Cessna Single Engine High Wing Maintenance

Aircraft General

Revision Record

Rev Year	Rev Number	Rev Date	Revision Details	Reference	Revised by
2016	00	05/13/2016	Initial Issue	172S Maintenance Manual, Rev 21, 01OCT15	Zimmerman
2016	01	8/12/2016	Model 182/206 Differences added	182 & 206 Maintenance Manual Rev 19, 01OCT15	Zimmerman
2017	02	01/18/2017	Corrected aircraft designations on differences, editorial changes per SME.	172S Maintenance Manual, Rev 21, 01OCT15 182 & 206 Maintenance Manual Rev 19, 01OCT15	Springer

Contents

Aircraft General

ATA04 – Airworthiness Limitations

LESSON OBJECTIVES

- Identify safety precautions related to ATA Chapter 04;
- Identify maintenance practices important to ATA Chapter 04;
- Describe the general layout of ATA Chapter 04;

INSPECTION AND REPLACEMENT TIME LIMITS (04-10-00 & 4-11-00)

INSPECTION TIME LIMITS

NOTE

An initial inspection and subsequent recurring structural inspections of these items are necessary to maintain the airworthiness of the airplane. The recurring inspection intervals do not begin until after the completion of the initial inspection.

REPLACEMENT TIME LIMITS

OIL PRESSURE SWITCH REPLACEMENT INTERVALS		
PART NAME	PART NUMBER	REPLACEMENT INTERVAL
Oil Pressure Switch	83278	Every 3,000 Hours

(4-10-00) Inspection Time Limits

- The inspection time intervals that apply to the systems and components of this aircraft represent the maximum inspection intervals. Detailed inspection and maintenance check procedures are in the applicable chapters of the maintenance manual.

INSPECTION AND REPLACEMENT TIME LIMITS (04-10-00 & 4-11-00)

INSPECTION TIME LIMITS

An initial inspection and subsequent recurring structural inspections of these items are necessary to maintain the airworthiness of the airplane. The recurring inspection intervals do not begin until after the completion of the initial inspection.

(4-11-00) Replacement Time Limits

- You must replace the life-limited components that follow at the specified time. Cessna recommends that you schedule the components for replacement during the airplane's inspection interval that aligns with or occurs just before the specified time limit expires. Procedures to replace the components are in the applicable chapters of maintenance manual.

PROPELLER INSPECTION TIME LIMITS - AIRWORTHINESS LIMITATIONS (MPC26 4-10-00)

Inspection time intervals require disassembly, operational checks, and represent the maximum inspection intervals that maintenance personnel must adhere to.

There are inspections schedules for Fixed Pitch Propellers.

For a complete list of descriptions and inspection time limits, refer to the McCauley Propeller Systems Owner/Operator Information Manual, Chapter 4 Airworthiness Limitations, Inspection Time Limits 4-10-00.

Model Differences

182/206 DIFFERENCES - INSPECTION AND REPLACEMENT TIME LIMITS (04-10-00 & 4-11-00)

INSPECTION TIME LIMITS

NOTE

An initial inspection and subsequent recurring structural inspections of these items are necessary to maintain the airworthiness of the airplane. The recurring inspection intervals do not begin until after the completion of the initial inspection.

REPLACEMENT TIME LIMITS

OIL PRESSURE SWITCH REPLACEMENT INTERVALS		
PART NAME	**PART NUMBER**	**REPLACEMENT INTERVAL**
Oil Pressure Switch	83278	Every 3,000 Hours

- The inspection time limits and the replacement time limits for the each of the Single Engine High Wing aircraft are unique.

Refer to the appropriate Maintenance Manual for complete information about the time limits.

ATA05 - Time Limits/Maintenance Checks

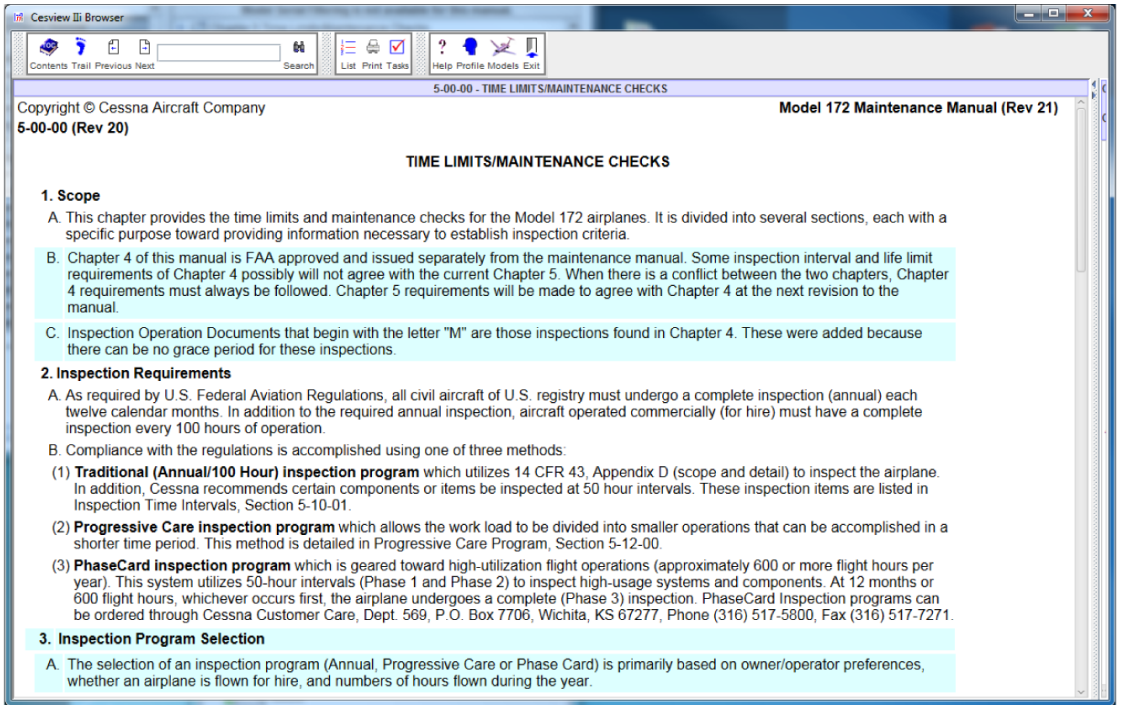
LESSON OBJECTIVES

- Identify safety precautions related to ATA Chapter 05.
- Identify maintenance practices important to ATA Chapter 05.
- Describe the general layout of ATA Chapter 05.

TIME LIMITS/MAINTENANCE CHECKS (5-00-00)

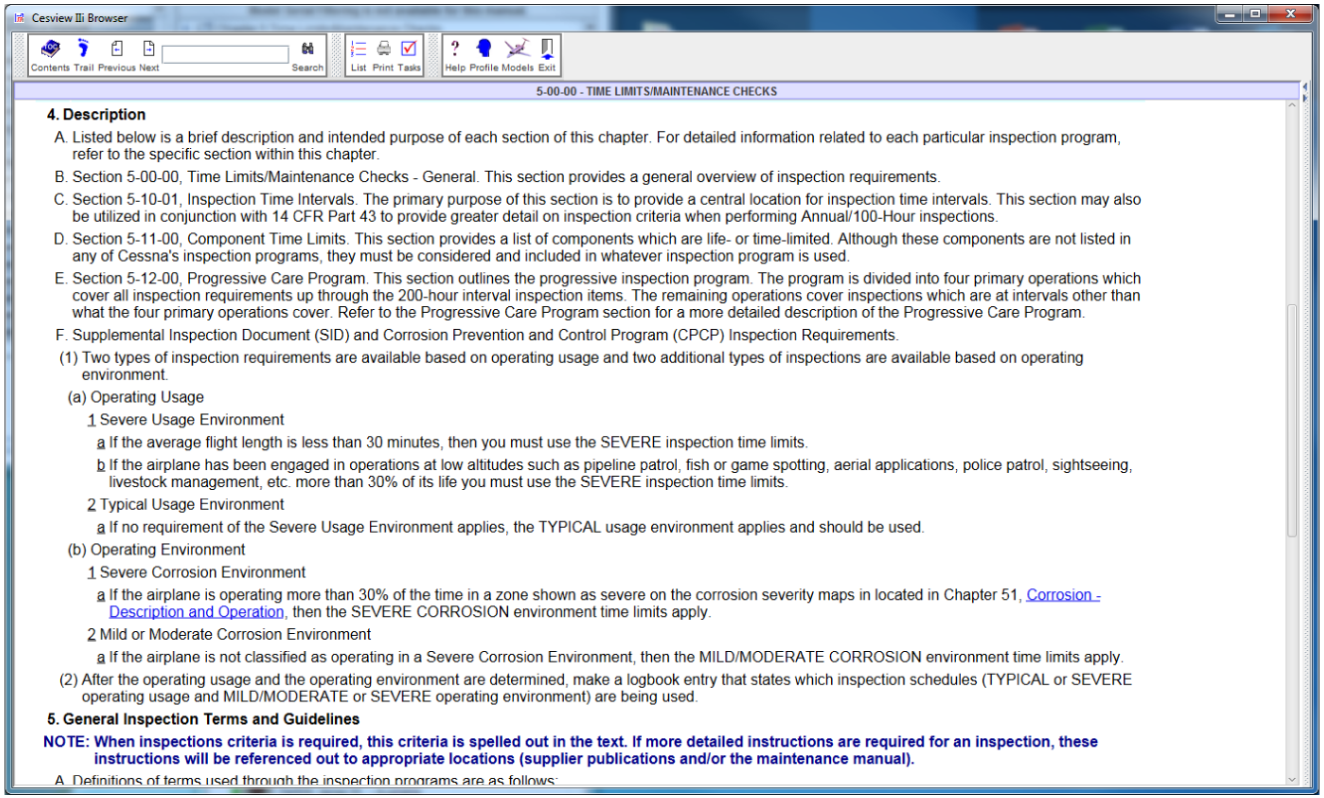
As required by U.S. Federal Aviation Regulations, all civil aircraft of U.S. registry must undergo a complete annual inspection (each twelve calendar months). In addition to the required annual inspection, aircraft operated commercially (for hire) must have a complete inspection every 100 hours of operation.

To comply with the regulations, use one of three methods:

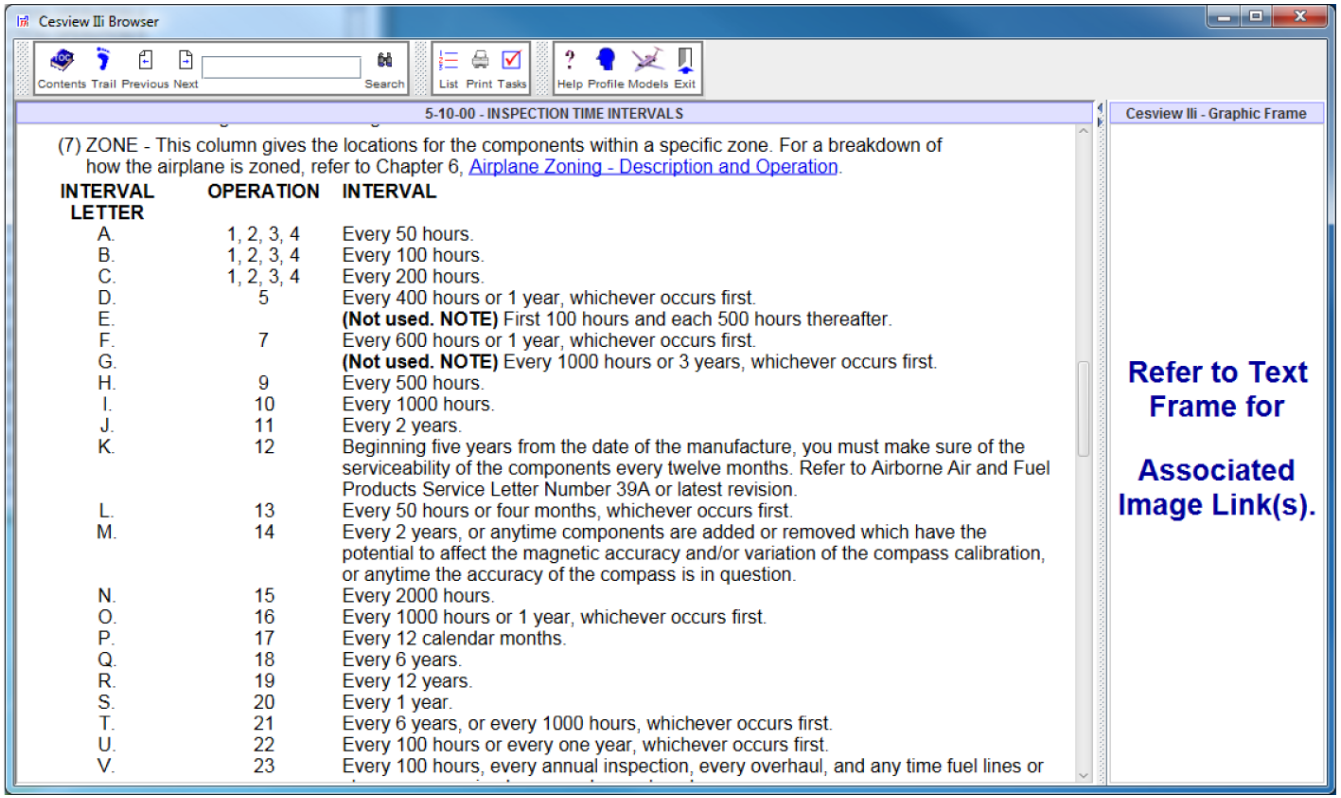


- **Traditional (Annual/100 Hour) inspection program** which utilizes 14 CFR 43, Appendix D (scope and detail) to inspect the airplane. In addition, Cessna recommends certain components or items be inspected at 50 hour intervals. These inspection items are listed in Inspection Time Intervals, Section 5-10-01 of the maintenance manual.
- **Progressive Care inspection program** which allows the work load to be divided into smaller operations that can be accomplished in a shorter time period. This method is detailed in Progressive Care Program, Section 5-12-00 of the maintenance manual.
- **Phase Card inspection program** which is geared toward high-utilization flight operations (approximately 600 or more flight hours per year). This system utilizes 50-hour intervals (Phase 1 and Phase 2) to inspect high-usage systems and components. At 12 months or 600 flight hours, whichever occurs first, the airplane undergoes a complete (Phase 3) inspection. Phase Card Inspection programs can be ordered through Cessna Customer Care, Dept. 569, P.O. Box 7706, Wichita, KS 67277, Phone (316) 517-5800, Fax (316) 517-7271.

TIME LIMITS/MAINTENANCE CHECKS (5-00-00)



INSPECTION TIME INTERVALS (5-10-00)



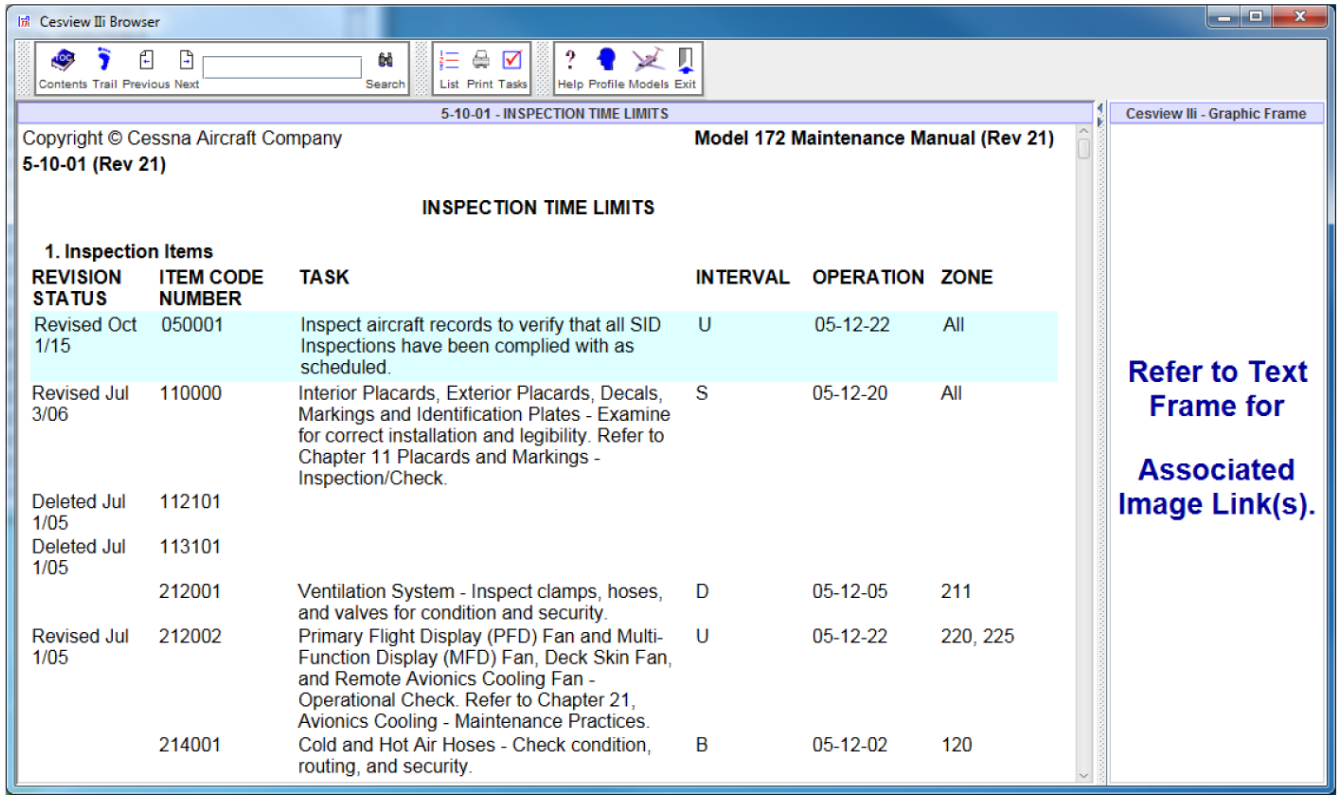
(7) ZONE - This column gives the locations for the components within a specific zone. For a breakdown of how the airplane is zoned, refer to Chapter 6, Airplane Zoning - Description and Operation.

INTERVAL LETTER	OPERATION	INTERVAL
A.	1, 2, 3, 4	Every 50 hours.
B.	1, 2, 3, 4	Every 100 hours.
C.	1, 2, 3, 4	Every 200 hours.
D.	5	Every 400 hours or 1 year, whichever occurs first.
E.		**(Not used. NOTE)** First 100 hours and each 500 hours thereafter.
F.	7	Every 600 hours or 1 year, whichever occurs first.
G.		**(Not used. NOTE)** Every 1000 hours or 3 years, whichever occurs first.
H.	9	Every 500 hours.
I.	10	Every 1000 hours.
J.	11	Every 2 years.
K.	12	Beginning five years from the date of the manufacture, you must make sure of the serviceability of the components every twelve months. Refer to Airborne Air and Fuel Products Service Letter Number 39A or latest revision.
L.	13	Every 50 hours or four months, whichever occurs first.
M.	14	Every 2 years, or anytime components are added or removed which have the potential to affect the magnetic accuracy and/or variation of the compass calibration, or anytime the accuracy of the compass is in question.
N.	15	Every 2000 hours.
O.	16	Every 1000 hours or 1 year, whichever occurs first.
P.	17	Every 12 calendar months.
Q.	18	Every 6 years.
R.	19	Every 12 years.
S.	20	Every 1 year.
T.	21	Every 6 years, or every 1000 hours, whichever occurs first.
U.	22	Every 100 hours or every one year, whichever occurs first.
V.	23	Every 100 hours, every annual inspection, every overhaul, and any time fuel lines or

The primary function of this section is to give inspection time intervals. Section 5-10-01 of the maintenance manual is an index of the inspections that you can use with the 14 CFR 43, Appendix D, Scope and Detail of Items (as Applicable to the Particular Aircraft) To Be Included in Annual/100 hour inspections. Use the chart in ATA Chapter 05 as an augmentation for the inspection.

The time intervals shown in ATA chapter 05 are recommended intervals at which items are to be examined for normal use under average environmental conditions. Airplanes operated in extremely humid areas (tropics), or in unusually cold, damp climates, etc., may need more frequent inspections for wear, corrosion, and lubrication. Under these adverse conditions, complete periodic inspections related to this chart at more frequent intervals until operator field experience is used to set individual inspection intervals.

INSPECTION TIME LIMITS (5-10-01)



Model 172 Maintenance Manual (Rev 21)

5-10-01 (Rev 21)

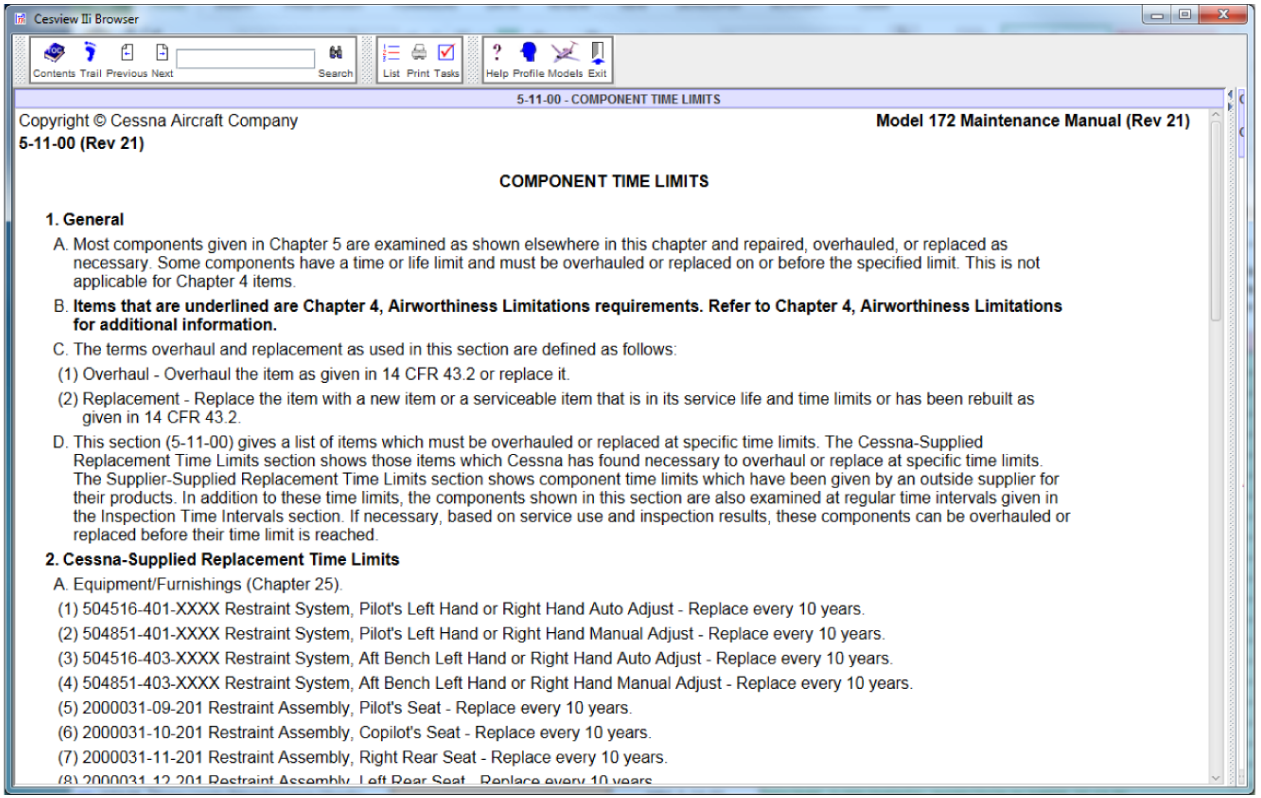
INSPECTION TIME LIMITS

1. Inspection Items

REVISION STATUS	ITEM CODE NUMBER	TASK	INTERVAL	OPERATION	ZONE
Revised Oct 1/15	050001	Inspect aircraft records to verify that all SID Inspections have been complied with as scheduled.	U	05-12-22	All
Revised Jul 3/06	110000	Interior Placards, Exterior Placards, Decals, Markings and Identification Plates - Examine for correct installation and legibility. Refer to Chapter 11 Placards and Markings - Inspection/Check.	S	05-12-20	All
Deleted Jul 1/05	112101				
Deleted Jul 1/05	113101				
	212001	Ventilation System - Inspect clamps, hoses, and valves for condition and security.	D	05-12-05	211
Revised Jul 1/05	212002	Primary Flight Display (PFD) Fan and Multi-Function Display (MFD) Fan, Deck Skin Fan, and Remote Avionics Cooling Fan - Operational Check. Refer to Chapter 21, Avionics Cooling - Maintenance Practices.	U	05-12-22	220, 225
	214001	Cold and Hot Air Hoses - Check condition, routing, and security.	B	05-12-02	120

For a complete list of Inspection Time Limits see the maintenance manual ATA chapter 5 section 5-10-01.

COMPONENT TIME LIMITS (5-11-00)

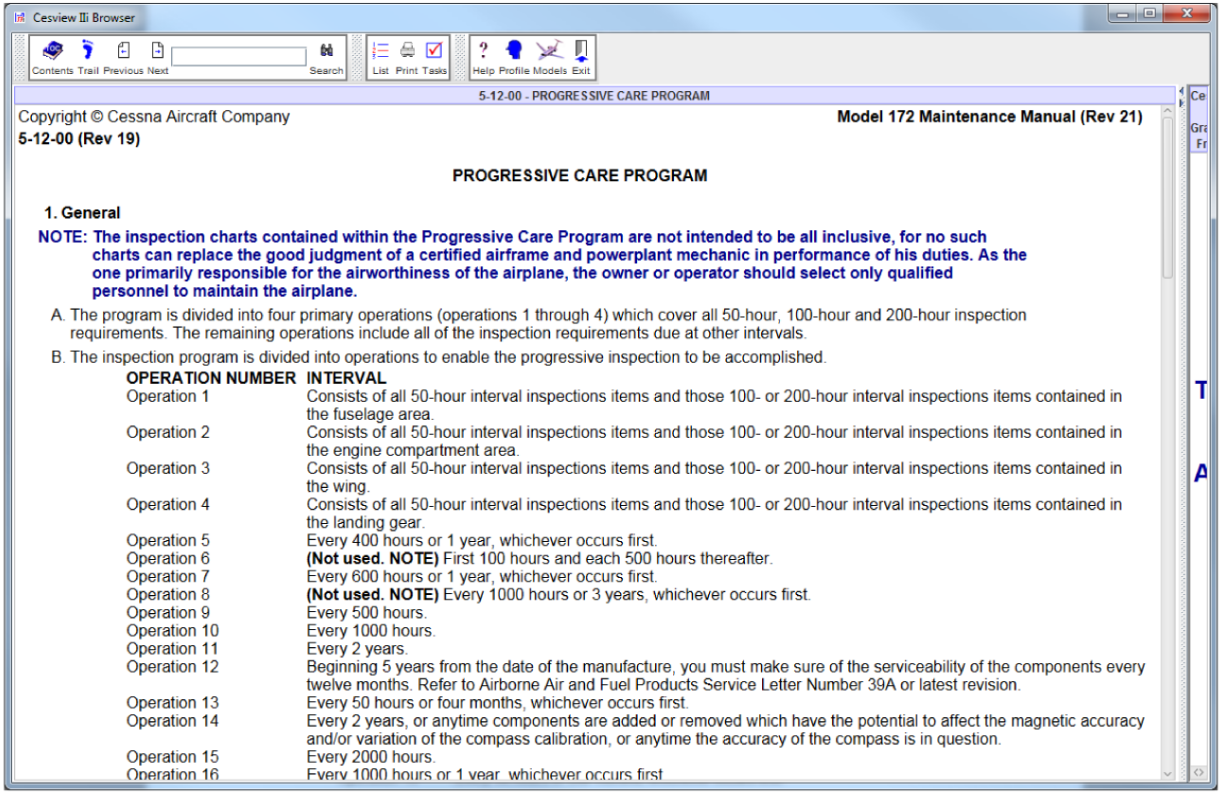


The terms overhaul and replacement as used in this section of the maintenance manual are defined as follows:

- Overhaul - Overhaul the item as given in 14 CFR 43.2 or replace it.
- Replacement - Replace the item with a new item or a serviceable item that is in its service life and time limits or has been rebuilt as given in 14 CFR 43.2.

For a complete list of Cessna Supplied Component Replacement Time Limits see the maintenance manual ATA chapter 5 section 5-11-01

PROGRESSIVE CARE PROGRAM (5-12-00)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5-12-00 - PROGRESSIVE CARE PROGRAM

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5-12-00 (Rev 19)

PROGRESSIVE CARE PROGRAM

1. General

NOTE: The inspection charts contained within the Progressive Care Program are not intended to be all inclusive, for no such charts can replace the good judgment of a certified airframe and powerplant mechanic in performance of his duties. As the one primarily responsible for the airworthiness of the airplane, the owner or operator should select only qualified personnel to maintain the airplane.

A. The program is divided into four primary operations (operations 1 through 4) which cover all 50-hour, 100-hour and 200-hour inspection requirements. The remaining operations include all of the inspection requirements due at other intervals.

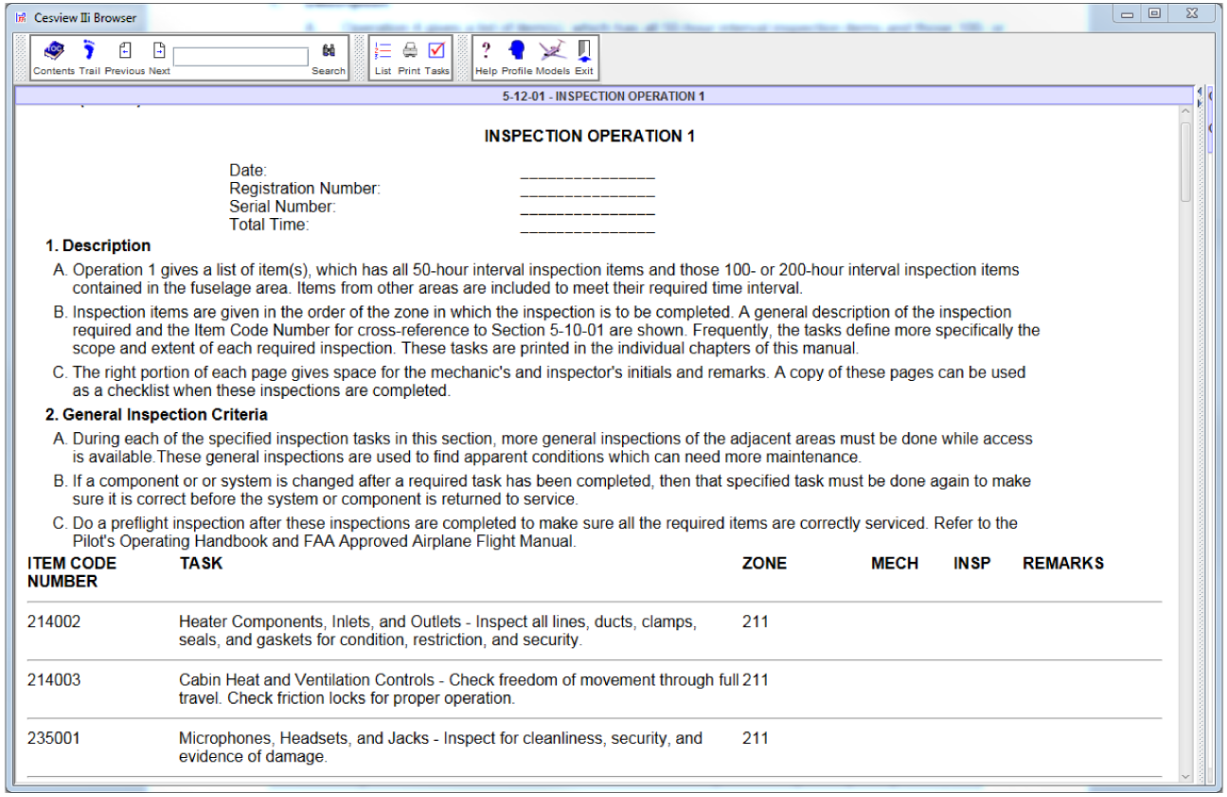
B. The inspection program is divided into operations to enable the progressive inspection to be accomplished.

OPERATION NUMBER	INTERVAL
Operation 1	Consists of all 50-hour interval inspections items and those 100- or 200-hour interval inspections items contained in the fuselage area.
Operation 2	Consists of all 50-hour interval inspections items and those 100- or 200-hour interval inspections items contained in the engine compartment area.
Operation 3	Consists of all 50-hour interval inspections items and those 100- or 200-hour interval inspections items contained in the wing.
Operation 4	Consists of all 50-hour interval inspections items and those 100- or 200-hour interval inspections items contained in the landing gear.
Operation 5	Every 400 hours or 1 year, whichever occurs first.
Operation 6	**(Not used. NOTE)** First 100 hours and each 500 hours thereafter.
Operation 7	Every 600 hours or 1 year, whichever occurs first.
Operation 8	**(Not used. NOTE)** Every 1000 hours or 3 years, whichever occurs first.
Operation 9	Every 500 hours.
Operation 10	Every 1000 hours.
Operation 11	Every 2 years.
Operation 12	Beginning 5 years from the date of the manufacture, you must make sure of the serviceability of the components every twelve months. Refer to Airborne Air and Fuel Products Service Letter Number 39A or latest revision.
Operation 13	Every 50 hours or four months, whichever occurs first.
Operation 14	Every 2 years, or anytime components are added or removed which have the potential to affect the magnetic accuracy and/or variation of the compass calibration, or anytime the accuracy of the compass is in question.
Operation 15	Every 2000 hours.
Operation 16	Every 1000 hours or 1 year, whichever occurs first.

The program is divided into four primary operations (operations 1 through 4) which cover all 50-hour, 100-hour and 200-hour inspection requirements. The remaining operations include all of the inspection requirements due at other intervals.

For a complete list of the operation numbers and intervals, see the maintenance manual ATA chapter 5 section 5-12-00

INSPECTION OPERATIONS (5-12-01)



INSPECTION OPERATION 1

Date: _____
Registration Number: _____
Serial Number: _____
Total Time: _____

1. Description

A. Operation 1 gives a list of item(s), which has all 50-hour interval inspection items and those 100- or 200-hour interval inspection items contained in the fuselage area. Items from other areas are included to meet their required time interval.

B. Inspection items are given in the order of the zone in which the inspection is to be completed. A general description of the inspection required and the Item Code Number for cross-reference to Section 5-10-01 are shown. Frequently, the tasks define more specifically the scope and extent of each required inspection. These tasks are printed in the individual chapters of this manual.

C. The right portion of each page gives space for the mechanic's and inspector's initials and remarks. A copy of these pages can be used as a checklist when these inspections are completed.

2. General Inspection Criteria

A. During each of the specified inspection tasks in this section, more general inspections of the adjacent areas must be done while access is available.These general inspections are used to find apparent conditions which can need more maintenance.

B. If a component or or system is changed after a required task has been completed, then that specified task must be done again to make sure it is correct before the system or component is returned to service.

C. Do a preflight inspection after these inspections are completed to make sure all the required items are correctly serviced. Refer to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

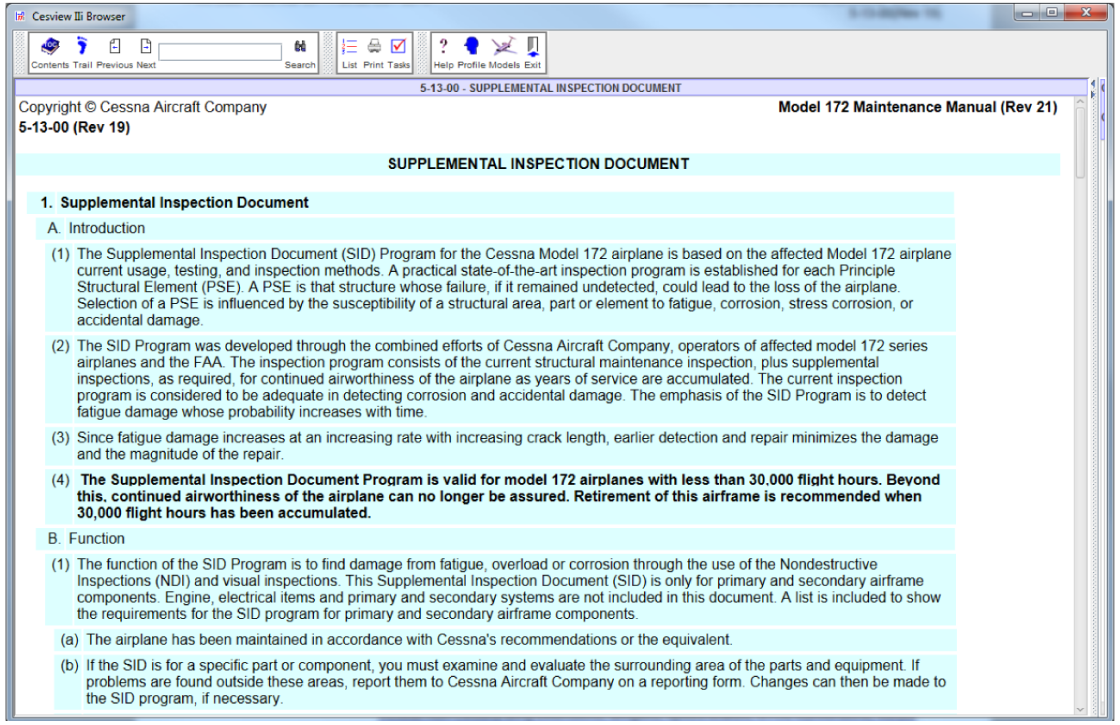
ITEM CODE NUMBER	TASK	ZONE	MECH	INSP	REMARKS
214002	Heater Components, Inlets, and Outlets - Inspect all lines, ducts, clamps, seals, and gaskets for condition, restriction, and security.	211			
214003	Cabin Heat and Ventilation Controls - Check freedom of movement through full travel. Check friction locks for proper operation.	211			
235001	Microphones, Headsets, and Jacks - Inspect for cleanliness, security, and evidence of damage.	211			

For a complete list of the operation numbers and intervals, see the maintenance manual ATA chapter 5 section 5-12-01

SUPPLEMENTAL INSPECTION DOCUMENT (5-13-00)

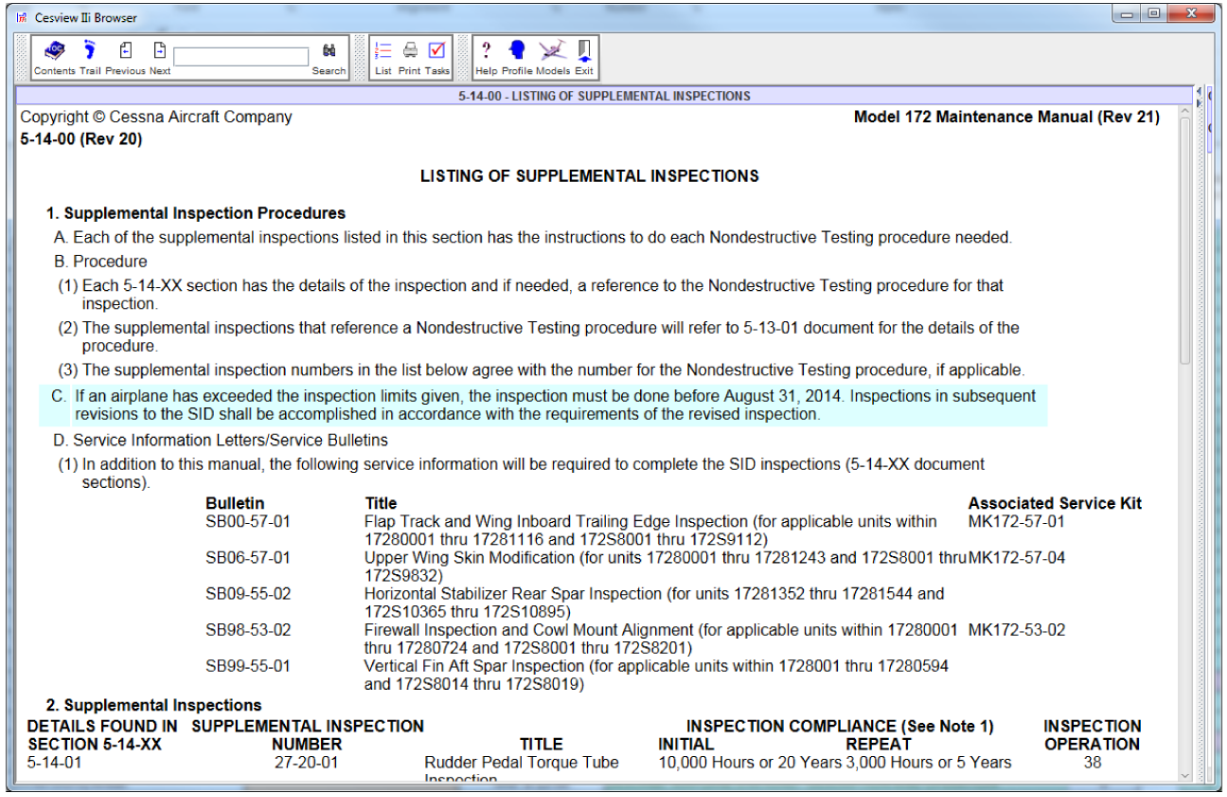
The Supplemental Inspection Document (SID) Program is a practical state-of-the-art inspection program for each Principle Structural Element (PSE). A PSE is that structure whose failure, if it remained undetected, could lead to the loss of the airplane. Selection of a PSE is influenced by the susceptibility of a structural area, part or element to fatigue, corrosion, stress corrosion, or accidental damage.

The SID Program consists of the current structural maintenance inspection, plus supplemental inspections, as required, for continued airworthiness of the airplane as years of service are accumulated. The current inspection program is considered to be adequate in detecting corrosion and accidental damage. The emphasis of the SID Program is to detect fatigue damage whose probability increases with time.



The function of the SID Program is to find damage from fatigue, overload or corrosion through the use of the Nondestructive Inspections (NDI) and visual inspections. The SID is only for primary and secondary airframe components. Engine, electrical items and primary and secondary systems are not included in this document.

LISTING OF SUPPLEMENTAL INSPECTIONS (5-14-00)



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5-14-00 - LISTING OF SUPPLEMENTAL INSPECTIONS

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5-14-00 (Rev 20)

LISTING OF SUPPLEMENTAL INSPECTIONS

1. Supplemental Inspection Procedures

A. Each of the supplemental inspections listed in this section has the instructions to do each Nondestructive Testing procedure needed.

B. Procedure

(1) Each 5-14-XX section has the details of the inspection and if needed, a reference to the Nondestructive Testing procedure for that inspection.

(2) The supplemental inspections that reference a Nondestructive Testing procedure will refer to 5-13-01 document for the details of the procedure.

(3) The supplemental inspection numbers in the list below agree with the number for the Nondestructive Testing procedure, if applicable.

C. If an airplane has exceeded the inspection limits given, the inspection must be done before August 31, 2014. Inspections in subsequent revisions to the SID shall be accomplished in accordance with the requirements of the revised inspection.

D. Service Information Letters/Service Bulletins

(1) In addition to this manual, the following service information will be required to complete the SID inspections (5-14-XX document sections).

Bulletin	Title	Associated Service Kit
SB00-57-01	Flap Track and Wing Inboard Trailing Edge Inspection (for applicable units within 17280001 thru 17281116 and 172S8001 thru 172S9112)	MK172-57-01
SB06-57-01	Upper Wing Skin Modification (for units 17280001 thru 17281243 and 172S8001 thru 172S9832)	MK172-57-04
SB09-55-02	Horizontal Stabilizer Rear Spar Inspection (for units 17281352 thru 17281544 and 172S10365 thru 172S10895)	
SB98-53-02	Firewall Inspection and Cowl Mount Alignment (for applicable units within 17280001 thru 17280724 and 172S8001 thru 172S8201)	MK172-53-02
SB99-55-01	Vertical Fin Aft Spar Inspection (for applicable units within 1728001 thru 17280594 and 172S8014 thru 172S8019)	

2. Supplemental Inspections

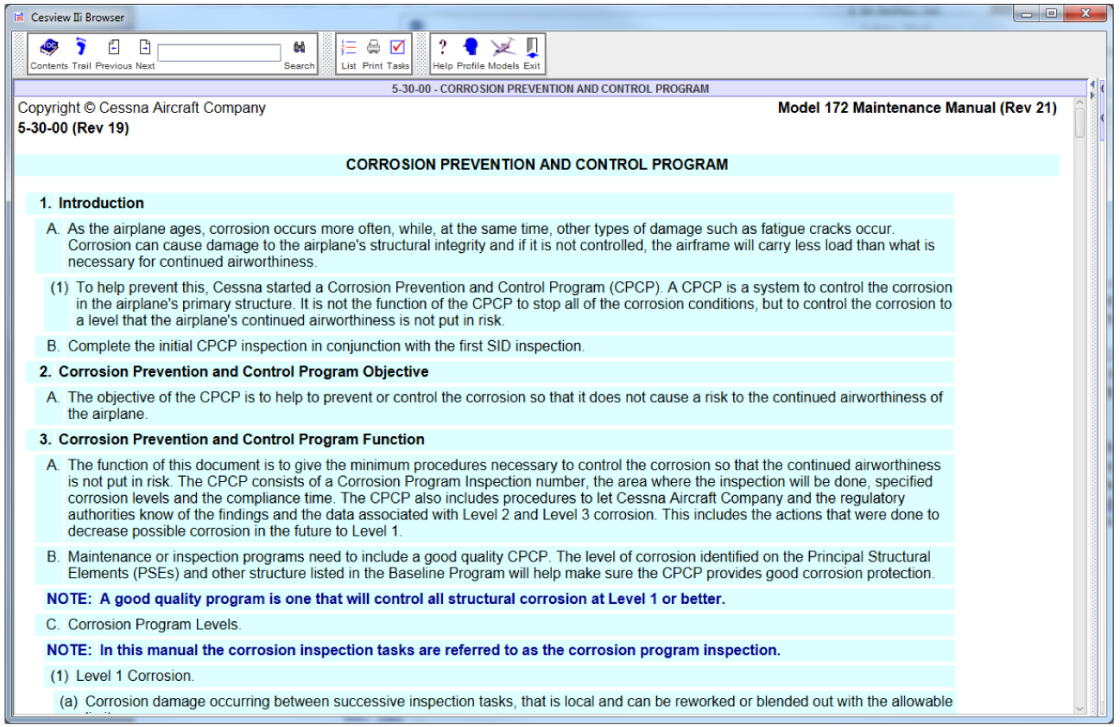
DETAILS FOUND IN SECTION 5-14-XX	SUPPLEMENTAL INSPECTION NUMBER	TITLE	INSPECTION COMPLIANCE (See Note 1) INITIAL	REPEAT	INSPECTION OPERATION
5-14-01	27-20-01	Rudder Pedal Torque Tube Inspection	10,000 Hours or 20 Years	3,000 Hours or 5 Years	38

For a complete list of the supplemental inspections, see the maintenance manual ATA chapter 5 section 5-14-00

CORROSION PREVENTION AND CONTROL PROGRAM (5-30-00)

As the airplane ages, corrosion occurs more often, while, at the same time, other types of damage such as fatigue cracks occur. Corrosion can cause damage to the airplane's structural integrity and if it is not controlled, the airframe will carry less load than what is necessary for continued airworthiness.

To help prevent this, Cessna started a Corrosion Prevention and Control Program (CPCP). A CPCP is a program to control the corrosion in the airplane's primary structure. It is not the function of the CPCP to stop all of the corrosion conditions, but to control the corrosion to a level that the continued airworthiness of the airplane is not put in risk. The function of this document is to give the minimum procedures necessary to control the corrosion so that the continued airworthiness is not put in risk.

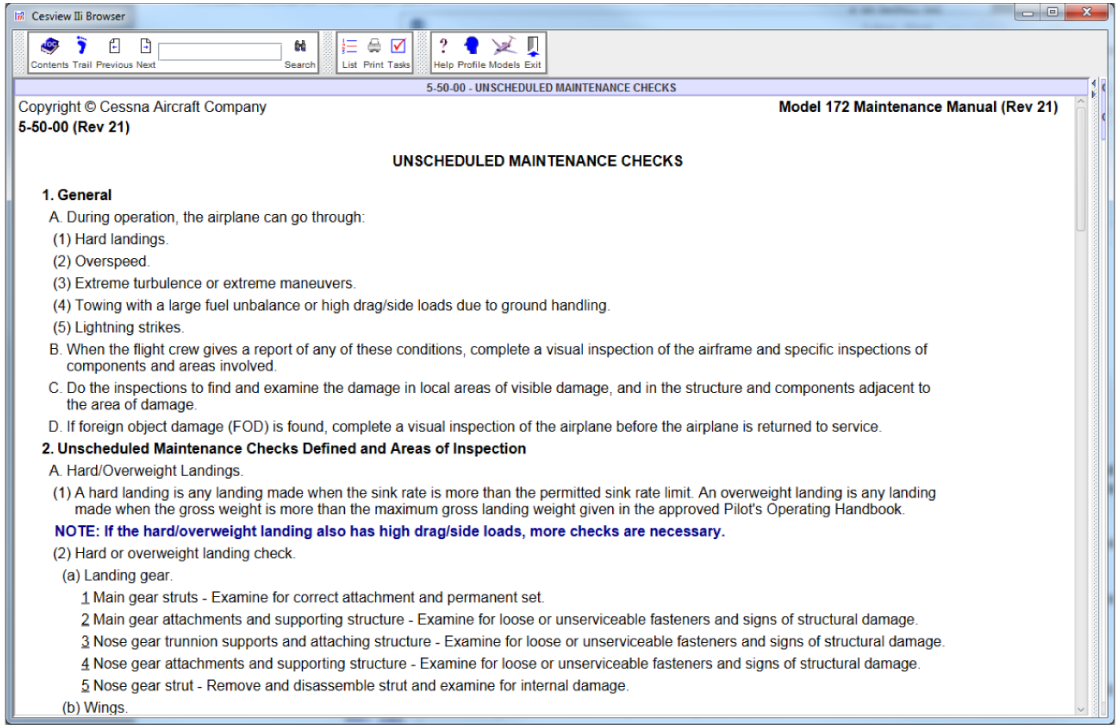


The CPCP consists of a Corrosion Program, Inspection number, the area to conduct the inspection, specified corrosion levels and the compliance time. The CPCP also includes procedures to let Cessna Aircraft Company and the regulatory authorities know of the findings and the data associated with Level 2 and Level 3 corrosion. This includes the actions that were done to decrease possible corrosion in the future to Level 1.

UNSCHEDULED MAINTENANCE CHECKS (5-50-00)

During operation, the airplane can go through:

- Hard landings
- Overspeed
- Extreme turbulence or extreme maneuvers
- Towing with a large fuel unbalance or high drag/side loads due to ground handling
- Lightning strikes



When the flight crew gives a report of any of these conditions, complete a visual inspection of the airframe and specific inspections of components and areas involved. Conduct the inspections to find and examine the damage in local areas of visible damage, as well as in the structure and components adjacent to the area of damage.

If Foreign Object Damage (FOD) is found, complete a visual inspection of the airplane before the airplane is returned to service.

Model Differences

182/206 DIFFERENCES - INSPECTION TIME INTERVALS (5-10-00)

The primary function of this section is to give inspection time intervals.

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INTERVAL	OPERATION	INTERVAL
A.	1, 2, 3, 4	Every 50 hours.
B.	1, 2, 3, 4	Every 100 hours.
C.	1, 2, 3, 4	Every 200 hours.
D.	5	Every 400 hours or 1 year, whichever occurs first.
E.		**(Not used)**
F.	7	Every 600 hours or 1 year, whichever occurs first.
G.		**(Not used)**
H.	9	Every 500 hours.
I.	10	Every 1000 hours.
J.	11	Every 2 years.
K.		**(Not used)**
L.		**(Not used)**

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INTERVAL	OPERATION	INTERVAL DETAILS
A.	1, 2, 3, 4	Every 50 hours.
B.	1, 2, 3, 4	Every 100 hours.
C.	1, 2, 3, 4	Every 200 hours.
D.	5	Every 400 hours or 1 year, whichever occurs first.
E.		**(Not used)**
F.	7	Every 600 hours or 1 year, whichever occurs first.
G.		**(Not used)**
H.	9	Every 500 hours.
I.	10	Every 1000 hours.
J.	11	Every 2 years.
K.	12	Beginning five years from the date of the manufacture, you must make sure of the serviceability of the components every twelve months. Refer to Airborne Air and Fuel Products Service Letter Number 39A or latest revision.
L.		**(Not used)**

- *Section 5-10-01 of the maintenance manual is an index of the inspections that you can use with the 14 CFR 43, Appendix D, Scope and Detail of Items (as Applicable to the Particular Aircraft) to be included in Annual/100 hour inspections.*
- Use the chart in ATA Chapter 05 as an augmentation for the inspection.
- The time intervals shown in ATA chapter 05 are recommended intervals at which items are to be examined for normal use under average environmental conditions.
- Airplanes operated in extremely humid areas (tropics), or in unusually cold, damp climates, etc., may need more frequent inspections for wear, corrosion, and lubrication.
- Under these adverse conditions, complete periodic inspections related to this chart at more frequent intervals until operator field experience is used to set individual inspection intervals.

182/206 DIFFERENCES - INSPECTION TIME LIMITS (5-10-01)

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REVISION STATUS	ITEM CODE NUMBER	TASK	INTER-VAL	OPERA-TION	ZONE
Revised Jul 1/12	050001	Inspect aircraft records to verify that all SID Inspections have been complied with as scheduled.	W	05-12-23	All
Revised Mar 1/05	110000	Interior Placards, Exterior Placards, Decals, Markings and Identification Plates - Inspect for security of installation and legibility. Refer to Chapter 11, Placards and Markings - Inspection/Check.	B	05-12-01	ALL
Deleted Mar 1/04	112101				
Deleted Mar 1/04	113101				
	212001	Ventilation System - Inspect clamps, hoses, and valves for condition and security.	D	05-12-05	211
Revised Mar 1/05	212002	Primary Flight Display (PFD) Fan, Multi-Function Display (MFD) Fan, Deck Skin Fan, and Remote Avionics Cooling Fan - Operational Check. Refer to Chatper 21, Avionics Cooling - Maintenance Practices.	W	05-12-23	220, 225
	214001	Cold and Hot Air Hoses - Check condition, routing, and security.	B	05-12-02	120
Revised	214002	Heater Components, Inlets, and Outlets - ducts, clamps, seals, and	B	05-12-01	211

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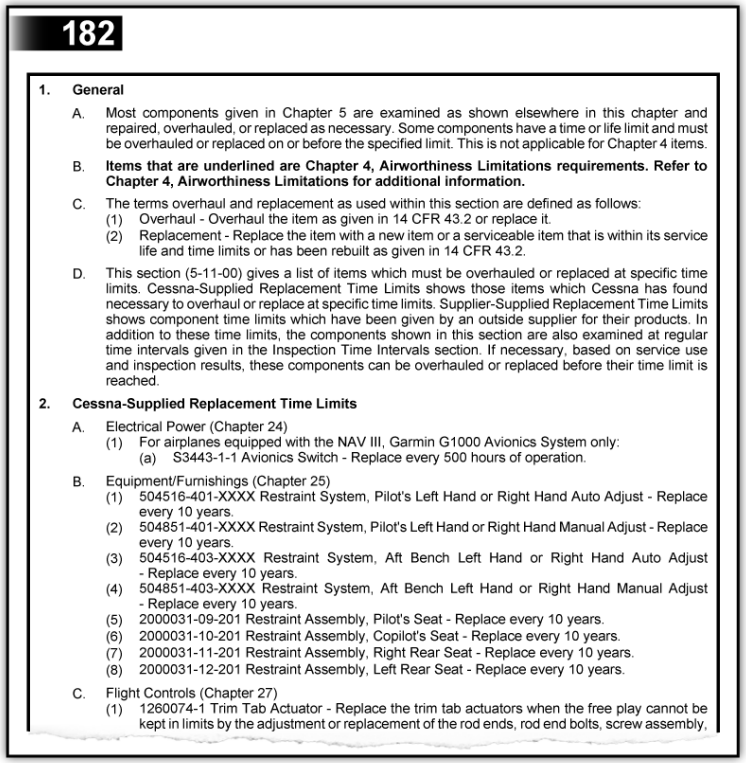
REVISION STATUS	ITEM CODE NUMBER	TASK	INTER-VAL	OPERA-TION	ZONE
Revised Jul 1/12	050001	Inspect all of the airplane maintenance records to verify that all SID Inspections have been complied with as scheduled.	U	05-12-22	ALL
Revised Apr 1/05	110000	Interior Placards, Exterior Placards, Decals, Markings and Identification Plates - Inspect for security of installation and legibility. Refer to Chapter 11, Placards and Markings - Inspection/Check.	B	05-12-01	All
Deleted Apr 5/04	112101				
Deleted Apr 5/04	113101				
	212001	Ventilation System - Inspect clamps, hoses, and valves for condition and security.	D	05-12-05	211
Revised Apr 1/05	212002	Primary Flight Display (PFD) Fan and Multi-Function Display (MFD) Fan, Deck Skin Fan, and Remote Avionics Cooling Fan - Operational Check. Refer to Chapter 21, Avionics Cooling - Maintenance Practices.	U	05-12-22	220, 225
	214001	Cold and Hot Air Hoses - Check condition, routing, and security.	B	05-12-02	120
Revised	214002	Heater Components, Inlets, and Outlets -	B	05-12-01	211

For a complete list of Inspection Time Limits see the maintenance manual ATA chapter 5 section 5-10-01.

182/206 DIFFERENCES - COMPONENT TIME LIMIT (5-11-00)



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1. General

A. Most components given in Chapter 5 are examined as shown elsewhere in this chapter and repaired, overhauled, or replaced as necessary. Some components have a time or life limit and must be overhauled or replaced on or before the specified limit. This is not applicable for Chapter 4 items.

B. **Items that are underlined are Chapter 4, Airworthiness Limitations requirements. Refer to Chapter 4, Airworthiness Limitations for additional information.**

C. The terms overhaul and replacement as used within this section are defined as follows:
(1) Overhaul - Overhaul the item as given in 14 CFR 43.2 or replace it.
(2) Replacement - Replace the item with a new item or a serviceable item that is within its service life and time limits or has been rebuilt as given in 14 CFR 43.2.

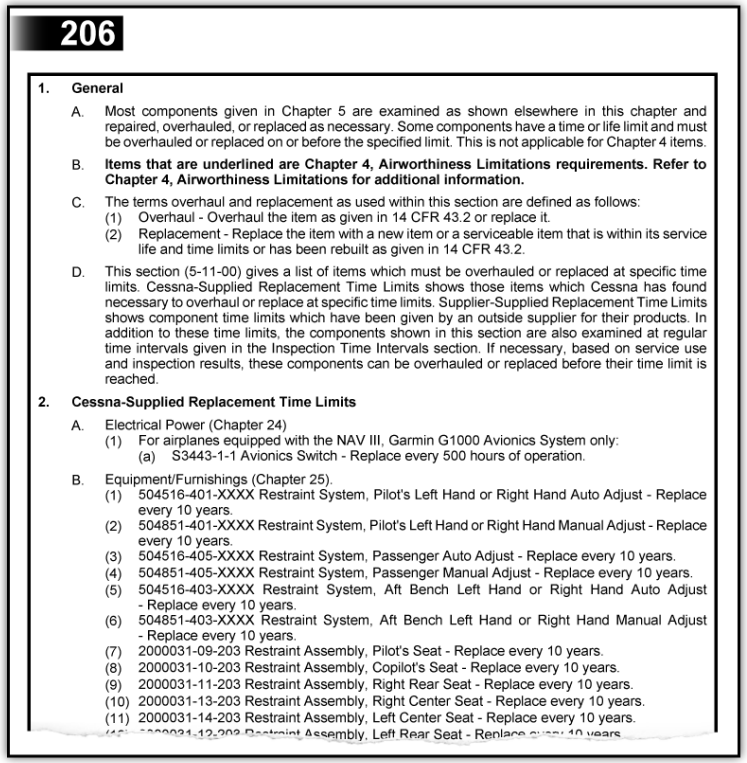
D. This section (5-11-00) gives a list of items which must be overhauled or replaced at specific time limits. Cessna-Supplied Replacement Time Limits shows those items which Cessna has found necessary to overhaul or replace at specific time limits. Supplier-Supplied Replacement Time Limits shows component time limits which have been given by an outside supplier for their products. In addition to these time limits, the components shown in this section are also examined at regular time intervals given in the Inspection Time Intervals section. If necessary, based on service use and inspection results, these components can be overhauled or replaced before their time limit is reached.

2. Cessna-Supplied Replacement Time Limits

A. Electrical Power (Chapter 24)
(1) For airplanes equipped with the NAV III, Garmin G1000 Avionics System only:
(a) S3443-1-1 Avionics Switch - Replace every 500 hours of operation.

B. Equipment/Furnishings (Chapter 25)
(1) 504516-401-XXXX Restraint System, Pilot's Left Hand or Right Hand Auto Adjust - Replace every 10 years.
(2) 504851-401-XXXX Restraint System, Pilot's Left Hand or Right Hand Manual Adjust - Replace every 10 years.
(3) 504516-403-XXXX Restraint System, Aft Bench Left Hand or Right Hand Auto Adjust - Replace every 10 years.
(4) 504851-403-XXXX Restraint System, Aft Bench Left Hand or Right Hand Manual Adjust - Replace every 10 years.
(5) 2000031-09-201 Restraint Assembly, Pilot's Seat - Replace every 10 years.
(6) 2000031-10-201 Restraint Assembly, Copilot's Seat - Replace every 10 years.
(7) 2000031-11-201 Restraint Assembly, Right Rear Seat - Replace every 10 years.
(8) 2000031-12-201 Restraint Assembly, Left Rear Seat - Replace every 10 years.

C. Flight Controls (Chapter 27)
(1) 1260074-1 Trim Tab Actuator - Replace the trim tab actuators when the free play cannot be kept in limits by the adjustment or replacement of the rod ends, rod end bolts, screw assembly.



206

1. General

A. Most components given in Chapter 5 are examined as shown elsewhere in this chapter and repaired, overhauled, or replaced as necessary. Some components have a time or life limit and must be overhauled or replaced on or before the specified limit. This is not applicable for Chapter 4 items.

B. **Items that are underlined are Chapter 4, Airworthiness Limitations requirements. Refer to Chapter 4, Airworthiness Limitations for additional information.**

C. The terms overhaul and replacement as used within this section are defined as follows:
(1) Overhaul - Overhaul the item as given in 14 CFR 43.2 or replace it.
(2) Replacement - Replace the item with a new item or a serviceable item that is within its service life and time limits or has been rebuilt as given in 14 CFR 43.2.

D. This section (5-11-00) gives a list of items which must be overhauled or replaced at specific time limits. Cessna-Supplied Replacement Time Limits shows those items which Cessna has found necessary to overhaul or replace at specific time limits. Supplier-Supplied Replacement Time Limits shows component time limits which have been given by an outside supplier for their products. In addition to these time limits, the components shown in this section are also examined at regular time intervals given in the Inspection Time Intervals section. If necessary, based on service use and inspection results, these components can be overhauled or replaced before their time limit is reached.

2. Cessna-Supplied Replacement Time Limits

A. Electrical Power (Chapter 24)
(1) For airplanes equipped with the NAV III, Garmin G1000 Avionics System only:
(a) S3443-1-1 Avionics Switch - Replace every 500 hours of operation.

B. Equipment/Furnishings (Chapter 25).
(1) 504516-401-XXXX Restraint System, Pilot's Left Hand or Right Hand Auto Adjust - Replace every 10 years.
(2) 504851-401-XXXX Restraint System, Pilot's Left Hand or Right Hand Manual Adjust - Replace every 10 years.
(3) 504516-405-XXXX Restraint System, Passenger Auto Adjust - Replace every 10 years.
(4) 504851-405-XXXX Restraint System, Passenger Manual Adjust - Replace every 10 years.
(5) 504516-403-XXXX Restraint System, Aft Bench Left Hand or Right Hand Auto Adjust - Replace every 10 years.
(6) 504851-403-XXXX Restraint System, Aft Bench Left Hand or Right Hand Manual Adjust - Replace every 10 years.
(7) 2000031-09-203 Restraint Assembly, Pilot's Seat - Replace every 10 years.
(8) 2000031-10-203 Restraint Assembly, Copilot's Seat - Replace every 10 years.
(9) 2000031-11-203 Restraint Assembly, Right Rear Seat - Replace every 10 years.
(10) 2000031-13-203 Restraint Assembly, Right Center Seat - Replace every 10 years.
(11) 2000031-14-203 Restraint Assembly, Left Center Seat - Replace every 10 years.

The terms overhaul and replacement as used in this section of the maintenance manual are defined as follows:

- Overhaul - Overhaul the item as given in 14 CFR 43.2 or replace it.
- Replacement - Replace the item with a new item or a serviceable item that is in its service life and time limits or has been rebuilt as given in 14 CFR 43.2.

For a complete list of Cessna Supplied Component Replacement Time Limits see the maintenance manual ATA chapter 5 section 5-11-01

ATA06 - Dimensions/Areas

LESSON OBJECTIVES

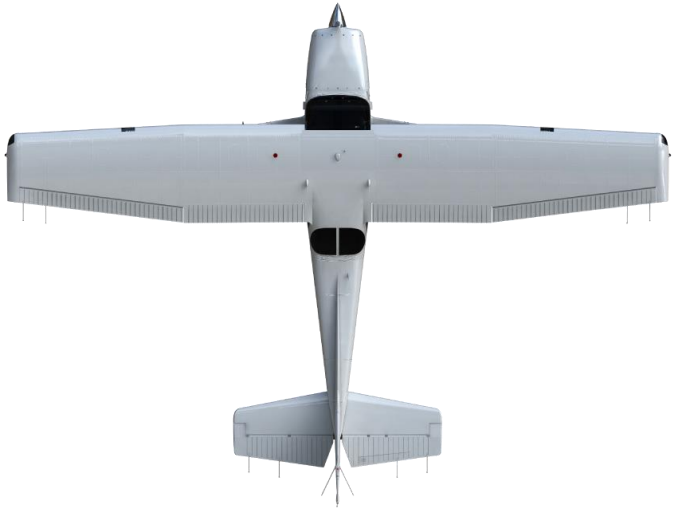
- Identify safety precautions related to ATA Chapter 06;
- Identify maintenance practices important to ATA Chapter 06;
- Describe the general layout of ATA Chapter 06;

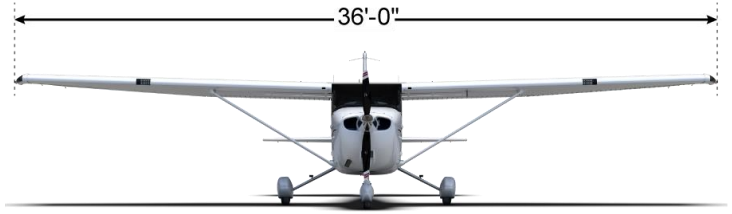
DIMENSIONS/AREAS (6-00-00)

ATA Chapter 06 of the maintenance manual includes illustrations and statistical information concerning the Model 172 airplane. This ATA chapter provides the overall airplane dimensions, surface areas, station locations, zones and access plate locations.

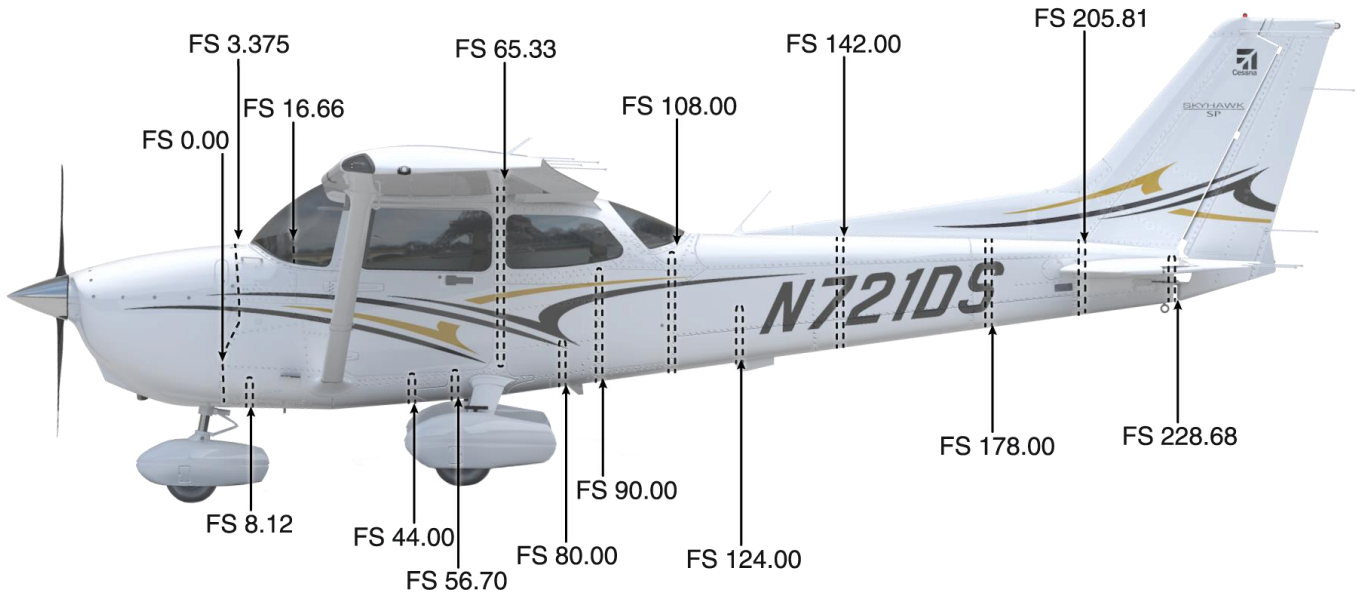
- **Airplane Dimensions and Areas** - The section on airplane dimensions and areas provides airplane dimensions and identifies areas of the airplane.
- **Airplane Stations** - The section on stations provides illustrations to identify reference points on the airplane along a three axis division.
- **Airplane Zoning** - The section on zoning provides illustrations of all airplane zones.
- **Access Plates/Panels** - The section on access plates/panels provides numbering of all plates and panels based on specific airplane zones.

Maximum weight is 2558 pounds.





AIRPLANE STATIONS - (6-15-00)



The airplane is laid out according to fuselage stations (FS) and wing stations (WS). These stations provide fixed reference points for all components located on or within the airplane. Fuselage Stations begin at the firewall (FS 0.00) and extend to the tail cone area (FS 230.18). Wing Stations begin at the root (WS 23.62) and extend to the tip (WS 208.00). Both Fuselage Stations and Wing Stations are measured in inches. For example, FS 185.50 is 185.50 inches aft of the firewall (FS 0.00).

AIRPLANE ZONING - (6-20-00)

The Model 172 is divided into numbered zones to provide a method for locating components and/or placards throughout the airplane. The zones are identified by a three-digit number as shown in the example. The first digit in the sequence denotes the major zone (300 series for aft of cabin, 500 series for left wing, etc.). The second digit in the sequence further divides the zone into sub-major zone (Zone 510 for inboard portion of the left wing and Zone 520 for outboard portion of the left wing, etc..). The third digit further divides the sub-major zones into subdivisions (if no subdivision is needed, this digit is typically assigned as 0 (zero).

Major Zones.

100 - Forward side of firewall and forward.

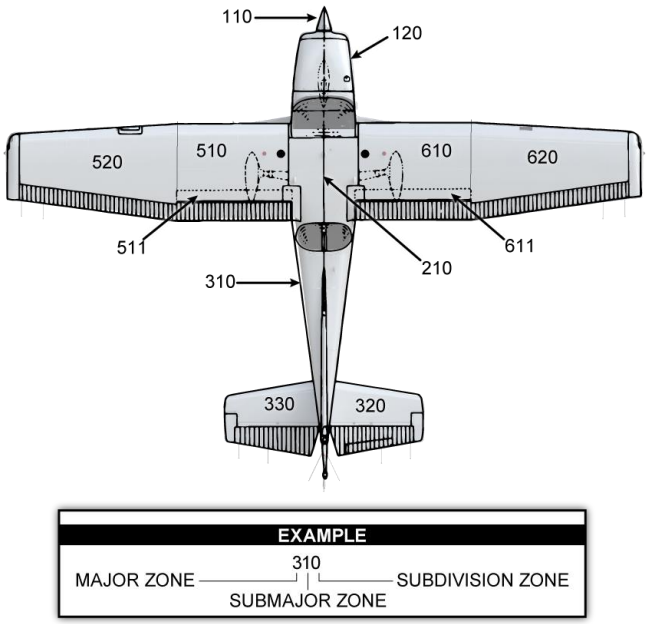
200 - Aft side of firewall.

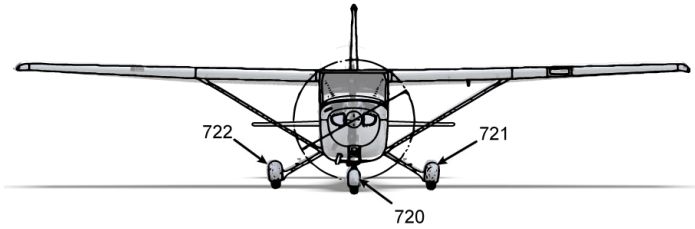
300 - Aft of cabin to end of airplane.

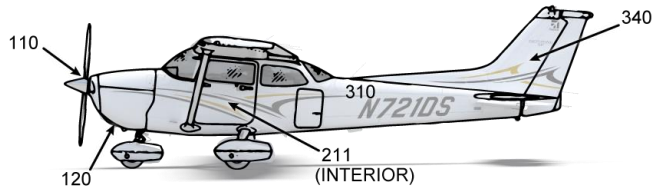
500 - Left wing.

600 - Right wing.

700 - Landing gear.







DIMENSIONS/AREAS (6-00-00)

There are access and inspection panels on the interior and exterior of the airplane. These panels give access to components and airframe areas.

All access/inspection panels have a series of numbers and letters that identify their zone location, sequence, and orientation.

(1) Zone Location - Zone location is identified by the first three numbers of any panels. This three-number sequence is specified in Airplane Zoning - Description and Operation.

(2) Sequence - The sequence is identified by alphabetical letters follow the three-number sequence. The first panel is identified as “A,” the second panel is identified as “B”, and so on.

(3) Orientation - The orientation for each panel is identified by one of four letters that come after the sequence letter. The orientation letters are "T" for top, "B" for bottom, "L" for left, and "R" for right.

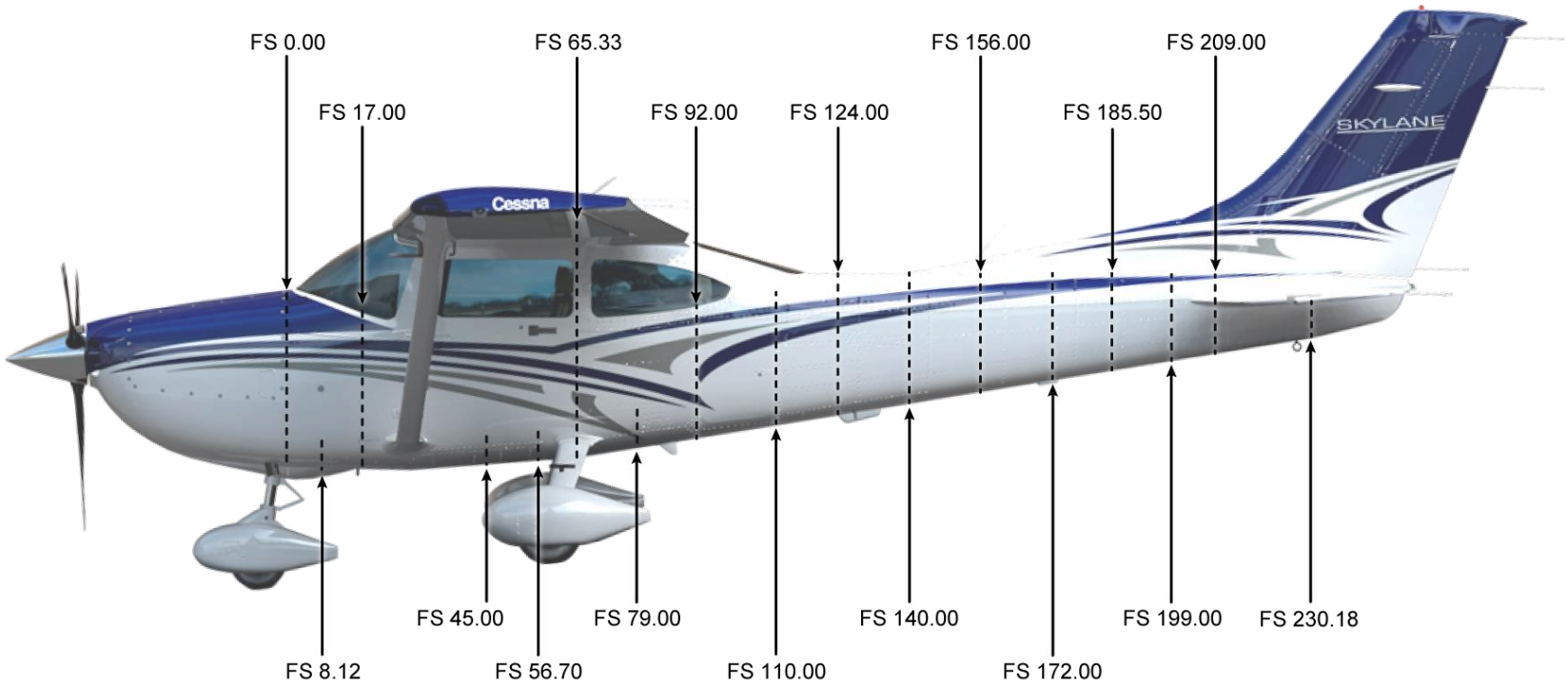
Model Differences

182 DIFFERENCES - DIMENSIONS/AREAS (6-10-00)

206 DIFFERENCES - DIMENSIONS/AREAS (6-10-00)

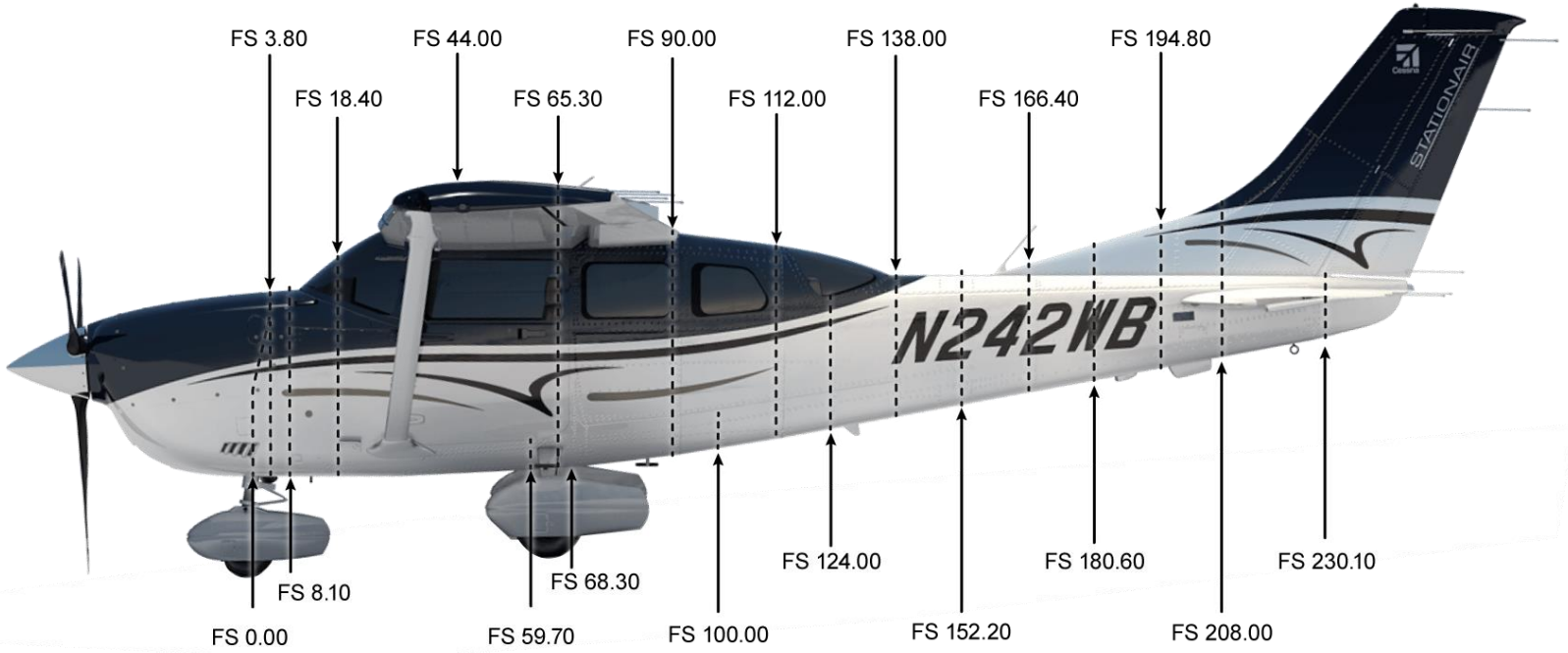
The dimensions of the 182 are slightly different from the 172 and 206.

182 DIFFERENCES - AIRPLANE STATIONS - (6-15-00)



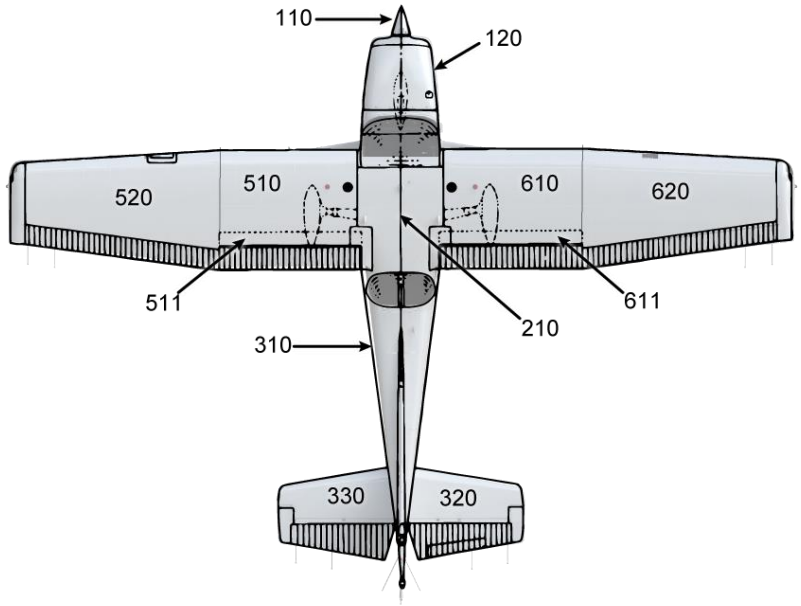
The dimensions of the 206 are different from the 172 and the 182.

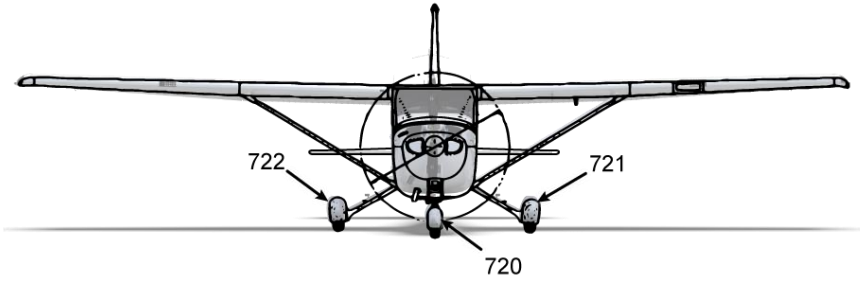
206 DIFFERENCES - AIRPLANE STATIONS - (6-15-00)

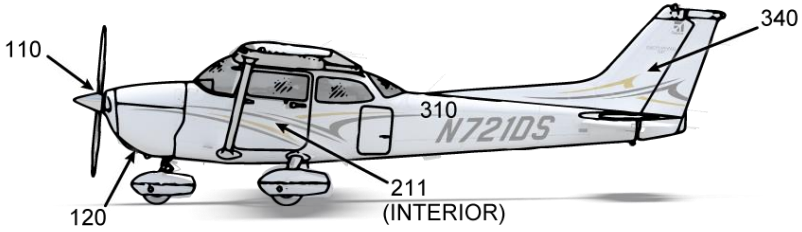


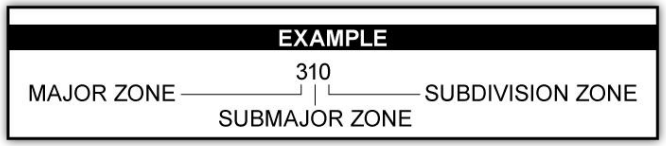
- Fuselage Stations begin at the firewall (FS 0.00) and extend to the tail cone area (FS 230.18).
- Wing Stations begin at the root (WS 23.62) and extend to the tip (WS 208.00).
- Both Fuselage Stations and Wing Stations are measured in inches. For example, FS 185.50 is 185.50 inches aft of the firewall (FS 0.00).

206 - AIRPLANE ZONING - (6-20-00)









- The 206 airplane is laid out according to fuselage stations (FS) and wing stations (WS).
- These stations provide fixed reference points for all components located on or within the airplane.
- Fuselage Stations begin at the firewall (FS 0.00) and extend to the tail cone area (FS 230.17).
- Wing Stations begin at the root (WS 23.62) and extend to the tip (WS 208.00).
- Both Fuselage Stations and Wing Stations are measured in inches. For example, FS 185.50 is 185.50 inches aft of the firewall (FS 0.00).

182 DIFFERENCES - ACCESS/INSPECTION PLATES - (6-20-02)

This slide depicts the standard zoning configuration for all 3 aircraft. Zoning for the 172, 182 & 206 all have the same configuration standards.

The Model 172 / 182 & 206 are divided into numbered zones to provide a method for locating components and/or placards throughout the airplane.

The zones are identified by a three-digit number as shown in the example.

- The first digit in the sequence denotes the major zone (300 series for aft of cabin, 500 series for left wing, etc.).
- The second digit in the sequence further divides the zone into sub-major zone (Zone 510 for inboard portion of the left wing and Zone 520 for outboard portion of the left wing, etc.).
- The third digit further divides the sub-major zones into subdivisions (if no subdivision is needed, this digit is typically assigned as 0 (zero).

Major Zones.

(1) 100 - Forward side of firewall and forward.

(2) 200 - Aft side of firewall.

(3) 300 - Aft of cabin to end of airplane.

(4) 500 - Left wing.

(5) 600 - Right wing.

(6) 700 - Landing gear.

206 DIFFERENCES - ACCESS/INSPECTION PLATES - (6-20-02)

There are access and inspection panels on the interior and exterior of the 206 airplane. These panels give access to components and airframe areas.

All access/inspection panels have a series of numbers and letters that identify their zone location, sequence, and orientation.

(1) Zone Location - Zone location is identified by the first three numbers of any panels. This three-number sequence is specified in Airplane Zoning - Description and Operation.

(2) Sequence - The sequence is identified by alphabetical letters follow the three-number sequence. The first panel is identified as “A,” the second panel is identified as “B”, and so on.

(3) Orientation - The orientation for each panel is identified by one of four letters that come after the sequence letter. The orientation letters are "T" for top, "B" for bottom, "L" for left, and "R" for right.

ATA07 - Lifting and Shoring

LESSON OBJECTIVES

- Identify safety precautions related to ATA Chapter 07;
- Identify maintenance practices important to ATA Chapter 07;
- Describe the general layout of ATA Chapter 07;

LIFTING AND SHORING (07-00-00)

Jacking:

Normal jacking procedures involve lifting one main wheel at a time. This procedure is best accomplished using a floor jack in conjunction with the built-in jack pad (located directly below the step on each strut).

JACKING PRECAUTIONS

JACKING

Jacking both wheels simultaneously at built-in jack pads is not recommended. When using built-in jack pad, flexibility of the main gear strut will cause the main wheel to slide inboard as the wheel rises, tilting the jack. If this occurs, lower the jack for a second operation.

JACKING

Equivalent substitutes may be used for the tools listed in ATA chapter 07 of the maintenance manual.

Emergency Lifting/Hoisting- Maintenance Practices:

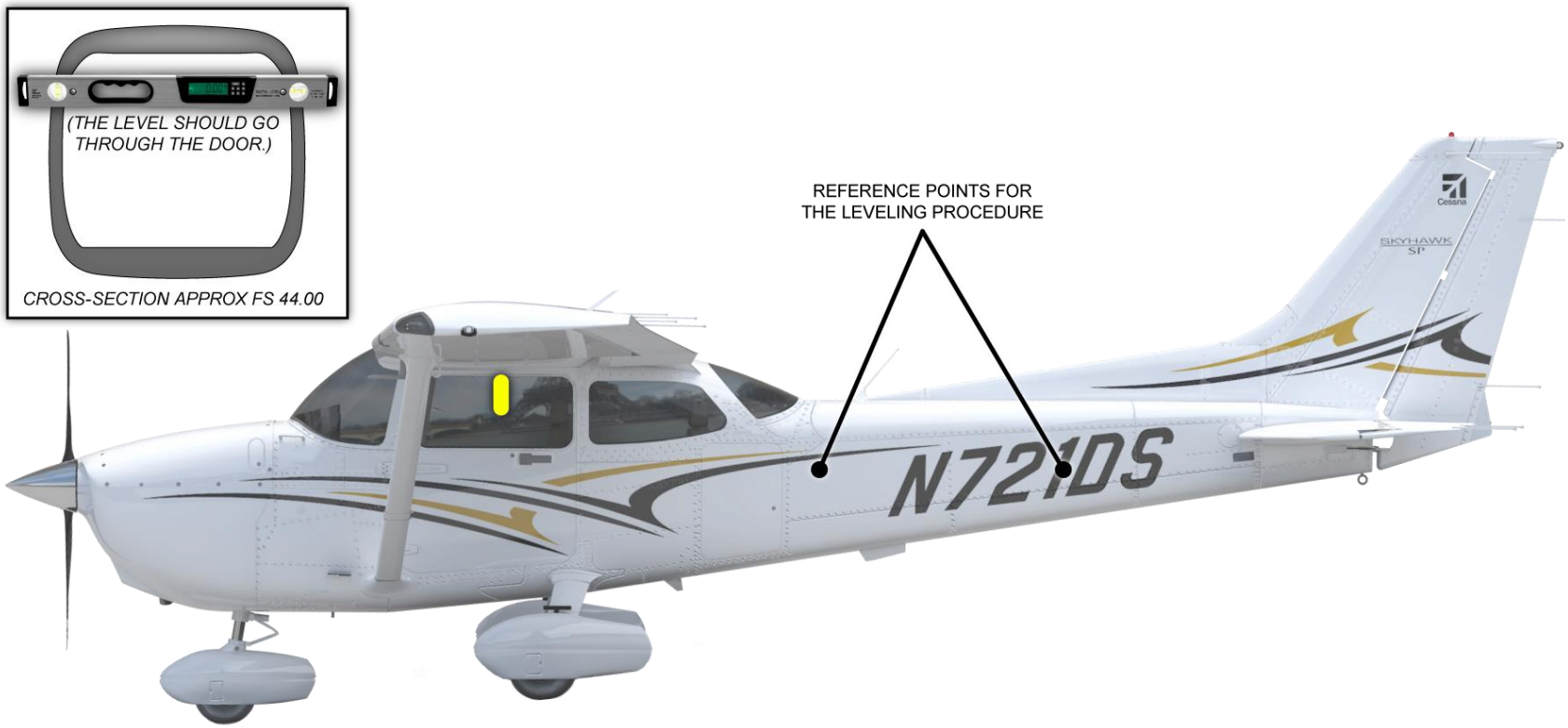
For an emergency lifting or hoisting situation lift the airplane using a hoist of two-ton capacity attached by rings, which are optional equipment installed by Service Kit, or by suitable slings. The front sling should be hooked to each upper engine mount, and the aft sling should be positioned around the fuselage at the first bulkhead forward of the leading edge of the stabilizer. If the optional hoisting rings are used, a minimum cable length of 60 inches for each cable is required to prevent bending of the eyebolt-type hoisting rings. If desired, fabricate a spreader jig to apply vertical force to the eyebolts.

ATA08 - Leveling and Weighing

LESSON OBJECTIVES

- Identify safety precautions related to ATA Chapter 08;
- Identify maintenance practices important to ATA Chapter 08;
- Describe the general layout of ATA Chapter 08;

LEVELING - MAINTENANCE PRACTICES (08-10-00)



Lateral Leveling

To Level the aircraft laterally, find two points that are the same on each upper door sill of the left and right cabin doors and put a level in position across these points. Make a note of the airplane's lateral position. If applicable, put jacks in position at the wings and tail jacking points. Adjust the wing jacks as required to get the necessary lateral position.

LEVELING - MAINTENANCE PRACTICES (08-10-00)

LEVELING

Out-of-level tolerance for wing tips is three inches total.

Longitudinal Leveling

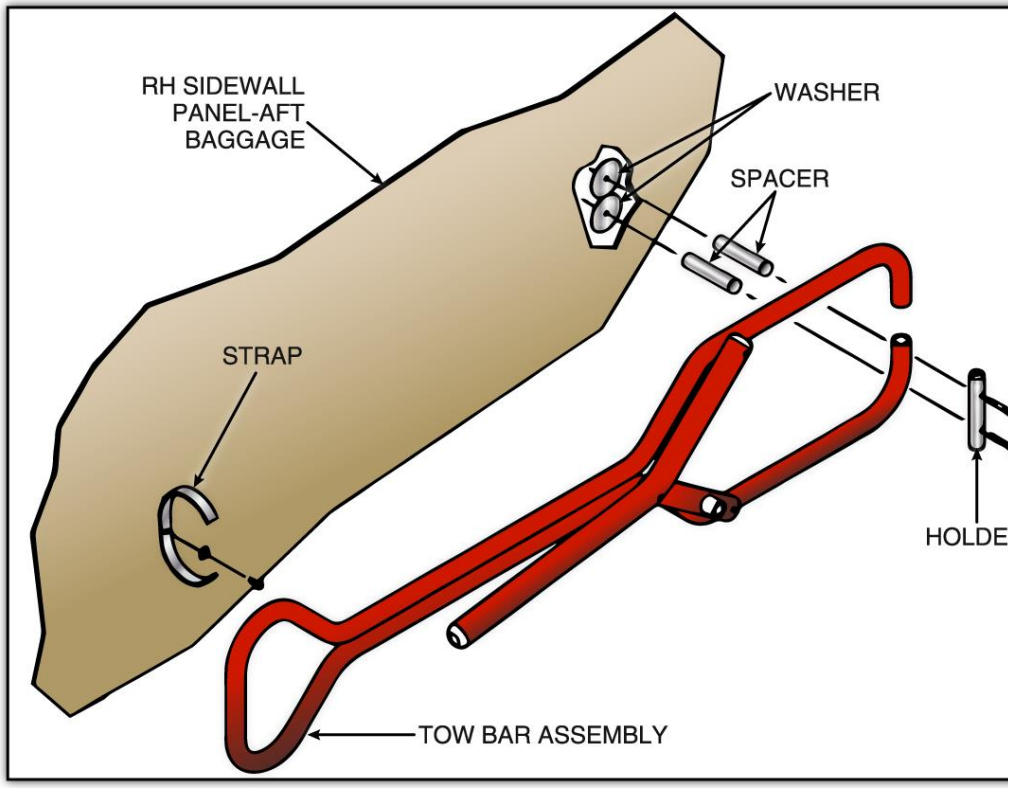
To Level the aircraft longitudinally, find the two screws on the left side of the airplane tail cone that are in line with water line zero. Remove the screws and install studs or long screws of applicable length (approximately two inches long). Put the level in position on the studs or screws and make a note of the airplane's longitudinal position. If applicable, put jacks in position at the wings and tail jacking points. Adjust the tail jack as required to get the necessary longitudinal position.

ATA09 - Towing and Taxiing

LESSON OBJECTIVES

- Identify safety precautions related to ATA Chapter 09;
- Identify maintenance practices important to ATA Chapter 09;
- Describe the general layout of ATA Chapter 09;

TOWING - MAINTENANCE PRACTICE (09-10-00)



Moving the airplane by hand by using the wing struts and landing gear struts as push points. Use a tow bar attached to the nose gear for steering and maneuvering the airplane on the ground. When no tow bar is available, press down on the tail cone at a bulkhead to raise the nose wheel off the ground. With the nose wheel clear of the ground, the airplane will turn by pivoting about the main wheels.

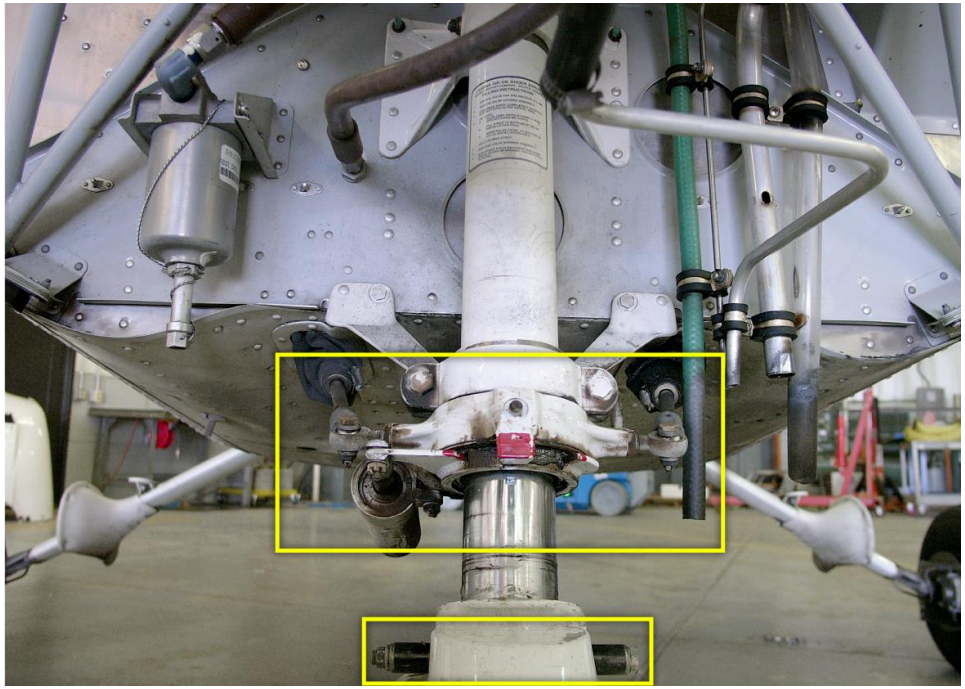
TOWING - MAINTENANCE PRACTICE (09-10-00)

NOTE

TOWING

When towing the airplane, never turn the nose wheel more than 30 degrees on either side of center, or the gear will be damaged. Do not push on control surfaces or Any portion of the horizontal stabilizer. When pushing on the tail cone, always apply pressure at the bulkhead to avoid damaging the skin.

Tow bar attachment points



ATA10 - Parking Mooring & Return To Service

LESSON OBJECTIVES

- Identify safety precautions related to ATA Chapter 10
- Identify maintenance practices important to ATA Chapter 10
- Describe the general layout of ATA Chapter 10

PARKING AND MOORING (10-00-00)

Parking

Park the airplane on a hard surface or on sod. If high winds are anticipated or the airplane will remain outside for an extended period of time, it is important to moor the airplane.

STORAGE

Flyable

- The flyable storage is a maximum of 30 days storage with no engine operation and/or the first 25 hours of intermittent engine operation.

Temporary

- Temporary storage is when the airplane does not operate in a maximum of 90 days.
- Because of corrosion, it is possible that some piston engines will not complete the usual service life. Moisture from the air and material from combustion mix to cause corrosion on cylinder walls and bearing surfaces when the engine is not in operation. Use a thin layer of corrosion inhibitor to help prevent corrosion.

In areas of high humidity, corrosion can start in a short period of time. Corrosion is found on cylinder walls of new engines that have not operated for a period as short as two days.

In engines that have 50 hours or more time of service in a short period, the cylinder walls will have a varnish that will help protect from corrosion. These engines in good atmospheric conditions can stay inactive for many weeks without indication of corrosion.

Mooring

When mooring the airplane in the open, head into the wind if possible. Tie down the airplane using the wing and tail rings and secure the control surfaces with the internal control (gust) lock. Avoid setting brakes in freezing conditions; wheel chocks are preferred. For the complete procedure for mooring the aircraft, see ATA chapter 10 10-20-00.

PARKING PRECAUTIONS

PARKING

Any time the airplane is loaded heavily, the footprint pressure (pressure of the airplane wheels upon the contact surface of the parking area or runway) will be extremely high, and surfaces such as hot asphalt or damp sod may not adequately support the weight of the airplane. Precautions should be taken to avoid airplane parking or movement on such surfaces.

PARKING BRAKE

Do not set parking brake during cold weather, when accumulated moisture may freeze brakes, or when brakes are hot.

RETURN TO SERVICE (10-30-00)

Flyable Storage Return to Service

Flyable storage is defined as a maximum of 30 days nonoperational storage and/or the first 25 hours of intermittent engine operation. After flyable storage, returning the airplane to service by performing a thorough preflight inspection. At the end of the first 25 hours of engine operation, drain engine oil and replace oil filter. Service engine with correct grade and quantity of engine oil.

Temporary Storage Return to Service

Temporary storage is defined as airplane in a nonoperational status for a maximum of 90 days.

After temporary storage, use the procedures found in ATA Chapter 10, 10-30-00 to return the airplane to service.

ATA11 - Placards and Markings

LESSON OBJECTIVES

- Identify safety precautions related to ATA Chapter 11
- Identify maintenance practices important to ATA Chapter 11
- Describe the general layout of ATA Chapter 11

PLACARDS AND MARKINGS (11-00-00)

Examine the interior of the airplane. Include the aft baggage areas for the installation of all required placards, decals, and markings. For required placards, decals, and markings, refer to the Model 172S Illustrated Parts Catalog.

Examine the exterior of the airplane for the installation of all required placards, decals, and markings. For required placards, decals, and markings, refer to the Model 172S Illustrated Parts Catalog.

Examine the airplane identification (ID) plate. The ID plate is on the left side of the stinger, Zone 310. Refer to the Model 172R Illustrated Parts Catalog and Chapter 6, Airplane Zoning - Description and Operation.

ATA12 - Servicing

LESSON OBJECTIVES

- Identify safety precautions related to ATA Chapter 12
- Identify maintenance practices important to ATA Chapter 12
- Describe the general layout of ATA Chapter 12

REPLENISHING OVERVIEW (12-10-00)

The ATA chapter 12, 12-10-00 of the maintenance manual includes tables that provide replenishment capacities of various systems:

(1) Fuel Capacity (Table 1)

(2) Approved Fuels (Table 2)

(3) Engine Oil Capacity (Table 3)

Fuel Capacity 56.0 Gallons

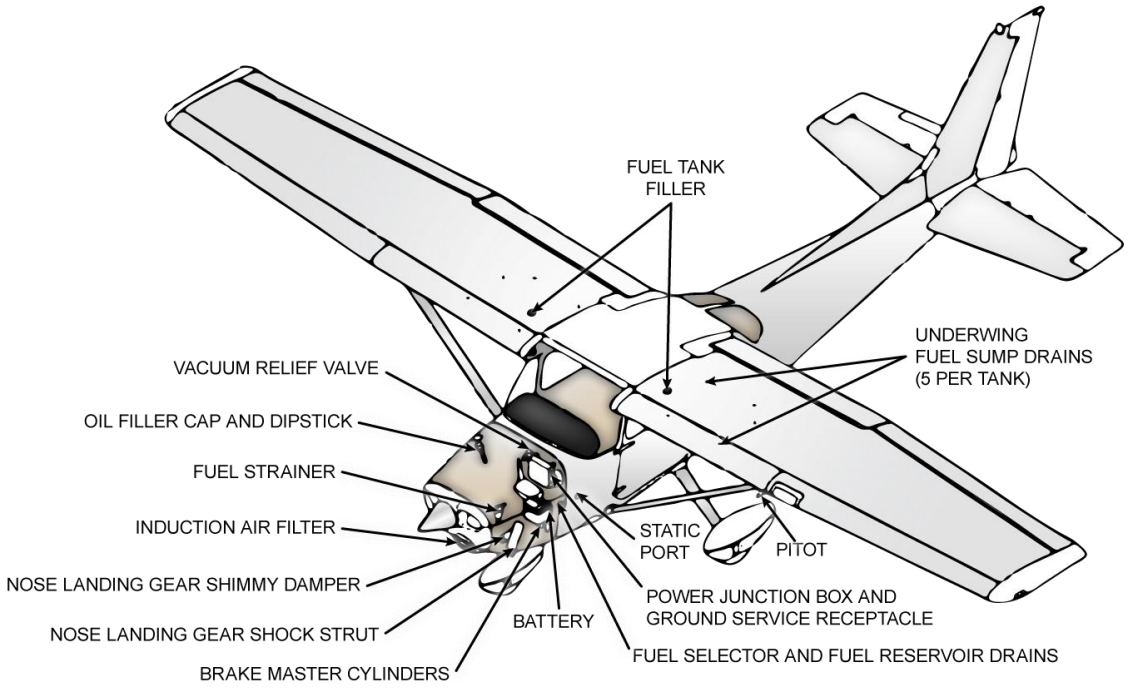
Usable Fuel 53.0 Gallons

Oil Capacity - 8.0 quarts (sump capacity) - (9.0 quarts with filter, oil cooler and cooler hoses)

Approved Fuels:

100 LL ASTM-D910 Blue

100 ASTM-D910 Green

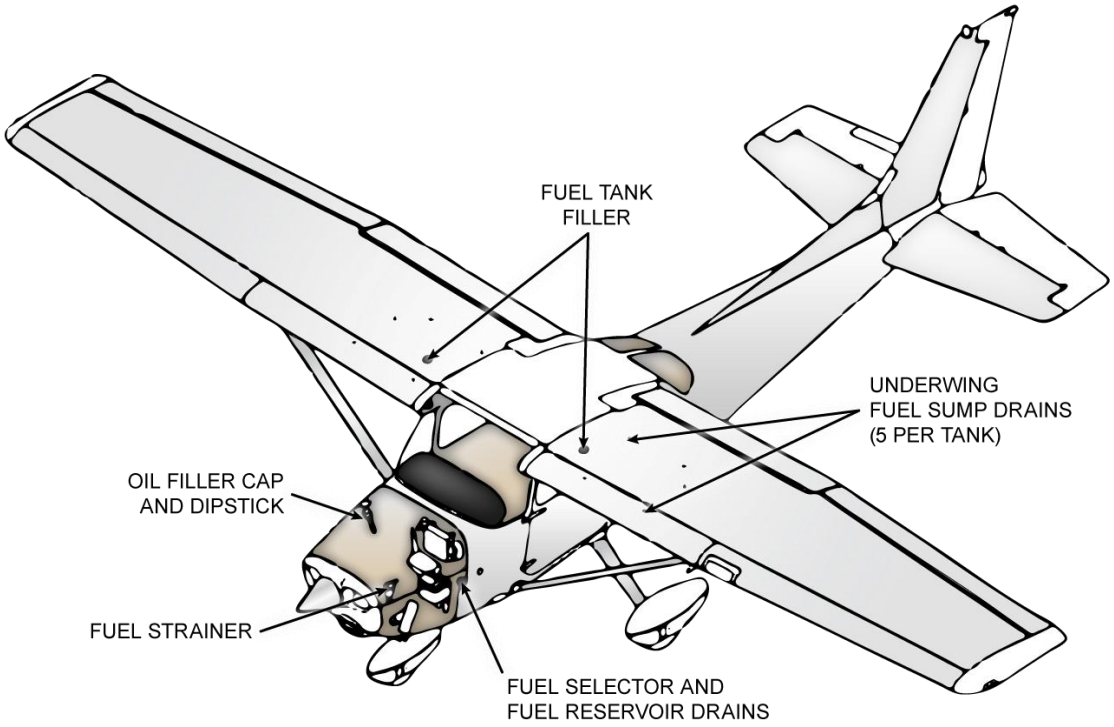


FUEL AND ENGINE OIL (12-14-00)

Fuel Safety Precautions:

Local directives may supersede the safety precautions on fueling and defueling.

- Ground, by designated grounding cables, the fueling and/or defueling vehicle to the airplane. In addition, a static ground device shall contact the fueling or defueling vehicle and ground.
- Firefighting equipment shall be immediately available.
- Wear proper clothing.
    1. Do not wear clothing that has a tendency to generate static electricity such as nylon or synthetic fabrics.
    2. Do not wear metal taps on shoes when working in areas where fuel fumes may accumulate at ground level.



- The airplane shall be in a designated fuel loading or unloading area.
- Do not operate high wattage, pulse transmitting avionics equipment in the immediate vicinity.

FUEL AND ENGINE OIL (12-14-00)

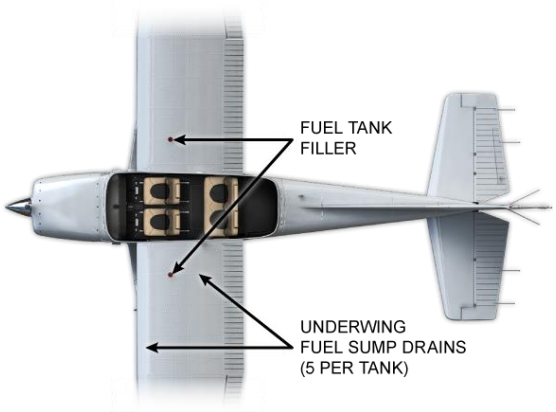
Maintenance Precautions:

- Use designated equipment for fuel loading and unloading to prevent contamination.
- Use proper procedures when adding fuel inhibitors.
- Use specified type of fuel.

Oil Maintenance Precautions

- Use proper servicing procedures; do not overfill, do not mix manufacturer’s brands of oil.

FUEL – SERVICING (12-14-01)



Fuel Tanks

Each wing contains an integral fuel bay, located between the front and rear spars, extending from WS 31.38 to WS 65.125. Fill the fuel bays immediately after each flight to lessen condensation in the tanks and lines. A fuel filler cap is located on top of each wing and provides a fueling/defueling point for each fuel bay.

Fuel Drains

Fuel drains are located at various places on the underside of each integral fuel bay and throughout the fuel system. These drains collect fuel samples for analysis. Collect fuel samples by placing the fuel sample cup up to the drain valve, and depressing the valve with rod protruding from the cup.

ENGINE OIL – SERVICING (12-14-02)

Oil Change Interval

- You must frequently do a check of the oil during the first 25 hours of engine operation and add oil as necessary. Use an aviation grade mineral oil of the required viscosity that agrees with SAE J1966.
- After the first 25 hours, drain the engine oil and replace the oil filter. Fill the engine through the oil filler tube with aviation grade mineral oil of the required viscosity that agrees with SAE J1966.
- Continue to use the aviation grade mineral oil until the airplane completes a total of 50 hours of engine operation or oil consumption is stabilized. You must then drain the engine oil, replace the oil filter and add ashless dispersant oil to the engine.

For more information on engine oil replacement intervals, refer to ATA Chapter 5, Inspection Time Limits.

INDUCTION AIR FILTER – SERVICING (12-15-00)

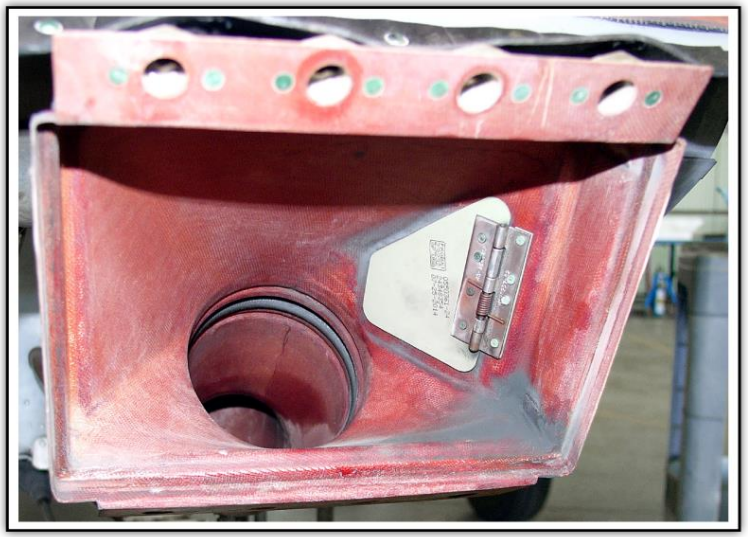
The induction air filter helps make sure dust and dirt does not go into the induction system.

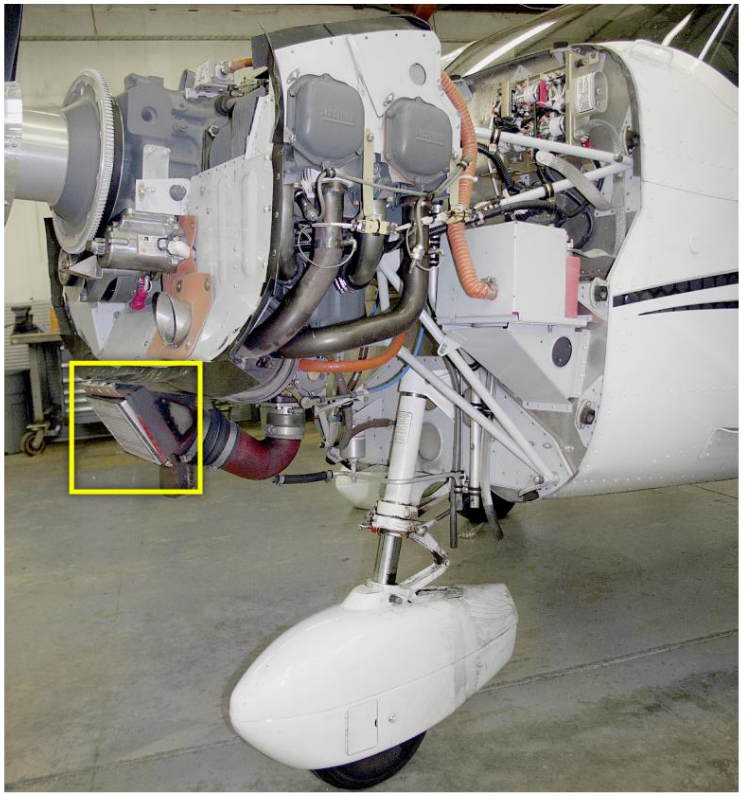
CA3559 Air Filter Service

The CA3559 Induction Air Filter must be serviced at 50 hours, is life limited and must be replaced at 100 hours.

P198281 Air Filter Service

The filter must be serviced at 50 hours, is life-limited and must be replaced at 500 hours.





AIRPLANE EXTERIOR - CLEANING/PAINTING (12-22-00)

Wash the airplane frequently in order to maintain its appearance and minimize corrosion. Polish the painted area of the airplane at periodic intervals to remove chalking paint and restore its gloss. Water/detergent cleaning is the preferred method to clean the exterior surface of the airplane.

AIRPLANE EXTERIOR - CLEANING/PAINTING (12-22-00)

Precautions

- Read and adhere to all manufacturer's instructions, warnings and cautions on the cleaning/solvent compounds used.
- Do not use silicone based wax to polish the airplane exterior. Silicone based wax, especially if buffed to produce a high shine, will contribute to the buildup of P-static.
- Do not park or store airplane where it might be subjected to direct contact with fluid or vapors from methanol, denatured alcohol, gasoline, benzene, xylene, methyl n-propyl ketone, acetone, carbon tetrachloride, lacquer thinners, commercial or household window cleaning sprays, paint strippers or other types of solvents.
- Do not leave sun visors up against windshield when not in use. The reflected heat from these items causes elevated temperatures on the windshield. If the airplane is equipped with solar screens, ensure they are the silver appearing, reflective type.

Preventive Maintenance

- Keep all surfaces of windshields and windows clean.
- If desired, wax acrylic surfaces.
- Carefully cover all surfaces during any painting, power plant cleaning or other procedure that calls for use of any type of solvent or chemical. Table 701 lists approved coatings for use in protecting surfaces from solvent attack.

For more detailed instructions, refer to the maintenance manual ATA Chapter 12, 12-22-00

AIRPLANE INTERIOR - CLEANING/PAINTING (12-23-00)

ATA Chapter 12 section 12-23-00 provides cleaning/painting procedures for different types of cleaning agents and cleaning procedures for the interior of the airplane. The procedures include general cleaning and specific cleaning for different types of stains.

Topics include:

- Interior Cleaning Materials
- Interior Panels
- Carpets
- Seats
- GDU 1040 Display Lens
- Deck Skin Paint Removal/Installation

UNSCHEDULED SERVICING - DESCRIPTION AND OPERATION (12-30-00)

Extreme Weather Maintenance

Seacoast and Humid areas.

- In salt-water areas, take special care to keep engine, accessories, and airframe clean to help prevent oxidation.
- In humid areas, check the fuel and oil frequently and drain of condensation to prevent corrosion.

Cold Soak

If extended exposure to cold weather is expected, refer to the procedure located in ATA chapter 12, 12-30-00 to prepare the airplane for cold soak. If the airplane has cold soaked for more than two hours at temperatures colder than -10°C (14°F), refer to this procedure and the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual to prepare the airplane for flight.

- Cold temperatures have an effect on control cable tension. Refer to Chapter 27, Aileron Control System - Maintenance Practices, Elevator Control System - Maintenance Practices, Elevator Trim Control - Maintenance Practices, and Flap Control System – Maintenance Practices for flight control cable tensions.
- For information on lubrication and greasing of moving parts, refer to Chapter 12, Lubricants - Description and Operation.
- Refer to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual for the correct engine oil viscosity.
- Refer to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual for additional information on procedures for operation of the airplane in cold temperatures.

The engine must be preheated before an engine start when exposed to very cold temperatures. Refer to the procedure located in ATA chapter 12, 12-30-00 to preheat the engine.

ATA20 - Standard Practices

LESSON OBJECTIVES

- Identify safety precautions related to ATA Chapter 20
- Identify maintenance practices important to ATA Chapter 20
- Describe the general layout of ATA Chapter 20

TORQUE DATA - MAINTENANCE PRACTICES (20-11-00)

Torque Data

To ensure security of installation and prevent over stressing of components during installation, use the torque values outlined in this section and other applicable chapters of this manual during installation and repair of components.

The torque value tables, listed in ATA chapter 20 20-11-00, are standard torque values for the nut and bolt combinations. If a component requires special torque values, those values will be in the applicable maintenance practices section.

TORQUE REQUIREMENTS FOR STEEL NUTS, BOLTS, AND SCREWS (IN INCH-POUNDS)

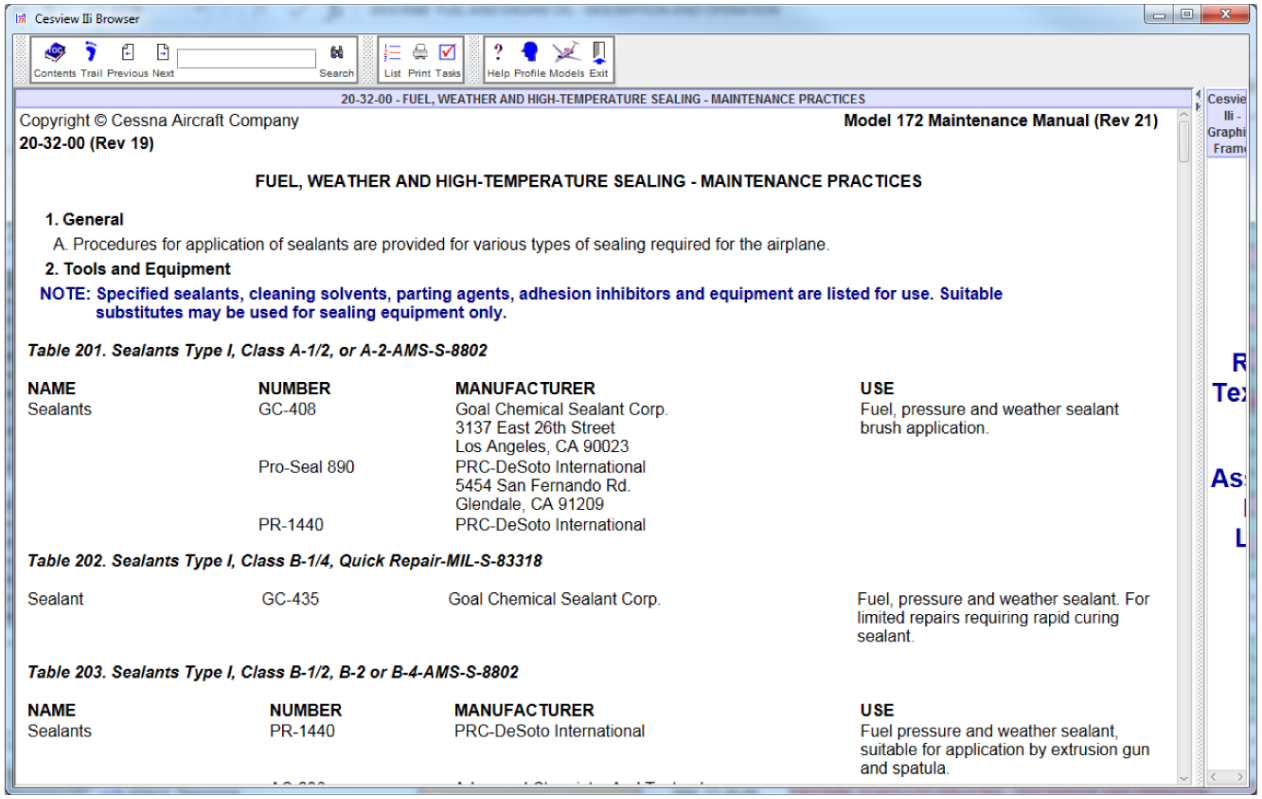
SIZE	FINE THREADED SERIES (TENSION TYPE NUTS)		FINE THREADED SERIES (SHEAR TYPE NUTS EXCEPT MS17826)		MS17826 NUTS	
	STANDARD TORQUE	ALTERNATE TORQUE	STANDARD TORQUE	ALTERNATE TORQUE	STANDARD TORQUE	ALTERNATE TORQUE
8-36	12 to 15	- -	7 to 9	- -	- -	- -
10-32	20 to 25	20 to 28	12 to 15	12 to 19	12 to 15	12 to 20
1/4-28	50 to 70	50 to 75	30 to 40	30 to 48	30 to 40	30 to 45
5/16-24	100 to 140	100 to 150	60 to 85	60 to 100	60 to 80	60 to 90
3/8-24	160 to 190	160 to 260	95 to 110	95 to 170	95 to 110	95 to 125
7/16-20	450 to 500	450 to 560	270 to 300	270 to 390	180 to 210	180 to 225
1/2-20	480 to 690	480 to 730	290 to 410	290 to 500	240 to 280	240 to 300
9/16-18	800 to 1000	800 to 1070	480 to 600	480 to 750	320 to 370	320 to 400
5/8-18	1100 to 1300	1100 to 1600	660 to 780	660 to 1060	480 to 550	480 to 600
3/4-16	2300 to 2500	2300 to 3350	1300 to 1500	1300 to 2200	880 to 1010	880 to 1100
7/8-14	2500 to 3000	2500 to 4650	1500 to 1800	1500 to 2900	1500 to 1750	1500 to 1900
1-14	3700 to 4500	3700 to 6650	2200 to 3300	2200 to 4400	2200 to 2700	2200 to 3000

Torque is typically applied and measured using a torque wrench. Different adapters, used in conjunction with the torque wrench, may produce an actual torque to the nut or bolt which is different from the torque reading. Figure 201 in section 20-11-00 of the maintenance manual provides the relation to specific adapters used with the torque wrench to help calculate actual torque.

Free Running Torque Value

Free running torque value is the torque value required to rotate a nut on a threaded shaft, without tightening. Free running torque value does not represent the torque values listed in the tables of section 20-11-00. Torque values listed in the tables represent the torque values above free running torque.

FUEL, WEATHER AND HIGH-TEMPERATURE SEALING - MAINTENANCE PRACTICES (20-32-00)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20-32-00 - FUEL, WEATHER AND HIGH-TEMPERATURE SEALING - MAINTENANCE PRACTICES

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20-32-00 (Rev 19)

FUEL, WEATHER AND HIGH-TEMPERATURE SEALING - MAINTENANCE PRACTICES

1. General

A. Procedures for application of sealants are provided for various types of sealing required for the airplane.

2. Tools and Equipment

NOTE: Specified sealants, cleaning solvents, parting agents, adhesion inhibitors and equipment are listed for use. Suitable substitutes may be used for sealing equipment only.

Table 201. Sealants Type I, Class A-1/2, or A-2-AMS-S-8802

NAME	NUMBER	MANUFACTURER	USE
Sealants	GC-408	Goal Chemical Sealant Corp. 3137 East 26th Street Los Angeles, CA 90023	Fuel, pressure and weather sealant brush application.
	Pro-Seal 890	PRC-DeSoto International 5454 San Fernando Rd. Glendale, CA 91209	
	PR-1440	PRC-DeSoto International	

Table 202. Sealants Type I, Class B-1/4, Quick Repair-MIL-S-83318

Sealant	GC-435	Goal Chemical Sealant Corp.	Fuel, pressure and weather sealant. For limited repairs requiring rapid curing sealant.

Table 203. Sealants Type I, Class B-1/2, B-2 or B-4-AMS-S-8802

NAME	NUMBER	MANUFACTURER	USE
Sealants	PR-1440	PRC-DeSoto International	Fuel pressure and weather sealant, suitable for application by extrusion gun and spatula.

Section 20-32-00 of the maintenance manual provides procedures for application of sealants for various types of sealing required for the airplane.