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Technical Bulletin


Second Hour Meter and Collective Switch Installation


Bell 212


TBN-212-001

Revision A

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TABLE OF CONTENTS

| | |
|--|-----------|
| 1. Introduction | 4 |
| 1.1. Approval..... | 4 |
| 1.2. Purpose | 4 |
| 1.3. Effectivity | 4 |
| 1.4. Compliance..... | 4 |
| 1.5. Description..... | 4 |
| 2. Installation Data..... | 5 |
| 2.1. Parts List..... | 5 |
| 2.2. Weight and Balance | 5 |
| 2.3. Electrical Loads | 5 |
| 3. Installation Procedure..... | 6 |
| 3.1. Second Hour Meter Installation (-011 Configuration)..... | 6 |
| 3.2. Second Hour Meter Installation (-013 Configuration)..... | 7 |
| 4. Test Procedure | 13 |
| 4.1. Post Installation Test | 13 |
| Aircraft Record Set Update and Eagle Notification | 16 |

LIST OF TABLES

| | |
|--|----|
| Table 1 – Parts List | 5 |
| Table 2 – -011 and -013 Electrical Loads | 5 |
| Table 3 – Bonding Check Results..... | 13 |
| Table 4 – EMI / EMC Check Sheet..... | 15 |

LIST OF FIGURES

| | |
|--|----|
| Figure 1 – Mounting Hole..... | 6 |
| Figure 2 – Second Hour Meter Install Wiring Diagram -011 Configuration | 8 |
| Figure 3 - Collective Switch Install Wiring Diagram -013 Configuration | 9 |
| Figure 4 – Cam Assembly Installation Diagram..... | 10 |
| Figure 5 – Bracket Assembly/Relay/Switch Installation..... | 11 |
| Figure 6 – CB Installation Overhead Panel..... | 12 |

1. Introduction

1.1. Approval

This Technical Bulletin is approved data in accordance with the following STC:

TCCA STC: SH07-28

FAA STC: SR02831NY

1.2. Purpose

This Technical Bulletin provides instructions for the installation of the Second Hour meter in the centre pedestal and interconnecting it with the collective switch, relay and terminal block.

1.3. Effectivity

| |
|-----|
| MSN |
| ALL |

1.4. Compliance

Optional.

1.5. Description

This Technical Bulletin provides information required for the installation of the Second Hour meter in the Centre Pedestal as well as a cam actuated switch on the collective to initiate the counter. The Second Hour Meter captures the time data between the time the collective is pulled up to the flight position, to the time it is lowered to the normal idle position. A configuration is also provided to install the collective switch as a stand alone option for other uses.

2. Installation Data

2.1. Parts List

| Item | -011 Qty | -013 Qty | Part Number | Description |
|------|----------|----------|-----------------|---------------------|
| 1 | 1 | | LM-HH3AS-H21 | Hobbs Hour Meter |
| 2 | 1 | | M22073-1 | Circuit Breaker, 1A |
| 3 | 1 | | DT2R-A7 | Switch, DPDT |
| 4 | 1 | 1 | M81714/60-20-02 | Terminal Block |
| 5 | 1 | | 209-075-323-001 | Relay |
| 6 | 1 | 1 | MD3211Q5 | Actuator Switch |
| 7 | 1 | 1 | MA10210 | Nut |
| 8 | 3 | 3 | 640903-1 | Faston Terminal |
| 9 | 80ft | 40ft | M22759/41-22-9 | Wire, 22 AWG |
| 10 | 1 | | D-436-37 | Splice |
| 11 | 2 | | MS25036-148 | Ring terminals |
| 12 | 1 | 1 | D212-725-1-947 | Cam Assembly |
| 13 | 1 | 1 | D212-725-1-061 | Bracket Assembly |
| 14 | 2 | | MS35206-215 | Screw |
| 15 | 3 | 3 | HL64BP6-4 | Fasteners |

Table 1 – Parts List

2.2. Weight and Balance

The incorporation of the Technical Bulletin has a negligible effect on the rotorcraft weight and balance.

2.3. Electrical Loads

| System | Start & Warm-up 15 Min. | | Take-off 15 Min. | | Cruise 15 Min. | | Land 15 Min. | |
|-------------------------|----------------------------|----------------------|-----------------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|
| | -011 | -013 | -011 | -013 | -011 | -013 | -011 | -013 |
| Total for all DC Busses | 50.9 Amps | | 109.7 Amps | | 114.0 Amps | | 110.2 Amps | |
| TBN-E212-001 | 0.35 Amps | 0 Amps | 0.35 Amps | 0 Amps | 0.35 Amps | 0 Amps | 0.35 Amps | 0 Amps |
| Total | 51.3 Amps | 50.9 Amps | 110.5 Amps | 109.7 Amps | 114.35 Amps | 114.0 Amps | 110.55 Amps | 110.2 Amps |

Table 2 – -011 and -013 Electrical Loads

3. Installation Procedure

3.1. Second Hour Meter Installation (-011 Configuration)

1. Disconnect the battery and external power in accordance with ICA-D212-725.

WARNING:

OBEY ALL THE SAFETY PRECAUTIONS WHEN YOU DO MAINTENANCE ON OR NEAR ELECTRICAL/ELECTRONIC EQUIPMENT.

2. Cut panel for Second Hour Meter in accordance with Figure 1. Install the Second Hour Meter (P/N: LH-HH3AS-H21) into the mounting hole.
3. Install circuit breaker (P/N: M22073-1) in accordance with Figure 6. The circuit breaker can be installed on any empty circuit breaker location on NON-ESSENTIAL 28V DC Bus, see Figure 6. Label CB "HOUR METER #2" IAW Figure 2.
4. Install wiring in accordance with or Figure 2, as applicable.
5. Install cam assembly in accordance with Figure 4.
6. Install bracket and switch in accordance with Figure 5 using HL64BP6-4 Hi-Lok fasteners. The D212-725-1-061 bracket overlaps and uses common fasteners for the forward leg. Fabricate a shim from 0.040" AMS-QQ-A-250/5 2024-T3 sheet to suit the D212-725-1-061 bracket installation.
7. Install relay onto existing mounting point under co-pilot seat using 2x MS35206-215 in accordance with Figure 5.

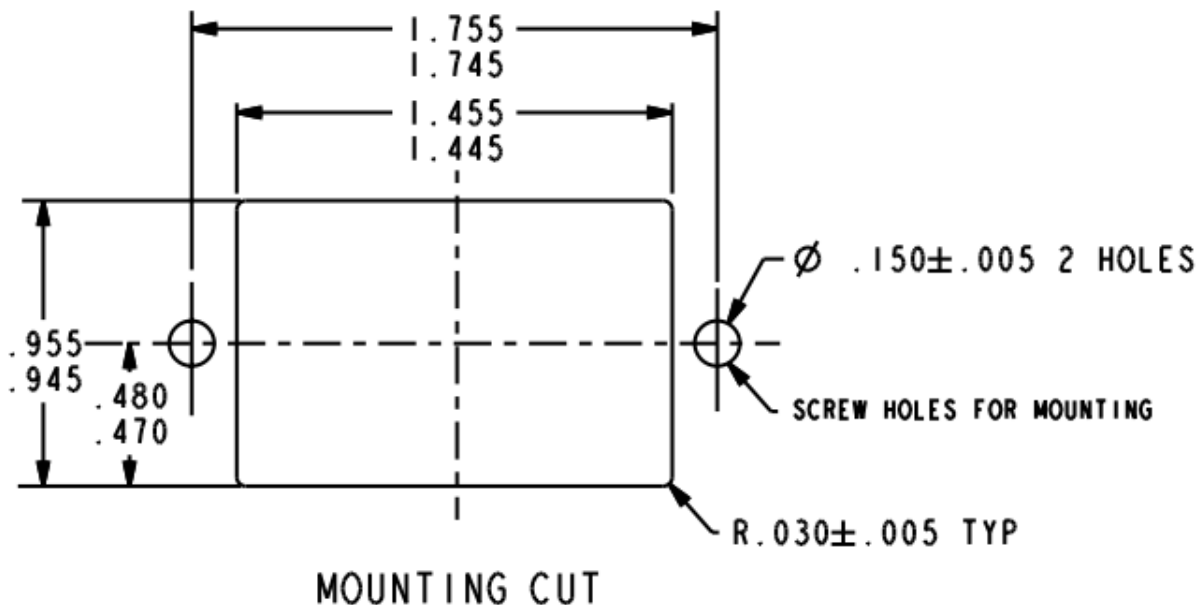


Figure 1 – Mounting Hole

3.2. Second Hour Meter Installation (-013 Configuration)

1. Disconnect the battery and external power in accordance with ICA-D212-725.

WARNING:

OBEY ALL THE SAFETY PRECAUTIONS WHEN YOU DO MAINTENANCE ON OR NEAR ELECTRICAL/ELECTRONIC EQUIPMENT.

2. Install wiring in accordance with Figure 3, as applicable.
3. Install cam assembly in accordance with Figure 4.
4. Install bracket, relay, and switch in accordance with Figure 5.

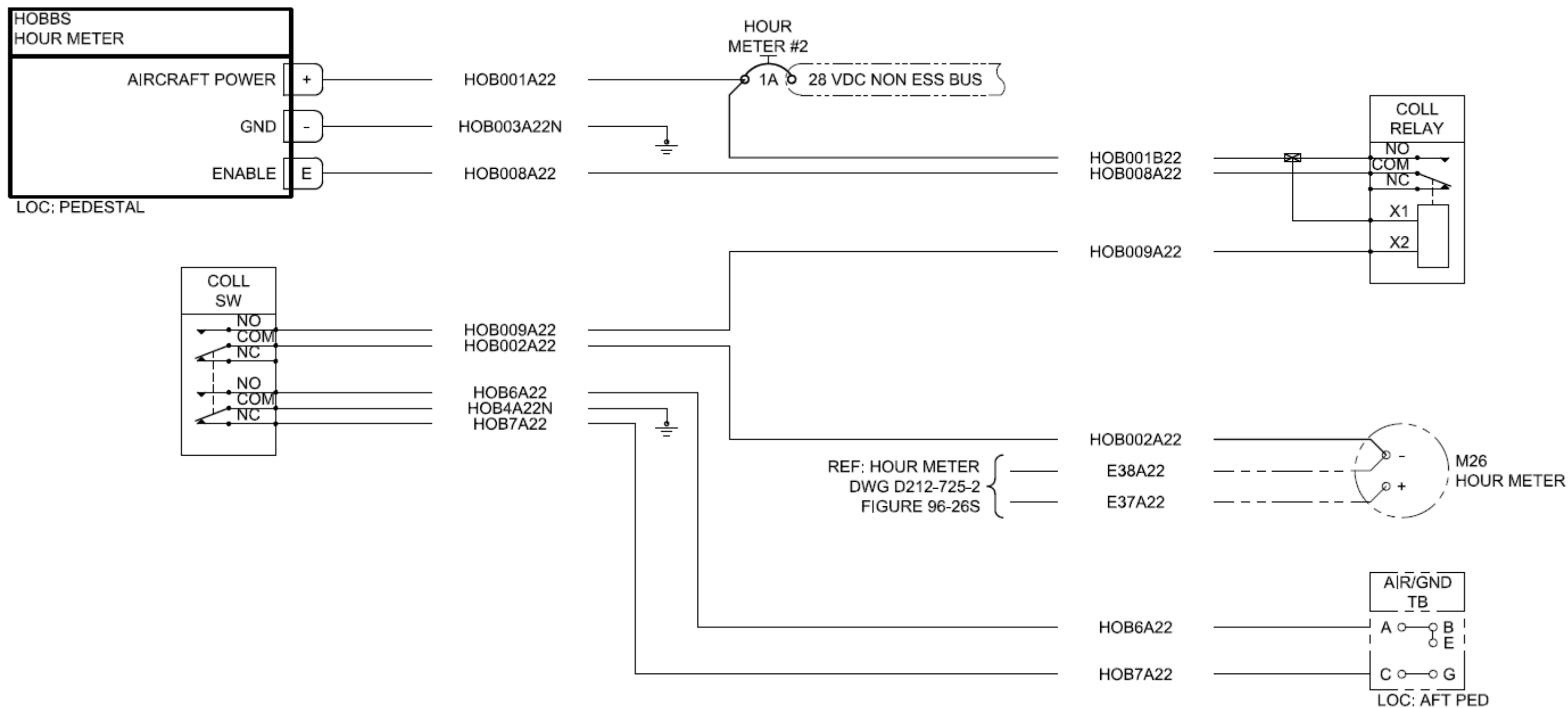


Figure 2 – Second Hour Meter Install Wiring Diagram -011 Configuration (with flight timer)



Figure 3 - Collective Switch Install Wiring Diagram -013 Configuration (without Flight Timer)

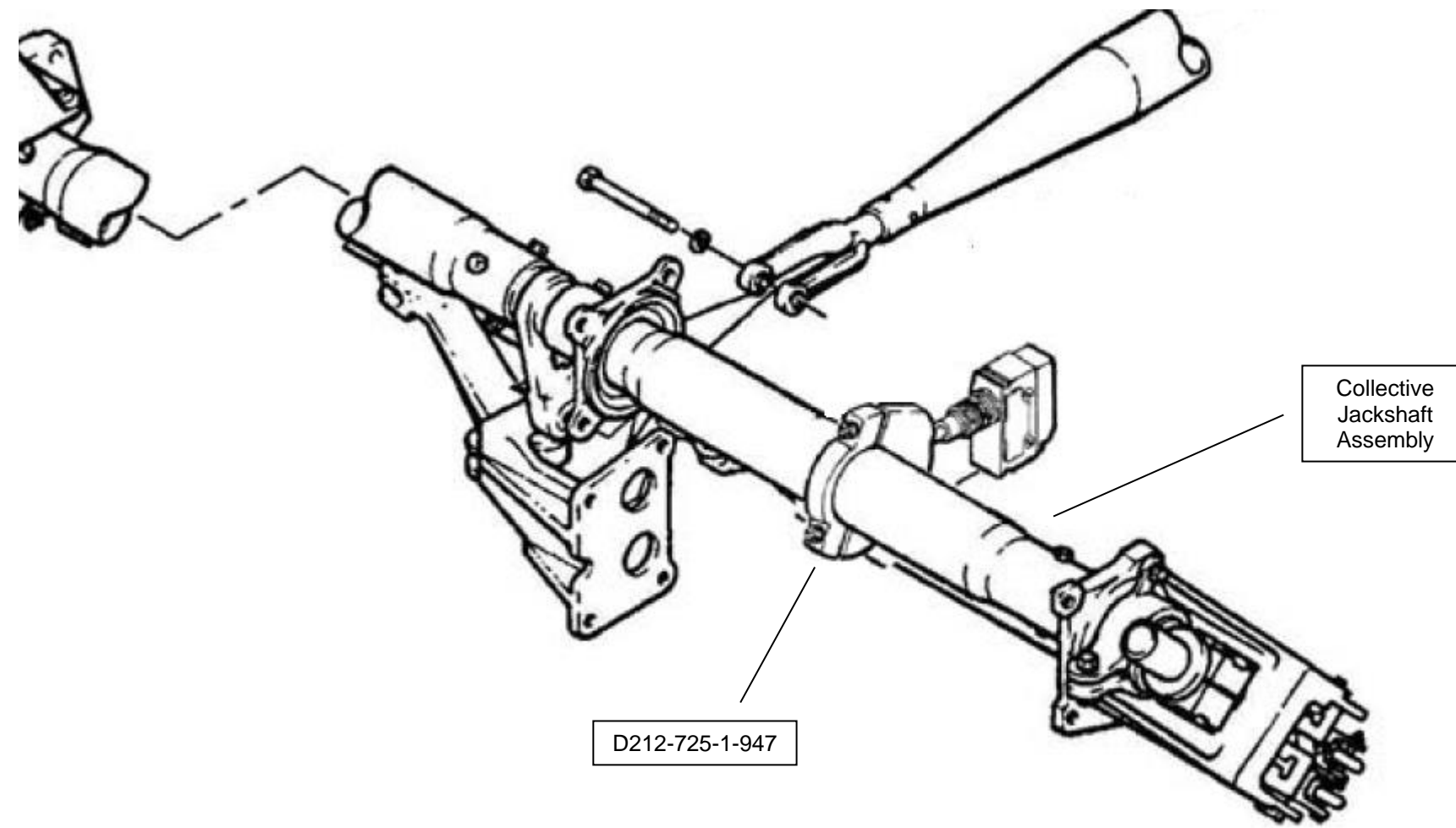
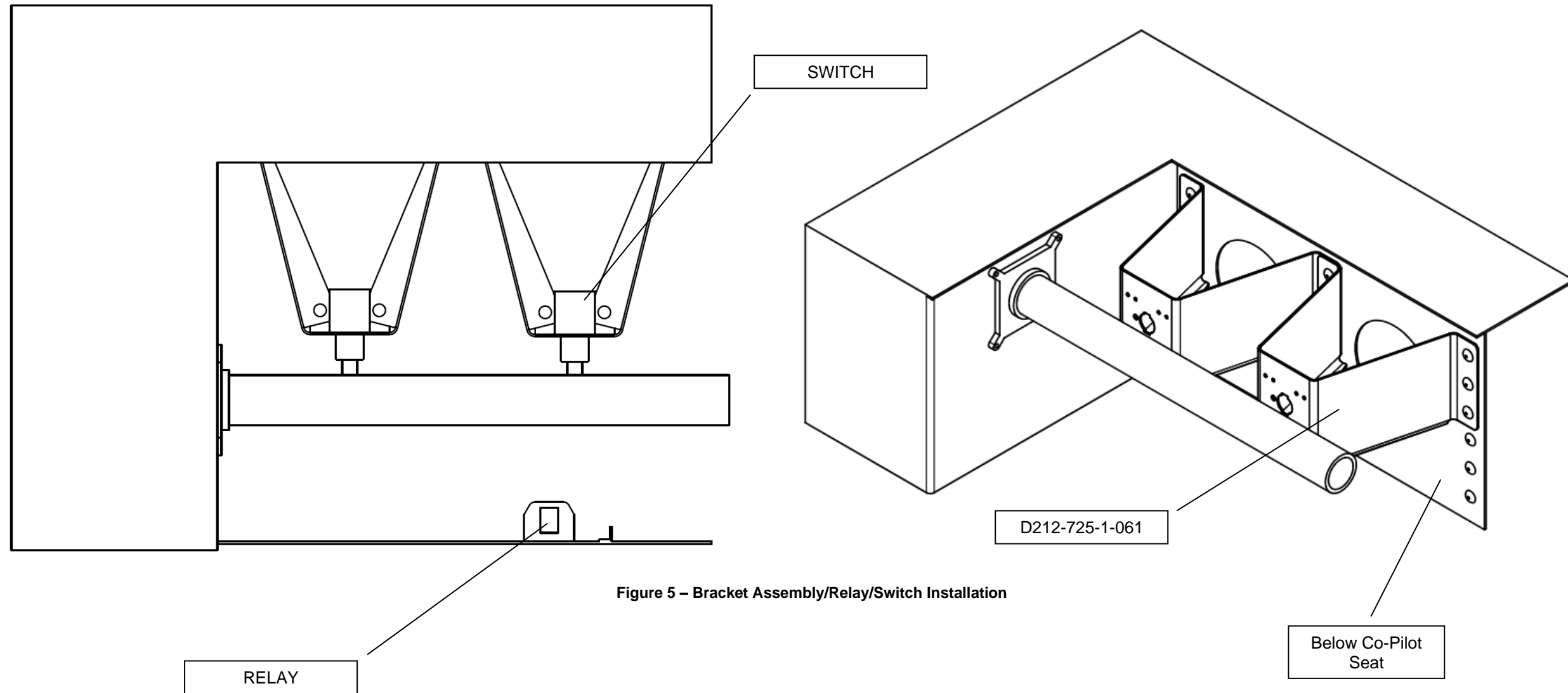


Figure 4 – Cam Assembly Installation Diagram



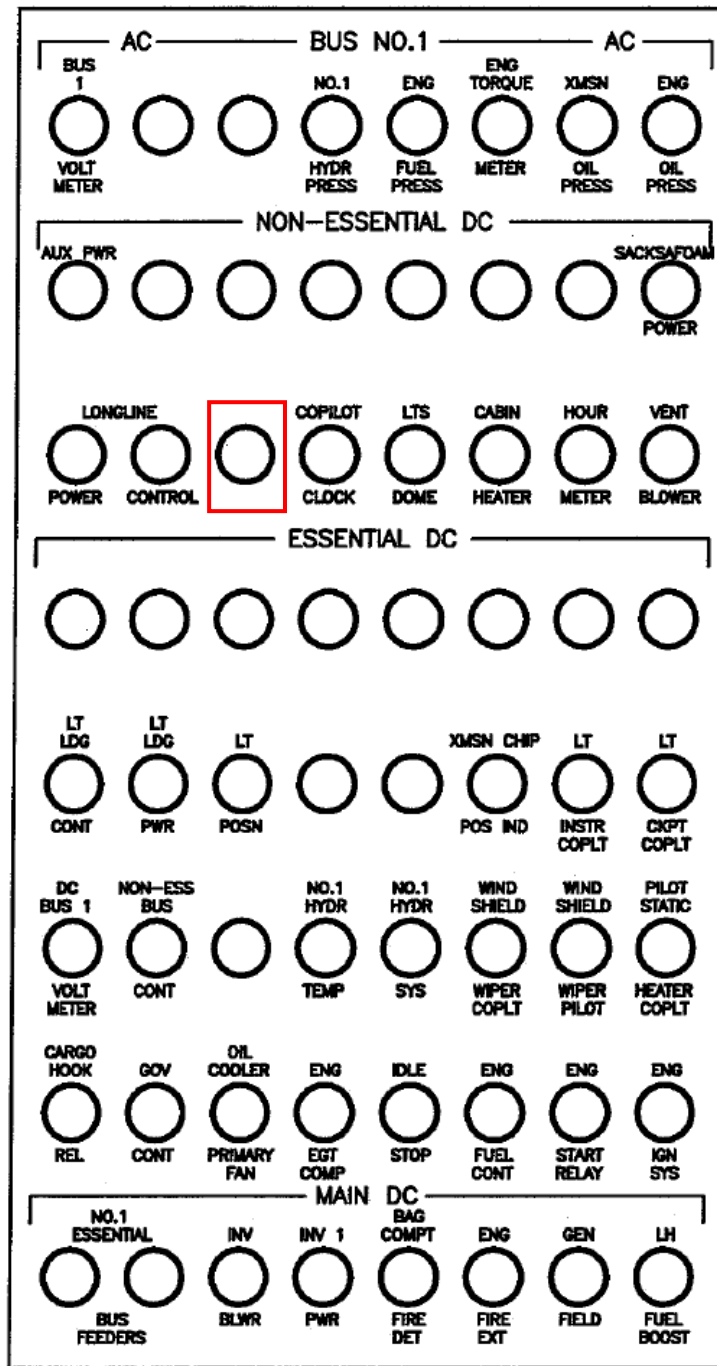


Figure 6 – CB Installation Overhead Panel

4. Test Procedure

4.1. Post Installation Test

1. Ensure that the circuit breakers are pulled and collared. Disconnect the Second Hour Meter connectors.
2. Check all pins for shorts to ground or adjacent pins.
3. Ensure that all cables are properly secured in accordance with Figure 2 or Figure 3 as applicable.
4. Ensure that the Second Hour Meter is grounded and connectors are disconnected. Perform a ground bonding check on each clock. Record the measurements to airframe ground in Table 3 below.

| LRU Point | Ground Point | Measurement | Pass/Fail |
|--|---|------------------------|--|
| Suitable ground location on the hour meter | Airframe ground on or near the instrument panel | 3 milliohms (< 0.003Ω) | Resistance: _____Ω Pass: <input type="checkbox"/> Fail: <input type="checkbox"/> Initial: _____ |

Table 3 – Bonding Check Results

5. Connect ground power and turn on aircraft power IAW ICA-D212-725.

WARNING:

OBEY ALL THE SAFETY PRECAUTIONS WHEN YOU DO MAINTENANCE ON OR NEAR ELECTRICAL/ELECTRONIC EQUIPMENT.

6. Remove collars and push in the Second Hour Meter circuit breaker.
7. If installing the -011 configuration:

On the Second Hour Meter connector, check the following pins.

| PIN | MEASUREMENT | PASS/FAIL |
|-----|--|--|
| + | +28 Vdc relative to ground | Pass: <input type="checkbox"/> Fail: <input type="checkbox"/> Initial: _____ |
| - | <0.5 Ω to ground | Pass: <input type="checkbox"/> Fail: <input type="checkbox"/> Initial: _____ |
| E | +28 VDC when collective switch is closed and relay is active | Pass: <input type="checkbox"/> Fail: <input type="checkbox"/> Initial: _____ |

8. Ensure the Second Hour Meter circuit breaker is pulled and collared.
9. Connect the Second Hour Meter connectors.
10. Remove collar, push in the Second Hour Meter circuit breaker.
11. Ensure the Second Hour Meter is powered on.
12. Simulate AIR/GND and verify that the Second Hour Meter continuously record.
13. For -013 installation, simulate AIR/GND and using multimeter verify that the ground is available on AIR/GND TB.
14. Perform EMI/EMC testing following the below steps. Refer to Table 4. For tests that include a frequency, test at the listed frequencies and at approximately one MHz intervals between the

listed frequencies. For other radio systems with controllable frequencies, test in a similar manner for low, middle, and high frequency bands.

- a. Ensure all systems are installed and functioning correctly. All previous steps in this section must be successfully completed before beginning EMI / EMC checks.
 - b. Ensure the aircraft is in a normal flight configuration. For example: all doors and windows are closed.
 - c. Using ground power, test each system outlined in Table 4 and record any aircraft abnormality that would indicate whether each system is a source or victim of EMI. Evaluate all possible scenarios and ensure that as many possible system settings are tested. Repeatedly perform tasks to ensure EMC (e.g., turn equipment on and off and adjust any user interfaces).
 - d. Using engine driven generators as the power source, complete testing of any systems that could not be tested on ground power (e.g., engine indications) and verify the evaluation performed in step c. Ensure that all systems are tested and any potential EMI that was noted is investigated further.
15. Turn off aircraft power and disconnect ground power in accordance with ICA-D212-725.

| Aircraft Systems | EMI Source: Second Hour Meter | | EMI Victim: Second Hour Meter | | Notes |
|------------------------------------|-------------------------------------|----|-------------------------------------|----|-------|
| | YES | NO | YES | NO | |
| VHF COMM 1, 118.000 MHz | | | | | |
| VHF COMM 1, 127.500 MHz | | | | | |
| VHF COMM 1, 135.975 MHz | | | | | |
| VHF COMM 2, 118.000 MHz | | | | | |
| VHF COMM 2, 127.500 MHz | | | | | |
| VHF COMM 2, 135.975 MHz | | | | | |
| NAV (VOR/ILS) NO. 1, 108.000 MHz | | | | | |
| NAV (VOR/ILS) NO. 1, 108.100 MHz | | | | | |
| NAV (VOR/ILS) NO. 1, 113.500 MHz | | | | | |
| NAV (VOR/ILS) NO. 1, 117.975 MHz | | | | | |
| NAV (VOR/ILS) NO. 2, 108.000 MHz | | | | | |
| NAV (VOR/ILS) NO. 2, 108.100 MHz | | | | | |
| NAV (VOR/ILS) NO. 2, 113.500 MHz | | | | | |
| NAV (VOR/ILS) NO. 2, 117.975 MHz | | | | | |
| GPS1 | | | | | |
| GPS2 | | | | | |
| PILOT AUDIO | | | | | |
| COPILOT AUDIO | | | | | |
| PUBLIC ADDRESS SYSTEM | | | | | |
| PILOT PFD/MFD | | | | | |
| COPILOT PFD/MFD | | | | | |
| ADAHRS 1 | | | | | |
| ADAHRS 2 | | | | | |
| HSVT | | | | | |
| STANDBY INSTRUMENT | | | | | |
| STANDBY COMPASS | | | | | |
| TCAS I | | | | | |
| RADIO ALTIMETER | | | | | |
| TRANSPONDER | | | | | |
| DME | | | | | |
| ELT | | | | | |
| GENERATOR / INVERTER | | | | | |
| EXTERIOR LIGHTS | | | | | |
| INTERIOR LIGHTS | | | | | |
| PUMPS / MOTORS | | | | | |
| PILOT TORQUE | | | | | |
| PILOT DUAL TACH | | | | | |
| COPILOT DUAL TACH | | | | | |
| NG | | | | | |
| MGT | | | | | |
| FUEL QUANTITY | | | | | |
| FUEL PRESSURE | | | | | |
| ENG OIL TEMP AND PRESS | | | | | |
| XMSN OIL TEMP AND PRESS | | | | | |
| HYD 1 OIL TEMP AND PRESS | | | | | |
| HYD 2 OIL TEMP AND PRESS | | | | | |
| GENERATOR VOLTMETER AND AMMETER | | | | | |
| MASTER CAUTION PANEL | | | | | |
| FIRE DETECTION AND WARNING | | | | | |
| OTHER: | | | | | |
| OTHER: | | | | | |

Table 4 – EMI / EMC Check Sheet

Aircraft Record Set Update and Eagle Notification

1. Make an entry in the aircraft record set that TBN-212-001-011 or TBN-212-001-013 has been incorporated.
2. Update the aircraft's Weight and Balance and Electrical Loads records with the values in Section 2 as required.
3. Notify Eagle Copters that TBN-212-001 has been incorporated by emailing the below information to customersupport@eaglecopters.com:

Aircraft Serial Number

Aircraft Owner

Date Incorporated

Configuration Number Installed