SECTION 9

SUPPLEMENTS

TABLE OF CONTENTS

SUPPLEMENT N° 1

GARMIN GNS 430 GPS/VHF COMM/NAV

1 INTRODUCTION

This section contains supplementary information for safe and efficient operation of the aircraft if equipped with a Garmin GNS 430 system.

1.2 GENERAL

1. The GPS GNS 430 Global Positioning System is an integrated system that contains a GPS navigation system in addition to a VHF COMM radio transceiver and a VOR/ILS receiver.
2. The system includes an antenna for GPS, a receiver for GPS, a VOR/LOC antenna, a VOR/ILS receiver, a VHF Comm antenna and a VHF Comm tranceiver.
3. The main function of the VHF Comm is to allow communication with the control tower.
4. The VOR/ILS function is to receive and demodulate VOR and LOC signals.
5. The GPS section is dedicated to signal acquisition from the GPS satellite system and to furnish real-time information with respect to position, speed and time.
6. With appropriate signals the GPS GNS 430 can:
   - plan VFR/IFR routes, track waypoints and plan non-precision instrument approaches (GPS, LORAN-C, VOR, VOR-DME, TACAN, NDB, NDB-DME, RNAV) in accordance with AC 20-138;
7. Reference coordinates used for navigation are WGS-84.

1.3 LIMITATIONS

1. The "Pilot's guide and Reference" p/n 190-00140-00 rev. F dated July 2000 or later versions, must be available for proper use of the instrument.
2. Only VFR use is permitted.
3. The GPS section must use the following (or more recently approved) software versions:

Subsystem	*Software version*
MAIN	2.00
GPS	2.00
COMM	1.22
VOR/LOC	1.25

The software version of the main subsystem is displayed by the GNS 430 immediately after start-up for 5 seconds. Remaining subsystems software versions may be verified in sub-page 2 of the AUX Group display for "SOFTWARE/DATA BASE VER".

4. The following default settings must be keyed-in in the SETUP 1 menu of the GNS430 receiver before any other operation:

- ***DIS, SPD*** nm kt *(select navigation unit to "nautical miles" and "knots");*
- ***ALT,VS*** ft fpm *(select altitude to "feet " and "feet per minute");*
- ***MAP DATUM*** WGS 84 *(select map datum WGS84);*
- ***POSN*** deg-min *(select grid for nav unit to decimal-minutes);*

1.4 EMERGENCY PROCEDURES

1. If the information provided by the Garmin GNS430 is not available or manifestly wrong, it is necessary to use other navigation instruments.
2. If the message "WARN" appears in the lower left portion of the display, the receiver cannot be considered useful as a navigation aid. The pilot must use the VLOC receiver or an alternative navigation system.
3. If the message "INTEG" appears in the lower left portion of the display, the RAIM function is unavailable. The pilot must use the VLOC receiver or an alternative navigation system;
4. In emergency flight conditions, pressing the COM flip-flop knob for 2 seconds will automatically tune-in the 121.500MHz emergency frequency.

1.5 NORMAL OPERATION

1. DETAIL FOR NORMAL OPERATION

   Normal operation is described in the "Pilot's guide and Reference" P/N 190-00140-00 rev. F dated July 2000 or later versions.

2. GARMIN GNS 430 DISPLAY.

   Data for GNS 430 system appears on GARMIN GNS430 display.

   Data source is either the GPS or the VLOC as indicated above the CDI switch of the GARMIN 430 display.

1.6 PERFORMANCE

No variations.

1.7 WEIGHT AND BALANCE

See section 6 of the present manual.

1.8 SYSTEMS

See "GNS 430 Pilot's Guide" p/n 190-00140-00 rev. F dated July 2000 or later versions, for a complete description of the system.

SUPPLEMENT NO. 2

BANNER TOWING

2 INTRODUCTION

This section contains supplementary information for a safe and efficient operation of the aircraft if equipped with a hook for towing banners (Mod. Number 92/27).

2.2 GENERAL

CERTIFICATION BASIS

This installation has been certified under the technical specifications listed into the Tecnam Report 92/104.

2.3 LIMITATIONS

Section 2 includes operating limitations, instrument markings, and basic placards necessary for safe banner-towing operations.

APPROVED BANNER DIMENSION

The banner approved to be operated with the P92-JS is of the type equipped with wheels. The maximum banner surface that has been towed during the tests is 140m^2.

WEIGHT

The aircraft's MTOW equipped with a 140m^2 banner reaches 460kg.
For banners whose surface is lower than 140m^2, please refer to the table in paragraf 2.5 in this Section

AIRFIELD ALTITUDE

The highest approved airfield altitude for take-off operations while towing banner of 140m^2 is 3000ft.

AIRSPEED

For all flap settings, the minimum towing airspeed is **53** KIAS.

WARNING

The maximum towing airspeed depends on the banner's surface.
For further information, please refer to the banner manufacturer specifications/limitations.

APPROVED MANEOUVRES

The P92-JS, while towing a banner, is cleared to do only the manoeuvres pertinent to normal flight.

DEMONSTRATED CROSS WIND OPERATIONS

The aircraft's controllability was investigated during take-off with a cross wind velocity of **5** kts.

LIMITATION PALACARDS

On the instrument panel the following limitation placards must be present:

MINIMUM TOWING AIRSPEED = **53 KIAS**

REFER TO FLIGHT MANUAL SUPPLEMENT 9.2 FOR LIMITATIONS DURING TOWING OPERATIONS,

2.4 EMERGENCY PROCEDURES

EMERGENCY RELEASE

1. Find a safe location on the ground for the banner's release
2. Activate the release lever.

If the banner is properly released:

3. Control the a/c
4. Land

If the banner doesn't release:

5. Flap: *as necessary*
6. Engine throttle: *as necessary*
7. If the runway's length allows, set a landing glide so as to ground the banner at the runway's head.
8. Control the banner's position
9. Land.

NOTE

If the banner is hold by an obstacle on the ground, it automatically detaches from the towing rope by means of a calibrated collapsible link.
The load at which the link collapses depends on the banner's dimension.
For further information, please refer to the banner's manufacturer manual.

2.5 NORMAL PROCEDURES

In addition to what has been specified in Section 4, before each flight it is necessary to carry out the extra inspections listed below.

CABIN INSPECTION

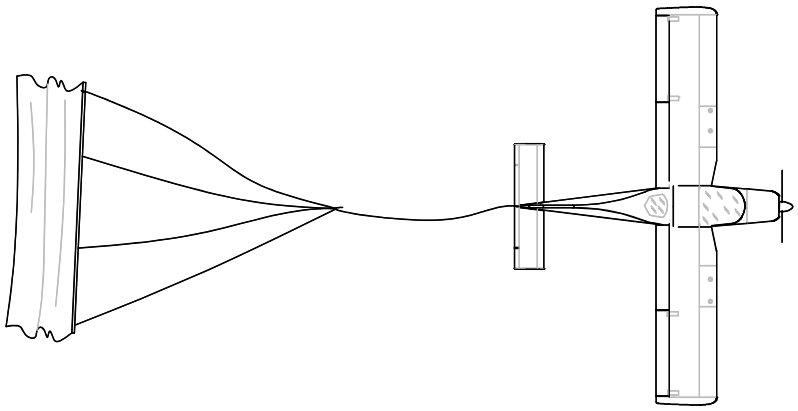
- Weight and airfield altitude: check for compatibility with the Section 9.2 Limitations.
- Release lever: check.

EXTERNAL INSPECTION

- Adjust the rear view mirror and check for a proper fastening
- Release hook: check functionality.

BEFORE TAKE-OFF

- The banner will be either unfolded along the runway or placed properly folded.
- Place the banner behind the a/c so as to straighten the towing ropes (see picture below).



- Check the banner and its link to the aeroplane to insure that the connection has properly done and in compliance with the manufacturer instructions.

TAKE OFF AND CLIMB

WARNING

In order to reduce the banner's ground drag, the take-off should be done on a paved runway or on a short/dry grass runway

- Check the banner position through the rear view mirror.

CRUISE

- While cruising, please remember that the banner flies approx 50ft below the aeroplane.

BEFORE LANDING

- Check the banner attitude.
- Set a glide to release the banner on the runway.
- To avoid banner's damage, release it at a height above ground level, not exceeding 100ft.
- Pull the release lever.
- Proceed with a normal landing and check that the banner has been removed from the runway.

2.6 PERFORMANCE

INTRODUCTION

This section provides all necessary data for accurate and comprehensive planning of flight activity from take-off to landing in towing conditions.

Sections approved by EASA are marked by "*Approved data*" immediately following the paragraph head line.

TAKE-OFF PERFORMANCES (*Approved data*).

TAKE-OFF RUN AND DISTANCE, TOWING A BANNER UP TO **140** m^2.

CONDITIONS:

- Flap: 15°
- Take-off weight **460** kg
- Engine throttle: Full
- Runway: dry, compact grass runway
- Runway slope: 0°
- Wind: zero

*Banner' surface = **140** m^2*

Peso A/m kg	Press Alt ft	5 °C		15 °C		25 °C		35 °C	
		GRND ROLL m	DISTANCE 15 m OBS m	GRND ROLL m	DISTANCE 15 m OBS m	GRND ROLL m	DISTANCE 15 m OBS m	GRND ROLL m	DISTANCE 15 m OBS m
460	0	***106***	***232***	***199***	***437***	***279***	***612***	***357***	***784***
	1000	***115***	***253***	***217***	***476***	***304***	***667***	***390***	***855***
	2000	***126***	***276***	***237***	***520***	***332***	***729***	***425***	***933***
	3000	***137***	***301***	***259***	***568***	***363***	***796***	***465***	***1019***

WARNING

To obtain a take-off climb rate of 2m/s, or higher, form every airfield altitude and temperature conditions, the maximum take-off weight (with a banner of 140m^2) should not exceed 460kg.

TAKE-OFF RUN AND DISTANCE, TOWING A BANNER OF NOT MORE THAN 90 m^2

CONDITIONS:

- Flap: 15°
- Take off weight: **550** kg
- Engine throttle: Full
- Runway: dry, compact grass runway
- Runway slope: 0°
- Wind: zero

*Banner's surface = **90** m^2*

Peso A/m kg	Press Alt ft	5 °C		15 °C		25 °C		35 °C	
		GRND ROLL m	DISTANCE 15 m OBS m	GRND ROLL m	DISTANCE 15 m OBS m	GRND ROLL m	DISTANCE 15 m OBS m	GRND ROLL m	DISTANCE 15 m OBS m
550	0	***104***	***229***	***196***	***431***	***275***	***604***	***352***	***773***
	1000	***114***	***249***	***214***	***470***	***300***	***659***	***385***	***844***
	2000	***124***	***272***	***234***	***513***	***328***	***719***	***420***	***921***
	3000	***136***	***297***	***256***	***561***	***358***	***786***	***459***	***1006***

*Banner's surface = **70** m^2*

Peso A/m kg	Press Alt ft	5 °C		15 °C		25 °C		35 °C	
		GRND ROLL m	DISTANCE 15 m OBS m	GRND ROLL m	DISTANCE 15 m OBS m	GRND ROLL m	DISTANCE 15 m OBS m	GRND ROLL m	DISTANCE 15 m OBS m
550	0	***81***	***178***	***153***	***335***	***214***	***470***	***274***	***602***
	1000	***88***	***194***	***167***	***366***	***234***	***512***	***299***	***656***
	2000	***96***	***212***	***182***	***399***	***255***	***559***	***326***	***716***
	3000	***105***	***231***	***199***	***436***	***278***	***611***	***357***	***783***

For towing banners whose surface is less than 90m^2, the maximum allowed take-off weight reaches 550kg.

RATE OF CLIMB

CONDITIONS:

- Flap: 0°
- Engine throttle: Full
- V_Y = 53 KIAS
- OAT ≤ 35°
- Airfield pressure altitude ≤ 3000 *ft*
- Banner's surface: **140** m^2
- Take-off weight: **460** kg

The rate of climb is higher than **2** m/s.

CONDITIONS:

- Flap: 0°
- Engine throttle: Full
- V_Y = 53 KIAS
- OAT ≤ 35°
- Airfield pressure altitude ≤ 3000 *ft*
- Banner's surface ≤ **90** m^2
- Take-off weight: **550** kg

The rate of climb is higher than **2** m/s.

2.7 WEIGHT & BALANCE

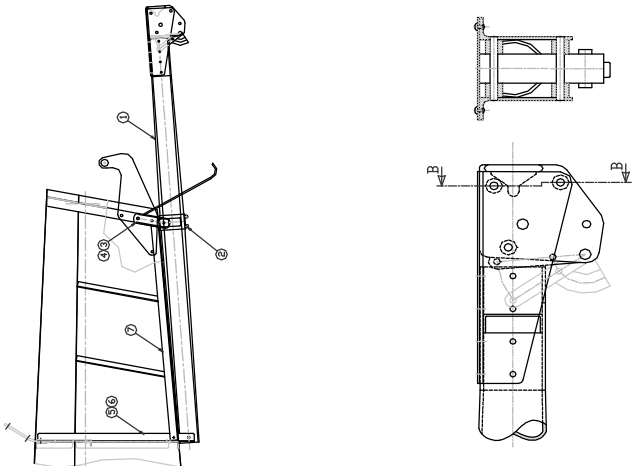
EQUIPMENT LIST

In the following table are listed all the equipment that Tecnam has installed on the P92-JS for towing banners.

EQUIPMENT LIST		A/C S/N		DATE:	
REF.	DESCRIPTION & P/N	S/N	INST	WEIGHT *kg*	DATUM *m*
F1	Towing Hook assy		*	3.8	4.01
F2	Rear-view mirror 92-12-900-000		*	0.2	1.60

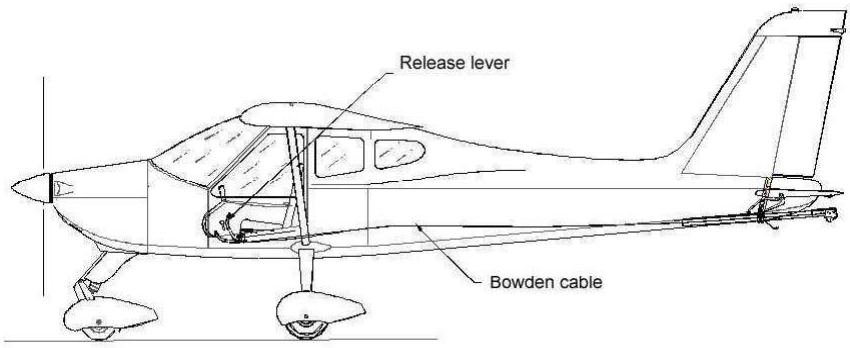
2.8 SYSTEMS

The P92-JS for towing banners is equipped with a hook located in the rear part of the fuselage. This hook is supported by a tubular beam [1] that transfers the towing loads to the tail cone structure. The forward part of the beam is connected to the bulkhead #4 by means of two vertical stringers [5-6] and two longitudinal stringers [7] (not present in the P92-JS standard configuration). The rear link to the bulkhead #5 is realised by a steel support [2] connected by means of two steel ties [4-3] to the stabilator's fitting plates.
The hook is a TOST E85 and is connected to the aluminium tubular beam by means of aluminium plates.

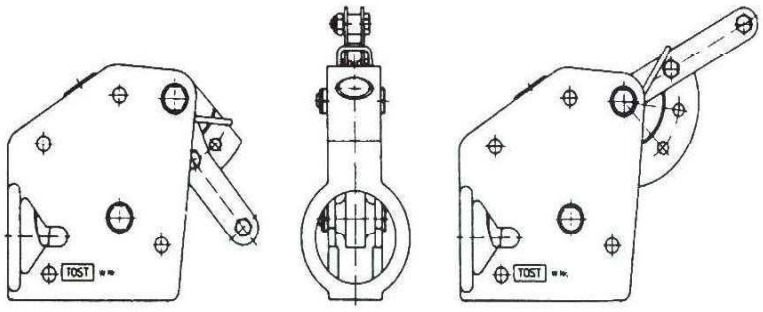


Supporting beam assembly Hook connection

The towing rope is released by the Hook simply operating the release lever located in cabin between the two seats.



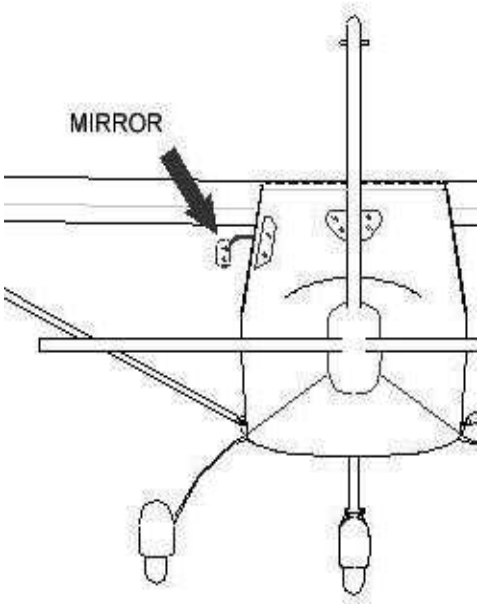
The towing hook is a TOST E85 approved type (Type Certificate No. 30.230/1)



Hook TOST E85

For further information, please refer to the hook's "Operating Manual for tow releases"

On the left door, a rear view mirror is positioned to let the pilot to see the banner during towing.



SUPPLEMENT N° 3

DIFFERENTIAL BRAKE SYSTEM

3 INTRODUCTION

This section contains supplementary information for safe and efficient operation of the aircraft if equipped with the differential brake system.

3.1 GENERAL

No variations.

3.2 LIMITATIONS

No variations.

3.3 EMERGENCY PROCEDURES

No variations.

3.4 NORMAL OPERATION

No variations.

3.5 PERFORMANCE

No variations.

3.6 WEIGHT AND BALANCE

No variations.

3.7 SYSTEMS

Figure 9-2 shows the brake system schematic diagram.

The left and right wheel brakes are independent systems. The system has a reservoir (4) visible from a little window on the baggage compartment. The reservoir is directly connected to the brake master cylinders (3). Two flexible hoses connect the master cylinders on the co-pilot's brake pedals to the master cylinders on the pilot's brake pedals.

The parking brake valve (6) is mounted on the floor of the fuselage, below the seats and it's activated by lever (2). Each main wheel has a brake disc (7).

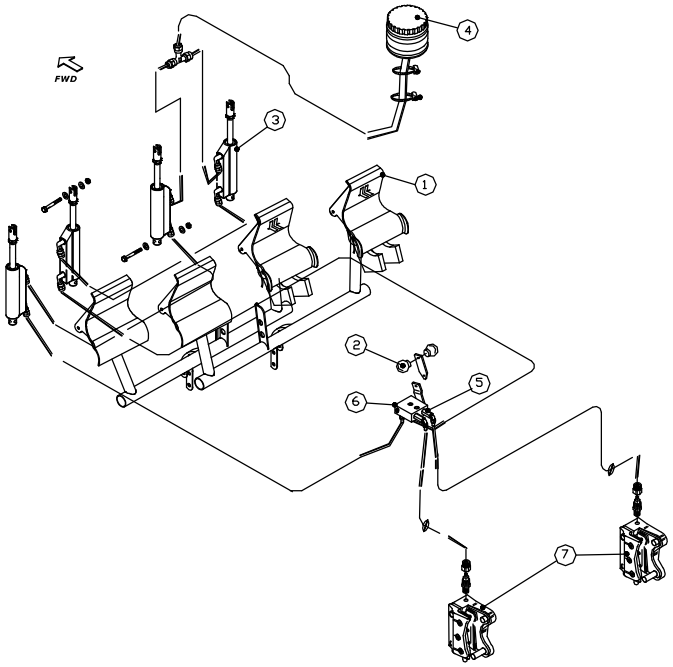


Figure 9-2 Differential brake system

The following placard is located on the central pedestal:

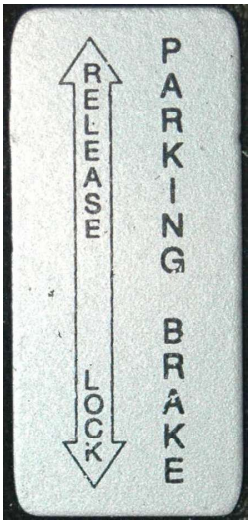


Figure 9-3 Parking brake placard

SUPPLEMENT N° 4

CENTRAL THROTTLE CONTROL SYSTEM

4 INTRODUCTION

This section contains supplementary information for safe and efficient operation of the aircraft if equipped with the central throttle control system.

4.1 GENERAL

No variations.

4.2 LIMITATIONS

No variations.

4.3 EMERGENCY PROCEDURES

No variations.

4.4 NORMAL OPERATION

No variations.

4.5 PERFORMANCE

No variations.

4.6 WEIGHT AND BALANCE

No variations.

4.7 SYSTEMS

The figures 9-3A and 9.3B show the central throttle control system when the Carb. Heat lever installed and only with central throttle lever.

The engine throttle lever is located on the left site and the choke lever is located on the right site.
The levers friction, for both configurations, is located on the lateral right site of the central throttle control system.

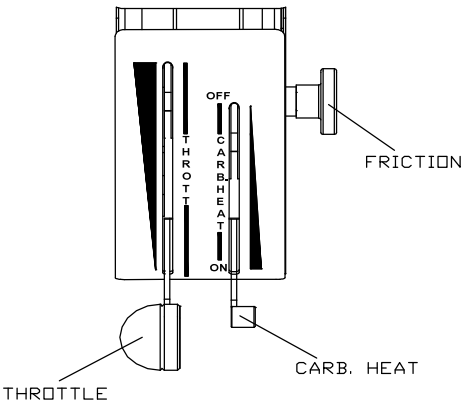


Figure 9-3A Central throttle control system with Carb. Heat control lever

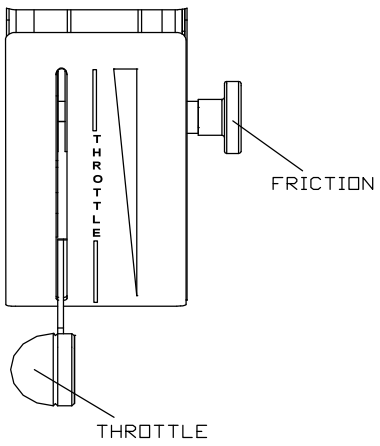


Figure 9-3B Central throttle control system

SUPPLEMENT N° 5

NEW ANALOGICAL INSTRUMENTS PANEL

5 INTRODUCTION

This section contains supplementary information for safe and efficient operation of the aircraft if equipped with the new analogical instruments panel.

5.2 GENERAL

No variations.

5.3 LIMITATIONS

No variations.

5.4 EMERGENCY PROCEDURES

No variations.

5.5 NORMAL OPERATION

No variations.

5.6 PERFORMANCE

No variations.

5.7 WEIGHT AND BALANCE

No variations.

5.8 SYSTEMS

The new analogical instruments panel is designed with a modular concept to improve the instruments visibility.

The new instruments panel is divided into three main parts. The left part with the flight instruments, central part with the avionic instruments and the right part with the engine instruments.

The following picture shown the new analogical instruments panel.

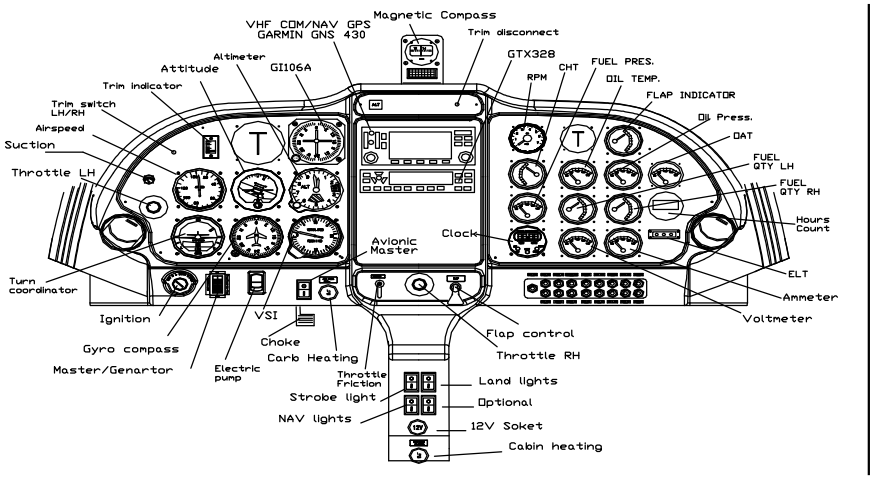


Figure 9-4

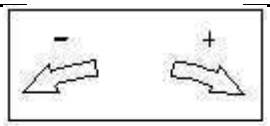
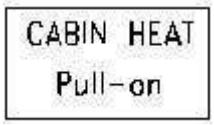
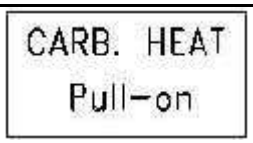
SUPPLEMENT N° 6

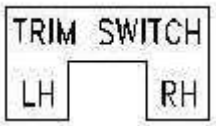
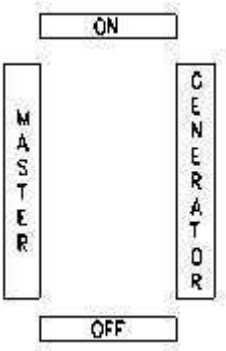
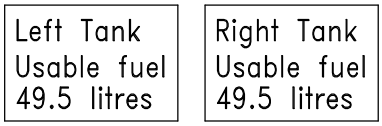
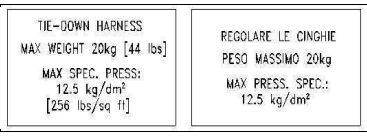
CHINESE AIRCRAFT FLIGHT MANUAL SUPPLEMENT

Record of Revisions

Rev	Revised page	Description of Revision	EASA Approval or Under DOA Privileges
0			DOA

6 PLACARD IN CHINESE

Placard	Chinese
	油门
 	油门阀
	客舱加热 拉-开
	汽化器加热 拉-开
 	调整片断开 开 关

Placard	Chinese
	调整片开关 左手 右手
	开 主开关 发电机 关
	左油箱可用燃油量49.5升 右油箱 可用燃油量49.5升
	油泵 开 关
	行李带系紧最大重量20kg 最大规定压力12.5kg

Placard	Chinese
AUTOMOTIVE FUEL LEADED OR UNLEADED AVGAS 100LL CAPACITY 50LT (13.2 US gal.) AUTOMOTIVE FUEL LEADED OR UNLEADED AVGAS 100LL CAPACITY 50LT (13.2 US gal.)	汽车燃油 含铅/不含铅 航油 100低铅，容量50升 汽车燃油 含铅/不含铅 航油 100低铅，容量50升
AUTOMOTIVE OIL APL "SF" OR "SG" AUTOMOTIVE OIL CAPACITY 3.5 LT	机动滑油 APL "SF" or "SG" 机动滑油 容量3.5升
BATTERY INSIDE	内装蓄电池
EXTERNAL POWER RECEPTACLE 12 Volt - DC	外接电源插头 12伏 –直流
FIRE EXTINGUISHER ON BAGGAGE FLOOR	灭火器在行李舱地板上
No smoking	禁止吸烟
NO STEP	请勿踩踏
Maneuvering speed Va=93 KIAS Maneuvering speed Va=97 KIAS Note: Va=97 Kias when the weight increment to 600 Kg is applied	机动速度VA=93 KIAS 机动速度 VA=97 KIAS

Placard	Chinese

SUPPLEMENT N° 7

ARGENTINA AIRCRAFT FLIGHT MANUAL SUPPLEMENT

Record of Revisions

Rev	Revised page	Description of Revision	EASA Approval or Under DOA Privileges
0			DOA

7 INTRODUCTION

This section contains supplementary information for a safe and efficient operation of the aircraft delivered in the Argentina.

7.2 GENERAL

No variations, refer to basic AFM.

7.3 LIMITATIONS

Section 2 includes additional operating limitations, instrument markings, and basic placards necessary.

WARNING: Limitations, operation under Normal and Emergency Procedures & Performances associated to 600 Kg MTOW are only applicable for Aircraft which embody the design change MOD 92/41, or apply Service Bulletin SB 011-CS as retrofit .

7.3.1 FUEL

APPROVED FUEL	MOGAS ASTM D4814
	AVGAS 100L (ASTM D910)

7.3.2 REQUIRED EQUIPMENT

The airplane, in standard configuration, is approved only for day VFR operation with terrain visual contact.

In addition to KOEL, listed in the basic manual, the appropriate equipment for different types of operation must comply with the applicable Argentine Operational Regulations (RAAC).

7.3.3 LIMITATION PLACARDS

On the left hand of the dashboard a placard will state the following:

NO FUMAR

Near baggage compartment a placard will state the following:

ASEGURAR LA RED
PESO MÁXIMO 20 Kg
MÁXIMA PRESIÓN 12,5
Kg/dm^2

7.4 EMERGENCY PROCEDURES

No variations, refer to basic AFM.

7.5 NORMAL OPERATION

No variations, refer to basic AFM.

7.6 PERFORMANCE

No variations, refer to basic AFM.

7.7 WEIGHT AND BALANCE

No variations, refer to basic AFM.

7.8 AIRCRAFT & SYSTEMS DESCRIPTION

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

EXTINTOR DE INCENDIO EN EL PISO DEL COMPARTIMIENTO DE EQUIPAJE

The following placard is located in proximity of fuel filler caps (28x63 mm):

MOGAS ASTM D4814
AVGAS 100LL (ASTM D910)
CAPACIDAD 45 Lt (11,9 US gal)

The following label is located below each door for emergency opening (Cabin doors external aft side):

EN CASO DE EMERGENCIA TOME LA MANIJA Y TIRE CON FUERZA DE AQUÍ.	EN CASO DE EMERGENCIA TOME LA MANIJA Y TIRE CON FUERZA DE AQUÍ.

On the right side of the tail cone, on the power receptacle´s door is present the following placard (135x25 mm)

CONEXIÓN DE ENERGÍA EXTERNA 12 VOLT - DC

On the right side of the tail cone, next to the battery case access door, is present the following placard (69x17 mm)

BATERÍA ADENTRO

On both the main landing gear fairings the following placard (120x22 mm) is present.

NO PISAR