WELCOME

The publishers of this Aviation Maintenance Technician Certification Series welcome you to the world of aviation maintenance. As you move towards EASA certification, you are required to gain suitable knowledge and experience in your chosen area. Qualification on basic subjects for each aircraft maintenance license category or subcategory is accomplished in accordance with the following matrix. Where applicable, subjects are indicated by an "X" in the column below the license heading.

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We wish you good luck and success in your studies and in your aviation career!

REVISION LOG

VERSION	EFFECTIVE DATE	DESCRIPTION OF CHANGE
001	2022 03	Module Creation and Release
001.1	2022 03	Label Correction for Figure 2-1; Page 2.2
002	2022 10	Inclusion of Measurement Standards for clarificaton, page iv. Enhanced or modified content within the following Sub-Modules: 12.9(A) - Moved content on emergency escape lighting from page 9.14 to 9.5. 12.13 - Expanded content on Wiper Systems. 12.14 - Expanded content on Emergency Pop-out Floats. 12.19 - Added section; Miscellaneous Information Systems.
002.1	2023 01	Minor type corrections and Figure replacement. Replaced Figure 14-54 on page 14.30 Replaced Figure 15-9 on page 15.5 Replaced Figure 18.4 and 18.5 on page 18.5

MODULE EDITIONS AND UPDATES

ATB EASA Modules are in a constant state of review for quality, regulatory updates, and new technologies. This book's edition is given in the revision log above. Update notices will be available Online at www.actechbooks.com/revisions.html
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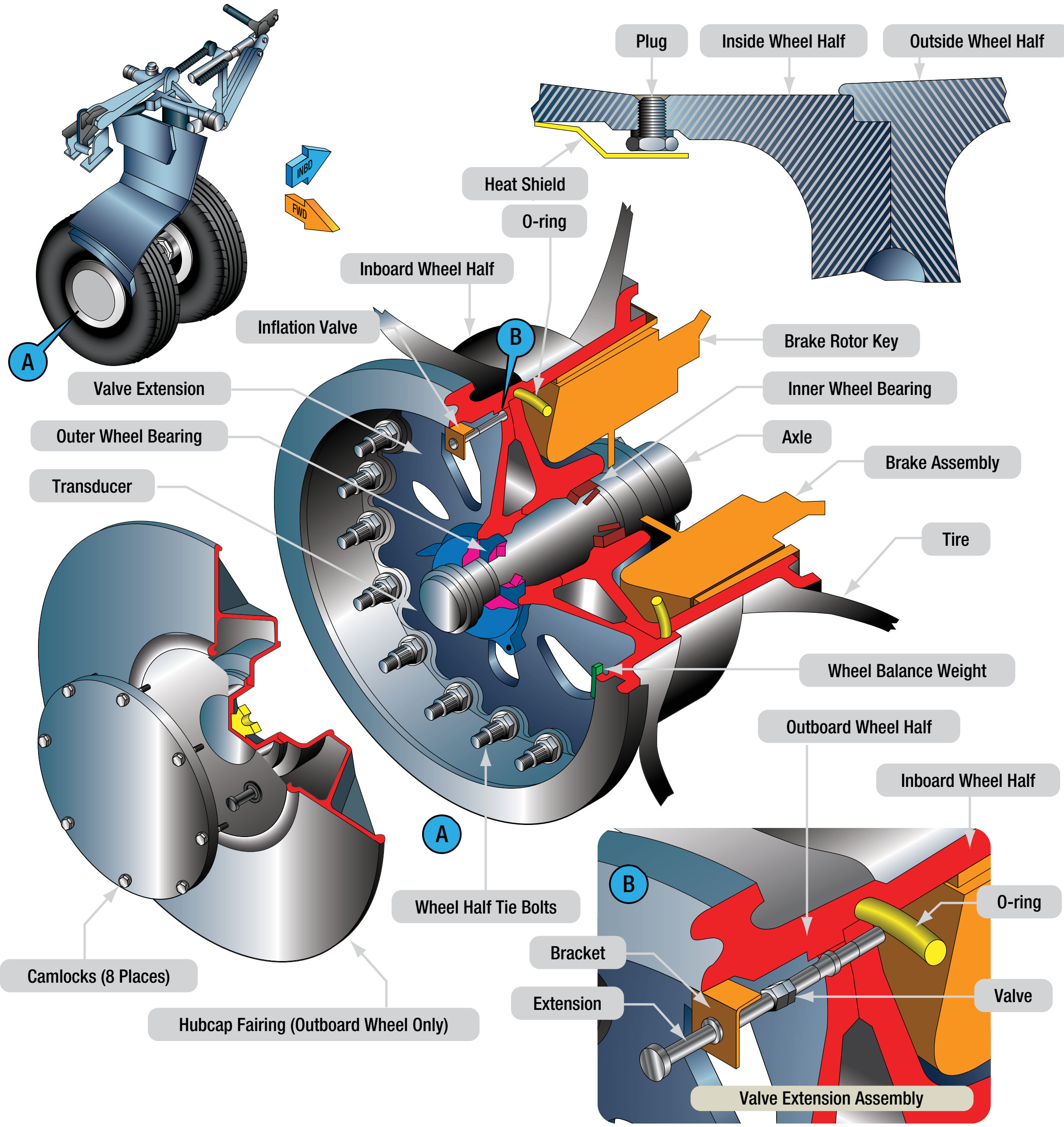

Figure 14-53. Features of a two piece aircraft wheel.

Figure 14-54. Keys on the inner wheel half.

On Aircraft Wheel Inspection

The landing gear area is such a hostile environment that the technician should inspect the landing gear including the wheels, tires, and brakes whenever possible. The general condition can typically be inspected while on the aircraft. However, any signs of suspected damage may require further testing and so the removal of the wheel assembly from the aircraft may be required.

Proper Installation

Proper installation of the wheels should not be taken for granted. All tie bolts and nuts must be in place and

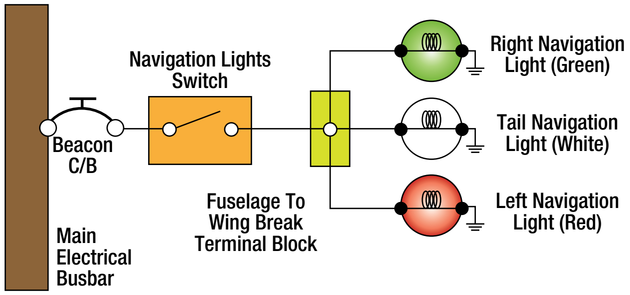

Figure 15-7. Navigation light system schematic.

Figure 15-8. A forward position LED position light from Devore Aviation.

Small aircraft are usually equipped with a simplified control switch and circuitry. In some cases, one control knob or switch is used to turn on several sets of lights. For example, one system utilizes a control knob, the first movement of which turns on the position lights and the instrument panel lights. Further rotation of the control knob increases the intensity of only the panel lights.

A flasher unit is generally included in the position light circuitry of all aircraft. Traditional position lights use incandescent light bulbs. LED lights have been introduced on modern aircraft because of their good visibility, high reliability, and low power consumption. (***Figure 15-8***)

ANTI-COLLISION LIGHTS

Anti-collision lights are safety lights to warn other aircraft, especially in congested areas. Anti-collision lights may be of two types:

- Rotating Beacons
- Flashing Strobe Lights

Rotating Beacons

Rotating beacons are usually installed on top of the fuselage or tail and/or under the fuselage. Each is installed in such a location that the light does not affect the vision of the crew member or detract from the visibility of the position lights. ***Figure 15-9*** shows a typical anti-collision light installation in a vertical stabilizer.

Figure 15-9. A typical anti-collision light installation in a vertical stabilizer.

The beacon illustrated in (***Figure 15-10A***) employs a V-shaped reflector over the axis of a single sealed lamp. One half of the rotating reflector is flat and emits a narrow high intensity beam towards the horizon, while the other half is curved to increase the up and down spread of its beam to 30° above and below the horizon. The gear and pinion type motor turns the reflector at a constant speed of 40-45 RPM giving an observed flash frequency of 80-90 flashes per minute.

Another type of beacon illustrated in (***Figure 15-10B***) employs two filament lamps, mounted in tandem, each of which is pivoted on its own axis. One half of each

Figure 15-10A. A V-shaped reflector over the axis of a single sealed lamp.

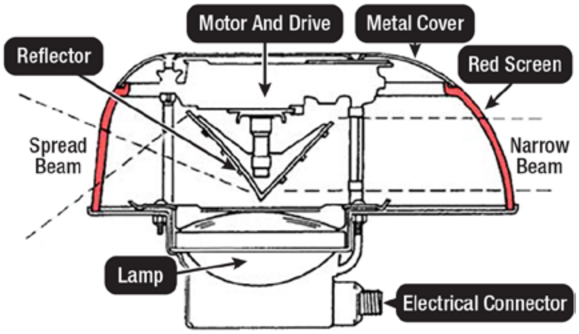

Figure 15-10B. Two filament lamps mounted in tandem.

continuous. If anything that is being monitored fails, BITE will alert the CMC automatically.

In some aircraft, the user can run the BITE power-up check for a given system from the CMC control unit at any time. This capability is provided as a CMC menu item. This function can be useful when troubleshooting the system. Some LRUs containing BITE have indicator lights that indicate the status of the LRU. Green lights indicate a normal condition, red lights indicate that the BITE detected a fault in the LRU. ***Figure 18-4*** shows an LRU with BITE indicators.

BITE systems also have the capability of storing fault history. The history is kept in non-volatile memory. Non-volatile memory holds the stored information even after the system has been powered off.

DATA LOADING SYSTEMS

An aircraft data loading system provides a means to upload and download data to and from the on board maintenance system. The data loading system connects to other on board systems, as well. It can be used with any digital system that requires data uploads and downloads while installed in the aircraft.

Early data loading systems used floppy disks as the data storage medium. An example of this is the Multipurpose Disk Drive Unit (MDDU) used on many Airbus models. The MDDU uses 3.5-inch floppy disks for uploading, downloading, and data storage. In the Airbus system, a data loader selector switches the MDDU to the various systems that require a data upload or download. On other aircraft, data loading is accomplished through a Maintenance Access Terminal (MAT) on the flight deck. ***Figure 18-5*** shows a typical MAT.

Data loading systems also allow for the use of other forms of storage media. Newer systems can be connected to a laptop via a USB cable. A CD-ROM disk, or a USB memory stick or "flash drive" may also be used. In some aircraft, there are multiple locations to connect external devices to the data loading system. ***Figure 18-6*** shows various types of data loading panels.

The primary uses for the data loading system are for the uploading of program updates, the uploading of database updates, and the downloading of reports. An example of a unit requiring program updates is the central maintenance computer which contains an operating program that is upgraded from time to time. The same is true for other aircraft systems with internal programming. The number of systems requiring program updating varies from aircraft to aircraft.

An example of a database requiring updating is the navigation database which forms a part of the Flight Management System. The navigation database contains a great deal of information used by the flight crew. This includes the location of airports, airways, way points, and intersections, the location and frequencies of radio navigation aids, and other information needed to create and follow a flight plan. Because changes to this information occur from time to time, the navigation database requires periodic updates. These updates are uploaded through the data loading system. The standard frequency for navigation database updates is every 28 days. ***Figure 18-7*** shows examples of navigation database update software.

Figure 18-4. Built In Test Equipment (BITE) Indicators.

Figure 18-5. Maintenance Access Terminal (MAT).