# Aircraft Maintenance Manual
# XA41 / XA42



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**TC Holder:**

Liftify UG (haftungsbeschränkt)
Felsenbergstraße 25
39110 Magdeburg
Germany

This Manual includes the material required to be furnished to the maintenance personal by EASA regulations, additional information provided by the manufacturer, and in Chapter 4 the EASA approved Airworthiness Limitations.
The present revision C replaces the previous revision B.

# LOG OF REVISIONS

| Issue | Date | Changed Pages | Reason Of Change | Approval |
|---|---|---|---|---|
| C.00 | 25.09.2018 | All | Manual rewritten in Simplified Technical English (ASD-STE 100). Inclusion of the following modifications:<br>- General Corrections<br>- Grove and Beringer Brake system improvement<br>- Canopy seal treatment<br>- Secondary spar bolt washer correction<br>- Camlocks footrest<br>- Fire protective coating | Under DOA EASA.21J.360 |
| C.01 | 10.05.2023 | 01-1 – 01-4, 03-2<br>27-12<br>27-27<br>32-11<br>39-7, 39-8<br>51-11, 51-12<br>55-6<br>57-6<br>76-2<br>91<br>Appendix 9 | - New TC Holder<br>- Correction, added option for screw to mount spade<br>- Correction, added trim rod assembly option<br>- Correction of the Beringer Wheel and brake assembly.<br>- Correction of chapter for trim wire diagram<br>- Improvement, addition of removal instructions for trim indicator<br>- Added Appendix reference for common repairs<br>- Correction, added Flettner tap option.<br>- Correction, added alternative rear spar bolt<br>- Correction of the Throttle assembly.<br>- Updated wiring diagrams<br>- New Appendix added for common repairs | EASA |

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| C.02 | 18.08.2025 | 05-11, 05-12<br><br><br><br>57-02, 57-04, 57-05<br><br><br><br><br><br>05-18<br><br><br><br>Appendix 9 | - Added heat shrink tube protection and surface protection inspection of the longeron connectors<br>- Added heat shrink tube protection over safety wire between longeron connection bolts<br>- Corrected screws of main spar cover (AN instead of MS)<br>- Adapted pictures to heat shrink tube<br>- Added contact to the TC Holder in case of exceedance of published limitations for inspection instructions.<br>- SB-XA42-2025-003 added to common repairs list | EASA<br><br>EASA Minor Change Approval nr: 10087963 |

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# Chapter 01 Introduction

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## 01-00-00 GENERAL

This Aircraft Maintenance Manual (AMM) includes the necessary data to do the maintenance of the XA41 and the XA42. The structure is as follows: Description of the systems, troubleshooting procedures, removal and installation procedures and maintenance instructions.

Use the AMM with these (and other) manuals and the related service bulletins:

- TC Holder. Illustrated Parts Catalogue, IPC-XA42-0050-001.
- TC Holder. Aircraft Flight Manual, AFM-XA41-0040-002 and AFM-XA42-0040-002
- Kannad. Installation Manual - Operation Manual – ELT Kannad 406 AF-Compact. DOC08038C
- Lycoming. AEIO-580-B1A Operation and Installation Manual. P/N 60297-32
- MVP-50P Operating Instructions.
- Unison. 4300/6300 Series Magneto Maintenance and Overhaul Manual. L-1363D
- mt-Propeller. ATA 61-01-24 (E-124) Operation and Installation Manual – Hydraulically Controlled Variable Pitch Propeller MTV-9-().
- mt-Propeller. ATA 61-20-48 (E-1048) Operation and Installation Manual - Hydraulically Constant Speed Governor P-8()()-().

## 01-00-01 Revision Service

The manufacturer has a revision service for the Aircraft Maintenance Manual. The revision shows the design changes to the aircraft or changes in procedures. Each page and each chapter of the manual show the date of the first issue. Changed pages or chapters show the date of the revision.

## 01-00-02 Warnings, Cautions and Notes

Obey all the usual safety precautions and maintenance instructions when you do the maintenance. The definitions of Warnings, Cautions, and Notes are as follows:

**WARNING**

If you do not obey the operating procedures or other instructions carefully, there is a risk of injury or death.

**CAUTION**

If you do not obey the operating procedures or other instructions carefully, there is a risk of damage to equipment.

**NOTE**

Notes give necessary information to help the reader during a procedure.

## 01-00-03 Log of Revisions

This aircraft maintenance manual has a log of revisions. Use the log of revisions to show when changes were added to the aircraft maintenance manual.

## 01-10-00 SAFETY

Obey these precautions to prevent injury and/or damage during the maintenance procedures on the XA41 and the XA42:

- Only approved personnel must do the maintenance work and inspections.
- Read the maintenance manual before you start the maintenance work.
- To do the maintenance work, refer to the applicable national safety requirements.
- Obey the warnings, cautions and notes in this manual.

Left blank intentionally

# Chapter 02 Organization and Handling of this Manual

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## 02-00-00 GENERAL

This AMM agrees with the Air Transport Association of America, ATA Specification No. 100. For data about a special system, refer to the list of chapters and find the chapter number. The first page of each chapter shows the table of contents.

The chapters use a numbering system which shows the chapter, section and subject as follows:

02-01-04

chapter – section – subject

This example refers to chapter 02, section 01 and subject 04.

The pages of each chapter have continuous numbers. Page 1 is the title page of each chapter. Figure 1 is the first figure in each chapter.

## 02-00-01 Revisions

The manufacturer makes changes to the aircraft maintenance manual to show design changes, maintenance procedure changes or other changes. Each group of changes is referred to as a revision.

A manual revision includes these items:

- The changed pages
- The cause of the revision
- Instructions how to put the revision into the AMM
- A new list of effective chapters
- A vertical bar in the left margin of the page shows the changes.

**NOTE**

This is the approved AMM. It is not permitted to replace or remove pages and to change or add text unless there is an approval by EASA or the manufacturer.

## 02-00-02 Conversion Factors

| Dimension / Unit | | Conversion Factor: SI to US/Imperial | Conversion Factor: US/Imperial to SI |
|---|---|---|---|
| ***Length*** | | | |
| Millimeter | (mm) | (mm)/25.4 = (in) | |
| Meter | (m) | (m)/0.3048 = (ft) | |
| Kilometer | (km) | (km)/1.852 = (nm) | |
| Inch | (in) | | (in)*25.4 = (mm) |
| Foot | (ft) | | (ft)*0.3048 = (m) |
| Nautical Mile | (nm) | | (nm)*1.852 = (km) |
| ***Velocity*** | | | |
| Kilometers per hour | (km/h) | (km/h)/1.852 = (kts)<br>(km/h)/1.609 = (mph)<br>(m/s)*196.85 = (fpm) | |
| Meters per second | (m/s) | | (mph)*1.609 = (km/h) |
| Miles per hour | (mph) | | (kts)*1.852 = (km/h) |
| Knots | (kts) | | (fpm)/196.85 = (m/s) |
| Feet per minute | (fpm) | | |
| ***Rotational Speed*** | | | |
| Revolutions per minute | (rpm) | | (rpm) = ($min^{-1}$) |
| ***Pressure*** | | | |
| Bar | (bar) | (bar)*14.5038 = (psi) | |
| Pounds per square inch | (psi) | | (psi)/14.5038 = (bar) |
| ***Force or Weight*** | | | |
| Newton | (N) | (N)/4.448 = (lb) | |
| Pound | (lb) | | (lb)*4.448 = (N) |
| ***Torque*** | | | |
| Newton meter | (Nm) | (Nm)/1.3558 = (ft.lb)<br>(Nm)*8.851 = (in.lb) | |
| Foot pound | (ft.lb) | | (ft.lb)*1.3558 = (Nm) |
| Inch pound | (in.lb) | | (in.lb)/8.851 = (Nm) |

(continued)

| Dimension Unit | | Conversion Factor | |
|---|---|---|---|
| | | **SI to US/Imperial** | **US/Imperial to SI** |
| **Volume** | | | |
| Liter | (l) | (l)/3.7854 = (US gal)<br>(l)/0.9464 = (USqt)<br>(l)/61.024 = (in³) | |
| US gallon | (US gal) | | (US gal)*3.7854 = (l) |
| US quart | (USqt) | | (USqt)*0.9464 = (l) |
| Cubic inch | (in³) | | (in³)*61.024 = (l) |
| ***Mass*** | | | |
| Kilogram | (kg) | (kg)/0.45359 = (lb) | |
| Pound | (lb) | | (lb)*0.45359 = (lb) |
| ***Temperature*** | | | |
| Degree Celsius | (°C) | (°C)*1.8 + 32 = (°F) | |
| Degree Fahrenheit | (°F) | | (°F)-32)/1.8 = (°C) |

# Chapter 03 General Description of the Aircraft

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## 03-00-00 GENERAL

The Xtreme XA42 is a two-seat unlimited aerobatic aircraft with a tailwheel. The XA41 is a one-seat variant. All parts of the structure are made from carbon/honeycomb sandwich. The two models have the certification in the utility and aerobatic category, as specified in the EASA CS-23.

This chapter gives an overview of the systems of the aircraft. You can find more information and descriptions in the related chapters.

## 03-10-00 DESCRIPTION

### 03-10-01 Construction

Manufacturer: XtremeAir GmbH
Harzstraße 2
Am Flughafen Cochstedt
D-39444 Hecklingen, Germany

TC Holder: Liftify UG (haftungsbeschränkt)
Felsenbergstraße 25
D-39110 Magdeburg, Germany
www.liftify.aero

Fuselage: carbon fiber composite monocoque

Wing: carbon fiber composite

Stabilizers: carbon fiber composite

Landing gear: tail dragger (2 main wheels, 1 tailwheel),
steel spring type main landing gear struts

Seat: pilot/rear seat to pedal distance adjustable,
seven-point harness

### 03-10-02 Flight Control System

Pitch control: push-pull rods

Yaw control: cable system

Roll control: push-pull rods

Pitch trim: trim tab on the right side of the elevator, electrical actuator and indication

### 03-10-03 Brake System

Main wheels: hydraulically operated disc brakes,
hydraulic brake cylinders that are operated with the rudder pedals

Tailwheel: no brake

## 03-10-04 Powerplant

**Engine:**

Manufacturer: Textron Lycoming
Williamsport Division
652 Oliver Street
Williamsport, PA17701, USA

Type: AEIO-580-B1A
- 6-cylinder air cooled
- fuel injection
- inverted flight oil system
- independent dual magneto ignition system

Rated power: 235 (kW) / 315 (hp) @ 2700 (rpm)

**Propeller:**

Manufacturer: MT-Propeller Entwicklung GmbH
Flugplatzstr. 1
D-94348 Atting, Germany

| Type: | MTV-9-B-C/C203-20d | or | MTV-14-B-C/C190-130 |
|---|---|---|---|
| | • diameter 2030 (mm) | | 1900 mm diameter |
| | • 3-blade | | 4-blade wood composite |
| | • hydraulic variable pitch with constant speed regulator | | |

## 03-10-05 Fuel System

Tanks: 2 integral wing tanks,
1 acro tank (behind the firewall) with floptube equipped headertank

Fuel supply: mechanically operated, gear driven pump,
electrically operated auxiliary boost pump

## 03-10-06 Electrical System

Power supply: 14V/20A alternator (engine-operated),
16Ah Battery,
Master Switch

Circuits: automatic circuit breakers / circuit breaker switches

Ignition: double magneto system (operates independently from electrical power supply)

## 03-10-07 Instruments

Standard equipment (minimum) installed:

| Instrument | XA42 | XA41 |
|---|---|---|
| Primary glass panel engine monitor - MVP-50P | 1 | 1 |
| Airspeed indicator | 2 | 1 |
| Altimeter | 2 | 1 |
| Magnetic compass | 1 | 1 |
| G-Meter | 2 | 1 |

# Chapter 04 Airworthiness Limitations

## Record of Revisions Chapter 04

| Rev. No. | Date of Revision | Revised Pages | Description of Revision | EASA Approval Date and Sign of Approval |
|---|---|---|---|---|
| B.01 | 12.12.2011 | All | First edition | 01 February 2012 |
| B.03 | 13.10.2012 | All | FAA approval statement | 18 October 2012 |
| B.07 | 29.11.2013 | All | Service Life 6000 hrs | 26 February 2014 |
| C.00 | 25.09.2018 | All | Editorial changes. Revision equivalent to B.07. Limitations not affected | n/a |
| | | | | |
| | | | | |

## Log of Effective Pages Chapter 04

| Page: | Date: | Issue: |
|---|---|---|
| 1-04 | 25.09.2018 | C.00 |
| 2-04 | 25.09.2018 | C.00 |
| 3-04 | 25.09.2018 | C.00 |
| 4-04 | 25.09.2018 | C.00 |

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# 04-00-00 GENERAL

The Airworthiness Limitations Section is EASA approved and specifies inspection and maintenance required according to CS-23 Appendix G, 23.4 unless an alternative program has been EASA approved.

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

This chapter outlines the maximum replacement intervals and/or maintenance requirements for aircraft components, systems, and structures determined to be life limited and/or require monitoring through scheduled maintenance.

Note: All time limits and requirements listed in this section are also covered in Chapter 5, Time Limits and Maintenance Checks.

The following airworthiness limitations and requirements are separated into groups as described below.

**A. Maintenance Limitations**
Component and system checks required to be performed during aircraft scheduled maintenance.

**B. Replacement Limitations**
Listing of time limits for replacement of specific components.

**C. Structural Limitations**
Damage Tolerant Limitations required by EASA regulations for certification.

## 04-00-01 Operating Time

The replacement of all components is required when the limit operating time is reached. Only the airframe and components listed in chapter 04-10-00 are subject to a permissible operating time.

## 04-10-00 LIFE LIMITED COMPONENTS

## 04-10-01 General

The replacement time of the life limited components listed in chapter 04-10-02 must be accomplished not later than the specified period of operation for that component or in accordance with the manufacturer's service data or airworthiness directives.

## 04-10-02 Replacement Time

The following items must be replaced during the regular maintenance periods.

| Item | Part number | Limit life time |
|---|---|---|
| Fuselage longeron connection bolt<br>Zylinderschraube M12x120 | XA42-5300-205 A.01 | 100 h |

subject bolts are installed on MSN 01, 02, 03, 101, 102, 103 and 106 only.

Bolts XA42-5300-210, installed on XA41 MSN 04 and on, and XA42 MSN 107 and on, are not life limited.

## 04-10-03 Service Life Limited Components

The service life of the XA41 and XA42 composite structure as listed in chapter 04-10-02 has been set to **6000** flight hours.

# Chapter 05 Time Limits and Maintenance Checks

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## 05-00-00 GENERAL

This chapter gives charts and schedules for time limits and maintenance procedures. Thus, approved personnel can do correct inspections on the XA41/XA42. The periodic inspections in this chapter are minimum requirements to keep the aircraft in an airworthy condition. If more frequent maintenance services are necessary to operate the aircraft, it is possible to decrease the time periods. But only the regulatory authority is permitted to increase the check intervals and to give the approval for more checks and changes.

For maintenance of the vendor equipment, refer to the vendor equipment manuals of the manufacturers. Most of the applicable instructions are given in the check lists that follow. But only the instructions in the newest edition of the inspection manual of the vendor equipment are mandatory. Thus, it is important to have the revision with the newest instructions available before the maintenance procedures.

The information service gives more information with service bulletins and service letters. The pilot must make sure that all airworthiness directives, service bulletins and other requirements of the airworthiness authority are completed as necessary.

## 05-10-00 TIME LIMITS

## 05-10-01 General

All scheduled maintenance checks have specified time limits. Do the scheduled maintenance in these time limits. Do an inspection of all components that are not included in the overhaul schedule, refer to Chapter 05-20 "Maintenance Checks". If necessary, repair the components and do an overhaul.

## 05-10-02 Overhaul Schedule

This list shows the overhaul time limits for the items.

| Item | Overhaul |
|---|---|
| Engine (Textron Lycoming) | Refer to Lycoming Service Instruction No. 1009, newest issue |
| Engine accessories | together with engine |
| Magnetos (Slick 6350/6393) | Refer to Unison. 4300/6300 Series Magneto Maintenance and Overhaul Manual. L-1363 newest revision. |
| Propeller (MT Propeller) | Refer to mt-propeller Service Bulletin No. 1, newest issue. |
| Governor (MT Propeller P-880-5) | 6 years or 2000 flight hours |
| Fire extinguisher (RTA 400) | 12 years |
| Weldon Fuel pump 8120-G | 10 years |
| Beringer Wheel and Brakes | Refer to Beringer Maintenance and overhaul manual BRG-ALTP-02 MM-ETSO-007 |
| Oil filter adapter kit BC700 | Refer to BC700_ICA |
| Alternator BC410 or BC462-H | 1700 hrs |
| All other components | on condition |

## 05-10-03 Recommended Replacement Times

This list shows the replacement times for the items. Only the applicable national authority is permitted to change the replacement times.

| Item | Replacement Time |
|---|---|
| Battery (Genesis 12 V / 16Ah) | on condition |
| Bolts and nuts (DIN 931, DIN 933, LN 9037, AN…) | on condition, if no other instructions are available |
| Brake and brake assembly(Grove) | on condition |
| Brake and brake assembly(Beringer) | on condition, refer to manufacturer's instructions for replacement time. |
| Brake hoses and sensing hoses | on condition |
| Wheels (Beringer) | on condition, refer to manufacturer's instructions for replacement time. |
| ELT Batteries (Kannad) | Refer to manufacturer's instructions for replacement time. |
| Engine shock mounts (Lord) | on condition, or at each engine overhaul |
| Engine shock mounts (Barry) | on condition, or at each engine overhaul |
| Fairleads | on condition |
| Fuel-, oil- and sensing- hoses (DIN 73379) | on condition |
| Rudder control cables | on condition |
| Seat belts (Hooker Custom Harness, Inc.) | on condition |
| Self locking nuts (LN 9338, DIN 985, AN…..) | after removal |
| Tires 5.00 – 5, 6 Ply ( | on condition |
| Tires 5.00 – 5, 10 Ply (Michelin Aviator) | on condition |

# 05-20-00 SCHEDULED MAINTENANCE CHECKS

## 05-20-01 General

Do the scheduled maintenance checks after the first 25 hours and at intervals of 50, 100 and 1000 hours.

For the maintenance instructions of the engine, refer to Lycoming Maintenance and Overhaul Manual LMO-AEIO-580.

The inspections that follow are mandatory.

Shorter intervals can become necessary because of the condition of the aircraft.

If damage occurs, repair or replace the part immediately.

Remove these items before the inspection:

1 Seats

2 Footrest (XA41) or footrest/cover of the front compartment (XA42)

3 Inspection hole covers in the cockpit

4 Baggage compartment

5 Cowling top and bottom

6 Wheel pant covers

7 Covers of the wing inspection holes

8 Fuselage wing-spar cover

After the inspection:

- Install all removed parts again.
- Clean the aircraft internally and externally.

Column "Description"

Gives you the correct conditions or necessary procedures for the equipment/component.

Column "Action"

Tells you what to do. The meaning of "CHECK" is as follows: To make sure that the correct condition is available. If necessary, you must set the equipment/component to the specified condition.

Column "Signature"

Each item in the table must have the signature of approved maintenance personnel

## 05-20-02 First 25 Hour Inspection

For new aircraft, the procedures which are defined in the 50 Hour inspection (Chapter 05-20-03) must be performed after the first 25 hours of operation.

## 05-20-03 50 Hour Inspection

| Description | Action | Signature |
|---|---|---|
| **Canopy** | | |
| The canopy lock operates correctly | CHECK | |
| The canopy moves freely when you open and close it | CHECK | |
| The retaining strap is correctly installed | CHECK | |
| The hinge pins and the retaining clips are correctly installed | CHECK | |
| The condition of the canopy glass is satisfactory | CHECK | |
| Canopy seal (aircraft with canopy seal) | APPLY TALC | |
| **Rear seat - Rudder pedal assemblies RH and LH** | | |
| The pedal assemblies move freely from stop to stop | CHECK | |
| The play of the pedal sliders is correctly adjusted | CHECK | |
| The AN23-18A bolt is correctly installed in the pedal axle | CHECK | |
| The split pins are correctly installed in the master brake cylinder assembly | CHECK | |
| The brake pedal and the master brake cylinder move freely when you push the brake pedal | CHECK | |
| The brake lines are correctly connected | CHECK | |
| The condition of the rudder pedal assembly is satisfactory | CHECK | |
| The rails and mounting blocks are correctly assembled | CHECK | |
| All nuts are safetied | CHECK | |
| The length is correctly adjusted. The assemblies move freely from the most forward to the most aft position | CHECK | |
| The length adjustment lock is correctly assembled and operates correctly | CHECK | |
| The brake function for "hard pedals" is satisfactory | CHECK | |
| **Rudder idler assemblies RH and LH** | | |
| The assemblies move freely from stop to stop | CHECK | |
| The split pins are correctly installed in the castle nuts | CHECK | |
| The rod ends turn freely | CHECK | |

| Description | Action | Signature |
|---|---|---|
| **Front seat - Rudder pedal assemblies RH and LH** | | |
| The assemblies move freely from stop to stop | CHECK | |
| The split pins are correctly installed in the castle nuts | CHECK | |
| The pulleys are correctly installed and not worn | CHECK | |
| **Rudder cables** | | |
| The cables move freely from stop to stop | CHECK | |
| The condition of the cables is satisfactory | CHECK | |
| The tension of the cables is correct | CHECK | |
| The safety wires are correctly installed in the tensioners | CHECK | |
| The connections to adjacent parts are correct | CHECK | |
| **Torque tube and control stick, front and aft** | | |
| The elevator and the aileron move freely from stop to stop | CHECK | |
| The aileron stops are not damaged (no wear, cracks, deformation or other damage) | CHECK | |
| The elevator stops are not damaged (no wear, cracks, deformation or other damage) | CHECK | |
| All screw connections of the aileron control have safety wires, split pins or locking varnish on selflocking nuts | CHECK | |
| All screw connections of the elevator control have safety wires, split pins or locking varnish on selflocking nuts | CHECK | |
| The ends of the elevator control rod turn freely at the left and right stops<br>**WARNING**<br>Make sure that the elevator control rod is correctly adjusted. Incorrect adjustment can cause damage to the rod end housing and failure of the elevator control | CHECK | |
| The stick grip is correctly installed | CHECK | |
| The PTT button is correctly installed and operates correctly. Set the switch on the radio to ON. Push the PTT button and make sure that the “Transmit” sign is shown on the display | CHECK | |
| The control stick is tightly attached. The split pin is correctly installed | CHECK | |
| The PTT cable is correctly installed and the connector is tightly attached | CHECK | |
| **Fuel selector switch** | | |
| The switch turns freely and engages in the detent in the “OFF” position | CHECK | |
| **Wiring loom** | | |
| Pull out all circuit breakers. Set the Master switch to | ON | |
| Set the AVIONICS MASTER switch to | ON | |
| Set the ACL switch to ON. Make sure that the anticollision lights operate correctly | CHECK | |

| Description | Action | Signature |
|---|---|---|
| Push the trim circuit breaker in. The trim position indicator light must come on, and the trim motor must operate correctly | CHECK | |
| Push the GPS circuit breaker in. The GPS screen must come on | CHECK | |
| Push in the COM circuit breaker. Set the radio to ON and make sure that the radio display comes on | CHECK | |
| Push XPDR circuit breaker in. Set the transponder to ON and make sure that the transponder display comes on | CHECK | |
| The wiring loom has the correct routing and is safely installed | CHECK | |
| The cables are correctly connected to the instruments | CHECK | |
| **MVP-50** | | |
| Make sure that there are no system errors | CHECK | |
| The fuel pressure indication is correct (the fuel boost pump must be ON) | CHECK | |
| The fuel quantity indication is correct (compare the value with the actual quantity) | CHECK | |
| The temperature indication (sensor) of each cylinder shows the ambient temperature | CHECK | |
| Set the Master Switch to | OFF | |
| **Pitot / Static System** | | |
| The static ports are corrctly attached | CHECK | |
| The pitot tube is correctly attached | CHECK | |
| **Left hand side console (XA42 rear cockpit)** | | |
| The throttle slider is correctly installed and operates correctly | CHECK | |
| The front and rear throttle linear ballbearing is free of dirt | CHECK | |
| The throttle grip is correctly installed. The fixation screws are correctly installed and the the grip is not loose | CHECK | |
| The throttle cable is correctly installed and operates correctly | CHECK | |
| The throttle friction screw is correctly installed and operates correctly | CHECK | |
| The trim indication is correctly installed | CHECK | |
| The smoke switch is correctly installed and operates correctly | CHECK | |
| The vernier control cable for the propeller is correctly installed and operates correctly | CHECK | |
| The vernier control cable for the mixture is correctly installed and operates correctly | CHECK | |
| **Smoke System** | | |
| The smoke pump is correctly installed | CHECK | |
| The refill plug is correctly installed | CHECK | |
| The inspection cover of the smoke tank is correctly installed | CHECK | |
| The smoke oil hoses, joints and fittings have the correct routing and are safely attached | CHECK | |

| Description | Action | Signature |
|---|---|---|
| There is no leakage from the smoke oil tank | CHECK | |
| **Aileron bellcranks in fuselage, LH and RH** | | |
| The bellcranks move freely from stop to stop | CHECK | |
| The bellcranks and the split pins are correctly installed | CHECK | |
| **Inner and outer aileron pushrods** | | |
| The pushrods move freely from stop to stop | CHECK | |
| The condition of the pushrods is satisfactory and they are correctly installed | CHECK | |
| The ends of the aileron control rod turn freely at the left and right stops<br>**WARNING**<br>Make sure that the aileron control rod is correctly adjusted. Incorrect adjustment can cause damage to the rod end housing and failure of the aileron control | CHECK | |
| The jam nut is correctly installed on each rod end | CHECK | |
| **Aileron bellcranks in wing, RH and LH** | | |
| The bellcranks move freely from stop to stop | CHECK | |
| The condition of the bellcranks is satisfactory and they are correctly installed | CHECK | |
| The ends of the aileron control rod turn freely at the left and right stops<br>**WARNING**<br>Make sure that the aileron control rod is correctly adjusted. Incorrect adjustment can cause damage to the rod end housing and failure of the aileron control | CHECK | |
| **Seatbelts, front and rear cockpit** | | |
| The condition of the shoulder belts is satisfactory and they are correctly installed | CHECK | |
| The condition of the lap belts is satisfactory and they are correctly installed | CHECK | |
| The condition of the crotch belts is satisfactory and they are correctly installed | CHECK | |
| **Spade arms, spades LH and RH** | | |
| The condition of the spade arms is satisfactory and they are correctly installed | CHECK | |
| The condition of the spades is satisfactory and they are correctly installed | CHECK | |
| **Aileron linkage on wing, LH and RH** | | |
| The aileron linkage moves freely from stop to stop | CHECK | |
| The bellcranks and the split pins are correctly installed | CHECK | |

| Description | Action | Signature |
|---|---|---|
| The ends of the aileron control rod turn freely at the left and right stops<br>**WARNING**<br>Make sure that the aileron control rod is correctly adjusted. Incorrect adjustment can cause damage to the rod end housing and failure of the aileron control | CHECK | |
| **Main landing gear, LH and RH** | CHECK | |
| The retaining pins of the gear leg and the safety wiring are correctly installed | CHECK | |
| Gear leg: The engine mount bushing is correctly installed | CHECK | |
| The fairings are correctly installed | CHECK | |
| The brakes operate correctly<br>The brake linings are satisfactory | CHECK, if necessary REPLACE | |
| The condition of the tyre is satisfactory and the pressure is correct | CHECK | |
| The slipmarks on the tyre and on the rim are aligned | CHECK | |
| Wheel nut: The split pin is correctly installed | CHECK | |
| **Exhaust, LH and RH** | | |
| The condition of the exhaust is satisfactory and it is correctly installed | CHECK | |
| The EGT sensors are correctly installed. The routing of the adjacent cables is correct | CHECK | |
| The smoke lines are correctly connected | CHECK | |
| **Engine mount, shock mounts** | | |
| The condition of the engine- and shock- mounts is satisfactory and they are correctly installed | CHECK | |
| **Oil cooler, LH and RH** | | |
| The coolers are correctly installed and do not leak | CHECK | |
| The oil coolers are correctly sealed. Silicone is applied to the outlet lip | CHECK | |
| The oil hoses have the correct routing, are correctly connected and have no signs of leaks | CHECK | |
| **Engine Baffling** | | |
| The baffling parts are correctly installed | CHECK | |
| The fairleads for the ignition harness and the propeller cable are correctly installed | CHECK | |
| **Engine** | | |
| Oil filter (if installed) | REPLACE | |
| Oil spectral analysis (recommended) | PERFORM | |
| The mixture control is correctly installed | CHECK | |
| The propeller control is correctly installed | CHECK | |
| The throttle control is correctly installed | CHECK | |

| Description | Action | Signature |
|---|---|---|
| The alternator is correctly installed | CHECK | |
| The magneto P-lead is correctly connected | CHECK | |
| The starter is correctly installed and connected | CHECK | |
| The propeller, the spinner and the safety wiring are correctly installed | CHECK | |
| The Christen oil separator is correctly installed | CHECK | |
| The Christen gravity valve is correctly installed | CHECK | |
| The breather line is correctly installed | CHECK | |
| The oil lines are correctly installed and connected | CHECK | |
| The fuel lines are correctly installed and connected | CHECK | |
| The CHT sensors are correctly installed and connected. The routing of the adjacent cables is correct | CHECK | |
| **Rudder** | | |
| The rudder is correctly installed and moves freely from stop to stop | CHECK | |
| The connecting bolts and the safety wiring are correctly installed | CHECK | |
| The hinge pin is correctly installed and locking varnish applied | CHECK | |
| **Horizontal tail** | | |
| The elevator is correctly installed and moves freely from stop to stop | CHECK | |
| The hinge pin of the elevator is correctly installed | CHECK | |
| The trim tab is correctly installed and moves freely from stop to stop | CHECK | |
| The hinge pin of the trim tab and the safety wiring are correctly installed and locking varnish is applied to the hinge pin | CHECK | |
| The trim rod is correctly installed | CHECK | |
| **Tailwheel and tail wheel strut** | | |
| The tail wheel strut is correctly installed and not bent | CHECK | |
| The tailwheel lock is correctly adjusted | CHECK | |
| The tailwheel fork and the wheel are correctly installed<br>There is no unusual friction<br>The safety wiring is correctly installed | CHECK | |
| Lubricate the bushings | APPLY GREASE | |
| Condition of the tailwheel tyre is satisfactory. | CHECK, if necessary REPLACE | |
| **Fuselage, inside** | | |
| There are no foreign objects | CHECK | |

| Description | Action | Signature |
|---|---|---|
| **Front left compartment** | | |
| The electric fuel pump is correctly installed on the bracket | CHECK | |
| The electrical connector of the fuel pump is correctly connected | CHECK | |
| The vent line of the electric fuel pump is correctly installed | CHECK | |
| Fuel filter element | REPLACE | |
| Fuel and vent line connections to the wing tank plate are correctly installed | CHECK | |
| The adjacent fuel lines have the correct routing and are correctly connected. There are no signs of chafing | CHECK | |
| The fuel vent lines have the correct routing and are correctly connected. There are no signs of chafing | CHECK | |
| The counterplate of the lower engine mount and the self-locking nuts are correctly installed | CHECK | |
| The bulkhead fitting for fuel is correctly installed | CHECK | |
| The footrest is correctly attached and the clickbonds or camlocks are correctly installed | CHECK | |
| **Front right compartment** | | |
| The battery box is correctly installed. The battery is correctly installed in the battery box | CHECK | |
| The relay is correctly installed | CHECK | |
| The fuse is correctly installed | CHECK | |
| The cables have the correct routing and are correctly connected. There are no signs of chafing | CHECK | |
| The insulating bushing is correctly installed in the electrical power bulkhead | CHECK | |
| Fuel and vent line connections to the wing tank plate are correctly installed | CHECK | |
| The fuel lines have the correct routing and are correctly connected. There are no signs of chafing | CHECK | |
| The fuel vent lines have the correct routing and are correctly connected. There are no signs of chafing | CHECK | |
| The counterplate of the lower engine mount and the self-locking nuts are correctly installed | CHECK | |
| The bulkhead fitting for fuel is correctly installed | CHECK | |
| The footrest is correctly attached and the clickbonds or camlocks are correctly installed | CHECK | |

| **Description** | Action | Signature |
|---|---|---|
| **Wing / fuselage connection** | | |
| The two main bolts are correctly installed and safetied with split pins | CHECK | |
| The two aft bolts are correctly installed and safetied with split pins | CHECK | |
| The fuselage longeron connection bolts (four (4) ea. inside and four (4) ea. outside of the fuselage) are correctly installed and have safety wire with heat shrink tube protection | CHECK | |
| The fuselage longeron connectors (two (2) ea. Inside and two (2) ea. Outside the fuselage) are corrosion free and the surface is sealed. | CHECK | |
| **ELT installation** | | |
| The mounting bracket is correctly installed | CHECK | |
| The ELT is safely attached to the mounting bracket | CHECK | |
| The remote control and the antenna cable are correctly connected | CHECK | |
| The routing of the antenna and of the remote control cables is correct and they are safely attached | CHECK | |
| The ELT antenna is correctly installed | CHECK | |
| The remote control is correctly installed | CHECK | |
| **External markings and placards** | | |
| The aircraft type placard is correctly attached | CHECK | |
| All placards are correctly attached iaw AFM para. 2.17 | CHECK | |
| The registration placard is correctly attached | CHECK | |

## 05-20-04 100 Hour Inspection

Do all steps of the 50h inspection plus these steps:

| Description | Action | Signature |
|---|---|---|
| **Electrical system** | | |
| Alternator maintenance iaw ICA-BC410 or ICA-BC462-H. | PERFORM | |
| Regulator maintenance iaw ICA-LR3C | PERFORM | |
| **Fuel selector switch** | | |
| The aft universal joint and the mounting bracket are correctly installed | CHECK | |
| The mounting bracket is correctly installed | CHECK | |
| The fuel selector valve is correctly installed | CHECK | |
| The fuel hoses are correctly connected to the fuel selector valve | CHECK | |
| The bushing is correctly installed in the carry-through bridge of the spar | CHECK | |
| The front universal joint and the mounting bracket are correctly installed | CHECK | |
| **Structure** | | |
| The firewall and the adjacent structure are not damaged and have no cracks | CHECK | |
| Visual inspection: The composite structure is not damaged and has no cracks | CHECK | |
| The torque of the fuselage longeron connection bolt is 42 Nm (31 ft.lbs.) | CHECK | |
| The control surface deflections are correct, refer to the form (Appendix 7) | CHECK<br>If necessary<br>ADJUST | |
| **NOTE**<br>The maximum permitted play in a control bearing is 0.6 (mm). If the value is higher, replace the bearing. | | |
| The condition of the magneto is satisfactory and its timing is correct | CHECK | |
| **NOTE**<br>For the step above, refer to “Lycoming Maintenance and Overhaul Manual LMO-AEIO-580” | | |

## 05-20-05 1000 Hour Inspection

Disassemble the aircraft and do a full inspection of all components.

| Description | Action | Signature |
|---|---|---|
| Remove the wings | CHECK | |
| Remove the ailerons | CHECK | |
| Remove the elevator | CHECK | |
| Remove the rudder | CHECK | |
| Remove the stabilizer | CHECK | |
| Do the NDI on all composite structure bond lines, for example the tap test, refer to FAA AC43.13-1B section 8* | EXAMINE | |
| Remove the tailwheel strut. Disassemble the tailwheel | CLEAN. If necessary REPLACE | |
| Disassemble the controls and the control rods | CLEAN and EXAMINE | |

## 05-20-06 Engine change

Install the engine, refer to 72-10-00 and Lycoming. AEIO-580-B1A Operation and Installation Manual. P/N 60297-32, Section II.

## 05-20-07 Maintenance Checks Performed

| Flight time | Date | Place | Signature |
|---|---|---|---|
| 25 h | | | |
| 50 h | | | |
| 100 h | | | |
| 150 h | | | |
| 200 h | | | |
| 250 h | | | |
| 300 h | | | |
| 350 h | | | |
| 400 h | | | |
| 450 h | | | |
| 500 h | | | |
| 550 h | | | |
| 600 h | | | |
| 650 h | | | |
| 700 h | | | |
| 750 h | | | |
| 800 h | | | |
| 850 h | | | |
| 900 h | | | |
| 950 h | | | |
| 1000 h | | | |

(continued)

| Flight time | Date | Place | Signature |
|---|---|---|---|
| 1050 h | | | |
| 1100 h | | | |
| 1150 h | | | |
| 1200 h | | | |
| 1250 h | | | |
| 1300 h | | | |
| 1350 h | | | |
| 1400 h | | | |
| 1450 h | | | |
| 1500 h | | | |
| 1550 h | | | |
| 1600 h | | | |
| 1650 h | | | |
| 1700 h | | | |
| 1750 h | | | |
| 1800 h | | | |
| 1850 h | | | |
| 1900 h | | | |
| 1950 h | | | |
| 2000 h | | | |

# 05-50-00 UNSCHEDULED MAINTENANCE CHECKS

Hard landing

| Description | Action | Signature |
|---|---|---|
| Remove the landing gear fairings and the cowling | EXAMINE | |
| Engine mount | EXAMINE | |
| Landing gear legs | EXAMINE | |
| Wheels and axles | EXAMINE | |
| Tail wheel strut straight? | EXAMINE | |
| Rudder impact from tail wheel assembly? | EXAMINE | |

Violent stopping of the engine or propeller strike

| Description | Action | Signature |
|---|---|---|
| Remove and examine the propeller, refer to the manufacturer's maintenance manual | EXAMINE | |
| Remove the engine and examine it for shock loading, refer to the engine manufacturer´s specification | EXAMINE | |
| Engine mount | EXAMINE | |

Engine fire

| Description | Action | Signature |
|---|---|---|
| Cowling: Structural damage | EXAMINE | |
| Fuel- and oil lines | EXAMINE | |
| Cables | EXAMINE | |

Lightning strike

| Description | Action | Signature |
|---|---|---|
| Impact zone: Damage | EXAMINE | |
| All metallic parts | EXAMINE | |
| All bearings | EXAMINE | |
| All electronic equipment | EXAMINE | |

Bird strike

| Description | Action | Signature |
|---|---|---|
| Impact zone: Damage | EXAMINE | |
| Adjacent structure | EXAMINE | |

Hail damage

| Description | Action | Signature |
|---|---|---|
| Upper / exposed surfaces:<br>Damage (coin tapping inspection)<br>Dents (visual inspection) | EXAMINE | |
| Propeller blades: Damage | EXAMINE | |

Exceedance of published AFM limitations: CONTACT the TC Holder.

# Chapter 06 Dimensions

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## 06-00-00 GENERAL

The XA41 and the XA42 use the System International (SI) for dimensions and areas. For the conversion factors of SI units and US imperial units, refer to Chapter 02.

## 06-10-00 DIMENSIONS XA41 / XA42

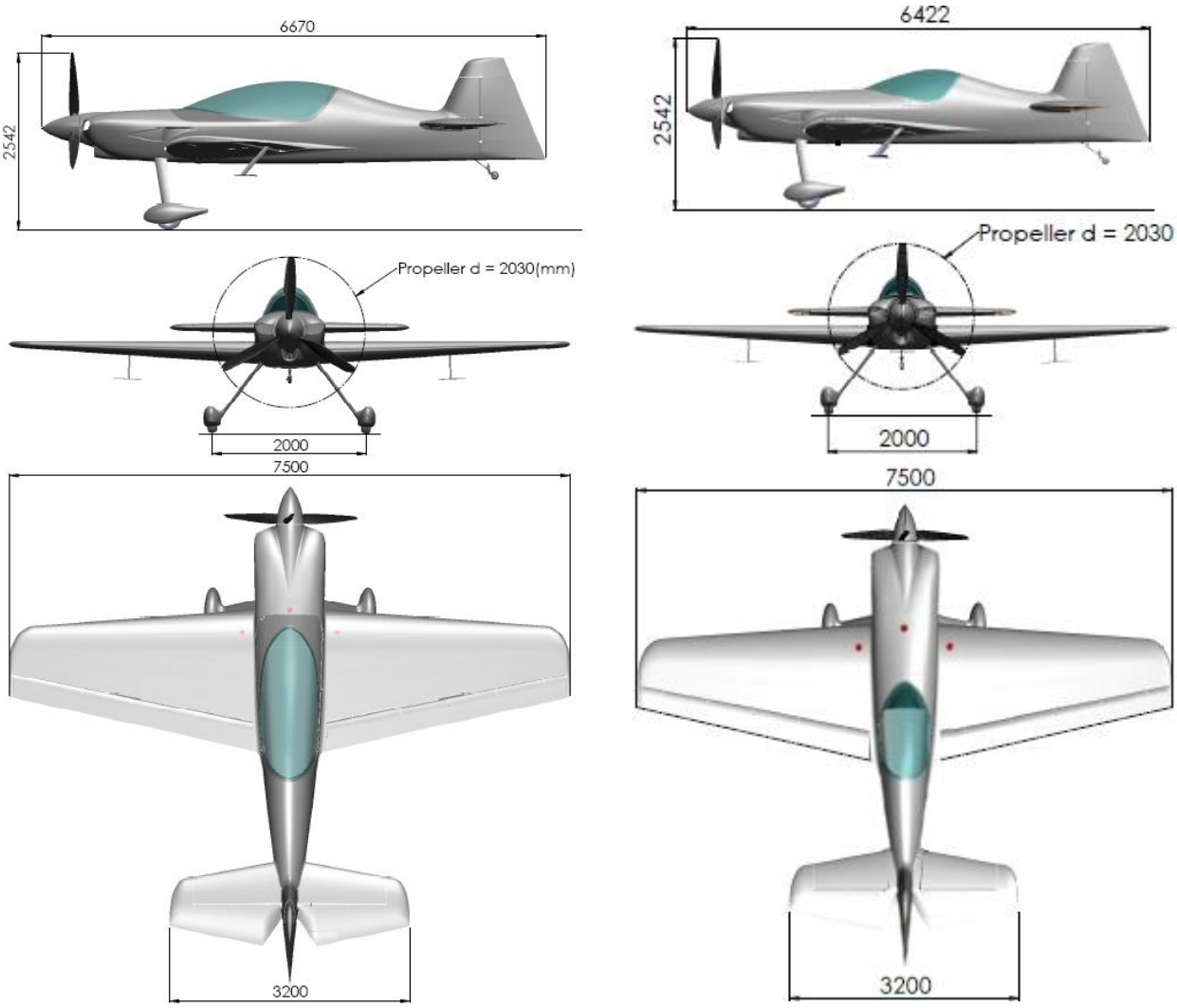



Figure 06-1: Dimensions XA42 (left) and XA41 (right)

## 06-10-01 Primary Data

| Dimensions in mm | XA42 | XA41 |
|---|---|---|
| Length overall | 6670 | 6422 |
| Height overall (ground attitude) | 2542 | |
| Span | 7500 | |
| Wheel track | 2000 | |

## 06-10-02 Wing

| | |
|---|---|
| Wing planform | Trapezoid |
| Wing span | 7500 mm |
| Wing area | 11.25 m² |
| Aspect ratio | 5.00 |
| Airfoil | PS-1-16 / Tip PS-1-09 |
| Root chord | 2060 mm |
| Tip chord | 950 mm |
| MAC | 1505 mm |
| Aileron span | 3220 mm |
| Aileron area | 1.26 m² |
| Aileron deflection | ± 30 ° |

## 06-10-03 Horizontal Tail (with Elevator)

| | |
|---|---|
| Planform | Trapezoid |
| Span | 2600 mm |
| Area | 2.97 m² |
| Airfoil | DU86-MOD1 |

## 06-10-04 Elevator

| | |
|---|---|
| Span | 3200 mm |
| Area | 1.45 m² |
| Deflection | ± 27 ° |

## 06-10-05 Trim Tab

| | |
|---|---|
| Span | 400 mm |
| Tip chord | 130 mm |
| Deflection | ± 3 ° |

## 06-10-06 Vertical Tail (with Rudder)

| | |
|---|---|
| Planform | Trapezoid |
| Height | 1100 mm |
| Area | 1.54 m² |
| Airfoil | DU86-MOD1 |

## 06-10-07 Rudder

| | |
|---|---|
| Height | 1400 mm |
| Area | 0.82 m² |
| Deflection | ± 30 ° |

# Chapter 07 Lifting and Shoring

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## 07-00-00 GENERAL

The XA41 and the XA42 have no special hoist points. Refer to chapter 07-10-00.

## 07-10-00 JACKING

To lift the aircraft, remove the top cowling. Attach the straps to the left and right side of the engine mount as near as possible to the fuselage. The figure in chapter 07-20-01 shows the straps that are attached to the engine mount.

To lift the rear of the aircraft: Push the aircraft up from below the horizontal stabilizer.

**CAUTION**

Only use straps with a permitted load of more than 1000 (kg)/2200 lbs.

Hold the wings with trestles to prevent the aircraft to tilt to one side.

## 07-20-00 SHORING

It is necessary to shore the aircraft during the installation or removal of the main or tail landing gear.

## 07-20-01 Shoring the front

To lift the front, a support is necessary. The support area must be a minimum of 100 x 500 mm.

**CAUTION**

Put a cushion on top of the support to prevent damage to the fuselage.

To lift the front:

1 Lift the aircraft, refer to chapter 07-10-00.

2 Remove the spar bridge cover.

3 Put the aircraft on the support, refer to the figure below. Put the support below the lower longeron connector brackets of the fuselage.

**CAUTION**

Do not remove the straps to make sure that the aircraft is safe while shoring.

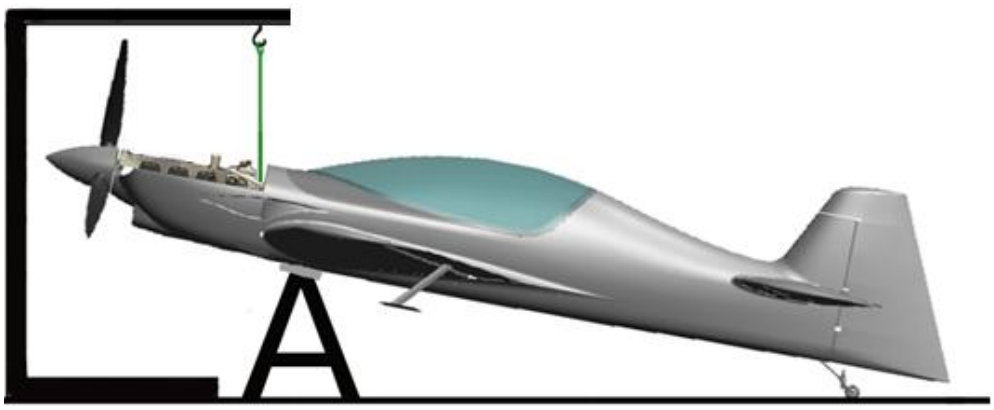


Figure 07-1: Shoring the front

## 07-20-02 Shoring the tail

The dimensions of the tail support must be 500x300x300 mm.

**CAUTION**

Put a cushion on top of the tail support to prevent damage to the fuselage.

To lift the tail:

1 Use wheel chocks to safety the main wheels.

2 Lift the tail.

3 Put the applicable tail support below the fuselage, refer to the figure below.

4 Put the tail on top of the tail support.

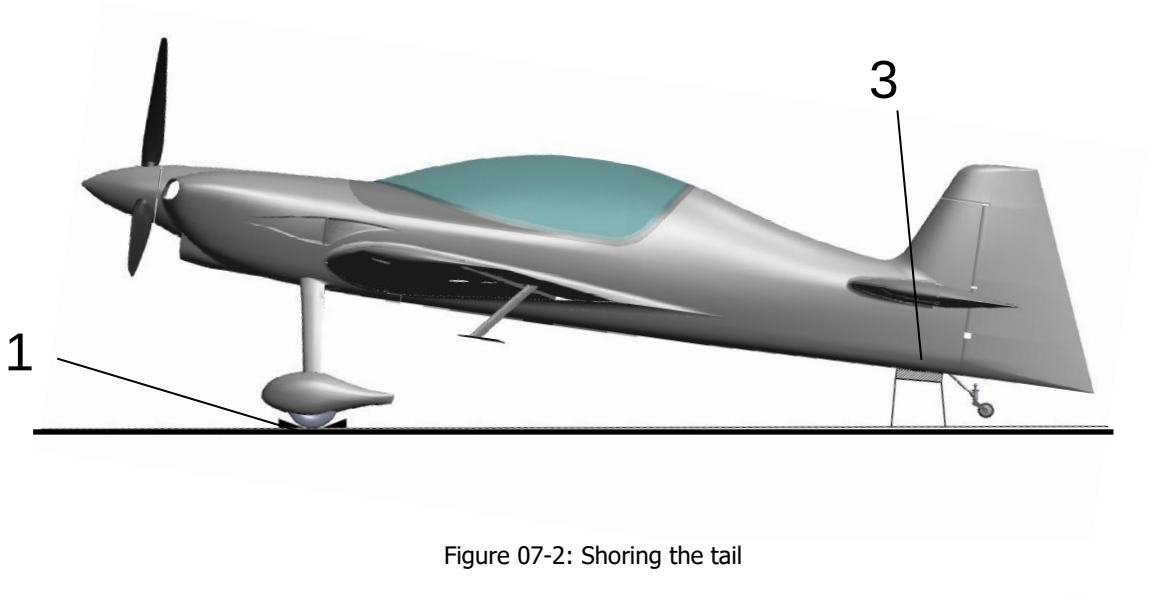



Figure 07-2: Shoring the tail

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# Chapter 08 Leveling and Weighing

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## 08-00-00 GENERAL

This chapter gives information on the tools for leveling, weighing and how to calculate the center of gravity.

**NOTE**

Do the leveling and weighing procedure only on a flat surface. Do the leveling and weighing procedure in a hangar to prevent incorrect measurements because of wind.

**WARNING**

Do not lift the tail higher than necessary. When the tail is lifted too much, the aircraft can tilt forward. This can cause injury to persons.

## 08-10-00 LEVELING

To level the aircraft:

1 Use wheel chocks to safety the main wheels.

2 Lift the tail.

3 Put a jack below the tailwheel. The tailwheel must be locked straight.

4 Use a water level to measure the attitude of the aircraft. Put the water level on the straight part of the canopy cutout (left side of the cockpit).

5 Adjust the pitch of the aircraft as follows: Change the height of the jack until the water level shows that the aircraft is in a horizontal position.

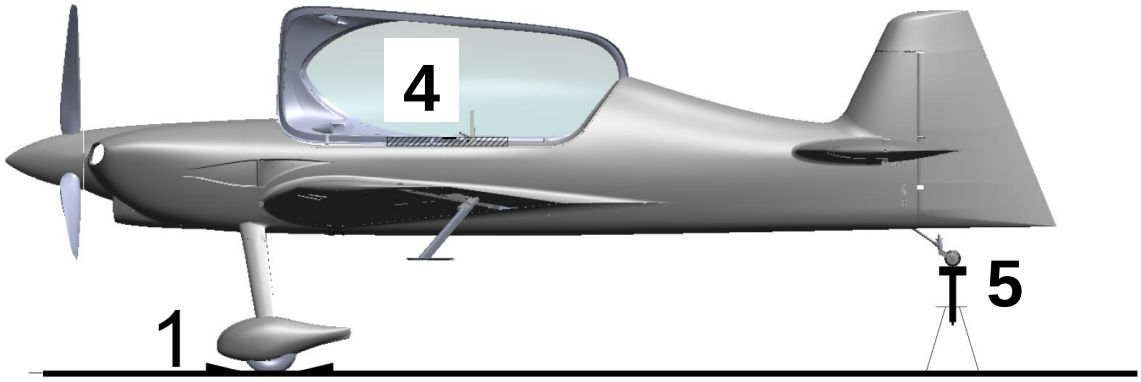



Figure 08-1: Leveling

## 08-20-00 MASS & BALANCE

Refer to the Form in Appendix 2.

## 08-20-01 Weighing

To measure the aircraft empty mass:

1 Make sure that the aircraft has the necessary equipment, refer to the equipment list of the Aircraft Flight Manual. Make sure that the equipment is correctly installed in the specified positions.

2 Set the control surfaces to the neutral position and make sure that they cannot move.

3 Make sure that only unusable fuel is in the fuel tanks.

4 Make sure that all other fluids have the correct fluid level, for example engine oil and brake fluid. Fill the fluids to the correct level, if necessary.

5 Remove all objects that are not part of the equipment (luggage and others).

6 Clean and dry the aircraft.

7 Close the canopy.

8 Move the two main wheels onto the scales. Use ramps, if necessary.

9 Put a third scale below the tailwheel.

10 Make the aircraft level, refer to chapter 08-10-00.

11 Read the scales and record the mass below.

12 Calculate the center of gravity, refer to the instructions on the next page.

Net mass on left main wheel scale ($W_1$) _____ (kg)

Net mass on right main wheel scale ($W_2$) _____ (kg)

Net mass on tailwheel scale ($W_3$) _____ (kg)

**Total empty mass ($M = M_1 + M_2 + M_3$)** _____ **(kg)**

## 08-20-02 Center of Gravity

To calculate the center of gravity, refer to the figure below:

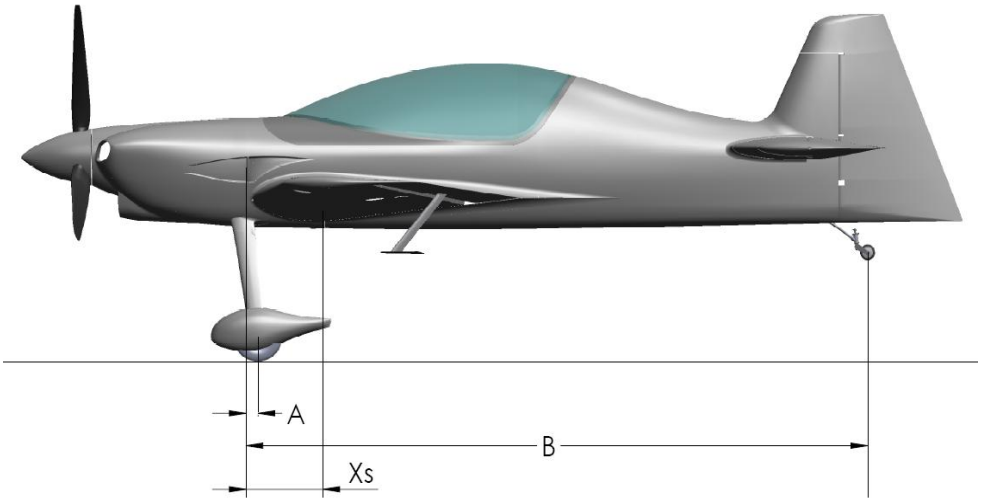



Figure 08-2: Center of Gravity calculation

The moment arms A and B are constant values:

XA42: A = 112 (mm)
B = 4475 (mm)
XA41: A = 120 (mm)
B = 4225 (mm)

For mass $M_{1,2,3}$ and the weighing procedure, refer to chapter 08-20-01.

Calculate the center of gravity $X_S$ of the empty aircraft as follows:

$$X_S = (A * M_1 + A * M_2 + B * M_3) / M$$

**WARNING**

Only operate the aircraft in the permitted range of mass and center of gravity limits. This will give good flight performance, good handling qualities and is also necessary for flight safety.

# Chapter 09 Towing and Taxiing

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## 09-00-00 GENERAL

This chapter gives information how to move the aircraft on the ground. It is possible to tow and taxi the XA41 / XA42 on the ground.

**WARNING**

Only qualified personnel are permitted to taxi the aircraft.

## 09-10-00 TOWING

**WARNING**

Make sure that the ignition switch is in the OFF position during all towing maneuvers to prevent accidents.

Do not use towing vehicles, towing devices and equipment to tow the aircraft with your hands.

**CAUTION**

Do not push the spinner to prevent damage.

Push only the leading edges of the wing or tail or pull the inner part of the propeller blades (near the spinner).

## 09-20-00 TAXIING

If necessary, remove the wheel chocks and the tie-down devices. Taxi the aircraft only at slow speeds. Taxi a distance of some feet and make sure that the brakes are serviceable. To turn the aircraft, operate the left or the right toe brake. To stop the aircraft, use the two toe brakes.

**CAUTION**

Be careful when you taxi the aircraft on rough ground. The propeller must not touch the ground. Gravel and loose stones can also cause damage to the aircraft.

**WARNING**

Make sure that there are no persons and objects in the area around the aircraft. The propeller can cause injury to persons and damage to objects.

The minimum turning radius is 5.5 (m) / 18(ft).

# Chapter 10 Parking, Mooring, Storage and Return to Service

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## 10-00-00 GENERAL

Always park or tie down the aircraft when it is not in operation. If the aircraft is parked for a longer period of time, we recommend that you tie it down. Always tie down the aircraft if strong winds are possible. If you must park the aircraft for more than 5 days, put it in a hangar. For protection, we recommend that you keep the aircraft in a hangar at all times.

Refer to the Lycoming Operator's Manual for full information about the engine storage.

**NOTE**

All pilots and maintenance personnel must fully know the procedures in this chapter.

## 10-10-00 PARKING AND STORAGE

### 10-10-01 Parking

If there are strong winds or gusts, moor the aircraft, refer to chapter 10-20-00.

**CAUTION**

Make sure that the wheel chocks that are necessary to park the aircraft have the correct dimensions. This will prevent damage to the wheel covers.

To park the aircraft:

1 Taxi or tow the aircraft to the parking position.

2 Align the aircraft into the wind.

3 Put the wheel chocks in front of and behind the main wheels.

4 Safety the control stick in the rear center position with the lap strap of the rear cockpit harness.

5 Close the canopy.

6 Install the pitot cover and the canopy cover (accessory equipment).

### 10-10-02 Storage

If the aircraft is not operated for 30 days or more, you must do this storage procedure:

1 Do the procedure for parking, refer to chapter 10-10-01.

2 Do the corrosion prevention procedure for engines, refer to Lycoming Service Letter L108, newest issue.

3 Disconnect the aircraft battery.

4 Fill the fuel tanks to the maximum level.

5 Clean the tires with a dry cloth. Apply a tire protector spray.

6 Remove loose equipment from the aircraft.

7 Examine the fuel each week for water contamination.

8 Make sure that the air pressure in each tire is correct.
If necessary, inflate the tires.
Move the wheels one time each week to prevent corrosion.

## 10-20-00 TIEDOWN

**CAUTION**

If you must put the aircraft into storage outdoors for a long time, do the tiedown procedure.
Strong winds or gusts can cause damage to the aircraft when it is not tied down.
Only use the tie-down points that are shown in this chapter.

The tie-down points of the aircraft are at the outer aileron hinge on each side of the wing. You can also use the tailwheel axle to tie down the tail. Tie down the aircraft as follows:

1 Park the aircraft, refer to chapter 10-10-02.

**CAUTION**

Make sure that the ropes do not have too much tension to prevent damage.

2 Attach a rope to each mooring point and to the ground anchor point. We recommend that you push the aileron control to one side to get easy access to the aileron hinges.

3 Make sure that the canopy is closed and that the canopy cover is installed.

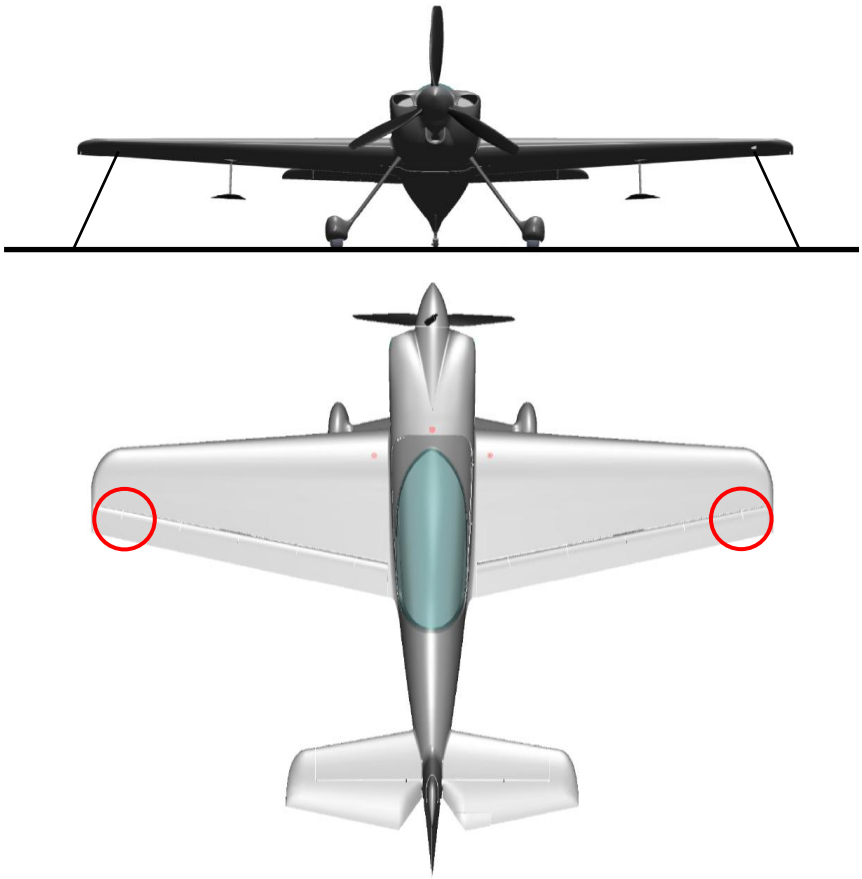


Figure 10-1: Tie-down points

## 10-30-00 RETURN TO SERVICE

If the aircraft was parked for more than 30 days, we recommend that you do a 50 hour Inspection, refer to chapter 05-20-04. Also do the procedure to return the engine to service, refer to Lycoming Service Letter L180, newest issue. If necessary, install the equipment which you removed for storage. If the aircraft battery is disconnected or removed, connect or install the battery again.

# Chapter 11 Placards and Markings

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## 11-00-00 GENERAL

Placards are used for identification and indication. They show the function, operation and operating limits of systems and equipment.

**WARNING**

Do not remove, replace or change placards and markings without approval of the airworthiness authority. Replace damaged placards and markings to prevent accidents and/or damage.

## 11-20-00 EXTERNAL PLACARDS AND MARKINGS

For applicable external placards and their locations, refer to the Aircraft Flight Manual, chapter 2.17. The order for replacement placards must have the correct placard text and the placard number or the aircraft serial number.

## 11-30-00 INTERNAL PLACARDS AND MARKINGS

For applicable internal placards and their locations, refer to the Aircraft Flight Manual, chapter 2.17. The order for replacement placards must have the correct placard text and the placard number or the aircraft serial number.

# Chapter 12 Servicing

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## 12-00-00 GENERAL

This chapter gives information about the servicing of the aircraft.

Shorter service and maintenance intervals are recommended when the aircraft operates in unusual conditions, such as:

- Very high or low temperature ranges
- Atmospheric conditions with dust
- High humidity and moisture
- Rough runways
- Other unusual operating conditions.

## 12-10-00 REPLENISHING

The procedures of this chapter give information how to add fuel, engine oil and brake fluid. Information about tire inflation is also included. Chapter 12-10-08 gives an overview of all fluids that are necessary for replenishing.

## 12-10-01 Refueling

**WARNING**

Do not refuel the aircraft while the engine operates.

Fire, sparks, heat or persons that smoke are not permitted in the safety zone of 30 (m) around the aircraft.

Make sure that all electrical systems of the aircraft are de-energized (OFF) when you refuel the aircraft.

Before you start the engine, make sure that there is no spilled fuel around the aircraft.

If you do not obey these precautions, accidental fire can occur.

**CAUTION**

The minimum aviation grade fuel for the Lycoming AEIO-580-B1A engine is AvGas 100 or 100LL. Refer to the newest revision of Lycoming Service Instruction No. 1070.

**NOTE**

For fuel quantities, refer to chapter 12-10-08.

**WARNING**

Make sure to keep the fuel quantity in the limits for the specified flight operations. Incorrect fuel quantities are dangerous. For the correct fuel quantities, refer to the Aircraft Flight Manual.

To refuel the acro tank or the wing tanks of the aircraft:

1 Make sure that the engine is OFF.

2 Ground the aircraft electrically.

3 Open the filler cap.

4 Fill the necessary quantity of fuel into the tank. If necessary, use a pump.

5 Close the filler cap correctly.

6 Disconnect the ground cable from the aircraft.

## 12-10-02 Defueling

**WARNING**

Before you defuel the aircraft, make sure that it is electrically grounded. Incorrectly grounded aircrafts can cause accidents.

Also obey the safety precautions in chapter 12-10-01.

To defuel the tanks, use containers with applicable dimensions. Use pumps or siphons to remove the fuel from the tanks through the filler ports. Open all drain valves. Refer to chapter 12-10-03.

## 12-10-03 Fuel Drainage

The aircraft has three drain valves:
The drain valve of the main tank is on the bottom side of the fuselage in front of the main spar.
The drain valves of the wing tanks are on the bottom side of the wing.

**WARNING**

Do not drain fuel while the engine or exhaust system is hot or in strong winds to prevent accidents.

When the fuel is drained, close the drain valve correctly and make sure that there are no leaks.

To drain the fuel:

1 Before you drain the fuel and examine the fuel drain valves, wait for a minimum of 5 minutes after refuelling. Thus, moisture and sediment can collect at the bottom of the tank.

2 Use a transparent container to drain a quantity of fuel before the first flight of the day.

3 Let the drained fuel collect at the bottom of the container before you examine the fuel.

4 Continue to drain each drain valve until there is no water and/or contamination.

## 12-10-04 Replenishment of Engine Oil

**NOTE**

Refer to chapter 12-10-08 for the quantity of engine oil and the specifications.

Refer to the newest revision of Lycoming Service Instruction No.1014.

To examine the oil quantity:

1 Stop the engine and wait for a minimum of 5 minutes.

2 Open the hatch in the upper cowling half.

3 Remove the oil filler cap and the dipstick of the engine.

4 Remove the oil from the dipstick with a clean cloth or a paper towel.

5 Put the dipstick back into the filler port and tighten it with your hand.

6 Remove the dipstick.

7 Examine the oil level on the dipstick and compare the level with the markings on the dipstick.

8 If it is necessary to add oil, do the instructions below.

9 Put the dipstick back into the filler port and tighten it with your hand.

10 Close the hatch in the upper cowling half.

To add engine oil:

1 Examine the oil quantity, refer to chapter 12-10-04. Add oil only if it is necessary.

2 Make sure that the oil has the correct specification and viscosity. Fill the necessary quantity in the open filler port.

3 Examine the oil level during the procedure to make sure that there is not too much engine oil.

4 Put the dipstick back into the filler port and tighten it with your hand.

5 Close the hatch in the upper cowling half.

## 12-10-05 Engine Oil Change

For the engine oil change intervals, refer to chapter 05-20-00.

To replace the engine oil, refer to chapter 12-10-04 and the newest revision of Lycoming Service Instruction No.1014.

To replace the engine oil:

1 Remove the cowling.

2 Cut the safety wire that safeties the oil drain plug.

3 Put a container with applicable dimensions below the oil drain plug.

4 Remove the oil drain plug and let the oil drain into the container.

5 Remove the oil screen housing from the engine accessory housing.

**CAUTION**

Be careful when you find metal particles on the oil pressure screen. Metal particles are signs of engine damage. Make sure that the oil pressure screen and the mesh are not damaged.

6 Examine the oil pressure screen for metal particles. Clean the oil pressure screen.

7 Install the oil pressure screen to the oil screen housing.

8 Install the oil screen housing to the engine accessory housing with a new gasket.

9 Add the engine oil, refer to chapter 12-10-04.

## 12-10-06 Replenishment of Brake Fluid

**WARNING**

Be careful with brake fluid. Do not get brake fluid on your skin or in your mouth to prevent damage to health.

Remove spilled brake fluid immediately to prevent damage to paint and other materials.

**NOTE**

For quantity and specification of the brake fluid, refer to chapter 12-10-08.

The best method to bleed and fill aircraft brakes is from the bottom up:

1 Loosely connect a 1/8" ID transparent hose between the bleeder valve of the brake caliper and a brake bleeder tank such as ATS P/N 06-11413-1.

2 Use a container with an applicable pump. Supply brake fluid until the hose is full without air bubbles.

3 Attach the hose to the bleeder screw of the brake caliper and make sure that air cannot get out. Open the valve a quarter turn.

4a Applicable to brake systems with a XA42-3280-230 master cylinder: Open the vent plug, refer to Figure 12-1 (left).

4b Applicable to brake systems with a XA42-3280-232 master cylinder with reservoir XA42-3280-233: Remove the top reservoir cover. Remove the membrane, refer to Figure 12-1 (right).

5 Use a pump and supply brake fluid into the system until the brake cylinder reservoir is full.

6 Tighten the bleeder valve screw. Remove the hose.

7 To seal the reservoir:
- a) For XA42-3280-230: Close the vent plug. Refer to Figure 12-1 (left).
- b) For XA42-3280-232: Install the membrane. Close and tighten the reservoir top. Refer to Figure 12-1 (right).

8 Make sure that the reservoir is full and that you have a "hard pedal."

9 If you have a "soft-pedal," push the brake pedal some times. Frequently this will remove the problem. If the pedal stays soft, drain the fluid and do the procedure again.

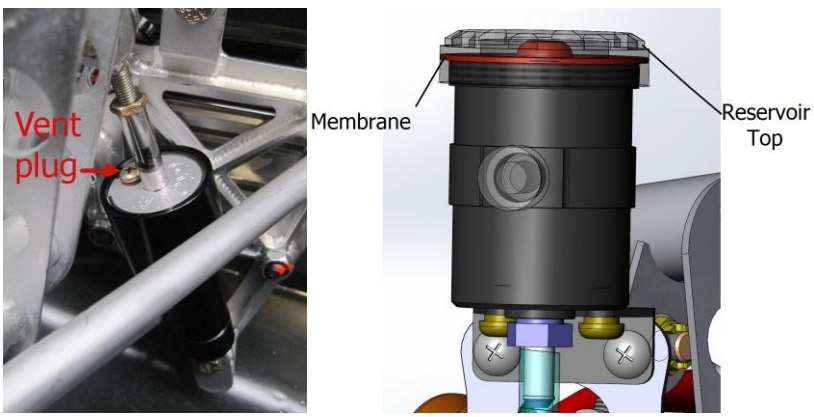



Figure 12-1: How to open the master cylinder (left) and the reservoir (right)

## 12-10-07 Tire Inflation

The specified tire pressure of the main landing gear wheels is 3.5 (bar) / 50 (psi). The tailwheel is made of solid rubber. You cannot inflate it.

## 12-10-08 Overview of Fluids for Replenishing

**FUEL**

Use AvGas 100 or 100LL only.

The fuel capacities of the main tank and wing tanks are as follows:

Total fuel capacity: 277 (L) / 73.2 (US gal)

- Wing tanks: 2x 105 (L) / 2x 27.7 (US gal)
- Main tank: 67 (L) / 17.7 (US gal)

Usable fuel capacity (Total): 266 (L) / 70.3 (US gal)

Usable fuel capacity (Acro): 57 (L) / 15.1 (US gal)

**OIL**

The oil quantity of the Lycoming AEIO-580-B1A engine is:

Maximum sump capacity: 15.15 (L) / 16 (USqt)

Minimum sump capacity: 8.52 (L) / 9 (USqt)

The engine oil must have the specifications as given in the table below, refer to the Lycoming AEIO-580-B1A Operation and Installation Manual:

Table: Recommended oil grades*

| Average Ambient Air | MIL-J-6082B or SAE J1966 Spec. Mineral Grades | MIL-L-22851 or SAE J1899 Spec. Ashless Dispersant Grades |
|---|---|---|
| All Temperatures | --- | SAE15W50 or SAE20W50 |
| More than 27 (°C) / 80 (°F) | SAE 60 | SAE 60 |
| More than 16 (°C) / 60 (°F) | SAE 50 | SAE 40 or SAE 50 |
| -1 (°C) / 30 (°F) thru 32 (°C) / 90 (°F) | SAE 40 | SAE 40 |
| -18 (°C) / 0 (°F) thru 21 (°C) / 70 (°F) | SAE 30 | SAE 30, SAE 40 or SAE20W40 |
| Less than -12 (°C) / 10 (°F) | SAE 20 | SAE 30 or SAE20W30 |

* Use only mineral oil during the first 50 hours of operation for these engines:

- New engines
- Newly overhauled engines
- Rebuilt engines
- Engines with one or more replaced cylinders.

**BRAKE FLUID**

Use Mil-H-5606 red hydraulic fluid only.

Total brake fluid capacity: 2 x 0.10 (L) / 0.11 (USqt)

## 12-20-00 SCHEDULED SERVICING

## 12-20-01 Cleaning of the external surfaces

The external surfaces have an automotive acrylic finish. The applicable procedure for these surfaces is to clean them with water first and then to polish them. To clean the surfaces, we recommend that you use a mixture of cool water and a weak aircraft or automotive cleaner.

**CAUTION**

Do not use household detergents or cleaning agents which contain silicone to clean the external surfaces of the aircraft.

Such cleaning agents can cause damage to the finish.

To remove very strong dirt of insects from the wing leading edges, we recommend that you clean them immediately after the flight. You can apply non-silicone car polish to the surfaces and polish them to make them glossy. The manufacturer recommends that you polish them two times a year.

To clean the canopy Plexiglass, you must only use clean water without detergent. Use a clean sponge or a chamois leather to clean the Plexiglass.

**CAUTION**

Do not use usual detergents or glass cleaners to clean the Plexiglass. Plexiglas is softer than glass and damage can occur.

Do not clean the canopy Plexiglass when it is dry. Use only clean warm water and a clean chamois leather. Do not clean it with fuel, alcohol, acetone or other materials to prevent damage.

## 12-20-02 Cleaning of the internal surfaces

To remove dust and loose dirt, we recommend that you clean the internal surfaces before the first flight of the day with a vacuum cleaner. Remove spilled liquids with a tissue or a cloth.

To clean the internal surface of the canopy Plexiglass, refer to chapter 12-20-01.

## 12-20-03 Engine Cleaning

Remove dirt and oil from the engine. This is necessary to decrease the temperature and to prevent fire. But the applicable maintenance and service procedures are also necessary for a clean engine. Make sure that there is a good airflow in the work area during the cleaning procedure.

**WARNING**

Make sure that the fire-fighting and safety equipment is available, refer to the Equipment list of the Aircraft Flight Manual.

To clean the engine and engine compartment, refer to the manufacturer's manuals.

To clean the engine:

1 Let the temperature of the engine decrease before you clean it.

2 Make sure that the electrical components, the air intakes and the cowling have protection from cleaning agents.

**WARNING**

Do not start the engine before you removed all cleaning agents.

Use only cleaning agents that are not flammable to prevent fire.

3 Start to clean the engine compartment from the top with a cleaning agent.

4 Flush the engine compartment with clean, warm water to fully remove all cleaning agents.

## 12-30-00 UNSCHEDULED SERVICING

## 12-30-01 Removal of Snow and Ice

**CAUTION**

Remove snow and ice as immediately as possible. Melted water can freeze and can cause damage.

Do not use sharp objects or de-icing fluids to remove snow or ice. This can cause damage to the external surfaces and the structure.

Use soft brushes to remove the snow from the surfaces. If possible, put the aircraft in a warm hangar to remove the ice.

# Chapter 20 Standard Practices - Airframe

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## 20-00-00 GENERAL

This chapter contains data about standard threaded fasteners.

Always tighten the nut or bolt to the torque shown in chapters 20-10-02 and 20-10-03 unless other instructions are applicable.

Always use the correct locking device for the nut or the bolt.

**WARNING**

Discard the self-locking nuts after removal, because they have a decreased friction torque.

Obey the special torque and locking procedures for all bolt connections. Loose connections can cause injury to persons and/or damage to material.

## 20-10-00 STANDARD PRACTICES - AIRFRAME

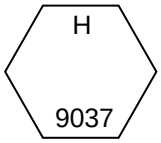
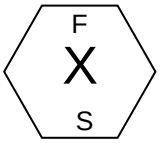
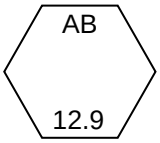
### 20-10-01 Types of Bolts

Applicable bolts for the aircraft are:

- LN Bolts ("Luftfahrt Norm")
- AN Bolts ("Army/Navy"
- DIN Bolts ("Deutsche Industrie Norm")

The marks on the bolt head identify the types of bolts. The table below shows the identification.

Table: Types of Bolts

| | **LN-Bolts** | **AN- Bolts** | **DIN- Bolts** |
|---|---|---|---|
| **Head identification** |  |  |  |
| **Marks on head** | Manufacturer identification (H, L, …)<br>LN Specification (9037, 9355) | Manufacturer identification (C, F, …)<br>Alloy Steel (X) | Manufacturer identification (AB, …)<br>Property class (8.8, 12.9) |
| **Example** | **LN9355-06026**<br>LN9355 specification<br>06 - M6 thread<br>026- length in mm | **AN4-10A**<br>4 - bolt diameter 4/16"<br>10 - length 10/8"<br>A - hole location | **DIN931 M4x10 8.8**<br>DIN 931 specification<br>M4 thread 10 - length in mm<br>8.8 - property class |

## 20-10-02 Standard Torque Values

To tighten the nuts and bolts, use these torque values:

Table: Standard maximum torque values for DIN and LN bolts and nuts

| Thread size (metric) | Torque value | |
|---|---|---|
| | (Nm) | (ft.lb) |
| M4 | 3 | 2.0 |
| M5 | 6 | 4.5 |
| M6 | 10 | 7.5 |
| M8 | 25 | 18.0 |
| M10 | 50 | 37.0 |
| M12 | 85 | 63.0 |

Table: Standard installation torque values for AN and MS bolts and nuts

| Thread size | Torque value | |
|---|---|---|
| | (Nm) | (ft.lb) |
| (AN3) 10-32 | 1.6 | 1.2 |
| (AN4) 1/4-28 | 7.0 | 5.2 |
| (AN5) 5/16-24 | 13.6 | 10.0 |
| (AN6) 3/8-24 | 28.5 | 21.0 |
| (AN7) 7/16-20 | 38.5 | 28.0 |
| (AN8) 1/2-20 | 54.2 | 40.0 |
| (AN9) 9/16-18 | 91.0 | 67.0 |
| (AN10) 5/8-18 | 125.0 | 92.0 |

## 20-10-03 Special Torque Values

Table: Special torque values

| Location and Item | Torque value | |
|---|---|---|
| | (Nm) | (lb-ft) |
| Engine to Engine Mount: NAS363-720 (metal stop nut) | 55 | 41 |
| Engine Mount to fuselage AN5 | 25 | 18.4 |
| Horizontal Stabilizer Spar Bolt: XA42-5510-291 | 60 | 44 |
| Longeron connection bolt XA42-5300-210 | 42 | 31 |
| AN4H-12A Brake caliper bolt | 10 | 7.3 |
| Engine components | Refer to Lycoming Maintenance and Overhaul Manual LMO-AEIO-580 | |
| Propeller | Refer to mt-Propeller. ATA (E-124) Operation and Installation Manual – Hydraulically Controlled Variable Pitch Propeller MTV-9-() | |

## 20-10-04 Torque Measurement

For self-locking nuts, add the torque value of the locking device (friction or brake torque) to the value in the tables above. Read the friction value from the torque wrench when the nut touches the washer.

When you tighten a bolt from the bolt head, do as follows: Add the value of the shaft friction (the friction of the bolt in the attached part) to the value in the table. Read the friction value from the torque wrench when the bolt touches the washer.

## 20-10-05 Check for Delamination

Do a coin tapping inspection to examine the airframe composite structure for delamination. Use a large washer or coin and tap it against a solid surface. Make sure that you can hear a typical metal sound. If there is a delamination, you will hear a soft sound.

## 20-10-06 Flexible Hoses

For the maintenance or overhaul work of the flexible hoses, refer to the manufacturer's service information and service bulletins. Examine the hoses and the hose assemblies for deterioration at each inspection period.

Examine the hoses for:

- Leakage
- Separation of the cover or of the braid of the inner hose
- Hard parts or parts that are not flexible
- Cracks
- Scratches, marks or cracks because of the pressure of hose clamps or supports.

If damage occurs, replace all parts of the hose assembly. Use a new hose assembly with the factory-installed end fittings. Make sure that all parts are the correct types with the specified dimensions.

These oil, fuel, brake and sense lines are installed in the aircraft:

Table: Flexible hoses

| Item | Manufacturer and Type |
|---|---|
| Fuel, oil and sense lines in engine bay | Parker, Stratoflex PTFE Type 101 and 124 |
| Fuel lines in cockpit | Parker, Stratoflex PTFE Type 101 and 124 |
| Brake lines | Parker, Stratoflex PTFE Type 101 and 124 |

**CAUTION**

Do not twist flexible hoses during installation. Twisted hoses can have lower life times.

Identification stripes along the hose will help you to install the hose correctly. Make sure that they are straight and not twisted.

**CAUTION**

Do not change the routing when you replace flexible hoses. A different routing can decrease the bend radius of the hoses. A small bend radius will decrease the life time of the hose.

## 20-10-07 Fittings

All installed fittings for the oil lubrication, the fuel system, the brake system and the smoke system are made of aluminum alloy. Most fittings are AN-fittings. The dash number that follows the AN number shows the dimension of the hose for which the fitting is made, in 16$^{th}$ of an inch. This dimension is the inner diameter of the hose. The material code letter (D) follows the dash number.

Example: AN823-10D

**CAUTION**

Apply Loctite 577 on all National Pipe Threads (NPT) before installation to prevent leaks.

# 20-20-00 ASSEMBLY AND DISASSEMBLY INSTRUCTIONS

## 20-20-01 General

For transportation or storage it is possible to disassemble the aircraft, refer to chapter 20-20-03. To assemble the aircraft, obey the instructions of chapter 20-20-02. Only approved personnel are permitted to do the assembly and the disassembly.

For assembly and disassembly these tools are necessary:

- 2 x 3/8" wrench socket
- 2 x 7/16" wrench socket
- 2 x ½" wrench socket
- 1 x 11/16" wrench
- 1 x 10 mm wrench socket
- 1 x 19 mm wrench socket
- 1 x 30 mm wrench socket
- 1 x 6 mm Allen key
- 1 x 10 mm Allen key
- 1 x T50 Torx wrench socket
- 1 x PH 2 Phillips type screwdriver
- 1 x Safety wire pliers
- 1 x Grip pliers
- 1 x Rubber hammer
- 1 x Torque wrench

# 20-20-02 Assembly Instructions

Unless specified differently, torque all bolts and nuts as given in chapters 20-10-02 and -03.

Assemble the aircraft in the sequences as follows:

1 Remove the rudder if it is installed to the fuselage; refer to chapter 55-60-00.

2 Prepare the stabilizer assembly: Clean it and lubricate the bolts and bushings with grease.

3 Install the stabilizer assembly. Follow the installation instructions in chapter 55-10-00.

4 If the elevator was removed, install the elevator. Refer to chapter 55-20-00.

5 Install the elevator control rod between the elevator bell crank and the elevator. Refer to chapter 27-30-02 and 27-30-03

6 To install the rudder, refer to chapter 55-60-00.

7 Install the wing. Refer to chapter 57-10-00.

8 If temporary transportation nuts are installed on the wheel axles, remove the nuts. Install operational wheel nuts on the wheel axles. Safety the nuts with a split pin, DIN 94 3.2x50mm.

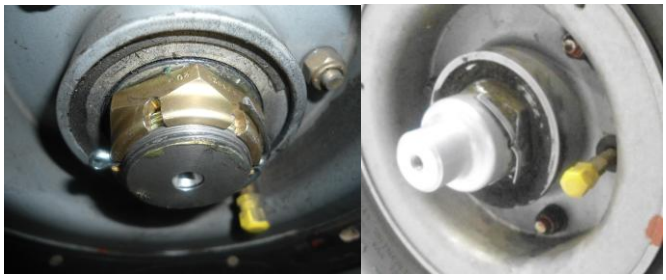


Figure 20-1: Transportation nut (left) operational wheel nut (right)

9 Install the propeller, refer to chapter 61-10-00.

10 Install the landing gear fairings, refer to chapter 32-50-00

11 Install the cowling, refer to chapter 71-10-00.

12 Adjust the ailerons, if necessary. Refer to chapter 27-10-00.

13 Install the spades on the aileron horns, refer to chapter 27-10-01.

14 Connect the battery, RH front footrest (6 mm bolts, 10 mm wrench).

15 Do a functional test of the trim tab.

16 Check that the fuel gage indication is correct.

17 Install the baggage compartment (MS 1032 screws, PH 2 screwdriver). Refer to chapter 25-50-00.

18 Install the two seats (MS 1032 screws, PH 2 screwdriver). Refer to chapter 25-10-01.

19 Close all access hatches in the cockpit (MS 1032 screws, PH 2 screwdriver).



Figure 20-2: Access hatches location in the cockpit

20 Install the battery cover.

21 Install the LH and RH foot rests for the front cockpit (PH 2 screwdriver).

22 Seal the gap at the wing-fuselage intersection with transparent PU protection tape.



Figure 20-3: Wing-fuselage intersection

23 Seal the gap between the horizontal stabilizer and the fuselage with transparent PU protection tape.



Figure 20-4: Fuselage horizontal stabilizer intersection

24 Install the LH and RH side visors with MS24694C5S screws. Safety the thread of the screws with Loctite 243.

**NOTE**

Write an applicable logbook entry of compliance with the Assembly Instruction in chapter 20-20-02.

## 20-20-03 Disassembly Instructions

It is possible to remove the wing and the stabilizer for transportation and storage.

To disassemble the aircraft, do these steps:

1 Fully drain fuel from all tanks.

2 Remove the foot rests from the front cockpit (PH 2 screwdriver).

3 Remove the battery cover (below the RH foot rest).

4 Disconnect the battery (6 mm bolts, 10 mm wrench).

5 Remove the seat(s)

6 Open all access panels in the cockpit (MS 1032 screws, PH 2 screwdriver), refer to Figure 20-2.

6 Remove the baggage compartment (MS 1032 screws, PH 2 screwdriver).

7 Remove the rudder, refer to chapter 55-60-00.

8 Remove the elevator, refer to chapter 55-20-00.

9 Remove the stabilizer assembly, refer to chapter 55-10-00.

10 Remove the wing, refer to chapter 57-10-00.

**CAUTION**

After removing the wing, do not unload the front jack without securing the fuselage cut-out with the aluminum longeron spacers. This could seriously damage the fuselage structure due to the weight of the engine.

11 For transportation or storage of the fuselage, install the lower longeron connectors and the aluminum spacers again (refer to chapter 57-10-00 Figure 57-3 and Figure 57-4). If desired, assemble the actuating rod of the fuel selector valve (refer to chapter 28-20-01).

12 For transportation or storage of the wing, fix the aileron to the wing with an appropriate jig. Make sure the actuation rods inside the wing are secured and properly protected to avoid damage.

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# Chapter 21 Environmental Systems

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| 21-20-01 | Canopy Defog | 21-3 |

## 21-00-00 GENERAL

This chapter includes the system description and operation of the air ventilation and the canopy defog system of the aircraft. You can operate the air intakes on the external side of the canopy with the lever that is shown in Figure 21-1. The levers are installed in the canopy.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Grip | XA42-2130-234 |
| 2 | 1 | Screw | DIN 7991 M3x8 |
| 3 | 1 | Lever | XA42-2130-234 |
| 4 | 2 | Screw | DIN 7991 M3x16 |
| 5 | 1 | Bushing | XA42-2130-239 |
| 6 | 4 | Washer | DIN 9021 3,2 x 7 x 0,5 |
| 7 | 2 | Nut | DIN 985 M3 |

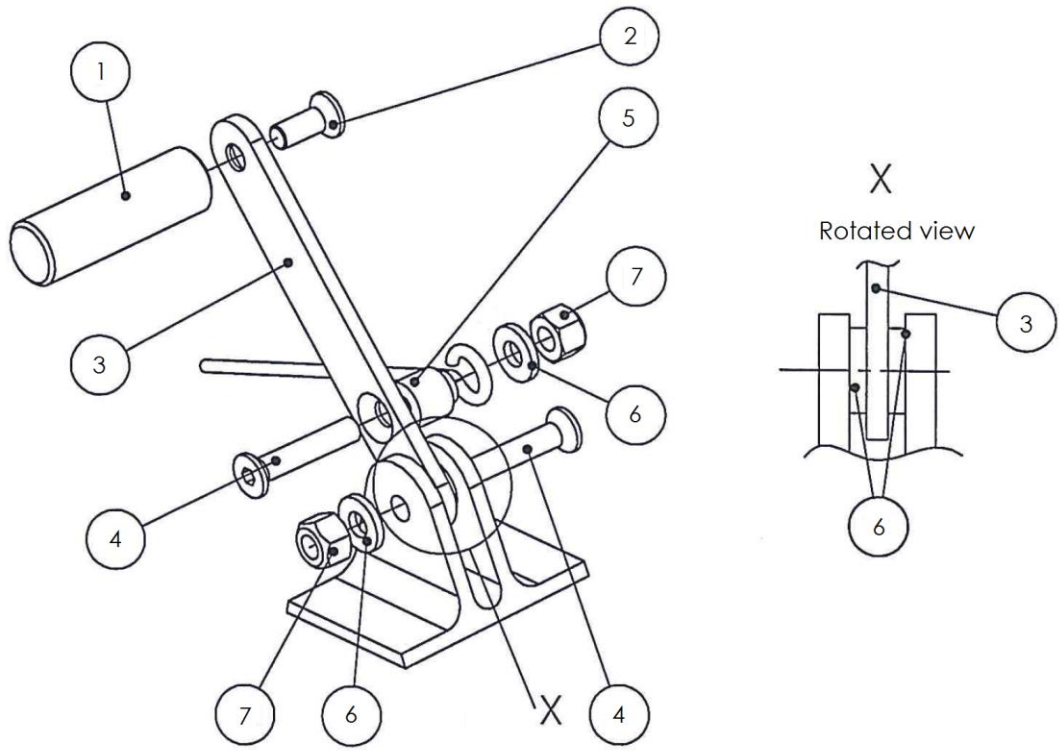



Figure 21-1: Adjustment lever for the air vents and the canopy defog system

## 21-20-00 DISTRIBUTION

### 21-20-01 Air Vents

Air for the ventilation comes into the aircraft through a NACA intake on the front left part of the canopy. The NACA intake is connected to a duct system which supplies the air into two eye ball vents. The eye ball vents are on the inner front part of the canopy. To adjust the quantity of air, turn the front rim of the eye ball vents.

Only applicable to XA42: Use the applicable lever on the left side of the rear cockpit to close the NACA intake.

## 21-20-01 Canopy Defog

On the XA42, a NACA intake on the front right part of the canopy lets the air in for the canopy defogging. The NACA intake is connected to a duct system. It supplies the air to the canopy glass through a diffuser on the bottom front part of the canopy. To adjust the quantity of air for defogging, move the applicable lever on the right side of the rear cockpit.

On the XA41, an air intake on the center front part of the canopy lets the air in for the canopy defogging. To adjust the quantity of air for defogging, move the lever in the top center of the instrument panel.

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# Chapter 23 Communication

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# 23-00-00 GENERAL

# 23-10-00 VHF COMMUNICATION TRANSCEIVER

The XA41 and the XA42 have an ATR833 OLED VHF or similar communication transceiver in the standard configuration. This transceiver is installed in the center console of the rear cockpit.

For more data, refer to the manufacturer's Operation and Installation Manual.

To remove the transceiver:

1. Remove the front seat (XA42) or remove the center channel cover (XA41).
2. Disconnect the wiring loom. Disconnect the antenna connectors.
3. Remove the mounting screws with a Phillips 2 screwdriver. Remove the transceiver.

A Comant CI-122 antenna is connected to the transceiver through a shielded cable.

Manufacturer: Cobham plc
Brook Road, Wimborne
Dorset, BH21 2BJ, UK

This antenna is installed at the bottom of the fuselage, between the support bulkheads of the (rear) seat.

To remove the antenna:

1. Remove the (rear) seat.
2. Disconnect the antenna connector.
3. Remove the 4 mounting screws. Remove the antenna.

# 23-40-00 INTERCOM

The XA42 and XA41 have a voice-controlled intercom which is a part of the ATR833 OLED radio or similar. The intercom can connect a maximum of 2 headsets.

An ON / OFF switch is installed between the radio and the transponder in the center console.

# 23-50-00 HEADPHONES / HELMETS

To connect a headset, a pair of female plugs is installed for each seat.

To use the VHF transceiver, persons must always put on headphones or helmets.

| | | |
|---|---|---|
| Position of the plugs: | Front seat: | Right bottom part of the instrument panel. |
| | Rear seat and XA41: | Behind the backrest or on the lower, right hand inspection cover. |

# Chapter 24 Electrical Power

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## 24-00-00 GENERAL

For the wiring diagram, refer to chapter 91.

## 24-30-00 DC GENERATOR

The aircraft has a BC410-H or a BC462-H gear-driven DC generator.

Both are a spline-driven alternator with high performance. The rated outputs of the alternators are:
BC410-H: 30 amps @ 2500 RPM of the engine crankshaft.
BC462-H: 36 amps @ 2500 RPM of the engine crankshaft.

The alternator is installed on the rear vacuum pump pad of the engine with 4 studs and an adapter.

Manufacturer: B&C Specialty Products
123 E. 4th Street
POB B
Newton, KS 67114, USA

For more instructions, refer to the B&C Installation Instructions.

An LR3C-14 Alternator Controller/Regulator controls the output of the alternator. The LR3C-14 is installed in the front right compartment.

Manufacturer: B&C Specialty Products
123 E. 4th Street
POB B
Newton, KS 67114, USA

## 24-50-00 ELECTRICAL LOAD DISTRIBUTION

The electrical system is a 12-Volt direct-current system. An alternator supplies the power for the onboard battery (12V, 16Ah). If the alternator is defective, the battery will supply all direct-current devices with power for a minimum of 30 minutes.

Switches on the lower right side console panel control the electrical system.

The circuit breakers (switch breakers) are installed on the upper right side console panel and at the center panel. Other circuit breaker locations are given in the related AFM supplements.

The alternator and the battery supply electrical power as follows:

Hot Bus:

Battery, Starter solenoid, Battery relay, external power relay (optional) and external power socket (optional).

Power Bus 1*:

Fuel sensor, Field, Starter, Volt. Reg., EMS, Trim, 12v sockets. (Circuit breakers)

Power Bus 2*:

Smoke, ACL, Fuel Boost, Avionics Master (Switches)

Avionics Master:

XPDR, COM, GPS, Instr., Copilot Instr., Other options (Circuit breakers)

*Power Bus 1 and 2 are not connected when a large alternator is installed. S/N 145 and subsequent have two alternative circuit breaker configurations in the center console for the Power Bus:

- One circuit breaker for small alternators
- Two circuit breakers for large alternators.

For more information on the wiring loom, refer to chapter 91-10-00.

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# Chapter 25 Equipment and Furnishing

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## 25-10-00 COCKPIT

The cockpit of the XA42 has two seats in a tandem layout. The cockpit of the XA41 has one seat. Special aerobatic harnesses are installed on all seats. The aircraft flight manual and the log book are kept in a document bag on the left side wall.

## 25-10-01 Seats

The seats are made of a carbon-/glass fiber-reinforced composite. It is possible to remove them for maintenance on systems that are installed below the seats (for example: the control system, the electrical wiring and the smoke system). The seats are attached to the fuselage structure with MS24693S274 screws. The top of the front seat is attached to the instrument frame with MS35214-42 or AN526-832R8 screws. The front bottom of the rear seat is attached to the fuselage floor with Velcro or with MS21083N08 nuts on male studs. These studs are bonded on the fuselage floor.

To remove the seats:

1 Remove the screws.

2 Pull the seat up.

3 Pull the shoulder harnesses through the applicable holes in the top part of the seat. (Exception for rear seats from SN 152 and on or after applying SB-XA42-2018-016).

## 25-10-02 Harnesses

The seats have special aerobatic harnesses that are made by "Hooker Custom Harness, Inc.". Each harness system has these components:

- A left shoulder belt
- A right shoulder belt
- Two left lap belts with one or two (optional) ratchet(s)
- Two right lap belts with one or two (optional) ratchet(s)
- A crotch strap.

All belts are adjustable. The lap belts have ratchets to tighten them for aerobatic flight.

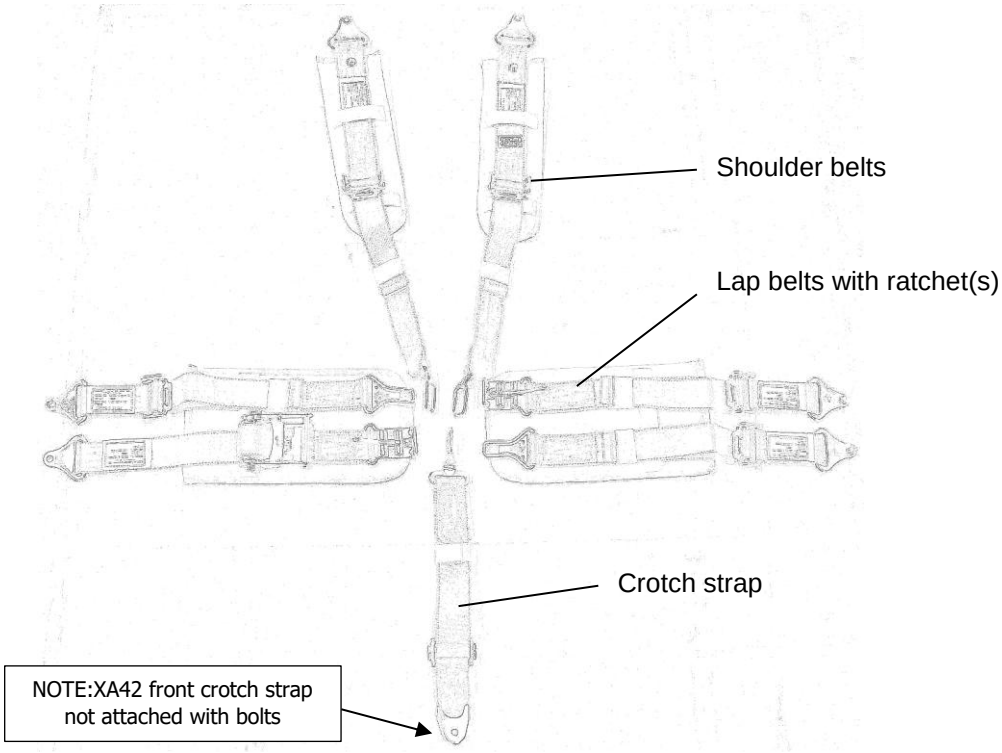



Figure 25-1: Harness System XA42 (rear) and XA41

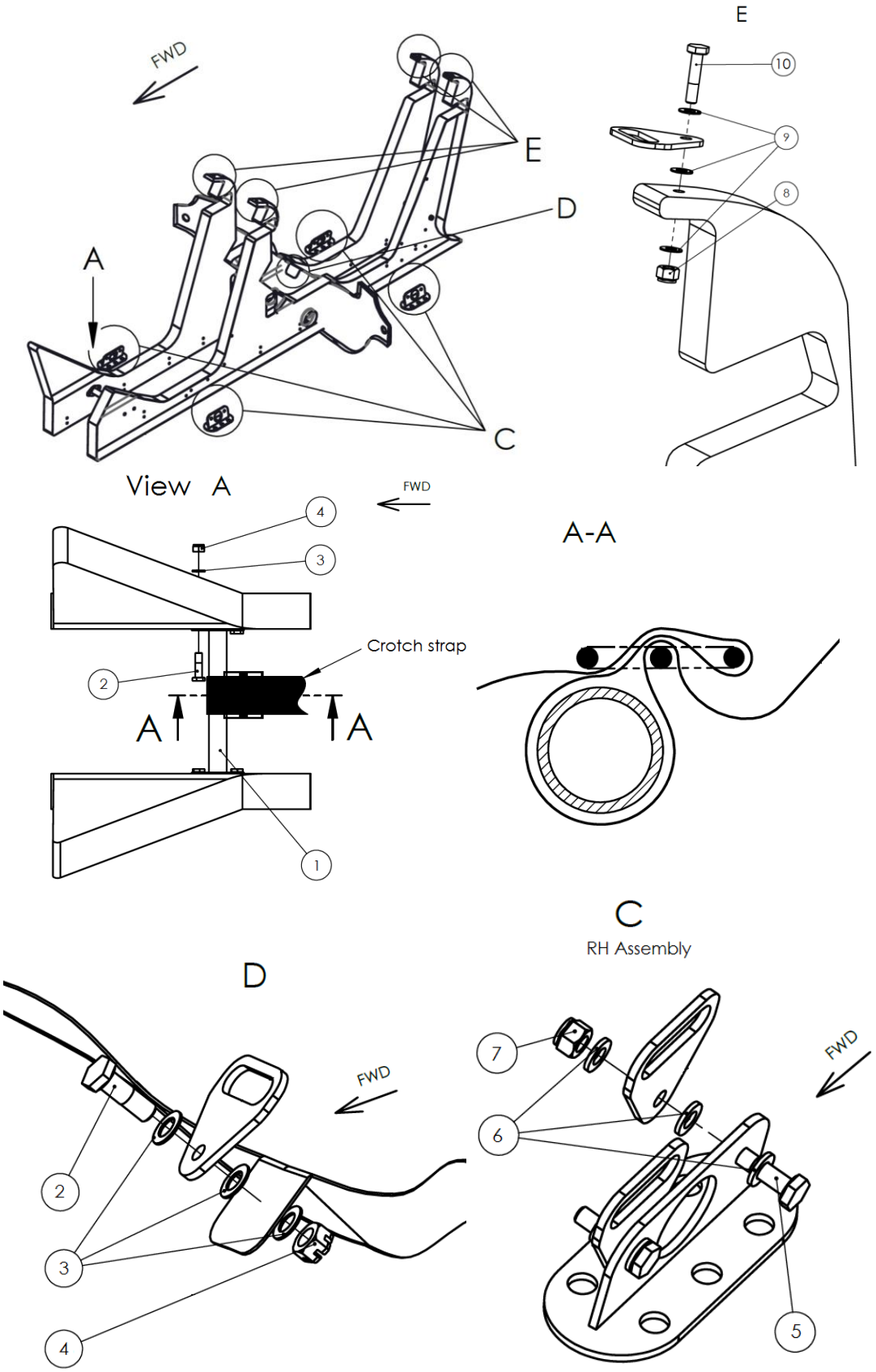



Figure 25-2: Installation of the Harness system.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Front seat rib spacer bar | XA42-2530-151 |
| 2 | 5 | Screw | AN5-6A |
| 3 | 7 | Washer | AN960-516L |
| 4 | 5 | Nut | MS21044N5 |
| 5 | 8 | Screw | AN4-10A |
| 6 | 24 | Washer | AN960-416 |
| 7 | 8 | Nut | MS21044N4 |
| 8 | 4 | Nut | MS21083N4 |
| 9 | 12 | Washer | AN960-416L |
| 10 | 4 | Screw | AN4-12A |

Each lap belt is attached to a mount on the floor of the fuselage. The shoulder belts are attached to the top part of the applicable seat frame. The crotch strap is attached to the front seat rib spacer bar. The direction of installation of bolts is from the top to the bottom and from the internal side to the external side.

## 25-10-03 Document Bag

The document bag is in the left access panel of the pilot seat. It is a leather bag with a zipper to hold the documents safely during all flight attitudes.

The documents bag is for storage of:

- The Log book
- The Aircraft Flight Manual
- The Maps.

## 25-50-00 CARGO COMPARTMENTS

The XA41 and the XA42 have a cargo compartment which you can use during non-aerobatic flight.

**WARNING**

The cargo compartment must be empty for aerobatic flight.

If there are items in the cargo compartment during a utility flight, make sure that they cannot move. Safety the items with the restraint system/restraint net.

Make sure that the weight of all items in the cargo compartment is not more than the maximum of 10 (kg).

If you do not obey these precautions, accidents can occur.

To remove the cargo compartment:

1. Remove the screws along the center line of the cargo compartment (AN526C-8R8).

**CAUTION**

Hold the side of the cargo compartment which is being removed. This will prevent the part from falling and prevent damage to the elevator pushrod.

2. Remove the screws along the external side (MS24693C273 and A3235-020-24A or A3235-028-193)
3. First remove one part of the cargo compartment and then the other part.
4. Install the cargo compartment in the opposite sequence.

# 25-60-00 EMERGENCY

## 25-60-01 Emergency Locator Transmitter

This chapter includes the description of the KANNAD 406 AF-Compact Emergency Locator Transmitter (ELT) and its remote control RC200. Refer to the manufacturer's Operator's Manual for more data.

**NOTE**

We recommend that you set the switch of the ELT to OFF when the aircraft is parked for a long period or for maintenance. This will prevent accidental operation of the ELT.

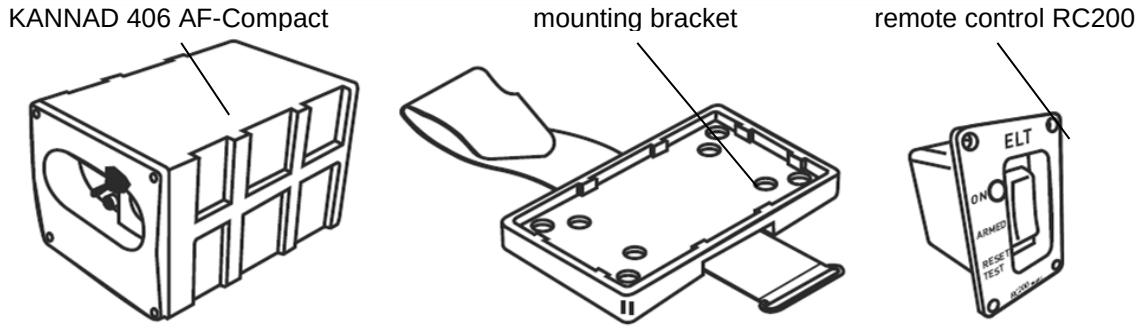



Figure 25-3: ELT components

The ELT is attached to a mounting bracket on the left side of the rear left seat frame. The remote control is on the right side of the instrument panel of the rear cockpit or on the right side of the center console. The remote control is connected to the ELT with three wires. For more information on the installation, refer to the manufacturer's Initial Installation Manual or the wiring diagram in chapter 91.

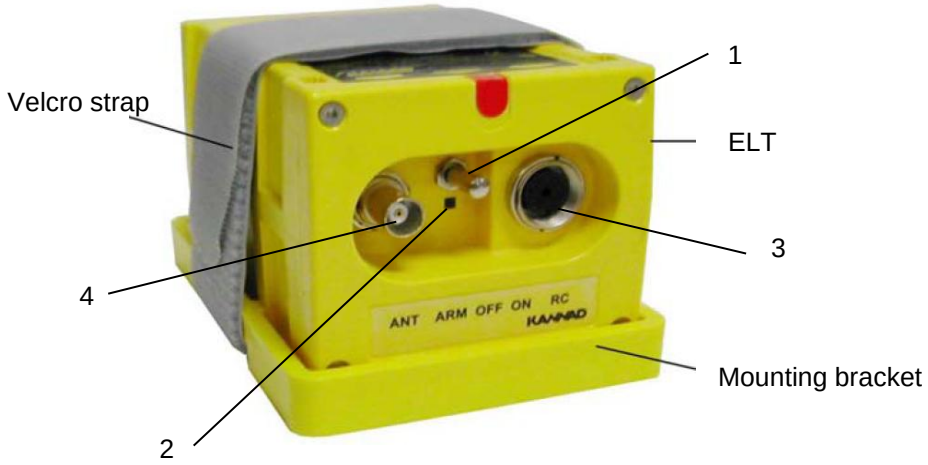



Figure 25-4: ELT mounting and connectors

The ELT has these controls and connectors:

1 3-position switch ARM/OFF/ON

2 Visual indicator (red)

3 DIN 12 socket for the connection of the remote control, a programming dongle or a programming equipment

4 BNC connector for the antenna.

For a functional description and operating modes, refer to the manufacturer's Installation Manual/ Operation Manual.

You can program the ELT with:

- The aircraft registration
- A 24-bit address (same as MODE "S")
- A / The serial number
- An aircraft operator designator.

Maintenance of the ELT is only necessary one time in a month. This is a self-test that is started with the remote control in the cockpit or at the ELT, refer to MM ELT. The ELT status is shown with a flashing indicator and a buzzer. For the maintenance procedures, refer to the manufacturer's Installation Manual/ Operation Manual.

Find the expiration date of the batteries and make sure that it is not expired. It is mandatory to replace the battery:

- After more than 1 hour of transmitter operation (cumulative operating time)
- Before the battery expiration date
- When the battery was used in an emergency
- After an accidental start of an unknown period of time
- After the recommended replacement time (refer to chapter 05-10-03).

Power for the transmitter is supplied with this battery:

- KIT BAT200, P/N: S1840510-01 ($LiMnO_2$ two-element battery)

**NOTE**

Only an approved Part 145 (or equivalent) maintenance organization is permitted to replace the battery.

## 25-60-02 Parachutes

For the maintenance of the parachutes, refer to applicable Instructions for Continued Airworthiness (ICA) of the parachutes.

# Chapter 27 Flight Controls

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## 27-00-00 GENERAL

This chapter gives the operation and the adjustment of the flight controls.

It also includes the assembly of the flight controls. Refer to the related chapter for the data on a specified system.

The standard flight control system of the aircraft is as follows: XA41 with single stick control and XA42 with dual stick control. An elevator on the horizontal stabilizer gives pitch control. Ailerons on the trailing edge of each wing give roll control. The rudder on the vertical stabilizer gives yaw control.

For the crew members, the aircraft have a control stick and a rudder pedal assembly. Rudder pedal assemblies are attached as follows: To the fuselage side walls of the XA41 and XA42 rear cockpit, and to the forward fuselage bulkhead of the XA42 front cockpit. The rudder pedals are adjustable with an adjuster handle on the rudder pedal assembly. Elevator and aileron controls operate through a system of push-rods and bell cranks. Cables operate the rudder. An electric actuator operates the trim tab. The elevator trim tab is operated by an electric actuator and controlled through a switch on the left side panel.

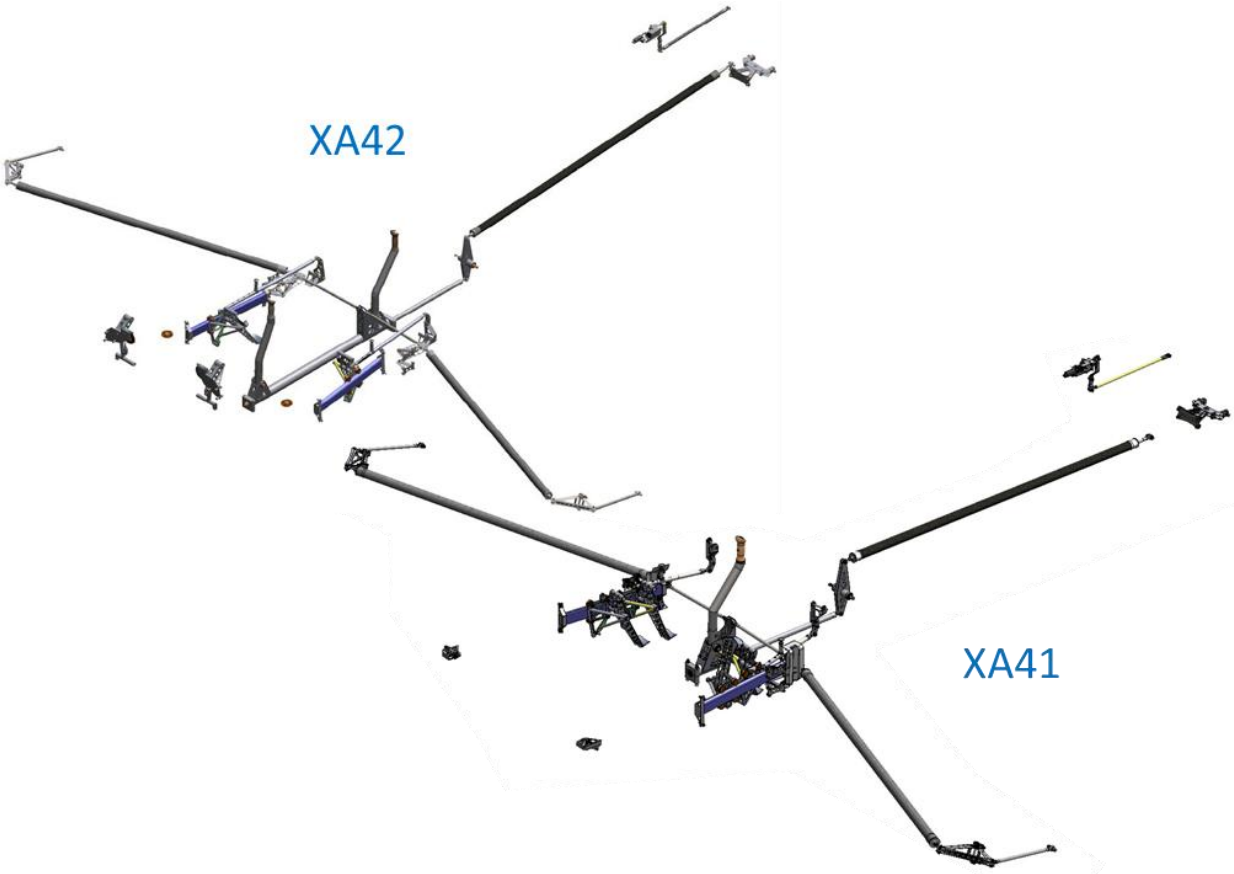



Figure 27-1: Overview - flight control system XA41 and XA42

Table 27-1: Overview - control surface deflection and play

| | Ailerons | Elevator | Rudder | Trim tab |
|---|---|---|---|---|
| Deflection | ±30° | ±27° | ±30° | ±3° |
| Tolerance | +0° -5° | +3° -5° | ±3° | ±1° |
| Permitted play* | ±1 mm | ±1 mm | - | ±2 mm |

* measured at each trailing edge at the position of maximum chord, while the control sticks are locked in position. Rudder control: No play is available at the rudder's trailing edge.

For the measurement form of the control surface deflections, refer to Appendix 7.

## 27-00-01 Control Sticks

To remove the control sticks for maintenance or overhaul:

1 Disconnect the electronic wires from the lower part of the stick.

2 Remove the tie wraps.

3 Remove the bolt from the lower part of the stick.

4 Remove the stick.

5 Assemble the control stick in the opposite sequence.

6 Make sure that there is no play between the control stick and the stick base on the torque tube.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Rear stick | XA42-2790-105 |
| 2 | 5 | Screw | AN4-20A |
| 3 | 7 | Washer | AN960-416 |
| 4 | 5 | Nut | MS21044-N4 |

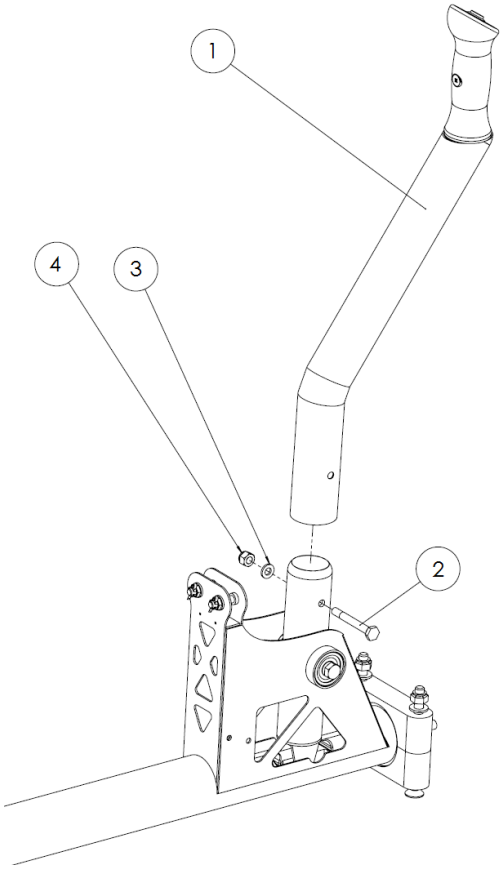



Figure 27-2: Rear stick installation

## 27-00-02 Torque Tube

The front bearing block is assembled with a taper roller bearing. The rear bearing is a needle roller bearing.

To remove the torque tube:

1 Remove the control sticks, refer to chapter 27-00-01.

2 Remove the two seats, refer to chapter 25-10-01.

3 Disconnect the elevator control rod. Refer to Figure 27-3, detail D.

4 Disconnect the aileron control rods. Refer to Figure 27-3, detail C.

5 Remove the front seat rib spacer bar, refer to chapter 25-10-02.

6 Remove the four M8x100 DIN 7991 bolts from the front and rear bearing blocks. Refer to Figure 27-3, details A and D.

7 Disassemble the bearing blocks.

8 Remove the torque tube.

Assemble the torque tube in the opposite sequence.

Do these checks:

- The torque tubes must move freely.
- The aileron and the elevator must move freely.
- The permitted play must agree with Table 27-1.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 2 | Front bearing shell | XA42-2790-251 |
| 2 | 1 | Outer race | A2120D |
| 3 | 2 | Rear bearing shell | XA42-2790-252 |
| 4 | 2 | Taper roller bearing | A2037 |
| 5 | 1 | Cotter pin | DIN94 2,5x22 |
| 6 | 1 | Castle nut | AN320-6 |
| 7 | 4 | Hexagon head screw | DIN7991 M8x100 |
| 8 | 4 | Washer | DIN125-A M8 |
| 9 | 4 | Self-locking nut | DIN985 M8 |
| 10 | 1 | Washer | AN960-616 |
| 11 | 1 | Inner racer | LR 50x55x20,5 |
| 13 | 4 | Washer | AN960-10 |
| 14 | 4 | Nut | MS21044N3 |
| 15 | 2 | Elevator stop | XA42-2790-255 |
| 16 | 4 | Countersunk machine srew | MS24693S274 |
| 17 | 2 | Hexagon head srew | AN4-11 |
| 18 | 4 | Washer | AN960-416 |
| 19 | 2 | Castle nut | AN310-4 |
| 20 | 2 | Cotter pin | DIN94 2x12 |
| 21 | 1 | Drawn cup | LR 50x55x20,5 |
| 22 | 2 | Aileron rod inboard | XA42-2710-109 |
| 23 | 1 | Elevator rod FWD | XA42-2730-103 |
| 24 | 1 | joint bearing | GAXS 6 So-M8 mit GXS 6 So D=6,35 |
| 25 | 1 | Nut | DIN934 M8 |
| 26 | 1 | Washer | AN960-416C |
| 27 | 1 | Nut | AN310-4 |
| 28 | 1 | Cotter pin | DIN94 2x12 |
| 29 | 1 | Screw | AN4-10 |

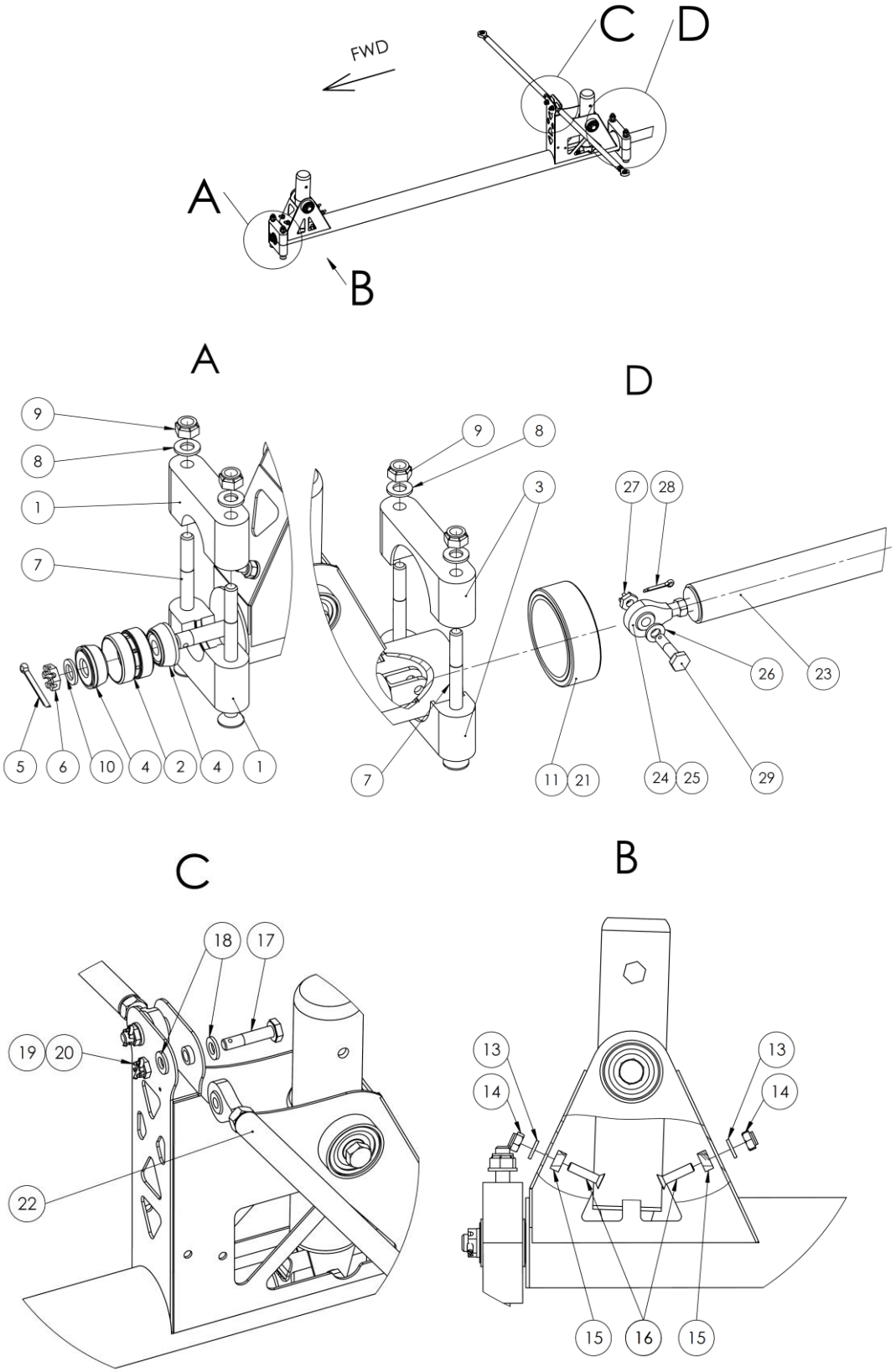



Figure 27-3: Torque tube installation

## 27-00-03 Control Rods

To remove the control rods:

1 Remove the applicable access panels and seats.

2 Remove the bolt connection which connects the rod ends to other parts. Refer to the applicable section in chapter 27 for details.

3 Remove the control rods.

Install the control rods in the opposite sequence.

To measure the length L of the control rods, refer to Figure 27-4.

For the lengths of the control rods, refer to Table 27-2.

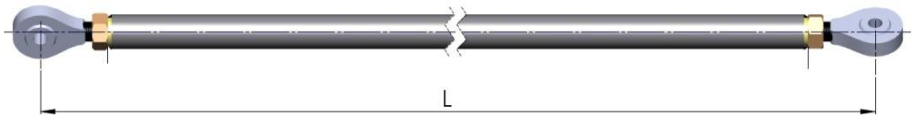



Figure 27-4: Length L of the control rods

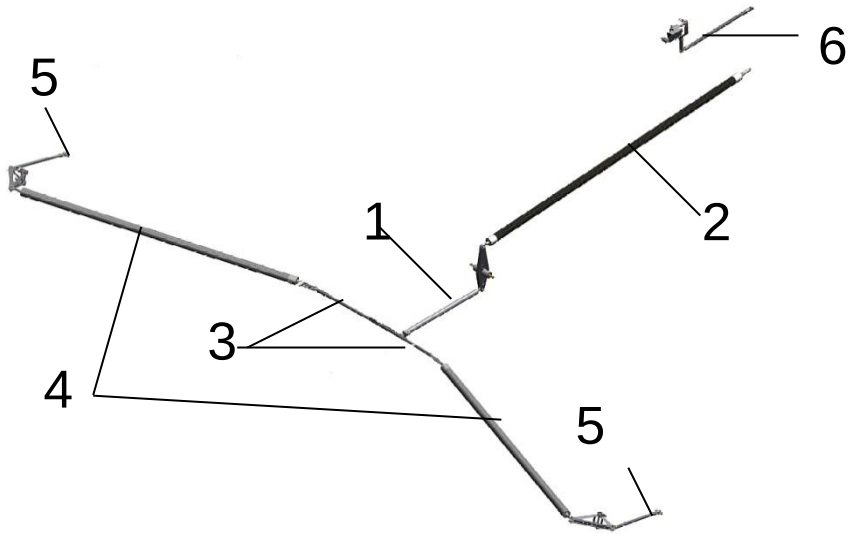



Figure 27-5: Overview - control rods

Table 27-2: Control rod lengths [mm]

| Control rod | XA41 | XA42 |
|---|---|---|
| 1- Elevator rod FWD | as necessary | as necessary |
| 2- Elevator rod CFRP | 1835 | 1900 |
| 3- Aileron rod inboard | 405 | 405 |
| 4- Aileron rod CFRP | 1595 | 1595 |
| 5- Aileron rod outboard | as necessary | as necessary |
| 6- Trim tab rod | as necessary | as necessary |

**NOTE**

Before you adjust the control system, examine the control rods, the bell crank levers and the hinges for wear and damage. Make sure that the length of the control rods is correct. Adjust the length, if necessary. Apply ACF-50 oil to the rod ends.

To adjust the length of the control rods:

1 Remove the access panels if necessary.

2 Remove the bolt that connects the applicable rod end to other parts. Refer to the applicable section in chapter 27 for details.

3 Loosen the counter nut.

4 Turn the rod end until you get the correct length.

5 Measure the maximum adjustment length "L" of the rod ends, refer to Figure 27-6. Make sure that a length equal to a minimum of 1.5 times of the diameter of the screw is in the thread.

**WARNING**

Make sure that the control system components do not touch the structure after you changed the length of control rods. Incorrect adjustment of the control rods can cause injury to persons or damage.

**CAUTION**

Make sure that the rod ends of the elevator control rod (1, Figure 27-5) are accurately parallel. This will prevent damage to the casted housings of the rod end at full aileron deflection.

6 Make sure that the rod end is correctly aligned.

7 Tighten the counter nut.

8 Assemble the removed connection parts.

9 Make sure that the controls move smoothly from stop to stop.

10 Install the access panels.




Figure 27-6: Maximum adjustment length

## 27-10-00 AILERONS

The ailerons are mechanically connected to the control sticks with these components:

| No. | Quantity | Component | P/N |
|---|---|---|---|
| - | - | Torque tube | See 27-00-02 |
| 1 | 2 | Aileron rod inboard | XA42-2710-109 |
| 2 | 2 | Aileron bellcrank fuselage | XA42-2710-050 |
| 3 | 2 | Aileron rod CFRP | XA42-2710-114 |
| 4 | 2 | Aileron bellcrank wing | XA42-2710-060 |
| 5 | 2 | Aileron rod outboard | XA42-2710-119 |

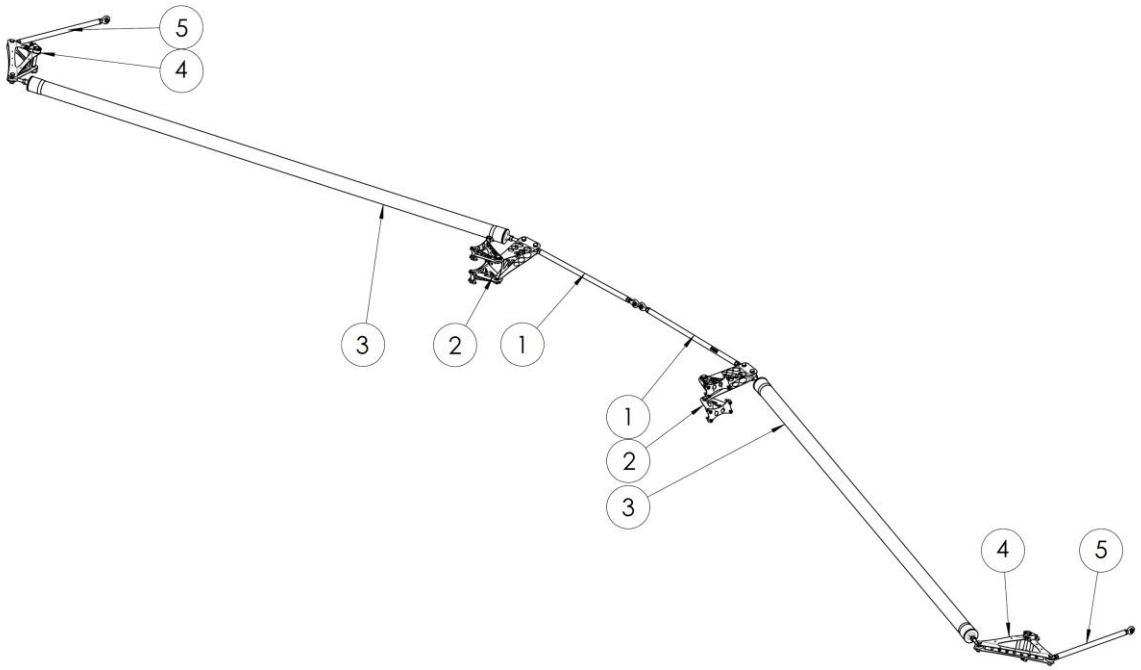



Figure 27-7: Overview - aileron control rods

The bearings in the bell cranks are sealed ball bearings.

Each aileron is attached to five hinge points with one metal rod.

To prevent flutter, each aileron has a balancing mass in its leading edge.

To decrease the pilot's control forces, the ailerons have spades. The spade arms are connected to the center hinge ribs of the ailerons.

Travel stops on the fuselage structure near the torque tube keep the aileron travel in the specified limits. Refer to chapter 27-00-02 for the exchange of the aileron travel stops.

Before you adjust the control system, examine the control rods, bell crank levers and hinges for wear and damage.

Make sure that the control rods length is correct. Adjust the length, if necessary. Refer to chapter 27-00-03

To adjust the ailerons neutral position and/or deflection:

1 Lock one control stick in the neutral position with a temporary fixture.

2 Measure the length of the aileron rod inboard. Adjust the length, if necessary (refer to chapter 27-00-03).

3 Make sure that the aileron trailing edge aligns with the inboard trailing edge of the wing.

4 If necessary, adjust the length of the aileron outboard rod and/or the aileron CFRP rod.

5 Make sure that the aileron travel is in the specified tolerances, refer to chapter 27-00-00.

6 Adjust the stop bolts on the fuselage structure, left and right from the torque tube, if necessary.

7 Do the procedures again for the other aileron.

8 Make sure that the control sticks move freely in the full travel range. Make sure that the travel of the control sticks is symmetrical for the left side and the right side.

To remove the ailerons, refer to chapter 57-60-00.

## 27-10-01 Spades

The spade arms are attached to the central hinge point of the ailerons with two bolt connections

The spades are attached to the spade arms with three screw connections.

To remove the spades and/or the spade arm:

1 Remove the two bolts from the top of the spade arm. Refer to Figure 27-8, detail X.

2 Remove the three screws from the spade mounting plate. Refer to Figure 27-8, detail Y.

3 Install the spades in the opposite sequence.

4 Do a test flight to make sure that the roll trim is correct.

5 Safety the bolt thread with locking varnish.

**Roll trim correction**

When the aircraft rolls (turns around its longitudinal axis) to the right, lower the leading edge of the left spade. Thus, the downlift increases and pushes the left aileron up.

When the aircraft rolls to the left, lower the leading edge of the right spade.

For each 10°/sec roll imbalance, add one AN960-10 washer between the related front attachment point (between the spade and the spade arm).

Try to get a satisfactory adjustment with a minimum of washers.

The maximum quantity of washers must not be more than 5.

As an alternative, use spade arm shim plates instead of the washers:

- Spade arm shim plate 1.5mm aft – XA42-5760-401 (to raise the leading edge)
- Spade arm shim plate 1.5mm front – XA42-5760-402 (to lower the leading edge)

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Aileron bonded assy lh | XA42-5760-101 |
| 2 | 1 | Spade arm | XA42-5760-193 |
| 3 | 1 | Spade plate | XA42-5760-196 |
| | opt. | 632 cm² spade plate | XA42-5760-197 |
| | opt. | 585 cm² undersized spade plate | XA42-5760-198 |
| 4 | 2 | Screw | AN4-14A |
| 5 | 2 | Washer | AN960-416L |
| 6 | 2 | Nut | MS21083N4 |
| 7 | opt. | Spade arm shim plate 1,5 mm aft | XA42-5760-401 |
| | opt. | Spade arm shim plate 1,5 mm front | XA42-5760-402 |
| | opt. | Washer | AN960-10 |
| 8 | 3 | Screw | AN526-1032R12 |
| | alt. | Screw | AN526-1032R14 |
| | alt. | Screw | AN526-1032R16 |

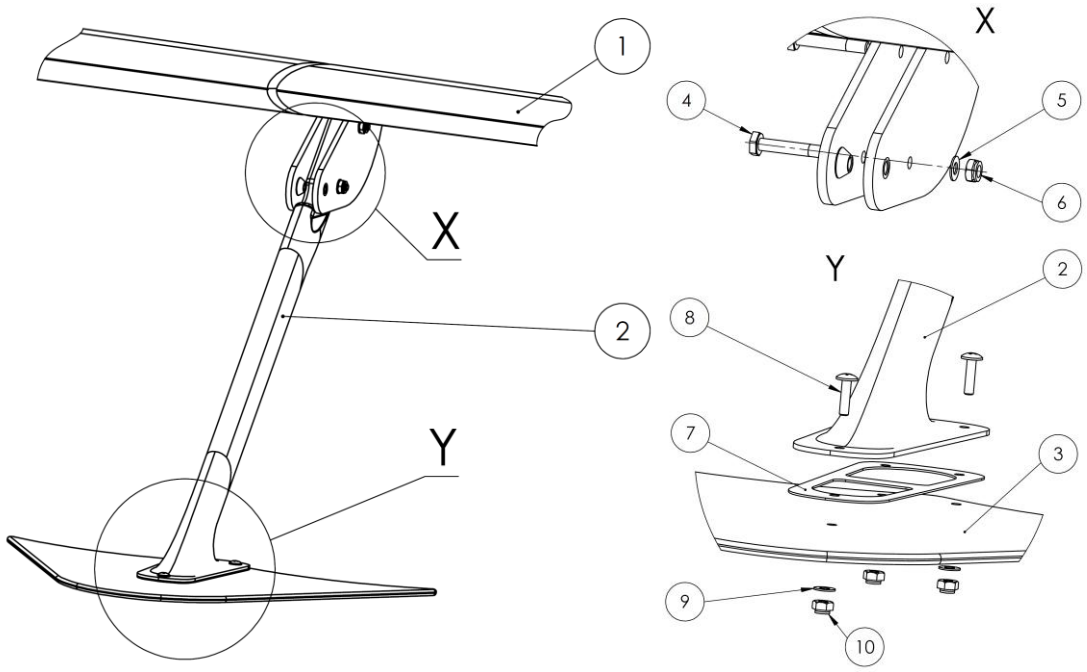



Figure 27-8: LH Spade arm assembly and installation

## 27-10-02 Aileron bellcrank fuselage

The aileron bellcrank in the fuselage is installed against the side wall on each side behind the side panel. The bellcrank is connected to the fuselage from the outside with screws on the interface surface between wing and fuselage.

To remove the bellcrank:

1 Remove the applicable access panels and the rear seat.

2 Disconnect the Aileron rod CFRP and the Aileron rod inboard. Refer to Figure 27-9, detail B.

3 Remove the wing. Refer to chapter 57-10-00.

4 Remove the screws that connect the bellcrank to the fuselage. Refer to Figure 27-9, detail A.

5 Install the bellcrank in the opposite sequence. Replace the split pins and the stop nuts.

6 Safety the bolts and screws threads with locking varnish.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 2 | Mounting bracked aileron idler | XA42-2710-101 |
| 2 | 1 | Aileron bellcrank fuselage | XA42-2710-102 |
| 3 | 1 | Aileron-Rod Inboard compl, | XA42-2710-109 |
| 4 | 1 | Aileron-Rod CFRP | XA42-2710-114 |
| 5 | 2 | Screw | AN4-6 |
| 6 | 6 | Washer | AN960-416L |
| 7 | 2 | Bearing | KP4A |
| 8 | 3 | Washer | AN960-416 |
| 9 | 4 | Nut | AN310-4 |
| 10 | 4 | Cotter pin | DIN94 2x12 |
| 11 | 2 | Screw | AN4-11 |
| 12 | 8 | Screw | MS24694-S56 |
| 13 | 8 | Washer | AN960-10 |
| 14 | 8 | Nut | MS21044-N3 |

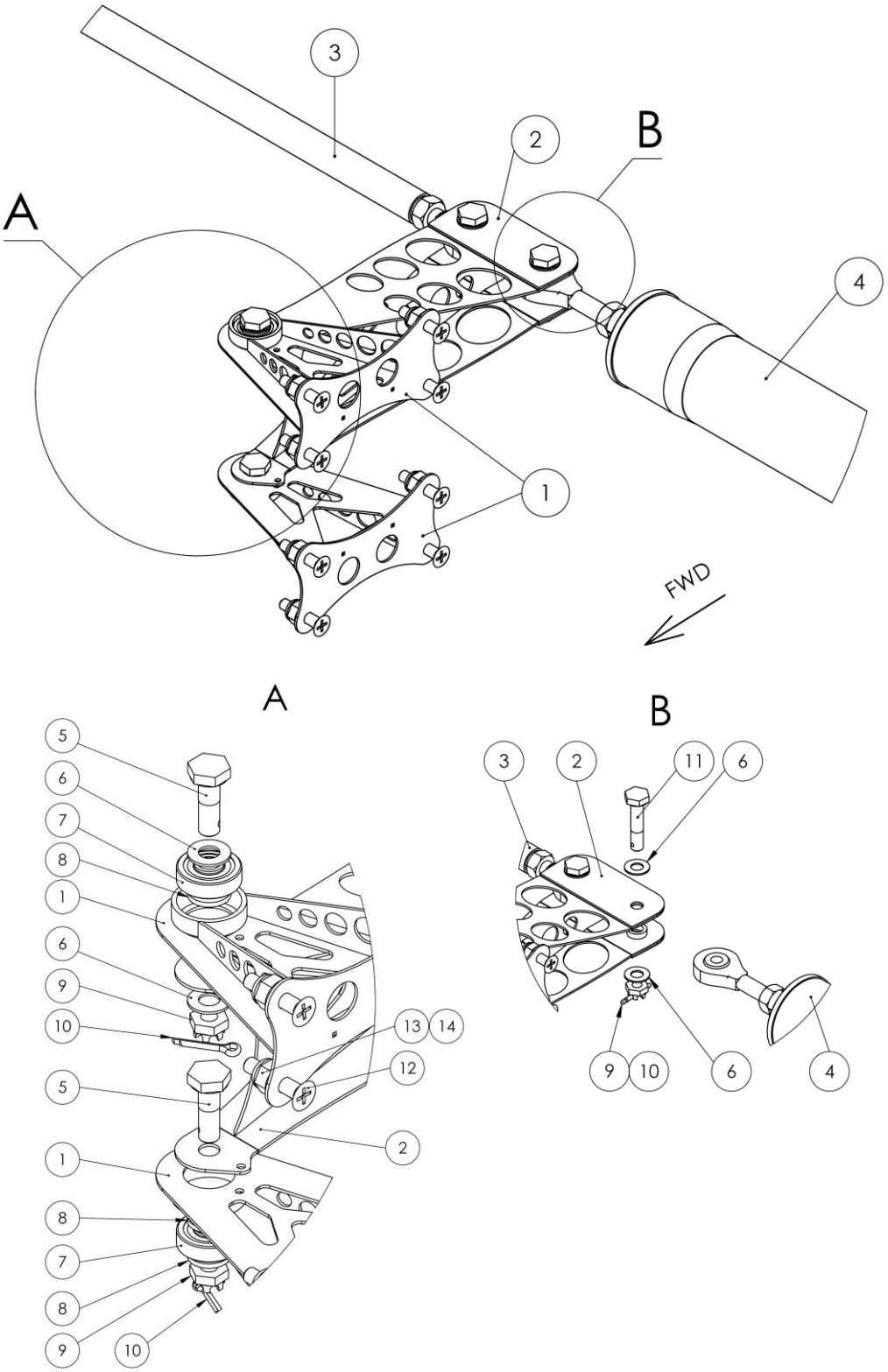



Figure 27-9: Fuselage bellcrank installation

## 27-10-03 Wing bellcrank

The *Aileron bellcrank wing* is installed on the third wing end rib. It connects the *aileron rod CFRP* and the *aileron rod outboard*. See Figure 27-10 for details on the connection.

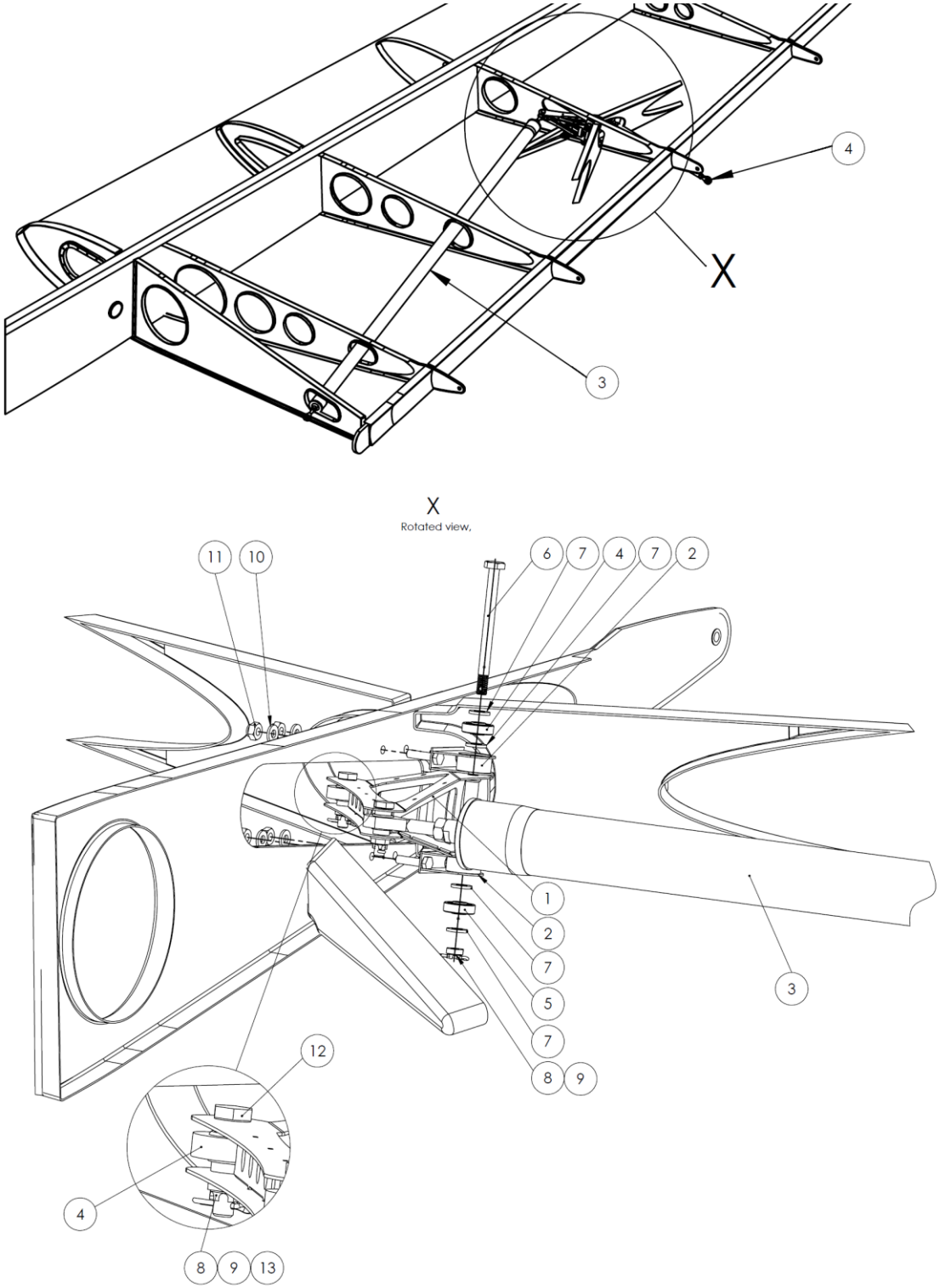



Figure 27-10: Wing bellcrank installation

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Aileron bellcrank wing | XA42-2710-104 |
| 2 | 2 | Ailleron bracket | XA42-2710-106 |
| 3 | 1 | Aileron-Rod CFRP | XA42-2710-114 |
| 4 | 1 | Aileron rod Outboard | XA42-2710-119 |
| 5 | 2 | Bearing | KP4A MS27641-4 |
| 6 | 1 | Screw | AN4-30 |
| 7 | 4 | Washer | AN960-416 |
| 8 | 3 | Nut | AN310-4 |
| 9 | 3 | Cotter pin | DIN 94 2x12 |
| 10 | 4 | Washer | AN960-10 |
| 11 | 4 | Nut | MS21044N3 |
| 12 | 2 | Screw | AN4-10 |
| 13 | 2 | Washer | AN960-416L |

## 27-10-04 Aileron outboard rod

The aileron rod outboard is installed between the wing bellcrank and the aileron actuation horn. The connection of the rod to the aileron is shown in Figure 27-11.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Aileron rod outboard | XA42-2710-119 |
| 2 | 1 | Screw | AN4-15 |
| 3 | 2 | Washer | DIN 9021 M6 A2 |
| 4 | 1 | Nut | AN310-4 |
| 5 | 1 | Cotter pin | DIN 94 2x12 |

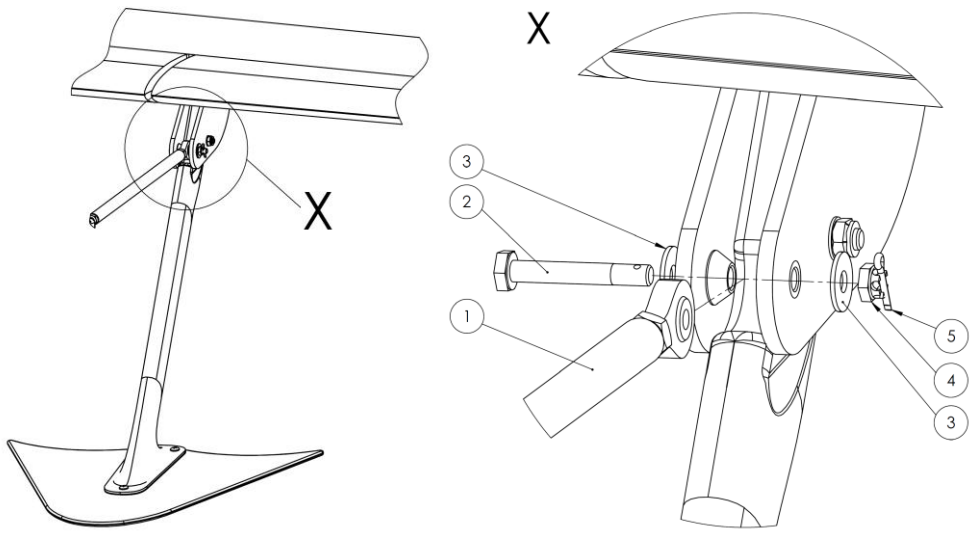



Figure 27-11: Aileron rod outboard installation.

## 27-20-00 RUDDER

The rudder operates with a single (XA41) or dual (XA42) pedal system which is connected to the rudder with control cables. The travel stops of the rudder control system are attached to the fulcrum lever. For maintenance of the fulcrum lever, remove the rudder.

The rudder is attached to three hinge points of the vertical tail. The fulcrum lever and the related control cables connection to the rudder are at the bottom hinge point.

To prevent flutter, each rudder has a balancing mass in the rudder horn.

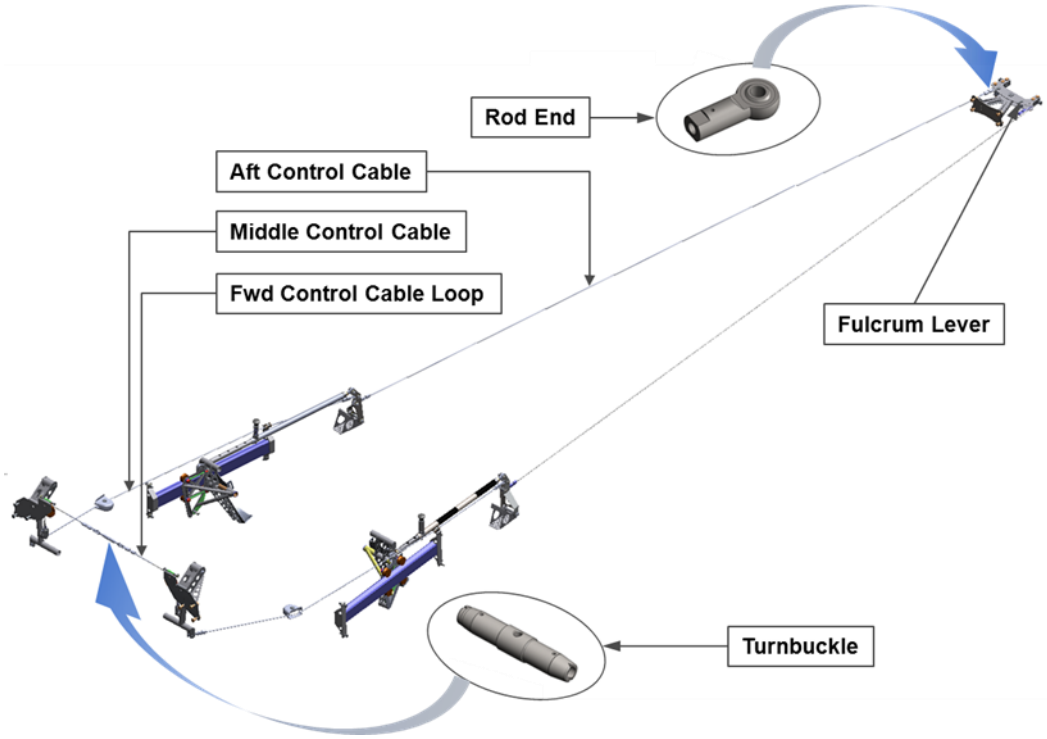
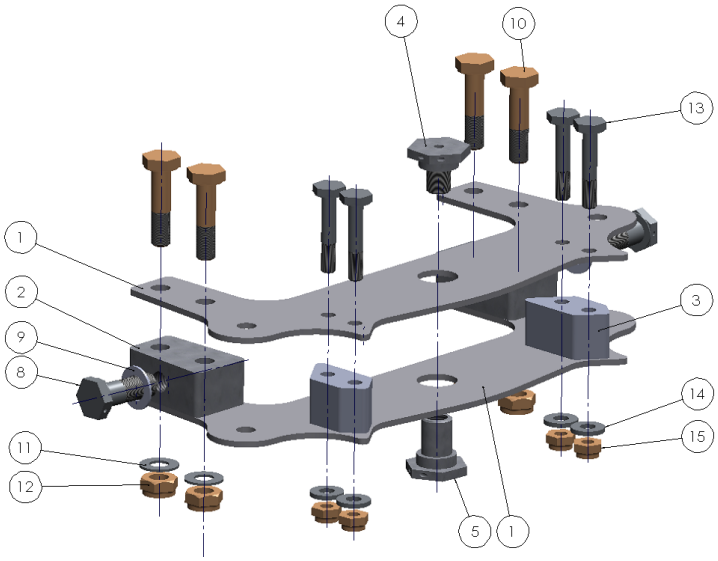



Figure 27-12: Rudder control system




| | |
|---|---|
| 1 | XA42-2720-220 |
| 2 | XA42-2720-222 |
| 3 | XA42-2720-225 |
| 4 | XA42-2720-231 |
| 5 | XA42-2720-232 |
| | |
| 8 | AN5H-6A |
| 9 | AN960-516L |
| 10 | AN4-10A |
| 11 | AN960-416L |
| 12 | MS21083N4 |
| 13 | AN3-10A |
| 14 | AN960-10L |
| 15 | MS21083N3 |

Safety the connections (4,5,8) with safety wire.

Figure 27-13: Rudder fulcrum lever rocker

To remove the rudder, refer to chapter 55-60-00

To adjust the neutral position of the rudder:

1 Remove the side inspection cover in the cockpit.

2 Remove the upper cowling, refer to chapter 71-10-01.

3 Remove the upper firewall inspection cover. Refer to chapter 71-30-00.

4 Turn the turnbuckle (XA42-2720-260) to release the tension in the rudder cable control system.

5 To change the neutral position, change the length of the aft control cables and middle control cables. Follow the necessary steps described in chapter 27-20-02 under "To install a set of assembled control cables".

6 Assemble the aircraft in the opposite sequence.

To adjust the deflection of the rudder:

**NOTE**

The deflection of the rudder is set to a constant angle. It is not possible to adjust it.

1 Make sure that the deflection tolerances agree with Table 27-1.

2 If the deflection is too large, and/or the rudder does not touch the stops, replace the stops at the fulcrum lever (Figure 27-13, pos. 3).

## 27-20-01 Rudder Pedals

You can adjust the position of the pilot's rudder pedals as follows: Pull the knob on the pedal control rod and move the pedal to the necessary position. The knob operates a plunger. When you push the knob, the plunger moves into a hole of the adjustment rod and locks the position of the pedal.

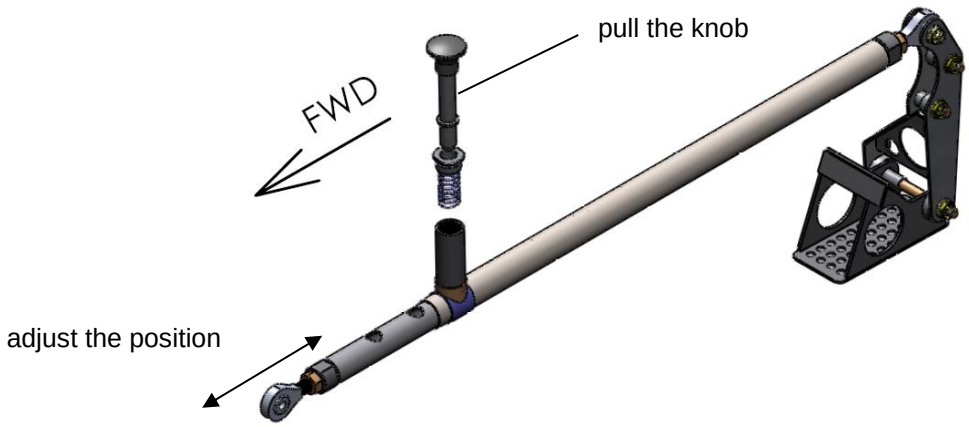



Figure 27-14: Pedal adjustment

To remove the front rudder pedals (XA42 only):

1 Disconnect the forward control cable loop.

2 Disconnect the middle control cable.

3 Remove the bolt connection from the hinge point of the front rudder pedal. Refer Figure 27-15, pos. 1.

4 Assemble the front rudder pedals in the opposite sequence.

5 Make sure that the pedals move freely from stop to stop.

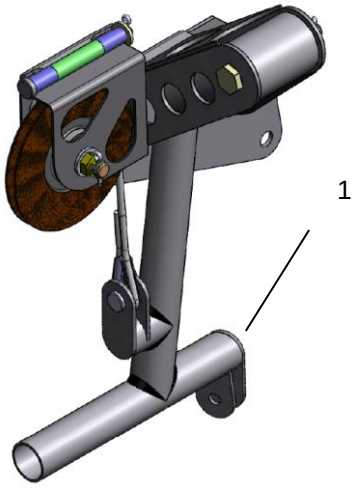



Figure 27-15: Front right rudder pedal (XA42)

To remove the rear rudder pedals:

1 Disconnect the top connection of the brake cylinder from the pedal.

2 Remove the AN23-18A screw connection that safeties the hinge bolt. Refer Figure 27-16, pos. 1.

3 Remove the hinge bolt.

4 Remove the pedal.

5 Assemble the rear rudder pedals in the opposite sequence with a new MS21083N3 locking nut. Refer to Figure 27-16, pos. 2.

6 Make sure that the pedals can move freely after the installation of the hinge bolt.

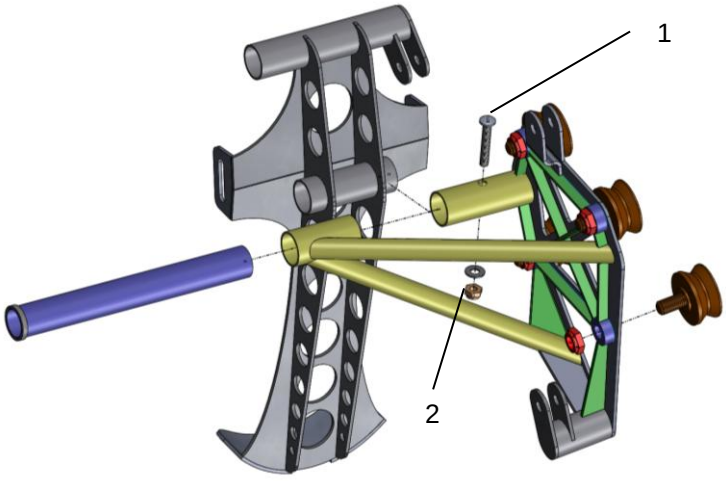



Figure 27-16: Rear left rudder pedal (XA42)

To remove the pedal cart:

Applicable to XA42:

1 Disconnect the brake cylinder from the pedal cart.

2 Remove the front connection of the length adjustment rod. Refer to Figure 27-19.

3 Remove the bolts from the two bottom rollers.

4 Remove the pedal cart.

5 Assemble the pedal cart in the opposite sequence.

**CAUTION**

Adjust the eccentric rollers in the untightening direction. The eccentric roller is torqued correctly when there is no play, and when the cart can roll without friction with all rollers rotating. Wrong adjustment of the eccentric rollers can lead to excessive wear of the rollers.

6 Adjust the eccentric rollers as necessary to prevent play between the rollers and the rail and to allow free movement. Torque the nuts to 20 Nm (14,75 ft.lbs.)

7 Make sure that the pedal cart moves freely on the full travel range without resistance or play.

Applicable to XA41:

1 Remove the split pin from the bolted connection of the master brake cylinder. Remove the nuts. Remove the two (2) AN4-7A bolts. Disconnect the master brake cylinder.

2 Remove the connection of the length adjustment rod to the pedal cart as follows. Remove the split pin. Remove the nuts. Remove the AN4-7A bolt. Refer to Figure 27-19.

3 Remove the nuts from the four rollers.

4 Remove the four rollers.

5 Remove the connection of the pedal cart assembly as follows (refer to Figure 27-17): Remove the safety wire from the bolted connection. Remove the four (4) AN3 H6A bolts. Remove the base plates and the rail bridge.

To assemble the pedal cart:

6 Assemble the connection with the length adjustment rod, refer to Figure 27-19. Make sure that the bolt is installed from the bottom. Replace the 2x12 split pin.

7 Install the two base plates as follows, refer to Figure 27-18: Put them from the inner side into the top and into the bottom triangular cut-out of the pedal cart. Make sure that the base plates are installed correctly in the pedal cart. The outer side of the base plate must be flush with the outer side of the pedal cart, refer to Figure 27-18, left illustration.

8 Put the pedal cart near the rail.

9 Put the two (2) concentric rollers in the upper locations of the cart and hold the rail bridge in position at the same time. Make sure that the arrow on the rail bridge points forward.

10 Put the two (2) eccentric rollers in the bottom locations of the cart.

11 Attach the two (2) base plates to the rail bridge with four (4) AN3H6A bolts and AN960-10L washers. Torque the bolts to 5 Nm (45 in.lbs.). Make sure that the base plates are flush with the cart, refer to Figure 27-18.

**CAUTION**

Adjust the eccentric rollers by rotating in the counterclockwise direction. The eccentric roller is torqued correctly when there is no play, and when the cart can roll without friction with all rollers rotating. Wrong adjustment of the eccentric rollers can lead to excessive wear of the rollers.

12 Adjust the eccentric rollers as necessary to prevent play between the rollers and the rail and to allow free movement. Torque the nuts to 20 Nm (14,75 ft.lbs.)

13 Safety the AN3H6A bolts of each base plate in pairs with wire.

14 Install the brake cylinder. Install a new 2x12 split pin.

15 Make sure that the rudder pedals move freely on the full travel range. Make sure that there is no play between the rollers and the rail.

16 Safety all fasteners with locking varnish.

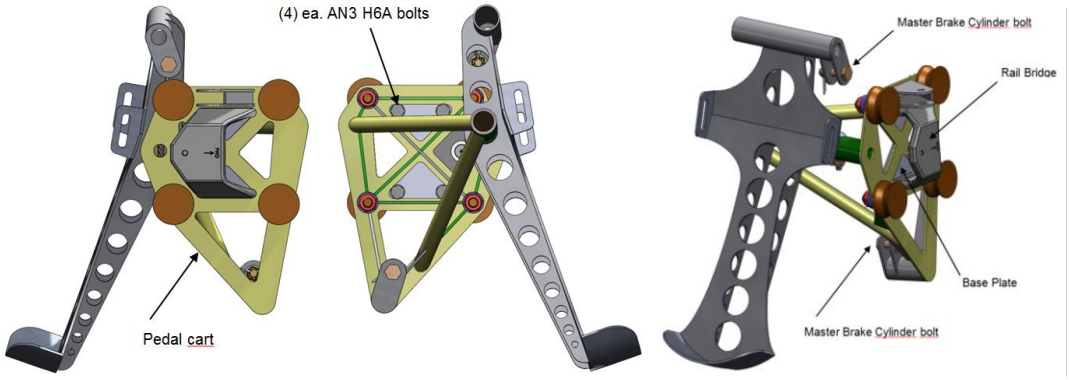



Figure 27-17: Pedal cart assembly.

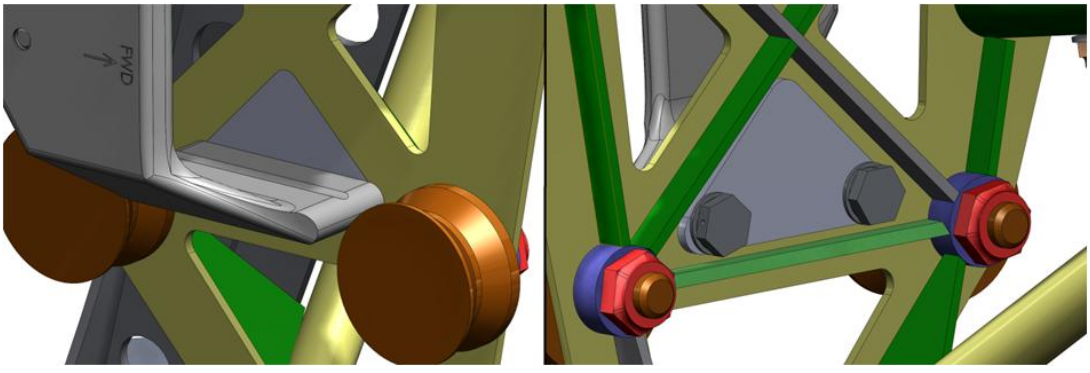



Figure 27-18: Detail of the bottom base plate, view from outside (left) and from inside (right).

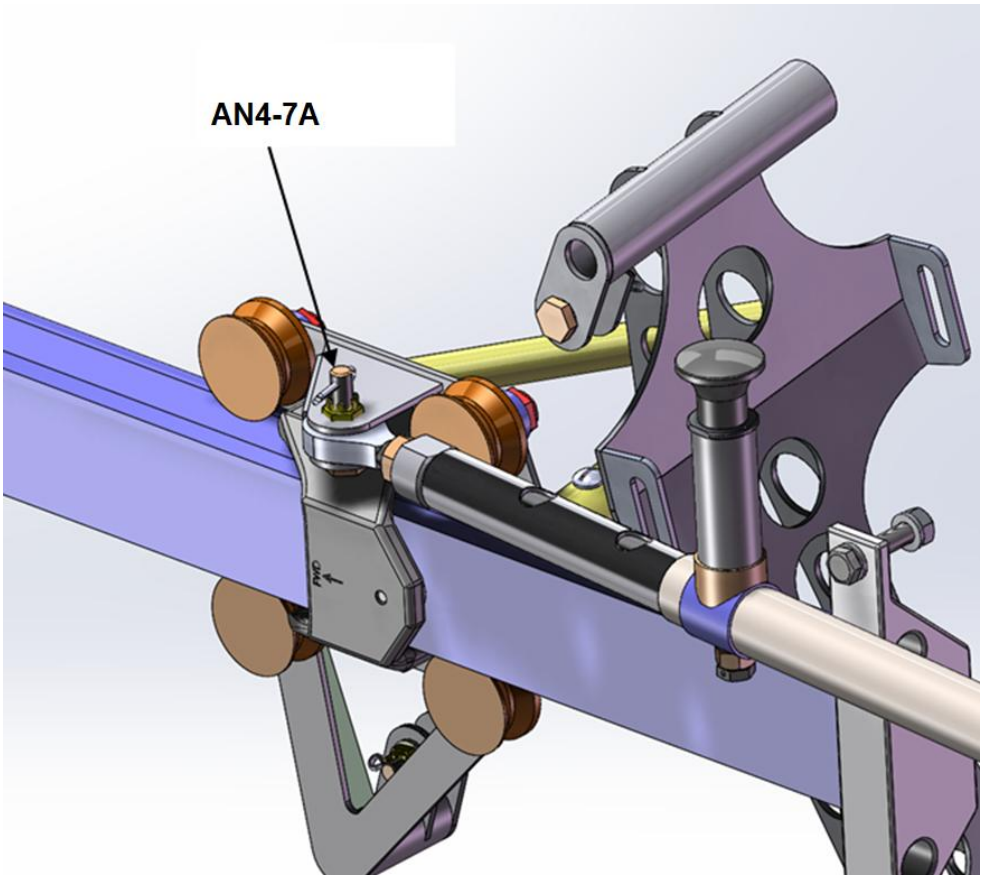



Figure 27-19: Connection bolt AN4-7A of the length adjustment rod to the pedal cart.

## 27-20-02 Control Cables

These assembled control cables are available in sets:

- The control cables in the rear fuselage
- The loop of the control cable in the front fuselage
- The control cables that connect the front part with the rear part of the rudder control system.

To remove the control cables:

1 Remove the related access panels.

2 Remove the connecting bolts.

3 Pull the control cable out of its position.

To install a set of assembled control cables:

1 Start the installation on one side (in this example the left side). Start with the aft control cable (XA42-2720-255) at the fulcrum lever.

2 Turn the rod end (XA42-2720-265) 15mm onto the threaded rod from one side of the control cable. Lock it in position with an AN-315-4 counter nut.

3 Install the rod end of the control cable to the fulcrum lever (XA42-2720-051), refer to Figure 27-20.

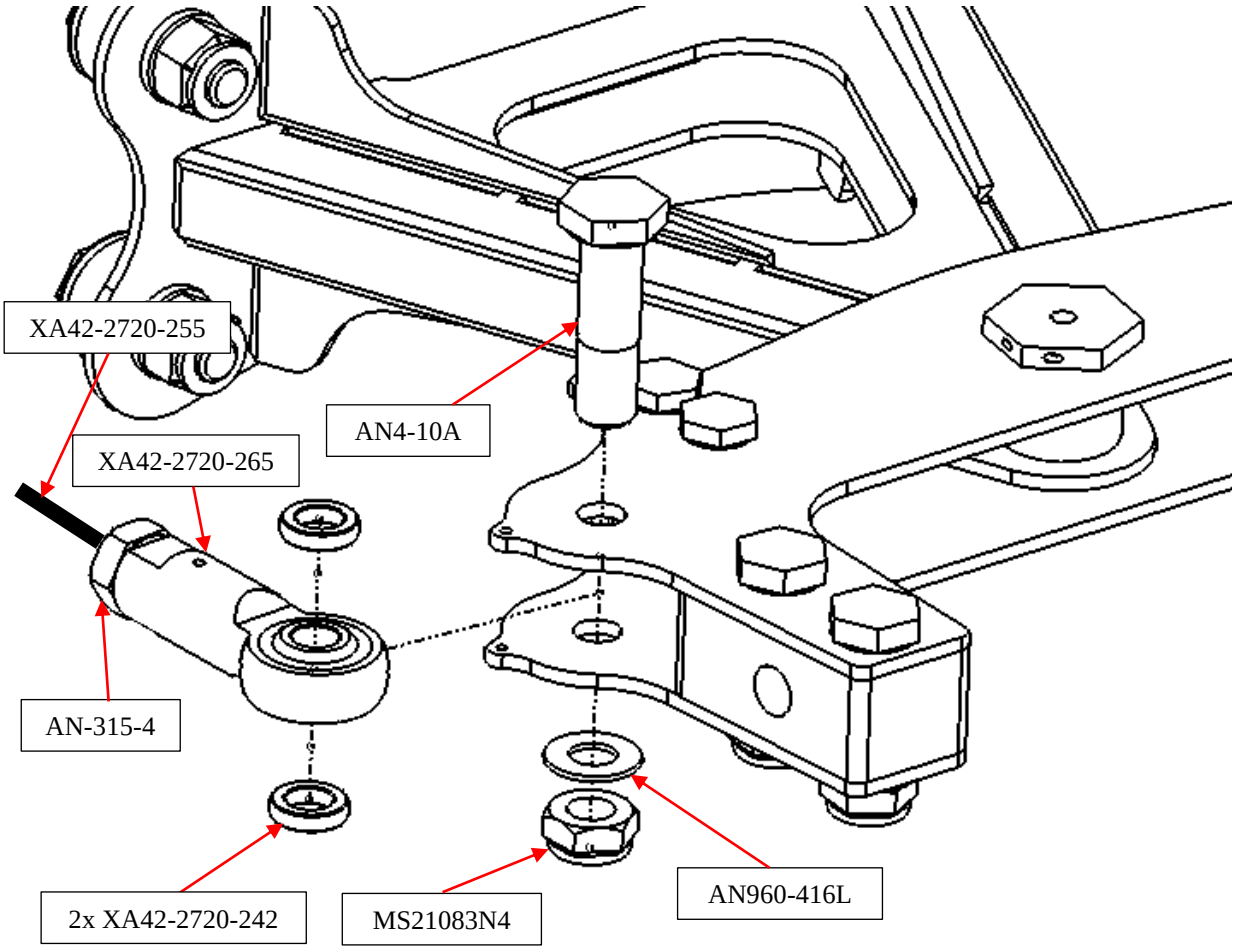



Figure 27-20: Left control cable installation to fulcrum lever.

4 Remove all lateral access panels in the cockpit to get a better access.

5 Install the other control cable end on the lever in the side wall of the rear cockpit, refer to Figure 27-21.

6 To adjust the correct length of the cable: Move the rudder to the right. Put the lever in the side wall with a minimum distance of 5mm to the frame directly aft of it.

7 Adjust the control cable length: Tighten the XA42-2720-265 rod end on the cable end and lock it in the correct position with an AN-315-4 counter nut.

8 Install the rod end of the control cable on the lever, refer to Figure 27-21.

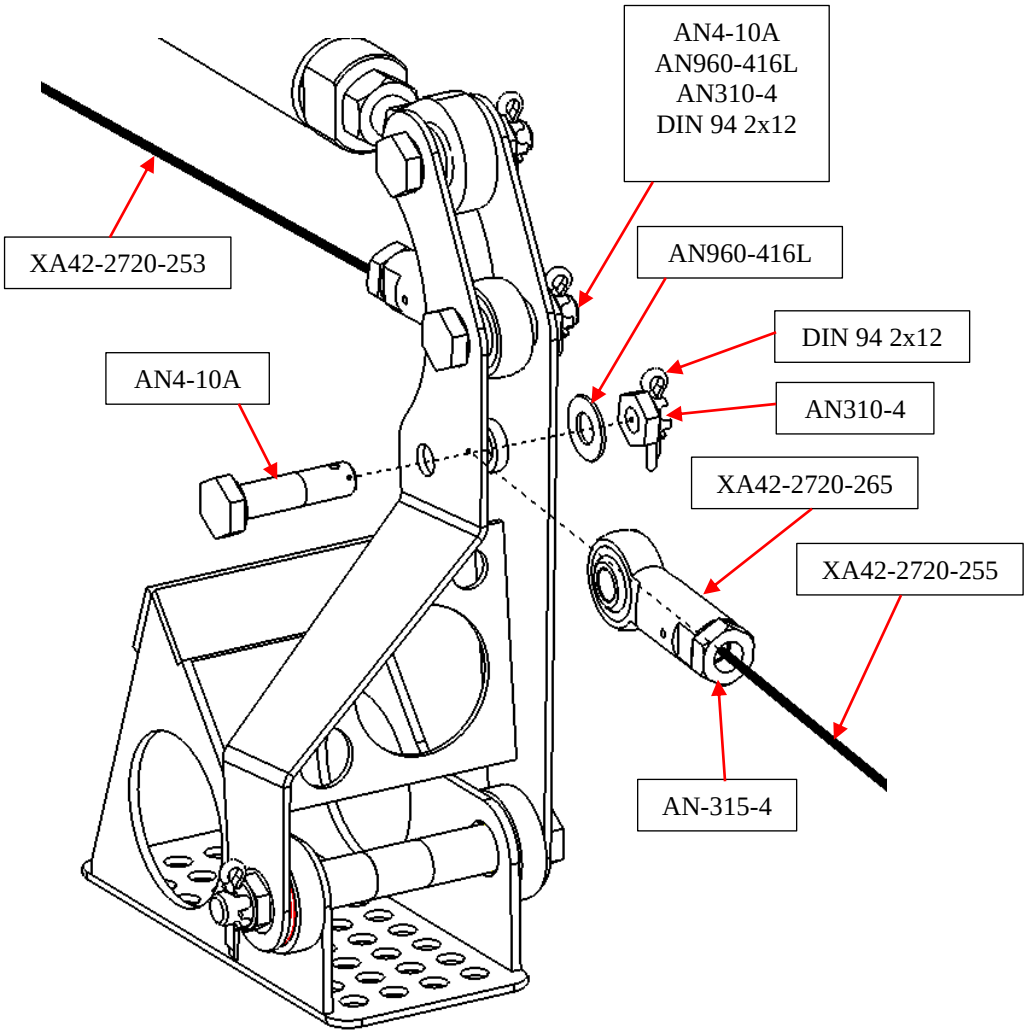



Figure 27-21: Left control cables installation to the fuselage side wall lever.

9. Do the installation steps 2 to 8 for the middle control cable (XA42-2720-253). Install the cable first on the lever in the side wall of the rear cockpit (refer to Figure 27-21). Then install the cable with the lever on the front pedal (refer to Figure 27-22).

10. To adjust the correct length of the cable: Move the rudder to the left and the front pedal forward. The clearance distance between the most forward point of the actuation bar of the front rudder pedal and the firewall must be a minimum of 30mm.

11. Do the same installation procedure for the control cables on the right side of the fuselage.

12. Assemble the forward control cable loop left (XA42-2720-251) and the forward control cable loop right (XA42-2720-252) with the turnbuckle (XA42-2720-260). Refer to Figure 27-22.

13. Use the turnbuckle to apply a tension of 110 N (25 lb) ± 10% to the cable system. Use the left aft control cable to measure the tension.

14. Move the rudder control system from stop to stop. Make sure that it only touches the stops at the fulcrum lever and no other parts.

15. Check minimum thread engagement in rod-ends and turnbuckles.

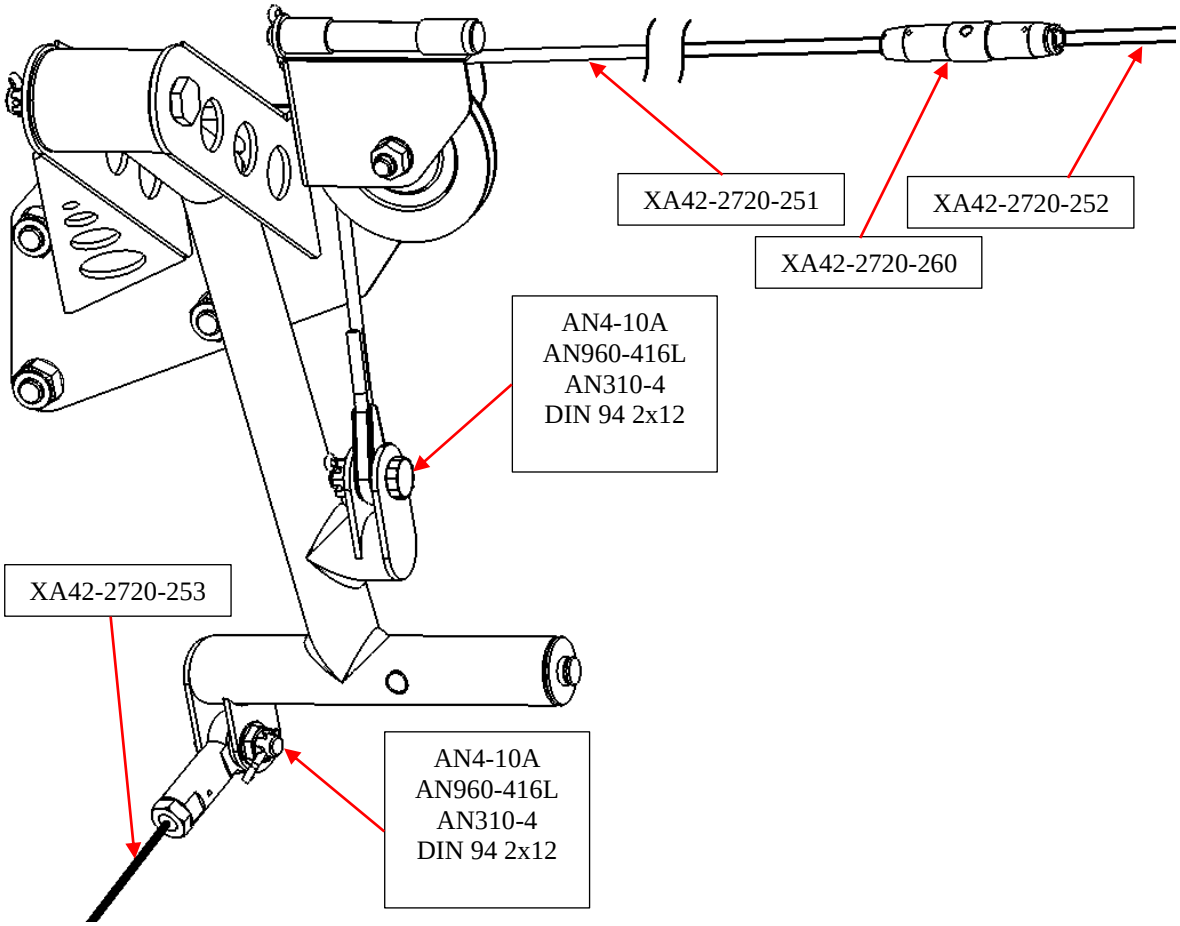



Figure 27-22: Left control cables installation to the front rudder pedal.

## 27-30-00 ELEVATOR AND TRIM TAB

The elevator operates through push/pull rods, a bell crank and an actuator arm. The actuator arm is part of the elevator. The push/pull rod that connects the actuator arm is made of carbon fiber. The bell crank has a sealed ball bearing. For information on the bell crank, refer to chapter 27-30-02.

The elevator is attached at six hinge points to the horizontal tail. The travel stops are in the torque tube. Refer to Figure 27-3, position 15.

To remove the elevator, refer to chapter 55-20-00.

To adjust the neutral position and/or the deflection of the elevator:

1 Examine the control rods, bell crank levers and hinges for wear and other damage.

2 Measure the length of the control rods and adjust them, if necessary. Refer to Table 27-2.

3 Make the aircraft level, refer to chapter 08-10-00.

4 Hold the control stick in the neutral position.

5 Make sure that the elevator leading edge aligns with the leading edge of the horizontal stabilizer (0° position).

6 If necessary, adjust the length of the elevator rod FWD to align the leading edges of the elevator and the horizontal stabilizer.

7 Make sure that the elevator travel is in the permitted tolerances; refer to Table 27-1.

8 Replace the travel stops, if necessary.

9 Make sure that the control sticks move freely in the full travel range.

## 27-30-01 Trim Tab

The trim tab operates through an electric actuator. You can control the actuator with a switch on the left side panel of the rear cockpit. The trim tab is attached at two hinge points on the right side of the trailing edge of the elevator. To remove the trim tab, refer to chapter 55-30-00.

To disassemble the trim tab control system:

1 Disconnect the control rod from the trim tab. See Figure 27-23, detail L.

2 Disconnect the control rod from the trim bellcrank. See Figure 27-23, detail H.

3 Disconnect the trim bellcrank from the horizontal tail and the trim tab drive. See Figure 27-23, detail H and P.

4 Disconnect the trim tab drive electrically.

5 Remove the trim tab drive. See Figure 27-23, detail P.

The trim tab LED position indicator and the actuator switch are located in the left side panel in the rear cockpit. Refer to chapter 39-30-00.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Trim rod assy. | XA42-2750-105 A (For serial numbers 01 to 07 and 101 to 143) |
| | | | XA42-2750-105 B (For serial numbers 08 and 144 on or after performing SB-2016-006) |
| 2 | 1 | Trim bell crank | XA42-2750-101 |
| 3 | 1 | Trim tab drive | XA42-2750-051 |
| 4 | 1 | Trim bushing | XA42-2750-271 |
| 5 | 1 | Trim tab washer | XA42-2750-273 |
| 6 | 1 | Hexagon head bolt | AN3-6 |
| 7 | 2 | Flat washer | AN960-10L |
| 8 | 1 | Castle nut | AN310-3 |
| 9 | 4 | Cotter pin | DIN94-2x12 |
| 10 | 1 | Hexagon head bolt | AN4-10 |
| 11 | 1 | Hexagon head bolt | AN4-11 |
| 12 | 6 | Flat washer | AN960-416 |
| 13 | 3 | Castle nut | AN310-4 |
| 14 | 1 | Hexagon head bolt | AN4-7 |
| 15 | 1 | Flat washer | AN960-416L |
| 16 | 4 | Flat washer | DIN125-A-4,3 |
| 17 | 4 | Lock nut | DIN985-M4 |

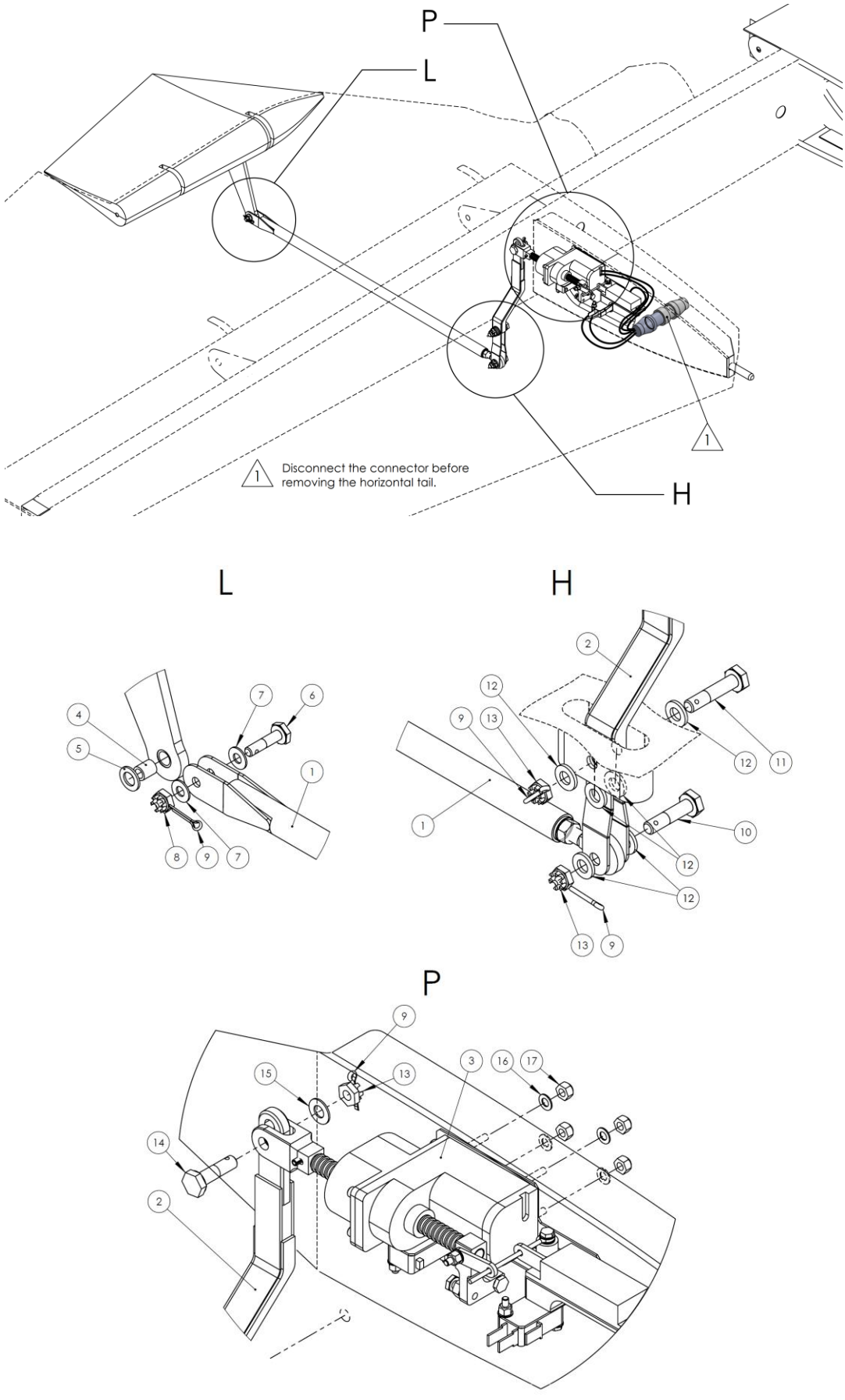



Figure 27-23: Trim control installation. Detail L from S/N 08 and S/N 144 on or after performing SB-2016-006.

## 27-30-02 Elevator bellcrank

The Elevator bellcrank is installed between the rear seat frames with an AN5-53A bolt. Refer to Figure 27-24.

To disassemble the elevator bellcrank:

1 Remove the rear seat, refer to chapter 25-10-01.

2 Disconnect the *Elevator control rod FWD*.

3 Disconnect the *Elevator control rod CFRP*.

4 Remove the hinge bolt between the bellcrank and the seat frames.

5 Reassemble in reverse order.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Elevator bellcrank | XA42-2730-100 |
| 2 | 1 | Elevator control rod CFRP | XA42-2730-101 |
| 3 | 1 | Elevator control rod FWD | XA42-2730-103 |
| 4 | 1 | Spacer elevator bellcrank | XA42-2730-220 |
| 5 | 2 | Bearing | MS27640-5 |
| 6 | 1 | Hexagon head bolt | AN5-53A |
| 7 | 1 | Flat washer | AN960-516 |
| 8 | 1 | Lock nut | MS21044-N5 |
| 9 | 2 | Hexagon head bolt | AN4-11 |
| 10 | 2 | Flat washer | AN960-416 |
| 11 | 2 | Flat washer | AN960-416L |
| 12 | 2 | Castle nut | AN310-4 |
| 13 | 2 | Cotter pin | DIN94-2x12 |

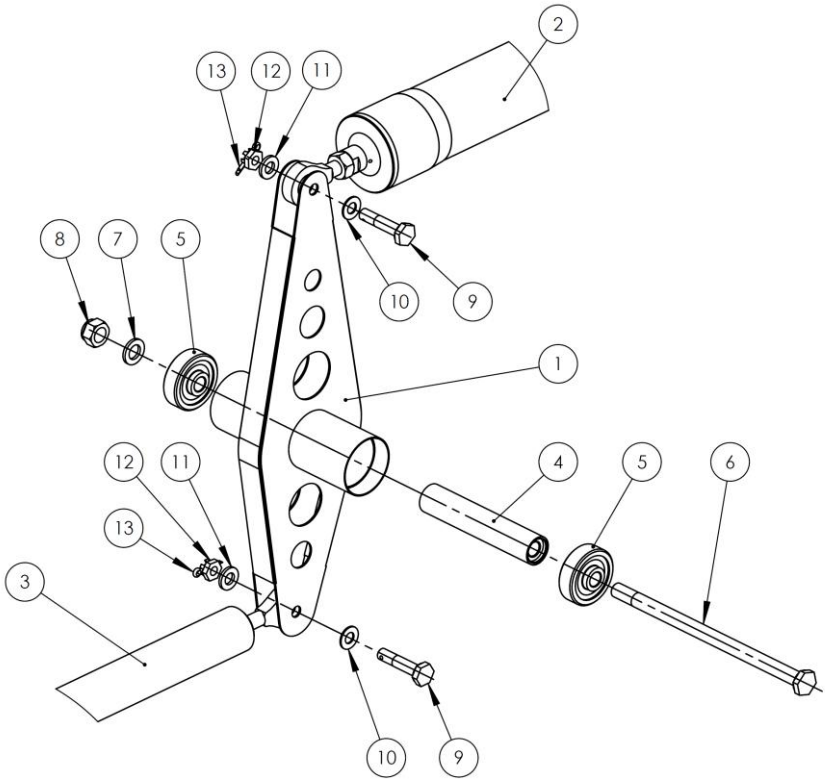



Figure 27-24: Elevator bellcrank installation

## 27-30-03 Elevator control rod CFRP

For the connection of the elevator control rod CFRP to the elevator, refer to Figure 27-25.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Elevator control rod CFRP | XA42-2730-101 |
| 2 | 1 | Elevator | XA42-5520-051 |
| 3 | 1 | Screw | AN4-13 |
| 4 | 2 | Washer | DIN 9021 6,4 (M6) |
| 5 | 1 | Nut | AN310-4 |
| 6 | 1 | Cutter pin | DIN 94 2x12 |

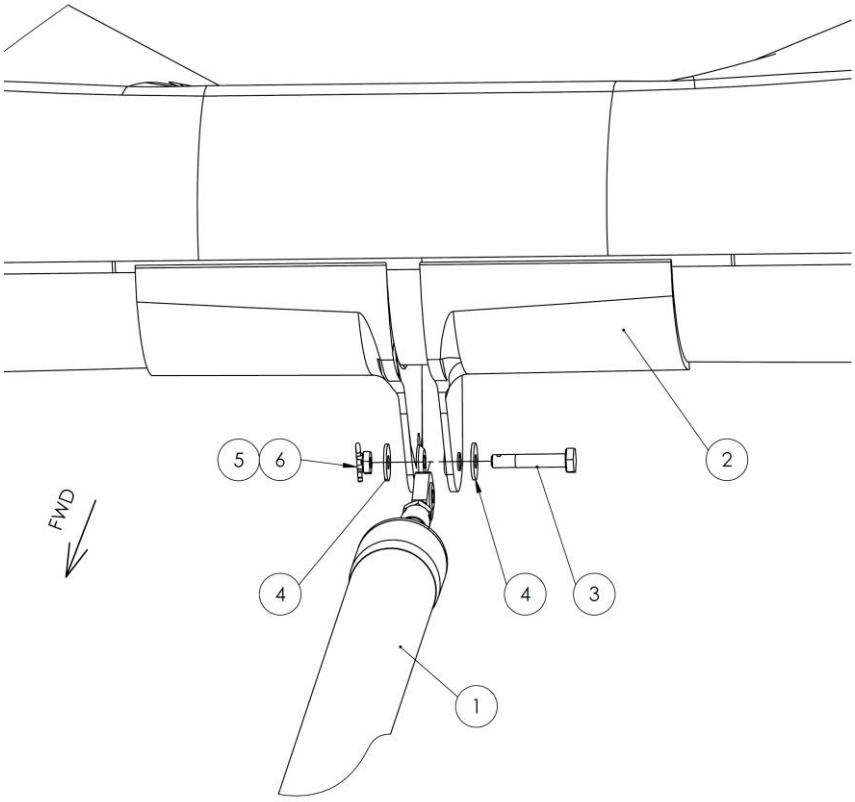



Figure 27-25: Elevator control rod CFRP installation on the Elevator.

# Chapter 28 Fuel

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## 28-00-00 GENERAL

The fuel system has these components:

- The acro tank
- Two integral wing tanks
- A fuel selector valve
- A fuel filter
- An electrically operated auxiliary fuel pump (boost pump)
- A mechanical fuel pump operated by the engine.

The acro tank is used for aerobatic flight, take-off and landing. The wing tanks are used only for utility flight.

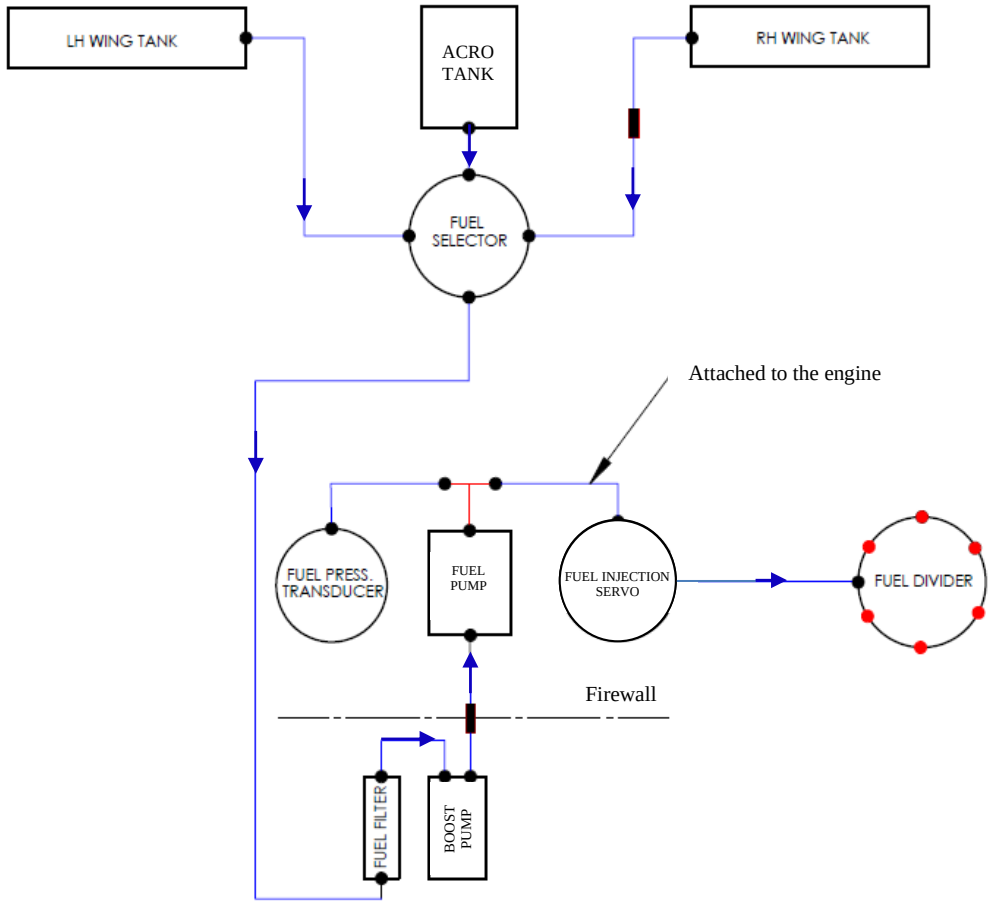



Figure 28-1: Overview - Fuel system

The fuel tanks capacities (refer to chapter 12-10-08) are:

| | |
|---|---|
| Total fuel capacity: | 277 (L) / 73.2 (US gal) |
| • Wing tanks: | 2x 105 (L) / 2x 27.7 (US gal) |
| • Acro tank: | 67 (L) / 17.7 (US gal) |
| | |
| Usable fuel capacity (Total): | 266 (L) / 70.3 (US gal) |
| Usable fuel capacity (Acro): | 57 (L) / 15.1 (US gal) |

For refueling, defueling or fuel drainage instructions; refer to chapters 12-10-01 thru 12-10-03. Obey the warnings and cautions of the related chapters.

**WARNING**

Obey these instructions during all maintenance procedures on the fuel system. Fuel and fuel tank vapors can cause accidents.

1 Only personnel who do work on the aircraft are permitted to stay in the area around the aircraft.

2 No other maintenance work is permitted during work on the fuel system.

3 When a fuel tank is opened for repair, start the ventilation immediately.

4 When you drain fuel, make sure that applicable containers with the correct dimensions are available. Keep the fuel in safe storage. Remove fuel vapors as quickly as possible.

To remove fuel vapors from an open tank for the maintenance work:

1 Blow compressed air into the tank until the internal space is dry and without fuel vapors.

2 Always make sure that there is good airflow when the tank is open during maintenance work.

## 28-10-00 STORAGE

## 28-10-01 Acro Tank

The acro tank is installed in the forward center fuselage. It is attached with two bolts on each side to the side walls of the fuselage tank compartment. Shims might be installed between the tank attachments and the tank walls. The support structure around the acro tank holds it in position. The tank filler neck is connected to a bonding cable. A tank drain valve is accessible from the bottom of the fuselage in front of the main spar. For a description of the tank ventilation system, refer to chapter 28-10-04.

The acro tank has two compartments. A tube connects the top compartment to the bottom compartment. So that a continuous fuel supply is possible during an inverted flight or negative G maneuvers. The outlet is on the forward side of the bottom compartment. The outlet is connected to a flop tube (refer to chapter 28-10-02) on the internal side of the tank.

The internal side of the tank is sealed; refer to chapter 51-30-06 for the sealant specification.

To remove the acro tank:

1 Drain the acro tank, refer to chapter 12-10-03.

2 Disconnect all fuel hoses, bonding cables and electronic wiring.

3 Remove the engine, refer to chapter 72-10-00.

4 Remove the engine mount, refer to chapter 71-20-00.

5 Remove the metal sheet of the fire wall, refer to 71-30-00.

6 Disassemble the filler neck.

7 Remove the four bolts on top of the acro tank which attach the tank to the tank compartment structure. If shims are available, identify the position of the shims. This helps to install them in the same position during the installation. Refer to Figure 28-2.

8 Remove the acro tank.

9 Assemble the acro tank in the opposite sequence. Apply RTV 106 sealant (MIL-A-46106) on the rear side of the metal sheet of fire wall.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 4 | Bolt | AN6-7A |
| 2 | 8 | Washer | AN960-616 |
| 3 | Optional | 1 or 0.5 mm Shim | XA42-2810-301/-302 |
| 4 | 4 | Nut | MS21042-6 |

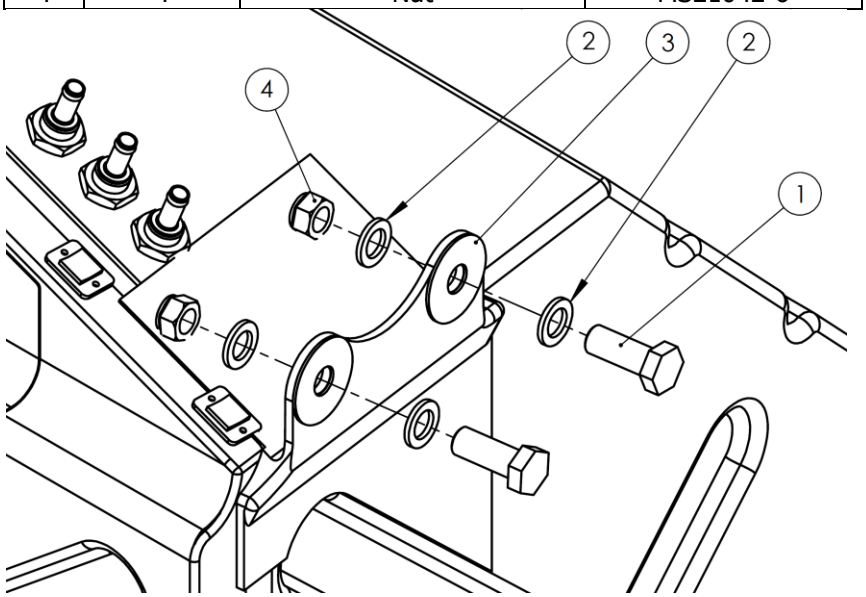



Figure 28-2: Installation Acro tank.

## 28-10-02 Flop Tube

The flop tube continuously supplies fuel during all flight attitudes, which is necessary for the aerobatic flight. The flop tube assembly is shown in Figure 28-3.

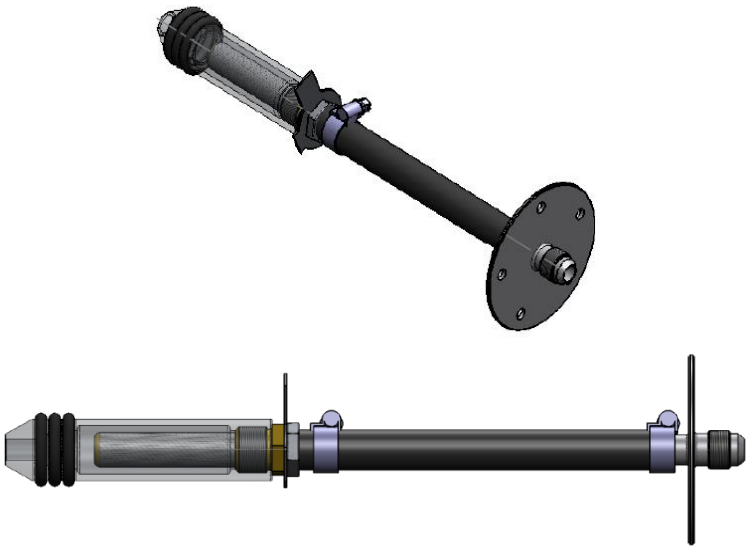


Figure 28-3: Flop tube assembly

To remove the flop tube:

1 Drain the main tank, refer to chapter 12-10-03.

2 Remove the cowling, refer to chapters 71-10-01 and 71-10-02.

3 Remove the lower access panel from the fire wall, refer to chapter 71-30-00.

4 Remove the fuel line from the outlet of the main tank.

5 Remove the five bolts from the outlet flange. Refer to Figure 28-4.

6 Remove the outlet flange together with the flop tube.

**WARNING**

Be careful with flammable cleaning agents, such as acetone. Make sure that there is a good airflow in the work area and that safety equipment is available. If you do not obey these precautions, accidents can occur.

7 Before you assemble the flop tube again, examine the seal for damage. Replace the seal, if necessary. Clean the sealing surfaces mechanically with acetone.

9 Examine the flop tube for wear and damage. Replace the flop tube assembly, if necessary.

10 Assemble the flop tube in the opposite sequence. Apply "Epple 33" sealant to the outlet flange. Safety the bolts to each other with safety wire.

11 Do a fuel leak check.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 5 | Bolt | AN3H-3A |
| 2 | 5 | Washer | AN960-10 |
| 3 | 1 | Flop tube assembly | XA42-2810-160 |
| 4 | 1 | Seal tank | XA42-2810-226 |

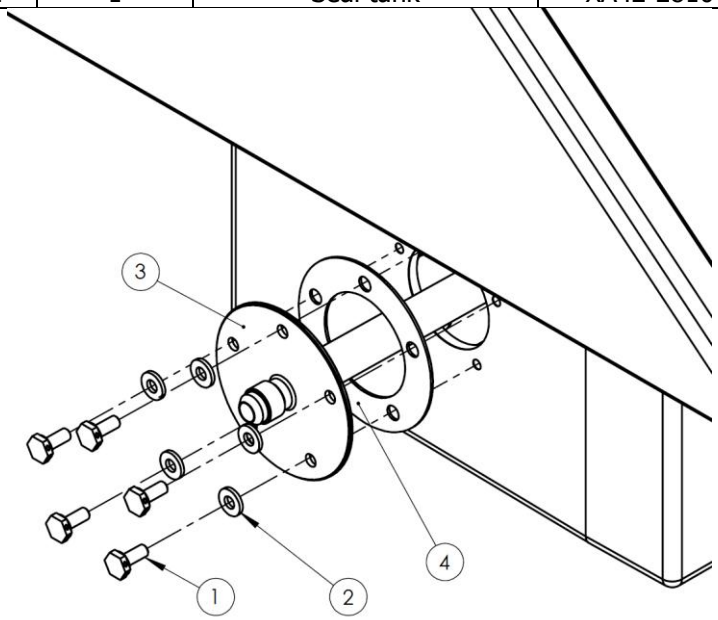



Figure 28-4: Flop tube assembly installation

## 28-10-03 Wing Tanks

Two integral wing tanks are in front of the main spar between the root rib and the third outboard rib of the wing. The wing tanks are sealed with a sealant, refer to chapter 51-30-06. Vent lines connect the wing tanks to the acro tank.

You can examine the wing tanks from the internal side through inspection panels in the front root ribs of the wing. The outlet hoses and ventilation lines are attached to fittings on the inspection panel.

To remove the inspection panel of the wing tank:

1 Drain the applicable wing tank, refer to chapter 12-10-03.

2 Make sure that the fuel vapors are fully removed.

3 Remove the foot rest to get access to the wing tank inspection panel.

4 Disconnect the fuel line and the ventilation line from the inspection panel.

5 Remove the bolts (AN3) from the inspection panel.

6 Remove the inspection panel from the root rib of the wing.

7 Disconnect the ventilation line from the tank side of the inspection panel. This is not applicable for aircraft with serial numbers 01 thru 07 and 101 thru 133 (no accomplishment of SB-2014-004).

8 Remove the inspection panel.

**WARNING**

Be careful with flammable cleaning agents, such as acetone. Make sure that there is a good airflow in the work area and that safety equipment is available. If you do not obey these precautions, accidents can occur.

9 Before you assemble the inspection panel again, clean the sealing surfaces mechanically and with acetone. Replace damaged sealing surfaces.

10 Assemble the inspection panel of the wing tank in the opposite sequence. Apply "Epple 33" sealant to the sealing surface.

11 Do a fuel leak check.

## 28-10-04 Ventilation Lines

All ventilation lines are plastic hoses and resistant to fuel. The ventilation lines are connected through fittings. The ventilation system connects the wing tanks to the acro tank. The system is ventilated to the environment with a hose that connects the acro tank to the left fairing of the main landing gear.

After you disconnected a ventilation hose, examine the ends of the hose for damage. Replace damaged hoses. This is necessary to connect them correctly to the fittings.

## 28-20-00 DISTRIBUTION

Flexible hoses connect the components of the fuel system. Three input fuel lines are connected to the fuel selector valve. One output fuel line goes through a fuel filter first and through the electrically-operated auxiliary/boost pump before it goes into the engine fuel pump.

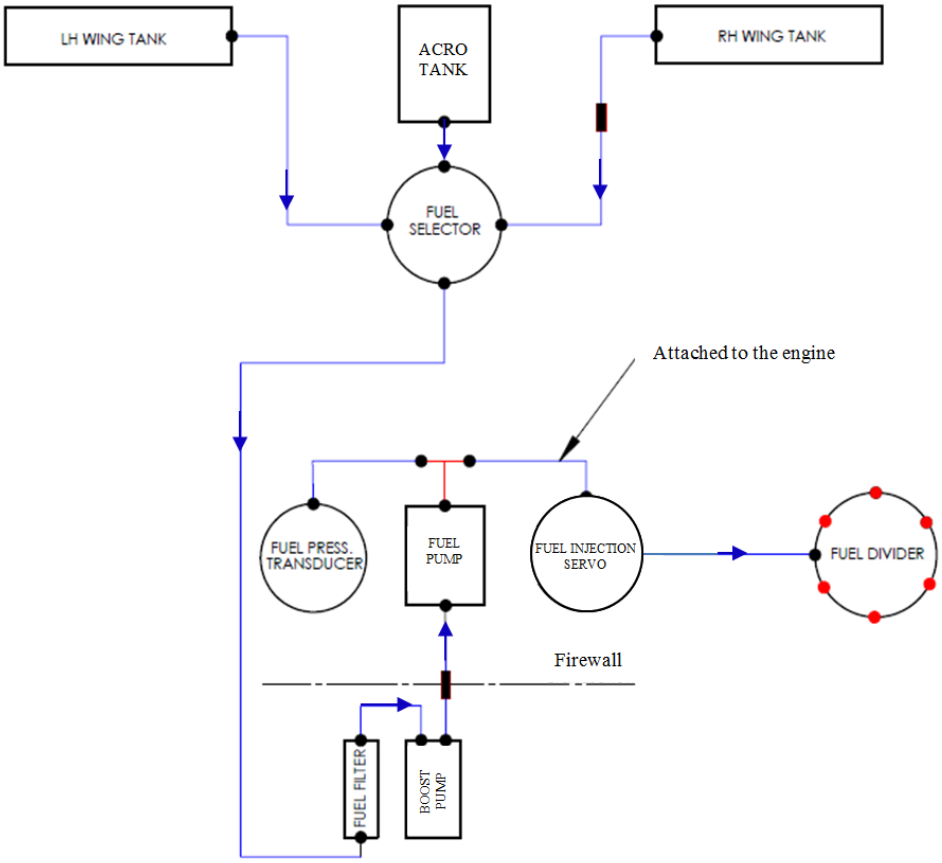



Figure 28-5: Overview - fuel distribution

## 28-20-01 Fuel Selector Valve and Fuel Selector Switch

The fuel selector valve is attached to a bracket on the bottom of the fuselage behind the fire wall. A control rod connects the fuel selector valve to the fuel selector switch in the rear cockpit. The positions of the fuel selector switch are shown on Figure 28-6. The available positions are LEFT, ACRO, RIGHT, and OFF.




Figure 28-6: Positions of the fuel selector switch

To disassemble the fuel selector control rods in order to remove the wing:

1 Drain all fuel tanks, refer to chapter 12-10-03.

2 Remove the front seat, refer to chapter 25-10-01.

3 Remove the wing spar cover if installed.

4 Disconnect the A*ctuation rod union assembly* attachment from the left front seat frame. Refer to Figure 28-7, position 1.

5 Slide the union over the *Middle actuation rod* (Position 3).

6 Remove the *Rear actuating rod assembly* (Position 4).

7 Remove towards the rear the *Middle actuation rod* outside of the spar bridge.

8 Assemble in reverse order.

To remove the fuel selector valve and its control rods:

1 Drain all fuel tanks, refer to chapter 12-10-03.

2 Remove the cowling, refer to chapters 71-10-01 and 71-10-02.

3 Remove the lower access panel from the metal sheet of the fire wall. Refer to chapter 71-30-00.

4 Disconnect the fuel lines from the fuel selector valve.

5 Remove the attachment screws from the selector valve. Refer to detail D.

6 Remove the front actuation rod assembly (includes the fuel selector valve) to the front.

7 Remove the *Actuation rod union assembly* from the seat frame as described above.

8 Remove the actuation rods and fuel selector switch. Refer to detail A.

9 Assemble the fuel selector valve and its control rods in the opposite sequence.

10 Do a functional check.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Actuation rod union assy. | XA42-2840-131 |
| 2 | 1 | Front actuation rod assy. | XA42-2840-133 |
| | 1 | Front actuation rod assy. | XA41-2840-133 |
| 3 | 1 | Middle actuation rod | XA42-2840-226 |
| | 1 | Middle actuation rod | XA41-2840-226 |
| 4 | 1 | Rear actuation rod assy. | XA42-2840-132 |
| | 1 | Rear actuation rod assy. | XA41-2840-132 |
| 5 | 1 | Fuel Selector | EFS20x5-MB |
| 6 | 2 | Washer | DIN 9021 5,3 (M5) |
| 7 | 4 | Screw | MS24693S274 |
| 8 | 7 | Washer | AN960-10L |
| 9 | 4 | Nut | MS21044N3 |
| 10 | 3 | Screw | AN526-10R10 |
| 11 | 2 | Screw | AN3-5A |

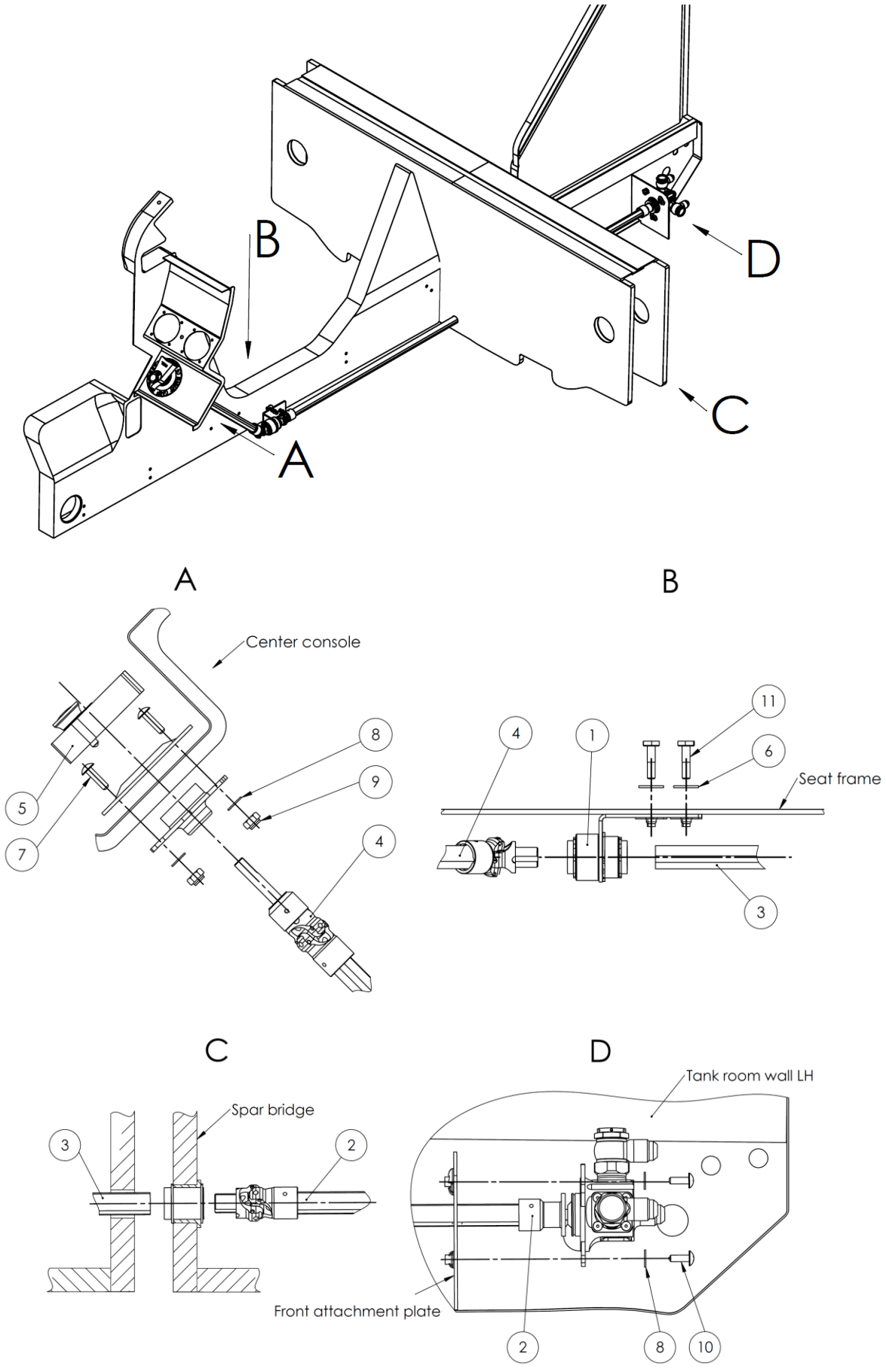



Figure 28-7: Fuel selector mechanism assembly

## 28-20-02 Fuel Lines

For general information on the fuel lines and the fittings, refer to chapters 20-10-06 and 20-10-07.

If it is necessary to replace the fuel lines: Replace all seals on the fire wall with RTV 106 sealant. Use only fuel lines with applicable fire sleeves for the fuel distribution in the engine compartment.

## 28-20-03 Fuel Filter

The fuel filter is installed between the fuel selector valve and the auxiliary/boost pump in the lower left forward fuselage compartment.

To remove the fuel filter:

1 Set the fuel selector switch to OFF.

2 Remove the lower left forward fuselage compartment cover.

3 Disconnect the fuel lines from the fuel filter. Drain the fuel into an applicable container.

4 Remove spilled fuel immediately.



Figure 28-8: Filter housing (left) and filter element (right).

To replace the fuel filter element:

1 Remove the circlip.

2 Disassemble the fuel filter. Replace the filter element (Crosland 489 or XA42-2800-230), if necessary.

3 Replace the seals, if necessary:

I. DIN 7603 – A - 6 x 12 x 1 Vf

II. DIN 3771 - 19,05 x 2,62 - NBR70

III. DIN 3771 – 58 x 2,5 – NBR70

4 Assemble the fuel filter in the opposite sequence.

5 Do a fuel leak check.

## 28-20-04 Auxiliary/Boost Pump

If the engine-operated fuel pump does not operate correctly, an auxiliary/boost pump supplies sufficient fuel to the engine.

The auxiliary/boost pump also operates as a primer during the start of the engine.

The switch for the auxiliary/boost pump is on the right side panel of the rear cockpit.

The auxiliary/boost pump is in the lower left forward fuselage compartment.

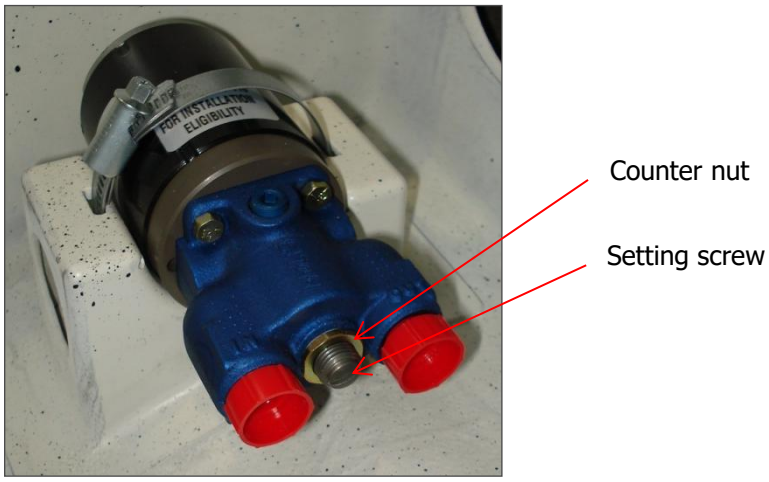



Figure 28-9: Installed auxiliary/boost pump

In case of replacing the auxiliary/boost pump, the new pump needs to be set correctly.

To set a new auxiliary/boost pump:

1 Loosen the counter nut on the setting screw. Refer to Figure 28-9.

2 Screw the setting screw all the way in without applying torque.

3 Loosen the setting screw by 270°.

4 Fix the setting screw in that position by torqueing the counter nut.

To remove the auxiliary/boost pump:

1 Set the fuel selector switch to OFF.

2 Remove the lower left forward fuselage compartment cover.

3 Disconnect the electric cables.

4 Disconnect the fuel lines and the vent line from the auxiliary/boost pump. Drain the fuel into an applicable container.

5 Remove spilled fuel immediately.

6 Remove the clamp.

7 Remove the auxiliary/boost pump.

**WARNING**

Make sure that you install the auxiliary/boost pump in the correct direction. Find the IN and OUT markings on the pump (refer to Figure 28-9) to connect the auxiliary/boost pump correctly. An incorrectly installed auxiliary/boost pump can cause accidents.

8 Install the auxiliary/boost pump in the opposite sequence.

9 Do the engine run-up procedure to make sure that the engine operates correctly.

10 Do a fuel leakage check.

## 28-40-00 INDICATING

## 28-40-01 Fuel Quantity Indicator

For fuel quantity indication, the main tank has a capacitive quantity sensor. Each wing tank has a lever-type sensor. The fuel quantity data are transmitted to the Engine Data Converter and shown on the MVP-50P Electronic Engine Monitor in the instrument panel.

## 28-40-02 Fuel Quantity Sensors

To calibrate the fuel quantity sensor of the main tank, two screws on the sensor are available.

To calibrate the fuel quantity sensor for each tank:

1 Make the aircraft level, refer to chapter 08-10-00.

2 Fully remove all fuel from the fuel tanks.

3 Make the wing level. Use shims, or change the tyre pressure on each side.

4 Set the engine monitoring system MVP-50 to ON.

5 Push the "MENU" button on the MVP-50.

6 Select the "System Configuration Screens Menu".

7 Enter the Level 1 password: "200".

8 On the system configuration screens menu, select the "Fuel Tank Calibration"(refer to Figure 28-10).

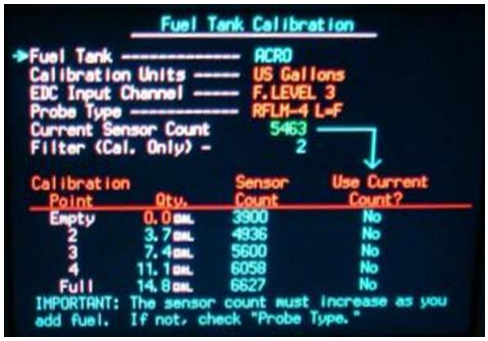



Figure 28-10: MVP-50 fuel tank calibration screen.

Different options are available in this menu. When you select the applicable tank for calibration, the "Current Sensor Count" shows a measured value that agrees with the fuel quantity in the tank.

The calibration procedure is as follows: Fill the tank with known quantities of fuel. For each calibration step, set the "Use Current Count" of the related quantity of fuel to "Yes".

The calibration screen is in US Gallons.

Calibration of the Acro Tank.

9 On the "Fuel Tank" option, select "ACRO".

10 Fill 10 liters (2.64 US Gallons) of fuel into the tank. The fuel quantity sensor does not measure the first 10 liters.

11 Set the "Use Current Count?" for 0 US Gallons to "Yes".

**WARNING**

When you add fuel, make sure that the value of the "Current Sensor Count" increases. If the fuel quantity sensor is incorrectly calibrated, incorrect fuel quantity indications are possible in flight.

12 Fill 14 liters (3.7 US Gallons) of fuel into the acro tank.

13 Set the "Use Current Count?" for 3.7 US Gallons to "Yes".

14 Fill 14 liters (3.7 US Gallons) of fuel into the acro tank.

15 Set the "Use Current Count?" for 7.4 US Gallons to "Yes".

16 Fill 14 liters (3.7 US Gallons) of fuel into the acro tank.

17 Set the "Use Current Count?" for 11.1 US Gallons to "Yes".

18 Fill 14 liters (3.7 US Gallons) of fuel into the acro tank.

19 Set the "Use Current Count?" for 14.8 US Gallons to "Yes".

Calibration of the Wing Tanks.

**WARNING**

Calibrate the two wing tanks at the same time. Each wing tank must have the same quantity of fuel during the calibration process to keep the wings level. If you calibrate only one wing tank, incorrect fuel quantity indications are possible in flight.

20 On the "Fuel Tank" option, select the applicable wing tank with "L Wing" or "R Wing".

21 With empty wing tank, set the "Use Current Count?" for 0 US Gallons to "Yes" on the two wing tanks.

22 Fill 25,7 liters (6.8 US Gallons) into each wing tank.

23 Set the "Use Current Count?" for 6.8 US Gallons to "Yes" for each wing.

24 Fill 25,7 liters (6.8 US Gallons) into each wing tank.

25 Set the "Use Current Count?" for 13.7 US Gallons to "Yes" for each wing.

26 Fill 25,7 liters (6.8 US Gallons) into each wing tank.

27 Set the "Use Current Count?" for 20.6 US Gallons to "Yes" for each wing.

28 Fill 25,7 liters (6.8 US Gallons) into each wing tank.

29 Set the "Use Current Count?" for 27.5 US Gallons to "Yes" for each wing.

30 Push "EXIT" some times to go back to the main screen.

# Chapter 32 Landing Gear

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## 32-00-00 GENERAL

The aircraft has a standard landing gear that cannot retract.

It has two main wheels and one tail wheel.

## 32-10-00 MAIN LANDING GEAR

Each main wheel is attached to a landing gear strut. The landing gear struts are attached to the engine mount. The MLG bushing is installed between engine mount and landing gear strut. Figure 32-1 shows the mounting of the main landing gear.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Main landing gear strut | XA42-3210-151 |
| 2 | 2 | MLG bushing | XA42-3210-212 |
| 3 | 2 | Bolt | XA42-3210-230 |
| 4 | 2 | Washer | DIN 125 10,5 (M10) |
| 5 | - | Safty wire | MS20995 Diameter .032" |

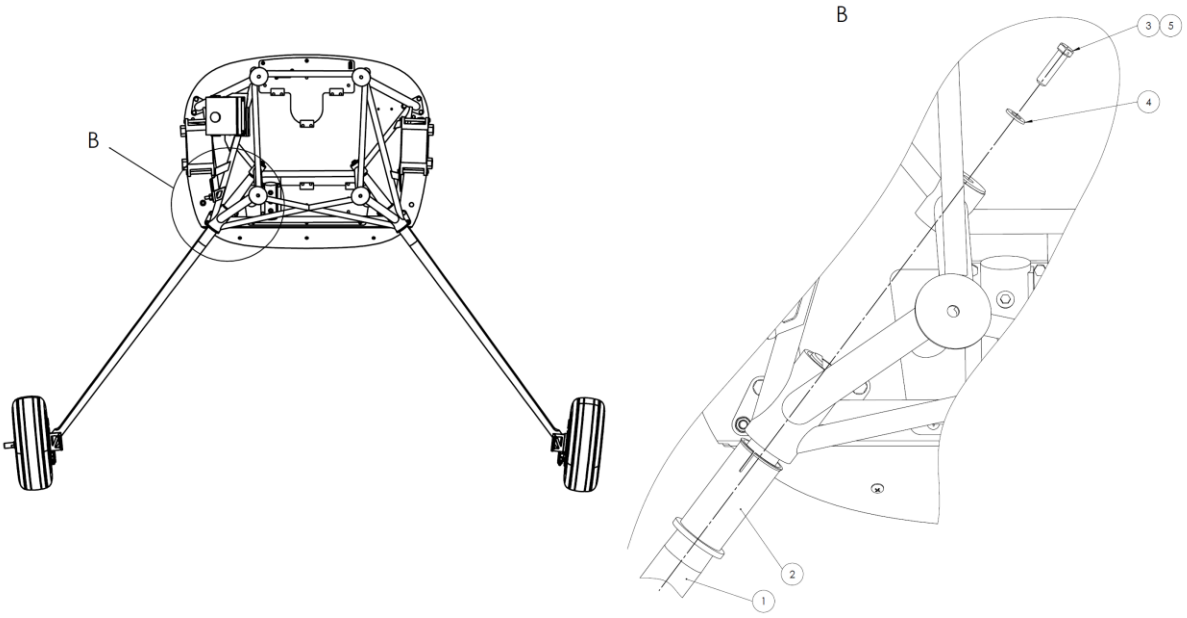



Figure 32-1: Installation of the main landing gear.

To remove the main landing gear/gear struts of the main landing gear:

1 Remove the cowling, refer to chapters 71-10-01 and 71-10-02.

2 Lift the front of the aircraft, refer to chapter 07-20-01.

3 Remove the wheel pants, refer to chapter 32-50-00.

4 Remove the screw that attaches the upper strut fairing to the fuselage.

**WARNING**

Be careful when you drain the brake fluid. Do not spill it. Do not get it on your skin. Remove spilled brake fluid immediately. Brake fluid can cause damage to health and materials.

5 Disconnect the brake lines from the fire wall fitting. Drain the brake fluid.

6 Pull the fuel vent lines and the breather lines out from the landing gear fairing.

7 Remove the safety wire from the retaining bolt on the engine mount. Remove the bolt, refer to Figure 32-1.

8 Pull the gear strut out together with the gear fairing. If you cannot remove the leg easily, turn the wheel around the yaw axis.

9 If necessary, remove the fairing and the brake lines from the leg. Refer to chapter 32-50-00.

10 Assemble the main gear/main gear struts in the opposite sequence.

11 Install a new safety wire. If the brake line was removed, attach it to the leg with tie wraps. Torque the bolt on the engine mount to 79 Nm.

12 Add brake fluid. Bleed the brake system, refer to chapter 12-10-06.

## 32-20-00 TAIL GEAR

The tail wheel is connected to a spring-type strut. This strut is attached to the frame in the tail of the fuselage.

A tail wheel lock locks the wheel in a straight position for these functions:

- Straight taxi procedures are possible without many operations of the brakes.
- The lock prevents yaw movements during the landing rollout.

An idler behind the pilots seat connects the lock to the elevator control and can also disconnect the lock. Thus, the tail wheel can move freely only when the control stick is pushed forward on the last 2.5 cm (1 inch) of the stick travel.
The lock is connected to the control stick with a Bowden cable. This cable goes from the elevator idler behind the pilot´s seat to the locking mechanism that is attached to the tail wheel spring.

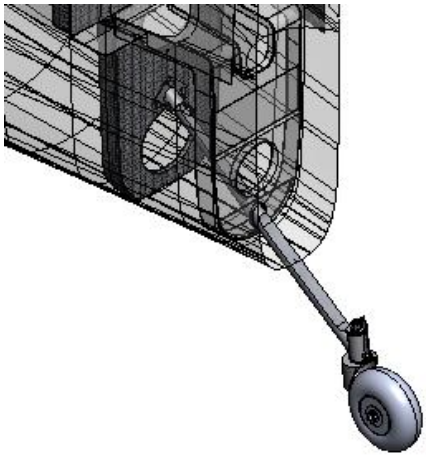


Figure 32-2: Tail gear and fuselage assembly.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Tail wheel fork | XA42-3260-110 |
| 2 | 1 | Tail gear Swing arm | XA42-3230-113 |
| 3 | 1 | Tail gear mounting bracket | XA42-3220-109 |
| 5 | 2 | Tail wheel bushing | XA42-3230-238 |
| 6 | 1 | Tail wheel washer | XA42-3230-262 |
| 7 | 1 | Slide ring | XA42-3260-225 |
| 8 | 1 | Tail wheel axle | XA42-3230-230 |
| 10 | 1 | Tail wheel | 6x2.125x5/8 solid |
| 11 | 1 | Nut | M12 DIN 937 |
| 12 | 1 | Nut | M10x1.25 DIN 935 |
| 13 | 1 | Washer | A13 A2 DIN 125 |
| 14 | 1 | Nut | MS21044N4 |
| 15 | 1 | Washer | AN960-416 |
| 16 | 2 | Split pin | 2.5x32 DIN 94 |
| 17 | 1 | Bolt | AN4-14A |
| 18 | 1 | Lubricating nipple | M6x1 vz DIN 71412A(H1) |
| 19 | 2 | Bearing | KSK/499502H Roller bearing |
| 20 | 1 | Bearing bushing | XA42-3230-229 |

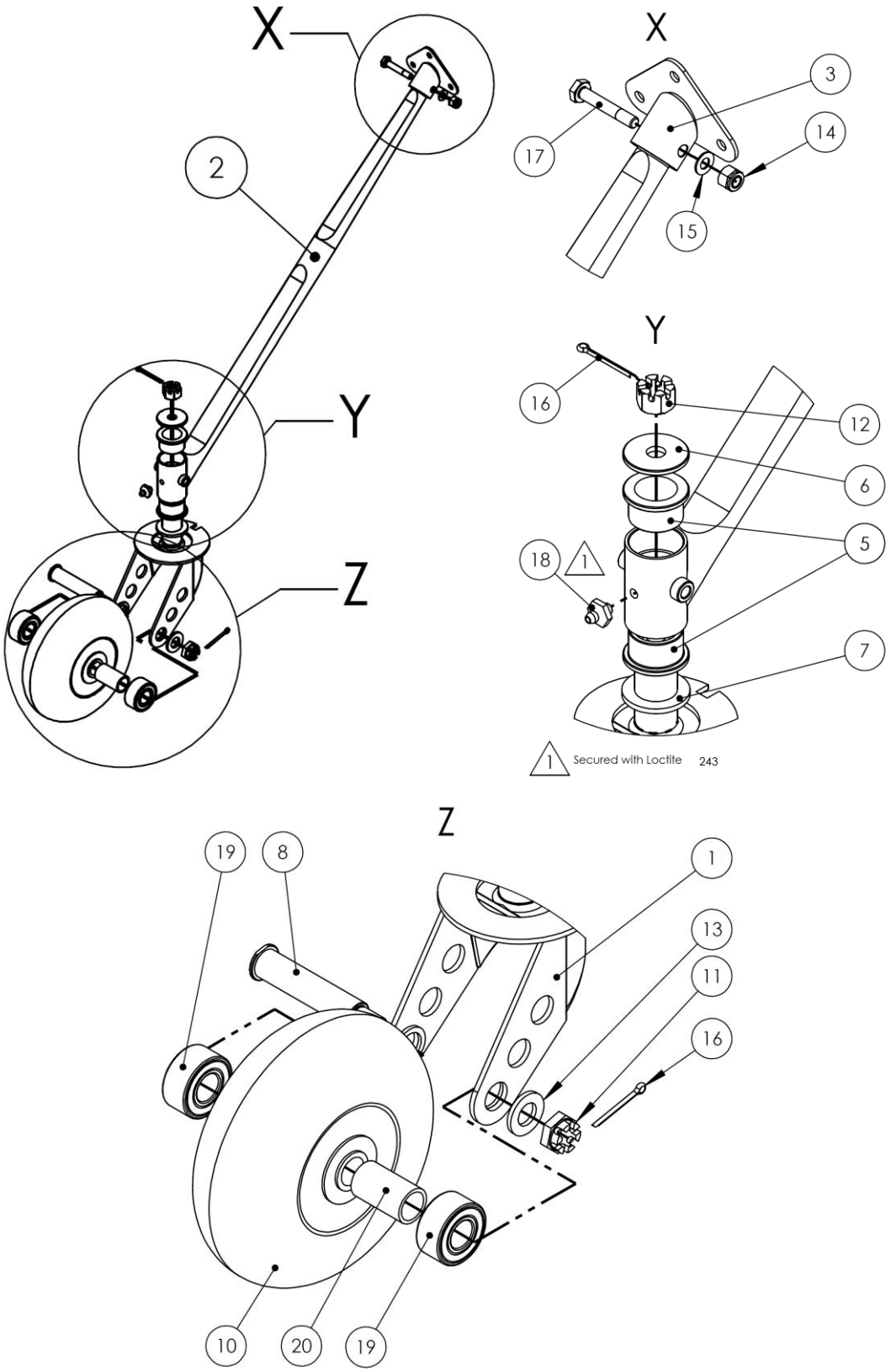



Figure 32-3: Tail gear strut assembly

To remove the tail wheel strut assembly:

1 Lift the tail of the aircraft, refer to chapter 07-20-02.

2 Remove the rudder, refer to chapter 27-20-00.

3 Disconnect the Bowden cable of the tail wheel lock.

4 Remove the bolt that connects the tail wheel swing arm to the mounting bracket. Refer to Figure 32-3, detail X.

5 Remove the tail gear strut assembly.

6 Assemble the tail gear strut assembly in the opposite sequence.

7 Make sure that the tail wheel lock operates and that it is correctly adjusted.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Tail gear strut assembly | XA42-3260-051 |
| 2 | 1 | Spring bracket | XA42-3260-130 |
| 3 | 1 | Lock | XA42-3260-120 |
| 5 | 2 | Spring fitting | XA42-3260-217 |
| 6 | 1 | Bowden cable holder | XA42-3260-216 |
| 7 | 2 | Tail wheel lock bushing | XA42-3260-305 |
| 8 | 1 | Clamping piece | XA42-6110-201 |
| 10 | 1 | Cylinder screw M5x10 | XA42-6110-205 |
| 11 | 1 | Spring | XA42-3260-218 |
| 13 | 1 | Nut | MS21044N3 |
| 14 | 1 | Bolt | AN4H-3A |
| 15 | 1 | Washer | AN960-416 |
| 16 | 1 | Washer | AN960-10 |
| 17 | 2 | Nut | AN310-3 |
| 18 | 1 | Split pin | 1,6x20 DIN 94 |
| 19 | 1 | Nut | M6 DIN 934 |
| 20 | 2 | Bolt | AN3-14A |

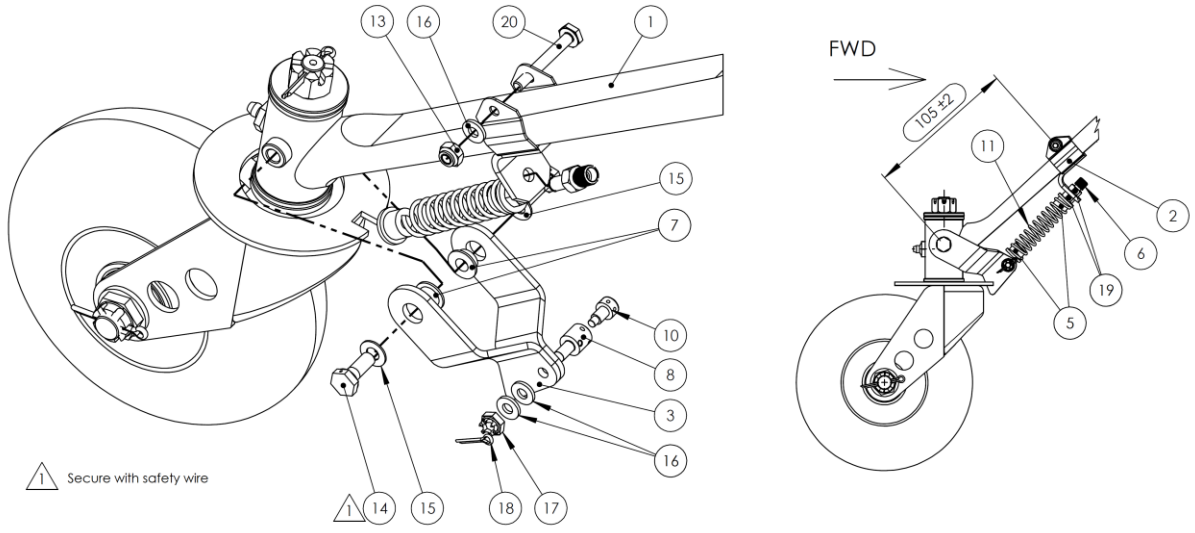



Figure 32-4: Tail wheel lock assembly

To remove the tail wheel assembly:

1 Remove the split pin. Remove the nut on top of the tail wheel assembly. Refer to Figure 32-3, detail Y.

2 Remove the tail wheel assembly.

3 Assemble the tail wheel assembly in the opposite sequence with a new split pin.

4 Add grease into the lubricating nipple.

5 Make sure that the tail wheel fork moves freely without too much play when the tail wheel lock is disengaged.

To remove the control assembly of the tail wheel lock: Refer to Figure 32-6.

1 Remove the rear seat

2 Remove the TWL spring (Pos. 8), the TWL spring retainer (Pos. 9) and the Bowden cable. Refer to detail L and H.

3 Remove the TWL slider bushing (Pos. 7) and the TWL slotted link (Pos. 6).

4 Remove two TWL idler bushings (Pos. 5) from the elevator bell crank. Refer to chapter 27-30-02.

5 Remove the TWL cable bracket (Pos. 1).

6 Assemble the control assembly of the tail wheel lock in the opposite sequence.

7 Adjust the tail wheel lock.

8 Re-install the rear seat.

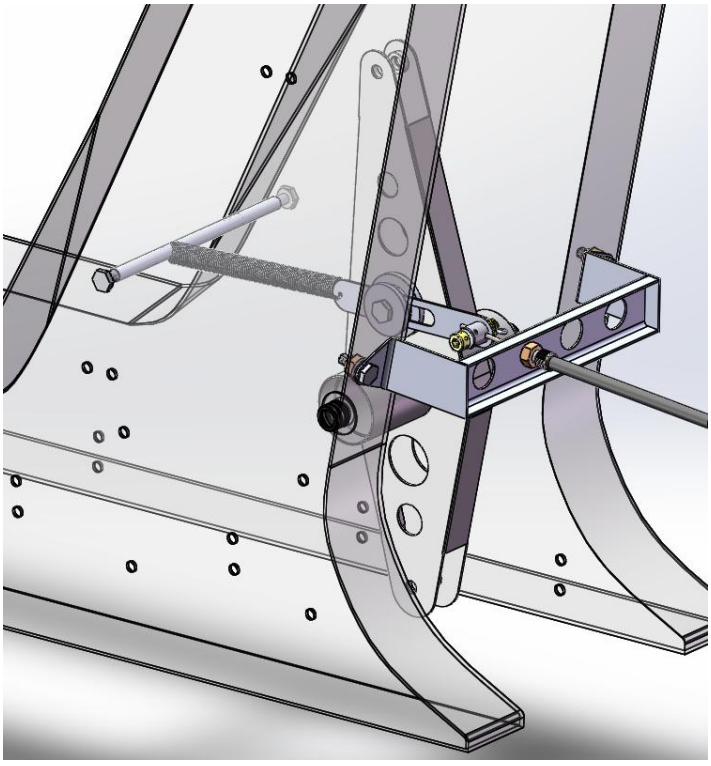


Figure 32-5: Control assembly of the tail wheel lock (between the rear seat frames).

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Tail wheel lock cable bracket | XA42-3261-100 |
| 2 | 1 | Tail wheel lock clamp | XA42-3261-208 |
| 3 | 1 | Cylinder head screw M5x10 | XA42-6110-205 |
| 4 | 1 | Elevator bell crank | XA42-2730-100 |
| 5 | 2 | Tail wheel lock idler bushing | XA42-3261-206 |
| 6 | 1 | Tail wheel lock slotted link | XA42-3261-204 |
| 7 | 1 | Tail wheeel lock slider bushing | XA42-3261-205 |
| 8 | 1 | Tail wheel lock spring | XA42-3261-207 |
| 9 | 1 | Tail wheel lock spring retainer | XA42-3261-203 |
| 10 | 1 | Bowden cable holder | XA42-3260-216 |
| 11 | 2 | Hexagon head bolt | AN3-3A |
| 12 | 3 | Flat washer | AN960-10 |
| 13 | 2 | Lock nut | MS21044N3 |
| 14 | 2 | Nut | DIN934-M6 |
| 15 | 5 | Flat washer | AN960-10L |
| 16 | 2 | Castle nut | AN310-3 |
| 17 | 2 | Split pin | DIN94-1,6x20 |
| 18 | 1 | Hexagon head bolt | AN3-15 |
| 19 | 1 | Hexagon head bolt | AN3-5A |

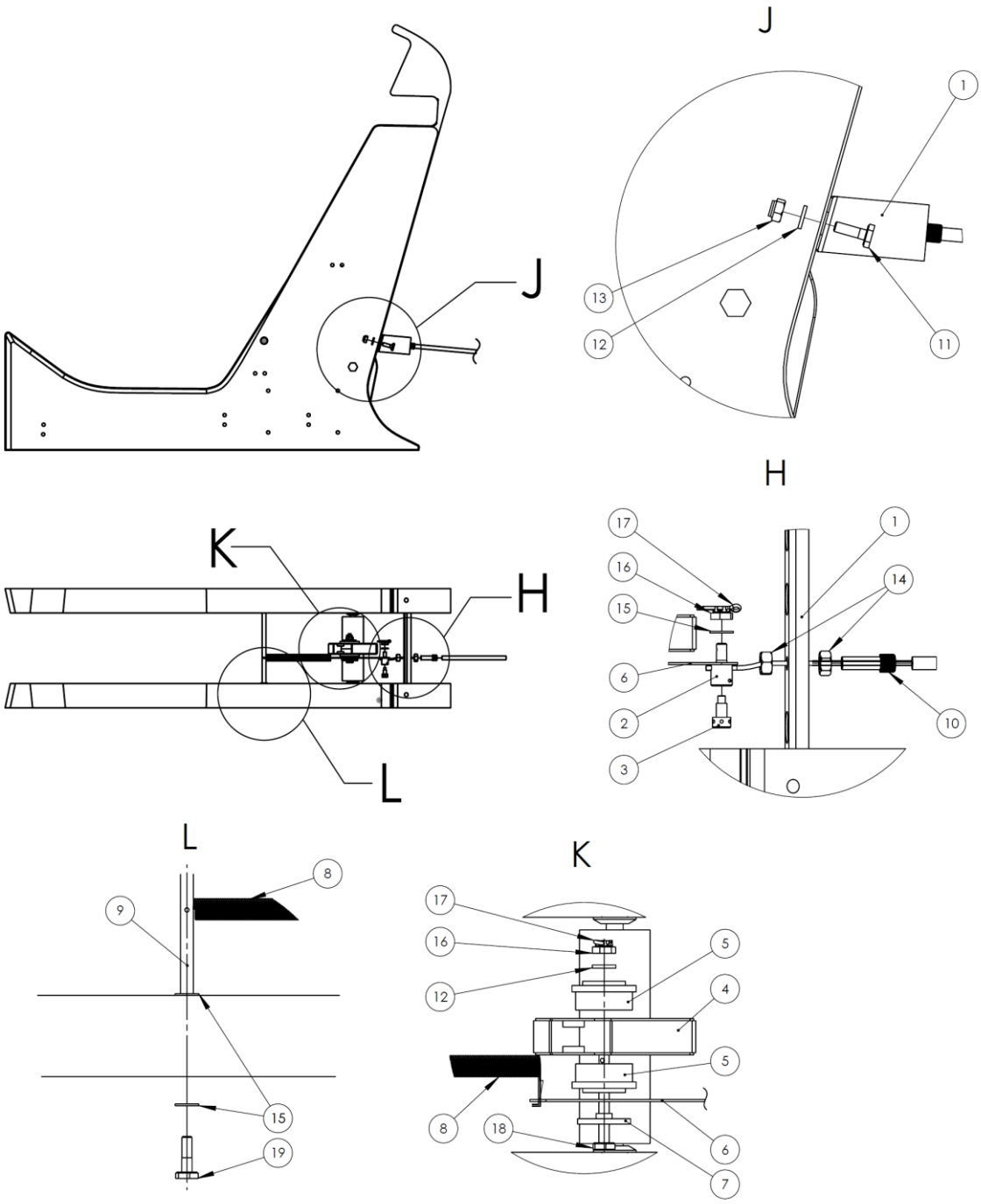



Figure 32-6: Installation of the control assembly of the tail wheel lock.

To adjust the tail wheel lock:

1 Disconnect the forward end of the Bowden cable.

2 Lift the elevator leading edge 90mm and temporarily lock it in this position. Refer to Figure 32-7.

3 Put the forward end of the Bowden inner cable into the TWL clamp (Figure 32-6 Pos. 2). Attach it with the screw (Figure 32-6 Pos. 3). Safety the screw with safety wire.

4 Install the TWL clamp (Figure 32-6 Pos. 2) from the left side in the 6 mm hole of the TWL slotted link (Figure 32-6 Pos. 6). Use a castle nut AN310-03 (Figure 32-6 Pos. 16) and a split pin (Figure 32-6 Pos. 17).

5 Do a functional test as follows: Push the control stick forward. The lock must disconnect. The tail wheel must move freely when the top of the control stick is approximately 25 mm (1 inch)/ aft of the forward stop.

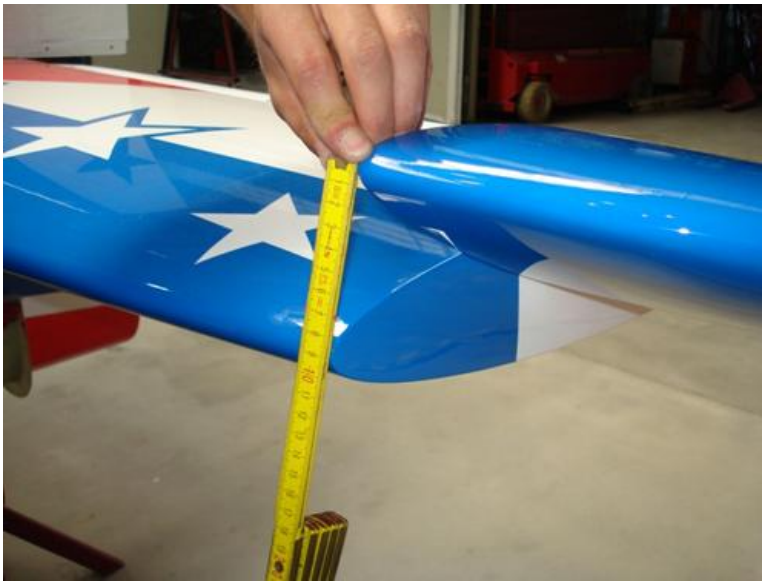


Figure 32-7: Elevator lifted 90mm for adjustment of the tail wheel lock.

## 32-40-00 WHEELS AND BRAKES

This section gives information on the wheels and the brakes for the maintenance personnel. It includes inspections, removal, servicing, refinishing and installation.

## 32-40-01 Wheels

**Main wheels:**

Beringer 5.00-5 wheels with 5.00-5 10ply tires.

To disassemble the main wheel assembly from the main wheel strut of the main landing gear:

1 Remove the main landing gear strut, refer to chapter 32-10-00.

2 Remove the axle split pin and the axle nut from the external side of the wheel axle.

3 Remove the main wheel.

4 Install the main wheels in the opposite sequence.

For maintenance of the wheels and brakes, refer to the manufacturer's maintenance and overhaul manual BRG-ALTP-02 MM-ETSO-007.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 2 | Welding Group MLG | XA42-3210-151 |
| 2 | 1 | Wheel pant support LH | XA42-3210-165 |
| 3 | 1 | Wheel pant support RH | XA42-3210-168 |
| 4 | 2 | Wheel assembly | RF-018(A) |
| 5 | 2 | Brake assembly HE2 for DOT4 | 6A-002.2N(A) |
| 6 | 2 | Tire 5.00-5 10PLY Michelin Aviator TL | PAA02 |
| 7 | 2 | Main wheel axle | FUS-009(B) |
| 8 | 2 | Axle nut | ECR-002(B) |
| 9 | 4 | Washer | HYD-005P |
| 10 | 2 | Banjo fitting | HYD-019VC |
| 11 | 2 | Banjo bolt | HYD-003P |
| 12 | 6 | Screw | AN4H-12A |
| 13 | 8 | Washer | AN960-416 L |
| 14 | 2 | Screw | AN4H-7A |
| 15 | - | Safty wire | MS20995 Diameter .032“ |

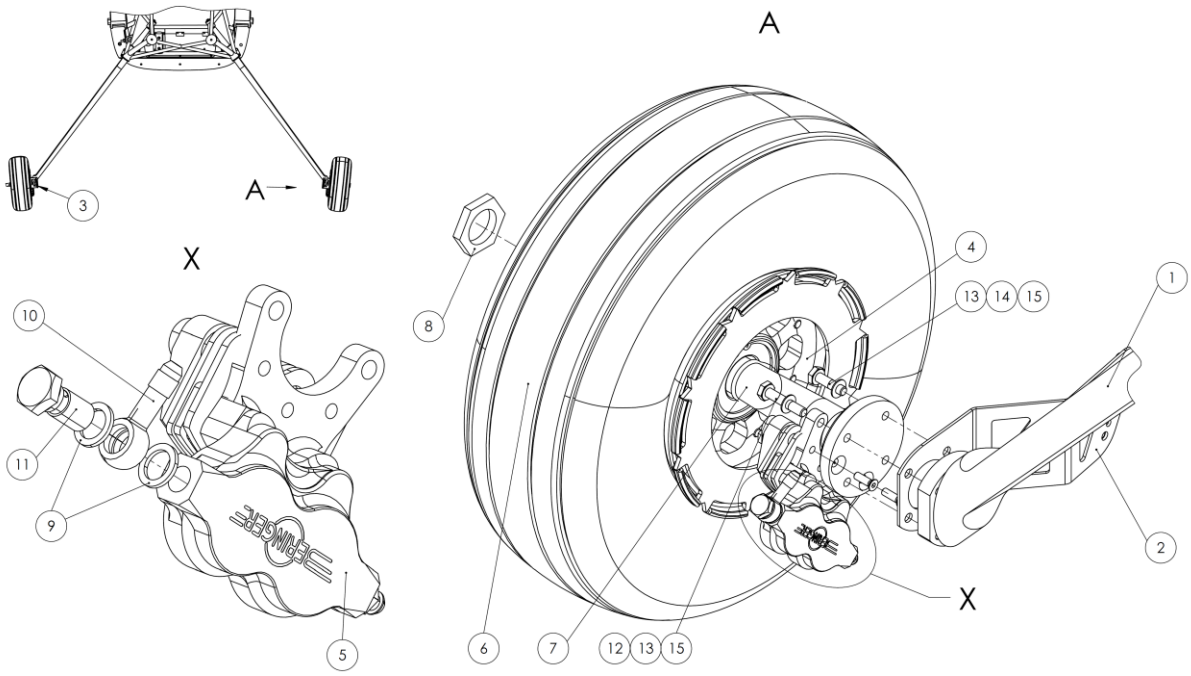



Figure 32-8: Beringer main wheel installation

Grove 5.00-5 wheels with 5.00-5 6ply tires

Inspection:

1 Make sure that the wheel tie bolts are tight.

2 Visually examine the wheel for corrosion, cracks, or other damage.

3 Visually examine the brake disc for cracks, corrosion, grooves, unusual wear, or other damage.

To disassemble the main wheel assembly from the landing gear strut:

1 Remove the main landing gear strut, refer to chapter 32-10-00.

2 Remove the axle split pin and the axle nut from the external side of the wheel axle.

3 Remove the main wheel.

To disassemble the wheel:

**WARNING**

Do not disassemble the wheel halves before all the tire pressure is fully released. If you do not obey this instruction, there is a risk of injury.

**CAUTION**

Be careful when you remove the wheel. Scratches and/or nicks will cause damage to the corrosion-resistant protection of the wheel.

1 To deflate the tire, push the valve stem plunger until all the air is fully released.

2 Put the wheel assembly on an applicable work surface.

**CAUTION**

Be careful when you remove the tire beads from the wheel halves. Do not put the tool between the tire and wheel flange. This can cause damage to the tire and/or the wheel.

3 Disconnect the tire beads from the wheel halves with a tire bead breaker or other applicable tools.

4 Remove the nuts, washers and bolts that hold the wheel halves together.

5 Remove the brake disc from the inner wheel half.

**CAUTION**

Be careful when you remove the wheel half. Do not cause damage to the inner tube, the valve stem and the bearings.

6 Remove each wheel half from the tire.

**CAUTION**

Be careful when you remove the rings, seals and bearings. Do not cause damage to the wheel and the bearings.

7 Remove the retaining snap rings, the felt grease seals and the wheel bearings.

Inspection and repair:

1 Examine the bearing races for scoring, corrosion, signs of heat damage or other damage. Loose bearing races are a cause to reject the wheel half. To replace the race, carefully push it out with a press and use bushings with the correct dimensions (refer to Figure 32-9).

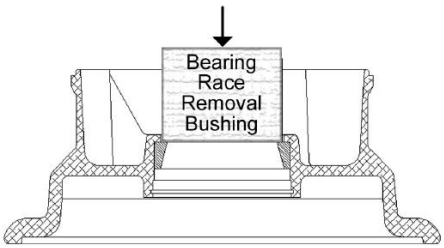



Figure 32-9: How to push out the bearing race.

2 Visually examine each wheel half for cracks, nicks, corrosion or other damage. Be careful when you do work in the seat area of the tire bead. Cracks and corrosion are causes to reject the part.

If you are not sure if parts are serviceable, we recommend that you do a dye-penetrant inspection. You can remove small nicks, scratches and pits with 400 grit sandpaper and polish the surface. Then paint the wheel half and/or apply corrosion preventive compound to prevent corrosion.

**CAUTION**

Be careful when you dry the bearings with compressed air. The bearings must not turn to prevent damage.

3 Clean the wheel bearings in an applicable solvent. Dry them with compressed air.

4 Examine the bearings for pitting, cracks, signs of heat damage and corrosion. Each damage is a cause to reject the part.

5 Examine the felt grease seals. Replace worn, hard and dirty seals. Clean serviceable seals in a solvent and let them dry in the air. Keep them safely in a clean area for the assembly.

6 Examine the felt-seal retaining washers and snap rings for distortion, unusual corrosion or other damage. Each damage is a cause to reject the part.

7 Examine the wheel tie bolts. Cracks, bending, thread damage, or unusual corrosion are causes to reject the wheel tie bolts. Fatigue-type loads can cause deterioration of the wheel tie bolts. If you are not sure about their condition, always replace them.

8 To make sure that the nuts of the wheel tie bolts are serviceable, install them onto the bolts. If you can turn the nut with your hand more than to the self-locking section, replace the nut.

9 Examine the brake disc. Unusual wear, scoring, corrosion, cracks, deformation or other damage are causes to reject the part. If the disc thickness is worn more than 0.025" of the new disc, replace the disc. Remove small corrosion and defects in the surface finish with a 220 grit sandpaper. Remove corrosion from the non-braking part of the disc. Then paint the non-braking part and/or apply corrosion preventive compound to prevent corrosion.

To assemble the wheel:

**CAUTION**

Assemble the wheel carefully. Do not cause damage to the protective finish of the wheel.

1 Assemble the wheel on a clean, flat surface.

2 Install the bearing races again, if applicable.

a) Clean the race bore of the wheel bearing. Apply a thin coat of wheel bearing grease to the race bore.

**CAUTION**

Make sure that the bearing race is correctly aligned and not tilted to one side to prevent damage.

b) Put the bearing race in the wheel bore.

**CAUTION**

Make sure that you hold the wheel half at the bottom of the bearing seat. Do not apply too much force. If you do not obey this precaution, the wheel casting can break.

c) Put the wheel half in the press as shown in Figure 32-10.

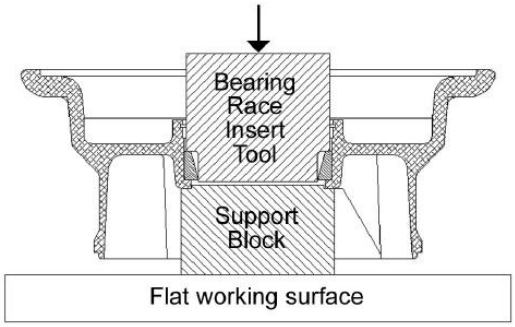



Figure 32-10: Installation - bearing race.

d) Push the bearing race fully into the wheel.

e) Remove the wheel from the press. Visually examine the race. Make sure that it is fully and tightly installed in the wheel.

3 To install the tire on the wheel:

**WARNING**

Make sure that the wheel is clean and dry to prevent accidents. The bead area must be clean and dry without grease or other dirt. Grease or dirt decrease the friction and can cause the tire to turn on the wheel, when the brakes are operated.

a) Put the inner tube into the tire. Align the red dot on the tire (its lightest point) with the white or yellow dot on the tube (its heaviest point). If the tube does not have a white dot, align the red dot on the tire with the valve stem of the tube. We recommend that you apply a layer of talc powder to the tube and the internal part of the tire. This will let the tube move easily into the tire.

b) Inflate the inner tube to approximately 10 psi until it has the shape of the tire. Release pressure from the tire. Stop to release the pressure, when the tire starts to change its shape.

c) Put the tire and the tube onto the outer wheel half. Carefully put the valve stem through the hole in the wheel half.

d) Install the inner wheel half into the tire. Make sure that the tie bolt holes are aligned and that the tire is not between the two halves.

e) Put the wheel and the tire assembly on a flat work surface. The internal side of the wheel must point up. Install the brake disc in the inner wheel half. Align the bolt holes with the wheel half. Put the tie bolts through the brake disc and the wheel.

f) Turn the wheel from the work surface on the opposite side to attach the nuts to the tie bolts. Tighten a nut with washer on each of the tie bolts with your hand. Make sure that the wheel halves touch each other but that the inner tube is not between them.

g) Torque the tie bolt nuts to the value shown on the wheel label. The usual torque values are 90 inch-pounds for 1/4" bolts and 150 inch-pounds for 5/16" bolts. Measure the torque value that is necessary to turn the nut (locking friction of the nut). Add this value to the necessary torque values to get the correct installation torque.

4 Fill the bearings with MIL-G-81 322 grease such as Aeroshell 22 or Mobil 28.

5 With the wheel on a flat work surface, put in a wheel bearing. Before you install the bearing, apply a thin layer of bearing grease to the bearing race.

6 Install the washers, the felt grease seal and the retention snap ring. We recommend that you apply a thin layer of light-weight oil on the felt grease seal before installation.

7 Turn the wheel on the other side and do steps 5 and 6 again.

8 Put the wheel in a protective enclosure. Inflate the wheel to the specified pressure, refer to chapter 12-10-07.

To install the wheel to the landing gear strut:

1 Examine the axle to make sure that it is clean, dry and in serviceable condition.

2 Move the wheel onto the axle with the brake disc side inboard.

3 Install the axle nut and tighten it with your hand. Make sure that the inboard wheel bearing is fully installed on the axle.

**CAUTION**

Turn the wheel carefully to prevent damage to the valve stem.

4 Turn the wheel slowly and tighten the axle nut lightly at the same time. Continue to tighten until you feel a stop.

5 Loosen the axle nut sufficiently to make sure that the wheel turns freely or only with small friction.

6 Align the axle nut to the nearest split pin hole in the axle. If you must turn the nut to align it, first try to tighten it clockwise. If you can turn the wheel with little or no resistance, use that hole. If there is strong resistance, loosen the nut and use the next hole in counterclockwise direction.

**CAUTION**

Install the split pin carefully to prevent damage to the wheel. Make sure that the split pin does not touch the valve stem or other parts when you turn the wheel.

7 Install a new split pin. Bend the split pin around the nut (one end clockwise and one end counterclockwise). Bend the other end back toward the wheel. Decrease the length of the split pin to make sure that it does not touch other parts, when the wheel turns.

8 Install the backing plate of the brake caliper. Torque the bolts to the value shown on the label of the brake caliper. Safety the bolts with wire.

9 Turn the wheel to make sure that it turns freely.

**Tail wheel:**

To disassemble the tail wheel:

1 Remove the tail wheel axle. Refer to Figure 32-3, detail Z.

2 Disassemble the tail wheel. Refer to Figure 32-3, detail Z.

3 Assemble the tail wheel in the opposite sequence.

4 Make sure that the wheel turns freely.

## 32-40-02 Brakes

Beringer HE2 brakes:

Refer to the manufacturer's maintenance and overhaul manual BRG-ALTP-02 MM-ETSO-007.

Grove brakes:

Inspection:

1 Visually examine the caliper for corrosion, leakage of hydraulic fluid, cracks or other damage.

2 Examine the attachment bolts of the back plate to make sure that they are correctly torqued and safetied with wire.

3 Visually examine the torque plate for corrosion, cracks and loose bolts that attach the torque plate to the axle.

4 Make sure that there is no brake fluid on the brake linings. Replace the brake linings if there is brake fluid.

5 Examine the brake linings and the brake line fittings for signs of damage or leakage. Replace the linings that are worn to less than 0.100" (2,5mm) thickness.

Removal and inspection of brake linings:

1 Remove the safety wire and the attaching bolts from the back plate. Remove the back plate assembly.

2 Move the brake caliper out of the torque plate assembly. If it is necessary to remove the brake line, put caps or plugs on the hydraulic lines to prevent contamination. After installation of the brake caliper, bleed the brakes, refer to chapter 12-10-06.

3 Move the press plate assembly out of the torque pins.

4 To remove used brake linings, remove the rivets with an applicable tool (such as Rapco Brake Rivet tool kit RA825).

Installation of new brake linings:

Permitted brake lining types are:

| | |
|---|---|
| Grove | 066-111 |
| Rapco | RA66-111 |
| Cleveland | 66-111 |

1 Before you install the new brake linings, clean the surfaces of the back plate and the press plate.

2 Visually examine the back plate and the press plate for corrosion, deformation or other damage. Make the press plate straight. Replace it, if the deformation is more than 0.010".

3 Rivet new linings onto the back plate and the press plate with an applicable rivet tool. Small cracks in the tubular rivets are permitted after forming if they do not go through the crest of the formed head. A maximum of three cracks is permitted. Only two cracks are permitted in each 90 degree segment.

4 Make sure that the pads are tightly attached to the back plate and the press plate.

Installation of the back plate and press plate assemblies:

1 Remove dirt, grease, and other unwanted material from the brake cylinder and the piston. Push the piston back into the cylinder.

2 Clean the torque pins.

**CAUTION**

Do not use grease on the torque bolts and the press plate. Dirt will collect in the grease and can cause damage to the components.

3 Apply a thin layer of dry lubricant (such as silicon spray) to the torque pins.

4 Move the press plate onto the torque pins. Install the brake caliper assembly onto the torque plate.

5 Put the back plate between the tire and the brake disc. Install the attaching bolts and the washers. Tighten the bolts to 90lbs.in. Safety the attaching bolts of the back plate with wire, refer to Figure 32-11.



Figure 32-11: Grove brake assembly.

6 If you disconnected the hydraulic lines, bleed the brake system, refer to chapter 12-10-06.

Removal and disassembly of the brake caliper:

**WARNING**

Be careful when you drain the brake fluid. Do not spill it. Do not get it on your skin. Remove spilled brake fluid immediately. Brake fluid can cause damage to health and materials.

1 Drain the brake fluid from the brake system as follows: Open the bleeder fitting. Push the brake pedal again and again until all the brake fluid is released from the system. Collect the released fluid and discard it correctly.

2 Disconnect the brake line from the brake caliper. Put a cap on the brake line to prevent contamination.

3 Remove the back plate.

**WARNING**

Be careful when you remove the piston to prevent injury and damage. Use compressed air only with low pressure to make sure that the piston will not eject at high speed.

4 Remove the piston from the caliper body. Supply compressed air through the brake line fitting at low pressure. Put a cloth on the piston and the caliper and/or put them with the face down on a soft surface.

5 Remove the O-ring from the piston. We recommend that you install new O-rings. If you will use the O-rings again, make sure that they do not become damaged during removal or installation. Replace the O-ring if it has brittleness, nicks, scratches or flat surfaces.

Inspection and repair:

1 Visually examine the cylinder for cracks, nick, corrosion or other damage. If there are cracks around the torque pins, replace the cylinder.

2 Examine the caliper torque pins for wear, cracks in the caliper body or other damage. Make sure that the torque pins are correctly tightened. Cracks in the caliper body or loose torque pins are causes to reject the caliper body.

**CAUTION**

Be careful when you remove the nicks and scratches from the piston. Do not cause damage to the protective coating to prevent corrosion.

3 Examine the piston bore and the piston for contamination, corrosion and scratches. Polish small nicks and scratches to remove them. Nicks or scratches with an unusual depth are a cause to reject the part.

4 Visually examine the back plate and the press plate. Unusual corrosion and/or deformation are causes to reject the part. Make the press plate straight. Replace it, if it has a deformation of more than 0.010”.

5 Examine the torque plate for corrosion and cracks. Unusual corrosion or cracks are causes to reject the part.

Assembly and installation of the brake caliper assembly:

1 Clean the brake parts in solvent. Do not clean the O-rings and the brake linings. Dry the cleaned parts with air.

**WARNING**

Be careful with the hydraulic fluid to prevent injury and damage to equipment. Do not get in on your skin. Remove hydraulic fluid immediately from the skin and from the equipment.

2 Apply aircraft hydraulic fluid, Dow 55M O-ring lubricant or an equivalent to a new or serviceable O-ring. Carefully install it on the piston.

3 Apply a light layer of aircraft hydraulic fluid, Dow 55M O-ring lubricant or an equivalent to the piston bore. Find the side of the piston with the O-ring that is nearest to the surface. Put this side carefully into the caliper. Install it fully until the top of the piston is flush with the caliper body.

4 Move the caliper assembly onto the torque plate on the aircraft.

5 Install the back plate. Torque the back plate bolts to 90lbs.in. Safety the attachment bolts of the back plate with a wire.

6 Connect the hydraulic lines. Bleed the brake system, refer to chapter 12-10-06.

7 If you removed the torque plate, install it in its initial position.

After maintenance on the brakes or the brake system, make sure that the brakes operate correctly. Push the brake pedals and operate the engine at 1.800 RPM. The brakes must keep the aircraft in the stopped position (on hard surfaces).

# 32-50-00 MAIN LANDING GEAR FAIRINGS

The main landing gear fairings consist of four parts each leg: The upper strut fairing, the leg fairing, the wheel pants and the brake cover.

For installation details on the complete landing gear fairings, refer to Figure 32-12.

To remove the wheel pants:

1 Remove the screws from the brake cover on the respective wheel pant (Pos. 9). Remove the brake cover (Pos. 7 and 8).

2 Remove the screws from the inner front side of each wheel pant (Pos. 11). Remove the outer screw from the axle standoff stub (Pos. 13). Remove the wheel pant.

3 Assemble the wheel pants in the opposite sequence. Make sure that there is a sufficient clearance between the wheel pant and the tyre.

To remove the upper strut fairing and the leg fairing:

1 Remove the cowling. Refer to chapter 71-10-00.

2 Shore the front of the aircraft. Refer to chapter 07-20-01.

3 Remove the landing gear. Refer to chapter 32-10-00.

4 Remove both leg fairing parts together, or separate them by removing the screw that connects them (Pos. 9).

5 Assemble the leg fairings in the opposite sequence.

| No. | Quantity | Component | P/N | Note |
|---|---|---|---|---|
| 1 | 1 | Wheel Pant LH | XA42-3250-151 | |
| 2 | 1 | Wheel Pant RH | XA42-3250-156 | |
| 3 | 1 | Upper strut fairing LH | XA42-3250-211 | |
| 4 | 1 | Upper strut fairing RH | XA42-3250-212 | |
| 5 | 1 | Leg fairing LH | XA42-3250-215 | |
| 6 | 1 | Leg fearing RH | XA42-3250-216 | |
| 7 | 1 | Brake Cover LH | XA42-3250-221 | Grove |
| | 1 | Brake cover Beringer LH | XA42-3250-223 | Beringer |
| 8 | 1 | Brake Cover RH | XA42-3250-222 | Grove |
| | 1 | Brake cover Beringer RH | XA42-3250-224 | Beringer |
| 9 | 12 | Screw | AN526-10R8 | |
| 10 | 2 | Washer | DIN 9021 6,4 (M6) | |
| 11 | 4 | Screw | AN526-10R10 | |
| 12 | 2 | Screw | AN526-10R12 | |
| 13 | 2 | Screw | AN4H3A | Grove |
| | 2 | Screw | DIN 933 M6x55 | Beringer |
| 14 | 12 | Nut plate | XS-0210-101 | |
| 15 | 2 | Tooth disc | MS35333-40 | Grove |
| | 2 | Tooth disc | DIN 6797 Form F 6,4 (M6) | Beringer |
| 16 | 2 | Spacer Beringer | XA42-3210-223 | Beringer |

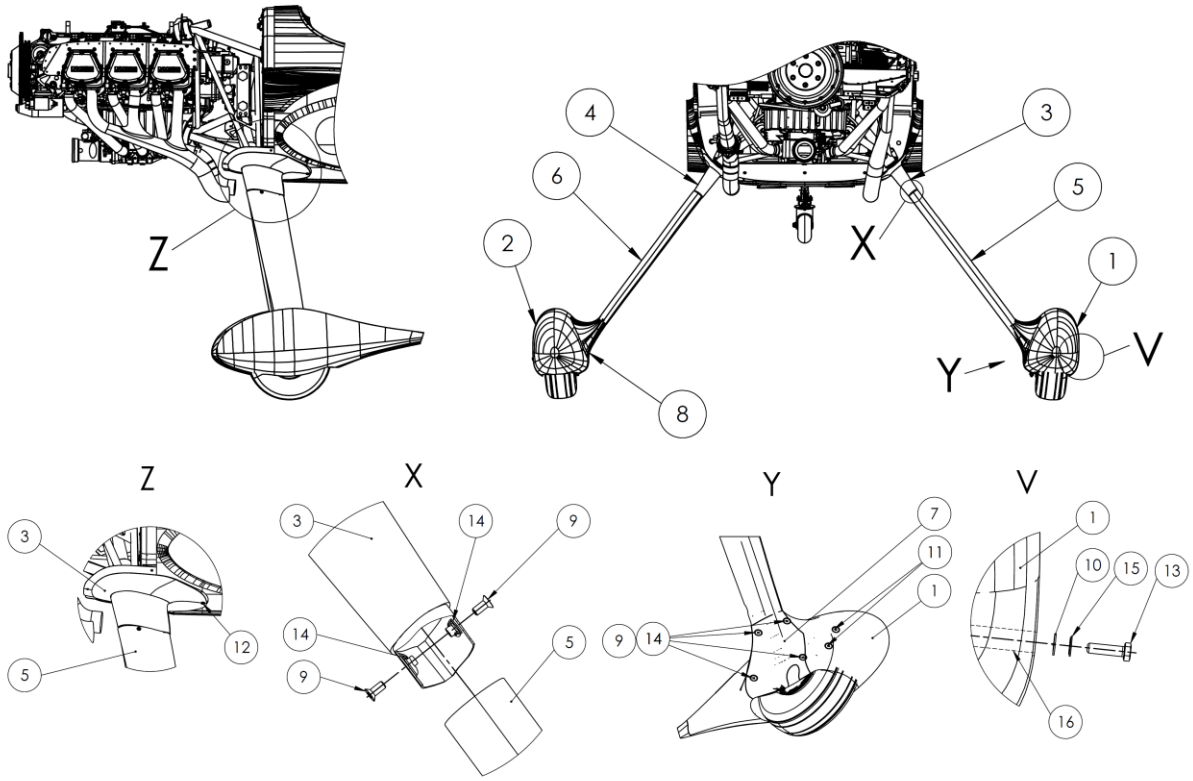



Figure 32-12: Landing gear leg fairing installation

## 32-60-00 BRAKE SYSTEM

The brakes are installed at the wheels (refer to chapter 32-40-01). The brakes are acutated with the top part of the rudder pedals, which actuate brake cylinders. Front master brake cylinders (XA42-3240-213) are installed on the front rudder pedals (refer to Figure 32-13). Rear master brake cylinders (XA42-3280-232) are installed on the rear rudder pedals (refer to Figure 32-14). The brake fluid reservoir (XA42-3280-233) is installed on the rear rudder pedals (refer to Figure 32-14).

The master brake cylinder installed in the rear rudder pedals for aircraft with serial numbers 01 thru 06 and 101 thru 120 (which did not accomplish SB-2013-003) are the (XA42-3280-230). Flexible brake lines connect the master brake cylinders to the callipers.

Brake fluid: Use only Mil-H-5606 red hydraulic fluid.

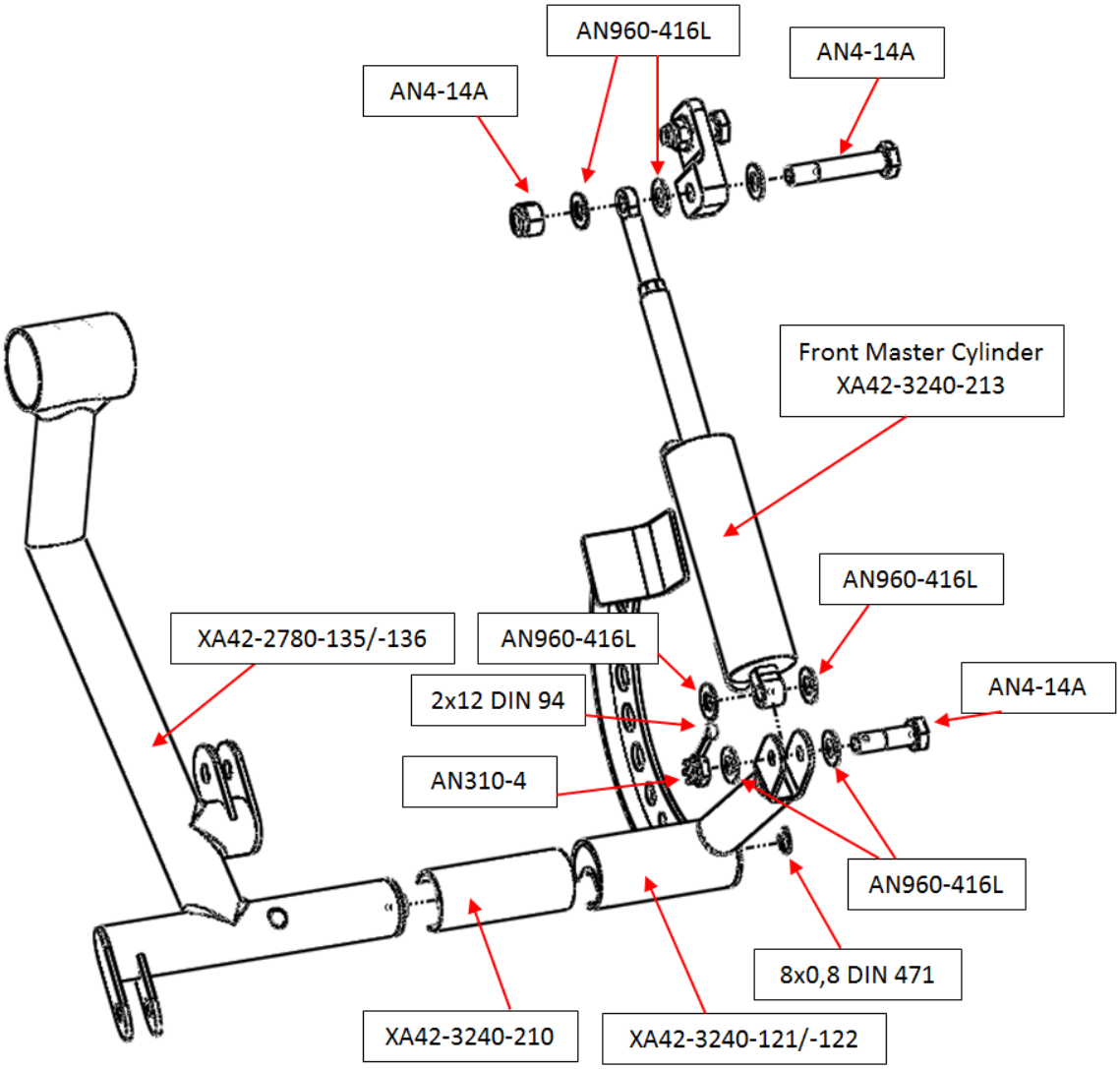



Figure 32-13: Front brake cylinder (LH)

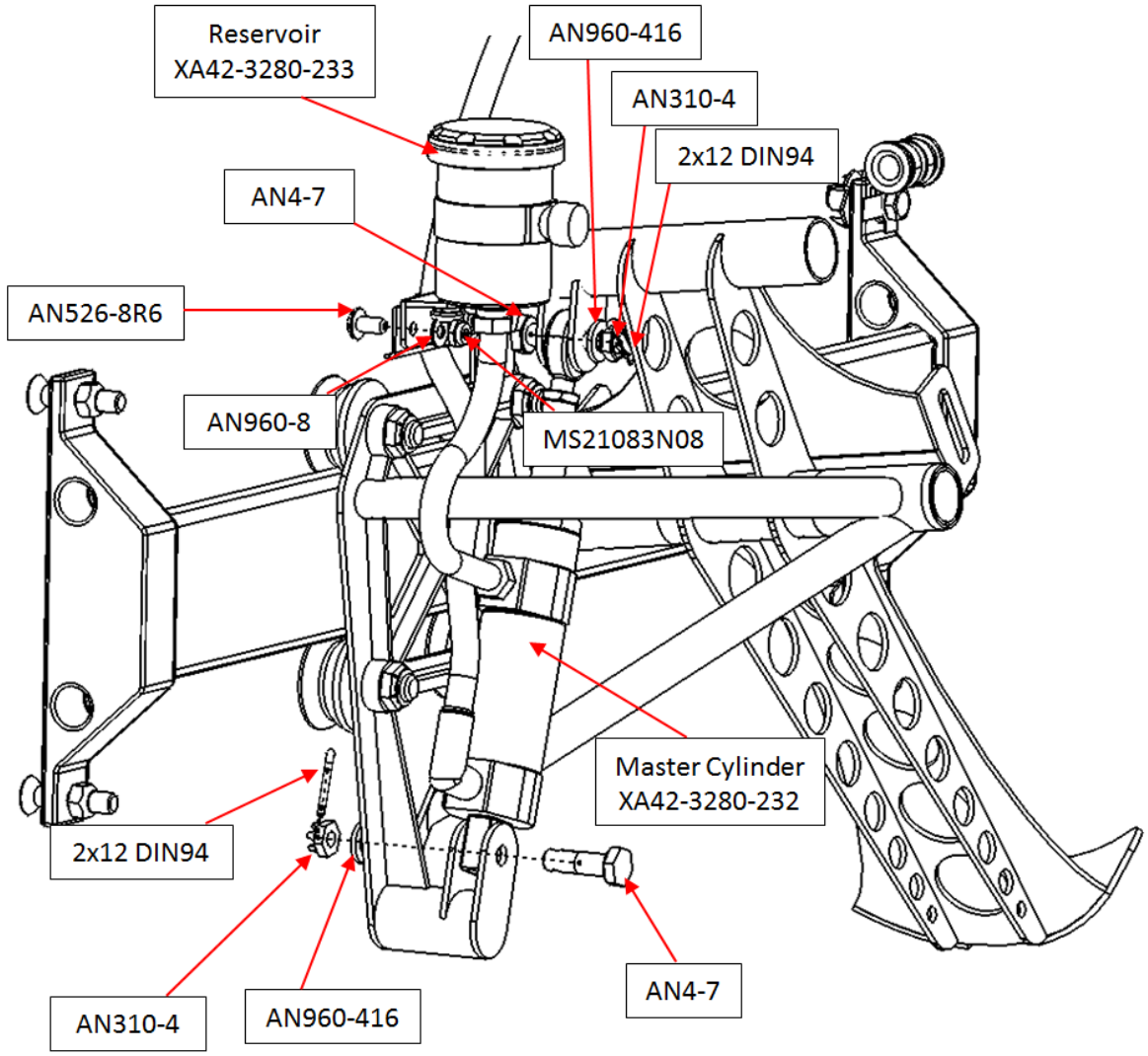



Figure 32-14: Rear brake cylinder (RH).

# Chapter 33 Lights

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## 33-40-00 ANTI-COLLISION LIGHTS (ACL)

The aircraft has strobe ACL lights on each wingtip. Each light strip is attached to the wingtip structure with two M3 DIN 7991 screws. When you assemble the strobe lights, seal the connection with silicone.

The switch for the anti-collision light (ACL) is on the right side panel of the rear cockpit.

For wiring, refer to the wiring diagram in chapter 91.

# Chapter 34 Navigation and Pitot Static System

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## 34-00-00 GENERAL

The aircraft has a pitot/static system to measure the total and static pressure. The pitot tube is at the left wing leading edge. Two static ports measure the static pressure. They are installed behind the canopy on the left and right side of the fuselage. The minimum configuration of the aircraft also has an altimeter, an airspeed indicator and a magnetic compass.

## 34-10-00 FLIGHT ENVIRONMENT DATA

### 34-10-01 Pitot Static System

The pitot tube is attached to an access panel on the bottom of the left wing. The total pressure goes into the front end of the tube. A flexible hose transmits the pressure through the wing to the fuselage and to the instrument panels. The total pressure hoses are identified with a red tape. If it is necessary to remove the wing, you can disconnect the pressure hoses from the wing root.

The static pressure goes into two static ports (one on each side) of the rear fuselage. The two ports are connected to one flexible hose that transmits the static pressure to the instrument panels. The static pressure hoses are identified with a blue tape.

The flexible hoses are safely attached to the structure. You can drain the water from the system at two T-fittings where these three static lines are connected:

- From the static port to the front instruments
- From the static port to the rear instruments
- Merged static port.

The T-fittings are at the lowest point of the system below the front seat. You can visually examine the T-fittings. If necessary, you can disconnect one line and drain the water.

## 34-10-02 Altimeter

The altimeter measures the pressure changes of the atmosphere to calculate the altitude. The scale of the altimeter has marks in feet (ft) or in (m).

The knob on the bottom left side sets the barometric pressure value. The scale has marks in millibars (mbar) or in inches mercury (in Hg)

Barometric adjustment: 946 thru 1050(mbar) or 28.1 thru 31.0(in Hg)

Calibrated range: -1,000 thru +20,000(ft)

To remove the altimeter:

1 Remove the front seat, refer to chapter 25-10-01.

2 Cut the cable strap and remove the hose.

3 Remove the attachment bolts and nuts.

4 Assemble the altimeter in the opposite sequence. Use a new cable strap to safety the connection of the hose to the instrument adapter.

5 Do a check, refer to 14CFR Part 43 Appendix E or an equivalent.

## 34-10-03 Airspeed Indicator

The airspeed indicator measures the speed of the aircraft in relation to the atmosphere. The instrument uses the pitot and static pressure to calculate the airspeed.

Maximum operating altitude: 12,000 m or 39,370 ft

Calibrated range: 30 thru 240 kts

## 34-20-00 DIRECTION

## 34-20-01 Magnetic Compass

The magnetic compass shows the direction of the aircraft in relation to the magnetic north. Always do a calibration of the magnetic compass in these conditions:

- When you replaced the engine.
- When you replaced, changed or added parts of the electrical system.
- When you replaced, changed or added magnetic metals or parts.

For other maintenance procedures, refer to chapter 05.

You can do the magnetic compass compensation with the aircraft in a three-point attitude (the tail is not lifted).

# 34-50-00 DEPENDENT POSITION DETERMINING

## 34-50-01 Transponder

The standard transponder is the TRT800H-OLED. It has the standard A/C modes of operation and the Mode-S support with an extended squitter function.

The transponder antenna is located left under the fuselage. It is forward of the spar, at the wing fuselage intersection.

See chapter 91 for the wiring diagrams.

# Chapter 39 Electric/Electronic Panels & Multipurpose Parts

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## 39-00-00 GENERAL

All instrument and control panels are made of carbon fiber. The panels are attached to the structure with screws and click bonds.

In the XA42, the cover of the rear instrument panel is part of the front seat.

## 39-10-00 INSTRUMENT AND CONTROL PANELS

To remove an instrument panel:

1 Remove the screws around the panel.

2 Remove the panel.

3 Disconnect the instruments, refer to chapters 34-10-02, 34-10-03 and 34-20-01.

4 Assemble the instrument panel in the opposite sequence.

## 39-10-01 XA41 Instrument Panel

* If other options are installed, the layout of the instrument panel can be different.

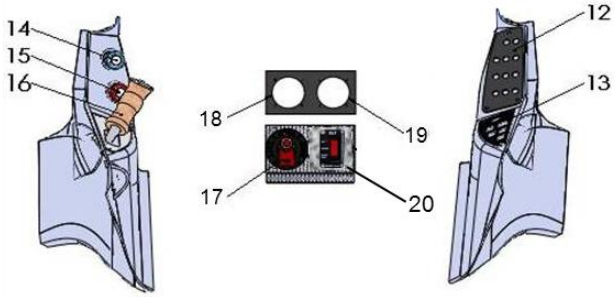



**MVP-50P has these functions:**

- Fuel pressure
- Ampere / Voltmeter
- EGT / CHT Scanner
- Fuel capacity
- Tachometer
- Oil temperature / Oil pressure
- Manifold pressure
- Clock
- G-Meter
- Structure temperature monitoring




Figure 1: XA41 Instrument Panel




1. Airspeed indicator
2. Magnetic Direction Indicator
3. Altimeter
4. Timer
5. GPS
6. G-Meter
11. Instrument panel
12. Circuit breaker panel
13. Electric switch panel
14. Propeller control
15. Mixture control
16. Throttle lever with smoke switch
17. Fuel selector switch
18. Com
19. XPDR Transponder
20. ELT Remote control

Figure 39-1: XA41 instrument panel

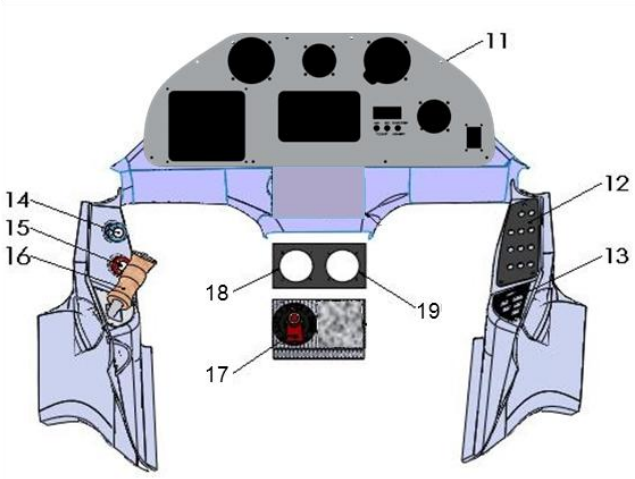
## 39-10-02 XA42 Rear Instrument Panel

* If other options are installed, the layout of the instrument panel can be different.




**MVP-50P has these functions:**

- Fuel pressure
- Ampere / Voltmeter
- EGT / CHT Scanner
- Triple fuel capacity gauge
- Tachometer
- Oil T & P Dual Gauge
- Manifold pressure
- Clock
- (G-Meter)
- Structure temperature monitoring



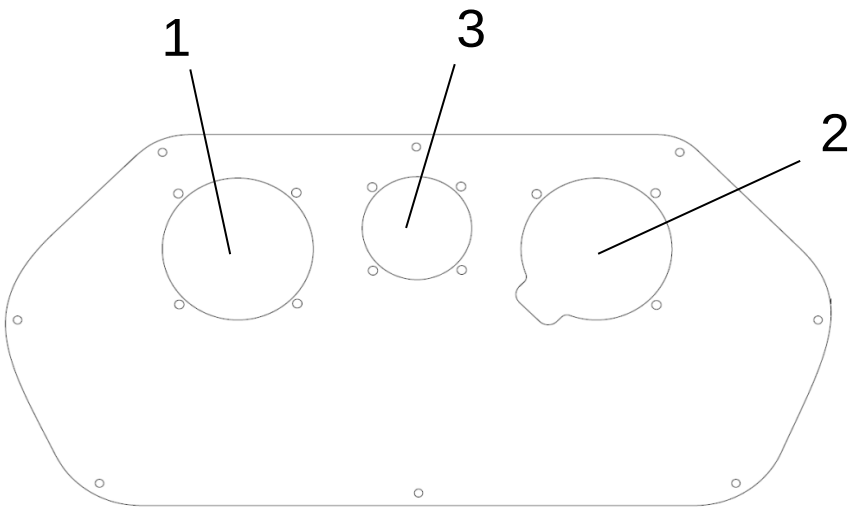

1. Airspeed indicator
2. Magnetic Heading Indicator
3. Altimeter
4. GPS
5. Timer
6. G-Meter
7. ELT Remote control
11. Instrument panel
12. Circuit breaker panel
13. Electric switch panel
14. Propeller control
15. Mixture control
16. Throttle lever with smoke switch
17. Fuel selector switch
18. Com
19. XPDR Transponder

Figure 39-2: XA42 Rear instrument panel

## 39-10-03 XA42 Front Instrument Panel

* If other options are installed, the layout of the instrument panel can be different.

Refer to the figure below for the location of each equipment item of the front instrument panel.




| | | |
|---|---|---|
| 1 | Airspeed indicator | (refer to chapter 34-10-03) |
| 2 | Altimeter | (refer to chapter 34-10-02) |
| 3 | G-Meter | |

Figure 39-3: XA42 Front instrument panel

## 39-20-00 ELECTRICAL SWITCH PANEL

The switch panel is on the right side console of the (rear) cockpit.

For information on the switches, refer to the figure and the list below.

Keyed ignition switch: Part No. 11-03169

Manufacturer: ACS,

Supplier: Aircraft Spruce & Specialty
225 Airport Circle Corona, CA 92880, USA

Master switch (red): Part No. 11-15900

Manufacturer: Cessna, Part

Supplier: Aircraft Spruce & Specialty
225 Airport Circle Corona, CA 92880, USA

Fuel Boost Switch: Part No.: 3130-F110-P7T1-W12QY2-8A,

Manufacturer & Supplier:
E-T-A Elektrotechnische Apparate GmbH
Industriestraße 2-8 , D-90518 Altdorf

Avionic Master switch: Part No.: 3130-F110-P7T1-W12QY2-20A

Manufacturer & Supplier:
E-T-A Elektrotechnische Apparate GmbH
Industriestraße 2-8 , D-90518 Altdorf

Anti-collision light switch: Part No.: 3130-F110-P7T1-W12QY2-5A

Manufacturer & Supplier:
E-T-A Elektrotechnische Apparate GmbH
Industriestraße 2-8 , D-90518 Altdorf

Smoke switch: Part No.: 3130-F110-P7T1-W12QY2-8A

Manufacturer & Supplier:
E-T-A Elektrotechnische Apparate GmbH
Industriestraße 2-8 , D-90518 Altdorf




Figure 39-4: Electrical switch panel

To remove the switch panel:

1 Remove the screws around the switch panel.

2 Lift the switch panel.

3 Disconnect all wiring; refer to chapter 91-10-00. Cut the safety wire.

4 Remove the switch panel.

5 Assemble the switch panel in the opposite sequence. Safety the cable shoes with wire.

6 Do a functional check of all switches.

# 39-30-00 THROTTLE AND TRIM CONTROL

**For serial numbers 01 to 07 and 101 to 150:**

The throttle and trim control is on the left control panel. A control screw for the throttle friction is on the left side of the trim control switch.






Figure 39-5: Throttle grip and trim switch (left). Throttle friction control and trim LED scale (right).

Throttle grips for the two seats are attached on one parallel-motion steel tube on the left cockpit wall. The rear throttle grip has an On/Off switch for the smoke system on top.

An electronic switch operates the trim control. An LED scale shows the trim position. For further information on the trim system refer to chapter 27-30-01.

To remove the left control panel:

1 Remove the access panel below the throttle. Remove the trim control panel.

2 Disconnect the cable from the throttle handle.

3 Remove the bolt that connects the throttle handle to the control rod.

4 Remove the throttle handle.

5 Remove the screws from the panel.

6 Lift the panel.

7 Disconnect all wiring, refer to chapter 91-05-00. Cut the safety wire.

8 Remove the panel.

9 Assemble the panel in the opposite sequence. Safety the cable shoes with wire.

10 Do a functional check of all controls.

To remove the trim switch after removal of the panel:

1 Remove the nut from the bottom side of the panel.

2 Remove the trim switch.

3 Assemble the trim switch in the opposite sequence.

4 Do a functional check of the trim control.

To remove the throttle control rod after removal of the panel:

1 Disconnect the throttle cable from the front end.

2 Remove the AN-3 bolt that connects the long rod with the aft throttle assembly.

3 Pull the aft throttle assembly out of the sliding block to the rear.

4 Pull the throttle control rod out to the front.

5 Assemble the throttle control rod in the opposite sequence.

6 Do a functional check of the throttle control.

**From serial numbers 08 and 151 on, or after performing SB-2017-014:**

To remove the panel:

1 Loosen and remove the screws around the panel.

2 Lift the panel.

3 Disconnect all wiring, refer to chapter 91-05-00.

4 Remove the panel.

5 Reassemble in reverse order. Secure the cables as required with tie wraps

To remove the trim switch after removal of the panel:

1 Loosen and remove the nut on the bottom side of the panel.

2 Remove the trim switch.

3 Reassemble in reverse order. Perform a functional check of the trim control.

To remove the LED scale after removal of the panel:

**From serial numbers 151 to 154 or after performing SB-2017-014:**

1 Remove the plastic label around the led indicator

2 Carefully drill out the two rivets holding the LED scale

3 Reassemble in reverse order. Perform a functional check of the trim control.

**From serial numbers 08 & 155 on, or after performing SB-XA42-2019-006:**

1 Loosen and remove the two countersunk screws holding LED scale
2 Remove the face plate from the trim indicator
3 Remove the trim indicator
4 Reassemble in reverse order. Assemble the trim indicator such that the label of indicator shows to the right hand side.
5 Perform a functional check of the trim control.

## 39-50-00 CIRCUIT BREAKER PANEL

The circuit breaker panel is attached to the right side of the rear cockpit. For the wiring, refer to chapter 91-10-00. The panel also includes the Refill / Smoke switch. This switch changes the pumping direction of the smoke pump for the applicable operations:

- REFILL – To fill smoke oil into the smoke tank
- SMOKE – To operate the smoke system.

For information on the circuit breakers, refer to Figure 39-6 and the list below.

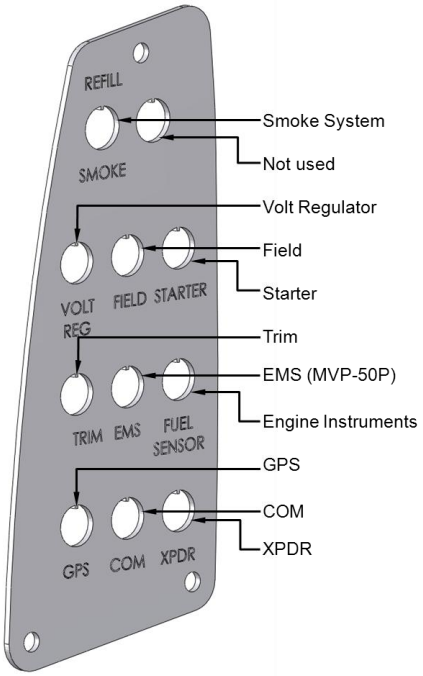



Figure 39-6: Circuit breaker panel

The circuit breakers are all the same types. Only their ampere ratings are different.

Manufacturer: Sensata Technologies Holland B.V.
Business Center, Kolthofsingel 8,
7602 EM, 7600 AA, Almelo, Netherlands
Part No.: 7274-2 (MS26574)

| | |
|---|---|
| Volt / Regulator: | 2A |
| Field: | 5A |
| Starter: | 5A |
| Trim: | 3A |
| EMS: | 5A |
| Fuel Sensor: | 1A |
| GPS*: | 3A |
| COM*: | 5A |
| XPDR*: | 3A |

*will change depending on installed equipment

To remove the circuit breaker panel:

1 Remove the screws around the circuit breaker panel.

2 Lift the circuit breaker panel.

3 Disconnect all wiring, refer to chapter 91-10-00.
Cut the wires that safety the cable shoes.

4 Remove the circuit breaker panel.

5 Assemble the circuit breaker panel in the opposite sequence.
Safety the cable shoes with wire.

6 Do a functional check of all circuit breakers.

To remove a circuit breaker:

1 Remove the nut from the front side of the panel.

2 Remove the circuit breaker.

3 Assemble the circuit breaker in the opposite sequence.

4 Do a functional check of the circuit breaker.

For information on the removal of the Refill / Smoke switch, refer to the procedure to remove the trim switch in chapter 39-30-00.

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# Chapter 51 Standard Practices and Structures - General

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## 51-00-00 GENERAL

This chapter gives information on standard practices. It includes standard procedures, a list of the used materials for parts of the aircraft that have to be repaired, control surface weight and balance limits, and repair inspection and documentation procedures.

## 51-30-00 MATERIALS

This section includes the descriptions of materials that are necessary to repair composite and metal parts of the XA41 and the XA42. Suppliers are also included.

## 51-30-01 Composite Parts

**WARNING**

Use only approved materials to repair composite parts. If you do not obey this precaution, accidents can occur.

**Epoxy resin/Epoxy system:**

| | |
|---|---|
| Manufacturer: | Hexion |
| Resin: | Epikote Resin L20 |
| Hardener: | Epikure Curing Agent 960 |
| Component weight ratio.: | 100 parts L20 / 34 parts EPH 960 |

**Carbon fiber fabrics:**

Manufacturer: C. Cramer &Co.
Eper Straße 45-47
D-48619 Heek, Germany

| Style (Cramer) | WLB-No.* DIN 65147 | US-style | Weavepatterns | Mass per unit area [g/m²] |
|---|---|---|---|---|
| 469 | 8.3505.80 | – | plain | 93 |
| 452 | 8.3520.80 | – | twill 2/2 | 204 |
| 459 | – | – | cross-twill | 220 |

* WLB: Werkstoff-Leistungsblatt, refer to German standard DIN-WL.

**Carbon fiber unidirectional:**

Manufacturer: C. Cramer & Co.
EperStraße 45-47
D-48619 Heek, Germany

| Style (Cramer) | WLB-No. DIN 65147 | US-sytle | Weavepatterns | Mass per unit area [g/m²] |
|---|---|---|---|---|
| KDU 1007 | – | – | uni-axial | 200 |
| KDU 1002 | – | – | uni-axial | 320 |
| Style 763 | – | – | uni-axial | 263 |

**Carbon fiber rovings:**

Manufacturer: Toho TenaxEurope GmbH
Kasinostraße 19-21
D-42103 Wuppertal, Germany

Supplier: TohoTenax Europe GmbH
Kasinostraße 19-21
D-42103 Wuppertal, Germany

Type: Tenax HTS40 F13 24k 1600 tex (WLB 8.3614.1*)

* WLB: Werkstoff-Leistungsblatt, refer to German standard DIN-WL.

**Glass fiber fabrics:**

Manufacturer: Porcher Industries Germany GmbH

| Style | WLB-No.* LN 9169 | US-style | Weavepatterns | Mass per unit area [g/m²] |
|---|---|---|---|---|
| 90070 | 8.4505.60 | 1610 | plain | 80 |
| 92110 | 8.4548.60 | – | twill 2/2 | 163 |
| 92125 | 8.4551.60 | – | twill 2/2 | 280 |

* All glass fabric is made of alkali-free E glass with Volan-A finish or with finish I 550.

**Core material - Foam:**

Manufacturer: Gaugler & Lutz oHG
Habsburgerstraße 12
D-73432 Aalen-Ebnat, Germany

Supplier: Gaugler & Lutz oHG
Habsburgerstraße 12
D-73432 Aalen-Ebnat, Germany

Type: Rohacell RHC 51 IG-F

**Core material - Honeycomb:**

| | |
|---|---|
| Manufacturer/Supplier: | Schütz GmbH & Co. KGaA<br>Schützstraße 12<br>D-56242 Selters, Germany |
| Type: | Aramidwabe Coremaster C1-3,2-29t5 |
| | Aramidwabe Coremaster C1-3,2-29t8 |

**Filler material for resin:**

| | |
|---|---|
| Manufacturer/Supplier: | STW Schwarzwälder Textil-Werke<br>Heinrich Kautzmann GmbH<br>Aue 3<br>D-77773 Schenkenzell, Germany |
| Type: | Cotton Flakes |
| Manufacturer/Supplier: | Omega Mineral Germany GmbH<br>Rugenbarg 63a<br>D-22848 Norderstedt, Germany |
| Type: | Microballoons |

## 51-30-02 Steel Parts

**WARNING**

Use only approved materials to repair steel parts. If you do not obey this precaution, accidents can occur.

**Steel tubing:**

| | |
|---|---|
| Supplier: | CP-Tech GmbH<br>Zeppelinring 1-6<br>D-33142 Büren, Germany |
| Type: | WLB 1.7734.5 |

**Steel sheet metal:**

| | |
|---|---|
| Manufacturer/Supplier: | Böhler Uddeholm Deutschland GmbH<br>Hansa Allee 321<br>D-40549 Düsseldorf, Germany |
| Type: | WLB 1.7734.4 |

**Steel bar stock:**

| | |
|---|---|
| Manufacturer/Supplier: | Böhler Uddeholm Deutschland GmbH<br>Hansa Allee 321<br>D-40549 Düsseldorf, Germany |
| Type: | WLB 1.4548.4 |

## 51-30-03 Aluminum Parts

**WARNING**

Use only approved materials to repair aluminum parts. If you do not obey this precaution, accidents can occur.

**Aluminum sheet:**

| | |
|---|---|
| Supplier: | Thyssenkrupp AG |
| Type: | WLB 3.1354 T4 or 2024 T4 |
| | WLB 3.1364 T3511 or 2024 T3 |
| | WLB 3.3214 T4 or 6061-T4 (SS) |

**Aluminum bronze:**

| | |
|---|---|
| Manufacturer/Supplier: | CARO-PROMETA Metallvertriebs GmbH<br>Wilhelm-Maisel-Straße20a<br>D-90530 Wendelstein, Germany |
| Type: | 2.1052 |
| | 2.0331 |

## 51-30-04 Titanium Parts

**WARNING**

Use only approved materials to repair titanium parts. If you do not obey this precaution, accidents can occur.

**Titanium sheet:**

| | |
|---|---|
| Supplier: | Enpar Sonderwerkstoffe GmbH<br>Betriebsweg 10<br>D-51645 Gummersbach, Germany |
| Type: | WLB 3.7025 Titan Grade 1 |

## 51-30-05 Paint

**Filler:**

| | | |
|---|---|---|
| Manufacturer: | Nexa Autocolor | |
| Supplier: | Nexa Autocolor<br>Düsseldorferstrasse 80<br>D-40721 Hilden, Germany | |
| Type: | PE Filler light grey | P565-7100 |
| | Hardener | P275-2500 |
| | Thinner | P830-1492 |
| Type: | Basefiller | P565-5301/5305/5307 |
| | Hardener | P210 |
| | Thinner | P850-1492/1493/1494 |

---

| | | |
|---|---|---|
| Manufacturer: | Spies Hecker | |
| Supplier: | Spies Hecker<br>An der Wuhne 4<br>D-39326 Hermsdorf, Germany | |
| Type: | Basefiller | 3508 |
| | Hardener | 9520 |
| | Thinner | 3385 |
| Type: | HS Premium filler | 5310 |
| | Hardener | 3315/3310 |
| | Thinner | 3385 |

**Exterior:**

| | | |
|---|---|---|
| Manufacturer: | Nexa Autocolor | |
| Supplier: | Nexa Autocolor<br>Düsseldorferstrasse 80<br>D-40721 Hilden, Germany | |
| Type: | Aquabase Plus base coat | P99-xxx |
| | Thinner | P980-5000 |
| Type (clearcoat): | HS+Clearcoat | P190-6690 |
| | Hardener | P210-87x |
| | Thinner | P850-149x |

---

| | | |
|---|---|---|
| Manufacturer: | Spies Hecker | |
| Supplier: | Spies Hecker<br>Düsseldorferstrasse 80<br>D-39326 Hermsdorf, Germany | |
| Type: | Permahyd Hi-Tec base coat | |
| | WT Additive | 6052/6050 |

| | | |
|---|---|---|
| | WT Beispritz Additive | 1050 |
| Type (clearcoat): | HS+Clearcoat | 8055 |
| | Hardener | 3240/3230 |
| | HS Clearcoat additive | 9034 |
| | Thinner | 3385 |

**Interior:**

| | | |
|---|---|---|
| Manufacturer: | Nexa Autocolor | |
| Supplier: | Nexa Autocolor<br>Düsseldorferstrasse 80<br>D-40721 Hilden, Germany | |
| Type: | HS+Topcoat | P47-xxx |
| | Hardener | P210-82-xxx |
| | Thinner | P852-189x |
| Type: | 2K EHS Topcoat | P498 |
| | Hardener | P210-877 |
| | Thinner | P852-189x |

**Cowling fire protective paint:**

| | |
|---|---|
| Manufacturer: | PPG Aerospace |
| Supplier: | PRC-Desoto International<br>24811 Ave Rockefeller<br>Valencia, CA, 91355 USA |
| Type: | Paint N56582/T508 |
| Manufacturer: | Indestructible Paint Ltd |
| Supplier: | Indestructible Paint Ltd<br>19-25 Pentos Drive, Sparkhill<br>Birmingham B11 3TA |
| Type: | Paint IP9189 A&B Kit |

# 51-30-06 Agents and Sealers

**Tank Sealer:**

| | |
|---|---|
| Manufacturer: | PPG Aerospace |
| Supplier: | PPG Aerospace |
| Type: | PR 1440 A<br>PR 1440 B (Wing Tank bonding area)<br>Alternative:<br>PR 1422 A2 NA<br>PR 1422 B2 NA (Wing Tank bonding area) |

**Firewall Sealer:**

| | |
|---|---|
| Manufacturer: | Momentive |
| Supplier: | Interturbine Aviation Logistics GmbH<br>Kisdorfer Weg 36<br>D-24568 Kaltenkirchen, Germany |
| Type: | RTV 106 (MIL-A-46106B) |

**Bonding Agents:**

| | |
|---|---|
| Manufacturer: | Huntsman Corporation |
| Supplier: | Filzring OHG<br>Werrastraße 3-4<br>D-37242 Bad Sooden Allendorf, Germany |
| Type: | Araldite 2011 AW 106 (Harz) / HV 953 U (Härter) |
| Supplier: | Filzring OHG<br>Werrastraße 3-4<br>D-37242 Bad Sooden Allendorf, Germany |
| Type: | Araldite 2022 XD 4662 A / B |

# 51-30-07 Exterior Foil

It is permitted to apply a foil on the aircraft surface after paint.

Permitted areas to apply the foil:

All external aircraft areas where paint is applied.

This does not include:

- Contact surfaces between movable structures (such as control surfaces and the canopy).
- Recesses of parts that you can remove (such as inspection covers and cowlings).
- Spinner and propeller.

Minimum properties of the foil:

- Maximum foil thickness: 0.08mm
- Temperature range: -50°C thru + 100°C
- Resistant to water, oil and fuel
- Adhesive material: Permanent solvent polyacrylate
- Self-extinguishing material, refer to DIN 75200 or an equivalent.

**Exterior Foil:**

| | |
|---|---|
| Manufacturer: | Orafol Europe GmbH<br>Orafolstraße 2<br>D-16515 Oranienburg |
| Supplier: | WB Werbung<br>Haeckelstraße 6a<br>D-06467 Hoyn |
| Type : | 551 High Performance Cal |

# 51-60-00 CONTROL SURFACE BALANCING

## 51-60-01 Weighing and Calculation of the Control Surface Moments

To weigh a control surface or to calculate its moment, it is necessary to remove the control surface from the aircraft. You must weigh and calculate the control surface moments after each repair or painting procedure.

Weigh the control surface in the disassembled condition. The balance masses are installed in the structure and it is not possible to disassemble them. When you remove the balance masses, the control surface becomes unserviceable.

To calculate the control surface moment, use the form below:

1 Record the mass at the specified arm and multiply it with the correct arm (distance between the weighing point and the hinge line).

2 Make sure that the control surface moment is in the given tolerances. Refer to Appendix 6 for the form of the control surface mass and moment.

To calculate the mass at the specified arm and the control surface moments:

1 Remove the control surface, refer to chapter 27.

2 Install the hinge pin.

3 Put the hinge pin onto two mandrels, one on each side of the control surface. The mandrels must not touch the control surface. For the Flettner tab, use a string to hold the hinge pin of the tab.

4 Calculate the balance mass at the specified arm and record the mass in the form FO P-24. See Appendix 6.

5 Calculate the control surface moment as follows: Multiply the arm, the mass at that arm and the gravitation constant (9,81m/s²).

6 Make sure that the values are in the permitted tolerances.

7 Install the control surface, refer to chapter 27.

| **Control surface** | **Mass [kg]** | **Arm* [m]** | **Balance mass at specified arm [kg]** |
|---|---|---|---|
| Aileron, LH | 6,4 – 9,4kg | 0,286m | 0,8 – 1,4kg |
| Aileron, RH | 6,4 – 9,4kg | 0,286m | 0,8 – 1,4kg |
| Elevator w/o Flettner | 10,0 – 13,0kg | 0,56m | 0,3 – 1,8kg |
| Rudder | 5,2 – 6,2kg | 0,87m | 0,7 – 1,5kg |
| Flettner Tab | 0,35 – 0,55kg | 0,145m | 0,05 – 0,15kg |

*Distance between the weighing point and the hinge line.
If the weighing point was repaired: Measure the length of the arm and use this value to calculate the control surface moment.

# 51-70-00 REPAIRS

This chapter presents general procedures to perform repairs. In Appendix 9 approved common repair designs and the reference documents with instructions are listed. Contact Liftify for further repair design approvals.

## 51-70-10 Repairs of Reinforced Glass and Carbon Fiber Parts

This chapter gives the standard practices to repair a composite structure. A certified design organization must prepare a special repair design for each repair. This repair design must include the layup plans with the number of layers and their orientation.

**CAUTION**

Only approved personnel are permitted to repair composite parts. If you do not obey this precaution, damage to the aircraft can occur.

To prepare the damaged area for the repair:

1 Examine the damaged areas carefully, refer to the inspection steps in chapter 51-70-11.

2 Prepare a damage description which includes the dimensions and the depth of the damage, refer to chapter 51-70-12. With this damage description, it will be possible to make a decision if it is necessary to repair the damage or to replace the damaged part. Aspects, such as reparability, costs, time, weight, aerodynamic shape and finish will also have an effect on the decision.

3 Do the repair as given in the repair instructions from the design organization. Refer to chapter 51-70-13 and obey the repair guidelines.

4 If necessary, prepare the surface and paint the repaired area, refer to chapter 51-70-15.

## 51-70-11 Damage inspection

Always do a damage inspection after an incident, when you find damage or when you think that damage is possible.

1 Find all damaged locations of the aircraft. Look at the reflections on the surface to find unusual curvature changes.

2 Examine each damaged location carefully.

3 Do a tap test on the damaged area and its adjacent areas to find delamination. Use a marker or a tape and temporarily identify the areas where you found possible damage or delamination.

**CAUTION**

Do not apply too much pressure on the surface to prevent local damage to the inner honeycomb core.

4 At the identified locations, apply light pressure to the surface. If you hear light cracking, the honeycomb core is possibly damaged.

5 Make a damage description, refer to chapter 51-70-12.

## 51-70-12 Damage description

It is very important to make an accurate damage description. This will be the basis for the repair design. To record a damaged area on the aircraft for a repair design, use the forms in Appendix 8. Record the position, the dimensions and the shape of the damage.

1 Communicate with the design organization to agree on the next steps. If more information is necessary on the damage, it might be necessary to remove some layers for a better damage inspection.

**CAUTION**

Be careful when you remove damaged material. If you remove too much material, the repair area can increase or a part can become unserviceable for repair. If you are not sure about the repair process, get the aid of the design organization.

2 Remove some damaged layers around the damage area without spreading too much in the width.

3 Examine the area to know the depth of the damage and the number of damaged layers.

4 Send the damage description to the design organization. If applicable, include it in an occurrence report.

## 51-70-13 Repair guidelines

**WARNING**

Be careful with resin. Do not get it on your skin and do not breathe the fumes to prevent damage to your health.

1 Use the correct mixture ratio of resin and hardener (for example: 100:34 ± 2% for L20/SL), refer to the manufacturer. Always use clean tools and containers. The minimum quantity for a sufficiently accurate mixture is 50 g.

2 Use a volume ratio of composite fabric to resin mixture of 43% ± 5%. For this volume ratio, the related weight ratios of carbon fabric to resin mixture are:

- 50:50 (approximately) when you use vacuum bagging
- 55:45 (approximately) when you do not use vacuum bagging.

**WARNING**

Be careful when you sand carbon and glass fiber laminates. Do not get dust of these materials on your skin and do not breathe it. Put on protective clothing and use respiratory protection to prevent damage to your health.

**WARNING**

Be careful with flammable cleaning agents, such as acetone. Make sure that there is a good airflow in the work area and that safety equipment is available. If you do not obey these precautions, accidents can occur.

3 Prepare the damaged area before the repair as given in the repair instruction. Make sure that you use the correct dimensions and the permitted depth for the repair area.

**CAUTION**

Before you do the repair, make sure that dirt and dust is fully removed from the repair area. Dirt and dust can cause bad bonding.

4 Sand the repair area. Remove the dust with a vacuum cleaner.

**WARNING**

Make sure that fiber layers have the correct orientation, the correct number of layers and the correct layup sequence. This is necessary to get the correct stability and strength of the part.

5 Laminate the pre-impregnated layers as specified in the repair instruction.

6 Apply the vacuum bagging if it is specified in the repair instruction.

**CAUTION**

Be careful when you apply heat. The temperature must not be more than 100°C. Do not increase the temperature faster than 10°C/hour. This will prevent damage to the part.

7 Cure the repair area as given in the repair instruction. Monitor the time and the temperature during the curing process.

## 51-70-15 Painting of Composite Parts

**WARNING**

Be careful when you use hardeners and coating materials:

- Do not get hardeners and coating materials on your skin.
- Do not breathe the fumes.
- Make sure that there is sufficient airflow in the work area during and after the procedure.
- Put on a breathing mask when you use sprays.
- Refer to the manufacturer's technical notes before you start the work.

Hardeners and coating materials are dangerous materials and can cause damage to health.

1 If necessary, remove the vacuum bagging.

2 If necessary, apply polyester putty to make the repair flat to the adjacent surface.

3 Use sandpaper (only grade 80 or higher) and make the surface rough. To finish the surface, use grade 150 or higher.

4 Remove dust and unwanted materials from the surface of the repair area.

5 Apply filler, refer to chapter 51-30-05.

6 Make sure that the filler is fully dry. Then prepare the surface with wet sand paper (grade 400).

7 Clean the surface.

8 Apply paint as given in the manufacturer indications. Refer to chapter 51-30-05.

9 Polish the painted surface.

10 When you repaired a control surface, measure the weight and balance of the control surface. Refer to chapter 51-60-01.

## 51-70-20 Repair of Aluminum and Steel Components

To repair aluminum and steel components, obey the standard repair instructions or the specified repair instructions of a design organization.

## 51-70-25 Aluminum and Steel Components Refinishing

To refinish aluminum or steel components of the aircraft, it is necessary to remove the paint from the parts before you apply new paint. This procedure is given in this section.

## Removal of grease:

**WARNING**

Be careful when you use solvents or other liquids to clean the components. These liquids can be dangerous and release flammable fumes. Always obey these precautions:

- Make sure that there is sufficient airflow in the work area during and after the procedure.
- Do not get liquids on your skin.
- Always close solvent containers when you do not use them.

**CAUTION**

Before you remove the paint from the parts: Remove all fittings, O-rings, nuts, bolts, washers, pistons, bearing cups and other items to prevent damage.

To remove the grease from the metal parts:

1 To clean all metal parts, put them fully in a clean degreasing solution. We recommend that you use an alkaline-based solution for aluminum parts.

2 Remove hard dirt or grease with a soft bristle brush or soak the part in a cleaning solution.

3 Clean bearing cones carefully in a different container with clean solvent.

**CAUTION**

Do not use compressed air to dry the bearing cones. If they turn too quickly, damage can occur.

4 When the cleaning procedure is completed, fully dry all metal parts with filtered dry compressed air.

5 We recommend that you replace the O-rings at each overhaul. If necessary, you can use the O-rings again. Make sure that you put them back into their initial position of removal.

6 Clean O-rings, backup rings, wipers, or other rubber parts with a clean dry cloth. Before you install these parts, lubricate them with an applicable O-ring lubricant.

## Removal of paint:

Disassemble the components as necessary for the repair.

To remove the paint from the components:

**WARNING**

Be careful when you use paint-removing solvents or other liquids to remove the paint from the components. These liquids can be dangerous and release flammable fumes. Always obey these precautions:

- Make sure that there is sufficient airflow in the work area during and after the procedure.
- Do not get liquids on your skin.
- Always close solvent containers when you do not use them.

**CAUTION**

Before you remove the paint from the parts: Remove all fittings, O-rings, nuts, bolts, washers, pistons, bearing cups and other items to prevent damage.

1 Remove grease from all parts as given in the procedure "Removal of grease".

**CAUTION**

Make sure that the parts are fully soaked with solvent to prevent corrosion.

2 Fully soak the part in paint-removing solvent.

3 Remove the part from the solvent and flush it fully with hot water (75°C/170°F). Remove the solvent carefully from all cavities and threaded holes where solvent can collect.

4 Dry the part fully with filtered dry compressed air.

5 When the paint is removed, visually examine the part for cracks or possible defects, refer to the related chapters.

**CAUTION**

Apply new paint as quickly as possible. Corrosion immediately occurs on parts without paint.

6 Paint the repair area.

# Chapter 52 Canopy

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| 52-00-00 | GENERAL | 52-2 |

## 52-00-00 GENERAL

The canopy frame is a carbon-fiber construction and has an acrylic canopy glass. The composite parts have different protective layers: a polyester layer, an acrylic filler and an acrylic paint to prevent damage to the structure because of moisture and UV radiation.

To repair the canopy composite parts, refer to chapter 51.

To remove the canopy:

1 Open the canopy.

**CAUTION**

Before you disconnect the retaining strap, hold the canopy safely to prevent damage.

2 Remove the retaining strap from the fuselage side (stringer). Refer to Figure 52-1, section A-A.

**CAUTION**

While you disconnect the canopy hinge bolts, hold the canopy safely to prevent damage.

3 Remove the screws from each of the three canopy hinge bolts.

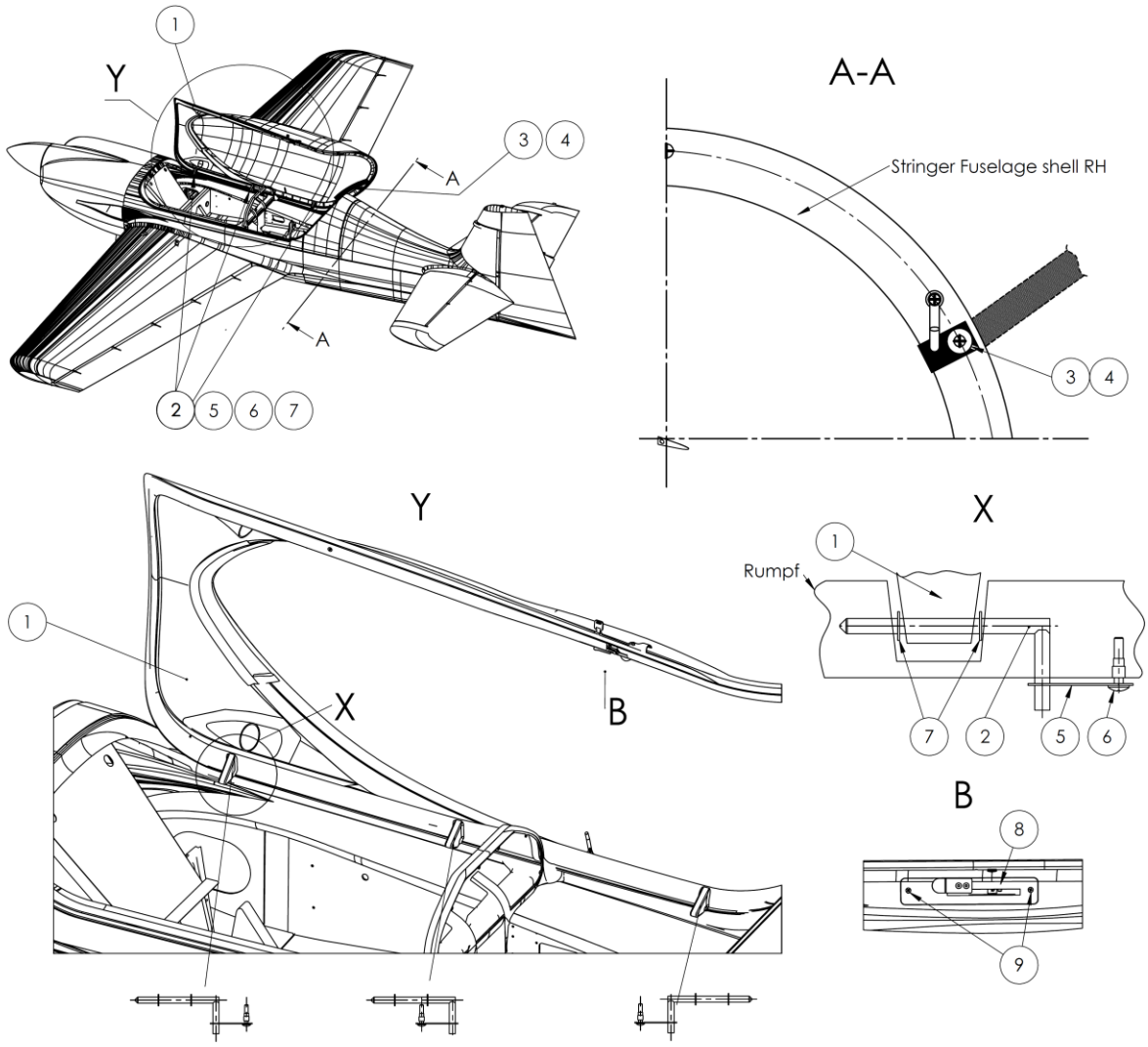
4 Remove the canopy hinge bolts. (On the XA42: Pull the front and center bolts aft. Pull the rear bolt forward). Refer to Figure 52-1, detail X and Y.

5 Remove the canopy.

6 Assemble the canopy in the opposite sequence. Lubricate the bolts with grease. Make sure that you put the shim washers at the hinges in their initial positions.

7 The contour of the canopy interface must accurately align with the contour of the fuselage. Steps are not permitted. Make sure that you can open and close the canopy freely. Make sure that the canopy latch engages correctly.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Canopy assy | XA42-5200-001 |
| | option | Single seat canopy | XA42-5200-002 |
| 2 | 3 | Canopy hinge pin | XA42-5230-150 |
| 3 | 1 | Countersunk washer | A3235-028-193 |
| 4 | 1 | Screw | MS24693S274 |
| 5 | 3 | Retainer plate | XA42-5230-250 |
| 6 | 3 | Screw | AN526-10R10 |
| 7 | - | Shim-washer canopy 1,0 | XA42-5230-255 |
| | - | Shim-washer canopy 1,2 | XA42-5230-256 |
| | - | Shim-washer canopy 1,5 | XA42-5230-257 |
| 8 | 1 | Maintenance cover canopy* | XA42-5210-295 |
| 9 | 2 | Screw* | MS35214-28 |




*From S/N 151 onwards.

Figure 52-1: Canopy installation

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# Chapter 53 Fuselage

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| 53-00-00 | GENERAL | 53-2 |

## 53-00-00 GENERAL

The fuselage of the XA41 and the XA42 is a carbon-fiber/honeycomb sandwich construction.

All composite parts have different protective layers: a polyester layer, an acrylic filler and an acrylic paint to prevent damage to the structure because of moisture and UV radiation.

# Chapter 55 Stabilizers

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| 55-20-00 | ELEVATOR | 55-4 |
| 55-30-00 | TRIM TAB | 55-6 |
| 55-60-00 | RUDDER | 55-7 |

## 55-00-00 GENERAL

The XA41 and the XA42 have a standard empennage with stabilizers and movable control surfaces.

The spars are made of carbon fiber rovings, carbon fiber mesh and foam cores. The empennage shells are made of honeycomb sandwich with carbon-fiber laminate.

The vertical stabilizer is a part of the fuselage. A trim tab is attached to two hinge points on the right side of the elevator.

All composite parts have different protective layers: a polyester layer, an acrylic filler and an acrylic paint to prevent damage to the structure because of moisture and UV radiation.

## 55-10-00 HORIZONTAL STABILIZER

To remove the horizontal stabilizer:

1 Remove the rudder. Refer to chapter 55-60-00.

2 Remove the rear seat and the luggage compartment. Refer to chapter 25.

3 Remove the elevator. Refer to chapter 55-20-00.

4 Disconnect the elevator trim electric connector. Refer to Figure 55-1 and Figure 27-23.

5 Remove the safety wire from the stabilizer main bolts in the rear fuselage. Refer to Figure 55-2.

6 Remove the stabilizer main bolts. (5/8” wrench). Refer to Figure 55-3.

7 Remove the horizontal stabilizer to the rear.

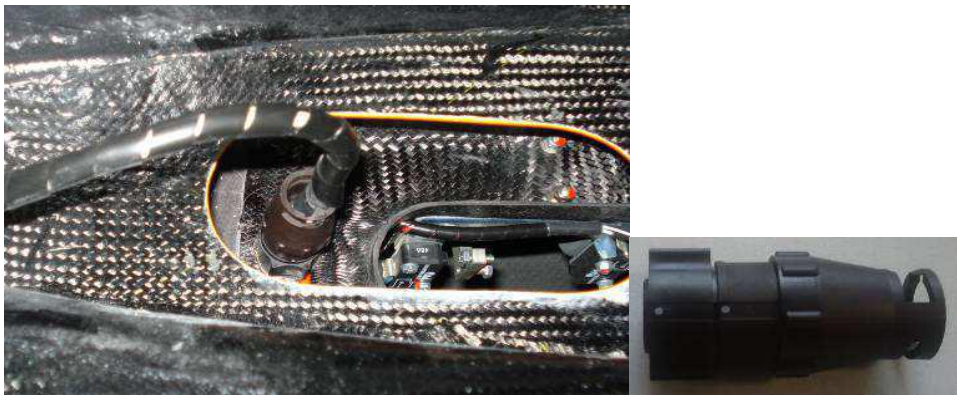


Figure 55-1: Electric trim connector

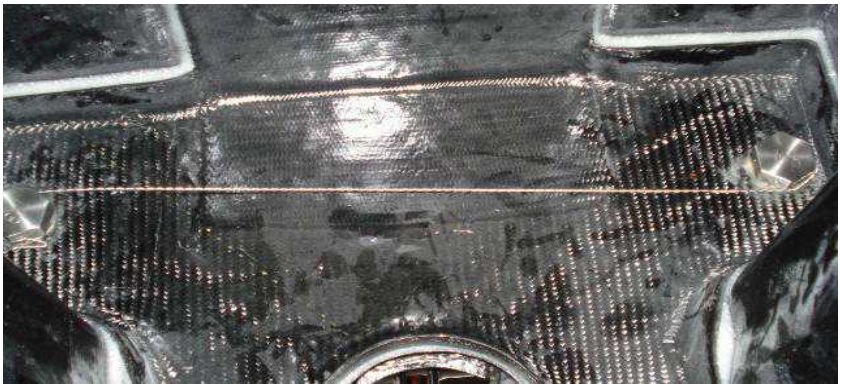


Figure 55-2: Safety wire lock of horizontal stabilizer main bolts

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Stabilizer | XA42-5510-001 |
| 2 | 2 | Horizontal tailplane bolt | XA42-5510-291 |
| 3 | 2 (optional) | Shim washer | DIN988-22x30-A2 |
| 4 | - | Safety wire | MS20995-C32 |

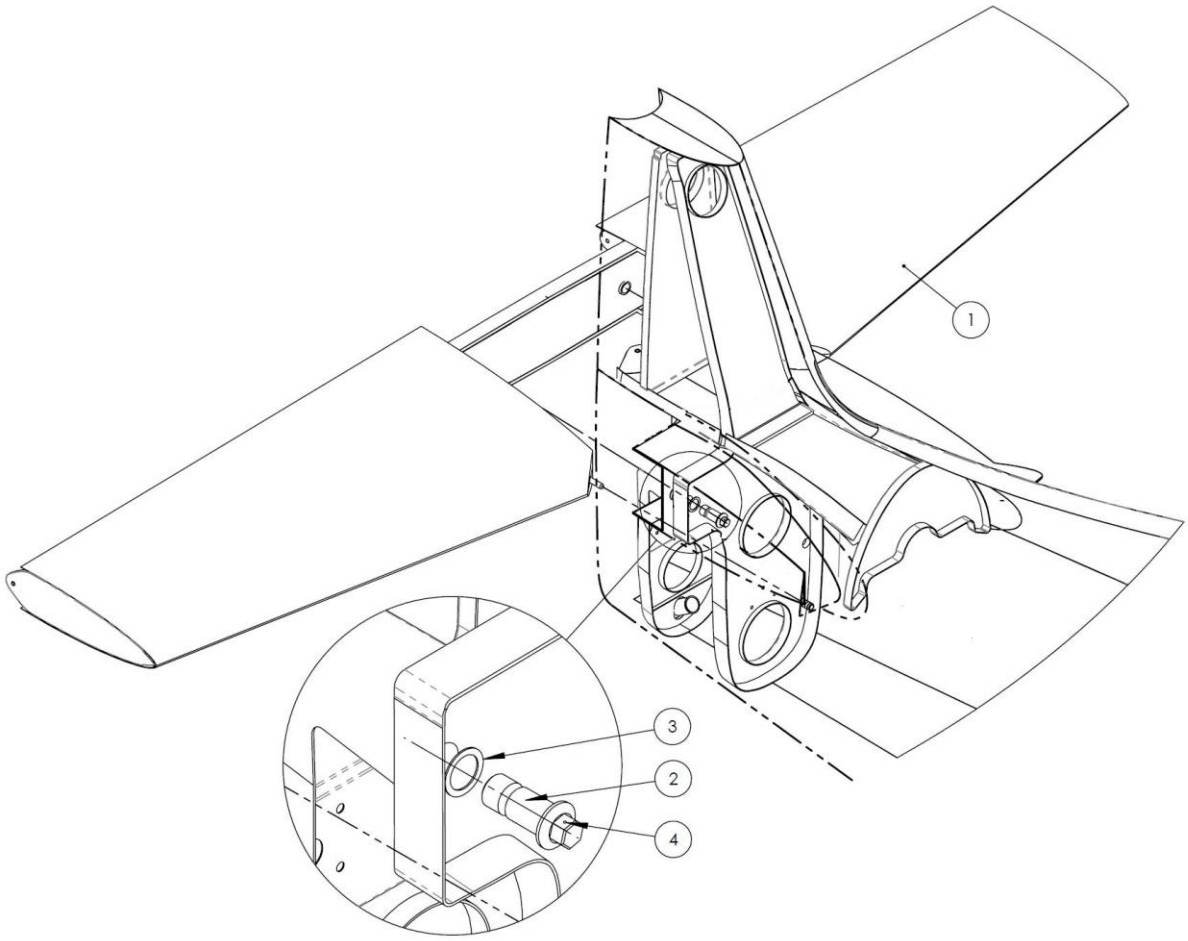



Figure 55-3: Horizontal stabilizer installation

To install the horizontal stabilizer:

1 Clean and lubricate the bolts and bushings with grease.

2 Put the horizontal stabilizer into position from the rear. Make sure that the main stabilizer spar is flush with the fuselage fin rib. Make sure that the alignment pins from the stabilizer are correctly engaged into the fuselage bushings.

**WARNING**

The bolt thread end must not be more than 1mm above the bushing. If necessary, install DIN 988 22x30 shim washers on the bolt head (Refer to Figure 55-3, position 3). If you do not obey this precaution, the bolt can cause damage to the elevator and accidents can occur.

3 In the rear fuselage, install the horizontal tailplane bolts from the front to the rear. Torque the bolts to 60 Nm (44 lbs/ft).

4 Safety the stabilizer main bolts against each other with a 0.032" safety wire. Refer to Figure 55-2.

5 Connect the elevator trim electric connector to the right side of the stabilizer. Make sure that the bayonet lock of the connector is "open" (the white dots are aligned). Refer to Figure 55-1 and Figure 27-23. Turn the connector 90° to lock it.

## 55-20-00 ELEVATOR

To remove the elevator:

1 Remove the rudder, refer to chapter 55-60-00.

2 Remove the slot fairings from the vertical tail. (8x MS24693C273 screws with PH2 screwdriver). Refer to Figure 55-4.

3 Disconnect the trim tab rod. Refer to chapter 27-30-01.

4 Disconnect the elevator rod CFRP. Refer to chapter 27-30-03.

5 Remove the elevator hinge pin (5mm Allen key). Refer to Figure 55-5.

6 Remove the elevator.



Figure 55-4: Slot fairing installation

To install the elevator:

1 Install the horizontal stabilizer. Refer to chapter 55-10-00.

2 Lift the elevator into position.

3 Push the elevator hinge pin in. Refer to Figure 55-5.

4 Torque the hinge pin (5mm Allen key) to 15 Nm (11 lbs/ft). Safety the connection with Loctite 243.

5 Seal the connection with locking varnish.

6 Connect the elevator rod CFRP. Refer to chapter 27-30-03.

7 Connect the trim tab rod. Refer to chapter 27-30-01.

8 Install the slot fairings to the vertical fin. Refer to Figure 55-4.

9 Do these checks:

- The rudder must move freely from stop to stop.
- Deflection, tolerance and permitted play must agree with the table of chapter 27-00-00.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Elevator | XA42-5520-051 |
| 2 | 1 | Stabilizer | XA42-5510-001 |
| 3 | 1 | Control surface hinge pin | XA42-5780-150 |

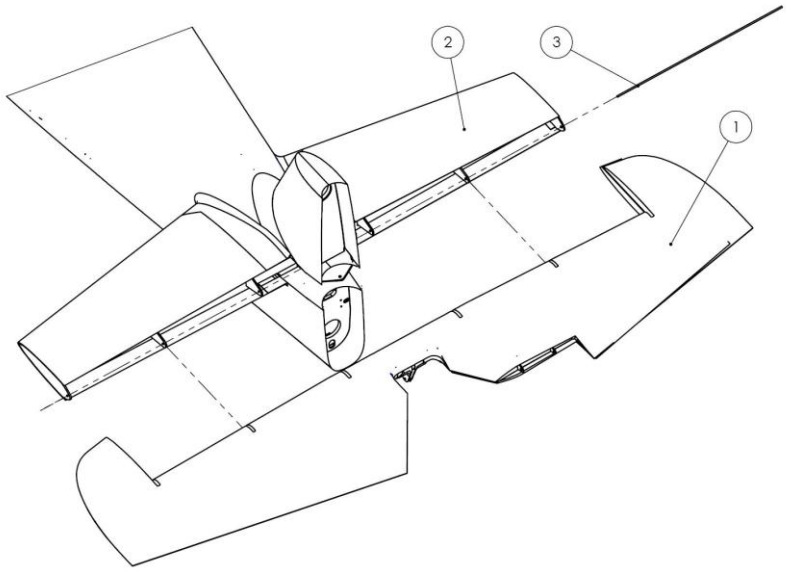



Figure 55-5: Elevator installation

## 55-30-00 TRIM TAB

To remove the trim tab:

1 Disconnect the control rod of the trim tab. Refer to chapter 27-30-01.

2 Cut the safety wire on the hinge pin. Remove the hinge pin. Refer to Figure 55-6.

3 Remove the trim tab.

4 Assemble the trim tab in the opposite sequence.

5 Safety the hinge pin with a new safety wire.

6 Do these checks:

- The trim tab must move freely from stop to stop.
- Deflection and permitted play must agree with Table 27-1.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Elevator | XA42-5520-051 |
| 2 | 1 | Flettner tab | XA42-5530-100 (from serial number 01 to 07 and 101 to 143 or after performing SB-2016-006 |
| | | | XA42-5530-101 (from serial number 08 and 144 on). |
| 3 | 1 | Flettner hinge pin | XA42-5530-202 |
| 4 | - | Safety wire | MS20995-C32 |

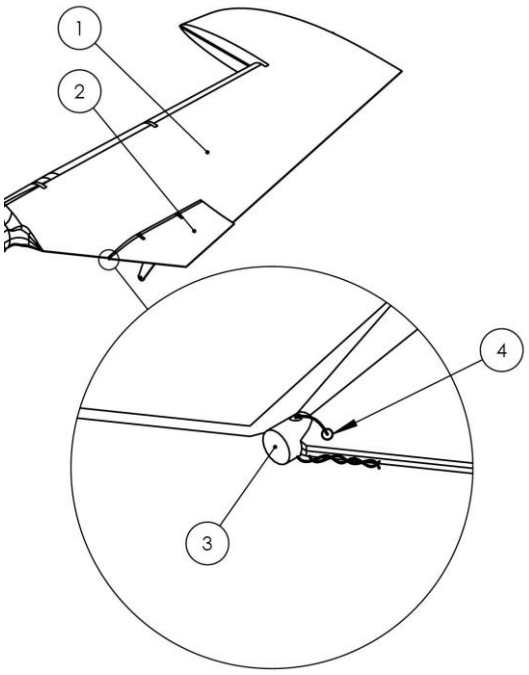



Figure 55-6: Flettner tab installation

## 55-60-00 RUDDER

To remove the rudder:

1 Cut the safety wires. Remove the bolts of the lower connection of the rudder (AN5H-6A bolts, ½" wrench) (refer to Figure 55-7).

2 Remove the rudder hinge pin (5mm Allen key).

3 Pull the rudder out to the top.

4 Remove the rudder.

To install the rudder:

1 Lift the rudder into position.

2 Push the rudder hinge pin in from the top.

3 Torque the hinge pin (5mm Allen key) to 15Nm (11lbs/ft). Safety the connection with Loctite 243.

4 Seal the connection with locking varnish.

5 Install the AN5H-6A bolts (½" wrench). Torque the bolts.

6 Safety the bolts with new 0.032"safety wire.

7 Do these checks:

- The rudder must move freely from stop to stop.
- Deflection, tolerance and permitted play must agree with the table of chapter 27-00-00.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Rudder | XA42-5560-100 |
| 2 | 1 | Rudder hinge pin | XA42-5560-180 |
| 3 | 2 | Hexagon head bolt | AN5H-6A |
| 4 | - | Safety wire | MS20995C32 |

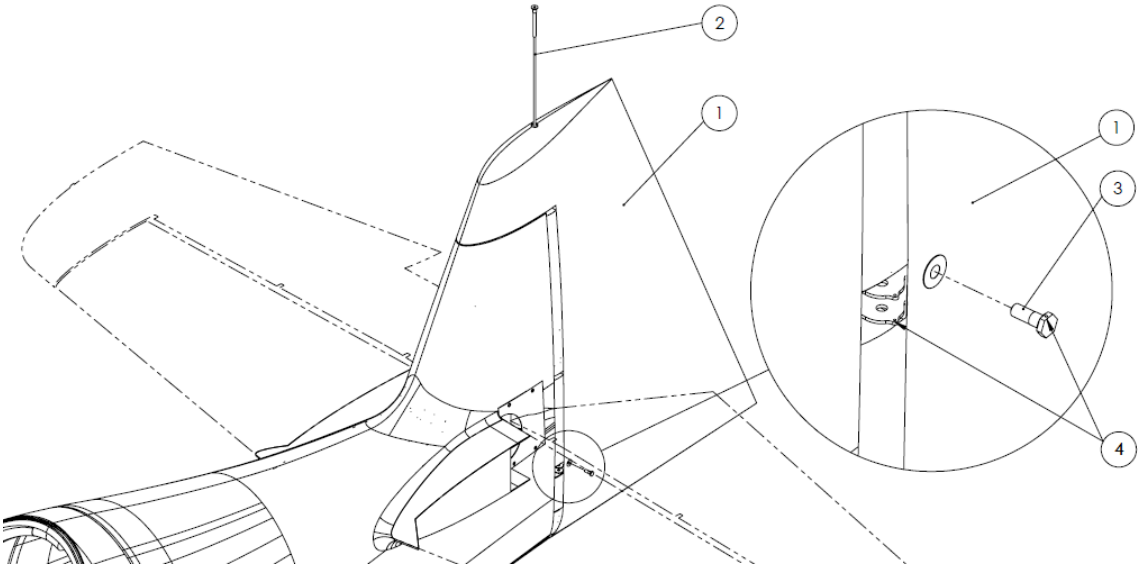



Figure 55-7: Installation rudder

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# Chapter 57 Wing

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## 57-00-00 GENERAL

The wing of the XA41 and the XA42 is one part. It has a dual-box main spar which is made of CFRP. The core of the box is foam. The wing shells are a honeycomb sandwich type with carbon-fiber laminates. CFRP ribs are used to prevent buckles in the wing shells. A special mesh as the outer layer on the wing tanks gives protection from lightning.

All composite parts have different protective layers: a polyester layer, an acrylic filler and an acrylic paint to prevent damage to the structure because of moisture and UV radiation.

## 57-10-00 WING

To remove the wing:

1 Disconnect the dynamic pressure line outboard of the LH pilot pedal rail (refer to Figure 57-1).

2 Remove the forward fuselage compartment covers.

3 Disconnect the fuel lines (-6 fittings, 11/16" wrench). Disconnect the vent lines and the wires from the two wing nose root ribs (refer to Figure 57-2).

4 Remove the cowling, refer to chapter 71-10-00.

5 Jack the aircraft, refer to chapter 07-10-00.

6 Remove the main spar cover from the bottom of the fuselage (AN 526-8R8 screws, PH 2 screwdriver).

7 Remove the fuel selector valve actuating rod that goes through the spar bridge, underneath the wing. Refer to chapter 28-20-01 and Figure 28-7.

8 Remove the lower longeron connectors. Remove the 10 mm connection bolts (T50 Torx wrench socket). Remove the aluminum spacers from the bottom side of the aircraft, refer to Figure 57-3 and Figure 57-4.

9 Disconnect the *aileron rod CFRP* from the *Aileron bellcrank fuselage*. Refer to chapter 27-10-02.

10 Disconnect the *aileron rod outboard* from the aileron. Refer to chapter 27-10-04.

**CAUTION**

Make sure the *aileron rod CFRP* does not hit the inside of the wing. This can cause non visible damage to the CFRP rod.

11 Pull the *aileron rod outboard* toward the trailing edge of the wing so that the *aileron rod CFRP* will move inside the wing root.

12 Temporally fix the aileron to the wing in neutral position with an appropriate jig.

13 Remove the wheel pants, refer to chapter 32-50-00.

14 Refer to chapter 32-50-00, Figure 32-12. Remove the aft screws of the *upper strut fairing* (LH and RH) (Pos. 12). Carefully turn the landing gear strut fairing (LH and RH) 90 degrees down (Pos. 3 and 5 for the LH and Pos. 4 and 6 for the RH). This is to make sure that it does not touch the wing during disassembly.

15 Lock the control stick in the neutral position. This makes sure that the wing does not touch the aileron fuselage bell crank.

16 Hold the wing with a minimum of one strong person at each wingtip and one person on the aft of the wing.

17 A fourth person must remove the rear spar bolts as follows: Pull the safety pins out. Push the bolts out with a rubber mallet, refer to Figure 57-5.

18 Remove the main bolts as follows: Pull the safety pins out. Push the bolts out with a rubber mallet (refer to Figure 57-6).

19 Lower the wing below the fuselage. When the wing is clear of the fuselage, remove it laterally from the fuselage.

20 Put the wing on jacks with protection pads or on a transport jig.

**CAUTION**

Do not unload the front jack without securing the fuselage cut-out with the aluminum longeron spacers. This could seriously damage the fuselage structure due to the weight of the engine.

21 It the wing and fuselage are being prepared for transportation or storage, follow further instructions in chapter 20-20-03.

To install the wing:

For the installation of the wing, we recommend that a minimum of 4 persons are available to lift the wing into the applicable fuselage cutout.

1 Level the fuselage. Refer to chapter 08-10-00.

2 Remove the cowling (if installed), refer to chapter 71-10-00.

3 Jack the front of the fuselage. Refer to chapter 07-10-00. The front should be unloaded. The main wheels should still have contact with the ground.

4 Remove the wheel pants (if installed), refer to chapter 32-50-00.

5 Refer to chapter 32-50-00, Figure 32-12. Remove the aft screws of the *upper strut fairing* (LH and RH) (Pos. 12). Carefully turn the landing gear strut fairing (LH and RH) 90 degrees down (Pos. 3 and 5 for the LH and Pos. 4 and 6 for the RH). This is to make sure that it does not touch the wing during assembly.

6 Lock the control stick in the neutral position. This makes sure that the wing does not touch the aileron fuselage bell crank.

7 In the intersection between the fuselage and the wing spar: Disassemble the aluminum longeron connectors and the actuating rod of the fuel selector valve (if installed). Refer to Figure 57-7. For more details refer to chapter 28-20-01.

**CAUTION**

Temporarily attach the electric cables on the LH and RH side of the wing with tape. This will prevent damage to the electric cables during assembly. Refer to Figure 57-8.

8 To make sure that the fuel lines in the fuselage do not touch the wing attachment: Remove the cover XA42-5370-242 from the RH side of the fuselage. Attach the fuel lines to the inner side of the fuselage during the wing assembly. Refer to Figure 57-9.

9 Disconnect the *aileron rod outboard* from the aileron, if they are connected. Refer to chapter 27-10-04.

**CAUTION**

Make sure that the *aileron rod CFRP* fully moves into the wing root when you pull the *aileron rod outboard*. If they are not in the wing root, damage to the *aileron rod CFRP* can occur.

10 Pull the *aileron outboard rods* to the trailing edge of the wing (to the rear).

11 Clean the bolts and bushings of the main spar and the rear spar. Apply grease to bolts and bushings of the main spar and the rear spar.

12 Put the wing below the fuselage.

**CAUTION**

Make sure that a minimum of four persons are available to lift the wing into position. If you do not obey this precaution, damage to the wings can occur.

13 Lift the wing into position as follows:

One person is necessary for each wingtip to lift the wing.

The third person below the fuselage at the rear spar must help to put the wing into position.

The fourth person must be in the fuselage to give instructions how to align the spar bolts with the bushings and to install the bolts.

14 Install the main spar bolts from the front. Refer to Figure 57-6.

15 Install the rear spar bolts from the front. Refer to Figure 57-5.

16 Install new safety pins (3.2 mm x 71 mm) in the two main spar bolts.

17 Install new safety pins (3.2 mm x 40 mm) in the two rear spar bolts.

18 Install aluminum longeron spacers for the lower longeron connectors and align them with the holes in the fuselage brackets.

19 Install XA42-5300-210 longeron connection bolts from the rear. Install four bolts for each spacer: Two on the fuselage belly and two on the fuselage floor. Torque the bolts to 42 Nm (31 lbs.ft). Refer to Figure 57-3 and Figure 57-4. Safety the bolts with safety wire and apply a heat shrink tube over the twisted part of the safety wire in order to protect the surface of the longeron connectors against surface damage.

20 Install the fuel selector valve actuating rod. Refer to chapter 28-20-01.

21 Install the main spar cover on the bottom of the fuselage (AN526-8R8 screws, PH 2 screwdriver). Seal the cover edges with transparent PU protection tape.

22 Refer to Figure 57-2:

a) Connect the fuel lines (D-06 fittings, 11/16” wrench with 12.5 Nm torque) and the vent lines of the fuel tank to the LH and RH wing nose ribs. Seal the lines with locking varnish.

b) Connect the electrical wires (LH and RH).

c) Install the cover XA42-5370-242 on the RH side with five screws (AN526C-8R6).

23 Connect the end of the dynamic pressure line in the fuselage to the wing port, refer to Figure 57-1. Do a leak test.

24 Install and adjust the aileron rod inboard and aileron rod outboard. Refer to chapters 27-10-02 and 27-10-04.

25 Lower the airplane.

26 Unlock the control stick.

27 Turn the top and bottom landing gear strut fairing (LH and RH) to the original position. Install the aft screw on both top strut fairings (AN526-10R12). Refer to chapter 32-50-00, Figure 32-12.

28 Install the wheel pants. Refer to chapter 32-50-00.

29 Install the cowling. Refer to chapter 71-10-00.

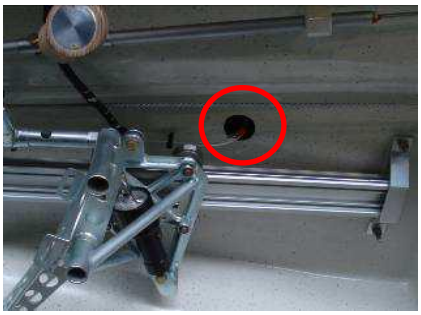


Figure 57-1: Dynamic pressure line, fuselage LH side.

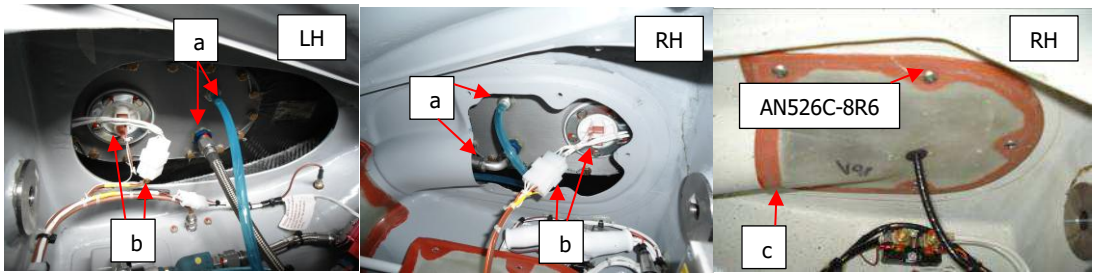



Figure 57-2: Connection of fuel lines, fuel tank vent lines and wires.

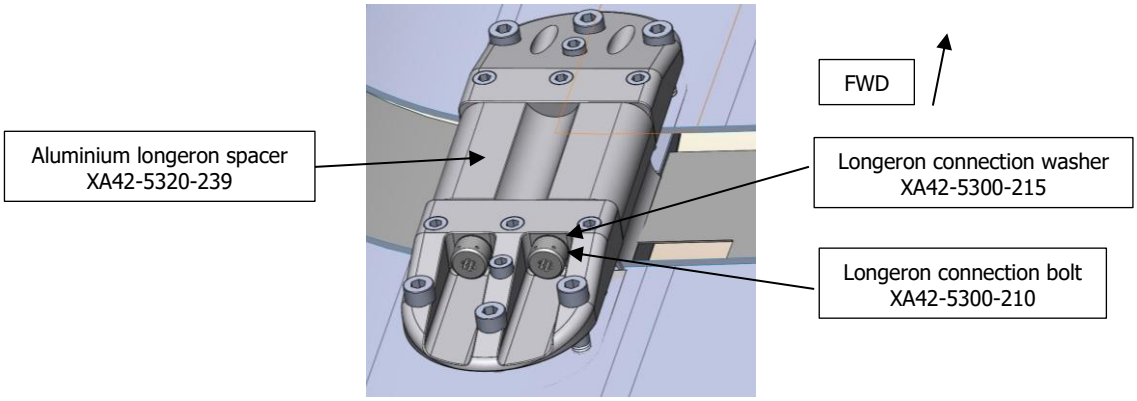



Figure 57-3: Longeron connector main spar assembly

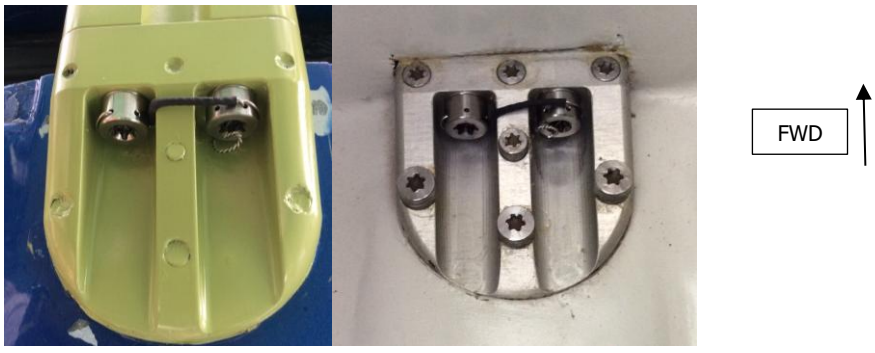



Figure 57-4: Longeron connector outer view (left) and inner view (right)

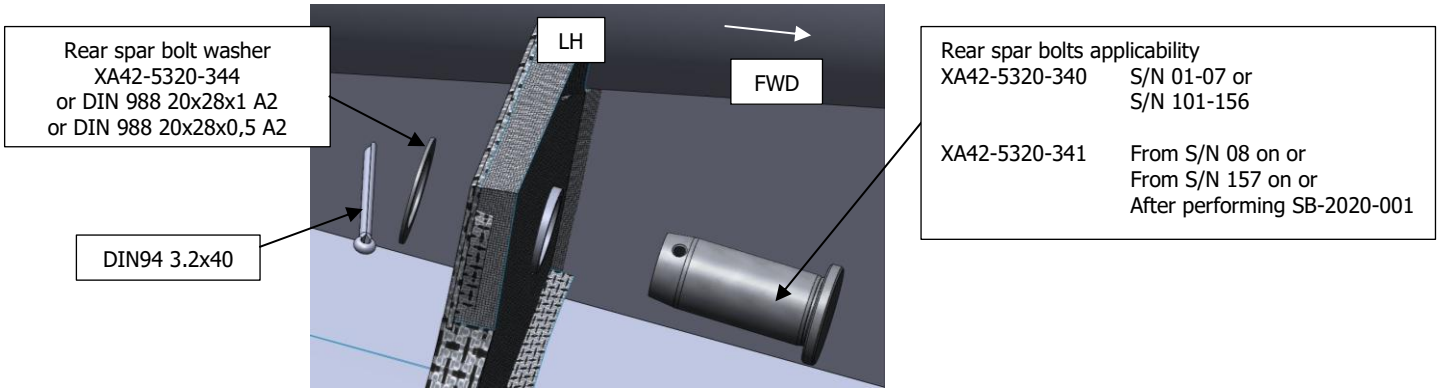



Figure 57-5: Rear spar bolt assembly

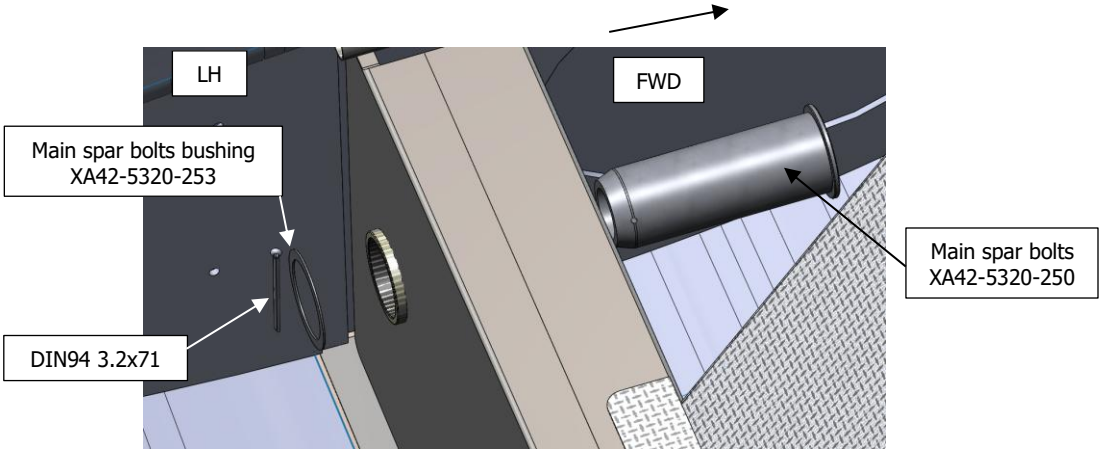



Figure 57-6: Main spar bolt assembly



Figure 57-7: Actuating rod of the fuel selector valve in the intersection between the fuselage and the wing main spar during transportation.



Figure 57-8: Wiring at the leading edge of the wing root

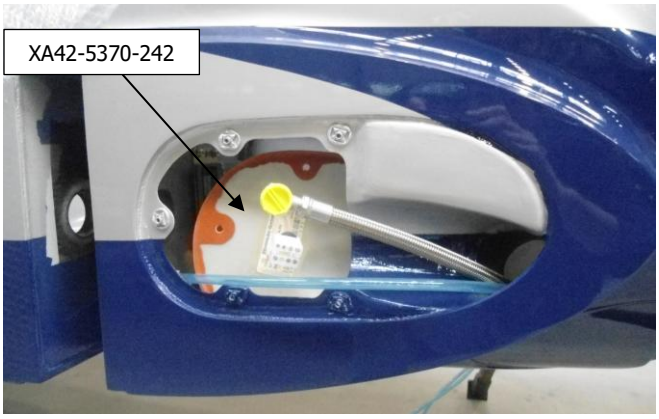



Figure 57-9: Fuel lines RH fuselage

## 57-60-00 AILERONS

The construction of the ailerons is the same as the wing, but they have only one spar. The spar is a honeycomb sandwich type with carbon fiber laminate. It is attached at five points.

All composite parts have different protective layers: a polyester layer, an acrylic filler and an acrylic paint to prevent damage to the structure because of moisture and UV radiation.

To remove the ailerons:

1 Remove the wing, refer to chapter 57-10-00.

2 Remove the hinge pin (5mm Allen key).

3 Remove the aileron.

4 Assemble the ailerons in the opposite sequence. Torque the hinge pin to 15 Nm (11 lbs/ft).

5 Do these checks:

The ailerons must move freely from stop to stop.

Deflection, tolerance and permitted play must agree with Table 27-1 .

The ailerons have spades to decrease the control forces. For information on the spades, refer to chapter 27-10-01.

<u>To put shim washers to the ailerons, do these steps:</u>

Measure the aileron play:

1 Move the aileron to the inboard side.

2 Measure the inboard and outboard clearance between the hinge horn of the aileron and the aileron at each hinge.

3 Select the necessary shim washers (DIN988 d=6mm, 1mm or 0.5mm thick) for each of the ten (10) positions for each aileron. We recommend that you use a minimum of washers at each position.

Install the shim washers:

4 Remove the wing, refer to chapter 57-10-00.

5 Remove the ailerons from the wing.

6 Put the aileron hinge pin through the hinge horns of the aileron. Put the selected washers through the aileron hinge pin between the hinge horns of the aileron.

7 Bond the washers to the horns with instant glue.

8 Remove the aileron hinge pin.

9 Install the aileron in the opposite sequence.

10 Install the wing in the opposite sequence.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Wings assy | XA42-5710-001 |
| 2 | 1 | Aileron complett lh | XA42-5760-051 |
| 3 | 1 | Aileron complett rh | XA42-5760-061 |
| 4 | 2 | Aileron hinge pin | XA42-5780-150 |

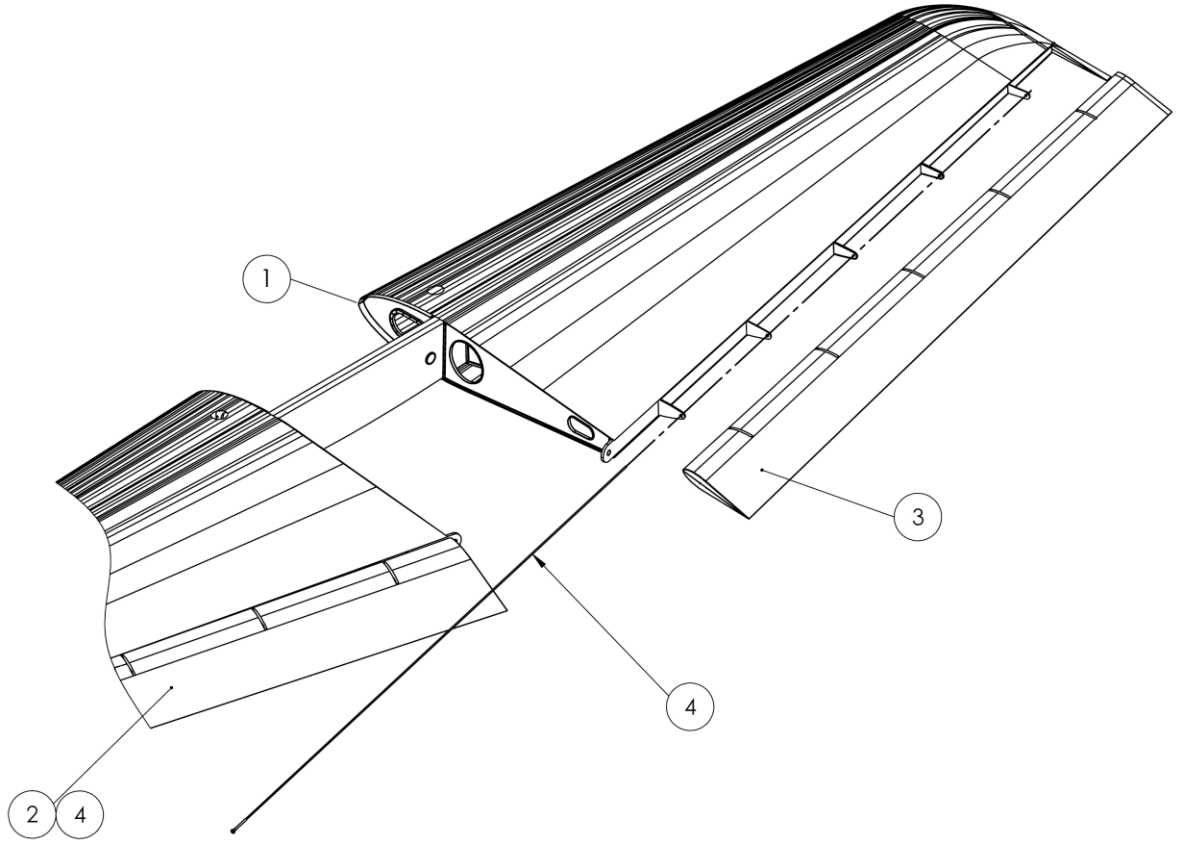



Figure 57-10: Aileron installation

## 57-70-00 SIGHTING DEVICES

The aircraft has sighting devices at the wing tips that you can remove. The sighting devices are made of carbon fiber rods.

To remove the sighting devices:

1 Remove the screw from the sighting device. (MS24694C5S)

2 Remove the sighting device from the wing.

3 Install the sighting device in the opposite sequence.

4 Make sure that the sighting device is correctly aligned and has a tight fit.

# Chapter 61 Propeller

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## 61-00-00 GENERAL

The XA41 and the XA42 have a MTV-9-B-C/C203-20d 3-blade, or MTV-14-B-C/C190-130 4-blade constant-speed propeller.

For the control, the operation and the maintenance of the propeller, refer to the MT-Propeller Operation and Installation Manual E-124.

## 61-10-00 PROPELLER

The propeller has a laminated wood structure with a layer of glass-fibre reinforced plastic. Parts of the leading edge have metal tips to prevent erosion. Paint is applied to the propeller as a protection from the environment.

The governor controls the pitch change. Thus, the selected rotational speed of the engine stays constant during changes of airspeed or power.

Mechanical stops are available for low and high pitch. When the oil pressure of the governor decreases, the propeller will automatically change to high pitch.

For troubleshooting and the removal and installation instructions, refer to MT-Propeller, ATA 61-01-24 (E-124) Operation and Installation Manual – Hydraulically Controlled Variable Pitch Propeller MTV-9-(). No other special procedures for the aircraft are applicable.

## 61-20-00 PROPELLER CONTROL

The propeller is operated with a vernier control on the left side of the rear cockpit that goes to the propeller governor.

To adjust the propeller control:

1 Push the vernier control knob fully forward. Turn it out approximately 5 mm.

2 Move the control lever on the governor to the forward stop.

3 Attach the control cable to the control lever on the governor in this position. Refer to Figure 61-1 or Figure 61-2 depending on the aircraft serial number.

4 If you replaced the governor control cable: Apply RTV 106 sealant to the seal on the engine side of the firewall.

For troubleshooting, and removal and installation instructions, refer to MT-Propeller, ATA 61-20-48 (E-1048) Operation and Installation Manual - Hydraulically Constant Speed Governor P-8()()-(). No other special procedures for the aircraft are applicable.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Propeller governor | P-880-5 MT with XA42-6110-210 housing |
| 2 | 1 | Clamping piece | XA42-6110-201 |
| 3 | 1 | Cylinder screw M5x10 | XA42-6110-205 |
| 4 | 1 | Washer | AN960-10L |
| 5 | 1 | Nut | AN310-3 |
| 6 | 1 | Split pin | 1,6-20 DIN94 |

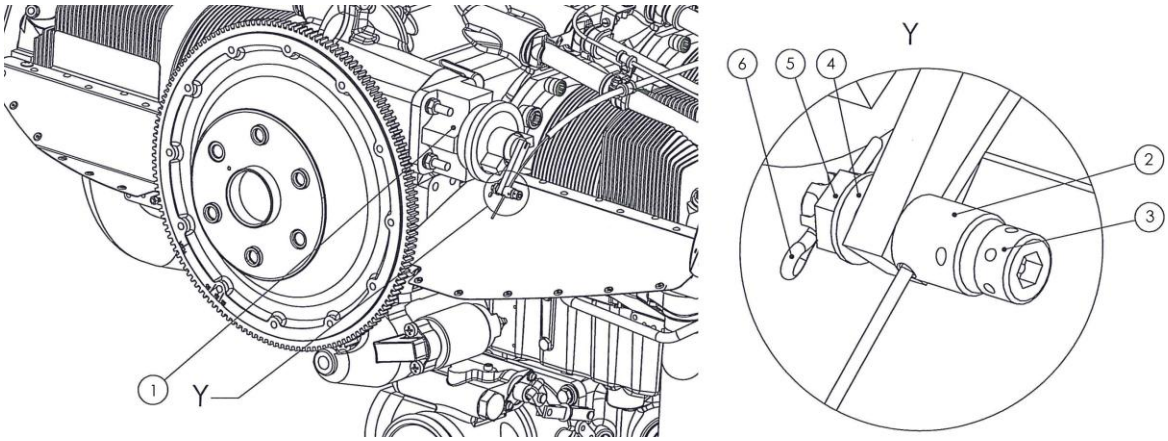



Figure 61-1: Connection to the propeller governor. S/N 01-07 and 101-150.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Propeller governor | P-880-5 MT with XA42-6110-210 housing |
| 2 | 1 | Bolt | AN3-11 |
| 3 | 1 | Washer | M5 DIN 9021 |
| 4 | 1 | Rod end | XA42-6110-211 |
| 5 | 1 | Nut | AN315-3 |
| 6 | 1 | Wire grip | XA42-6110-212 |
| 7 | 1 | Bushing | XA42-7620-225 |
| 8 | 1 | Washer | AN960-10 |
| 9 | 1 | Nut | AN310-3 |
| 10 | 1 | Split pin | 2x12 DIN 94 |

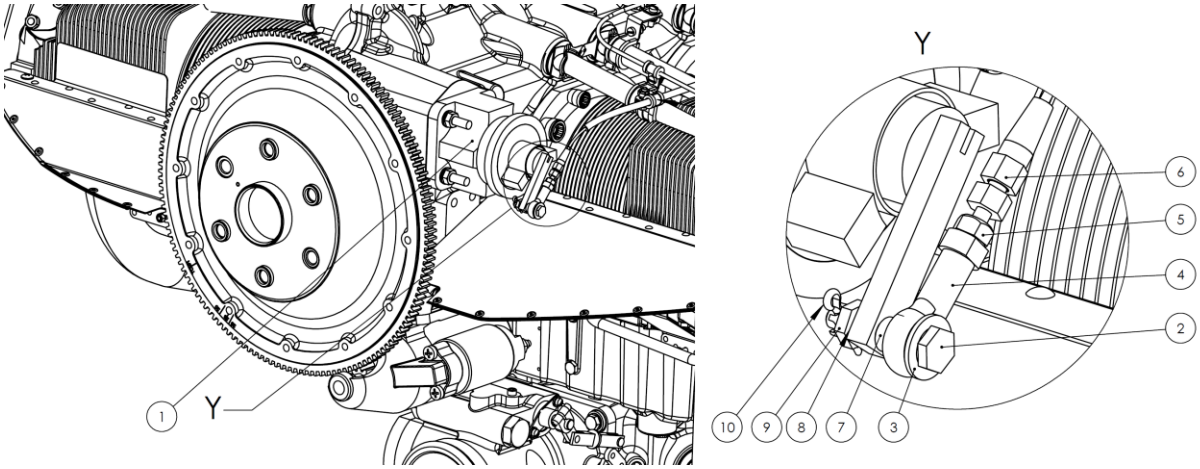



Figure 61-2: Connection to the propeller governor. From S/N 08 on and from S/N 151 on; or after performing SB-2017-014.

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# Chapter 71 Power Plant

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## 71-00-00 GENERAL

The XA41 and the XA42 have a Lycoming AEIO-580-B1A aircraft engine.

For information on the engine, refer to the manufacturer's manual.

## 71-01-00 MANIFOLD

The engine has six custom manifold pipes. For the installation of the manifolds on the engine, refer to Figure 71-1.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Intake manifold 1 | XA42-7100-111 |
| 2 | 1 | Intake manifold 2 | XA42-7100-112 |
| 3 | 1 | Intake manifold 3 | XA42-7100-113 |
| 4 | 1 | Intake manifold 4 | XA42-7100-114 |
| 5 | 1 | Intake manifold 5 | XA42-7100-115 |
| 6 | 1 | Intake manifold 6 | XA42-7100-116 |
| 7 | 6 | Manifold flange | 74360 Lycoming |
| 8 | 6 | Gasket | 71973 Lycoming |
| 9 | 11 | Bolt | LW-25-1.25 Lycoming |
| 10 | 11 | Locking washer | STD-160 Lycoming |
| 11 | 11 | Washer | STD-8 Lycoming |
| 12 | 6 | O-ring | 72711 Lycoming |

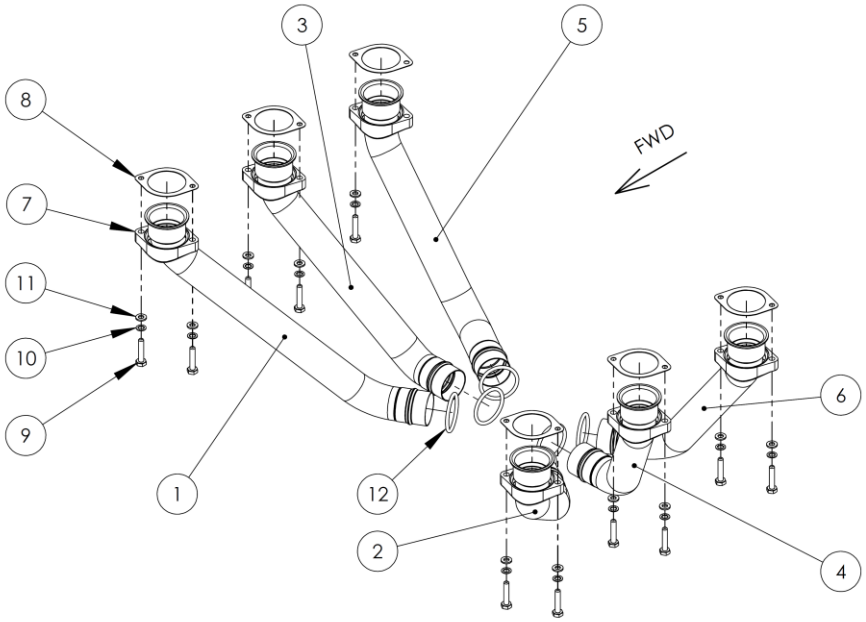



Figure 71-1: Manifold installation

# 71-10-00 COWLING

**WARNING**

Before you do work on the cowling, make sure that the engine is OFF. If the engine operates, this can cause accidents.

For repair of the cowling, refer to chapter 51-70-10 – Repairs of Reinforced Glass and Carbon Fiber Parts.

## 71-10-01 Upper Cowling

To remove the upper cowling:

1 Remove all screws around the upper cowling. (6x MS24693S274, 2x MS24693S276, 6x AN526-10R10)

2 Remove the two hinge wires. (XA42-7110-170).

3 Lift the upper cowling and remove it. (XA42-7110-105)

4 Install the upper cowling in the opposite sequence. Make sure that the upper cowling has a tight fit.

## 71-10-02 Lower Cowling

To remove the lower cowling:

1 Remove the upper cowling, refer to chapter 71-10-01.

2 Remove all screws around the lower cowling. (8x MS24693S276, 2x AN526-10R10)

3 Remove the lower cowling. (XA42-7110-101)

4 Install the lower cowling in the opposite sequence. Make sure that the lower cowling has a tight fit.

## 71-20-00 ENGINE MOUNT

The engine mount holds the engine and attaches the engine to the airframe. The engine is attached to the steel tube engine mount at four points with bolts and washers. Each mounting point has a shock absorber to absorb engine vibration. For the installation of the engine on the engine mount, refer to Figure 71-2. To install or remove an engine, refer to chapter 72.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 4 | Mounting kit | Lord J-7764-20 |
| | | | Barry controls 94016-02 |
| | | | Barry controls 94016-044 |
| 2 | 4 | Bolt | AN7-50A |
| 3 | 4 | Screw | AN363-720 |

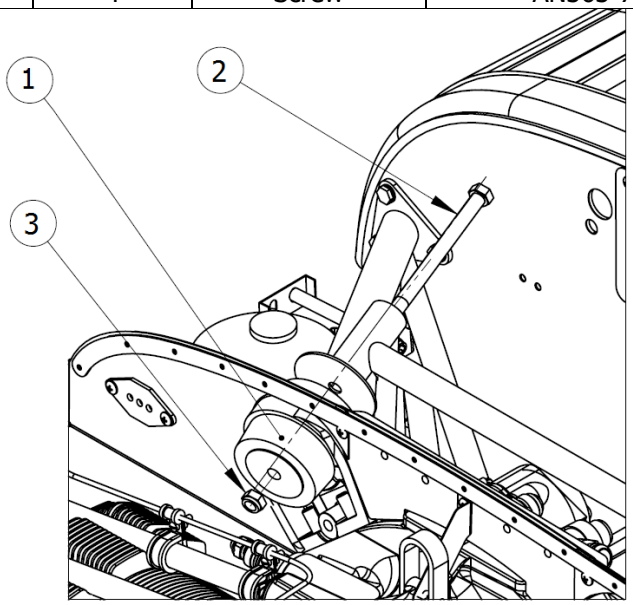



Figure 71-2: Installation of the engine on the engine mount

The engine mount is attached to the airframe at four points with bolts, washers and self-locking nuts. For the engine mount installation, refer to Figure 71-3.

| No. | Component | P/N | Comment |
|---|---|---|---|
| 1 | Engine mount | XA42-7120-151 | |
| 2 | LH Front pedal | XA42-2780-121 | XA42 |
| | Upper plate | XA41-7120-201 | XA41 |
| 3 | RH Front pedal | XA42-2780-126 | XA42 |
| | Upper plate | XA41-7120-201 | XA41 |
| 4 | Lower plate | XA42-7100-114 | |
| 5 | Bolt | AN5-12A (Alt. 11A, 13A) | |
| 6 | Washer | AN960-516 | |
| 7 | Washer | AN960-516L | |
| 8 | Self-locking nut | MS 21045-5 | |

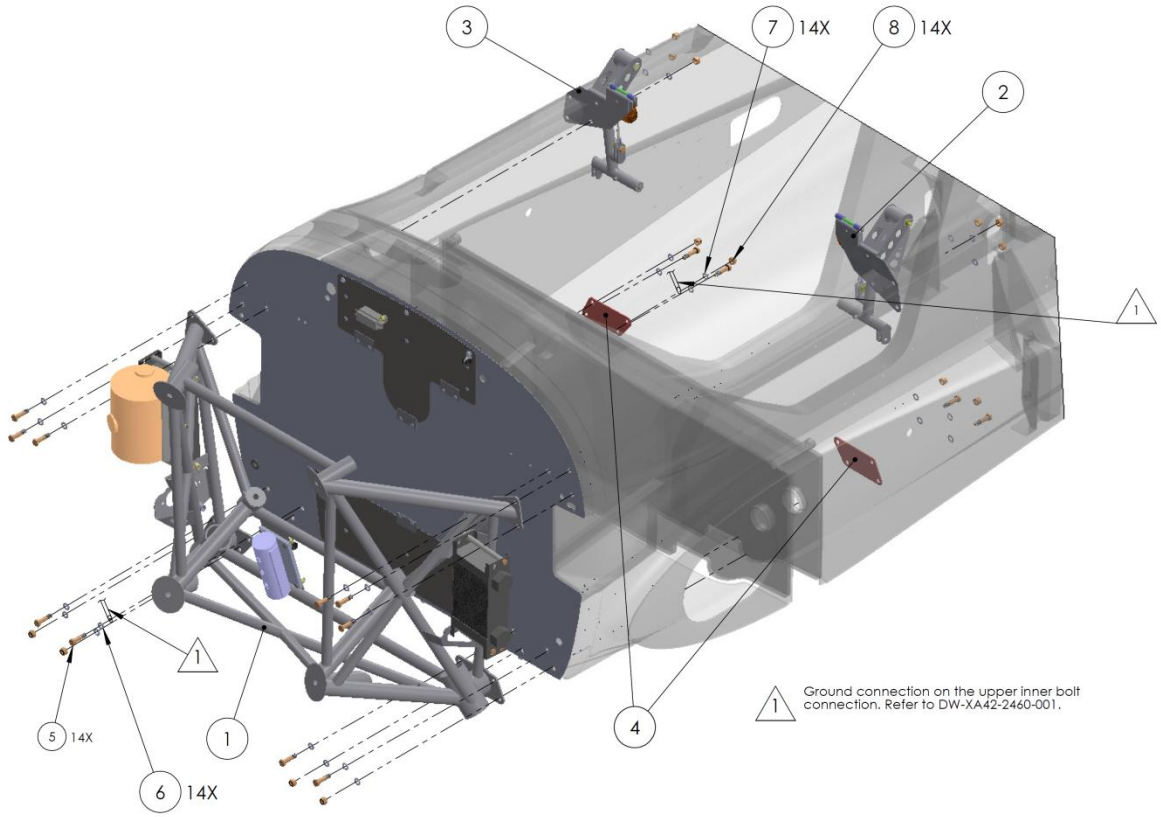



Figure 71-3: Engine mount installation

## 71-30-00 FIRE WALL

The XA41 and the XA42 have a titanium fire wall. It is installed between the engine mount and the airframe. There are two access panels to get access to the main tank. Fire blankets are also installed in the fire wall. Replace the fire blankets if they are damaged.

| No. | Quantity | Component | P/N | Comments |
|---|---|---|---|---|
| 1 | 1 | Assembly upper cover plate | XA42-7130-160 | |
| 2 | 1 | Assembly lower cover plate | XA42-7130-170 | |
| 3 | 1 | Fire wall assembly | XA42-7130-180 | |
| | 1 | Firewall assembly for External power | XA42-7130-181 | External power option |
| 4 | 1 | Padding for acro tank | XA42-7130-210 | |
| 5 | 1 | Padding fuel level probe | XA42-7130-216 | |
| 6 | 1 | Cable guide firewall | XA42-7100-205 | 2 ea. for External power option |
| 7 | 2 | Top Flange | XA42-7130-221 | |
| 8 | 2 | Bottom flange | XA42-7130-222 | |
| 10 | 1 | Hose clamp | RSGU1.20/15W1 | |
| 11 | 3 | Screw | AN526-10R12 | |
| 12 | 5 | Screw | AN526-10R10 | |
| 13 | 1 | Screw | AN526-10R16 | |
| 14 | 2 | Washer | AN960-10 | |
| 15 | 13 | Firewall spacer small | XA42-7130-260 | |
| 16 | 2 | Firewall spacer medium | XA42-7130-261 | |
| 17 | 1 | Firewall spacer large | XA42-7130-262 | |
| 18 | - | Araldite 2022 | | |
| 19 | - | Fire Protection | XA42-7130-202a | |
| 20 | - | RTV 106 | Silicon RED | |

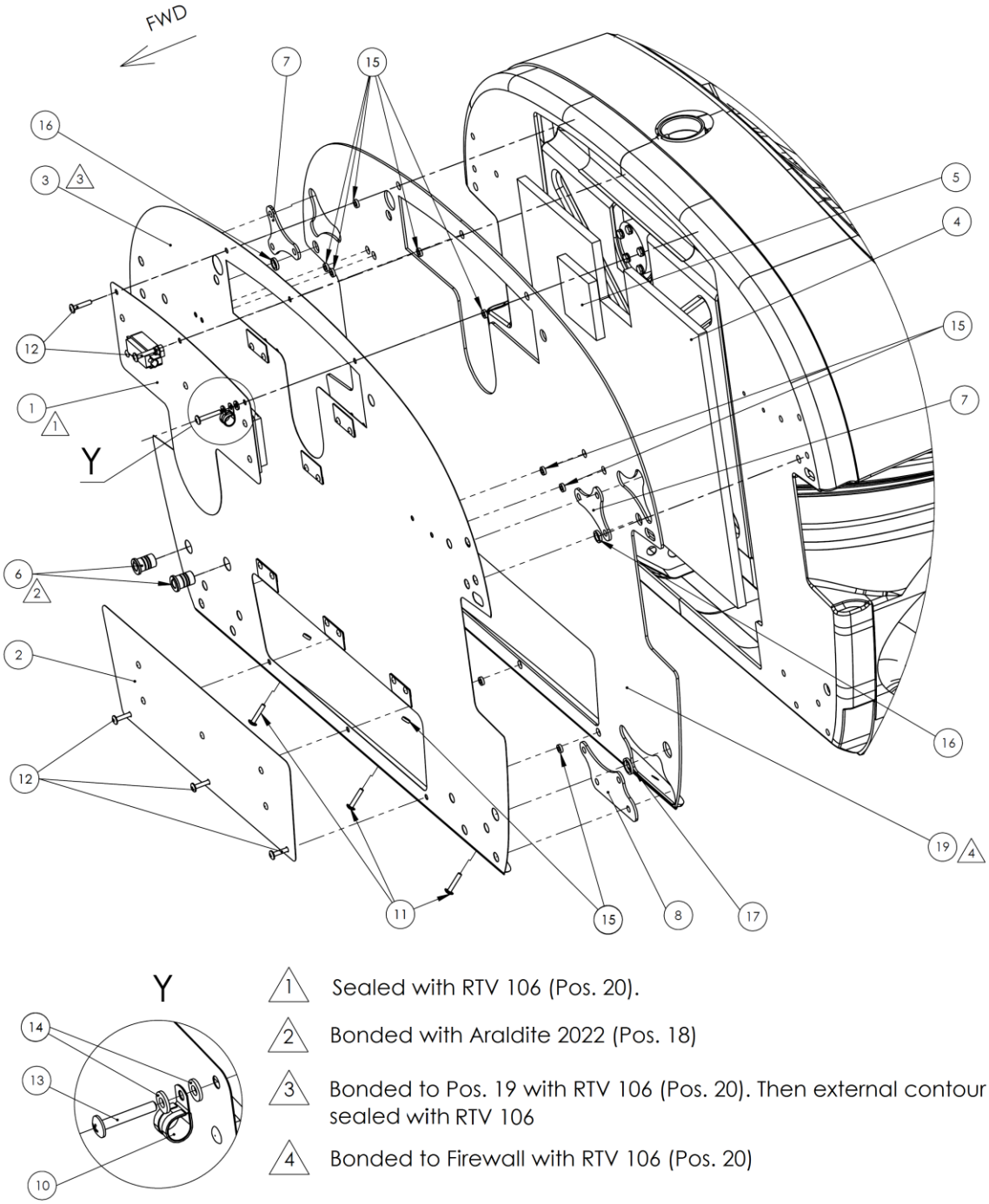



Figure 71-4: Firewall installation

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# Chapter 72 Engine

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## 72-00-00 GENERAL

This chapter gives information on the engine and its assemblies that are installed in the aircraft. For operation and maintenance on the engine, refer to the applicable Lycoming Manual as in chapter 01-0-00.

## 72-10-00 ENGINE

The engine installed in the aircraft is a Textron Lycoming type AEIO-580-B1A 6-cylinder, direct drive, horizontally-opposed, air-cooled aerobatic aircraft engine.

The engine is a normally aspirated engine and supplies 315HP at 2.700 RPM.

The engine is attached to the engine mount with four mounting points and shock mounts. For further information on the mounting, refer to chapter 71.

The induction system has a Bendix RSA-10AD1 fuel injector.

Fuel is injected into the intake ports of each cylinder.

You can adjust the power setting manually with a butterfly valve in the air intake.

The mixture is controlled in relation to the intake air flow.

The engine is air-cooled. The air can get access to the engine compartment through the two inlets on the front of the cowling. The baffling is an aid to get the correct airflow through the cylinder fins. The baffling has rubber edges to accurately attach to the shape of the adjacent cowling.

An engine-driven oil pump lubricates the engine. For aerobatic maneuvers, an inverted oil system is installed.

Two oil coolers (Setrab P/N 50-113-7612) control the oil temperature. For more information on the oil system, refer to chapter 79.

The ignition system has two magnetos that operate independently: Slick 6393 on the left side and Slick 6350 on the right side.

If you replaced the engine control cables, apply RTV 106 sealant to the bushing grooves and gaps at the engine side of the fire wall.

To remove the engine:

1. Remove the cowlings, refer to chapter 71-10-00.
2. Make the aircraft level, refer to chapter 08-10-00.
3. Drain the engine oil.
4. If necessary, remove the propeller, refer to chapter 61-10-00.

**NOTE**

To remove the engine from the engine mount, you must disconnect the ignition harnesses of cylinders 2-4-6.

5. Disconnect all electrical cables from the engine and accessories.
6. Disconnect the hose from the manifold pressure sensor in cylinder 5, refer to Figure 72-1.

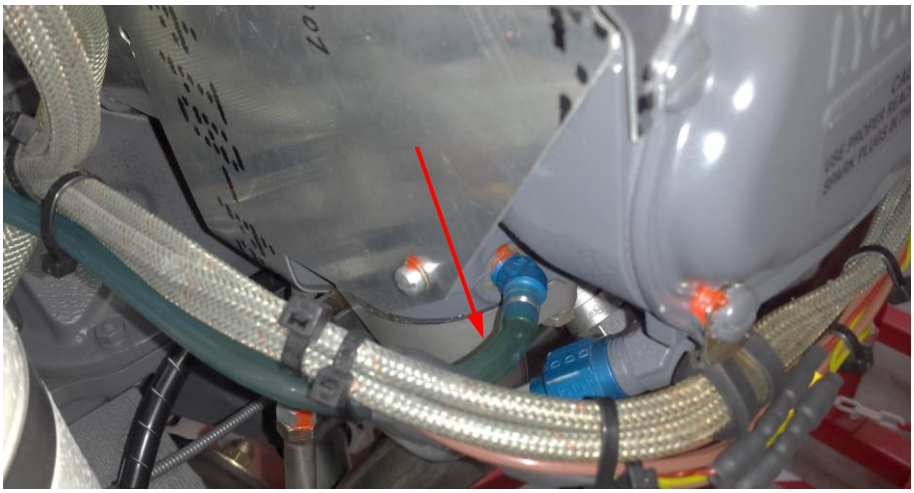


Figure 72-1: Sensor hose of the manifold pressure (cylinder 5).

7. Disconnect the mixture vernier control from the injector body and the engine, refer to chapter 76-20-00.
8. Disconnect the propeller control vernier from the propeller governor. Refer to chapter 61-20-00.
9. Disconnect the throttle Bowden cable from the injector body and the engine, refer to chapter 76-10-00.

**NOTE**

We recommend that you remove the intake manifold from cylinder No. 6. This will help you to disassemble the XA42-7620-151 bracket and to disconnect the assembly from the engine. Refer to Figure 72-2.

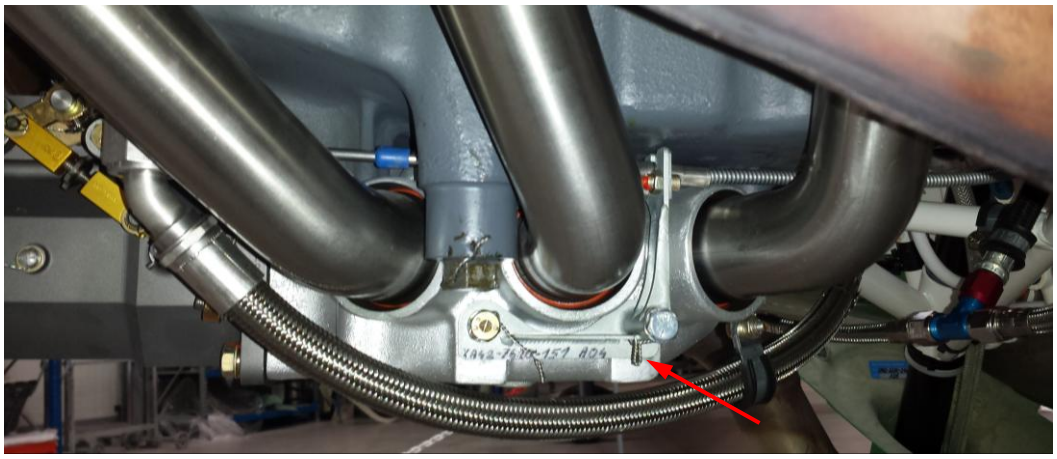


Figure 72-2: Throttle Bowden cable and bracket XA42-7620-151.

10. Disconnect the smoke oil hoses from the exhaust stacks, refer to chapter 85-10-00.
11. Disconnect all fuel lines from the engine. For the schematic of the fuel lines, refer to chapter 28-00-00.
12. Disconnect all oil lines from the engine. For the schematic of the oil lines, refer to chapter 79-00-00.

**NOTE**

We recommend that you remove the oil lines from the oil valve end and not from the engine end.

13. If necessary, remove the exhaust assembly (78-00-00), the manifold assembly (71-01-00), the baffling and the fittings.

**CAUTION**

Be careful when you remove the engine. Make sure that the hoist is correctly balanced (with or without propeller) to prevent damage.

14. Hold the engine at the two engine hoist points on top of the engine.
15. To disconnect the engine from the engine mount, disassemble the shock mount connections, refer to chapter 71-20-00.

**NOTE**

We recommend that you start with the top connections.

To install the engine:

**CAUTION**

If the wing is removed, install the lower fuselage longeron spacers first before you install the engine. This will prevent damage to the fuselage. Refer to chapter 57-10-00.

**CAUTION**

Install the engine on the engine mount carefully. Do not cause damage to the installed ignition cables and hoses.

1. Use an engine hoist and put the engine from the front side into the engine mount.

**CAUTION**

Make sure that you install the spacers supplied with the shock mount kits to prevent damage of the shock mounts.

2. Install the lower bolts, washers, and shock mount kits. Safety the nuts with approximately three turns.
3. Remove the load from the rear hoist point. Remove the rear strap, refer to Figure 72-3.



Figure 72-3: Rear hoist removed during engine installation.

4. Lift the front end of the engine sufficiently to install the top bolts, washers, and shock mount kits.

5. Torque all four (4) bolts to 51-56 Nm (450–500 in.lb.). Safety the nuts with inspection varnish.

6. Install the fuel and oil hoses, refer to chapters 28-00-00, 79-00-00 and 79-00-01. Make sure that the routing of the cables agrees with the figures below. Also refer to chapter 20-10-06.

Oil system: Figure 72-4 thru Figure 72-8.

The oil line numbers on the figures agree with Figure 79-1.

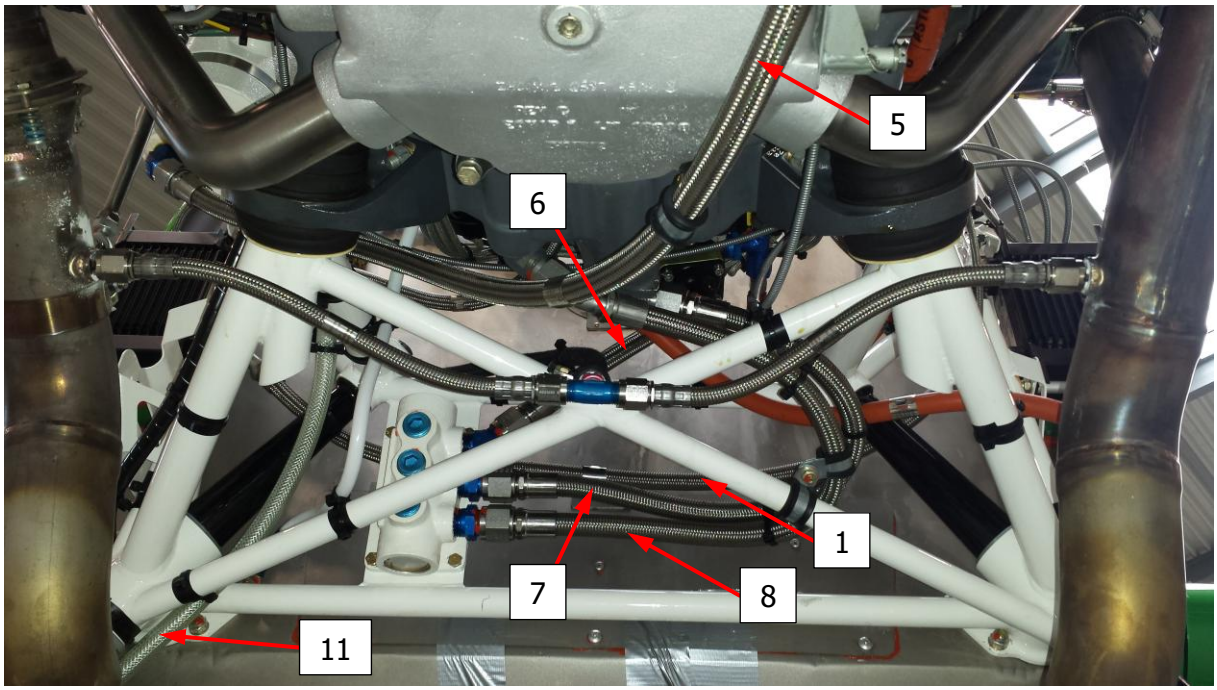



Figure 72-4: Oil lines 1, 5, 6, 7, 8 and 11.

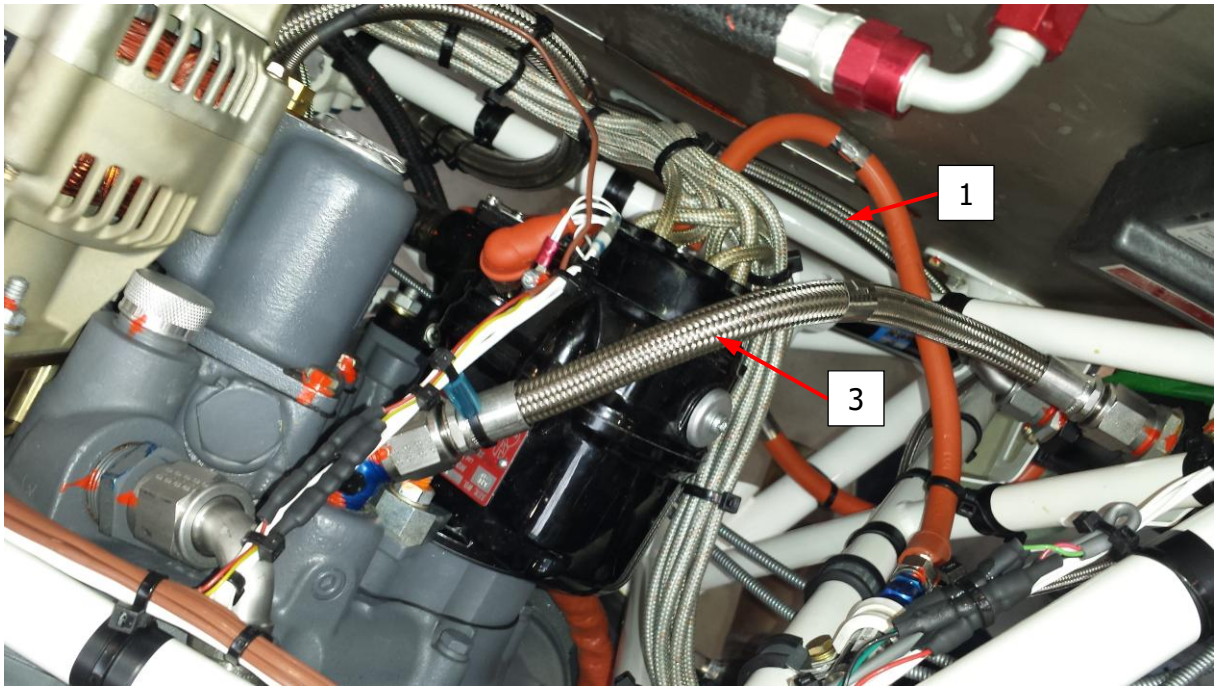



Figure 72-5: Oil line 1 and 3.

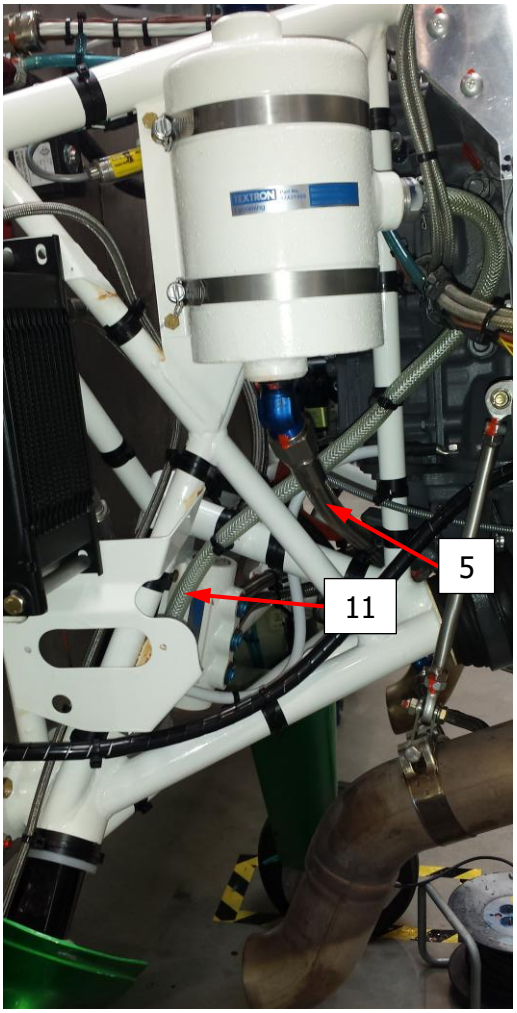



Figure 72-6: Oil lines 5 and 11.

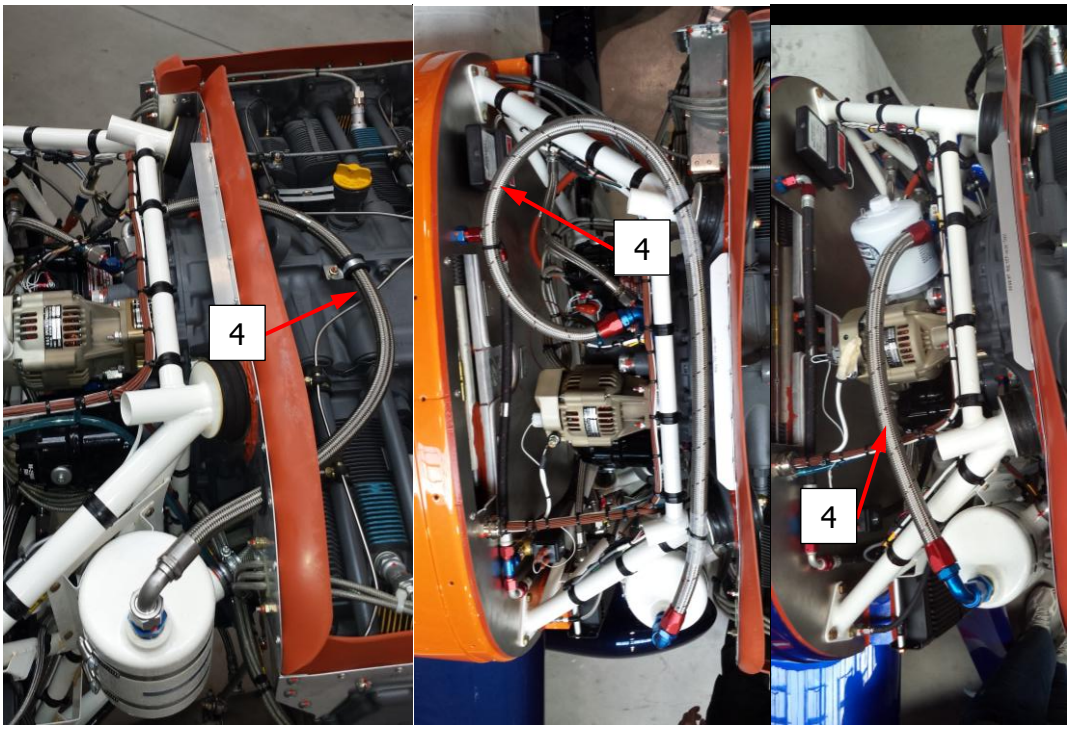



Figure 72-7: Oil line 4. LH for SN 01-07 and SN 101-136. CENTER from SN 08 and SN 137 on. RH for option with oil filter.

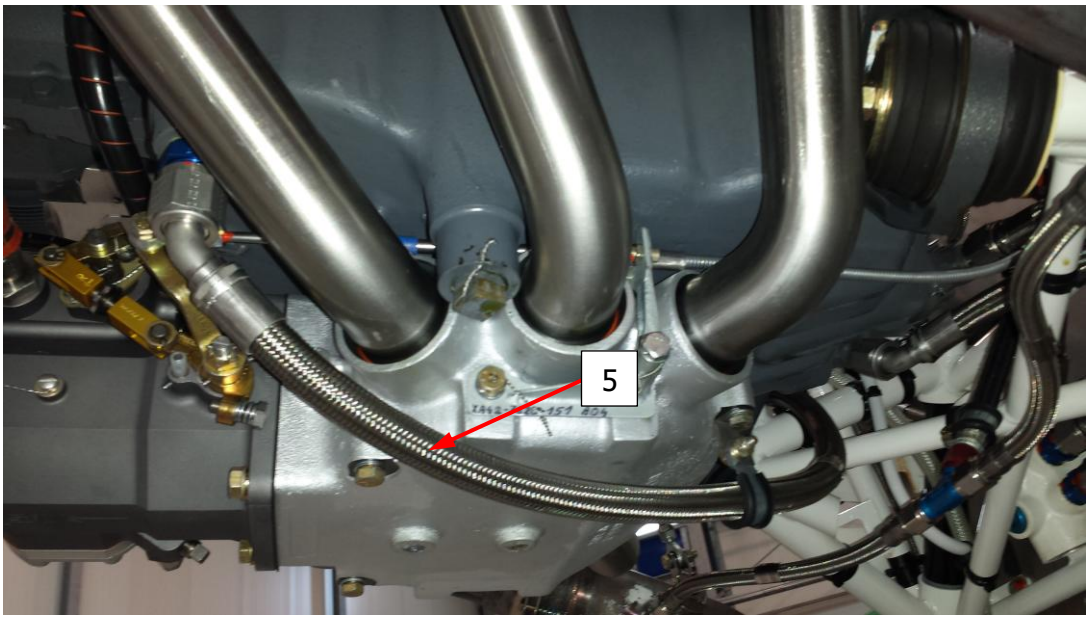



Figure 72-8: Oil line 5

Fuel system: Figure 72-9 thru Figure 72-11.

Refer to Figure 28-5.

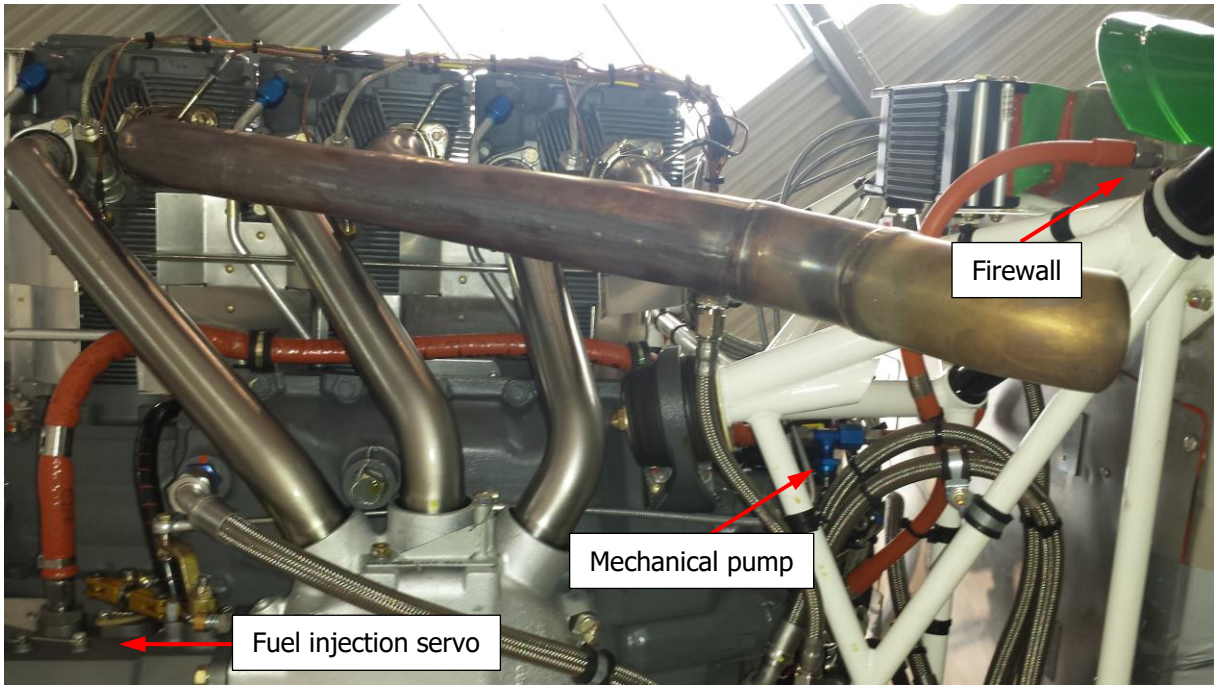



Figure 72-9: Fuel lines

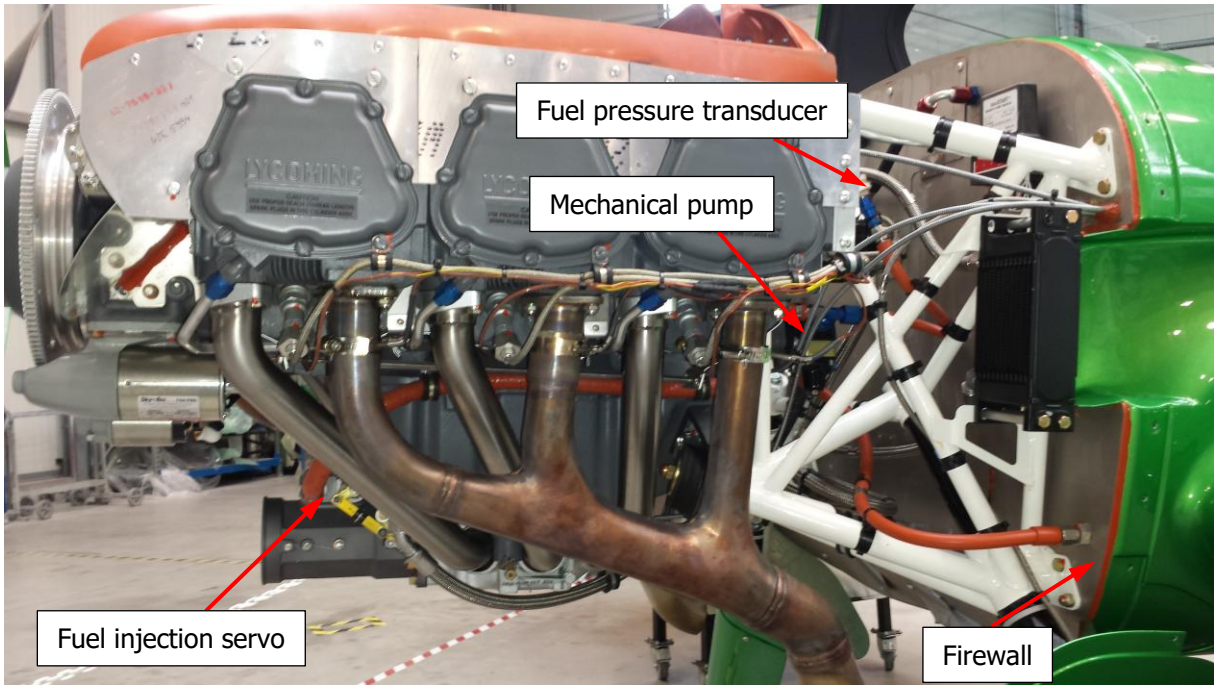



Figure 72-10: Fuel lines (cont.)

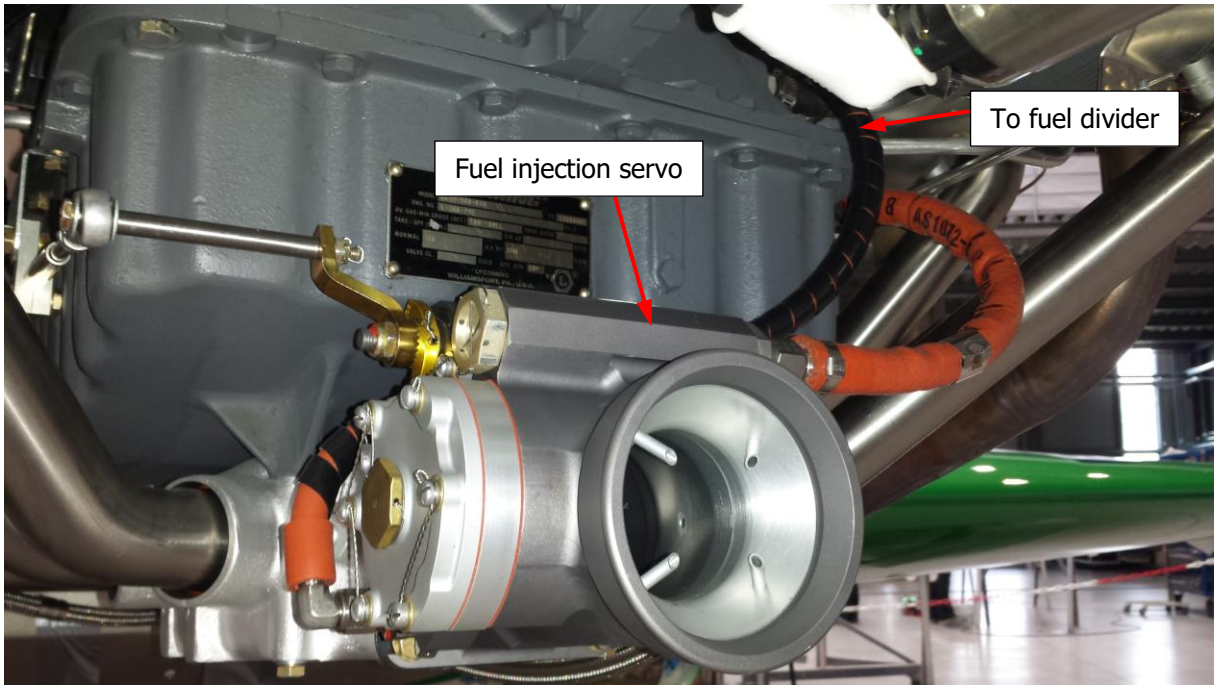



Figure 72-11: Fuel lines (cont.)

7. Install the smoke oil hoses with a T-fitting. Connect the hoses to the exhaust stacks, refer to Figure 72-4.

8. Connect the throttle Bowden cable to the injector body and the engine. Refer to chapter 76-10-00.

9. Connect the propeller control Vernier to the propeller governor. Refer to chapter 61-20-00.

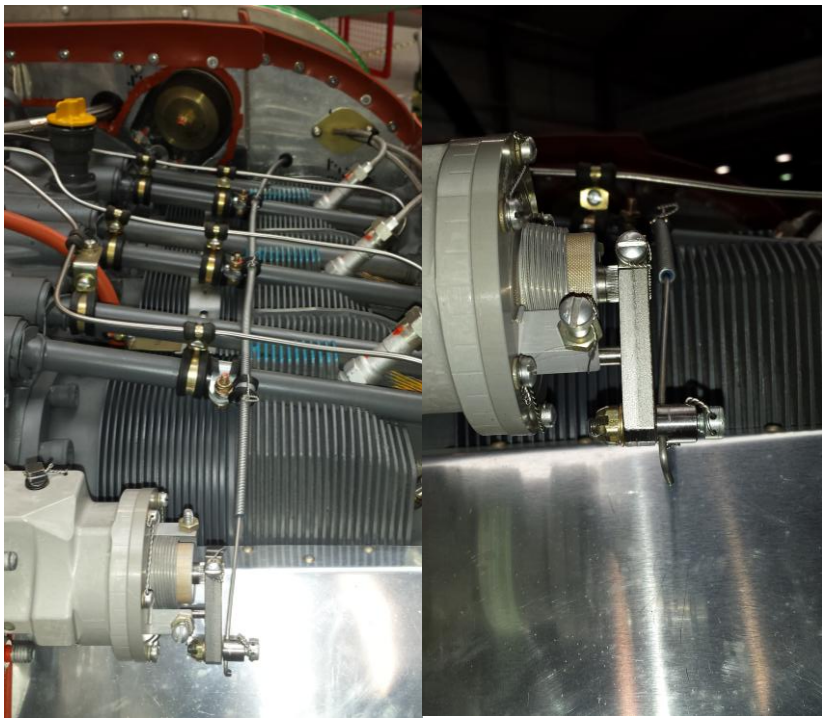


Figure 72-12: Propeller control vernier.

10. Connect the mixture control vernier to the injector body and the engine.
11. Connect the hose to the manifold pressure sensor.
12. Connect all electrical cables to the engine and the accessories; refer to chapter 91-10-00.

# Chapter 76 Engine Controls

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| 76-10-00 | THROTTLE CONTROL | 76-2 |
| 76-20-00 | MIXTURE CONTROL | 76-5 |

## 76-00-00 GENERAL

The engine controls include the throttle control, the propeller control, and the mixture control.

## 76-10-00 THROTTLE CONTROL

The throttle is operated with a throttle lever on the left side of each cockpit and a Bowden cable.

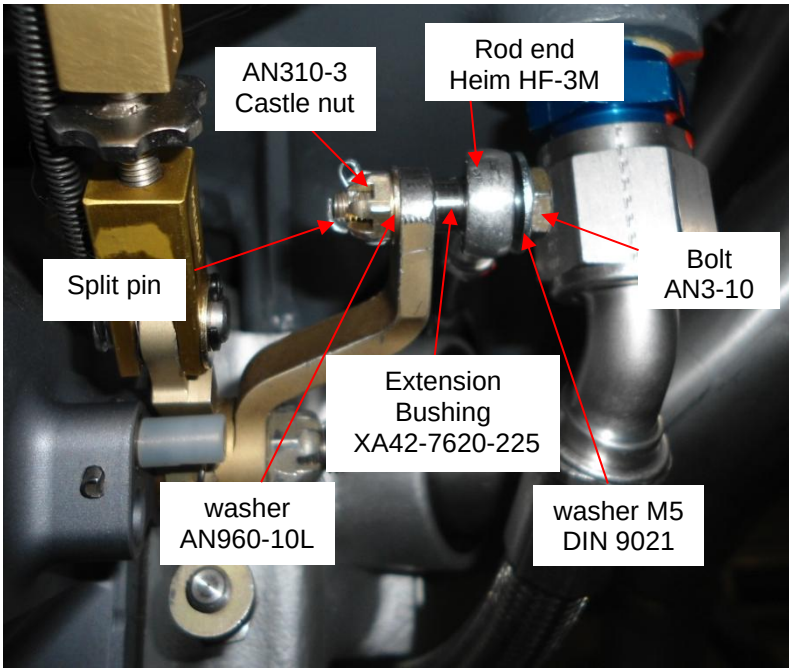



Figure 76-1: Throttle control linkage.

If the throttle control linkage is different than the one illustrated in Figure 76-1, perform SB-2013-005.

To adjust the throttle, change the length of the rod end. The rod end connects the forward end of the Bowden cable to the operating lever on the injector body. Thus, the full operation range is available, from idle to full throttle.

To remove the throttle control grip and rod for S/N 01 – 07 and S/N 101-150, refer to chapter 39-30-00:

To remove the throttle control grip and rod from S/N 151 on, or after performing SB-2017-014:

To replace throttle track and traveler:

1 Remove the connection between the front and rear handle. Pos.14 from Figure 76-2.

2 Remove safety wire and screws from the handles. Pos. 12 and Pos. 13 from Figure 76-2.

3 Replace track and traveler. Refer to Figure 76-3 and Figure 76-4.

5 Reassemble in reverse order and safety wire. Perform a functional check of the throttle control.

| No. | Quantity | Component | P/N | Comments |
|---|---|---|---|---|
| 1 | 1 | Rear lever assy. | XA42-7610-111 | |
| 2 | 1 | Front lever assy. | XA42-7610-112 | |
| 3 | 1 | Throttle pushrod | XA42-7610-116 | |
| 4 | 1 | Friction screw | XA42-7610-214 | |
| 5 | 1 | Screw retainer plate | XA42-7610-217 | |
| 6 | 1(2) | Throttle track 1 | XA42-7610-235 | For retrofit installed in front and rear |
| 7 | 1 | Front throttle traveller | XA42-7610-236 | |
| 8 | 1(0) | Throttle track 2 | XA42-7610-237 | Not for retrofit |
| 9 | 1 | Rear throttle traveller | XA42-7610-238 | |
| 10 | 4 | Edge protection | XA42-7610-381 | |
| 11 | 4 | Screw, cap socket head | MS16998-26 | |
| 12 | 6 | Screw, cap socket head | XA42-7610-220 | |
| 13 | 2 | Screw, cap socket head | XA42-7610-221 | |
| 14 | 1 | Clevis bolt dia. 6mm | XA42-7610-367 | |
| 15 | 1 | Flat washer | AN960-10L | |
| | | | | |
| 17 | - | Loctite 243 | | |
| 18 | - | Safety wire dia. .032“ | MS20995 | |

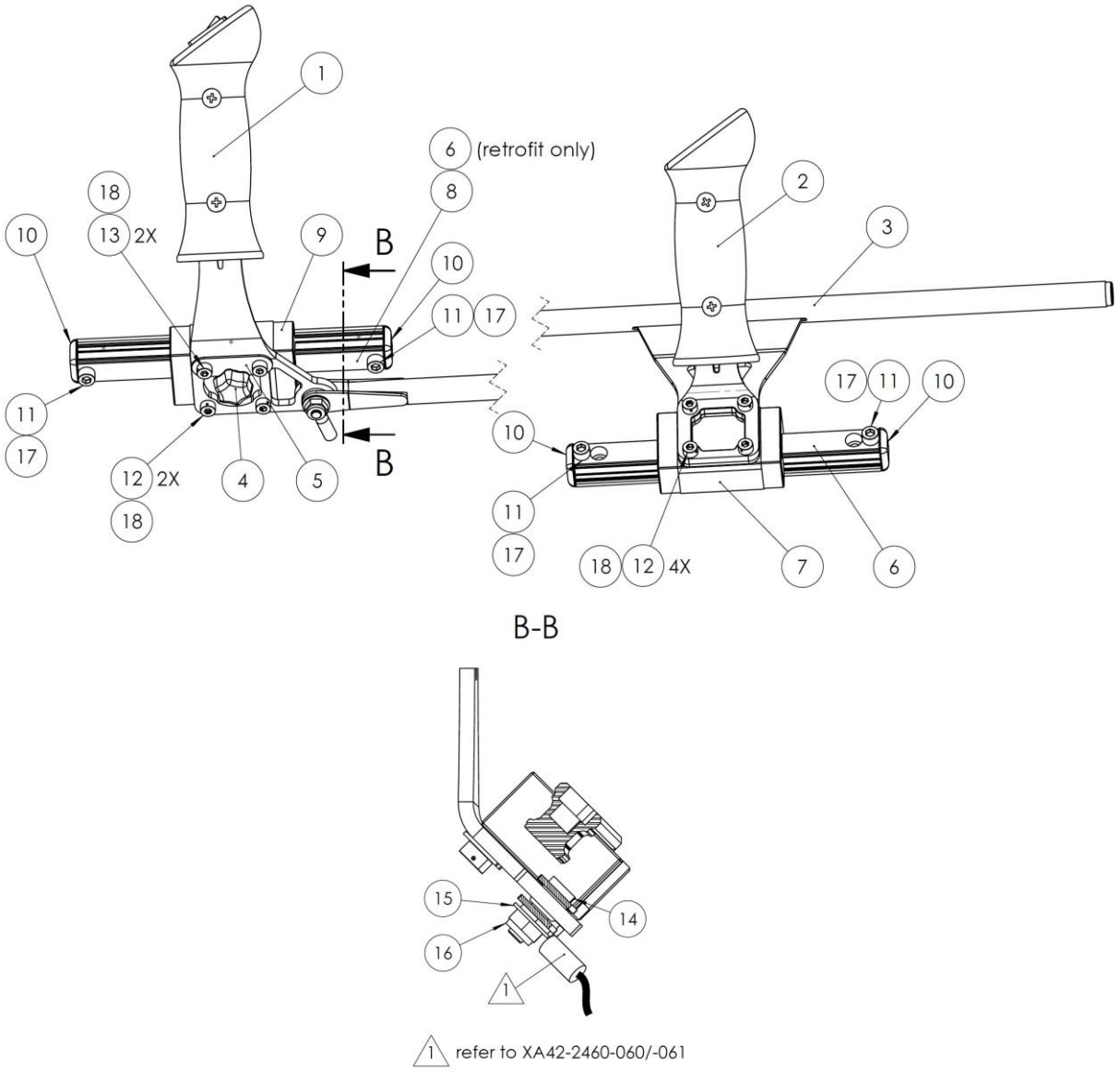



Figure 76-2: Throttle grip assembly.

| No. | Quantity | Component | P/N | Comments |
|---|---|---|---|---|
| 1 | 2 | Screw, flat countersunk head | XA42-7610-365 | Secured with Loctite 243 |
| 2 | 2 | Screw, cap socket head | MS16998-28 | For retrofit. Secured with Loctite 243 |

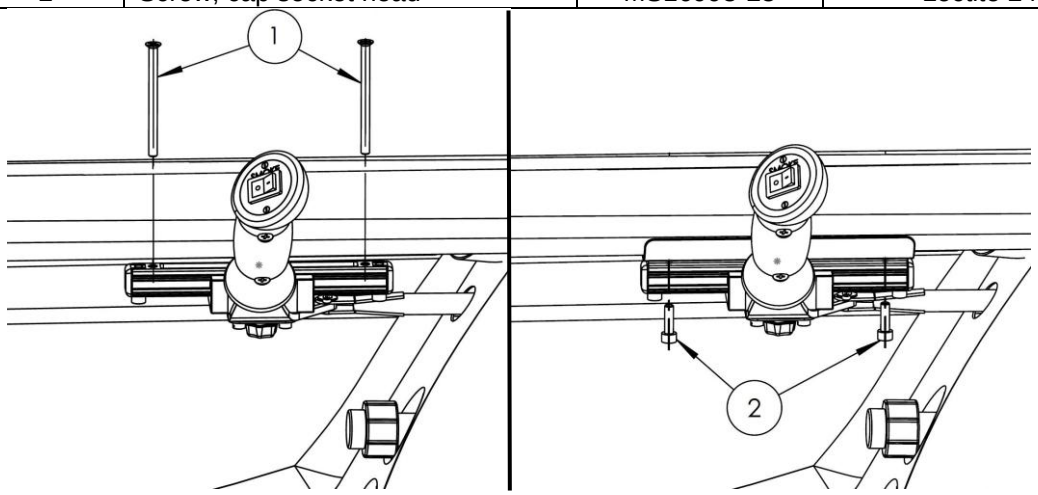



Figure 76-3: Rear Throttle handle installation on the aircraft. RIGHT after performing SB-2017-014.

| No. | Quantity | Component | P/N | Comments |
|---|---|---|---|---|
| 2 | 2 | Screw, cap socket head | MS16998-28 | Secured with Loctite 243 |

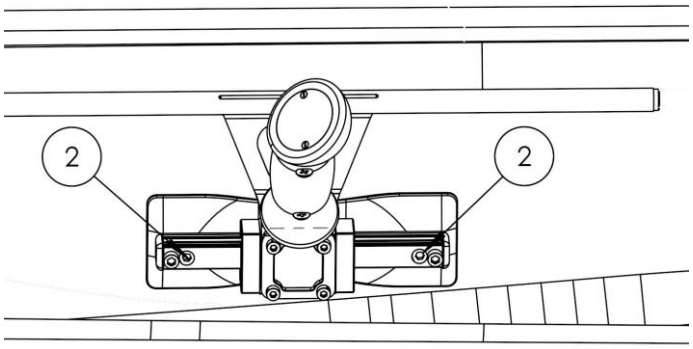



Figure 76-4: Front Throttle handle installation on the aircraft.

## 76-20-00 MIXTURE CONTROL

A vernier on the left side of the rear cockpit and a lever on the right side of the injector body control the mixture.

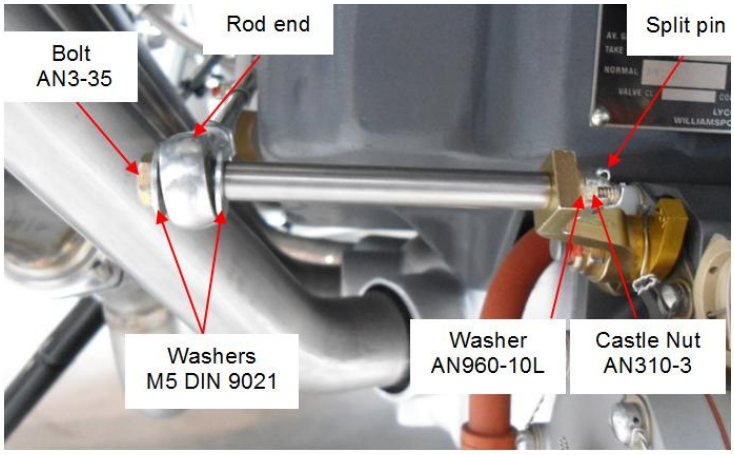



Figure 2: Mixture control linkage.

To adjust the mixture control, change the length of the rod end bearing. The rod end bearing connects the forward end of the Bowden cable to the operating lever on the injector body. Thus, the full operation range is available, from idle cutoff to full rich.

Left blank intentionally

# Chapter 78 Exhaust

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## 78-00-00 GENERAL

The exhaust gas of the six engine cylinders goes into two exhaust stacks (6 into 2 system). The assembly on the engine is shown in Figure 78-1.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Exhaust brace RH | XA42-7810-101 |
| 2 | 1 | Exhaust Stack LH | XA42-7810-151 |
| 3 | 1 | Exhaust Stack RH | XA42-7810-156 |
| 4 | 1 | Locking plate | DIN 463 A4 6.4 |
| 5 | 1 | Bolt | DIN 931 UNC 1/4x2" 10.9 |
| 6 | 6 | Gasket | 75118 Lycoming |
| 7 | 6 | Washer | STD 35 Lycoming |
| 8 | 6 | Self-locking nut | STD 2233 Lycoming |

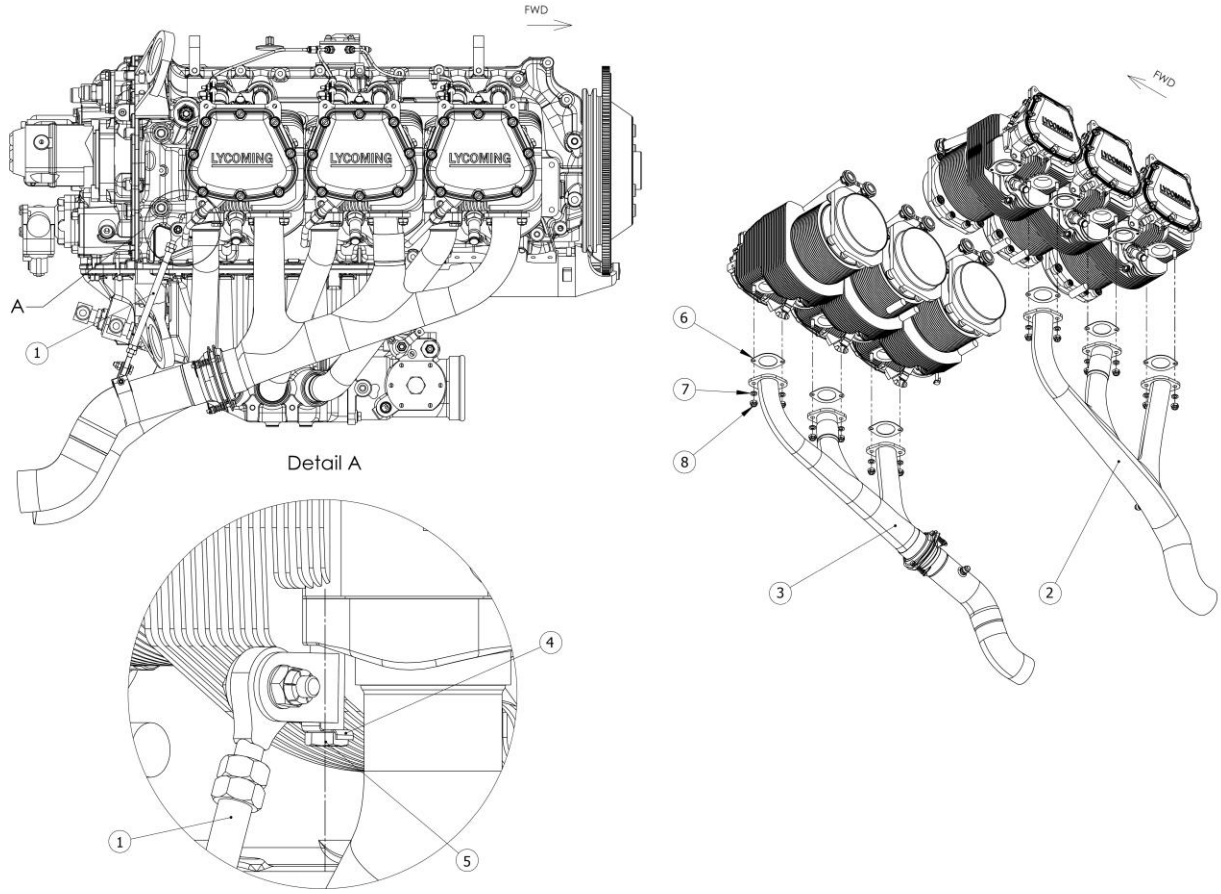



Figure 78-1: Exhaust assembly applicable to these serial numbers:

- S/N 07 and subsequent (XA41)
- S/N 119 and subsequent (XA42)
- Aircraft that accomplished SB-2014-003 and/or SB-2015-003.

# Chapter 79 Oil System

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## 79-00-00 GENERAL

The XA41 and the XA42 have an inverted oil system for a satisfactory lubrication during all aerobatic maneuvers. The installed system is the Christen inverted oil system.

The oil temperature is controlled with two oil coolers (Setrab P/N 50-113-7612). Flexible hoses connect the oil coolers to each other and to the engine.

The standard fittings on the engine are replaced with other standard AN fittings because different angles are necessary. For a schematic illustration of the oil system, refer to Figure 79-1.

| No. | Component | P/N | Comment |
|---|---|---|---|
| 1 | Parker no. 124007E0274C000 | MS8005H274D000 | |
| 2 | Parker no. 124001-8CR-0141 | MS8005H141A | |
| 3 | Parker no. 124001-8CR-0130 | MS8005H130A | |
| 4 | Parker no. 124012F0300C305 | MS8005J300F305 | For SN 01-07 and SN 101-136 |
| | Parker no. 124012F0475C090 | MS8005J475F090 | From SN 08 and SN 137 on |
| | Parker no. 124012F0200C040 | MS8005J200F040 | For aircraft with oil filter. |
| 5 | Parker no. 124003-10CR-0330 | MS8005J330B | |
| 6 | Parker no. 124001-10CR-0202 | MS8005J202A | |
| 7 | Parker no. 124001-10CR-0185 | MS8005J185A | |
| 8 | Parker no. 124003-10CR-0206 | MS8005J206B | |
| 9 | Setrab oil cooler | 50-113-7612 | |
| 10 | Oil valve | Lycoming 08-06745 | |
| 11 | Overboard breather line | ID: 9mm OD: 15mm | |
| 12 | Oil return fitting | XA42-7900-100 | |
| 13 | Oil separator | Lycoming 08-06740 | |

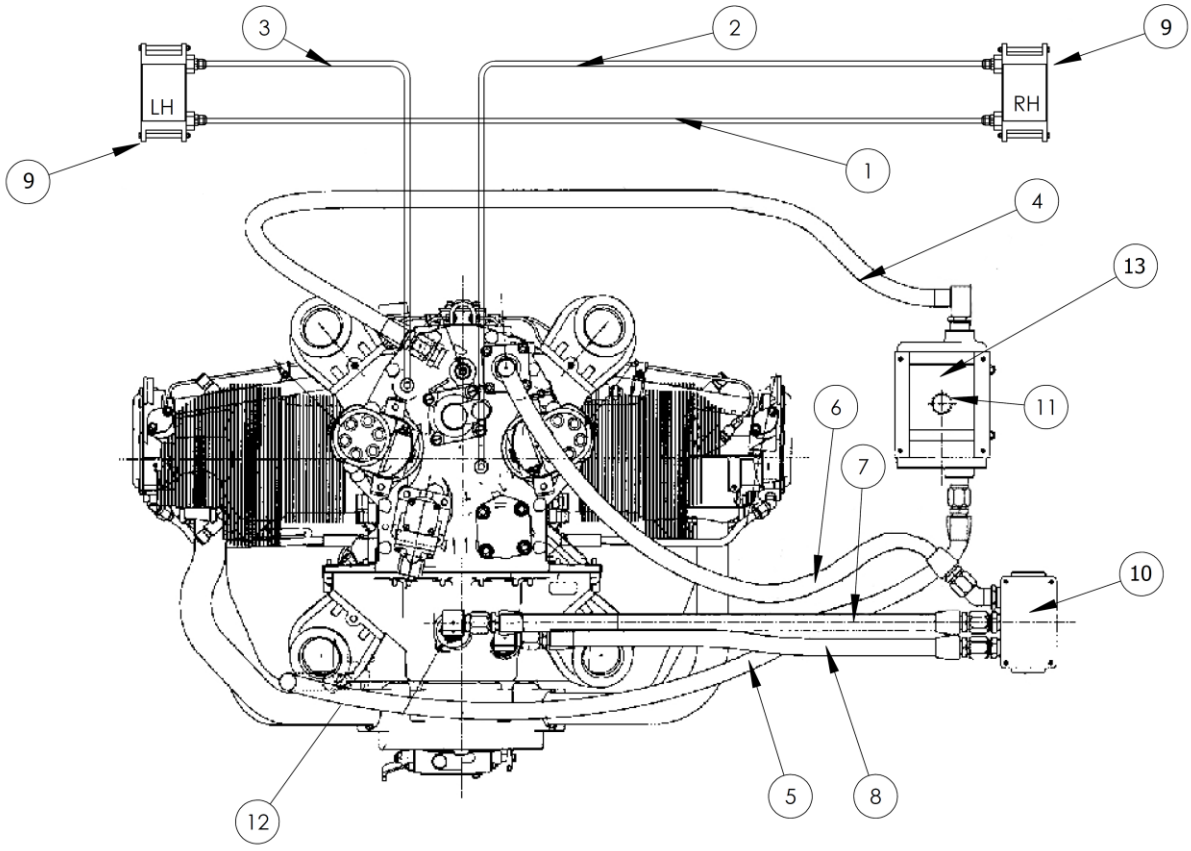



Figure 79-1: Schematic illustration of the oil system.

## 79-00-01 Christen Inverted Oil System

The Christen inverted oil system is a gravity oil system. A connection to aircraft power sources is not necessary. The system is applicable for all flight attitudes and also for negative-g flight. For a schematic illustration of the christen oil system, refer to Figure 79-2 and Figure 79-3.

During normal flight (Figure 79-2), the weighted ball valve at the top of the Christen 803 oil separator is open. Thus, blow-by gases from the engine crankcase go from the breather port to the top of the oil separator. Then they go out through the overboard breather line.

With the Christen 802 oil valve, the top ball valve is closed and the bottom valve is open. Thus, oil flows from the sump out to the oil pump and to the engine lubrication points.

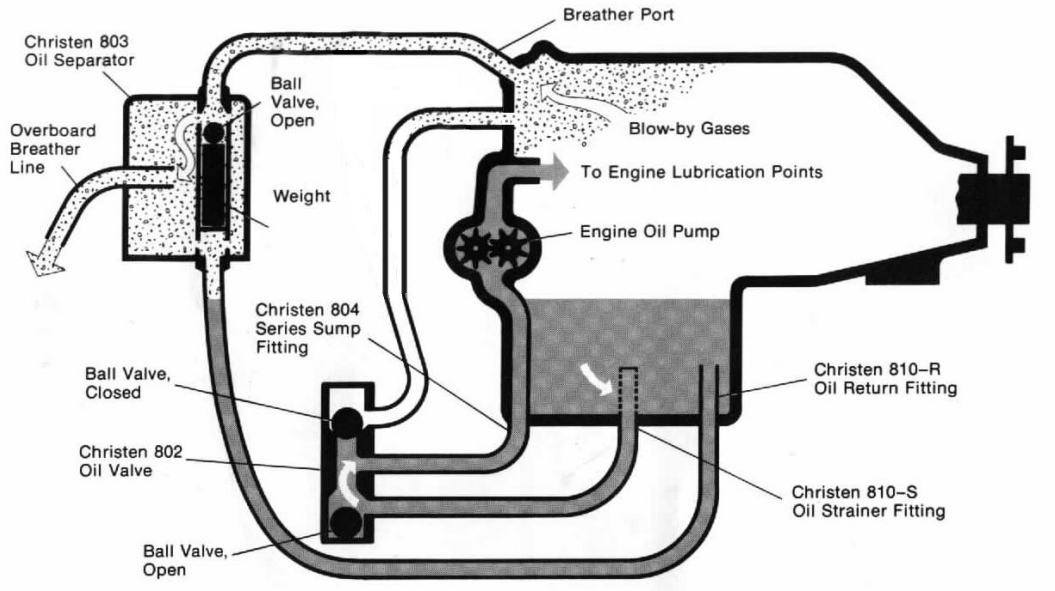



Figure 79-2: Schematic illustration of the Christen oil system during normal flight.

During an inverted flight or during negative-g maneuvers (Figure 79-3), engine oil falls or is pushed up to the top of the engine crankcase. The weighted ball valve in the oil separator closes and prevents an overboard oil loss through the top of the oil separator.

Blow-by gases from the engine crankcase go from the sump to the bottom of the oil separator and through the overboard breather line. The top ball valve of the oil valve is open and the bottom valve is closed. Thus, oil can flow from the breather port to the oil valve through the sump fitting. Then it flows to the oil pump and to the engine lubrication points.

Oil in lines which does not go back to the sump during the change from normal flight to inverted flight, drains into the oil separator. During periods of normal flight, this oil goes back from the bottom of the oil separator to the sump. Thus, only minimum oil loss occurs.

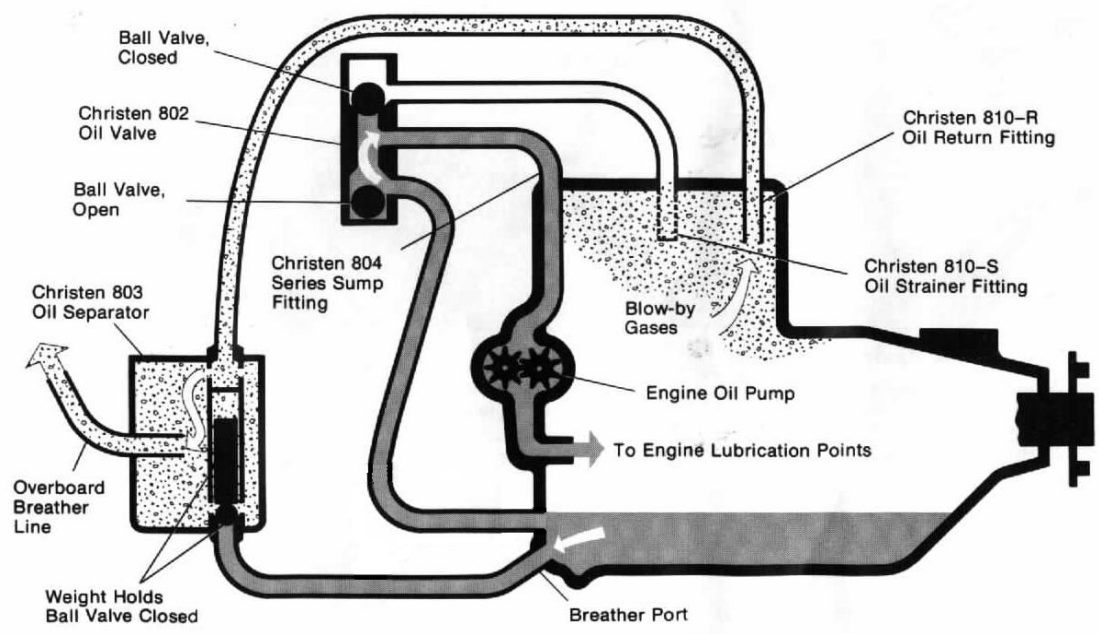



Figure 79-3: Schematic illustration of the Christen oil system during inverted flight.

The overboard breather line is connected to the landing gear fairing on the right side.

For maintenance of the inverted oil system, refer to the Lycoming maintenance program.

## 79-40-00 OIL COOLING

The XA41 and the XA42 have two oil coolers (Setrab P/N 50-113-7612). Flexible hoses connect the oil coolers to each other and to the engine. The oil coolers are attached to the engine mount on the left and the right side. Air flow to the oil coolers is supplied through the cowling. This air flow comes out of the engine compartment behind the oil coolers.

During operation, the oil flow is as follows: The oil pump supplies the hot oil through a hose to the left oil cooler, then to the right oil cooler and then back into the engine.

For information on the flexible hoses for the oil system connections, refer to chapter 20-10-06.

# Chapter 85 Smoke System

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## 85-00-00 GENERAL

The XA41 and the XA42 have a smoke system that the pilot can operate for aerobatic flight. The smoke system includes a smoke oil tank and smoke oil lines. The smoke oil is injected into the exhaust stacks where the hot exhaust gas evaporates it. Thus, white smoke comes out of the exhaust stacks.

**NOTE**

Only straight paraffin oil is permitted.

## 85-10-00 SMOKE OIL TANK

The smoke oil tank is installed in the fuselage structure behind the rear seat.

The smoke oil tank has a capacity of 27 liters of smoke oil.

The smoke oil tank has a flop tube to supply smoke oil during all flight attitudes. The flop tube assembly is shown in the figure below.



Figure 85-1: Flop tube assembly of the smoke tank.

To remove the flop tube or the outlet of the smoke oil tank: (Refer to Figure 85-2).

1 Drain the smoke oil tank as described in this chapter.

2 Remove the smoke oil line from the smoke oil flop tube assembly.

3 Remove all bolts from the outlet rim.

4 Remove the outlet together with the flop tube assembly.

5 Apply "Epple 33" sealant to the mating surfaces of the flop tube flange.

6 Install the flop tube assembly in the opposite sequence.

| No. | Quantity | Component | P/N |
|---|---|---|---|
| 1 | 1 | Smoke tank | XA42-8510-101 |
| 2 | 1 | Smoke oil pickup line | XA42-8510-122 |
| 3 | 1 | Screw | AN3-4A |
| 4 | 1 | Washer | AN960-10 |
| 5 | - | Sealant | Epple 33 |

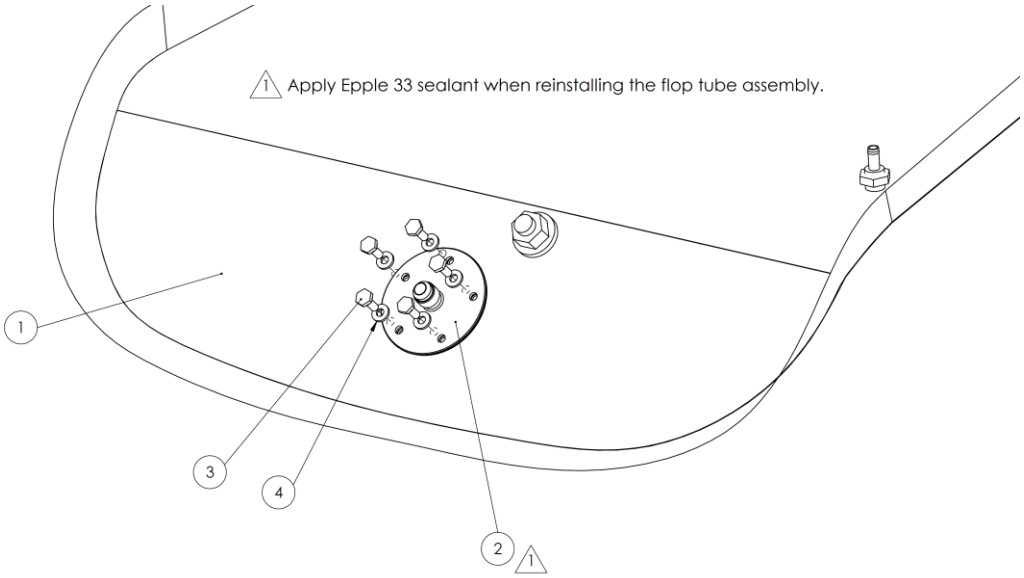



Figure 85-2: Smoke oil flop tube assembly installation.

To fill the smoke tank, change the pump direction of the smoke pump with the switch on the right side panel.

To operate the smoke system, start the smoke pump with the applicable switch. An ON/OFF button is on the pilot's throttle stick. Magnetic valves inject the smoke oil into the exhaust stacks. You can adjust the quantity of smoke oil with the magnetic valves.

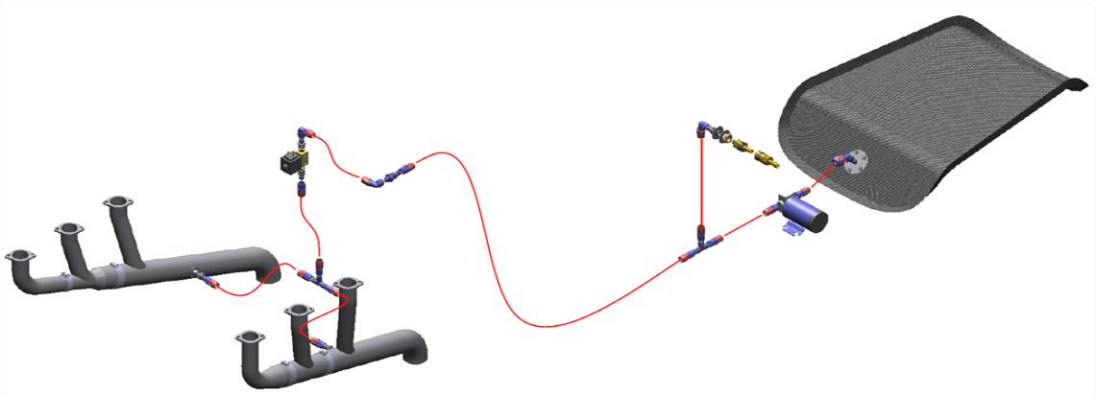


Figure 85-3: Smoke system with refill from behind the rear seat.




Figure 85-4: Smoke system with refill from the right side of the lower cowling.

To drain the smoke tank:

1 Put a container of applicable dimensions below the exhaust tubes.

2 Set the battery switch to "ON".

3 Set the REFILL / SMOKE switch to "SMOKE".

4 Set the ON/OFF button on the pilot's throttle stick to "I".

5 Set the ON/OFF button on the pilot's throttle stick immediately to "O" when the smoke tank is empty. No more oil must come out of the exhaust tubes.

6 Set the battery switch to "OFF".

7 Remove spilled oil immediately.

To fill the smoke tank:

1 Connect the refill hose to the smoke tank filler connector.

2 Put an applicable container below the breather line that comes from the bottom of the rear fuselage.

2 Set the battery switch to "ON".

3 Set the REFILL / SMOKE switch to "REFILL".

4 Set the I/O button on the pilot's throttle stick to "I".

5 Set the I/O button on the pilot's throttle stick immediately to "O" when the smoke tank is full. Make sure that the smoke oil that spills from the breather line collects in the container.

6 Set the battery switch to "OFF".

7 Disconnect the hose.

8 Remove spilled oil immediately.

## 85-20-00 SMOKE DISTRIBUTION

The smoke oil is supplied through flexible hoses. The smoke pump is attached to the airframe on the applicable bracket in front of the smoke tank.

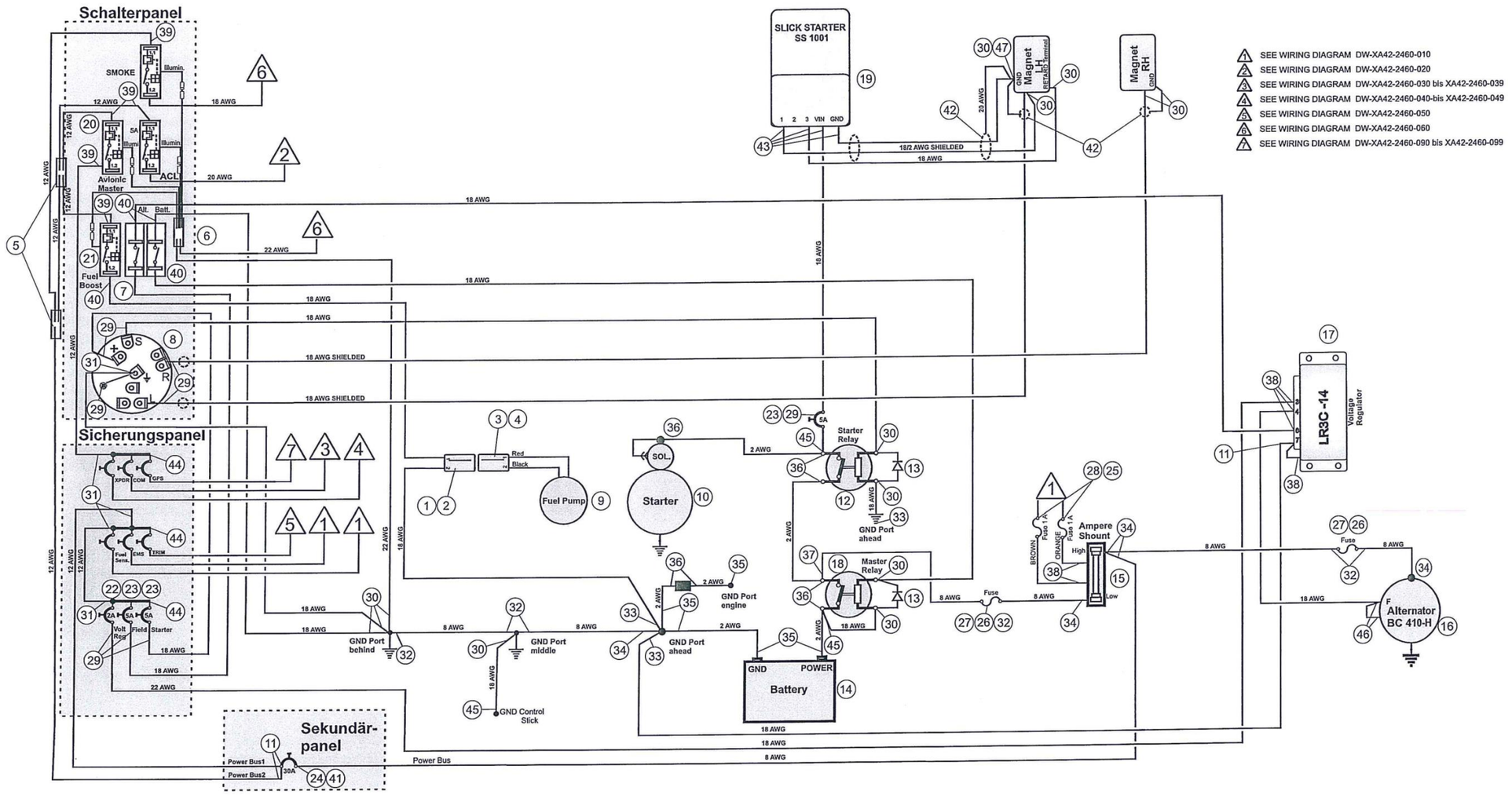
The smoke oil line goes through the fire wall into the engine compartment, where the shutoff valve is installed. Here the line divides into two lines. Each line supplies one exhaust stack with smoke oil.

# Chapter 91 Charts

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## 91-00-00 MAIN WIRING DIAGRAMS

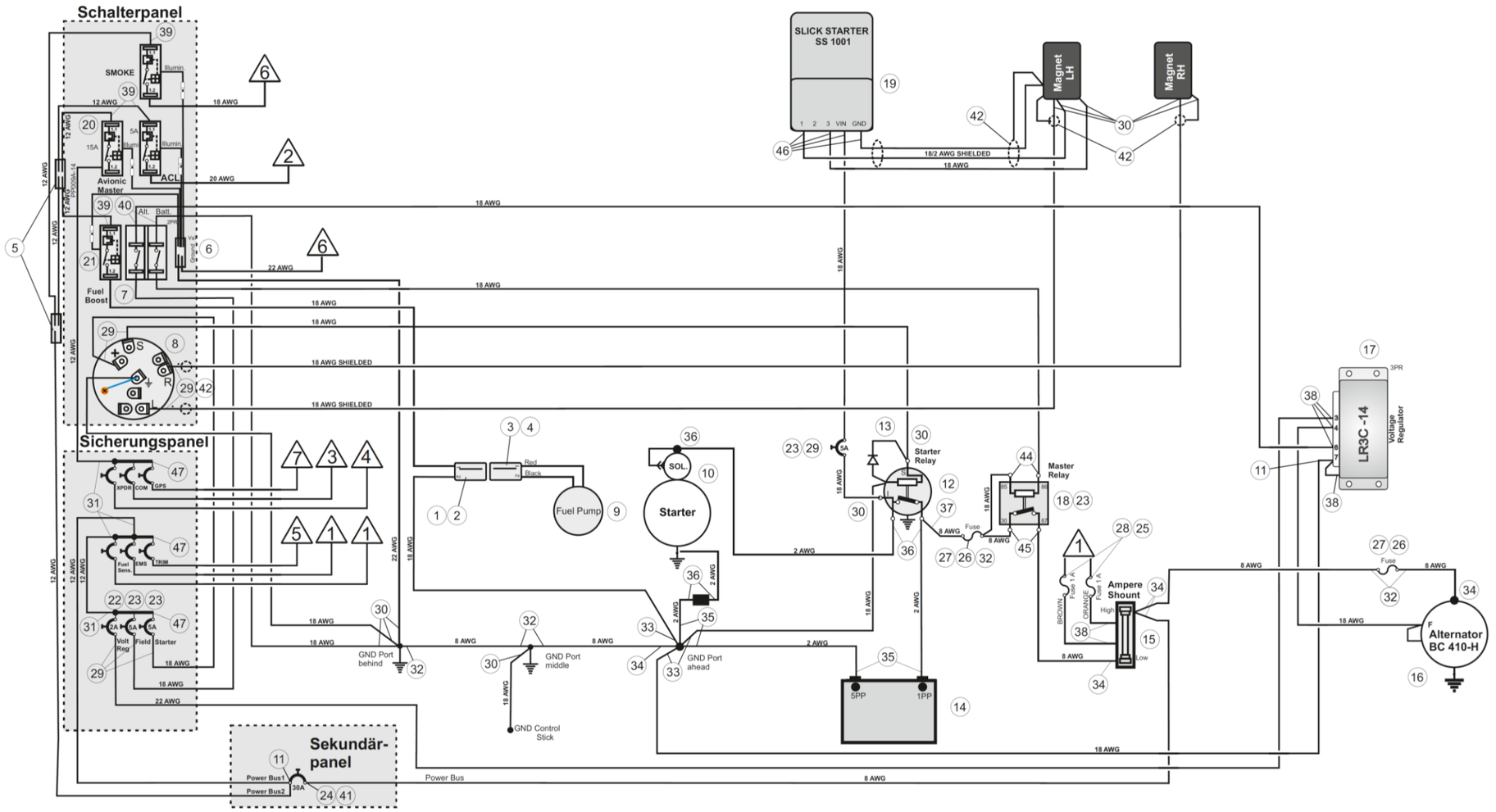



| | | | | |
|---|---|---|---|---|
| 1 | 1 | 2 circuit plug | XS-0120-012 | Tyco Electronics,1-480318-0 |
| 2 | 2 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics, 163557-2 |
| 3 | 1 | 2 circuit cap | XS-0120-011 | Tyco Electronics,1-480319-0 |
| 4 | 2 | Pin AWG22/18 | XS-0120-101 | Tyco Electronics 133557-2 |
| 5 | 2 | PIDG crimpsplice yellow | M7928/5-5 | AMP, 0-0320570-0 |
| 6 | 1 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity, D-436-37 |
| 7 | 1 | Cessna Split Master Switch | S-1994-1-1 | Cessna Aircraft CO. |
| 8 | 1 | Ignition switch | A-510-2 | ACS Products Co. |
| 9 | 1 | Electrical fuel pump | 8120-G | Weldon |
| 10 | 1 | Starter | 149-12-PM | Skytech |
| 11 | 32 | PIDG-ring terminal | MS25036-153 | |
| 12 | 1 | Starter Solenoid | Lamar X61-0030 | Lamar |
| 13 | 2 | Surge Suppressor Diode | 16050-2 | ACS Products Co. |
| 14 | 1 | Battery | 0769-2007 | Enersys Energy |
| 15 | 1 | AMPERE SHUNT | | Zubehör MVP 50 SET |
| 16 | 1 | Alternator | BC410-H | B&C |

| | | | | |
|---|---|---|---|---|
| 17 | 1 | Voltage Regulator | LR3C-14 | B&C |
| 18 | 1 | Master relay | Lamar X61-0030 | Lamar |
| 19 | 1 | Slick Starter | SS1001 | Champion Aerospace |
| 20 | 1 | Thermal Switch | 3130-F110-P7T1W12QY2-20A | E-T-A |
| 21 | 2 | Thermal Switch | 3130-F110-P7T1W12QY2-8A | E-T-A |
| 22 | 1 | Circuit breaker 2A | MS26574-2 | Sensata, 7274-2-2 |
| 23 | 3 | Circuit breaker 5A | MS26574-5 | Sensata, 7274-2-5 |
| 24 | 1 | Circuit breaker 30A | MS25244-30 | Sensata, 3TC7-30 |
| 25 | 2 | Microfuse 1A 5x20mm | 0217001.MXP | Littelfuse |
| 26 | 2 | Fuse 50 A | 341 233 | ESKA |
| 27 | 2 | Fuse mount | 1003600 | ESKA |
| 28 | 2 | Fuse mount in-line 5x20 | FX0385 | Bulgin |
| 29 | 10 | PIDG-Ring terminal A3,5-1 | MS25036-101 | AMP, 0-0036150-0 |
| 30 | 14 | PIDG-Ring terminal A5-1 | MS25036-103 | AMP, 0-0130008-0 |
| 31 | 5 | PIDG-Ring terminal A3,5-2,5 | MS25036-106 | AMP, 0-0320619-0 |
| 32 | 7 | Cable lug terminal 10QMM Ø 5.3 | 3547A | Vogt |

| | | | | |
|---|---|---|---|---|
| 33 | 3 | PIDG-Ring terminal A6-1 | MS25036-154 | AMP-31894-0 |
| 34 | 5 | Cable lug terminal 10QMM Ø 6.5 | 3549A | Vogt |
| 35 | 5 | Cable lug terminal 35QMM Ø 6.5 | 3431A | Vogt |
| 36 | 7 | Cable lug terminal 35QMM Ø 8.4 | 3432A | Vogt |
| 37 | 1 | Cable lug terminal 8-10 CU SN | 3417A | Vogt |
| 38 | 6 | PIDG-Ring terminal A4-1 | MS25036-153 | AMP, 0-0031890-0 |
| 39 | 5 | Ultra-Fast Faston blue gewink. | | AMP, 3-0520133-2 |
| 40 | 5 | Ultra-Fast Faston red gewink. | | AMP, 2-0520129-2 |
| 41 | 1 | Cable lug terminal 10QMM Ø 4 | 3414A | Vogt |
| 42 | 3 | Solder connector 4,8mm | B-155-05 | TE Connectivity |
| 43 | 4 | PIDG-FASTON volliso. Red | 735278-0 | AMP |
| 44 | 3 | Ground plate 3fach 7mm² | XA42-2460-201 | |
| 45 | 3 | PIDG-Ring terminal A8-1 | MS25036-104 | AMP, 31895-0 |
| 46 | 2 | Steckhülse mit Rastwarze | 5-160447-5 | TE Connectivity |
| 47 | 1 | PIDG-Ring terminal A5-2.5 | MS25036-154 | AMP, 130094-0 |

Figure 91-1: XA42-2460-001 C - Main Wiring diagram (from SN 149 and on, or after aircraft modified iaw. SB-XA42-2018-011).

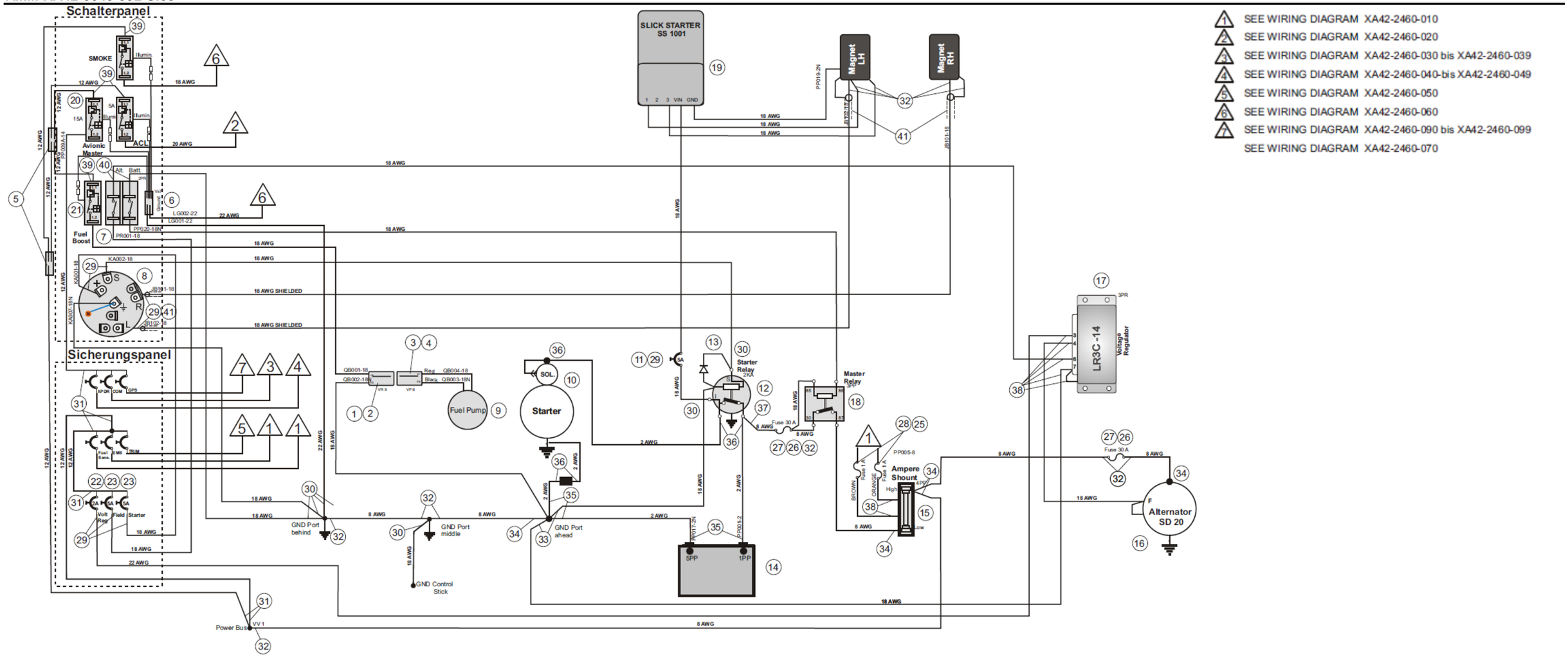



| | | | | |
|---|---|---|---|---|
| 1 | 1 | 2 circuit plug | XS-0120-012 | Tyco Electronics,1-480318-0 |
| 2 | 2 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics, 163557-2 |
| 3 | 1 | 2 circuit cap | XS-0120-011 | Tyco Electronics,1-480319-0 |
| 4 | 2 | Pin AWG22/18 | XS-0120-101 | Tyco Electronics 133557-2 |
| 5 | 2 | PIDG crimpsplice yellow | M7928/5-5 | AMP, 0-0320570-0 |
| 6 | 1 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity, D-436-37 |
| 7 | 1 | Cessna Split Master Switch | S-1994-1-1 | Cessna Aircraft CO. |
| 8 | 1 | Ignition switch | A-510-2 | ACS Products Co. |
| 9 | 1 | Electrical fuel pump | 8120-G | Weldon |
| 10 | 1 | Starter | 149-12-PM | Skytech |
| 11 | 2 | PIDG-ring terminal | MS25036-153 | |
| 12 | 1 | Starter Solenoid | 22735 | Swiches Kidde |
| 13 | 1 | Surge Suppressor Diode | 16050-2 | ACS Products Co. |
| 14 | 1 | Battery | 0769-2007 | Enersys Energy |
| 15 | 1 | AMPERE SHUNT | | Zubehör MVP 50 SET |
| 16 | 1 | Alternator | BC410-H | B&C |

| | | | | |
|---|---|---|---|---|
| 17 | 1 | Voltage Regulator | LR3C-14 | B&C |
| 18 | 1 | Kräcker cut off relay | 12.1400.00 | KRÄCKER |
| 19 | 1 | Slick Starter | SS1001 | Champion Aerospace |
| 20 | 1 | Thermal Switch | 3130-F110-P7T1W12QY2-20A | E-T-A |
| 21 | 2 | Thermal Switch | 3130-F110-P7T1W12QY2-8A | E-T-A |
| 22 | 1 | Circuit breaker 2A | MS26574-2 | Sensata, 7274-2-2 |
| 23 | 3 | Circuit breaker 5A | MS26574-5 | Sensata, 7274-2-5 |
| 24 | 1 | Circuit breaker 30A | MS25244-30 | Sensata, 3TC7-30 |
| 25 | 2 | Microfuse 1A 5x20mm | 0217001.MXP | Littelfuse |
| 26 | 2 | Fuse 50 A | 341 233 | ESKA |
| 27 | 2 | Fuse mount | 1003600 | ESKA |
| 28 | 2 | Fuse mount in-line 5x20 | FX0385 | Bulgin |
| 29 | 5 | PIDG-Ring terminal A3,5-1 | MS25036-101 | AMP, 0-0036150-0 |
| 30 | 5 | PIDG-Ring terminal A5-1 | | AMP, 0-0130008-0 |
| 31 | 2 | PIDG-Ring terminal A3,5-2,5 | MS25036-106 | AMP, 0-0320619-0 |
| 32 | 6 | Cable lug terminal 10QMM Ø 5.3 | 3547A | Vogt |

| | | | | |
|---|---|---|---|---|
| 34 | 5 | Cable lug terminal 10QMM Ø 6.5 | 3549A | Vogt |
| 35 | 5 | Cable lug terminal 35QMM Ø 6.5 | 3431A | Vogt |
| 36 | 5 | Cable lug terminal 35QMM Ø 8.4 | 3432A | Vogt |
| 37 | 2 | Cable lug terminal 8-10 CU SN | 3417A | Vogt |
| 38 | 8 | PIDG-Ring terminal A4-1 | MS25036-153 | AMP, 0-0031890-0 |
| 39 | 4 | Ultra-Fast Faston blue gewink. | | AMP, 3-0520133-2 |
| 40 | 5 | Ultra-Fast Faston red gewink. | | AMP, 2-0520129-2 |
| 41 | 1 | Cable lug terminal 10QMM Ø 4 | 3414A | Vogt |
| 42 | 3 | Solder connector 4,8mm | B-155-05 | TE Connectivity |
| 43 | 1 | RELAIS-SOCKEL | 841609 | |
| 44 | 2 | Steckhülse mit Rastwarze | 5-160447-5 | TE Connectivity |
| 45 | 2 | Crimp,Faston,10-11AWG | 182490-2 | Tyco Electronics |
| 46 | 4 | PIDG-FASTON volliso. Red | 735278-0 | AMP |
| 47 | 3 | Ground plate 3fach 7mm² | XA42-2460-201 | |

Figure 91-2: XA42-2460-001 B - Main Wiring diagram (from SN 145 to SN 148).




| | | | | |
|---|---|---|---|---|
| 1 | 1 | 2 circuit plug | 1-480318-0 | Tyco Electronics |
| 2 | 2 | Socket AWG22/18 | 163557-2 | Tyco Electronics |
| 3 | 1 | 2 circuit cap | 1-480319-0 | Tyco Electronics |
| 4 | 2 | Pin AWG22/18 | 133557-2 | Tyco Electronics |
| 5 | 2 | PIDG crimpsplice yellow | 0-0320570-0 | AMP |
| 6 | 1 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity, D-436-37 |
| 7 | 1 | Cessna Split Master Switch | S-1994-1-1 | Cessna Aircraft CO. |
| 8 | 1 | Ignition switch | A-510-2 | ACS Products Co. |
| 9 | 1 | Electrical fuel pump | 8120-G | Weldon |
| 10 | 1 | Starter | 149-12-PM | Skytech |
| 11 | 2 | PIDG-ring terminal | MS25036-153 | |
| 12 | 1 | Starter Solenoid | 22735 | Swiches Kidde |
| 13 | 1 | Surge Suppressor Diode | 16050-2 | ACS Products Co. |
| 14 | 1 | Battery | 0769-2007 | Enersys Energy |
| 15 | 1 | AMPERE SHUNT | | Zubehör MVP 50 SET |
| 16 | 1 | Alternator | BC410-H | B&C |

| | | | | |
|---|---|---|---|---|
| 17 | 1 | Voltage Regulator | LR3C-14 | B&C |
| 18 | 1 | Kräcker cut off relay | 12.1400.00 | KRÄCKER |
| 19 | 1 | Slick Starter | SS1001 | Champion Aerospace |
| 20 | 1 | Thermal Switch | 3130-F110-P7T1W12QY2-20A | E-T-A |
| 21 | 2 | Thermal Switch | 3130-F110-P7T1W12QY2-8A | E-T-A |
| 22 | 1 | Klixon CB | 7277-2-2 | Sensata, 7274-2-2 |
| 23 | 3 | Klixon CB | 7277-2-5 | Sensata, 7274-2-5 |
| 24 | 1 | Circuit breaker 30A | MS25244-30 | Sensata, 3TC7-30 |
| 25 | 2 | Microfuse 1A 5x20mm | 0217001.MXP | Littelfuse |
| 26 | 2 | Fuse 50 A | 341 233 | ESKA |
| 27 | 2 | Fuse mount | 1003600 | ESKA |
| 28 | 2 | Fuse mount in-line 5x20 | FX0385 | Bulgin |
| 29 | 5 | PIDG-Ring terminal A3,5-1 | MS25036-101 | AMP, 0-0036150-0 |
| 30 | 5 | PIDG-Ring terminal A5-1 | | AMP, 0-0130008-0 |
| 31 | 2 | PIDG-Ring terminal A3,5-2,5 | MS25036-106 | AMP, 0-0320619-0 |
| 32 | 6 | Cable lug terminal 10QMM Ø 5.3 | 3547A | Vogt |

| | | | | |
|---|---|---|---|---|
| 34 | 5 | Cable lug terminal 10QMM Ø 6.5 | 3549A | Vogt |
| 35 | 5 | Cable lug terminal 35QMM Ø 6.5 | 3431A | Vogt |
| 36 | 5 | Cable lug terminal 35QMM Ø 8.4 | 3432A | Vogt |
| 37 | 2 | Cable lug terminal 8-10 CU SN | 3417A | Vogt |
| 38 | 8 | PIDG-Ring terminal A4-1 | 0-0031890-0 | AMP |
| 39 | 4 | Ultra-Fast Faston blue gewink. | 3-0520133-2 | AMP |
| 40 | 5 | Ultra-Fast Faston red gewink. | 2-0520129-2 | AMP |

Figure 91-3: XA42-2460-001 A.04 - Main Wiring diagram (from SN 108 to SN 144).

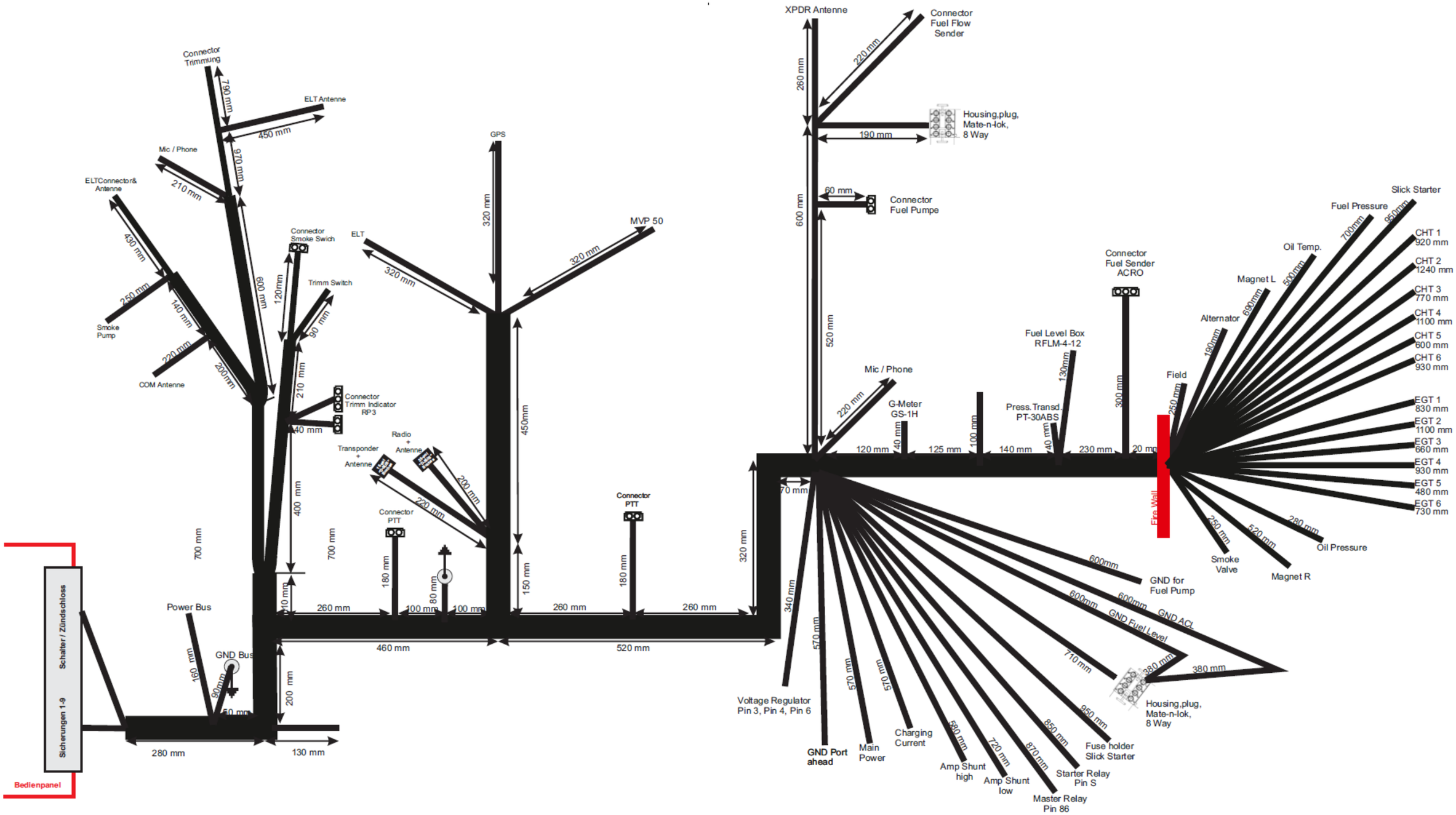
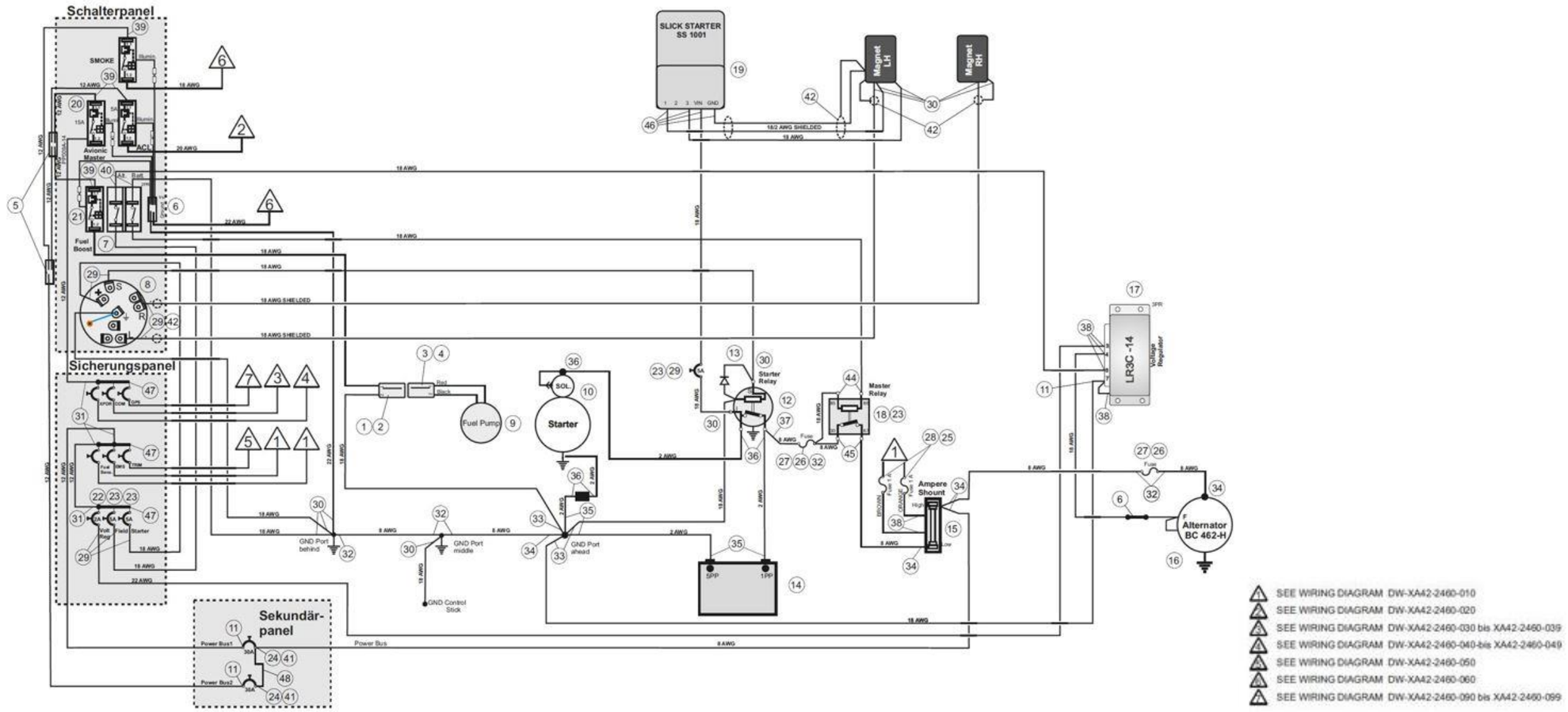



Figure 91-4: XA42-2460-002 A.02 – XA42 Wiring Bundle (from 108 on)

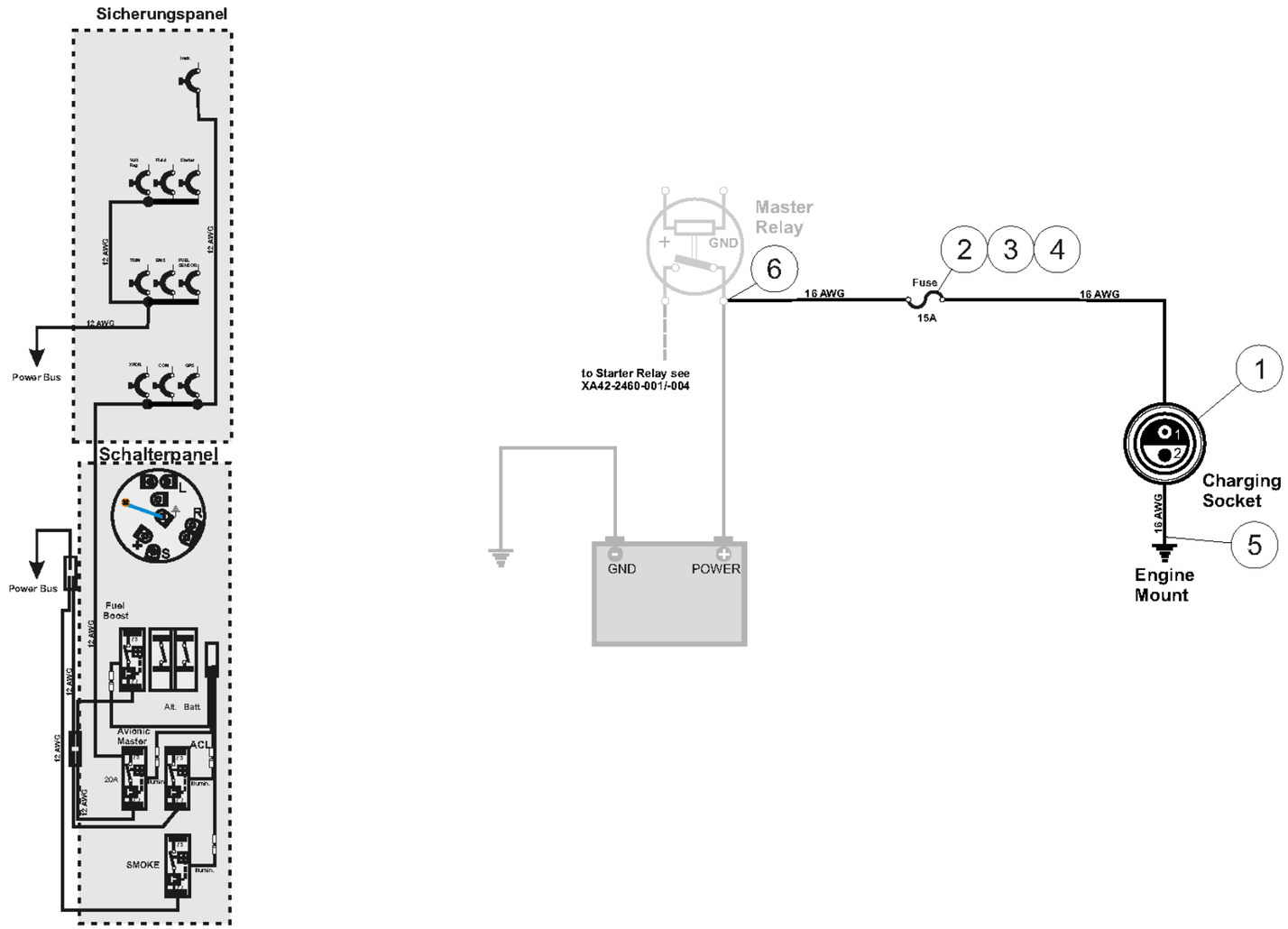



| | | | | |
|---|---|---|---|---|
| 1 | 1 | 2 circuit plug | XS-0120-012 | Tyco Electronics,1-480318-0 |
| 2 | 2 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics, 163557-2 |
| 3 | 1 | 2 circuit cap | XS-0120-011 | Tyco Electronics,1-480319-0 |
| 4 | 2 | Pin AWG22/18 | XS-0120-101 | Tyco Electronics 133557-2 |
| 5 | 2 | PIDG crimpsplice yellow | M7928/5-5 | AMP, 0-0320570-0 |
| 6 | 2 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity, D-436-37 |
| 7 | 1 | Cessna Split Master Switch | S-1994-1-1 | Cessna Aircraft CO. |
| 8 | 1 | Ignition switch | A-510-2 | ACS Products Co. |
| 9 | 1 | Electrical fuel pump | 8120-G | Weldon |
| 10 | 1 | Starter | 149-12-PM | Skytech |
| 11 | 2 | PIDG-ring terminal | MS25036-153 | AMP, 320565-0 |
| 12 | 1 | Starter Solenoid | 22735 | Swiches Kidde |
| 13 | 1 | Surge Suppressor Diode | 16050-2 | ACS Products Co. |
| 14 | 1 | Battery | 0769-2007 | Enersys Energy |
| 15 | 1 | Ampere shunt | | Zubehör MVP 50 SET |
| 16 | 1 | Alternator | BC462-H | B&C |
| 17 | 1 | Voltage Regulator | LR3C-14 | B&C |
| 18 | 1 | Kräcker cut off relay | 12.1400.00 | KRÄCKER |
| 19 | 1 | Slick Starter | SS1001 | Champion Aerospace |

| | | | | |
|---|---|---|---|---|
| 20 | 1 | Thermal Switch | 3130-F110-P7T1W12QY2-20A | E-T-A |
| 21 | 2 | Thermal Switch | 3130-F110-P7T1W12QY2-8A | E-T-A |
| 22 | 1 | Circuit breaker 2A | MS26574-2 | Sensata, 7274-2-2 |
| 23 | 3 | Circuit breaker 5A | MS26574-5 | Sensata, 7274-2-5 |
| 24 | 2 | Circuit breaker 30A | MS25244-30 | Sensata, 3TC7-30 |
| 25 | 2 | Microfuse 1A 5x20mm | 0217001.MXP | Littelfuse |
| 26 | 2 | Fuse 50 A | 341 233 | ESKA |
| 27 | 2 | Fuse mount | 1003600 | ESKA |
| 28 | 2 | Fuse mount in-line 5x20 | FX0385 | Bulgin |
| 29 | 5 | PIDG-Ring terminal A3,5-1 | MS25036-101 | AMP, 0-0036150-0 |
| 30 | 5 | PIDG-Ring terminal A5-1 | | AMP, 0-0130008-0 |
| 31 | 4 | PIDG-Ring terminal A3,5-2,5 | MS25036-106 | AMP, 0-0320619-0 |
| 32 | 5 | Cable lug terminal 10QMM Ø 5.3 | 3547A | Vogt |
| 33 | 2 | PIDG-Ring terminal A6-1 | MS25036-154 | AMP, 0-0031894-0 |
| 34 | 1 | Cable lug terminal 10QMM Ø 6.5 | 3549A | Vogt |
| 35 | 5 | Cable lug terminal 35QMM Ø 6.5 | 3431A | Vogt |
| 36 | 3 | Cable lug terminal 35QMM Ø 8.4 | 3432A | Vogt |
| 37 | 2 | Cable lug terminal 8-10 CU SN | 3417A | Vogt |
| 38 | 6 | PIDG-Ring terminal A4-1 | MS25036-153 | AMP, 0-0031890-0 |

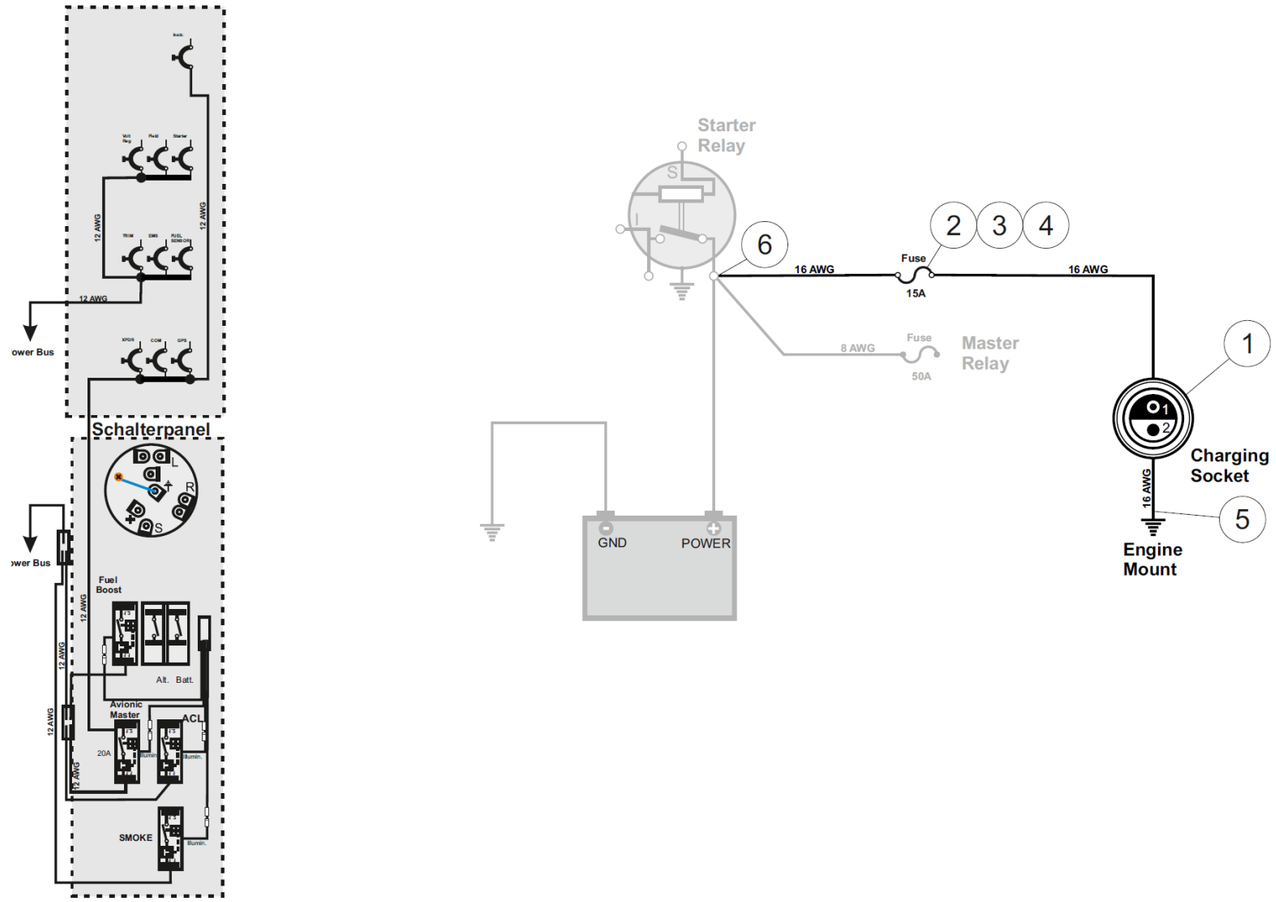
| | | | | |
|---|---|---|---|---|
| 39 | 4 | Ultra-Fast Faston blue gewink. | | AMP, 3-0520133-2 |
| 40 | 6 | Ultra-Fast Faston red gewink. | | AMP, 2-0520129-2 |
| 41 | 2 | Cable lug terminal 10QMM Ø 4 | 3414A | Vogt |
| 42 | 2 | Solder connector 4,8mm | B-155-05 | TE Connectivity |
| 43 | 1 | RELAIS-SOCKED | 841609 | |
| 44 | 2 | Flat plug sleeve with locking tongue | 5-160447-5 | TE Connectivity |
| 45 | 2 | Crimp,Faston,10-11AWG | 182490-2 | Tyco Electronics |
| 46 | 4 | PIDG-FASTON volliso. Rot | 735278-0 | AMP |
| 47 | 3 | Ground plate | XA42-2460-201 | |
| 48 | 1 | Ground plate 2 pole 10mm² | XA42-2460-203 | |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 18 AWG | M22759/32-18-9 | |
| | ALL | 18 AWG SHIELDED | M27500-18SD1T23 | |
| | ALL | 18/2 AWG SHIELDED | M27500-18SD2T23 | |
| | ALL | 14 AWG | M22759/32-14-9 | |
| | ALL | 12 AWG | M22759/34-12-9 | |
| | ALL | 2 AWG | M22759-16-2-9 | |

Figure 91-5: XA42-2460-004 A – Main Wiring diagram advanced (option with BC462-H alternator)



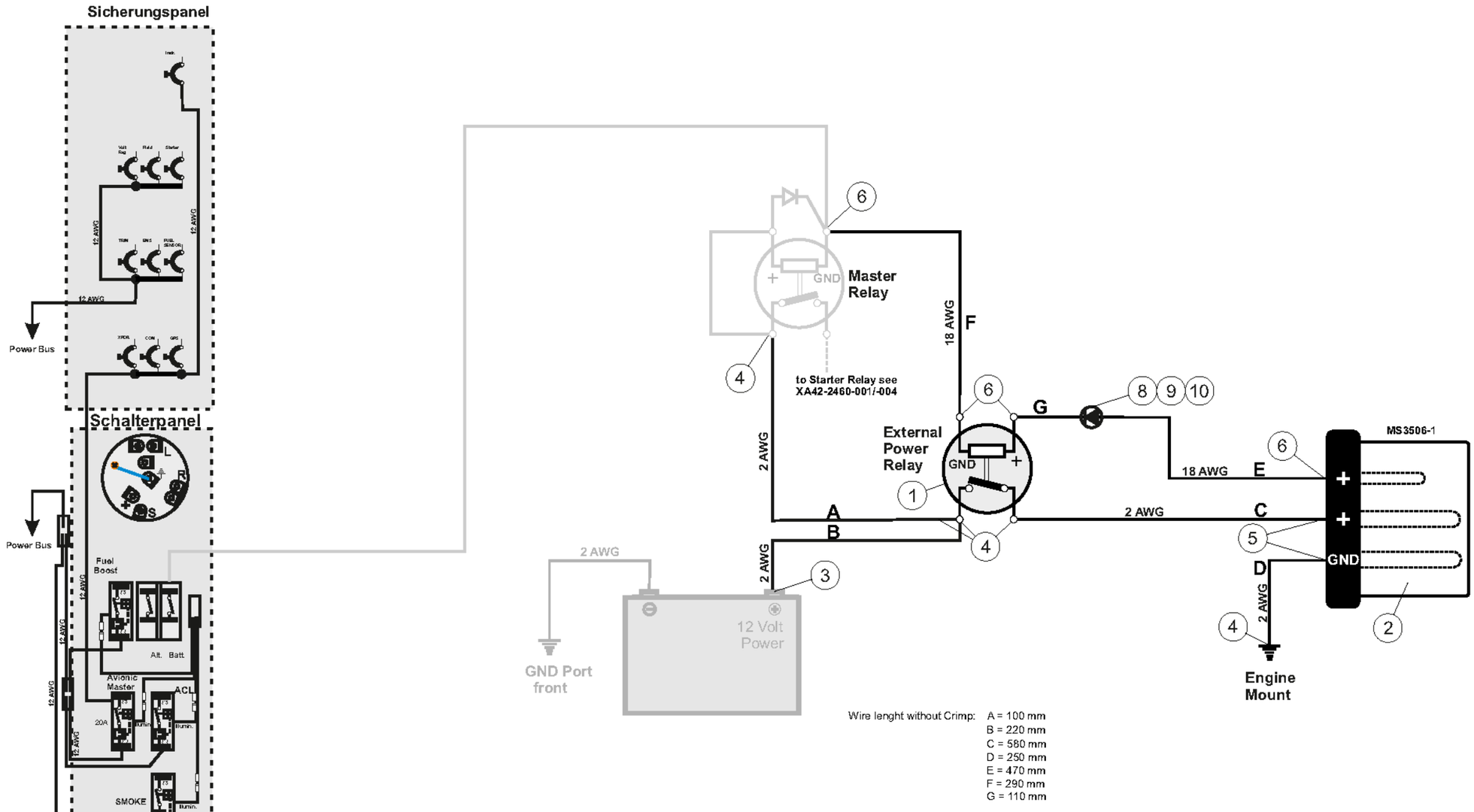

| | | | | |
|---|---|---|---|---|
| 1 | 1 | Lemo Serie 1S bushing 2-pol. | XS-0120-071 | Lemon, ERA.1S.302.CLL |
| 1 | 1 (option) | Lemo Serie 1S bushing 2-pol. | XS-0120-072 | Lemon, ERN.1S.302.CLL |
| 2 | 1 | In-Line Fuse mount 5x20 | FX0385 | Bulgin |
| 3 | 1 | Microfuse 15A | 0217015.MXP | Littelfuse |
| 4 | 2 | Wire ferril unisol. AWG16 | DIN 46228-1 | JST, WE1.5-10. |
| 5 | 1 | PIDG-Ring terminal A5-1 | MS25036-103 | AMP, 0-0130008-0 |
| 6 | 1 | PIDG-Ring terminal A8-1 | MS25036-104 | AMP, 0-0031895-0 |
| | | | | |
| | ALL | AWG 16 single-wire, unshielded | M22759/16-16-9 | |

Figure 91-6: XA42-2460-005 B – External battery charging access (option, from SN 149, or after aircraft modified iaw. SB-XA42-2018-011)



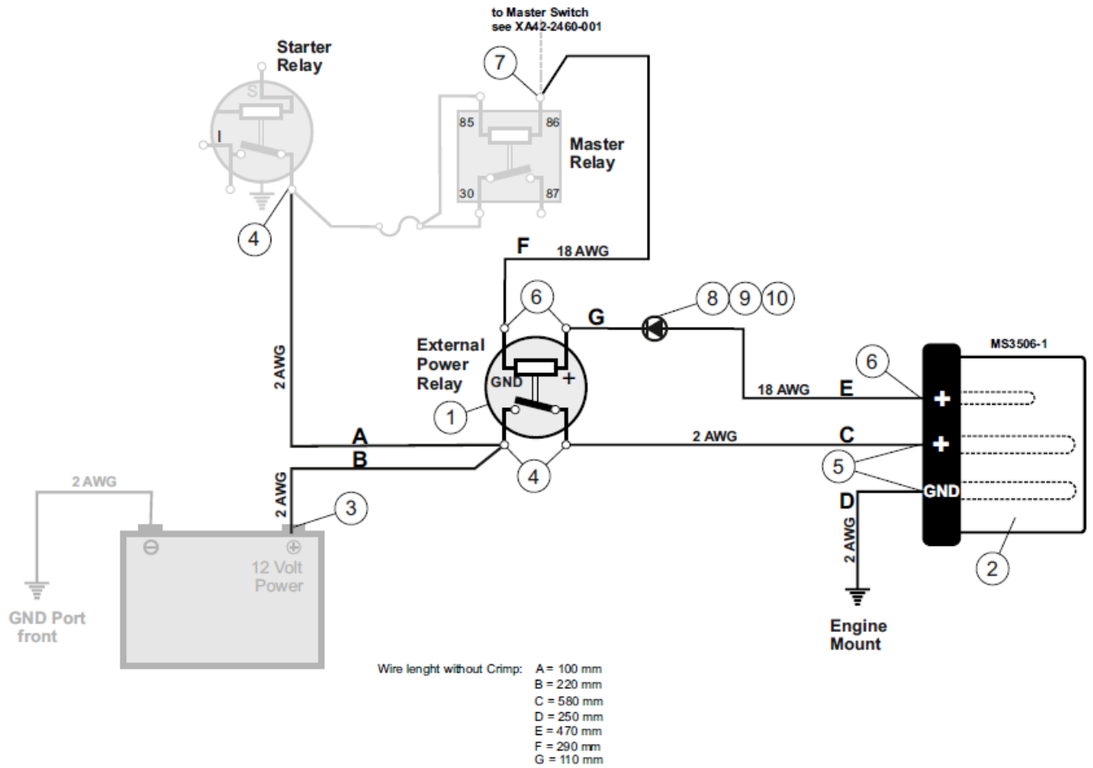

| | | | | |
|---|---|---|---|---|
| 1 | 1 | Lemo Serie 1S Buchse 2-pol. | XS-0120-071 | |
| 2 | 1 | In-Line Fuse mount 5x20 | FX0385 | Bulgin |
| 3 | 1 | Microfuse 15A | 0217015.MXP | Littelfuse |
| 4 | 2 | Wire ferril unisol. AWG16 | DIN 46228-1 | JST, WE1.5-10. |
| 5 | 1 | PIDG-Ring terminal A5-1 | MS25036-103 | AMP, 0-0130008-0 |
| 6 | 1 | PIDG-Ring terminal A8-1 | MS25036-104 | AMP, 0-0031895-0 |
| | | | | |
| | ALL | AWG 16 single-wire, unshielded | M22759/16-16-9 | |

Figure 91-7: XA42-2460-005 A – External battery charging access (option from SN 101 to 148)



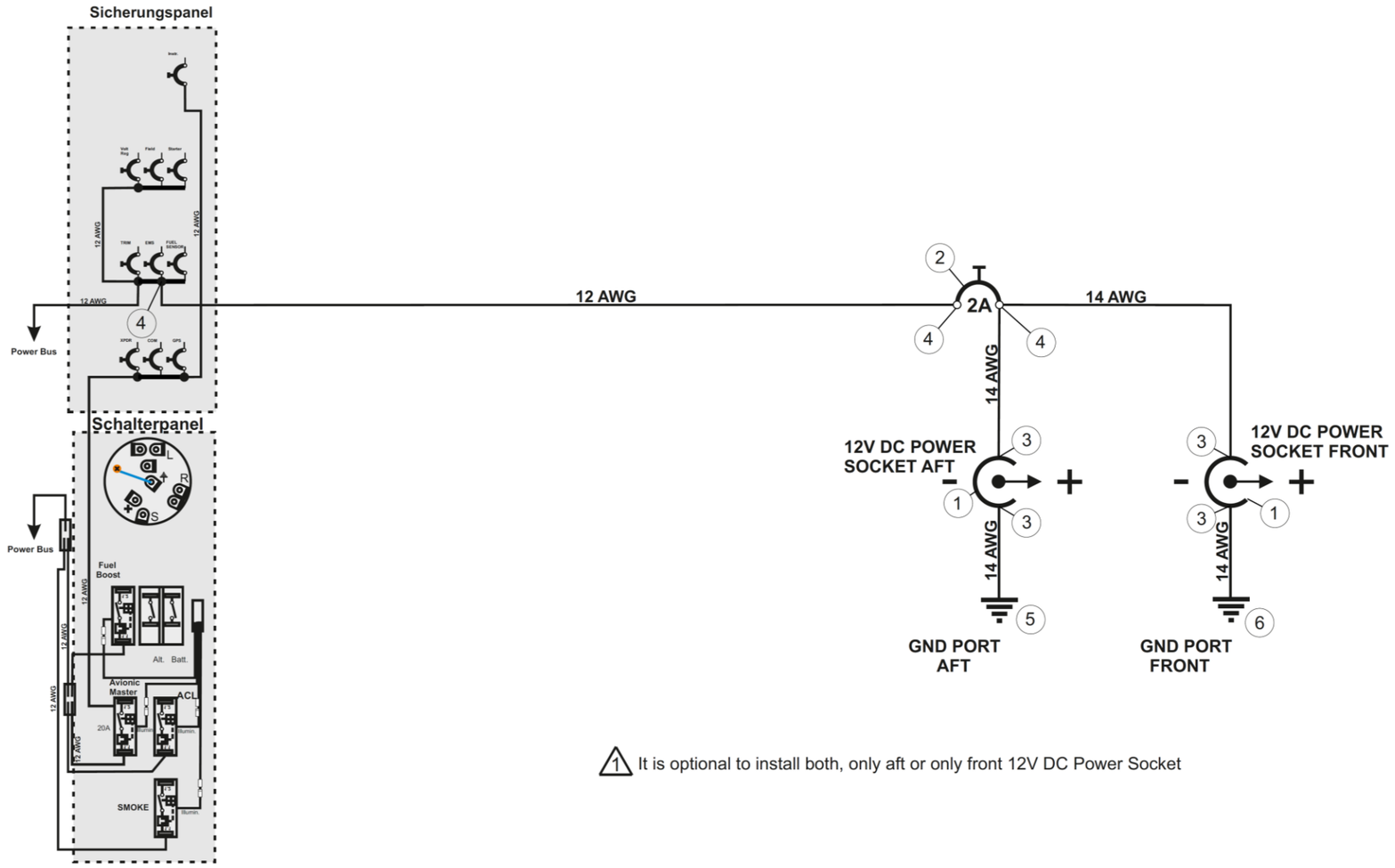

| | | | | |
|---|---|---|---|---|
| 1 | 1 | Continuous Relay 12Volt | X61-0028 | LAMAR |
| 2 | 1 | External Power Receptacle | AN2552-3A | MS3506-1 |
| 3 | 1 | Tubular terminal M6, 35 mm² | 3431A | Vogt |
| 4 | 5 | Tubular terminal M8, 35 mm² | 3432A | Vogt |
| 5 | 2 | Tubular terminal 90 ° M10 35 mm² . | 183136 | CIMCO |
| 6 | 4 | PIDG-Ring terminal A5-1 | MS25036-103 | AMP, 0-0130008-0 |
| 8 | 1 | Silicon rectifier diode | DIODE 1N5402 | DIOTEC |
| 9 | 2 | Sealed in-line crimp AWG 20-16 blue | MIL-S-81824/1 | TE Connectivity, D-436-37 |
| 10 | 1 | Heat shrink 6,0 | | |
| | | | | |
| | ALL | 18 AWG | M22759/32-18-9 | |
| | ALL | 2 AWG | M22759-16-2-9 | |

Figure 91-8: XA42-2460-007 C – External power system (option, from S/N 149 and on)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Continuous Relay 12Volt | X61-0028 | LAMAR |
| 2 | 1 | External Power Receptacle | AN2552-3A | MS3506-1 |
| 3 | 1 | Tubular terminal M6, 35 mm² | 3431A | Vogt |
| 4 | 4 | Tubular terminal M8, 35 mm² | 3432A | Vogt |
| 5 | 2 | Tubular terminal 90 ° M10 35 mm² . | 183136 | CIMCO |
| 6 | 3 | PIDG-Ring terminal A5-1 | MS25036-103 | AMP, 0-0130008-0 |
| 7 | 1 | Fastin-faston crimp | 5-160447-6 | TE Connectivity |
| 8 | 1 | Silicon rectifier diode | DIODE 1N5402 | DIOTEC |
| 9 | 2 | Sealed in-line crimp AWG 20-16 blue | MIL-S-81824/1 | TE Connectivity, D-436-37 |
| 10 | 1 | Heat shrink 6,0 | | |
| | | | | |
| | ALL | 18 AWG | M22759/32-18-9 | |

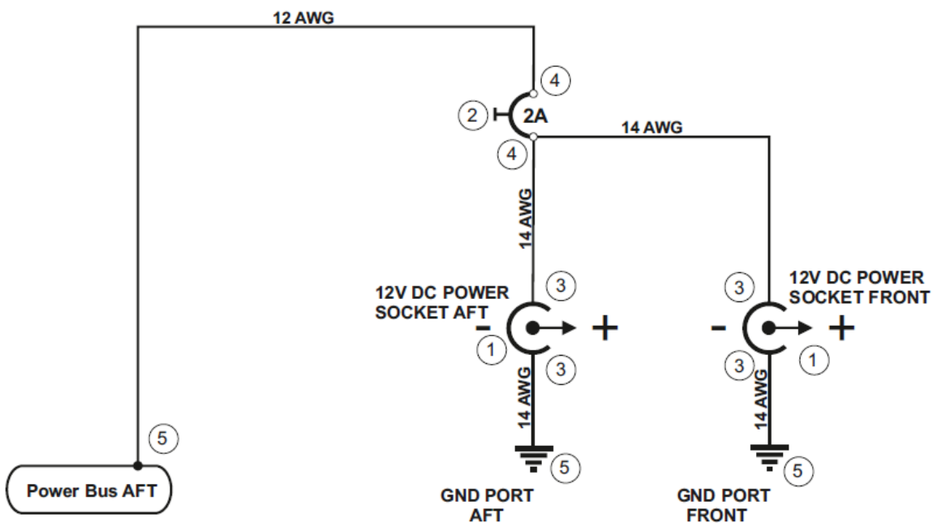
Figure 91-9: XA42-2460-007 B – External power system (option from SN with XA42-7120-151 A.07 or higher revision to S/N 148)




1 It is optional to install both, only aft or only front 12V DC Power Socket

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 12/24 V Power Socket | XS-0150-101 | |
| 2 | 1 | Circuit breaker 2A | MS26574-2 | |
| 3 | 4 | Faston tilted receptabe blue | 3-0520133-2 | AMP, alike DIN 46245 |
| 4 | 4 | PIDG-Ring terminal A3,5-2,5 | MS25036-106 | |
| 5 | 1 | PIDG-Ring terminal A5-2,5 | MS25036-108 | |
| 6 | 1 | PIDG-Ring terminal A6-2,5 | MS25036-150 | |
| | | | | |
| | ALL | 14 AWG | M22759/32-14-9 | |
| | ALL | 12 AWG | M22759/34-12-9 | |

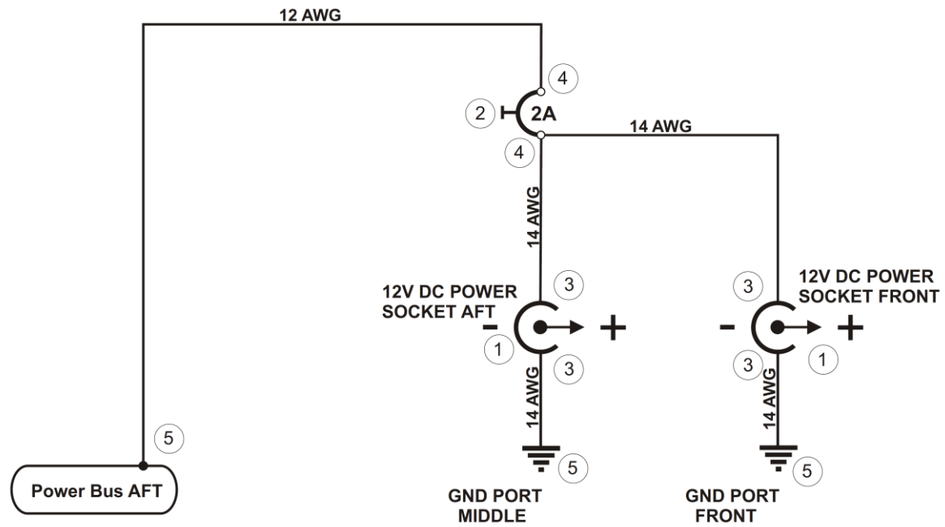
Figure 91-10: XA42-2460-008 C – 12V DC Power Socket (option)




1 It is optional to install both, only aft or only front 12V DC Power Socket

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 12/24 V Power Socket | XS-0150-101 | |
| 2 | 1 | Klixon 2A | 7277-2-2 | |
| 3 | 4 | Faston tilted receptabe blue | 3-0520133-2 | AMP, alike DIN 46245 |
| 4 | 4 | PIDG-Ring terminal A3,5-2,5 | 0-0320619-0 | |
| 5 | 1 | PIDG-Ring terminal A5-2,5 | 0-0130094-0 | |
| | | | | |
| | | | | |
| | ALL | 14 AWG | M22759/32-14-9 | |
| | ALL | 12 AWG | M22759/34-12-9 | |

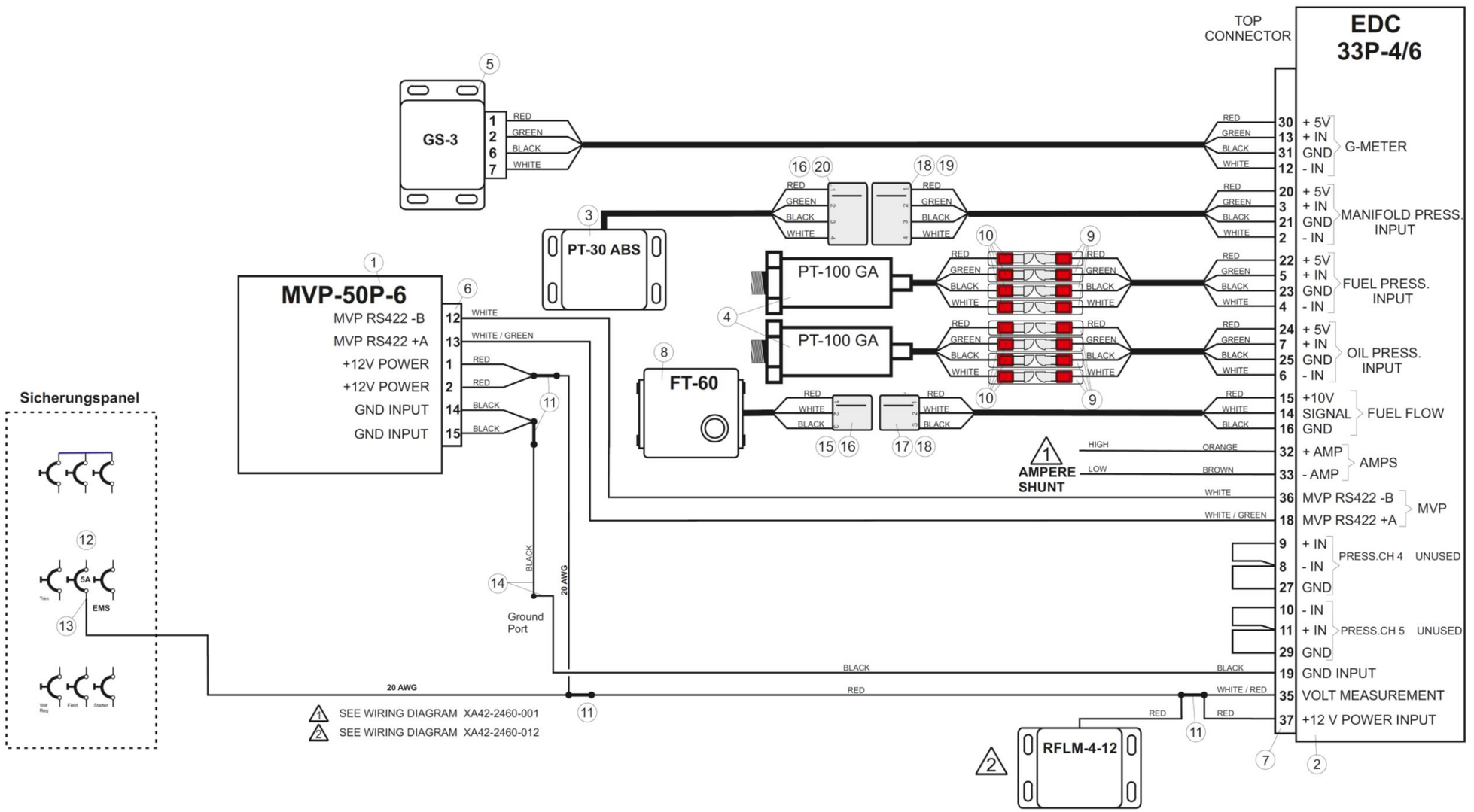
Figure 91-11: XA42-2460-008 B – 12V DC Power Socket (option)




1 It is optional to install both, only aft or only front 12V DC Power Socket

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 12/24 V Power Socket | XS-0150-101 | |
| 2 | 1 | Circuit breaker 2A | MS26574-2 | |
| 3 | 4 | Flat plug sleeve 6,3x0,8 | DIN 46245 | Für AWG 16-14, vollisoliert blau |
| 4 | 4 | PIDG-Ring terminal A3,5-2,5 | 0-0320619-0 | |
| 5 | 1 | PIDG-Ring terminal A5-2,5 | 0-0130094-0 | |
| | | | | |
| | | | | |
| | ALL | 14 AWG | M22759/32-14-9 | |
| | ALL | 12 AWG | M22759/34-12-9 | |

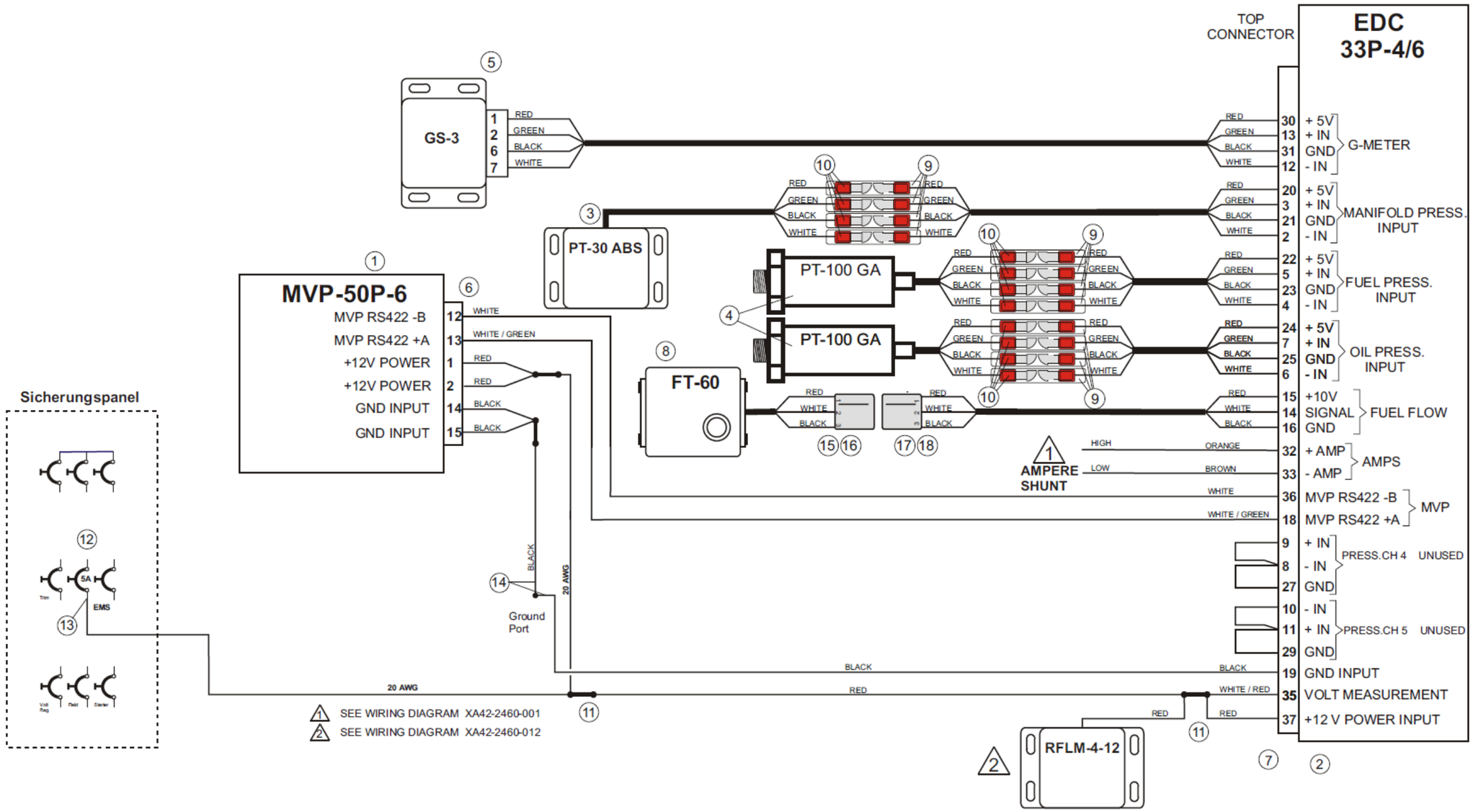
Figure 91-12: XA42-2460-008 A02 – 12V DC Power Socket (option)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | MVP-50P-6 | | Fittings MVP 50 KIT |
| 2 | 1 | EDC 33P-4/6 | | Fittings MVP 50 KIT |
| 3 | 1 | Manifold Sensorbox | PT-30 ABS | Fittings MVP 50 KIT |
| 4 | 2 | Fuel and Oil pressure probe | PT-100 GA | Fittings MVP 50 KIT |
| 5 | 1 | G-Meter Sensor | GS-3 | Fittings MVP 50 KIT |
| 6 | 1 | Wiring loom MVP 50 display | | Fittings MVP 50 KIT |
| 7 | 1 | Wiring loom EDC Top Connector | | Fittings MVP 50 KIT |
| 8 | 1 | Fuel Flow Sensor | FT-60 | Fittings MVP 50 KIT |
| 9 | 8 | Heat shrink tube | | |
| 10 | 16 | KNIFE DISCONNECTS | 32446 | TE Connectivity |
| 11 | 4 | Cripsplice AWG 20-16 blau | M8182411-2 | TE Connectivity, D-436-37 |
| 12 | 1 | Sicherungsautomat 5A | MS26574-5 | |
| 13 | 1 | PIDG-Ring terminal A3,5-1 | MS25036-101 | |

| | | | |
|---|---|---|---|
| 14 | 1 | PIDG-Ring terminal A5-1 | MS25036-103 |
| 15 | 1 | 3 circuit plug | XS-0120-021 |
| 16 | 7 | Pin AWG22/18 | XS-0120-101 |
| 17 | 1 | 3 circuit cap | XS-0120-022 |
| 18 | 7 | Socket AWG22/18 | XS-0120-102 |
| 19 | 1 | 4 circuit plug | XS-0120-032 |
| 20 | 1 | 4 circuit cap | XS-0120-031 |
| | | | |
| | ALL | 22 AWG | M22759/32-22-9 |
| | ALL | 20 AWG | M22759/32-20-9 |

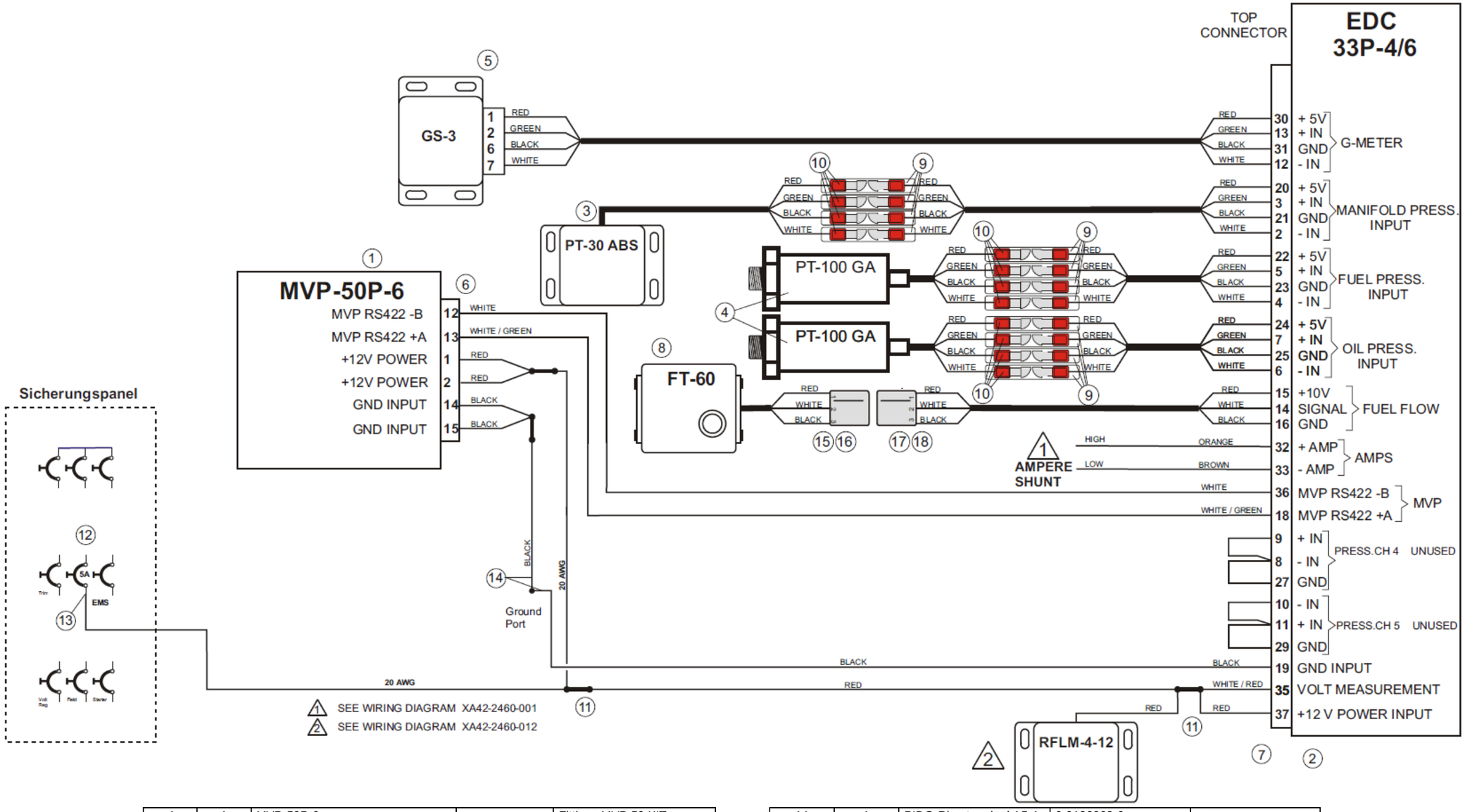
Figure 91-13: XA42-2460-010 B – MVP50 Top Connector (from SN 145 on)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | MVP-50P-6 | | Fittings MVP 50 KIT |
| 2 | 1 | EDC 33P-4/6 | | Fittings MVP 50 KIT |
| 3 | 1 | Manifold Sensorbox | PT-30 ABS | Fittings MVP 50 KIT |
| 4 | 2 | Fuel and Oil pressure probe | PT-100 GA | Fittings MVP 50 KIT |
| 5 | 1 | G-Meter Sensor | GS-3 | Fittings MVP 50 KIT |
| 6 | 1 | Wiring loom MVP 50 display | | Fittings MVP 50 KIT |
| 7 | 1 | Wiring loom EDC Top Connector | | Fittings MVP 50 KIT |
| 8 | 1 | Fuel Flow Sensor | FT-60 | Fittings MVP 50 KIT |
| 9 | 8 | Heat shrink tube 6,0 | | |
| 10 | 16 | KNIFE DISCONNECTS | 32446 | TE Connectivity |
| 11 | 4 | Heat-shrink splices blue | D-436-37 | TE Connectivity, D-436-37 |
| 12 | 1 | Klixon CB 5A | 7277-2-5 | |
| 13 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |

| | | | | |
|---|---|---|---|---|
| 14 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| 15 | 1 | 3 circuit plug | 1-480305-0 | Tyco Electronics |
| 16 | 3 | Pin AWG22/18 | 163558-2 | Tyco Electronics |
| 17 | 1 | 3 circuit cap | XS-0120-022 | Tyco Electronics |
| 18 | 7 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 20 AWG | M22759/32-20-9 | |

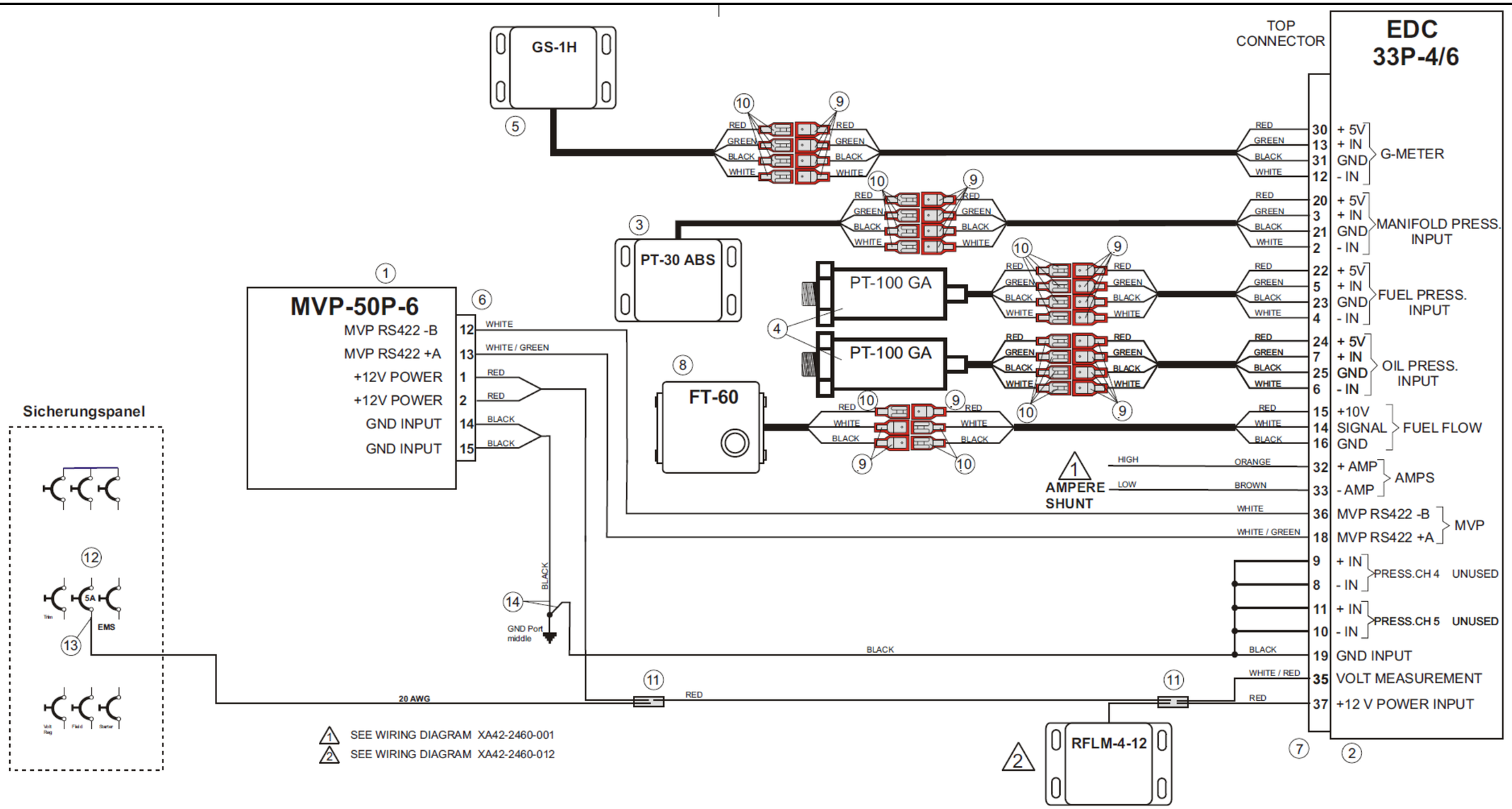
Figure 91-14: XA42-2460-010 A05 – MVP50 Top Connector (from SN123 to SN144)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | MVP-50P-6 | | Fittings MVP 50 KIT |
| 2 | 1 | EDC 33P-4/6 | | Fittings MVP 50 KIT |
| 3 | 1 | Manifold Sensorbox | PT-30 ABS | Fittings MVP 50 KIT |
| 4 | 2 | Fuel and Oil pressure probe | PT-100 GA | Fittings MVP 50 KIT |
| 5 | 1 | G-Meter Sensor | GS-3 | Fittings MVP 50 KIT |
| 6 | 1 | Wiring loom MVP 50 display | | Fittings MVP 50 KIT |
| 7 | 1 | Wiring loom EDC Top Connector | | Fittings MVP 50 KIT |
| 8 | 1 | Fuel Flow Sensor | FT-60 | Fittings MVP 50 KIT |
| 9 | 8 | Heat shrink tube 6,0 | | |
| 10 | 16 | KNIFE DISCONNECTS | 32446 | TE Connectivity |
| 11 | 4 | Heat-shrink splices blue | D-436-37 | TE Connectivity, D-436-37 |
| 12 | 1 | Klixon CB 5A | 7277-2-5 | |
| 13 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |

| | | | | |
|---|---|---|---|---|
| 14 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| 15 | 1 | 3 circuit plug | 1-480305-0 | Tyco Electronics |
| 16 | 3 | Pin AWG22/18 | 163558-2 | Tyco Electronics |
| 17 | 1 | 3 circuit cap | XS-0120-022 | Tyco Electronics |
| 18 | 7 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 20 AWG | M22759/32-20-9 | |

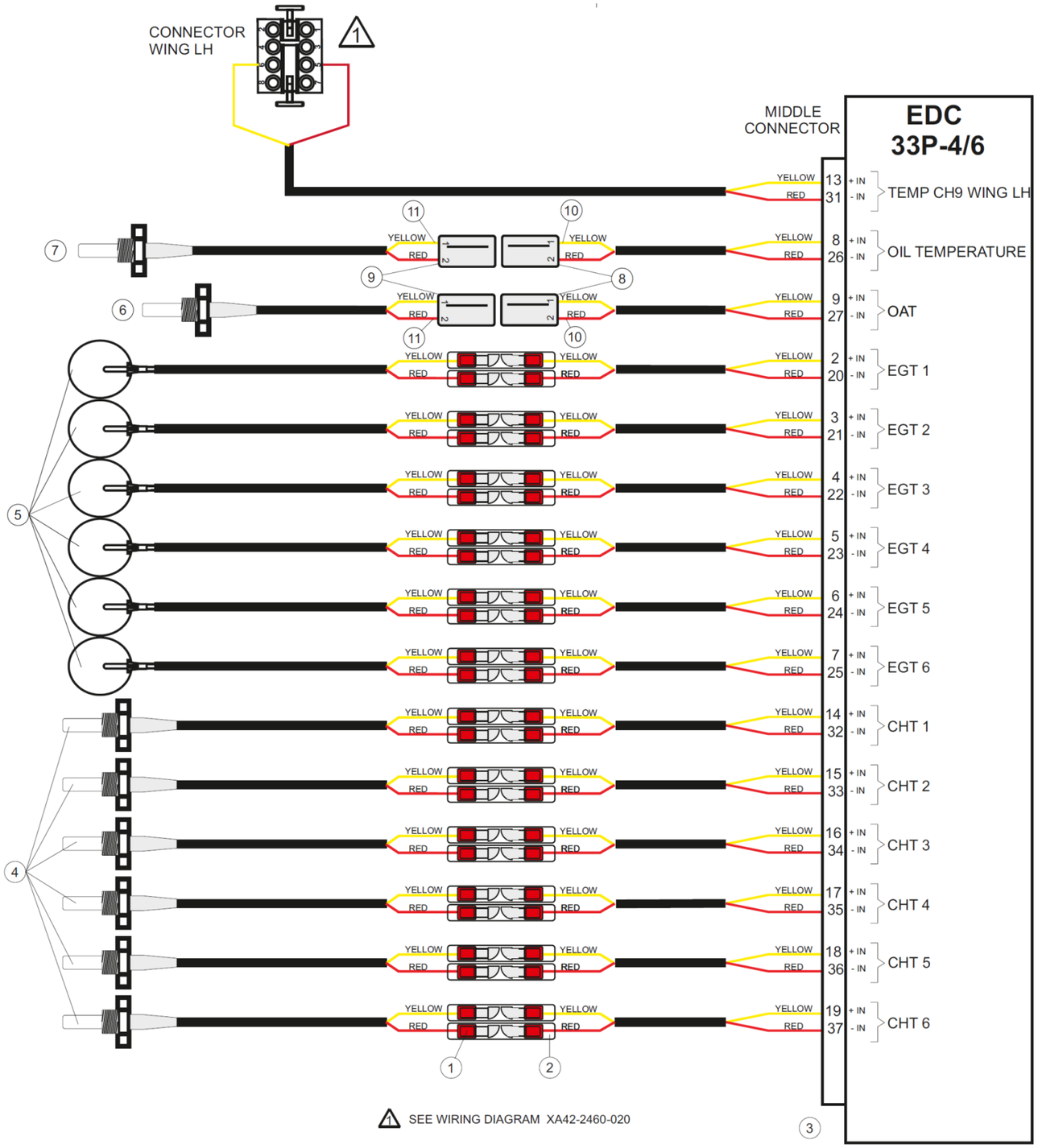
Figure 91-15: XA42-2460-010 A04 – MVP50 Top Connector (from SN115 to SN122)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | MVP-50P-6 | | Fittings MVP 50 KIT |
| 2 | 1 | EDC 33P-4/6 | | Fittings MVP 50 KIT |
| 3 | 1 | Manifold Sensorbox | PT-30 ABS | Fittings MVP 50 KIT |
| 4 | 2 | Fuel and Oil pressure probe | PT-100 GA | Fittings MVP 50 KIT |
| 5 | 1 | G-Meter Sensor | GS-1H | Fittings MVP 50 KIT |
| 6 | 1 | Wiring loom MVP 50 display | | Fittings MVP 50 KIT |
| 7 | 1 | Wiring loom EDC Top Connector | | Fittings MVP 50 KIT |
| 8 | 1 | Fuel Flow Sensor | FT-60 | Fittings MVP 50 KIT |
| 9 | 8 | Flat tab plug fully insulated | | |
| 10 | 16 | Flat tab socket fully insulated | | |
| 11 | 4 | Heat-shrink splices blue | D-436-37 | TE Connectivity, D-436-37 |

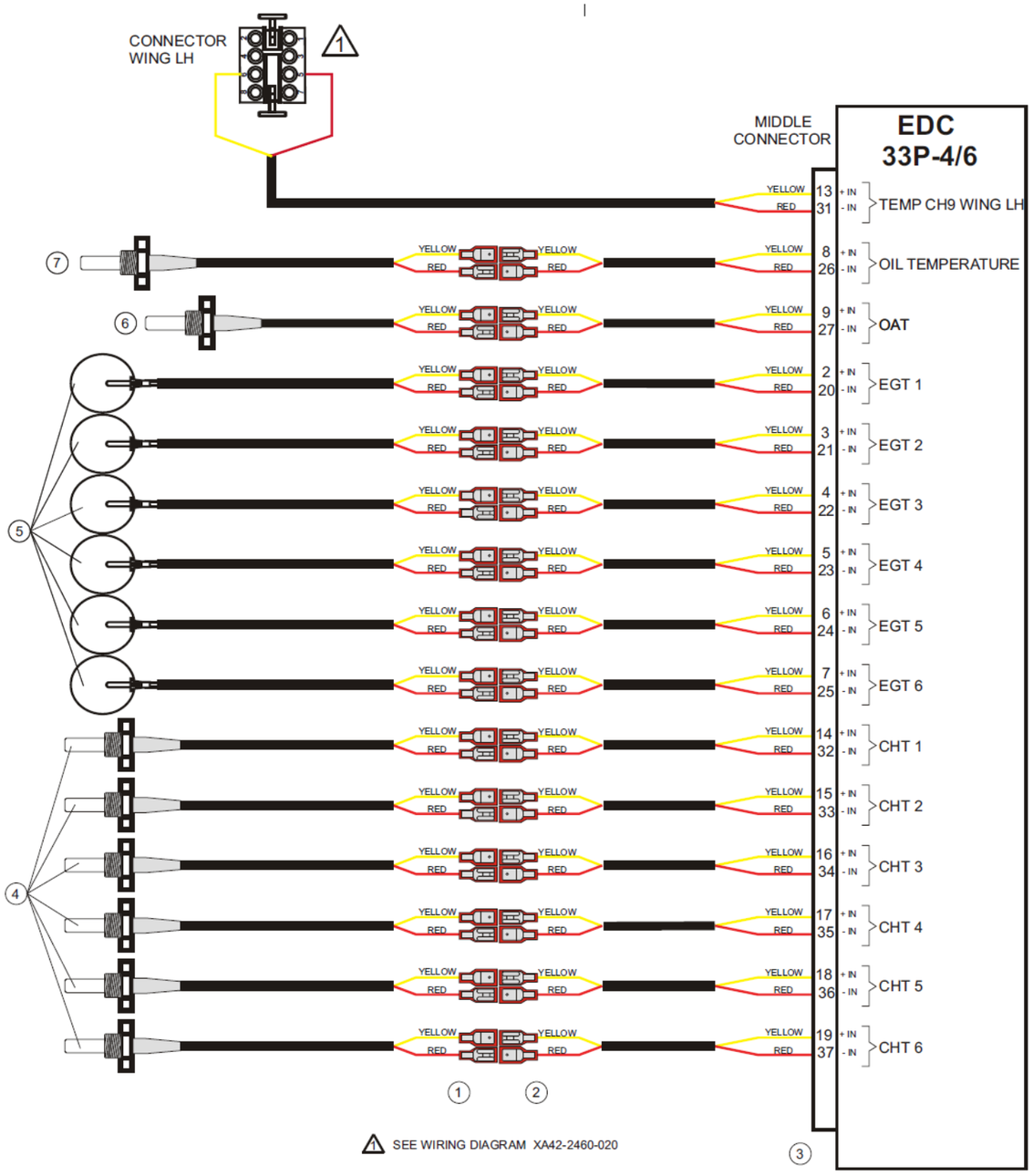
| | | | | |
|---|---|---|---|---|
| 12 | 1 | Klixon CB 5A | 7277-2-5 | AMP |
| 13 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 14 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Figure 91-16: XA42-2460-010 A03 – MVP50 Top Connector (from SN108 to SN114)



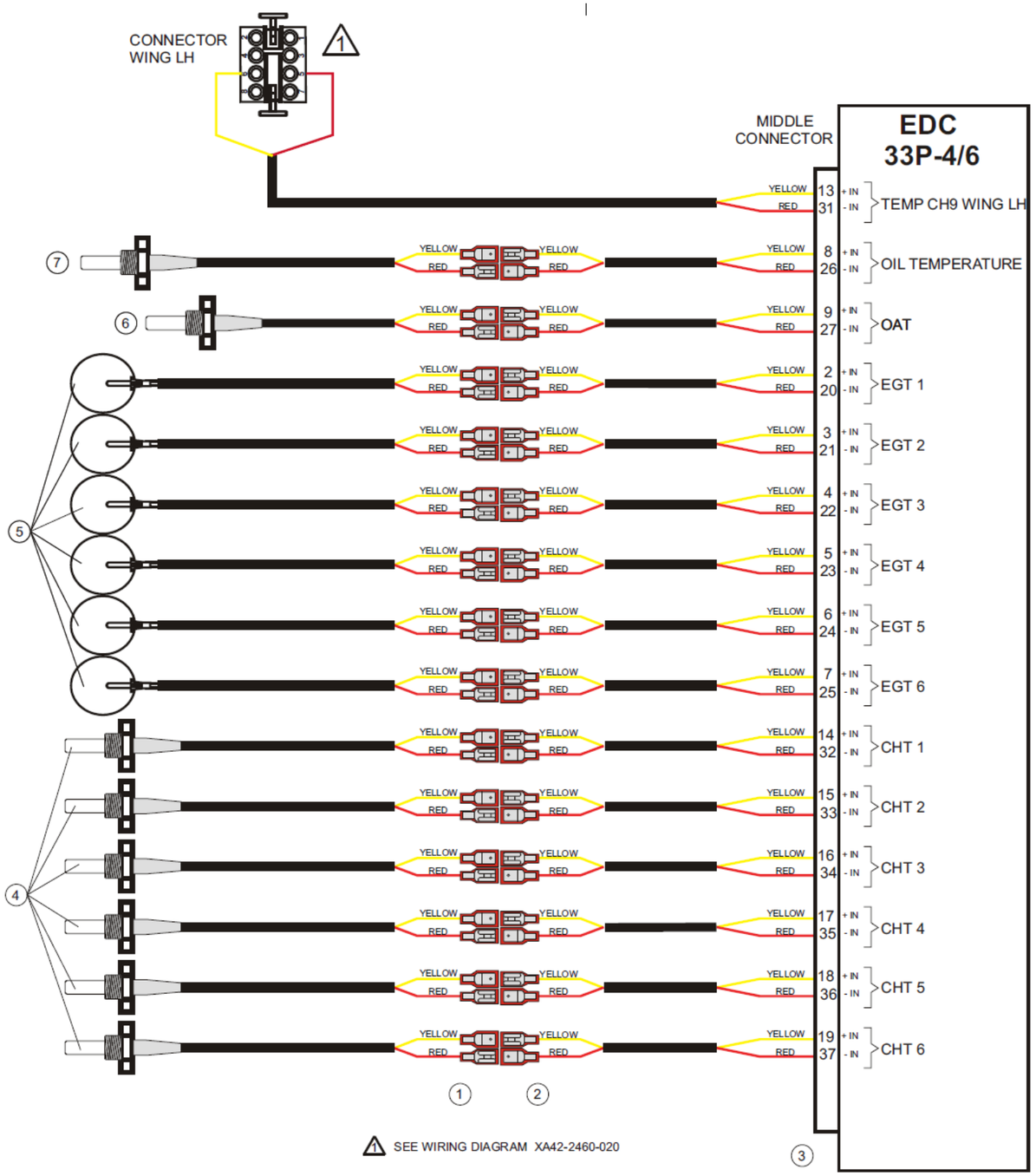

| | | | | |
|---|---|---|---|---|
| 1 | 48 | KNIFE DISCONNECTS | 32446 | TE Connectivity |
| 2 | 24 | Heat shrink tube 6,0 | | |
| 3 | 1 | Wiring loom EDC Middle Connect. | | Zubehör MVP 50 KIT |
| 4 | 6 | CHT Sensor | P-100 | Zubehör MVP 50 KIT |
| 5 | 6 | EGT Sensor | P-110 | Zubehör MVP 50 KIT |
| 6 | 1 | OAT Sensor | P-128 | Zubehör MVP 50 KIT |
| 7 | 1 | Oil temperature Sensor | P-120 | Zubehör MVP 50 KIT |
| 8 | 2 | 2 circuit plug | XS-0120-011 | TE Connectivity, C-480318 |
| 9 | 2 | 2 circuit cap | XS-0120-012 | TE Connectivity, C-480319 |
| 10 | 4 | 2 circuit cap AWG22/18 | XS-0120-102 | TE Connectivity, 0-163557-2 |
| 11 | 4 | Pin AWG22/18 | XS-0120-101 | TE Connectivity, 0-163558-2 |

Figure 91-17: XA42-2460-011 B – MVP50 Middle Connector Installation (from SN145 on)



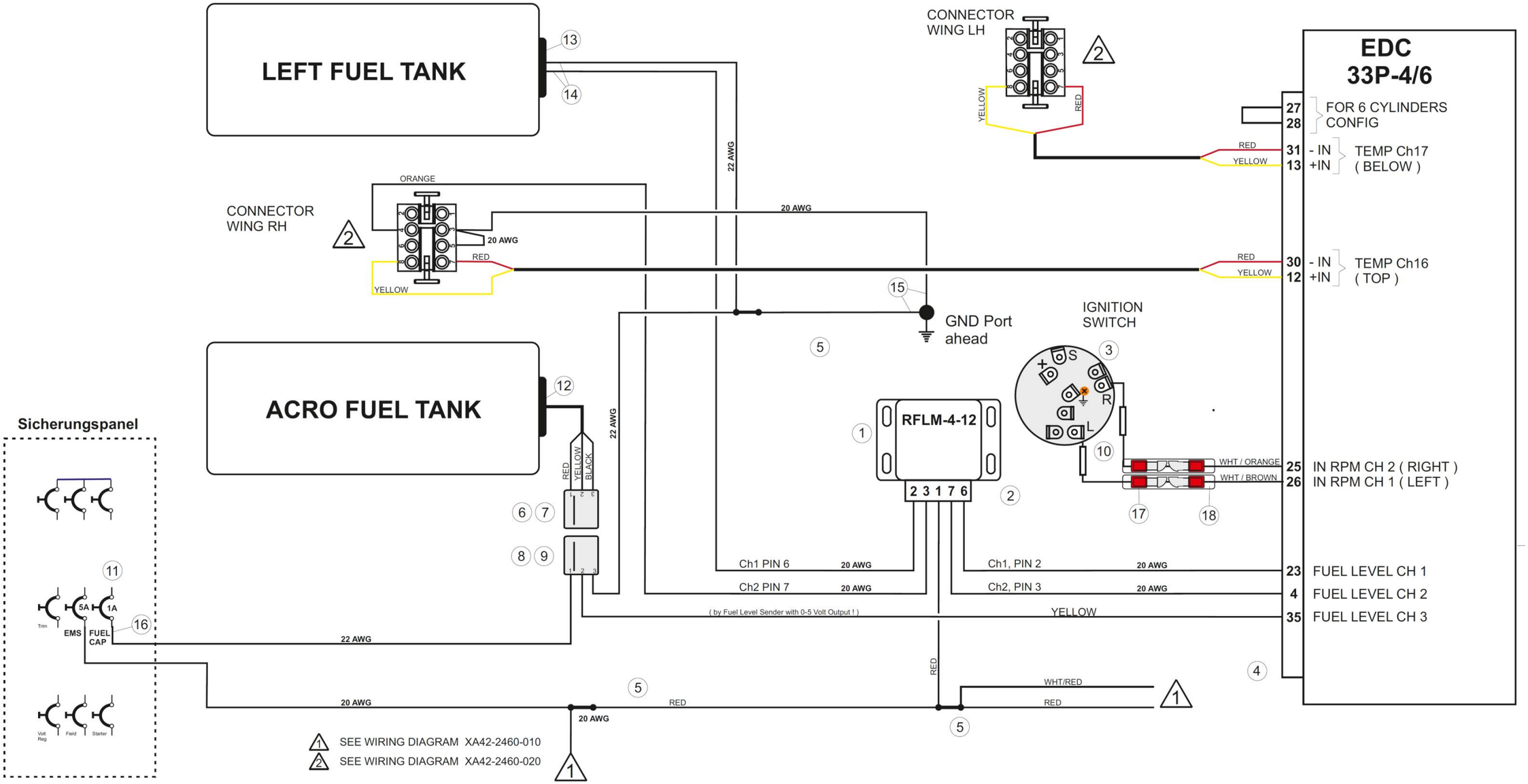

| | | | | |
|---|---|---|---|---|
| 1 | 56 | KNIFE DISCONNECTS | | Zubehör MVP 50 KIT |
| 2 | 28 | Heat shrink tube 6,0 | 32446 | TE Connectivity |
| 3 | 1 | Wiring loom EDC Middle Connect. | | |
| 4 | 6 | CHT Sensor | P-100 | Zubehör MVP 50 KIT |
| 5 | 6 | EGT Sensor | P-110 | Zubehör MVP 50 KIT |
| 6 | 1 | OAT Sensor | P-128 | Zubehör MVP 50 KIT |
| 7 | 1 | Oil temperature Sensor | P-120 | Zubehör MVP 50 KIT |

Figure 91-18: XA42-2460-011 A04 – MVP50 Middle Connector Installation (from SN123 to SN144)




| | | | | |
|---|---|---|---|---|
| 1 | 14 | Flat tab plug fully insulated | | Zubehör MVP 50 KIT |
| 2 | 14 | Flat tab socket fully insulated | | Zubehör MVP 50 KIT |
| 3 | 1 | Wiring loom EDC Middle Connect. | | Zubehör MVP 50 KIT |
| 4 | 6 | CHT Sensor | P-100 | Zubehör MVP 50 KIT |
| 5 | 6 | EGT Sensor | P-110 | Zubehör MVP 50 KIT |
| 6 | 1 | OAT Sensor | P-128 | Zubehör MVP 50 KIT |
| 7 | 1 | Oil temperature Sensor | P-120 | Zubehör MVP 50 KIT |

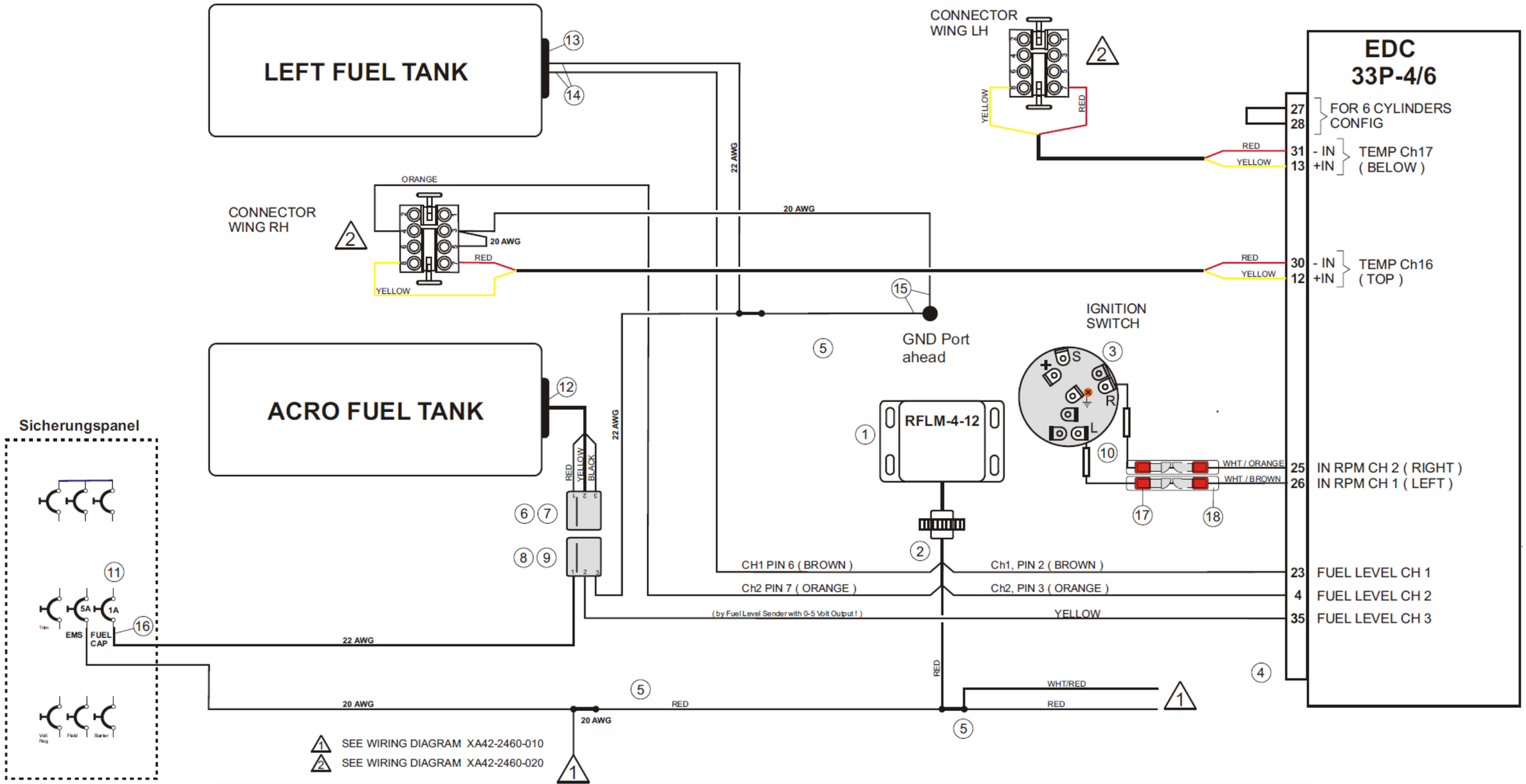
Figure 91-19: XA42-2460-011 A03 – MVP50 Middle Connector Installation (from SN108 to SN122)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Fuel Level Sender Module | RFLM-4-12 | Zubehör MVP 50 KIT |
| 2 | 1 | Sub-D crimp plug, 9-pin | | Zubehör MVP 50 KIT |
| 3 | 1 | Ignition switch | A-510-2 | ACS Products Co. |
| 4 | 1 | Wiring loom EDC Bottom Conn. | | Zubehör MVP 50 KIT |
| 5 | 3 | Crimpspleiß AWG 20-16 blau | D-436-37 | TE Connectivity |
| 6 | 1 | 3 circuit cap | 1-480305-0 | Tyco Electronics |
| 7 | 3 | Pin AWG22/18 | 163558-2 | Tyco Electronics |
| 8 | 1 | 3 circuit plug | 1-480303-0 | Tyco Electronics |
| 9 | 3 | Socket AWG22/18 | 163557-2 | Tyco Electronics |
| 10 | 2 | Ring Terminal Isolator | 79 Ohm | Zubehör MVP 50 KIT |
| 11 | 1 | Klixon CB 1A | 7277-2-1 | Sensata |

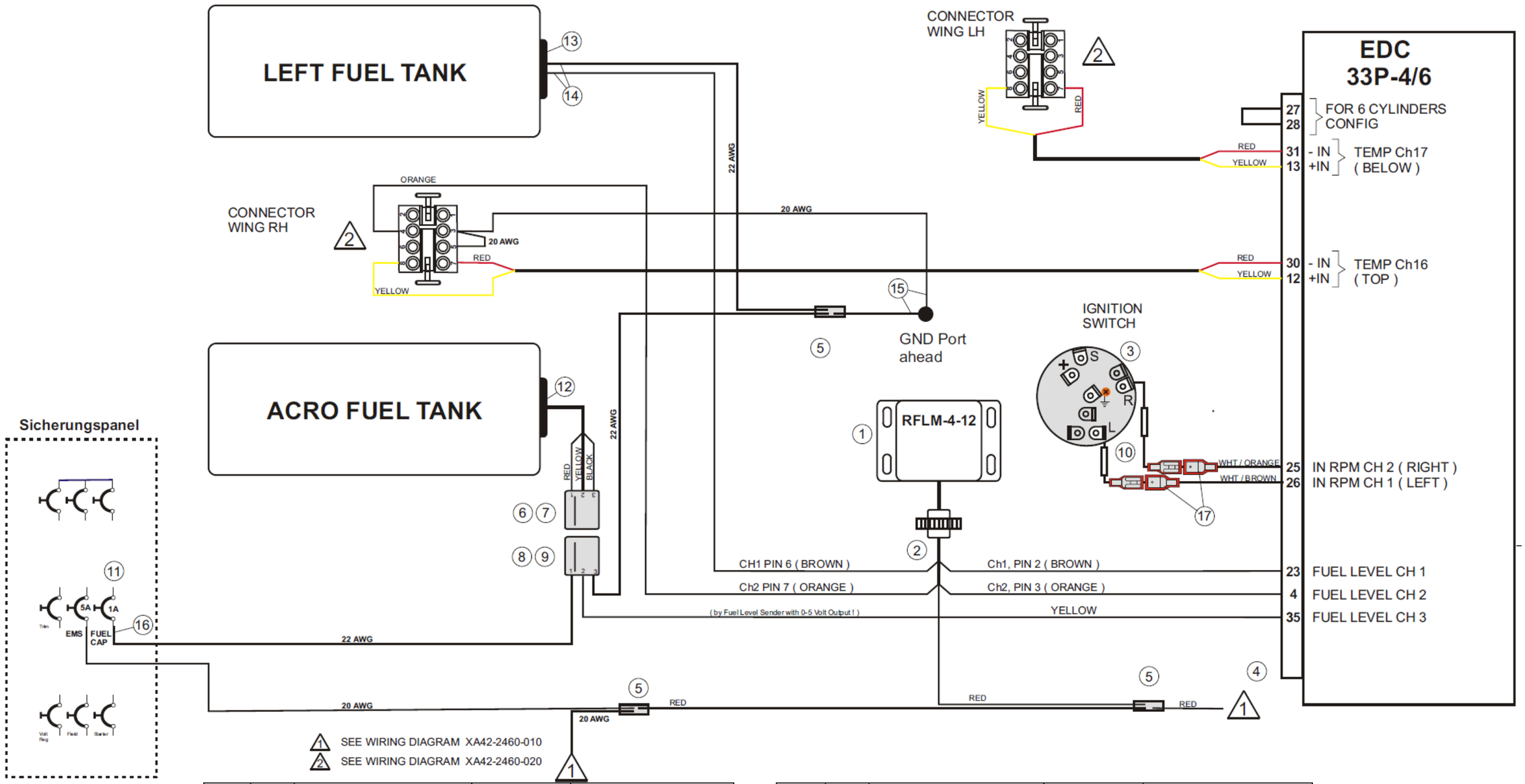
| | | | | |
|---|---|---|---|---|
| 12 | 1 | Fuel level probe acro tank | XA42-2810-275 | Westach AP-Q24B3-D1205V |
| 13 | 1 | Fuel level probe wing tank | XA42-2820-252 | |
| 14 | 2 | Ultra-Fast Faston red gewinkelt | 2-0520129-2 | AMP |
| 15 | 2 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| 16 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 17 | 4 | KNIFE DISCONNECTS | 32446 | TE Connectivity |
| 18 | 2 | Heat shrink tube 6,0 | | |
| | | | | |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 20 AWG | M22759/32-20-9 | |

Figure 91-20: XA42-2460-012 A06 – MVP50 Bottom Connector Installation (from SN 134 on)




| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | Fuel Level Sender Module | RFLM-4-12 | Zubehör MVP 50 KIT | | 12 | 1 | Fuel level probe acro tank | XA42-2810-275 | Westach AP-Q24B3-D1205V |
| 2 | 1 | Sub-D crimp plug, 9-pin | | Zubehör MVP 50 KIT | | 13 | 1 | Fuel level probe wing tank | XA42-2820-252 | |
| 3 | 1 | Ignition switch | A-510-2 | ACS Products Co. | | 14 | 2 | Ultra-Fast Faston red gewinkelt | 2-0520129-2 | AMP |
| 4 | 1 | Wiring loom EDC Bottom Conn. | | Zubehör MVP 50 KIT | | 15 | 2 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| 5 | 3 | Crimpspleiß AWG 20-16 blau | D-436-37 | TE Connectivity | | 16 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 6 | 1 | 3 circuit cap | 1-480305-0 | Tyco Electronics | | 17 | 4 | KNIFE DISCONNECTS | 32446 | TE Connectivity |
| 7 | 3 | Pin AWG22/18 | 163558-2 | Tyco Electronics | | 18 | 2 | Heat shrink tube 6,0 | | |
| 8 | 1 | 3 circuit plug | 1-480303-0 | Tyco Electronics | | | | | | |
| 9 | 3 | Socket AWG22/18 | 163557-2 | Tyco Electronics | | | | | | |
| 10 | 2 | Ring Terminal Isolator | 79 Ohm | Zubehör MVP 50 KIT | | | ALL | 22 AWG | M22759/32-22-9 | |
| 11 | 1 | Klixon CB 1A | 7277-2-1 | Sensata | | | ALL | 20 AWG | M22759/32-20-9 | |

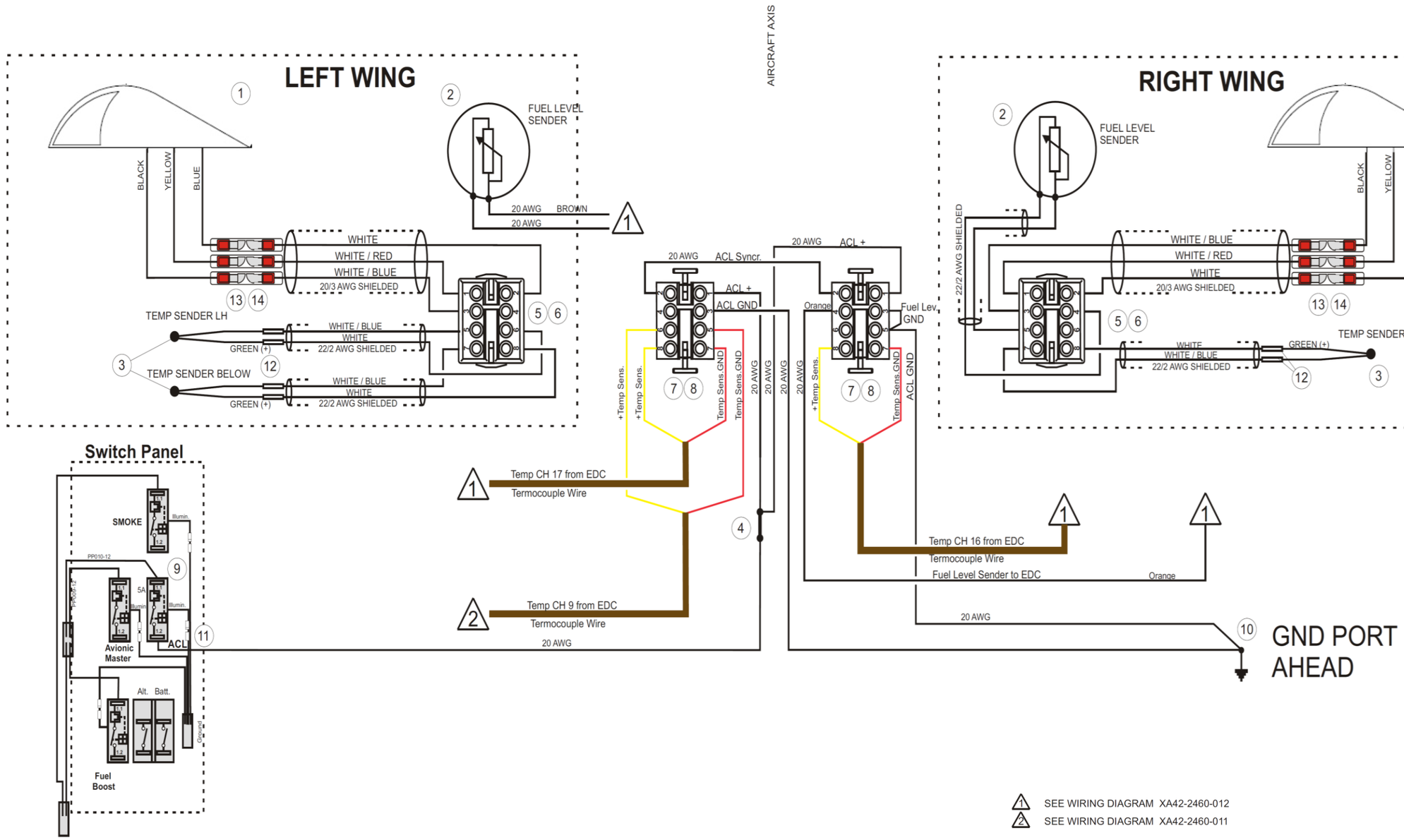
Figure 91-21: XA42-2460-012 A05 – MVP50 Bottom Connector Installation (from SN123 to SN133)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Fuel Level Sender Module | RFLM-4-12 | Zubehör MVP 50 KIT |
| 2 | 1 | Sub-D crimp plug, 9-pin | | Zubehör MVP 50 KIT |
| 3 | 1 | Ignition switch | A-510-2 | ACS Products Co. |
| 4 | 1 | Wiring loom EDC Bottom Conn. | | Zubehör MVP 50 KIT |
| 5 | 3 | Crimpspleiß AWG 20-16 blau | D-436-37 | TE Connectivity |
| 6 | 1 | 3 circuit cap | 1-480305-0 | Tyco Electronics |
| 7 | 3 | Pin AWG22/18 | 163558-2 | Tyco Electronics |
| 8 | 1 | 3 circuit plug | 1-480303-0 | Tyco Electronics |
| 9 | 3 | Socket AWG22/18 | 163557-2 | Tyco Electronics |
| 10 | 2 | Ring Terminal Isolator | 79 Ohm | Zubehör MVP 50 KIT |
| 11 | 1 | Klixon CB 1A | 7277-2-1 | Sensata |

| | | | | |
|---|---|---|---|---|
| 12 | 1 | Fuel level probe acro tank | XA42-2810-275 | Westach AP-Q24B3-D1205V |
| 13 | 1 | Fuel level probe wing tank | XA42-2820-252 | |
| 14 | 2 | Ultra-Fast Faston red gewinkelt | 2-0520129-2 | AMP |
| 15 | 2 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| 16 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 17 | 4 | KNIFE DISCONNECTS | 32446 | TE Connectivity |
| 18 | 2 | Heat shrink tube 6,0 | | |
| | | | | |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 20 AWG | M22759/32-20-9 | |

Figure 91-22: XA42-2460-012 A04 – MVP50 Bottom Connector Installation (from SN108 to SN122)

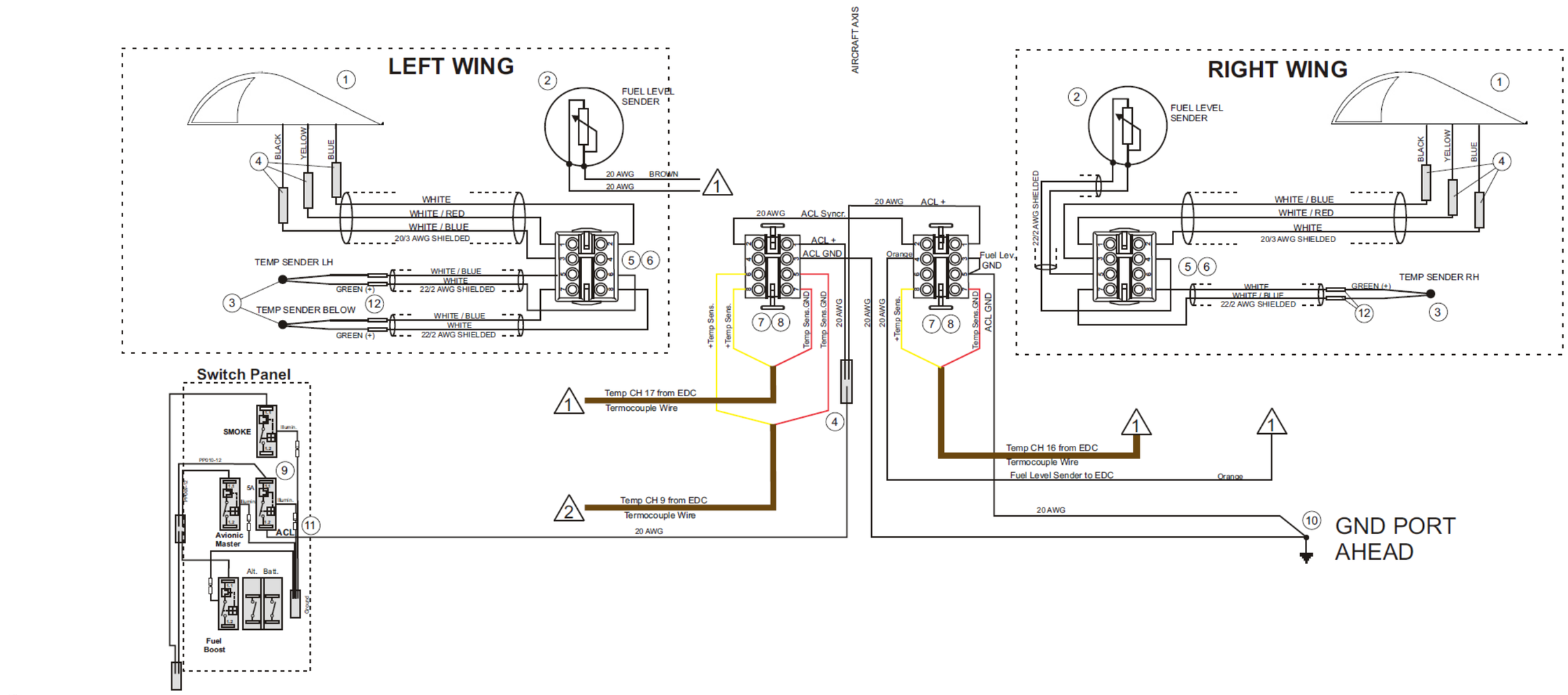



SEE WIRING DIAGRAM XA42-2460-012
SEE WIRING DIAGRAM XA42-2460-011

| | | | | |
|---|---|---|---|---|
| 1 | 2 | ACL Andromeda | AVE-WLSOEA-60G | AVEO |
| 2 | 2 | Fuel level probe lever | 226 801 015 001G | VDO |
| 3 | 3 | Temperatur probe Typ K | 1111-11-207 | Thermo Sensor GmbH |
| 4 | 7 | PIDG-crimp splice red | 0-0320559-0 | AMP |
| 5 | 2 | 8 circuit cap | 1-480345-0 | Tyco Electronics |
| 6 | 14 | Pinl AWG22/18 | 163558-2 | Tyco Electronics |
| 7 | 2 | 8 circuit plug | 1-480283-0 | Tyco Electronics |
| 8 | 14 | Socket AWG22/18 | 163557-2 | Tyco Electronics |
| 9 | 1 | Thermal switch 5A | 3130-F110-P7T1W12QY2-5A | E-T-A |

| | | | | |
|---|---|---|---|---|
| 10 | 1 | PIDG-Ring terminal A6-1 | 0-0031894-0 | AMP |
| 11 | 1 | Faston tilted receptabe red | 2-0520129-2 | AMP |
| 12 | 6 | wire ferril 0,5qm | 440106.47 | Vogt |
| 13 | 12 | KNIFE DISCONNECTS | 32446 | TE Connectivity |
| 14 | 6 | Heat shrink tube 6,0 | | |
| | ALL | 20 AWG | M22759/32-20-9 | |
| | ALL | 22/2 AWG SHIELDED | M27500-22SD2T23 HU | |
| | ALL | 20/3 AWG SHIELDED | M27500-20TG3T14 | |

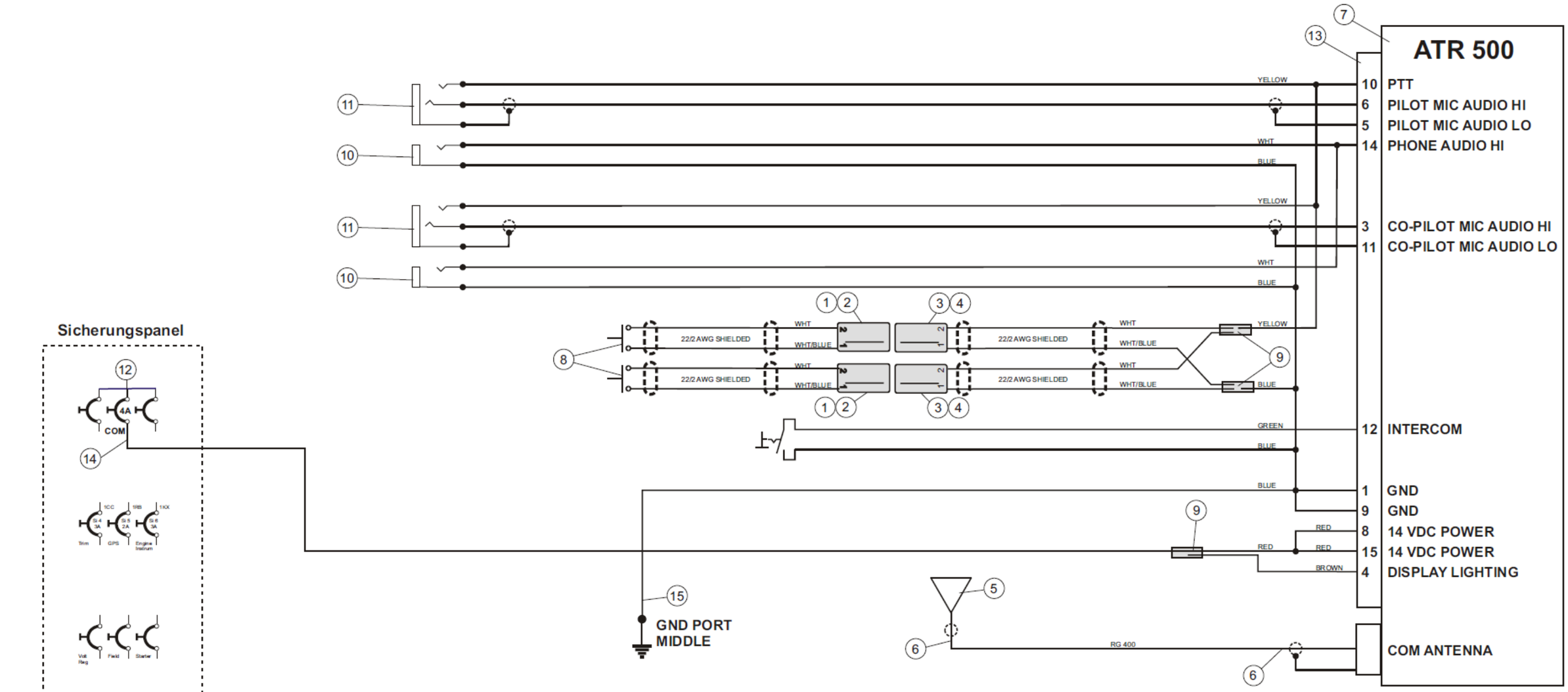
Figure 91-23: XA42-2460-020 A.04 – Wiring Wing (from SN 123 on)




1 SEE WIRING DIAGRAM XA42-2460-012
2 SEE WIRING DIAGRAM XA42-2460-011

| | | | | |
|---|---|---|---|---|
| 1 | 2 | ACL Andromeda | AVE-WLSOEA-60G | AVEO |
| 2 | 2 | Fuel level probe lever | 226 801 015 001G | VDO |
| 3 | 3 | Temperatur probe Typ K | 1111-11-207 | Thermo Sensor GmbH |
| 4 | 7 | PIDG-crimp splice red | 0-0320559-0 | AMP |
| 5 | 2 | 8 circuit cap | 1-480345-0 | Tyco Electronics |
| 6 | 14 | Pin AWG22/18 | 163558-2 | Tyco Electronics |
| 7 | 2 | 8 circuit plug | 1-480283-0 | Tyco Electronics |
| 8 | 14 | Socket AWG22/18 | 163557-2 | Tyco Electronics |
| 9 | 1 | Thermal switch 5A | 3130-F110-P7T1W12QY2-5A | E-T-A |
| 10 | 1 | PIDG-Ring terminal A6-1 | 0-0031894-0 | AMP |
| 11 | 1 | PIDG-Ring terminal 3,5-1 | 0-0036150-0 | AMP |
| 12 | 6 | wire ferril 0,5qm | 440106.47 | Vogt |
| | ALL | 20 AWG | M22759/32-20-9 | |
| | ALL | 22/2 AWG SHIELDED | M27500-22SD2T23 HU | |
| | ALL | 20/3 AWG SHIELDED | M27500-20TG3T14 | |

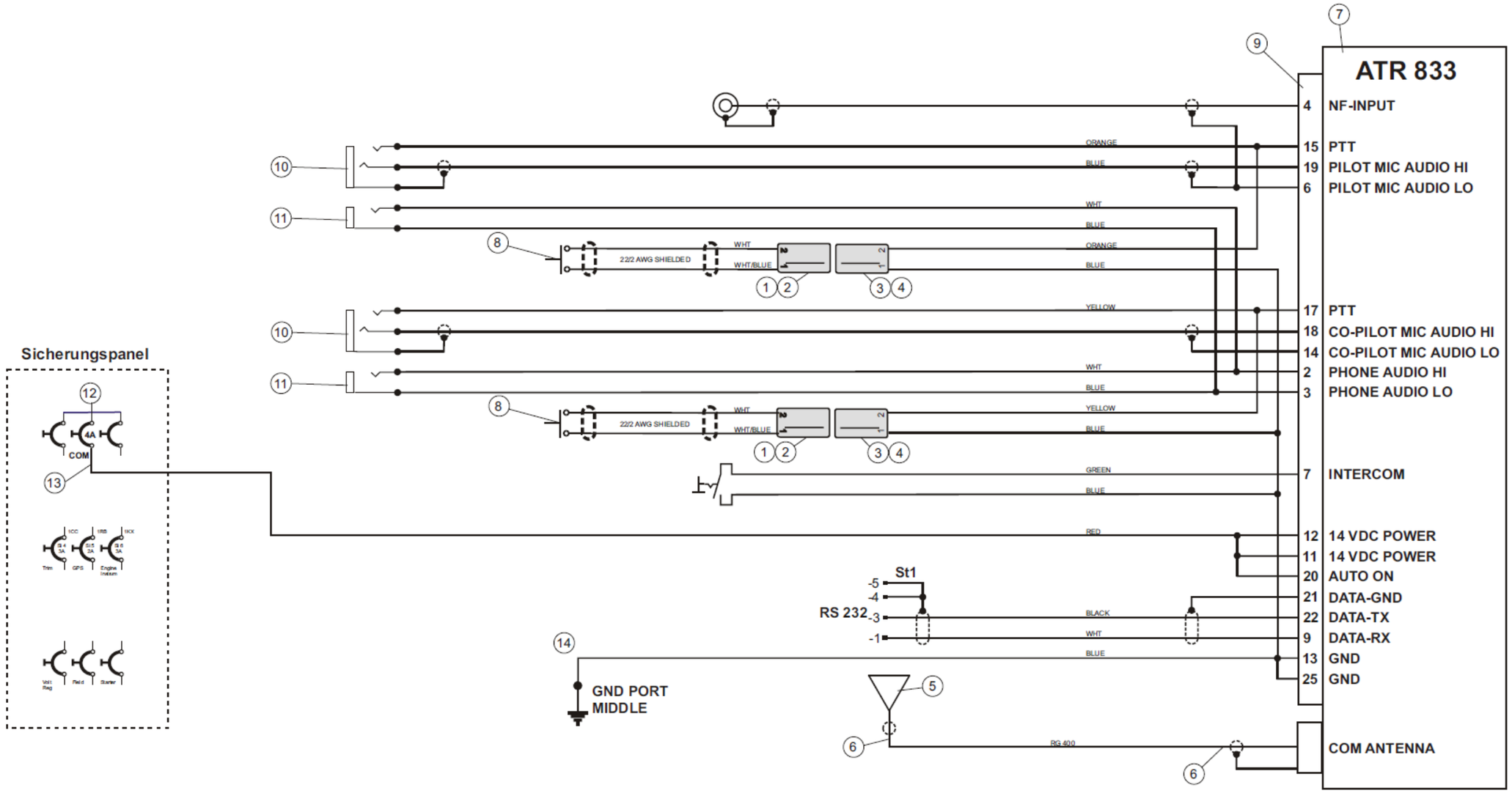
Figure 91-24: XA42-2460-020 A03 – Wiring Wing (from SN108 to SN122)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | 2 circuit cap | 1-480319-0 | Tyco Electronics |
| 2 | 2 | Pin AWG22/18 | 163558-2 | Tyco Electronics |
| 3 | 1 | 2 circuit plug | 1-480318-0 | Tyco Electronics |
| 4 | 2 | Socket AWG22/18 | 163557-2 | Tyco Electronics |
| 5 | 1 | COM Antenne | CI-122 | Comant Industries |
| 6 | 2 | BNC crimp plug | 546-4853 | RS Components |
| 7 | 1 | VHF Transciever | ATR 500 | Funkwerk |
| 8 | 1 | Push button. 1-pin | 9633AX1146 | APEM |
| 9 | 4 | PIDG-crimpsplice red | 0-0320559-0 | AMP |

| | | | | |
|---|---|---|---|---|
| 10 | 1 | Headphone socket | Zubehör Kabelsatz | |
| 11 | 1 | Microphone socket | Zubehör Kabelsatz | |
| 12 | | Klixon CB | 7277-2-4 | Sensata |
| 13 | 1 | Wiring loom VHF Transceiver | BSKS500M | Funkwerk |
| 14 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 15 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| | | | | |
| | ALL | 22/2 AWG SHIELDED | M27500-22SD2T23 HU | |
| | ALL | RG400 | M17/128-RG400 | |

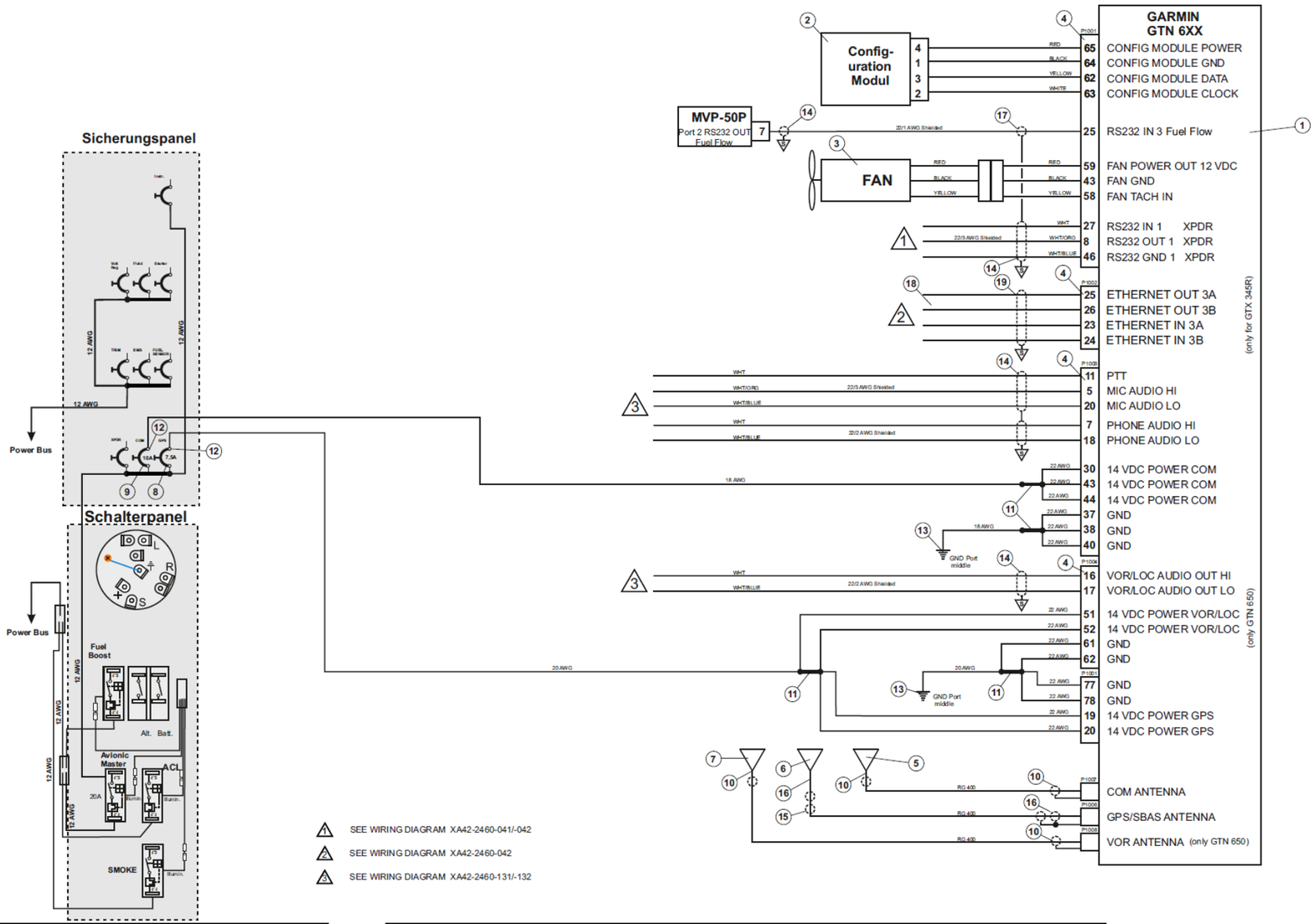
Figure 91-25: XA42-2460-030 A01 – ATR 500 (from SN 108 on)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | 2 circuit cap | 1-480319-0 | Tyco Electronics |
| 2 | 2 | Pin AWG22/18 | 163558-2 | Tyco Electronics |
| 3 | 1 | 2 circuit plug | 1-480318-0 | Tyco Electronics |
| 4 | 2 | Socket AWG22/18 | 163557-2 | Tyco Electronics |
| 5 | 1 | COM Antenne | CI-122 | Comant Industries |
| 6 | 2 | BNC Crimp plug | 546-4853 | RS Components |
| 7 | 1 | VHF Transciever | ATR 833 | Funkwerk |
| 8 | 1 | Push button. 1-pin | 9633AX1146 | APEM |
| 9 | 1 | Wiring loom VHF Transciever | BSKS833T | Funkwerk |

| | | | | |
|---|---|---|---|---|
| 10 | 1 | Mic.-socket | | Zubehör Kabelsatz |
| 11 | 1 | Phone socket | | Zubehör Kabelsatz |
| 12 | 1 | Klixon CB 4A | 04.02.7277 | Sensata |
| 13 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 14 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| | | | | |
| | ALL | RG 400 | M17/128-RG400 | |
| | ALL | 22/2 AWG shielded | M27500-22SD2T23 HU | |

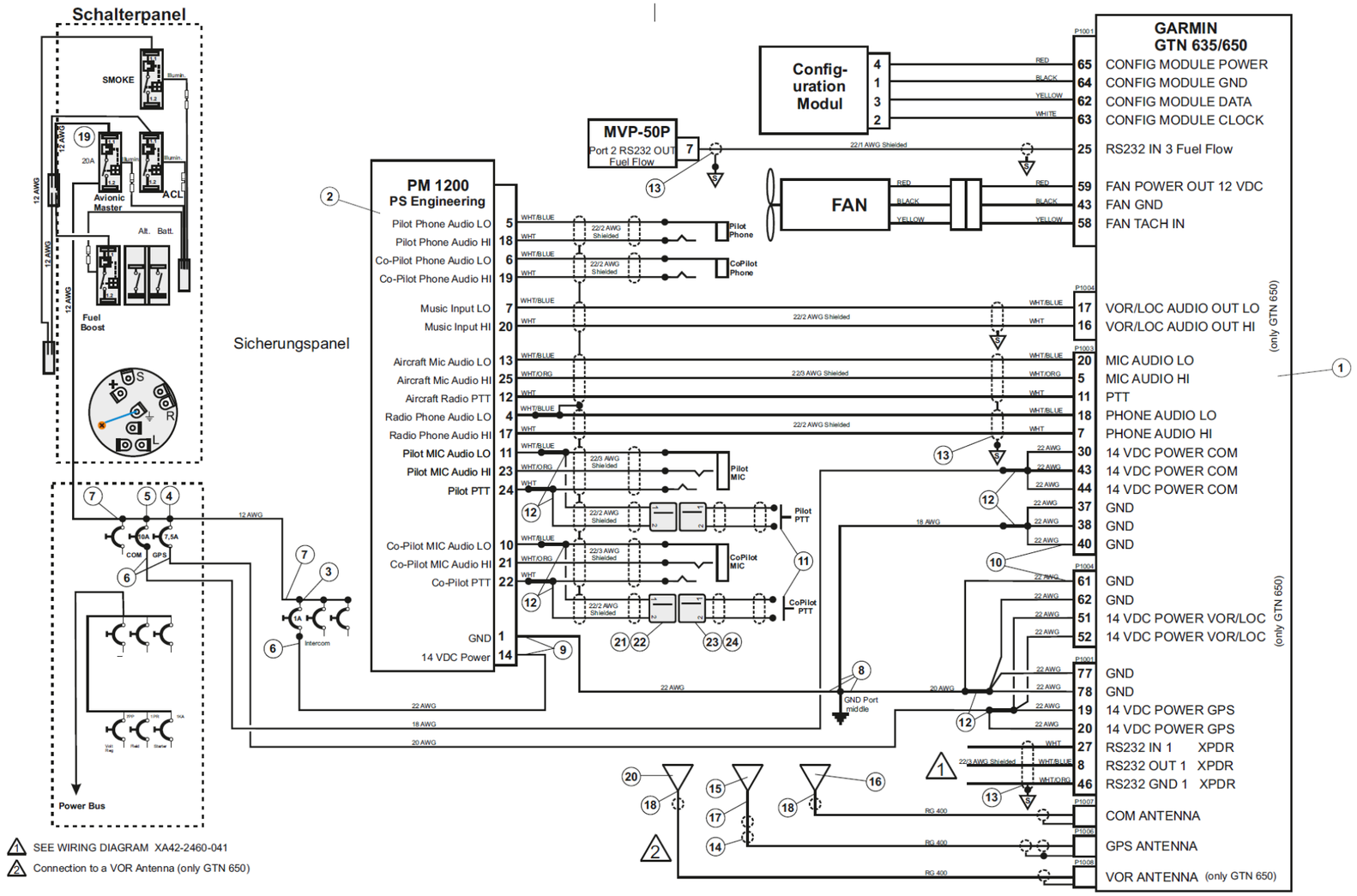
Figure 91-26: XA42-2460-031 A01 – ATR 833 (from SN 108 to 148)




| | | | |
|---|---|---|---|
| 1 | Radio GTN 650 | 010-00813-50 | Garmin |
| 1 | Configuration Modul | | Install. KIT 010-00813-50 |
| 1 | FAN | 371-00014-01 | Install. KIT 010-00813-50 |
| 1 | Connector Kit | 011-02325-02 | Install. KIT 010-00813-50 |
| 1 | Com Antenne | CI-122 | Comant Industries |
| 1 | GPS Ant. GA35 schwarz | 013-00235-00 | Garmin |
| 1 | NAV Antenne | CI-159C | Comant Industries |
| 1 | Circuit breaker 7,5A | MS26574-7,5 | |
| 1 | Circuit breaker 10A | MS26574-10 | |
| 4 | BNC MALE CONNECT RG400 | M39012/16-0503 | 2 Cat. B 11-01802 |
| 3 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity, D-436-37 |
| 2 | PIDG-Ring terminal A3,5-1 | MS25036-101 | |
| 1 | PIDG-Ring terminal A5-1 | MS25036-103 | |
| 4 | Lötverbinder 4,8mm | B-155-05 | TE Connectivity |

| | | | | |
|---|---|---|---|---|
| 15 | 1 | Abschirmgefl. ID 6,0 4,0-10 mm | VG96936-10 Typ A 003 A | Cabeltec, HBT99-06.0-2/0-F, ID 6 |
| 16 | 2 | TNC Stecker RG400 gerade | M39012/26-0503 | Rosenberger, 56S107-106N5 |
| 17 | 1 | solder connector 1mm | B-155-03 | TE Connectivity |
| 18 | - | Ehternet Cat. 5 | EDI-CAT5-1 | ARINC |
| 19 | 2 | solder connector yellow | CWT-9004 | TE Connectivity |
| | | | | |
| All | | 22 AWG | M22759/32-22-9 | |
| All | | 20 AWG | M22759/32-20-9 | |
| All | | 18 AWG | M22759/32-18-9 | |
| All | | 12 AWG | M22759/34-12-9 | |
| All | | 22/1 AWG | M27500-22TE1T14 | |
| All | | 22/2 AWG | M27500-22SD2T23 HU | |
| All | | 22/3 AWG | M27500-22SD3T23 HU | |
| All | | RG400 | M17/128-RG400 | |

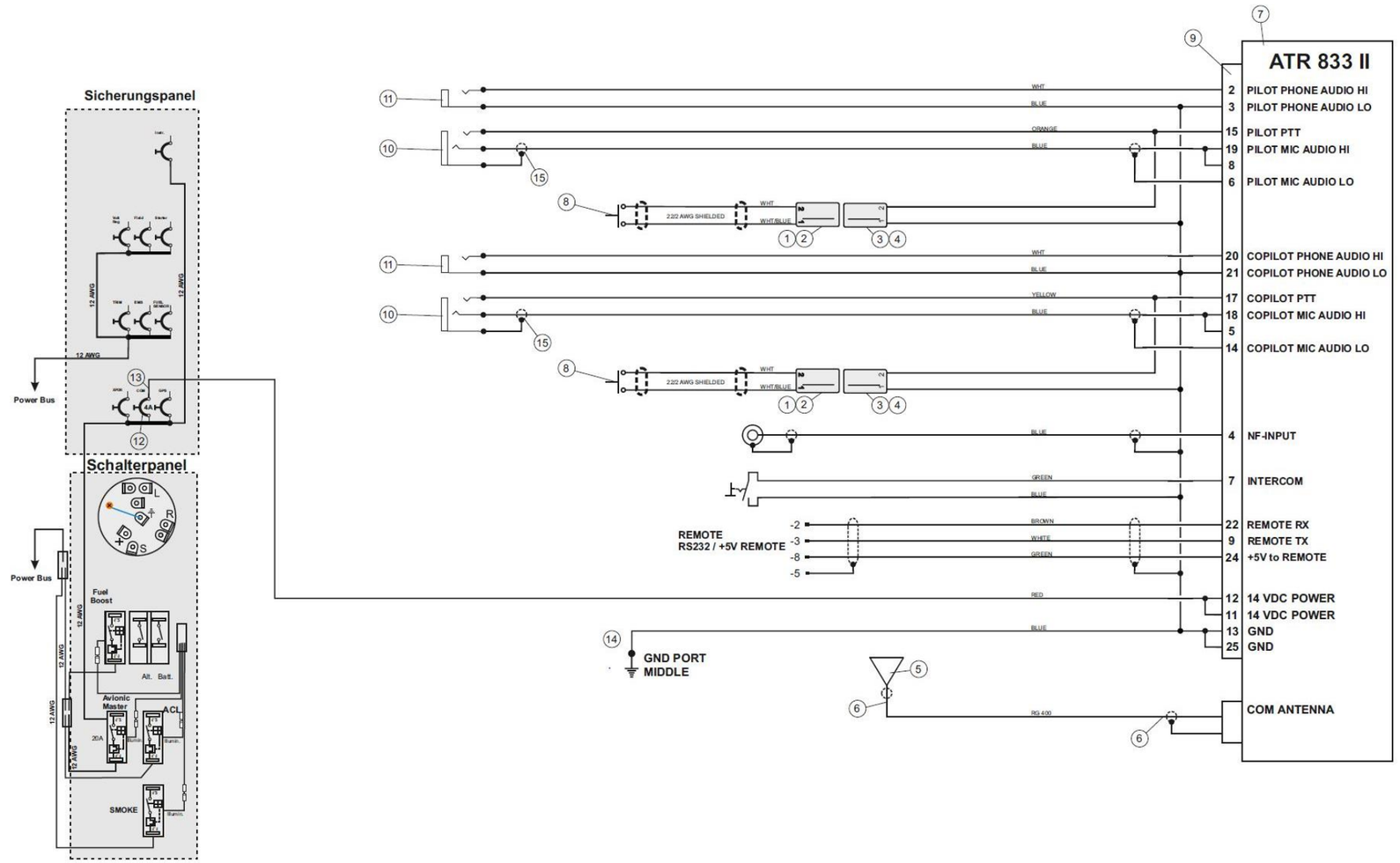
Figure 91-27: XA42-2460-032 C – Garmin GTN 6XX (option)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Radio GTN 650 | 010-00813-50 | Garmin |
| 2 | 1 | Intercom PM 1200 | 11960 | PS Engineering |
| 3 | 1 | Klixon CB 1A | 7274-2-1 | Sensata |
| 4 | 1 | Klixon CB 7,5A | 7274-2-7,5 | AMP |
| 5 | 1 | Klixon CB 10A | 7274-2-10 | TE Connectivity |
| 6 | 3 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 7 | 3 | PIDG-Ring terminal A3 2,5 | 0-0320619-0 | AMP |
| 8 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| 9 | 17 | D SUB CONTACT, PIN, 24-20 | 205089-1 | Tyco Electr./ Install. KIT PM 1200 |
| 10 | 34 | D SUB CONTACT, PIN, 28-22 | 204370-2. | Tyco Electr./ Install. KIT PM 1200 |
| 11 | | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity, D-436-37 |
| 12 | | PIDG-Ring terminal A3,5-1 | MS25036-101 | |
| 13 | | PIDG-Ring terminal A5-1 | MS25036-103 | |
| 14 | | Lötverbinder 4,8mm | B-155-05 | TE Connectivity |

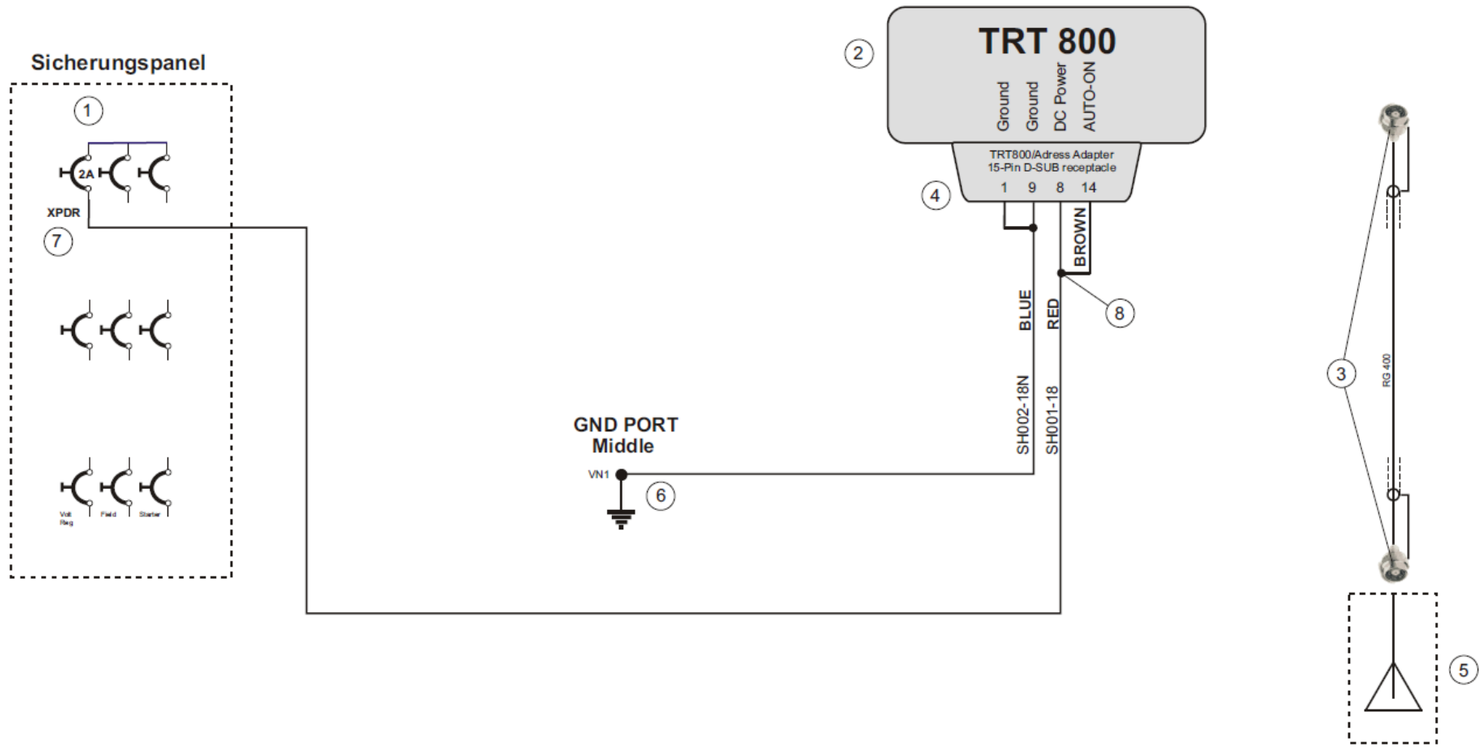
| | | | | |
|---|---|---|---|---|
| 15 | 1 | Abschirmgefl. ID 6,0 4,0-10 mm | VG96936-10 Typ A 003 A | Cabeltec, HBT99-06.0-2/0-F, ID 6 |
| 16 | 2 | TNC Stecker RG400 gerade | M39012/26-0503 | Rosenberger, 56S107-106N5 |
| 17 | 1 | solder connector 1mm | B-155-03 | TE Connectivity |
| 18 | - | Ehternet Cat. 5 | EDI-CAT5-1 | ARINC |
| 19 | 2 | solder connector yellow | CWT-9004 | TE Connectivity |
| | | | | |
| All | | 22 AWG | M22759/32-22-9 | |
| All | | 20 AWG | M22759/32-20-9 | |
| All | | 18 AWG | M22759/32-18-9 | |
| All | | 12 AWG | M22759/34-12-9 | |
| All | | 22/1 AWG | M27500-22TE1T14 | |
| All | | 22/2 AWG | M27500-22SD2T23 HU | |
| All | | 22/3 AWG | M27500-22SD3T23 HU | |
| All | | RG400 | M17/128-RG400 | |

Figure 91-28: XA42-2460-032 B – Garmin GTN 6XX (option)



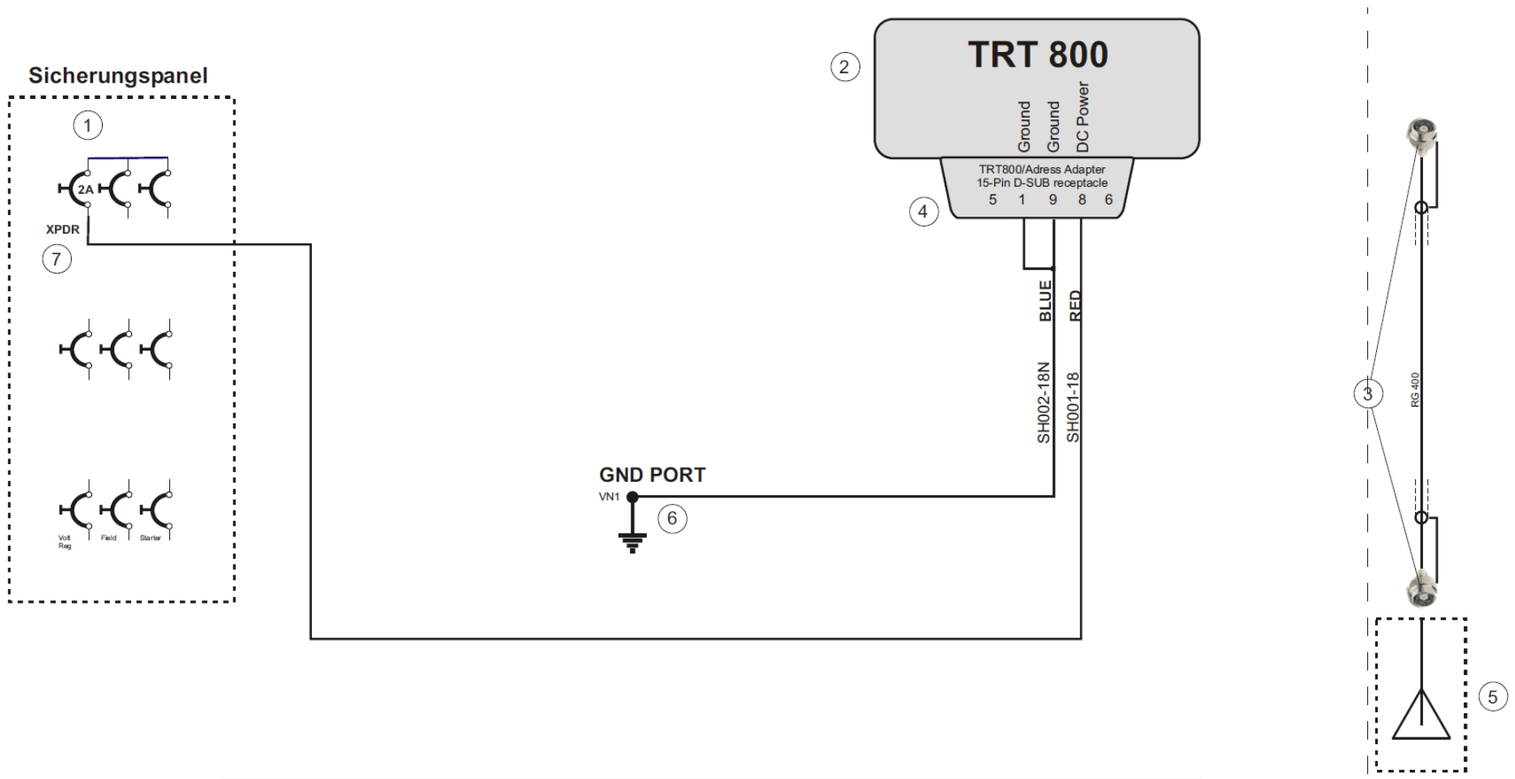

| | | | | |
|---|---|---|---|---|
| 1 | 1 | 2 circuit cap | XS-0120-011 | Tyco Electronics, 1-480319-0 |
| 2 | 2 | Pin AWG22/18 | XS-0120-101 | Tyco Electronics, 163558-2 |
| 3 | 1 | 2 circuit plug | XS-0120-012 | Tyco Electronics, 1-480318-0 |
| 4 | 2 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics, 163557-2 |
| 5 | 1 | COM Antenne | CI-122 | Comant Industries |
| 6 | 2 | BNC Crimp plug | 546-4853 | RS Components |
| 7 | 1 | radio set | ATR 833 II | Funkwerk |
| 8 | 2 | Push button 1pin die 16mm | 9633AX1146 | APEM |
| 9 | 1 | wiring loom radio set | BSKS833D-S | Funkwerk |
| 10 | 1 | Mic.-socket | | Bestandteil Kabelsatz Funkgerät |
| 11 | 1 | Phone socket | | Bestandteil Kabelsatz Funkgerät |
| 12 | 1 | Circuit breaker 4A | MS26574-4 | Sensata, 7274-2-4 |
| 13 | 1 | PIDG-Ringterminal A3,5-1 | MS25036-101 | AMP, 36150-0 |
| 14 | 1 | PIDG-Ringterminal A5-1 | MS25036-103 | AMP, 130008-0 |
| 15 | 2 | Solder connect 1mm | | TE Connectivity, B-155-03 |
| | ALL | RG 400 | M17/128-RG400 | |
| | ALL | 22/2 AWG shielded | M27500-22SD2T23 HU | |

Figure 91-29: XA42-2460-033 A – ATR 833II (from SN149 on)



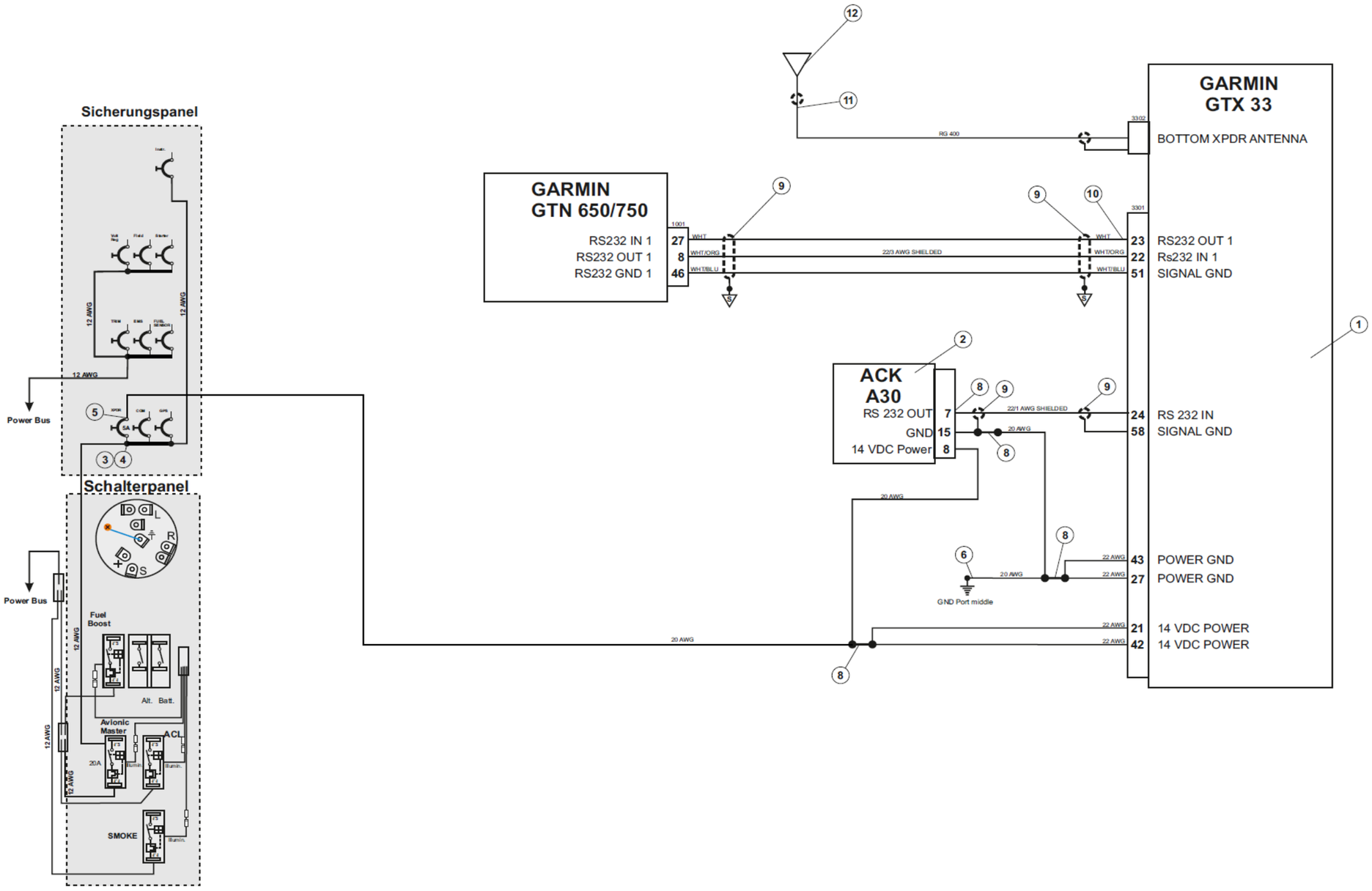

| | | | | |
|---|---|---|---|---|
| 1 | 1 | Klixon CB 2A | 7277-2-2 | Sensata |
| 2 | 1 | Transponder Mode S | TRT 800 H | Funkwerk |
| 3 | 2 | BNC Crimpstecker | 546-4853 | RS Components |
| 4 | 1 | Wiring loom Transponder | ZTRT800EM-RT | Funkwerk |
| 5 | 1 | Transponder Antenne | CI-105 | Comant Industries |
| 6 | 1 | PIDG-ring terminal A5-1 | 0-0130008-0 | AMP |
| 7 | 1 | PIDG-ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 8 | 1 | Crimpspleiß AWG 20-16 blue | D-436-37 | TE Connectivity |
| | | | | |
| | | | | |
| | | RG 400 | M17/128-RG400 | |

Figure 91-30: XA42-2460-040 A.02 – TRT 800 (from SN118 on)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Klixon CB 2A | 7277-2-2 | Sensata |
| 2 | 1 | Transponder Mode S | TRT 800 H | Funkwerk |
| 3 | 2 | BNC Crimpstecker | 546-4853 | RS Components |
| 4 | 1 | Wiring loom Transponder | ZTRT800EM-RT | Funkwerk |
| 5 | 1 | Transponder Antenne | CI-105 | Comant Industries |
| 6 | 1 | PIDG-ring terminal A5-1 | 0-0130008-0 | AMP |
| 7 | 1 | PIDG-ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 8 | 1 | Crimpspleiß AWG 20-16 blue | D-436-37 | TE Connectivity |
| | | | | |
| | | | | |
| | | RG 400 | M17/128-RG400 | |

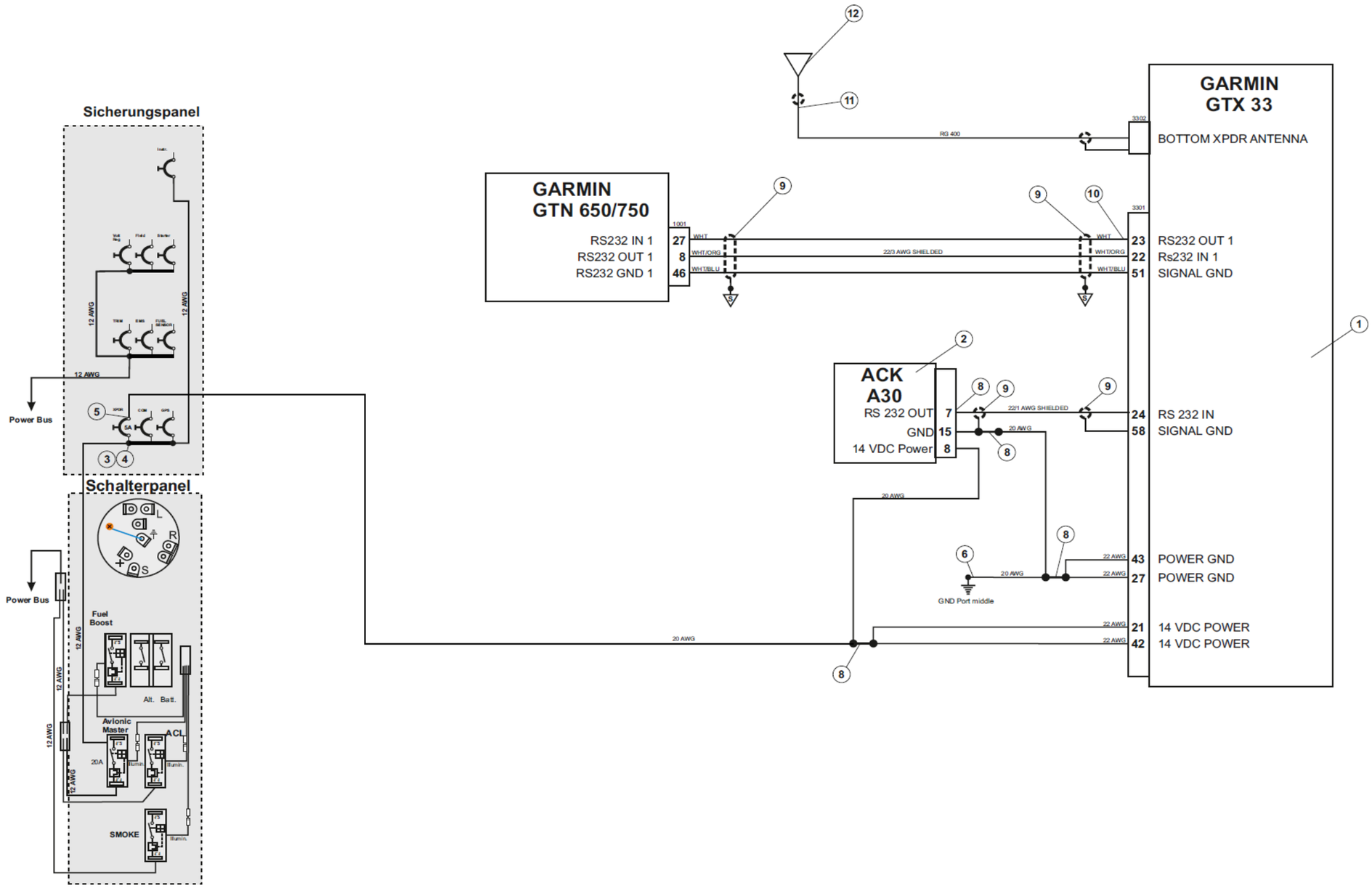
Figure 91-31: XA42-2460-040 A01 – TRT 800 (from SN108 and SN117)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Transponder GTX 33 | 010-00267-11 | Garmin |
| 2 | 1 | Altitude Encoder | ACK A-30 Mode 9 | ACK Technologies |
| 3 | 1 | Klixon CB 5A | 7277-2-5 | Sensata |
| 4 | 1 | PIDG-Ring terminal A3 2,5 | MS25036-106 | AMP |
| 5 | 3 | PIDG-Ring terminal A3,5-1 | MS25036-101 | AMP |
| 6 | 3 | PIDG-Ring terminal A5-1 | MS25036-103 | AMP |
| 7 | 1 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity |
| 8 | 3 | CONTACT, SKT GOLD CRIMP | 205090-1 | Tyco Electronics |
| 9 | 3 | Solder connector 4,8mm | B-155-05 | TE Connectivity |
| 10 | 4 | D SUB CONTACT, PIN, 28-22 | 204370-2. | Tyco Electr./ Install. KIT GTX33 |

| | | | | |
|---|---|---|---|---|
| 11 | 8 | BNC Male RG 400 | M39012/16-0503 | RS |
| 12 | 2 | Transponder Antenne | CI-105 | Comant Industries |
| | | | | |
| All | | 22 AWG | M22759/32-22-9 | |
| All | | 20 AWG | M22759/32-20-9 | |
| All | | 12 AWG | M22759/34-12-9 | |
| All | | 22/1 AWG | M27500-22TE1T14 | |
| All | | 22/3 AWG | M27500-22SD3T23 HU | |
| All | | RG400 | M17/128-RG400 | |

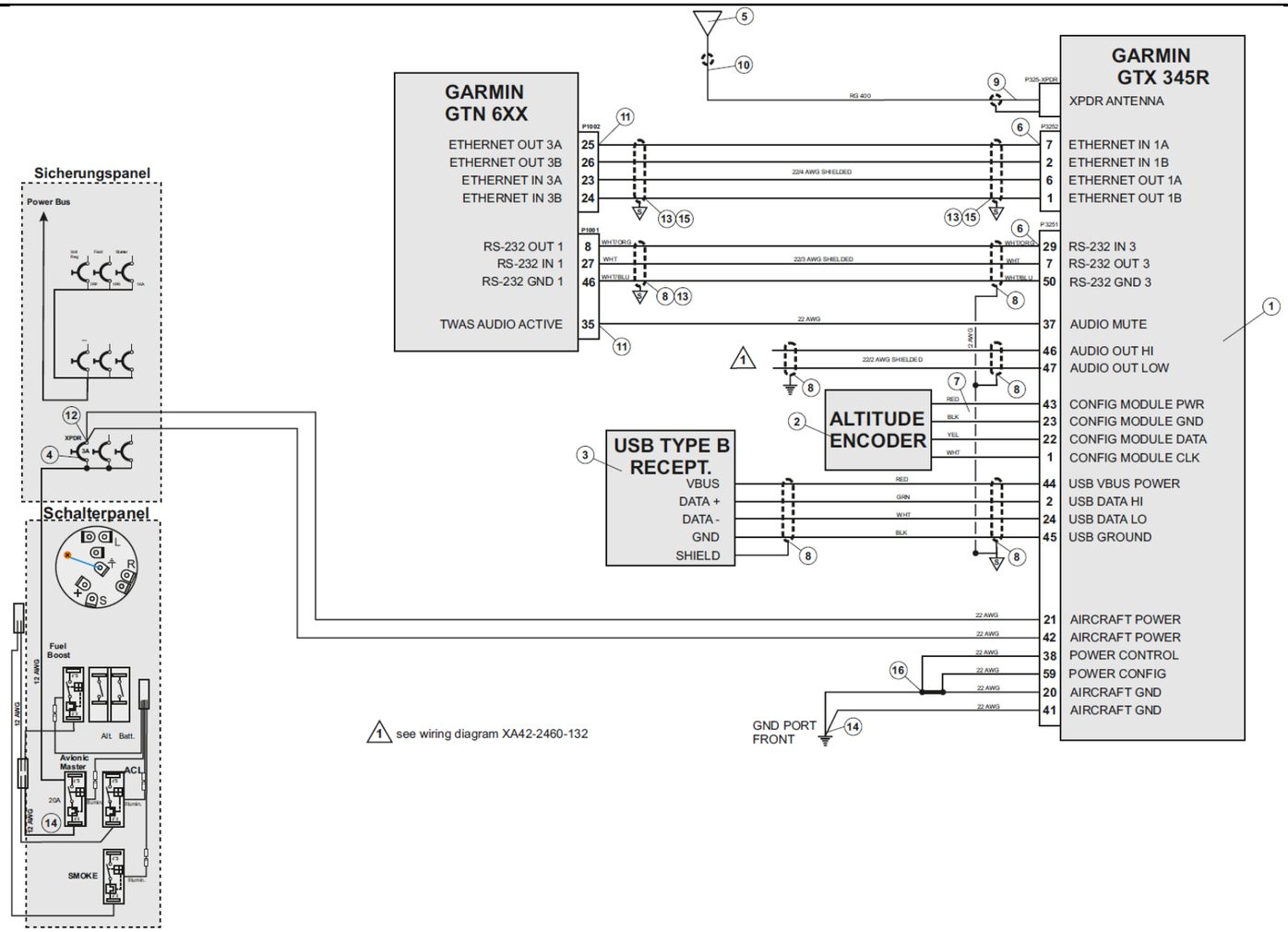
Figure 91-32: XA42-2460-041 B – GTX 33 & ACK A30 (option)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Transponder GTX 33 | 010-00267-11 | Garmin |
| 2 | 1 | Altitude Encoder | ACK A-30 Mode 9 | ACK Technologies |
| 3 | 1 | Klixon CB 5A | 7277-2-5 | Sensata |
| 4 | 1 | PIDG-Ring terminal A3 2,5 | MS25036-106 | AMP |
| 5 | 3 | PIDG-Ring terminal A3,5-1 | MS25036-101 | AMP |
| 6 | 3 | PIDG-Ring terminal A5-1 | MS25036-103 | AMP |
| 7 | 1 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity |
| 8 | 3 | CONTACT, SKT GOLD CRIMP | 205090-1 | Tyco Electronics |
| 9 | 3 | Solder connector 4,8mm | B-155-05 | TE Connectivity |
| 10 | 4 | D SUB CONTACT, PIN, 28-22 | 204370-2. | Tyco Electr./ Install. KIT GTX33 |

| | | | | |
|---|---|---|---|---|
| 11 | 8 | BNC Male RG 400 | M39012/16-0503 | RS |
| 12 | 2 | Transponder Antenne | CI-105 | Comant Industries |
| | | | | |
| All | | 22 AWG | M22759/32-22-9 | |
| All | | 20 AWG | M22759/32-20-9 | |
| All | | 12 AWG | M22759/34-12-9 | |
| All | | 22/1 AWG | M27500-22TE1T14 | |
| All | | 22/3 AWG | M27500-22SD3T23 HU | |
| All | | RG400 | M17/128-RG400 | |

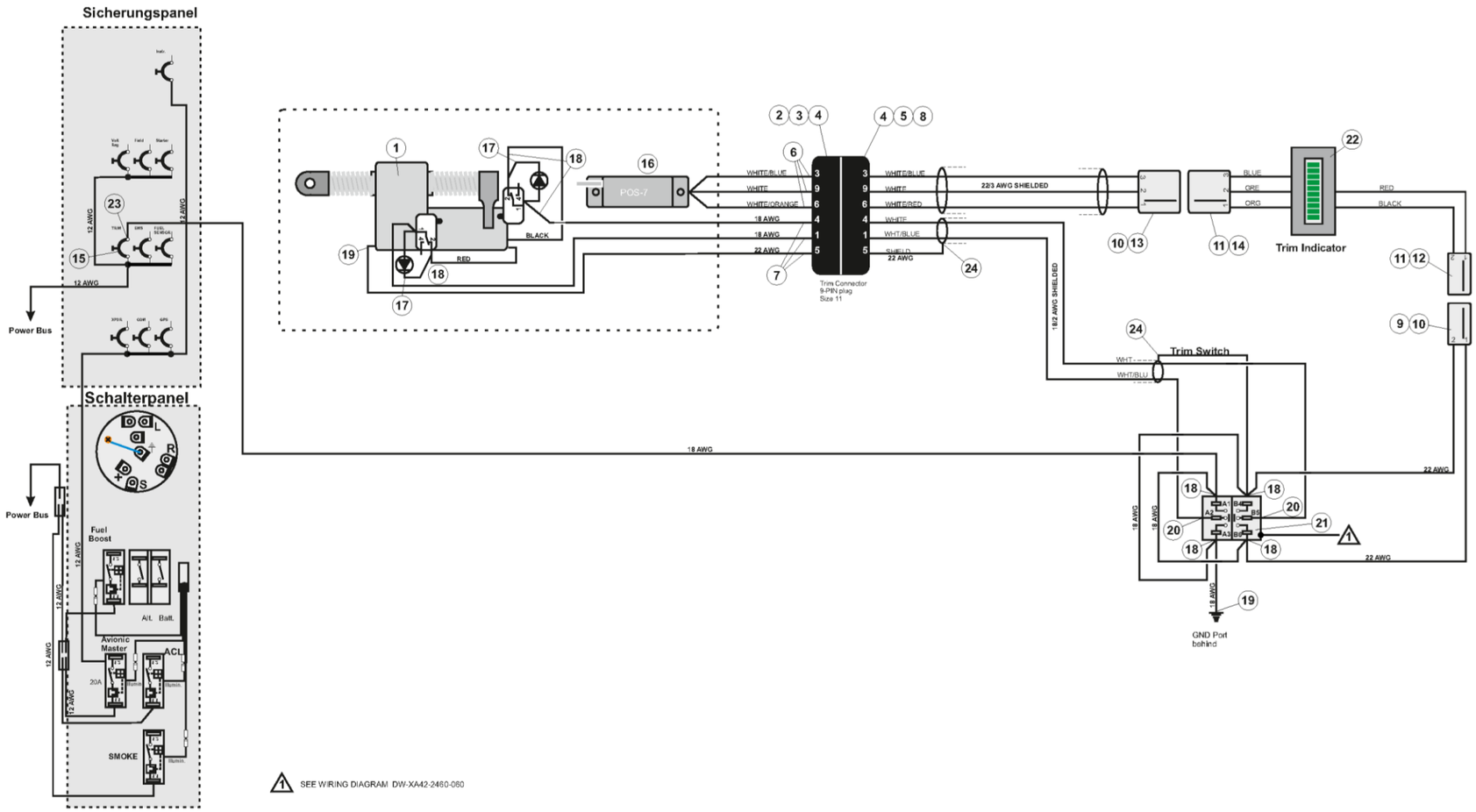
Figure 91-33: XA42-2460-041 A01 – GTX 33 & ACK A30 (option)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Transponder GTX 345R | 010-01217-01 | Garmin |
| 2 | 1 | Altitude Encoder | 011-03080-00 | Garmin |
| 3 | 1 | USB TYP B Recept. | | Garmin |
| 4 | 1 | Circuit breaker 3A | MS26574-3 | Sensata, 7274-2-3 |
| 5 | 1 | Transponder Antenne | CI-105 | Comant Industries |
| 6 | 3 | Connector Kit | 011-02977-01 | Garmin |
| 7 | 1 | Connector Kit | 011-03080-00 | Garmin |
| 8 | 4 | solder connector 4,8mm | B-155-05 | TE Connectivity |
| 9 | 1 | BNC MALE CONNECT RG400 | M39012/16-0503 | 2 Cat. B 11-01802 |
| 10 | 4 | BNC 90° Crimpstecker | M39012/20-0503 | TE Connectivity, 1-1478075-0 |
| 11 | 8 | GTN 6XX Connector Kit | 011-02325-02 | Garmin |
| 12 | 1 | PIDG-Ring terminal A3,5-1 | MS25036-101 | |

| | | | | |
|---|---|---|---|---|
| 13 | 1 | Screw | AN526 8R6 | |
| 14 | 1 | PIDG-Ring terminal A5-1 | MS25036-103 | |
| 15 | 2 | solder connector yellow | CWT-9004 | TE Connectivity |
| 16 | 1 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity, D-436-37 |
| | | | | |
| All | | 22 AWG | M22759/32-22-9 | |
| All | | 20 AWG | M22759/32-20-9 | |
| All | | 12 AWG | M22759/34-12-9 | |
| All | | 22/1 AWG | M27500-22TE1T14 | |
| All | | 22/3 AWG | M27500-22SD3T23 HU | |
| All | | RG400 | M17/128-RG400 | |
| | | | | |

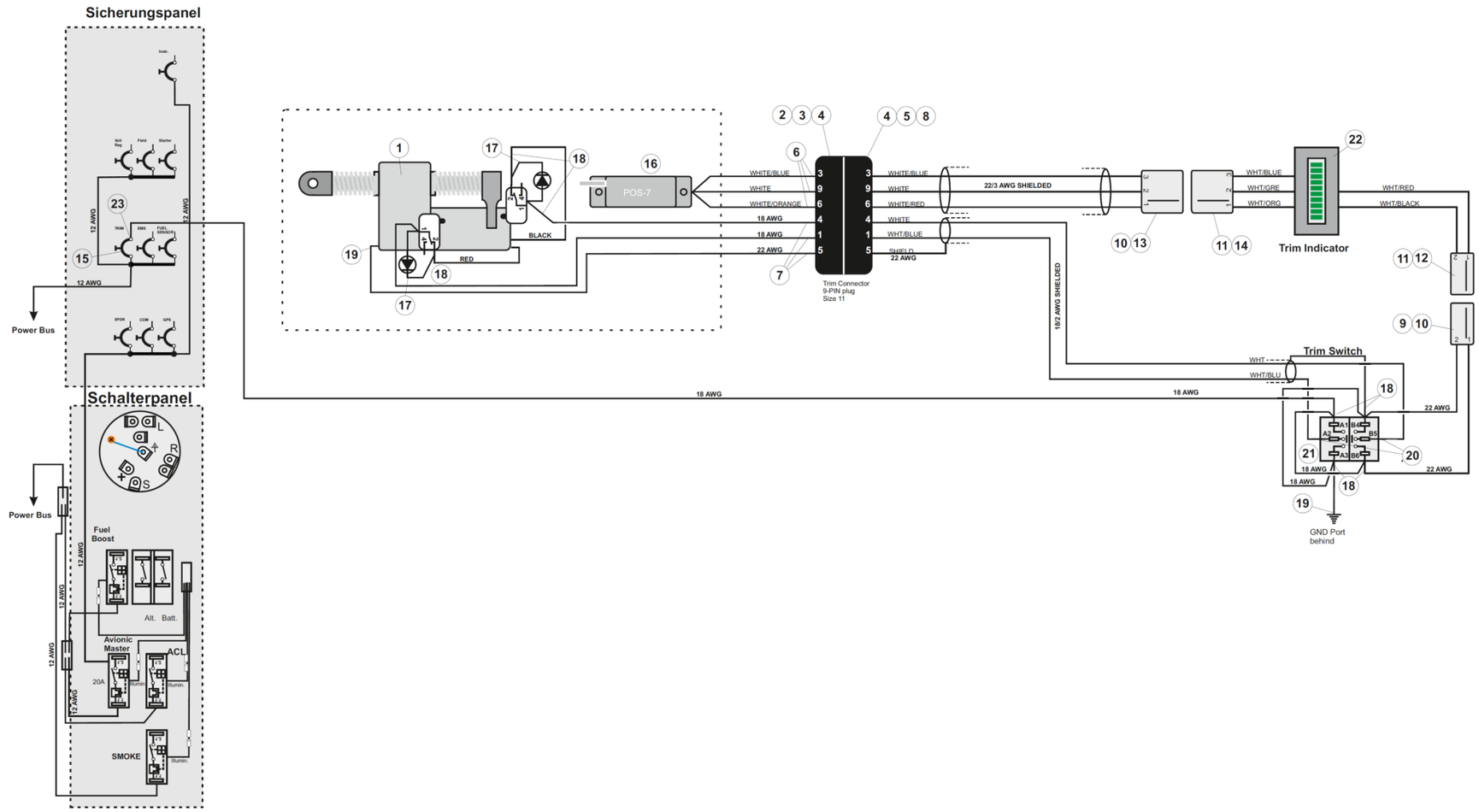
Figure 91-34: XA42-2460-042 A – GTX 345R (option)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Trim actuator | XA42-2750-051 | |
| 2 | 1 | Female connector CPC11, 9-Pin | 1445816-3 | Tyco Electronics |
| 3 | 1 | Clamping nut mini. CPC11 | 1445904-1 | Tyco Electronics |
| 4 | 2 | Pull relief mini CPC11 | 1445856-1 | Tyco Electronics |
| 5 | 1 | Male connector CPC11, 9-Pin | 1445807-3 | Tyco Electronics |
| 6 | 3 | Pin AWG 26-22 CPC | 170363-3 | Tyco Electronics |
| 7 | 3 | Pin AWG 22-18 CPC | 170364-3 | Tyco Electronics |
| 8 | 6 | Socket AWG 22-18 CPC | 170366-3 | Tyco Electronics |
| 9 | 1 | 2 circuit plug | XS-0120-012 | Tyco Electronics |
| 10 | 5 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics |
| 11 | 5 | Pin AWG 22-18 CPC | XS-0120-101 | Tyco Electronics |
| 12 | 1 | 2 circuit cap | XS-0120-011 | Tyco Electronics |
| 13 | 1 | Kabelbuchsengehäuse 3-polig | XS-0120-022 | Tyco Electronics |
| 14 | 1 | 3 circuit cap | XS-0120-021 | Tyco Electronics |
| 15 | 1 | Klixon CB 3A | MS26574-3 | Sensata |

| | | | | |
|---|---|---|---|---|
| 16 | 1 | Trim position sensor | POS-7 | Ray Allen Co. |
| 17 | 2 | Rectifier diode | 1N5402 | DIOTEC |
| 18 | 8 | PIDG-Faston 6,3x0,8 volliso blue | DIN 46245 | AMP |
| 19 | 2 | PIDG-Ring terminal A5-1 | MS25036-103 | AMP |
| 20 | 2 | PIDG-Faston 6,3x0,8 volliso red | DIN 46245 | AMP |
| 21 | 1 | Toggle switch, 2pin | XS-0110-011 | APEM |
| 22 | 1 | Trim position inducator | RP4 LED | Ray Allen Co. |
| 23 | 1 | PIDG-Ring terminal A3,5-1 | MS25036-102 | AMP |
| 24 | 2 | Solder sleeve 4,8mm | B-155-05 | Tyco Electronics |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 18 AWG | M22759/32-18-9 | |
| | ALL | 22 AWG shielded | M27500-22SD3T23 HU | |
| | ALL | 18 AWG shielded | M27500-18SD2T23 | |

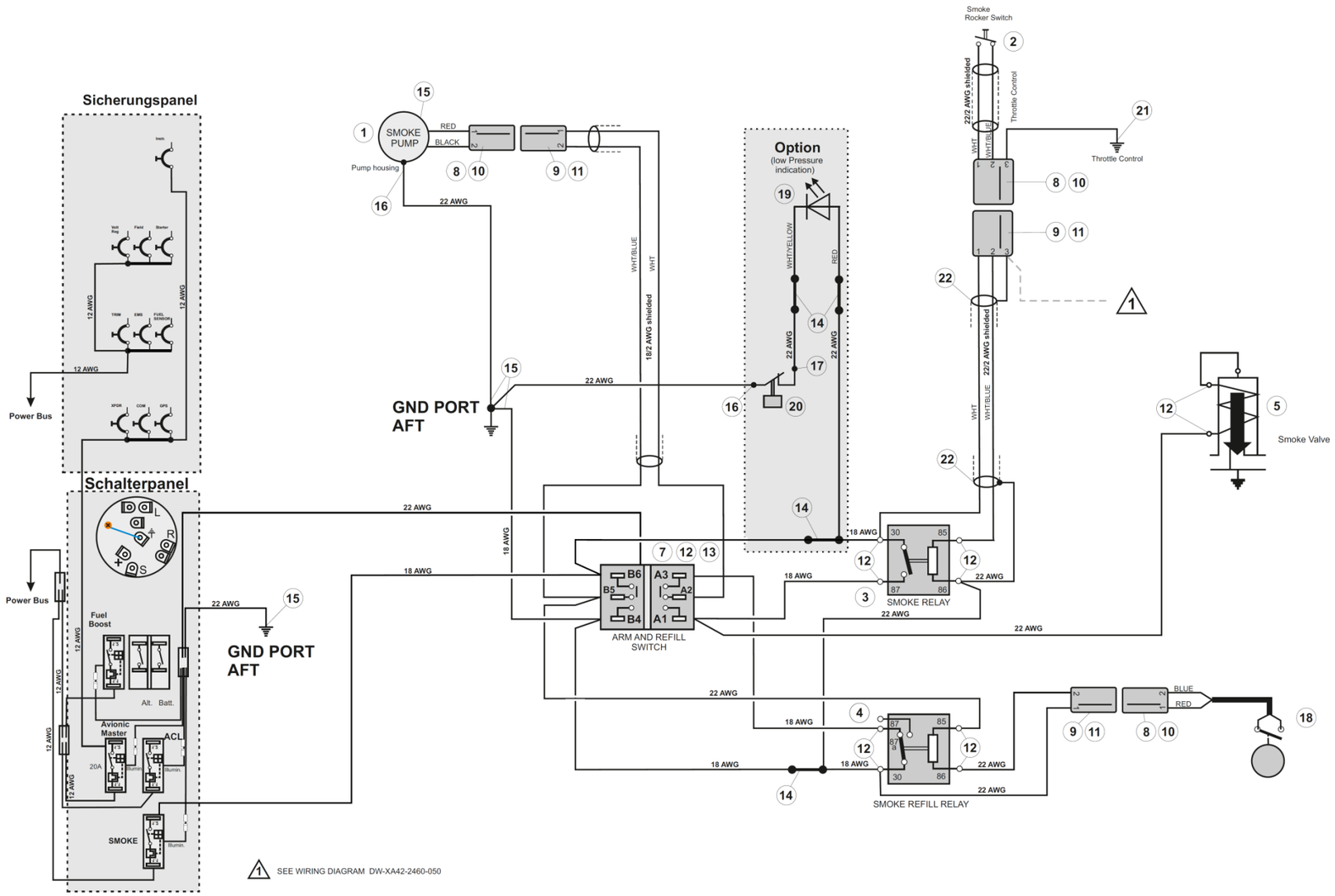
Figure 91-35: XA42-2460-050 D – Trim (from SN 155 and on, SN 08 and on, after performing SB-XA42-2019-006)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Trim actuator | XA42-2750-051 | |
| 2 | 1 | Female connector CPC11, 9-Pin | 1445816-3 | Tyco Electronics |
| 3 | 1 | Clamping nut mini. CPC11 | 1445904-1 | Tyco Electronics |
| 4 | 2 | Pull relief mini CPC11 | 1445856-1 | Tyco Electronics |
| 5 | 1 | Male connector CPC11, 9-Pin | 1445807-3 | Tyco Electronics |
| 6 | 3 | Pin AWG 26-22 CPC | 170363-3 | Tyco Electronics |
| 7 | 3 | Pin AWG 22-18 CPC | 170364-3 | Tyco Electronics |
| 8 | 6 | Socket AWG 22-18 CPC | 170366-5 | Tyco Electronics |
| 9 | 1 | 2 circuit plug | XS-0120-012 | Tyco Electronics |
| 10 | 5 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics |
| 11 | 5 | Pin AWG 22-18 CPC | XS-0120-101 | Tyco Electronics |
| 12 | 1 | 2 circuit cap | XS-0120-011 | Tyco Electronics |
| 13 | 1 | Kabelbuchsengehäuse 3-polig | XS-0120-022 | Tyco Electronics |
| 14 | 1 | 3 circuit cap | XS-0120-021 | Tyco Electronics |

| | | | | |
|---|---|---|---|---|
| 15 | 1 | Klixon CB 3A | MS26574-3 | |
| 16 | 1 | Trim position sensor | POS-7 | Ray Allen Co. |
| 17 | 2 | Rectifier diode | 1N5402 | DIOTEC |
| 18 | 8 | PIDG-Faston 6,3x0,8 volliso blue | DIN 46245 | |
| 19 | 2 | PIDG-Ring terminal A5-1 | MS25036-103 | |
| 20 | 2 | PIDG-Faston 6,3x0,8 volliso red | DIN 46245 | |
| 21 | 1 | Toggle switch, 2pin | XS-0110-010 | |
| 22 | 1 | Trim position inducator | RP3 LED | Ray Allen Co. |
| 23 | 1 | PIDG-Ring terminal A3,5-1 | MS25036-102 | AMP |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 18 AWG | M22759/32-18-9 | |
| | ALL | 22 AWG shielded | M27500-22SD3T23 HU | |
| | ALL | 18 AWG shielded | M27500-18SD2T23 | |

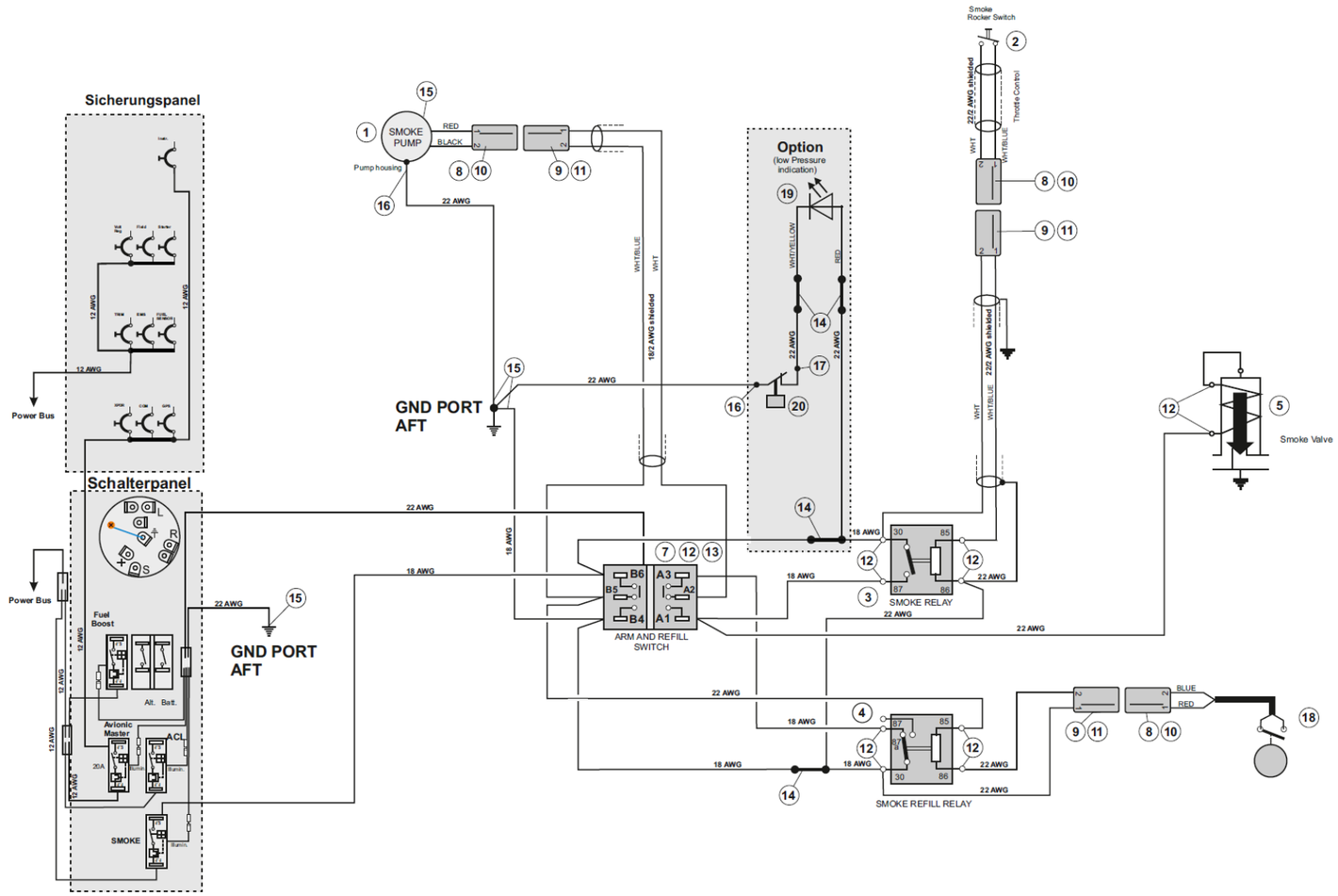
Figure 91-36: XA42-2460-050 B – Trim (from SN 108 to 153, SN 01 to 07)




| | | | | | |
|---|---|---|---|---|---|
| 1 | 1 | Oil pump | XS-0160-101 | | |
| 2 | 1 | Rocker switch 1pin ON/OFF | XS-0110-001 | | |
| 3 | 1 | Contact relay 40A | XS-0130-011 | | |
| 4 | 1 | Changeover relay 40A | XS-0130-021 | | |
| 5 | 1 | Magnet valve | XS-0130-101 | | |
| 6 | 1 | Thermal Switch 8A | XS-0110-021-8A | | |
| 7 | 1 | Toggle switch 2pin ON/ON | XS-0110-011 | | |
| 8 | 3 | 2 circuit cap | XS-0120-011 | | |
| 9 | 3 | 2 circuit plug | XS-0120-012 | | |
| 10 | 6 | Pin AWG22/18 | XS-0120-101 | | |
| 11 | 6 | Socket AWG22/18 | XS-0120-102 | | |
| 12 | 12 | Flat plug sleeve 6,3x0,8 | | DIN 46245 | für AWG 22-16, vollisolier, rot |
| 13 | 2 | Flat plug sleeve 6,3x0,8 | | DIN 46245 | für AWG 16-14, vollisoliert, blau |

| | | | | | |
|---|---|---|---|---|---|
| 14 | 5 | Crimpspleiß | AS/MIL-S--81824/1-2 | | für AWG 20-16, blau |
| 15 | 3 | PIDG-Ring terminal A5-1 | MS-25036-103 | | |
| 16 | 2 | PIDG-Ring terminal A4-1 | MS-25036-149 | | |
| 17 | 2 | Flachsteckerhülse, gewinkelt | | DIN 46346 | für AWG 22-16 vollisoliert rot |
| 18 | 1 | Smoke oil refill limit switch | XS-0110-041 | | |
| 19 | 1 | LED Yellow | | | Lieferumfang MVP50 |
| 20 | 1 | Öil pressure switch | XS-0110-051 | | |
| | | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | | |
| | ALL | 18 AWG | M22759/32-18-9 | | |
| | ALL | 22/2 AWG shielded | M27500-22SD2T23HU | | |
| | ALL | 18/2 AWG shielded | M27500-18SD2T23 | | |
| | | | | | |

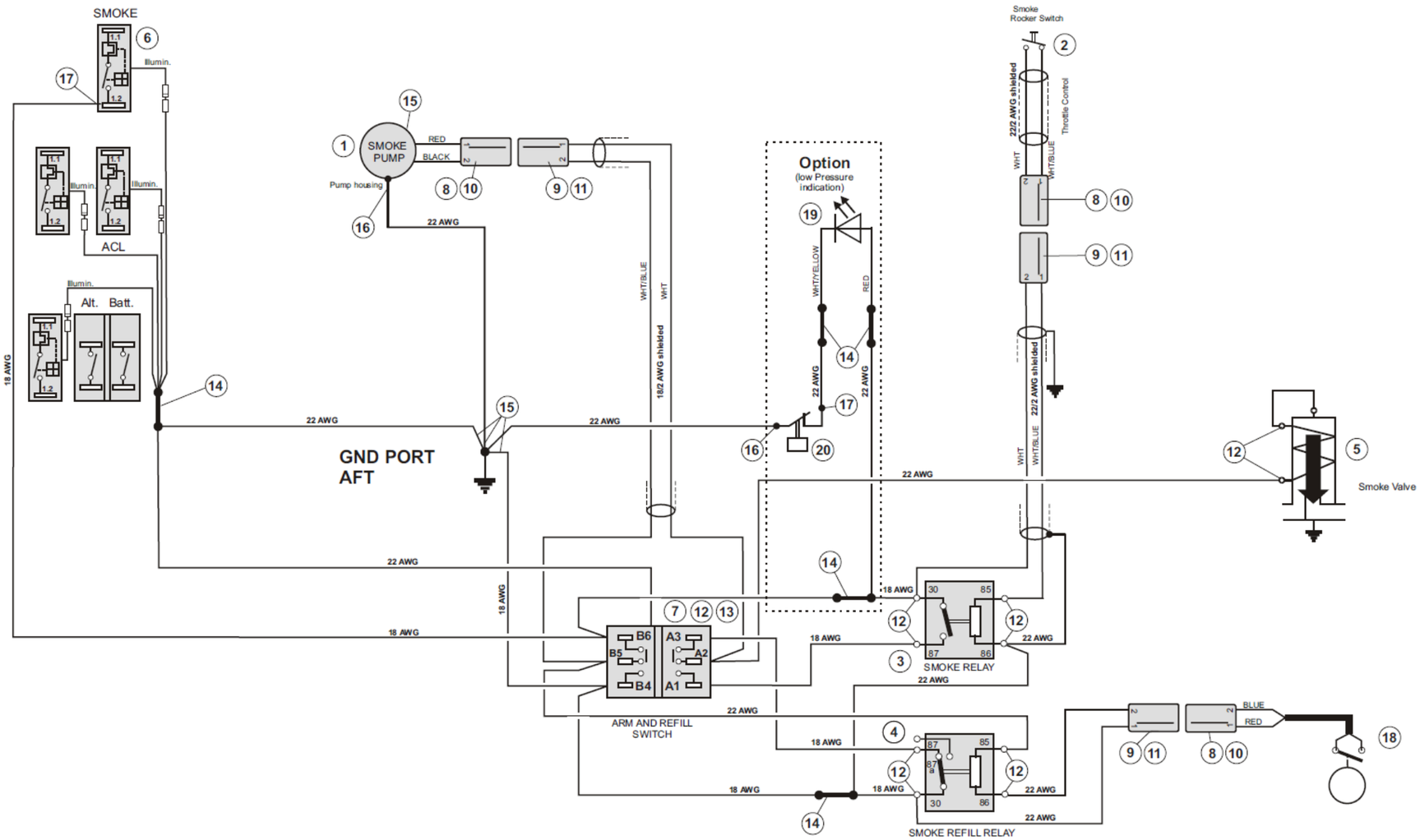
Figure 91-37: XA42-2460-060 C – Smoke System (From SN151 and on) (After performing SB-2017-014)




| | | | | | |
|---|---|---|---|---|---|
| 1 | 1 | Oil pump | XS-0160-101 | | |
| 2 | 1 | Rocker switch 1pin ON/OFF | XS-0110-001 | | |
| 3 | 1 | Contact relay 40A | XS-0130-011 | | |
| 4 | 1 | Changeover relay 40A | XS-0130-021 | | |
| 5 | 1 | Magnet valve | XS-0130-101 | | |
| 6 | 1 | Thermal Switch 8A | XS-0110-021-8A | | |
| 7 | 1 | Toggle switch 2pin ON/ON | XS-0110-011 | | |
| 8 | 3 | 2 circuit cap | XS-0120-011 | | |
| 9 | 3 | 2 circuit plug | XS-0120-012 | | |
| 10 | 6 | Pin AWG22/18 | XS-0120-101 | | |
| 11 | 6 | Socket AWG22/18 | XS-0120-102 | | |
| 12 | 12 | Flat plug sleeve 6,3x0,8 | | DIN 46245 | für AWG 22-16, vollisolier, rot |
| 13 | 2 | Flat plug sleeve 6,3x0,8 | | DIN 46245 | für AWG 16-14, vollisoliert, blau |

| | | | | | |
|---|---|---|---|---|---|
| 14 | 5 | Crimpspleiß | AS/MIL-S--81824/1-2 | | für AWG 20-16, blau |
| 15 | 3 | PIDG-Ring terminal A5-1 | MS-25036-103 | | |
| 16 | 2 | PIDG-Ring terminal A4-1 | MS-25036-149 | | |
| 17 | 2 | Flachsteckerhülse, gewinkelt | | DIN 46346 | für AWG 22-16 vollisoliert rot |
| 18 | 1 | Smoke oil refill limit switch | XS-0110-041 | | |
| 19 | 1 | LED Yellow | | | Lieferumfang MVP50 |
| 20 | 1 | Öil pressure switch | XS-0110-051 | | |
| | | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | | |
| | ALL | 18 AWG | M22759/32-18-9 | | |
| | ALL | 22/2 AWG shielded | M27500-22SD2T23HU | | |
| | ALL | 18/2 AWG shielded | M27500-18SD2T23 | | |
| | | | | | |

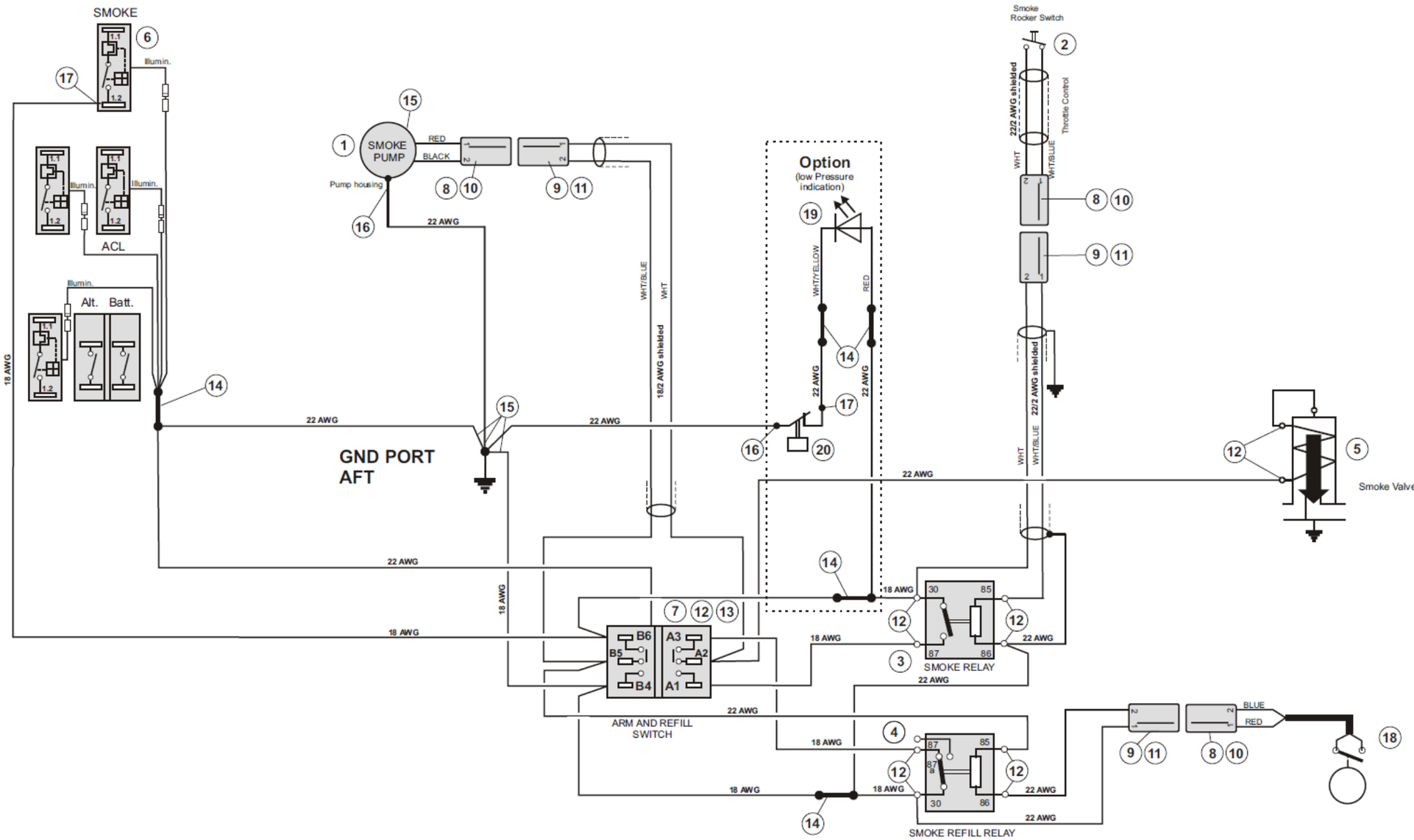
Figure 91-38: XA42-2460-060 B – Smoke System (From SN149 to SN150)




| | | | | | |
|---|---|---|---|---|---|
| 1 | 1 | Oil pump | XS-0160-101 | | |
| 2 | 1 | Rocker switch 1pin ON/OFF | XS-0110-001 | | |
| 3 | 1 | Contact relay 40A | XS-0130-011 | | |
| 4 | 1 | Changeover relay 40A | XS-0130-021 | | |
| 5 | 1 | Magnet valve | XS-0130-101 | | |
| 6 | 1 | Thermal Switch 8A | XS-0110-021-8A | | |
| 7 | 1 | Toggle switch 2pin ON/ON | XS-0110-011 | | |
| 8 | 3 | 2 circuit cap | XS-0120-011 | | |
| 9 | 3 | 2 circuit plug | XS-0120-012 | | |
| 10 | 6 | Pin AWG22/18 | XS-0120-101 | | |
| 11 | 6 | Socket AWG22/18 | XS-0120-102 | | |
| 12 | 12 | Flat plug sleeve 6,3x0,8 | | DIN 46245 | für AWG 22-16, vollisolier, rot |
| 13 | 2 | Flat plug sleeve 6,3x0,8 | | DIN 46245 | für AWG 16-14, vollisoliert, blau |

| | | | | | |
|---|---|---|---|---|---|
| 14 | 5 | Crimpspleiß | AS/MIL-S--81824/1-2 | | für AWG 20-16, blau |
| 15 | 3 | PIDG-Ring terminal A5-1 | MS-25036-103 | | |
| 16 | 2 | PIDG-Ring terminal A4-1 | MS-25036-149 | | |
| 17 | 2 | Flachsteckerhülse, gewinkelt | | DIN 46346 | für AWG 22-16 vollisoliert rot |
| 18 | 1 | Smoke oil refill limit switch | XS-0110-041 | | |
| 19 | 1 | LED Yellow | | | Electronics Internat. (MVP50) |
| 20 | 1 | Öil pressure switch | XS-0110-051 | | |
| | | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | | |
| | ALL | 18 AWG | M22759/32-18-9 | | |
| | ALL | 22/2 AWG shielded | M27500-22SD2T23HU | | |
| | ALL | 18/2 AWG shielded | M27500-18SD2T23 | | |
| | | | | | |

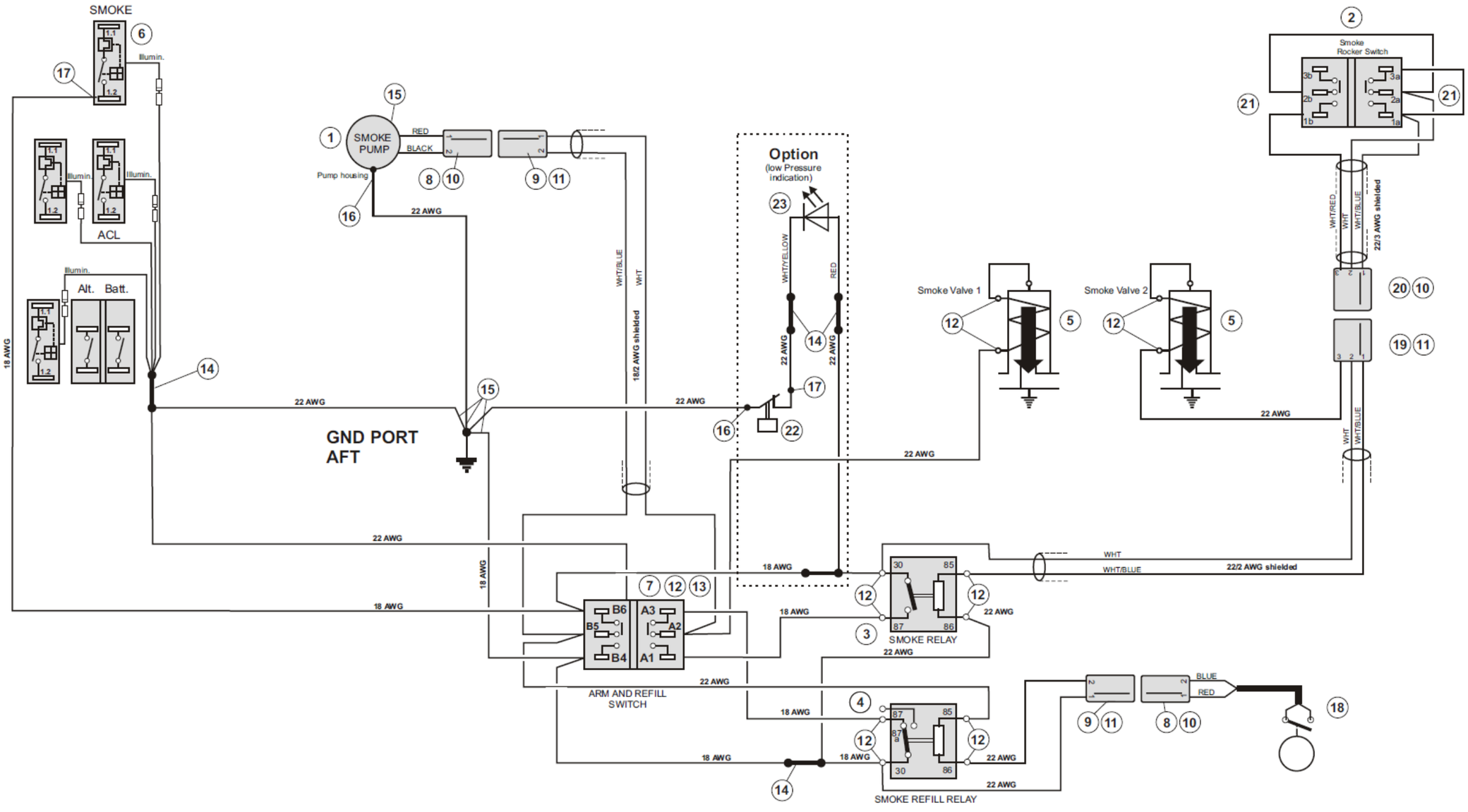
Figure 91-39: XA42-2460-060 A03 – Smoke System (From SN 126 to SN 148)




| | | | | | |
|---|---|---|---|---|---|
| 1 | 1 | Smoke pump | 16402012/UP3/oil | | Marco |
| 2 | 1 | Rocker switch 1pin ON/OFF | 18016115 | | Marquardt |
| 3 | 1 | Contact relay 40A | V23134B1052C642 | | Tyco Electronics |
| 4 | 1 | Changeover relay 40A | GRL-S-112DF | | GoodSky |
| 5 | 1 | Magnet valve | 21A5KV45-UDA12012CS | | ODE |
| 6 | 1 | Thermal Switch 8A | 3130-F110-P7T1W12QY2-8A | | E-T-A |
| 7 | 1 | Toggle switch 2pin ON/ON | 646H/2 | | APEM |
| 8 | 3 | 2 circuit cap | 1-480319-0 | | Tyco Electronics |
| 9 | 3 | 2 circuit plug | 1-480318-0 | | Tyco Electronics |
| 10 | 6 | Pin AWG22/18 | 163558-2 | | Tyco Electronics |
| 11 | 6 | Socket AWG22/18 | 163557-2 | | Tyco Electronics |
| 12 | 12 | Flat plug sleeve 6,3x0,8 red | 0-0735278-0 | | AMP |
| 13 | 2 | Flat plug sleeve 6,3x0,8 blue | 0-0735160-0 | | AMP |

| | | | | | |
|---|---|---|---|---|---|
| 14 | 5 | Crimpspleiß AWG 20-16 blue | D-436-37 | | Tyco Electronics |
| 15 | 3 | PIDG-Ring terminal A5-1 | MS-25036-103 | | AMP |
| 16 | 2 | PIDG-Ring terminal A4-1 | MS-25036-149 | | AMP |
| 17 | 2 | Flat plug sleeve, tilded | 2-0520129-2 | | AMP |
| 18 | 1 | Smoke oil refill limit switch | RSF53Y100JC | | Cynergy3 |
| 19 | 1 | LED Yellow | AL-1Y | | Electronics Internat. (MVP50) |
| 20 | 1 | Öil pressure switch | FAE 11290 | | FAE Group |
| | | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | | |
| | ALL | 18 AWG | M22759/32-18-9 | | |
| | ALL | 22/2 AWG shielded | M27500-22SD2T23HU | | |
| | ALL | 18/2 AWG shielded | M27500-18SD2T23 | | |
| | | | | | |

Figure 91-40: XA42-2460-060 A01 – Smoke System (From SN108 to SN125)

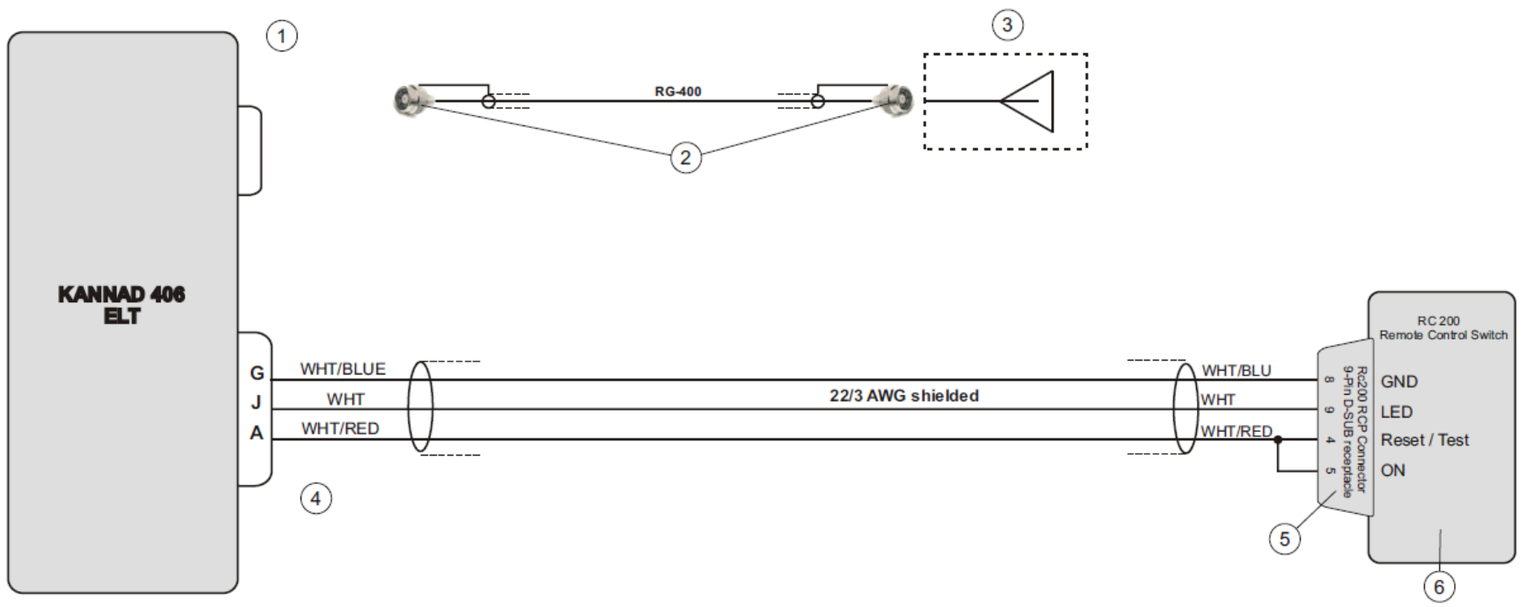



| | | | | | |
|---|---|---|---|---|---|
| 1 | 1 | Oel pump | XS-0160-101 | | |
| 2 | 1 | Rocker switch 2pin ON/OFF/ON | XS-0110-001 | | |
| 3 | 1 | Contact relay 40A | XS-0130-011 | | |
| 4 | 1 | Changeover relay 40A | XS-0130-021 | | |
| 5 | 2 | Magnet valve | XS-0130-101 | | |
| 6 | 1 | Thermal Switch 8A | XS-0110-021-8A | | |
| 7 | 1 | Rocker switch 1pin ON/ON | XS-0110-011 | | |
| 8 | 3 | 2 circuit plug | XS-0120-011 | | |
| 9 | 3 | 2 circuit cap | XS-0120-012 | | |
| 10 | 6 | Pin AWG22/18 | XS-0120-101 | | |

| | | | | | |
|---|---|---|---|---|---|
| 11 | 6 | Socket AWG22/18 | XS-0120-102 | | |
| 12 | 18 | Flat plug sleeve 6,3x0,8 | | DIN 46245 | für AWG 22-16, vollisolier, rot |
| 13 | 2 | Flat plug sleeve 6,3x0,8 | | DIN 46245 | für AWG 16-14, vollisoliert, blau |
| 14 | 5 | Crimpspleiß | AS/MIL-S-81824/1-2 | | für AWG 20-16, blau |
| 15 | 3 | PIDG-Ring terminal A5-1 | MS-25036-103 | | |
| 16 | 2 | PIDG-Ring terminal A4-1 | MS-25036-149 | | |
| 17 | 2 | Flat plug sleeve, tilted | | DIN 46346 | für AWG 22-16 vollisoliert rot |
| 18 | 1 | Smoke oil refill limit switch | XS-0110-041 | | |
| 19 | 1 | 3 circuit plug | XS-0120-022 | | |
| 20 | 1 | 3 circuit cap | XS-0120-021 | | |

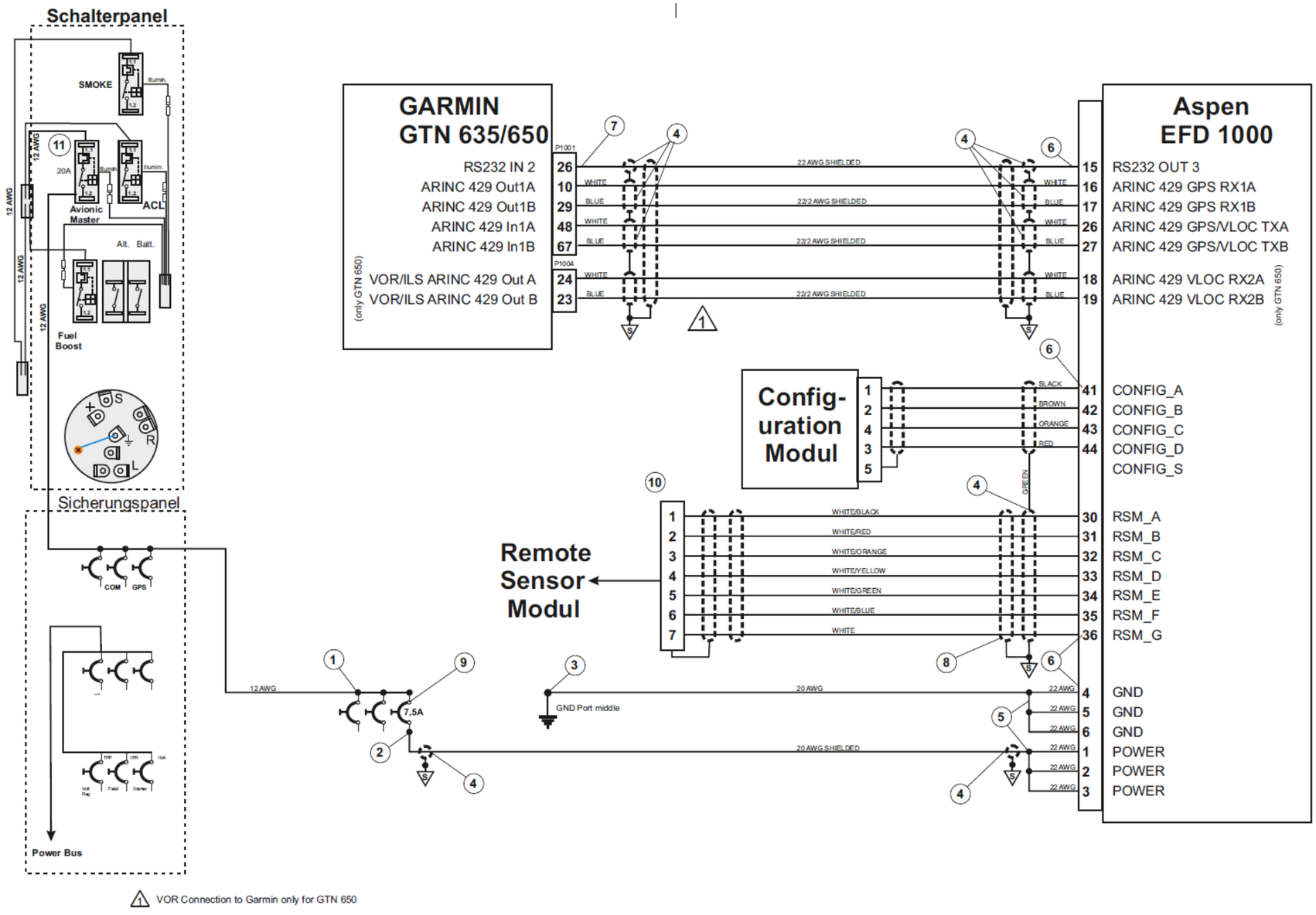
| | | | | | |
|---|---|---|---|---|---|
| 21 | 5 | Flachsteckerhülse 4,8x0,8 | | DIN 46245 | für AWG 22-16 |
| 22 | 1 | Oil pressure switch | XS-0110-051 | | |
| 23 | 1 | LED Yellow | | | Elec. Int.(MVP50) |
| | | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | | |
| | ALL | 18 AWG | M22759/32-18-9 | | |
| | ALL | 22/2 AWG shielded | M27500-22SD2T23 HU | | |
| | ALL | 22/3 AWG shielded | M27500-22SD3T23 HU | | |
| | ALL | 18/2 AWG shielded | M27500-18SD2T23 | | |

Figure 91-41: XA42-2460-061 A01 – Smoke System (Hight/Low) (option)




| | | | | |
|---|---|---|---|---|
| 1 | | ELT | 406AF Compact | Kannad |
| 2 | | BNC Crimpstecker | 546-4853 | RS Components |
| 3 | | ELT Antenne | AV-200 | RAMI |
| 4 | | DIN-12 Connector | | 406AF Compact Zubehör |
| 5 | | Sub-D Connector 9 PIN | | 406AF Compact Zubehör |
| 6 | | RC200 Remote Control Switch | | 406AF Compact Zubehör |
| | | | | |
| | ALL | 22/3 AWG | M27500-22SD3T23 HU | |
| | ALL | RG 400 | M17/128-RG400 | |

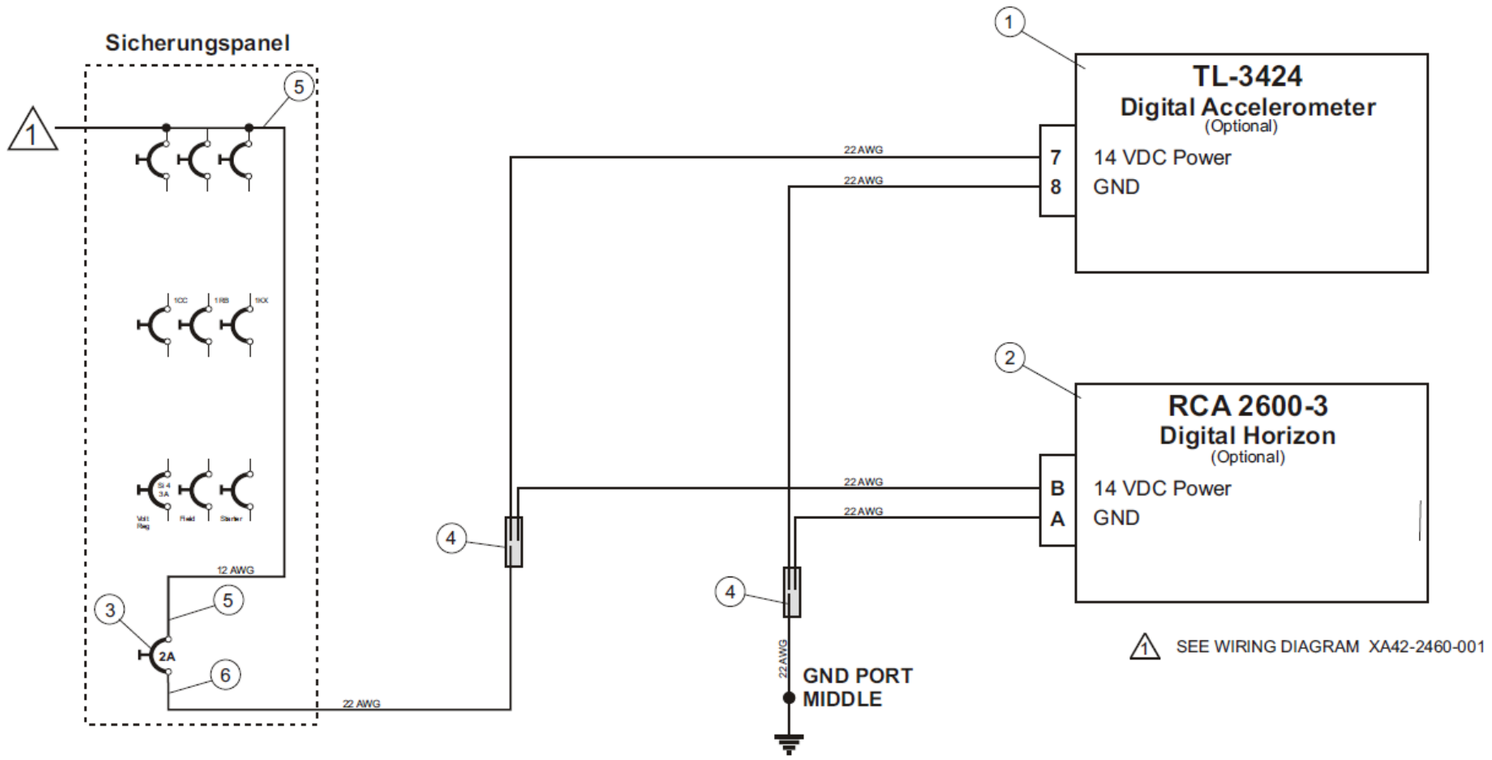
Figure 91-42: XA42-2460-070 A01 – ELT (from SN 108 – and on)




| | | | | |
|---|---|---|---|---|
| 1 | 2 | PIDG-Ring terminal A3 2,5 | 0-0320619-0 | AMP |
| 2 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 3 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| 4 | 9 | Solder connector 4,8mm | B-155-05 | TE Connectivity |
| 5 | 1 | Crimpspleiß AWG 20-16 blau | D-436-37 | TE Connectivity |
| 6 | 22 | 44 Pin D-Sub con. w. contacts | DD44F10000 | Zubehör Installation KIT Aspen |
| 7 | 5 | D SUB CONTACT, PIN, 28-22 | 204370-2. | Tyco Electronics Install. Kit GTN 650 |
| 8 | 1 | Braided screen ID 6,0 4,0-10 mm | HBT99-06.0-2/0-F, ID 6 | Cabeltec |
| 9 | 1 | Klixon CB 7,5A | 7274-2-7,5 | Sensata |

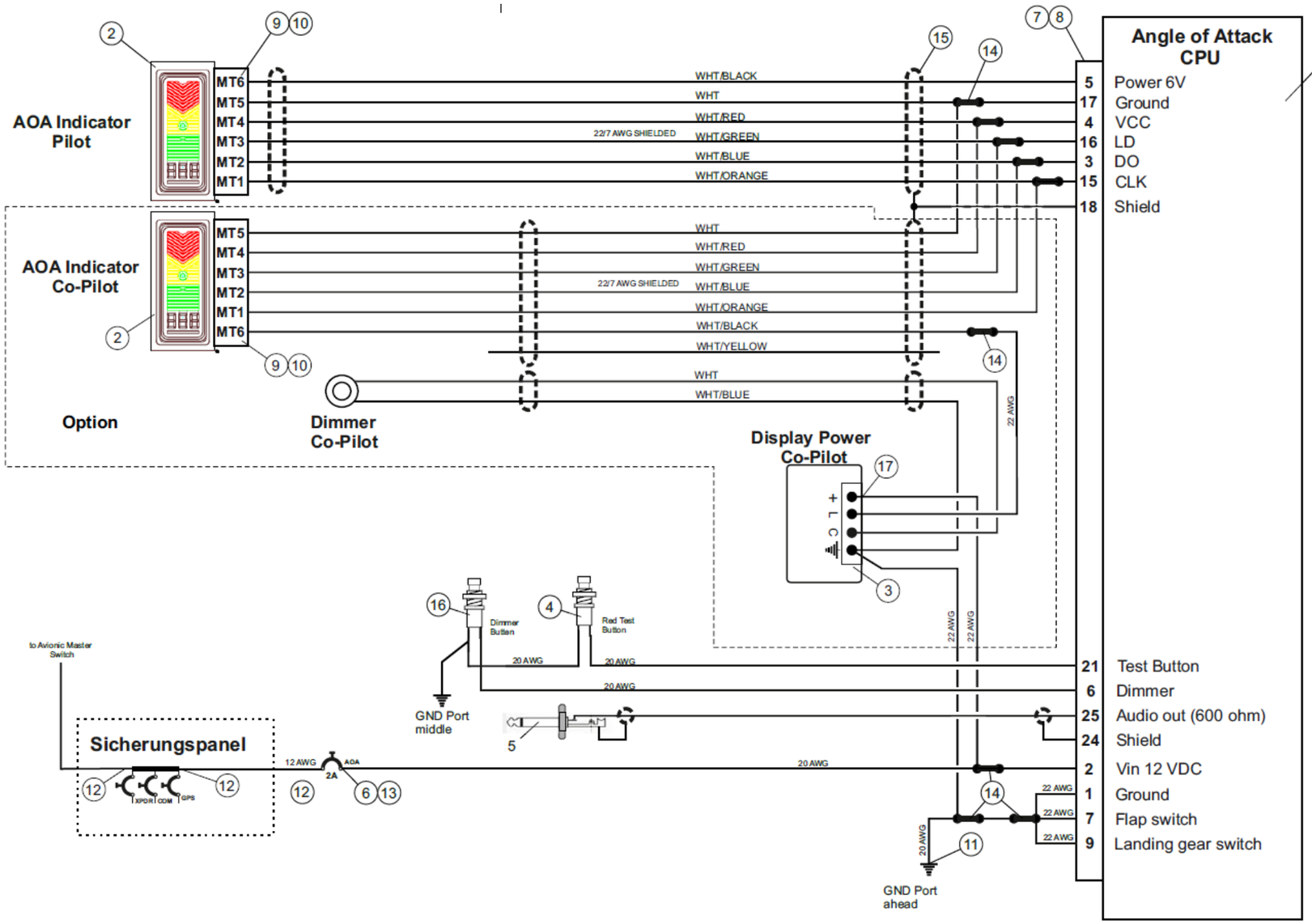
| | | | | |
|---|---|---|---|---|
| 10 | 1 | RSM, bottom mount | 910-00003-003 | Aspen Avionics Inc |
| 11 | 1 | Therm. Schutzschalter 20A | 3130-F110-P7T1W12QY2-20A | E-T-A |
| | | | | |
| All | | 20 AWG | M22759/32-20-9 | |
| All | | 12 AWG | M22759/34-12-9 | |
| All | | 22/1 AWG | M27500-22TE1T14 | |
| All | | 22/2 AWG | M27500-22SD2T23 HU | |
| All | | RG400 | M17/128-RG400 | |

Figure 91-43: XA42-2460-080 B – Aspen EFD 1000 (option)



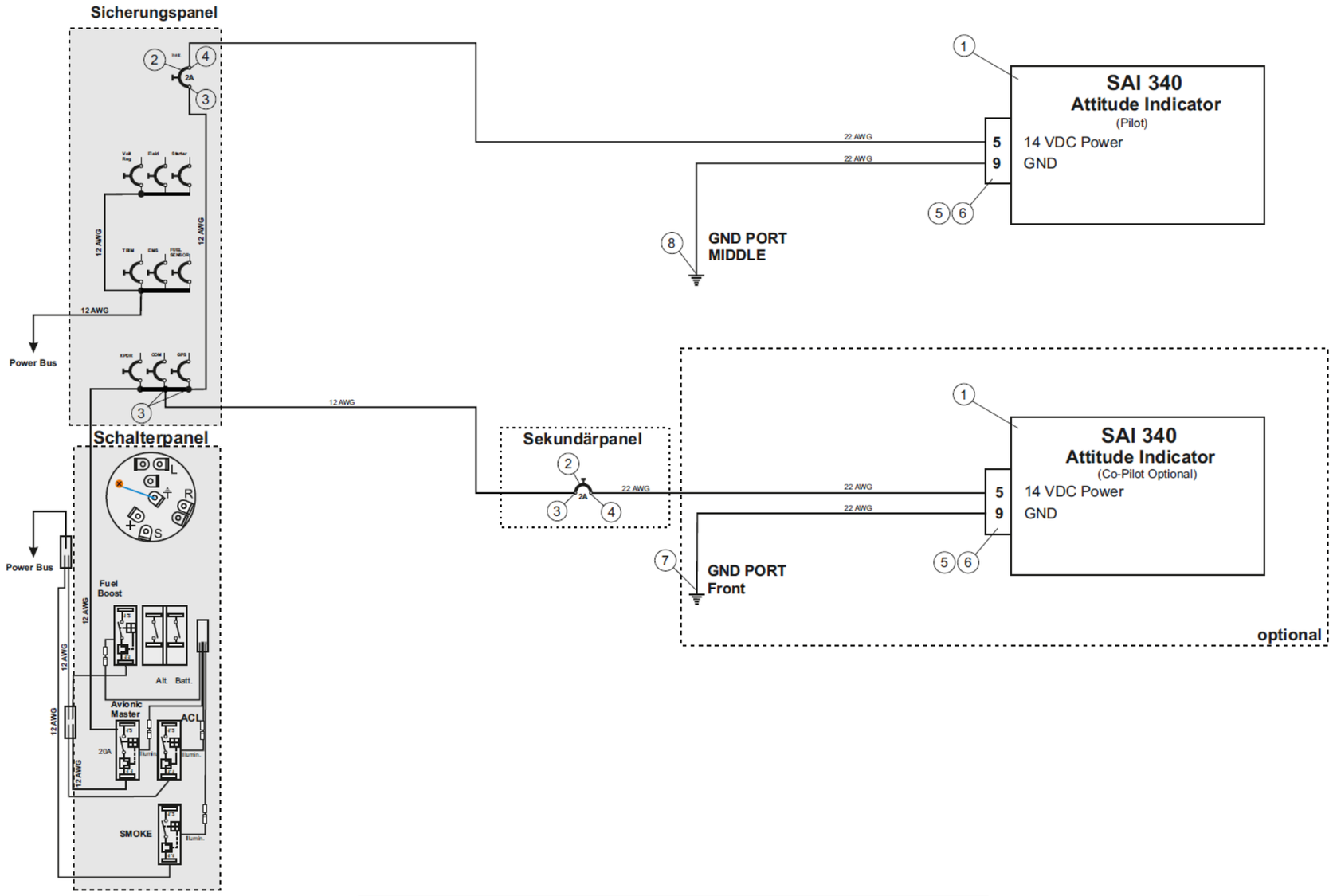

| | | | | |
|---|---|---|---|---|
| 1 | 1 | Digital Accelerometer | TL-3424 | |
| 2 | 1 | Digital Horizon | RCA 2600-3 | |
| 3 | 1 | Klixon CB 2A | 7277-2-2 | Sensata |
| 4 | 2 | PIDG-crimp splice red | 0-0320559-0 | AMP |
| 5 | 2 | PIDG-Ring terminal A3,5-2,5 | 0-0320619-0 | AMP |
| 6 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 7 | 2 | PIDG-Ring terminal A3,5-2,5 | 0-0320619-0 | AMP |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 20 AWG | M22759/34-20-9 | |
| | ALL | 18 AWG | M22759/32-18-9 | |
| | ALL | 12 AWG | M22759/34-12-9 | |

Figure 91-44: XA42-2460-081 A01 – Digital Accelerometer Digital Horizon (option)



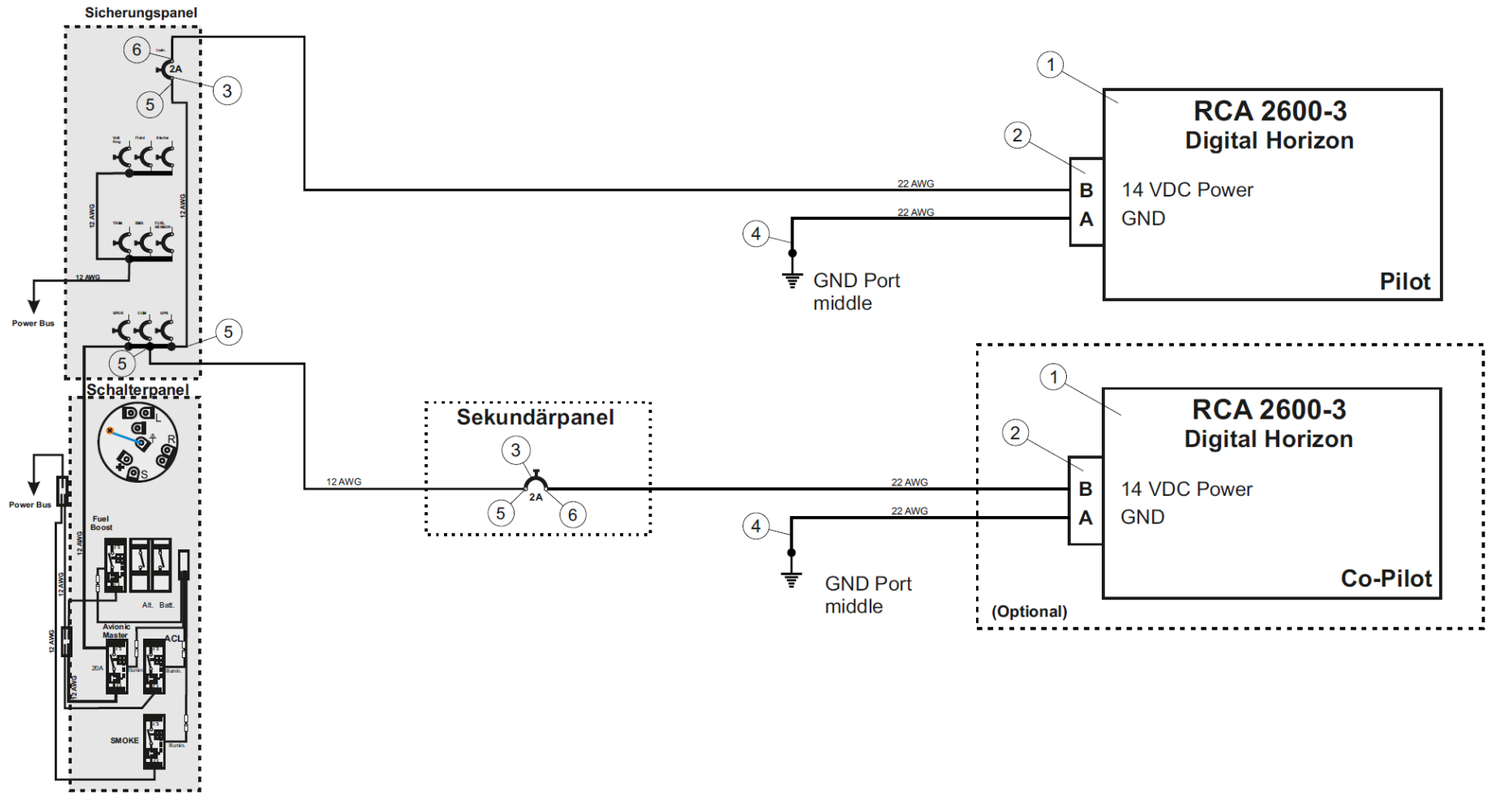

| | | | |
|---|---|---|---|
| 1 | 1 | AOA CPU | Im Install kit AOA ADVANCED |
| 2 | 2 | AOA Indicator | Im Install kit AOA ADVANCED |
| 3 | 1 | Display Power Co-Pilot | Im Install kit AOA ADVANCED |
| 4 | 1 | push button red | Im Install kit AOA ADVANCED |
| 5 | 1 | Stereo jack | Im Set des ATR 833 |
| 6 | 1 | Klixon CB 2A | Sensata |
| 7 | 1 | D-sup plug 25pin | Im Install kit AOA ADVANCED |
| 8 | 15 | CONTACT, SKT GOLD CRIMP | TE Connectivity |
| 9 | 2 | Plug | Im Install kit AOA ADVANCED |
| 10 | 12 | Socket | Im Install kit AOA ADVANCED |
| 11 | 1 | PIDG-Ring terminal A6-1 | AMP |
| 12 | 3 | PIDG-Ring terminal A3_5-2_5 | AMP |
| 13 | 1 | PIDG-Ring terminal A3,5-1 | AMP |
| 14 | 9 | Crimpspleiß AWG 20-16 blue | TE Connectivity |
| 15 | 2 | Solder connector 4,8mm | TE Connectivity |
| 16 | 1 | push button black | Im Install kit AOA ADVANCED |
| 17 | 5 | wire ferril 0,5qm | Vogt |
| | | | |
| | All | AWG 12 | |
| | All | AWG 20 | |
| | All | AWG 22 | |
| | All | AWG 22 geschirmt | |
| | All | AWG 22/7 geschirmt | |

Figure 91-45: XA42-2460-082 B – Angle of Attack System Horizon (option)



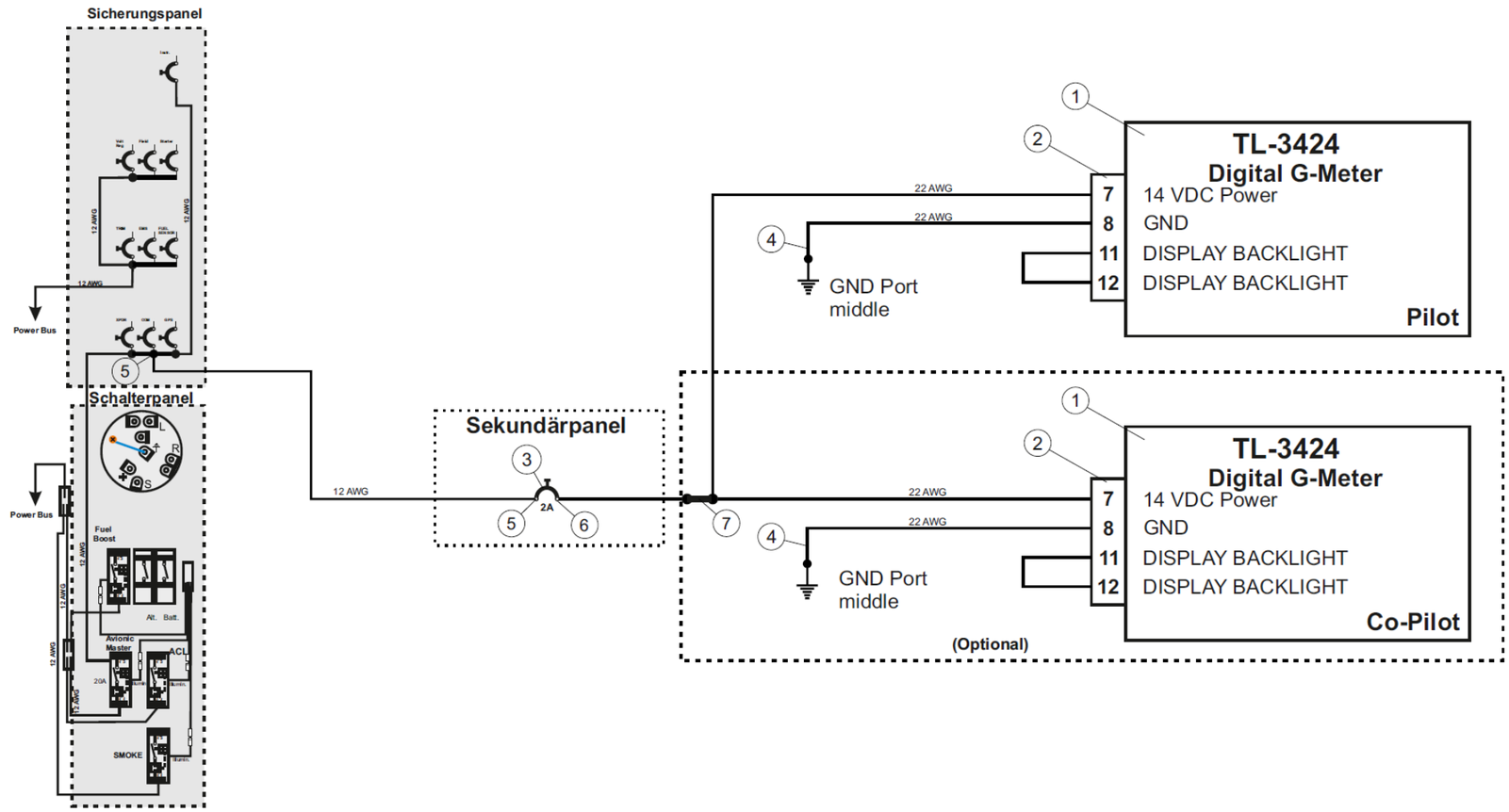

| | | | | |
|---|---|---|---|---|
| 1 | 2 | Attitude Indicator | SAI 340 | Sandia |
| 2 | 2 | Klixon CB 2A | MS26574-2 | |
| 3 | 4 | PIDG-Ring terminal A3,5-2,5 | MS25036-106 | |
| 4 | 1 | PIDG-Ring terminal A3,5-1 | MS25036-101 | |
| 5 | 1 | Installation KIT | 306188-00 | Sandia |
| 6 | 1 | 9 Pin D-SUB female | | Sandia |
| 7 | 1 | PIDG-Ring terminal A6-1 | MS25036-150 | |
| 8 | 1 | PIDG-Ring terminal A5-1 | MS25036-103 | |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 12 AWG | M22759/34-12-9 | |

Figure 91-46: XA42-2460-084 A00 – SAI 340 (option)



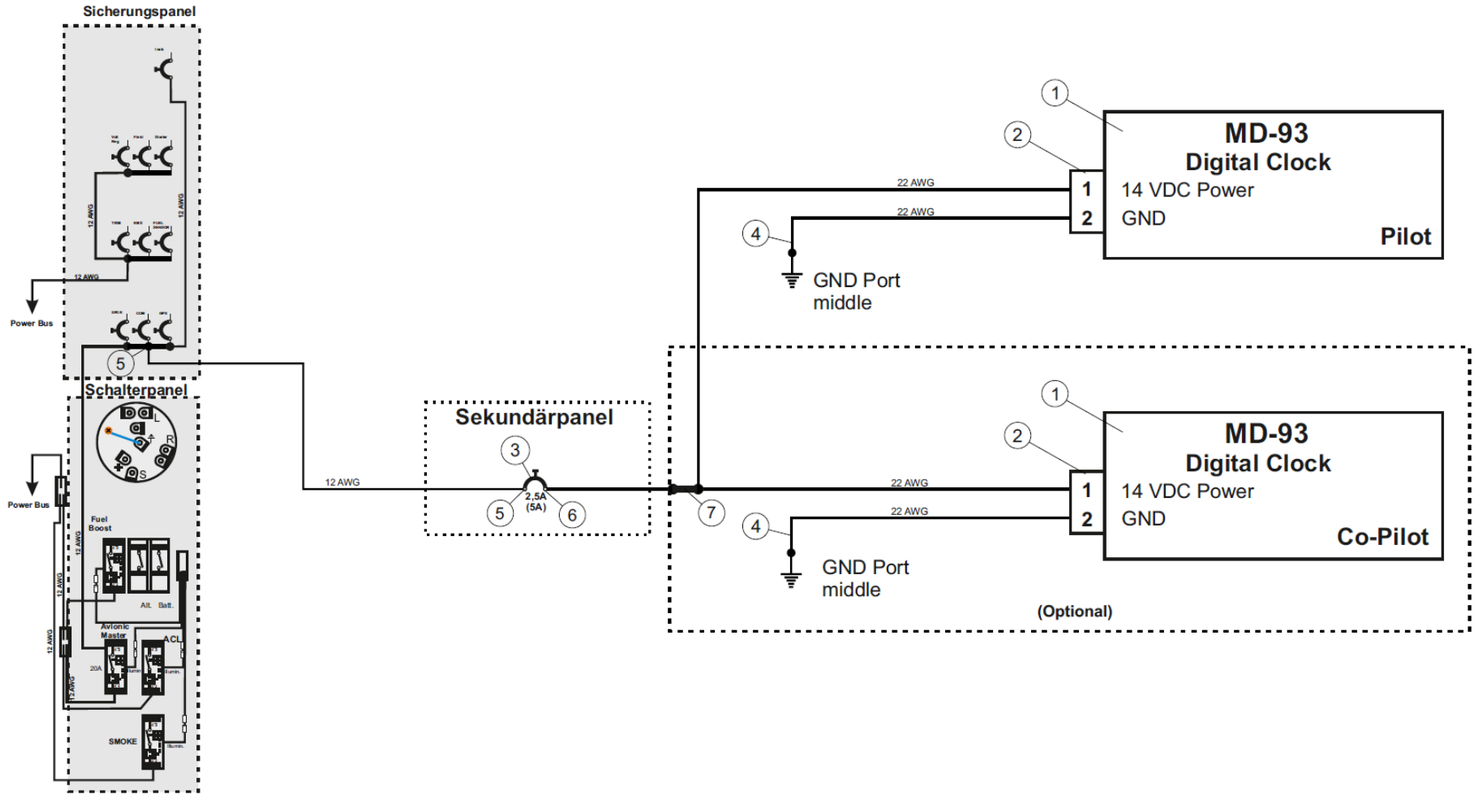

| | | | | |
|---|---|---|---|---|
| 1 | 1 (2) | Digital Horizon | RCA 2600-3 | |
| 2 | 1 (2) | 4 PIN CONNECTOR | MS3116E8-4S | Amphenol |
| 3 | 2 | Klixon CB 2A | 7274-2-2 | Sensata |
| 4 | 2 | PIDG-Ring terminal A5-1 | 130008-0 | AMP |
| 5 | 4 | PIDG-Ring terminal A3,5-2,5 | 320619-0 | AMP |
| 6 | 2 | PIDG-Ring terminal A3,5-1 | 36150-0 | AMP |

Figure 91-47: XA42-2460-085 A – RCA 2600-3 (option).



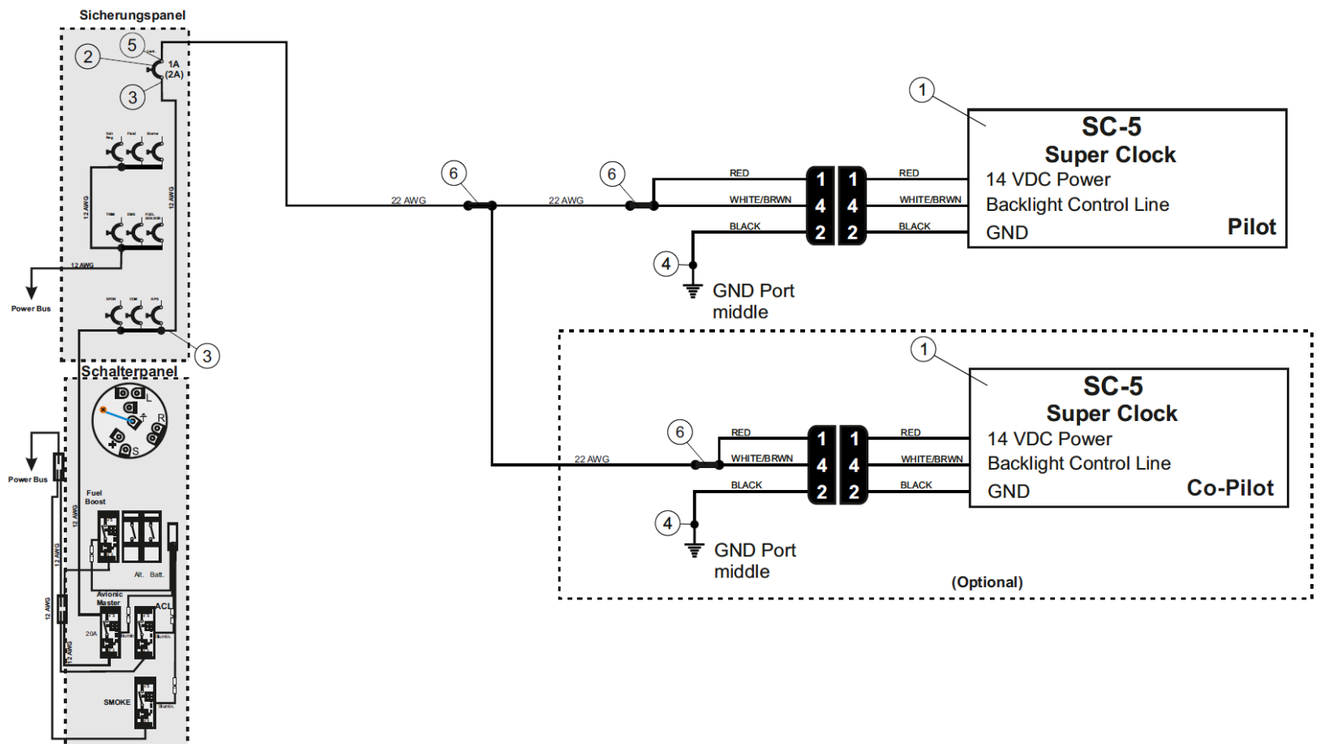

| | | | | |
|---|---|---|---|---|
| 1 | 1 (2) | Digital G-Meter | TL-3424 | TL-Elektronic |
| 2 | 1 (2) | 24 PIN CONNECTOR | | Install.- Kit TL3424 |
| 3 | 1 | Klixon CB 2A | 7274-2-2 | Sensata |
| 4 | 2 | PIDG-Ring terminal A5-1 | 130008-0 | AMP |
| 5 | 2 | PIDG-Ring terminal.A3,5-2,5 | 320619-0 | AMP |
| 6 | 1 | PIDG-Ring terminal A3,5-1 | 36150-0 | AMP |
| 7 | 1 | Crimpspleiß AWG20-16 blue | D-436-37 | TE Connectivity |

Figure 91-48: XA42-2460-086 A – Digital G-Meter TL-3424 (option).



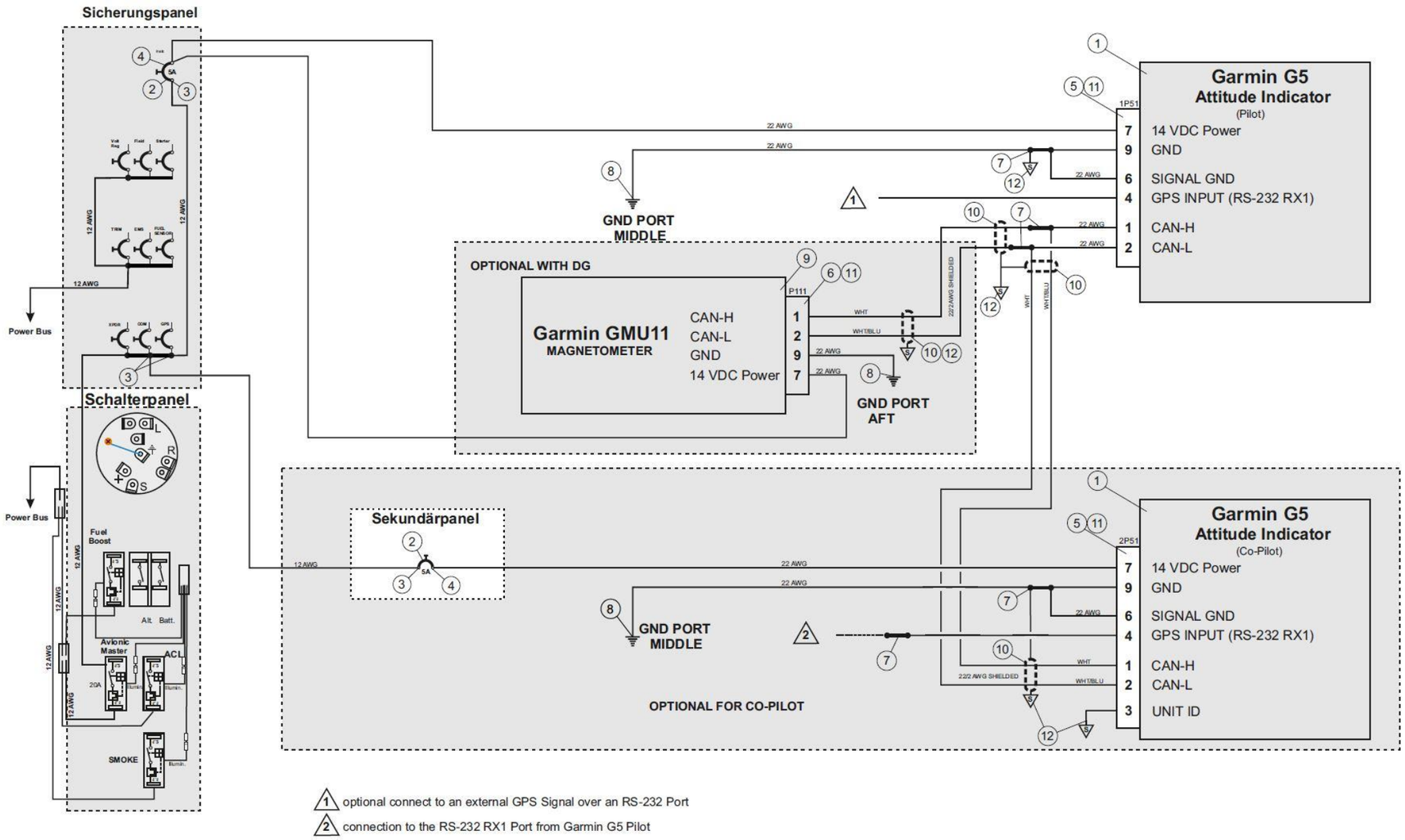

| | | | | |
|---|---|---|---|---|
| 1 | 1 (2) | Digital Clock | MD-93 | Mid Continent |
| 2 | 1 (2) | Mating Connector, 4-pin | 9018205 | Install.- Kit MD-93 |
| 3 | 1 | Klixon CB 2,5A | 7274-2-2,5 | Sensata |
| 4 | 2 | PIDG-Ring terminal A5-1 | 130008-0 | AMP |
| 5 | 2 | PIDG-Ring terminal.A3,5-2,5 | 320619-0 | AMP |
| 6 | 1 | PIDG-Ring terminal A3,5-1 | 36150-0 | AMP |
| 7 | 1 | Crimpspleiß AWG20-16 blue | D-436-37 | TE Connectivity |

Figure 91-49: XA42-2460-087 A – Digital Clock MD-83 (option).




| | | | | |
|---|---|---|---|---|
| 1 | 1 (2) | Super Clock | SC-5 | Electronics International |
| 2 | 1 (2) | Circuit breaker | MS26574-2 | 7274-2-2 Sensata |
| 3 | 1 | Klixon CB 2,5A | 7274-2-2,5 | Sensata |
| 4 | 2 | PIDG-Ring terminal A3,5-2,5 | MS25036-106 | 0-0320619-0 AMP |
| 5 | 2 | PIDG-Ring terminal.A5-1 | MS25036-103 | 0-0130008-0 AMP |
| 6 | 1 | PIDG-Ring terminal A3,5-1 | MS25036-101 | 0-0036150-0 AMP |
| 7 | 1 | Crimpspleiß AWG20-16 blue | M8182411-2 | D-436-37 TE Connectivity |

Figure 91-50: XA42-2460-088 A – Super Clock SC-5 (option).

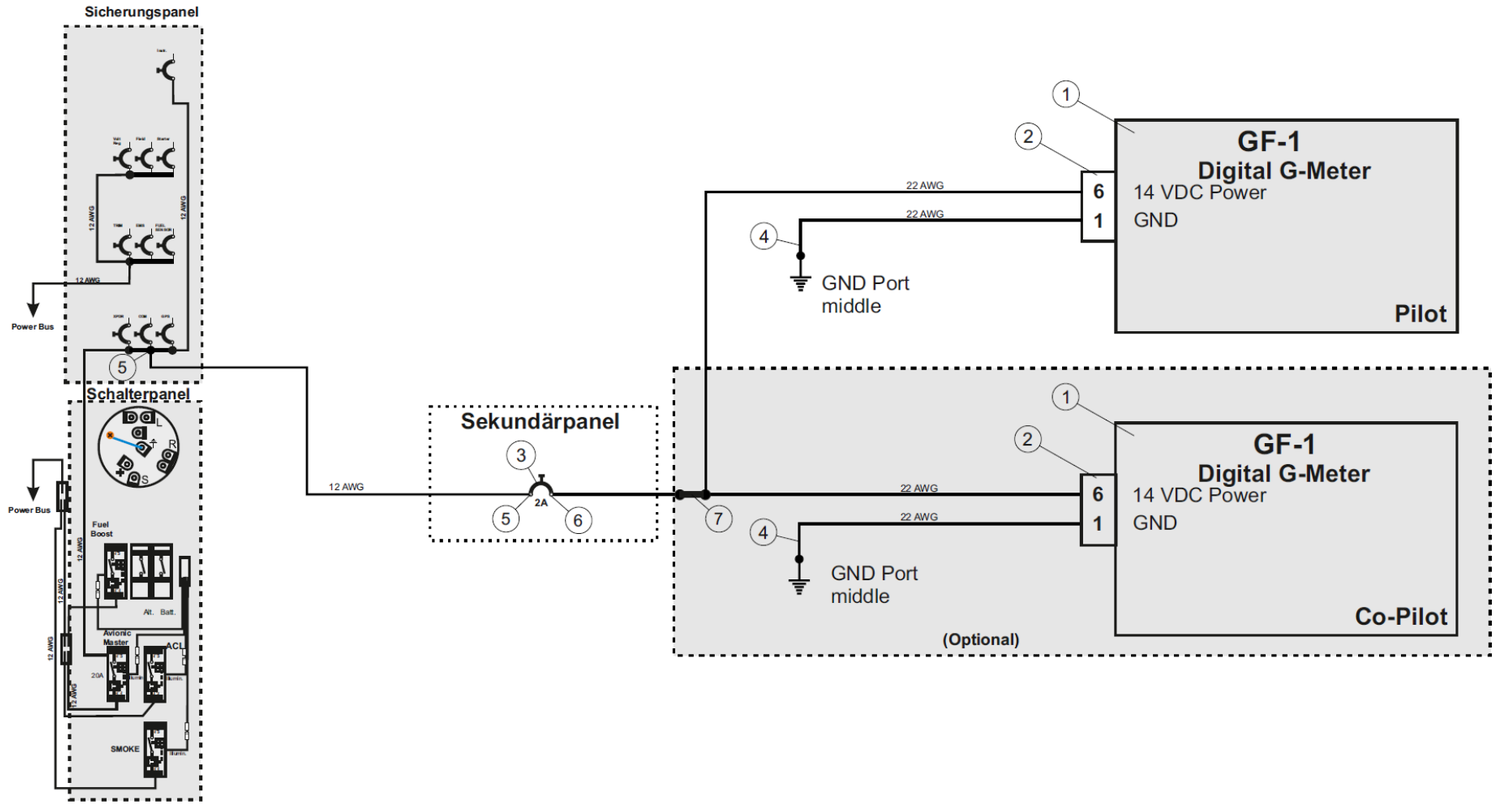



1 optional connect to an external GPS Signal over an RS-232 Port
2 connection to the RS-232 RX1 Port from Garmin G5 Pilot

| | | | |
|---|---|---|---|
| 1 | 1 (2) | Attitude Indicator | Garmin G5 |
| 2 | 1 (2) | Klixon CB 5A | MS26574-5 |
| 3 | 2 (4) | PIDG-Ring terminal A3,5-2,5 | MS265036-106 |
| 4 | 1 (2) | PIDG-Ring terminal A3,5-1 | MS265036-101 |
| 5 | 1 (2) | Connector Kit Garmin G5 | P/N 011-03002 |
| 6 | 0 (1) | Connector Kit Garmin GMU 11 | P/N 011-03002 |
| 7 | 1 (5) | Crimpspleiß AWG 20-16 blue | M8182411-2 |
| 8 | 1 (3) | PIDG-Ring terminal A5-1 | MS265036-103 |

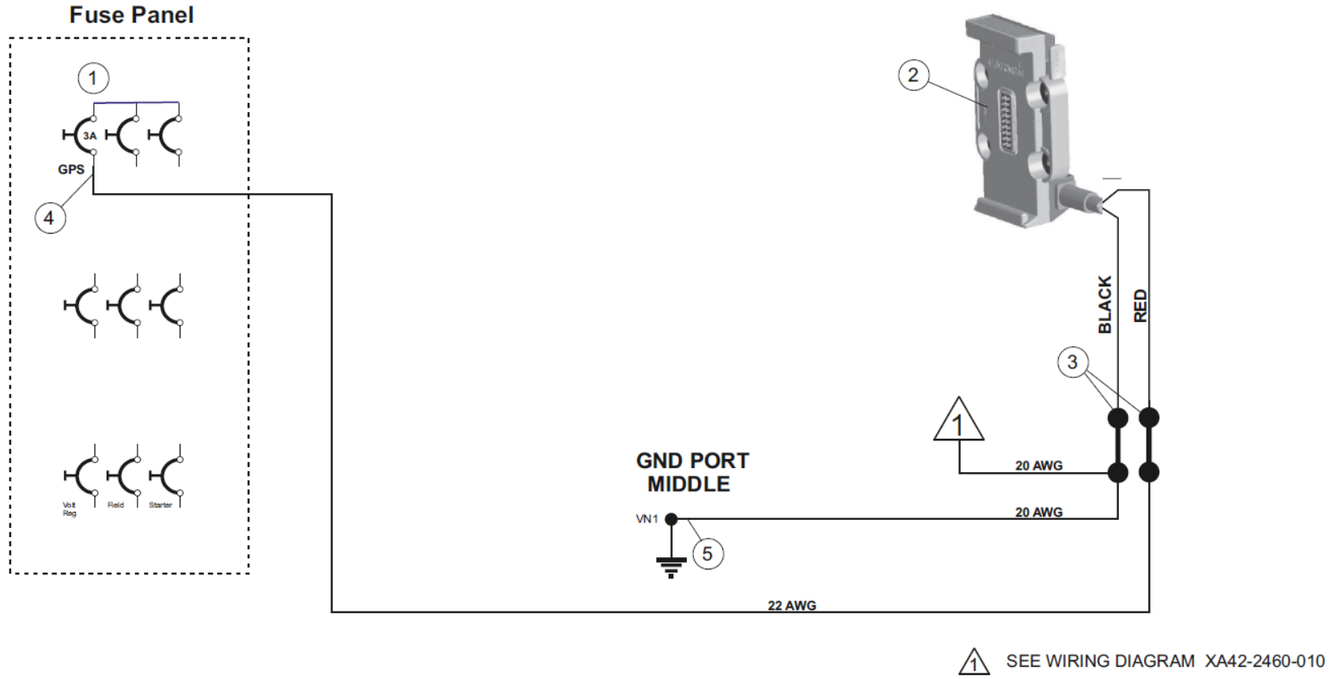
| | | | |
|---|---|---|---|
| 9 | 0 (1) | Magnetometer | Garmin GMU 11 |
| 10 | 0 (4) | Solder connector 4,8mm | B-155-05 |
| 11 | 0 (3) | CAN Termination KIT | P/N 011-02887-00 |
| 12 | 1 (5) | PIDG-Ring terminal A4-1 | MS265036-103 |
| | | | |
| | ALL | 22 AWG | M22759/32-22-9 |
| | ALL | 12 AWG | M22759/34-12-9 |
| | ALL | AWG 22 zweiadr. Geschirmt | M27500-22SD2T23 HU |

Figure 91-51: XA42-2460-089 B – Garmin G5 (option).



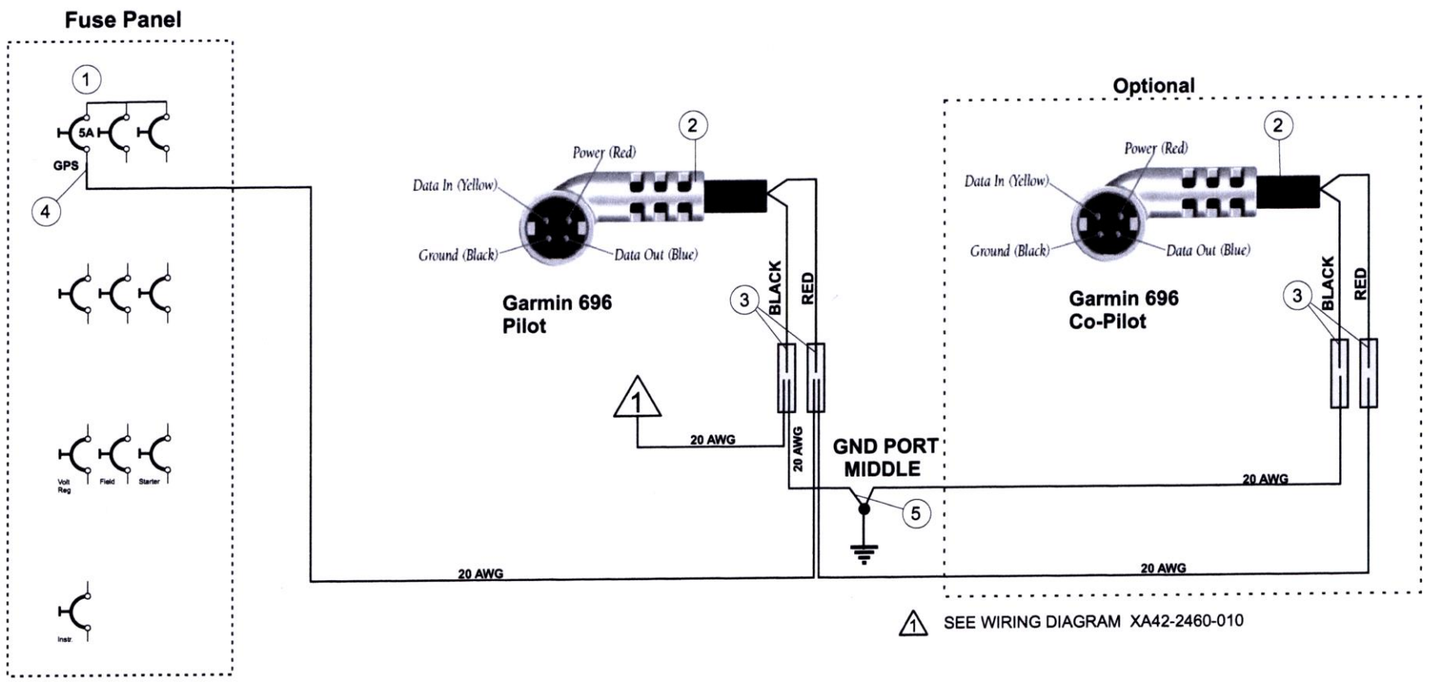

| | | | |
|---|---|---|---|
| 1 | 1 | Klixon CB 3A | 7274-2-3 |
| 2 | 1 | Aviation Mount with Power Cable | 010-11385-03 |
| 3 | 2 | Crimpspleiß AWG 20-16 blue | D-436-37 |
| 4 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 |
| 5 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 |
| | | | |
| | ALL | 22 AWG | M22759/32-22-9 |

Figure 91-52: XA42-2460-180 A – Digital G-Meter GF-1 (option).



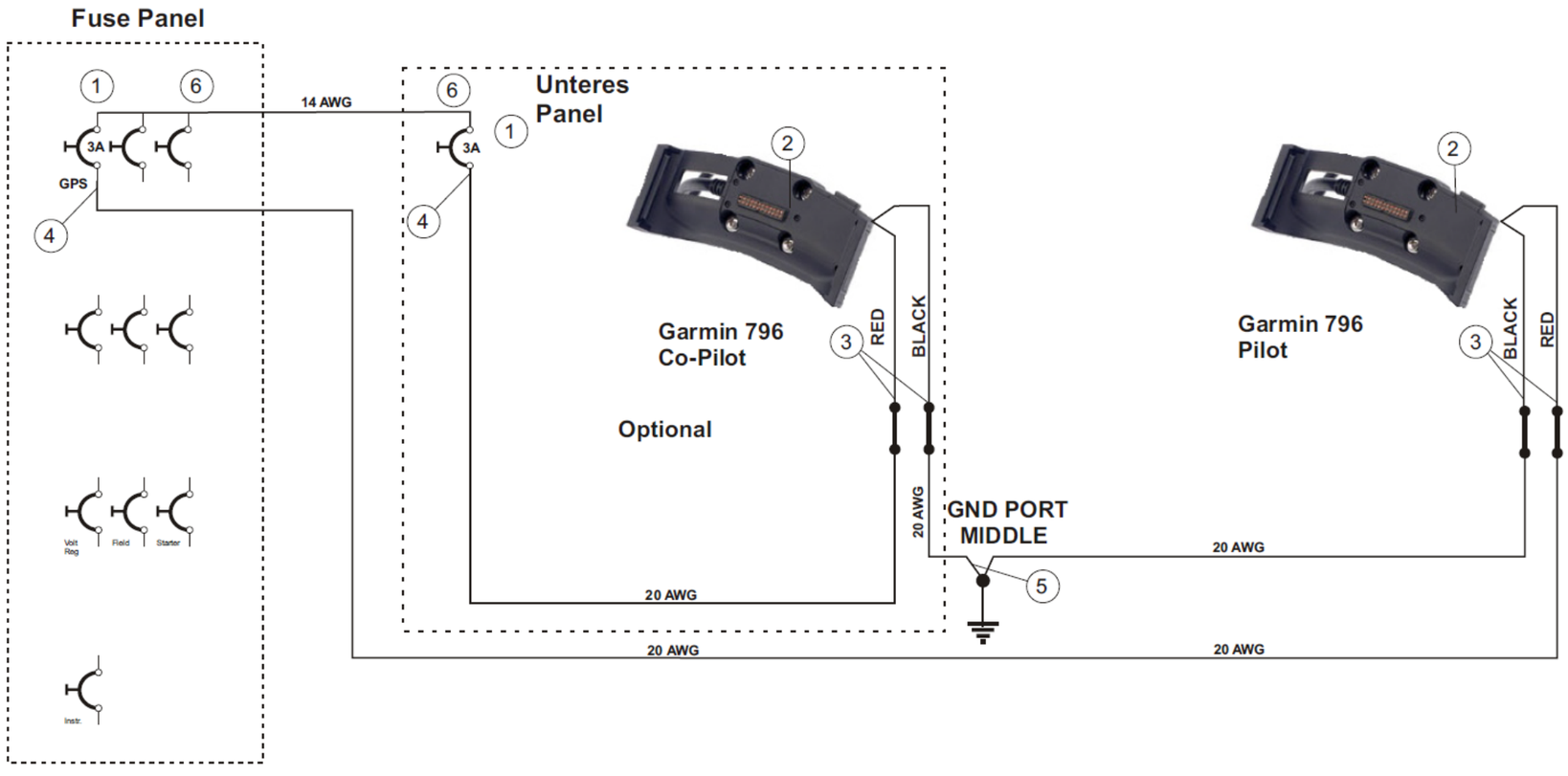

| | | | |
|---|---|---|---|
| 1 | 1 (2) | Attitude Indicator | Garmin G5 |
| 2 | 1 (2) | Klixon CB 5A | MS26574-5 |
| 3 | 2 (4) | PIDG-Ring terminal A3,5-2,5 | MS265036-106 |
| 4 | 1 (2) | PIDG-Ring terminal A3,5-1 | MS265036-101 |
| 5 | 1 (2) | Connector Kit Garmin G5 | P/N 011-03002 |
| 6 | 0 (1) | Connector Kit Garmin GMU 11 | P/N 011-03002 |
| 7 | 1 (5) | Crimpspleiß AWG 20-16 blue | M8182411-2 |
| 8 | 1 (3) | PIDG-Ring terminal A5-1 | MS265036-103 |
| 9 | 0 (1) | Magnetometer | Garmin GMU 11 |
| 10 | 0 (4) | Solder connector 4,8mm | B-155-05 |
| 11 | 0 (3) | CAN Termination KIT | P/N 011-02887-00 |
| 12 | 1 (5) | PIDG-Ring terminal A4-1 | MS265036-103 |
| | | | |
| | ALL | 22 AWG | M22759/32-22-9 |
| | ALL | 12 AWG | M22759/34-12-9 |
| | ALL | AWG 22 zweiadr. Geschirmt | M27500-22SD2T23 HU |

Figure 91-53: XA42-2460-091 B – Garmin AERA 550 (option).



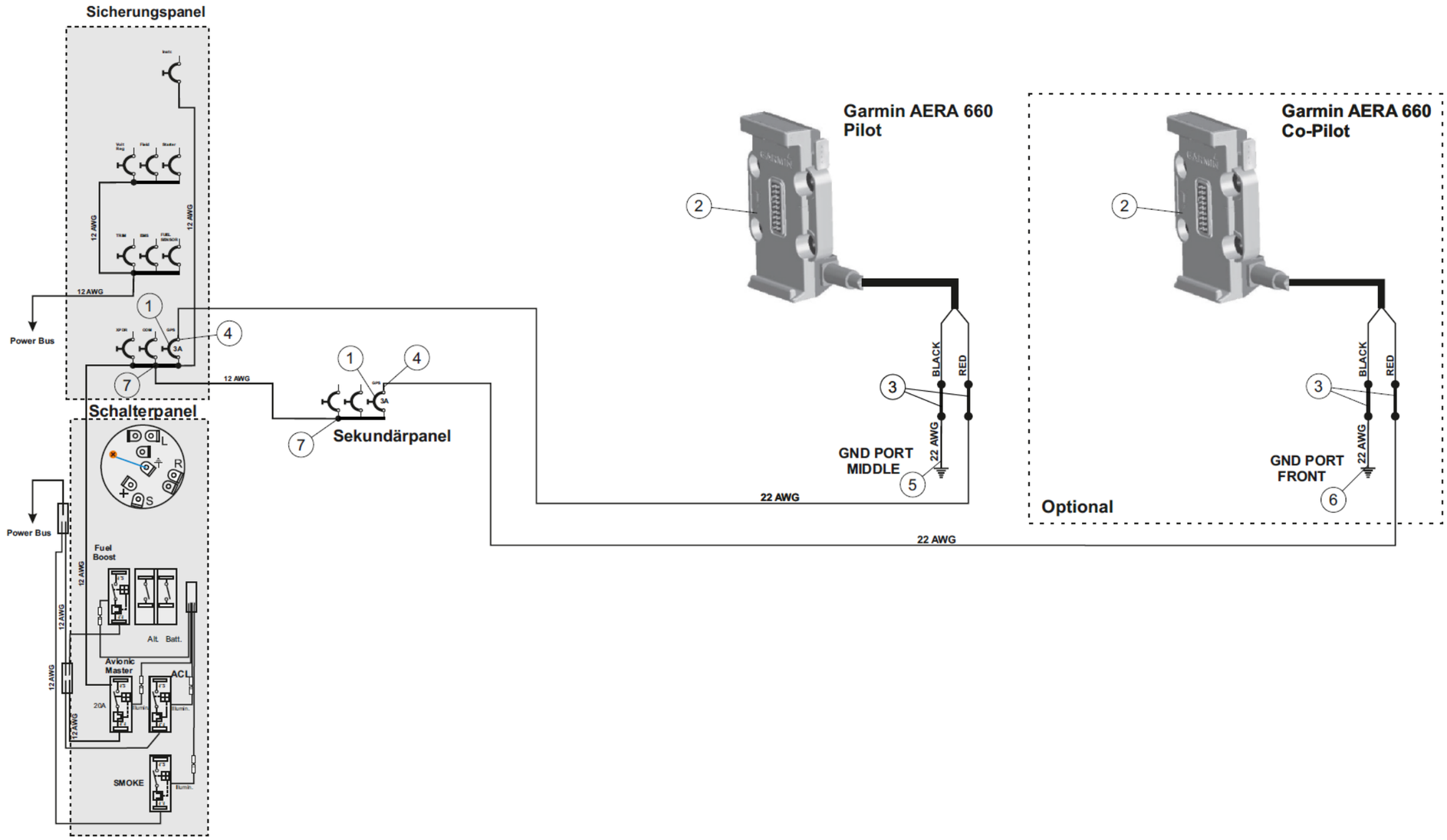

| | | | | |
|---|---|---|---|---|
| 1 | 1 | Klixon CB 5A | 7277-2-5 | Sensata |
| 2 | 2 | Power Cable | 010-11385-03 | Garmin |
| 3 | 4 | Crimpspleiß AWG 20-16 blue | D-436-37 | TE Connectivity |
| 4 | 1 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 5 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 20 AWG | M22759/32-20-9 | |

Figure 91-54: XA42-2460-092 A01 – Garmin 696 (option)




| | | | | |
|---|---|---|---|---|
| 1 | 2 | Klixon CB 3A | 7277-2-3 | Sensata |
| 2 | 2 | Aviation Mount, Bare Wires | 010-11756-01 | Garmin |
| 3 | 4 | Crimpspleiß AWG 20-16 blue | D-436-37 | TE Connectivity |
| 4 | 2 | PIDG-Ring terminal A3,5-1 | 0-0036150-0 | AMP |
| 5 | 1 | PIDG-Ring terminal A5-1 | 0-0130008-0 | AMP |
| 6 | 2 | PIDG-Ring terminal A3_5-2_5 | 0-0320619-0 | AMP |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |
| | ALL | 20 AWG | M22759/32-20-9 | |
| | ALL | 14 AWG | M22759/32-14-9 | |

Figure 91-55: XA42-2460-093 A01 – Garmin 795/796 (option)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Klixon CB 3A | MS26574-3 | |
| 2 | 2 | Aviation Mount with Power Cable | 010-12373-01 | Garmin |
| 3 | 4 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity D-436-37 |
| 4 | 1 | PIDG-Ring terminal A3,5-1 | MS25036-101 | |
| 5 | 1 | PIDG-Ring terminal A5-1 | MS25036-103 | |
| 6 | 1 | PIDG-Ring terminal A6-1 | MS25036-150 | |
| 7 | 1 | PIDG-Ring terminal A3,5-2,5 | MS25036-106 | |
| | | | | |
| | ALL | 22 AWG | M22759/32-22-9 | |

Figure 91-56: XA42-2460-094 A01 – Garmin AERA 660 (option)

## 91-10-00 OPTIONAL WIRING DIAGRAMS

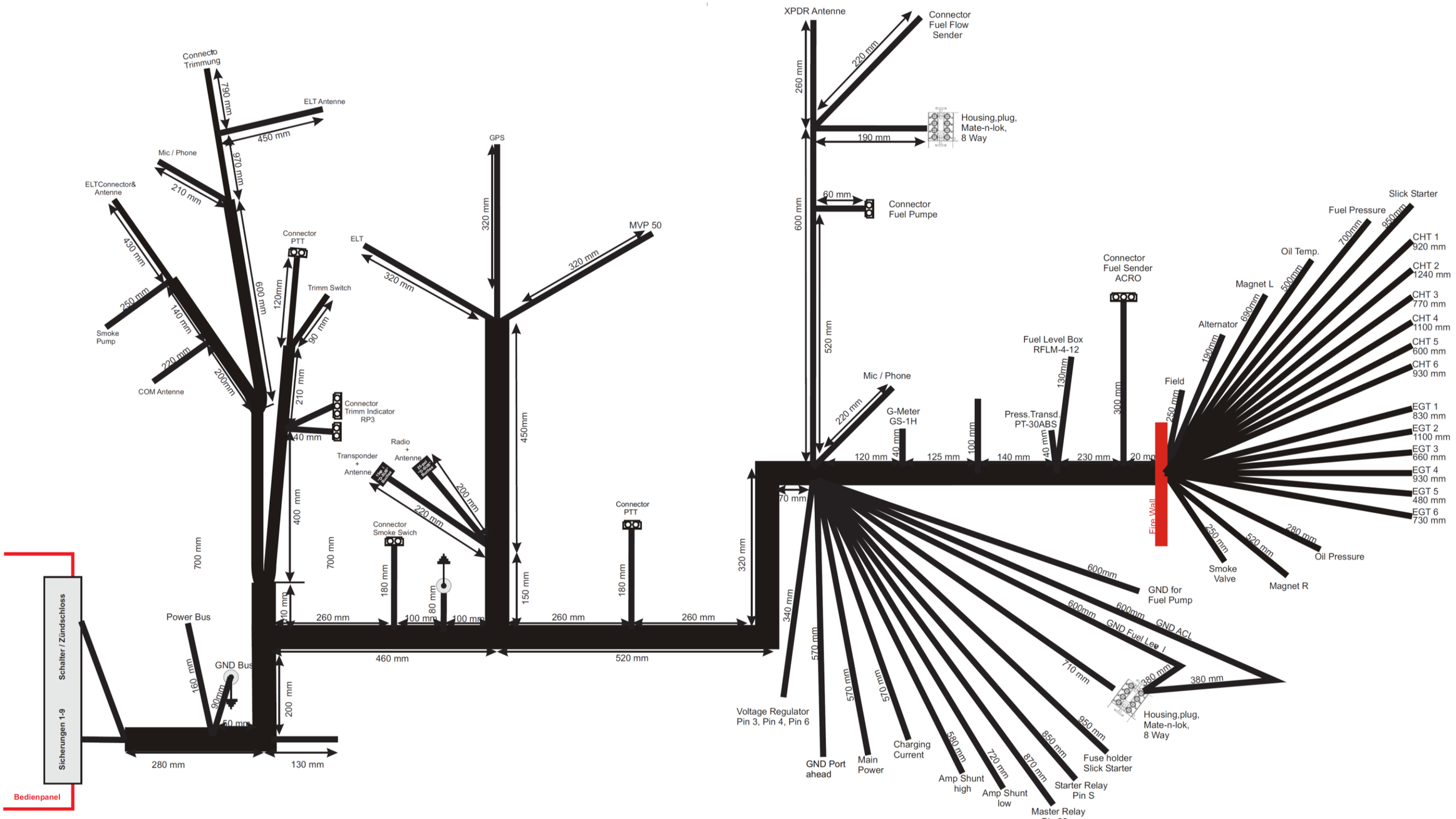
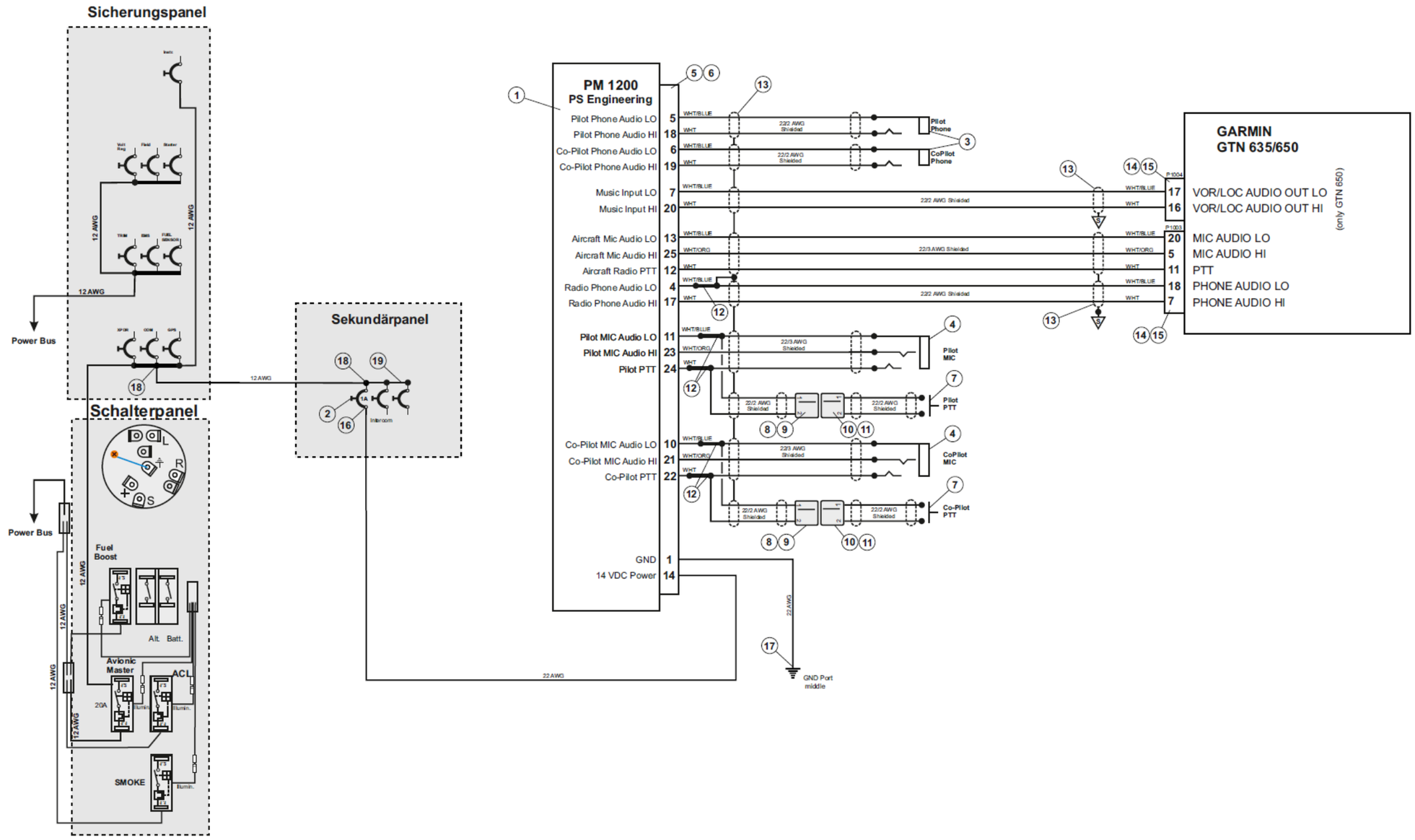



Figure 91-57: XA42-2460-101 A01 – Wiring Bundle For change PTT and Smoke Switch (option)

## 91-13-00 AUDIO

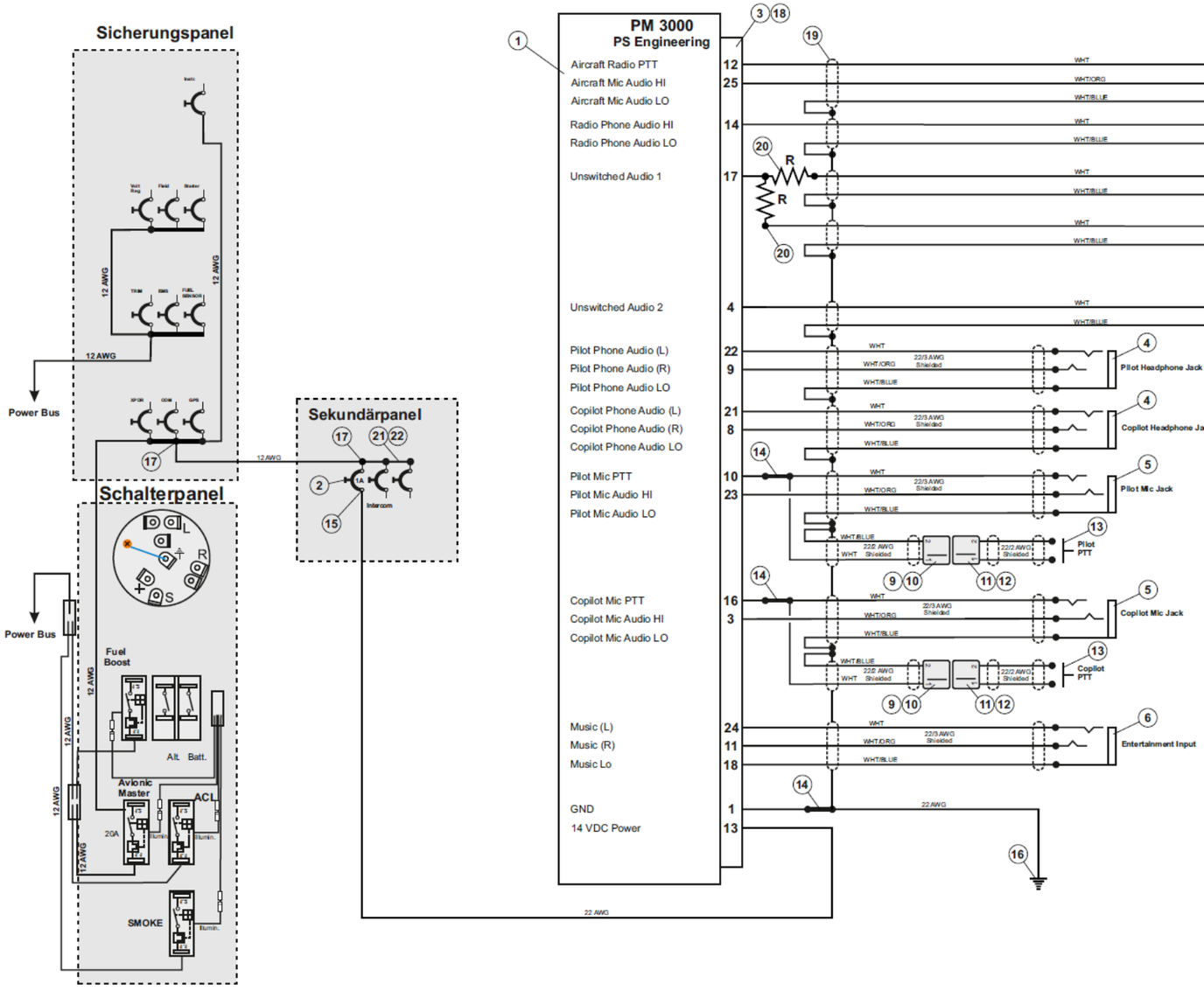



| | | | | |
|---|---|---|---|---|
| 1 | 1 | Intercom PM 1200 | 11960 | PS Engineering |
| 2 | 1 | Circuit breaker 1A | MS26574-1 | |
| 3 | 2 | Headphone socket | | Install. KIT PM 1200 |
| 4 | 2 | Mikrophone socket | | Install. KIT PM 1200 |
| 5 | 17 | Sub-d Contact, PIN, 24-20 | 205089-1 | Tyco Electr./ Install. KIT PM 1200 |
| 6 | 1 | 25 pin Sub-d Connector | | Install. KIT PM 1200 |
| 7 | 2 | Push button 1pin dia 16mm | 9633AX1146 | APEM |
| 8 | 2 | 2 circuit plug | XS-0120-012 | Tyco Electronics, 1-480318-0 |
| 9 | 4 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics, 163557-2 |

| | | | | |
|---|---|---|---|---|
| 11 | 4 | Pin AWG22/18 | XS-0120-101 | Tyco Electronics, 163558-2 |
| 12 | 5 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity, D-436-37 |
| 13 | 12 | Solder connector 4,8mm | B-155-05 | TE Connectivity |
| 14 | 7 | Sub-d Contact, PIN, 28-22 | 204370-2 | Tyco Electr./ Install. KIT GTN650 |
| 15 | 1 | Install. Kit GTN6XX | | Garmin |
| 16 | 1 | PIDG-Ring terminal A3,5-1 | MS25036-101 | |
| 17 | 1 | PIDG-Ring terminal A5-1 | MS25036-103 | |
| 18 | 2 | PIDG-Ring terminal A3,5-2,5 | MS25036-106 | |
| 19 | 1 | GND connector, double 7qm | XA42-2460-202 | optional |

| | | | | |
|---|---|---|---|---|
| All | | 22 AWG | M22759/32-22-9 | |
| All | | 20 AWG | M22759/32-20-9 | |
| All | | 18 AWG | M22759/32-18-9 | |
| All | | 12 AWG | M22759/34-12-9 | |
| All | | 22/1 AWG | M27500-22TE1T14 | |
| All | | 22/2 AWG | M27500-22SD2T23 HU | |
| All | | 22/3 AWG | M27500-22SD3T23 HU | |
| All | | RG400 | M17/128-RG400 | |

Figure 91-58: XA42-2460-131 A – PM1200 (option)




| | | | | |
|---|---|---|---|---|
| 1 | 1 | Intercom PM 3000 | 11931A | PS Engineering |
| 2 | 1 | Circuit breaker 1A | MS26574-1 | |
| 3 | 1 | 25 pin Sub-d Connector | 425-025-0010 | Install. KIT PM 3000 |
| 4 | 2 | Headphone socket | 550-001-0002 | Install. KIT PM 3000 |
| 5 | 2 | Mikrophone socket | 550-001-0003 | Install. KIT PM 3000 |
| 6 | 1 | socket jack 3,5 mm | | Kunststoffgehäuse, isoliert, mit Lötkontakte |
| 7 | 1 | Install. Kit GTN6XX | | Garmin |
| 8 | 1 | Install. Kit GTX 345R | | Garmin |
| 9 | 2 | 2 circuit plug | XS-0120-012 | Tyco Electronics, 1-480318-0 |
| 10 | 4 | Socket AWG22/18 | XS-0120-102 | Tyco Electronics, 163557-2 |

| | | | | |
|---|---|---|---|---|
| 11 | 2 | 2 circuit cap | XS-0120-011 | Tyco Electronics, 1-480319-0 |
| 12 | 4 | Pin AWG22/18 | XS-0120-101 | Tyco Electronics, 163558-2 |
| 13 | 2 | Push button 1pin dia 16mm | 9633AX1146 | APEM |
| 14 | 7 | Crimpspleiß AWG 20-16 blue | M8182411-2 | TE Connectivity, D-436-37 |
| 15 | 1 | PIDG-Ringkabelschuh A3,5-1 | MS25036-101 | |
| 16 | 1 | PIDG-Ringkabelschuh A5-1 | MS25036-103 | |
| 17 | 2 | PIDG-Ringkabelschuh A3,5-2,5 | MS25036-106 | |
| 18 | 18 | Sub-d Contact, PIN, 24-20 | 205089-1 | Tyco Electr./ Install. KIT PM 3000 |
| 19 | 17 | Solder connector 4,8mm | B-155-05 | TE Connectivity |
| 20 | 2 | Wire resistor 390 Ohm | ERG-1SJ391V | Panasonic |

| | | | | |
|---|---|---|---|---|
| 21 | 1 | GND connector, double 7qm | XA42-2460-202 | optional |
| | | | | |
| All | | 22 AWG | M22759/32-22-9 | |
| All | | 20 AWG | M22759/32-20-9 | |
| All | | 18 AWG | M22759/32-18-9 | |
| All | | 12 AWG | M22759/34-12-9 | |
| All | | 22/1 AWG | M27500-22TE1T14 | |
| All | | 22/2 AWG | M27500-22SD2T23 HU | |
| All | | 22/3 AWG | M27500-22SD3T23 HU | |
| All | | RG400 | M17/128-RG400 | |

Figure 91-59: XA42-2460-132 B – PM3000 Intercom (option)

# APPENDIX

## Table of Content


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| Appendix 6 | FORM: CONTROL SURFACES MASS AND BALANCE ..... | 13 |
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| Appendix 9 | COMMON REPAIRS ..... | 22 |

# APPENDIX 1 FORM: OCCURENCE REPORT

Design Holder Contact Data: **Liftify UG (haftungsbeschränkt)**
Felsenbergstraße 25
D-39110 Magdeburg

E-Mail: **airworthiness@liftify.aero**
Fax: + 49 39155 565041
Phone: + 49 152 26215456

Electronic Report Form refer to: www.liftify.aero

With Attention to: Head of Design Organisation
Office of Airworthiness

## 1. General Information

| | | | |
|---|---|---|---|
| Reporting Organisation: | | Reporting Date: | |
| Contact Person: | | Phone & E-Mail: | |
| Occurrence Title: | | Occurrence Finding Date: | |
| ATA-Chapter: | | Occurrence Location in A/C: | |

Other Parties already informed: [_] None [_] EASA [_] NAA [_] CAMO [_] …

Occurrence Caused: [_] No Damage/Injury [_] Damage to Aircraft [_] Damage to Property [_] Personal Injury

## 2. Aircraft Information

| | | | |
|---|---|---|---|
| Aircraft Type: | | Aircraft S/N: | |
| Operator/ Owner: | | Aircraft Registration: | |
| Aircraft Flight Hours: | | Aircraft total Cycles: | |

## 3. Engine, Propeller and Component Information (as relevant)

Information related to: [_] Engine [_] Propeller [_] Component

| | | | |
|---|---|---|---|
| Parts Catalogue (IPC) Reference: | | | |
| Part Number and Name: | | Serial Number: | |
| Manufacturing Date: | | TCDS or ETSO Reference: | |
| Time since New (TSN): | | Time since Overhaul (TSO): | |

## 4. Occurrence Summary

| | | | | |
|---|---|---|---|---|
| Detection Phase: | [_] Maintenance | [_] Parking | [_] En-Route | [_] Aerobatic |
| | [_] Scheduled | [_] Taxi | [_] Descent | [_] Hovering |
| | [_] Non-Scheduled | [_] Take-off | [_] Approach | [_] Manoeuvring |
| | [_] Operation | [_] Climb | [_] Landing | [_] Unknown |
| | | | | [_] … |
| Probable Cause(s): | [_] Design | [_] Repair | [_] Unapproved Part | [_] Not Determined |
| | [_] Production | [_] Fatigue | [_] Human Factors | [_] … |
| | [_] Maintenance | [_] Corrosion | | |
| | [_] Operational | | | |

## 5. Occurrence Details

Failure, Mal-function, Defect Description:
(incl. Photos, Sketches, etc.)

Suggestion:
(if any)

Aircraft still in Operation: [_] Yes [_] No [_] Restricted

Present Position of the Aircraft:

Attachments to Occurrence Report: [_] Yes [_] No

References:

…

# APPENDIX 2 FORM: MASS AND BALANCE

| | |
|---|---|
| POA Nr.: **DE.21G.0227** | **Mass and Balance XA42** |

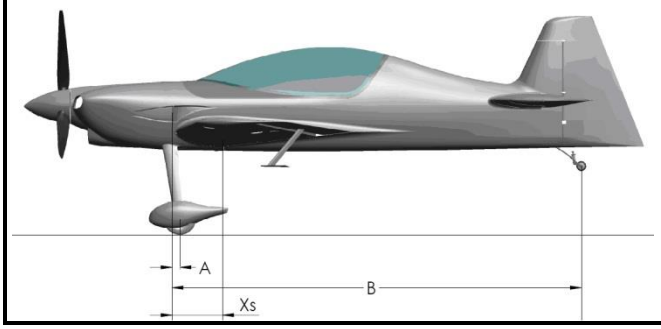
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Type:** | **XA42** | **Prod.-Nr.:** | | **Registration:** | | **Job-Nr.** | |
| **Equipment List from:** | | | | **Reason for M&B:** | | | |

**Data according to Airplane Operating Handbook or Type Certificate:**

| | | | |
|---|---|---|---|
| **Reference Plane (RP):** | **Firewall** | | |
| **Levelling reference (LR):** | **Firewall vertical** | | |
| **Remaining fuel, comments, configuration** | | | |
| **MTOM in category** | **999 kg Utility** | **850 kg Acrobatic** | |
| **CG Limits for Flight** | **$X_{front}$ 550 mm** | **$X_{aft}$ 700 mm** | **MTOM Utility (kg): 999** |

**Weighing and Empty CG position:**

| Support point | Total (Kg) | Tara(Kg) | Mass Net (Kg) | Moment Arm (m) | Mass Moment (mkg) |
|---|---|---|---|---|---|
| **Tailwheel** | / | / | | | |
| **Mainwheel LH** | / | / | | | |
| **Mainwheel RH** | / | / | | | |
| **Fuel Acrotank** ***(0,72 kg/l)*** | | | | ***(0,285)*** | |
| **Fuel Wingtank** ***(0,72 kg/l)*** | | | | ***(0,340)*** | |
| ***Empty mass EM =*** | | | | | |
| ***Empty mass moment ME*** | | | | | |
| ***Empty mass CG $x_E$*** | | | | | |




$$XE = \frac{M1 * A + M2 * B}{M1 + M2}$$

**Variable masses**

| | | | | |
|---|---|---|---|---|
| **1.** | **Fuel Acrotank** ***(0,72 kg/l)*** | | **0,285** | |
| **2.** | **Fuel Wingtanks** ***(0,72 kg/l)*** | | **0,340** | |
| **3.** | **Front seat** | | **0,780** | |
| **4.** | **Rear Seat** | | **1,670** | |
| **5.** | **Baggage** | | **2,225** | |
| **6.** | **Miscellaneous** | | | |

**Masses and moment arms are to be taken from aircraft documents: Type certificate, AFM, Equipment List)**

**Determination of CG for flight {front ($x_v$) and aft ($x_h$) CG positions}**

| | | | | |
|---|---|---|---|---|
| **$X_{front}$** | **Empty mass EM** | | | |
| | | | | |
| | | | | |
| **$X_{aft}$** | **Empty mass EM** | | | |
| | | | | |
| | | | | |

Place and Date | Stamp | Signature CS

# APPENDIX 3 FORM: COMPASS COMPENSATION

| | | |
|---|---|---|
| | **XtremeAir GmbH, Harzstr.2, D-39444 Hecklingen** | **Doc. Nr.:**_____ |
| | | **Page: 1 of 1** |
| POA-Nr.: DE.21G.0227 | **Compass compensation** | |

| | | |
|---|---|---|
| Aircraft Type: | Registration: | Aircraft S/N: |
| Compass type: | Compass S/N: | Compass manufacturer: |

**Reason for compensation:** ☐ New Aircraft ☐ Maintenance
☐ Compass instrument panel Pilot (rear)
☐ Compass instrument panel Passenger (front)

**Deviation δ in Degrees:**

⇐ − + ⇒

| 14 | | 12 | | 10 | | 8 | | 6 | | 4 | | 2 | | 0 | | 2 | | 4 | | 6 | | 8 | | 10 | | 12 | | 14 | Deg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 000 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 030 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 060 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 090 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 120 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 150 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 180 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 210 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 240 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 270 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 300 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 330 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 360 |

**Calculation of the deviation coefficients:**

$A = \frac{(\delta N)+(\delta O)+(\delta S)+(\delta W)}{4}$ $B = \frac{(\delta O)-(\delta W)}{2}$ $C = \frac{(\delta N)-(\delta S)}{2}$

$A = \frac{(\quad)+(\quad)+(\quad)+(\quad)}{4}$ $B = \frac{(\quad)-(\quad)}{2}$ $C = \frac{(\quad)-(\quad)}{2}$

A = ° B = ° C = °

**Verification of the compass compensation:**

| Target heading | N | 030° | 060° | O | 120° | 150° | S | 210° | 240° | W | 300° | 330° |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Real heading | | | | | | | | | | | | |

☐ No observations ☐ Observations ☐ Electrical equipment was on during the test

Place, Date Stamp Signature CS

# APPENDIX 4 FORM: GROUND RUN REPORT

| | | |
|---|---|---|
| | **XtremeAir GmbH, Harzstr.2, D-39444 Hecklingen** | |
| | | **Page: 1 of 1** |
| POA-Nr.: DE.21G.0227 | **Ground Run report** | |

| | | | |
|---|---|---|---|
| Registration: | | | Aircraft S/N: |
| Aircraft Model: | | Location: | Airfield elevation: |
| Pilot: | QNH: | Engine: | Propeller: |
| Co-Pilot: | OAT (°C): | Date: | |

**Functional tests***

*Fill in where applicable:* ***Not applicable = O*** ***Without observations = +*** ***With observations = -***

| | | | | |
|---|---|---|---|---|
| Check Fuel selector | Check Ignition | Fuel pump, Fuel pressure | Tank level indication on the ground | Engine starting and acceleration |
| Throttle, Stops, Friction adjustment | Engine monitoring instruments, Markings | Generator function, Charge controller | Vibrations | Ventilation system, check operation |
| XPDR / COM | Propeller adjustment, Governor function | Canopy lock | Brake function | Trim indicator |
| Cockpit glass (striations, Microcracks) | CO-Test in Cockpit | Leaks / Odor in Engine compartment | | |

*Observations are to be documented as an attachment.

| Operational phase | | Throttle-setting | Propeller-setting | Target RPM | Measured RPM | Oil pressure | Oil Temp. | CHT | MAP | Observations | In order | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | %MCP | | rpm | rpm | psi | °F | °F | In/HG | (i.e. Sensor fail) | yes | no |
| **Engine start (cold start)** | | | | | | | | | | | | |
| **Warm-up until CHT 200 °F** | | | | | | | | | | | | |
| **Propeller setting cycle 3 x** | | | | | | | | | | | | |
| **Magnetcheck** | **Both** | | | | | | | | | | | |
| | **Left** | | | | | | | | | | | |
| | **Both** | | | | | | | | | | | |
| | **Right** | | | | | | | | | | | |
| | **Both** | | | | | | | | | | | |
| **Idle run & Shut-down** | | | | | | | | | | | | |
| **Engine start (warm start)** | | | | | | | | | | | | |
| **Mixture Check** | | | | 1000 | | | | | | | | |
| **Idle run & Shut-down** | | | | | | | | | | | | |
| **Fluid leak** | | | | | --- | --- | --- | --- | --- | | | |

| **RPM calibration** | **Cockpit display rpm** | **Instrument reading rpm** | **RPM** | **Cockpit display rpm** | **Instrument reading rpm** |
|---|---|---|---|---|---|
| Idle | | | RPM | | |
| RPM | | | Full throttle | | |

**Result:** Ground run w/o observations ☐ After correction of minor deficiencies o.k. ☐ Repeat ground run after correction of deficiencies ☐

Location Date Stamp Signature CS

# APPENDIX 5 FORM: CHECK FLIGHT REPORT

| | | |
|---|---|---|
| | **XtremeAir GmbH**<br>POA: DE.21G.0227 | **Check Flight** |

| | | | | | |
|---|---|---|---|---|---|
| Type: | | | Aircraft S/N: | | Registration: |
| Pilot: | | | Location: | | Airfield elevation: |
| Co-Pilot: | | | Take-off: | : | Landing: : |
| QNH: | | OAT (°C) | Date: | | Flighttime: |

| **Weight and Balance** | | | | | |
|---|---|---|---|---|---|
| Empty mass: (EM) | | kg | Take-off mass (TOM): | | kg |
| Crew and crew equipment: | | kg | Empty mass c.g.: | | mm |
| Take-off fuel mass (TOFM): | | kg | Take-off c.g.: | | mm |

**Functional tests***  ***Beanstandungen sind in den Befundbericht aufzunehmen!**

*Fill in where applicable* | ***Not applicable = O*** | ***Without observations = +*** | ***With observations = -***

| | | | | | |
|---|---|---|---|---|---|
| Harness | Engine Controls | Warnings | Intercom | Fuel level in flight | |
| Canopy lock | Fuel selector | Tailwheel lock | ELT function | Fluid leaks | |
| Batterie | Magneto test | Engine monitoring | XPR.Check in flight | Odor, CO-Test | |
| Anti collision lights | Structure temperature indication | Generator, charging current | VOR/Moving Map | Vibration, noises | |
| Control deflections | Propeller setting | Flight instrumentation | Compass | | |
| Trim, indicator | | Pitot static system | Smoke system | | |
| Trim range | Wheel brake | Radio in flight | Cruise flight | | |

| **Flight phase** | Power | MVP-50 | IAS | Height | Vario | RMP | MAP | Oil | | CHT | EGT | Fuel | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *%* | *%* | *kts* | *ft* | *ft/min* | *1/s* | *In/HG* | *bar* | *°C* | *°C* | *°C* | *bar* | *l/h* |
| **Engine run-up** | Idle | | | | **---**<br>**---** | | | | | | | | |
| **Take-off** | Max. | | | | | | | | | | | | |
| **Climb** | Max.<br>75% | | | | | | | | | | | | |
| **Cruise** | Max.<br>75%<br>55% | | | | **0**<br>**0**<br>**0** | | | | | | | | |
| **Landing** | Idle | | | | | | | | | | | | |

| **Stall test** (Desired values see AFM. Pay attention to safety altitude) | | | |
|---|---|---|---|
| Configuration | Power | | Stall speed |
| **1) clean** | **Idle** | | |
| | | | |
| **3) clean** | **75%** | | |
| | | | |
| **5) clean, bank 30°** | **75%** | | |
| **Stall behavior w/o observations:** | | | |

| **Vne test** (Pay attention to safety altitude and altitude error) | | | |
|---|---|---|---|
| Vne: | **225 kts** | IAS: | |
| Max. RPM | | RPM | |
| Height: | | | |
| Comments: | | | |
| **Vne test w/o observations:** | | | |

| **Result:** | | **Observations:** (if applicable to entry in inspection report.) |
|---|---|---|
| **Flyingwise o.k.** | | **1.** |
| **After correction of minor deficiencies o.k.** | | **2.** |
| **Repeat flight test after correction of deficiencies** | | **3.** |
| | | **4.** |

| **Name, Signature Pilot** | **Date** | **Stamp** | **Signature CS** |
|---|---|---|---|

# APPENDIX 6 FORM: CONTROL SURFACES MASS AND BALANCE

# Control surfaces mass and balance

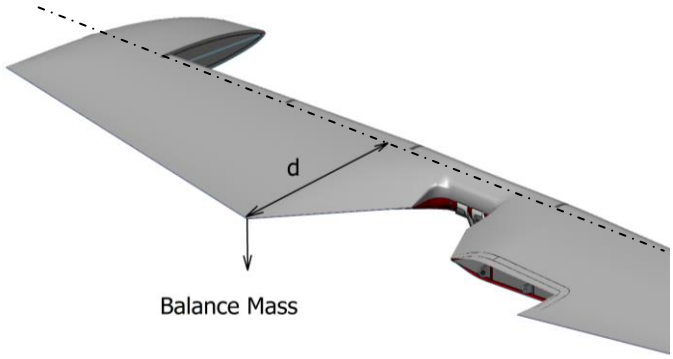
| Model: | Serial Number (S/N): | Registration: |
|---|---|---|
| **XA41 / XA42** | | |

Refer to AMM chapter 51-60-01 and follow the procedure to determine the mass and balance of the control surfaces.

| Control surface | Mass (kg) | | Moment | | |
|---|---|---|---|---|---|
| | Should be* | Is | Balance Mass (kg) is | Distance (m) measuring point aft of hinge line | Balance Mass (kg) Should be |
| Left aileron with/without spade & spade arm | 6,4 – 9,4 | | | 0,286 | 0,8 – 1,4 |
| Right aileron with/without spade & spade arm | 6,4 – 9,4 | | | 0,286 | 0,8 – 1,4 |
| Elevator without flettner | 10 - 13 | | | 0,560 | 0,3 – 1,8 |
| Flettner | 0,35 – 0,55 | | | 0,145 | 0,05 – 0,15 |
| Rudder | 5,2 – 6,2 | | | 0,870 | 0,7 – 1,5 |

Comments / Deviations:

To perform the moment measurements the control surface needs to be suspended by a frictionless axis. The mass on the most rear point of the control surface on horizontal position is to be measured. Crosscheck the arm of the measurement point to the axis with the distance indicated in the table.

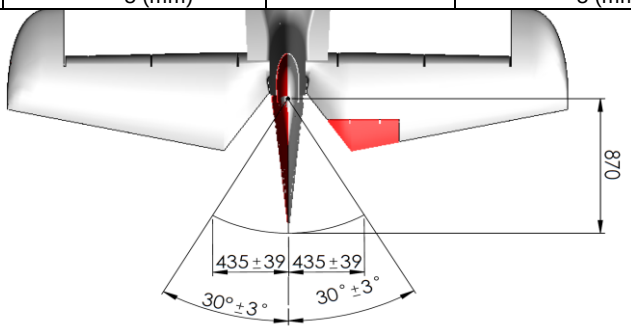



| Created: Signature: | Checked: Signature CS: |
|---|---|
| _____ | _____ |
| _____ | _____ |
| Place, Date | Place, Date |

# APPENDIX 7 FORM: CONTROL SURFACE DEFLECTIONS

| | | |
|---|---|---|
| | **XtremeAir GmbH, Harzstr.2, D-39444 Hecklingen** | **Page: 1 of 1** |
| POA-Nr.: DE.21G.0227 | **Control surface deflections** | |

| Model: **XA41 / XA42** | Serial Number (S/N): | | Registration: | |
|---|---|---|---|---|
| **Aileron** | Left wing | | Right wing | |
| Deflection **(° )** | **Target** | **Measured** | **Target** | **Measured** |
| Right deflection | 30 + 0 (°) down - 5 (°) | | 30 + 0 (°) up - 5 (°) | |
| Left deflection | 30 + 0 (°) up - 5 (°) | | 30 + 0 (°) down - 5 (°) | |
| **Elevator** | Push | | Pull | |
| Deflection **(° )** | **Target** | **Measured** | **Target** | **Measured** |
| | 27 + 3 (°) - 5 (°) | | 27 + 3 (°) - 5 (°) | |
| **Rudder** | Left | | Right | |
| *Projected distance from most aft rudder position to rudder axis **435 (mm)** | **Target** | **Measured** | **Target** | **Measured** |
| | 30 ± 3 (°) / 435 ± 39 (mm) | | 30 ± 3 (°) / 435 ± 39 (mm) | |
| **Flettner** | With neutral elevator Trim nose heavy | | With neutral elevator Trim tail heavy | |
| Deflection (°) | **Target** | **Measured** | **Target** | **Measured** |
| | + 3 ± 1 (°) | | - 3 ± 1 (°) | |
| | Push elevator Trim neutral | | Pull elevator Trim neutral | |
| Distance from elevator rear edge to flettner edge. **(mm)** | **Target** | **Measured** | **Target** | **Measured** |
| | 74 + 3 (mm) - 5 (mm) | | 63 + 3 (mm) - 5 (mm) | |

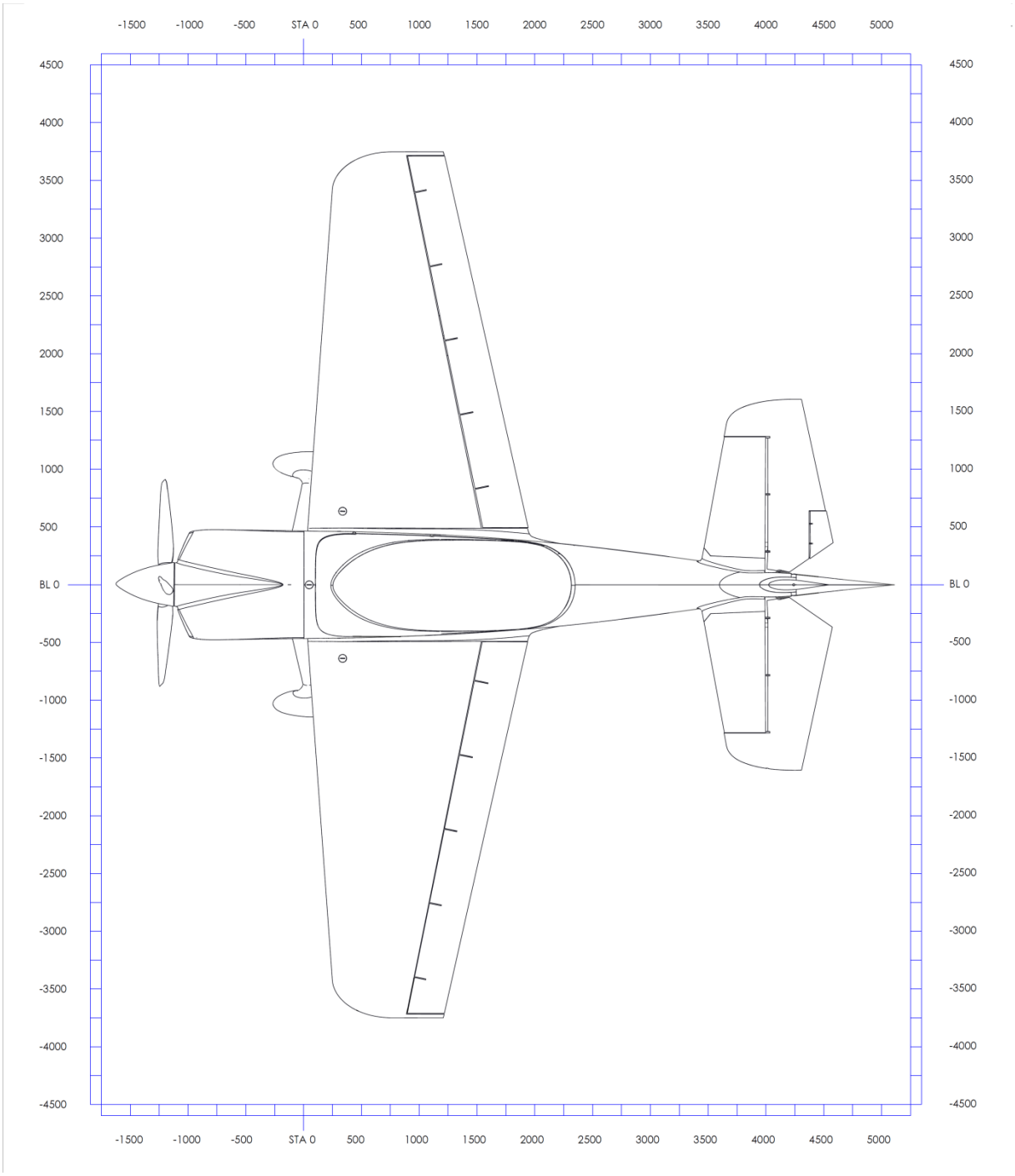


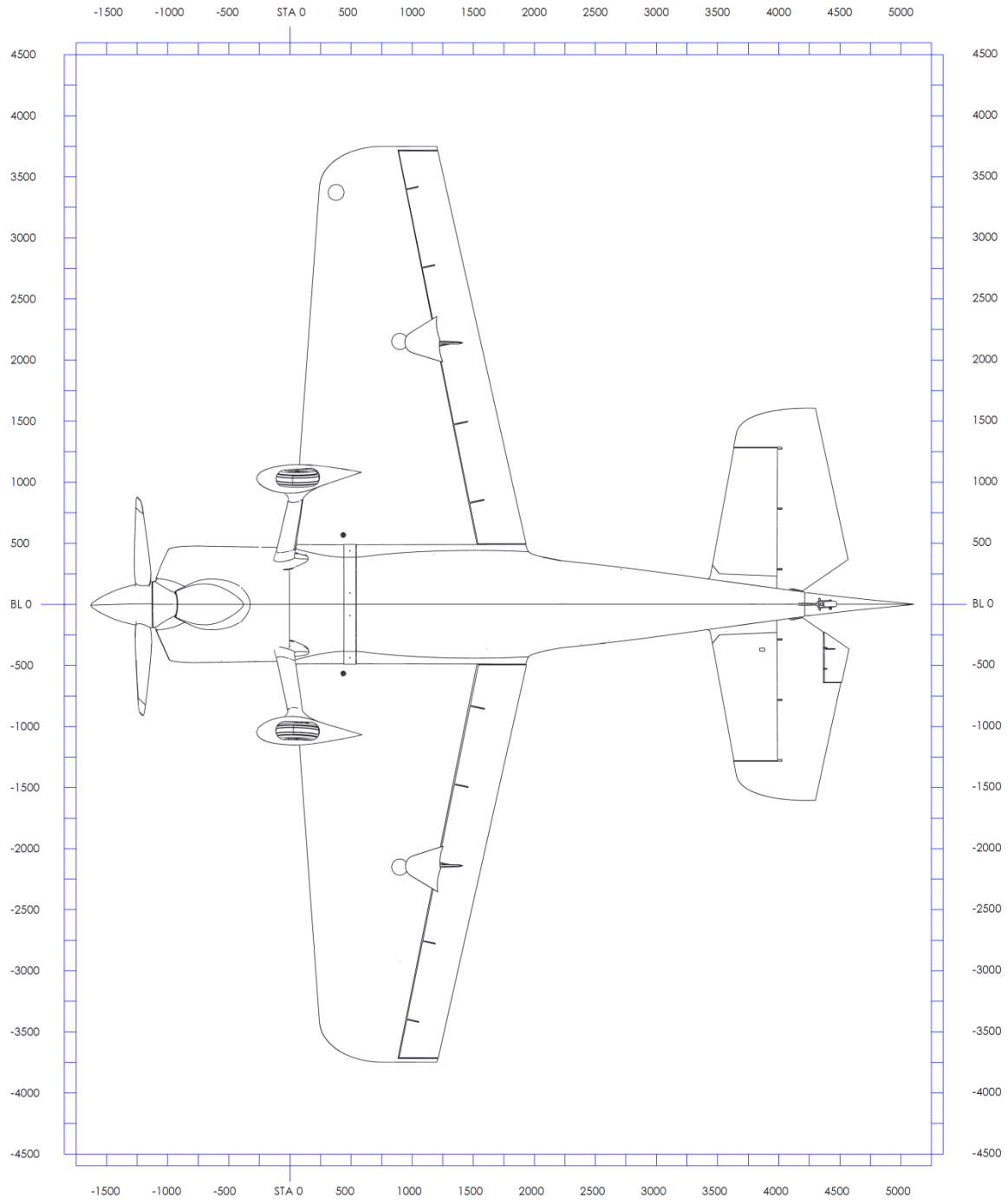

*

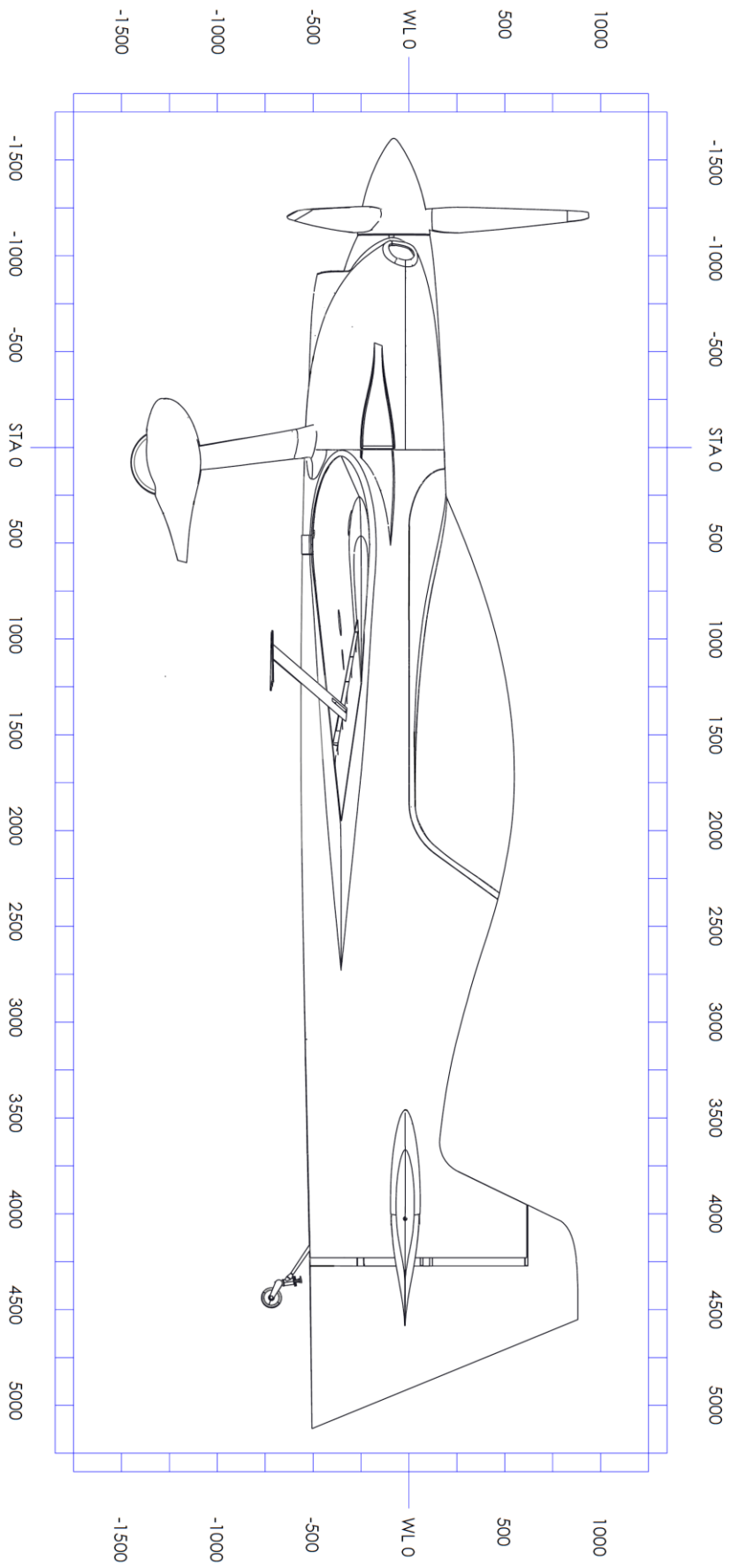
| Created: Signature: | Checked: Signature CS: |
|---|---|
| _____ | _____ |
| _____Place, Date | _____Place, Date |

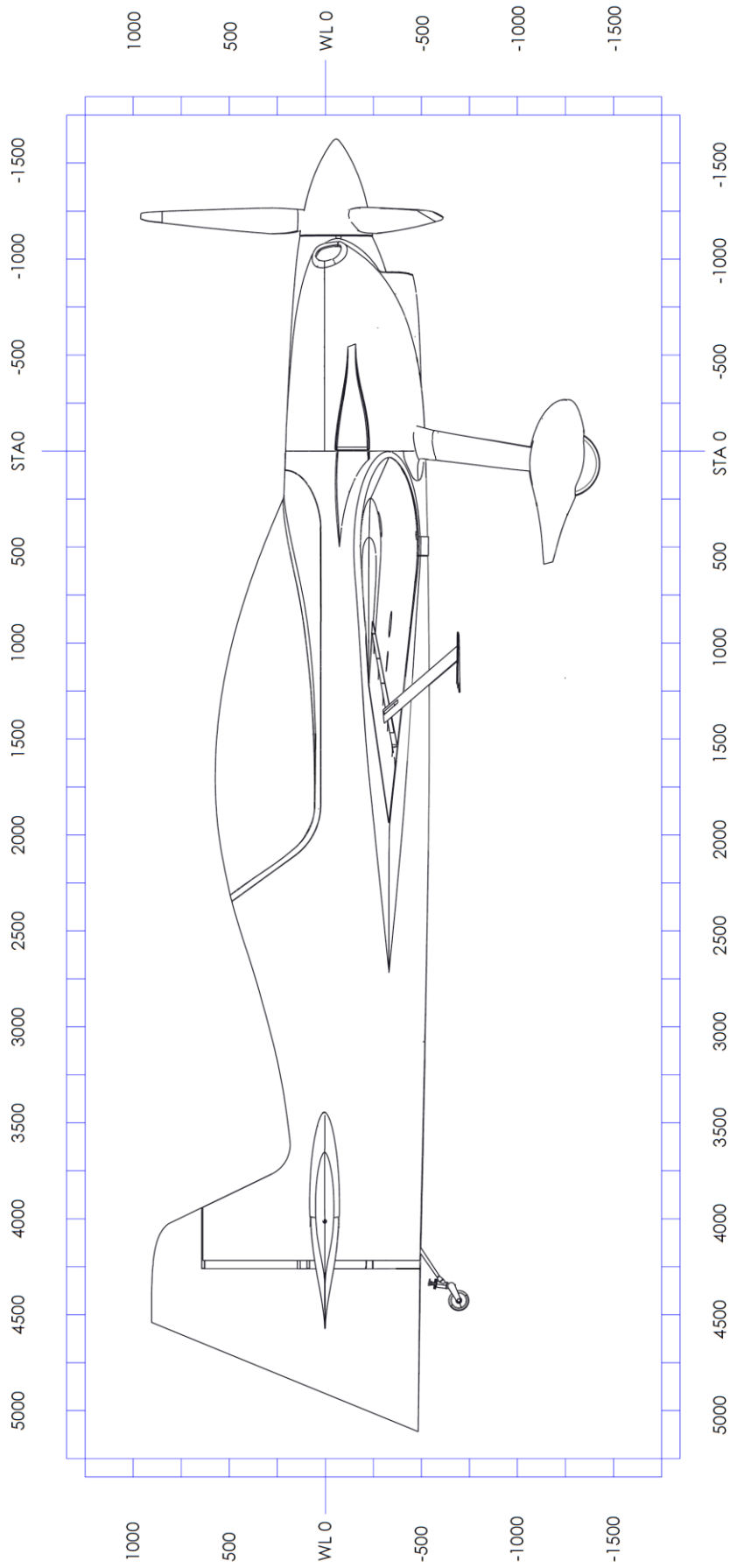
# APPENDIX 8 DAMAGE DESCRIPTION

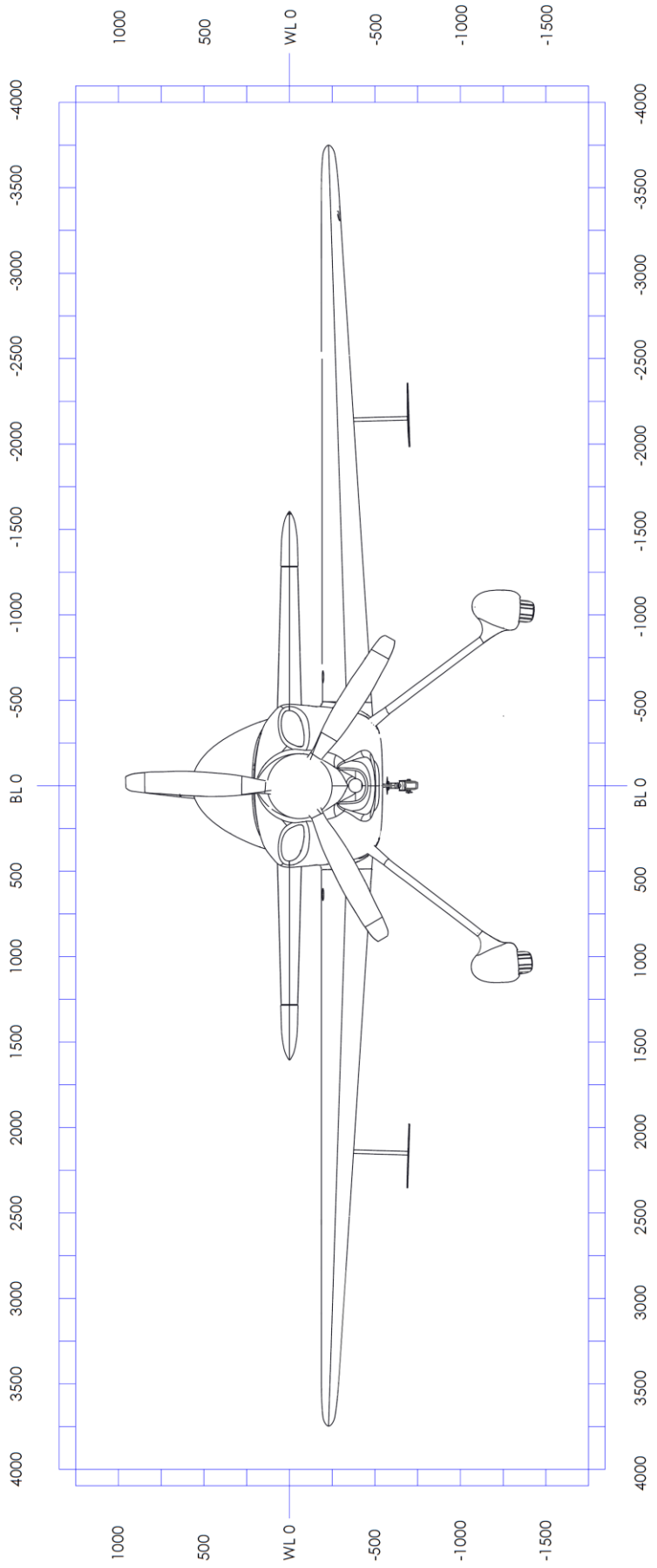
Use the aircraft views below to document the position and dimensions of the damage. In case necessary, attach further sketches and detailed description.




-1500
-1000
-500
STA 0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
BL 0
-500
-1000
-1500
-2000
-2500
-3000
-3500
-4000
-4500


-1500
-1000
-500
WL 0
500
1000
STA 0
1500
2000
2500
3000
3500
4000
4500
5000


1000
500
WL 0
-500
-1000
-1500
-1500
-1000
-500
STA 0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000


1000
500
WL 0
-500
-1000
-1500
-4000
-3500
-3000
-2500
-2000
-1500
-1000
-500
BL 0
500
1000
1500
2000
2500
3000
3500
4000

# APPENDIX 9 COMMON REPAIRS

Repairs that have been approved as common repairs for the XA41 and XA42 are listed in this appendix with a reference to the instructions document.

**WARNING**

It is very important to make sure that the damage on the aircraft is the same as the damage description on the repair instructions. In case of doubt always contact Liftify before performing the repair. Not doing so could lead to a wrongly repaired aircraft endangering the occupants.

| Repair instructions | Repair Name | Applicability |
|---|---|---|
| SB-XA42-2023-004 | Seat Frame Repair | XA41/XA42 all serial numbers |
| SB-XA42-2023-005 | Tailwheel Bushing Repair | XA41/XA42 all serial numbers |
| SB-XA42-2025-003 | Longeron Connectors Inspection and Protection | XA41/XA42 all serial numbers |