

CUB CRAFTERS, INC.



CC18-180 AIRCRAFT MAINTENANCE MANUAL

**CUB CRAFTERS, INC.
1918 SOUTH 16TH AVENUE
YAKIMA, WA 98903
U.S.A.**

**(509) 248-9491
1-877-484-7865
www.cubcrafters.com**

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Record of Revisions

Rev.	Change	Date	Prepared	Checked
NC	Initial Issue	4/15/05	ECL	ES
A	List of Effective Pages updated. Mailing address removed. Rudder control travel angle $25^{\circ} \pm 2^{\circ}$ was $20^{\circ} \pm 2^{\circ}$.	7/29/05	MO	ECL
B	List of Effective Pages updated Removed TC3001-001, TC3001-002 from Chapter 04-00. Added Vacuum filter to Chapter 05-20 inspection table. Added Vacuum pump pressure to Chapter 05-30 operational and function check table. Added Chapter 71-90, Vacuum System, to the manual.	9/21/05	RB	
C	List of Effective Pages Updated Added float information to chapters 04-00, 06-00, 08-00 and 32-00. Added chapter 32-60 to manual Added chapter 95-00 to manual	11-15/05	KAH	ECL
D	List of Effective Pages updated. Added Fuel Vent Check Valve to Chapter 28-00.	1/10/2006	ECL	ECL
E	List of Effective Pages updated. Structural Limitations in Chapter 04-00 modified. Modified Chapter 05-10 to include O-360-C1G Engine and Artex ME406 ELT. Modified Chapter 05-20 to include Artex ME406 ELT Modified Chapters 04-00, 06-00, 08-00, 32-60 and 95-00 to correct Wipaire callout to "2100A". Revised Chapter 12-00 for Fuel Capacity callout. Modified Chapter 20-00 for Spark Plug torque values. Modified Chapter 27-30 (C.5.g) for clarification. Added double cotter pin installation on Rudder and Elevator clevis pins. Modified Chapter 27-40 (2.A.c; 2.B.c; 2.C.c) for clarification. Modified Chapter 28-00 for Fuel Vent Line System and Fuel Vent Check Valve. Modified Chapter 32-00, 32-20, and 31-41 for PSI callouts to reference Chapter 12-00. Modified Chapter 34-00 to remove reference to 43-10. Modified Chapter 60-00 to include all approved propellers.	4/17/2008	JPB/SJT	SJH

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Rev.	Change	Date	Prepared	Checked
	Modified Chapter 71-00 to include O-360-C1G Lycoming engine option. Modified Chapter 71-10 to remove C4P reference. Added Appendix A for Conversions.			
F	List of Effective Pages Updated. Revised NOTE in Chapter 05-00. Revised Chapter 08-00 to add note and update Figure 08-00-6 for float arm calculation. Revised Chapter 10-00 (3.B.1.g) to clarify propeller cleaning. Revised Chapter 12-20 (2.E) to add Engine Control Lubrication. Revised Chapter 20-00 to add Inch Pounds to General Torque Values. Revised Chapter 24-00 (5.B.2.b) Revised Chapter 27 to correctly separate sub-chapters. (27-20 Rudder, 27-30 Elevator, 27-40 Horizontal Stabilizer) Revised Chapter 34-00 to add knot information. Added Chapter 37-00 for Vacuum System. Revised Chapter 52-00 to Chapter 51-00. Revised Chapter 60-00 to add note regarding Sensenich Wood Propeller. Revised Chapter 71-00 to correct sub-chapter numbering (71-10 Engine Cowl and 71-60 Air Induction) Added Chapter 74-00 for Ignition. Added Chapter 76-00 for Engine Controls. Added Chapter 79-00 for Oil System. Added Chapter 80-00 for Starter. Revised Chapter 95-00 to "Special Purpose Equipment". Revised Appendix A Speed Table.	05-20-08	SJT	SJH
G	List of Effective Pages Updated Revised Section 4.2 Bottom Cushion part numbers.	05/25/11	SJT	ECL
H	List of Effective Pages Updated. Revised Chapter 05-10 for Superior engine. Revised Chapter 12-00 for Superior engine. Revised Chapter 60-00 for Superior engine. Revised Chapter 71-00 for Superior engine.	07/18/12	ECL	ECL
J	List of Effective Pages Updated Revised Chapter 04-00 for Seaplane floats. Revised Chapter 05-20 for Night VFR. Revised Chapter 06-00 for Seaplane floats. Revised Chapter 08-00 for Seaplane floats. Revised Chapter 24-00 for Night VFR.	11/20/12	AMS/ MRG	ECL

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Rev.	Change	Date	Prepared	Checked
J	Added Chapter 32-61 for Seaplane floats. Revised Chapter 33-00 Night VFR.	11/20/12	AMS/ MRG	ECL
K	List of Effective Pages Updated Revised Chapter 32-42 for Brake Pedal Travel	06/06/13	AMS	ECL
L	List of Effective Pages Updated Revised Chapter 24-00 for Amphibious floats. Revised Chapter 33-00 for Amphibious floats.	05/21/14	VCS	ECL
M	List of Effective Pages Updated Revised Chapter 71-10 for Winterization Kit.	07/01/14	VCS	ECL
N	List of Effective Pages Updated Revised step j of 71-10 section 1.2.	08/21/14	MRG	ECL
Q	List of Effective Pages Updated Revised Chapter 71-10 for Winterization Kit	12/29/14	CEO	VCS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

List of Effective Pages

REV	PAGE NUMBER	CHANGE	DATE	PREPARED	CHECKED
NC	All	Initial Issue	4/15/05	ECL	ES
A	00-00 Page 2	Mailing address removed	7/29/05	MO	ECL
	06-00 Page 5	Rudder control travel angle $25^{\circ} \pm 2^{\circ}$ was $20^{\circ} \pm 2^{\circ}$.			
B	Chapter 00: all pages	Revision to manual, updated footer	9/21/05	RBB	
	Chapter 04-00 all pages	Updated footer.			
	Chapter 04-00 Page 3	Removed TC3001-001, TC3001-002 from replacement part table.			
	Chapter 05-20: all pages	Updated footer.			
	05-20 Page 7	Added Vacuum pump and filter to inspection table.			
	Chapter 05-30: all pages	Updated footer.			
	05-30 Page 4	Added Vacuum filter to operational and functional check table.			
	Chapter 71-90	Added new Chapter 71-90 Vacuum System			
C	Chapter 00: Pages i, ii, iii	Revision to manual, Updated footer	11/15/05	KAH	ECL
	Chapter 04-00: Pages 1 and 6	Added Float Data and Updated Footer.			
	Chapter 06-00: All Pages	Added Float data and figures, Updated footer			
	Chapter 08-00: All pages	Added Float data and figures, Updated footer			
	Chapter 32-00: Pages 1 and 4	Added Float Data and updated footer			
	Chapter 32-60: All pages	Added to Manual			
	Chapter 95-00: All pages	Added to Manual			
D	Chapter 00-00: Pages I & ii	Revision to manual	1/10/06	ECL	ECL
	Chapter 28-00: Pages 1 through 6 and 13	Added information for Fuel Vent Check Valve.			
E	Chapter 04-00: Page 3 and Page 5	Structural Limitations modified: 3,000 hours for TC3200-001 & -002 was 2,000 hours; 20,000 hours for TC3101-001 & TC2566-001 was 2,000 hours; 9,000 hours for TC3300-001 was 2,000 hours; limitations added for TC3001-001 & -001 and TC3002-001 & -002. Modified Float callout to "2100A"	4/15/08	SJT / JPB	SJH

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

REV	PAGE NUMBER	CHANGE	DATE	PREPARED	CHECKED
E	Chapter 05-10: Page 3 Page 4	Added O-360-C1G Engine Added Artex Model ME406 ELT	4/15/08	SJT / JPB	SJH
	Chapter 05-20: Page 11	Added Artex Model ME406 ELT			
	Chapter 06-00: Pages 5 & 6	Revised Wipaire callout to "2100A"			
	Chapter 08-00: All Pgs	Revised Wipaire callout to "2100A"			
	Chapter 12-00: Page 3	Revised Fuel Capacity on Table 1.			
	Chapter 20-00: Page 6	Corrected torque value for Spark Plugs: 415-425 in-lbs. was 400- 420.			
	Chapter 27-30: Page 4 Page 12 Page 14	Added double cotter pin to clevis pin installation on Rudder Clarified (g) for tab location. Added double cotter pin to clevis pin installation on Elevator.			
	Chapter 27-40: Page 2 Page 3 Page 4	Clarified A(c) for levelling aileron. Clarified B(c) for levelling Elevators Clarified C(c) for levelling Rudder			
	Chapter 28-00: Page 3 Page 4 Page 10	Revised Figure 28-00-1. Revised Troubleshooting Chart. Revised Fuel Check Valve information.			
	Chapter 32-00: Page 3	Revised Tail Wheel "Remedy"			
	Chapter 32-20: Page 2	Revised Figure 32-40-1 for 2-hole configuration shown.			
	Chapter 32-41: Page 2 Page 6	Revised General Information. Removed tire pressure callouts			
	Chapter 34-00: Page 5	Reference to 43-10 removed from Airspeed Indicator Remedy.			
	Chapter 60-00: Page 2	Revised Propeller Options.			
	Chapter 71-00: Page 2	Added O-360-C1G Engine Option			
	Chapter 71-10: Page 2	Revised General Section to remove C4P Reference.			
Chapter 95-00: Page 2	Revised Wipaire callout to "2100A"				
Appendix A: All Pages	Added to Manual.				
F	All Chapters and All Pages	Revised all references to match new chapter and sub-chapter numbering.	05/20/08	SJT	SJH
	Chapter 00: Page vii	Revised Table of Contents.			
	Chapter 05-00: Page 3	Revised Note.			
	Chapter 08-00: Page 8 and Page 9	Added note to clarify arm measurement for floats. Revised Table 08-00-6.			
	Chapter 10-00: Page 4	Revised 3.B.1.g for Propeller cleaning.			

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

REV	PAGE NUMBER	CHANGE	DATE	PREPARED	CHECKED
F	Chapter 12-00: Page 4	Added Engine Controls to Lubrication Chart.			
	Chapter 20-00: Page 7	Added "Inch-Pounds" to General Torque Values Chart			
	Chapter 24-00: Page 8	Revised 5.B.2.b.			
	Chapter 27: Page i	Revised Table of Contents to match GAMA numbering			
	Chapter 27-20: All Pages	Created Sub-Chapter for Rudder Controls			
	Chapter 27-30: All Pages	Created Sub-Chapter for Elevator Controls			
	Chapter 27-40: All Pages	Renamed to "Horizontal Stabilizer" and restructured.			
	Chapter 32-60: Page 3	Added Knots information to MPH.			
	Chapter 34-00: Pages 6 and 7	Added Knots information to MPH.			
	Chapter 37-00: All Pages	Created Chapter for Vacuum System (was 71-90)			
	Chapter 51-00: All Pages	Revised number to match GAMA numbering.			
	Chapter 60-00: Page 2	Added Note regarding Sensenich Wood Propeller Model W80CM8.			
	Chapter 71: Page i	Revised Table of Contents to match GAMA numbering.			
	Chapter 71-10: All Pages	Revised Sub-Chapter to match GAMA numbering for Engine Cowl. (was 71-30)			
	Chapter 71-60: All Pages	Revised Sub-Chapter to match GAMA numbering for Air Induction. (was 71-20)			
	Chapter 74-00: All Pages	Created Chapter for Ignition. (was 71-10)			
	Chapter 76-00: All Pages	Created Chapter for Engine Controls (was 71-70)			
	Chapter 79-00: All Pages	Created Chapter for Oil System (was 71-50)			
	Chapter 80-00: All Pages	Created Chapter for Starter (was 71-80)			
	Chapter 95:	Revised Chapter Title to "Special Purpose Equipment".			
Appendix A: Page 5	Revised Speed Table to begin at 0 MPH and end at 180 MPH				

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

REV	PAGE NUMBER	CHANGE	DATE	PREPARED	CHECKED
G	Chapter 00-00: Pages ii and v	Revision to manual.	05/25/11	SJT	ECL
	Chapter 04-00: Page 3	Revised Seat Cushion part numbers to TC2450-201 and TC2452-201.			
H	Chapter 00-00: Pages ii and vi	Revision to manual.	07/18/12	ECL	ECL
	Chapter 05-10: Page 3	Added Superior engine to replacement and overhaul times.			
	Chapter 12-00: Page 3	Added Superior report to note.			
	Chapter 60-00: Page 1	Revised Table of Contents page numbering.			
	Chapter 60-00: Page 2	Revised General section for Superior engine.			
	Chapter 71-00: Page 2	Revised General section for Superior engine.			
J	Chapter 00-00: All	Revision to manual	11/20/12	AMS/MRG	ECL
	Chapter 04-00: All	Page 5 Added seaplane floats.			
	Chapter 05-20: All	Page 10 Added Taxi and checklist item 27.			
	Chapter 06-00: All	Page 4, 5 Added seaplane float geometry and gross weight.			
	Chapter 08-00: All	Page 10, 11 Added section for seaplane weighing.			
	Chapter 24-00: All	Revised schematics for Night VFR changes. Updated figure numbers.			
	Chapter 32-61: All	New section for seaplane floats installation and removal.			
	Chapter 33-00: All	Page 4 Added cabin lighting for Night VFR changes.			
K	Chapter 00-00: Pages i- vii	Revision to manual.	06/06/13	AMS	ECL
	Chapter 32-42: All	Page 8, Added Section D for Setting Brake Pedal Travel.			
L	Chapter 00-00: All	Revision to manual.	05/21/14	VCS	ECL
	Chapter 24-00: Page 4	Updated Figure 24-00-3 Schematic			
	Chapter 33-00: Page 4	Revised upper dimmer control descriptions.			
	Chapter 33-00: Page 7	Added Emergency Hand Pump Lights section.			

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

M	Chapter 00-00: All	Revision to manual.	07/01/14	VCS	ECL
	Chapter 71-10: Page 4	Added winterization kit installation instructions.			
N	Chapter 00-00: All	Revision to manual	8/21/14	MRG	ECL
	Chapter 71-10: Page 4	Revision to step j of section 1.2.			
Q	Chapter 00-00: All	Revision to manual	12/29/14	CEO	VCS
	Chapter 71-10: Page 4	Insertion of steps f and h in section 1.2.1.			

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

TABLE OF CONTENTS

00	Introduction
04	Airworthiness Limitations
05	Time and Scheduled Maintenance
06	Dimensions and Areas
07	Jacking and Lifting
08	Leveling and Weighing
10	Parking and Mooring
12	Servicing
20	Standard Practices
24	Electrical
25	Cabin
27	Controls
28	Fuel System
32	Landing Gear
33	Lights
34	Pitot Static
37	Vacuum System
51	Structures
57	Wings
60	Propeller
71	Powerplant
74	Ignition
76	Engine Controls
79	Oil System
80	Starter
95	Special Purpose Equipment
APPENDIX A	Conversions

CUB CRAFTERS, INC. CC18-180 MAINTENANCE MANUAL

00 INTRODUCTION

1 GENERAL

Cub Crafters, Inc.'s Technical Publications Department prepared this Aircraft Maintenance Manual. It contains the information that a trained mechanic will need to maintain the CC18-180 in an airworthy condition.

The CC18-180 Aircraft Maintenance Manual was prepared using GAMA Specification #2 (Specification for Manufacturers Maintenance data), Revised September 1982 as a model. However, this specification is intended to cover a very broad range of aircraft including very complex ones. By comparison, the CC18-180 is a relatively simple aircraft, so the model given in the GAMA Specification was altered for clarity, while at the same time preserving a format that will be familiar to most modern aircraft mechanics.

This Maintenance Manual does not reflect part numbers and cannot be used for ordering replacement parts.

The wiring schematics that have been included in the manual are for general information purposes only. Aircraft will have optional equipment for which there will be specific drawings that will either be included with the aircraft's documentation on delivery or be available from Cub Crafters, Inc.

2 LAYOUT OF THE MANUAL

This Maintenance Manual is divided into chapters. The chapter numbers follow the numbering system given in GAMA Specification #2, although in certain instances it has been adapted for this manual. The chapter numbers appear at the foot of each page.

Each chapter contains its own table of contents. Where the systems are complex, the table of contents will be found in the sub chapter (as is the case in Chapter 27).

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

3 WARNINGS, CAUTION AND NOTES

WARNING
AN OPERATING PROCEDURE, PRACTICE OR A CONDITION WHICH, IF NOT CORRECTLY FOLLOWED OR REMEDIED, COULD RESULT IN SERIOUS PERSONAL INJURY OR LOSS OF LIFE.

CAUTION
An operating procedure, practice or a condition which, if not strictly observed or corrected, could result in destruction of, or damage to equipment.

NOTE
An operating procedure, practice or condition which is important to emphasize.

4 REVISION SERVICE

The CC18 Maintenance Manual will be made available to aircraft owners and repair shops on a subscription basis. Revisions will be sent to registered subscribers as they become available.

Revisions may also be obtained by submitting a request to:

Cub Crafters, Inc.
Address: 1918 S. 16th Avenue
Yakima, WA 98903
USA
Telephone: (509) 248-9491
Telephone: (877) 484-7865
Fax: (509) 248-1421
Website: www.cubcrafters.com
Email: support@cubcrafters.com

CHAPTER
04-00

AIRWORTHINESS
LIMITATIONS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

04-00 AIRWORTHINESS LIMITATIONS

TABLE OF CONTENTS

1	GENERAL.....	2
2	DESCRIPTION	3
2.1	MAINTENANCE LIMITATIONS.....	3
2.2	REPLACEMENT INTERVALS.....	3
2.3	STRUCTURAL LIMITATIONS	4
2.4	VORTEX GENERATORS.....	6
2.5	WIPAIRE 2100A AMPHIBIOUS and 2100S SEAPLANE FLOATS	6

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1 GENERAL

The FAA has approved the Airworthiness Limitations Section of this manual; it specifies inspection and maintenance required by paragraphs 43.16 and 91.403 of the Federal Aviation Regulations, unless an alternative program has been FAA approved.

This chapter outlines replacement intervals, maintenance requirements and means of monitoring aircraft components, systems, and structures determined to be life limited.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2 DESCRIPTION

The following airworthiness limitations and requirements are separated into five groups as described below.

- Maintenance Limitations - Checks of components and systems that are required to be performed during scheduled maintenance.
- Replacement Limitations - List of time limits at which Cub Crafters considers that specific components must be replaced.
- Structural Limitations - Are related to fatigue life limitations as required by Federal Aviation Regulations for certification.
- Vortex Generators - This limitation is related to the number of vortex generators that may be missing from an aircraft.
- WIPAIRE 2100A Amphibious and 2100S Seaplane Floats – Restriction on propeller used in this configuration.

2.1 MAINTENANCE LIMITATIONS

The scheduled maintenance requirements are found in Chapter 5-20 (Scheduled Maintenance Checks).

2.2 REPLACEMENT INTERVALS

Chapter 5-10 (Time Limits and Maintenance Checks - Overhaul and Replacement Schedule) lists replacement intervals that Cub Crafters considers essential for the safe continued airworthiness of the aircraft.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

2.3 STRUCTURAL LIMITATIONS

This section lists the parts whose replacement is mandatory and as such, are an airworthiness limitation. The following parts must be replaced at the intervals specified:

	PART NUMBER	DESCRIPTION	INTERVAL
1	TC1201-001	Wing Spar Assembly Front Left	20,000 hours
2	TC1201-002	Wing Spar Assembly Front Right	20,000 hours
3	TC1202-001	Wing Spar Assembly Rear Left	20,000 hours
4	TC1202-002	Wing Spar Assembly Rear Right	20,000 hours
5	TC1901-001	Wing Strut Assembly Front, Left	20,000 hours
6	TC1901-001	Wing Strut Assembly Front, Right	20,000 hours
7	TC1902-001	Wing Strut Assembly Rear Left	20,000 hours
8	TC1902-001	Wing Strut Assembly Rear Right	20,000 hours
9	TC2800-003	Fuselage Frame- Landing Gear Lift Strut Fitting (See FIGURE 04-00-1)	20,000 hours*
10	TC2800-003	Fuselage Frame- Forward Wing Spar Attachment Lug (See Figure 04-00-2)	20,000 hours*
11	TC3200-001	Stabilizer Assembly Left	3,000 hours
12	TC3200-002	Stabilizer Assembly Right	3,000 hours
13	TC3101-001	Elevator Assembly Left	20,000 hours
14	TC3101-001	Elevator Assembly Right	20,000 hours
15	TC3300-001	Rudder Assembly	9,000 hours
16	TC2566-001	Vertical Stabilizer Assembly	20,000 hours
17	TC3001-001	Upper Brace Wire Assembly Left	8,000 hours
18	TC3001-002	Upper Brace Wire Assembly Right	8,000 hours
19	TC3002-001	Lower Brace Wire Assembly Left	8,000 hours
20	TC3002-002	Lower Brace Wire Assembly Right	8,000 hours
21	TC2450-201	Front Seat Bottom Cushion	5 years
22	TC2452-201	Rear Seat Bottom Cushion	5 years

* After time expiration, FAA approved Cub Crafters repair required to restore TC2800-003 to an airworthy condition. Contact the Cub Crafters Customer Service Department for further information.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

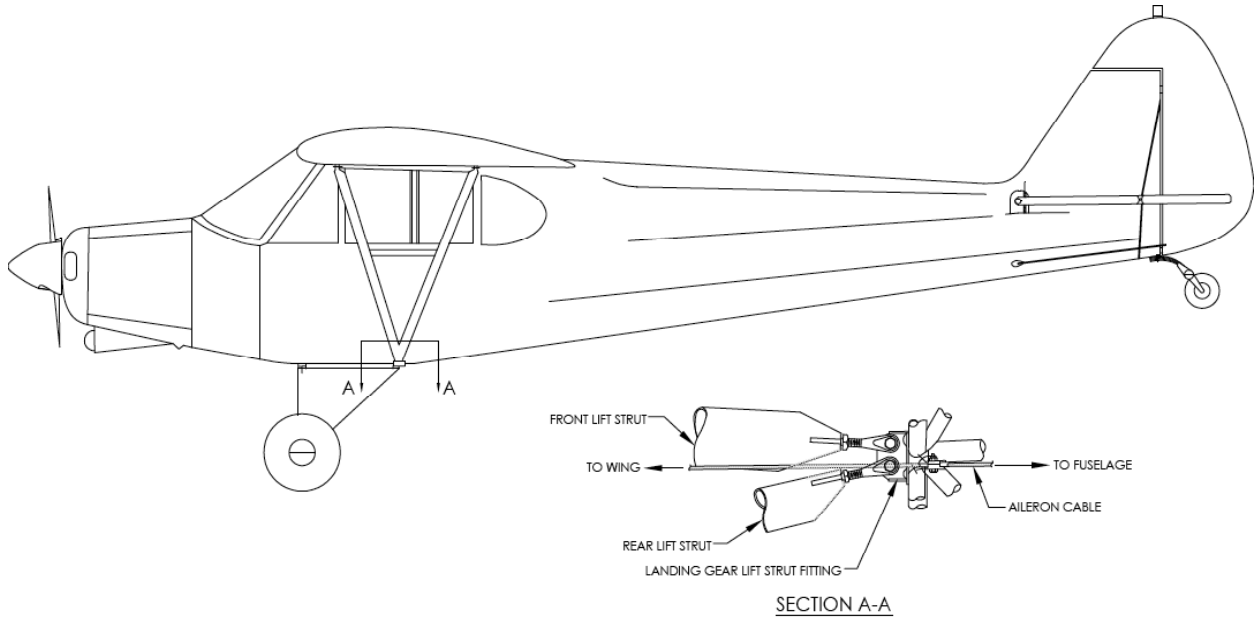


FIGURE 04-00-1 Landing Gear Lift Strut Fitting

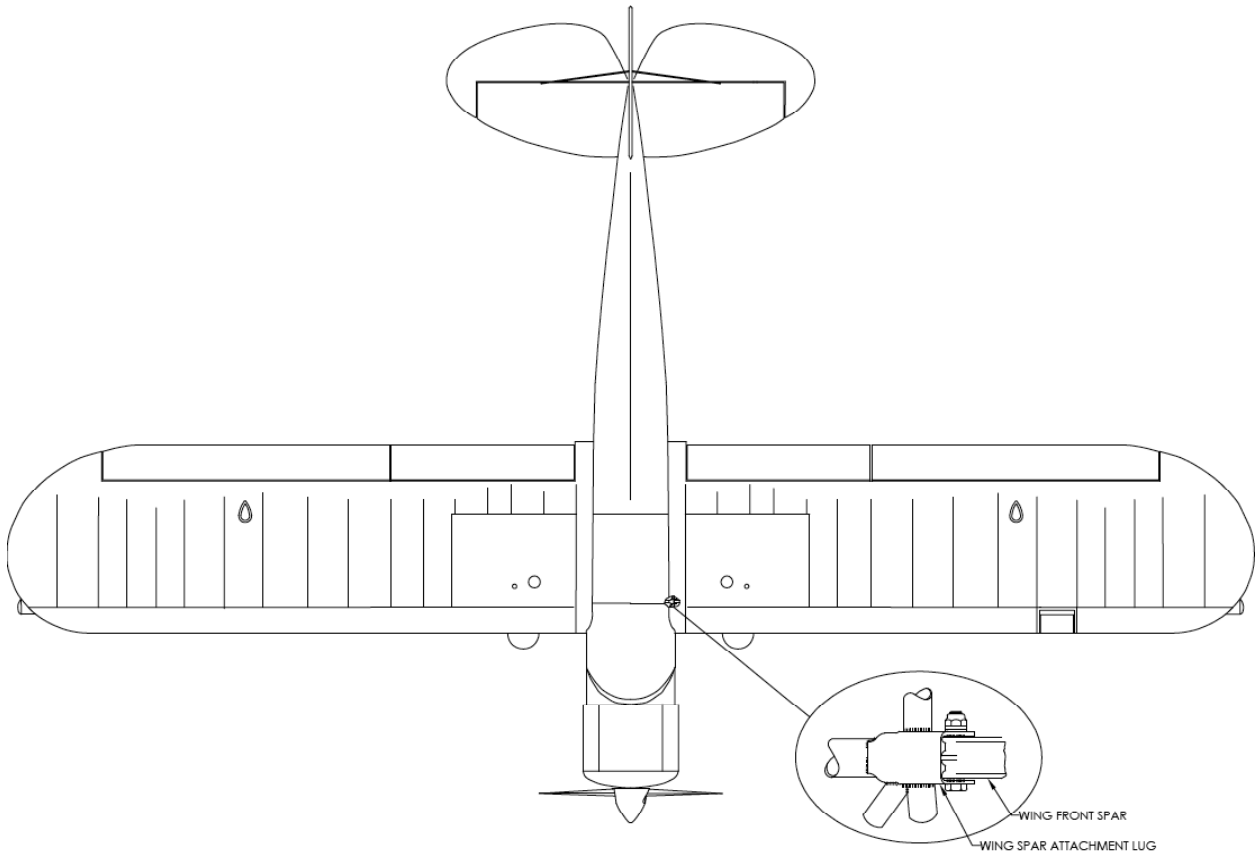


FIGURE 04-00-2 Forward Wing Spar Attachment Lug

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2.4 VORTEX GENERATORS

The CC18-180 is allowed to fly with the following number of vortex generators missing:

- Not more than three vortex generators missing on an aircraft.
- Not more than two vortex generators missing on a wing.
- The missing vortex generators must not be next to each other.

If there are vortex generators missing, the maximum takeoff weight of the aircraft is limited to 2100 lbs.

2.5 WIPAIRE 2100A AMPHIBIOUS and 2100S SEAPLANE FLOATS

When the CC18-180 is equipped with Wipaire 2100A Amphibious Floats or Wipaire 2100S Seaplane Floats, it must have a McCauley Propeller System, Model 1A200/FA 82 in. diameter, 40 in. pitch propeller installed. No other propeller is approved in this configuration.

CHAPTER 05

TIME LIMITS AND SCHEDULED MAINTENANCE

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

05 TIME LIMITS AND SCHEDULED MAINTENANCE

05-00 TIME LIMITS AND SCHEDULED MAINTENANCE
05-10 OVERHAUL AND REPLACEMENT SCHEDULE
05-20 SCHEDULED MAINTENANCE
05-30 OPERATIONAL AND FUNCTIONAL CHECK OF AIRCRAFT

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

05-00 TIME LIMITS AND SCHEDULED MAINTENANCE

TABLE OF CONTENTS

1 GENERAL.....2

2 ANNUAL INSPECTIONS2

3 100-HOUR INSPECTIONS2

4 SPECIAL CONDITIONS - CAUTIONARY NOTICE2

CUB CRAFTERS, INC.

CC18-180 MAINTENANCE MANUAL

1 GENERAL

This chapter outlines the recommended intervals for:

- Overhaul and replacement of components,
- Scheduled and unscheduled maintenance, and
- Annual inspections.

The Schedule is based on inspections being carried out every 50 hours with additional tasks performed at 100, 500, and 1000 hour intervals. These intervals are recommended and are based on normal usage under average environmental conditions. In extreme climates it will be desirable to make these intervals shorter.

2 ANNUAL INSPECTIONS

If the aircraft is registered in the United States, Federal Aviation Regulation Part 91.409 requires that all civil airplanes must undergo a complete inspection at least once every 12 calendar months. An authorized maintenance person, as described in FAR Part 43.3, must perform this inspection. A signed and dated record must be maintained as each inspection task is completed. When the last task of the inspection has been completed, the Inspection Report is to be signed off in the Log Book/Maintenance Record. The inspection items to be covered in the Annual Inspection are identical to the 100-hour Inspection items. The inspection interval to the next Annual Inspection may not exceed twelve calendar months.

3 100-HOUR INSPECTIONS

If the aircraft is operated commercially (for hire) in the U.S.A., it must also have an inspection every 100 flight hours. The 100-hour interval between inspections should never be exceeded by more than 10 hours, and then only if additional time is required to reach a place where the inspection can be satisfactorily accomplished. Additionally, the time the interval was exceeded must be included as flight hours in the next 100-hour interval. Inspection tolerances cannot be accumulated.

4 SPECIAL CONDITIONS - CAUTIONARY NOTICE

Airplanes operated for Air Taxi operation or other than normal operation and airplanes that fly in humid tropics or cold and damp climates, etc., may need more frequent inspections for wear, corrosion, and/or lack of lubrication. In these areas, periodic inspections should be performed more frequently until the operator can set his own inspection periods based on experience.

NOTE

The recommended periods do not constitute a guarantee that the item will reach the period without malfunction as in-service factors cannot be controlled by the manufacturer. Any item on the aircraft should be repaired, overhauled, or replaced when inspection or performances of these items reveal a potentially unserviceable or unsafe condition. The date on the "ORIGINAL STANDARD AIRWORTHINESS CERTIFICATE," FAA Form No. 8100-2, which is issued with a new airplane, is to be used as the basis for all inspected components listed in the following schedules.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

05-10 OVERHAUL AND REPLACEMENT SCHEDULE

TABLE OF CONTENTS

1 GENERAL2
2 REPLACEMENT AND OVERHAUL TIMES.....3

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1 GENERAL

This section lists the components that Cub Crafters recommends be overhauled or replaced at specified intervals. Whenever this is carried out, ensure that the following information is properly recorded in the Airplane Maintenance Log:

- Date of removal, installation, or overhaul of the component
- Time on the component since last overhaul (if appropriate)
- Aircraft's flight hours

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

2 REPLACEMENT AND OVERHAUL TIMES

	ITEM	INTERVAL	REPLACE	OVERHAUL	NOTES
1	Engine				
1a	Lycoming O-360-C4P O-360-C1G	2000 Hours		X	Refer to the latest revision of Textron Lycoming Service Instruction 1009
1b	Superior O-360-A3A2	1000 Hours		X	Refer to latest revision of Superior publication SVOM01
2	Propeller				
2a	Sensenich Propeller Manufacturing Company Inc, Model 76EM8	2000 Hours		X	Refer to latest revision of Sensenich Service Bulletin No. R-17
2b	McCauley Propeller Systems 1A200/FA	2000 Hours or 72 Months		X	Refer to latest revision of McCauley Service Bulletin No. 137
2c	Sensenich Wood Propeller Company, Inc				There is no recommended TBO for this propeller. Attention is drawn to document W80CM8-CF
3	B & C Alternator	At Engine Overhaul		X	
4	Starter	At Engine Overhaul		X	
5	Exhaust and Muffler	1000 Hours	X Inspect exhaust and muffler, replace if needed.		If aircraft is used for banner or glider towing reduce the interval to 500 hours.
6	Induction Air Box	2000 Hours/ Engine Overhaul, Whichever Comes First	X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

	ITEM	INTERVAL	REPLACE	OVERHAUL	NOTES
7	Flexible Fuel Lines	12 Years/ Engine Overhaul, Whichever Comes First	X		
8	Flexible Oil System Lines	12 Years/ Engine Overhaul, Whichever Comes First	X		
9	Emergency Locator Transmitter Batteries	After 1 hour of Cumulative Transmitting. Date Marked on the Batteries by Duracell.	X		Refer to ACK Technologies Model E-01 or Artex Model ME406 Installation and Operation Manual
10	Remote ELT Switch Battery	8 Years Lithium 4 years Alkaline	X		
11	Fire Extinguisher	12 Years From Date of Manufacture	X		Applicable to model RT A400. Replace if gross weight is less than 17.7 oz.
12	Rubber Engine Mount Bushings	At Engine Overhaul	X		
13	Landing Gear Bungees	5 Years	X		Replace more frequently when bungees are no longer strong enough to return the landing gear to its stops or whenever they are frayed or damaged

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

05-20 SCHEDULED MAINTENANCE

TABLE OF CONTENTS

- 1 GENERAL2
- 2 INSPECTION GROUPS AND CRITERIA2
 - 2.1 Visual Inspection2
 - 2.2 Operational Inspection3
 - 2.3 Functional Inspection3
- 3 INSPECTION FORMS4

CUB CRAFTERS, INC.

CC18-180 MAINTENANCE MANUAL

1 GENERAL

This chapter is intended to serve as a guide for a certified airframe and power plant mechanic to perform routine maintenance on the aircraft. It is the responsibility of the owner and the operator to maintain the aircraft in an airworthy condition and ensure that all applicable Airworthiness Directives have been complied with. Furthermore, it is the responsibility of the owner and the operator to ensure that the airplane is inspected as specified in Parts 43 and 91 of the Federal Aviation Regulations. This inspection guide is not intended to replace the good judgment of a certified airframe and power plant mechanic.

The guide will make reference to service information provided by other vendors such as the manufacturer of the engine. The persons performing the maintenance on the aircraft must ensure that they have the latest editions of these publications. This guide will not make reference to revision levels of vendor publications.

This guide will be applicable to the aircraft in the configuration it left Cub Crafters when it was first delivered and it may not cover modifications made to the aircraft subsequently.

2 INSPECTION GROUPS AND CRITERIA

2.1 Visual Inspection

Visual inspections will normally apply to those areas, surfaces, or items that become visible by the removal or opening of access doors, panels, fairings, or cowlings.

Visual Inspection criteria will normally consist of, but are not limited to the following criteria:

a. Moving Parts

Proper operation, correct alignment, security, sealing, cleanliness, lubrication, adjustment, tension, travel, condition, binding, excessive wear, cracking, corrosion, deformation and any other apparent damage

b. Fabric covered parts

Security, condition, cleanliness, wear, cracking, obstruction of drainage or vent holes, deformation, heat deterioration, fluid saturation and any other apparent damage

c. Metal Parts

Security, condition of finish, cleanliness, distortion, fatigue cracks, cracked welds, corrosion and any other apparent damage

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- d. Fuel and Hydraulic Oil Lines and Hoses
Cracks, dents, kinks, loss of flexibility, deterioration, obstruction, chaffing, improper bend radius, cleanliness, security and any other apparent damage
- e. Electrical Wiring
Cleanliness, loose, corroded, or broken terminals, chaffed, broken, or worn insulation; security; heat deterioration and any other apparent damage
- f. Bolts and Nuts
Fretting, wear, damage, stretch, proper torque and safety wiring
- g. Filters and Screens
Filters and screens shall be removed, cleaned, inspected for contamination, or replaced as applicable
- h. Fuel Tank Areas
Cleanliness, evidence of leaks or structural fatigue

2.2 Operational Inspection

An Operational Inspection is a check intended to determine that a component or system is fulfilling its intended purpose. The Operational Inspection does not require quantitative tolerances.

2.3 Functional Inspection

When called for by an inspection task, a Functional Inspection is a quantitative check to determine if one or more functions of a component perform within specified limits. The Functional Inspection is a comparative examination of a component or system against a specific standard.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

3 INSPECTION FORMS

Scheduled Inspection Report			
Make: Cub Crafters, Inc.	Model: CC18-180	Serial Number:	Registration:
Owner:		Date:	
Type of Inspection:		Hobbs/Tach Time:	

	Visual Pre-Inspection	Ref.	Interval		Initials
			100	Special	
1	Review compliance with current Federal Aviation Regulations, including visual inspection of: <ul style="list-style-type: none"> - Aircraft Flight Manual - Aircraft Log Book - Registration Certificate - Weight and Balance Record - Aircraft Equipment List - FAA Airworthiness Directives - Cub Crafters' Service Documents 		X		
2	Visual Inspection of Aircraft				
3	Check Oil Quantity 8 Quarts	12-00	X		
4	Operational Check	05-30	X		
5	Perform Walk-around to Detect Fluid Leaks. <ul style="list-style-type: none"> - Make record of all malfunctions and discrepancies 		X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Engine Group		Ref.	Interval		Initials
			100	Special	
1	Engine Cowl: - Remove, clean and check for cracks distortion, loose, or missing fasteners		X		
2	Engine Oil: - Drain	Lycoming SB 480 Superior SVMM01		25 hours	
3	Suction Oil Strainer: - Visual Inspection for Foreign Particles	Lycoming SB 480 Superior SVMM01		25 hours	
4	Oil Temperature Sender Unit: - Check for Leaks and Security.		X		
5	Oil Lines and Fittings: - Check for Leaks, Security, Chafing, Dents, and Cracks		X		
6	Oil Radiator: - Clean and Check Cooling Fins for Damage		X		
7	Engine Oil: - Fill with 8 Quarts (Refer to 12-00)	Lycoming SI 1014 Superior SVMM01		25 hours	
8	Spark Plugs - Visual Inspection and Re-Gap as Necessary	Champion Aviation Technical Bulletin 99-2	X		
9	Check Differential Cylinder Compression: Cylinder 1 _____ Cylinder 2 _____ Cylinder 3 _____ Cylinder 4 _____	Lycoming SI 1191 Superior SVMM01	X		
10	Cylinders: - Visual Inspection for Cracked or Broken Fins		X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Engine Group (continued)		Ref.	Interval		Initials
			100	Special	
11	Electrical Wiring to Engine and Accessories: - Visual Inspection - Replace Damaged Wires and Clamps - Visual Inspection of Terminals for Security and Cleanliness		X		
12	Ignition Harness and Insulators: - Visual Inspection for High Tension Leaks and Continuity		X		
13	Magnetos: - Check Magneto to Engine Timing and Adjust, if Needed	Unison Manual L-1363	X		
14	Magnetos: - Inspect Plug Wires and P-lead for Condition and security - Verify Vent Hole is Clean and Clear of Obstructions	Unison Manual L-1363	X		
15	Magnetos: - Remove and Inspect IAW the Latest Version of the Unison L-1363 Maintenance Manual	Unison Manual L-1363		500 hour	
16	Induction Air Filter: - Remove, Inspect, and Clean. - Replace at 500 hours, or when filter is more than 50% covered by foreign material		X	500 hours, or 50% covered	
17	Carburetor: - Drain and Clean Inlet Line Fuel Strainer		X		
18	Induction Air Box: - Visual Inspection Condition		X		
19	Intake Seals: - Visual Inspection for Leaks and Clamps for Tightness		X		
20	Flexible Fuel and Primer Lines: - Visual Inspection Condition		X		
21	Throttle, Mixture Controls: - Visual Inspection for Proper Travel and Operating Condition		X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Engine Group (continued)		Ref.	Interval		Initials
			100	Special	
22	Exhaust Stacks, Connections, Gaskets, and Braces: - Visual Inspection - Replace Exhaust Gaskets, as Required		X		
23	Muffler, Heat Exchanger, and Hoses: - Remove shroud - Visual inspection			50 hours	
24	Oil Breather Tube: - Visual Inspection for Obstructions and Security		X		
25	Crankcase: - Visual Inspection for Cracks, Leaks, and Security of Case Bolts		X		
26	Engine Mounts: - Visual Inspection for Cracks and Distortion and Security		X		
27	Engine Baffles: - Visual Inspection for Damage and Security		X		
28	Rubber Engine Mount Bushings: - Visual Inspection for Deterioration		X		
29	Firewall and Seals: - Visual Inspection		X		
30	Cabin Heater Control: - Visual Inspection		X		
31	Alternator: - Visual Inspection for Condition, Security, and Tension of Drive Belt		X		
32	Starter: - Visual Inspection for Condition and Security		X		
33	Engine Controls: - Check Travel from Stop to Stop and Lubricate		X		
34	Engine Cowl: - Install, Ensuring Good Clearance		X		
35	Vacuum Pump Filter (if optional vacuum pump is installed): - Visually Inspect for Excessive Contamination		X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Propeller Group – Metal		Ref.	Interval		Initials
			100	Special	
THIS INSPECTION SHEET IS APPLICABLE TO THE SENSENICH PROPELLER MANUFACTURING CO. MODEL 76EM8 PROPELLER AND MCCAULEY PROPELLER SYSTEMS 1A200/FA82.					
1	Spinner and Bulkheads: - Visual Inspection for Damage and Security		X		
2	Propeller Blades: - Visual Inspection for Nicks and Cracks		X		
3	Spinner Mounting Brackets: - Visual Inspection for Damage and Security		X		
4	Propeller Mounting Bolts: - Visual Inspection - Check Torque, If Safety Wire is Broken		X		

Propeller Group - Wood		Ref.	Interval		Initials
			100	Special	
THIS INSPECTION SHEET IS APPLICABLE TO THE SENSENICH WOOD PROPELLER CO., W80CM8 PROPELLER.					
1	Spinner and Back Plate: - Visual Inspection for Damage and Security			50 hours	
2	Propeller Hub and Blades: - Visual Inspection for Nicks and Cracks	Sensenich Bulletin Doc W80CM8- CF		50 hours	
3	Propeller Mounting Bolts: - Torque Verification after 1st Flight, 25 Hours, and Every 50 Hours thereafter or Should the Operating Environment Change If below 200 in-lbs.: - Remove Propeller and Inspect Hub for Damage Between 200-275 in-lbs.: - Adjust torque Between 275-325 in-lbs. - No Further Action Required Above 325 in-lbs.: - Loosen Bolts and Re-Torque			1st Flight, 25 hours, 50 hours, Environ.	

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

	Cabin Group	Ref.	Interval		Initials
			100	Special	
1	Doors: - Visual Inspection for Damage, Operation, and Security		X		
2	Door Latches and Hinges: - Visual Inspection - Lubricate		X		
3	Cabin Windows and Windshield: - Clean and Visual Inspection for Cracking, Crazing, and General Condition		X		
4	Upholstery: - Visual Inspection for Tears and Fraying		X		
5	Seat Belts, Inertia Reel, and Harnesses: - Visual Inspection		X		
6	Pilot Seat: - Visual Inspection - Verify Latch Security		X		
7	Control Bushings, Cables, and Pulleys (including control stick and torque tube): - Visual Inspection - Lubricate Bearing Surfaces Only		X		
8	Elevator Trim: - Visual Inspection of Complete System - Operational Check - Lubricate Shaft Only		X		
9	Fuel Lines and Gauges: - Visual Inspection for Leaks, Chaffing, Obstruction, Security, and General Condition		X		
10	Flap Lever: - Operational Check - Visual Inspection of Ratchet and Latch Through the Range of Operation - Lubricate Shaft		X		
11	Rudder Pedals: - Operational Check - Lubricate		X		
12	Throttle: - Verify Freedom of Movement - Ensure It Contacts Engine Stops		X		
13	Mixture: - Verify Freedom of Movement - Ensure It Contacts Engine Stops		X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Cabin Group (continued)		Ref.	Interval		Initials
			100	Special	
14	Carburetor Heat Control: - Verify Freedom of Movement - Ensure Full Travel		X		
15	Cabin Heater: - Verify Freedom of Movement - Ensure Full Travel		X		
16	Emergency Locator Transmitter: - Functional Inspection	FAR 91.207	X		
17	Placards and Instrument Markings: - Visual Inspection for Conformity, Security, and Condition		X		
18	Instrument Panel: - Visual Inspection for Security of Lines and Wiring		X		
19	Pitot System: - Visual Inspection of Lines for Leaks and Chaffing - Operational Inspection of Heater CAUTION: PITOT TUBE WILL BECOME VERY HOT AND COULD CAUSE BURNS.		X		
20	Strobe, Landing, Taxi and Navigation Lights: - Visual Inspection for Condition and Security - Operational Inspection		X		
21	Stall Warning: - Operational Inspection		X		
22	Altimeter: - Visual and Functional Inspection for Condition and Calibration, If Required By FAR 91.411	FAR 91.411	24 mos		
23	Transponder: - Visual and Functional Inspection for Condition and Calibration in Accordance with FAR 91.413	FAR 91.413	24 mos		
24	Antennas: - Visual Inspection for Condition and Security		X		
25	Brake Cylinders and Parking Valves: - Operational and Visual Inspections for Leaks - Fill Up With Fluid, As Required		X		
26	Fire Extinguisher (Model RT A400): - Visual Inspection of Extinguisher and Mounting Bracket - Visual Inspection of Safety Seal - Weigh Unit and Replace If Gross Weight is Less Than 17.6 oz		X		
27	Interior Lights - Functional Check of Instrument, Placard and Post Lights		X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Fuselage and Empennage Group		Ref.	Interval		Initials
			100	Special	
1	Fabric and Finish: - Visual Inspection for Cracks and Deterioration		X		
2	Battery, Box, and cables: - Visual inspection		X		
3	ELT: - Installation and Condition of Battery and Antenna	ACK Technologies E-01 Installation & Ops Manual	X		
		Artex ME-406 Installation and Ops Manual	X		
4	Fuel Lines: - Visual Inspection for Security and Damage		X		
5	Fuselage frame Tubing, Longerons, and Stringers: - Visual Inspection for Damage and Corrosion		X		
6	Rudder, Elevator and Stabilizer Trim Cables, Turnbuckles, Guides, and Pulleys: - Inspect for Tension, Safety, Wear, Damage, Corrosion, and Operation		X		
7	Stabilizer Yoke and Screw: - Visual Inspection for End Play, Security, and Excessive Wear		X		
8	Rudder, Stabilizer, and Elevator Structures: - Visual Inspection for Damage		X		
9	Rudder Hinge Pins and Bushings: - Visual Inspection for Excess Wear, and Corrosion		X		
10	Elevator Hinge Pins and Bushings: - Visual Inspection for Excess Wear, and Corrosion		X		
11	Stabilizer Brace Wires: - Visual Inspection for Corrosion, Tightness, and Safety		X		
12	Lubricate per Figure 12-20-01		X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Wing Group		Ref.	Interval		Initials
			100	Special	
1	Fabric and Finish: - Visual Inspection for Cracks and Deterioration		X		
2	Aileron, Flap, and Wing Structure: - Visual Inspection for Damage		X		
3	Fuel Tanks, Caps, Scupper Rings, and Lines: - Visual Inspection for Damage, Leaks and Deterioration		X		
4	Wing Attachment Bolts: - Visual Inspection for Security		X		
5	Lift and Jury Struts: - Visual Inspection for Security		X		
6	Lift Strut Forks: - Visual Inspection for Damage and Security		X		
7	Aileron and Flap Cables, Turnbuckles, Guides, and pulleys: - Visual Inspection for Safety, Damage, Corrosion, and Operation		X		
8	Ailerons Attachments and Brackets: - Visual Inspection for Tightness and Damage		X		
9	Aileron Hinge Pins and Blocks: - Visual Inspection for Excess Wear and Corrosion		X		
10	Flap Attachments and Brackets: - Visual Inspection for Tightness and Damage		X		
11	Flap Bellcrank, Control Rod, Spring Pins, and blocks: - Visual Inspection		X		
12	Lubricate per Figure 12-20-01		X		

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Landing Gear Group		Ref.	Interval		Initials
			100	Special	
1	Fabric and Finish: - Visual inspection for cracks and deterioration		X		
2	Jack Airplane		X		
3	Gear, Cabane, and Shock Strut Bolts and Nuts: - Visual inspection for safety		X		
4	Shock Absorber and Shock Cords: - Visual inspection for broken bands, threads, and weakness		X		
5	Tires: - Visual inspection for cuts, uneven or excessive wear and slippage		X		
6	Wheels: - Remove, Clean, Check, and Repack Bearings		X		
7	Main Wheel Tire Pressure: - Check Pressure		X		
8	Brake Lining and Disks: - Visual Inspection for Excessive Wear		X		
9	Brake Lines: - Visual Inspection for Chafing and Security		X		
10	Tail Wheel Attachments: - Visual Inspection for Tightness and Safety		X		
11	Tail Wheel Fork: - Visual Inspection for Looseness on Bracket		X		
12	Tail Wheel tire: - Visual Inspection for Cuts and Uneven or Excessive Wear		X		
13	Tail Wheel: - Remove, Clean, and visually inspect for damage and Corrosion - Functionally Check Tail Wheel Swivel Lock - Repack Bearings		X		
14	Tail Wheel Tire Pressure: - Verify Pressure		X		
15	Lubricate per Figure 12-20-01		X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Floats		Ref.	Interval		Initials
			100	Special	
1	Refer to latest edition of Wipline Model 2100/2350 float Service Manual				

Return To Service		Ref.	Interval		Initials
			100	Special	
1	Install Engine Cowling		X		
2	Install Fuselage and Empennage Access Panels				
3	Install Wing Access Panels				
4	Verify Oil Level is 7- 8 Quarts				
5	Perform Engine Run-up in Accordance with Operational/Functional Check (05-30): - After completing, perform a walk around to detect fluid leaks or other discrepancies	05-30	X		
6	Verify All Airworthiness Directives are Complied With	FAR 91.403	X		
7	Verify All Cub Crafters' Service Letters, Bulletins, and Instructions are Complied With	FAR 91.403	X		
8	Verify The Aircraft's Documentation is In Order: - Airworthiness Certificate - Registration - Pilot's Operating Handbook and Aircraft Flight Manual - Weight and Balance - Equipment List	FAR 91.203	X		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

05-30 OPERATIONAL AND FUNCTIONAL CHECK OF AIRCRAFT

TABLE OF CONTENTS

1	GENERAL.....	2
2	OPERATIONAL AND FUNCTIONAL CHECK.....	2

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1 GENERAL

This chapter describes the Operational and Functional check that must be performed on the aircraft before and after carrying out the Scheduled Maintenance Inspection. It is intended to determine malfunctions or defects. The Operational and Functional check involves operating the engine and taxiing the aircraft. Therefore, whoever performs this check must be familiar with the aircraft and its systems and the risks and dangers of operating an aircraft on the ground. Attention is drawn to the fact that this aircraft has a tail wheel configuration and its behavior during taxiing is different from an aircraft with a nose gear. The operator must be familiar with taxiing a tail wheel aircraft before attempting to perform this check.

During the check, observe engine temperatures limitations.

2 OPERATIONAL AND FUNCTIONAL CHECK

Operational/Functional Inspection Report		Initials	Notes
1	Flight Controls: - Check Controls Operate in the Correct Direction - Ensure Movement Through Full Range of Travel without Binding and There is No Excessive Friction		
2	Flaps: - Lower Flaps to the First and Second Notches - Ensure the Notches Hold		
3	Elevator Trim Controls: - Ensure It Operates Through Full Range of Travel without Binding		
4	Engine Controls: - Ensure Movement Through Full Range of Travel without Binding		
5	Altimeter: - Must Indicate within 50 Feet of Field Elevation When Set to Correct Barometric Pressure		
6	Vertical Speed Indicator (VSI): - Must Indicate Zero		
7	Battery Master Switch: - Switch On - Verify Voltage - Flag On Turn Coordinator Should Disappear		
8	Start Engine Using Procedure in Pilot's Operating Handbook, Section 4		
9	Set 1700 RPM: - Perform Magneto Check - Drop Not to Exceed 175 RPM or 50 RPM Differential Between Magnetos - No Engine Roughness		
10	Pull Carburetor Heat Knob: - Engine RPM Should Show a Slight Drop		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Operational/Functional Inspection Report		Initials	Notes
11	Apply a Load to the Electrical System (e.g. switch on landing lights or pitot heat): - Observe that Voltage Remains Constant and Amperage Increases When Load is Applied		
12	Check Vacuum Pressure (if vacuum pump is installed): - Normal Reading is Between 4.8 and 5.2 Inches of Mercury		
13	Check the Radio for Proper Nav and Com Operation		
14	Check the Transponder for Proper Operation		
15	Verify Proper ELT Operation Using the Remote Switch		
16	Set Throttle to Idle: - Engine Should Idle Between 500 and 750 RPM		
17	Set 1000 RPM		
18	Turn Engine Off by Slowly Pulling Mixture Control NOTE An increase in RPM prior to the control reaching idle cut-off position indicates proper air fuel mixture.		

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CHAPTER
06-00**

**AREAS,
DIMENSIONS, AND
GEOMETRY**

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

06-00 AREAS, DIMENSIONS, AND GEOMETRY

TABLE OF CONTENTS

- 1 GENERAL2
- 2 MAIN DIMENSIONS6
 - 2.1 LANDPLANE **Error! Bookmark not defined.**
 - 2.2 WIPAIRE 2100A AMPHIBIOUS FLOATS.....6
 - 2.3 WIPAIRE 2100S SEAPLANE FLOATS6
- 3 WINGS6
- 4 AILERONS6
- 5 FLAPS6
- 6 STABILIZER.....6
- 7 FIN AND RUDDER7
- 8 LANDING GEAR7
 - 8.1 LANDPLANE7
 - 8.2 WIPAIRE 2100A AMPHIBIOUS FLOATS.....7
- 9 CONTROL SURFACE TRAVELS AND CABLE TENSION SETTINGS.....7
 - 9.1 AILERON7
 - 9.2 FLAPS7
 - 9.3 STABILIZERS.....7
 - 9.4 ELEVATORS7
 - 9.5 RUDDER7

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1 GENERAL

The location of any point on the aircraft is identified in a three axes grid as follows (Reference Figure 06-00-01):

- FS - Fuselage Station is a horizontal reference designation starting in front of the nose of the airplane at a point 60 inches ahead of the wing leading edge.
- WL - Water Line is a vertical reference designation measured parallel to the ground from a point 38.53 inches below the center of the bolts that attach the landing gear to the fuselage.
- BL - Buttock Line is a horizontal reference designation starting at the airplane centerline. When the aircraft is viewed from above, the letters "L" and "R" indicates whether the point is to the left or the right of the centerline.
- WS - Wing Station is measured outboard from the center of the respective wing attachment bolt to the wing tip. The letters "L" and "R" designate left or right wing respectively.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

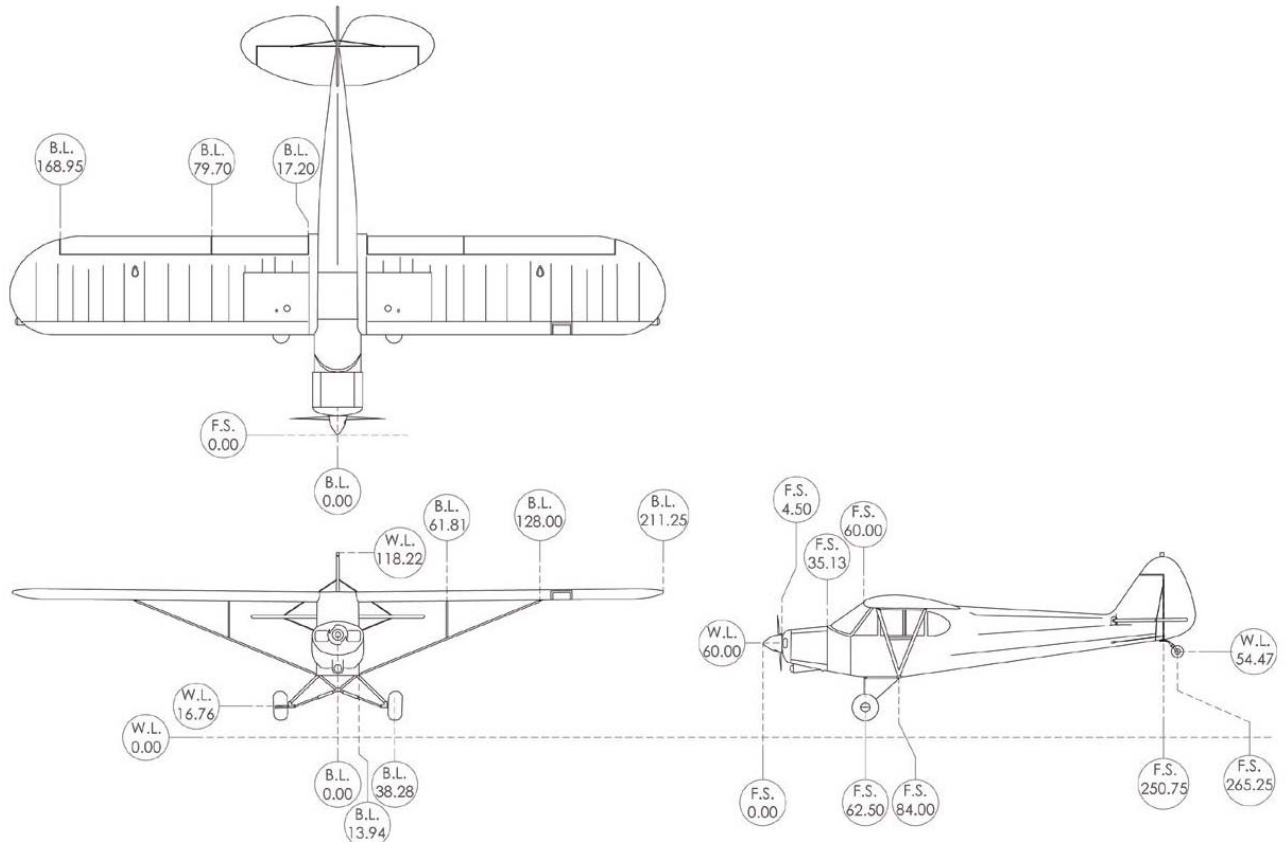


Figure 06-00-1 - CC18-180 Landplane Geometry

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

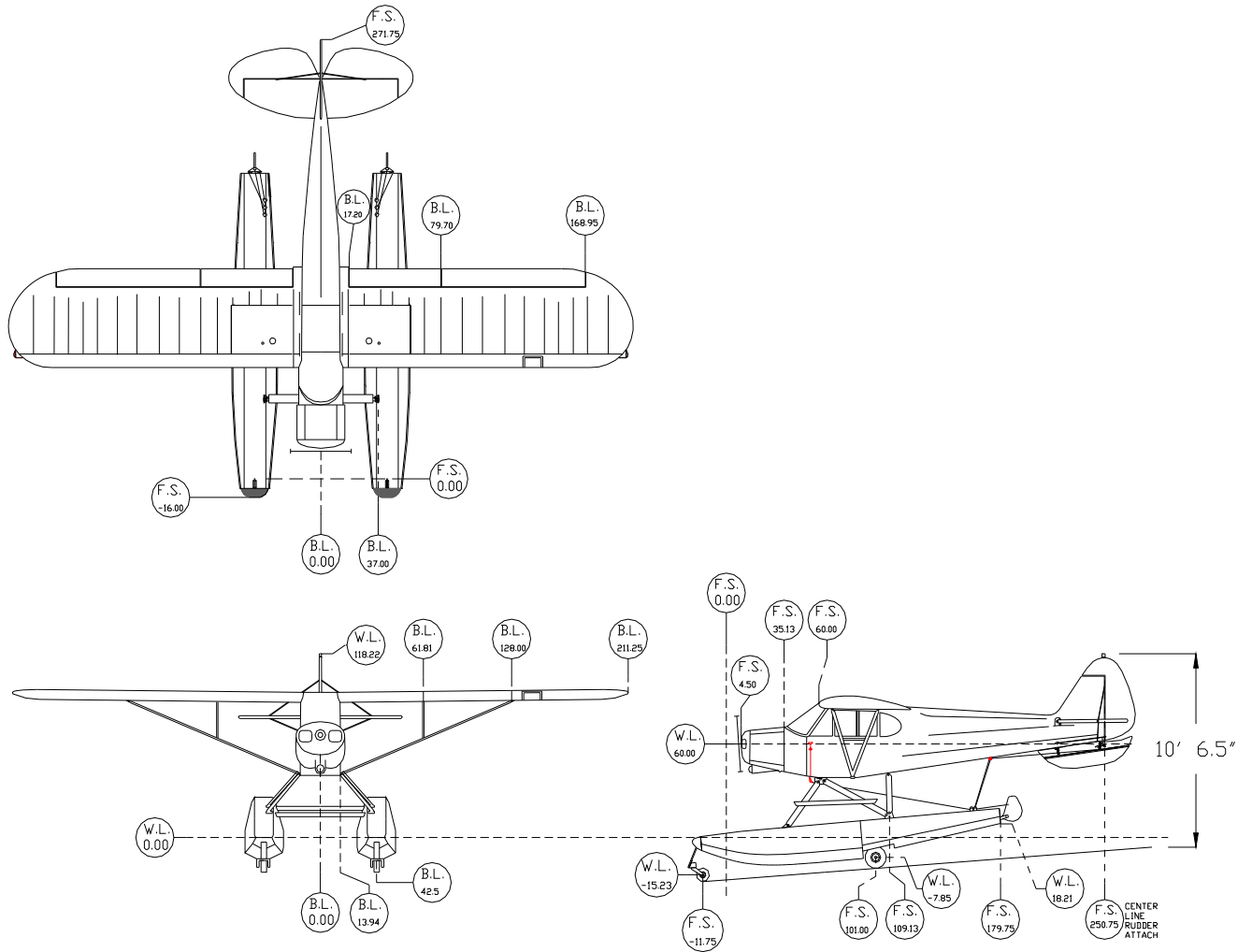


Figure 06-00-2 - CC18-180 Wipaire 2100A Geometry

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

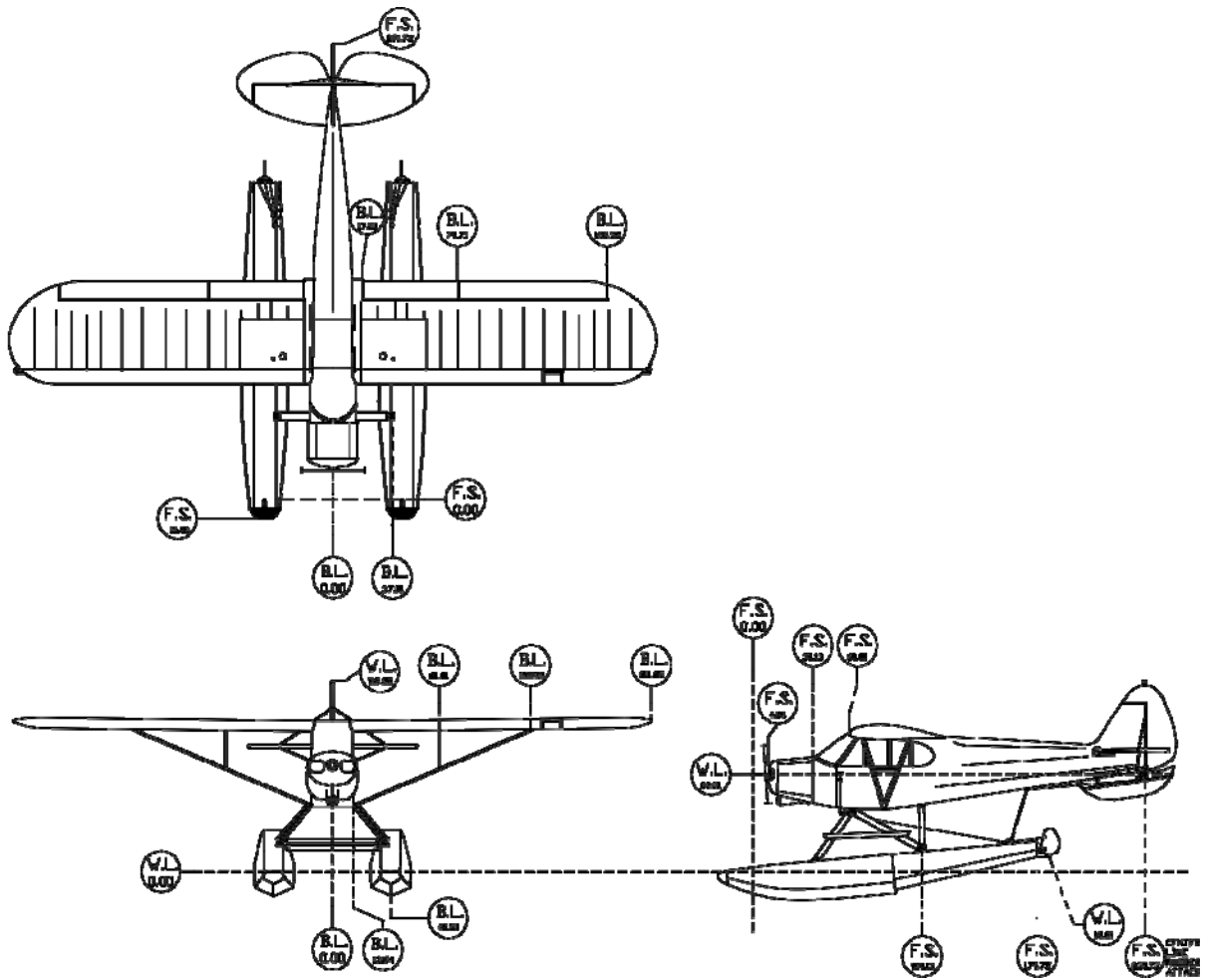


Figure 06-00-3 - CC18-180 Wipaire 2100S Geometry

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2 MAIN DIMENSIONS

2.1 LANDPLANE

Span	422.5 in.
Length (level flight attitude)	271 in.
Length (three point attitude)	275 in.
Height	119.0 in.
Height (tail wheel on ground, propeller blade vertical at top)*	95.75 in.
Propeller Ground Clearance*	10 in.
Design Gross Weight	2300 lbs

*With Sensenich Metal propeller model 76EM8 propeller and 8.50x6 wheels

2.2 WIPAIRE 2100A AMPHIBIOUS FLOATS

Length (ground attitude)	287 in.
Height	126.5 in.
Design Gross Weight	2300 lbs

2.3 WIPAIRE 2100S SEAPLANE FLOATS

Design Gross Weight	2300 lbs
---------------------------	----------

3 WINGS

Type	Externally Braced, High Wing
Airfoil Section	USA 35B Mod at Root and Tip
Chord at Root	63 in.
Dihedral (measured on underside of front spar).....	0° 45 min
Area	178.5 sq ft
Aspect Ratio	6.944

4 AILERONS

Area (Both ailerons)	18.80 sq ft
----------------------------	-------------

5 FLAPS

Area (Both flaps)	11.50 sq ft.
-------------------------	--------------

6 STABILIZER

Span	105 in.
Maximum Chord	27 in.
Incidence (in neutral position).....	-2.5°
Dihedral	0°
Area (including elevators).....	15.90 sq ft.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

7 FIN AND RUDDER

Area..... 11.42 sq. ft.

8 LANDING GEAR

2.4 LANDPLANE

Wheel Track (main to main) 72.50 in.
Wheel Base (main to tail) 265.25 in.

2.5 WIPAIRE 2100A AMPHIBIOUS FLOATS

Wheel Track (main to main) 85.00 in.
Wheel Base (front main to rear main)..... 112.75 in.

9 CONTROL SURFACE TRAVELS AND CABLE TENSION SETTINGS

9.1 AILERON

Aileron Up $18^{\circ} \pm 2^{\circ}$
Aileron Down $18^{\circ} \pm 2^{\circ}$
Aileron Cable Tension 40 ± 5 lbs.

9.2 FLAPS

First Notch $22^{\circ} \pm 2^{\circ}$
Second Notch $50^{\circ} \pm 2^{\circ}$

9.3 STABILIZERS

Neutral Setting -2.5° relative to longitudinal axis
Stabilizers Up $2.5^{\circ} \pm 0.5^{\circ}$
Stabilizers Down $4^{\circ} \pm 0.5^{\circ}$

9.4 ELEVATORS

Elevator Up $25^{\circ} \pm 2^{\circ}$
Elevator Down $15^{\circ} \pm 2^{\circ}$
Elevator Cable Tension 60 ± 2 lbs.

9.5 RUDDER

Rudder Left $20^{\circ} \pm 2^{\circ}$
Rudder Right $20^{\circ} \pm 2^{\circ}$

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CHAPTER
07-00**

**JACKING AND
LIFTING**

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

07-00 JACKING AND LIFTING

TABLE OF CONTENTS

1. GENERAL.....	2
2. MAINTENANCE PRACTICES	2
2.1 JACKING THE AIRPLANE	2
2.1.1 TOOLS, EQUIPMENT AND SUPPLIES	2
2.1.2 RAISING THE TAIL.....	2
2.1.3 RAISING THE AIRCRAFT FROM THE LANDING GEAR	3
2.1.4 RAISING THE AIRCRAFT FROM THE WING.....	4

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1 GENERAL

This section will describe the methods for jacking the CC18-180.

2 MAINTENANCE PRACTICES

2.1 JACKING THE AIRPLANE

2.1.1 TOOLS, EQUIPMENT AND SUPPLIES

Description	P/N or Spec.	Supplier	Purpose
Floor Jack	-	Any Source	Jack Main Wheels
Wooden Saw Horse or Bench	-	Any Source	Place Under Tail
Cub Crafters' Wing Jack	-	Any Source	Jack From Wing

CAUTION
Do not jack the aircraft outside or in open hanger with winds in excess of 10 m.p.h.

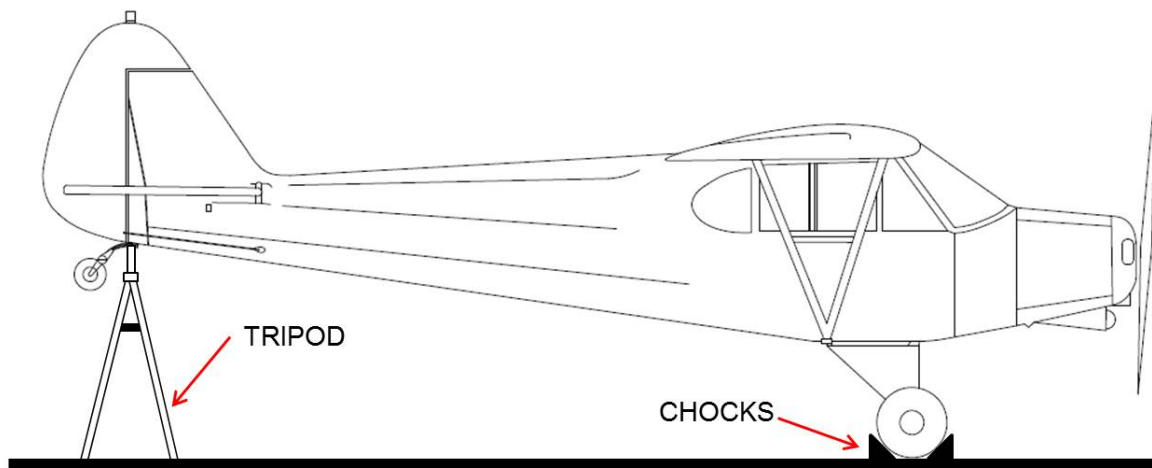
NOTE
Raise airplane no more than required for maintenance being performed.

2.1.2 RAISING THE TAIL

- a. Set parking brakes and place chocks under main wheels.

Grasp the lift handle and raise the airplane to place a tripod or saw horse under the tail wheel wheel springs as indicated in

- b. FIGURE 07-00-1.



**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

FIGURE 07-00-1 - Raising the Tail

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

2.1.3 RAISING THE AIRCRAFT FROM THE LANDING GEAR: Use this method to service the wheels and brakes.

- a. Place a chock under the opposite main wheel and tail wheel.
- b. Place a jack under the main axle as shown in FIGURE 07-00-2.

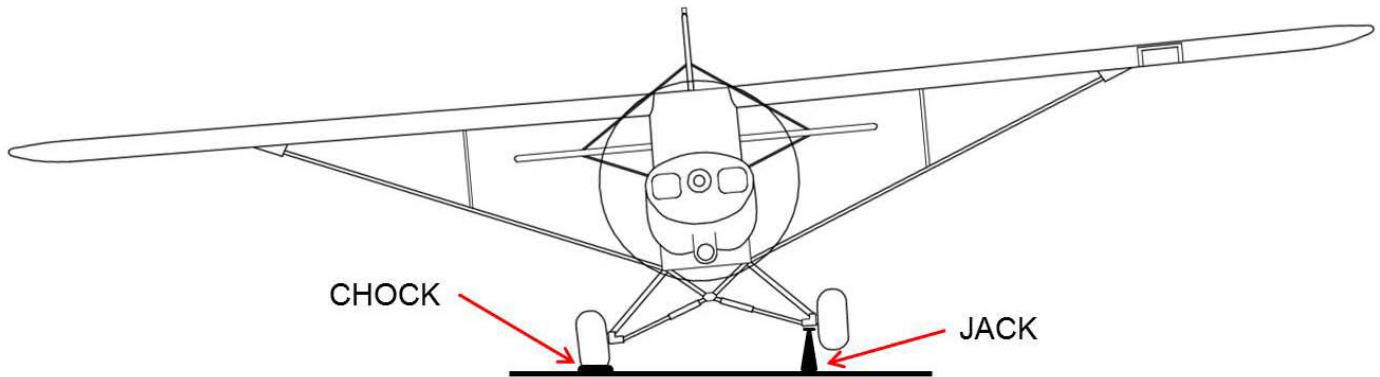


FIGURE 07-00-2 - Jacking From Main Axle

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

2.1.4 RAISING THE AIRCRAFT FROM THE WING: Use this method to remove a complete landing gear leg.

- a. Place chock under opposite main wheel and tail wheel.
- b. Place jack between the main lift strut wing attachment point and the tie down (Refer to FIGURE 07-00-3). Jack one side at a time. Jacking both sides simultaneously is to be avoided.



FIGURE 07-00-3 - Jacking From the Wing

CHAPTER 08-00

LEVELING AND WEIGHING

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

08-00 LEVELING AND WEIGHING

TABLE OF CONTENTS

1	LEVELING.....	2
1.1	MAINTENANCE PRACTICES FOR LANDPLANE AIRCRAFT	2
1.1.1	PREPARATION.....	2
1.1.2	LONGITUDINAL LEVELING	2
1.1.3	LATERAL LEVELING.....	2
1.2	MAINTENANCE PRACTICES FOR AIRCRAFT EQUIPPED WITH WIPAIRE 2100A AMPHIBIOUS FLOATS	4
1.2.1	PREPARATION.....	4
1.2.2	LONGITUDINAL LEVELING	5
1.2.3	LATERAL LEVELING.....	5
2	WEIGHING.....	5
2.1	GENERAL.....	5
2.2	MAINTENANCE PRACTICES FOR LANDPLANE AIRCRAFT	6
2.2.1	PREPARATION.....	6
2.2.2	WEIGHING THE AIRCRAFT.....	6
2.3	MAINTENANCE PRACTICES FOR AIRCRAFT EQUIPPED WITH WIPAIRE 2100A AMPHIBIOUS FLOATS	Error! Bookmark not defined.
2.3.1	PREPARATION.....	8
2.3.2	WEIGHING THE AIRCRAFT.....	8
2.4	MAINTENANCE PRACTICES FOR AIRCRAFT EQUIPPED WITH WIPAIRE 2100S SEAPLANE FLOATS	10
2.4.1	CALCULATING EMPTY WEIGHT OF THE AIRCRAFT	10

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1 LEVELING

1.1 MAINTENANCE PRACTICES FOR LANDPLANE AIRCRAFT

1.1.1 PREPARATION

- a. Place the aircraft in a hangar with the doors closed where the wind will not affect the aircraft.
- b. Place the aircraft approximately in a flight level attitude by supporting the tail wheel on a bench.

1.1.2 LONGITUDINAL LEVELING

- a. Place a spirit level on the lower longeron between the landing gear tubes as shown in Figure 08-00-1. Lower or raise the tail until the aircraft is level. If necessary, this may be accomplished by letting air out of the tires.



Figure 08-00-1 - Leveling the Aircraft Longitudinally

1.1.3 LATERAL LEVELING

- a. Place a level on the upper forward cross tube located in the cabin just behind the windshield, or between the two forward landing gear attachment bolts as shown in Figure 08-00-2. Lateral leveling may be half a bubble off center.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



Figure 08-00-2 - Leveling the Aircraft Laterally

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

**1.2 MAINTENANCE PRACTICES FOR AIRCRAFT EQUIPPED WITH WIPAIRE
2100A AMPHIBIOUS FLOATS**

1.2.1 PREPARATION

- a. Place the aircraft in a hangar with the doors closed where the wind will not affect the aircraft.
- b. If the aircraft is being weighed, place weighing pads under the front wheels.
- c. Install axle extensions P/N TL4000-001. Axle extensions are defined in Section 95-00 of this document.
- d. Place the aircraft approximately in a flight level attitude by the rear wheels on jacks as shown in Figure 08-00-3. If the aircraft is being weighed, place the jacks on weighing pads.



FIGURE 08-00-3 - Jacking Aircraft with Wipaire 2100A Amphibious Floats

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1.2.2 LONGITUDINAL LEVELING

Place a spirit level on the lower longeron between the landing gear tubes as shown in Figure 08-00-4. Lower or raise the tail until the aircraft is level. This may be accomplished by letting air out of the front tires.



FIGURE 08-00-4
Leveling Aircraft with Wipaire 2100A Amphibious Floats Longitudinally

1.2.3 LATERAL LEVELING

- a. Place a level on the upper forward cross tube located in the cabin just behind the windshield, or between the two landing gear attach points as shown in.
- b. Level by adjusting the jacks or letting the air out of the tires, as appropriate. Lateral leveling may be half a bubble off center as marked by the spirit level.

2 WEIGHING

2.1 GENERAL

This section describes the methods for determining the empty weight of the aircraft and the position of its center of gravity relative to the datum.

Weight and balance limits are placed on aircraft for two reasons:

- First, the structure was designed to carry a certain weight;

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- Second, the operating weight of the aircraft and the position of the center of gravity affect performance, stability, and control characteristics, particularly in stall and spin recovery.

The aircraft will only attain the performance and exhibit the handling characteristics used for certification if it is flown when the weight and the center of gravity are within the approved range.

Prior to leaving the factory, the aircraft was weighed and the C.G. location was computed. You will find this information in paragraph 6.4 of the Pilot's Operating Handbook and Aircraft Flight Manual. If it should become necessary to re-weigh the aircraft, follow the procedures given in this section.

2.2 MAINTENANCE PRACTICES FOR LANDPLANE AIRCRAFT

2.2.1 PREPARATION

- a. Remove any items not listed on the Aircraft Equipment List (such as rags, charts, tools, etc.) The Aircraft Equipment List is found in Section 6 of the Pilot's Operating Handbook and Aircraft Flight Manual
- b. Clean the aircraft to remove excess dirt and grease.
- c. Remove the fuel from the aircraft. This may be accomplished by opening the fuel drains until all remaining fuel is drained.
- d. Check that the oil is full (8 quarts on the dip stick).
- e. Position the pilot's seat in the mid position.
- f. Zero the scales or record the tare, as appropriate.

2.2.2 WEIGHING THE AIRCRAFT

- a. Place the aircraft on calibrated scales. The range of the scales should be 1000 lb. for each main wheel and 250 lb. for the tail wheel.
- b. Level the aircraft (Refer to Section 08-00 11.1).
- c. Record the weight of the main wheels and the tail wheel in Figure 08-00-5.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Line Number	Position	Recorded Weight	Tare	Actual Weight	Arm	Moment
1	Left Main Wheel				62.50 in.	
2	Right Main Wheel				62.50 in.	
3	Tail Wheel				265.25 in.	
	TOTAL WEIGHT (Weight in Lines 1+2+3)				TOTAL MOMENT (Moment in Lines 1+2+3)	

Figure 08-00-5 - Weighing Form for Landplane

Compute the empty weight of the aircraft and position of center of gravity.

EMPTY WEIGHT OF AIRCRAFT = TOTAL WEIGHT (Lines 1+2+3)

= _____ LB.

POSITION OF CENTER OF GRAVITY = TOTAL MOMENT ÷ TOTAL WEIGHT

= _____ ÷ _____

= _____

Record the new empty weight and position of center of gravity in Section 6 of the Pilot's Operating Handbook and Aircraft Flight Manual.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

**2.3 MAINTENANCE PRACTICES FOR AIRCRAFT EQUIPPED WITH WIPAIRE
2100 A AMPHIBIOUS FLOATS**

2.3.1 PREPARATION

- a. Remove any items not listed on the Aircraft Equipment List (such as rags, charts, tools, etc.) The Aircraft Equipment List is found in Section 6 of the Pilot's Operating Handbook and Aircraft Flight Manual.
- b. Clean the aircraft to remove excess dirt and grease.
- c. Remove the fuel from the aircraft. This may be accomplished by opening the fuel drains until all remaining fuel is drained.
- d. Check that the oil is full (8 quarts on the dip stick).
- e. Position the pilot's seat in the mid position.
- f. Zero the scales or record the tare, as appropriate.

2.3.2 WEIGHING THE AIRCRAFT

- a. Place the aircraft on calibrated scales. The range of the scales should be 1000 lb. for each main wheel.
- b. Level the aircraft (Refer to Section 08-00-11.2).
- c. Measure the arm for the front and rear wheels. This is to be done by dropping a plumb bob off the left and right extremes of the leading edge of the forward float spreader bar and marking these locations on the floor. Draw a line on the floor between these points. Then, measure the longitudinal distance from each of the front and rear wheels to the line. The leading edge of the forward spreader bar is located at FS 40.1 (Figure 08-00-8). Record this information in Figure 08-00-6.

NOTE

The Left and Right front wheel measurements of the floats will be a negative number in Column 1 of Figure 08-00-6.

- d. Record the weight of all four wheels in Figure 08-00-7.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Position	Column 1	Column 2	Column 3
	Measurement (in)	+/- Distance From Datum (in)	Arm (in) Column 1+2
Left Front Wheel	-	+ 40.1	-
Right Front Wheel	-	+ 40.1	-
Left Rear Wheel		+ 40.1	
Right Rear Wheel		+ 40.1	

Figure 08-00-6 - Calculation of Arm for Aircraft with Wipaire 2100A Floats

Record actual arm in Figure 08-00-7.

Line Number	Position	Recorded Weight	Tare	Actual Weight	Actual Arm	Moment
1	Left Front Wheel				-	
2	Right Front Wheel				-	
3	Left Rear Wheel					
4	Right Rear Wheel					
TOTAL WEIGHT (weight in lines 1+2+3+4)					TOTAL MOMENT (moment in lines 1+2+3+4)	

Figure 08-00-7 - Weighing Form for Aircraft with Wipaire 2100A Amphibious Floats

Compute the empty weight of the aircraft and position of center of gravity.

EMPTY WEIGHT OF AIRCRAFT = TOTAL WEIGHT (Lines 1+2+3+4)

= _____ LB.

POSITION OF CENTER OF GRAVITY = TOTAL MOMENT ÷ TOTAL WEIGHT

= _____ ÷ _____

= _____

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Record new empty weight and position of center of gravity in Section 6 of the Pilot's Operating Handbook and Aircraft Flight Manual.



**Figure 08-00-8
Measuring the Arm on Aircraft Equipped with Wipaire 2100A Amphibious Floats**

**2.4 MAINTENANCE PRACTICES FOR AIRCRAFT EQUIPPED WITH WIPAIRE
2100S SEAPLANE FLOATS**

2.4.1 CALCULATING EMPTY WEIGHT OF THE AIRCRAFT

- a. Remove the gear from aircraft in accordance with Chapter 32.
- b. Weigh the components of the landing gear, enter results in the chart below, and calculate total weight and moment.
- c. Subtract the sum of the weights and the total moment from the empty weight of the aircraft (Section 6 Pilot's Operating Handbook and Approved Flight Manual).

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Line Number	Position	Recorded Weight	Arm	Moment
1	Left Main Landing Gear Assembly		62.50 in.	
2	Right Main Wheel Landing Gear Assembly		62.50 in.	
	Cabane Vee and Shock Absorbers		62.50 in	
3	Tail Wheel		265.25 in.	
	TOTAL WEIGHT (Weight in Lines 1+2+3)		TOTAL MOMENT (Moment in Lines 1+2+3)	

Figure 08-00-9 - Weighing Form for Landing Gear (Removal)

Using the data supplied by Wipaire, add the weight of the floats to the equipment list (Section 6 Pilot's Operating Handbook and Approved Flight Manual). See example in the chart following.

WEIGHT (lbs)*	ARM (in)*	MOMENT (in-lb)*
282	72.8	20529.6

*** Example- use actual data from Wipaire for the specific serial number floats being installed**

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

CHAPTER 10-00

PARKING AND MOORING

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

10-00 PARKING AND MOORING

TABLE OF CONTENTS

- 1. PARKING2
- 2. MOORING.....2
- 3. STORAGE.....3
 - A. GENERAL.....3
 - B. MAINTENANCE PRACTICES3
 - (1) TEMPORARY STORAGE - 30 to 90 Days3
 - (2) INDEFINITE STORAGE.....5
 - (3) PREPARATION FOR SERVICE4

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1 PARKING

- a. Position the airplane on level surface, headed into wind.
- b. Set the parking brakes. The parking brake valves are located under the pilot's seat. To engage, press both brake pedals and move both valve levers aft. However, leave the parking brake off during cold weather when accumulated moisture may freeze the brakes or when the brakes are overheated.
- c. Chock the main gear wheels.
- d. In gusty or stormy weather, moor the airplane.
- e. When the aircraft is to be parked for an extended time, it should be moved frequently to prevent corrosion in the wheel bearings and getting flat spots on the tires.

2 MOORING

- a. Position the airplane on level surface and headed into the wind.
- b. Set the parking brake. The parking brake valves are located under the pilot's seat. To engage, press both brake pedals and move both valve levers aft. However, leave the parking brake off during cold weather when accumulated moisture may freeze the brakes or when the brackets are overheated.
- c. Chock the main gear wheels.
- d. Tie mooring lines. (Figure 10-00-1) There are two tie-down rings underneath each wing next to the forward lift strut. The tail should be tied down by wrapping rope around the tail wheel springs. In severe weather, use multiple lines. During gusty or high wind conditions, mooring lines may require periodic tightening to prevent excessive movement of airplane. Use a secure knot such as a bowline knot to ensure security.
- e. Install a pitot tube cover to prevent entry of foreign materials.



FIGURE 10-00-1 - Wing Tie-Downs

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

3 STORAGE

3.1 GENERAL

The procedures outlined in this chapter must be followed if it is expected that the aircraft will remain inactive for longer than 30 days.

3.2 MAINTENANCE PRACTICES

3.2.1 TEMPORARY STORAGE - 30 to 90 Days

- a. Park and moor the airplane.
- b. Apply engine preservation. Refer to the latest edition of Textron Lycoming Service Letter SL L180.
- c. Fill the fuel tanks completely. Check for water accumulation each week.
- d. Wipe the tires with dry cloth, and treat them with tire protector spray. Mark the tire positions and date with chalk. Turn the wheels and check air pressure regularly.
- e. Remove the battery (Refer to 24-00) and ELT battery (Refer to 05-10) and store in accordance with standard practices. Clean the battery compartment and the battery cable terminals to neutralize any battery acid that may be present.
- f. Lubricate according to lubrication schedule. (Refer to 12-20)
- g. Clean the propeller in accordance with propeller's manufacturer's instructions to remove dirt, oil, and bug accumulation.
- h. Clean and cover the instruments and panel. Observe any additional precautions recommended by the various manufacturers of the avionics and the instruments.
- i. Clean and install protective covers on the seats.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

3.2.2 INDEFINITE STORAGE

CAUTION

Do not set the parking brake as brake seizing can result.

- a. Park and moor the airplane. (Refer to 10-00)
- b. Apply engine preservation. Refer to the latest edition of Textron Lycoming Service Letter SL L180.
- c. Drain the fuel tanks. (Refer to 12-20)
- d. Clean the brake assemblies. The wheels should be turned three to four revolutions per 30 days to prevent corrosion. Touch up all spots where paint has been chipped from the wheels. Wipe the tires with dry cloth, and treat with tire protector spray. Turn the wheels. Mark the tire position and date with chalk. Check the air pressure periodically and inflate the tires as necessary. (Refer to 12-20).

NOTE

It is advisable to use unserviceable tires for prolonged storage.

- e. Remove the battery (Refer to 24-00) and the ELT batteries (Refer to 05-10) and store in accordance with standard practices (Refer to 24-00). Clean the battery compartment and the battery cable terminals to neutralize any battery acid that may be present.
- f. Lubricate according to lubrication schedule. (Refer to 12-20)
- g. Clean the propeller to remove dirt, oil, and bug accumulation. Coat the blades with preservative oil and wrap with moisture proof material.
- h. Clean and cover the instruments and the panel. Take any additional precautions according to the manufacturer.
- i. Clean and install protective covers on the seats.
- j. Remove all loose equipment and store.
- k. Clean and install covers over windshield and windows.
- l. Cover the static ports and the pitot tube.

3.2.2 PREPARATION FOR SERVICE

- a. Engine preparation for service - Refer to Lycoming Service Letter SL L180
- b. Remove all covers, tapes and tags from airplane.
- c. Reinstall the engine battery (Refer to 24-00) and the ELT batteries (Refer to 05-10).
- d. Fill the fuel tanks (if applicable). (Refer to 12-10)
- e. Thoroughly clean and visually inspect the airplane. It is recommended to carry out at least a 100 hour inspection prior to flying the aircraft. (Refer to 05-20)

CHAPTER

12

SERVICING

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

12 SERVICING

12-00 SERVICING
12-20 SCHEDULED SERVICING

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

12-00 SERVICING

TABLE OF CONTENTS

1. GENERAL2
2. CAPACITIES, FLUIDS AND PRESSURES3

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The information gives the general servicing procedures and maintenance practices that are to be used when servicing the airplane. For additional detailed information concerning unit servicing of the various airplane systems and components, refer to the applicable chapters. For electrical wiring diagrams, refer to the Wiring Diagram Manual.

The intervals specified in Chapter 5 are considered adequate to meet average requirements under normal operating conditions. However, it is advisable to shorten service and maintenance intervals when operating under abnormal environmental conditions, such as high humidity and moisture, salt water environments, dusty atmospheric conditions, extreme temperature ranges, unimproved airport facilities or other unusual operating requirements. In salt water areas special care should be taken to keep the engine, accessories and airframe clean to help prevent oxidation.

CAUTION

The operation of the airplane can be seriously impaired if unapproved or contaminated fuel, oil, fluids, lubricants or materials are used. Adherence to instructions, cautions, and warnings can avoid injury to personnel and damage to the airplane or associated equipment.

Mixing of various brands, types and weights of materials should be avoided. Specified lubricants will meet requirements for extreme hot or cold temperature operations. Use of substitutes or other lubricants may cause a malfunction when operating in extreme temperature conditions, or may cause excessive wear due to improper lubrication.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

2. CAPACITIES, FLUIDS AND PRESSURES

Item	Specifications			Capacity
Fuel	100 LL or 100			50 U.S. Gallons Total 44 U.S. Gallons Usable
Oil (See note below)	Average Ambient Temperature	J-1966 SAE Grades Mineral Grades	J-1899 SAE Grades Ashless Dispersant	8 Quarts
	All temperatures	----	15W-50 or 20W-50	
	Above 80°F	60	60	
	Above 60°F	50	40 or 50	
	30°F to 90°F	40	40	
	0°F to 70°F	30	30, 40, or 20W-40	
Below 10°F	20	30 or 20W-30		
Hydraulic Fluid	MIL-H-5606			As required
Main Tire Pressure	Goodyear 8.50 x 6-6	Dry Air		18 ± 2 psi
	Goodyear 26 x 10.5 x 6	Dry Air		12 ± 2 psi
Tail Wheel Tire	Scott 3200	Dry Air		38 ± 5 psi

Table 1 - Fuel, Oil, Brake Fluid, and Tire Pressure

NOTE

The engine must be operated on mineral oil during the first 50 hours of operation, or until oil consumption has been stabilized. Additive part number LW-16702 may be used on Lycoming engines. For further information refer to latest revision of Textron Lycoming Service Instruction SI No. 1014 and Superior report SVOM01.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

12-20 SCHEDULED SERVICING

TABLE OF CONTENTS

- 1. GENERAL 2
- 2. MAINTENANCE PRACTICES 2
 - A. FUEL SYSTEM 2
 - (1) DRAINING FUEL..... 2
 - B. OIL SYSTEM..... 2
 - (1) CHANGING ENGINE OIL 2
 - C. TIRES AND WHEELS 3
 - D. BATTERY 3
 - E. LUBRICATION 4

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

In this section, you will find the information required to perform scheduled maintenance.

2. MAINTENANCE PRACTICES

A. FUEL SYSTEM

(1) DRAINING FUEL

The aircraft has three fuel drains, one under each wing and one on the gascolator, located on the engine firewall.

CAUTION

Observe all precautions related to fuelling and de-fueling the aircraft. In particular, the following are highlighted:

- **Connect grounding wire to one of the wing tie-downs and ground the aircraft to an earth ground.**
- **Do not operate any electrical equipment during the de-fueling operation.**
- **Operation of any electrical switch during the fueling operation is prohibited.**
- **Do not allow smoking or open flames within 100 feet (of the aircraft or fuel servicing vehicle are prohibited.**
- **Do not operate radios, electric system, or electronic equipment during the fueling or de-fueling operations.**
- **Do not drain fuel tanks within 100 feet of any electrical equipment capable of producing sparks.**
- **Have a suitable fire extinguisher available at all times.**

(a) Open wing and gascolator drain valves and allow fuel to drain into container.

(b) If the fuel has been drained and then the aircraft has been re-fueled, the engine must be run on the ground for enough time to purge the system of air prior to flight.

B. OIL SYSTEM

(1) CHANGING ENGINE OIL

(a) Warm engine

(b) Remove the upper and lower engine cowlings. (Refer to 71-10)

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

- (c) Place a suitable drain pan under the oil drain.
- (d) Open the oil drain. Allow the oil to completely drain out.
- (e) Close the oil drain making sure it is sealed.
- (f) Fill the engine with an approved oil (8 quarts maximum).
- (g) Verify oil quantity with dipstick.
- (h) Secure dipstick.
- (i) Install engine cowling. (Refer to 71-10)
- (j) Start the engine in accordance with Pilot's Operating Handbook procedures and monitor the engine oil pressure gauge for proper oil pressure. Allow the engine to idle for a few minutes and shutdown the engine in accordance with POH procedures.

CAUTION If the oil pressure does not rise in 30 seconds, stop the engine and determine the trouble.
--

- (k) Open cowlings and visually check for any obvious leaks and correct them as necessary.

C. TIRES AND WHEELS

Main Tire Pressure	Goodyear 8.50 x 6-6	Dry Air	18 ± 2 psi
	Goodyear 26 x 10.5 x 6	Dry Air	12 ± 2 psi
Tail Wheel Tire	Scott 3200	Dry Air	38 ± 5 psi

D. BATTERY

The sealed battery does not require any maintenance. Inspect every 100 hours for physical condition and cleanliness.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

E. LUBRICATION

LUBRICATION CHART		
ITEM	SUGGESTED	SPEC
ENGINE		
Engine Oil	Appropriate for temperature	See 12-00 Table 1
Spark Plug Thread Lubricant	Champion Aerospace # 2612	
Oil Filter Gasket	Dow Corning 4 Lubricant	MIL-S-8660C
Engine Controls	LPS 2	MIL-C-16173E GRADE 3 CLASS I
COCKPIT		
Hydraulic Fluid (Brake)	Any Brand	MIL-H-5606
Control Stick Pivot Points Torque Tube Bearings	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Elevator Pulley Shafts	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Aileron Pulley Shafts	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Rudder Pedal Pivot Points Brake Pedal Pivot Points	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Flap Handle Shaft	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Door Hinges	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Fuel Fittings with Pipe Threads	EZ TURN Lubricant	MIL-G-6032D
Fuel Selector O-Rings	Dow Corning 4 Lubricant	MIL-S-8660C
FUSELAGE		
Flap Pulley Shafts	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Stabilizer Jackscrew	Mobilgrease 28	MIL-G-81322E
Trim Pulley Shafts	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Fuel Fittings with Pipe Threads	EZ TURN Lubricant	MIL-G-6032D
LANDING GEAR		
Main Landing Gear Shock Strut Pivot Points	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Main Landing Gear Pivot Points	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Main Wheel Bearings	Mobilgrease 28	MIL-G-81322E
Tail Wheel Swivel	Mobilgrease 28	MIL-G-81322E
Tail Wheel Bearings	Mobilgrease 28	MIL-G-81322E

Figure 12-20-1 - Lubrication Chart

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

EMPENNAGE		
Stabilizer Tube Liners	Mobilgrease 28	MIL-G-81322E
Elevator Hinge Pins	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Rudder Hinge Pins	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Fuel Fittings with Pipe Threads	EZ TURN Lubricant	MIL-G-6032D
WING		
Aileron and Flap Hinge Pins	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Aileron Pulley Shafts	LPS 2	MIL-C-16173E GRADE 3 CLASS I
Flap Bellcrank, Pushrod and Hinge Pivot Points	LPS 2	MIL-C-16173E GRADE 3 CLASS I

Figure 12-20-1 - Lubrication Chart (continued)

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CHAPTER
20-00**

**STANDARD
PRACTICES**

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

20-00 STANDARD PRACTICES

TABLE OF CONTENTS

1. GENERAL-TORQUE VALUES	2
2. DEFINITIONS	2
3. TORQUING REQUIREMENTS.....	2
4. USE OF TORQUE WRENCHES AND ADAPTORS	3
5. TORQUING PATTERNS.....	5
6. SPECIFIC TORQUE REQUIREMENTS	6
7. GENERAL TORQUE VALUES	7

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL-TORQUE VALUES

This chapter gives the requirements for torquing the fasteners on the CC18-180.

No lubricating or anti-seize compounds are to be applied to threaded fasteners except when specified. At the time of installation, the threads must be clean and free of corrosion, paint or any products other than those applied by the fastener's manufacturer.

2. DEFINITIONS

Running torque: The average torque developed after the fastener is at least one full thread through the nut, but prior to the tightening of the joint (also called self-locking torque, locking torque, friction drag torque).

Assembly torque: The torque required by Design Engineering in order to create the desired axial load on the bolt/nut assembly (also called tightening torque, installation torque).

3. TORQUING REQUIREMENTS

Whenever possible, the nut shall be turned during torquing.

Where it is necessary to tighten the fastener assembly from the head, the installation torque shall be the maximum torque indicated in Chapter 20-00-7 + 10 percent.

(Note: This is only applicable for fasteners greater than 3/16" in diameter).

When nuts are to be secured to fasteners by means of cotter pins or lock wire, the low side of the specified torque range shall be approached for tightening. If necessary, tightening shall be continued until the next slot aligns with the hole.

Nuts shall not be loosened to obtain the required alignment.

The maximum torque shall not be exceeded.

Threaded fasteners which have been torqued above the maximum value specified **shall not** be backed off and retorqued but shall be removed, rejected and rendered unserviceable.

If there is doubt that a fastener has been under-torqued, the nut shall be backed off one complete rotation (360°) maximum and retightened to the specified value; the bolt, screw or stud must not be allowed to rotate.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

4. USE OF TORQUE WRENCHES AND ADAPTORS

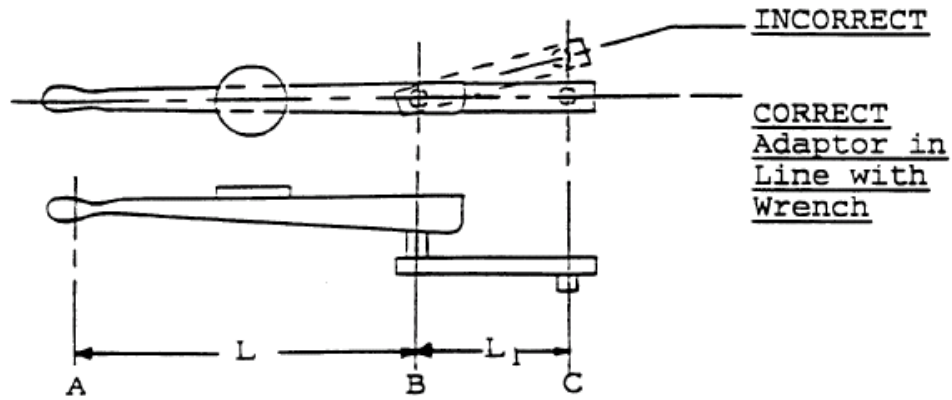
All final torquing shall be carried out with certified torque wrenches or torque screwdrivers.

When adaptors or extensions are used on manually operated torque wrenches, they shall be aligned as shown in Figure 20-00-1 and the dial reading required shall be calculated from the following formula:

$$\text{Dial Reading} = \frac{\text{Specified Torque} \times L}{L+L_1}$$

Dimensions must be measured in the same units (i.e. both in inches, both in feet etc.) for each calculation. Different units must not be mixed.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



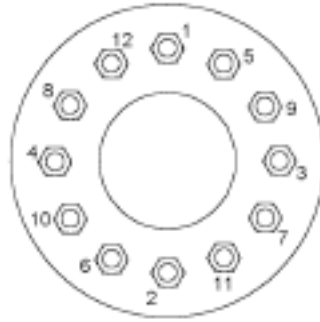
- A = fulcrum point of handle
- B = centre line of wrench drive
- C = centre line of adaptor or extension drive
- L = distance from fulcrum point of handle to centre line of wrench drive
- L1 = distance from centre line of wrench drive to centre line of adaptor or extension drive

Figure 20-00-1 - Use of Torque Wrenches

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

5. TORQUING PATTERNS

Whenever applicable, the following pattern must be followed when torquing fasteners:



TYPICAL CIRCULAR PATTERN TORQUING SEQUENCE



TYPICAL LINEAR PATTERN TORQUING SEQUENCE

Figure 20-00-2 - Torque Pattern

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

6. SPECIFIC TORQUE REQUIREMENTS

Item	Chapter/Section Reference	Minimum Dry Torque Inch Pounds	Maximum Dry Torque Inch Pounds
Sensenich Propeller Manufacturing Co Model 76EM8 Propeller	60-00	720	780
McCauley Propeller Systems 1A200/FA82	60-00	660	780
Sensenich Wood Propeller Co, W80CM8 Propeller	05-20	275	325
Spark Plugs	74-00	415	425
Spark Plug Caps	74-00	80	90

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

7. GENERAL TORQUE VALUES

**Torque Values in inch-pounds.
(Friction drag torque already included)**

BOLTS - STEEL TENSION				BOLTS - STEEL TENSION				BOLTS - ALUMINUM			
AN3 THRU AN 20 AN42 THRU AN49 AN73 THRU AN81 AN173 THRU AN186 MS20033 THRU MS20046 MS20073 MS20074 AN509 MS24694 AN525 MS27039				MS20004 THRU MS20024 NAS 144 THRU NAS158 NAS333 THRU NAS340 NAS538 THRU NAS590 NAS624 THRU NAS644 NAS1303 THRU NAS1320 NAS172 NAS174 NAS517 STEEL SHEAR BOLT NAS464 NAS1103 NAS1104 NAS1105				AN3DD THRU AN20DD AN173DD THRU AN186DD AN509DD AN525D MS27039D MS24694DD			
NUTS - STEEL				NUTS - STEEL				NUTS - ALUMINUM			
TENSION		SHEAR		TENSION		SHEAR		TENSION		SHEAR	
AN363 AN365 NAS1021 MS21045 MS20365 MS20500 NAS679		AN364 MS20364 NAS1022 NAS1024- 1030 NAS1067- 1068 NAS680-687 NAS696-698		AN363 AN365 MS20365 MS21045 NAS1021 NAS1291 NAS679		AN364 NAS1022 MS20364		AN365D NAS1021D		AN364D NAS1022D	

THREAD SIZE (FINE)	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
10-32	38	43	30	33	43	48	33	38	28	33	23	28
1/4-28	80	100	60	70	110	130	80	90	60	75	45	60
5/16-24	160	200	120	145	180	205	130	150	100	125	85	100
3/8-24	240	270	175	190	280	330	200	230	155	190	125	150
7/16-20	550	600	370	400	620	730	400	500	280	380	210	270
THREAD SIZE (COARSE)	MIN.	MAX.	MIN.	MAX.								
8-32	27	30	22	24								
10-32	38	43	30	33								
1/4-20	70	80	55	60								
5/16-18	140	150	108	115								
3/8-16	240	265	175	190								
7/16-14	335	355	240	255								

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

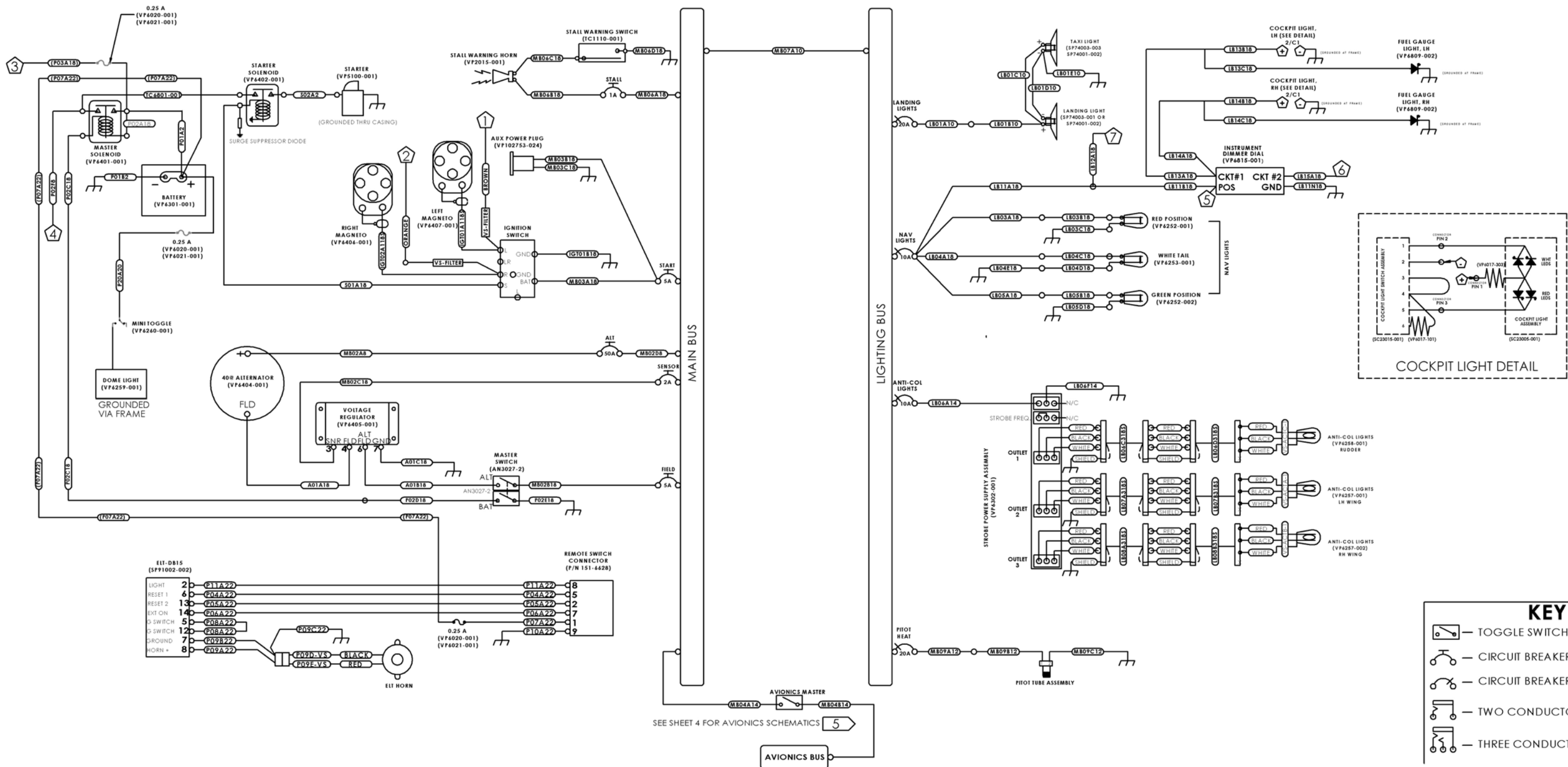
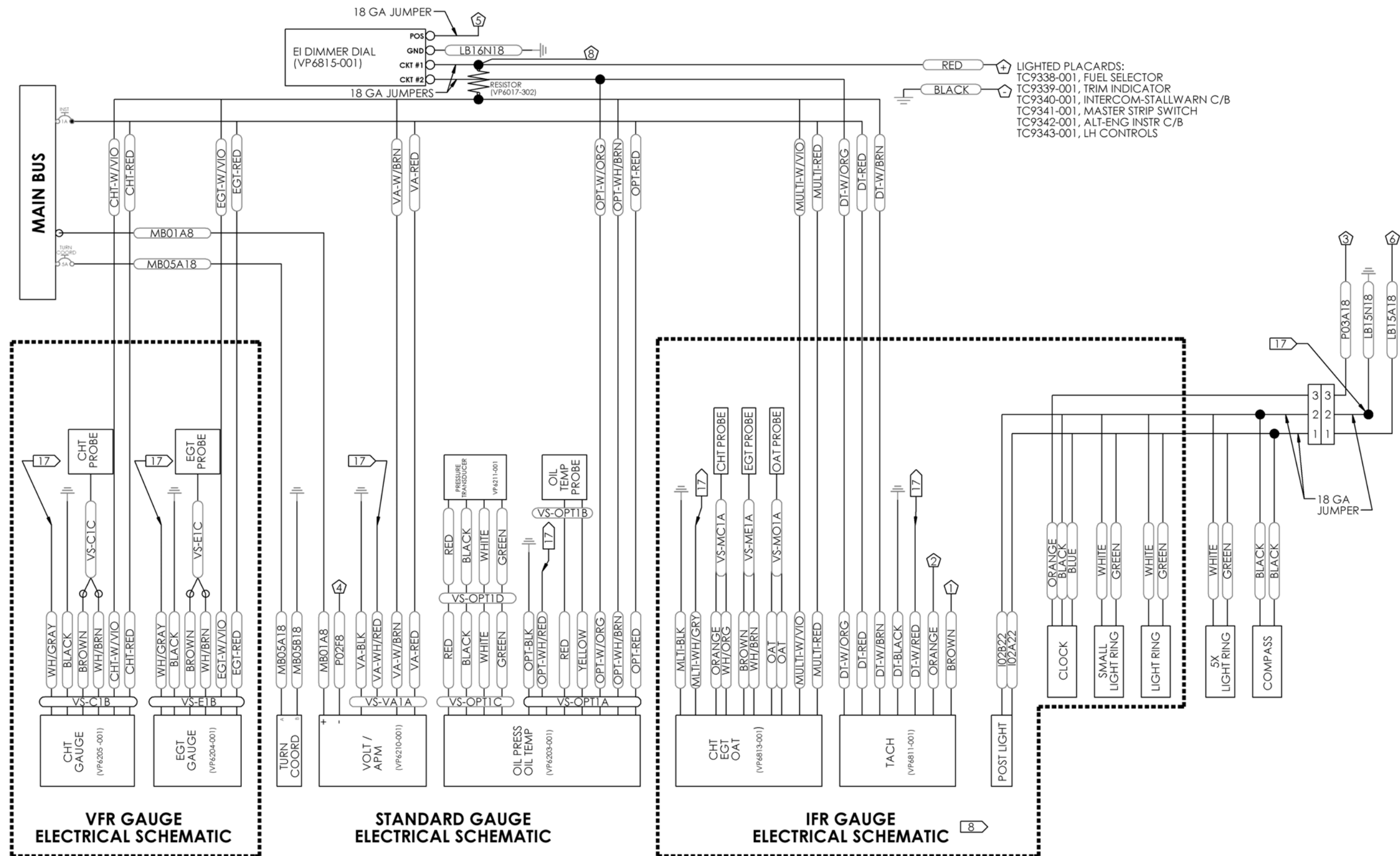


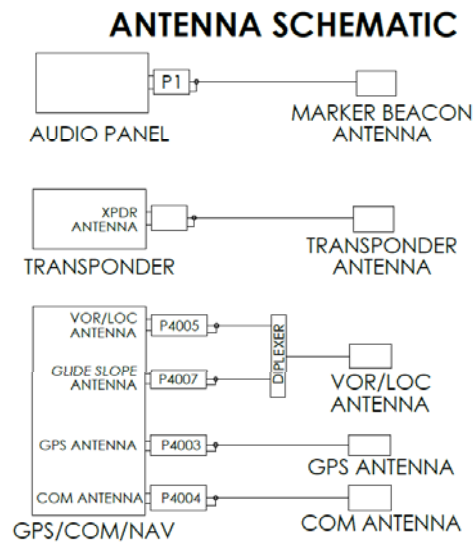
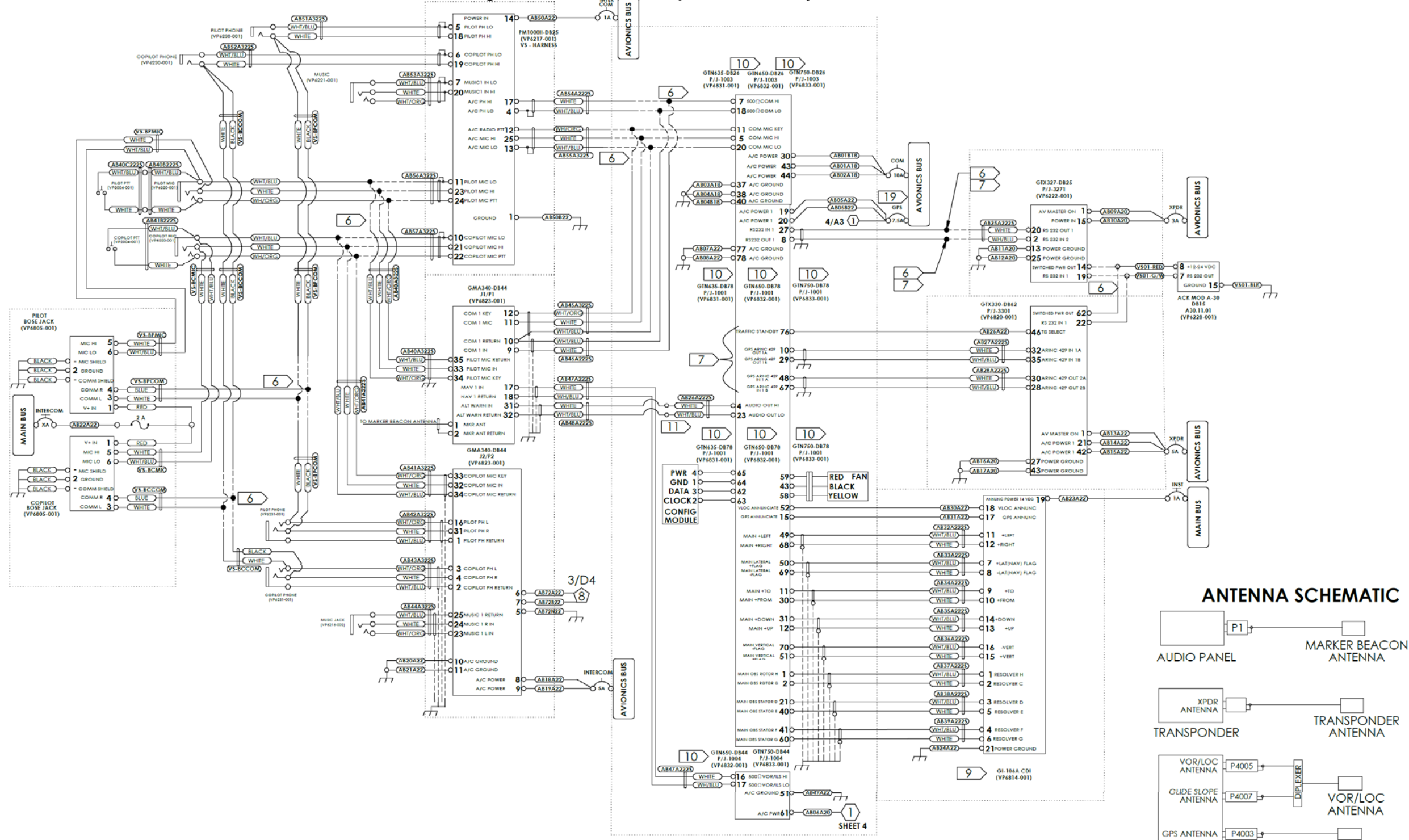
Figure 24-00-2 – Lighting Schematic

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Figure 24-00-3 – Panel Specific Panel System Schematic

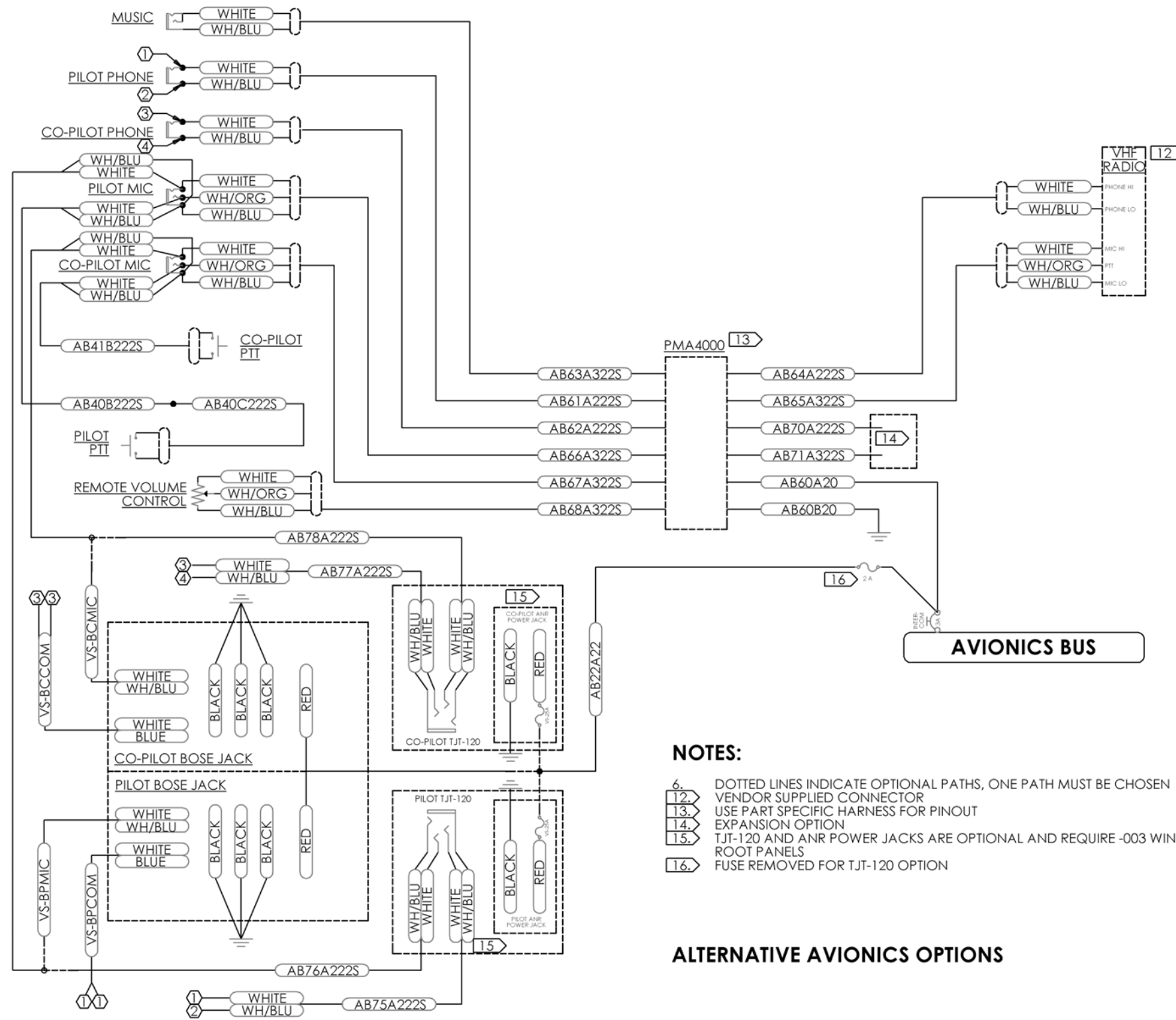


PRIMARY AVIONICS OPTIONS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

Figure 24-00-4 – Primary Avionics System Schematic

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



- NOTES:**
- 6. DOTTED LINES INDICATE OPTIONAL PATHS, ONE PATH MUST BE CHOSEN
 - 12. VENDOR SUPPLIED CONNECTOR
 - 13. USE PART SPECIFIC HARNESS FOR PINOUT
 - 14. EXPANSION OPTION
 - 15. T.JT-120 AND ANR POWER JACKS ARE OPTIONAL AND REQUIRE -003 WING ROOT PANELS
 - 16. FUSE REMOVED FOR T.JT-120 OPTION

ALTERNATIVE AVIONICS OPTIONS

Figure 24-00-5 – Alternative Avionics System Schematic

CHAPTER
25-00

EQUIPMENT AND
FURNISHINGS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

25-00 EQUIPMENT AND FURNISHINGS

TABLE OF CONTENTS

1. GENERAL.....	2
2. TROUBLESHOOTING.....	2
3. MAINTENANCE PRACTICES	3
A. FRONT SEAT	3
(1) INSPECTION	3
B. AFT SEAT.....	3
(1) INSPECTION	3

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The seats and harnesses are designed to enhance the safety of the occupants in the case of an accident. The aircraft must only be operated with seat covers and cushions that have been specifically approved for use on the CC18-180.

CAUTION:

The seat cushions are an integral part of the crashworthiness provisions of the CC18-180. If it becomes necessary to replace any of the cushions, only approved parts that have been shown to meet the requirements of 14CFR Part 23.562 in the CC18-180 may be used.

2. TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Pilot Seat Does Not Adjust	Lack of Lubrication on Seat Rail	Lubricate with Graphite or Equivalent
	Lack of Lubrication on Seat Locking Pin	Lubricate with LPS 2
Shoulder Harness Does Not Retract	Fold in Belt as It Goes into the Reel	Carefully Extend the Belt Out of the Reel and Allow to Retract Gently
	Internal Defect of Reel	Not Field Repairable Replace Reel

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

3. MAINTENANCE PRACTICES

A. FRONT SEAT

(1) INSPECTION

- (a) Ensure that the pilot's seat is free to move throughout the range of fore/aft adjustment and that the locking pin works smoothly and positively. Check the integrity of the locking pin spring.
- (b) Ensure that the seat cushion is in good condition and replace if it is deteriorated.
- (c) Check the operation and condition of the seat belts and the inertia reel harness.

B. AFT SEAT

(1) INSPECTION

- (a) Ensure that the seat cushion is in good condition and replace if it is deteriorated.
- (b) Check the operation and condition of seat belts and the inertia reel harness.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

CHAPTER

27

FLIGHT CONTROLS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

27 FLIGHT CONTROLS

27-00..... FLIGHT CONTROLS
27-10.....AILERONS
27-20..... RUDDER
27-30.....ELEVATOR
27-31.....STALL WARNING SYSTEM
27-40..... HORIZONTAL STABILIZER
27-50..... FLAPS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

27-00 FLIGHT CONTROLS

TABLE OF CONTENTS

1. GENERAL.....	2
2. MAINTENANCE PRACTICES	2
A. INSPECTION	2
(1) FUSELAGE	2
(2) TAIL SURFACES	2
3. TROUBLESHOOTING.....	3

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

This chapter describes the flight controls of the airplane. The flight controls consist of ailerons, rudder, elevators, horizontal stabilizers, and flaps. The chapter also includes the longitudinal trim system.

The control surfaces of the CC18 aircraft must be balanced within the prescribed limits in order to maintain adequate margins of safety. This chapter specifies the procedures that must be used to balance the ailerons, elevators, and rudder.

2. MAINTENANCE PRACTICES

A. INSPECTION

(1) FUSELAGE

- (a) Visually inspect the fuselage longeron tubing and stringers for damage and corrosion.
- (b) Inspect all pulleys, guides, and fairleads for damage, cracks, or misalignment.
- (c) Check that the pulleys turn freely.
- (d) Replace damaged pulleys that bind and guides or fairleads that are cracked.
- (e) Check all control cables for wear or corrosion.
- (f) Inspect all turnbuckles and turnbuckle terminals for cracks, corrosion, improper safety and freedom of movement.
- (g) Damaged turn buckles and control cables must be replaced.

(2) TAIL SURFACES

- (a) Inspect the steel structure for damage or pitting from corrosion.
- (b) Check the control surfaces for minor damage such as tears or holes in the fabric.
- (c) Repair fabric in accordance with section 51-00.
- (d) Examine all drain holes. These must be kept open at all time so that accumulations of moisture will drain out of the control surfaces.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

3. TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Control Sticks are Displaced When Ailerons are in Neutral	Control Cables Improperly Rigged	Adjust Control Cables
Improper Aileron Travel	Control Cables Improperly Rigged	Adjust Control Cables
	Torque Tube Incorrectly Adjusted	Readjust Torque Tube
Lost Motion in Control Sticks	Loose Control Cables	Take Up Slack on Control Cables
	Broken Pulley	Replace Broken Pulley
	Worn Holes in Control Stick Stub or Torque Tube Where They Attach to Each Other	Replace Worn Control Stick Stub or Torque Tube
Excessive Resistance To Movement of Control Sticks	Control Cables too Taut	Adjust Control Cables
	Pulleys Binding	Replace Damaged Pulleys
Full Elevator Travel Cannot Be Achieved	Pulleys Binding	Replace Damaged Pulleys
Stabilizer Does Not Move Up or Down When Actuating Stabilizer Adjustment Crank	Control Cable Slips on Pulleys Because of Oil or Grease	Clean Oil or Grease From Cable Cloth Moistened in Clean Gasoline
	Broken Control Cables	Replace Broken Control Cable
	Loose Control Cables or Springs	Replace Weak/Broken Spring
	Broken or Worn Pulley	Replace Pulley
	Stabilizer Adjustment Screw Sheared	Replace Stabilizer Adjustment Screw
Stabilizer Moves Only With Excessive Resistance	Pulleys Binding	Replace Damaged Pulleys
	Cable Guide Block Damaged or Misaligned	Realign or Replace Damaged Cable Guide Block
	Indicator Wire Pulleys Damaged or Broken	Replace Broken or Damaged, Indicator Wire Pulleys
	Screw and Yoke Assembly Jammed	Disassemble, Clean, and Reassemble Screw, and Yoke Assembly
	Tube Frozen to Link Assembly	Disassemble, Clean, and Reassemble Tube to Link Assembly

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

PROBLEM	PROBABLE CAUSE	REMEDY
Flaps Do Not Move When Flap Control Arm is Actuated	No Tension in Flap Control Cables	Adjust Tension of Flap Control Cables
	Broken Flap Control Cables	Replace Flap Control Cables
	Flap Control Cables Too Taut	Adjust Tension on Flap Control Cables
	Broken Pulley	Replace Pulley
	Bellcrank Distorted, Damaged, or Broken	Repair or Replace Bellcrank
Flap Control Arm Cannot Be Actuated	Flap Control Arm Release Button Not Working Properly	Repair Release Mechanism
	Bellcrank Distorted, Damaged, or Broken	Replace Bellcrank
Flaps Do Not Move In Unison	Flap Control Cables Improperly Adjusted	Readjust Length of Upper Flap Cables
Stall Warning Comes On Well Above Stalling Speed	Stall Warning Vane Not Calibrated Properly	Calibrate Stall Warning Vane
Stall Warning Comes On at a Speed Less Than 6 mph Above The Stall	Stall Warning Vane Not Calibrated Properly	Calibrate Stall Warning Vane
Stall Warning Does Not Work	Problem in the Electric Circuit, Switches or Horn	Inspect and Replace or Repair Damaged Components

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

27-10 AILERONS

TABLE OF CONTENTS

1.	GENERAL	2
2.	MAINTANENCE PRACTICES	2
A.	REMOVAL	2
B.	INSTALLATION	3
C.	RIGGING	5
3.	BALANCING	8

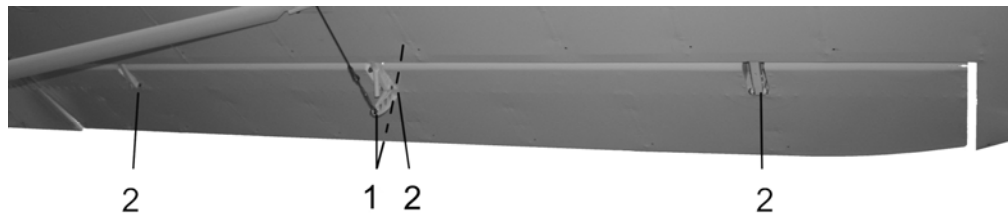
CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The CC18-180 has conventional Friese type ailerons that are operated with a stick and actuated with cables. The surfaces have an aluminum structure and are covered with polyester fabric.

2. MAINTANENCE PRACTICES

A. REMOVAL



1 - Cable attach screw 2 - Clevis pin

Figure 27-10-1 - Aileron Installation

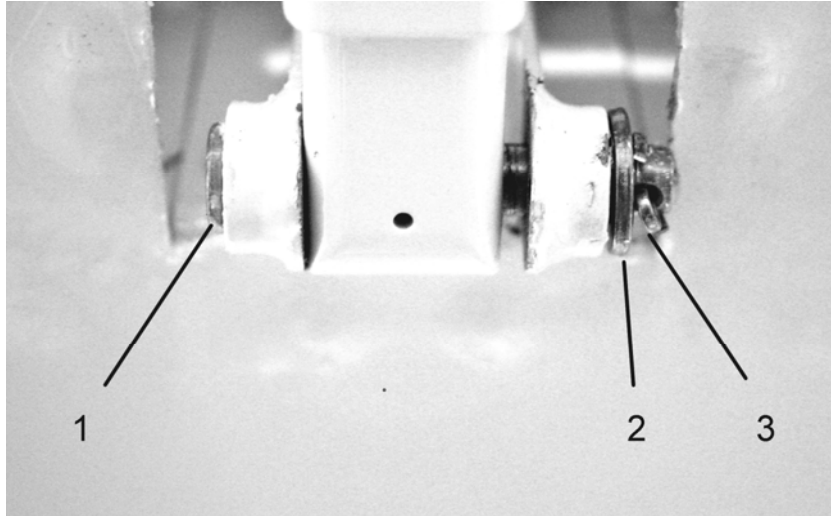
(Refer to Figure 27-10-1)

- (1) Disconnect both aileron control cables (1) from the upper and lower aileron horns.
- (2) Remove the clevis pins (2) while firmly holding the aileron.
- (3) Carefully remove the aileron from the wing panel.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

B. INSTALLATION

(Refer to Figure 27-10-2)



1- Clevis Pin

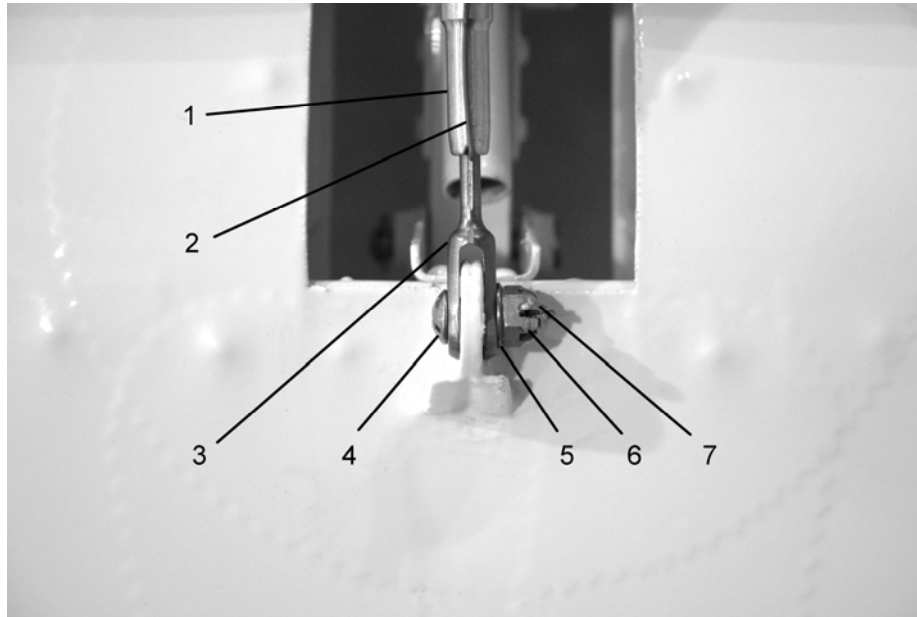
2- Washer

3- Cotter Pin

Figure 27-10-2 - Installation of Clevis Pin

- (1) Position the ailerons on the wing panels and secure with the clevis pins (1), washers (2), and cotter pins (3).

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL



- | | | |
|-----------------------|-----------------|----------------|
| 1 - Turnbuckle Barrel | 4 - Screw | 7 - Cotter Pin |
| 2 - Wire-Lock Clip | 5 - Thin Washer | |
| 3 - Turnbuckle Fork | 6 - Castle Nut | |

Figure 27-10-3 - Installation of Control Cable on Aileron Horn

Refer to Figure 27-10-3

- (2) Attach each aileron control cable turnbuckle fork to the proper aileron horn with a screw (4), a thin washer (5), a nut (6) and a cotter pin (7).
- (3) The cable tension must be 40 ± 5 lbs and the travel $18^\circ \pm 2^\circ$ up or down (Refer to 06-00). Refer to the next section, if adjustment is needed.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

C. RIGGING

(1) PROCEDURE

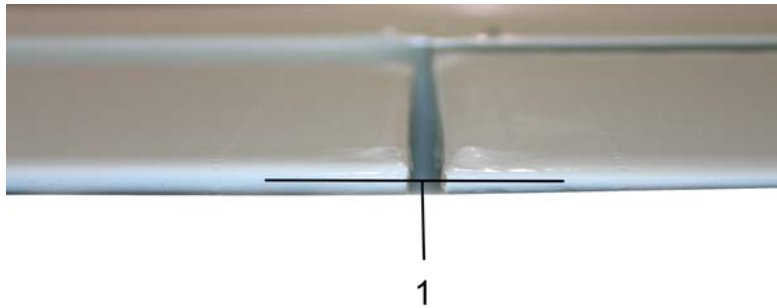


Figure 27-10-4 - Alignment of Aileron Trailing Edge with Flap Trailing Edge

- (a) The neutral position of the ailerons is found by matching as closely as possible, the trailing edge of the ailerons with the trailing edge of the flaps and the wing tip ribs.

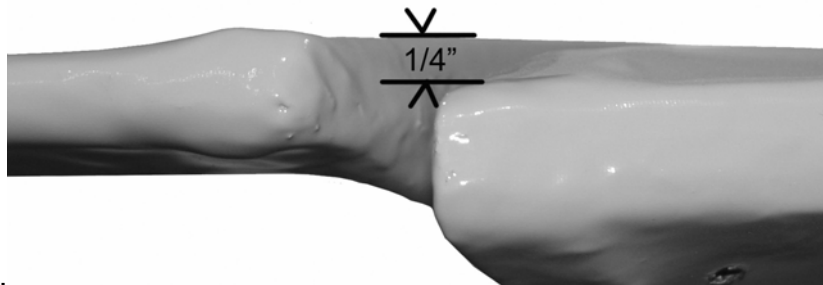


Figure 27-10- 5 - Alignment of Aileron Trailing Edge with Wing Tip

- (b) The ailerons must be rigged so that the top aft edge of the outboard end rib of either aileron does not extend more than 1/4-inch above or 1/4-inch below the top aft edge of the end wing rib with the control stick deflected right $1^{\circ} \pm 1^{\circ}$ of vertical. (See Figure 27-10-5)
- (c) To raise the trailing edge of an aileron, take up the turnbuckle at the upper aileron horn and simultaneously let out the turnbuckle at the lower aileron horn.
- (d) The aileron trailing edge may be lowered by reversing the procedure. Ensure that the cable tension is 40 ± 5 lbs. (Refer to 06-00).

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

CAUTION
Leave not more than 3 threads visible at each end of the turnbuckle barrels.

- (e) Safety each turnbuckle barrel with 2 wire lock clips making sure the clip ends are locked in the hole (Figure 27-10-6). Alternatively use the single wrap method with 0.040 stainless safety wire.

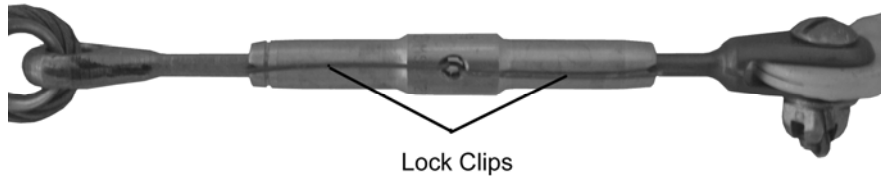


Figure 27-10-6 - Safety of Turnbuckles

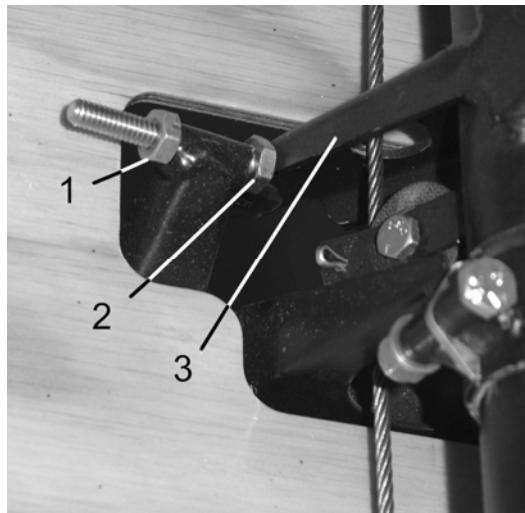


Figure 27-10-7 - Adjustment at Control Stick Torque Tube

- (f) (Refer to Figure 27-10-7) Adjust the aileron stops at the torque tube so the arm (3) contacts the bolt head (2) when the aileron travel is $18^\circ \pm 2^\circ$ up or down from neutral. Tighten the jam nut (1) to hold in place.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

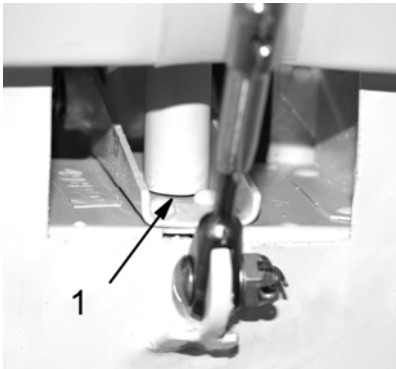


Figure 27-10- 8 - Aileron Stops

- (g) (Refer to Figure 27-10-8) Place the aileron in the full "UP" position and slide the aileron stop bracket along the hinge bracket until the upper stop tube just clears the aileron hinge

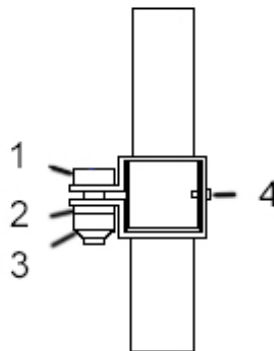


Figure 27-10-9 - Aileron Stop Bracket

Refer to Figure 27-10-9

- (h) Install a bolt (1), washer (2) and nut (3) and tighten enough to hold the bracket in place. Check and make sure there is 0 to 1/8 inch clearance between the aileron horn and lower stop tube with aileron in the full up position.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

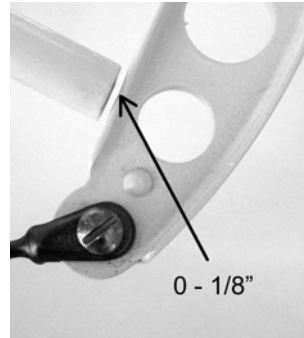


Figure 27-10-10 - Lower Aileron Stop

- (i) File off face of lower stop tube until 0 to 1/8 inch clearance is obtained between the aileron horn and lower stop tube with aileron in the full down position.
- (j) Drill through the stop bracket and into one side of the aileron hinge bracket with a #40 drill.
- (k) Lock the stop bracket in position with a screw (4).
- (l) Repeat on the opposite side.

NOTE

Tight cables make stick action stiff while loose cables result in stick action that is too free and uncertain. Properly adjusted cables should not slap or wobble when the stick is moved back and forth in rapid succession.

3. BALANCING

A. PROCEDURE

- (1) Insert a 0.25" pin or bolt through each of the outboard hinge holes of the aileron (2 per aileron) such that about 0.25" of the pin or bolt protrude from either side of the hinge.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (2) Place the aileron horizontally over a bench such that the exposed parts of the pins or bolts rest on half tubes, knife-edges or a similar supports that have little friction and allow the aileron to rotate freely. (See Figure 27-10-11)

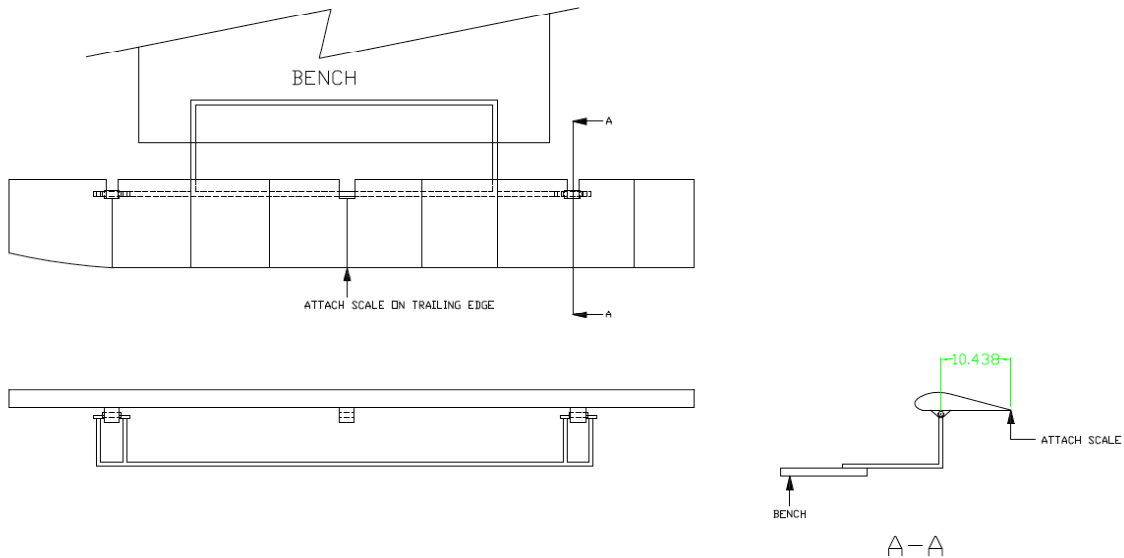


Figure 27-10-11 - Balancing Ailerons

- (3) Place a force gauge or scale at the trailing edge of the aileron, directly behind the center hinge. Ensure the lower surface of the aileron is level. Record the weight.
- (4) The weight at the trailing edge must be between 1.15 lb. and 1.63 lb. trailing edge heavy.

NOTE

If the aileron is not within these limits, contact Cub Crafters for disposition.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

27-20 RUDDER

TABLE OF CONTENTS

- 1. GENERAL2
- 2. MAINTANENCE PRACTICES2
 - A. REMOVAL.....2
 - B. INSTALLATION.....3
 - C. RIGGING.....4
- 3. BALANCING5

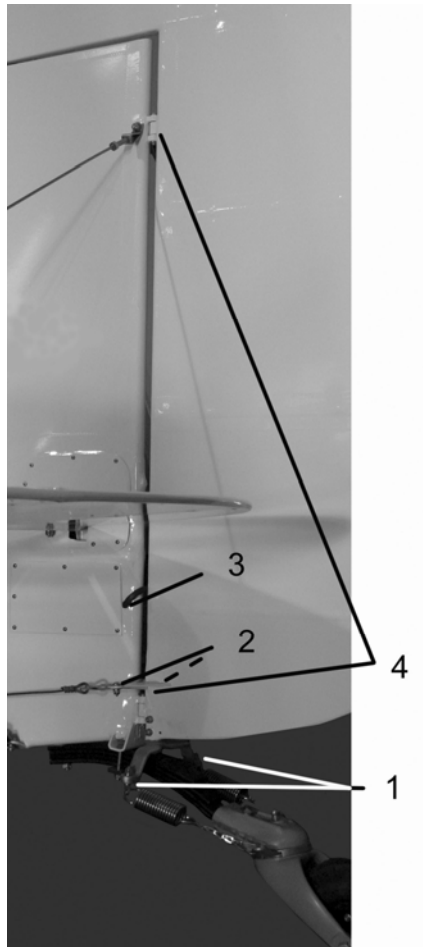
**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The rudder is constructed of tubular steel with steel channel ribs.

2. MAINTANENCE PRACTICES

A. REMOVAL



1 - Springs 2 - Cables 3 - Wiring 4 - Hinge pins

Figure 27-20-1 - Rudder Installation

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Refer to Figure 27-20-1

- (1) Unhook the tail wheel steering springs from the rudder arm (1).
- (2) Disconnect the rudder cables (2) from the rudder horn.
- (3) Remove the rectangular inspection cover and disconnect the electrical wiring to the tail assembly (3).
- (4) Remove the hinge pins (4) and separate the rudder assembly from the fin.

B. INSTALLATION

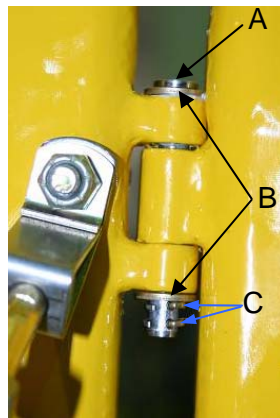
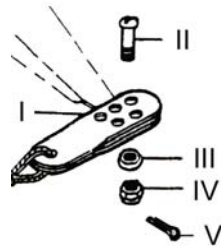


Figure 27-20-2 - Installation of Clevis Pins at Rudder Hinges

- (1) Position the rudder hinges in line with the hinges on the fin and fasten with 2 clevis pins (A), washers (B) and cotter pins (C). (Figure 27-20-2)
- (2) Reconnect the electrical wiring to the lights in the light (3).
- (3) Secure each rudder cable fitting (I Figure 27-20-3) to a rudder horn (1) with a screw (II Figure 27-20-3), washer (III Figure 27-20-3) and nut (IV Figure 27-20-3). Make certain that the connections pivot freely and that the rudder is centered when rudder pedals are in line with each other. Verify that full rudder travel to the left and to the right can be obtained. Make any adjustments at the rear cable attach fitting (I Figure 27-20-3) by changing the hole through which the screw (II Figure 27-20-3) goes through the fitting (I Figure 27-20-3). Safety each nut (IV Figure 27-20-3) with a cotter pin (V Figure 27-20-3).

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL



- | | | |
|-------------------|-------------------|----------------|
| I - Cable Fitting | III - Thin Washer | V - Cotter Pin |
| II - Clevis Screw | IV - Castle Nut | |

Figure 27-20-3 - Attachment of Rudder Cable Fitting

- (4) Hook each tail wheel steering spring (1) to a rudder arm. Lubricate the hinge pins and pivot points with LPS-2 oil.
- (5) Install the rectangular inspection cover.

C. RIGGING

- (1) Check that the rudder is centered when rudder pedals are inline with each other. Ensure that the rudder can travel through its full range, left and right. Rudder travel may be measured using a special protractor available at Cub Crafters for a nominal fee. The travel is not adjustable on the field. Contact Cub Crafters if adjustments to the travel are required. Make any adjustments at the rear cable attach fitting (I Figure 27-20-3) by changing the hole through which the screw (II Figure 27-20-3) goes through to the fitting (I Figure 27-20-3). Safety each nut (IV Figure 27-20-3) with a cotter pin (V Figure 27-20-3).
- (2) Make sure all castellated nuts and clevis pins are secured with cotter pins.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

3. BALANCING

- (1) Insert a 0.25" diameter pin or bolt through each of the hinge holes of the rudder (2 per elevator) such that about 0.25" of the pin or bolt protrude from either side of the hinge.
- (2) Place the rudder horizontally over a bench such that the exposed sections of the pins or bolts rest on a half tubes, knife-edges or a similar supports that have little friction and allow the rudder to rotate freely (See Figure 27-20-4).
- (3) Place a force gauge or scale at the trailing edge of the elevator, adjacent to the SECOND rib, counting from the bottom of the rudder to the top. Ensure the rudder chord is level. Record the weight.

IF NAVIGATION LIGHT AND TRIM TAB ARE NOT INSTALLED

- (4) The weight at the trailing edge must be between 0.93 lb. and 1.32 lb. trailing edge heavy.

IF NAVIGATION LIGHT AND/OR TRIM TAB ARE INSTALLED

- (5) The weight at the trailing edge must be between 0.93 lb. and 1.40 lb. trailing edge heavy.

NOTE

If the rudder is not within these limits, contact Cub Crafters for disposition.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

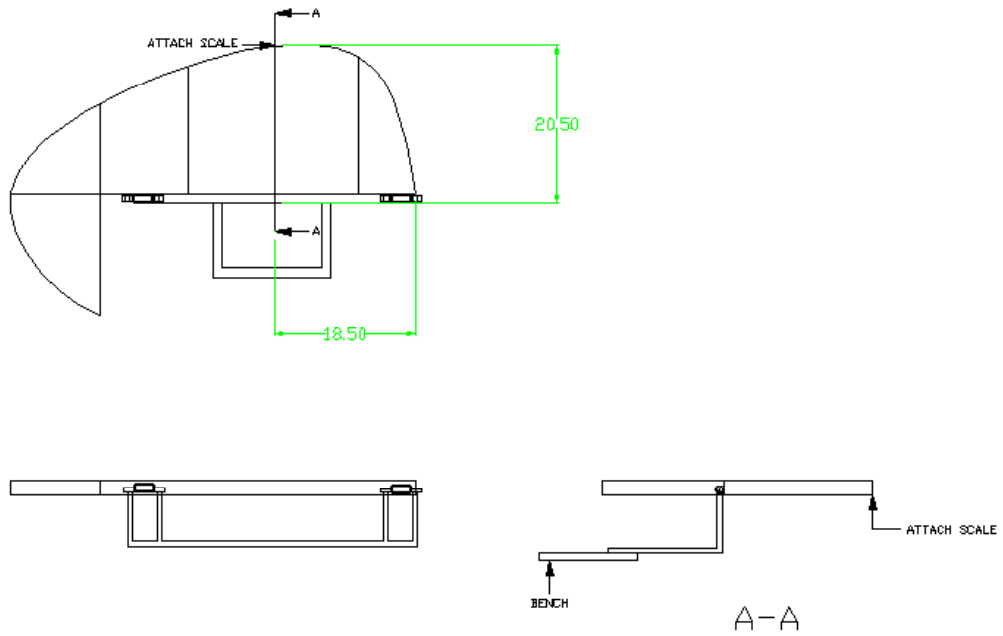


Figure 27-20-4 - Balancing Rudders

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

27-30 ELEVATOR

TABLE OF CONTENTS

- 1. GENERAL2
- 2. MAINTENANCE PRACTICES2
 - A. REMOVAL.....2
 - B. INSTALLATION.....3
 - C. RIGGING.....5
- 3. BALANCING6

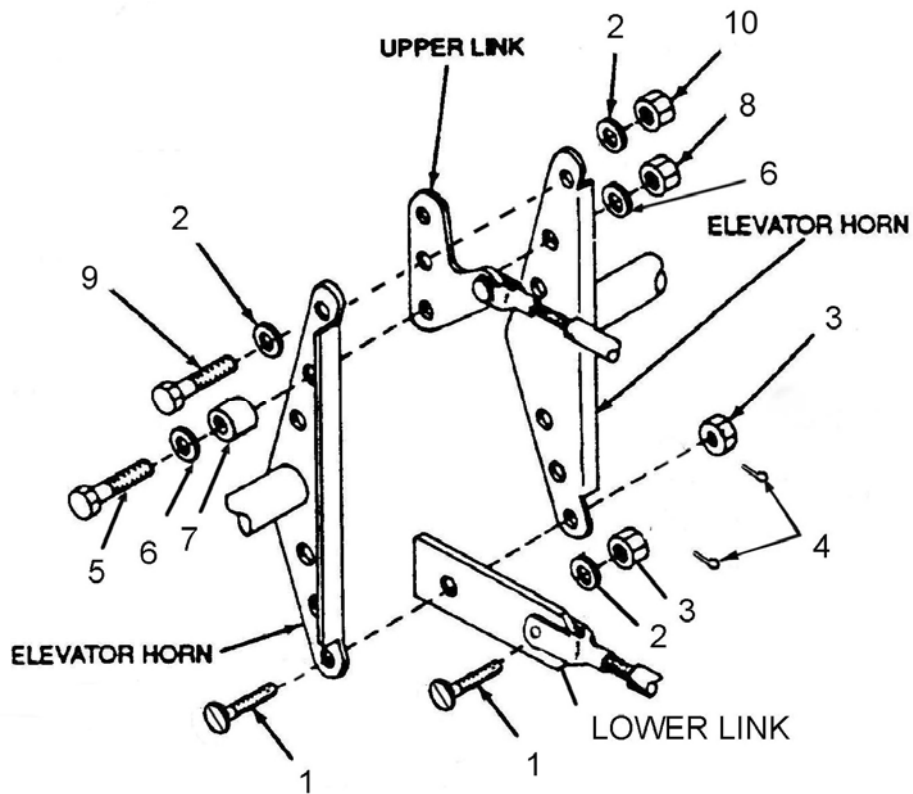
CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The elevators are constructed of tubular steel with steel channel ribs. There are two strakes forward and below each elevator, which are attached to the upper longerons.

2. MAINTENANCE PRACTICES

A. REMOVAL



- | | | |
|------------------|----------------|---------------|
| 1 - Clevis Screw | 5 - 1/4 Bolt | 9 - 3/16 Bolt |
| 2 - 3/16 Washer | 6 - 1/4 Washer | 10 - 3/16 Nut |
| 3 - Castle Nut | 7 - Bushing | |
| 4 - Cotter Pin | 8 - 1/4 Bolt | |

Figure 27-30-1 - Elevator Horn Installation

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Refer to Figure 27-30-1

- (1) Remove left hand and right hand tail inspection covers.
- (2) Loosen the bolt (5) on the top side of the upper link forward and remove the top bolt (9).
- (3) Pivot the upper link forward to remove the cable tension.
- (4) Remove the bolts (5) to disconnect the upper link from the elevator horns.
- (5) Remove the rear screw (1) to disconnect lower link from the elevator horns.
- (6) Remove the hinge pins, one side at a time, and carefully separate the elevators from the stabilizer and fuselage.

B. INSTALLATION

- (1) Identify which are the left and right elevators. The sewn seams are on the bottom trailing edge of each.

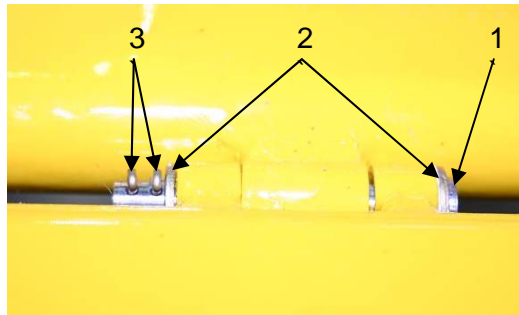
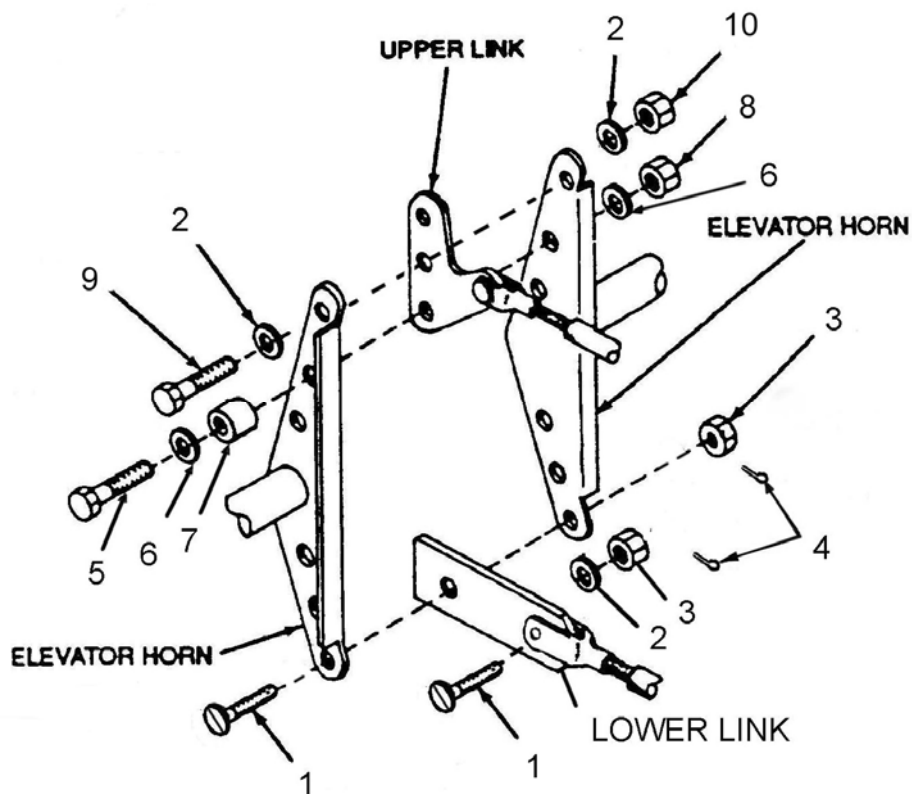


Figure 27-30-2 - Clevis Pin Installation on Elevator

- (2) Install each elevator onto the matching hinges on the stabilizers using (1) clevis pins with a (2) washer at each end of every pin, and then secure each with (3) two cotter pins. (Figure 27-30-2)

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



- | | | |
|------------------|----------------|---------------|
| 1 - Clevis Screw | 5 - 1/4 Bolt | 9 - 3/16 Bolt |
| 2 - 3/16 Washer | 6 - 1/4 Washer | 10 - 3/16 Nut |
| 3 - Castle Nut | 7 - Bushing | |
| 4 - Cotter Pin | 8 - 1/4 Bolt | |

Figure 27-30-3 Elevator Horn Installation

Refer to Figure 27-30-3

- (3) Connect the upper link to the top of the elevator horns by holding the link and the bushing (7) in position between both elevator horns. Insert a bolt (5), in the large hole with a washer (6) under the head, through the elevator horns and secure it with a washer (6) and a nut (8). Temporarily tighten finger tight.

- (4) Connect the upper link to the top of the elevator horns by holding the link and the bushing (7) in position between both elevator horns. Insert a bolt (5), in the large hole with a washer (6) under the head, through the elevator horns and secure it with a washer (6) and a nut (8). Temporarily tighten finger tight.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (5) Rotate the link to align the top holes in the upper elevator horns with the matching hole in the link and insert a bolt (9) with a washer (2). Secure it with a washer (2) and a nut (10). Torque the nut (10) to 38-43 in/lbs. Torque the larger nut (8) to 80-100 in/lbs. Check to verify proper elevator movement and routing of cables.
- (6) Safety each turnbuckle barrel with 2 wire lock clips making sure that each clip end is locked in the hole. Alternatively, use the single wrap method with 0.040" stainless steel safety wire.
- (7) Reattach the left hand and right hand tail inspection covers.

C. RIGGING

(1) Adjust both turnbuckles until:

- The stick clears the instrument panel by at least 1/8 inch when the stick is moved all the way forward (nose down);
- With the pilot's seat all way forward, the stick clears the base of the seat by at least 1/8 inch when the stick is moved all the way back (nose up) and,
- The cable tension is 60 ± 2 lbs. (Refer to 06-00)

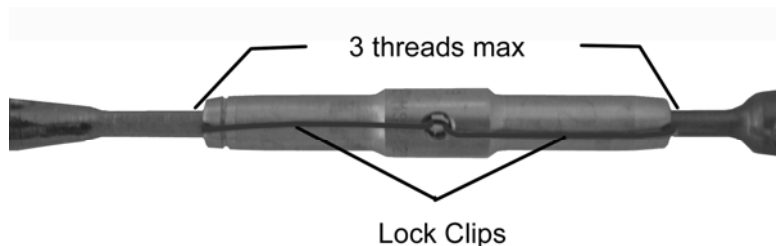


Figure 27-30-4 - Installing Safety Clips on Turnbuckles

<p>CAUTION Not more than 3 threads shall be visible at each end of the turnbuckle barrels.</p>

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

3. BALANCING

- (a) Insert a 0.25" diameter pin or bolt through each of the hinge holes of the elevator (2 per elevator) such that about 0.25" of the pin or bolt protrude from either side of the hinge.
- (b) Place the elevator horizontally over a bench such that the exposed parts of the pins or bolts rest on half tubes, knife-edges or a similar supports that have little friction and allow the elevator to rotate freely (See Figure 27-40-2).

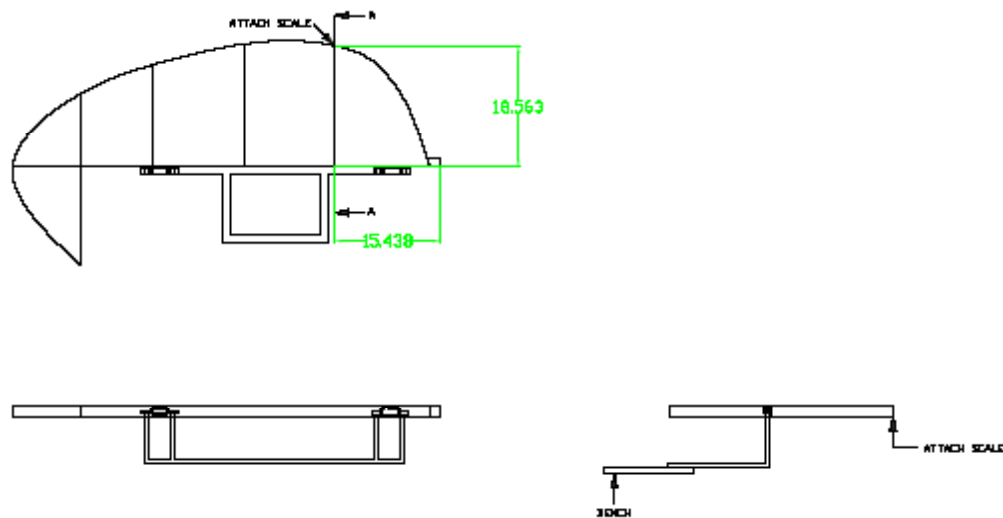


Figure 27-30-5 – Balancing Elevators

- (c) Place a force gauge or scale at the trailing edge of the elevator, adjacent to the FIRST rib, counting inboard to outboard. Ensure the elevator chord is level. Record the weight.
- (d) The weight at the trailing edge must be between 1.00 lb. and 1.40 lb. trailing edge heavy.

NOTE

If the elevator is not within these limits, contact Cub Crafters for disposition.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

27-31 STALL WARNING SYSTEM

TABLE OF CONTENTS

- 1. GENERAL2
- 2. MAINTENANCE PRACTICES2
 - A. STALL WARNING SWITCH ADJUSTMENT2

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The stall warning system is electrically powered and is made up of a horn and an actuating switch. The horn is mounted in the right wing root panel and the switch is on the leading edge of the right wing. As the stall condition progresses, the air stream lifts the switch vane, closing the circuit, and activating the horn.

2. MAINTENANCE PRACTICES

A. STALL WARNING SWITCH ADJUSTMENT

The stall horn should be activated at a speed that is no less than 6 MPH (5.2 kts) prior to the stall occurring in any configuration. On the other hand, the stall warning should not come on so often that it becomes a nuisance.



Figure 27-31-1 - Stall Warning Vane

Refer to Figure 27-31-1

- (a) Loosen the screws (1) and slide the switch (2) up or down. (Down will cause the horn to go off earlier and up will cause the horn to go off later.)
- (b) Tighten the screws in the desired position and go flying!
- (c) See Figure 24-00-1 Standard Electrical Schematic for system details.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

27-40 HORIZONTAL STABILIZERS

TABLE OF CONTENTS

1. GENERAL	2
2. MAINTANENCE PRACTICES.....	2
A. REMOVAL	2
B. INSTALLATION	3
(1) RIGHT HORIZONTAL STABILIZER	3
(2) LEFT HORIZONTAL STABILIZER	5
(3) TAIL BRACE WIRES	6
C. RIGGING OF TAIL BRACE WIRES	8
3. RIGGING THE STABILIZER TRIM	8
A. DESCRIPTION.....	8
B. RIGGING	9
C. STRAKES.....	12

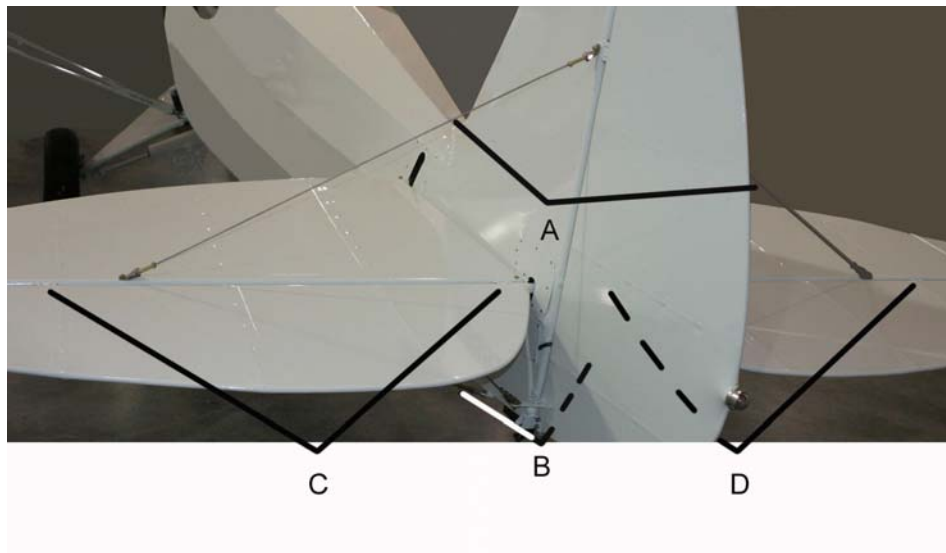
CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The horizontal stabilizers are constructed of tubular steel with steel channel ribs. Stainless steel tie rods and fitting brace the stabilizers to the fin and fuselage. There are two strakes forward and below each elevator, which are attached to the upper longerons.

2. MAINTENANCE PRACTICES

A. REMOVAL



A. Upper Wires B. Lower Wires C. Clevis Pins D. Clevis Pins

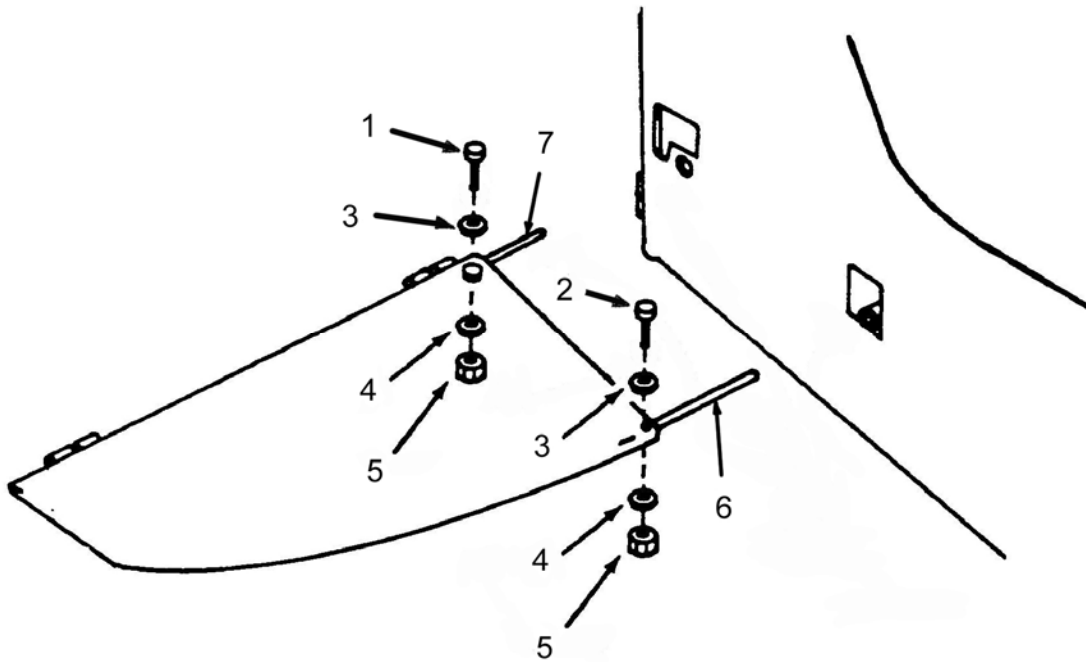
Figure 27-40-1 - Tail Brace Wires and Elevator Attachment

- (1) Unbolt the upper (A) and lower (B) tail brace wire assemblies.
- (2) Unbolt the left stabilizer from the tubes and carefully pull it off.
- (3) Carefully slide the right stabilizer, together with the tubes, out of the mounting points in the fuselage.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

B. INSTALLATION

(1) RIGHT HORIZONTAL STABILIZER



1 - Long Bolt

2 - Bolt

3 - Thin Washer

4 - Thick Washer

5 - Nut

7 - Rear Stabilizer Tube

Figure 27-40-2 - Horizontal Stabilizer Installation

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Refer to Figure 27-40-2

- (a) Identify the right stabilizer. (Note that the fabric seam should be on the bottom of the surface). Lay the stabilizer on a suitable work surface and apply a thin coat of grease (MIL-G-81322E) to the inside ends of the front and rear tubes.
- (b) If the tail surfaces have been changed and new tubes are to be installed, complete the following steps;
 - Make a line around the front stabilizer tube (6), 2-7/8 inches from one end with a fine tip felt pen.
 - Make a line around the rear stabilizer tube (7), 2-1/2 inches from one end with a fine tip felt pen.
 - Slide the front tube liner (6) into the end of the stabilizer until the marks are even with the end of the stabilizer tube.
 - Drill a hole down through the topside of the stabilizer and tube with a #12 bit, using the predrilled hole in the stabilizer frame as a guide. **DO NOT DRILL CLEAR THROUGH AT THIS TIME.**
 - Insert a short 3/16-inch bolt or cleco into each hole to hold the alignment and turn the stabilizer frame over. It may be necessary to hold the alignment bolt in place with tape.
 - Drill a hole with a #12 bit through the stabilizer holes into the tube liners, remove the alignment bolts and drill clear through to "clean out" the holes.
 - Repeat the same steps for the rear tube liner (7).
- (c) Attach the front tube with a long bolt (1) and washer (3) inserted through the stabilizer and tube (6) and secure it with a washer (4) and nut (5). Torque the nut to 38-43 in/lbs.
- (d) Attach the rear tube with a bolt (2) and washer (3) inserted through the stabilizer and tube and secure it with a washer (4) and nut (5). Torque the nut to 38-43 in/lbs.
- (e) Apply a thin coat of grease (MIL-G-81322E) to the inside of the stabilizer attachment tubes on the airframe and slide the stabilizer on until it is tight against the mounting points.

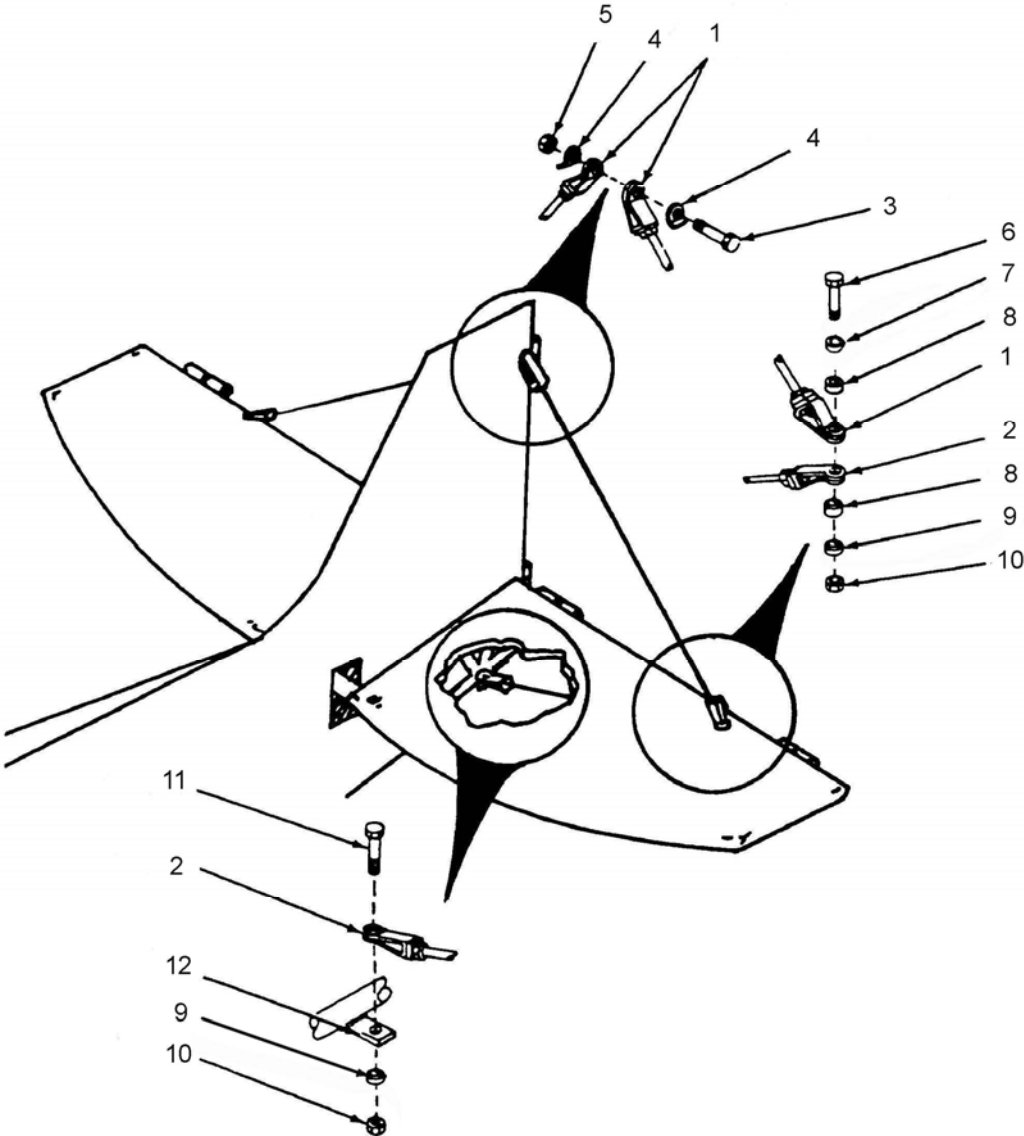
CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(2) LEFT HORIZONTAL STABILIZER

- (a) Apply grease (MIL-G-81322E) to the inside of the front and rear tubes of the right stabilizer and install it onto the ends of the tubes that protrude from the side of the fuselage. It may be necessary to have a second person hold the left stabilizer as a back up.
- (b) Make sure the sewn seams on the trailing edge of both stabilizers are on the bottom.
- (c) Make sure the stabilizer frame fits tightly against the fuselage attachments.
- (d) If the tail surfaces have been changed and new tube liners are installed complete the following;
 - Have a second person pull the front corners of the stabilizer together tight against the fuselage attachment yoke then drill a hole down through predrilled hole in top of the left front stabilizer tube into the tube liner with a #12 bit. DO NOT DRILL CLEAR THROUGH.
 - If any play exists between stabilizer and the fuselage use a tapered punch to adjust the alignment of the upper hole and remove the play; drill the hole up from the bottom through the stabilizer and liners and on up through the top to "clean out" the holes.
- (e) Attach with a long bolt (1) and washer (3) inserted down through the stabilizer and tube (6) and secure it with a washer (4) and nut (5). Torque the nut to 38-43 in/lbs.
- (f) After the tail brace wires are installed and rigged, drill the right rear stabilizer and tube with a #12 bit and insert a bolt (2) and washer (3) and secure with a washer (P4) and nut (5). Torque the nut to 38-43 in/lbs.
- (g) Pump grease (MIL-G-81322E) into the stabilizer link assembly grease fittings until it starts to squeeze out.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

(3) TAIL BRACE WIRES



- | | | | |
|------------------|-----------------|-----------------|-----------------|
| 1 - Upper Clevis | 4 - Bent Washer | 7 - Thin Washer | 10 - 3/16 Nut |
| 2 - Lower Clevis | 5 - 1/4 Nut | 8 - Bushing | 11 - Short Bolt |
| 3 - 1/4 Bolt | 6 - Long Bolt | 9 - Washer | 12 - Attach Tab |

Figure 27-40-3 - Tail Brace Wire Installation

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Refer to Figure 27-40-3

- (a) Set the tail of the aircraft on a sawhorse or a bench.
- (b) Position a long tail wire with the most sharply bent clevis (1) on the fin and insert a bolt (3) with a bent washer (4).
- (c) On the opposite side of the fin, install the other long tail wire with the most sharply bent clevis (1) at the top; insert the bolt and secure with a bent washer (4) and nut (5) and torque to 80-100 in/lbs.
- (d) Line up the clevis (1) that is on the lower end of a long wire with the hole in the rear spar of the horizontal stabilizer.
- (e) Insert a bolt (6) with a washer (7) and bushing (8) through the clevis (2).
- (f) Position a short tail wire, with the bent clevis (2) through the bolt that was just inserted through the rear spar of the horizontal stabilizer. Secure with a washer (9), bushing (8) and nut (10) and torque to 38-43 in/lbs.
- (g) Line up the clevis (2) on the lower end of the wire with the hole in the tab that is on the bottom, rear end the fuselage (12). Be sure that the tab on the fuselage (12) is sandwiched between the two surfaces of the clevis (2).
- (h) Insert a bolt (11) and secure with a washer (9) and nut (10) and torque to 38-43 in/lbs.
- (i) Repeat on the opposite side.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

C. RIGGING OF TAIL BRACE WIRES

- (1) Set the tail of the aircraft on a sawhorse or bench.
- (2) Level the fuselage laterally (Refer to Section 08-00).
- (3) Hang a plumb bob from the top rudder hinge and line up the tip with the bottom rudder hinge.
- (4) If needed, adjust the tension of the tail brace wires to straighten the fin. Accomplish this by loosening the jam nut on either end of the wire and turn the brass barrel, (in to shorten the wire and out to lengthen it).
- (5) The tail brace wires must be tensioned while at the same time ensuring that the horizontal stabilizers remain horizontal and the fin vertical.
- (6) Lay a level along the rear spar of the stabilizers.
- (7) Adjust the tension of the tail brace wires such that a 0.44 (7/16) inches \pm 0.0625 (1/16) inches deflection may be reached when applying a load of 10 \pm 1 lbs at right angles at the center of either of the top wires.
- (8) Ensure that the rear spar of the stabilizer ends up level and the fin remains vertical at the rudder hinge centerline after tensioning.
- (9) The tolerance is \pm 0.5 degrees.
- (10) Tighten all 8 jam nuts on the brass barrels.

3. RIGGING THE STABILIZER TRIM

A. DESCRIPTION

The CC18 is trimmed in flight by changing the stabilizer's angle of incidence. A crank on the left side of the cockpit operates the stabilizer trim control. A circular flexible steel cable passes around a pulley attached to the crank, then back through the fuselage to another pulley on the lower end of the stabilizer adjusting a jackscrew. When the crank is rotated, the jackscrew turns raising or lowering the leading edge of the horizontal stabilizers.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

B. RIGGING

- (1) Attach trim indicator wire to the elevator yoke with at least 5 wraps.

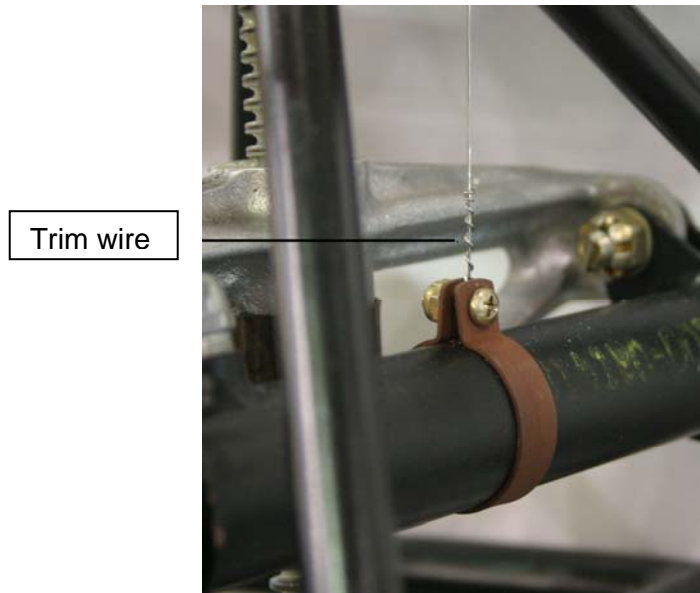


Figure 27-40-4 - Installation of Trim Indicator Wire on Yoke

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

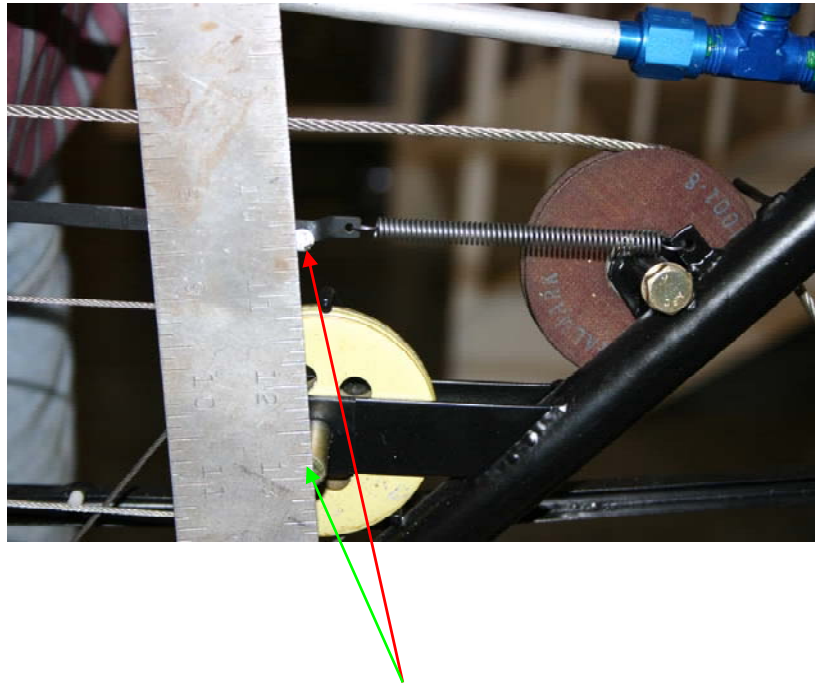
- (2) Turn the rear stabilizer pulley until it is centered on the jackscrew (± 0.063 or 1/16 inch). Centering can be done by measuring with a ruler or by counting the turns of the trim handle.



Figure 27-40-5 - Yoke in the Center of the Jackscrew

- (3) Position the indicator button to line up with a square placed on the bottom of the main longeron tube on the left side of the fuselage or on the bottom of the throttle quadrant; the set square must line up with the center of the trim handle shaft (Figure 27-30-6).

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



Datum

Figure 27-40-6 - Alignment of Indicator Button

- (4) Stretch the indicator wire and secure it to the plate that attaches the indicator button ensuring that it remains aligned with the setsquare. (Note: over the course of a few days, the wire may uncoil after installation and the indicator may have to be re-set).
- (5) Ensure that the shaft is centered in the hole and that the plate is square with the longeron (step 3) and install the cover plate.
- (6) Check that the indicator button, the center mark on the scale and the shaft are in line and perpendicular to the main longeron tube on the left side of the fuselage. Ensure that the indicator button is able to travel through the full range without contacting slot.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

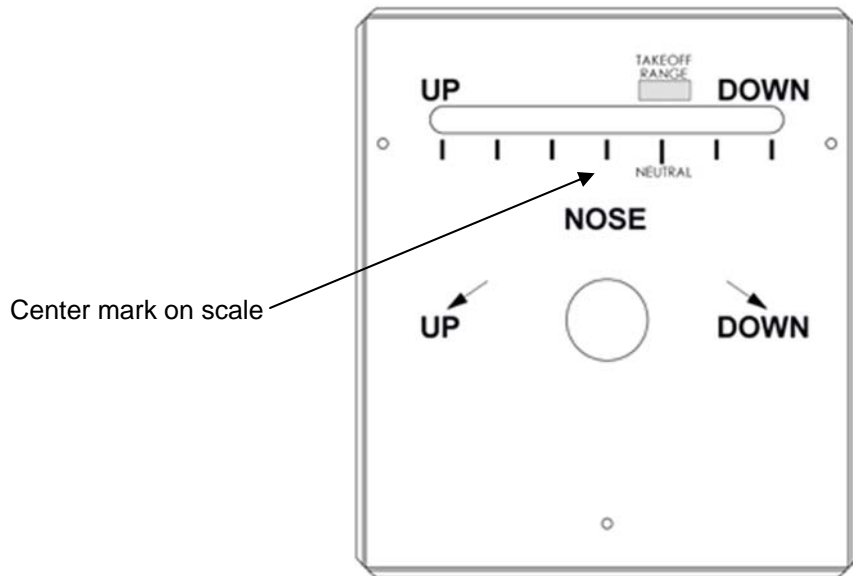


Figure 27-40-7 - Indicator Cover Plate

C. STRAKES



Figure 27-40-8 - Bracket for Strake Attachment – RH Shown

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

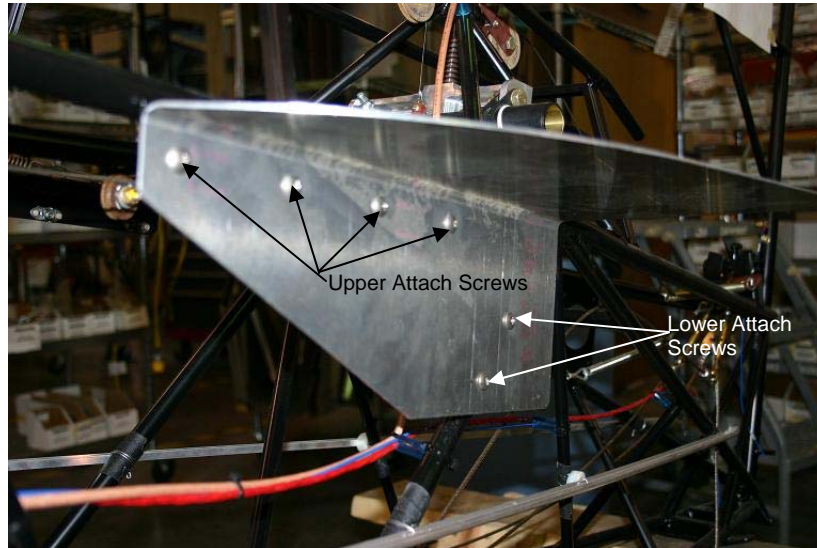


Figure 27-40-9 - Attachment of Strakes - LH Shown

Refer to Figure 27-40-8

(1) TAIL STRAKE REMOVAL

- (a) Remove the inspection covers that are located under the tail.
- (b) Remove the lower attachment screws, washers, and nuts from the strakes on one side.
- (c) Remove the upper attachment screws.
- (d) Repeat on the opposite side.

(2) INSTALLATION

- (a) Attach strake with the 4 upper attachment screws.
- (b) Install the 2 lower attachment screws, washers and nuts. Add or remove washers to ensure that the horizontal surface of the strake is parallel to the stabilizer.
- (c) Repeat for the strake on the opposite side.
- (d) Install the inspection covers.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

CUB CRAFTERS
CC18-180 MAINTENANCE MANUAL

27-50 FLAPS

Table of Contents

1		
1.	GENERAL	2
2.	MAINTENANCE PRACTICES	2
(1)	REMOVAL	2
(2)	INSTALLATION	3
(3)	RIGGING THE POSITION OF THE FLAPS.....	4
(4)	RIGGING THE FLAP TRAVEL.....	5

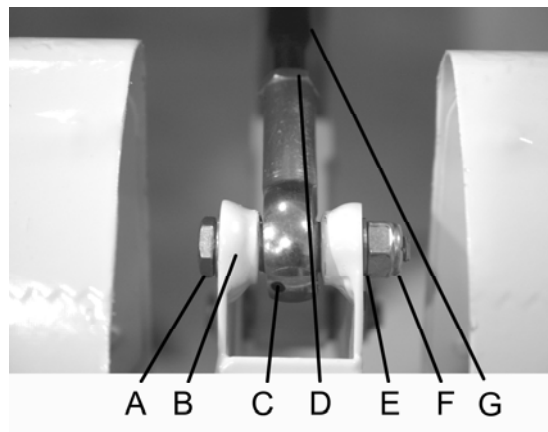
CUB CRAFTERS
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The flaps are operated mechanically by moving a lever located on the left forward side of the cockpit. The flaps are slotted and have three positions, up, first notch, (22°) and full flaps (50°). The flap lever has a spring latch system that holds the flap in the selected position.

2. MAINTENANCE PRACTICES

(1) REMOVAL



A- Bolt	C- Ball end	E- Washer	G- Actuator rod
B- Hinge	D- Jam nut	F- Nut	

Figure 27-50-1 - Flap Actuator

- (a) Remove the bolt holding the flap control rod ball end (C) at the hinge (B) (Figure 27-50-1)
- (b) Remove the hinge pins (Figure 27-50-2) and carefully separate the flap.

CUB CRAFTERS
CC18-180 MAINTENANCE MANUAL

(2) INSTALLATION

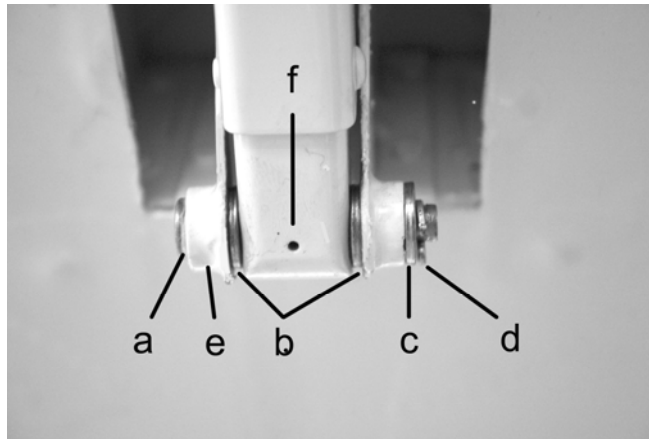


1- Outboard hinge

2 - Inboard hinge

Figure 27-50-2 - Flap Installation

(c) Hold the flap in position and insert a punch in each hinge to hold temporarily.



a- Hinge pin

b- Spacer washers

c- Washer

d- Cotter pin

e- Hinge

f- Hinge bracket

Figure 27-50-3 - Flap Hinge

CUB CRAFTERS
CC18-180 MAINTENANCE MANUAL

Reference Figure 27-50-3

- (d) At the inboard hinge (2 Figure 27-50-2) insert a hinge pin (a), pointing inboard, through the hinge (e), spacer washer (b) hinge bracket (f), spacer washer (b), hinge (e) and washer (c) Secure with a cotter pin (d).
- (e) At the outboard hinge (1 Figure 27-50-2) fill any gap between the hinge (e) and hinge bracket (f) with a thin or thick spacer washer as necessary.
- (f) Insert a hinge pin (a), pointing inboard, through the hinge (e), hinge bracket (f), hinge (e) and washer (c). Secure with a cotter pin (d).
- (g) At the inboard hinge (2 Figure 27-50-2) align the flap control rod ball end (C Figure 27-50-1) with the hinge (B Figure 27-50-1) attach point.
- (h) Insert the bolt (A Figure 27-50-1) through the hinge (B) and ball end (C Figure 27-50-1) then secure with a washer (E Figure 27-50-1) and nut (F Figure 27-50-1) torqued to 38-43 in/lbs.

NOTE

It may be necessary to check the flap rigging depending on the parts that were removed.

(3) RIGGING THE POSITION OF THE FLAPS

- (a) Position the flaps in the “UP” position.
- (b) Place a straightedge along the bottom of the wing at a position mid span along the flap. The bottom surface of the flap should line up with the bottom of the wing.
- (c) To adjust, unbolt the flap actuator rod ball end from the flap hinge. Loosen the jam nut (D Figure 27-50-1) and screw the ball end (C Figure 27-50-1) in or out accordingly. Ensure that both flaps are aligned.

CUB CRAFTERS

CC18-180 MAINTENANCE MANUAL

- (d) There is a hole at the ball end of the rod. (C Figure 27-50-1). Insert a piece of safety wire into the hole to ensure that the ball end is threaded past the hole.
- (e) Tighten the jam nut (D Figure 27-50-1) and make sure the rod (G Figure 27-50-1) is free to rotate slightly.

(4) RIGGING THE FLAP TRAVEL

- (f) With the flaps in the "UP" position, use a protractor to measure the angle of the flaps to obtain a starting reference point.
- (g) Move the flap control arm to the "FULL DOWN" position; the angle of travel should be $50^{\circ} \pm 2^{\circ}$. Adjust the turnbuckles at the wing root so the flaps move down at simultaneously and the angle of travel is $50^{\circ} \pm 2^{\circ}$.
- (h) Check the travel at the first notch. It should be $22^{\circ} \pm 2^{\circ}$. This position is not adjustable on the field other than by varying the full down position.

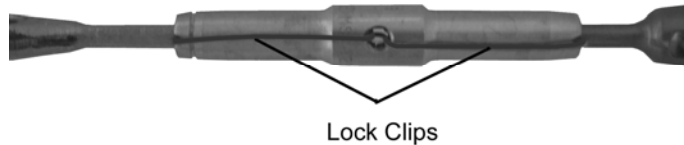


Figure 27-50-4 - Turnbuckle

- (i) Safety each turnbuckle barrel with two wire lock clips. Make sure that each clip end is locked in the hole; alternatively use the single wrap method with 0.040 stainless safety wires.
- (j) Ensure that the jam nut on the flap actuator is tight and the through bolt nut is secure.

CAUTION

Not more than three threads should be visible at each end of turnbuckle barrel after they have been adjusted.

CUB CRAFTERS
CC18-180 MAINTENANCE MANUAL

INTENTIONALLY LEFT BLANK

CHAPTER 28-00

FUEL SYSTEM

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

28-00 FUEL SYSTEM

TABLE OF CONTENTS

1. GENERAL.....	2
2. TROUBLESHOOTING.....	4
3. MAINTENANCE PRACTICES	4
A. TANK REMOVAL.....	4
(1) REMOVAL	4
(2) INSPECTION.....	4
(3) TANK REPAIR.....	5
(4) INSTALLATION	5
B. SERVICING FILTERS	6
(1) FUEL STRAINER SERVICING.....	6
(2) CARBURETOR INLET SCREEN SERVICING.....	7
C. FUEL SELECTOR	8
(1) FUEL SELECTOR OVERHAUL.....	8
D. FUEL CHECK VALVE	10
(1) FUEL VENT CHECK VALVE OVERHAUL	10

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The fuel system is a gravity flow system. Fuel drains from two wing tanks through a selector valve and fuel strainer to the carburetor.

There is an engine fuel primer system that may be used to start the engine, especially in cold conditions. The fuel primer draws fuel from the strainer by means of a hand-operated pump on the instrument panel and injects it into three cylinders for starting.

The selector valve is located on the lower left side of the cockpit and has four positions;

- Both - The engine is fed by both fuel tanks
- Left - Fuel is supplied by the left tank.
- Right - Fuel is supplied by the right tank.
- Off - Fuel supply to the engine is cut off.

Fuel will flow from one tank to the other when the selector is in either the "OFF" or the "BOTH" position. The fuel vent lines are fitted with check valves, which will prevent fuel from being discharged when tanks are full and the aircraft is in uncoordinated flight or when it is parked on a slope. When parking the aircraft on a slope, leave the selector either in the "LEFT" or "RIGHT" positions to prevent fuel from flowing from one tank to the other.

The engine may be operated in the BOTH, LEFT, or RIGHT positions. However, the selector must be in the "BOTH" position for takeoff and landing.

The fuel strainer is equipped with a quick drain and is mounted on the engine side of the firewall.

Fuel quantity is determined by means of two glass sight gauges located on either side of the cockpit at the wing root.

The tanks are ventilated through tubes at the forward outboard edge of the tanks. The tubes protrude under the wing, close to the forward wing strut attachment. Also an interconnect vent line goes between them crossing behind the rear spar carry through.

Prior to refueling the aircraft, connect the fueling equipment's grounding wire to either of the wing tie downs

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

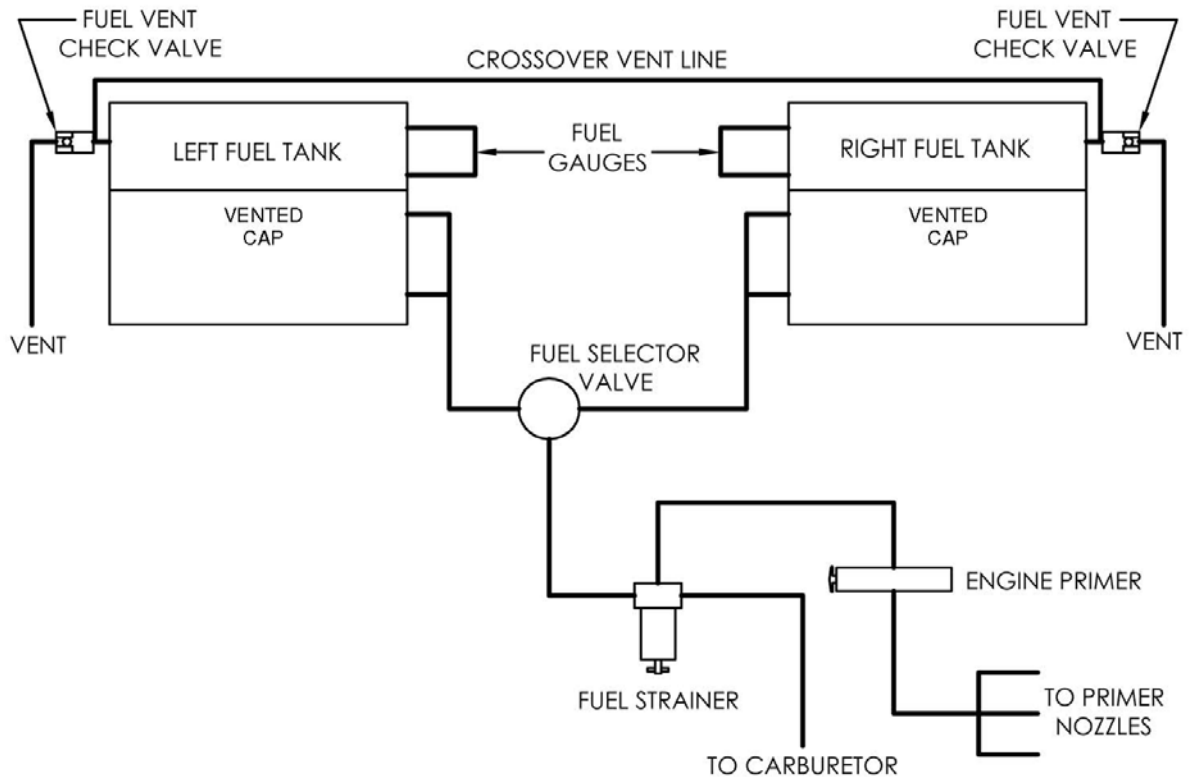


Figure 28-00-1 - Fuel System Schematic

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2. TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Filler Cap Leaks	Filler Cap Improperly Installed	Install Filler Cap Properly
	Seal Improperly Installed	Replace Fuel Cap Seal
	Deteriorated Seal	Replace Fuel Cap Seal
Leak in Fuel Line	Loose Connector(s)	Inspect and Tighten Connector(s)
	Chaffing	Replace Fuel Line
	Defective Thread	Replace Threaded Component
Fuel Discharge From Vents	Defective Fuel Check Valve	Clean Fuel Check Valve, Reassemble, or Replace

3. MAINTENANCE PRACTICES

A. TANK REMOVAL

(1) REMOVAL

- (a) Drain the fuel tanks through the drains located on the underside of the wing.
- (b) Remove the fuel tank covers.
- (c) Remove the front, the upper and the lower wing root-fairing panels.
- (d) Disconnect the supply and fuel vent check valve from the tank.
- (e) Remove the nipple fittings from the tank.
- (f) Unfasten the fuel tank straps.
- (g) Unfasten the drag brace tube at the inboard end.
- (h) Carefully lift the tank out of the tank bay allowing the drag tube to pivot at the outboard end.

(2) INSPECTION

- (a) Visual inspect for damage, leaks and distortion.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(3) TANK REPAIR

- (a) Thoroughly clean the tank inside and outside. Ensure that any residual fuel fumes have completely dissipated.
- (b) The tank may be repaired by welding the affected area. This must be carried out by a qualified repair shop or by Cub Crafters, Inc.
- (c) After repairing, a pressure test of the tank should be carried out. Using shop air, apply 1.5 to 2 psi to the tank and ensure that the pressure can be maintained for 5 minutes.

(4) INSTALLATION

- (a) Carefully insert the drag brace through the tank and lower the tank into the bay.
- (b) Reconnect the drag brace tube at the inboard end and tighten the nut.
- (c) Refasten the fuel tank straps and tighten until the strap slack is removed.
- (d) Lubricate the fuel nipple fittings with EZ TURN Lubricant, insert in the tank and tighten.
- (e) Reconnect the fuel supply and fuel vent check valve. Make sure all the nipple fittings and hose clamps are tight.
- (f) Install the upper, the lower and the front wing root fairings.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

B. SERVICING FILTERS

(1) FUEL STRAINER SERVICING

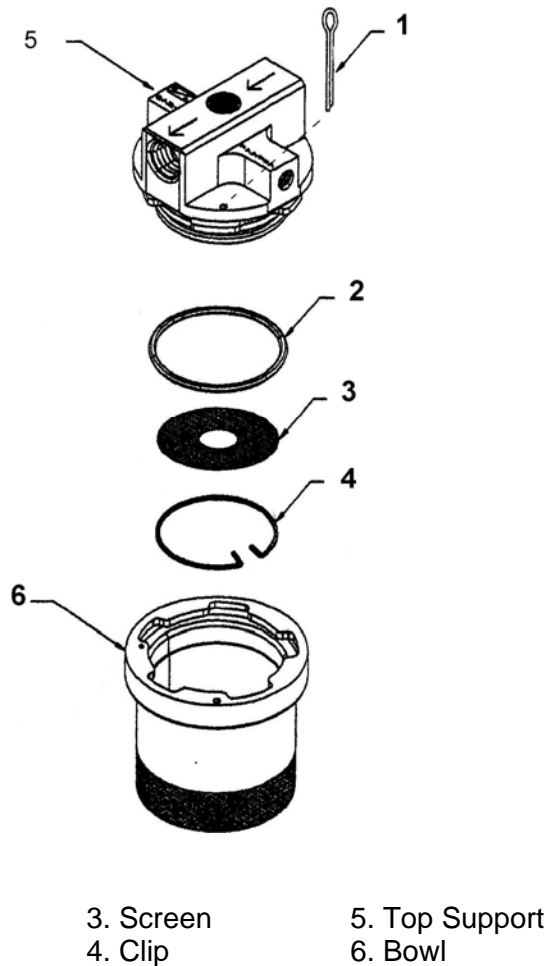


Figure 28-00-2 - Fuel Strainer Assembly

- (a) Turn fuel selector to "OFF" position.
- (b) Drain fuel from strainer.
- (c) Remove the cotter pin (1) that locks the bowl (6).

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

- (d) Place a metal container under the bowl to catch the residual fuel.
- (e) Twist bowl (6) to remove and empty the residual fuel.
- (f) Remove the wire snap ring (4) with your fingers and gently remove the screen (3).
- (g) Inspect and clean the screen (3).
- (h) Check the condition of the O-ring (2).
- (i) Carefully install the screen (3) and hold it in place with the wire snap ring (4).
- (j) Insert and twist the bowl (6) into position.
- (k) Install the safety cotter pin (1).
- (l) Turn on fuel and check for leaks.

(2) CARBURETOR INLET SCREEN SERVICING



Figure 28-00-3 - Carburetor Inlet Screen

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (a) Turn fuel selector to "OFF" position.
- (b) Straighten the locking tabs holding the hexagonal cap.
- (c) Remove the inlet screen, inspect, and clean (Figure 28-00-3).
- (d) Install the inlet screen, cap and torque to 35-40 in/lbs.
- (e) Bend the locking tabs to keep the cap from turning.

C. FUEL SELECTOR

(1) FUEL SELECTOR OVERHAUL

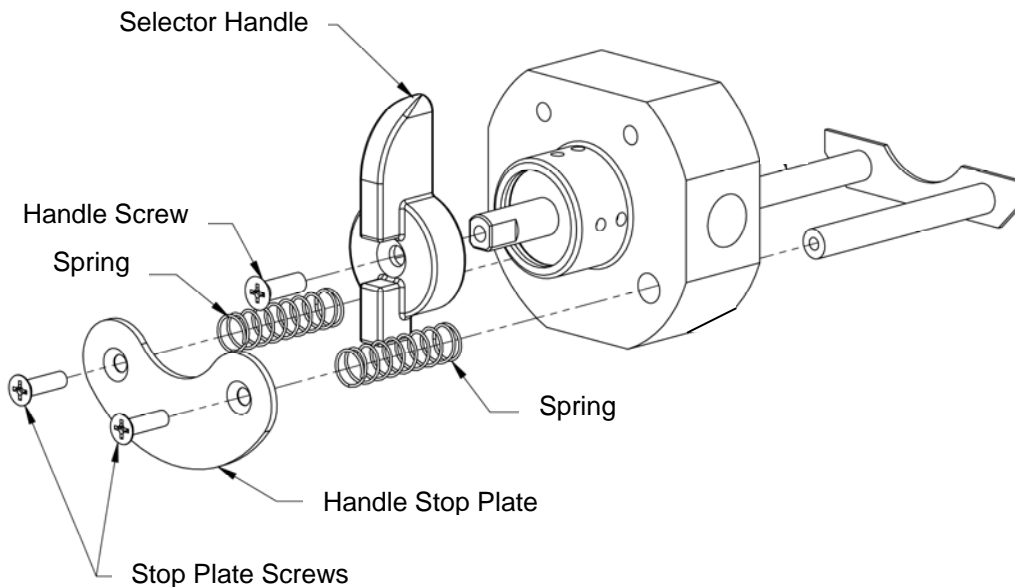
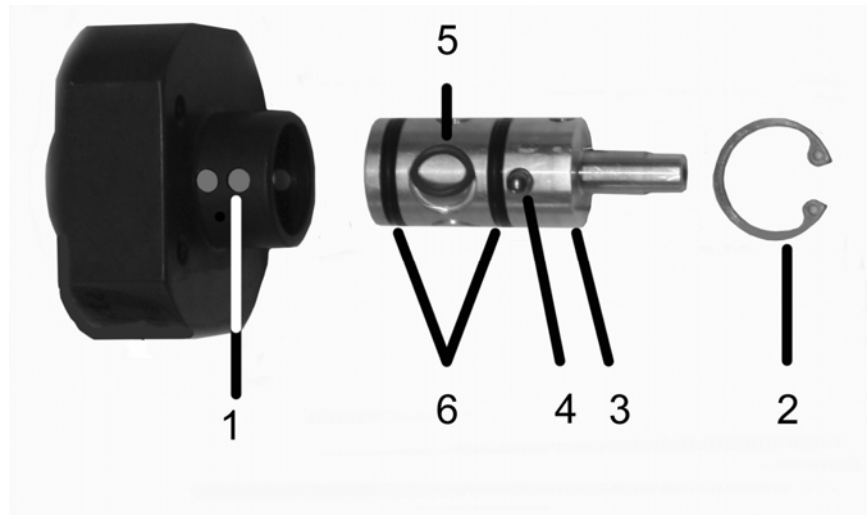


Figure 28-00-4 - Fuel Selector Valve

- (a) Drain the fuel tanks through the drains located on the underside of the wing.
- (b) Drain the remaining fuel out the fuel strainer drain.
- (c) Remove the selector handle and handle stop plate with the springs.
- (d) Put a rag under the valve to catch any residual fuel.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



- | | | |
|-----------------|-----------------------------|------------------|
| 1. Detent Holes | 3. Barrel | 5. Small O-Ring |
| 2. Snap Ring | 4. Detent Balls and Springs | 6. Large O-Rings |

Figure 28-00-5 - Fuel Selector Detail

- (e) Rotate the shaft so the detent balls (4) are between the detent holes (1).
- (f) Remove the snap ring (2) holding the handle barrel (3) in the housing.
- (g) Carefully pull the barrel (3) out of the housing with your fingers positioned to catch each set of balls and springs (4).
- (h) Remove the small O-ring (5) and the large O-rings (6) then clean the barrel.
- (i) Inspect for wear and grooves.
- (j) Replace the small O-ring (5) and the large O-rings (6) with new and lube on installation.
- (k) Insert the barrel (3) part way in the housing.
- (l) One set at a time, insert a spring with a ball (4) on each end and push the barrel the rest of the way in.
- (m) Secure with the snap ring (2).

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (n) Check the operation for positive detent and smooth turning.
- (o) Remove the rag.
- (p) Reattach the cover, and the handle stop plate with the springs and the handle.
- (q) Check and make sure the handle stop is working properly.

D. FUEL CHECK VALVE

(1) FUEL VENT CHECK VALVE OVERHAUL



Figure 28-00-6 – Fuel Check Valve

- (a) Drain fuel from the appropriate fuel tank until it is less than $\frac{3}{4}$ full. This may be accomplished either through the drain valve on each tank or by using the strainer on the gascolator just forward of the engine firewall.
- (b) Remove the fuel tank cover from the appropriate wing and locate the fuel vent check valve on the fuel vent line. (See Figure 28-00-1).
- (c) Remove the fuel vent check valve and clean the threads on the valve and the fittings on the fuel vent line.
- (d) Clean the body and the entrance/exits of the check valve.
- (e) Install the fuel vent check valve fuel system applying a lubricant that meets MIL-G-6032D (Cub Crafters P/N RM6032-001) to the threads.
- (f) Reinstall the fuel tank cover.

NOTE

If the fuel discharge persists after maintenance, replace the fuel vent check valve assembly (Cub Crafters part number VP7011-001).

CHAPTER

32

LANDING GEAR

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

32 LANDING GEAR

32-00..... LANDING GEAR
32-10..... MAIN LANDING GEAR
32-20..... TAIL LANDING GEAR
32-41..... MAIN WHEELS
32-42..... BRAKES
32-60..... AMPHIBIOUS FLOATS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

32-00 LANDING GEAR

TABLE OF CONTENTS

1. GENERAL.....	2
2. TROUBLESHOOTING.....	2

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The landing gear on the CC18-180 is not retractable and has a tail wheel. The main landing gear has bungee type shock absorbers with a hydraulic dampener. Both main wheels are fitted with hydraulically operated disc brakes, actuated by pressing heel brakes at each crew position. The tail wheel has leaf springs, is steerable, and has the ability to caster through 360°.

The CC18-180 may be fitted with Wipaire 2100A Amphibious Floats. The landing gear is hydraulically operated and consists of four wheels. The rear wheels are fitted with hydraulically operated disc brakes, actuated by pressing heel brakes at each crew position. The front wheels are steerable, and have the ability to caster through 360°. For all troubleshooting issues concerning the Wipaire 2100A Amphibious Floats refer to the latest revision of Wipline Model 2100/2350 Float Service Manual.

2. TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Landing Gear Sags	Bungees Are No Longer Strong Enough To Return The Landing Gear To Its Stops	Replace Bungee Cords
Shocks Bottom on Landing	Inspect For Weak Bungee Cords	Replace Bungee Cords
Tail Wheel Does Not Respond To Rudder Pedal	Broken Steering chains, Links or Springs	Replace Defective Steering Chain, Link, or Spring
	Broken Rudder Control Cables	Replace Broken Rudder Control Cables
Tail Wheel Shimmies	Steering Springs Have Weakened	Replace Weakened Steering Springs
	Tire Worn	Replace Tire
	Spring/Chain Tension	Springs Should Neither Be Slack or In Tension When Wheel is Centered
	Tail Wheel Assembly Has Play or Is Loose	Ensure the Tail wheel is Assembly is Properly Secured to the Fuselage
	Tail Wheel Assembled Incorrectly	Remove Tail Wheel Assembly, Dismantle, Clean, and Reassemble

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

PROBLEM	PROBABLE CAUSE	REMEDY
Tail Wheel Does Not Swivel	Fork Binds in Bracket Because of Dirt or Lack of Lubricant	Disassemble, Clean, Reassemble, and Lubricate
Tail Wheel Does Not Absorb Shock	Broken Leaf Spring	Replace Leaf Spring
	Tail wheel Tire Over Inflated	Reduce Pressure to Recommended PSI.
Brakes Drag	Pressure Build Up In System	Bleed Off Excess Pressure
	Foreign Matter Wedged In Brakes	Locate and Remove
	Pistons Cocked In Cylinder	Inspect Lining and/or Disc For Wear and Replace as Necessary
	Piston Does Not Retract	Remove Caliper and Inspect Piston O-Ring and Cylinder
	Back Pressure Due To Malfunction of Master Cylinder or Parking Valve	Bleed Hydraulic System and/or Repair/Replace Master Cylinder or Parking Valve
	Water or Ice In Hydraulic System	Flush and Bleed Hydraulic System (Thaw Ice First)
	Bent or Cracked Torque Plate	Replace
	Corroded Anchor Bolts and/or Torque Plate Bushings	Clean and Lubricate or Replace
	Warped Brake Disc; Inspect By Laying a Straight Edge Across Disc Face	Replace and Use Caution During Operation To Prevent Excessive Energy Input Into Brake
	Out of Position/Stuck Lining	Repair or Replace
	Restriction In Hydraulic Line	Isolate and Remove Restriction
	Lining Not Firmly Seated Flush Against Pressure / Back Plate	Deburr Rivet Hole on surface Adjacent to Lining
Brakes Inoperative	Brake Fluid Level Low	Replenish Brake Fluid
	Air in Brake System	Bleed Brake System
	Worn Brake Linings	Replace Linings
	Defective Caliper	Replace Caliper
	Defective Master Cylinder	Replace Master Cylinder
	Leaky Brake Line Connections	Tighten or Replace Connectors

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

PROBLEM	PROBABLE CAUSE	REMEDY
Parking Brake Inoperative	Parking Brake Valve Defective	Replace Valve
Unable to Obtain Sufficient Hydraulic Brake Pressure, Excessive Toe Pedal Travel, or Spongy Pedal	Air in Hydraulic System	Check for Source, Then Bleed Hydraulic System
	Leak in System; Brake, Master Cylinder, Fittings, or Lines	Locate Leak and Repair
	Defective Brake Line (Ballooning)	Replace
	Defective Master Cylinder	Replace or Repair
	Back Plate bolts Loose or Not Properly Torqued, Causing Excessive Brake Deflection	Torque Bolts to Proper Value
	Excessive Rusting, Scoring, or Pitting of Brake Disc	Clean or Replace Disc
	Excessive Back Plate Deflection Caused By Bent Bolts or Over Torquing Bolts	Check and Replace Bolts
	Incorrect Lining and/or Disc	Replace with Correct Parts
	Defective Caliper	Rebuild Caliper
	Rapid Disc and Lining Wear	Excessive Rusting, Scoring, or Pitting of Brake Disc
Excessive Back Plate Deflection Caused By Bent Bolts or Over Torquing Bolts		Check and Replace Bolts
Incorrect Lining and/or Disc		Replace With Correct Parts
Brakes Will Not Hold	Lining Worn Below Minimum Wear Limits	Replace Linings
	Discs Worn Below Minimum Wear Limits	Replace Discs
	Contaminated Lining	Replace Lining
	New Lining Installed With Old Disc, Lining Not Seated in Wear Track Creating Partial Contact With Disc	Replace Excessively Worn Disc
	Brake Lining Plate Installed Backwards	Remove, Inspect, and Install

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

32-10 MAIN LANDING GEAR

TABLE OF CONTENTS

1. GENERAL.....	2
2. MAINTENANCE PRACTICES	2
A. BUNGEE ASSEMBLY	3
(1) REMOVAL	3
(2) INSPECTION	3
(3) INSTALLATION	3
B. LANDING GEAR LEG	4
(1) REMOVAL	4
(2) INSPECTION	4
(3) INSTALLATION	5

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The main landing gear legs are made from welded steel tubing. A combination of rubber shock rings and a hydraulic strut provide shock absorption.

2. MAINTENANCE PRACTICES

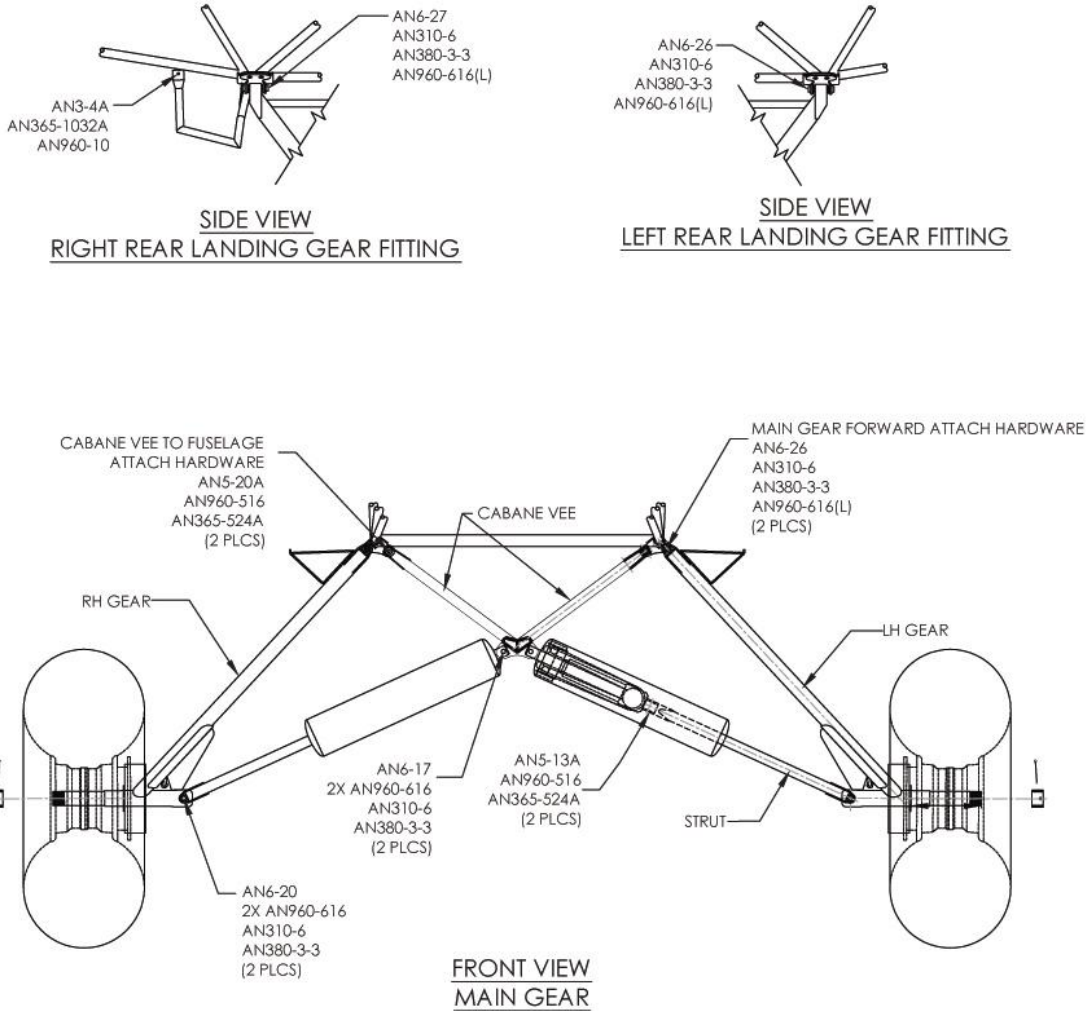


Figure 32-10-1 - Main Landing Gear Arrangement

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

A. BUNGEE ASSEMBLY

(1) REMOVAL

- (a) Chock the main wheel on the opposite side of the landing gear that is to be worked on. Chock the tail wheel. It is not recommended to carry this work out in windy conditions.
- (b) Remove the top bungee cover screws and slide the cover down until the lower bungee bolt is exposed (the bungee cords can be inspected at this point and if replacement is required accomplish the following steps).
- (c) Jack the aircraft by lifting the wing that is on the same side as the landing gear that is to be worked on. The jack is placed at the forward wing strut to spar attachment point on the desired side. (See 07-00).
- (d) Remove the upper shock assembly attach bolt and lower the shock assembly.
- (e) Remove the bungee cover end from the shock assembly.
- (f) Remove the lower attach bolt and pull the shock out of the strut.

(2) INSPECTION

- (a) Check the bungee cords for broken bands, threads, and signs of weakness. Inspect the hydraulic strut for leaking fluid or damage.

NOTE

The bungees are replaced every 5 years (See 05-10).

- (b) If the cords need replacement, cut the old cords off. Inspect the hydraulic shock for damage and smoothness of operation.
- (c) Install new bungee cords using the special tool available from Cub Crafters.
- (d) Replace any hardware that is excessively corroded or worn.

(3) INSTALLATION

- (a) Insert the shock assembly in the strut. Insert a bolt with a washer through the shock and strut and place a washer and nut on the end of the bolt. Torque the nut to 160-200 in/lbs.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (b) Place the bungee cover end over the top shaft of the shock assembly. Align with the top shock hole and the holes in the cabane vee and insert bolt.
- (c) Place the washer and the nut on the end of the bolt. Torque to 130 in/lbs. If necessary, tightened past this torque value to align the nut with the nearest hole in the bolt. Safety the nut with a new cotter pin.
- (d) Verify that all hardware is installed properly then lower the aircraft back to the ground.

B. LANDING GEAR LEG

(1) REMOVAL

- (a) Chock the main wheel on the opposite side of the landing gear that is to be worked on. Chock the tail wheel. It is recommended to carry this work in a sheltered hangar.
- (b) Disconnect the brake line from the fuselage.
- (c) Jack the aircraft by lifting the wing that is on the same side as the landing gear that is to be removed. The jack is placed at the forward wing strut to spar attachment point on the desired side. (See 07-00).
- (d) Remove the lower shock strut attach bolt.
- (e) Remove both upper landing gear bolts.

(2) INSPECTION

- (a) Inspect the landing gear and fuselage attachment points for cracks, damage, and oversized holes.
- (b) Replace or repair affected parts.
- (c) Inspect the brake backing plates for cracks or excessive wear.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(3) INSTALLATION

- (a) Replace any hardware that is excessively corroded or worn.
- (b) Align the upper landing gear attachment holes with the corresponding ones in the fuselage.
- (c) If there is a gap between a landing gear leg and the corresponding fuselage ear, fill the gap with washers of the appropriate thickness.
- (d) Apply grease to slow corrosion and insert the upper landing gear bolts.
- (e) The rear bolt on the right landing gear is longer than the one on the left because the ear of the passenger step must be placed over the bolt end.
- (f) Place washers and nuts on the end of the bolts.
- (g) Align the hole at the bottom of the shock strut with the holes in the landing gear.
- (h) Apply grease to slow corrosion and insert the bolt with a washer under the head. Place washer and nut on the end of the bolt.
- (i) Torque all nuts to 130 in/lbs or if necessary, past this value so that the nuts may be aligned with the nearest hole on the corresponding bolt.
- (j) Safety the nuts with new cotter pins.
- (k) Verify that all the hardware is installed properly and lower the aircraft to the ground.
- (l) Reconnect the brake lines and tighten the fittings.
- (m) Service the brakes, if needed, to obtain the proper pedal travel. (See 32-42)

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

32-20 TAIL LANDING GEAR

TABLE OF CONTENTS

- 1. GENERAL.....2
- 2. MAINTENANCE PRACTICES2
 - A. TAIL LANDING GEAR.....2
 - (1) REMOVAL OF TAIL WHEEL AND LEAF SPRINGS2
 - (2) DISASSEMBLY OF TAIL WHEEL BRACKET AND FORK.....4
 - (3) CLEANING.....5
 - (4) INSPECTION OF TAIL WHEEL COMPONENTS.....5
 - (5) MINOR REPAIRS OF TAIL WHEEL COMPONENTS5
 - (6) REPLACEMENT OF PARTS.5
 - (7) REASSEMBLY OF TAIL WHEEL BRACKET AND FORK.....6
 - (8) INSTALLATION OF TAIL WHEEL AND LEAF SPRINGS7

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

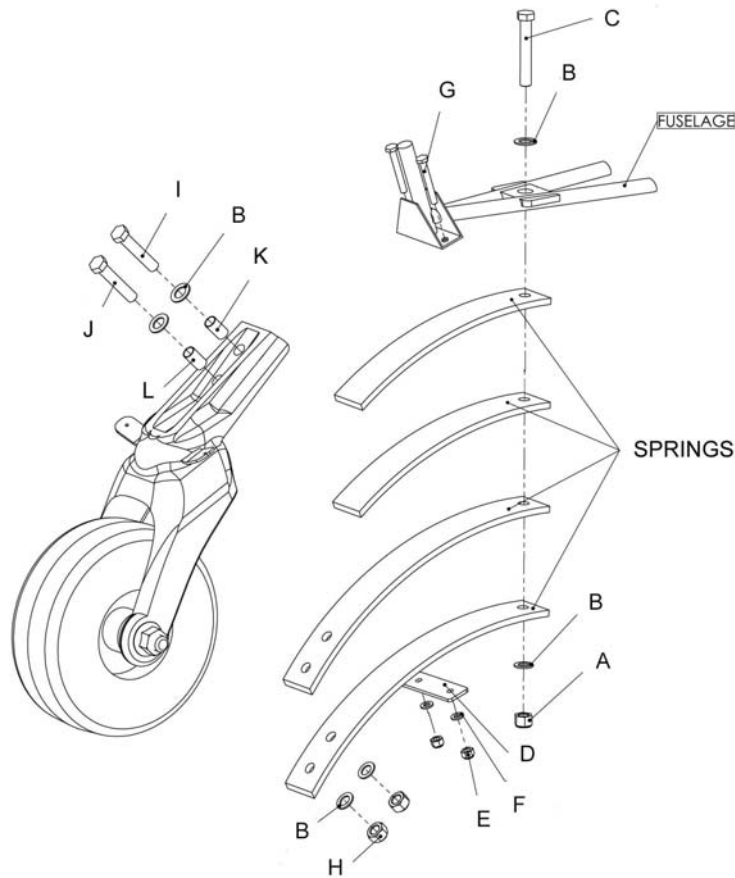
1. GENERAL

The tail landing gear has a tail wheel assembly that swivels through 360 degrees and is steerable via the rudder pedals. It is mounted to the fuselage with steel leaf springs.

2. MAINTENANCE PRACTICES

A. TAIL LANDING GEAR

(1) REMOVAL OF TAIL WHEEL AND LEAF SPRINGS



- | | | | |
|----------------|----------------------|------------------------|-------------------|
| A - Nut | D - Clamp | G - Small Bolt (2) | J - Bolt |
| B - Washer (5) | E - Small Nut (2) | H - Large Area Nut (2) | K - Short Bushing |
| C - Long Bolt | F - Small Washer (2) | I - Short Bolt | L - Long Bushing |

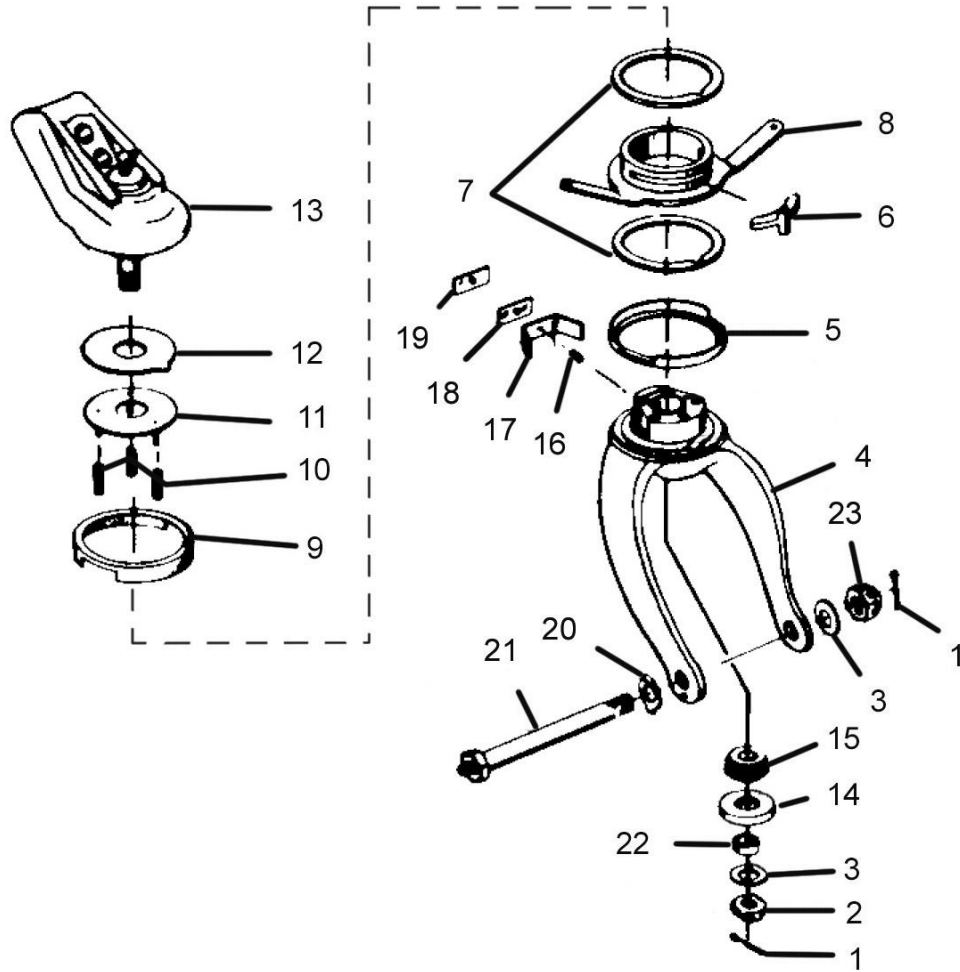
Figure 32-20-1 – Tail Wheel and Leaf Spring Installation
(2-Hole Configuration Shown. Some hardware omitted for 1-Hole configuration)

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (a) Lift the tail section of the airplane and rest the fuselage on a bench so the tail landing gear clears the ground.
- (b) Disconnect the chain links from the tail wheel arms.
- (c) Remove the front tail spring attach nut (A) and washer (B).
- (d) Disconnect the tail spring clamp (D) by removing the nuts (E), washers (F) and bolts (G).
- (e) To separate the springs from the tail wheel, remove the large area nuts (H), washers (B), and bolts (I & J).

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

(2) DISASSEMBLY OF TAIL WHEEL BRACKET AND FORK



- | | | | |
|----------------------|-------------------------|----------------------|------------------|
| 1 - Cotter Pin | 7 - Thrust Washer | 13 - Bracket Assy. | 19 - Shim |
| 2 - Short Castle Nut | 8 - Arm Assy. | 14 - Grease Retainer | 20 - Lock Washer |
| 3 - Washer | 9- Upper Dust Cap | 15 - Bearing | 21 - Axle |
| 4 - Fork Assy. | 10 - Springs | 16 - Pin | 22 - Spacer |
| 5 - Lower Dust Cap | 11 - Thrust Plate | 17 - Flat Spring | 23 - Castle Nut |
| 6 - Pawl | 12 - Fiber Thrust Plate | 18 - Shim | |

Figure 32-20-2 – Tail Wheel Assembly

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (a) Remove the tire assembly from the fork by removing the cotter pin (1), castle nut (23), and washer (3) then sliding the axle (21) out.
- (b) At the bottom of the fork (4) remove the cotter pin (1), short castle nut (2), and washer (3). Carefully pull the fork (11) off of the bracket (1).
- (c) Separate the spacer (22), grease retainer (14), and the bearing (15) from the fork (4).
- (d) Disengage the lower dust cap (5), thrust washer (7), arm assembly (8), thrust washer (7), pawl (6), upper dust cap (9), springs (10), thrust plate (11), and fiber thrust plate (12) from the fork (4) and bracket (13).

(3) CLEANING

- (a) Clean all metal parts (including the bearings) in a cleaning solution. Dry all parts with compressed air.

(4) INSPECTION OF TAIL WHEEL COMPONENTS

(See Figure 32-20-1 and Figure 32-20-2)

- (a) Check the leaf springs for damage or twisting (Figure 32-20-1)
- (b) Replace if condition dictates.
- (c) Inspect the arm assembly (8, Figure 32-20-2), flat spring (17, Figure 32-20-2), fork (4, Figure 32-20-2), and bracket (13, Figure 32-20-2) for excessive wear, cracks or other damage. Replace damaged parts.
- (d) Examine the thrust washers (7, Figure 32-20-2) for wear, scoring, or other damage. Replace if necessary.
- (e) Inspect the bearing (15, Figure 32-20-2) and races for wear or damage. Replace if necessary.

(5) MINOR REPAIRS OF TAIL WHEEL COMPONENTS

(See Figure 32-20-2)

- (a) The components that make up the tailwheel assembly may not be repaired except that minor realignments are permitted, such as minor dents and bends.

(6) REPLACEMENT OF PARTS.

- (a) Replace all cotter pins that have been removed with new cotter pins.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(7) REASSEMBLY OF TAIL WHEEL BRACKET AND FORK

(See Figure 32-20-2)

- (a) Hand apply grease to all internal parts and pack the bearing (15) with grease (MIL-G-81322E).
- (b) Place the lower dust cap (5) on the fork (4) and the thrust washer (7) on the fork (4) being sure to align the notch with the locking pin in the fork (4).
- (c) Position the pawl (6) on the arm (8) with the longest lobe down and place the arm assembly (8) on the fork (4).
- (d) Position the other thrust washer (7) and the upper dust cap (9) on the arm assembly (8).
- (e) Insert 3 springs (10) in the proper holes on the top of the fork (4) so the thrust plate (11) can be placed on top.
- (f) Position the fiber thrust plate (12) in the bracket (13) so the nub is aligned with the groove and insert the bracket assembly (13) into the fork (4) maintaining the alignment of all the interlocking parts.
- (g) Place the bearing (15), grease retainer (14), spacer (22), and washer (3) in the fork (4). Exert pressure on the bracket (13) to engage the short castle nut (2) with the bracket assembly post.
- (h) Tighten the nut (2) securely, back off to the first cotter pin hole in the bracket post, and secure with a cotter pin (1). These last steps may be accomplished once the tail wheel assembly is installed back on the fuselage.
- (i) Check to verify proper tailwheel pivoting and tension.
- (j) Install the tire assembly on the fork by sliding the axle (21) with the lock washer (20) through the fork and tire assembly.
- (k) Secure with a washer (3) and castle nut (23). Tighten the nut until there is no free play in the bearings and there is a slight amount of friction. Safety with a cotter pin (1).
- (l) Pump the tail wheel bracket assembly (13) and axle (21) full of grease (MIL-G-81322E) then wipe off the excess.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(8) INSTALLATION OF TAIL WHEEL AND LEAF SPRINGS

(See Figure 32-20-1)

- (a) Position the tail wheel springs on the fuselage with long bolt (C) and hold in place with a washer (B) and a nut (A).
- (b) Install the small bolts (G), clamp (D), and small washers (F) with the small nuts (E) only finger tight.
- (c) Insert the bushings (K, L) into the tail wheel assembly, if they were removed.
- (d) Insert the bolts (I, J) through the bushings and tail wheel assembly.
- (e) Hold in place with two washers (B) and two large area nuts (H).
- (f) Tighten the large area nuts (H) to 270-300 in/lbs.
- (g) Tighten the nut (A) to 270-300 in/lbs.
- (h) Tighten the small nuts (E) to 70-100 in/lbs.
- (i) Reconnect the chain links to the tail wheel arms. The springs and chains should neither be slack nor have tension when the wheel is centered. It may be necessary to adjust the number of chain links to achieve this.
- (j) Lower the tail section to the ground.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

32-41 MAIN WHEELS AND TIRES

TABLE OF CONTENTS

- 1. GENERAL.....2
- 2. MAINTENANCE PRACTICES2
 - A. MAIN WHEELS2
 - (1) REMOVAL.....2
 - (2) WHEEL DISASSEMBLY3
 - (3) INSPECTION5
 - (4) WHEEL ASSEMBLY6
 - B. TAIL WHEEL7
 - (1) DISASSEMBLY8
 - (2) INSPECTION8
 - (3) REASSEMBLY OF TAIL WHEEL.....8

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The main wheels are of aluminum construction and are designed to be used with tires and tubes. The standard CC18-180 is equipped with 8.50 X 6-6 tires. Larger tires are offered as optional equipment.

2. MAINTENANCE PRACTICES

A. MAIN WHEELS

(1) REMOVAL

- (a) Chock the main wheel on the opposite side of the landing gear that is to be worked on. Chock the tail wheel. It is not recommended to carry this work out in windy conditions.
- (b) Remove the hubcap and the axle nut cotter pin.
- (c) Cut the safety wire and remove the brake back plate bolts.
- (d) Place a jack under the axle and raise the tire off the ground (See Chapter 07-00).
- (e) Remove the axle nut and wheel.
- (f) The bearings can be removed, cleaned and inspected without disassembling the wheel and removing the tire.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(2) WHEEL DISASSEMBLY

See Figure 32-41-1

CAUTION

Care must be taken to avoid damaging wheel halves when breaking tire beads loose.

WARNING

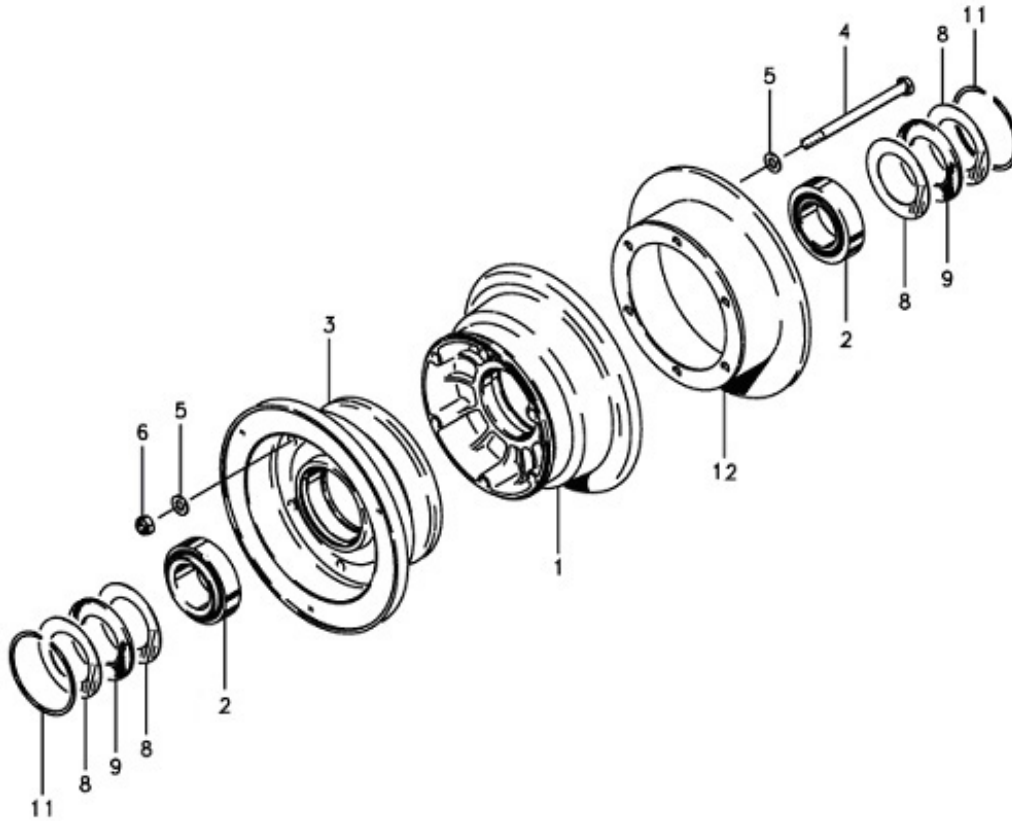
DO NOT ATTEMPT TO REMOVE VALVE CORE UNTIL TIRE HAS BEEN COMPLETELY DEFLATED. THE VALVE CORE WILL BE EJECTED AT A HIGH VELOCITY IF IT IS UNSCREWED BEFORE THE AIR PRESSURE HAS BEEN RELEASED.

WARNING

INJURY CAN RESULT WHEN ATTEMPTING TO SEPARATE WHEEL HALVES WITH THE TUBE INFLATED.

- (a) Deflate the tire.
- (b) Break the tire bead loose from the wheel.
- (c) Remove the wheel halve nuts (6) and washers (5).
- (d) Pull the wheel halves (1, 3) apart being careful with the tubes valve stem.
- (e) Remove the snap ring (11), grease seals (8, 9) and bearing (2). Repeat on other wheel half.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL



- | | | | |
|----------------------|-----------------|-------------------------|-----------------|
| 1 - Inner Wheel Half | 4 - Bolt (6) | 7 - Tire | 10 - Tube |
| 2 - Bearing | 5 - Washer (12) | 8 -Grease Seal Ring (4) | 11 - Snap Ring |
| 3 - Outer Wheel Half | 6 - Nut (12) | 9 -Grease Seal Felt (2) | 12 - Brake Disc |

Figure 32-41-1 – Wheel

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(3) INSPECTION

(f) Axle

- Visually inspect the axle to make sure there are no cracks or grooves.

(g) Tire and Tube

- Visually inspect the tires inside and outside for cuts, uneven or excessive wear, and penetration by foreign objects.
- Visually inspect the inner tube for wear, cuts or cracks. Pay close attention to the valve stem base.
- The tire should be removed when the tread is worn to the base of a groove. Tires with wear through the top fabric layer can only remain in service long enough to return to a maintenance base to be replaced.

(h) Wheel Halves

- Inspect the wheel halves for cracks or corrosion.

(i) Discs

- Inspect the brake disc attachment points for cracking or distortion.
- Minimum disc thickness is 0.220 in.

(j) Bearings

- Clean all metal parts (including the bearings) in a cleaning solution. Dry all parts with compressed air.
- Inspect the bearing and races for wear or damage. Replace if necessary.

(k) Replace unserviceable parts as required.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(4) WHEEL ASSEMBLY

- (l) If a new tire or tube is used or the old one is sticky, dust the inside of the tire lightly with talcum powder.
- (m) Inflate the tube, inside the tire, with enough air to start to fill it out so it will not be pinched between the wheel halves.
- (n) Insert the outboard wheel half (1) over the valve stem and into the tire.
- (o) Mount the inner wheel half (1) onto the outer wheel half (3).
- (p) Secure the brake disc (12) using six bolts (4) with a washer (5) under each head.
- (q) Place a washer (5) and nut (6) on each bolt (4) and torque to 85-95 in/lbs.
- (r) Inflate the tires per recommended pressure (Reference Chapter 12-00).
- (s) Allow time for the air trapped between the tube and tire to escape and recheck the pressure.
- (t) Pack the bearings with grease (MIL-G-81322E).
- (u) Insert the bearing (4), inner grease seal ring (8), grease seal felt (9), outer grease seal ring (8) and secure with a snap ring (11). Repeat on the opposite side.

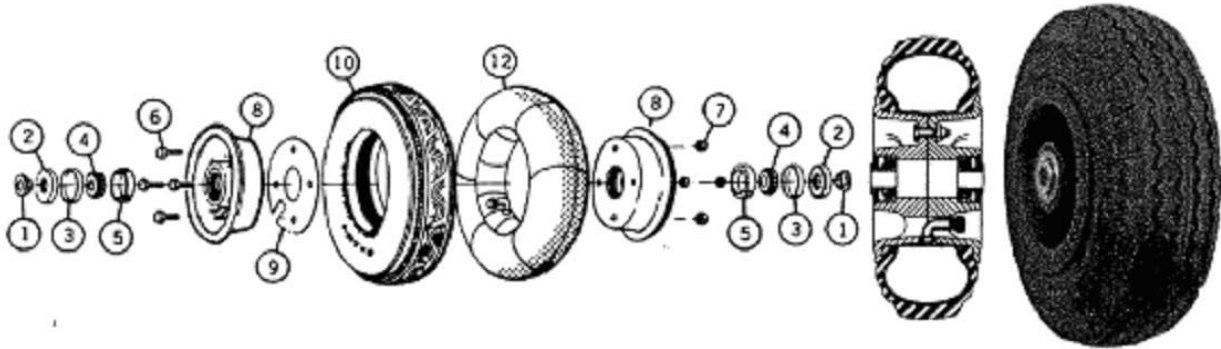
(5) MAIN WHEEL INSTALLATION

- (a) Place the wheel on axle and tighten the axle nut so the tire will turn 1 ½ -2 times after a good spin.
- (b) Safety with a cotter pin.
- (c) Verify the tire pressure. Reference Chapter 12-00.
- (d) Safety the axle nut with a cotter pin. Verify before attaching the hubcaps.
- (e) Position the brake back plates, insert the bolts, and torque to 65-75 in/lbs.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

- (f) Safety the bolts in pairs with 0.032 safety wire.
- (g) Lower the aircraft to the ground.

B. TAIL WHEEL



- | | | | |
|---------------------|------------------|------------|-----------|
| 1 - Spacer | 4 - Bearing | 7 - Nut | 10 - Tire |
| 2 - Grease Retainer | 5 - Bearing Race | 8 - Hub | 12 - Tube |
| 3 - Inner Spacer | 6 - Bolt | 9 - Gasket | |

Figure 32-41-2 – Tail Wheel Assembly

CAUTION
Care must be taken to avoid damaging wheel halves when breaking tire beads loose.

WARNING
DO NOT ATTEMPT TO REMOVE VALVE CORE UNTIL TIRE HAS BEEN COMPLETELY DEFLATED. IF IT IS UNSCREWED BEFORE THE AIR PRESSURE HAS BEEN RELEASED, THE VALVE CORE WILL BE EJECTED AT A HIGH VELOCITY.

WARNING
INJURY CAN RESULT WHEN ATTEMPTING TO SEPARATE WHEEL HALVES WITH THE TUBE INFLATED.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Refer to Figure 32-41-2

(1) DISASSEMBLY

- (a) Deflate the tube (12).
- (b) Break the tire bead loose from the wheel.
- (c) Remove the wheel half nuts (5) and bolts (6).
- (d) Pull the wheel hubs (8) apart being careful with the valve stem.
- (e) Remove the spacer (1), grease retainer (2), inner spacer (3) and bearing (4) from each hub.

(2) INSPECTION

- (a) Wipe the tire and the tube with a dry cloth. If the tire or the tube is spotted with grease, oil or other deposits, wash in a solution of soap and water. Rinse with clean water and dry with a clean cloth.
- (b) Visually inspect the tire inside and out for cuts, uneven or excessive wear, and penetration by foreign objects. Replace if the tire is in poor condition.
- (c) Visually inspect the inner tube for wear, cuts or cracks taking a close look at the valve stem base. Replace if the tube is in poor condition.
- (d) The tire should be removed when the tread is worn to the base of a groove. Tires that are worn through the top fabric layer can only remain in service long enough to return to a maintenance base to be replaced.
- (e) Clean all metal parts (including the bearings) in a cleaning solution. Dry all parts with compressed air.
- (f) Inspect the bearing and races for wear or damage. Replace if necessary.

(3) REASSEMBLY OF TAIL WHEEL.

- (a) Dust the inside of tire lightly with talcum powder.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (b) Place the tube (12) in the tire (10).
- (c) Insert the wheel hubs (8) with the gasket (9) in between into the tire and tube assembly. Make certain the gasket (9) is properly aligned with tube valve and hub bolt holes.
- (d) Insert 4 bolts and engage with 4 nuts. Torque to 80-100 in/lbs.
- (e) Inflate the tire to 38 pounds.
- (f) Pack the bearings with grease (MIL-G-81322E).
- (g) Insert a bearing (4), inner spacer (3), grease retainer (2) and spacer (1) into the each wheel hub.
- (h) To install on the airplane see Chapter 32-20 2.A.(7)(J).

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

32-20 TAIL LANDING GEAR

TABLE OF CONTENTS

- 1. GENERAL.....2
- 2. MAINTENANCE PRACTICES2
 - A. TAIL LANDING GEAR.....2
 - (1) REMOVAL OF TAIL WHEEL AND LEAF SPRINGS2
 - (2) DISASSEMBLY OF TAIL WHEEL BRACKET AND FORK.....4
 - (3) CLEANING.....5
 - (4) INSPECTION OF TAIL WHEEL COMPONENTS.....5
 - (5) MINOR REPAIRS OF TAIL WHEEL COMPONENTS5
 - (6) REPLACEMENT OF PARTS.5
 - (7) REASSEMBLY OF TAIL WHEEL BRACKET AND FORK.....6
 - (8) INSTALLATION OF TAIL WHEEL AND LEAF SPRINGS7

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

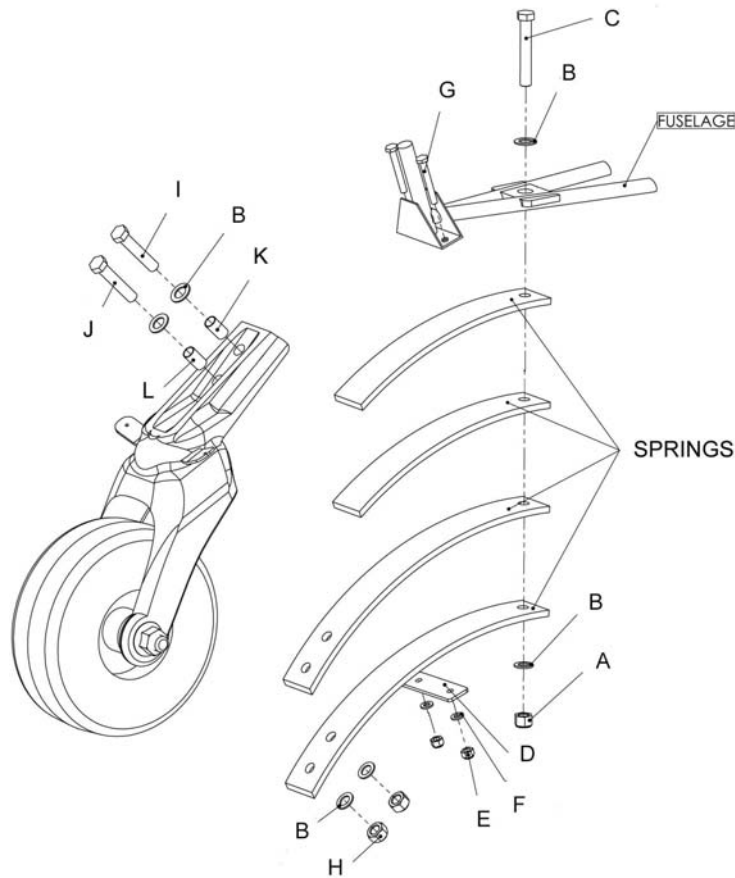
1. GENERAL

The tail landing gear has a tail wheel assembly that swivels through 360 degrees and is steerable via the rudder pedals. It is mounted to the fuselage with steel leaf springs.

2. MAINTENANCE PRACTICES

A. TAIL LANDING GEAR

(1) REMOVAL OF TAIL WHEEL AND LEAF SPRINGS



- | | | | |
|----------------|----------------------|------------------------|-------------------|
| A - Nut | D - Clamp | G - Small Bolt (2) | J - Bolt |
| B - Washer (5) | E - Small Nut (2) | H - Large Area Nut (2) | K - Short Bushing |
| C - Long Bolt | F - Small Washer (2) | I - Short Bolt | L - Long Bushing |

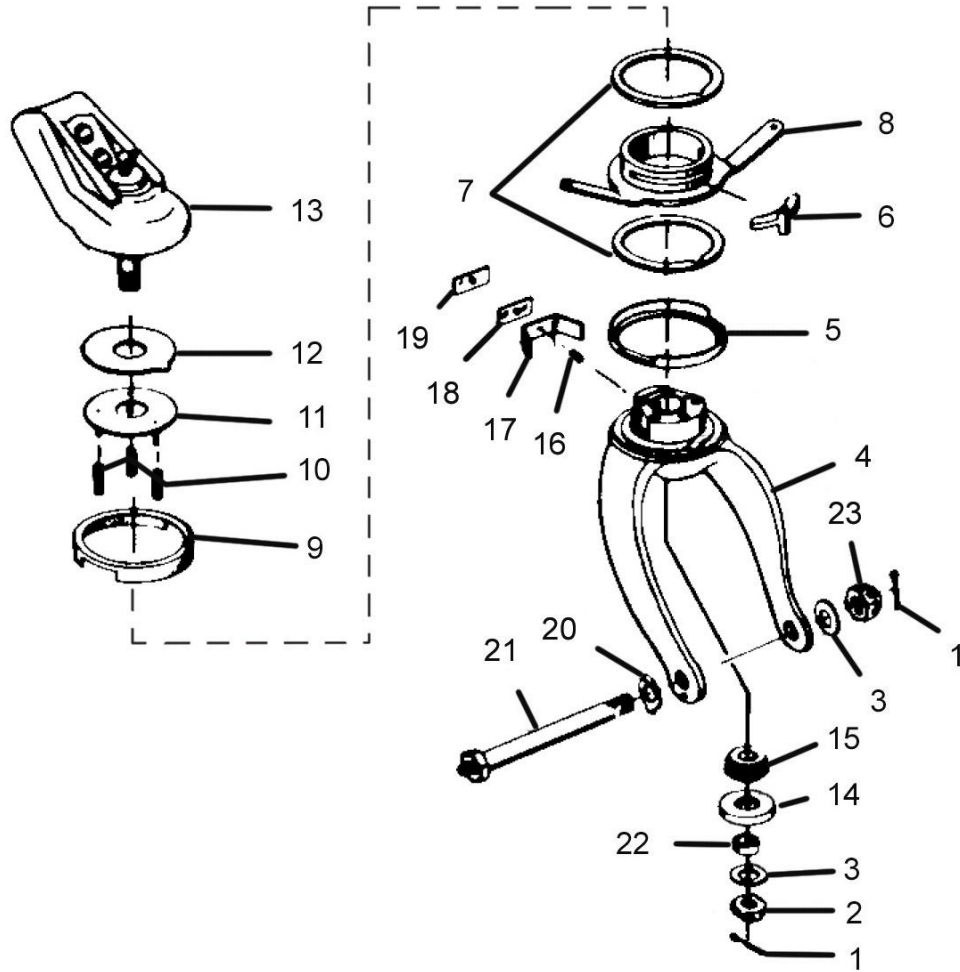
Figure 32-20-1 – Tail Wheel and Leaf Spring Installation
(2-Hole Configuration Shown. Some hardware omitted for 1-Hole configuration)

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (a) Lift the tail section of the airplane and rest the fuselage on a bench so the tail landing gear clears the ground.
- (b) Disconnect the chain links from the tail wheel arms.
- (c) Remove the front tail spring attach nut (A) and washer (B).
- (d) Disconnect the tail spring clamp (D) by removing the nuts (E), washers (F) and bolts (G).
- (e) To separate the springs from the tail wheel, remove the large area nuts (H), washers (B), and bolts (I & J).

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(2) DISASSEMBLY OF TAIL WHEEL BRACKET AND FORK



- | | | | |
|----------------------|-------------------------|----------------------|------------------|
| 1 - Cotter Pin | 7 - Thrust Washer | 13 - Bracket Assy. | 19 - Shim |
| 2 - Short Castle Nut | 8 - Arm Assy. | 14 - Grease Retainer | 20 - Lock Washer |
| 3 - Washer | 9- Upper Dust Cap | 15 - Bearing | 21 - Axle |
| 4 - Fork Assy. | 10 - Springs | 16 - Pin | 22 - Spacer |
| 5 - Lower Dust Cap | 11 - Thrust Plate | 17 - Flat Spring | 23 - Castle Nut |
| 6 - Pawl | 12 - Fiber Thrust Plate | 18 - Shim | |

Figure 32-20-2 – Tail Wheel Assembly

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (a) Remove the tire assembly from the fork by removing the cotter pin (1), castle nut (23), and washer (3) then sliding the axle (21) out.
- (b) At the bottom of the fork (4) remove the cotter pin (1), short castle nut (2), and washer (3). Carefully pull the fork (11) off of the bracket (1).
- (c) Separate the spacer (22), grease retainer (14), and the bearing (15) from the fork (4).
- (d) Disengage the lower dust cap (5), thrust washer (7), arm assembly (8), thrust washer (7), pawl (6), upper dust cap (9), springs (10), thrust plate (11), and fiber thrust plate (12) from the fork (4) and bracket (13).

(3) CLEANING

- (a) Clean all metal parts (including the bearings) in a cleaning solution. Dry all parts with compressed air.

(4) INSPECTION OF TAIL WHEEL COMPONENTS

(See Figure 32-20-1 and Figure 32-20-2)

- (a) Check the leaf springs for damage or twisting (Figure 32-20-1)
- (b) Replace if condition dictates.
- (c) Inspect the arm assembly (8, Figure 32-20-2), flat spring (17, Figure 32-20-2), fork (4, Figure 32-20-2), and bracket (13, Figure 32-20-2) for excessive wear, cracks or other damage. Replace damaged parts.
- (d) Examine the thrust washers (7, Figure 32-20-2) for wear, scoring, or other damage. Replace if necessary.
- (e) Inspect the bearing (15, Figure 32-20-2) and races for wear or damage. Replace if necessary.

(5) MINOR REPAIRS OF TAIL WHEEL COMPONENTS

(See Figure 32-20-2)

- (a) The components that make up the tailwheel assembly may not be repaired except that minor realignments are permitted, such as minor dents and bends.

(6) REPLACEMENT OF PARTS.

- (a) Replace all cotter pins that have been removed with new cotter pins.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(7) REASSEMBLY OF TAIL WHEEL BRACKET AND FORK

(See Figure 32-20-2)

- (a) Hand apply grease to all internal parts and pack the bearing (15) with grease (MIL-G-81322E).
- (b) Place the lower dust cap (5) on the fork (4) and the thrust washer (7) on the fork (4) being sure to align the notch with the locking pin in the fork (4).
- (c) Position the pawl (6) on the arm (8) with the longest lobe down and place the arm assembly (8) on the fork (4).
- (d) Position the other thrust washer (7) and the upper dust cap (9) on the arm assembly (8).
- (e) Insert 3 springs (10) in the proper holes on the top of the fork (4) so the thrust plate (11) can be placed on top.
- (f) Position the fiber thrust plate (12) in the bracket (13) so the nub is aligned with the groove and insert the bracket assembly (13) into the fork (4) maintaining the alignment of all the interlocking parts.
- (g) Place the bearing (15), grease retainer (14), spacer (22), and washer (3) in the fork (4). Exert pressure on the bracket (13) to engage the short castle nut (2) with the bracket assembly post.
- (h) Tighten the nut (2) securely, back off to the first cotter pin hole in the bracket post, and secure with a cotter pin (1). These last steps may be accomplished once the tail wheel assembly is installed back on the fuselage.
- (i) Check to verify proper tailwheel pivoting and tension.
- (j) Install the tire assembly on the fork by sliding the axle (21) with the lock washer (20) through the fork and tire assembly.
- (k) Secure with a washer (3) and castle nut (23). Tighten the nut until there is no free play in the bearings and there is a slight amount of friction. Safety with a cotter pin (1).
- (l) Pump the tail wheel bracket assembly (13) and axle (21) full of grease (MIL-G-81322E) then wipe off the excess.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(8) INSTALLATION OF TAIL WHEEL AND LEAF SPRINGS

(See Figure 32-20-1)

- (a) Position the tail wheel springs on the fuselage with long bolt (C) and hold in place with a washer (B) and a nut (A).
- (b) Install the small bolts (G), clamp (D), and small washers (F) with the small nuts (E) only finger tight.
- (c) Insert the bushings (K, L) into the tail wheel assembly, if they were removed.
- (d) Insert the bolts (I, J) through the bushings and tail wheel assembly.
- (e) Hold in place with two washers (B) and two large area nuts (H).
- (f) Tighten the large area nuts (H) to 270-300 in/lbs.
- (g) Tighten the nut (A) to 270-300 in/lbs.
- (h) Tighten the small nuts (E) to 70-100 in/lbs.
- (i) Reconnect the chain links to the tail wheel arms. The springs and chains should neither be slack nor have tension when the wheel is centered. It may be necessary to adjust the number of chain links to achieve this.
- (j) Lower the tail section to the ground.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

32-41 MAIN WHEELS AND TIRES

TABLE OF CONTENTS

- 1. GENERAL.....2
- 2. MAINTENANCE PRACTICES2
 - A. MAIN WHEELS2
 - (1) REMOVAL.....2
 - (2) WHEEL DISASSEMBLY3
 - (3) INSPECTION5
 - (4) WHEEL ASSEMBLY6
 - B. TAIL WHEEL7
 - (1) DISASSEMBLY8
 - (2) INSPECTION8
 - (3) REASSEMBLY OF TAIL WHEEL.....8

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The main wheels are of aluminum construction and are designed to be used with tires and tubes. The standard CC18-180 is equipped with 8.50 X 6-6 tires. Larger tires are offered as optional equipment.

2. MAINTENANCE PRACTICES

A. MAIN WHEELS

(1) REMOVAL

- (a) Chock the main wheel on the opposite side of the landing gear that is to be worked on. Chock the tail wheel. It is not recommended to carry this work out in windy conditions.
- (b) Remove the hubcap and the axle nut cotter pin.
- (c) Cut the safety wire and remove the brake back plate bolts.
- (d) Place a jack under the axle and raise the tire off the ground (See Chapter 07-00).
- (e) Remove the axle nut and wheel.
- (f) The bearings can be removed, cleaned and inspected without disassembling the wheel and removing the tire.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(2) WHEEL DISASSEMBLY

See Figure 32-41-1

CAUTION

Care must be taken to avoid damaging wheel halves when breaking tire beads loose.

WARNING

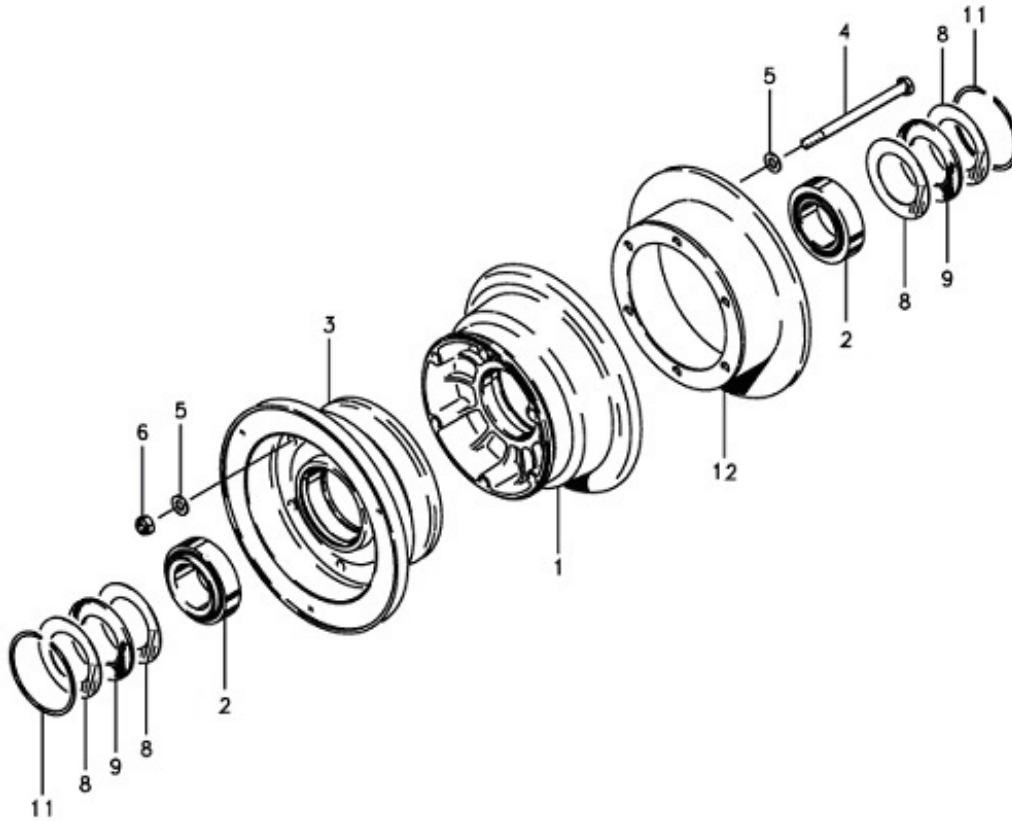
DO NOT ATTEMPT TO REMOVE VALVE CORE UNTIL TIRE HAS BEEN COMPLETELY DEFLATED. THE VALVE CORE WILL BE EJECTED AT A HIGH VELOCITY IF IT IS UNSCREWED BEFORE THE AIR PRESSURE HAS BEEN RELEASED.

WARNING

INJURY CAN RESULT WHEN ATTEMPTING TO SEPARATE WHEEL HALVES WITH THE TUBE INFLATED.

- (a) Deflate the tire.
- (b) Break the tire bead loose from the wheel.
- (c) Remove the wheel halve nuts (6) and washers (5).
- (d) Pull the wheel halves (1, 3) apart being careful with the tubes valve stem.
- (e) Remove the snap ring (11), grease seals (8, 9) and bearing (2). Repeat on other wheel half.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL



- | | | | |
|----------------------|-----------------|-------------------------|-----------------|
| 1 - Inner Wheel Half | 4 - Bolt (6) | 7 - Tire | 10 - Tube |
| 2 - Bearing | 5 - Washer (12) | 8 -Grease Seal Ring (4) | 11 - Snap Ring |
| 3 - Outer Wheel Half | 6 - Nut (12) | 9 -Grease Seal Felt (2) | 12 - Brake Disc |

Figure 32-41-1 – Wheel

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(3) INSPECTION

(f) Axle

- Visually inspect the axle to make sure there are no cracks or grooves.

(g) Tire and Tube

- Visually inspect the tires inside and outside for cuts, uneven or excessive wear, and penetration by foreign objects.
- Visually inspect the inner tube for wear, cuts or cracks. Pay close attention to the valve stem base.
- The tire should be removed when the tread is worn to the base of a groove. Tires with wear through the top fabric layer can only remain in service long enough to return to a maintenance base to be replaced.

(h) Wheel Halves

- Inspect the wheel halves for cracks or corrosion.

(i) Discs

- Inspect the brake disc attachment points for cracking or distortion.
- Minimum disc thickness is 0.220 in.

(j) Bearings

- Clean all metal parts (including the bearings) in a cleaning solution. Dry all parts with compressed air.
- Inspect the bearing and races for wear or damage. Replace if necessary.

(k) Replace unserviceable parts as required.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(4) WHEEL ASSEMBLY

- (l) If a new tire or tube is used or the old one is sticky, dust the inside of the tire lightly with talcum powder.
- (m) Inflate the tube, inside the tire, with enough air to start to fill it out so it will not be pinched between the wheel halves.
- (n) Insert the outboard wheel half (1) over the valve stem and into the tire.
- (o) Mount the inner wheel half (1) onto the outer wheel half (3).
- (p) Secure the brake disc (12) using six bolts (4) with a washer (5) under each head.
- (q) Place a washer (5) and nut (6) on each bolt (4) and torque to 85-95 in/lbs.
- (r) Inflate the tires per recommended pressure (Reference Chapter 12-00).
- (s) Allow time for the air trapped between the tube and tire to escape and recheck the pressure.
- (t) Pack the bearings with grease (MIL-G-81322E).
- (u) Insert the bearing (4), inner grease seal ring (8), grease seal felt (9), outer grease seal ring (8) and secure with a snap ring (11). Repeat on the opposite side.

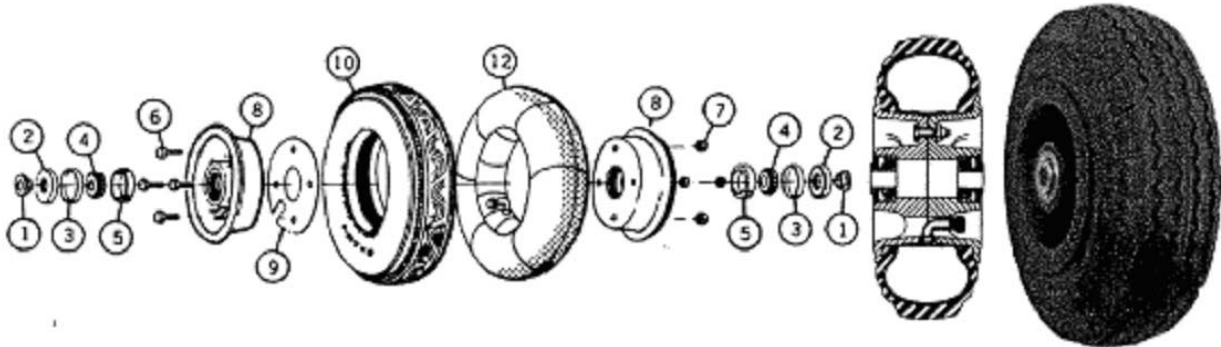
(5) MAIN WHEEL INSTALLATION

- (a) Place the wheel on axle and tighten the axle nut so the tire will turn 1 ½ -2 times after a good spin.
- (b) Safety with a cotter pin.
- (c) Verify the tire pressure. Reference Chapter 12-00.
- (d) Safety the axle nut with a cotter pin. Verify before attaching the hubcaps.
- (e) Position the brake back plates, insert the bolts, and torque to 65-75 in/lbs.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

- (f) Safety the bolts in pairs with 0.032 safety wire.
- (g) Lower the aircraft to the ground.

B. TAIL WHEEL



- | | | | |
|---------------------|------------------|------------|-----------|
| 1 - Spacer | 4 - Bearing | 7 - Nut | 10 - Tire |
| 2 - Grease Retainer | 5 - Bearing Race | 8 - Hub | 12 - Tube |
| 3 - Inner Spacer | 6 - Bolt | 9 - Gasket | |

Figure 32-41-2 – Tail Wheel Assembly

CAUTION
Care must be taken to avoid damaging wheel halves when breaking tire beads loose.

WARNING
DO NOT ATTEMPT TO REMOVE VALVE CORE UNTIL TIRE HAS BEEN COMPLETELY DEFLATED. IF IT IS UNSCREWED BEFORE THE AIR PRESSURE HAS BEEN RELEASED, THE VALVE CORE WILL BE EJECTED AT A HIGH VELOCITY.

WARNING
INJURY CAN RESULT WHEN ATTEMPTING TO SEPARATE WHEEL HALVES WITH THE TUBE INFLATED.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Refer to Figure 32-41-2

(1) DISASSEMBLY

- (a) Deflate the tube (12).
- (b) Break the tire bead loose from the wheel.
- (c) Remove the wheel half nuts (5) and bolts (6).
- (d) Pull the wheel hubs (8) apart being careful with the valve stem.
- (e) Remove the spacer (1), grease retainer (2), inner spacer (3) and bearing (4) from each hub.

(2) INSPECTION

- (a) Wipe the tire and the tube with a dry cloth. If the tire or the tube is spotted with grease, oil or other deposits, wash in a solution of soap and water. Rinse with clean water and dry with a clean cloth.
- (b) Visually inspect the tire inside and out for cuts, uneven or excessive wear, and penetration by foreign objects. Replace if the tire is in poor condition.
- (c) Visually inspect the inner tube for wear, cuts or cracks taking a close look at the valve stem base. Replace if the tube is in poor condition.
- (d) The tire should be removed when the tread is worn to the base of a groove. Tires that are worn through the top fabric layer can only remain in service long enough to return to a maintenance base to be replaced.
- (e) Clean all metal parts (including the bearings) in a cleaning solution. Dry all parts with compressed air.
- (f) Inspect the bearing and races for wear or damage. Replace if necessary.

(3) REASSEMBLY OF TAIL WHEEL.

- (a) Dust the inside of tire lightly with talcum powder.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (b) Place the tube (12) in the tire (10).
- (c) Insert the wheel hubs (8) with the gasket (9) in between into the tire and tube assembly. Make certain the gasket (9) is properly aligned with tube valve and hub bolt holes.
- (d) Insert 4 bolts and engage with 4 nuts. Torque to 80-100 in/lbs.
- (e) Inflate the tire to 38 pounds.
- (f) Pack the bearings with grease (MIL-G-81322E).
- (g) Insert a bearing (4), inner spacer (3), grease retainer (2) and spacer (1) into the each wheel hub.
- (h) To install on the airplane see Chapter 32-20 2.A.(7)(J).

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

32-42 BRAKES

TABLE OF CONTENTS

1	GENERAL.....	2
2	MAINTENANCE PRACTICES	3
2.1	BRAKE CALIPERS	3
2.1.1	REMOVAL	4
2.1.2	INSPECTION.....	4
2.1.3	INSTALLATION	4
2.2	MASTER CYLINDER AND PARKING BRAKE VALVE.....	5
2.2.1	REMOVAL	5
2.2.2	INSPECTION.....	6
2.2.3	INSTALLATION	7
2.3	PARKING BRAKE VALVE.....	7
2.3.1	REMOVAL	7
2.3.2	INSPECTION.....	7
2.3.3	INSTALLATION	7
2.4	SETTING BRAKE PEDAL TRAVEL	8
2.4.1	PROCESS	8

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1 GENERAL

The CC18-180 is equipped with two independent hydraulic brake systems. One system operates the brakes on the left main wheel and the other on the right. They are individually activated by floor-mounted pedals, located at the pilot's and the co-pilot's heels.

Each system has a master cylinder that is attached to the co-pilot's brakes. The master cylinders push hydraulic fluid to the calipers where two pistons are displaced and force the brake linings against a disc. Because it is a closed system, changes in temperature, lining wear or leaking fluid greatly affect the brake operation.

Each main wheel utilizes a Cleveland 30-60A single cylinder, dual piston caliper, secured by an eight-hole backing plate. The parking brakes consist of two Scott 4500A1 valves with hand-operated levers located under the pilot's seat. The parking brake valves are connected to the master cylinders. To operate the parking brakes, both brake pedals must be pressed and both valve levers moved aft.

For further information on the Cleveland Brakes, refer to the Cleveland Wheels & Brakes Manual AWBCMM0001-10/USA.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2 MAINTENANCE PRACTICES

2.1 BRAKE CALIPERS

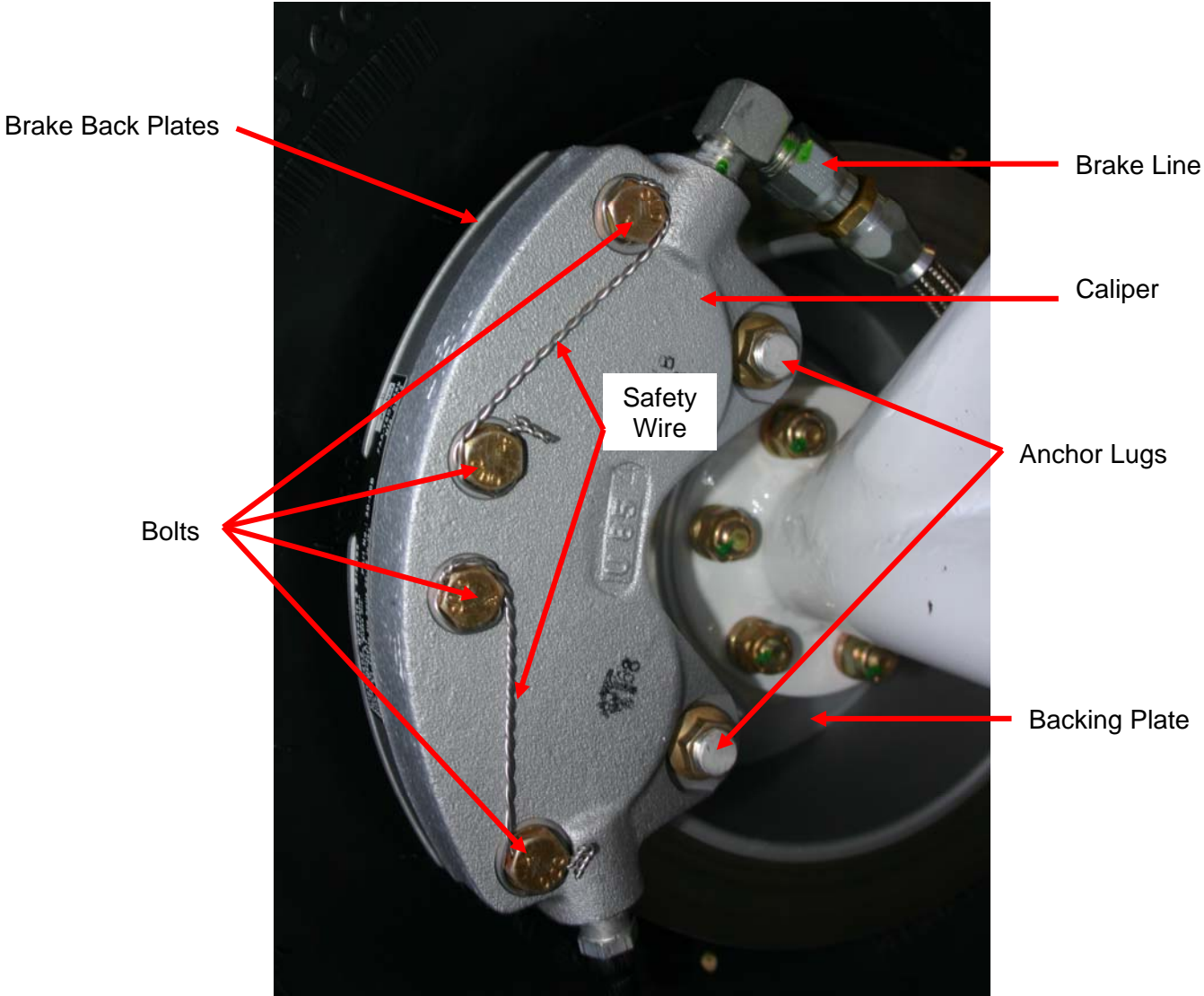


Figure 32-42-1 – Brake Calipers

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2.4.1 REMOVAL

- a. Cut the safety wire and remove the brake back plate bolts.
- b. Disconnect the brake line from the caliper.
- c. Separate the caliper from backing plate.

2.4.2 INSPECTION

- a. Inspect the brake linings for loose rivets, cracks and uneven wear.
- b. The minimum lining thickness is 0.100 inches.
- c. Inspect the calipers for leaks and excessive corrosion.
- d. If leaks are present at the pistons, overhaul the caliper.
- e. Inspect the brake backing plate for cracks or excessive wear.
- f. Replace the parts if their condition so dictates.

2.4.3 INSTALLATION

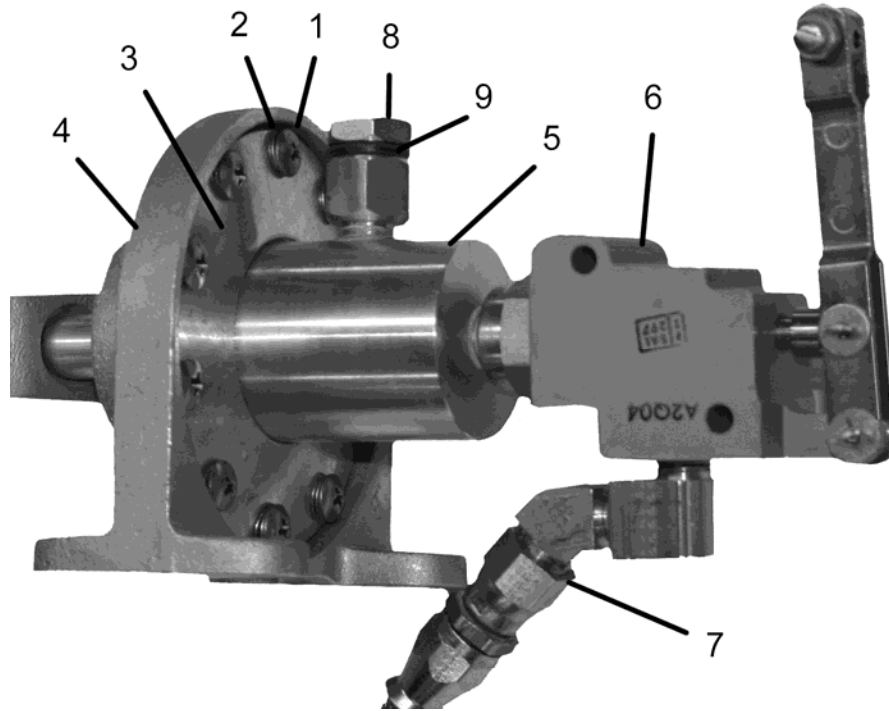
- a. Position the brake pressure plate on the caliper so the linings are facing the disc.
- b. Insert the caliper anchor lugs into the backing plate holes.
- c. Connect the brake line and tighten. Confirm that there is no resistance on the wheel.
- d. Position the brake back plates, insert the bolts, and torque to 65-75 in/lbs.
- e. Safety bolts with 0.032 safety wire.
- f. Make sure the wheel turns freely.

NOTE

Verify that there is positive clearance between the brake pad lining and disc.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

2.2 MASTER CYLINDER AND PARKING BRAKE VALVE



- | | | |
|-----------------|-------------------------|----------------|
| 1 - Screw | 4 - Base | 7 - Brake Line |
| 2 - Lock Washer | 5 - Master Cylinder | 8 - Cap |
| 3 - Faceplate | 6 - Parking Brake Valve | 9 - Gasket |

Figure 32-42-2 - Brake Master Cylinder and Parking Brake Valve

2.2.1 REMOVAL

- Remove the screws (1) with lock washers (2) in the faceplate (3) that secures the master cylinder (5) to the base (4).
- Disconnect the brake line (7) from the fitting on the bottom of the parking brake valve (6).
- Remove the master cylinder (5) with the parking brake (6) attached.
- The master cylinder (5) can be unscrewed from the parking brake valve (6) if needed.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

2.2.2 INSPECTION

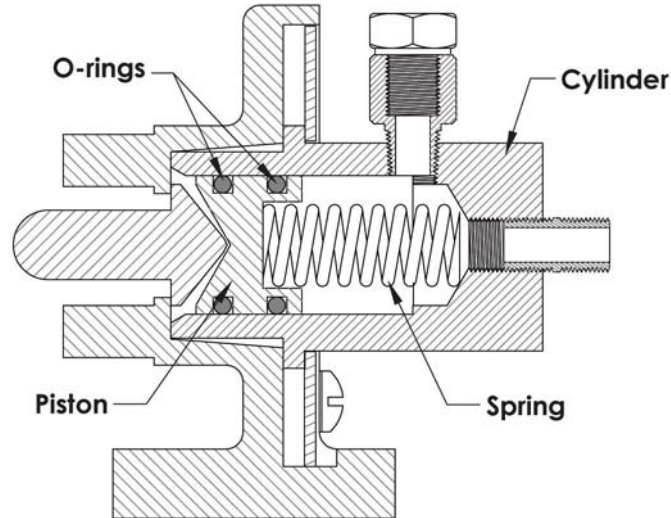


Figure 32-42-3 - Master Cylinder

- a. Inspect the piston and the inside of cylinder for grooving or wear. Only minor scratches may be removed using fine emery cloth.
- b. Inspect the O-rings for cuts or worn areas. Replace as needed.
- c. Lubricate the O-rings and the piston with brake fluid prior to reassembly.
- d. Ensure that the spring is resting in the piston on reassembly.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2.2.3 INSTALLATION

See Figure 32-42-1

- a. If the parking brake valve was separated from the master cylinder, apply a thin coat of EZ TURN Lubricant to the threads on the front fitting. Tighten enough so that it does not to leak but not so tight so as to break the nipple. The parking brake handle and filler standoff must point up.
- b. Reconnect the brake line (7) to the fitting on the bottom of the parking brake valve (6) and tighten.
- c. Reposition the master cylinder (5) against the base (4).
- d. Reinstall the screws (1) with new lock washers (2) under the head through the faceplate (3) into the base (4).
- e. Rotate the cylinder (5) so that the vent/filler hole is pointed straight up.
- f. Tighten the screws (1), in several steps to 28-32 in/lb. in an alternating pattern.

2.3 PARKING BRAKE VALVE

The parking brake valve locks the brake fluid pressure in the system. It is released when the brakes by pressing the brake pedals or by moving the parking brake lever forward.

2.3.1 REMOVAL

See Figure 32-42-2

- a. The parking brake valve (6) is attached to the master cylinder (5). Remove master cylinder (5) as described in 32-42 2.B.(1).
- b. Unscrew the parking brake valve (6) from the master cylinder (5).

2.3.2 INSPECTION

- a. Visually check for damage or leaks. Replace if condition dictates.

2.3.3 INSTALLATION

- a. Reinstall as described in 32-42 2.B.(3).

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2.4 SETTING BRAKE PEDAL TRAVEL

The brake system is designed to be unpressurized unless the brake pads are engaged. To keep the system unpressurized, the piston inside the master cylinder must have room to move with the thermal expansion and contraction of the hydraulic fluid.

2.4.1 PROCESS

- a. Remove the vent cap from the master cylinder.
- b. Fill the line with hydraulic fluid from the bottom using an oil can filled with Mil-H-5606.
- c. Install the vent cap.
- d. Check the brake system for sponginess.
- e. If sponginess occurs open the bleeder screw on the brake and let the trapped air out. Hold pressure on brake while bleeding.
- f. Close the bottom bleeder screw when all air is out of the system.
- g. Once again, check the brake for sponginess.
- h. If the brakes are spongy repeat steps (e) through (g) until the brakes are firm.
- i. Verify that travel is correct for brake (1.5" to 2.1").
- j. Put masking tape, or the equivalent, on the floorboard and mark the beginning location of the outermost point of the brake pedal.
- k. Mark both 1.5" and 2.1" in front of the first mark as shown in Figure 32-42-4.
- l. Check pedal travel, it must be between the marks; if travel is too short perform steps (i)(d) – (i)(f).
- m. Open the bleeder assembly on the brake calipers while holding pressure on the brakes.
- n. Let out a few drops of fluid and close the bleeder assembly.
- o. Check that the travel sits somewhere between the 1.5" and 2.1" marks. If not repeat steps (i)(d) – (i)(f).

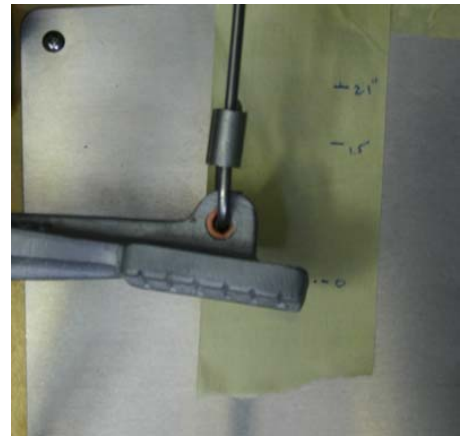


Figure 32-42-4 – Pedal Travel

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

32-60 WIPAIRE 2100A AMPHIBIOUS FLOATS

TABLE OF CONTENTS

1. GENERAL.....	2
2. MAINTENANCE PRACTICES	2
A. INSTALLATION AND REMOVAL OF WIPAIRE 2100A AMPHIBIAN FLOATS.....	2
(1) AIRCRAFT CONFIGURATION	2
(2) INSTALLATION AND REMOVAL	3
B. LAKE AND AIR AMPHIBIAN LANDING GEAR POSITION ADVISORY SYSTEM	3
(1) ADJUSTMENT	3

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

The CC18-180 has the option of being fitted with Wipaire 2100A Amphibious Floats.

This chapter of the maintenance manual will give instructions for the installation and removal of the floats as well as the information necessary for setting the Amphibian Landing Gear Position Advisory System. For instructions for continued airworthiness related to the floats and the landing gear including the brakes, refer to Wipaire manual WIPLINE MODEL 2100 / 2350 FLOAT SERVICE MANUAL.

2. MAINTENANCE PRACTICES

A. INSTALLATION AND REMOVAL OF WIPAIRE 2100A AMPHIBIAN FLOATS

(1) AIRCRAFT CONFIGURATION

- (a) Refer to drawing TC10200 and select the appropriate configuration for the fuselage modifications (Table 32-60-1).

CONFIGURATION	AIRCRAFT SERIAL NUMBER	FUSELAGE DRAWING
A*	0008, 0009, 0011 and Subsequent	Install Floats per TC10400
B**	0003, 0004, 0005, 0006, 0010	Install Floats and Modify Fuselage per TC10500
C**	0001, 0002, 0007	Install Floats and Modify Fuselage per TC10600

Table 32-60-1 - Fuselage Configuration

* Aircraft listed under configuration A do not require fuselage modifications.

** If the fuselage frame on any of the aircraft listed under configurations B or C is changed for a fuselage frame built to drawing TC2800 Rev E or later, install Wipaire 2100A floats per configuration A.

- (b) Select the appropriate drawing for the installation of the control panel depending which of the two panels is selected.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

CONFIGURATION	CONTROL PANEL P/N	INSTALL PER DRAWING	DETAIL
1	TC10701-001	TC10700	Round control panel
2	TC10801-001	TC10800	Square control panel

Table 32-60-2 - Instrument Panel Configuration

(2) INSTALLATION AND REMOVAL

- (a) Install and remove floats in accordance with latest revision of Cubcrafters drawing TC10200.
- (b) Ensure that the changes are entered in the aircraft log book's weight and balance section.

B. LAKE AND AIR AMPHIBIAN LANDING GEAR POSITION ADVISORY SYSTEM

(1) ADJUSTMENT

There are only two adjustments: Volume and airspeed threshold. Both are located on the side of the system controller unit. A small, flat-bladed screwdriver is required to make the adjustments. The airspeed adjustment switch is found on the side of the electronics box labeled "AIRSPEED."

- The airspeed threshold should be set to 65 mph (57 kts) minimum or 70 mph (61 kts) maximum.
- To increase the airspeed threshold, turn the switch clockwise and conversely.
- To lower the airspeed threshold, turn the switch counter-clockwise. The lowest setting is 50 mph (43 kts) and increases in 5 mph (4.4 kts) increments at each detent.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

32-61 WIPAIRE 2100S SEAPLANE FLOATS

TABLE OF CONTENTS

1. GENERAL.....	6
2. MAINTENANCE PRACTICES	6
A. INSTALLATION AND REMOVAL OF WIPAIRE 2100S SEAPLANE FLOATS	6
(1) AIRCRAFT CONFIGURATION	6
(2) INSTALLATION AND REMOVAL	6

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The CC18-180 has the option of being fitted with Wipaire 2100S Seaplane Floats.

This chapter of the maintenance manual will give instructions for the installation and removal of the floats. For instructions for continued airworthiness related to the floats, refer to Wipaire manual WIPLINE MODEL 2100 / 2350 FLOAT SERVICE MANUAL.

2. MAINTENANCE PRACTICES

A. INSTALLATION AND REMOVAL OF WIPAIRE 2100S SEAPLANE FLOATS

(1) AIRCRAFT CONFIGURATION

- (a) Select the appropriate configuration for the fuselage modifications (Table 32-61-1).

CONFIGURATION	AIRCRAFT SERIAL NUMBER	FUSELAGE DRAWING
A*	0008, 0009, 0011 and Subsequent	Install Floats per TC4200
B**	0003, 0004, 0005, 0006, 0010	Modify Fuselage per TC10016, 125700, and 125701 Install Floats per TC4200
C**	0001, 0002, 0007	Modify Fuselage per TC10016, 125700, and 125701 Install Floats per TC4200

Table 32-61-1 - Fuselage Configuration

* Aircraft listed under configuration A do not require fuselage modifications.

** If the fuselage frame on any of the aircraft listed under configurations B or C is changed for a fuselage frame built to drawing TC2800 Rev E or later, install Wipaire 2100S floats per configuration A.

(2) INSTALLATION AND REMOVAL

- (a) Install and remove floats in accordance with latest revision of Cub Crafters drawing TC4200.
- (b) Ensure that the changes are entered in the aircraft log book's weight and balance section.

CHAPTER 33-00

LIGHTS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

33-00 LIGHTS

TABLE OF CONTENTS

- 1 GENERAL..... 2
- 2. TROUBLESHOOTING 2
- 3. MAINTENANCE PRACTICES..... 2
 - A. LANDING AND TAXI LIGHT 2
 - (1) GENERAL..... 2
 - (2) REMOVAL 3
 - (3) INSTALLATION 3
 - B. NAVIGATION LIGHTS..... 3
 - (1) GENERAL..... 3
 - (2) REMOVAL 3
 - (3) INSTALLATION 3
 - C. ANTI COLLISION..... 4
 - (1) GENERAL..... 4
 - (2) REMOVAL 4
 - (3) INSTALLATION 4
 - D. CABIN LIGHTING 4
 - (1) GENERAL..... 4
 - i) PLACARD LIGHTS 5
 - ii) FUEL GAUGE POST LIGHTS..... 5
 - iii) INSTRUMENT LIGHTS 6
 - iv) DOME LIGHT 6
 - v) MAP LIGHTS..... 6

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1 GENERAL

This chapter contains information for troubleshooting, removal, installation and adjustments of the interior and exterior lighting systems used on the airplane. Exterior lighting consists of standard navigation lights and an anti-collision light on the rudder. There are two landing lights on the leading edge of the left wing. The flight instruments and avionics equipment are either integrally lighted or have lights around the bezel of instrument. The instrument lights are controlled by two separate dimmers. There are two map lights located on the upper right and left panels in the cockpit.

WARNING:
ALWAYS DISCONNECT THE POWER SUPPLY PRIOR TO SERVICING ANY PORTION OF THE ELECTRICAL SYSTEM. ENSURE THAT THE MAIN POWER SWITCH IS IN THE OFF POSITION; THEN REMOVE THE NEGATIVE BATTERY CABLE FOLLOWED BY THE POSITIVE BATTERY CABLE.

CAUTION:
Always wear clean cotton gloves when working with light bulbs. Never allow the glass portion of the light bulb to come into contact with exposed skin. Oils from the exposed skin will cause premature bulb failure.

2 TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Bulb Does Not Light Up	Bulb Burnt Out	Replace Bulb
	Circuit Breaker Tripped	Reset Circuit Breaker
	Loose Wiring	Check Wiring To Bulb

3 MAINTENANCE PRACTICES

3.1 LANDING AND TAXI LIGHT

GENERAL

The landing lights consist of two 12-volt 100 watt bulbs mounted in the left wing leading edge. The outboard light points down for taxiing and the inboard shines ahead for landing. The lights are covered with a Plexiglas lens the same shape of the leading edge. A breaker switch on the instrument panel turns on the lights.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(1) REMOVAL

- (a) Remove lens trim strips.
- (b) Remove 4 screws that hold the front mounting bracket.
- (c) Disconnect wires from bulb and remove bulb.

(2) INSTALLATION

- (a) Attach bulb to wires. On S/N 0056 and on, verify the polarity on LED lights is correct.
- (b) Reposition front mounting plate and secure with 4 screws.
- (c) Reattach the lens and trim strips being very careful not to crack the Plexiglas.

A. NAVIGATION LIGHTS

(1) GENERAL

The colors of the navigation lights conform to standard aeronautical practice. The left wing navigation light is red, the right wing navigation light is green and the tail navigation light is white. A breaker switch on the instrument panel turns on all three lights.

(2) REMOVAL

- (a) Wing tip - Remove the light shield lens and turn the bulb a quarter turn to unscrew. Be careful not to drop the glass lens or the gasket.
- (b) Tail - Remove the lens retainer and lens and turn the bulb a quarter turn to unscrew. Be careful not to drop the glass lens or the gasket.

CAUTION

Only approved navigation lights may be installed. The rudder navigation light affects the balance of the rudder.

(3) INSTALLATION

- (a) Wing tip - Insert the bulb and reinstall the lens and the shield.
- (b) Tail - Insert a bulb and reinstall the lens and the lens retainer.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

B. ANTI COLLISION

(1) GENERAL

- (a) The anti collision beacon is a self-contained flashing light with a red and white lens mounted on the top of the rudder. A breaker switch on the instrument panel turns it on. For aircraft serial number 0056 and on and aircraft modified in accordance with Service Letter 002 a portion of the red lens is masked. This part must face forward.

(2) REMOVAL

- (a) Loosen the plastic clamp at the base of light.
- (b) Remove the lens.
- (c) Remove the bulb.

(3) INSTALLATION

- (a) Install the bulb, being careful not to bend or misalign the wire bulb contacts.
- (b) Install the lens with the white half facing aft.
- (c) Secure by tightening the clamp screw.

C. CABIN LIGHTING

(1) GENERAL

- (a) Aircraft serial number 0056 and on and aircraft modified in accordance with Service Letter 002 are equipped with interior lights for night VFR operations. The interior contains lighting for fuel, placards, and instruments as well as a dome light and two maps lights. The map lights and instrument lighting are on the same circuit as the navigation lights. The intensity of the instrument lights may be changed by means of two controls located on the instrument panel.
- (b) The upper dimmers control:
 - Large knob: The backlight to the digital readouts of the engine instruments and placards.
 - Small Knob: The operational range LED lights on the perimeter of the engine instruments, placards and emergency hand pump light (for amphibious float option only).
- c. The lower dimmer controls:
 - Large knob: Fuel sight gauges and map lights.
 - Small knob: Navigation instruments.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (c) Aircraft serial numbers 0001 through 0055 were equipped from the factory with two dimmers and one map light. The map light and instrument lighting are on the same circuit as the navigation lights. However, the instrument lights have two knob-controlled rheostats located on the instrument panel. Dimmer #1 controls the instrument lighting and Dimmer #2 controls the warning lights on the oil pressure and temperature gauge. See electrical schematics in Section 24-00 Electrical Power for more information.

i) PLACARD LIGHTS

(1) REMOVAL

- (a) If LED's have been determined as faulty, the faulty LED harness needs replacing. The LED's are grouped onto the following harnesses:
 - (a) Fuel selector and trim indicator.
 - (b) Mixture and dimmer knobs.
 - (c) Circuit breakers and instrument panel switches.
- (b) Remove the LED's from the rear of placards by pulling the bulbs from the fiber optic sleeves. (Fuel selector and trim indicator placards will need to be unscrewed first)
- (c) Disconnect and remove the LED harness.

(2) INSTALLATION

- (a) Replace wiring harness.
- (b) Reattach light(s) to fiber optic sleeves.
- (c) Install placard if necessary.

ii) FUEL GAUGE POST LIGHTS

(1) REMOVAL

- (a) Disconnect wire from post light.
- (b) Unscrew nut and lock washer from outboard face of wing root panel.
- (c) Remove post light.

(2) INSTALLATION

- (a) Install post light.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(b) Install lock washer and nut.

(c) Connect wire to post light.

iii) INSTRUMENT LIGHTS

(1) GENERAL

(a) Instrument lighting is contained in either the gauge itself or a ring located between the gauge and the panel. Contact CubCrafters for replacement.

iv) DOME LIGHT

(1) REMOVAL

(a) Remove (2) screws from the front frame.

(b) Remove (4) screws from the main body.

(c) Disconnect wiring from switch and remove light.

(2) INSTALLATION

(a) Reattach wiring.

(b) Install main light body.

(c) Install light frame.

v) MAP LIGHTS

(1) REMOVAL

(a) Disconnect LED harness.

(b) Remove nut and washer from outboard face of wing root panel.

(c) Remove map light from panel.

(2) INSTALLATION

(a) Install map light and washer.

(b) Attach washer and nut, locating panel between the (2) nylon washers. (Do not over tighten to allow map light adjustment)

(c) Connect LED harness.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

vi) EMERGENCY HAND PUMP LIGHTS (Amphibious Float Option Only)

(3) REMOVAL

- (d) Disconnect LED harness.
- (e) Remove nut and washer from outboard face of seat base.
- (f) Remove light from panel.

(4) INSTALLATION

- (g) Install light and washer.
- (h) Attach washer and nut, locating panel between the (2) nylon washers. (Do not over tighten to allow light adjustment)
- (i) Connect LED harness.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

CHAPTER 34-00

PITOT STATIC

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

34-00 PITOT STATIC SYSTEM

TABLE OF CONTENTS

1. GENERAL.....	2
2. TROUBLESHOOTING.....	5
3. MAINTENANCE PRACTICES	6
A. ATC TRANSPONDER TEST	6
B. ALTIMETER STATIC SYSTEM TEST AND INSPECTION.....	6
(1) STATIC SYSTEM LEAK TEST	6
(2) PITOT SYSTEM LEAK CHECK.....	6

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

This section covers the Pitot and Static systems. These systems provide the information required by the airspeed indicator, the altimeter, the vertical speed indicator and the altitude encoder.

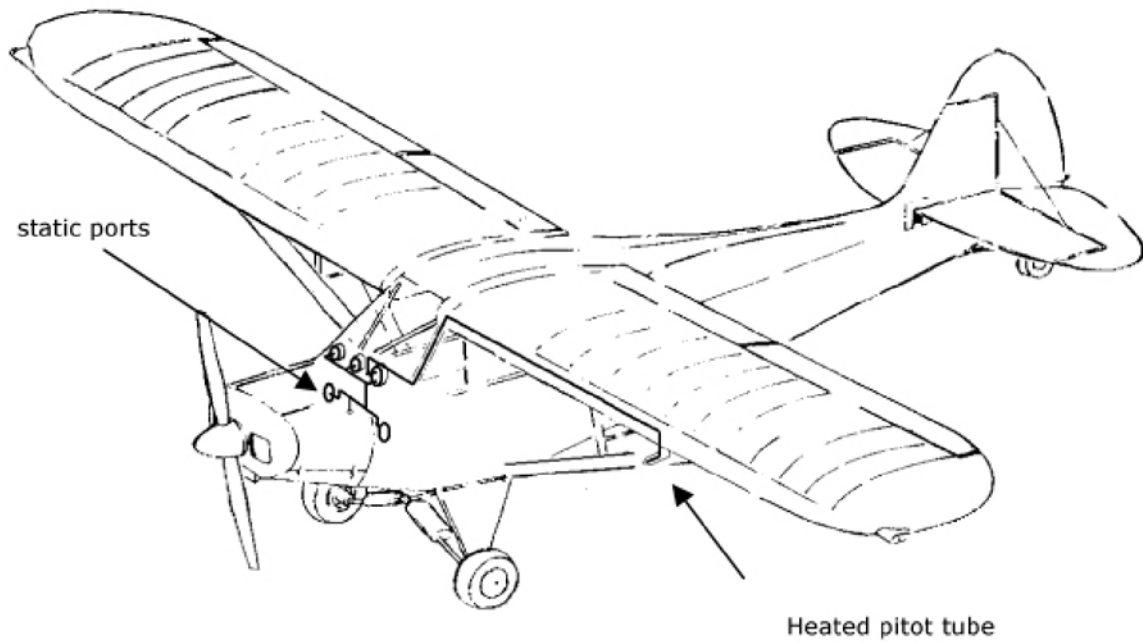
The pitot system senses dynamic pressure through a tube that is aligned with the flow of air and is located under the left wing. The tube is heated.

The static pressure orifices are located on the both sides of the fuselage, just behind the engine. There are two orifices to counteract the effects of yaw. The alternate static source valve is found on the lower left side of the instrument panel. It provides an alternate source of static air pressure from inside the cabin in the event the normal static sources are plugged.

NOTE

The alternate static source is to be used when the normal system is inoperative or malfunctioning. When alternate static air is used, instrument readings will vary from normal readings due to static air being obtained from the cabin.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



Pitot Static Installation

Figure 34-00-1 - Position of Pitot and Static Sources

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

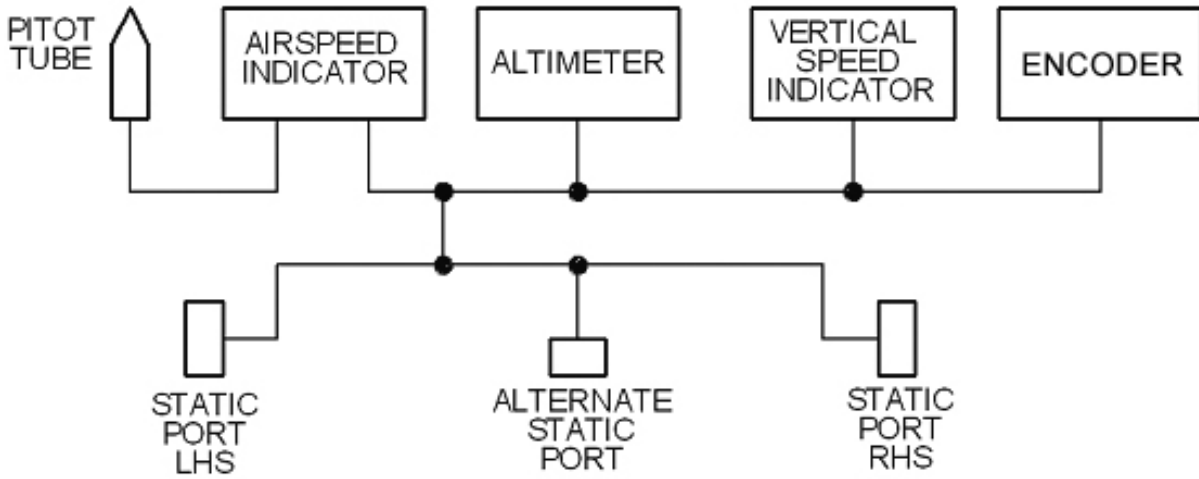


Figure 34-00-2 - Pitot Static System Schematic

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

2. TROUBLESHOOTING

PROBLEM - PITOT STATIC	PROBABLE CAUSE	REMEDY
- Low or sluggish airspeed indication - Normal altimeter and vertical speed indication	- Pitot tube deformed - Leak or obstruction in pitot line	- Repair or replace damaged component
- Incorrect or sluggish response on all three pitot-static instruments	- Leaks or obstruction in static line	- Repair or replace line - Remove obstruction
- Pitot tube does not get Hot	- Circuit breaker out	- Reset circuit breaker
	- Break in wiring	- Test and repair wiring
	- Insufficient current	- Check current drain of element
	- Heating element burned out	- Replace element

PROBLEM – ALTIMETER	PROBABLE CAUSE	REMEDY
- Excess scale error	- Improper calibration adjustment	- Repair or replace damaged component
- Excessive pointer oscillation	- Defective instrument	- Replace or repair instrument
- High reading	- Static system leak	- Inspect static system

PROBLEM – AIRSPEED INDICATOR	PROBABLE CAUSE	REMEDY
- Pointer fails to respond - Indicates improperly or oscillates	- Leak in instrument case	- Replace or repair instrument
	- Obstruction in pitot line	- Check line for obstruction - Replace lines on Gauge and blow out lines
	- Leak in pitot or static lines	- Repair or replace damaged lines - Tighten connections
	- Alternate static source valve open	- Close for normal operation

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

3. MAINTENANCE PRACTICES

A. ATC TRANSPONDER TEST

A transponder test is required every 24 calendar months in accordance with 14 CFR 91.413. The transponder is located in the instrument panel at the bottom of the radio stack. The encoder is mounted to the top of the front right interior panel underneath the instrument panel.

B. ALTIMETER STATIC SYSTEM TEST AND INSPECTION

Static system tests must comply with the requirements of 14 CFR 91.411 and be performed by a rated repair station with the appropriate test equipment. A static leak test should be accomplished whenever a connection has been loosened or an instrument replaced.

(1) STATIC SYSTEM LEAK TEST

- (a) Connect the test equipment directly to a static port and seal off the opposite static port with plastic tape.

CAUTION
Do not blow air through the line toward the instrument panel. This may seriously damage the instruments.

- (b) Apply a vacuum equivalent to 1,000 feet altitude, (differential pressure of approximately 1.07 inches of mercury or 14.5 inches of water) and hold.
- (c) After 1 minute, check that the leak has not exceeded the equivalent of 100 feet of altitude (decrease in differential pressure of approximately 0.0105 inches of mercury or 1.43 inches of water).
- (d) Unseal the static port and disconnect the equipment.

(2) PITOT SYSTEM LEAK CHECK

- (a) Seal the drain hole on the bottom of the pitot tube and connect the pitot pressure opening to a tee to which a source of pressure and manometer or reliable indicator is connected.
- (b) Restrain the hoses to prevent them from moving excessively when the pressure is applied.
- (c) Apply pressure until the airspeed indicator indicates 150 m.p.h. (130 kts) (equivalent to a differential pressure 1.1 inches of mercury or 14.9 inches of water). Hold this pressure and clamp off from the source of pressure. After 1

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

minute, the leakage should not exceed 10 m.p.h. (8.7 kts) (decrease in differential pressure of approximately 0.15 inches of mercury or 2.04 inches of water).

CAUTION:

To avoid rupturing the diaphragm of the airspeed indicator, apply pressure slowly and do not build up excessive pressure in the line. Release pressure slowly to avoid damaging the airspeed indicator.

- (d) If the airspeed indicator reading declines, check the system for leaky hoses and loose connections.
- (e) Inspect the hoses for signs of deterioration, particularly at bends and at the connection points to the pitot mast and airspeed indicator. Replace any hoses that are cracked or hardened. Any time a hose is replaced, perform a pressure check.

CAUTION

Do not apply suction to pitot lines.

- (f) Unseal the drain hole and disconnect the equipment.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

CHAPTER 37-00

VACUUM SYSTEM

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

37-00 VACUUM SYSTEM

TABLE OF CONTENTS

- 1. GENERAL2
- 2. MAINTENANCE PRACTICES3
 - A. VACUUM PUMP3
 - (1) REMOVAL.....3
 - (2) INSPECTION3
 - (3) INSTALLATION.....3
 - B. AIR FILTER.....3
 - (1) REMOVAL.....3
 - (2) INSPECTION3
 - (3) INSTALLATION.....3
 - C. TROUBLESHOOTING4

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The vacuum system is offered as an option on the CC18-180. It powers the attitude gyro and the directional gyro. Air enters the instruments after going through the vacuum filter, then from the instruments air travels to the regulator and finally to the vacuum pump.

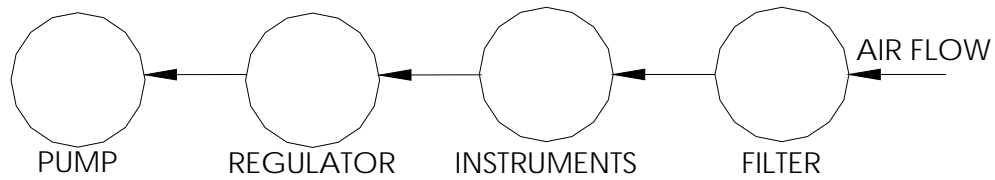


Figure 37-00-1 - Vacuum System Air Flow

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2. MAINTENANCE PRACTICES

A. VACUUM PUMP

(1) REMOVAL

- (a) Disconnect the hoses
- (b) Unbolt from engine

(2) INSPECTION

- (a) Check vacuum pressure: Normal reading us between 4.8 and 5.2 inches of mercury. Check to see if shaft is sheared.

(3) INSTALLATION

- (a) Install pump with a new gasket
- (b) Torque nuts to manufacturers recommended values
- (c) Reconnect hoses

B. AIR FILTER

(1) REMOVAL

- (a) Remove bolt from top of air filter
- (b) Pull out

(2) INSPECTION

- (a) Visually inspect filter for excessive contamination

(3) INSTALLATION

- (a) Install new air filter
- (b) Reinstall bolt

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

C. TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
High Suction	- Filter Clogged - Relief Valve Malfunction	- Replace Filter or Regulator
Normal Suction Gauge Reading, Sluggish or Erratic	- Instrument Air Filters Clogged	- Check Operation with Filters Removed. - Replace Filters.
Low Suction Gauge Readings	- Leaks or Restriction Between Instruments and Relief Valve - Relief Valve Out of Adjustment - Defective Pump	- Check Lines for Leaks - Disconnect And Test Pump - - Repair or Replace Lines - Adjust or Replace Relief Valve - Repair or Replace Pump.
	- Air Filter Dirty	- Check Operation with Filters Removed. - Replace Filters.
Suction Gauge Fluctuates	- Defective Gauge or Sticking Relief Valve	- Check Suction With Test Gauge. - Replace Gauge - Clean Sticking Valve. - If Valve Sticks After Cleaning, Replace Valve

CHAPTER
51-00

STRUCTURES

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

51-00 STRUCTURES

TABLE OF CONTENTS

1.	GENERAL	2
2.	APPROVED FABRIC REPAIR MATERIALS	2
3.	MAINTENANCE PRACTICES	2
A.	INSPECTION OF FABRIC	2
B.	FABRIC REPAIRS	3
(1)	SIZE OF REPAIR AREA	3
(2)	PATCH REPAIR LESS THAN 8 INCHES	4
(3)	PATCH REPAIR MORE THAN 8 INCHES.....	5
(4)	STITCHING	6

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

This chapter contains information and procedures applicable to all fabric repairs as well as information and procedures for aircraft painting and priming.

2. APPROVED FABRIC REPAIR MATERIALS

Description	Supplier
Methyl Ethyl Ketone (MEK)	Local Supplier
Poly-Fiber	Poly-Fiber Aircraft Coating
Poly-Tak	Poly-Fiber Aircraft Coating
Poly-Brush	Poly-Fiber Aircraft Coating
Poly-Spray	Poly-Fiber Aircraft Coating
Flat Rib Lace Cord	Poly-Fiber Aircraft Coating
LOCTITE Depend 330 Adhesive	Cub Crafters or Local Supplier

3. MAINTENANCE PRACTICES

A. INSPECTION OF FABRIC

The polyester fabric used on the CC18-180 is very durable and its longevity depends on maintaining the coating in good shape. Ultraviolet radiation (in other words, direct sunlight) is the main cause of deterioration of the fabric. The fabric is treated at the factory to protect it from this type of radiation.

The fabric covering on the CC18-180 meets the requirements of TSO C-15d/AMS which stipulate that the minimum breaking strength of the fabric should be at least 56 lbs. Testing fabric requires skill and experience and should only be performed by a qualified person who has experience in this matter.

The CC-18-180 has been covered using a process that is proprietary to Cub Crafters. It is similar to the Poly-Fiber Aircraft coating, more commonly referred to as the Stits method.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

B. FABRIC REPAIRS

The decision to repair damage on the fabric or whether to replace the covering on the part will depend upon the extent of the damage and should take into account the aesthetics of the repair.

These repairs require the use of an iron to shrink the fabric. It is very important that only a good quality clothing iron is used.

WARNING
GROUND THE STRUCTURE BEING SANDED OR SPRAYED TO
PREVENT STATIC ELECTRICITY FROM IGNITING VAPORES AND
EXPLODING!

(1) SIZE OF REPAIR AREA

- If the length of the damaged area is 8 inches or more, the patch must overlap the old fabric by at least 2 inches. Repairs longer than 8 inches require at least a 2 inch wide finishing tape over the seams. These tapes should be centered over the seam of the patch.
- If the length of the damaged area is less than 8 inches in length, the patch must overlap the old fabric by at least 1 inch. Finishing tapes are not required over the glued seams unless the patch is on top of the wing.
- For small fabric repairs such as stick or stone damage, where the holes are ½ inch long or less, a patch of already doped and painted fabric with the edges pinked can be used. An overlap of at least ½ inch of patch material over ½ inch of old fabric on all sides is required and it must be secured with Loctite Depend 330 Adhesive or a suitable equivalent.
- Any stitching that is removed during repair must be replaced. Use the methods given in section 3.(B)(4).

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(2) PATCH REPAIR LESS THAN 8 INCHES

- (a) Trim any ragged edges.
- (b) Lay an un-shrunk piece of material over the hole and trace the outline of the patch with a #2 pencil. Make sure to allow for enough overlap as explained earlier. Note that square or rectangular patches are preferable. Cut out the patch with pinking shears.
- (c) Mask off the area outside the patch leaving an extra half-inch or so of working room around the contour of the patch.
- (d) Peel the polyurethane paint off and clean all the coatings inside the masked area with MEK down to the bare fabric.
- (e) Glue the patch to the old fabric with Poly-Tak and allow it to dry.
- (f) With an iron set to 225°F, smooth the glued areas.
- (g) Heat-shrink the area of the patch over the hole with a 350°F iron. This acts as a shrinking panel to re-tighten the fabric in the area of the repair. Use a piece of cardboard as a shield to keep the iron off the glued areas, if needed.
- (h) Poly-Brush requires two applications. Each application consists of 2 coats.
 - The first coat should be brushed on to penetrate the fabric.
 - After the first coat has flashed off, apply the second coat by brushing or spraying on then allow it to dry.
 - If finishing tapes are needed, attach them with Poly-Brush.
 - Smooth the finish tapes with a hot iron.
 - Make a second application of Poly-Brush (2 coats) allowing it to flash off in between coats. The Poly-Brush may all be brushed on if it is a small patch or sprayed if it is larger or in a high visibility area.
- (i) Make 2 applications of Poly-Spray.
- (j) For the first application;
 - Blow and tack off the covering to be sure it is as dust free as possible.
 - Spray or brush the first coat of Poly-Spray. Allow to dry for approximately 15 minutes.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- Spray or brush the second coat of Poly-Spray and make sure it is dry before sanding.
- (k) For the second application;
- Smooth any edges, which may be sticking up, using a small hot iron.
 - Smooth tape and doubler edges using dry 320 grit sandpaper to remove surface dust bumps.
 - Blow and tack off the covering to be sure it is as dust free as possible.
 - Spray or brush the third coat of Poly-Spray and let dry for approximately 15 minutes.
 - Spray or brush the fourth coat of Poly-Spray and let dry completely before sanding.
- (l) Paint to match original paint.
- (3) PATCH REPAIR MORE THAN 8 INCHES
- (a) For large fabric repairs such as a wing tip, start at the last good rib, or at a convenient location close to the damaged area, removing the old finish tapes.
- (b) Cut the rib laces.
- (c) Clean off all the coatings with MEK down to the fabric so that there is at least a 2 inch overlap over the rib.
- (d) Glue a whole new piece of fabric to cover the wingtip with a 2 inch overlap over the rib area.
- (e) Heat shrink.
- (f) Apply the first application of Poly-Brush as described previously.
- (g) Secure the fabric to the rib, in the same manner it was previously, by rib stitching or with broad-head pop rivets. For rib stitching see the instructions at the end of the Section.
- (h) Apply tapes as described previously.
- (i) Apply the second application of Poly-Brush as described previously.
- (j) Then apply Poly-Spray as described previously.
- (k) Paint to match original paint.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(4) STITCHING

A modified seine knot will be used for stitching and the knots and stitches will be hidden under the fabric. The following text and sketches describe how this is accomplished.

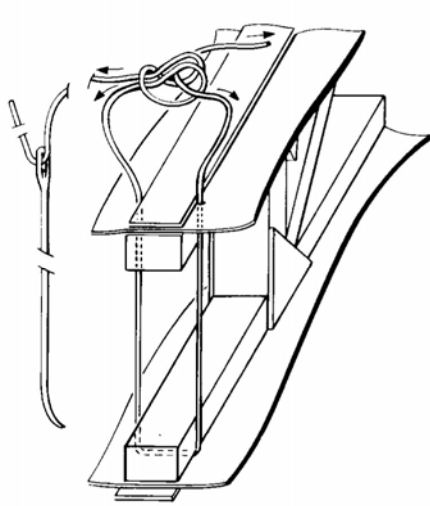
Tie the first loop with a square knot as illustrated in Step 1 (Figure 1) and secure the knot with a half hitch on each side after the lacing is pulled tight around the rib (Step 2 Figure 1). Then route the needle under the fabric and out through the next lace location, then back down through the wing as illustrated in Steps 3 and 4 (Figure 1). Tie a modified seine knot as illustrated in Steps 5 through 11 (See Figure 2 and Figure 3).

(1) Rotate each lace loop to place the knot at the side of the rib cap to reduce the protrusion and aerodynamic interference before moving to the next lace location, then route the cord under the fabric to the next lace location as illustrated in Step 3 and 4 (Figure 1). Cut the cord end off leaving a minimum of 1/4-inch stub pulled inside. Lacing tension should be uniform.

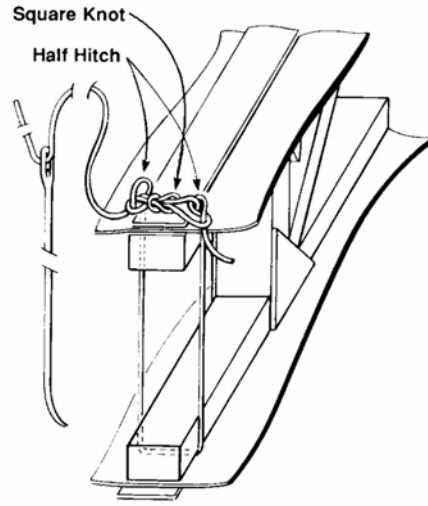
(2) Repeated pulling of long lengths of lacing cord may remove wax coating from the cord and cause fraying. Convenient lengths of rib lacing cord may be used to lace long or thick ribs. Tie off the end of each length with a half hitch as illustrated in Step 10 and 11 (See Figure 3), or if needed, separate lengths of lacing cord may be joined by using the splice knot illustrated in Figure 4.

(3) Lacing is installed through other components, where applicable, in the same manner as a wing. Single, wide space lace attachments, usually used on empennage surfaces, are tied with a square knot and half hitch on each side, the same as a starting wing rib lace illustrated in Steps 1 and 2 (Figure 1). The lace may be rotated to place the knot under the fabric before cutting the cord.

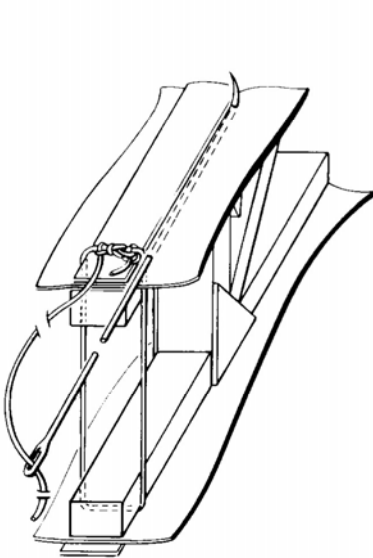
**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



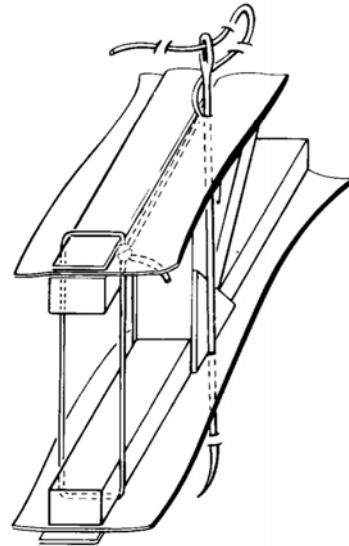
Step 1. Tie a square knot by passing the short end of the cord thru the fold-back loop, as illustrated.



Step 2. Secure the tight square knot with a half hitch at each side.



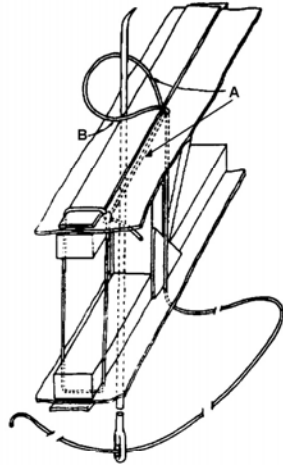
Step 3. Route the needle back thru the right hand hole and exit at the next pre-punched lacing location.



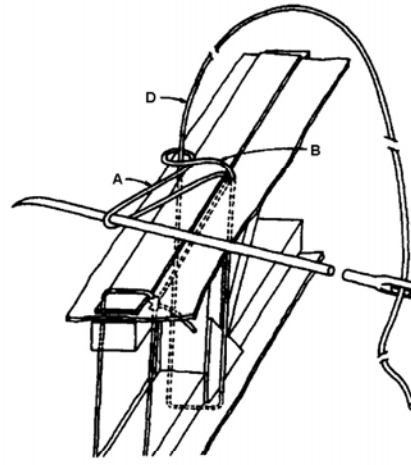
Step 4. Route the needle back thru the exit hole and thru the opposite fabric surface leaving approximately a 3" loop around a finger on the top surface.

Figure 1 - Rib Stitching, Steps 1 to 4

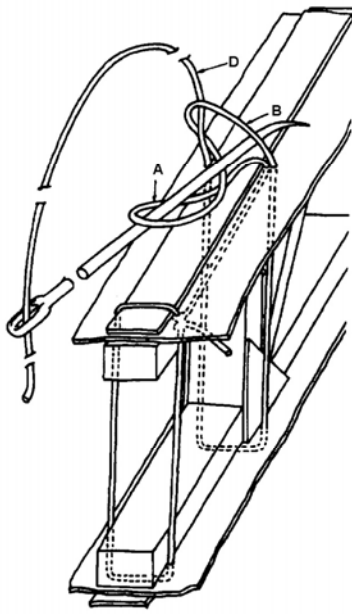
CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL



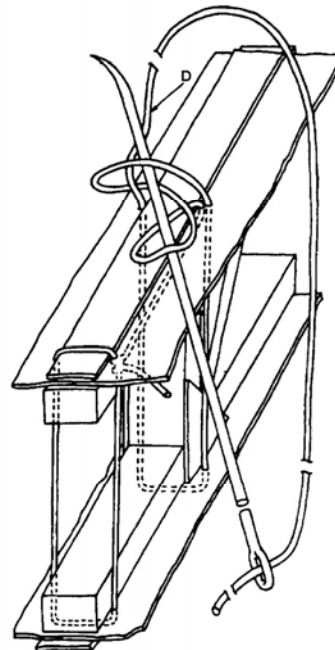
Step 5. As the needle is returned thru the top surface on the opposite side of the rib cap the loop is rotated to position cord section "A" to the forward side of the needle, then the needle is pulled thru.



Step 6. The needle tip is routed under cord section "B" to hook and pull cord section "A" aft.



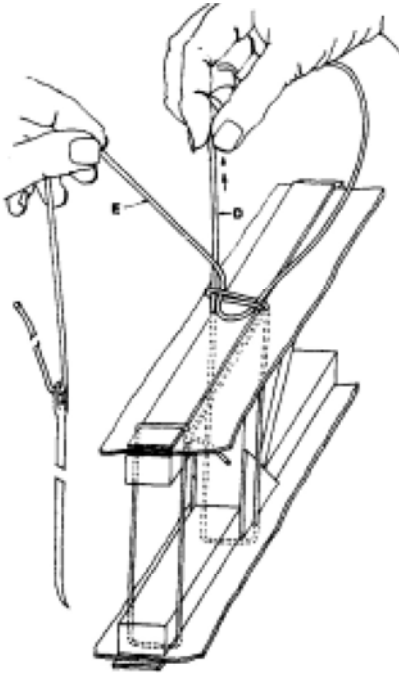
Step 7. The needle tip is then routed over the top of cord section "A" and under cord section "B."



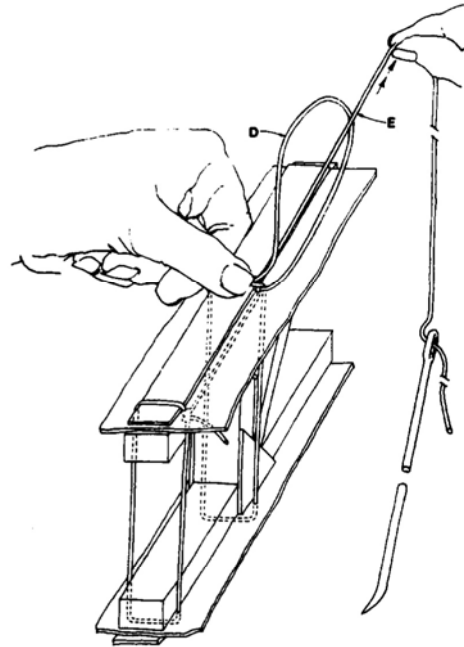
Step 8. The needle tip is then routed over cord section "D" and passed thru the lacing while holding cord section "D" perpendicular to the surface to avoid cord entanglement.

Figure 2 - Rib Stitching, Steps 5 to 8

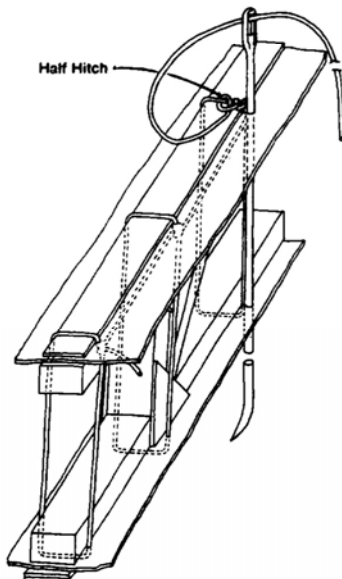
**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



Step 9. Pull cord section "D" perpendicular to the fabric surface to remove all slack in the cord back to the last rib lacing knot while working the loose knot to the right side. Do not pull cord section "E."



Step 10. After all slack is removed by pulling cord section "D," switch hands and place a thumbnail on the loose knot formed on the right-hand side, then secure the knot by pulling firmly perpendicular to the fabric surface on cord section "E."



Step 11. After completing all lacing in the same sequence, the end is secured with a half hitch after the modified seine knot. The knot is pulled to the inside by routing the needle thru the wing before cutting the cord to leave the end inside.

Figure 3 - Rib Stitching, Steps 9 to 11

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

The splice knot is made by crossing the ends of the cord, and making four complete wraps with the small end of the free piece around the end of the standing piece. The end is then doubled back through the formed loop. The other free end is wrapped and doubled back. The long ends of the cords are then pulled until the knot is tight. The short ends are cut close to the knot.

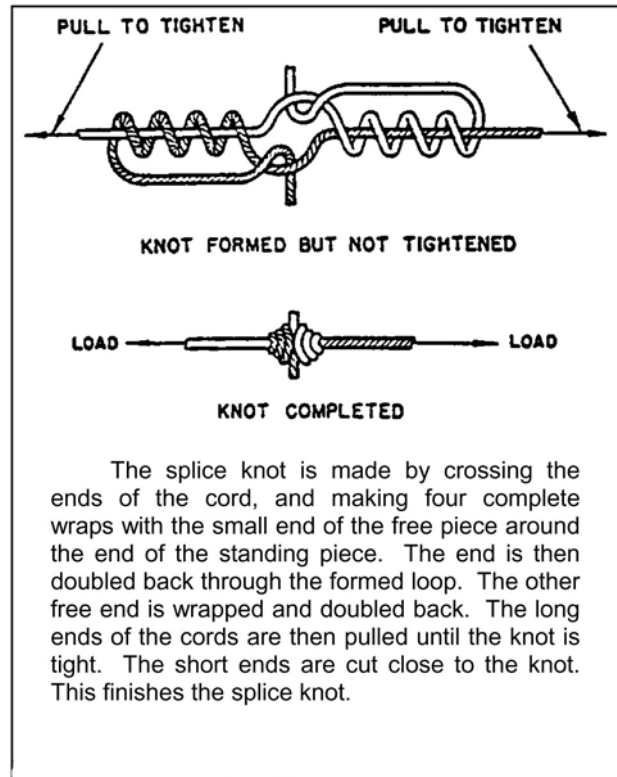


Figure 4 - Splice Knot

CHAPTER 57-00

WINGS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

57-00 WINGS

TABLE OF CONTENTS

1.	GENERAL	2
2.	MAINTENANCE PRACTICES	3
A.	SERVICING	3
(1)	REMOVAL	5
(2)	INSTALLATION	6
B.	RIGGING THE WINGS	8
(1)	PREPARATION	8
(2)	DIHEDRAL ANGLE	8
(3)	WASHOUT ANGLE	9
C.	VORTEX GENERATORS	10

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The wing is covered with fabric, has two extruded aluminum spars, pressed aluminum ribs and aluminum leading and trailing edge skins. Rigidity is provided by drag wires and drag braces. The left wing panel houses a landing light. The stall-warning switch is installed on the leading edge of the right wing. The wing incorporates slotted wing flaps inboard of the ailerons.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

2. MAINTENANCE PRACTICES

A. SERVICING

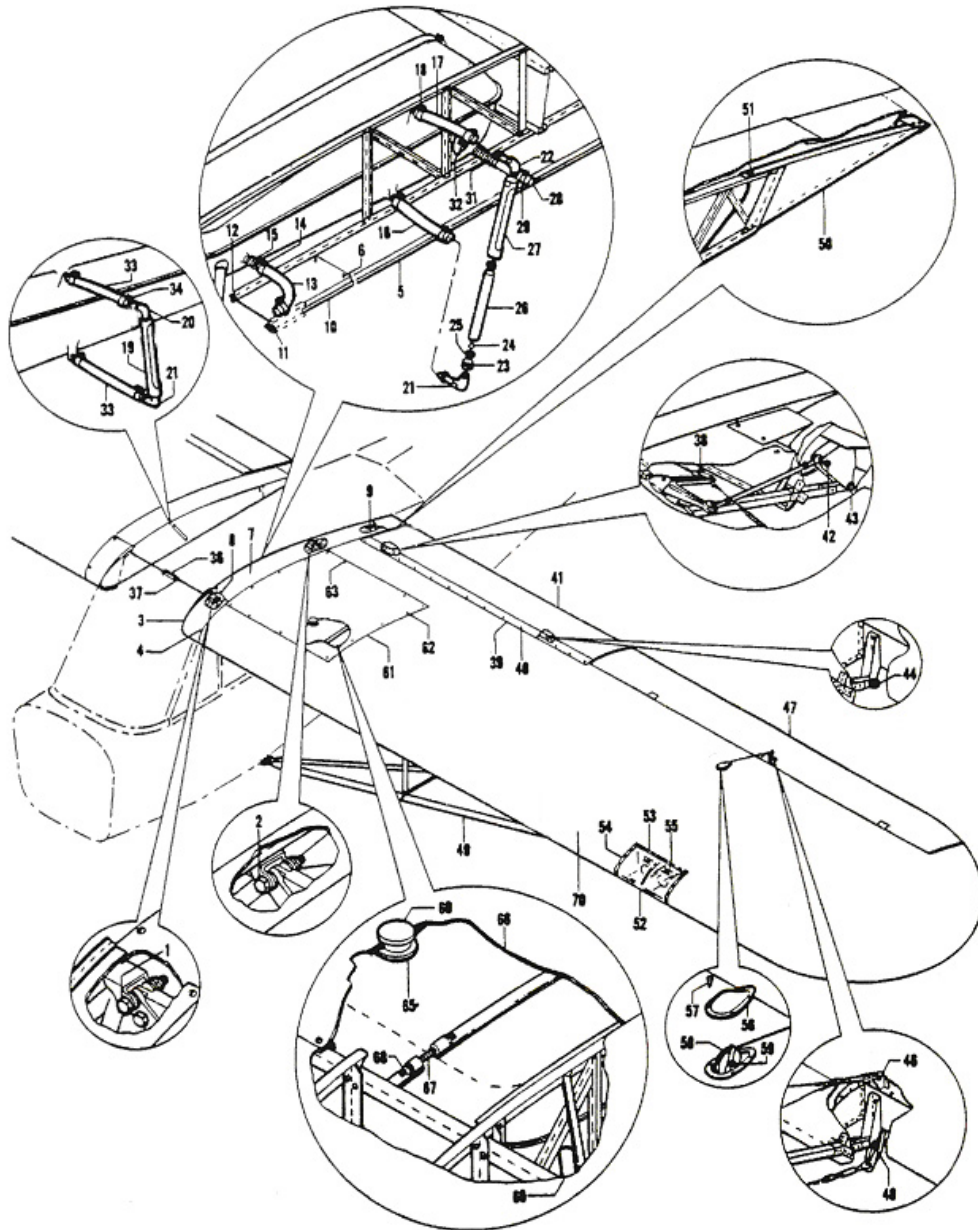


Figure 57-00-1 - Wing Installation

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- | | |
|---|---|
| 1. Bolt, Nut, and Washer Assembly | 37. Bolt, Washer, and Nut |
| 2. Bolt, Nut, and Washer Assembly | 38. Bolt, Nut, and Cotter Pin |
| 3. LH and RH Front Wing Root Fairing Assembly | 39. LH and RH Flap Fairing |
| 4. Screws | 40. Screws |
| 5. LH and RH Lower Wing Root Fairing | 41. LH and RH Flap |
| 6. Screws | 42. Bolt, Washer, and Nut |
| 7. Wing Root Upper Fairing | 43. Flat-head Pin, Washers, and Cotter Pin |
| 8. Screws | 44. Flat-head Pin, Washer, and Cotter Pin |
| 9. Screws | 46. Clevis Bolt, Washer, Nut, and Cotter Pin |
| 10. LH and RH Lower Rear Wing Root Fairing | 47. LH and RH Aileron |
| 11. Screw and Nut | 48. Flat-head Pin, Washers, and Cotter Pin |
| 12. Screws | 49. Lift and Jury Strut Installation |
| 13. 3/8 Hose | 50. LH and RH Wing Rib Butt Plate |
| 14. 3/8 Hose Clamp | 51. Screws |
| 15. Tank Finger Strainer | 52. Landing Light Window |
| 16. 1/4 Hose | 53. Landing Light Window Top and Bottom Trim Strips |
| 17. 1/4 Hose | 54. Landing Light Window Side Trim Strips |
| 18. 1/4 Hose Clamp | 55. Screws and Tinnermans |
| 19. Fuel Gauge Assembly | 56. Wing Pulley Cover |
| 20. Elbow | 57. Screws |
| 21. Restrictor Elbow | 58. Pulley |
| 23. Bushing | 59. Bolt, Nut, Bushing, and Cotter Pin |
| 24. Elbow Cork Fuel Gauge Float | 60. Fuel Tank Cap |
| 25. Cork Gasket | 61. Fuel Tank Cover |
| 26. Glass Fuel Gauge Tube | 62. Sheet Metal Screws |
| 27. Fuel Gauge | 63. Machine Screws |
| 28. 3/8 Hose | 65. Scupper Ring |
| 29. 3/8 Hose Clamp | 66. LH and RH Fuel Tank |
| 32. Tank Finger Strainer | 67. Stainless Steel Stud |
| 33. 1/4 Hose | 68. Nuts |
| 34. 1/4 Hose Clamp | 69. Drag Brace Tube Felt |
| 36. Link | 70. LH and RH Wing |

Figure 57-00-1 (continued)

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(1) REMOVAL

CAUTION

Before removing the wings, set the parking brakes and chock the wheels.

- (a) Remove the wing root upper fairing (7), front wing root fairing (3), lower wing root fairing (5), and lower rear wing root fairing (10) from the wing root.
- (b) Remove the fuel tank cover (61).
- (c) Drain the fuel tank (66) and disconnect the fuel supply and gauge lines (13, 16, 17 and 22) inboard ends at the wing root. Cover all exposed ends of tubing and hoses with tape to prevent contamination of the fuel from dirt or debris.
- (d) Disconnect the pitot air tube at the wing root.
- (e) Disconnect the appropriate wiring, antenna cables, stall warning system, navigation and landing light at the wing root butt splices.
- (f) Remove the wing pulley inspection plate covers (56) from the wing panel.
- (g) Disconnect the lower aileron control cables from the torque tube link or the upper aileron horn. Remove the associated pulley and fairleads so the cable can be pulled from the strut.
- (h) Disconnect the aileron crossover cable link (36 & 37) in the cabin and pull the cable ends free from the fuselage.
- (i) Disconnect the flap cable end (38) from the bell crank link inside the wing.

NOTE

The flaps and ailerons may be removed from the wings at this point.
See Chapter 27 Flight Controls.

- (j) Unbolt and remove the jury strut braces. They are secured to the wing from the middle of the struts. Mark the struts LH and RH so they may be reinstalled in the same location.

CAUTION

To accomplish removal and installation of the wings, at least three people will be required.

Use one person to support the outboard portion of the wing and one person to support the inboard end while the third removes the attaching hardware.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (k) With a person holding the upper end of the rear lift strut, remove the lower and upper rear lift strut bolts and separate the strut from the fuselage.
- (l) Remove the nuts from the wing and strut attachment bolts.
- (m) Remove the lower and upper front lift strut bolts and separate the strut from the fuselage.
- (n) Remove the wing (70) from the fuselage.
- (o) Rest the wing on the leading edge using soft pads along the leading edge so as not to dent or damage the surfaces or place horizontally on padded sawhorses.
- (p) Repeat the all the procedures on the opposite wing if necessary.

(2) INSTALLATION

- (a) Support the wing at the outboard end and at the wing root.
- (b) Align the wing root attachment points with the fuselage attachment points and insert bullets. (It is easier to temporarily secure the wing with bullets of the same diameter as the bolts and then push the bullets out with the bolts.)
- (c) Position the front strut fork on the fuselage attachment point and align the hole with a bullet.
- (d) Slide the tie-down ring over the strut attachment bracket on the wing.
- (e) Align the top hole of the front strut with the wing attachment hole and secure with a bullet.
- (f) Position the rear strut fork on the fuselage attachment point, align the hole with a bullet; align the top hole of the rear strut with the wing attachment point and secure with a bullet.
- (g) Repeat the procedure on the opposite wing if necessary.
- (h) Apply a light coat of grease to the wing attachment bolts before installation.
- (i) Press out the bullets at the wing to fuselage attachment points with the proper bolts. Secure the bolts using the appropriate washers and nuts. Torque the nuts to 100-140 in/lbs. (Reference 20-00.)
- (j) Press out the bullet at the wing to front strut attachment point with the proper bolt. Slide the spacer and pulley bracket over the end and secure the using the appropriate washer and nut. Torque to 160-190 in/lbs. (Reference 20-00.)

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (k) Press out the bullet at the wing to rear strut attachment point with the proper bolt. Secure using the appropriate washer and nut. Torque to 160-190 in/lbs. (Reference 20-00.)
- (l) Support the outboard end of the wing and remove the lower strut bullets. Insert the proper bolts. Torque the nut to 36-48 in/lbs and safety with a cotter pin.
- (m) Check the dihedral angle in accordance with Section B (Rigging the Wings). Adjust if necessary.
- (n) Check the wing washout in accordance with Section B (Rigging the Wings). Adjust if necessary.
- (o) Install the jury struts making sure the longer vertical tube is in front. The strut spacer tube should have the longer slot aft. Secure using the appropriate bolt, washer and nut then torque to 38-43 in/lbs.
- (p) Reconnect the aileron crossover cable link (36) in the cabin.
- (q) Connect the flap cable end to the bell crank link inside the wing with the proper bolt, nut and cotter pin (38).
- (r) Route the lower aileron cable down the strut.
- (s) Install the associated pulley and fairleads. Make sure the cable is not hooked on a strut or fuel tank strap stud (67).
- (t) Connect the lower aileron control cables to the torque tube link or the upper aileron horn. Ensure that the nuts have the appropriate cotter pins.
- (u) Connect the pitot air tube at the wing root. Reconnect the antenna cables, stall warning system, navigation and landing light wires at the wing root.
- (v) Remove the tape from the fuel line ends and reconnect the fuel supply and gauge lines (13, 16, 17, and 22) at the wing root. Torque the ¼ inch hose clamps to 10-14 in/lbs and the 3/8 hose clamps to 35-40 in/lbs.
- (w) Ensure that the aileron cables are not rubbing or hung up. Check to verify the cable tension is 40 ± 5 lbs. and if needed, adjust in accordance with Section 27-10 Ailerons.
- (x) Install the wing pulley inspection plate covers (56).
- (y) Attach the lower rear wing root fairing (10), the lower wing root fairing (5), the front wing root fairing (3), and the upper the wing root fairing (7).
- (z) Install the fuel tank covers.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

B. RIGGING THE WINGS

(1) PREPARATION

- (a) The aircraft must be level longitudinally and laterally prior to setting or adjusting the dihedral or the washout angles. Refer to the leveling procedure described in Section 08-00.

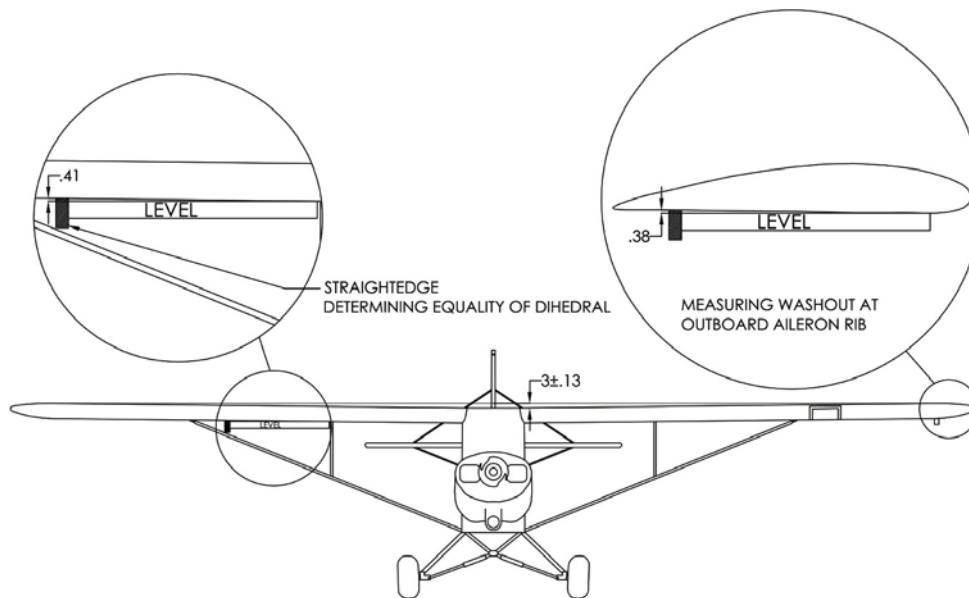


Figure 57-00-2 - Dihedral Angle and Washout

(2) DIHEDRAL ANGLE

- (a) Remove the front wing root fairings.
- (b) Stretch a string from wing tip to wing tip above the front spar and pull tight and secure.
- (c) Measure down from the string to the top of the inboard edge of the front spar cap (Figure 57-00-2). The measurement should be 3 inches plus or minus 0.13 (1/8) inches. This adjustment is accomplished by turning the forks in or out. However, prior to making any adjustment, proceed to step (d) and (e).
- (d) To determine that each wing panel has the same dihedral, hold a straight-edge on the end of a 30-inch level so that one end of the straight-edge protrudes 0.41 (13/32) of an inch above the level (see Figure 57-00-2). Place the level combination along the front spar bottom between the lift strut and jury strut attachment fittings as

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

illustrated in Figure 57-00-2. The bubble should be approximately centered. Check the opposite wing panel in the same manner.

- (e) If the dihedral angle is not equal for both wing panels, adjust the threaded fork on the lower end of the front strut until the dihedral angle is the same. Recheck the total dihedral and readjust as necessary.
- (f) Record the actual results in the aircraft log book.

(3) WASHOUT ANGLE

- (a) Check the washout of each wing by holding a straight-edge on the end of a 30-inch level so that one end of the straight-edge protrudes 0.38 (3/8) inches above the level (See Figure 57-00-2). Place this combination along the bottom surface of the full rib next to the outboard end of the aileron. The level end with straight-edge space should be to the rear of the rib while the other end of the level should be placed under the front spar.
- (b) To obtain the proper washout, adjust the threaded fork at the lower end of the rear strut at the fuselage end until the bubble is centered.
- (c) Repeat on the opposite wing if needed.
- (d) Record the actual results in the aircraft log book.

CAUTION

There should not be more than 15 threads exposed on the lift strut forks.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

3. VORTEX GENERATORS

Each wing of the CC18-180 has 36 vortex generators on the top leading edge. The CC18-180 is allowed to fly with the following number of vortex generators missing:

- Not more than three vortex generators missing on an aircraft
- Not more than three vortex generators missing on a wing
- The missing vortex generators must not be next to each other
- If there are any vortex generators missing, the maximum takeoff weight is limited to 2,100 lb.

If a vortex generator should fall off, it must be glued on the same location as follows:

- (a) Ensure the area where the vortex generator fell off is dry and free of grease and dirt.

NOTE

If the color of the vortex generator does not match the aircraft, it is advisable to paint the exposed part of the vortex generator prior to installation.

- (b) Clean the bottom surface of the vortex generator, removing any old adhesive.
- (c) Mask of the rectangular footprint of the vortex generator.
- (d) Reattach the vortex generator with Loctite Depend glue.
- (e) Remove masking and wipe off excess glue with cleaner.

CHAPTER 60-00

PROPELLER

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

60-00 PROPELLER

TABLE OF CONTENTS

1.	GENERAL	2
2.	METAL PROPELLERS	2
A.	TROUBLESHOOTING	2
B.	MAINTENANCE PRACTICES.....	3
(1)	REMOVAL.....	3
(2)	INSPECTION	3
(3)	INSTALLATION.....	3
3.	WOOD PROPELLER	4
A.	TROUBLESHOOTING	4
B.	MAINTENANCE PRACTICES.....	4
(1)	PROPELLER MAINTENANCE (BOLT TORQUE)	4
(2)	BOLT TORQUE CHECK PROCEDURE	5
C.	SERVICING.....	6
(1)	REMOVAL.....	6
(2)	INSPECTION	7
(3)	HUB INSPECTION.....	7
(4)	INSTALLATION.....	8

CUB CRAFTERS, INC.

CC18-180 MAINTENANCE MANUAL

1. GENERAL

Several fixed pitch propellers are approved for use on the CC18-180.

Standard aircraft comes with a:

- Sensenich Propeller Company - 76EM8-0 (76-inch diameter) 52 through 56-inch pitch metal propeller. This propeller is approved for use with the Textron Lycoming O-360-C4P and O-360-C1G and the Superior Air Parts O-360-A3A2 engines. However, when used with the O-360-C1G or the O-360-A3A2, the tachometer must be appropriately marked with a red arc between 2150 and 2350 RPM.

The optional propellers are:

- McCauley Propeller Systems
 - Metal Propellers 1A200/FA82 (82-inch diameter) 40 through 44-inch pitch. This propeller is approved for use with the Textron Lycoming O-360-C4P and O-360-C1G engines.
- Sensenich Wood Propeller Company, Inc
 - Wood Propellers W80CM8 (80-inch diameter) 45 through 47-inch pitch. This propeller is approved for use with the Textron Lycoming O-360-C4P and O-360-C1G engines.

NOTE

The wood propeller installation uses different crank flange bushings so the metal and wood propellers are not interchangeable.

NOTE

The Sensenich Wood Propeller Model W80CM8 (80-inch diameter) is not approved for Canadian Certified aircraft.

2. METAL PROPELLERS

A. TROUBLESHOOTING

If the propeller-engine combination feels rough in flight;

- (a) Check that the mounting face of the propeller is tight against the engine flange and check the blade track.
- (b) Verify that the attaching bolts have reached their required torque and have not bottomed out of the threads.
- (c) Remove the propeller, rotate it 180 degrees on the engine crankshaft flange, and re-install. Again, check the blade track.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

B. MAINTENANCE PRACTICES

(1) REMOVAL

- (a) Remove the spinner.
- (b) Cut and remove the safety wire from the propeller bolts.
- (c) Remove the propeller bolts. Assistance may be needed to hold the propeller and aft spinner bulkhead.

(2) INSPECTION

- (a) Examine the propeller blades for corrosion, cracks, nicks, or dents beyond the permissible limits. (These limits will be found in the propeller manufacturer's service manuals). If the propeller is unserviceable, replace it with a new one and return the damaged propeller to the factory.
- (b) Inspect the attaching bolts for worn or damaged threads and heads. Replace damaged bolts with new ones.
- (c) Inspect the spinner bulkheads for cracks or broken brackets. Replace on condition.

(3) INSTALLATION

- (a) Thoroughly clean the surfaces of the crankshaft flange and pilot stub, the rear/mounting face of the propeller, and the pilot bore. Carefully examine each surface and especially examine the end of the crankshaft pilot stub. Even minor nicks or burrs must be smoothed.
- (b) MAKE SURE the propeller attaching bolts, and the threads in the drive bushings or retaining nuts are clean and dry.
- (c) Be certain that the magneto switches are off, and that both magnetos are grounded.
- (d) Place the aft spinner bulkhead on the crankshaft flange, oriented so that the propeller will be centered over the 2 crankshaft flange bushings that are flush. Tape in place.
- (e) Position the front spinner bulkhead over the front of the propeller and insert the bolts with washers.
- (f) Position the propeller so that it is centered over the two crankshaft flange bushings that are flush and tighten the bolts snug.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (g) BE SURE the aft bulkhead is positioned properly on the flange bushings before you torque the bolts.
- (h) Apply torque in several increments, working diagonally across the bolt circle until reaching 720–780 in/lbs (60-65 ft/lbs) torque.
- (i) Check to make sure the propeller track is within 1/8-inch.
- (j) Install 0.040-inch diameter stainless steel safety wire in the propeller bolt heads locking bolt heads together in a tightening moment. It is recommended that bolts be wired in pairs, twisting the wire between the bolt heads.

3. WOOD PROPELLER

A. TROUBLESHOOTING

Check propeller balance whenever there is evidence of roughness on operation. For new propeller installations, rotating the propeller 180 degrees and reinstalling will often help.

B. MAINTENANCE PRACTICES

(1) PROPELLER MAINTENANCE (BOLT TORQUE)

The main factor that leads to the loss of propeller bolt torque is the variation of the wood hub thickness. The hub thickness will vary with wood moisture content changes and temperature changes. Even though your propeller has been sealed and/ or painted, changes in wood moisture content can occur and can significantly change the thickness of the hub. A one percent (1%) change in the moisture content of a propeller (increase / decrease) will cause a 0.010" change in hub thickness. As the required compression for a typical 65 HP wood propeller is 0.021", almost half of the required hub compression would be lost with such a change. Moisture content changes are not immediate and can span several weeks or months, depending on many factors such as temperature, humidity, and operating schedules. Operating temperature changes have similar effects but are not as severe. For these reasons, it is important to follow the maintenance schedule below:

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

- (a) **After First Flight** – After the first flight, recheck the bolt torque. Refer to Bolt Torque Check Procedure and Table 1.
- (b) **After First 25 Hours** – After the first 25 hours, recheck the propeller bolt torque. Refer to Bolt Torque Check Procedure and Table 1.
- (c) **Every 50 Hours** – After the first 25-hour recheck, it is **Mandatory** that the propeller bolt torque be rechecked every 50 hours. Refer to Bolt Torque Check Procedure and Table 1.
- (d) **Environment Changes** - Should the operating environment change significantly in temperature and/or humidity for a long period of time, the propeller bolt torque must be rechecked.

(2) BOLT TORQUE CHECK PROCEDURE:

- (a) Be certain that magneto switch is off, and that both magnetos are grounded. Remove the spinner dome.
- (b) Remove safety wire on propeller mounting bolts.
- (c) With a calibrated torque wrench, check bolt torque by applying the torque in a tightening direction until the bolt begins to turn. Check the torque limits and actions given in Table 1.

CAUTION
Improper torque values will be obtained by measuring the breaking torque in a loosening direction. The torque should be checked in a tightening direction and adjusted as needed.

Actual Torque	Required Action
Below 200 in/lbs	Remove Propeller Inspect hub for damage
Between 200-275 in/lbs	Adjust Torque as per Installation
Between 275-325 in/lbs	No Further Action Required
Above 325 in/lbs	Loosen and Torque as per Installation

Table 1 - Torque Values and Actions

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

C. SERVICING

The following practices will add to the service life of your wood propeller.

- (a) Inspect and check propeller attaching bolt torque at least every 50 hours according to the Bolt Torque Check Procedure. More frequent inspections may be necessary when climate changes are extreme, such as a change of seasons.
- (b) When the propeller is not in use, place the propeller in a horizontal position and if it is exposed to the weather, cover it with a waterproof cover.
- (c) Do not use the propeller as a tow-bar to move your aircraft.
- (d) Protect your propeller from moisture and UV exposure by waxing with an automotive type paste wax at least once a year. Keep the tip drain holes in metal tipping clear.
- (e) Avoid running the engine up in areas containing loose stones and gravel.
- (f) Finish loss off the leading edge is a normal wear item, and is dependent on the amount of operation in rain and grit.
- (g) Touch up worn finish areas and scratches with spar varnish. Return the propeller to the factory or approved repair station for total worn areas larger than 4x4" or scratches deeper than 1/32".
- (h) Inspect frequently for bruises, scars, or other damage to wood and blade leading edge protection.
- (i) Damage to the wood or leading edge that is 1/16" deep or less without breaking the finish is acceptable.

(1) REMOVAL

- (a) Mark the aft bulkhead propeller and spinner with tape, so they are reinstalled in the same orientation.
- (b) Remove the spinner.
- (c) Remove the safety wire on the propeller mounting bolts.
- (d) Remove the propeller bolts.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (e) Remove the propeller from the flange. A slight rocking may be necessary to remove the propeller. Be careful during the removal; if the propeller is tight on the flange it is possible to tear out the back of the hub around the center bore and bolt hole counterbores.
- (f) Assistance may be needed to hold the propeller, plates and rear spinner bulkhead.

(2) INSPECTION

- (a) Be certain that the magneto switches are off and that both magnetos are grounded.
- (b) Inspect for bruises, scars, or other damage to wood and blade leading edge protection. Assume that your propeller is un-airworthy after any kind of impact until qualified personnel have inspected it.
- (c) All wood and metal tipping repairs must be made at the factory or by an approved propeller repair station.
- (d) Check propeller balance whenever there is evidence of roughness on operation.
- (e) If your propeller begins to show any of the following damage, it should be retired from service:
 - Cracks in hub bore,
 - A deep cut across the wood grain,
 - A long, wide, or deep crack parallel to the grain,
 - A separated lamination,
 - Oversize or elongated hub bore or bolt holes,
 - An appreciable warp (discovered by inspection or through rough operation),
 - An appreciable portion of wood missing or,
 - Obvious damage or wear beyond economical repair.

(3) HUB INSPECTION

- (a) Remove propeller in accordance with previous instructions.
- (b) Clean both propeller hub faces using light grit scotch pad and de-natured alcohol. It should be possible to remove most of any fretting marks and darkened areas.
- (c) Inspect the propeller's rear hub face for cracks and/or elongation of the bolt holes and/or counterbores where the engine flange drive bushings are inserted.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Cracks

- (d) If cracks are evident on the hub face, take a razor blade and very gently try to insert the corner of the blade. Most cracks will be paint cracks only, however, if the tip of the razor easily goes into the crack more than 1/16-inch than the propeller must be returned to the factory for closer inspection.

Bolt Hole/Counterbore Elongation

- (e) The bolt holes and counterbores will naturally elongate since the wood will shrink and expand differently with and against the grain. When inspecting the counterbores, look for a ridge at .375-.75" deep in from the mounting hub face that would indicate that the flange drive bushings were hitting against the side. If any bolt hole elongation or ridge height inside the counterbore is more than 1/32", then the propeller **MUST** be returned to Sensenich Wood Propeller factory for closer inspection and the attaching bolts **MUST** be replaced.
- (f) Inspect the spinner aft bulkhead and engine flange for fretting. If the fretting is severe and cannot be dressed out with emery cloth then the parts must be replaced.
- (g) Clean the flange face for reinstallation.

(4) INSTALLATION

- (a) Installation of the propeller requires front and rear faceplates, spinner assembly, attaching bolts, and washers.
- (b) Be certain that the magneto switches are off and that both magnetos are grounded.
- (c) Install the aft bulkhead on the crankshaft flange making sure there is an insulating gasket on both sides. Position the aft propeller plate over the flange in front of the bulkhead.
- (d) Position the faceplate over the front of the propeller and insert the bolts with washers.
- (e) Position the propeller on the engine flange in most convenient position for hand cranking and tighten the bolts "finger tight."
- (f) Using a standard ratchet, tighten all the bolts using a star pattern until the propeller and spinner assembly is snug.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (g) Tighten the attaching bolts in small increments, moving diagonally across the bolt circle. It is good practice to check the blade track frequently while tightening the nuts. Take care to tighten bolts on opposite sides of the blade, centerline, evenly so blade-to-blade conformity of angles is maintained. Torque all bolts to the values as specified in Table 2.

ATTACHING INSTALLATION TORQUE	
Minimum	Maximum
275 in-lbs.	325 in-lbs.
23 ft-lbs	27 ft-lbs
31 N-m	37 N-m

Table 2 - Wood Propeller Installation Torque

CAUTION: Over-tightening propeller attaching bolts will cause the wood of the hub to crush, breaking its moisture seal, and slightly reducing drive-torque.
--

- (h) Check the tip track of the propeller. The track should be within 1/8".
- (i) Since a small part of the wood compression is plastic (permanent), it is good practice to loosen the bolts and allow the wood to relax for an hour. Retighten following the same procedure. Install .040-safety wire. It is good practice to wire the attaching bolts in pairs (not a continuous wire), twisting the wire in a tightening moment between bolt heads.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

CHAPTER

71

POWERPLANT

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

71 POWERPLANT

71-00.....POWERPLANT
71-10..... ENGINE COWL
71-60.....AIR INDUCTION

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

71-00 POWERPLANT

TABLE OF CONTENTS

1. GENERAL	2
2. TROUBLESHOOTING	3

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

This chapter describes maintenance practices for the airplane's powerplant.

The CC18-180 is powered by one of the following engines:

1. a Textron Lycoming O-360-C4P engine. This is an air-cooled, four cylinder, direct drive, horizontally opposed engine that is capable of delivering up to 180 hp at 2700 RPM
2. a Textron Lycoming O-360-C1G engine. This is an air-cooled, four cylinder, direct drive, horizontally opposed engine containing a hollow crankshaft for use with constant speed propeller systems capable of delivering up to 180 hp at 2700 RPM.
3. Superior Air Parts O-360-A3A3 engine This is an air-cooled, four cylinder, direct drive, horizontally opposed engine containing a hollow crankshaft for use with constant speed propeller systems capable of delivering up to 180 hp at 2700 RPM.

The engine is mounted to the fuselage with a tubular truss made of 4130N steel that is bolted to the airframe in four places. The engine is attached to the mount through rubber mounts to reduce vibration.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

2. TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Engine Will Not Start	- Defective Ignition Wire	- Check with Electrical Tester - Replace Any Defective Wires
	- Improper Operation of Magneto Breaker Points	- Clean Points - Check Internal Timing of Magnetos
	- Defective Magneto Switch - Grounded Magneto Leads	- Check Continuity - Repair or Replace Switch or Leads
	- Spark Plugs Fouled	- Remove, Clean, and Re-gap (0.016 -0.021) or Replace
	- Improper Use of Starting Procedures	- Review Starting Procedures. (Refer to POH)
	- Fuel Tank Empty	- Inspect and Fill Tank
	- Engine Flooded	- Advance Throttle to Full OPEN - Retard Mixture Control to Idle - Cut Off and Crank Engine to Clear Cylinders and Excess Fuel
	- Water in Fuel System	- Sample Fuel - Drain if Water is Present
	- Fuel Contamination	- Drain - Flush Fuel System
*Starter Turns Engine Slowly When Cold	- Weak Battery	- Charge Battery - Test - Replace, If Necessary
*Starter Turns Engine Slowly When Hot	- Bad Connection, Cable, or Solenoid	- Clean Connections and/or Replace Faulty Component
*When Starter Engages, It Makes a Loud Grinding Noise	- Starter Damaged By Engine Kicking Back	- Correct the Ignition Problem - Repair or Replace Starter
*When the starter is Engaged, There is a Click and The Engine Does Not Turn	- Voltage Not Getting To Starter - Starter Solenoid Defective	- Replace Starter Solenoid
*Starter Drive Gear Stays Engaged for Some Length of Time After the Start Button Released	- Stuck Starter Solenoid	- Replace Faulty Starter Solenoid - Replace or Repair Starter

Figure 71-00-1

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

*Below is a troubleshooting guide produced by the manufacturer of the engine starter that is being included to further assist the mechanic:

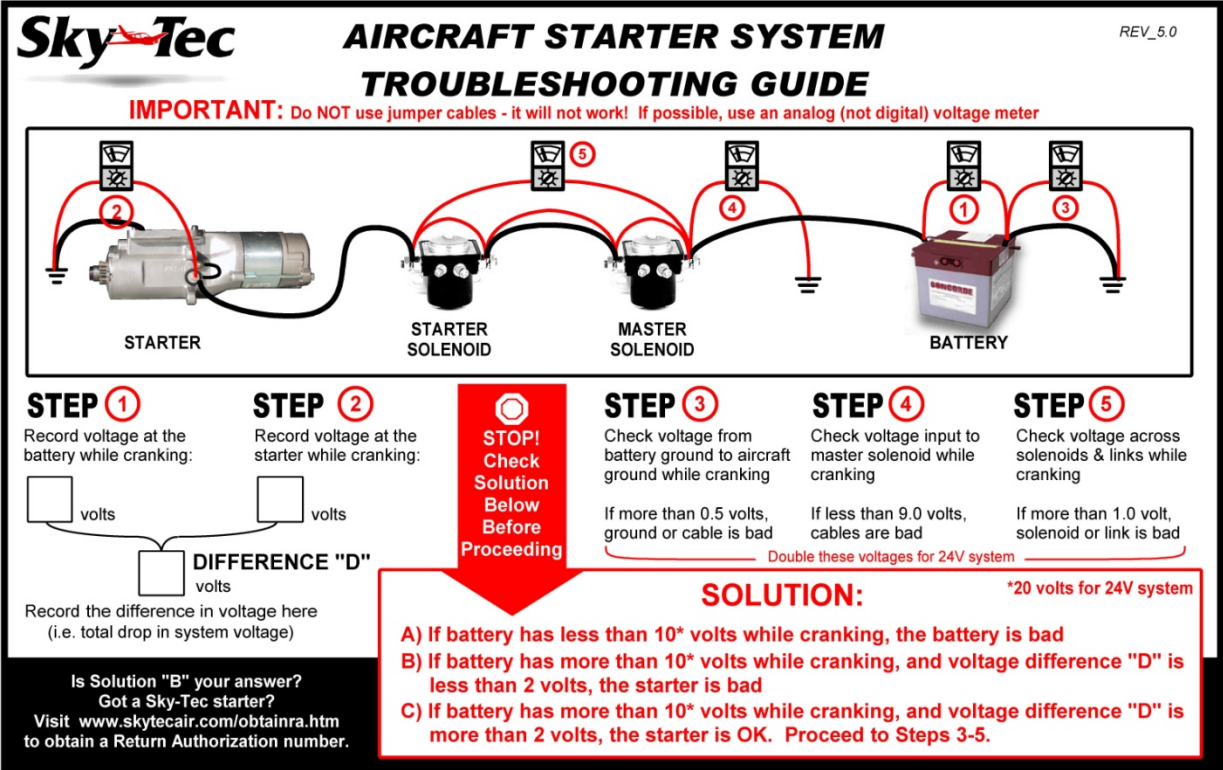


Figure 71-00-2

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

71-10 ENGINE COWL

TABLE OF CONTENTS

1	GENERAL	2
1.1	ENGINE COWL	2
1.1.1	REMOVAL.....	2
1.1.2	INSPECTION	2
1.1.3	INSTALLATION.....	3
1.2	WINTERIZATION KIT.....	4
1.2.1	INSTALLATION	4

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1 GENERAL

The engine cowl is made in two pieces and can be removed without the propeller having to come off. The upper and lower portions are made of fiberglass using fire resistant resins. The side doors of the cowl are made of aluminium and are hinged so that they can be opened for service and inspection (see figure below).

1.1 ENGINE COWL

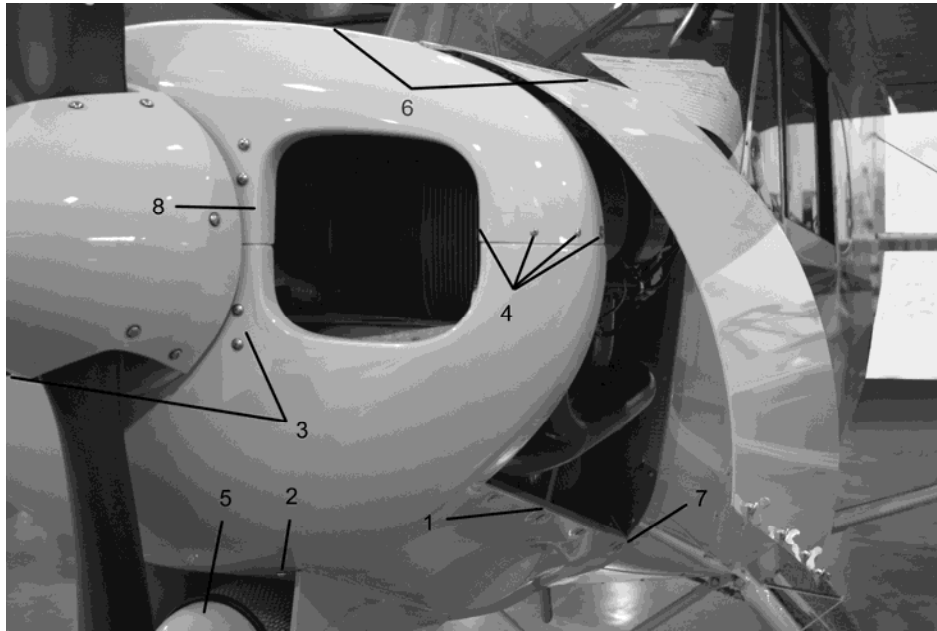
1.1.1 REMOVAL

- a. Unbolt the engine mount to cowl braces on both sides at the lower end (1).
- b. Remove the screw holding the hose clamp to the front left of the cowl (2).
- c. Remove the 2 pairs of lower cowl stiffener screws from the front of the cowl (3).
- d. Remove both sets of screws holding the cowl together at the front outboard seam (4).
- e. Remove the air filter and dome (5).
- f. Unbolt the top 2 upper rear cowling attach screws (6).
- g. Carefully lift the top cowl off.
- h. Rotate the prop backwards until the blades are horizontal.
- i. Unbolt the bottom 2 lower rear cowling attach screws (7).
- j. Carefully remove the lower cowl.

1.1.2 INSPECTION

- a. Inspect the cowl for loose rivets, wear points and cracking.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**



- | | | |
|------------------------------|----------------------|------------------------------|
| 1 - Lower Brace Attach | 2 - Hose Clamp Screw | 3 - Lower Stiffener Screws |
| 4 - Seam Screws | 5 - Air Filter Dome | 6 - Upper Rear Attach Screws |
| 7 - Lower Rear Attach Screws | | 8 - Upper Stiffener Screws |

Figure 71-10-1 - Engine Cowl

1.1.3 INSTALLATION

- a. Carefully position the lower cowl in place.
- b. Install the 2 rear lower cowling attach screws, washers and nuts (7).
- c. Attach both, engine mount to cowl braces, at the lower end with bolts, washers, and nuts (1).
- d. Reattach the hose clamp to the front left of the cowl with the screw and washer (2) making sure the hose is not rubbing on anything.
- e. Carefully position the upper cowl in place.
- f. Replace the lock washers with new and secure the lower end of both cowl stiffeners with the 4 lower screws and washers at the front of the cowl (3).
- g. Secure the front cowl seam with the 8 screws and washers at the front seam (4).
- h. Install the 2 rear upper cowling attach screws, washers and nuts (6).

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- i. Install the air filter and dome (5) (Refer to 71-60 2.A.)
- j. Double check to make sure all the hardware is tight.
- k. Makes sure the felt baffle seal is laying properly.
- l. Verify that there is equal clearance from the cowl on each side of the ring gear and that the stiffeners are properly installed and not rubbing (8).

1.2 WINTERIZATION KIT

1.2.1 INSTALLATION

CAUTION

This kit must be removed when the aircraft is operated above 40°F.

Service Letter SL0003 must be complied with prior to this installation.

- a. Remove the top engine cowl, and remove the four bolts and hardware attaching the oil cooler to the engine baffles in accordance with the instructions in Section 1.1.1.
- b. Remove attachment bolts and support oil cooler. Do not disconnect oil lines.
- c. Install oil cooler plate (TC5021-001) in front of baffle, aligned with the four bolt holes and oriented with the flat edge down. This should leave the opening at the top. Reinstall the oil cooler and securely fasten with previous hardware.
- d. Verify that 1.00"±.13 of the oil cooler is still exposed. Trim plate as needed to achieve this.
- e. As required, install anti-chafe tape onto the exterior of the cowling to prevent plate from rubbing.
- f. Install SCAT Tube Flange (101889-01) on forward left baffle with screws (AN526C632R7), washers (AN960-6L) and lock nuts (AN363-632).
- g. Install the cowl plates with (AN526C632R6), ensuring the flat side of the cowl plates faces forward and the flange is at the top.
- h. Install SCAT tube (RM0006-001) between left cowl plate and flange on baffle with hose clamps (AN737TW74).
- i. Reinstall top engine cowl per the instructions in Section 1.1.3.
- j. Verify that there is a 2.75"± .13 gap from the top of the plates to the top of the cowl inlets.
- k. Removal of oil cooler plate and cowl inlet plates is done opposite of installation.
- l. For subsequent operations in cold weather, repeat Steps a-h.
- m. Make a logbook entry each time kit is installed or removed.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

71-60 AIR INDUCTION SYSTEM

TABLE OF CONTENTS

- 1. GENERAL 2
- 2. MAINTENANCE PRACTICES 3
 - A. AIR FILTER 3
 - (1) REMOVAL 3
 - (2) INSPECTION 4
 - (3) INSTALLATION 4
 - B. AIR BOX 4
 - (1) REMOVAL 4
 - (2) INSPECTION 5
 - C. CARBURETOR HEAT 7
 - (1) INSTALLATION OF CABLE TO AIRBOX ARM SWIVEL FITTING 7
 - (2) CABLE CLAMP 8
 - (3) INSPECTION 8

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

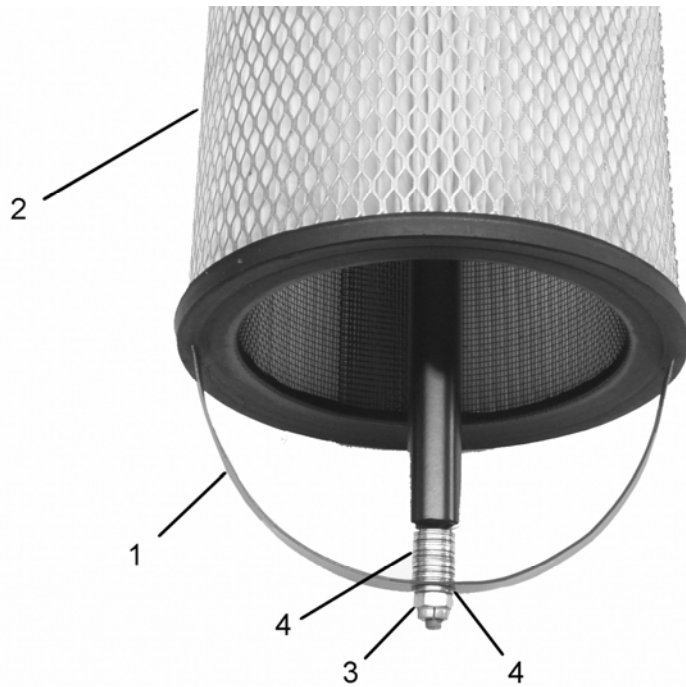
The induction air for the engine enters through a filter on the lower side of the cowling and from there the air goes through an air box into the carburetor. The carburetor heat control operates a butterfly valve that allows heated, unfiltered air to feed into the engine. The carburetor heat control is located on the top left side of the instrument panel.

<p>CAUTION Ground operations with the carburetor heat control in the hot position must be limited because it allows air to bypass the filter.</p>

Should the air filter become obstructed, the carburetor air control provides an alternate manual means of supplying the engine with air for the induction system.

2. MAINTENANCE PRACTICES

A. AIR FILTER



- 1- Dome (cutaway) 3- Nut
2- Filter 4- Washer(s)

Figure 71-60-1 - Air Filter Installation

(1) REMOVAL

(Refer to Figure 71-60-1)

- (a) Remove the nut (3) and washer (4) on the front of the air filter dome (1).
- (b) Remove the dome (1), washers (4), and air filter (2).

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

(2) INSPECTION

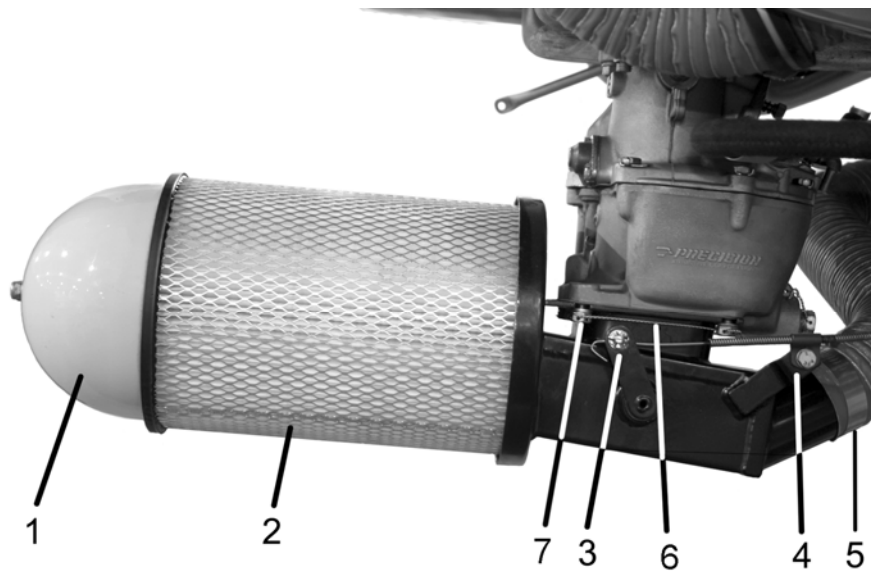
- (a) Visually inspect the filter's paper element and wire frame.
- (b) Replace the filter at 500 hrs or whenever the element is more than 50% covered with foreign material.

(3) INSTALLATION

- (a) Slide the air filter (2) into position on the air box.
- (b) With the air filter centered and tight against the air box, slide the dome (1) over the rod. Slide enough washers (4) to ensure that with the nut tight (3), the filter will not rotate and the dome (1) will not crush the filter.

B. AIR BOX

(1) REMOVAL



- | | | |
|-------------------|-----------------|-----------|
| 1 - Dome | 4 - Cable Clamp | 7 - Bolts |
| 2 - Filter | 5 - Air Duct | |
| 3 - Attach Swivel | 6 - Safety Wire | |

Figure 71-60-2 - Carburetor Air Box

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (a) Remove the air filter (2) (Refer to 71-60-2A(1)).
- (b) Remove the lower cowl (Refer to 71-10).
- (c) Disconnect the carburetor heat air duct (5).
- (d) Mark the position of the carburetor heat control cable clamp (4) on the cable and disconnect the cable (4) from the air box.
- (e) Disconnect the cable attachment swivel (3) from the butterfly arm.
- (f) Cut the safety wire (6) that holds the bolts (7).
- (g) Remove the bolts (7).

(2) INSPECTION

- (a) Visually inspect the butterfly valve and shaft for security and wear. Pay close attention to the state of the welds that attach these parts.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(3) INSTALLATION

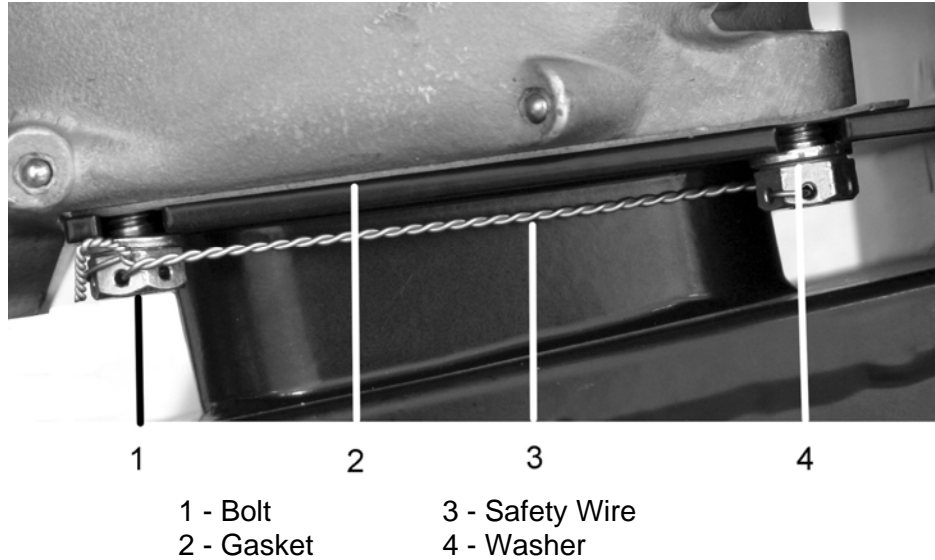


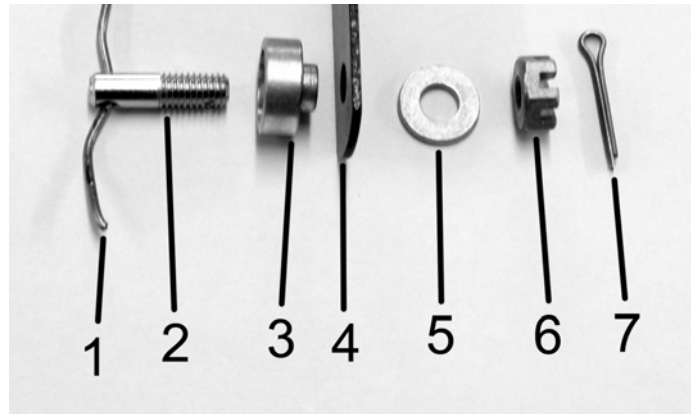
Figure 71-60-3 - Installation of Air Box

- (a) Install a new air box gasket (2).
- (b) Position the air box below the carburetor and secure with 4 washers (4) and bolts (1) and torque to 70-80 in/lbs.
- (c) Safety the bolts in pairs with 0.032" safety wire (3).
- (d) Connect the carburetor heat air duct (Item 5 of Figure 71-60-2).
- (e) Reconnect the carburetor heat cable to the air box (Items 3 & 4 of Figure 71-60-2) in the same position as it was prior to removal.
- (f) Install the lower cowling (Refer to 71-10).
- (g) Install the air filter and dome as described previously.
- (h) Check for proper operation of the carburetor heat (see Section C).

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

C. CARBURETOR HEAT

(1) INSTALLATION OF CABLE TO AIRBOX ARM SWIVEL FITTING



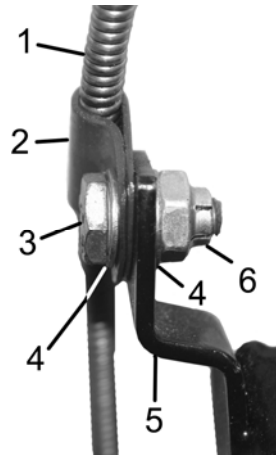
- | | | |
|--------------------|---------------------------|----------------|
| 1 - Cable Rod | 4 - Butterfly Arm | 7 - Cotter Pin |
| 2 - Stud | 5 - Washer | |
| 3 - Swivel Fitting | 6 - Short Castellated Nut | |

Figure 71-60-4 - Installation of Carburetor Cable Swivel

- (a) Install the items as shown in Figure 71-60-4.
- (b) Adjust the cable rod (1) length at the swivel fitting (3) to ensure that the butterfly valve travel has full travel.
- (c) Tighten the short castellated nut (6) enough to hold the cable rod firmly but not so tight as to shear it or strip the treads.
- (d) Safety the nut with a cotter pin (7).

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(2) CABLE CLAMP



- | | | |
|-----------|------------|------------------|
| 1 - Cable | 3 - Bolt | 5 - Attach Strap |
| 2 - Clamp | 4 - Washer | 6 - Nut |

Figure 71-60-5 - Carburetor Heat Cable Clamp

- (a) Install the items as shown in Figure 71-60-5.
- (b) Adjust the position of the carburetor heat cable housing (1) on the clamp so that the control operates smoothly, allowing the butterfly valve to move throughout the full range of travel. There should be no more than $\frac{1}{4}$ " cushion between the control knob and the instrument panel when the knob is in the full "COLD" position. Moving the cable housing (1) in the clamp (2) affects the knob travel in relation to instrument panel.
- (c) Torque the nut (6) to 38-43 in/lbs.

(3) INSPECTION

- (a) Ensure that the control operates smoothly, moving the butterfly valve throughout the full range of travel, and ensuring that there is no more than $\frac{1}{4}$ " cushion between the control knob and the instrument panel in the full "COLD" position.
- (b) Ensure that the cable attachment swivel (3 Figure 71-60-4) does not have excessive play and the clamp (2) holds the cable tightly.
- (c) Control operation should be smooth. Lube with LPS 2 if needed.

CHAPTER 74-00

IGNITION

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

74-00 IGNITION

TABLE OF CONTENTS

- 1. GENERAL2
- 2. MAINTENANCE PRACTICES3
 - A. MAGNETOS.....3
 - (1) REMOVAL.....3
 - (2) INSPECTION4
 - (3) INSTALLATION.....4
 - B. SPARK PLUGS.....6
 - (1) REMOVAL.....6
 - (2) INSPECTION6
 - (3) INSTALLATION.....6

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The ignition system on the O-360 engines use two magnetos that generate electricity, which is distributed via a distributor block to the ignition harness. The ignition harness delivers the energy generated by the magnetos to the spark plugs via shielded conductors. The spark plugs then carry the energy from the ignition harness into to the combustion chamber where the spark ignites the air/fuel mixture.

The ignition wiring is arranged so that the left magneto fires the bottom plugs in the cylinders on the left side of the engine and the top plugs in the right side. The right magneto fires the top plugs of the left cylinders and the bottom plugs in the right cylinders (Refer to Figure 74-00-1)

Both magnetos incorporate impulse couplings which delay rotation of the magneto during the engine starts. This in turn retards the spark until each piston reaches top dead center (T.D.C). At T.D.C., the coupling spins ahead, generating enough voltage to ignite the fuel/air mixture. The impulse couplings disengage after the engine starts. Because both magnetos have impulse couplings, the engine should be started with both magnetos on.

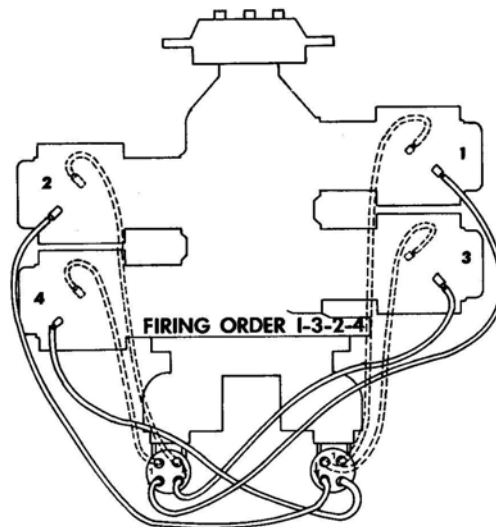


Figure 74-00-1 - Engine Firing Order
(Seen from above)

2. MAINTENANCE PRACTICES

A. MAGNETOS

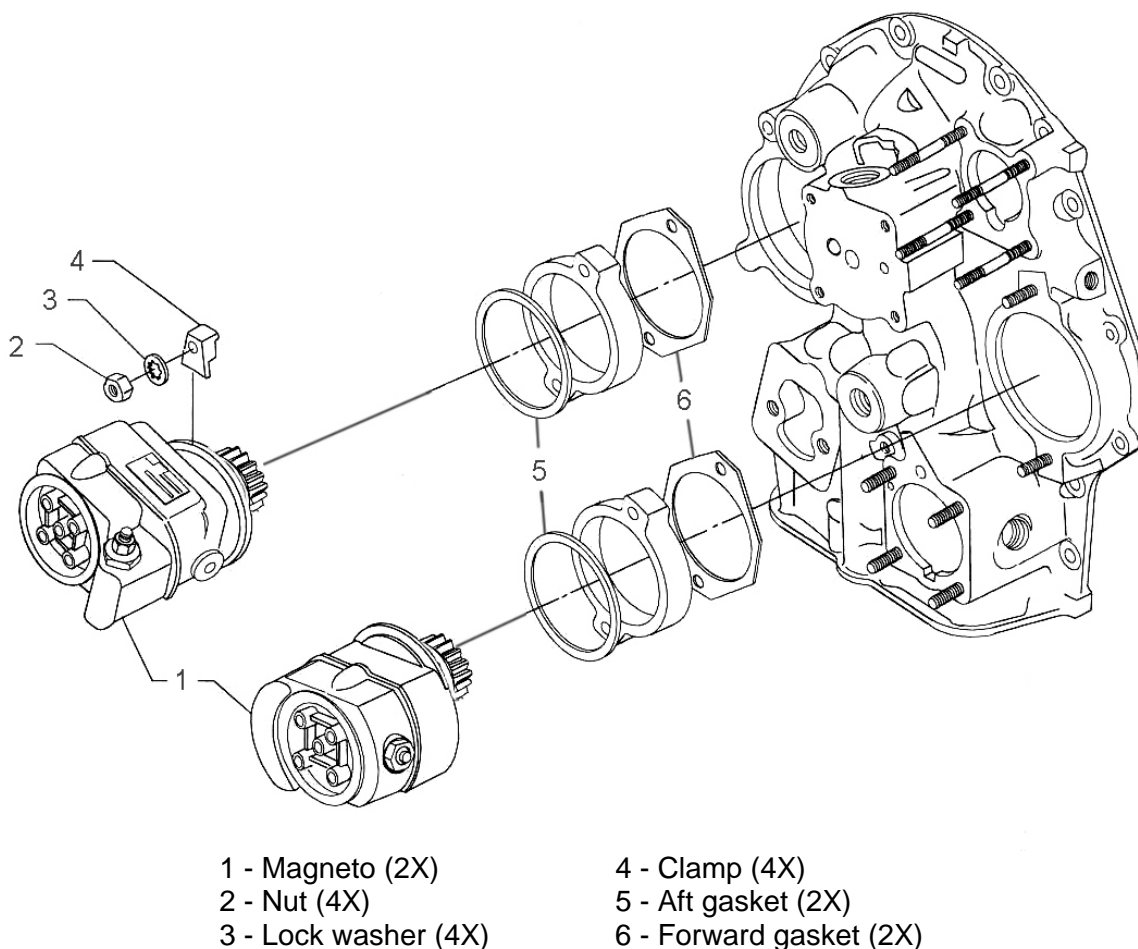


Figure 74-00-2 - Magneto Installation

(1) REMOVAL

WARNING

PRIOR TO REMOVING THE MAGNETOS, MAKE SURE THE FUEL MIXTURE IS IN IDLE CUTOFF POSITION AND THE MAGNETOS ARE TURNED OFF.

- (a) Find the # 1 cylinder firing position by removing a spark plug from the No.1 cylinder and placing a thumb over the spark plug hole. Rotate the crankshaft in the direction of normal rotation until the compression stroke is reached; this is indicated by a positive pressure inside the cylinder tending to push the thumb off

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

the spark plug hole. Continue rotating the crankshaft until both impulse couplers have snapped. Line up the 25° timing mark on the front face of the starter ring gear with the alignment hole located at the two o'clock position on the front face of the starter housing (Refer to Figure 74-00-3).

- (b) Unscrew the 3 harness cap screws and separate the harness from the magnetos.
- (c) Disconnect the P-leads.
- (d) Remove the nuts (2), washers (3) and clamps (4) that secure the magneto (1) and separate it from the engine.

(2) INSPECTION

- (a) Inspect the magnetos in accordance with the current version of the Unison L-1363 maintenance manual.

(3) INSTALLATION

- (a) To set the magneto's internal timing:
 - Insert a T-118 timing pin in the L hole of the distributor block.
 - Turn the rotor shaft clockwise until the timing pin is inserted approximately 7/8" into the distributor block. When properly engaged the timing pin will "seat" against the distributor block.

NOTE

If the rotor shaft cannot be turned and the timing pin is not seated 7/8" into the distributor block, remove the pin and turn the rotor shaft 1/8 turn and reinsert the timing pin.

- With the timing pin fully inserted in the distributor block, the magneto is aligned to fire cylinder #1.

CAUTION

Do not rotate the magneto rotor shaft or propeller with the timing pin fully inserted into the magneto distributor block! Rotation of the magneto shaft or propeller may damage the internal components of the magneto and render the unit non-airworthy.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(b) To set the timing of the magnetos to the engine:

- Be sure the # 1 cylinder is in the firing position.
- Ensure that the mounting surfaces are clean.
- Making sure the magneto gear does not move from this position; install the magneto on the engine with a gasket (5). Secure with clamps (4), washers (3) and nuts (2); tighten only finger tight.

<p>CAUTION Remove The Timing Pin!</p>

- Using a battery powered timing light, attach the positive lead to a suitable terminal connected to the switch terminal of the magneto (with the switch turned on) and the negative lead to any unpainted portion of the engine. Rotate the magneto in its mounting flange to a point where the light comes on, and then slowly turn it in the opposite direction until the light goes out. Bring the magneto back slowly until the light just comes on. Repeat this with the second magneto.



Figure 74-00-3 - Magneto Timing

- Back off the crankshaft a few degrees and the timing lights should go out. Bring the crankshaft slowly back in direction of normal rotation until the 25° timing mark and the hole in the starter housing are in alignment (Refer to Figure 74-00-3). At this point, both lights should go on simultaneously. If needed, bump the magneto to adjust the alignment until it is 25 °.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- Intermediately tighten both nuts to 100 in/lbs.
- Finally tighten both nuts alternately, in several steps, to 200-208 in/lbs.
- Recheck the timing. If it has changed, loosen the nuts, readjust and repeat the torquing procedure.
- Reconnect the P-lead ground shields with a screw to the proper magneto case. Torque to 18-20 in/lbs.
- Reconnect the P-leads and tighten the nuts to 13-15 in/lbs.
- Reposition the respective harness caps, insert the 3 harness cap screws and tighten to 18-20 in/lbs.

<p>WARNING TURN THE MAGNETO SWITCHES OFF SO THE ENGINE CANNOT ACCIDENTALLY BE STARTED.</p>
--

B. SPARK PLUGS

(1) REMOVAL

- (c) Unscrew all the spark plug caps.
- (d) Unscrew all the spark plugs.

(2) INSPECTION

- (a) Inspect the firing end of the spark plugs for any foreign material lodged between electrodes or around the insulator that could be conductive. Clean as needed.
- (b) Check the electrode gap. It should be between 0.016 and 0.021 ins. Re-set if necessary.
- (c) Check connector for any abnormalities and clean if needed.

(3) INSTALLATION

- (a) Apply a small amount of Spark Plug Thread Lubricant (Refer to section 12-20) to the threaded area of each spark plug at the firing end. Using a new gasket, install the plugs and torque to 415-425 in/lbs.
- (b) Connect the spark plug caps and torque to 80-90 in/lbs.

CHAPTER 76-00

ENGINE CONTROLS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

76-00 ENGINE CONTROLS

TABLE OF CONTENTS

1. GENERAL	2
2. MAINTENANCE PRACTICES	2
A. THROTTLE	2
(1) LEVER ATTACHMENT	2
(2) LEVER INTERCONNECT LINKAGE.....	3
(3) ATTACHMENT OF THROTTLE CABLE TO FUSELAGE	4
(4) MOTOR MOUNT CABLE ATTACHMENT.....	5
(5) THROTTLE CABLE TO CARBURETOR ARM ATTACHMENT	7
(6) INSPECTION.....	8
B. MIXTURE.....	8
(1) MIXTURE CONTROL CABLE TO PANEL ATTACHMENT.....	8
(2) MOTOR MOUNT MIXTURE CABLE ATTACHMENT	9
(3) MIXTURE CABLE TO CARBURETOR LEVER SWIVEL ATTACHMENT	10
(4) INSPECTION.....	11

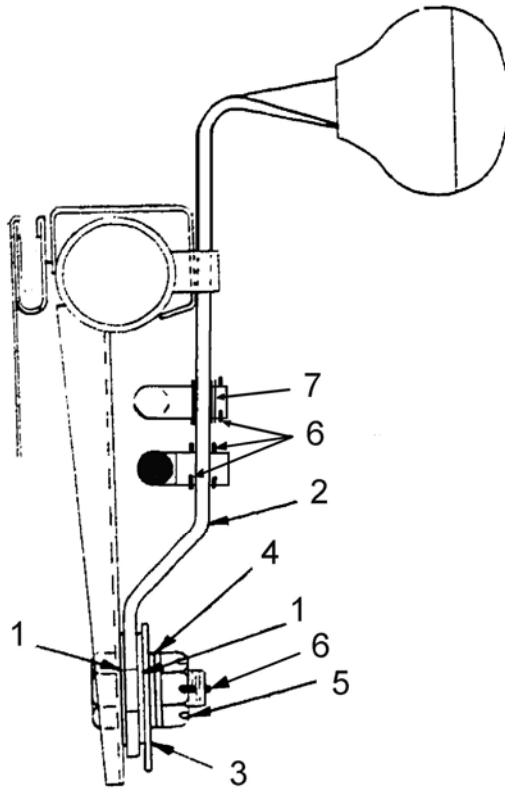
CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

Each crewmember is provided with a throttle lever on the left side of the cockpit. The air to fuel mixture is adjusted manually with a red control knob located on the lower left side of the instrument panel. Pulling the mixture control all the way back operates a cut-off valve on the carburetor that stops the supply of fuel to the engine.

2. MAINTENANCE PRACTICES

A. THROTTLE



1 - Friction Washer
2 - Lever
3 - Friction Lug

4 - Washers
5 - Short Castle Nut
6 - Cotter Pins

7 - Washer

Figure 76-00-1 - Throttle Installation (Forward Throttle Shown)

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(1) LEVER ATTACHMENT

Refer to Figure 76-00-1

- (a) Each lever is installed onto a bolt that is welded on the fuselage frame as shown in Figure 76-00-2. Each control has friction washers on either side of the control, which is secured with a friction lug (3), washers (4), a short castle nut (5), and a cotter pin (6).
- (b) The interconnect link is secured to the throttle levers with cotter pins (6).
- (c) The throttle cable end is secured to the front throttle lever with a washer (7) and a cotter pin (6).

(2) LEVER INTERCONNECT LINKAGE

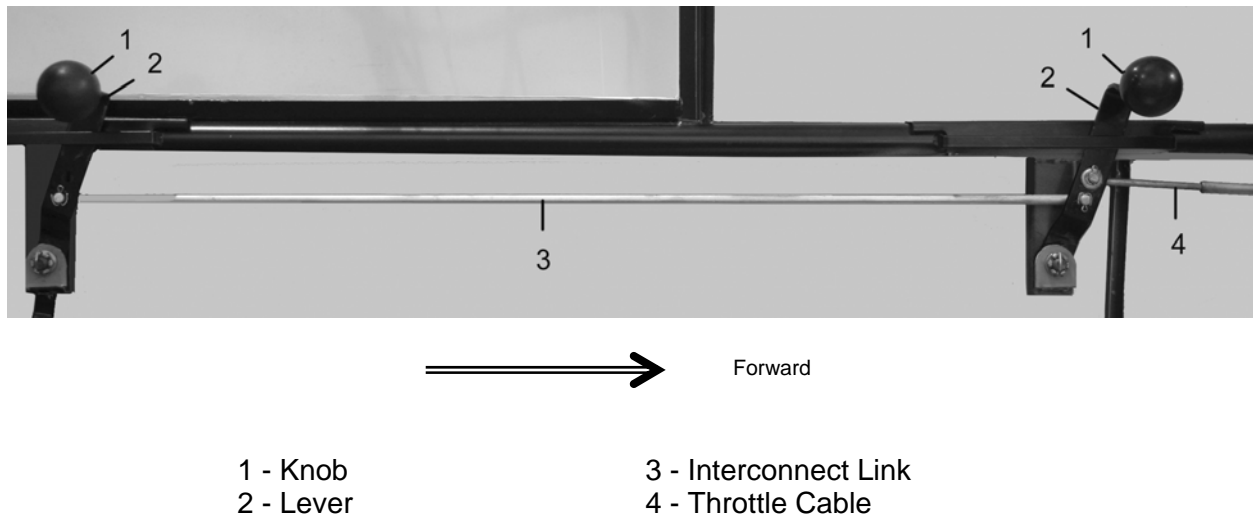
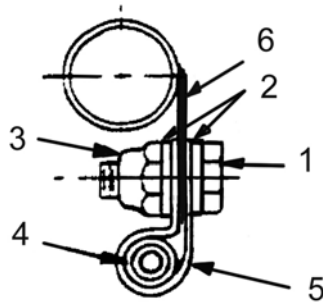


Figure 76-00-2 - Throttle Interconnect Linkage
View from the cockpit, looking outboard

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

(3) ATTACHMENT OF THROTTLE CABLE TO FUSELAGE



- | | | |
|-------------|--------------------|----------------|
| 1 - Bolt | 3 - Nut | 5 - Clamp |
| 2 - Washers | 4 - Throttle Cable | 6 - Attach Tab |

Figure 76-00-3 - Attachment of Throttle Cable to Fuselage

Refer to Figure 76-00-3

- (a) The throttle cable housing is kept from moving by a clamp that is bolted to a tab on the fuselage at the front left side, behind the interior panel.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

(4) MOTOR MOUNT THROTTLE CABLE ATTACHMENT

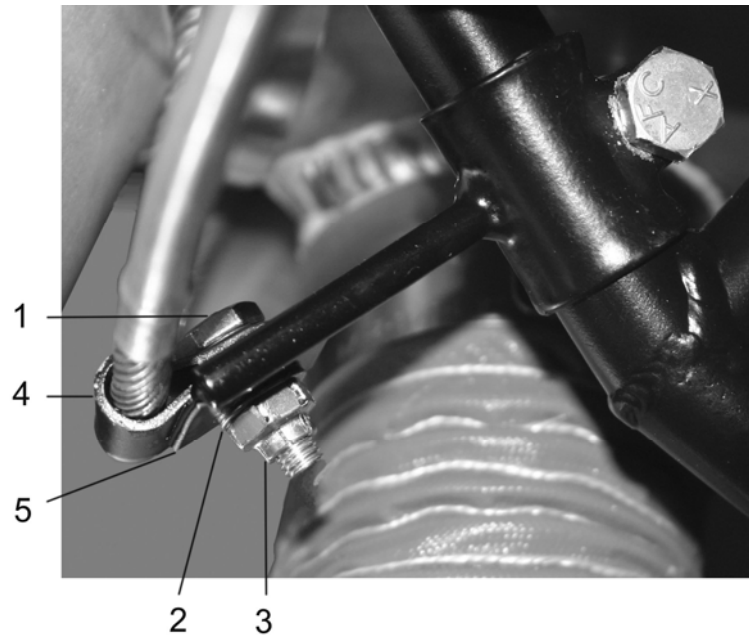


Throttle Bracket

Mixture Bracket

Figure 76-00-4 - Throttle Cable Attachment

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

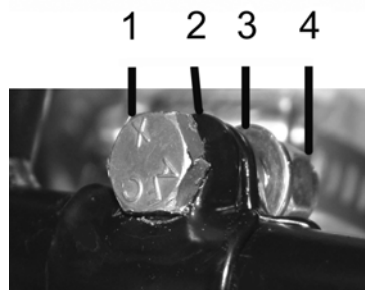


1 - Bolt 3 - Nut 5 - Throttle Bracket
2 - Washer 4 - Clamp

Figure 76-00-5 - Attachment of Throttle Bracket to Engine Mount

Refer to Figure 76-00-5

- (a) The throttle cable is held in place to the engine mount with a clamp (4) secured to the throttle link bracket (5) with a bolt (1), washer (2), and nut (3).



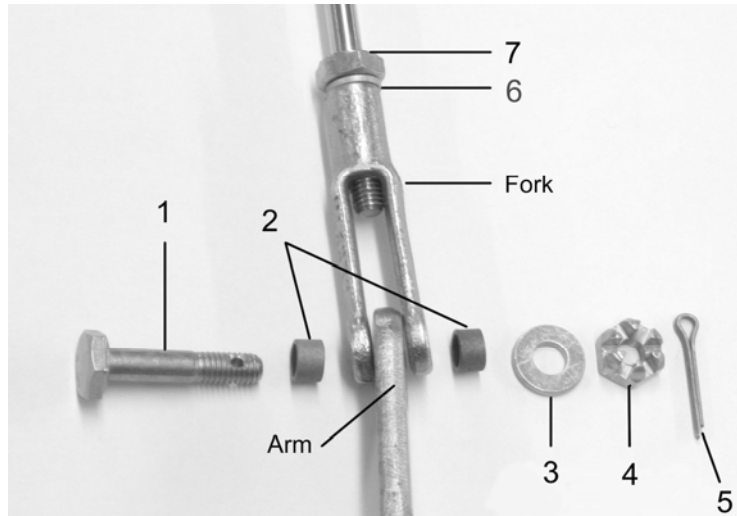
1 - Bolt 3 - Washer
2 - Mixture Bracket 4 - Nut

Figure 76-00-6 - Throttle and Mixture Bracket to Engine Mount Bolt

- (b) The throttle link bracket (2) is secured to the engine mount with a bolt (1), washer (3), and nut (4) (Figure 76-00-6)

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(5) THROTTLE CABLE TO CARBURETOR ARM ATTACHMENT



- | | | |
|--------------|------------------|---------|
| 1 - Bolt | 4 - Castle Nut | 7 - Nut |
| 2 - Bushings | 5 - Cotter Pin | |
| 3 - Washer | 6 - Split Washer | |

Figure 76-00-7 - Attachment of Throttle Cable to Carburetor Arm

Refer to Figure 76-00-7

- (a) The throttle cable is secured to the carburetor arm with a bolt (1), through-bushings (2), a washer (3), a nut (4), and a cotter pin (5) as shown in the figure.
- (b) The throttle travel can be adjusted by screwing the fork or sliding the cable housing in the clamp at the throttle link bracket. Be sure that the clamp and the fork jam nut are retightened after making any adjustment.

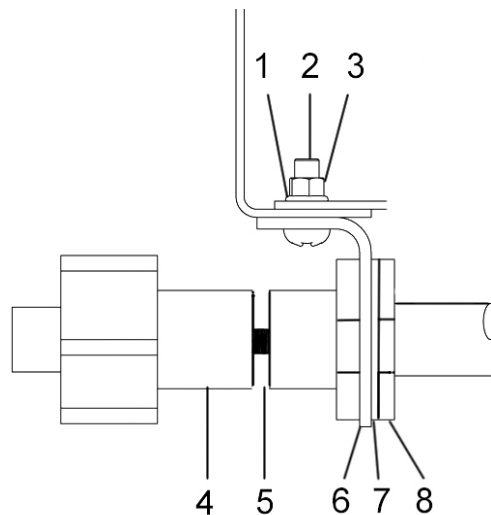
CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(6) INSPECTION

- (a) Ensure that the throttle arm at the carburetor contacts both stops at either extreme of its travel while the throttle levers in the cabin have positive clearance from the panel.
- (b) Control operation should be smooth. Lubricate the cable with LPS #2 if needed.
- (c) The throttle levers and cable should have enough friction so that the levers do not creep at full power while at the same time operating easily.

B. MIXTURE

(1) MIXTURE CONTROL CABLE TO PANEL ATTACHMENT



- | | | |
|------------|--------------------------|-----------------|
| 1 - Washer | 4 - Mixture Control Knob | 7 - Bracket |
| 2 - Screw | 5 - Cushion Space | 8 - Lock Washer |
| 3 - Nut | 6 - Panel Nut | 9 - Large Nut |

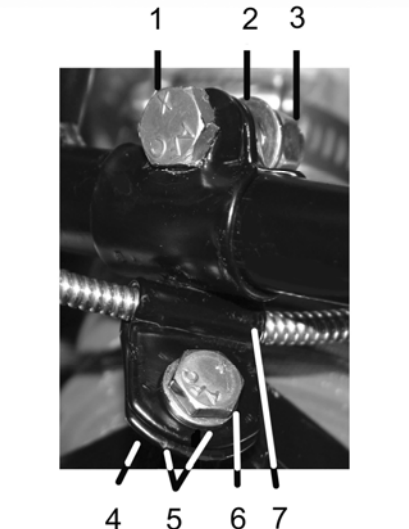
Figure 76-00-8 - Mounting of the Mixture Control at the Instrument Panel

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Refer to Figure 76-00-8

- (a) The mixture control mounting bracket (7) is fastened to the lower left side of the instrument panel with 4 screws (2), washers (1), and nuts (3).
- (b) The mixture control knob (4) is secured to the mounting bracket (7) with a lock washer (8), and a nut (9).
- (c) The mixture knob (4) should have enough movement so that the carburetor mixture lever contacts the stops at both extents of its travel and there should not be more than 1/4" cushion (5) between the knob (4) and the panel nut (6) in the full rich position.

(2) MOTOR MOUNT MIXTURE CABLE ATTACHMENT



- | | | |
|------------|-------------|---------------------|
| 1 - Bolt | 4 - Nut | 7 - Mixture Bracket |
| 2 - Washer | 5 - Washers | |
| 3 - Nut | 6 - Bolt | |

Figure 76-00-9 - Attachment of Mixture Bracket to Engine Mount

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

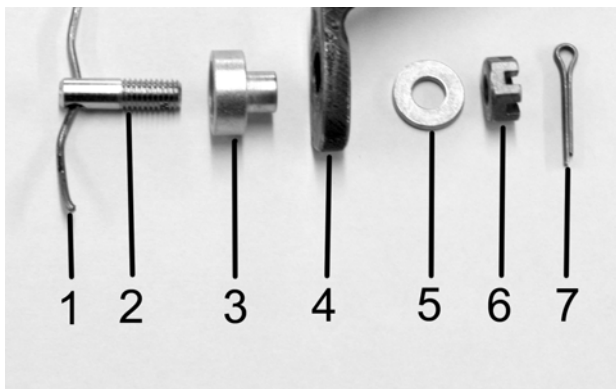
Refer to Figure 76-00-9

- (a) The mixture cable is fastened to the mixture bracket clamp (7) with a bolt (6), washers (5), and a nut (4).
- (b) The mixture bracket (7) is secured to the engine mount with a bolt (1), a washer (2), and a nut (3).

The position of the cable housing in the mixture bracket clamp (7) affects the travel of the knob in relation to the instrument panel. The travel can be adjusted by loosening the mixture bracket clamp (7) holding the cable housing and sliding the cable housing in the clamp. Retighten the clamp and check travel.

- (c) Be sure the cable housing is held tightly in the clamp after making any adjustments.

(3) MIXTURE CABLE TO CARBURETOR LEVER SWIVEL ATTACHMENT



- | | | |
|--------------|--------------------------|---------------|
| 1- Cable Rod | 4- Mixture Lever | 7- Cotter Pin |
| 2- Stud | 5- Washer | |
| 3- Swivel | 6- Short Castellated Nut | |

Figure 76-00-10 - Attachment of Mixture Cable to Carburetor Swivel Arm

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Refer to Figure 76-00-10

- (a) The control cable rod (1) pivots the mixture control lever (4) on the carburetor. The rod (1) is held tight by the mixture swivel fitting (3).
- (b) Adjusting the cable rod (1) length at the swivel fitting (3) affects the travel of the mixture control lever (4). There should be enough travel in the lever that it reaches the stops on either extreme of its travel.
- (c) The swivel nut (6) should be tightened enough to hold the cable rod firmly but not enough to shear it or strip the threads.

(4) INSPECTION

- (a) Ensure that the mixture lever at the carburetor contacts both stops at either extreme of its travel. At the same time, there should be no more than $\frac{1}{4}$ " cushion between the knob and the panel nut in the full rich position.
- (b) Inspect to be sure the cable attach swivel does not have excessive play and the cable is held tightly by the clamp.
- (c) Control operation should be smooth. Lubricate with LPS #2 if required.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

CHAPTER 79-00

OIL SYSTEM

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

79-00 OIL SYSTEM

TABLE OF CONTENTS

- 1. GENERAL.....2
- 2. MAINTENANCE PRACTICES2
 - A. OIL PRESSURE SCREEN.....2
 - (1) REMOVAL.....2
 - (2) INSPECTION3
 - (3) INSTALLATION.....3
 - B. OIL SUCTION SCREEN4
 - (1) REMOVAL.....4
 - (2) INSPECTION5
 - (3) INSTALLATION.....5
 - C. OIL FILTER.....6
 - (1) GENERAL7
 - (2) REMOVAL.....8
 - (3) INSPECTION8
 - (4) INSTALLATION.....8
 - D. OIL COOLER9
 - (1) REMOVAL.....10
 - (2) INSTALLATION.....10

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

1. GENERAL

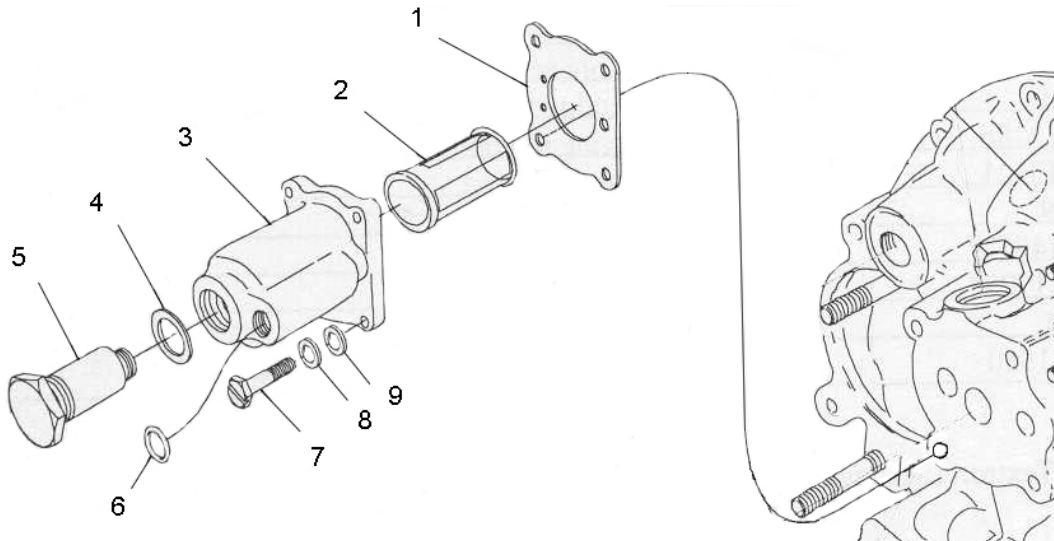
The oil system is an integral part of the engine, except for the cooler that is mounted onto the baffles on the left side of the engine.

Some aircraft are fitted with an optional spin-on type oil filter. These instructions will cover the removal and installation of this type of filter as well.

Refer to the latest revision of Textron Lycoming SB 480 to determine the frequency of oil changes and screen inspections.

2. MAINTENANCE PRACTICES

A. OIL PRESSURE SCREEN



- | | | |
|---------------------|---------------------|-----------------|
| 1 - Gasket | 4 - Aluminum Gasket | 7 - Bolt |
| 2 - Pressure Screen | 5 - Bypass Valve | 8 - Lock Washer |
| 3 - Screen Housing | 6 - Crush Gasket | 9 - Washer |

Figure 79-00-1 - Oil Pressure Screen

(1) REMOVAL

- (a) Drain the oil (Refer to section 12-20 2.B.)
- (b) Place a rag below the screen and on top of the muffler shroud to catch the oil.
- (c) Remove the bolts (7) that secure the oil pressure screen housing.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

CAUTION

Do not damage the temperature probe wire while separating the screen housing from the accessory case.

(d) Drain the oil from the housing and remove the screen (2).

(2) INSPECTION

(a) Inspect the screen (2) and inside the housing (3) for foreign particles.

CAUTION

If examination of the pressure screen indicates abnormal metal content, additional service may be required to determine the source and possible need for corrective maintenance

(b) Remove the old gasket (1) and make sure the housing and case surfaces are clean.

(3) INSTALLATION

(a) Assemble the screen (2) in the housing (3), assemble the gasket (1) and the housing (3) on mounting pad.

(b) Ensure that the gasket is properly oriented.

(c) Using new lock washers (8), secure the housing with 4 bolts (7), torque to 92-100 in/lbs.

(d) Remove the rag and clean all excess oil from the engine, firewall and muffler.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

B. OIL SUCTION SCREEN

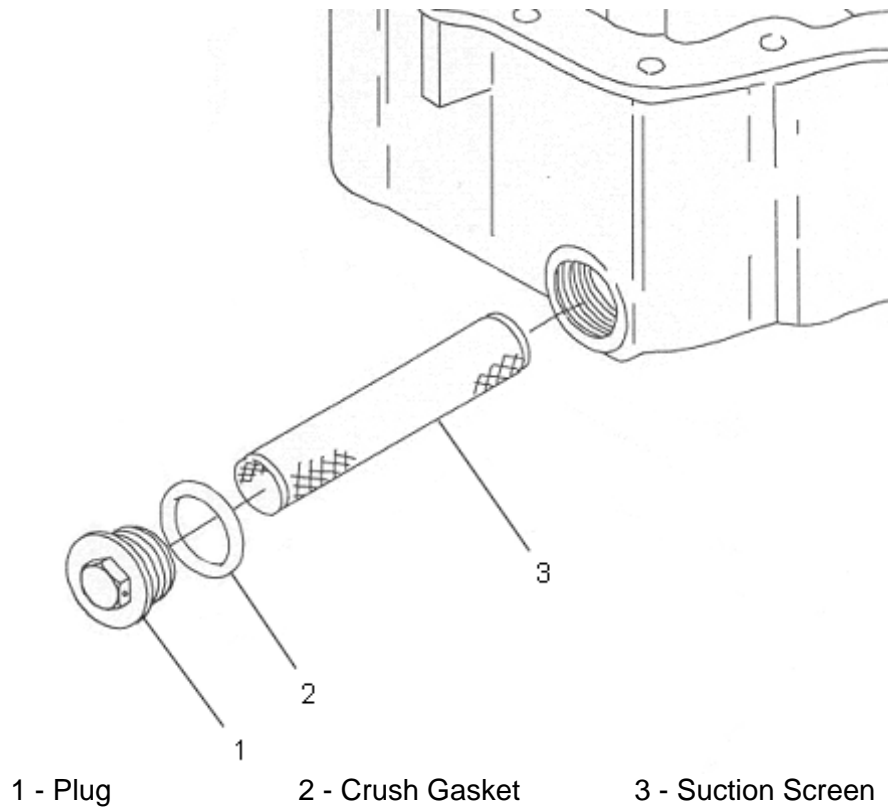


Figure 79-00-2 - Oil Suction Screen

(1) REMOVAL

- (a) Cut the safety wire and remove the hex head plug (1), gasket (2), and screen (3) at the right rear of the engine.

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(2) INSPECTION

- (a) Inspect the screen (2) for metal particles.

CAUTION

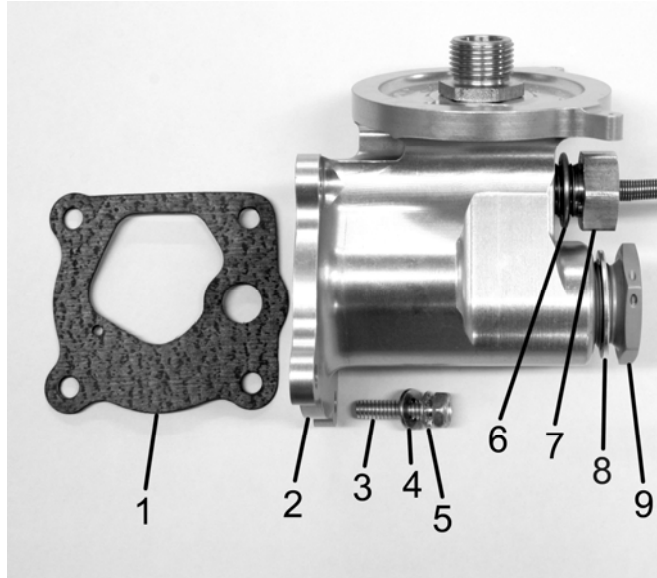
If examination of the suction screen indicates abnormal metal content, additional service may be required to determine the source and possible need for corrective maintenance

(3) INSTALLATION

- (a) Insert the screen (3) and plug (1) with a new copper crush gasket (2) with the unbroken surface against the plug.
- (b) Turn the plug until the sealing surfaces are in contact and tighten 135°.
- (c) Safety the plug with 0.032 safety wire.
- (d) Service the engine with oil (Refer to 12-20).
- (e) Run the engine and check for correct oil pressure and oil leaks. (Refer to 05-30).
- (f) Check the oil level.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

C. OIL FILTER



1 – B & C Gasket
2 - Oil Filter Adapter
3 - Bolt

4 - Washer
5 - Lock Washer
6 - Crush Gasket

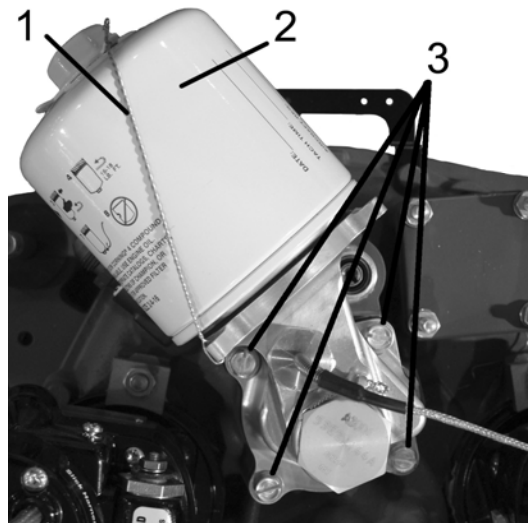
7 - Oil Temperature Probe
8 - Aluminum Gasket
9 - Bypass Valve

Figure 79-00-3 - Optional Oil Filter Adapter

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(1) GENERAL

- (a) The oil filter is mounted on a machined aluminum oil filter adapter (2) installed on the pad of the oil pressure screen housing at the top, center of the accessory case.
- (b) The oil filter adapter (2) uses the standard Lycoming thermostatic bypass valve (Vern-a therm) (9) for control of the engine's temperature and as an oil cooler bypass valve. Problems with oil temperature or oil pressure should be approached in the same manner as if the engine was equipped with a Lycoming spin-on oil filter adapter or oil screen housing (Refer to the Engine Operator's Manual).
- (c) The oil filter adapter (2) does not provide a bypass valve so it is important that the proper bypass filter is used.
- (d) The oil filter adapter (2) does not need to be removed for routine maintenance.



1 - Safety Wire 2 - Oil Filter 3 - Bolts

Figure 79-00-4 Spin-On Oil Filter

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(2) REMOVAL

- (a) Poke a hole in the top of the oil filter (2) with an awl.
- (b) Remove the safety wire (1) and the filter (2).
- (c) Drain the oil (Refer to 12-20).
- (d) After 45 minutes to 1 hour of draining, remove the filter (this will ensure minimal oil leakage). Use a plastic bag (2' X 2') that has a drawstring. Break the initial torque loose on the filter. Put the plastic bag over the filter and pull the drawstrings tight around the oil filter adapter flange and unscrew the filter inside the plastic bag. NO MESS!

(3) INSPECTION

- (a) Open the filter and carefully unfold the paper element and examine the material trapped in the filter.

CAUTION

If examination of the filter paper element indicates abnormal metal content, additional service may be required to determine the source and possible need for corrective maintenance

(4) INSTALLATION

- (a) Lubricate the oil filter base gasket with D-C 4 (Refer to 12-20). If unavailable, use clean engine oil. Do not use dirty engine oil to lubricate the filter base gasket. Dirty engine oil will make the oil filter difficult to remove later on.
- (b) Install the spin-on oil filter (2) and torque to 192-216 in/lbs.
- (c) Safety (1) the filter in same sense as you would turn the filter to tighten it with 0.032 safety wire (Figure 79-00-4).
- (d) Service the engine with oil (Refer to 12-20).

CAUTION

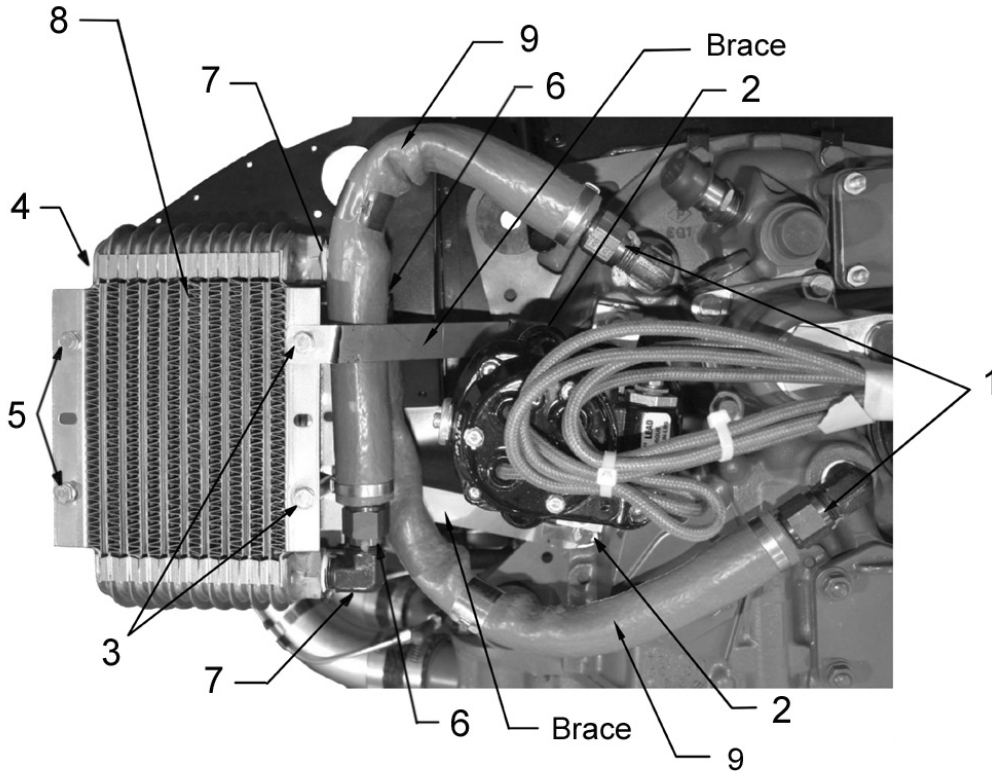
Do not tighten the spin-on filter beyond the specified maximum torque. Over tightening will make the filter extremely difficult to remove. Always use a 6 point, 1 inch socket when tightening a filter.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

(e) Run the engine and check for correct oil pressure and oil leaks. (Refer to section 05-30).

(f) Check the oil level.

D. OIL COOLER



- | | | |
|--------------------------|------------------------------|----------------|
| 1 - Inboard Hose Fitting | 4 - Rear Outboard Brace Bolt | 7 - Elbow |
| 2 - Inboard Brace Bolt | 5 - Outboard Through Bolts | 8 - Oil Cooler |
| 3 - Inboard Through Bolt | 6 - Outboard Hose Fitting | 9 - Hoses |

Figure 79-00-5 - Oil Cooler
(View of Aft Side of Engine, Looking Forward)

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(1) REMOVAL

- (a) Disconnect the inboard hose fittings (1) from the elbows that go into the accessory case.
- (b) Remove the inboard brace bolts (2) from the case.
- (c) Remove the inboard through-bolts (3) that hold the braces at the oil cooler (8) end.
- (d) Remove the rear bolt (4) on the outboard brace.
- (e) Remove the outboard through-bolts (5) and carefully remove the oil cooler (8).
- (f) Disconnect the hoses (6) from the oil cooler elbows (7).
- (g) Remove the elbows (7) from the oil cooler (8).

(2) INSTALLATION

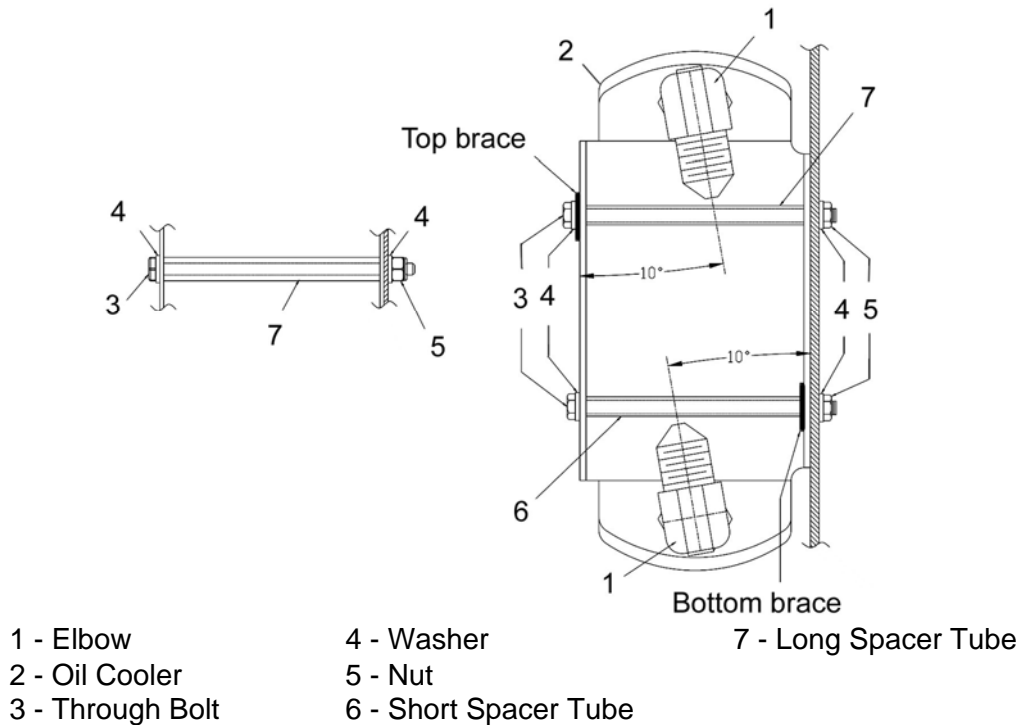


Figure 79-00-6 - Oil Cooler
(View looking from the center of the engine, outboard)

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

Refer to Figure 79-00-6, Figure 79-00-7, Figure 79-00-8, and Figure 79-00-9.

- (a) Apply thread sealant (EZ TURN Lubricant) to all but the most inner pipe thread on each elbow but not on the flare fitting threads. Screw the elbows (1) into the oil cooler (2). Be very careful to start the threads properly and tighten as close to 110 in/lbs as possible with the elbow pointing the proper direction.
- (b) Position the oil cooler (2) and install the outboard through-bolts (3) with a washer (4) through the long spacer tubes (7) between the oil cooler webs securing each with a washer (4) and nut (5).

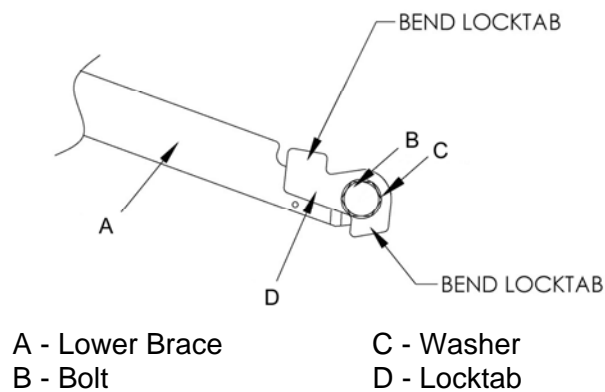


Figure 79-00-7 - Oil Cooler Support Braces

- (c) Position the lower bottom brace (A) and insert the inboard bolt (B), washer (C), and locktab (D).
- (d) Insert the through-bolt (3) with a washer (4) through the short spacer tube (6) between the oil cooler webs and brace end securing it with a washer (4) and nut (5).

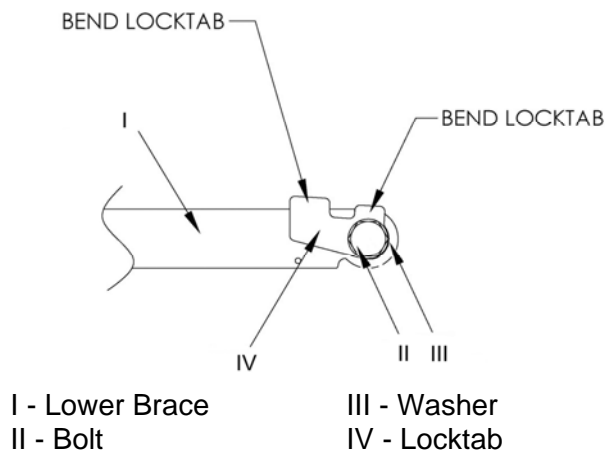
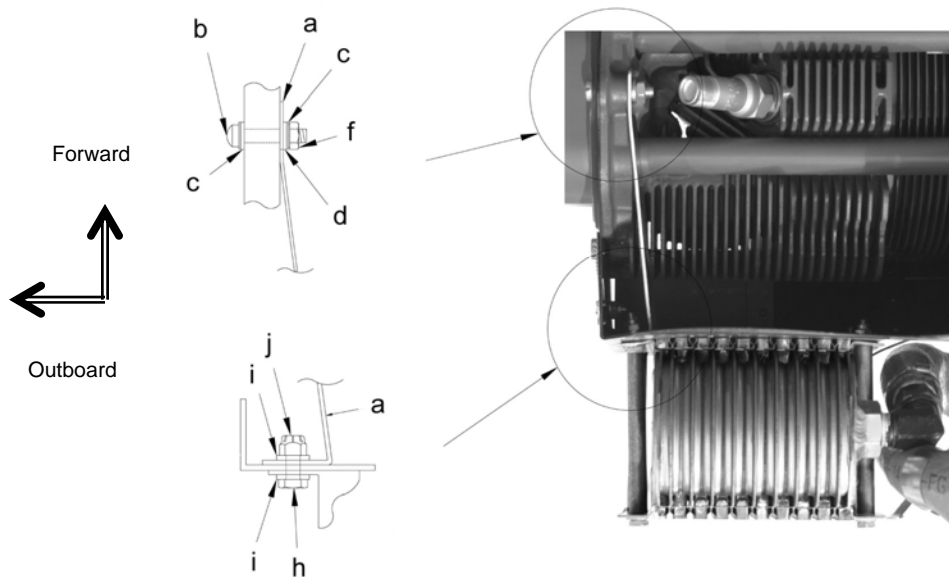


Figure 79-00-8 - Oil Cooler Support Braces

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

- (e) Position the upper brace (I) and insert the inboard bolt (II), washer (III) and locktab (IV).
- (f) Insert the through bolt (3) with a washer (4) through the brace (I), oil cooler web and long spacer tube (7) between the oil cooler webs and secure with a washer (4) and nut (5).



- | | | |
|-----------------|--------------------|--------------|
| a - Front Brace | d - Washer | h - Bolt |
| b - Screw | f - Nut | i - Washer |
| c - Lock Washer | g - No Part Listed | j - Lock Nut |

Figure 79-00-9 - Oil Cooler Support Tabs
(View looking down)

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

- (g) Attach the forward end of the front brace (a) to the end of the long rocker cover screw (b) of cylinder #4, securing it with a washer (d) lock washer (c) and nut (f) and torque to 50 in/lbs. maximum. Secure the rear end with a bolt (h), washers (i) and nut (j) and torque to 38-43 in/lbs.
- (h) Torque the inboard brace bolts on the accessory case to 96 in/lbs maximum and bend lock-tabs to safety.
- (i) Torque the four through-bolt nuts to 38-43 in/lbs.
- (j) Attach the longer oil hose to the upper elbow (which points down) on the oil cooler and tighten the fitting to 55-65 in/lbs while holding the elbow with a wrench.
- (k) Connect the inboard end of the hose to the lower elbow on the accessory case and tighten the fitting to 55-65 in/lbs while holding the elbow with a wrench.
- (l) Attach the shorter oil hose to the elbow that is pointing up on the oil cooler and tighten the fitting to 55-65 in/lbs while holding the elbow with a wrench.
- (m) Connect the inboard end of the hose to the upper elbow on the accessory case and tighten the fitting to 55-65 in/lbs while holding the elbow with a wrench.

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

CHAPTER
80-00

STARTER

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

80-00 STARTER

TABLE OF CONTENTS

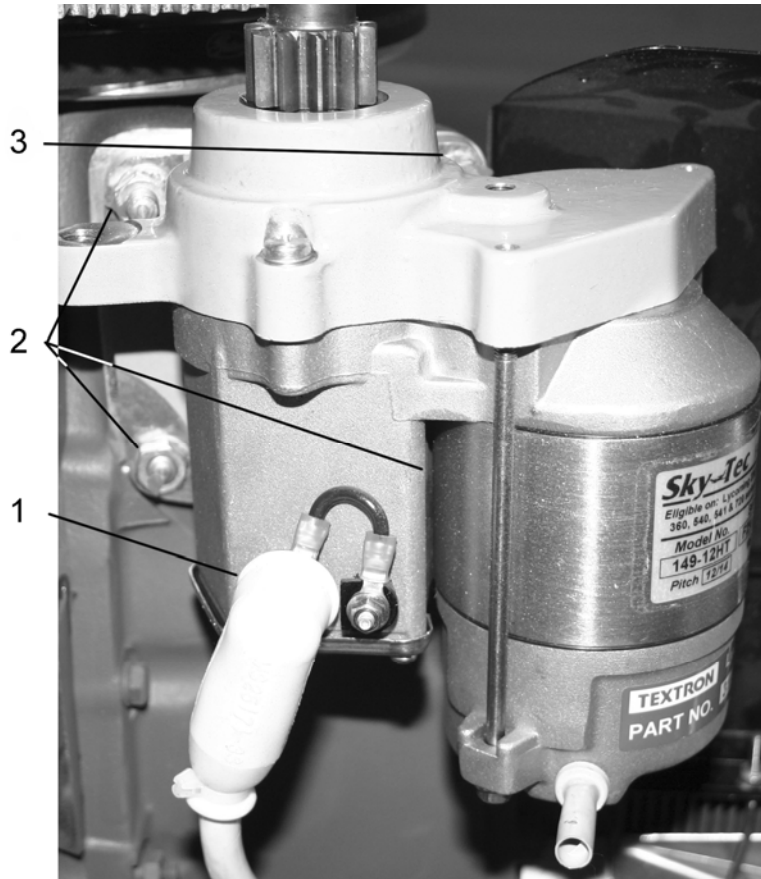
1. GENERAL.....	2
2. MAINTENANCE PRACTICES	2
(1) REMOVAL.....	3
(2) INSPECTION.....	3
(3) INSTALLATION.....	3

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The starter is a SKY TEC AIR 12 VOLT High-Torque starter with a built in electromechanical solenoid to engage the drive gear.

2. MAINTENANCE PRACTICES



1 - Power Cable Attach 2- Nuts and Lock Washers 3- Bolt and Lock Washers

Figure 80-00-1 - Starter

CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL

(1) REMOVAL

- (a) Disconnect the power cable (1).
- (b) Unbolt the starter attachment bolt (3) and nut (2).

(2) INSPECTION

- (a) Visually inspect the teeth of the starter gear and starter's housing for damage.

(3) INSTALLATION

- (a) Secure the starter using new lock washers (2, 3).
- (b) Torque the bolts (3) and nuts (2) to 95-105 in/lbs.
- (c) Attach the power cable using the metric nut and new lock washer (1). Torque the nut to 50-60 in/lbs.

<p>CAUTION Do not over torque the nut on the copper stud.</p>

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK

**CHAPTER
95-00**

**SPECIAL
PURPOSE
EQUIPMENT**

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

95-00 SPECIAL PURPOSE EQUIPMENT

Table of Contents

- 1. GENERAL2
- 2. TOOLING2
 - A. TL4000-001 FLOAT AXLE EXTENSION.....2

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

1. GENERAL

The CC18-180 aircraft requires special tooling for the service and maintenance of the aircraft. This section lists general tools needed for the service and maintenance of the aircraft.

2. TOOLING

A. TL4000-001 FLOAT AXLE EXTENSION

The CC18-180 aircraft may have the option of being fitted with Wipaire 2100A Amphibious Floats. In the event that the aircraft is fitted with floats a special tool is required for jacking the aircraft. Refer to section 08-00 for the proper use of the tool. The float axle extension tool is used to jack the aircraft, in particular when it is weighed following the procedures outlined in section 08-00 of this manual. The axle extension is inserted in the round tube on the inboard side of each main landing gear. The axle is to be made out of low or mild carbon steel. Figure 95-00-1 shows the dimensions of the tool to be used to lift the rear axles of the float equipped aircraft.

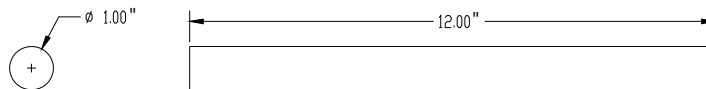


Figure 95-00-1 - TL4000-001 Float Axle Extension

APPENDIX A

CONVERSIONS

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

APPENDIX A CONVERSIONS

Table of Contents

- I. CONVERSIONS.....2
 - A. WEIGHT - POUNDS INTO KILOGRAMS.....2
 - B. LENGTH - FEET INTO METERS2
 - C. LENGTH - INCHES INTO CENTIMETERS3
 - D. VOLUME - GALLONS INTO LITERS3
 - E. TEMPERATURE - FAHRENHEIT INTO CELSIUS.....4
 - F. TORQUE - INCH POUNDS, FOOT POUNDS INTO NEWTON METERS4
 - G. SPEED - MILES PER HOUR INTO KNOTS.....5
 - H. DISTANCE - STATUTE MILES, NAUTICAL MILES, AND KILOMETERS.....5

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

I. CONVERSIONS

A. WEIGHT - POUNDS INTO KILOGRAMS (LIVRES EN KILOGRAMMES)

(Kilograms x 2.205 = Pounds)

(Pounds x .454 = Kilograms)

LB	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
0	0.0	0.454	0.907	1.361	1.814	2.268	2.722	3.175	3.629	4.082
10	4.536	4.990	5.443	5.897	6.350	6.804	7.257	7.711	8.165	8.618
20	9.072	9.525	9.979	10.433	10.886	11.340	11.793	12.247	12.701	13.154
30	13.608	14.061	14.515	14.969	15.422	15.876	16.329	16.783	17.237	17.690
40	18.144	18.597	19.051	19.504	19.958	20.412	20.865	21.319	21.772	22.226
50	22.680	23.133	23.587	24.040	24.494	24.948	25.401	25.855	26.303	26.762
60	27.216	27.669	28.123	28.576	29.030	29.484	29.937	30.391	30.844	31.298
70	31.752	32.205	32.659	33.112	33.566	34.019	34.473	34.927	35.380	35.834
80	36.287	36.741	37.195	37.648	38.102	38.555	39.009	39.463	39.916	40.370
90	40.823	41.277	41.731	42.184	42.638	43.091	43.545	43.999	44.452	44.906
100	45.359	45.813	46.266	46.720	47.174	47.627	48.081	48.534	48.988	49.442

B. LENGTH - FEET INTO METERS (PIEDS EN METRES)

(Meters x 3.281 = Feet)

(Feet x .305 = Meters)

Ft	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
	Meters	Meters	Meters	Meters	Meters	Meters	Meters	Meters	Meters	Meters
0	0.0	0.305	0.610	0.914	1.219	1.524	1.829	2.134	2.438	2.743
10	3.048	3.353	3.658	3.962	4.267	4.572	4.877	5.182	5.486	5.791
20	6.096	6.401	6.706	7.010	7.315	7.620	7.925	8.230	8.534	8.839
30	9.144	9.449	9.754	10.058	10.363	10.668	10.973	11.278	11.582	11.887
40	12.192	12.497	12.802	13.106	13.411	13.716	14.021	14.326	14.630	14.935
50	15.240	15.545	15.850	16.154	16.459	16.764	17.069	17.374	17.678	17.983
60	18.288	18.593	18.898	19.202	19.507	19.812	20.117	20.422	20.726	21.031
70	21.336	21.641	21.946	22.250	22.555	22.860	23.165	23.470	23.774	24.079
80	24.384	24.689	24.994	25.298	25.603	25.908	26.213	26.518	26.822	27.127
90	27.432	27.737	28.042	28.346	28.651	28.956	29.261	29.566	29.870	30.175
100	30.480	30.785	31.090	31.394	31.699	32.004	32.309	32.614	32.918	33.223

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

C. LENGTH - INCHES INTO CENTIMETERS (POUCES EN CENTIMETRES)

(Centimeters x .394 = Inches)

(Inches x 2.54 = Centimeters)

IN	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
	cm	cm	cm	cm	cm	cm	cm	cm	cm	cm
0	0.00	2.54	5.08	7.62	10.16	12.70	15.24	17.78	20.32	22.86
10	25.40	27.94	30.48	33.02	35.56	38.10	40.64	43.18	45.72	48.26
20	50.80	53.34	55.88	58.42	60.96	63.50	66.04	68.58	71.12	73.66
30	76.20	78.74	81.28	83.82	86.36	88.90	91.44	93.98	96.52	99.06
40	101.60	104.14	106.68	109.22	111.76	114.30	116.84	119.38	121.92	124.46
50	127.00	129.54	132.08	134.62	137.16	139.70	142.24	144.78	147.32	149.86
60	152.40	154.94	157.48	160.02	162.56	165.10	167.64	170.18	172.72	175.26
70	177.80	180.34	182.88	185.42	187.96	190.50	193.04	195.58	198.12	200.66
80	203.20	205.74	208.28	210.82	213.36	215.90	218.44	220.98	223.52	226.06
90	228.60	231.14	233.68	236.22	238.76	241.30	243.84	246.38	248.92	251.46
100	254.00	256.54	259.08	261.62	264.16	266.70	269.24	271.78	274.32	276.86

D. VOLUME - GALLONS INTO LITERS (GALLONS EN LITRES)

(Gallons x 3.785 = Liters)

(Liters x .26 = Gallons)

Gal.	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
	Liters	Liters	Liters	Liters	Liters	Liters	Liters	Liters	Liters	Liters
0	0.0	3.79	7.57	11.36	15.14	18.93	22.71	26.5	30.28	34.07
10	37.85	41.64	45.42	49.21	52.10	56.78	60.57	64.35	68.14	71.92
20	75.71	79.49	83.28	87.06	90.85	94.64	98.42	102.21	105.99	109.78
30	113.56	117.35	121.13	124.92	128.70	132.49	136.27	140.06	143.85	147.63
40	151.42	155.20	158.99	162.77	166.56	170.34	174.13	177.91	181.7	185.49
50	189.27	193.06	196.84	200.63	204.41	208.20	211.98	215.77	219.55	223.34
60	227.12	230.91	234.70	238.48	242.27	246.05	249.84	253.62	257.41	261.19
70	264.98	268.76	272.55	276.34	280.12	283.91	287.69	291.48	295.26	299.05
80	302.83	306.62	310.40	314.19	317.97	321.76	325.55	329.33	333.12	336.90
90	340.69	344.47	348.26	352.04	355.83	359.61	363.34	367.18	370.97	374.76
100	378.54	382.33	386.11	389.90	393.68	397.47	401.25	405.04	408.82	412.61

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

E. TEMPERATURE - FAHRENHEIT INTO CELSIUS

((°F - 32) x 5/9 = °C)

((°C x 9/5) + 32 = °F)

°F	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
	°C	°C	°C	°C	°C	°C	°C	°C	°C	°C
0	-17.8	-17.2	-16.7	-16.1	-15.6	-15.0	-14.4	-13.9	-13.3	-12.8
10	-12.2	-11.7	-11.1	-10.6	-10	-9.4	-8.9	-8.3	-7.8	-7.2
20	-6.7	-6.1	-5.5	-5.0	-4.4	-3.9	-3.3	-2.8	-2.2	-1.7
30	-1.1	-0.6	0.0	0.6	1.1	1.7	2.2	2.8	3.3	3.9
40	4.4	5.0	5.6	6.1	6.7	7.2	7.8	8.3	8.9	9.4
50	10.0	10.6	11.1	11.7	12.0	12.8	13.3	13.9	14.4	15.0
60	15.6	16.1	16.7	17.2	17.8	18.3	18.9	19.4	20.0	20.6
70	21.1	21.7	22.2	22.8	23.3	23.9	24.4	25.0	25.6	26.1
80	26.7	27.2	27.8	28.3	28.9	29.4	30.0	30.6	31.1	31.7
90	32.2	32.8	33.3	33.9	34.4	35.0	35.6	36.1	36.7	37.2
100	37.8	38.3	38.9	39.4	40.0	40.6	41.1	41.7	42.2	42.8

F. TORQUE - INCH POUNDS, FOOT POUNDS INTO NEWTON METERS

INCH POUNDS INTO NEWTON METERS

In-lbs.	+0	+10	+20	+30	+40	+50	+60	+70	+80	+90
	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m
0	0.0	1.1	2.3	3.4	4.5	5.6	6.8	7.9	9.0	10.2
100	11.3	12.4	13.6	14.7	15.8	16.9	18.1	19.2	20.3	21.5
200	22.6	23.7	24.9	26.0	27.1	28.2	29.4	30.5	31.6	32.8
300	33.9	35.0	36.2	37.3	38.4	39.5	40.7	41.8	42.9	44.1

FOOT POUNDS INTO NEWTON METERS

Ft-lb.	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m	N-m
20	27.1	28.5	29.8	31.2	32.5	33.9	35.3	36.6	38	39.3
30	40.7	42	43.4	44.7	46.1	47.5	48.8	50.2	51.5	52.9
40	54.2	55.6	56.9	58.3	59.7	61	62.4	63.7	65.1	66.4
50	67.8	69.1	70.5	71.9	73.2	74.6	75.9	77.3	78.6	80
60	81.3	82.7	84.1	85.4	86.8	88.1	89.5	90.8	92.2	93.6

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

G. SPEED - MILES PER HOUR INTO KNOTS

MPH	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
	knots	knots	knots	knots	knots	knots	knots	knots	knots	knots
0	0.0	0.9	1.7	2.6	3.5	4.3	5.2	6.1	7.0	7.8
10	8.7	9.6	10.4	11.3	12.2	13.0	13.9	14.8	15.6	16.5
20	17.4	18.2	19.1	20.0	20.9	21.7	22.6	23.5	24.3	25.2
30	26.1	26.9	27.8	28.7	29.5	30.4	31.3	32.2	33.0	33.9
40	34.8	35.6	36.5	37.4	38.2	39.1	40.0	40.8	41.7	42.6
50	43.4	44.3	45.2	46.1	46.9	47.8	48.7	49.5	50.4	51.3
60	52.1	53.0	53.9	54.7	55.6	56.5	57.4	58.2	59.1	60.0
70	60.8	61.7	62.6	63.4	64.3	65.2	66.0	66.9	67.8	68.6
80	69.5	70.4	71.3	72.1	73.0	73.9	74.7	75.6	76.5	77.3
90	78.2	79.1	79.9	80.8	81.7	82.6	83.4	84.3	85.2	86
100	86.9	87.8	88.6	89.5	90.4	91.2	92.1	93.0	93.8	94.7
110	95.6	96.5	97.3	98.2	99.1	100.0	100.8	101.7	102.5	103.4
120	104.3	105.1	106.0	106.9	107.8	108.6	109.5	110.4	111.2	112.1
130	113.0	113.9	114.8	115.6	116.5	117.3	118.2	119.1	120.0	120.8
140	121.7	122.6	123.5	124.3	125.2	126.0	126.9	127.8	128.7	129.5
150	130.3	131.2	132.1	132.9	133.8	134.7	135.6	136.5	137.4	138.2
160	139.0	139.9	140.8	141.6	142.5	143.4	144.3	145.2	146.1	146.9
170	147.7	148.6	149.5	150.3	151.2	152.1	152.9	153.8	154.7	155.5
180	156.4	157.3	158.2	159.0	159.9	160.8	161.6	162.5	163.4	164.2

H. DISTANCE - STATUTE MILES, NAUTICAL MILES, AND KILOMETERS

(Statute Miles x 1.609 = Kilometers)
 (Statute Miles x 8.69 = Nautical Miles)
 (Nautical Miles x 1.852 = Kilometers)

(Kilometers x .622 = Statute Miles)
 (Nautical Miles x 1.15 = Statute Miles)
 (Kilometers x .54 = Nautical Miles)

**CUB CRAFTERS, INC.
CC18-180 MAINTENANCE MANUAL**

INTENTIONALLY LEFT BLANK