Tecnam P2010

AMM Supplement S6

2nd Edition, Rev 2 (08/01/2026)

For airplanes embodying the Design Change MOD2010/078
"Lycoming IO-390 Engine and G1000Nxi avionic suite installation".

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SUPPLEMENT S6

LOEP

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RECORD OF REVISIONS

In order to improve the aircraft safe and efficient operation, Tecnam, whenever considered necessary, will amend, add or delete information and instructions within the Supplement.

A Record of Revisions to this Supplement is then provided and the operator is advised to make sure that the record is kept up-to-date.

The Supplement issue is identified by Edition and Revision codes reported on each page, lower right side. The revision code is numerical and consists of the number "0"; subsequent revisions are identified by the change of the code from "0" to "1" for the first revision to the basic publication, "2" for the second one, etc.

Should be necessary to completely reissue a publication for contents and format changes, the Edition code will change to the next number (“2” for the second edition, “3” for the third edition etc).

Additions, deletions and revisions to existing text will be identified by a revision bar (black line) in the left-hand margin of the page, adjacent to the change.

When technical changes cause expansion or deletion of text which results in unchanged text appearing on a different page, a revision bar will be placed in the right-hand margin adjacent to the page number of all affected pages providing no other revision bar appears on the page.

These pages will be updated to the current regular revision date.

NOTE: It is the responsibility of the owner to maintain this supplement in a current status when it is being used for operational purposes.

Record of Revisions

Rev	Revised page	Description of Revision	Tecnam Approval			EASA Approval Or Under DOA Privileges
			DO	OoA	HDO	
0	06-00	Added Section "Dimensions and Areas"				Under DOA privileges (DOA ref. EASA21J.335)
1	INTRO/1	Updated Introduction				
1	05-20/ 1, 2, 4	Updated Inspection Program				
1	78-10/2	Updated Figure				
1	78-10/204	Updated procedure "Exhaust Installation"				
1	78-10/ 206 to 208	Added procedure "Exhaust Flame Tube Inspection" and related Figure				
2	05-20/4	Updated Inspection Program				

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INTRODUCTION

This AMM Supplement applies to aircrafts which embody the Design Change 2010/078.
This will be accomplished by the installation of the following systems:

- Garmin G1000Nxi integrated flight deck suite
- Lycoming IO-390-C3B6 Engine, with a new nacelle and oil cooler
- Alternative MT propeller three blades variable pitch

The installation of this design change will keep the operational capabilities of the basic type certificated A/C (full day/night IFR).



Figure 1- P2010 with design change 2010/078 embodied

Herein are reported the ATA Chapters impacted by the design changes mentioned

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CHAPTER 03 - AIRPLANE GENERAL DESCRIPTION

GENERAL FEATURES

Engine

Manufacturer	Lycoming Textron
Model	IO-390-C3B6
Maximum power	160.3 kW (215 hp) @ 2700 rpm
Maximum continuous power	160.3 kW (215 hp) @ 2700 rpm (continuous)
Certification base	CS-E Amendment 4 (FAR 33)
Certification approval	EASA TCDS N° IM.E.097
Engine features	Fuel injected (I), direct drive,4 cylinders horizontally opposed (O), air cooled with down exhaust outlets

Propeller

Manufacturer	MT-Propeller Entwicklung GmbH
Type certificate	EASA.P.013
Model	MTV-12B/183-59L
Blades	3
Diameter	1830mm
Type	Variable pitch propeller at constant speed
Governor	P-860-23
Governor type	Hydraulic Constant Speed Governor

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CHAPTER 04 – AIRWORTHINESS LIMITATIONS

AIRWORTHINESS LIMITATIONS TABLE

The Airworthiness Limitations Section is not affected by the change. Refer to AMM Chapter. 04 “Airworthiness Limitations”.

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CHAPTER 05 – TIME LIMITS AND MAINTENANCE SCHEDULE

05 – 20 INSPECTION PROGRAM

The following table shows the maintenance tasks performed at defined intervals to retain an item in a serviceable condition by systematic inspection, detection, replacement of wear out items, adjustment, calibration, cleaning, etc. as applicable.

The inspections are grouped as follows:

- **A** – first 25 hr and every 50 hr
- **B** - every 100 hr or every year (WOF)
- **C** - every 600 hr or every 3 years (WOF)
- **D** - every 1200 hr or every 5 years (WOF)
- **E** - every 2000 hr

	A	B	C	D	E
Flight hours	**First 25 hr and every 50 hr**	**100 hr**	**600 hr**	**1200 hr**	**2000 hr**
Calendar schedule	**-**	**1 year**	**3 years**	**5 years**	**-**

Inspection program table

The airframe inspection time limits may not exceed by one (1) month or +10% FH, with a maximum of 60 FH. At the same time, the inspections may be anticipated as required, keeping the upcoming inspections interval unchanged.

Limit excess cannot be accumulated. If, for example, the initial 100 FH hour inspection is performed at 110 FH, the 600 hours inspection is still due at 600 FH and the next 100 FH inspection shall be accomplished after 90 FH.

For engine and propeller, refer to related manuals.

All the tasks are grouped in function of ATA-100 code.

The first column shows the ATA code which the item belongs to, the second column shows the system name, the third column shows the maintenance task and the last columns shows the task frequency required, namely:

– Column A : if a “X” is indicated in this column, the task must be performed at each “A” inspection

– Column B : if a “X” is indicated in this column, the task must be performed at each “B” inspection

– Column C : if a “X” is indicated in this column, the task must be performed ateach “C” inspection

– Column D : if a “X” is indicated in this column, the task must be performed at each “D” inspection

– Column E : if a “X” is indicated in this column, the task must be performed at each “E” inspection

Equipment inspections, requiring a different time interval, are shown as well. In this case the frequency is declared.

The instruction to make repairs or replacements of inspected items can be found in the related component/system ATA Chapter.

NOTE: *A log book entry should be made upon completion of any inspections*

For checks and inspections to be carried out, refer to the following general rules:

MOVABLE PARTS for lubrication, security of attachment, safetying, excessive wear, correct travel, cracked fittings, safety of hinges, defective bearings, cleanliness, corrosion, deformation and tension.

FLUID LINES and HOSES for leaks, cracks, dents, kinks, chafing, proper radius, corrosion, obstructions and deterioration.

METAL PARTS for security of attachment, cracks, metal distortion, broken spot-welds and riveting, corrosion and any other apparent damage

WIRING for security, chafing, burning, defective insulation, loose or broken terminals, heat deterioration.

BOLTS for correct torque, safetying and damaged thread

FILTERS and FLUID for cleanliness, contamination and/or replacement if required.

Make sure that all Airworthiness Directives and Service Bulletins are implemented as required. Tecnam can change the time between checks publishing the change as a revision of this Maintenance Manual.

Engine inspections

Refer to Lycoming Engine Maintenance Manual MM-IO-390-C Series -last issue – for engine inspections and maintenance with related schedule. Consult also applicable service bulletins and instruction books regarding the repair and overhaul, inspection and installation of engines.

Propeller and Governor inspections

Refer to MT-Propellers Operation and Installation Manual E124 -last issue – for propeller inspections and maintenance with related schedule.

Refer to MT-Governor Operation and Installation Manual E-1048 -last issue – for governor inspections and maintenance with related schedule.

Vendor Equipment inspection

For main vendor equipment installed make reference to applicable maintenance instructions addressed on related Component Maintenance Manuals (CMM). Inobservance of this recommendation may affect the aircraft airworthiness.
In addition to the basic Aircraft Maintenance Manual, the Maintenance instructions for MOD2010/078 “Lycoming IO-390 Engine and G1000Nxi avionic suite installation” are included in the manufacturer documents.
In addition to the basic Aircraft Maintenance Manual, a list of applicable CMMs is herein reported:

Equipment	Unit function	Doc.No	Doc. Description
GDU 1050	Display Unit (PFD and MFD)	190-00303-92	GDU 105X Installation Manual
GIA 63W	COM/NAV/GPS interface	190-00303-05	Garmin GIA 63/GIA 63W Installation Manual
GRS 79	AHRS	190-01852-00	Garmin GRS 79/GMU 44 Installation Manual
GMU 44	Magnetometer	190-00303-10	
GDC 72	ADC -Air Data Computer	190-01855-00	Garmin GDC 72 Installation Manual
GEA 71	EIS units	190-00303-40	Garmin GEA 71 Installation Manual
GAP 26	Heated Pitot Probe	190-01115-01	G3X/G3X Touch Installation Manual
GTP 59	OAT Probe	190-01855-00	GDC 72 Installation Manual
GMA 1347	Full digital audio panel	190-00303-20	GMA 1347 Installation Manual
GTX 345R	MODE-S/ADSB-OUT/ADSB-IN-FIS-B XPDR	190-01499-02 E	GTX 3X5 Transponder TSO Installation Manual
KN 63	DME	006-00176-0004	Bendix-King KN-63 Installation Manual
MD-302	Stand-by instrument	9017782	Mid-Continent MD302 Installation Manual
ELT	Emergency Locator transmitter	E04M	ACK Model E-04 ELT – Installation Manual / Operation Manual
RA-3502/AC-3504	ADF System	DV 30613.03	Becker ADF 3500 System Manual

Table 1 - Vendor Equipment list

1. Scheduled Maintenance

In addition to the basic Aircraft Maintenance Manual, the following maintenance tasks need to be considered.

NOTE: When the ATA Chapter and subchapter are included in the table below, they replace those in basic AMM.
If the ATA Chapter and subchapter are not listed below, refer to inspection tasks in basic AMM

ATA	Item	Maintenance Task	FREQUENCY				
			A	B	C	D	E
78	Exhaust	Perform the exhaust flame tube inspection (Refer to ATA 78-10-00 – Exhaust Flame Tube Inspection)	Every 200 hrs, as prescribed by SB 937-CS				
78	Exhaust	Visually inspect exhaust manifold, muffler for condition and security of installation	X				
78	Exhaust	Disassembly the exhaust system, including the removal of thermal coat and check it for deformation, damage or cracks		X			
78	Exhaust	Muffler mounting springs and safety wire: check for integrity	X				
78	Exhaust	Remove and inspect heat exchanger	200 hrs.				

CHAPTER 06 – DIMENSIONS AND INSPECTIONS CAPS

06 – 00 DIMENSIONS AND AREAS

Control Surfaces Travel Limits

Ailerons	Up 19°; Down 14 ° (± 2°)
Stabilator (*)	Up 6°; Down 17° (± 2°)
Stabilator trim tab	Up 3°; Down 15° (± 1°)
Stabilator trim tab (**)	Up 3°; Down 6° (± 1°)
Rudder	RH 25°; LH 25° (± 2°)
Rudder trim	RH 20°; LH 20° (± 2°)
Flaps	0°; 40° (± 1°)

(*) Degrees are measured from the Stabilator Leading Edge.

(**) When MOD 2010/133 is installed

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06 – 20 ENGINE COWLING

Description and Operation

The engine cowling is made of carbon fiber material and consists of two parts:

1. Upper engine cowling
2. Lower engine cowling

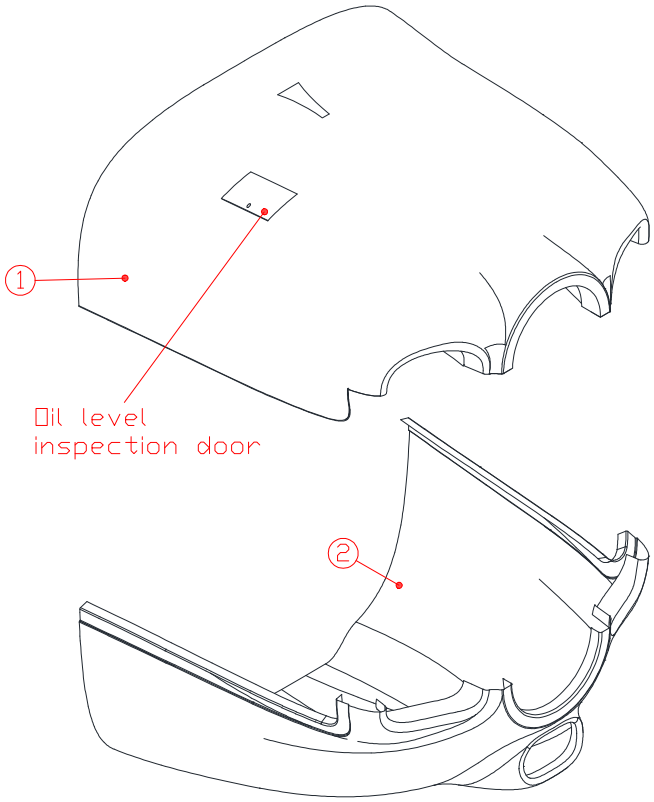


Figure 2-Engine cowling

All internal surfaces of engine cowlings including the internal side of engine oil level door are protected by an ablative varnish.

An oil level inspection door is located on RH side of upper engine cowling.

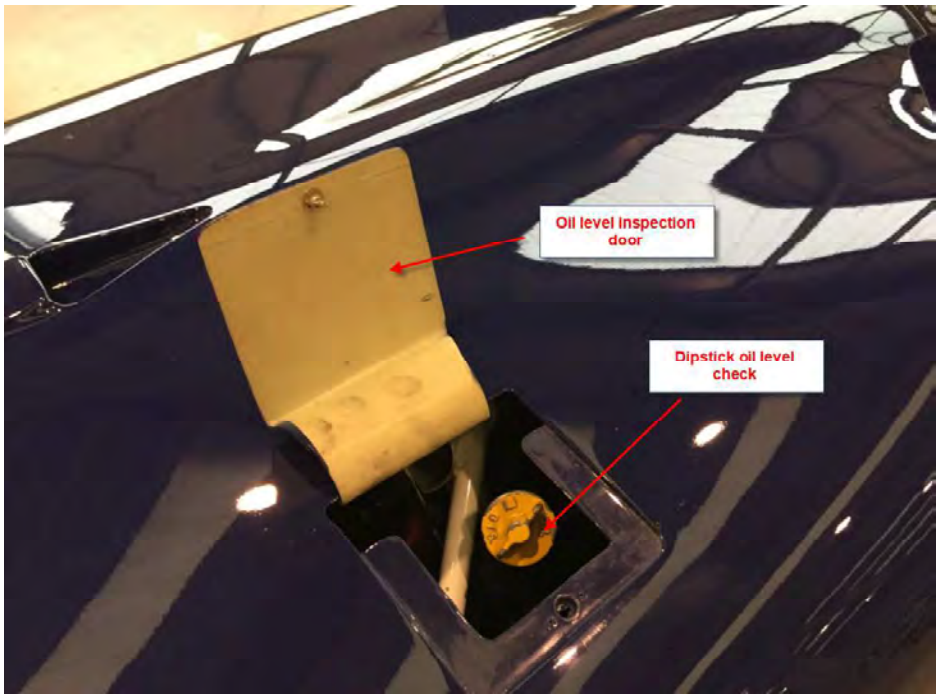


Figure 3 - Engine cowling oil level inspection door

For others scheduled inspection operations the upper and lower engine cowlings are easily removable by a series of steel screws as indicated in figures below:



Figure 4 - Engine cowling fittings side view



Figure 5 - Engine cowling fittings front view



Figure 6 – Cold air hose fitting

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Maintenance Practices

This Chapter contains the following maintenance tasks description:

- Upper and lower cowling removal/installation
- Ablative paint restoration

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Upper and Lower Cowling removal/installation

The upper and lower removal/installation procedure is herein reported.

Removal Procedure

Step no.	Upper and lower cowling removal Task description	Additional info & References
1.	Engage parking brake.	
2.	Unscrew the 2 screws that connect the upper cowling to the fuselage.	Refer to Figure 5
3.	Unscrew the 8 quick fasteners and 4 screws (6 on RH side and 6 on LH side) that connect the upper cowling to the lower cowling	Refer to Figure 4
4.	Disconnect the Cold air hose from the firewall by lifting gently the upper cowling.	Refer to Figure 5
5.	Remove the upper cowling.	Carefully lift the upper cowling panel up to clear the airplane. Put it in a safe place on a surface which does not damage the panel.
6.	Disconnect the connector of taxing/landing lights from lower engine cowling	
7.	Unscrew the 10 screws (5 on RH side and 5 on LH side) that connect the lower cowling to the fuselage.	Sustain the cowling during screws removal Refer to Figure 4
8.	Remove the cold air hose form the alternate air valve and the hose from the front air intake	
9.	Remove the oil drainage hose from the lower cowling	
10.	Remove the lower cowling.	Carefully remove the lower cowling. Put it in a safe place, on a surface which does not damage the panel.

Installation Procedure

Step no.	Upper and lower cowling installation Task description	Additional info & References
1.	Engage parking brake.	
2.	Check the panels for damage, cracks and splits, blistering and flaking of the paint finish.	
3.	Check the screws for conditions.	
4.	Make sure cowlings are cleaned.	If required clean the surfaces of the panels
5.	Make sure that the ablative paint coat is not damaged.	If required, restore ablative paint coat i.a.w. procedure addressed on this Chapter
6.	Remove the front net of lower cowling	
7.	Connect the Connect the cold air hose to alternate air valve and hose to front air intake	
8.	Connect the oil drainage hose to lower cowling	
9.	Put in position the lower cowling, if removed.	Make sure that there are not interferences with the engine air intake and water and oil coolers
10.	Adjust the hose on the alternate air valve through the intake where the net was installed, then reinstall the net	
11.	Connect the connector of taxing/landing lights of lower engine cowling	
12.	Fix the 10 screws which connect the lower cowling panel to the fuselage.	Sustain the cowling during screws fixing Refer to Figure 4
13.	Put in position the upper cowling.	
14.	Connect the Cold air hose to the firewall	Refer to Figure 6
15.	Fix the 8 fasteners and 4 screws (6 on LH and 6 on RH side) which connect the upper cowling to the lower cowling on front side of cowling.	Refer to Figure 4
16.	Fix the 2 screws that connect the upper cowling to the fuselage.	Refer to Figure 5

CHAPTER 11- PLACARDS AND MARKINGS

11-20 – EXTERNAL PLACARDS

On both sides of oil inspection door are located two placards.
On the external side is located the “Oil Check Placard”.



Figure 7 – External oil inspection door placard

On the internal side of the door is located the “Oil Filler” placard.

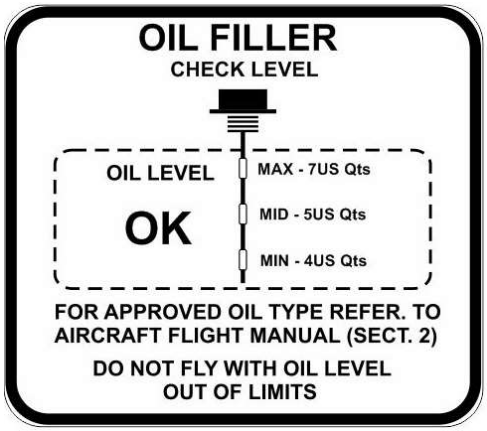


Figure 8 – Internal oil inspection door placard



Figure 9 – Internal and external oil inspection door placards installation

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11–30 – INTERNAL PLACARDS

Garmin G1000 NXi suite provides flight, trim, engine and map navigation information.
The picture and table below show a detailed description of the instrument panel.



Figure 10 – P2010 Instrument Panel

No	Description	No	Description
1	GDU 1050 (PFD)	14	Carburettor Heat
2	Limitation Placards	15	Defrost & Cabin Heat
3	Audio Panel	16	Throttle Lever
4	MD-302 Standby Attitude Module	17	Fuel Selector
5	Magnetic Compass	18	Lights Switches
6	GDU 1050 (MFD)	19	Pitot Heat
7	Breaker Panel	20	Trim Disconnect
8	Emergency Light	21	AP Master
9	Day/Night Switch	22	Avionic Master
10	Instruments/Panel lights dimmers	23	Fuel Pump
11	Flaps switch	24	Master/Generator
12	Mixture Lever	25	Engine Start
13	Cabin Heat	26	ELT

Table 2 – P2010 Instrument Panel

The main flight information is shown on PFD while map, trim and engine information is displayed on the MFD.

In the event of a PFD failure, the system automatically switches flight information on the MFD keeping the engine data on this display.

The below picture shows default indications displayed on PFD.



1. NAV Frequency Box
2. Airspeed Indicator
3. True Airspeed
4. Current Heading
5. Selected Heading Bug
6. Outside Air Temperature (OAT)
7. Softkeys
8. System Time
9. Transponder Data Box
10. Horizontal Situation Indicator (HSI)
11. Turn Rate Indicator
12. Altimeter Barometric Setting
13. Selected Altitude Bug
14. Vertical Speed Indicator (VSI)
15. Altimeter
16. Selected Altitude
17. COM Frequency Box
18. Navigation Status Box
19. Slip/Skid Indicator
20. Attitude Indicator

Figure 11 - Garmin G1000Nxi PDF Display

As shown in the above figure flight information layout on PFD is as follows:

- Attitude indicator is located at the top center of display.
- Directional gyro indicator is located below the attitude indicator.
- Airspeed indicator is located on the left of attitude indicator.
- Altitude indicator is located on the right of attitude indicator.
- Vertical speed indicator is located on the right of altitude indicator.

The following figure shows the full bar of airspeed indicator located in the Garmin G1000 NXi installed on P2010.

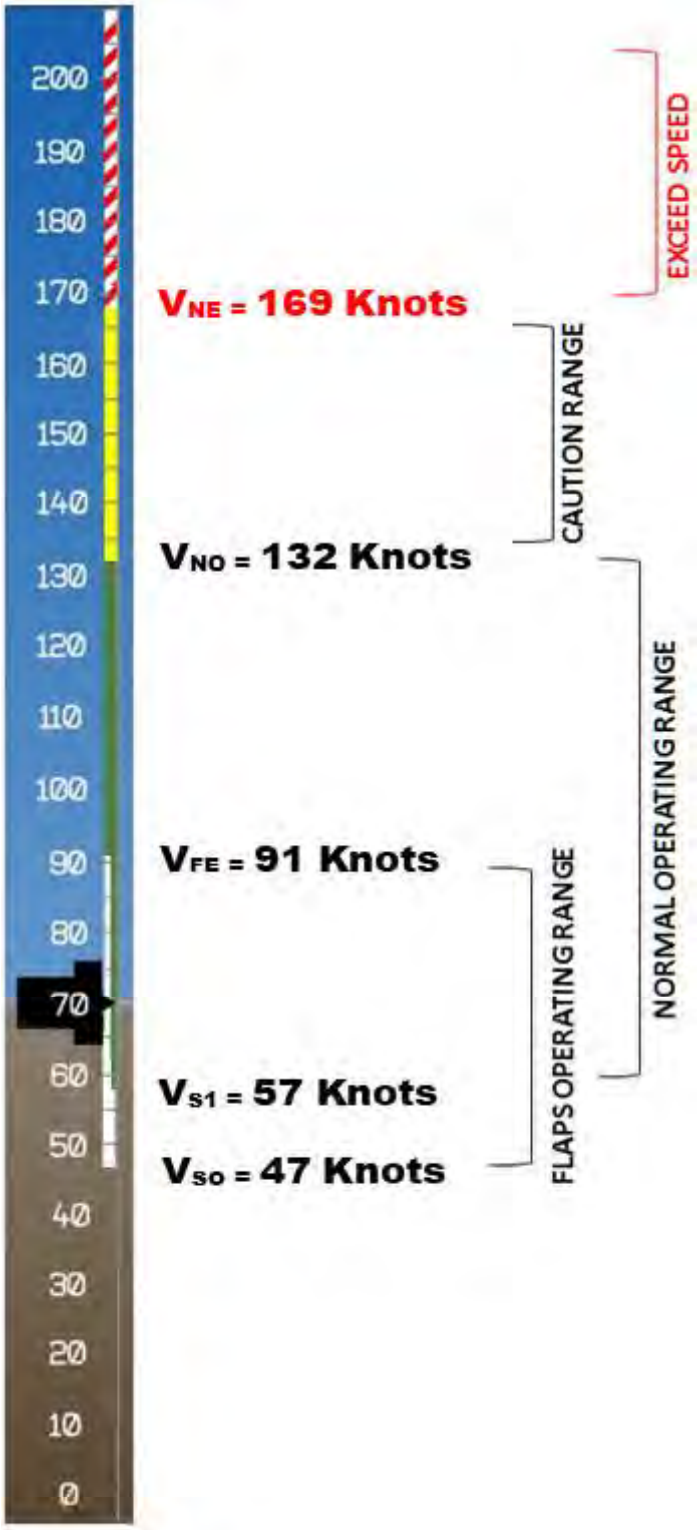
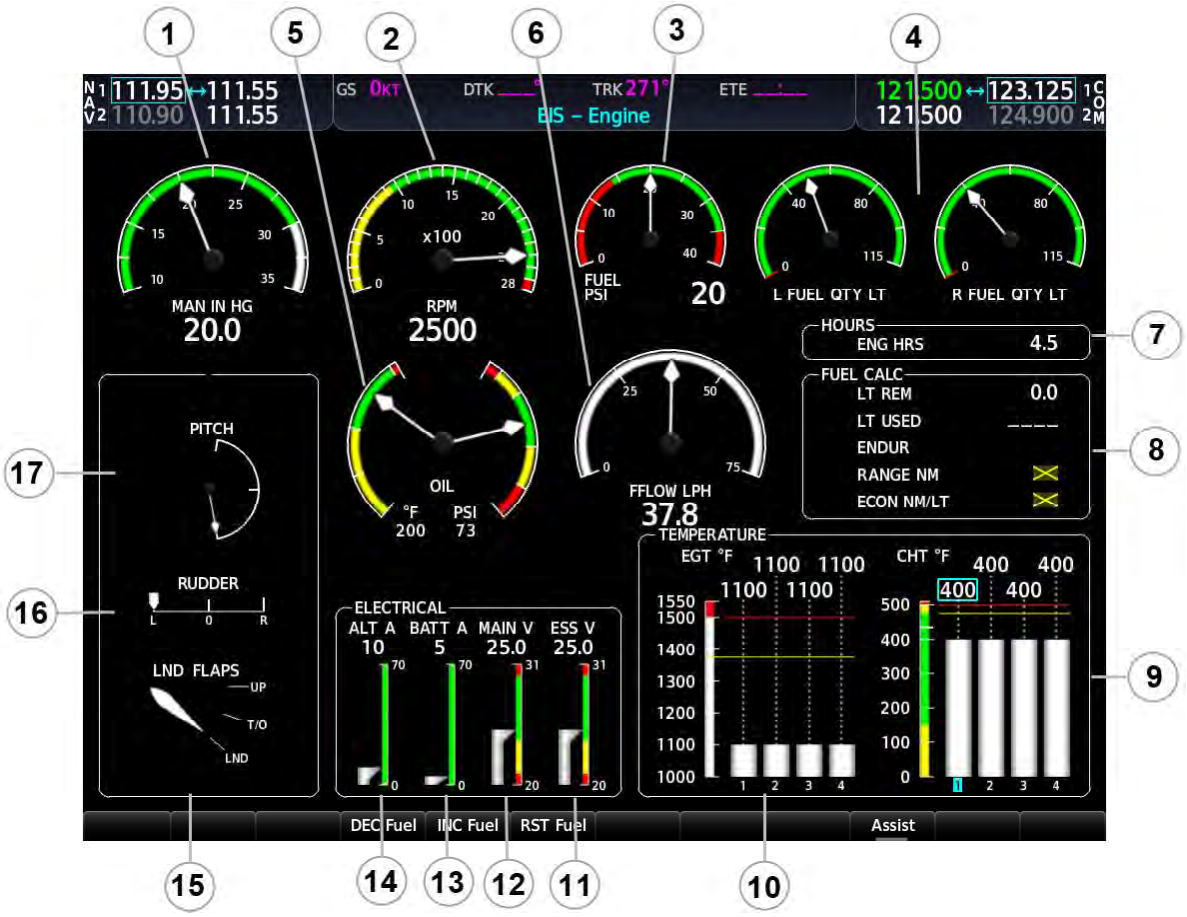


Figure 12 - Airspeed Indicator markings

The below picture shows default indications displayed on MFD in normal and strip mode. The flaps, pitch trim and rudder trim position indicator are integrated into the Garmin suite and they are shown on the MFD. Only the flap system presents a backup indication, given by the position of the flap switch.



	Engine Parameters		Electrical Parameters
1	Manifold Absolute Pressure	**11**	Essential Bus Voltmeter
2	Tachometer (RPM)	**12**	Main Bus Voltmeter
3	Fuel Pressure	**13**	Battery Ammeter
4	Fuel Quantity	**14**	Alternator Ammeter
5	Oil Temperature/Pressure		**Control Surfaces Position**
6	Fuel Flow	**15**	Flap Position
7	Hours meter	**16**	Rudder Trim Position
8	Fuel Calculation	**17**	Pitch Trim Position
9	Cylinder Head Temperature		
10	Exhaust Gas Temperature		

Figure 13 - Garmin G1000Nxi MFD Display – Normal Mode



Figure 14 - Garmin G1000Nxi MFD Display – Strip Mode and Maps

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CHAPTER 12 – SERVICING

12 – 10 FUEL SYSTEM – SERVICING PRACTICES

General

According the **Lycoming SI No.** 1070Y the approved fuel for Lycoming IO-390-C3B6 is:

- AVGAS 100LL (ASTM D910)



Do not refuel the aircraft near flames or sparks; direct contact of fuel with the skin can cause disease. During refueling apply grounding and make sure that a fire extinguisher is available in the area. Master switch has to be turned OFF. Do not refuel with passengers on board.



Use only clean fuel servicing equipment.

Refuelling Procedure

The Refuelling Procedure Section is not affected by the change. Refer to AMM Chapter.12-10 “Fuel System – Servicing Practices”.

12 – 20 OIL SYSTEM – SERVICING PRACTICES

General

The tables below show the oil requirements and oil system specifications according to IO-390-C3B6 Lycoming operation and installation manual.

Oil Requirements		
Average	MIL-L-6082B or SAEJ1966 Spec.	MIL-L-22851 or SAEJ1899 Spec. Ashless Dispersant
Ambient Air	Mineral Grades	Grades
In new, newly overhauled, or rebuilt engines or following the replacement of one or more cylinders, use only mineral oil during the first 50 hours of operation.		
All Temperatures	- - - - - - - - - -	SAE15W50 or SAE20W-50
Above 80°F	SAE60	SAE60
Above 60°F	SAE50	SAE40 or SAE50
30°F to 90°F	SAE40	SAE40
0°F to 70°F	SAE30	SAE40, SAE30, SAE20W40
Below 10°F	SAE20	SAE30 or SAE20W30

Table 3-Oil grade specs

Oil Sump Capacity	
(L)IO-390-C3B6	7 U.S. Qts.
Minimum safe quantity in sump	2 U.S. Qts.

Table 4-Oil sump capacity

Oil Pressure, psi				
	Maximum	Minimum	Idling	Start and Warm-up
Normal Operation	95	55	25	115

Table 5 – Oil pressure limits

CHT Temperature: The maximum permissible temperature is 465°F (240°C).
Oil Temperature: The maximum permissible oil temperature is 235°F. (113°C.). For maximum engine life, maintain desired oil temperature between 180°F. (82°C).



Make certain that fluids and fluid containers are protected from contamination of any kind. If there is any question regarding the cleanliness of the fluid, do not use it. Containers for fluid must never be left open to air longer than necessary.



Allow the engine to cool down to the ambient temperature before start of any work.

Oil Level Checking and Filling Procedure

1. Open the Oil Inspection Door, ref. Figure 3
2. Remove the filler cap; remove and clean the dipstick
3. Read the oil level: the level must be between the minimum and maximum marks
4. If necessary, replenish oil
5. Fit dipstick and filler cap
6. Clean up any spilled oil
7. Close the Oil Inspection Door, ref. Figure 3

This stick must be used, before the first flight of the day, to check the correct oil level in the engine sump.



Figure 15 - Stick oil level indicator

This stick (lower side of the rod) reports markings for the maximum (7 US Qts), medium (5 US Qts) and minimum (4 US Qts) quantity of oil level in the sump.



Figure 16 - Stick oil level indicator

Oil Change Procedure

1. Operate the engine until the oil temperature stabilizes and then shut down the engine.
2. Wait at least 15 minutes after engine shutdown and then proceed with the oil change.
3. Disconnect the oil drain hose, see figure Figure 17, and then remove the Engine cowlings (Refer to Chapter 06)
4. Apply “Oil change procedure” addressed on Lycoming Engine Maintenance Manual IO-390-C Series.
5. Close the Engine cowlings (Refer to Chapter 06) and install the oil drain hose.

NOTE:

Remove and replace engine oil filter at each oil change. Refer to Lycoming Engine Maintenance Manual last issue, for detailed instructions.

CAUTION

In event of heavy oil contamination, it is necessary to perform the oil tank cleaning operation. Refer to Lycoming Engine Maintenance Manual last issue, for detailed instructions.

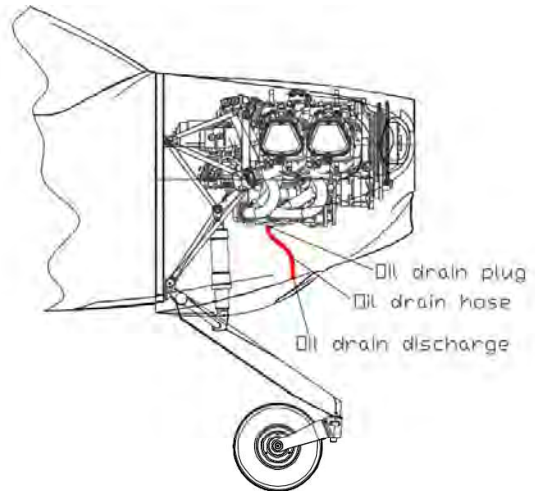


Figure 17 - Oil drain plug discharge location



Figure 18 - Oil drain plug discharge location on lower engine cowling

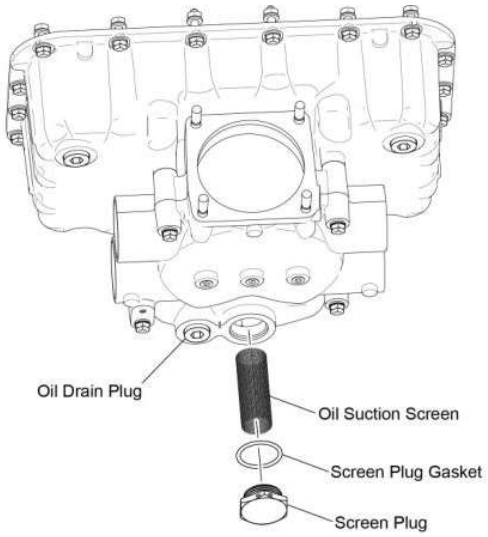


Figure 19 - Oil Suction Screen and Drain Plug

CHAPTER 23 - COMMUNICATIONS

23-10 – SPEECH COMMUNICATIONS

DESCRIPTION AND OPERATION

Communication functions are performed by the following LRUs included in Garmin G1000NXi suite:

- COM1 → GIA 63W #1
- COM2 → GIA 63W #2
- AUDIO PANEL → GMA 1347

Since Garmin G1000NXi IFDS (Integrated Flight Deck System) is an avionics suite which combines primary flight instrumentation, communication, navigation and engine parameters information: the integrated system as a whole is deeply described on Chapter 34 of this Manual.

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CHAPTER 28 - FUEL SYSTEM

28 – 10 DESCRIPTION AND OPERATION

Fuel quantity indicating system

Due to design change new fuel quantity senders are installed: Cies CC-Series. Each fuel tank has a sensor and the capacitive output is tied to GEA 71.



Figure 20 - Fuel level sensor

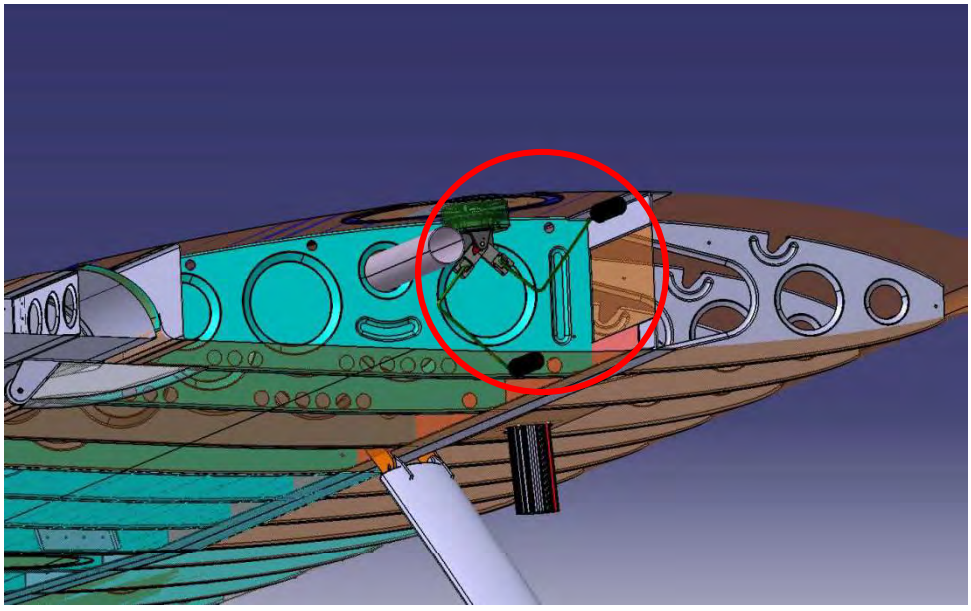


Figure 21 - Fuel level sensor travel view

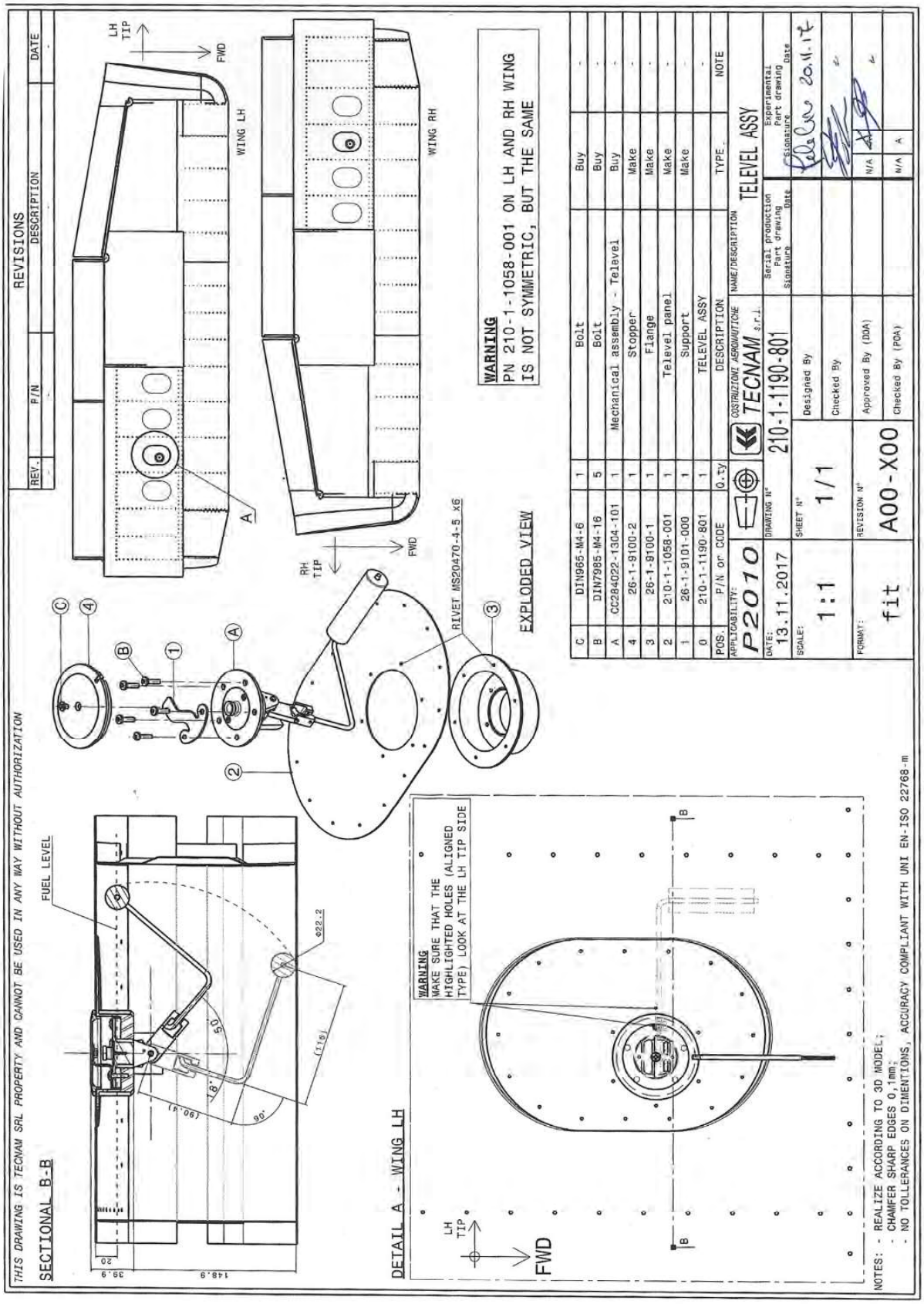


Figure 22 - Fuel sender Cies CC-Series drawing installation

Maintenance practices

This Chapter contains the following maintenance tasks description:

- Fuel quantity indication test
- Fuel quantity sender replacement
- Fuel quantity indication calibration

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Fuel Quantity Indication Test

For this kind of procedure, the operator can use a dipstick (P/N 210-7-1050-001) provided along with aircraft delivery;

Procedure

Step no.	Fuel quantity indication test Task description	Additional info & References
1.	Engage parking brake	
2.	Drain fuel tank according to *Fuel system draining procedure*	See Chapter 12
3.	Open filler cap	See Chapter 06
4.	Use suitable means to fill tank and measure fuel quantity before filling	
5.	Set Master Switch ON	
6.	Insert Fuel quantity breaker if is pulled out	
7.	Check correspondence between ten liters of fuel and zero fuel quantity indicator.	For safety, the zero quantity indication corresponds to 10 liters of fuel.
8.	Add 30 L and check for indicator position. Indicator should return the value of 30L -/+8L	(Total 40 L) Indicator system can have a tolerance of "-8,5/+8,5 liters"
9.	Add 30 L and check for indicator position. Indicator should return the value of 60L -/+8L	(Total 70 L) Indicator system can have a tolerance of "-8,5/+8,5 liters"
10.	Add 30 L and check for indicator position. Indicator should return the value of 90L -/+8L	(Total 100 L) Indicator system can have a tolerance of "-8,5/+8,5 liters"
11.	Add 25 L and check for indicator position. Indicator should return the value of 115L -/+8L	(Total 125 L) Indicator system can have a tolerance of "-8,5/+8,5 liters"
NOTE	In case of test failure (missing correspondence between fuel q.ty and indications) investigate the cause: if due to fuel q.ty sender or/and fuel q.ty indicator it's mandatory to replace/fix which one is faulty.	Refer to *Fuel q.ty sender Replacement*.
 WARNING	**FLYING WITH DAMAGED FUEL QUANTITY INSTRUMENTS COULD JEOPARDIZE FLIGHT AND CAUSE INJURY OR DEATH.**	
12.	Close filler cap	
13.	Set Master Switch OFF	

Fuel Quantity Sender Replacement

Procedure

Step no.	Fuel quantity sender replacement Task description	Additional info & References
1.	Engage parking brake	
2.	Set Master Switch OFF. Pull out fuel q.ty breakers.	
3.	Drain fuel tank according to *Fuel system draining procedure*	See AMM Chapter 12
4.	Unseal the fuel quantity sender cap and its screws from wing upper part	
5.	Unscrew fuel quantity sender from wing upper part in correspondence of fuel tank.	
6.	Remove fuel quantity sender.	Between fuel q.ty sender and wing upper part are located two gaskets, that need to be installed again.
7.	Unseal the wire cover and remove it.	
8.	Disconnect electrical wires from the sender	Make note of electrical wires connections
9.	Remove fuel sender	
10.	Replace fuel sender	
11.	Install gaskets in seat	
12.	Insert new fuel q.ty sender in the tank	
13.	Screw fuel quantity sender on wing upper part	
14.	Connect wires through splice connectors	
15.	Adapt wires in seat	
16.	Apply wires cover, polyurethane sealant 3M 08689 or similar	
17.	Set Master Switch ON. Insert fuel q.ty breakers.	
18.	Perform a fuel quantity indication calibration	See Fuel Quantity Sender Calibration
19.	Perform a fuel quantity indication test	See *Fuel quantity indication test*

Fuel Quantity Sender Calibration

Filling and Oscilloscope Reading

Procedure

Step no.	Filling and Oscilloscope Reading Task description	Additional info & References
1.	Engage parking brake	
2.	Remove the positive cable from the battery	
3.	Drain fuel tank according to *Fuel system draining procedure*	See AMM Chapter 12
4.	Locate two different cables, as shown in following figure, who are connected to both Fuel Quantity Senders (RH and LH) and held together by clamp, accessible from under the PFD.  **Fig a - RH and LH Fuel Quantity Sender Cables location**	
5.	Reinstall the positive cable on the battery	
6.	Supply the aircraft by external power unit by setting its operation to 28V;	
7.	Turn ON the G1000NXi System by setting ON Master Switch and Avionic Switch;	
8.	Connect an oscilloscope to the cables located at Step 4, paying attention to distinguish the RH from LH. Connect the positive probe of the oscilloscope to the cable (RH or LH according to which fuel quantity sender will be calibrated) and the ground probe of the oscilloscope to ground	
9.	Place a saddles, or any proper support, under the RH and LH wings making sure that the aircraft is leveled	

Step no.	Filling and Oscilloscope Reading Task description	Additional info & References
	With empty fuel tank, detect and report on the Table in Appendix A the measured KHz frequency by means the oscilloscope	
10.	Proceed to detect the measured frequency by oscilloscope filling each time the tank with 5 liters of fuel, up to the amount of 35 liters, after which it will continue filling and detection with 10 liters at a time up to fill. Report in the Table on Appendix A all KHz values and display values on the oscilloscope	
11.	Remove the positive probe of the oscilloscope from the cable;	
12.	Connect the positive probe of the oscilloscope to the other cable located at Step 4;	
13.	Repeat the filling and reading procedure described in Step 10 and Step 11 for the other tank;	
14.	Once the test is concluded, send the filled copy of the Table below to Tecnam Technical Support at technical.support@tecnam.com	
15.	Remove the oscilloscope and the cables from the aircraft	
16.	Remove the saddles	

LH Tank			Low Fuel Off
Liters	**Freq (KHz)**	**Display Value**	
Empty			
5			
10			
15			
20			
25			
30			
35			
45			
55			
65			
75			
85			
95			
100			
105			
110			
115			

RH Tank			Low Fuel Off
Liters	**Freq (KHz)**	**Display Value**	
Empty			
5			
10			
15			
20			
25			
30			
35			
45			
55			
65			
75			
85			
95			
100			
105			
110			
115			

Table 6 - Fuel sender calibration Table

Parameters Setting

Procedure

Step no.	Parameters Setting Task description	Additional info & References
1.	After calculation of recalibration curve, Tecnam will provide a Parameters Table. See Figure below showing a sample of the Parameter Table:	
2.	Start the G1000Nxi PFD and MFD in Configuration Mode according to procedure reported in following table	

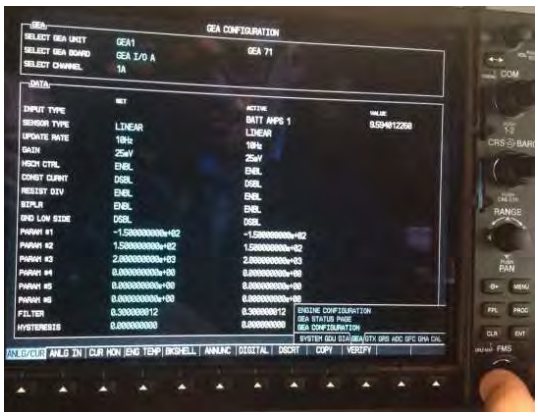
PARAMETERS	
A	*Value A*
B	*Value B*
C	*Value C*
D	*Value D*

Fig b - Parameters of recalibration

Step no.	G1000 Configuration mode access
1.	Master Switch OFF, Avionics OFF(starting configuration)
2.	MFD breaker: pull
3.	PFD breaker : push
4.	Press and hold the ENT key on PFD while applying power to PFD turning Master Switch to ON
5.	Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of PFD
6.	The PFD starts in configuration mode
7.	Avionics ON
8.	MFD breaker: push and simultaneously press and hold the ENT key on MFD
9.	Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of MFD
10.	The MFD starts in configuration mode.



Fig c - Configuration Mode Page

Step no.	Parameters Setting Task description	Additional info & References
3.	Turn the main FMS knob on the PFD and go to the GEA page:  **Fig d - GEA Page**	
4.	Turn the small FMS knob on the PFD and go to the GEA configuration page:  **Fig e - GEA Configuration Page**	
5.	Push ANLG/CUR, ANLG IN, CUR MON, ENG TEMP and DIGITAL. It unlocks a GEA Configuration page  **Fig f - GEA Configuration page**	

Step no.	Parameters Setting Task description	Additional info & References
6.	Turn the main FMS knob on the PFD and go to the PARAM #3  **Fig g - Parameters Setting (only for reference)**	
7.	Turn the internal FMS knob to select the number and the small knob to set this value to *"Value A"*(Refer to provided Parameters Table reported in **Fig b**	
8.	Push ENT soft-key on PFD to accept the change	
9.	Turn the internal FMS knob on the PFD and go to the PARAM #4;	
10.	Turn the internal FMS knob to select the number and the small knob to set this value to *"Value B"*(Refer to provided Parameters Table reported in **Fig b**	
11.	Push ENT soft-key on PFD to accept the change	
12.	Turn the internal FMS knob on the PFD and go to the PARAM #5	
13.	Turn the internal FMS knob to select the number and the small knob to set this value to *"Value C"*(Refer to provided Parameters Table reported in **Fig b**	
14.	Push ENT soft-key on PFD to accept the change	
15.	Turn the internal FMS knob on the PFD and go to the PARAM #6;	
16.	Turn the internal FMS knob to select the number and the small knob to set this value to *"Value D"*(Refer to provided Parameters Table reported in **Fig b**	
17.	Push ENT soft-key on PFD to accept the change;	
18.	Turn the internal FMS knob on PFD and go to SELECT CHANNEL "1A";	

Step no.	Parameters Setting Task description	Additional info & References
19.	Turn the internal FMS knob and a small drop down sub-menus with eight (8) options will appear	
20.	Select “2A” using the internal FMS knob and then press the ENT button to enter the page related the FUEL QNTY L #1  **Fig h - GEA Configuration**	
21.	Repeat the step from Step 6 to Step 17	
22.	Push the “VERIFY ” softkey on PFD  **Fig i - GEA Configuration Page**	
23.	Press ENT button to acknowledge the completion of the GEA configuration process	
24.	Pull MFD breaker	
25.	Pull PFD breaker	
26.	Wait 5 seconds	

Step no.	Parameters Setting Task description	Additional info & References
27.	Push PFD breaker	
28.	Push MFD breaker;	
29.	The PFD starts in normal mode	

Final Check

Procedure

Step no.	Final Check Task description	Additional info & References
1.	Make sure that the aircraft is clear from foreign objects	
2.	Ensure that all inspection doors are closed and properly fastened	
3.	Perform an operational test of the fuel quantity indication	Ref to "Fuel Quantity Indication Test"
4.	Record the operation on the aircraft logbook	

CHAPTER 31 – INDICATING SYSTEM

DESCRIPTION AND OPERATION

The instrument panel is divided in three areas:

- The left area (Figure 23 panel 1) holds Garmin G1000NXi PFD,
- The central area (Figure 23 panel 2) holds the standby unit for PFI parameters, MD 302 suite, and the ELT button.
- The right area (Figure 23 panel 3) holds Garmin G1000NXi MFD and panel breakers;
- The lower-left portion (Figure 23 panel 4) of the instrument panel holds:
  - Ignition key;
  - Master and Generator switches;
  - Fuel pump;
  - Avionic Master;
- The lower-central portion (Figure 23 panel 5) of the instrument panel holds:
  - AP Master
  - Trim disc
  - Pitot Heat
  - Strobe Light
  - Nav. Light
  - Taxi Light
  - Landing Light
  - Dimmers
  - Day/Night
  - Emerg. Light
- The portion (Figure 23 panel 6) under the lower central portion of the instrument panel holds:
  - Fuel selector valve.
  - Flap Control

The following picture gives an overview of the instrument panel (typical layout).



Figure 23 - P2010 cockpit (typical layout).

GARMIN G1000NXi

Flight Instruments

Garmin G1000NXi suite provides flight, engine and map navigation information. The main flight information is shown on PFD (GDU 1050) while map, trim and engine information are displayed on the MFD (GDU 1050).
In the event of a PFD failure the system automatically switches flight information on the MFD keeping the engine data on this display.
In the event of a failure of the automatic reversion mode the pilot is able to force the reversionary mode pressing the red reversionary mode button located on the bottom of GMA1347 audio panel. The below picture shows default indications displayed on PFD of Garmin G1000NXi.



1. NAV Frequency Box
2. Airspeed Indicator
3. True Airspeed
4. Current Heading
5. Selected Heading Bug
6. Outside Air Temperature (OAT)
7. Softkeys
8. System Time
9. Transponder Data Box
10. Horizontal Situation Indicator (HSI)
11. Turn Rate Indicator
12. Altimeter Barometric Setting
13. Selected Altitude Bug
14. Vertical Speed Indicator (VSI)
15. Altimeter
16. Selected Altitude
17. COM Frequency Box
18. Navigation Status Box
19. Slip/Skid Indicator
20. Attitude Indicator

Figure 24 - PDF default indications

Engine Instruments

G1000NXi displays engine, map, electrical, fuel, trim and flaps information on the MFD during normal operations.

The Engine Indication System (EIS) derives the required signals from multiple sources. All engine parameters are acquired by means of a specifics sensor whose output is conveyed into the Garmin Engine interface units (one per engine). Together with the engine parameter this unit allow to report the fuel quantity indication, the voltage and current value and addition signal related to flight control as pitch trim, rudder trim and flap position.



Figure 25 - EIS full page

Below the EIS strip for IO-390-C3B6 engine, displayed along with moving map information, is shown.



Figure 26 - EIS strip and map page

Green bands on the instruments indicate normal ranges of operation; yellow and red bands indicate caution and warning, respectively. White or uncolored bands indicate areas outside of normal operation not yet in the caution or warning ranges. When unsafe operating conditions occur, the corresponding readouts flash to indicate cautions and warnings.

If sensory data to an instrument becomes invalid or unavailable, a red "X" is displayed across the instrument.

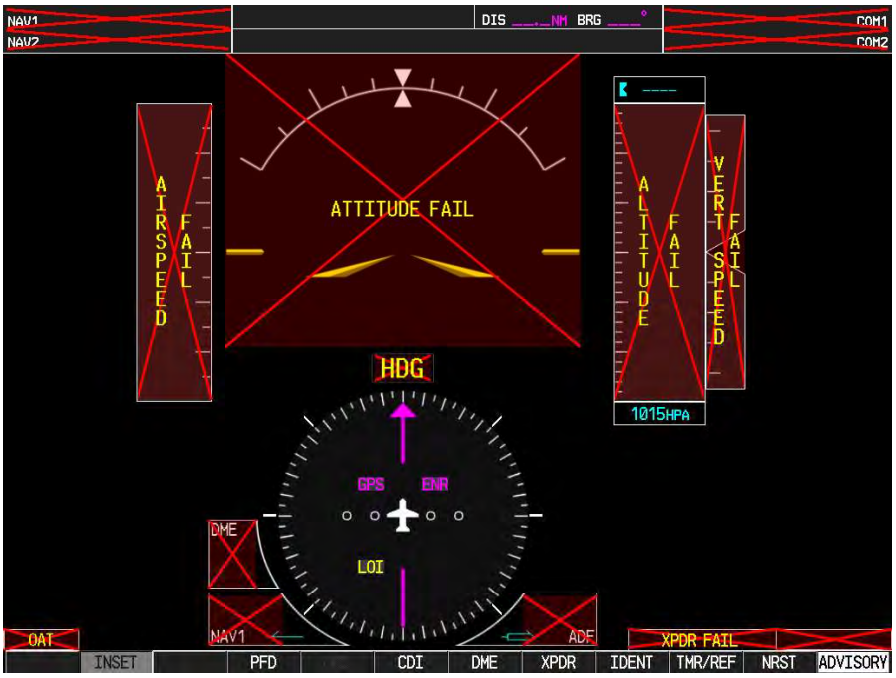


Figure 27 - Flag for LRUs failure

Annunciator Panel

Annunciator panel is integrated into G1000Nxi. The system presents different kinds of annunciations, color coded in accordance with their priority level (red, amber, white and green) The GEA 71 unit manage the implementation of annunciation messages through the G1000 NXi system, displayed on PFD in normal mode. Below the types of message are listed and explained.

- **WARNING (red) –** it requires immediate attention and corrective action;
- **CAUTION (amber) –** it indicates a type of alert that does not require any immediate
- **SAFE OPERATION (green) –** this level of alert provides general information
- **ADVISORY (white) –** it indicates a general information type of alert;
-



Figure 28 – Alerts

The following alert messages are configured on P2010 aircraft.

WARNING red light (indicates dangers needing immediate corrective actions) is associated with the following alerts on display:

- LOW FUEL PRESS
- LOW OIL PRESS

CAUTION amber light (indicates possible need of future corrective actions) is associated with the following alerts on display:

- ALT FAIL
- PITOT HEAT
- LOW FUEL QTY LH
- LOW FUEL QTY RH

SAFE OPERATION green light (indicates safe operation) is associated with the following alerts on display:

- PITOT HEAT ON
- FUEL PUMP ON

– white light (it indicates a general information type of alert) is associated with the following alerts on display:

-

Heated Pitot System

Since the aircraft is equipped with heated pitot system, G1000 NXi is set up in order to show the operational state of heated pitot system. Two CAS messages one amber and one green are displayed on PFD, thus being in clear view of the pilot. Below the operation of the system is described:

- AMBER light is ON when:

➢ Pitot Heat switch is in the OFF position;
➢ Pitot Heat switch is in the ON position and resistance is inoperative (no current absorption);

- GREEN light is ON when:

➢ Pitot Heat switch is in the ON position and the resistance is drawing the nominal current.

MD – 302 STAND BY INSTRUMENT

In order to provide the pilot with main flight information in the event of a dual display failure of both PFD and MFD, or in the event of an AHRS and ADC units combined failure, an integrated digital stand-by instrument featuring airspeed, altitude, attitude and slip information is installed is installed. The selected instrument model is Mid-Continent MD 302.Below are described the main features of the instruments

MD 302 - back-up for

- Airspeed
- Altitude
- Attitude
- Slip
- Internal lithium-ion battery



Figure 29 – MD 302

The instrument is provided with an internal stand-alone rechargeable lithium battery
Below its main specifications are shown

Indicator	Specification	Value
Airspeed	Range	20 to 500 knots
Altimeter	Range	-1,500 to +55,000 feet
Attitude indicator	Roll Rate	300°/s

For MD-302 system removal/installation and troubleshooting refer to AMM chapter 34.

MAINTENANCE PRACTICES

This Chapter contains the following maintenance tasks description:

- GDU 1050 display removal/ installation

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GDU 1050 display removal/ installation

For removal and installation procedure of GDU 1050 displays Refer to ATA chapter 34

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CHAPTER 34 – NAVIGATION

34-20 – GLASS COCKPIT – GARMIN G1000NXi

Description and Operation

G1000NXi Integrated Flight Deck is an avionics suite designed to integrate pilot/aircraft interaction into one central system. The system combines primary flight instrumentation, aircraft systems instrumentation, and navigational information, all displayed on two large color displays.
G1000NXi system is composed of several sub-units or Line Replaceable Units (LRUs). LRUs have a modular design and are installed directly behind the instrument panel or in a separate avionics bay. This design greatly eases troubleshooting and maintenance of the G1000NXi system.
A digital stand-by instrument (MD302) is installed along with G1000NXi avionics suite and is connected to the pitot and static ports. This instrument provides the pilot with back-up airspeed, altitude, attitude and slip information.

The following block diagram describes the avionic system installed on P2010 which embodies design change MOD 2010/136:

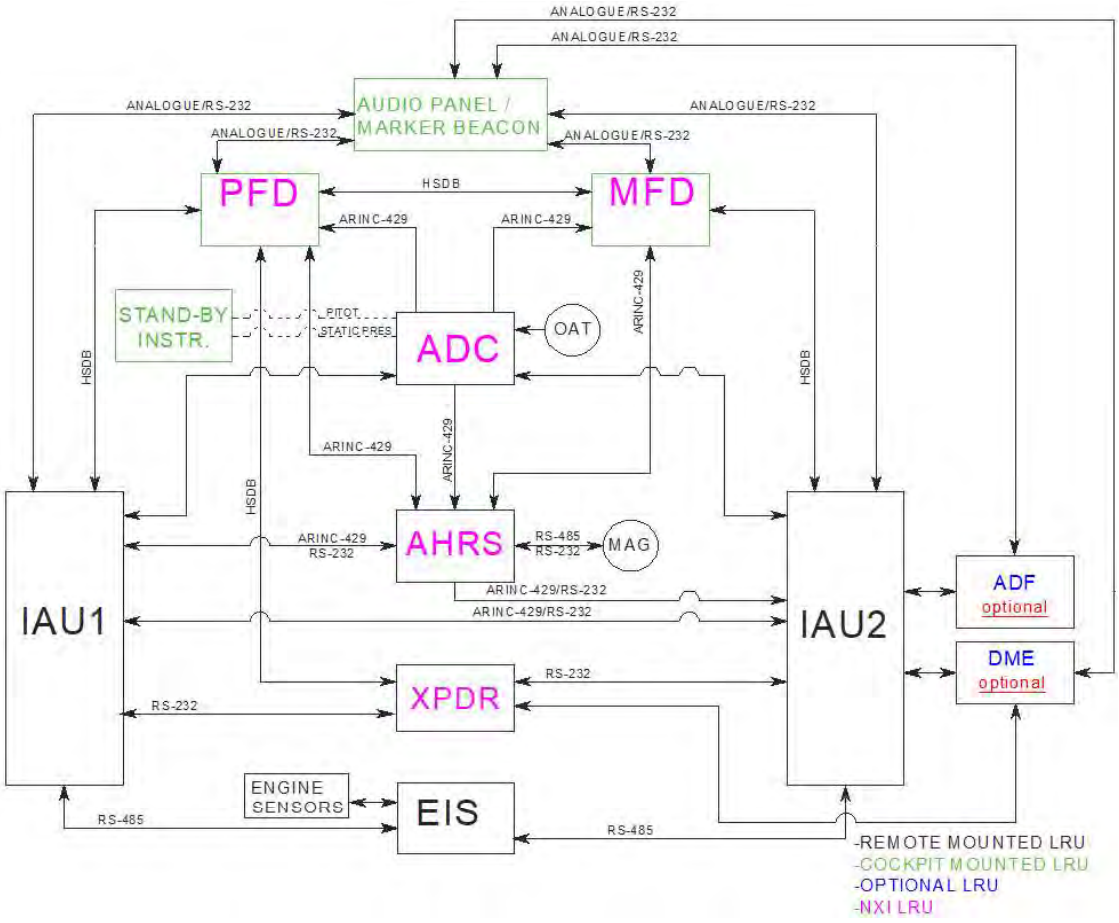


Figure 30 - Avionic system architecture

The following LRU are installed on the instrument panel:

• LH GDU 1050 Display
• RH GDU 1050 Display
• GMA 1360 Full digital audio panel with Integrated Marker Beacon Receiver

The left-hand GDU is configured as a PFD and the right-hand one as a MFD his configuration allows to include all engine parameters in the Garmin system.

In the following tables are reported the Garmin LRU's and the others units installed on P2010 equipped with IO-360 engine with Garmin G1000Nxi.

LRU Model	Description	Remote/Cockpit mounted	Qty
GDU 1050	Display Unit (PFD and MFD)	Cockpit mounted	2
GIA 64W	COM/NAV/GPS interface	Remote (Behind the MFD)	2
GRS 79	AHRS	Remote (Baggage compartment)	1
GDC 72	ADC	Remote (Baggage compartment)	1
GEA 71B	EIS units	Remote (baggage compartment)	1
GMU 44	Magnetometer	Remote (Tail cone)	1
GTP 59	OAT Probe	Remote (Under the co–pilot pedals)	1
GMA 1360	Full digital audio panel	Cockpit mounted	1
GTX 345R	Mode–S XPDR with ADS–B IN and OUT	Remote (Baggage compartment)	1
KN 63	DME	Remote (Baggage compartment)	1

Table 7 – Garmin LRUs

LRU Model	Description	Remote/Cockpit mounted	Qty
MD–302	Stand–by Instrument	Cockpit mounted	1
ELT	Emergency Locator trasmitter	Remote	1

Table 8 – Other LRUs

LRU Model	Description	Remote/Cockpit mounted	Manufacturer	Qty
GTS 800	TCAS unit	Remote (Baggage compartment)	Garmin	1
RA–3502/ AC–3504	ADF System	Remote	Becker Avionics	1

Table 9 – Optional LRUs

GDU 1050 (Display unit, PFD and MFD)

GDU 1050 units display flight, engine parameters and moving map information. They are the user interface for P2010 avionic suite. GDU 1050 units placed on instrument panel LH and RH sides are identified as Primary Flight Display (PFD on LH side) and Multifunction Display (MFD on RH side).

The GDU 1050 unit include COTS graphics processor.

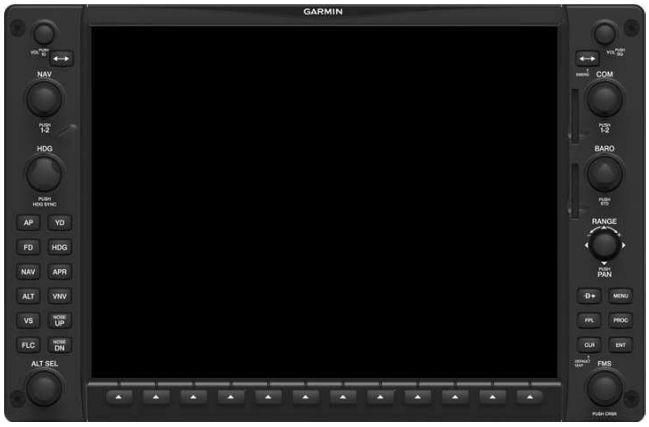


Figure 31 - GDU 1050 (PFD and MFD)

GIA 63W

GIA 63W unit is a microprocessor–based unit linked to GDU via Ethernet High speed Data Bus (HSDB). P2010 NXi is equipped with two GIA 63W units, each one connected to a GDU, in particular, GIA 63W #1 to PFD and GIA 63W #2 to MFD, respectively.



Figure 32- GIA 63W (Integrated Avionics Unit)

GRS 79 and GMU 44

GRS 79 AHRS (Attitude and Heading Reference System) and GMU 44 units are remote devices that provide the aircraft with attitude and heading reference system



Figure 33 - GRS 79 and GMU 44 (AHRS/Magnetometer)

GRS 79 provides the following information using ARINC 429 data bus:

- Aircraft heading, pitch and roll;
- Aircraft yaw, pitch and roll rates;
- Aircraft body–axis accelerations;
- Rates of change of heading, pitch and roll;
- Aircraft accelerations expressed in a local level frame of reference

GDC 72 (Air Data Computer)

GDC 72 unit is an AIR Data Computer; it allows to sense, elaborate and display air data on instrument panel displays.



Figure 34- GDC 72 (Air Data Computer)

GDC 72 unit is able to sense the following flight information:

- Air Temperature (Total air temperature, outside/static air temperature)
- Corrected Static Pressure
- Density Altitude
- Impact Pressure Uncorrected

- Indicated Airspeed
- Pressure Altitude
- Total Pressure
- True Airspeed
- Vertical Speed

The air data computer static port is connected to the primary and alternate static ports. It is connected to the heated pitot located on the left side of the fuselage.

GEA71 (Engine/Airframe Interface)

The GEA 71 is a microprocessor based input/output Line Replaceable Unit (LRU) used to monitor sensor inputs and drive annunciator outputs for aircraft engine systems. It interfaces with all engine sensors on the aircraft and communicates engine information via RS–485 digital interface to both GIA 63W Integrated Avionics Units. The GIAs then interface with the GDU Primary Flight Display (PFD) and Multi–Function Display (MFD). The MFD shows engine instrumentation while the PFD shows airframe alerts provided by the GEA 71.

Engine instrumentation is also displayed on the PFD and/or MFD while the system is in reversionary mode. The PFD and MFD displays serve as the user interface for the GEA 71.

GEA 71 software is dedicated and is based upon the configuration of aircraft sensors.



Figure 35 - GEA 71 (Engine/Airframe interface)

GTP 59 (OAT Probe)

GTP 59 is a resistive temperature probe that provides outside air temperature.

It is connected with GDC 72 and provides it with temperature data in order to allow the evaluation of temperature influenced air data parameters.

In figure below the GTP 59 is shown.



Figure 36 - GTP59 Outside Air Temperature probe

GMA 1347 (Full Digital Audio Panel)

The Garmin GMA 1347 is a vertically oriented panel, mounted audio control and marker beacon system. The system delivers reliability and versatility for all audio controlling functions. LED–illuminated push buttons and logical panel layout allow audio selection of NAV, COM, DME, ADF, MKR, TEL, AUX and automatic warning audio in voice or tone annunciation. The GMA 1347 includes a six–position intercom system (ICS) with electronic cabin noise de–emphasis, two stereo music inputs, and combined pilot, co-pilot, and passenger volume controls. The GMA 1347 provides digital audio input/output capability to external radios. A programming pin indicates whether the digital or analog channels are used for COM 1, COM 2, NAV 1 and NAV 2. The GMA 1347 provides a recovery button in order to set both display in reversionary mode manually.

In figure below the GMA 1347 is shown



Figure 37 - GMA 1347 (Audio Panel)

GTX 345R

GTX 345R is a rack mounted MODE C and S transponder that operates on radar frequencies receiving ground radar or TCAS interrogations at 1030 MHz and transmitting a coded response of pulses to ground–based radar on a frequency of 1090 MHz.

The GTX 345R replies to Mode A, Mode C and Mode S interrogation. Mode A replies consist of framing pulses and any one of 4096 codes, which differ in the position and number of pulses transmitted. Mode C replies include framing pulses and encoded altitude.

GTX 345R is equipped with IDENT capability.

This unit also features an altitude monitor and TIS traffic advisories (only operational where suitable ground–radar facilities are available).

Ground station can interrogate the transponder individually using a 24–bit ICAO Mode S address, which is unique to the particular aircraft. In addition, ground station may interrogate a GTX 345R for its transponder data capability and the aircraft's Flight ID, which is the registration number which can be entered into the transponder at installation time together with the mode S hexadecimal code.

GTX 345R includes the following enhanced capabilities:

- ADS–B Out –> GIA#1 and GIA#2 GPS receivers act as position source;
- ADS–B In –> Receivers for both the UAT and the 1090 MHz frequency bands for all ADS–B In data reception capabilities.

GTX 345R receives ADS–B transmissions from other ADS–B Out equipped aircraft, ADS–R, and TIS–B information from ground stations in areas where coverage is present. Traffic information received for ADS–B, ADS–R, and TIS–B transmissions supplies compatible ADS–B In data to CDTIs to show the pilot.

The Primary Flight Display allows the control and monitoring of the code, reply symbol and mode of operation in normal mode; in the event of PFD failure the system switches to reversionary mode and the transponder interface can be operated from MFD.



Figure 38 - GTX 345R Transponder

MD – 302 Stand by Instrument

For MD 302 information refer to chapter 31.

KN 63 DME

The KN 63 is a remote mounted, 200 channel DME based on solid–state transmitter and large scale integrated circuit (LSI) technology. All tuning is done electronically; using a crystal, digital, frequency synthesizer. Range, speed, and time–to–station are measured digitally, using two LSI's.

This unit is interfaced with audio panel and GIA 63W #2 and its information is displayed on PFD. In Figure 42b the DME unit is shown.



Figure 39 - KN 63 DME

ADF system (Automatic Direction Finder) (Optional)

The ADF system is composed of the following units:

- Remote ADF receiver unit (RA 3502);
- RMI converter module (AC 3504–01);
- ADF antenna (AN 3500);

ADF frequency can be tuned directly on G1000 NXI PFD, or MFD if the system is in reversionary mode configuration. The ADF receiver operates in the 190 kHz and 2182 kHz ± 5kHz frequency range.

This solid–state receiver provides bearing information to stations in the above-mentioned frequency band and also provides audio signal reception to enable the pilot to identify stations and listen to transcribed weather broadcasts or commercial radio stations in the AM broadcast band. This unit is connected to GMA 1347 audio panel and is also interfaced with Garmin's GIA 63W #2 in order to display ADF information and allow for frequency tuning on the PFD without the need of installing a dedicated indicator or a control head.

The system complies with JTSO–2C41d, RTCA/DO–179 and RTCA/DO–178A. environmental qualification was conducted on the units composing the system in accordance with RTCA/DO–160C.

In the figure below are shown the ADF system units.



Remote ADF Receiver (RA 3502)



RMI Converter (AC 3504–01)



ADF Antenna (AN 3500)

Figure 40 – ADF System

Emergency Locator Transmitter

The ELT device installed is manufactured by ACK Technologies and its model is E-04. This device is installed on a dedicated mount connected to the primary structures of the aircraft. The installation direction is parallel to the longitudinal axis of P2010. ELT antenna is located on the upper side of fuselage at about 90 cm from the COM1 antenna. A dedicated remote control device is installed on the cockpit in order to allow the pilot to activate the ELT. The ELT is equipped with an automatic G-switch which enables the transmitter in the event of a crash. An internal battery provides the energy required for continuous for at least 48 hours in case of crash. An audio buzzer is provided and installed behind the cockpit.



Figure 41 – ELT ACK Model E-04

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Troubleshooting

The Garmin G1000NXi design greatly eases troubleshooting and maintenance: a failure or problem can be isolated to a particular LRU, which can be replaced quickly and easily. Each LRU has a particular function, or set of functions, that contributes to the system's operation.
For information about troubleshooting regarding the G1000NXi system refer to GARMIN G1000NXi Maintenance Manual, last issue.

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MAINTENANCE PRACTICES

In addition to the basic Aircraft Maintenance Manual, this Chapter contains the following maintenance tasks description:

- LRU mechanical installation general features
- GDU 1050 display removal/installation & testing
- GMA 1347 removal/installation & testing
- GIA 63W removal/installation & testing
- GDC 72 removal/installation
- GDC 72 testing and leak test
- GTX 345R removal/installation & testing
- GRS 79 removal/installation & testing
- GMU 44 removal/installation & testing
- GEA 71 removal/installation & testing
- KN 63 removal/installation & testing
- ADF System removal/installation & testing
- Software upload procedure
- Single LRU SW Upload
- Optional equipment SW Upload
- SW Testing procedure
- ADF check out
- DME check out
- Final check-list
- Configuration mode

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LRU Mechanical Installation General Features

The G1000NXi mounting system is designed to simplify the installation, removal, and servicing of G1000NXi LRUs. The system typically consists of LRU racks and any required cooling accessories. In this way, LRUs are quickly accessible by removing and disconnecting the display.

The GDU 1050 PFD and MFD mount to the instrument panel cutout.

A handle-lock mechanism is used to guide and lock some LRUs into place. The handle has a locking stud that engages a dogleg-shaped track on the LRU rack. After engaging the dogleg, the handle can be pushed down and locked. This action seats the LRU against the rear plate and connectors. A single Phillips screw is used to fasten the lever to the LRU body.

Some pressure is required to seat the LRU and lock the handle. The unit should be gently worked into position using the lever. Do not use excessive force inserting the LRU. If the LRU binds or is caught, stop and remove it. Check and ensure that the rear plate and connectors are floating freely in the LRU rack before attempting to re-install.

G1000NXi LRU racks employ a keyplate/hex-dowel system that mates with the back of certain units and their rear plates. This prevents another similarly sized unit from being inserted into the incorrect rack and potentially damaging the connectors.

GDU 1050 DISPLAY REMOVAL/INSTALLATION & TESTING

The GDU 1050 display is installed by holding the unit flush with the instrument panel.

Procedure

Step no.	GDU 1050 display removal/installation & testing Task description	Additional info & References
1.	Make sure Master Switch is set to OFF	
2.	Turn each of the four or six locking sockets one quarter turn counterclockwise until they reach their stops using a 3/32” hex drive tool.	
3.	Gently pull the display out of the panel. Hold unit tightly to prevent dropping it. The display is only about 2-3 inches thick	
4.	Remove the connector from the back of the unit by pushing on the slide lock tab on the side of the connector to release it and then pull the connector away from the unit.	
5.	Remove and save any SD cards to install in the replacement display.	
6.	Inspect wire harness connector for damaged pins before installing the new unit.	
7.	Attach connector to the front of the unit by first pressing the slide lock tab on the side of the connector, then align and mate the unit and wire harness connectors together, and then release the slide lock tab. Locking tabs must be engaged on both ends of the connector.	
8.	Hold the GDU flush with the instrument panel and ensure that locking stud alignment marks are in the vertical position.	
9.	Turn each of the four or six locking sockets one quarter turn clockwise using a 3/32” hex drive tool (this may require applying a small amount of forward pressure to engage the quarter turn sockets).	

Step no.	GDU 1050 display removal/installation & testing Task description	Additional info & References
10.	Install unit software and configuration files per instructions reported in this Supplement (Software upload Section). If the removed display(s) are reinstalled in their original positions, no software or configuration loading is required. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. If a new, repaired, or exchange GDU is installed; the correct software, configuration and Jeppesen aviation database files must be loaded to the unit. Retain the database SD card(s) from the original display to install in the new display after loading software.	**NOTE** If replacing the PFD with a new, repaired, or exchanged GDU, the new GDU must be placed in the MFD location and the GDU system files loaded there to prevent calibration and other configuration data residing in the PFD config module from being deleted. It is not necessary to install a display in the PFD position to load GDU software into a display installed in the MFD position. After loading GDU software into the display in the MFD position, turn off the system and move the GDU to the PFD position in the instrument panel and continue the install by loading the configuration files.

Step no.	GDU 1050 display removal/installation & testing Task description	Additional info & References
11.	**TESTING** If the display is removed or replaced, the following tests are recommended. Allow displays to initialize. Check that all COM/NAV display fields are valid in the top corners of the display. PFD: Check that attitude, heading, altitude, airspeed, vertical speed and OAT fields are valid within 2 minutes of power up. Push the red display reversion button on the GMA 1347. Verify both displays enter reversionary mode (both should have valid attitude, heading, altitude, airspeed, vertical speed, and engine instruments): de-activate reversionary mode by pushing the red reversion button again. Verify Optional Features and Equipment (if equipped; i.e. ADF, DME, etc.) are operational. On the PFD, press the ALERTS softkey. Correct any PFD/MFD Alert messages.	

GMA 1347 REMOVAL/INSTALLATION & TESTING

For GMA 1347 removal/installation and testing procedure refer to AMM chapter 34

GIA 63W REMOVAL/INSTALLATION & TESTING

For GIA 63W removal/installation and testing procedure refer to AMM chapter 34

GDC 72 REMOVAL/INSTALLATION

Procedure

Step no.	GDC 72 removal/installation Task description	Additional info & References
1.	Make sure Master Switch is set to OFF.	
2.	Remove the GDU 1050 PFD display	Refer to GDU 1050 removal procedure in this chapter
3.	Remove the connector from the back of the unit by pushing on the slide lock tab on the side of the connector to release it and then pull the connector away from the unit.	
4.	Disconnect Pitot and static lines connected to the GDC 72.	The GDC 72 has two ports that are connected to the aircraft's pitot pressure source and static pressure source. The two ports are labeled on the unit.
5.	Apply protective plugs in correspondence of the hoses end.	Use care to avoid getting fluids or particles anywhere within the pitot and static lines connected to the GDC 72.
6.	Loosen two thumb screws securing unit to the mounting rack.	
7.	Remove GDC 72 unit.	
8.	Inspect wire harness connector for damage before installing new unit.	
9.	Put in place the new/overhauled unit on the remote mounting plate: slide the unit fully into the rack.	
10.	Tighten the two thumb screws that secure unit to the mounting rack.	
11.	Remove protective plugs in correspondence of the hoses end and inspect them for damage.	
12.	Connect Pitot and static lines connected to the GDC 72.	Seal the threads of pneumatic fittings at the connector ports. Use caution to ensure there are no pneumatic leaks.

Step no.	GDC 72 removal/installation Task description	Additional info & References
13.	Attach connector to the back of the unit by first pressing the slide lock tab on the side of the connector, then align and mate the unit and wire harness connectors together, and then release the slide lock tab. Locking tabs must be engaged on both ends of the connector.	
14.	Install unit software and configuration files per instructions reported in this Supplement (Software upload Section). **NOTE** Any pitot/static covers must be removed in order to successfully execute the Software and/or configuration loading to the GDC, if required.	No software or configuration loading is required if the original GDC is reinstalled. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. If a new, repaired or exchange GDC 72 is installed, load the following files after removing the Supplemental Database cards from the bottom slots of each display. • GDC1 Software • GDC1 Configuration Note which card was removed from the MFD so it may be identified later for reinsertion in the MFD when software and configuration loading is complete. It contains a FliteChart® or ChartView database which is only used by the MFD. Reinstall all the cards after the software and configuration file loads are complete. For new GDC Configuration Module Installed: the correct configuration files must be loaded, if the GDC configuration module has been replaced. Load the GDC1 Configuration file.

Step no.	GDC 72 removal/installation Task description	Additional info & References
15.	Reinstall the GDU 1050 PFD display.	Refer to GDU 1050 installation procedure in this chapter
16.	Perform GDC 72 testing procedure.	See instructions reported in this Supplement "GDC 72 Testing and Leak Test"
17.	Perform GDU testing procedure.	See instructions reported in this Supplement "GDU 1050 display removal/installation & testing"

GDC 72 TESTING AND LEAK TEST

In addition to what prescribed on basic MM (Chapter 34-10) in terms of test equipment required and test procedures for Pitot/static leak test, apply following instructions which apply for verification of the altimeter and airspeed information supplied by GDC 72.

Procedure

Step no.	GDC 72 Testing and leak test Task description	Additional info & References
1.	Allow the unit to warm up for 15 minutes before performing the following tests.	**CAUTION** Configuration mode contains certain pages and settings that are critical to aircraft operation and safety. These pages are protected and cannot be modified, unless the technician is properly authorized and equipped. However, most protected pages are viewable to allow system awareness for troubleshooting.
2.	Start the G1000NXi system in normal mode.	
3.	Remove power to PFD.	

Step no.	GDC 72 Testing and leak test Task description	Additional info & References
4.	Turn PFD1 on in Configuration mode by pressing and holding the ENT key on the PFD while applying power.	
5.	Release the ENT key after "INITIALIZING SYSTEM" appears in the upper left corner of the PFD.	
6.	Using the FMS knob on the PFD, reach the GRS page group. Use the B ALT field for all tests for G1000NXi altitude.	
7.	Place the MFD in Reversionary mode by pressing the red "display backup" button on the GMA. The baro setting can then be read from the MFD.	**NOTE** The baro setting on the MFD is controlled by PFD.
8.	Perform test i.a.w. instructions provided at AMM paragraph 34-10 (Pitot and static leak tests).	
9.	After completing the tests, return both the MFD and the PFD to normal mode by pressing the red reversionary mode button.	

GTX345R REMOVAL/INSTALLATION & TESTING

Procedure

Step no.	GTX 345R removal/installation & testing Task description	Additional info & References
1.	Make sure Master Switch is set to OFF.	
2.	Open inspection cap F1. Get access to the avionics rack.	
3.	Remove backside vertical panel	
4.	Loosen the Phillips screw and unlock the handle into the GTX 345R body.	
5.	Pull the GTX 345R lever up: this disengages the unit into the rack. Remove GIA unit.	
6.	Inspect rack connectors for damaged pins before installing the new unit.	
7.	Pull the handle up and carefully slide the new/overhauled LRU into the rack. Ensure that the orientation of the unit allows for the engagement.	The unit can only be installed in one direction. The rear plates are designed to float in the unit rack. Check to ensure the rear plates are not bound by the connectors or spring clip.
8.	Push the GTX 345R lever down towards the bottom of the unit. This engages the locking stud with the dogleg slot and locks unit into the rack. If lever fails to go down with moderate pressure, stop and make sure the floating backplate in the rack can move to align itself with the unit upon insertion. In extreme cases, the wire harness going to the connectors may need to be pressed up or down to allow the backplate to slide and align.	Do not use excessive force when inserting the GTX 345R into the rack. This may cause damage to the connectors, unit and/or unit rack. If excessive resistance is felt during installation, stop! Remove the GTX 345R and identify the source of resistance.
9.	Lock the handle into the GTX 345R body and tighten the Phillips screw.	
10.	Install unit software and configuration files per instructions reported in this Chapter (Software upload Section).	
11.	**TESTING** If unit is removed or replaced the following tests are recommended:	

Step no.	GTX 345R removal/installation & testing Task description	Additional info & References
	The integrated transponder/altitude reporting system must be verified in accordance with Title 14 of the Code of Federal Regulations (CFR) §§ 91.411 and 91.413. Transponder Ramp Test: this test requires the use of a Mode S ramp generator. Specific instructions for operating the ramp tester are contained in the applicable operator's manual. Refer to Title 14 CFR Part 43 Appendix F for testing criteria.	
12.	Install backside vertical panel	
13.	Close inspection cap F1.	

GRS 79 REMOVAL/INSTALLATION & TESTING

Procedure

Step no.	GRS 79 removal/installation & testing Task description	Additional info & References
1.	Make sure Master Switch is set to OFF.	
2.	Remove the vertical panel of baggage compartment in order to access to tail cone LH side	Refer to ATA 6 and 25
3.	Remove the connector from the front of the unit by pushing on the slide lock tab on the side of the connector to release it and then pull the connector away from the unit.	
4.	Loosen four screws holding the unit to the mounting rack (do not loosen mounting rack bolts).	
5.	Remove the unit.	
6.	Inspect wire harness connector for damaged pins before installing the new unit.	
7.	Put in place the new/overhauled GRS unit.	
8.	Use a #2 Phillips screwdriver to tighten the GRS 79 to the rack, rather than hand tightening the knurled screws.	The recommended torque is 22-25 inch pounds.
9.	Attach connector to the front of the unit by first pressing the slide lock tab on the side of the connector, then align and mate the unit and wire harness connectors together, and then release the slide lock tab. Locking tabs must be engaged on both ends of the connector.	

Step no.	GRS 79 removal/installation & testing Task description	Additional info & References
10.	Install unit software and configuration files per instructions reported in this Supplement (Software upload Section).	If the original GRS is reinstalled, no software loading is required. This does not include units that were returned for repair as their software and configuration files are deleted during the repair testing process. If a new, repaired or exchange GRS is installed; load the file listed below after removing the supplemental database cards from the bottom slots of each display. • GRS Software Note which card was removed from the MFD so it may be identified later for reinsertion in the MFD when software and configuration loading is complete. It contains a FliteChart or ChartView database which is only used by the MFD. Reinstall all the cards after the software and configuration file loads are complete. If the GRS 79 configuration module was replaced, no software loading is required but the pitch/roll calibration and magnetometer calibration procedures need to be performed again.
11.	**TESTING** Allow displays to initialize. PFD: check all fields are valid within 2 minutes of power up. On the PFD, press the ALERTS softkey. Correct any PFD/MFD Alert messages.	

Step no.	GRS 79 removal/installation & testing Task description	Additional info & References
12.	Reinstall the vertical panel of baggage compartment	Refer to ATA 6 and 25

GMU44 REMOVAL/INSTALLATION & TESTING

For GMU 44 removal/installation and testing procedure refer to AMM chapter 34

GEA71 REMOVAL/INSTALLATION & TESTING

For GEA71 removal/installation and testing procedure refer to AMM chapter 34

KN 63 REMOVAL/INSTALLATION & TESTING

For KN 63 removal/installation and testing procedure refer to AMM chapter 34

ADF SYSTEM REMOVAL/INSTALLATION & TESTING

For ADF system removal/installation and testing procedure refer to AMM chapter 34

SOFTWARE UPLOAD

The following instructions apply for the SW installation/updating on G1000NXi. The G1000NXi is not airworthy unless software and configuration procedures are accomplished successfully as described in these procedures. It is extremely important that each LRU software load be completed successfully.
The software update availability will be communicated by Tecnam by means of a Service Bulletin providing detailed instructions.

NOTE

When SW upload is performed, use always an external power unit jointly to the airplane battery charged and efficient: the upload procedure can take a significant period of time, during which it is important that the system be always properly supplied.

Required Materials and Equipment

Make sure that all of the required materials and equipment are on hand before you begin the upgrade procedure.

- A ground power unit capable of supplying 28 VDC power to the aircraft systems and avionics
- Software Loader Card

System SW Upload procedure

The following table provides information to upload the SW as a whole.

Before loading software on G1000NXi system, perform the following operation:

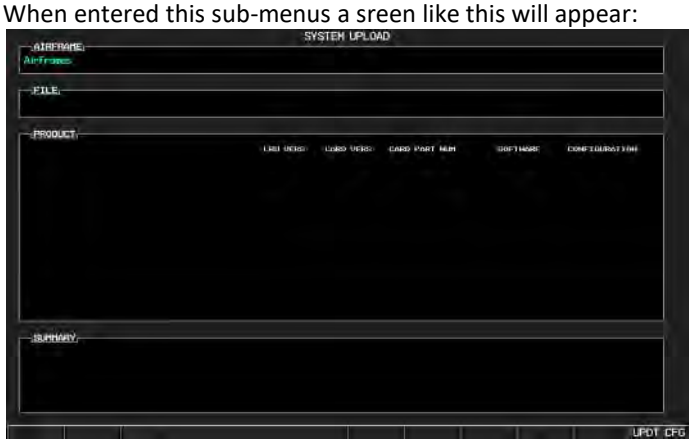
Step no.	User settings clearing	Additional info & References
1.	LH and RH CROSS BUS OFF	
2.	LH and RH Avionics OFF	
3.	PFD breaker: pull	Optionally, the technician may remove power from the stand-by instruments by pulling the circuit breakers
4.	MFD breaker: pull	
5.	Master Switch ON, Avionics ON	
6.	MFD breaker: push and simultaneosly hold the CLR key down	
7.	Release the CLR key after the initializing system message appears	
8.	Select "YES" when prompted to clear user settings	
9.	MFD breaker: pull	
10.	PFD breaker: push and simultaneosly hold the CLR key down	
11.	Release the CLR key after the initializing system message appears	
12.	Select "YES" when prompted to clear user settings	
13.	PFD breaker: pull	

When the above procedure is complete, apply SW upload procedure:

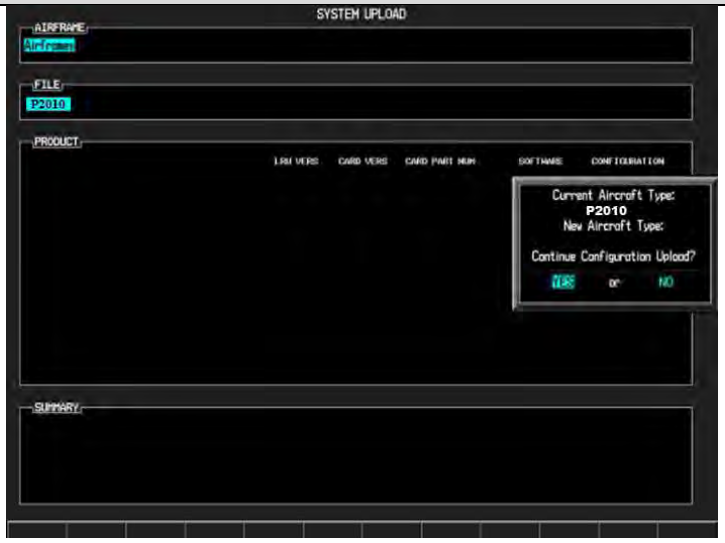
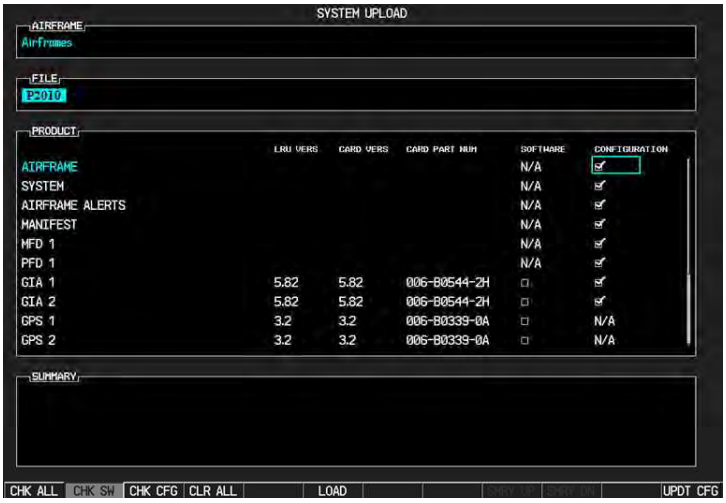
Step no.	Software upload procedure	Additional info &References
1.	Make sure that SD Loader Card embodies the correct SW p/n	
2.	Make sure that PFD and MFD breakers are pulled	Optionally, the technician may remove power from the stand-by instruments by pulling the circuit breakers
3.	Insert the Loader Card into the MFD top card slot	
4.	While holding the ENT key on the MFD, restore power by closing the MFD circuit breaker.	
5.	When the words INITIALIZING SYSTEM appear in the upper left corner of the MFD, release the ENT key	

Step no.	Software upload procedure	Additional info &References
6.	The system prompts the user to load the new software version contained on the loader card on GDU 1050 MFD.	All G1000NXi screen shots used in this document are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.
7.	ENSURE that power will remain applied to the system. Press the ENT key to load new software.	All G1000NXi screen shots used in this document are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.
8.	When prompted press the YES soft key to upload the splash screen.	A softkey labeled 'YES' appears in the lower right corner and may be used in lieu of the ENT key
9.	New software is loaded to the MFD. When complete, the MFD starts in configuration mode	
10.	MFD breaker: pull	
11.	Remove the G1000NXi SD Loader Card from the MFD and insert it into the top card slot on PFD	
12.	While holding the ENT key on the PFD, restore power by closing the PFD circuit breaker	
13.	When the words INITIALIZING SYSTEM appear in the upper left corner of the PFD, release the ENT key	
14.	The system prompts the user to load the new software version contained on the loader card on GDU 1050 PFD.	All G1000NXi screen shots used in this document are intended to provide visual

Step no.	Software upload procedure	Additional info &References
		reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.
15.	ENSURE that power will remain applied to the system. Press the YES soft key to load new software.	All G1000NXi screen shots used in this document are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.
16.	When prompted press the YES soft key to upload the splash screen.	A softkey labeled 'YES' appears in the lower right corner and may be used in lieu of the ENT key
17.	When the PFD load is complete, it starts in the configuration mode. Do not remove power.	
18.	While holding the ENT key on the MFD, restore power by closing the MFD circuit breaker.	
19.	When the words INITIALIZING SYSTEM appear in the upper left corner of the MFD, release the ENT key	
20.	**For the rest of the software/configuration procedure, do not operate the MFD while loading software or configuration files unless specifically instructed to do so. A failed or cancelled load may result.**	
21.	When in configuration mode a window like this will appear:	

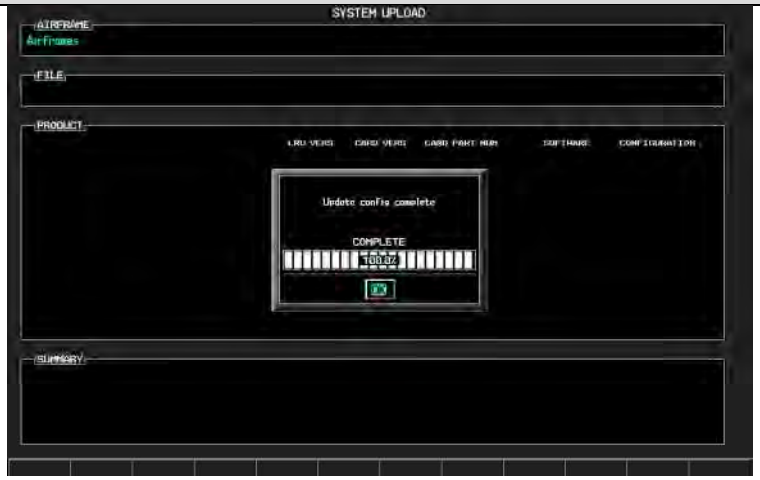
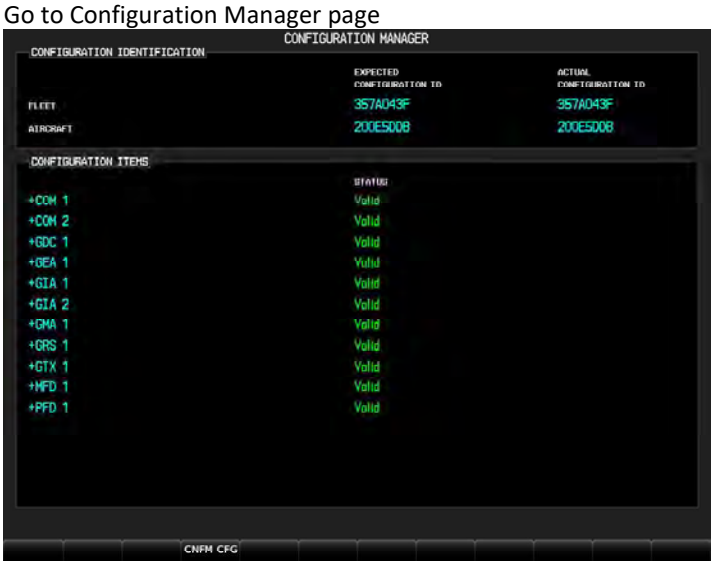
Step no.	Software upload procedure	Additional info &References
		
22.	Turn the small FMS knob on the PFD and go to the system upload page: 	
23.	When entered this sub-menus a sreen like this will appear: 	
24.	Turn the internal FMS knob and a small drop down sub-menus with two options will appear: 1. Airframes 2. Options	

Step no.	Software upload procedure	Additional info &References
	 Higlight Airframes using the internal FMS knob and then press the ENT button to enter the system software installation.	
25.	At this time a screen like this will appear: 	
26.	Turn the internal FMS knob and a small drop down sub-menus called P2010 will be higlighted. Pressing ENT button and a window like this will appear:	

Step no.	Software upload procedure	Additional info &References
	 When prompted if you want to continue with configuration upload press ENT button.	
27.	Pressing ENT will determine an output like this: 	
28.	If you want to load the system software and configuration for all LRUs just press the LOAD soft button on the PFD and the upload process will begin.	
29.	**Wait for the process to be completed without removing the power neither from PFD nor from MFD.** **The process could take until one and half an hour.** During the software upload process some pictures showing the upload progress will appear:	

Step no.	Software upload procedure	Additional info &References
	  The **PASS/FAIL** label beside each system software indicates if the software upload was successful or not.	
30.	When the software upload process is complete a screen like this will be output:	

Step no.	Software upload procedure	Additional info &References
	 Press ENT button to acknowledge the completion of the software upload process.	
31.	When the upload process is complete a configuration upload must be performed to complete the software upload process. This can be done by pressing the UPDT CFG soft key on the PFD:  When prompetd if you want to perform the configuration module update confirm by pressing the ENT button.	
32.	Wait until the configuration update process is completed.	
33.	When the configuration update process is completed a screen like this will be outuput:	

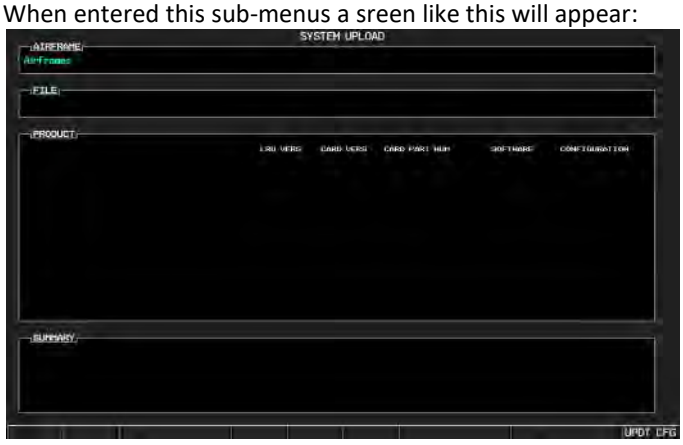
Step no.	Software upload procedure	Additional info &References
	 Press the ENT button to acknowledge the process completion.	
34.	Go to Configuration Manager page  Press CNFM CFG Button	
35.	Remove the Power from both PFD and MFD.	
36.	Remove the Garmin G1000 loader card from the PFD top slot.	
37.	Restore power on PFD and MFD to enter the normal operating mode.	
38.	Perform testing procedures: see Para. **Errore. L'origine riferimento non è stata trovata.**	

SINGLE LRU SW UPLOADED

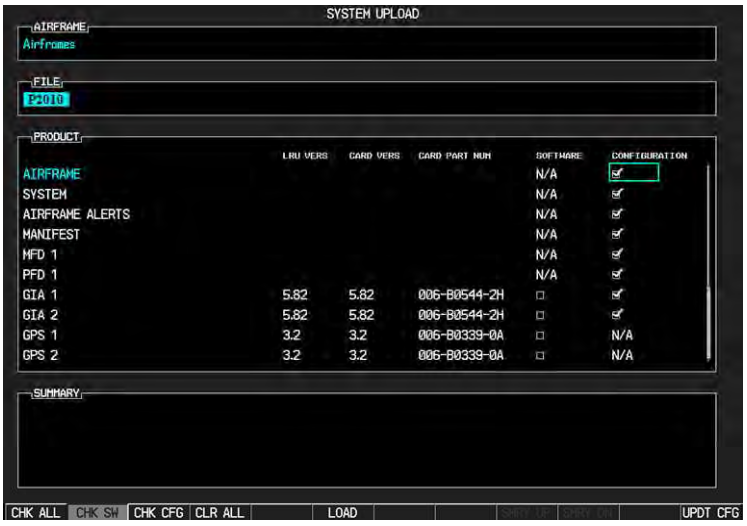
Following table gives information to upload a single LRU SW, if needed.

Step no.	Single LRU Software upload procedure	Additional info &References
1.	Make sure that SD Loader Card embodies the correct SW p/n to install	
2.	Make sure that PFD and MFD breakers are pulled	Optionally, the technician may remove power from the stand-by instruments by pulling the circuit breakers
3.	Insert the correct G1000NXi Loader Card into the MFD top card slot	Follow this part of the procedure only if you need to update the MFD system software.
4.	While holding the ENT key on the MFD, restore power by closing the MFD circuit breaker	Follow this part of the procedure only if you need to update the MFD system software.
5.	When the words INITIALIZING SYSTEM appear in the upper left corner of the MFD, release the ENT key	Follow this part of the procedure only if you want to update the MFD system software.
6.	The system prompts the user to load the new software version contained on the loader card on GDU 1050 MFD.	Follow this part of the procedure only if you want to update the MFD system software. All G1000NXi screen shots used in this document are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.
7.	Ensure that power will remain applied to the system. If you want to load the GDU1050 MFD system software press the ENT key to load new software; else press the NO soft key to skip the GDU1050 system software upload.	Follow this part of the procedure only if you want to updated the MFD system software. All G1000NXi screen shots used in this document are intended to provide visual reference only. All information depicted in screen shots, including software file names,

Step no.	Single LRU Software upload procedure	Additional info &References
		versions and part numbers, is subject to change and may not be up to date.
8.	When prompted press the NO soft key to skip the splash screen upload.	A softkey labeled 'YES' appears in the lower right corner and may be used in lieu of the ENT key
9.	New software is loaded to the MFD. When complete, the MFD starts in configuration mode	
10.	Remove the G1000NXi SD Loader Card from the MFD and insert it into the top card slot on PFD	
11.	While holding the ENT key on the PFD, restore power by closing the PFD circuit breaker	
12.	When the words INITIALIZING SYSTEM appear in the upper left corner of the PFD, release the ENT key	
13.	The system prompts the user to load the new software version contained on the loader card on GDU 1050 PFD.	All G1000NXi screen shots used in this document are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.
14.	ENSURE that power will remain applied to the system. If you want to upload the system software to the PFD press the ENT key to load new software; else press NO soft key.	All G1000NXi screen shots used in this document are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.
15.	When prompted press the NO soft key to skip the splash screen upload.	
16.	The PFD starts in the configuration mode. Do not remove power.	
17.	For the rest of the software/configuration procedure, do not operate the MFD while loading software or configuration files unless specifically instructed to do so. A failed or cancelled load may result.	
18.	When in configuration mode a window ilke this will appear:	

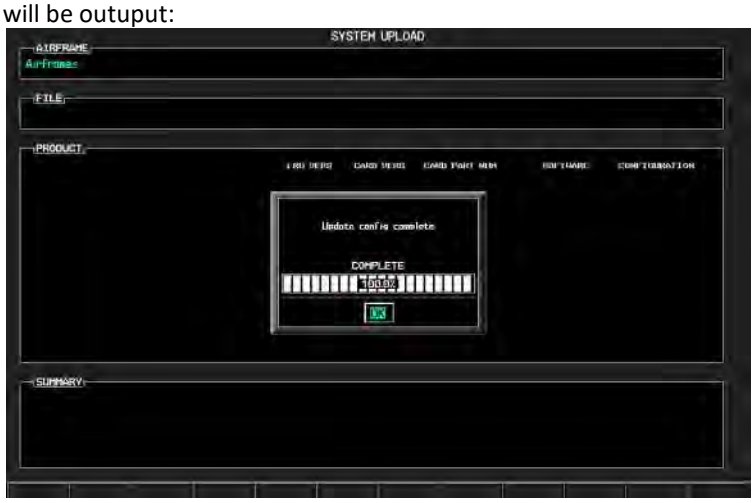
Step no.	Single LRU Software upload procedure	Additional info &References
		
19.	Turn the small FMS knob on the PFD and go to the system upload page: 	
20.	When entered this sub-menus a sreen like this will appear: 	
21.	Turn the internal FMS knob and a small drop down sub-menus with two options will appear: 3. Airframes 4. Options	

Step no.	Single LRU Software upload procedure	Additional info &References
	 Higlight Airframes using the internal FMS knob and then press the ENT button to enter the system software installation.	
22.	At this time a screen like this will appear: 	
23.	Turn the internal FMS knob and a small drop down sub-menus called P2006 will be higlighted. Pressing ENT button and a window like this will appear:	

Step no.	Single LRU Software upload procedure	Additional info &References
	 When prompted if you want to continue with configuration upload press ENT button.	
24.	Pressing ENT will determine an output like this: 	
25.	If you want to load the system software and configuration for one LRU follow this procedure: 1. Press the CLR ALL soft key on the PFD to uncheck all items on the list. 2. Use the external FMS knob to scroll between the units. 3. Select the LRU software and configuration to be loaded pressing ENT button. (The picture below show the case of GIA63W #1 selection)	

Step no.	Single LRU Software upload procedure	Additional info &References
	 4. Press the LOAD soft key on the PFD and the upload process will begin.	
26.	**Wait for the process to be completed without removing the power neither from PFD nor from MFD.** During the software upload process some pictures showing the upload progress will appear: 	

Step no.	Single LRU Software upload procedure	Additional info &References
	 The **PASS/FAIL** label beside each system software indicates if the software upload was successful or not.	
27.	When the software upload process is complete a screen like this will be output:  Press ENT button to acknowledge the completion of the software upload process.	
28.	When the upload process is complete a configuration upload must be performed to complete the software upload process. This can be done by pressing the UPDT CFG soft key on the PFD:	

Step no.	Single LRU Software upload procedure	Additional info &References
	 When prompetd to perform the configuration module update confirm pressing the ENT button.	
29.	**Wait for the process to be completed without removing the power neither from PFD nor from MFD.**	
30.	When the configuration update process is completed a screen like this will be outuput:  Press the ENT button to acknowledge the process completion.	
31.	Remove the Power from both PFD and MFD.	
32.	Remove the Garmin G1000NXi loader card from the PFD top slot.	
33.	Restore power on PFD and MFD to enter the normal operating mode.	
34.	Perform testing procedures: see Para. “SW Testing Procedure”	

OPTION EQUIPMENT SW UPLOAD

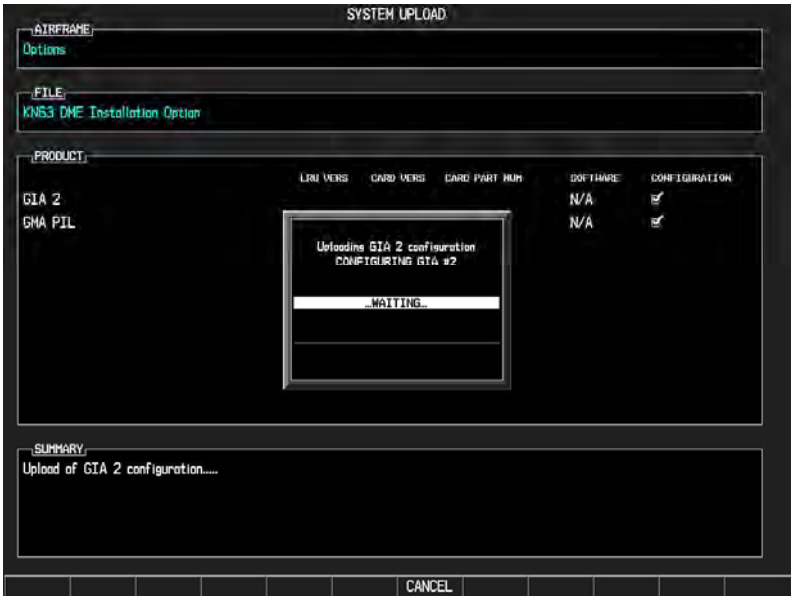
Following instructions refer to the installation of optional equipment, namely ADF and DME.

Step no.	Optional Equipment Software upload procedure	Additional info & References
1.	Make sure that SW part number is the desired one	
2.	Make sure that PFD and MFD breakers are pulled	Optionally, the technician may remove power from the stand-by instruments by pulling the circuit breakers
3.	While holding the ENT key on the MFD, restore power by closing the MFD circuit breaker. The MFD starts in configuration mode.	
4.	Insert the G1000NXi SD Loader Card into the top card slot on PFD	
5.	While holding the ENT key on the PFD, restore power by closing the PFD circuit breaker	
6.	When the words INITIALIZING SYSTEM appear in the upper left corner of the PFD, release the ENT key	
7.	The system prompts the user to load the new software version contained on the loader card on GDU 1050 PFD.	All G1000NXi screen shots used in this document are intended to provide visual reference only. All information depicted in screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.
8.	ENSURE that power will remain applied to the system. Press NO soft-key.	All G1000NXi screen shots used in this document are intended to provide visual reference only. All information depicted in

Step no.	Optional Equipment Software upload procedure	Additional info & References
		screen shots, including software file names, versions and part numbers, is subject to change and may not be up to date.
9.	When prompted press the NO soft key to skip the splash screen upload.	
10.	The PFD starts in the configuration mode. Do not remove power.	
11.	**For the rest of the software/configuration procedure, do not operate the MFD while loading software or configuration files unless specifically instructed to do so. A failed or cancelled load may result.**	
12.	When in configuration mode a window ilke this will appear: 	
13.	Turn the small FMS knob on the PFD and go to the system upload page: 	
14.	When entered this sub-menus a sreen like this will appear:	

Step no.	Optional Equipment Software upload procedure	Additional info & References
		
15.	Turn the internal FMS knob and a small drop down sub-menus with two options will appear: 5. Airframes 6. Options  Higlight Options using the internal FMS knob and then press the ENT button to enter the option equipment software installation.	
16.	At this time a screen like this will appear turning the FMS knob:	

Step no.	Optional Equipment Software upload procedure	Additional info & References
		
17.	Turn the internal FMS knob to highlight in the drop-down menu the option equipment for which the software upload is needed in the drop down menu: 	
18.	Pressing ENT will determine an output like this:	

Step no.	Optional Equipment Software upload procedure	Additional info & References
		
19.	To start the load process for optional equipment software and configuration press the LOAD soft key on the PFD and the upload process will begin.	
20.	**Wait for the process to be completed without removing the power neither from PFD nor from MFD.** During the software upload process some pictures showing the upload progress will appear: 	

Step no.	Optional Equipment Software upload procedure	Additional info & References
	 The **PASS/FAIL** label beside each system software indicates if the software upload was successful or not.	
21.	When the software upload process is complete a screen like this will be output:  Press ENT button to acknowledge the completion of the software upload process.	
22.	When the upload process is complete a configuration upload must be performed to complete the software upload process. This can be done by pressing the UPDT CFG soft key on the PFD:	

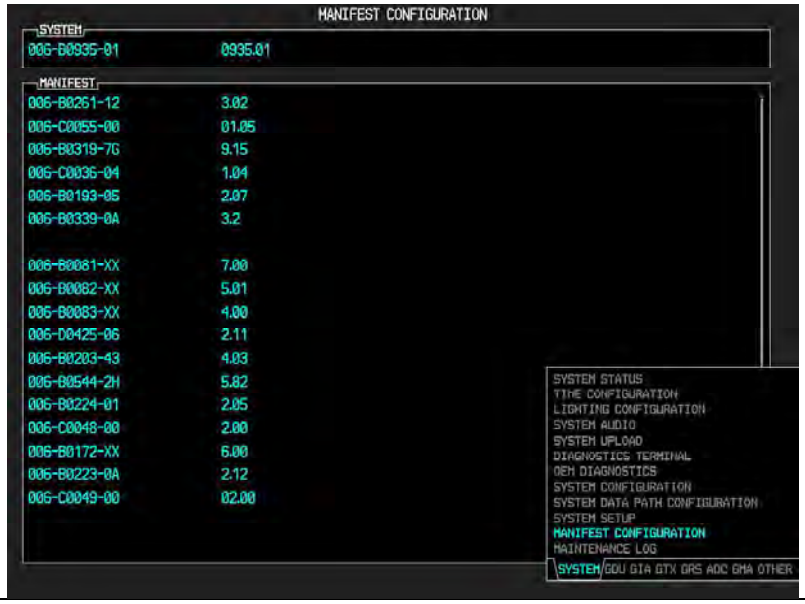
Step no.	Optional Equipment Software upload procedure	Additional info & References
	 When prompetd to perform the configuration module update confirm pressing the ENT button.	
23.	**Wait for the process to be completed without removing the power neither from PFD nor from MFD.**	
24.	When the configuration update process is completed a screen like this will be outuput:  Press the ENT button to acknowledge the process completion.	
25.	Remove the Power from both PFD and MFD.	
26.	Remove the Garmin G1000NXi loader card from the PFD top slot.	
27.	Restore power on PFD and MFD to enter the normal operating mode.	
28.	For ADF and DME equipment perform check-ut procedure addressed on Para. “ADF Chekout” and “DME Checkout”.	

SW TESTING PROCEDURE

Following procedure alows for test the system in order to have confirmation SW has been properly loaded. This task is mandatory after SW loading.

Step no.	Software testing procedure	Additional info & References
1.	Make sure that PFD and MFD breakers are pulled	Optionally, the technician may remove power from the stand-by instruments by pulling the circuit breakers
2.	Restore power by closing the MFD circuit breaker. The MFD starts in normal mode	
3.	Restore power by closing the PFD circuit breaker. The PFD starts in normal mode	
4.	For the rest of the software/configuration procedure, do not operate the MFD while loading software or configuration files unless specifically instructed to do so. A failed or cancelled load may result.	
5.	When in normal mode a window like this will appear on the MFD:  Check if the loaded software version matches with the one indicated in the top right part of the MFD (figure above only for reference).	
6.	Turn the external FMS knob on the MFD and go to the AUX page. Then turn the intenal FMS knob and select the SYSTEM STATUS page:	

Step no.	Software testing procedure	Additional info & References
		
7.	Press the button on the internal FMS knob and select the units and check if their status is OK: 	
8.	After performing this check remove the Power from PFD and MFD.	
9.	While holding the ENT key on the MFD, restore power by closing the MFD circuit breaker. The MFD will start in configuration mode	
10.	While holding the ENT key on the PFD, restore power by closing the PFD circuit breaker. The PFD will start in configuration mode	
11.	Use the MFD FMS external knob to enter the System Status page:	

Step no.	Software testing procedure	Additional info & References
		
12.	Use the PFD FMS internal knob to access the Manifest Configuration page: 	
13.	Press the MFD internal FMS knob button. Turn the internal FMS knob on the MFD and select the unit you wish to check (below GIA63W #1 has been chosen):	

Step no.	Software testing procedure	Additional info & References
		
14.	Press the PFD internal FMS knob button. Turn the internal FMS knob on the PFD and select the part number of the unit you wish to check (below GIA63W #1 has been chosen): 	
15.	Check if the software version indicated in the MANIFEST CONFIGURATION and in the SYSTEM STATUS page match. If this test is successful the software has been uploaded correctly for the current LRU.	
16.	If you need to check multiple LRUs repeat the steps from 13 to 15 until completion.	

ADF Check out

This check verifies that the ADF-to-G1000NXi interface operates correctly.

1. On the PFD, check to see if the ADF window(s) is displayed. If not, press the PFD softkey. Using either the BRG1 or BRG2 softkeys, toggle the softkey until the ADF bearing is shown. Press the BACK softkey.

2. Verify that the ADF window is not invalid (no red 'X').

Press the ADF/DME softkey and check to ensure the ADF tuning window displays correctly.

DME Checkout

This check verifies that the DME-to-G1000NXi interface operates correctly.

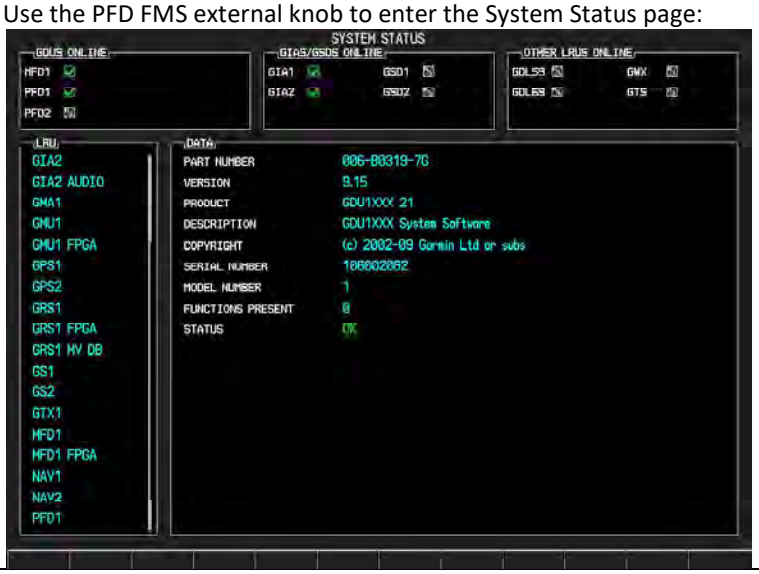
1. On the PFD, check to see if the DME window is displayed. If not, press the PFD softkey, then press the DME softkey to display the DME window next to the HSI.

2. Verify that the DME window is not invalid (no red 'X').

3. On the PFD, press the ADF/DME softkey. Verify that the ADF/DME TUNING screen is displayed correctly.

FINAL CHECK-LIST

When the software upload process is complete the user must perform a final check to verify that the software versions loaded for each LRU are the correct ones. This can be done performing the following procedure and filling the attached check-list.

Step no.	SW final check-list	Additional info & References
1.	Make sure that PFD and MFD breakers are pulled	Optionally, the technician may remove power from the stand-by instruments by pulling the circuit breakers
2.	Restore power by closing the MFD circuit breaker. The MFD starts in normal mode	
3.	While holding the ENT key on the PFD, restore power by closing the PFD circuit breaker. The PFD will start in configuration mode	
4.	Use the PFD FMS external knob to enter the System Status page: 	
5.	Press the PFD internal FMS knob button. Turn the internal FMS knob on the PFD and select the unit you wish to check (below GIA63W has been chosen):	

Step no.	SW final check-list	Additional info & References
		
6.	Record the software version indicated in the SYSTEM STATUS page in the table below. Check if the software version indicated in the SYSTEM STATUS page matches with the one shown in the reference table in the Additional Infos section of this document. If this test is successful the software has been uploaded correctly for the current LRU.	
7.	Repeat the steps from 4 to 6 for each LRU whose software has been uploaded.	

Record the software versions yielding from the procedure described above in the table below and check if they match with the desired one

	Installed SW version	Reference SW Version	PASS/FAIL
PFD			
MFD			
GIA63W #1			
GIA63W #2			
GMA1347			
GRS77 AHRS			
GDC74A ADC			
GTX33			
GMU44			
GEA 71			

CONFIGURATION MODE

Configuration mode allows the technician with a means of configuring, checking, and calibrating various G1000NXi sub-systems. Troubleshooting/diagnostics information can also be derived from this mode.
Additional information is provided by GARMIN G1000NXi INSTALLATION MANUAL, latest revision.
To start the system in Configuration mode, perform following tasksa:

Step no.	G1000NXi Configuration mode access	Additional info & References
1.	Avionics OFF	
2.	MFD breaker: pull	
3.	PFD breaker : push	
4.	Master Switch ON: press and hold the ENT key on PFD while applying power to PFD	
5.	Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of PFD	
6.	The PFD starts in configuration mode	
7.	Avionics ON	
8.	MFD breaker: push and simultaneously press and hold the ENT key on MFD	
9.	Release the ENT key after 'INITIALIZING SYSTEM' appears in the upper left corner of MFD	It is required to have both displays in the same mode
10.	The MFD starts in configuration mode.	

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CHAPTER 61- PROPELLER

61-10 – PROPELLER

Description and Operation

The propeller installed on P2010 equipped with Lycoming IO-390-C3B6 is a MT-Propeller P/N MTV-12B/183-59b
MTV-12B/183-59b is a three blade constant speed variable pitch propeller. This model of propeller has a flange type SAE No. 2 mod. bolts ½''-20 UNF and a diameter of 183 cm.

The blades are in natural composite, using high compressed wood in the root and light-weight wood in the remaining body. Epoxy fiberglass covers the entire blade surface and is painted with acryl lacquer. The outer portion is protected against erosion by a bonded on stainless steel erosion sheath. The inner portion of the blade is protected by a self-adhesive PU-strip.

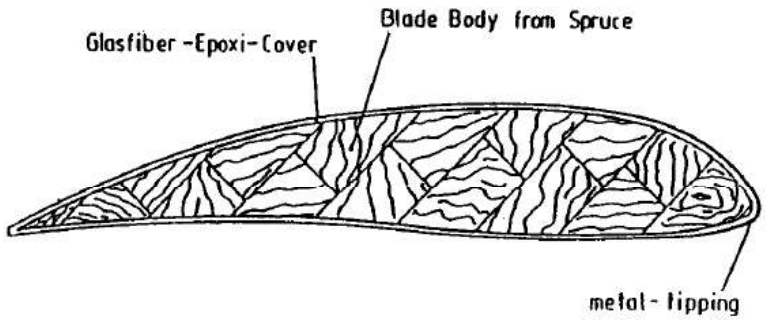


Figure 42 - MT propeller blade section

The pitch change is conducted by a propeller governor. Once an engine rotational speed is selected it will be held constant at variations of airspeed and power. Usually, this is called a constant speed propeller. Mechanical stops for low pitch and high pitch limit the pitch change travel. In case of the oil pressure of the governor to be lost, the blades return automatically to low pitch enabling the pilot to continue the flight. The oil pressure is single acting.

For further details, refer to MT-Propellers Operation and Installation Manual E124 "HY-DRAULICALLY CONTROLLED VARIABLE PITCH PROPELLER (CONSTANT SPEED PROPELLER)"-last issue.



Figure 43 – Propeller

Hub Designation

MTV - 16 - 1 - E - C - ( ) - ( ) ( ) ( )
1 2 3 4 5 6 7 8 9 10

10 Capital letter: modifications, restricting or excluding Interchangeability.
Small letter: modifications, not affecting interchangeability.

9 only applicable for Reverse-Propeller

8 only applicable for Reverse-Propeller

7 F = feathering system installed

6 Letter designation counterweights
blank = none or small counterweights mounted for pitch change moments towards low pitch
C = counterweights mounted for pitch change moments towards high pitch/feathering

5 Code for propeller flange
A = Motorglider engines bolt 7/16" - 20 UNF, circle dia 80 mm
AA = Flange Mount for Adapter to SAE No. 20 Spline
B = SAE No. 2 mod. bolts 1/2"-20 UNF
C = SAE No. 2 mod bolts 7/16"-20 UNF
D = ARP 502
E = ARP 880
F = SAE No. 1, bolts 3/8 "-24UNF
R = bolt ½"-20 UNF, circle dia 80 mm

4 consecutive number of series (1 = applicable for MTV-5, MTV-16, MTV-25, MTV-27)
3 consecutive number of basic type
2 Variable Pitch propeller
1 MT-Propeller (manufacturer)

Blade Designation

( ) ( ) 240- 35 c
1 2 3 4 5

5 small letter indicating change of blade twist from std. value given by the manufacturer

4 consecutive number of basic type (includes aerodyn. data)

3 diameter in cm

sense of rotation
- blank = right hand tractor
- RD = right hand pusher
- L = left hand tractor
- LD = left hand pusher

1 Position of actuation pin
- blank = pitch change pin for pitching moments towards low pitch
- C = pitch change pin for pitching moments towards high pitch
- CF = pitch change pin for feathering, pitching moments towards high pitch

Troubleshooting

For propeller troubleshooting, refer to MT-Propellers Operation and Installation Manual E124 “HYDRAULICALLY CONTROLLED VARIABLE PITCH PROPELLER (CONSTANT SPEED PROPELLER)”-last issue

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Maintenance Practices

This Chapter contains the following maintenance tasks description:

- Propeller removal
- Propeller installation

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Propeller Removal

Procedure

Step no.	Propeller removal Task description	Additional info & References
 WARNING	**IN ORDER TO AVOID AN ACCIDENTAL ENGINE TURN-ON, MAKE SURE THAT NONE IS IN THE CAB AND THAT MASTER SWITCH AND STARTER KEY ARE TURNED OFF.**	
1.	Make sure Master Switches are turned OFF.	
2.	Parking brake: engage	
3.	Engine starter circuit breakers: pull out	
4.	Remove engine upper cowling unscrewing along the edges.	Refer to chapter 06
5.	Remove safety wires and stops on hex screw	Refer to Figure 44
6.	Unscrew hex screws on pulley carriers **Note:** all the hex screw has to screw in the same time.	Refer to Figure 45
 CAUTION	**During the operation is suggested to use a container under the propeller attach because the oil can go out.**	
7.	Pull slowly propeller off from its position.	
8.	Position the propeller on dedicated trestle;	

Propeller Installation

Procedure

Step no.	Propeller installation Task description	Additional info &References
 WARNING	**IN ORDER TO AVOID AN ACCIDENTAL ENGINE TURN-ON, MAKE SURE THAT NONE IS IN THE CAB AND THE SWITCH AND THE KEY ARE IN AN "OFF" POSITION.**	
1.	Make sure Master Switch are turned OFF.	
2.	Parking brake: engage	
3.	Engine starter circuit breakers: pull out	
4.	Position the MIXTURE control lever in full back position	Refer to Figure 46
5.	Remove propeller from container and position it on its dedicated trestle	
6.	Check that the propeller is not damaged and is perfectly clean especially in the central hub hole and in the fixing holes	Remove all surface defects. Remove the shipping plugs and protective wrap, if any.
7.	If necessary, proceed to clean the propeller as well as the hub flange before the assembly using a gentle detergent and not abrasive detergent. Dry perfectly all the surfaces	
8.	In case of used propeller assembly, carefully verify the absence of scratches, cracks, abrasion and corrosion	See MT Propeller Doc. No. E124 - last issue
 WARNING	**DO NOT USE OIL IN ANY PART OF THE PROPELLER DURING THE ASSEMBLY**	

Step no.	Propeller installation Task description	Additional info &References
NOTE	**BEFORE THE ASSEMBLY ON THE ENGINE OF A USED PROPELLER, CHECK IN THE PROPELLER HANDBOOK THE TOTAL FLIGHT HOURS AND ALL THE MAINTENANCE WORKS PLANNED ON IT TO WICH IT HAS OR NOT BEEN SUBJECTED DURING ITS OPERATIVE LIFE. IN ANY DOUBT REPEAT THE PERIODIC INSPECTION CORRESPONDENT TO ITS OPERATING TIME AND NOTE IT ON THE HANDBOOK**	
9.	Install (if required) "O-Ring" P/N AN6230B6 (MS 28775-228) on flange of engine-propeller coupling; NOTE: Lubricate "O-Ring" using engine oil.	
10.	Put the propeller on the hub flange of the engine using a center-dome to obtain a perfect axial positioning	
11.	Insert the 6 bolts from the back in the engine flange	
12.	Assemble the frontal flange and the 6 plane washers and respective bolts	
NOTE	**MAKE SURE THAT THE BOLTS ARE OF THE RIGHT KIND AND LENGTH BEFORE THE ASSEMBLY AND MAKE SURE THEY RESPECT THE AIRCRAFT SPECIFICATIONS**	
13.	Tighten the bolts using a torque wrench proceeding in cross alternate way and diametrically opposite in two phases (63-66 Lb.ft)	See MT Propeller Doc. No. E124 - last issue
 WARNING	**THESE VALUE OF TIGHTEN TORQUE ARE REFERRED TO DRY BOLTS THAT MUST NOT BE GREASED IN ANY REASON**	
14.	Visually check that the propeller and respective hub flange are perfectly adherent	
NOTE	**NO MINIMUM SPACE HAS TO BE BETWEEN THEM**	
15.	Apply safety wires.	Refer to Figure 44

Step no.	Propeller installation Task description	Additional info &References
16.	Check track of the blades. There is max. 1/8 inch allowed, measured approx. 4 inches from the tip on the trailing edge.	
17.	Install spinner on support plates, observe mating marks. Torque screws with plastic washers 35 - 44 inlb. Check run out of the dome. Max. 0,08 inch permissible.	
18.	Perform a functional check: a) Adjust power lever for approx. 1700 rpm. Pull propeller lever back(out) until the rpm drops by 300 - 500. Push propeller lever full forward (in) for take off position and observe rpm increase. Decrease and increase of engine speed should have about the same time. Cycle three times to bleed air out of the system. b) Adjust power lever at approx. 2200 rpm now. Pull propeller lever back until rpm drops about 100 rpm. When the rpm is stabilized, increase manifold pressure by about 3 inhg and observe the governor function. rpm must stabilize. c) Watch for a clean ground surface to avoid blade damage and advance power lever and propeller lever for take-off power and rpm. The static rpm must be limited by the propeller and should be 2280 to 2380 rpm.	See engine starting and shutdown procedure on AFM. Keep parking brake engaged. See MT Propeller CMM Chapter "Troubleshooting" to check, if the propeller or governor limits the rpm.
19.	After the ground runs, check for oil leaks and blade shake	
20.	Install engine upper cowling screwing along the edges.	Refer to Chapter 06

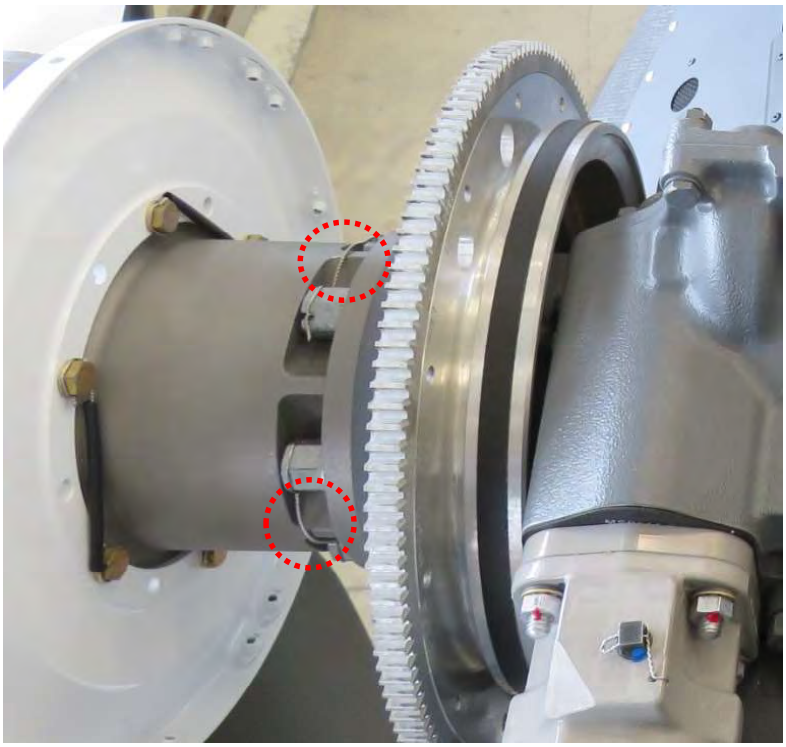


Figure 44 – Safety wire

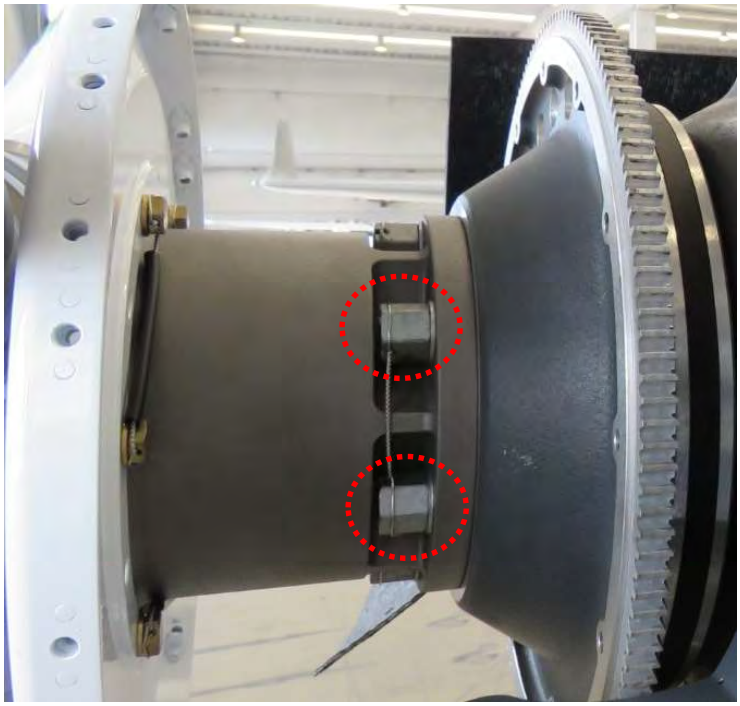


Figure 45 – Hex screws



Figure 46 – Mixture lever in full back position

61-20 – PROPELLER CONTROL

The governor installed on P2010 equipped with Lycoming IO-390-C3B6 is a MT Governor type P-860-23.
MT P-860-23 (Figure 47) is a standard hydraulic constant speed governor manufactured by MT-Propeller.



Figure 47 – Propeller Governor

For governor functioning description and further details refer to - MT Propeller Doc. No. E1048 “Operation and Installation Manual - Hydraulically Constant Speed Governor”, last issue



Figure 48 –Governor installation on P2010

Governor Designation (for reference)

P - 8 6 0 - 17

1 2 3 4 5

Legend:

1 P = Propeller Governor

2 8 = Manufactured for MT-Propeller by AVIA Propeller

3 5 = Pressure to increase pitch. CCW facing engine mounting pad
6 = Pressure to increase pitch. CW facing engine mounting pad
7 = Pressure to decrease pitch. CCW facing engine mounting pad
8 = Pressure to decrease pitch. CW facing engine mounting pad

4 = Special arrangements
0 = Standard
1 = Feathering
2 = Higher Pump Capacity
3 = Electronic Control
4 = Accumulator Connection / Standard
5 = Accumulator Connection / Feathering
6 = Synchrophasing
7 = Electronic Control (3) + Accumulator Connection Standard (4) + Electric Feathering
8 = Feathering (1) + Electric Control (3)

5 = Application Number, Settings of Control Lever and Relief Valve Pressure etc.

In the following figures governor details are given.

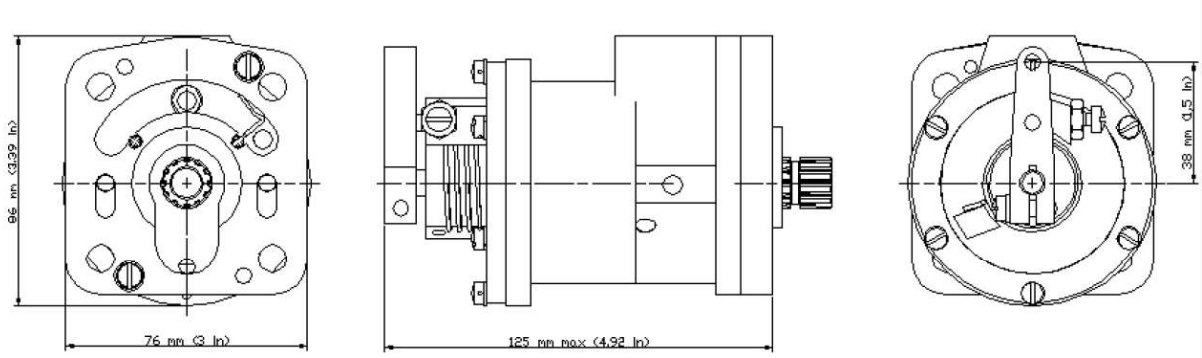


Figure 49 - Propeller Governor dimensions

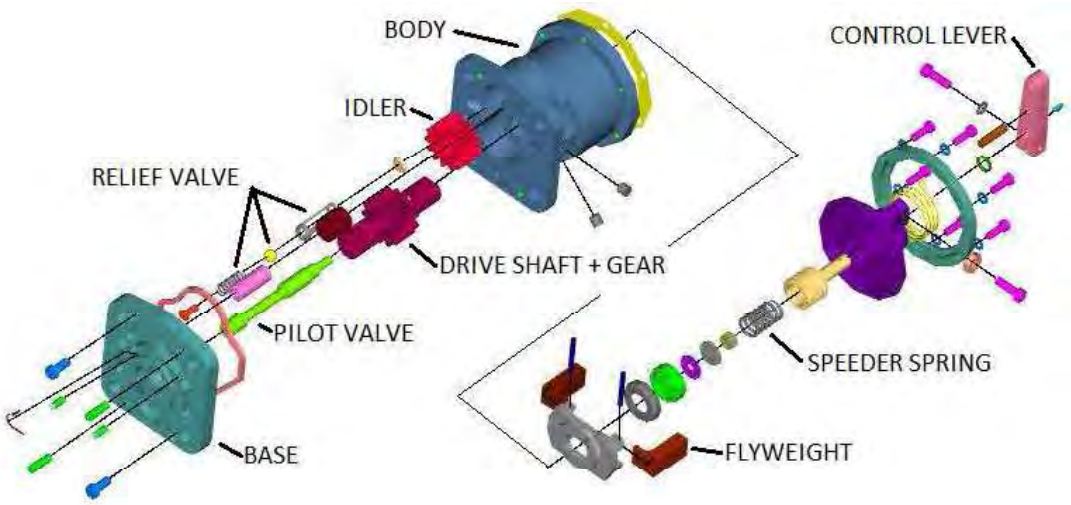


Figure 50 - Propeller Governor Assembly

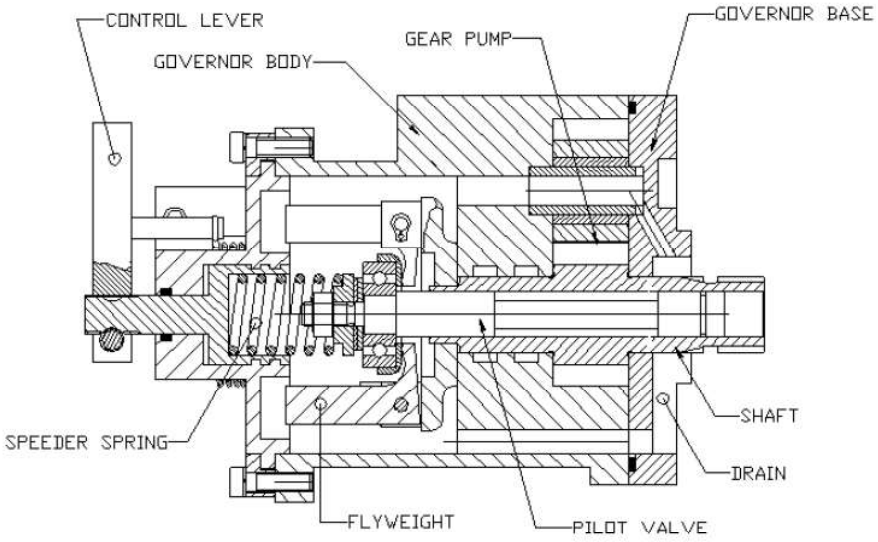


Figure 51 - Propeller Governor Section View

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Troubleshooting

For governor troubleshooting, refer to MT Propeller Operation and Installation Manual E1048 “Hydraulically Constant Speed Governor”, last issue

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Maintenance Practices

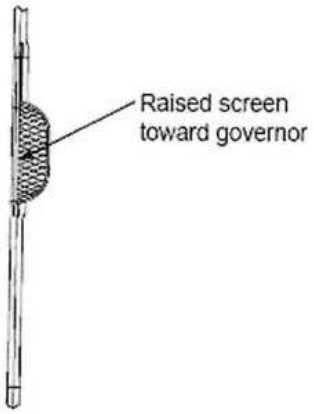
This Chapter contains the following maintenance tasks description:

- Governor replacement

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Governor replacement

Step no.	Governor replacement Task description	Additional info & References
1.	Make sure Master Switches are turned OFF.	
2.	Parking brake: engage	
3.	Engine starter circuit breakers: pull out	
4.	Remove engine upper cowling unscrewing along the edges.	
5.	Remove propeller bowden cable from governor control lever. Unscrew bolt.	Refer to Figure 52
6.	Remove mounting nuts and washers	Governor drive and engine pad must be without impurities. (metal chips etc.) If it is necessary, clean governor drive and engine pad by appropriate means.
7.	Pat on the governor to release it and then remove governor from engine pad.	
8.	Remove required top cover screws from new/overhauled governor and install push pull linkage bracket to top of governor and torque screws 18-24 in. lbs. 2-3 Nm	

Step no.	Governor replacement Task description	Additional info & References
9.	Prepare new mounting gasket, P/N B-20024.	Coat gasket with engine oil or equivalent before installation. Gasket raised screen toward governor 
10.	Check that mounting studs project a minimum of 31,75 mm (1.250 in) from face of engine pad.	
11.	Clean engine pad, studs and mounting hardware before installing new mounting gasket. Ensure governor drive spline mate correctly with engine accessory drive spline.	
12.	Attach mounting hardware and torque the (4) mounting nuts to 20-24 Nm (180-220 in-Ibs	
13.	Joint propeller bowden cable to governor control lever: use ISO4014 M5-25 bolt(1x), UNI6592-ISO7089 D=5 washers (2x), UNI7473-DIN982 D=5 self-locking nut.	Refer to Figure 52

Step no.	Governor replacement Task description	Additional info & References
14.	Check correspondence between governor lever position and propeller knobs.	• Ensure that when propeller knob is full forward, governor control lever reaches the relative stop screw; • Ensure that when propeller knob is in feather position governor control lever reaches the relative stop screw
15.	Adjusting correspondence. • remove propeller bowden cable from governor control lever • Loosen nut • Screw/unscrew rod end bearing to adjust cable as needed • Screw nut to lock position • Join bowden cable as shown to step 13 .	

Step no.	Governor replacement Task description	Additional info & References
16.	Perform a functional check: 1. Test feathering 2. Place cockpit propeller RPM lever in MAX RPM position. Advance throttle slowly to maximum permitted engine manifold pressure limits. Record propeller RPM. If local wind conditions are over 2.5 m/s, 5 knots repeat check with aircraft pointed to opposite direction and average two numbers. As a general rule, propeller static max rpm should be 2280 to 2380 rpm. 3. Pull back the propeller lever 3 to 5 times to spill the system and remove the air in the system.	See engine starting and shut-down procedure on AFM. Keep parking brake engaged. See MT Governor CMM Chapter "Troubleshooting" to check, if the propeller or governor limits the rpm.
17.	After the ground runs check for oil leaks: none permitted	
18.	Install engine upper cowling screwing along the edges.	Refer to chapter 6

Step no.	Governor replacement Task description	Additional info & References
19.	Perform flight test: During takeoff acceleration, record maximum propeller RPM. When sufficient altitude is reached, level out aircraft, leaving propeller control in MAX RPM position. Maintain this setting for 3 to 5 minutes while monitoring propeller RPM. Following this check, two conditions may exist which require adjustment: 1. If the propeller RPM is exceeding the red line limit, reduce it to the red line using propeller control. Leaving propeller at this red line RPM setting, land aircraft and shutdown. Remove cowling and note position of control arm and governor. Adjust governor high RPM screw clockwise so it just touches stop on governor control arm; this will ensure that the correct arm position for governor redline RPM setting cannot be exceeded. Make reference to Governor CMM for adjustment instructions for mechanical control. 2. If the propeller is below red line limit with max RPM setting on the propeller cockpit control, note RPM and land. Remove engine cowling and adjust the governor high RPM screw counterclockwise to increase of approximately 25 RPM. Perform another flight to confirm the adjustment was sufficient. Make reference to Governor CMM for adjustment instructions for mechanical control.	
20.	Remove engine cowling and check for the oil leaks. Oil leaks aren't permitted.	Refer to chapter 6



Figure 52 - Governor control cable

CHAPTER 72 - ENGINE

72-10 ENGINE

Description and Operation

P2010 is equipped with a 215hp - Textron Lycoming - IO-390-C3B6.
The IO-390-C3B6 is a fuel injected (IO), direct drive four cylinder, horizontally opposed, air cooled engine with down exhaust outlets.
The maximum continuous power is 215hp @ 2700rpm in ISA-sea level conditions. The engine has a bore of 5.319 in., a stroke of 4.375 in., a piston displacement of 390 cubic inches, and a compression ratio of 8.9:1.

Due to the design change the RPM sensor is a magneto type, installed directly on the lateral side of RH magneto engine.

The sensor is screwed directly on lateral side of RH magneto as shown in Figure 57.

Model Number	Meaning
IO	Fuel Injection System and "opposed cylinder" arrangement
390	Displacement in cubic inches

Table 10 - Lycoming IO-390 model nomenclature



Figure 53 - Lycoming IO-390

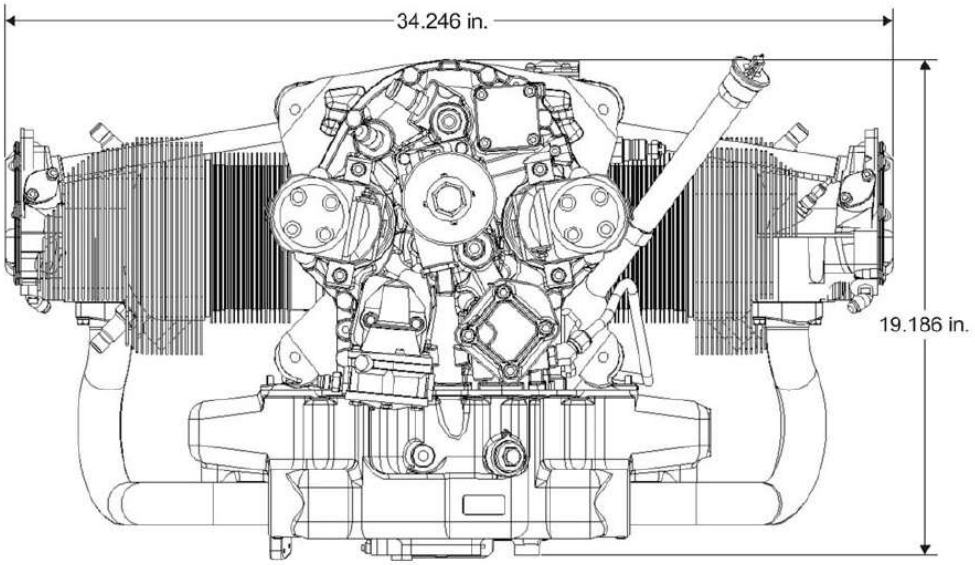


Figure 54 - Lycoming IO-390 rear dimensions

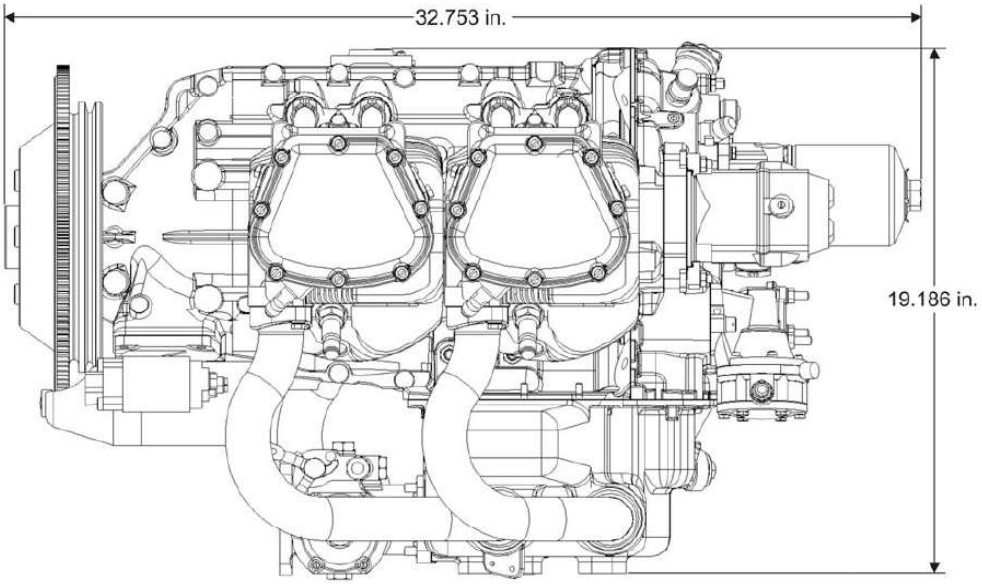


Figure 55 -Lycoming IO-390 lateral dimensions

Table below shows the technical specifications of Lycoming IO-390-C3B6

Table 11-Lycoming IO-390 Specifications

Rated Maximum Continuous HP @ RPM	**215 @ 2700**
Performance Cruise (75% Rated)	161 @ 2450
Economy Cruise (65% Rated)	140 @ 2350
Fuel Consumption, gph @ 75% Rated	12.8
Fuel Consumption, gph @ 65% Rated	9.7
Propeller Drive Ratio	1:1
Propeller Shaft Rotation	Clockwise
Bore, Inches	5.319
Stroke, Inches	4.375
Displacement, Cubic Inches	389
Compression Ratio	8.9:1
Weight, Lbs.	303
Height	22.19
Width	34.34
Length	32.56
Oil Sump Capacity, Quarts	7
Fuel, Aviation Grade, Octane	100 OR 100LL



Figure 56 - RPM sensor (P/N T1A9-1)

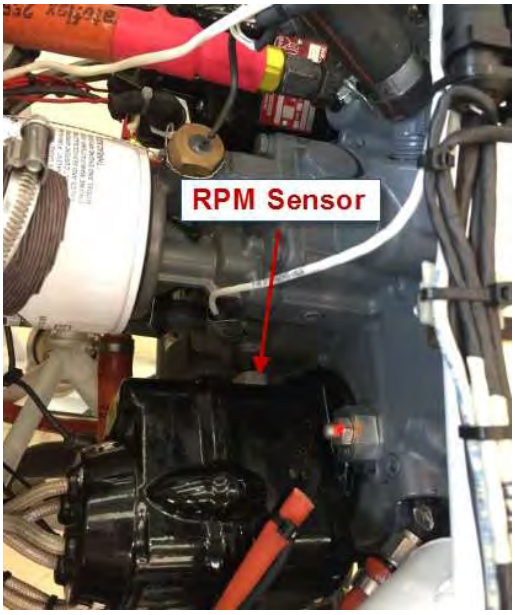


Figure 57 - RPM sensor installation

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Maintenance practices

This Chapter contains the following maintenance tasks description:

- Engine removal
- Engine installation
- Powerplant controls rigging

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Engine Removal

Item	Quantity	Part Number / Notes
Crane	**1**	**Commercial** **Check for suitable capacity according to engine weight**

Procedure

Step no.	Engine removal procedure Task description	Additional info & References
1.	Engage parking brake	
2.	Ensure that Master Switch is turned OFF	
3.	Starter Relay Breaker OFF	
4.	Fuel Selector Valve OFF	
5.	Lock Wheels	
6.	Remove Positive Cable from the Battery	
7.	Remove engine upper and lower cowling	See Chapter 06
 **CAUTION**	**ENSURE THAT ENGINE IS COOL BEFORE STARTING ANY OPERATION**	
8.	Remove propeller	See Chapter 61
9.	Disconnect Wire from electric RPM Sensor	See Figure 57
10.	Disconnect throttle and mixture control cable from engine injector then remove throttle and mixture control cable brackets from engine	See Figure 58 - Figure 59
11.	Disconnect 4 CHT sensors from engine and remove all attachment clamps	See Figure 60
12.	Disconnect fuel hose from the electric boost pump and from fuel engine driven pump, then disconnect the fuel vent hose from engine driven pump. Remove all eventually attachment clamps	See Figure 61

Step no.	Engine removal procedure Task description	Additional info & References
13.	Disconnect control cable from alternate hot air valve then remove all hoses from alternate hot air valve. Remove all eventually attachment clamps	See Figure 62
14.	Disconnect 4 EGT sensors from engine and remove all attachment clamps	See Figure 63
15.	Disconnect fuel vent hose from engine	
16.	Disconnect and remove oil temperature sensor from engine	See Figure 64
17.	Disconnect oil pressure hose from engine side	See Figure 65
18.	Disconnect and remove two oil hoses from radiator and oil pump	See Figure 66
19.	Disconnect the MAP hose from engine	See Figure 67
20.	Disconnect the fuel hose from engine	
21.	Drain oil from engine	
22.	Position a trestle under fuselage tail cone	
23.	Check all wire connections and all hoses to be sure for eventually impediments to the engine removal	
24.	Install a hook on engine: use lifting point attachments by using crane	See Figure 68
WARNING	**ENSURE ENGINE IS CORRECTLY HOOKED TO CRANE BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY HOOKED ENGINE COULD CAUSE INJURY OR DEATH.**	
25.	Remove 4 engine bolts attachments of engine from engine mount	
26.	Place engine on a dedicated support as required	
27.	Make sure that the aircraft is clear of foreign objects	
28.	Ensure that all inspection doors are closed and securely	

Engine Installation

Tools

Item	Quantity	Part Number / Notes
Crane	**1**	**Commercial Check for suitable capacity according to engine weight of 137 KG (Dry and without propeller installed)**
Copper lubricant	**A/R**	**Commercial**

Pre-installation Procedure

Step no.	Engine pre-installation procedure Task description	Additional info & References
1.	Examine that engine mount and engine attachment points are free from damages, corrosion or deformations	No deformation permitted. No corrosion permitted.
2.	Examine the main bolt assemblies. Look especially for corrosion and deformation. Replace bolts if required	

Installation Procedure

Step no.	Engine installation procedure Task description	Additional info & References
1.	Engage parking brake	
2.	Ensure that Master Switch is turned OFF	
3.	Starter Relay Breaker OFF	
4.	Fuel Selector Valve OFF	
5.	Lock Wheels	
6.	Remove Positive Cable from the Battery	
CAUTION	**BEFORE TO START WITH ENGINE INSTALLATION MUST BE SURE TO INSTALL ALL COMPONENTS REMOVED BEFORE AND REMOVE ALL PROTECTION DURING REINSTALLATION OPERATIONS.**	
7.	Install engine shock mounts on engine mount as required	

Step no.	Engine installation procedure Task description	Additional info & References
8.	Install a hook on engine: use lifting point attachments by using crane and position engine on airplane engine mount as required	
 WARNING	**ENSURE ENGINE IS CORRECTLY HOOKED TO CRANE BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY HOOKED ENGINE COULD CAUSE INJURY OR DEATH.**	
9.	Install 4 bolts (2xMS20007-62 for the "upper side" and 2xMS20007-64 for the "lower side") on the engine mount shock absorber. Use 4 stop nuts P/N NAS1291-7.	Tight these bolts with a torque value between 450 and 500 Lbs - Inch.
10.	Connect and regulate throttle and mixture control cable on engine injector then install throttle and mixture control cable brackets on engine	
11.	Connect control cable on alternate hot air valve then install all hoses on alternate hot air valve. Install all attachment clamps as required	
12.	Connect fuel hose on the electric boost pump and on fuel engine driven pump, then connect the fuel vent hose on engine driven pump. Install all attachment clamps; Connect the fuel hose on engine as required	**Note:** Apply approved sealant on the female fillets fittings as required;
13.	Connect the MAP hose on engine	**Note:** Apply approved sealant on the female fillets fittings as required
14.	Connect and install oil temperature sensor on engine	
15.	Connect oil pressure hose on engine	
16.	Connect 4 EGT sensors on engine and install all attachment clamps as required	
17.	Connect 4 CHT sensors on engine and install all attachment clamps as required	
18.	Connect wire from electric RPM sensor	
 CAUTION	**DO NOT ROTATE THE CRANKSHAFT OF AN ENGINE CONTAINING PRESERVATIVE OIL BEFORE REMOVING THE BOTTOM SPARK PLUGS. ENGINE DAMAGE WILL RESULT.**	

Step no.	Engine installation procedure Task description	Additional info & References
 CAUTION	**AVOID CONTACT OF PRESERVATION OIL WITH PAINTED SURFACES. IF PRESERVATION OIL DOES CONTACT A PAINTED SURFACE, CLEAN IT OFF WITH A SOLVENT AS SOON AS POSSIBLE.**	
19.	Remove all the bottom spark plugs	
20.	Turn the crankshaft three or four revolutions by hand	
21.	Tilt the engine to one side until the spark plug holes on that side are oriented vertically	
22.	Rotate the crankshaft at least two revolutions and allow the oil to drain out through the spark plug holes	
23.	Repeat steps (21) and (22) for the opposite side of the engine	
24.	Inspect the spark plugs before reinstalling them. If they are not clean, wash them in clean oil-based solvent. Dry them with compressed air	
25.	Remove the oil sump plug and allow any preservative oil that has accumulated in the sump to drain	
26.	Remove the oil screen and clean it with a hydrocarbon-based solvent such as Varsol or equivalent	
27.	Reinstall the oil screen	
28.	The expansion plug must be removed from the crankshaft. Pierce a 1/8 in. to 3/16 in. hole in the center of the plug to remove it	
29.	Replace the oil sump plug and install a safety wire. Refer to Maintenance and Overhaul Manual P/N LMO-(L)IO-360-M1A for lockwire information	
30.	Fill the sump with 8 quarts of aviation-grade oil. Refer to Section I, Part 2 for oil recommendations	

Step no.	Engine installation procedure Task description	Additional info & References
 CAUTION	**USE ONLY MINERAL OIL DURING THE FIRST 50 HOURS OF OPERATION**	
31.	Inspect the induction riser to ensure that it is clean and dry. If a significant amount of preservative oil is noted, clean, reinspect, and reinstall the intake pipes	
 CAUTION	**DISPOSE OF USED ENGINE PRESERVATIVE AND SOLVENTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.**	
NOTE	**IF A SMALL AMOUNT OF PRESERVATIVE OIL REMAINS IN THE ENGINE, IT WILL NOT BE HARMFUL; HOWEVER, DURING THE FIRST OIL CHANGE, THE OIL SHOULD BE DRAINED WHILE THE ENGINE IS HOT. THIS WILL REMOVE ANY RESIDUAL PRESERVATIVE OIL.**	
32.	Remove the fuel inlet strainer and clean it with a hydrocarbon-based solvent such as Varsol or equivalent	
33.	Inspect the fuel supply lines, fuel manifold, throttle body, and “bullet nose” venturi to ensure they are clean and dry	
34.	Reassemble the injector. Inject clean fuel into the fuel inlet connection with the fuel outlets uncapped until clean fuel flows from the outlets. Do not exceed 15 psi inlet pressure	
35.	Install Propeller	See Chapter 61 *Propeller Installation*
 CAUTION	**TO ELIMINATE THE POSSIBILITY OF HIGH-SPEED BEARING FAILURE RESULTING FROM INSUFFICIENT LUBRICATION DURING INITIAL STARTS, ALL AIRCRAFT ENGINES MUST BE PRE-OILED AFTER AN OVERHAUL, FOLLOWING OIL COOLER DRAINING OR REPLACEMENT, OR WHENEVER THE OIL LINES HAVE BEEN DISCONNECTED.**	
 WARNING	**IF A PROPELLER IS INSTALLED, REMAIN CLEAR OF THE PROPELLER TURNING ARC. THE PROPELLER WILL TURN DURING THIS PROCEDURE, AND COULD CAUSE INJURY.**	
36.	Fill the oil cooler with oil	

Step no.	Engine installation procedure Task description	Additional info & References
37.	Remove one spark plug from each cylinder of the engine	
38.	Place the mixture control lever in the "IDLE CUT-OFF" position and the fuel selector switch in the"OFF" position	
39.	Turn the engine with the starter (or with an external power source, if available) until a minimum oil pressure of 20 lb. is indicated on the oil pressure gage or until there is a steady flow of oil from the opening on the engine	
 CAUTION	**DO NOT ENERGIZE THE STARTER FOR PERIODS LONGER THAN 15 SECONDS. ALLOW THE STARTER TO COOL AFTER EACH ENERGIZING PERIOD. REFER TO THE STARTER MANUFACTURER'S INSTRUCTION MANUAL FOR ADDITIONAL INFORMATION.**	
NOTE	**IF OIL PRESSURE IS NOT DETERMINED AFTER THE FIRST CRANKING OF 10 TO 15 SECONDS, ALLOW THE STARTER TO COOL AND REPEAT THE CRANKING/STARTER COOLING SEQUENCE UNTIL 20 LB. IS INDICATED ON THE OIL PRESSURE GAGE OR OIL FLOW IS OBSERVED.**	
 CAUTION	**IF THERE IS NO INDICATION OF STEADY OIL PRESSURE AFTER FIVE ATTEMPTS, THE CAUSE SHOULD BE DETERMINED AND FIXED**	
40.	Turn the starter for an additional 10 seconds to verify that the oil pressure remains at latest 20 lb	
41.	Reinstall the spark plugs and proceed with normal starting procedures immediately. Refer to Section I, Part 3 of Engine Operator Manual	
42.	When the engine starts, observe the oil pressure gage. If there is no oil pressure indication, shut down the engine until cause is determined	
43.	Allow the engine to run for approximately 3 minutes at 1000 rpm	

Step no.	Engine installation procedure Task description	Additional info & References
44.	Shut down in accordance with Section I, Part 3, Step 10 of Engine Operator Manual: 1. Idle until there is a decided decrease in cylinder head temperature; 2. Move mixture control to "Idle Cut-Off"; 3. When engine stops, turn ignition switch off;	
 CAUTION	**ENSURE THAT ENGINE IS COOL BEFORE STARTING THE FOLLOWING OPERATIONS**	
45.	Be sure all switches are in the "Off" position	
46.	Be sure magneto ground wires are connected	
47.	Check oil level	
48.	Check fuel level	
49.	Check fuel and oil line connections	
50.	Open the fuel drain to remove any accumulation of water and sediment	
51.	Check engine controls for general condition, travel and freedom of operation	
52.	Inspect and service Induction system air filter in accordance with the airframe manufacturer's recommendations	
53.	Connect all air hoses and landing light connector	
54.	Install engine lower cowling screwing along the edges	
55.	Install engine upper cowling screwing along the edges and fix engine camlock of upper engine cowling doors	
56.	Make sure that the aircraft is clear of foreign objects	

Step no.	Engine installation procedure Task description	Additional info & References
57.	Ensure that all inspection doors are closed and securely	

Powerplant Controls Rigging

Procedure

Step no.	Powerplant control rigging Task description	Additional info & References
1.	Engage parking brake	
2.	Open engine cowlings (upper and lower)	
	MIXTURE AND THROTTLE CONTROL RIGGING	
3.	Joint throttle bowden cable to throttle control lever	
4.	Check correspondence between throttle/mixture lever position and throttle knobs.	• Ensure that when throttle/mixture knob is fully forward , throttle/mixture control lever is fully forward; • Ensure that when throttle/mixture knob is fully backward , throttle/mixture control lever is fully backward;
5.	Adjusting correspondence. • move throttle control cable from throttle control lever loosing nut • adjust cable as required • Screw nut to lock position and apply cable end	

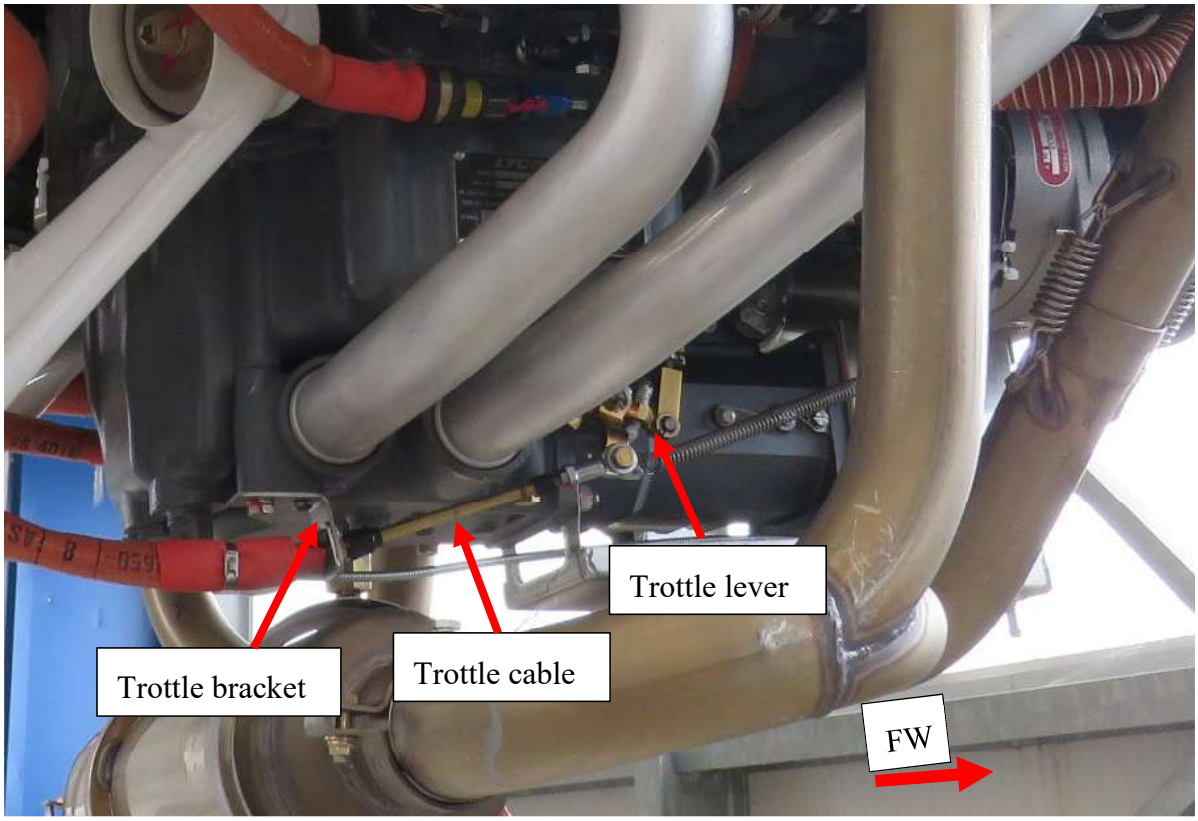


Figure 58 - Throttle Control Cable disconnection

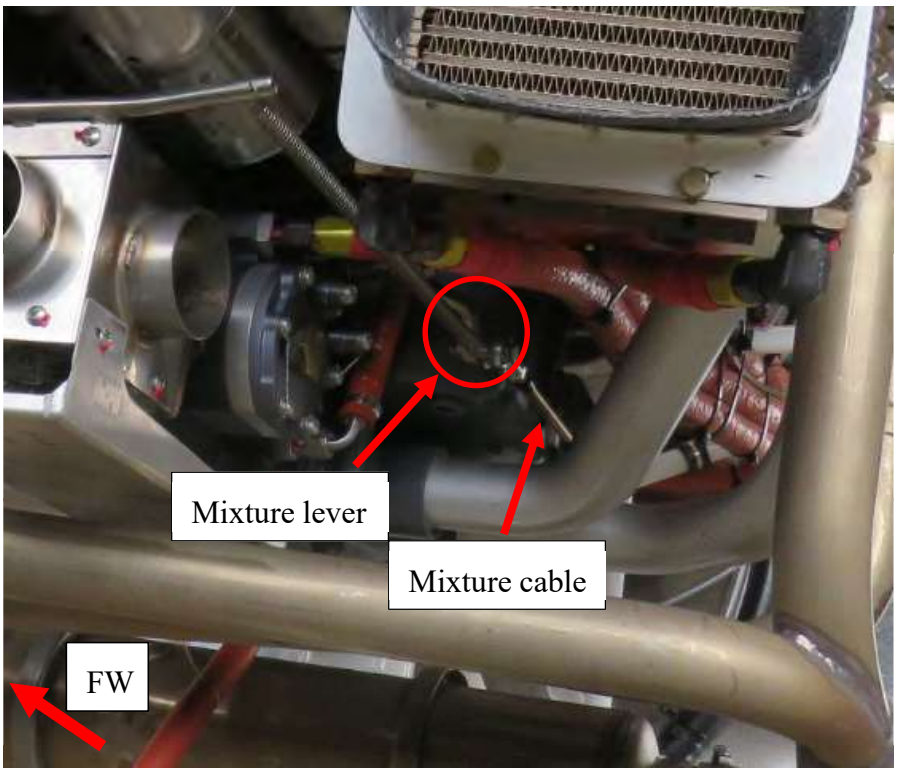


Figure 59 - Mixture Control Cable disconnection

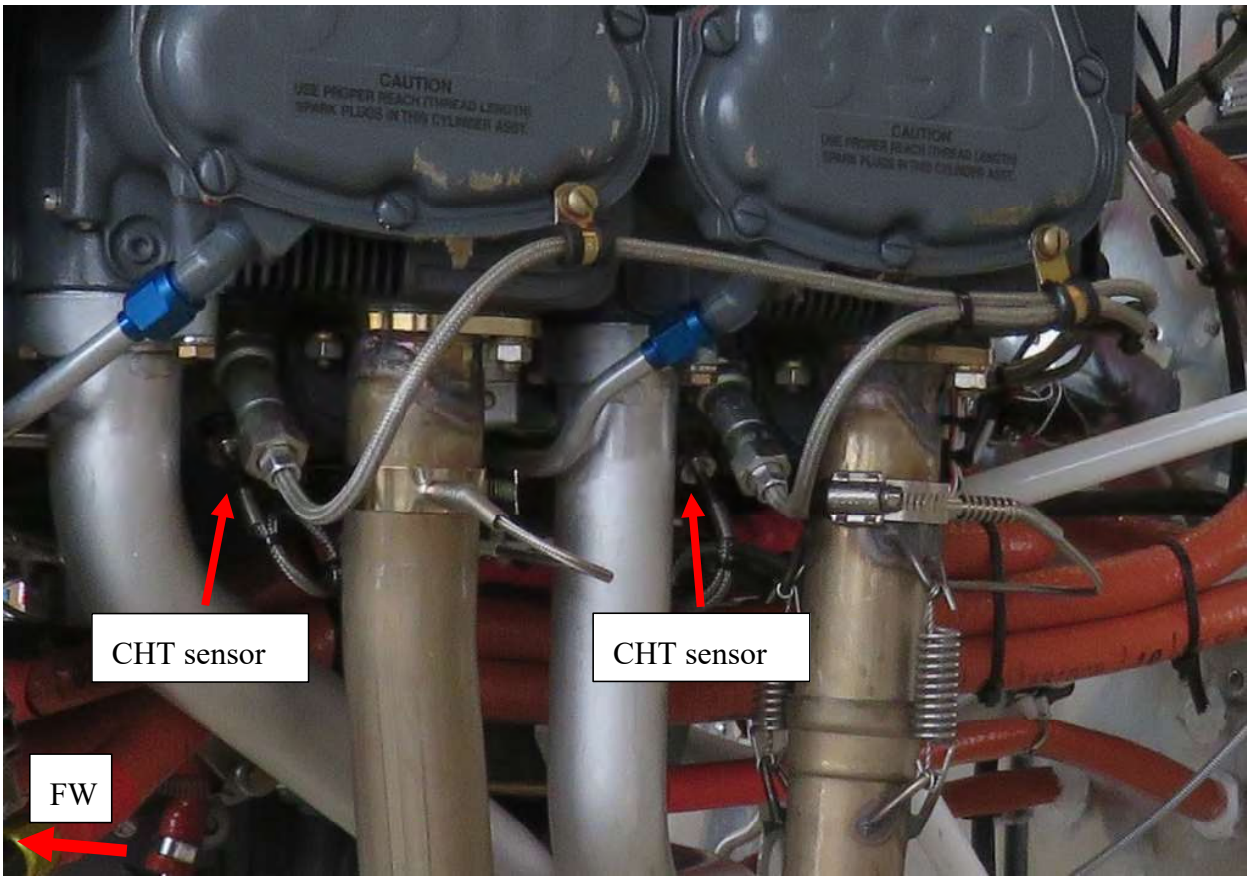


Figure 60 - CHT sensor disconnection

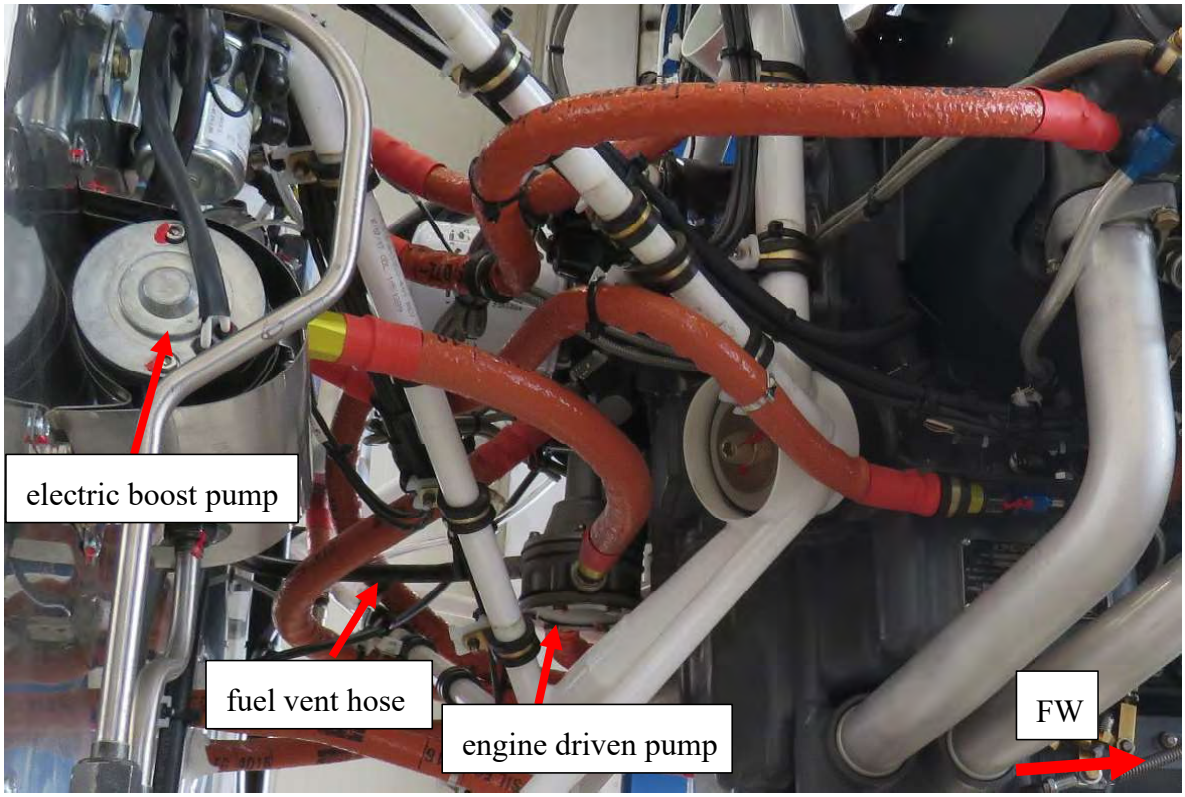


Figure 61 - Electric Boost pump and driven pump

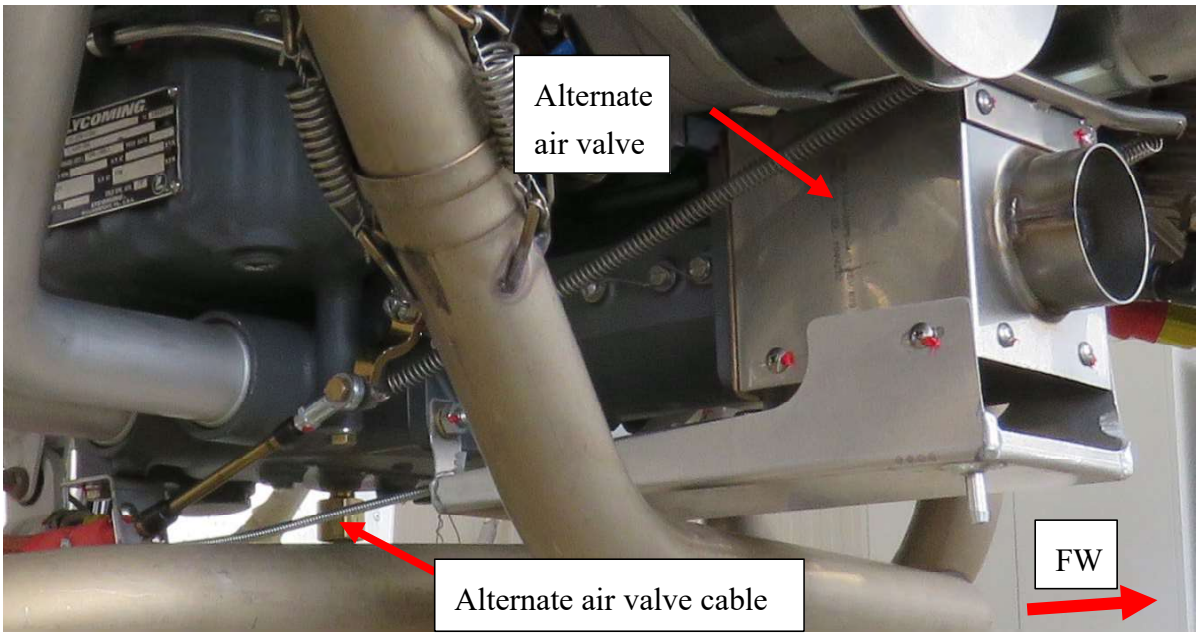


Figure 62 - Alternate hot air valve cable

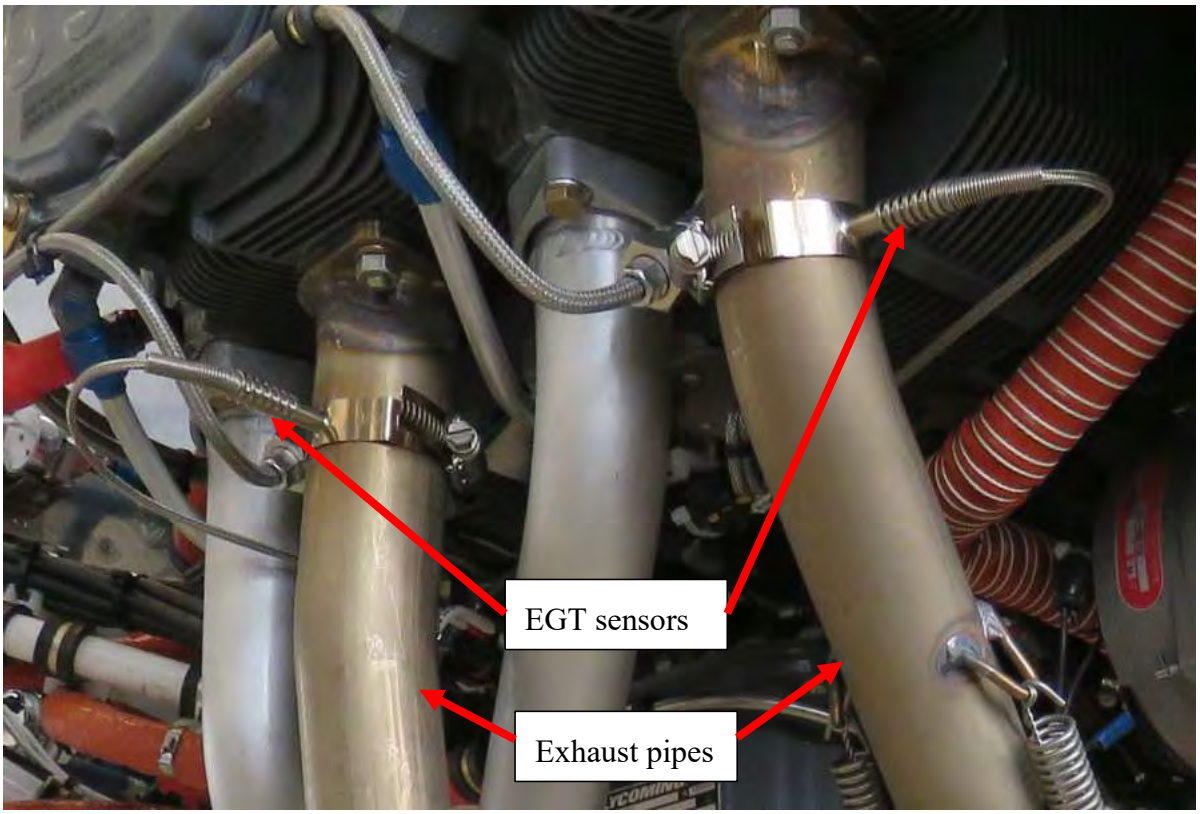


Figure 63 - EGT sensor

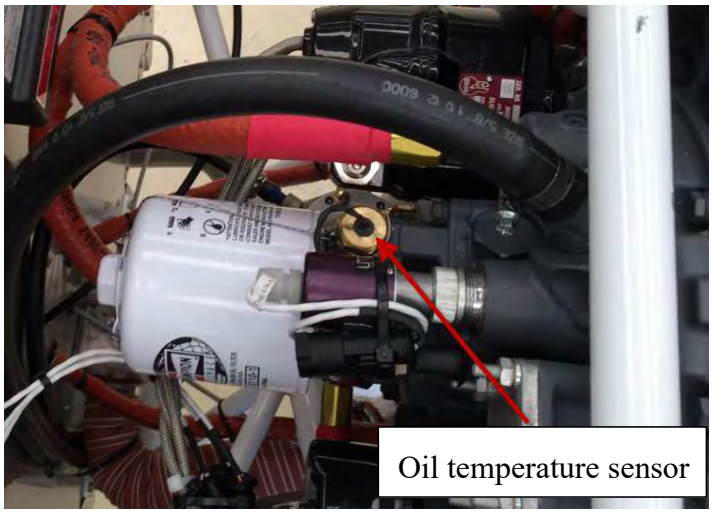


Figure 64 – Oil temperature sensor

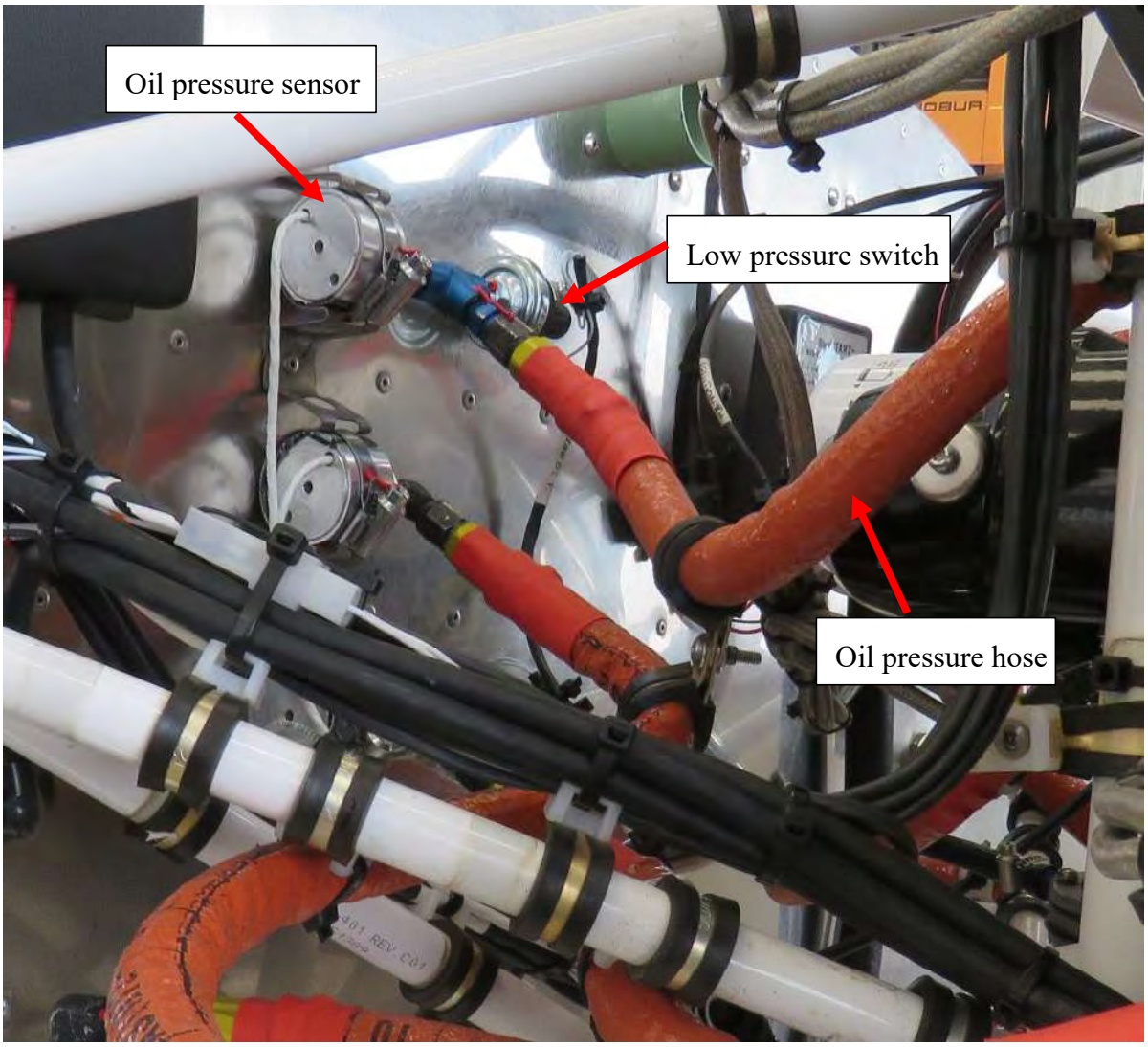


Figure 65 - Oil pressure sensor

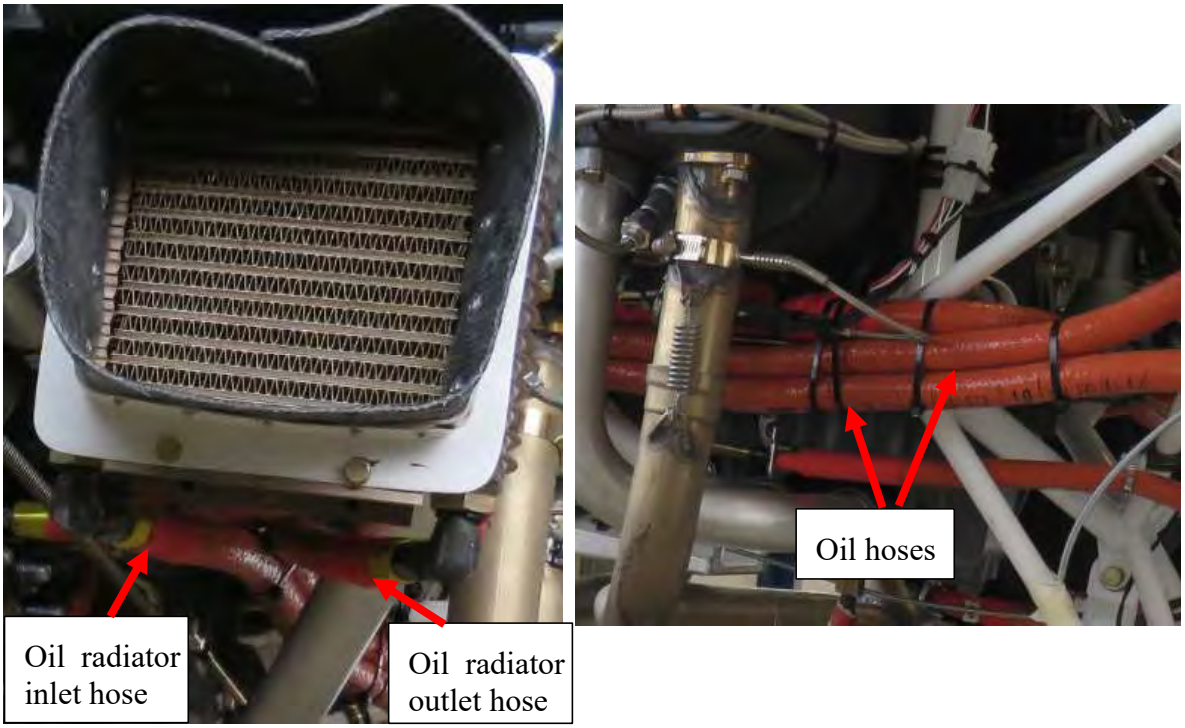


Figure 66 - Oil hoses

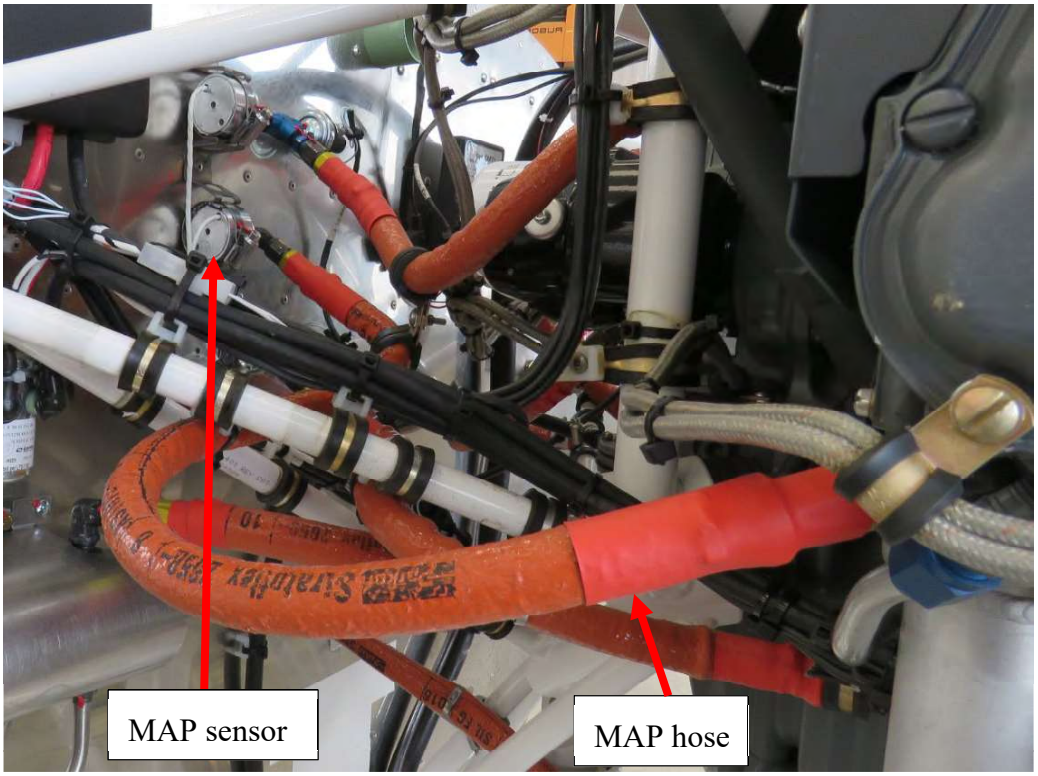


Figure 67 – MAP hose and MAP sensor

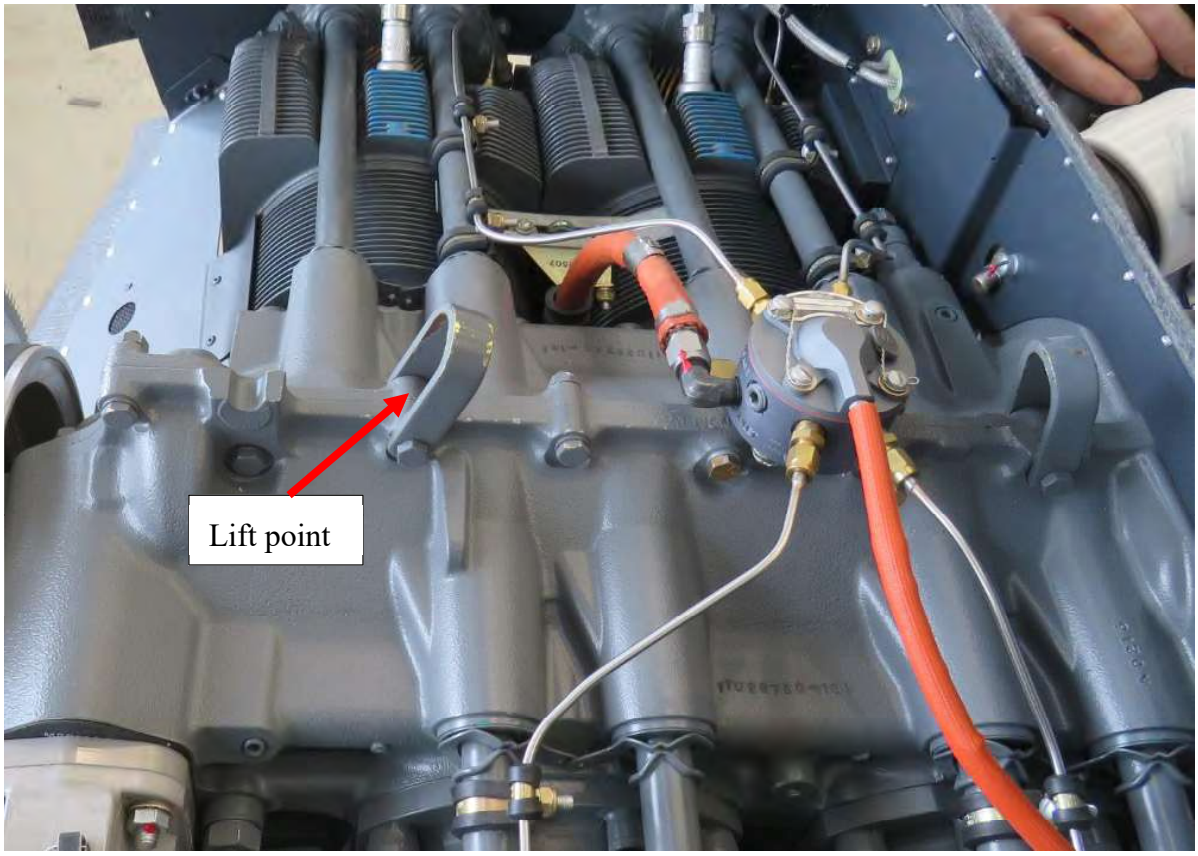


Figure 68 - Engine lift point

CHAPTER 78- EXHAUST

78-10 EXHAUST

Description and Operation

The following figures show the new exhaust system with single muffler discharge, located below IO-390 engine.

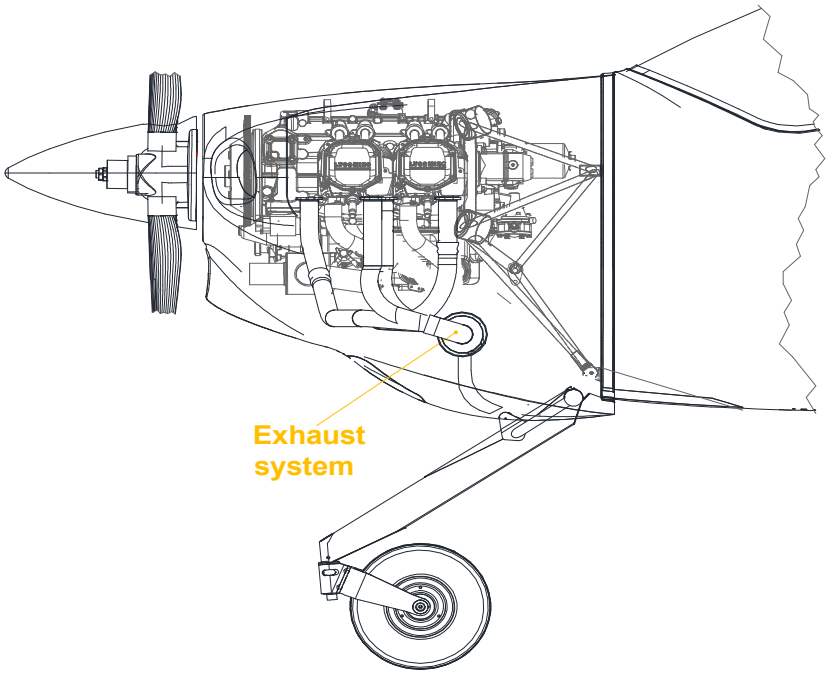


Figure 69 - Side view of exhaust system

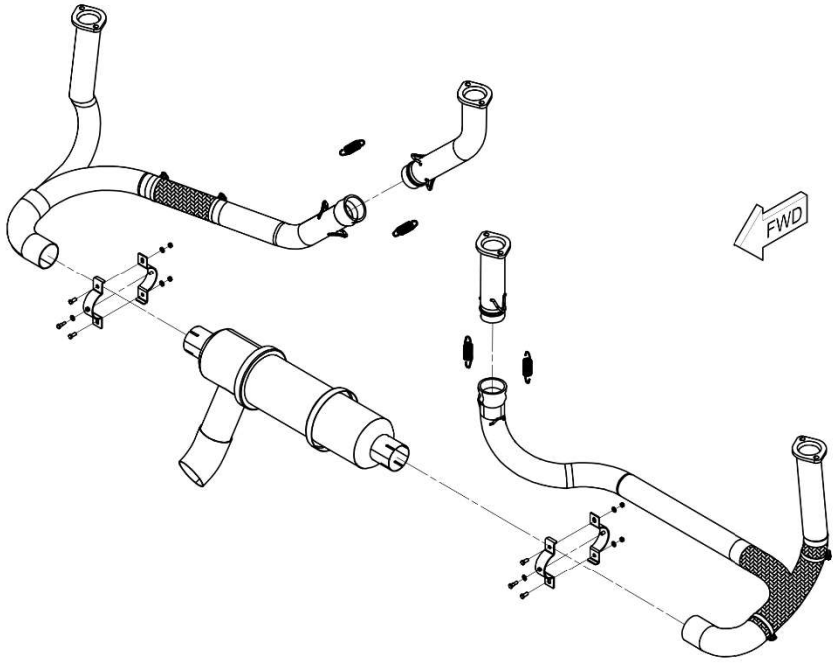


Figure 70 - Cross exhaust system

Below the components of exhaust system:

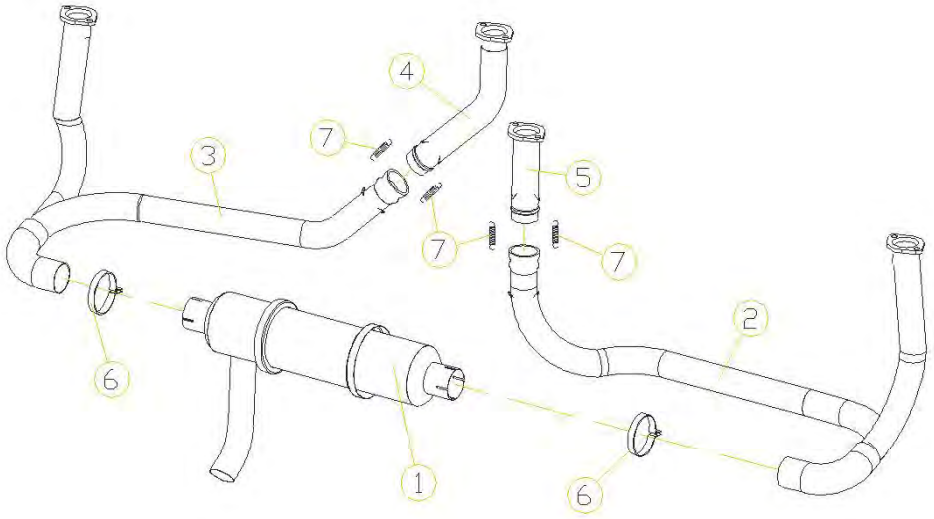


Figure 71 - Exhaust system assy

N°	Description	N°	Description
1	Exhaust muffler assy	5	LH exhaust pipe extension assy
2	LH exhaust pipe assy	6	Clamps
3	RH exhaust pipe assy	7	Springs
4	RH exhaust pipe extension assy		

Table 12 - Exhaust items list

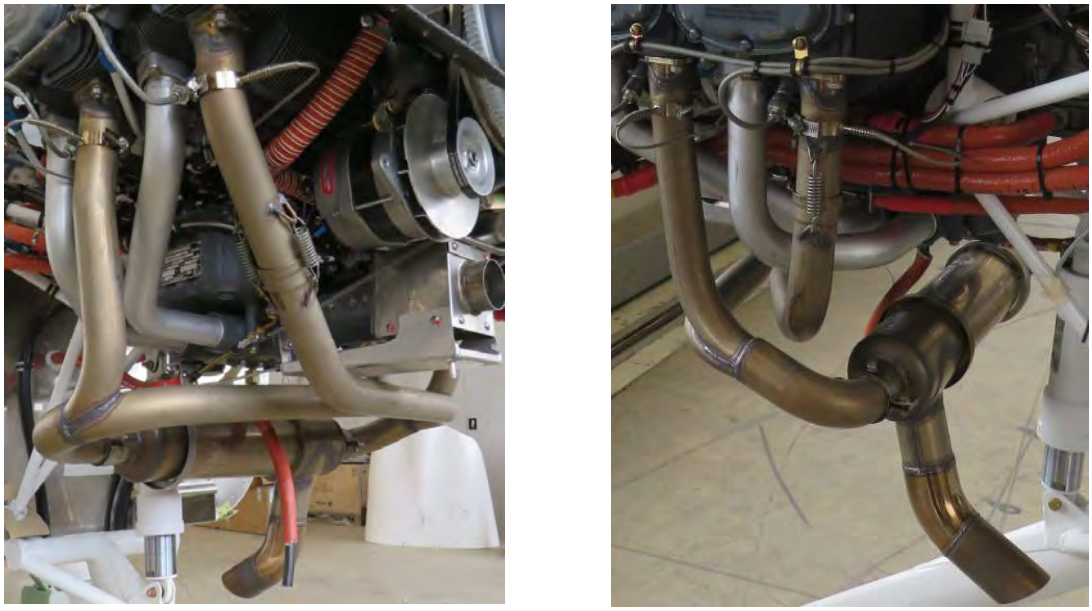


Figure 72 - Exhaust system assy installation

Except for items n°2 and n°3 (Figure 71), that have an improvement in terms of length, all other items are the same used for Lycoming IO-360.

As described in following figure, the exhaust system (cross pipes type) is attached under the engine cylinder via a flange. The exhaust muffler is attached to RH and LH exhaust pipes via clamps. Each exhaust pipe flange is fitted on engine via 2 nuts furnished by Lycoming

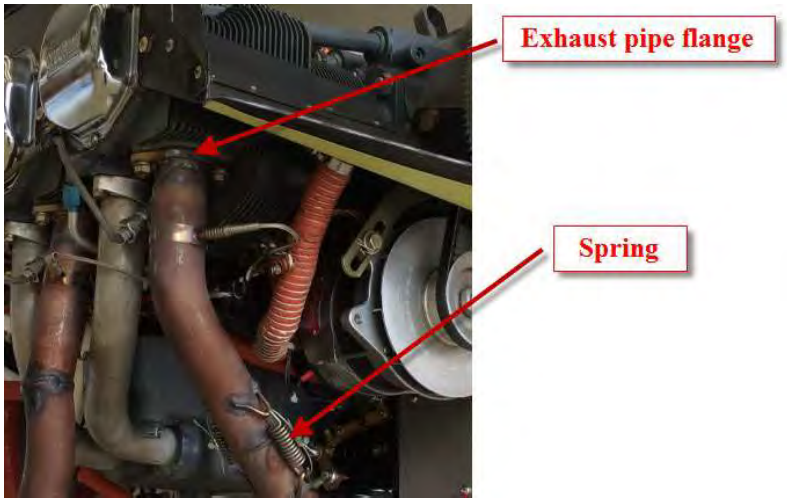


Figure 73 - Exhaust pipe flange attachment

The LH and RH exhausts pipes have two extensions installed via two springs for each part with a steel safety wire installed as shown in following figure:

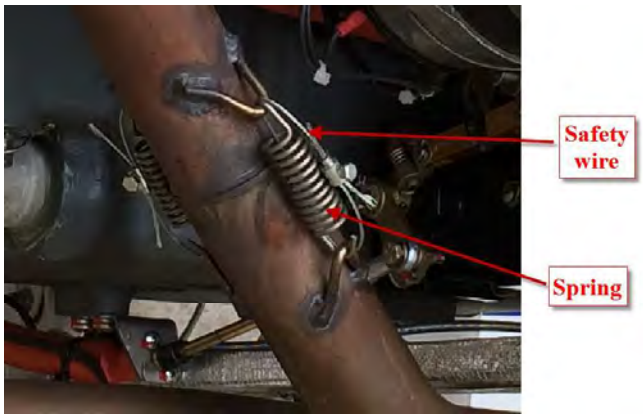


Figure 74 - Spring safety wire installation

The following figure shows a scheme of exhaust system ventilation. This ventilation is adequate to maintain the temperature of exhaust pipes and muffle in acceptable values.

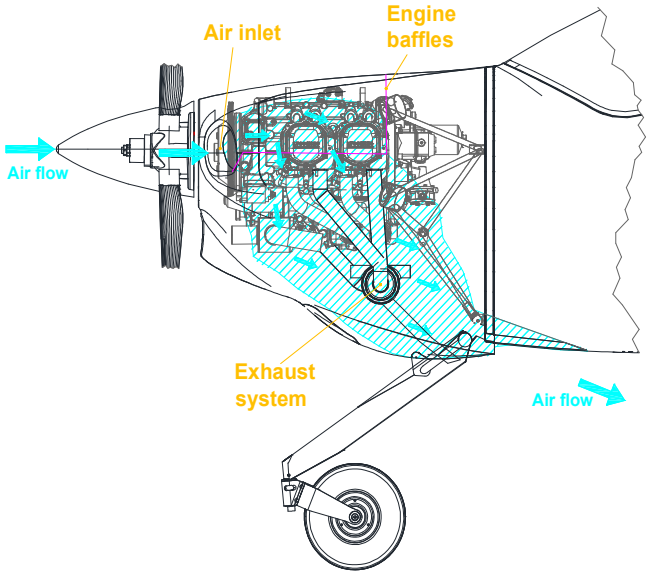


Figure 75-Exhaust system ventilation

Maintenance Practices

This Chapter contains the following maintenance tasks description:

- Exhaust Removal
- Exhaust Installation
- Heat Exchanger inspection
- Exhaust Flame Tube Inspection

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Exhaust Removal

Procedure

Step no.	Exhaust Removal Task description	Additional info & References
1.	Engage parking brake	
2.	Ensure that Master Switch is turned OFF	
3.	Remove engine upper and lower cowling panel	See Chapter 06
 CAUTION	**ENSURE THAT ENGINE IS COOL BEFORE STARTING ANY OPERATION**	
4.	Loosen serflex and remove air system hoses from heat exchanger	
5.	Remove spring from exhaust manifold; remove the safety wire	
6.	Unscrew nut to disconnect exhaust manifold	
7.	Remove muffler	

Exhaust Installation

Tools

Item	Quantity	Part Number / Notes
Copper lubricant	**A/R**	**Commercial**

Pre-installation Procedure

Step no.	Exhaust Pre-Installation Task description	Additional info & References
1.	Examine that exhaust manifold is free from corrosion or deformations	No deformation permitted. No corrosion permitted.
2.	Examine the main bolt assemblies. Look especially for corrosion and deformation. Replace bolts if required	

Installation Procedure

Step no.	Exhaust installation Task description	Additional info & References
1.	Engage parking brake	
2.	If removed, install the thermal coat to exhaust manifold.	
3.	Screw nut to connect exhaust manifold. Apply a torque value as suggest by Engine Installation Manual	
4.	Apply copper lubricant between exhaust manifold and muffler	
5.	Install spring on exhaust manifold; install safety wire	
6.	Apply air system hoses on heat exchanger and tighten screwing serflex	
7.	Install engine upper and lower cowling	See chapter 06

Heat Exchanger Inspection

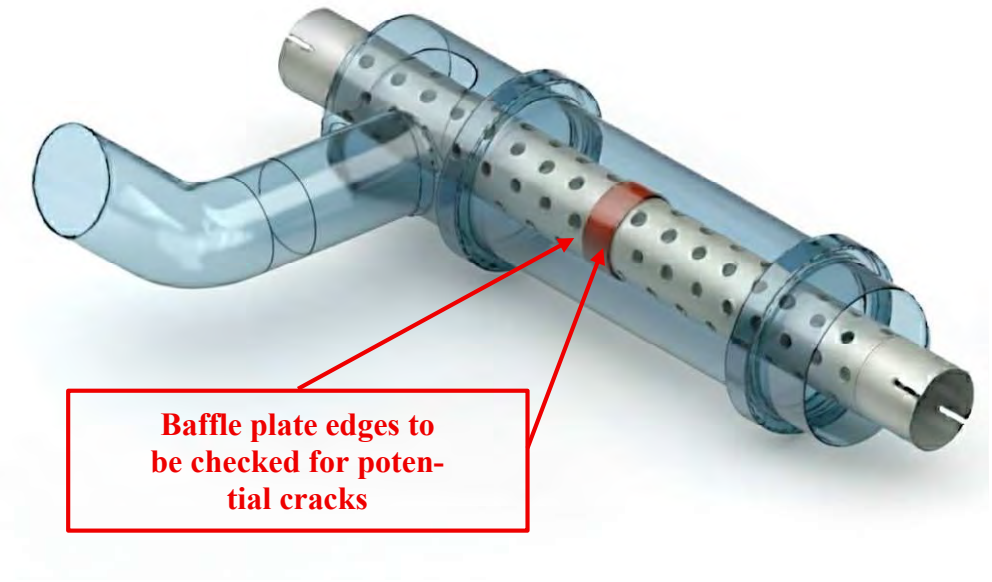
Procedure

Step no.	Heat Exchanger inspection Task description	Additional info & References
1.	Engage parking brake	
2.	Ensure that Master Switch is turned OFF	
3.	Remove exhaust	Refer to "*Exhaust removal*"
4.	Remove rivets along heat exchanger longitudinal edges with suitable means and record position.	
5.	Open heat exchanger along longitudinal edges and remove it from muffler	
6.	Remove all mastic traces	
7.	Inspect heat exchanger to locate corrosions, cracks and deformations	No corrosion, cracks or deformation allowed
8.	Apply a mastic layer on muffler rings and in correspondence of rivet line. Use high heat-resistant silicone;	See AMM Chapter 51
9.	Position heat exchanger on its muffler seat	
10.	Use a clamp to keep heat exchanger position on muffler	
11.	Fix with rivets as recorded during removal procedure	
12.	Install exhaust	Refer to "*Exhaust installation*"

Exhaust Flame Tube Inspection

Step no.	Exhaust Flame Tube Inspection Task description	Additional info & References
1.	Set the aircraft in safety conditions.	Refer to P2010 Basic AMM, ATA 10-10-00 – Parking Aircraft in Safety Conditions – *For Maintenance Purpose*
2.	Remove the exhaust assembly.	Refer to ATA 78-10-00 – Exhaust Removal
3.	Perform a detailed borescope inspection of the internal surfaces of the perforated flame tube within the exhaust muffler, accessing the interior through both the left and right entry points (1a and 1b in the Figure 1). Focus the inspection on the region adjacent to the steel baffle plate located at the mid-length of the flame tube itself (highlighted in red in the Figure 1).	Refer to Figure 1
CAUTION	IT IS MANDATORY TO PERFORM THE INSPECTION FROM BOTH SIDES TO ENSURE FULL COVERAGE	
4.	Check for any of the following conditions: cracks, fractures or any signs of potential initiation of such defects.	
5.	Subsequently, conduct a borescope inspection of the external surfaces of the perforated flame tube by inserting the borescope through the single outlet port normally leading to the exhaust terminal (point 2 in the Figure 1). The external surface of the flame tube shall be inspected along its entire length, with particular attention to the area around the two edges of the steel baffle plate that are welded to the flame tube	Refer to Figure 1
6.	Check for any of the following conditions: cracks, fractures or any signs of potential initiation of such defects.	

Step no.	Exhaust Flame Tube Inspection Task description	Additional info & References
7.	If no defect is found, install the exhaust assembly.	Refer to ATA 78-10-00 – Exhaust Installation



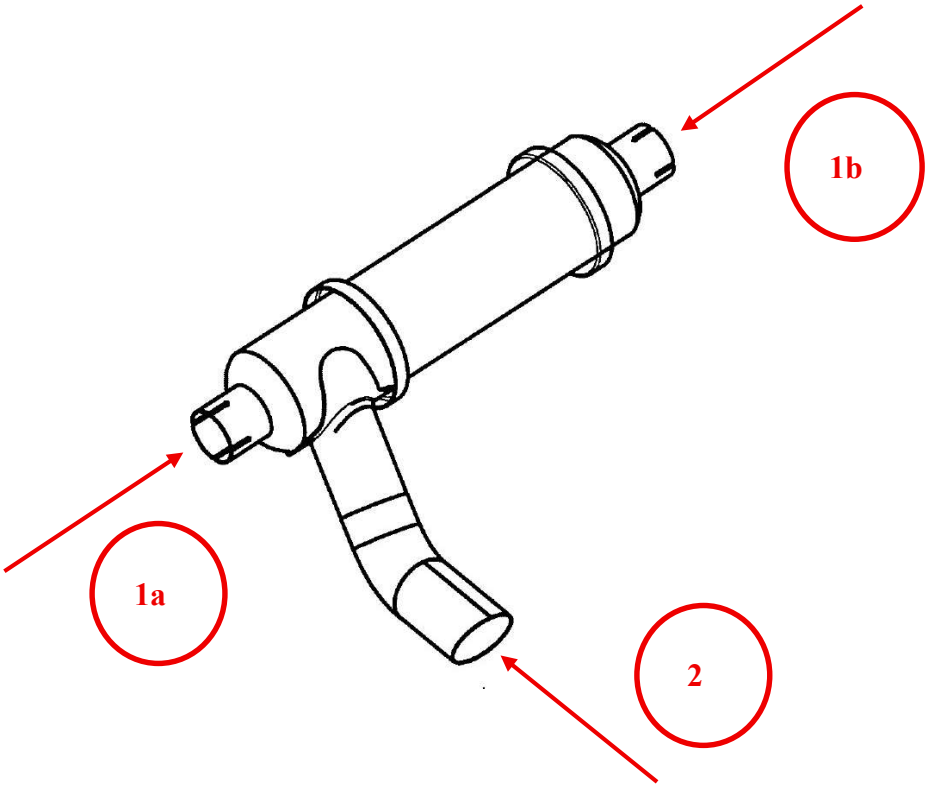


Figure 1: Exhaust Flame Tube Inspection

CHAPTER 79 - OIL SYSTEM

79 – 10 OIL SYSTEM

Description and Operation

The Lycoming IO-390-C3B6 internally provides the oil storage and distribution for engine components lubrication.

The lubrication system is of pressure wet sump type and figure below shows a schematic diagram of the oil system.

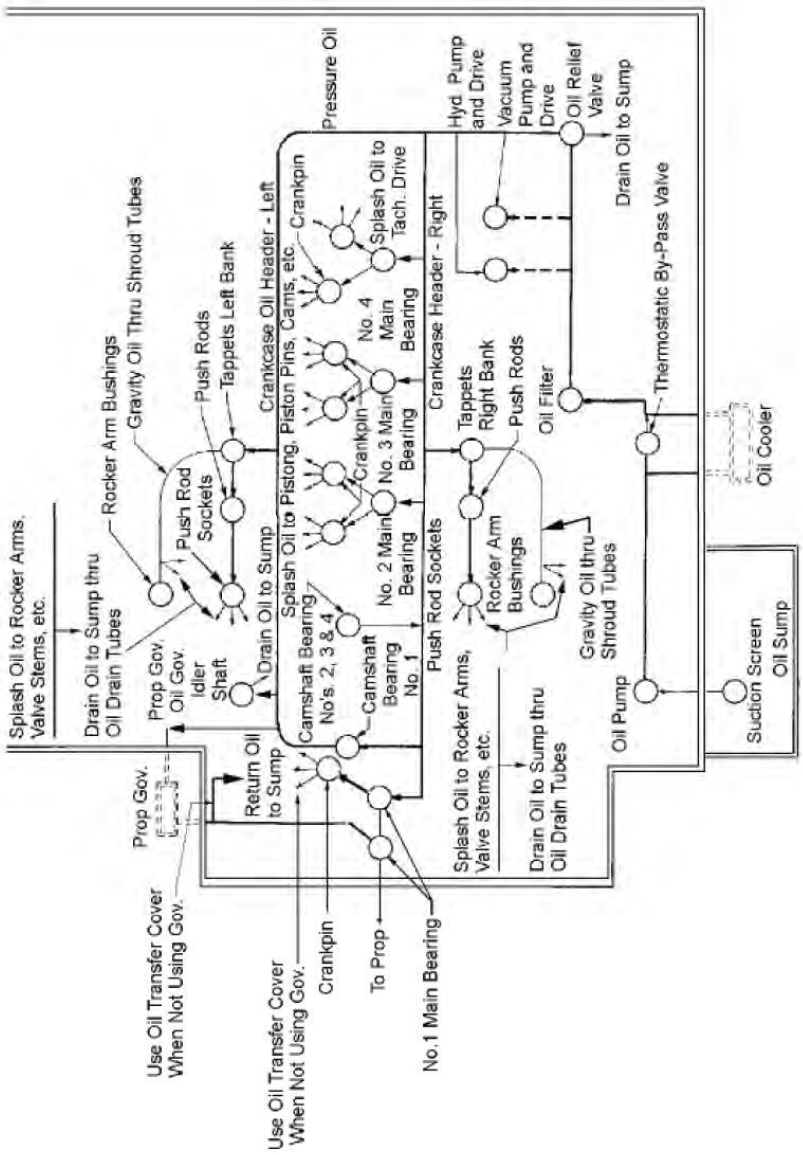


Figure 76 - Oil system schematic diagram

For oil requirements and oil system specifications ref to chapter 12-10.

The oil level, can be inspect directly via a dipstick located on top of engine as shown in Figure below. For Oil Level Checking and Filling Procedure refer to chapter 12-10.

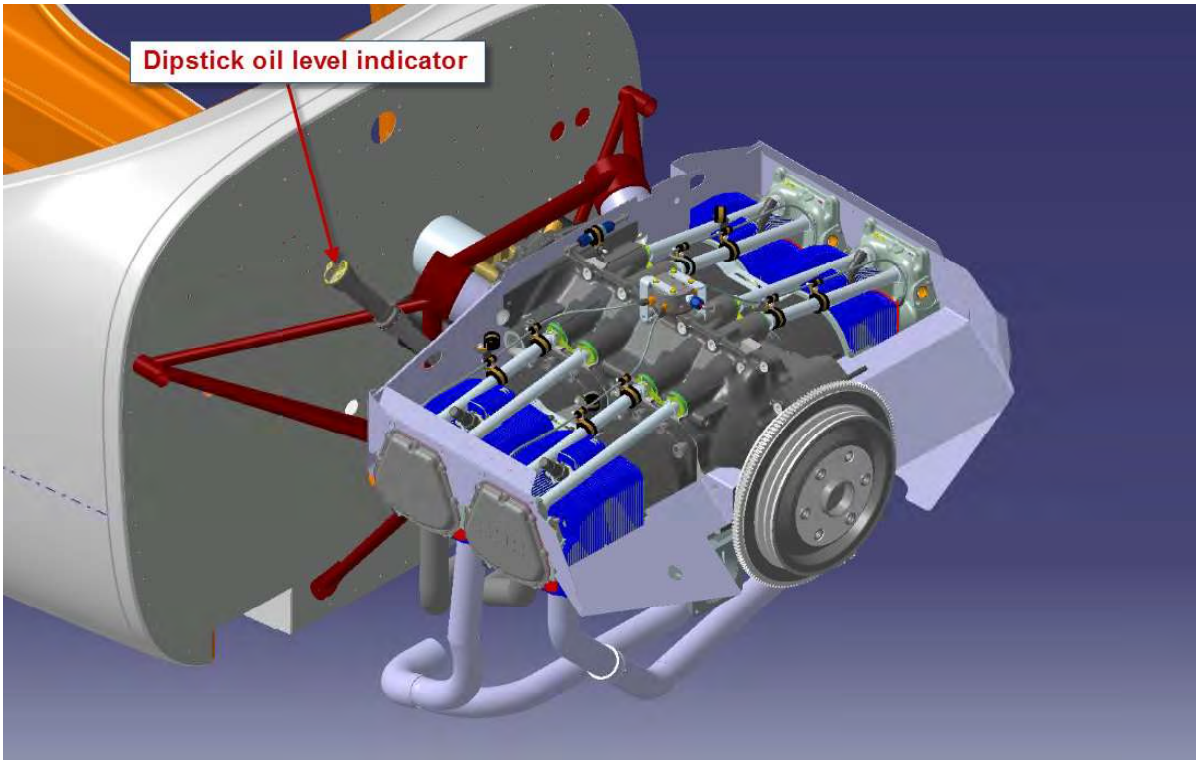


Figure 77 - Dipstick oil level indicator location

Oil Cooler System

Hoses, fittings, supports and fire protection used are exactly the same used for IO-360-M1A. Refer to AMM chapter 79-10 for further detail.

Oil Filter

For oil filter refer to AMM chapter 79-10 for further detail.

Maintenance Practices

This Chapter contains the following maintenance tasks description:

- Oil tank cleaning
- Oil cooler replacement

Make reference to Engine Maintenance Manual for maintenance practices specifically related to the engine.

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Oil Tank Cleaning

For Oil Tank Cleaning procedure refer to AMM chapter 79

Oil Cooler Replacement

For Oil Cooler Replacement procedure refer to AMM chapter 79

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CHAPTER 92 – WIRING DIAGRAMS

Wiring diagrams, affected by the change 2010/0078, are reported in the following table:

WIRING DIAGRAMS INDEX

DWG no.	Description	Rev..	Sheets
210-9-0001-401	Avionic system	0	1
210-9-0001-401	Avionic system	0	2
210-9-0001-401	Avionic system	0	3
210-9-0001-401	Avionic system	0	4
210-9-0001-401	Avionic system	0	5
210-9-0001-401	Avionic system	0	6
210-9-0001-401	Avionic system	0	7
210-9-0001-401	Avionic system	0	8
210-9-0001-401	Avionic system	0	9
210-9-0001-401	Avionic system	0	10
210-9-0001-401	Avionic system	0	11
210-9-0001-401	Avionic system	0	12

The information concerning the electrical wiring installation, replacement and wires routing is the same reported in the basic AMM, ATA 92.

In case further wire routing information is required to complete maintenance activities, the operators can request detailed information from Tecnam using the Technical support mail address, reference Master Drawing List included in doc. 2010/010 TDD ed3 rev0 or later.

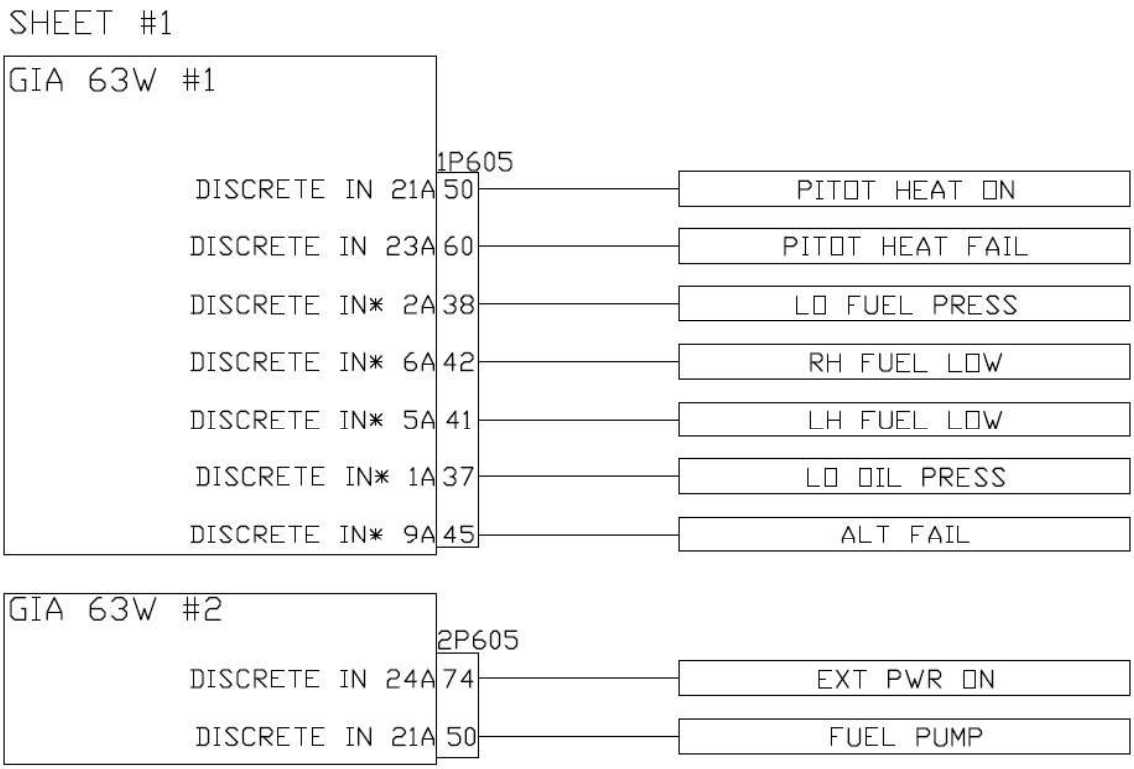


Figure 78 – Avionic System sheet 1/12 - DWG No. 210-9-0001-401

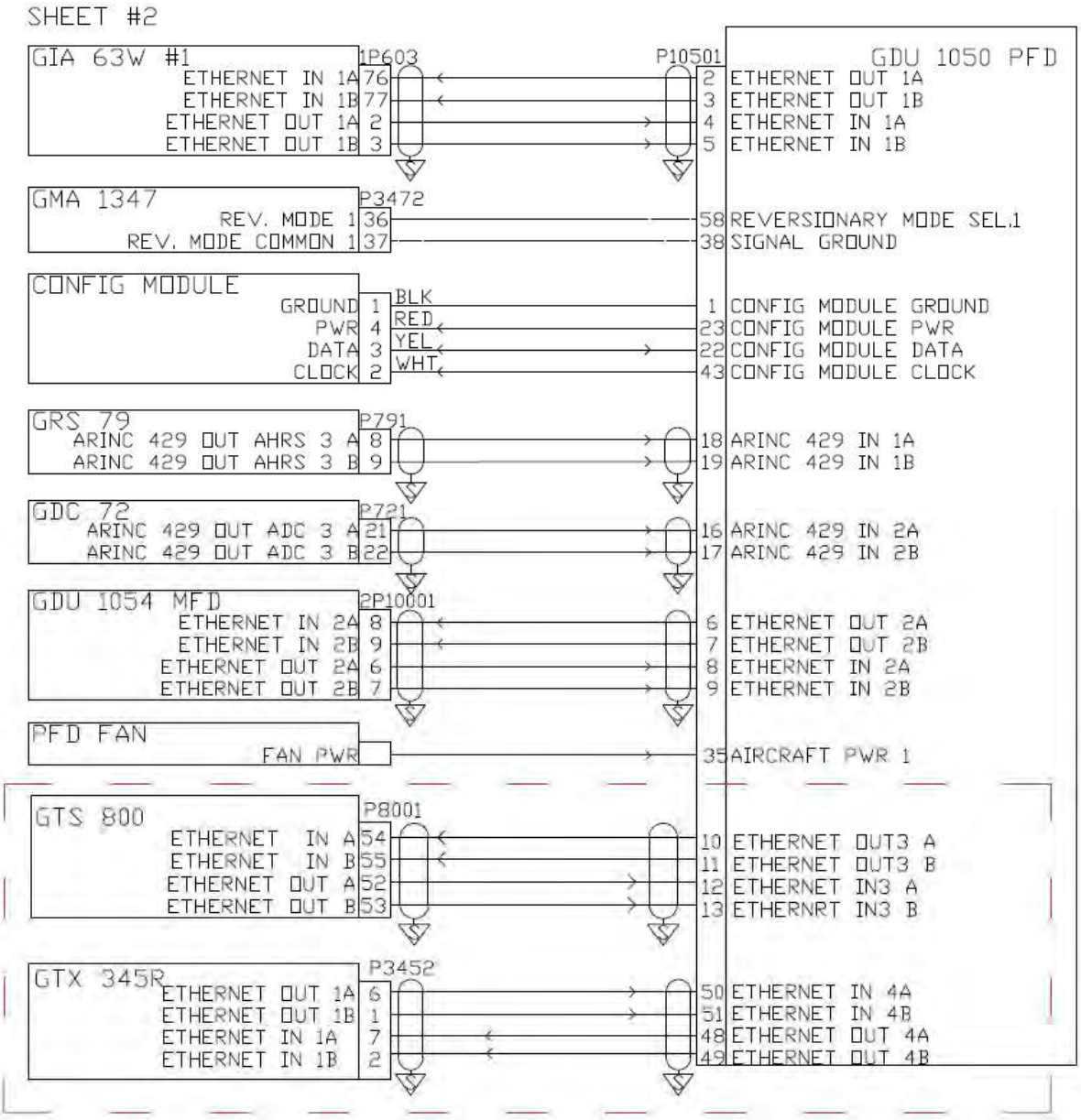


Figure 79 – Avionic System sheet 2/12 - DWG No. 210-9-0001-401

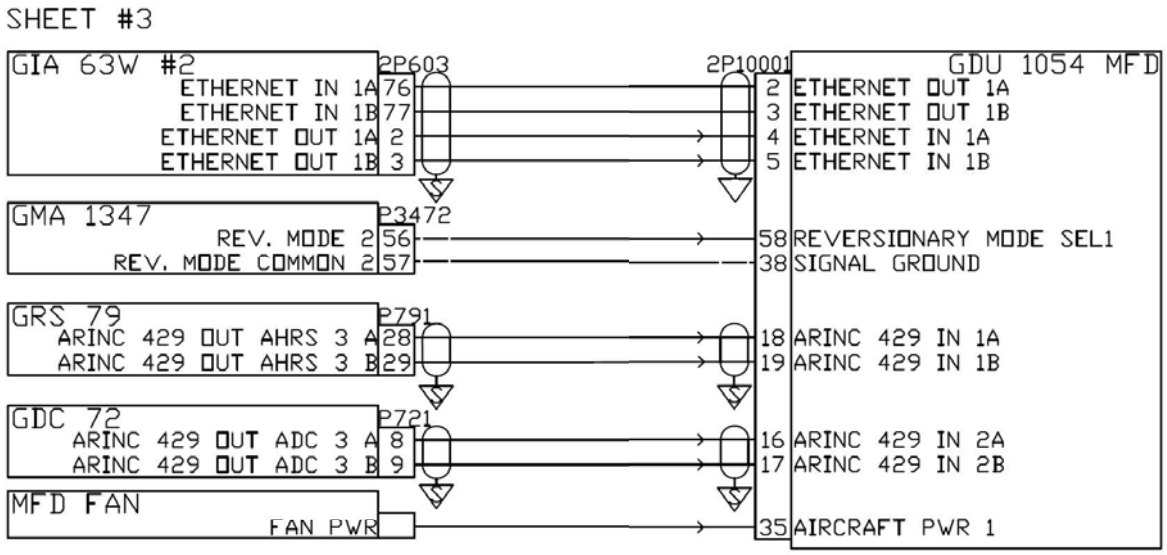


Figure 80 – Avionic System sheet 3/12 - DWG No. 210-9-0001-401

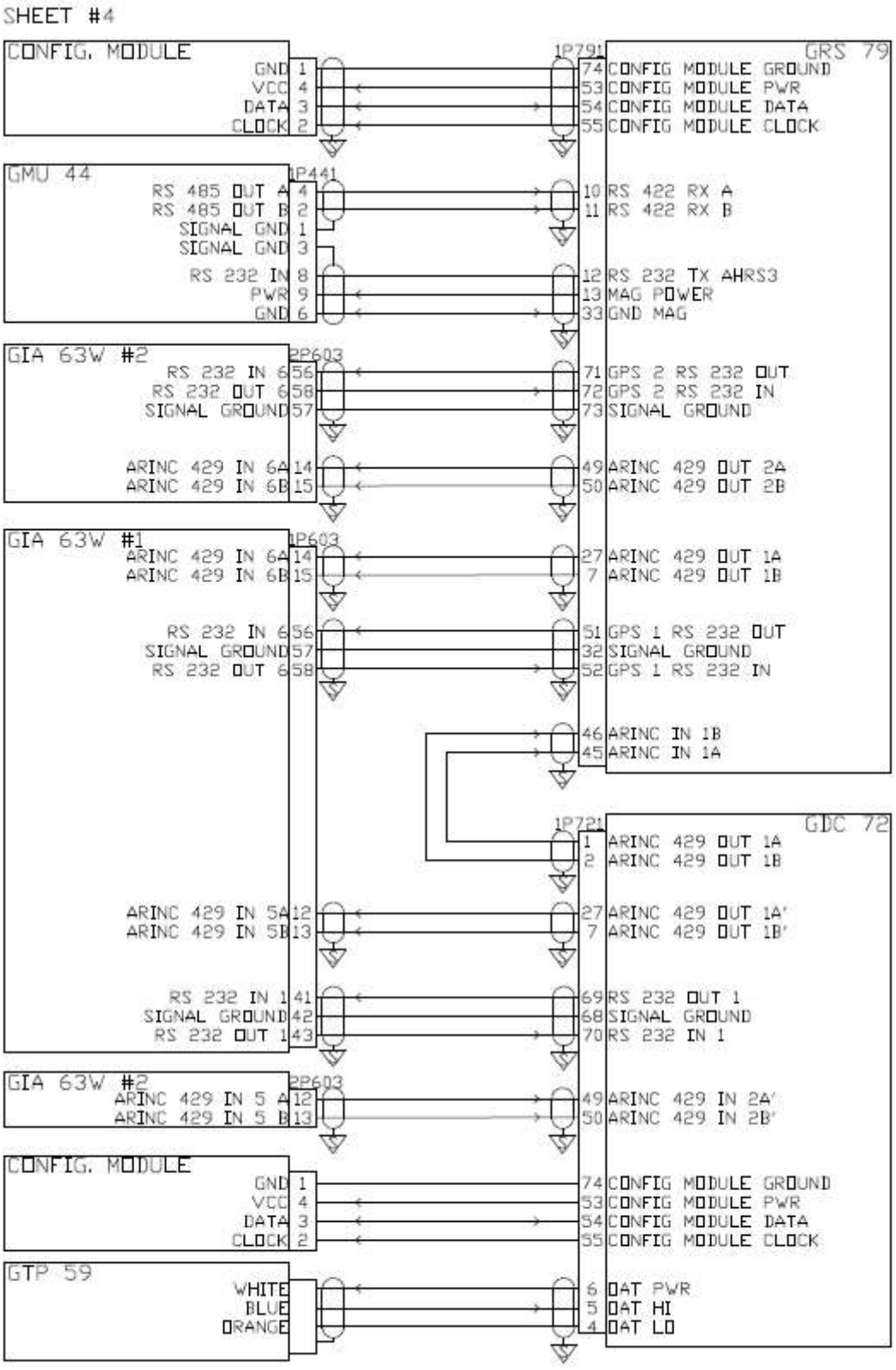


Figure 81 – Avionic System sheet 4/12 - DWG No. 210-9-0001-401

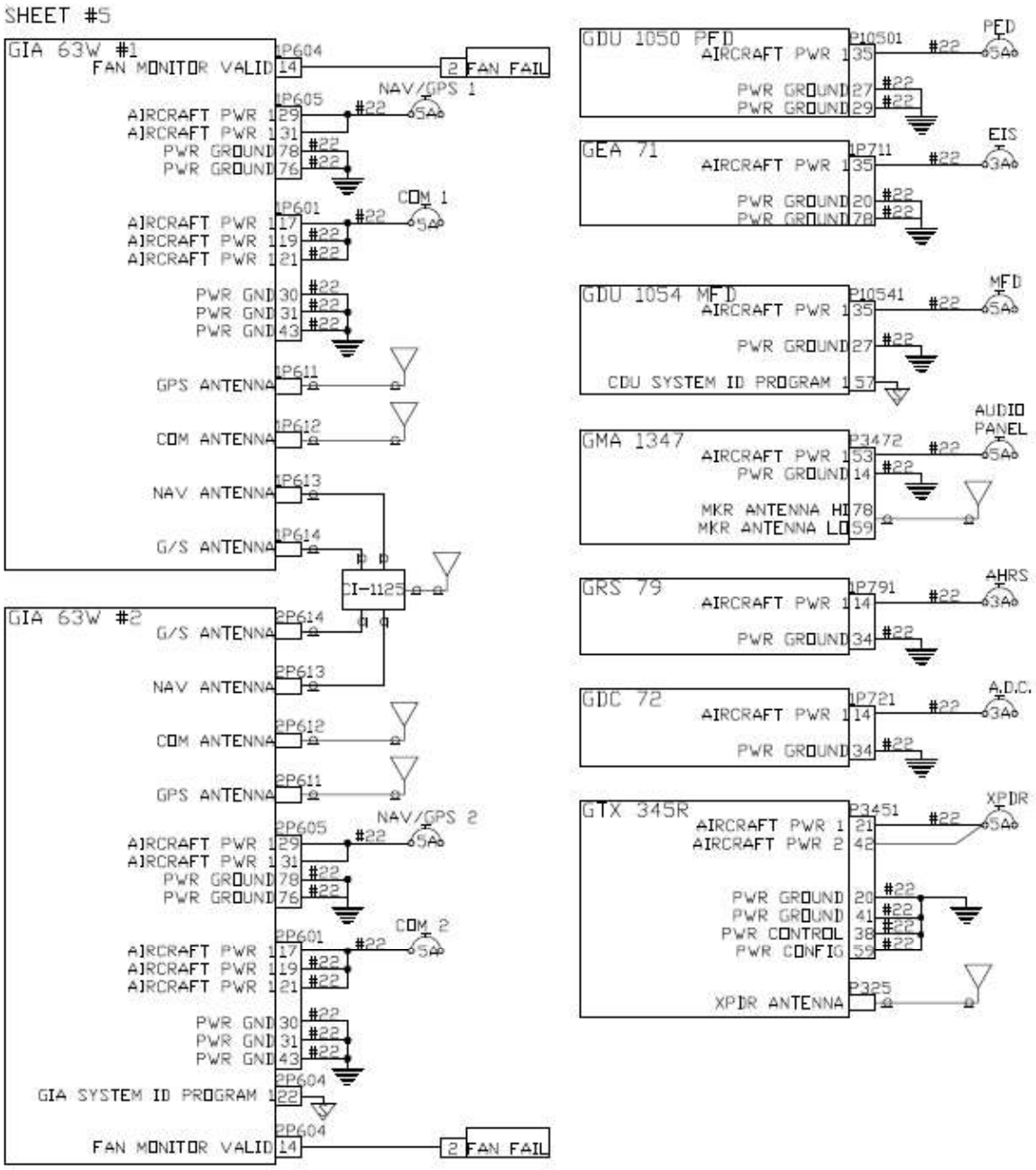


Figure 82 – Avionic System sheet 5/12 - DWG No. 210-9-0001-401

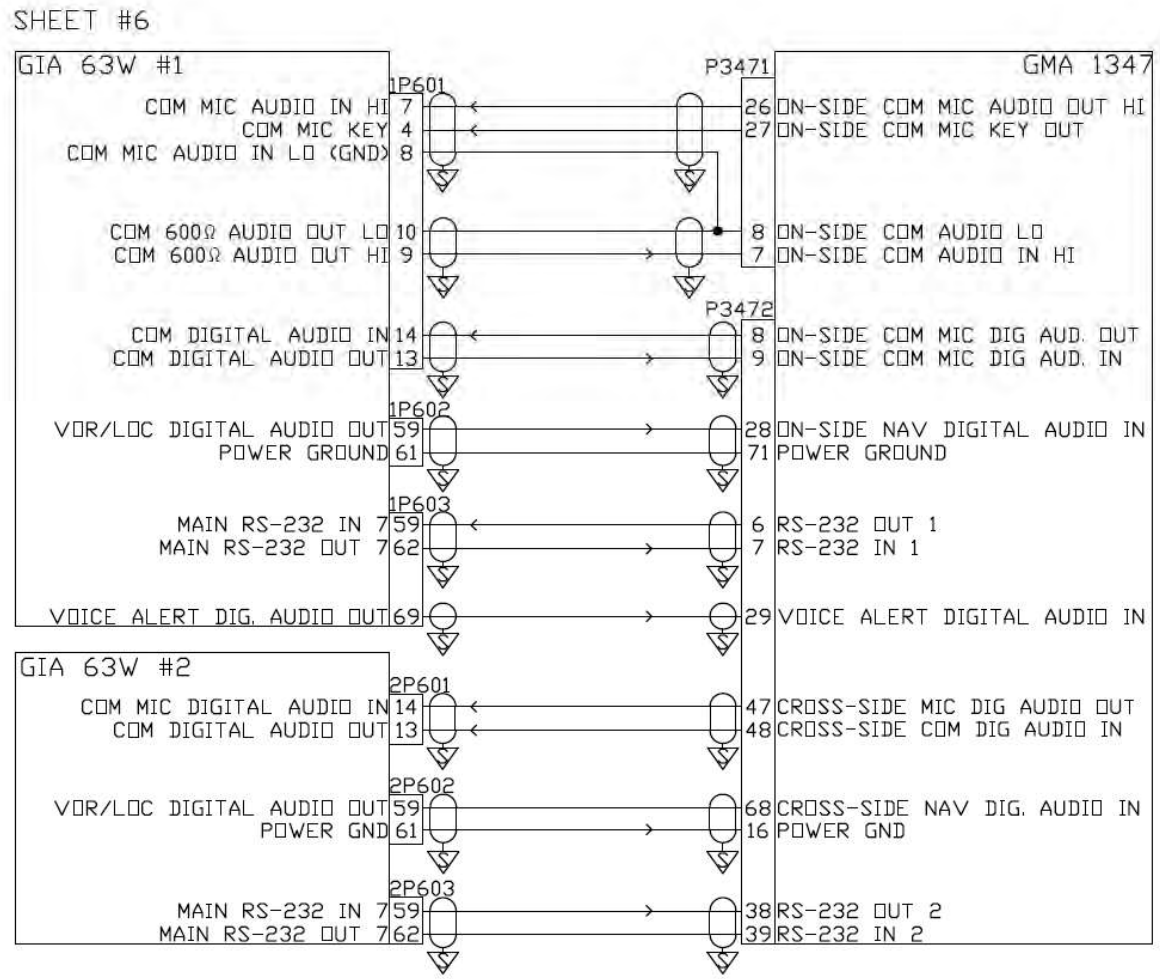


Figure 83 – Avionic System sheet 6/12 - DWG No. 210-9-0001-401

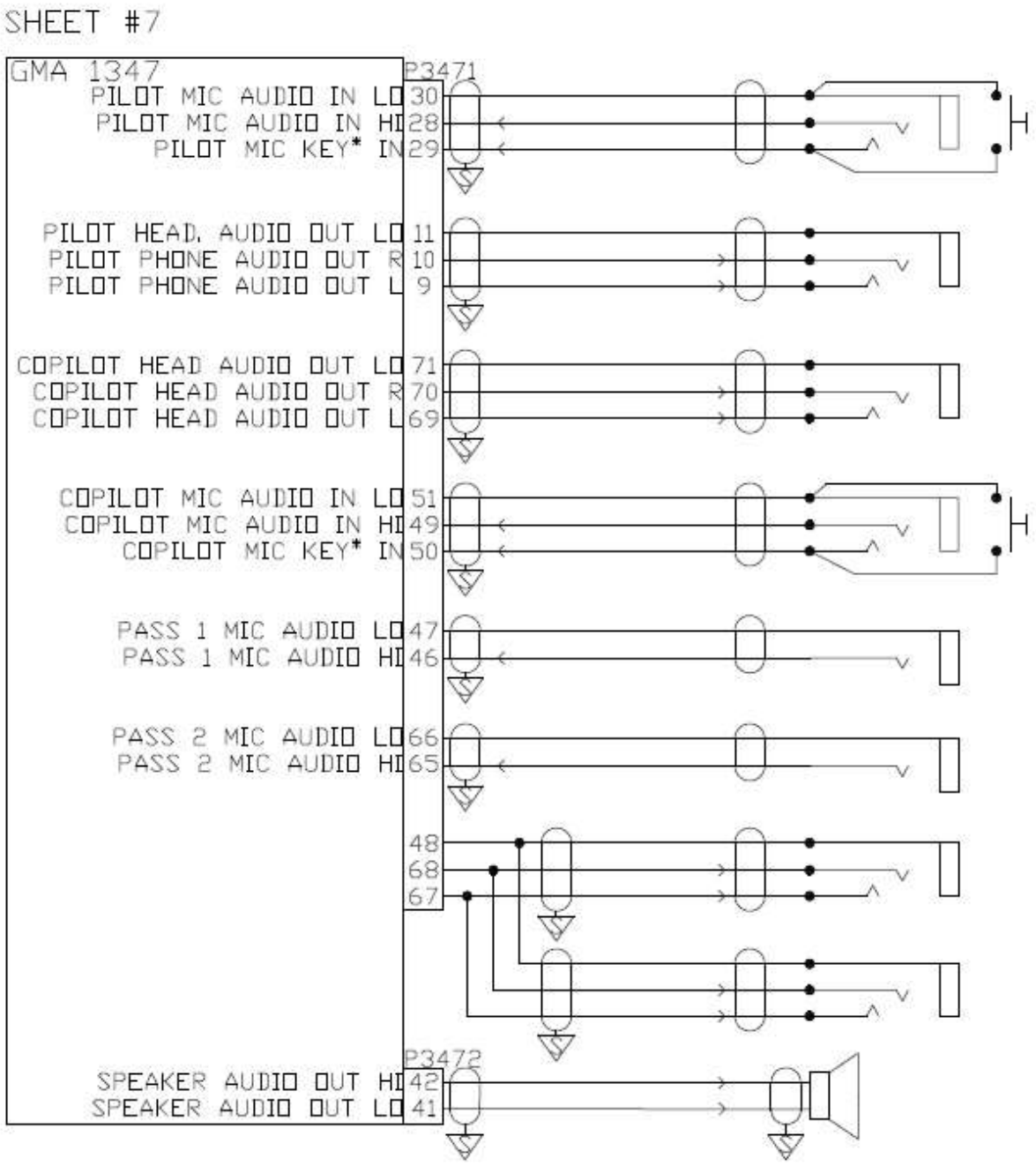


Figure 84 – Avionic System sheet 7/12 - DWG No. 210-9-0001-401

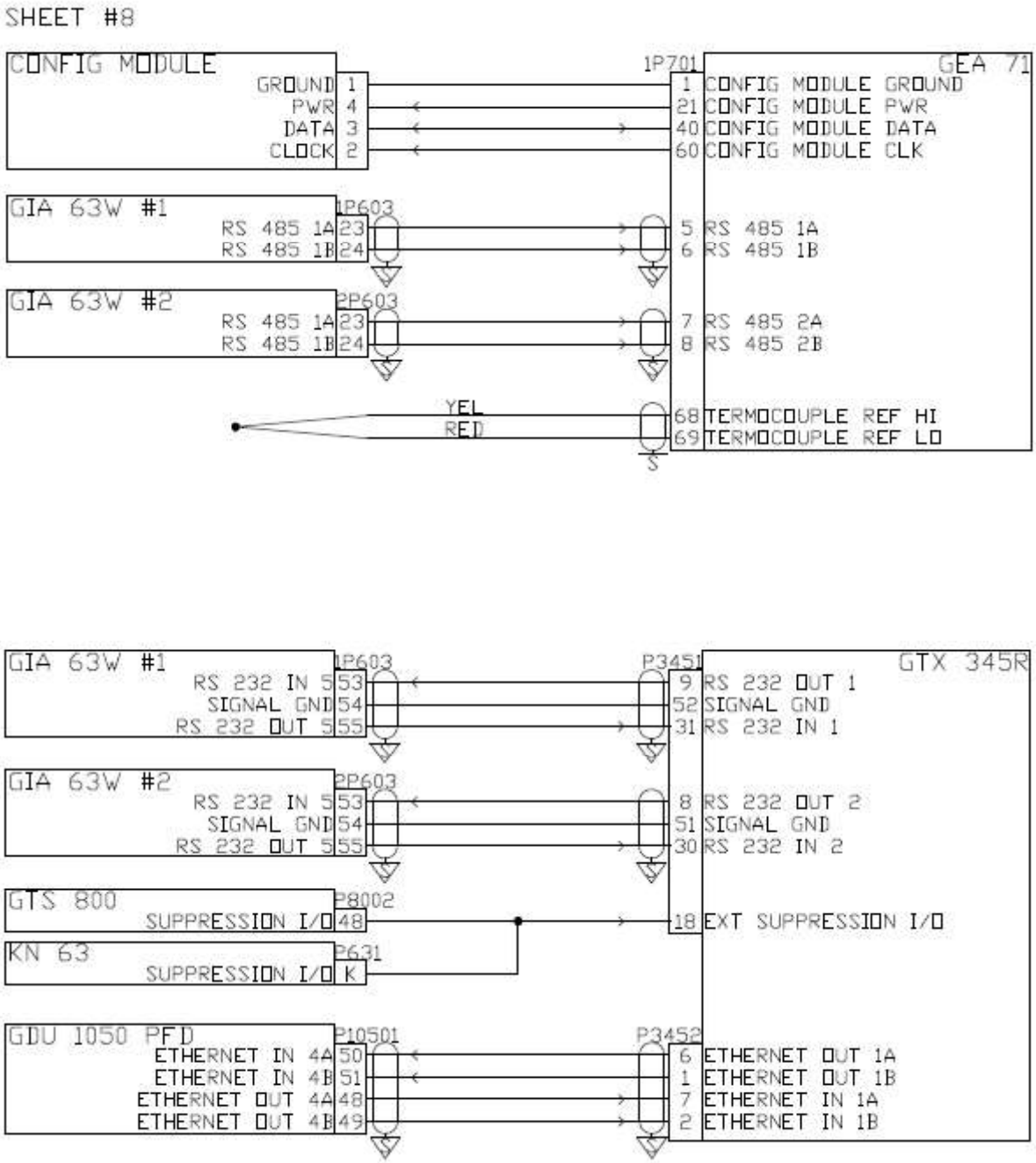


Figure 85 – Avionic System sheet 8/12 - DWG No. 210-9-0001-401

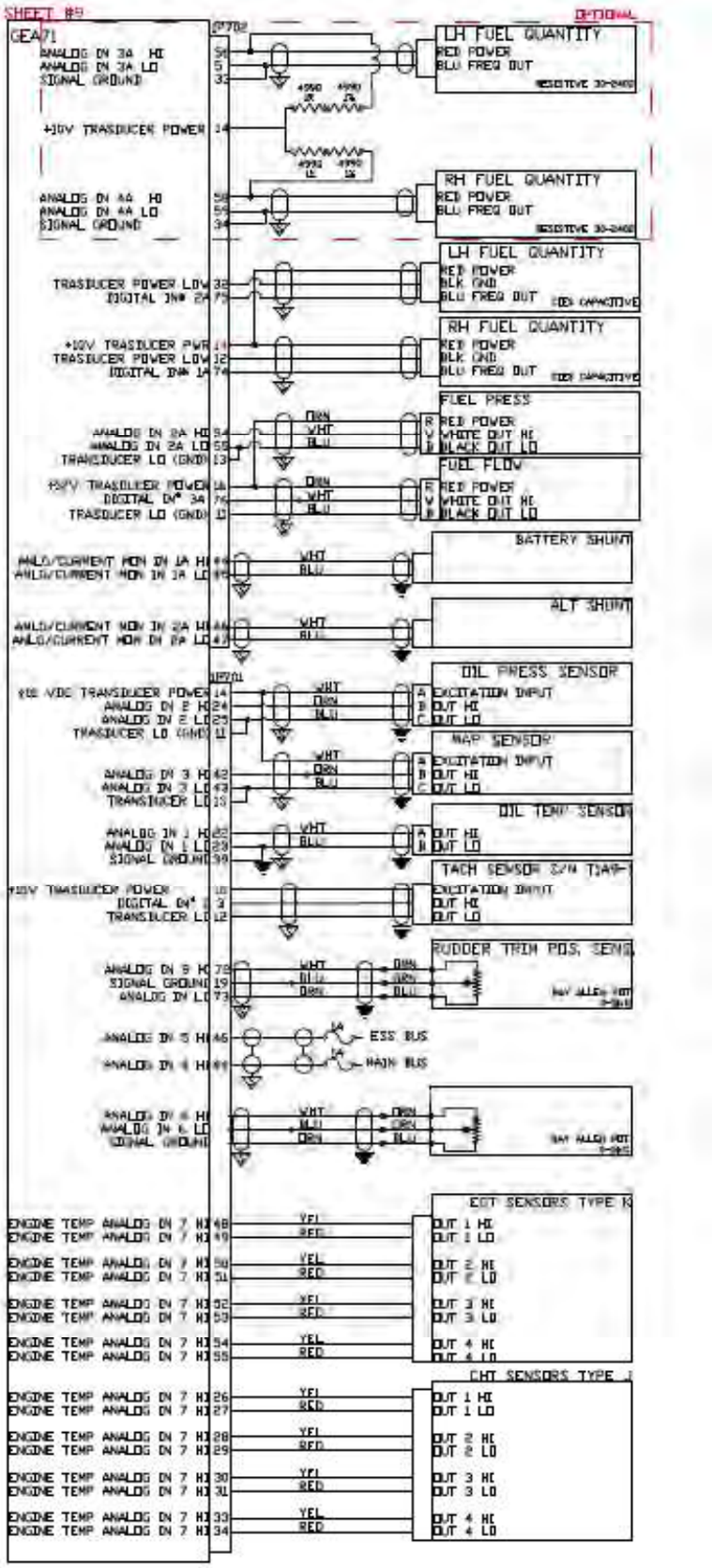


Figure 86 – Avionic System sheet 9/12 - DWG No. 210-9-0001-401

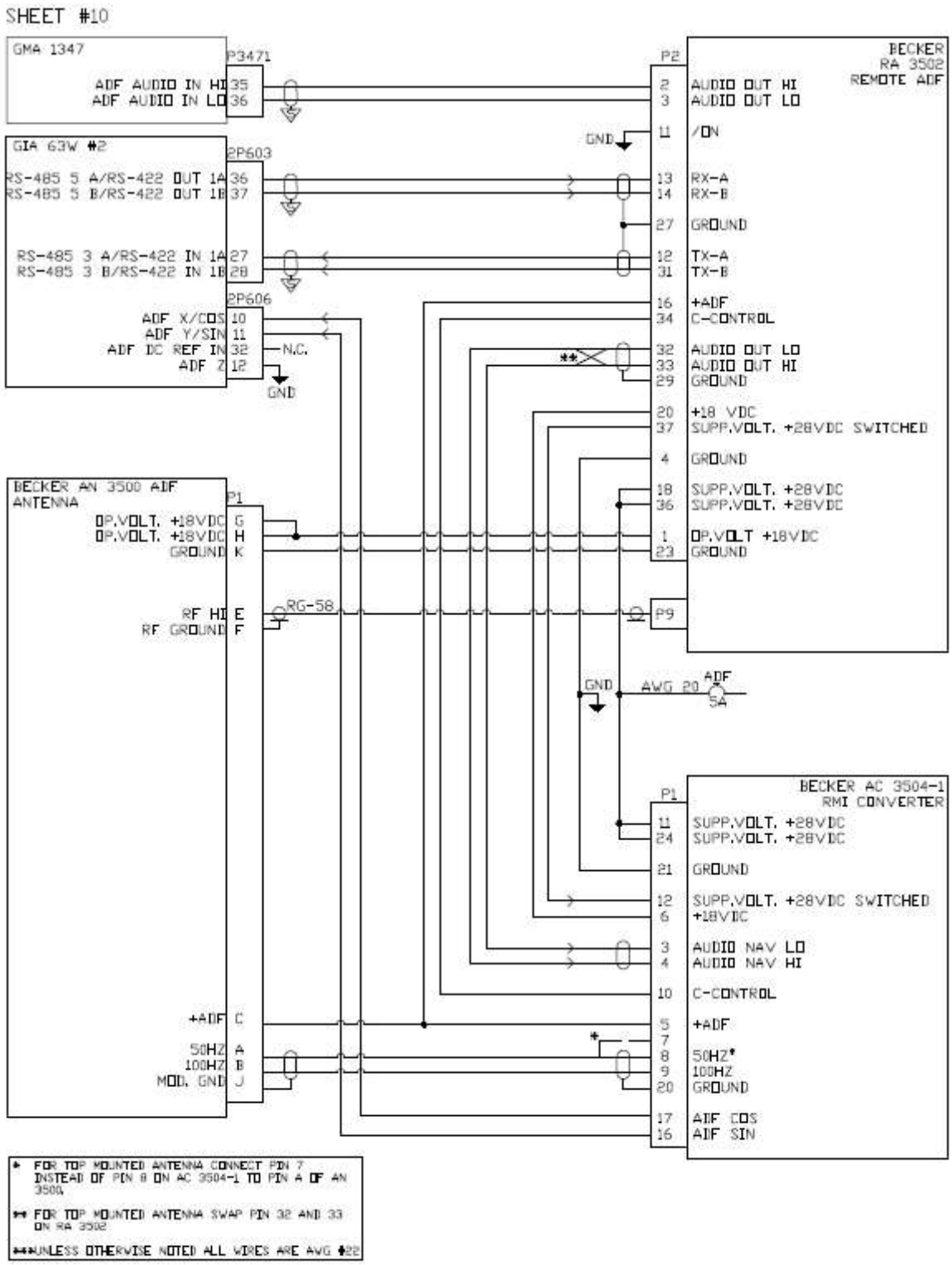


Figure 87 – Avionic System sheet 10/12 - DWG No. 210-9-0001-401

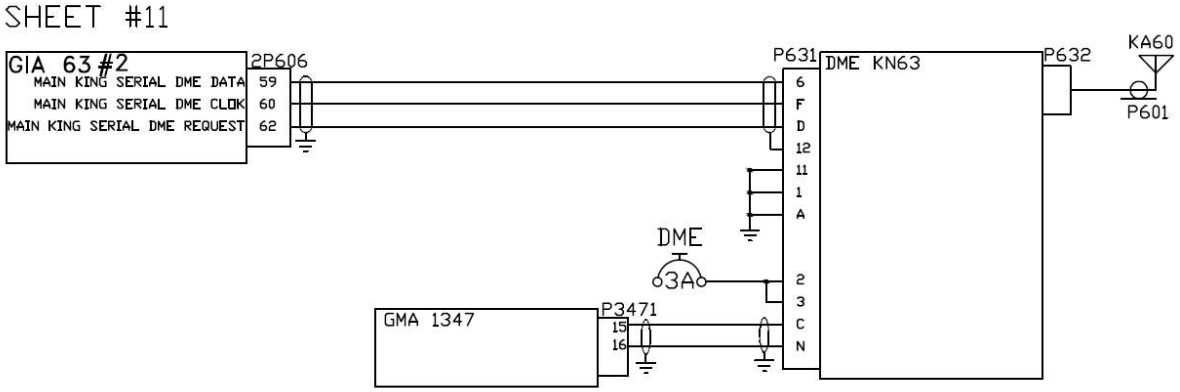


Figure 88 – Avionic System sheet 11/12 - DWG No. 210-9-0001-401

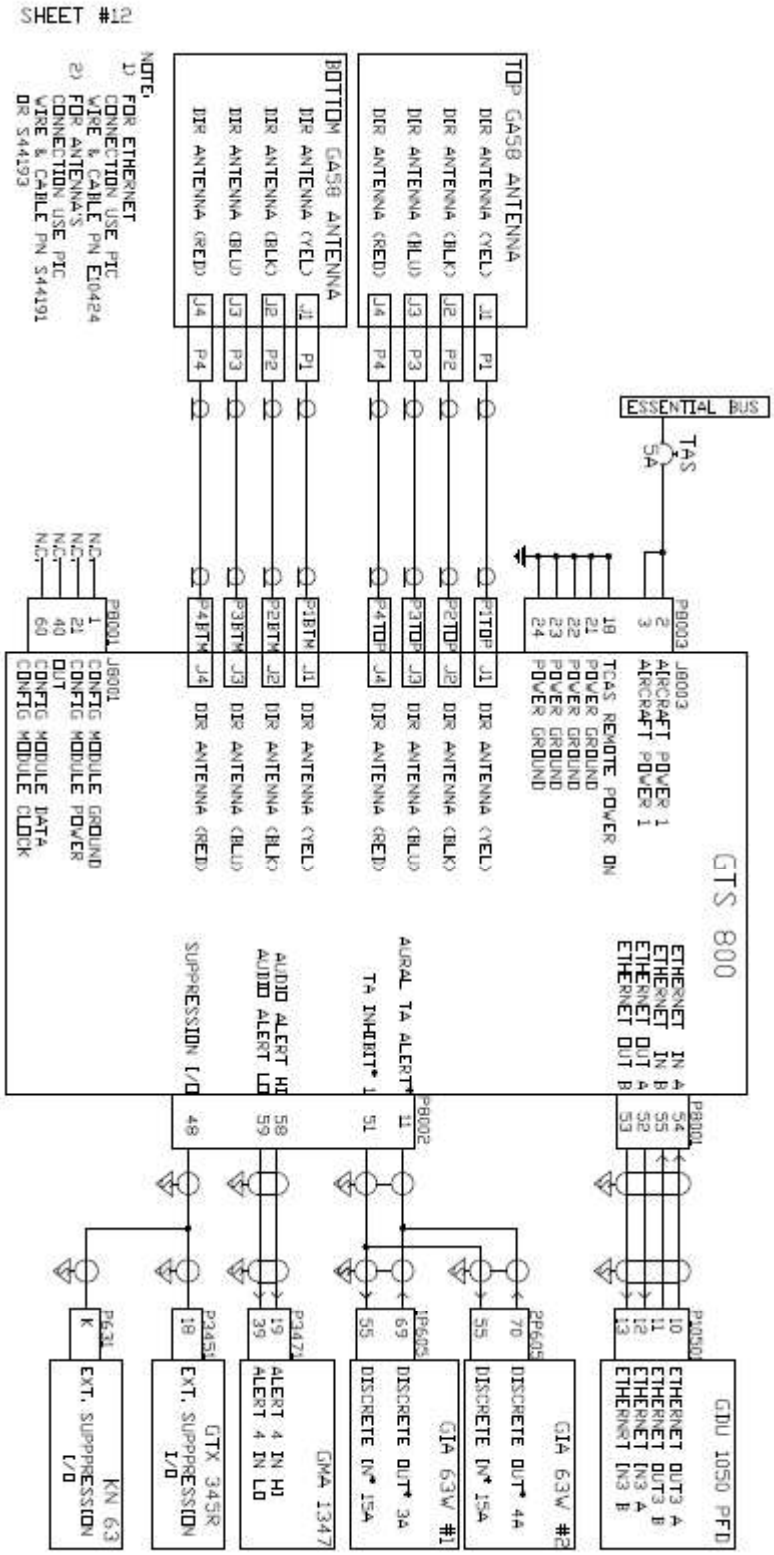


Figure 89 – Avionic System sheet 12/12 - DWG No. 210-9-0001-401

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