SECTION 7

AIRCRAFT & SYSTEMS DESCRIPTION

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INTRODUCTION

This section provides description and operation of the aircraft and its systems.

AIRFRAME

WING

The wing is constructed of a central light alloy torque box; an aluminum leading edge with integrated fuel tank is attached to the front spar while flap and aileron are hinged to rear spar. Flaps are constructed of a center spar to which front and rear ribs are joined; wrap-around aluminum skin panels cover the flap structure. The aileron is constructed of an aluminum spar to which a formed sheet metal leading edge and metal ribs are attached; a wrap-around. thermosetting synthetic material covers aileron structure.

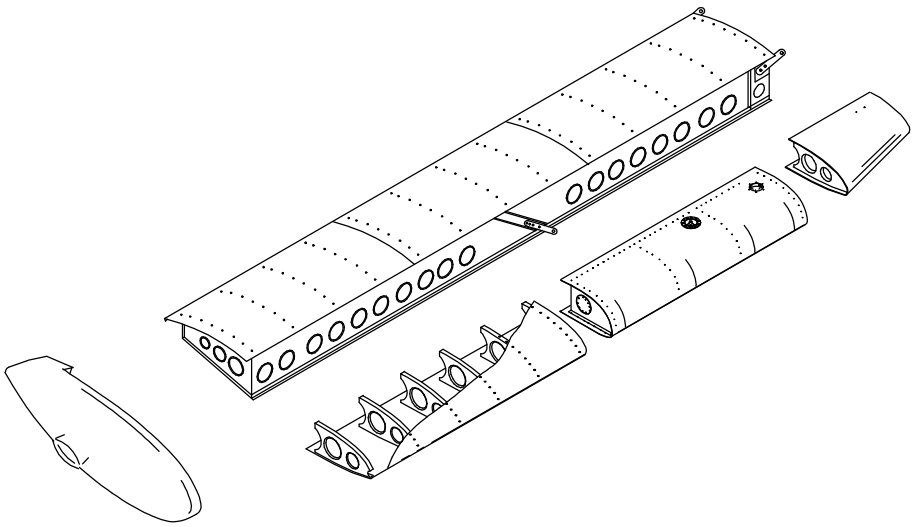


Fig. 7-1. RIGHT WING EXPLODED VIEW

FUSELAGE

The front part of the fuselage is made up of a mixed structure: a truss structure with special steel members for cabin survival cell, and a light-alloy semi-monocoque structure for the cabin's bottom section. The aft part of the fuselage is constructed of an aluminum alloy semi-monocoque structure. The engine housing is isolated from the cabin by a stainless steel firewall; the steel stringers engine mount is attached to the cabin's truss structure in four points.

EMPENNAGES

The vertical tail is entirely metal: the vertical stabilizer is made up of a twin spar with stressed skin while the rudder consists of an aluminum torque stringer connected to light alloy ribs and skin. The horizontal tail is an all-moving type (stabilator); its structure consists of an aluminum tubular spar connected to ribs and leading edge; wrap-around thermoretractible synthetic material covers the stabilator structure.

FLIGHT CONTROLS

Aircraft flight controls are operated through conventional stick and rudder pedals. Longitudinal control acts through a system of push-rods and is equipped with a trim tab. Aileron control is of mixed type with push-rods and cables; the cable control circuit is confined within the cabin and is connected to a pair of push-rods positioned in the wings that control ailerons differentially. Aileron trimming is carried out on ground through a small tab positioned on left aileron.
Flaps are extended via an electric servo actuator controlled by a switch on the instrument panel. Flaps act in continuous mode, the indicator displays the two positions relative to takeoff (15°) and landing (38°). A breaker positioned on the right side of the instrument panel protects the electric circuit.
Longitudinal trim is performed by a small tab positioned on the stabilator and controlled via an electric servo by pushing an Up/Down push-button on the control stick. A shunt switch placed on the instrument panel enables control of either left or right stick; in addition, a safety switch positioned by the trim indicator shuts off power from the circuit in case of emergency (see section 3).

INSTRUMENT PANEL

The conventional type instrument panel allows placement of a broad range of equipment. Instruments marked with an asterisk (*) are optional.

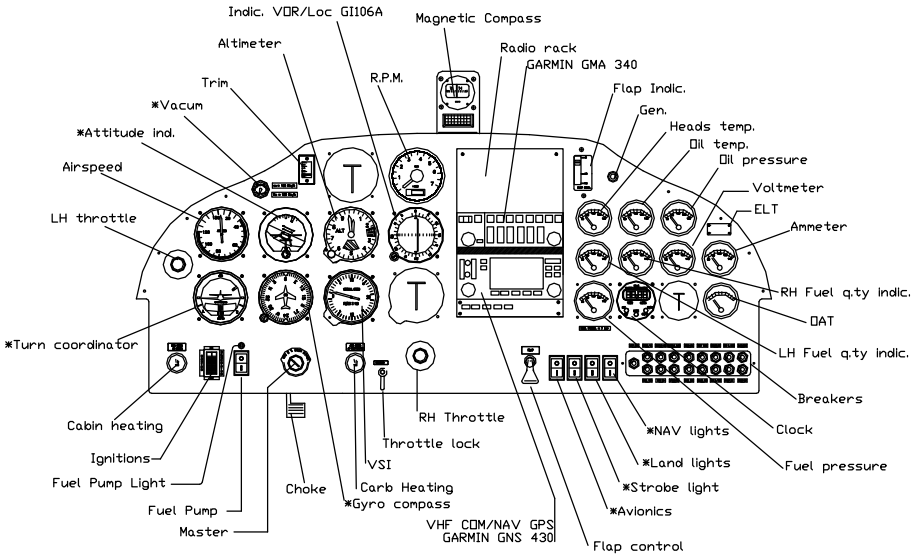


Fig. 7-2. INSTRUMENT PANEL

CARBURETOR HEAT

Carburetor heat control knob is square shaped and is located just to the left of the center throttle control; when the knob is pulled fully outward from the instrument panel, carbs receive maximum hot air. During normal operation, the knob is OFF.

CABIN HEAT

The cabin heat control knob is positioned on the lower left side of the instrument panel; when knob is pulled fully outward, cabin receives maximum hot air. Vents are located by the rudder pedals and above instrument panel. If necessary, outside fresh air can be circulated inside cabin by opening door vents.

THROTTLE FRICTION LOCK

It is possible to adjust the engine's throttle friction lock by appropriately tightening the friction lock disk located on the instrument panel near the center throttle control.

SEATS AND SAFETY HARNESS

Aircraft features three point fitting safety belts with waist and diagonal straps adjustable via a sliding metal buckle.
Seats are built with light alloy tube structure and synthetic material cushioning. A lever located on the right lower side of each seat allows for seat adjustment according to pilot size.

DOORS

Aircraft doors feature external and internal door handles with door-lock provided externally on left side door. An internal safety latch mechanism is positioned in proximity of door's upper edge and must be used before flight to secure door. Mechanism rotates to engage doorframe to cabin tubular framework.

BAGGAGE COMPARTMENT

The baggage compartment is located behind the pilots' seats. Baggage shall be uniformly distributed on utility shelf and its weight shall not exceed 20kg. Tie-down baggage using adjustable tie-down net.

Before loading baggage, check aircraft's weight and CG location (see section 6).

WARNING

POWERPLANT

ENGINE ROTAX 912S2, 4 stroke, horizontally-opposed 4 cylinder, mixed air and water cooled, twin electronic ignition, forced lubrication

Maximum rating – 98.6hp (73.5Kw) @ 5800 rpm/min (2388 rpm/min. prop).
Gear reduction ratio - 2.4286:1
For further information see: *"Engine Operating Manual"*.
Engine control instruments are located on right side of instrument panel.

PROPELLER wood twin blade HOFFMAN type: HO17GHM-174 177C or HO17GHM A 174 177C; for further information see "*Service Manual"* for P92-JS and *"Propeller Service Manual"*.

FUEL SYSTEM

The system is equipped with two aluminum fuel tanks integrated within the wing leading edge and accessible for inspection through dedicated covers. Capacity of individual tank is 35lt (45lt optional) and total usable fuel is 66.8lt (86.8 lt). Each fuel tank is equipped with a cabin installed shutoff valve. A strainer cup with a drainage valve (Gascolator) is located on the engine side of the firewall. Fuel level indicators for each tank are located on instrument panel. Fuel feed is through an engine-driven mechanical pump and through an electric pump for emergencies (normally ON for takeoff) that supplies adequate engine feed in case of main pump failure. All fuel lines located in the engine compartment are protected with fireproof braiding to avoid possible fire. Figure 7-3 illustrates the schematic of the fuel system.

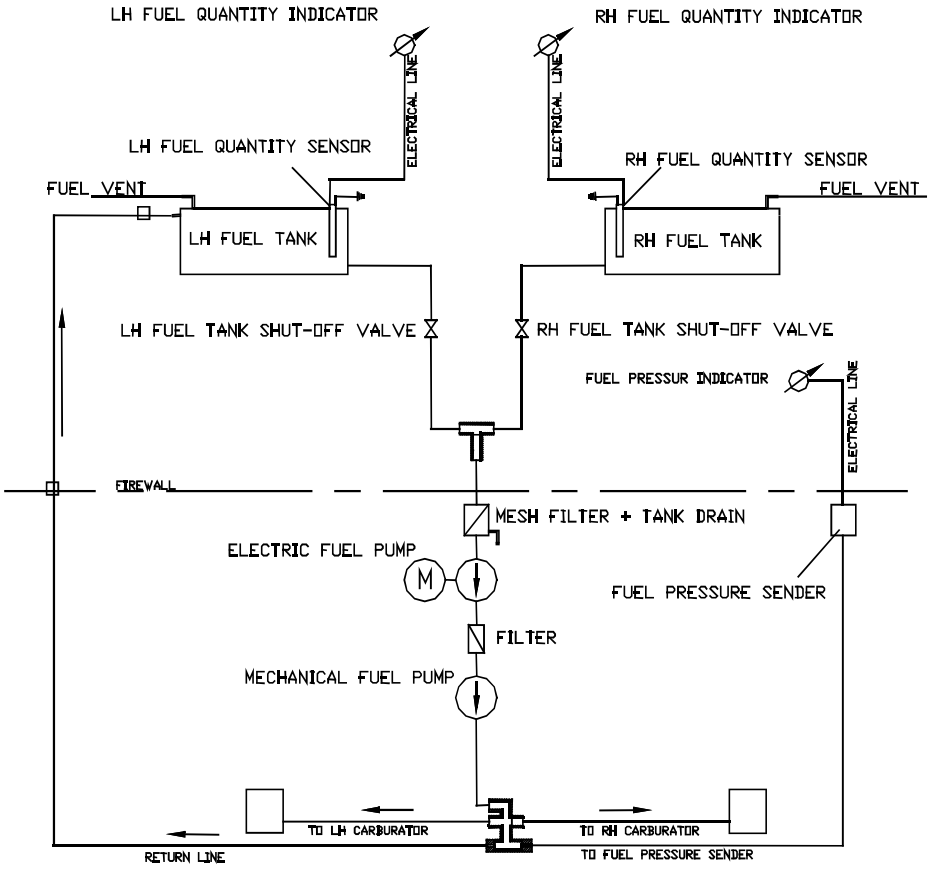


Fig. 7-3. FUEL SYSTEM SCHEMATIC

ELECTRICAL SYSTEM

The aircraft's electrical system consists of a 12 Volt DC circuit controlled by the Generator Switch located on the instrument panel. Electricity is provided by an alternator and by a buffer battery placed in the fuselage tail section. Generator light is located on the right side of the instrument panel.

WARNING

If the ignition key is in the position L, R or BOTH an accidental movement of the propeller may start the engine with possible danger for bystanders.

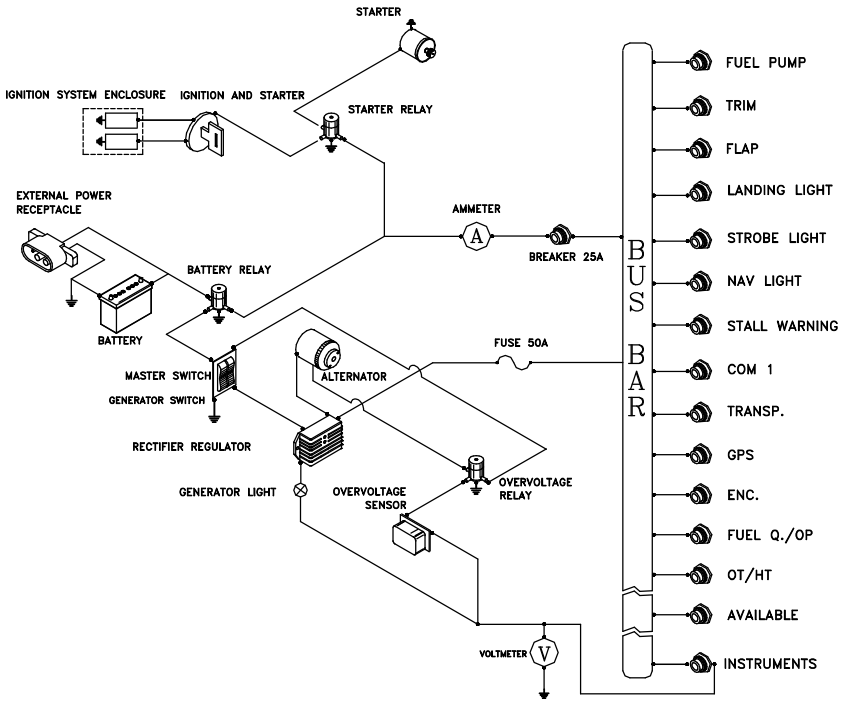


FIG. 7-4. ELECTRICAL SYSTEM SCHEMATIC

GENERATOR LIGHT

Generator light (red) illuminates for the following conditions:

- Generator failure
- Failure of regulator/rectifier, with consequent overvoltage sensor set off.

The battery can support energy requirements for 26 min (see page 3-8)

VOLT-AMMETER

The voltmeter indicates voltage on bus bar; a positive value of the ammeter indicates the generator is charging the battery, a negative value indicates the battery's discharge rate.

OIL AND CYLINDER HEADS TEMP. - OIL PRESSURE

These instruments are connected in series with their respective sensors. The same breaker protects all temperature instruments while a second breaker protects oil pressure indicator and other instruments.

O.A.T. INDICATOR

A digital Outside Air Temperature indicator (°C) is located on the upper left side of the instrument panel. The sensor is placed on cabin top.

STALL WARNING SYSTEM

The aircraft is equipped with a stall warning system consisting of a sensor located on the right wing leading edge connected to a warning noisemaker located on the instrument panel.

AVIONICS

The central part of the instrument panel holds room for avionics equipment. The manufacturer of each individual system furnishes features for each system.

EXTERNAL POWER SUPPLY

On the right side of the tail cone, an external power is present. Using this device it is possible to feed the electric system by an external power source. It should be used at the engine start-up in cold weather condition.

Follow this procedure to start the engine using the external power source.

1. Magnetos, Master switch, Generator switch: OFF
2. Open the receptacle door and insert the external power source's plug into the socket
3. Engine start-up procedure (see Sect. 4 in this manual)
4. Disconnect the external power source's plug and close firmly the receptacle door.

PITOT AND STATIC PRESSURE SYSTEMS

The airspeed indicator system for the aircraft is shown below and consists of two static ports located on the sides of the aircraft forward of the cabin and by a pitot tube located on the left wing strut.

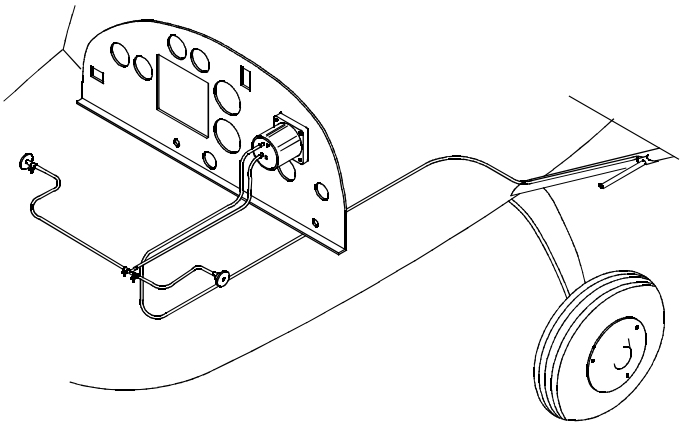


FIG. 7-5. AIRSPEED INDICATOR SYSTEM

BRAKES

The aircraft's braking system is a single system acting on both wheels of main landing gear through disk brakes, the same circuit acts as parking brake via an intercept valve.
To activate brakes it is sufficient to verify that brake shut-off valve positioned on tunnel between pilots is OFF, then activate brake lever as necessary.
To activate parking brake pull brake lever and set brake shut-off valve to ON.

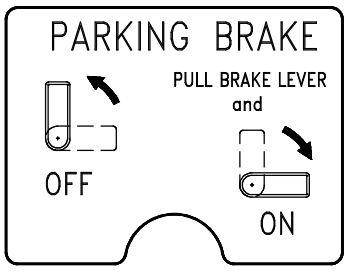
MARKING & PLACARDS

To compensate for deviation errors of the magnetic compass, the following correction card is located immediately below compass:

For	N	30	60	E	120	150
Steer						
For	S	210	240	W	300	330
Steer						

DATE RADIO ON AIRPATH

This placard has to be compiled by certified operator with valid and proper instrumentation.
The following placard is located on the cabin's floor tunnel, near the hydraulic brake circuit shutoff valve:

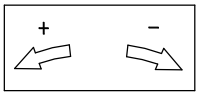


Refer to section 9 for possible variations.

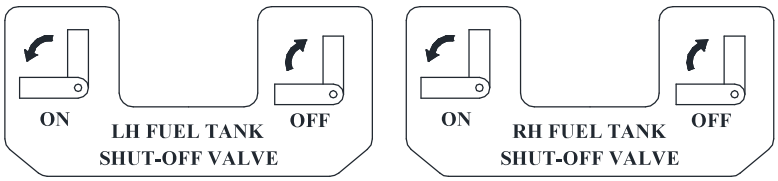
Two throttle control knobs are located on instrument panel. One is positioned centrally while the other is on the upper left-hand side. The following placard is near each one:

A throttle friction lock is located on the instrument panel to maintain desired setting. The following placard is positioned near friction lock:

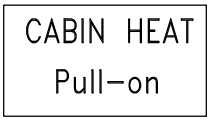
Refer to section 9 for possible variations.



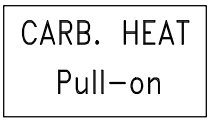
Fuel shutoff valves are located on cabin truss forward members. RH valve shuts off fuel flow from RH fuel tank; LH valve shuts off fuel flow from LH fuel tank. When valve lever is aligned with truss member, the valve is open; if lever is rotated 90° wrt truss member, the valve is closed. A 20x8mm OPEN - CLOSED placard is placed near each shutoff valve. The following placard is placed near the RH forward truss member shutoff valve:



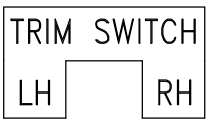
The cabin heat control knob is located on the instrument panel central area just to the right of the throttle control; the following placard is next to it:



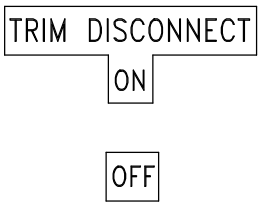
The carburetor heat control knob is located on the instrument panel central area just to the left of the throttle control; the following placard is next to it:



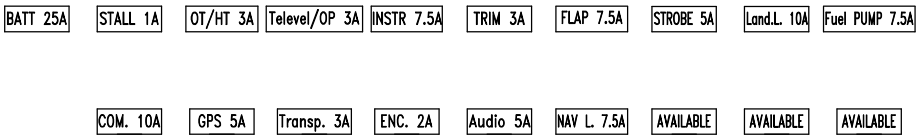
The trim switch control is located on the upper central area of the instrument panel alternatively allocating trim control to either RH or LH control stick. The following placard is positioned just above it:



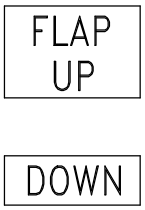
A switch located on the upper central area of the instrument panel interrupts power supply to the trim system in case of malfunction. The following placard is positioned near switch:



Circuit breakers are located on lower right side of instrument panel and each breaker is individually marked as follows: (from left to right):

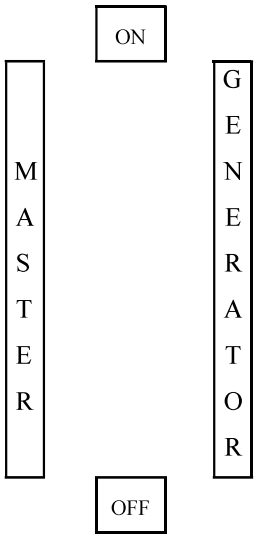


The flap control switch is located on the lower portion of the instrument panel, slightly towards the right. The following placards are just next to it:



A placard measuring 74x7 mm is located on the instrument panel to indicate fire extinguisher position:

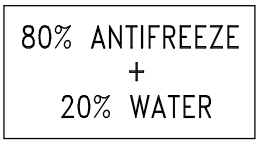
Generator and Master switches are located on the lower left side of the instrument panel and 4 labels are placed around them: one on top, one on RH side, one on bottom and one on LH side:



A generator warning light is located on the upper right side of the instrument panel and is marked with the following label:

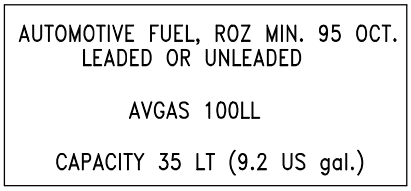
PLACARDS OUTSIDE CABIN

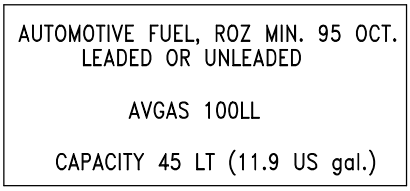
The overflow reservoir cap for antifreeze liquid bears the following placard:



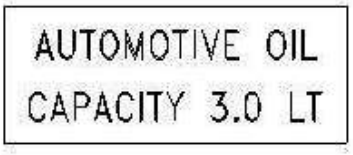
Brake fluid reservoir cap bears the following placard:

The following placard is located in proximity of fuel filler caps (28x63mm):

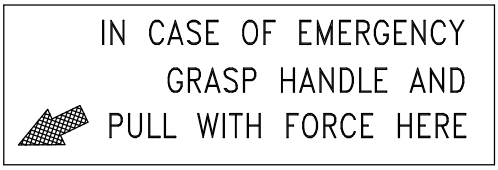




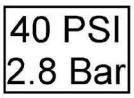
The following placards are located on oil reservoir:



The following label is located below each door for emergency opening:



Main landing gear tire inflation pressure is indicated in the following label affixed on each spring-leaf strut:



The following label indicates inflation pressure for nose gear tire and is affixed on nose gear assy (32 psi if the 5.00 tire is installed and 15 psi if 4.00 tire is installed):

The 0° reference mark for stabilator balance is located on left hand side of tail cone in proximity of stabilator

The following aircraft identification placard is located on tail cone:

TECNAM S.R.L.
P92 - JS
S/N _____
CERT. N° A-412

On the right side of the tail cone, next to the battery case access door, is present the following placard (69x17mm):

On the right side of the tail cone, on the power receptacle's door is present the following placard (135x25mm).

EXTERNAL POWER RECEPTACLE
12 Volt - DC

On both the main landing gear fairings the following placard (120x22mm) is present:

NO STEP

INTENTIONALLY LEFT BLANK