

INSIGHT

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Document Number GEM-R-ICA
Issue 1

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

For

**Insight Graphic Engine Monitor (GEM)
610C and 1200C Models**

This document must be attached to the aircraft Approved Maintenance Manual when the above instruments are installed in the subject aircraft.

The information contained herein supplements the Maintenance Manual only in those areas listed herein. For limitations and maintenance procedures not contained in this supplement, consult the Maintenance Manual.

LOG OF AMENDMENTS

| Revision No. | Revised Pages | Approval Date | Entered By: |
|---------------------|----------------------|----------------------|-------------------------|
| Issue 1 | | | <i>Debbie Margettie</i> |
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CHAPTER 1 – INTRODUCTION

A. General

The Insight Instrument GEM Models 610C and 1200C are primary engine instruments for display of the EGT, CHT and TIT parameters. Both can be configured as single-engine instruments, model 1200C also as a twin-engine instrument. They may also be used as additional, non-required indicators for those engine temperatures and additional engine parameters.

| Make | Unit | P/N | Description |
|--------------------------------|-------------------|-----------|--|
| Insight Instrument Corporation | GEM 610C | 610C-001 | Single-engine primary EGT, CHT, TIT instrument |
| Insight Instrument Corporation | GEM G4-001 Single | 1200C-001 | Single-engine primary EGT, CHT, TIT instrument |
| Insight Instrument Corporation | GEM G4-002 Twin | 1200C-001 | Twin-engine EGT, CHT, TIT instrument |

The GEM instrument is installed in the aircraft instrument panel. The installation is permitted only on eligible rotorcraft models equipped with compatible engine types.

The associated probes and transducers are installed as per Insight Doc. 070906 – *Installation Manual for GEM 610C-001, G4-001 and G4-002*, and the respective aircraft installation manuals.

The temperature values are displayed numerically and as bargraphs. The displays dim automatically with the intensity of ambient light.

The instruments sense temperatures through thermocouple-type probes.

The GEM instruments are powered typically from the avionics bus and protected by dedicated, trip-free, re-settable 1A circuit breakers. The instruments automatically adapt to either 14 or 28 V electrical systems.

The GEM weight is 0.22 kg.

The GEM instruments do not have adjustments or field-serviceable components. There is no scheduled maintenance prescribed by the manufacturer. For service, the instruments must be returned to an authorized repair facility.

The following documents supplement information in this manual concerning the installation, use and removal of the components:

| Document | Document No. | Title |
|------------------------|---------------------------|--|
| Installation Manual | 070906 Latest Revision | Installation Manual for GEM 610C-001, G4-001 and G4-002 |
| Operation Instructions | 070907 Latest Revision | Operating Instructions for GEM 610C-001, G4-001 and G4-002 |

B. ICA Distribution

This document and any revisions hereto, shall be distributed to the authorized users of the STC data or repair stations required to perform work on this aircraft. They will be distributed by courier, in electronic or paper format. The revisions will be distributed to responsible Transport Canada and FAA offices.

The STC holder is responsible for making these instructions available to any person required to comply with the terms of the instructions.

C. Aircraft/ Engine Applicability

These instruments may be used as EGT/CHT/TIT indicators instead of original factory-installed systems, and those original systems may be removed.

The standard model instruments are intended for use with engines that have 450 – 475°F CHT red lines. This covers nearly all common Continental and Lycoming engines.

D. Supplement Identities: Chapter, Page, Paragraph Numbers

The supplement format follows the general requirements of specification ATA-100 with respect to Chapter and Title. However, since the extent of the supplement information is relatively small in scope, the page numbering for each chapter is consecutive. Reference can be made to the following Chapter/Subject Listing:

| <u>Subject</u> | <u>Page Number</u> |
|--|---------------------|
| Title page, Log of Amendments, List of Effective Pages and Table of Contents and Content page(s) | 1, 2, 3, 4, etc |
| Paragraph or component titles are listed via | A., B., C., D. etc. |

Sub-paragraphs are listed according to:

| <u>Subject</u> | <u>Sub-Para. Number</u> |
|----------------------|-------------------------|
| Description | 1.0 |
| Fault Isolation | 101 |
| (Reserved) | 201 |
| Servicing | 301 |
| Removal/Installation | 401 |
| Adjustment/Test | 501 |
| Inspection/Check | 601 |
| Cleaning/Painting | 701 |
| Approved Repairs | 801 |
| Storage | 901 |

E. Abbreviations:

| | |
|------|---------------------------------|
| AMM | Aircraft Maintenance Manual |
| CB | Circuit Breaker |
| CHT | Cylinder Head Temperature |
| EGT | Exhaust Gas Temperature |
| TIT | Turbine Inlet Temperature |
| P/N | Part Number |
| STC | Supplemental Type Certificate |
| TCCA | Transport Canada Civil Aviation |
| TSO | Technical Standard Order |
| FAA | Federal Aviation Authority |

CHAPTER 4 – AIRWORTHINESS LIMITATIONS

There are no Airworthiness Limitations associated with this installation.

FAA Approval

The Airworthiness Limitations section is FAA-approved and specifies maintenance required under 43.16 and 91.403 of the Federal Aviation Regulation, unless an alternative program has been FAA approved.

CHAPTER 5 – PERIODIC INSPECTIONS

SCHEDULED MAINTENANCE CHECKS

There are no scheduled maintenance checks of the GEM instruments.

The instruments feature a built-in test (BIT), which is started automatically on power-up. The BIT will detect instrument's malfunctions. The malfunction of a probe or sensor is indicated by the digital numerical value being replaced by dashes: "---" and the corresponding bargraph is removed from the display.

Maintenance of the installation including temperature probes/ transducers should be accomplished as per the AMM, in accordance with applicable airworthiness standards.

No additional maintenance requirements are defined. Maintenance shall be on a "Condition Monitoring" basis; refer to FAA Procedures 8310.4, par. 3033. Any required maintenance must be accomplished by Insight Instrument Corporation maintenance staff. All maintenance functions will be accomplished using Maintenance Instructions for GEM, document numbers MI-G3, MI-1200C, latest revisions.

CHAPTER 11 – PLACARDS AND MARKINGS

INTERIOR PLACARDS

No markings or placards are required.

CHAPTER 24 – ELECTRICAL POWER

DC ELECTRICAL LOAD DISTRIBUTION

A. General

The power supply in GEM instruments offers normal operation from 8-33 VDC input so the instrument may be used interchangeably in either 14V or 28V aircraft.

(The GEM Display automatically accommodates both 14 and 28 Volt electrical systems.)

The power is supplied as follows:

| Equipment | Load | Circuit Breaker Rating | Power |
|-----------------------|-------------|-------------------------------|----------------|
| GEM 610C GEM 1200C | 2 W | 1 A | 14/ 28 VDC Bus |

B. Removal

Refer to Insight document No. 070906, *Installation Manual for GEM 610C-001, G4-001 and G4-002*.

Removal should be accomplished as per the AMM, in accordance with applicable Airworthiness Standards.

C. Installation

Refer to Insight document No. 070906 – *Installation Manual for GEM 610C-001, G4-001 and G4-002*.

Installation including temperature probes/ transducers should be accomplished as per the AMM, in accordance with applicable airworthiness standards.

D. Troubleshooting

Troubleshooting of the installation including temperature probes/ transducers should be done as per Insight document No. 070906 – *Installation Manual for GEM 610C-001, G4-001 and G4-002*.

CHAPTER 77 – ENGINE INDICATION

A. General

The GEM instruments are installed in the aircraft instrument panel. The installation is permitted only on eligible aircraft models equipped with compatible engine types. The instrument should be installed in place of the original factory-installed instruments, or another acceptable front panel location. The GEM 1200C may be configured and installed either as a single- or twin-engine instrument, the GEM 610C is a single-engine instrument.

The GEM instrument may be used as follows:

- As additional, non-required EGT/CHT/TIT indicators, or
- As primary EGT/CHT/TIT indicators (replacing the original factory-installed instruments)
- In addition to engine temperatures, the instruments can be configured as additional, non-required indicators of other engine parameters, as per manufacturer (Insight) installation instructions

The instruments are intended for use with engines that have 450 – 475°F CHT red lines. For the eligible aircraft/ engines refer to the STC-approved model list.

The temperature values are displayed numerically and as bar-graphs. The display dims automatically with the intensity of ambient light.

The GEM instruments do not have adjustments or field-serviceable components. There is no scheduled maintenance prescribed by the manufacturer. For service, the instruments must be returned to an authorized repair facility.

B. Removal

Refer to Insight document No. 070906 – *Installation Manual for GEM 610C-001, G4-001 and G4-002.*

Removal should be accomplished as per the AMM, in accordance with applicable airworthiness standards.

C. Installation

Refer to Insight document No. 070906 – *Installation Manual for GEM 610C -001, G4-001 and G4-002.*

Installation including temperature probes/ transducers should be accomplished as per the AMM, in accordance with applicable airworthiness standards.

D. Troubleshooting

Troubleshooting of the installation including temperature probes/ transducers should be done as per Insight document No. 070906 – *Installation Manual for GEM 610C -001, G4-001 and G4-002.*

Appendix A

Insight drawings –

Included in Insight document No. 070906 – *Installation Manual for GEM 610C-001, G4-001 and G4-002.*

BLOCK 4 – Applicant Statement of Compliance

The Supplemental ICA referenced above comprises the complete listing of supplemental ICA necessary to show compliance with the regulatory standard that supports this change in type design.

Applicants Signature: 

Date: 13-06-13

Applicants Name: Marek Jaglarz DAR 298 Phone # +41 (0)786184270 Email: dar298@gmail.com

BLOCK 5 – Minister’s Statement of Acceptability

The design change is adequately supported by existing ICA and/or supplemental ICA, as identified above and is acceptable to the Minister.

Reviewer’s Name: V.M. VUJOSEVIC Phone # 416-952-0331 Email: Vladan.Vujosevic@tc.gc.ca

Mail Routing Symbol: PAH1

Signature:  Date: 18/11/2013 NAPA Number 0-13-0140