AIRPLANE MAINTENANCE MANUAL

FOR THE POWERED SAILPLANE

OF THE

HK 36 SUPER DIMONA SERIES

Models	**HK 36** **HK 36 R Super Dimona** **HK 36 TS** **HK 36 TC** **HK 36 TTS** **HK 36 TTC** **HK 36 TTC - ECO**
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CHAPTER 0
GENERAL

0.1 LOG OF REVISIONS

Rev. No.	Pages	Source	Date	Inserted by
1 through 10			1994 through 1998	-
11	MÄM 36-396 New Edition, all pages revised MSB 36-087/1 AMM-TR-MÄM-36-218 AMM-TR-MÄM-36-225/a & AMM-TR-MÄM-36-314 AMM-TR-MÄM-36-305 AMM-TR-MÄM-36-320 AMM-TR-MÄM-36-327 AMM-TR-MÄM-36-385 AMM-TR-MÄM-36-450 AMM-TR-OÄM-36-200 AMM-TR-OÄM-36-211 AMM-TR-OÄM-36-229 AMM-TR-OÄM-36-361 AMM-TR-OÄM-36-369 HK 36 added		15 Jan 2016	

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CHAPTER 5: REPAIR INSTRUCTIONS

CHAPTER 6: AIRWORTHINESS LIMITATIONS

0.3 EXPLANATIONS

NOTE

This manual replaces former AMM Doc. No. 3.02.01-E, which will no longer be revised.

NOTE

This manual is not organized in accordance with the ATA 100 standard. Therefore make sure to use the correct chapters for scheduled maintenance requirements and airworthiness limitations. Airworthiness limitations are listed in Chapter 6.

NOTE

A list of additional manuals for maintenance can be found in section 3.1.2.

0.3.1 ABBREVIATIONS

AC	Advisory Circular
AD	Airworthiness Directive
CFRP	Carbon fiber reinforced plastic
DP	Datum Plane (for CG Calculations)
CG	Center of gravity
FAA	Federal Aviation Administration
GFRP	Glass fiber reinforced plastic
SB	Service Bulletin

0.3.2 ORGANIZATION AND HANDLING OF THE MANUAL

Service Bulletins

Service Bulletins get issued when necessary. They give the operator more information on inspections, maintenance, repairs or modifications.
Service Bulletins have 4 categories:

A. Alert Service Bulletins
Alert Service Bulletins are issued if there is an immediate danger (risk of damage or total loss). They are sent immediately by the fastest means to all known addresses of operators and service stations which are affected.

B. Mandatory Service Bulletins
Mandatory Service Bulletins include the description of a problem and the solution. If you do not follow a mandatory Service Bulletin, failures or malfunctions can result during further operation.
You must do the work given in a Mandatory Service Bulletin.

C. Recommended Service Bulletins
Recommended Service Bulletins give data about:

- A minor problem and its correction.
- A better technical design.

If you do not follow a Recommended Service Bulletin, it will not cause a failure. But it may cause increased maintenance work.
If you do follow a Recommended Service Bulletin:

- The maintenance work may be reduced (for example, reduced wear, increased life).
- The operational behavior will be improved (for example, easier engine starting).

D. Optional Service Bulletins
Optional Service Bulletins give data about optional equipment that you can install in an airplane (for example, sailplane towing device).
The airplane owner makes the decision to follow an Optional Service Bulletin.

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.

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 sparepart 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.

0.3.3 APPLICABILITY

Depending on the airplane model and configuration some sections may or may not apply. These sections are addressed regarding the applicability with one or a combination of the following methods:

Addressed by model number:
If a group of models is addressed, they are listed or the following abbreviations are used:

HK 36 T-Series	HK 36 TC, HK 36 TS, HK 36 TTC, HK 36 TTS, HK 36 TTC-ECO
HK 36 TT*	HK 36 TTC, HK 36 TTS and HK 36 TTC-ECO
Tail-wheel models	HK 36, HK 36 R, HK 36 TS and HK 36 TTS
Tricycle models	HK 36 TC, HK 36 TTC and HK 36 TTC-ECO

* The asterisk represents the last letter of a model.

Addressed by serial number: (Example: For Serial Numbers 36.517 and subsequent)

| Addressed by modification: (Refer to the production modification status and retrofit
| modifications recorded in the airplane log to find out whether this modification is
| installed in the airplane. Example: “if OSB 36-100 is installed”)

| 0.3.4 PHYSICAL UNITS

	SI units	inch/pound units	conversions
Length	[mm] Millimeter [cm] Centimeter [m] Meter	[in.] Inch [ft.] Foot	[mm] / 25.4 = [in.] [cm] / 2.54 = [in.] [m] / 0.3048 = [ft.]
Velocity	[km/h] Kilometers per hour [m/s] Meters per second	[kts.] Knot [mph] Miles per hour [fpm] Feet per minute	[km/h] / 1.852 = [kts.] [km/h] / 1.609 = [mph] [m/s] * 196.85 = [fpm]
Rotary speed	[min^{-1}] Revolutions per minute	[RPM] Revolutions per minute	[min^{-1}] = [RPM]
Capacity	[l] Liter	[US gal.] U.S. gallon [Imp. gal.] Imperial gallon	[l] / 3.785 = [US gal.] [l] / 4.546 = [Imp. gal.]
Mass density	[kg/m^3] Kilograms per cubic meter	[lbs./cu.in.] Pounds per cubic inch [lbs./cu.ft.] Pounds per cubic foot	[kg/m^3] / 27680 = [lbs./cu.in.] [kg/m^3] / 16.02 = [lbs./cu.in.]
Mass	[kg] Kilogram	[lbs.] Pound	[kg] * 2.2046 = [lbs.]
Force, weight	[N] Newton [daN] Decanewton	[lbs.] Pound	[N] * 0.2248 = [lbs.] [daN] * 2.248 = [lbs.]
Power	[kW] Kilowatt [DIN-hp.] DIN-horsepower (German horsep., non-SI unit)	[h.p.] Horse power	[kW] * 1.36 = [DIN-hp.] [kW] * 1.341 = [h.p.]
Pressure	[hPa] Hectopascal [mbar] Millibar [bar] Bar	[inHg] Inch mercury column [psi] Pounds per square inch	[hPa] = [mbar] [hPa] / 33.865 = [inHg] [bar] * 14.504 = [psi]
Temper-ature	[°C] Degree Celsius	[°F] Degree Fahrenheit	[° C] * 1.8 + 32 = [° F]
Current intensity	[A] Ampère		-
Current capacity	[Ah] Ampère hour		-
Voltage	[V] Volt		-

CHAPTER 1

RIGGING AND DE-RIGGING, CARE

1.1 RIGGING AND DE-RIGGING

The rigging and de-rigging procedures are described in Section 4 of the Airplane Flight Manual.

NOTE

When installing or removing the wings, make sure that the airplane does not fall onto its nosewheel or tail skid due to the CG movement.

If the airplane is equipped with the optional wing folding mechanism, the wings remain connected to the fuselage with a telescopic tube after de-rigging. For a complete detachment of the wings, remove the two spring dowel sleeves from the joint of the A-bolt and the telescopic tube.

1.2 ROAD TRANSPORT

An open trailer is recommended for road transport. The components should be cushioned and protected against slippage.

The fuselage is transportable standing on all three wheels. It must be prevented from moving forward, rearward or vertically. Ensure sufficient propeller clearance in the trailer to prevent damage due to fuselage movement.

If the powered sailplane is equipped with the optional wing folding mechanism, the wings need not be removed completely for road transportation. They remain attached to the fuselage by the telescopic tubes (optional equipment). However, the wing must be supported by a 400 mm (16 in.)

wide and 500 mm (20 in.) high profile cushion under the root rib. This will prevent damage to the telescopic tube and its guide. Another profile cushion should be placed about 4 m (13 ft.) behind the root rib. The cushion should be at least 300 mm (12 in.) wide and 350 mm (14 in.) high.

The wings must be prevented from moving rearward. The B-bolt must be padded to prevent damage to the wing skin.

Lay the horizontal stabilizer flat on the trailer and tie it down or place it vertically on the leading edge, and secure it using profiles cushioned with felt or cellular rubber.

1.3 STORAGE

If your airplane is furnished with the optional wing folding mechanism, the wings can be folded for storage in a narrow space. The wing outboard ends can be hung from the horizontal stabilizer with the provided support fixtures. The horizontal stabilizer must be supported with the appropriate diagonal struts. The B-bolts must be padded to protect the wing skin from damage.

Should the airplane be stored for a prolonged period (e.g. during winter break), it is recommended that profile cushions are placed under the wings as described above. The storage room or hangar should have good air-circulation.

1.4 CLEANING AND CARE

The entire surface of the Powered Sailplane is painted with a white weather proof two component paint. Nevertheless, the airplane should be protected against moisture and dampness. The airplane should not be stored outdoors for extended periods of time. Water that has accumulated must be removed by storing the affected parts in a dry place and turning them over several times.

Dirt, insects, etc. can be removed with water and, if necessary, with a mild detergent. An automotive paint cleaner can be used for stubborn spots. For best results, clean the airplane after the day's flying is ended, so that the dirt will not become engrained.

Oil stains, exhaust stains etc. on the fuselage underside can be removed with a cold detergent. Before starting, make sure the detergent does not harm the paint finish. Use commercial automotive preservatives to conserve the paint finish.

Canopy and windows should be cleaned with an acrylic glass detergent if available; otherwise use lukewarm water. Final cleaning should be done with a clean piece of doeskin or soft cloth. Never rub or polish dry acrylic glass!

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CHAPTER 2

SYSTEMS DESCRIPTION

2.1 FLIGHT CONTROL SYSTEM

2.1.1 GENERAL

The flight control system, the engine control system and the engine block are electrically connected by ground straps. When working on the flight control systems, always make sure that the straps are attached and intact.

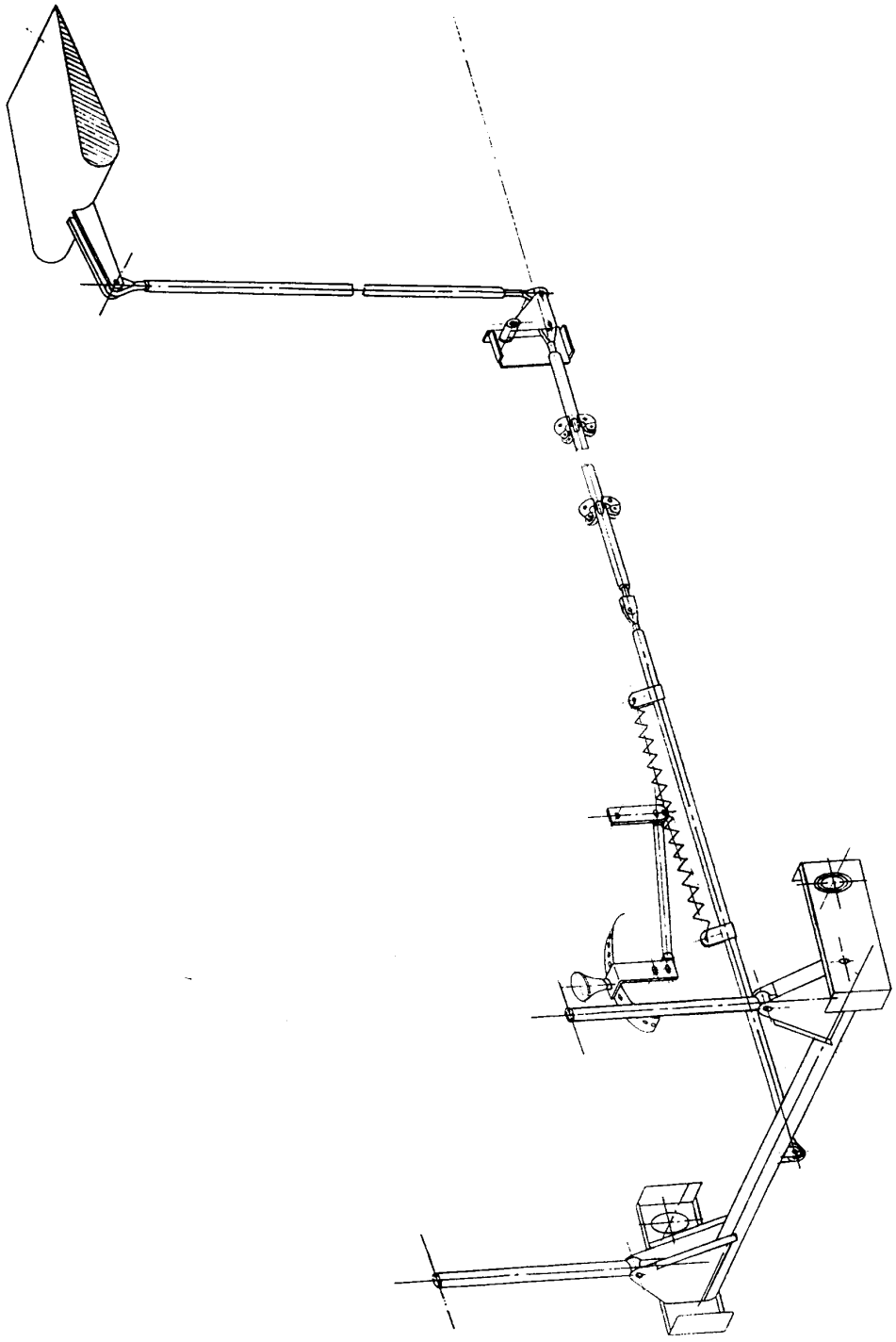
2.1.2 ELEVATOR CONTROL SYSTEM

Description

Both control sticks are connected by a torque tube. A shackle joint, which is welded to the lower side of the torque tube slightly to the left of the center, connects the elevator push-rods to the torque tube.

Two push-rods in the fuselage with a joint aft of the main spar connect to the bellcrank in the vertical stabilizer spar. The rearward push-rod is guided in the half-bulkhead and in the second ring frame, the forward push-rod is guided in the sickle shaped bulkhead.

| From the bell crank a vertical push-rod goes to the elevator horn.



Elevator Control and Trim System

Removal and installation

The forward elevator control system is accessible after removing the seats. The rear elevator control parts are accessible after removing the rudder.

| For removal of the control system components located under the seats, refer to Section 2.1.7.

To remove the rearward horizontal push-rod from the fuselage tube, remove the rudder, disconnect push-rods on both ends, mark position of forward rod end bearing, remove forward rod end bearing, remove push-rod in rearward direction.

To remove the forward horizontal push-rod, remove the rear push-rod, disconnect rod on forward end, mark position of forward rod end bearing, remove forward rod end bearing, mark positions of clamps for trim springs, loosen clamps, remove push-rod in rearward direction.

Vertical push-rod in vertical stabilizer: The push-rod can be removed after disconnecting it from the bellcrank on the lower end and the elevator horn on the upper end.

| After re-installation of elevator push-rods, check trim adjustment (see Section 2.1.3) and elevator deflection (see Section 4.3). For removal and installation of the horizontal stabilizer,
| refer to Airplane Flight Manual.

Adjustment of elevator stops

The stops for the elevator are placed on the left side of the forward transverse stiffener. Adjust maximum elevator deflection with the two screws and locking nuts on the transverse stiffener (accessible from outside).

2.1.3 ELEVATOR TRIM CONTROL SYSTEM

The elevator trim control system operates on springs. A spring loaded locking mechanism keeps the trim lever in its position.

Inspection of the trim adjustment

1. The elevator control system must operate smoothly and must not be blocked by anything (harnesses, seats, etc.).
2. Move trim lever slowly from full NOSE UP to NOSE DOWN position until the stick reaches its maximum forward position; release trim lever.
3. The lever must catch in index hole no. 11 ± 4, counted from the front.
4. Move the trim lever to full NOSE DOWN position, pull stick to the rearward stop. The rearward trim spring must not contract completely.

NOTE

If the result is not satisfactory, check the condition of the trim springs before readjusting the trim lever. In most cases, one of them has been overstretched.

2.1.4 RUDDER CONTROL SYSTEM

Description

The rudder is deflected through control cables by means of foot pedals. The four forward cables run from the pedals to the rudder lever which is mounted to the B-bulkhead.

The outer cables are guided by rollers which are mounted to the root rib of the fuselage (tail wheel models with Serial Nos. through 36.516) or to the transverse stiffeners (tail wheel models with Serial Nos. above 36.516 and tricycle models). The cables are partly guided through Teflon hoses.

The two rearward control cables are guided by Teflon tubes from the rudder lever through the fuselage tube to the rudder.

Adjustment of forward rudder control cables

Lock all four rudder pedals in neutral position. Lock rudder lever in B-bulkhead in neutral position (perpendicular to airplane centerline). In front of each pedal there is a fitting with six mounting holes. Attach cables to appropriate mounting holes.

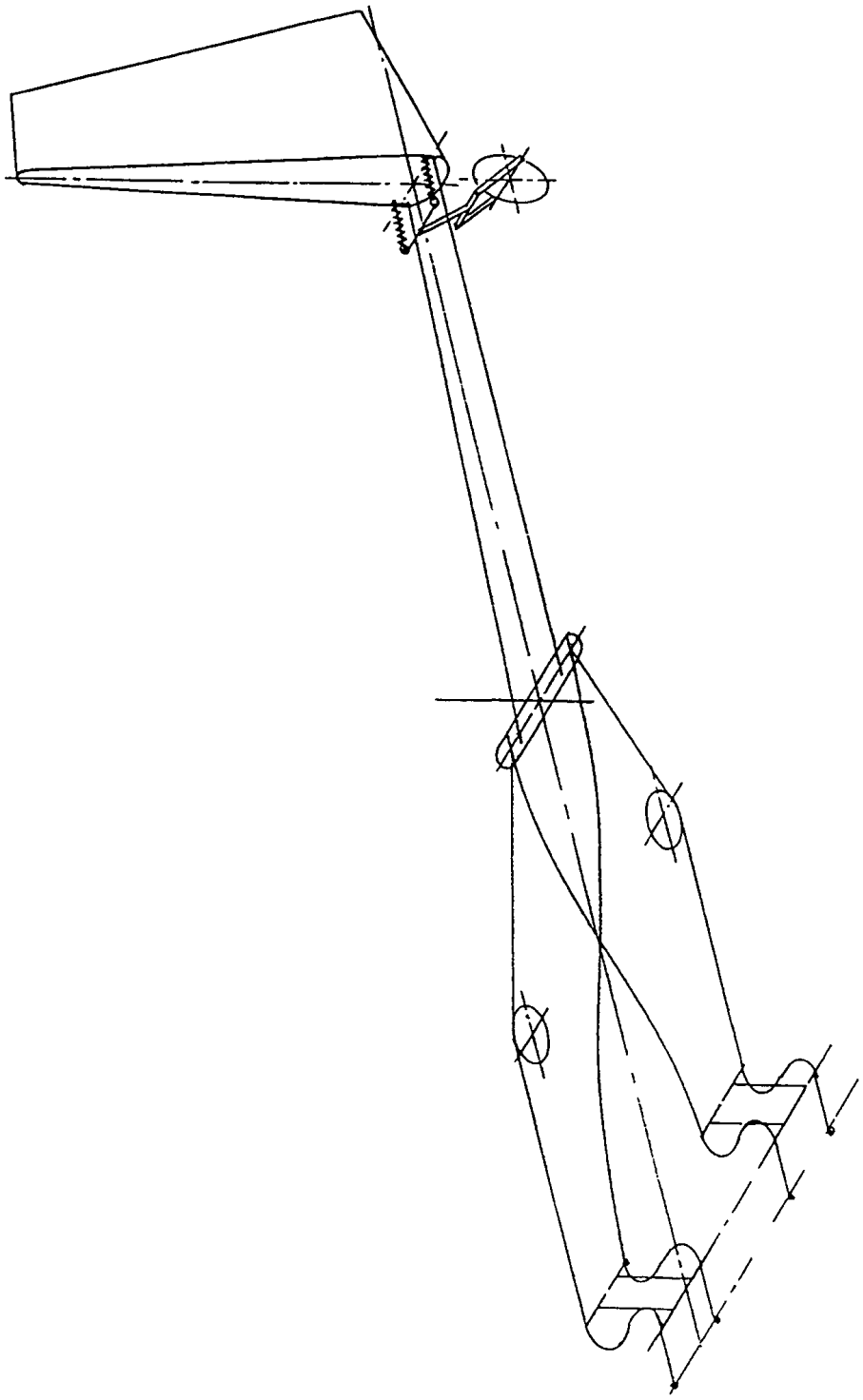
Adjustment of rearward rudder control cables

The tensile force of these cables can be adjusted with turnbuckles. These are accessible through the B-bulkhead. In airplanes with fuselage fuel tank, remove the fuel tank.

Serial Numbers	**Nominal Tensile Force of Rearward Rudder Control Cables**	
	[daN]	**[lbs.]**
36.301 through 36.504	15 ± 2	33.7 ± 4.5
36.505 and subsequent	12 ± 2	27.0 ± 4.5

Adjustment of rudder stops

The stops for the rudder are located on the inside surface of the lower rudder mounting plate. Adjust maximum rudder deflection with the two screws and locking nuts.



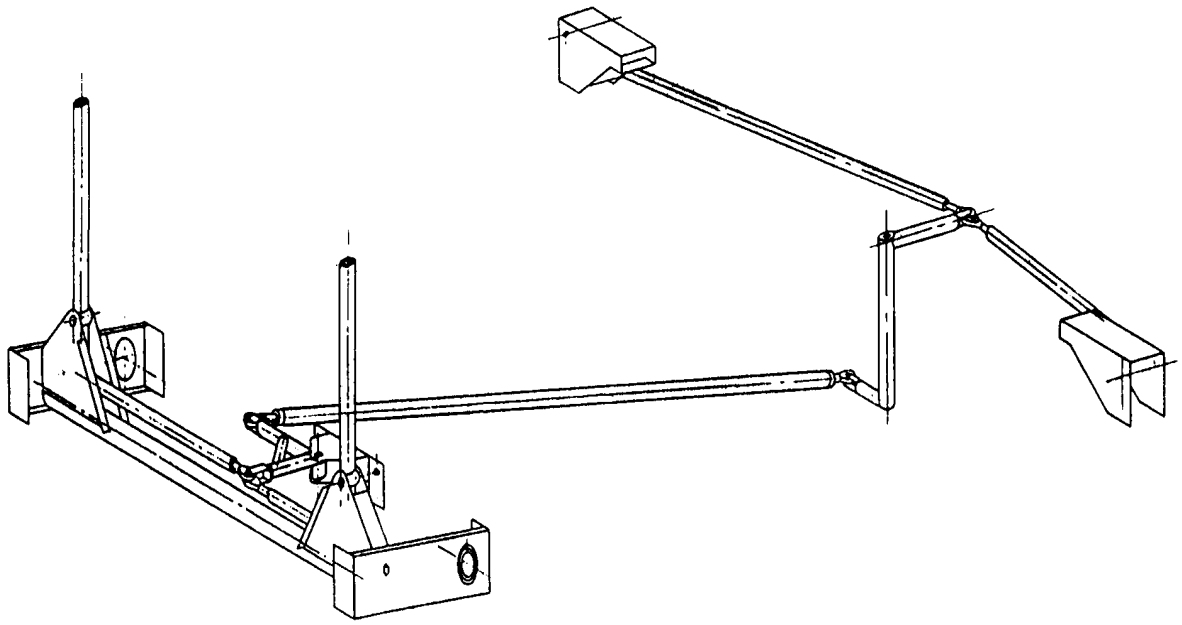
Rudder Control System

2.1.5 AILERON CONTROL SYSTEM

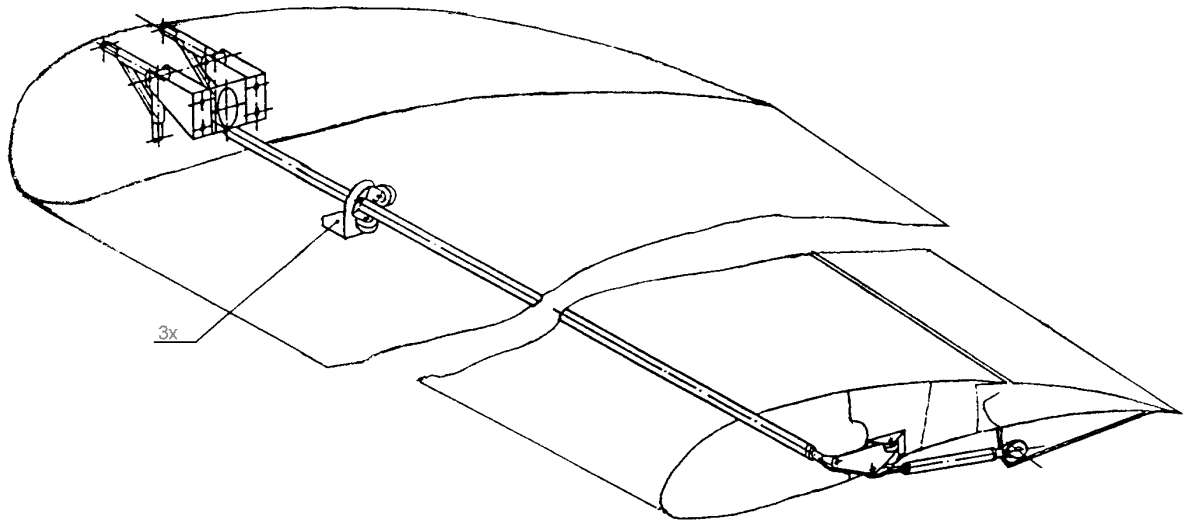
Description

In lateral direction, the two control sticks are coupled through two push-rods under the seats. These push-rods are connected to a bellcrank which is mounted to the rearward transverse stiffener. From this bellcrank, another push-rod runs through the center console to a second bellcrank behind the main bulkhead. The movement is finally transmitted to the left and right aileron pocket through two more push-rods. The design of the aileron pockets enables the automatic connection of the ailerons during wing installation.

At the wing root rib, a bellcrank engages in the aileron pocket. The aileron pocket is connected to the differentiator lever through a push-rod in the wing. A short push-rod transmits the movement to the aileron horn.



Aileron Control System in Fuselage



Removal and installation

The forward aileron control system is accessible after removing the seats. For removal, refer to Section 2.1.7.

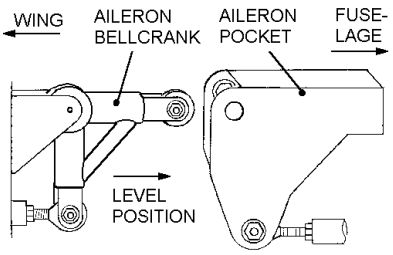
The bellcrank behind the main bulkhead and the aileron pockets are accessible after removing the baggage compartment floor. In case of airplanes with fuselage mounted fuel tank, the latter must also be removed. The differentiator lever in the wing is accessible through an inspection window which is attached to the lower wing surface with three screws near the aileron horn.

Adjustment of aileron bellcranks in fuselage

With the control sticks centered, the arms of the two bellcranks that are connected by the push-rod in the center console must be aligned perpendicular to the airplane centerline. The aileron pocket must be parallel with the root rib of the fuselage (see sketch).

Adjustment of aileron bellcranks in wing

With the aileron blocked in neutral position, the outboard bellcrank under the inspection window (or differentiator lever) must be aligned in such a way that the outboard rod end bearing of the long transverse push-rod lies on the hypothetical extension of the short push-rod connecting the bellcrank to the aileron horn. The bellcrank at the wing root rib must be parallel with the wing root (see sketch).



Bellcrank engaging in aileron pocket

Adjustment of aileron stops

The stops are located on the stick bearing unit on either side. Adjust maximum aileron deflection with the two screws with locking nuts.

2.1.6 AIR BRAKE CONTROL SYSTEM

The two air brake levers are coupled through a torque tube under the seats. An arm welded to the torque tube drives a push-rod running rearward under the left seat. The push-rod is connected to a bellcrank behind the main bulkhead. The bellcrank transmits the movement to the air brake pockets by means of two push-rods. Like the ailerons, the air brakes are connected automatically during wing installation.

A push-rod runs through the wing from the bellcrank at the root rib to the toggle joint. From here a short rod (called "toggle joint connecting rod", see sketch) runs to the first of two air brake levers which are coupled by means of a push-rod.
A stop on the toggle joint pedestal limits the overbending of the toggle joint and the extension of the air brakes. The toggle mechanism prevents self-extension of the air-brakes. The overbending travel is compensated for by means of seven springs between air-brake shield and cover plate.

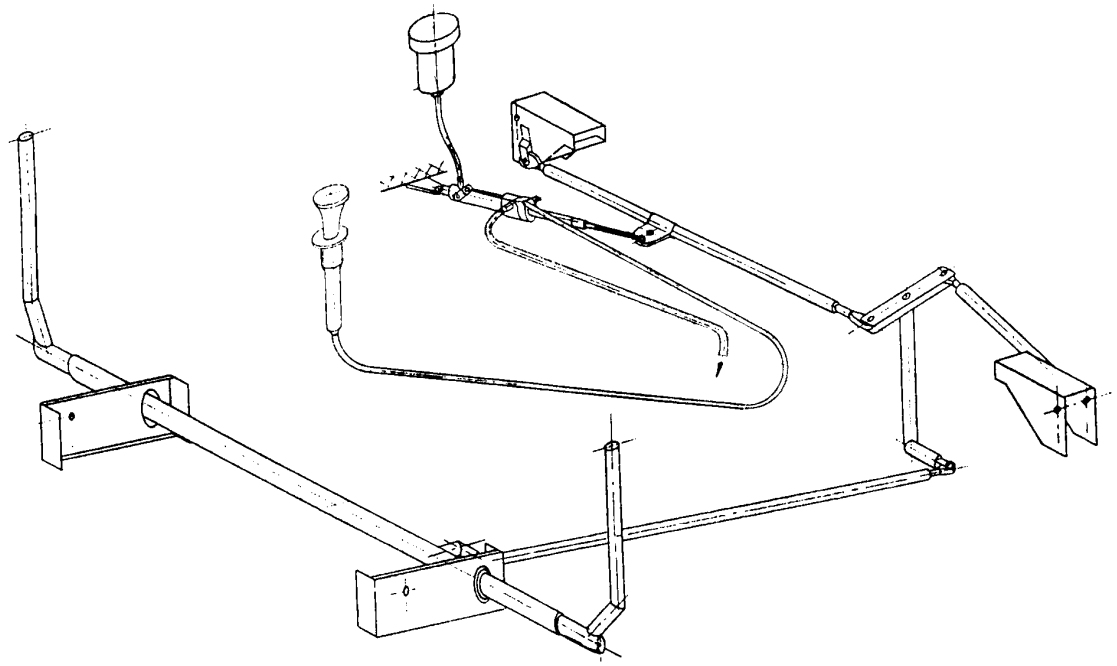
All HK 36 T-Series models are equipped with a spring loaded lever, made of polyamide, which is attached to the rearward transverse stiffener and pressed against the LH air brake lever by means of a spring. When the air brakes are half extended, the air brake lever catches in a groove in the polyamide lever. This device allows the air brakes to be fixed in the half extended position.

The forward air brake control system is accessible after removing the seats. The parts behind the main bulkhead can be reached when the baggage compartment floor is removed. In case of airplanes with fuselage mounted fuel tank, the latter must also be removed. The air brake control system in the wing can be viewed when the air brakes are extended.

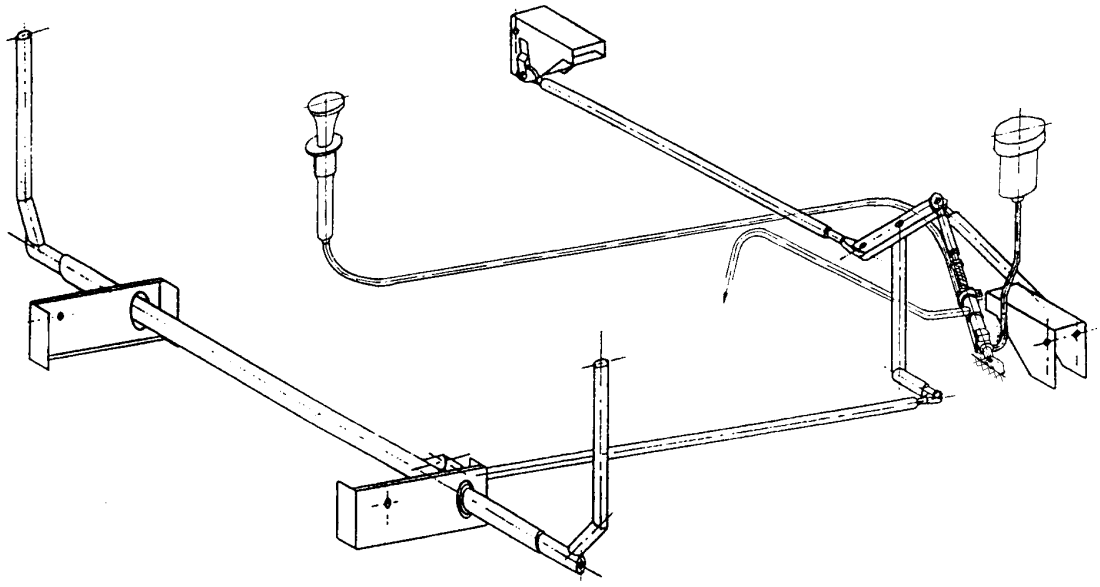
The locking and unlocking forces required for the air brake can be adjusted at the toggle joint connecting rod in the wing. See Section 3.2.4 for force measurement.

WARNING

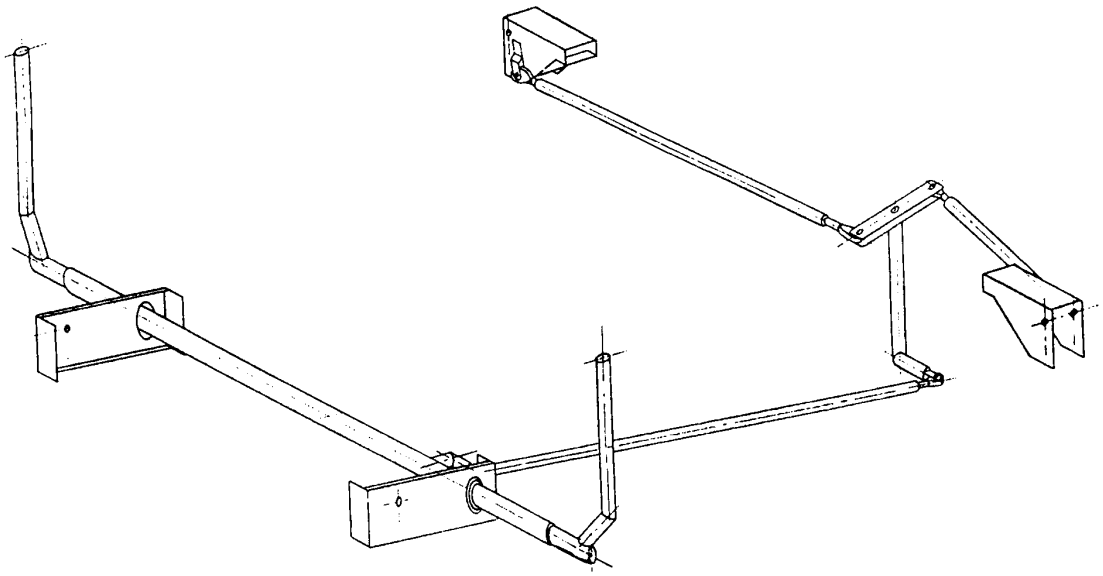
The necessity for readjusting the air brake control system may indicate damage to the structure (e.g. due to over-stressing). Therefore, contact the Manufacturer before readjusting!



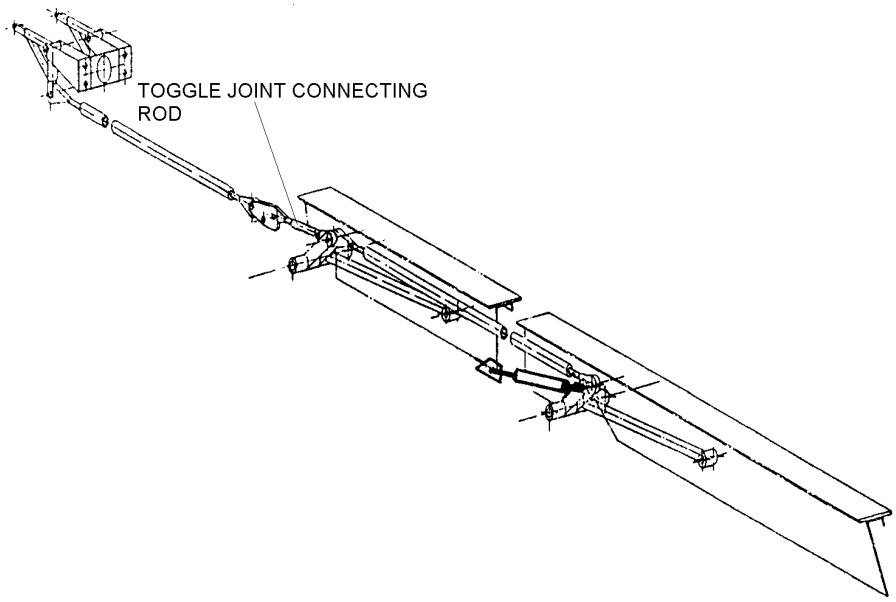
Airbrake System in Fuselage, S/N 36.301 though 36.349



Airbrake system in Fuselage, S/N 36.350 though 36.516, Tailwheel models



Airbrake system in fuselage
Tailwheel models 36.517 and subsequent, all tricycle models



Airbrake Control System in Wing

2.1.7 REMOVAL OF ALL PRIMARY CONTROL SYSTEM PARTS UNDER THE SEATS

1. Disconnect the push-rods of elevator, aileron, and air brake control systems from the torque tubes.
2. Remove the fastening screws of the two air brake levers.
3. Push the right hand air brake lever into the air brake torque tube until the right hand bearing journal lies free.
4. Remove the fastening screws of the left and right primary control pedestal.
5. Gently lift the air brake torque tube, extract right hand air brake lever.
6. Remove left hand air brake lever in a similar manner.
7. Remove both bearing screws of the primary control torque tube.
8. Shift right hand pedestal to the right, tip, remove.
9. Remove left hand pedestal in a similar manner.
10. Remove the aileron bellcrank together with its pedestal.
11. Remove both control sticks.
12. Remove primary control torque tube and air brake torque tube.

2.2 LANDING GEAR

2.2.1 TAILWHEEL MODELS

MAIN LANDING GEAR

Description

The two-legged landing gear with GFRP strut (tail wheel models only) is equipped with 380 by 150 mm (15.00 by 6.00 in.) - 5 tires (Goodyear 8.00-6, 6PR tires, if OÄM 36-369 is installed). The wheel fairings are separate parts and are fastened with four screws.

The GFRP-strut consists of three parts. Diagonal torsion plies form the outer skin. The bending loads are absorbed by caps made of UD cloth, embedded in the outer skin. The shear force is absorbed by two diagonally laminated tubes which also form the center web.

Steel mounts are inserted in pockets and fastened with four bolts each on the ends of the strut. If OÄM 36-369 is installed, an additional heat shield is mounted to the GFRP-strut using the two bottom screws. The axle is attached to the steel mount with four bolts (6 bolts, if OÄM 36-369 is installed). It also serves as a wheel fairing support (if installed). The steel mounts provide a camber of 1° ± 1° and a total toe-in (sum of toe-in on left and right side) of 2° ± 1°.

The landing gear is connected to the fuselage through two bolts. These bolts go through the landing gear tunnel and the bushes which are bonded into the GFRP strut. In the area around the holes there are additional reinforcing plies. Self-lubricating press-fit collar bushes lie within the bushes. Thus, bending of the gear legs is not disturbed by the mounting at the fuselage. Spacers prevent play of the landing gear strut in the tunnel.

Removal and Installation

The brake lines run behind the wheel mounts and through the GFRP strut (behind the GFRP strut, if OÄM 36-369 is installed). In the center of the strut they are connected with a T-type

fitting. The brake line in the fuselage can be connected through holes in the strut and in the gear tunnel. This line must be disconnected before removing the landing gear. Then the fuselage is jacked up, and the two mounting bolts are removed. When extracting the bolts, mind the spacers.

To install the landing gear, reverse the procedure.

| **TAIL WHEEL**

The steerable tail wheel is connected to the rudder with two coil-springs and chain links. The chain links permit the opposite deflection of rudder and tail wheel up to an angle of 60°, at which point one spring is completely relieved.
An elastomer package provides suspension of the tail wheel. To adjust the pre-tension, unload tail wheel by jacking up fuselage tube and tighten nut on top of elastomer package until the elastomer package cannot be turned with moderate hand torque.

| 2.2.2 TRICYCLE MODELS

| **MAIN LANDING GEAR**

Description

| The main landing gear consists of metal struts, that are equipped with 380 by 150 mm (15.00 by 6.00 in.) - 5 tires. It comprises of two separate spring steel or aluminum legs which are attached to the main bulkhead with two fittings each. Polyamide plates in the outer fittings
| compensate for the bending of the struts. Teflon tapes are applied on the aluminum legs around
| the fittings to protect them against corrosion and wear.

The wheel axle is attached to the strut with four bolts and also serves as a support for the wheel fairing.

| Remove the strut

1. Unload main wheel.
2. Remove wheel fairing.
3. Remove brake caliper.
4. Disconnect electrical ground strap from landing gear strut.
5. Support strut, remove lower bracket from outer fitting.
6. Remove bolt from inner fitting.
7. Remove strut.

| Install the strut

For installation, reverse the sequence.

Adjustment values

Toe-in: 0.5° to 1.5°

Camber: 1° to 6° at empty mass (empty weight)

| NOSE LANDING GEAR

Description

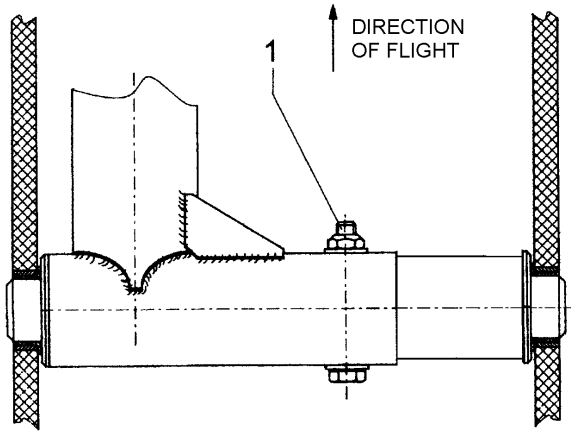
The nose landing gear (tricycle models) with castering nosewheel has an elastomer damper. The tire is a Tost-Aero 4.00-4. Stops on the nosewheel fork limit deflection to ±30°.

The steering friction (which prevents nosewheel shimmy) is adjustable at the mounting bolt of the nosewheel fork. When the nosewheel is unloaded, the force required to deflect the wheel must be 3 to 5 daN (6.7 to 11.2 lbs.) (measured along the wheel axle).

| Adjustment of elastomer damper: see Section 3.2.5.

| Remove the nose landing gear

1. Remove engine cowlings.
2. Unload nosewheel.
3. Disconnect damper on its upper end from engine mount.
4. Remove safety bolt (1) from journal assembly in fuselage bottom (see sketch).
5. Compress journal assembly, extract from bearings.
6. Remove nose gear in a downward direction.

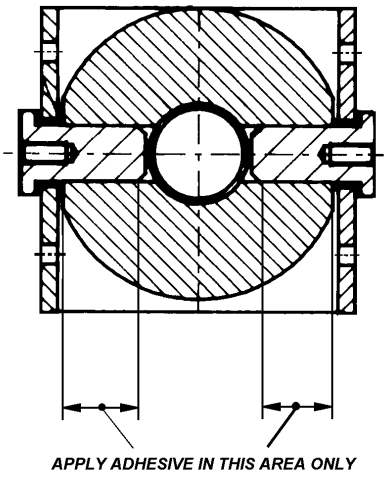


| Install the nose landing gear

For installation reverse the sequence.

| Remove the damper

1. Remove engine cowlings.
2. Unload nosewheel.
3. Disconnect damper on its upper end from engine mount.
4. Disconnect damper on its lower end from nose gear leg: Remove both safety brackets and remove both bearing journals with M5 pulling screw, applying heat, if necessary, to break glue contact.



| Install the damper

For installation, reverse the sequence. The bearing journals must be degreased before they are bonded into the aluminum disk with Loctite 262. Be careful not to apply adhesive to the bronze bushes (see sketch).

2.2.3 WHEEL BRAKE SYSTEM

VERSION 1 (For tail wheel models with Serial Nos. through 36.516)

The brake master cylinder is located under the fuel tank. The equalizing reservoir is accessible after removal of the baggage floor.

Serial Nos. through 36.349

The brake master cylinder is actuated by the right hand push-rod between the bellcrank and the air brake pocket.

The air brake lever position at which the wheel brake starts taking effect can be adjusted by moving the plate connecting the push-rod to the brake master cylinder.

Serial Nos. 36.350 through 36.516

The brake master cylinder is actuated by a short push-rod between the bellcrank and the left hand fuselage root rib.

The air brake lever position at which the wheel brake starts taking effect can be adjusted by opening the locking nut on one end of the push-rod (either on the rod end bearing or on the brake cylinder side) and turning the push-rod.

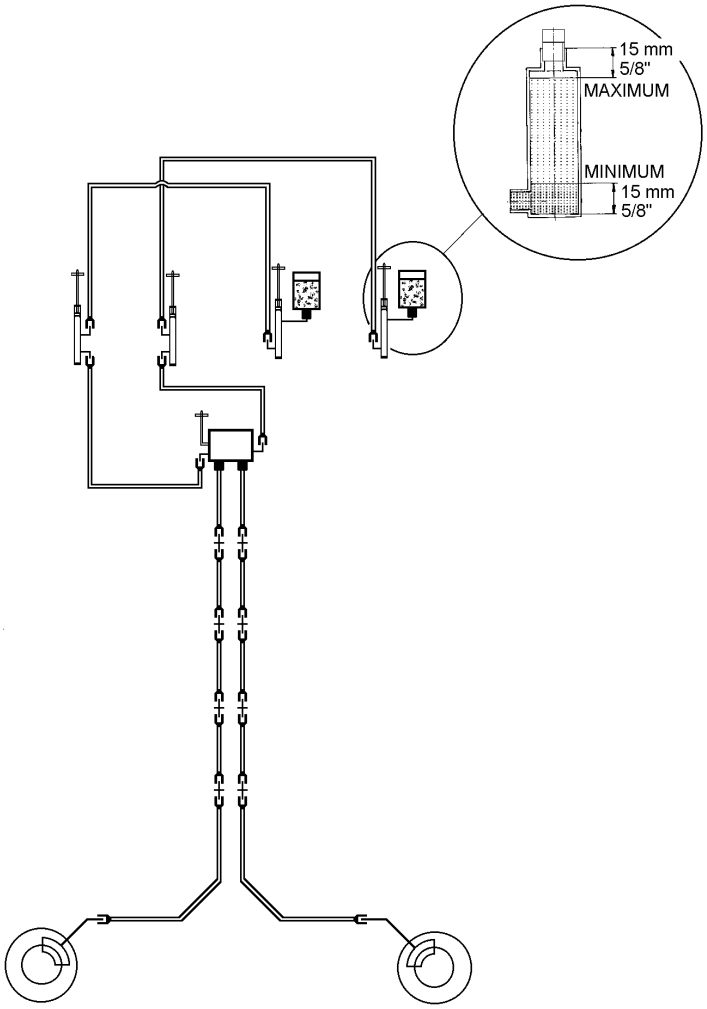
The brake line runs through the center console and the landing gear tunnel to the "T"-fitting inside the landing gear strut and further to either wheel brake cylinder. The parking brake valve on the brake master cylinder is actuated with a Bowden cable.

VERSION 2 (For tail wheel models with Serial Nos. above 36.516 and tricycle models)

The main wheels are equipped with independent disk brakes which are operated through toe-pedals integrated into the rudder pedals. The four master brake cylinders are attached to the pedals. The two brake fluid reservoirs are mounted to the pedals on the co-pilot's side.

The parking brake valve is located in the center console near the pilot's feet. It is operated through a bowden cable.

The brake lines run from the brake master cylinders to the parking brake valve, from where they are routed through the fuselage skin and along the rear edge of the metal struts or inside the GFRP strut to the wheel brake cylinders.



2.3 FUEL SYSTEM IN AIRPLANES WITH FUSELAGE TANK

This Section applies to all models except for the HK 36 TTC-ECO.

NOTE

Always use new lock wires when safetying.

2.3.1 FUEL SYSTEM DESCRIPTION

The HK 36 is equipped with a 55 liter (14.5 US gal.) or a 79/80 liters (20.9/21.1 US gal.) aluminum tank.

The tank is mounted between the main bulkhead and the B-bulkhead. It is covered by the floor of the baggage compartment. The filler lies outboard on the left side behind the canopy and is connected to the fuel tank by a rubber hose. The tank vent line runs from the filler through the fuselage underside to the exterior of the airplane. Fuel can be drained with a drain cup. For HK 36 and HK 36 R, the handhole lid in the fuselage underside must be opened first. Since the outlet is placed at the lowest point in the tank, it is possible to drain water that might have deposited. The fuel tank cap is not ventilated.

The tank is bonded to all metal parts of the flight control system, the engine and the filler by a ground cable. This prevents the build up of electrostatic charges during refueling and thus prevents fuel vapors from igniting.

The sensor for the for the electric fuel quantity indicator is installed on the upper side of the tank with 5 screws and a gasket. A finger filter, which absorbs coarse impurities, is installed in the tank outlet.

Models with Rotax 912

A short hose line runs from the finger filter to the electric fuel pump with integrated filter. A quick release coupling is built into this line. By opening it, a shut-off mechanism stops the outflow of fuel.

Models with Rotax 914 F

A short hose line runs from the finger filter to the filter box with integrated strainer. A quick release coupling is built into this line. By opening it, a shut-off mechanism stops the outflow of fuel.

From the filter box, the fuel reaches the two serially connected fuel pumps. Each fuel pump has a bypass connected in parallel. A check valve in each bypass prevents the fuel from being pumped back into the tank.

NOTE

In deviation from the description in the Maintenance Manual for Rotax Engine Type 914 F, the integrated filters have been removed from the fuel pumps. Remove the filters in the new electric fuel pumps during replacement.

The fuel is carried through a hose line in the center console to the fuel shut-off valve, which is located on the center console near the pilot's feet and is open when it points in the flight direction. From the fuel shut-off valve, a flexible line runs to the firewall breach.

HK 36 with Limbach 2400

A line goes from the firewall to the engine-driven mechanical fuel pump with built-in filter.

Models with Rotax 912

A line leads from the firewall breach to the cam-shaft driven mechanical fuel pump with built-in filter. From here, the fuel goes via the fuel manifold block to the two carburetors.

From the fuel manifold block, a return line runs to the tank. In the case of the HK 36 R, the opening for the return line is marked by an “R” on the fuel manifold block. In the case of other models, the *uppermost* opening is that of the return line.

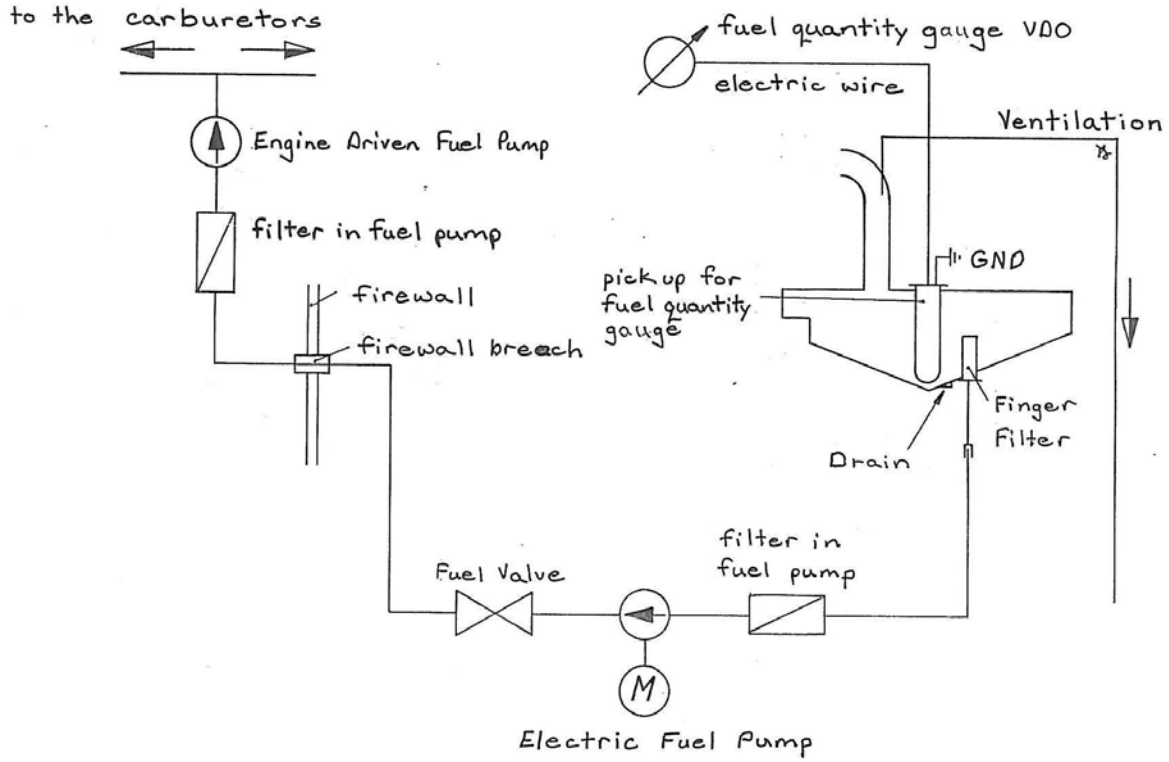
A fuel pressure sensor is mounted on the fuel manifold block. As soon as the fuel pressure (above atmospheric) falls below 0.1 bar (1.45 psi), the fuel pressure warning light illuminates in the cockpit.

Models with Rotax 914 F

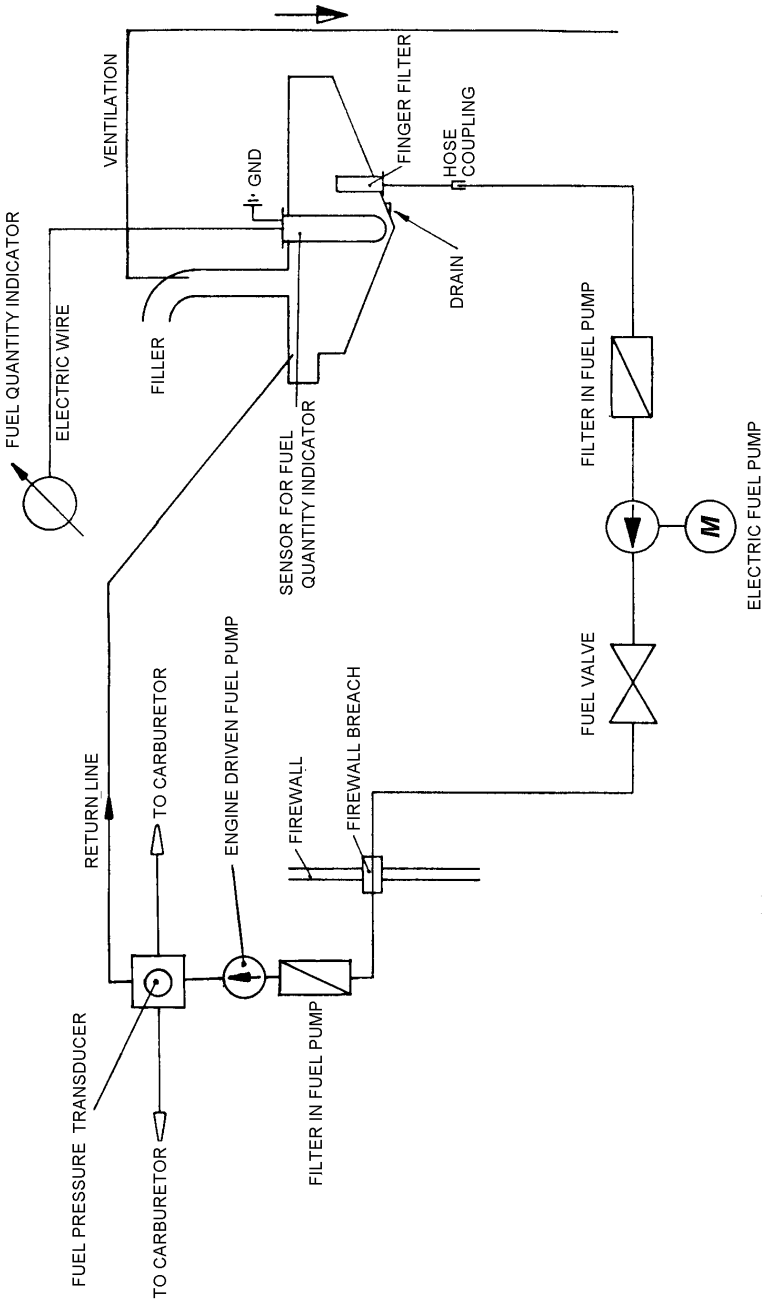
A hose line leads from the firewall breach to the fuel pressure regulator on top of the airbox. Through steel pipes the regulator supplies the two carburetors with fuel under a pressure which is always 0.25 bar (3.6 psi) higher than in the airbox.

The connection for the airbox pressure is located on the underside of the regulator and the connection for the return line to the tank is located on top.

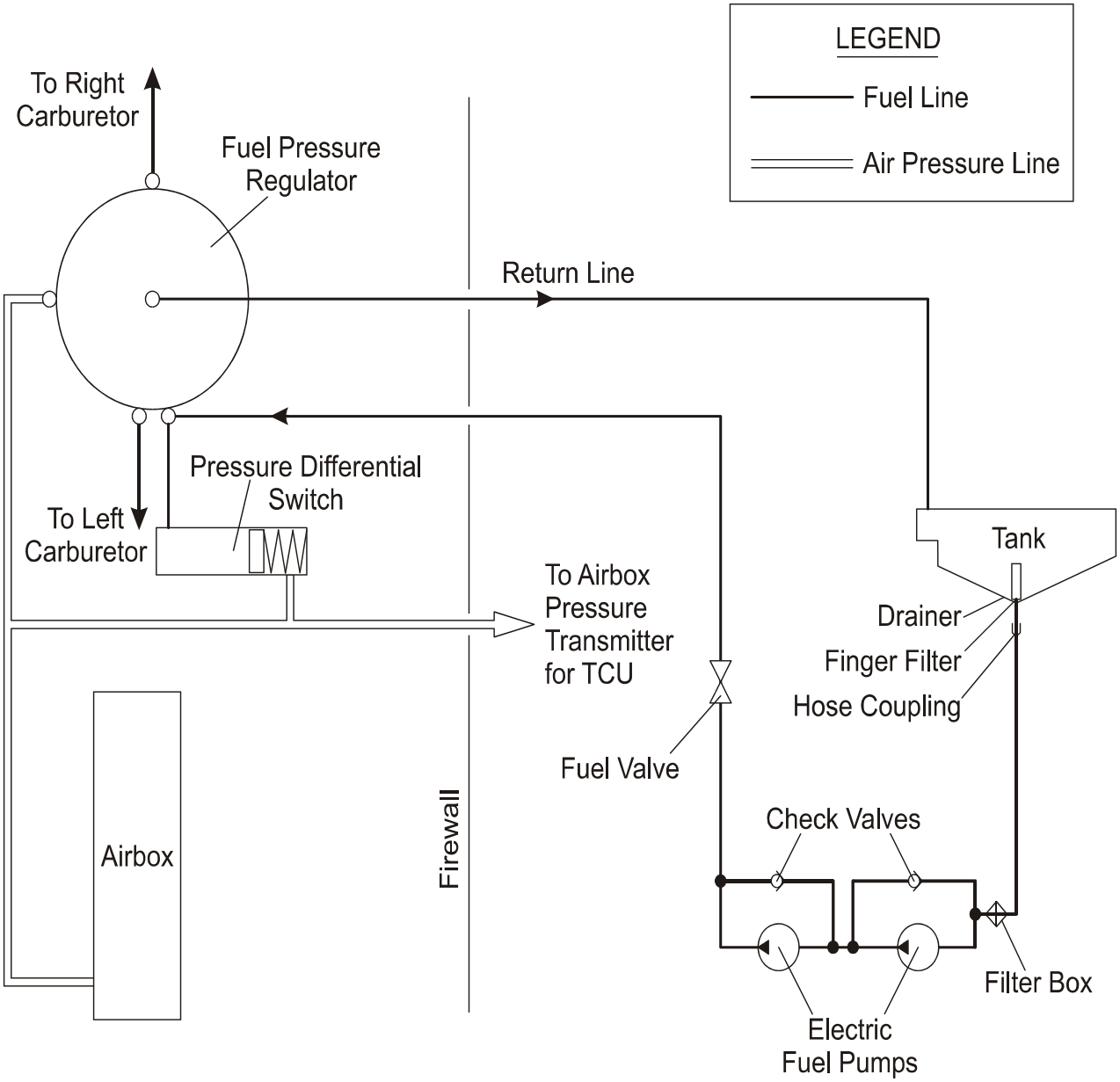
A fuel pressure sensor is mounted at the entrance to the regulator. As soon as the fuel pressure (above airbox pressure) falls below 0.1 bar (1.45 psi), the fuel pressure warning light illuminates in the cockpit.



Fuel system schematic for HK 36 (with Limbach 2400)



Fuel system schematic for models with the Rotax 912



Fuel System Schematics for HK 36 TTC and HK 36 TTS

2.3.2 DRAIN THE FUEL TANK

Method 1

1. Open the handhole lid in the fuselage bottom shell.
2. Remove the lock wire from the quick release coupling under the tank.
3. Open the quick release coupling.
4. Disable the shut-off mechanism by connecting a hose with a corresponding fitting and a free end.

Method 2

1. For HK 36 and HK 36 R: Open the handhole lid in the fuselage bottom shell.
2. Actuate and block the drain valve.

2.3.3 REMOVE THE FUEL TANK

1. Empty the tank as in Method 1 (see above).
2. Remove the baggage compartment floor.
3. Disconnect the rubber hose from the filler by opening the two hose clamps.
4. Release the tank fastening strap.
5. Disconnect all electric wires.
6. Remove the tank.

To install the tank, reverse the procedure.

2.3.4 REMOVE THE FUEL FILTERS INSTALLED IN THE AIRFRAME

Finger filter in the tank bottom

1. Remove the tank (see above).
2. Remove the lock wire from the finger filter.
3. Unscrew the finger filter.

To install the finger filter, reverse the procedure.

| Filter in electric fuel pump (models with Rotax 912 and Limbach 2400)

1. Open the handhole lid in the fuselage bottom shell.
2. Remove the lock wire from the quick release coupling.
3. Open the quick release coupling.
4. Open the pump lid (bayonet socket, fork wrench 16 mm (5/8 in.)).
5. Remove the filter.

To install the filter in the fuel pump, reverse the procedure.

| Replace a fuel pump (Rotax 914):

| 1. Remove the fuel pump.
| 2. Remove the internal filter of the new fuel pump.
| 3. Install the new fuel pump.

Fuel strainer in the filter box (only models with Rotax 914 F)

1. Open the handhole lid in the fuselage bottom shell.
2. Remove the lock wire from the lid of the filter box.
3. Unscrew the lid from the filter box by pushing a rod (such as an Allen key) into the hole in the journal of the lid.
4. Remove the seal and filter.

To install the fuel strainer in the filter box, reverse the procedure.

| 2.3.5 CALIBRATE THE FUEL QUANTITY INDICATOR

1. Drain fuel tank to unusable quantity.
2. Align airplane horizontally as shown in Section 4.2.
3. Remove instrument panel top cover.

4. Remove fuel quantity indicator from instrument panel, leave electric wires in place.
5. Master switch - ON.
6. Mode select switch - POWER FLIGHT.
7. Wait a few seconds until fuel quantity indicator indicates constant value.
8. On the LH side of the indicator's case, when viewed from the face, there is a small hole covered with tape which must be removed. Use a small common tip screwdriver to adjust to zero position. Replace tape.
9. Mode select switch - SOARING.
10. Master switch - OFF.
11. Re-install fuel quantity indicator.
12. Re-install instrument panel top cover.

2.4 FUEL SYSTEM IN AIRPLANES WITH WING TANKS

This Section applies to model HK 36 TTC-ECO only).

NOTE

Always use new lock wires when safetying.

2.4.1 FUEL SYSTEM DESCRIPTION

General

The airplane has a fuel tank in each wing. The fuel tank which is selected with the fuel tank selector feeds a central fuel reservoir through gravity feed. From there two electric fuel pumps which are connected in series supply fuel to the engine through the fuel shut-off valve.

Wing Tanks

The HK 36 TTC-ECO is equipped with two 55 liter (14.5 US gal.) tanks made of GFRP with vinyl ester resin. The usable fuel quantity is 53 liters (14.0 US gal.).

The tanks are approximately two meters (approximately 7 ft.) long and are located in the wings in front of the spar. The inboard edge is near the root rib. A finger filter is installed at this position. From the outlet a hose runs through the root rib to the fuel selector valve. When removing the wing, the screwed connection on the tank is opened to separate the hose line.

Electrical Bonding:

The wing tanks are electrically conductive through the use of copper mesh. They are connected to electrical ground by a ground strap. This prevents the build-up of electrostatic charges and thus prevents fuel vapors from igniting. The ground strap has a flat plug connector under the seat shell which is disconnected when removing the wing.

Tank filler:

A tank filler is located on the upper side of each wing tank.

Drain:

Each wing tank has a quick drain valve which is located on the bottom side of the wing, near the root rib. To drain, press the quick drain valve in upward direction.

Electrical fuel quantity sensors:

Two sensors are installed in the bottom side of each wing tank with 5 screws and one gasket. These are accessible after removing the inspection panels. The two sensors of one tank are connected in series. The fuel quantity signal wire has a connector under the seat shell which is separated when removing the wing.

When you replace the fuel quantity sensor, check the resistance values. In the “full” position the electrical resistance must be 0 to 3 Ω. The float lever must reach the stop before the float contacts the upper tank wall. In the position in which the float contacts the lower tank wall the resistance must be between 76 and 82 Ω**.** Then calibrate the fuel quantity indicator of the affected tank.

Fuel selector valve

The fuel selector valve is mounted in the center console. When installed, only the positions LEFT and RIGHT are available. The design of the valve would allow to shut off *both* fuel lines. This is however prevented by stops in the center console. A fuel line runs from the fuel selector valve to the central fuel reservoir.

Central fuel reservoir

An aluminum receptacle which holds 9 liters (approximately 2.4 US gal.) is installed in the fuselage behind the main bulkhead under the baggage compartment.

A finger filter is installed in the outlet. From there the fuel is led to the two fuel pumps which are connected in series.

Low Fuel caution light (amber):

A sensor is installed in the central fuel reservoir which activates the low fuel caution light as soon as less than 5 liters (approximately 1.3 US gal.) are left in the reservoir.

Electrical bonding:

The central fuel reservoir is connected to electrical ground through a ground strap. This prevents the build-up of electrostatic charges and thus prevents fuel vapors from igniting.

Drain:

The central fuel reservoir has a quick drain valve on the bottom. It is accessible on the fuselage bottom side and is activated by pressing in upward direction.

Ventilation:

See description at the end of this article.

Fuel pumps

Each fuel pump has a bypass. A check valve in each bypass prevents the fuel from being pumped back into the central fuel reservoir.

A hose line running through the center console leads the fuel to the fuel shut-off valve.

NOTE

In deviation from the description in the Maintenance Manual for Rotax Engine Type 914 F, the integrated filters have been removed from the fuel pumps. Attention should also be paid to this fact during the replacement of fuel pumps.

Fuel shut-off valve

The fuel shut-off valve is located on the center console near the pilot's feet and is open when it points in the flight direction. From the fuel shut-off valve, a flexible line runs to the firewall breach.

Fuel pressure regulator

A hose line leads from the firewall breach to the fuel pressure regulator on top of the airbox. Through steel pipes the regulator supplies the two carburetors with fuel under a pressure which is always 0.25 bar (3.63 psi) higher than in the airbox.

Connectors:

The connection for the airbox pressure is located on the underside of the regulator. The connection for the return line to the central fuel reservoir is located on top.

Fuel pressure warning light (red):

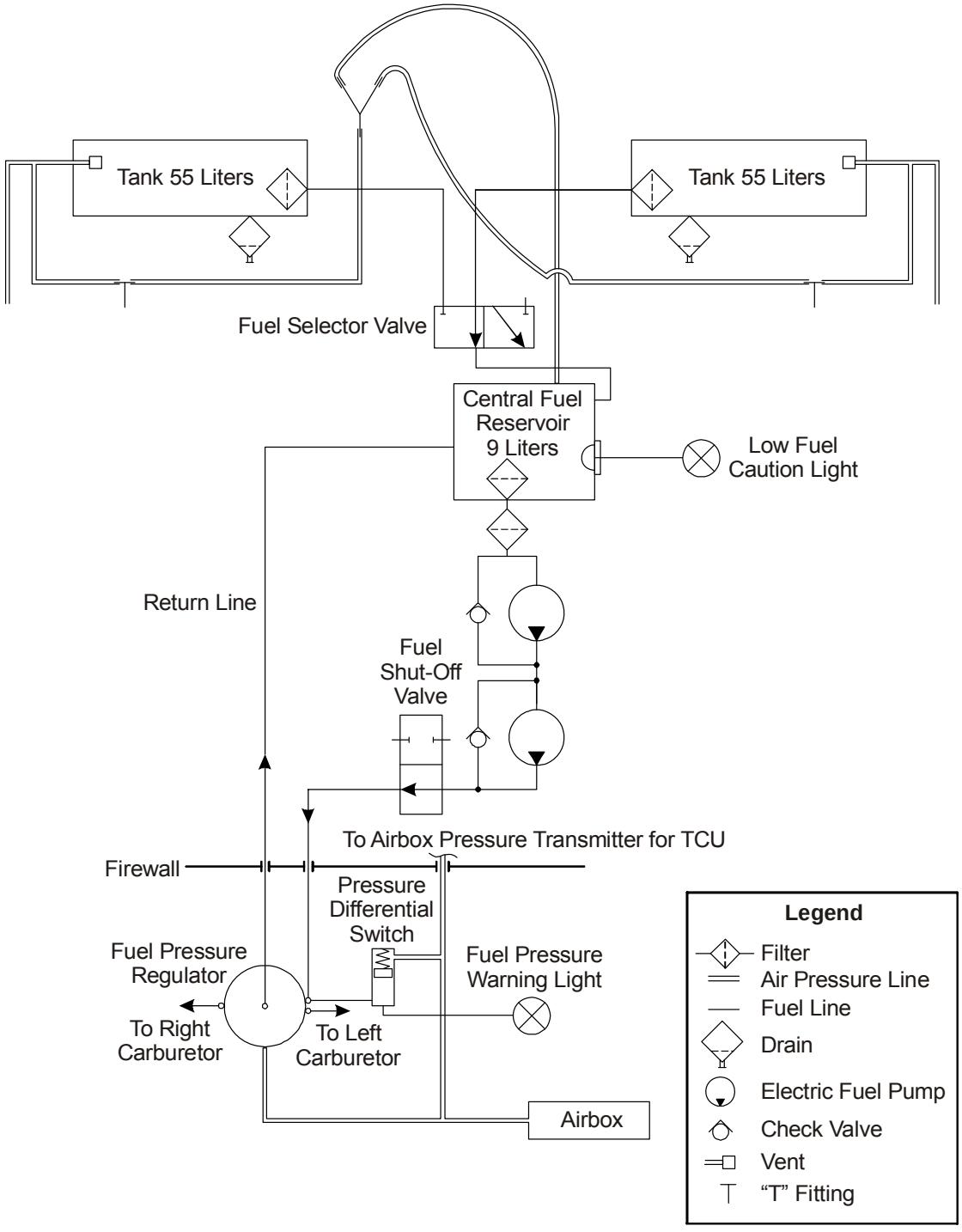
A fuel pressure sensor is mounted at the entrance to the regulator. As soon as the fuel pressure (above airbox pressure) falls below 0.1 bar (1.45 psi), the fuel pressure warning light illuminates in the cockpit.

Fuel System Ventilation

Also see sketch on the next page.

The fuel system has four vents:

* The vent under the LH wing mainly vents the LH fuel tank. A short hose leads from the highest and most outboard point of the tank to this vent.
* The vent under the RH wing mainly vents the RH fuel tank. A short hose leads from the highest and most outboard point of the tank to this vent.
* The vent under the fuselage left of the aircraft centerline mainly vents the LH tank and the central fuel reservoir.
  - A hose leads from the highest and most outboard point of the LH tank through the wing and the root rib to this vent.
  - A hose leads from the highest point of the central fuel reservoir through the roll bar to this vent. The vent hose itself is also vented in order to cut a continuous stream of fuel which might occur. This prevents the emptying of the fuel system through siphoning.
* The vent under the fuselage right of the aircraft centerline mainly vents the RH tank.
  - A hose leads from the highest and most outboard point of the RH tank through the wing and the root rib to this vent.
  - A hose connects this vent to the vent left of the aircraft centerline.



Fuel system of the HK 36 TTC-ECO

2.4.2 DRAIN THE FUEL SYSTEM

(1) Remove quick drain valves from both fuel tanks and central fuel reservoir. Collect fuel in suitable receptacle.

2.4.3 REMOVE THE CENTRAL FUEL RESERVOIR

(1) Empty fuel system.
(2) Remove baggage compartment floor.
(3) Remove RH aileron and air brake push-rods behind main bulkhead.
(4) Disconnect fuel and vent lines from central fuel reservoir.
(5) Remove electric wires (Low-Fuel signal wire, ground strap) from central fuel reservoir.
(6) Release tank fastening strap.
(7) Remove fuel reservoir.

2.4.4 REMOVE THE FUEL FILTERS

Finger filters in the wing tanks

(1) Empty fuel system.
(2) Remove wing.
(3) Remove lock wire from finger filter.
(4) Remove finger filter.

To install the filter reverse the procedure.

Finger filter in central fuel reservoir

(1) Remove central fuel reservoir.
(2) Remove lock wire from finger filter.
(3) Unscrew finger filter.

To install the filter reverse the procedure.

2.4.5 CALIBRATE THE FUEL QUANTITY INDICATOR

(1) Drain fuel tank to unusable quantity.
(2) Align airplane horizontally as shown in Section 4.2.
(3) Remove instrument panel top cover.
(4) Remove fuel quantity indicator from instrument panel, leave electric wires in place.
(5) Master switch - ON.
(6) Mode select switch - POWER FLIGHT.
(7) Wait a few seconds until fuel quantity indicator indicates constant value.
(8) On the LH side of the indicator´s case, when viewed from the face, there is a small hole covered with tape which must be removed. Use a small common tip screwdriver to adjust to zero position. Replace tape.
(9) Mode select switch - SOARING.
(10) Master switch - OFF.
(11) Re-install fuel quantity indicator.
(12) Re-install instrument panel top cover.

2.4.6 REPLACE A FUEL PUMP

(1) Remove the fuel pump.
(2) Remove the internal filter of the new fuel pump.
(3) Install the new fuel pump.

2.5 POWER-PLANT

2.5.1 ENGINE DESCRIPTION

| The HK 36 is powered by a Limbach 2400, a Rotax 912 or Rotax 914 four stroke four cylinder
| horizontally opposed engine. The Rotax engines have an integrated speed-reducing gear
| between crank shaft and propeller shaft.

Engine mounting

| Limbach 2400
| The engine is installed on a steel engine mount which is connected to the firewall with bolts.

Rotax 912

The engine is firmly connected on its four rear fixture points to two branched engine mount adapters. Each engine mount adapter is connected to the engine mount by a rubber damper (silentbloc).

Each of the two forward engine fixture points is connected directly to the engine mount by two rubber dampers (silentblocs).

The engine mount has four fixture points on the firewall.

Rotax 914 F

| The engine is firmly connected on its four rear fixture points to the ring engine mount adapter. This engine mount adapter is connected to the engine mount at four points by rubber dampers (silentblocs).

The two forward engine fixture points are not used.

The engine mount has six fixture points on the firewall.
The rubber dampers are designed in such a way that the connection still is maintained if the rubber is damaged.

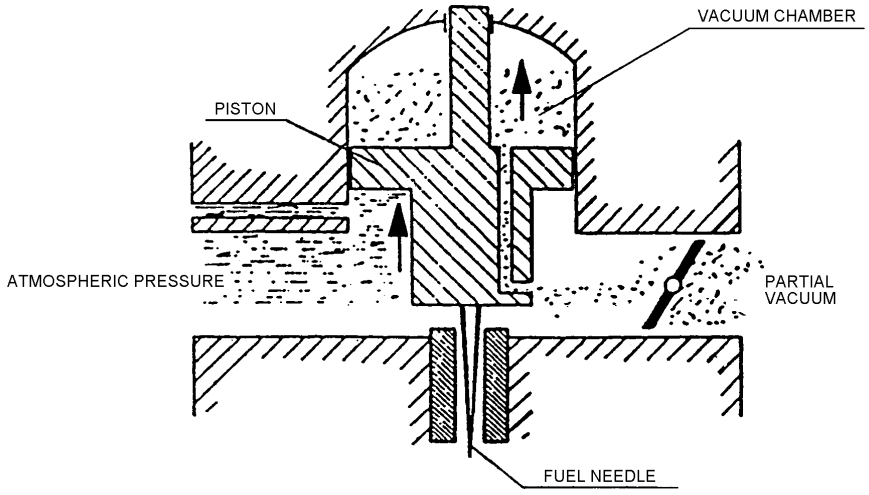
| Engine Harness and controls

All wires come together in a multi-pin plug which is attached to the firewall in the upper right corner. The plug in models with the Rotax 912 has some free pins for additional wires that might be needed. Other breaches of the firewall should not be established.

| The engine is controlled via bowden cables.

2.5.2 CARBURETOR DESCRIPTION

The carburetor is a constant speed or equal pressure carburetor. The engine suction produces a partial vacuum, dependent on the throttle valve position. The vacuum propagates to the vacuum chamber (upper part of the dome). As a result, the differential pressure between the vacuum chamber and the atmosphere increases, and the piston and the attached fuel needle ascend.



This device provides an almost constant pressure drop and an almost constant velocity of air flow in the Venturi tube.

For more information about the carburetor refer to the Operator's Manual or the Maintenance Manual of the engine.

2.5.3 DESCRIPTION OF THE TURBOCHARGING OF THE ROTAX 914 F ENGINE

General

The exhaust turbocharger it installed underneath the engine on the right. The TCU (Turbo Control Unit) and the actuator for the waste gate flap are mounted between the instrument panel and the firewall on the right hand side.

Manifold pressure regulation

A switch marked “TCU ON” is located under a flap in the right hand section of the instrument panel. With this switch, the actuator for the waste gate flap can be switched off.

Warning and caution lights for engine monitoring

Three lights are located in the instrument panel:

Light	Color	Signal	Meaning
Turbo	amber	flashing	Defect in the sensor, sensor wiring or TCU area, or leakage in the airbox
Manifold Pressure	red	flashing	Time limit for max. take off power exceeded
		steady on	Max. permissible manifold pressure exceeded
Temperature	amber	steady on	EGT above 950 °C (1742 °F) or airbox temp. above 72 °C (162 °F) for TCU No. 966470, respectively airbox temp. above 88 °C (190 °F) for TCU No. 966741.

The “Turbo” and “Manifold Pressure” lights are controlled by the TCU. The “Temperature” caution light receives its signal from a monitoring box, which is located on the right hand side of the firewall. The electronics in the box are protected by a fuse, which is also located in the box.

At three measuring terminals on the monitoring box, the voltages relative to ground can be measured using a voltmeter, from which the temperature values can be calculated directly. Temperature values and corresponding voltage values are displayed directly on the box. Intermediate values can be evaluated by linear interpolation.

With this, the three sensors can be checked. It is also possible to check the exhaust gas and airbox temperatures during operation.

2.5.4 REMOVE THE ENGINE

For HK 36 with LIMBACH 2400 engine

(1) Remove the Bowden Cable from the cowl flap.
(2) Remove the upper cowling.
(3) Disconnect the main battery (negative terminal first) and remove battery from airplane.
(3) Remove the lower cowling:
- Undo the CAMLOCs.
- Disconnect the hose for cabin heat from the cool end of the heat exchanger.
(4) Disconnect the ignition cable.
(5) Remove the propeller.
(6) Disconnect the fuel line from the firewall.
(7) Disconnect the Multi-pin plug on the firewall.
(8) Disconnect the throttle, choke and carburetor heat Bowden Cables.
(9) Disconnect the cabin heat hose on the hot end of the heat exchanger.
(10) Remove manifold pressure line from firewall.

(11) Lift the engine with a suitable lifting device until the engine mount is unloaded.

(12) Remove the upper and lower bolts that connect the engine mount to the firewall.

(13) Remove the engine from the airplane.

(14) Remove the exhaust system, the baffles and the engine mount.

For HK 36 with Rotax engines

NOTE

Cover all openings with suitable means immediately to prevent contamination of the inner areas of the engine and compartments.

(1) Disconnect bowden cable from the cowl flap actuator.

(2) Remove upper and lower engine cowling.

a. Disconnect landing light cable (if installed).

(3) Remove the cowling support (if installed)

(4) Disconnect the main battery (negative terminal first).

(5) Remove the propeller.

(6) Disconnect Connector P2400 (located at the firewall or in the instrument panel).

(7) Remove the TCU (Rotax 914).

a. Disconnect bowden cable for waste gate flap.

b. Remove the waste gate servo.

c. Remove the waste gate bowden cable.

(8) Disconnect temperature monitoring box plug (Rotax 914).

(9) Remove the electrical cable harness from the following plugs:

a. Oil pressure sensor.

b. Oil temperature sensor.

c. Cylinder heat temperature sensor or Coolant temperature sensor.

d. Fuel pressure sensor.

e. Coolant level sensor (if installed).

f. Airbox temperature sensor (Rotax 914).

g. Throttle position potentiometer (Rotax 914).

h. RPM sensor (Rotax 914).

i. 3-way solenoid valve (Rotax 914).

(10) Generators:

a. Remove the external generator (if installed).

b. Disconnect the internal generator cable shielding (if not disabled).

(11) Disconnect the starter cable.

(12) Disconnect the ground and short-circuit cables of the ignition system.

(13) Disconnect the engine ground cable at cylinder No. 3.

(14) Disconnect the flexible shaft of the RPM indicator from the engine.

(15) Remove the propeller control system (hydraulic constant speed prop MTV-21-A-C-F/CF175-05 or HO-V352F-S1/S170FQ):

a. Disconnect the governor bowden cable.

b. Relieve the pressure from the propeller accumulator.

c. Remove the propeller accumulator and the line to the governor (if the accumulator is not installed on the firewall).

d. Remove governor according to Rotax Maintenance Manual.

(16) Remove the propeller control system i.a.w. the propeller maintenance manual (electric constant speed propeller MTV-1-A/170-08).

(17) Disconnect bowden cables and control cables for:

a. Throttle.

b. Choke.

c. Carburetor heat.

d. Mechanical feathering system (if installed).

(18) Disconnect fuel lines from thr firewall fitting or at the mechanical fuel pump and fuel manifold (Rotax 912).

a. Disconnect the fuel pump drain line (if a mechanical fuel pump with drain connector is installed).

(19) Disconnect fuel lines from fuel pressure regulator and return line fitting of the engine (Rotax 914).

| (20) Remove the Airbox (Rotax 912):
| a. Disconnect manifold pressure hose from the airbox.
| b. Disconnect the drain lines from airbox, the carburetors and the drip trays.
| c. Disconnect the hose from the air filter and the exhaust heat exchanger at the airbox.
| d. Remove the airbox.
| (21) Air intake system (Rotax 914):
| a. Disconnect hose from air filter at the turbocharger.
| b. Disconnect hose between turbocharger and airbox.
| c. Disconnect manifold pressure indicator line at the airbox.
| (22) Remove the oil system.
| a. Drain the oil.
| b. Disconnect the oil line at the engine sump.
| c. Disconnect the oil line at the oil pump.
| d. Disconnect the oil line at the turbocharger (Rotax 914).
| (23) Remove the coolant system:
| a. Drain the coolant.
| b. Disconnect the coolant hose to the overflow bottle at the expansion tank.
| c. Disconnect the coolant hose to the coolant radiator at the expansion tank.
| d. Disconnect the coolant hose to the coolant radiator at the water pump.
| e. Remove the LH and RH water pipes from the engine.
| f. Remove the coolant radiator with the coolant radiator brackets from the engine (Rotax 912).
| (24) Remove engine exhaust system:
| a. Disconnect all hoses from exhaust heat exchanger.
| b. Remove the exhaust heat exchanger.
| c. Remove the exhaust muffler and pipes (Rotax 912).
| d. Remove the heat shields and the EGT sensors (Rotax 914).
| (25) Start lifting the engine (e.g. with suitable nylon ropes at the propeller shaft and the manifolds).
| a. Support the airplane on the aft end of the fuselage (Tricycle airplanes only).

b. Lift the engine until the engine mount is unloaded.

(26) Remove the engine mounting bolts and move the engine free of the airplane.

(27) Remove the ring engine mount from the engine (Rotax 914).

(28) Remove the LH and RH engine mount adapters from the rear engine attachment (Rotax 912 only).

2.5.5 INSTALL THE ENGINE

For HK 36 with LIMBACH 2400 engine reverse the remove sequence.

For HK 36 with Rotax engines

NOTE

Secure all non self-locking bolts with lock wire.

NOTE

Check pipes, lines and tubes for foreign objects an contamination before connecting.

(1) Install the ring engine mount (Rotax 914).

(2) Install the LH and RH engine mount adapters on the rear engine attachment points (Rotax 912).

(3) Lift the engine (e.g. with suitable nylon ropes at the propeller shaft and the manifolds).
a. Support the airplane on the aft end of the fuselage (Tricycle airplanes only).
b. Lift the engine in position.

(4) Install the engine mounting bolts (Torque 40 Nm).

(5) Install the exhaust system:
a. Install the exhaust muffler and pipes (Rotax 912).
b. Install the heat shields and the EGT sensors (Rotax 914).
c. Install the exhaust heat exchanger.
d. Connect all hoses to the exhaust heat exchanger.

(6) Install the coolant system:

a. Replace all coolant hoses.
b. Make sure that the water pump elbow is installed in the same position as before.
c. Connect the coolant hose to the overflow bottle at the expansion tank.
d. Connect the coolant hose to the coolant radiator at the expansion tank.
e. Connect the coolant hose to the coolant radiator at the water pump.
f. Install the LH and RH water pipes from the engine.
g. Install the coolant radiator with the coolant radiator brackets on the engine (914 engine only)
h. Make sure the coolant lines and pipes do not touch the engine mount.
i. Install heat protection on the coolant hoses next to the exhaust.

(7) Install the oil system:
a. Connect the oil line at the engine sump.
b. Connect the oil line at the oil pump.
c. Connect the oil line at the turbocharger (Rotax 914).

(8) Install the Airbox (Rotax 912):
a. Install the airbox
b. Connect manifold pressure hose on the airbox.
c. Connect the drain lines on the airbox, the carburetors and the drip trays.
d. Connect the hose from the air filter and the exhaust heat exchanger at the airbox.

(9) Air intake system (Rotax 914):
a. Connect hose from air filter at the turbocharger.
b. Connect hose between turbocharger and airbox.
c. Connect manifold pressure indicator line at the airbox.

(10) Connect fuel lines at the firewall fitting or at the mechanical fuel pump and fuel manifold (Rotax 912).
a. Connect the drain line at the mechanical fuel pump (if a mechanical fuel pump with drain connector is installed).

(11) Connect fuel lines at fuel pressure regulator and return line fitting of the engine (Rotax 914).

(12) Connect and adjust bowden cables and control cables for:
a. Throttle.
b. Choke.
c. Carburetor heat.
d. Mechanical feathering system (if installed).

Refer to engine maintenance manual.

(13) Install the cowling support (if installed).

(14) Install the propeller control system (hydraulic constant speed propeller MTV-21-A-C-F/CF175-05 or HO-V352F-S1/S170FQ):

a. Install governor according to the Rotax Maintenance Manual.

b. Install the propeller accumulator and the line to the governor (if the accumulator is installed on the engine).

c. Charge the pressure from the propeller accumulator i.a.w. the propeller maintenance manual.

i. If the propeller accumulator (P/N P726) is installed on the firewall, supply electric power to the accumulator valve during charging.

d. Connect the governor bowden cable.

(15) Install and adjust the propeller control system i.a.w. the propeller maintenance manual (electric constant speed propeller MTV-1-A/170-08).

(16) Connect flexible shaft of the RPM indicator on the engine,

a. Protect RPM cable by a fire sleeve secured with lock wire.

(17) Connect the engine ground cable at cylinder No. 3.

(18) Connect the ground and short-circuit cables of the ignition system.

(19) Connect the starter.

(20) Alternators:

a. Install and connect the external alternator (if installed).

b. Connect the internal alternator cable and shielding (if not disabled).

c. Put a heat shrink on the end of the cable of the internal alternator and attach it to the engine with heat resistant cable ties, if the internal alternator is disabled.

(21) Install the electrical cable harness at the following plugs:

a. Oil pressure sensor.

b. Oil temperature sensor.

c. Cylinder heat temperature sensor or Coolant temperature sensor.

d. Fuel pressure sensor.

e. Coolant level sensor (if installed).

f. Airbox temperature sensor (Rotax 914).

g. Throttle position potentiometer (Rotax 914).

h. RPM sensor (Rotax 914).

i. 3-way solenoid valve (Rotax 914).

| (22) Connect temperature monitoring box plug (Rotax 914).
| (23) Install the TCU (Rotax 914):
| a. Install the waste-gate servo.
| b. Install the waste-gate bowden cable.
| c. Connect and adjust bowden cable for the waste-gate i.a.w. engine maintenance manual.
| (24) Connect connect P2400 (located at the firewall or in the instrument panel).
| (25) Install the propeller i.a.w. the propeller maintenance manual:
| a. Put oil on the O-ring.
| b. Install pulley on the propeller flange and check alignment with the pulley on the external alternator (if an external alternator is installed).
| c. Install the V-belt and adjust tension i.a.w. the engine maintenance manual.
| (26) Connect the main battery (positive terminal first).
| (27) Check throttle position i.a.w. the engine maintenance manual (Rotax 914).
| (28) Install upper and lower cowling:
| a. Connect landing light cable (if installed).
| b. Check fit of oil and coolant radiator.
| c. Check clearance:
| i. Exhaust end pipe to cowling min. 10 mm
| ii. Sufficient clearance between cowling and oil tank, exhaust shielding (Rotax 914) and propeller accumulator (if not installed on the firewall).
| (29) Connect bowden cable at the cowl flap.
| Adjust OPEN position to 140 ± 3 mm.
| (30) Fill and bleed the coolant system i.a.w. Chapter 4 and the AFM.
| Check for leaks.
| (31) Fill and bleed the oil system i.a.w. Chapter 4, the AFM and the engine maintenance manual.
| Check for leaks.
| (32) Do an engine ground run i.a.w. AFM.
| a. Do a carbon monoxide test.
| b. Check propeller speeds.
| c. Check for leaks after ground run.
| d. Replenish oil and coolant as necessary.
| (33) Retorque engine bolts with 40 Nm.

2.5.6 PROPELLER DESCRIPTION

mt-propeller MTV-1-A/L160-03 and MTV-1-A/170-08

* Electric constant speed propeller
* mt-propeller P-120-A electronic control unit
* Blade pitch change mechanism actuated by electric DC-motor and threaded spindle
* Manual: Operation and Installation Manual No. E-118

Hoffmann HO-V352F-S1/S170FQ

* Hydraulically controlled constant speed propeller
* Mechanical feathering device
* Governor Woodward A 210786 A
* Manual: Instruction Manual No. E 540

mt-propeller MT170R125-2A

* Fixed pitch propeller with wooden blades
* Manual: Operation and Installation Manual No. E-203

Hoffmann HO14-170S123

* Fixed pitch propeller with wooden blades
* Manual: Owner's Manual No. E 0110.74

mt-propeller MTV-21-A-C-F/CF175-05

* Hydraulically controlled constant speed propeller
* Oil pressure is used to reduce propeller pitch
* Feathering device operated through counterweights and spring forces
* Pressure accumulator to move the blades from the feathered position to low pitch
* Governor : Woodward A 210790 (for Rotax 912 and Rotax 914 or
  McCauley DCFU 290 D17()/T1 (for Rotax 912 A) or
  McCauley DCFU 290 D17()/T2 (for Rotax 914 F) or
  mt-propeller P-875-12 (for Rotax 912 S and Rotax 914 F)

* Manual: Operation and Installation Manual No. E-124

The MTV-21-A-C-F/CF175-05 has several variants, which only differ in the adjustment values.

CAUTION

Using a propeller with the wrong adjustment can lead to reduced performance, improper operational behavior and mechanical damage.

Before installing make sure, that the propeller is adjusted with the correct values for your engine as listed in the table below. Refer to the propeller logs or measure the adjustment values.

Adjustment Value	Rotax 912 A	Rotax 912 S	Rotax 914 F
Stop for low pitch	12° ± 0.2°	14° ± 0.2°	16.5° ± 0.2°
Stop for high pitch	23° ± 1°	20° ± 1°	28° ± 1°
Stop for starting pitch	14° ± 1°	19° ± 2.5°	19° ± 1°
Stop for feathering	83° ± 1°	83° ± 1°	83° ± 1°
Ctrwts. at low pitch	28° ± 1°	30° ± 0.5°	32.5° ± 1°

Troubleshooting

During an engine ground run after the installation, the use of the wrong propeller variant can be recognized by the following signs:

(1) Propeller for Rotax 914 F on 912 A: Maximum attainable engine speed at take off power during ground run is more than 100 RPM below correct value (2550 RPM).

(2) Propeller for Rotax 912 A on 914 F: At take off power during ground run, the governor reduces the engine speed upon the slightest movement of the propeller speed control away from the foremost position (no "quasi-dead travel" of the propeller speed control).

If the wrong propeller variant has been used, the propeller must be exchanged. A change to the propeller settings can only be made by the propeller manufacturer.

2.5.7 ENGINE COOLING SYSTEM

System Description

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, coolant reservoir and an expansion reservoir. The coolant reservoir may hold the coolant quantity sensor.

The coolant pump is driven by the camshaft and forces the coolant through the cylinder heads and the cooler. The coolant emerges on top of the cylinder heads and is collected in the coolant reservoir. The reservoir on the engine housing serves as an expansion room.

The expansion reservoir is sealed with a pressure relief valve and a blow valve. As the coolant gets warm and expands, the coolant opens the pressure relief valve and is collected in the transparent overflow reservoir via a not pressurized tube. When cooling down, the coolant is sucked back to the coolant circuit. See Rotax SB 912-039/SB 914-025 ‘Modification of the overflow reservoir’, latest revision.

Types of coolant

There are 2 approved types of coolant with different operating limitations:

- Conventional Coolant mixed with water with a mixing ratio of 1:1 (BASF Glysantin G48 or equivalent)
- Waterless Coolant (EVANS NGP+ or equivalent)

For brand and product names recommended by the engine manufacturer refer to Rotax SI-912-016 / SI-914-019.

NOTE

If approved for your airplane, DAI recommends the use of conventional coolant (G48 or equivalent). DAI has issued a Service Bulletin for change from waterless coolant (EVANS NPG+ or equivalent) to conventional coolant (G48).

Inspection of the Cooling System:

WARNING

Make sure the engine has cooled down to ambient temperature before you start maintenance work. Otherwise the hot engine and coolant may cause burns and scalds.

WARNING

Do not open the coolant cap when the coolant is hot. Opening the cap may lead into an emergence of boiling coolant causing scalds. Use a cloth to cover the cap and open cautious.

Visually inspect all coolant hoses for damage, leaks, hardened spots due to heat and porosity. Inspect all top and bottom cylinder head connections and at the coolant pump.
Inspect the expansion reservoir for damage.
Make sure the rubber on bottom of the coolant reservoir is mounted properly.
Inspect the coolant cap, the pressure relief valve and the blow valve for improper function.
Inspect coolant for change in density and color.
Check coolant level.
Replenish coolant i.a.w. Section 4.1.3, if necessary. Make sure to use the correct coolant type.

Troubleshooting

If the engine runs too hot, flush the cooling system.

Coolant Level Caution Light (If installed)

The Coolant Level Caution Light is installed on the instrument panel. The lamp is driven by an electronic device fed by the sensor signal. The coolant sensor is mounted in an adapted coolant reservoir. Revision 0 of the coolant electronic is approved for conventional coolant (G48 or equivalent) only, Revision 1 is approved for both conventional and waterless coolant.

Description:

After switching the avionic- and engine master switch to ‘ON’, the control light illuminates and performs an control light test. If the coolant level is sufficient, the coolant level caution light extinguishes after 3 to 5 seconds. If the coolant level caution light does not extinguish, the coolant level is too low and coolant must be replenished. Leaks in the coolant system must be identified and eliminated.

NOTE

The coolant level caution light does not continuously monitor the coolant level during flight.

| Coolant Sensor and Electronics Check:

| (1) Replenish coolant to the correct level.

| (2) Set the main switch to ‘ON’, the coolant level control light illuminates for approximately 3 seconds.

| (3) Set the main switch to ‘OFF’.

| (4) Unplug the sensor cable (center contact) from the coolant reservoir.

| (5) Set the main switch to ‘ON’.

| (6) Check, if the coolant level control light extinguishes after 5 seconds.

| (7) If the coolant level control light extinguishes after 5 seconds, the electronic circuit or the sensor cable are defective. Replace defective component.

| (8) Plug the sensor cable to the coolant reservoir (center contact).

| (9) Repeat check routine until check is passed.

2.6 ELECTRICAL SYSTEM

2.6.1 POWER SUPPLY

The power supply of the electrical system consists of a 12 V lead-acid battery and a
| generator which is part of the engine or an optional belt driven alternator which is mounted
| to the front of the engine.

| For Limbach engines:
| The generator is an AC-alternator (14V, 55 A) with built-in voltage regulator.
|
| For Rotax engines:
| The generator is a permanently excited ten-pole single phase alternator. Voltage regulation and rectification are performed by an electronic regulator with a full-wave bridge rectifier, fabricated by Ducati, Rotax Part No. 965345 with connector shell 965335.

| The external alternator is a three phase alternator. Voltage regulation and rectification are performed by an internal regulator.

The standard rechargeable battery has a capacity of 18 Amp-hours (optional 30 Amp-hours). The battery has a central ventilating system to allow vapors to be externally vented.

The battery is separated from the network by means of a battery relay. The cable that runs from the battery to the starter is not protected and is therefore coated with glass fabric in compliance with LN 9251 B standards. This cable must be routed properly to prevent short-circuits.

All other wires meet LN 9251 A standards.
With the exception of the starter, all electrical consumers are protected with thermal overload breakers or glass fuses.

When triggered, the main breaker separates the network from the battery. The generator supplies the electrical network with power via the generator breaker.

A mode selection switch for the different operation modes (power flight, soaring) is connected in series with the master switch.

When the master switch is closed (ON) and the mode select switch is open (i.e. in
| SOARING position), only COM 1 radio and the optional electric vertical speed indicator are supplied with power.

When the master switch is closed (ON) and the mode select switch is closed (i.e. in POWER FLIGHT position), the pallet of the battery relay is attracted, and all electrical consumers are supplied with power.

When the master switch is open (OFF), all electrical consumers are disconnected from the battery and the generator. The electrical network is thereby currentless.

2.6.2 ELECTRIC INSTRUMENTS

An ammeter is used to monitor the electrical system. It indicates how quickly the battery is being charged (+ range) or discharged (- range).

The following electric engine instruments are installed:
- Electric oil pressure indicator
- Electric oil temperature indicator
- Electric fuel quantity indicator(s)
| - Electric cylinder head temperature indicator (if an engine with Suffix -01 is installed: Electric
| coolant temperature indicator.)

Essentially, all the instruments function in a similar manner: The sensors contain resistors, whose resistances change through changes in the measured variable. The indicators convert these resistance values into needle deflections.

| The cylinder head temperature gauge uses a thermocouple. Therefore it requires no
| external power supply. The unit reacts very sensitive to all changes of connections. Any
| manipulation of the wiring will lead to instrument malfunction.
|
| HK 36 with Limbach 2400 engine
|
| Relay B controls the engine hour meter. When the oil pressure is below 0.5 bar (7.25 psi)
| the warning contact of the oil pressure sensor is closed and interrupts the power supply to
| the engine hour meter. With the engine running and the oil pressure is above 0.5 bar (7.25
| psi) the relay is closed and electric power is supplied to the engine hours meter.
|
| An optional LED light for monitoring the battery voltage during soaring is installed next to the
| propeller control unit. It starts blinking as soon as the voltage fall below 11 V.

2.6.3 ELECTRIC FUEL PUMP

| Models with Limbach 2400 and Rotax 912:
The Powered Sailplane is equipped with a engine-driven mechanical fuel pump and an electric fuel pump, which is operated by a switch on the instrument panel.

The circuit breaker for the electric fuel pump is located in the center section of the instrument panel.

Models with Rotax 914 F:
The Powered Sailplane is equipped with two independent electric fuel pumps. The main fuel pump has no switch. It promotes fuel flow as soon as the generator delivers current. The fuel

booster pump is dependent on the electrical network and is operated by a switch on the instrument panel.

The fuse for the main fuel pump is located in the engine compartment. The circuit breaker for the fuel booster pump is located in the instrument panel.

2.6.4 IGNITION SYSTEM

| For Limbach engines:
| The engine is equipped with either a Slick (4230) or a Bendix (S4RN21) magneto.
|
| For Rotax engines:
The engine is equipped with a non-contacting reactor-capacitor dual ignition.

To cut off the ignition, the ignition system must be short-circuited. Therefore, it is very important to ensure proper connection between the ignition system and the ignition switch, and in particular proper ground connection of the switch.

WARNING

If the ignition system is not short-circuited properly, the ignition is on. When working on the ignition system, the propeller must be secured against moving by hand, otherwise the engine might fire - **DANGEROUS TO LIFE!**

2.6.5 WIRING

Wires in fuselage and wings are fastened with clamps and bindings in a way that prevents chafing. The entire wiring complies with aeronautical requirements (LN 9251 and others). These requirements must also be followed in the case of repairs or subsequent installations.

As far as possible, crimp connections are used. Soldered connections should used as little as possible. Connectors must have a so-called insulation support (i.e. a copper bush that grips the wire insulation). Only tinned, insulated copper cable sockets are used.

A crimped connection has more strength than the wire itself when proper crimping tools are used. It is advisable to use crimping tools with a self-locking mechanism.

2.6.6 CIRCUIT BREAKERS

The circuit breakers operate on thermal overload (bimetal). They must not be reset unless the reason for the cut-out is eliminated.

HK 36 TTC-ECO:
Main breaker (50A), the generator breaker (25 A) and breakers for electrical consumers (engine instruments, ATC equipment, fuel pump, ACL, position lights, landing light, etc.) are located in the top RH section of the instrument panel.

Other models:
Located in the right hand section of the instrument panel are: the main breaker (50 A), the generator breaker (HK 36 and HK 36 R, HK 36 T** with external alternator: 50 A, other models: 25 A), the breakers for the power-plant instruments and the breakers for the air traffic control equipment. The switch panel in the center section of the instrument panel includes breakers for the corresponding switches (fuel pump, ACL, position lights, landing lights, etc.).
The circuit breaker for the electric variable pitch propeller (if installed) is located beside the control unit.

Additional fuses for models with the Rotax 914 F
The fuses for the main fuel pump, the generator relay and the generator control relay are located at the rear of the engine compartment on the right hand side.

2.6.7 SWITCHES

For general purposes, single and double pole rocker type switches (HK 36 TTC-ECO) or toggle type switches (other models, switching capacity: 20 Amps per contact) are used.

The ignition/starter switch is a key switch. It must not be replaced by any other (unspecified) commercial switch.

2.6.8 AIR TRAFFIC CONTROL (ATC) EQUIPMENT

Any ATC equipment must be installed in the center section of the instrument panel. Installation must be done by appropriately rated personnel in accordance with the regulations of the respective manufacturers.

2.6.9 ANTENNAS

COM 1 antenna:	Antenna located in the vertical stabilizer, standard equipment.
COM 2 antenna:	On the fuselage bottom, behind the baggage compartment.
VOR antenna:	Serial Nos. 36.301 through 36.305, 36.307, 36.308, 36.310 through 36.314, 36.316, 36.317, 36.319 and 36.320: Located in the fuselage behind the fuel tank on the upper side. Serial Nos. 36.306, 36.309, 36.315, 36.318, 36.321 and subsequent: Located in the horizontal stabilizer.

ADF antenna: Located under the fuselage.

Transponder/DME antenna: Located under the fuselage at the below the seats or below the main bulkhead. The counterweight is a copper foil which is bonded to the inner side of the fuselage skin.

ELT-antenna: Located in the fuselage behind the baggage compartment on the half-bulkhead.

2.6.10 RADIO LOUDSPEAKER

The radio loudspeaker is installed on the upper edge of the backrest between the seats or in the upper rear of the baggage compartment.

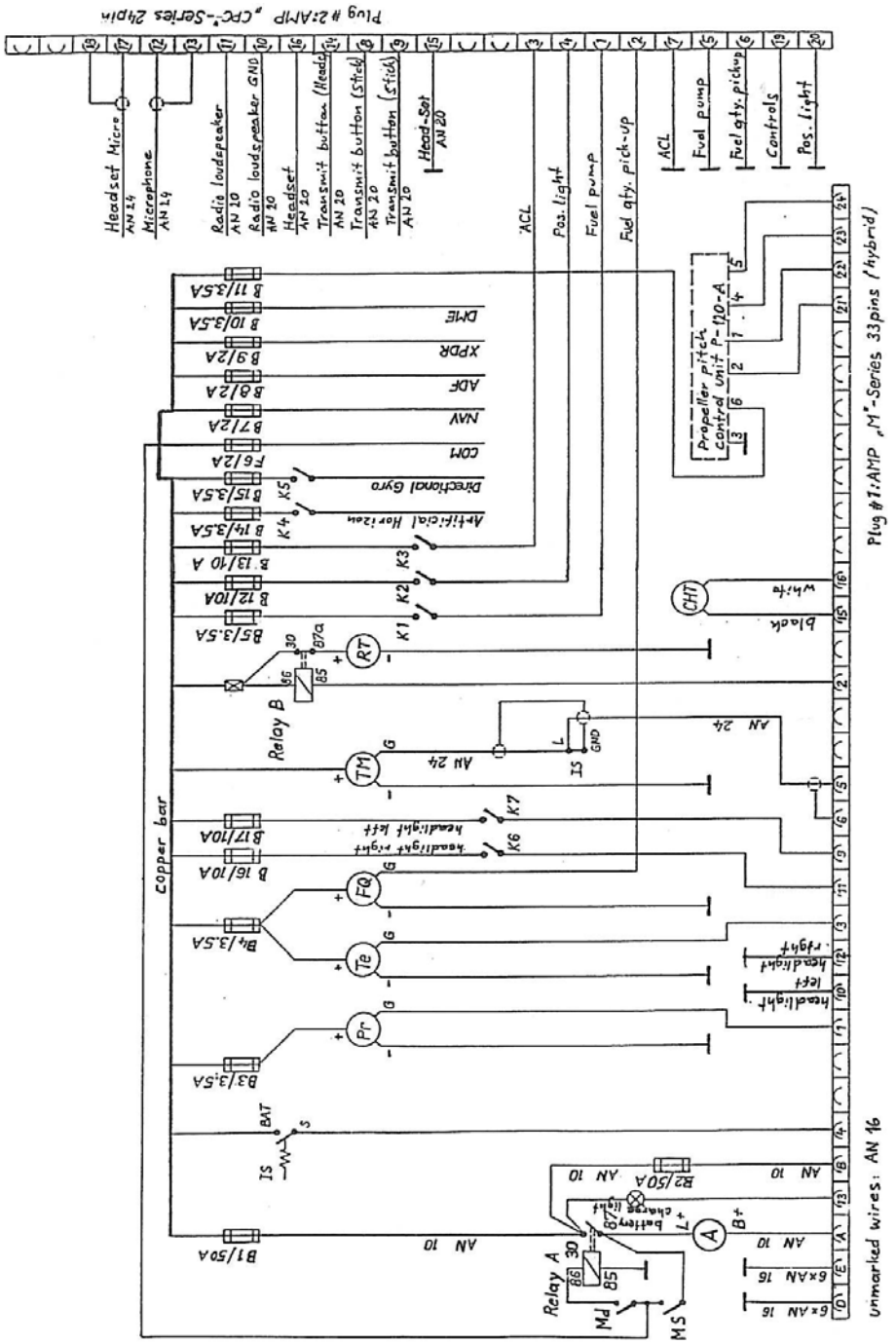
2.6.11 ANTI COLLISION LIGHTS (ACL)

The switch and breaker are located on the switch panel of the instrument panel. ACLs should be mounted to the wing tips in combination with the position lights, or to the horizontal stabilizer. We recommend not to use ACLs with filament bulbs, since their power consumption is high in relation to their benefit.

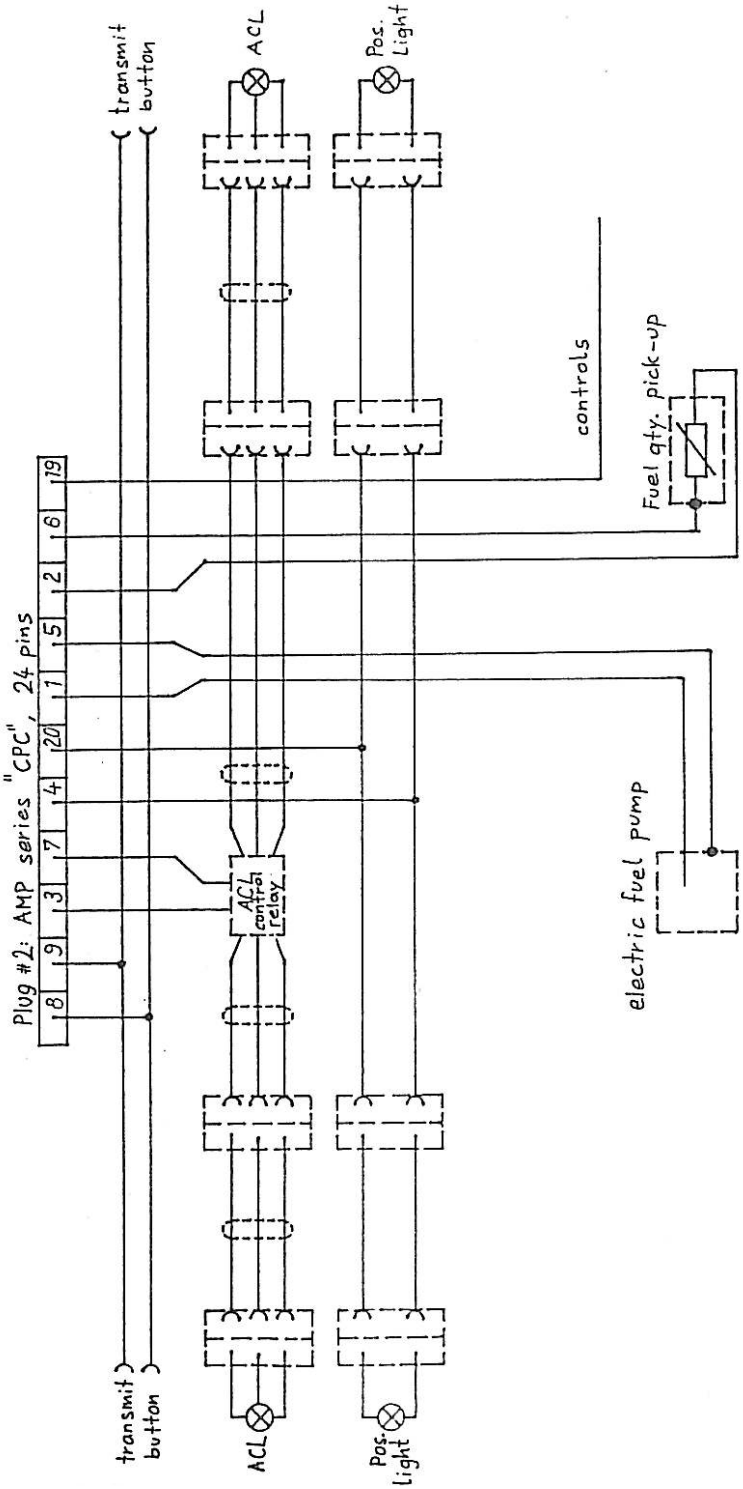
2.6.12 POSITION LIGHTS

The position lights (optional) are mounted on the wing tips. The switch and breaker are located on the switch panel of the instrument panel.

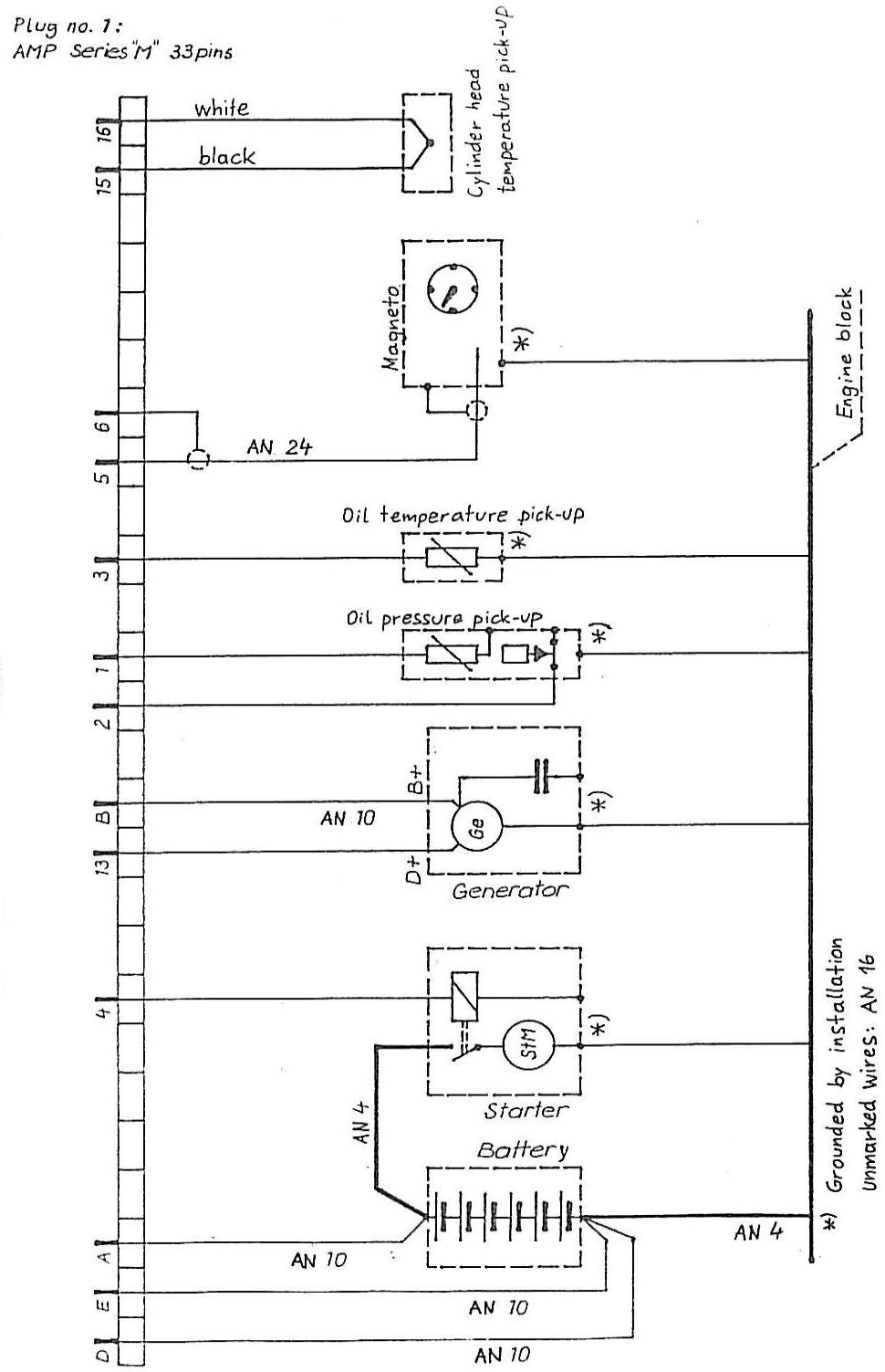
2.6.13 WIRING DIAGRAMS HK 36



´WIRING DIAGRAM - DASHBOARD HK 36



WIRING DIAGRAM - FUSELAGE - HK 36



WIRING DIAGRAM - ENGINE COMPARTMENT - HK 36

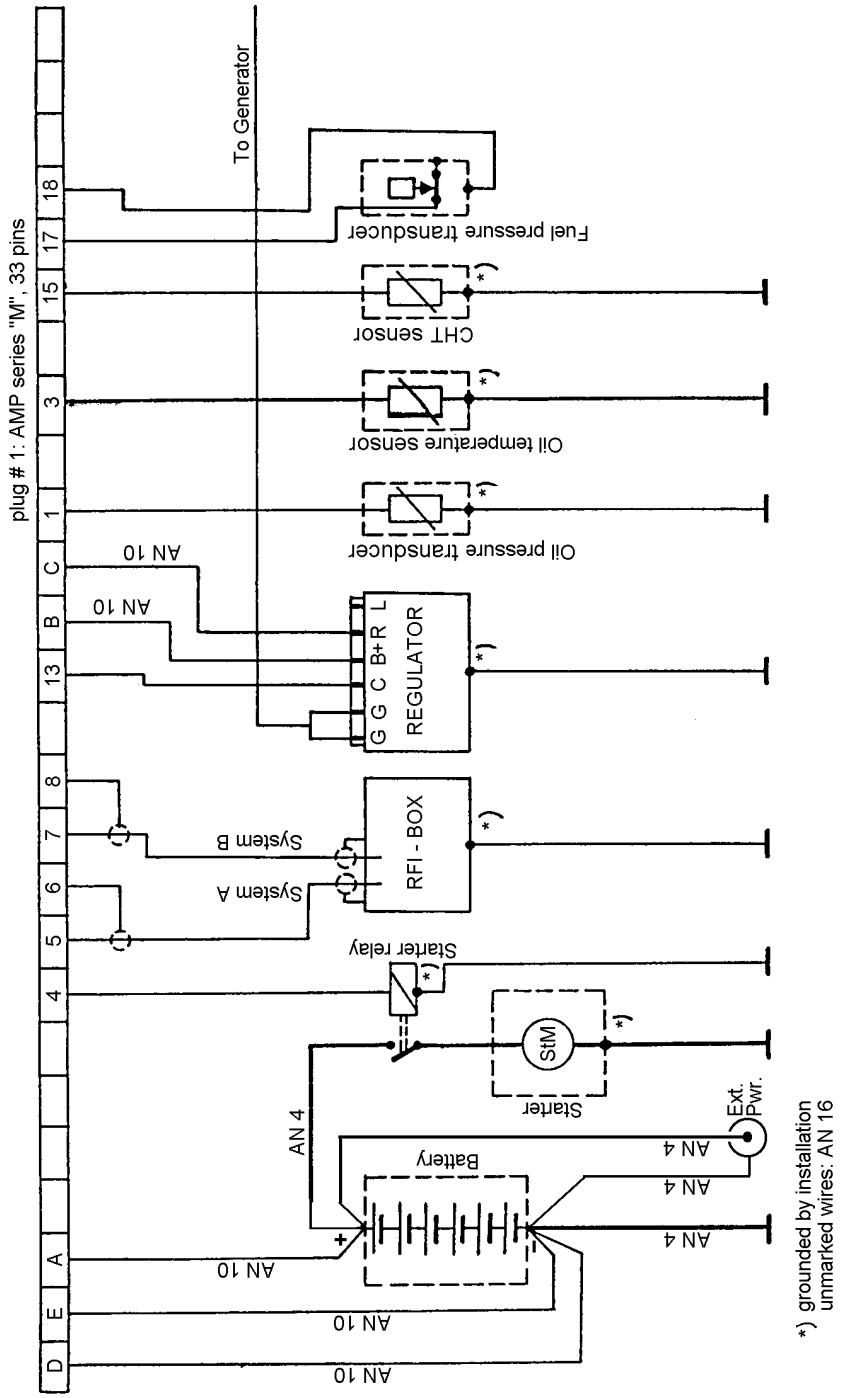
2.6.13.1 ABBREVIATIONS USED IN THE HK 36 WIRING DIAGRAMS

Relay A	Battery Relay
Relay B	Relay for the engine running time meter
A	Ammeter
Pr	Oil pressure indicator
Te	Oil temperature indicator
FQ	Fuel quantity indicator
TM	Tachometer
RT	Running time meter
CHT	Cylinder head temperature indicator
B1	Main breaker
B2	Generator breaker
B3, B4, ...	Breakers for various consumers
IS	Ignition/starter switch
MS	Master switch
Md	Mode select switch
K1, K2, ...	Switches for various consumers
StM	Starter motor
Ge	Generator with built-in voltage regulator

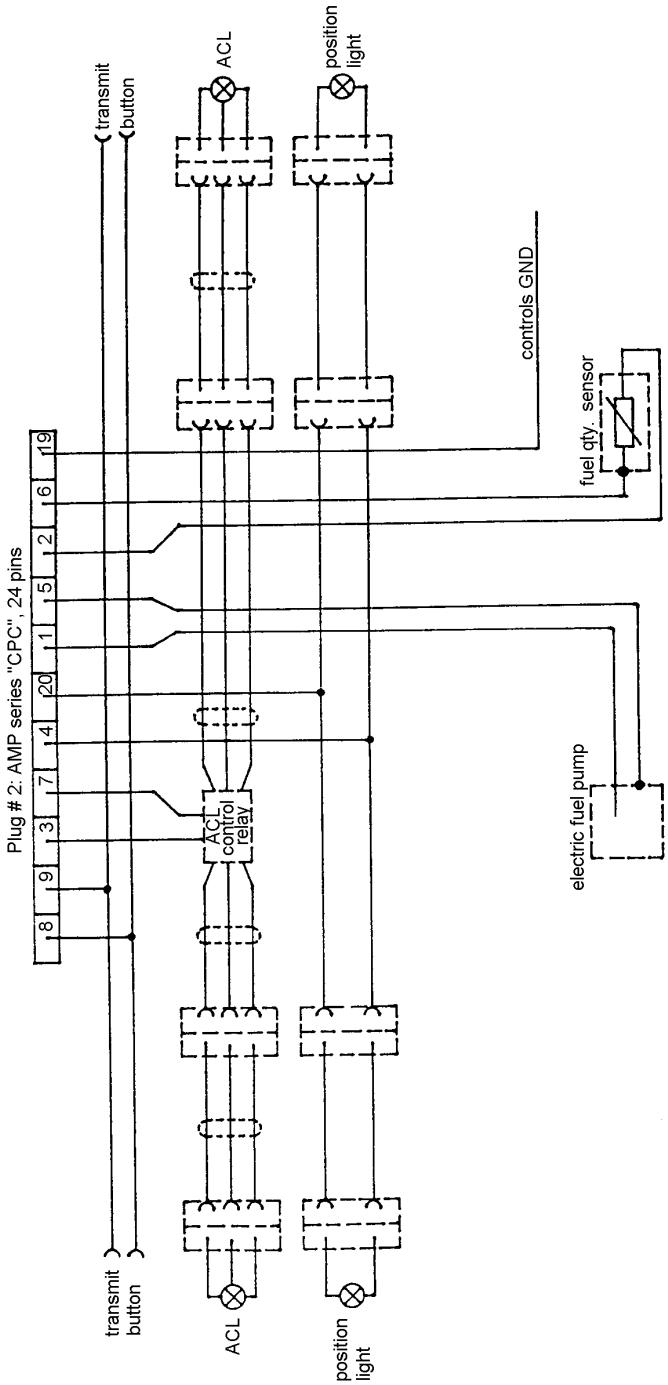
2.6.13.2 NUMBERING OF THE WIRES IN THE HK 36 WIRING DIAGRAMS

1	Positive terminal battery to battery relay (terminal 87)
2	Positive terminal battery to starter
3	Negative terminal battery to engine block
5	Fuel quantity sensor
6	Cylinder head temperature sensor
7	Oil temperature sensor
8	Starter relay
9	Ignition short-circuiting cable
10	Oil pressure transducer
11	Oil pressure warning contact to relay B (terminal 85)
12	Electric fuel pump
13	Relay B (terminal 86 / terminal 30)
14	Relay B (terminal 87a to running time meter, positive)
15	Generator B+
16	Generator B+ to generator breaker 50 A
17	Battery relay terminal 30 to main breaker 50 A
18	Radio loudspeaker
19	Transmit buttons
25	Anti collision lights
26	COM
27	NAV
28	Transponder
29	ADF
30	Attitude gyro
31	Direction gyro
33	Position lights
39	DME

2.6.14 WIRING DIAGRAMS HK 36 R



WIRING DIAGRAM - ENGINE COMPARTMENT HK 36 R



WIRING DIAGRAM - FUSELAGE HK 36 R

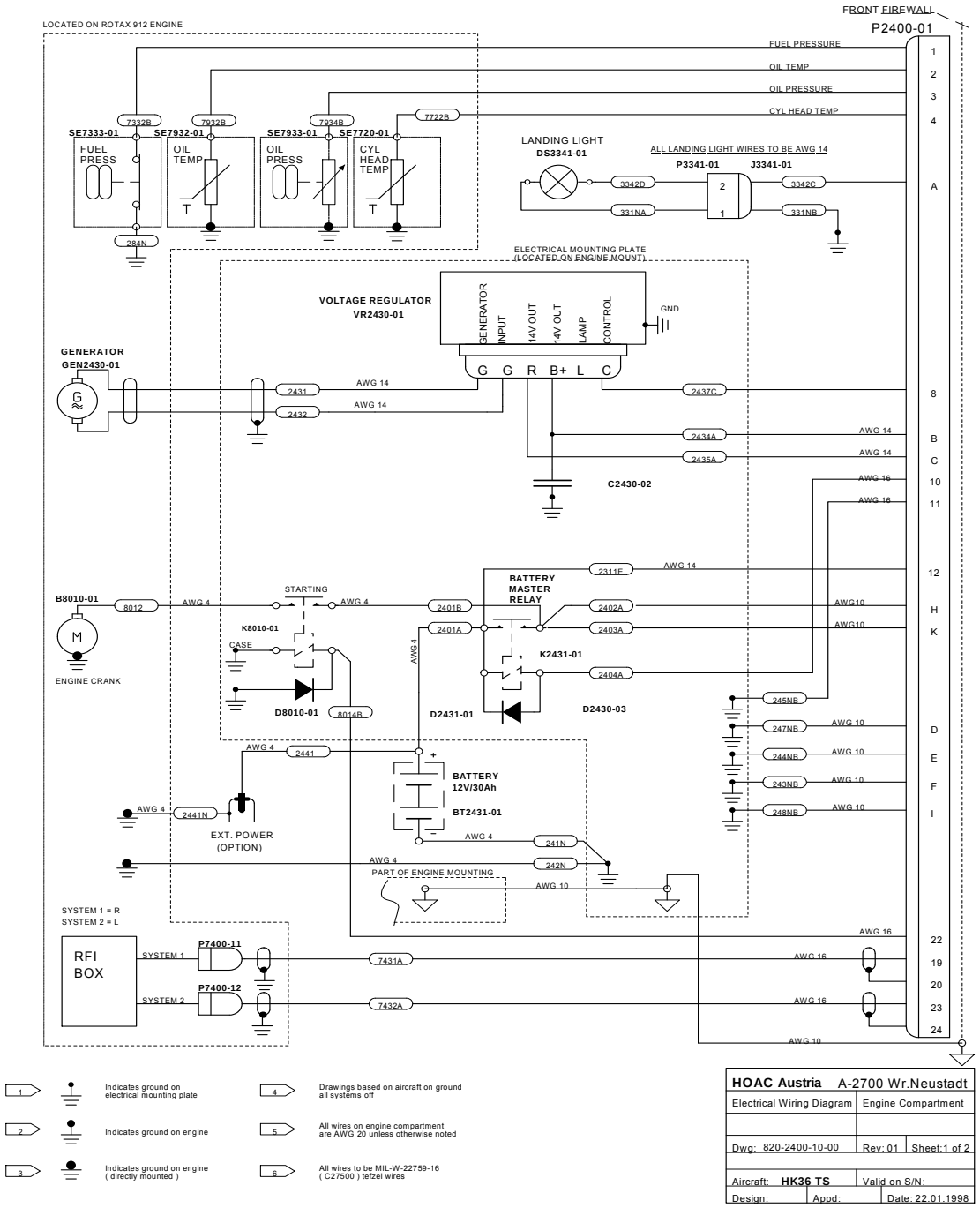
2.6.14.1 ABBREVIATIONS USED IN THE HK 36 R WIRING DIAGRAMS

A	Ammeter
B1	Main breaker
B2	Generator breaker
B3, B4, ...	Breakers for various consumers
CHT	Cylinder head temperature indicator
Ext. Pwr.	External power plug
FQ	Fuel quantity indicator
IS	Ignition/starter switch
K1, K2, ...	Switches for various consumers
Md	Mode select switch
MS	Master switch
Pr	Oil pressure indicator
Relay A	Battery relay
StM	Starter motor
Te	Oil temperature indicator

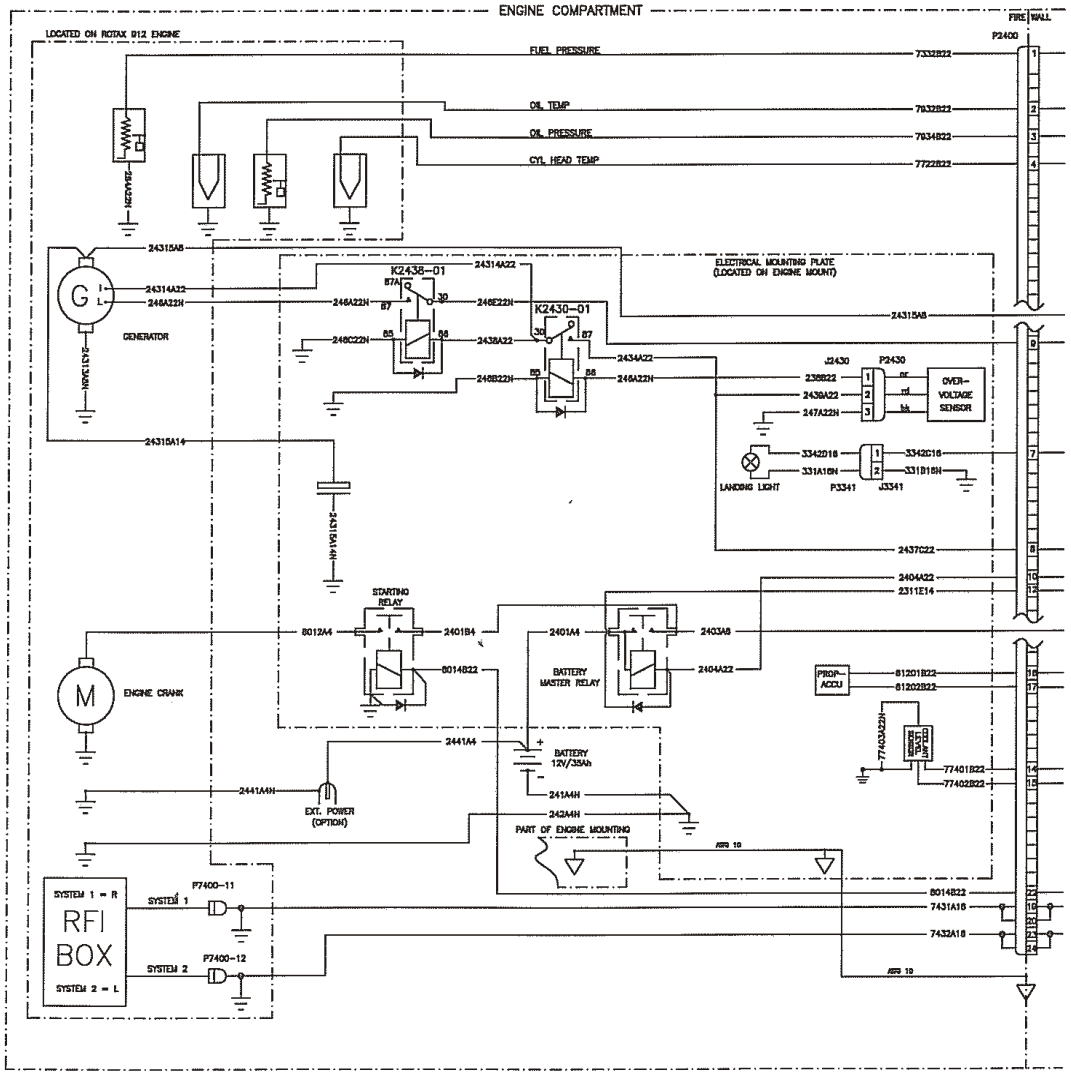
2.6.14.2 NUMBERING OF THE WIRES IN THE HK 36 R WIRING DIAGRAMS

1 Positive terminal battery to ammeter (terminal B+) - ammeter (terminal L+) - battery relay (terminal 87)
2 Positive terminal battery to starter
3 Negative terminal battery to engine block
5 Fuel quantity sensor
6 Cylinder head temperature sensor
7 Oil temperature sensor
8 Starter relay
9 Ignition short-circuiting cable
10 Oil pressure transducer
12 Electric fuel pump
15 Regulator C+
16 Generator breaker to regulator B+, to regulator R
17 Battery relay terminal 30 to main breaker 50 A
18 Radio loudspeaker
19 Transmit buttons
25 Anti collision lights
26 COM
27 NAV
28 Transponder
29 ADF
30 Attitude gyro
31 Direction gyro
33 Position lights
39 DME

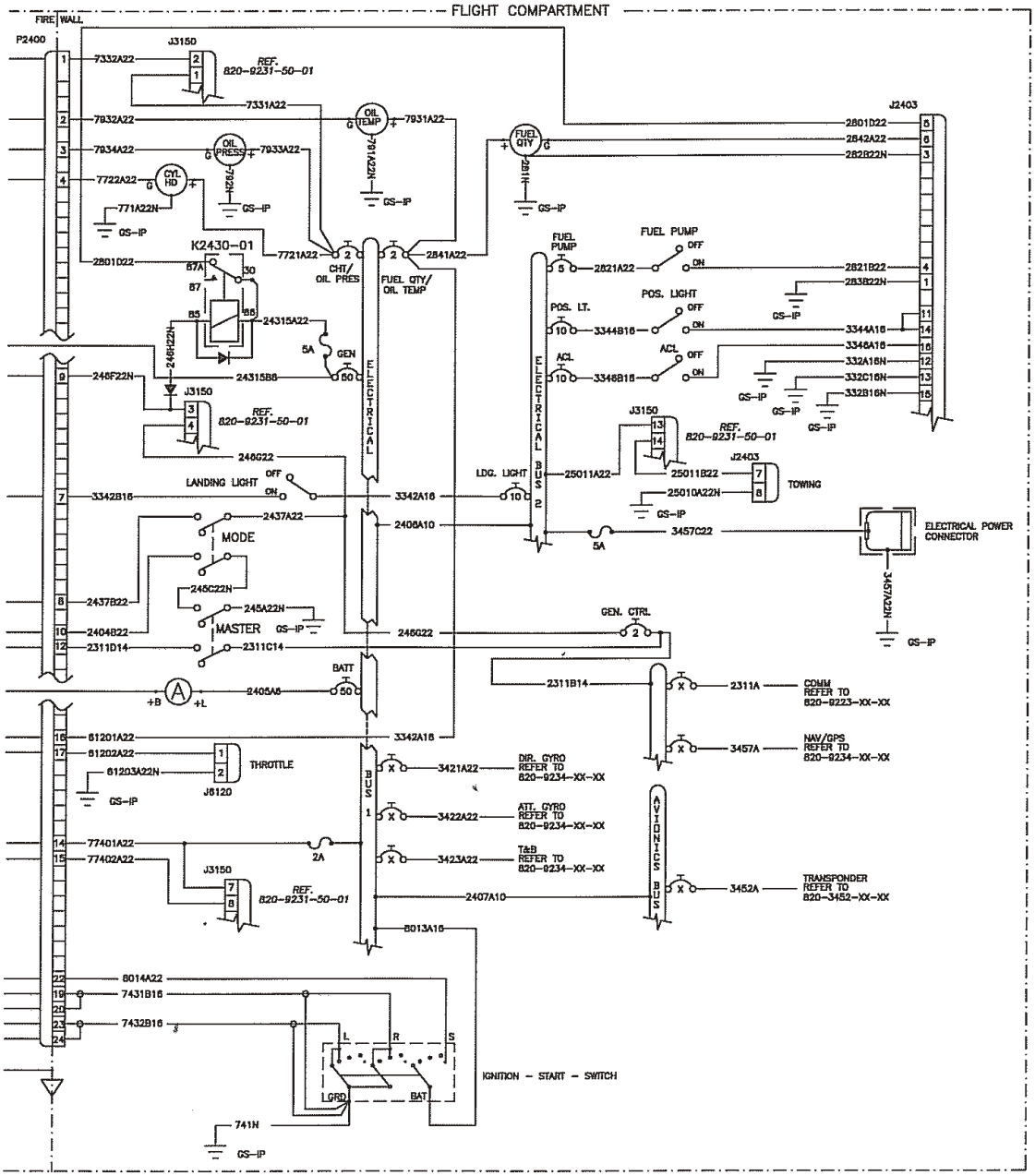
2.6.15 WIRING DIAGRAMS HK 36 TC and HK 36 TS



WIRING DIAGRAM - ENGINE COMPARTMENT HK 36 TS, HK 36 TC

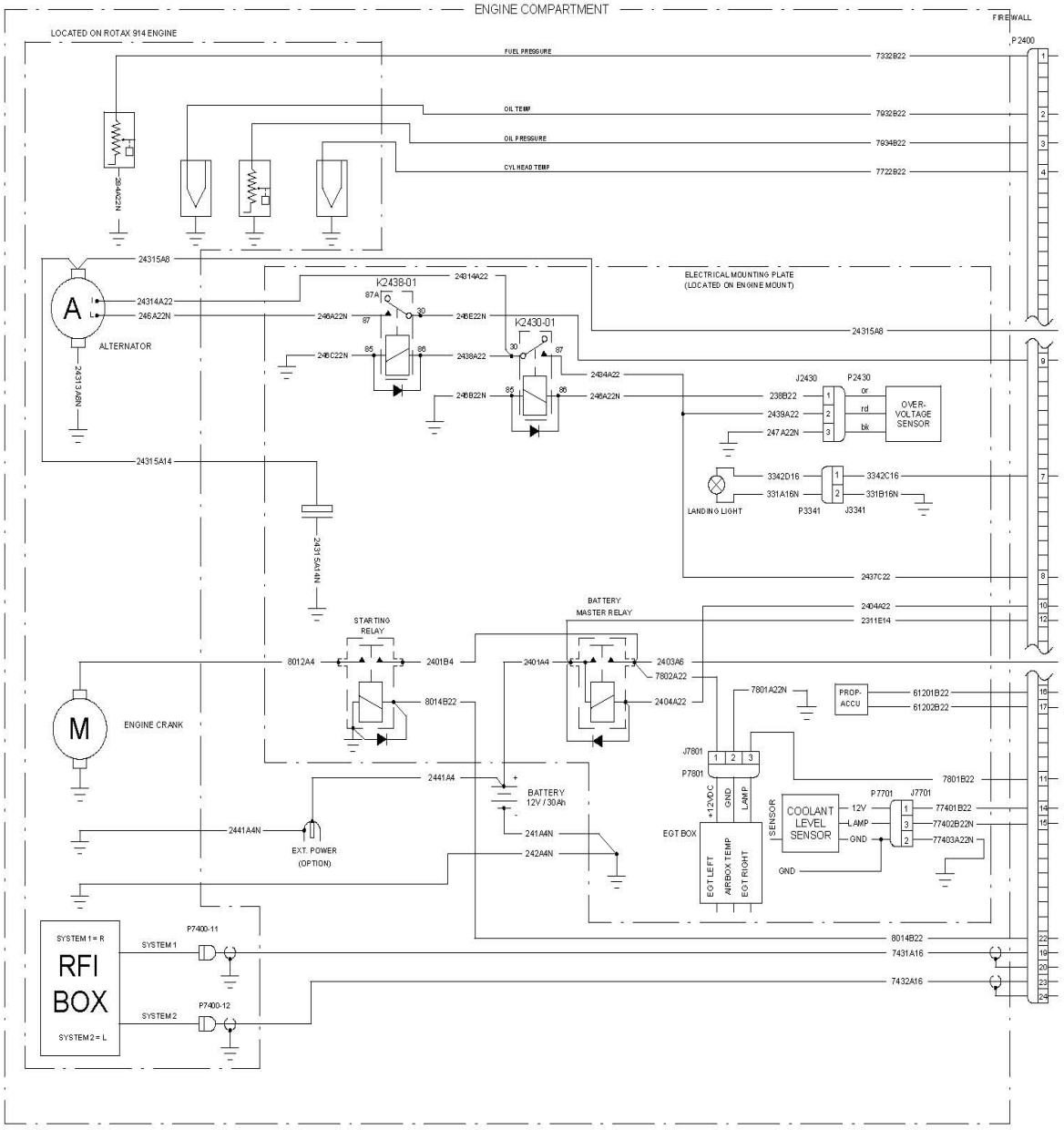


WIRING DIAGRAM - ENGINE COMPARTMENT
HK 36 TC WITH ROTAX 912 S ENGINE EXTERNAL ALTERNATOR

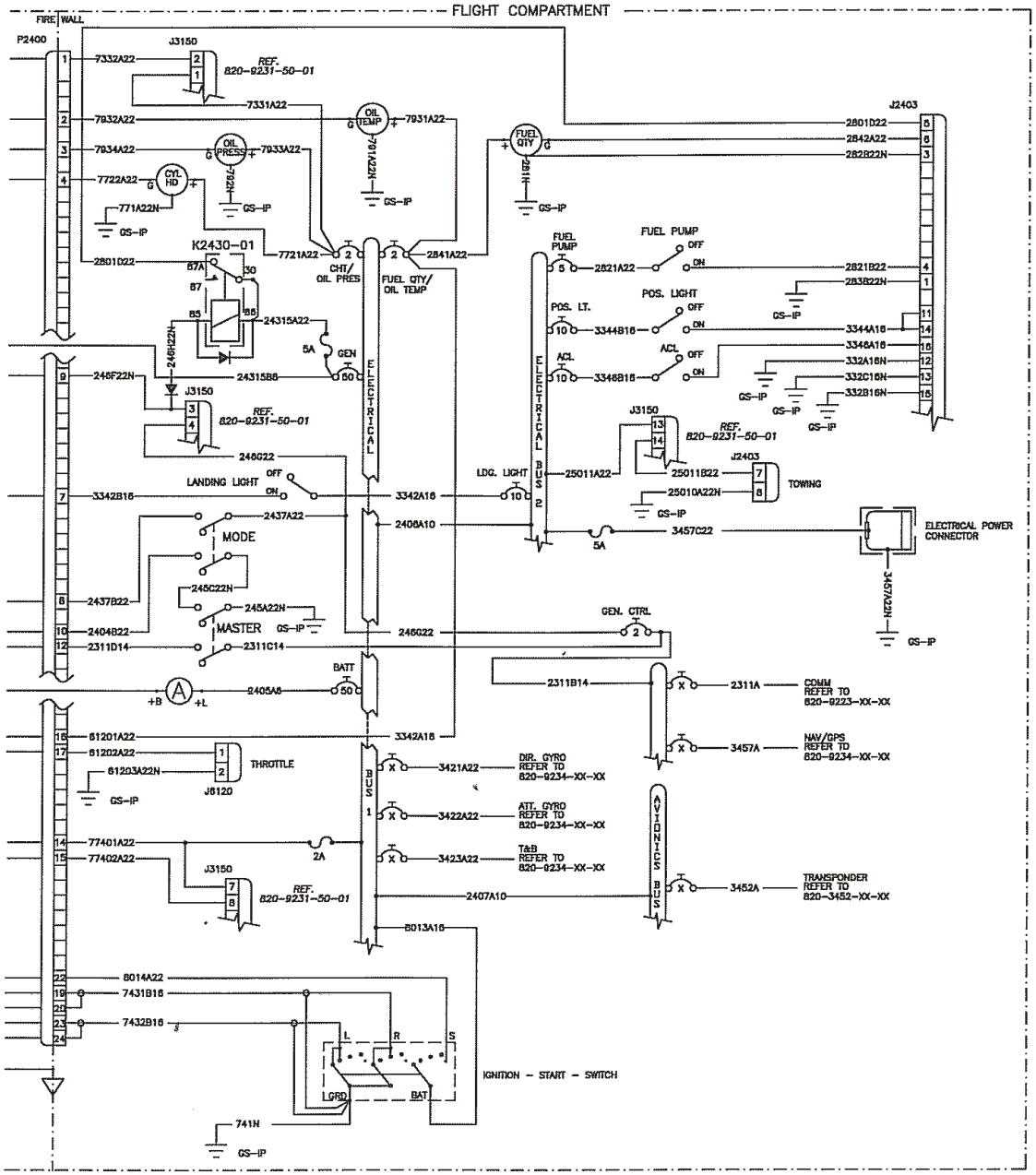


WIRING DIAGRAM - FLIGHT COMPARTMENT
HK 36 TC WITH ROTAX 912 S ENGINE EXTERNAL ALTERNATOR

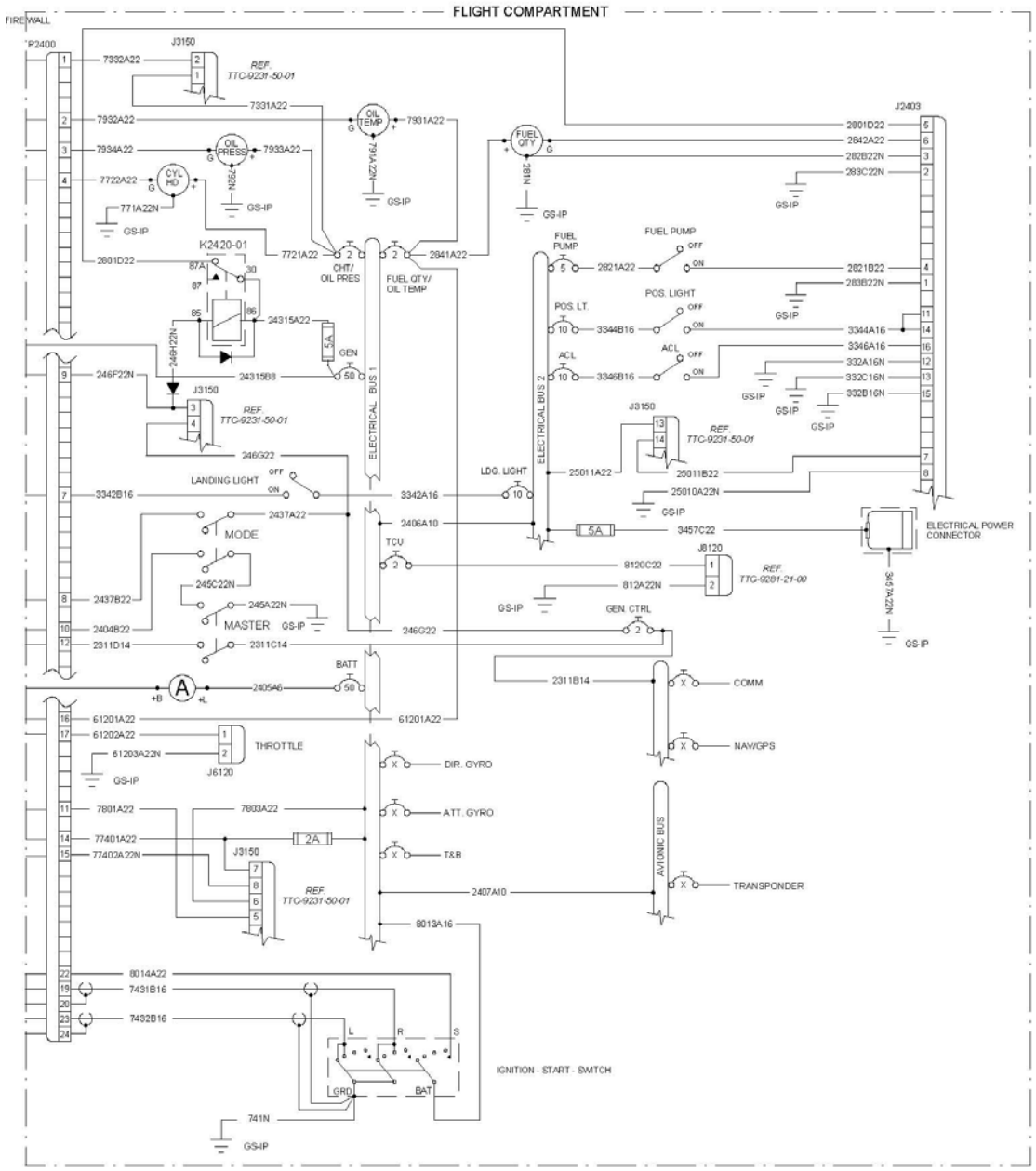
2.6.16 WIRING DIAGRAMS HK 36 TTC and HK 36 TTS



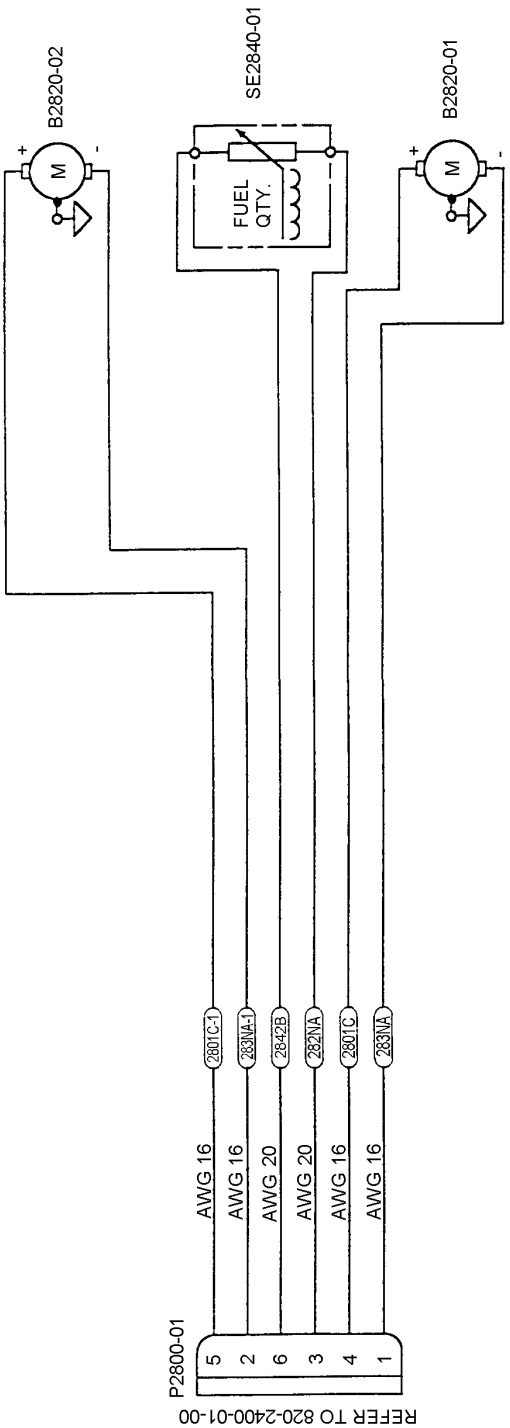
WIRING DIAGRAM - ENGINE COMPARTMENT HK 36 TTS, HK 36 TTC with external alternator



WIRING DIAGRAM - FLIGHT COMPARTMENT
HK 36 TC WITH ROTAX 912 S ENGINE EXTERNAL ALTERNATOR

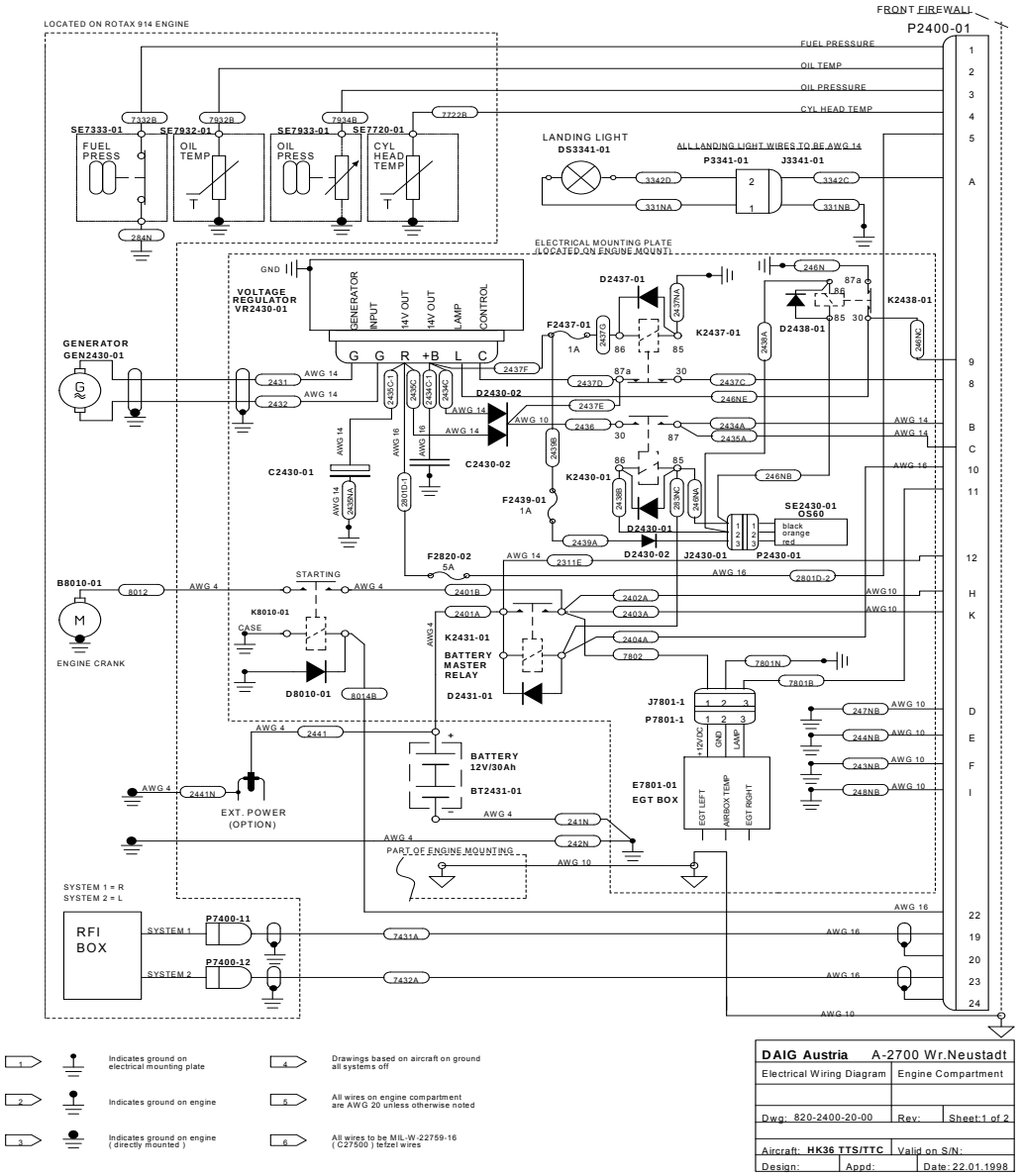


WIRING DIAGRAM - FLIGHT COMPARTMENT HK 36 TT* WITH EXTERNAL ALTERNATOR

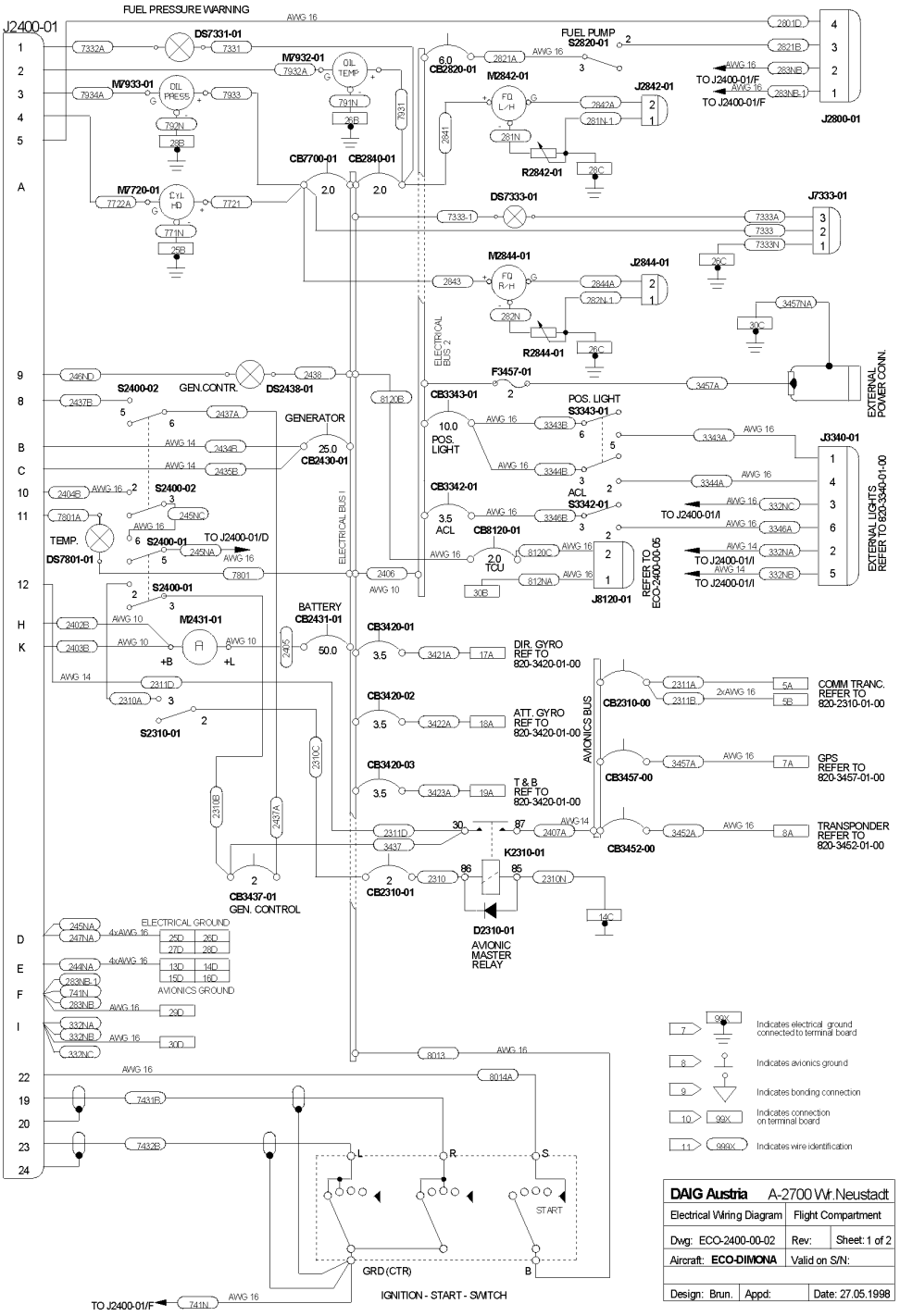


WIRING DIAGRAM - FUEL SYSTEM HK 36 TTS, HK 36 TTC

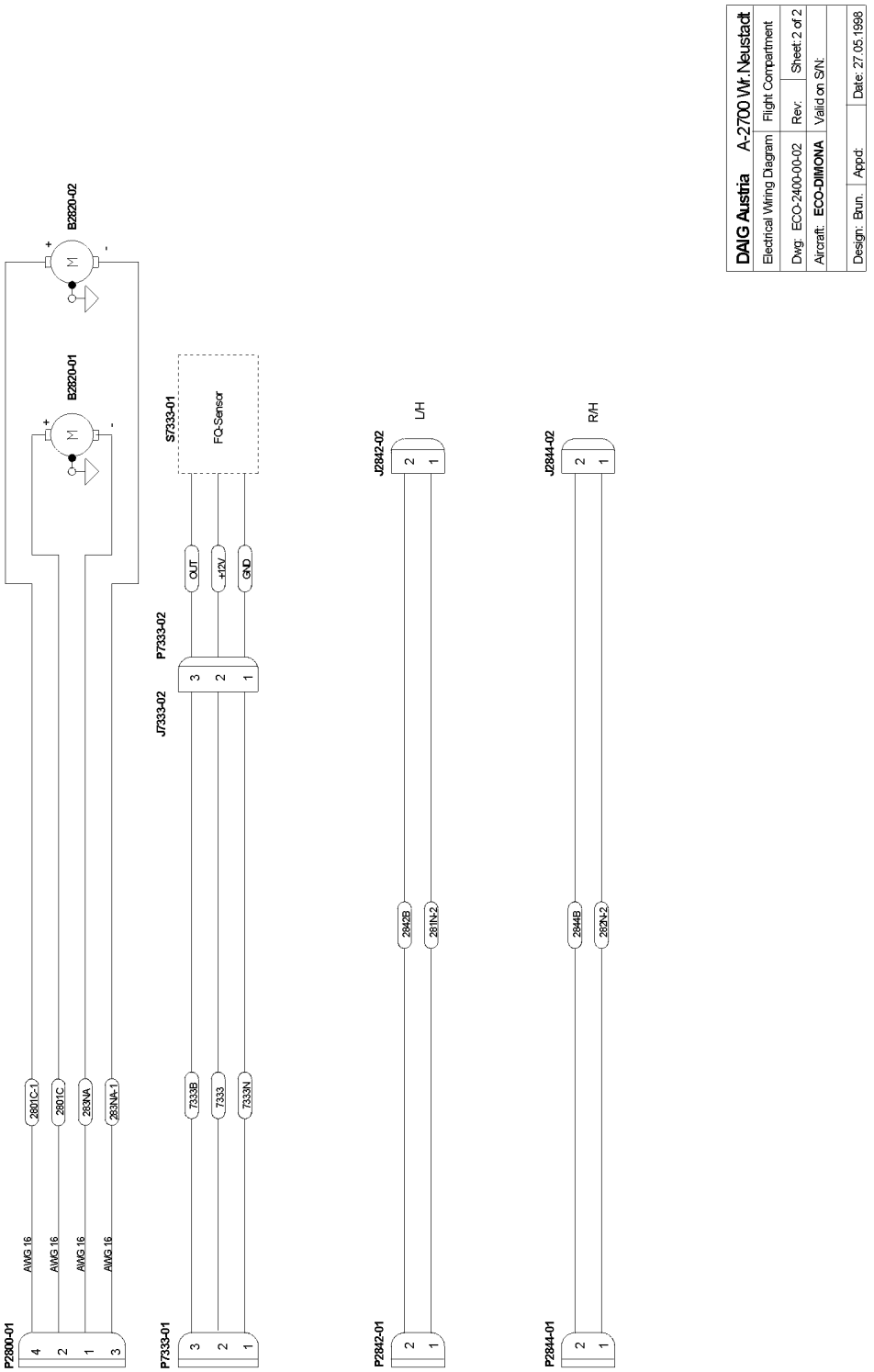
2.6.17 WIRING DIAGRAMS HK 36 TTC-ECO



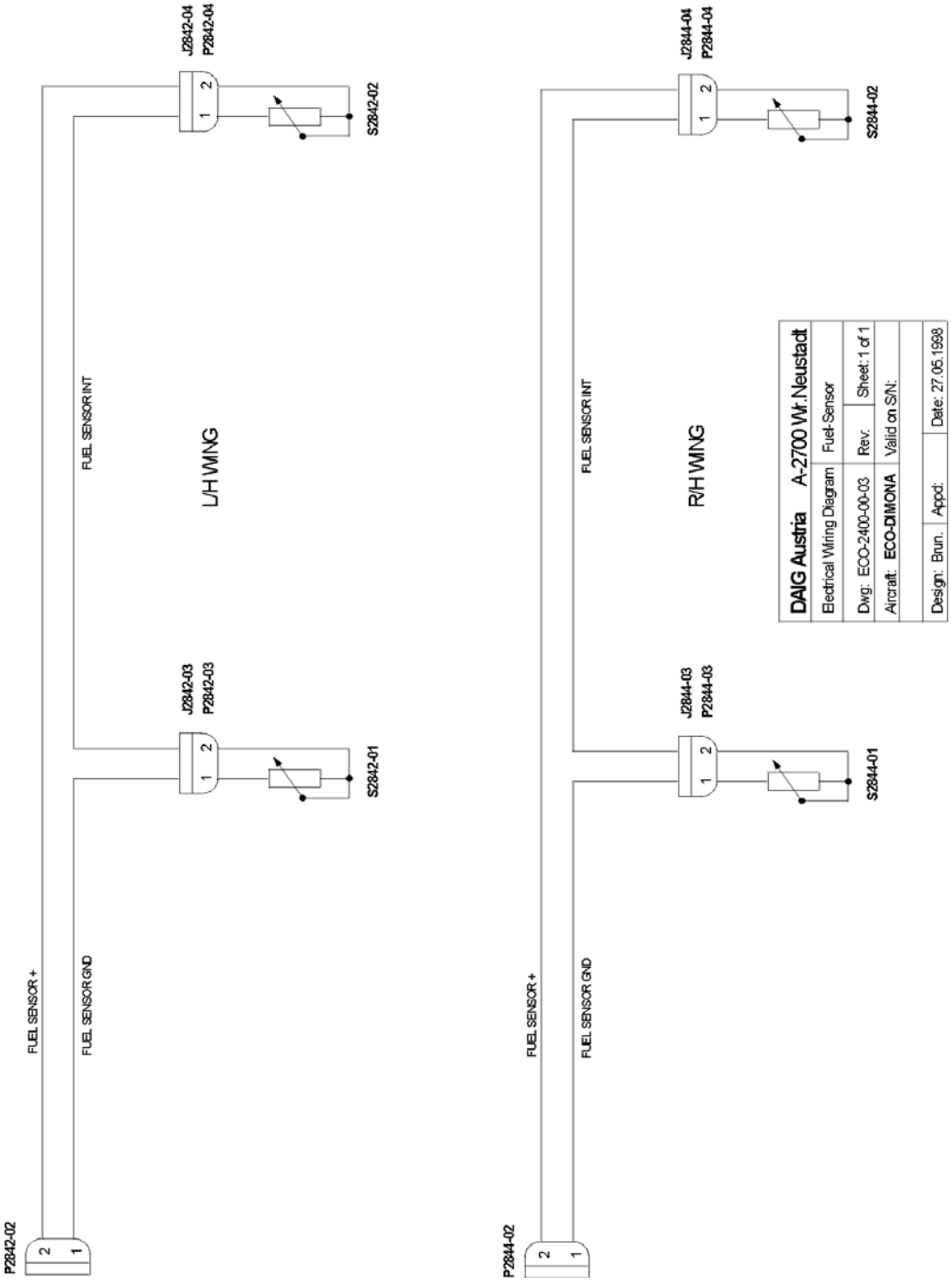
WIRING DIAGRAM HK 36 TTC-ECO ENGINE COMPARTMENT



WIRING DIAGRAM - INSTRUMENT PANEL HK 36 TTC-ECO



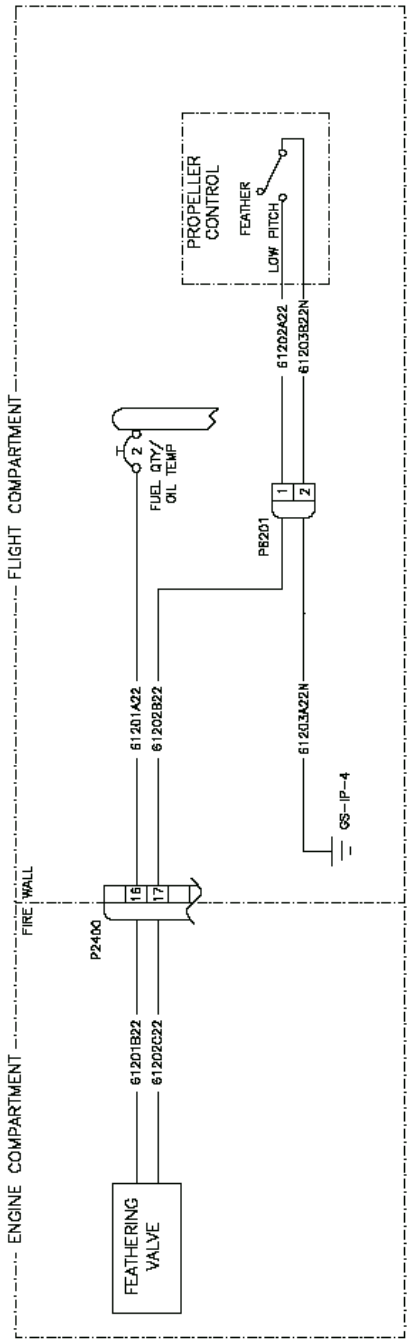
WIRING DIAGRAM - FUSELAGE HK 36 TTC-ECO



WIRING DIAGRAM - HK 36 TTC-ECO WING FUEL TANKS

2.6.18 WIRING DIAGRAM - PRESSURE ACCUMULATOR

For Serial Numbers 36.800 and subsequent



2.6.19 WIRING DIMENSIONS

Designation	AN 4	AN 10	AN 14	AN 16
Cross Sectional Area [mm^2]	22.0	5.3	1,94	1.2

Permitted loading on AN 16 wire:

Length [m]	30	15	6	3
[ft.]	98	49	20	10
Current Intensity [A]	1	2	5	10

2.6.20 POWER CONSUMPTION OF ELECTRICAL EQUIPMENT

Appliance		Power Consumption [A]
Engine instruments, including propeller speed control (for electrically variable propeller)		approximately 2.0
Battery relay		0.8
Turbo Control Unit (Rotax 914 F only)		0.3
Actuator for waste gate flap (Rotax 914 F only)		average 0.3
Fuel booster pump for Rotax 912 and Limbach 2400: intermittent consumption, depending on fuel pressure and flow rate		approximately 1.5
Fuel pumps for Rotax 914 F	Main pump alone	2.7
	Main and booster pump	4.0
Electric starter		maximum 120 (HK 36 with Limbach 2400 150)
ACL		approximately 3.5
Position lights		approximately 7.5
Landing lights		approximately 7.5
Direction gyro		approximately 0.8
Attitude gyro		approximately 0.8

2.6.21 INSTALLATION OF ADDITIONAL ELECTRICAL EQUIPMENT

NOTE

Each change to the airplane must be approved in accordance with the national regulations of the state of registry.

The following rules must be followed when installing additional electrical equipment:

* The total mass (total weight) of the instrument panel, including the instruments, must not exceed 17 kg (37.5 lbs.). For HK 36 TTC-ECO 20 kg (44.1 lbs.). The total mass (total weight) of the instrument panel including standard equipment (without COM, NAV, etc.) is 7 kg (15.4 lbs.).

* Do not rearrange the avionics panel (center section of the instrument panel). In each model, except for the HK 36 TTC-ECO, the switch panel in the upper center section of the instrument panel provides additional cooling for the avionics. It must not be displaced, and the free space behind it must be maintained.

* Compliance with the 15 ampères limit (see CAUTION) can be checked using the table in Section 2.6.20. Operating times of equipment with a high power consumption must be restricted.

CAUTION

If no external alternator is installed, the average power consumption of the aircraft electrical system must not exceed 15 ampères, since sufficient battery charging can otherwise not be ensured.

WARNING

Only applicable to models with Rotax 914 F: The engine only uses electric fuel pumps. In the case of a generator failure, the

entire fuel supply depends on the battery. Consequently, the charging of the battery is crucial for flight safety.

* After the installation of additional equipment, the empty mass (weight) and empty mass CG position must be established by calculation or weighing in accordance with Section 4.2.

2.6.22 GENERAL RULES FOR WORKING ON THE ELECTRICAL SYSTEM

* Set the master switch in OFF position. If necessary, disconnect the ground cable from the battery to avoid short-circuits.

* Follow repair procedures set forth in FAA AC 43.13-1A (Aircraft Inspection and Repair).

* Use approved material only (aviation cables, fully insulated connectors). Use the special tools of the respective manufacturers.

* Avoid soldered joints.

* Wires must have the sizes set forth in FAA AC 43.13-1A, Chapter 11, and must be routed safely. The maximum permissible voltage drop is 0.5 V during continuous operation. Consequently, when the battery is fully charged (14 V), the voltage available to the appliance must be 13.5 V or higher.

2.7 OPTIONAL STALL WARNING SYSTEM

The airplanes equipped with an aural stall warning system have a plastic hose running from a bore in the leading edge of the left wing to a horn installed in the cockpit near the pilot's feet. The bore is located 0.9 meters (approximately 3 ft.) outboard of the wing root.

2.8 MINIMUM EQUIPMENT LIST

The Minimum Equipment List can be found in the Airplane Flight Manual, Paragraph 6.9.

NOTE

The term “Minimum Equipment List” is not meant to include the “Master Minimum Equipment List” which is developed by the FAA.

CHAPTER 3
MAINTENANCE AND INSPECTIONS

3.1 SCHEDULED INSPECTIONS

3.1.1 INSPECTION INTERVALS AND TOLERANCES

Inspection of Airplanes **NOT** Serviced in Accordance with 14 CFR part 91

| Engine and propeller inspections must be performed every 50 (Limbach 2400 engine only), 100, 200, and 1000 engine operating hours.

| Airframe inspections must be performed every 100, 200, 1000 and at 6000 flight hours.

If the airplane is operated less than 200 hours per year, a 200 hour inspection must be performed once a year.

Inspection of Airplanes Serviced in Accordance with 14 CFR part 91

The 100 hour inspection checklist in this section shall be accomplished for compliance with the 100 Hour and Annual Inspections required by 14 CFR part 91.

| The 200 hour, 1000 and 6000 hour inspections specified in this section shall be accomplished in addition to the 100 Hour and Annual Inspections required by 14 CFR part 91.

| Tolerances

The intervals between the inspections must be followed to within a tolerance of ± 10 hours. For the 1000 hour inspection the tolerance is ± 50 hours and for the 6000 hour inspection ± 100 hours.

These tolerances must not be added up. Example: if the 100 hour inspection was done at 110 hours, the next inspection is due at 200 ± 10 hours, not at 210 ± 10 hours.

If an inspection is done more than 10 hours ahead of schedule, all subsequent inspection intervals are counted from that inspection. Example: if the 100 hour inspection was done at 83 hours, the next inspection is due at 183 ± 10 hours.

3.1.2 REFERENCED MAINTENANCE DATA

NOTE

Use the latest revision of referenced maintenance data.

NOTE

In addition to the listed documents all service documents (Manuals, Service Bulletin, Service Informations etc.) issued by the manufacturers of installed equipment and Airworthiness Directives are applicable.

Supplier	Doc. Name	Doc. No.
Rotax	Maintenance Manual (Line Maintenance) for Rotax engine type 912 Series	MML-912
Rotax	Maintenance Manual (Line Maintenance) for Rotax engine type 914 Series	MML-914
Rotax	Maintenance Manual (Heavy Maintenance) for Rotax engine type 912 and 914 series	MMH-912 MMH-914
Rotax	Wartungshandbuch (Line Maintenance) für Rotax Motoren der 912 Serie	WHBL-912
Rotax	Wartungshandbuch (Line Maintenance) für Rotax Motoren der 914 Serie	WHBL-914
Rotax	Wartungshandbuch (Heavy Maintenance) für Rotax Motoren der 912 und 914 Serie	WHBH-912 WHBH-914
Rotax	Betriebshandbuch für Rotax Motor Type 912 Serie	HB-912
Rotax	Betriebshandbuch für Rotax Motor Type 914 Serie	HB-914
Rotax	Operators Manual for Rotax engine type 912 Series	OM-912
Rotax	Operators Manual for Rotax engine type 914 Series	OM-914
MT	BETRIEBS- UND EINBAUANWEISUNG OPERATION AND INSTALLATION MANUAL	ATA 61-01-18 (E-118)
MT	BETRIEBS- UND EINBAUANWEISUNG HYDRAULISCHE VERSTELLPROPELLER - OPERATION AND INSTALLATION MANUAL HYDRAULICALLY CONTROLLED VARIABLE PITCH PROPELLER (CONSTANT SPEED PROPELLER)	ATA 61-01-24 (E-124)
MT	Operation and Installation Manual - Hydraulically Constant Speed Governor P-8( )( )-( )	ATA 61-20-48 (E-1048)
Hoffmann	BETRIEBS- UND WARTUNGSHANDBUCH	540
Hoffmann	OPERATION AND MAINTENANCE MANUAL	E 540

Supplier	Doc. Name	Doc. No.
Hoffmann	Betriebs- und Wartungshandbuch feste Holz-Composite-Propeller	0207.71
Hoffmann	Operation and Maintenance Manual fixed wood composite propeller	E 0110.74
McCauley	Service Manual - Governors and Accumulators	780401
Woodward/ Ontic	Time Before Overhaul Period Service Bulletin	S/B-33580
Tost	Betriebshandbuch Kupplungstyp E85	N/A
Tost	Technische Mitteilung - Änderung TBO	TM 1-2001
MT	BETRIEBS- UND EINBAUANWEISUNG MT-HOLZ-COMPOSITE FESTPROPELLER OPERATION AND INSTALLATION MANUAL MT-WOOD-COMPOSITE FIXED PITCH PROPELLERS	ATA 61-01-12 (E-112)
Cleveland/ Parker	Cleveland/Parker Maintenance Manual	AWBCMM0001
Cleveland/ Parker	Cleveland/Parker Product Catalog	AWBPC0001
Cleveland/ Parker	Cleveland/Parker Technician’s Service Guide	AWBTSG0001
Limbach	Betriebs- und Wartungshandbuch Limbach 2400	N/A
Slick	4200/6200 Series Magneto Maintenance & Overhaul Manual	L-1037

3.1.3 MAINTENANCE REQUIREMENTS AND COMPONENT TIME LIMITS

For possible maintenance requirements of engine, propeller, components and vendor equipment refer to the applicable Maintenance data as listed in Section 3.1.2.

Component	Time Limit
Engine Shock Mounts	coincident with engine overhaul
Engine Coolant	2 yrs
Electric fuel pumps for Rotax 912	3000 hrs
Electric fuel pumps for Rotax 914	coincident with engine overhaul
Elastomer hoses in engine compartment	5 yrs
Elastomer hoses in airframe	8 yrs
Teflon hoses in airframe and engine compartment	on condition
Note: Airplanes with the serial number 36.800 or higher are equipped with Teflon brake lines as original equipment.	
Rudder control cables Tail Wheel Models Tricycle Models: non-stainless steel cable stainless steel cables	 on condition 6 yrs or 1200 hrs on condition
Note: If material of rudder cables is unknown, assume non-stainless steel.	
HK 36 (R) only: Outer rod end bearings of Elevator attachment	3000 hrs
Brake fluid	3 yrs
safety harness	according to safety harness manufacturers instruction
Air Filter HK 36 with Limbach 2400 Rotax engines	500 hrs 600 hrs
For airplanes serviced in accordance with 14 CFR part 91 and on airplanes registered in Russia: Air Filter	 200 hrs
Ignition switch	2000 hrs for servicing i.a.w. HOAC Work Instruction No. 13.
ELT Battery	according to ELT manufacturers instruction
Pitot-static system	2 yrs for cleaning and leakage test
Altimeter	2 yrs for check of correct indication
Magnetic compass	2 yrs for compensation
Transponder	2 yrs for system check

3.1.4 ACCOMPLISHMENT OF MAINTENANCE WORK

The scheduled maintenance inspections are done on the basis of Inspection Checklists in this section, which show the procedures and extent of each maintenance item in key-words.

Legend
o This maintenance item must be done at these intervals.
L This maintenance item must be done on HK 36 with Limbach 2400 engine at 50 hours

Record scheduled maintenance done on copies of the tables in this section and file it in the airplane log.

| The maintenance and inspection work must be done by authorized personnel only.

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
A. GENERAL				
0. AIRPLANE				
Model:	HK 36 _____			
Serial number	_____			
Call Sign	_____			
Running time meter count	_____			
Flight hours	_____			
Scope				
Airframe	o 100 h o 200 h o 1000 h			
Engine	o 50 h o 100 h o 200 h o 1000 h			
Propeller	o 100 h o 200 h o 1000 h			
0.1	Review Airplane Flight Manual Supplements for optional equipment that requires inspection.	o	o	o
0.2	Review Airworthiness Directives and Service Bulletins for airframe, engine, propeller and equipment for compliance.	o	o	o
0.3	Check life limited components for expiration (refer to Section 3.1.3).	o	o	o
0.4	Clean the airframe, engine and the propeller thoroughly.	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
B. POWER PLANT				
1. ENGINE				
Type	o Limbach 2400 o Rotax 912 A o Rotax 912 S o Rotax 914 F			
Serial number	: _____			
Running time meter count	: _____			
Flight hours	: _____			
Scope	: o 50 h o 100 h o 200 h o 1000 h			
1.1	Remove upper and lower cowling, check for cracks, overheated spots, deformation, loose or missing fasteners; clean cowling.	o, L	o	o
1.2	For HK 36 with Limbach engine: Check baffles for ineffective sealing, cracks deformation and missing fasteners.	o, L	o	o
1.3	Do engine maintenance i.a.w the engine maintenance manual (refer to Section 3.1.2). At every oil change cut open the oil filter and check for metal pieces and foreign objects.	o, L	o	o
1.4	If the external alternator is installed: Check alternator drive belt. Refer to Engine Maintenance Manual.	o	o	o
1.5	For airplanes serviced in accordance with 14 CFR part 91 and on airplanes registered in Russia: Do engine compression test i.a.w the engine maintenance manual (refer to Section 3.1.2)	o	o	o
1.6	For models with Rotax engines: Check coolant for poor condition or insufficient quantity. (Refer to Section 4.1.3)	o	o	o
1.7	For HK 36 TT*: Check coolant filler cap on dispatcher vessel for defective sealing; check pressure control valve and return valve for improper operation.	o	o	o
1.8	For models with Rotax engines (If installed): Check caution light for coolant level for malfunction.	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
1.9	For models with Rotax engines: Clean coolant radiator ribs; check radiator for leakage, damage, insecure mounting and poor condition of fastening.	o	o	o
1.10	For models with Rotax engines: Check airbox for insecure attachment, cracks, leaks, deformation, and heat damage.	o	o	o
1.11	Check carburetor heat flap for looseness and improper operation. Note: Remove the air filter if necessary for inspection.	o	o	o
1.12	Clean oil radiator ribs; check oil radiator for leakage, damage, insecure mounting and poor condition of fastening.	o, L	o	o
1.13	Check compensator tubes between intake manifolds for chafing, leakage and insecure attachment. Note: To prevent fuel accumulation the tube must not sag.	o, L	o	o
1.14	For models with Rotax engines: Check oil tank breather for blockage (long term operation at low engine temperatures in combination with high air humidity leads to blockage of the breather).	o	o	o
1.15	Check engine mount for cracks, deformation, corrosion, missing fasteners and lack of safetying.	o, L	o	o
1.16	Check silent blocks for cracks and poor condition.	o, L	o	o
1.17	Re-torque bolts attaching engine mount to firewall (torque: 40 Nm (29.5 ft.lbs.)).			o
1.18	Check cabin heat hoses for obvious defects.	o, L	o	o
1.19	Check exhaust pipes, seals and clamps for damage.	o, L	o	o
1.20	Check heat exchanger (muffler heating jacket) for cracks and insecure mounting to the muffler; check hoses for insecure mounting.	o, L	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
1.21	Open heat exchanger, check muffler for cracks, deformation, and corrosion. Note: The connection sleeves are most susceptible to cracks.	o, L	o	o
1.22	Remove muffler and check for interior damage through connection sleeves.		o	o
1.23	Remove heat valve. Inspect gap between firewall sheet and firewall bulkhead for missing sealant and crumbling firewall insulation.			o
1.24	Check all nuts and bolts for looseness and obvious defects.	o	o	o
1.25	For HK 36 TT*: Check condensation screen in airbox pressure line for TCU (between firewall and instrument panel) for water accumulation and replace if necessary.	o	o	o
1.26	For HK 36 TT*: Check the three glass fuses on the right hand side of the firewall.	o	o	o
1.27	For HK 36 TT*: Open hose connection between carburetor heat flap and turbocharger. Check turbocharger for cracks in the housing and defective attachment. Check compressor wheel for damage and interference.	o	o	o
1.28	Check firewall breaches for leakage and insecure attachment of clamps and missing sealant.	o, L	o	o
1.29	Inspect the sealing of firewall sheet around the edges for cracks, disbonding of the sheet and crumbling firewall insulation.		o	o
1.30	Check fuel lines and all other hoses for leakage, chafing, kinks and improper routing; check clamps for looseness.	o	o	o
1.31	Not for HK 36 TT*: Open cap of electric fuel pump, clean filter and cap.	o, L	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
1.32	Check all wires and electric installations for heat damage and chafing. Check all listed components for insecure attachment and leakage (if applicable). Check wire attachments and connectors for looseness by slightly pulling by hand. o Ground straps o Generator o Starter o Voltage regulator o Oil temperature sensor o Oil pressure sensor o Cylinder head temperature sensor or if an engine with Suffix -01 is installed Coolant temperature Sensor o Sensor for caution light for coolant level (if installed) o Ignition coils and harness o Intake Temperature o Exhaust Temperature o All Relays For HK 36 TT*: o TCU, actuator (behind instrument panel) o Airbox pressure transducer o Ambient pressure transducer o Airbox temperature sensor o Throttle valve position sensor o Mixture switch valve	o	o	o
1.33	Check electric fuel pump for leakage and insecure mounting.	o, L	o	o
1.34	Check engine driven fuel pump for leakage and insecure mounting.	o	o	o
1.35	For HK 36 TTS and HK 36 TTC: Clean fuel filter in the filter box under the tank.	o	o	o
1.36	For HK 36 TT*: Check both electric fuel pumps for leaks and insecure mounting.	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
1.37	Check drain lines of carburetors, airbox and drip bowls for insecure attachment and poor condition; check drip bowl drains for blockage of transverse bores. HK 36 R only: check drip bowl outlets for dirt in the transverse holes.	o	o	o
1.38	Check battery mount for poor condition; check acid level of battery.	o, L	o	o
1.39	Check battery for poor charge and poor capacity.	o, L	o	o
1.40	Check all control cables for insecure condition, rough operation interference and lack of operating clearance; check cable fixtures for looseness; check throttle control friction, adjust if necessary. o Throttle** o Choke o Carburetor heat o Cowl flap o Cabin heat o Propeller governor o Cabin Air ** For HK 36 TT* the dead travel of the throttle must be 1 mm (0.04 in.).	o, L	o	o
1.41	Remove lower LH engine mount bolt and inspect for corrosion. Note: Corrosion of the engine mount bolt can be a sign for moisture in the firewall insulation.			o
1.42	Check for foreign objects.	o, L	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
2. PROPELLER				
Type	o mt-propeller MTV 1-A/L160-03 o mt-propeller MT 170 R 125-2A o Hoffmann HO14-170 S 123 o mt-propeller MTV 1-A/170-08 o mt-propeller MTV 21-A-C-F/CF175-05 o Hoffmann HO-V352F-S1/S170FQ			
Serial number	_____			
Running time meter count	_____			
Flight hours	_____			
Scope	o 100 h o 200 h o 1000 h			
2.1	Do propeller maintenance i.a.w the referenced propeller maintenance manual (refer to Section 3.1.2).	o	o	o
2.2	Check spinner and spinner mount for cracks, dents, runout, and missing fasteners.	o	o	o
2.3	Check propeller track.	o	o	o
2.4	Check blades for damage and cracks (refer to Propeller Manual).	o	o	o
2.5	Fixed pitch propellers only: Remove propeller, check propeller flange for corrosion.		o	o
2.6	For variable pitch propellers: Remove spinner dome, check spinner backplate for cracks and insecure mounting.	o	o	o
2.7	Check all parts for insecure mounting and defective safetying.	o	o	o
2.8	Check propeller hub for cracks and corrosion.	o	o	o
2.9	Tighten propeller flange bolts (refer to Propeller Manual for proper torque and procedure). Check safetying.	o	o	o
2.10	For hydraulic constant speed propeller: Check propeller governor for insecure mounting.	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
2.11	For MTV-21 hydraulic constant speed propeller: Check pressure accumulator for insecure mounting; check gas pressure, refill if necessary (nitrogen or air, 8.5 bar (125 psi)). Note: For Serial numbers 36.800 and subsequent: While refilling the solenoid valve must be opened (solenoid under voltage).	o	o	o
2.12	For HO-V352 hydraulic constant speed propeller: Check propeller speed control cable for improper operation and obvious defects.	o	o	o
2.13	For HO-V352 hydraulic constant speed propeller: Check mechanical feathering device for improper operation and obvious damage; check thrust plate for excessive wear (max.: 0.2 mm (1/128 in.)) check all parts of the actuating mechanism and ball bearings for poor condition.	o	o	o
2.14	For HO-V352 hydraulic constant speed propeller: Clean thrust plate; slightly grease pitch change rods, ball bearings and thrust plate of mechanical feathering device with Calypsol H 443 or equivalent.	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
C. AIRFRAME				
Serial number	: _____			
Running time meter count	: _____			
Flight hours	: _____			
Scope	: o 100 h o 200 h o 1000 h			
3. CABIN				
3.1	Check canopy for damage; check locking device for unserviceability.	o	o	o
3.2	Inspect canopy cantilever, frame, fittings and the attachment at the backrest for damage and poor condition.			o
3.3	Check canopy jettison device for improper operation.			o
3.4	Check seat belts and shoulder harnesses and their fastenings for damage.	o	o	o
3.5	Check elevator trim control system in center console for damage, interference, looseness of notch plate and improper adjustment.	o	o	o
3.6	Check rudder pedals for damage and corrosion, in particular in the area of the weld seams.	o	o	o
3.7	Check rudder pedals for looseness, interference, and poor condition of recuperator springs. Check pedal adjusting device for improper operation. Lubricate, if necessary.	o	o	o
3.8	Check parking brake valve for improper operation and leaky connectors and check Bowden cable for improper adjustment.	o	o	o
3.9	Inspect all Bowden cables for corrosion and poor condition.			o
3.10	Check control cables in the area of the S-guides for chafing and broken strands.	o	o	o
3.11	Inspect all rudder cable pulleys for play and excessive wear.		o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
3.12	Check control sticks for interference, defective stops, and excessive play.	o	o	o
3.13	Measure the play of aileron and elevator control system with one stick blocked. Max. allowable play: 3 mm (1/8 in.), measured on the trailing edge of the surfaces.	o	o	o
3.14	Check air brake levers for improper locking and unlocking (in the retracted position); check air brakes for asynchronous extension. Tail wheel models through Serial No. 36.516 only: check for premature or delayed activation of wheel brakes.	o	o	o
3.15	Check all instruments, controls and handles for improper or missing markings, inscriptions or placards.		o	o
3.16	Remove instrument panel top cover; check all electric equipment, switches, instruments, and breakers for insecure mounting.	o	o	o
3.17	Check fuel valve for insecure mounting.	o	o	o
3.18	HK 36 TTC-ECO only: Check fuel selector valve for interference, improper latching, defective stops, and looseness.	o	o	o
3.19	Check safetying of main bolts for unserviceability and poor condition.	o	o	o
3.20	Check main bolts for interference, lubricate if necessary.	o	o	o
3.21	Inspect copper bonding tape in front fuselage for delamination or disconnection.			o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
4. STRUCTURE				
4.1	Check the skin of the wings, stabilizers, and fuselage for dents, cracks, holes, etc.	o	o	o
4.2	Tricycle Models only: Inspect entrance steps and composite structure in the attachment area for cracks and deformation.			o
4.3	Inspect all PAF and PAP bushings for corrosion, excessive wear and play.			o
4.4	Inspect all ball bearings for corrosion, excessive wear and play.			o
4.5	Inspect all rudder control cable pulleys for play and excessive wear.			o
4.6	Check winglets, horizontal stabilizer tips, and tail fins (if installed) for damage and looseness.	o	o	o
4.7	Check ailerons for defective attachment and excessive play in hinges; check slot for imperfect or missing adhesive tape.	o	o	o
4.8	Check aileron bellcrank and push-rods through inspection window for improper connection and improper safetying.	o	o	o
4.9	Inspect all aileron push rod roller cages for corrosion, excessive wear and play.			o
4.10	Check aileron webs for delamination and defective bonds.			o
4.11	Check air brakes and air brake mechanism in wings and fuselage for damage, improper connection and improper safetying.	o	o	o
4.12	HK 36 TTC-ECO only: Empty fuel tanks		o	o
4.13	Remove wings.		o	o
4.14	HK 36 TTC-ECO only: Check fuel tanks, fillers and drains for damage and leakage.	o	o	o
4.15	HK 36 TTC-ECO only: Check fuel tank connectors (fuel hose, vent line, fuel quantity signal wire, ground strap) for damage.		o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
4.16	Measure forces for locking, unlocking and extending the air brakes.		o	o
4.17	Check main bulkhead inside for damage and delamination.		o	o
4.18	Measure LH and RH b-bolt hinge play between fitting surface and fuselage shell. Install a shim if play is greater than 0.2 mm (0.08 in).			o
4.19	Check wing spar stump for damage and delamination.		o	o
4.20	Check forward and rearward web of wing spar through holes in root rib and aileron inspection hole for defective bonds, cracks and delamination.			o
4.21	Inspect elevator intermediate bearings for deformation, wear, corrosion and interference.			o
4.22	Remove horizontal stabilizer, check brackets and locking ring for insecure attachment and corrosion; check locking ring for improper locking function.		o	o
4.23	Examine horizontal stabilizer mounting bolts and bearing for wear and play.		o	o
4.24	Examine forward attachment fitting in the inside of the horizontal stabilizer for poor condition and corrosion.			o
4.25	*For Serial Nos. 36.301 through 36.416 if SB 51, Measure 2 has not been done:* Check elevator horn for defective attachment.	o	o	o
4.26	Check horizontal stabilizer and elevator for insecure mounting; check elevator hinges for insecure attachment and improper safetying.	o	o	o
4.27	Check both rudder hinges for insecure attachment and excessive play; check rudder control cables for damage, improper connection and looseness; check safetying of bolts on rudder lower mounting plate for damage; *tail wheel models only:* check lower edge of rudder for cracks and rubber marks.	o	o	o
4.28	Inspect upper rudder hinge pin for corrosion and excessive wear (min. diameter 5.9 mm).			o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
4.29	*Tail wheel models only:* check tail wheel steering mechanism and suspension for improper operation; check coil springs for play and improper installation.	o	o	o
4.30	*Tail wheel models only*: Check tail wheel fork and steering shaft for deformation.	o	o	o
4.31	Remove rudder; relieve tail wheel (if fitted); check rudder lower pedestal for deformation, cracks, and corrosion. Refer to Section 5.1.3	Tail wheel	o	o
4.32	*Tail wheel models only:* Remove tail wheel fork. Check steering shaft for deformation.		o	o
4.33	*Tail wheel models only*: Remove dowel pins, extract hub of the tail wheel fork (on upper edge of the oval fork arms). Check hub for deformation.		o	o
4.34	*Tail wheel models only:* tighten tail wheel rubber spring assembly.	o	o	o
4.35	*Tail wheel models only*: Inspect tail wheel for wear and excessive play.			o
4.36	*Tricycle models only:* Check tail skid for defective attachment and excessive wear.	o	o	o
4.37	Check vertical stabilizer stiffener and rearward ring frames for poor condition, cracks and defective bonds.	o	o	o
4.38	Check rearward parts of elevator control system for insecure attachment, improper installation, improper operation, excessive play, corrosion, and improper safetying.	o	o	o
4.39	Remove baggage compartment floor; check rudder control cables, rudder lever, and aileron and air brake control system parts for lack of operational serviceability, damage, corrosion, improper operation and improper safetying.	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
4.40	Remove panel on rear wall of baggage compartment; check fuselage tube for deformation and cracks; check roller cages of elevator push-rod for insecure attachment, wear and play; check control cables and turnbuckles for corrosion, wear and lack of safetying.	o	o	o
4.41	Check forward ring frames, B-bulkhead, and sickle shaped bulkhead for delamination, cracks, and defective bonds.			o
4.42	Remove seat shells, check for uncleanliness and loose equipment that might foul the controls.	o	o	o
4.43	*All models except HK 36 and HK 36 R:* check air brake fixture (next to LH air brake lever) for uncleanliness and wear.	o	o	o
4.44	Inspect main bolts for poor condition, wear and excessive play.			o
4.45	Inspect main bolt bushings for poor condition, wear and excessive play (Maximum play 0.1 mm).			o
4.46	Check main bulkhead and forward and rearward transverse stiffener for delamination and defective bonds.	o	o	o
4.47	Check firewall for delamination around engine mount attachment bolts.			o
4.48	Check fuel lines and central fuel reservoir (HK 36 TTC-ECO) or fuel tank (other models) for leakage; *airplanes registered in Russia only:* check vent line and additional vent bore for blockage; check central fuel reservoir (HK 36 TTC-ECO) or fuel tank (other models) for insecure or improper installation.	o	o	o
4.49	Check electrical installation and ground straps for chafing; check wire attachments and connectors for looseness by slightly pulling by hand.	o	o	o
4.50	Check Pitot tube, TEC nozzle (if installed), and antennas for insecure attachment.	o	o	o
4.51	Check drain holes and ventilation bores in wings, fuselage and control surfaces for blockage.	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
4.52	Check aural stall warning system (if installed) for improper operation by applying negative pressure to the bore in the leading edge of the left wing.	o	o	o
4.53	Check aileron and air brake control system parts in root ribs (wing and fuselage) for insecure mounting and wear, lubricate if necessary.	o	o	o
4.54	Install wings.		o	o
4.55	*HK 36 TTC-ECO only:* Measure electrical resistance between tank filler and engine block (LH and RH wing, max. admissible: 0.5 Ω). Measure electrical resistance between drainer and engine block (LH and RH wing, max. admissible: 0.5 Ω).		o	o
4.56	Check fuel quantity indicator for improper indication.		o	o
4.57	Towing device and release mechanism (optional): clean and lubricate, check for poor condition and improper operation; check towing device mount for deformation, obvious damage, and defective attachment to the fuselage tube.	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
5. LANDING GEAR				
5.1	Clean landing gear; remove wheel fairings (if installed)	o	o	o
5.2	Check main landing gear strut for cracks, deformation and damage. Tail wheel models only: check strut for delamination; contact Manufacturer if GFRP strut is damaged.	o	o	o
5.3	Check brake linings for wear, minimum thickness (refer to Cleveland - Parker Maintenance Manual).	o	o	o
5.4	Check tires for cuts, excessive wear and defective valve stems; check slip marks.	o	o	o
5.5	Ensure correct tire inflation pressure *Tail wheel models*: main gear 2.1 bar (30 psi), tail wheel 3.1 bar (45 psi). If OÄM 36-369 is installed: main gear 1.2 bar (17 psi), tail wheel 3.1 bar (45 psi). *Tricycle models*: main gear 2.3 bar (33 psi), nosewheel 1.8 bar (26 psi).	o	o	o
5.6	Check rims for cracks; check bearings for rough running and play; check brake disks for wear (for minimum thickness refer to Cleveland - Parker Maintenance Manual).	o	o	o
5.7	*Tricycle models only:* check nose landing gear assembly for play, damage, deformation and cracks; check bearings in fuselage for play; check LH and RH journal in damper for play, lubricate.	o	o	o
5.8	*Tricycle models only:* Inspect nose landing gear elastomer damper, tighten if necessary.	o	o	o
5.9	Tricycle models only: Disassemble nose wheel damper. Inspect guide rod for corrosion and wear. Assemble nose wheel damper.			o
5.10	*Tricycle models only:* Remove nosewheel fork. Check vertical pivot and pivot bearing for corrosion and play.			o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
5.11	*Tricycle models only:* Unload nosewheel fork. Check for play and improper friction (3 to 5 daN / 6.7 to 11.2 lbs. along axle).		o	o
5.12	Inspect wheels for wear and excessive play.			o
5.13	Inspect all 4 MLG attachment bracket for deformation, cracks and corrosion. Remove 1 bolt of each bracket and inspect bracket on the inside for corrosion.			o
5.14	For tricycle models: Jack airplane. Lay a straight ruler on the upper side of the strut. Measure the maximum value of the gap between the ruler and the strut. Maximum allowed deflection: 3 mm (0.12 in).			o
5.15	Check main gear for corrosion and cracks.			o
5.16	For Tail wheel models: Inspect main landing gear strut for cracks in paint coat. If cracks (including hairline cracks are noticed, remove the paint coat and inspect composite for delamination. Maximum allowed delamination 30 mm diameter. Record delamination in the aircraft log. Repaint area.			o
5.17	For tail wheel models with Serial No. 36.517 and subsequent and tricycle models: Check brake pedals for interference, play, and improper operation. Check mechanism for damage and wear.	o	o	o
5.18	Check brake cylinders and brake lines for leakage.	o	o	o
5.19	Check brake fluid for poor condition. Fill brake fluid reservoirs to maximum level. Note For tail wheel models with Serial No. 36.517 and subsequent and tricycle models: 15 mm (5/8 in.) below top).	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
5.20	*Tail wheel models with SB 42 installed:* Check differential wheel braking system for poor condition and improper operation.	o	o	o
5.21	Check brake lines and brake cylinders for leaks, damage, and corrosion.	o	o	o
5.22	Install wheels and wheel fairings (if wheel fairings were installed), ensure a secure attachment.	o	o	o
D. GENERAL MAINTENANCE WORK				
6.1	Check Pitot and static pressure system for leakage and dirt.		o	o
6.2	Lubricate parts according to Lubrication Schedule.	o	o	o
6.3	Check for imperfect or missing placards and inscriptions. Refer to Airplane Flight Manual Supplements for placards for optional equipment.	o	o	o
6.4	If necessary re-determine empty mass (weight) and corresponding CG position (see Section 4.2).	o	o	o
6.5	Record inspection in log book.	o	o	o
6.6	Perform check flight, do and record all items in the form "Check Flight".	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000

E. LUBRICATION SCHEDULE

With a few exceptions, the whole flight control system and all other mechanical systems are provided with maintenance free rod end bearings and rigid ball bearings. However, the bearings should be observed constantly, (especially in the case of tough climatic conditions such as wind-borne sand, saline air, etc.) and, if necessary, cleaned and lubricated.

In addition to lubrication during rigging, lubrication is necessary at the times shown below.

All commercial greases are appropriate. However, lubricants containing MoS_2 must not be combined with common all-purpose grease.

1	Engine operating cable fixtures (oil).	o	o	o
2	All rod end bearings (grease).			o
3	Rudder control cables in area of pedals, S-guides (oil).	o	o	o
4	Rudder bearings (2 pieces) after removing rudder (grease).		o	o
5	*Tail wheel models only:* Eye bolt in tail wheel elastomer package (oil).	o	o	o
6	Cable eyes on rudder lever beneath baggage compartment (grease).			o
7	Telescopic tubes of wing folding mechanism (optional), main bolts, A- and B- bolts (grease).		o	o
8	Rollers in the bellcranks for aileron and air brake control systems (in wing root rib, grease).	o	o	o
9	Main landing gear bearings (grease).		o	o
10	*Tricycle models only:* Vertical pivot bearing of nosewheel fork (grease).		o	o
11	*Tricycle models only:* LH and RH bearing journal in connection of nosewheel leg and damper (oil).	o	o	o
12	Locking rings in horizonal tail and in the two B-bolt fastening units (oil).	o	o	o

HK 36 Series Maintenance Checklist		Interval		
No.	Inspection Items	100	200	1000
13	*HO-V352 constant speed propeller only:* Rollers, thrust plate, pitch change rods (grease).	o	o	o

F. CHECK FLIGHT AFTER MAINTENANCE

Call sign: : _____ Pilot : _____

Date: : _____ Start: : _____

Aerodrome: : _____ Landing: : _____

Performance checks, flying characteristics	Observations	
	no	yes
Functioning check of warning and caution lights		
Fuel quantity indicator		
Anti collision lights (ACLs)		
Position lights		
VOR, ADF, XPDR, etc. NAV 1 and if installed NAV 2		
COM, transmission test COM 1 and if installed COM 2		
Electric fuel pump(s)		
Electric starter		
Engine starting behavior (cold)		
Functioning of oil pressure indicator		
Functioning of ammeter, functioning of generator, battery charge		
Functioning of RPM indicator (comparison with calibrated tachometer)		
Functioning of cylinder head temperature indicator or coolant temperature indicator		
Functioning of wheel brakes / parking brake		
Functioning of oil temperature indicator		
Taxiing behavior		
Take-off		
Functioning of airspeed indicator		
Functioning of altimeter / QNH setting		
Functioning of vertical speed indicator / TEC		
Functioning of magnetic compass		

Performance checks, flying characteristics	Observations	
	no	yes
Functioning of Turbo Control Unit (R 914 F only)		
Functioning of propeller speed control (if installed)		
High speed flying characteristics		
Functioning of elevator trim / trim range		
Functioning of air brakes		
Functioning of cabin heat / cabin air		
Carbon monoxide test		
In-flight engine stop (constant speed propeller feathered)		
Low speed flying characteristics / stall characteristics		
Landing		
Functioning of fuel valve and fuel pressure warning light (full throttle, fuel valve CLOSED, fuel pressure warning light must illuminate within 2 seconds).		
Engine starting behavior (warm)		
Remarks:		

_____
Signature

3.1.5 6000 HOUR INSPECTION

After 6000 hours of operation an inspection as specified in Section must be done.

The purpose of this inspection is the non-recurring extension of the lifetime to 12000 hours.

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.

	Inspection Items	Inspection Method	Initials
General			
1	Implement all Mandatory Service Bulletins.	N/A	
2	Perform a fuselage torsion test.	Section 4.8.5	
3	Replace engine mount attachment bolts.	N/A	

	Inspection Items	Inspection Method	Initials
4	Remove and inspect the following parts of the flight control system for cracks, excessive wear, incorrect function and corrosion. Inspect interior of push rods (tubes) for corrosion (including long air brake push rod in wing) via Boroscope Inspection. Spray the indes of all push rods with Dinitrol AV 8 or Dinitrol AV 30 or HHS 2000. Long push rods have to be sprayed from both sides. Elevator: -Elevator push rod (2.1.2) -Elevator push rod in fuselage tube (2.1.7) -Elevator bellcrank -Elevator push rod in rudder fin -Elevator trim spring Rudder: -Rudder pedal assembly (2.1.4) -Cables between firewall and rudder lever -Control cables in fuselage tube -Cable fittings -Rudder lever -Rudder pedestal -Lower mounting plate Aileron: -Aileron push rods connecting control sticks (2.1.5) -Bellcrank attached to rearward transverse stiffener -Push rod in center console -Bellcrank attached to sickle shaped bulkhead -Aileron push rods connected to aileron pockets -Aileron pockets -Bellcrank engaging in aileron pocket -Long push rod in wing -Aileron bellcrank -Short push rod in wing Air brake: -Push rod under pilot seat (2.1.6) -Bellcrank attached to sickle shaped bulkhead -Air brake push rods connected to air brake pockets -Air brake pocket	V	

	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	Condition of 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	
6	Check spar web sandwich structure outboard from root rib looking through root rib openings (condition of laminate, delamination, condition of core).	V	
Left Upper and Lower Wing Skins			
1	Check for delamination, cracks, dents and scratches.	V	
2	Check condition of paint (chips, scratches, UV damage).	V	
3	Check for damage to core or disbond between skin and core.	V (T)	
4	Leading edge bond (disbonds, cracks above or below overlap seam).	V (T)	
5	Check drain holes for contamination.	V	
6	Remove tie down ring and check for delamination, cracks and elongation of hole.	V	
Left Wing Trailing Edge Spar			
1	Condition of laminate.	V	
2	Bond of trailing edge to skins.	V (T)	
3	Bonding of aileron hinges to trailing edge and skin.	V (T)	
4	Condition of aileron hinges (cracks, corrosion, fit of clevis pin in hinge, paint, separation from trailing edge spar or lower skin ahead of spar face and loose rivet).	V / F	
Left Wing Internal Ribs			
1	Condition of laminate.	V	
2	Check for cracks and delamination around bellcrank brackets and disbond between bracket and rib.	V	
3	Condition of bellcrank brackets (cracks, elongation of bellcrank mounting holes, corrosion and paint).	V	
Left Wing Air Brake Case			
1	Check wing skin around air brake case for cracks and delamination.	V(T)	
2	Check air brake case for foreign objects.	V	
3	Check air brake actuation lever bearings for excessive play and wear out.	V / F	
4	Check structure in the area of the air brake actuation lever bearings and stop attachment for cracks and delamination.	V(T)	
5	Check gas spring attachment bracket for cracks and delamination.	V(T)	
6	Check air brake stop for deformation and corrosion.	V	

Inspection Items		Inspection Method	Initials
7	Check drain holes for contamination.	V	
8	Check air brake case walls for disbonding from wing skin.	V(T)	
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	Condition of laminate (cracks or 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 Spar Stump			
1	Condition of laminate (delamination).	V	
2	Main bolt bushing in spar web.	V / F	
Right Wing Main Spar			
1	Main spar bonding with wing skins.	V (T)	
2	Main spar flange joint with web outboard from root rib looking through root rib openings (no delamination).	V	
3	Spar web sandwich structure outboard from root rib looking through root rib openings (condition of laminate, delamination and condition of core).	V	
Right Upper and Lower Wing Skins			
1	Check for delamination, cracks, dents and scratches.	V	
2	Check condition of paint (chips, scratches and UV damage).	V	
3	Check for damage to core or disbond between skin and core.	V (T)	
4	Leading edge bond (disbonds and cracks above or below overlap seam).	V (T)	
5	Check drain holes for contamination.	V	
6	Remove tie down ring and check for delamination, cracks and elongation of hole.	V	
Right Wing Trailing Edge Spar			
1	Condition of laminate.	V	
2	Bond of trailing edge to skins.	V (T)	
3	Bonding aileron hinges to trailing edge and skin.	V (T)	
4	Condition of aileron hinges (cracks, corrosion, fit of clevis pin in hinge, paint, separation from trailing edge spar or lower skin ahead of spar face and loose rivet). Refer to AMM.	V / F	
Right Wing Internal Ribs			
1	Condition of laminate.	V	
2	Check for cracks and delamination around bellcrank brackets and disbond between bracket and rib.	V	
3	Condition of bellcrank brackets (cracks, elongation of bellcrank mounting holes, corrosion and paint).	V	

	Inspection Items	Inspection Method	Initials
Right Wing Air Brake Case			
1	Check wing skin around air brake case for cracks and delamination.	V(T)	
2	Check air brake case for foreign objects.	V	
3	Check air brake actuation lever bearings for excessive play and wear out.	V / F	
4	Check structure in the area of the air brake actuation lever bearings and stop attachment for cracks and delamination.	V(T)	
5	Check gas spring attachment bracket for cracks and delamination.	V(T)	
6	Check air brake stop for deformation and corrosion.	V	
7	Check drain holes for contamination.	V	
8	Check air brake case walls for disbonding from wing skin.	V(T)	
Fuselage Skin, including Vertical Stabilizer			
1	Check for delamination, cracks, dents and scratches.	V	
2	Check condition of paint (chips, scratches, UV damage and condition of fire-proof paint aft of lower cowl outlet).	V	
3	Inspect for cracks in paint at bonding seam down centerline of fuselage, upper and lower surfaces, and disbonding between internal composite components and skin.	V (T)	
4	Examine vertical fuselage bonding line at the leading edge of vertical stabilizer for cracks in paint coat. Remove paint coat if necessary.	V (T)	
5	Check drain holes for contamination.	V	
Bulkheads, Webs, Ribs in Vertical Stabilizer			
1	Check bulkheads, webs and ribs for delamination and cracks (particularly around access holes).	V	
2	Viewing through access holes in vertical stabilizer spar, inspect internal composite components for disbonding with skin, and for delamination and cracks.	V	
3	Check aft horizontal stabilizer attachment fitting for corrosion, cracks, delamination or cracks in composite around the fitting.	V	
4	Check forward horizontal stabilizer mounting pin (security of pin in structure, cracks, corrosion, fit of pin in bearing, delamination or cracks in surrounding laminate).	V / F	
5	Visually inspect fuselage skin around lower tail fin for cracks. Inspect bond line to vertical stabilizer web for cracks.	V	
Main Bulkhead and Wing Connection			
1	Condition of main bulkhead laminate (delamination) and bond to fuselage.	V	
2	Check for delamination of fuselage skin outboard of seat fastener through side of main bulkhead.	V	
3	Main bolt, A- and B-bolt bushings (security of bushings in surrounding composite, tightness of fit of pin/bolt, cracks and corrosion).	V	

	Inspection Items	Inspection Method	Initials
4	Examine connection between backrest and fuselage in region of canopy frame.	V	
5	Main bolts and A-bolts (corrosion, wear and distortion).	V / F	
Firewall			
1	Condition of laminate when viewed from cockpit side (cracks and delamination, particularly around engine mount fastener holes, battery box and discolouration).	V	
Cockpit Area			
1	Check seats and attachments (cracks, delamination and damage around fastener holes).	V	
2	Check floor structure (cracks or delamination around aft rudder pedal bracket and throttle quadrant opening).	V	
3	Check B-bulkhead (cracks and delamination, particularly around fuel tank attachments).	V	
4	Check lap belt attachments (general condition, security of metal fitting or composite roving).	V	
5	Check rudder lever mounting (located under B-bulkhead, check for security of mounting, elongation of hole and cracks in surrounding laminate).	V	
Canopy			
1	Check frame for delamination, scratches and cracks (particularly around fastener holes).	V	
2	Check latching components for corrosion, wear and damage.	V / F	
HS Skins			
1	Check for delamination, cracks, dents and scratches.	V (T)	
2	Check condition of paint (chips, scratches and UV damage).	V	
3	Check for damage to core or disbond between skin and core.	V (T)	
4	Leading edge bond (disbonds, cracks above or below overlap seam).	V (T)	
5	Check drain holes for contamination.	V	
HS Spar			
1	Bond to skins.	T	
HS Trailing Edges			
1	Condition of laminate.	V	
2	Bond of trailing edge to skin.	V (T)	
3	Condition of elevator hinges (cracks, corrosion and fit of clevis pin in hinge).	V / T / F	
4	Condition of inner hinge plates (cracks, corrosion, disbond of trailing edge and skin from stabilizer).	V	
HS Attachments			
1	Aft mounting bushings (cracks in bond between bushings and web, delamination in web around bushings, cracks and corrosion).	V	

	Inspection Items	Inspection Method	Initials
2	Forward mounting bracket (cracks in bond to plate, delamination in rib around fasteners, condition of bearing and fit of pin in bearing).	V / F	
Control Surfaces			
Ailerons			
1	Check skins for delamination, cracks, dents and scratches.	V (T)	
2	Check condition of paint (chips, scratches and UV damage).	V	
3	Check for damage to core or disbond between skin and core.	V (T)	
4	Ribs (bonding with skins).	V (T)	
5	Check laminate around hinges and control horn fasteners for cracks or delamination.	V	
6	Check drain holes for contamination.	V	
7	Mass balance attachment (cracks in laminate and bonding paste around fasteners - accessible through access hole on lower surface).	V	
8	Inspect previous repairs or repainting.	V	
9	Make sure mass and static moment are within specified limits (Section 4.4.2).	V	
10	Check hinges and control horns (cracks, corrosion, disbond from skin, condition of plain bearing and fit of clevis pin in bearing).	V / F	
Air Brakes			
1	Check upper and lower air brake surface for cracks, delamination and corrosion.	V (T)	
2	Check air brake actuation fitting (including rivets) for deformation, cracks and corrosion.	V	
3	Check attachment between upper and lower air brake surface for tight and secure fit.	T	
Elevator			
1	Check skins for delamination, cracks, dents and scratches.	V	
2	Check condition of paint (chips, scratches and UV damage).	V	
3	Check for damage to core or disbond between skin and core.	T	
4	Condition of hinges (cracks, corrosion, disbond from leading edge, tightness of fasteners, fit of pin and condition of sliding surface on plain bearing).	V / F	
5	Condition of control horn (cracks, corrosion, disbond from skin, tightness of fasteners, fit of pin and mass balance attachment).	V / F	
6	Check drain holes for contamination.	V	
7	Inspect previous repairs or repainting.	V	
8	Make sure mass and static moment are within specified limits (Section 4.4.2).	V	
Rudder			
1	Check skins for delamination, cracks, dents and scratches.	V (T)	
2	Check condition of paint (chips, scratches and UV damage).	V	
3	Check for damage to core or disbond between skin and core.	T	

Inspection Items		Inspection Method	Initials
4	Check drain holes for contamination.	V	
5	Inspect for previous repairs or repainting.	V	
6	Make sure mass and static moment are within specified limits (Section 4.4.2).	V	
Final Work Steps			
1	Do an Electrical Bonding System Test	Section 4.8.4	
2	Clean working area and check for foreign objects.	V	
3	Determine empty weight and corresponding centre of gravity.	N/A	
4	Make necessary entries in the Airframe Logs.	V	
5	Perform Check Flight.	N/A	
6	File completed Inspection Checklist and Findings Report in the Airplane Maintenance Log.	N/A	

MAINTENANCE REPORT

Airplane Serial Number: Registration Number:

| Airframe : o 100 h o 200 h o 1000 h o 6000 hrs

| Engine : o 50 h o 100 h o 200 h o 1000 h

| Propeller : o 100 h o 200 h o 1000 h

REMARKS:

The airplane is airworthy with respect to maintenance condition.

Place Date Authorized

3.1.6 DRAIN HOLES INSPECTION CHECKLIST

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 - 4 to identify the locations of the drain holes listed below.

Drain Holes Inspection Checklist

Ref.	Drain Hole Location	Hours	Initials
1	**FUSELAGE**		
1.01	Footwell, LH and RH	200	
1.02	Front side of fuselage shell, in corner of hat profile, LH and RH	200	
1.03	Fuselage shell, in corner of backside from middle console, rear, LH and RH	200	
1.04	Rear lower corner of main bulkhead, near center	600	
1.05	In corner of sickle bulkhead, LH and RH	200	
1.06	In center of fuselage shell, behind sickle bulkhead	200	
1.07	Through lower end of half frame	1000	
1.08	Through lower end of ring bulkhead 1	1000	
1.09	Through lower end of ring bulkhead 2	1000	
1.10	Through lower end of ring bulkhead 3	1000	
1.11	Through backside of vertical stabilizer rib lower	1000	
1.12	In fuselage shell, top of vertical stabilizer, frontside	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	
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	

Drain Holes Inspection Checklist			
Ref.	**Drain Hole Location**	**Hours**	**Initials**
3.03	Lower shell, in center of the recess	100	
4	**ELEVATOR**		
4.01	Front side of lower shell, close to the open area in the center, LH and RH	100	
4.02	In center of lower shell, in front of trailing edge, optional near center LH and RH	100	
5	**RUDDER**		
5.01	In center of lower edge	100	
6	**WINGS**		
6.01	Wing tip backside (LH and RH wing)	100	
6.02	Lower shell, under inner side of the speed brake (LH and RH wing)	100	
6.03	Between root rib and trailing edge	100	
7	**AILERONS**		
7.01	Lower shell, between root rib and trailing edge	100	

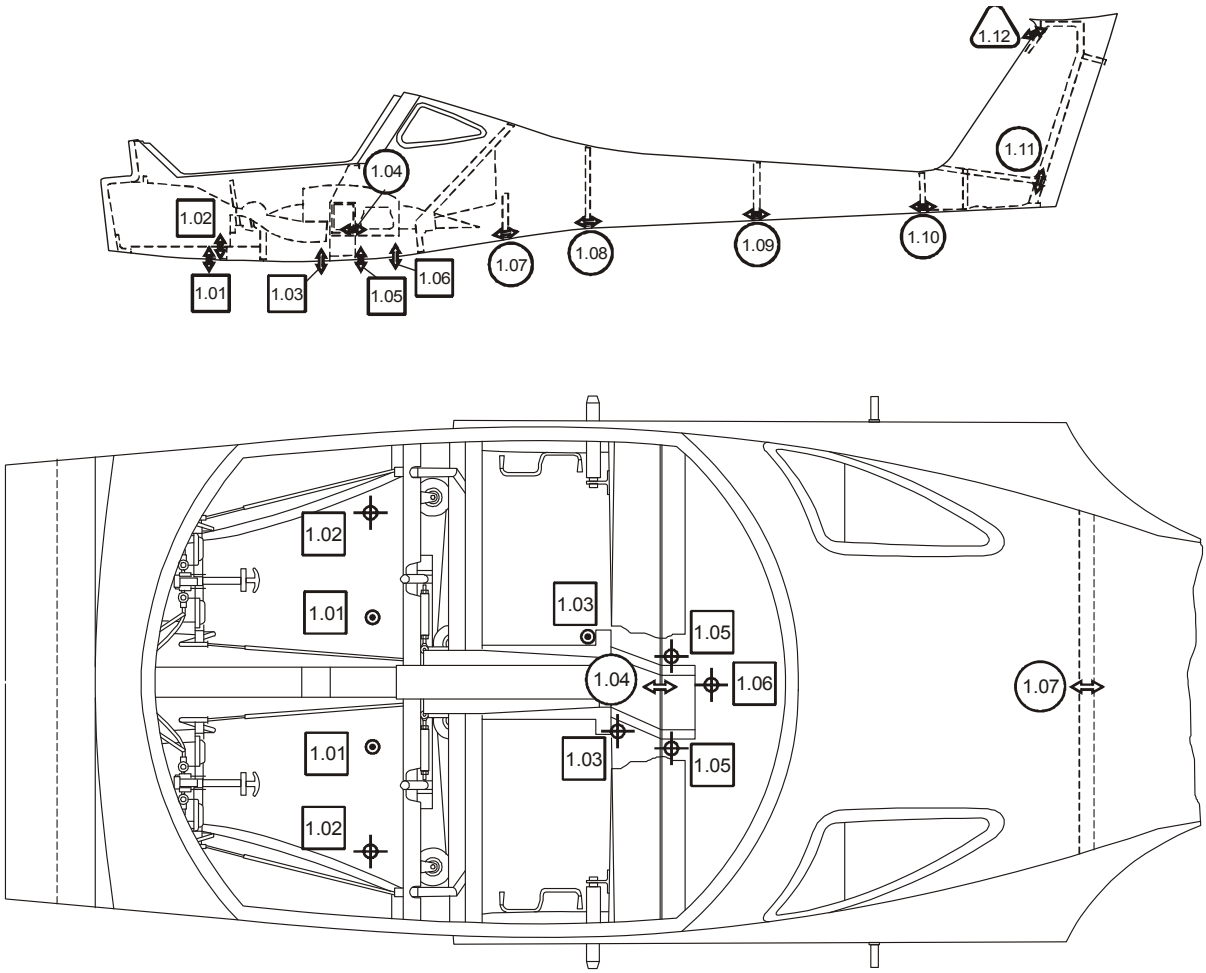
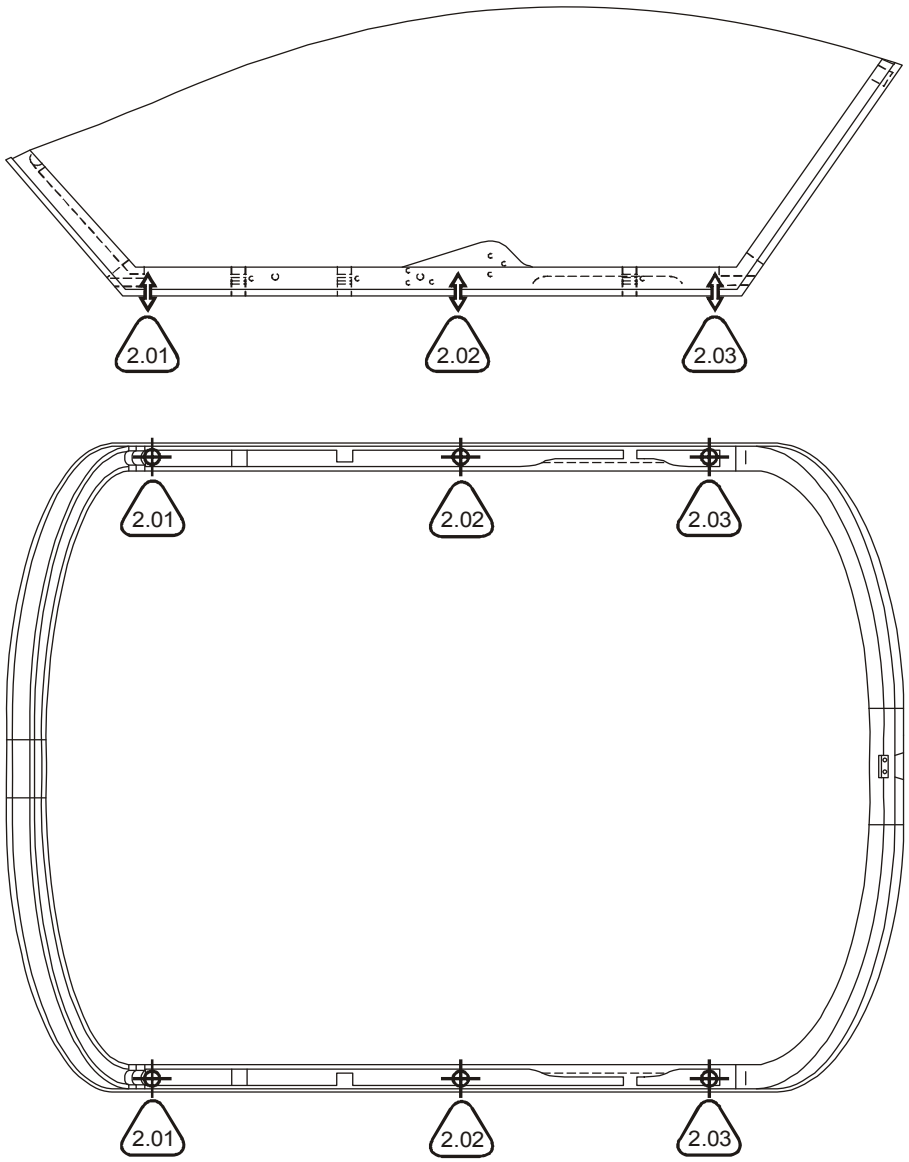


Figure 1: Drain Holes Fuselage



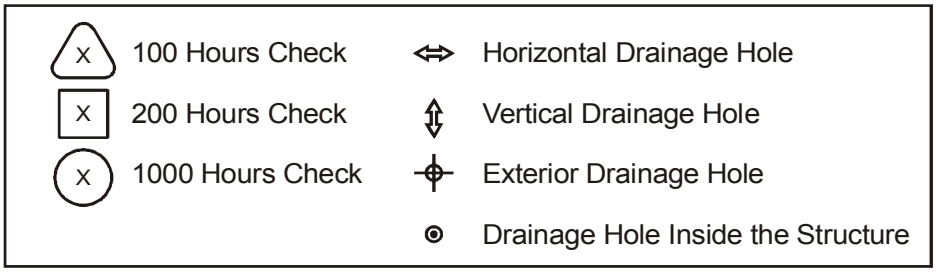


Figure 2: Drain Holes Canopy

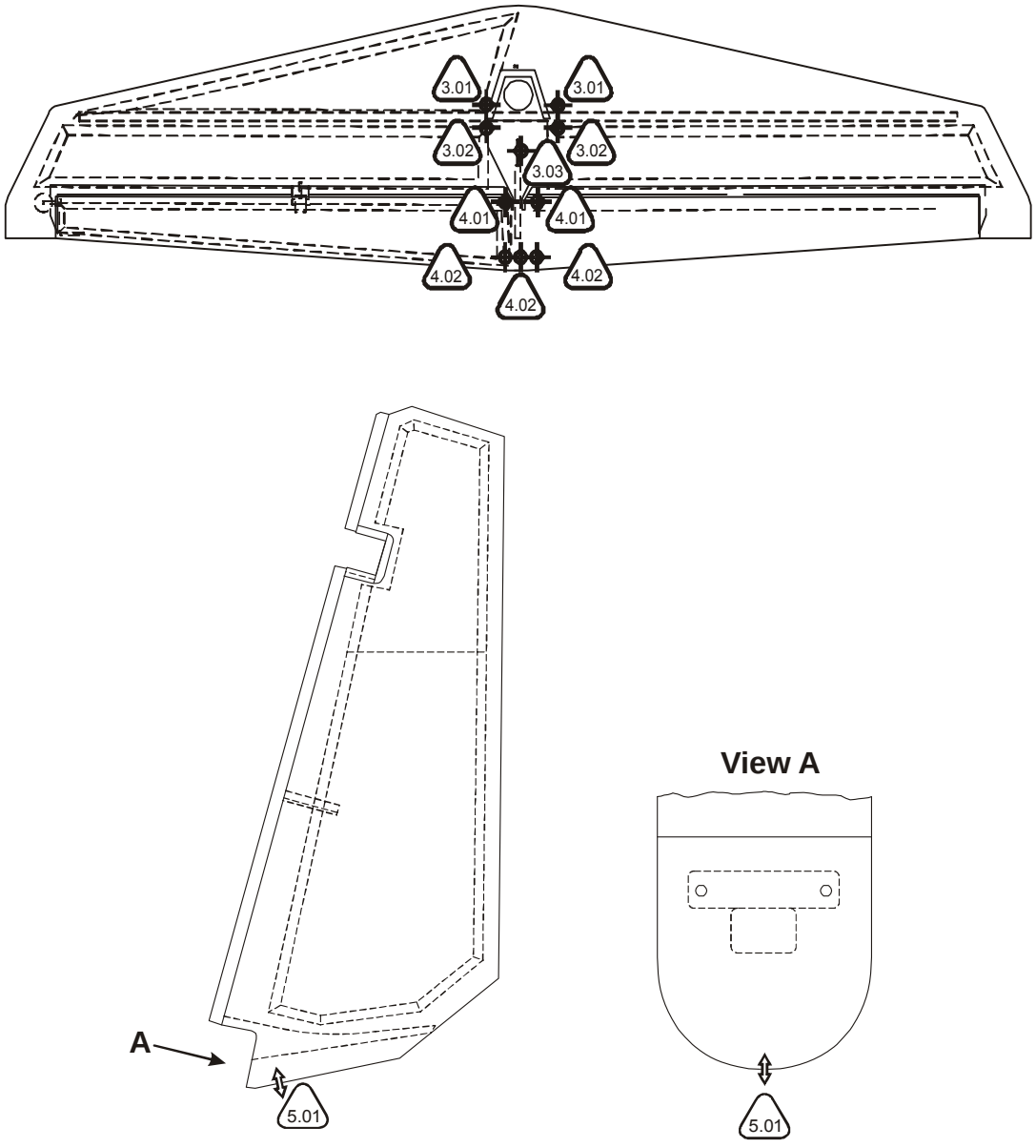


Figure 4: Drain Holes Empannage

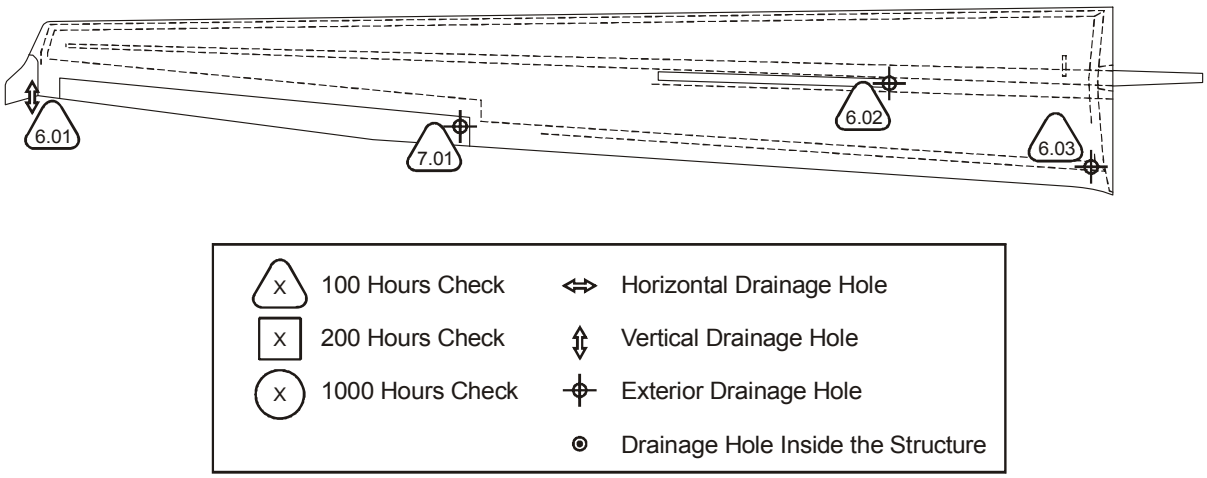


Figure 4: Drain Holes Wings, Ailerons

3.2 DESCRIPTION OF SCHEDULED INSPECTIONS

3.2.1 ENGINE

1.3 If metal pieces are present, the cause has to be determined and repaired by authorized personnel. The oil system has to be flushed and the oil cooler must be replaced.

3.2.2 CABIN

3.1 The canopy and the two rear windows (optional) are checked for cracks and pressure cracks. Should a crack be found, refer to the instructions in Section 5.3.2. The locking mechanism must not be loose, but also should not jam. The connecting rods to the locking pins must not be deformed.

3.3 The canopy locking levers are swung fully rearward when checking the canopy jettison device, i.e. approximately 180°. The canopy is separated from the four locking pins and the canopy brackets are disconnected from the canopy frame.

To avoid inadvertent canopy jettison during flight, the levers are blocked by means of lock wires in the mechanism. In the event of canopy jettison, or in this test, the lock wire tears off and must be replaced (available from Diamond Aircraft).

CAUTION

The breaking strength of the lock wire must not exceed 20 daN (45 lbs.). Otherwise the force required to jettison the canopy would be too large.

3.4 The condition of the seat harnesses must be inspected. The harnesses must be free from chafing, rips, dry-rot and kinks. The fasteners must be installed and secured properly. The fittings must be free from cracks on the painted surfaces.

3.5 The elevator trim control system must operate smoothly and the lever must remain snapped in, even at full elevator deflection. Inspect the condition of the notched plate and its fastening. Inspect the elevator trim control system as prescribed in Section 2.1.3.

3.6 Should corrosion be detected on the rudder pedals, the pedals and the forward control cables must be replaced.

3.7 Rudder pedals: the pedal adjustment must function smoothly. During the 100 hour inspection, the S-shaped cable guides must be lubricated with a few drops of engine oil. The cable itself must not have any kinks or defective strands. In the case of visible damage or wear, the cable must be replaced (refer to FAA AC 43.13-1B).

3.12 The control sticks must be easy to move in every direction and must not rest against anything but the travel stops. Check zero position.

3.13 Check for play between control stick and control surfaces. It is important to block only one stick in order to be able to detect excessive play between the two sticks.

3.14 The point where the wheel brake starts taking effect is adjusted correctly when the air brakes are extended from 65 to 105 mm (2.6 to 4.1 in.) over the wing upper surface.

3.15 The markings of the instruments must be well identifiable, confusions of the arcs (especially on the airspeed indicator) must be impossible. The proper markings are specified in the Flight Manual.

3.19 *HK 36 and HK 36 R:* The locking pin of the main bolts must be easy to insert.

Other models: The locking hook for the main bolts must not jam. There must be a spring load on the hook even when it is fully retracted, i.e. there must not be any dead travel.

3.20 The main bolts must be easy to move when the wings are supported, no matter whether the wing is removed or installed. If the bolts do not move easily, either the lubrication is insufficient and the bolts have seized up in their guides, or the bolts or bushes are deformed due to inappropriate wing installation (releasing the wing when the bolt is inserted half-way). A deformed bolt must be replaced.

3.2.3 STRUCTURE

| 4.1 For repairs refer to Chapter 5.

4.3 When the bushings in the horizontal stabilizer are replaced, install them with Loctite 648 adhesive.

4.7 Each aileron is attached to the wings with five CFRP hinges. Check the areas around the hinges for cracks and defective bonds. Self-lubricating bushes are bonded into the hinges fixed to the ailerons. Pivots, which are secured by cross pins, are inserted in the wing mounted hinges.

4.8 All bolts must be secured with self-locking nuts and all rod end bearings must have locking nuts. Check bolts and nuts for corrosion.

| 4.11 Inspect the bonding area of the web-to-cab plies within the air brake box on the lower
| shell. Over a length of 20 cm (8 in) more than a third (1/3) of the bonding area has to be
| faultless. Bonding defects open towards the trim edge must not extend into the area of
| a quarter (1/4) of the spar cap width measured from the spar web. Fill accessible gaps
| within the airbrake box with bonding paste and seal the whole trim-edge with bonding
| paste. For detailed information see MSB-36-089, latest revision.

4.16 The forces for locking, unlocking, and extending the air brakes are measured on the bellcranks in the LH and RH wing root rib. The wing should be placed on its leading edge and a spring scale is hooked onto the roller bearing, perpendicular to the bellcrank arm. The extension forces are measured in order to check the condition of the air brake damper. The force that is measured shortly before the air brake reaches the stop is relevant.

CORRECT AIR BRAKE OPERATING FORCES			
Model	**Unlocking force**	**Locking force**	**Extension force before reaching stop**
	[daN]	**[daN]**	**[daN]**
HK 36 / HK 36 R	min. 7	max. 24	min. 7
HK 36 TS, TC, TTS, TTC, TTC-ECO, S/N 36.517 and subsequent	min. 12	max. 24	min. 7
others	min. 10	max. 18	min. 7

CAUTION

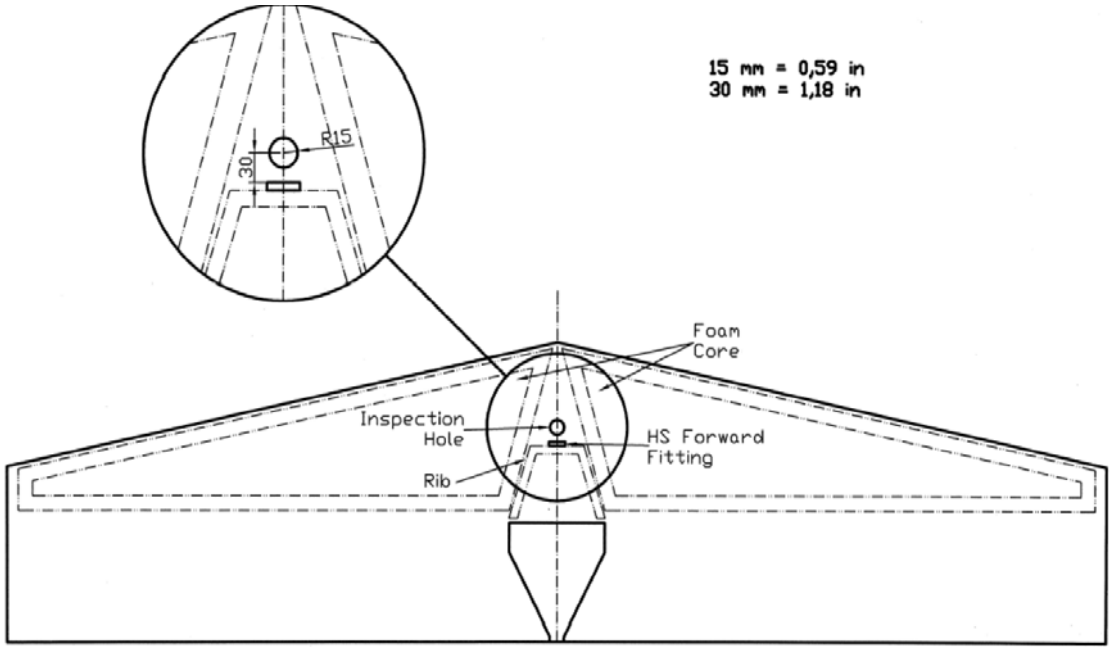
The necessity to adjust the air brake control system may indicate damage to the structure (e.g. due to overstressing). Therefore contact the Manufacturer before adjusting.

4.22 The bolts on the horizontal stabilizer mount must fit tightly and must be secured with self-locking nuts. The locking ring must be secured against twist by means of two cross-pins on the forward horizontal tail mount.

CAUTION

The elevator is not automatically connected to the elevator control system! Be aware of this when installing or removing the horizontal tail!

| 4.24 If there is no inspection hole in the lower side of the horizontal stabilizer:
| Cut a Ø 30 mm (1.2 in) inspection hole in the down side of the horizontal stabilizer.
|



4.25 Elevator horns which are constructed from plywood must be checked for defective attachment to the elevator as follows:

(a) Remove horizontal tail.

(b) Fix together elevator horn and horizontal stabilizer.

(c) Apply a force of 15 daN (34 lbs.) to elevator at trailing edge in upward and downward direction. Check for play.

4.27 The rudder is held in place by a pin which is fixed to the vertical stabilizer at the top and a bolt in the mounting plate at the bottom.
The rudder control cables are also attached to the mounting plate with one bolt each. All three bolts must be secured with lock wire.
The rudder control cables, eye stiffeners and nicopress sleeves should be checked for poor condition.

4.29 When the rudder is held firmly and the tail wheel is twisted, a positive spring load must be perceptible in either direction. Play in the assembly indicates a defective spring. Furthermore, verify that the tail wheel moves to neutral position if the rudder is being brought to neutral. For this test the fuselage is elevated right in front of the tail wheel.

If the tail wheel has exceeded the maximum resiliency travel due to overload (e.g. nose over, extremely unfavorable ground), it presses the weak lower edge of the rudder. The rudder hinges will not be damaged, and the rudder will still function. However, the rudder hinges, tail wheel, and tail wheel suspension must be inspected thoroughly. If necessary, repair the rudder lower edge in accordance with Chapter 5.

4.31 It is absolutely necessary for this inspection to relieve the tail wheel completely. In particular the welds and the adjacent areas must be thoroughly inspected for cracks from all sides. The entire pedestal must be checked for deformation and corrosion.

4.33 To remove the tail wheel fork, first remove the transverse M6 bolt, then extract steering shaft in a downward direction.

4.34 For correct adjustment of the pre-tension of the rubber spring assembly, jack airplane in front of the vertical tail so that the tail wheel has no ground contact. Tighten nut on elastomer package until disks cannot be twisted by hand torque.

4.39 The control cables must be inspected for wear. If there are signs of wear (see FAA AC 43.13-1B), the cables must be replaced.

The tension force of two the rearward rudder control cables must be adjusted by means of the turnbuckles. For correct tensile force refer to Section 2.1.4.

4.48 Thoroughly check all screwed connections and the drainer valve for leakage. Check fastening strap for poor condition, defective attachment to the fuselage structure and chafing on the central fuel reservoir or tank.

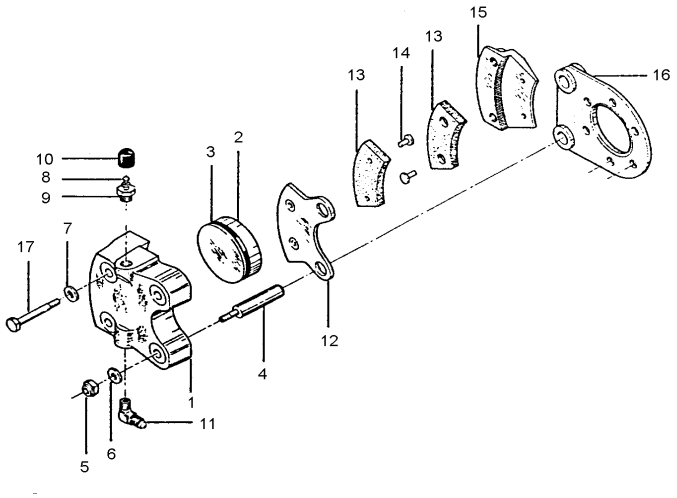
3.2.4 LANDING GEAR

5.2 This inspection should be performed very thoroughly after hard landings or in the case of operation on aerodromes with extremely rough runways.

| 5.3 The brake linings may be worn down to a minimum thickness according to the
| Cleveland - Parker Maintenance Manual they must be replaced.

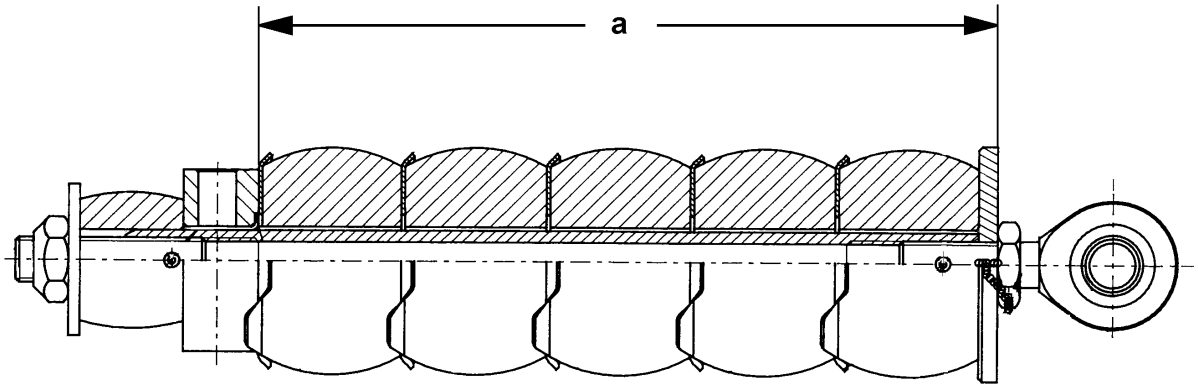
To replace the linings, remove the lock wires and the two fixture screws (17). The two pressure plates (12 and 15) can be removed and the new brake linings are affixed with the provided rivets. Re-install pressure plates. When replacing brake linings, all four should be replaced at the same time.

1.	Brake cylinder	11.	Brake line connector
2.	Brake piston	12./15.	Pressure plate
4.	Guide pins	13.	Brake linings
8.	Bleed nipple	16.	Fixture plate
9.	Bleed screw	17.	Attachment bolts (2)



5.8 When new elastomer elements are installed, Dimension “a” should be 195 mm (7.7 in.) with the nosewheel clear of the ground.

The preload on used elements is adjusted properly when the rubber elements cannot



be twisted by moderate hand torque while the nosewheel is clear of the ground. With the elastomer package properly preloaded, dimension “a” must not be less than 185 mm (7.3 in.). Otherwise the rubber elements must be replaced.

5.19 The brake fluid level must not fall below the minimum marking. If it does, inspect the brake linings. If they are not worn, determine the reason for the loss of brake fluid.

3.3 NON-SCHEDULED INSPECTIONS

3.3.1 ENGINE

25 hour inspection

A newly installed engine must undergo a non-recurring inspection after 25 operating hours. The maintenance items are listed in the Operator's Manual and Maintenance Manual of the engine.

In addition, the bolts attaching the engine mount to the firewall must be tightened at the 25 hour inspection (torque: 40 Nm (29.5 ft.lbs.)).

Special inspections

Special inspections (e.g. after propeller strike, excessive temperature, etc.) are described in the Operator's Manual and Maintenance Manual of the engine.

Amber temperature caution light illuminates (Models with Rotax 914 F only)

Through improper operation (carburetor heat ON with power above 75 %) or a high power setting with a high OAT, the airbox temperature can exceed 72 °C (162 °F) for TCU No. through 966470 respectively 88 °C (190 °F) for TCU No. 966471 and subsequent. If the caution light illuminates for a short while due to this, and is terminated by the action of the TCU or by moving back the carburetor heat control or throttle control, it does not indicate a fault.

If the caution light illuminates under other conditions or for a longer time, an inspection must be done as follows:

(1) Perform engine ground run, measure airbox temperature *at idle RPM* (see Article 2.5.3). This may not exceed 60 °C (140 °F); a higher temperature indicates a defective airbox temperature sensor.

(2) Increase engine power setting. The measured value of the airbox temperature must thereby increase; deviating behavior indicates a defective airbox temperature sensor.

NOTE

Only airbox temperatures above 0 °C (32 °F) can be measured. At OATs below 0 °C, the airbox temperature can only be measured with increased engine power settings.

(3) Measure LH and RH EGT at take-off power (see Section 2.5.3). Both temperatures should lie between 850 °C (1562 °F) and 950 °C (1742 °F).

NOTE

At temperatures above ISA + 15 °C (ISA + 27 °F), an airbox temperature just over 72 °C (162 °F) can be reached during this test. Subsequently, the caution light will illuminate.

If the indicated values are too low, a defect in the corresponding EGT sensor is likely, but the defect could also lie in the carburetor system ⇒ proceed to Items (4), (5) and (6).
If the indicated values are too high, a defect in the carburetor system is likely, but the defect could also lie in the EGT sensor ⇒ proceed to Items (5), (4) and (6).

(4) Test the two EGT sensors with an electronic thermometer for Type "K" thermocouples. If the sensors are defective, they must be replaced.
(5) Examine the carburetor in accordance with the Maintenance Manual for Rotax Engine Type 914 F. Check the pressure connection lines for blockage, kinks or other damage.
(6) If the above measures do not solve the problem, contact the manufacturer.

3.3.2 PROPELLER

Special inspections (e.g. after excessive RPM) are described in the Propeller Maintenance Manual.

3.3.3 AIRFRAME

Hard landings

After an excessively hard landing or some other unusual loading on the landing gear, even when no obvious damage is apparent, the following inspection must be done:

(1) Check the fixing parts of the main landing gear for cracks, deformation and other damage using a light and a mirror.
Check the surrounding GFRP structure for delamination.

(2) Check the main landing gear strut(s) for cracks, deformation, delamination of GFRP strut, and other damage.
Measure the track width and compare with the value recorded in the Adjustment Report (use slide sheets!).

(3) Check all three tires for cuts in the side.

(4) Check brake lines, brake cylinders, calipers and brake disks for leakage and damage.

(5) *Tail wheel models only:*
Remove rudder and check tail wheel assembly and rudder pedestal for cracks, deformation, defective attachment to the fuselage and other damage.

| (6) *Tail wheel models only:*
| Do a fuselage torsion test in accordance with section 4.8.5.

(7) *Tricycle models only:*
Check entire nosewheel assembly for cracks, deformation and other damage. Unload the nosewheel and check for excessive play in the bearings.

(8) *Tricycle models only:*
Check top hat profile in fuselage underside for delamination, especially in the bonding areas and around the nosewheel strut bearings.

(9) Check engine mount for cracks and deformation. In the case of tricycle models, the nosewheel damper attachment area must be inspected especially thoroughly. Check shock mounts (silentblocs) and fixture points of the engine mount to the firewall for damage.

(10) Check hinges and attachment of balancing masses on the control surfaces for damage.

(11) Remove wings; check wing leading edge and wing-fuselage connection for damage. Check main bulkhead for delamination.

(12) Remove horizontal tail and check horizontal stabilizer leading edge and attachment for damage.

(13) Check avionic equipment and instruments for loose attachment and obvious damage.

(14) Check flight instrument indications on the ground: airspeed indicator and vertical speed indicator (if installed) must indicate zero and altimeter must indicate airfield elevation when set to aerodrome QNH.

Exceeding of operating limitations

If operating limitations (e.g. v_{NE}) have been exceeded, the manufacturer should be contacted.

3.4 TORQUES

| Apply safety lacquer (e.g. Organic Products F900 or F1000) on screw fittings as required.

3.4.1 STANDARD TORQUES

Unless otherwise provided (see Section 3.4.2), nuts and bolts must be tightened with the following torques:

Nut or Bolt Size	Torque [Nm]	Torque [ft.lbs.]
M5	36	27
M6	64	47
M8	160	118
M10	320	236
M12	570	420

The number after the “M” indicates the thread major diameter in millimeters. Divide this value by 25.4 to obtain inches. Example: an M8 bolt is one with a thread major diameter of 0.315 inches.

3.4.2 SPECIAL TORQUES

Nut or Bolt	Torque [Nm]	Torque [ft.lbs.]
Bolts attaching engine mount to firewall	40	30
Bolts attaching main landing gear axles to strut If OÄM 36-369 is installed:	20 6.5	15 5
Bolts attaching GFRP main landing gear strut to fuselage *(tail wheel models only)*	10	7.5
Bolt in main landing gear fitting at inner end of steel strut *(tricycle models only)*	height of spring washers 4 ± 0.5 mm	0.16 ± 0.02 in.
Bolts in main landing gear fitting next to fuselage root rib *(tricycle models only)*	20	15
Nosewheel stop bolts limiting steering angle *(tricycle models only)*	15	11
Nuts and bolts on engine	see Engine Maintenance Manual	
Nuts and bolts on propeller	see the Propeller Maintenance Manual	

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CHAPTER 4

MAINTENANCE PROCEDURES

4.1 PROCEDURES FOR REPLENISHING THE OPERATING FLUIDS

4.1.1 FUEL

For approved fuel grades refer to Airplane Flight Manual, Section 2.

CAUTION

During refueling, the ground cable must be electrically connected to the exhaust pipe to prevent electrostatic charge build up.

CAUTION

Do not fill the tank completely when the weather is hot. The fuel expands when it gets warm and drains off through the ventilation line.

Maximum quantity

Standard tank	55 liters (14.5 US gal.)
Long range tank HK36, HK 36 R	80 liters (21.1 US gal.)
Long range tank HK 36 TS, TC, TTS, TTC	79 liters (20.9 US gal.)
Wing tanks HK 36 TTC-ECO	55 liters each (14.5 US gal. each)

4.1.2 ENGINE OIL

For information on approved engine oils refer to the Airplane Flight Manual, Section 2.

- Remove the oil filler cap (Rotax: yellow cap, rearward on the right hand side of the engine; Limbach: next to the crankcase breather)
- Replenish the engine oil i.a.w. AFM.
- Check condition of the rubber sealing ring.
- Close the oil filler.

Maximum oil quantitiy

Rotax engines	3.0 Liters (3.2 Quarts)
Limbach 2400	3.5 Liters (3.7 Quarts)

4.1.3 COOLANT (ROTAX ENGINE ONLY)

For information on approved coolants refer to the Airplane Flight Manual, Section 2.

CAUTION

If waterless coolant (EVANS NGP+ or equivalent) is used:

Do NOT replenish the coolant system with water or water containing coolant.

Before you replenish the coolant system:

- Find out the reason for the loss of fluid (e.g. leaky hose connections).
- Make sure you use the correct coolant type.

When the engine is cold, open the pressure cap on the dispatcher vessel on top of the engine and fill the dispatcher vessel up completely. The equalizing reservoir (transparent vessel next to oil tank) must be between $^{1}/_{3}$ and $^{2}/_{3}$ full.

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. Fill up equalizing reservoir until it is between $^{1}/_{3}$ and $^{2}/_{3}$ full. The maximum coolant quantity is approximately 2.5 liters (2.6 US quarts).

Before closing the pressure cap, check the condition of the rubber sealing rings.

4.1.4 BRAKE FLUID

Airplanes with wheel brake system version 1 (see Section 2.2.3) have the brake fluid reservoir installed behind the main bulkhead under the baggage compartment floor. Airplanes with wheel brake system version 2 (see Section 2.2.3) have two brake fluid reservoirs mounted to the co-pilot's LH and RH rudder pedal.

Always find out the reason for the loss of brake fluid before filling up (worn brake linings, leaky brake lines or brake cylinders).

The required brake fluid grade is Mil-H-5606 A (or English DTD 585 or French AIR 3520) Aeroshell Fluid 4. Brake fluids with equal grades may be mixed.

CAUTION

Avoid contact of brake fluid and paint finish! When closing the brake fluid reservoir of an airplane with wheel brake system version 1 (see Section 2.2.3), make sure that the bleed hole is not blocked.

4.1.5 REFILLING THE BATTERY

The battery must be filled up with distilled water to the upper marking. It is recommendable to use a special wash bottle or a large injection syringe. Spilled battery acid can be rendered harmless by means of an acid neutralizer (e.g. Varta Neutralon Spray) or with much water, which is, however, hard to remove afterwards. At this time, clean the battery terminals and apply battery terminal grease or Vaseline.

4.2 MASS AND BALANCE

4.2.1 DETERMINING EMPTY MASS CG POSITION

Condition of the Powered Sailplane during weighing:

* Powered Sailplane completely rigged
* No seat cushions, equipment as listed in the Equipment Inventory
* No parachutes, no wing support fixtures, no baggage
* Canopy closed
* Fuel system drained down to the unusable quantity. In case of the HK 36 TTC-ECO, both wing tanks and the central fuel reservoir must be emptied through the drain valves, then 2 liters (0.53 US gal.) of fuel must be filled into each tank.
* Full oil quantity (refer to Section 4.1)

For the determination of the empty mass CG, the powered sailplane is placed upon three scales, one under each wheel. The fuselage tube must be aligned horizontally as shown in the sketch on the next page. Drop a plumb line from the wing leading edge at the root rib to the ground. This plumb line defines the datum plane (DP). Measure the distances from DP to the axletrees (x_1, x_2 or x_1, x_{2L}, x_2) and enter them in the Weighing Report. The mass portions (m_1, m_2 or m_1, m_{2L}, m_{2R}) are measured with the scales.

Use these formulae to determine position of the empty mass CG aft of DP.

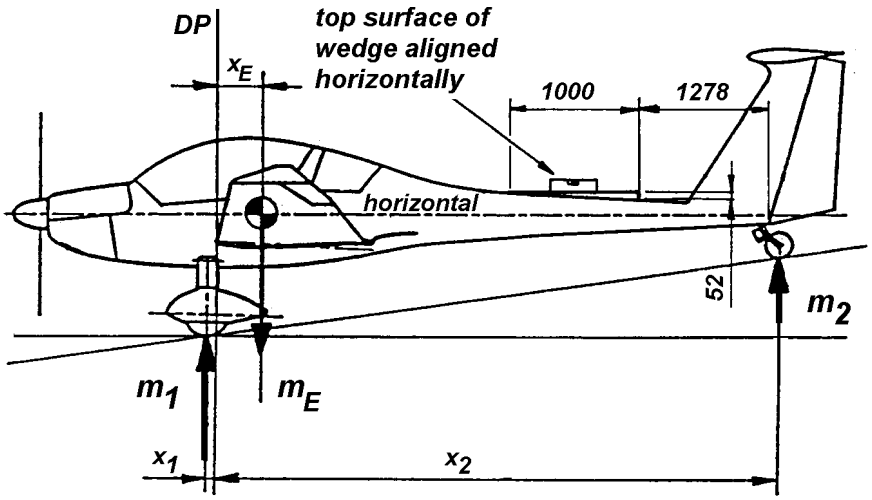
$$x_E = \frac{x_2 \times m_2 - x_1 \times m_1}{m_1 + m_2}$$

for tail wheel models

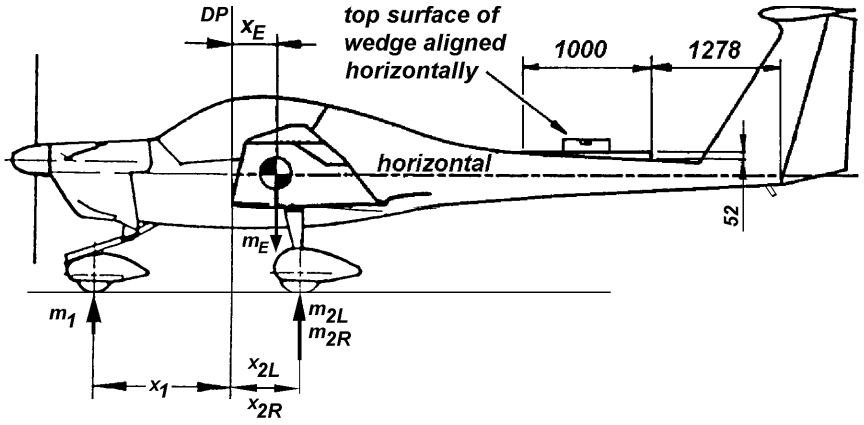
$$x_E = \frac{x_{2L} \times m_{2L} + x_{2R} \times m_{2R} - x_1 \times m_1}{m_1 + m_{2L} + m_{2R}}$$

for tricycle models

The empty mass is the sum of the mass portions (m_1+m_2 or $m_1+m_{2L}+m_{2R}$).



Horizontal alignment - tail wheel models



Horizontal alignment - tricycle models

4.2.2 TABLE OF THE MOST IMPORTANT LEVER ARMS

Lever arms are given in millimeters, forward (-) or aft (+) of DP.

Item		Arm [mm aft of CG]	Item	Arm [mm aft of CG]
Wings		495	Avionics	-420
Horizontal stabilizer		4860	Landing light	-1370
Long range tank		824	ACL on horizontal tail	4800
Standard tank		727	ACLs on wings	470
Wing tanks (HK 36 TTC-ECO only)		255	Pilots	143
central fuel reservoir (HK 36 TTC-ECO only)		680	Oil tank, Rotax 912 A	-1060
Seat cushions		110	Oil tank, Rotax 914 F	-990
Backrest cushions		390		
Baggage	HK 36 TTC-ECO	824		
	other models	assumed equal to fuel tank		

4.2.3 WEIGHING REPORT

The Weighing Report shows the current empty mass and the current empty mass CG position. Weighing Report and Equipment Inventory are preserved in the Aircraft Maintenance Log.

A master form can be found in Section 4.2.13.

NOTE

In case of equipment changes, repairs and repainting, or no later than 5 years after the last weighing, the airplane must be re-weighed by an authorized person. Afterwards, the new empty mass CG position must be computed. The values must be entered in the Mass and Balance Form (see Section 4.2.6). The new limits must be drawn on a new Mass and Balance Diagram (not for HK 36 TTC-ECO, see Section 4.2.7), and the limitations placard in the cockpit must be updated.

4.2.4 EMPTY MASS AND CORRESPONDING CG

Empty mass CG limitations depending on the empty mass are given in Section 4.2.9.

HK 36 TTC-ECO:

These limitations guarantee that solo pilots with a minimum mass (weight) of 70 kg (154 lbs.) will not overstep the maximum rearward CG when flying with at least 10 kg (22 lbs.) of fuel and no baggage.

The CG will not exceed the maximum forward position if the maximum useful load minus 10 kg (22 lbs.) (fuel for a half hour flight) is placed on the seats.

Other models:

These limitations guarantee that solo-pilots with a minimum mass (weight) of 70 kg (154 lbs.) will not overstep the maximum rearward CG when flying with a full tank and no baggage.

The CG will not exceed the maximum forward position if the maximum useful load minus 10 kg (22 lbs.) (fuel for a half hour flight) is placed on the seats.

Another limitation is the minimum flight mass of 600 kg (1323 lbs.). Consequently, the useful load must never be less than

minimum useful load = (600 kg) - (10 kg fuel) - (empty mass)

The empty mass CG position can be shifted rearward using a balance weight mounted to the vertical stabilizer web (serial nos. through 36.517: x = 4700 mm (185.0 in.), serial nos. 36.518 and subsequent: x = 4490 mm (176.8 in.)).

4.2.5 MASS OF NON-LIFTING PARTS AND USEFUL LOAD

The maximum mass of all non-lifting parts is the sum of:

* Mass of fuselage and installed parts including canopy
* Mass of rudder
* Mass of horizontal tail
* Maximum permissible useful load

Serial numbers	Mass of both wings	Max. mass of non-lifting parts	Maximum permissible useful load
36.301 through 36.510 and 36.512 through 36.516	≥ 180 kg	590 kg	770 kg minus empty mass
	< 180 kg	590 kg	590 kg plus mass of both wings minus empty mass
36.511, 36.517 and sub-sequent	≥ 160 kg	610 kg	770 kg minus empty mass
	< 160 kg	610 kg	610 kg plus mass of both wings minus empty mass

4.2.6 MASS AND BALANCE FORM

The Mass and Balance Form in Section 6 of the Flight Manual is a record of all weighings shows the following values:

HK 36 TTC-ECO:

* Current empty mass
* Current empty mass CG position
* Current maximum permissible useful load
* Minimum useful load on the seats with 10 kg (22 lbs.) fuel and no baggage
* Minimum useful load on the seats with 10 kg (22 lbs.) fuel and maximum baggage mass (30 kg (66 lbs.))

other models:

* Current empty mass
* Current empty mass CG position
* Current maximum permissible useful load
* Minimum useful load on the seats with full tank and no baggage
* Minimum useful load on the seats with full tank and maximum baggage mass (12 kg (26 lbs.)).

The Mass and Balance Form must be updated by an authorized person in compliance with the currently effective Weighing Report as follows (from left to right):

* Date of weighing: taken from the Weighing Report
* Empty mass (weight): taken from the Weighing Report
* Empty mass (weight) CG position: taken from the Weighing Report
* Maximum permissible useful load under consideration of the maximum mass of all non-lifting parts (see Section 4.6)
* Minimum useful load on the seats with no baggage;
  Minimum useful load on the seats with maximum baggage
  taken from the tables in Sections 4.2.10, 4.2.11, or 4.2.12
* Signature and stamp of the aircraft maintenance engineer (A.M.E.)

4.2.7 MASS AND BALANCE DIAGRAM

In addition to the Mass and Balance Form, a new Mass and Balance Diagram must be filled in upon each weighing.

NOTE

The CG position of the HK 36 TTC-ECO cannot be determined using a diagram. It must therefore be determined by calculation.

4.2.8 EXPLANATION OF THE DIAGRAM (not for HK 36 TTC-ECO)

* Master diagrams are given in Section 6 of the Flight Manual . There is a separate form for each tank version (standard or long range). Photocopy the appropriate master.
* The minimum pilot mass and the maximum total mass of fuel and baggage do not depend on the weighing. Therefore, these limits are already drawn on the diagram.
* Two additional limits are drawn following the weighing:
  - Draw the line representing the empty mass in a parallel direction between the broken lines labeled with the corresponding empty mass values. The forbidden loading range lies above this line and must be hatched.
  - The empty mass CG position (depending on propeller model, tank, avionics, etc.) may require an additional limit to the maximum rearward CG position. Draw the line for the empty mass CG position in a parallel direction between the broken lines labeled with the corresponding empty mass CG values. The forbidden loading range lies above this line and must be hatched. If this limitation lies outside the other borders, it is not effective and thus need not be drawn.
* Insert page into Section 6 of the Flight Manual.

4.2.9 PERMISSIBLE EMPTY MASS CG POSITION

Empty mass [kg]	Permissible empty mass CG range (standard tank) [mm]	Permissible empty mass CG range (long range tank) [mm]	Permissible empty mass CG range (wing tanks) [mm]
520 - 524	384 - 445	384 - 423	390 - 432
525 - 529	384 - 445	384 - 423	389 - 432
530 - 534	383 - 444	383 - 423	388 - 431
535 - 539	382 - 444	382 - 423	386 - 431
540 - 544	382 - 444	382 - 423	385 - 431
545 - 549	380 - 444	380 - 423	383 - 430
550 - 554	377 - 444	377 - 424	381 - 430
555 - 559	375 - 444	375 - 424	379 - 430
560 - 564	373 - 444	373 - 424	377 - 430
565 - 569	371 - 443	371 - 424	374 - 429
570 - 574	369 - 443	369 - 424	372 - 429
575 - 579	367 - 443	367 - 424	370 - 429
580 - 584	365 - 443	365 - 424	368 - 429
585 - 589	363 - 443	363 - 424	367 - 428
590 - 594	361 - 443	361 - 424	365 - 428
595 - 599	360 - 443	360 - 424	363 - 428
600 - 604	358 - 443	358 - 424	361 - 428
605 - 609			359 - 427
610 - 614			357 - 427
615 - 619			356 - 427
620			354 - 427

4.2.10 MINIMUM USEFUL LOAD ON THE SEATS WITH STANDARD FUEL TANK

Empty mass CG position [mm aft of DP]	Minimum useful load on the seats with full tank, no baggage [kg]	Minimum useful load on the seats with full tank, 12 kg baggage [kg]
358 - 430	55	55
431 - 432	55	60
433 - 434	55	65
435 - 437	60	70
438 - 439	65	75
440 - 442	70	80
443 - 444	75	85

4.2.11 MINIMUM USEFUL LOAD ON THE SEATS WITH LONG RANGE FUEL TANK

Empty mass CG position [mm aft of DP]	Minimum useful load on the seats with full tank, no baggage [kg]	Minimum useful load on the seats with full tank, 12 kg baggage [kg]
358 - 406	55	55
407 - 409	55	60
410 - 411	55	65
412 - 414	55	70
415 - 417	60	75
418 - 420	65	80
421 - 422	70	85
423 - 425	75	90

4.2.12 MINIMUM USEFUL LOAD ON THE SEATS WITH WING TANK

Empty mass (weight) CG position [mm aft of DP]	Minimum useful load on the seats with 10 kg (22 lbs.) fuel, no baggage [kg]	Minimum useful load on the seats with 10 kg (22 lbs.) fuel, 30 kg (66 lbs.) baggage [kg]
354 - 400	55	55
401 - 402	55	60
403 - 404	55	65
405 - 406	55	70
407 - 408	55	75
409 - 410	55	80
411 - 412	55	85
413 - 415	55	90

4.2.13 WEIGHING REPORT (MASTER)

Diamond AIRCRAFT

WEIGHING REPORT

D.A.I. Form No. H17-E

Type:	**Date**:	**Serial No.**:	**Call sign:**

Datum plane DP : vertical plane, tangential to wing leading edge at root rib
Horizontal alignment : wedge 52:1000, 1278 mm in front of fuselage tube rear edge

	[kg]	non-lifting parts [kg]
RH wing		
LH wing		
fuselage including trim mass		
vertical tail		
rudder		
useful load		

	[kg]
empty mass	
max. useful load	
max. total mass	770
mass of non-lifting parts including useful load	

Remark:

scale	gross [kg]	tara [kg]	net [kg]	arm [mm]
front m_1				
rear m_2				

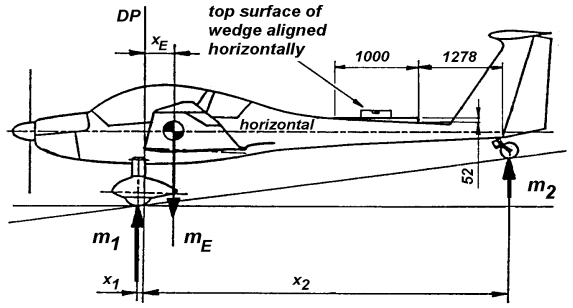
trim mass on vertical stabilizer web (see AMM, Section 4.2.4)

[ ] kg at x = [ ] mm

$$x_E = \frac{x_2 \times m_2 - x_1 \times m_1}{m_1 + m_2} =$$

= _____ =

= [ ] mm aft of DP



admissible empty mass CG position according to Airplane Maintenance Manual, Section 4.2.9:

[ ] mm to [ ] mm aft of DP

CORRECTIONS Modification	mass [kg]	arm [mm]	corrected x_E [mm]	date	signature

The empty mass CG position determined above lies within the admissible range. The placard in the cockpit and the Airplane Flight Manual (Mass & Balance Form, Mass & Balance Diagram) have been updated. Equipment: see Equipment Inventory dated: _____.

Stamp: Signature:

Diamond AIRCRAFT

WEIGHING REPORT

D.A.I. Form No. H17a-E

Type:	**Date**:	**Serial No.**:	**Call sign:**

Datum plane DP : vertical plane, tangent to wing leading edge at root rib
Horizontal alignment : wedge 52:1000, 1278 mm in front of fuselage tube rear edge

	[kg]	non-lifting parts [kg]
RH wing		
LH wing		
fuselage including trim mass		
vertical tail		
rudder		
useful load		

	[kg]
empty mass	
max. useful load	
max. total mass	770
mass of non-lifting parts including useful load	

Remark:

scale	gross [kg]	tara [kg]	net [kg]	arm [mm]
front m_1				
rear m_{2L}				
rear m_{2R}				

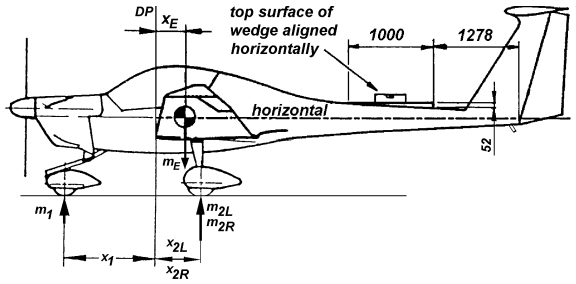
trim mass on vertical stabilizer web (see AMM, Section 4.2.4)

[ ] kg at x = [ ] mm

$$x_E = \frac{x_{2L} \times m_{2L} + x_{2R} \times m_{2R} - x_1 \times m_1}{m_1 + m_{2L} + m_{2R}} =$$

$$= \qquad =$$

$$=$$ [ ] mm aft of DP



admissible empty mass CG position according to Airplane Maintenance Manual, Section 4.2.4:

[ ] mm to [ ] mm aft of DP

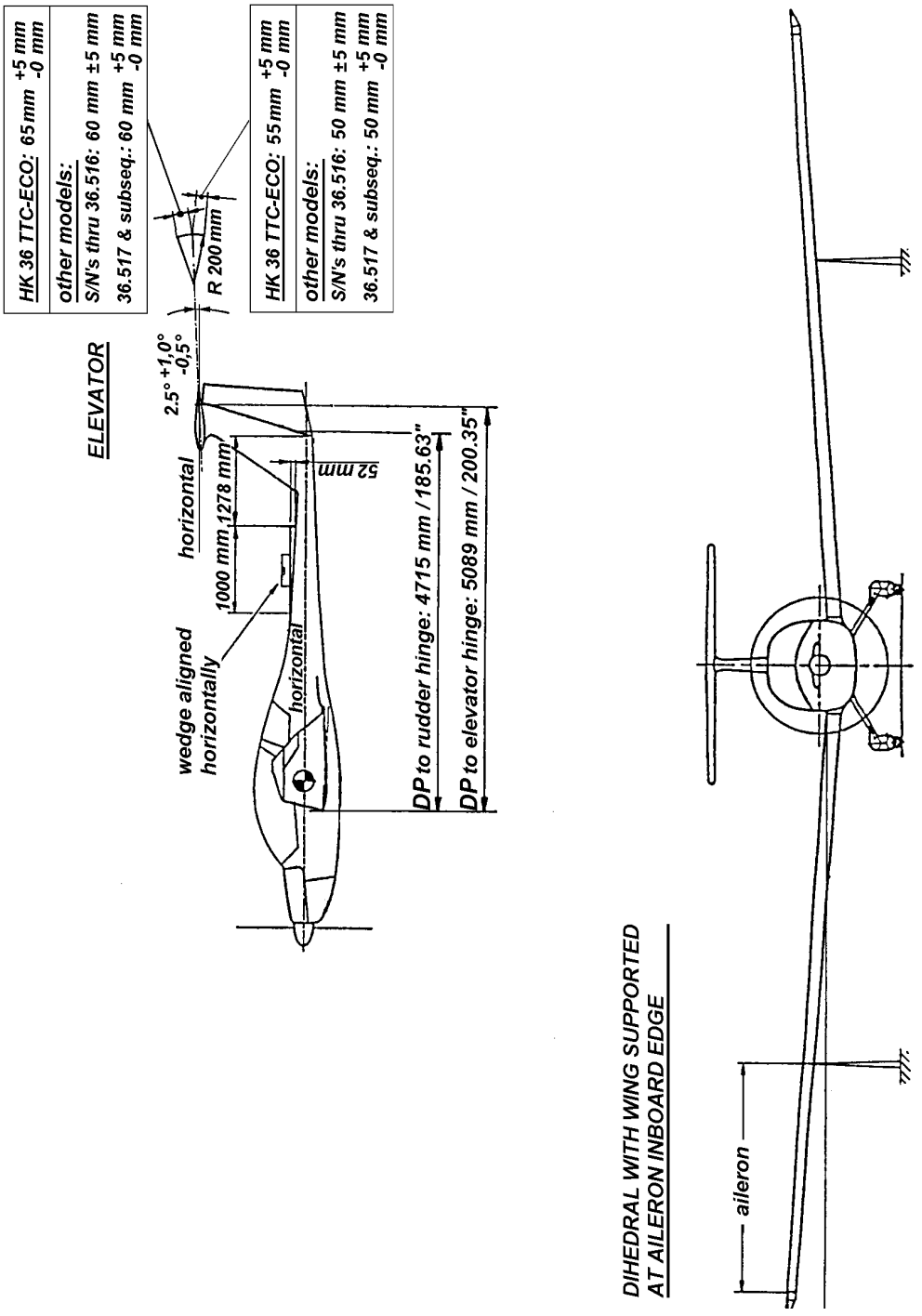
CORRECTIONS Modification	mass [kg]	arm [mm]	corrected x_E [mm]	date	signature

The empty mass CG position determined above lies within the admissible range. The placard in the cockpit and the Airplane Flight Manual (Mass & Balance Diagram (not for HK 36 TTC-ECO), Mass & Balance Form) have been updated.
Equipment: see Equipment Inventory dated: _____.

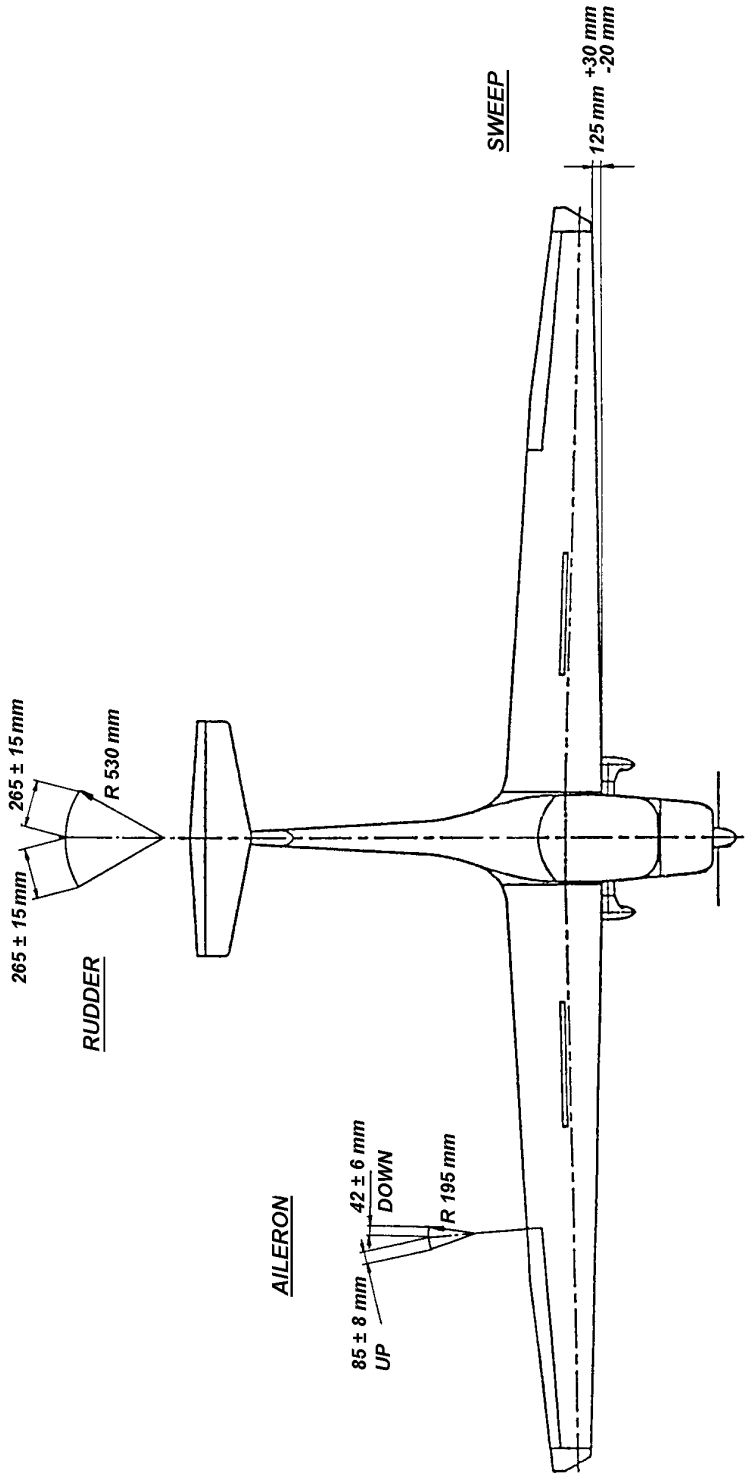
Stamp: Signature:

4.3 ADJUSTMENT DIAGRAMS

4.3.1 HORIZONTAL ALIGNMENT, ELEVATOR, ANGLE OF INCIDENCE, DIHEDRAL



4.3.2 AILERONS, RUDDER, SWEEP



4.4 CONTROL SURFACE MASS AND RESIDUAL MOMENTS

WARNING

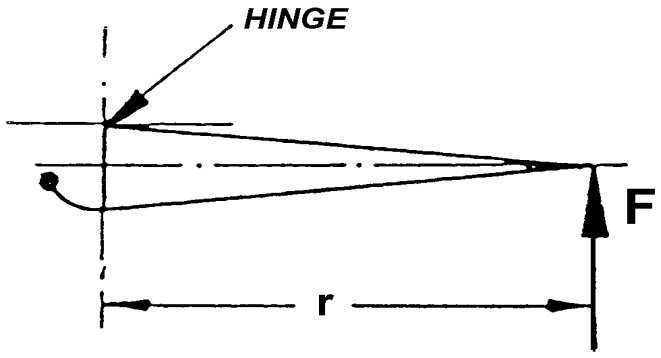
Contact the manufacturer before modifying the mass balancing!

CAUTION

For the flutter safety of the airplane, it is very important that masses and residual moments of the control surfaces comply with the following limitations. Therefore, these values must be re-determined after repairing or repainting a control surface.

4.4.1 MEASUREMENT OF RESIDUAL MOMENTS

The surfaces must be removed from the airplane and supported in their axes of rotation with as little friction as possible. The force "F" is measured (e.g. with a letter balance or a spring scale) opposite to the balancing mass while the surface is horizontal. The measuring range of the balance should be about 15 N (3.5 lbs.). With the lever arm "r" which is equal to the distance between the hinge line and the force "F", the residual moment “M” can be computed as follows:



$$M = F \times r$$

with F in [N], r in [cm]
[lbs.] * 4.448 = [N]
[in.] * 2.54 = [cm]

If a surface fails to meet the correct values given in Section 4.4.2, a modification of the mass balancing is necessary.

4.4.2 CONTROL SURFACES MASS AND RESIDUAL MOMENTS TABLE

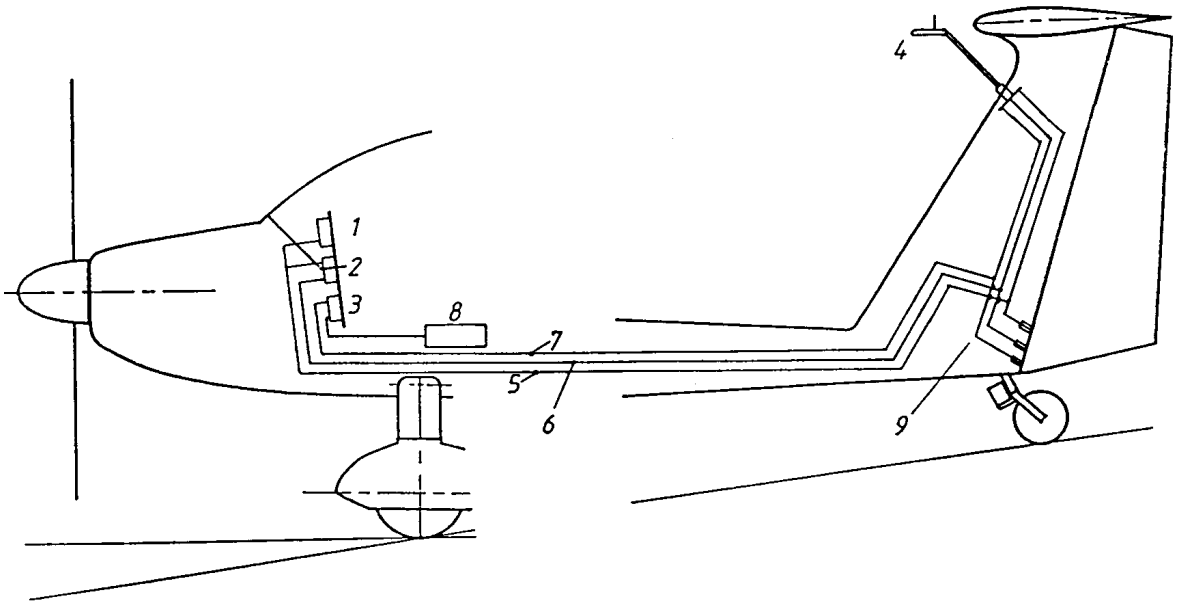
Control Surface	Models	Permissible mass (including balancing mass) [kg]	Permissible residual moment [N*cm]
elevator	HK 36, R, TS, TC, TTS, TTC horizontal stabilizers no. HF 1 through HF 17	2.45 to 3.00	90 to 112
	HK 36, R, TS, TC, TTS, TTC horizontal stabilizers no. HF 18 and subsequent	2.25 to 2.80	100 to 122
	HK 36 TTC-ECO	2.40 to 2.90	76 to 106
rudder	HK 36, R, TS, TC, TTS, TTC	5.30 to 6.55	100 to 160
	HK 36 TTC-ECO	4.75 to 5.80	120 to 150
ailerons	HK 36, R, TS, TC, TTS, TTC Serial Nos. 36.301 through 36.510 and Serial Nos. 36.512 through 36.516	2.30 to 2.75	100 to 125
	HK 36, R, TS, TC, TTS, TTC Serial Nos. 36.511, 36.517 and subsequent	2.80 to 3.50	50 to 83
	HK 36 TTC-ECO	2.90 to 3.60	30 to 75

4.5 PITOT-STATIC SYSTEM

The instruments in the instrument panel are accessible after removing the instrument panel top cover. The following sketches illustrate the connections of the instruments.

HK 36 and HK 36 R, Serial Nos. through 36.331

Water removal: remove rudder; remove caps from drain tubes.

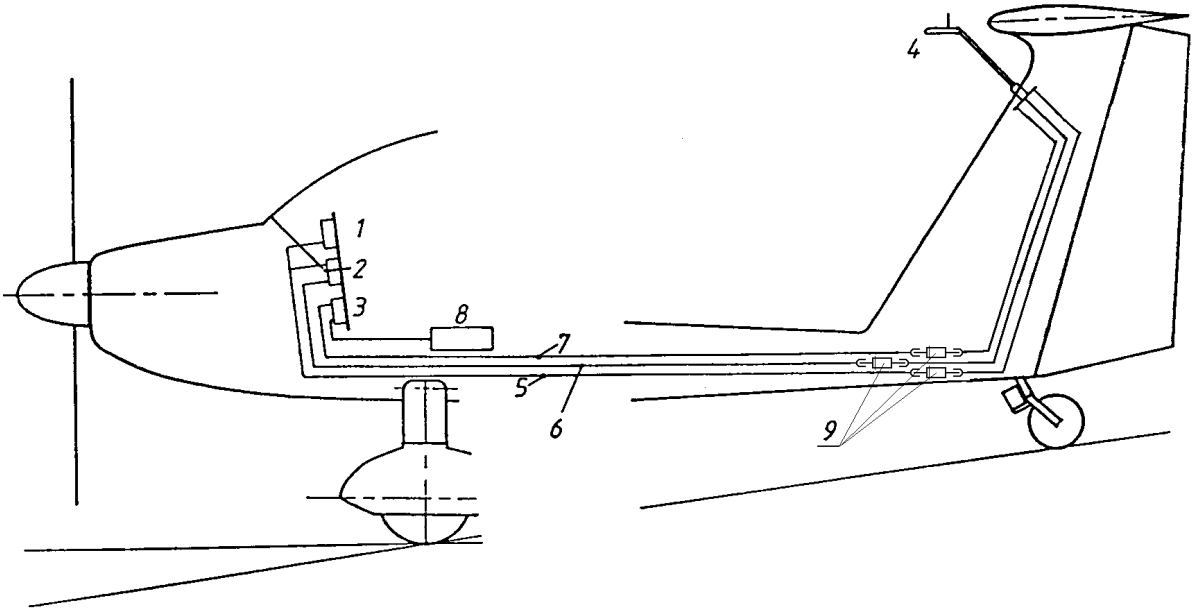


Legend

1 Altimeter
2 Airspeed indicator
3 Vertical speed indicator
4 Compensator nozzle and Pitot tube with static pressure sensor
5 Static pressure (blue)
6 Total head (green)
7 Nozzle (total energy; red)
8 Equalizing reservoir 0.45 liters (approximately 1 US pt.) (blue or colorless)
9 Water drain

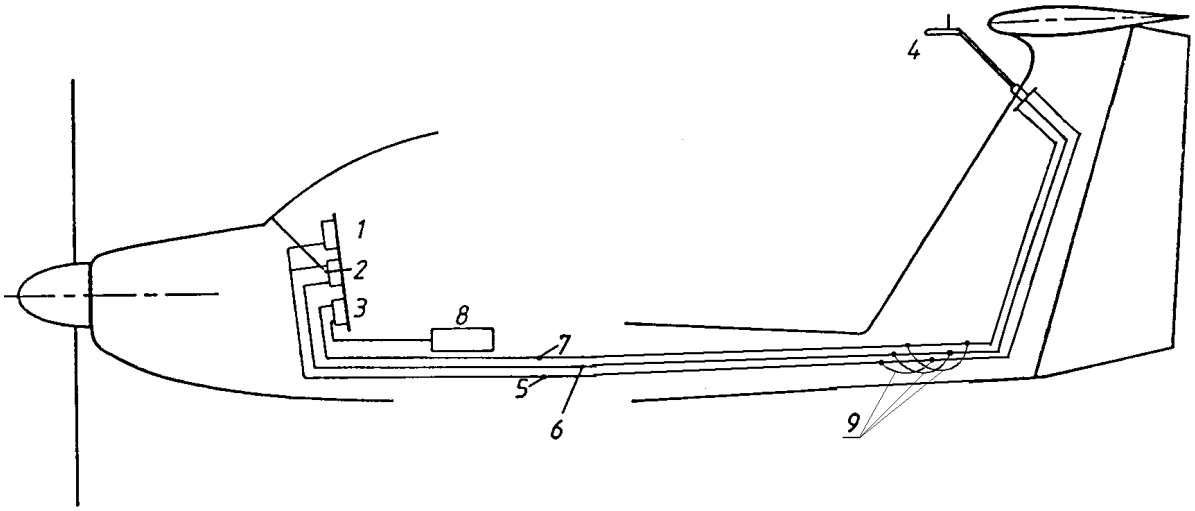
HK 36 R, Serial Nos. 36.332 and subsequent

Water removal: open access hole cover on fuselage tube bottom side; disconnect and empty filters.



HK 36 T-Series

Water removal: open access hole cover on fuselage tube bottom side; disconnect and empty bypass lines.



4.6 PARKING FOR MORE THAN 30 DAYS

4.6.1 PRESERVATION

For standing periods of more than 30 days, the following tasks must be done:

Once only

(1) Engine . . . . . preserve in accordance with the Operator's Manual or the Maintenance Manual of the engine
(2) Fuel system . . . . . fill up completely
(3) Tires . . . . . wipe dry and spray with tire protector
(4) Battery . . . . . remove
(5) Lubricated areas . . . . . lubricate in accordance with Lubrication Schedule
(6) Cabin . . . . . ventilate

Weekly

(1) Fuel system . . . . . remove water deposit using drainer
(2) Wheels . . . . . turn through 3-4 revolutions
(3) Tires . . . . . visually inspect for obvious underinflation
(4) Brakes . . . . . operate 3-4 times

4.6.2 RETURNING TO OPERATION

(1) Battery . . . . . charge and install
(2) Engine . . . . . return to operation in accordance with the Operator's Manual or the Engine Maintenance Manual
(3) Do a daily inspection in accordance with the Flight Manual

4.7 PLACARDS AND INSCRIPTIONS

Placard	Location	Remark
Maneuvering Speed at maximum gross weight: v_A=176 km/h Minimum seat payload, full tank, no baggage ____ Minimum seat payload, full tank, 12 kg baggage ____ Maximum permissible payload ____	Instrument Panel or LH canopy frame	all airplanes except HK 36 TTC-ECO if airspeed indicator is calibrated in [kts]: v_A= 95 kts
Maneuvering Speed at maximum gross weight: v_A=176 km/h Minimum seat payload on seat, 10 kg (22 lbs.) Fuel, no baggage ____ Minimum seat payload, 10 kg (22 lbs.) fuel, 30 kg (66lbs) baggage ____ Maximum permissible payload ____	Instrument Panel or LH canopy frame	For HK 36 TTC-ECO if airspeed indicator is calibrated in [kts]: v_A= 95 kts
This airplane must be operated as a utility category airplane in compliance with the operating limitations as stated in the form of placards, markings and manuals. Maximums Maneuvering Speed 176 km/h (95 kts. / 109 mph) Gross Weight 770 kg (1698 lbs.) Flight Load Factor +5.3 / -2.65 No acrobatic maneuvers, including spinning approved. Altitude loss in stall recovery: 20 m (65 ft) Flight into known icing prohibited. This airplane is certified for the following flight operations as of the date of the original airworthiness certificate: DAY-VFR		For US registered airplanes only: location: canopy frame, LH side
Altitude [m] / [ft.] — v_{NE} (IAS) [km/h] [kts.] [mph] - 2000 - 6500 261 141 162 - 3000 - 9800 246 133 153 - 4000 - 13100 233 126 145 - 5000 - 16400 221 119 137 - 6000 - 19600 210 113 130	Instrument Panel or LH canopy frame	required for U.S. and Canadian registered airplanes only
WARNING Use air brake fixture (hands off) only up to **150 km/h**!		For HK 36 T-Series location: instrument panel or LH canopy frame if airspeed indicator is calibrated in [kts]: v_A= 81 kts

Placard	Location	Remark
Aerobatics and Spin are forbidden!	instrument panel	
GPS not approved for primary navigation.	instrument panel	optional
Landing Light - max. operation: 25 % of engine operating time, no longer than 5 minutes	instrument panel	For models with Rotax 912 A optional (if Landing Light and no external alternator is installed)
Landing Light and Position Lights may only be used for 10 % of engine operating time	instrument panel	For models with Rotax 912 S and Rotax 914 F optional (if Landing Light and no external alternator is installed)
No smoking	instrument panel	
Tie baggage down, max. 12 kg (26 lbs.)	rearward side of baggage compartment	For all models except HK 36 TTC-ECO
Tie baggage down, max. 30 kg (66 lbs.)	rearward side of baggage compartment and outside next to baggage door	For HK 36 TTC-ECO
Air Brakes	next to each air brake lever	For tail wheel models above Serial No. 36.516 and tricycle models
Air Brakes - pull through completely to actuate wheel brakes	next to each air brake lever	For tail wheel models through Serial No. 36.516
Nose Down - Trim - Nose Up	center console next to trim lever	
OFF Carburetor Heat ON	throttle quadrant	
Idle / Full Throttle	throttle quadrant	

Placard	Location	Remark
Propeller Speed Control Take-Off Cruise Feather	throttle quadrant	For airplanes with MTV 21 propeller
Prop.	throttle quadrant	For airplanes with HO V352 propeller
OFF Choke ON	throttle quadrant	except models with hydraulic propeller speed control
Prop. Pitch Control	next to prop. control unit	models with MTV 1 propeller only
PROPELLER FEATHER	on propeller feather grip	models with HO V352 propeller only
Choke pull - ON	instrument panel, center section	models with hydraulic propeller speed control only
Cowl Flap - pull to close	instrument panel, center section	
Cabin Heat pull - ON	instrument panel, center section	
Parking Brake - pull	next to parking brake button	
Fuel Valve OPEN / CLOSED	next to fuel shut-off valve	
L / R Fuel Tank Selector Valve	next to fuel tank selector valve	HK 36 TTC-ECO only
Tow-Rope	above caution light for towing device	optional, light is not required in all countries
Tow-Rope Release	on release lever for tow-rope	optional
ON	next to the on position of each switch	
Power Flight / Soaring	next to the mode switch	

Placard	Location	Remark
Main Bus / Master Switch / or / Master Oil press. / Oil temp / CHT TCU / or / Turbo Battery/Main CB / Generator / Gener. Control Fuel Qty / Fuel LH / Fuel RH / Fuel pump Avionics / NAV / COM / or / Radio Position Lights / Landing Lights / ACL GPS / ADF / MKR / XPDR / QDM / QDR Attitude Gyro / Direction Gyro / Turn & Bank IC / or / Intercom Volume / VOR / Fuel Pressure Differential Braking	instrument panel, next to circuit breakers, switches, indicators and caution or warning lights	If an engine with Suffix -01 is installed CHT is replaced by CT. depending on model and equipment installed All circuit breakers, switches, indicators and caution or warning lights must be placarded.
OFF / Turbo Control ON	next to TCU switch	colored red, models with Rotax 914 F only
Cabin Air	LH and RH air vent	
Headset Pilot / Headset Copilot	backrest, top side	optional
CANOPY JETTISON: Pull both handles fully rearward. Push canopy up and away.	next to each lever for canopy jettison	colored red 2 pcs.
Max. 250 °C	cylinder head temperature indicator	HK 36
Max. 150 °C	cylinder head temperature indicator	models with Rotax 912 A only
Max. 120 °C	Coolant temperature indicator	If an engine with Suffix -01 is installed

Placard	Location	Remark
usable 77 l (20.3 gal.)	on fuel quantity indicators	HK 36 TC, TS, TTC, TTS.
usable 53 l (14 gal.)	on fuel quantity indicators	HK 36 TTC-ECO only, 2 pcs.
max. difference L/R: 50 % = 27 l (7.1 gal.)	next to fuel quantity indicators and next to fuel selector valve	HK 36 TTC-ECO only, 2 pcs.
55 l Aviation Grade 100 LL or MOGAS (96 oct. ROZ) usable: 54 l or 80 l Aviation Grade 100 LL or MOGAS (96 oct. ROZ) usable: 79 l	next to tank filler cap	HK 36 or HK 36 R with SB 36 not installed
55 l Aviation Grade 100 LL or MOGAS (96 oct.) or unleaded Auto Super (95 oct.) usable: 54 l or 80 l Aviation Grade 100 LL or MOGAS (96 oct.) or unleaded Auto Super (95 oct.) usable: 79 l	next to tank filler cap	HK 36 or HK 36 R with SB 36 installed
79 l (20.9 US gal.) AVGAS 100 LL, MOGAS, Auto Super min. 95 ROZ leaded or unleaded usable: 77 l (20.3 US gal.)	next to tank filler cap	HK 36 TS, TC, TTS, TTC
55 l (14.5 US gal.) AVGAS 100 LL, MOGAS, Auto Super min. 95 ROZ leaded or unleaded usable: 53 l (14.0 US gal.)	next to tank filler caps	For HK 36 TTC-ECO, 2 pcs.
Hydraulic Fluid 4	on or next to brake fluid reservoir(s)	1 or 2 pcs.
Ultimate load of breaking piece: 400 daN (899 lbs.) or Ultimate load of breaking piece: 300 daN (674 lbs.)	towing assembly mount	models with towing assembly only (optional) models with Rotax 912 A: 300 daN models with Rotax 914 F: 400 daN

Placard	Location	Remark
2.1 bar / 30 psi	next to main wheels	For tail wheel models
1.2 bar / 17 psi	next to main wheels	For tail wheel models if OÄM 36-369 is installed:
3.1 bar / 45 psi	on rudder beside tail wheel	For tail wheel models
2.3 bar / 33 psi	next to main wheels	For tricycle models
1.8 bar / 26 psi	next to nose wheel	For tricycle models
Oil 3.5 l	oil filler cap	HK 36
Oil 3.0 l	oil filler cap	For airplanes with Rotax engine
SAE 15 W-40 or according to Flight Manual	oil filler cap	
C A U T I O N ! DO NOT USE AVIATION GRADE ENGINE OIL!	oil inspection lid in upper cowling, inside	colored red models with Rotax engine only
Coolant	coolant dispatcher vessel; equalizing reservoir	For airplanes with Rotax engine 2 pcs.
Gen. Relay / Main Fuel Pump / Gen. Contr. Relay F 2439-01 / F 2820-02 / F 2437-01	RH side of firewall, next to glass fuses	models with Rotax 914 F only
RPM / MANIFOLD PRESSURE 2500 max. 30 2400 max. 30 2200 max. 24 2000 max. 22 1500 max. 17	instrument panel	HK 36 with MTV -1 propeller only

Placard	Location	Remark
RPM / MANIFOLD PRESSURE 2500 max. 30 2200 max. 30 2100 max. 27 2000 max. 26 1500 max. 21	instrument panel	models with HO V352 propeller only
The differential braking system may only be activated during taxiing.	instrument panel	tail wheel models, optional
Power connector should be used **only** on the ground. Maximum load: **2 A**	instrument panel	optional
Switch COM 2 OFF when using landing light or position lights.	instrument panel	
START CHECK 1. Mass & Balance checked 2. Main bolts secured 3. Fuel valve OPEN 4. Fuel quantity checked 5. Canopy locked 6. Seat harness on & secure 7. Propeller check 8. Magneto check 9. Carburetor heat OFF 10. Controls free 11. Trim checked 12. Parking brake released 13. Air brakes locked 14. Electric fuel pump ON	instrument panel	HK 36 HK 36 R HK 36 TS HK 36 TC

Placard	Location	Remark
START CHECK 1. Mass & Balance checked 2. Main bolts secured 3. Fuel valve OPEN 4. Fuel quantity checked 5. Canopy locked 6. Seat harness on & secure 7. Propeller check 8. Magneto check 9. Carburetor heat OFF 10. Controls free 11. Trim neutral 12. Parking brake released 13. Air brakes locked 14. Turbo control ON 15. Fuel booster pump ON	instrument panel	For HK 36 TTS and HK 36 TTC
START CHECK 1. Mass & Balance checked 2. Main bolts secured 3. Baggage door secured 4. Fuel valve OPEN 5. Fuel quantity checked 6. Fuller tank selected 7. Canopy locked 8. Seat harness on & secure 9. Propeller check 10. Magneto check 11. Carburetor heat OFF 12. Controls free 13. Trim neutral 14. Parking brake released 15. Air brakes locked 16. Turbo control ON 17. Fuel booster pump ON	instrument panel	HK 36 TTC-ECO only

4.7.1 HANDLING OF IDENTIFICATION DATA

No person shall remove, change, or place identification information on any airplane, engine, propeller, propeller blade, or propeller hub, without the approval of the competent national Airworthiness Authority.

If a deviation from the procedure above is necessary, any person performing maintenance work may in consultation with the competent national Airworthiness Authority:

- Remove, change, or place the identification plate on any airplane, engine, propeller, propeller blade, or propeller hub.
- Remove an identification plate, when necessary during maintenance operations.
- No person shall install an identification plate, removed in accordance with the procedures above, on any airplane, engine, propeller, propeller blade, or propeller hub other than the one from which it was removed.

4.8 MAINTENANCE PRACTICE

4.8.1 REPLACE A ROLLER CAGE

1. Remove push rod.
2. Inspect push rod for rub marks, chafing, deformation and corrosion.
3. Drill out rivets with max. Ø 4.2 mm drill.

CAUTION

Do not damage the composite structure.

4. Remove roller cage and debris.
5. Install new roller cage.

NOTE

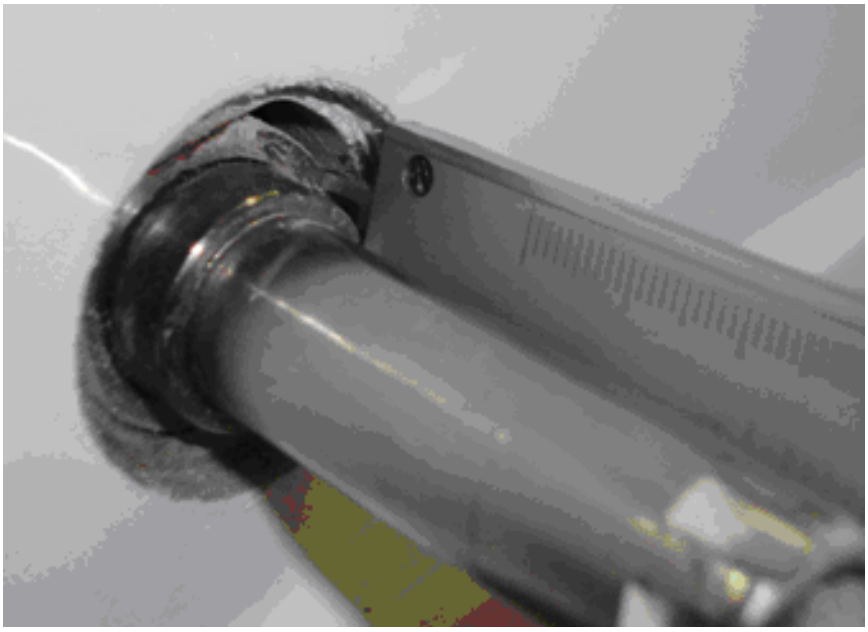
Some roller cages are in remote locations like the fuselage tube or the wing. If they are not easily accessible for replacement auxiliary tools and fixtures are necessary for replacement. For some roller cages in the wings additional access holes must be cut in order to be able to replace the roller cages.

NOTE

The original roller cages are attached with rivets. To simplify replacement in remote locations the roller cages can be replaced with roller cages that are attached with bolts.

4.8.2 ADJUSTMENT OF B-BOLT AXIAL PLAY

1. Measure and record B-Bolt length from Tube and Bolt acc. picture



2. Remove the safety screw from B – bolt tube.
3. Remove B – bolt from the tube.
4. Install the shim through the cable hole in the fuselage. Position the shim with a centering pin.

NOTE

Make sure the axial play is below 0.2 mm.

5. Install the B – bolt to the same length recorded in step 1.
6. Install the safety bolt on the tube.

4.8.3 REPLACE THE MAIN BOLT BUSHINGS

NOTE

Do not change more than one bushing at a time.

1. Level aircraft longitudinally (refer to Section 4.3.1).
2. Level aircraft laterally using the A-bolts as reference
3. Select a fixed reference point on the installed wings and measure its dihedral using a calibrated digital level/protractor/etc. Using the same reference point, measure the dihedral on the opposite wing. Ensure that the dihedral is within the limits according adjustment report. If not within limits, do not proceed any further and contact DAI for further instructions.
4. Using a plumb bob, mark points on the floor corresponding to the leading edges of the wings at the roots, and at the outboard end (just inboard of wingtip seam). Draw a line, connecting to the outboard marks. Measuring the distance form this line to the inboard mark provides a measurement of sweep. Make sure that the sweep is within the limits according adjustment report. If not within limits, do not proceed any further and contact DAI for further instructions.
5. Support the wing tip with an appropriately cushioned wing trestle to ensure wing position.
   - Wing should be supported load free, so that main bolt s are easy moveable.
   - Mark and fix trestle.
6. Remove wings.
7. First remove a spar stump bushing before a bulk head bushing.
8. Replacing the bushing:
   - Cut the bushing parallel to the longitudinal axis

CAUTION

Do not damage the composite structure.

   - Remove the old bushing
   - Prepare the area for pasting the new bushing
   - Check clearness by dry wing assembly
9. Paste the new bushing with thickened resin.

10. Assemble the wing at the fuselage and lift it on the prepared jacks.

CAUTION

Only PUSH the main bolt into the bushings.

11. Allow bond line to cure without changing the position of the wing in relation to the fuselage. Remove the wing after curing.
12. Repeat the procedure for every changing bushing.
13. Postcure with main bolt installed in accordance with the AMM.

4.8.4 ELECTRICAL BONDING SYSTEM TEST

The Electrical Bonding System Test is done by Low resistance measurements for bondings of controls and other metal parts of the airplane. The airplane must be in a serviceable condition during the tests, except that the engine cowlings must be removed.

Do the low resistance bonding measurements with a milliohmmeter and Kelvin probes. The test current must be approximately 2 A.
All measurements are done between the reference point RP 01 on the electrical shelf and the test points.

If the measure resistance is too high, disconnect and clean the connections of the electric bonding system surfaces, sand the mating surfaces if neccessary. Then reconnect and seal them with bonding lacquer.

Special Tools: Low Resistance Measure Instrument

Test Point	Description	**maximum permitted Resistance** (mOhms)	**measured Resistance** (mOhms)	**OK Signature**
TP 1	Engine exhaust	20		
TP 2	Engine mount	10		
TP 3	LH side of engine firewall	30		
TP 4	LH instrument panel	50		
TP 5	RH instrument panel	50		
TP 6	Radio mountings	50		
TP 7	Co-pilot stick	500		
TP 8	Pilot stick	500		
TP 9	Fuel tank filler	150		
TP 10	Fuel tank	150		
TP 12	LH wheel	200		
TP 14	RH wheel	200		

Notes:

RP01 Indicates bonding reference point

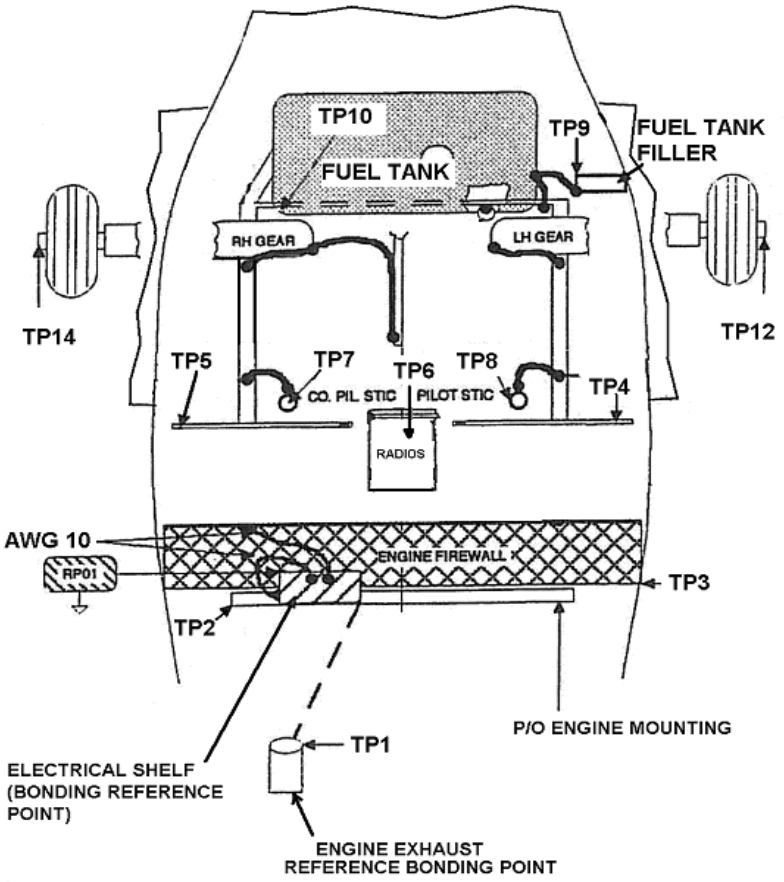
Indicates bonding connection by AWG 16 per MIL-W-22759-16

Indicates bonding connection by tined copper braid AWG15 per ASTM-B-33

Indicates bonding connection point

Groundplane by copper foil 35u

Engine firewall



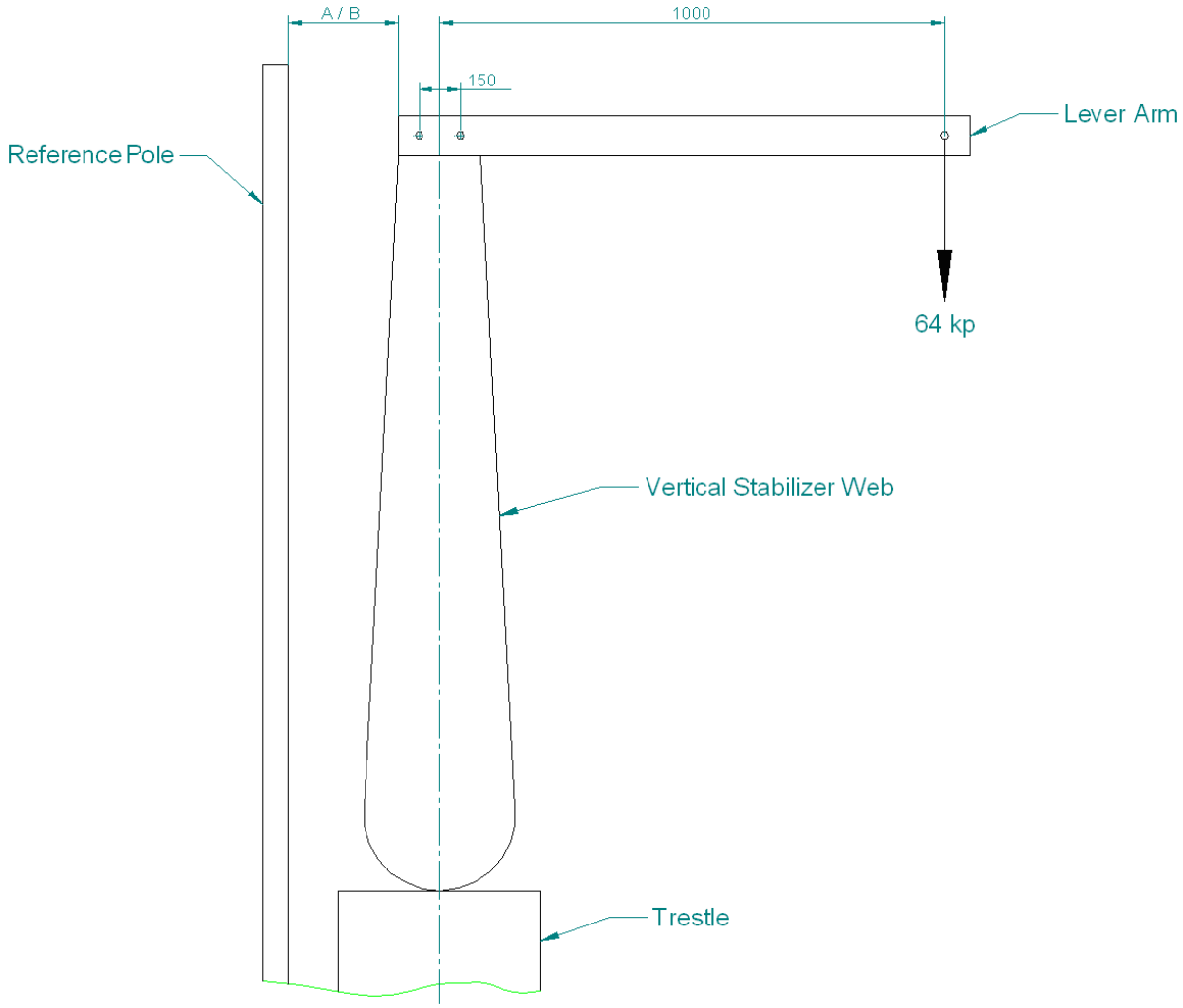
4.8.5 FUSELAGE TORSION TEST

WARNING

NEVER DO THE FUSELAGE TORSION TEST UNLESS INSTRUCTED BY THE MANUFACTURER. STRICTLY ADHERE TO THE PROCEDURE AND THE PRESCRIBED LOAD VALUES. OVERSTRESSING WILL LEAD TO STRUCTURAL FAILURE.

The fuselage torsion test is a limit load test for the fuselage tube. The results can indicate delamination and bonding failures. Because the loads of the fuselage torsion equal the highest design load expected during operation, repeated fuselage torsion test will lead to fatigue damage.

1. Lift the fuselage tube on the trestle. To avoid falling down, support it at the end (directly in front of the tail wheel or aft of the access cover under the vertical stabilizer).
2. Prepare a cantilever i.a.w. drawing below.
3. Fix the fuselage against rotation with a trestle under the A-bolt.
4. Fix both the trestle under the fuselage tube and the reference pole to the floor.
5. Fix the cantilever at the rear horizontal stabilizer mounting bolts and secure it against slipping.
6. Measure distance between the reference pole and the cantilever.
7. Attach a weight of 64 kp on the cantilever with a lever arm of 1000 mm (40 in) to the fuselage symmetry plane.
8. Measure distance between the reference pole and the cantilever again.
9. Compare the two measurements.
   - If the difference is more than 30 mm (1.2 in), inspect for structural damage and delamination (especially on the ring frames). Contact Diamond aircraft for repair instructions.


A / B
1000
150
Lever Arm
Reference Pole
64 kp
Vertical Stabilizer Web
Trestle

CHAPTER 5

REPAIR INSTRUCTIONS

5.1 DESCRIPTION OF STRUCTURAL COMPOSITE PARTS

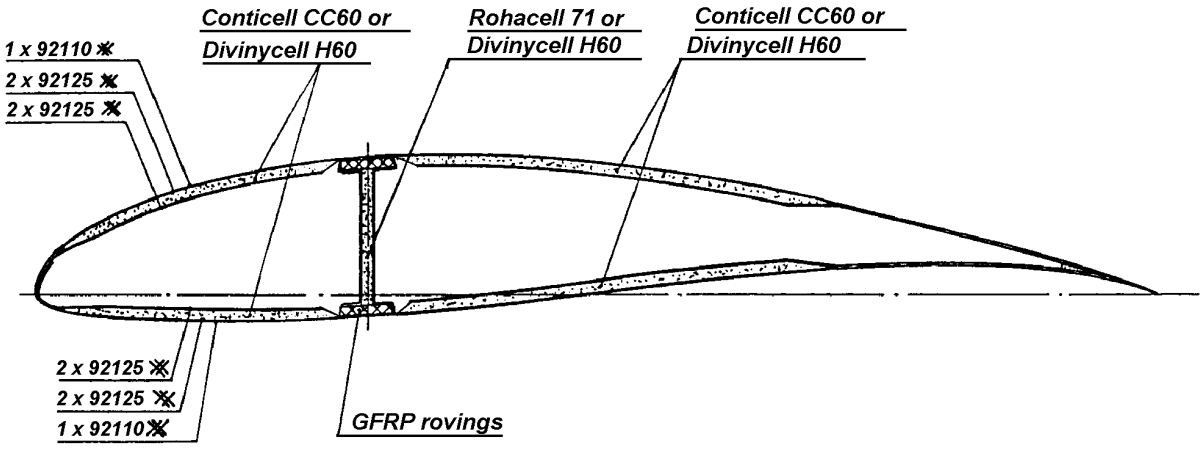
5.1.1 WING

Skin

The primary structure of the wing consists of a sandwich shell and a spar. The skin is very strong, in order to allow for the high aerodynamic torsion effect on the wing. The skin sandwich consists of diagonal glass fabric and 8 mm foam core.

Spar (Serial Nos. 36.301 through 36.516)

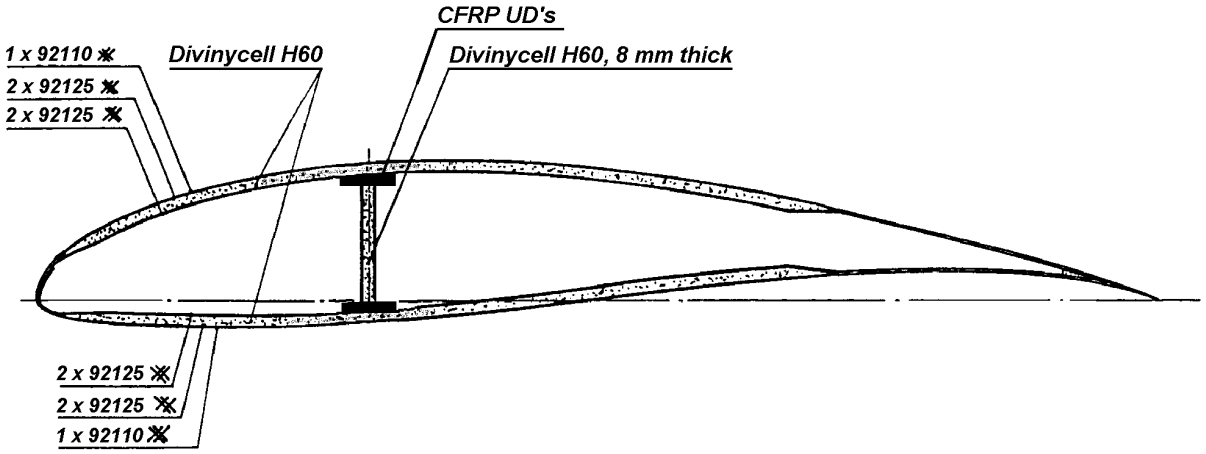
The caps of the I-shaped spar consist of glass rovings. The spar web consists of diagonal glass fabric and 8 mm foam core. In the area of the spar, the wing skin sandwich is recessed, so that the spar caps lie on the outer skin.



Wing (Serial Nos. 36.301 through 36.516)
Fiber direction: ±45° to spar.

Spar (Serial Nos. 36.517 and subsequent)

The caps of the I-shaped spar consist of CFRP UD bands. The sandwich web consists of diagonal layers and 8 mm foam core. In the area of the spar, the wing skin sandwich is not recessed.



Wing (Serial Nos. 36.517 and subsequent)
Fiber direction: ±45° to spar.

Wing tanks (HK 36 TTC-ECO only)

In front of the wing spar, a GFRP trough is bonded to the wing upper skin. Copper mesh laminated into the walls provides electrical conductivity.

NOTE

In deviation from the rest of the structure, vinyl ester resin is used for the wing tanks (instead of epoxy resin).

The part of the wing skin that forms the upper wall of the fuel tank is covered with one 92125 layer impregnated with vinyl ester resin.

Wing-Fuselage connection

The spar stump penetrates the fuselage to the centerline. Each wing is attached to the fuselage with three bolts. The removable main bolt is placed close to the fuselage centerline and lies in the flight direction. A- and B-bolts are attached to the root rib of the fuselage in transverse direction.

The main bulkhead of the fuselage serves as a bridge for the two spars. The wing root rib and the spar stump web are fabricated in one piece. Repairs of the wing spar, the spar stump and the root rib may only be done by the manufacturer or a repair station authorized by the manufacturer.

For Wing removal refer to Airplane Flight Manual, Section 4.

5.1.2 AILERONS

Construction

The aileron consists of two half-shells in sandwich design. Carbon fiber cloth is used beside glass fiber cloth to increase torsional stiffness. The fiber direction is 45° to the aileron axis.

The aileron is attached to the wing by means of five CFRP hinges. These hinges are bonded to the wing, and integrated into the upper skin of the aileron.

Removal and installation

Removal of the aileron is only necessary when major damage occurs to the aileron or to the wing in this area.

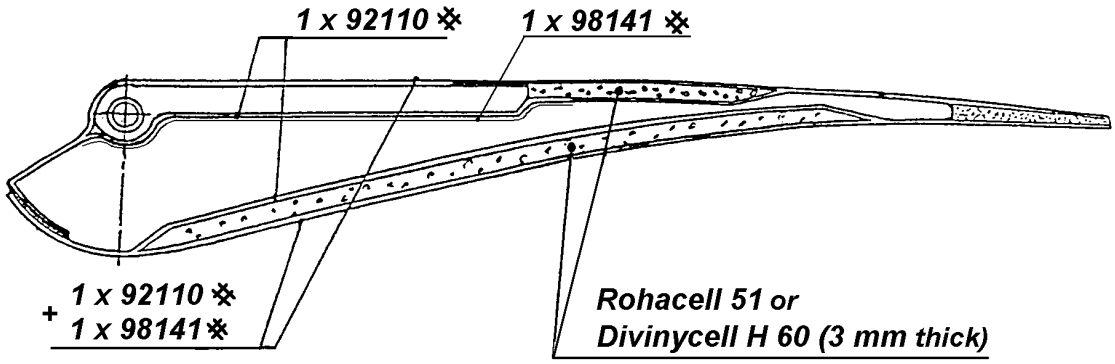
To remove the aileron, the push-rod which is connected to the aileron horn with an M6 bolt must be disconnected. Then remove the adhesive tape and deflect the aileron upward, exposing the hinges. Remove safety pins, extract hinge bolts.

To install the surface, reverse the procedure. The gap between aileron and wing must be sealed (e.g. with adhesive cloth tape) with the wing removed from the fuselage and the aileron deflected to its full down position.

Repair information

If the ailerons have been damaged, the areas around the hinges must be inspected thoroughly.

After the aileron has been repaired, the mass and the residual moment must be re-determined before installing the surface. Refer to Section 4.4, Masses and Residual Moments of Control Surfaces.



5.1.3 RUDDER

Construction

The rudder consists of two GFRP sandwich skins which have 45° fiber direction only. Two roving stringers (HK 36 and HK 36 R) or two UD bands (other models) run over the whole length of the rudder and from the lower mounting rib rearward to the trailing edge. Several rigid foam ribs reinforce the rudder. The lower edge serves as a buffer and has a very thin skin.

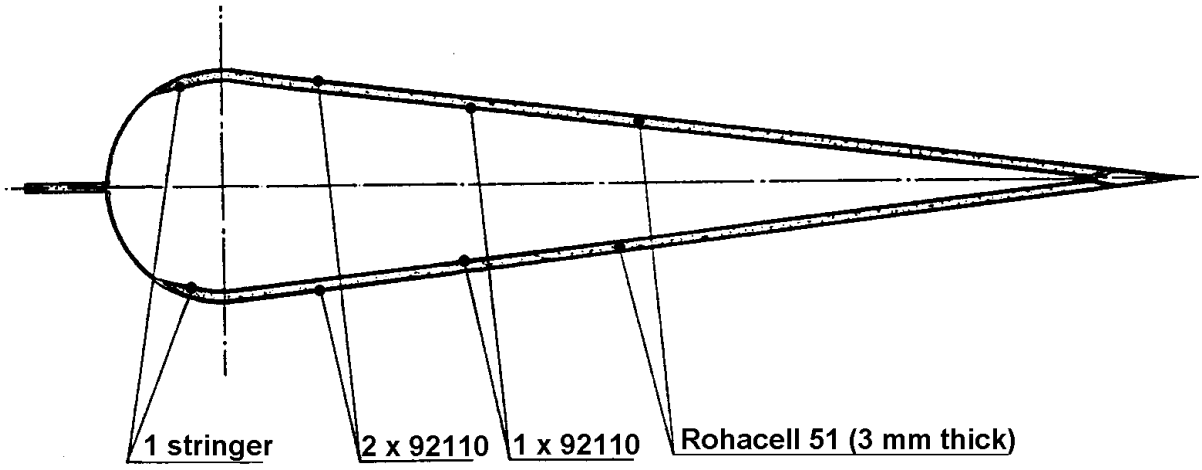
The lower rudder mount is a C-shaped metal plate to which the rudder cables and eventually the springs for the tail wheel steering are attached. This mounting plate is screwed to the lower mounting rib which transmits control forces into the rudder.

The rudder upper hinge is a brass bush, bonded into the upper rudder mounting rib. The hinge is completed by a 6 mm bolt which is attached to the vertical stabilizer.

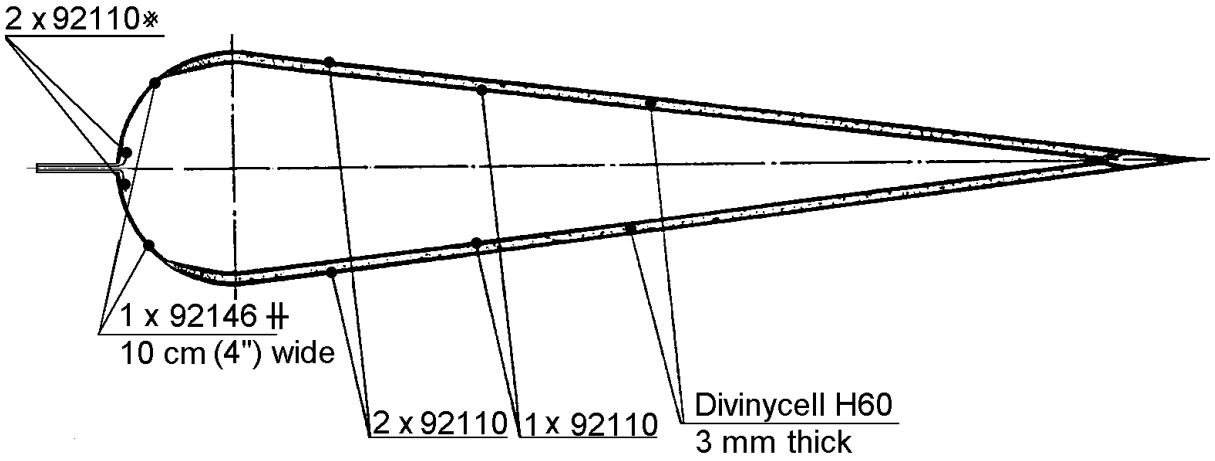
Removal and installation

To remove the rudder, first remove the horizontal stabilizer. Separate the mounting plate from the rudder by removing the two M6-nuts. Swing the rudder approx. 2 cm ($^3/_4$ in.) rearward, then remove it by lifting.

To install the rudder, reverse the procedure.



HK 36 and HK 36 R rudder
lower edge: only 2*92110, 45°
1 stringer = 51 * EC 9 - 756 tex (K43) or 16 * EC 10 - 2400 tex (K43)



HK 36 T- Series rudder

5.1.4 HORIZONTAL TAIL

Construction

The horizontal stabilizer is a sandwich design type. Two root ribs transfer the torsional loads of the skin to the bolts. A spar absorbs bending and shearing loads. Two consoles which are able to hold the wing support fixtures are attached to the spar web.

The horizontal stabilizer mount has two bolts lying in flight direction. Two swing bearings mounted in the web of the horizontal stabilizer are slipped onto these bolts. The forward fastening of the horizontal stabilizer is a bolt with hexagon socket head. It goes through the fitting near the nose of the stabilizer and is screwed into a nut which is fixed to the auxiliary web of the vertical stabilizer. This is done after slipping the horizontal stabilizer onto the two bolts. The hexagon socket bolt is secured with a locking ring.

The GFRP sandwich elevator is held in place by 5 hinges, which are attached to the rearward web of the horizontal stabilizer.

Elevator removal

| *HK 36 and HK 36 R*: Remove lock wires; remove two outer bolts and nut of center hinge; remove elevator in a rearward direction.

other models: Remove maintenance hole covers on horizontal stabilizer tips; remove split pins and extract outer journals; remove both attachment bolts for elevator horn; remove elevator in rearward direction.

Elevator installation

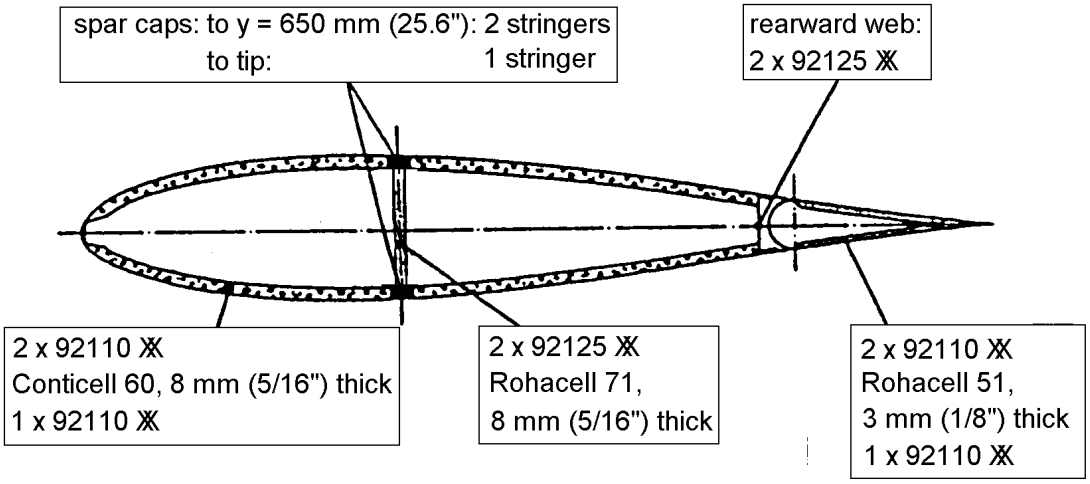
For installation, reverse the procedure.

CAUTION

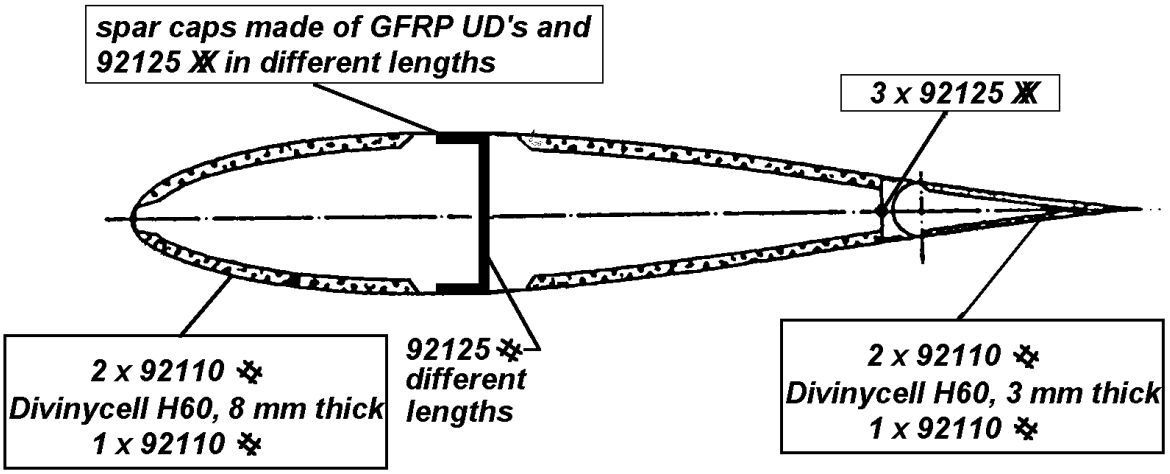
Do not forget the safetying!

Repair information

After repair or repainting of the elevator, mass and residual moment must be re-determined (see Section 4.4).



Horizontal tail of the HK 36 and HK 36 R
1 stringer = 51 * EC 9 - 756 tex (K43) or 16 * EC 10 - 2400 tex (K43)



Horizontal tail of the HK 36 T-Series

5.1.5 FUSELAGE

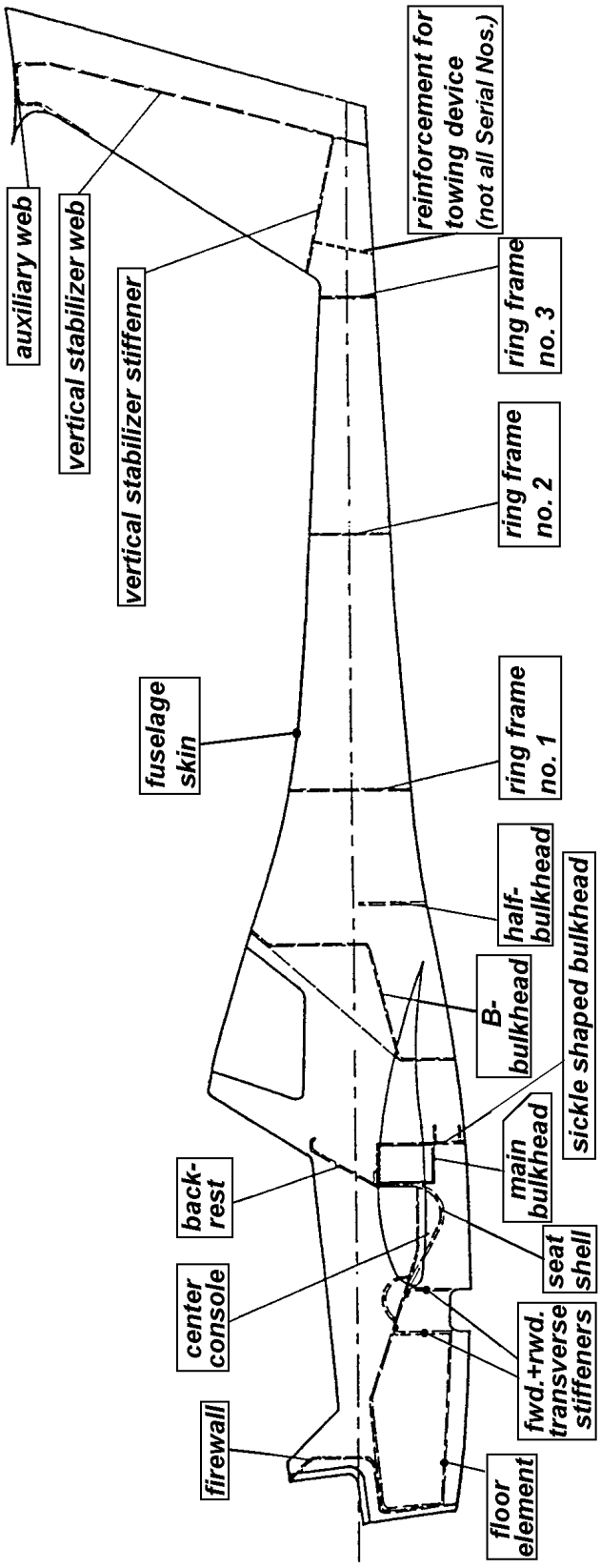
The fuselage is manufactured in GFRP semi-monocoque construction with several bulkheads but without rigid foam or supporting stringers.

The number of layers and their orientation depend on the load in the respective cross sections. Therefore, the fuselage skin has very different laminate thicknesses and fiber orientations. Prior to a repair of the fuselage skin or the built-in parts, contact Diamond Aircraft and order a fuselage layup plan.

5.1.6 MAIN LANDING GEAR MADE OF GFRP

All tail wheel models are equipped with a main landing gear strut made of GFRP.

Due to the complex structure of the GFRP strut, not all damage can be repaired. Before repairing the landing gear strut, contact Diamond Aircraft.


auxiliary web
vertical stabilizer web
vertical stabilizer stiffener
reinforcement for towing device (not all Serial Nos.)
ring frame no. 3
ring frame no. 2
fuselage skin
ring frame no. 1
half-bulkhead
B-bulkhead
sickle shaped bulkhead
main bulkhead
back-rest
seat shell
center console
fwd.+rwd. transverse stiffeners
firewall
floor element

5.2 COMPOSITE REPAIR, STANDARD PRACTICE

5.2.1 STRUCTURAL INSPECTION METHODS FOR COMPOSITE

A. Types of Inspection

In the inspection checklist, three types of inspections are specified:

V Visual Inspection

T Tap Test

F Functional or Fit Check

A.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 damage, e.g. by pushing slightly on it. Check for abnormal flexibility or noises. Broken laminate often cracks under load. Damage to the core may also be visible. In that case, the surface is dented. However delamination between foam core and skin cannot always 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 a bright light shines on the surface 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. Because the cured paste is white, it can be difficult to tell the difference between this paste and 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 green or brown in colour, white areas can indicate

damage. If the part is painted, 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 is in good condition. UV light can also damage the paint. 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 residue of the cleaner off immediately.

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.

A.2 Tap Test

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.

A.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.

5.2.2 DAMAGE CLASSIFICATION

If the airplane is damaged, first determine the extent of damage. White areas indicate damage to GFRP laminate.

After a hard landing, the airplane, must be inspected, even if no visible damage is apparent. In particular, cracks in the paint finish indicate possible damage to the outer laminate or the GFRP parts built in (e.g. bulkheads).

Should there be doubt whether the crack area is damaged, the paint must be removed. Steel fittings, such as shear bolts, horizontal tail mount, etc. must be inspected thoroughly for cracks and white spots in the adjacent structure; sometimes the crack continues beneath the surface where it is invisible.

In case of doubt, contact Diamond Aircraft.

In the following cases, repair work may only be performed by the manufacturer or an authorized repair station:

* damage to the primary structure, e.g. wing spar, horizontal stabilizer spar, main bulkhead, landing gear, root rib;
* damage to fittings of wing, main bulkhead, stabilizer, landing gear, engine, etc.;
* two-dimensional damage to the skin of wing, fuselage or stabilizer, if the diameter is greater than 15 cm (6 in.);
* in particular: broken fuselage tube, broken wings, broken control surfaces.

5.2.3 REPAIR OF COMPOSITE PARTS

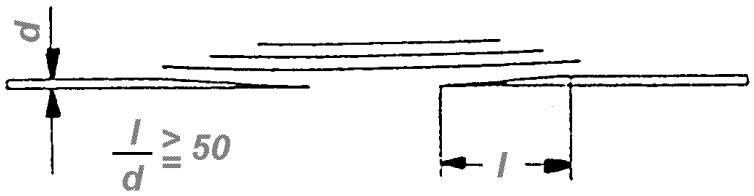
Repair work must be performed extremely carefully and only by authorized personnel. The outer skin is a load carrying member. Any failure of this structure can have serious consequences.

It is very important that the resin mixture has the exact proportion (± 0.5 %) and that only clean vessels are used. Do not use brushes that have been in contact with oil, grease or something similar, even if they have been washed. New brushes are best utilized.

The ratio of glass weight to resin mixture weight should be approximately 1:1.

As when working with plywood, the orientation of the fibers (parallel or diagonal) is very important to ensure the strength of the laminate. The number of cloth layers that is required to provide the original strength can be determined from the layup plans which are available from the manufacturer. A piece of old damaged laminate can be removed and set on fire. The resin will burn and the glass fabric remains. Cloth types, number of layers and orientations can then be identified.

Chamfer the laminate around the damage (ratio of laminate thickness to chamfer length: 1:50, chamfer length per layer: min 20 mm (0.8 in.)), and clean the area (eventually with uncontaminated carbon tetrachloride or acetone). Lay the cloth patches into the area, the largest patch first. For larger holes, use a piece of plywood (as described in Section 5.2.6, Damage to the Entire Sandwich), because wet laminate alone should not bridge more than 20 mm (0.8 in.).



Sand the repair area shortly before laying the wet laminate to prevent the surface from getting dirty. The sanded areas must not be touched and must be cleaned thoroughly with a vacuum cleaner after sanding. Before laying the laminate, lightly coat the repair area with resin. Lay the cloth patches into the repair area in their respective orientations and impregnate them until the surface has a matt finish. The largest patch comes first, the smallest is the last. Avoid dust and grease!

It is important to work up the resin before the pot life is over (at least 20 minutes at 20 °C (68 °F), see resin manufacturer's specifications).

At room temperature, the resin hardens in approximately 24 hours. The area may then be sanded (not the skin in the center, only the edges), primed, and painted.

In order to reduce hardening time, heat may be applied with a heat fan. Build a small foil tent over the repair area and blow hot air into it. This will prevent local overheating, which would cause blisters in the fabric.

Post cure the repaired area for 14 hours at 55 °C (131 °F).

As alternative post-cure cycle the repaired laminate must have a temperature of 55°C (131°F) to 60° C (140°F) thoroughly for at least 6 consecutive hours.

5.2.4 DAMAGE TO GFRP SANDWICH PARTS

There are two common damages to sandwich parts:

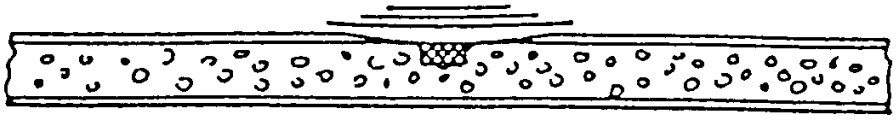
* only the surface (outer skin) is damaged
* the whole sandwich construction (outer skin, foam core, inner skin) is broken

5.2.5 DAMAGE TO THE OUTER SKIN

To find out if the laminate has separated from the rigid foam around the damage, inspect this area by tap test. Remove the outer skin, that has separated, with a sanding disk, a sanding block or a sharp knife. Then chamfer the fabric around the damage area i.a.w. Section 5.2.3.

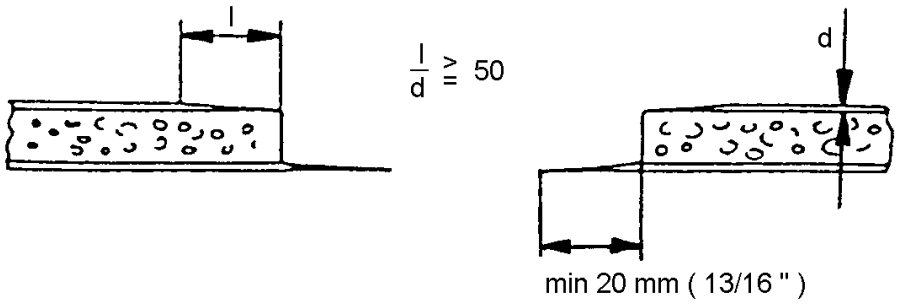
After chamfering, remove the dust with a vacuum cleaner. The pores of the rigid foam must also be open and clean. If the area is contaminated with oil or grease, clean it with uncontaminated carbon tetrachloride or acetone.

Repair the damage of the foam core with resin and Microballoons using a spatula. For repair of the outer skin refer to Section 5.2.3.

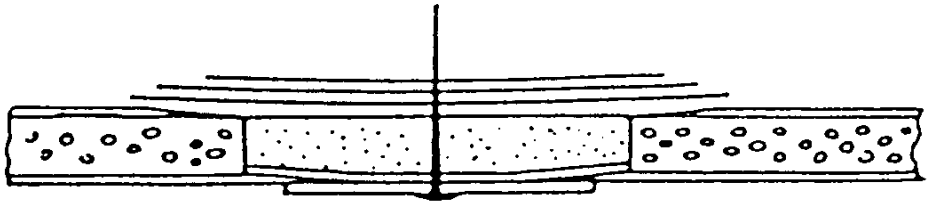


5.2.6 DAMAGE TO THE ENTIRE SANDWICH

If the inner skin is damaged, first remove the outer laminate that has separated from the foam core. Remove the foam core that is disbonded from the inner skin. To repair the inner laminate, remove the foam core until a rim of inner laminate at least 20 mm (0.8 in.) wide is available. Remove all residue of the foam core. Carefully chamfer the inner and outer skin (refer to Section 5.2.3)



For small repairs, bond a thin piece of plywood to the inner skin from the inside. The plywood can be inserted through the skin if the hole has an elongated shape. A nail through the plywood allows it to be held tightly against the inner skin (see sketch). The plywood must lie close to the skin to prevent kinks in the fabric. Lay the cloth patches of the inner skin. Then fill the hole with resin and Microballoons. After pre-curing sand the surface and repair the outer skin i.a.w. Section 5.2.3.



For repair of larger damages in a sandwich structure, use a piece of foam core (Conticell 60, Rohacell 71, or Divinycell H60) instead of the Microballoons to save weight. Prepare a piece of foam core that fits the hole exactly. The pores of the inner surface should be closed with resin and Microballoons with a spatula. Lay the inner laminate on the foam insert. When using the foam insert, the plywood piece is not needed. After pre-curing of the foam insert, it can still be bent (use a fan heater if necessary). Sand the insert and paste it in the hole using a mixture of resin and cotton flakes.

Pre-cure and then sand the upper surface, close the pores with resin and Microballoons and lay the outer laminate (refer to Section 5.2.3).

5.2.7 PAINTING

When the laminate in the repair area is hardened and cured (see Section 5.2.3), sand the area with no. 80 sandpaper to remove the major unevenness. Smaller unevenness is primed. Then use no. 150 sandpaper 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. Refer to Section 5.4 for information on paint.

5.3 REPAIR PROCEDURES

5.3.1 REPAIR SCHEMES

For repairs, for which the repair procedure can not be generated with the information in the AMM an approved repair scheme must be used. Approved repair schemes can be obtained from Diamond Aircraft.

5.3.2 CRACKS IN LEADING EDGE BONDS

CAUTION

Cracks in the paint on a leading edge bond require a thorough examination of the bond.

Cracks in the leading edge bond of a control surface

Cracks in the leading edge of a control surface are repaired by embedding a 92110 layer, observing the correct chamfer ratio.

Cracks in the wing leading edge bonds

(1) Determine crack depth. If the crack continues under the laminate of the outer skin: Remove laminate and thickened resin until the end of the crack is reached.
   - Case 1: Crack does not continue under the laminate of the outer skin, no laminate needed to be removed
   - Case 2: A laminate strip with a maximum width of 10 mm (0.4 in.) (parallel to the wing leading edge) had to be removed.
   - Case 3: A laminate strip wider than 10 mm (0.4 in.) (parallel to the wing leading edge) had to be removed.

(2) Chamfer remaining laminate. Minimum chamfer lengths:
   - Case 1: 15 mm (0.6 in.)
   - Case 2: 30 mm (1.25 in.)
   - Case 3: 60 mm (2.5 in.)

(3) Remove sanding dust with a vacuum cleaner or compressed air.

(4) If the repair area has come in contact with dirt or grease, it must be cleaned with

uncontaminated tetrachloride or acetone.

(5) Fill groove with resin and Microballoons.

(6) Prepare impregnated laminate **diagonally** on plastic foil. See Item (2) for chamfer lengths.

Case 1: 2 x 92110 layers

Case 2: 2 x 92125 layers

Case 3: 4 x 92125 layers

(7) Apply resin to repair area, lay prepared laminate and remove plastic foil.

(8) Cure and finish the repair (refer to Section 5.2.3).

5.3.3 REPAIR OF THE CANOPY

If a crack in the canopy is detected, a stop hole should be drilled immediately. This will prevent the crack from going further. If the crack is longer than 10 mm (0.4 in.), it should be repaired as follows:

1. Make a 3 mm ($^1/_8$ in.) wide V-groove along the crack.
2. Align and fix the edges.
3. Apply acrylic glass cement (e.g. Röhm Acrifix 92) to the groove. Since this cement hardens only in light, it should be exposed to direct sunlight (hardening time 3 to 6 hours). If this is not possible, an artificial light source may be used.
4. After the cement has hardened, remove the bead with a small milling cutter, sand the repair area with smooth sandpaper and finally apply polishing paste.

5.3.4 REPAIR OF FITTINGS AND CONTROL SYSTEM PARTS

Repair of fittings and control system parts must never be carried out without contacting the manufacturer. The parts mostly consist of aviation steel 1.7734 or 1.7214, which is only weldable with T.I.G.-welding. Since the steel quality cannot be identified visually, it is necessary to refer to the type design.

All major fitting bolts are also made of this material, quenched and tempered to condition 6. Therefore, only the original bolts made by the manufacturer may be used.

5.3.5 REPAIR OF THE FIREWALL INSULATION

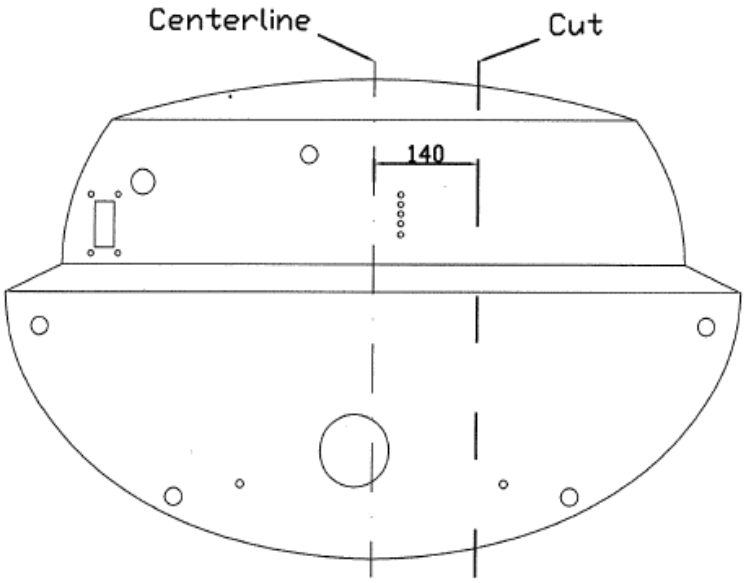
(1) Remove all parts of the firewall forward engine installation and all cables routed through the firewall.

(2) Remove the sealant (fire resistant resin) of the firewall sheet metal.

(3) Cut the sheet metal 140 mm (5.5 in) to the right from the centerline (front view).

CAUTION

Do not damage the composite structure.



(4) Carefully remove sheet metal from firewall.

(5) Remove all firewall insulation completely from firewall sheet and firewall bulkhead.

(6) Inspect the firewall bulkhead for cracks, delamination and heat damage (particularly around the heating valve). Repair any damage found i. a. w. Section 5.2.3.

Basic Layup Firewall bulkhead around the heating valve:

1. 1 Lay Up 8.4554.60 (92140) ± 90°
2. 2 Lay Up 8.4554.60 (92140) ± 45°
3. 1 Lay Up 8.4554.60 (92140) ± 90°

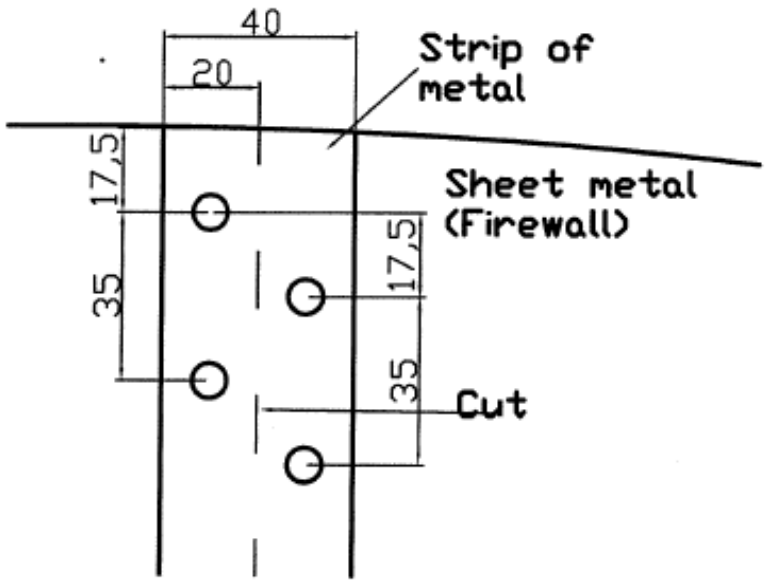
Sand all damaged layers. Chamfer each layer with a staggers length of 20mm.

CAUTION

Do not remove all layers.

Keep at least on laminate layer to keep the original contour.

(7) Prepare a stainless steel i.a.w. sketch (min. thickness 0.4 mm, 40 mm x 900 mm). Install the metal strip on the left half of firewall sheet metal with rivets DIN 7337-A3,2 x 5,5 or by spot welding. Seal the gap between the strip and the sheet with firewall sealant PR 812. Prepare the right side of the strip with Ø 2.0 mm (0.08 in) drills for rivets according to the sketch.
Trim to fit.



(8) Adjust both halves of the sheet metal to the firewall bulkhead. Both halves should be moved as far as possible to the edges.

(9) Prepare 4 boards (recommended material wood or plastic) to fix the sheet metal over the whole surface of the firewall bulkhead.

CAUTION

The metal sheet must not warp.

NOTE

The plates must be attached with screws and screw clamps through the holes which are already in the metal sheet and the firewall bulkhead.

(10) Remove the boards.

(11) Cut the Fiberfrax to the shape of the firewall bulkhead (including the drill holes).

(12) Spread the Fiberfrax adhesive equally over the complete surface of the firewall bulkhead and Fiberfrax paper.

NOTE

Follow the instructions of the Fibrefrax and adhesive manufacturer.

(13) Place the Fiberfrax on the firewall.

(14) Spread the Fiberfrax adhesive equally over the complete surface of the firewall sheet and the Fiberfrax paper.

(15) Place the firewall sheet on the Fiberfrax.

(16) Place the prepared plates against the metal sheet and attach them with screws and screw clamps.

CAUTION

The metal sheet shall not warp, if it warps, remove the plates and affix them again.

(17) Let fiberfrax adhesive cure.

NOTE

Follow the instructions of the adhesive manufacturer.

(18) Remove the plates.

(19) Drill out the prepared drills for the rivets on the right side of the strip.

CAUTION

Do not damage the Fiberfrax or the composite structure by drilling deeper than 2 mm (0.08 in).

20 Seal the gap between strip and sheet with firewall sealant PR 812.

21 Connect both halves of the firewall sheet with rivets DIN 7337-A3,2 x 5,5.

22 Cover the edge from sheet metal to fuselage with fire resistant resin EP240F and let it cure.

Note

Follow the instructions of the resin manufacturer.

23 Seal the gap between the firewall sheet and the firewall bulkhead at the heating valve hole with PR 812.

24 Reinstall the engine installation.

5.3.6 REPAIR OF CRACKS NEAR THE ENTRANCE STEPS

If cracks near the entrance steps are found, follow this repair scheme:

1 Carefully remove the paint coat in the area of the cracks.

2 Inspect the composite structure for damage.

3 Repair all composite damage found i.a.w. Section 5.2.3.

4 In addition, reinforce composite structure with one layer of 92140 (+-45°) 200 mm x 150 mm (8 in x 6 in) and one layer of 92110 (0°/90°) 220 mm x 170 mm (9 x 7 in).

5 Cure, post cure i.a.w. Section 5.2.3.

6 Prepare surface and paint the reinforced area i.a.w. Section 5.2.7.

5.4 MATERIALS USED AND SOURCES

Resin system

Resin : L 285

Hardener : 286

Mixture : 100 parts resin and 38 parts hardener (by weight)

Supplier : Scheufler
Am Ostkai 21/22
D-70327 Stuttgart, Germany
Phone: +49/711/323081
Fax: +49/711/3280041

Resin system for HK 36 TTC-ECO wing tanks

Resin	: Derakane 470-36S	
Hardener	: Butanox LPT	1.5 to 2 parts per 100 parts resin (by weight)
Accelerator	: NL51P (cobalt or violet)	0.3 parts per 100 parts resin (by weight)
Restrainer	: NLC-10	0.5 parts per 100 parts resin (by weight)
Carbon powder	: Ketjenblack (only for coloring)	max. 2 parts per 100 parts resin (by weight)

Supplier : Polychem HandelsgesmbH
Bahnhofsplatz 5
A-2111 Rückersdorf, Austria
Phone: +43/2264/6521-0
Fax.: +43/2264/6139

Rovings

Vetrotex glass silk rovings EC 10 - 2400 tex (K43) or EC 9 - 756 tex (K 43)

Supplier : Rudolf Usner GmbH
Am Ausferngenufer 4
A-5400 Hallein, Austria
Phone: +43/6245/81516
Fax: +43/6245/81516-40

Glass fiber cloth

WLB No. (German aviation standard)	Weave	Mass per unit area [g/m²]	***Interglas Type***	Porcher Type	Vorwerk Type
845486	2/2 twill	163	***92110***	917	
845516	2/2 twill	280	***92125***	3063	95290
845546	2/2 twill	390	***92140***	1989	
845206	UD	220	***92145***		
845256	UD	425	***92146***		

All cloth types consist of alkali free E-glass with I 550 or PT 55 finish and comply with LN 9169 (German aviation standard).

Supplier for Interglas fabric : Rudolf Usner GmbH (see above)

Supplier for Porcher fabric : Porcher Industrietextilien GmbH
Holzgraben 13/15
D-52062 Aachen, Germany
Phone: +49/241/48225
Fax: +49/241/48229

Supplier for Vorwerk fabric : Saertex Wagener GmbH & Co KG
Industriestr. 9
D-48369 Saerbeck, Germany
Phone: +49/2574/8051
Fax: +49/2574/8231

Carbon fiber cloth

WLB No. (German aviation standard)	Weave	Mass per unit area [g/m²]	***Interglas Type***	Porcher Type	Vorwerk Type
835208	2/2 twill	200	***98141***		

The cloth complies with LN 9169 (German aviation standard).

Supplier: Rudolf Usner GmbH (see above)

Foam cores

WLB No. (German Aviation Standard)	**Density [kg/m³]**	**Thickness [mm]**	**Divinycell Type**	**Rohacell Type**
	60	8	PVC foam core Divinycell H 60	
514601	50	3		PMI foam core Rohacell 51
514602	70	8		PMI foam core Rohacell 71

Supplier for Divinycell Continental
C.U.P Gummi Ges.m.b.H.
Eisgrubengasse 4
A-2334 Vösendorf Süd, Austria

Manufacturer of Rohacell Röhm, Darmstadt, Germany

Supplier for Rohacell Thun und Hohenstein
Lamezanstr. 17
A-1231 Vienna, Austria
Phone: +43/1/6167510-0
Fax: +43/1/6167510-33

Fillers for resin

Cotton flakes FB1F, white

Supplier Schwarzwälder Textilwerke
Postfach 4, Aue 3
D-77771 Schenkenzell, Germany
Phone: +49/7836/5713
Fax: +49/7836/5737

Silcell 300

Supplier Joh. Klinglhuber & Söhne Handelsgesellschaft mbH
Wallgasse 21
A-1062 Vienna, Austria
Phone: +43/1/5974712-0
Fax: +43/1/5974712-16

Aerosil 380

Supplier Polychem HandelsgmbH (see above)

Microballoons Q-cell 300

Supplier Polychem HandelsgmbH (see above)

Chopped glass fiber

Supplier Rudolf Usner GmbH (see above)

Knifing filler, Primer (acrylic filler), Paint (color RAL 9016)

These products are supplied by Herberts or Sikkens. It is highly recommendable to contact Diamond Aircraft Industries to inquire about the products used on a specific serial number in order to avoid such problems as bubbles in the paint finish.

Paint for the instrument panel

Satin paint, color tone B2, with hardener and thinner

Manufacturer: 3M

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
Lauenburger Landstr. 11
D-21039 Börnsen, Germany
Phone: +49/40/720031-75, -74
Fax: +49/40/7204192

Acrylic glass cement

Polymerization cement Acrifix 92

Manufacturer Röhm, Darmstadt, Germany

Supplier Thun und Hohenstein (see above)

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CHAPTER 6

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 AIRWOR-
| THINESS LIMITATIONS REQUIRED BY JAR 22.
|
| THIS AIRPLANE MAINTENANCE MANUAL CHAPTER 06 (AIRWORTHINESS LIMITATIONS)
| IS APPROVED WITH EASA APPROVAL NO.10059027.
|

6.1 AIRFRAME LIFE LIMIT

| The current airframe life time of the HK 36-series is 12,000 hours.

| At an operation time of 6,000 flight hours the airplane must pass the 6,000 hrs inspection as listed
| in Chapter 3. Compliance with MSB 36-087 up to issue 1 is considered equivalent to passing
| the 6,000 hrs inspection as listed in Chapter 3.
|
| At an operation time of 12,000 flight hours the airplane must be inspected in accordance with
| an individual inspection program prepared by the manufacturer. Upon positive result or after
| removal of all findings the airframe lifetime can be extended.

6.2 SURFACE COLOR

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 airplane must be painted white.

Exceptions are registration markings and warning marks, which are subject to the following restrictions (also see drawing on next page):

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

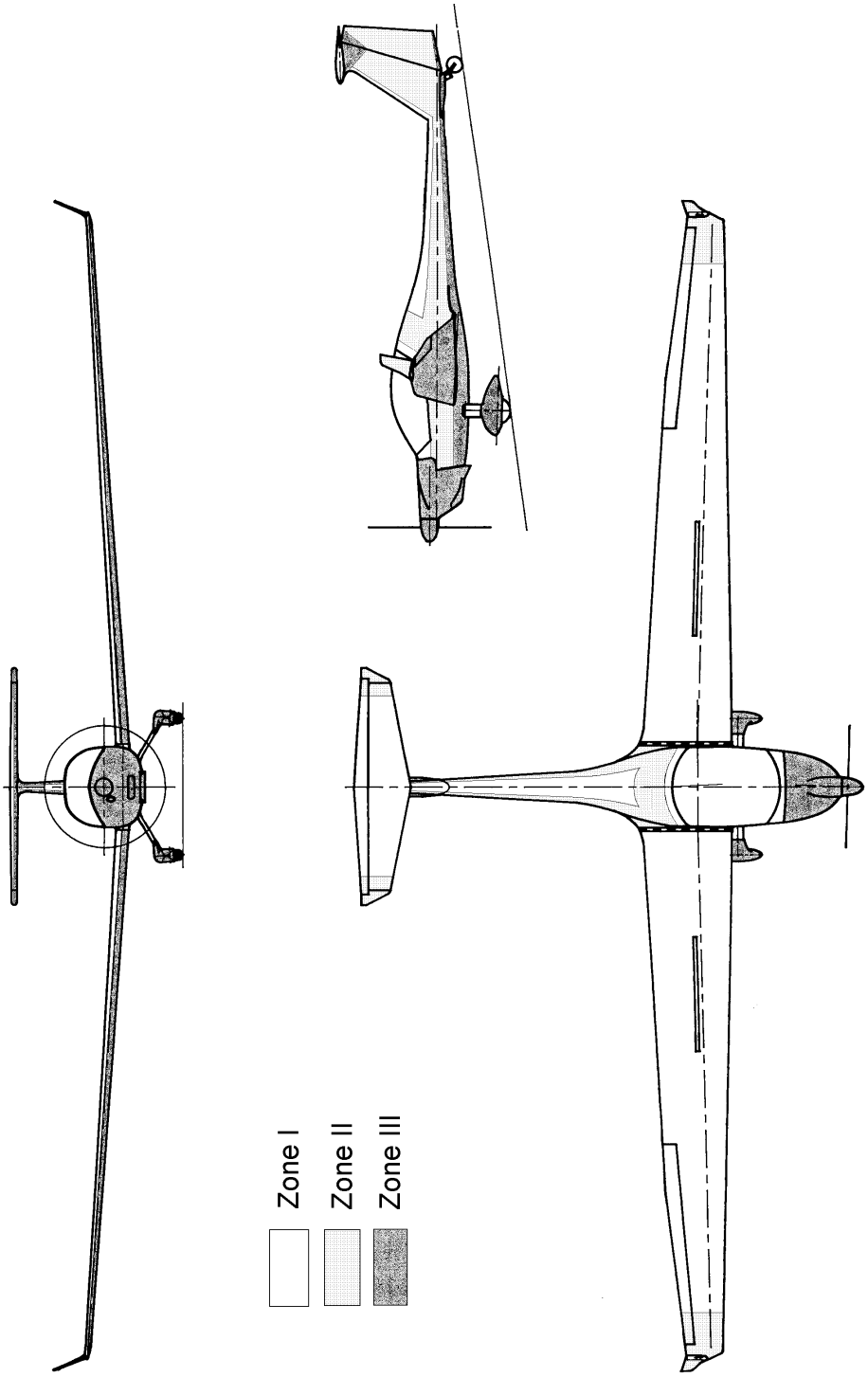
Zone II — Registration markings and warning marks may be applied here. They may have

(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 be applied here without restrictions.



NOTE

Conventional landing gear shown: For both conventional and tricycle landing gear, the wheel fairings and metal parts are Zone III. The GFRP landing gear strut of the conventional landing gear is Zone I.