Component Maintenance Manual with Illustrated Parts List

MAIN LANDING GEAR (MLG) AXLE REMOTE DATA CONCENTRATOR (ARDC)

PART NUMBERS:

HYDRO-AIRE, INC.	GE AVIATION SYSTEMS LLC	THE BOEING CO.
142-129-01	2-8330-1	S683Z001-21

CRANE AEROSPACE & ELECTRONICS, HYDRO-AIRE, INC.

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PRELIMINARY

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We welcome your comments concerning this manual. Although every effort has been made to prevent errors, some may occur. When reporting a specific problem, please describe it briefly and include the manual number, the paragraph or figure number, and the page number.

To ask questions or make comments about this manual, please visit our website at www.CraneAE.com/TechPubs.

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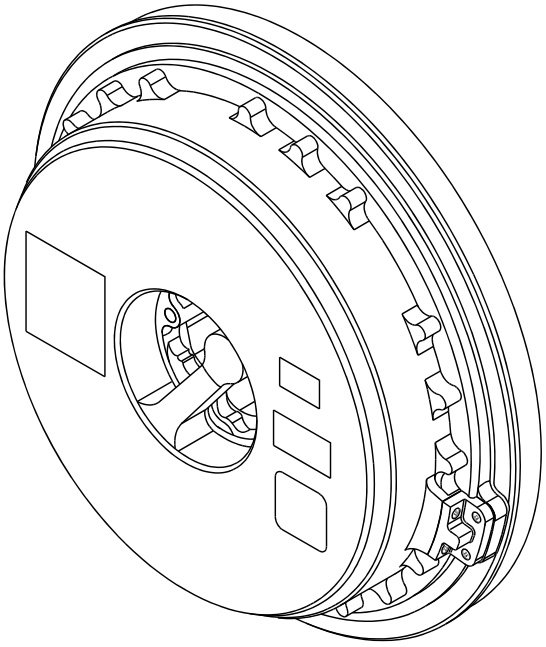
FCC Warning Statements

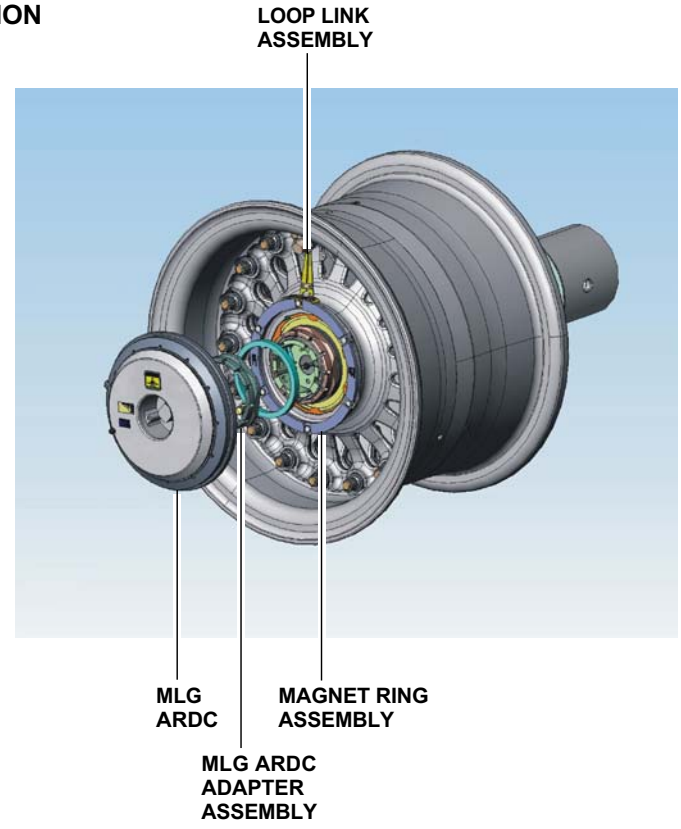
This equipment complies with Part 15.209 and 15.205 of the FCC rules. Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules subject to the following two conditions:

1) This device may not cause harmful interference.
2) This device must accept all interference received, including interference that may cause undesired operation.



INSTALLATION DETAIL



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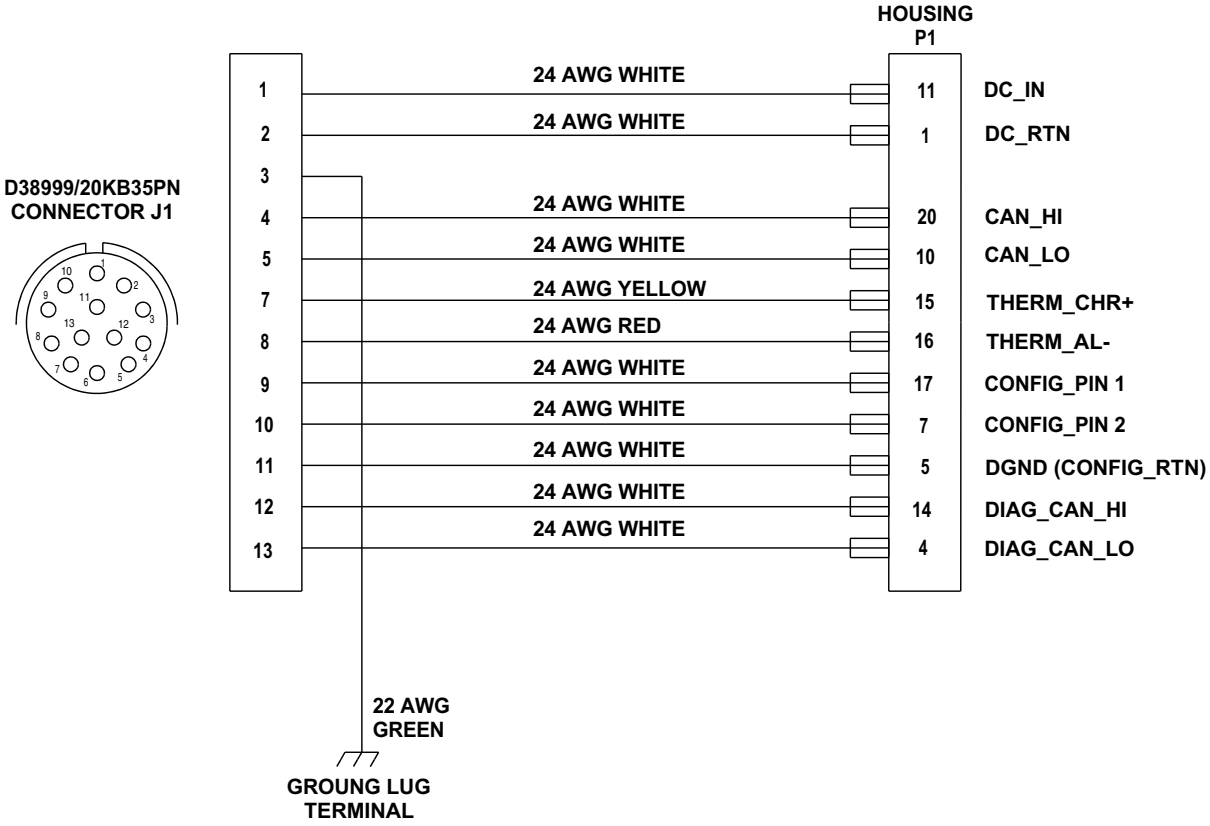
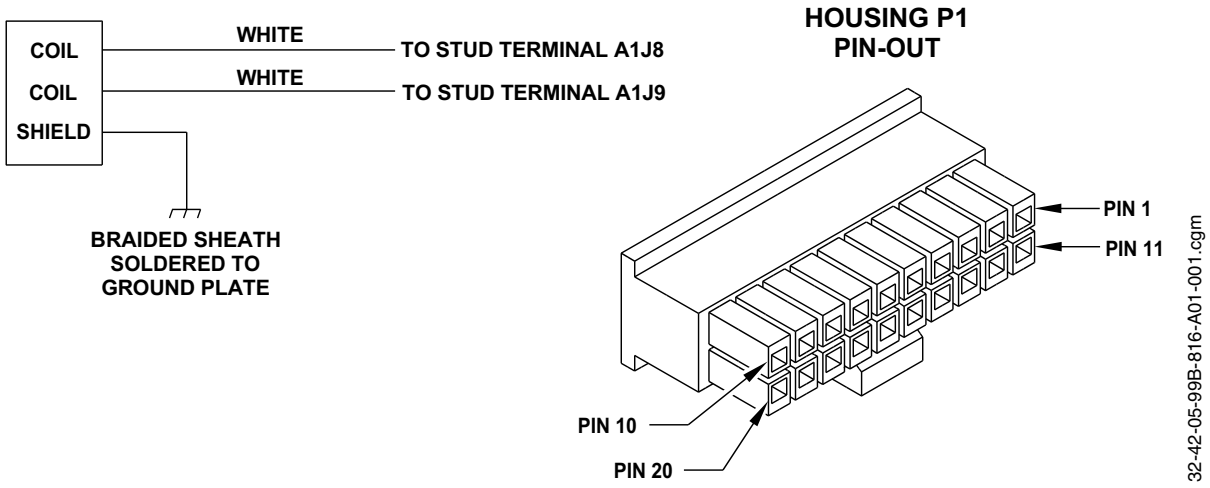
GRAPHIC 32-42-05-99B-812-A01

MLG ARDC
Figure 2

MLG ARDC WIRING DIAGRAM



COIL HOUSING ASSEMBLY WIRING DIAGRAM



GRAPHIC 32-42-05-99B-816-A01 Wiring and Pin-Out Diagrams
Figure 4

TASK 32-42-05-870-812-A01

3. Operation

A. Controls and Indicators

(1) The MLG ARDC operates automatically. It has no manual operator controls and no visual indicators.

(2) A pin-out diagram and signal list are given in Figure 4. The connector specifications are listed in Leading Particulars, Table 1.

B. Tire Pressure Reporting

(1) The BCMS contains ten tire pressure sensors, eight on the left and right MLG tires and two on the Nose Landing Gear (NLG) tires. The temperature sensors at the MLG wheels are mounted in loop link assemblies attached to the magnetic ring assemblies. A passive temperature sensor incorporated into the pressure sensor module allows correction of the tire pressure reading for ambient temperature.

(2) The tire pressure is measured using an integrated passive wireless sensing technology, called SmartStem, embedded into the tire inflation stem. The SmartStem contains three redundant Application Specific Integrated Circuit (ASIC) devices, each with an associated pressure sensor. They are powered by low frequency Radio Frequency (RF) energy provided by the NLG ARDC. The three ASICs within each stem act as data transponders, sending stem pressure and temperature data back by modulating the RF signal generated by the MLG ARDC. The wireless response is sent to the MLG ARDC where it is processed and transmitted to the BSCU for Common Core System (CCS) transmittal.

(3) An abnormal tire pressure is transmitted to the EICAS on the CAN Bus. The BSCU reports the low pressure, deviation pressure, or differential pressure to the flight crew.

C. Wheel Speed Reporting

(1) [redacted]

(2) The Hall effect sensors measure the changing field strength generated by the rotating magnet and generate an output analog voltage which is proportional to the applied magnetic field. The MLG ARDC uses the Hall effect sensor output, which represents the angular position change of the tire, to calculate the wheel speed.

(3) Software on the MLG ARDC converts the data from the Hall-Effect sensors to a digital signal, and also calculates a reference velocity and velocity error. Proportional, Integral and Differential (PID) control algorithms add a value to the signal to compensate for wheel slip.

D. Brake Temperature Reporting

(1) The MLG ARDC receives inputs from the thermocouple on the brake temperature probe to sense the brake temperature of the wheel. Software on the MLG ARDC conditions and compensates the brake temperature signal to reduce errors. The temperature readings are then transmitted to the BSCU using CAN bus communication.