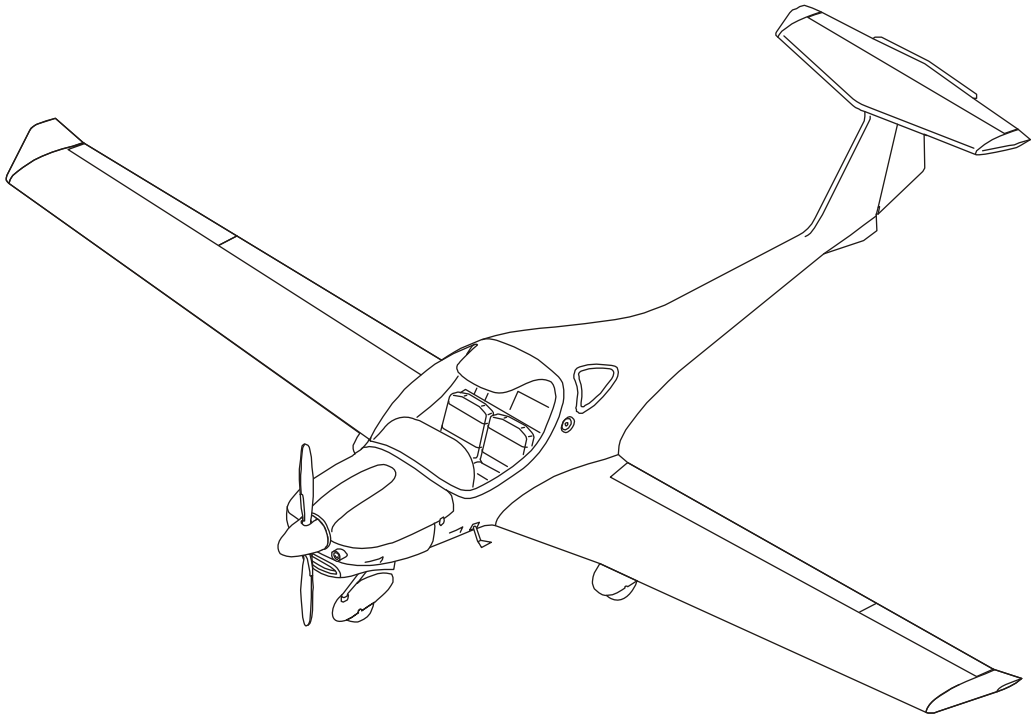
Diamond AIRCRAFT

DV 20 KATANA

AIRPLANE MAINTENANCE MANUAL



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The technical information contained in this document has been approved under the authority of DOA No. EASA.21J.052.

This manual contains the maintenance information required by JAR-VLA. Contents and revision status can be found in the TABLE OF CONTENTS and in the RECORD OF REVISIONS.

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Record of Revision

1. Record of Revision

Use this check list to record and control all of the revisions which you put in this Airplane Maintenance Manual (AMM). Put the affected pages of the revision into the AMM as soon as you get them. Remove and destroy the pages which are superseded. Complete the table below when you have put the revision in the AMM.

Revision Number	Date Issued	Inserted On	Inserted By	Revision Number	Date Issued	Inserted On	Inserted By
Original							
1	Sept. 1993						
2	Mar. 1994						
3	Nov. 1994						
4	Dec. 1994						
5	Mar. 1995						
6	May 1995						
7	Jan. 1996						
8	May 1997						
9	Jan. 1999						
10	Jul. 1999						
11	Sep. 2001						
12	Apr. 2003						
13	Dec. 2018						
14	Mar. 2022						

Revision Number	Date	Affected Pages
Original Issue	Jun. 1993	
Rev. No. 1 (SB 20-2)	Sep. 1993	03-00/4, 05-10/1, 61-00/1
Rev. No. 2	Mar. 1994	04/1 thru 04/2 04-00/1 04-10/1 05/2 05-00/1 05-10/1 thru 05-10/2 05-20/1 thru 05-20/16b 05-40/1 thru 05-40/3 07/2 07-00/1 07-10/1 07-20/1 27-10/1 thru 27-10/2 27-10/4 thru 27-10/10 27-20-00/1 27-20-20/1 thru 27-20-20/2 27-20-30/2 27-30/1 thru 27-30/5 27-40/1 thru 27-40/4 27-50/7 32-10/4 32-40/4 thru 32-40/5 57/2 57-10/2 thru 57-10/5 57-60/2 71-00/1 75-10/1 79-00/1
Rev. No. 3	Nov. 1994	04/2 04-00/1 thru 04-00/3

Revision Number	Date	Affected Pages
Rev. No. 4	Dec. 1994	04-10/1 05-10/1 05-20/6b 05-20/7a 05-20/8a 05-20/9a 05-20/11a 05-20/12a 05-20/13a 24/2 24-31/5 thru 24-31/8
Rev. No. 5 (SB 20-17)	Mar. 1995	01/7 05/2 05-20/9a 05-21/1 thru 05-21/2 05-21/3a,b thru 05-21/16a,b 11/2 11-11/1 thru 11-11/8 12/2 12-21/1 thru 12-21/2
Rev. No. 6 (SB 20-18)	May 1995	05/2 05-20/1 thru 05-20/4b 05-20/6b 05-20/11a 05-20/12a 05-20/13b 05-20/14a 05-21/1 thru 05-21/4b 05-21/6b 05-21/11a 05-21/12a 05-21/13b 05-21/14a 12-10/2 32-20/4 32-20/5 32-40/2 32-40/8

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		11-11	5
Rev. No. 13	Dec. 2018	all	all
Rev. No. 14	Mar. 2022	all	all

2. Record of Incorporated Temporary Revisions

The following Temporary Revisions are incorporated into the DV 20 KANTANA AMM by Revision 13:

Temporary Revision Number	Description of Temporary Revision
AMM-TR-MÄM-20-252/a&442	Airframe Life Limit
AMM-TR-MÄM-20-259	Alteration of Coolant
AMM-TR-MÄM-20-323/a	Drain Holes Inspection Checklist
AMM-TR-MÄM-20-357	Life Limited Parts
AMM-TR-MÄM-20-390	Spark Plug Replacement
AMM-TR-MÄM-20-405	Change from CHT to Coolant Temperature Measurement
AMM-TR-MÄM-20-422	Wheel Inflation Pressure
AMM-TR-OÄM-20-244&245	Instrument Panel Version D20-3110-00-00 and External Alternator
AMM-TR-OÄM-20-249	Garmin SL 30 COM/NAV
AMM-TR-OÄM-20-253	Preparation for installation of a portable Garmin GPS (GPSMAP 196/296/396/496)
AMM-TR-OÄM-20-266	New Oil Pressure Indicator
AMM-TR-OÄM-20-267	Provisions for NVFR

The following Temporary Revision is incorporated into the DV 20 KANTANA AMM by Revision 14:

Temporary Revision Number	Description of Temporary Revision
AMM-TR-MÄM-20-463	Powerplant Maintenance

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CHAPTER 01

INTRODUCTION

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CHAPTER 01

INTRODUCTION

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CHAPTER 01
INTRODUCTION

1. General

The purpose of this Maintenance Manual is to furnish the maintenance personnel with all data required to maintain the DV 20 KATANA airplane. It comprises a detailed description of its systems, troubleshooting and correction, removal and installation, as well as maintenance information.

This manual comprises only information regarding tasks to be performed on the airplane itself, e.g. removal and installation of components.

For the electric system, only such diagrams are shown in the manual which are of importance for understanding of the task.

Maintenance work, repairs, and inspections must be performed in accordance with the procedures given in this Maintenance Manual.

The following documentation should be used in conjunction with this manual:

– DV 20 KATANA Flight Manual.

– Vendor documentation as listed in Chapter 03-00, 3. VENDOR DOCUMENTATION.

A. Revisions

Each page of the Maintenance Manual has the date of issue of the first edition printed in the footer, or, if the page has already been revised, the date of issue of the revision.

The Record of Revisions, which is part of each Revision issued shows the pages affected. These should be exchanged.

B. Warning, Cautions and Notes

Whenever maintenance work is performed on the airplane, the general safety and maintenance procedures must be observed.

In addition, the Maintenance Manual contains safety information which is shown in a specific format so it will not be overlooked:

WARNING: A WARNING TELLS THE PERSON DOING THE MAINTENANCE THAT INJURY OR DEATH IS POSSIBLE IF THEY DO NOT STRICTLY FOLLOW THE INSTRUCTIONS.

CAUTION: A CAUTION TELLS THE PERSON DOING THE MAINTENANCE THAT DAMAGE TO EQUIPMENT IS POSSIBLE IF THEY DO NOT FOLLOW THE INSTRUCTIONS.

Note: A Note tells the person doing the maintenance how to make the task easier.

2. Layout of this Manual

The layout of the Maintenance Manual in general is in accordance with the Air Transport Association of America, ATA Specification No. 100. The title of each chapter can be found in the general table of contents located at the beginning of the manual.

Each system is described in a chapter which is subdivided into sections in which the subsystems are described.

The chapters are combined in main groups as follows:

1. Introduction Chapters 01-03
2. General Chapters 04-12
3. Equipment Chapters 20-37
4. Airframe Chapters 51-57
5. Propeller Chapter 61
6. Engine Chapters 71-79

Each of the main groups as well as each chapter is divided by a cover page showing the chapter no. and the title.

A. Contents (Peculiarities)

(1) MAIN GROUP 02, GENERAL

Chapter 05 includes maintenance and inspection procedures with reference to respective chapters in this manual.

Chapter 12 describes all ground support activities such as refueling and lubrication schedules.

(2) MAIN GROUP 03, EQUIPMENT

Chapter 20 consists of standard practices valid for the airplane.

In chapter 31, only the instrument locations are described. A detailed description of each instrument is given with each of the system descriptions, e.g. flaps position indicator in chapter 27, etc.

(3) MAIN GROUP 04, AIRFRAME

Chapter 51 includes a description of the airframe structure, procedures for cleaning and surface treatment, and instructions for minor repairs of the entire airframe.

(4) MAIN GROUP 05, PROPELLER

Chapter 61 contains maintenance procedures for the propeller with references to the manufacturer's manual.

(5) MAIN GROUP 06, ENGINE

This group contains only parts of the powerplant installation. For engine maintenance refer to the engine manufacturer’s manual.

.

B. Chapters

Refer to the table of contents in the maintenance manual.

C. Arrangement of Chapters

(1) STRUCTURE

xx	yy	zz
Chapter	Section	Unit
Sample:		
27	20	10
(Flight Controls)	(Rudder)	(Pedal assy.)

This type of chapter structure in three groups ensures a clear and understandable organization of the Maintenance Manual and guarantees a problem free integration of any new or revised pages.

The description of each system is kept straight forward, which leaves the third group free for the more complex assembly groups so that they can be described in detail.

(2) CHAPTER CONTENTS

Each chapter, section, and subsection is subdivided as follows:

– Description and Function

– Troubleshooting

– Maintenance Comments

The maintenance comments consist of:

1. Ground Service
2. Removal and Installation
3. Adjustment / Test
4. Checks / Inspections
5. Cleaning / Painting
6. Repairs

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E. Illustrations

The illustrations are arranged in accordance with the chapter in which they are presented. The numbering will start with (1) for each section and will be continued throughout this section.

F. Record of Revisions

A Record of Revisions is located in the front section of the manual in which the revisions to the manual are recorded.

G. Check List

The Check List is used to keep control over the changes entered into the manual.

H. Supplementary Sub-Chapters

This manual contains the additional sub-chapters 05-21, 11-11, and 12-21 which are presented in German language for the use in German speaking/reading countries.

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CHAPTER 02

ORGANIZATION AND HANDLING OF THE MAINTENANCE MANUAL

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CHAPTER 02

ORGANIZATION AND HANDLING OF THE MAINTENANCE MANUAL

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3. Service Information 2
4. Concession-Reports and Non-Conformance-Reports 2
5. Abbreviations 2

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CHAPTER 02
ORGANIZATION AND HANDLING OF THE MAINTENANCE MANUAL

1. General

To search and gain information regarding a specific system of the airplane, the manual user should refer to the Table of Contents for the correct chapter no.

Detailed chapter breakdown can be found in the chapters own Table of Contents located at the beginning of each chapter.

A. Applicability

Data applicable to a series of airplane is marked with an applicability note.

E.g. valid for S/N:

20067 to 20090

This shows that such information can be used for serial numbers 20067 through 20090 inclusive.

2. Revisions

Revisions of the Maintenance Manuals are issued in regular intervals and can have various reasons (changed of requirements, design changes, typing errors, etc.)

A Revision Notice contains a brief description of the change such as

– revised pages

– reason for the revision

– serial numbers affected

All changes, additions, as well as deletions are identified by a vertical revision bar located next to the revised portion.

A. Temporary Revisions

Deviating from the regular revision service, in urgent cases Temporary Revisions can be issued. In such cases revised pages are printed on yellow paper and will be considered at the next regular revision of the Maintenance Manual.

B. Service Bulletins

In the event that a Service Bulletin causes a revision of the Maintenance Manual, this will be noted in the Service Bulletin issued.

Service Bulletins (SBs) are classified as follows:

– Alert SB: Airworthiness is directly affected. The SB is delivered as fast as possible to the users.

– Standard SB: Standard SBs are issued in such cases where Alert SB is not required.

– Recommended SB: This SB informs the user of approved changes on this airplane.

Note: All Service Bulletins issued for this airplane type should be recorded in the List of Service Bulletins, page v/vi.

3. Service Information

A Service Information tells the operator about permitted installations or provided information to installed or additional equipment. It also gives the applicable technical data.

4. Concession-Reports and Non-Conformance-Reports

Concession- and Non-Conformance-Reports are tools to approve and document deviations from the standard manufacturing processes during construction and assembly of an individual airplane (for example, handling of a mis-drilled hole in the fuselage). In case the operator or the maintenance organization needs to be informed as a consequence of the deviations for that particular airplane (for example, the use of a special spare part is necessary or a different limit in a control surface balancing report applies), these Concession- and Non-Conformance-Reports are contained in the airplane log. Before you do maintenance, check the airplane log for such Concession- and Non-Conformance Reports.

5. Abbreviations

Where appropriate, abbreviations are used in accordance with applicable regulations.

CHAPTER 03

GENERAL DESCRIPTION OF THE AIRPLANE

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CHAPTER 03

GENERAL DESCRIPTION OF THE AIRPLANE

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CHAPTER 03
GENERAL DESCRIPTION OF THE AIRPLANE

1. General

Diamond Aircraft Industries GmbH

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2700 Wiener Neustadt

Austria

is manufacturer of the DV 20 KATANA.

2. Description

The DV 20 KATANA may be operated under VFR conditions.

It is approved as a "Normal" airworthiness category airplane.

The single engine, two-seated, low wing airplane consists of a self supporting wing structure and a T-tail.

The latest state of the art fiber composite production techniques were used in the manufacturing of the DV 20 KATANA.

The fuselage is built in a semimonocoque construction consisting of a self supporting GFRP-shell with bulkheads and stiffeners. The one part canopy ensures a generous all around view.

The cantilever wing is a semimonocoque sandwich construction and has a trapezoidal shape. It incorporates an I-shaped spar with caps constructed of carbon fiber rovings.

The wing spar stumps reach to the middle of the fuselage. Each wing is attached to the fuselage using three bolts. Conventional ailerons and electrically operated wing flaps are attached at the trailing edge of the wing.

The vertical stabilizer consists of two GFRP half-shells which are integrated into the fuselage, and are reinforced by a web and a stiffener.

The horizontal stabilizer is also of semimonocoque construction, and incorporates two root ribs, stiffeners, and a spar. The horizontal stabilizer is attached to the vertical stabilizer with five bolts.

The construction of elevator and rudder is similar to that of the flaps and ailerons.

An acrylic filler as well as acrylic varnish is used to protect the outside skin against ultraviolet rays and humidity.

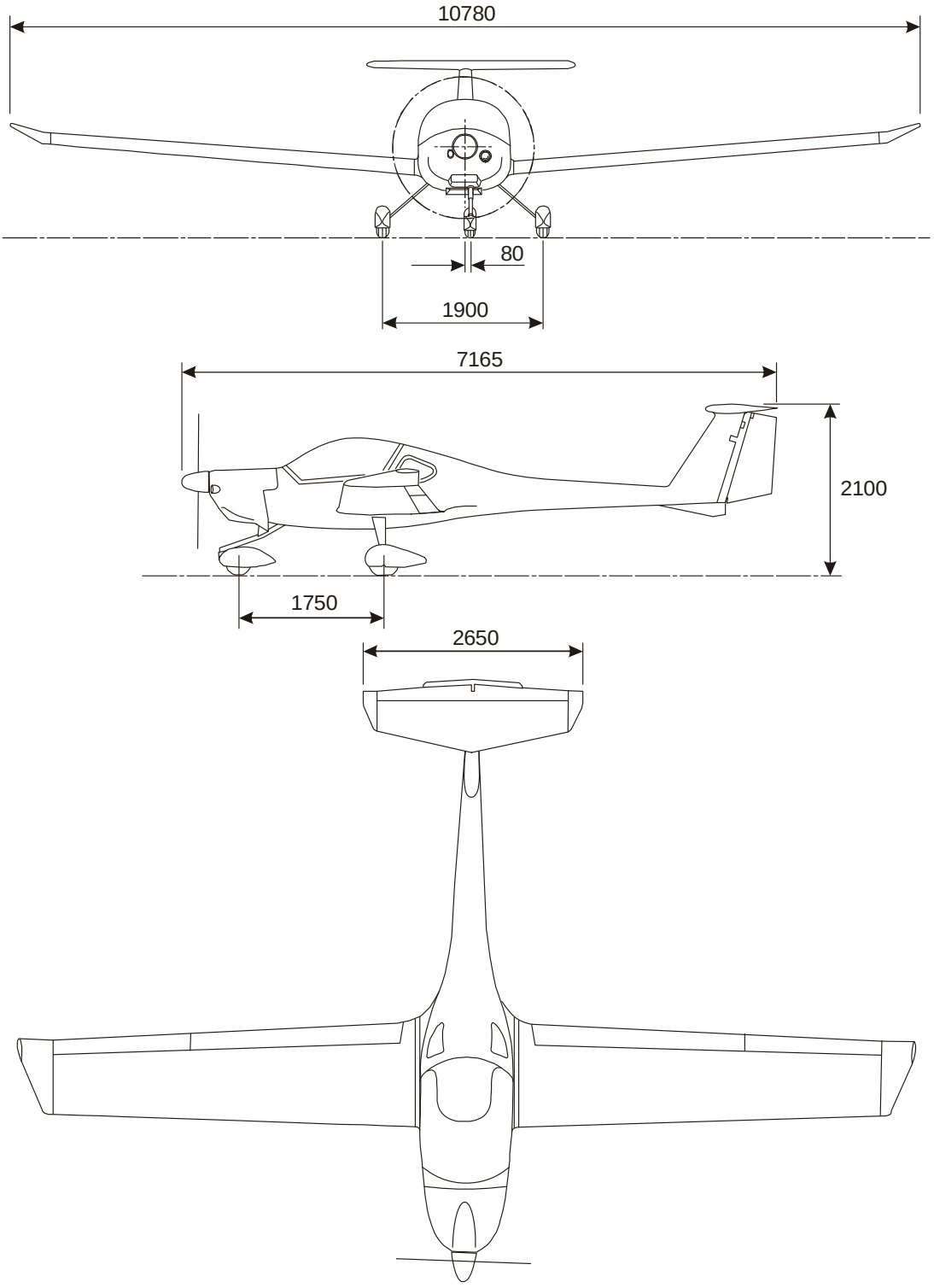

Figure 1: Three-view Drawing Dimensions in Millimeters

The DV 20 KATANA is equipped with a fixed tricycle landing gear. The main wheels are equipped with hydraulically operated disk brakes.

The flight controls consist of conventional ailerons, elevator, and rudder. Ailerons and elevator are deflected through push rods, while rudder and trim tab are controlled by use of control cables. The wing flaps are operated electrically.

The engine of the DV 20 KATANA is a ROTAX 912 A3 or S3. On this four cycle engine, the cylinders are cooled by ram air, while the cylinder heads are cooled by using a liquid cooling system.

Engine output is transferred to the constant speed two-bladed propeller (Hoffmann HO-V72F/S170DW, Hoffmann HO-V352F/170FQ, Hoffmann HO-V352F/C170FQ or mt-Propeller MTV-21-A/175-05) using a reduction transmission. The propeller blades are of wood composite construction, with the spinner manufactured of aluminum.

Fuel is supplied using a tank located in the fuselage. It has a capacity of 79 liters, 77 liters of which are usable. The aluminum tank is located between the backrest of the seat and the B-bulkhead below the floor of the baggage compartment.

3. Vendor Documentation

The following table lists suppliers of vendor systems and equipment installed in the DV 20 KATANA. It will be helpful when detailed information on the respective systems and equipment is to be obtained.

Engine:	Rotax 912 A3 or Rotax 912 S3
Supplier	Bombardier-Rotax GmbH A-4623 Gunskirchen, Austria Phone No. : +43-7246-601-0 Fax No. : +43-7246-6370

Propeller:	Hoffmann HO-V72F/S170DW
Supplier:	Hoffmann Propeller Küpferlingstr. 9 D-83022 Rosenheim, Germany Phone No. : +49-8031-18780 Fax No. : +49-8031-187878
Available Manuals:	Operation & Maintenance Manual No. E243 Overhaul Manual No. E105
Propeller:	Hoffmann HO-V352F/170FQ or HO-V352F/C170FQ
Supplier:	Hoffmann Propeller, address see above
Available Manuals:	Operation & Maintenance Manual No. E540 Overhaul Manual No. E569
Propeller:	mt-Propeller MTV-21-A/175-05
Supplier:	mt-Propeller Airport Straubing-Wallmühle D-94348 Atting, Germany Phone No. : +49-9429-9409 Fax No. : +49-9429-8432
Available Manuals:	Operation & Installation Man. No. E-124 Overhaul Manual & Parts List No. E-220 (English) or E-128 (German)
Main Wheel Brakes:	Cleveland 30-9
Supplier:	Parker Hannifin Corporation Aircraft Wheel and Brake Division P.O. Box 158 Avon, Ohio 44011 USA Phone No.: (216) 937-1203 Fax No. : (216) 937-6416

CHAPTER 04

AIRWORTHINESS LIMITATIONS

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AIRWORTHINESS LIMITATIONS

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CHAPTER 04
AIRWORTHINESS LIMITATIONS

THIS AIRWORTHINESS LIMITATIONS SECTION IS APPROVED BY EUROPEAN AVIATION SAFETY AGENCY (EASA) IN ACCORDANCE WITH THE APPLICABLE CERTIFICATION PROCEDURES AND THE TYPE CERTIFICATION BASIS. IT SPECIFIES THE AIRWORTHINESS LIMITATIONS REQUIRED BY JAR-VLA.

THIS AIRPLANE MAINTENANCE MANUAL CHAPTER 04 (AIRWORTHINESS LIMITATIONS) IS APPROVED WITH EASA APPROVAL NO. 0010053079 AND 10065523 AND 10069516.

THE AIRWORTHINESS LIMITATIONS SECTION IS FAA APPROVED AND SPECIFIES MAINTENANCE REQUIRED UNDER SECS. 43.16 AND 91.403 OF THE FEDERAL AVIATION REGULATIONS UNLESS AN ALTERNATIVE PROGRAM HAS BEEN FAA APPROVED.

FOR CANADIAN REGISTERED AIRPLANES, THE AIRWORTHINESS LIMITATIONS ARE TO BE UNDERSTOOD AS RECOMMENDED SERVICE LIFE LIMITATIONS.

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Note: It is the responsibility of the operator to ensure that time limits or operating limitations for equipment described within this chapter are not exceeded.

1. Paint Finish

Since the strength of the fiber composite structure has only been shown up to a temperature of 54 °C (129 °F), the outer surface of the aircraft must be painted white.

The paint specified in Sub-Chapter 51-10 or an equivalent product must be used.

Exceptions are the registration markings and warning marks in accordance with 2. below.

2. Registration Markings and Warning Marks

Registration markings and warning marks are subject to the following restrictions (see Fig. 1):

Zone I No registration markings or warning marks may be applied here.

Zone II Registration markings and warning marks may be applied here. They may have

(a) any shape, provided that colors with a solar absorptivity not exceeding 0.5 (e.g. light yellow or light green) are used

or

(b) any color, provided that no area measuring 15 cm by 15 cm (½ ft. by ½ ft.) is covered by more than 50 %. One consequence is that the width of decoration stripes must not exceed 7.5 cm (3 in.).

Zone III Registration markings and warning marks of any shape and color may applied here without restrictions.

CAUTION: IN CASE OF AIRPLANES EQUIPPED WITH A WING-FOLDING MECHANISM, THE WING LOWER SURFACE IS PART OF ZONE II, NOT ZONE III!

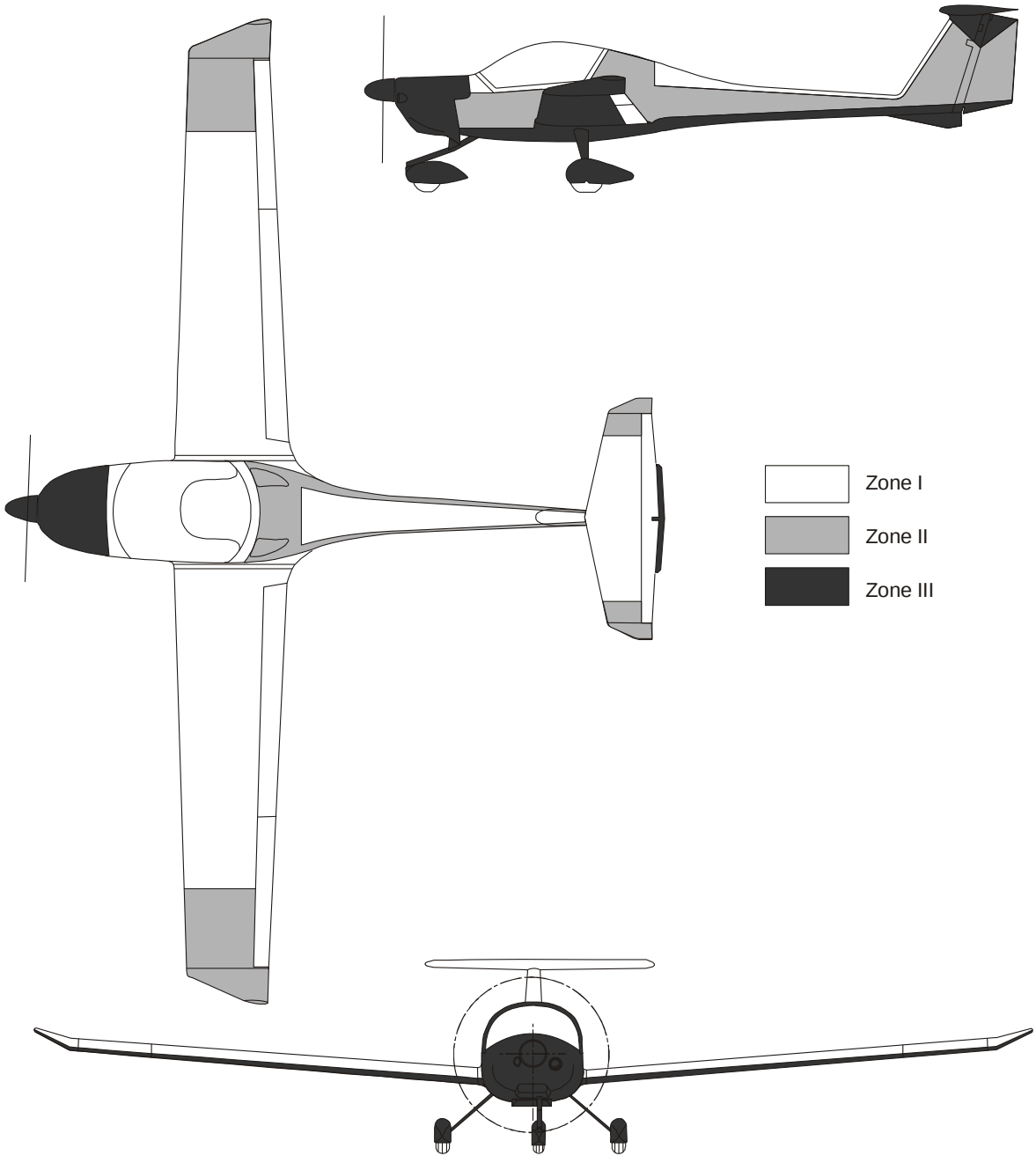

Figure 1: Paint Color Scheme

Section 04-10
TIME LIMITS

1. Time Limit for Airframe

There is no structural lifetime limit.

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Section 04-20
MAJOR STRUCTURAL INSPECTIONS

1. Recurrent Structural Inspection

The Major Structural Inspection must be carried out at 6000 hours, 12000 hours, and every 4000 hours thereafter, with a tolerance of ± 100 hours. The inspection is specified in AMM Chapter 05-20.

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CHAPTER 05

TIME LIMITS / MAINTENANCE CHECKS (INSPECTION INTERVALS)

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CHAPTER 05
TIME LIMITS / MAINTENANCE CHECKS (INSPECTION INTERVALS)

1. General

During the design of the DV 20 KATANA maintainability of the equipment was one of the prime considerations.

Chapters 04 and 05 should be used by the maintenance personnel as reference in the execution of proper maintenance and inspections.

The inspections and their intervals described in Chapters 04 and 05 are the minimum required to keep the airplane in airworthy condition.

From time to time, the time-intervals could be changed as new experiences are constantly evaluated. Information with regard to any such changes will be issued through the revision service.

In the event that the usage of the airplane prevents maintenance at the recommended intervals, the time interval should rather be decreased but under no circumstances be extended without the express approval of the manufacturer.

WARNING: TO PREVENT INJURY TO PERSONNEL, IT MUST BE ENSURED THAT THE PROPELLER AREA IS CLEAR OF ANY PERSON, IN THE EVENT THAT AN INSPECTION OF MAINTENANCE MUST BE PERFORMED WITH THE MASTER SWITCH IN THE "ON" POSITION, THE BATTERY CONNECTED, THE IGNITION SWITCH ACTUATED, AND THE PROPELLER BEING MOVED. IN SUCH CASES, UNINTENTIONAL FIRING OF THE ENGINE CANNOT BE RULED OUT.

A. Referenced Maintenance Data

Use latest revision of referenced maintenance data.

Supplier	Document Name	Document No.
ACS	Service Bulletin Ignition Switch ACS A510-2	ACS SB 92-01
Artex	Installation and Maintenance Manual for the ME406 ELT	570-1600
Cleveland/Parker	Cleveland/Parker Maintenance Manual	AWBCMM0001
Cleveland/Parker	Cleveland/Parker Product Catalog	AWBPC0001
Cleveland/Parker	Cleveland/Parker Technician's Service Guide	AWBTSG0001
Goodyear	Aircraft Tire Care & Maintenance	
Hoffmann Propeller	Instruction Manual No. 243 for installing and Operating Constant Speed Propeller Models HO-V 72	E243
Hoffmann Propeller	Operation and Maintenance Manual No. E540A HO-V 72	E540A
mt-Propeller	mt-Propeller Operation and Installation Manual	E124, ATA 61-01-
mt-Propeller	mt-Propeller Operation and Installation Manual for the Hydraulic Constant Speed Governor	E-1048, ATA 61-20-48
Rotax	Operators Manual 912 series	OM-912
Rotax	Installation Manual 912 series	IM-912
Rotax	Maintenance Manual 912 and 914 series	MMH-912/MMH-914
Rotax	Maintenance Manual Line 912 Series	MML-912

Section 05-10
TIME LIMITS

1. Time Limits for Equipment

The following components must be overhauled at the specified intervals:

Component	TBO
Engine ROTAX 912 A3 or S3	in accordance with applicable documents of manufacturer (e.g. Rotax SB 912-14).
Reduction Gear	together with engine
Mounted Equipment	together with engine
Governor Woodward	together with engine
Governor MT P-850-12	in accordance with applicable documents of manufacturer (e.g. SB)
Propeller HO-V72F/S170DW	in accordance with applicable documents of manufacturer (e.g. SB)
Propeller HO-V352F/(C)170FQ	in accordance with applicable documents of manufacturer (e.g. SB)
Propeller MTV-21-A/175-05	in accordance with applicable documents of manufacturer (e.g. SB)
Ignition switch ACS A510-2	2000 hrs. (Maintenance according to ACS-SB 92/1)

To ensure correct observation of these times, the date of removal, installation, or overhaul of such components as well as the flight hours must be entered in the Service Time Record (filed in the Airplane Maintenance Log).

2. Time Limits for Parts

The items listed below are time limited items which must be removed from service at the replacement times shown and discarded (scrapped).

Component	Replacement Time	
	hrs.	yrs.
Elastomer brake lines		8 years
Teflon hoses in airframe and engine compartment	on condition	
Fuel hoses to and from the mechanical fuel pump		5 years
Mechanical fuel pump with fuel hoses directly attached		5 years
Oil hoses		5 years or upon engine overhaul, whichever comes first
Coolant hoses		5 years
Carburetor membranes		5 years
Carburetor vent hoses		5 years
Elastomer fittings between intake manifolds and carburetors		5 years
Hoses between airbox and carburetors		5 years
All hoses connected to compensator pipe between intake manifolds		5 years
Engine shock mounts	upon engine overhaul	
Intake air filter cartridge	600 hrs	
Rudder control cables, non stainless steel	1200 hrs or 6 years, whichever comes first	
Rudder control cables, stainless steel	on condition	
ELT battery	depending on type	
Safety belts		12 years
Elevator drive lever	12000 hrs.	
Aluminium elevator bell crank at vertical tail spar, (S/N 20.130 and above)	12000 hrs.	
Horizontal stabilizer bracket front	12000 hrs.	
Horizontal stabilizer bracket rear	12000 hrs.	

Operating Fluid	Replacement Time
Coolant EVANS NPG+ (engines without suffix -01)	on condition
Coolant based on ethylene glycol (engines with suffix -01)	2 years
Brake fluid	3 years

To ensure correct observation of these times the date of removal and installation of such components as well as the flight hours must be entered in the Service Time Record (filed in the Airplane Maintenance Log).

3. Scheduled Maintenance Time Limits

(Refer to Sections 05-20 through 05-21).

The following recommended hourly time limits apply to the scheduled maintenance checks which are necessary to maintain the airplane in a good technical condition. Do the scheduled maintenance at the intervals and within the tolerances shown below:

Scheduled Maintenance Check (Hourly)	Do At These Times	Maximum Tolerance
100 Hour Check	At 100 hours since new and every 100 hour intervals.	± 10 %
200 Hour Check	At 200 hours since new and every 200 hour intervals.	± 5 %
1000 Hour Check	At 1000 hours since new and every 1000 hour intervals	± 5 %
Major Structural Inspection (MSI).	At 6000 hours & 12000 hours since new, and every 4000 hours thereafter	± 100 hours

The intervals between the inspections must be adhered to within the tolerances shown. These tolerances must not be added up. For example: if the 100 hour inspection was done at 110 hours, the next inspection must be done at 200 ±10 hours, not 210 ±10 hours.

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Section 05-20
Scheduled Maintenance Checks

1. General

The tasks contained in this sub-chapter include the requirements for performing daily checks, regular inspections, and annual inspections.

Daily checks are done before the first flight of the day and are described in the Flight Manual.

A. Airplanes not Serviced in Accordance with FAR 91

Regular inspections are inspections performed at 100, 200, and 1000 hour intervals.

Annual inspections are 200 hour inspections performed at intervals not to exceed one year.

In addition, a 100 hour inspection must be performed after the first 25 hours of operation of a new airplane. This inspection must include re-torquing of the bolts attaching the engine mount to the firewall (for proper torque refer to Chapter 20-00, page 2).

B. Airplanes Serviced in Accordance with FAR 91

The 100 hour inspection checklist shall be accomplished for the 100 Hour and Annual Inspections required by FAR 91.

The 200 hour and 1000 hour inspections specified in this sub-chapter shall be accomplished in addition to the 100 Hour and Annual Inspections required by FAR 91.

In addition, a 100 hour inspection must be performed after the first 25 hours of operation of a new airplane. This inspection must include re-torquing of the bolts attaching the engine mount to the firewall (for proper torque refer to Chapter 20-00, page 2).

Do the scheduled maintenance checks with reference to the 100, 200, and 1000 Hour Inspection Checklist in this Section. In parallel do the scheduled drain hole checks with reference to the Drain Holes Inspection Checklist.

Note: Diamond Aircraft Ind. has replaced the 600 hours inspection. The first 1000 hours inspection has to be done 1000 flight hours after the last 600 hours inspection. Thereafter 1000 hours interval applies.

2. Drain Holes Inspection Checklist

Do a check of the drain holes. The drain holes must not be blocked by dirt or other residues. Make sure to remove all foreign objects and clean the drain holes to their full diameter. Otherwise the drain capacity may not be sufficient under certain conditions like heavy rain etc.

All drain holes should be drilled with a diameter of 5 mm (+2 mm / -0 mm) or 0.2 in. (+0.08 in / - 0.00 in). The holes should be circular, deburred, not frayed and cleaned.

Refer to the corresponding indication on the figures 1 - 6 to identify the locations of the drain holes listed below.

Drain Holes Inspection Checklist			
Ref.	**Drain Hole Location**	**Hours**	**Initials**
1	**FUSELAGE**		
1.01	Front side of fuselage shell, in corner of hat profile, LH and RH.	200	
1.02	Footwell, LH and RH.	200	
1.03	Fuselage shell, in corner of middle console, rear, RH.	200	
1.04	Fuselage shell, behind middle console, close to connection channel, LH.	200	
1.05	Backside of main bulkhead, near center.	1000	
1.06	In corner of sickle bulkhead, LH and RH.	200	
1.07	In center of fuselage shell, behind sickle bulkhead.	200	
1.08	Through lower end of half frame.	1000	
1.09	Through lower end of ring bulkhead 1.	1000	
1.10	Through lower end of ring bulkhead 2.	1000	
1.11	Through lower end of ring bulkhead 3.	1000	
1.12	On lowest point of fin.	100	
1.13	Through backside of vertical stabilizer rib lower.	1000	
1.14	In rudder bolt mounting shell, top of the vertical stabilizer bar.	100	
2	**CANOPY**		
2.01	In forward corner of canopy frame, LH and RH.	100	
2.02	In the middle of the canopy frame (under the door lock mechanism), LH and RH.	100	
2.03	In rear corner of lower canopy frame, LH and RH.	100	

Drain Holes Inspection Checklist			
Ref.	**Drain Hole Location**	**Hours**	**Initials**
3	**HORIZONTAL STABILIZER**		
3.01	Lower shell, near the outside of the elevator rib, in front of the elevator spar, LH and RH.	100	
3.02	Lower shell, behind the elevator spar, close to the recess in the center, LH and RH.	100	
3.03	Lower shell, in center of the recess.	100	
4	**ELEVATOR**		
4.01	Lower shell, in front of trailing edge, near the center, LH and RH.	100	
5	**ELEVATOR TRIM TAB**		
5.01	Lower shell, leading edge section, near center, LH and RH.	100	
6	**RUDDER**		
6.01	Close to center and lower edge, LH and RH.	100	
7	**WINGS**		
7.01	In aft of wing tip sandwich rib (LH and RH wing).	100	
7.02	Lower shell, between outside of wing rib center and trailing edge (LH and RH wing).	100	
7.03	Lower shell, under maintenance access (LH and RH wing).	100	
7.04	In lower shell of landing flap stop in front of trailing edge (LH and RH wing).	100	
8	**FLAPS**		
8.01	Root rib, next to trailing edge bonding, LH and RH.	100	
9	**AILERONS**		
9.01	Inner root rib, next to the trailing edge bonding, LH and RH.	100	

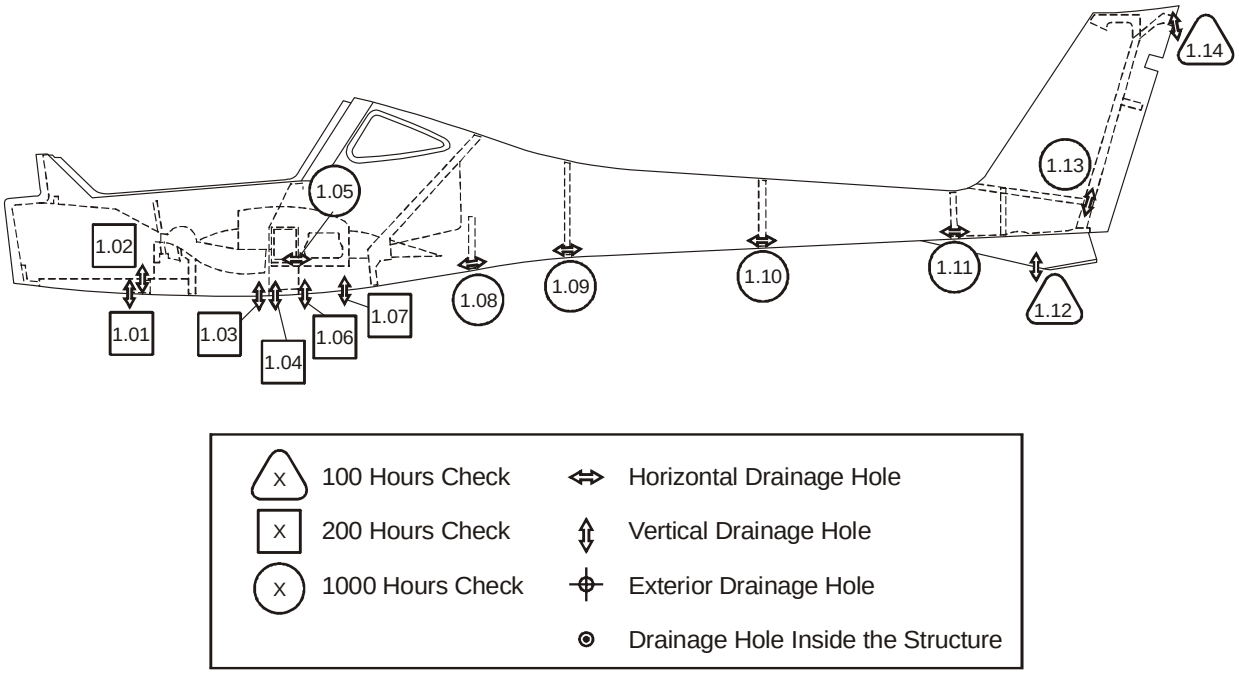


Figure 1: Drain Holes Fuselage (Part 1)

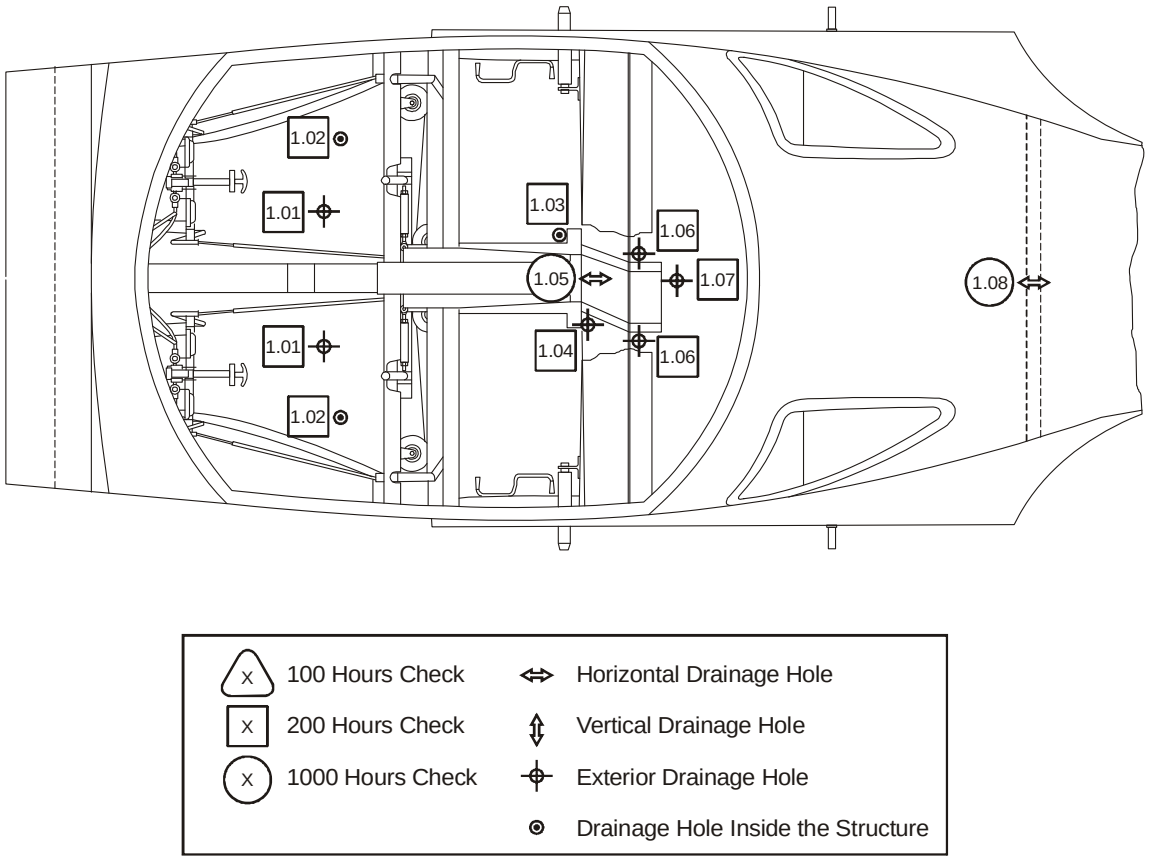


Figure 2: Drain Holes Fuselage (Part 2)

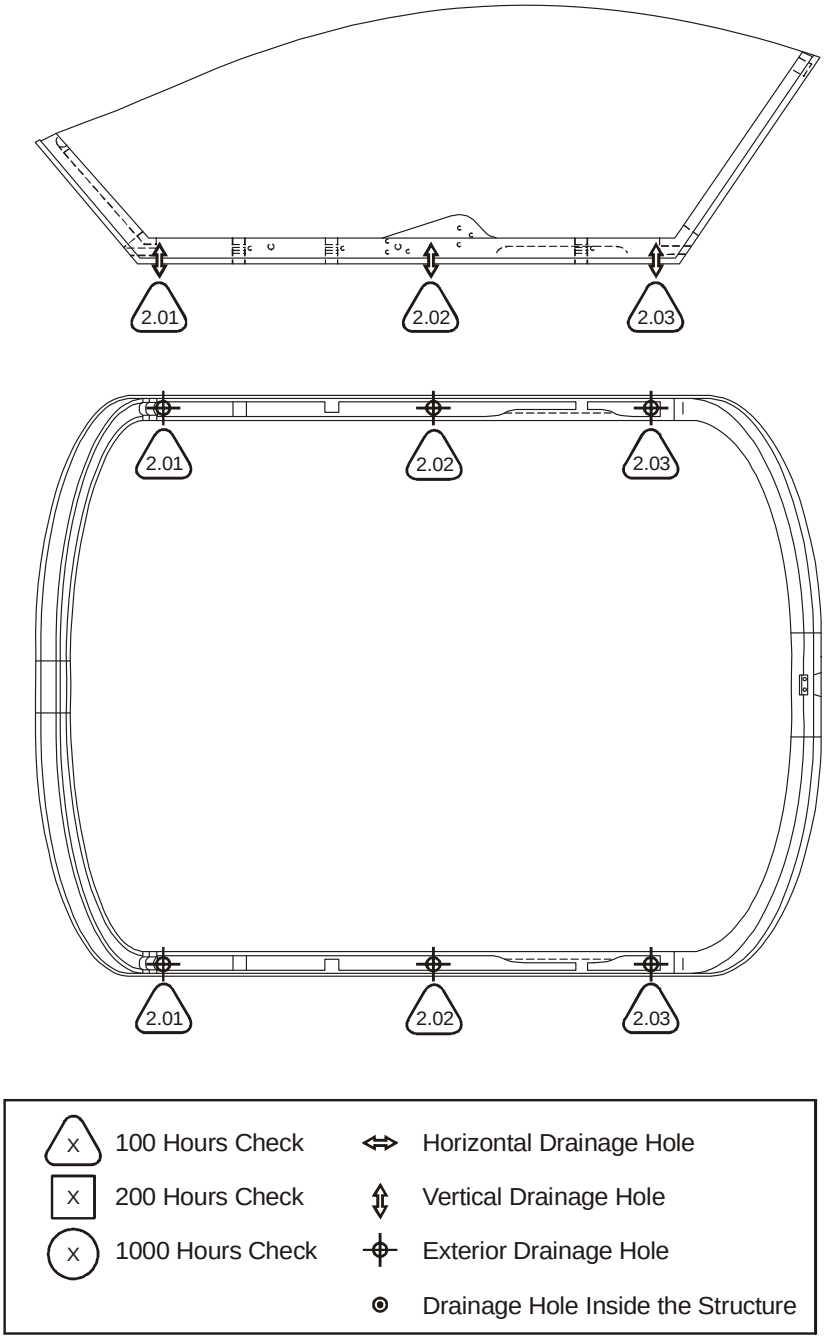


Figure 3: Drain Holes Canopy

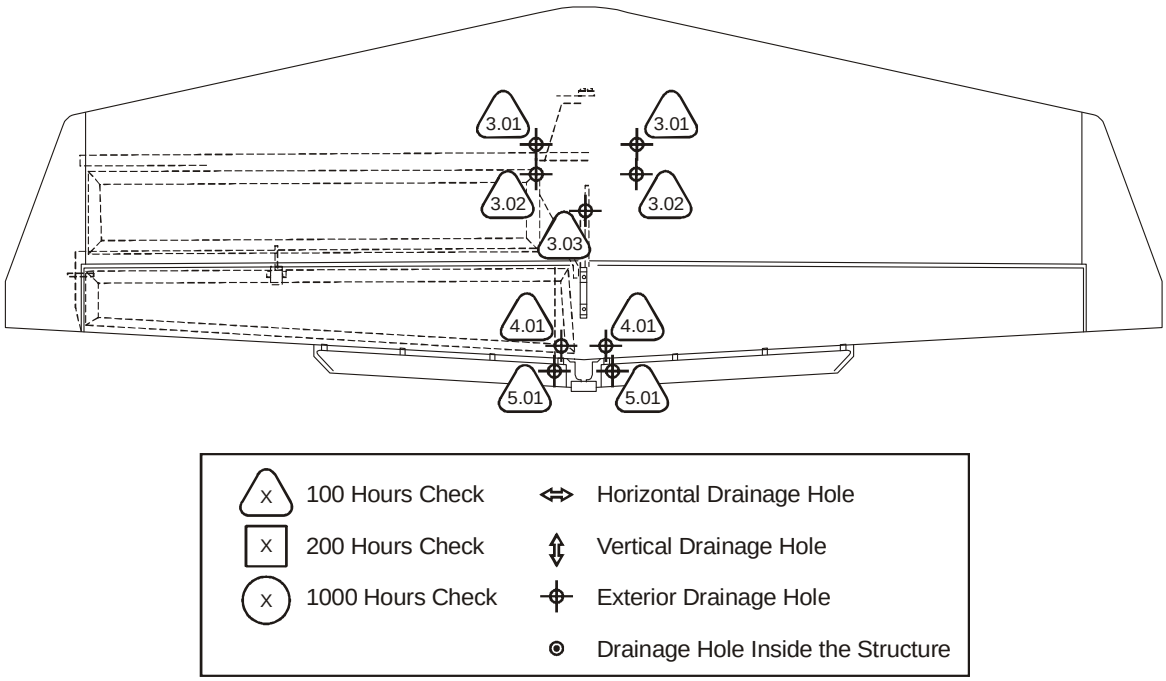


Figure 4: Drain Holes Horizontal Stabilizer, Elevator and Elevator Trim Tab

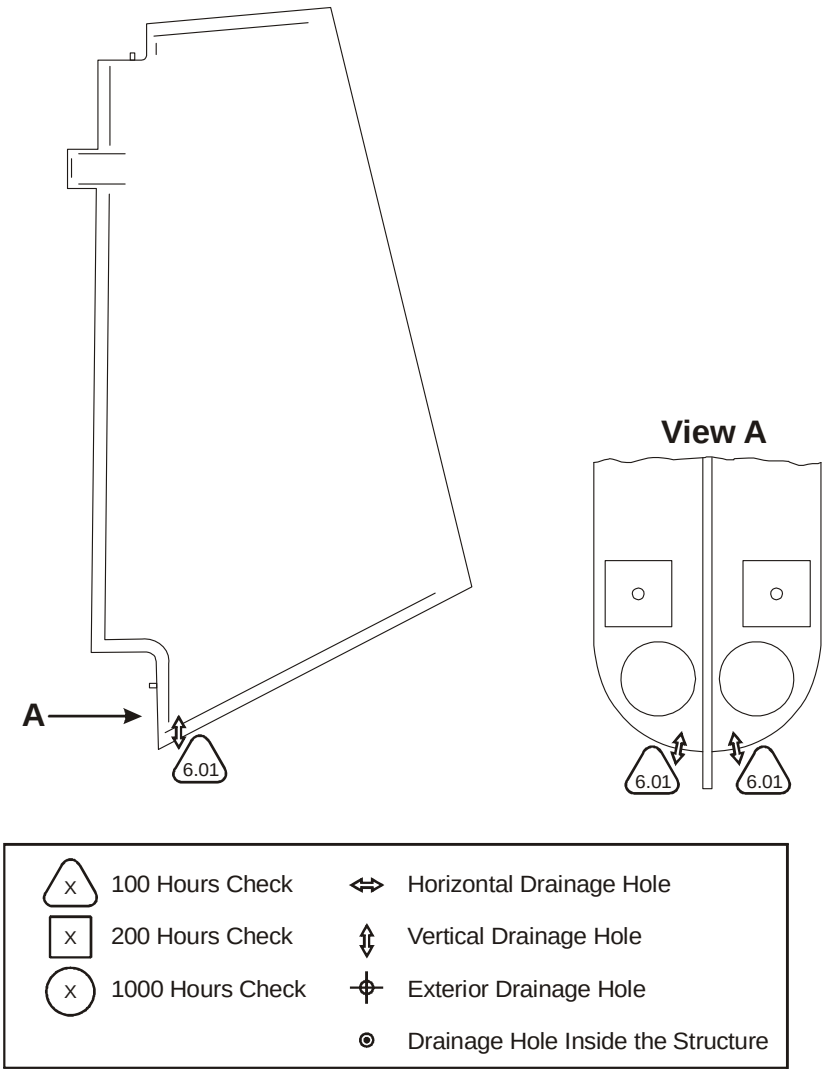


Figure 5: Drain Holes Rudder

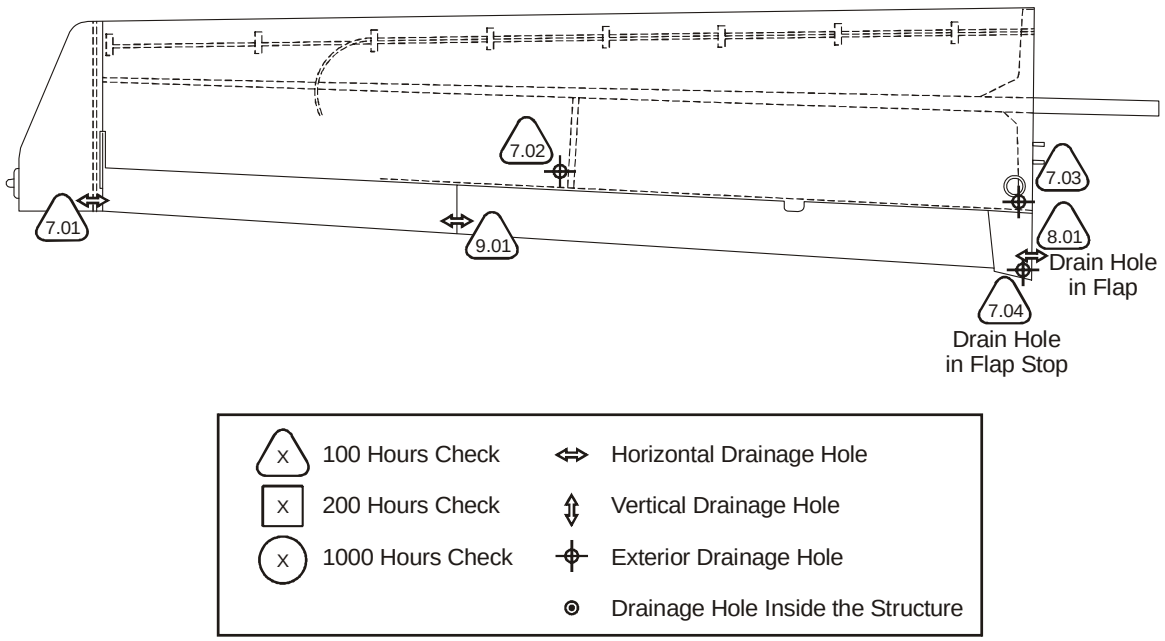


Figure 6: Drain Holes Wings, Flaps and Ailerons

3. 100, 200, and 1000 Hour Inspection Checklist

All inspection items listed in Table 2 must be performed within the specified intervals.

Note: All items marked with X must be performed at these intervals on any airplane.

All items marked with an asterisk (*) must be performed at these intervals on U.S., Canadian and Russian registered airplanes.

All items performed must be signed by the airplane maintenance engineer. Completion of the properly performed inspection must be recorded in the log book.

Findings as well as their correction must be recorded in a Findings Report and filed together with the completed Inspection Checklist in the Airplane Maintenance Log.

Note: Where applicable reference is made to the Maintenance Manual of the Rotax Engine, abbreviated as "EMM" (Engine Maintenance Manual).

A. INSPECTION CHECKLIST DV 20 KATANA

S/N : _____	Registration : _____
Date : _____	Engine operating hours, TSN/TSO : _____
Scope (100, 200, 1000) : _____	Airplane operating hours : _____

		Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
	PRIOR TO INSPECTION				
	Review Airworthiness Directives for compliance.	X	X	X	
	Review Service Bulletins for compliance.	X	X	X	
	Check Service Time Record.	X	X	X	
	Check log book for unattended findings/complaints.	X	X	X	
	Clean aircraft thoroughly.	X	X	X	

(1) Initial Test-Run

	INITIAL TEST-RUN	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
	WARNING: DO NOT LET PERSONS GO INTO THE DANGER AREA OF THE PROPELLER. PROPELLERS CAN CAUSE INJURY OR DEATH. **WARNING: SET THE PARKING BRAKE TO ON. IF YOU DO NOT DO THIS, THE AIRPLANE CAN MOVE. THIS CAN CAUSE INJURY OR DEATH.**				
1.	Check oil level according to ROTAX Engine Maintenance Manual (EMM) Chapter 12-00.	X	X	X	
2.	Run engine until oil temp. has reached 40 °C, check engine instruments for abnormal operation. (see EMM Chapter 12-00).	X	X	X	
3.	Ignition check at: 1700 RPM (912 A3) 1600 RPM (912 S3) Drop 1: _____ RPM (max. 150) Drop 2: _____ RPM (max. 150) Between 1&2: ___ RPM (max. 50).	X	X	X	
4.	Carburetor heat check at the same RPM as above Drop: _____ RPM (min. 30) .	X	X	X	
5.	Note idle speed: _____ RPM.	X	X	X	
6.	Check fuel shut-off valve for improper operation. Engine must stop with valve closed.	X	X	X	
7.	Ignition "OFF", master switch "OFF" (remove ignition key).	X	X	X	

(2) Engine

	ENGINE	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
	WARNING: MAKE SURE THE EXHAUST SYSTEM IS COOL BEFORE YOU DO MAINTENANCE ON THE ENGINE. THE EXHAUST SYSTEM CAN BE HOT. THIS CAN CAUSE INJURY TO PERSONS. **WARNING: DO NOT GET OIL ON YOU. OIL CAN CAUSE SKIN DISEASE.** **WARNING: DO NOT GET FUEL ON YOU. FUEL CAN CAUSE SKIN DISEASE. DO NOT ALLOW FIRE NEAR FUEL. FUEL BURNS AND CAN CAUSE INJURY TO PEOPLE AND DAMAGE TO EQUIPMENT.**				
1.	Remove upper and lower cowling, check for cracks, overheated areas, deformation, loose or missing fasteners. Clean cowlings if dirty.	X	X	X	
2.	Do engine maintenance in accordance with the referenced engine maintenance manual (EMM), latest revision (Refer to Section 05-00).	X	X	X	
3.	If control light for coolant qty. is installed: Check for improper operation. See Chap 77-00.	X	X	X	
4.	Check cooling system for loss of coolant; dispatcher vessel should be full. Refill if needed. (See Chap. 12-10 of this manual). Verify cap is securely closed. Check chafing protection pad on dispatcher vessel for damage.	X	X	X	
5.	Check equalizing reservoir and line to dispatcher vessel for damage, leaks and obstructions. Refill coolant if necessary. Check vent bore in cap for obstructions.	X	X	X	
6.	Clean coolant radiator ribs; check for damage and leaks.	X	X	X	
7.	Check radiator for looseness; check mounting for poor condition.	X	X	X	
8.	Check air distribution box for carburetor heat for insecure mounting, cracks, leakage, deformation, and heat defects; check drip bowls for insecure attachment.	X	X	X	
9.	Check carburetor heat flaps for looseness and improper operation.	X	X	X	

	ENGINE	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
10.	Clean oil radiator ribs, check for damage and leaks.	X	X	X	
11.	Check oil radiator for looseness, check radiator mounting for poor condition.	X	X	X	
12.	Check compensator pipe between the intake manifolds for chafing and leakage.	X	X	X	
13.	Check oil tank breather for blockage and obvious defects. Ensure that alternate vent hole is clear (at lower end of vent pipe 5 cm or 2" inside of engine cowling).	X	X	X	
14.	Check engine mount for cracks, deformation, heat damage, corrosion, missing fasteners and safetying devices; check shock mounts for poor condition.	X	X	X	
15.	Check electrical system for heat damage, corrosion and chafing; check central plug (if installed), cable fastenings and all connectors by lightly pulling by hand. (EMM 12-00) Ground strap o Starter o Oil temperature sensor o Oil pressure sensor o Generator o Voltage regulator, (if installed) o Fuel pressure sensor o Coolant quantity sensor, (if installed) o	X	X	X	
16.	Check starter, relays, and ignition boxes for insecure attachment.	X	X	X	
17.	Perform continuity check (refer to Sub-Chapter 24-31).			X	
18.	Check hoses for cabin heat, carburetor intake and carburetor heat for defects.	X	X	X	
19.	Check cabin heat flap for defects and looseness.	X	X	X	

	ENGINE	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
20.	Check exhaust pipes and mounting brackets for cracks and looseness; check for leakage at the connection to the muffler; check deflector shield for insecure attachment; check springs for corrosion.	X	X	X	
21.	Check heat exchanger (muffler heating jacket) for cracks and insecure mounting to muffler; check hoses for insecure mounting.	X	X	X	
22.	Open heat exchanger, check muffler for cracks, deformation and corrosion. The connection sleeves are especially susceptible to cracking.		X	X	
23.	Remove muffler and check for interior damage through connection sleeves.		X	X	
24.	Check firewall breaches for leaks and insecure attachment of clamps and missing sealant.	X	X	X	
25.	Check fire resistant hoses for poor condition; check fuel lines for improper routing and leaks; check fittings for looseness. Check fuel lines for porosity and hardening from heat where applicable.	X	X	X	
26.	Clean filter in electrical fuel pump; close and secure pump cap; close and secure hose coupling.	X	X	X	
27.	Check electrical fuel pump for leakage and insecure mounting.	X	X	X	
28.	Check mechanical fuel pump and all connections for leakage, looseness, and insecure mounting.	X	X	X	
29.	Check carburetor vent lines to air distribution box for insecure attachment and poor condition; check drip bowl drains for blockage.	X	X	X	
30.	Check battery mount for poor condition; check battery acid level; check battery vent hose for blockage.	X	X	X	
31.	Check battery charge and capacity.	X	X	X	

	ENGINE	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
32.	Check all bowden cables for insecure condition, interference, and lack of operating clearance; lubricate. Check clamp straps for looseness. Throttle o Carburetor Heat o Cabin Heat o Choke o Prop. Speed Control o	X	X	X	
33.	Re-torque bolts attaching engine mount to firewall (see Chap. 20-00, page 2).			X	
34.	Check for foreign objects; install cowling.	X	X	X	

	ENGINE	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
	Operating fluids used: (Type and quantity) Oil : _____ Coolant : _____ Misc. : _____ Parts Replaced: _____ _____ _____ _____ Remarks:				

(3) Propeller

	PROPELLER	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
	WARNING: DO NOT LET PERSONS GO INTO THE DANGER AREA OF THE PROPELLER. PROPELLERS CAN CAUSE INJURY OR DEATH. **WARNING: YOU MUST MAKE SURE THAT THE ENGINE IS SAFE BEFORE YOU TURN THE PROPELLER.**				
1.	Remove spinner; check spinner and spinner mount for cracks, dents, and run-out.	X	X	X	
2.	Do inspection in accordance with the referenced propeller maintenance manual, latest revision (Refer to Section 05-00).	X	X	X	
3.	Install spinner.	X	X	X	
4.	Check governor for insecure mounting; check lines for poor condition and leaks; check bowden cable for insufficient travel.	X	X	X	

(4) Cabin

	CABIN	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
1.	Check canopy, sliding windows and seals for damage.	X	X	X	
2.	Check canopy attachment rods, coil springs, hinges and rubber bumper for damage.	X	X	X	
3.	Check canopy lock mechanism & emergency release for damage and improper operation in accordance with measure 1 of Service Bulletin MSB20-39/1.	X	X	X	
4.	Check safety belts and their fastenings for defects.	X	X	X	
5.	Remove seat shells; remove any dirt.	X	X	X	
6.	Check flap actuator and position switch assembly under pilot's seat for insecure attachment and improper operation.	X	X	X	
7.	Remove center console cover; check elevator trim system for damage.	X	X	X	
8.	Check rudder control cables for chafing and broken strands in the adjustment range of the S-guides and in the area around the rollers and cable guides; check rollers for interference; check pedestals for insecure attachment.	X	X	X	
9.	Check rudder pedals for insecure attachment and interference; check return springs for poor condition; check pedal adjustment for inproper operation; lubricate if necessary.	X	X	X	
10.	Check brake pedals for interference, play, and improper operation. Check mechanism for damage and wear.	X	X	X	
11.	Check brake cylinders and brake lines for leakage.	X	X	X	
12.	Check parking brake valve for improper operation; check all connections for leaks.	X	X	X	
13.	Check brake fluid for poor condition, replace if necessary. Fill brake fluid reservoir to maximum level (15 mm = 5/8" below top).	X	X	X	

	CABIN	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
14.	Check control sticks for interference; check stops for defects; check zero position; check all fittings and bearings for looseness.	X	X	X	
15.	Check play of aileron and elevator control system with one stick blocked. Maximum allowable play: 3 mm (0.12"), measured at the edge of ailerons and elevator.	X	X	X	
16.	Check instrument markings.	X	X	X	
17.	Check flap position indicator for improper operation.	X	X	X	
18.	Check all switches and handles for missing placards in accordance with Maintenance Manual, Chapter 11-10.	X	X	X	
19.	Check ignition switch for improper operation.	X	X	X	
20.	Remove instrument panel top cover; check all components, switches, instruments, breakers and wiring for insecure attachment; remove any dirt.		X	X	
21.	Check air ducts in fuselage for aging, cracks, obvious defects and loose connectors.		X	X	
22.	Check wing main bolt locking device for improper operation and poor condition.	X	X	X	
23.	Check main bulkhead bushings for looseness.		X	X	

(5) Structure and Control Surfaces

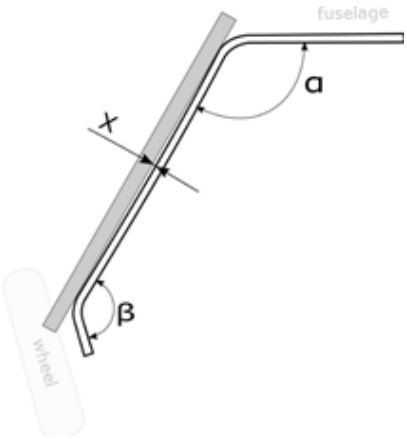
	STRUCTURE AND CONTROL SURFACES	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
1.	Check skin of wings, tail surfaces, and fuselage for defects, especially dents, cracks, holes, etc.	X	X	X	
2.	Examine composite structure in the area of the entrance step. If cracks or delamination are detected reinforce in accordance with Chapter 51-10.	X	X	X	
3.	Check aileron hinges for excessive play. Allowable: axial : ±2.0 mm (±0.08 in.) radial: ±0.25 mm (±0.01 in.)	X	X	X	
4.	Check aileron balancing masses for damage and looseness.	X	X	X	
5.	Check aileron control system in wings through plexiglass windows for improper connection and improper safetying.	X	X	X	
6.	Check flaps and flap control mechanism in wings and fuselage for improper connection and improper safetying.	X	X	X	
7.	Check flaps pre-tension and adjust if required. Correct pre-tension: 30 to 50 N (6.7 to 11.2 lbs.)		X	X	
8.	Remove rudder; lubricate hinge bushes; check vertical stabilizer interior structure for damage.		X	X	
9.	Remove horizontal tail; check mounting hardware for insecure attachment and corrosion; check forward bolts for corrosion; lubricate; re-install horizontal tail.			X	
10.	Check elevator and horizontal stabilizer for insecure or improper attachment and improper safetying.	X	X	X	
11.	Check rearward parts of elevator control system for insecure mounting, excessive play, improper safetying, and corrosion.	X	X	X	
12.	Disconnect friction damper and check friction with a spring scale; adjust if necessary.	*	X	X	

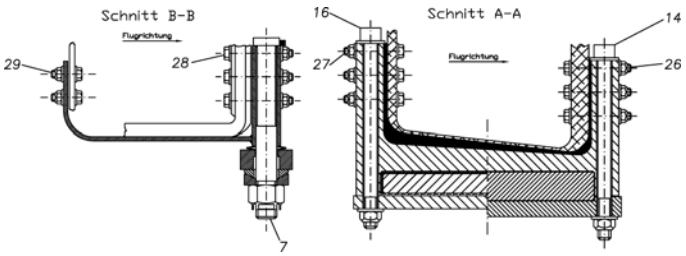
	STRUCTURE AND CONTROL SURFACES	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
13.	Check trim tab and trim tab hinges for damage; check trim tab control mechanism for play; check hinge wire and castle nut for improper safetying.	X	X	X	
14.	Remove elevator push rod in fuselage tube; check for chafing in guide roller area.			X	
15.	Remove tail fin; check rearward fuselage bulkheads for damage; remove any dirt.			X	
16.	Check rudder mounting and control cable connection points for wear in the cable eyes, looseness, play, and improper safetying; check rudder lower edge for cracks.	X	X	X	
17.	Examine upper rudder hinge bearing for radial play between spherical surface and wear. If necessary replace it in accordance with Chapter 27-20-30.			X	
18.	Examine upper rudder hinge pin. If corrosion or grooves are detected, or a diameter less than 5.9 mm (0.232 in) is measured, replace it in accordance with Chapter 27-20-30.			X	
19.	Check tail fin for improper or insecure attachment and damage.	X	X	X	
20.	Remove floor plate from baggage compartment. Check landing gear mounting for insecure attachment and improper safetying; check rudder control cables, rudder lever (in B-bulkhead), and aileron and flap control system parts for damage, corrosion, improper operation, and improper safetying; check flaps synchro tube for damage; remove any dirt. Check rudder cable tension. Nominal: 15 ± 2 daN (33.7 ± 4.5 lbs.)	*	X	X	
21.	Remove fuel tank, check for damage and corrosion; remove and clean integrated fuel screen. Calibrate fuel quantity indicating system after reinstalling the tank.			X	

	STRUCTURE AND CONTROL SURFACES	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
22.	Remove panel aft of baggage compartment; check fuselage tube for deformation and cracks; check elevator push rod guidance for insecure mounting; check rudder control cables and turn buckles for corrosion, wear, and improper safetying; remove any dirt.	*	X	X	
23.	Check fuel lines, fuel tank and filler for damage and leakage; check vent line and additional vent bore (airplanes registered in Russia only) for blockage; check tank fastening for defects.	X	X	X	
24.	Check electrical system and ground straps for chafing; check cable ties and all connectors by lightly pulling by hand.	X	X	X	
25.	Check Pitot head and antennas for insecure attachment; check stall warning system for improper operation.	X	X	X	
26.	Check drain and vent bores in wings, fuselage, and control surfaces.	X	X	X	
27.	Check placards. Refer to Airplane Flight Manual Supplements for placards for optional equipment.	X	X	X	
28.	Remove wings; inspect bolts and bushes, refer to Chapter 57-10; lubricate.		X	X	
29.	Check air ducts in LH wing for aging, cracks, obvious defects, and looseness of connectors.		X	X	
30.	Remove aileron push rods; check for chafing in roller guide area.			X	
31.	Check aileron and flap control system parts in the area of the wings' and fuselage's root rib for insecure mounting and wear; lubricate if necessary.		X	X	

	STRUCTURE AND CONTROL SURFACES	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
32.	Check fastening units of B-bolts for improper operation (locking devices must catch perceptibly every 60°).	X	X	X	
33.	Check pins of flap synchronizing tube assembly for looseness.		X	X	
34.	Install wings; apply adhesive tape to gaps between wings and fuselage.		X	X	
35.	Remove tips from wings and horizontal stabilizer; check interior structure for damage.			X	
36.	Check strobe lights and position lights for damage and looseness.	X	X	X	

(6) Landing Gear

	LANDING GEAR	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
1.	Clean main landing gear and nose wheel; remove fairings; check fairing mounts for cracks.	X	X	X	
2.	Check main landing gear for cracks, unusual deformation, and damage.	X	X	X	
3.	Measure the maximum deflection X of the unloaded main gear struts. (Lay a straight rod [grey] on the upper side of the strut and measure the maximum value of the gap according to the sketch). – X ≤ 3 mm (0.12 in): Examine main gear strut for corrosion and cracks (particularly at the curvatures). – X > 3 mm (0.12 in): Replace the strut. 			X	

	LANDING GEAR	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
4.	Examine main landing gear attachment brackets. If cracks, damages or serious corrosion is detected remove the MLG legs in accordance with Chapter 32-10 Section 6. Examine inboard main landing gear attachment bolt (item 7). Replace if wear exceeds 0.1 mm. Examine outboard main landing gear attachment bolts (items 14, 16) and replace nuts. Examine main landing gear bracket attachment screws (items 26 - 29) for corrosion and poor condition, replace if necessary. Retorque main landing gear bracket attachments bolts. 			X	
5.	Examine main landing gear strut for excessive wear at attachment brackets. Repair paintcoat when worn.			X	
6.	Check toe & camber in accordance with Sub-Chapter 32-10.			X	
7.	Check brake linings for wear. Minimum thickness: 4.0 mm (0.16").	X	X	X	
8.	Check brake disks for wear. Min. thickness: 3.8 mm (0.15").	X	X	X	
9.	Check brake lines and calipers for leakage, damage, cracks, and corrosion.	X	X	X	

	LANDING GEAR	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
10.	Check nose wheel assembly for insecure attachment, cracks, and deformation; check bearings in fuselage bottom for play; check LH and RH journal in rubber spring assembly for play; lubricate.	X	X	X	
11.	Examine nose landing gear for excessive wear at bearings in top hat profile.			X	
12.	Examine engine mount around nose landing gear shock strut attachment for distortion and cracks.			X	
13.	Examine all bronze coated bushings and collar bushings on nose landing gear.			X	
14.	Check rubber spring assy. for damage; tighten if necessary.	X	X	X	
15.	Check nose wheel fork for play and friction with nose wheel off the ground (3 - 5 daN / 6.75 - 11.25 lbs. at axle).		X	X	
16.	Remove nose landing gear fork. Check vertical pivot bearing for corrosion & play, lubricate. Re-install fork. S/N's 20.005 thru 20.119: S/N's 20.120 and subsequent :	 X	 X	 X X	
17.	Check 3 tires for cuts, wear, defective valve stems; check slip markings. Observe limits set forth in FAA AC 43.13-1A.	X	X	X	
18.	Ensure correct inflation: Main wheels: 2.3 bar or 33 PSI. Nose wheel: 1.8 bar or 26 PSI.	X	X	X	
19.	Check 3 rims for cracks.	X	X	X	
20.	Check 3 wheel bearings for play, wear, corrosion, and irregular running.	X	X	X	
21.	Remove main wheels; clean and lubricate bearings.	*	*	X	
22.	Examine main landing gear axles and their attachment bolts for cracks, corrosion and wear.			X	
23.	Check axles for cracks, deformation, and corrosion.			X	

	LANDING GEAR	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
24.	Install 3 wheels and fairings.	X	X	X	

(7) General

	GENERAL	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**
1.	Review Airplane Flight Manual Supplements for optional equipment that requires inspection.	X	X	X	
2.	Inspect ELT and its battery as prescribed by manufacturer.	*	X	X	
3.	Check Pitot-static system for leaks and contamination..			X	
4.	Drain any water which may have accumulated in the Pitot and static system.	*	X	X	
5.	Lubricate in accordance with Lubrication Schedule (see Sub-Chapter 12-20).	X	X	X	
6.	Check for foreign objects and tools; close all inspection holes.	X	X	X	
7.	Perform general functional test and engine test run (engine test: according EMM and (1) Initial Test-Run).	X	X	X	
8.	Check engine for leakage.	X	X	X	
9.	Tighten oil filter.	X	X	X	
10.	Perform carbon monoxide test.	X	X	X	
11.	Perform check flight, carry out and confirm all items on the form "Check Flight".			X	
12.	Enter inspection in log book.	X	X	X	
13.	File Inspection Checklist, material tags, Findings Report, Engine Test Run Report, and Check Flight Report in Airplane Maintenance Log.	X	X	X	

	GENERAL	Flight Hours			
	Inspection Items	**100**	**200**	**1000**	**Initials**

REMARKS:

The airplane is airworthy with respect to its maintenance condition.

Place : _____

Date : _____

A.M.E. : _____

B. CHECK FLIGHT REPORT

If an engine with suffix -01 is installed, the items ‘Cylinder head temperature indicator’ and ‘Cylinder head temperature’ are changed to ‘Coolant temperature indicator’ and ‘Coolant temperature’.

Diamond AIRCRAFT	**CHECK FLIGHT**	**DV 20 KATANA** Page 1 of 2

Registration:	Pilot:	Airdrome:
Date:	Take-Off:	Landing:

Functional Check, Flight Behavior	**Findings**	
	NO	**YES**
Fuel quantity indicator		
ACL, navigation lights		
Warning and caution lights		
Altimeter, QNH adjustment		
Radio, radio check		
Navigational instruments		
Electrical fuel pump		
Engine starting behavior, cold		
Oil pressure indicator		
Ammeter, Generator		
RPM indicator		
Cylinder head temperature indicator / Coolant temperature indicator		
Oil temperature indicator		
Parking brake		
Wing flaps		
Propeller speed control		
Ignition circuits		
Carburetor heat		
Taxiing behavior, take-off behavior		
Airspeed indicator		

Diamond AIRCRAFT	CHECK FLIGHT	DV 20 KATANA Page 2 of 2	
Vertical speed indicator			
Compass			
Behavior during climb			
Cylinder head temperature / Coolant temperature			
Oil temperature			
Cabin heat / cabin air			
Behavior during high-speed flight			
Trim / trim range			
Behavior during slow-speed flight			
Stall warning			
Landing behavior			
Fuel shut-off valve			
Engine starting behavior, warm			
Engine shut-down behavior			
Remarks:			
Pilot: _____			

4. Major Structural Inspection

After 6000 hours, 12000 hours and every 4000 hours of operation thereafter an inspection as specified in this Section must be done in addition to the 1000 hours inspection defined in Section 3.

The purpose of this inspection is a recurrent structural inspection to extend the life limit of the airframe.

Legend:

T Tap Test
V Visual Inspection
F Functional or Fit Check

NOTE: Where the inspection method indicated in the following tables is followed by the symbol "(T)", perform a tap test, if visual inspection reveals evidence of possible delamination and/or disbond.

NOTE: If damages are determined which cannot be repaired in accordance with the Airplane Maintenance Manual Diamond Aircraft must be contacted for repair instructions.

A. General

	GENERAL Inspection Items	Inspection Method	Initials
Prior to Inspection			
1.	Implement all Mandatory Service Bulletins.	N/A	
General - Disassembly			
2.	Replace engine mount attachment bolts.	N/A	

	GENERAL Inspection Items	Inspection Method	Initials
3.	Remove and inspect the following parts of the flight control system in accordance with AMM Chapter 27. All parts must be examined for wear, corrosion deformation and poor condition. Aileron: – Aileron push rods connecting control sticks (item 2). – Bell crank attached to rearward transverse stiffener (item 3). – Push rod in center console (item 4). – Bell crank attached to sickle shaped bulkhead (item 5). – Aileron push rods connected to aileron pockets (item 6). – Aileron pockets (item 7). – Bell crank engaging in aileron pocket (item 8) - if installed. – Long push rod in wing (item 9). – Aileron bell crank (item 10). – Short push rod in wing (item 11). Rudder: – Rudder pedal assembly (27-20-10). – Cables between firewall and rudder lever (item 1). – Cables between rudder lever and lower mounting plate (item 2). – Cable fittings (item 3). – Rudder lever (item 5). – Lower mounting plate (item 7).	V	

	GENERAL Inspection Items	Inspection Method	Initials
	Elevator: – Elevator push rod (item 3). – Elevator push rod in fuselage tube (item 4). – Elevator bell crank (item 5). – Elevator push rod in rudder fin (item 6). Elevator trim: – Trim lever (item 1). – Trim Bowden cable - examine for elongation (item 2). – Actuating lever. Flaps: – Flaps actuator. – Bell crank assembly. – Push rods. – Pockets. – Synchro tube. – For S/N 20.005 through S/N 20.100: – Flaps pockets. – Bell crank engaging in flaps pocket. – Long push rod in wing. – Flap bell crank. – Short push rod in wing. Examine interior of push rods for corrosion with Boroscope and renew corrosion protection. Use material published in DP-S-15-00010 Section 4.4.1.		

B. Left Wing

	LEFT WING Inspection Items	Inspection Method	Initials
	Left Wing Root Ribs (in front of and behind spar)		
1.	Bonding with the skins.	V (T)	
2.	Joints with main spar/spar stump.	V	
3.	Laminate (cracks, delamination).	V	
4.	A-bolt bushing and bearing in forward root rib (bond of bushing in rib, tight fit of bearing in bushing, corrosion or wear of bearing).	V / F	
5.	B-bolt bushing and bearing in aft root rib (bond of bushing in rib, tight fit of bearing in bushing, corrosion or wear of bearing).	V / F	
	Left Wing Spar Stump		
6.	Laminate (cracks, delamination).	V	
7.	Main bolt bushing in spar web.	V / F	
	Left Wing Main Spar		
8.	Main spar bonding with wing skins (cracks, delamination).	V (T)	
9.	Main spar flange joint with web outboard of root rib looking through root rib openings (delamination).	V	
10.	Spar web sandwich structure outboard of root rib looking through root rib openings and examine condition of laminate (delamination, condition of core).	V	
	Left Upper and Lower Wing Skins		
11.	Laminate (delamination, cracks, dents, scratches).	V (T)	
12.	Paint (chips, scratches, UV damage).	V	
13.	Condition of core (damage, delamination to skin).	V (T)	
14.	Leading edge bond (disbonds, cracks above or below overlap seam).	V (T)	
15.	Remove tie down ring and inspect for delamination, cracks, elongation of hole.	V	

	LEFT WING Inspection Items	Inspection Method	Initials
	Left Wing Trailing Edge Spar		
16.	Laminate (resin erosion, without any resin cover - refer to Chapter 51-10 Section 11).	V	
17.	Bonding of trailing edge to skins (cracks, foam strip brittle - refer to Chapter 51-10 Section 11).	V (T)	
18.	Bonding of flap and aileron hinges to trailing edge and skin.	V (T)	
19.	Flap and aileron hinges (cracks, corrosion, fit of clevis pin in hinge, paint and separation of trailing edge spar or lower skin ahead of spar face, loose rivet - refer to Chapter 57).	V / F	
	Left Wing Internal Ribs		
20.	Laminate (cracks, delamination).	V	
21.	Bellcrank brackets (cracks, elongation of bellcrank mounting holes, corrosion, paint and delamination and disbond between bracket and rib).	V	
22.	Guide rollers in wing (excessive play in roller - refer to Chapter 27-11 Section 6 and 7)	V	
23.	Replace all bronze coated bushings and collar bushings on control system.	N/A	

C. Right Wing

	RIGHT WING Inspection Items	Inspection Method	Initials
	Right Wing Root Ribs (in front of and behind spar)		
1.	Bonding with the skins.	V (T)	
2.	Joints with main spar/spar stump.	V	
3.	Laminate (cracks, delamination).	V	
4.	A-bolt bushing and bearing in forward root rib (bond of bushing in rib, tight fit of bearing in bushing, corrosion or wear of bearing).	V / F	
5.	B-bolt bushing and bearing in aft root rib (bond of bushing in rib, tight fit of bearing in bushing, corrosion or wear of bearing).	V / F	

	RIGHT WING Inspection Items	Inspection Method	Initials
	Right Wing Spar Stump		
6.	Laminate (cracks, delamination).	V	
7.	Main bolt bushing in spar web.	V / F	
	Right Wing Main Spar		
8.	Main spar bonding with wing skins (cracks, delamination)	V (T)	
9.	Main spar flange joint with web outboard of root rib looking through root rib openings (delamination).	V	
10.	Spar web sandwich structure outboard of root rib looking through root rib openings and examine condition of laminate (delamination, condition of core).	V	
	Right Upper and Lower Wing Skins		
11.	Laminate (delamination, cracks, dents, scratches).	V (T)	
12.	Paint (chips, scratches, UV damage).	V	
13.	Condition of core (damage, delamination to skin).	V (T)	
14.	Leading edge bond (disbonds, cracks above or below overlap seam).	V (T)	
15.	Remove tie down ring and inspect for delamination, cracks, elongation of hole.	V	
	Right Wing Trailing Edge Spar		
16.	Laminate (resin erosion, without any resin cover - refer to Chapter 51-10 Section 11).	V	
17.	Bonding of trailing edge to skins (cracks, foam strip brittle - refer to Chapter 51-10 Section 11).	V (T)	
18.	Bonding of flap and aileron hinges to trailing edge and skin.	V (T)	
19.	Flap and aileron hinges (cracks, corrosion, fit of clevis pin in hinge, paint and separation of trailing edge spar or lower skin ahead of spar face, loose rivet - refer to Chapter 57).	V / F	
	Right Wing Internal Ribs		
20.	Laminate (cracks, delamination).	V	
21.	Bellcrank brackets (cracks, elongation of bellcrank mounting holes, corrosion, paint and delamination and disbond between bracket and rib).	V	
22.	Guide rollers in wing (excessive play in roller - refer to Chapter 27-11 Section 6 and 7)	V	
23.	Replace all bronze coated bushings and collar bushings on control system.	N/A	

D. Fuselage

	FUSELAGE Inspection Items	Inspection Method	Initials
Fuselage Skin, including Vertical Stabilizer			
1.	Laminate (delamination, cracks, dents, scratches).	V (T)	
2.	Paint (chips, scratches, UV damage, condition of fire-proof paint aft of lower cowl outlet).	V	
3.	Laminate at trailing edge spar of vertical stabilizer (resin erosion, dry without any resin cover - refer to Chapter 51-10 Section 11).	V	
4.	Fuselage bonding lines - centerline of fuselage, upper and lower surfaces (cracks in paint and separation of internal composite components and skin).	V (T)	
5.	NLG bushings in T-panel on bottom of fuselage (security of bushing in T-panel, play between NLG strut and bushing, condition of laminate, bond of T-panel to floor panel and fuselage skin).	V (T)	
Bulkheads, Webs, Ribs in Vertical Stabilizer			
6.	Laminate (delamination, cracks - particularly around access holes).	V	
7.	Internal composite components (look through access holes in vertical stabilizer spar and inspect for separation from skin and for delamination and cracks).	V (T)	
8.	Guide rollers in fuselage (excessive play in roller bearings - refer to Chapter 27-30 Section 6.	V	
9.	Rudder cable pulleys (play and excessive wear).	V	
10.	Rudder control cable guides (wear).	V	
11.	Replace all bronze coated bushings and collar bushings on control system.	N/A	
12.	Replace all bronze coated bushings and collar bushings on trim system.	N/A	
13.	Bushings at aft horizontal stabilizer attachment (corrosion, cracks, delamination or cracks in composite around bushing)	V	
14.	Replace horizontal stabilizer forward mounting bolt.	V / F	
15.	Fuselage skin around lower tail fin (cracks).	V	
16.	Bonding line to vertical stabilizer web (cracks).	V	
17.	Lower rudder bearing block (deformation).	V	

	FUSELAGE Inspection Items	Inspection Method	Initials
18.	Trailing edge reinforcement rib (delamination from skin, cracks).	V	
	Main Bulkhead and Wing Connection		
19.	Main bulkhead laminate and bonding to fuselage (delamination).	V	
20.	Fuselage skin outboard of seat fastener through side of main bulkhead (delamination).	V (T)	
21.	Main bolt, A- and B-bolt bushings (security of bushings in surrounding composite, tightness of fit of pin/bolt, cracks, corrosion).	V	
22.	Main bolts and A-bolts (corrosion, distortion and wear or play refer to Chapter 57-10.	V / F	
23.	Main landing gear and A-bolt attachment brackets (cracks or corrosion of bracket, disbond from or delamination in surrounding laminate).	V	
	Firewall		
24.	Laminate when viewed from cockpit side (cracks and delamination, - particularly around engine mount fastener holes, battery box, discoloration).	V	
25.	Replace firewall heat isolation - refer to Chapter 51-10 Section 10.	V	
	Cockpit Area		
26.	Seats and attachments (cracks, delamination, damage around fastener holes).	V	
27.	Connection between backrest and fuselage in region of canopy frame (cracks in the thickened resin - refer to Chapter 51-10 Section 9).	V	
28.	Floor (cracks or delamination around aft rudder pedal bracket and throttle quadrant opening).	V	
29.	B-bulkhead (cracks, delamination, particularly around fuel tank attachments).	V	
30.	Lap belt attachments (general condition, security of metal fitting in surrounding composite).	V	
31.	Flap actuator mounting on LHS of center console (security of bracket on laminate, cracks in surrounding laminate).	V	

	FUSELAGE Inspection Items	Inspection Method	Initials
32.	Rudder lever mounting (located under B-bulkhead, check for security of mounting, elongation of hole, cracks in surrounding laminate).	V	
33.	Bronze coated bushings and collar bushings on pedals.	V	
	Canopy		
34.	Frame (delamination, scratches, cracks - particularly around fastener holes).	V	
35.	Cantilever, frame, fittings and attachment at backrest (damage or poor condition).	V	

E. Horizontal Stabilizer

	HORIZONTAL STABILIZER Inspection Items	Inspection Method	Initials
	HS Skins		
1.	Delamination, cracks, dents, scratches.	V (T)	
2.	Paint (chips, scratches, UV damage).	V	
3.	Damage to core or disbond between skin and core.	V (T)	
4.	Leading edge bond (disbonds, cracks above or below overlap seam).	V (T)	
	HS Spar		
5.	Bonding to skins.	T	
	HS Trailing Edges		
6.	Laminate (resin erosion on glass layer, appears dry without any resin cover - refer to Chapter 51-10 Section 11).	V	
7.	Bonding of trailing edge to skin (brittle foam strip, cracks - refer to Chapter 51-10 Section 11).	V (T)	
8.	Elevator hinges (cracks, corrosion, fit of clevis pin in hinge).	V / F	
9.	Inner hinge plates (cracks, corrosion, delamination of trailing edge and skin from stabilizer).	V	
	HS Attachments		
10.	Aft mounting plate (cracks in plate, cracks in bond between plate and web, delamination in web around bushings, cracks, corrosion).	V	

	HORIZONTAL STABILIZER Inspection Items	Inspection Method	Initials
11.	Forward mounting bracket (cracks in plate, cracks in bond to plate, delamination in rib around fasteners, condition of spherical bearing, fit of pin in bearing).	V / F	
12.	Elevator PAF bushing at the horizontal stabilizer (wear).	V	
13.	Replace all bronze coated bushings and collar bushings on control system.	N/A	

F. Control Surfaces

	CONTROL SURFACES Inspection Items	Inspection Method	Initials
	Ailerons		
1.	Surface (delamination, cracks, dents, scratches).	V (T)	
2.	Paint (chips, scratches, UV damage).	V	
3.	Core and laminate (cracks, damage, delamination to skin).	V (T)	
4.	Ribs (bonding with skins).	V (T)	
5.	Laminate around hinges and control horn fasteners (cracks, delamination).	V	
6.	Replace all bronze coated bushings and collar bushings.	N/A	
7.	Mass balance attachment (cracks in laminate and bonding paste around fasteners - accessible through access hole on lower surface).	V	
8.	Check technical records to ensure mass and static moment are within specified limits (Chapter 06-00).	V / F	
9.	Hinges and control horns (cracks, corrosion, disbond from skin, condition of plain bearing, fit of clevis pin in bearing - refer to Chapter 57).	V / F	
10.	Bonding strips on aileron (disbonding and disconnection).	V	
	Flaps		
11.	Surface and laminate (delamination, cracks, dents, scratches).	V (T)	
12.	Paint (chips, scratches, UV damage).	V	
13.	Core (cracks, damage, delamination to skin).	T	
14.	Ribs (bonding with skins).	V (T)	

	CONTROL SURFACES Inspection Items	Inspection Method	Initials
15.	Hinges and control horn (cracks, corrosion, disbond from skin, condition of plain bearing, fit of clevis pin in bearing - refer to Chapter 57).	V	
16.	Flap horn (cracks, wear).	V	
17.	Replace bronze coated bushings and collar bushings on Flap actuator.	N/A	
18.	Examine flap interconnection bushings.	V	
19.	Check technical records to ensure mass and static moment are within specified limits (Chapter 06-00).	V / F	
	Elevator and Tab		
20.	Surface and laminate (delamination, cracks, dents, scratches).	V (T)	
21.	Paint (chips, scratches, UV damage).	V	
22.	Core (cracks, damage, delamination to skin).	T	
23.	Hinges (cracks, corrosion, disbond from leading edge, tightness of fasteners, fit of pin, condition of sliding surface on plain bearing).	V / F	
24.	Both intermediate elevator bearings (corrosion, wear and excessive play).	V	
25.	Replace all bronze coated bushings and collar bushings on elevator and trim tab.	N/A	
26.	Control horn (cracks, corrosion, deformation, disbond from skin, tightness of fasteners, fit of pin, mass balance attachment - refer to Chapter 27-30).	V / F	
27.	Tab hinge and hinge-wire (corrosion, wear, hinge pin security and poor condition).	V	
28.	Trim actuation levers (poor condition) and replace ball joint connections (4x).	V	
29.	Check technical records to ensure mass and static moment are within specified limits (Chapter 06-00).	V / F	
30.	Replace the elevator springs.	N/A	
	Rudder		
31.	Examine skins for delamination, cracks, dents, scratches.	V (T)	
32.	Paint (chips, scratches, UV damage).	V	
33.	Damage to core or disbond between skin and core.	V (T)	

	CONTROL SURFACES Inspection Items	Inspection Method	Initials
34.	Check technical records to ensure mass and static moment are within specified limits (Chapter 06-00).	V / F	

G. After Assembly

	GENERAL - AFTER ASSEMBLY Inspection Items	Inspection Method	Initials
1.	Control surface adjustment - refer to Chapter 06-00.	V / F	
2.	Do bonding test - refer to Chapter 51-80.	F	
3.	Determine empty weight and corresponding center of gravity.		
4.	Do necessary entries in the airframe logs.		

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Section 05-21
PERIODISCHE KONTROLLEN
(GERMAN VERSION OF CHAPTER 05-20)

1. Allgemeines

Regelmäßige Kontrollen sind alle 100, 200 und 1000 Betriebsstunden durchzuführen.

Zusätzlich ist nach den ersten 25 Betriebsstunden eine 100 h-Kontrolle fällig, bei der auch die Motorträger-Befestigungsschrauben nachzuziehen sind (Drehmoment siehe Kap. 20-00). Die in Kapitel 05-21 dargestellte Kontrolliste enthält alle dazu erforderlichen Wartungs- und Kontrollarbeiten.

Die Zeit zwischen zwei 200 h Kontrollen darf nicht mehr als 1 Jahr betragen.

Zusätzliche Hinweise für die Motorwartung sind im Betriebshandbuch für den ROTAX 912 A3 / S3 Motor und in den Technischen Mitteilungen enthalten.

Zusätzliche Hinweise für die Wartung des Propellers finden sich im Propellerhandbuch.

Bei jeder Kontrolle sind auch die Ausführungen des Schmierplans zu beachten.

WICHTIGER HINWEIS: Die Wartungsvorschriften für in den U.S.A., in Kanada und in Rußland registrierte Flugzeuge weichen von den allgemeinen Wartungsvorschriften ab. Siehe hierzu Chapter 05-20.

Die Checklisten für die 100, 200 und 1000 Kontrollen in diesem Abschnitt sind abzuarbeiten. Parallel muß die Checkliste zur Überprüfung der Entwässerungsbohrungen durchgeführt werden.

ANMERKUNG: Diamond Aircraft Ind. hat die 600 Stunden Kontrolle durch eine 1000 Stunden Kontrolle ersetzt. Die erste 1000 Stunden Kontrolle ist 1000 Flugstunden nach der letzten 600 Stunden Kontrolle durchzuführen. Danach gelten die 1000 Flugstunden Intervalle.

2. Checkliste zur Überprüfung der Entwässerungsbohrungen

Die Entwässerungsbohrungen sind zu überprüfen. Entwässerungsbohrungen dürfen nicht durch Schmutz oder andere Ablagerungen verstopft sein. Alle Fremdkörper müssen entfernt werden und die Entwässerungsbohrungen sind komplett zu reinigen. Anderenfalls kann die Entwässerungskapazität unter bestimmten Umständen, wie Starkregen, etc., unzureichend sein.

Alle Entwässerungsbohrungen müssen einen Durchmesser von 5 mm (+ 2 mm / - 0 mm) or 0.2 in. (+ 0.08 in / - 0.00 in) aufweisen. Die Entwässerungsbohrungen müssen kreisrund, entgratet, nicht ausgefranst und sauber sein.

Siehe entsprechende Markierungen in den Abbildungen 1 - 6 (Kapitel 05-20) um die Position der nachfolgend gelisteten Entwässerungsbohrungen zu bestimmen.

Checkliste zur Überprüfung der Entwässerungsbohrungen			
Ref.	**Position der Entwässerungsbohrungen**	**Stunden**	**Initialen**
1	**RUMPF**		
1.01	Vorderseite der Rumpfschale, in Ecke des Hutprofils, LH und RH.	200	
1.02	Fußraum, LH und RH.	200	
1.03	Rumpfschale, hinten in der Ecke des Mitteltunnels, RH.	200	
1.04	Rumpfschale, hinter Mitteltunnel, nahe dem Verbindungskanal, LH.	200	
1.05	In hinterer unterer Ecke des Hauptspants, nahe der Mitte.	1000	
1.06	Rumpfschale, in der Ecke des Sichelspants, LH und RH.	200	
1.07	In der Mitte der Rumpfschale, hinter Sichelspant.	200	
1.08	Durch unteres Ende des Halbspant.	1000	
1.09	Durch unteres Ende des Ringspant 1.	1000	
1.10	Durch unteres Ende des Ringspant 2.	1000	
1.11	Durch unteres Ende des Ringspant 3.	1000	
1.12	Am tiefsten Punkt der Finne.	100	
1.13	Durch Hinterseite der Seitenleitwerk-Rippe unten.	1000	
1.14	In Seitenleitwerksteg, oben hinter Seitenruder-Lager.	100	
2	**HAUBE**		
2.01	In vorderer Ecke des Haubenrahmens, LH und RH.	100	
2.02	In der Mitte des Haubenrahmens (unter Verschlußmechanismus), LH und RH.	100	
2.03	In hinterer Ecke des Haubenrahmens, LH und RH.	100	

Checkliste zur Überprüfung der Entwässerungsbohrungen			
Ref.	**Position der Entwässerungsbohrungen**	**Stunden**	**Initialen**
3	**HÖHENFLOSSE**		
3.01	Unterschale, nahe der Außenseite der HF-Rippe, vor HF-Holm, LH und RH.	100	
3.02	Unterschale, hinter HF-Holm, nahe der Aussparung in der Mitte, LH und RH.	100	
3.03	Unterschale, in der Mitte der Aussparung.	100	
4	**HÖHENRUDER**		
4.01	In der Unterschale, vor der Hinterkante, nahe der Mitte, LH und RH.	100	
5	**HÖHENRUDERTRIMMUNG**		
5.01	In der Unterschale, an der Profilnase, nahe der Mitte, LH und RH.	100	
6	**SEITENRUDER**		
6.01	Am tiefsten Punkt nahe der Mitte, LH und RH.	100	
7	**TRAGFLÄCHE**		
7.01	Wing-Tip Hinterseite durch Sandwich Rippe, LH und RH.	100	
7.02	In Unterschale neben mittlerer Rippe, LH und RH.	100	
7.03	In Unterschale unter dem Wartungsdeckel, LH und RH.	100	
7.04	In Unterschale, nahe der Hinterkante vom Landeklappenanschlag LH und RH.	100	
8	**LANDEKLAPPE**		
8.01	Durch Wurzelrippe, nahe der Hinterkante, LH und RH.	100	
9	**QUERRUDER**		
9.01	Durch Wurzelrippe, nahe der Hinterkante, LH und RH.	100	

3. Checklisten für die 100, 200 und 1000 h Kontrollen

Die in Tabelle 2 angeführten Arbeiten müssen bei der 100, 200 oder 1000 Stunden-Kontrolle erledigt werden.

Alle von der ausführenden Person erledigten Arbeiten müssen Punkt für Punkt abgezeichnet werden. Die ordnungsgemäße Durchführung der Kontrolle ist im Bordbuch zu bescheinigen.

Beanstandungen und Maßnahmen zu deren Behebung müssen in einem Befundbericht festgehalten und zusammen mit der Kontrolliste im Lebenslaufakt abgelegt werden.

ANMERKUNG: Wenn das Wartungshandbuch für den Rotax Motor in Querverweisen angeführt wird, ist dieses mit MHB (Motorhandbuch) abgekürzt.

A. CHECKLISTE DV 20 KATANA

Werk-Nr : _____		Kennzeichen : _____	
Datum : _____		Motorbetriebszeit TSN/TSO : _____	
Kontrollumfang (100, 200, 1000) : _____		Flugzeug-Betriebszeit : _____	

		Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
	VOR DER KONTROLLE				
	Lufttüchtigkeitsanweisungen beachten.	X	X	X	
	Technische Mitteilungen beachten.	X	X	X	
	Betriebszeitenübersicht kontrollieren.	X	X	X	
	Bordbuch auf offene Beanstandungen überprüfen.	X	X	X	
	Das Flugzeug gründlich reinigen.	X	X	X	

(1) Eingangsstandlauf

	EINGANGSSTANDLAUF	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
	WARNUNG: IM GEFAHRENBEREICH DES PROPELLERS DÜRFEN SICH KEINE PERSONEN BEFINDEN. DER PROPELLER KANN PERSONEN VERLETZEN ODER TÖTEN. **WARNUNG: DIE PARKBREMSE MUSS GESETZT WERDEN. WENN DIE PARKBREMSE NICHT GESETZT IST, KANN SICH DAS FLUGZEUG BEWEGEN UND PERSONEN VERLETZEN ODER TÖTEN .**				
1.	Ölstand kontrollieren gemäß Wartungshandbuch für Rotax Motor (MHB). Kapitel 12-00.	X	X	X	
2.	Öltemperatur auf 40 Grad erwärmen lassen, Triebwerks-instrumente auf abnormales Verhalten kontrollieren (siehe MHB Kapitel 12-00).	X	X	X	
3.	Zündkontrolle bei: 1700 RPM (Rotax 912 A3). 1600 RPM (Rotax 912 S3). Abfall 1: _____ RPM (max. 150). Abfall 2: _____ RPM (max. 150). Diff. 1&2: ___ RPM (max. 50).	X	X	X	
4.	Kontrolle der Vergaservorwärmung bei gleicher RPM wie unter Punkt 3. angegeben. Abfall: _____ RPM (min. 30)	X	X	X	
5.	Leerlaufdrehzahl notieren: _____ RPM.	X	X	X	
6.	Brandhahn auf Fehlfunktion kontrollieren. Motor muss bei geschlossenem Hahn stehenbleiben.	X	X	X	
7.	Zündung "AUS", Hauptschalter "AUS" (Zündschlüssel abziehen).	X	X	X	

(2) Motor

	MOTOR	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
	WARNUNG: VOR BEGINN VON WARTUNGSARBEITEN AM MOTOR MUSS ÜBERPRÜFT WERDEN, OB DIE AUSPUFFANLAGE ABGEKÜHLT IST. EINE HEISSE AUSPUFFANLAGE KANN PERSONEN VERLETZEN. **WARNUNG: VERMEIDEN SIE HAUTKONTAKT MIT ÖL. ÖL KANN GESUNDHEITSSCHÄDEN HERVORRUFEN.** **WARNUNG: VERMEIDEN SIE HAUTKONTAKT MIT KRAFTSTOFF. KRAFTSTOFF KANN GESUNDHEITSSCHÄDEN HERVORRUFEN. VERMEIDEN SIE FEUER IN DER NÄHE VON KRAFTSTOFF. KRAFTSTOFF BRENNT UND KANN PERSONEN VERLETZEN UND AUSRÜSTUNG BESCHÄDIGEN.**				
1.	Obere und untere Cowling abnehmen, auf Risse, überhitzte Stellen, Verformungen, lose oder fehlende Verschlüsse kontrollieren; Verschmutze Cowling reinigen.	X	X	X	
2.	Motorwartung in Übereinstimmung mit dem referenzierten Motor Wartungshandbuch, der letztgültigen Version durchführen. (siehe Kapitel 05-00).	X	X	X	
3.	Falls Kontrolllampe für Kühlmittel installiert: Auf Fehlfunktion prüfen (siehe Kapitel 77-00).	X	X	X	
4.	Kühlsystem auf Flüssigkeitsverlust prüfen; Verteilergefäß soll voll sein. Gegebenenfalls nachfüllen (siehe Kapitel 12-10). Der Verschluss muss sicher eingerastet sein. Schutzgummi des Verteilergefäßes auf Schaden kontrollieren.	X	X	X	
5.	Vorratsbehälter und Leitung zum Verteilergefäß auf Lecks, Schäden und Verstopfung kontrollieren. Gegebenenfalls Kühlmittel auffüllen. Entlüftungsbohrung muss frei sein.	X	X	X	

	MOTOR	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
6.	Rippen des Kühlers reinigen und auf Beschädigungen und Undichtheit kontrollieren.	X	X	X	
7.	Kühler auf Festsitz und dessen Befestigung auf mangelhaften Zustand kontrollieren.	X	X	X	
8.	Vergaservorwärmkasten auf mangelhafte Befestigung, Risse, undichte Stellen, Verformung und Hitzeschäden kontrollieren. Tropftassen auf mangelhafte Befestigung kontrollieren.	X	X	X	
9.	Vorwärmklappen auf lockeren Sitz und Fehlfunktion kontrollieren.	X	X	X	
10.	Rippen des Ölkühlers reinigen und auf Beschädigung und Leckage kontrollieren.	X	X	X	
11.	Ölkühler auf mangelhaften Sitz und Halterung auf mangelhaften Zustand kontrollieren.	X	X	X	
12.	Ausgleichsleitung zwischen den Ansaugkrümmern auf Scheuerstellen und Leckage kontrollieren.	X	X	X	
13.	Ölbehälterbelüftung auf Beschädigung und Verstopfung kontrollieren. Bohrung in Belüftungsleitung (ca. 5 cm oder 2" innerhalb der Cowling) auf Verstopfung kontrollieren.	X	X	X	
14.	Motoraufhängung auf Risse, Verformungen, Hitzeschäden, Korrosion und fehlende Befestigungs- und Sicherheitsteile kontrollieren. Schwingungsdämpfer auf mangelhaften Zustand kontrollieren.	X	X	X	

	MOTOR	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
15.	Elektrische Installation auf Hitzeschäden, Scheuerstellen und Korrosion kontrollieren (siehe MHB). Zentralstecker (falls installiert), Kabelbefestigungen und Verbindungen durch leichtes Ziehen von Hand prüfen. Masseband o Starter o Öltemperaturgeber o Öldruckgeber o Generator o Spannungsregler, (falls installiert) o Kraftstoffdruckgeber o Kontrolllampe für Kühl- mittel (falls installiert) o	X	X	X	
16.	Starter, Relais und Zündboxen auf mangelhafte Befestigung kontrollieren.	X	X	X	
17.	Durchgangsprüfung (Continuity Check lt. Kapitel 24-31) durchführen.			X	
18.	Kabinenheizungsschlauch, Vergaseransaug- und Vorwärmschlauch auf mangelhaften Zustand kontrollieren.	X	X	X	
19.	Klappe für Kabinenheizung auf Beschädigungen und lockeren Sitz kontrollieren.	X	X	X	
20.	Auspuffrohre und Befestigungsschellen auf Risse und lockeren Sitz kontrollieren; Anschlüsse zum Auspufftopf auf undichte Stellen kontrollieren; Abschirmblech auf lockeren Sitz, Federn auf Korrosion kontrollieren.	X	X	X	
21.	Wärmetauscher (Heizungsummantelung des Schalldämpfers) auf Risse, losen Sitz und schadhafte Befestigung, sowie Befestigungen der Schläuche auf Defekte kontrollieren.	X	X	X	

	MOTOR	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
22.	Wärmetauscher öffnen, Auspufftopf auf Risse, Korrosion und Deformation kontrollieren (Rissgefährdet sind vor allem die Anschlussstutzen).		X	X	
23.	Auspufftopf ausbauen, durch die Stutzen auf innere Beschädigungen kontrollieren.		X	X	
24.	Brandspantdurchführungen und entlang der Kanten des Hitzeschutzblocks auf undichte Stellen und fehlende Isolierung kontrollieren.	X	X	X	
25.	Brandschutzmäntel auf Defekt, Kraftstoffleitungen auf falsche Verlegung, undichte Stellen und lose Anschlüsse kontrollieren. Kraftstoffleitungen auf Verhärtung durch Hitze und Porosität kontrollieren.	X	X	X	
26.	Filter der elektrischen Kraftstoffpumpe reinigen Pumpendeckel schließen und sichern; Schlauchkupplung schließen und sichern.	X	X	X	
27.	Elektrische Kraftstoffpumpe auf Leckage und losen Sitz kontrollieren.	X	X	X	
28.	Mechanische Kraftstoffpumpe und deren Anschlüsse auf Lecks und losen Sitz kontrollieren.	X	X	X	
29.	Vergaserbelüftungseinleitungen zum Vorwärmkasten auf mangelhafte Befestigung und Zustand kontrollieren Tropftassenabläufe auf Verschmutzung kontrollieren.	X	X	X	
30.	Batteriehalterung auf mangelhaften Zustand kontrollieren; Säurezustand der Batterie prüfen; Schlauch der Entgasung auf Verstopfung kontrollieren.	X	X	X	
31.	Ladezustand und Kapazität der Batterie überprüfen.	X	X	X	

	MOTOR	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
32.	Alle Betätigungszüge auf unsicheren Zustand, Schwergängigkeit und Blockierung kontrollieren und schmieren; Klemmnippel auf losen Sitz kontrollieren. Gas o Vergaservorwärmung o Heizung o Choke o Propellerverstellung o	X	X	X	
33.	Motorträger-Befestigungsschrauben nachziehen (Drehmoment siehe Kapitel 20-00).			X	
34.	Fremdkörperkontrolle durchführen; Cowling montieren.	X	X	X	

	MOTOR	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
	Verwendete Betriebsmittel: (Sorte und ggf. Menge) Öl : _____ Kühlmittel : _____ Sonstige : _____ Ausgetauschte Teile: _____ _____ _____ _____ Bemerkungen:				

(3) Propeller

	PROPELLER	Flugstunden			
	WARNUNG: IM GEFAHRENBEREICH DES PROPELLERS DÜRFEN SICH KEINE PERSONEN BEFINDEN. DER PROPELLER KANN PERSONEN VERLETZEN ODER TÖTEN. **WARNUNG: DER MOTOR MUSS GESICHERT WERDEN; BEVOR DER PROPELLER GEDREHT WIRD.**				
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
1.	Spinner entfernen, Spinner und Spinnerträger auf Risse, Beulen und Schlag kontrollieren.	X	X	X	
2.	Die Inspektion in Übereinstimmung mit dem referenzierten Propeller Wartungshandbuch, der letztgültigen Version durchführen. (Siehe Kapitel 05-00).	X	X	X	
3.	Spinner montieren.	X	X	X	
4.	Governor auf losen Sitz prüfen; Leitungen auf mangelhaften Zustand und undichte Stellen kontrollieren. Betätigungszug auf eingeschränkte Verstellmöglichkeit kontrollieren.	X	X	X	

(4) Kabine

	KABINE	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
1.	Kabinenhaube, Schiebefenster und Abdichtungen auf Beschädigungen kontrollieren.	X	X	X	
2.	Haubenbefestigungsarme, Ferdern, Lagerungen und Gummipuffer auf Beschädigungen kontrollieren.	X	X	X	
3.	Haubenverriegelung und -notbetätigung gemäß Technischer Mitteilung Nr. MSB20-39/1 auf Schäden und Fehlfunktionen kontrollieren.	X	X	X	
4.	Anschnallgurte und deren Befestigungen auf Verschleiß und Schäden kontrollieren.	X	X	X	
5.	Sitze ausbauen, Schmutz entfernen.	X	X	X	
6.	Landeklappen-Aktuator und Positionsschalterleiste unter Pilotensitzschale auf losen Sitz und Fehlfunktion prüfen.	X	X	X	
7.	Mitteltunneldeckel entfernen und Trimmung im Mitteltunnel auf Schäden kontrollieren.	X	X	X	
8.	Steuerseile im Verstellbereich der S-Führungen und im Bereich der Umlenkrollen und Durchführungen auf Scheuerstellen und Litzenrisse kontrollieren; Seitenruder-Seilumlenkrollen auf schwergängigen Lauf und Lagerböcke auf losen Sitz kontrollieren.	X	X	X	
9.	Seitenruderpedale auf mangelhafte Befestigung, Schwergängigkeit, mangelhafte Rückholfedern kontrollieren; die Pedalverstellung auf Fehlfunktion kontrollieren und ggf. schmieren.	X	X	X	
10.	Bremspedale auf Schwergängigkeit, Spiel, Fehlfunktion und Mechanik auf Schäden und Abnutzung kontrollieren.	X	X	X	
11.	Bremszylinder und -leitungen auf Leckagen kontrollieren.	X	X	X	
12.	Parkbremsventil auf fehlerhafte Funktion, Anschlüsse auf Leckage kontrollieren.	X	X	X	
13.	Zustand der Bremsflüssigkeit prüfen, ggf. wechseln. Bremsflüssigkeit bis zum Maximum auffüllen (15 mm = 5/8" unter Behälter-Oberkante).	X	X	X	

	KABINE	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
14.	Steuerknüppel auf Schwergängigkeit, defekte Anschläge und übermmäßiges Spiel kontrollieren. Null-Stellung prüfen. Beschläge und Lagerungen auf losen Sitz kontrollieren.	X	X	X	
15.	Einen Steuerknüppel blockieren; Steuerungsspiel an den Ruderendkanten messen. Maximalspiel: 3 mm (0.12").	X	X	X	
16.	Instrumente auf fehlende oder falsche Markierungen prüfen.	X	X	X	
17.	Klappenanzeige auf fehlerhafte Funktion kontrollieren.	X	X	X	
18.	Bediengriffe auf fehlende oder falsche Beschriftung und Kennzeichnung laut Kapitel 11-11 kontrollieren.	X	X	X	
19.	Zündschalter auf fehlerhafte Funktion kontrollieren.	X	X	X	
20.	Gerätepilzabdeckung abnehmen: Alle Geräte, Schalter, Instrumente, Sicherungen und Leitungen auf losen Sitz kontrollieren; Schmutz entfernen.		X	X	
21.	Pitot- und Statikleitungen im Rumpf auf Alterung, Risse, Beschädigung und lose Verbindungen kontrollieren.		X	X	
22.	Sicherung der Hauptbolzen af mangelhafte Funktion und mangelhaften Zustand kontrollieren.	X	X	X	
23.	Hauptspantbuchsen auf losen Sitz kontrollieren.		X	X	

(5) Zelle

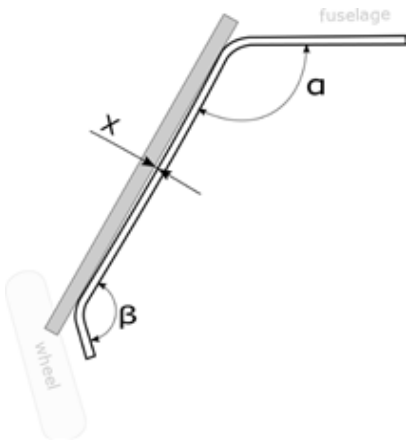
	ZELLE	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
1.	Schale von Flügel, Leitwerk und Rumpf auf Beschädigungen, insbesondere Beulen, Risse, Löcher oder Ähnliches kontrollieren.	X	X	X	
2.	Prüfe den Zustand der Faserverbundstruktur im Bereich der Trittstufenbefestigung. Bei Beschädigung gemäß Kapitel 51-10 reparieren.	X	X	X	
3.	Querruderlagerung auf Spiel kontrollieren. Max. zulässig: axial : ±2.0 mm (±0.08 in.) radial: ±0.25 mm (±0.01 in.)	X	X	X	
4.	Querruder-Ausgleichsmassen auf Beschädigung und losen Sitz kontrollieren.	X	X	X	
5.	Querruderantrieb im Flügel durch Plexiglasscheibe auf falschen Anschluss und schadhafte Sicherung kontrollieren.	X	X	X	
6.	Landeklappen und LK-Mechanismus in Flügeln und Rumpf auf falschen Anschluss und fehlerhafte Sicherung kontrollieren.	X	X	X	
7.	LK-Vorspannung prüfen ggf. einstellen Vorspannkraft: 30 to 50 N (6.7 to 11.2 lbs.)		X	X	
8.	Seitenruder abbauen und Lagerbuchsen schmieren, Seitenflosse innen auf Schäden kontrollieren.		X	X	
9.	HLW abbauen; Beschläge auf losen Sitz und Korrosion kontrollieren. Vordere Lagerbolzen auf Korrosion kontrollieren, schmieren; HLW montieren.			X	
10.	Befestigung der Höhenflosse und des Höhenruders auf losen Sitz und schadhafte oder fehlende Sicherungen prüfen.	X	X	X	
11.	Höhenruderantrieb auf losen Sitz, Spiel, schadhafte oder fehlende Sicherungen und auf Korrosion kontrollieren.	X	X	X	

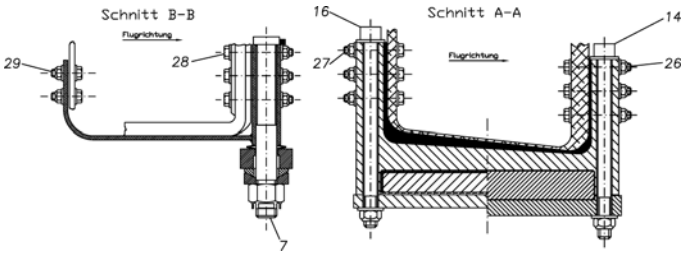
	ZELLE	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
12.	Antriebsreibungsdämpfer abschließen und mit Federwaage auf falsche Reibkraft überprüfen bzw. einstellen.		X	X	
13.	Trimmruder und Lagerung auf Beschädigung kontrollieren; Antrieb auf Spiel kontrollieren; Lagerungsdraht und Kronenmutter auf schadhafte oder fehlende Sicherung kontrollieren.	X	X	X	
14.	Höhenruder-Stoßstange in Rumpfröhre ausbauen, auf Scheuerstellen an Rollenführungen kontrollieren.			X	
15.	Heckfinne demontieren; Hintere Rumpfspanten auf Beschädigung kontrollieren; Schmutz entfernen.			X	
16.	Aufhängung des Seitenruders und Anschluss der Steuerseile auf Verschleiss in den Seilkauschen, auf losen Sitz, übermäßiges Spiel, schadhafte oder fehlende Sicherungen prüfen; Unteren Seitenruderrandbogen auf Risse untersuchen.	X	X	X	
17.	Oberes Rundschanierlager auf Verschleiß an der Kugelfläche und auf Radialspiel prüfen. Wenn notwendig gemäß Kapitel 27-20-30 ersetzen.			X	
18.	Den oberen Rundstift prüfen. Bei Korrosion, Kerben oder einem Durchmesser kleiner 5.9 mm (0.232 in) gemäß Kapitel 27-20-30 ersetzen.			X	
19.	Heckfinne auf losen Sitz und Beschädigung prüfen.	X	X	X	

	ZELLE	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
20.	Gepäckfachboden ausbauen. Fahrwerksaufhängung auf losen Sitz und schadhafte oder fehlende Sicherungen kontrollieren. Seitenrudersteuerseile, Seitenrudersteuerscheit, Querruderumlenkung, Landeklappenantrieb auf Schäden, Korrosion und Fehlfunktion und auf schadhafte oder fehlende Sicherungen kontrollieren. Landeklappen-Torosionsverbindungsrohr auf Schäden, Risse oder Korrosion kontrollieren, Schmutz entfernen. Seitenruder-Seilspannung prüfen: Soll 15 ± 2 daN (33.7 ± 4.5 lbs.)		X	X	
21.	Tank ausbauen; Auf Beschädigung und Korrosion prüfen; Kraftstoffsieb ausbauen und reinigen; Nach Einbau des Tanks Tankanzeige kalibrieren.			X	
22.	Deckel hinter Gepäckfach entfernen; Rumpfröhre auf Verformungen, Risse; Lagerung der Höhenruder-Stoßstange auf losen Sitz, sowie Steuerseile und Spannschlösser auf Korrosion, Verschleiss und schadhafte oder fehlende Sicherungen kontrollieren; Schmutz entfernen.		X	X	
23.	Kraftstoffleitungen, Tank und Tankeinfüllstutzen auf Beschädigungen und Leckstellen kontrollieren; Tankbefestigung auf Beschädigung prüfen.	X	X	X	
24.	Elektrische Installation und Massebänder auf Scheuerstellen kontrollieren, Kabelbefestigungen und Steckverbindungen durch leichte Ziehen von Hand überprüfen.	X	X	X	
25.	Staurohr und Antennen auf festen Sitz kontrollieren, Überziehwarnung auf fehlerhafte Funktion prüfen.	X	X	X	

	ZELLE	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
26.	Entwässerungs- und Belüftungsöffnungen in Flügeln, Rumpf und Rudern auf Verstopfung prüfen.	X	X	X	
27.	Hinweisschilder und Beschriftungen kontrollieren. Hinweisschilder für optionale Ausrüstung: siehe Anhang zum Flughandbuch.	X	X	X	
28.	Flügel abrüsten; Bolzen und -lagerungen auf losen Sitz, Risse und Korrosion prüfen; Verschleißgrenzen gemäß Kapitel 57-10; Schmieren.		X	X	
29.	Pitot- und Statikleitungen im linken Flügel auf Alterung, Risse, Beschädigung und lose Verbindungen prüfen.		X	X	
30.	Querruder-Stoßstangen ausbauen, auf Scheuerstellen bei Rollenführungen überprüfen.			X	
31.	Querruderantrieb und Landeklappenantrieb an der Wurzelrippe sowie an der Flügelanformung rumpfseitig auf losen Sitz und Verschleiß prüfen und gegebenenfalls schmieren.		X	X	
32.	B-Bolzen-Sicherungselemente auf fehlende Sicherungswirkung prüfen (Einrasten der Sicherungselemente alle 60° Drehwinkel soll spürbar sein).	X	X	X	
33.	Mitnehmer der Klappentorsionsverbindung auf losen Sitz prüfen.		X	X	
34.	Nach Montage der Flügel Flügel-Rumpf-Übergang mit Klebeband abkleben.		X	X	
35.	Flügel und Höhenleitwerk entfernen, Innenstruktur auf Beschädigung kontrollieren.			X	
36.	Anti-Kollisionslichter und Positionslichter auf Beschädigungen und losen Sitz prüfen.	X	X	X	

(6) Fahrwerk

	FAHRWERK	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
1.	Fahrwerke reinigen, Radverkleidungen demontieren; Halterungen der Verkleidungen auf Risse kontrollieren.	X	X	X	
2.	Hauptfahrwerk auf Risse, ungewöhnliche Verformungen, Beschädigungen kontrollieren.	X	X	X	
3.	Maximalen Spalt X der unbelasteten Hauptfahrwerksstrebe messen (geraden Stab [grau] auf die Oberseite der Strebe legen und den maximalen Abstand zwischen Stab und Strebe messen [siehe Skizze]). – X ≤ 3 mm (0.12 in): Hauptfahrwerksstrebe auf Korrosion und Risse kontrollieren (besonders an den Krümmungen). – X > 3 mm (0.12 in): Strebe ersetzen. 			X	

	FAHRWERK	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
4.	Die Befestigungsklammern am Hauptfahrwerk auf Risse, Beschädigungen und übermäßige Korrosion prüfen. Bei einem dieser Defekte sind die Hauptfahrwerksbeine gemäß Kapitel 32-10, Abschnitt 6 zu entfernen. Die innenseitigen Befestigungsbolzen des Hauptfahrwerks (Bauteil 7) kontrollieren. Wenn die Abnutzung 0.1 mm übersteigt den Bolzen ersetzen. Die außenseitigen Befestigungsbolzen des Hauptfahrwerks (Bauteile 14, 16) kontrollieren und Bolzenmuttern ersetzen. Die Befestigungsbolzen an den Klammern des Hauptfahrwerks (Bauteile 26-29) auf Korrosion und schlechten Zustand prüfen. Die Befestigungsbolzen an den Klammern des Hauptfahrwerks nachziehen. 			X	
5.	Die Hauptfahrwerksstrebe an den Befestigungsklammern auf Abnützung kontrollieren. Lackschicht bei Verschleiß erneuern.			X	
6.	Spur und Sturz gemäß Sub-Chapter 32-10 prüfen.			X	
7.	Bremsbeläge auf Abnützung kontrollieren, Mindestdicke: 4.0 mm (0.16").	X	X	X	
8.	Bremsscheiben auf Abnützung kontrollieren, Mindestdicke: 3.8 mm (0.15").	X	X	X	

	FAHRWERK	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
9.	Bremsleitungen und Bremszylinder auf Lecks, Beschädigungen und Korrosion prüfen.	X	X	X	
10.	Bugradaufhängung auf losen Sitz, Schäden, Risse und Verformungen prüfen; Lagerung im Rumpf auf Spiel, seitliche Lagerzapfen im Federpaket auf Spiel prüfen; Schmieren.	X	X	X	
11.	Das Bugfahrwerk am Lager im Hutprofil auf übermäßige Abnutzung kontrollieren.			X	
12.	Die Motoraufhängung um die Bugfahrwerk-Federbeinbefestigung auf Verformung und Risse prüfen.			X	
13.	Alle bronzebeschichteten Buchsen und alle Bundbuchsen am Bugfahrwerk kontrollieren.			X	
14.	Gummifederpaket kontrollieren, ggf. Nachspannen (siehe Kapitel 32-20).	X	X	X	
15.	Bugradgabel auf Spiel und mangelnde Reibung im entlasteten Zustand kontrollieren (3 - 5 daN / 6.75 - 11.25 lbs. bei Achse).		X	X	
16.	Bugradgabel abbauen; Lenklager auf Korrosion und Spiel kontrollieren, schmieren, Bugradgabel einbauen. Werk-Nr. 20.005 thru 20.119: Werk-Nr. 20.120 and subsequent :	X	X	X X	
17.	3 Reifen auf Schnitte, Verschleiß, defekte Ventile und verschobene Rutschmarken kontrollieren. Limits gemäß FAA AC 43.13-1A beachten.	X	X	X	
18.	Luftdruck prüfen: Haupträder: 2.3 bar oder 33 PSI. Bugrad: 1.8 bar oder 26 PSI.	X	X	X	
19.	3 Felgen auf Risse prüfen.	X	X	X	
20.	3 Radlager auf Spiel, Korrosion und rauhen Lauf prüfen.	X	X	X	
21.	Haupträder abbauen, Radlager reinigen und schmieren.			X	
22.	Die Hauptfahrwerksachsen und deren Befestigungsbolzen auf Risse, Korrosion und Abnutzung prüfen.			X	
23.	Achsen auf Risse, Deformation und Korrosion prüfen.			X	

	FAHRWERK	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
24.	3 Räder und Radverkleidungen montieren.	X	X	X	

(7) Allgemeines

	ALLGEMEINES	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**
1.	Optionale Ausrüstung gemäß Anhängen zum Flughandbuch kontrollieren.	X	X	X	
2.	ELT und dessen Batterie gemäß Herstellerangaben überprüfen.		X	X	
3.	Druckmeßsystem (Pitot-Statik) auf Lecks und Verunreinigungen kontrollieren.			X	
4.	Pitot-Statik-System entwässern.		X	X	
5.	Gemäß Schmierplan schmieren (siehe Kapitel 12-21).	X	X	X	
6.	Fremdkörperkontrolle und Werkzeugkontrolle durchführen, alle geöffneten Wartungsöffnungen wieder verschließen.	X	X	X	
7.	Allgemeine Funktionsprüfung und Motorstandlauf durchführen (Standlauf: gemäß MHB und (1) Eingangsstandlauf).	X	X	X	
8.	Motor auf Undichtheit prüfen.	X	X	X	
9.	Ölfilter nachziehen.	X	X	X	
10.	CO-Test durchführen.	X	X	X	
11.	Werkstattflug durchführen und sämtliche Kontrollpunkte im Formblatt “Werkstattflug” durchführen und bestätigen.			X	
12.	Kontrolle im Luftfahrzeug-Bordbuch eintragen.	X	X	X	
13.	Kontrollliste, Materialanhänger, Befund-, Standlauf- und Flugbericht in Lebenslaufakt abheften.	X	X	X	

	ALLGEMEINES	Flugstunden			
	Wartungsarbeiten	100	200	1000	Wart

BEMERKUNGEN:

	ALLGEMEINES	Flugstunden			
	Wartungsarbeiten	**100**	**200**	**1000**	**Wart**

Das Luftfahrzeug ist in Bezug auf seine Wartung flugklar.

Ort : _____

Datum : _____

Stempel : _____

Unterschrift: _____

Wenn ein Motor mit dem Suffix -01 eingebaut ist, werden die Punkte ‘Zylinderkopfthermometer’ und ‘Zylinderkopf-Temperatur’ in ‘Kühlmittelthermometer’ and ‘Kühlmittel-Temperatur’ geändert.

	WERKSTATTFLUG nach der Wartung	**DV 20 KATANA**
		Seite 1 of 2

Kennzeichen:	Flugzeugführer:	Flugplatz:
Datum:	Startzeit:	Landezeit:

Funktionsprüfungen, Flugverhalten	**Beanstandungen**	
	nein	**ja**
Kraftstoffanzeige		
Zusammenstoßwarnlicht, Navigationsbeleuchtung		
Kontrolllampen		
Höhenmesser, QNH Einstellung		
Funk, Sprechprobe		
Navigationsinstrumente		
Elektrische Kraftstoffpumpe		
Anlassverhalten, kalt		
Öldruckanzeige		
Amperemeter, Generator		
Drehzahlmesser		
Zylinderkopfthermometer / Kühlmittelthermometer		
Ölthermometer		
Parkbremse		
Flügelklappen		
Propellerverstellung		
Zündkreise		
Vergaservorwärmung		
Rollverhalten, Startverhalten		
Fahrtmesser		
Variometer		
Kompass		

Diamond AIRCRAFT	**WERKSTATTFLUG nach der Wartung**	**DV 20 KATANA**	
		Seite 2 of 2	
Verhalten im Steigflug			
Zylinderkopf-Temperatur / Kühlmittel-Temperatur			
Öltemperatur			
Heizung / Lüftung			
Verhalten im Schnellflug			
Trimmung / Trimmbereich			
Verhalten im Langsamflug			
Überziehwarnung			
Landeverhalten			
Brandhahn			
Anlassverhalten, warm			
Triebwerkabstellverhalten			
Bemerkungen:			
Flugzeugführer: _____			

4. Große Inspektion der Flugzeugstruktur

Nach 6000 Stunden, 12000 Stunden und danach nach allen 4000 Stunden muss die folgende Inspektion zusätzlich zur 1000 Stunden Kontrolle gemäß Kapitel 3 durchgeführt werden.

Der Zweck dieser Prüfung ist die wiederkehrende Inspektion der Struktur um die Lebensdauer der Zelle zu verlängern.

Legende:

K Klopf Test
S Sichtprüfung
F Funktionalitäts- oder Passungsprüfung

ANMERKUNG: Wenn die Inspektionsmethode in den folgenden Tabellen mit dem Symbol “(K)” ergänzt ist, soll ein Klopf Test durchgeführt werden, wenn die Sichtprüfung Hinweise auf eine mögliche Delamination und/oder Ablösung gibt.

ANMERKUNG: Wenn die festgestellte Beschädigung nicht in Übereinstimmung mit dem Wartungshandbuch repariert werden kann muss Diamond Aircraft für Reparaturanweisungen kontaktiert werden.

A. Allgemein

	ALLGEMEIN Inspektionsgegenstand	Inspektions Methode	Wart
	Vor der Inspektion		
1.	Alle vorgeschriebenen Technischen Mitteilungen einarbeiten.	N/A	
	Allgemein - Auseinandernehmen		
2.	Die Motorträgerbolzen ersetzen.	N/A	

	ALLGEMEIN Inspektionsgegenstand	Inspektions Methode	Wart
3.	Folgende Teile des Steuersystems müssen demontiert und inspiziert werden. (Siehe Kapitel 27) Alle Teile müssen auf Verschleiß, Korrosion, Verformung und schlechten Zustand kontrolliert werden. Querruder: – Die Querruderstoßstangen, die die Steuerknüppel verbinden. (Bauteil 2). – Umlenkhebel an der hinteren Querversteifung (Bauteil 3). – Stoßstange in der Mittelkonsole (Bauteil 4). – Umlenkhebel am sichelförmigen Spant (Bauteil 5). – Die Querruderstoßstangen, die mit den Querrudertaschen verbunden sind. (Bauteil 6). – Querrudertaschen (Bauteil 7). – Umlenkhebel, der in die Querrudertaschen eingreift (Bauteil 8) - wenn eingebaut. – Lange Stoßstange im Flügel (Bauteil 9). – Querruderumlenkhebel (Bauteil 10). – Kurze Stoßstange im Flügel (Bauteil 11). Seitenruder: – Ruderpedal System (Siehe 27-20-10). – Steuerseile zwischen Brantspant und Ruderhebel (Bauteil 1). – Steuerseile zwischen dem Seitenruderhebel und der unteren Befestigungsplatte (Bauteil 2). – Steuerseilverschraubungen (Bauteil 3). – Seitenruderhebel (Bauteil 5). – Untere Befestigungsplatte (Bauteil 7).	S	

	ALLGEMEIN Inspektionsgegenstand	Inspektions Methode	Wart
	Höhenruder: – Höhenruderstoßstange (Bauteil 3). – Höhenruderstoßstange in der Rumpfröhre (Bauteil 4). – Höhenruderumlenkhebel (Bauteil 5). – Höhenruderstoßstange in der Seitenflossen (Bauteil 6). Höhenrudertrimmung: – Trimmhebel (Bauteil 1). – Kabelzüge der Trimmung (auf Längung kontrollieren) (Bauteil 2). – Betätigungshebel. Landeklappen: – Landeklappenbetätigungshebel. – Umlenkhebelsystem. – Stoßstangen. – Landeklappentaschen. – Synchronisationsrohr. – Für S/N 20.005 bis inklusive S/N 20.100: – Landeklappentaschen. – Umlenkhebel, der in die Landeklappentasche eingreift. – Lange Stoßstange im Flügel. – Landeklappenumlenkhebel. – Kurze Stoßstange im Flügel . Die Innenseiten der Stoßstangen mit einem Boroskop kontrollieren und den Korrosionsschutz erneuern. Das in der DP-S-15-00010 Abschnitt 4.4.1 gelistete Material ist zu verwenden.		

B. Linker Flügel

	LINKER FLÜGEL Inspektionsgegenstand	Inspektions Methode	Wart
	Linke Flügelwurzelrippen (Vor und hinter Holm)		
1.	Verklebung mit der Flügelschale.	S (K)	
2.	Verklebung mit dem Hauptholm/Hauptholmstrumpf.	S	
3.	Zustand der Faserverbundstruktur (Risse und Delamination).	S	
4.	A-Bolzenbuchse und Lager in der vorderen Wurzelrippe (Verklebung der Buchse mit der Rippe, fester Sitz des Lagers in der Buchse, Korrosion oder Abnutzung des Lagers).	S / F	
5.	B-Bolzenbuchse und Lager in der hinteren Wurzelrippe (Verklebung der Buchse mit der Rippe, fester Sitz des Lagers in der Buchse, Korrosion oder Abnutzung des Lagers).	S / F	
	Linker Holmstumpf		
6.	Zustand der Faserverbundstruktur (Risse, Delaminaton).	S	
7.	Hauptbolzenbuchse im Holm.	S / F	
	Linker Hauptholm		
8.	Verklebung zwischen Hauptholm und Flügelschale.	S (K)	
9.	Hauptholmflanschverbindung mit Steg von außen durch die Wurzelruppenöffnungen auf Delamination prüfen.	S	
10.	Holm-Verbundstruktur von außen durch die Wurzelrippenöffnungen inspizieren. (Zustand der Faserverbundstruktur, Delamination, Zustand des Kerns).	S	
	Linke Flügel Ober- und Unterschale		
11.	Zustand der Faserverbundstruktur (Delamination, Risse, Dellen und Kratzer).	S (K)	
12.	Lackierung überprüfen (Abplatzer, Kratzer, und UV Schäden).	S	
13.	Zustand des Kerns (Schäden, Ablösung zwischen Kern und Decklage).	S (K)	
14.	Tragflächenvorderkanten Verklebung (Ablösung oder Risse ober- und unterhalb der Überlappungsnaht).	S (K)	
15.	Verzurrring entfernen und Verbindungsstruktur auf Delamination, Risse und Verschleiß des Lochs kontrollieren.	S	

	LINKER FLÜGEL Inspektionsgegenstand	Inspektions Methode	Wart
	Linker Hinterkantenholm		
16.	Zustand der Faserverbundstruktur. (Harzerosion, fehlende Abdeckung durch Harz - siehe Kapitel 51-10).	S	
17.	Verklebung zwischen Hinterkante und Flügelschalen (Risse, brüchiger Schaumstoffstreifen - siehe Kapitel 51-10).	S (K)	
18.	Verklebung der Landeklappen- und Querruderscharniere mit der Hinterkante und den Flügelschalen.	S (K)	
19.	Zustand der Querruderscharniere (Risse, Korrosion, Sitz des Lagerbolzen im Scharnier, Lackierung, Ablösung vom Hinterkantenholm oder der Unterschale vor der Flanke des Holms und lose Nieten - Siehe Kapitel 57).	S / F	
	Innere Rippen - Linker Flügel		
20.	Zustand der Faserverbundstruktur (Risse Delamination).	S	
21.	Umlenkhebelhalterung (Risse, Verschleiß des Befestigungslochs, Korrosion, Delamination und Ablösung zwischen Halterung und Rippe).	S	
22.	Rollkäfige im Flügel auf übermäßiges Spiel kontrollieren. (siehe Kapitel 27-11).	S	
23.	Alle bronzebeschichteten Buchsen und alle Bundbuchsen am Kontrollsystem ersetzen.	N/A	

C. Rechter Flügel

	RECHTER FLÜGEL Inspektionsgegenstand	Inspektions Methode	Wart
	Rechte Flügelwurzelrippen (Vor und hinter Holm)		
1.	Verklebung mit der Flügelschale.	S (K)	
2.	Verklebung mit dem Hauptholm/Hauptholmstumpf.	S	
3.	Zustand der Faserverbundstruktur (Risse und Delamination).	S	
4.	A-Bolzenbuchse und Lager in der vorderen Wurzelrippe (Verklebung der Buchse mit der Rippe, fester Sitz des Lagers in der Buchse, Korrosion oder Verschleiß des Lagers).	S / F	
5.	B-Bolzenbuchse und Lager in der hinteren Wurzelrippe (Verklebung der Buchse mit der Rippe, fester Sitz des Lagers in der Buchse, Korrosion oder Verschleiß des Lagers).	S / F	

	RECHTER FLÜGEL Inspektionsgegenstand	Inspektions Methode	Wart
	Rechter Holmstumpf		
6.	Zustand der Faserverbundstruktur (Risse, Delamination) .	S	
7.	Hauptbolzenbuchse im Holm.	S / F	
	Rechter Hauptholm		
8.	Verklebung zwischen Hauptholm und Flügelschale.	S (K)	
9.	Hauptholmflanschverbindung mit Steg von außen durch die Wurzelruppenöffnungen auf Delamination prüfen.	S	
10.	Holm-Verbundstruktur von außen durch die Wurzelrippenöffnungen inspizieren (Zustand der Faserverbundstruktur, Delamination, Zustand des Kerns).	S	
	Rechte Flügel Ober- und Unterschale		
11.	Zustand der Faserverbundstruktur (Delamination, Risse, Dellen und Kratzer).	S (K)	
12.	Lackierung überprüfen (Abplatzer, Kratzer, und UV Schäden).	S	
13.	Zustand des Kerns (Schäden, Ablösung zwischen Kern und Decklage).	S (K)	
14.	Tragflächenvorderkanten Verklebung (Ablösung oder Risse ober- und unterhalb der Überlappungsnaht).	S (K)	
15.	Verzurrring entfernen und Verbindungsstruktur auf Delamination, Risse und Verschleiß des Lochs kontrollieren.	S	
	Rechter Hinterkantenholm		
16.	Zustand der Faserverbundstruktur. (Harzerosion, fehlende Abdeckung durch Harz -siehe Kapitel 51-10).	S	
17.	Verklebung zwischen Hinterkante und Flügelschalen (Risse, brüchiger Schaumstoffstreifen - siehe Kapitel 51-10).	S (K)	
18.	Verklebung der Landeklappen- und Querruderscharniere mit der Hinterkante und den Flügelschalen.	S (K)	
19.	Zustand der Querruderscharniere (Risse, Korrosion, Sitz des Lagerbolzen im Scharnier, Lackierung, Ablösung vom Hinterkantenholm oder der Unterschale vor der Flanke des Holms und lose Nieten - siehe Kapitel 57).	S / F	

	RECHTER FLÜGEL Inspektionsgegenstand	Inspektions Methode	Wart
	Innere Rippen - Rechter Flügel		
20.	Zustand der Faserverbundstruktur (Risse, Delamination).	S	
21.	Umlenkhebelhalterung auf Risse, Verschleiß des Befestigungslochs, Korrosion, Delamination und Ablösung zwischen Halterung und Rippe.	S	
22.	Rollkäfige im Flügel auf übermäßiges Spiel kontrollieren. (Siehe Kapitel 27-11).	S	
23.	Alle bronzebeschichteten Buchsen und alle Bundbuchsen am Kontrollsystem ersetzen.	N/A	

D. Rumpf

	RUMPF Inspektionsgegenstand	Inspektions Methode	Wart
	Rumpfhülle inklusive Seitenflosse		
1.	Zustand der Faserverbundstruktur (Delamination, Risse, Dellen und Kratzer).	S (K)	
2.	Zustand der Lackierung überprüfen (Abplatzer, Kratzer, UV Schäden und feuerfeste Lackierung hinter dem Auslass der unteren Motorgondel).	S	
3.	Faserverbundstruktur am Seitenflossenhinterkantenholm (Harzerosion, fehlende Abdeckung durch Harz - siehe Kapitel 51-10).	S	
4.	Rumpfverklebungen entlang der Rumpfmittellinie auf Ober- und Unterseite (Risse in der Lackierung, Ablösung zwischen Schale und inneren Komponenten).	S (K)	
5.	Die Buchsen des Bugfahrwerks im T-Profil auf der Rumpfunterseite kontrollieren auf: – Befestigung der Buchse im T-Profil. – Spiel zwischen der Bugfahrwerksstrebe und der Buchse. – Zustand der umliegenden Faserverbundstruktur. – Verklebung zwischen T-Profil, Bodenpanel und Rumpfschale.	S (K)	

	RUMPF Inspektionsgegenstand	Inspektions Methode	Wart
	Spanten, Stege, Rippen in der Seitenflosse		
6.	Zustand der Faserverbundstruktur (Delamination und Risse - besonders um die Zugangsöffnungen).	S	
7.	Innere Faserverbundstrukturen (Ablösung von der Schale, Delamination und Risse durch Zugangslöcher in Seitenleitwerksholmen).	S (K)	
8.	Führungsrollen im Rumpf auf übermäßiges Spiel im Lager kontrollieren. Siehe Kapitel 27-30.	S	
9.	Seitenrudersteuerseilumlenkrollen auf Spiel und übermäßige Abnutzung kontrollieren.	S	
10.	Seilführungen der Seitenrudersteuerseile (Verschleiß).	S	
11.	Alle bronzebeschichteten Buchsen und alle Bundbuchsen am Steuerungssystem ersetzen.	N/A	
12.	Alle bronzebeschichteten Buchsen und alle Bundbuchsen am Trimmsystem ersetzen.	N/A	
13.	Buchsen an der hinteren Höhenflossenbefestigung auf Korrosion, Risse, Delamination und Risse in der umliegenden Faserverbundstruktur kontrollieren.	S	
14.	Den vorderen Befestigungsbolzen des Höhenleitwerks ersetzen.	S / F	
15.	Die Rumpfschale um die untere Heckflinne auf Risse kontrollieren.	S	
16.	Verklebekante zum Seitenleitwerkssteg (Risse).	S	
17.	Unteren Ruder Lagerblock auf Deformation prüfen.	S	
18.	Hinterkantenverstärkungsrippe auf Risse und Ablösung von der Seitenleitwerksstruktur kontrollieren.	S	
	Hauptspant und Flügelverbindung		
19.	Zustand des Hauptspantlaminats und die Verklebung zum Rumpf auf Delamination prüfen.	S	
20.	Rumpfschale außerhalb der Sitzbefestigungen durch Seite des Hauptspants inspizieren (Delamination).	S (K)	
21.	Haupt-, A- und B-Bolzen Buchsen auf Risse, Korrosion, Sitz des Bolzen und die Verbindung mit der umliegenden Struktur.	S	
22.	Haupt- und A- Bolzen (Korrosion, Verformung, Abnutzung und Spiel gemäß Kapitel 57-10).	S / F	

	RUMPF Inspektionsgegenstand	Inspektions Methode	Wart
23.	Halterung des Hauptfahrwerks und der A Bolzen (Risse, Korrosion, Ablösung von der Faserverbundstruktur und Delamination in der umgebenden Faserverbundstruktur).	S	
	Brandspant		
24.	Faserverbundstruktur von der Cockpitseite (Risse, Delamination und Verfärbung - insbesondere um die Motorbefestigungslöcher und der Batteriebox).	S	
25.	Die Brandspant Isolierung ersetzen - siehe Kapitel 51-10.	S	
	Cockpit		
26.	Sitze und Befestigungen (Risse, Delamination und Schäden um die Befestigungslöcher).	S	
27.	Verbindung zwischen Rückenlehne und Rumpf im Bereich des Kabinenhaubenrahmens (Risse im Dickharz - siehe Kapitel 51-10).	S	
28.	Boden (Risse oder Delaminationen um die hinteren Ruderpedalhalterungen und der Öffnung für den Gashebelquadranten).	S	
29.	B-Spant (Risse und Delamination, besonders um die Kraftstofftankbefestigung).	S	
30.	Beckengurtbefestigungen (allgemeiner Zustand, Befestigung der Metallstruktur in der Faserverbundstruktur).	S	
31.	Klappenhebelbefestigung auf der linken Seite der Mittelkonsole (sichere Befestigung der Halterung auf der Faserverbundstruktur, Risse in der umliegenden Struktur).	S	
32.	Ruderhebelbefestigung (befestigt unter dem B-Spant - sichere Befestigung, Längung der Löcher und Risse in der umliegenden Struktur).	S	
33.	Bronzebeschichtete Buchsen und alle Bundbuchsen an den Pedalen.	S	
	Kabinenhaube		
34.	Rahmen (Delamination, Kratzer und Risse - besonders um die Befestigungslöcher).	S	
35.	Träger, Rahmen, Beschläge und Befestigungen an der Rückenlehne (Schäden, schlechter Zustand).	S	

E. Höhenleitwerk

	HÖHENLEITWERK Inspektionsgegenstand	Inspektions Methode	Wart
	Höhenflossenschale		
1.	Faserverbundstruktur (Delamination, Risse, Dellen und Kratzer).	S (K)	
2.	Lackierung (Abplatzer, Kratzer und UV Schäden).	S	
3.	Kern (Delamination zwischen Kern und Decklage, Schäden).	S (K)	
4.	Verklebung der Nasenleiste (Ablösungen, Risse über und unter der Überlappungsnaht).	S (K)	
	Höhenflossenholm		
5.	Verklebung zu den Schalen.	K	
	Höhenflossenhinterkanten		
6.	Zustand der Faserverbundstruktur (Harzerosion auf der Glasschicht, fehlende Abdeckung durch Harz - siehe Kapitel 51-10).	S	
7.	Verklebung zwischen Hinterkante und Schalen (Risse, brüchiger Schaumstoffstreifen - siehe Kapitel 51-10).	S (K)	
8.	Höhenruderscharniere (Risse, Korrosion, und Sitz des Lagerzapfens).	S / F	
9.	Innere Scharnierplatten (Risse, Korrosion und Ablösung der Hinterkante und der Schale von der Höhenflosse).	S	
	Höhenleitwerksbefestigungen		
10.	Hintere Befestigungsplatten auf Risse und Korrosion kontrollieren. Die Verbindung zwischen Buchse und Struktur auf Risse und Delamination kontrollieren.	S	
11.	Vordere Montagehalterungen (Risse in der Platte, Zustand des Lagers, Sitz des Lagerzapfens und Ablösungen in der Rippe um die Halterung).	S / F	
12.	Höhenruder PAF - Buchse an der Höhenflosse.	S	
13.	Alle bronzebeschichteten Buchsen und alle Bundbuchsen am Kontrollsystem ersetzen.	N/A	

F. Steuerflächen

	STEUERFLÄCHEN Inspektionsgegenstand	Inspektions Methode	Wart
	Querruder		
1.	Zustand der Faserverbundstruktur (Delamination, Risse, Dellen und Kratzer).	S (K)	
2.	Lackierung (Abplatzer, Kratzer, UV Schäden).	S	
3.	Kern (Ablösung zwischen Kern und Decklage, Schäden).	S (K)	
4.	Rippen (Ablösung von den Schalen).	S (K)	
5.	Struktur um die Scharniere und die Befestigungen des Steuerhorns (Risse und Delamination).	S	
6.	Alle bronzebeschichteten Buchsen und alle Bundbuchsen ersetzen.	N/A	
7.	Befestigungen der Ausgleichsmassen (Risse in der Struktur und der Verklebung, Zugänglich über das Inspektionsloch auf der Unterschale).	S	
8.	Sicherstellen, dass die Massen und statischen Momente innerhalb der Limits sind. Siehe Kapitel 06-00.	S / F	
9.	Scharniere und Steuerhorn (Risse, Korrosion, Ablösung von der Schale, lockeren Sitz des Lagerbolzen und die Gleitlagerflächen auf den Zustand - siehe Kapitel 57).	S / F	
10.	Potentialausgleichsverbindung am Querruder (Ablösung oder unzureichende Verbindung).	S	
	Landeklappen		
11.	Zustand der Faserverbundstruktur (Delamination, Risse, Dellen und Kratzer).	S (K)	
12.	Lackierung (Abplatzer, Kratzer, UV Schäden).	S	
13.	Kern (Ablösung zwischen Kern und Decklage, Schäden).	K	
14.	Rippen (Ablösung von den Schalen).	S (K)	
15.	Scharniere und Steuerhorn (Risse, Korrosion, Ablösung von der Schale, lockeren Sitz des Lagerbolzen und die Gleitlagerflächen auf den Zustand kontrollieren - siehe Kapitel 57).	S	
16.	Ruderhorn (Risse und Abnutzung).	S	
17.	Alle bronzebeschichteten Buchsen und alle Bundbuchsen am Klappenantrieb ersetzen.	N/A	
18.	Klappenverbindungsbuchsen prüfen.	V	

	STEUERFLÄCHEN Inspektionsgegenstand	Inspektions Methode	Wart
19.	Massen und statischen Momente innerhalb der Limits. (siehe Kapitel 06-00).	S / F	
	Höhenruder und Trimmruder		
20.	Zustand der Faserverbundstruktur (Delamination, Risse, Dellen und Kratzer).	S (K)	
21.	Lackierung (Abplatzer, Kratzer, UV Schäden).	S	
22.	Kern (Ablösung zwischen Kern und Decklage, Schäden).	K	
23.	Zustand der Lager (Risse, Korrosion, Ablösung von der Nasenleiste, fester Sitz, Sitz des Lagerbolzen und Oberfläche der Gleitlager).	S / F	
24.	Mittlere Höhenruder (Korrosion, Verschleiß und übermäßiges Spiel).	S	
25.	Alle bronzebeschichteten Buchsen und alle Bundbuchsen am Höhenruder und am Trimm Hilfsruder ersetzen.	N/A	
26.	Steuerhorn (Risse, Korrosion, Ablösung von der Schale, lockeren Sitz, lockeren Sitz des Lagerbolzen und fehlende Trimmgewichte kontrollieren - siehe Kapitel 27-30).	S / F	
27.	Trimmruderschanier und Scharnierstange (Korrosion, Abnützung und Sitz der Scharnierstange).	S	
28.	Trimmruder Betätigungshebel (schlechter Zustand) und die Kugelgelenkverbindungen ersetzen (4x).	S	
29.	Sicherstellen, dass die Massen und statischen Momente innerhalb der Limits sind. Siehe Kapitel 06-00.	S / F	
30.	Die Höhenruderfedern ersetzen.	N/A	
	Seitenruder		
31.	Zustand der Faserverbundstruktur (Delamination, Risse, Dellen und Kratzer).	S (K)	
32.	Lackierung (Abplatzer, Kratzer, UV Schäden).	S	
33.	Kern (Ablösung zwischen Kern und Decklage, Schäden).	S (K)	
34.	Sicherstellen, dass die Massen und statischen Momente innerhalb der Limits sind. Siehe Kapitel 06-00.	S / F	

G. Abschließende Arbeitsschritte

	ABSCHLIEßENDE ARBEITSSCHRITTE Wartungsarbeiten	Inspektions Methode	Wart
1.	Steuerflächeneinstellung überprüfen - Siehe Kapitel 06-00.	S / F	
2.	Einen Test des elektrischen Potentialausgleichsystems durchführen - Siehe Kapitel 51-80.	F	
3.	Das Leergewicht und die zugehörige Schwerpunktlage ermitteln.		
4.	Die notwendigen Eintragungen im Logbuch durchführen.		

Section 05-30
GENERAL INSPECTIONS

1. General

Preflight as well as postflight inspections are part of the general inspection procedure. In general these inspections are performed on a daily base. These inspections are described in the Airplane Flight Manual and are performed by the pilot.

2. Preflight Inspection

This inspection should be performed before the first flight of the day to determine the general condition of the airplane and its engine.

Specific attention should be given to the preflight inspection, because many accidents were caused by insufficient preflight inspection. It must be ensured that all switches are in the OFF position (also refer to the Airplane Flight Manual) before any inspection is attempted.

3. Postflight Inspection

This inspection should be performed after the last flight of the day.

Measures supplementary to those described in the Airplane Flight Manual:

Check on-board log book for any open complaints, as well as for correct recording of all landings and flight hours.

If required, moor the airplane (refer to Chapter 10).

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Section 05-40
UNSCHEDULED INSPECTIONS

1. General

Unscheduled inspections are only performed in the event that during flight operation of the airplane incidents occur which are not part of a normal flight operation, and which could have caused a defect or interfere with the airworthiness of the airplane.

2. Special Inspections

A. Hard Landing

In the event of an excessively hard landing or any other atypical load on the landing gear, a careful inspection of all involved components and connection points must be performed as follows:

(1) The landing gear fittings should be inspected, using a mirror and flashlight, for defects (e.g. cracks), inspect surrounding structure for delamination.

The landing gear struts must be inspected for deformation and cracks. Measure track and compare with value shown in adjustment report (use gliding sheets).

Check tires for cuts in side walls; check brake system for damage.

(2) Condition of the complete nose wheel assembly must be checked (cracks, deformation). Special attention must be given to the upper cross bar of the engine mount to which the nose wheel assembly is attached. Check for deformation.

(3) The top hat profile in the fuselage bottom should be inspected for white spots and delamination in the area around the bearings for the nose wheel assembly.

Check the nose wheel assembly in the unloaded condition for excessive play in the bearings due to overloading.

(4) In addition to the landing gear, all control surfaces (hinges, balancing weights), and the complete engine mounting (engine mount, mounting points to the firewall, shock mounts, etc.) should be inspected.

Furthermore wings and stabilizers must be inspected on the leading edge, in the vicinity of the wing spar, around the connecting points to the fuselage, and especially in the area of the mounting fittings.

NOTE: In case of suspicion of damage to any load carrying member, the manufacturer must be consulted for proper repair procedures.

B. Sudden Engine Stoppage (Prop Strike)

Refer to the ROTAX Operator's Manual and to Sub-Chapter 71-00 Propeller Flange Check.

C. Non-Operation of More Than 30 Days

With non-operation of more than 30 days, refer to Chapter 10-30 for correct procedure.

CHAPTER 06

DIMENSIONS AND AREAS

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CHAPTER 06

DIMENSIONS AND AREAS

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CHAPTER 06
DIMENSIONS AND AREAS

1. General

Most dimensions in this chapter are metric. The spans are measured parallel to their respective datum plane if not indicated otherwise.

Unit Conversions

LENGTH

$$\frac{\text{mm}}{25.4} = \text{inch}$$

$$\frac{\text{cm}}{2.54} = \text{inch}$$

$$\frac{\text{m}}{0.3048} = \text{feet}$$

MASS / FORCE

$$\frac{\text{kg}}{0.45359} = \text{lbs.}$$

$$\frac{\text{daN}}{0.44482} = \text{lbs.}$$

MOMENT

$$\frac{\text{kg} * \text{cm}}{1.152} = \text{inch} * \text{lbs.}$$

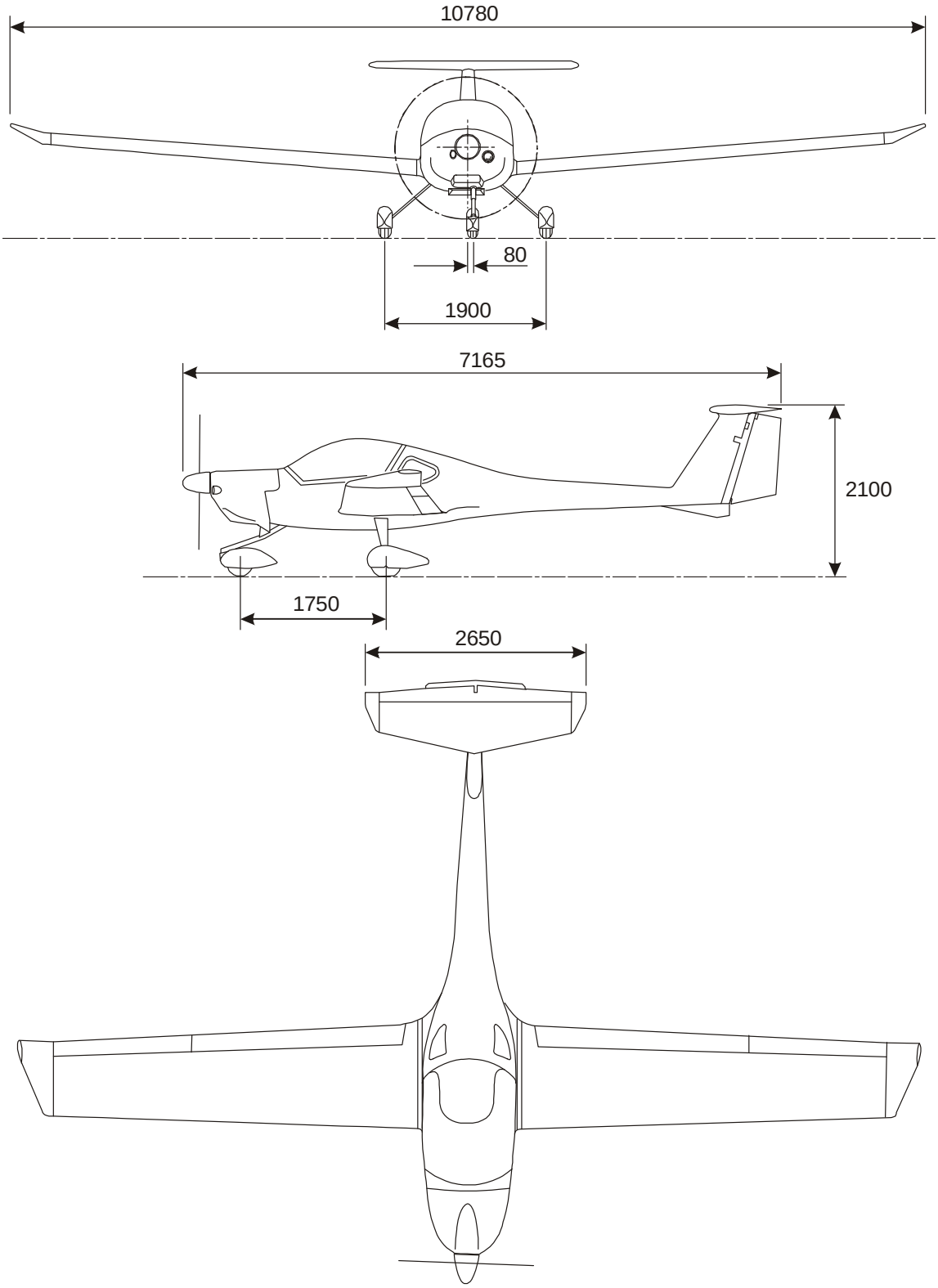

Figure 1: Three View Drawing

2. Dimensions

DV 20 KATANA Dimensions	
Overall Dimensions	
Wing span	10.78 m (35.4 ft) 10.84 m (35.6 ft) including ACL
Length	7.28 m (23.9 ft)
Height (nominal)	1.76 m (5.77 ft)
Wings	
Airfoil	Wortmann FX63-137/20 HOAC
Wing area	11.6 m² (125 ft²)
Mean aerodynamic chord (MAC)	1.09 m (42.9 in)
Aspect ratio	10.0
Dihedral	4°
Sweep	1°
Ailerons	
Area	0.658 m² (7.08 ft²)
Wing Flaps	
Area	1.236 m² (13.3 ft²)
Horizontal Tail Surfaces	
Area	1.692 m² (18.21 ft²)
Elevator area	0.441 m² (4.75 ft²)
Angle of incidence	-2°
Vertical Tail Surface	
Area	1.134 m² (12.21 ft²)
Rudder area	0.426 m² (4.59 ft²)
Landing Gear	
Wheel track	1.90 m (6.2 ft)
Wheel base	1.75 m (5.7 ft)
Nose wheel	300*100/4.00-4
Main wheel	380*150/15*6.00-5

3. Adjustment Values for Control Surfaces and Trim, Adjustment Report

All adjustment values are recorded in the so called Adjustment Report before a DV 20 KATANA is delivered. The completed report is part of the Airplane Maintenance Log.

When the adjustment values are checked, the report should be used to determine whether any deviations from the recorded measurements have occurred.

NOTE: All residual moments given in this chapter are trailing edge heavy.

NOTE: For each serial number, two Adjustment Report forms are valid:

(a) the one that was filled out before delivery (filed in the Airplane Maintenance Log)
(b) the master copy on the next page.

HOAC form no. D18 Aug. 25, 1995

HOAC AUSTRIA Ges.m.b.H.		ADJUSTMENT REPORT	
S/N:	Registr.:	Date:	Signature:

DV 20 KATANA		DEFLECTIONS nominal [°/mm]	actual [°/mm]	radius [mm]	CONTROL SURFACE MASSES AND RESIDUAL MOMENTS mass + bal.m. nomin. [kg]	actual [kg]	bal. mass [kg]	m [kg]	r [cm]	residual moment nominal [kg*cm]	actual [kg*cm]
Aileron left	up	15° / 54 17° / 61		205	2.20 2.71					2.55 6.11	
	down	12° / 43 14° / 50									
Aileron right	up	15° / 54 17° / 61			2.20 2.71					2.55 6.11	
	down	12° / 43 14° / 50			Aileron masses and moments including horn and fixed trim tab.						
Elevator	pulled	17° / 59 15° / 52		200	2.35 2.85					13.37 16.63	
	pushed	15° / 52 13° / 45			Elevator masses and moments including horn and trim tabs.						
Rudder	left	29° /260 31° /278		520	3.20 4.10					15.29 20.39	
	right	29° /260 31° /278			Rudder masses and moments including lower mounting plate.						
Wing Flap left	UP	-1° / -4 +1° / +4		205							
	T/O	14° / 50 16° / 57			2.75 3.4		-			24.46 30.07	
	LDG	39° /137 42° /147									
Wing Flap right	UP	-1° / -4 +1° / +4									
	T/O	14° / 50 16° / 57			2.75 3.4		-			24.46 30.07	
	LDG	39° /137 42° /147			Flap masses and moments including horn.						
Trim Tabs neutral	elev. pulled	-20° /-23 -12° /-14		65							
	elev. neutral	+2° / +2 -2° / -2									
	elev. pushed	+20° /+23 +26° /+29			0.22 0.28		-			0.61 0.82	
nose down	elev. pulled	-38° /-42 -32° /-36									
nose up	elev. pushed	+54° /+59 +60° /+65			Trim tab masses and moments for both tabs together, without horns.						

		nominal	actual		nominal	actual
WING FLAPS Pre-tension	left	3.0 daN 5.0 daN		TRIM TABS Friction damper adjustmt.	1.5 daN 3.0 daN	
	right	3.0 daN 5.0 daN		RUDDER Control cable tension	13 daN 17 daN	
WINGS Dihedral	left	290 mm 330 mm		MAIN LDG. GEAR (AT EMPTY WEIGHT) Camber	left 1° 4°	
	right	290 mm 330 mm			right 1° 4°	
Sweep	left	65 mm 95 mm		Toe	left 0.5° 1.5°	
	right	65 mm 95 mm			right 0.5° 1.5°	
Length of diagonal line	left	Diff.: max. 50 mm		Track	-	
	right					
HORIZONTAL TAIL Angle of incidence		-2.5° -1.5°		NOSE WHEEL Friction damper adjustmt.	3.0 daN 5.0 daN	

4. Control Surface Gaps

The gaps between control surfaces and wings/fins must be at least 3 mm (0.12") wide.

5. Masses and Residual Moments of Control Surfaces

After re-painting or repair of control surfaces special attention must be paid to ensure that the masses (weights) and residual moments of the control surfaces are within the limit values specified on the Adjustment Report (see paragraph 3. ADJUSTMENT VALUES FOR CONTROL SURFACES AND TRIM, ADJUSTMENT REPORT on the previous pages).

Multiply kilograms [kg] by 2.2046 to obtain pounds [lbs.].

Multiply [kg*cm] by 0.868 to obtain [in.*lbs.].

For the determination of residual moments, the surfaces must be removed from the aeroplane and supported in their axes of rotation with as little friction as possible. The horns remain attached to the surfaces.

The residual moment is: $M = m * r$

where the value "m" is measured (e.g. with a spring scale) opposite to the balancing weight and "r" is the lever arm (distance between the hinge line and the point where "m" was measured)

If the values are exceeded, the balancing weight must be supplemented. Before repairing or modifying any balancing weight, the manufacturer must be contacted.

CHAPTER 07

LIFTING AND SHORING

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CHAPTER 07
LIFTING AND SHORING

1. General

The DV 20 KATANA is a very light airplane and does not have any crane attachment points. Belts are used to lift the airplane.

The wings and elevator unit are removed and carried by hand.

The DV 20 KATANA has two jacking points. To perform maintenance operations, the fuselage may be placed on jacks. The rear fuselage is supported at the junction of fuselage and vertical stabilizer forward of the fin.

2. Required Equipment

Item	Quantity
Jacks with conical depression on support (for forward jacking points)	2
Suspension support frame (for rear fuselage)	1
Lifting belts	2
Rope bridge	1

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Section 07-10
LIFTING

1. General

No lifting equipment is required for installation and removal of the wings and elevator unit.

Belts are used to lift the fuselage. The forward belt should be placed in front of the steps, the rearward belt should be placed in front of the tail fin.

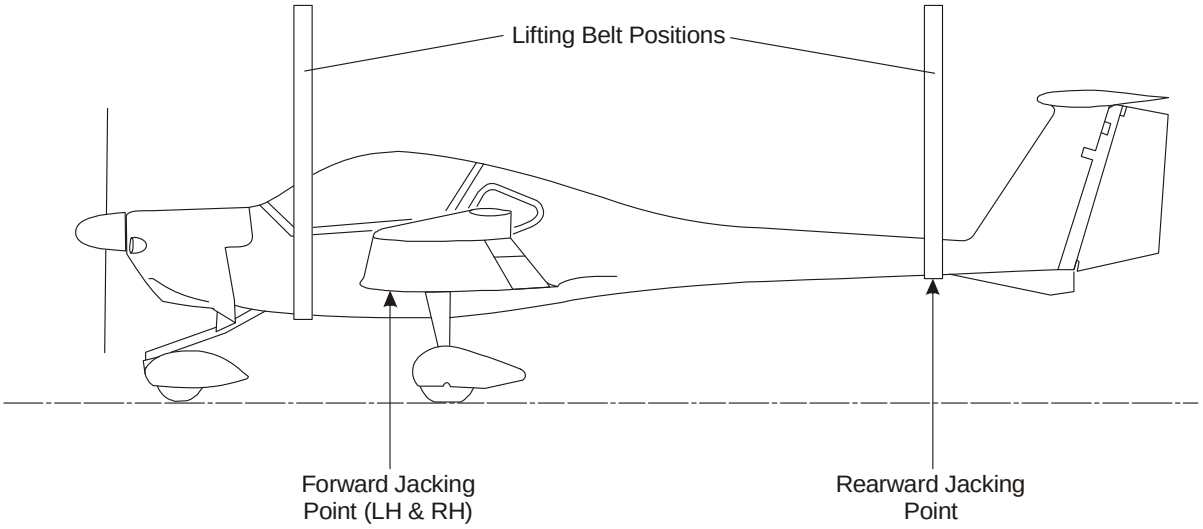

Figure 1: Lifting and Jacking Positions

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Section 07-20
SHORING

1. General

Two jacking points are provided for jacking and shoring the DV 20 KATANA. They are located at the bottom of the fuselage's root ribs (see Fig. 1). The rear is supported, using the proper support seat, by the third jack in front of the vertical stabilizer.

CAUTION: THE FRONT JACKS MAY ONLY BU USED IN CONJUNCTION WITH THE CONICAL INSERTS.

2. Shoring the Airplane

The following must be observed when shoring the airplane:

Detail Steps/Work Items		Key Items/References
(1)	If the airplane is shored outside, is must be pointed into the wind.	
CAUTION: DO NOT SHORE THE AIRPLANE IF THE AMBIENT WIND SPEED EXCEEDS: 6 KTS (10 KM/H).		
(2)	Position jacks with the proper seats at the correct positions under the fuselage.	
(3)	Remove chock blocks and release parking brake.	
(4)	Operate jacks simultaneously maintaining airplane in level position.	

3. Lowering the Airplane

Detail Steps/Work Items		Key Items/References
(1)	Check if the space below and immediately above the airplane is clear.	
(2)	Lower the airplane evenly, by operating the jacks.	

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CHAPTER 08

LEVELING AND WEIGHING

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CHAPTER 08
LEVELING AND WEIGHING

1. General

To obtain the expected flight performance, flight characteristics and flight safety, the airplane must be operated within the permissible load and center of gravity envelope.

Therefore empty mass (weight) and corresponding center of gravity must be re-determined every time the airplane or its equipment is modified in a way that might influence its mass (weight) or center of gravity position.

Empty mass (weight) and corresponding center of gravity and useful load must be recorded in the Weighing Report (see DV 20 KATANA Flight Manual).

2. Leveling

Prior to weighing the airplane axes must be aligned horizontally and vertically by leveling the airplane.

Alignment of longitudinal axis: Template horizontal on fuselage tube (see sketch on Weighing Report).

Alignment of lateral axis: Level on back rest of seat.

3. Weighing

The weighing may be performed using mechanical or electrical scales. The scale manufacturers' guide lines must be observed.

Preparations to be made before every weighing:

– Check that the equipment is complete and installed in the correct positions according to the equipment list.

– Clean and dry the airplane, and remove foreign objects such as tools, baggage, etc.

– Drain fuel tank down to the unusable fuel quantity (2 liters / 0.5 US gal.).

– Fill engine operating fluids (including coolant) up to the maximum markings.

– Position all control surfaces in neutral positions.

After these preparations the airplane is placed on three scales. When rolling the main wheels onto the scales, ensure that the landing gear struts do not distort the scales which would result in inaccurate weighing. The nose wheel must be aligned to the rear, and must be centered on the scale.

NOTE: Two scales of exactly the same height must be used for the two main wheels.

After that, the airplane must be horizontally aligned (leveled) using a level. As mentioned previously, a template is placed on top of the fuselage tube.

NOTE: The weighing should be performed in a closed room to prevent weighing error due to the influence of wind.

After the canopy is closed, the mass (weight) portions can be read off the scales and recorded in the Weighing Report (see Fig. 1). The net mass (weight) is calculated by subtracting the tare mass (weight) - e.g. chock blocks - from the gross mass (weight).

Additional information regarding the center of gravity calculations can be found in the Airplane Flight Manual.

Weighing Report

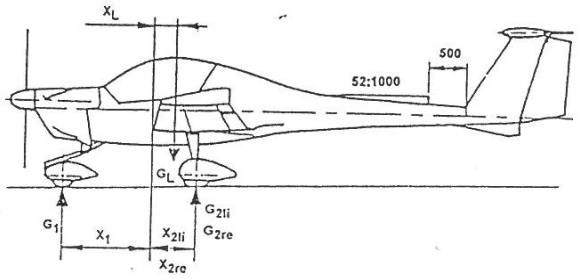
Model: DV 20 S/N.:_____ Registration:_____

Data in accordance with TCDS respectively Flight Manual Reason for Weighing: _____
Reference Datum : Leading edge of wing at root rib
Horizontal reference line: Wedge 52:1000, 500 mm (19.69 in.) forward of rudder fin

Weighing and empty mass(weight) CG

Equipment list - dated:_____

Weighing Conditions: Including Brake Fluid, Lubricant, Coolant and Unusable Fuel (1.5 kg /3.31 lbs)



Support	Gross [kg] ([lbs])	Tare [kg] ([lbs])	Net Mass [kg] ([lbs])	Lever Arm [m] ([in])
Front G_1				x_1 =
Rear G_{2li}				x_{2li} =
Rear G_{2re}				x_{2re} =
Empty Mass(Weight) G_L = _____ kg (lbs)				

CG Position for Empty Mass (Weight):

Empty-Mass(Weight)-Moment: $M_L = G_L * x_L$ = _____ * _____ = _____ kg*m

Maximum Permissible Useful Load:

Maximum Mass (Weight) [kg] ([lbs])	
Empty Mass (Weight) [kg] ([lbs])	
Max useful Load [kg] ([lbs])	

Data to be entered into the Flight Manual: see page 6 - 6

Empty Mass (Weight) [kg] ([kg])	Empty- Mass-Moment [kg*m] ([in*lbs])

Place / Date	A.M.E.'s Stamp	A.M.E.'s Signature

4. Permissible Empty Mass (Weight) C.G. Range

The empty mass center of gravity must be within the limits listed in the table below. On one hand, these limits permit the operation of the airplane by a 55 kg (121 lbs.) pilot with 19 kg (42 lbs.) of fuel without exceeding the rearward CG limit according to the Airplane Flight Manual. On the other hand, two pilots weighing 86 kg (190 lbs.) each with only the unusable fuel can operate the airplane without exceeding the forward CG limit according to the Airplane Flight Manual.

Empty Mass [kg]	Max. Rearward Empty Mass CG [mm aft of RD]	Max. Forward Empty Mass CG [mm aft of RD]
490	400	288
495	400	288
500	400	287
505	400	287
510	400	287
515	400	286
520	400	286
525	400	286
530	400	285

CHAPTER 09

TOWING AND TAXIING

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CHAPTER 09
TOWING AND TAXIING

1. General

Movement of the airplane on the ground is accomplished either by towing with a draw tongue or by taxiing. To prevent damage to the airplane it is of great importance to familiarize oneself closely with the towing and taxiing procedures.

2. Equipment and Accessories

The DV 20 KATANA is towed using a draw tongue that is part of the optional equipment, and attached to the nose wheel. One person is capable of moving the airplane on a smooth, level surface using this equipment.

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Section 09-10
TOWING

1. General

On the ground, the airplane can be moved manually or with a tow vehicle. The towing procedures are described below.

2. Towing Procedures

A. Towing without Tow Vehicle

Normally the DV 20 KATANA is moved manually using the draw tongue. The following procedure should be followed:

Detail Steps/Work Items		Key Items/References
(1)	Attach the draw tongue to the nose wheel strut and close.	
(2)	Release parking brake.	
(3)	Remove chock blocks.	
(4)	Move airplane to desired position.	
(5)	Position chock blocks in front of main wheels.	
(6)	Remove draw tongue.	
(7)	Set parking brake.	

B. Towing with a Tow Vehicle

When the airplane is moved with a tow vehicle, the following procedure must be followed:

Detail Steps/Work Items		Key Items/References
(1)	Attach the draw tongue to the nose wheel strut and close.	
(2)	Attach draw tongue to tow vehicle.	
(3)	Release parking brake.	
(4)	Remove chock blocks.	
(5)	Move airplane to desired position.	
(6)	Position chock blocks in front of main wheels.	
(7)	Remove draw tongue from airplane and tow vehicle.	
(8)	Set parking brake.	

NOTE: When towing the airplane with a tow vehicle, one person must always be in the cockpit to operate the brakes in an emergency.

CAUTION: THE NOSE WHEEL CAN BE DEFLECTED 30° TO EITHER SIDE. IF THIS ANGLE IS EXCEEDED, DAMAGE TO THE NOSE WHEEL MAY OCCUR.

WARNING: WHEN TOWING WITH THE DRAW TONGUE ENSURE THAT THE DRAW TONGUE CLAMPS ENGAGE THE NOSE WHEEL STRUT PROPERLY.

C. Moving without Draw Tongue

The airplane may be moved without using the draw tongue. The DV 20 KATANA may be pushed at the wing-tips and at the wing-fuselage connection.

CAUTION: NEVER PUSH OR PULL ON THE CONTROL SURFACES!

In the case of reduced freedom to maneuver two people can turn the airplane about the main wheels. One person must push down in front of the vertical stabilizer and turn the airplane while the other person is holding on to one wing tip.

CAUTION: EXCESSIVE FORCE ON THE PROPELLER OR CONTROL SURFACES MUST BE AVOIDED UNDER ANY CIRCUMSTANCES. WEIGHTS MAY NEVER BE PLACES ON THE TAIL UNIT TO RAISE THE NOSE WHEEL. IN ADDITION, WHEN THE WHEELS ARE OBSTRUCTED BY SNOW OR MUD TOWING SHOULD BE AVOIDED.

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Section 09-20
TAXIING

1. General

The DV 20 KATANA is controlled with the foot operated brakes during taxiing. In order to achieve very tight turning radii, the brake may be applied to individual wheels.

NOTE: The airplane may only be taxied by authorized personnel.

2. Taxiing Procedures

Detail Steps/Work Items		Key Items/References
(1)	Remove all foreign object from the airplane area (tools, tool carts, etc.).	
(2)	Remove chock blocks, mooring ropes, and draw tongue if required.	
(3)	Set parking brake by pulling the parking brake lever and operating the foot brakes.	
WARNING:	**ENSURE THAT NO MAINTENANCE PERSONNEL OR OBSTRUCTIONS ARE IN THE IMMEDIATE AREA SURROUNDING THE AIRPLANE.**	
(4)	Start engine.	See Airplane Flight Manual DV 20 KATANA.
(5)	Release parking brake.	
(6)	Check brake operation during taxiing.	
CAUTION:	THE AIRPLANE MUST BE TAXIED IN SUCH A WAY THAT A BRAKE FAILURE WILL NOT CAUSE THE AIRPLANE TO COLLIDE WITH ANY OBJECTS OR PERSONNEL. THE SAFETY AREA FOR TAXIING OPERATIONS MUST BE OBSERVED. ON UNEVEN GROUND, TAXIING OPERATIONS MUST BE PERFORMED ESPECIALLY CAREFULLY TO AVOID PROPELLER GROUND CONTACT. LOOSE STONES, GRAVEL OR SIMILAR MATERIAL MAY ALSO DAMAGE THE PROPELLER.	

Detail Steps/Work Items		Key Items/References
(7)	Taxi the airplane to the desired position.	
(8)	Turn off engine.	See Airplane Flight Manual DV 20 KATANA.
(9)	Park the airplane and moor as required.	See Chapter 10.

CHAPTER 10

PARKING AND MOORING

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CHAPTER 10
PARKING AND MOORING

1. General

To avoid possible damage to the airplane, the DV 20 KATANA should always be parked or moored while not in use. The pilot and maintenance personnel should thoroughly familiarize themselves with the procedures described in Chapters 10-10 and 10-20.

2. Equipment and Accessories

The following table lists the equipment required to park and moor the airplane.

Item	**Quantity**	**Purpose**
Chock blocks.	4	Prevent airplane from moving.
Mooring rings.	2	Airplane mooring.
Ropes (nylon or hemp).	3	Airplane mooring.

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Section 10-10
PARKING

1. General

The following parking procedures must be followed to protect the airplane when it is parked outside. The scope of the procedure depends on the parking time and weather conditions.

2. Short Term Parking

If the airplane is parked for a short period of time, the following procedure should be followed:

Detail Steps/Work Items		Key Items/References
(1)	Taxi or tow airplane to its parking position.	See Chapter 09.
(2)	Align airplane in headwind direction.	
CAUTION:	DO NOT END THE TAXI OR TOW OPERATION WITH AN ANGLED NOSE WHEEL. THE NOSE WHEEL MUST ALWAYS BE ALIGNED BEFORE THE AIRPLANE COMES TO STOP IN ORDER TO AVOID EXCESSIVE SIDE FORCES ON THE LANDING GEAR.	
(3)	In very gusty or stormy weather, moor the airplane.	See Chapter 10-20.
(4)	If the parking area is covered with packed snow or ice, pour a 5 mm (0.2 in.) layer of sand under the wheels.	
(5)	Set parking brake.	
CAUTION:	Do not set the parking brake when the brakes are overheated, or the danger of the brakes freezing up exists.	
(6)	Position chock blocks before and behind main wheels.	
(7)	Release parking brake.	
(8)	Position all control surfaces in neutral position and install control surfaces lock.	
(9)	Retract flaps.	
(10)	Close and lock canopy.	

3. Long Term Parking

If the airplane is parked for long periods of time, danger of wheel bearing corrosion exists. To prevent this, the wheels of the lifted airplane (Chapter 07) should be turned three to four revolutions. Parked airplanes should be moved by pushing or towing.

To prevent flat spots and other deformations which may lead to irregular running or oscillations, the wheels should be positioned at a new position according to the instructions above.

The frequency of the movement depends on the weather conditions. It should be performed daily in cold weather, and weekly in warm weather.

NOTE: Check Chapter 10-30 for procedures required for longer parking durations.

Section 10-20
MOORING

1. General

Whenever the airplane is parked outside for extended periods of time, it should be moored. Unexpected strong gusts or heavy winds can cause severe damage to an airplane that is not moored.

2. Mooring

The airplane has three mooring points; one on each wing and one on the tail fin.

To moor the airplane, proceed as follows:

Detail Steps/Work Items		Key Items/References
(1)	Park the airplane.	See Chapter 10-10.
(2)	Ensure that flaps are retracted.	
(3)	Screw mooring rings into the adapters below the wings.	
(4)	Attach ropes.	
CAUTION:	When using hemp ropes, keep in mind that the ropes will tighten themselves under the influence of moisture. To is of special importance when mooring the airplane to secure ground anchors. Moor the airplane at the provided mooring points only.	
(5)	Remove all foreign objects that may damage the airplane.	

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Section 10-30
PARKING DURATION

1. Parking Over 30 Days

For parking over 30 days the following maintenance work is required:

A. Engine Preservation and De-Preservation

See Operator's Manual for the Rotax engine.

B. Fuel Supply

The fuel tank must be filled completely. Check for water in the tank each week.

C. Landing Gear, Wheels and Tires

– Main and Nose Landing Gear

No special procedures are required for the main and nose landing gear.

– Wheels

The wheels should be turned three to four revolutions to prevent corrosion.

– Tires

(a) Wipe tires with dry cloth, and treat with tire protector spray.

(b) Turn wheels. Mark tire position and date with chalk.

(c) Air pressure: daily visual inspection, check weekly or during take-off preparations.

D. Electrical System

After 30 days of storage: remove battery and perform maintenance (see Sub-Chapter 24-31).

E. Lubrication

Before storing the airplane, lubricate according to the Lubrication Schedule (see Chapter 12).

F. Instruments

Instruments remain installed in the airplane.

G. Loose Equipment

Collect loose equipment and store.

H. Electronic Equipment

No special procedure required.

I. Airplane Ventilation

Vent the airplane thoroughly before parking.

J. Parking and Mooring

See Chapter 10-20.

CHAPTER 11

REQUIRED PLACARDS

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ANBRINGUNGSORTE DER HINWEISSCHILDER UND BESCHRIFTUNGEN

(GERMAN VERSION OF CHAPTER 11-10)

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CHAPTER 11
REQUIRED PLACARDS

1. General

Placards are used for identification and indication purposes. They should describe the function, operation, and operating limitations of the various systems and equipment.

This chapter describes the location of the placards on the interior and exterior surfaces of the airplane.

Self adhesive plastic foil is used for exterior placards, and self adhesive metal foil is used for interior placards.

Placards with poor readability or other damage must be replaced.

2. Material

The material required to replace placards is listed in the following table.

Item	**Manufacturer**	**Purpose**
Self adhesive plastic foil placard.		Identification/indication.
Self adhesive metal foil placard.		Identification/indication.
Methylated spirit.	Commercial merchandise.	Clean surfaces for metal foil.
Soap water.		Clean surfaces for plastic foil.

3. Removal and Installation

A. Self Adhesive Metal Foil Placards

Procedure:

Detail Steps/Work Items		**Key Items/References**
(1)	Pull off old sign and remove remaining adhesive using methylated spirit.	
(2)	Remove the protective layer from the new placard.	
(3)	Rub on new placard with a cloth.	

B. Self Adhesive Plastic Foils

Procedure:

Detail Steps/Work Items		Key Items/References
(1)	Moisten foil and surface with soap water using a sponge.	
(2)	Press on new placard using plastic spatula.	
(3)	Remove protective film and let the placard dry.	
(4)	The removal of plastic foil placards can be facilitated by heating the placard with a hot-air blower.	

Section 11-10
LOCATION OF PLACARDS

1. General

In addition to the fire proof identification plate, the following placards are installed:

Easily visible in the cockpit

S/N's registered outside of North America:

Maneuvering speed: v_A = 104 kts.
This aeroplane is classified as a very light aeroplane approved for day VFR only, in non-icing conditions. All aerobatic maneuvers including intentional spinning are prohibited. See Flight Manual for other limitations.

S/N's registered in the U.S.A.:

Maneuvering speed: v_A = 104 kts. U.S.A.
This airplane must be operated as a VLA-Special Class Category airplane. It is approved for day VFR only, in non-icing conditions. All aerobatic maneuvers including intentional spinning are prohibited. See Flight Manual for other limitations.

S/N's registered in Canada:

Maneuvering speed: v_A = 104 kts. CDN
This airplane is classified as a very light airplane approved for day VFR only, in non-icing conditions. All aerobatic maneuvers, except of intentional spinning which is permitted with flaps UP only, are prohibited. See Flight Manual for other limitations.

On the rear wall of the baggage compartment

Baggage, max. 20 kg (44 lbs.), only with baggage harness

On the center console

Full throttle

Idle

Prop.

OFF Carburetor Heat ON

Near the pilot's feet, next to the fuel shut-off valve (partly colored red)

Fuel valve open

closed <-- colored red

On the left and right side wall on the air vents

Cabin air

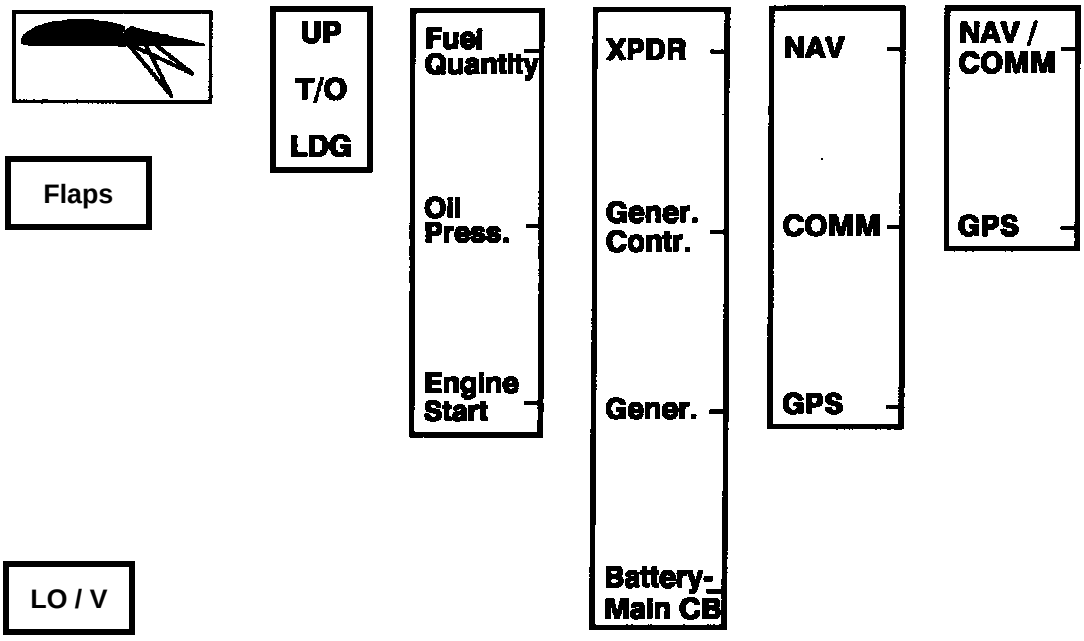
Under the instrument panel next to the individual knobs and handles

Cabin heat
pull - ON

Parking brake
pull

Choke
pull - ON

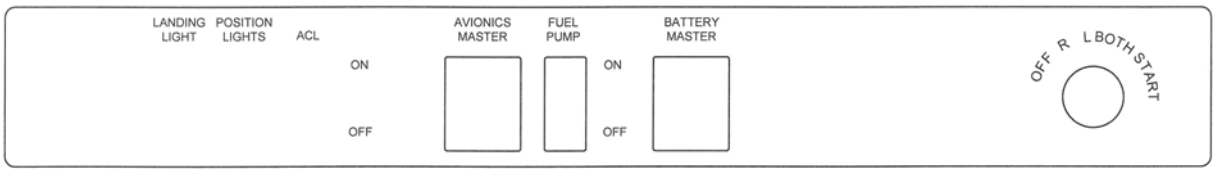
On the instrument panel next to the individual breakers, switches, and caution and warning lamps (partly colored red)

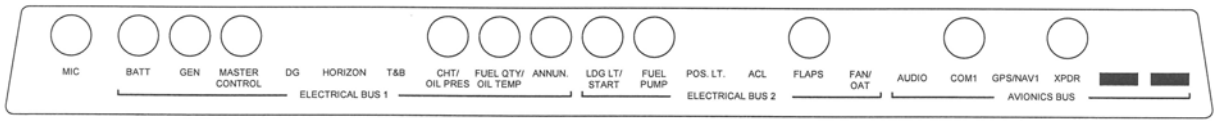


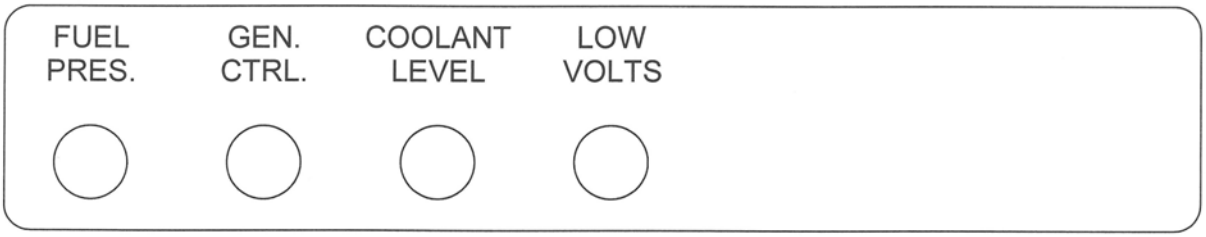
ON	ON	ON	ON	ON	ON	ON	QDM	ON/OFF
Battery Gener.	Avionics Fuel Press.	Fuel Pump	Position Light	ACL	Landing Light	IC Att. Gyro	QDR Dir. Gyro	Flaps Turn Ind.

The area marked gray is red on the actual placard.

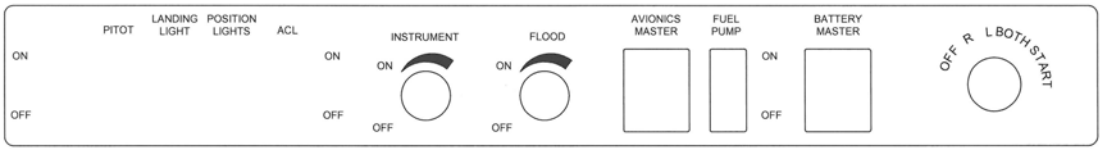
On the instrument panel next to the individual breakers, switches, and caution and warning lamps (if OÄM 20-244 & OÄM 20-245 are installed):

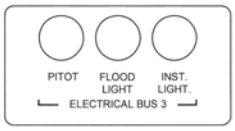






On the instrument panel next to the individual breakers and switches (if OÄM 20-267 is installed):





On the center console next to the trim lever:

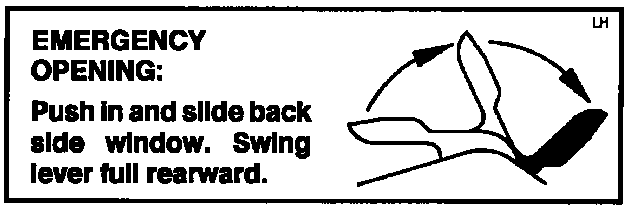
Nose down - Trim - Nose up

Next to the canopy emergency release handles (all colored red)

inside, left

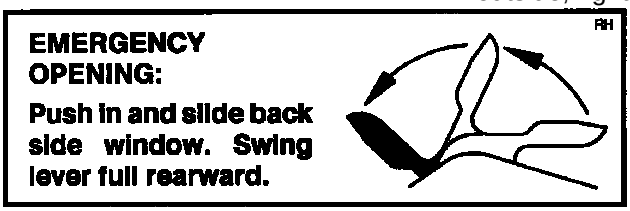
inside, right

outside, left



↑ last two lines only if ELT is installed

outside, right



Next to the ignition switch (colored red)

CHECK before take-off: CANOPY LOCKED ON BOTH SIDES

(refer to MSB20-38)

Next to fuel tank filler cap

S/N's registered outside of Canada

79 l / 20.9 US gal. AVGAS 100 LL, MOGAS, Auto Super min. 95 oct. leaded or unleaded usable: 77 l / 20.3 US gal.

S/N's registered in Canada

79 l / 20.9 US gal. AVGAS 100 LL, usable: 77 l / 20.3 US gal.

On the brake fluid reservoirs

Hydraulic Fluid 4

Next to main wheels

2.3 bar

33 psi

Next to nose wheel

1.8 bar

26 psi

On oil filler cap

Oil 3.0 l

SAE 15W-40 or according to Flight Manual

On lid in canopy, inside (colored red)

CAUTION!
DO NOT USE AVIATION GRADE ENGINE OIL!

On coolant equalizing reservoir

Coolant

On coolant dispatcher vessel

Coolant

Dispatcher vessel Do not open!

NOT valid on 912 S3
and with coolant qty
sensor installed

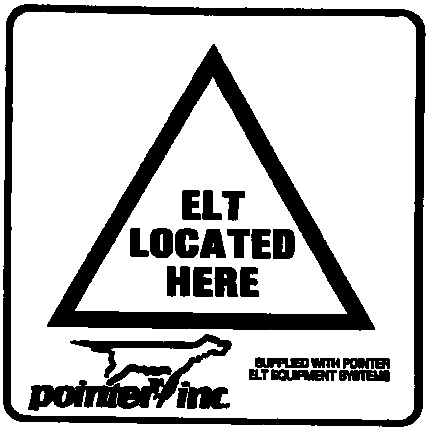
On the instrument panel or within the pilot's field of vision

No smoking!

Next to ELT (if installed) to indicate switch positions

ELT
on - off - auto

On fuselage upper skin behind cockpit (only if ELT is installed), colored yellow



Next to GPS (if installed)

GPS not approved for primary navigation.

On power plant instruments

usable 77 l / 20.3 gal.

A. Engine with Cylinder Temperature Senor

If an engine without suffix -01 is installed, use the following placards:

for ROTAX 912 A3 only:

Cyl. max. 150°C

for ROTAX 912 S3 only:

Cyl. max. 135°C

B. Engine with Coolant Temperature Sensor

If an engine with suffix -01 is installed, use the following placard:

Coolant max. 120 °C

C. Oil Temperature

for ROTAX 912 A3 only:

Oil max. 140 °C	Oil pressure

for ROTAX 912 S3 only:

Oil max. 130 °C	Oil pressure

Section 11-11

ANBRINGUNGSORTE DER HINWEISSCHILDER UND BESCHRIFTUNGEN

(GERMAN VERSION OF CHAPTER 11-10)

1. Allgemeines

Es sind außer dem feuerfesten Typenschild noch folgende Schilder angebracht:

Gut sichtbar im Cockpit

Manövergeschwindigkeit: v_A = 104 kts.
Dieses Flugzeug ist eingestuft als Leichtflugzeug und nur für Tag-Sichtflug ohne Vereisungsbedinungen zugelassen. Alle Kunstflugmanöver, einschließlich beabsichtigtem Trudeln, sind verboten. Weitere Betriebsgrenzen sind dem Flughandbuch zu entnehmen.

An der Rückwand des Gepäckraums:

Gepäck, max. 20 kg,
nur mit Gepäcknetz

Auf der Mittelkonsole:

Vollgas **Leerlauf**

Prop. **AUS Vergaservorwärmung EIN**

Im linken Fußraum neben dem Brandhahn: (teilweise rot)

Brandhahn auf

zu <-- rot

An der rechten und linken Bordwand auf der Lüftungsdüse:

Lüftung

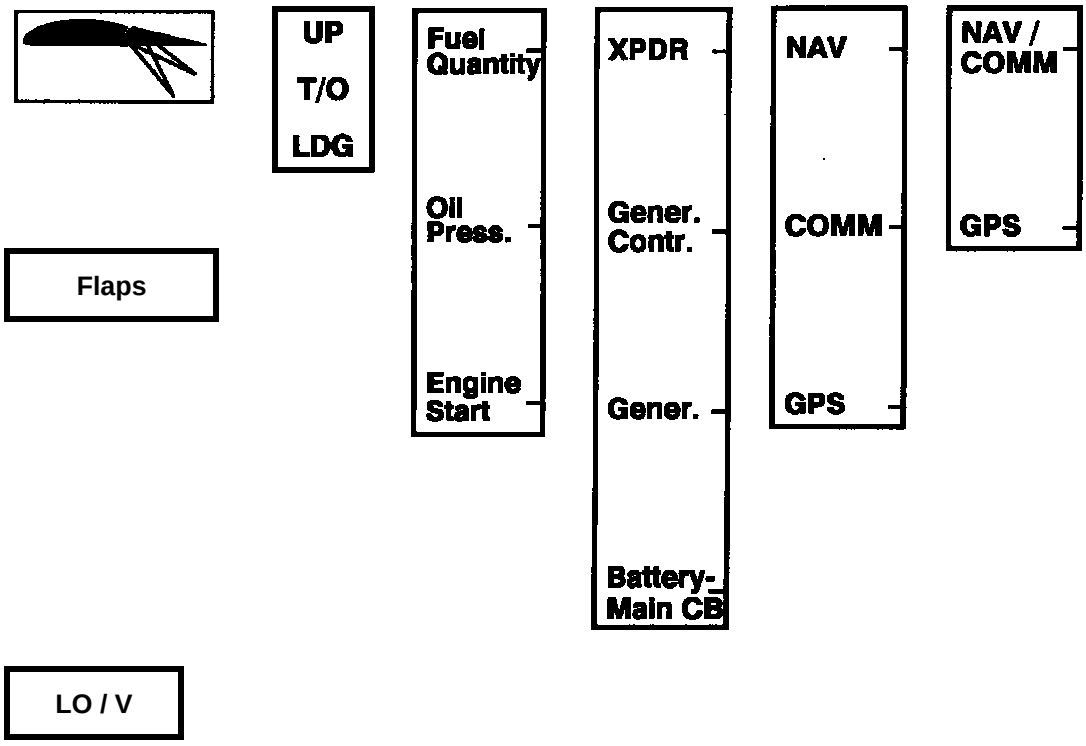
Unter dem Instrumentenbrett neben den einzelnen Betätigungsgriffen:

Kabinenheizung ziehen - EIN

Parkbremse ziehen

Choke ziehen - EIN

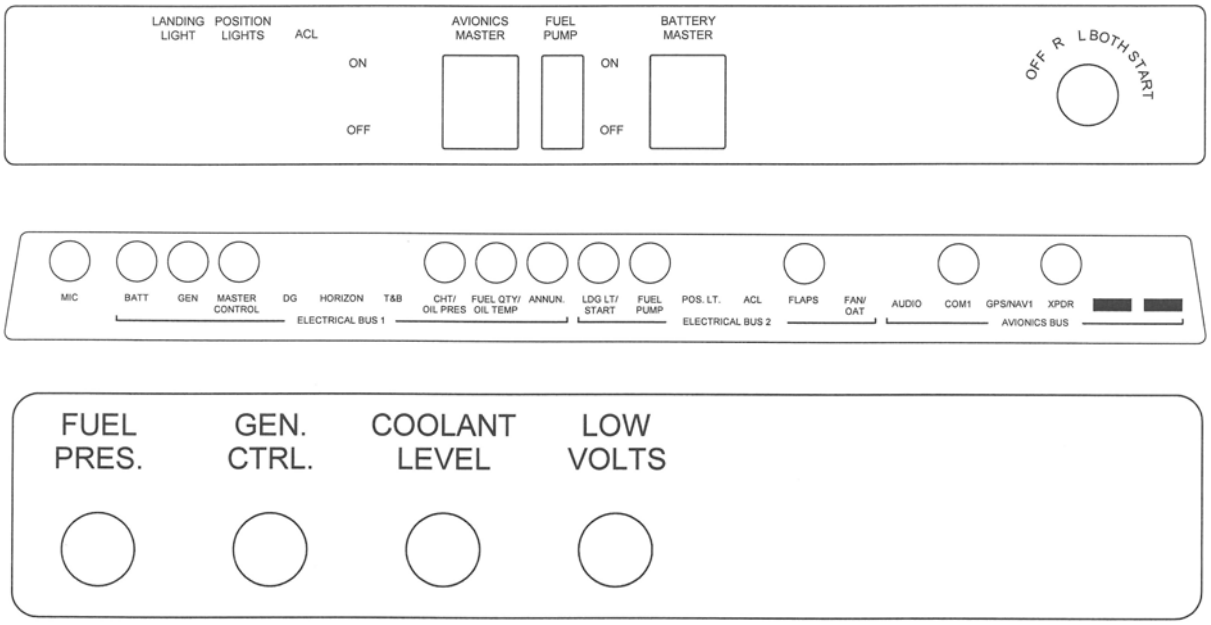
Auf dem Instrumentenbrett neben den Sicherungen, Schaltern und Kontrollampen (teilweise rot):



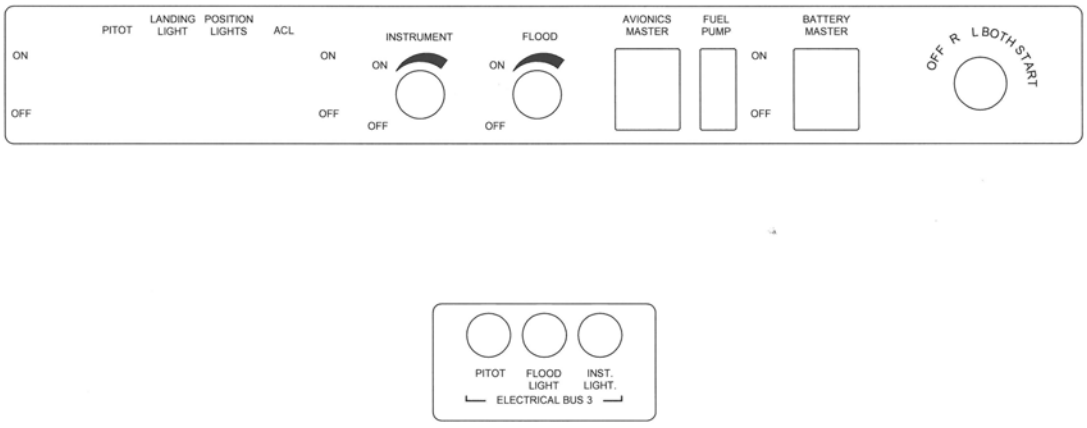
ON	ON	ON	ON	ON	ON	ON	QDM	ON/OFF
Battery Gener.	Avionics Fuel Press.	Fuel Pump	Position Light	ACL	Landing Light	IC Att. Gyro	QDR Dir. Gyro	Flaps Turn Ind.

Die grau markierte Fläche ist auf dem Schild rot.

Auf dem Instrumentenbrett neben den Sicherungen, Schaltern und Kontrolllampen (wenn OÄM 20-244 & OÄM 20-245 eingebaut sind):



Auf dem Instrumentenbrett neben den Sicherungen und Schaltern (wenn OÄM 20-267eingebaut ist):



Auf der Mittelkonsole neben dem Trimmknopf:

Kopflastig - Trimmung - Schwanzlastig

Neben den Griffen für den Haubennotabwurf (alle rot):

innen links

innen rechts

außen links

↑ untere zwei Zeilen nur falls ELT eingebaut ist

außen rechts

Neben dem Zündschalter (rot):

CHECK vor dem Start: HAUBE BEIDSEITIG VERRIEGELT

(siehe MSB20-38)

Neben dem Tankeinfüllstutzen:

79 l AVGAS 100 LL, MOGAS, Auto Super min. 95 ROZ verbleit oder unverbleit ausfliegbar: 77 l

Auf den Bremsflüssigkeitsbehältern:

Hydraulic Fluid 4

Neben den Hauptfahrwerksrädern:

2,3 bar **33 psi**

Neben dem Bugrad:

1,8 bar **26 psi**

Auf dem Öldeckel:

Öl 3,0 l **SAE 15W-40 oder laut Flughandbuch**

Auf dem Wartungsdeckel für den Öltank (in der oberen Cowling)

ACHTUNG! KEIN FLUGMOTORENÖL VERWENDEN!

Auf dem Kühlflüssigkeits-Ausgleichsgefäß:

Kühlflüssigkeit

Auf dem Kühlflüssigkeits-Verteilergefäß:

Kühlflüssigkeit **Verteilergefäß nicht öffnen**

nicht für ROTAX 912 S3 oder wenn Sensor für Kühlmittel installiert ist.

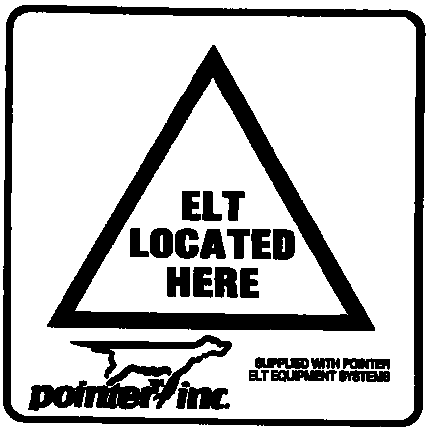
Auf dem Instrumentenbrett oder im Sichtfeld des Piloten:

Rauchen verboten

Neben dem ELT (falls eingebaut) zur Kennzeichnung der Schalterstellung:

ELT
on - off - auto

Auf der Rumpfoberseite hinter dem Cockpit (falls ELT eingebaut ist, Farbe gelb):



Beim GPS (falls eingebaut):

GPS nicht für Primärnavigation zugelassen

Auf den Triebwerksüberwachungsinstrumenten

ausfliegbar
77 l

A. Motor mit Zylinderkopftemperatursensor

Wenn ein Motor ohne Suffix -01 eingebaut ist, werden die folgenden Placards verwendet:

nur für ROTAX 912 A3:

Cyl. max.
150°C

nur für ROTAX 912 S3:

Cyl. max.
135°C

B. Motor mit Kühlflüssigkeitstemperatursensor

Wenn ein Motor mit dem Suffix -01 eingebaut ist, wird das folgende Placard verwendet:

Kühlmittel
max. 120 °C

C. Öltemperatur

nur für ROTAX 912 A3:

Öl max.
140 °C

Öldruck

nur für ROTAX 912 S3:

Öl max.
130 °C

Öldruck

CHAPTER 12

SERVICING

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6. Cooling System 4

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PERIODISCHE KONTROLLEN

(GERMAN VERSION OF CHAPTER 12-20)

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CHAPTER 12
SERVICING

1. General

Servicing on the ground in general includes replenishing and the periodic lubrication of component groups. Other tasks which are performed during ground services are also described in this chapter.

Detailed procedures for preventive and corrective maintenance of the individual systems are described in the respective Chapters of this manual.

Chapter 05 comprises the inspection intervals of all maintenance tasks.

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Section 12-10
REPLENISHING

1. Fuel System

A. REFUELING

Fuel for the DV 20 KATANA is supplied from a fuselage mounted fuel tank with a capacity of either 55 liters (14.5 US gal.) or 79 liters (20.9 US gal.). The aluminum welded fuel tank is located between the main- and B-bulkhead below the baggage compartment floor.

Refueling of the DV 20 is performed via a filler neck located on the left side of the airplane, integrated into the fuselage.

During re-fueling, the following must be observed:

– Airplane as well as fuel supply (fuel truck, filling station, etc.) must be grounded (ground connection on engine exhaust pipe).

– Fire extinguisher must available.

– All ground equipment located in the re-fueling area must be switched off.

– Operation of electrical switches is not permitted.

– Only fuel types in accordance with the Flight Manual, Chapter 2 should be used.

B. DEFUELING

Fuel is drained via the drain valve located at the lowest point of the tank. Open lid over inspection hole and open drain valve. A sufficient number of canisters should be available for the fuel to be drained. The fuel tank sump is also drained via the drain valve. In principle the same safety procedures as described in A. should be observed.

2. Oil System

The engine installed in the DV 20 KATANA is equipped with a dry sump pressure lubrication system with a capacity of 3 liters (3.2 US quarts). The filler cap of the oil tank is located on the right hand side of the engine behind cylinder No. 3. It can be reached by opening the lid in the upper right engine cowling. A dipstick is located in the tank indicating the oil level with min/max markings. The difference between the markings represents 1 liter (appr. 1 US quart).

A. Oil specification

Motorcycle oil of a registered brand with gear additives.

For information on approved engine oils refer to the Airplane flight Manual, Section 1.9.

– Because of the incorporated friction clutch, oils with friction modifier additives are unsuitable as this could result in a slipping clutch during normal operation.

– Heavy duty 4-stroke motor cycle oils meet all the requirements. These oils are usually no mineral oils but semi- or fully-synthetic oils.

– Oils primarily used for Diesel engines are generally unsuitable due to insufficient high-temperature properties and additives which favour clutch slipping.

CAUTION: IF THE ENGINE IS RUN ON AVGAS 100 LL, THE FOLLOWING MAINTENANCE WORK IS REQUIRED EVERY 50 HOURS OF OPERATION:

- OIL FILTER CHANGE
- OIL CHANGE
- OIL LEVEL CHECK

FURTHERMORE

- AVOID CONTINUOUS USE OF CARB HEAT
- AVOID RUNNING ENGINE ON IDLE LONGER THAN NECESSARY.

The use of multi-grade oils is recommended.

NOTE. Multi-viscosity grade oils are less sensitive to temperature variations than single grade oils. They are suitable for use throughout the seasons, ensure rapid lubrication of all engine components at cold start and keep their favorable properties even at higher temperatures.

3. Brake System

Servicing of the brake system is limited to checking and refilling of brake fluid. The brake fluid reservoirs are located on the brake cylinders on the co-pilot's side.

Remove reservoir filler caps to add fluid. In the event that the fluid level is found to be low, the reason for loss of brake fluid must be determined.

CAUTION: REMOVE ANY DIRT ON THE BRAKE FLUID RESERVOIR FILLER CAPS BEFORE OPENING.

Only brake fluid meeting the MIL-H-5606A specification should be used.

CAUTION: BRAKE FLUID SPILLED MUST BE REMOVED IMMEDIATELY AS IT DAMAGES PAINT UPON CONTACT.

4. Tires

The DV 20 KATANA main landing gear is equipped with tires of the size 380 x 150/15 x 6.00-5. The tire size used on the nose wheel is 4.00-4.

The tire pressure on the landing gear wheels is 2.3 bar (33 psi), on the nose wheel 1.8 bar (26 psi). To reduce any damage to the tires due to landing shocks or stones with sharp edges and to increase the life time of the tires, the tire pressure should be checked at regular intervals.

A visual tire inspection should be performed each time the tire pressure is checked including visually checking the red slip markings on the main wheels.

NOTE: The slip markings should be in alignment.

5. Battery

The battery mount holding a 12 Volt battery is installed to the front left hand side of the firewall. The battery provides power for the engine starter. Furthermore it allows the electrical consumers to be operated while the engine is off. The standard battery has a capacity of 30 amp.hrs.

Battery charge and fluid level should be visually inspected at regular intervals. This battery inspection is normally included in the 100 hour and 200 hour inspection (refer to Chapter 05-20).

CAUTION: THE BATTERY SHOULD ONLY BE REFILLED USING DISTILLED WATER UP TO THE MAXIMUM LEVEL AS MARKED ON THE BATTERY.

During the above mentioned battery inspection, the battery terminals should be cleaned and lubricated. In addition the battery cable connector lugs should be inspected.

NOTE: The battery should be removed from the airplane prior to a battery inspection.

Battery and battery mount must be kept clean and dry at all times. For cleaning of both parts, use clear water and wipe dry afterwards. It should also be checked in regular intervals that the breather tube is clean and operative.

6. Cooling System

A. Coolant

(1) Engine with Cylinder Temperature Sensor

If an engine without suffix -01 is installed, ensure that only EVANS NPG+ is used.

CAUTION: COOLANT OF MINOR QUALITY INCREASES THE LIKELINESS OF PARTICULATE FORMATION AND (PARTIAL) OCCLUSION IN THE COOLING SYSTEM AND MAY RESULT IN INSUFFICIENT COOLING.

“EVANS NPG+” OR EQUIVALENT COOLANT MUST BE USED WITHOUT WATER OR OTHER ADDITIVES.

CAUTION: WATER OR WATER CONTAINING COOLANT MUST NOT BE ADDED IN ANY CASE TO THE COOLING SYSTEM!

CAUTION: THE ADVICE OF THE COOLANT MANUFACTURER MUST BE FOLLOWED!

(2) Engine with Coolant Temperature Sensor

If an engine with suffix -01 is installed, ensure that only antifreeze concentrate based on ethylene glycol, designed for aluminum engines is used (e.g. BASF Glysantin Protect Plus/G48).

NOTE: Coolant of minor quality increases the likeliness of particulate formation and (partial) occlusion in the cooling system and may result in insufficient cooling.

Mixing ratio:

50% antifreeze concentrate with additives against corrosion and 50% distilled water shall be used, or alternatively an equivalently premixed coolant.

NOTE: If problems are encountered with boiling after engine stop gradually increase the percentage of antifreeze concentrate.

In all cases the mixing ratio must not exceed the coolant manufacturer's recommendations. Non-compliance to the manufacturer's recommendation may lead to particulate formation and (partial) occlusion or inadequate protection against freezing.

CAUTION: PARTICULATE FORMATION AND (PARTIAL) OCCLUSION MAY BE HARMFUL TO COOLING SYSTEM COMPONENTS AND MAY RESTRICT COOLANT FLOW TO AND FROM EQUALIZING RESERVOIR.

B. Adding of Coolant

Prior to adding coolant, the reason for the loss of the liquid must be investigated and corrected (e.g. leaky hose connections).

NOTE: Consumption of coolant is very limited under normal circumstances. Therefore topping up is necessary and senseful only if the coolant quantity is below the minimum marking.

NOTE: For those aircraft equipped with the control light for coolant quantity see also Chapter 77.

When the engine is cold, open the pressure cap on top of the engine and fill the dispatcher vessel up completely. The level in the equalizing reservoir must not exceed the maximum marking.

After the first top-up, close the pressure cap and let the engine run for approximately 3 minutes at increased idle speed. Then fill up dispatcher vessel completely as described above.

The maximum coolant quantity is 2.5 liters (2.6 US quarts), the minimum is 2.4 liters (2.4 US quarts).

The minimum marking of the equalizing reservoir refers to a quantity of 0.1 liters (0.1 US quarts), the maximum marking to a quantity of 0.2 liters (0.2 US quarts).

Before closing the pressure cap check rubber sealing rings for poor condition.

WARNING: WHEN CLOSING THE DISPATCHER VESSEL PUSH DOWN THE PRESSURE CAP FIRMLY IN ORDER TO ALLOW IT TO BE HELD BY ITS SAFETY CATCH. VERIFY DISPATCHER VESSEL IS SECURELY CLOSED!

Draining of the cooling system is performed by opening the hose connection on the radiator on the lower right hand side.

Section 12-20
SCHEDULED SERVICING

1. General

The complete flight control system and all other mechanical systems are, with a few exceptions, equipped with maintenance free friction bearings and rod end bearings. However, these bearings and joints should be inspected regularly, especially under tough climatic conditions such as airborne sand, saltwater concentrations in the air etc., and if required cleaned and lubricated.

2. Lubrication Schedule

Independent of the lubrication during rigging, lubrication is required at the intervals marked with a X. Prior to lubrication all lubrication points must be cleaned.

	LUBRICATION SCHEDULE	Hours		
		100	200	1000
1.	Clamp straps of engine operating cables (oil).	X	X	X
2.	All rod end bearings (grease).			X
3.	Rudder pedal adjusting device on both sides (grease); cable guides and cables (oil).	X	X	X
4.	S/N's with removable wings. Main bolts, A-bolts, B-bolts, pins of flaps synchronizing tube assembly (grease); telescopic rods, if installed (grease).		X	X
5.	S/N's with removable wings. Rollers in the bellcranks for aileron and wing flap control systems (in wing root rib; grease).		X	X
6.	Main landing gear bearings (grease).			X
7.	Vertical pivot bearing of nose wheel fork (grease). S/N's 20.005 thru 20.119 S/N's 20.120 and subsequent	X	X	X X
8.	2 Journals in rubber spring assembly of nose wheel (oil).	X	X	X
9.	Locking rings in the two B-bolt fastening units (oil).		X	X
10.	Cable eyes on rudder (grease).	X	X	X
11.	Upper rudder hinge (grease).	X	X	X
12.	Battery terminals (suitable grease).	X	X	X

All commercial greases are appropriate. However, lubricants containing MoS2 must not be combined with common all-purpose grease.

Section 12-21
PERIODISCHE KONTROLLEN
(GERMAN VERSION OF CHAPTER 12-20)

1. Allgemeines

Mit wenigen Ausnahmen sind die gesamte Steuerung und die sonstige Mechanik mit wartungsfreien Gleitlagern und Gelenklagerköpfen ausgerüstet. Trotzdem sollten die Lager (besonders bei härteren klimatischen Bedingungen wie Flugsand, salzwasserfeuchte Luft usw.) ständig beobachtet und bei Bedarf gereinigt und nachgefettet werden.

2. Schmierplan

Neben dem Schmieren beim Aufrüsten ist ein Schmieren an den jeweils mit einem X versehenen Zeitpunkten erforderlich. Alle Schmierstellen müssen vor dem Schmieren gereinigt werden.

	SCHMIERPLAN	Hours		
		100	200	1000
1.	Klemmnippel der Triebwerksbedienungs-Bowdenzüge ölen.	X	X	X
2.	Alle Lager der Gelenkstangenköpfe fetten.			X
3.	An beiden Sitzen Pedalverstellung fetten, Seileinlauf und Seile ölen.	X	X	X
4.	Für WNrn. m. abnehmbaren Flügeln: Hauptbolzen, A-Bolzen, B-Bolzen und LK-Torsionsstangenmitnehmerstifte fetten, Teleskopstange fetten, wenn vorhanden.		X	X
5.	Für WNrn. m. abnehmbaren Flügeln: Querruder- und Landeklappenantriebsrollen in der Wurzelrippe fetten.		X	X
6.	Hauptradlager fetten.			X
7.	Lenklager der Bugradgabel fetten Werk-Nrn. 20.005 bis 20.119 Werk-Nrn. 20.120 und höher.	X	X	X X
8.	Seitliche Lagerzapfen (2 Stk.) im Bugfahrwerk-Federpaket ölen.	X	X	X
9.	Kugelsicherungsringe an den B-Bolzenschraubelementen ölen.		X	X
10.	SR-Seilkauschenverbindungen fetten.	X	X	X
11.	Oberes Seitenruderlager fetten.	X	X	X
12.	Batteriepole mit Polfett schützen.	X	X	X

Zum Nachfetten sind alle handelsüblichen Fette geeignet. Es dürfen jedoch keine MoS2-haltigen Schmiermittel mit normalen Mehrzweckfetten kombiniert werden

Section 12-30
UNSCHEDULED SERVICING

1. Cleaning, Exterior

For the flight characteristics of a composite airplane with a laminar airfoil, a clean external surface is most important. For this reason it is highly recommendable that the airplane, especially the leading edge of the wings are kept clean at all times.

For best result, the cleaning is performed using much water. If necessary, a mild cleaning agent can be added. Excessive dirt such as insects etc. are best cleaned off immediately after flight, because once dried they are difficult to remove.

Approximately once a year, the surface of the airplane should be treated and buffed using a silicon free automotive polish.

CAUTION: DO NOT USE ANY CLEANING AGENT CONTAINING SILICON BASED MATERIALS.

Cover all lubricated and oiled surfaces prior to the cleaning procedure.

For cleaning the Plexiglas canopy, in principal the same rules should be applied as for the outside surface of the DV 20. The cleaning should be performed using plenty of water, and with only clean sponges and chamois. Even the smallest dust particle can cause scratch marks.

CAUTION: NEVER RUB OR POLISH DRY PLEXIGLAS!

Dull or scratched parts of the canopy may be polished using a special plexiglass polishing paste. Scratches can be removed by using special polishing emery cloth (e.g. micro-mesh).

2. Cleaning, Interior

Seat covers and floor should be vacuumed at regular intervals.

3. Engine Cleaning

For cleaning of the engine a cold cleaning agent should be used.

CAUTION: ENSURE THAT THE ENGINE CLEANING AGENT DOES NOT GET INTO THE FOLLOWING INSTRUMENTS AND COMPONENTS: IGNITION SYSTEM, GENERATOR, STARTER, AIR INTAKES.

FURTHERMORE, IT MUST BE ENSURED THAT THE ENGINE IS STARTED ONLY AFTER ALL OF THE CLEANING SOLUTION HAS EVAPORATED.

4. Snow and Ice Removal

After snow has collected on the airplane it should be removed as soon as possible to prevent melt water from refreezing on the surface, or in any gaps.

CAUTION: DO NOT USE SHARP OBJECTS TO REMOVE SNOW OR ICE.

If ice has formed it is recommended that the ice is melted by placing the airplane in a heated hangar.

CHAPTER 20

STANDARD PRACTICES - AIRFRAME

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STANDARD PRACTICES - AIRFRAME

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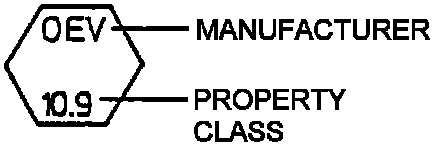
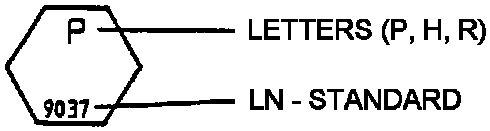
CHAPTER 20
STANDARD PRACTICES - AIRFRAME

1. General

The design of the structure does not call for a special maintenance procedure. Therefore this chapter only describes the bolts and screws used in the DV 20 KATANA and gives information on prescribed torque values and associated measuring technique details.

2. Bolt Types

The bolts used in the DV 20 KATANA are of DIN and LN specifications which can be identified by the markings located on the head of the bolts and by the surface treatment.

Bolt type	Marking on Head	Surface Treatment
DIN-bolt		zinc coated
LN-bolt		zinc coated and yellow chromized

3. Standard Torques

The nuts used (except for lock nuts) comply with LN 9348 and DIN 985 specifications.

Maximum permissible torque values for bolts and nuts in accordance with DIN and LN specifications:

Metric Thread	Torque (Nm)	Torque (lbf.ft.)
M4	1.8	1.3
M5	3.6	2.7
M6	6.4	4.7
M8	16.0	11.8
M10	32.0	23.6
M12	57.0	42.0

The above torque values are valid for all screws that comply with these specifications, with the exception of the parts described in paragraph 4 below.

4. Special Torques

Part	Torque (Nm)	Torque (lbf.ft.)
Propeller lock nuts.	see propeller manual	
Spinner mounting screws.	see Chapter 61 or propeller manual	
Spark plugs.	20	14.8
Bolts attaching engine mount to firewall.	40	29.5
Nose wheel stop bolts limiting steering angle.	15	11.1
Main landing gear bolt, near center.	height of spring washers 4 ± 0.5 mm (0.16 ± 0.02 in.)	
Main landing gear bolts, outside.	20	14.8
B-bolt fastening units.	6	4.4
Engine.	see engine Operator's Manual	
8 Bolts for horizontal tail rear attachment fitting.	45	33.2

NOTE: Observation of the prescribed torque value and installation of the prescribed safetying device must be ensured with each screw connection.

CAUTION. SELF LOCKING NUTS MUST BE REPLACED AFTER REMOVAL IN THE EVENT THAT THE FICTION TORQUE HAS DIMINISHED.

5. Measuring Technique Details

Where self locking nuts are used, the torque value of the safetying mechanism (friction or brake torque) must be added to the value in the table. This value can be read from the torque wrench indicator before seating of the nut has been accomplished.

When bolts are torqued from their head-side, additional torque due to the friction of the barrel may occur. This value can be read from the torque wrench indicator before seating of the screw has been accomplished, and must be added to torque value in the table.

CHAPTER 21

ENVIRONMENTAL SYSTEMS

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CHAPTER 21
ENVIRONMENTAL SYSTEMS

1. General

The heating and ventilation system installed in the DV 20 KATANA permits the independent supply of cold and warm air as well as the supply of warm air to the floor and the canopy.

Control of the heating system is located in the center console on the transition piece to the instrument panel. Fresh air can be supplied and regulated through adjustable air-vents located on the left and right side under the instrument panel or, if OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, on the left and right side of the instrument panel.

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Section 21-20
DISTRIBUTION

1. Functional Description

A. Heating System and Canopy Defroster

During flight, ram air is directed to the heat exchanger through an air hose installed behind the radiator. After passing the heat exchanger, the warm air is directed by an air hose to the air distributor, which is mounted to the lower half of the firewall.

An air duct located in the center directs warm air to the window defrosting vents. At the same time, openings in the air duct allow warm air to reach the floor.

An air regulating flap is located within the air distribution box which can be set via a bowden cable. If warm air is required to flow into the cabin, the cabin heat button located in the front part of the center console must be pulled to the stop. To regulate the heat, any position inbetween can be used.

B. Ventilation

Fresh air is directed from the air intake openings (NACA type) located on both sides of the forward fuselage to adjustable vents. Amount of fresh air as well as the direction of flow can be individually adjusted.

2. Maintenance Information

A. Inspections

During each scheduled inspection, the heat exchanger must be checked for insecure mounting, leakage, and poor condition.

All air vents should be inspected for poor condition, improper operation, and any kind of obstructions. The inspection also includes the examination of all hot air and fresh air hoses for poor condition, leaks, and insecure attachment. Furthermore it should be checked whether the position of the control flap within the airbox corresponds to the position of the operating button.

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Section 21-40
HEATING

1. Heat Exchanger Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove engine cowlings.	
(2)	Loosen hose clamps of air intake and cabin heat hose, remove both hoses from the upper half of the heat exchanger.	
(3)	Remove carburetor heat hose in a similar manner.	
(4)	Remove the three bolts holding the heat exchanger jacket.	
(5)	Remove heat exchanger jacket.	

2. Heat Exchanger Inspection

The heat exchanger must be inspected during each 100 hour inspection for insecure attachment, leakage, and poor condition.

In addition, the exhaust muffler should be inspected at each 100 hour inspection. Cracks or holes in the muffler could allow carbon monoxide to enter the heating system causing danger to occupants.

Recommended muffler inspection procedure:

Detail Steps/Work Items		Key Items/References
(1)	Remove lower half of the heat exchanger as described in paragraph 1 (above).	
(2)	Check muffler for cracks or holes.	
(3)	If cracks or holes are detected, replace muffler.	
(4)	If no defects have been found, re-assemble heat exchanger by reversing the sequence described in paragraph 1 (above).	

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CHAPTER 23

COMMUNICATIONS

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SPEECH COMMUNICATION GARMIN GNS 430

1. General 1

Section 23-10.4

SPEECH COMMUNICATION GARMIN SL 30

1. General 1

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CHAPTER 23
COMMUNICATIONS

1. General

The VHF radio system is used for communication between airplane and ground station, and between airplanes. It operates in the frequency band between 118,00 to 136,975 MHz.

The system consists of the following components:

1 VHF-COMM transceiver

1 VHF folded-top antenna (mounted in the rudder fin)

1 Swan-neck or hand held microphone

1 Speaker

2 Headsets (optional)

Power is supplied by the generator and by the battery via the avionics master switch and the COMM breaker.

The intercom system enables communication between pilots using the headsets, and is activated via the intercom switch which is located on the switch panel. During intercom operation, the speaker is switched off. The radio system located within the center console can be operated by both pilots.

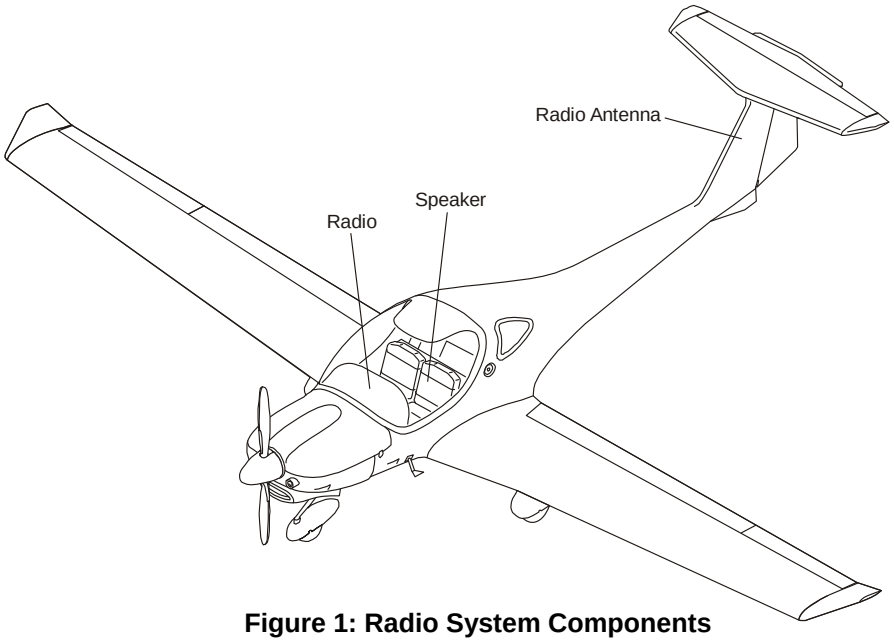

Figure 1: Radio System Components

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Section 23-10.1
SPEECH COMMUNICATION BECKER AR3201

1. General

The AR3201-(.) radio system consists of a transmitter/receiver including operator panel, and is designed as a single unit system.

The frequency range of 118.000 MHz to 136.975 MHz includes 760 channels in intervals of 25 kHz.

The memory can store up to 4 frequencies.

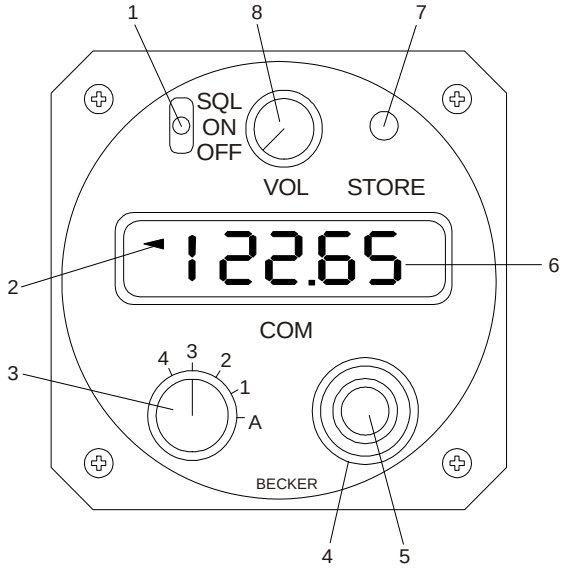
The transmitter is activated with the buttons located in the control sticks.

The AR3201-(.) can be operated using a swan-neck microphone or headsets.

A breaker located in the instrument panel protects the on-board network from overloading in the event of any short circuit within the radio system.

The AR3201-(1) can be used to measure the outside air temperature and the on-board voltage. The measured values are displayed on the LC-display by operation of a spring loaded switch located in the instrument panel.

The outside air temperature sensor is located in the left NACA-type air intake (refer to Chapter 34-10).



1 ON/OFF Switch, combined with Squelch Switch
2 Transit Mode Indicator
3 Channel Selector Switch
4 Mhz Frequency Selector Switch
5 kHz Frequency Selector Switch
6 LCD for Frequency Selector Switch
7 Memory Switch
8 Volume Control

Figure 1: Becker AR3201-(.)

2. System Description

A. Receiver Description

The high frequency signal received by the antenna arrives via a coaxial cable at the antenna input of the radio unit. It is selected, amplified, demodulated, and fed to the speaker or headphones as a low frequency signal.

The required volume can be adjusted using the volume control (VOL).

The automatic squelch control is activated with the OFF-ON-SQL switch and suppresses any signal noise in the speaker or headphone in the event that the HF carrier voltage at the antenna input is not sufficient.

B. Transmitter Description

The radio unit is automatically switched to transmit mode when the transmit button is pressed. The signal received by the microphone is directed to the transmitter unit, amplified, and modulated to a high frequency carrier signal which is then sent by the antenna.

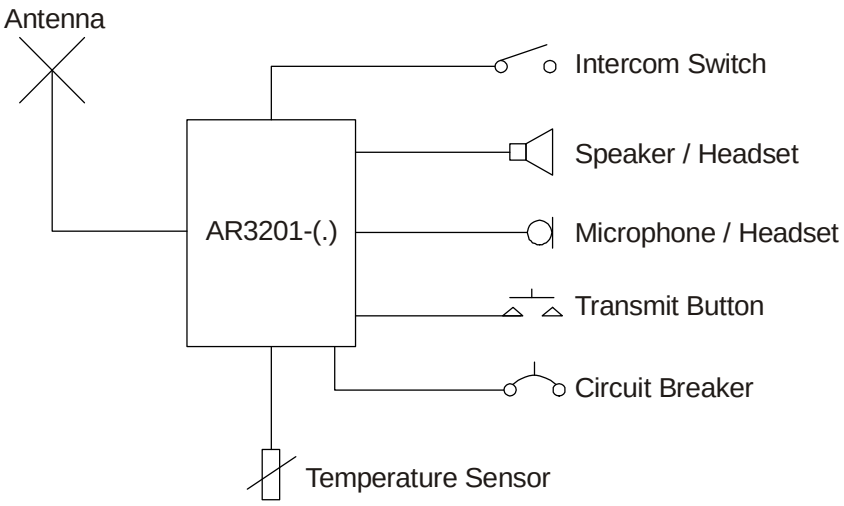


Figure 2: AR3201-(.) Radio Unit, Functional Diagram

C. Unit Operation

Switch master switch and avionics master switch ON.

(1) SWITCHING ON

Switch the VHF unit switch ON. For a few seconds the number 188.88 (display test) as well as an arrow (transmit mode indicator) is displayed on the LC-display. Following that the VHF unit is switched automatically to the last used frequency if the channel selector is in position A. If the channel selector is in any other position (selector position 1 to 4), the frequency stored at that position will be displayed. In the event that a frequency other than the displayed one is required, the channel selector should be positioned in the A position, and the required frequency selected by use of the frequency selectors, MHz and kHz.

(2) STORING FREQUENCIES

Four memory positions are available which can be used for any frequency within the aeronautical radio service between 118,000 and 136,975 MHz. Sequence of the stored frequencies is users discretion.

Storage procedure:

Detail Steps/Work Items		Key Items/References
(1)	Switch the channel selector to position A.	
(2)	Select the required frequency using the MHz and kHz selector.	
(3)	Position the channel selector on the position in which the selected frequency is to be stored.	
(4)	Press the STORE button for approximately two (2) seconds.	

To overwrite or delete a stored frequency proceed to step (1).

(3) TRANSMIT MODE INDICATOR

While transmitting, a small arrow is displayed left of the selected frequency on the LC-display. It indicates that the VHF unit is in transmit mode.

(4) ON-BOARD INTERCOMMUNICATION

The speaker is switched off in this operation mode.

Switch the intercom switch ON. Communication between pilot and co-pilot through the headsets should be clear and without interruptions.

The volume of the intercom can be adjusted using the EIV control located on the side of the VHF-unit.

3. Troubleshooting

The following table contains procedures for general troubleshooting on the radio and intercom system. For the corresponding wiring diagrams refer to Chapter 92 of the Maintenance Manual.

Complaint	Possible Cause	Repair
Unable to transmit or receive, LCD inoperative.	Defective power supply. Defective COMM breaker. If other avionics are also without power: defective avionics master switch. Defective radio unit.	Repair. Replace. Replace. Repair.
Unable to transmit from the pilot's side (missing transmit mode indicator on LCD).	Defective transmit button on pilot's side. Defective wiring between pilot's transmit button and radio unit.	Replace. Repair.
Unable to transmit from the co-pilot's side (missing transmit mode indicator on LCD).	Defective transmit button on co-pilot's side. Defective wiring between co-pilot's transmit button and radio unit.	Replace. Repair.
No modulation when transmitting from pilot's side.	Defective pilot's headset. Defective wiring.	Repair. Repair.
No modulation when transmitting from co-pilot's side.	Defective co-pilot's headset. Defective wiring.	Repair. Repair.
No modulation when transmitting with swan-neck microphone.	Defective swan-neck microphone. Defective wiring.	Replace. Repair.
Short range in transmit mode, reception without problems.	Defective radio unit.	Repair.

Complaint	Possible Cause	Repair
Short range in receive mode, signal noise in reception.	Defective radio unit.	Repair.
Short range in transmit and receive mode, signal noise in reception.	COMM antenna, coaxial cable and plug.	Repair or replace.
Speaker silent, headsets operating normal.	Defective speaker. Defective wiring. Defective intercom switch	Replace. Repair. Replace.
Transmit mode indicator on LCD is always visible.	Transmit button stuck.	Replace.
Intercom system inoperative, transmit mode ok.	Defective intercom switch. Defective wiring.	Replace. Repair.

4. Maintenance Information

A. General

The Becker AR3201 radio unit requires no regular maintenance.

The built-in buffer battery for the stored frequencies has a lifetime expectancy of approximately four (4) years. We recommend that the AR3201 unit is sent to the manufacturer or an approved Becker representative for replacement of the battery if the stored frequencies are lost. Early replacement prevents possible damage to the radio unit which might occur due a leaky battery.

B. Removal and Installation of Radio Unit

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove electrical and antenna connectors.	
(2)	Loosen the four (4) Phillips screws on the front side and remove unit.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
(2)	Perform radio check.	

Section 23-10.2
SPEECH COMMUNICATION BENDIX/KING KX125

1. General

The KX125 radio system is part of the NAV/COMM system used in the DV 20 KATANA. The COMM frequency range of 118.000 MHz to 136.975 MHz includes 760 channels.

The memory can store one frequency.

The unit can be operated using a speaker and a hand held microphone or headsets. It is switched to transmit mode with the transmit button.

The hand held microphone is connected to the microphone plug which is located on the right side under the pilot's instrument panel.

A breaker located in the instrument panel protects the on-board network from overloading in the event of any short circuit within the radio system.

For the description of the NAV part of the KX125 refer to Chapter 34.

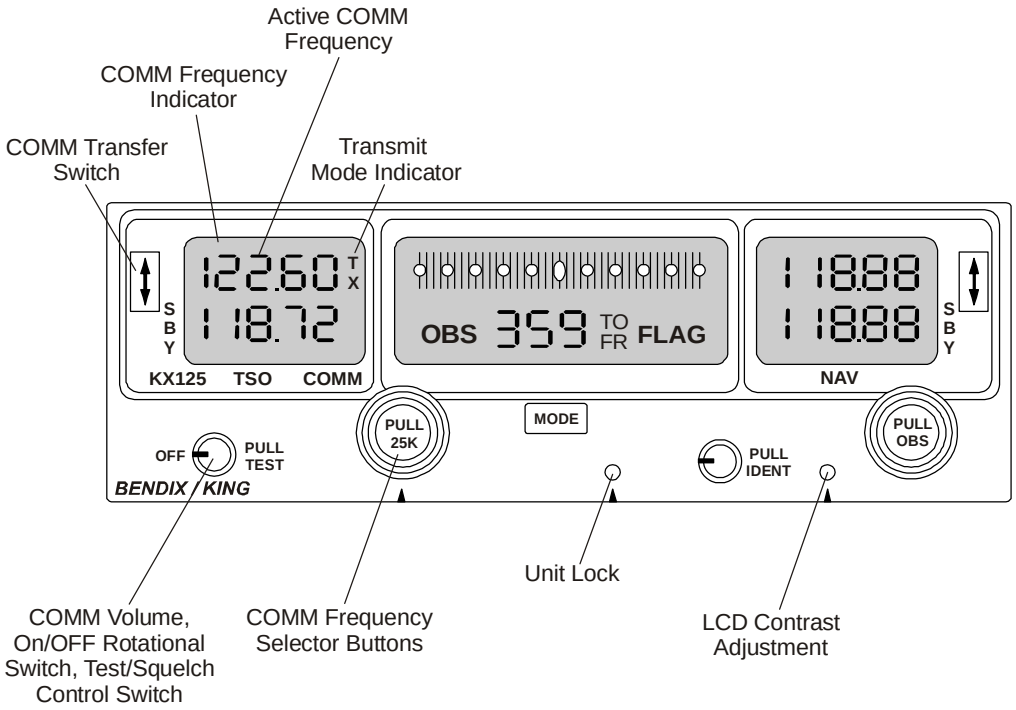


Figure 1: BENDIX/KING KX125

2. System Description

A. Receiver Description

The high frequency signal received by the antenna arrives via a coaxial cable at the antenna input of the radio unit. It is selected, amplified, demodulated, and fed to the speaker or headphones as a low frequency signal.

The required volume can be adjusted using the volume control.

The automatic squelch control suppresses any signal noise in the speaker or headphone in the event that the HF carrier voltage at the antenna input is not sufficient. It can be deactivated by pulling the PULL TEST switch.

B. Transmitter Description

The radio unit is automatically switched to transmit mode when the transmit button is pressed. The signal received by the microphone is directed to the transmitter unit, amplified, and modulated to a high frequency carrier signal which is then sent by the antenna.

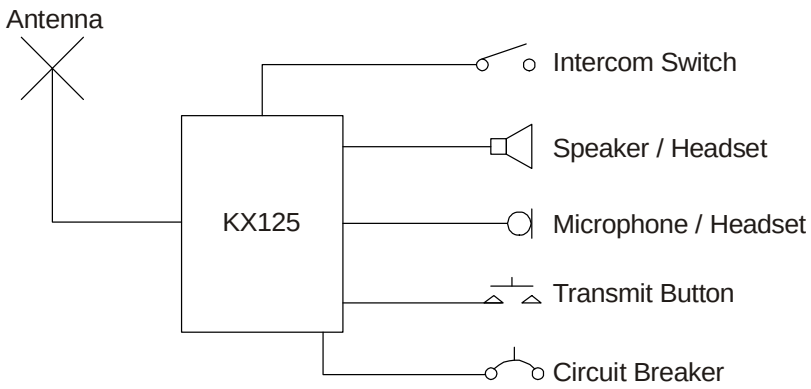


Figure 2: KX125 Unit, Functional Diagram

C. Unit Operation

Switch master switch and avionics master switch ON.

(1) SWITCHING ON

The KX125 unit is switched ON by turning the COMM/PULL/TEST rotating switch from the OFF position in clockwise direction. The last selected as well as the pre-selected frequencies are displayed on the LC Display.

The volume is adjusted by pulling and turning the COMM volume button. After selection the COMM volume button should be pushed back to activate the automatic squelch.

(2) FREQUENCY SELECTION

The required frequency is selected by rotating of the COMM frequency selection buttons, where the outer button is the MHz control. With the inner knob, the frequency can be adjusted in steps of 50 kHz (pushed position) or 25 kHz (pulled position).

The upper COMM frequency display shows the presently active frequency, while the lower display shows the pre-selected frequency. Normally selection of any frequency is performed in the STANDBY window, and then by pressing the COMM transfer button exchanged with the frequency shown in the ACTIVE window. For a direct change of frequency, the COMM transfer button must be pressed for at least two (2) seconds. After that, only the ACTIVE frequency is displayed, and can be changed directly.

Additional pressing of the COMM transfer button will restore the previous state.

(3) TRANSMIT MODE INDICATOR

In transmit mode the TX-indicator is displayed on the LCD. The KX125 is designed for uninterrupted transmission of up to 30 seconds. With exceeding of this time limit the transmitter is switched off and the COMM frequency display will flash. The transmitter is ready for operation immediately after release of the transmit button.

(4) ON-BOARD INTERCOMMUNICATION

The intercom is activated by a toggle switch located in the instrument panel. In this operating mode the speaker is switched off.

3. Troubleshooting

The following table contains procedures for general troubleshooting on the radio and intercom system. For the corresponding wiring diagrams refer to Chapter 92 of the Maintenance Manual.

Complaint	Possible Cause	Repair
Unable to transmit or receive, LCD inoperative.	Defective power supply.	Repair.
	Defective COMM breaker.	Replace.
	If other avionics are also without power: defective avionics master switch.	Replace.
	Defective radio unit.	Repair.
Unable to transmit from the pilot's side (missing transmit mode indicator on LCD).	Defective transmit button on pilot's side.	Replace.
	Defective wiring between pilot's transmit button and radio unit.	Repair.
Unable to transmit from the co-pilot's side (missing transmit mode indicator on LCD).	Defective transmit button on co-pilot's side.	Replace.
	Defective wiring between co-pilot's transmit button and radio unit.	Repair.
No modulation when transmitting from pilot's side.	Defective pilot's headset.	Repair.
	Defective wiring.	Repair.
No modulation when transmitting from co-pilot's side.	Defective co-pilot's headset.	Repair.
	Defective wiring.	Repair.
No modulation when transmitting with hand-held microphone.	Defective hand-held microphone.	Replace.
	Microphone not plugged in.	Plug in.
	Defective wiring.	Repair

Complaint	Possible Cause	Repair
Short range in transmit mode, reception without problems.	Defective radio unit.	Repair.
Short range in receive mode, signal noise in reception.	Defective radio unit.	Repair.
Short range in transmit and receive mode, signal noise in reception.	COMM antenna, coaxial cable and plug.	Repair or replace.
Speaker silent, headsets operating normal.	Defective speaker. Defective wiring. Defective intercom switch	Replace. Repair. Replace.
Transmit mode indicator on LCD visible without transmut button pressed; COMM display starts flashing after 30 seconds.	Transmit button stuck.	Replace.
Intercom system inoperative, transmit mode ok.	Defective intercom switch. Defective wiring.	Replace. Repair.
Unable to transmit; reception via headsets ok.	Defective intercom switch. Defective wiring.	Replace. Repair.

4. Maintenance Information

A. General

The Bendix/King KX125 radio unit requires no regular maintenance.

B. Removal and Installation of Radio Unit

The KX125 is held in its place by a retaining claw which can be turned with a hexagon socket screw and catches in the rack. The hexagon socket screw is accessible from the front side and is located to the left of the MODE button. A 3/32 inch wrench is required to remove or install the radio unit.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Use wrench to turn hexagon socket screw under opening beside MODE button in anti clockwise direction until fixing device unlocks.	
(2)	Remove unit from rack.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
(2)	Check NAV/COMM unit.	

(3) LCD Contrast Adjustment

The contrast of the LCD can be adjusted with a small screwdriver through an opening in the front panel (located to the right of the PULL/IDENT button).

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Section 23-10.3
SPEECH COMMUNICATION GARMIN GNS 430

1. General

Figure 1 shows the GNS 430 NAV/COM/GPS system. It is located in the avionics rack in the instrument panel, see Chapter 31. Refer to the equipment manufacturers' manuals for more data about the equipment.

The GNS 430 has these functions:

– Two-way voice communication in the frequency range from 118 MHz to 136.975 MHz in 25 kHz or 8.33 kHz increments (depends on setup). This gives 760 or 2278 communication channel operation.

– Receiving navigation signals in the frequency range from 108 MHz to 117.95 MHz in 50 kHz increments. This gives 200 navigation channel operation.

– Receiving glideslope signals in the frequency range from 329.15 MHz to 335 MHz in 150 kHz increments.

The GNS 430 has the communication and navigation controls on the left. They have these controls:

– The small left knob (PUSH C/V) (1) is used to tune the kilohertz (kHz) value of the standby frequency for the communications transceiver (COM) or the VLOC receiver, whichever is currently selected by the tuning cursor. Press this knob momentarily to toggle the tuning cursor between the COM and VLOC frequency fields.

– The large left knob (COM/VLOC) (2) is used to tune the megahertz (MHz) value of the standby frequency for the communications transceiver (COM) or the VLOC receiver, whichever is currently selected by the tuning cursor.

– The VLOC volume knob (3) controls audio volume for the selected VOR/Localizer frequency. Press momentarily to enable/disable the ident tone.

– The VLOC flip-flop key (4) is used to swap the active and standby VLOC frequencies (i.e., make the selected standby frequency active).

– The COM power/volume knob (5) controls unit power and communications radio volume. Press momentarily to disable automatic squelch control.

– The COM flip-flop key (6) is used to swap the active and standby COM frequencies. Press and hold to select emergency channel (121.500 MHz).

The GNS 430 display is divided into separate 'windows' (or screen areas), including a COM window, VLOC window and the GPS window (the right 3/4 of the display).

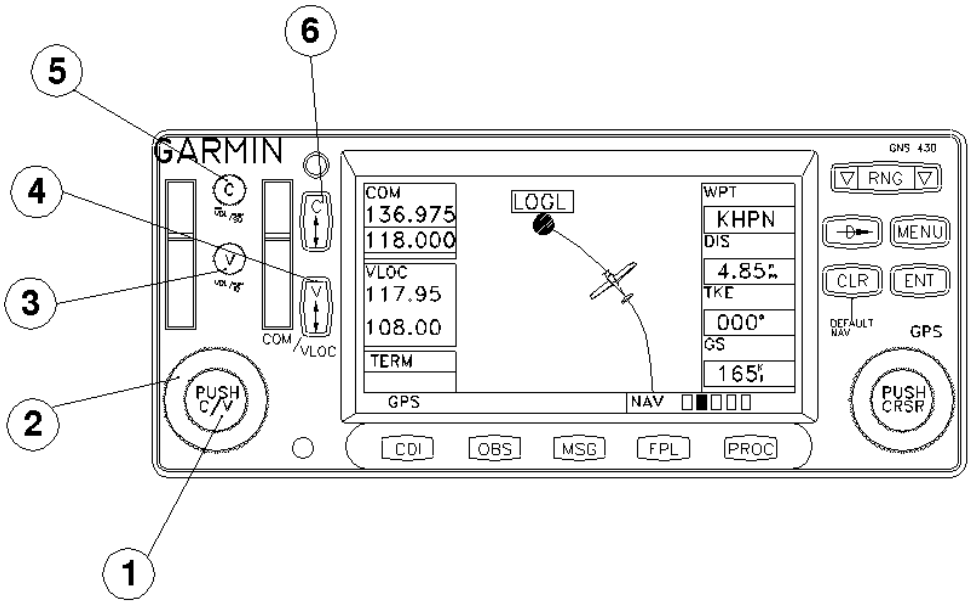

Figure 1: Garmin GNS 430 NAV/COM/GPS

Section 23-10.4
SPEECH COMMUNICATION GARMIN SL 30

1. General

Figure 1 shows the SL 30 COM/NAV. It is located in the avionics rack in the instrument panel, see Chapter 31. Refer to the equipment manufacturers' manuals for more data about the equipment.

The SL 30 has these functions:

– Two-way voice communication in the frequency range from 118 MHz to 136.975 MHz in 25 kHz increments. This gives 760 communication channel operation.

– Receiving navigation signals in the frequency range from 108 MHz to 117.95 MHz in 50 kHz increments. This gives 200 navigation channel operation.

– Receiving glideslope signals in the frequency range from 328 MHz to 335 MHz in 150 kHz increments.

The SL 30 has these controls:

– Power On/Off - Volume - Squelch. The knob on the left side of the SL 30 controls power on/off, volume, and squelch test. Rotate the knob clockwise (CW) past the detent to turn the power on. Continuing to rotate the knob to the right increases speaker and headphone amplifier volume level. Rotate the knob to the left to reduce the volume level. Pull the knob out to disable automatic squelch. The SL 30 may be configured to have the volume knob control NAV and intercom volume, as well as COM volume.

– Large/Small knobs. The dual concentric knobs on the right side of the SL 30 are used to select frequencies, to view the features available within a function, or make changes.

– Flip/Flop. Press the FLIP/FLOP button to switch between the active (left-most) and standby (right-most) frequency. Switching between COM frequencies is disabled while you are transmitting.

– COM. Press COM to select the COM radio mode. The annunciator will light above the button when you are in COM mode. Press COM a second time to monitor the standby frequency.

– NAV. Press NAV to select the NAV radio mode. The annunciator above the button will light when you are in NAV mode. Press NAV a second time to monitor the standby frequency.

– SYS. Press SYS to reach the System mode. The annunciator above the button will light when you are in System mode.

– OBS. Press OBS to see the current OBS setting and graphic CDI. If the annunciator above the OBS button lights, you may use the Large and Small knobs to change the displayed OBS values. If your system is configured with an external CDI, the OBS radial of your remote display will be decoded and displayed on the screen of the SL 30.

– T/F. Press T/F to toggle between the bearing TO or radial FROM the active VOR. The T/F button does not operate for Localizer frequencies.

– ID. Press ID to select the NAV audio and toggle between VOICE or IDENT. Pressing ID will cancel the VOR monitor function. Selecting the monitor function will suspend the ID function until the monitor function is disabled.

– SEL. Press SEL to choose from a list of channel types or to change values. In COM or NAV modes, press SEL to choose frequencies from the available lists. Press SEL again if you want to cancel the selection process. The annunciator will light above the button when this function is active.

– ENT. Press ENT to save selected values, to confirm a prompt, or to save the Standby frequency.

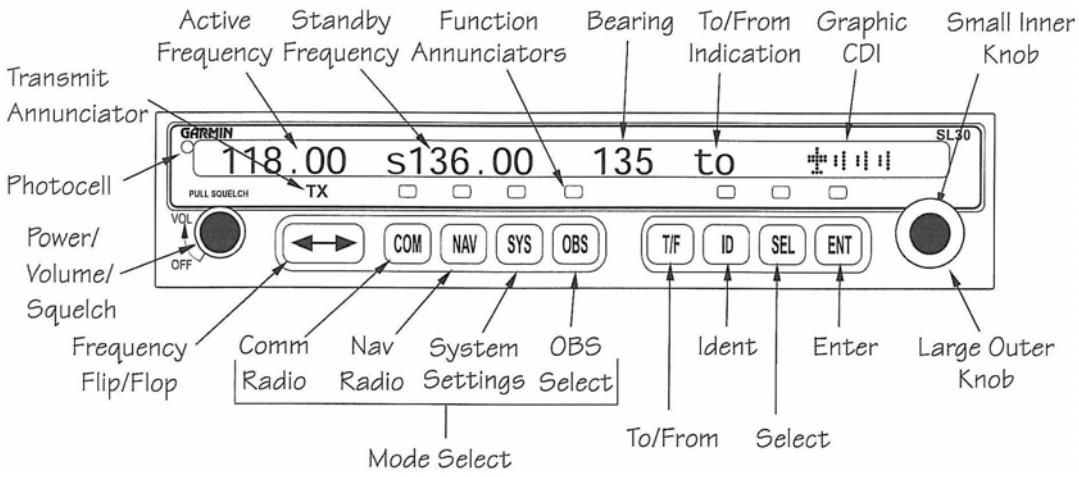

Figure 1: Garmin SL 30 COM/NAV

CHAPTER 24

ELECTRICAL POWER

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CHAPTER 24
ELECTRICAL POWER

1. General

The DV 20 is equipped with a 14 Volt direct current (DC) electrical system. An alternator integrated into the engine and connected to a rectifier/voltage regulator supplies power to the electrical system.

Optional, the DV 20 can be equipped with a external alternator (OÄM 20-245), which is mounted onto the front of the engine and driven by a flat belt. This alternator has an internal voltage regulator.

A 12 Volts, 30 amp.hrs. battery is charged by the alternator and supplies power for starting the engine, and for equipment while the engine is not running. The battery also supports the alternator in such cases when a temporary capacity overload occurs (e.g. operation of the landing light).

The electrical circuits of the system are, with the exception of the engine start circuit, protected by automatic circuit breakers. The master switch is used to switch all electrical sources within the system ON and OFF.

An overvoltage sensor protects the electrical system in the event of generator overvoltage.

With the exception of battery, alternator, and starter motor, all electrical components within the engine compartment are mounted to a base plate attached to the engine mount. Connections to the cockpit are established through a plug either attached to the firewall or to the instrument panel floor.

The components of the electrical system are identified in accordance with the ATA 100 specification and can thus easily be assigned to their respective sub-systems.

e.g. VR2430-01

VR: Voltage regulator

24: Chapter 24 Electrical Power

30: Sub-Chapter 30 DC Generation

-

01: Item No. within the system

For detailed wiring diagrams refer to Chapter 92 of the Maintenance Manual.

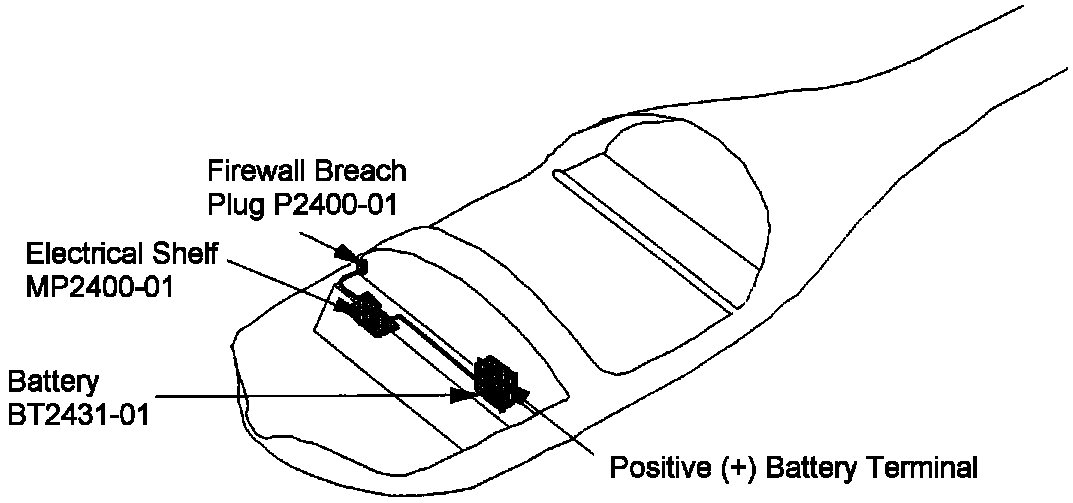

Figure 1: DV 20 Electrical System, Components in Engine Compartment

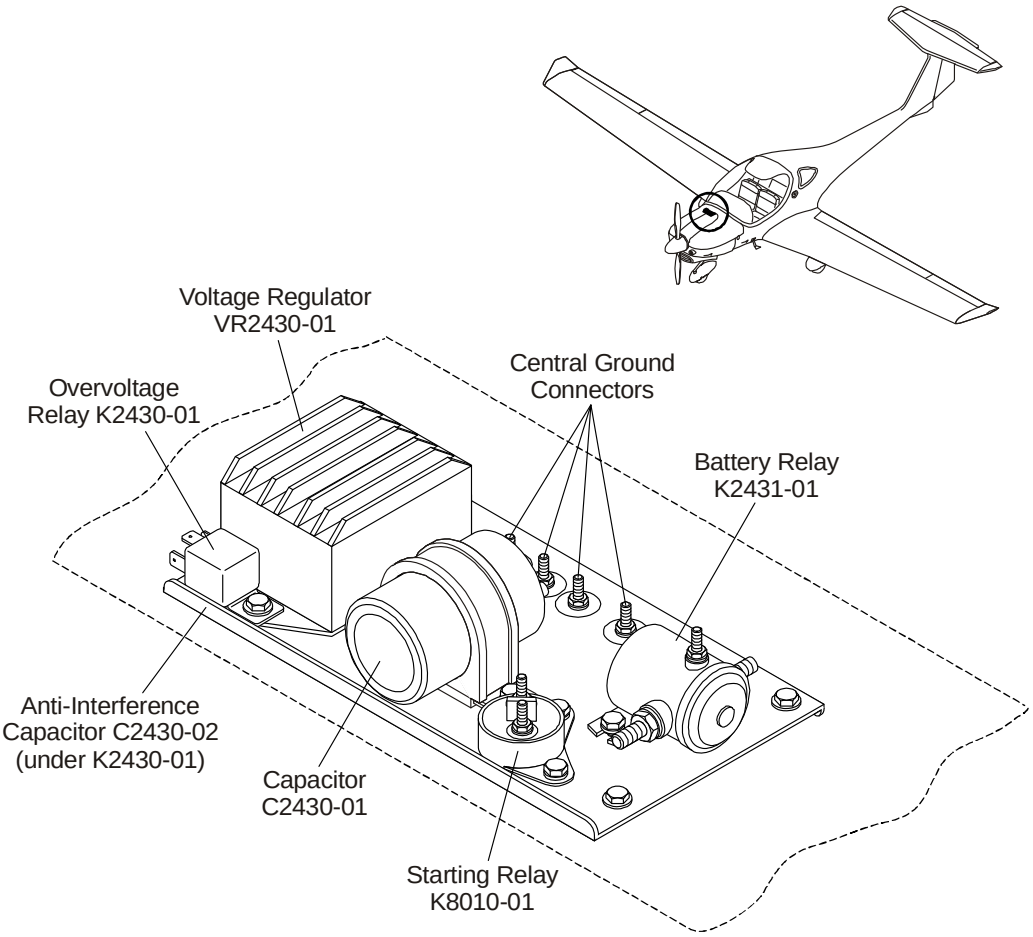

Figure 2: Electrical Shelf in Engine Compartment

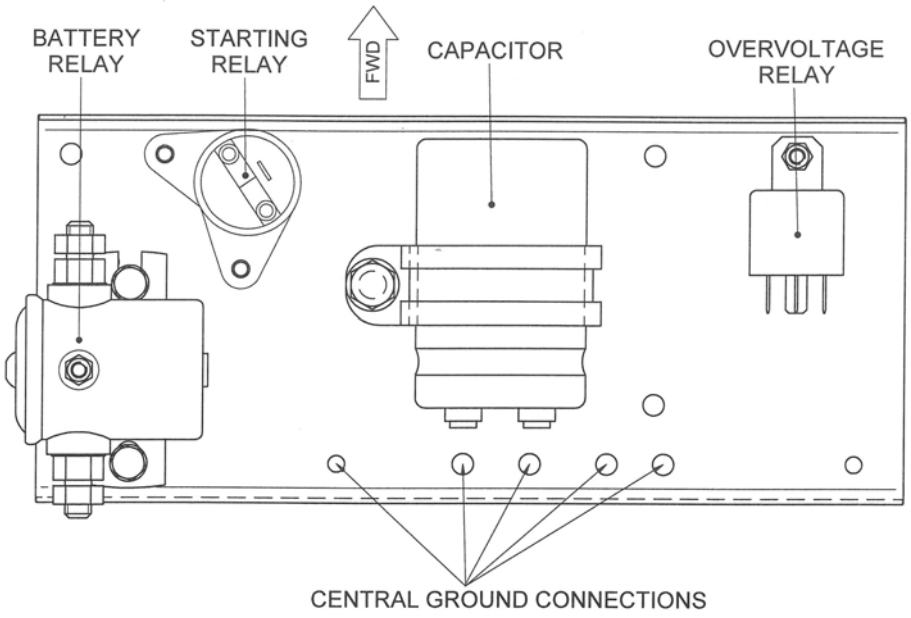

Figure 3: Electrical Shelf in Engine Compartment (OÄM 20-245, External Alternator)

2. Description

A. Battery

The lead acid battery is located in the engine compartment, supplies power to the starter and is also used as emergency supply when the engine has stopped.

B. Battery Relay

The battery relay connects the battery to the electrical buses 1 and 2, the starting relay, and the avionics bus. The battery relay is controlled by means of the master switch.

C. Master Switch

The master switch is located in the switch panel (in the center section of the instrument panel). It controls the battery and overvoltage relays.

A red sleeve is used to mark the master switch.

If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, the master switch is located in the bottom section of the instrument panel on the pilot's side. The switch is colored red.

D. Voltage Regulator

The voltage regulator rectifies the AC supplied by the alternator to DC and regulates the voltage to a constant value of 13.75 Volts.

If OÄM 20-245 (External alternator) is installed, the voltage regulator is internal of the alternator.

E. Starting Relay

The starting relay connects the output of the battery relay with the starter motor. The starter can only be operated with the master switch ON, and the battery relay closed.

F. Overvoltage Sensor

The overvoltage sensor monitors the system voltage and controls the overvoltage control relay. In the event that the on-board system voltage rises above the threshold of 16.1 Volts, the sensor disconnects the alternator by switching the overvoltage control relay off.

G. Generator Warning Light

The generator warning indicator is illuminated in the event of generator failure.

H. Ammeter

The ammeter is located in the right hand section of the instrument panel and indicates charging (+) and discharging (-) of the battery.

I. Low Voltage Caution Light

The low voltage caution light is located adjacent to the ammeter in the right hand section of the instrument panel, and illuminates when the on-board voltage drops below the threshold of 12.5 Volts.

If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, the low voltage caution light is installed in the top, center section of the instrument panel, and illuminates when the on-board voltage drops below the threshold of 12.75 Volts.

J. Electrical Buses 1 and 2

The electrical buses 1 and 2 distribute power to the electrical components via automatic circuit breakers. The electrical bus 1 is located in the instrument panel on the right hand side, while electrical bus 2 is located in the switch panel above the radio rack.

If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, the electrical buses 1 and 2 are located on the left, bottom side of the instrument panel on the pilot´s side.

K. Avionics Master Switch and Avionics Bus

The avionics bus is connected to the electrical bus 1 via the avionics master switch and supplies electrical power to the avionics through circuit breakers.

A red sleeve is used to mark the master switch.

If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, the avionics bus is connected to the electrical bus 1 via the avionics master relay. The avionics master switch controls the avionics master relay.

3. Troubleshooting

The following table lists defects as they could appear in the electrical system, and their correction. Detailed troubleshooting tables are presented in the respective chapters.

The wiring diagrams are located in Chapter 92 of the Maintenance Manual.

Complaint	Possible Cause	Repair
Starter motor inoperative; warning lights in instrument panel operating normal during starting.	Starting relay.	Replace.
	Starter cabling; breaker.	Replace.
	Ignition switch.	Replace.
	Starting relay control.	Repair.
Starter operates for a short time and then stops; warning lamps in instrument panel operating normal before starting and extinguish during start attempt.	Battery.	Charge, replace.
	Contact interruption between battery and battery relay.	Repair.
	Battery relay.	Replace.
Starter motor turns very slowly, battery fully operational.	Starter motor.	Replace.
	Contact resistance in starter power supply.	Repair.
	Ground connection between battery and engine block.	Repair.

4. Maintenance Information

CAUTION: GENERAL SAFETY REGULATIONS SHOULD BE OBSERVED DURING MAINTENANCE PERFORMED ON THE ELECTRICAL SYSTEM, AS WELL AS SAFETY INSTRUCTIONS DESCRIBED IN THE FOLLOWING CHAPTERS.

THE BATTERY SHOULD BE DISCONNECTED FOR EXTENSIVE MAINTENANCE OPERATIONS. AFTER COMPLETION OF MAINTENANCE TASKS, AND BEFORE RE-CONNECTION OF THE BATTERY, THE ELECTRICAL SYSTEM SHOULD BE CHECKED USING AN EXTERNAL 14 VOLTS POWER SUPPLY WITH ADJUSTABLE OVERCURRENT PROTECTION.

CAUTION. IN THE EVENT THAT DURING MAINTENANCE OR REPAIR WORK, ELECTRIC OR ELECTRONIC COMPONENTS ARE TO BE REPLACED ON THE DV 20, ONLY GENUINE SPARE PARTS APPROVED BY THE AIRPLANE MANUFACTURER SHOULD BE INSTALLED.

Section 24-30
DC GENERATION

1. General

The generator system consists of the following components:

Description		Identification
a)	Internal alternator	GEN2430-01
b)	Voltage regulator	VR2430-01
c)	Overvoltage control relay	K2430-01
d)	Overvoltage sensor	SE2430-01
e)	Generator warning light	DS2430-01
f)	Low voltage caution light	DS2430-02
g)	Generator circuit breaker	CB2430-01
h)	Generator control circuit breaker	CB2430-02
i)	External alternator (OÄM 20-245)	none
j)	Low voltage monitor (OÄM 20-244)	none

The maintenance free alternator is integrated into the engine and supplies power to the equipment during normal operation. If OÄM 20-245 (External alternator) is installed, the alternator is mounted on the left front side of the engine and driven by a flat belt.

The voltage regulator and the overvoltage control relay are installed on the electrical shelf attached to the engine mount and are accessible after removing the upper cowling. If OÄM 20-245 (External alternator) is installed, no voltage regulator is installed on the electrical shelf, because the external alternator has an internal regulator.

The overvoltage sensor is located in the cockpit in front of the right hand instrument panel. S/Ns 20.200 and above have the overvoltage sensor installed on the firewall adjacent to the electrical shelf in the engine compartment.

The low voltage caution light with integrated sensor is located next to the ammeter in the right hand section of the instrument panel. If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, the low voltage caution light is installed in the top center section of the instrument panel. An external voltage monitor is installed on the right side of the instrument panel floor and controls the low voltage caution light.

The generator warning light is located under the battery master switch in the switch panel above the radio rack. If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, the generator warning light is installed in the top center section of the instrument panel.

For wiring diagram of DV 20 Generator System, please refer to Chapter 92.

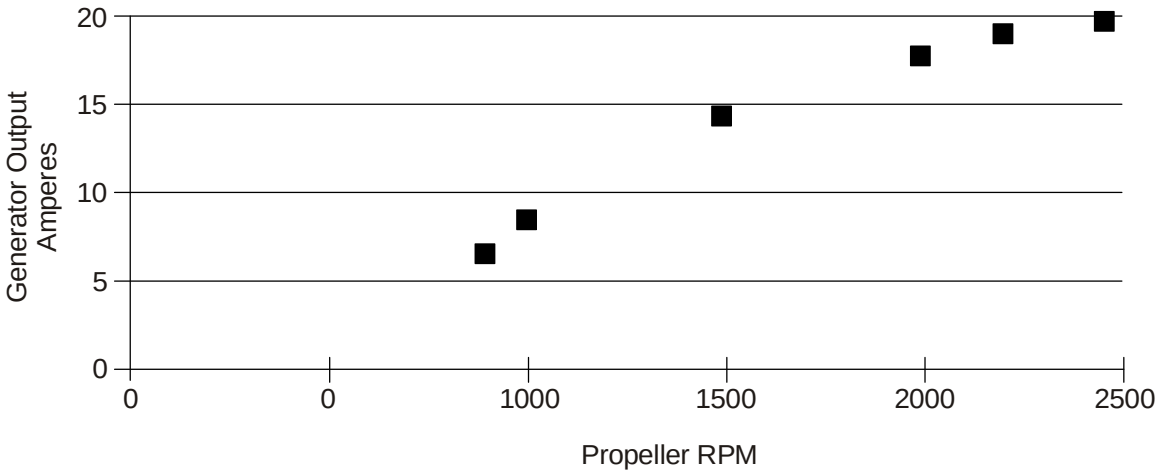

Figure 1: Max. Generator Output as a Function of Propeller RPM

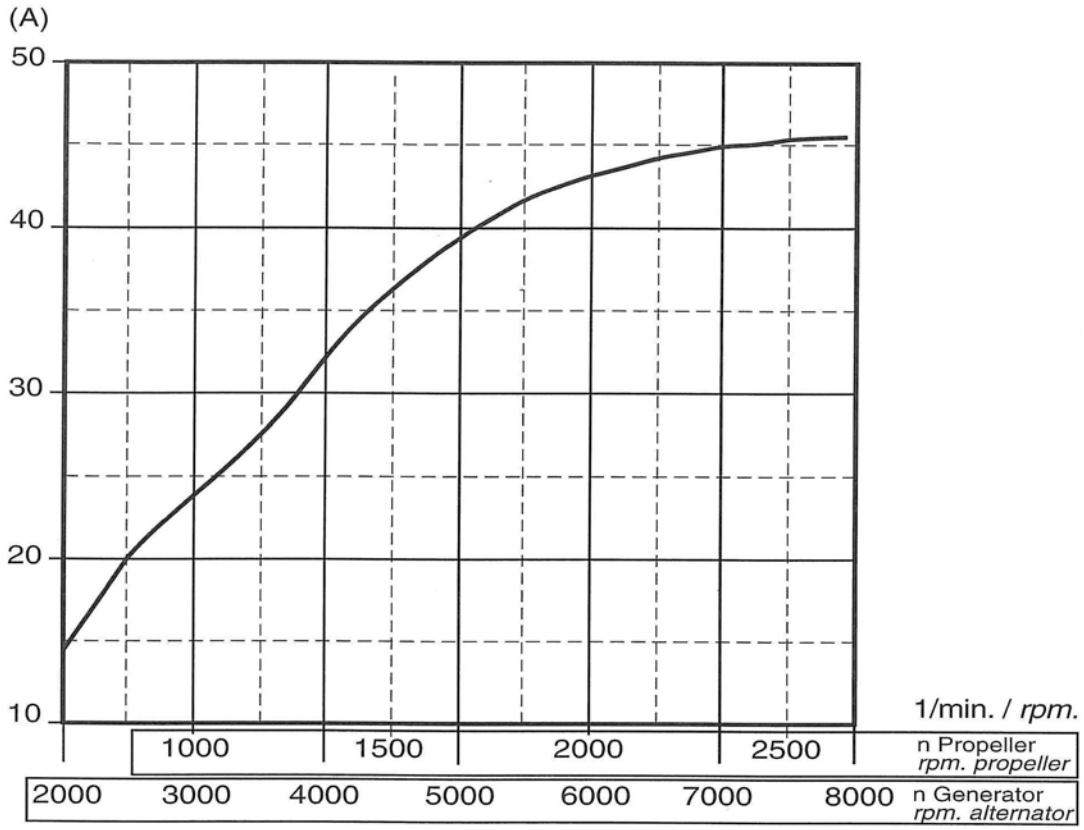

Figure 2: Max. Alternator Output (OÄM 20-245, External Alternator)

2. Description

The generator is a permanently excited ten-pole monophase alternator. It is connected directly to the engine crankshaft through a flange. The voltage is generated in coils which are arranged in tangential direction and whose windings are crossed by the magnetic flux lines of the rotor magnet. The generated AC voltage is dependent on the rotor RPM. It is rectified and regulated by the voltage regulator. The voltage regulator is adjusted by the manufacturer to a fixed threshold of 13.75 volts and can not be re-adjusted.

The filter capacitor (C2430-01) connected to the output side of the voltage regulator reduces the alternating component. The anti-interference capacitor (C2430-02), connected in parallel, filters intermittent high frequency spikes to ground.

The electrical bus 1 which supplies the electrical equipment and recharges the battery (BT2431-01) is fed by the voltage regulator via the generator circuit breaker (CB2430-01).

In addition to its purpose described in Chapter 24-31, the battery is also part of the generator system, and serves to stabilize the on-board electrical voltage in conjunction with voltage regulator and the filter capacitor (C2430-10).

Power is supplied to the voltage regulator as well as to the generator indicators and the overvoltage protection via the generator control circuit breaker (CB2430-02).

The generator warning DS2430-01 light is illuminated when the generator fails to deliver power.

The low voltage caution light (DS2430-02) is equipped with an integrated sensor which enables illumination of the light if the on-board voltage drops below 12.5 Volts. This indicates that the current supplied by the alternator is not sufficient; e.g. in case of low engine RPM which causes low output of the alternator due to its design, or in case that all electrical equipment is switched on simultaneously, using more current then the alternator can supply (refer to Figure 1).

In such cases, the system voltage drops below the threshold, the low voltage caution light is illuminated, and additional power is supplied to the system by the battery. Since such cases are limited in time, it is ensured that the battery is recharged.

The overvoltage protection consists of the overvoltage sensor (SE2430-01) and the overvoltage control relay (K2430-01).

When switching the battery master switch (S2430-01) ON, voltage is supplied to the overvoltage sensor which in turn supplies voltage to the overvoltage control relay via the control output. This relay connects the alternator to the voltage regulator.

In the event that the voltage on the sensing input of the overvoltage sensor (on-board voltage) increases above 16.1 Volts due to malfunction of the voltage regulator, the control output interrupts the supply to the overvoltage control relay, the control relay opens and disconnects the alternator from the voltage regulator. This condition is maintained until the supply to the overvoltage sensor is interrupted (switching battery master switch OFF).

The external alternator, as installed by OÄM 20-245, is installed on the left front side of the engine. It is driven by a flat belt, which is driven by the propeller flange. The alternator has an internal regulator and cannot be adjusted or replaced. Refer to the engine manufacturer for more data about the alternator.

The filter capacitor connected to the output of the alternator reduces the alternating component.

The electrical bus 1 which supplies the electrical equipment and recharges the battery is fed by the alternator via the generator circuit breaker.

In addition to its purpose described in Chapter 24-31, the battery is also part of the alternator system, and serves to stabilize the on-board electrical voltage in conjunction with the filter capacitor.

Power is supplied to the internal voltage regulator of the alternator, as well as to the overvoltage protection via the master control circuit breaker.

The generator warning light is illuminated when the alternator fails to deliver power.

The low voltage caution light has an external voltage monitor which enables illumination of the light if the on-board voltage drops below 12.75 Volts. This indicates that the current supplied by the alternator is not sufficient; e.g. in case of low RPM which causes low output of the alternator due to its design.

The overvoltage protection consists of the overvoltage sensor and the overvoltage relay.

When switching the battery masters switch ON, voltage is supplied to the overvoltage sensor which in turn supplies voltage to the overvoltage control relay via the control output. This relay connects the alternator excitation to the master control circuit breaker.

In the event that the voltage on the sensing input of the overvoltage sensor (on-board voltage) increases above 16.1 Volts due to malfunction of the internal voltage regulator of the alternator, the control output interrupts the supply to the overvoltage control relay, the control relay opens and disconnects the alternator excitation from the master control circuit breaker. This condition is maintained until the supply to the overvoltage sensor is interrupted.

3. Troubleshooting

The following table lists defects as they could appear on the generator system, and their correction.

The wiring diagrams are located in Chapter 92 of the maintenance manual, or this temporary revision to the maintenance manual.

Find the trouble in column 1 do the repair given in column 3.

Trouble	Possible Cause	Repair
No power supplied by alternator with engine running (malfunction even with minimum current consumption); generator warning light and low voltage caution light illuminated.	Internal alternator.	Repair.
	External alternator (OÄM 20-245).	Replace.
	Overvoltage control activated.	Replace voltage regulator. Replace alternator if the external alternator (OÄM 20-245) is installed.
	Overvoltage relay.	Replace.
	Voltage regulator.	Replace. Replace alternator if the external alternator (OÄM 20-245) is installed.
	Wiring, connectors, electrical connections.	Repair.
	Battery master switch S2400-01.	Replace.
	Overvoltage sensor.	Replace.

Trouble	Possible Cause	Repair
No power supplied by alternator with engine running (malfunction even with minimum current consumption); low voltage caution light illuminated.	Voltage regulator. Generator circuit breaker. Wiring, electrical connections between voltage regulator and electrical bus, or between alternator and electrical bus (OÄM 20-245).	Replace. Replace alternator if the external alternator (OÄM 20-245) is installed. Replace. Repair.
No power supplied by alternator with engine running; ammeter indicates constant discharging of battery; low voltage caution light and generator warning light are not illuminated (even when engine is not running).	Defective supply to the voltage regulator or alternator, overvoltage sensor, and low voltage caution light or low voltage monitor. Generator circuit breaker (CB2430-01). Wiring circuit breaker (CB2430-01).	 Replace. Repair.
Generator circuit or master control breaker (CB2430-01) opens with battery master switch on.	Voltage regulator Filter capacitor (C2430-01). Anti-interference capacitor (C2430-02) (if installed). Wiring.	Replace. Replace alternator if the external alternator (OÄM 20-245) is installed. Replace. Repair.

Trouble	Possible Cause	Repair
Generator control or mater control circuit breaker opens with battery master switch on.	Voltage regulator.	Replace. Replace alternator if the external alternator (OÄM 20-245) is installed.
	Overvoltage sensor.	Replace.
	Low voltage caution light. (OÄM 250-244 not installed).	Replace.
	Wiring.	Repair.
RPM related error (noise) in speaker or head set.	Filter capacitor (C2430-01).	Replace.
	Defective ground connection of alternator cable shielding (OÄM 20-245 not installed).	Replace.

4. Removal and Installation

A. Alternator

For removal and installation of the alternator refer to engine operator's manual.

(1) Voltage Regulator

(a) Removal

Detail Steps/Work Items		Key Items/References
(1)	Throw master switch in OFF position.	
(2)	Remove upper engine cowling.	
(3)	Remove connector (P2430-01) from voltage regulator.	
(4)	Remove voltage regulator by loosening the two mounting screws.	

(b) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
CAUTION: THE CAPACITOR (C2430-02) AND RELAY (K2430-01) MUST BE INSTALLED USING THE FORWARD MOUNTING SCREW OF THE VOLTAGE REGULATOR.		

(2) Overvoltage Control Relay

(a) Removal

Detail Steps/Work Items		Key Items/References
(1)	Switch OFF the electric master switch.	
(2)	Remove upper engine cowling.	
(3)	Remove connector (P2430-03) from overvoltage control relay.	
(4)	Remove the front mounting screws on overvoltage control relay; remove relay.	

(b) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

(3) Overvoltage Sensor

(a) Removal

Detail Steps/Work Items		Key Items/References
(1)	Switch OFF the electric master switch.	
(2)	Remove top cover from instrument panel. For S/Ns 20.200 and higher, remove the upper engine cowling.	
(3)	Remove connector (P/J2430-02 or P/J2430) from overvoltage sensor.	
(4)	Remove mounting screw; remove sensor.	

(b) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

(4) Low Voltage Sensor

(a) Removal

Detail Steps/Work Items		Key Items/References
(1)	Switch OFF the electric master switch.	
(2)	Remove top cover from instrument panel.	
(3)	Disconnect low voltage sensor on terminal board TB1. If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, disconnect the low voltage sensor at connectors P/J2440.	
(4)	Remove low voltage sensor by loosening both hex nuts on back side. If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, remove the low voltage sensor by removing the screws, washers and nuts.	

(b) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

5. Maintenance Information

The generator system does not require periodic maintenance.

Section 24-31
BATTERY SYSTEM

1. General

The DV 20 is equipped with a 12 Volts, 30 amp.hrs. lead acid accumulator located in the engine compartment in a composite trough.

The battery is charged by the alternator.

Venting of the battery cells is accomplished through a silicon hose which directs the gas generated by the charging process in downward direction to the exterior of the airplane.

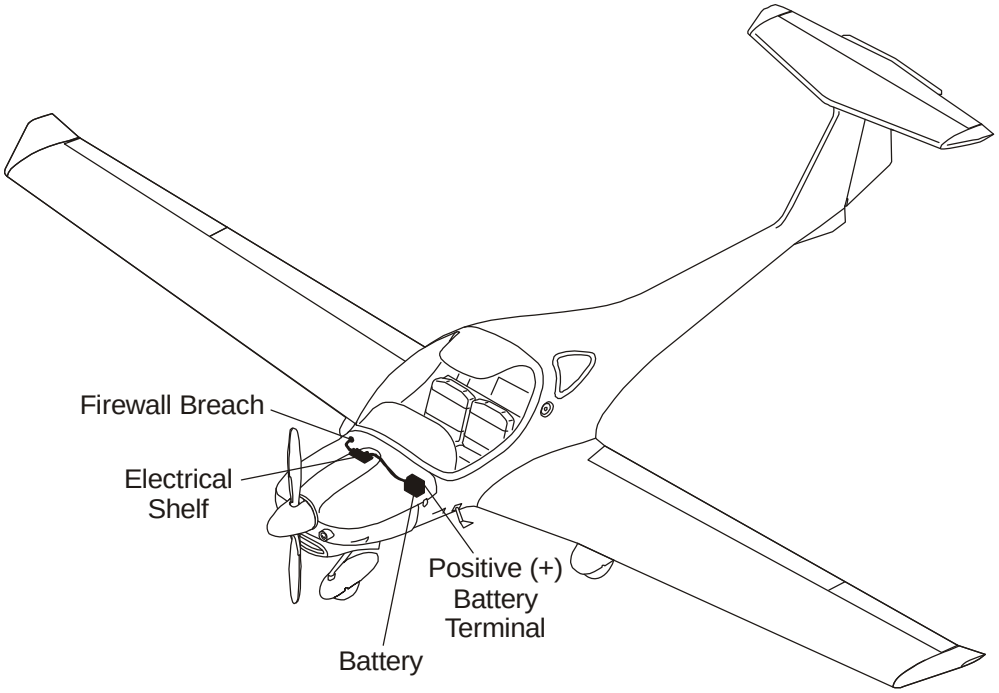

Figure 1: DV 20 Battery System, Components in Engine Compartment

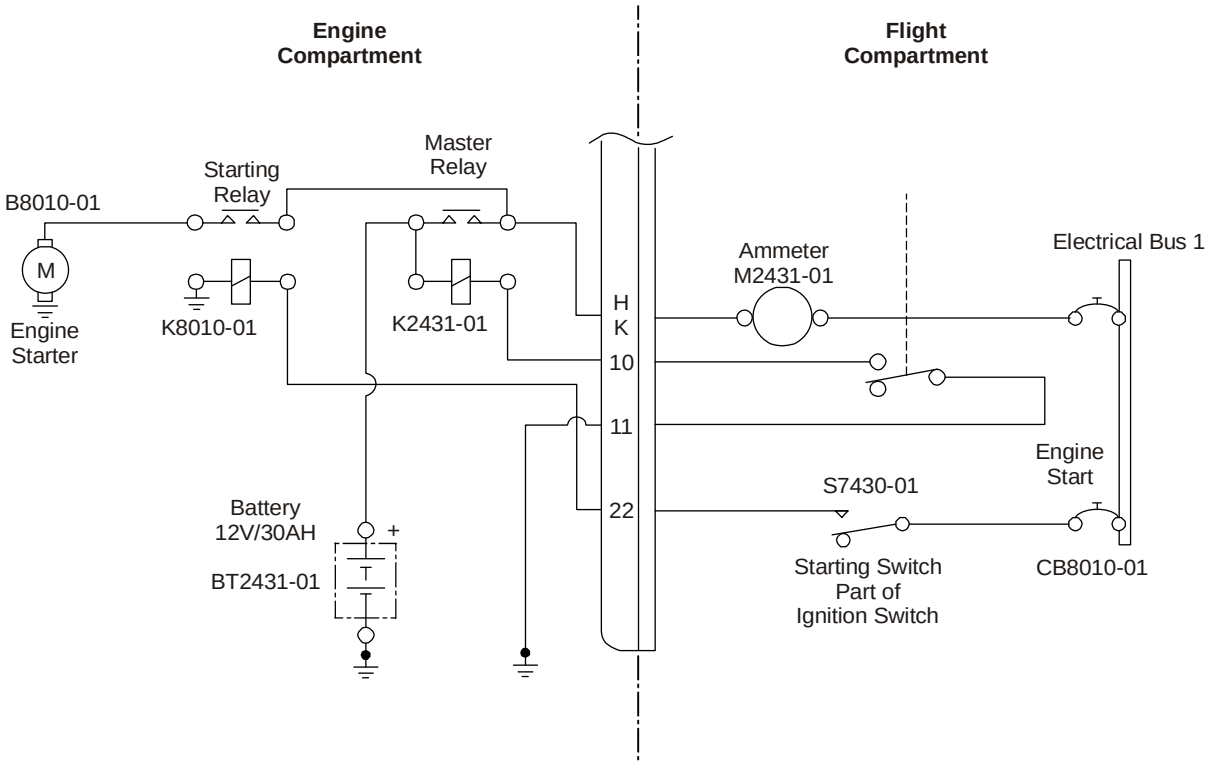

Figure 2: DV 20 Battery System, Simplified Schematic

2. Description

The battery is connected to the electrical buses, and consequently to the on-board network, via the master relay (K2431-01).

With the battery master switch (S2400-01) in the OFF position, the battery voltage is connected to the opened master relay (K2431-01). By throwing the master switch in the ON position, the master relay (K2431-01) is closed, connecting the battery via the ammeter (M2431-01) to the electrical bus 1 and to the open starting relay (K8010-01).

The ammeter indicates charging or discharging of the battery.

The lead acid battery requires regular maintenance.

3. Troubleshooting

The following table lists defects as they could appear on the battery system, and their correction.

The wiring diagrams are located in chapter 92 of the maintenance manual.

Complaint	Possible Cause	Repair
Battery cannot be connect to the bus.	Discharged battery. Master switch. Master relay. Cabling.	Charge. Replace. Replace. Repair.
Battery uses too much water.	Voltage regulator (charging voltage to high).	Replace.
Ammeter on constant zero (0) indication.	Ammeter.	Replace.
Battery capacity permanently too low.	Voltage regulator (charging voltage to low). Battery.	Replace. Replace.
Starter motor turns to slowly or not at all.	Refer to Chapter 24-00.	

4. Maintenance Information

The battery has an inspection interval of 100 flight hours. At this interval or after prolonged parking (see Sub-Chapter 10-30), the fluid level should be checked (should be approximately 1 cm or 0.4 inch above the lead plates), as well as the charge condition using a hydrometer. The vent tube must be checked for blockage.

CAUTION: THE FLUID LEVEL SHOULD BE FILLED TO THE MAXIMUM MARKING USING DISTILLED WATER ONLY.

ACID, CAUSTIC SOLUTIONS, OR ADDITIVES CAN DESTROY THE BATTERY, AND SHOULD NOT BE USED.

WARNING: TO AVOID BURNS OR FIRE DURING MAINTENANCE TASKS PERFORMED IN THE ENGINE COMPARTMENT, NEAR THE BATTERY, OR DIRECTLY ON THE ELECTRICAL SYSTEM (REPLACING OF COMPONENTS, OR WORKING ON THE CABLING), EXERCISE CAUTION. DISCONNECT THE NEGATIVE (-) BATTERY POLE TO AVOID SHORT CIRCUIT.

THE BATTERY IS FILLED WITH DILUTED SULFURIC ACID WHICH CAN CAUSE SEVERE ACID BURNS. FOR HANDLING THE LEAD ACID BATTERY, RUBBER GLOVES, RUBBER APRON AND GOGGLES MUST BE WORN.

TO NEUTRALIZE ANY ACID BURNS ON THE SKIN, A SOLUTION OF NATRIUM CARBONATE AND WATER SHOULD BE USED AND AFTERWARDS REMOVED WITH PLENTY OF WATER. ACID BURNS IN THE AREA OF THE EYES SHOULD BE WASHED IMMEDIATELY WITH PLENTY OF WATER (USING AN EYE WASH STATION).

IN CASE OF ACID BURNS A PHYSICIAN MUST BE CONSULTED IMMEDIATELY.

5. Continuity Check

The continuity check is performed to detect eventual defects in parallel routed wires. If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) and OÄM 20-245 (External Alternator) are installed, this check must not be performed. Refer to Wiring Diagram No. 01-2400-14-1 in Chapter 92.

Procedure:

Detail Steps/Work Items		Key Items/References
(1)	Remove upper engine cowling.	
(2)	Disconnect battery.	
(3)	Disconnect ignition harness from spark plugs.	
(4)	Disconnect firewall breach plug No. P2400-01.	See Figure 1.
WARNING:	**AFTER DISCONNECTION OF THE FIREWALL BREACH PLUG, THE MAGNETOS ARE HOT. WHEN THE SPARK PLUGS ARE NOT DEACTIVATED (STEP 3) AND THE PROPELLER IS MOVED UNDER THESE CONDITIONS, THE ENGINE MIGHT FIRE.**	
(5)	Check wires for continuity using table below, using a continuity tester or a low resistance ohmmeter. P2400-01 (plug, engine side): – Pin H to K. – Pin B to C. S2400-01 (socket, mounted to firewall): – Socket H to K. – Socket B to C.	
(6)	Visually check connector contacts for poor condition.	
(7)	Re-connect firewall breach plug.	
(8)	Re-connect ignition harness to spark plugs.	
(9)	Reconnect battery.	
(10)	Re-install engine cowling.	
(11)	Inspect electrical systems for proper operation.	

6. Removal and Installation

CAUTION: WHEN DISCONNECTING THE BATTERY, ALWAYS DISCONNECT THE NEGATIVE TERMINAL FIRST.

FOR RECONNECTING THE BATTERY, ALWAYS CONNECT THE NEGATIVE TERMINAL LAST.

A. Battery (BT2431-01)

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Throw master switch in OFF position.	
(2)	Disconnect negative battery terminal.	
(3)	Disconnect positive battery terminal.	
(4)	Disconnect battery vent line.	
(5)	Loosen mounting clamp and lift battery carefully.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
CAUTION:	ENSURE CORRECT RE-CONNECTION OF THE BATTERY TERMINALS. WRONG CONNECTION WILL RESULT IN SEVERE DAMAGE TO THE ELECTRICAL AND ELECTRONIC SYSTEM.	
Note:	To avoid corrosion, DOW CORNING COMPOUND 4 (DC4) should be applied to the battery terminals and the cable lugs.	

B. Master Relay (K2431-01)

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Throw master switch in OFF position.	
(2)	Disconnect negative battery terminal.	
(3)	Disconnect cable from relay.	
(4)	Remove relay by loosening the mounting screws.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
Note: Ensure correct polarization of the diode! Refer to Chapter 92 for wiring diagram.		

C. Ammeter (M2431-01)

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Throw master switch in OFF position.	
(2)	Disconnect negative battery terminal.	
(3)	Remove instrument panel top cover.	
(4)	Disconnect wires from ammeter.	
(5)	Remove ammeter.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
Note:	Ensure correct re-connection of the connecting wires! Refer to Chapter 92 for wiring diagram.	

D. Master Switch (S2400-00)

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Throw master switch in OFF position.	
(2)	Disconnect negative battery terminal.	
(3)	Remove instrument panel top cover.	
(4)	Disconnect wires from master switch.	
(5)	Remove master switch.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
Note:	Ensure correct re-connection of the connecting wires! Refer to Chapter 92 for wiring diagram.	

7. Cleaning

In the event that acid has leaked from the battery, the battery must be removed from the airplane and rinsed with water, as well as the battery trough should be cleaned and rinsed with water.

Any acid residue should be neutralized with natrium carbonate solution and rinsed with plenty of water.

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Section 24-50
ELECTRIC LOAD DISTRIBUTION

1. General

The electrical power from the alternator and the battery is supplied via bus 1 and bus 2, the avionics bus, and the respective circuit breakers to the individual electrical equipment.

The circuit breakers of bus 1 and the avionics bus are located in the right hand section of the instrument panel, while the circuit breakers of bus 2 are located in the switch panel above the radio rack. If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, all circuit breakers are located on the bottom left side of the instrument panel.

For simplified and detailed schematics of electrical load power distribution, please refer to Chapter 92.

2. Description

Electric power os distributed via the electrical bus 1, the electrical bus 2, and the avionics bus which is connected to bus 1 through the avionics master switch (S2450-01) or, if OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, through the avionics master relay.

The electrical equipment is directly connected to the breakers, the avionics systems are supplied via a Faston connector terminal board (TB1), which is located in the cockpit in front of the right hand instrument panel. If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, all electrical equipment, including the avionics equipment, is connected to the individual circuit breakers.

3. Troubleshooting

The following table lists defects as they could appear on the power distribution system, and their correction.

The wiring diagrams are located in Chapter 92 of the maintenance manual, or this temporary revision to the maintenance manual.

Find the trouble in column 1 do the repair given in column 3.

Complaint	Possible Cause	Repair
No electrical power on radio- and navigational equipment.	Defective avionics master switch.	Replace.
	Defective avionics master relay (with OÄM 20-244 only).	Replace.
	Defective wiring from bus 1 to the avionics bus or avionics master relay.	Repair.
No electrical power on electrical bus 2.	Defective wiring from bus 1 to bus 2.	Repair.
Intermittent operation of various electrical equipment.	Defective wiring (loose connection to circuit breaker and/or on terminal board).	Repair.

4. Maintenance Information

WARNING: TO AVOID BURNS OR FIRE DURING MAINTENANCE TASKS PERFORMED IN THE ENGINE COMPARTMENT, NEAR THE BATTERY, OR DIRECTLY ON THE ELECTRICAL SYSTEM (REPLACING OF COMPONENTS, OR WORKING ON THE CABLING), EXERCISE CAUTION. DISCONNECT THE NEGATIVE (-) BATTERY POLE TO AVOID SHORT CIRCUITS.

During maintenance performed on the power distribution system, check all wires and connectors for looseness and poor condition.

5. Removal and Installation

A. Circuit Breakers

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Throw master switch in OFF position.	
(2)	Disconnect negative battery terminal.	
(3)	Remove instrument panel top cover.	
(4)	Disconnect wires from breaker.	
(5)	Remove mounting nut, remove breaker.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
Note: Ensure correct re-connection of the connecting wires!		

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CHAPTER 25

EQUIPMENT / FURNISHINGS

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BAGGAGE COMPARTMENT

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CHAPTER 25
EQUIPMENT / FURNISHINGS

1. General

The cabin equipment is subdivided into the two (2) pilot seats, cabin lining, equipment components, and baggage compartment.

A description of the individual component groups and equipment can be found in the respective chapters.

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Section 25-10
FLIGHT COMPARTMENT

1. General

This chapter describes the equipment components located in the cabin.

A. Map Pockets

Map pockets are installed on the LH and RH cockpit sidewall. Optional extra map pockets are located under the instrument panel. They are useful for the storage of items such as airplane documents, flight maps, and other small items required during flight.

B. Fire Extinguisher

The fire extinguisher is located behind the right seat in the baggage compartment. The extinguisher agent HALON is - with restrictions - considered non toxic and leaves no residues.

Maintenance is limited to checking the pressure indicator and the seal wire and checking the mounting for looseness. If the seal wire is damaged, the fire extinguisher should be checked by weighing. The mass (weight) should be equal to the full mass recorded on the test plaque, or the tare and the filling mass engraved on the container. A mass deficit of up to 0.02 kg (0.044 lbs.) is permissible.

With mass deviations greater than permissible and insufficient pressure or after use, the fire extinguisher must be replaced or sent to the manufacturer for service.

NOTE: The fire extinguisher must be overhauled every ten (10) years from the date of manufacture (month and year are recorded on the inspection tag).

C. Emergency Locator Transmitter (ELT)

The DV 20 can be equipped with an Emergency Locator Transmitter. The ELT is installed in a compartment designed for the ELT and located in the rear part of the baggage compartment. The cover of this compartment can easily be removed by loosening the snap screws. The ELT transmits a signal automatically after a crash on the emergency frequencies of 121.5 and 243.0 MHz. The ELT can also be manually operated (e.g. after an emergency landing or for testing).

Maintenance consists of a visual inspection of the housing, the antenna, and the mounting. In addition, an inspection of the battery as well as a functional test should be performed at regular intervals.

The batteries have life time limitation depending on the battery type and should be replaced upon expiry (see the ID plaque located on the housing) or after one cumulative hour of operation.

To always ensure an operational battery it is recommended that the ELT is switched OFF if not needed. In case the airplane is not in use for a longer time, it is recommendable to remove the battery from the unit.

D. Lining of Side Panels

The lining of the side panels consists of a fire resistant material and is attached using a spray glue. For cleaning use a vacuum cleaner. Excessive dirt can be removed by using a mild soap solution. After cleaning it must be ensured that the area is sufficiently ventilated to prevent the collection of extra humidity and the possibility of corrosion.

E. Instrument Panel Cover

The instrument panel cover is located above the instrument panel, it is a GFRP part covered with synthetic material (Nextel). Air vents for the avionics are located on the upper side of the panel.

F. Center Console Cover

The center console cover is a GFRP part that can be removed.

G. Seats

The seats consist of a backrest in the shape of a bulkhead and the seat shells whose side parts form the armrests and part of the side cover.

H. Safety Belts

Both seats are equipped with a four (4) point safety belt with central lock. Each safety belt can be adjusted individually to suit the user. The safety belts should be inspected at regular intervals. Should cracks or fraying be detected, the belts must be replaced. Also refer to the operating instructions of the safety belt manufacturer.

2. Removal and Installation

A. ELT

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Loosen wing nuts, remove cover.	
(2)	Slide unit from mounting, disconnect antenna.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

(3) Functional Test

Detail Steps/Work Items		Key Items/References
(1)	Set receiver of the radio unit to frequency 121.5 MHz. Operate ELT manually, check that a signal can be heard. Switch off ELT.	
Note: The functional test should only be performed within the first five (5) minutes following each full hour to prevent false alarm situations.		

B. Instrument Panel Cover

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove screws around instrument panel cover.	
(2)	Remove cover by lifting.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

C. Seat Shells

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove seat cushions if installed.	
(2)	Remove boot around control stick.	
(3)	Remove screws around seat shells.	
(4)	Remove seat shells by lifting.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

D. Safety Belts

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove shoulder harnesses by loosening the mounting screws.	
(2)	Remove seat shells.	
(3)	Remove lap belts with central lock by feeding belts through mountings.	
(4)	Remove lap belts without central lock by loosening mounting screw and pulling belts from attachment.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

E. Center Console Cover

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Loosen mounting screws around cover.	
(2)	Remove cover.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

3. Cleaning

A. Seats

The seat and backrest cushions consist of fire resistant material. For cleaning the cushions are vacuumed. For persistent dirt, the seat covers can be cleaned using a mild soap solution.

B. Safety Belts

Excessive dirt can be removed using a mild soap solution.

Section 25-50
BAGGAGE COMPARTMENT

1. General

The baggage compartment is used for storage of small baggage and equipment. It is located within the cabin and is within reach of both seats. The baggage compartment has flame resistant floor covering and is approved for loads of up to 20 kg (44 lbs.). A baggage net, which can be attached with eyelets, secures the baggage.

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CHAPTER 27

FLIGHT CONTROLS

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CHAPTER 27-00
FLIGHT CONTROLS

1. General

This chapter describes construction, operation, and adjustment of control surfaces and their operating devices. The DV 20 KATANA is equipped with dual control systems. Through push rods and bellcranks the control movements are transmitted to the respective control surfaces.

2. Description

The DV 20 is equipped with conventional ailerons, rudder, and elevator.

Ailerons and elevator are deflected with the control stick via push rods. The rudder is deflected with the rudder pedals via control cables.

The DV 20 KATANA is equipped with a manual elevator trim system. The trim lever in the center console is connected to the elevator trim tab. The airplane is trimmed "nose down" when the lever is in a forward position. A rearward lever position results in a "nose up" trim.

3. Troubleshooting

Defects that may occur within the control system are described in the respective sub-chapters.

4. Maintenance Information

If maintenance is carried out on the flight control system, common safety precautions must be taken. After working on the control systems, check for interference and looseness.

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Section 27-10
AILERON CONTROL SYSTEM

1. General

The ailerons are used to control the movement of the airplane about its longitudinal axis. Actuating the stick results in the deflection of one aileron in upward direction and the other in downward direction. The ailerons are actuated via push rods and bellcranks. The airplane can be trimmed about its longitudinal axis by means of a fixed trim tab on the left hand aileron.

The aileron balancing mass is attached to the aileron horn.

2. Description

S/N's 20.005 thru 20.100: refer to Figure 1.

S/N's 20.101 and subsequent: refer to Figure 2.

The DV 20 KATANA can be operated from either seat. A roll control movement is transmitted from the control sticks to the ailerons through the following parts:

(2) 2 push rods connecting the control sticks (1) in cross direction, attached to bottom end of sticks

(3) bellcrank attached to rearward transverse stiffener

(4) push rod

(5) bellcrank attached to sickle shaped bulkhead

(6) push rod to either side

(7) aileron pocket in fuselage's root rib (only S/N's 20.005 thru 20.100)

(8) bellcrank engaging in aileron pocket (only S/N's 20.005 thru 20.100)

(9) push rod

(10) aileron bellcrank

(11) push rod

(12) aileron horn

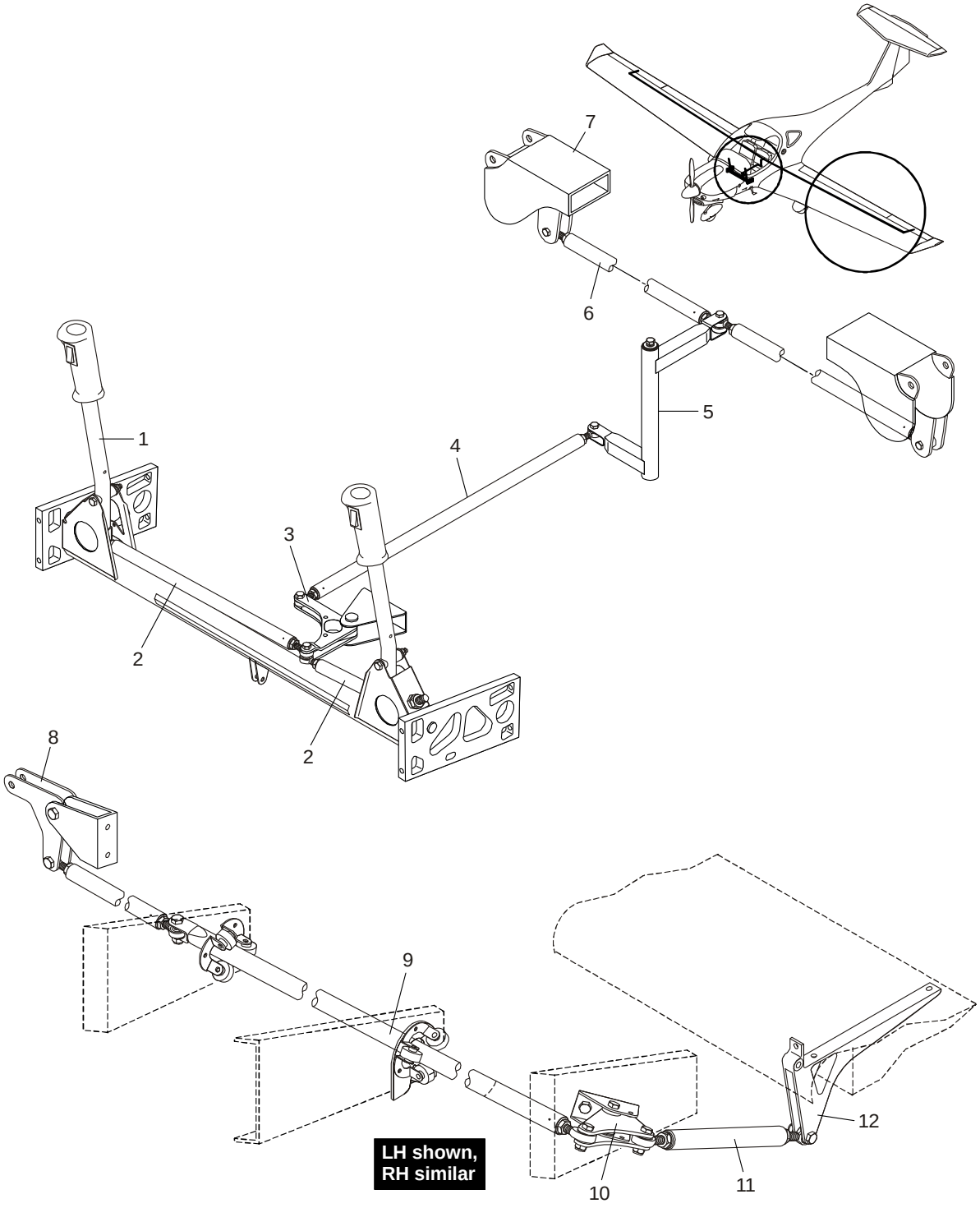


Figure 1: Aileron Control System S/N's 20.005 thru 20.100

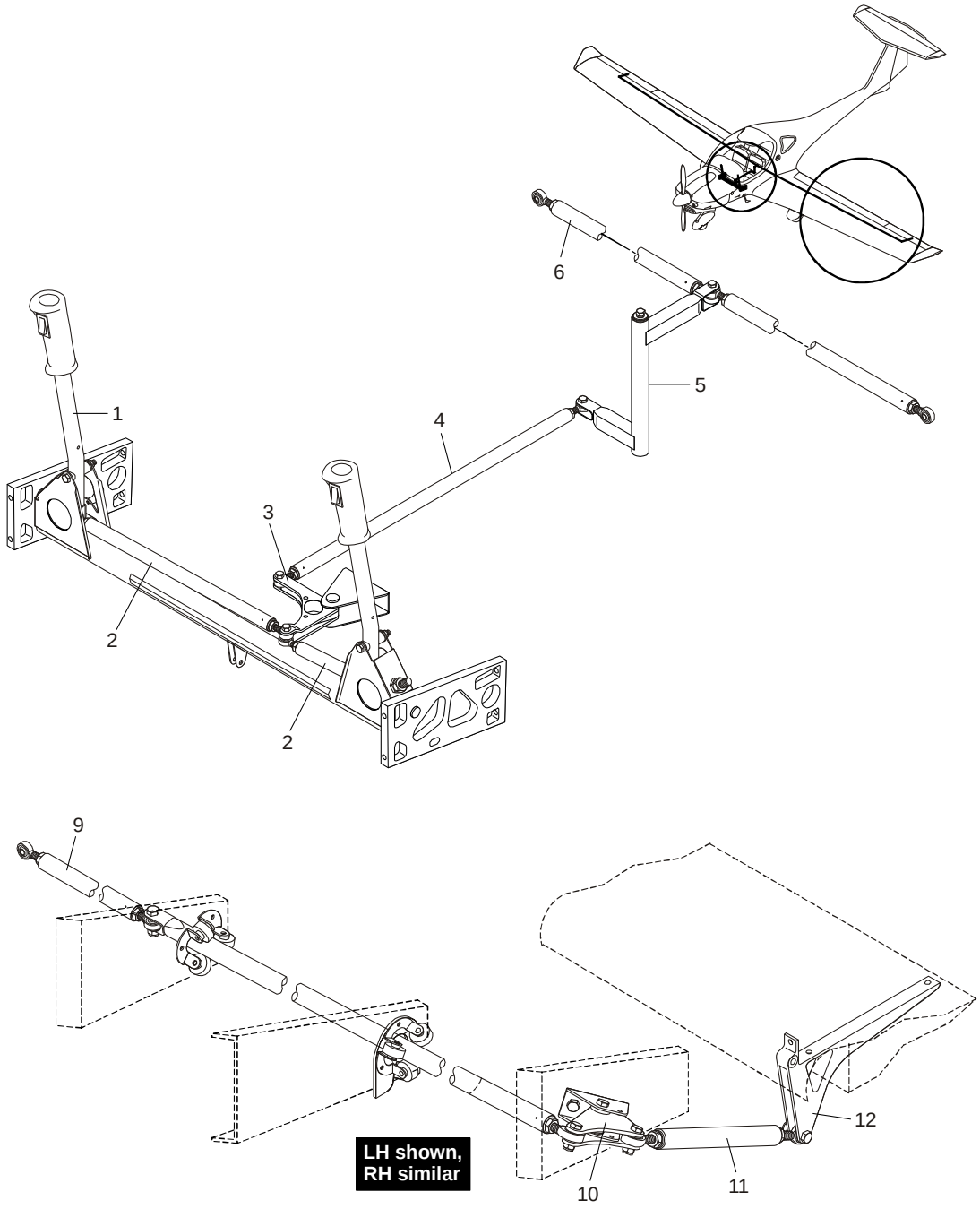


Figure 2: Aileron Control System S/N's 20.101 and subsequent

3. Troubleshooting

The following table lists defects as they could appear in the aileron control system, and their correction.

Complaint	Possible Cause	Repair
Interference.	Unclean or detective bearings.	Replace bearings.
Aircraft moves about longitudinal axis.	Aileron push rods adjusted incorrectly.	Re-adjust.
	Fixed trim tab adjusted incorrectly.	Re-adjust.
	Wing flaps adjusted incorrectly.	Re-adjust.

4. Removal and Installation

Refer to Figure 1 or 2.

A. Item (1): Control Sticks

Refer to Sub-Chapter 27-11.

B. Item (2): Aileron Push Rods Connecting Control Sticks

(Located under seat shells).

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove mounting bolts from rod end bearings of the respective push rod.	
(2)	Remove push rod from bellcrank and control stick.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

C. Item (3): Bellcrank Attached to Rearward Transverse Stiffener

Seat shells must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove 2 mounting bolts of aileron push rods.	
(2)	Remove mounting bolt from pedestal.	
(3)	Remove bellcrank from pedestal.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

D. Item (4): Push Rod in Center Console

This push rod is located under the center console between the seats. In order to gain access to the push rod, both seat shells and the center console cover must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove both mounting bolts of the aileron push rod.	
(2)	Move push rod in rearward direction until forward end can be lifted through opening in center console, extract push rod in forward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

E. Item (5): Bellcrank Attached to Sickle Shaped Bulkhead

Baggage compartment floor and fuel tank must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove 2 mounting bolts of the aileron push rods.	
(2)	Remove mounting bolt of bellcrank in upward direction.	
(3)	Remove bellcrank together with guide bushing from pedestal.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

F. Item (6): Aileron Push Rods Connected to Aileron Pockets

Fuel Tank must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove 2 mounting bolts from rod end bearings.	
(2)	Remove push rods.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

G. Item (7): Aileron Pockets

Only installed in S/N's 20.005 thru 20.100. Wings must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove mounting bolt of push rod.	
(2)	Remove bolts attaching pocket to fuselage structure; remove pocket.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

H. Item (8): Bellcrank Attached to Wing Root Rib

Only installed in S/N's 20.005 thru 20.100. Wings must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect flap push rod and aileron push rod.	
(2)	Remove pedestal mounting bolts, remove pedestal.	
(3)	Remove rivet serving as bearing journal using a drill.	
(4)	Remove bellcrank from pedestal.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

I. Item (9): Push Rod in Wing

Wings must be removed (see Chapter 57).

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Open inspection hole on wing bottom side.	
(2)	Remove bolts from rod end bearings at differentiator lever and in wing root rib.	
(3)	Remove push rod from wing.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

J. Item (10): Aileron Bellcrank in Wing

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Open inspection hole on wing bottom side.	
(2)	Remove mounting bolts of push rods.	
(3)	Remove mounting bolt of bellcrank bearing.	
(4)	Remove bellcrank.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

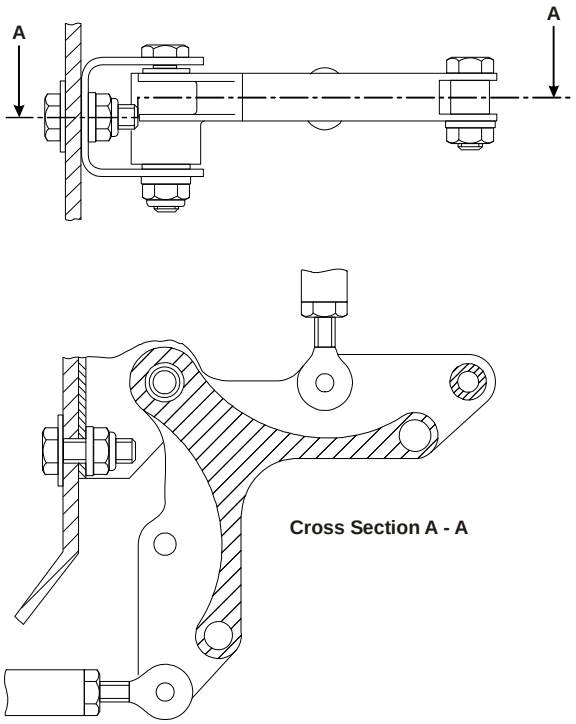


Figure 3: Aileron Bellcrank in Wing

NOTE: For reasons of production technique, the aileron bellcrank has holes which must NOT be used. The bellcrank must not be confused with the flap bellcrank (see Chapter 27-50).

5. Adjustment

Refer to Fig. 1 (S/N's 20.005 thru 20.100) or Fig. 2 (S/N's 20.101 and subsequent).

The DV 20 KATANA is an airplane with excellent aerodynamic characteristics; any improper adjustment of the ailerons may have a negative effect on the roll stability. After a repair of the aileron control system, a check of the system to verify the correct aileron deflections given in Sub-Chapter 06-00 must be carried out. To adjust the system, push rod eye-ends must be adjusted so as to obtain the following:

A. Control Stick (1) / Aileron Push Rods in Main Column (2)

With control sticks centered, control stick columns must be at right angles to the aileron push rods (seen from front or rear).

B. Aileron Push Rods in Main Column (2) / Bellcrank in Rearward Transverse Stiffener (3)

Longitudinally oriented arm of bellcrank must be at right angles to aileron push rods in main column.

C. Bellcrank in Rearward Transverse Stiffener (3) / Aileron Push Rod in Center Console (4)

Transversely oriented arm of bellcrank must be at right angles to aileron push rod in center console.

D. Aileron Push Rod in Center Console (4) / Bellcrank in Sickle Shaped Bulkhead (5)

Push rod must be at right angles to lower arm of bellcrank.

E. Bellcrank in Sickle Shaped Bulkhead (5) / Aileron Push Rods under Baggage Compartment (6)

Upper arm of bellcrank must be at right angles to push rods.

F. Aileron Push Rods Connected to Pockets (6) / Aileron Pockets (7)

Applicable only to S/N's 20.005 thru 20.100. Align LH and RH aileron pockets horizontally using a ruler.

G. Aileron Push Rod Connected to Horn (11) / Bellcrank in Wing (10)

With aileron at zero deflection, adjust rod ends until transverse arm of bellcrank is at right angles to push rod.

H. Aileron Push Rod in Wing (9) / Bellcrank in Wing Root Rib (8)

Applicable only to S/N's 20.005 thru 20.100. Adjust rod-end bearing on inboard end of push rod until vertical arm of bellcrank is parallel with wing root rib.

I. Aileron Push Rod in Wing (9) / Aileron Push Rod under Baggage Compartment (6)

Applicable only to S/N's 20.101 and subsequent. Wing must be attached, control sticks centered, ailerons at zero deflection.

Adjust length of push rods until they can be connected properly.

Connect push rods.

If inadequate roll stability is observed during flight, the left aileron must be fitted with a fixed trim tab 20 centimeters (8 inches) from the inboard edge.

Verify that the aileron travel up and down corresponds to prescribed values (refer to Sub-Chapter 06-00).

J. Fine Adjustment

The requirements for roll stability and a properly trimmed longitudinal axis must be met in all flight conditions.

The following modifications can be made to achieve correct adjustment:

1. Adjusting the fixed trim tab.

2. Adjusting the wing flaps.

If these components are properly adjusted, the airplane is stable about its roll and yaw axis when evenly loaded, in the entire airspeed range and with all power settings.

6. Inspection of Aileron Control System

Detail Steps/Work Items		Key Items/References
(1)	Remove push rod in wing (9).	Refer to Figure 1 or 2.
(2)	Remove aileron bellcrank (10) and (8) if installed.	Refer to Figure 1 or 2.
(3)	Remove push rod connecting aileron horn (11).	Refer to Figure 1 or 2.
(4)	Remove aileron horn (12).	Refer to Figure 1 or 2.
(5)	Check all parts for corrosion, deformation, function and poor condition.	
(6)	Assemble and adjust all parts.	Refer to Paragraphs 4 and 5.

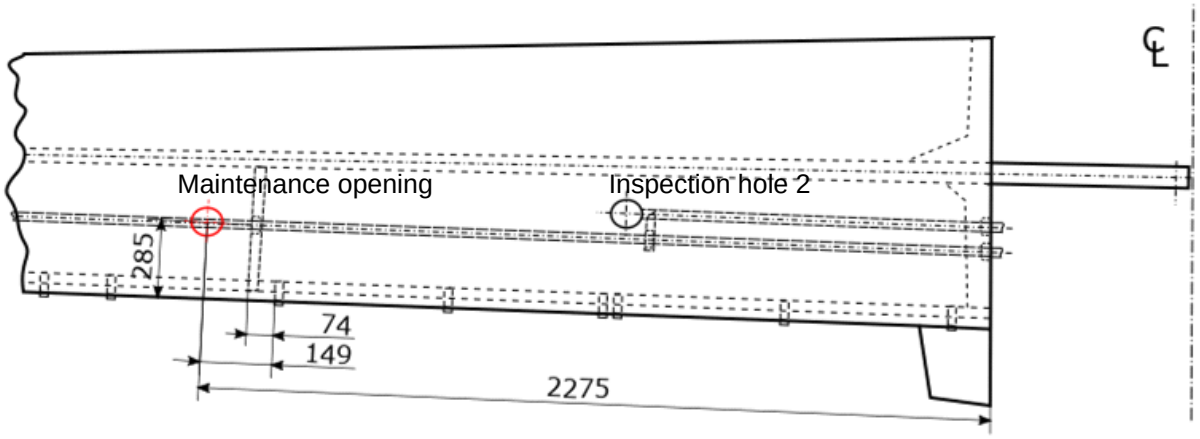
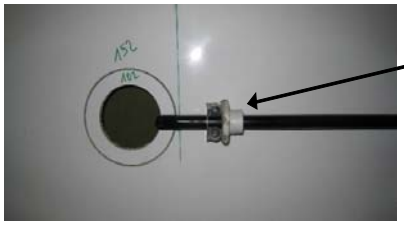


Figure 4: Inspection Holes

7. Replacement of Aileron Control System Roller Cages

Detail Steps/Work Items		Key Items/References
(1)	Remove the LH and RH wing.	Refer to Chapter 57.
(2)	Remove the roller cages by drilling out the rivets with an angle driller: – Remove the first roller cage through inspection hole 2. – Remove the second roller cage through the maintenance opening.  Temporary stop for positioning	Refer to Figure 4. Refer to Figure 4.
	CAUTION: THE WASHERS BETWEEN GFRP AND RIVET ARE ESSENTIAL FOR THE INSTALLATION.	
(3)	Install the new roller cages by riveting using washers.	
(4)	Clean working area and remove foreign objects.	
(5)	Check all altered, replaced, repaired parts for proper function.	
(6)	Check all systems in working area for function.	
(7)	Re-install all maintenance covers and assemble the LH and RH wing.	Refer to Chapter 57.

Section 27-11
MAIN COLUMN

1. General

The main column is located under the seats. It consists of the two control sticks and a torque tube for the transmission of elevator and aileron control inputs.

2. Description

The ailerons and the elevator are actuated by means of the control sticks.

3. Troubleshooting

The freedom of movement of the main column must be ensured at all times. Interference is in most cases caused by defective bearings. Defective bearings must be replaced under all circumstances.

4. Removal and Installation

A. Control Stick

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect aileron push rod.	
(2)	Remove bolt of stick bearing.	
(3)	Disconnect ground strap and wires.	
(4)	Extract stick in upward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

B. Elevator Torque Tube Assembly

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect elevator push rod.	
(2)	Remove LH and RH aluminum mounting ribs.	
(3)	Remove Torque Tube Assembly.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
NOTE: Ensure proper ground connections!		

5. Adjustment

A. Control Sticks

The control sticks must be centered for initial adjustment. The stops next to the sticks must be adjusted so that the surface deflections conform to the nominal values given in the Adjustment Report.

Section 27-20-00
RUDDER CONTROL SYSTEM

1. General

A deflection of the rudder results in the airplane turning about its vertical axis. The operation of the pedals causes the rudder to be deflected to the left or right side.

2. Description

The DV 20 KATANA is equipped with dual control rudder pedals. Any movement of the pedals is transmitted to the rudder through control cables and guide rollers. Either pedal assembly can be adjusted.

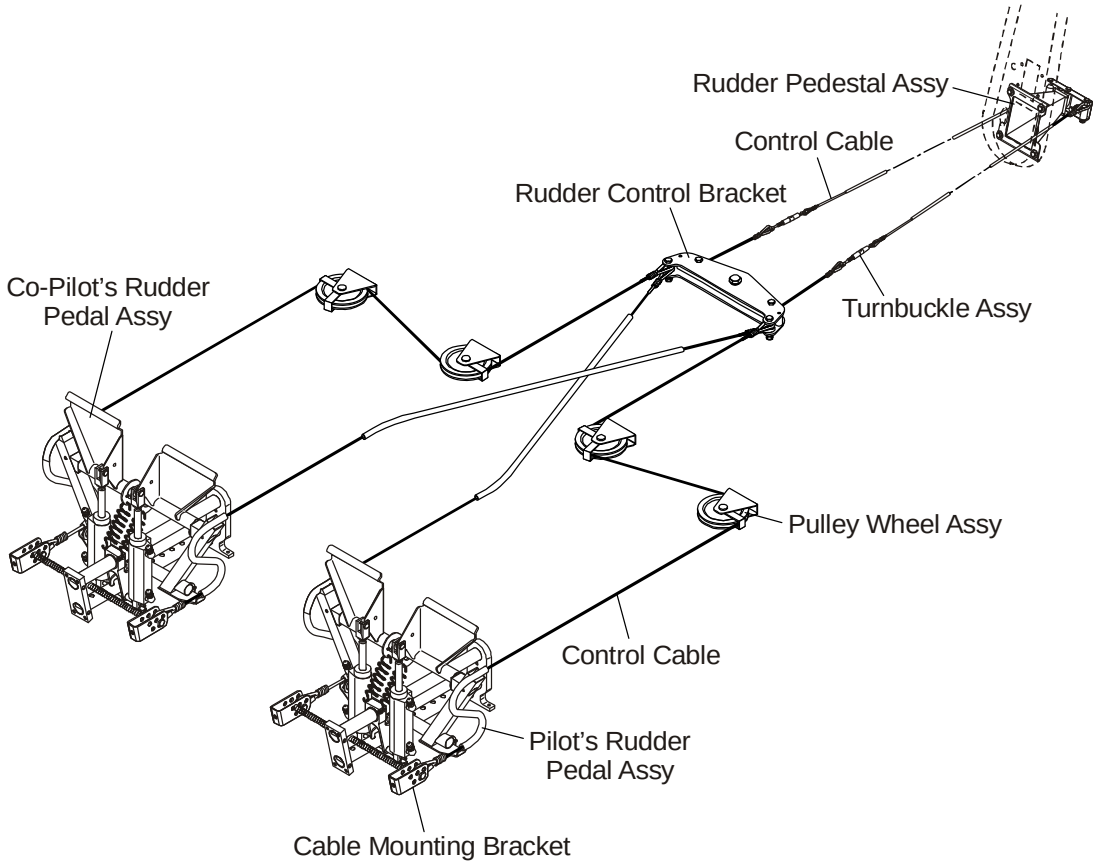


Figure 1: Rudder Control System

3. Troubleshooting

The following table lists defects as they could appear in the rudder control system, and their correction.

Complaint	Possible Cause	Repair
Interference.	Unclean or detective bearings.	Replace or clean bearings.
Aircraft moves about yaw axis.	Rudder adjusted incorrectly. Fixed trim tab adjusted incorrectly.	Re-adjust. Re-adjust.

Section 27-20-10
RUDDER PEDAL ASSEMBLY

1. General

The DV 20 KATANA includes complete pedal assemblies on both sides as standard equipment.

These are mounted on the floor group. In addition to the pedals, each assembly consists of an adjustment mechanism and brake cylinders for the left and right wheel brakes. After loosening the mounting bolts, the complete assembly can be removed from the fuselage.

2. Description

The movement of the pedals is transmitted to the rudder lower mounting plate through control cables. The pedals can be pushed forward or pulled rearward when the arresting is disengaged (black T-grip pulled). To lock the pedals into place at the desired position, release the arresting grip and push the pedals forward. The pedal axis is attached to the adjustment cradle. Secondary levers are mounted to the top of the pedals to actuate the brake cylinders.

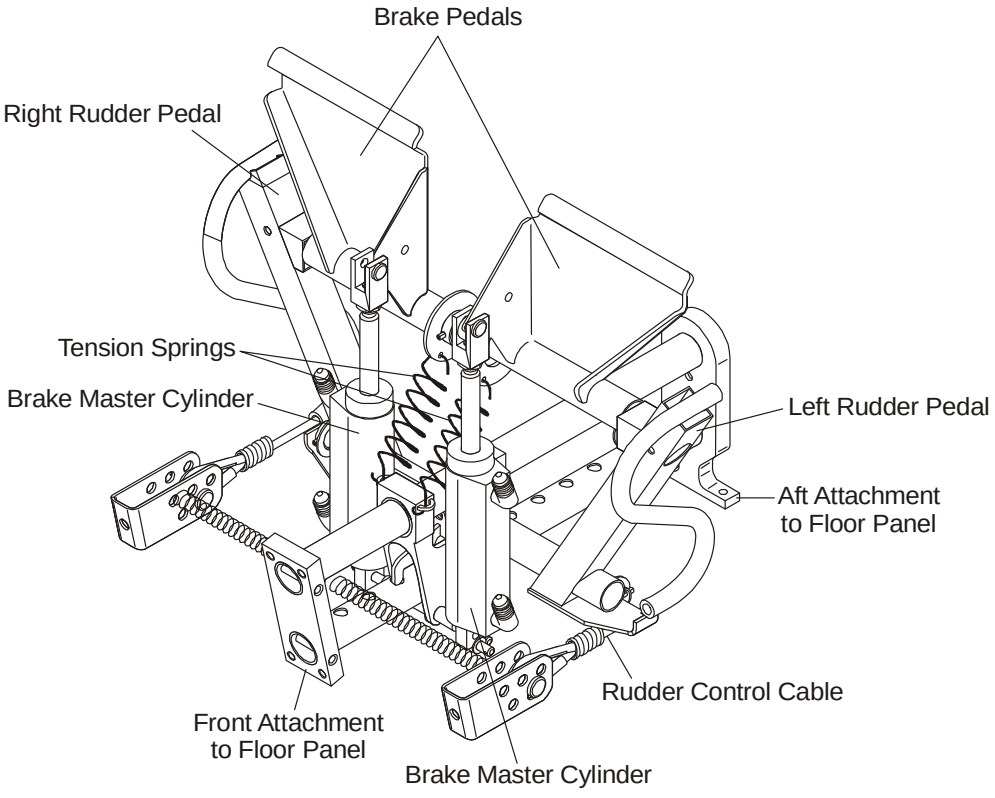


Figure 1: Rudder Pedal Assembly

3. Removal and Installation

A. Pedal Assembly

(1) Removal

It is recommendable to remove the complete pedal assembly.

Detail Steps/Work Items		Key Items/References
(1)	Disconnect control cables from firewall.	
(2)	Remove mounting bolts of cradle tube.	
(3)	Remove brake cylinders.	
(4)	Remove pedal assembly from cockpit.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

Section 27-20-20
RUDDER CONTROLS IN FUSELAGE

1. General

Rudder control inputs are transmitted through control cables within the fuselage. Four rollers under the seats and the rudder lever under the B-bulkhead guide the cables through the fuselage structure.

2. Description

Refer to Figure 1 in Sub-Chapter 27-20-00.

The movement of the 4 control cables is transferred to the rudder lever via guide rollers. From there, two cables run back to the rudder lower mounting plate, guided by teflon hoses.

3. Removal and Installation

Refer to Figure 1 in Sub-Chapter 27-20-00.

A. Item (1): Cables Between Firewall and Rudder Lever

(1) Removal

Seats and fuel tank must be removed.

Detail Steps/Work Items		Key Items/References
(1)	Disconnect cable from fitting (3) on firewall by removing bolt through cable eye.	
(2)	Cut off cable, pull through guides. Remove cable.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	Thread new cable, install cable eyes.	
(2)	Attach cable eyes to fitting (3) on firewall and to rudder lever (5).	

B. Item (2): Cables Between Rudder Lever and Rudder Lower Mounting Plate

(1) Removal and Installation

Analogous with removal and installation of forward cables, but with the rudder removed from the airplane.

NOTE: Only original material may be used. The cable ends are crimped using cable eyes and Nico-Press clamps for 3.2 millimeter diameter steel cables in accordance with LN 9374.

Crimping is done using the proper crimping tools and gauges.

4. Adjustment

Refer to Figure 1 in Sub-Chapter 27-20-00.

After a repair of the rudder control system a check of the system to verify the correct rudder deflections given in Sub-Chapter 06-00 must be carried out.

To adjust the system, the multi-hole fittings (3) on the firewall, the control cable turnbuckles (6), and the stop bolts (see Sub-Chapter 27-20-30) in the rudder lower mounting plate (7) must be adjusted.

A. Item (1): Cables Between Firewall and Rudder Lever

Adjustment is performed with the pedals in a vertical position (90). The cable eyes must be attached to the firewall mounted fitting (3) using the appropriate hole.

B. Item (2): Cables Between Rudder Lever and Rudder Lower Mounting Plate

These cables must be adjusted to a pre-tension of 15 ± 2 daN (33.7 ± 4.5 lbs.) by means of the turnbuckles (6). Ensure correct neutral position of the rudder.

Verify rudder travel left and right corresponds to prescribed values (refer to Sub-Chapter 06-00).

Section 27-20-30
RUDDER

1. General

The DV 20 KATANA is equipped with a conventional rudder which allows control of the airplane about its vertical axis.

A fixed trim tab on the rudder allows fine adjustment of the yaw angle. The forward center section of the rudder contains a balancing mass. The rudder is supported by two hinges at the top and bottom.

2. Description

On its bottom part, rudder is attached to the rudder lower mounting plate. A movement of this fitting causes a deflection of the rudder.

3. Removal and Installation

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove mounting nuts on rudder lower mounting plate.	
(2)	Swing rudder rearward, remove in downward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

4. Adjustment

A. Rudder Deflection

The rudder deflections are limited by stop bolts located in the lower mounting plate. The bolts may be adjusted and locked with lock nuts. For adjustment values, refer to Chapter 06-00.

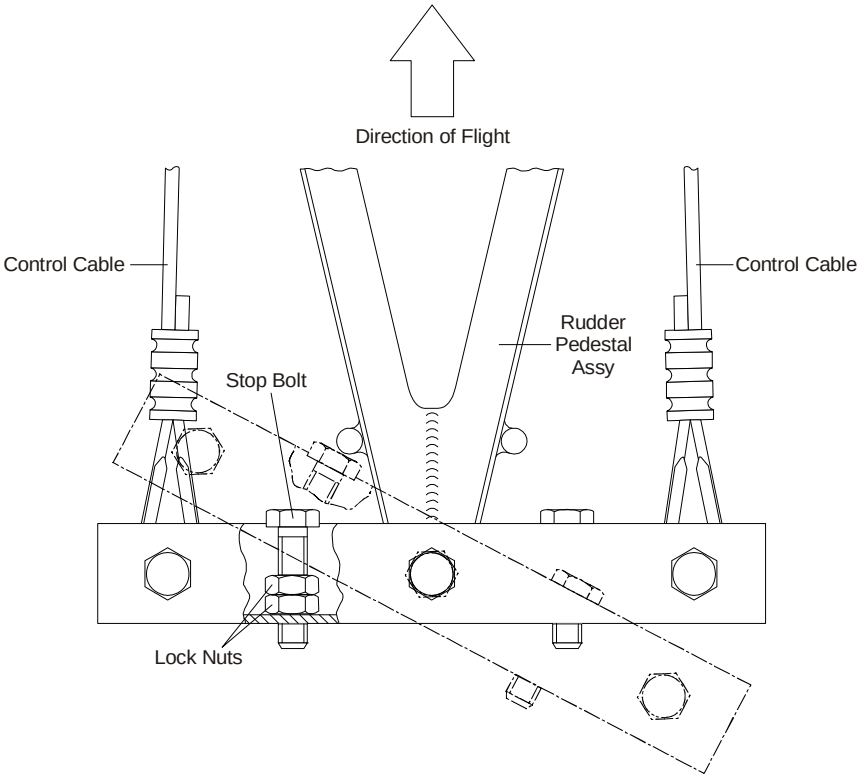


Figure 1: Rudder Stop Bolts

5. Replacement of Rudder Upper Hinge Bearing

Note: Fiber direction reference for all glass fiber plies is the leading edge of the rudder.

Detail Steps/Work Items		Key Items/References
(1)	Remove the ball from the bearing.	
CAUTION: DO NOT DAMAGE THE COMPOSITE STRUCTURE.		
(2)	Cut the bearing jacket with a hand milling machine and remove the bearing.	
(3)	Paste the new bearing with thickened resin.	Refer to Chapter 51.
(4)	Cure and post cure the area of the bearing.	

6. Replacement of Rudder Upper Hinge Pin

Detail Steps/Work Items		Key Items/References
(1)	Cut two Ø 30 mm (1.2 in) holes beside the rudder nose bonding flange: – Cut the first hole 35 mm (1.4 in) behind the nose bonding flange and 65 mm (2.55 in) below the hinge pin. – Cut the second hole 30 mm (1.2 in) below the first hole. (The distances are measured to the center of the holes).	
(2)	Connect the holes to an elongated hole in accordance with sketch 1.	Refer to Figure 2.
(3)	Remove the glass fiber cloth that covers the bolt with a hand milling machine.	
(4)	Remove the bolt.	
(5)	Bond the new bolt with thickened resin.	
(6)	Cover the bolt with – 3 layers 110 x 70 mm (4.3 x 2.8 in) of 92125 glass fiber fabric (+/- 45°).	

Detail Steps/Work Items		Key Items/References
(7)	Manufacture one pre-layer 92110 in accordance with sketch 2 (cure this layer).	Refer to Figure 2.
(8)	Chamfer the cloth around the hole in accordance with sketch 3.	Refer to Figure 2.
(9)	Prepare two holes for sheet metal screws to affix the layer.	
(10)	Prepare bonding surface and pre-laminate for bonding.	
(11)	Affix a sheet metal screw in the center of the pre-layer and paste the layer from the inside with thickened resin. Press the prepared layer against the laminate around the elongated hole using two sheet metal screws.	
(12)	Remove excess thickened resin.	
(13)	After the thickened resin has cured, remove the 3 screws.	
(14)	Prepare surface for repair.	Refer to Chapter 51.
(15)	Apply – one ply 92110 (+/- 45°), then – one 92146 (90°) and – two 92110 (+/- 45°) in accordance with sketch 3 and 4.	Refer to Figure 2.
(16)	Post cure and paint the repair area.	
(17)	Check mass and residual moment of rudder for compliance with adjustment report.	

CAUTION: ALL LINEAR MEASURES ARE IN MM.

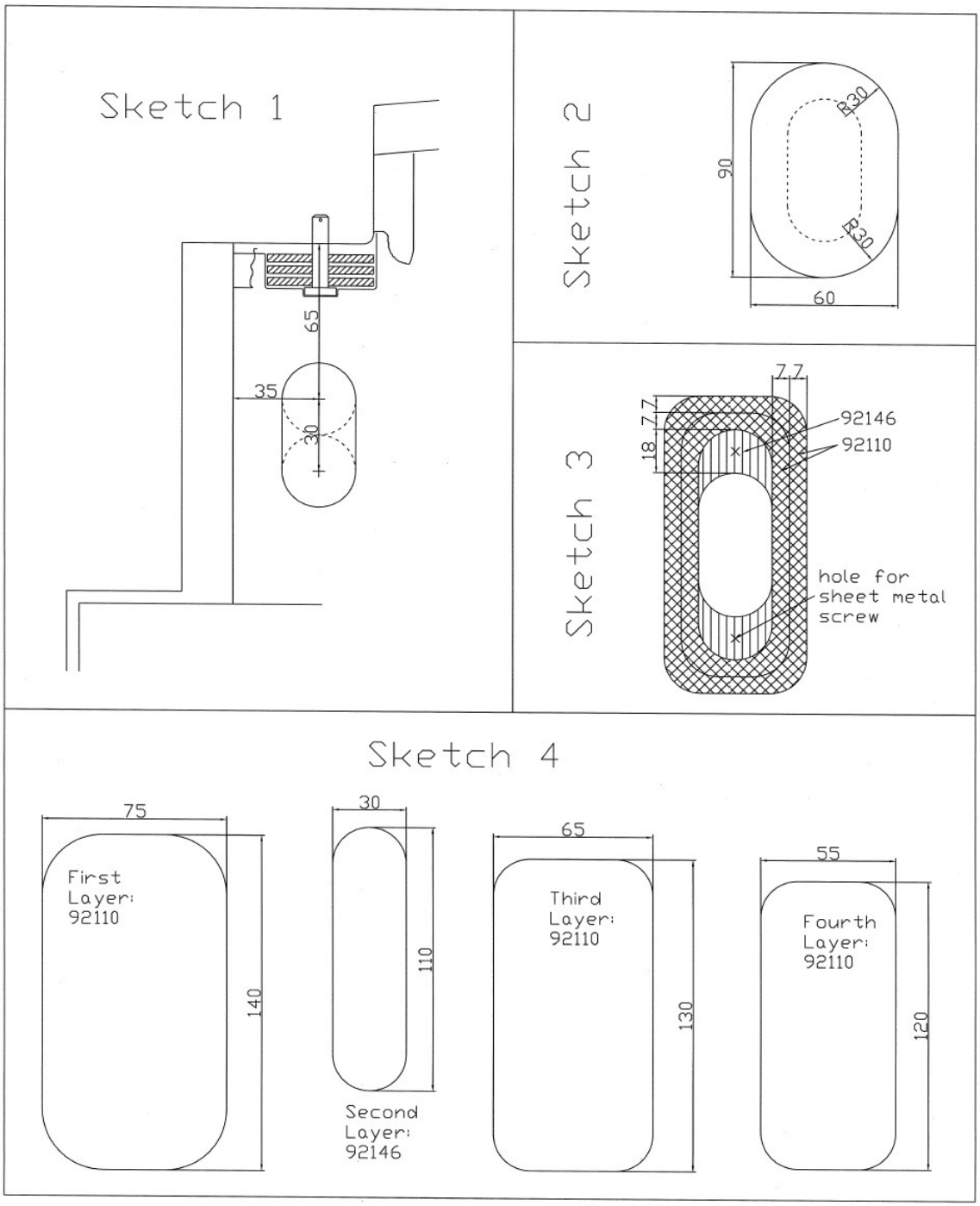


Figure 2: Replacement of Rudder Upper Hinge Pin

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Section 27-30
ELEVATOR CONTROL SYSTEM

1. General

The elevator control system provides control of the airplane about its pitch axis. It consists of the control sticks, the elevator torque tube assembly, push rods, and the elevator. The elevator is equipped with a trim tab consisting of two halves which are connected to each other. Within the rudder fin, there are two springs connected to the vertical elevator push rod.

2. Description

Pulling or pushing the control sticks causes the elevator to deflect upward or downward. (Refer to Figure 1.) The elevator torque tube assembly (2) is mounted to the control sticks (1). It transmits control inputs to the push rod (3) located in the center console and further to the push rod (4) in the fuselage tube. A bellcrank (5) connects this push rod to the vertical push rod (6) located in the rudder fin. The vertical rod is connected to the elevator horn (7). The elevator is attached to the elevator fin with maintenance free bearings.

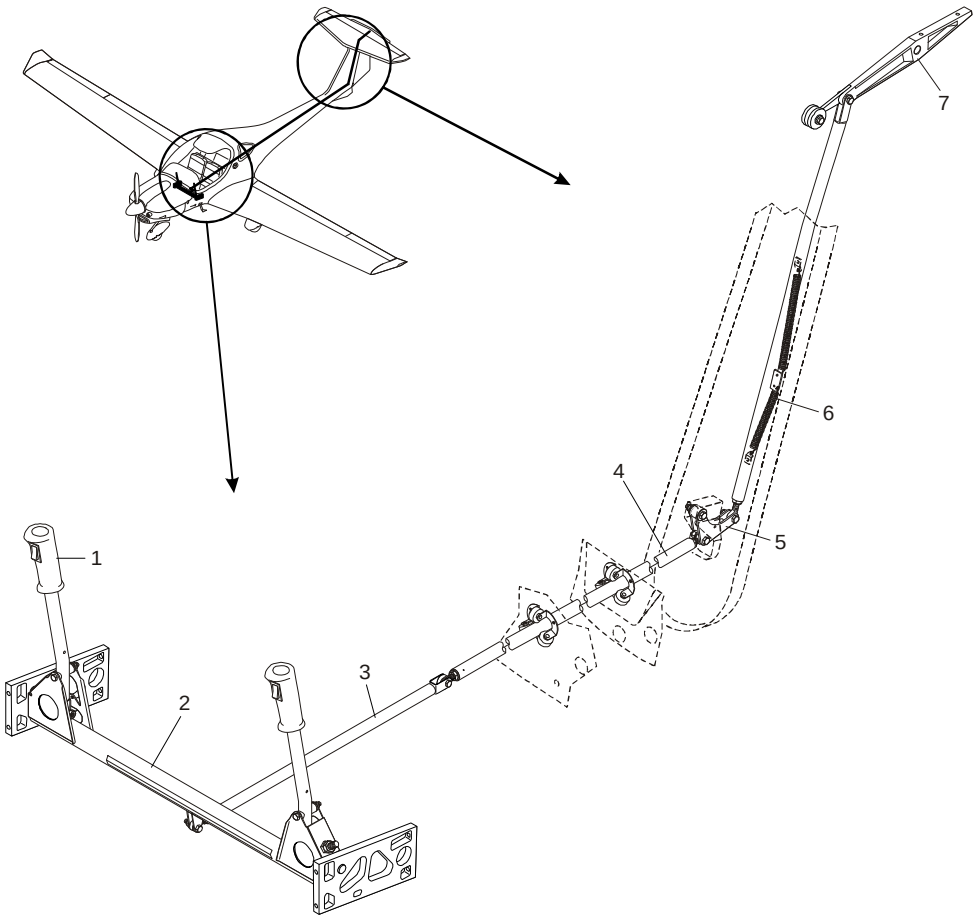

Figure 1: Elevator Control System

3. Troubleshooting

The following table lists defects as they could appear in the elevator control system, and their correction.

Complaint	Possible Cause	Repair
Interference.	Unclean or detective bearings.	Replace or clean bearings.
Excessive play.	Bearing or bolt worn.	Replace.

4. Removal and Installation

Refer to Figure 1.

A. Items (1) and (2): Control Sticks and Torque Tube Assembly

Refer to Sub-Chapter 27-11.

B. Item (3): Elevator Push Rod in Center Console

Seats must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove mounting bolts.	
(2)	Remove push rod in rearward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

C. Item (4): Elevator Push Rod in Fuselage Tube

Rudder must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove mounting bolts.	
(2)	Remove push rod in rearward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

D. Item (6): Elevator Push Rod in Rudder Fin

Rudder must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove mounting bolts on bellcrank and elevator horn.	
(2)	Disconnect springs.	
(3)	Remove push rod in downward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

E. Elevator

Elevator tips and rudder must be removed (see Chapter 27-20).

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect trim tab control mechanism (see Chapter 27-40).	
(2)	Pull out pins from outboard elevator hinges.	
CAUTION: BE CAREFUL NOT TO DAMAGE THE CONNECTION BETWEEN THE HINGES AND THE ELEVATOR FIN!		
(3)	Remove bearing journals.	
(4)	Remove mounting bolts of elevator horn.	
(5)	Remove elevator in rearward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
NOTE: The outboard bearings must be locked with dowel pins.		

5. Adjustment

Refer to Figure 1.

After a repair of the elevator control system a check of the system to verify the correct elevator deflections given in Sub-Chapter 06-00 must be carried out. To adjust the system, push rod eye-ends must be adjusted to obtain the following:

A. Items (1)+(2): Control Sticks and Torque Tube Assembly

Control sticks must be centered.

B. Items (3)+(4): Push Rods in Center Console & Fuselage Tube

Adjust push rod eye-ends so that bellcrank is at right angles to rudder fin web.

C. Item (6): Push Rod in Rudder Fin

Adjust push rod eye-ends so that elevator is in neutral position.

D. Elevator Stops

The stop for the pull direction is located in the floor element (forward of the stick). It cannot be adjusted. The adjustable stop for the push direction is located on the LH mounting rib for the main column. The total travel is adjusted on the vertical push rod in the rudder fin.

Verify elevator travel corresponds to prescribed values (ref. Sub-Chapter 06-00).

6. Replacement of Fuselage Roller Cages

Detail Steps/Work Items		Key Items/References
(1)	Remove the elevator control system.	Refer to Section 27-30.
CAUTION: DO NOT DAMAGE THE COMPOSITE STRUCTURE.		
(2)	Remove the installed roller cage in half frame with the drill < Ø 5.3 mm (0.17 in) and the roller cage in the Ring Frame 2 with a drill of <Ø 5.3 mm (0.17 in) by using an extension.	Refer to Figure 2.
(3)	Drill the holes in the ring frame and the half frame to Ø 5.3 mm (0.17 in).	
(4)	Remove drilling chips with vacuum.	
(5)	Place the roller cage RG2 with an auxiliary tool on the ring frame and fix it with screws and washers.	Refer to Figure 3.
(6)	Remove all foreign objects.	
(7)	Install the elevator control system and adjust it.	Refer to Section 27-30.
(8)	Check all systems in working area for function.	
(9)	Do all necessary entries into work report.	

Figure 2: Example of Drill Extension

Figure 3: Example of Auxiliary Tool

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Section 27-40
ELEVATOR TRIM SYSTEM

1. General

The DV 20 KATANA is equipped with a manual elevator trim system to allow trimming of the airplane for different center of gravity positions. The trim tab is adjusted with an arresting lever on the center console. Its movement is transmitted to the tab through a bowden cable. The lever position indicates the trim condition of the airplane.

The tab is also used as an anti-servo tab to increase the elevator control forces.

2. Description

Refer to Figure 1. The trim adjustment lever is connected to the actuating levers through a bowden cable. The actuating levers are connected to each other and drive one half of the tab each. A friction damper prevents flutter in the event of a failure in the trim control system.

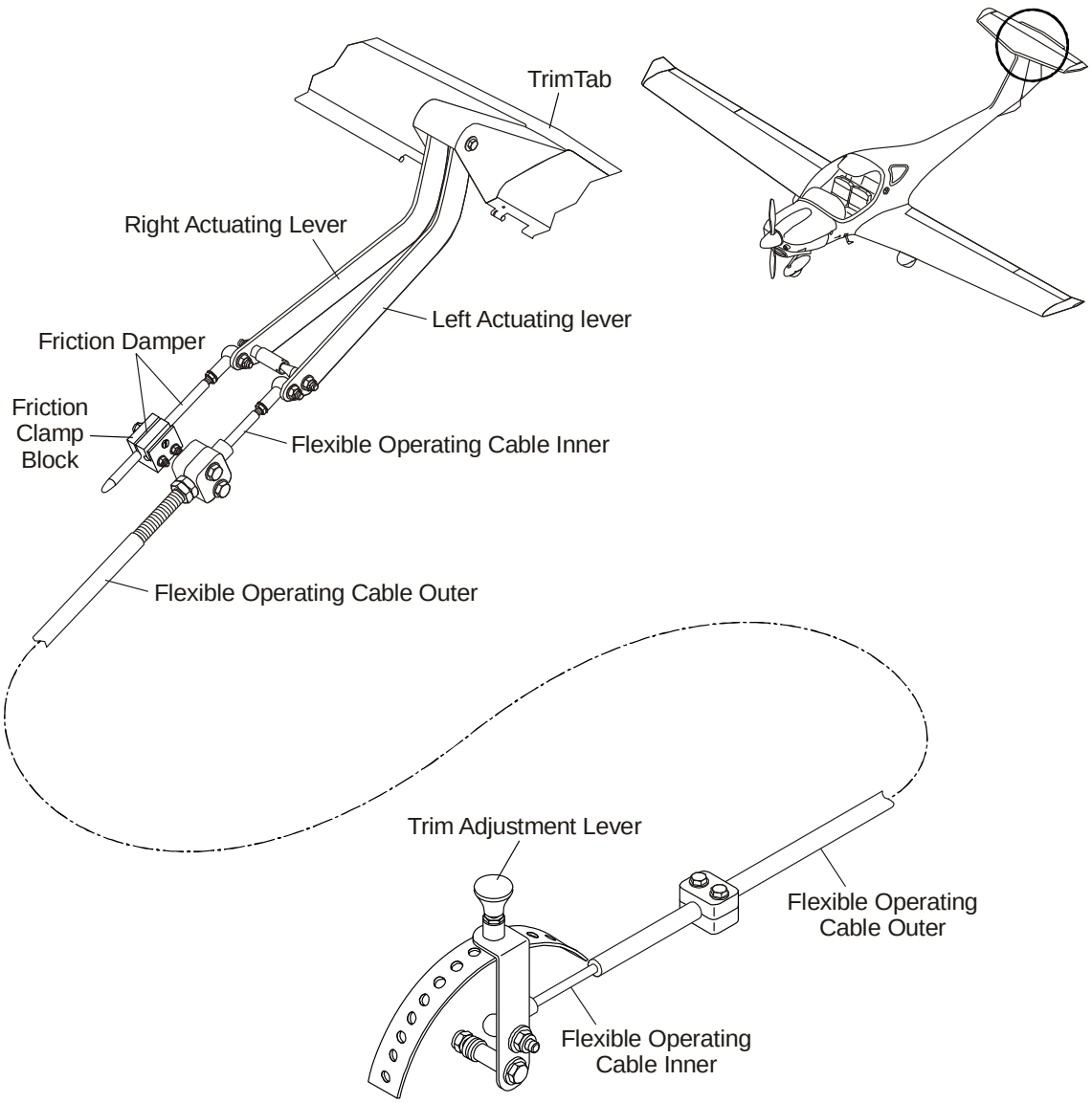

Figure 1: Elevator Trim System

3. Troubleshooting

The following table lists defects as they could appear in the elevator trim system, and their correction.

Complaint	Possible Cause	Repair
Excessive play in trim system.	Worn bearings or joints.	Replace.
Interference.	Defective bowden cable.	Replace.
	Friction damper adjusted in-correctly.	Re-adjust.

4. Removal and Installation

A. Item (1): Trim Lever

Center console cover must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove lever mounting bolt.	
(2)	Remove locking pin, open ball joint connection of bowden cable.	
(3)	Remove lever in upward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

B. Item (2): Trim Bowden Cable

Ground straps must be disconnected, holding straps in fuselage must be removed, rudder must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove mounting bolts for pedestal in center console.	
(2)	Open ball joint connection on trim lever.	
(3)	Remove bowden cable mount from rudder fin.	
(4)	Disconnect fork head of bowden cable from tab actuating lever.	
(5)	Pull bowden cable out of the fuselage.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

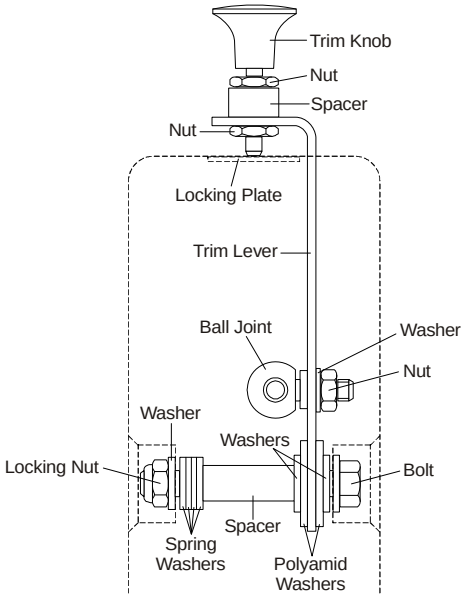

Figure 2: Trim Lever

C. Item (3): Actuating Lever

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect tab actuating levers from friction damper and bowden cable.	
(2)	Remove safetying of hinge wires; extract hinge wires in outboard direction using nippers.	
CAUTION: PREVENT TAB FROM FALLING!		

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

5. Adjustment

After a repair of the trim system a check of the system to verify the correct trim tab deflection given in Sub-Chapter 06-00 must be carried out. To adjust the system perform the following:

A. Parts in Center Console

Place trim lever in NOSE DOWN position. Pull bowden cable conduit back to the stop. Pull conduit 5 mm (0.2 in.) forward, attach to fitting in center console.

B. Parts in Rudder Fin

The bowden cable must be adjusted to ensure proper tab deflections in accordance with the Adjustment Report.

The friction damper must be adjusted to a friction force of 15 - 30 N (3.4 - 6.7 lbs.) as follows:

Detail Steps/Work Items		Key Items/References
(1)	Disconnect RH actuating lever.	
(2)	Measure friction force with spring scale.	
(3)	If re-adjustment is necessary, remove fairing at junction of elevator fin and rudder fin.	
(4)	Adjust friction.	See Figure 1.

The bowden cable position within the mount (clamp block) is fixed by a nut pair on the mount's front side. This simplifies initial adjustment in the case of repeated removal/installation of the horizontal stabilizer.

Section 27-50
WING FLAPS

1. General

The DV 20 KATANA has electrically operated wing flaps. They are operated by means of a 3 position toggle switch located in the center section of the instrument panel.

The flap position indicator is located next to the switch. It has LED's for the UP, T/O, and LDG positions.

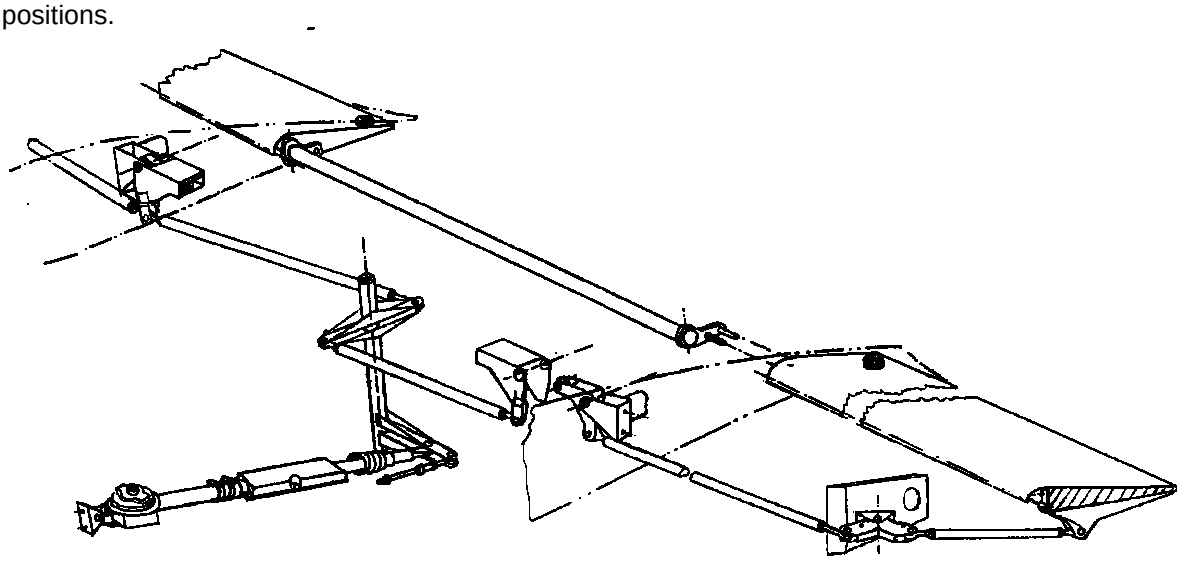

Figure 1: Wing Flaps (S/N's 20.005 thru 20.100)

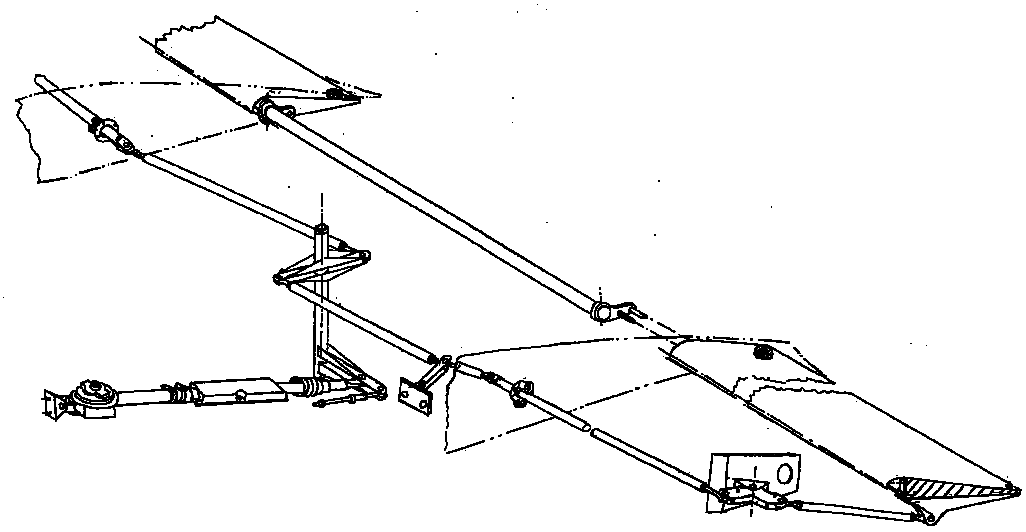

Figure 2: Wing Flaps (S/N's 20.101 and subsequent)

2. Description

The wing flaps are driven by an electric motor located under the left seat.

A reduction gear with a spindle and a push rod is fitted to the motor. The push rod transmits the actuator movement to a bellcrank.

A cam attached to the push rod actuates 5 micro switches which are part of the electronic control circuit.

The bellcrank is mounted to the sickle shaped bulkhead. From here, two push rods run to the LH and RH wing roots.

The wing flaps are mounted to the wings with hinges, and connected to each other with a torque tube.

The flaps are pressed to the wing bottom side with a pre-defined force. A mechanical stop on the sickle shaped bulkhead below the main bulkhead protects the flaps from overtraveling the end positions in the event of an electrical malfunction.

3. Troubleshooting

The following table lists defects as they could appear in the flap system, and their correction.

Complaint	Possible Cause	Repair
Flaps immovable.	Defective circuit breaker.	Replace.
	On-board voltage too low.	Check battery and generator.
	Defective flap switch.	Check switch.
	Defective or loose connector on motor.	Check connector.
	Defective limit stop switch.	Check limit stop switch.
	Defective electric motor.	Check motor.
Flaps moving too slowly.	Insufficient motor power.	Replace motor.
	Defective spindle.	Check spindle for discoloration, replace if necessary.
No or incorrect position indication.	Micro switch defective or adjusted improperly.	Check micro switch assembly.
Flap damage from aerodynamic load.	Flaps extended at too high airspeed.	Check entire flap system.

4. Removal and Installation

A. Wing Flaps

The wings must be removed from the fuselage.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect push-rod from flap horn.	
(2)	Carefully remove dowel pins from bearing journals.	
(3)	Remove bearing journals in inboard direction.	
NOTE: To assure an easy re-installation, mark the bearing journals (location and orientation).		
(4)	Remove flap.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

B. Bellcrank in Fuselage

Fuel tank must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect flap push rods.	
(2)	Disconnect actuator push rod.	
(3)	Remove mounting bolts of bellcrank.	
(4)	Remove bellcrank from fuselage.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

C. Bellcrank in Wing

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Open inspection hole on wing bottom side.	
(2)	Remove mounting bolts of push rods.	
(3)	Remove mounting bolt of bellcrank.	
(4)	Remove bellcrank.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

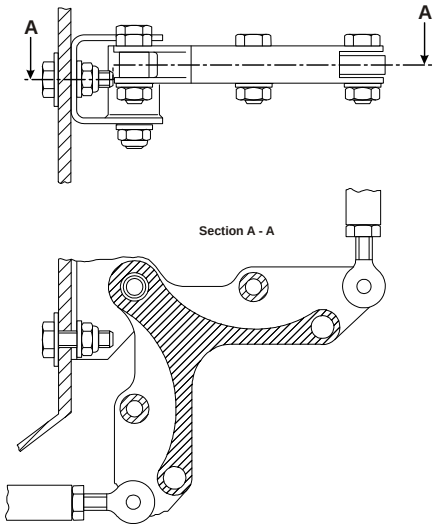

Figure 3: Flap Bellcrank in Wing

NOTE: For reasons of production technique, the bellcrank has holes which must NOT be used. The bellcrank must not be confused with the aileron bellcrank (see Chapter 27-10).

D. Electric Motor

The left seat shell must be removed.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect push-rod from bellcrank.	
(2)	Disconnect electric wires from motor and micro switch unit.	
(3)	Remove pedestal mounting bolts.	
(4)	Remove motor from fuselage.	
NOTE: In case a defect on the motor, it is recommendable to replace the entire motor.		

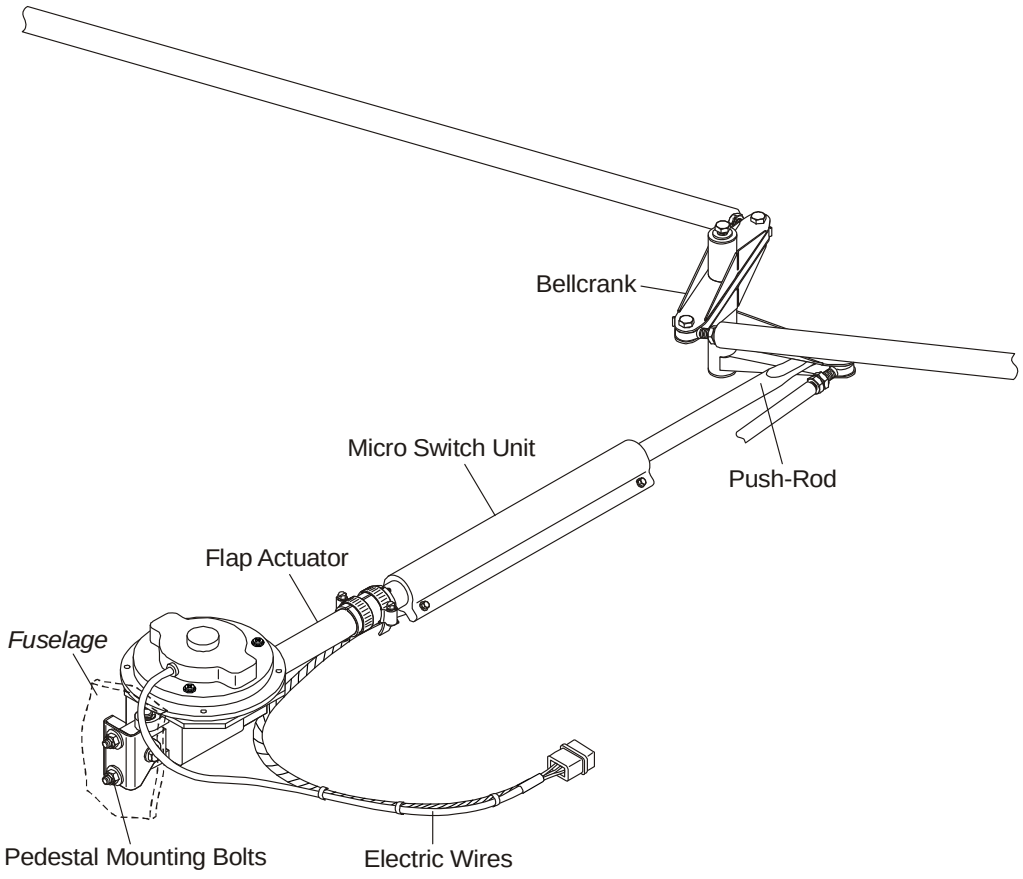

Figure 4: Flap Actuator Motor

5. Adjustment

After a repair of the flap system a check of the system to verify the correct flap travel given in Sub-Chapter 06-00 must be carried out.

The end positions of the flaps are adjusted with limit stop micro switches. Refer to the sketch below and to Wiring Diagram D20-9227-50-01 in Chapter 92.

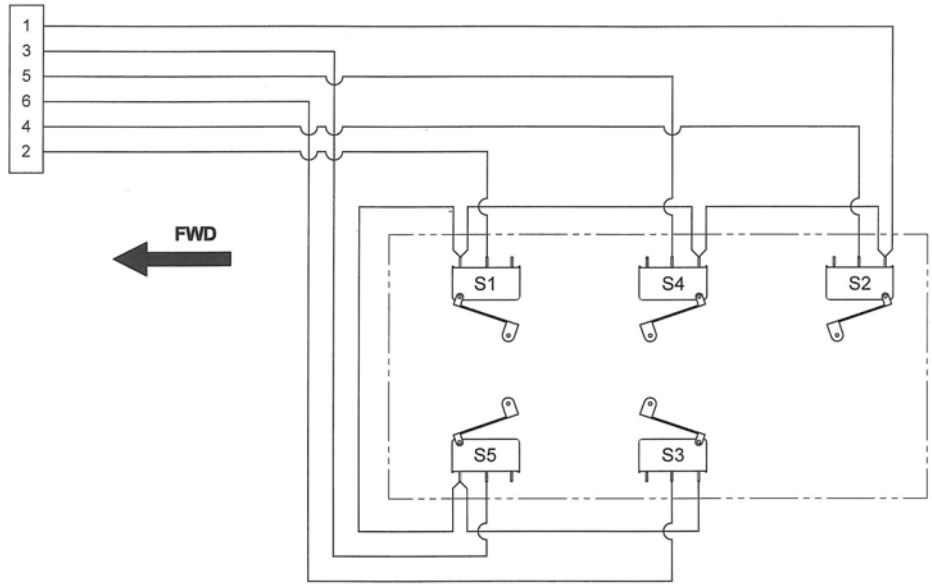

Figure 5: Micro Switch Designation

To move the switches, first release the mounting screws. After moving the switches to the desired position, re-tighten screws.

A. Initial Adjustment of Wing Mounted Parts

– With wing removed from fuselage, lock flap at 25° deflection.

– Adjust push-rod at flap horn until outboard bellcrank is at right angles to push rod.

– S/N's 20.005 thru 20.100: Adjust rod end in wing root until vertical arm of bellcrank is parallel with root rib.

B. Initial Adjustment of Fuselage Mounted Parts

S/N's 20.005 thru 20.100:

– With flap pockets aligned horizontally, align torsion bellcrank parallel to fuselage.

– Connect actuator to lower arm of torsion bellcrank.

– With the flap control switch in UP position, adjust pockets to 17° with the limit stop switches.

– Connect stop to lower arm of torsion bellcrank, adjust to 1 to 2 mm (0.04 to 0.08 in.) free play in the UP and LDG positions.

S/N's 20.101 and subsequent:

– Adjust position of micro switch assembly to the middle between the fully extended and fully retracted positions of the actuator. This ensures equal travel reserve of the actuator in UP and LDG positions.

– Connect actuator to lower arm of torsion bellcrank.

– Connect stop to lower arm of torsion bellcrank, adjust to 1 to 2 mm (0.04 to 0.08 in.) free play in the UP and LDG positions.

C. Complete Adjustment

– Install wings.

– S/N's 20.101 and subsequent: with flaps blocked at zero deflection and flap control switch in UP position, adjust length of push rods in wing root until they can be properly connected. Connect rods.

– Disconnect push rod connected to flap horn for safety reasons.

– With flap control switch in UP position, adjust 1 to 2 mm (0.04 to 0.08 in.) pre-tension at flap, corresponding to 3 to 5 daN (6.7 to 11.2 lbs.).

– Connect push rod, verify correct flap positions (see Chapter 06-00, Adjustment Report).

CHAPTER 28

FUEL

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CHAPTER 28-00
FUEL

1. General

The fuel system of the DV KATANA consists of an aluminum fuel tank with a capacity of 79 liters (20.9 US gal.), a fuel shut off valve, an electrical and a mechanical fuel pump, the carburetors, and the fuel lines. A sensor is used to monitor the fuel pressure.

2. System Description

The fuel tank is located behind the seats and is vented to the atmosphere.

A fuel line runs from the fuel tank to the electrical fuel pump, located under the tank, and further to the fuel shut off valve which is located in the center console. The fuel shut off valve has two positions, OPEN and CLOSED. The fuel line continues to the firewall breach from where it runs to the mechanical fuel pump which is mounted on the engine. From the pump output port the fuel line continues to a cross shaped fitting on the firewall. (Note that the cross-shaped fitting mounted on the ROTAX 912 S3 engine is different to the one used on the 912 A3 engine.) The pressure sensor (912 A3: orifice in cross-shaped fitting, 912 S3: orifice in sensor) is attached to this fitting. From here the fuel is finally directed to the carburetors.

A return line runs from the cross shaped fitting through a capillary valve to the fuel tank. If vapor bubbles occur, they will be removed via the return line.

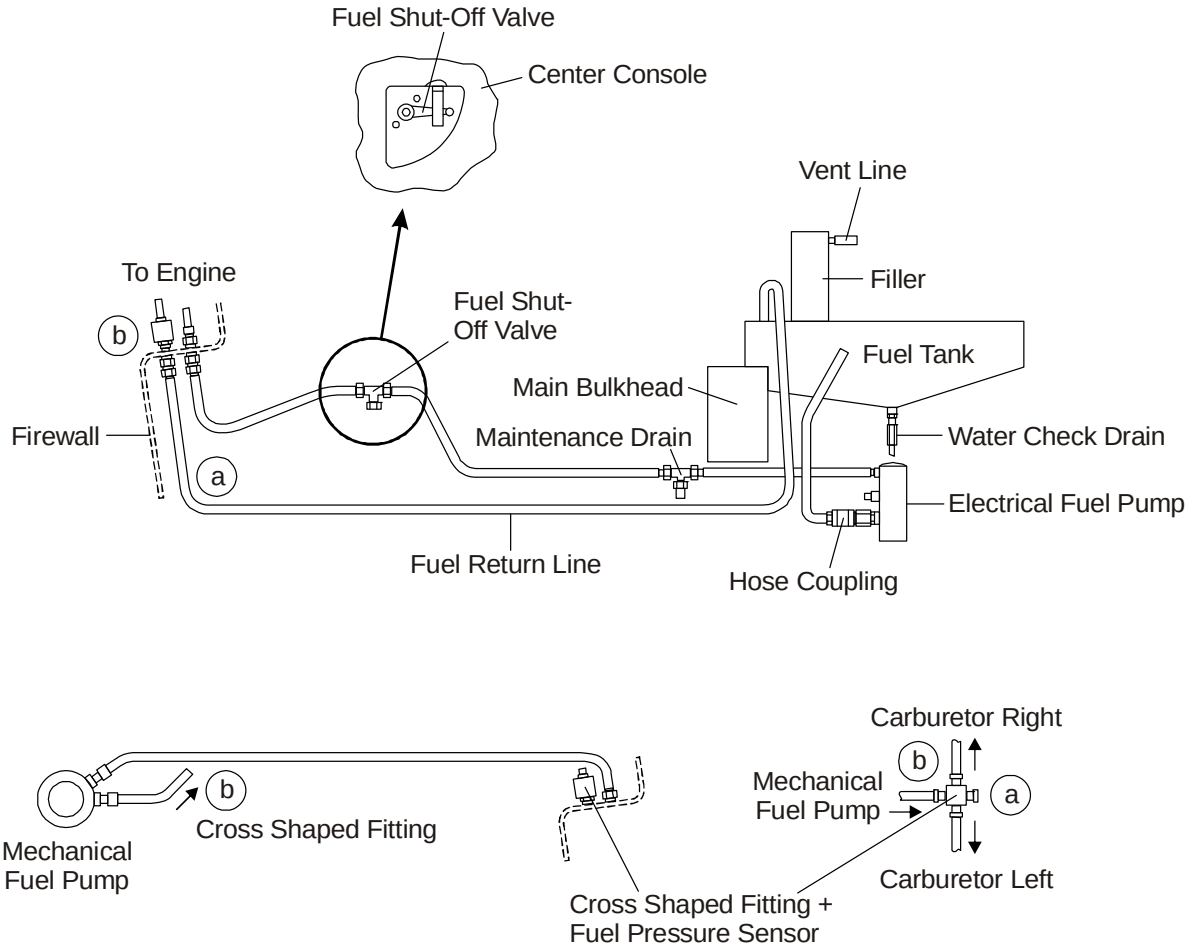

Figure 1: Fuel System

Section 28-10
STORAGE (TANK)

1. General

Fuel in the DV 20 KATANA is supplied from a fuselage mounted tank. The welded aluminum fuel tank is located between the main bulkhead and the B-bulkhead beneath the baggage compartment.

The fuel filler cap is located on the left hand side behind the canopy and is connected to the fuel tank via rubber hose.

The vent line runs from the filler cap through the fuselage floor to the exterior of the airplane. Its lower edge should be oblique as shown in Figure 1 below.

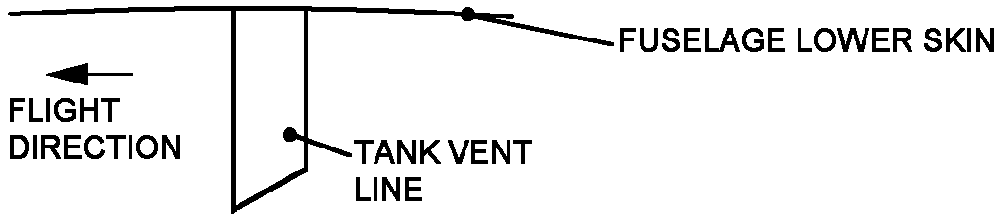

Figure 1: Lower Edge of Fuel Vent Line

A drain valve, installed at the lowest point of the fuel tank, allows draining of condensed water, and can be activated using a drainage cup.

2. System Description

Fuel is taken from the tank through a hollow screw with integrated fuel screen located in the bottom of the tank. When all the fuel is used, approximately 1 to 2 liters (approximately 1 to 2 US quarts) of fuel remain in the tank.

Located next to the fuel feed line is the connection port for the drain line which is connected to the outside via a hose and a spacer tube. Through this line the fuel tank can be drained completely. The fuel tank is located in the fuselage and placed on the main bulkhead and the B-bulkhead which are covered with rubber pads for protection. These ensure a proper fit and prevent the tank from sliding. In addition, a steel clamping band is used to secure the tank to the B-bulkhead.

3. Troubleshooting

The following table lists defects which could appear on the fuel tank and corrective measures.

Complaint	Possible Cause	Repair
Smell of fuel in airplane.	Loose fuel line connectors.	Tighten connectors.
	Cracks in fuel tank welding seams.	Weld or replace tank.
	Leaky fuel lines.	Check fuel lines.
Leaky tank filler cap.	Defective tank filler cap seal.	Replace seal.
Leaky tank connections.	Defective seals.	Replace seals.
	Defective thread.	Replace tank.

4. Removal and Installation

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Drain tank completely using the drain valve; disconnect fuel feed line.	
(2)	Remove baggage compartment floor.	
(3)	Disconnect rubber hose by loosening both hose clamps and pulling hose from connection sleeve.	
(4)	Remove the steel band holding the tank.	
(5)	Disconnect all electric wires.	
(6)	Remove tank.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
(2)	Shut hose coupling, wrap locking wire around fitting three times between hexagon part and locking ring to secure.	

5. Leakage Test

If leakage is suspected, or if a repair has included such tasks as welding on the tank, the tank should be filled with non-flammable fluid (e.g. water), all openings should be closed, and the tank should be checked for leaks. Welding seams can be checked for leakage using a soap solution.

WARNING: THE LEAK TEST MUST BE PERFORMED WITH THE TANK REMOVED FROM THE AIRPLANE.

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Section 28-20
DISTRIBUTION

1. General

The fuel pump system consists of an electrical and a mechanical fuel pump, fuel filters and the fuel shut off valve. The fuel lines are made out of shielded teflon hoses with screw type connectors.

The fuel is pumped through a screen filter located in the fuel tank, by the electrical fuel pump (with integrated filter). From there the fuel flows through the drain valve which is located at the lowest point of the system, and further to the fuel shut off valve which allows the fuel flow to the engine compartment to be shut off in an emergency situation.

From the fuel shut off valve the fuel line is directed through the firewall to the mechanical fuel pump which also has an integrated fuel filter. The output port of the mechanical fuel pump is connected with the cross shaped fuel fitting located on the firewall. Two of the four output ports of the cross shaped fitting are used to supply fuel to the carburetors, one is for the pressure sensor, and one is connected to the return line running back to the tank. To ensure the required pressure potentials in the fuel system, a capillary valve is installed in the firewall fitting of the return line.

2. System Description

A. Fuel Shut Off Valve

The fuel shut off valve is operated with the red lever located on the side of the center console. The fuel shut off valve consists of a ball which has an opening, and a viton-seal. The valve either permits or prevents fuel flow, depending on the position of the operating lever.

B. Electrical Fuel Pump

The electrical pump is used as auxiliary or emergency pump which should be switched on for start or landing as well as in certain emergency situations. It is operated by means of a toggle switch located in the center section of the instrument panel. If OÄM 20-244 (Instrument Panel Version D20-3110-00-00) is installed, the fuel pump is operated by means of a rocker switch located on the lower section of the instrument panel on the pilot's side.

The pump function is based on the vibrating motion of a diaphragm in a cylinder. This motion is controlled by an electromagnet. With the pump piston being pushed upward by the force of the piston spring it creates suction as well as pressure. At this point the valve in the piston is closed and the inlet valve in the valve cage is open, which results in the fuel located above the piston valve being lifted and via the check valve pumped to the mechanical fuel pump.

An additional fuel filter is installed within the pump.

C. Mechanical Fuel Pump

The mechanical fuel pump is a diaphragm type pump driven directly by the engine. With the engine running, the pump sucks fuel via the electric fuel pump to deliver it to the carburetors with a pressure of approximately 0.15 to 0.4 bar (2.2 to 5.8 psi).

The pump is driven by a cam via a push rod. The motion of the push rod is transferred against the pressure of a spring to the diaphragm, which creates suction as well as pressure. The two valves located in the upper part of the pump are opened or closed depending on the working cycle of the diaphragm.

During the suction period the output valve is closed. With increasing pressure in the upper part of the pump created through the motion of the diaphragm the input valve will be closed and the output valve opened.

3. Troubleshooting

The following table lists defects which could appear in the fuel supply system and corrective measures.

Complaint	Possible Cause	Repair
Smell of fuel in airplane.	Loose fuel line connections. Leaky fuel lines.	Tighten fuel line connections. Check fuel lines.
Insufficient fuel pressure.	Clogged filter. Defective mechanical fuel pump. Defective fuel pressure sensor.	Clean filter. Replace fuel pump. Replace fuel pressure sensor.
Electrical fuel pump stops running after short run (before starting engine).	Clogged capillary in cross shaped fitting.	Blow air through cross shaped fitting in reverse direction of fuel flow.

4. Removal and Installation

A. Fuel Shut-Off Valve

(1) Removal

Prior to removal, the fuel tank must be drained.

Detail Steps/Work Items		Key Items/References
(1)	Remove hand hole cover on the right side of the center console.	
(2)	Disconnect both hose lines.	
(3)	Remove operating lever.	
(4)	Remove mounting screws.	
(5)	Remove fuel shut off valve from airplane.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

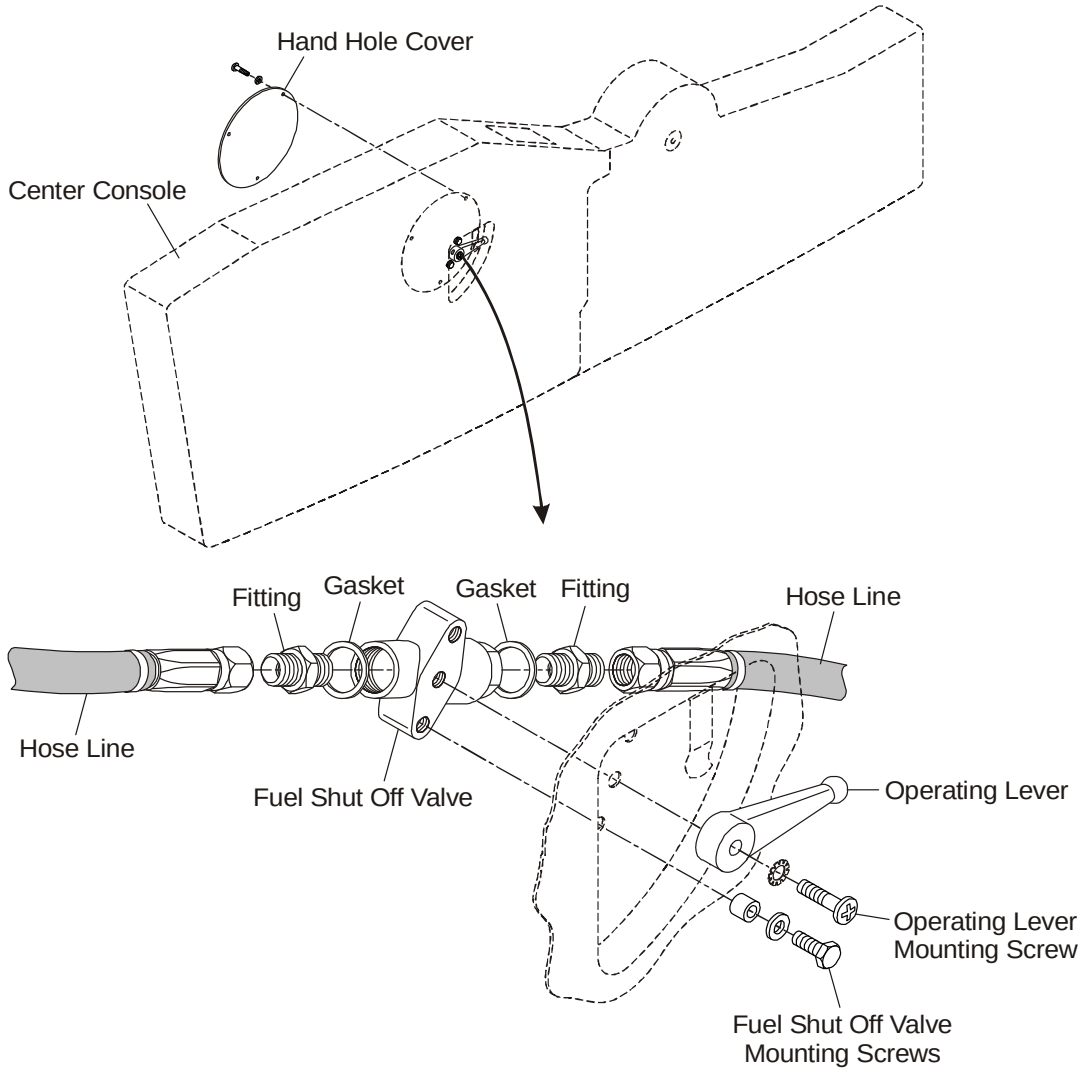

Figure 1: Fuel Shut-Off Valve

B. Electrical Fuel Pump

(1) Removal

Prior to removal, the fuel tank must be drained.

Detail Steps/Work Items		Key Items/References
(1)	Close fuel shut off valve.	
(2)	Disconnect electrical connections.	
(3)	Disconnect fuel lines (see below).	
(4)	Loosen mounting screws.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

(3) Maintenance of Filter Element

Detail Steps/Work Items		Key Items/References
(1)	Remove locking wire (6 and 7).	
(2)	Slide back locking ring (1).	
(3)	Remove hose connector (2).	
(4)	Remove lower cap (3).	
(5)	Remove filter element (4) and clean by washing.	
(6)	Check disk magnet (5) for metal particles.	
(7)	Reassemble filter and cap (3 and 4).	
(8)	Install hose connector (2).	
(9)	Slide on locking ring (1).	
(10)	Secure cap using locking wire (6).	
(11)	Secure locking ring against movement by wrapping locking wire around three times.	

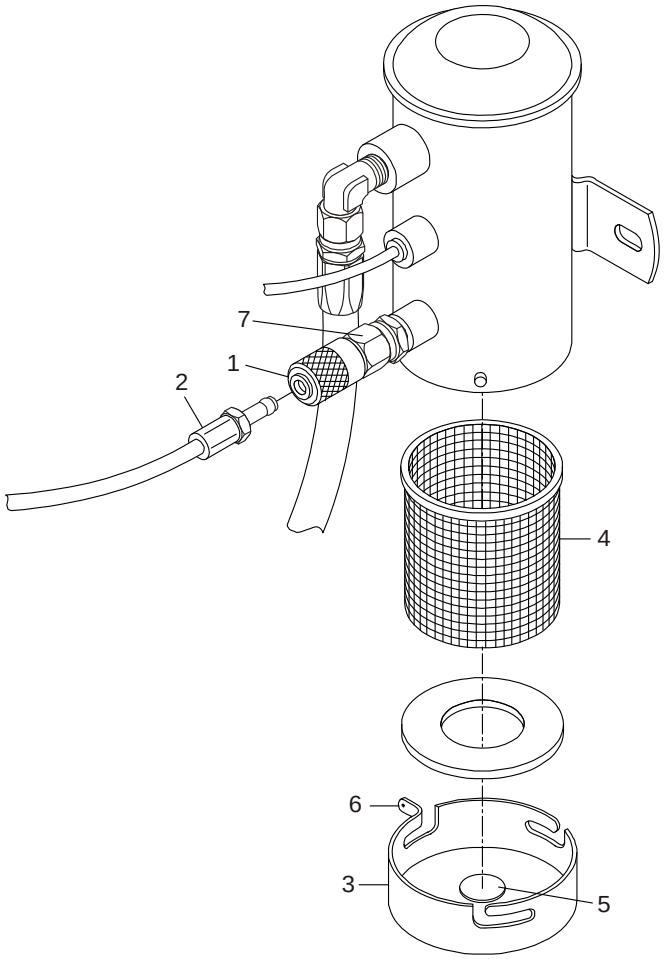

Figure 2: Electrical Fuel Pump

C. Mechanical Fuel Pump

(1) Removal and Installation

Detail Steps/Work Items		Key Items/References
(1)	Refer to engine Operator's Manual.	

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Section 28-40
INDICATING

1. General

A submerging tube sensor is installed in the top side of the fuel tank from which the fuel level is electrically sensed. This signal is sent to the fuel quantity indicator.

A fuel pipette is installed in the filler-tank connection for fuel quantity checking on the ground.

The airplane is also equipped with a fuel pressure sensor which illuminates a warning light, located in the instrument panel, when the fuel pressure is low.

2. System Description

A. Electrical Fuel Quantity Indicating System

The float located in the submerging tube is connected to a resistance wire. The changing fuel level changes the resistance, which is indicated by the fuel quantity indicator. The indicator is calibrated to the highest and lowest position of the float.

B. Mechanical Fuel Quantity Indicating System

A fuel pipette is installed in the filler-tank connection. It consists of a brass rod covered by a transparent plastic hose. The rod has 4 notches to indicate 1/4, 2/4, 3/4, and 4/4. To check the fuel quantity, the opening of the hose is closed off with a finger, and the pipette is extracted through the filler.

C. Fuel Pressure Sensor

The fuel pressure is measured using the pressure sensor on the firewall. The sensor is connected to the output port of the mechanical fuel pump. For operation the sensor requires a supply of 12 Volts. The sensor is activated as soon as the fuel pressure drops below 0.15 bar (2.2 psi).

3. Troubleshooting

The following table lists defects which could appear in the fuel quantity indicating system and corrective measures.

Complaint	Possible Cause	Repair
Insufficient fuel pressure.	Defective pressure sensor.	Check pressure sensor.
	Voltage supplied to pressure too low.	Check electrical supply.
Electrical fuel quantity indication incorrect.	Defective fuel quantity sensor.	Replace fuel quantity sensor.
	Defective fuel quantity indicator.	Replace fuel quantity indicator.
	Fuel quantity indicating system adjusted incorrectly.	Adjust fuel quantity indicating system.
Mechanical fuel quantity indication incorrect.	Pipette installed improperly.	Install properly.
	Pipette clogged.	Clean.
	Transparent hose leaky.	Replace.
	Aircraft standing on lopsided ground.	Place on even ground.

4. Removal and Installation

A. Fuel Pressure Sensor

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect electrical connector.	
(2)	Remove Sensor.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

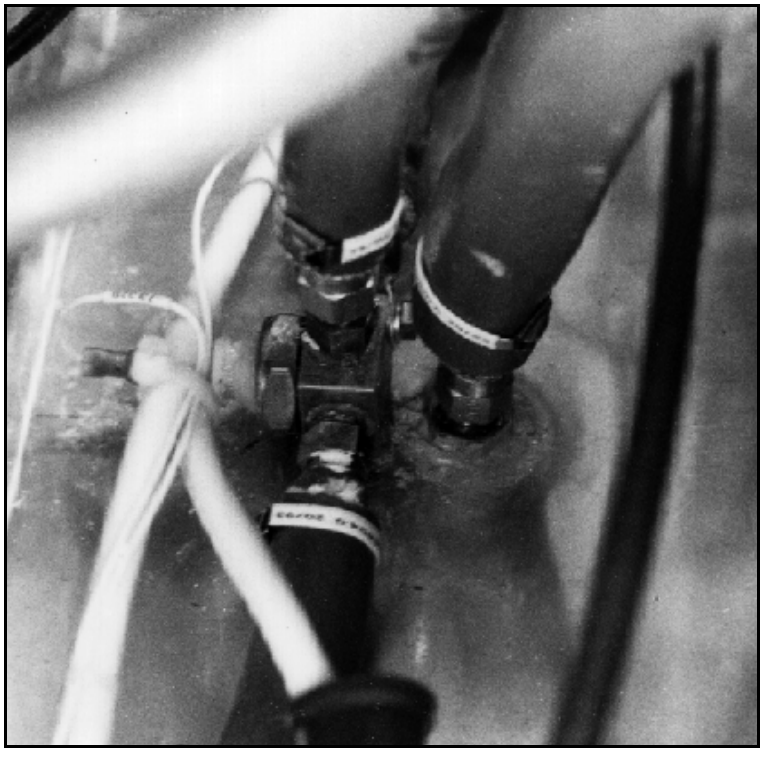

Figure 1: Fuel Pressure Sensor

B. Fuel Quantity Sensor

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove baggage compartment floor.	
(2)	Disconnect electrical connectors.	
(3)	Remove mounting screws around sensor.	
(4)	Remove sensor from tank.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
NOTE:	Prior to the installation of a new sensor, the tape and the pin on the bottom part must be removed (transportation protection). The sensor can only be installed in one position, as the mounting holes are not centered. Apply liquid seal to screws before installing.	

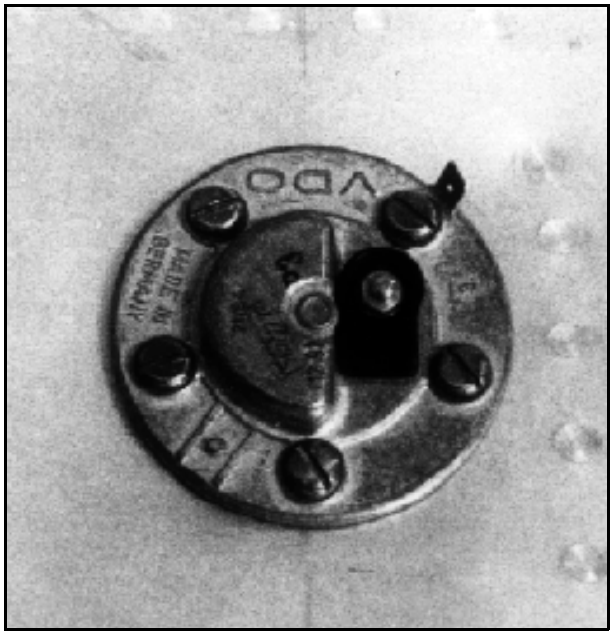

Figure 2: Fuel Quantity Sensor

5. Calibration

After replacement of the fuel quantity sensor or indicator, the gauge has to be checked for accurate indication.

The fuel quantity indicator is calibrated with an empty tank.

Detail Steps/Work Items		Key Items/References
(1)	Drain tank completely.	
(2)	Fill tank using a calibrated filler pump.	
(3)	Compare fuel quantity indicator reading with amount of fuel filled into tank.	

A. Fuel Quantity Indicator Adjustment

For calibration of the fuel quantity indicator, a potentiometer can be adjusted which can reached through a hole in the fuel quantity indicator housing. By adjusting the potentiometer, the indication on the front of the instrument is altered.

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CHAPTER 31

INDICATING/RECORDING SYSTEM

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CHAPTER 31-00
INDICATING/RECORDING SYSTEMS

1. General

This Chapter tells you about the indicating systems installed in the airplane. Refer to these Sections for the related data:

– Section 31-10. The instrument and control panels for the DV 20.

The DV 20 has these indicating systems:

– An instrument panel:

  – The instrument panel is divided into 5 sections: the LH, RH and center section, the instrument panel cover, and the panel on the center console

  or

  – The instrument panel with OÄM 20-244 installed is made in one piece with a shelf. The shelf goes between the panel and the firewall.

– .A control panel in the center console. This panel has the engine controls, fuel controls, cabin heat control levers, parking brake and trim.

This Section does not tell you about the indicators that belong to systems. See the related system for data.

Note: Equipment which is certified for installation in the DV 20 is listed in Section 6 of the Airplane Flight Manual. Such equipment may be installed in accordance with the Airplane Maintenance Manual.

Any equipment which is not listed in Section 6 of the Airplane Flight Manual is called "Additional Equipment". The installation of Additional Equipment is a modification which must be handled in accordance with national regulations or a Service Bulletin.

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Section 31-10
INSTRUMENT PANEL

1. General

The instrument panel is divided into five (5) sections: the LH, RH and center section, the instrument panel cover, and the panel on the center console.

The instrument panel as installed with OÄM 20-244 is made in one piece with a shelf. The shelf goes between the panel and the firewall.

2. Description

The LH section of the instrument panel holds the flight and navigational instruments and the stall warning horn.

The engine instruments and the instrument circuit breakers are located in the RH section of the instrument panel.

The center section holds the toggle switches, circuit breakers, and the avionics equipment. Furthermore the master switch, the ignition switch, and the flap control unit are installed in the center section.

On the center console below the instrument panel there is a panel accommodating the control knobs for the operation of parking brake, choke, and cabin heating.

The throttle quadrant consisting of throttle lever, carburetor heat control, and propeller pitch control is located in the center console. The knob on the RH side of the center console is connected to a friction brake which allows adjustment of the force required to move these levers.

If OÄM 20-244 & OÄM 20-245 are installed:

The airplane has an aluminum alloy instrument panel. The panel has cut-outs for instruments and switches. A large cut-out in the middle of the panel for the avionic equipment. Brackets between the shelf and the avionic equipment rack make the installation rigid.

The bottom of the panel bends up at 90º to make a shelf. The shelf has mountings for electrical equipment such as relays and multi-pin connectors. The right hand side of the shelf has a row of ground terminals. Cut-out areas in the shelf allow cooling air to move past the instruments and out through holes in the instrument panel cover.

Figure 1and 2 illustrates the location of each instrument in the Cockpit. System and functional description of each instrument as well as the removal and installation procedures can be found in the corresponding chapters.

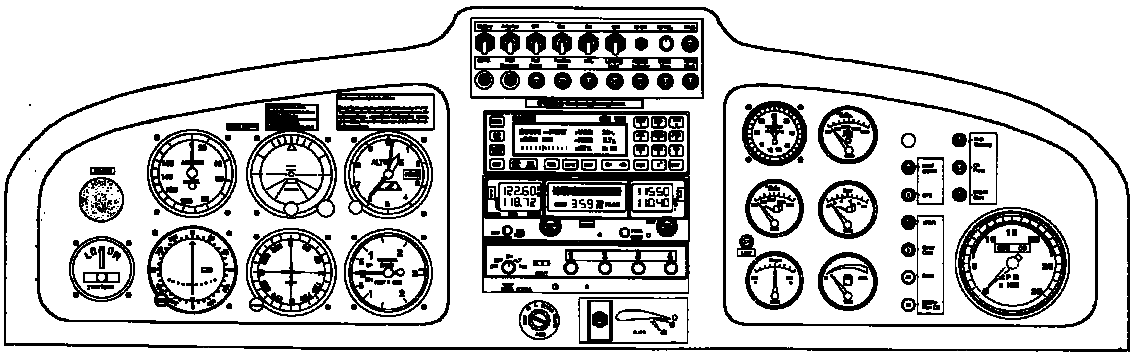

Figure 1: Instruments

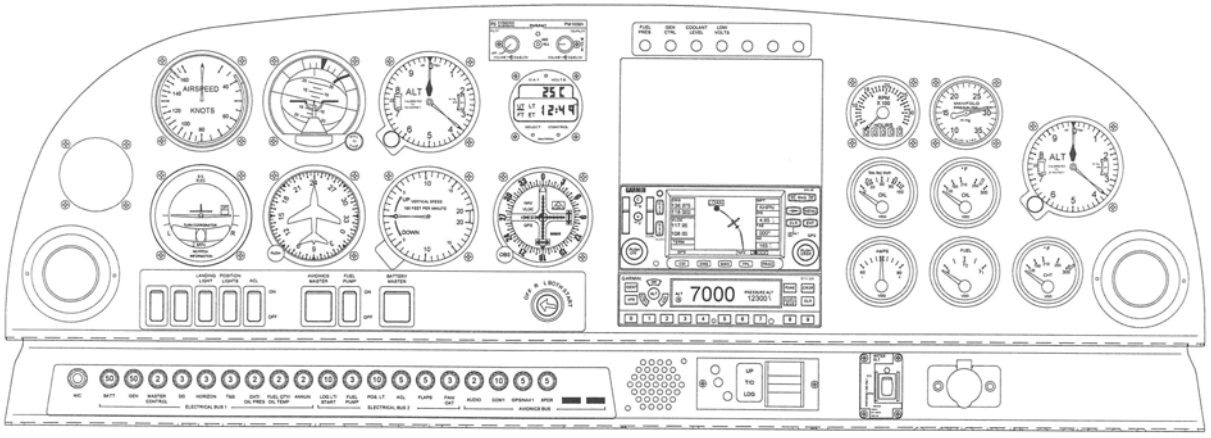

Figure 2: Instruments (if OÄM 20-244 & OÄM 20-245 are installed)

3. Removal and Installation

The DV 20 KATANA was designed with accessibility of the equipment in mind. Consequently, the instruments are easy to reach after removal of the instrument panel cover.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove instrument panel cover.	
(2)	Disconnect instruments.	
(3)	Remove mounting hardware (8) of the instrument panel.	
(4)	Remove the panel completely from the mounting surface.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

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CHAPTER 32

LANDING GEAR

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WHEELS AND BRAKES

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CHAPTER 32-00
LANDING GEAR

1. General

The DV 20 KATANA is equipped with a fixed tricycle landing gear, including a castering nose wheel. The two main landing gear struts are connected to the main bulkhead with two mounting brackets each.

The nose gear is attached to the engine mount and to the bottom side of the fuselage. Shock absorbing is ensured by an elastomer package located between engine mount and steel leg.

Nose and main gear are equipped single wheels with low pressure tires. Disk brakes are installed on the inside of each of the main wheels. The disk brakes can be individually operated by the left or right toe-brake pedal.

2. Troubleshooting

Malfunctions which can occur on the landing gear system are described in the individual sub-chapters.

3. Maintenance Information

Removal and installation of each assembly as well as the required adjustments are described in the respective sub-chapters. The general safety precautions must be observed at all times for any repair or maintenance work performed.

In the event that maintenance work has to be performed on the un-loaded main landing gear, the airplane must be lifted and shored using the designated lifting points.

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Section 32-10
MAIN LANDING GEAR

1. General

The main landing gear system consists of two leaf-spring steel struts, wheels with disk brakes, and the wheel fairings which are part of the standard equipment.

The struts made of quenched and tempered steel absorb the landing shocks. Brake disks are installed on the aluminum wheels. The disk brakes of the DV 20 KATANA are part of the standard equipment.

2. Description

Each strut is mounted to the inner bracket by means of one bolt which must be secured against loosening. The outer mounting bracket encloses the strut, thereby clamping it. As a buffer, polyamide sheets are installed between the contact surfaces. The wheel axis is attached with four bolts to the lower end of the landing gear strut.

Mounting brackets for the wheel fairings are attached between the wheel axis and the strut. Toe and camber can be adjusted by adding shims between strut and axis.

3. Troubleshooting

The following table lists defects as they could appear on the main landing gear system, and their correction.

Complaint	Possible Cause	Repair
Strut bent.	Hard landing.	Replace strut.
Negative camber.	Strut bent.	Replace strut.
Excessive tire wear.	Improper toe.	Adjust toe.

4. Removal and Installation

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Lift airplane or unload wheel.	See Chapter 7.
(2)	Remove wheel fairing by loosening the outer securing bolt (M8) and by removing the two screws on the inside.	
(3)	Remove back pressure plate from caliper.	
(4)	Remove wheel axle nut, remove caliper.	
(5)	Remove wheel.	
(6)	Remove brake line from strut.	
(7)	Remove axle from strut by removing the four attachment bolts.	
(8)	Remove nut and bolt at inner mounting bracket	Refer to Figure 1.
(9)	Support strut; remove nuts and bolts (M10) from inner bracket; remove lower plate.	
(10)	Remove strut in outboard direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	See Fig. 1 for correct assembly. See Sub-Chapter 20-00 for proper torques.

5. Adjustment

A. Play in Wheel Bearing

Detail Steps/Work Items		Key Items/References
(1)	Install wheel, install axle nut with spacer washer.	
(2)	Torque nut to 40 Nm (29.5 lbs.ft.).	
(3)	Loosen nut again, tighten to next pinhole with force of hand.	
(4)	Secure nut with split-pin.	

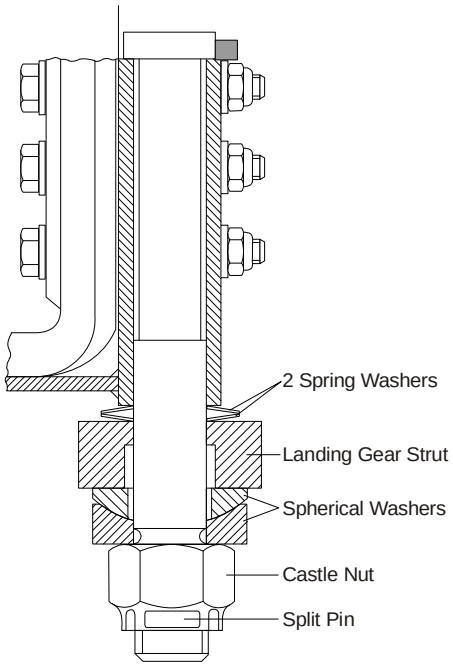


Figure 1: Main Landing Gear Strut Inner Attachment

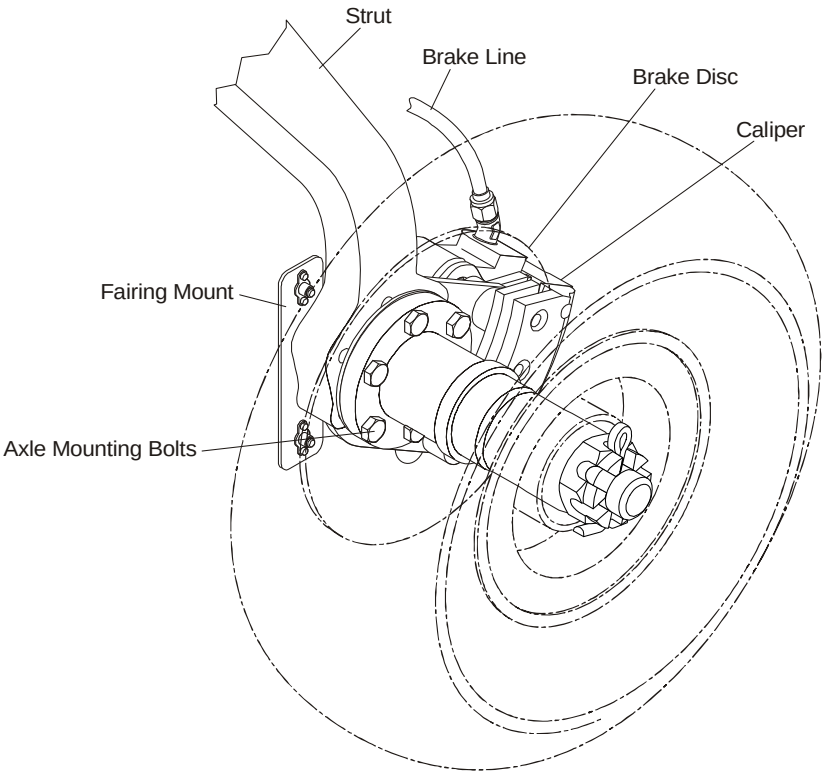


Figure 2: Main Wheel

B. Toe, Camber, and Track

After each hard landing and after any repair on the strut or the main bulkhead the wheel alignment has to be checked. For this, the DV 20 KATANA is placed onto slide sheets and alignment checked at empty mass (weight) against the data in the Adjustment Report.

In the event a deviation is found, shims should be placed between the strut and the wheel fairing mount. These change the angle between wheel axis and fuselage centerline.

In addition the wheel track can be checked at this time. The track is measured from the most outboard point of one wheel axis to the same point on the other axis. This inspection must also be performed at empty mass (weight) and with the airplane placed on slide sheets.

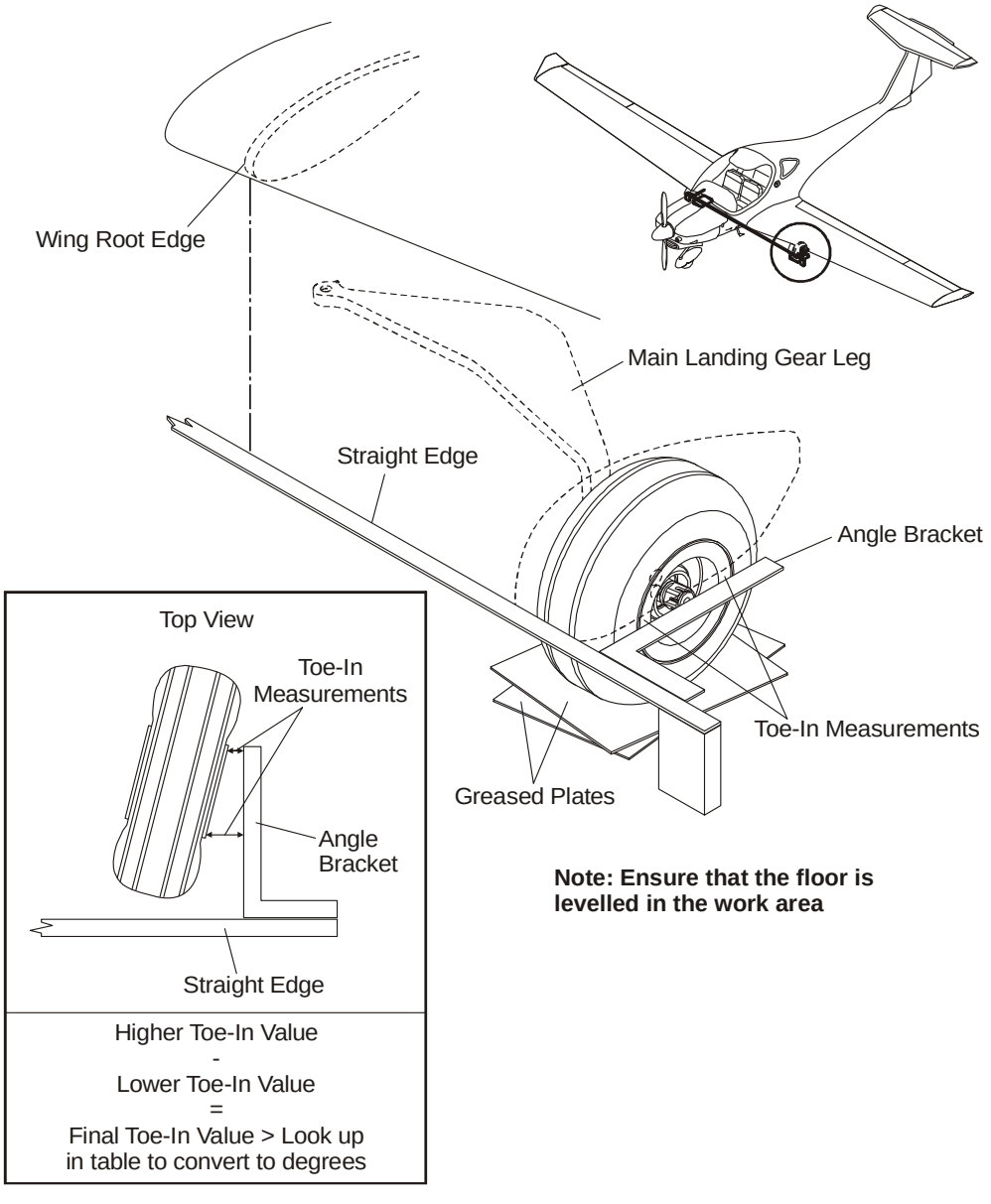


Figure 3: Toe and Camber Adjustment

6. Inspection and Removal of Main Landing Gear Attachment Brackets

The main landing gear attachment brackets must be replaced, if corrosion, cracks or deformation is detected.

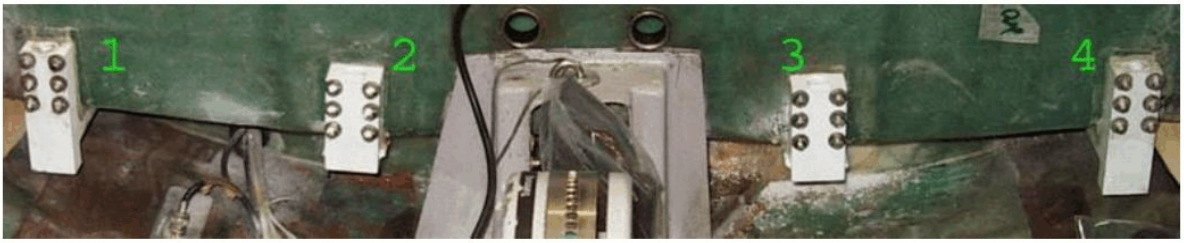


Figure 4: Inspection and Removal of Main Landing Gear Attachment Brackets

A. Inspection and Removal of Attachment Fitting 1 and 4

Detail Steps/Work Items		Key Items/References
(1)	Examine the outer main landing gear attachment brackets 1 and 4 for cracks and corrosion by visual inspection. If cracks are detected or corrosion spots in excess of 5 mm² and depth of 0.2 mm remove fittings and replace. Follow items (2) through (6). Note: The maximum corroded area must not exceed 50 mm².	Refer to Figure 4.
(2)	Remove screws.	
(3)	Remove attachment fittings.	
(4)	Install new attachment fittings with paste (thickened resin).	
(5)	Remove excess paste.	
(6)	Cure and post cure the bonding area.	

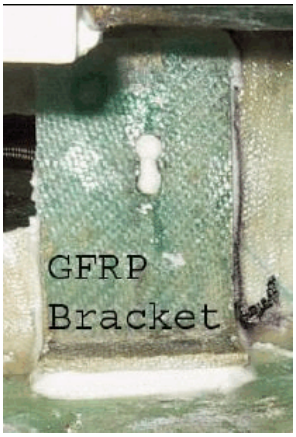
B. Inspection and Removal of Attachment Fitting 2

Detail Steps/Work Items		Key Items/References
(1)	Examine the inner main landing gear attachment bracket 2 for cracks and corrosion by visual inspection. Pay special attention to cracks at the welding seams and to corrosion at the bonding area to the main spar. If detected remove fittings and follow items (3) through (12).	Refer to Figure 4.
(2)	If corrosion spots in excess of 100 mm² and depth of 0.1 mm are detected at the inspectable surfaces of attachment bracket, remove fittings and repair or replace according to items (3) through (12). Repair small corrosion spots by grinding off rust with sandpaper and repaint. Note: The maximum corroded area must not exceed 1000 mm².	
(3)	Remove screws.	
CAUTION: DO NOT DAMAGE THE MAIN BULKHEAD.		
(4)	Cut out glass fibre cloth on the sickle shaped bulkhead below the attachment fitting. 	
(5)	Remove main landing gear attachment fitting.	

Detail Steps/Work Items		Key Items/References
(6)	Remove paint coat and corrosion from the fitting. Perform dye penetration inspection. If cracks were found, Diamond Aircraft must be contacted and the fitting must be replaced. In case of corrosion use the limit of corrosion depth of inspection item (2). The inner bracket sheet must not be thinner than 2.9 mm.	
Note: Use abrasive fleece for bonding preparation. Do not damage or remove the paintcoat.		
(7)	Paint the attachment fitting and prepare the area for bonding the fitting.	
(8)	Install new attachment fitting with paste.	
(9)	Remove excess paste.	
(10)	Repair sickle shaped bulkhead with two layers 92140 (+/-45).	Refer to Chapter 51.
(11)	Cure and post cure the bonding and repair area.	Refer to Chapter 51.
(12)	Seal the pilot compartment to the tank compartment.	

C. Inspection and Removal of Attachment Fitting 3

Detail Steps/Work Items		Key Items/References
(1)	Examine the inner main landing gear attachment bracket 3 for cracks and corrosion by visual inspection. Pay special attention to cracks at the welding seams and to corrosion at the bonding area to the main spar. If detected remove fittings and follow items (3) through (14).	Refer to Figure 4.

	Detail Steps/Work Items	Key Items/References
(2)	If corrosion spots in excess of 100 mm² and depth of 0.1 mm are detected at the inspectable surfaces of attachment bracket, remove fittings and repair or replace according to items (3) through (14). Repair small corrosion spots by grinding off rust with sandpaper and repaint. Note: The maximum corroded area must not exceed 1000 mm².	
(3)	Remove screws.	
	CAUTION: DO NOT DAMAGE THE MAIN BULKHEAD, FUSELAGE OR THE GFRP BRACKET.	
(4)	Mark the position of GFRP bracket and remove it. 	
	CAUTION: DO NOT DAMAGE THE MAIN BULKHEAD.	
(5)	Cut out glass fibre cloth on the sickle shaped bulkhead below the attachment fitting.	
(6)	Remove main landing gear attachment fitting.	

Detail Steps/Work Items		Key Items/References
(7)	Remove paint coat and corrosion from the fitting. If cracks were found, Diamond Aircraft must be contacted and the fitting must be replaced. In case of corrosion use the limit of corrosion depth of inspection item (2). The inner bracket sheet must not be thinner than 2.9 mm.	
Note: Use abrasive fleece for bonding preparation. Do not damage or remove the paintcoat.		
(8)	Paint the attachment fitting and prepare the area for bonding the fitting.	
(9)	Install new attachment fitting with paste.	
(10)	Remove excess paste.	
(11)	Repair sickle shaped bulkhead with two layers 92140 (+/-45).	Refer to Chapter 51.
(12)	Attach GFRP bracket with paste.	
(13)	Cure and post cure the bonding and repair area.	Refer to Chapter 51.
(14)	Seal the pilot compartment to the tank compartment.	

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Section 32-20
NOSE LANDING GEAR

1. General

The DV 20 KATANA is equipped with a fixed nose landing gear with a castering wheel. On its rear end, the leg is attached to the fuselage bottom with a special fitting. An elastomer package connects the leg to the supporting point at the engine mount.

2. Description

The nose landing gear has attachment points at the engine mount and in the fuselage bottom.

A stop on the nose wheel fork limits the deflection of the nose wheel to ± 30. Steering friction (preventing wobble) is adjusted by tightening the nose wheel fork mounting screw.

An elastomer package installed between the nose wheel leg and the engine mount is used for shock absorption. The elastomer package is maintenance free.

In the fuselage bottom, the nose gear is held by two bearings allowing a swinging motion of the nose wheel leg against the elastomer package.

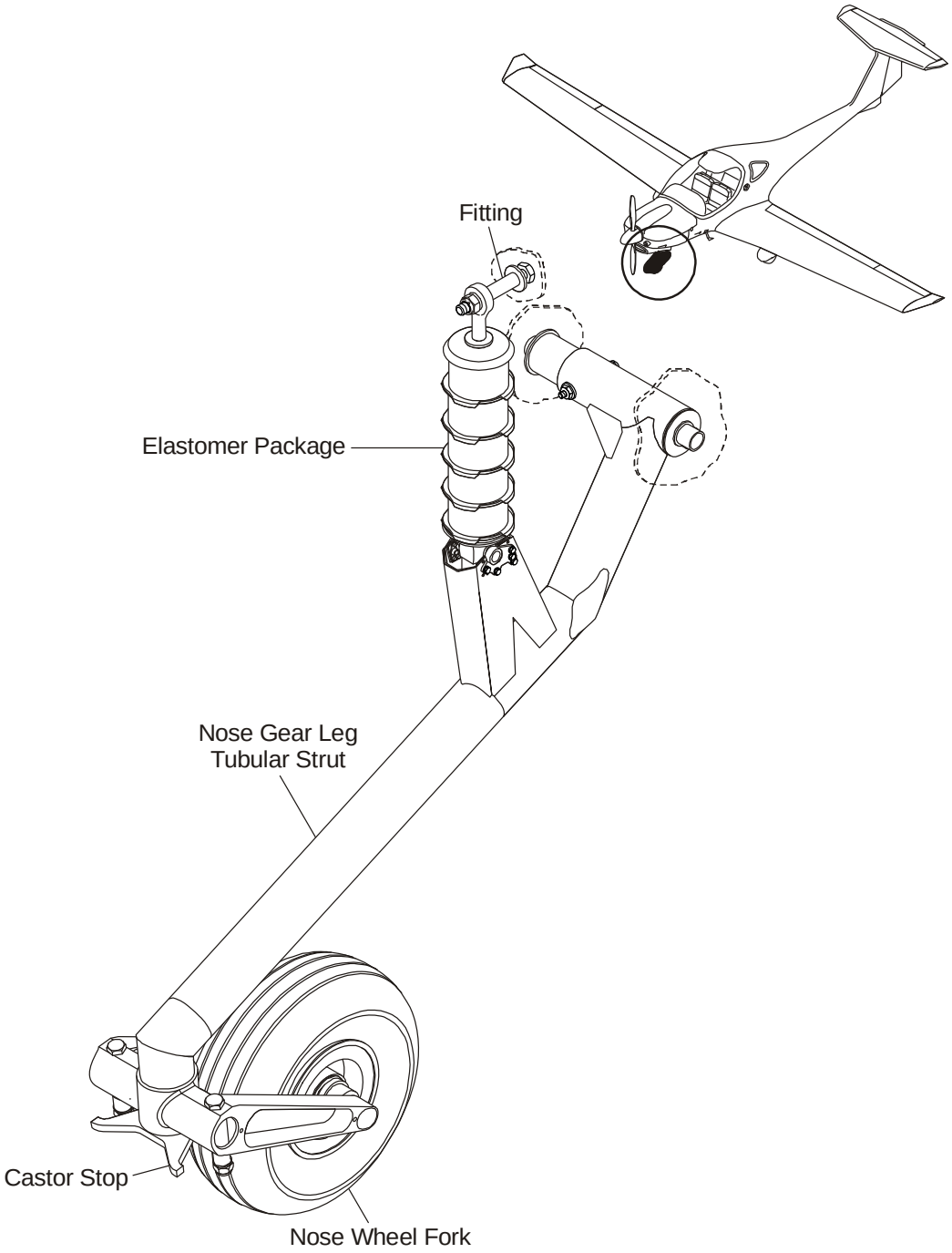

Figure 1: Nose Landing Gear

3. Removal and Installation

A. Nose Landing Gear Leg

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove engine cowling.	
(2)	Remove cover over nose landing gear fitting.	
(3)	Disconnect elastomer package assembly from engine mount.	
(4)	Remove safety bolt (1) from leg bearing journal unit.	
(5)	Compress bearing journal unit, extract from bearings.	
(6)	Remove nose gear in downward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

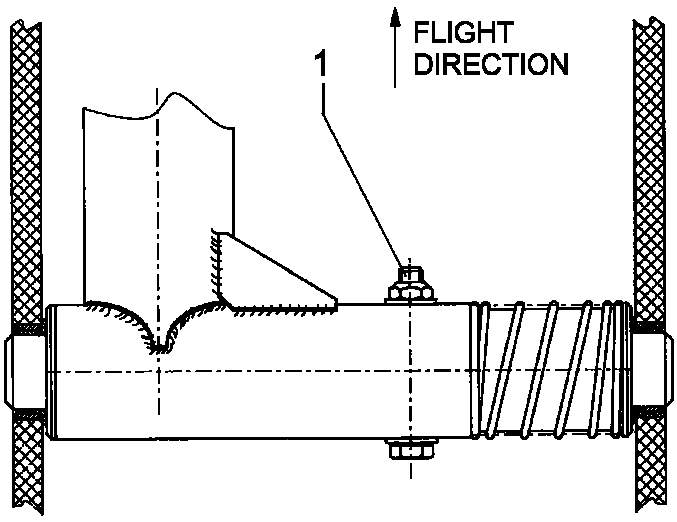

Figure 2: Bearing Journal Unit

Figure 3: Elastomer Package

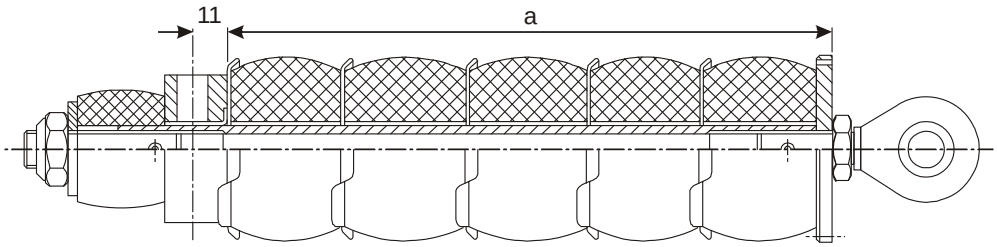

Figure 4: Elastomer Package

B. Rubber Spring Assembly

Airplane must be jacked up or nose wheel unloaded.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove engine cowling.	
(2)	Remove fairing of rubber spring assembly.	
(3)	Disconnect rod end bearing from engine mount.	
(4)	Support nose gear leg; disconnect rubber spring assembly from leg.	
(5)	Remove LH and RH safety plate; remove bearing journals using M4 pulling screw. Heat application may be required to break glue contact.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence. Secure bearing journals with Loctite 262.	

C. Elastomer Elements

The elastomer elements should be replaced in the event that they are worn (see 4. Adjustment) or cracks are found.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove the adjusting nut.	
(2)	Pull defective element off.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence. For proper pre-tension refer to Paragraph 4. Adjustment.	

4. Adjustment

A. Nose Wheel Steering Friction

The steering friction for the prevention of nose wheel wobble is adjusted with the nose wheel fork mounting bolt.

The friction should be adjusted to withstand a force of 30 to 50 N (6.75 to 11.25 lbs.) acting in the direction of the nose wheel axle.

B. Pre-tension of Elastomer Package

When new elastomer elements are installed, dimension "a" (see Fig. 4) should be 195 mm or 7.7" with the nose wheel clear of the ground.

The preload on used elements is adjusted properly when the rubber elements cannot be turned by moderate force of hand while the nose wheel is clear of the ground. With the elastomer package properly preloaded, dimension "a" must not be less than 185 mm or 7.3". Otherwise the rubber elements must be replaced.

Section 32-40
WHEELS AND BRAKES

1. General

The nose gear and main landing gear are each equipped with single wheels and low pressure tires. The wheels of the main landing gear are equipped with hydraulically operated disk brakes.

2. Description

The main landing gear wheels consist of two wheel halves, the inner tube, and the tire. Brake disks are attached to the inner half of each wheel. The valve stem is located on the outside of the wheel. Angular roller bearings are installed in each wheel half.

The brake system consists of the brake fluid reservoirs, the master cylinders, the brake lines, calipers, and brake disks.

The brake cylinders on the pilot's side work independently from those on the co-pilot's side.

The brake is applied by pressing the brake pedal, which is located on the rudder pedal, with the tip of the foot. The pressure on the pedal is directed to the master cylinder. The master cylinders are connected via hose lines to the parking brake valve. Brake lines made of steel connect the valve output with the brake cylinders located on both wheels.

The parking brake of the DV 20 KATANA is part of the standard equipment. The parking brake valve is located in the center console and is operated via a bowden cable. The operating knob is located between the seats next to the cabin heat and choke knobs. The parking brake is set by operating the brake pedals and pulling the operating knob. The brake lines are shut, and the fluid pressure will be maintained.

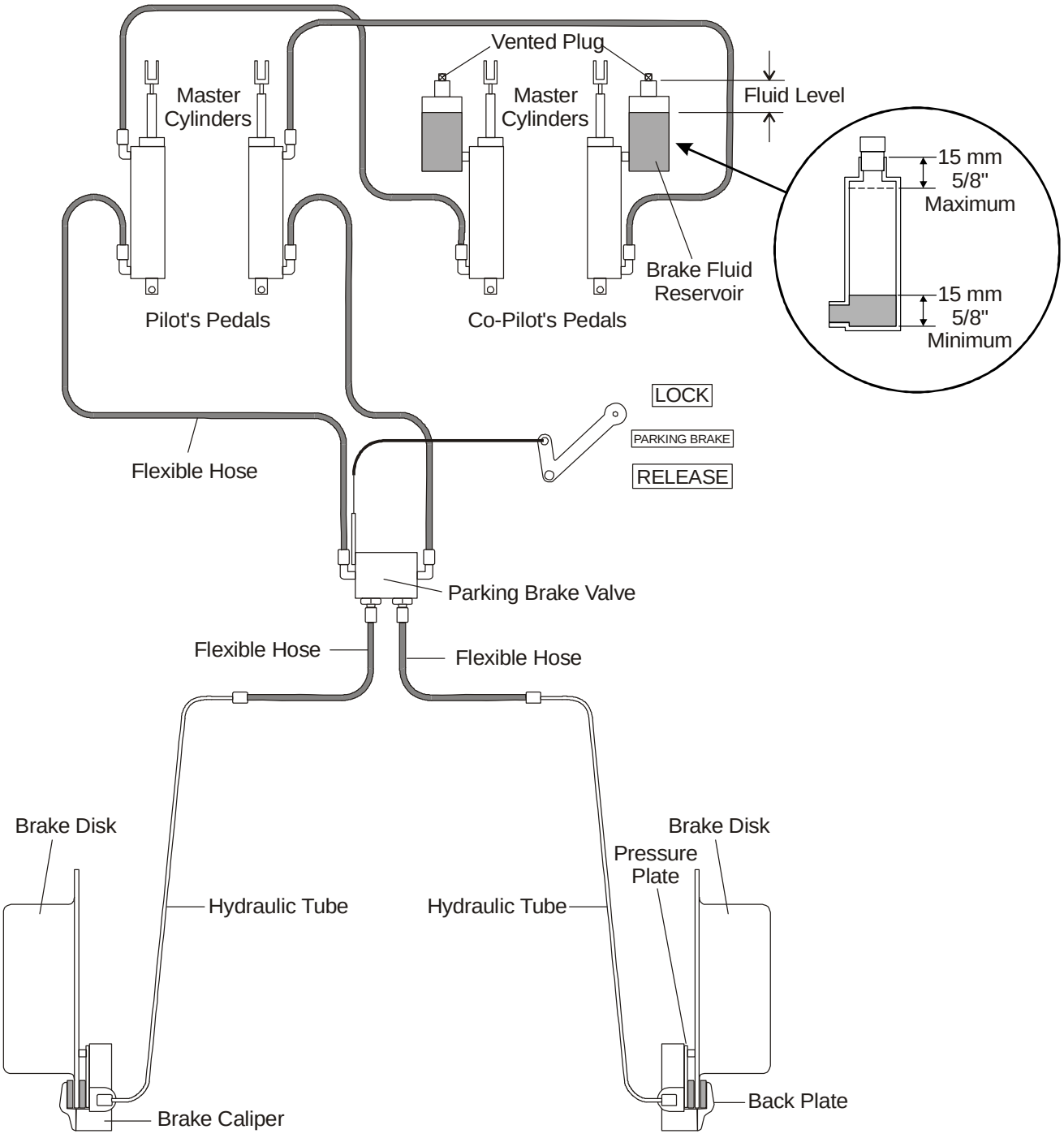

Figure 1: Brake System Schematic

3. Troubleshooting

The following table lists defects as they could appear on the wheels and brakes, and their correction.

Complaint	Possible Cause	Repair
Excessive tire wear.	Track adjusted improperly.	Adjust (see Ch. 32-10).
Excessive axial play of wheel.	Defective wheel bearing.	Adjust play in bearing or replace bearing.
Brake disks warped.	Brake applied too hard.	Replace.
	Hard landing.	Replace.
Brakes inoperative.	Brake fluid level low.	Refill with brake fluid.
	Air in brake system.	Bleed brake system.
	Defective master cylinder.	Contact brake manufacturer or replace.
	Defective caliper.	Contact brake manufacturer or replace.
	Worn brake linings.	Replace.
	Leaky brake line connections.	Tighten or replace connectors.

4. Removal and Installation

Refer to Figure 2 below and to Sub-Chapter 32-10, Figure 1.

A. Main Wheels

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Jack-up airplane or unload wheel; remove wheel fairing.	
(2)	Remove locking wire on caliper; remove back pressure plate from caliper.	
(3)	Remove wheel nut from axis.	
(4)	Pull wheel from axis.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

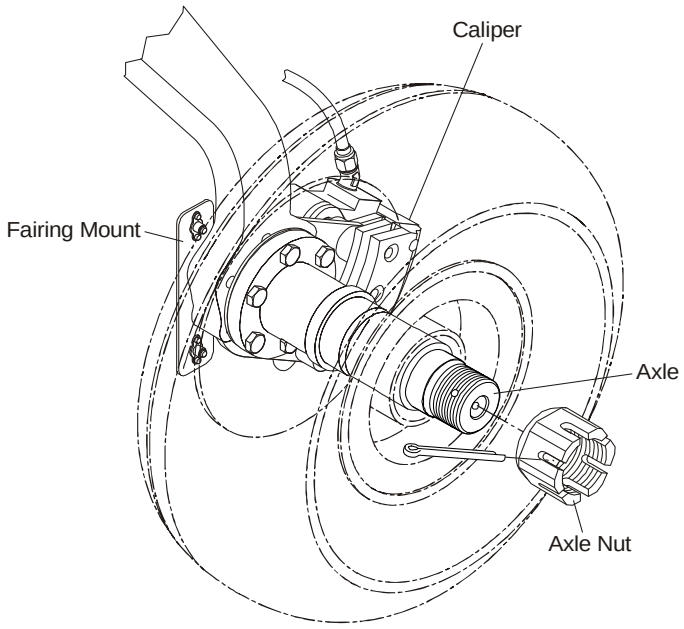

Figure 2: Main Wheel

(3) Disassembly

CAUTION: PRIOR TO DISASSEMBLY OF THE WHEEL THE TIRE MUST BE COMPLETELY DEFLATED BY REMOVING THE VALVE INSERT.

Detail Steps/Work Items		Key Items/References
(1)	Remove bolts on rim.	
(2)	Remove brake disk and rim halves from tire.	
(3)	Remove inner tube.	
(4)	The wheel bearing can be removed, if required (remove locking rings).	

(4) Assembly

Detail Steps/Work Items		Key Items/References
(1)	For assembly reverse the sequence.	
NOTE: Talcum should be applied to the inner tube prior to installation.		

B. Nose Wheel

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove 6 Allen screws securing fairing halves to each other.	
(2)	Remove LH and RH fairing mounting screw.	
(3)	Remove fairing.	
(4)	Unload nose wheel.	
(5)	Remove M10 nut and bolt (serving as axle); remove nose wheel.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

(3) Disassembly

Detail Steps/Work Items		Key Items/References
(1)	Deflate tire.	
(2)	Remove bolts.	
(3)	Split rim and remove inner tube.	

(4) Assembly

Detail Steps/Work Items		Key Items/References
(1)	For assembly reverse the sequence. Use only specified bolts.	

C. Brake Master Cylinder

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove brake lines on master cylinder.	
(2)	Remove the connecting bolt attaching the cylinder to the pedal.	
(3)	Remove cylinder lower mounting bolt.	
(4)	Remove master cylinder from airplane.	

NOTE: As a significant amount of brake will flow out, it must be ensured that a container is available for collection of the brake fluid, or the brake line must be quickly capped off after disconnection. For repair of the master cylinder refer to the manufacturer's documentation.

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

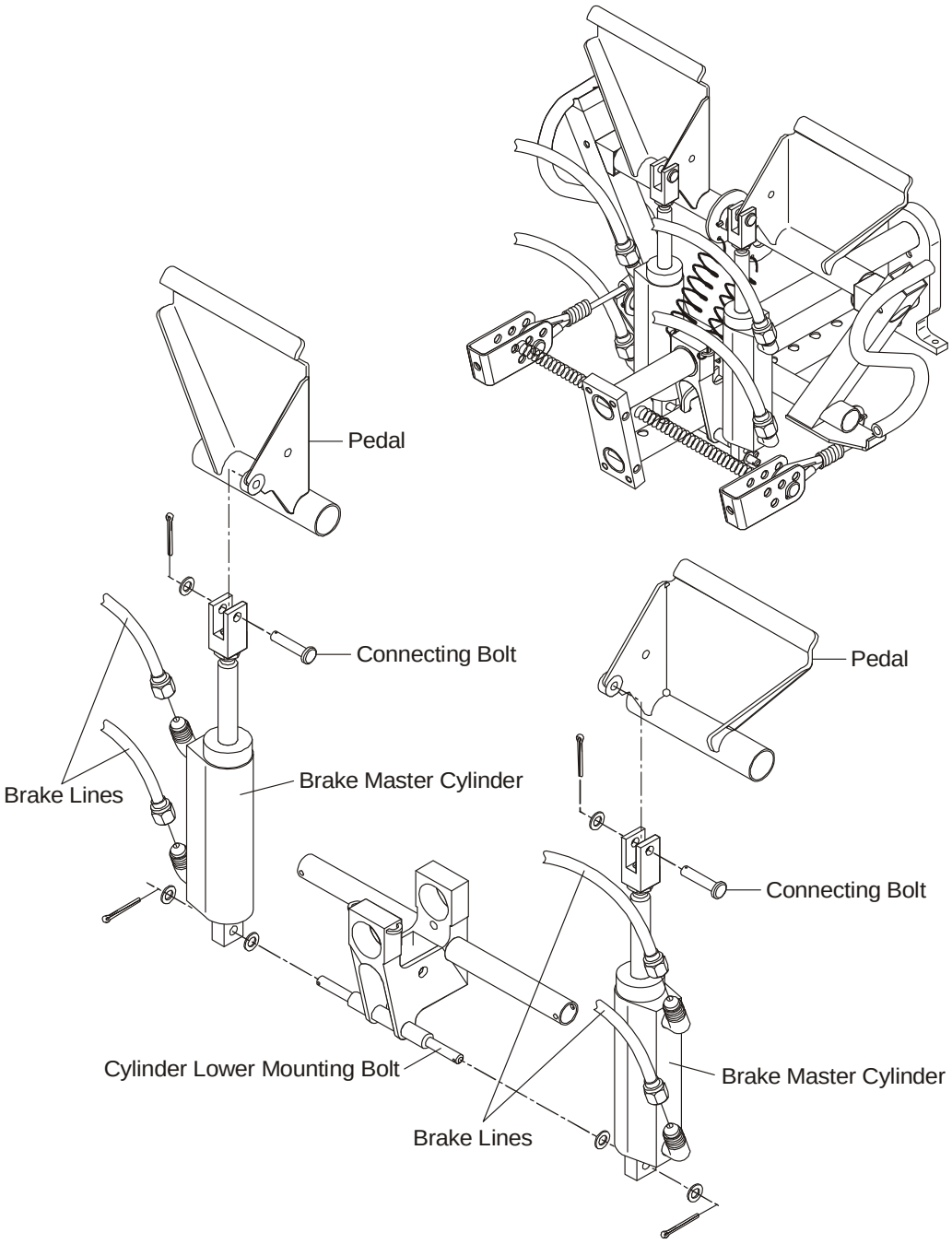

Figure 3: Brake Master Cylinders

D. Caliper

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect brake line from caliper (1).	
(2)	Disconnect back pressure plate (2) from cylinder.	
(3)	Remove caliper and guide assembly (3) from mount.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
NOTE: After maintenance tasks which involved opening or disconnecting of the brake line system, the brake system should be bleeded and checked for proper operation.		

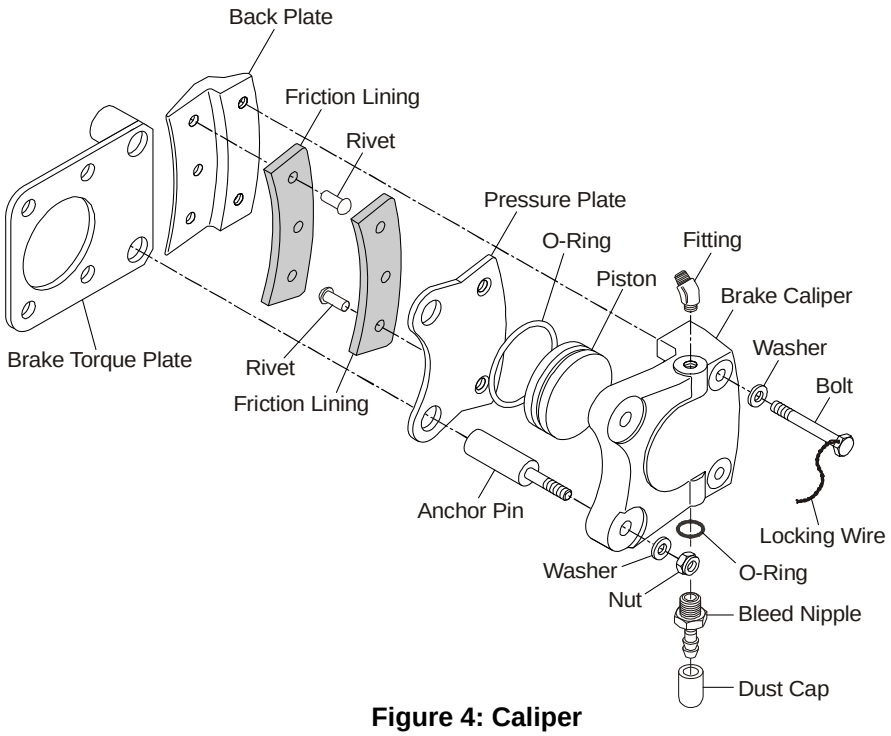

Figure 4: Caliper

E. Brake Disk

Brake disks should be replaced when their thickness is less than 3.8 mm (0.15 in).

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove wheel and caliper.	
(2)	Disassemble wheel.	
(3)	Remove brake disk.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence. Prior to installation of the brake disk, check condition of disk. The disk must not be warped, and any grooves on the disk surface should not be greater than 0.5 mm (0.02 in) in depth.	

F. Brake Linings

Brake linings should be replaced at scheduled inspections when theis thickness is less than 4 mm (0.16 in) in order to ensure airworthiness until the next scheduled inspection. The wear limit is 3 mm (0.12 in).

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove back pressure plate from caliper.	
(2)	Remove pressure plate from caliper.	
(3)	Remove brake linings using appropriate tool.	
(4)	Rivet new brake lining to brake shoe using proper tool; ensure tight and proper fit.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

G. Parking Brake

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect brake lines.	
(2)	Disconnect bowden cable.	
(3)	Remove mounting bolts.	
NOTE: For repair of the valve refer to the documentation of the manufacturer (Parker).		

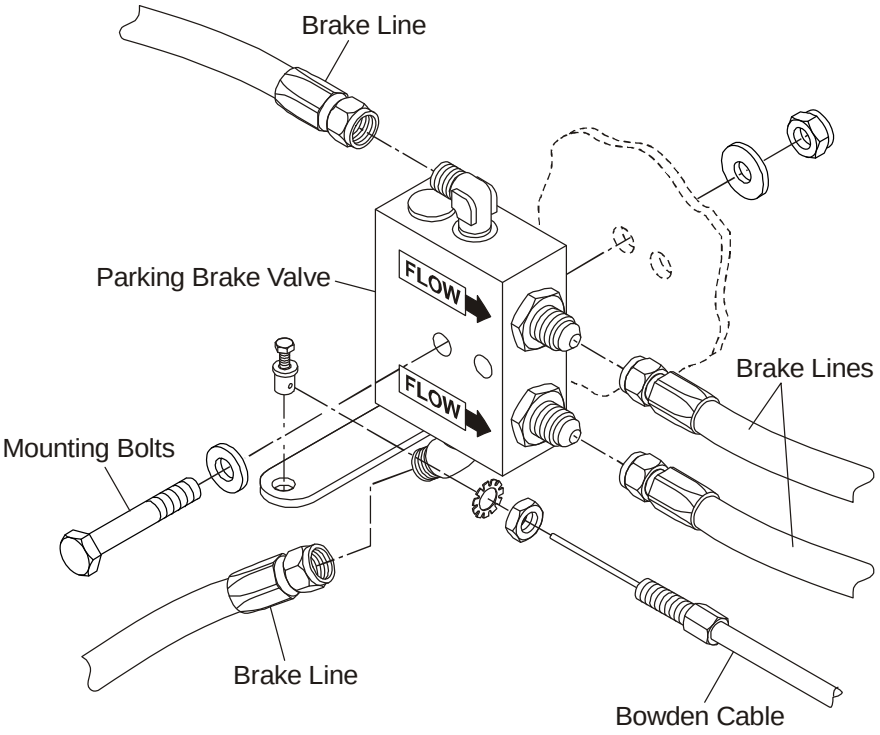

Figure 5: Parking Brake Valve

5. Bleeding of Brake System

Bleeding of the brake system requires a pressure pump which pumps brake fluid into the brake line system.

Detail Steps/Work Items		Key Items/References
(1)	Remove the reservoir cap and remove brake fluid down to approx. 1/3 of the normal level.	
(2)	Release parking brake.	
(3)	Connect pressure pump on bleeding nipple on brake caliper.	
(4)	Open bleeding nipple by turning ½ to 1 turns.	
(5)	Using the pressure pump fill brake system with brake fluid.	
(6)	Check reservoir to prevent overflow. In order to avoid overflow, it may be useful to connect the brake fluid reservoir to a separate vessel by means of a transparent hose with a suitable fitting (1/8 in NPTF).	
(7)	Fill system until no more air bubbles occur in reservoir.	
(8)	Close bleeding niple; remove pressure pump.	
(9)	Fill reservoir with brake fluid to maximum level.	

6. Adjustment

The brakes installed on the DV 20 KATANA are self adjusting. After installation of the calipers or after brake line replacement ensure that the wheels turn freely.

If a wheel does not turn freely, the cause must be investigated and corrected.

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CHAPTER 33

LIGHTS

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Section 33-40
EXTERIOR LIGHTS

1. General

The DV 20 KATANA can be equipped with the following exterior lighting:

– Anti Collision Lights (ACL).

– Position Lights.

– Landing Light.

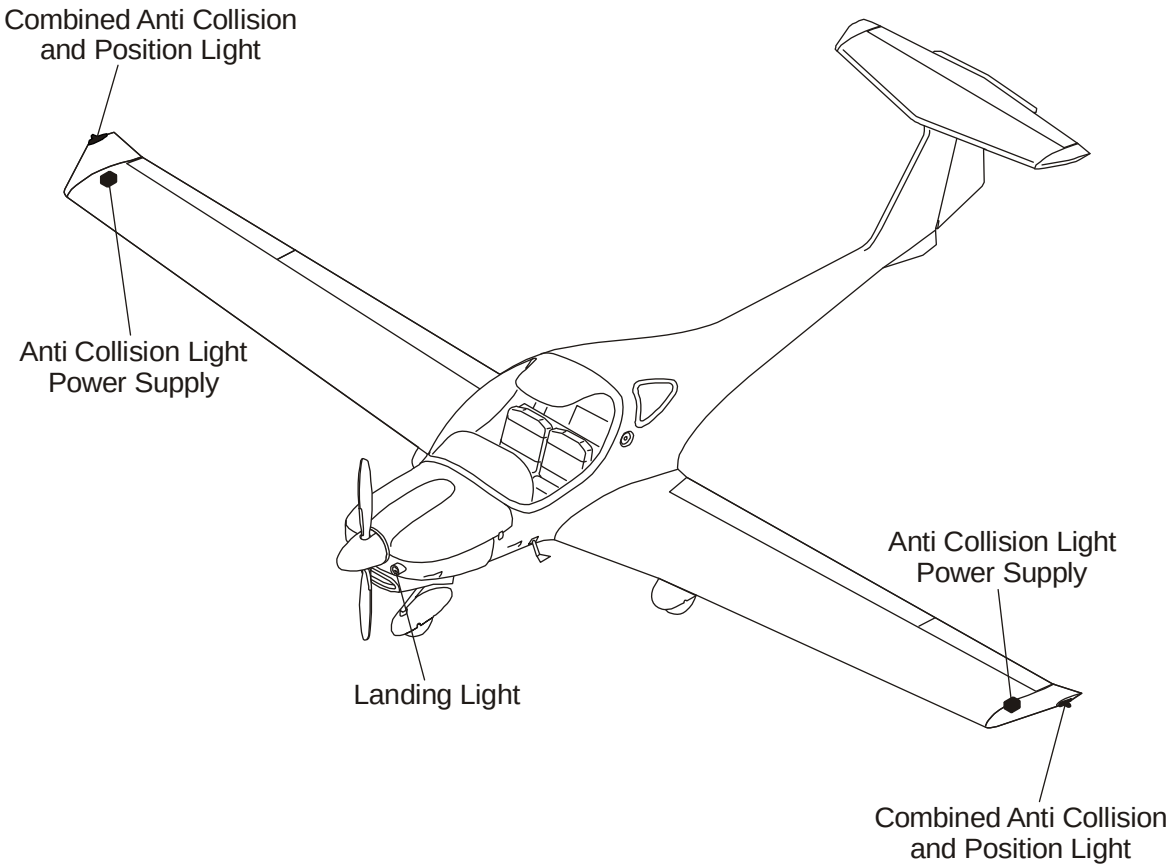

Figure 1: Exterior Lighting

2. Description

The anti collision and position lights are combined in one unit and are located at each wing tip. The anti-collision strobe light power supplies are installed in a location at the wing outboard edge. The landing light is installed in the lower engine cowling.

Each system can be individually operated using a toggle switch located on the switch panel.

The anti collision strobe lights (ACL) are powered by high voltage power supplies (approximately 600 Volts). The ignition pulse ionizes the gas in the lamp, and the capacitors located in the power supply are discharged through the lamp generating a light flash. Immediately after the first discharge a second lower flash is generated increasing the visibility (dual flashing principle). This procedure is repeated approximately 50 times per minute. The anti collision strobe lights are not synchronized.

The position lights consist of two lights each. One light is equipped, depending on the place of installation (LH or RH side) with a red or green lens, while the second light has a white lens and is aimed to the rear (tail light).

The two white lights directed to the rear allow the airplane to be easily visible from the rear. Furthermore the pilot of the following airplane has a better judgment of where the airplane in front of him might turn.

The landing light consists of a mirror type 100 W lamp with a horizontal reflector angle of approximately 12° and a vertical reflector angle of approximately 6°.

.

3. Troubleshooting

The following table lists defects as they could appear on the exterior lighting system, and their correction.

Complaint	Possible Cause	Repair
Both ACLs inoperative.	Defective switch.	Replace.
	Defective breaker.	Replace.
	Defective wiring in forward cockpit area.	Repair.
Left ACL inoperative.	Defective power supply.	Replace.
	Defective ACL lamp.	Replace.
	Defective wiring.	Repair.
Right ACL inoperative.	See left ACL.	
Both position lights inoperative.	Defective switch.	Replace.
	Defective breaker.	Replace.
	Defective wiring in forward cockpit area.	Repair.
Left position light inoperative.	Defective lamp.	Replace.
	Defective wiring.	Repair.
Right position light inoperative.	See left position light.	
ACL and position light inoperative on one side.	Connector at wing root not plugged in.	Plug in.
Landing light inoperative.	Defective lamp.	Replace.
	Defective switch.	Replace.
	Defective breaker.	Replace.
	Defective wiring.	Repair.
	Loose connector next to light.	Re-connect.

4. Removal and Installation

WARNING: THE POWER SUPPLIES OF THE ANTI COLLISION STROBE LIGHTS GENERATE HIGH VOLTAGE WHICH IS CONNECTED DIRECTLY TO THE STROBE LIGHTS. PRIOR TO PERFORMING ANY MAINTENANCE ON THE WIRING OR ON THE LIGHT ITSELF, A MINIMUM OF FIVE (5) MINUTES WAITING TIME MUST BE OBSERVED AFTER SWITCHING OFF THE SYSTEM TO ALLOW THE CAPACITORS TO DISCHARGE. THIS WARNING ALSO APPLIES TO THE POSITION LIGHTS AS THESE ARE INSTALLED UNDER THE SAME CAP.

CAUTION: NEVER TOUCH THE GLASS OF A BULB WITH BARE FINGERS.

A. Position Light Bulb

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Switch off battery master switch.	
(2)	Wait for approximately five (5) minutes to discharge the strobe light capacitors.	
(3)	Remove the lens (ensure that the parts cannot fall down).	
(4)	Replace bulb.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

B. ACL Bulb

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Switch off battery master switch.	
(2)	Wait for five (5) minutes to allow discharge of strobe light capacitors.	
(3)	Remove wing tip.	
(4)	Disconnect power lines and ground connection.	
(5)	Replace light unit.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

C. ACL Power Supply

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Switch off battery master switch.	
(2)	Wait for five (5) minutes to allow discharge of strobe light capacitors.	
(3)	Remove wing tip.	
(4)	Disconnect power lines and ground connection.	
(5)	Drill out the four (4) rivets holding the power supply.	
(6)	Remove power supply.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence. The ground connection should riveted together with the power supply.	

D. Landing Light

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Switch off master switch.	
(2)	Remove upper engine cowling.	
(3)	Disconnect the landing light connector (located directly behind the lamp).	
(4)	Remove lower engine cowling.	
(5)	Loosen mounting hardware and remove lamp.	
(6)	Unscrew connecting wire from lamp for re-usage.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

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CHAPTER 34

NAVIGATION AND PITOT STATIC

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POSITION DETERMINING SYSTEMS

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Section 34-00
NAVIGATION AND PITOT STATIC

1. General

The navigation systems include the instruments that operate on dynamic and static pressure. They indicate the airspeed, altitude, attitude, and direction.

The equipment supplied with dynamic and static pressure includes the altimeter, airspeed indicator, and vertical speed indicator.

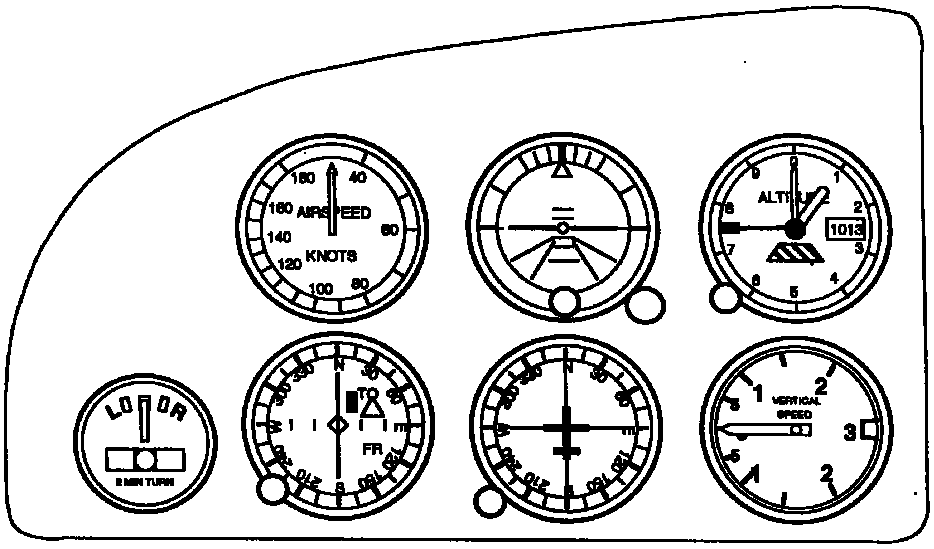

Figure 1: Navigation Instruments

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Section 34-10
PITOT STATIC

1. General

The Pitot static system is used to measure and deliver dynamic and static pressure to the airspeed indicator, altimeter, and vertical speed indicator.

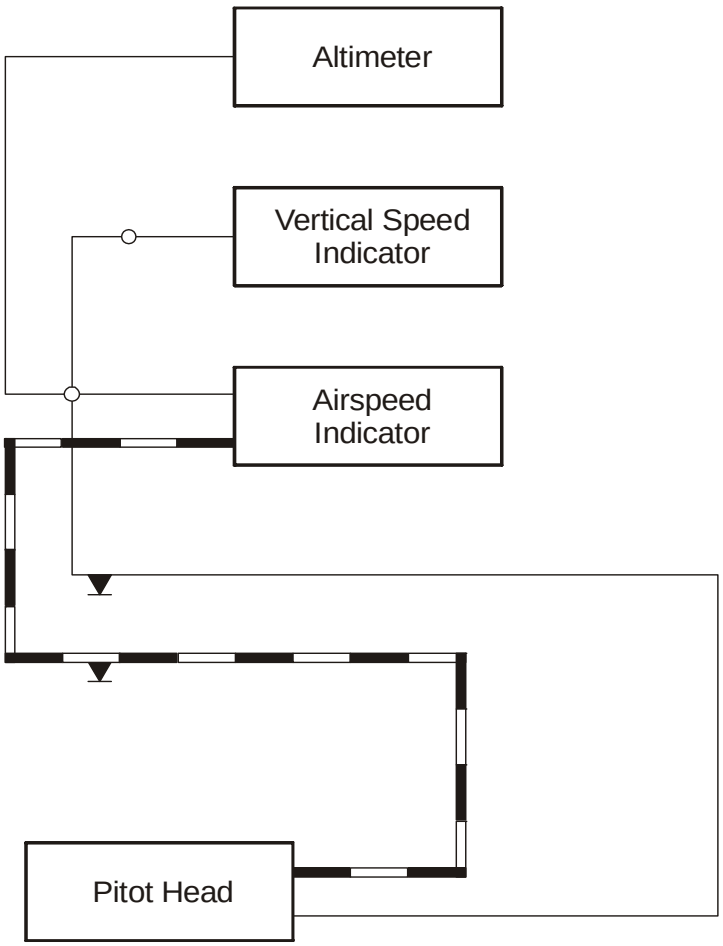

Figure 1: Pitot Static System Schematic

2. Description

A. Pitot Head/Lines

The Pitot head of the DV 20 KATANA is designed to measure total head and static pressure. The Pitot head is located below the left wing. Lines running through the left wing and the fuselage connect the Pitot head to the instruments. The lines for total head are green, and the lines for static pressure are blue.

The lines are attached to the connectors and secured with tie wraps.

B. Drain System

A drain system allows dewatering of the pressure lines.

If Service Bulletin No. 20-6 has not been carried out, this drain system consists of moisture filters located in the wing root area. The moisture filters are accessible after removing the left wing.

If Service Bulletin No. 20-6 has been carried out, each pressure line has a bypass hose forming a water sump. The pressure lines can be dewatered after removing the left seat shell.

From Serial No. 20.046 on, all DV 20 KATANA's are factory-equipped with the water sump type drain system.

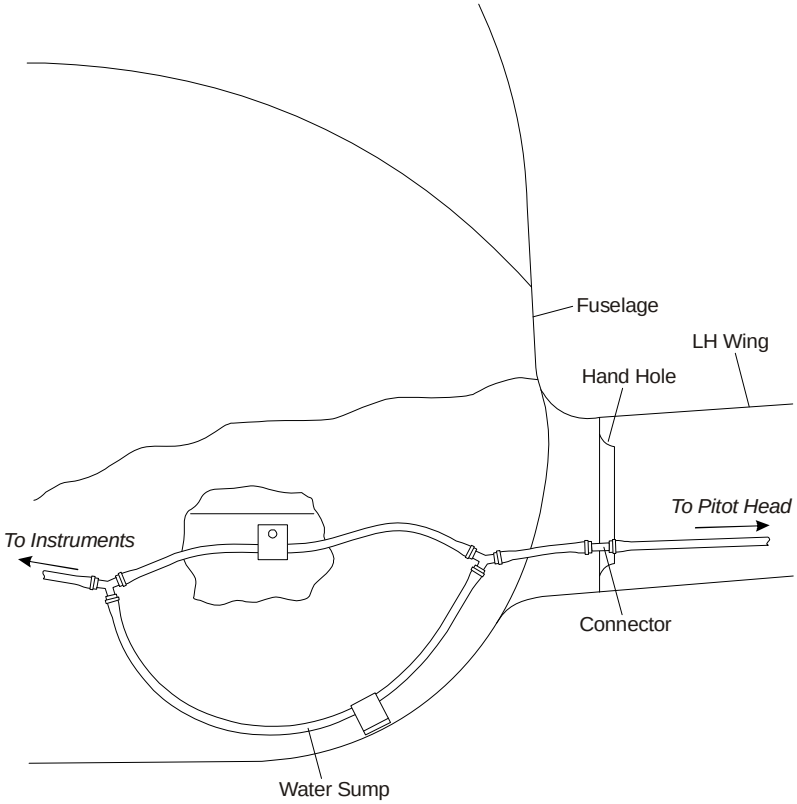

Figure 2: Water Sump Type Drain System

C. Altimeter

The altimeter measures the change in atmospheric pressure using aneroid chambers. The changes in pressure correspond to changes in altitude. A special mechanism converts the movement of the aneroid chambers into deflections of the pointers. The altimeter is equipped with a scale calibrated in feet (ft). Three pointers indicate the current altitude. The longest pointer shows 10,000 feet per revolution, the intermediate pointer shows 100 feet per revolution, and the short pointer makes one revolution for every 1,000 feet. The barometric scale shows hectopascals (same as millibars) and may be adjusted using the adjustment knob in the lower left corner.

Indicator range : -1,000 to 35,000 ft.

Temperature range : -30°C to +50°C (-22°F to +122°F)

D. Airspeed Indicator

The airspeed indicator shows the velocity of the airplane relative to the surrounding air.

The operation of the airspeed indicator is based on the measurement of the difference between total head and static pressure. Both pressures are picked up by the Pitot head and fed to the airspeed indicator through hoses.

The measuring equipment of the airspeed indicator is an open membrane chamber. The total head acts on the inside, while the static pressure acts on the outside. The differential pressure increases with increasing airspeed. This results in a deformation of the membrane which is transferred to the indicator needle via levers and gears. The airspeed is indicated in knots and km/h.

Information regarding the range markings is presented in the Flight Manual.

Altitude range : -1,000 to 40,000 ft.

Temperature range : -30°C to +70°C (-22°F to +158°F)

E. Vertical Speed Indicator

The vertical speed indicator is connected to the static pressure line. It indicates the vertical speed in feet per minute. The measuring range reaches from 2000 ft/min rate of climb to 2000 ft/min rate of descent. The scale is divided into 100 ft/min increments. A change in altitude causes a differential pressure between membrane and housing, resulting in a movement of the membrane which is transferred to the pointer. The differential pressure equalizes through a capillary hole, allowing the indicator to return to the zero position.

Measuring range : ± 2000 feet per minute

Temperature range : -30°C to +50°C (-22°F to +122°F)

F. Outside Air Temperature Indicator

The DV 20 KATANA can be equipped with an optional outside air temperature indicator.

The temperature sensor is located in the left NACA type air inlet. The system operates on on-board power.

The temperature is shown on the display of the COM equipment.

3. Troubleshooting

The following table lists defects as they could appear on the Pitot static system, and their correction.

Complaint	Possible Cause	Repair
No or incorrect instrument readings.	Leaky pressure lines.	Seal.
	Water in the lines.	Disconnect lines, blow out water.
	Defective instrument.	Replace.

4. Maintenance Information

With the exception of the drain system the Pitot and static system is maintenance free. The Pitot head should be covered when the airplane is parked outside.

CAUTION: NEVER BLOW COMPRESSED AIR INTO THE PITOT HEAD. THIS MAY CAUSE DAMAGE TO THE INSTRUMENTS.

5. Removal and Installation

A. Pitot Head

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Loosen screws from below.	
(2)	Remove Pitot head in downward direction.	
(3)	Disconnect pressure lines.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

B. Instruments

Removal and installation of all air data instruments is performed in the same way.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Pull off hoses connected to instrument.	
(2)	Remove fasteners.	
(3)	Remove instrument.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

6. Pitot Static Test

After working on the Pitot static system, it must be checked in accordance with the table below.

A. Airspeed Indicator

Leakage : At 150 kts max. loss off pressure 10 kts/min.

Indication Error : At 150 kts max. tolerance = 4.5 kts.

At 45 kts max. tolerance = 1.5 kts.

B. Altimeter

Leakage : Generate partial vacuum in the system until 1000 ft above current elevation are indicated. System loss max. 100 ft/min.

Indication Error : Adjust altimeter to current elevation. Determine error at 10,000 ft. Max. tolerance 80 ft.

Adjust altimeter to QNH. Max. tolerance ± 57 ft.

Adjust altimeter to QFE. Max. tolerance ± 30 ft.

If tolerances are exceeded, the instrument must be replaced.

C. Safety Precautions During the Test

The following safety precautions must be observed during leakage testing of the Pitot static system.

(a) Perform all other work and inspections before performing the leakage test.

(b) The pressure in the total head system must be equal or greater than the pressure in the static system. Incorrect connection of the pressure lines to the airspeed indicator may cause damage to it.

(c) Rate of change and applied pressure must never exceed the maximum design values of an instrument connected to the Pitot or static pressure system.

(d) After performing the leakage test, ensure that the system is returned to its normal operating condition.

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Section 34-12
STALL WARNING SYSTEM

1. Description

The airplane is equipped with a stall warning system as part of the standard equipment. The sensor works pneumatically and is located in the left wing. The stall warning system should warn the pilot acoustically using a horn shortly before reaching the maximum angle of attack. The horn is located in the left hand section of the instrument panel.

A hose connects the horn to the seal chamber and bore in the left wing. This bore is marked with a red circle. The system is maintenance free and can be checked by applying slight negative pressure to the sensor.

2. Adjustment

The stall warning system is designed to warn the pilot approx. 5 to 10 knots before the stall in case of slow deceleration (see table below). Upon slow acceleration the warning must stop at that airspeed.

Table of Stall Warning Speeds (IAS) at Maximum Flight Mass (MTOW)

Flap Position	Stall Warning Threshold			
	Maximum		Minimum	
	km/h	kts.	km/h	kts.
UP	106	57.2	95	51.3
T/O	97	52.4	86	46.4
LDG	95	48.6	84	45.4

If this value is not reached, first check the system for leaks.

Adjustment can be done as follows:

– If the stall warning is activated at a too high airspeed, the bore in the wing must be enlarged on its lower edge with a key file in steps of approx. 1 mm (0.05 in.).

– If the stall warning is activated at a too low airspeed, the bore in the wing must be enlarged on its upper edge with a key file in steps of approx. 1 mm (0.05 in.).

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Section 34-20
ATTITUDE AND DIRECTION

1. General

This section describes the equipment indicating attitude and flight direction. All equipment is gyro driven, with the exception of the magnetic compass.

2. Description

A. Magnetic Compass

The magnetic compass indicates the heading of the airplane relative to magnetic north. It is installed in the middle of the canopy. The measuring range is 360° with markings in increments of 5°. The housing is filled with silicon oil as damping agent.

The deviation table is located below the compass. After replacing the engine, parts of the ignition system, radios, or instruments, and at least once a year, the compass must be checked.

B. Turn Indicator

The turn indicator shows the speed of rotation of the airplane about its vertical axis.

It consists of an electrically powered gyro which is suspended in a frame and whose axis is parallel to the airplane's pitch axis. The frame is connected to the indicator needle via a system of levers. The needle indicates the rotational speed of the airplane. In addition, a ball in a bent glass tube filled with a dampening agent is placed in the instrument. This indicator shows if the airplane is slipping.

C. Directional Gyro

The directional gyro indicates the heading relative to a previously selected heading. This instrument is equipped with an electrically powered gyro whose axis is parallel to the surface of the earth.

The gyro axis remains stable due to gyroscopic forces. The movement between gyro and instrument housing is transferred to the instrument scale which is similar to a compass rose. The directional gyro provides dependable information regarding flight direction as long as the deviation is taken into account, and it has been adjusted according to the magnetic compass.

The directional gyro should be adjusted to match the magnetic compass every 15 minutes, due to friction in the bearings and imperfections in the axis suspension.

D. Attitude Gyro

The attitude gyro shows the airplane's attitude in relation to the earth's surface. Any movement about the pitch axis and the roll axis is displayed.

The attitude gyro consists of an electrically powered, gimbal mounted gyro. The gyro axis is perpendicular to the earth's surface. The gyro is equipped with a display disk symbolizing the horizon. Due to the gyroscopic forces, the display disk connected to the gyro remains level at all times, regardless of the flight attitude.

During steep turns or extreme climbs and descents, the attitude gyro may be blocked by the gimbal due to its design, and display wrong information.

The upper half of the instrument displays the bank angle of the airplane. The airplane pitch angle is displayed simultaneously. The airplane symbol may be adjusted for climb and descent or for changes in pitch caused by configuration changes, by turning the knob on the bottom.

3. Troubleshooting

The following table lists defects as they could appear on the attitude and direction indicating system, and their correction.

Complaint	Possible Cause	Repair
Compass leaking fluid.	Defective seal or membrane.	Replace parts. **See Note below.**
Compass deviation exceeding 10 degrees.	Improperly adjusted compass. Defective compass.	Adjust Replace. **See Note below.**
Turn indicator inoperative.	Insufficient power. Defective instrument.	Determine cause. Replace.
Attitude gyro does not raise.	Defective instrument.	Replace.

NOTE: On U.S. registered airplanes, the compass may only be serviced by authorized personnel.

4. Removal and Installation

A. Magnetic Compass

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove bolts and nuts from support.	
(2)	Remove compass from support.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
NOTE: Only brass or other non-magnetic bolts and nuts may be used to attach the compass.		

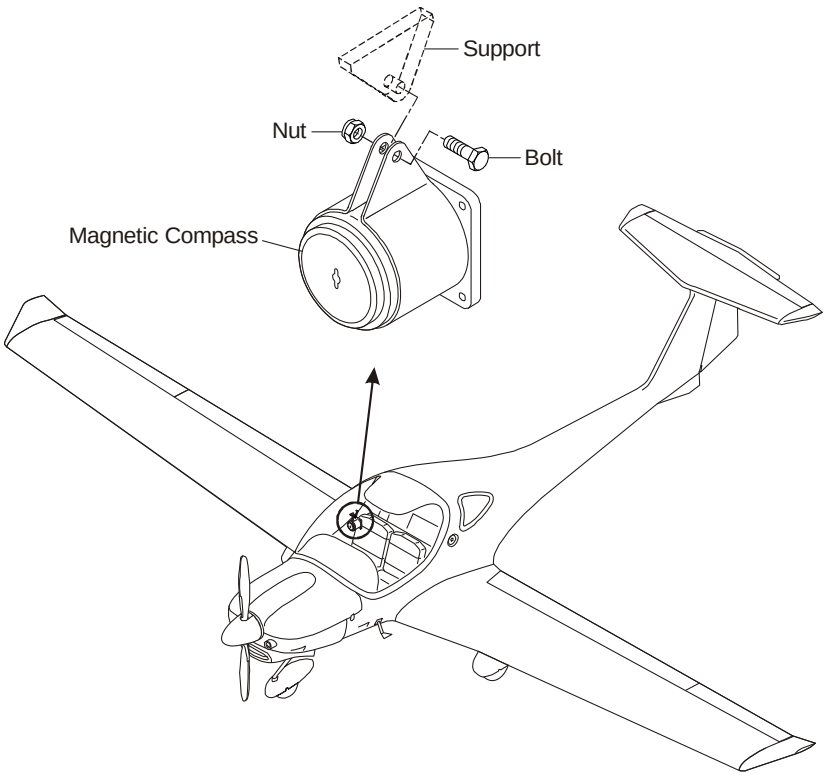

Figure 1: Magnetic Compass

B. Turn Indicator, Directional Gyro, Attitude Gyro

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Pull off connectors at rear of instrument.	
(2)	Remove screws on instrument panel.	
(3)	Pull out instrument.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

5. Compass Compensation

NOTE: On U.S. registered airplanes, the compass may only be serviced by authorized personnel.

If the compass does not display accurate information, compensation may eliminate or reduce the error.

The compass compensation is performed as follows:

Detail Steps/Work Items		Key Items/References
(1)	Move the airplane to a location away from steel constructions, underground pipes and cables, as well as reinforced concrete and other airplanes.	
(2)	Align the airplane to horizontal flight attitude.	
(3)	Check compass housing for fluid level and cleanliness. Missing compass fluid indicates that the compass is probably defective.	
(4)	Remove compensation magnets, or place built in magnets in neutral position before performing compensation.	
(5)	Check friction of movable indicator by approaching the instrument with a small magnet. The indicator must move freely in the display plane.	

Detail Steps/Work Items		Key Items/References
(6)	Align the airplane with magnetic north and equalize deviations with compensation magnets. Repeat the procedure for magnetic east. Then, position the airplane to magnetic south and west, and equalize half of the indication error using the compensation magnets. The engine must be running during this procedure.	
(7)	Rotate the airplane 360° in 30° increments. Prepare a compass deviation table that indicates the corrections that must be applied to the individual headings. If significant additional deviations occur during the operation of electrical or electronic equipment or systems, the deviation table must be amended to include the necessary corrections at each 30° heading that must be applied during the operation or activation of such systems.	

Section 34-50
POSITION DETERMINING SYSTEMS

1. General

The navigation system of the DV 20 KATANA can include the following systems:

– VOR/Localizer Navigation system

– Transponder/Altitude Digitizer

– GPS Navigation system

– ADF Navigation system

The systems and components are installed at the following positions:

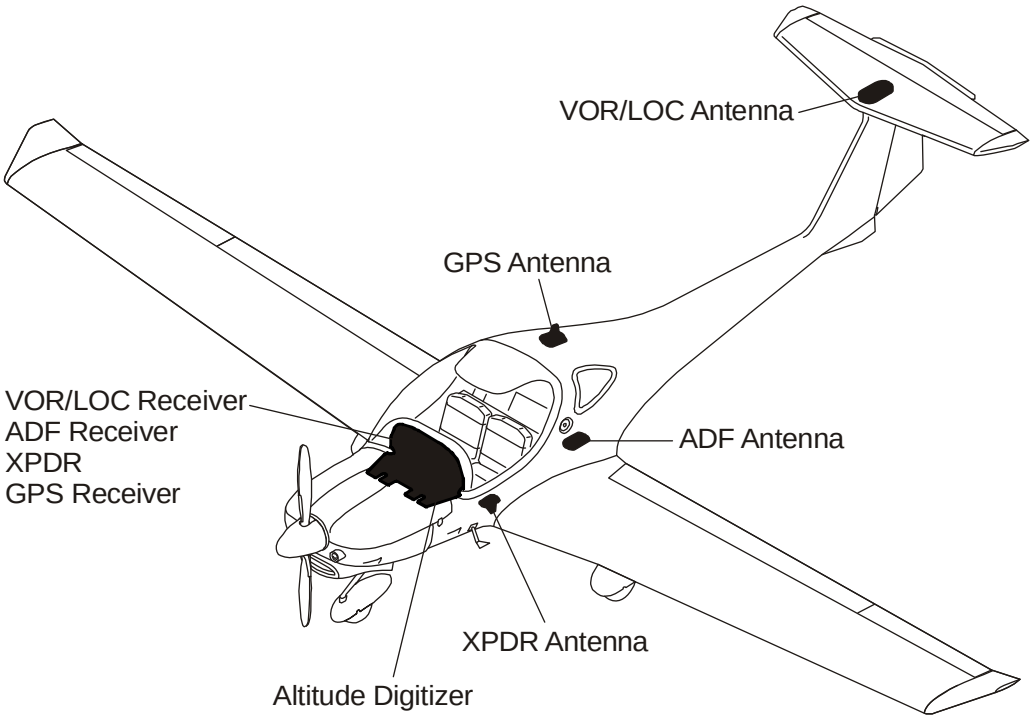

Figure 1: NAV Equipment Positions

The equipment installed is manufactured by Becker or Bendix/King (XPDR, COMM, NAV) as well as by Garmin (GPS). Refer to Chapter 92 for wiring diagrams.

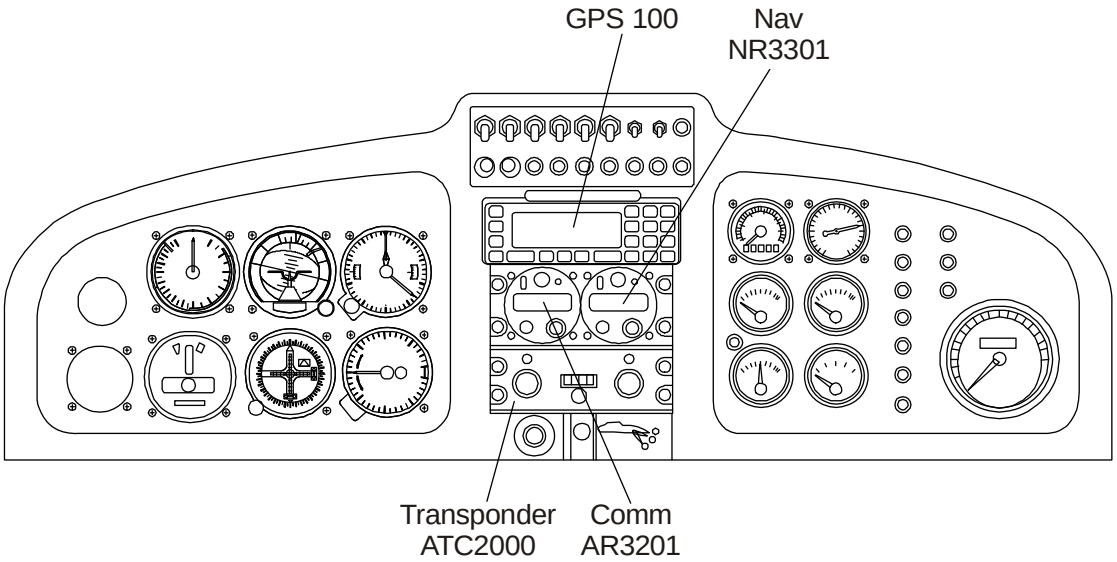

Figure 2: VHF NAV Standard Equipment - Becker

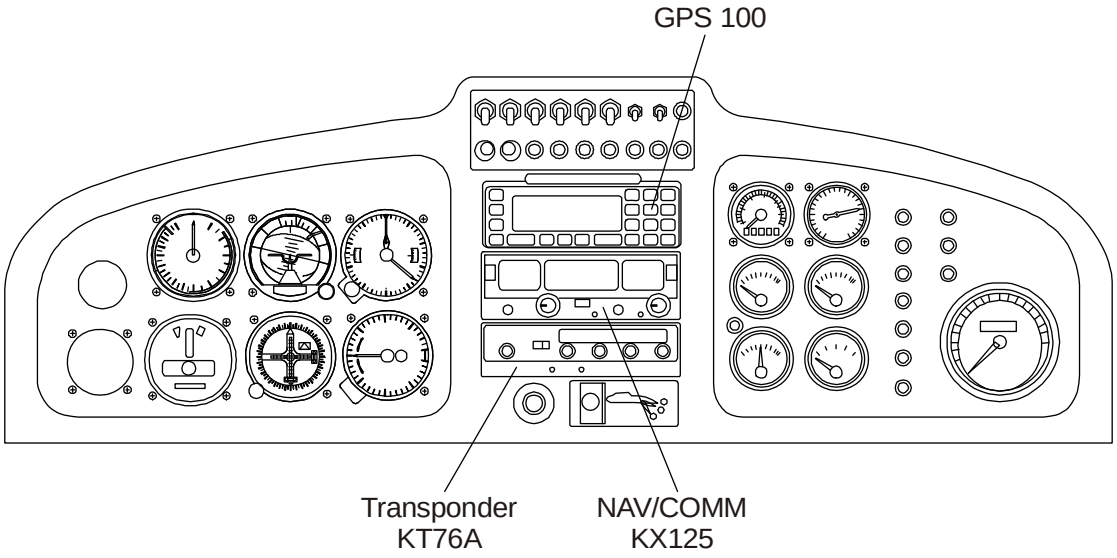

Figure 3: VHF NAV Standard Equipment - Bendix/King

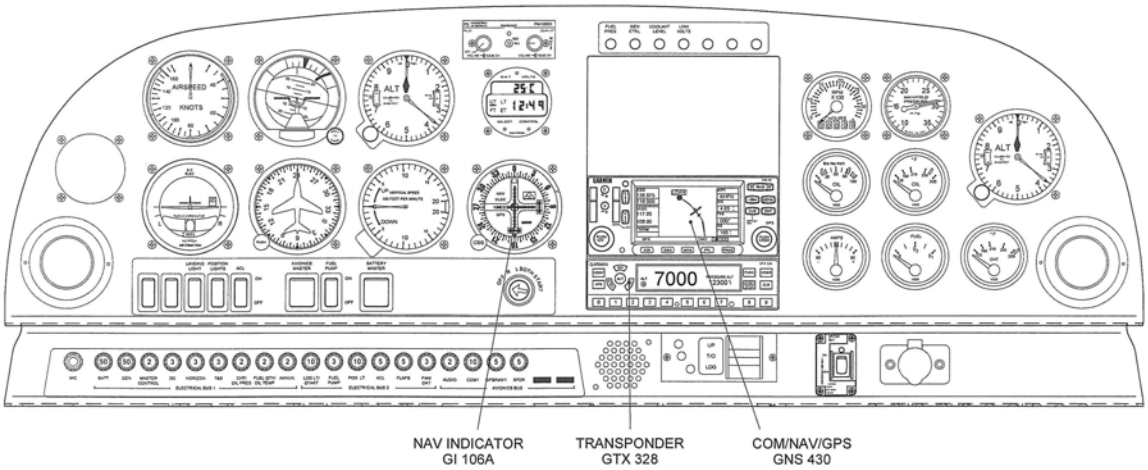

Figure 4: VHF NAV Standard Equipment - Garmin

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CHAPTER 51

STRUCTURES

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REPAIR OF METAL PARTS

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Section 51-00
STRUCTURES

1. General

The DV 20 KATANA is a low wing airplane in full composite construction. The fuselage consists of a self supporting glass fiber skin in semi-monocoque construction with bulkheads and stiffeners.

The single engine cantilever type monoplane is equipped with a T-tail. The DV 20 KATANA has a fixed tricycle landing gear with trailing nose wheel.

The trapezoidal cantilever wing has an I-spar with caps made of carbon fiber rovings. The wing skin is of sandwich construction. Each wing is attached to the fuselage with three bolts.

The DV 20 KATANA is equipped with FRP ailerons and wing flaps.

The rudder fin is integrated into the fuselage and consists of a stiffener near the rudder hinge line and a full laminate skin. The elevator fin, elevator, ailerons, and rudder are constructed similar to the wings.

The acrylic canopy has a frame made from glass fiber laminate and rovings.

The entire airframe is covered with acrylic filler and finished with an acrylic paint to protect it against moisture and ultraviolet rays.

2. Identification of Primary Structure

The primary structure of the DV 20 KATANA consists of the following members:

A. Wing

– Spar.

– Ribs.

– Web at hinge line.

– Skin.

– Wing-fuselage connection.

– Ailerons.

– Wing flaps.

B. Fuselage

– Skin.

– Bulkheads & stiffeners.

– Rudder fin.

– Rudder.

C. Horizontal Tail

– Elevator fin.

– Elevator.

– Horizontal tail / vertical tail connection.

3. Structural Inspection Methods for Composite

A. Types of Inspection

In the inspection checklist, three types of inspection are specified:

V Visual Inspection

T Tap Test

F Functional or Fit Check

(1) Visual Inspection

In glass fibre composite structures, surface damage, e.g. dents or scratches may be detected by visual inspection. You can see where fibre breakage or matrix cracking has happened. Damage to carbon fibre composite structures is rather difficult to detect by visual inspection. Apply a small load to the area where you expect a damage, e.g. by pushing slightly on it. Check for abnormal flexibility or noises. Broken lamination often cracks under load. Damage to the core may also be visible. In that case, the surface is dented. But delamination between foam core and skin cannot be detected visually. It is easier to see damage on unpainted areas of composite. On painted composite surfaces, damage is often first visible as waviness that shows up when you illuminate the surface with a bright light at a low angle.

To simplify laminating, a paste made of epoxy resin filled with silica powder is sometimes used to smooth abrupt transitions, such as sharp inside corners or at the edges of foam core. Since the cured paste is white, it can be difficult to tell the difference between this paste and a delamination in a glass fibre composite. The areas of paste are whiter and have more sharply defined edges.

In composite structures, small hairline cracks may occur in the surface finish, especially at places where filler putty has been used. If the part has no foam core and the opposite face is accessible and unpainted, you may be able to determine if there is damage to the composite. By using a bright light, GFRP must be in green or brown colour, white areas may be damaged. If not, you must remove the paint and filler from the affected area by careful hand sanding to expose the underlying composite.

The composite structure is protected by paint from exposure to damaging ultraviolet light from the sun. It is important that the paint be in good condition. UV light can also damage the paint. Inspection have shown clear signs of resin erosion at areas where no paintcoat is applied. These areas have to be inspected carefully and if necessary, the structure must be renewed according WI MSB 20-048 Appendix 12. Give special attention to

- the trailing edge spars of the wings,
- the trailing edge spar of the vertical stabilizer and
- the trailing edge spar of the horizontal stabilizer.

Due to the light structure of these components avoid any removal of glass fabric.

You can inspect for UV damage of the paint as follows:

1. Clean the painted surface with solvent based cleaner (BASF Prekleeno 900). Wipe the cleaner off before it dries.
2. Rub the paint surface with a dark cloth. An excess of white, chalky residue on the cloth indicates oxidation of the paint due to UV damage. If only a small amount of residue is found, the paint can be polished smooth. If a large amount of residue is found, the component should be repainted.

If visual inspection of a metal component indicates possible damage, non destructive inspection may be used to check for cracks. Alternately, the part may be replaced.

(2) Tap Test for Composites

Each type of structure makes a distinct sound when tapped with a large coin or washer. The thicker and more solid the structure, the higher pitch the sound. Areas of delamination, cracks in overlapping bonds and sandwich panels with underlying damage to the core sound dull or dead when tapped. The best technique is to tap repeatedly while moving slowly around the area of interest, listening for changes in the sound. In this way, it is possible to find the extent of an area of damage.

Tap testing is also useful to find the edges of an area of core, to find underlying bulkheads or ribs and to find steps in the thickness of solid laminates.

Tap testing is done if visual inspection indicates possible damage. For example, if a surface dent is found in a sandwich part, tap testing should be used to determine if there is a disbond between the skin and the core.

(3) Functional or Fit Check

Wear on mating parts can be evaluated by measuring the play between the parts when they are engaged, such as the fit of the main bolts in the bushings in the main bulkhead.

B. Damage Classifications for Composites

Diamond Aircraft has established damage classifications for the inspection of composite airframe components, refer to Section 51-10 for this information.

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Section 51-10
REPAIR OF COMPOSITE PARTS

1. Approved Materials, Suppliers

A. Resin and Hardener

Resin : Scheufler L 285 (100 parts of weight)

Hardener : Scheufler 286 (40 parts of weight)

Supplier : Hexion Specialty Chemicals Stuttgart GmbH
Am Ostkai 21/22
D-70327 Stuttgart, Germany
Phone +49/711/389 800-0
Fax +49/711/389 800-11

B. Glass Fiber Cloth

WLB # (German aviation standard)	Cloth	Mass per Area grams/m²	Interglas No.	Porcher No.	Vorwerk No.
8.4548.6	Double twill 2/2	161	92110	917	
8.4551.6	Double twill 2/2	276	92125	3063	95290
8.4554.6	Double twill 2/2	390	92140	1989	
8.4520.6	Warp reinforced	220	92145		
	Warp reinforced	433	92146		

All cloth is made from alkali free E-glass with Volan-A-Finish or Finish I 550 or PT 55, and complies with LN 9169 (German aviation standard).

Supplier for Interglas fabric: Rudolf Usner GmbH
Am Ausferngenufer 4
A-5400 Hallein, Austria
Phone +43/6245/81516
Fax +43/6245/81516-40

Supplier for Porcher fabric: Porcher Industries Germany GmbH
Benzstraße 14
D-89155 Erbach, Germany
Phone +49/7305/955-0
Fax +49/7305/955-519

Supplier for Vorwerk fabric: Saertex Wagener
GmbH
Brochterbecker Damm 52
D-48369 Saerbeck
Phone +49/2574/9020

C. Carbon Fiber Cloth

Cloth	Mass per Area grams/m²	Interglas No.
Double twill 2/2	200	98141

Supplier : Rudolf Usner GmbH (see above)

D. Glass Silk Rovings

EC 9-756 K43 or

EC 10-2400 K43

Supplier : Rudolf Usner GmbH (see above)

E. Rigid Foam

PVC foam Divinycell H 60

Supplier : Polychem GmbH

Gewerbeweg 7
A-7411 Markt Allhau
Phone +43/3356 / 20444
Fax +43/3356 / 20445

PMI rigid foam Rohacell 71 and 51

Manufacturer : Röhm, Darmstadt, Germany

Supplier : Gangler & Lutz OHG

Habsburger Straße 12
D-73432 Aalen Ebnat
Phone +49/7367 9666-0

F. Resin Fillers

Microballoons Q-cell 300

Supplier : Polychem GmbH (see above)

Aerosil Cotton Flakes

Supplier : Rudolf Usner GmbH (see above)

G. Knifing Filler, Primer (Acrylic Filler), Outside Paint (Color RAL 9016)

These products are supplied by Herberts or Sikkens. It is highly recommendable to contact HOAC to inquire about the products used on a specific serial number in order to avoid such problems as bubbles in the paint finish.

H. Paint for the Instrument Panel

Suede coating 3101, color B2 (stone gray), with hardener and thinner.

Manufacturer : 3M

I. Fire Retardant Paint

Fire retardant paint : No. N 56582/T508 (white)

Finishing varnish : No. 4232-0303

Hardener : No. N 39/1327 (4:1)

Supplier : Courtaulds Aerospace

c/o ICI Lacke Farben
Postfach 800449
D-21004 Hamburg, Germany
Phone +49/40/720030
Fax +49/40/7208268

2. Damage Classifications

Damages are classified into four categories according to the German Luftfahrt-Bundesamt.

NOTE: The primary structure can be identified using the list in Chapter 51-00.

A. Damage Category 1

Damage to large areas, requiring partial reconstruction of the part or repair of large areas.

Repairs may only be performed by the manufacturer or an aeronautical firm authorized by the manufacturer.

In case of U.S. registered airplanes, repairs may be performed by an authorized certified repair station or an authorized certified mechanic.

B. Damage Category 2

Damage to primary and secondary structures to the following extent:

Holes and breaks through a sandwich part.

Repairs may be performed by any qualified aeronautical firm.

In case of U.S. registered airplanes, repairs may be performed by a certified repair station or a certified mechanic.

C. Damage Category 3

Damage to primary and secondary structures to the following extent:

Small holes or breaks in the outer cover layers, with no damage to the matrix or internal cover layers.

Repairs may be performed by any qualified aeronautical firm.

In case of U.S. registered airplanes, repairs may be performed by a certified repair station or a certified mechanic.

D. Damage Category 4

Erosion, scratches, and grooves that are not connected to a break or hole. This damage category includes damage to covers.

No special qualifications are required to carry out repairs.

NOTE: If there is any doubt regarding the damage classification, if it is not possible to clearly asses the damage, or if there are any questions regarding the proper repair of the damage, despite considering the manufacturer's documentation, contact the airplane manufacturer.

3. Fuselage Layup

For any repair on the fuselage structure, the layups and work sections should be taken from the following pages and illustrations.

In any case, the appropriate manufacturer's documentation should be obtained when repairing composite parts.

NOTE: During the repairs, pay special attention to accuracy and cleanliness!

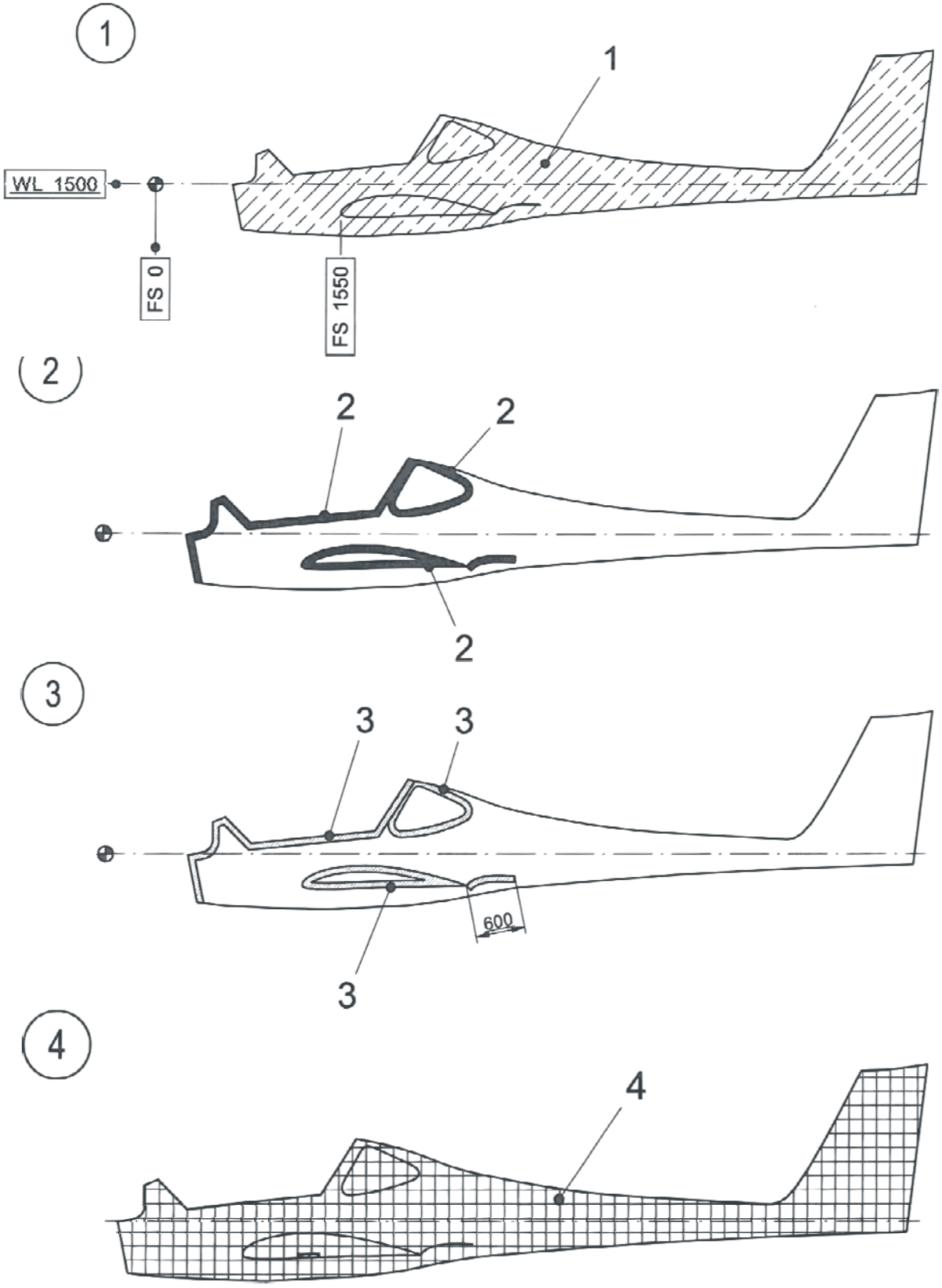
Item	Qty.	Description	Part No. / Supplier	Dimensions [mm]
1		Filler	Sikkens EP	all over
2		5 minutes epoxy resin	Araldit AW 2104-2934	on edges
3		Thickened resin - Glass/Aerosil		on edges
4	1	92110 #	Interglas	all over
5	1	92145 ╪	Interglas	
6	3	92125 or 95290 X	Interglas or Vorwerk	
7	1	92145 ╪	Interglas	
8	1	92125 or 95290 X	Interglas or Vorwerk	
9	1	92125 or 95290 X	Interglas or Vorwerk	
10	1	92125 or 95290 #	Interglas or Vorwerk	
11	1	92125 or 95290 #	Interglas or Vorwerk	
12	1	Breather Ply	PEF N352-80	30, RH side only
13	1	Peel ply	PA 20-63 98690	100, RH side only
14		Thickened resin - 25% shortglass fiber		
15	2	92125 #	Interglas	100, RH side only
16	3	92125 X	Interglas	100, RH side only
17	2	92125 #	Interglas	100, RH side only
18	2	92125 or 95290 #	Interglas or Vorwerk	200*200, RH side only

Item	Qty.	Description	Part No. / Supplier	Dimensions [mm]
19	2	92125 or 95290 X	Interglas or Vorwerk	200*200, RH side only
20	2	92125 or 95290 #	Interglas or Vorwerk	200*200, RH side only
21	2	92125 or 95290 X	Interglas or Vorwerk	200*200, RH side only
22,23	4	if MÄM 20-291 is installed: 92146 ╪	Interglas	500*100
24	4	if MÄM 20-291 is installed: 92146 ╪	Interglas	600*100
25	5	92146 ╪	Interglas	1200*100
26	4	92146 ╪	Interglas	700*100
27	2	KDU 1034 ╪		700*100
28	4	92146 ╪	Interglas	600*100
29	2	92146 ╪	Interglas	4000*100
30	1	92146 ╪	Interglas	1100*100
31	2	92146 ╪	Interglas	4000*100
32	2	92146 ╪	Intelglas	2900*100
33	1	92125 or 95290 X	Interglas or Vorwerk	
34	1	92125 or 95290 #	Interglas or Vorwerk	
35	2	KDU 1034 ╪		100*650
36	2	92125 or 95290 #	Interglas or Vorwerk	200*200, LH side only
37	1	Peel ply	PA 20-63 98690	over all

X : ± 45°

╪ : unidirectional

: 0° / 90°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1
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FS 1550
2
2
2
2
3
3
3
600
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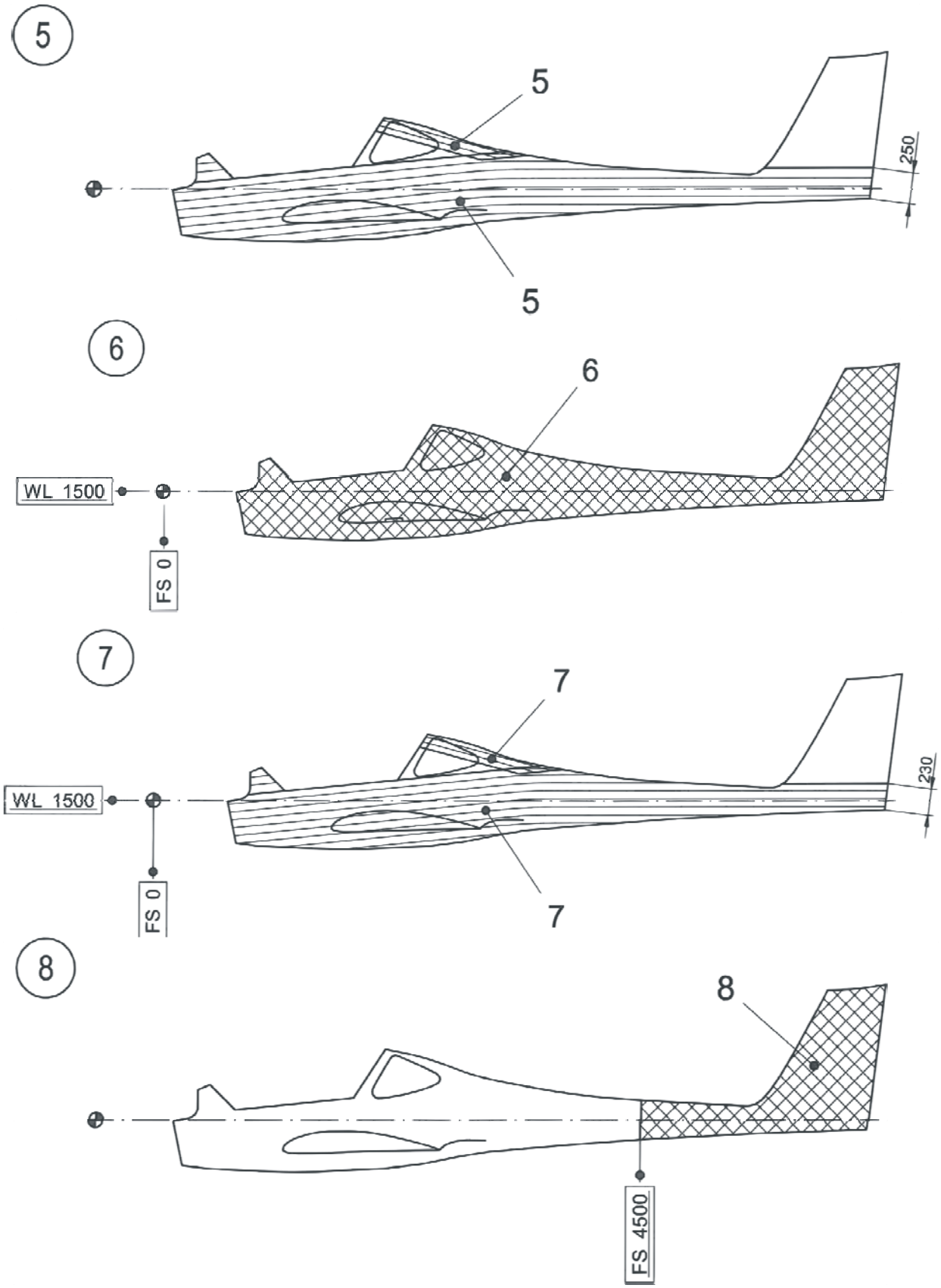
4
4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250
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6
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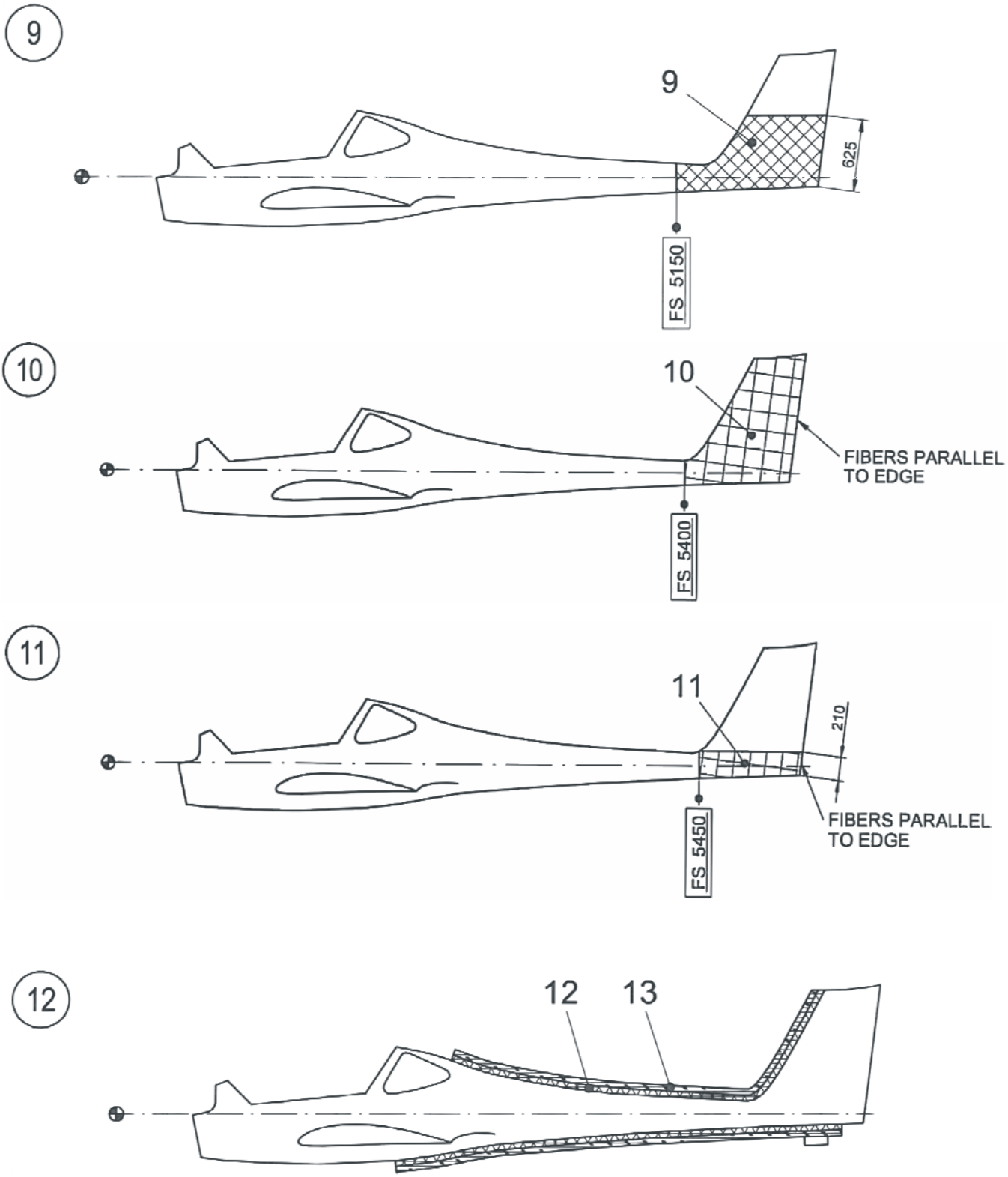
7
7
230
WL 1500
FS 0
7
8
8
FS 4500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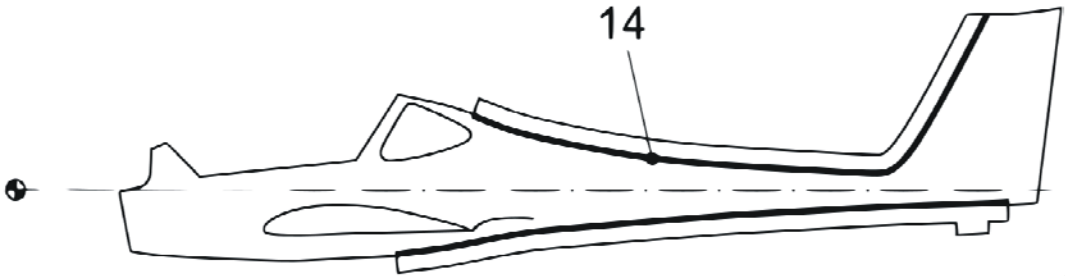
9
625
FS 5150
10
10
FIBERS PARALLEL
TO EDGE
FS 5400
11
11
210
FIBERS PARALLEL
TO EDGE
FS 5450
12
12
13

13



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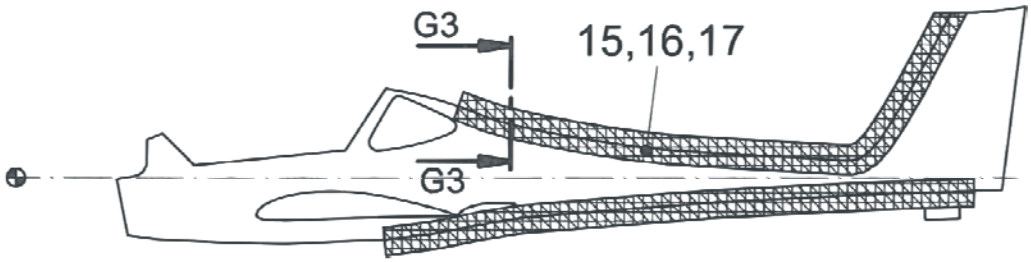

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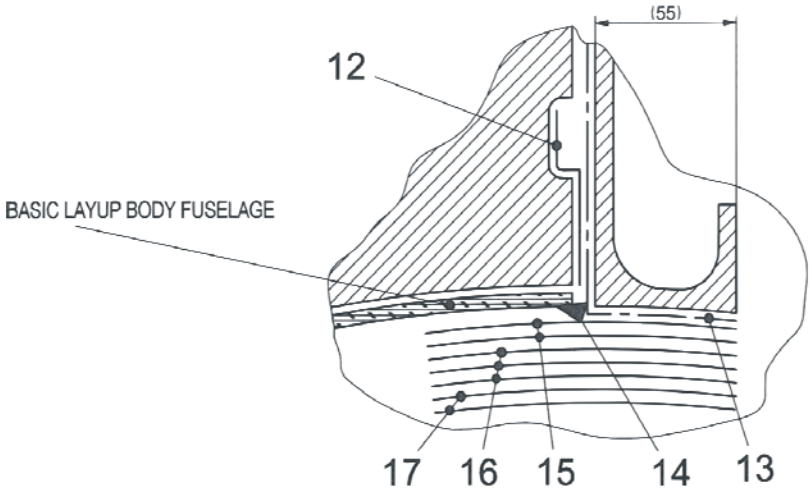

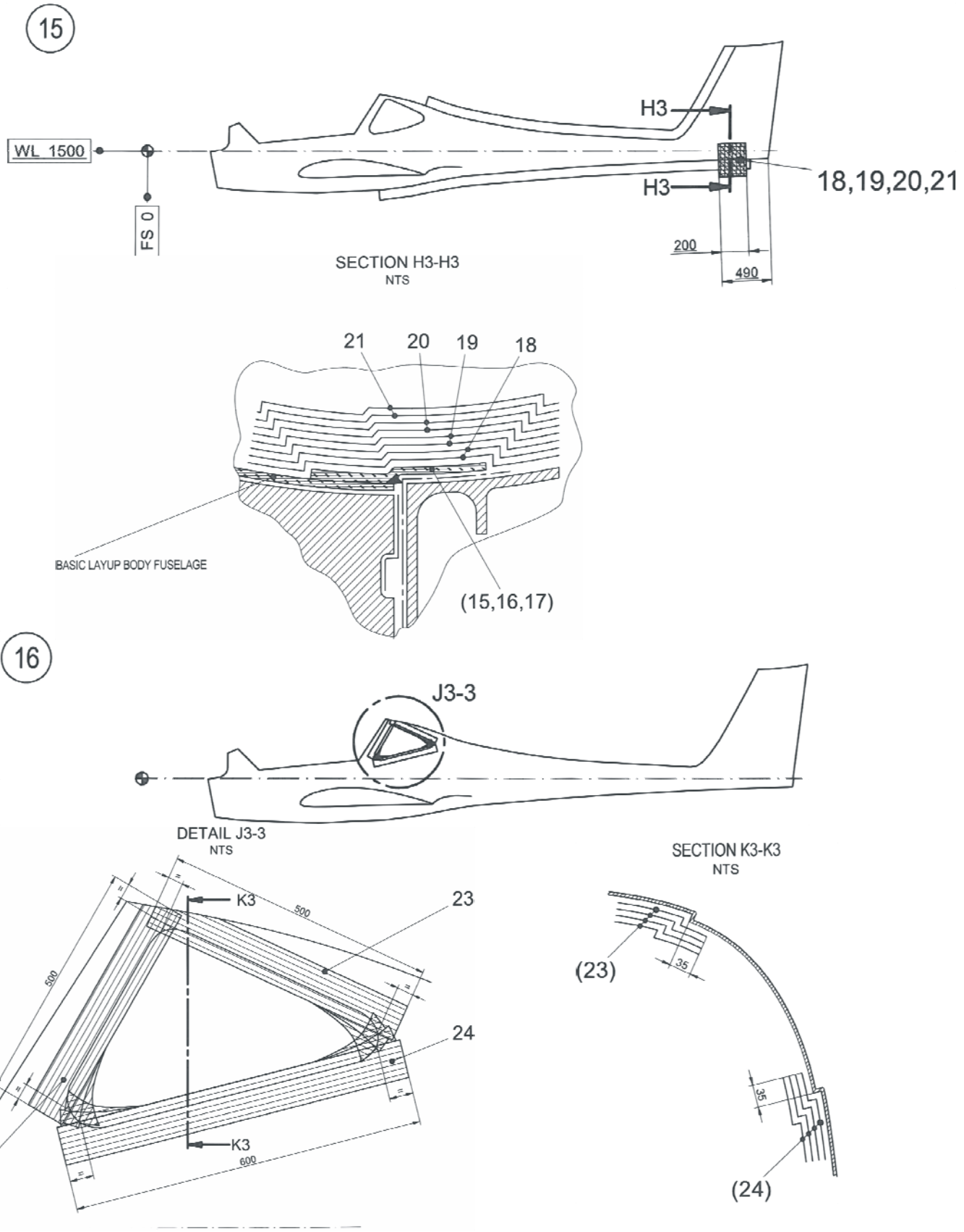
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H3
H3
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SECTION H3-H3
NTS
21
20
19
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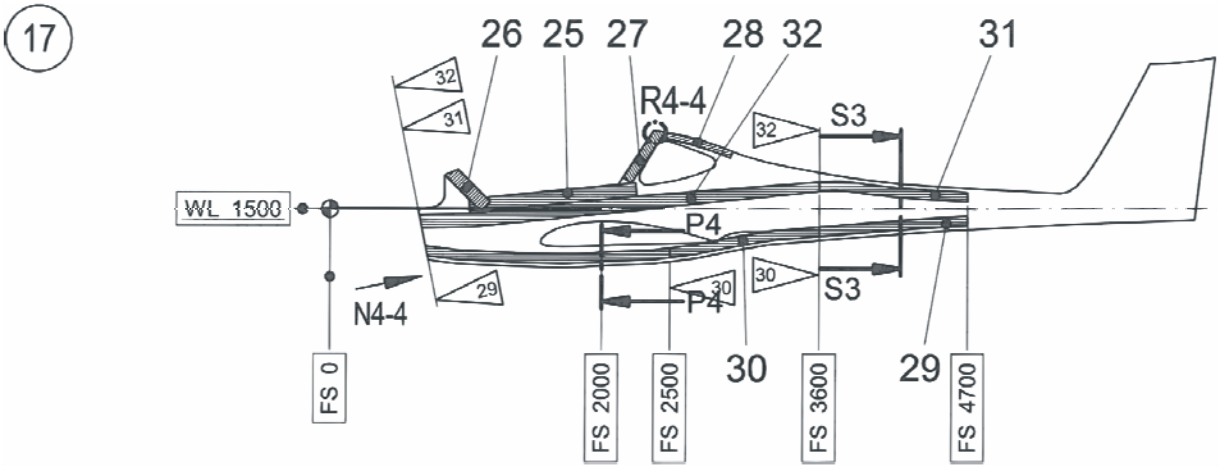
BASIC LAYUP BODY FUSELAGE
(15,16,17)
16
J3-3
DETAIL J3-3
NTS
K3
500
23
500
24
K3
600
22
SECTION K3-K3
NTS
(23)
35
35
(24)

17



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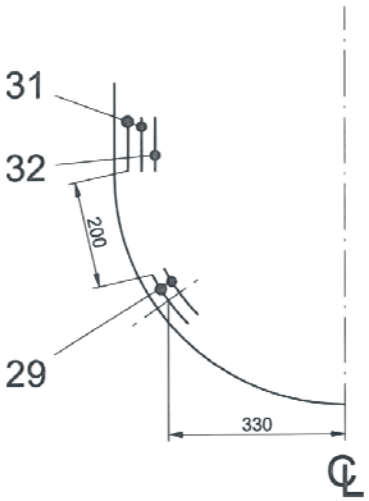

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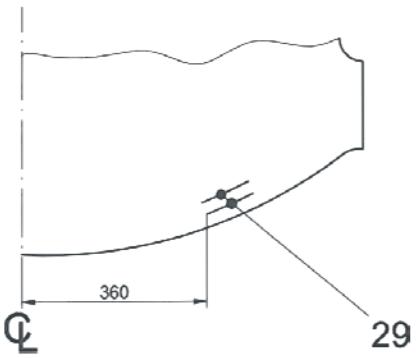

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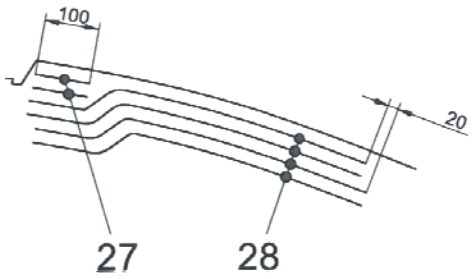
NTS



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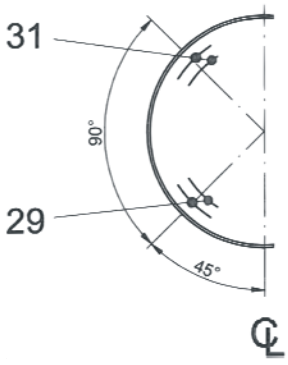

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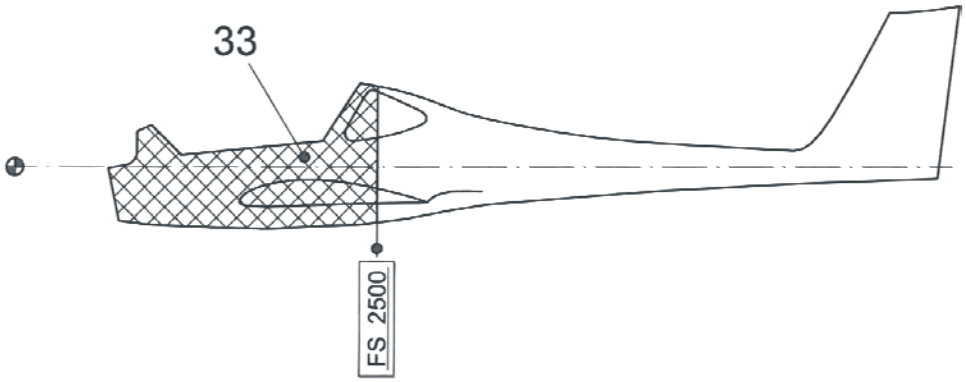
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FS 2500

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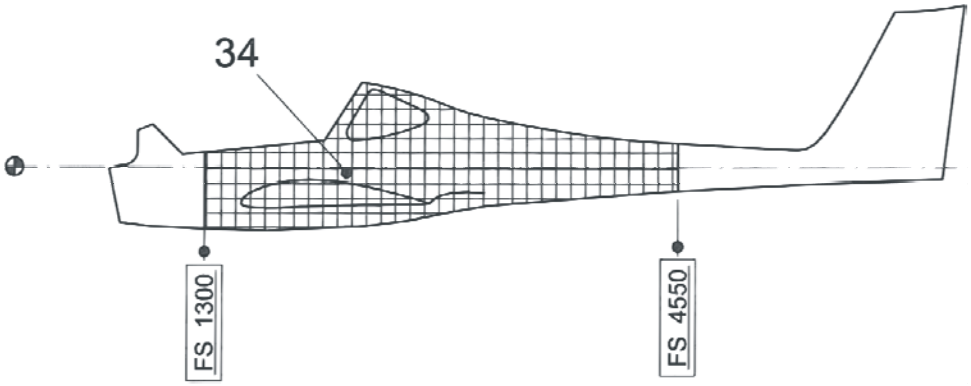
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FS 4550

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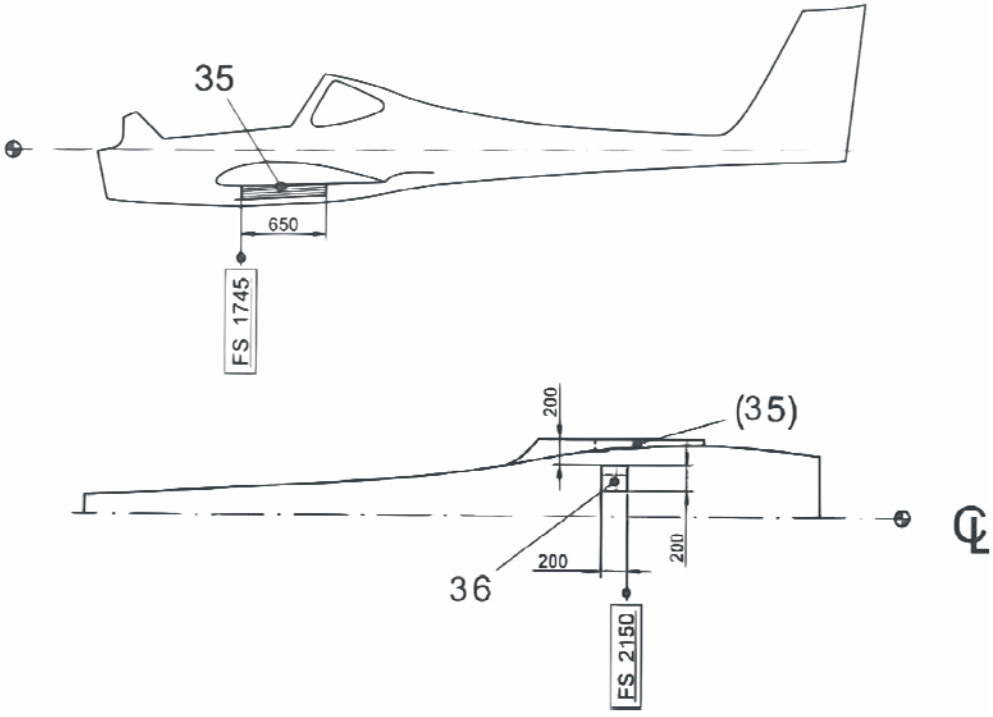
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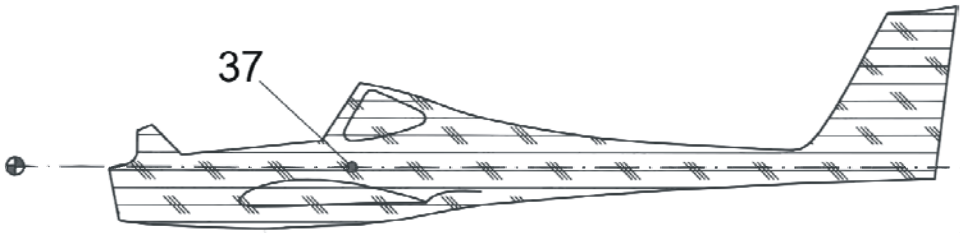
650
FS 1745
200
(35)
200
200
36
FS 2150

21



4. GFRP Repair

When the airplane is damaged, proceed as follows: Carefully visually inspect the surface and damaged area. Often other parts are affected as well. Occasionally the crack continues invisibly under the surface. Classify damage using paragraph 2. DAMAGE CLASSIFICATION.

All repairs must be carried out with care and precision. The exterior surfaces of composite airplanes are load carrying members. A failure of this structure can lead to a plane crash.

The resin-hardener mixture ratio must be adhered to exactly (± 0.5 %), and clean containers must be used. The ratio between the weight of the glass fiber cloth and the weight of the resin should be approximately 50 : 50. The damaged area must be sanded immediately before applying the wet laminate to prevent dirt from entering that might inhibit a strong bond.

As in the case of plywood, the orientation of the individual cloth fibers (lengthwise or diagonal) is of great importance for the strength of the structure. The number of layers required to rebuild the strength of the damaged area can be determined from the layup drawings. It is necessary to determine the remaining number of layers in the damaged area in order to arrive at the original number of layers.

In any case, the thickness of the damaged laminate must be measured. If a small piece is broken off the damaged area and set on fire, the resin burns, and the remaining layers can be counted and their type determined.

Even though chamfering is time-consuming, the area must be sanded down far enough to ensure that the new cloth layers are flush with the existing contour.

To reduce the hardening time, a fan heater may be used to raise the surrounding air temperature.

CAUTION: EXCESSIVELY HIGH TEMPERATURES CAUSES THE FORMATION OF LARGE AIR BUBBLES IN THE CLOTH. LOCAL EXCESSIVE TEMPERATURE CAN BE AVOIDED BY USING A FOIL TENT GUIDING THE FLOW OF THE HOT AIR. THE INDICATED CURING CYCLE MUST ALWAYS BE ADHERED TO. THE PRESCRIBED TEMPERATURES ARE TO BE UNDERSTOOD AS MATERIAL TEMPERATURES. A THERMOMETER MUST BE USED TO MONITOR THE TEMPERATURE. AFTER REPAIR WORK ON THE CONTROL SURFACES, THE MASS BALANCING MUST BE CHECKED.

5. Sandwich Repair

A. Minor Surface Damage

The laminate may have unbonded from the rigid foam around the area of a crack. The affected area is determined by tapping. Remove the loose laminate using a sanding disk, a sanding block, or a sharp knife. Chamfer the cloth around the damaged area. The proper chamfer length per cloth layer is approx. 20 mm (0.8 inch). The ratio between laminate thickness and chamfer length should be approx. 1:50.

After chamfering, the damaged area must be thoroughly cleaned as follows:

(a) Remove sanding dust with pressurized air.

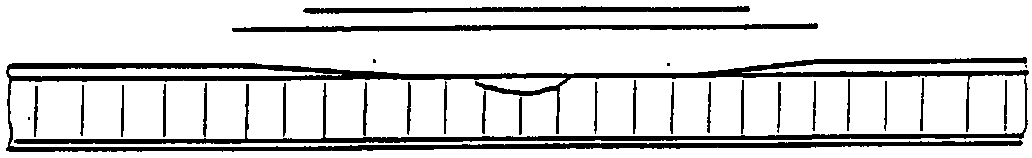
(b) Wash the chamfered area with carbon tetrachloride or acetone if dirt or grease has emerged during chamfering.

Fill grooves with resin and microballoons. Apply resin to repair area and laminate with the required cloth layers. Pay attention to the orientation of the cloth fibers.

CAUTION: THE REPAIR AREA MUST BE FREE OF DIRT AND GREASE.

The required number of layers should be laid out on a plastic foil and impregnated with resin before applying them to the damaged area. The foil must be removed after the cloth has been applied to the damaged area.

After initial hardening at room temperature, the damaged area must be cured in accordance with the prescribed temperature cycle (15 hrs. at 50°C / 122°F).



Sand the repair area after hardening is complete.

CAUTION: ONLY SAND THE EDGES!

B. Damage to the Entire Sandwich

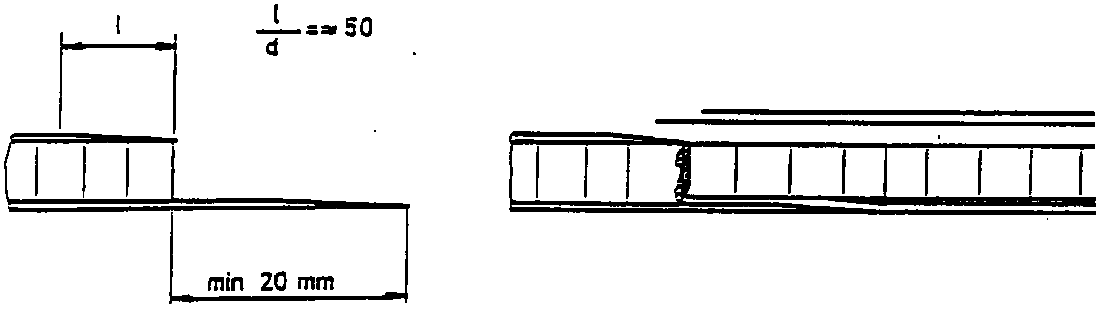
If the interior laminate is destroyed as well, the exterior laminate that has unbonded from the rigid foam must be removed first. The hole must be enlarged until the exterior laminate is securely bonded to the foam. To be able to repair the interior laminate, enough foam must be removed to provide an edge of at least 20 mm. A filling piece of foam with the same shape and size as the hole, and with layers conforming to the interior laminate must be constructed.

The laminate edges must be covered with the thickened resin (microballoons or cotton flakes).

After the laminate is pre-hardened at room temperature and has been chamfered, the protruding rigid foam is sanded down so it is flush with the exterior contour. The repair area must then be cleaned as follows:

(a) Remove sanding dust with pressurized air.

(b) Wash the chamfered area with carbon tetrachloride or acetone if dirt or grease has emerged during chamfering.



Cover the entire damaged area with resin. Laminate damaged area according to layup drawing. Pay special attention to the direction of the fibers.

CAUTION: THE REPAIR AREA MUST BE FREE OF DIRT AND GREASE!

The required number of layers should be laid out on a plastic foil and impregnated with resin before applying them to the damaged area. The foil must be removed after the cloth has been applied to the damaged area.

After initial hardening at room temperature, the damaged area must be suctioned off, and cured in accordance with the prescribed temperature cycle (15 hrs. at 50 °C / 122 ° F).

After the area is completely hardened, it may be sanded and painted.

6. Laminate Repair

A. Minor Damage

Cracks in the paint along a leading edge bonding require careful inspection of the joint. Repair of such delaminations is described below. Crack damage on the leading edge bonding of a control surface is repaired by covering the crack with 1 layer of 92110 cloth. For crack damage on the leading edge bonding of the wing, refer to C. Cracks in Wing Leading Edge Bonding.

The damaged area must be chamfered with sanding paper. The proper chamfering length per cloth layer is approx. 20 mm (0.8 in.). The ratio between laminate thickness and chamfering length should be approx. 1:50.

After chamfering, the area must be cleaned as follows:

(a) Remove sanding dust with pressurized air.

(b) Wash the chamfered area with carbon tetrachloride or acetone if dirt or grease has emerged during chamfering.

The damaged area must be covered with resin. Place the cloth layers, and impregnate with resin. Pay special attention to correct orientation of the fibers.

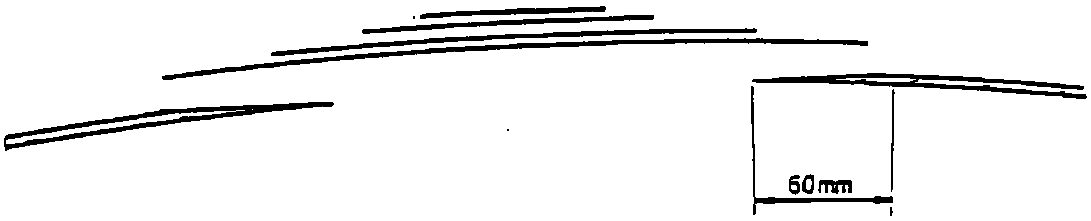
CAUTION: THE REPAIR AREA MUST BE FREE OF DIRT AND GREASE!

The required number of layers should be laid out on a plastic foil and impregnated with resin before applying them to the damaged area. The foil must be removed after the cloth has been applied to the damaged area.

After initial hardening at room temperature, the damaged area must be cured in accordance with the prescribed temperature cycle (15 hrs. at 50°C / 122°F).

After the area is completely hardened, it may be sanded and painted.

CAUTION: ONLY SAND THE EDGES OF THE REPAIRED AREA!



B. Major Damage

The damaged area must be uncovered down to the basic laminate. A counterpart made of two layers of glass fiber cloth must be constructed. The counterpiece should be approximately 20 mm (0.8 inches) larger than the area to be repaired. The counterpiece should be placed on the inside with thickened resin, and aligned to the contour with self tapping screws. Allow the piece to harden at room temperature for 8 hours.

The damaged area must be chamfered with sanding paper. The proper chamfering length per cloth layer is approx. 20 mm (0.8 in.). The ratio between laminate thickness and chamfering length should be approx. 1:50.

After chamfering, the area must be cleaned as follows:

(a) Remove sanding dust with pressurized air.

(b) Wash the chamfered area with carbon tetrachloride or acetone if dirt or grease has emerged during chamfering.

CAUTION: THE REPAIR AREA MUST BE FREE OF DIRT AND GREASE!

The damaged area must be covered with resin. Place the cloth layers, and impregnate with resin. Pay special attention to the correct orientation of the fibers. The cloth must be impregnated with resin using a brush or roller. The most outward layer must be covered with a peel ply.

After initial hardening at room temperature, the damaged area must be cured in accordance with the prescribed temperature cycle (15 hrs. at 50°C / 122°F). Then the peel ply must be removed.

After the area is completely hardened, it may be sanded and painted.

CAUTION: ONLY SAND THE EDGES OF THE REPAIRED AREA!

C. Cracks in Wing Leading Edge Bonding

(a) Determine depth of crack.

– case 1 Crack does not extend under laminate of upper skin: Removal of laminate not required.

If crack continues under skin, remove laminate and thickened resin until end of crack is reached.

– case 2 Not more than a 10 mm (0.4") wide strip of laminate (measured parallel to leading edge) had to be removed.

– case 3 More than 10 mm (0.4") of laminate removed.

(b) Chamfer existing laminate. Minimum chamfer length:

– case 1 15 mm or 0.6 inch

– case 2 30 mm or 1.2 inch

– case 2 60 mm or 2.4 inch

(c) Remove sanding dust using compressed air.

(d) Wash the chamfered area with carbon tetrachloride or acetone if dirt or grease has emerged during chamfering.

(e) Fill groove with resin and microballoons.

(f) Prepare impregnated laminate on plastic foil using diagonally oriented layers, chamfer length see step (b).

– case 1 2 layers type 92110

– case 2 2 layers type 92125

– case 3 4 layers type 92125

(g) Apply resin to repair area, apply prepared laminate, remove plastic foil.

(h) Allow hardening at room temperature, then cure repair area in accordance with prescribed temperature cycle (15 hrs. at 50°C / 122°F).

(i) Sand edges of repair area, paint repair area.

7. Spar Repair

The upper and lower cap of the wing spars consist of carbon fiber rovings. In any case, the repair of a spar is considered to be a major repair. Spar repairs, if at all possible, may only be carried out by the manufacturer.

8. Painting

When the laminate in the repair area is hardened and cured, sand the area with no. 80 sanding paper to remove the major unevenness. Smaller unevennesses are primed. Then use no. 150 or 320 sanding paper to create a uniform rough surface. Clear repair area from dust, parting compounds and other foreign substances. Apply primary coat and paint according to the paint manufacturer's instructions.

9. Repair of Cracks

A. Repair of Cracks Near the Entrance Steps

In case of cracks at the entrance step area, the structure has to be reinforced. If cracks are found or repairs because of cracks were already done before:

Detail Steps/Work Items		Key Items/References
CAUTION: DO NOT DAMAGE THE COMPOSITE STRUCTURE.		
(1)	Sand the paint coat and check the composite structure.	
(2)	In case of cracks or delamination, repair them according to instructions given in the AMM.	
(3)	Prepare the outside composite structure on a 250 x 200 mm (9.8 x 7.9 in) area around the entrance steps attachment bolts for reinforcement.	
(4)	Apply – One layer of 92140 (±45°) 200 x 150 mm (7.9 x 5.9 in) and then – One layer of 92110 (0°/90°) 220 x 170 mm (8.7 x 6.7 in).	
(5)	Cure, post cure and paint the reinforced area.	

Detail Steps/Work Items		Key Items/References
(6)	Prepare surface and paint the reinforced area in accordance with Section 8.	

B. Repair of Cracks at the Connection Between Backrest and Fuselage

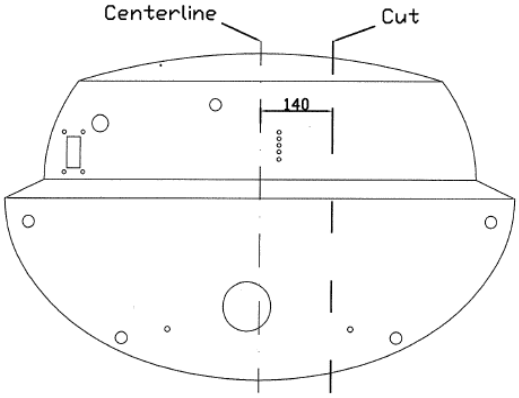
If cracks in the thickened resin are detected at the connection between backrest and fuselage in region of canopy frame:

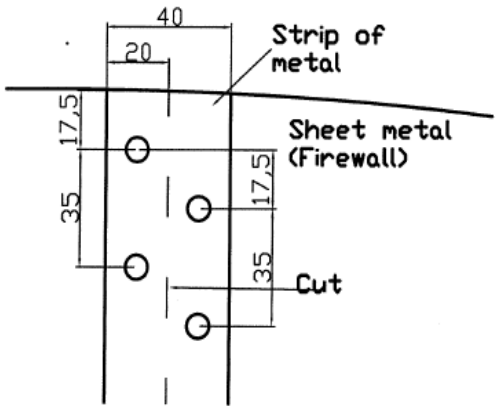
Detail Steps/Work Items		Key Items/References
CAUTION: DO NOT DAMAGE ANY COMPOSITE LAMINATE STRUCTURE.		
(1)	Remove thickened resin with a hand milling machine until the crack has disappeared.	
(2)	Fill the gap with thickened resin.	
(3)	Laminate a 50 mm (2 in.) stripe of 2x 92110 (±45°) over the gap.	
(4)	Cure, post cure and paint the repair area.	

10.Repair of the Firewall Insulation

NOTE: All parts must be removed from the firewall (screws, cables, etc.).

NOTE: All linear measures in the sketches are mm.

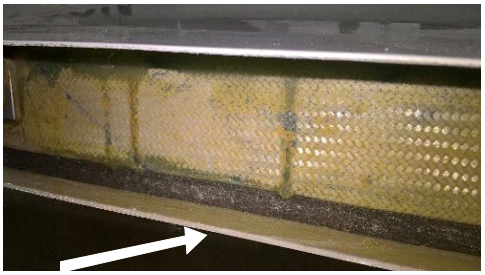
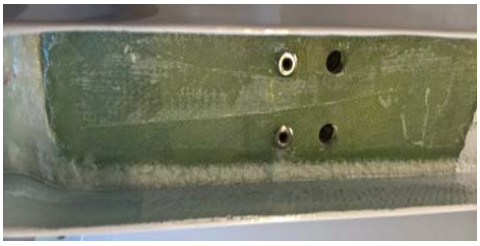
Detail Steps/Work Items		Key Items/References
(1)	Remove fire resistant resin from the edges of sheet metal to fuselage structure.	
CAUTION: DO NOT DAMAGE THE COMPOSITE STRUCTURE BEHIND.		
(2)	Cut the sheet metal 140 mm (5.51 in) right from the centerline. (when viewed from the front side). 	
(3)	Remove sheet metal from firewall.	
(4)	Remove old Fiberfrax thoroughly from metal and composites.	

	Detail Steps/Work Items	Key Items/References
(5)	Check composite structure for damage (particularly around the heating valve). If necessary, repair in accordance with the AMM. Basic Lay Up Firewall around Heating valve: - 1 ply 8.4554.60 (92140) 0°/90° over all - 2 ply 8.4554.60 (92140) ± 45° over all - 1 ply 8.4554.60 (92140) 0°/90° over all - 1 ply 8.4554.60 (92140) 0°/90° 200x1000 mm (only on horizontal part of firewall) In case of doubt, contact Diamond Aircraft Industries GmbH. Sand all damaged layers. Chamfer each layer with a stagger length of 20 mm. NOTE: Do not remove all layers to keep contour.	 Example of a damaged firewall Firewall after repair
(6)	Fix the metal strip on the left half of firewall sheet metal by spot-welding or riveting with A3.2 x 5.5 rivets.  Seal the strip and sheet with firewall sealant PR 812 KIT 25 or Dapco 2200.	
(7)	Prepare the right side of the strip with Ø 2 mm (0.08 in) drills for rivets according to the sketch.	

Detail Steps/Work Items		Key Items/References
(8)	Adjust both halves of the sheet metal to the firewall bulkhead.	
	CAUTION: THE METAL SHEET MUST NOT WARP. NOTE: The plates should be affixed with screws and screw clamps through the holes which are already in the metal sheet and the firewall bulkhead.	
(9)	Prepare 4 plates of wood or plastic to fix the sheet metal over the whole surface of the firewall bulkhead.	
(10)	Remove the plates and the metal sheets.	
(11)	Adapt the shape of the Fiberfrax to the shape of the sheet metal and firewall bulkhead (including the drills).	
	CAUTION: FOLLOW THE ADVICES OF THE FIBERFRAX AND ADHESIVE MANUFACTURER.	
(12)	Spread the Fiberfrax adhesive equally over the whole surface of the firewall bulkhead and Fiberfrax paper.	
(13)	Affix the Fiberfrax on the firewall.	
(14)	Spread the Fiberfrax adhesion equally over the whole surface of the sheet metal and the second surface of the Fiberfrax paper.	
(15)	Affix the metal sheet on the Fiberfrax.	
	CAUTION: THE METAL SHEET SHALL NOT WARP, IF IT WRAPS, REMOVE THE PLATES AND AFFIX THEM AGAIN.	
(16)	Press the prepared plates against the metal sheet with screws and screw clamps.	
(17)	Let Fiberfrax adhesive cure (according to adhesive manufacturer's advice).	
(18)	Remove the plates.	

	Detail Steps/Work Items	Key Items/References
	CAUTION: DO NOT DAMAGE THE FIBERFRAX OR THE COMPOSITE STRUCTURE BEHIND BY DRILLING DEEPER THAN 2 MM (0.08 IN).	
(19)	Drill out the prepared drills for the rivets on the right side of the strip.	
(20)	Seal the slit between strip and sheet with firewall sealant PR 812 KIT 25 or Dapco 2200.	
(21)	Set the rivets at the right side of the strip and the sheet (refer to sketch in instruction step 6).	
(22)	Cover the edge from sheet metal to fuselage with fire resistant sealant PR 812 KIT 25 or Dapco 2200 and let it set (according to resin manufacturer advice).	
(23)	Clean working areas, check for foreign objects.	
(24)	Check all altered, replaced, repaired parts for proper function.	
(25)	Test all systems in working area for function.	
(26)	Do all necessary entries in the airplane logs.	

11.Repair of Resin Erosion at Trailing Edge Spar

	Detail Steps/Work Items	Key Items/References
(1)	Examine wing, horizontal and vertical stabilizer trailing edge spar for resin erosion: Glass fabric surface is open without being soaked with any resin.	 wing upper side
	CAUTION: DO NOT DAMAGE ANY GLASS LAYER.	
(2)	Remove the aged foam strip in the edge of wing upper shell and trailing edge spar. Clean glass fabric structure carefully.	
(3)	Examine structure for cracks or delamination. In case of any finding, report Diamond Aircraft Industries to receive repair instructions.	
(4)	Refill the edge of wing upper shell and trailing edge spar with thickened resin.	
(5)	Refill the dry glass fabric with neat resin. Make sure that the resin does not block any thread or holes.	
(6)	Pre-cure laminating i.a.w. AMM Section 51-10.	
(7)	Post-cure laminating i.a.w. AMM Section 51-10.	
(8)	Clean working areas, check for foreign objects.	
(9)	Check all altered, replaced, repaired parts for proper function.	
(10)	Test all systems in working area for function.	
(11)	Do all necessary entries in the work report.	

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Section 51-20
REPAIR OF METAL PARTS

1. General

A. Steel Fittings

Repairs of metal fittings should only be performed after consulting the manufacturer.

If welding is required, it must be performed with a TIG (Tungsten Inert Gas) welder.

1.7734.2 (for 1.7734.4 and for St 35 BK or combinations of 1.7734.4 and St 35 BK) must be used as welding additive.

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Section 51-80
ELECTRICAL BONDING

1. General

This Paragraph tells you how to do a test of the bonding system.

The resistance measurements on the DV 20 have to be carried out with milliohmmeter and Kelvin probes. The test current must be approximately 2 amps.

Measure the resistance between the electrical shelf (reference point RP 01) and the test points (TP xx) in accordance with Figure 1.

The airplane must be in serviceable condition during the tests, except that the engine cowling must be removed.

2. Test Points

Test Point	Description	Max Permitted Resistance (mΩ)	Measured Resistance (mΩ)	OK Signature
TP 01	Engine exhaust	20		
TP 02	Engine mount	2		
TP 03	LH side of engine firewall	8		
TP 11	LH instrument panel	14		
TP 12	LH instrument panel	14		
TP 13	Radio mountings	16		
TP 14	Copilot stick	30		
TP 15	Pilot stick	30		
TP 16	Fuel tank filler	40		
TP 17	Fuel tank	36		
TP 18	ELT antenna	66		
TP 19	GPS antenna	80		
TP 20	Rudder bracket	150		
TP 21	LH wheel	40		
TP 22	LH aileron drive lever	150		
TP 23	LH ACL power supply	90		
TP 24	LH position light	90		
TP 31	RH wheel	40		
TP 32	RH aileron drive lever	150		
TP 33	RH ACL power supply	90		
TP 34	RH position light	90		
TP 40	Elevator trim	40		
TP 41	Fuel pump	30		
TP 42	Flaps drive unit	40		

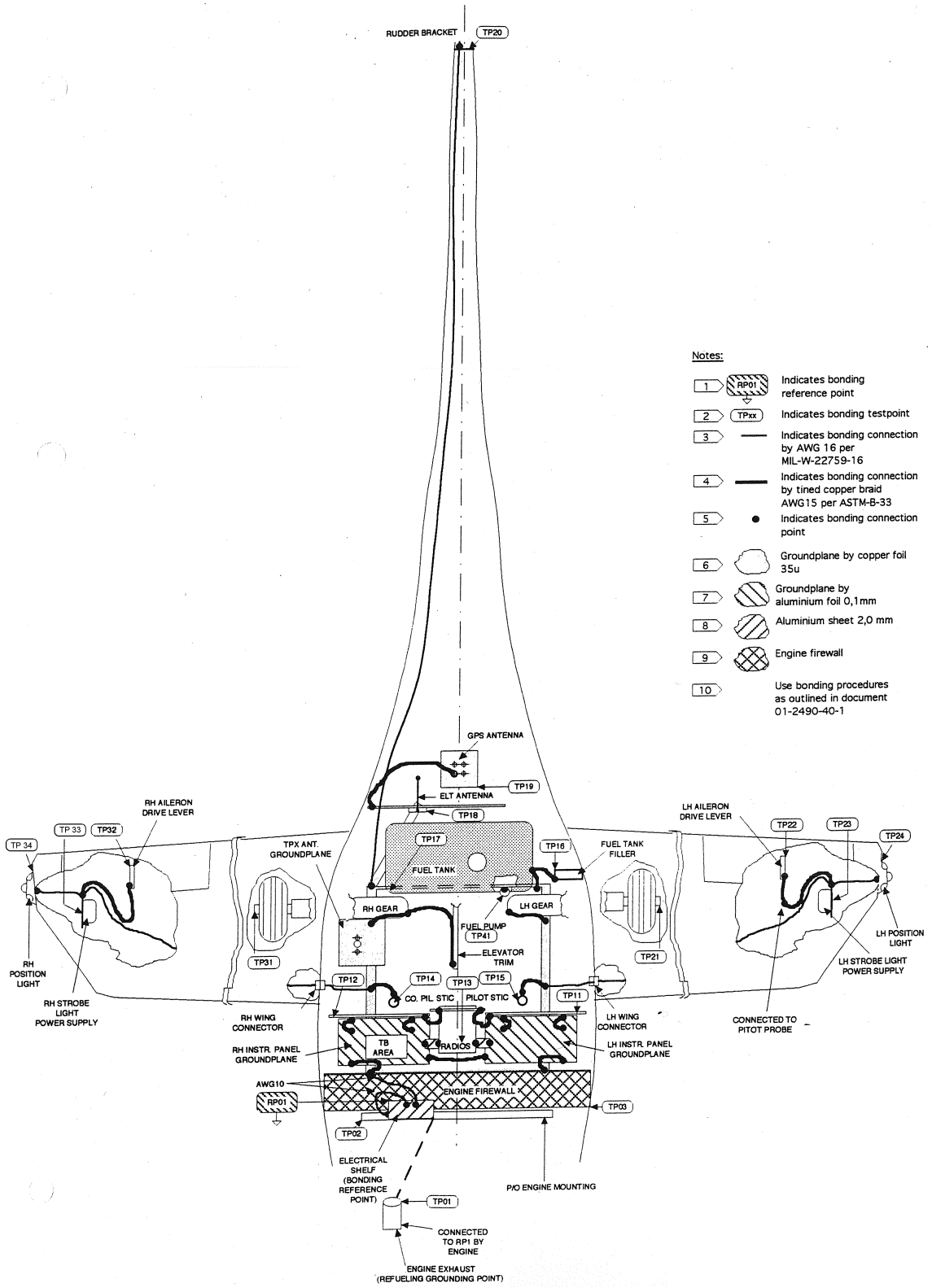

Figure 1: Test the Electrical Bonding System

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CHAPTER 53

FUSELAGE

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CHAPTER 53-00
FUSELAGE

1. General

The DV 20 KATANA fuselage is of semi-monocoque construction. The self supporting GFRP-fuselage is reinforced with bulkheads and stiffeners. The number of orientation of the layers corresponds to the loads in the individual sections. Therefore the fuselage skin has different thicknesses and fiber orientations.

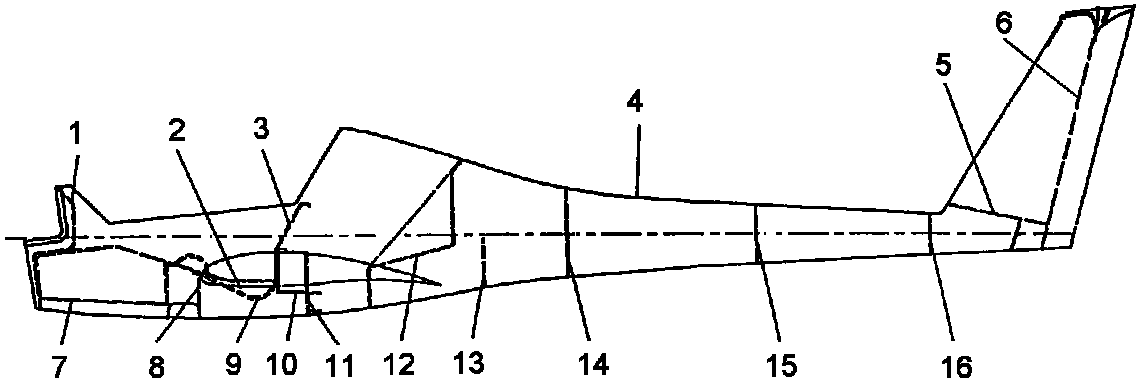

Figure 1: Fuselage Structure

LEGEND

1	Firewall	9	Seat Shells
2	Center Console	10	Main Bulkhead
3	Backrest	11	Sickle Shaped Bulkhead
4	Fuselage Skin	12	B-Bulkhead
5	Rudder Fin Stiffener	13	Half-Bulkhead
6	Rudder Fin Web	14	Ring Frame No. 1
7	Floor Element	15	Ring Frame No. 2
8	Transverse Stiffener	16	Ring Frame No. 3

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Section 53-10
MAIN FRAME

1. General

The DV 20 KATANA consists of a fuselage structure containing bulkheads and stiffeners which are:

- Firewall
- Floor Element
- Transverse Stiffener
- Main Bulkhead
- Sickle Shaped Bulkhead
- B-Bulkhead
- Roll Bar
- Half-Bulkhead
- Ring Frames 1 + 2 + 3
- Dinosaur Bulkhead
- Rudder Fin Stiffener
- Rudder Fin Web

2. Bulkheads and Stiffeners

The bulkheads and stiffeners are of different shape. They are fabricated from glass fiber laminate.

A. Firewall

The firewall of the DV 20 KATANA separates the engine compartment from the rest of the fuselage. It is fabricated from glass fiber laminate. For fire protection the front side of the firewall is covered with heat resistant protective texture as well as with stainless sheet steel. The heat resistant texture and sheet steel are attached using a special adhesive. In addition they are secured by the different components attached to the firewall. The firewall is attached to the fuselage with a thickened resin mixture.

B. Floor Element

The floor element is located in the forward cockpit area. It consists of GFRP and is bonded to the fuselage lower skin. The rudder pedal assemblies on both sides are mounted to the floor element.

C. Transverse Stiffener

The transverse stiffener is attached to the fuselage and the floor element. Attached to the transverse stiffener are the control stick mounting ribs as well as the guide rollers for the rudder control cables.

D. Main Bulkhead

The main bulkhead has a box-shaped cross section with carbon fiber layers on top and bottom. It is connected to the fuselage sidewalls and to the sickle shaped bulkhead through bondings. The wing spar stumps are connected to the main bulkhead through the main bolts. The landing gear structure is attached to the lower half of the main bulkhead with bolts and additionally secured by bonding. The bulkhead transition structure on each side contains the A-bolt for the wing connection within the front area, and the pockets for the ailerons and wing flaps in the rear area.

E. Sickle Shaped Bulkhead

The sickle shaped bulkhead is bonded to the fuselage lower skin and the main bulkhead. The sickle bulkhead is fabricated of glass fiber laminate. In its center area it is formed into a U-profile, where further fittings and bellcranks for the aileron and wing flap controls are attached.

F. B-Bulkhead

The B-bulkhead is also fabricated of glass fiber laminate and is, in the rear cabin area, attached to the fuselage skin with resin. Its Z-profile is used to mount the fuel tank. On both sides of the B-bulkhead, the B-bolts for the wing connection are installed. The rudder lever is located in the lower part of the B-bulkhead.

G. Roll Bar

The roll bar is integrated into the fuselage at the rear edge of the canopy support for reinforcement of the rear cabin area. Its Z-profile is fabricated of laminate including carbon fiber layers.

H. Half-Bulkhead

The half-bulkhead is attached to the fuselage skin and holds the forward guide of the elevator push rod.

I. Ring Frames No. 1, 2, and 3

For reinforcement of the fuselage tube, three ring frames are installed into the rear fuselage structure. Ring frame no. 2 holds another guide for the elevator push rod.

J. Dinosaur Bulkhead

The dinosaur bulkhead is also a GFRP part. It is located in the rearward fuselage tube.

K. Rudder Fin Stiffener and Rudder Fin Web

These components fabricated from glass fiber laminate are installed using thickened resin. An auxiliary bulkhead is attached below the rudder fin stiffener for reinforcement. The elevator mount, as well as the rudder mounting hardware are installed to the rudder fin web.

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Section 53-11

CANOPY

1. General

The DV 20 KATANA is equipped with a single piece lifting canopy with a frame fabricated of glass fiber laminate and rovings. To provide a generous all around view, an acrylic glass window is installed. It is held by screws and a bonding. The canopy is equipped with two emergency windows.

On both sides of the canopy, swivel arms are installed which are equipped with springs to counterbalance the weight of the canopy. To guide the swivelling motion, a third suspension point is provided in the upper rear area.

Locking of the closed canopy is performed using four locking pins which move in Teflon coated hardware in a longitudinal direction.

Canopy locking levers are located on both sides. They are connected to each other to enable opening of the canopy from one side in case of an emergency.

Grips are installed on either side of the canopy frame. These grips and the supporting spring force enable a soft closing of the canopy.

2. Troubleshooting

The following table lists defects as they could appear on the canopy system, and their correction.

Complaint	Possible Cause	Repair
Canopy jams.	Defective locking pins.	Replace.
Emergency window hard to open.	Unclean or defective guides.	Clean or replace.
Locking lever loose or worn.	Defective locking lever. Loose mounting hardware.	Replace. Tighten.
Grip loose.	Loose mounting hardware.	Tighten.

3. Removal and Installation

A. Canopy, Complete

The canopy can be removed and installed easily and fast.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Open canopy.	
(2)	Remove the screw located on the upper guide lever.	
(3)	Remove rod end bearings on swivel arms from the canopy frame.	
(4)	Remove canopy.	
CAUTION: TWO PEOPLE ARE REQUIRED FOR REMOVAL OF THE CANOPY.		

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

B. Emergency Windows

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Unscrew upper window guide.	
(2)	Lift window from lower window guide.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	
NOTE: For installation of the window guides, ACRYFIX should be used. The screws should be torqued very carefully.		

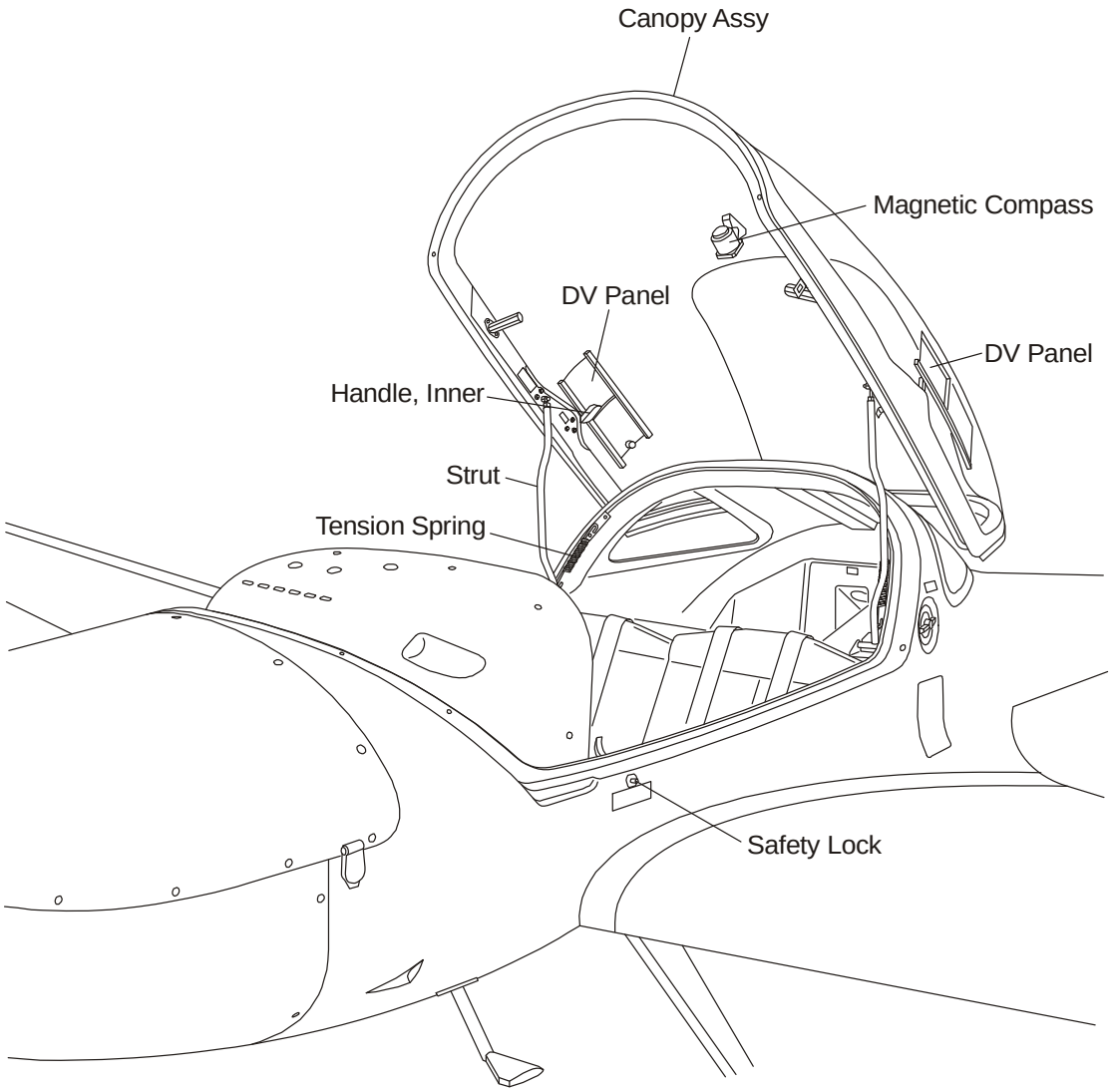

Figure 1: Canopy, Complete

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Section 53-31
INSPECTION HOLES

1. General

The DV 20 KATANA fuselage has four inspection holes. Their covers are fitted to the surface of the fuselage and are installed either with self-tapping screws or quick lock fasteners. The openings enable visual inspection and access to components and connections.

2. Description

The covers are made of aluminum or GFRP material. The covers are located on the fuselage bottom side, front and rear, and two in the middle. The forward cover enables access to the nose wheel mounting area, the covers in the middle enable access to the electrical fuel pump and the fuel drain valve. The rear cover enables access to the control gear in the vertical tail area.

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CHAPTER 55

STABILIZERS

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CHAPTER 55-00
STABILIZERS

1. General

The tail plane of the DV 20 KATANA consists of the horizontal stabilizer (elevator fin), elevator including trim tab, vertical stabilizer (rudder fin), and rudder. This chapter describes only the horizontal stabilizer, elevator and rudder.

The structural design is described in this chapter, while Chapter 27 describes removal and installation of the control surfaces.

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Section 55-10
HORIZONTAL STABILIZERS

1. General

Attached to the horizontal stabilizer is the elevator with the trim tab located in the middle.

2. Description

The horizontal stabilizer is attached to the rudder fin web with a metal fitting and two times four bolts. A second mounting point is located near the leading edge of the horizontal stabilizer. Here a pivot engages in the eye of the forward horizontal stabilizer fitting.

The upper and lower half of the horizontal stabilizer are of GFRP sandwich construction using PVC rigid foam. The continuous spar and the web at the hinge line are also made of GFRP. The fittings are attached with bolts and thickened resin. The tips are attached to the horizontal stabilizer with screws.

3. Removal and Installation

A. Horizontal Stabilizer

Rudder must be removed (refer to Sub-Chapter 27-20-30), elevator and trim tab must be disconnected from rearward controls (refer to Sub-Chapters 27-30 and 27-40).

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove horizontal stabilizer mounting bolts on fuselage side.	
(2)	Remove the horizontal stabilizer from the forward fitting by pulling to rear and simultaneously lifting slightly.	
(3)	Disconnect the NAV antenna connector.	
(4)	Remove elevator by lifting.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence. For torque values of the mounting nuts and bolts refer to Chapter 20.	

Section 55-40
RUDDER

1. General

The conventionally designed DV 20 KATANA rudder allows flight control of the airplane about the vertical axis. For maintenance information refer to Chapter 27-20-30.

This chapter describes only the rudder structure.

2. Description

The symmetrical half shells of the rudder are manufactured of PVC rigid foam covered on both sides. The upper pivot is installed using thickened resin. The balancing mass consists of a lead weight attached to the nose in the upper half of the rudder.

3. Removal and Installation

For removal and installation of the rudder refer to Chapter 27-20-30.

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CHAPTER 57

WINGS

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AILERONS

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CHAPTER 57-00
WINGS

1. General

The wing assembly of the DV 20 KATANA is a low wing monoplane design, and consists of two cantilever wings with ailerons and wing flaps. The wings are of semi-monocoque sandwich construction. For removal and installation of the wing flaps refer to Chapter 27. The structure is described in this chapter.

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Section 57-10
WING STRUCTURE

1. General

The DV 20 KATANA is a low wing monoplane design, using conventional ailerons and wing flaps.

2. Description

The cantilever wings of the DV 20 KATANA are of semi-monocoque sandwich construction.

An I-spar with caps constructed of carbon fiber is the base of the wing construction. The spar stumps reach to the middle of the fuselage.

Each wing is attached to the fuselage using three bolts. The A- and the B-bolts are fixed to the fuselage's root rib and are oriented in cross direction. The A-bolt is placed in front of the main bulkhead, while the B-bolt lies near the trailing edge.

The two main bolts are oriented in flight direction and are placed in the middle of the main bulkhead which serves as spar bridge. They are accessible between the backrests and can be removed.

The web at the hinge line stiffens the wing structure. Furthermore it holds the aileron and flap hinges.

Wing tips are screwed to the ends of the wing structure. A handhole is located on the upper wing surface which enables access to the B-bolt for removal of the wing. Two inspection windows fabricated of acrylic glass are located on the lower wing surface. They allow visual inspection of the aileron and flap bellcranks.

3. Removal and Installation

NOTE: Some S/N's are equipped with the optional wing folding mechanism. Refer to the Supplement to the Airplane Flight Manual for a description.

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	S/N's 20.101 and subsequent: remove baggage compartment floor, disconnect aileron and flap controls in wing root.	
(2)	Remove handhole lid next to wing root on upper surface near trailing edge.	
(3)	Remove B-bolt fastening unit.	
(4)	Remove locking device from main bolt, support wing.	
(5)	Extract main bolt.	
(6)	Carefully remove wing from main bulkhead, observing and disconnecting the electrical harness located at the root for the lights installed at the wing tips. When removing the left wing, observe and disconnect the Pitot, static, and stall warning system lines.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence. Before installing, clean and lubricate the mounting bolts. S/N's 20.005 thru 20.100: also clean and lubricate rollers in flap and aileron bellcranks.	
CAUTION: ENSURE PROPER CONNECTION OF MOUNTING BOLTS, FLAP AND AILERON CONTROLS, ELECTRICAL CONNECTOR, AND, ON THE LEFT SIDE, OF THE PITOT STATIC AND STALL WARNING LINES (SEE FIGURES 1 THRU 4).		

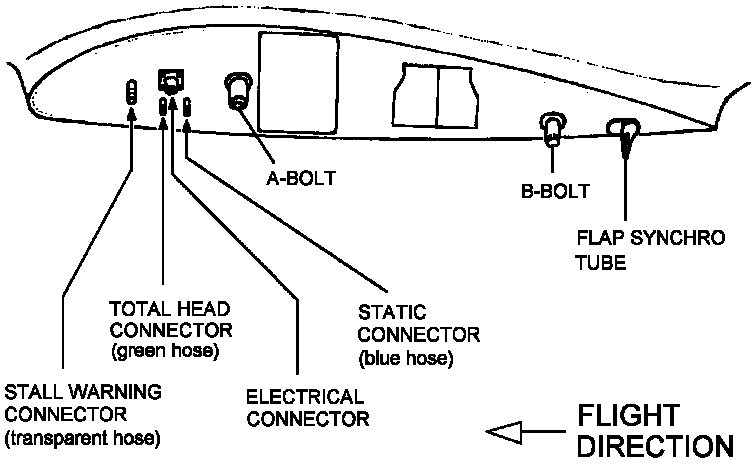

Figure 1: Connectors and Bolts on LH Wing Root

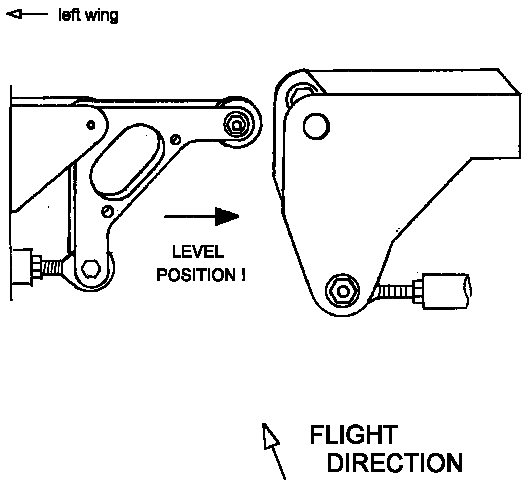

Figure 2: Proper Connection of Bellcrank and Pocket at Wing Root (Ailerons and Flaps)
Only S/N's 20.005 thru 20.100

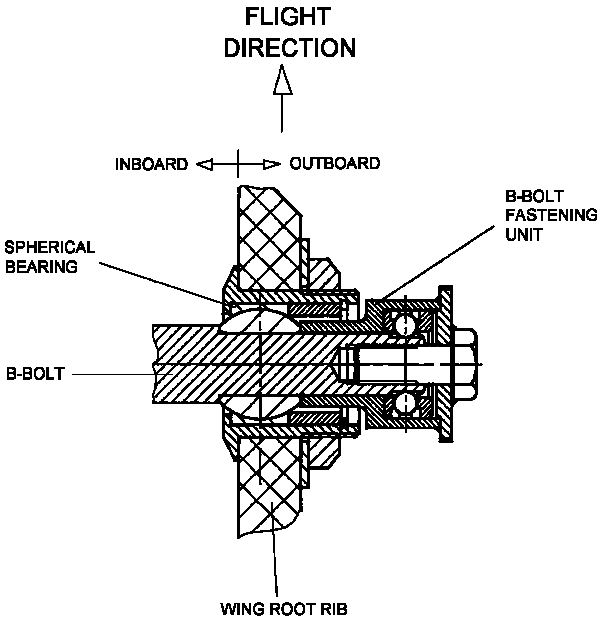

Figure 3: Properly Secured B-bolt

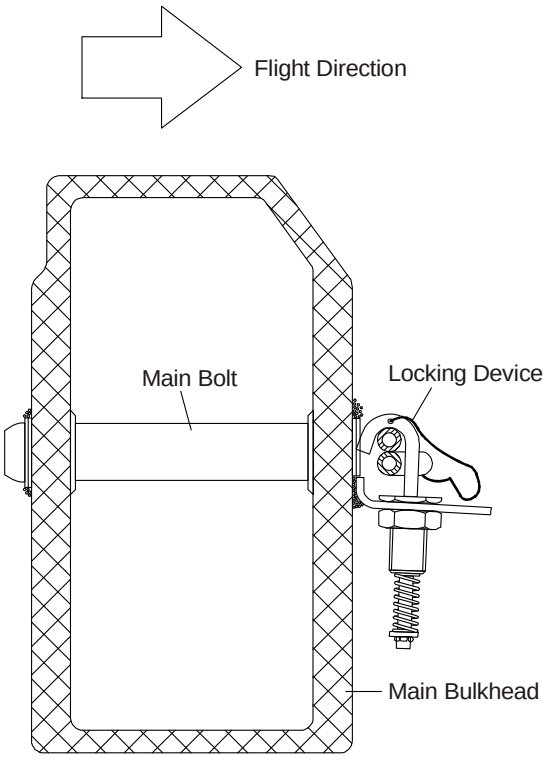

Figure 4: Properly Secured Main Bolts
Drawing does not show wing spar and wing spar bushing.

4. Bolt Play

A. Radial Play

The wing connection bolts are not sensitive to radial play. However, the radial play should not exceed the values given in the table below.

A-bolt in spherical bearing	0.08 mm	0.003"
B-bolt in spherical bearing	0.08 mm	0.003"
Main bolt in spar stump bush	0.125 mm	0.005"
Main bolt in main bulkhead bush	0.08 mm	0.003"

B. Axial Play

Maximum admissible values:

Tube connecting the two B-bolts	0.3 mm	0.012"
Spherical bearing for B-bolt	0.3 mm	0.012"

(Measured with force of hand with wings removed from fuselage.)

5. Replacement of Main Bolt Bushing

NOTE: Limits for play are defined in the Paragraph 4.

Detail Steps/Work Items		Key Items/References
CAUTION: DO NOT DAMAGE THE COMPOSITE STRUCTURE.		
(1)	Cut the bushings parallel to the longitudinal axis with a hand-milling machine.	
(2)	Remove bushings from the main bulkhead (4x). Prepare the area for pasting the new bushings.	
(3)	Paste bronze bushings with thickened resin.	
(4)	Align the bushings by inserting the main bolts.	
(5)	Cure and post cure the bushings.	
(6)	Cut and remove the bushings form the spar stump (2x).	
(7)	Paste bronze bushings with thickened resin.	
(8)	Align the bushings by mounting the wings (the bushings must be relieved from load).	
(9)	Cure and post cure the bushings.	

Section 57-50
WING FLAPS

1. General

The DV 20 KATANA is equipped with electrically operated wing flaps which are attached to the wings with hinges.

For removal and installation refer to Chapter 27-50.

This sub-chapter only describes the structure.

2. Description

The wing flaps are of semi-monocoque sandwich construction consisting of PVC rigid foam and glass and carbon fiber layers.

The flap has ribs on its inboard and outboard edges. The flap horn is installed in the middle of the flap. Each flap is attached to the wing using four hinges and the flap horn. The hinges are secured with screws to the flaps.

3. Removal and Installation

For removal and installation of the wing flaps refer to Chapter 27-50, which also describes all required adjustments.

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Section 57-60
AILERONS

1. General

The DV 20 KATANA is equipped with one aileron on each wing, operated by push rods. For a systems description as well as for removal and installation procedures of the aileron controls refer to Chapter 27-10.

This sub-chapter only describes the structure and the removal and installation of the ailerons.

2. Description

The ailerons are of semi-monocoque sandwich construction consisting of PVC rigid foam and glass and carbon fiber layers. They have ribs on either side. The ribs are attached to the ailerons by use of thickened resin.

Each aileron is attached to the wing by four hinges and the aileron horn. The aileron control system is connected to the aileron horn which is attached to the aileron with bolts.

3. Removal and Installation

Aileron push rod must be removed (refer to Chapter 27-10).

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove the dowel pins, extract bearing journals.	
NOTE: Secure the aileron from falling down! To ensure easy re-installation, mark location and direction of the bearing journals.		
(2)	Remove aileron.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

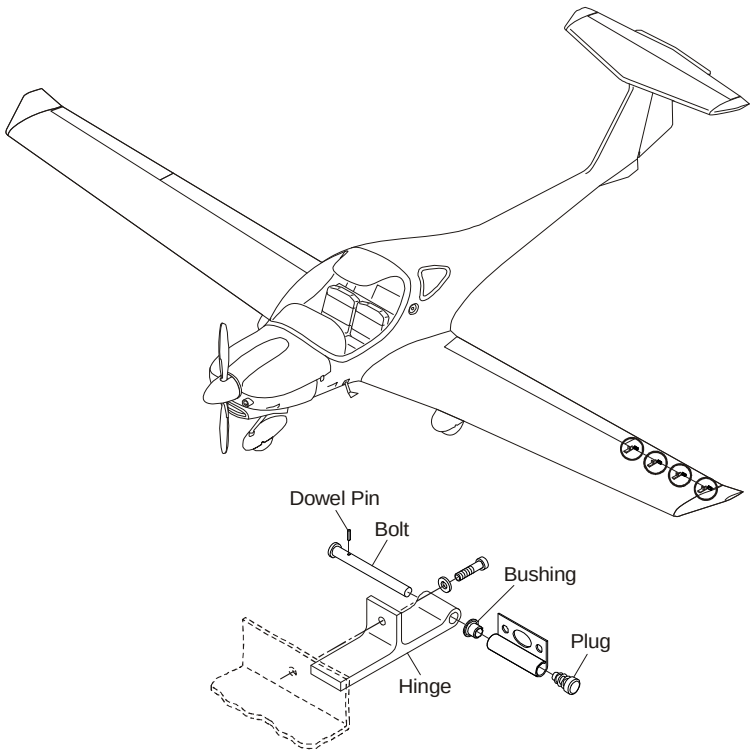

Figure 1: Hinge

CHAPTER 61

PROPELLER

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CHAPTER 61-00
PROPELLER

1. General

The DV 20 KATANA is equipped with one of the following propeller models:

– Hoffmann HO-V72F/S170DW (with 912 A3 engine only)

– Hoffmann HO-V352F/170FQ (with 912 A3 or S3 engine)

– Hoffmann HO-V352F/C170FQ (with 912 A3 or S3 engine)

– mt-Propeller MTV-21-A/175-05 (with 912 A3 engine only)

These propellers have a hydraulic infinitely variable pitch adjustment controlled by a propeller governor. When the desired propeller speed is preselected, the governor automatically keeps the speed at a constant value, regardless of manifold pressure and airspeed.

2. Description

The constant speed propeller consists of three main units: hub assembly, blade assembly, and spinner assembly.

Detailed information on the construction of the propeller can be found in the propeller manufacturer's documentation (refer to Chapter 03).

3. Troubleshooting

The following table lists defects as they could appear on the propeller, and their correction.

Complaint	Possible Cause	Repair
Blade shake.	Loose blade bearing.	**Hoffmann**: Tighten retention nut to 25 - 30 Nm (18.4 to 22.1 lbs.ft.). Use new safety plate and sealing. **mt-Propeller**: Contact manufacturer or approved repair station in case of bladeshake in excess of 3 mm (1/8").
Sluggish RPM.	Cold oil. Friction in pitch change mechanism.	Allow engine to warm up sufficiently. **Hoffmann**: Move pitch change mechanism by turning blades by hand. If excessive friction is revealed, contact repair station. **mt-Propeller:** Turn blades within angular play. If excessive friction is revealed, contact propeller manufacturer to inspect blade retention system.

Complaint	Possible Cause	Repair
Surging RPM.	Trapped air in propeller piston.	**Hoffmann**: Move propeller speed control at least 3 times over the entire pitch range to release air. **mt-Propeller:** Move propeller speed control at least twice before flight at about 1800 RPM with a drop of about 500 RPM.
	Oil sludge in system.	Contact repair station to clean oil lines in engine, cylinder, propeller, and governor.
	Wrong speeder spring in governor.	Check governor designation with Airplane Type Certification Data Sheet.
	Speeder spring in governor too weak.	5 periods of surging with low amplitude are acceptable. If governor does not stabilize then, contact repair station.
	Improper pitch setting in propeller.	Check whether pitch setting conforms to data given in Airplane Type Certification Data Sheet. Check static RPM.
	Abrupt movement of prop control or throttle control.	Move controls slowly and smoothly.
	Improper carburetor adjustment.	Adjust.
	Oscillation of tachometer.	Check tachometer and drive.

Complaint	Possible Cause	Repair
Differences in RPM during climb, cruise, and descent without propeller speed control lever movement.	Up to ± 50 RPM are system inherent. If this value is exceeded:	
	Friction in propeller or governor.	Contact propeller manufacturer.
	Defective RPM indicator.	Replace.
Increasing RPM during normal operation without movement of propeller speed control lever.	Oil leakage which is visible from outside.	Replace seals.
	Pitch change due to leakage in internal oil system between governor and propeller.	Contact engine repair station. Oil transfer rings on propeller shaft may be defective, or supply of engine oil to governor may be insufficient.
	Internal leakage in propeller.	Contact propeller manufacturer.
	Malfunction of governor drive or governor relieve valve.	Contact repair station to replace governor.
RPM drop during normal operation without movement of propeller speed control lever.	Failure of governor speeder spring, or plunger stuck in governor.	Contact repair station to replace governor.
	Defective propeller speed control bowden cable.	Repair or replace.
	Dirt in fuel system.	Clean.

Complaint	Possible Cause	Repair
Pitch change extremely sluggish after movement of propeller speed control lever and/or RPM changes with airspeed and manifold pressure as in case of a fixed pitch propeller.	Clogged oil lines between governor and propeller.	Contact repair station to have lines cleaned. NOTE: This kind of malfunction does not appear abruptly. The quality of the prop speed control function deteriorates slowly over a period of time. This condition should be detected during preflight inspections.
	Oil sludge in cylinder of propeller pitch change mechanism.	Contact repair station to clean. NOTE: see NOTE above.
	Defective pitch change mechanism in propeller.	Contact propeller manufacturer. NOTE: This failure may occur suddenly.
	Corrosion in the blade bearings.	Contact repair station.
Oil leakage (may either be visible from outside or not).	Defective seals.	Replace.
Engine running roughly, eventually in limited RPM range.	Poor static or dynamic balance.	Re-balance.

4. Installation Procedure

NOTE: Propeller installation may only be carried out by authorized personnel and must be checked immediately after completion. Any maintenance must be performed in accordance with the propeller manufacturer's documentation.

	Detail Steps/Work Items	Key Items/References
(1)	Clean propeller and engine flange with gasoline or a similar substance. The torque is transmitted through friction, therefore the flange surfaces must be clean.	
	NOTE: Do not install additional O-Rings!	
(2)	Check O-rings. **Hoffmann**: Check whether both O-rings are installed in the centering ring. Install centering rings to hub. **mt-Propeller:** Check position of O-ring installed in propeller flange.	
(3)	**Hoffmann**: Install propeller to centering on engine flange. Be careful not to damage the O-ring in the centering ring. **mt-Propeller**: Install spinner backplate. Install propeller, considering position relative to spinner backplate.	
(4)	Tighten nuts on flange uniformly in crosswise order. Proper torque: see propeller manual. Verify nuts and bolts are clean (do not lubricate) and turn easily on bolt threads.	
(5)	Check track of propeller blades approx. 10 cm (4 inches) from the blade tips at the trailing edge. Maximum allowable value: 3 mm (0.12"). For this check, the propeller should be turned opposite to its direction of rotation in order to avoid inadvertent engine firing.	

Detail Steps/Work Items		Key Items/References
(6)	Install spinner in accordance with the markings. Ensure sufficient guidance on guiding plate. Apply a light coat of motor oil to rubber before installing spinner. Torque of spinner mounting screws: **Hoffmann:** 2.5 to 3.0 Nm (22.1 to 26.6 in.lbs.), **mt-Propeller:** 4 to 5 Nm (35.4 to 44.3 in.lbs.).	

5. Minor Repairs

Minor repairs (small paint cracks etc.) may be performed without special authorization. Ensure that the wood core and the glass fiber coating are not damaged. The damaged area is cleared from grease with common solvents and sanded with no. 220 sanding paper. If necessary, the repair area should be treated with adequate nitro surfacer. Be careful not to apply a too thick coat. After the surfacer has hardened, generate an even surface with no. 220 sanding paper. Paint damaged area. Only original paint should be used, since the durability of other products cannot be guaranteed. In the event that several paint layers are applied, observe drying time.

This procedure is not valid for the plastic leading edge of the HO-V352F/C170FQ propeller.

If moisture has entered the wood core, the propeller must be sent to the manufacturer for repair.

In case of major damage, the propeller must also be removed from the airplane and sent to the manufacturer.

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CHAPTER 71

POWER PLANT (ENGINE)

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CHAPTER 71-00
POWER PLANT (ENGINE)

1. General

This chapter describes the engine installed in the DV 20 KATANA, its external units, removal and installation, as well as the troubleshooting procedures.

For maintenance or overhaul of the engine refer to the engine manufacturer's documentation. For operation refer to the Operator's Manual.

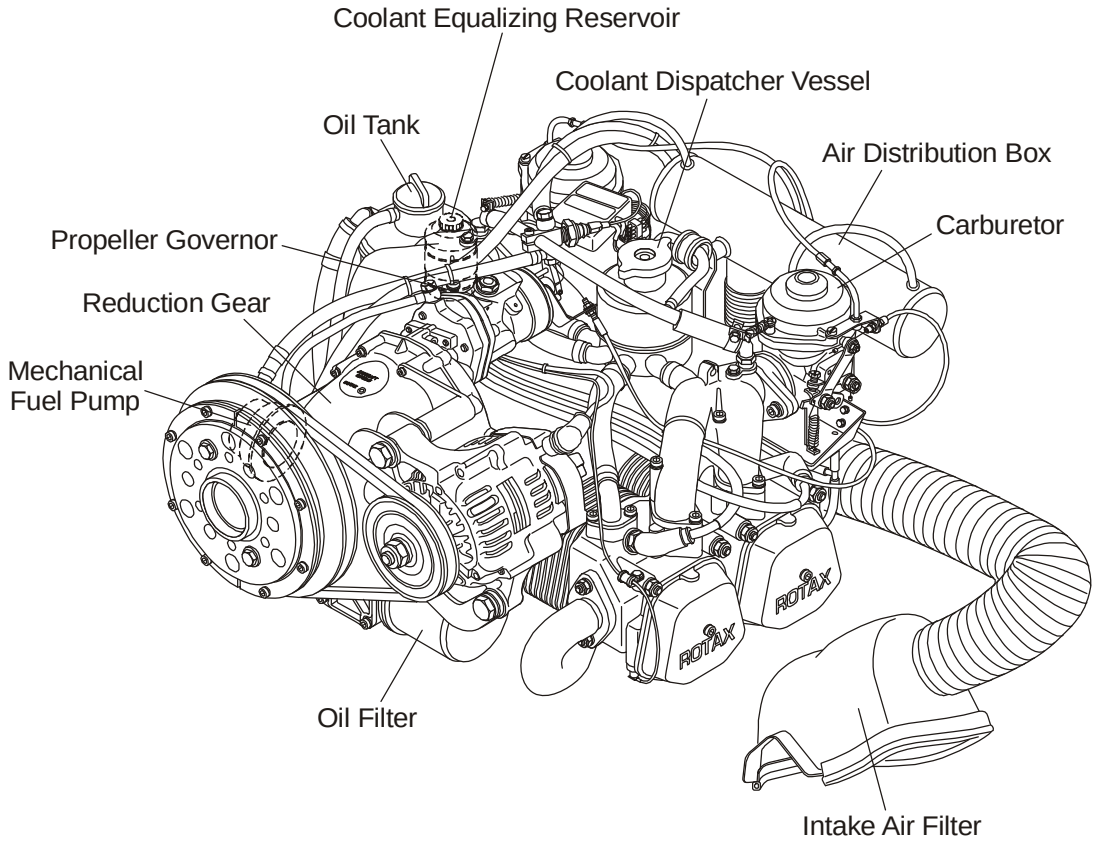

Figure 1: Engine

2. Description

The engine installed in the DV 20 KATANA is a ROTAX 912 A3 with a take-off performance of 80 hp at 5800 RPM.

Optionally installed may be the ROTAX 912 S3 engine with a take-off performance of 100 hp at 5800 RPM.

The 4 cylinder, 4 stroke horizontally opposed type engine has a dry sump forced lubrication system. It has air cooled cylinders and liquid cooled cylinder heads.

The propeller rotates in clockwise direction. Due to the reduction gear, the engine turns in opposite direction. The engine is equipped with self-adjusting valves which are maintenance free. The trigger coils of the breakerless capacitor discharge type dual ignition are integrated together with the alternator into the engine.

Attached to the integrated reduction gear is a hydraulic type propeller governor. The reduction gear is equipped with an overload clutch and a mechanical vibration damper. Attached to the engine are the electric starter, a mechanical fuel pump, two carburetors, an air distribution box, and an air intake filter.

The engine is operated via bowden cables.

If an engine with suffix -01 is installed, the item ‘Max. cylinder head temperature’ is changed to ‘Max. coolant temperature’ as shown in the paragraph below.

Engine Specification of the ROTAX 912 A3	
RPM's are propeller speeds, crankshaft speeds in brackets.	
Take off performance	59.6 kW (80 hp)
Take off RPM	2550 RPM (5800 RPM)
Max. continuous power	58 kW (78 hp)
Max. continuous RPM	2420 RPM (5500 RPM)
Idle RPM	950 RPM
Bore	79.5 mm
Stroke	61.0 mm
Displacement	1211 cm^3
Compression ratio	9.0 : 1
Ignition order	1-4-2-3
Min. oil pressure up to engine serial no. 4.410.226 engine no. 4.410.227 and higher	 1.5 bar (22 psi) 0.8 bar (12 psi) below 1550 RPM (3500 RPM)
Normal oil pressure (engine no. 4.410.227 and higher)	2-5 bar (29-73 psi) above 1550 RPM
Max. oil pressure	5 bar (73 psi)
Max. short-term oil pressure in case of cold-start	7 bar (102 psi)
Max. oil temperature	140°C (284°F)
Max. cylinder head temperature	150°C (302°F)
Max. coolant temperature	120° C (248° F)
Mass (weight), dry (without exhaust system, radiator and airbox)	59.8 kg (132 lbs.)

If an engine with suffix -01 is installed, the item ‘Max. cylinder head temperature’ is changed to ‘Max. coolant temperature’ as shown in the paragraph below.

Engine Specification of the ROTAX 912 S3	
RPM's are propeller speeds, crankshaft speeds in brackets.	
Take off performance	73.5 kW (100 hp)
Take off RPM	2385 RPM (5800 RPM)
Max. continuous power	69 kW (94 hp)
Max. continuous RPM	2260 RPM (5500 RPM)
Idle RPM	600 - 800 RPM
Bore	84 mm (3.31 inch)
Stroke	61.0 mm (2.40 inch)
Displacement	1352 cm^3 (82.5 $inch^3$)
Compression ratio	10.5 : 1
Ignition order	1-4-2-3
Min. oil pressure	0.8 bar (12 psi) below 1450 RPM (3500 RPM)
Normal oil pressure	2-5 bar (29-73 psi) above 1450 RPM
Max. oil pressure	5 bar (73 psi)
Max. short-term oil pressure in case of cold-start	7 bar (102 psi)
Max. oil temperature	130°C (266°F)
Max. cylinder head temperature	135°C (275°F)
Max. coolant temperature	120°C (248° F)
Mass (weight), dry (without exhaust system, radiator and airbox)	61.0 kg (134 lbs.)

A. Starter

The starter is attached to the engine and is located on the right hand side, at the rear of the engine. The starter pinion is pushed forward during the start phase to engage into the ring gear. With the engine running, the starter pinion is retracted by centrifugal force.

B. Alternator

The permanently excited, 10 pole monophase alternator is fixed to the engine. Regulation and rectification are achieved electronically. Output performance is 250 Watts at 13.5 to 14.5 Volts. The alternator is directly connected to the crankshaft of the engine.

Optionally, the DV 20 may be equipped with an external alternator (OÄM 20-245). Refer to the engine manufacturers' manuals for more data about the alternator.

C. Ignition System

The engine is equipped with a breakerless capacitor discharge type dual ignition system which operates totally independent from the electrical on-board network. Shielded wires are used to connect the spark plugs to the ignition magnetos.

D. Air Distribution Box

The air distribution box is of welded aluminum design which has a built in carburetor heat flap. With operation of this flap, pre-heated air is directed to the carburetors to prevent carburetor icing. At maintenance, it must be ensured that the adjustment of the carburetor heat bowden cable enables proper closing of the flap.

E. Carburetors

The BING 64/32 is an equal pressure or constant speed carburetor. The engine suction produces a partial vacuum depending on the position of the throttle valve. The vacuum propagates to the vacuum chamber in the upper part of the dome. The differential pressure between the vacuum chamber and the atmosphere increases, thus lifting the piston (diaphragm) and the attached fuel needle.

This device provides an almost constant pressure drop and an almost constant velocity of air flow in the Venturi tube.

For a detailed description of the carburetor and its adjustment, refer to the engine manufacturer's documentation.

F. Reduction Gear

The step-down ratio between crankshaft and propeller is 2.2727:1 on the 912 A3 engine and 2.43:1 on the 912 S3 engine. The reduction gear contains a dampening unit to reduce torsional vibration. This unit consists of a progressive torsional spring system using contour clamps with spring washers acting in axial direction. The clamp mechanism has a friction dampened backlash which is necessary to achieve a smooth idling.

Through this backlash a noticeable rotary shock is created during engine start and shut-off and in case of sudden load changes. This effect is harmless due to the built in overload clutch.

The overload clutch also protects the crankshaft from overload in case of propeller shock load.

G. Spark Plugs

The approved spark plug type is given in the Maintenance Manual for the engine.

3. Troubleshooting

The following table lists defects as they could appear on the engine, and their correction.

Complaint	Possible Cause	Repair
Engine does not start.	Spark plug gap to wide.	Adjust gap to 0.5 mm (0.02") or replace plugs.
	Closed fuel shut off valve.	Open.
	Clogged fuel filter.	Clean or replace.
	Leaky fuel system.	Repair.
	No fuel in tank.	Refill airplane.
	Ignition wires interchanged.	Observe firing order 1-4-2-3.
	Starter RPM too low, defective or empty battery.	Recharge or replace battery.
	Loose or defective ignition wire.	Heck wire connections, replace if required.
	Ignition box wet inside.	Dry thoroughly.
	Spark plugs wet from condensation.	Thoroughly dry plugs inside and outside.
	Spark plugs wet from fuel due to excessive actuation of choke or overflow of carburetor.	Dry spark plugs, check for faults in fuel system.
	Unclean or jammed fuel needle.	Clean or replace.
	Clogged carburetor jets.	Clean.
	Water in carburetor.	Drain and clean carburetor, fuel lines, filter, and separator.
	Insufficient compression.	Check for loss of pressure; carry out repair if necessary.
	Engine damage.	Inspect oil tank for metal particles; in case of presence, engine overhaul might be required.

Complaint	Possible Cause	Repair
Engine idles unsteadily after warm up, black exhaust gas	Choke activated.	Deactivate.
	Carburetors synchronized inadequately.	Adjust carburetors.
	Fuel needle unclean, jammed, or worn.	Clean or replace.
	Intake manifold leaky.	Tighten all connectors, replace defective parts.
Engine runs irregularly or misfires occasionally.	Spark plugs do not fire.	Check plugs, clean inside and outside, adjust electrode gap; replace plugs if necessary.
	Spark discharge over ignition wires.	Dry wet wires; replace defective wires.
	Defective ignition box.	Have box repaired, or replace.
	Clogged fuel filter.	Clean.
Engine runs too hot, oil temperature exceeds 140°C.	Too much oil remaining in crankcase.	Check oil return line for clogging; check engine for gas mixture leakage.
	Insufficient air stream to oil radiator.	Check for free air passage; clean.
	Insufficient oil supply.	Check oil level; replenish if necessary.
	Poor oil quality.	Change oil, use approved oil.
	Clogged oil filter.	Replace.
	Excessive piston blow-by.	Usual reason: worn or seized piston rings, overhaul required.
	Defective bearings.	If there are metal particles in the engine or oil tank - overhaul required.
	Defective oil temperature indicator.	Replace.

Complaint	Possible Cause	Repair
Engine performance unsatisfactory.	Defective ignition system.	Check ignition circuits; if defect evident, check ignition wires and trigger coil; have ignition box repaired.
	Too much oil in crankcase.	Check return line to oil tank for clogging (seals, covers, etc.).
	Insufficient fuel supply.	Check fuel system.
	Non-approved fuel.	Refuel using approved fuel.
	Incorrect throttle lever adjustment.	Adjust.
	Leaky air intake.	Tighten connectors, check carburetor connecting piece.
	Defective carburetor diaphragm.	Replace.
Low oil pressure.	Insufficient oil level.	Check oil level, replenish if required.
	Oil remains in engine and does not return to tank.	Check oil return line for clogging.
	Defective oil seal.	Replace.
	High oil temperature.	see "Engine runs too hot".
	Defective pressure control valve.	Check for foreign matter, check spring.
	No oil pressure, air in oil line.	Bleed oil line.
	Defective oil pressure indicator.	Check sensor, instrument, and wiring.
	Defective crankshaft bearings.	Engine overhaul required.
Post ignition.	Idle speed too high.	Adjust to 950 RPM.
	Defective ignition switch.	Check ground connections, overhaul switch.
	Overheated engine.	Allow engine to cool off at 950 RPM.

Complaint	Possible Cause	Repair
Excessive oil consumption.	Worn, broken, or improperly installed piston rings.	Engine overhaul required.
	Poor oil quality.	Change oil, use approved oil type.
	Worn valve guides, poor condition of valve shaft seal.	Cylinder head repair required.
	Oil leaks.	Seal.
Knocking under load.	Octane rating of fuel too.	Use fuel with higher octane rating.
	Spark plugs installed without sealing ring.	Ensure that there is one sealing ring in each spark plug.
	Excessive residue in combustion chamber.	Remove cylinder heads, remove combustion residue, check oil consumption.
	Excessive spark advance.	Only possible when flywheel has been twisted on crankshaft; check dead center position.
Engine hard to start at low temperatures.	Starting RPM too low.	Preheat engine.
	Low battery charge.	Recharge or replace.
	High oil pressure.	In case of cold-start, a reading of up to 7 bar does not indicate malfunction.
	Too low oil pressure after cold-start.	Too much resistance in oil line at low temperatures; shut off engine, pre-heat motor oil.

4. Removal and Installation

A. Engine

(1) Removal

NOTE: In many cases it is better to remove the engine together with the engine mount from the firewall. The following is a description of such task.

WARNING: BEFORE REMOVING THE ENGINE, DISCONNECT THE BATTERY AND CONNECT THE MAGNETOS TO GROUND (CONNECT MAGNETO CONNECTOR WITH GROUND SCREW USING WIRE), OR REMOVE ALL IGNITION CABLES FROM THE SPARK PLUGS.

Detail Steps/Work Items		Key Items/References
(1)	Install tail support.	Refer to Chapter 7.
(2)	Remove upper and lower cowling.	
(3)	Disconnect nose wheel elastomer package assembly from engine mount.	
(4)	Disconnect ignition wires.	
(5)	Remove propeller.	
(6)	Disconnect battery (negative terminal first), remove battery.	
(7)	Disconnect fuel line from firewall fitting.	
(8)	Disconnect the electrical connector on the firewall.	
(9)	Disconnect bowden cables for throttle, choke, and carburetor heat.	
(10)	Remove heating hose on the exhaust heat exchanger.	
(11)	Disconnect manifold pressure line from firewall fitting.	
(12)	Lift engine until the engine mount is without load. Remove lower and then upper engine mount attachment bolts and move airplane rearward.	

Detail Steps/Work Items		Key Items/References
(13)	Remove exhaust, radiators, oil tank, ignition box, engine mount, and auxiliary engine mounts.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

B. Carburetor

(1) Installation

Detail Steps/Work Items		Key Items/References
(1)	Remove fuel line from carburetor.	
(2)	Disconnect bowden cables from air distribution box and carburetor.	
(3)	Remove the air distribution box by loosening the hose clamps and moving in rearward direction.	
(4)	Loosen clamp on carburetor connector, remove carburetor in rearward direction.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

5. Maintenance Information

For maintenance information for the power plant (engine) refer to Rotax Maintenance Documentation.

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CHAPTER 71-10
COWLING

1. General

The engine cowling consists of two halves, with an inspection cover located on the upper half allowing access to the oil dipstick and the coolant equalizing reservoir. The cover is attached to the cowling by a hinge and secured by a rotary lock.

Both halves of the engine cowling are attached to the airframe by quick lock fasteners.

2. Removal and Installation

A. Removal

Detail Steps/Work Items		Key Items/References
(1)	Loosen fasteners on upper engine cowling.	
(2)	Remove upper cowling.	
(3)	On lower cowling, disconnect electrical connection to landing light (located on left hand side).	
(4)	Loosen fasteners on lower engine cowling.	
(5)	Place propeller into horizontal position and remove cowling in forward direction.	

B. Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

CHAPTER 71-20
ENGINE MOUNT

1. General

The engine is mounted to the airframe via the engine mount and the shock mounts (silentblocs). The engine mount consists of a welded steel bar frame which is mounted to the firewall using bolts and self locking nuts. The bolts must be re-torqued at the intervals specified in Chapter 05.

The shock mounts attached between the engine and the auxiliary engine mounts reduce the vibration transmission from the engine to the airframe.

2. Description

The engine mount is electrically grounded to the firewall by a ground strap. The engine is attached to the engine mount with shock mounts, which consist of a rubber element and a spacer tube. The rubber elements are secured against twisting by the pre-tension within the bushings.

Attached to the engine mount are different mounting brackets for oil and coolant radiators, oil tank, as well as mounting provisions for various cables and hoses for the engine.

3. Removal and Installation

A. Removal from the Firewall

Detail Steps/Work Items		Key Items/References
(1)	Remove bolts holding engine mount.	
(2)	Remove engine mount from firewall.	

B. Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

NOTE: For the correct torque, refer to Sub-chapter 20-00. Re-torquing is necessary at the intervals specified in Chapter 05.

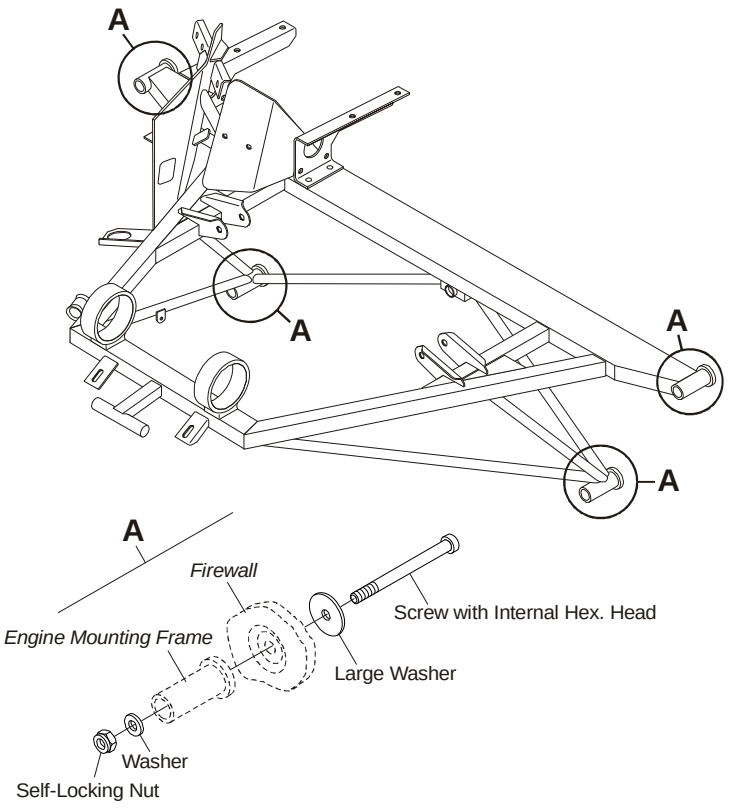

Figure 1: Engine Mount

CHAPTER 71-60
AIR INTAKES AND GUIDES

1. General

A ram air guide made of GFRP is installed on the engine to ensure optimal engine cooling.

2. Description

The air guide is designed to follow the contours of the engine block and cylinders. The exact fitting makes attachment screws unnecessary. The crossed over coolant hoses installed on the upper side of the engine secure the air guide.

3. Removal and Installation

A. Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect coolant hoses from cylinder heads (upper side); remove.	
(2)	Remove auxiliary units on engine upper side.	
(3)	Disconnect fuel lines from fuel pump; remove.	
(4)	Remove air guide.	

B. Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

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ENGINE COOLING

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CHAPTER 75-10
ENGINE COOLING

1. General

The engine cooling is performed using two different systems. Ram air guided by a duct is used to cool the cylinders, while the cylinder heads are liquid cooled.

The cylinder head cooling system consists of a coolant pump, radiator, dispatcher vessel, and an equalizing reservoir. The dispatcher vessel may hold the sensor for coolant quantity. Also see Chapter 71-00, Figure 1.

If an engine with suffix -01 is installed, or if cylinder head no. 3 is changed to a cylinder head with coolant temperature measurement, the cylinder head cooling system contains a coolant temperature sensor on cylinder head no. 3 for engine temperature monitoring.

The coolant radiator is attached to the engine mount in front of the engine.

The system components are interconnected by rubber hoses which have a life time of five (5) years.

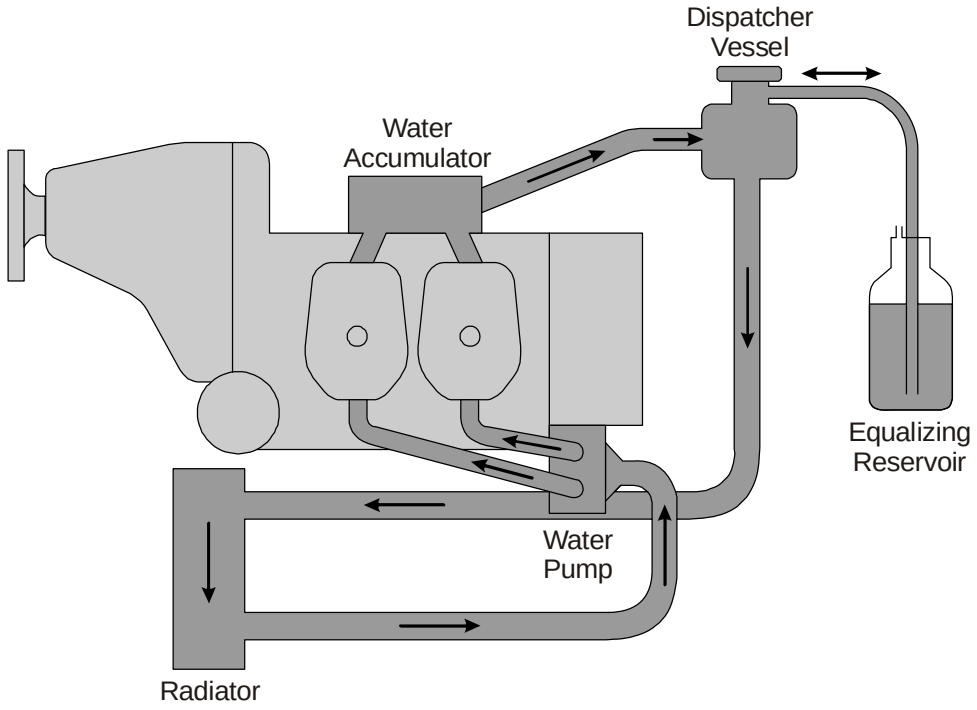

Figure 1: Coolant Circuit

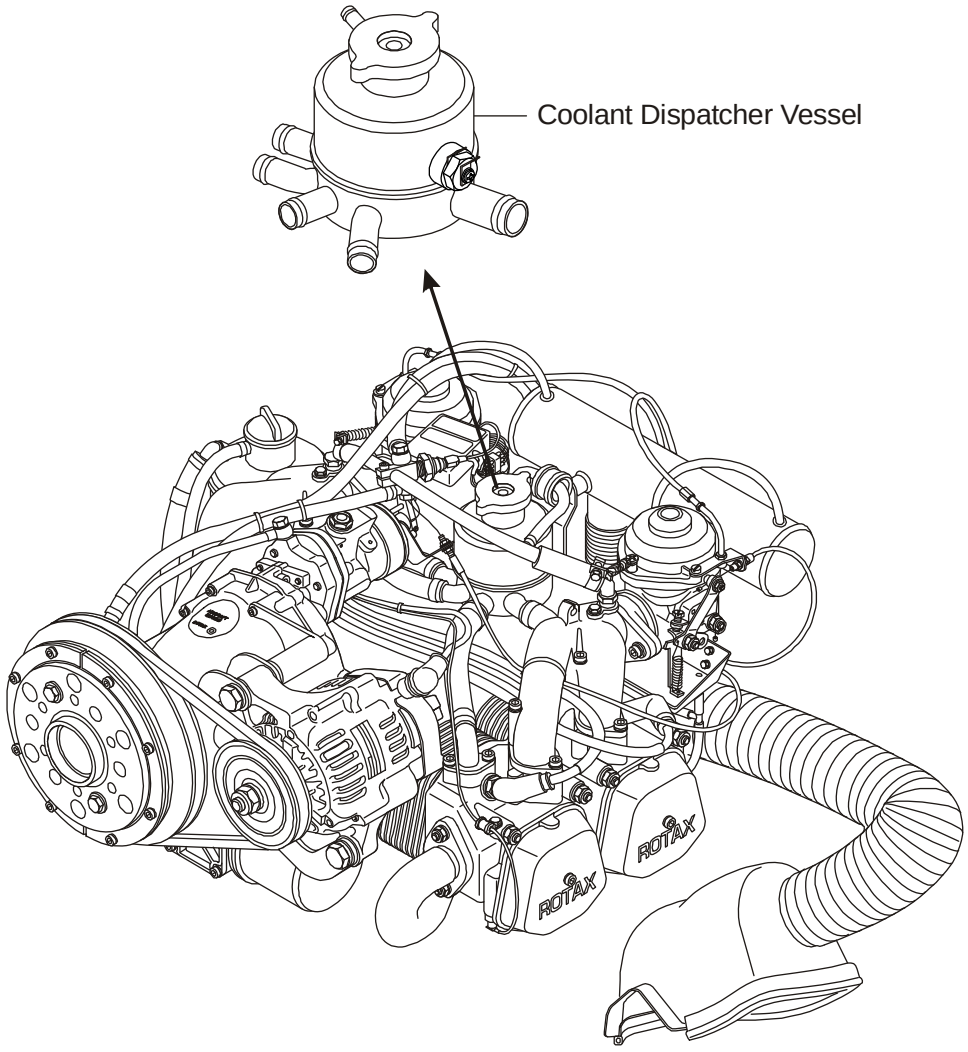

Figure 2: Dispatcher Vessel

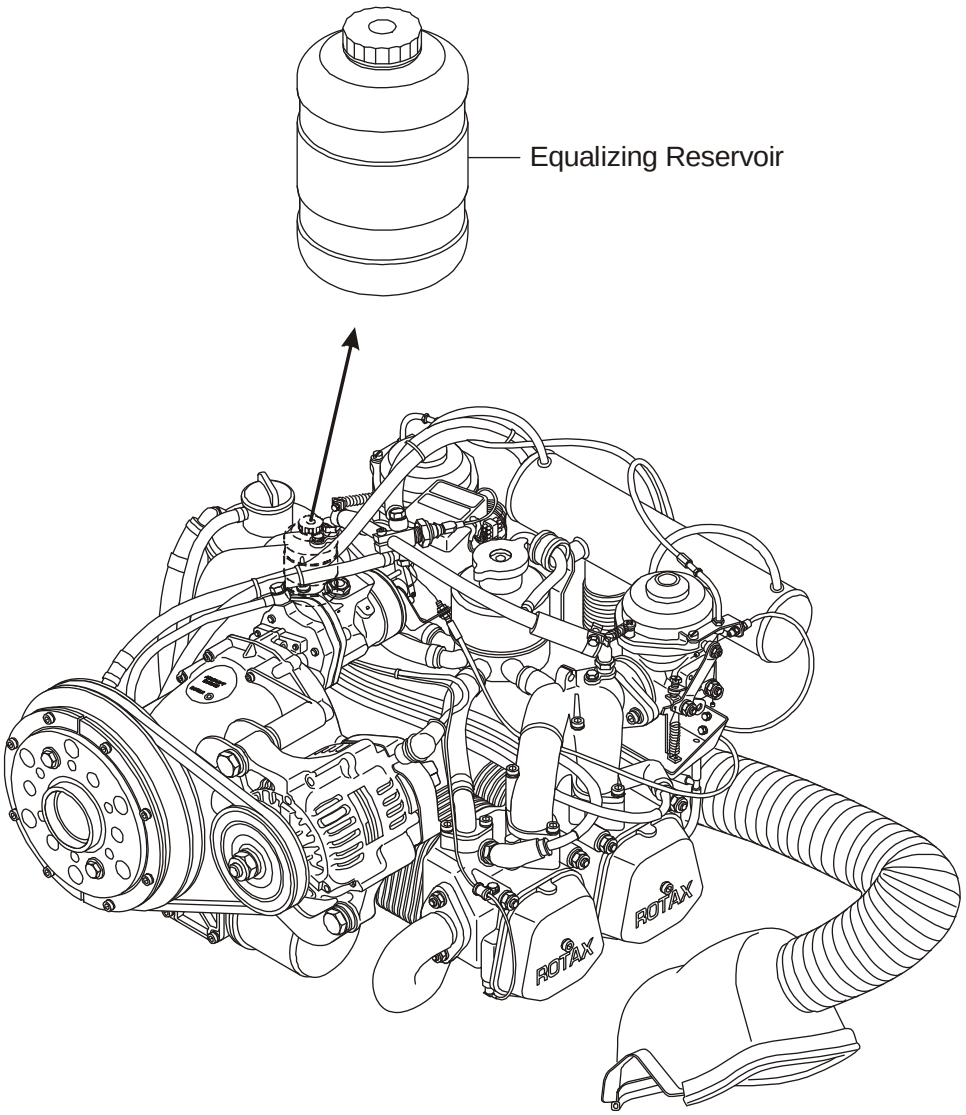

Figure 3: Equalizing Reservoir

2. Replenishing

For replenishing, refer to Sub-Chapter 12-10.

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ENGINE CONTROLS

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CHAPTER 76-10
ENGINE CONTROLS

1. General

The engine is controlled with the carburetor heat lever, propeller speed control lever, as well as by the throttle and the choke control. Bowden cables are used for the transmission of control movements. The bowden cables are sealed with a fire resistant compound as they pass through the firewall.

2. Description

A. Throttle

Operation of the throttle valve is controlled by the throttle control which is located in the center console. The bowden cables are attached to a lever under the instrument panel by clamps. The lever is connected to the throttle control via a rod with ball joints. The bowden cables are attached on the other end to the two carburetors using clamps. The bowden cable jackets are attached on both ends to a bracket and are adjustable on the carburetor side. The stop is located on the carburetor. In case of a malfunctioning of the throttle valve operating mechanism, a spring will position the throttle valve in the fully open position.

B. Choke

Operation of the rotary slide-valve starting carburetor is controlled by the choke control knob which is located on the center console, below the instrument panel.

The motion of the knob is transferred to the carburetor by a bowden cable. The bowden cable jacket is attached to the center console by a clamp. Next to the carburetor, it is held by an adjustable casing screw. The stop is located on the carburetor.

C. Carburetor Heat

By actuating the carburetor heat lever, a flap in the air distribution box is operated, and pre-heated air is directed to the carburetors to prevent icing. The carburetor heat lever is located in the center console. The motion of the lever is transferred to the flap by a bowden cable.

D. Propeller Speed Control

To adjust the propeller RPM, the propeller speed control lever located in the center console must be set. The movement of the lever is transferred to the control lever on the propeller governor via a bowden cable. This lever defines the control point by means of a slide valve.

E. Throttle Quadrant Friction Control

In the DV 20 KATANA, the levers for throttle, propeller speed, and carburetor heat can be arrested by turning the black knob on the right hand side of the center console in clockwise direction. The arresting is performed by clamping the friction washers installed on the lever axis.

3. Troubleshooting

The following table lists defects as they could appear on the engine controls, and their correction.

Complaint	Possible Cause	Repair
Engine is not controllable.	Broken bowden cable. Loose bowden cable connections. Jammed bowden cable.	Replace. Tighten. Replace.
Engine does not reach take off RPM.	Throttle valve does not reach stop. Propeller governor does not reach stop.	Adjust bowden cable. Adjust stop screw.
Poor action of friction brake in throttle quadrant.	Worn friction washers.	Replace.

4. Removal and Installation

A. Throttle Control Bowden Cables

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove engine cowlings.	
(2)	Remove instrument panel cover.	
(3)	Disconnect bowden cable clamps on carburetors.	
(4)	Disconnect bowden cable clamps on shift lever below instrument panel.	
(5)	Disconnect bowden cable jackets from brackets below instrument panel.	
(6)	Remove bowden cables by pulling rearward.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

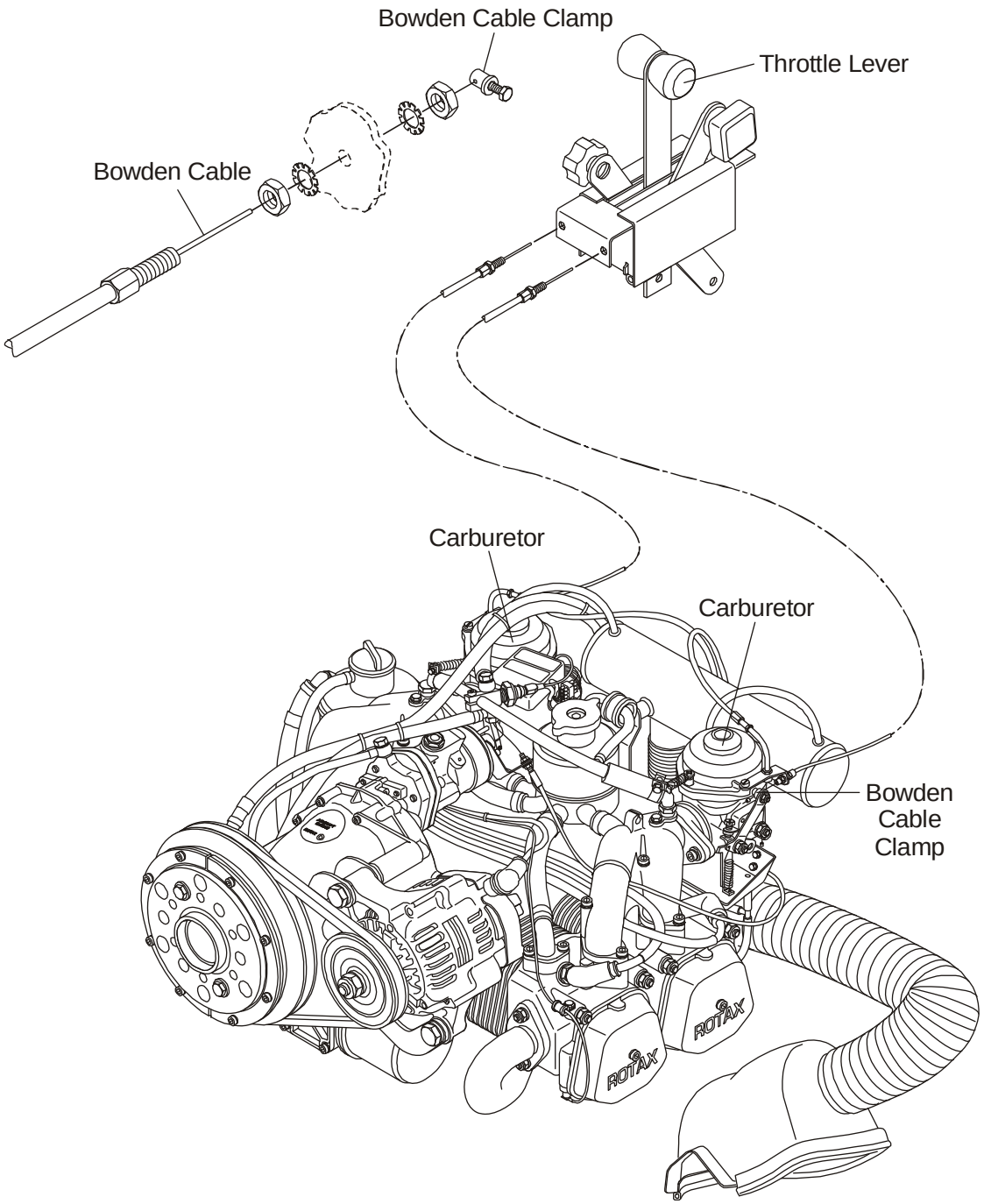

Figure 1: Throttle Control Bowden Cables

(3) Adjustment

To perform the initial idle speed adjustment, the idle speed adjustment screws must be turned back until the throttle valves have reached their limit position within the carburetors. Then the adjustment screws should be turned clockwise until a clearance of 0.1 mm (0.004") has been reached. Following that, both adjustment screws should be turned clockwise by 1 turn.

For carburetor synchronization refer to Chapter 71-00.

For adjustment of the bowden cables, move the throttle lever to the idle position. Move both levers located on the carburetors to idle position and tighten the bowden cable clamps.

For fine adjustment, the lock nuts located on the throttle/choke bowden cable bracket are adjusted. It must be ensured that when the throttle lever is in idle position, the levers on the carburetors are also in idle position without deforming the stop.

To verify the synchronous operation of both carburetors, the throttle lever should be moved to the full throttle position. When the throttle valve lever on one carburetor reaches the stop, the clearance between lever and stop on the other side should not exceed 1 mm (0.04").

B. Choke Bowden Cables

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove engine cowling.	
(2)	Remove instrument panel cover.	
(3)	Disconnect bowden cables from carburetors.	
(4)	Disconnect bowden cables from parallel guide on center console.	
(5)	Remove bowden cables by pulling rearward.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

(3) Adjustment

With the choke knob not pulled, it must be ensured that the levers on both starting carburetor housings reach their lower stop.

C. Carburetor Heat Bowden Cable

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove engine cowling.	
(2)	Loosen mounting hardware of throttle quadrant on the center console, and remove RH rotary knob.	
(3)	Disconnect bowden cable from flap actuating lever on air distribution box.	
(4)	Remove throttle quadrant from center console in upward direction.	
(5)	Disconnect bowden cable from carburetor heat lever.	
(6)	Remove bowden cable by pulling rearward.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

(3) Adjustment

Ensure that the flap for hot air in the air distribution box is closed (lower end of flap actuating lever on box full fwd.) when the carburetor heat control lever is in its full forward position.

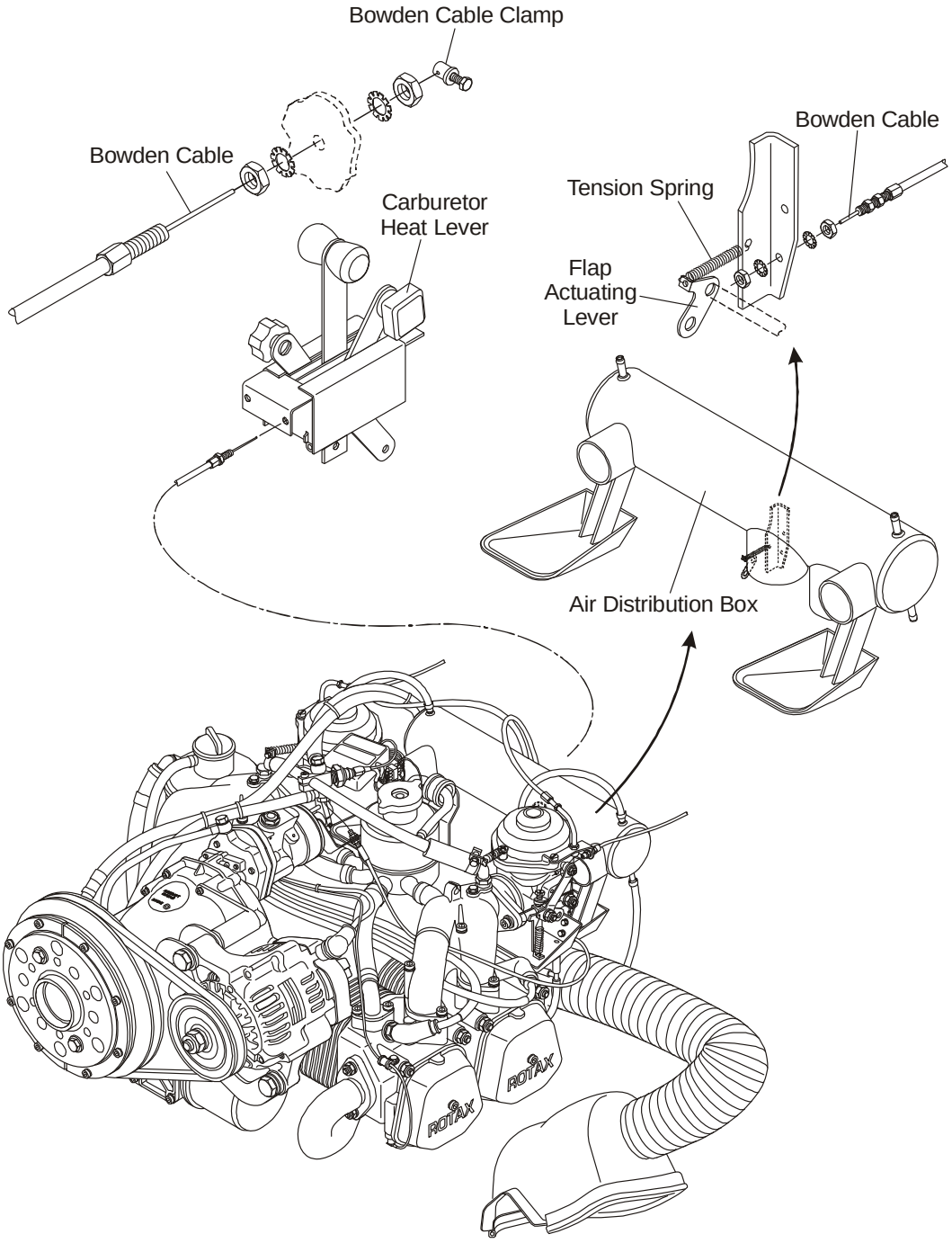

Figure 2: Flap Actuating Lever on Air Distribution Box

D. Propeller Speed Control Bowden Cable

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove engine cowling.	
(2)	Disconnect bowden cable from propeller governor.	
(3)	Loosen mounting hardware of throttle quadrant on the center console, and remove RH rotary knob.	
(4)	Remove throttle quadrant from center console in upward direction.	
(5)	Disconnect bowden cable from propeller speed control lever.	
(6)	Remove bowden cable by pulling rearward.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

(3) Adjustment

Ensure that the lever on the governor reaches its stop in pull-direction when the propeller speed control lever is in full forward position.

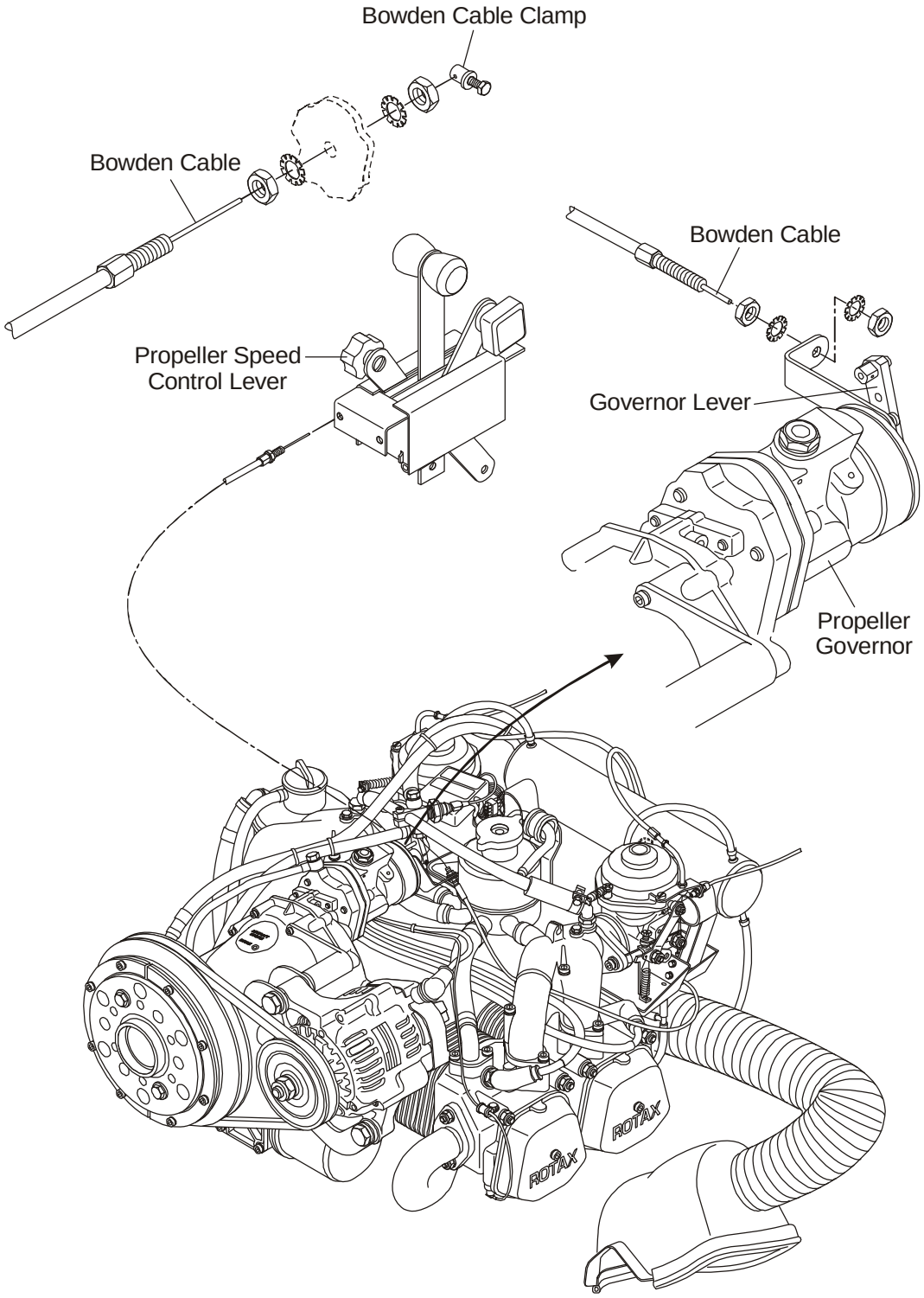

Figure 3: Lever on Propeller Governor

E. Throttle Quadrant Friction Control

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Remove rotary knob on RH side of center console.	
(2)	Remove washer springs and replace if required.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

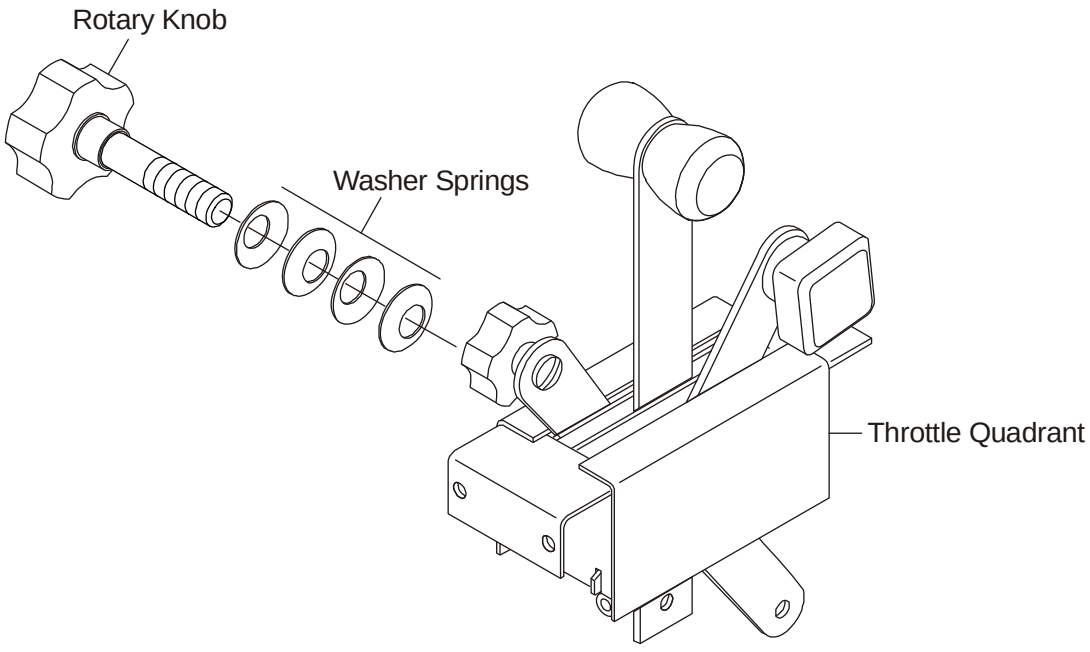

Figure 4: Throttle Quadrant

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CHAPTER 77

ENGINE INDICATING

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CHAPTER 77-00
ENGINE INDICATING

1. General

The engine indicating system includes the RPM indicator, the oil pressure and temperature indicators, the fuel pressure warning light, the cylinder head temperature indicator and the manifold pressure indicator, and if installed the control light for coolant quantity. The engine monitoring data is transmitted to the cockpit instrumentation partly electrically and partly mechanically.

2. Description

A. RPM Indicator

In the DV 20 KATANA the RPM indication is done by a mechanical system. The RPM indicated on the cockpit instrument is that of the propeller and not that of the engine.

B. Fuel Pressure Warning Light

The fuel pressure warning light is located in the center section of the instrument panel, and is activated by a pressure sensor located on the firewall. The pressure sensor operates on a piezoelectric crystal element which changes its resistance with pressure.

C. Oil Pressure Indicator

The oil pressure indicator is located in the right hand section of the instrument panel and receives its data from a pressure sensor located at the front of the engine. The sensor consists of a metal membrane whose movement is transferred to a resistor.

D. Oil Temperature Indicator

The oil temperature indicator is also located on the right hand section of the instrument panel and receives its data from a sensor which is located on the engine next to the oil filter. The temperature sensor transmits a voltage to the indicator.

E. Cylinder Head Temperature Indicator

The CHT indicator is located in the right hand section of the instrument panel. The temperature sensor is installed on cylinder No. 3 (right rear).

The sensor consists of an iron-copper-nickel element which generates a voltage which is transmitted to the indicator.

If an engine with suffix -01 is installed, or cylinder head no. 3 is changed to a cylinder head with coolant temperature measurement, the paragraph 'Cylinder Head Temperature Indicator' is changed as described in the paragraph below:

F. Coolant Temperature Indicator

The CT indicator is located in the right hand section of the instrument panel. The coolant temperature sensor is installed on cylinder no. 3 (right rear).

G. Manifold Pressure Indicator

The indicator is located in the right hand section of the instrument panel. A hose is attached to the equalizing pipe connecting the intake manifolds. This hose transmits the pressure value from the intake manifolds to the indicator.

H. Control Light for Coolant Quantity

The DV 20 KATANA may be equipped with a control light for coolant quantity. It is preferably located in the center console of the instrument panel and receives its data from a sensor located in the dispatcher vessel especially designed to hold this sensor. The control light will illuminate for about three second after switching on the battery/master switch (as a check for the light) and it will terminate illumination if the quantity of coolant in the dispatcher vessel is satisfactory. If the light does not terminate illumination, coolant in the dispatcher vessel has to be replenished. For replenishing coolant refer to Sub-Chapter 12-10.

3. Troubleshooting

The following table lists defects as they could appear on the engine indicating system, and their correction.

If an engine with suffix -01 is installed, the item 'No cylinder head temperature indication' is changed to 'No coolant temperature indication'.

Complaint	Possible Cause	Repair
No RPM indication.	Defective flexible shaft. Defective RPM indicator.	Replace. Replace.
Incorrect RPM indication.	Defective RPM indicator.	Replace.
No oil pressure indication.	Defective sensor. Defective indicator.	Replace. Replace.
Low oil pressure indication.	Low oil pressure. Clogged bore in sensor.	Check oil pressure using calibrated equipment. Replace sensor.
Fuel pressure warning light inoperative.	Defective sensor. Defective warning lamp. No fuel in system.	Replace. Replace. Refuel airplane, check fuel system.
High oil temperature indication.	Defective sensor. Defective wiring. Defective indicator. Use of non-approved motor oil.	Replace. Repair. Replace. Change motor oil.
No cylinder head temperature indication / No coolant temperature indication.	Defective sensor. Defective wiring. Defective indicator.	Replace. Repair. Replace.

Complaint	Possible Cause	Repair
No or high manifold pressure indication.	Defective or leaky manifold pressure line. Defective indicator.	Tighten clamps, replace line if necessary. Replace.

4. Removal and Installation

If an engine with suffix -01 is installed, the headline ‘Cylinder Head Temperature Indicator’ is changed to ‘Coolant Temperature Indicator’.

A. RPM Indicator

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect flexible shaft from rear of instrument.	
(2)	Remove nuts from mounting bracket.	
(3)	Remove instrument from panel.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

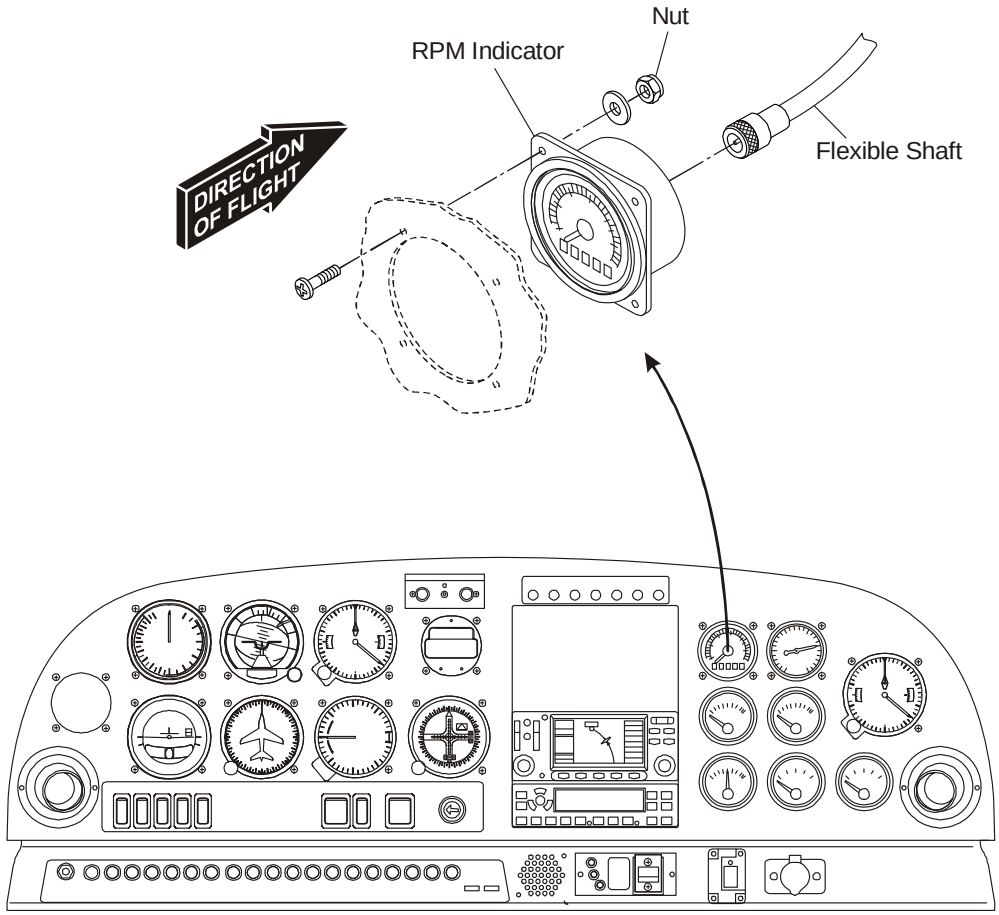

Figure 1: RPM Indicator

B. Fuel Pressure Warning Light

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Pull off connectors from rear of warning light.	
(2)	Remove mounting nut.	
(3)	Remove warning light from instrument panel.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

C. Control Light for Coolant Quantity

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Pull off connectors from rear of control light.	
(2)	Unscrew mounting socket.	
(3)	Remove control light from instrument panel.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

D. Oil Pressure Indicator

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Pull off connectors from rear of instrument.	
(2)	Remove nuts from mounting bracket.	
(3)	Remove instrument from panel.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

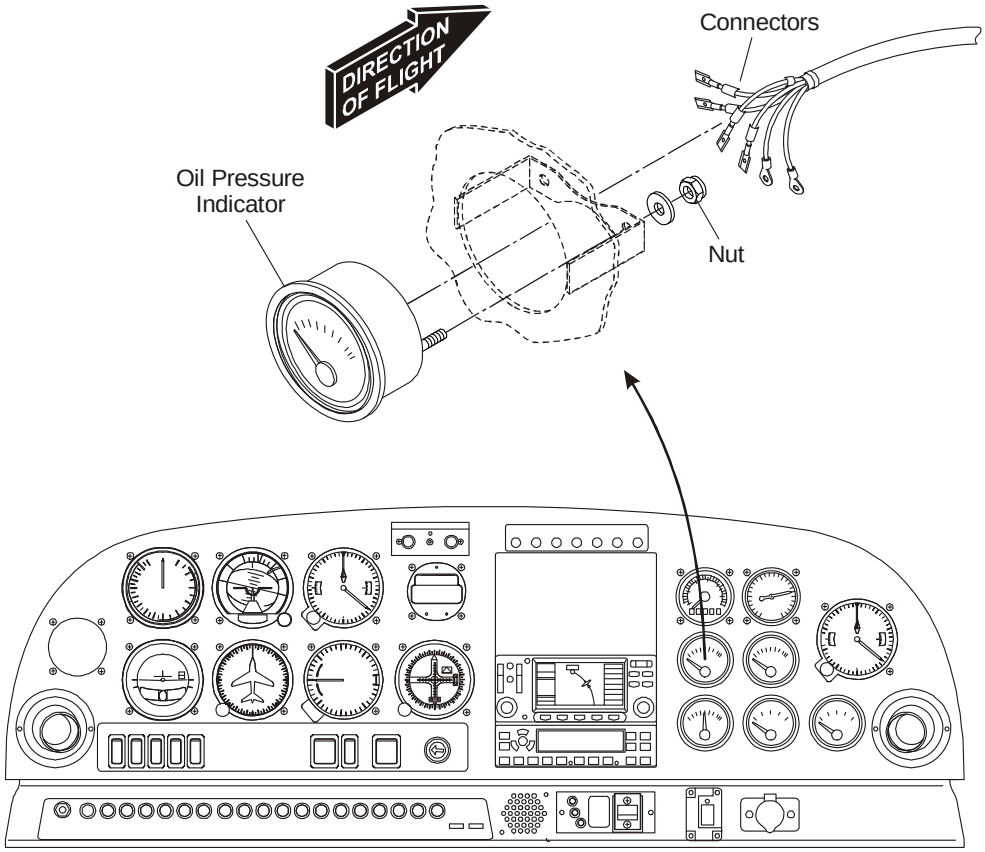

Figure 2: Oil Pressure Indicator

E. Oil Temperature Indicator

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Pull off connectors from rear of instrument.	
(2)	Remove nuts from mounting bracket.	
(3)	Remove instrument from panel.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

F. Cylinder Head Temperature Indicator / Coolant Temperature Indicator

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Pull off connectors from rear of instrument.	
(2)	Remove nuts from mounting bracket.	
(3)	Remove instrument from panel.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

G. Manifold Pressure Indicator

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Pull off connectors from rear of instrument.	
(2)	Remove mounting bolts and nuts.	
(3)	Remove instrument from panel.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence.	

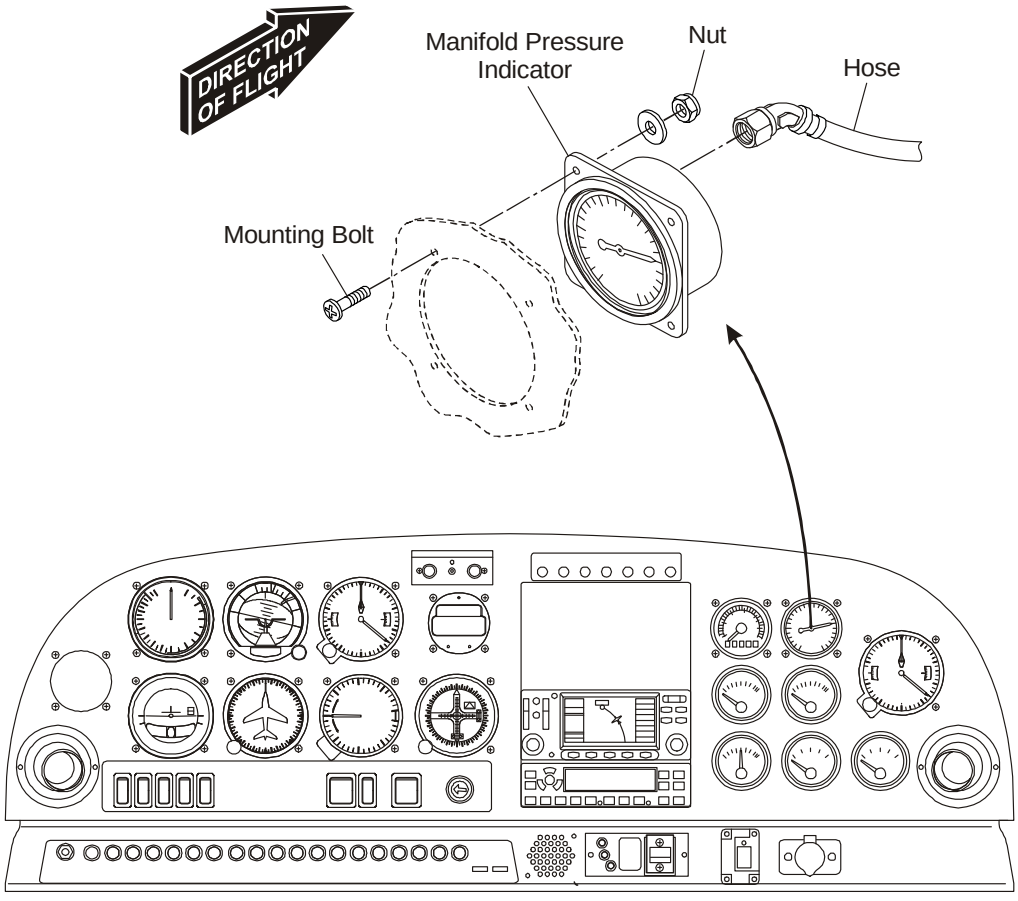

Figure 3: Manifold Pressure Indicator

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CHAPTER 78

EXHAUST

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CHAPTER 78-00
EXHAUST

1. General

Each of the engine cylinders is equipped with its own exhaust pipe leading to the underside of the engine, where they are attached to the muffler.

To enable a heat expansion of the exhaust system, the connections between muffler and pipes are movable and secured with two springs each. The end pipe runs to the exterior of the airplane through the lower engine cowling on the right hand side. A jacket around the muffler serves as a heat exchanger. It provides hot air for cabin heat and carburetor heat.

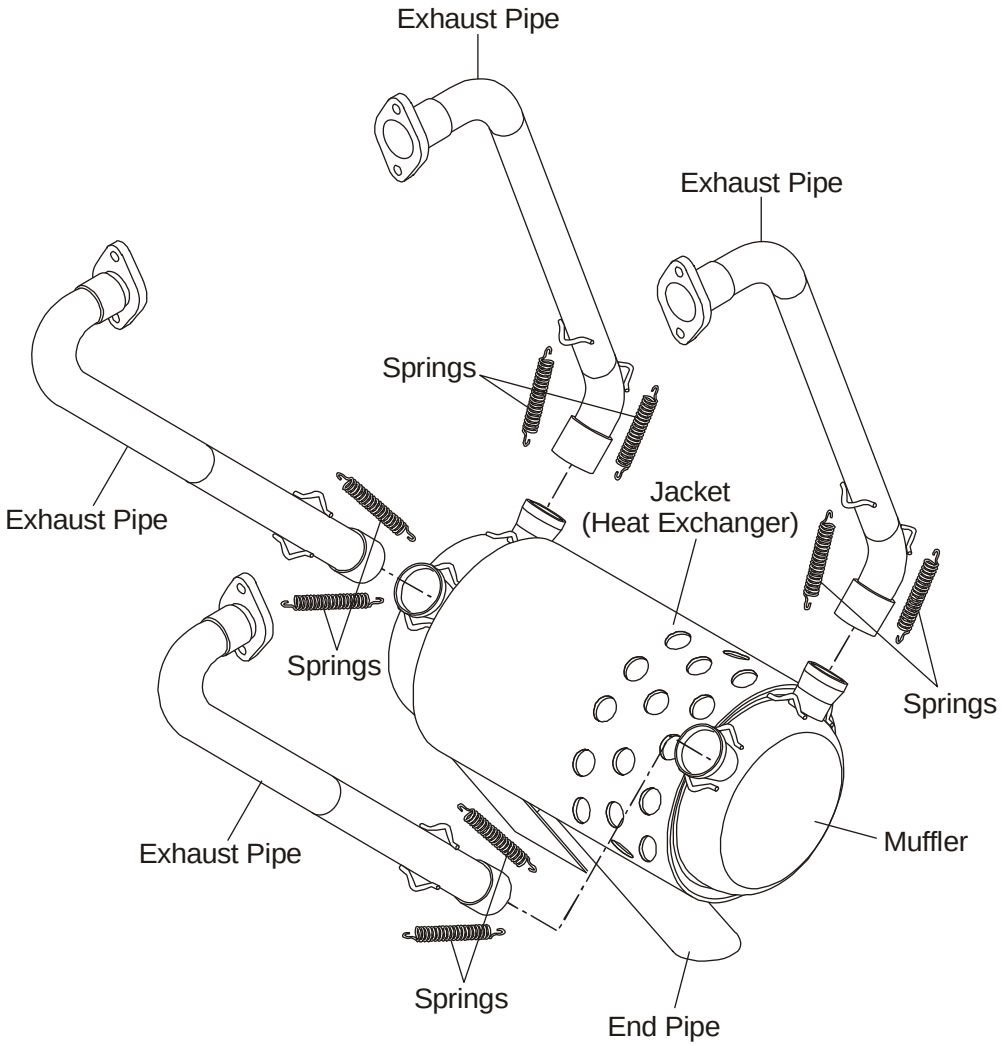

Figure 1: Exhaust System

2. Description

The exhaust pipes are fabricated of welded high-grade steel. They run from the cylinders to the underside of the engine where they are connected to the muffler. A heat exchanger surrounds the muffler. It heats fresh air collected from behind the coolant radiator. The heated air is directed to the cockpit by a hose. Another section of the heat exchanger provides hot air that is guided to the air distribution box.

3. Troubleshooting

The following table lists defects as they could appear on the exhaust system, and their correction.

Complaint	Possible Cause	Repair
Excessive engine noise	Defective muffler.	Replace.
Cracks in muffler	Locked up stress in muffler.	Weld or replace muffler.
Exhaust gas in cockpit	Cracks in muffler.	Weld or replace muffler.
Traces of exhaust gas on cylinder	Defective gasket on cylinder or exhaust pipe. Bent flange.	Replace. Replace pipe.

4. Removal and Installation

(1) Removal

Detail Steps/Work Items		Key Items/References
(1)	Disconnect air hoses from heat exchanger.	
(2)	Remove all nuts securing the exhaust pipes to the cylinder heads.	
(3)	Remove complete exhaust system from engine.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence. Use new gaskets on pipe connections to cylinder heads.	

5. Inspection

The exhaust system should be inspected for leaks every 200 hours. This test can be performed without removal of system components. To perform this test, loosen the mounting screws of the heat exchanger and inspect the muffler for cracks and corrosion.

The weld seams are especially susceptible to cracks through which dangerous carbon monoxide can enter the cabin.

If there is suspicion of leakage, the cabin should be checked for contamination using a gas-detector apparatus. The maximum permissible level of carbon monoxide contamination is 50 ppm (parts per million). In the event that there is no gas-detector apparatus available, the muffler should be closed off and checked by application of compressed air. The outside surface of the muffler should be coated with a soap solution, which will show bubbles where cracks exist. Small cracks can be repaired by welding, while in the event that major damage has been found, the muffler should be replaced.

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CHAPTER 79

OIL

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CHAPTER 79
OIL COOLING

1. General

This chapter describes the lubrication system which is located outside of the engine.

For a detailed description of the engine lubrication system refer to documentation of the engine manufacturer.

The DV 20 KATANA is equipped with an oil radiator attached to the engine mount on the right hand engine side and connected to the engine with oil lines. An opening in the lower engine cowling supplies ram air to the oil radiator.

The oil tank is attached to the engine mount on the right hand side of the engine. Hot oil from the crankcase is directed to the oil tank. The output port of the oil tank is connected to the oil radiator. The oil tank is accessible with the engine cowling installed through an inspection hole. This arrangement enables easy checking of the oil level.

2. Description

The hot oil is directed from the crankcase to the oil tank from where it flows to the oil radiator and on to the oil pump.

A temperature sensor is installed next to the oil filter. This sensor is connected to the oil temperature indicator.

An oil pressure sensor is installed opposite to the oil filter. It is connected to the oil pressure indicator.

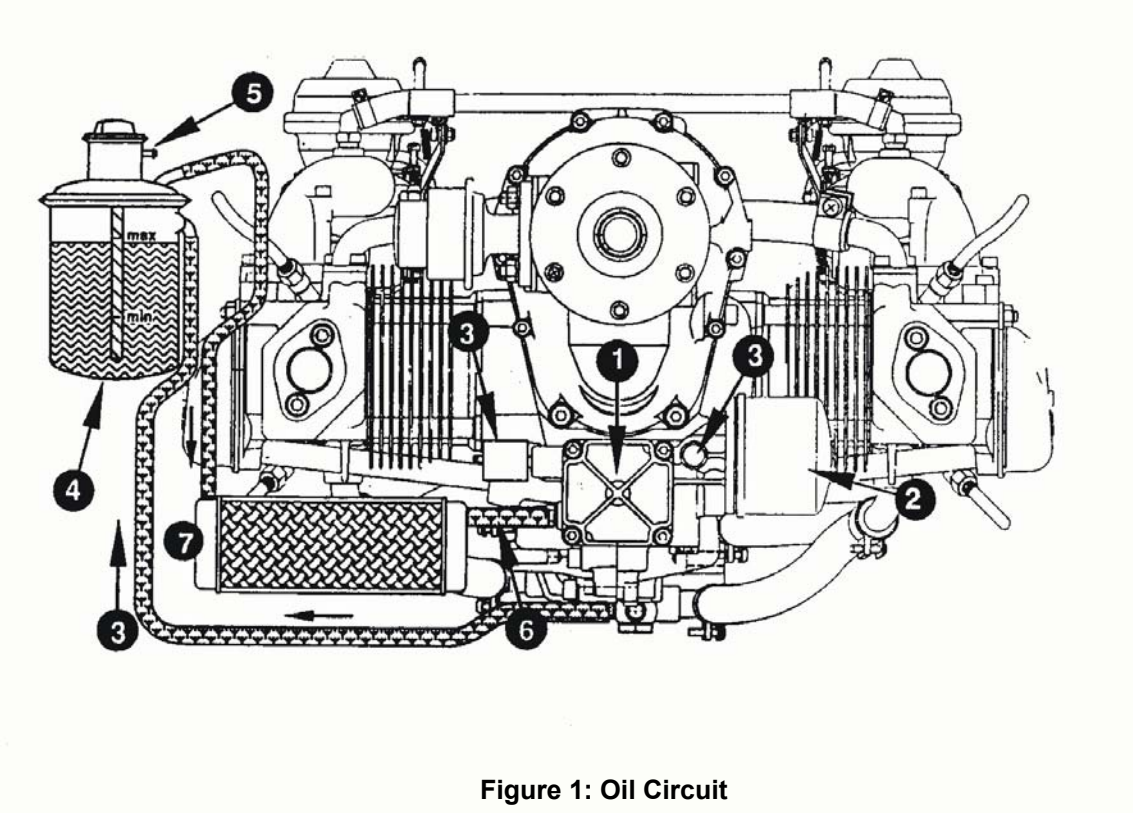

Figure 1: Oil Circuit

LEGEND

1 oil pump	6 oil feed line
2 oil filter	7 oil radiator
3 oil temp. sensor	8 oil return line
4 oil tank	9 oil pressure sensor
5 oil tank venting	

Section 79-21
OIL RADIATOR

1. General

The oil radiator is located on the lower right side of the engine, attached to the engine mount. The oil radiator has two threaded connection sleeves to which the oil lines are attached. The sleeves are also used to secure the radiator to the engine mount. Attached to the radiator is an air guide whose opening ends in the opening of the engine cowling.

2. Troubleshooting

The following table lists defects as they could appear on the oil cooling system, and their correction.

Complaint	Possible Cause	Repair
Excessive oil temperature.	Damaged radiator fins. Inhibited air flow.	Replace radiator. Check for foreign objects.
Leaks in oil cooling system.	Defective hose connections or radiator.	Check connections and radiator.

3. Removal and Installation

A. Oil Radiator

(1) Removal

	Detail Steps/Work Items	Key Items/References
(1)	Disconnect hose lines from radiator ports.	
(2)	Straighten locking plates on hose connectors.	
(3)	Remove mounting nuts.	
(4)	Remove oil radiator.	

(2) Installation

	Detail Steps/Work Items	Key Items/References
(1)	For installation reverse the sequence.	
	Note: Use new locking plates!	
	Note: In the event that the engine has to be disassembled due to metal particles detected during an oil filter change, the oil radiator must be replaced.	

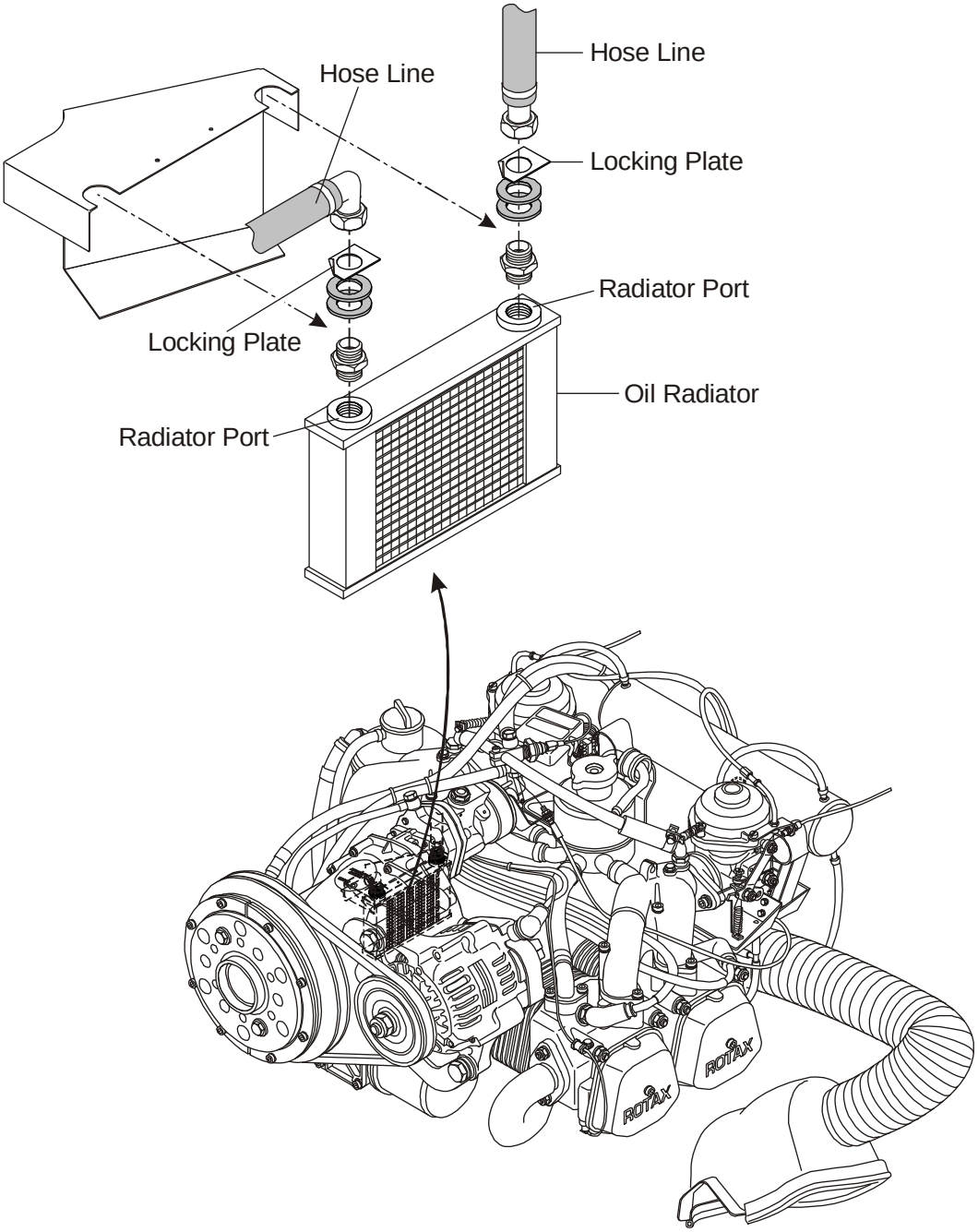

Figure 1: Oil Radiator

Section 79-30
INDICATING

1. General

The DV 20 KATANA is equipped with an oil pressure and an oil temperature sensor for monitoring the lubrication system.

The oil temperature sensor is attached next to the oil filter, while the oil pressure sensor is located opposite of the oil filter.

Both sensors operate electrically and transmit their data to the instruments located in the instrument panel.

A. Oil Temperature Sensor

The oil temperature sensor uses a resistor element and is supplied with onboard power.

B. Oil Pressure Sensor

The oil pressure sensor is a membrane type sensor with integrated potentiometer. The sensor is supplied with onboard power.

The built in membrane consists of a metal which is resistant to aging. Located on the top side of the sensor is a vent bore which is protected by a plastic cap.

2. Troubleshooting

The following table lists defects as they could appear on the oil cooling system, and their correction.

Complaint	Possible Cause	Repair
No oil temperature indication.	Defective wiring or connector.	Check wiring and connector.
	Defective sensor.	Replace sensor.
No oil pressure indication.	Defective wiring or indicator.	Check wiring and connector.
	Clogged bore on sensor.	Replace sensor.
	Clogged vent bore on senor.	Replace sensor.
	Defective sensor.	Replace sensor.

3. Removal and Installation

A. Oil Temperature Sensor

(1) Removal

	Detail Steps/Work Items	Key Items/References
(1)	Disconnect wiring.	
(2)	Remove sensor using suitable tool.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence. When installing a new seal, the sensor is to be turned until the torque increases perceptibly, and then by another 135° (3/8 revolutions). The proper torque for the cable connector is 1 Nm (0.74 lbs.ft.).	

Figure 1: Oil Temperature Sensor and Oil Filter

B. Oil Pressure Sensor

(1) Removal

	Detail Steps/Work Items	Key Items/References
(1)	Disconnect wiring.	
(2)	Remove sensor.	

(2) Installation

Detail Steps/Work Items		Key Items/References
(1)	For installation reverse the sequence. When installing the sensor, a suitable sealing compound must be used (e.g. Crane-pac Plastic Lead Seal No. 2). Max. torque of sensor in engine block: 30 Nm (22.1 lbs.ft.). Proper torque of cable connector: 1 Nm (0.74 lbs.ft.).	

(3) Testing

The oil pressure sensor changes its resistance with increase of pressure. It can be checked using the following table

Pressure [bar]	Pressure [psi]	Resistance[Ω]
0	0	10 + 3/- 5
2	29	52 ± 4
4	58	88 ± 4
6	87	124 ± 5
8	116	155 ± 5

In the event that the sensor fails to reach these values, it must be replaced.

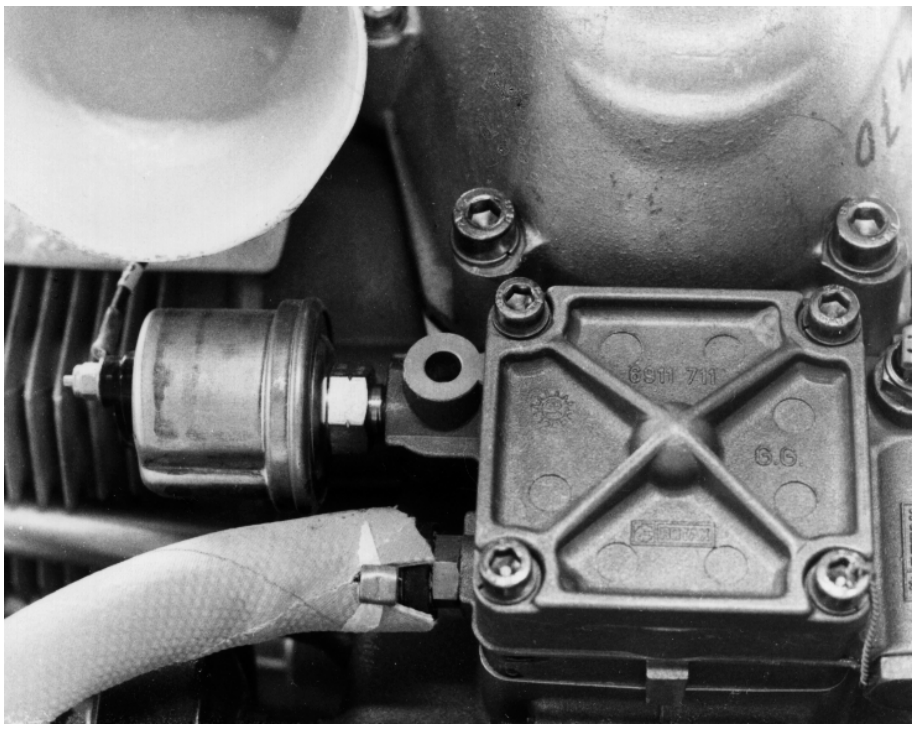

Figure 2: Oil Pressure Sensor

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WIRING DIAGRAMS

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CHAPTER 92
WIRING DIAGRAMS

1. General

This Chapter contains the wiring diagrams for each system. The wiring diagrams use the ATA Chapter/Section numbering system.

If an engine with suffix -01 is installed, the items ‘Cylinder head temperature indicator’ and ‘Cylinder head temperature’ are changed to ‘Coolant temperature indicator’ and ‘Coolant temperature’.

Title	Drawing No.	Date	Rev. No.
VHF NAV/COMM KX 125	01-2310-14-1.1	19.05.93	0
VHF NAV/COMM KX 125 MIC CIRCUIT	01-2310-14-1.2.1	19.05.93	0
VHF NAV/COMM KX 125 MIC RELAY CIRCUIT	01-2310-14-1.2.2	19.05.93	0
VHF NAV/COMM KX 125 MIC-VOX ICS AA80	01-2310-14-1.2.3	19.05.93	0
VHF COMM AR3201-(.) COMM TRANSCEIVER	01-2310-14-2.1	21.05.93	0
VHF COMM AR3201-(.) ICS Switching	01-2310-14-2.2	21.05.93	0
Audio Integration, Cabin Audio General	01-2350-14-1.1	14.03.93	0
Audio Integration, Cockpit Audio Becker	01-2350-14-1.2	14.03.93	0
Audio Integration, Cockpit Audio King	01-2350-14-1.3	14.03.93	0
Electrical Wiring Diag.Engine Compartm.	01-2400-14-1-sheet 1	30.05.93	3
Electrical Wiring Diag.Engine Compartm.	01-2400-14-1-sheet 2	30.05.93	3
Electrical Wiring Diag.Flight Compartm. (SB 20-30)	01-2400-14-1a-sheet 2	06.09.96	3
Electrical Power, Simplified Schematic	01-2400-14-2	15.03.93	1
Electrical Power, Simplified Schematic (SB 20-30)	01-2400-14-2a	06.09.96	1
Electr. Power Distr., Simpl. Schematic	01-2450-14	30.05.93	1
Electr. Power Distr., Simpl. Schematic (SB 20-30)	01-2450-14a	06.09.96	1
Flaps Control Circuit	01-2750-14-1	30.05.93	1

Title	Drawing No.	Date	Rev. No.
Position and Strobe Lights	01-3340-14-1	30.05.93	1
ADF KR 87/K1227	01-3431-10	20.02.95	0
ELT E-01	01-3440-10	25.07.95	0
NAV Receiver NR3301-(1)/IN3301-(4)	01-3451-14-2.1.1	12.05.93	0
NAV Receiver NR3301-(2)	01-3451-14-2.2.1	12.05.93	0
NAV Receiver NR3301-(S)	01-3451-14-2.3.1	12.05.93	0
Transponder/Alt. Dig. KT76A/SSD120-XX	01-3452-10	20.07.95	0
Transponder/Alt. Dig. KT76A/D120-P2-T	01-3452-14-1	12.03.93	0
Transponder/Alt. Dig. ATC2000/D120-P2-T	01-3452-14-2	21.05.93	0
Transponder/Alt. Dig. ATC2000/SSD120-XX	01-3452-20	20.07.95	0
Garmin GPS 100	01-3457-14-1	21.05.93	0
Garmin GPS 150	01-3457-14-2	21.06.95	0
Electrical Wiring Diag. Engine Compartm	820-2400-00-00-sheet 1	19.10.99	0
Electrical Wiring Diag. Flight Compartm.	820-2400-00-00-sheet 2	17.10.99	0
Schematic, Avionics Cooling	D20-9221-20-01	22.06.12	A
Schematic, SL 30 & GI 106A Wiring	D20-9223-10-01	06.07.09	-
Schematic, ICS Wiring	D20-9223-50-01	22.06.12	B
Schematic, Electrical System	D20-9224-30-01	22.06.12	A
Schematic, ELT ME 406 Wiring	D20-9225-60-01	09.08.11	A
Schematic, Flaps Wiring	D20-9227-50-01	07.07.11	A
Schematic, Fuel System Wiring	D20-9228-20-01	18.05.09	-
Schematic, Pitot Heat Wiring	D20-9230-30-02	30.05.12	-
Schematic, Clock/OAT Wiring	D20-9231-20-01	07.07.11	A
Schematic, Caution & Warning	D20-9231-50-01	16.08.11	A
Schematic, Instrument Floodlight Wiring	D20-9233-10-01	30.05.12	-
Schematic, Instrument Panel Light	D20-9233-10-05	03.12.12	A
Schematic, Position Light and ACL Wiring	D20-9233-40-01	17.06.09	-
Schematic, Artificial Horizon Wiring	D20-9234-10-01	08.08.11	A

Title	Drawing No.	Date	Rev. No.
Schematic, Directional Gyro Wiring	D20-9234-10-02	18.06.12	A
Schematic, Turn & Bank Wiring	D20-9234-10-03	06.06.12	A
Schematic, GPSMAP Wiring	D20-9234-50-08	07.07.09	-
Schematic, GNS 430 & GI 106A Wiring	D20-9234-50-15	11.06.12	A
Schematic, GTX 328 Wiring	D20-9234-50-18	09.08.11	A
Schematic, Oil Pressure Indicator Wiring	D20-9279-30-01	11.06.12	A

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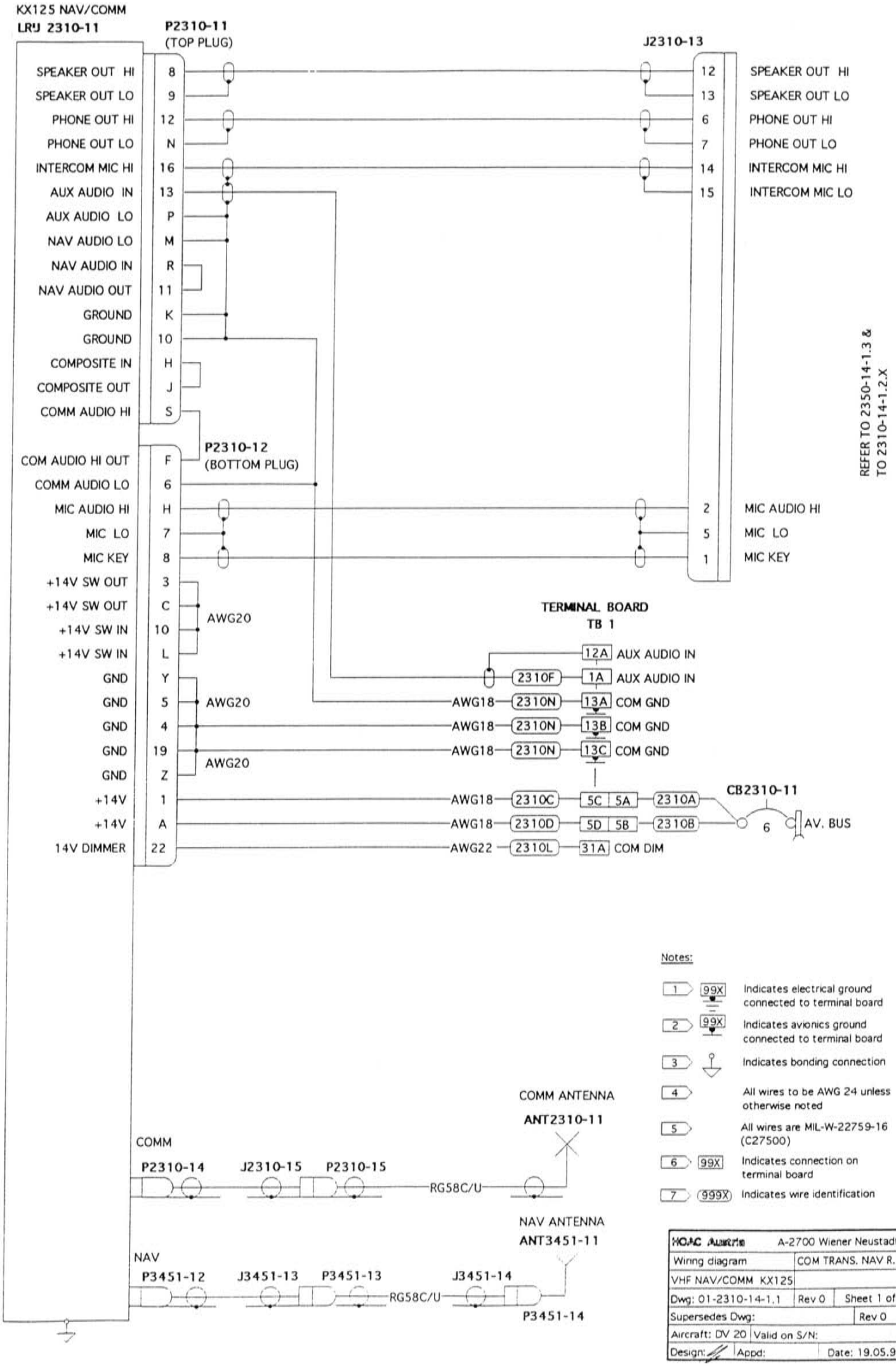
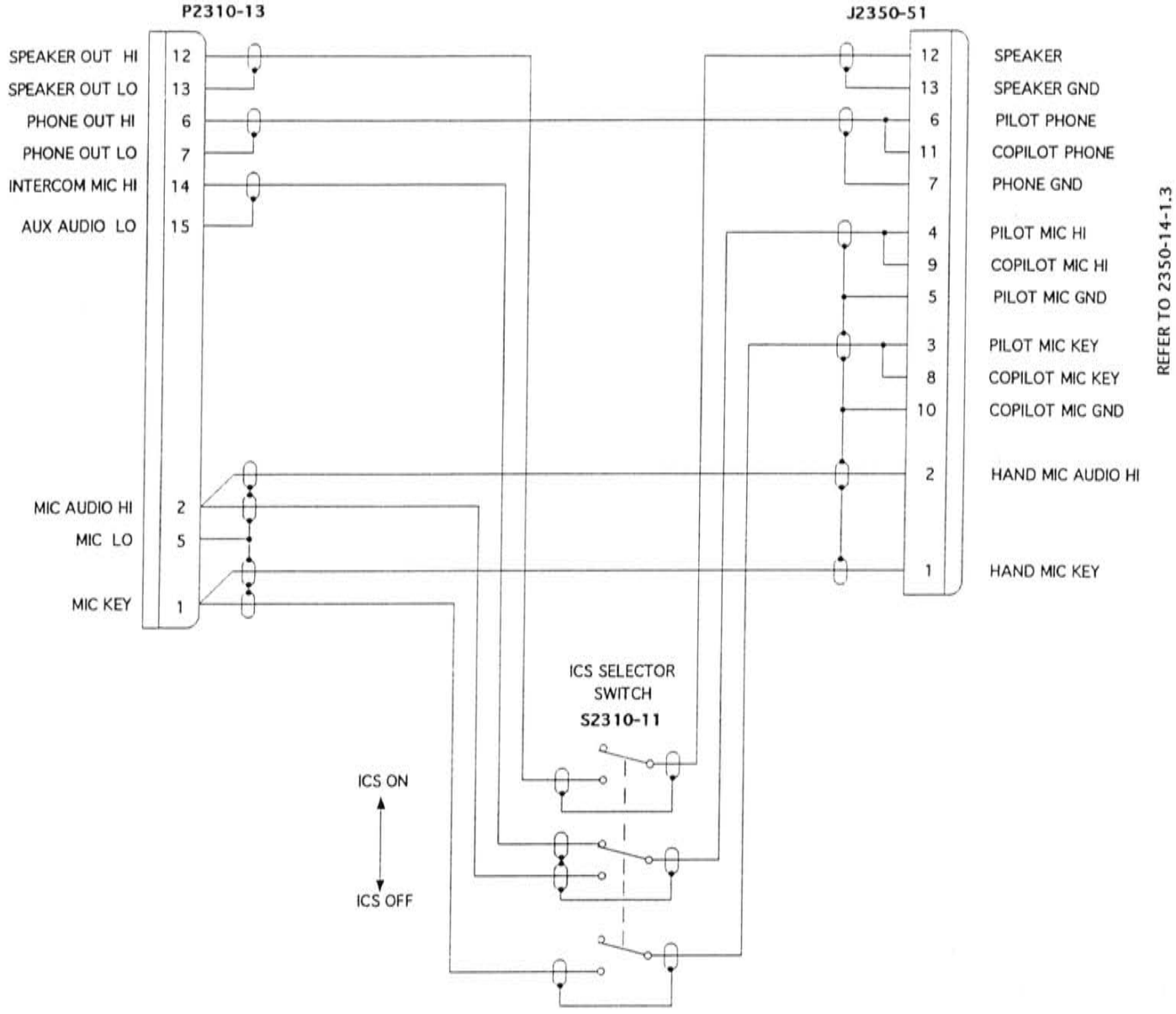


Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. (999X) — Indicates wire identification

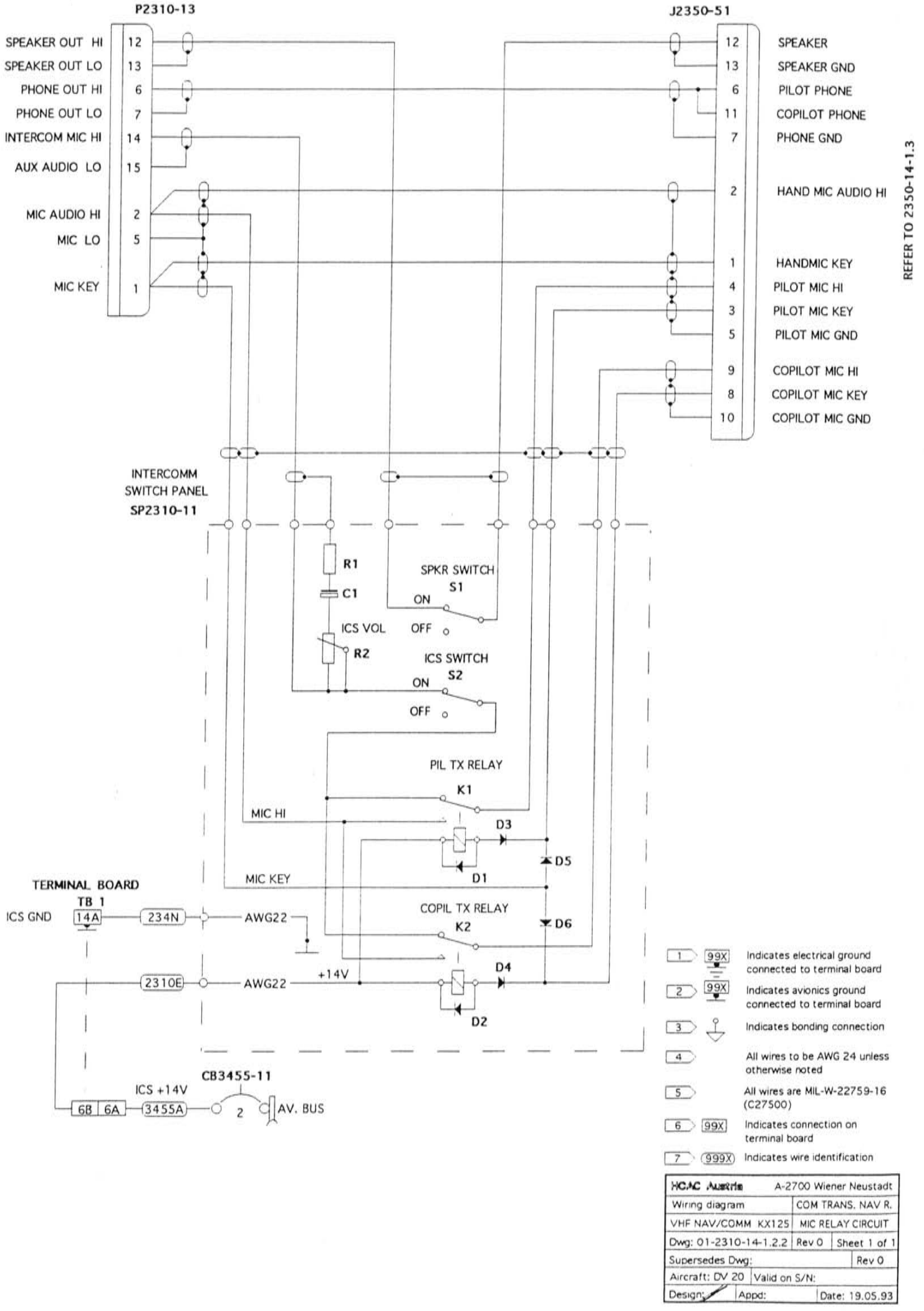
HOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	COM TRANS. NAV R.	
VHF NAV/COMM KX125		
Dwg: 01-2310-14-1.1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 19.05.93



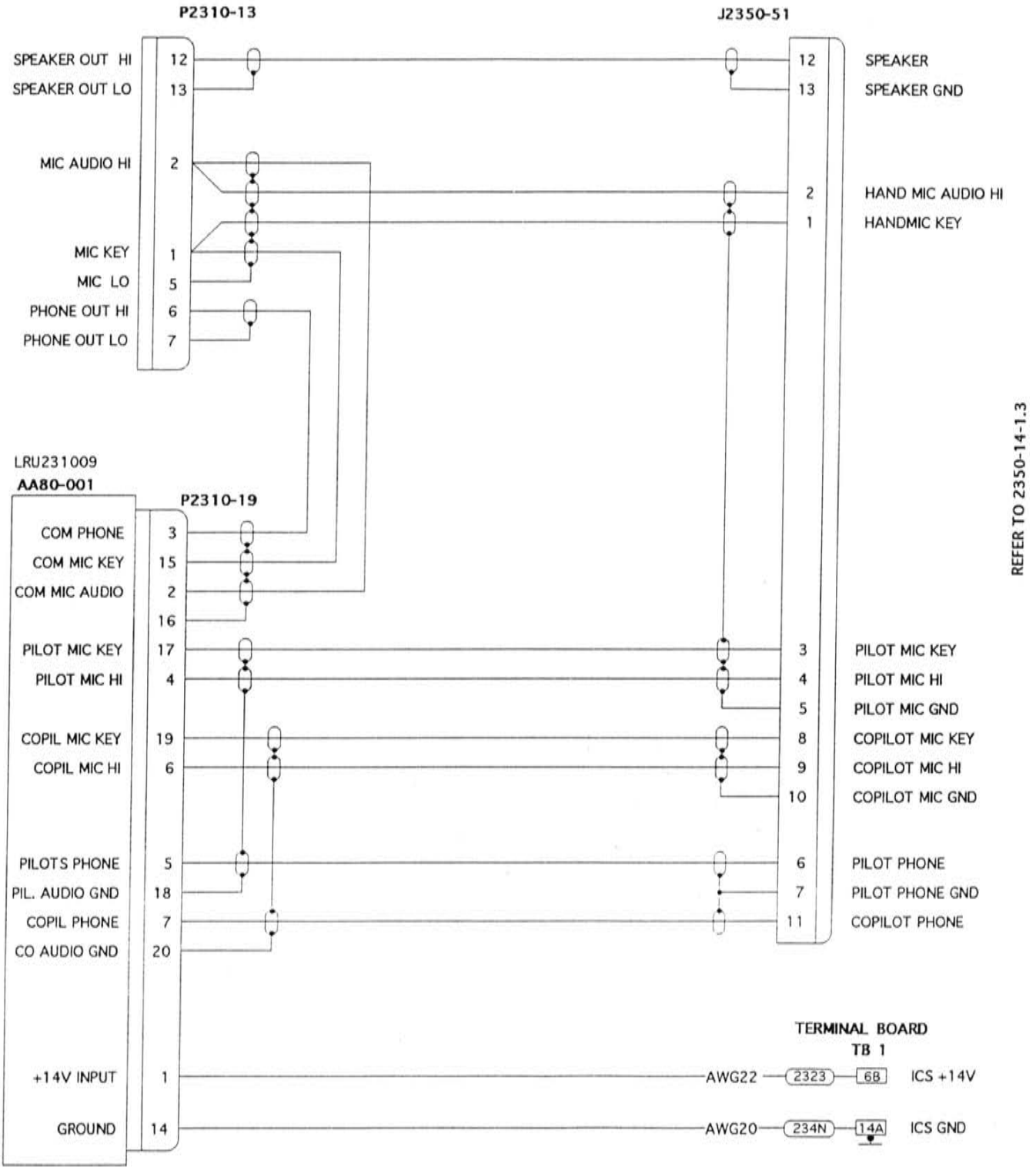
NOTE:
No xmit mode possible when S2310-11 is in ICS ON position.

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. 999X — Indicates wire identification

~~KCAC Austria~~ A-2700 Wiener Neustadt		
Wiring diagram	COM TRANS, NAV R,	
VHF NAV/COMM KX125	MIC CIRCUIT	
Dwg: 01-2310-14-1,2,1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 19.05.93



HCAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	COM TRANS. NAV R.	
VHF NAV/COMM KX125	MIC RELAY CIRCUIT	
Dwg: 01-2310-14-1.2.2	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 19.05.93



1 99X Indicates electrical ground connected to terminal board

2 99X Indicates avionics ground connected to terminal board

3 Indicates bonding connection

4 All wires to be AWG 24 unless otherwise noted

5 All wires are MIL-W-22759-16 (C27500)

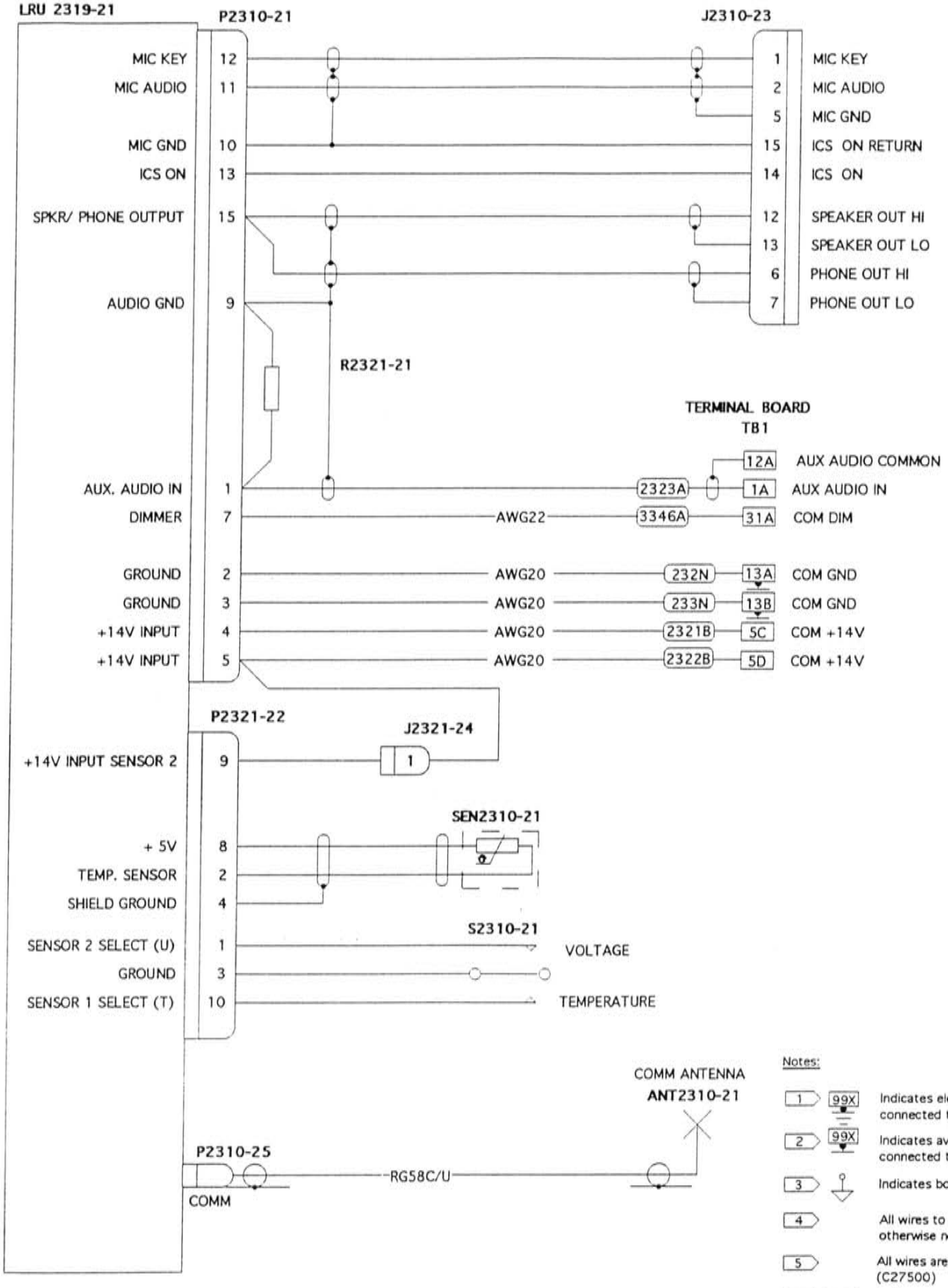
6 99X Indicates connection on terminal board

7 999X Indicates wire identification

KCAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	COM TRANS. NAV R.	
VHF NAV/COMM KX125	MIC - VOX ICS	
Dwg: 01-2310-14-1.2.3	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 19.05.93

AR3201-(.) COMM TRANSCEIVER

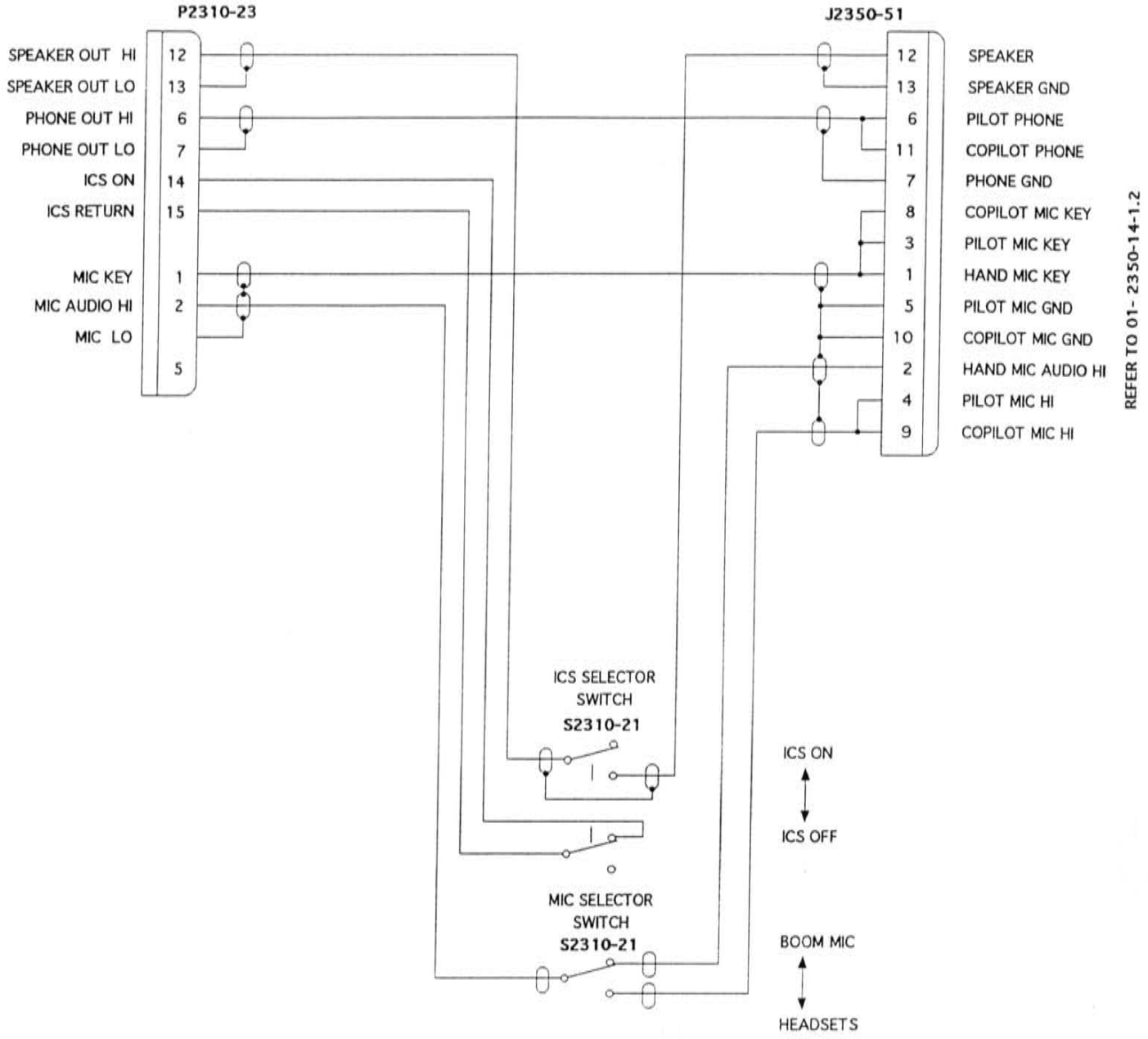
LRU 2319-21



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. 999X — Indicates wire identification

MOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	COM TRANSCEIVER	
VHF COMM AR3201(.)		
Dwg: 01-2310-14-2.1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 21.05.93



NOTE:
No xmit mode possible when S2310-11 is in ICS ON position.

1 99X — Indicates electrical ground connected to terminal board

2 99X — Indicates avionics ground connected to terminal board

3 — Indicates bonding connection

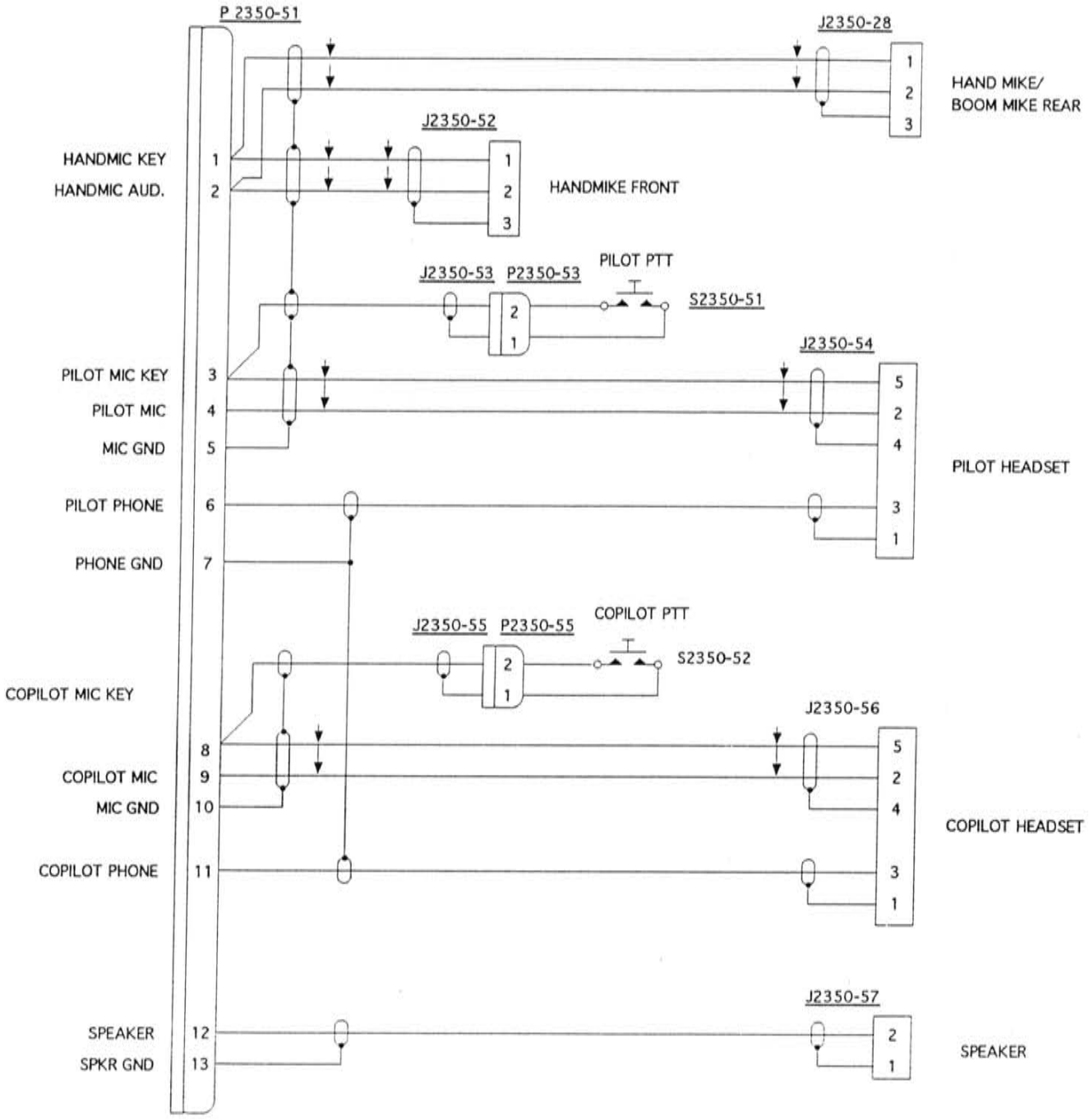
4 — All wires to be AWG 24 unless otherwise noted

5 — All wires are MIL-W-22759-16 (C27500)

6 99X — Indicates connection on terminal board

7 999X — Indicates wire identification

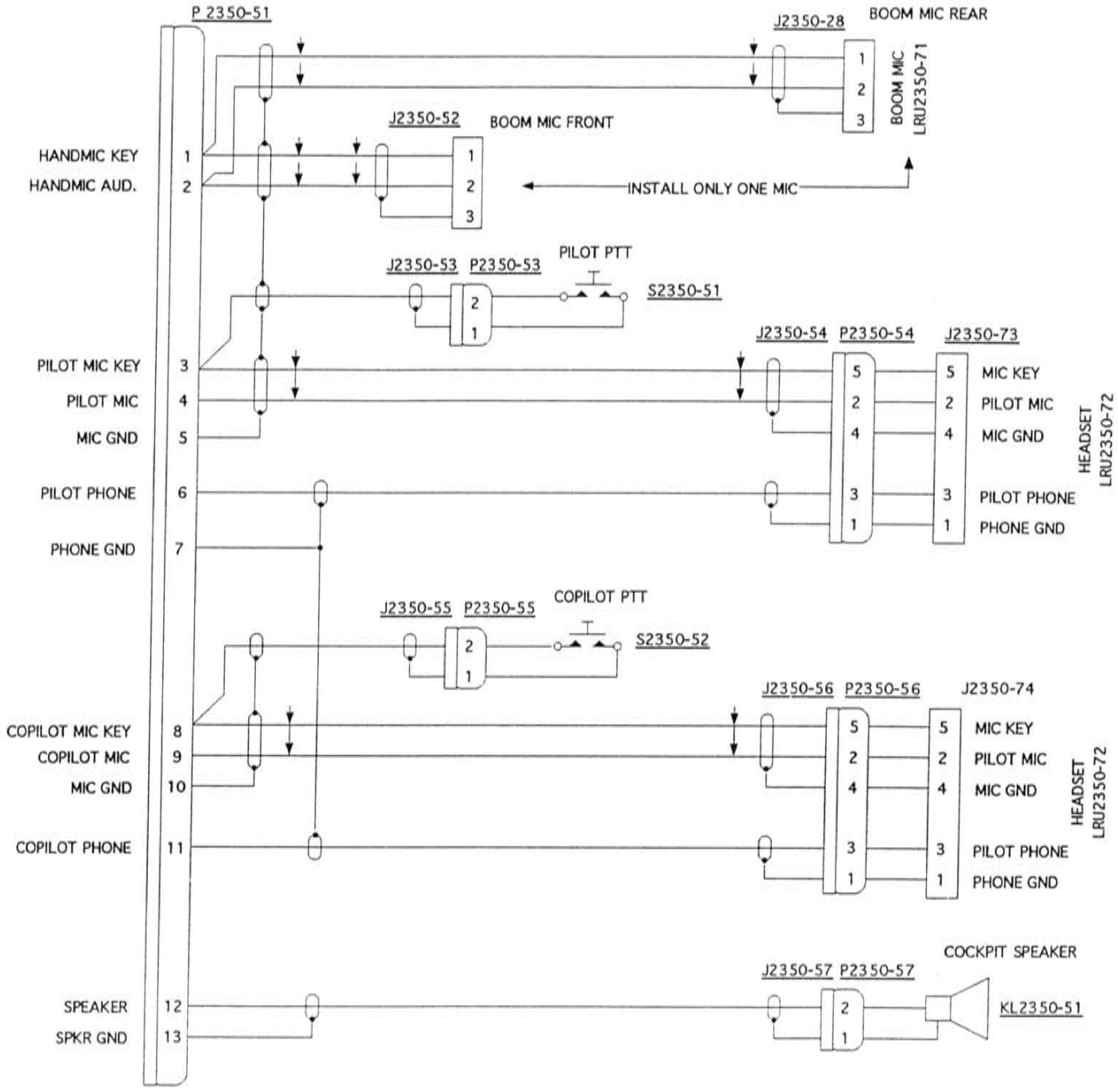
HCAC Austria A-2700 Wiener Neustadt		
Wiring diagram	COM TRANSCEIVER	
VHF COMM AR3201(.)	ICS SWITCHING	
Dwg: 01-2310-14-2.2	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 21.05.93



Notes:

1. Indicates electrical ground
2. Indicates avionics ground
3. Indicates bonding connection
4. All wires to be AWG24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)

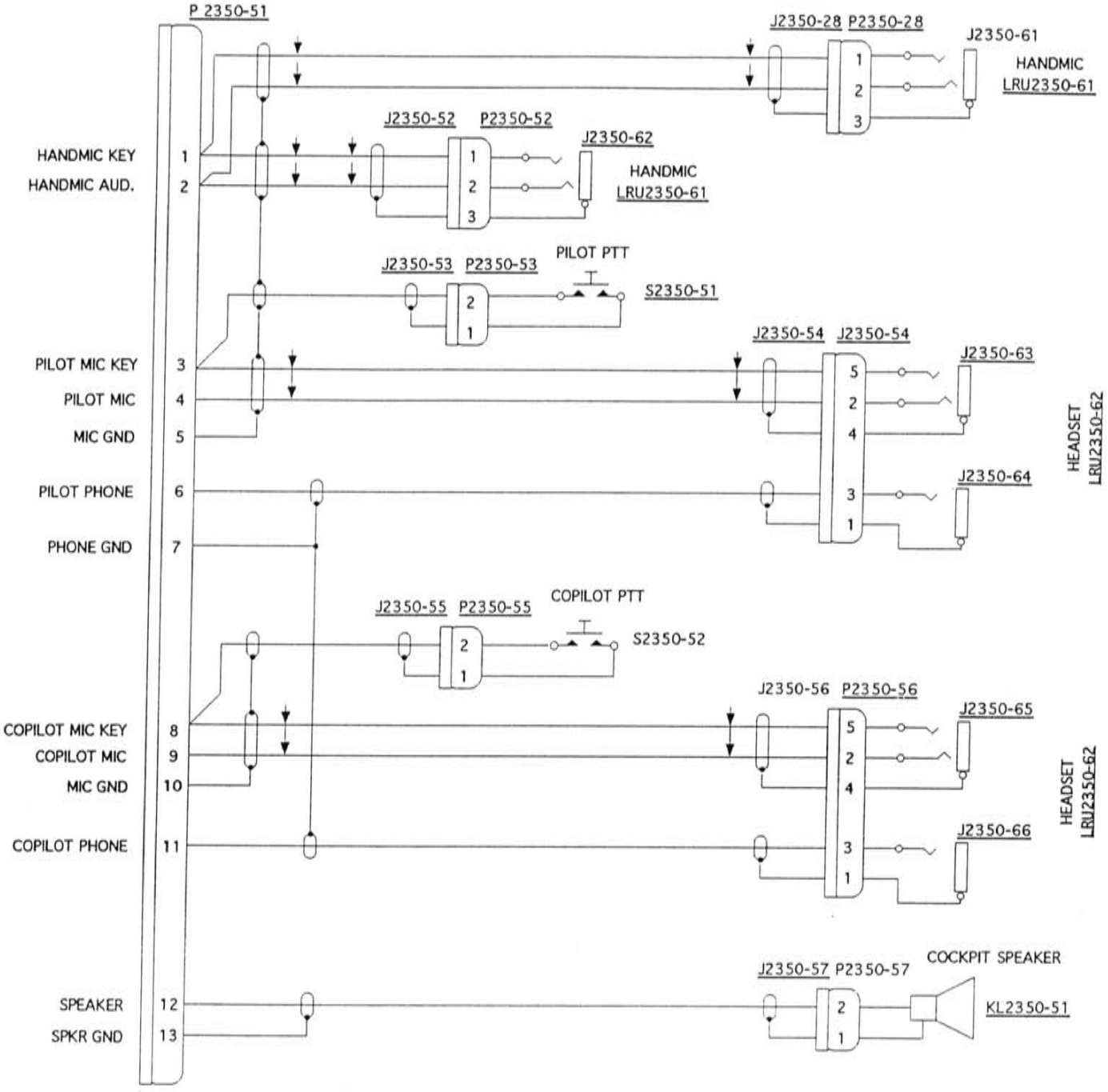
HOAC Austria	A-2700 Wiener Neustadt	
Wiring Diagram	Communication	
Audio Integration	Cabin audio general	
Dwg: 01-2350-14-1.1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 14.03.93



Notes:

1. Indicates electrical ground
2. Indicates avionics ground
3. Indicates bonding connection
4. All wires to be AWG24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)

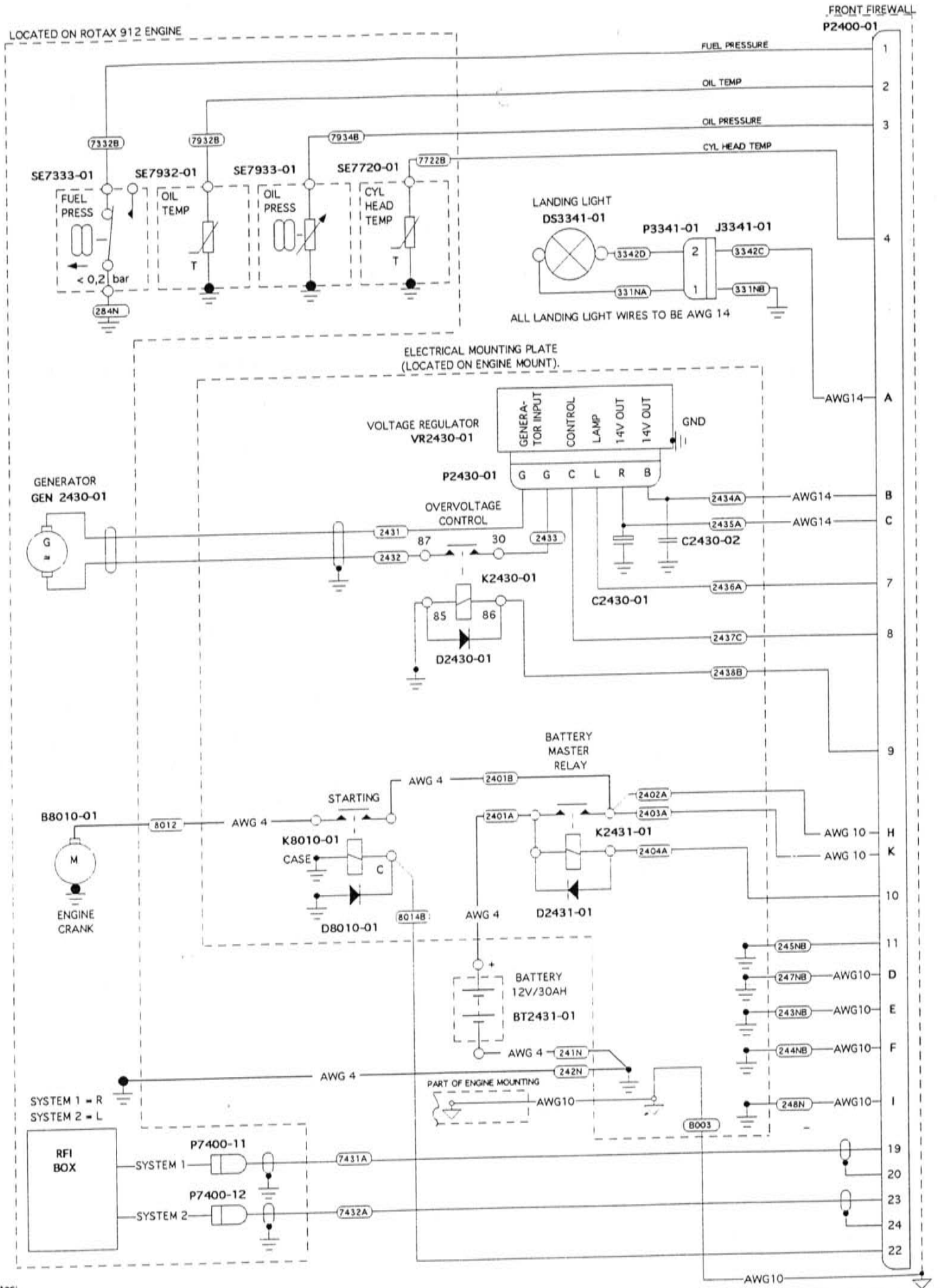
HOAC Austria	A-2700 Wiener Neustadt	
Wiring Diagram	Communication	
Audiointegration	Cockpit audio Becker	
Dwg: 01-2350-14-1.2	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 14.03.93



Notes:

1. Indicates electrical ground
2. Indicates avionics ground
3. Indicates bonding connection
4. All wires to be AWG24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)

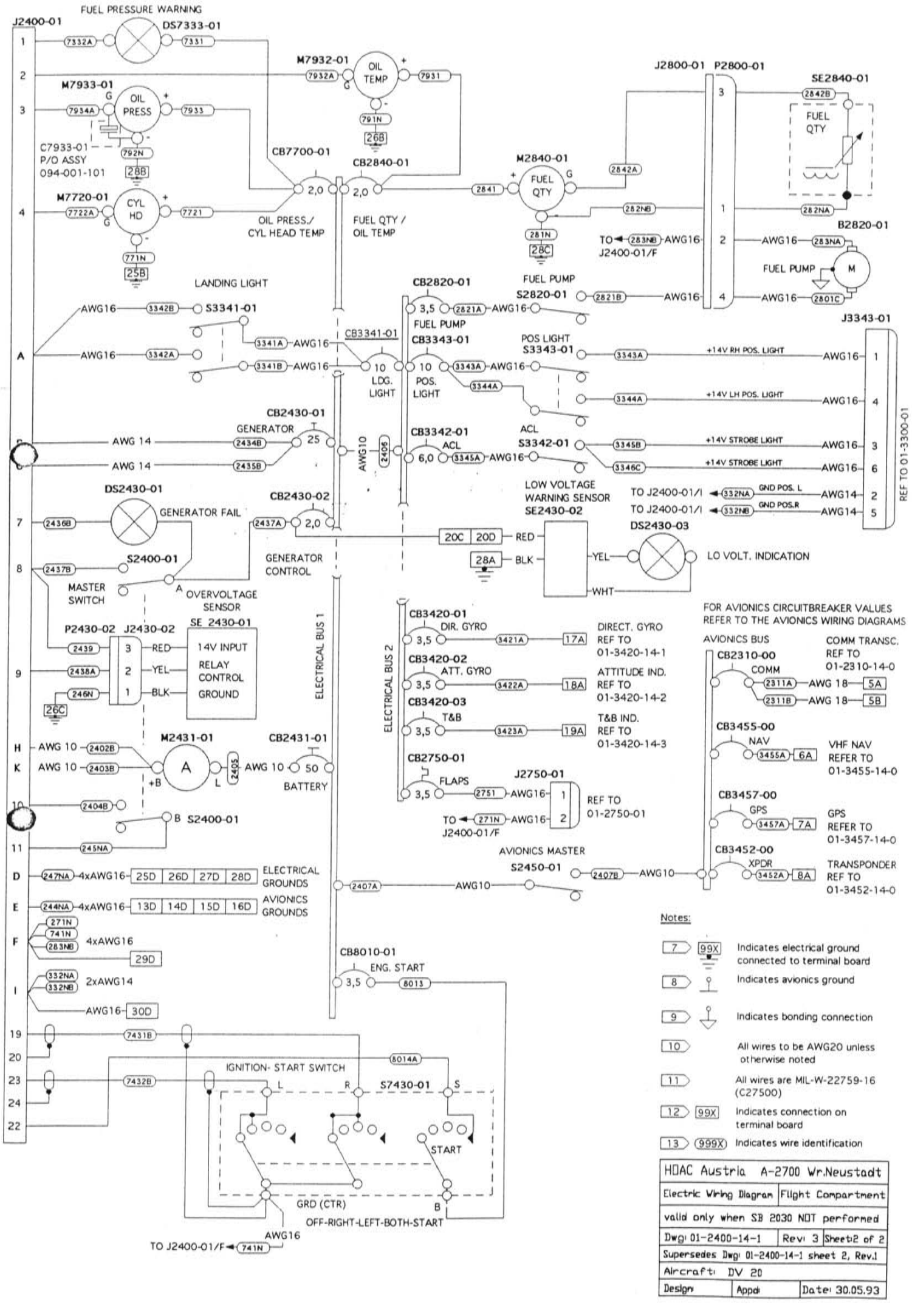
HOAC Austria	A-2700 Wiener Neustadt	
Wiring Diagram	Communication	
Audiointegration	Cockpit audio King	
Dwg: 01-2350-14-1.3	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 14.03.93



Notes:

1. Indicates ground on electrical mounting plate.
2. Indicates ground on engine
3. Indicates ground on engine (directly mounted)
4. Drawings based on aircraft on ground, all systems off.
5. All wires in engine compartment are AWG20 unless otherwise noted.
6. All wires to be MIL-W-22759-16

HOAC Austria	A-2700 Wiener Neustadt	
Electrical Wiring Diagram	Engine Compartment	
Dwg: 01-2400-14-1	Rev1	Sheet1 of 2
Supersedes Dwg:		
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 30.05.93



Notes:

7 99X — Indicates electrical ground connected to terminal board

8 — Indicates avionics ground

9 — Indicates bonding connection

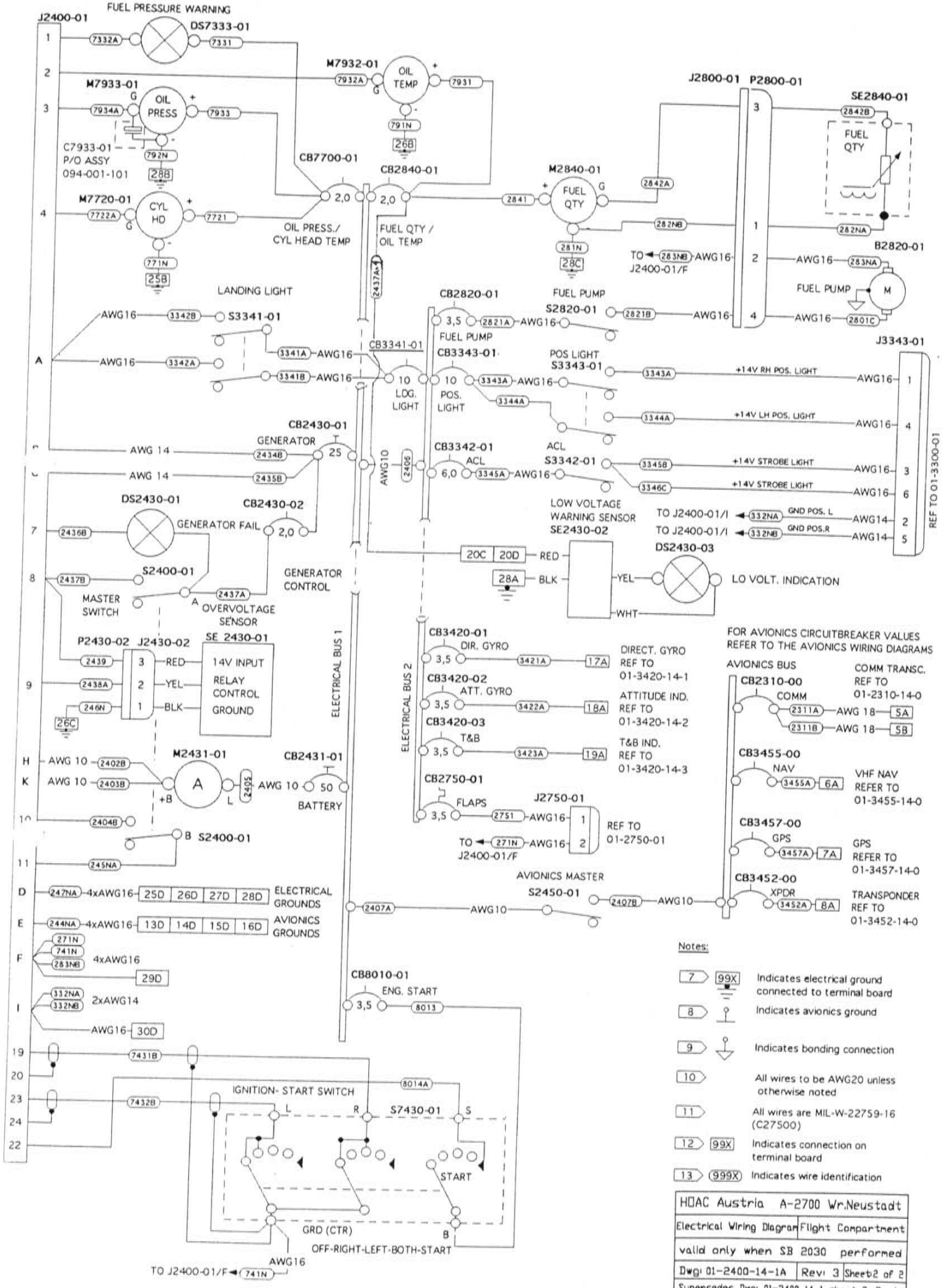
10 — All wires to be AWG20 unless otherwise noted

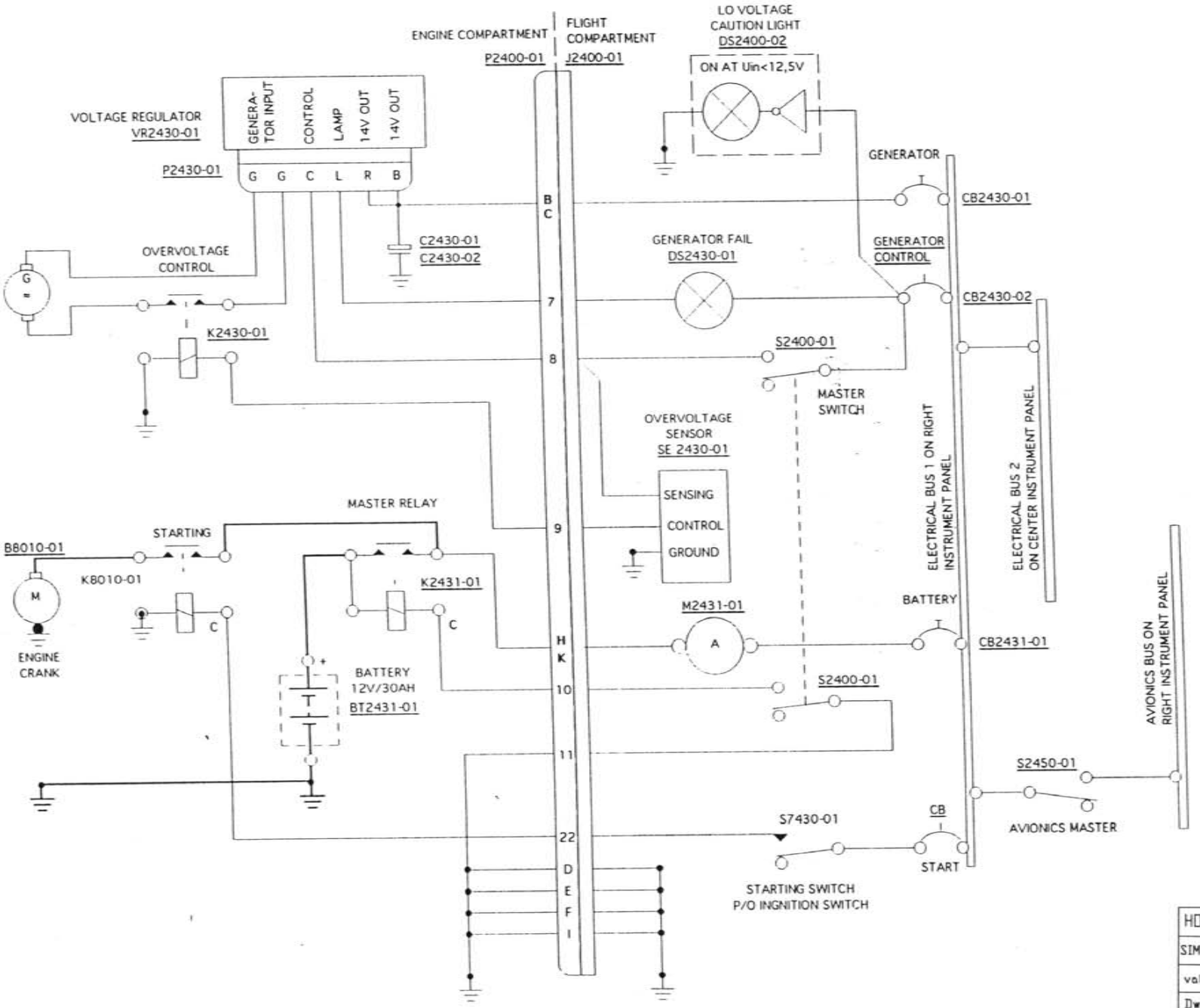
11 — All wires are MIL-W-22759-16 (C27500)

12 99X — Indicates connection on terminal board

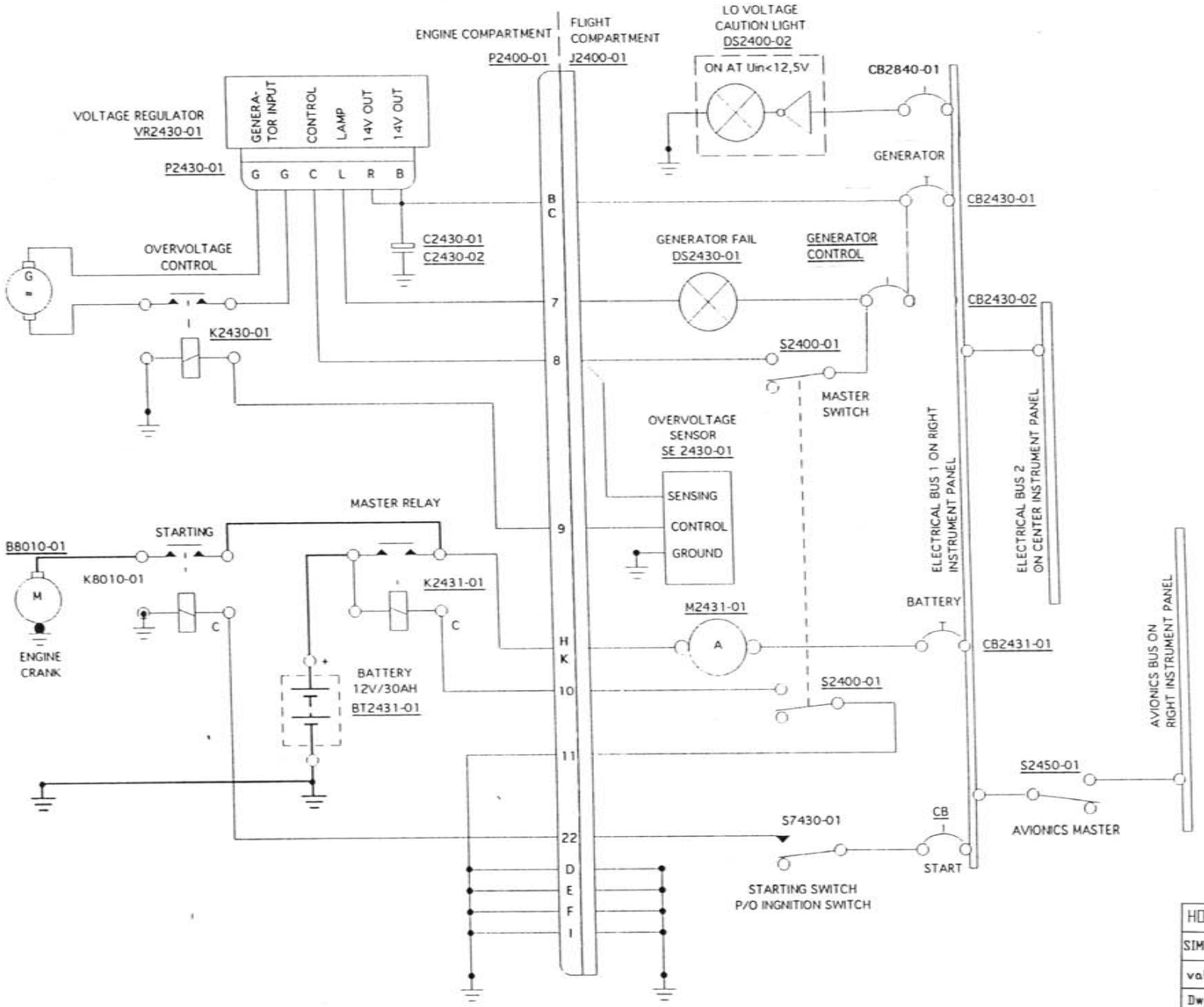
13 999X — Indicates wire identification

HOAC Austria A-2700 Wr.Neustadt		
Electric Wiring Diagram	Flight Compartment	
valid only when SB 2030 NOT performed		
Dwg: 01-2400-14-1	Rev: 3	Sheet: 2 of 2
Supersedes Dwg: 01-2400-14-1 sheet 2, Rev.1		
Aircraft: DV 20		
Design	Appd	Date: 30.05.93

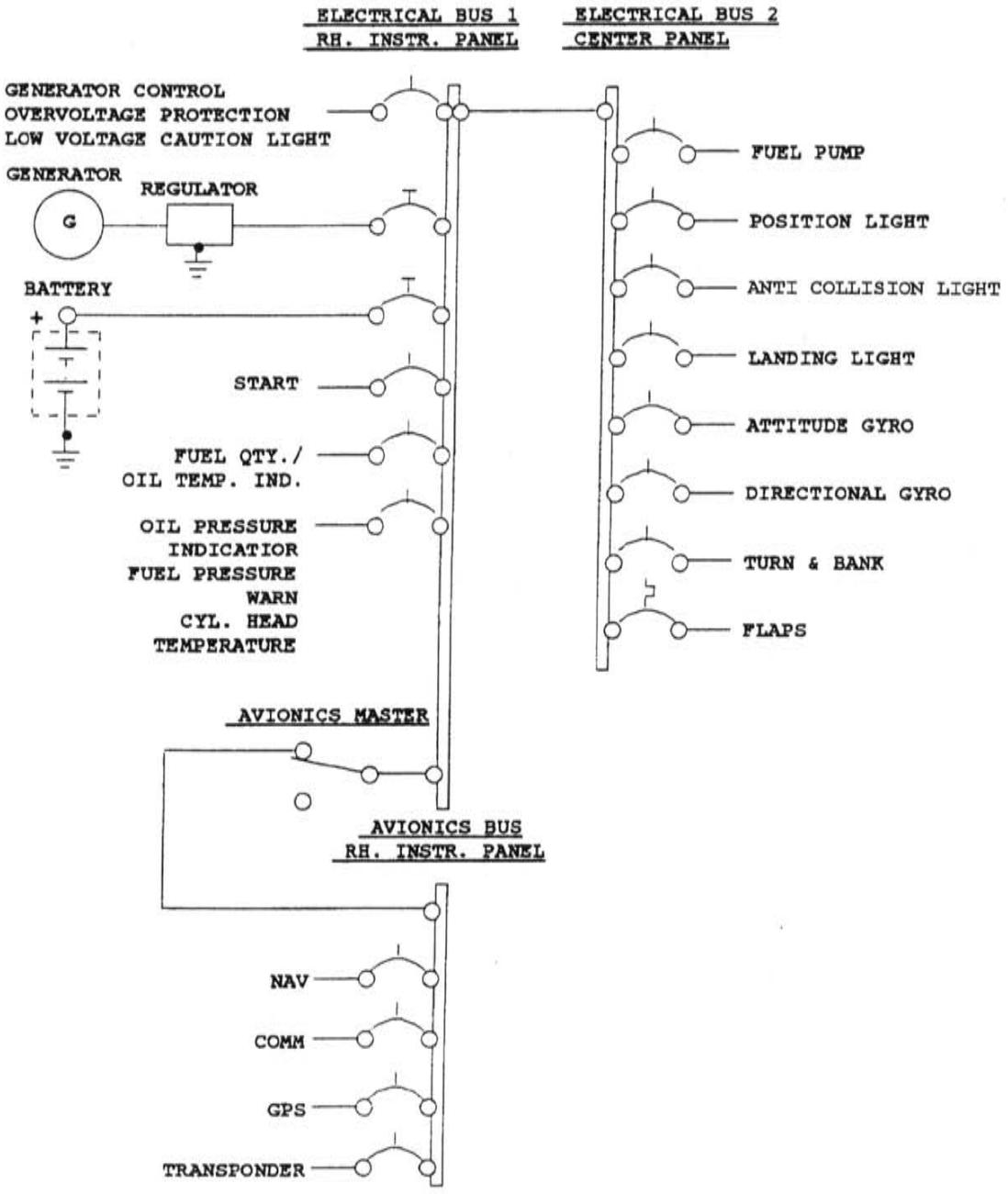

FUEL PRESSURE WARNING
J2400-01
DS7333-01
M7932-01
OIL TEMP
M7933-01
OIL PRESS
C7933-01
P/O ASSY
094-001-101
M7720-01
CYL HD
CB7700-01
CB2840-01
OIL PRESS./
CYL HEAD TEMP
FUEL QTY /
OIL TEMP
M2840-01
FUEL QTY
J2800-01 P2800-01
SE2840-01
FUEL QTY
B2820-01
FUEL PUMP
LANDING LIGHT
S3341-01
CB3341-01
CB2820-01
S2820-01
FUEL PUMP
CB3343-01
POS LIGHT
S3343-01
J3343-01
LDG. LIGHT
POS. LIGHT
+14V RH POS. LIGHT
+14V LH POS. LIGHT
CB2430-01
GENERATOR
CB3342-01
ACL
S3342-01
+14V STROBE LIGHT
+14V STROBE LIGHT
DS2430-01
GENERATOR FAIL
CB2430-02
LOW VOLTAGE
WARNING SENSOR
SE2430-02
DS2430-03
LO VOLT. INDICATION
S2400-01
MASTER SWITCH
OVERVOLTAGE SENSOR
GENERATOR CONTROL
P2430-02 J2430-02
SE 2430-01
14V INPUT
RELAY CONTROL
GROUND
ELECTRICAL BUS 1
ELECTRICAL BUS 2
CB3420-01
DIR. GYRO
CB3420-02
ATT. GYRO
CB3420-03
T&B
CB2750-01
FLAPS
J2750-01
M2431-01
CB2431-01
BATTERY
S2400-01
AVIONICS MASTER
S2450-01
FOR AVIONICS CIRCUITBREAKER VALUES
REFER TO THE AVIONICS WIRING DIAGRAMS
AVIONICS BUS
CB2310-00
COMM
COMM TRANSC.
REF TO
01-2310-14-0
CB3455-00
NAV
VHF NAV
REFER TO
01-3455-14-0
CB3457-00
GPS
GPS
REFER TO
01-3457-14-0
CB3452-00
XPDR
TRANSPONDER
REF TO
01-3452-14-0
DIRECT. GYRO
REF TO
01-3420-14-1
ATTITUDE IND.
REF TO
01-3420-14-2
T&B IND.
REF TO
01-3420-14-3
REF TO
01-2750-01
ELECTRICAL GROUNDS
AVIONICS GROUNDS
CB8010-01
ENG. START
IGNITION- START SWITCH
S7430-01
START
GRD (CTR)
OFF-RIGHT-LEFT-BOTH-START
REF TO 01-3300-01
Notes:
Indicates electrical ground connected to terminal board
Indicates avionics ground
Indicates bonding connection
All wires to be AWG20 unless otherwise noted
All wires are MIL-W-22759-16 (C27500)
Indicates connection on terminal board
Indicates wire identification
HOAC Austria A-2700 Wr.Neustadt
Electrical Wiring Diagram
Flight Compartment
valid only when SB 2030 performed
Dwg: 01-2400-14-1A
Rev: 3
Sheet2 of 2
Supersedes Dwg: 01-2400-14-1 sheet 2, Rev.1
Aircraft: DV 20
Design:
Appd:
Date: 06.09.96



HOAC Austria A-2700 Wr.Neustadt		
SIMPLIFIED SCHEMATIC	ELECTRICAL POWER	
valid only when SB 2030 NOT performed		
Dwg: 01-2400-14-2	Rev: 1	Sheet: 1 of 1
Supersedes Dwg: 01-2400-14-2, Rev.1		
Aircraft: DV 20		
Design:	Appd:	Date: 15.03.93

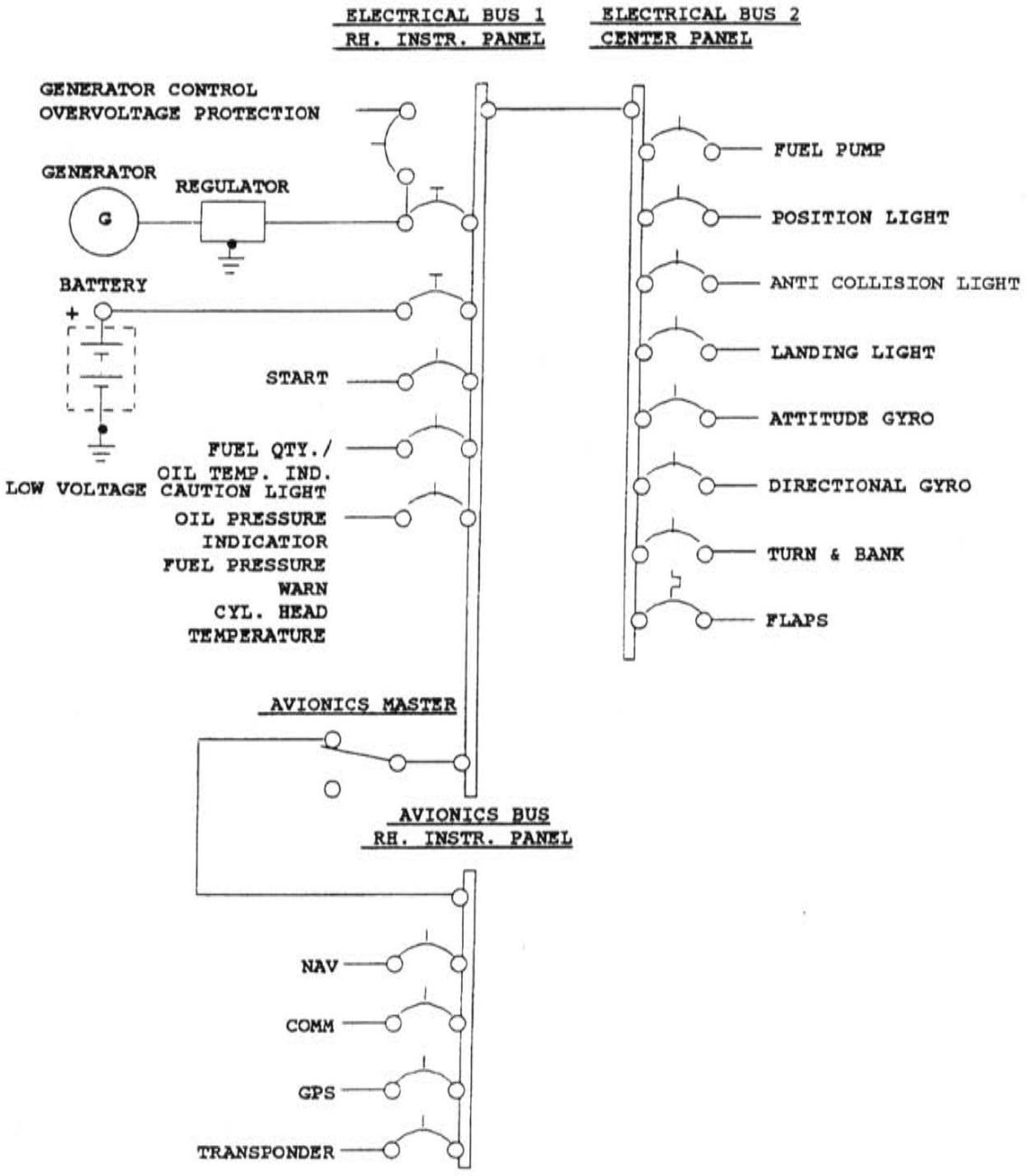


HOAC Austria A-2700 Wr.Neustadt		
SIMPLIFIED SCHEMATIC	ELECTRICAL POWER	
valid only when SB 2030 performed		
Dwg: 01-2400-14-2A	Rev: 1	Sheet: 1 of 1
Supersedes Dwg: 01-2400-14-2, Rev.1		
Aircraft: DV 20		
Design:	Appd:	Date: 06.09.96



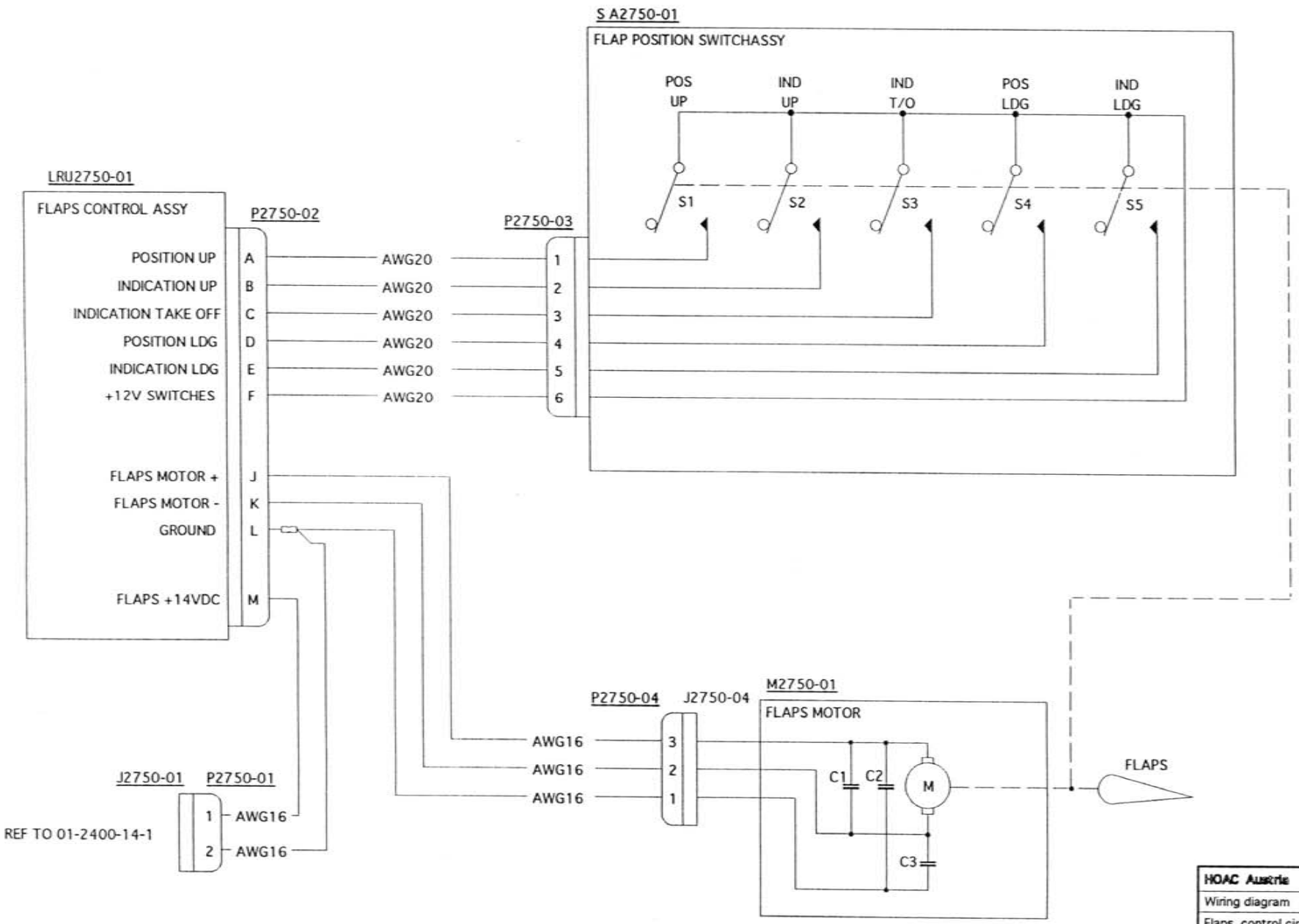
Electrical Load Power Distribution
Simplified Schematic

HOAC Austria A-2700 Wr.Neustadt		
SIMPLIFIED SCHEMATIC	ELECTR PWR DISTR	
valid only when SB 2030 NOT performed		
Dwg: 01-2450-14	Rev: 1	Sheet:1 of 1
Supersedes Dwg: ---		
Aircraft: DV 20		
Design:	Appd:	Date: 30.05.93

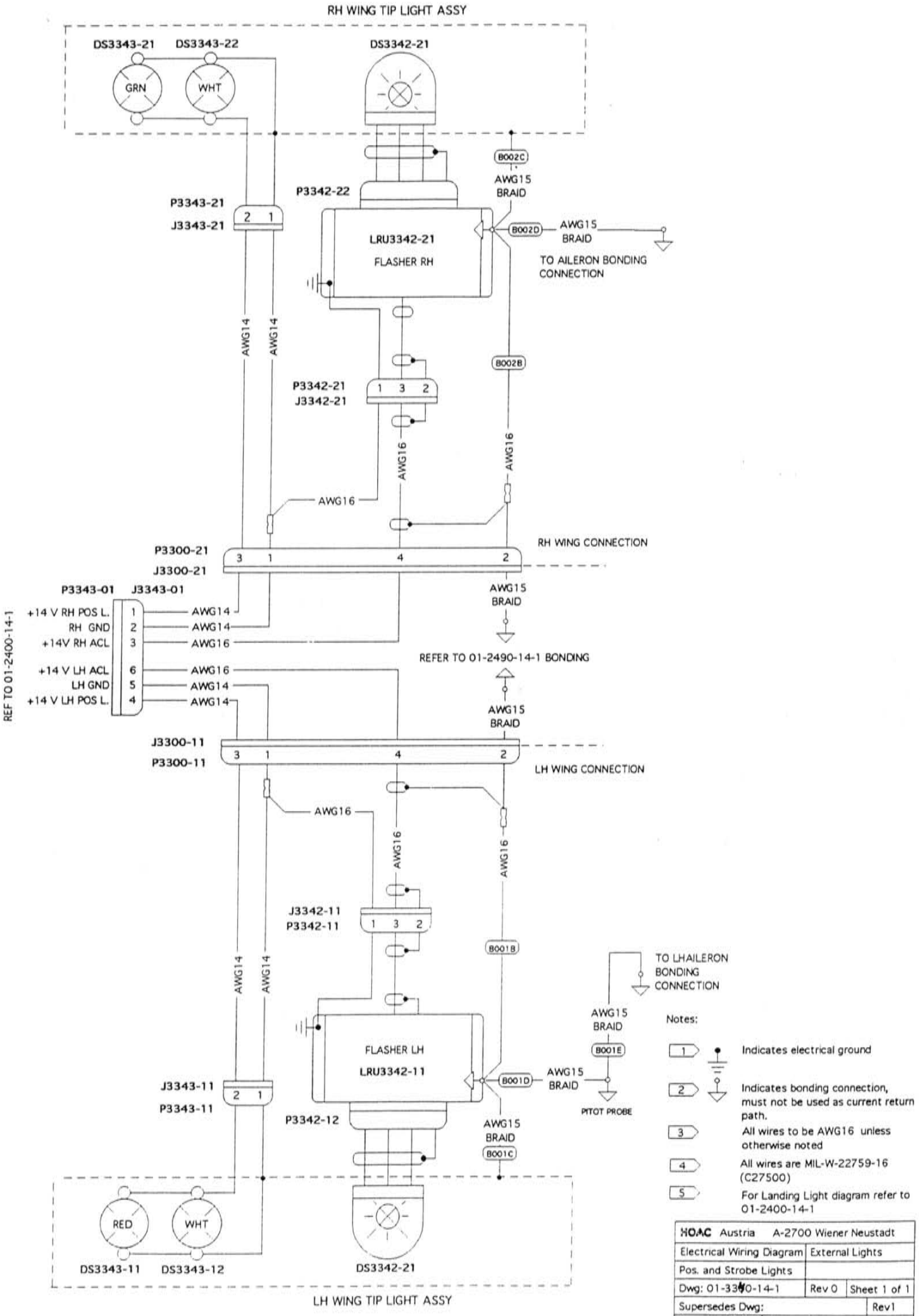


Electrical Load Power Distribution
Simplified Schematic

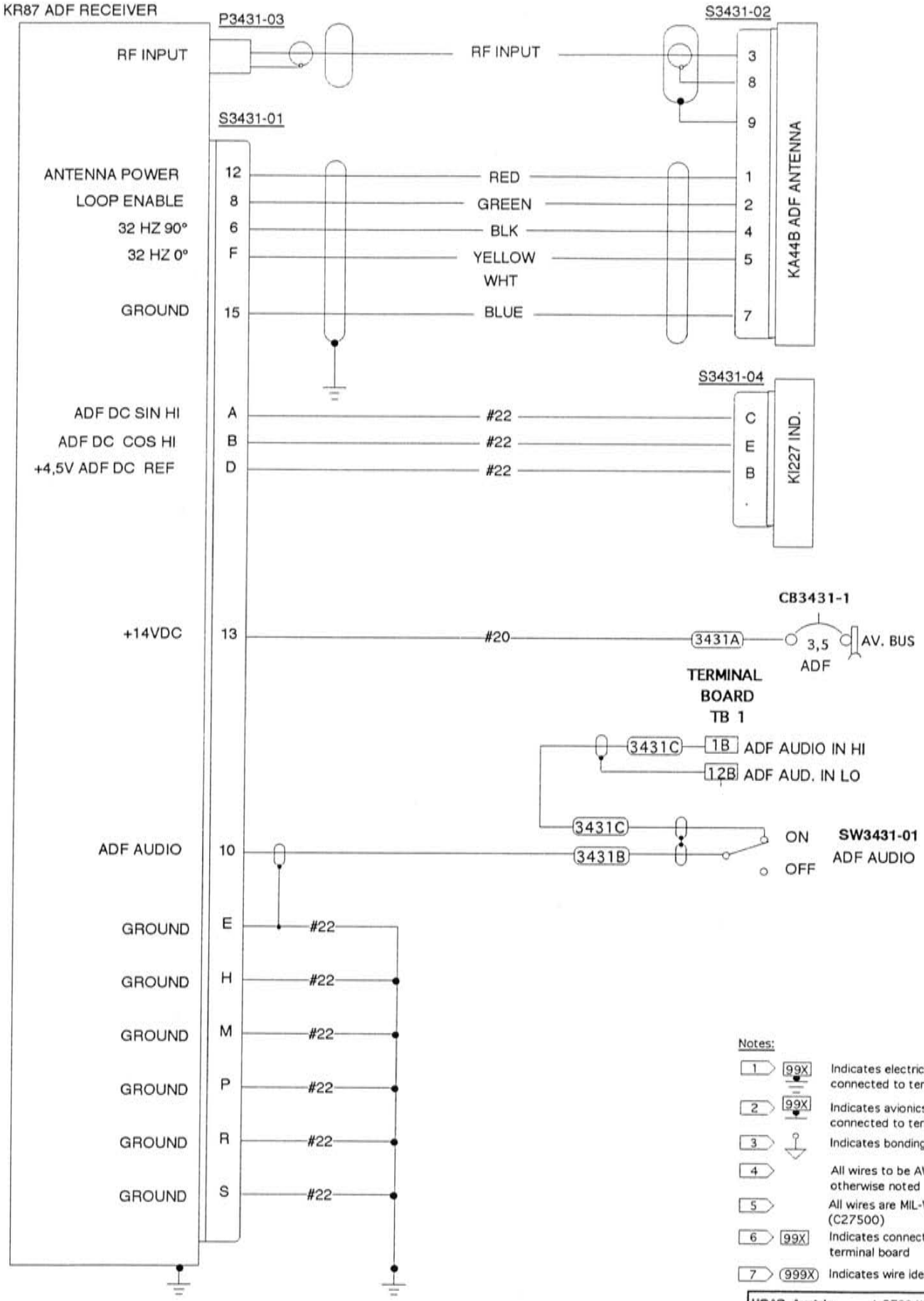
HOAC Austria A-2700 Wr.Neustadt		
SIMPLIFIED SCHEMATIC	ELECTR PWR DISTR	
valid only when SB 2030 performed		
Dwg: 01-2450-14A	Rev: 1	Sheet1 of 1
Supersedes Dwg: ---		
Aircraft: DV 20		
Design:	Appd:	Date: 06.09.96



HOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	Flight controls	
Flaps control circuit	KS 20A	
Dwg: 01-2750-14-1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 1
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 30.05.93



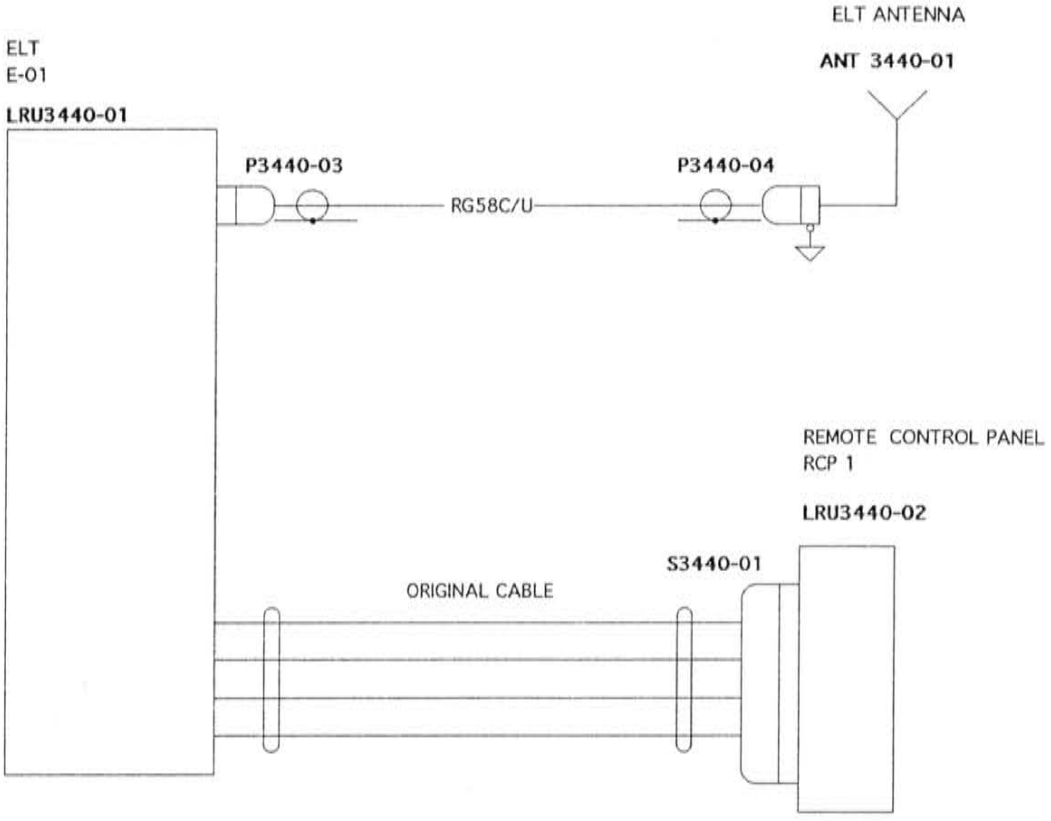
HOAC Austria A-2700 Wiener Neustadt		
Electrical Wiring Diagram	External Lights	
Pos. and Strobe Lights		
Dwg: 01-3340-14-1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev1
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 30.05.93



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. (999X) — Indicates wire identification

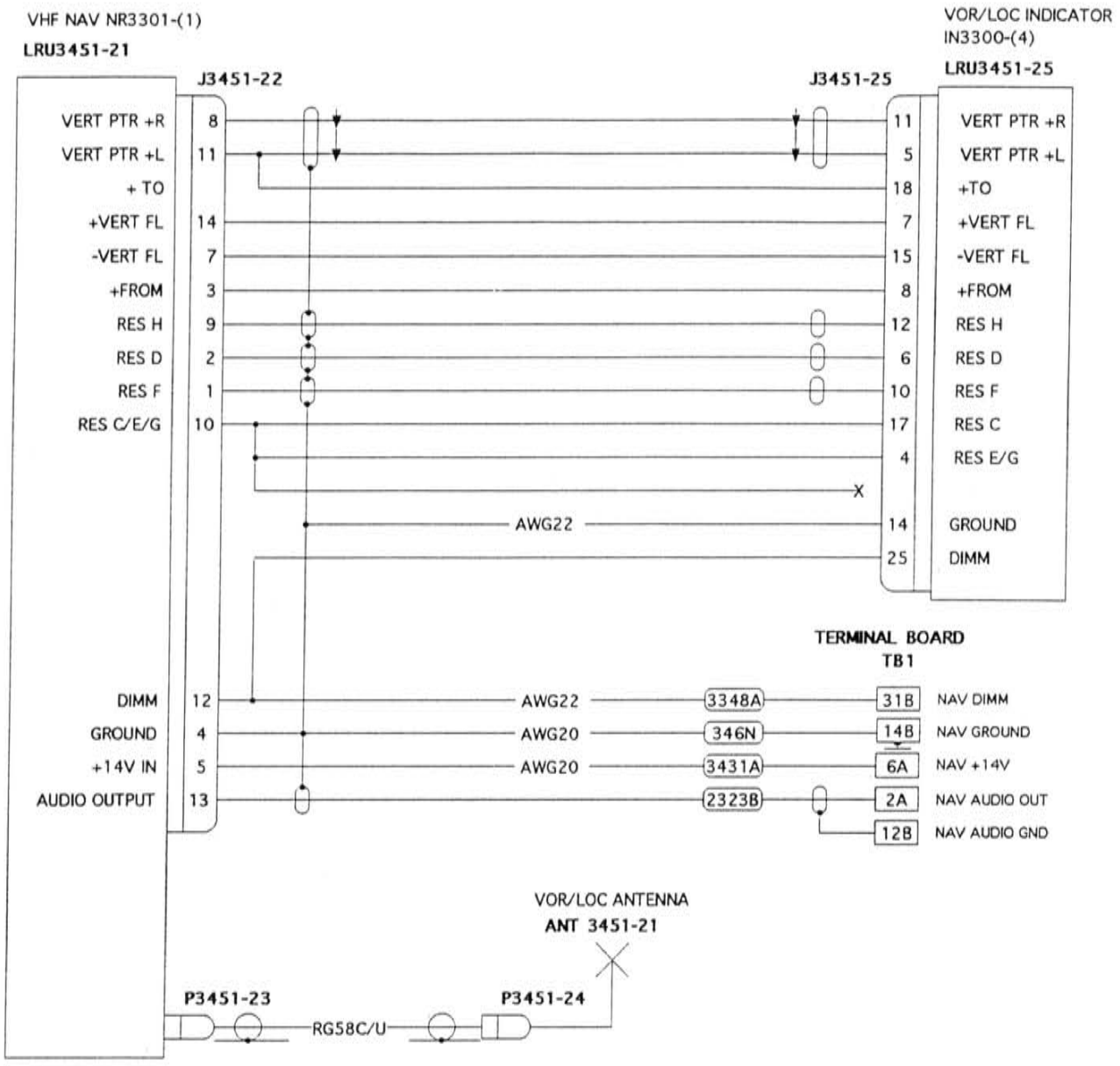
HOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	ADF SYSTEM	
ADF KR 87/KI227		
WDI-01-3431-10	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 95-02-20



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4.
5.
6. 99X — Indicates connection on terminal board
7. (999X) — Indicates wire identification

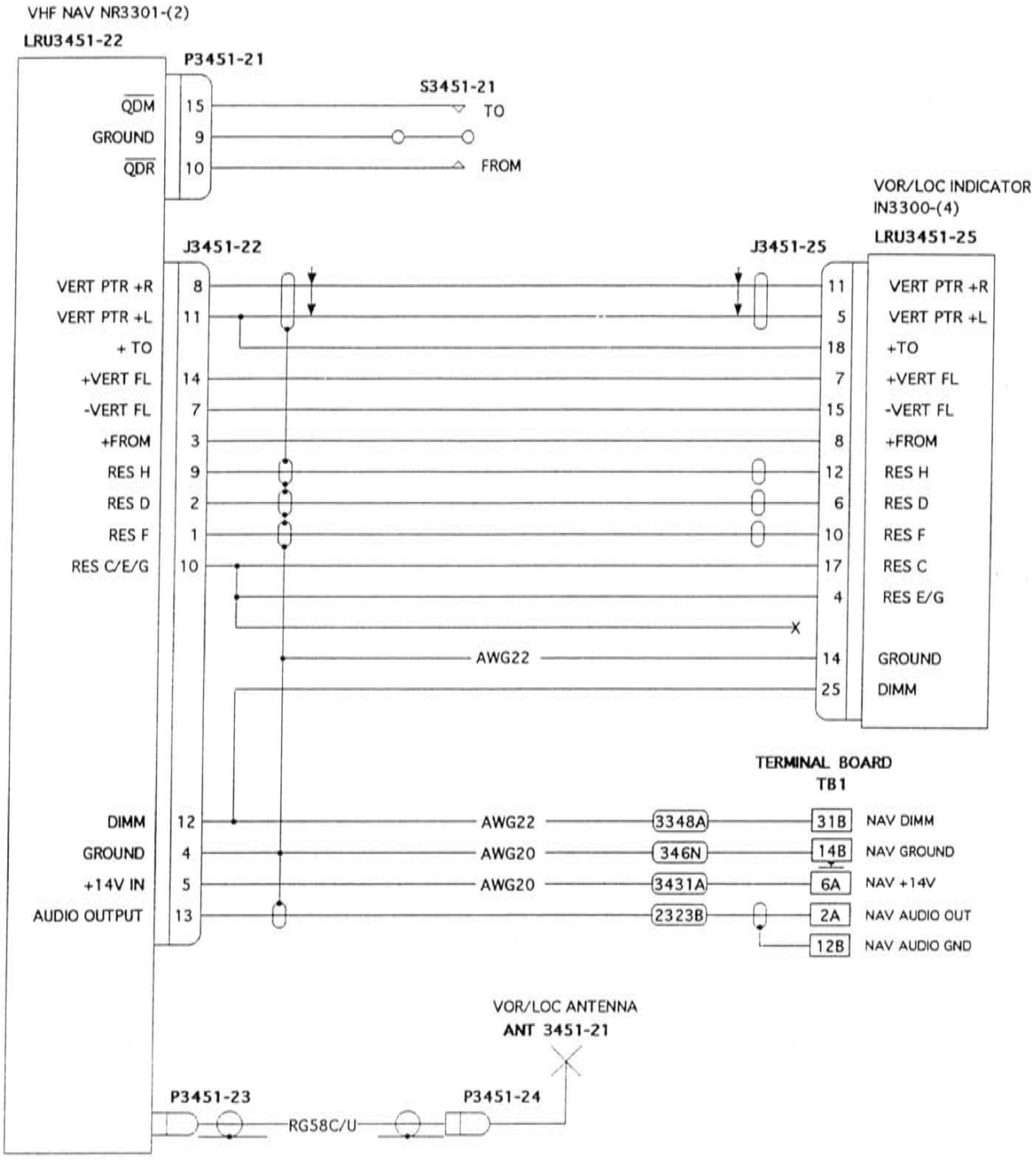
NOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	ELT	
ACK	ELT E-01	
WDI-01-3440-10	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 25.07.95



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. (999X) Indicates wire identification

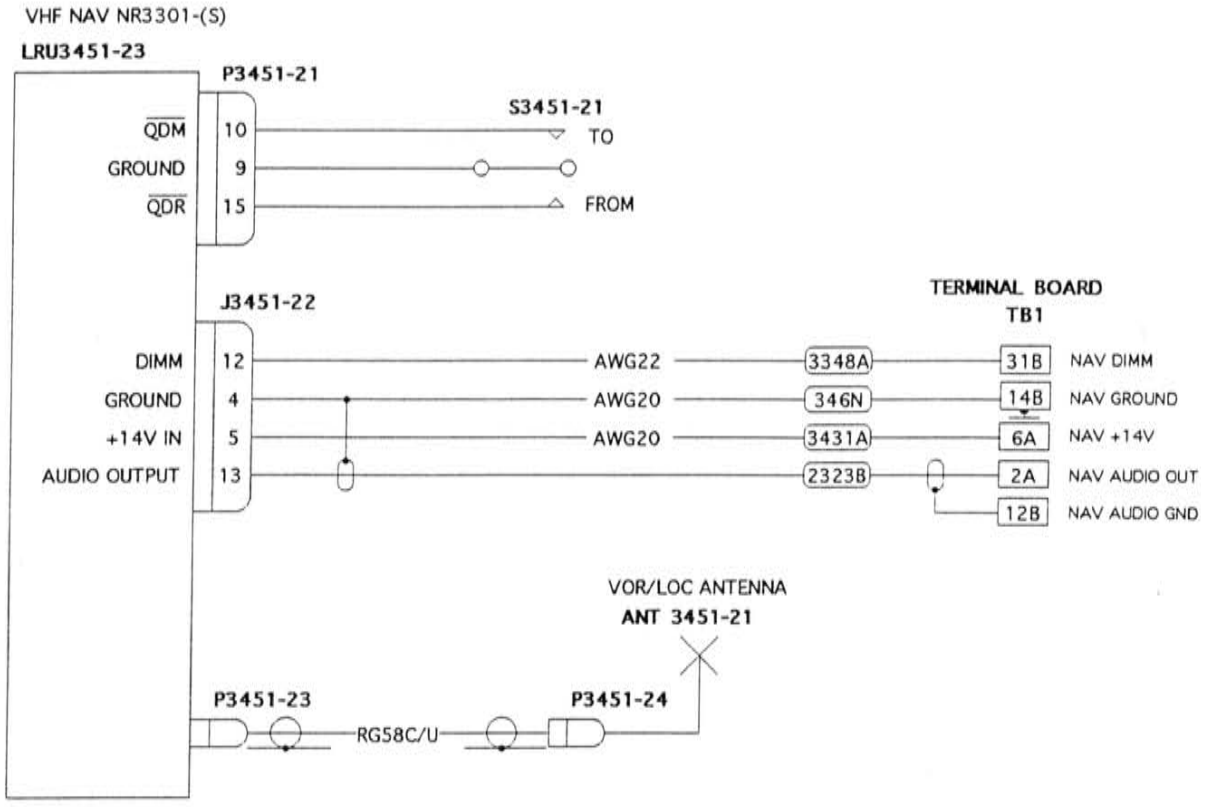
HOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	VHF NAV NR 3301-(.)	
NAV Rec. NR 3301-(1)	INDIC. IN 3301-(4)	
Dwg: 01-3451-14-2.1.1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 12.05.93



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. 999X — Indicates wire identification

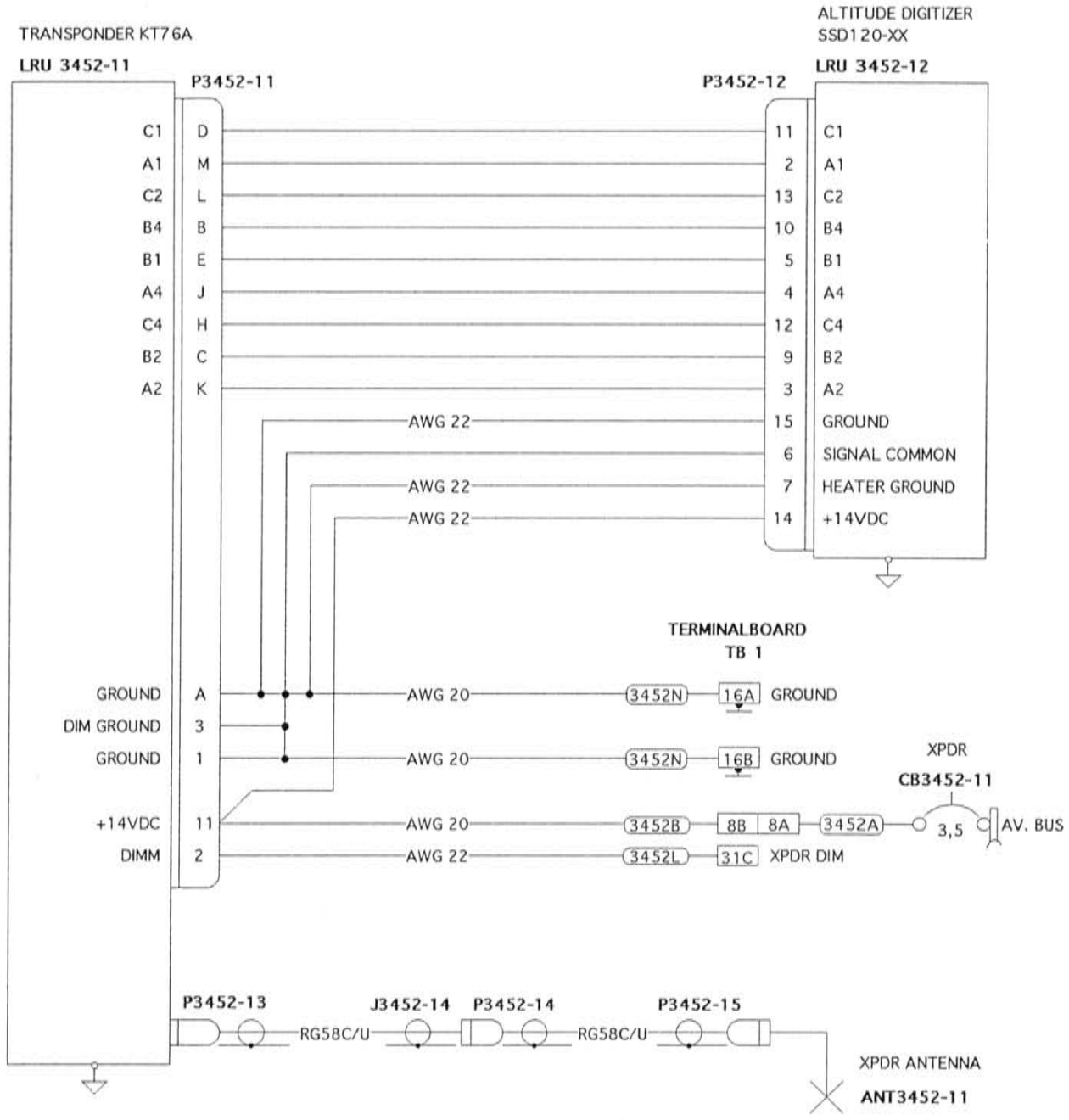
HCAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	VHF NAV NR 3301-(.)	
NAV Rec. NR 3301-(2)	INDIC. IN 3301-(4)	
Dwg: 01-3451-14-2.2.1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 12.05.93



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. 999X — Indicates wire identification

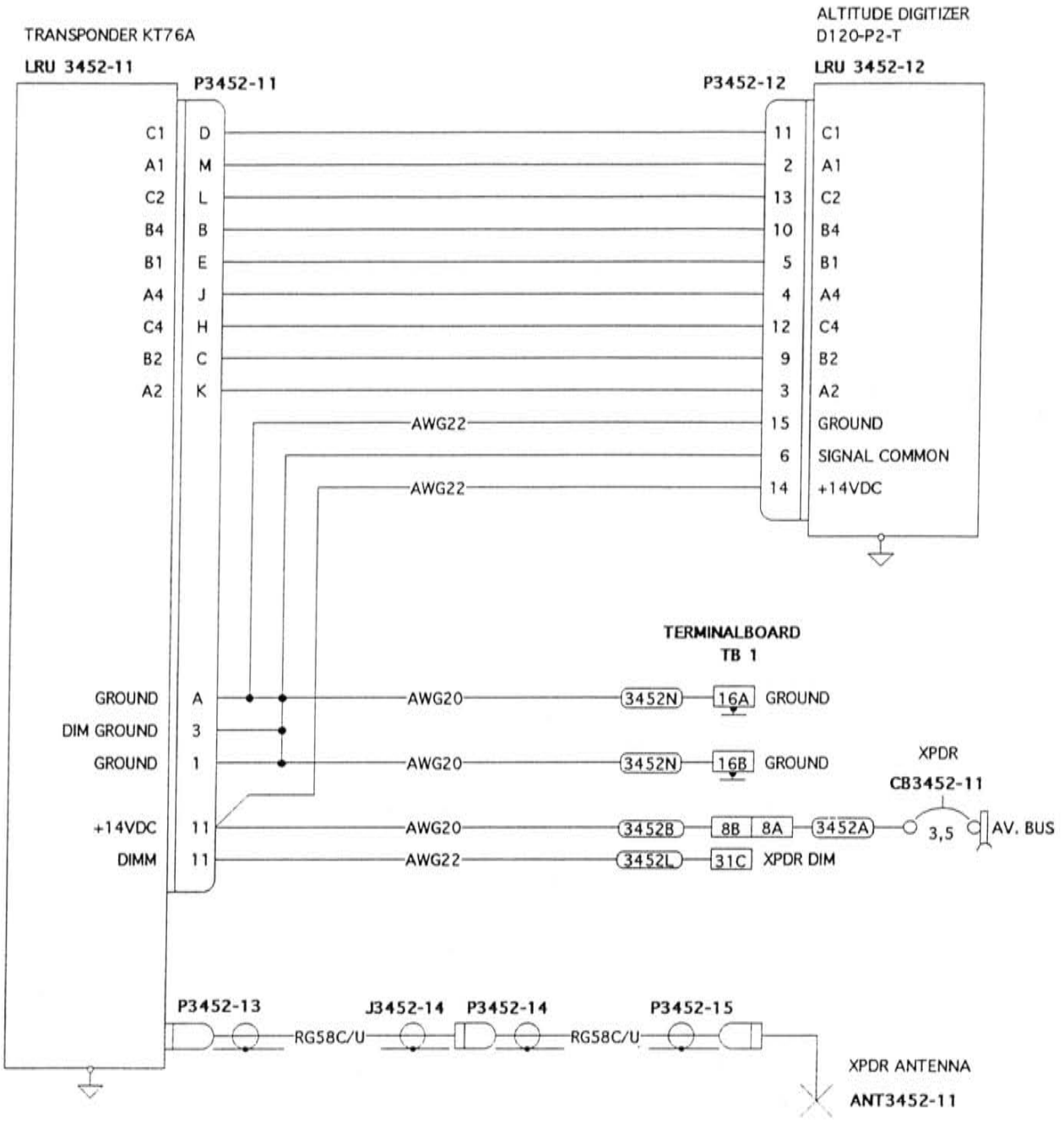
HOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	VHF NAV NR 3301-(.)	
NAV Rec. NR 3301-(S)		
Dwg: 01-3451-14-2.3.1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 12.05.93



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. (999X) — Indicates wire identification

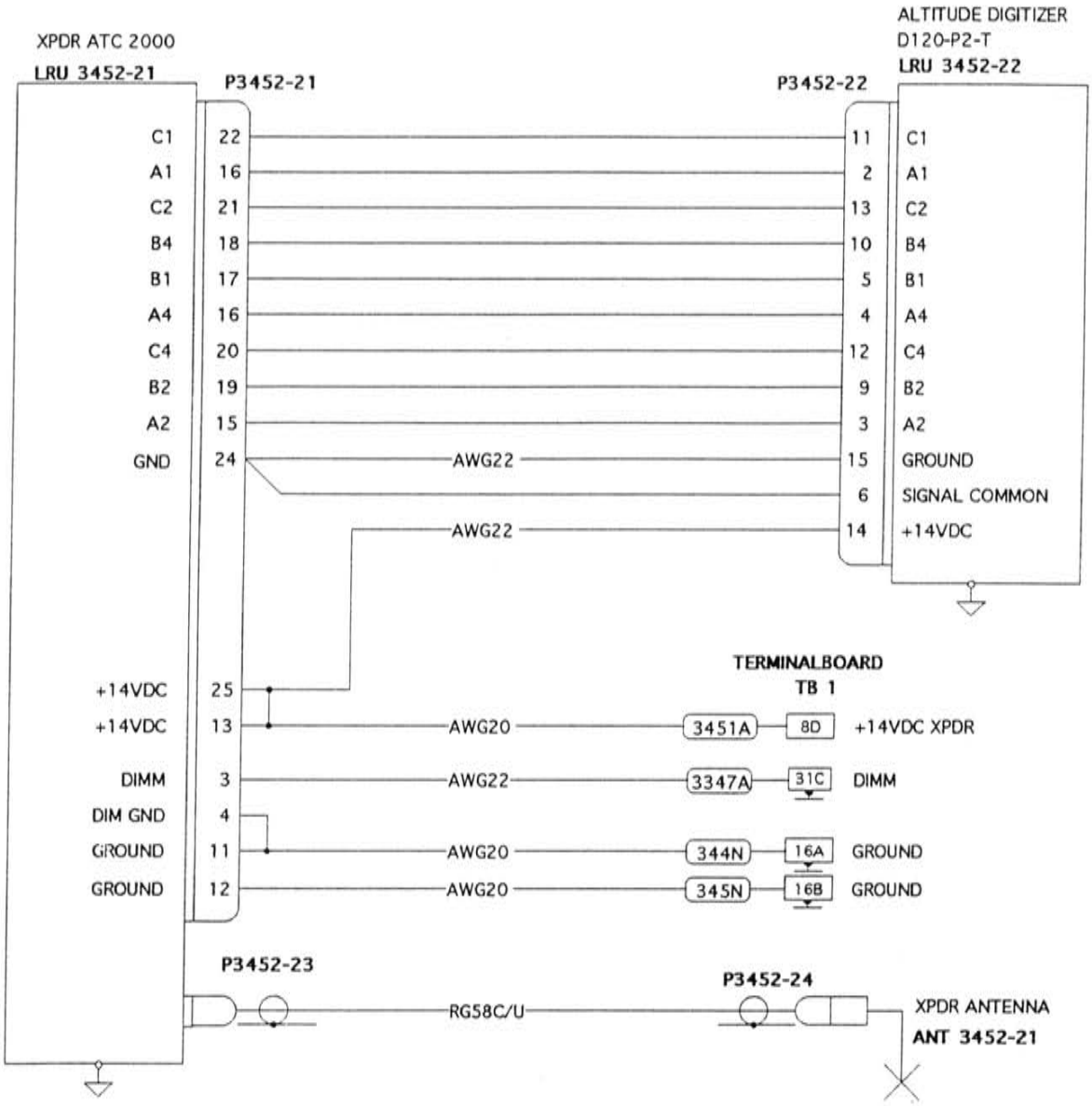
HOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	Navigation	
Transponder /Altitude D.	KT76A/SSD120-XX	
Dwg: 01-3452-10	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 95.07.20



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. (999X) Indicates wire identification

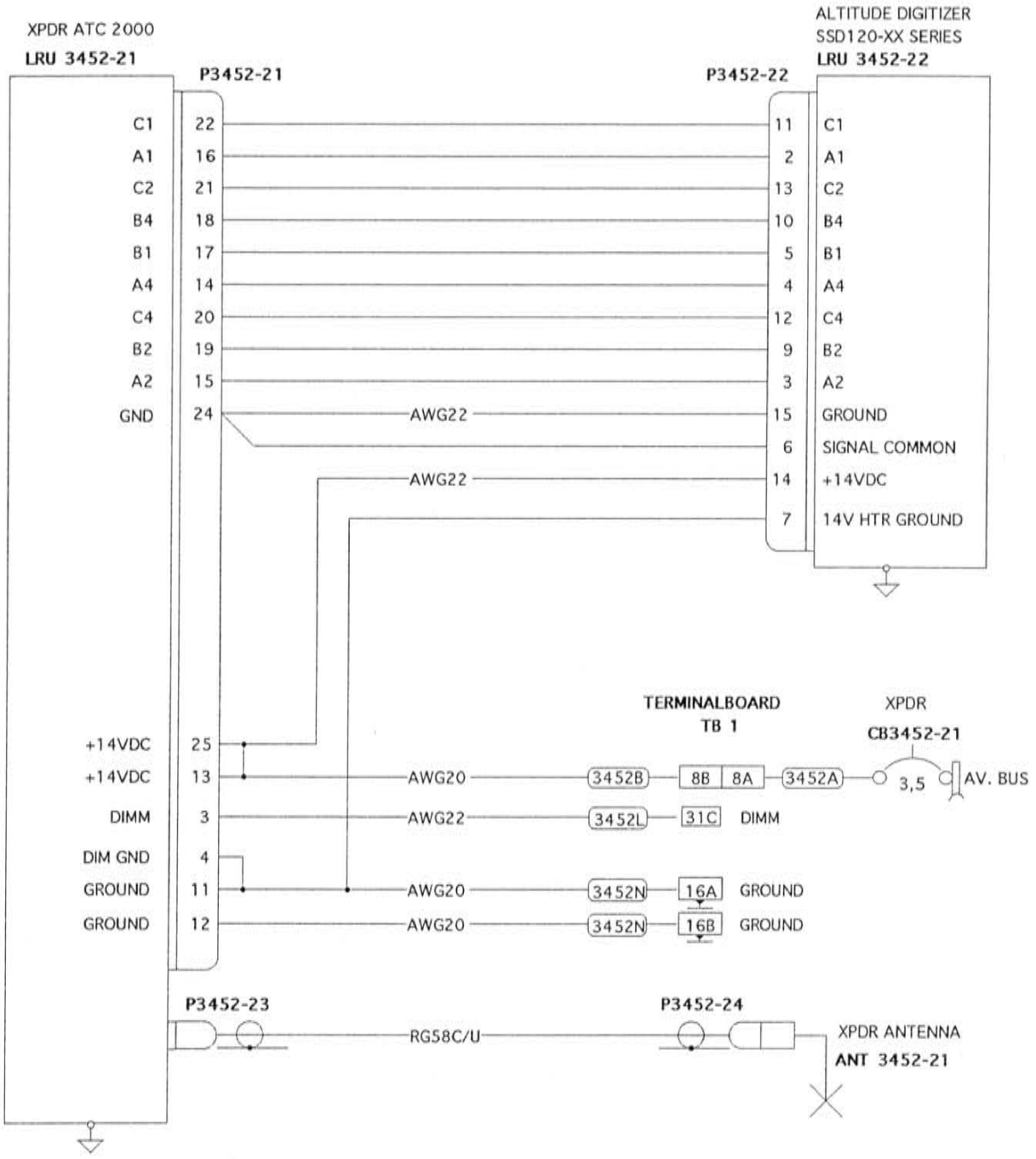
HCAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	Navigation	
Transponder / Altitude D.	KT76A/D120-P2-T	
Dwg: 01-3452-14-1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 12.03.93



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. 999X — Indicates wire identification

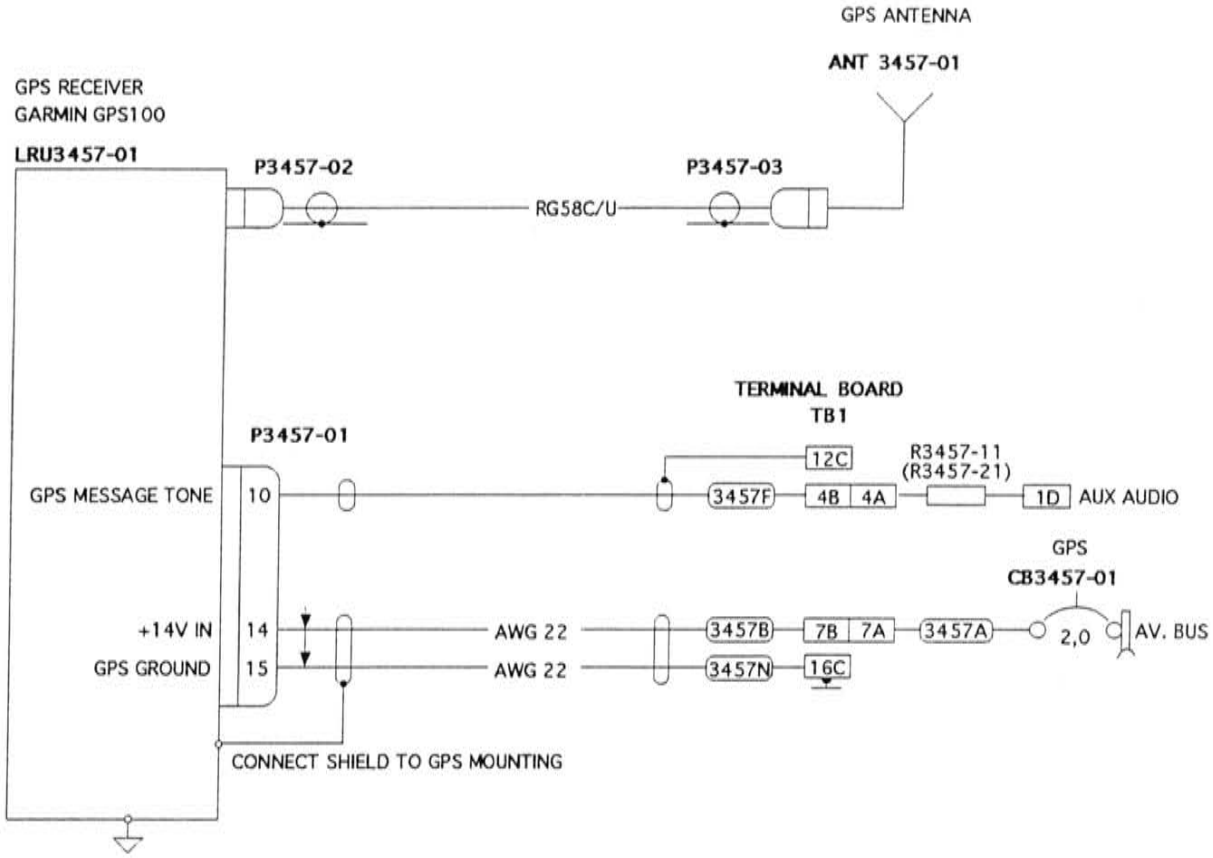
HOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	Navigation	
Transponder /Altitude D.	ATC2000/D120-P2-T	
Dwg: 01-3452-14-2	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 21.05.93



Notes:

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. (999X) Indicates wire identification

HOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	Navigation	
XPDR / Altitude D.	ATC2000/SSD120-XX	
Dwg: 01-3452-20	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 95.07.20

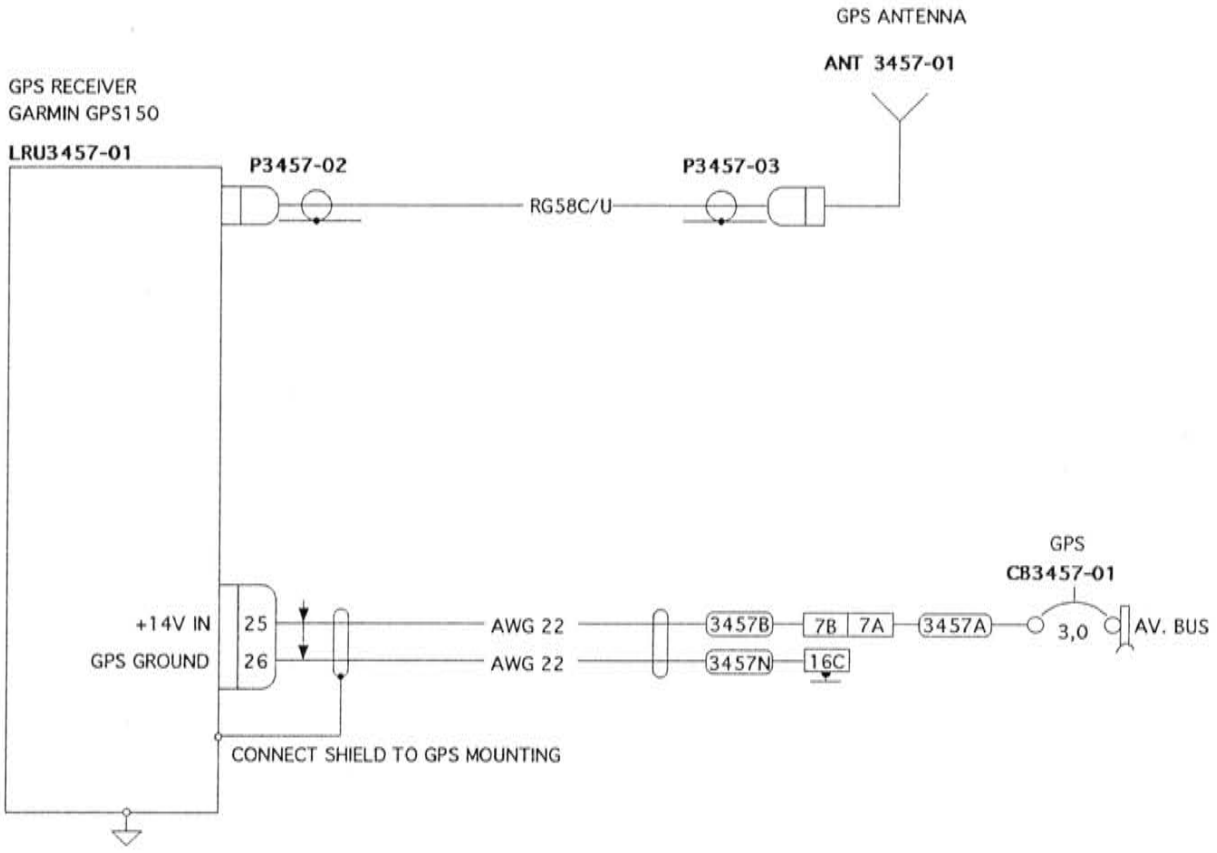


Notes:

The gps must be labeled:
GPS NOT APPROVED VOR NAVIGATION !

1. 99X — Indicates electrical ground connected to terminal board
2. 99X — Indicates avionics ground connected to terminal board
3. Indicates bonding connection
4. All wires to be AWG 24 unless otherwise noted
5. All wires are MIL-W-22759-16 (C27500)
6. 99X — Indicates connection on terminal board
7. (999X) — Indicates wire identification

HOAC Austria	A-2700 Wiener Neustadt	
Wiring diagram	GPS RECEIVER	
GARMIN	GPS100	
Dwg: 01-3457-14-1	Rev 0	Sheet 1 of 1
Supersedes Dwg:		Rev 0
Aircraft: DV 20	Valid on S/N:	
Design:	Appd:	Date: 21.05.93



Notes:

The GPS must be labeled:

GPS NICHT FÜR PRIMÄRNAVIGATION

1 99X — Indicates electrical ground connected to terminal board

2 99X — Indicates avionics ground connected to terminal board

3 — Indicates bonding connection

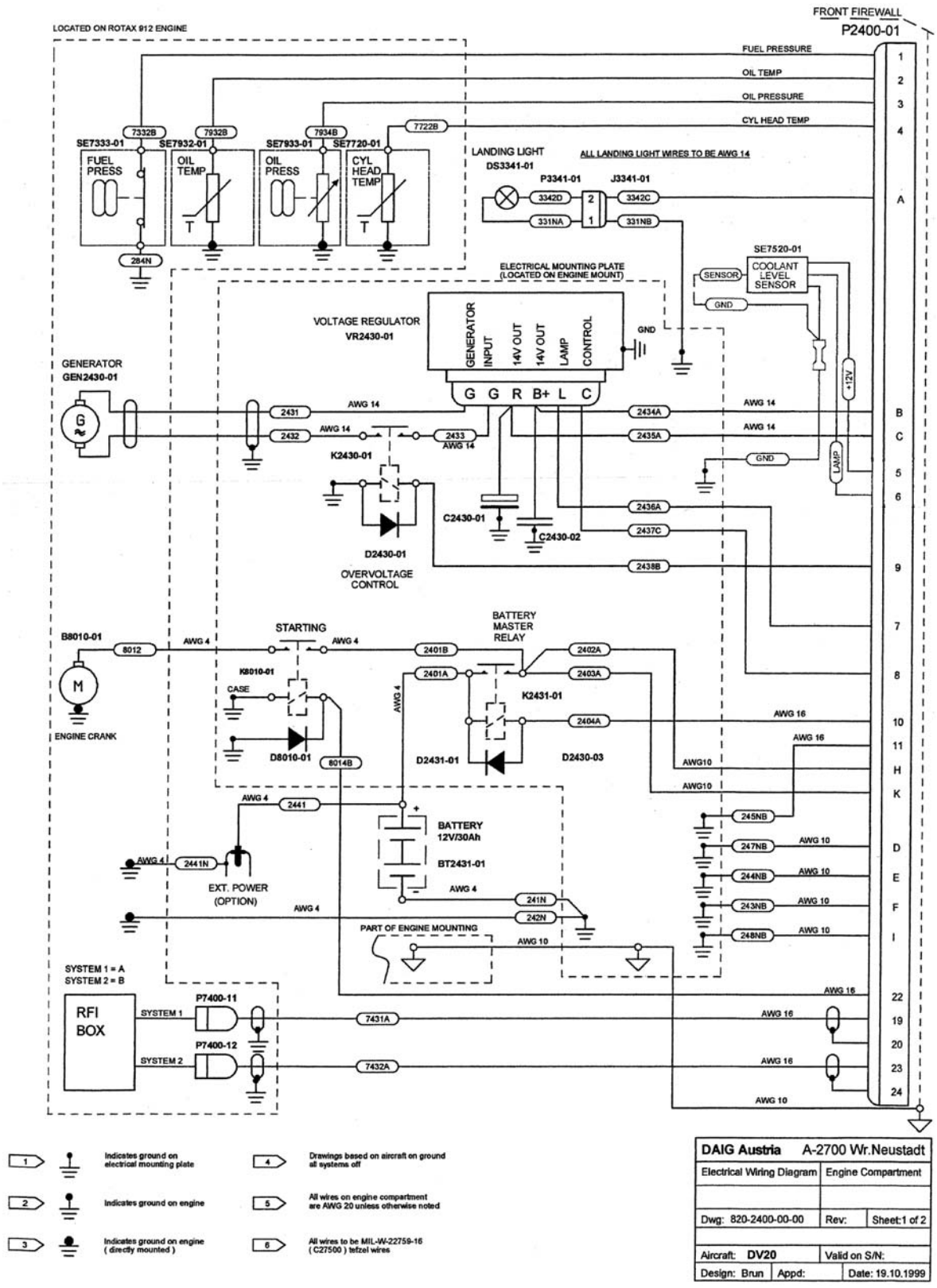
4 — All wires to be AWG 24 unless otherwise noted

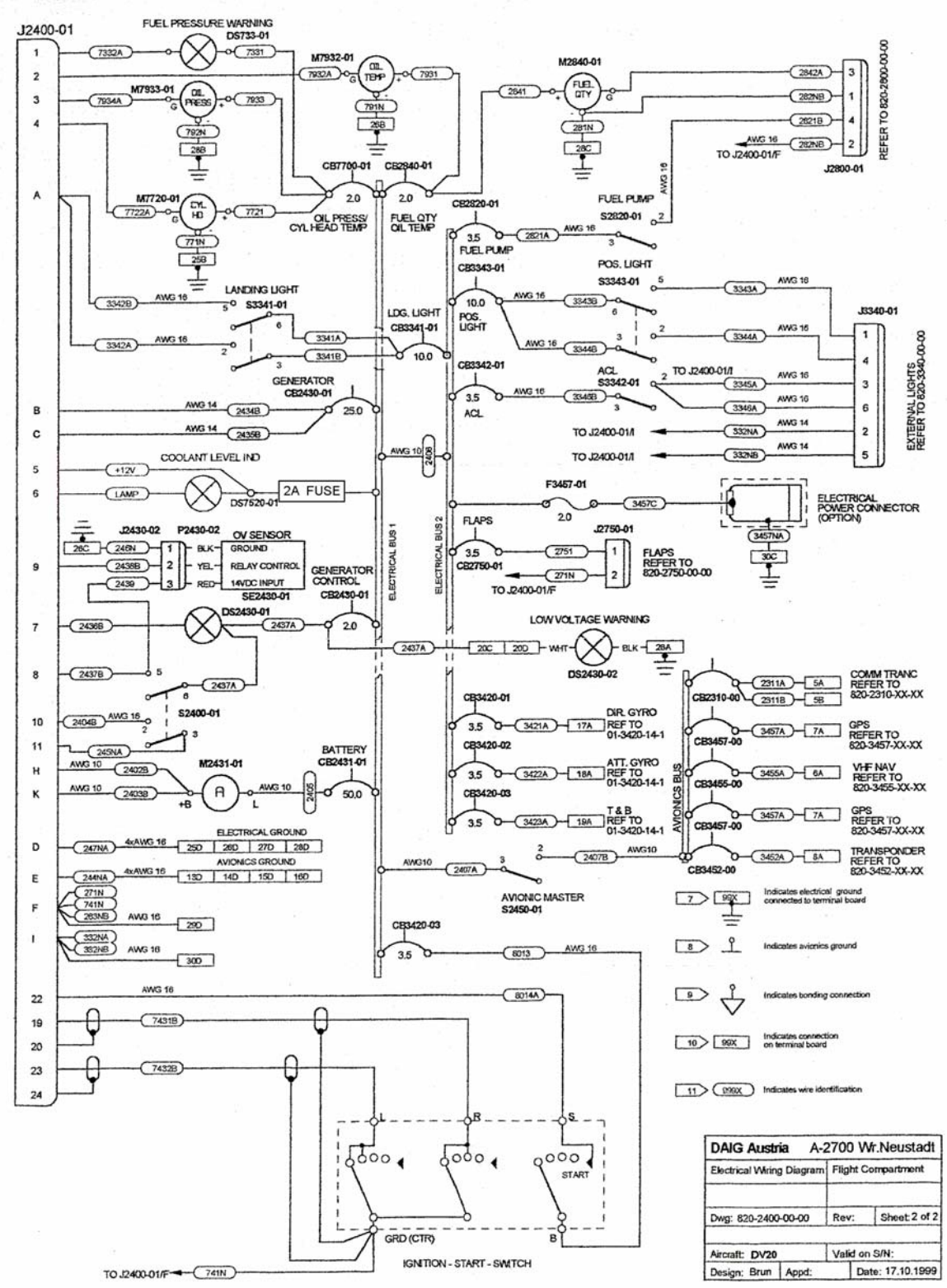
5 — All wires are MIL-W-22759-16 (C27500)

6 99X — Indicates connection on terminal board

7 (999X) — Indicates wire identification

HOAC Austria	A-2700 Wiener Neustadt		
Wiring diagram	GPS RECEIVER		
GARMIN	GPS150		
Dwg: 01-3457-14-2	Rev 0	Sheet 1 of 1	
Supersedes Dwg:		Rev 0	
Aircraft: DV 20	Valid on S/N:		
Design:	Appd:	Date: 21.06.95	


LOCATED ON ROTAX 912 ENGINE
FRONT FIREWALL
P2400-01
FUEL PRESSURE
OIL TEMP
OIL PRESSURE
CYL HEAD TEMP
SE7333-01
SE7932-01
SE7933-01
SE7720-01
FUEL PRESS
OIL TEMP
OIL PRESS
CYL HEAD TEMP
LANDING LIGHT
DS3341-01
ALL LANDING LIGHT WIRES TO BE AWG 14
P3341-01
J3341-01
SE7520-01
COOLANT LEVEL SENSOR
ELECTRICAL MOUNTING PLATE
(LOCATED ON ENGINE MOUNT)
VOLTAGE REGULATOR
VR2430-01
GENERATOR INPUT
14V OUT
14V OUT
LAMP CONTROL
GENERATOR
GEN2430-01
K2430-01
C2430-01
C2430-02
D2430-01
OVERVOLTAGE CONTROL
B8010-01
STARTING
BATTERY MASTER RELAY
K8010-01
K2431-01
D8010-01
D2431-01
D2430-03
ENGINE CRANK
BATTERY
12V/30Ah
BT2431-01
EXT. POWER
(OPTION)
PART OF ENGINE MOUNTING
SYSTEM 1 = A
SYSTEM 2 = B
RFI BOX
P7400-11
P7400-12
SYSTEM 1
SYSTEM 2
1 Indicates ground on electrical mounting plate
2 Indicates ground on engine
3 Indicates ground on engine (directly mounted)
4 Drawings based on aircraft on ground all systems off
5 All wires on engine compartment are AWG 20 unless otherwise noted
6 All wires to be MIL-W-22759-16 (C27500) tefzel wires
DAIG Austria A-2700 Wr.Neustadt
Electrical Wiring Diagram
Engine Compartment
Dwg: 820-2400-00-00
Rev:
Sheet:1 of 2
Aircraft: DV20
Valid on S/N:
Design: Brun
Appd:
Date: 19.10.1999



DAIG Austria	A-2700 Wr.Neustadt	
Electrical Wiring Diagram	Flight Compartment	
Dwg: 820-2400-00-00	Rev:	Sheet: 2 of 2
Aircraft: DV20	Valid on S/N:	
Design: Brun	Appd:	Date: 17.10.1999

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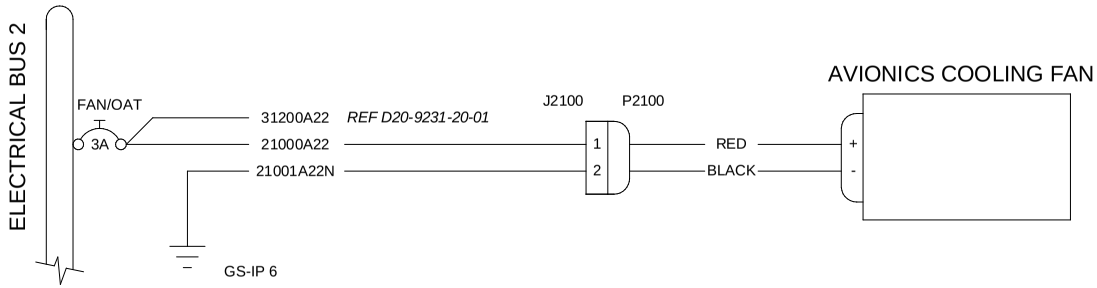
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	18.05.09	SEE TB
A	01	ALL	OÄM 20-267 GS updated	22.06.12	SEE TB



DIMENSIONS: **METRIC**	IDENTIFICATION MARKINGS: **DE-S-10-00003** - -	Diamond Aircraft Industries GmbH — Diamond Aircraft Industries — N. A. Otto-Straße 5, A-2700 Wiener Neustadt	
FIRST ANGLE PROJECTION; FORMAT: **A3**	CLASSIFICATION: **NONE**	DEPARTMENT / SIGN. / DATE	PROJECT: **DV 20**
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART: **NO**	DRAWN: **22.06.12**	TITLE: **Schematic, Avionics Cooling**
DIMENSION TOLERANCES: 3.2	THIS DRAWING WAS PRODUCED USING SOFTWARE: **SOLID EDGE V18**	CHECKED:	
2 DECIMAL ±0,25 1DECIMAL ±0,5 DECIMAL ±1 ANGLE ±1° RAD ±0,5 FINISH IN MICRO-METER	FILENAME: **D20-9221-20-01a.dft**	QA: **N/A** STRESS: **N/A** MANUF.: **N/A** SYSTEM: **N/A** APPROVED: **TL**	DWG.ORIG.: **DAIA** — DWG.NO.: **D20-9221-20-01** — REV: "A" — CODE: **710197** — SCALE: NTS — SH **01** OF **01**

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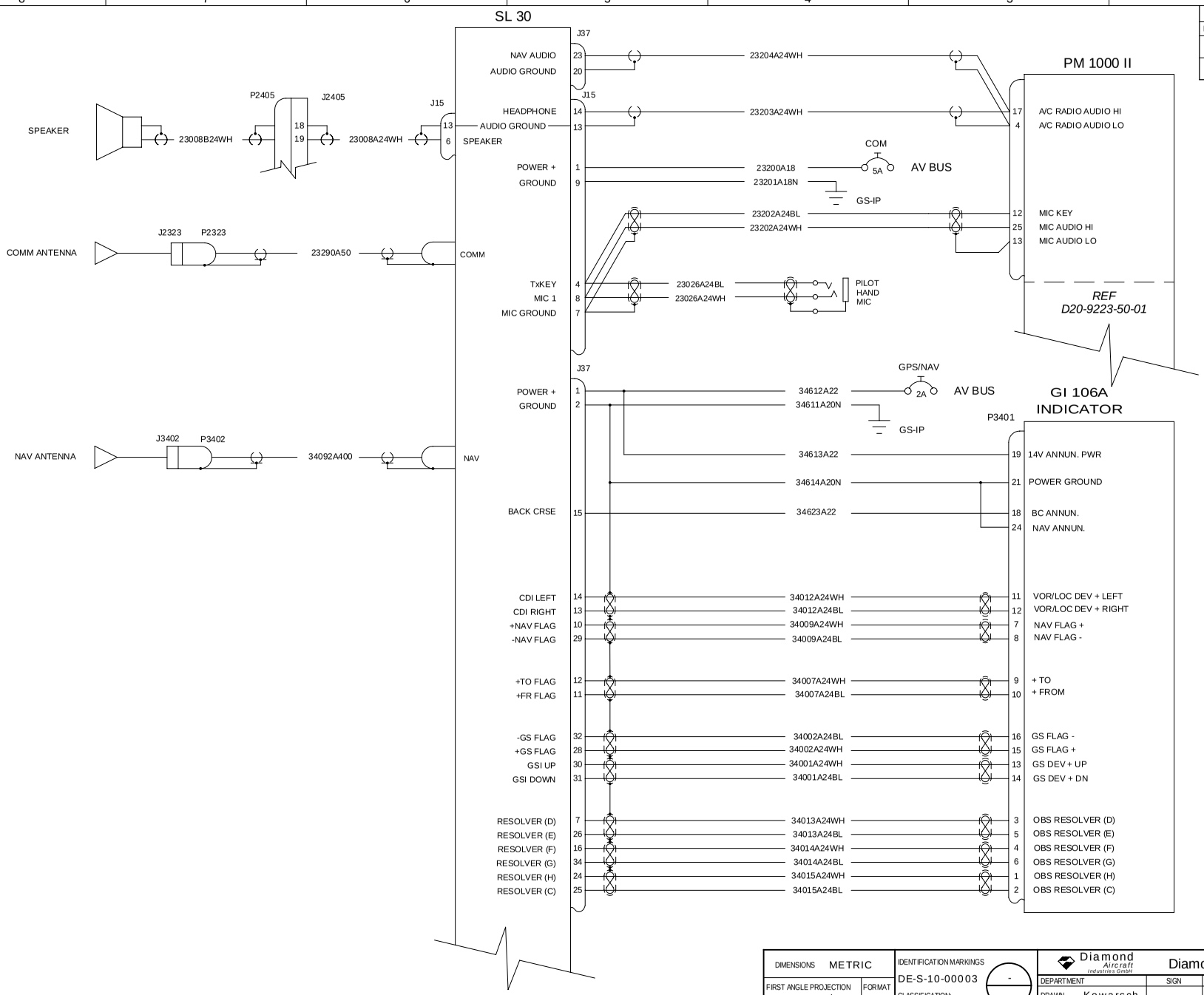
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-249 FIRST RELEASE	06.07.09	SEE TB



DIMENSIONS METRIC	IDENTIFICATION MARKINGS DE-S-10-00003	Diamond Aircraft Industries	N. A. Otto-Straße 5, A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION, FORMAT A2	CLASSIFICATION: NONE	DEPARTMENT / SIGN / DATE	PROJECT: DV 20
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART: NO	DRAWN: Kowarsch 06.07.09	TITLE: Schematic, SL30 & GI106A Wiring
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED: Kowarsch	DWG.ORIG.: DAIA
3.2 FINISH IN MICRO-METER	FILENAME: D20-9223-10-01.dft	QA: N/A	DWG.NO.: D20-9223-10-01
		STRESS: N/A	REV: "-"
		MANUF.: N/A	CODE 710197 SCALE NTS SH 01 OF 01
		SYSTEM: N/A	
		APPROVED: Jütte	

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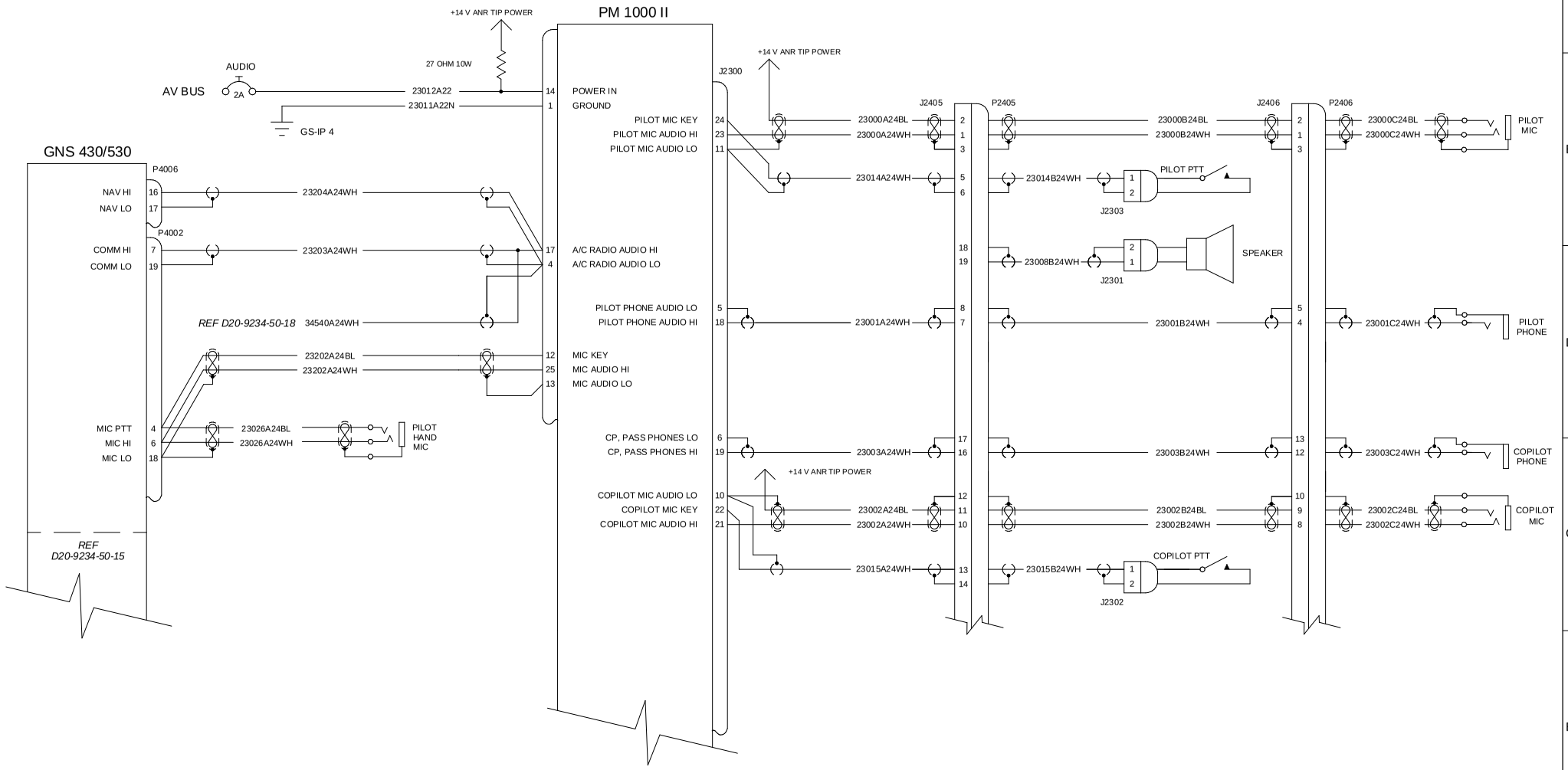
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	28.05.09	SEE TB
A	01	ALL	OÄM 20-244/a, WIRE NUMBERS AND CONNECTOR AT SPEAKER ADDED.	20.08.09	SEE TB
B	01	ALL	OÄM 20-267, GND wire number and ground stud updated.	22.06.12	SEE TB



DIMENSIONS: METRIC	IDENTIFICATION MARKINGS: DE-S-10-00003	Diamond Aircraft Industries	N. A. Otto-Straße 5 A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION	CLASSIFICATION: NONE	DEPARTMENT / SIGN / DATE	PROJECT: DV 20
FORMAT: A2	INTERCHANGEABLE PART: NO	DRAWN:	DATE: 22.06.12
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	THIS DRAWING WAS PRODUCED USING	CHECKED:	TITLE: Schematic, ICS Wiring
DIMENSION TOLERANCES: 3.2	SOFTWARE: SOLID EDGE V18	QA: N/A	
2 DECIMAL ±0,25 1 DECIMAL ±0,5 DECIMAL ±1 ANGLE ±1° RAD ±0,5	FINISH IN MICRO-METER	STRESS: N/A	
	FILENAME: D20-9223-50-01b.dft	MANUF.: N/A	DWG.ORIG.: DAIA DWG.NO.: D20-9223-50-01 REV: "B"
		SYSTEM: N/A	
		APPROVED:	CODE: 710197 SCALE: NTS SH: 01 OF 01

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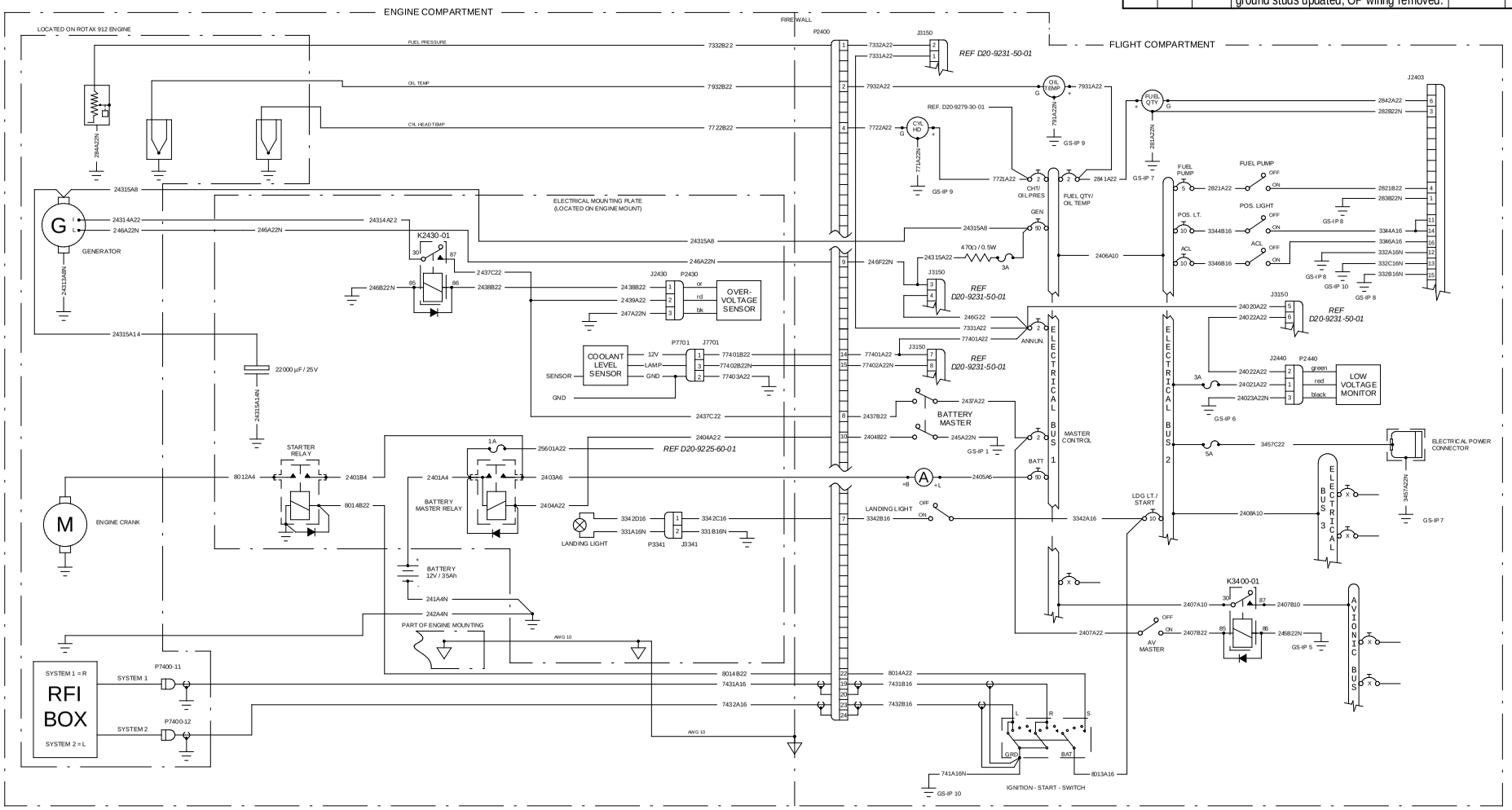
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	17.06.09	SEE TB
A	01	ALL	OÄM 20-267, Electrical bus 3 added, ground studs updated, OP wiring removed.	22.06.12	SEE TB



FLAG NOTES

1 — INDICATES BONDING CONNECTION.

DIMENSIONS **METRIC**	IDENTIFICATION MARKINGS **DE-S-10-00003**	Diamond Aircraft Industries GmbH	Diamond Aircraft Industries — N. A. Otto-Straße 5, A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION — FORMAT **A3**	CLASSIFICATION: **NONE**	DEPARTMENT / SIGN. / DATE	PROJECT **DV 20**
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART **NO**	DRAWN — **22.06.12**	TITLE **SCHEMATIC, ELECTRICAL SYSTEM**
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5 — FINISH 3.2 IN MICRO-METER	THIS DRAWING WAS PRODUCED USING SOFTWARE: **SOLID EDGE V18**	CHECKED QA: **N/A** STRESS: **N/A** MANUF.: **N/A** SYSTEM: **N/A**	DWG.ORIG. **DAIA** — DWG.NO. **D20-9224-30-01** — REV **A**
	FILENAME: **D20-9224-30-01a.dft**	APPROVED: **TL**	CODE **710197** — SCALE **NTS** — SH **01** OF **01**

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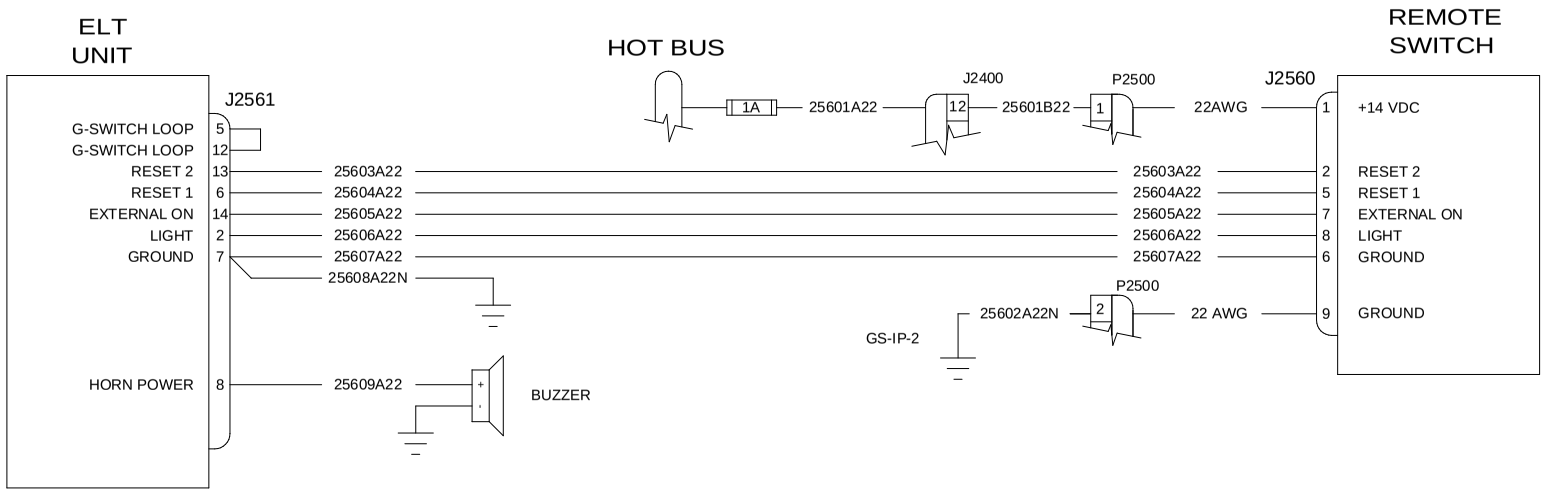
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	18.05.09	SEE TB
A	01	ALL	OÄM 20-267 P2500 added	09.08.11	SEE TB



DIMENSIONS METRIC	IDENTIFICATION MARKINGS DE-S-10-00003	Diamond Aircraft Industries GmbH	Diamond Aircraft Industries N. A. Otto-Straße 5 A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION / FORMAT A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE DRAWN 09.08.11	PROJECT DV 20
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART NO	CHECKED	TITLE Schematic, ELT ME 406 Wiring
DIMENSION TOLERANCES 2 DECIMAL u0,25 1DECIMAL u0,5 DECIMAL u1 ANGLE u1° RAD u0,5 3.2 FINISH IN MICRO-METER	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	QA: N/A STRESS: N/A MANUF.: N/A SYSTEM: N/A APPROVED: TL	DWG.ORIG. DAIA DWG.NO. D20-9225-60-01 REV A CODE 710197 SCALE NTS SH 01 OF 01
	FILENAME D20-9225-60-01a.dft		

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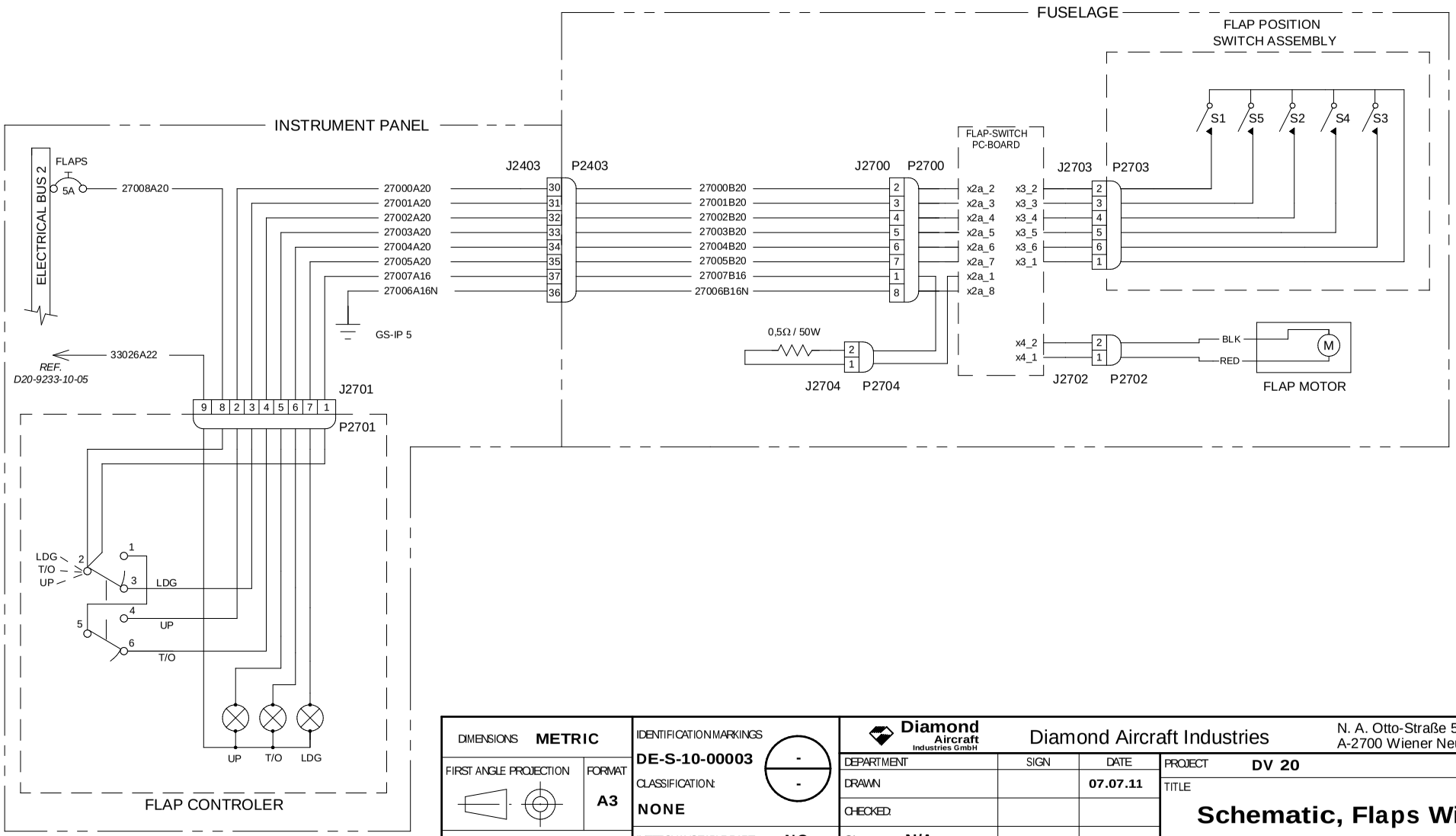
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	05.05.09	SEE TB
A	01	ALL	OÄM 20-267 Wire 33026A22 updated	07.07.11	SEE TB



DIMENSIONS METRIC	IDENTIFICATION MARKINGS DE-S-10-00003	Diamond Aircraft Industries GmbH	Diamond Aircraft Industries N. A. Otto-Straße 5 A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION / FORMAT A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE	PROJECT DV 20
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART NO	DRAWN: 07.07.11	TITLE: Schematic, Flaps Wiring
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED:	
3.2 FINISH IN MICRO-METER	FILENAME: D20-9227-50-01a.dft	QA: N/A	
		STRESS: N/A	
		MANUF.: N/A	DWG.ORIG. DAIA / DWG.NO. D20-9227-50-01 / REV A
		SYSTEM: N/A	
		APPROVED: TL	CODE 710197 / SCALE NTS / SH 01 OF 01

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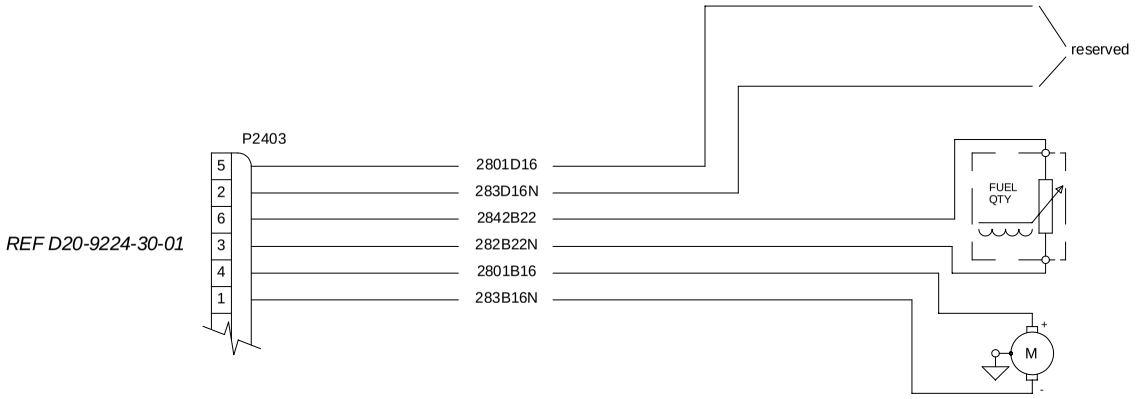
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	18.05.09	SEE TB



REF D20-9224-30-01

DIMENSIONS METRIC	IDENTIFICATION MARKINGS DE-S-10-00003	Diamond Aircraft Industries GmbH	Diamond Aircraft Industries N. A. Otto-Straße 5 A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION / FORMAT A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN / DATE	PROJECT DV 20
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART NO	DRAWN Kowarsch / 18.05.09	TITLE Schematic, Fuel System Wiring
DIMENSION TOLERANCES 2 DECIMAL ±0,25 1DECIMAL ±0,5 DECIMAL ±1 ANGLE ±1° RAD ±0,5 3.2 FINISH IN MICRO-METER	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED: Kowarsch QA: N/A STRESS: N/A MANUF.: N/A SYSTEM: N/A APPROVED: Jütte	DWG.ORIG. DAIA DWG.NO. D20-9228-20-01 REV "-" CODE 710197 SCALE NTS SH 01 OF 01
	FILENAME D20-9228-20-01.dft		

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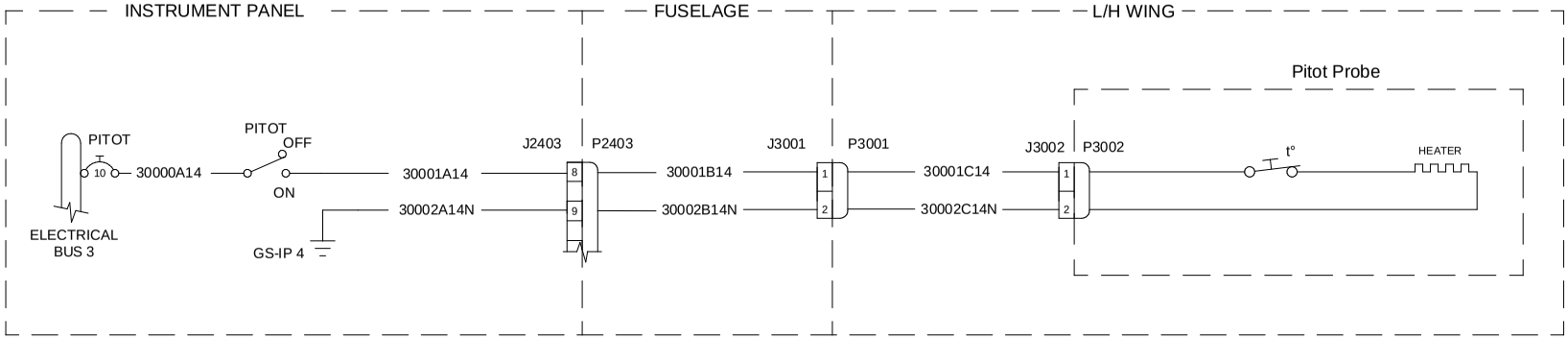
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
"-"	01	ALL	ÖÄM 20-267 FIRST RELEASE	30.05.12	SEE TB



DIMENSIONS: METRIC	IDENTIFICATION MARKINGS: DE-S-10-00003	Diamond Aircraft Industries GmbH	Diamond Aircraft Industries — N. A. Otto-Straße 5, A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE	PROJECT: DV 20
FORMAT: A3	INTERCHANGEABLE PART: NO	DRAWN: 30.05.12	TITLE: Schematic, Pitot Heat Wiring
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED:	
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5	FILENAME: D20-9230-30-02.dft	QA: N/A	DWG.ORIG.: DAIA
3.2 FINISH IN MICRO-METER		STRESS: N/A	DWG.NO.: D20-9230-30-02
		MANUF.: N/A	REV: "-"
		SYSTEM: N/A	CODE: 710197 SCALE: NTS SH 01 OF 01
		APPROVED: TL	

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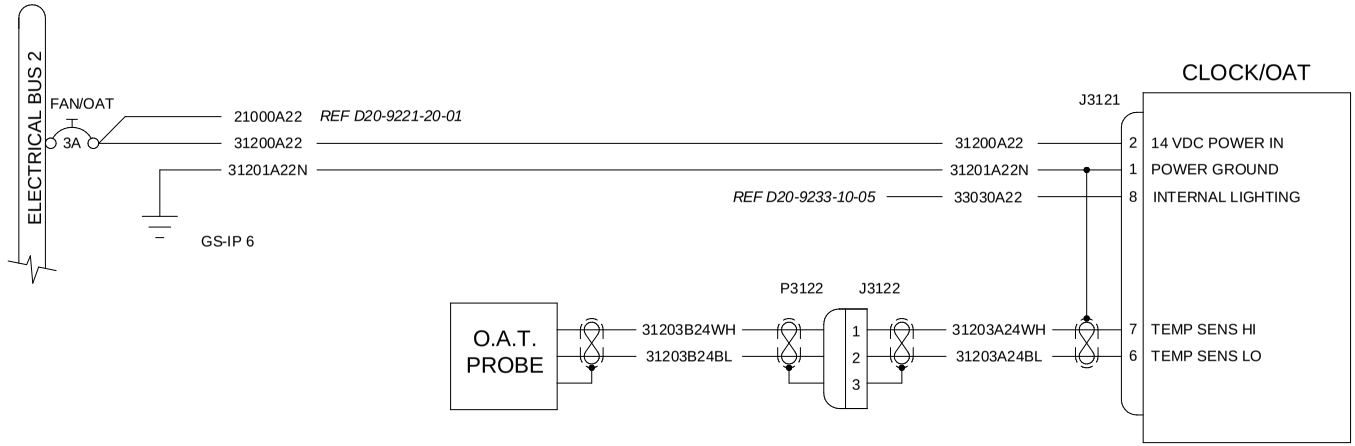
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	18.05.09	SEE TB
A	01	ALL	OÄM 20-267 Wire 33030A22 added	07.07.11	SEE TB



DIMENSIONS: METRIC	IDENTIFICATION MARKINGS: DE-S-10-00003 - -	Diamond Aircraft Industries GmbH — Diamond Aircraft Industries	N. A. Otto-Straße 5, A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION / FORMAT: A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE	PROJECT: DV 20
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART: NO	DRAWN: 07.07.11	TITLE: Schematic, Clock/OAT Wiring
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED:	DWG.ORIG.: DAIA
3.2 FINISH IN MICRO-METER	FILENAME: D20-9231-20-01a.dft	QA: N/A; STRESS: N/A; MANUF.: N/A; SYSTEM: N/A; APPROVED: TL	DWG.NO.: D20-9231-20-01; REV: A
			CODE: 710197; SCALE: NTS; SH 01 OF 01

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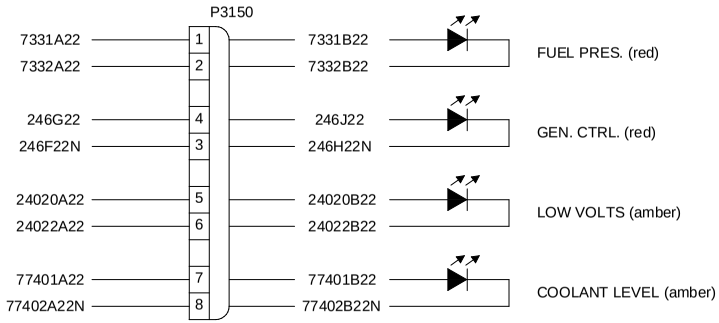
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	15.05.09	SEE TB
A	01	ALL	OÄM 20-267 77403A22 changed to 77402A22N	16.08.11	SEE TB

REF
D20-9224-30-01



DIMENSIONS **METRIC**

FIRST ANGLE PROJECTION

FORMAT **A3**

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MM

DIMENSION TOLERANCES

2 DECIMAL	u0,25
1DECIMAL	u0,5
DECIMAL	u1
ANGLE	u1°
RAD	u0,5

3.2

FINISH IN MICRO-METER

IDENTIFICATION MARKINGS
DE-S-10-00003

CLASSIFICATION:
NONE

INTERCHANGEABLE PART **NO**

THIS DRAWING WAS PRODUCED USING
SOFTWARE: **SOLID EDGE V18**

FILENAME
D20-9231-50-01a.dft

Diamond Aircraft Industries GmbH
Diamond Aircraft Industries
N. A. Otto-Straße 5
A-2700 Wiener Neustadt

DEPARTMENT	SIGN.	DATE
DRAWN		**16.08.11**
CHECKED:		
QA: **N/A**		
STRESS: **N/A**		
MANUF.: **N/A**		
SYSTEM: **N/A**		
APPROVED: **TL**		

PROJECT **DV 20**

TITLE
SCHEMATIC, CAUTION & WARNING

DWG.ORIG.	DWG.NO.	REV
DAIA	**D20-9231-50-01**	A

CODE **710197** SCALE NTS SH **01** OF **01**

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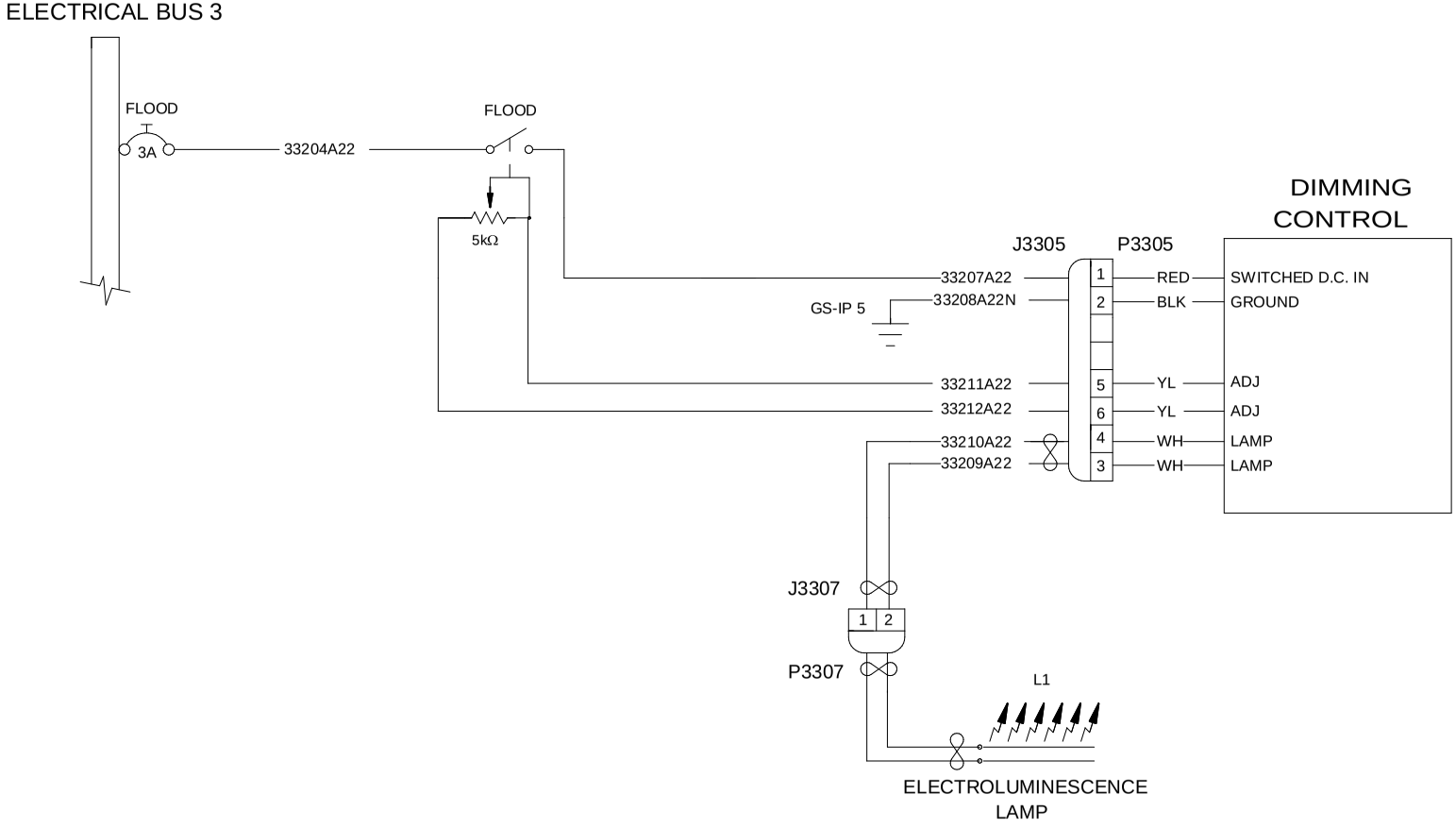
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-267 FIRST RELEASE	30.05.12	SEE TB



DIMENSIONS METRIC	IDENTIFICATION MARKINGS DE-S-10-00003	Diamond Aircraft Industries GmbH	Diamond Aircraft Industries — N. A. Otto-Straße 5, A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION / FORMAT A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE	PROJECT DV 20
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART NO	DRAWN — 30.05.12	TITLE: Schematic, Instrument Flood Light Wiring
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED	
3.2 FINISH IN MICRO-METER	FILENAME: D20-9233-10-01.dft	QA: N/A	
		STRESS: N/A	
		MANUF.: N/A	
		SYSTEM: N/A	
		APPROVED: TL	

DWG.ORIG.	DWG.NO.	REV
DAIA	D20-9233-10-01	"-"

CODE 710197 | SCALE NTS | SH 01 OF 01

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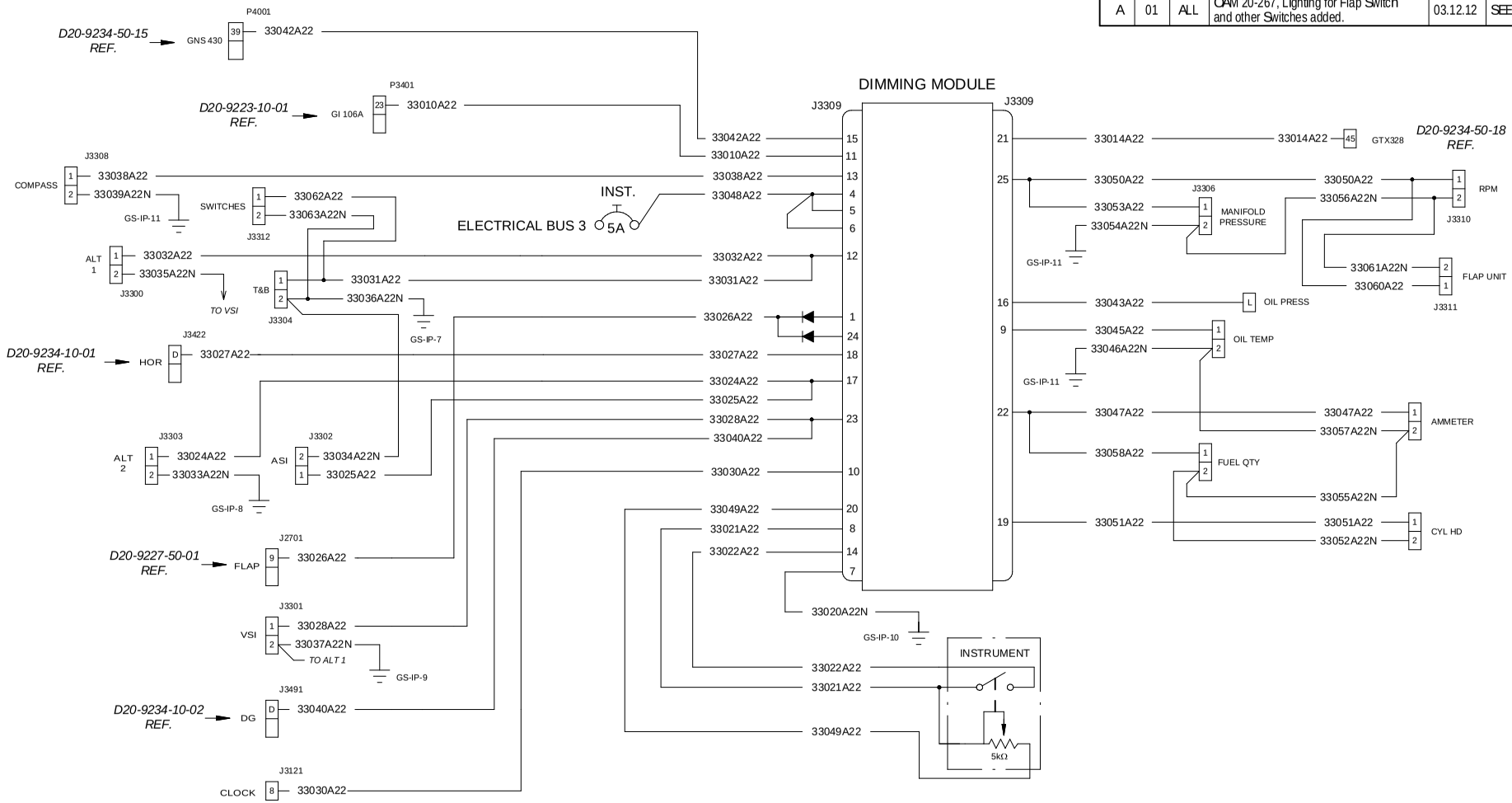
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-267 FIRST RELEASE	18.06.12	SEE TB
A	01	ALL	OÄM 20-267, Lighting for Flap Switch and other Switches added.	03.12.12	SEE TB



DIMENSIONS METRIC	IDENTIFICATION MARKINGS DP-S-17-00001	Diamond Aircraft Industries GmbH	Diamond Aircraft Industries N. A. Otto-Straße 5 A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION / FORMAT A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE	PROJECT DA 40 NG
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART NO	DRAWN 03.12.12	TITLE Schematic, Instrument Panel Light Wiring
DIMENSION TOLERANCES 2 DECIMAL ±0,25 1DECIMAL ±0,5 DECIMAL ±1 ANGLE ±1° RAD ±0,5 3.2 FINISH IN MICRO-METER	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED QA: N/A STRESS: N/A MANUF.: N/A SYSTEM: N/A APPROVED: TL	DWG.ORIG. DAIA DWG.NO. D20-9233-10-05 REV "A" CODE 710197 SCALE NTS SH 01 OF 01
	FILENAME D20-9233-10-05a.dft		

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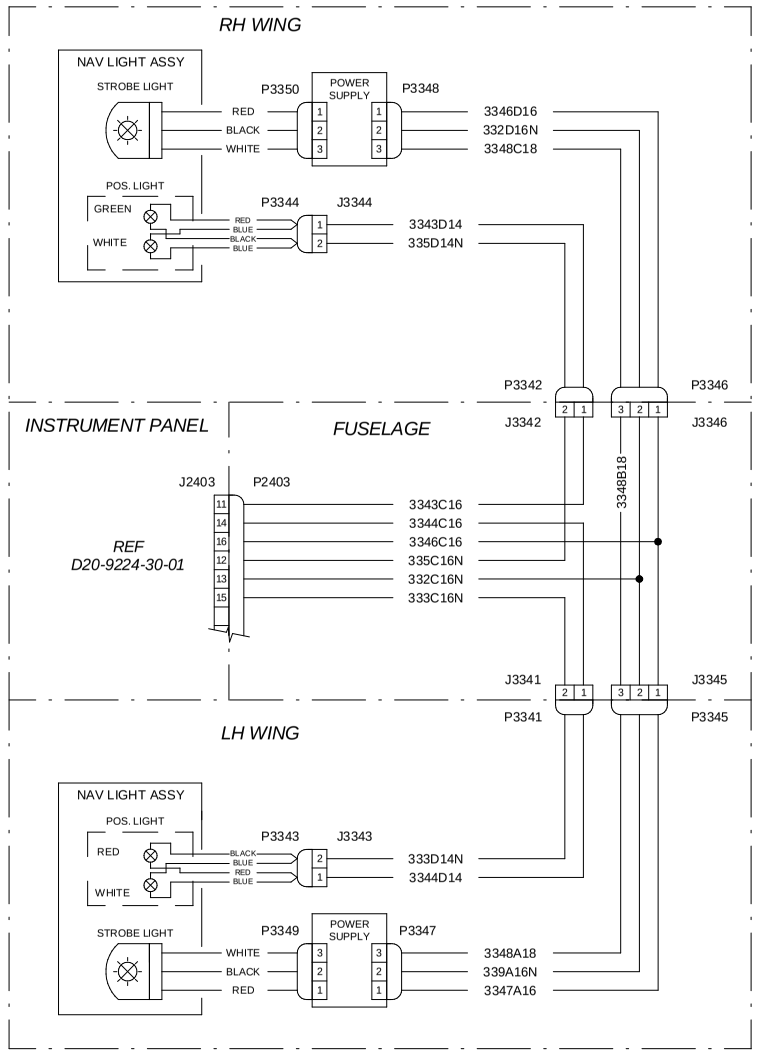
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
"-"	01	ALL	ÖÄM 20-244 FIRST RELEASE	17.06.09	SEE TB



DIMENSIONS METRIC	IDENTIFICATION MARKINGS DE-S-10-00003	Diamond Aircraft Industries GmbH	Diamond Aircraft Industries N. A. Otto-Straße 5 A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION / FORMAT A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE	PROJECT DV 20
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART NO	DRAWN / 17.06.09	TITLE: Schematic, Position Light and ACL Wiring
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED	
3.2 FINISH IN MICRO-METER	FILENAME: D20-9233-40-01.dft	QA: N/A	
		STRESS: N/A	
		MANUF.: N/A	
		SYSTEM: N/A	
		APPROVED	
			DWG.ORIG. DAIA / DWG.NO. D20-9233-40-01 / REV "-"
			CODE 710197 / SCALE NTS / SH 01 OF 01

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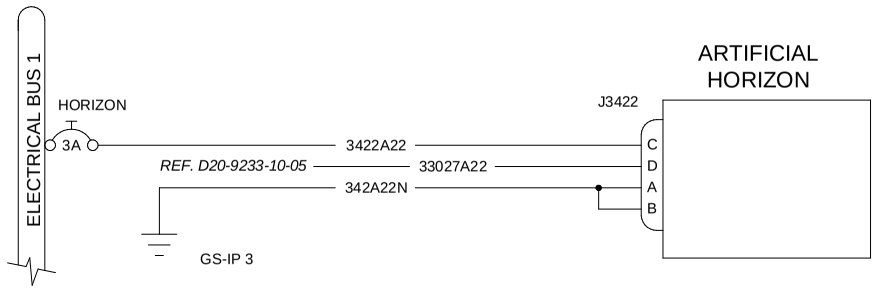
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	18.06.09	SEE TB
A	01	ALL	OÄM 20-267 Wire 33027A22 and Jumper added	08.08.11	SEE TB



DIMENSIONS: METRIC	IDENTIFICATION MARKINGS: DE-S-10-00003 - -	Diamond Aircraft Industries GmbH — Diamond Aircraft Industries — N. A. Otto-Straße 5, A-2700 Wiener Neustadt	
FIRST ANGLE PROJECTION / FORMAT: A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE DRAWN: 08.08.11 CHECKED:	PROJECT: DV 20 TITLE: **Schematic, Artificial Horizon Wiring**
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM DIMENSION TOLERANCES: 3.2 2 DECIMAL ±0,25 1DECIMAL ±0,5 DECIMAL ±1 ANGLE ±1° RAD ±0,5 FINISH IN MICRO-METER	INTERCHANGEABLE PART: NO THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18 FILENAME: D20-9234-10-01a.dft	QA: N/A STRESS: N/A MANUF.: N/A SYSTEM: N/A APPROVED: TL	DWG.ORIG.: DAIA DWG.NO.: D20-9234-10-01 REV: A CODE 710197 SCALE NTS SH 01 OF 01

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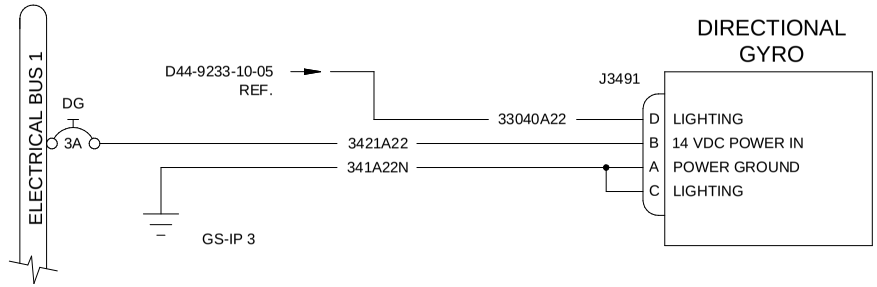
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	18.06.09	SEE TB
A	01	ALL	OÄM 20-267 Wire 3340A22 and Jumper added	18.06.12	SEE TB



DIMENSIONS: **METRIC**	IDENTIFICATION MARKINGS: **DE-S-10-00003** - -	Diamond Aircraft Industries GmbH — Diamond Aircraft Industries — N. A. Otto-Straße 5, A-2700 Wiener Neustadt	
FIRST ANGLE PROJECTION / FORMAT: **A3**	CLASSIFICATION: **NONE**	DEPARTMENT / SIGN. / DATE	PROJECT: **DV 20**
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART: **NO**	DRAWN: **18.06.12**	TITLE: **Schematic, Directional Gyro Wiring**
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5 — FINISH 3.2 IN MICRO-METER	THIS DRAWING WAS PRODUCED USING SOFTWARE: **SOLID EDGE V18**	CHECKED:	
	FILENAME: **D20-9234-10-02a.dft**	QA: **N/A**; STRESS: **N/A**; MANUF.: **N/A**; SYSTEM: **N/A**	DWG.ORIG.: **DAIA** — DWG.NO.: **D20-9234-10-02** — REV: **A**
		APPROVED: **TL**	CODE: **710197** — SCALE: NTS — SH **01** OF **01**

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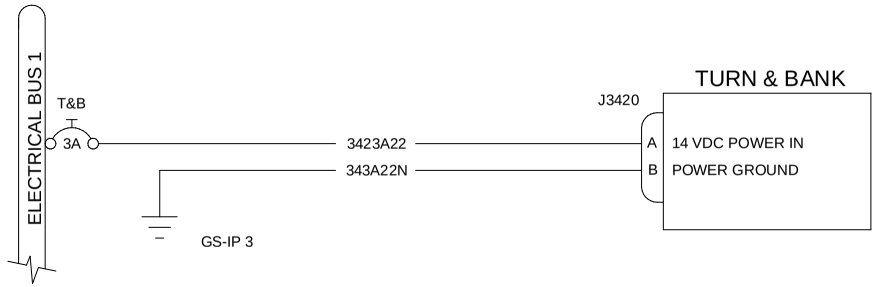
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	18.06.09	SEE TB
A	01	ALL	OÄM 20-267 GS updated	06.06.12	SEE TB



DIMENSIONS: **METRIC**	IDENTIFICATION MARKINGS: **DE-S-10-00003** - -	Diamond Aircraft Industries GmbH — Diamond Aircraft Industries — N. A. Otto-Straße 5, A-2700 Wiener Neustadt	
FIRST ANGLE PROJECTION / FORMAT: **A3**	CLASSIFICATION: **NONE**	DEPARTMENT / SIGN / DATE	PROJECT: **DV 20**
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART: **NO**	DRAWN: **06.06.12**	TITLE: **Schematic, Turn & Bank Wiring**
DIMENSION TOLERANCES: 3.2	THIS DRAWING WAS PRODUCED USING SOFTWARE: **SOLID EDGE V18**	CHECKED:	
2 DECIMAL ±0,25 1DECIMAL ±0,5 DECIMAL ±1 ANGLE ±1° RAD ±0,5	FILENAME: **D20-9234-10-03a.dft**	QA: **N/A** STRESS: **N/A** MANUF.: **N/A** SYSTEM: **N/A** APPROVED: **TL**	DWG.ORIG.: **DAIA** — DWG.NO.: **D20-9234-10-03** — REV: "A"
FINISH IN MICRO-METER			CODE: **710197** — SCALE: NTS — SH **01** OF **01**

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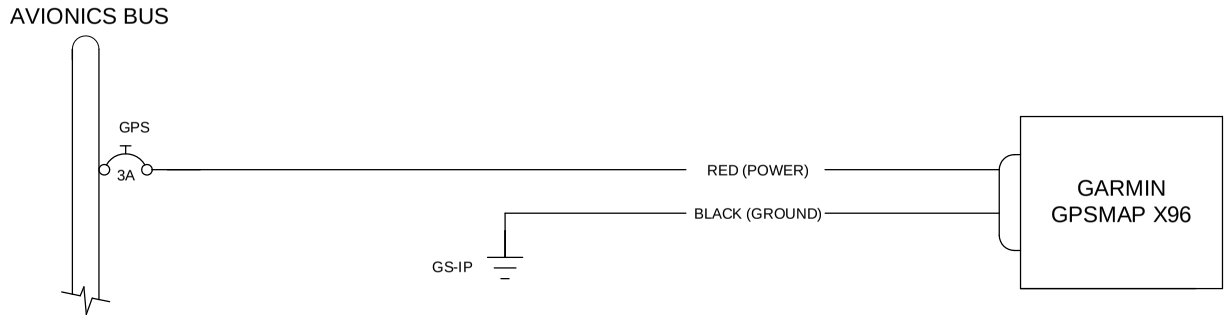
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-253 FIRST RELEASE	07.07.09	SEE TB



DIMENSIONS: METRIC	IDENTIFICATION MARKINGS: DE-S-10-00003 - -	Diamond Aircraft Industries GmbH — Diamond Aircraft Industries	N. A. Otto-Straße 5 A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION / FORMAT: A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE	PROJECT: DV 20
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART: NO	DRAWN: Kowarsch / 07.07.09	TITLE: SCHEMATIC, GPSMAP WIRING
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5 — 3.2 — FINISH IN MICRO-METER	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED: Kowarsch	DWG.ORIG.: DAIA — DWG.NO.: D20-9234-50-08 — REV: "-"
	FILENAME: D20-9234-50-08.dft	QA: N/A	CODE: 710197 — SCALE: NTS — SH 01 OF 01
		STRESS: N/A	
		MANUF.: N/A	
		SYSTEM: N/A	
		APPROVED: Jütte	

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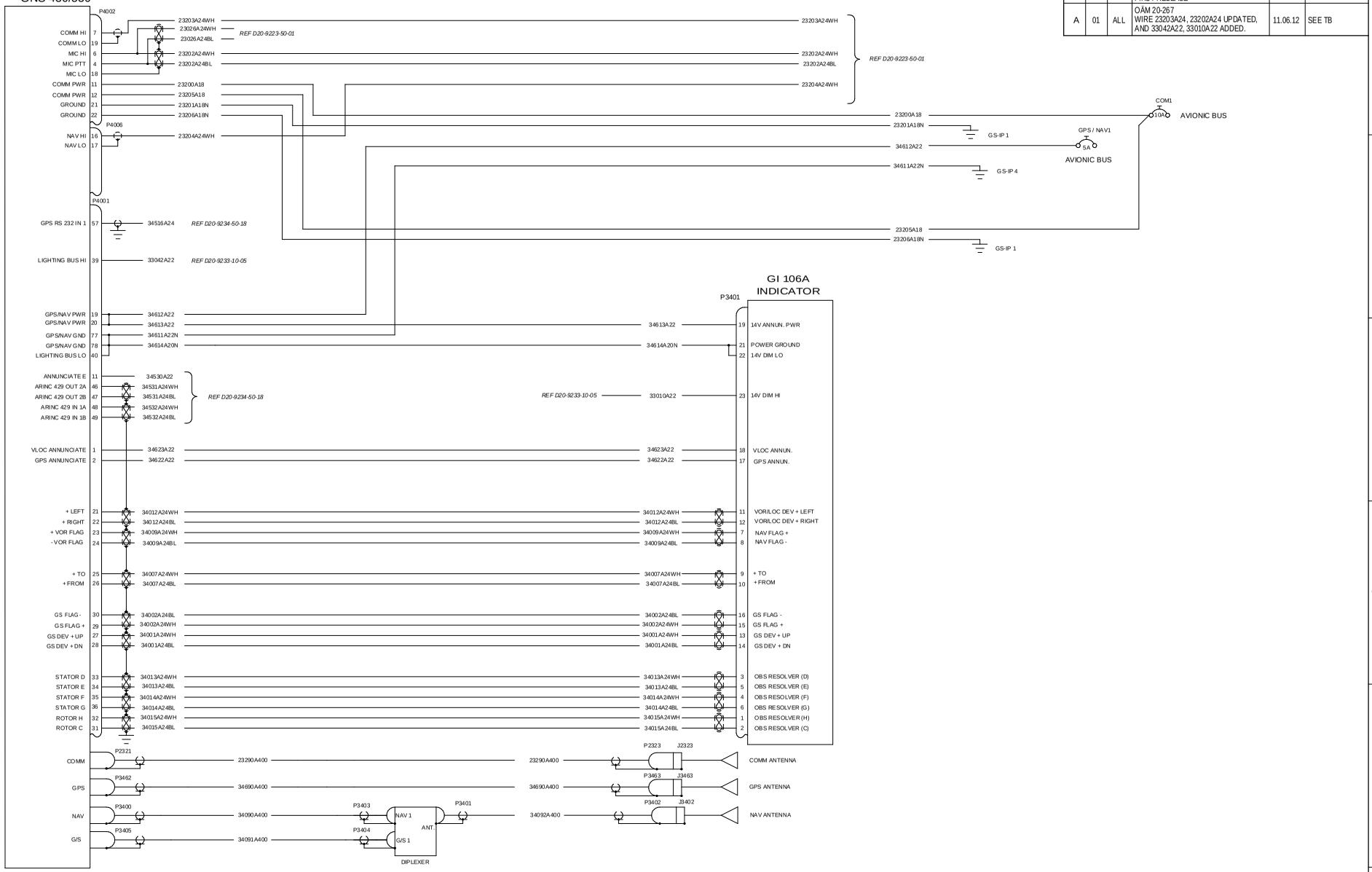
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	18.05.09	SEE TB
A	01	ALL	OÄM 20-267 WIRE 23203A24, 23202A24 UPDATED, AND 33042A22, 33010A22 ADDED.	11.06.12	SEE TB



DIMENSIONS: METRIC	IDENTIFICATION MARKINGS: DE-S-10-00003 -	Diamond Aircraft Industries	N. A. Otto-Straße 5 A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION	CLASSIFICATION: NONE -	DEPARTMENT / SIGN / DATE	PROJECT: DV 20
FORMAT: A2	INTERCHANGEABLE PART: NO	DRAWN:	11.06.12
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	THIS DRAWING WAS PRODUCED USING	CHECKED:	TITLE: Schematic, GNS 430 & GI 106A Wiring
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1 DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5	SOFTWARE: SOLID EDGE V18	QA: N/A	
3.2 FINISH IN MICRO-METER	FILENAME: D20-9234-50-15a.dft	STRESS: N/A	
		MANUF.: N/A	DWG.ORIG.: DAIA
		SYSTEM: N/A	DWG.NO.: D20-9234-50-15
		APPROVED: TL	REV: A
			CODE: 710197 SCALE: NTS SH: 01 OF: 01

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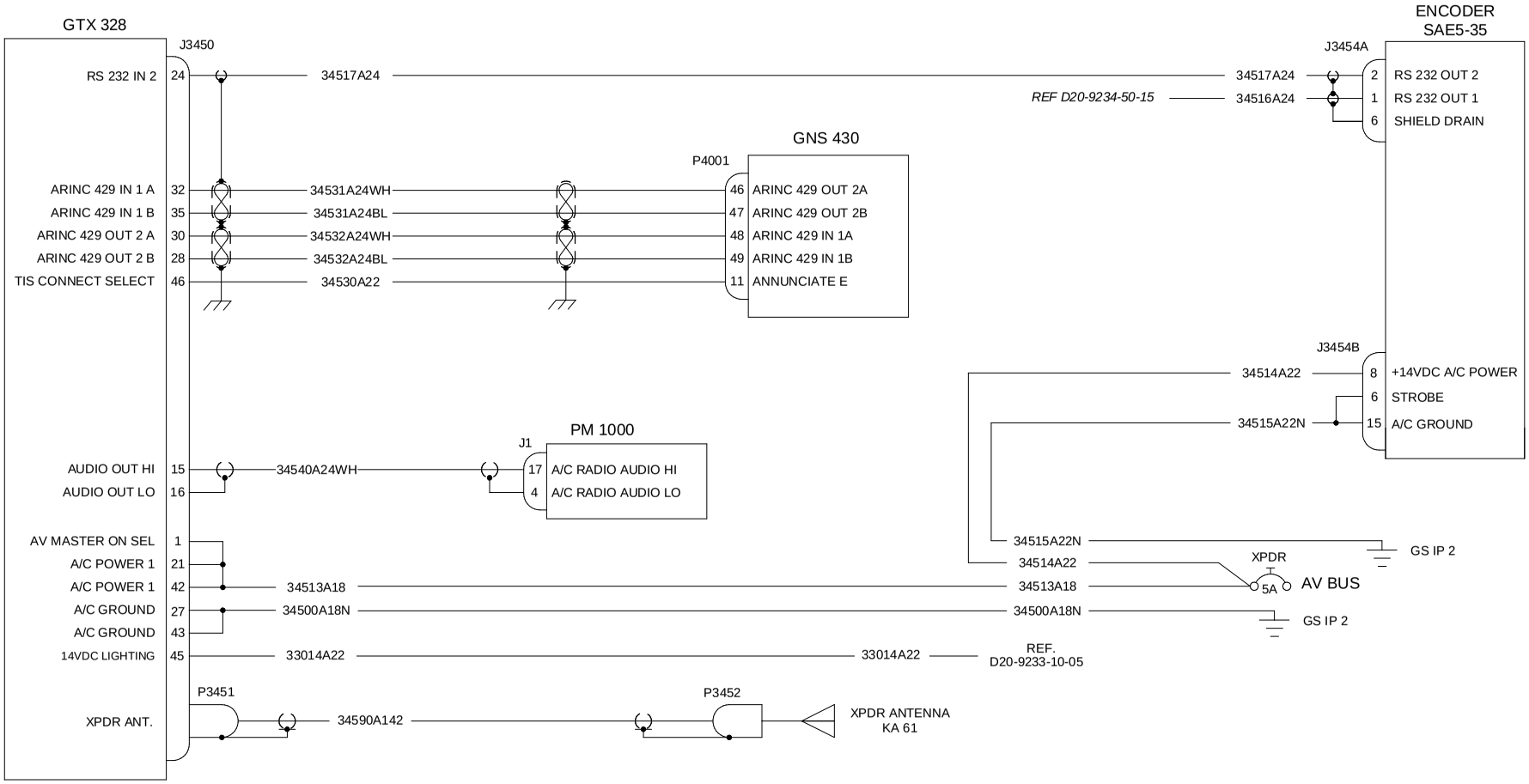
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-244 FIRST RELEASE	28.05.09	SEE TB
A	01	ALL	OÄM 20-267 Wire 33014A22 added	09.08.11	SEE TB



DIMENSIONS METRIC	IDENTIFICATION MARKINGS DE-S-10-00003	Diamond Aircraft Industries	N. A. Otto-Straße 5 A-2700 Wiener Neustadt
FIRST ANGLE PROJECTION / FORMAT A3	CLASSIFICATION: NONE	DEPARTMENT / SIGN. / DATE	PROJECT DV 20
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	INTERCHANGEABLE PART NO	DRAWN / 09.08.11	TITLE: SCHEMATIC, GTX 328 WIRING
DIMENSION TOLERANCES: 2 DECIMAL ±0,25; 1DECIMAL ±0,5; DECIMAL ±1; ANGLE ±1°; RAD ±0,5	THIS DRAWING WAS PRODUCED USING SOFTWARE: SOLID EDGE V18	CHECKED	DWG.ORIG. DAIA / DWG.NO. D20-9234-50-18 / REV A
3.2 FINISH IN MICRO-METER	FILENAME: D20-9234-50-18a.dft	QA: N/A STRESS: N/A MANUF.: N/A SYSTEM: N/A APPROVED: TL	CODE 710197 / SCALE NTS / SH 01 OF 01

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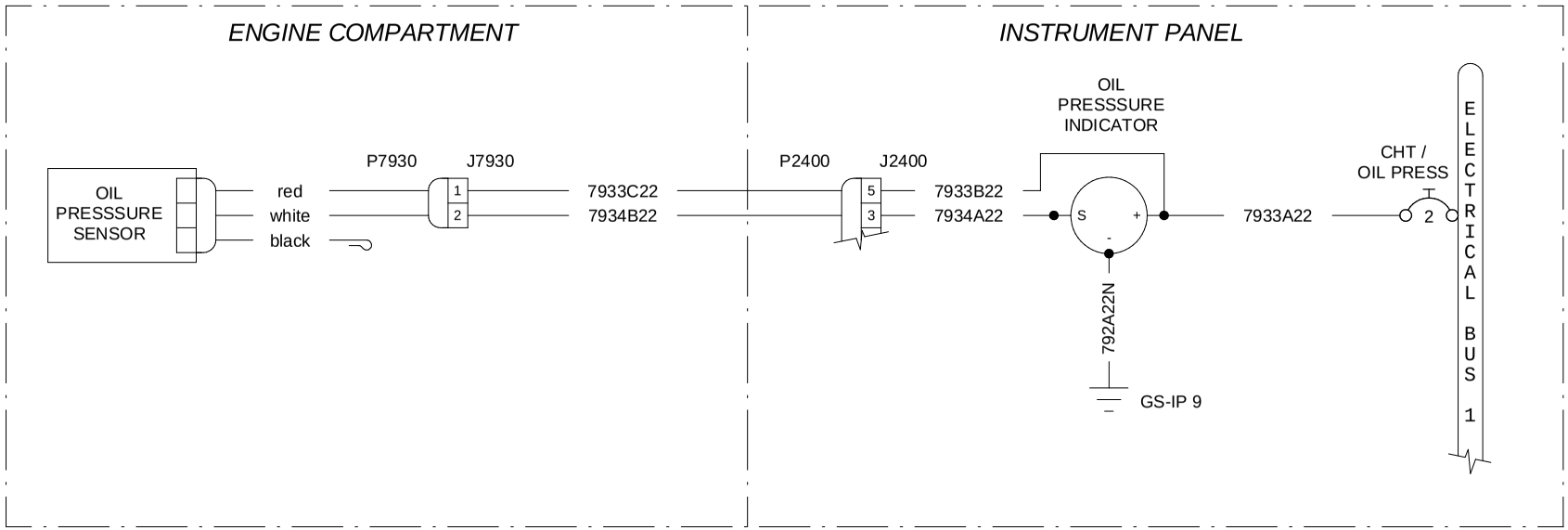
REVISION					
REV	SH	ZONE	DESCRIPTION	DATE	APPROVAL
-	01	ALL	OÄM 20-266 FIRST RELEASE	17.08.11	SEE TB
A	01	ALL	OÄM 20-267 Ground wire number and GS corrected.	11.06.12	SEE TB



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DIMENSIONS: **METRIC**

FIRST ANGLE PROJECTION

FORMAT: **A3**

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM

DIMENSION TOLERANCES

2 DECIMAL	±0,25
1DECIMAL	±0,5
DECIMAL	±1
ANGLE	±1°
RAD	±0,5

3.2

FINISH IN MICRO-METER

IDENTIFICATION MARKINGS: **DP-S-17-00001** - -

CLASSIFICATION: **NONE**

INTERCHANGEABLE PART: **NO**

THIS DRAWING WAS PRODUCED USING SOFTWARE: **SOLID EDGE V18**

FILENAME: **D20-9279-30-01a.dft**

Diamond Aircraft Industries GmbH

Diamond Aircraft Industries

N. A. Otto-Straße 5
A-2700 Wiener Neustadt

DEPARTMENT	SIGN.	DATE
DRAWN		11.06.12
CHECKED		
QA: N/A		
STRESS: N/A		
MANUF.: N/A		
SYSTEM: N/A		
APPROVED: TL		

PROJECT: **DV 20**

TITLE: **Schematic, Oil Pressure Indicator Wiring**

DWG.ORIG.	DWG.NO.	REV
DAIA	D20-9279-30-01	"A"

CODE: **710197** SCALE: NTS SH **01** OF **01**

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