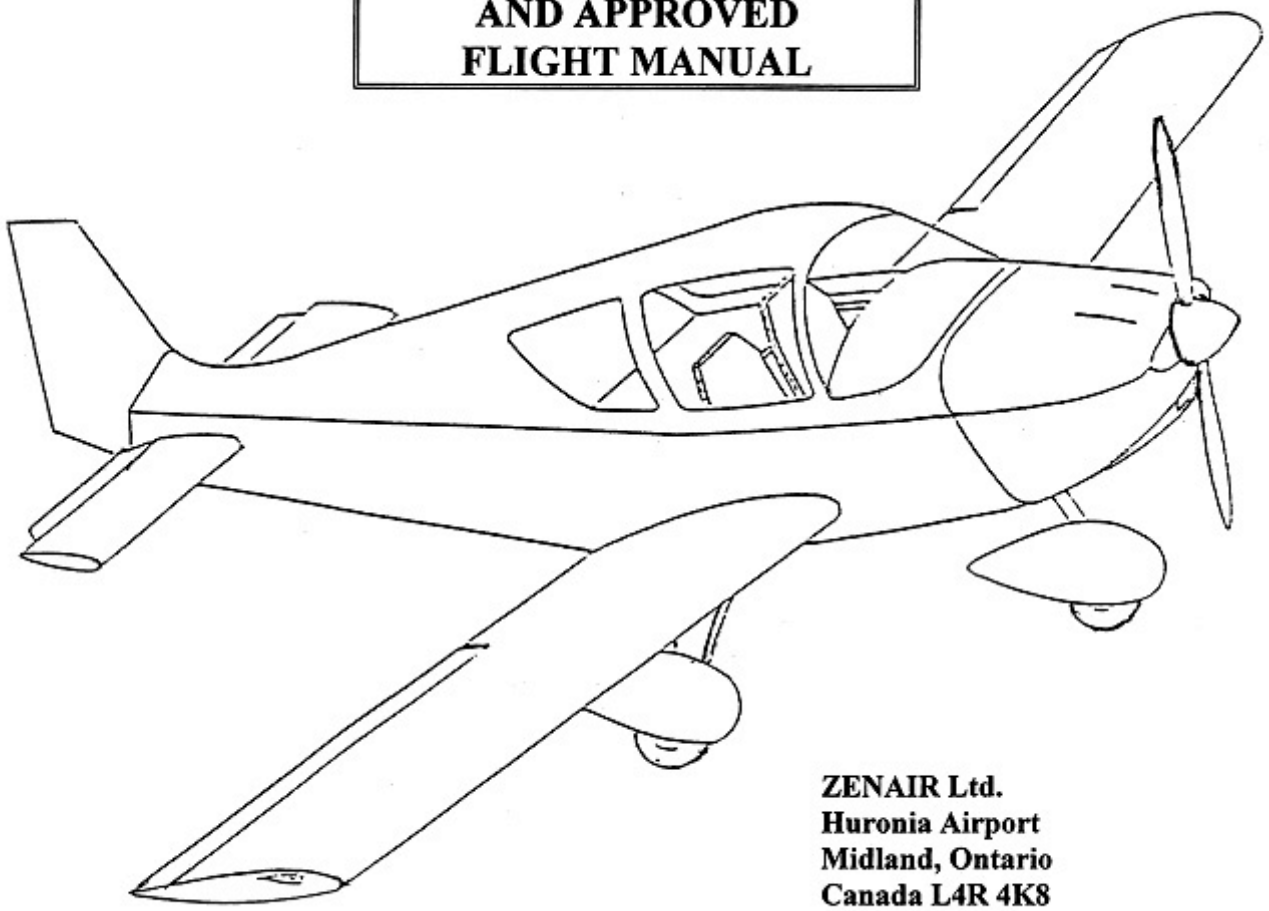
CH 2000 Trainer
with Lycoming 0-235-N2C

OWNER'S MANUAL AND APPROVED FLIGHT MANUAL



ZENAIR Ltd.
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REGISTRATION:

SERIAL NUMBER:

ZENAIR **Issued – 25 July 1995**

Revision 14 - **4 November 2002**

Includes Suplement #1 for 1,692 Lbs gross weight, for USA registered aircraft.

AIRCRAFT FLIGHT MANUAL

Model: *Zenair CH 2000 Trainer*

Serial No: *20 –*

Registration:

Date of Issue:

Sections 2, 3, 4, 5 comprise the Approved Flight Manual. The remaining sections are provided by the manufacturer for the information of the operator.

Pages indexed "App" are approved by: Federal Aviation Administration

Signature: Charles L. Smalley

for Manager, Systems and Flight Test Branch
Chicago Aircraft Certification Office

Federal Aviation Administration
Des Plaines, IL

Original Date of approval: July 25 1995

Date of issue: Nov 04 2002

This airplane is to be operated in compliance with information and limitations contained herein.

Rev. #14 - 4 Nov 02

OWNER'S MANUAL
LOG OF REVISIONS

Revision Number and Date	Revised Pages	Description of Revision	Transport Canada Approval/Date
#0 - 3 Apr 95	All pages	Initial issue	K.J. Mansfield 3 Apr 95
#1 - 7 Apr 95		Update	R.J. Mather 7 Apr 95
#2 - 8 May 95		Update	K.J. Mansfield 8 May 95
#3 - 19 Jul 95		Update	K.J. Mansfield 4 Jan 96
#4 -15 Dec 95		Update	K.J. Mansfield 4 Jan 96
#5 -29 Mar 96		Update	K.J. Mansfield 10 Apr 96
#6 -22 Jul 96		Update	K.J. Mansfield 14 Aug 96
#7-29 Aug 96		Update	S. Didrikson 29 Aug 96
#8-10 Oct 96		Update	K.J. Mansfield 10 Oct 96
#9-4 Feb 97		Update	K.J. Mansfield 25 Feb 97
#10-16 Dec 97		Update	K.J. Mansfield 16 Dec 97
#11 Dec 98		Update	W. Jupp 16 Dec 98
#12 Jan 2000		Update	W. Jupp 13 Jan 00
#13 Nov 00		Update	W. Jupp 3 Nov 00
#14 4-Nov-02		0-1 0-2 0-3 0-4 1-0 2-0 2-4 3-0 4-0 5-0 6-0 7-0 8-0 8-5 8-8 8-14 9-0 9-5 9-9 9-12 9-13	Chief, Flight Test for Director, Aircraft Certification Transport Canada

Note: 0-1 and 0-2 with Update sheet(s) are replaced for each new update.

OWNER'S MANUAL
List of Effective Pages

Section	Page	Date	Section	Page	Date	Section	Page	Date
1-0		4 Nov 02	5-0		4 Nov 02		8-10	3 Apr 95
	0-1	4 Nov 02		5-1	Sup. #1		8-11	15 Dec 95
	0-2	4 Nov 02		5-2	Sup. #1		8-12	29 Mar 96
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	1-3	Sup. #1		6-2	Jan-00		9-2	29 Mar 96
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	2-5	Sup. #1		7-5	3 Apr 95		9-13	4 Nov 02
3-0		4 Nov 02		7-6	29 Mar 96			
	3-1	3 Apr 95		7-7	29 Mar 96			
	3-2	19 Jul 95		7-8	Oct 03			
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	3-4	16 Dec 97		7-10	Dec-98			
	3-5	3 Apr 95		7-11	22 Jul 96			
	3-6	3 Apr 95		7-12	29 Mar 96			
	3-7	3 Apr 95	8-0		4 Nov 02			
	3-8	3 Nov 00		8-1	Jan-00			
	3-9	3 Apr 95		8-2	3 Apr 95			
4-0		4 Nov 02		8-3	3 Apr 95			
	4-1	Sup. #1		8-4	Jan-00			
	4-2	3 Apr 95		8-5	4 Nov 02			
	4-3	15 Dec 95		8-6	3 Apr 95			
	4-4	Jan-00		8-7	29 Mar 96			
	4-5	Sup. #1		8-8	4 Nov 02			
	4-6	Sup. #1		8-9	15 Dec 95			

For Sup. #1, see section 10 of this manual

OWNER'S MANUAL UPDATE LOG

REV. NO.	DATE ISSUED	DATE INCORPORATED	INSERTED BY
0, 1 to 14	----	----	Incorporated at issue

Note: 0-1 and 0-2 with Update sheet(s) are replaced for each new update.

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GENERAL

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SECTION 1

GENERAL

INTRODUCTION

This Manual is designed for maximum utilization as an operating guide for the pilot. It includes the material required by the regulations to be furnished to the pilot (pages indexed APP). It also contains supplemental data supplied by the airplane manufacturer.

This manual is not designed as a substitute for adequate and competent flight instruction, knowledge of current airworthiness directives, applicable air regulations or advisory circulars. It is not intended to be a guide for basic flight instruction or a training manual and should not be used for operational purposes unless kept in a current status.

Assurance that the airplane is in an air worthy condition is the responsibility of the owner. The pilot in command is responsible for determining that the airplane is safe for flight. The pilot is also responsible for remaining within the operating limitations as outlined by instrument markings, placards, and this manual.

Although the arrangement of this manual is intended to increase its in-flight capabilities, it should not be used solely as an occasional operating reference. The pilot should study the entire manual to familiarize himself with the limitations, performance, normal and emergency procedures and operational handling characteristics of the airplane before flight.

The manual has been divided into numbered (arabic) sections. The limitations and emergency procedures have been placed ahead of the normal procedures, performance and other sections to provide easier access to information that may be required in flight. The "Emergency Procedures" Section is quickly available, to present an instant reference. Provisions for expansion and/or updates to this manual have been made.

CERTIFICATION BASIS

This type of aircraft has been approved by the FAA: Aircraft type Approval # A-185
Category of Airworthiness: *Normal*
Noise Certification Basis: *FAR 36- "G"*

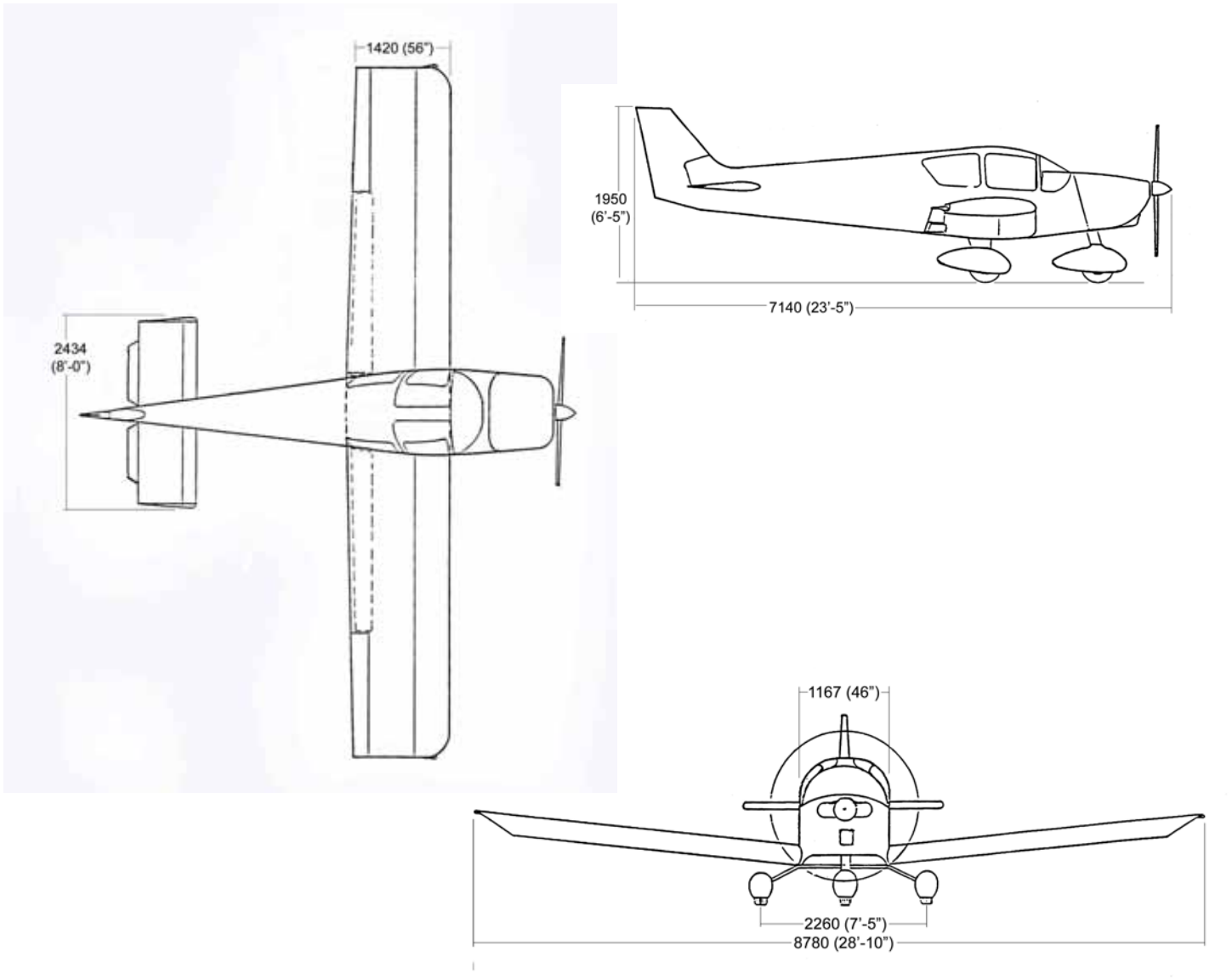
WARNINGS, CAUTIONS and Notes

The following definitions apply to warnings, cautions and notes used in the owner's manual.

WARNING: means that the non-observation of the corresponding procedure leads to an immediate degradation of the flight safety which could result in loss of life or destruction of equipment.

CAUTION: means that the non-observation of the corresponding procedure leads to a degradation of flight safety resulting in damage to the equipment.

NOTE: draws the attention to any item which is important or unusual.



SPECIFICATIONS
ZENAIR CH 2000 Trainer

WING SPAN	28 FT. 10 IN.
WING AREA	137 SQ. FT.
LENGTH	23 FT.
ENGINE	116BHP
PROPELLER (Fixed Pitch Metal)	72 IN.
WING LOADING	11.7 P.S.F.
POWER LOADING	15.1 lb/HP
DESIGN LOADING FACTOR	+3.8 / -1.9 G's
CABIN WIDTH	46 IN.
FUEL CAPACITY (STANDARD)	28 U.S. GAL. = 106 l.
FUEL CAPACITY (OPTIONAL WING TANK)	2 x 14 GAL. = 2x53 l.
FUEL CAPACITY (OPTIONAL LARGE TANK)	34 U.S. GAL.= 130 l.

ENGINE - 4 Cylinders Horizontally Opposed - Air Cooled

Engine Manufacturer	Lycoming
Engine Model Number	0235N2C
Rated Horsepower	116
Rated Speed (rpm)	2800
Bore (inches)	4.375
Stroke (inches)	3.875
Displacement (cubic inches)	233.3
Compression Ratio	8.1:1

PROPELLER - Fixed Pitch - Metal

Propeller Manufacturer	Sensenich
Model	72-CK-0-46 or 72-CK-0-48
Number of Blades	2
Propeller Diameter (inches)	72

FUEL - Standard

Fuel Capacity	106 liters / 28 U.S. gal.
Usable Fuel (U.S. gal) (total)	104 liters / 27.5 U.S. gal
Fuel grade, Aviation	100/100 LL

- Wing Tank Option

Fuel Capacity	2 x 53 liters/2x14 U.S. gal
Usable Fuel (U.S. gal) (total)	2 x 50 liters/2x13 U.S. gal
Fuel Grade, Aviation	100/100 LL

- Large Tank Option

Fuel Capacity	130 liters/34 U.S. gal
Usable Fuel (U.S. gal) (total)	128 liters/33.5 U.S. gal
Fuel Grade, Aviation	100/100 LL

OIL

Oil Capacity	Liters 5.7 / 6 US Quarts
Oil Specification	Refer to latest issue of Lycoming Service Instruction 1014
Oil Viscosity at all temperatures	Ashless dispersant SAE grades: 15W50 or 20W50

MAXIMUM WEIGHTS

Maximum Takeoff Weight (lbs)	1692 lbs
Maximum Landing Weight (lbs)	1608 lbs
Maximum Weights in Baggage Compartment	40 lbs

SPECIFIC LOADINGS

Wing Loading (lbs per sq ft)	12.3
Power Loading (lbs per hp)	14.6

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

The following definitions are of symbols, abbreviations and terminology used throughout the handbook and those which may be of added operational significance to the pilot.

General Airspeed Terminology and Symbols

BHP	Brake horsepower (= rated horsepower of the engine)
CAS	Calibrated Airspeed means the indicated speed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.
GPH	Gallons (U.S.) per Hr fuel consumption.
KCAS	Calibrated Airspeed expressed in "Knots".
C.G.	Centre of Gravity.
IAS	Indicated Airspeed is the speed of an aircraft as shown on the airspeed indicator.
KIAS	Indicated Airspeed expressed in "Knots".
L	Left
R	Right
RPM	Revolutions per minute.
S.L.	Sea Level
TAS	True Airspeed is the airspeed of an airplane relative to undisturbed air which is the CAS corrected for altitude and temperature.
V	Speed.
V_A	Maneuvering Speed is the maximum speed at which application of full available aerodynamic control will not overstress the airplane.
V_{FE}	Maximum Flap Extended Speed is the highest speed permissible with wing flaps partially or fully extended.

General Airspeed Terminology and Symbols (continued)

V_{NE}	Never Exceed Speed is the speed limit that may not be exceeded at any time.
V_{NO}	Maximum Structural Cruising Speed is the speed that should not be exceeded except in smooth air and only with caution.
V_S	Stalling Speed or the minimum steady flight speed at which the airplane is controllable.
V_{SO}	Stalling Speed at which the airplane is controllable in the landing configuration.
V_X	Best Angle-of-Climb Speed is the air speed which delivers the greatest gain of altitude in the shortest horizontal distance.
V_Y	Best Rate-of-Climb Speed is the air speed which delivers the greatest gain in altitude in the shortest time.

Meteorological Terminology

ISA International Standard Atmosphere in which:
The air is a dry perfect gas;
The temperature at sea level is 15^{o} Celsius (59^{o} Fahrenheit);
The pressure at sea level is 29.92 inches hg. (1013 mb);
The temperature gradient from sea level up, is: - 1.98^{o} C per 1000 ft or - 6.5^{o} C per 1000 meter, or -3.57^{o} F per 1000 ft.

OAT Outside Air Temperature is the free air static temperature, obtained either from inflight temperature indications or ground meteorological sources, adjusted for instrument error.

Indicated Pressure Altitude The number actually read from an altimeter when the barometric subscale has been set to 29.92 inches of mercury (1013 millibars).

Pressure Altitude Altitude measured from standard sea-level pressure (29.92 in. Hg) by a pressure or barometric altimeter. It is the indicated pressure altitude corrected for position and instrument error. In this manual, altimeter instrument errors are assumed to be zero.

Station Pressure Actual atmospheric pressure at field elevation.

Wind The wind velocities recorded as variables on the charts of this manual are to be understood as the headwind or tailwind components of the reported winds.

Units

Speed: Kts (Knots) = 1.15 mph (miles per hour)

Pressure: PSI = Pounds per Square Inch
in Hg = inches of Mercury
mb = millibar

Distances: in. = inches = 25.4 millimeters
ft = foot (feet) = .305 meters

Weights: Kg = kilograms = 2.2 lbs = 2.2 pounds

Power Terminology

Takeoff Power	Maximum power permissible for takeoff.
Maximum Continuous Power	Maximum power permissible continuously during flight.
Maximum Climb Power	Maximum power permissible during climb.
Maximum Cruise Power	Maximum power permissible during cruise.
Engine Instruments	
EGT Gauge	Exhaust Gas Temperature Gauge.

Airplane Performance and Flight Planning Terminology

Climb Gradient	The demonstrated ratio of the change in height during a portion of a climb, to the horizontal distance traversed in the same time interval.
Demonstrated Crosswind Velocity	The demonstrated crosswind velocity is the velocity of the crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during certification tests.

Weight and Balance Terminology

Reference Datum	An imaginary vertical plane from which all horizontal distances are measured for balance purposes: wing leading edge at rib #4
Station	A location along the airplane fuselage center line given in terms of distance from the reference datum.
Position or Arm	The horizontal distance from the reference datum to the center of gravity (C.G.) of an item parallel to fuselage centerline.
Moment	The product of the weight of an item multiplied by its arm. (Moment divided by a constant is used to simplify balance calculations by reducing the number of digits.)
Center of Gravity (C.G.)	The point at which an airplane would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane.
C.G. Arm	The arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.
C.G. Limits	The extreme center of gravity locations within which the airplane must be operated at a given weight.
Usable Fuel	Fuel available for flight planning.
Unusable Fuel	Fuel remaining after a runout test has been completed in accordance with governmental regulations.
Standard Empty Weight	Weight of a standard airplane including unusable fuel, full operating fluids and full oil.
Empty Weight	Standard empty weight plus optional equipment.
Payload	Weight of occupants, fuel and baggage.
Useful Load	Difference between takeoff weight, and empty weight.
Maximum Takeoff Weight	Maximum approved weight.

SECTION 2

LIMITATIONS

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SECTION 2

LIMITATIONS

GENERAL

This section includes operating limitations, instrument markings, and basic placards necessary for safe operation of the airplane, its engine, standard systems and standard equipment.

Note: All airspeeds are knots indicated airspeed unless specified.

AIRSPEED LIMITATIONS

SPEED	KIAS	KCAS	REMARKS
V_{NE} Never Exceed Speed	143	139	Do not exceed this speed in any operation.
V_{NO} Maximum Structural Cruising Speed	108	104	Do not exceed this speed except in smooth air and then only with caution.
V_{A} Design Maneuvering Speed	108	104	Do not make full or abrupt control movements above this speed.
V_{FE} Maximum Flap Extended Speed	101	99	Do not exceed this speed with flaps extended.

AIRSPEED INDICATOR MARKINGS

MARKING	KIAS VALUE OR RANGE	SIGNIFICANCE
White Arc	30 to 101	*Full Flap Operating Range.* Lower limit is maximum weight stalling speed in landing configuration. Upper limit is maximum speed permissible with flaps extended.
Green Arc	48 to 108	*Normal Operating Range.* Lower limit is maximum weight stalling speed with flaps up. Upper limit is maximum structural cruising speed.
Yellow Arc	108 to 143	Operations must be conducted with caution and only in smooth air.
Red Line	143	Maximum speeds for all operations.

Power plant

Engine Manufacturer: . . . . . Lycoming
Engine Model: 0235N2C
Maximum Power, Take-off: . . . . . 116 BHP
Continuous: . . . . . 116 BHP
Maximum Engine rpm, Take-off: 2800
Continuous: 2800
Maximum Cylinder Head Temperature: . . . . 500^{O} F
Maximum Oil Temperature: . . . . . 245^{O} F

Normal: . . . . . 60 to 90 psi
Maximum: . . . . . 115 psi
Fuel Pressure, Minimum: . . . . . 0.5 psi
Desired: . . . . . 3 psi
Maximum: . . . . . 8 psi
Fuel Grade (minimum octane): . . . . . 100/100LL Grade Aviation Fuel
Oil Grade . . . . . Ashless dispersant
SAE grades 15W50 or 20W50
Propeller Manufacturer: . . . . . Sensenich
Propeller Model: . . . . . 72-CK-0-46 or 72-CK-0-48
Propeller Diameter: Maximum . . . . 72 inches
Minimum . . . . . .70 inches
Propeller Tolerance (static RPM at full throttle) . . . . Not above 2750 RPM

OUTSIDE TEMPERATURE LIMIT

Maximum Outside Temperature for proper engine cooling .....100°F (38°C)
Extreme Hot temperature operation.....see page 9-7

INSTRUMENT MARKINGS

INSTRUMENT		Red Line MINIMUM LIMIT	Green Arc NORMAL OPERATING	Red Line MAXIMUM LIMIT
TACHOMETER	**RPM**	———	800 - 2800	2800
OIL TEMPERATURE	**^{O}F**	———	160 - 220	245
FUEL PRESSURE	**PSI**	.5	.5 - 8	8
OIL PRESSURE	**PSI**	15	60 - 90	115
AMMETER	**AMPS**	-75-0		+50-+75
VOLTMETER	**VOLTS**		10 - 14	
SUCTION	**Hg**	Yellow 0 - 4.3	4.3 - 6.1	Yellow 6.1 - 7

WEIGHT LIMIT

Maximum Take-off weight: . . . . . .1692 lbs
Maximum Landing weight: . . . . . .1608 lbs
Maximum empty weight: with engine oil full and
including unusable fuel . . . . . 1175 lbs (535 kg)
Maximum weight in Baggage Compartment: . . . . . 40 lbs (18 kg)

CENTER OF GRAVITY LIMITS

(See Page 2.5)

MANEUVER LIMITS

- Limited acrobatic maneuvers include:

	Entry Speed
Steep Turns	90 KAS
Lazy Eights	100 KAS
Chandelles	100 KAS

: Intentional spins prohibited.

FLIGHT LOAD FACTORS

Flap up: Positive + 3.8
Negative - 1.9

Flap extended: Positive 1.9
Negative 0

TYPES OF OPERATIONS

The airplane is approved for the following operations when equipped in accordance with the prevailing regulations.
Day V.F.R.
Night - when equipped with the light option. (see section 9)
Day/Night VFR/IFR when equipped in accordance with National requirements (see section 9)
Flight in known or forecast icing conditions is prohibited.

FUEL

Standard tank capacity	106 liters / 28 US gal.
Usable	104 liters / 27.5 US gal.
Wing tank option capacity	2x53 liters/2x14 US gal.
Usable	2x50 liters/2x13 US gal.
Large tank option capacity	130 liters/34 US gal.
Usable	128 liters/33.5 US gal.

OIL

See page 1-3

OCCUPANTS

Minimum One Pilot
Maximum One Pilot and One Passenger

LIMITATION PLACARDS

The following placards are installed (Boxed items for night flying option)

- On the instrument panel:
  - . Compass deviation chart
  - . NO SMOKING
  - . MANEUVERING SPEED VA = 108 KIAS
  - . CABIN HEAT PULL ON
  - . THROTTLE PULL CLOSE
    Fuel selector: 104 L./27.5 US gal, DEPRESS, ON, OFF
  - . Registration _ _ _ _ _ _
  - . RADIOS
    USABLE FUEL
    104 L./27.5 US gal

DAY VFR ONLY
IN NON-ICING CONDITIONS
AEROBATIC MANEUVERS
PROHIBITED
AVOID SIDESLIPS USING
LARGE RUDDER INPUTS
SEE FLIGHT MANUAL

(or with Night Flying Option)

DAY AND NIGHT VFR
IN NON-ICING CONDITIONS
AEROBATIC MANEUVERS
PROHIBITED
AVOID SIDESLIPS USING
LARGE RUDDER INPUTS
SEE FLIGHT MANUAL

UP
FLAP
DOWN

TRIM
DOWN
UP

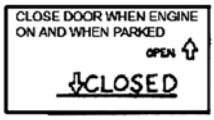
INTENTIONAL SPINS PROHIBITED

MASTER BREAKER	MASTER SWITCH				CARB HEAT	FIELD BKR	ALTERNATOR BREAKER	AUXILIARY FUEL PUMP BKR
ON	ON	R	L	BOTH		ON	ON	ON
OFF	OFF	OFF		START		OFF	OFF	OFF

OIL PRESS.	OIL TEMP.	STARTER SOLENOID	TURN & BANK	RADIOS
	FUEL PRESS.	FUEL GAUGE		
FLAP	STALL WARN.	TRIM	AUXILIARY CABIN LIGHT	12 VOLTS

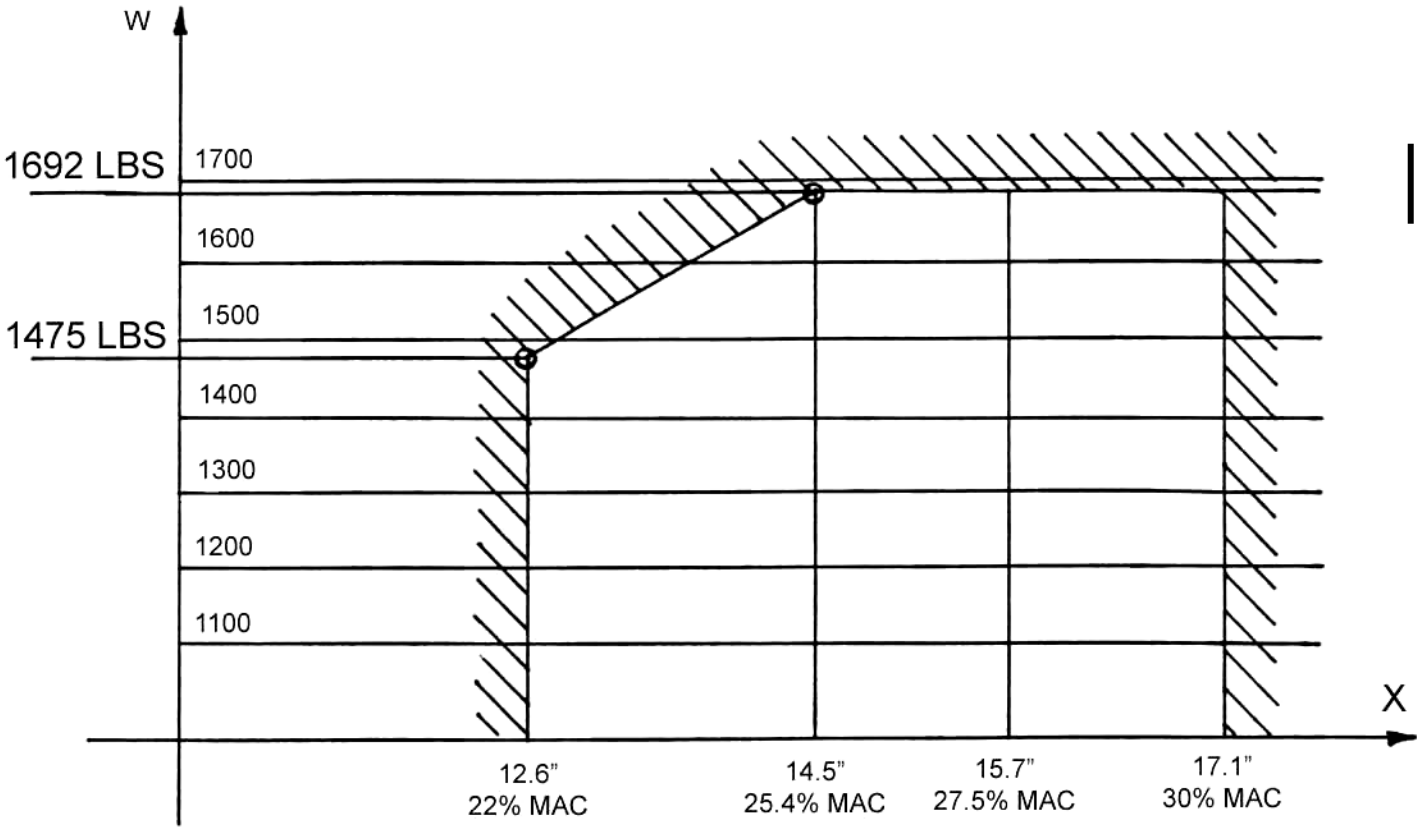
LIGHT MASTER BKR	MIXTURE PUSH RICH	NAV LIGHT BKR	LAND LIGHT L. BKR	LAND LIGHT R. BKR	STROBES BKR	CABIN LIGHT BKR

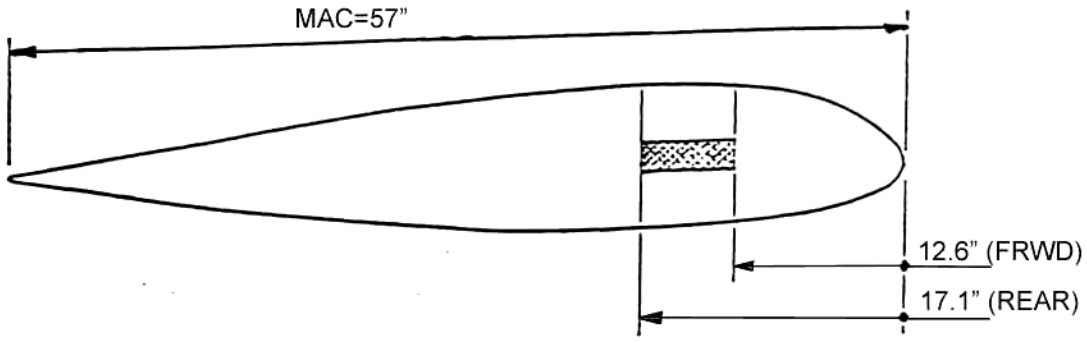
- Beside the red door handles:



- Baggage area: 18kg/ 40 LBS MAX. SOFT ARTICLES ONLY
  CHECK WEIGHT AND BALANCE
- Beside fuel filler: AVIATION FUEL
  100/100LL
  . 106 L./28 US gal
- Oil filler cover: OIL 5.7 L. or 6 US qts.
  SAE 20W50
- Left forward fuselage: FUEL DRAIN ↘
- Rear left side fuselage: (identification plate) ZENAIR LTD
  CH 2000 #(serial)
  MIDLAND. ON (date)
  T.A. #A-185 FAA T.C. #TA5CH MFR.APP. #72-94

WEIGHT AND C.G. RANGE





SECTION 3

EMERGENCY PROCEDURES

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SECTION 3

EMERGENCY PROCEDURES

GENERAL

The recommended procedures for coping with various types of emergencies and critical situations are provided by this section.

The first portion of this section consists of an abbreviated emergency check list which supplies an action sequence for critical situations with little emphasis on the operation of the systems.

The remainder of the section is devoted to amplified emergency procedures containing additional information to provide the pilot with a more complete understanding of the procedures.

These procedures are suggested as the best course of action for coping with the particular condition described, but are not a substitute for sound judgment and common sense. Pilots should familiarize themselves with the procedures given in this section and be prepared to take appropriate action should an emergency arise.

EMERGENCY PROCEDURES CHECK LIST

ENGINE FIRE DURING START

Starter . . . . . continue cranking
(If engine starts)
Power . . . . . .1700 RPM momentarily
Engine . . . SHUTDOWN and inspect for damage
(If engine fails to start)
Ignition . . . . . OFF
Master Switch . . . . . OFF
Mixture . . . . . .IDLE CUT OFF
Fuel . . . . . OFF
(abandon aircraft and fight fire)

ENGINE FAILURE DURING TAKEOFF

Throttle . . . . . IDLE
Brakes . . . . . APPLY
Wing Flaps . . . . . . UP
Mixture . . . . . IDLE CUT-OFF
Ignition Switch . . . . . .OFF
Master Switch . . . . . OFF

ENGINE FAILURE AFTER TAKEOFF

Airspeed . . . . **65 KIAS**
Mixture . . . . . IDLE CUT-OFF
Fuel Selector . . . . . OFF
Ignition Switch . . . . . OFF
Wing Flaps. . . . . AS REQUIRED
Master Switch . . . . . OFF

ENGINE FAILURE IN FLIGHT

(Restart Procedure)

Airspeed . . . . . 65 KIAS
Fuel Selector . . . . . ON
Aux Fuel Pump . . . . . ON
Mixture . . . . . RICH
Mag. Switch . . . . . BOTH
Carburetor Heat . . . . . ON
Gauges . . . . . Check for source of power loss

POWER OFF LANDING

Touchdowns should normally be made at lowest possible airspeed with full flaps.

When committed to landing:
Ignition . . . . . **OFF**
Master Switch . . . . . **OFF**
Fuel selector . . . .**OFF**
Mixture . . . . . .**IDLE CUT OFF**
Seat belt and harness . . . . . **Secure**

PRECAUTIONARY LANDING WITH ENGINE POWER

Seats, Seat Belts, Shoulder Harnesses ..**SECURE**
Airspeed . . . . . **65 KIAS (flaps UP)**
60 KIAS (flaps down)
Mixture . . . . . **RICH**
Fuel Selector. . . . . .**ON**
Ignition Switch . . . .**ON**
Wing Flaps . . . . . **as required**
Master Switch . . . . . .**ON**
Touchdown . . . .**slightly tail low**
Brakes . . . . . **as required**

FIRE IN FLIGHT

Source of fire . . . . . .**check**

Electrical fire (smoke in cabin):
Master switch and Alt. Field. . . . . .**OFF**
Vents . . . . **open**
Cabin heat . . . . . **OFF**
Fire Extinguisher . . . . . .If and as required
Land as soon as practical.

Engine fire:
Cabin Heat . . . . . **OFF**
Fuel selector . . . .**OFF**
Throttle . . . . . **CLOSED**
Mixture . . . . . **IDLE CUT-OFF**
Auxiliary fuel pump . . . . . **OFF**
Proceed with **POWER OFF LANDING** procedure

LOSS OF OIL PRESSURE

Reduce power.
Prepare for power off landing, and land as soon as practical.

LOSS OF FUEL PRESSURE

Auxiliary fuel pump . . . . . .**ON**
Fuel selector . . . . . **check "ON"**
Land at nearest airport and investigate problem.

HIGH OIL TEMPERATURE

Land at nearest airport and investigate the problem. Prepare for power off landing.

ALTERNATOR FAILURE

Verify failure
Reduce electrical load as much as possible.
Alternator circuit breakers . . . . . check
Alt. switch. . . . . .**OFF** (for 1 second), then **ON**
If no input Alt field. . . . . **OFF**
Reduce electrical load and land as soon as practical.

SPIN RECOVERY

Rudder . . . . . Full opposite to spin direction.
Ailerons . . . . . Neutral
Pitch . . . . . Full forward.
When rotation stops, centralize rudder and ease control wheel back to gently recover from dive.

Observe flap limit speed, if flaps are down.

ENGINE ROUGHNESS

Carburetor heat . . . . . **ON**
Mixture . . . . . adjust for max. smoothness
Auxiliary fuel pump . . . . . **ON**
Fuel selector . . . . . **check open**
Engine gauges . . . . . **check**
Magneto switch . . . . . **"BOTH"**

If operation is satisfactory on either one, continue on that magneto at reduced power and full **"RICH"** mixture to first airport.
Prepare for power off landing.

ICING

Inadvertent Icing Encounter

Ensure Pitot heat is **ON.**

Turn back or change altitude to obtain an outside air temperature that is less conducive to icing.

Pull cabin heat control full out to obtain maximum defroster air temperature.

Open the throttle to increase engine speed and minimize ice build-up on propeller blades.

Apply carburetor heat as required. Lean the mixture for maximum RPM, if carburetor heat is used continuously.

Plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable "off airport" landing site.

With ice accumulation on the wing leading edges, be prepared for significantly higher stall speed.

Leave wing flaps retracted. With a severe ice build-up on the horizontal tail, the change in wing wake airflow direction caused by wing flap extension could result in a loss of elevator effectiveness.

When the alternate static (if equipped) is used, the
altimeter reading must be decreased by 100 ft. (and 190 ft. when the deicing window is open).

When the pitot is not frozen and the alternate static is used, the airspeed reading will be 20 kts too high; in other words: the actual aispeed is 20 kts lower than indicated.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

Ammeter Shows Excessive Rate of Charge (Full scale deflection)

Alternator . . . . . **OFF**
Alternator Circuit Breaker . . . . . .**OFF**
Nonessential Electrical Equipment . . . . . .**OFF**
Flight . . . . . .**Terminate** as soon as possible

Ammeter Indicates Discharge

NOTE

Radios . . . . . .**OFF**
Alternator Circuit Breaker . . . . . **CHECK ON**
Master Switch . . . . . **OFF**
Master Switch . . . . . .**ON**
Radios . . . . . .**ON**

If Ammeter Continues Indicating Discharge

Alternator . . . . . **OFF**
Nonessential Radio and Elect. Equipment **OFF**
Flight . . . . . **Terminate** as soon as possible

ELECTRIC FLAP

Should the flaps become inoperative, the flight may be continued safely provided following is kept in mind:

Flaps Down: Do not exceed 100 KIAS
Caution: The rate of climb is reduced.
Monitor the engine oil temperature.

Flaps Up: Approach at 65 KIAS
Caution: Be prepared for a longer landing distance.

ELECTRIC TRIM

In case of complete electric failure (battery and alternator) or trim runaway; the pilot will no longer be able to neutralize the pitch control forces. They may become quite heavy. Adjust speed and power to minimize the forces on the control wheel and be prepared to have to exercise **unusually high pull or push** especially during landing.

LIGHTNING STRIKE

In case of a lightning strike, land at the nearest airport to investigate the damage.

AMPLIFIED EMERGENCY PROCEDURES (GENERAL)

The following paragraphs are presented to supply additional information for the purpose of providing the pilot with a more complete understanding of the recommended course of action and probable cause of an emergency situation.

ENGINE FIRE DURING START

Engine fires during start are usually the result of overpriming. The first attempt to extinguish the fire is to try to start the engine and draw the excess fuel back into the induction system and blow the fire out.

If fire continues more than a few seconds, the engine should be shut down and the fire extinguished by the best available means.

ENGINE POWER LOSS DURING TAKEOFF

The proper action to be taken if loss of power occurs during takeoff will depend on the circumstances of the particular situation.

If sufficient runway remains to complete a normal landing, land straight ahead.

Any turn will increase the risk of stall or stall/spin, fatal at low altitude. Land as straight ahead as practical and maintain a safe airspeed and make only a very shallow turn if necessary to avoid obstructions. Use of flaps depends on the circumstances. Normally, flaps should be fully extended for touchdown.

If sufficient altitude has been gained to attempt a restart, maintain a safe airspeed and check the fuel selector, check the Auxiliary fuel pump to ensure that it is **"ON"** and that the mixture is **"RICH."** The carburetor heat should be **"ON".**

If power is not regained, proceed with the Power Off Landing procedure (refer to the emergency check list).

ENGINE POWER LOSS IN FLIGHT

Complete engine power loss is usually caused by fuel flow interruption and power will be restored shortly after fuel flow is restored. If power loss occurs at a low altitude, the first step is to prepare for an emergency landing. An airspeed of at least 60 KIAS should be maintained.

If altitude permits, check the fuel and turn the Auxiliary fuel pump **"ON."** Move the mixture control to **"RICH"** and the carburetor heat to **"ON."** Check the gauges for an indication of the cause of the power loss. If no fuel pressure is indicated, check the tank selector position.

When power is restored move the carburetor heat and the Auxiliary fuel pump to **"OFF"**.

If the preceding steps do not restore power, prepare for an emergency landing.

If time permits, turn the ignition switch to **"L"** then to **"R"** then back to **"BOTH."** Move the throttle and mixture control levers to different settings. This may restore power if the problem is too rich or too lean a mixture or if there is a partial fuel system restriction. Water in the fuel could take some time to be used up, and allowing the engine to windmill may restore power. If power loss is due to water, fuel pressure indications will be normal.

(If engine failure was caused by fuel exhaustion power will not be restored after switching fuel tanks until the empty fuel lines are filled. This may require up to six seconds. wing tank option only)

If power is not regained, proceed with the Power Off Landing procedure (refer to the emergency check list).

POWER OFF LANDING

If loss of power occurs at altitude, trim the aircraft for best gliding angle (60 KIAS) and look for a suitable field. If measures taken to restore power are not effective, and if time permits, check your charts for airports in the immediate vicinity; it may be possible to land at one if you have sufficient altitude. If possible, notify Air Traffic Control or other facility by radio of your difficulty, position, and intentions.

When committed to a landing, flaps may be used as desired. Turn the fuel selector valve to **"OFF"** and pull the mixture out. Shut **"OFF"** the master and ignition switches. The seat belts and shoulder harness should be tightened. Touchdown should be normally made at the lowest possible airspeed.

FIRE IN FLIGHT

The presence of fire is noted through smoke, smell and heat in the cabin. It is essential that the source of the fire be promptly identified through instrument readings, character of the smoke, or other indications since the action to be taken differs somewhat in each case.

Check for the source of the fire first.

If an electrical fire is indicated (smoke in the cabin), the master switch should be turned **"OFF."** The cabin vents should be opened and the cabin heat turned **"OFF."** If installed; use fire extinguisher as required. A landing should be made as soon as possible.

If an engine fire is present, switch the fuel selector to **"OFF"** and close the throttle. The mixture should be pulled out. Turn the Auxiliary fuel pump **"OFF."** In all cases, the cabin heat should be pushed **"OFF."** Once final flap configuration is set, select master switch **"OFF."** Proceed with power off landing procedure.

LOSS OF OIL PRESSURE

Loss of oil pressure may be either partial or complete. A partial loss of oil pressure usually indicates a malfunction in the oil pressure regulating system, and a landing should be made as soon as possible to investigate the cause and prevent engine damage.

A complete loss of oil pressure indication may signify oil exhaustion or may be the result of a faulty gauge. In either case, proceed toward the nearest airport at reduced power setting, and be prepared for a forced landing. If the problem is not a pressure gauge malfunction, the engine may stop suddenly. Maintain altitude until such time as a dead stick landing can be accomplished. Don't change power settings unnecessarily, as this may hasten complete power loss.

Depending on the circumstances, it may be advisable to make an off airport landing while power is still available, particularly if other indications of actual oil pressure loss, such as sudden increases in temperatures, oil or smoke, are apparent, and an airport is not close.

If engine stoppage occurs, proceed with Power Off Landing.

LOSS OF FUEL PRESSURE

If loss of fuel pressure occurs, switch the Auxiliary fuel pump **"ON"** and check the fuel selector.

Land as soon as practical and have the engine driven fuel pump and fuel system checked.

HIGH OIL TEMPERATURE

An abnormally high oil temperature indication may be caused by a low oil level, damaged or improper baffle seals, a defective gauge, or other causes. Land as soon as practical at an appropriate airport and have the cause investigated.

A steady, rapid rise in oil temperature is a sign of trouble. Land at the nearest airport and let a mechanic investigate the problem. Watch the oil pressure gauge for an accompanying loss of pressure.

ALTERNATOR FAILURE

Loss of alternator output is detected through negative reading on the ammeter. Before executing the following procedure, ensure that the reading is negative and not merely low, by actuating an electrically powered device, such as the flaps. If no increase in the ammeter reading is noted, alternator failure can be assumed.

The electrical load should be reduced as much as possible. Check the alternator circuit breakers for a popped circuit.

The next step is to attempt to reset the overvoltage relay. This is accomplished by moving the "ALT" switch to **"OFF"** for one second and then to **"ON."** If the trouble was caused by a momentary overvoltage condition (16.5 volts and up) this procedure should return the ammeter to a normal reading.

If the ammeter continues to indicate "0" output, or if the alternator will not remain reset, turn the "ALT" switch **"OFF,"** maintain minimum electrical load and land as soon as practical. All electrical load is being supplied by the battery only.

SPIN RECOVERY

Apply full rudder opposite to direction of rotation and with ailerons in neutral, push control wheel forward. When rotation stops, centralize the rudder, and ease back on the control wheel to recover from the dive.

Observe flap limit speed if flaps are down.

CARBURETOR ICING
ENGINE ROUGHNESS

Engine roughness is usually due to carburetor icing which is indicated by a drop in RPM, and may be accompanied by a loss of airspeed or altitude. If too much ice is allowed to accumulate, restoration of full power may not be possible; therefore, prompt action is required.

Pull carburetor heat on (See Note). RPM will decrease slightly and roughness will increase. Wait for a decrease in engine roughness and increase in RPM, indicating ice removal. If no change in approximately one minute, push the carburetor heat to **"OFF."**

If the engine is still rough, adjust the mixture for maximum smoothness. The engine will run rough if too rich or too lean. The electric fuel pump should be switched to **"ON"** and the fuel selector checked to see if fuel contamination is the problem. Check the gauges for abnormal readings. If any gauge readings are abnormal, proceed accordingly. Move the magneto switch to **"L"** then to **"R,"** then back to **"BOTH."** If operation is satisfactory on either magneto, proceed on that magneto at reduced power, with mixture pushed full **"RICH,"** to a landing at the first available airport.

If roughness persists, prepare for a precautionary landing at pilot's discretion.

NOTE

Partial carburetor heat may be worse than no heat at all, since it may melt part of the ice, which will refreeze in the intake system. When using carburetor heat, therefore, always pull full heat, and when ice is removed, push the control to the full cold position.

SUSPICION OF CARBON MONOXIDE CONTAMINATION IN THE CABIN

Carbon monoxide (CO) is a gas which is developed during the engine combustion process. It is poisonous and without smell. Increased concentrations of carbon monoxide in closed spaces can be fatal.

As per Service Bulletin of March 2006, all CH2000 aircraft must be equipped with a carbon monoxide detector.

If the carbon monoxide detector indicates carbon monoxide or if a smell similar to exhaust gases is noticed in the cabin, the following measures must be taken:

1, Cabin heat . . . . .OFF
2, Ventilation. . . . . .OPEN
3, Emergency window (IFR window on pilot side) . . . . . .OPEN
4, Land aircraft

NOTE
Before take-off, inspect carbon monoxide detector for expiry date and color.

SECTION 4

NORMAL PROCEDURES

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SECTION 4

NORMAL PROCEDURES

GENERAL

This section describes the recommended regulatory procedures for the conduct of normal operations for the CH 2000 Trainer. All of the regulatory required procedures and those necessary for the safe operation of the airplane as determined by the operating and design features of the airplane are presented.

Normal procedures associated with those optional systems and equipment which require manual supplements are provided by Section 9.

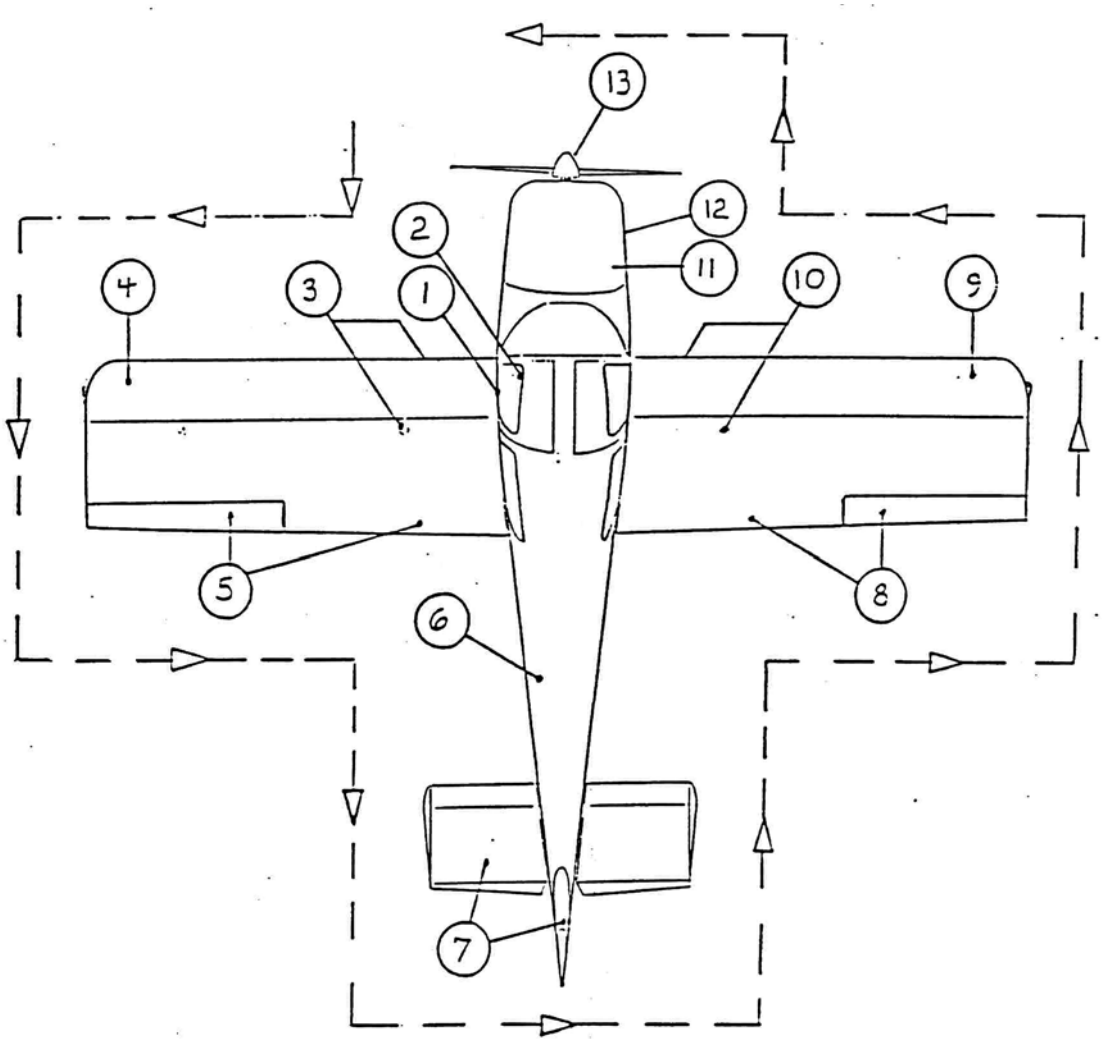
These procedures are provided to present a source of reference and review and to supply information on procedures which are not the same for all aircraft. Pilots should familiarize themselves with the procedures given in this section in order to become proficient in the normal operations of the airplane.

AIRSPEEDS FOR SAFE OPERATIONS

The following airspeeds are those which are significant to the safe operation of the airplane. These figures are for standard airplanes flown at gross weight under standard conditions at sea level.

Performance for a specific airplane may vary from published figures depending upon the condition of the engine, airplane and equipment, atmospheric conditions and piloting technique.

(a)	Best Rate of Climb Speed	65 KIAS
(b)	Best Angle of Climb Speed	62 KIAS
(c)	Turbulent Air Operating Speed: Do not exceed	108 KIAS
(d)	Maximum Flap Speed	101 KIAS
(e)	Landing Final Approach Speed (Flaps down)	60 KIAS
(f)	Maximum Demonstrated Crosswind Velocity	25 KTS



WALK-AROUND

NORMAL PROCEDURES CHECK LIST

PREFLIGHT CHECK

1 Unlock and open canopy

2 Check cockpit:

Ignition Magnetos 1 + 2	off
Master Switch	on
Mixture Control	pull out "lean"
Throttle	pull out "idle"
Fuel	open
Flaps	down
Master Switch	off

3 - Check left windshield and canopy for general condition.
- Drain sample from both: sump and gascolator.
- Inspect left main landing gear and tire for general condition (wear, cuts, abrasions, leaking brakes, tire inflation).
- Check Pitot static (remove cover, and dirt). Check Pitot static heat before IFR flight (Master ON).

4 - Check left wing surface and tip for damage.
- Remove left wing tie down.
- Check condition and security of lights.

5 - Check left aileron for freedom of movement and security.
- Check left flap for safety.

6 - Check rear fuselage for damage- rear access doors secured.
- Check antennas.

7 - Check elevator and rudder condition and freedom of movement.
- Check cables and hinges.
- Check trim tab for security.
- Remove tail tie down.
- Check condition and security of tail light.

8 - Check right flap for safety.
- Check right aileron for freedom of movement and security.

9 - Check right wing surface and tip for damage.
- Remove right wing tie down.
- Check stall warning for freedom movement.
- Check condition and security of lights.

10 - Inspect right landing gear and tire for general condition (wear, cuts, abrasions, leaking brakes, tire inflation).
- Check stall warning (Master ON)
- Drain sample from the fuel tank, and the gascolator.
- Check right windshield and canopy for general condition.

11 - Check engine cowling for damage and security of fasteners.
- Open engine access door and check engine oil dipstick.
- Re-Install engine cowling after completion of engine compartment check (check security of fasteners).

12 - Check engine muffler and exhaust for cracks, nicks, and security.

13 - (Remove tow bar from nose gear.)
- Check nose gear and tire for general condition (wear, cuts, abrasions, tire inflation).
- Check air intake for foreign particles.
- Check nose cone for damage
- Check propeller for damage.

Physically check fuel level in tank(s) before each take off

BEFORE STARTING THE ENGINE

Operate the controls and check for proper operation. Make sure the windshield is clean for best visibility. Check brakes, and fasten and check safety belt.
Warning: Doors must be closed securely: they will fly off when opened and engine on.

STARTING THE ENGINE

- Perform pre-flight inspection.
- Head airplane into wind.
- Lock wheels by either wheel brakes or chocks.
- Master **"ON".**
- Push carburetor heat control in **(closed).**
- Turn fuel valve to **"ON"** position.
- Set throttle back (idle).
- Push mixture control to **"Full Rich".**
- Switch electric fuel pump **"ON".**
- Pump throttle to full open and back to idle for 2 to 3 strokes for a cold engine.
- Engage the starter.
- When engine fires, release magneto key to the **"Both"** position.
- Check oil pressure gauge. If oil pressure is not indicated within thirty seconds, stop the engine and determine the trouble.
- Alternator and Field **"ON".**

Primer: - above freezing OAT - one stroke primer should be sufficient.
near freezing temperature - up to three strokes of the primer may be necessary.
- If the engine is under primed--most like in cold weather with a cold engine--it will not fire and additional priming will be necessary.
- below -12°C (10°F) OAT, the engine should be preheated.

Note: Overpriming or flooding is indicated by intermittent firing followed by puffs of black smoke from the exhaust. Excess fuel can be cleared by pulling the mixture out, pushing the throttle full open and cranking the engine over several revolutions with the starter.

Caution: The primer must be fully pushed in and locked (1/2 turn) before cranking the engine to avoid flooding.

WARM-UP AND GROUND TEST

The engine is air cooled and depends on the forward movement of the aircraft to maintain proper cooling. Particular care is necessary, therefore, when operating the engine on the ground during hot weather to prevent overheating. It is recommended that the following procedures be observed.

- Head the aircraft into the wind.
- Adjust the throttle to 1200 rpm for warmup.
- Leave the mixture control in the "Full Rich" setting.
- Avoid prolonged idling at low RPM as this practice may result in fouled plugs. Limit ground running to minimum time necessary to warm engine for take-off, without overheating it.
- Use of the carburetor hot air on the ground must be held to a minimum. Dust, sand, etc... can be taken into the engine with the resultant cylinder and piston ring wear. Carburetor air heat should be used on the ground only to make certain it is functioning properly.

NOTE: Any ground check that requires full throttle operation must be short to prevent overheating the engine.

TAXIING

With the tricycle configuration, taxiing is easy with the use of the steerable nose wheel. Avoid steering the aircraft with the brakes. When winds exceed 15 to 20 mph, taxi very slowly and carefully. Position control surfaces to prevent inadvertent lift-off.

Check: flight instruments and radio aids: functioning correctly.

BEFORE TAKE-OFF

- Check flaps up.
- Set trim.
- Check fuel selector valve.

- Check oil pressure and oil temperature.
- Check fuel quantity.
- Check Volts and Amp meter.

- Check all lights (if installed), select as required.
- Check and set radios and Navigation aids (if installed).
- Check mixture pushed "**RICH"**, Auxiliary fuel pump **"ON".**

- Set throttle for 1700 RPM. Check magnetos from **"BOTH"** to **TWO,** then from **"BOTH"** to **ONE**, and back to **"BOTH"** (on either one magneto, the RPM drop is approximately 100).
- Pull carburetor heat to check operation. (RPM will decrease by approximately 100 at 1700 RPM). Push carburetor heat in after check.

- Set Altimeter.
- Check pitot heat (if installed): "**ON**" (switch up) when flying in IFR conditions.
- Check alternate static (if installed) switch (**Normal**: switch up).

- Fasten seat belts, tighten (but not uncomfortably).
- Check that canopy is locked securely (both doors).
- Check freedom and deflection of controls.

TAKE OFF

- Release brakes.
- Push throttle fully open.
- Check RPM, and gauges.
- Rotate at approximately 55 KIAS.

CLIMB (at Max. Weight, flaps up)

BEST RATE OF CLIMB (Vy): Approx. 65 KIAS. This will provide the greatest altitude gain in the shortest time.

BEST ANGLE OF CLIMB (Vx): Approx. 62 KIAS. This will provide the greatest altitude gain in the shortest distance. (steepest angle of climb for short fields with obstruction)

AFTER TAKE OFF

- Auxiliary fuel pump **"OFF".**

CRUISE RPM

Set 75% power, see page 5-3.
Lower RPM means slower cruise speeds, quieter flying, better fuel economy, lower engine temperatures, and increased endurance.

PRE LANDING CHECK

Auxiliary Fuel Pump . . . . . ON
Mixture . . . . . RICH
Carburetor heat . . . . . ON
Flaps . . . . . As Required
Speeds . . . . . As Required
Harness . . . . . Tight
Lights . . . . . .As Required

CROSS WIND LANDING: Approach with one wing low, or use crabbing technique, or a combination of both. Straighten the aircraft out just before touchdown.
NOTE: Sideslips using large rudder inputs MAY be accompanied by a minor pitch oscillation and/or a significant nose-down pitching tendency. A strong aft, longitudinal control force may be required to hold the nose up.

Very large, abrupt, rudder pedal inputs can result in abrupt nose-down pitching tendencies unless appropriate aft stick pressure is applied. These maneuvers serve no useful purpose and should be avoided.
NOTE: When extending the flaps, the sink rate increases substantially: this may lead to hard landings if not taken into account.
MISSED LANDINGS: Apply full power. Maintain 54 KIAS with full flap or 62 KIAS with flap up for best climb gradient. Continue with circuit pattern. Retract flaps above 55 KIAS, trim at pattern height, turn downwind then approach etc...
FLAPS UP LANDINGS: APPROACH AT 65 KIAS

AFTER LANDING CHECK

Flaps . . . . . .UP
Lights . . . . . .As Required
Radios and Nav aids . . . . . .As Required
Pitot Heat . . . . . OFF

SHUT DOWN (Engine)

Magnetos . . . . . Check
Radios and Nav aids . . . . . OFF
External lights . . . . . .OFF
Auxiliary Fuel pump . . . . . OFF
Mixture . . . . . PULL/OUT
MAGs. (when propeller stops) . . . . . .OFF
MASTER . . . . . OFF
All switches . . . . . .OFF

Remove ignition key when aircraft is unattended.
NOTE: The hour-meter counts "engine time" from the moment the master switch is turned on. Do not forget to turn the master switch off.

TIE DOWN

When the aircraft is not in use, it should be anchored to the tie down rings located under each wing and at the rear fuselage. Tie the control forward. Make sure the doors are locked on both sides. The optional canopy cover will minimize dust, or damage to the canopy (and keep curious onlookers out).
NOTE: As the aircraft is not equipped with a "Parking Brake", it is important to always tie down the plane when it is not attended.

SECTION 5

PERFORMANCE

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SECTION 5

PERFORMANCE

GENERAL

All of the required regulatory and complimentary performance information applicable to this aircraft is provided by this section.- Approved data are indexed APP.

AIRSPEED CALIBRATION

KIAS	40	50	60	70	80	100	120	140
KCAS	48	53	61	70	80	98	116	135

STALL SPEEDS

At 1692 lbs

		level	20 deg	30 deg	45 deg bank
Flaps up	KIAS	48	58	72	104
	KCAS	51	59	72	102
Flaps down	KIAS	30	59	68	$n = 2$
	KCAS	48	56	68	> 1.9

TAKE OFF

At full power (brake release) flaps up from paved and level runway.
No wind
Aircraft at 1692 lbs
Lift off speed and climb at 65 KIAS

Ground roll in feet

Pressure altitude ft	ISA Temp. ^{o} F	ISA - 40^{o}F	ISA - 20^{o}F	ISA .	ISA + 20^{o}F	ISA + 40°F
S.L.	59	730	970	1210	1450	1690
2000	52	1110	1330	1560	1780	1990
4000	44	1520	1720	1930	2110	2320
6000	37	1870	2090	2290	2500	2700
8000	30	2300	2480	2680	2850	3050

To clear 50 ft (ground roll included) in feet

Pressure altitude ft	ISA Temp. ^{o} F	ISA - 40^{o}F	ISA - 20^{o}F	ISA.	ISA + 20^{o}F	ISA + 40^{o}F
S.L.	59	1140	1390	1640	1900	2150
2000	52	1590	1800	2070	2300	2530
4000	44	2250	2320	2560	2760	3000
6000	37	2600	8870	3100	3340	3580
8000	30	3320	3570	3850	4100	4450

Effect of wind

	ground roll is	distance over 50 ft is
for **headwind** of 10 kts	70 %	75%
20 kts	45%	55%
30 kts	25%	30%
	of table above	of table above

for **tailwind** up to 10 kts increase distances by 5% for every knot.

effect of grass, short mown, hard surface increase the ground roll by approx 20%.

SHORT FIELD TAKE OFF

Same procedure

Note 1: The pilot may want to lift off at a lower speed depending on aircraft weight and pilot familiarity with his aircraft.

Note 2: Flaps at intermediate settings will not shorten the take off run, but the rate of climb is deteriorated.

CLIMB

Max. Rate of Climb, full power, flaps up, at 1692 lbs, and at Vy = 65 KIAS:

Pressure altitude ft	ISA Temp	ISA - 40°F	ISA - 20°F	Std ISA	ISA + 20°F	ISA +40°F
S.L.	59	800	780	750	730	710
2000	52	680	660	640	620	600
4000	44	565	540	520	500	480
6000	37	450	420	400	385	370
8000	30	320	300	280	265	250
10000	23	180	165	150	140	130

Best angle of climb V_X is 62 KCAS.

Note - above 3000 ft lean Mixture for maximum RPM

- On a hot day (std +30°F) lean mixture for maximum RPM

CRUISE

Standard atmosphere, no reserve:

Pressure altitude ft	RPM	% BHP	TAS Knots	US gal/Hr	Endurance in Hrs + Min on 27 1/2 U.S. gal
2000	2800	75	99	6.7	4 Hrs 5 min
	2600	65	95	5.7	4 Hrs 45 min
	2400	55	90	4.9	5 Hrs 30 min
4000	2800	74	102	6.5	4 Hrs 10 min
	2600	65	97	5.7	4 Hrs 45 min
	2400	55	92	4.9	5 Hrs 30 min
6000	2800	72	104	6.4	4 Hrs 15 min
	2600	65	100	5.7	4 Hrs 45 min
	2400	55	95	4.9	5 Hrs 30 min
8000	2800	70	103	6.2	4 Hrs 25 min
	2600	65	101	5.7	4 Hrs 45 min
	2400	55	95	4.9	5 Hrs 30 min

Note: Temperature variations from standard have little (less then 2 %) effect on cruise speed. At altitude, the correct mixture setting improves endurance.

LANDING DISTANCE

Power off, flaps down, maximum braking on paved, level, dry runway.

No wind

At 1692 lbs, speed at 50 ft = 65 KIAS

Pressure altitude ft	total feet to clear 50 ft	ground roll ft
S.L.	1820	980
2000	1890	1050
4000	1980	1120
6000	2100	1230
8000	2260	1380

(temperature has little effect)

RATE OF CLIMB - FLAPS DOWN - (BALKED LANDING)

The rate of climb FPM with flaps down, full throttle at 1692 lbs at Vy = 56 KIAS

Pressure altitude ft	Std Temp.°F	ISA - 40°	ISA - 20°	ISA	ISA + 20°	ISA +40°
S.L.	59	400	375	360	340	310
2000	52	310	270	250	230	190
4000	44	210	175	150	125	80

Best angle of climb Vx is 54 KIAS at S.L.

Crosswind

The demonstrated takeoff and landing crosswind component is 25 kts.

Noise performance

The aircraft meets ICAO Amex 16 with 72.7 dBA, and FAR 36 appendix G with 72.3 dBA.

SECTION 6

WEIGHT AND BALANCE AND EQUIPMENT LIST

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SECTION 6

WEIGHT AND BALANCE

6.1 GENERAL

In order to achieve the performance and flying characteristics which are designed into the airplane, it must be flown with the weight and center of gravity (C.G.) position within the approved operating range (envelope). Although the airplane offers flexibility of loading, the pilot must insure that the airplane is loaded within the envelope before attempting to take off.

Misloading carries consequences for any aircraft. An overloaded airplane will not take off, climb or cruise properly. The heavier the plane is loaded, the less climb performance it will have.

Center of gravity is a determining factor in flight characteristics. If the C.G. is too far forward in any airplane, it is difficult to rotate for takeoff or landing. If the C.G. is aft of the approved limit, the airplane may rotate prematurely on takeoff or tend to pitch up or down. The aircraft is unstable in pitch. This can lead to inadvertent stalls and even spins; and spin recovery may become impossible.

A properly loaded airplane, however, will perform as intended. Before the airplane is delivered, it is weighed, and the corresponding empty weight and C.G. location is computed (the empty weight consists of the standard empty weight of the airplane plus the optional equipment). Using the empty weight and C.G. location, the pilot can easily determine the weight and C.G. position for the loaded airplane by computing the total weight and moment and then determining whether they are within the approved envelope. (see page 2.5 or 6.3)

The empty weight and C.G. location are recorded in the Weight and Balance Record Form (page 6.3). The current values should always be used. Whenever new equipment is added or any modification work is done, a new empty weight and C.G. position should be determined and recorded. The owner should make sure that it is done.

To determine a new empty-weight C of G, the airplane must first be weighed and then the new C of G position must be calculated.

To determine the C of G for the loaded airplane, loaded weight and balance calculations must be performed before flight.

6.2 AIRPLANE WEIGHING PROCEDURE

Correct empty aircraft weight and C.G. location data is presented on page 2.5 or 6.3.

The removal or addition of equipment or airplane modifications may affect basic empty weight and center of gravity. The following is a weighing procedure to determine this empty weight and center of gravity location:

Preparation

(1) Be certain that all items checked in the airplane equipment list are installed in the proper location in the airplane.

(2) Remove dirt, grease, moisture, foreign items such as rags and tools from the airplane before weighing.

(3) Defuel airplane: Open the fuel drain until all fuel is drained.

CAUTION

Whenever the fuel system is completely drained and fuel is replenished, it will be necessary to run the engine for a minimum of three minutes at 1 000 RPM (on each tank) to insure no air remains in the fuel supply lines.

(4) Fill with oil to full capacity.

(5) Place pilot and co-pilot seats in rearmost position. Flaps fully up and all control surfaces in the neutral position. Doors and access panels closed.

(6) Place the airplane on weighing scales inside a closed building to prevent errors in scale readings due to wind, and block the main gear.

Leveling

The horizontal reference is the upper fuselage longeron (door sill).

Level airplane (refer to page 6.3) deflating nose wheel tire, to center bubble on level placed on door sill.

After Weighing the Airplane

Re inflate the nose wheel tire if required.

6.3 EMPTY WEIGHT AND CENTER OF GRAVITY (C.G)

A/C SERIAL # _____

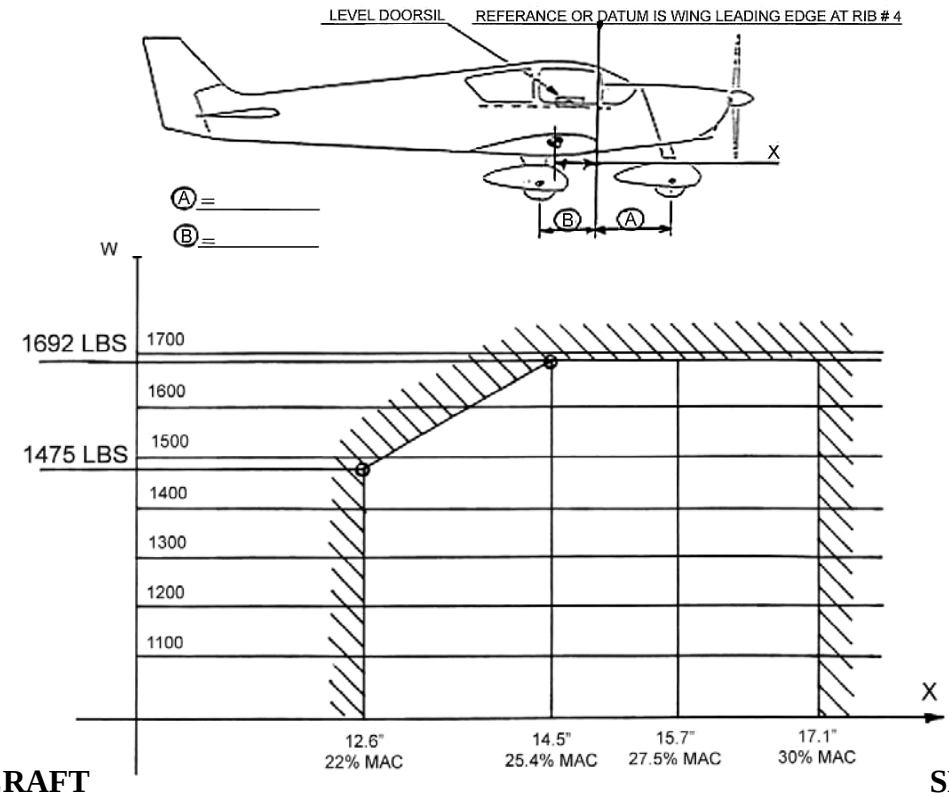
DATE:_____ SIGNATURE: _____

The empty weight and C.G. location are calculated using following table, where

N = Weight under Nose Wheel
R and L = Weight under Right and Left Wheel
W = Empty Weight
(A) and (B) = Horizontal distance from datum to Nose and Main wheels; with a plumb line project datum and wheel axels to the floor, then measure dimension (A) and (B)
X = Moment arm (C.G. location rear of datum).

	SCALE READING	DEDUCT TARE	NET WEIGHT	
NOSE WHEEL		-	N=	(1)
RIGHT MAIN		-	R=	(2)
LEFT MAIN		-	L=	(3)
TOTAL MAIN	----------	R + L =		(4)=(2)+(3)
EMPTY WEIGHT	----------	W = R + L + N =		(5)=(4)+(1)
----------		(B) x (R+L) =		(6)= B x(4)
----------		-(A) x N = -		(7)= -A x(1)
EMPTY CENTRE OF GRAVITY LOCATION		$X = \frac{B(R+L) - AN}{W}$		(8)=$\frac{(6)+(7)}{(5)}$

- With the airplane level, record the weight shown on each scale. Deduct the tare, if any, from each reading.



6.4 WEIGHT AND BALANCE RECORDS

Maintain an up to date weight and balance record using the present form.

WEIGHT AND BALANCE RECORD
Aircraft Model: CH 2000 Trainer
Serial # 20- .
Registration # .

Empty Weight lbs	C.G. Position inches	Date	Entered by

The form is to be used to present the current status of the airplane empty weight and a complete history of previous modifications. Any change to the permanently installed equipment or modification which affects weight or moment must be entered in the Weight and Balance Record.

See optional equipment list (page 6.5) or any other item.

EQUIPMENT LIST (OPTIONS)

The following is a list of the optional equipment which may be installed in the CH 2000 Trainer.
This list shows their weight and moment arm.
Add these items to the weight and balance record (page 6.4) if installed

Item	Weight	Arm
	lbs	inches
E.L.T.	3.2	+43
Fire extinguisher + First Aid	1.1	0
Tow Bar	.9	+31
Wheel fairings (set of 3)	12.5	+8
Propeller Spinner	2.2	-41
Vacuum pump	2.6	-30
Directional gyro	2.5	-6
Artificial horizon	2.6	-6
Electric turn and bank	1.1	-6
Rate of climb	.7	-6
Cabin light (ea)	.7	+30
Landing light (ea)	.7	+3
Navigation lights and strobes	1.1	+75
Strobe power supply	2.2	+122
External power plug	.9	+138
Nav. Com. KX155-42	5.3	-11
CDI K1209	1.0	-6
Transponder GTX 327	2.1	-11
Encoder SAE5-35	.86	-11
Audio Control GMA 340	1.6	-11
CDI MID CONT 206	1.5	-11
GPS IFR GNS 430	5.1	-11
Fuel Primer	.9	-15

Note: 1 lbs = .454 kg and 1 inch = .0254m

Weight and Balance Calculations for Flight

Before each flight, the weight and balance of the loaded airplane should be calculated as follows and checked to fit inside the approved limits. (see page 2.5)

Following tables may be used:

1) Obtain the Empty weight and C.G. position
   Use the latest figures from the Weight and Balance record (page 6.4).

2) Use the applicable values shown in following tables listing the **fuel** in the standard rear tank, or in each wing tank or in the large rear tank.

Fuel in standard rear tank

Gauge	Quantity	Weight	Position	Moment
	US gal	lbs	inches	lbs.inches
1	28	168	39.4	6620
3/4	20	120	39.4	4730
1/2	13	78	39.4	3070
1/4	5	30	39.4	1180
0	.5	---	39.4	---

Fuel in each wing tank (see page 9-5)

Gauge each tank	Quantity US gal	Weight lbs	Position inches	Moment lbs.inches
1	14	84	33	2770
1/2	6.8	41	33	1350
0	1	6	33	---

Fuel in large rear tank (see page 9-11)

Gauge	Quantity	Weight	Position	Moment
	US gal	lbs	inches	lbs.inches
1	34	204	41	8400
3/4	26	156	41	6400
1/2	16	98	41	4050
1/4	7	43	41	1800
0	.5	---	41	---

Note: 1 U.S. gal fuel = 6 lbs.

3**)** Use the applicable values shown in following table for the occupants.

Weight	Position*	Moment*
lbs	inches	lbs.inches
100	16	1600
150	16	2400
200	16	3200
250	16	4000
300	16	4800
350	16	5600
400	16	6400

*** Note:** The exact position of the occupants depends on their geometry (!) and the seat adjustment (.42 m = 16.5 inches rear to .35 m = 13.5 inches forward).
Above table gives only an average and more accurate results are obtained by using the actual figures.

4) Use the applicable values shown in the following table for baggage.

Weight	Position*	Moment*
lbs	inches	lbs.inches
10	50	500
20	50	1000
30	50	1500
40	50	2000

*** Note:** Position is 50 inches when baggage is located in the centre of the baggage area.

5) Enter all the applicable values obtained from page 6.4 and above tables into the appropriate blocks below and perform the necessary caluculations.

	Weight kg or lbs	Position m or inches	Moment kg.m or lbs.inches
1) Empty			
2) Fuel			
3) Occupant			
4) Baggage			
Total (add the columns)	W=		M=

Loaded Aircraft weight is W = _____(lbs)

Loaded C.G. position is x=M/W= ——— = (*x* in inches)

Check that both W and x fall within the limits shown on page 2.5 or 6.3.

Note: You may also want to repeat the above calculation corresponding to the aircraft at the end of the trip, which means with the fuel level as expected at destination.

SECTION 7

DESCRIPTION AND OPERATION OF THE AIRPLANE AND ITS SYSTEMS

TABLE OF CONTENTS

SECTION 7

DESCRIPTION OF THE AIRPLANE AND ITS SYSTEMS

INTRODUCTION

This section provides description and operation of the airplane and its systems. Refer to Section 9, "Options", for details of optional systems and equipment.

THE AIRPLANE

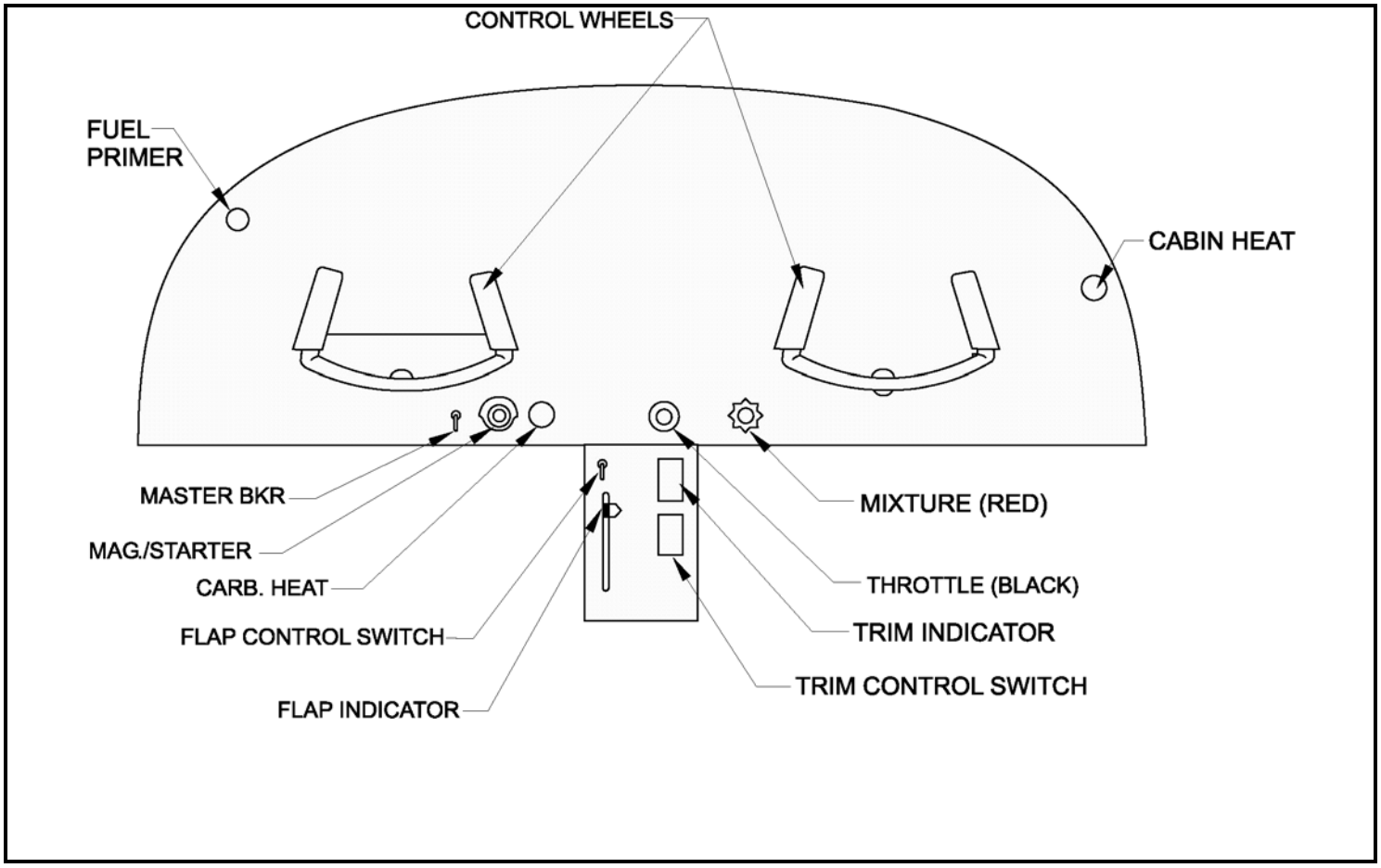
The CH 2000 Trainer is a single-engine, fixed gear, low wing monoplane of all metal construction. It has two place side by side seating with dual flight controls, and a forty pound baggage capacity.

AIRFRAME

The primary structure, with the exception of the steel tube engine mount, turn over protection, canopy frame, steel nose gear strut, and isolated areas, is of 6061-T6 aluminum sheet metal riveted to aluminum extrusions with Avex rivets. Composites are used on non structural fairings.

The fuselage is a conventional semi-monocoque structure. Gullwing doors provide easy access from either side. The baggage area is accessible through the cabin.

The wing has a high lift airfoil and Hoerner wing tips to maximize the CH 2000's effective wing span. The cantilever wings are attached to each side of the fuselage by insertion of the butt ends of the main spars into a center spar structure which is an integral part of the fuselage. The center spar structure, located under the seat, provides in effect a continuous main spar with splices at each side of the fuselage. The fore and aft wing attachments introduce the wing torsion and shear into the fuselage.



INSTRUMENT PANEL CONTROLS

FLIGHT CONTROLS

Dual flight controls are provided as standard equipment. The flight controls actuate the control surfaces through a cable system.

The horizontal surface (stabilator) is of the flying tail design with a trim tab mounted on the trailing edge. This tab serves the dual function of providing trim control and pitch control forces

The rudder is an all flying rudder and is operated by conventional foot pedals.

The ailerons are conventional in design and are operated by turning either control wheel.

The flaps are electrically actuated by a lever switch on the enter console. They are fully covered by the wing extension. Flap position is monitored by flap position indicator, under the control lever switch.

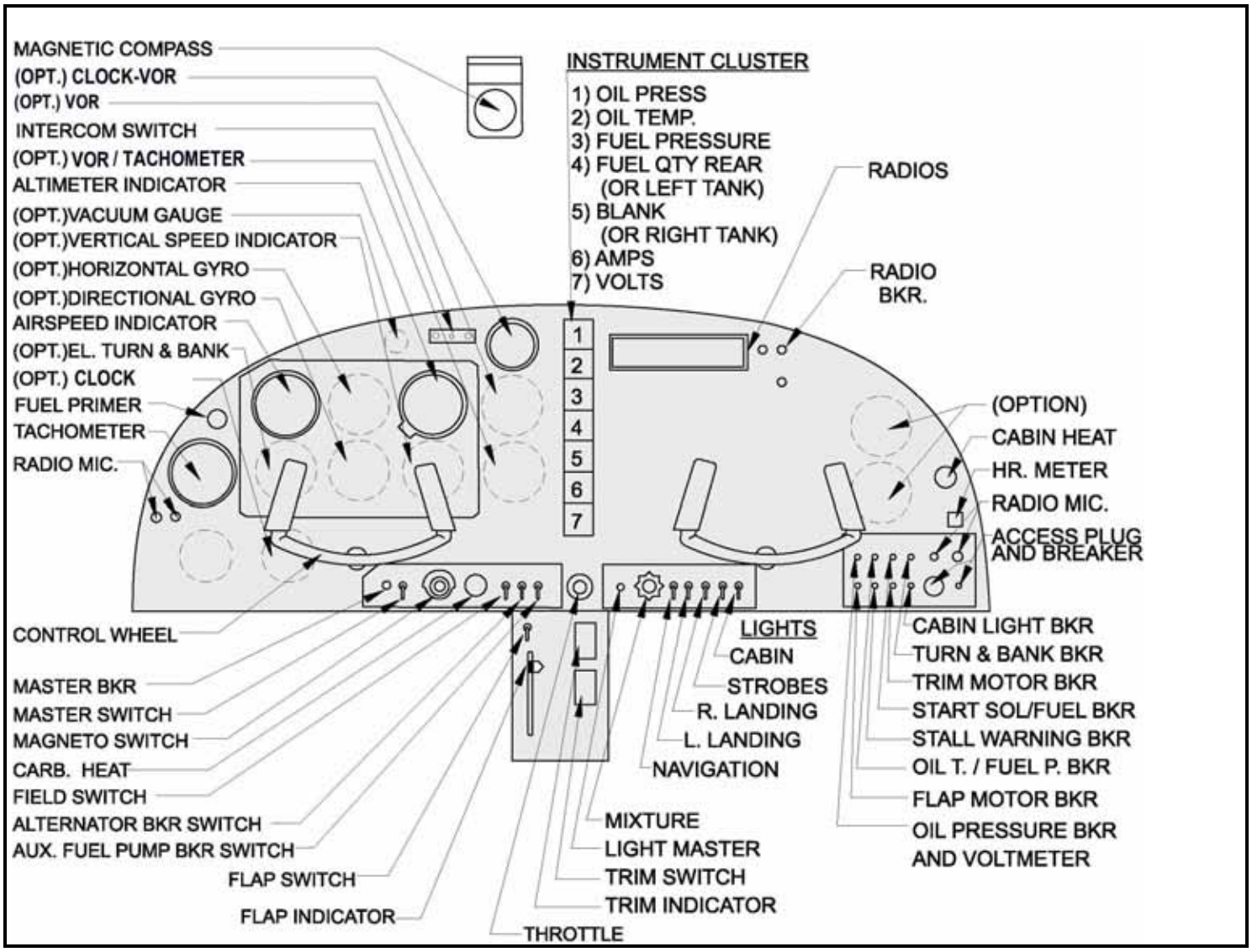
ENGINE CONTROLS

Engine controls consist of a throttle, a mixture, and a carb. Heat "push pull" control. These controls are located at the lower center of the instrument panel where they are accessible to both pilot and co-pilot.

The "**Black Handled"** throttle control is used to adjust engine RPM. Springs are added to the throttle lever arm to ensure that the engine will go to full power if linkages should fail.

The **"Red Handled"** mixture control is used to adjust the air-to-fuel ratio. The engine is shut down by the placing of the mixture control in the full lean position. In addition, the mixture control has a push button lock to prevent inadvertent activation of the mixture control. For more information on the leaning procedure, see the Avco-Lycoming Operator's Manual.

The **"Blue Dotted"** carburetor heat control has two positions: pull out for 'ON', push in for 'OFF'.



INSTRUMENT PANEL

INSTRUMENT PANEL

The instrument panel (Figure 7-4) is designed to accommodate the standard instruments for VFR and IFR flights, with plenty of room to install the optional avionics and IFR instruments.

Standard instruments include a compass, an airspeed indicator, a tachometer, an altimeter, an ammeter, an engine cluster. The compass is mounted on the dashboard in clear view of the pilot and co-pilot.

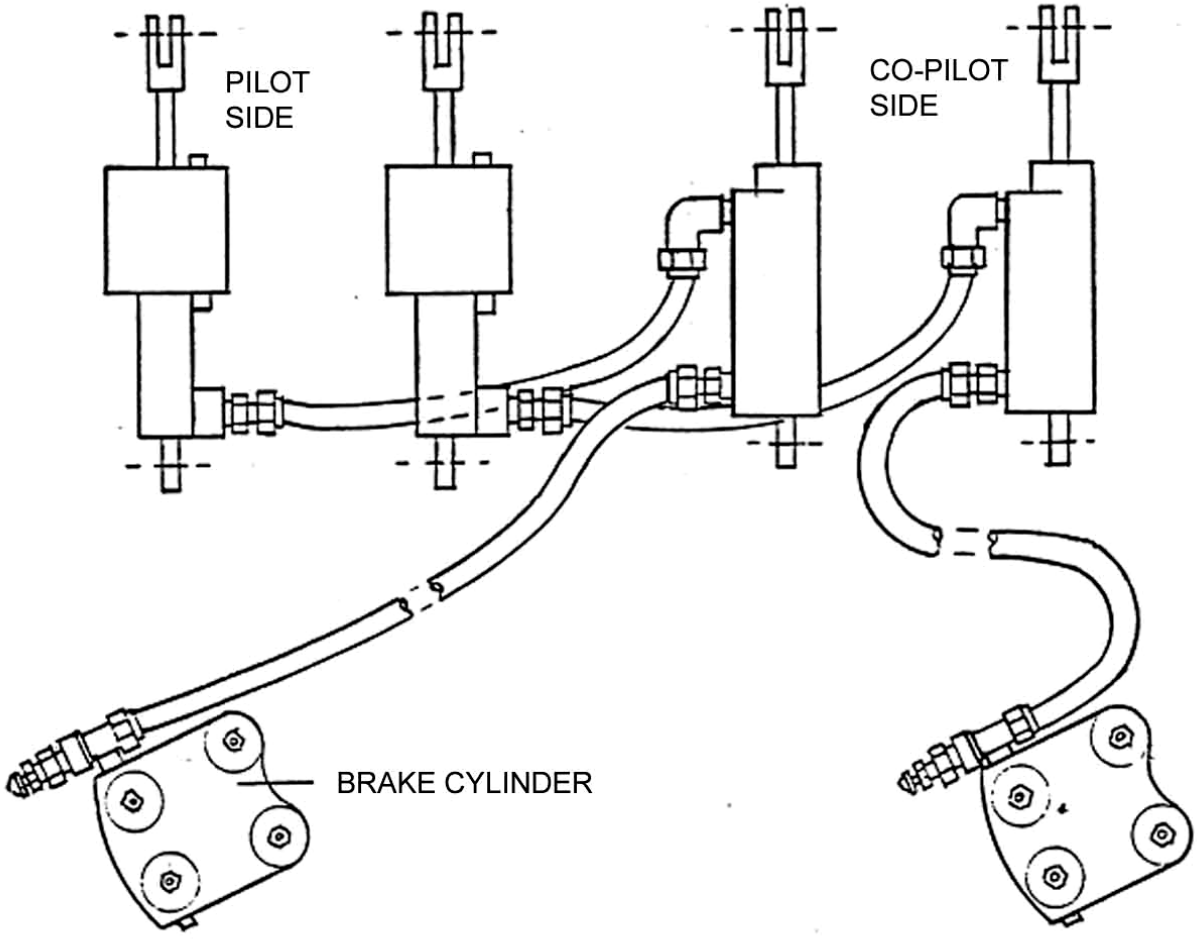
Instrument options available for the panel include: vertical speed indicator, attitude gyro, directional gyro, a turn and slip indicator or turn coordinator, etc… The attitude gyro and directional gyro are vacuum operated through the use of a vacuum pump (with a vacuum suction gauge) installed on the engine, while the turn and slip indicator is electrically operated.

LANDING GEAR

The fixed gear CH 2000 is equipped with 3 – 5.00 x 5 wheels (6.00 x 6 optional on main gear). Single disc hydraulic brake assemblies are provided on the main gear.

The nose gear is steerable through a 14 degree arc each side of center by the use of rudder pedals. A bungee assembly on the nose strut dampens shocks and bumping during taxiing.

The brakes are actuated by toe brake pedals which are attached to the rudder pedals. The master cylinders are connected to the pedals on the pilot side, and slave cylinders are on the passenger side.



BRAKE SYSTEM

POWERPLANT AND PROPELLER

The CH 2000 is powered by a four cylinder direct drive, horizontally opposed engine rated at 116 BHP at 2800 RPM. It is equipped with a starter, a 60 amp 12 volt alternator, shielded ignition harness, two magnetos, and fuel pump.

The engine compartment is accessible for inspection by removing the fasteners from the top and bottom cowling. The engine mount is constructed of steel tubing, and dynafocal attachment is provided to reduce vibration.

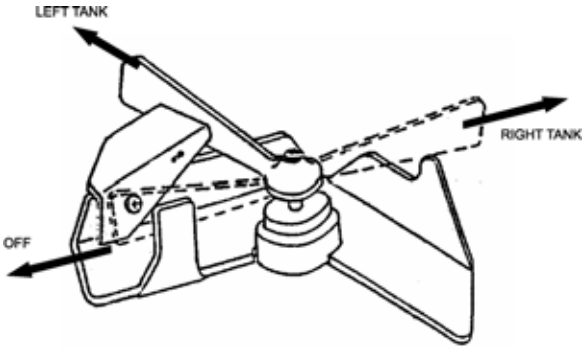
The exhaust system is constructed of stainless steel and incorporates a muffler system with heater shrouds to supply heated air for the cabin, windshield defroster; and the carburetor deicing system.

The engine is air cooled by directing air around the cylinder fins with a good baffling system. Air for the muffler shrouds is also picked up from the nose cowling and carried through duct, to the shrouds. Heated air enters the carburetor air box through a hose connected to the heater shroud.

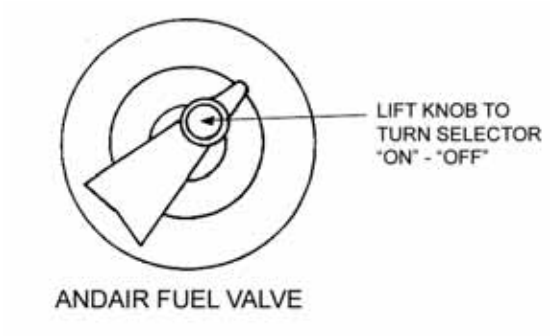
A fixed pitch metal propeller is installed as standard equipment. The propeller has a 72inch diameter.

The pilot should read and follow the procedures recommended in the Lycoming Operator's Manual for this engine in order to obtain maximum engine efficiency and time between engine overhauls.

FUEL SYSTEM



TO SHUT OFF ABOVE FUEL VALVE ONLY:
DEPRESS SAFETY LOCK AND TURN SELECTOR LEVER COUNTER-CLOCKWISE



TO SHUT OFF ABOVE FUEL VALVE ONLY:
LIFT RED KNOB AND TURN SELECTOR AS PER LABLE

FUEL SELECTOR

FUEL SYSTEM

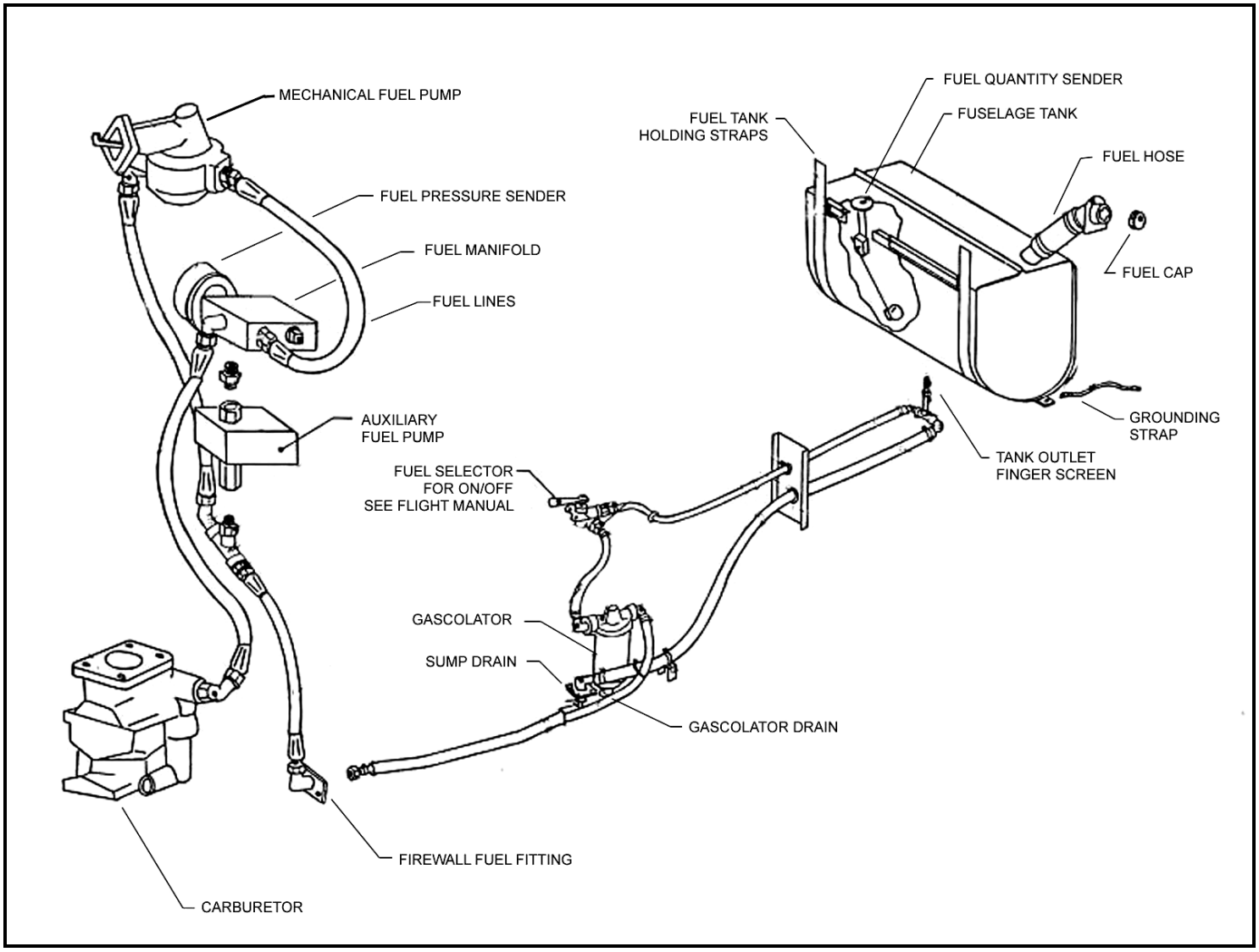
Fuel is stored in one standard rear tank (or in two optional wing tanks, or in one large optional rear tank.)

The fuel tank selector control is located on the seat panel between the pilot and passenger. See above picture for operation.

An auxiliary electric fuel pump is provided in case of the failure of the engine driven pump. The electric pump should be ON for all takeoffs and landings (and when switching tanks). The fuel pump switch is located on the instrument panel.

The fuel drains should be opened daily prior to first flight to check for water or sediment. Each tank has an individual drain. Check that the drains do not leak after closing them.

The gascolator located near the standard tank drain should also be drained before the first flight of the day. Refer to page 8-11 for the complete fuel draining procedure.



Fuel Quantity and fuel pressure gauges are mounted in a gauge cluster on the instrument panel.

FUEL SYSTEM SCHEMATIC

ELECTRICAL SYSTEM

The electrical system includes a 14 volt 60 ampere alternator, voltage regulator, overvoltage relay, battery contactor and a standard 12 volt 35 ampere hour battery. The battery is mounted in a vented and drained fiberglass box (fiberglass box not required when using a SEALED LEAD ACID battery) located at the rear of the fuselage, with the master switch solenoid just above the battery. The voltage regulator and overvoltage relay are on the upper left engine side of the firewall.

The master switch and other electrical switches are located on the instrument panel.

WARNING

The optional anti-collision lights should not be operating when flying through cloud, fog or haze, since the reflected light can produce spatial disorientation. Strobe lights should not be used in close proximity to the ground such as during taxiing, takeoff or landing.

Standard electrical accessories include a starter, an electric fuel pump, an audible stall warning indicator, fuel gauge, Amp. And Volt. Meter.

The system also provides for such optional electrical accessories as additional lights and gauges, heated pitot head, and communication and navigational equipment.

The master switch is an on /off toggle switch with a 50A breaker. The alternator has a 50 A breaker switch, and the field has an on/off toggle switch. They are located on the lower left of the instrument panel.

The ammeter as installed indicates the electrical load on the alternator in amperes. With all the electrical equipment on and the master switch on, the ammeter will indicate the total ampere draw of all the units including the battery. For example, the average continuous load for night flight with radios on is about 30 amperes. This 30 ampere value plus approximately 2 amperes for a fully charged battery will appear continuously under these flight conditions. The amount of current shown on the ammeter will tell immediately if the alternator system is operating normally, as the amount of current shown should equal the total amperage drawn by the electrical equipment which is operating.

The overvoltage relay protects the electronics equipment from a momentary overvoltage condition (approximately 16.5 volts and up), or a catastrophic regulator failure.

PITOT-STATIC SYSTEM

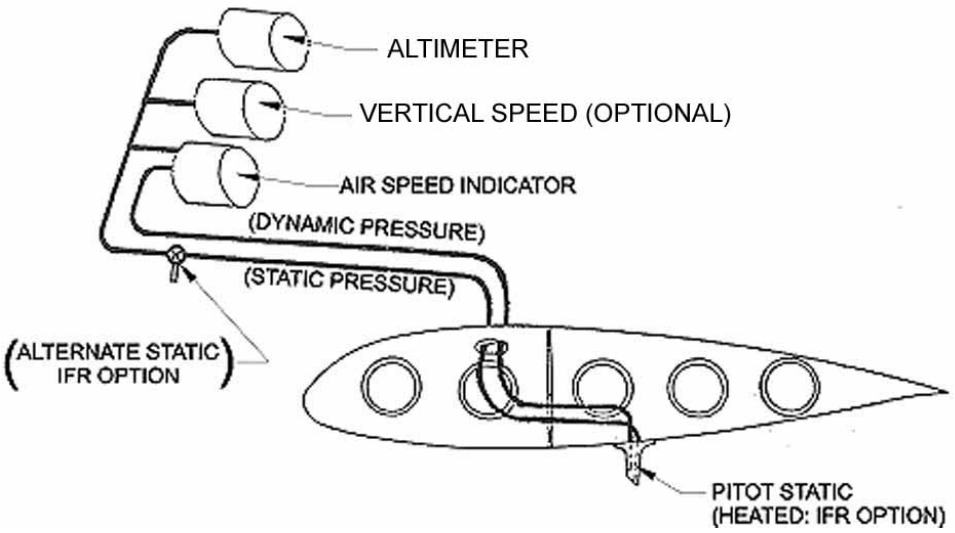
The system supplies both pitot and static pressure for the airspeed indicator, altimeter, and the optional vertical speed indicator.

Pitot and static pressure are picked up by a pitot head installed on the bottom of the left wing and carried through pitot and static lines within the wing and fuselage to the gauges on the instrument panel.

To prevent bugs from entering the pitot and static pressure holes, a cover should be placed over the pitot head, when the aircraft is not in use. A partially or completely blocked pitot head will give erratic or zero readings on the instruments.

NOTE

During the preflight, check to make sure the pitot cover is removed.



PITOT-STATIC SYSTEM

HEATING AND VENTILATING SYSTEM

Heat for the cabin interior and the defroster is provided by a shroud attached to the muffler. Heat is regulated with the control located on the far right side of the instrument panel.

Fresh air is directed into the cabin through the air vents installed in the right and left door windows. The flow is controlled through rotation.

WARNING: Doors must be closed securely when engine is on: they will fly off when opened and engine on.

STALL WARNING

An approaching stall is indicated by an audible alarm located under the baggage compartment roof. The indicator activates at between five to ten knots above stall speed.

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SECTION 8

AIRPLANE HANDLING, SERVICING AND MAINTENANCE

SECTION 8

AIRPLANE HANDLING, SERVICING AND MAINTENANCE

GENERAL

This section provides general guidelines relating to the handling, servicing and maintenance of the CH 2000 Trainer.

Every owner should stay in close contact with his distributor to obtain the latest information pertaining to his aircraft and to avail himself of the Aircraft Service Back-up.

In order to allow the owner to get the most efficient use from his/her aircraft and to keep it in the best mechanical condition, service bulletins and service letters relating to the aircraft are issued from time to time.

Service Bulletins are of special importance and should be complied with promptly. These are sent to the latest registered owners and distributors.

Service Letters deal with product improvements and service hints pertaining to the aircraft. They are sent to the distributors and to the latest registered owners, so they can properly service the aircraft and keep it up to date with the latest changes. Owners should give careful attention to the Service Letter information.

If an owner is not having his aircraft serviced by an Authorized Service Center, he should periodically check with a distributor to find out the latest information to keep his aircraft up to date.

A Subscription Service for the Service Bulletins and Service Letters is available. This service is offered to interested persons such as owners, pilots and mechanics at a nominal fee, and may be obtained through the distributors.

A service manual, parts catalog, and revisions to both, are available from your distributor. Any correspondence regarding the airplane should include the airplane model and serial number to ensure proper response.

AIRPLANE INSPECTION PERIODS

The official authorities occasionally publish Airworthiness Directives (ADs) that apply to specific groups of aircraft. They are mandatory changes and are to be complied with within a specified time limit. When an AD is issued, it is sent to the latest registered owner of the affected aircraft and also to the subscribers of the service. The owner should periodically check with his distributor or an A & P mechanic to see whether he has the latest issued AD against his aircraft.

One hundred hour inspections are required by law if the aircraft is used commercially. Otherwise this inspection is left to the discretion of the owner. This inspection is a complete check of the aircraft and its systems, and should be accomplished by an Authorized Service Center or by a qualified aircraft and power plant mechanic who owns or works for a reputable repair shop. The inspection is listed, in detail, in the inspection report of the appropriate Maintenance Manual.

An annual inspection is required once a year to keep the Airworthiness Certificate in effect. It is the same as a 100 hour inspection. This inspection is required whether the aircraft is operated commercially or for pleasure.

A Progressive Maintenance program is approved by the Authority and is available to the owner. It involves routine and detailed inspections at 50 hour intervals. The purpose of the program is to allow maximum utilization of the aircraft, to reduce maintenance inspection cost and to maintain a maximum standard or continuous airworthiness. Complete details are available from the distributor.

A spectographic analysis of the oil is available from several sources. This system, if used intelligently, provides a good check of the internal condition of the engine. For this system to be accurate, oil samples must be sent in at regular intervals, and induction air filters must be cleaned or changed regularly.

PREVENTATIVE MAINTENANCE

The holder of a Private Pilot licence may perform certain preventative maintenance described in the regulations. This maintenance may be performed only on an aircraft which the pilot owns or operates and which is not used in commercial service. The following is a list of the maintenance which the pilot may perform:

(a) Repair or change tires and tubes.
(b) Service landing gear wheel bearings, such as cleaning, greasing or replacing.
(c) Replace defective safety wire and cotter pins.
(d) Lubrication not requiring disassembly other than removal of non-structural items such as cover plates, cowling or fairings.
(e) Refinish the exterior or interior of the aircraft (excluding balanced control surfaces) when removal or disassembly of any primary structure or operating system is not required.
(f) Replace safety belts.
(g) Replace seats or seat parts with replacement parts approved for the aircraft
(h) Replace bulbs, reflectors and lenses of position and landing lights.
(i) Replace engine cowling.
(k) Replace, clean or set spark plug clearance.
(l) Replace any hose connection, except hydraulic connections, with replacement hoses.
(m) Replace prefabricated fuel lines.
(n) Replace the battery and check fluid level and specific gravity.

Although the above work is allowed by law, each individual should make a self analysis as to whether he has the ability to perform the work.

If the above work is accomplished, an entry must be made in the appropriate logbook. The entry should contain:

(a) The date the work was accomplished.
(b) Description of the work.
(c) Number of hours on the aircraft.
(d) The certificate number of pilot performing the work.
(e) Signature of the individual doing the work.

AIRPLANE ALTERATIONS

If the owner desires to have his aircraft modified, approval for the alteration must be obtained. Major alterations to the basic airframe or systems require a Supplemental Type Certificate.

The owner or pilot is required to ascertain that the following Aircraft Papers are in order and in the aircraft.

AIRPLANE DOCUMENTS

(a) To be displayed in the aircraft at all times:
  (1) Aircraft Certificate of Airworthiness
  (2) Aircraft Certificate of Registration

(b) To be carried in the aircraft at all times:
  (1) Aircraft Journey Log.
  (2) Flight manual.
  (3) Weight and Balance Record

Although the aircraft and engine logbooks are not required to be in the aircraft, they should be made available upon request. Logbooks should be complete and up to date. Good records will reduce maintenance cost by giving the mechanic information about what has or has not been accomplished.

GROUND HANDLING: the aiplane may be moved on the ground:

WARNING: Ignition "OFF"

By Pushing on the wing leading edges, apply hand pressure on the wing rib rivet lines.

WARNING: DO NOT push or lift through the elevator.

(b) Towing

The airplane may be moved on the ground by the use of the nose wheel steering bar or by power equipment that will not damage or excessively strain the nose gear steering assembly.

CAUTION

When towing with power equipment, do not turn the nose gear beyond its steering radius in either direction, as this will result in damage to the nose gear and steering mechanism.

CAUTION

Do not tow the airplane when the controls are locked.

In the event towing lines are necessary, ropes should be attached to both main gear struts as high up as possible. Lines should be long enough to clear the nose and/or tail by not less than fifteen feet, and a qualified person should ride in the pilot's seat to maintain control.

(c) Taxiing

Before attempting to taxi the airplane, ground personnel should be instructed and approved by a qualified person authorized by the owner. Engine starting and shut-down procedures as well as taxi techniques should be covered. When it is ascertained that the propeller back blast and taxi areas are clear, power should be applied moderately to start the taxi roll, and the following checks should be performed:

Taxi a few feet forward and apply the brakes to determine their effectiveness.
While taxiing, make slight turns to ascertain the effectiveness of the steering.
Observe wing clearance when taxiing near buildings or other stationary objects. If possible, station an observer outside the airplane.
When taxiing over uneven ground, avoid holes and ruts.
Do not operate the engine at high RPM when running up or taxiing over ground containing loose stones, gravel, or any loose material that may cause damage to the propeller blades.

(d) Parking

When parking the airplane, be sure that it is sufficiently protected from adverse weather conditions and that it presents no danger to other aircraft. When parking the airplane for any length of time or overnight, it is suggested that it be moored securely.

To park the airplane, head it into the wind if possible and use chocks to properly block the wheels.

(e) Tie Down

The airplane should be tied down for immovability, security and protection. The following procedures should be used for the proper mooring of the airplane:

Head the airplane into the wind if possible.
Retract the flaps.
Block the wheels.
Secure tie-down ropes to the wing tie-down rings and to the tail ring at approximately 45 degree angle to the ground. When using rope of non-synthetic material, leave sufficient slack to avoid damage to the airplane should the ropes contract.

CAUTION

Use bowline knots, square knots or locked slip knots. Do not use plain slip knots.

NOTE

Additional preparations for high winds include using tie-down ropes from the landing gear fork and securing the rudder.

Install a pitot head cover if available. Be sure to remove the pitot head cover before flight.
Cabin doors should be locked when the airplane is unattended.
The optional cabin cover will protect the windows from dust, the interior from ultraviolet rays, and keep onlookers away!

ENGINE AIR FILTER

The wet type polyurethane foam air filter must be inspected at least once every fifty hours. Under extremely adverse operating conditions, it may be necessary to inspect the filter more frequently. The filter is disposable and inexpensive and a spare should be kept on hand for a rapid replacement.

(a) Removal of Engine Air Filter

The filter is located in the lower front of the engine compartment and is readily visible for inspection, and may be removed by the following procedure:

Remove the upper and lower engine cowling.
Remove the metal screen.
Remove dirty or damaged filter.

(b) Installation Of Engine Air Filter

When replacing the filter, install the new filter and reinstall the metal screen..

BRAKE SERVICE

The brake system is filled with hydraulic fluid MIL-H-5606 (or aero fluid 41). The fluid level should be checked periodically or at every 50 hour inspection and replenished when necessary.

No adjustment of the brake clearances is necessary. If after extended service, brake blocks become excessively worn, they should be replaced with new segments.

LANDING GEAR SERVICE

The main landing gear as well as the nose gear carries 5.00 x 5 wheels (6.00 x 6 optional on main gear). All three tires are four-ply rating, type III tires with tubes.

The nose gear bungee should be checked for chaffing, and elasticity.

In jacking the aircraft for landing gear or other service, use a padded sawhorse under the rear fuselage, and hang the front of the plane off of the engine (ring on crankcase).

PROPELLER SERVICE

The spinner and backing plate should be frequently cleaned and inspected for cracks. Before each flight the propeller should be inspected for nicks, scratches, and corrosion. If found, they should be repaired as soon as possible by a rated mechanic, since a nick or scratch causes an area of increased stress which can lead to serious cracks or the loss of a propeller tip. The back face of the blades should be painted when necessary with flat black paint to retard glare. To prevent corrosion, the surface should be cleaned and waxed periodically.

OIL REQUIREMENTS

The oil capacity of the engine is 6 US quarts, and the minimum safe quantity is 2 US quarts. It is recommended that the oil be changed as per instructions in the Lycoming operator's manual (section 3 and 5). Should fuel other than the specified octane rating for the power plant be used, refer to the latest issue of Lycoming Service Letter No. L185 and Lycoming Service Instruction No. 1014 for additional information and recommended service procedures.

FUEL SYSTEM

(a) Servicing Fuel System

At every 50 hour inspection, the fuel screen in the gascolator and at the carburetor inlet must be cleaned.

(b) Fuel Requirements

The minimum aviation grade fuel is 100/100 LL. Since the use of lower grades can cause serious engine damage in a short period of time, the engine warranty is invalidated by the use of lower octanes and/or mogass.

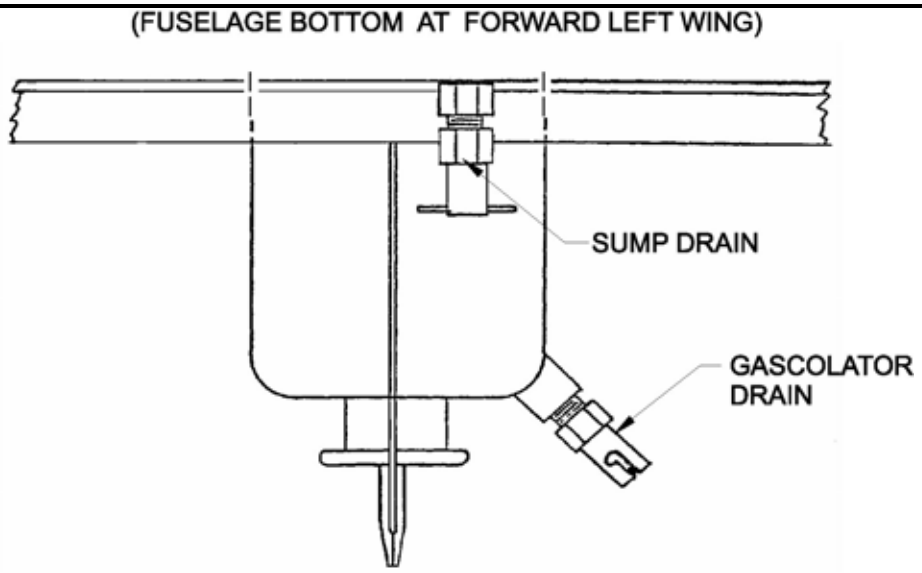
(c) Draining Fuel Strainer, Sumps and Lines

The fuel system sumps and strainer should be drained daily prior to the first flight and after refueling to avoid the accumulation of contaminants such as water or sediment. Each fuel tank is equipped with an individual quick drain located at the lower wing surface. The gascolator is equipped with an individual quick drain located under the fuselage near left wing L.E. Each of the fuel tank sumps should be drained first. Then the gascolator should be drained with the fuel selector valve on each individual tank. Each time fuel is drained, sufficient fuel should be allowed to flow to ensure removal of contaminants. This fuel should be collected in a suitable container, examined for contaminants, and then discarded.

CAUTION

When draining any amount of fuel, care should be taken to ensure that no fire hazard exists before starting the engine.

After draining, each quick drain should be checked to make sure it has closed completely and is not leaking.



FUEL DRAINS

(d) Draining Fuel System

The bulk of the fuel may be drained from the system by opening the valve(s) at the lower wing surface (optional wing tanks), or under the fuselage near the left wing L.E. (main tank). The remaining fuel is drained from the gascolator quick drain with the fuel selector set to each individual tank. Turn the drain valve stem(s) counter clockwise to hold the drain open.

TIRE INFLATION

For maximum service from the tires, keep them inflated to the proper pressure = 30 psi. All wheels and tires are balanced before original installation, and the relationship of tire, tube and wheel should be maintained upon reinstallation. Unbalanced wheels can cause extreme vibration in the landing gear; therefore, in the installation of new components, it may be necessary to rebalance the wheels with the tires mounted. When checking tire pressure, examine the tires for wear, cuts, bruises, and slippage.

BATTERY SERVICE

Access to the 12-volt battery is obtained through the access panel at the rear left fuselage side. The fiberglass box is strapped down, and secured with AN-3 bolts. The fiberglass box has vent/drain tubes.

The battery should be checked for proper fluid level. DO NOT fill the battery above the baffle plates. DO NOT fill the battery with acid - use only distilled water. The hydrometer check will determine the percent of charge in the battery.

If the battery is not up to charge, recharge starting at a 6 amp rate and finishing with a 2 amp rate. Quick charges are not recommended.

Optional SEALED LEAD ACID battery is available, which requires no fluid level checking

CLEANING

(a) Cleaning Engine Compartment

Before cleaning the engine compartment, place a strip of tape on the magneto vents to prevent any solvent from entering these units.

Place a large pan under the engine to catch waste.

With the engine cowling removed, spray or brush the engine with solvent or a mixture of solvent and degreaser may be necessary to brush areas that were sprayed.

CAUTION

Do not spray solvent into the alternator, vacuum pump, starter, or air intakes.

Allow the solvent to remain on the engine from five to ten minutes. Then rinse the engine clean with additional solvent and allow it to dry.

CAUTION

Do not operate the engine until solvent has evaporated or otherwise been removed.

Remove the protective tape from the magnetos.

Lubricate the controls, bearing surfaces, etc., in accordance with the Lubrication Chart.

(b) Cleaning Exterior Surfaces

The airplane should be washed with a mild soap (dishwashing) and water. Harsh abrasives, alkaline soaps or detergents could make scratches on painted or plastic surfaces or could cause corrosion of metal. Cover areas where cleaning solution could cause damage. To wash the airplane, use the following procedure:

Flush away loose dirt with water.
Apply cleaning solution with a soft cloth, a sponge or a soft bristle brush.
To remove exhaust stains, allow the solution to remain on the surface longer.
To remove stubborn oil or grease, use a cloth dampened with naphtha.
Rinse all surfaces thoroughly.
Any good automotive wax may be used to preserve painted surfaces. Soft cleaning cloths or a chamois should be used to prevent scratches when cleaning or polishing. A heavier coating of wax on the leading surfaces will reduce the abrasion problems in these areas.

(c) Cleaning Windshield and Windows

Clean only with the special cleaner available from Zenair, to avoid scratches and/or discolouring, using a woolen cleaning cloth.

CAUTION

Do not use gasoline, alcohol, benzene, carbon tetrachloride, thinner, acetone, or window cleaning sprays.

CAUTION

Never remove dust with a dry cloth, to avoid scratches.

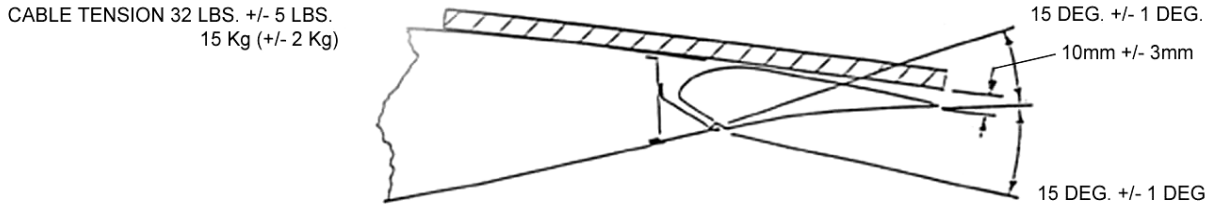
(d) Cleaning Headliner, Side Panels and Seats

Clean headliner, side panels, and seats with a stiff bristle brush, and vacuum where necessary.
Soiled upholstery, may be cleaned with a good upholstery cleaner suitable for the material. Carefully follow the manufacturer's instructions. Avoid soaking or harsh rubbing.

CONTROL SURFACE DEFLECTIONS

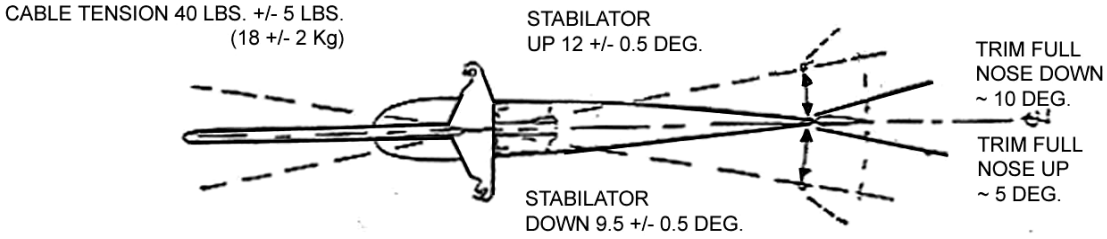
The following are the limits within which the control surfaces should deflect:

Ailerons: Neutral in line with flap cover trailing edge.

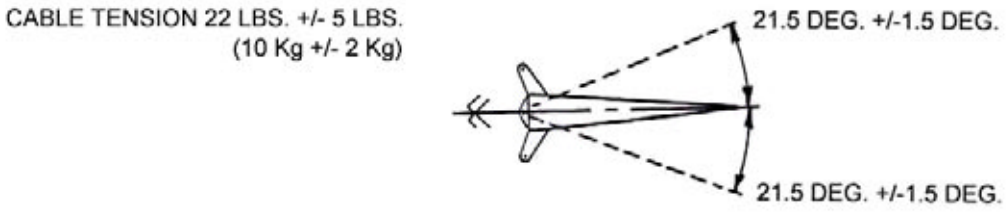


Flaps: Neutral when flaps up in wing
Down: 50 ± 3° from Neutral.

Stabilator: Neutral as shown in dwg. (The Horizontal Tail is parallel to the upper fuselage longeron).



Rudder: Neutral in line with the fuselage.



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OPTIONS

SECTION 9

OPTIONS

GENERAL

This section provides information in the form of Options which are necessary for efficient operation of the airplane when equipped with one or more of the various optional systems and equipment not provided with the standard airplane.

All of the Options provided by this section are “Approved” options, and consecutively numbered as a permanent part of this Manual. The information contained in each Option applies only when the related equipment is installed in the airplane. No change to limitations or performance is associated with these options.

EMERGENCY LOCATOR TRANSMITTER (ELT)

GENERAL

The E.L.T. consists of a self-contained dual-frequency radio transmitter and battery power supply, and if ARMED, it is activated by an impact producing a change in velocity of 3.5 ft/sec.or more as may be experienced in a crash landing. The E.L.T. emits an omni-directional signal on the international distress frequencies of 121.5 and 243.0 MHz. General aviation and commercial aircraft, the FAA, and CAP monitor 121.5 MHz, and 243.0 MHz is monitored by the military. Following a crash landing, the E.L.T. will provide line-of-sight transmission up to 100 miles at 10,000 feet. The E.L.T. transmits on both distress frequencies simultaneously at 75 mw rated power output for 48 continuous hours in the temperature range of -4^{O}F to +131^{O}F (-20^{O}C to +55^{O}C).

The portable E.L.T. unit is mounted on the baggage shelf and is easily accessible for manual activation and /or removal.

EMERGENCY PROCEDURES

Immediately after a forced landing where emergency assistance is required, the E.L.T. should be utilized as follows.

1. Ensure E.L.T. Activation - Turn a radio transceiver ON and select 121.5 MHz. If the E.L.T. can be heard transmitting, it was activated by the "g" switch and is functioning properly. If no emergency tone is audible, push the switch to ON.

2. Prior To Sighting Rescue Aircraft - Conserve airplane battery. Do not activate radio transceiver.

3. After Sighting Rescue Aircraft - Switch E.L.T. to OFF, preventing radio interference. Attempt contact with rescue aircraft with the radio transceiver set to a frequency of 121.5 MHz. If no contact is established, push the switch to ON immediately.

4. Following Rescue - Push the switch to ARMED.

NORMAL PROCEDURES (E.L.T.)

As long as the function selector switch remains in the ARMED position, the E.L.T. automatically activates following an impact.

Following a lightning strike, or an exceptionally hard landing, the E.L.T. may activate although no emergency exists. To check your E.L.T. for inadvertent activation, select 121.5 MHz. on your radio transceiver and listen for an emergency tone transmission. If the E.L.T. can be heard transmitting, push the switch to OFF, then to ARMED for normal operation.

NEVER ACTIVATE the ELT while airborne for any reason.

MAINTENANCE

Refer to the ELT Operation Manual. (Battery replacement).

FIRE EXTINGUISHER

The fire extinguisher is mounted to the left forward cabin side for easy access. It is to be used and maintained as per instructions printed on the unit.

TOW BAR

The tow bar is stored behind the forward shelf of the baggage compartment. The hook is inserted in the holes (right side) and the bar is secured with a Velcro strap. It is used to pull and steer the aircraft on the ground when the hook is inserted in the ring provided on the nose gear strut.

PROPELLER SPINNER

The propeller spinner is an option which enhances the look of your aircraft. It has no effect on performance and/or engine cooling.

WHEEL FAIRINGS

The wheel fairings give a sleek look to your aircraft with no effect on performance. They are made of a two part fiberglass shell and are easily removed or mounted to their attachment brackets.

Note: In snowy conditions, remove the wheel fairings so that the snow cannot accumulate inside, and freeze and lock the wheels.

GYRO OPTION

VACUUM SYSTEM

The vacuum system is designed to operate the air driven gyro instruments. This includes the directional gyro and artificial horizon when installed. The system consists of an engine driven vacuum pump, a vacuum regulator, a filter and the necessary plumbing.

VACUUM PUMP

The vacuum pump is a dry type pump. A shear drive protects the pump from damage. If the drive shears, the gyros will become inoperative.

A vacuum gauge, mounted on the gyro instrument panel provides a pilot check for the system during operation. A decrease in pressure in a system that remained constant over an extended period may indicate a dirty filter, dirty screens, possibly a sticky vacuum regulator or leak in the system. Zero pressure would indicate a sheared pump drive, defective pump, possibly a defective gauge or collapsed line. In the event of any gauge variation from the norm, the pilot should have a mechanic check the system to prevent possible damage to the system components or eventual failure of the system.

A vacuum regulator is provided in the system to protect the gyros. The valve is set so the normal vacuum reads 5.0 $\pm$ .1 inches of mercury, a setting which provides sufficient vacuum to operate all the gyros at their rated RPM. Higher settings will damage the gyros and with a low setting the gyros will be unreliable. The regulator is located behind the instrument panel. Vacuum pressure, even though set correctly, can read lower at very high altitude (above 12,000 ft), and at low engine RPM usually on approach or during training maneuvers. This is normal and should not be considered a malfunction.

ARTIFICIAL HORIZON

Gives a visual indication of flight attitude. Bank attitude is presented by a pointer at the top of the indicator relative to the bank scale which has index marks at 10^{o}, 20^{o}, 30^{o}, 60^{o}, and 90^{o} either side of the center mark. Pitch and roll attitudes are presented by a miniature airplane superimposed over a symbolic horizon area divided into two sections by a white horizon bar. The upper "blue sky" area and the lower "ground" area have arbitrary pitch reference lines useful for pitch attitude control. A knob at the bottom of the instrument is provided for inflight adjustment of the miniature airplane to the horizon bar for a more accurate flight attitude indication.

DIRECTIONAL GYRO

Displays airplane heading on a compass card in relation to a fixed simulated airplane image and index. The directional indicator will precess slightly over a period of time. Therefore, the compass card should be set just prior to takeoff, and occasionally re-adjusted on extended flights. A knob on the lower left edge of the instrument is used to adjust the compass card to correct for any precession.

ELECTRIC TURN AND BANK INDICATOR

Found at the lower left of the instrument panel cluster, directly facing the pilot

FUEL SYSTEM

WING TANK OPTION (instead of standard rear tank)

The present page 9.6 and 9.7 replace the pages 7.8 and 7.9 when the wing tank option is installed.

Placards

- at fuel selector valve: Left Usable 50 L/13 US gal | Right Usable 50 L/13 US gal
  and
  under the fuel gauges: OFF ↓ depress

- Beside the wing tank fillers: Aviation fuel 100/100LL MIN.OCT. 54 L/14 US gal Capacity

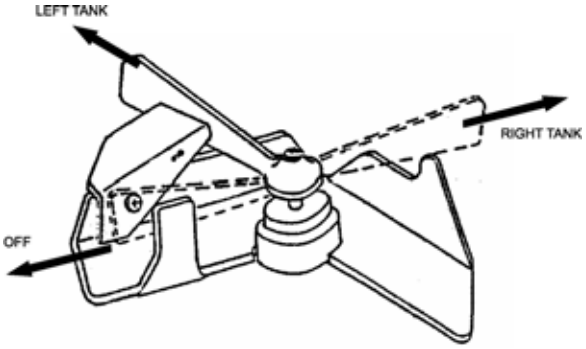
The fuel is stored in a Right and Left wing tank , capacity 2 x 53 litres, 2 x 14 US gallons (2 x 50 litres, 2 x 13 US gallons usable).

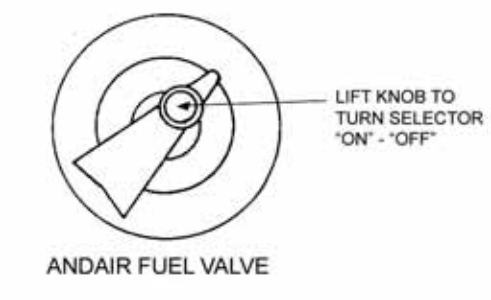
The fuel tank selector control is located on the seat panel between the pilot and passenger. The handle points forward Right for right tank, forward Left for left tank. It has a safety lock which has to be pushed down in order to shut off the fuel supply.

An auxiliary electric fuel pump is provided in case of the failure of the engine driven pump. The electric pump should be ON for all takeoffs and landings (and when switching tanks). The fuel pump switch is located on the instrument panel.

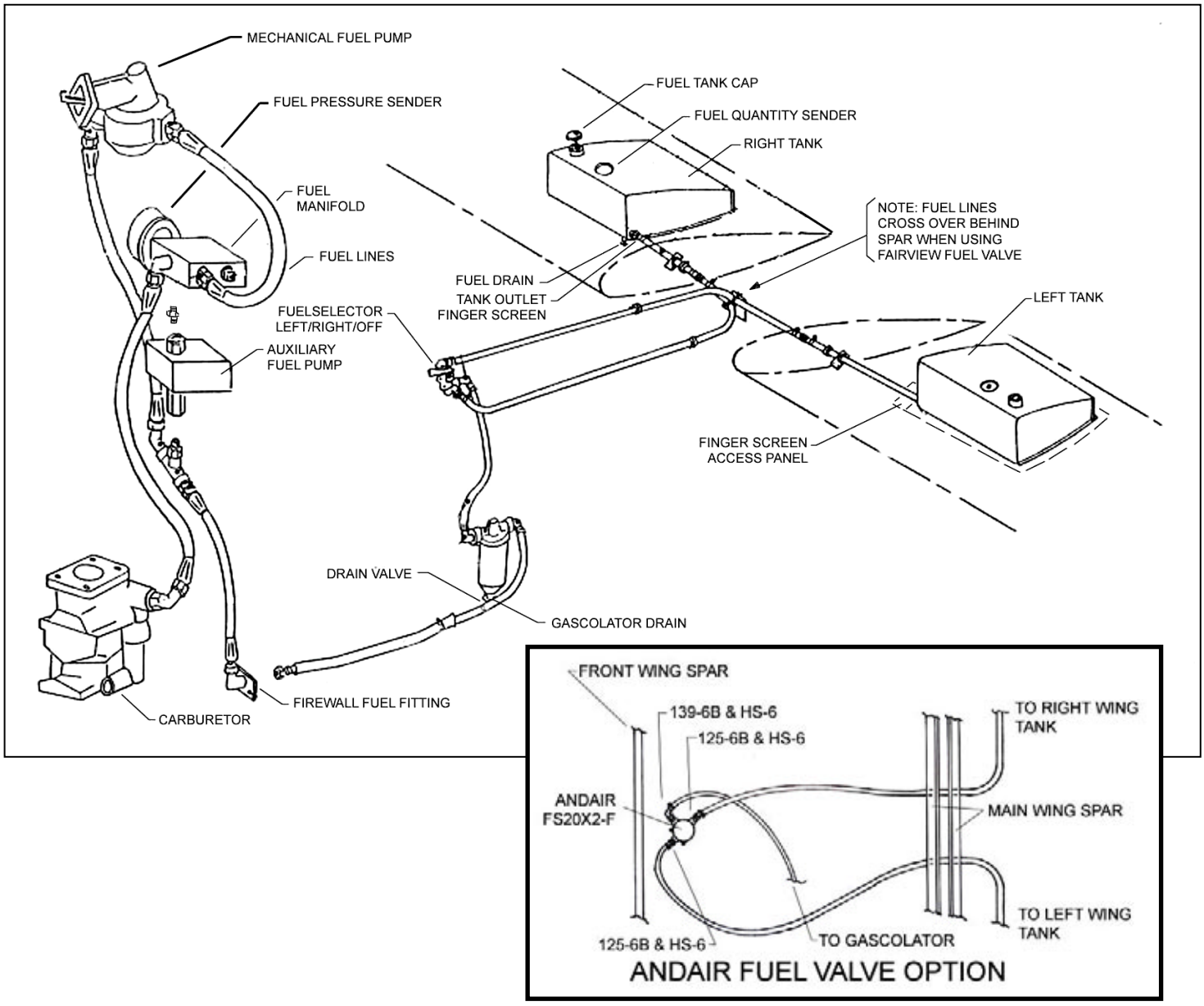
The fuel drains should be opened daily prior to first flight to check for water or sediment. Each tank has an individual drain. Check that the drains do not leak, after closing them.

The gascolator located near the Left wing leading edge under the fuselage, should also be drained before the first flight of the day. Refer to page 8-11 for the complete fuel draining procedure.





ANDAIR FUEL VALVE



SCHEMATIC OF FUEL SYSTEM WITH WING TANKS

LIGHT OPTION

NAVIGATION LIGHTS AND STROBES

Conventional navigation lights are located on the wing tips and the rudder. Strobe lights are also mounted on the wing tips. ON/OFF switches, found on the instrument panel are labeled (NAV LIGHTS), and (STROBES) respectively. The switches are ON in the up position.

Strobe lights must be turned off when taxiing in the vicinity of other airplanes, or during night flight through clouds, fog or haze.

LANDING LIGHTS

Dual landing / taxi lights are mounted in the left wing leading edge. The ON/OFF switch for the landing / taxi lights is found on the instrument panel.

INSTRUMENT LIGHTING

The instrument panel is lighted by 2 spot lights mounted to the cabin ceiling between the occupants' heads. The lights are adjustable directionally and the beam width can be varied. The light intensity can be adjusted and its colour changed progressively from white to red. Each unit may be removed from its attachment support for hand held operation.

COLD WEATHER OPERATION

The "winter baffles" should be installed, if the oil temperature is low during cold weather operation.
With or without "winter baffles", no oil temperature will be indicated prior to take off if OAT is low.
After a suitable warm up of 2 to 5 minutes at 1200 RPM, accelerate the engine several times to higher RPM: if it accelerates smoothly and the oil pressure remains normal and steady, it is ready for takeoff.
CAUTION: In order to get rid of the humidity in the oil, the oil temperature should reach at least once during the day, 160°F(70°C).
CAUTION: When intending a steady climb to high altitude, the "winter baffles" must be removed when the weather warms up above OAT of 30°F (0°C).

NOTE: If OAT is oscillating around freezing, the "winter baffles" may be left on if the airplane is operated in a school environment (flying around the pattern, with no prolonged climb). In this case, the oil temperature must be carefully monitored so as not to exceed 220°F (end of green arc).
(See below how to keep the oil temperature from exceeding the red line.)

EXTREME HOT WEATHER OPERATION

Without the "winter baffles", up to a Sea Level temperature of 100°F (38°C), the airflow provides proper engine cooling. If operation above this temperature is required, care must be taken not to overheat the engine. This is achieved by:

- minimizing ground warm up
- checking the oil temperature after the full throttle initial climb out: if the oil temperature is increasing beyond 220°F (end of Green arc), power must be reduced and/or a faster climb speed selected (i.e. 70 or 75 KIAS). It is necessary to initiate the corrective action before the oil reaches the Red line (245°F) as there is a time lag between the engine and oil temperatures.

NOTE: Above procedure is also applicable when the "winter baffles" have not yet been removed for sea level outside temperature in the 25 to 40°F (-3 to +5°C) range.

CAUTION: When climbing at reduced power or faster speed, the rate of climb is reduced.

IFR OPTION

The Instrument Flight Rule (I.F.R.) option consists of:

- Night flying (or Light) option (see 9-7),
- Gyro option (see 9-4),
- Outside Air Temperature (OAT) gauge,
- Electically heated pitot static,
- Alternate static source (see 3-4),
- Deicing window in the left cabin door,
- any other national requirements (in particular the electronic communication and navigation systems).

Following page 9-9 “Limitation placards for IFR”, replaces page 2-4, and page 9-10 “IFR instrument panel”, replaces page 7-4.

Detailed procedures to check the instruments, navigational aids and radios are given in the operation instruction for the relevant equipment.

As neither the flying surfaces nor the propeller are equipped with deicing devices, IFR flight into known or forecast icing conditions is prohibited.

However:

1) Should the Airspeed indicator, the altimeter and the rate of climb stop giving information, the pitot static probe is frozen up. The pitot heat switch is then moved up to “ON”, which will melt the accumulated ice.
If this is not effective, the static source switch is moved down to Alternate. This will open the static to t the cabin pressure: Altimeter and rate of climb will give readings.

With the alternate static, the Altitude must be corrected as follows:

Alternate static ‘ON”, deicing window closed, cabin heat off or on:	subtract 100 ft. from indicated altitude
Alternate static “ON”, deicing window open, cabin heat off or on:	subtract 190 ft. from indicated altitude

The rate of climb indications are correct.

If the pitot static probe is frozen, the airspeed will not read: Rate of climb and RPM are then the sole indications to the pilot for an approximation of the speed. If only the static is frozen (not the pitot), and thealternate static is on, use following indicated airspeeds:

Climb and approach at 85 KIAS
Stall will occur at 55 KIAS (flaps up) and 50 KIAS (flaps down)
(in cruise KIAS = KCAS + 15 kts)

Note: The GPS (Ground Positioning Satellites) speed reading may come in quite handy at this stage.

2) Should the windshield start icing: Pull cabin heat: the left windshield will defrost. If this is ineffective, the deicing window must be opened and the ice covering the left side of the windshield manually removed. The deicing window is positioned so that landings can be performed looking through it at the runway and left edge of the runway.

LIMITATION PLACARDS FOR IFR (replaces page 2.4)

The following placards are installed (Boxed items for IFR option)

- On the instrument panel
  - . Compass deviation chart
  - . NO SMOKING
  - . MANEUVERING SPEED VA = 108 KIAS
  - . CABIN HEAT PULL ON
  - . THROTTLE PULL CLOSED
  - . Fuel selector: 104 L./27.5 US gal., DEPRESS, ON, OFF
  - . Registration _ _ _ _ _ _
  - . RADIOS
  - . USABLE FUEL
    104 L./27.5 US gal.

DAY AND NIGHT VFR OR IFR
IN NON-ICING CONDITIONS.
AEROBATIC MANEUVERS
PROHIBITED
AVOID SLIDESLIPS USING
LARGE RUDDER INPUTS
SEE FLIGHT MANUAL

INTENTIONAL SPINS PROHIBITED

UP
FLAPS
DOWN

TRIM
DOWN
UP

MASTER BREAKER	MASTER SWITCH		CARB HEAT	FIELD	ALTERNATOR BREAKER	AUXILIARY FUEL PUMP BKR
ON	R	L BOTH		ON	ON	ON
OFF	OFF	START		OFF	OFF	OFF

OIL PRESS.	OIL TEMP.	STARTER SOLENOID	TURN & BANK	RADIOS
	FUEL PRESS.	FUEL GAUGE		
FLAPS	STALL WARN.	TRIM	CABIN LIGHT	12 VOLTS

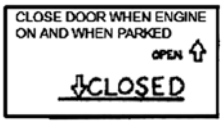
PITOT HEAT
NORMAL STATIC SOURCE
ALTERNATE

GPS: VFR USE ONLY*

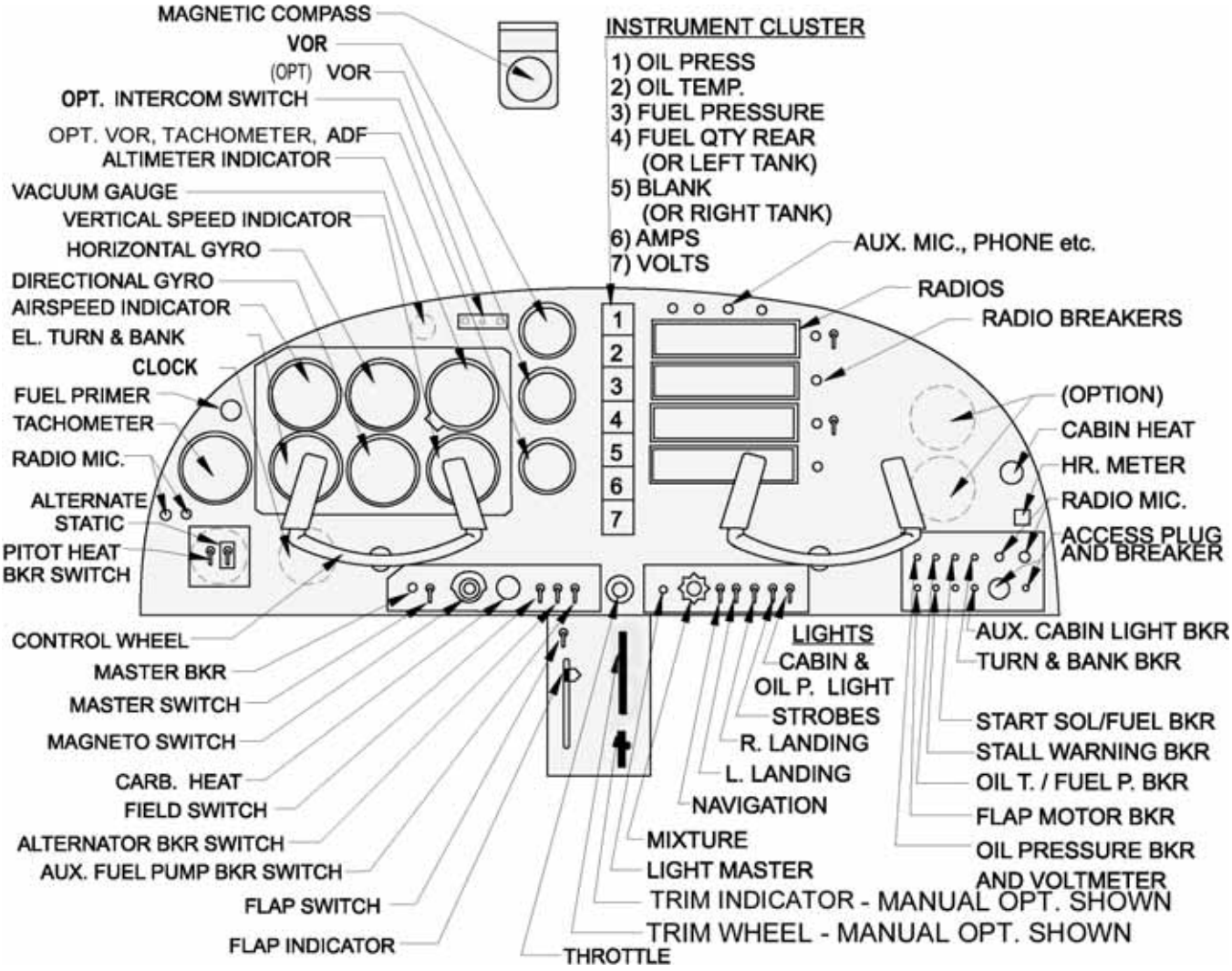
(*for non IFR certified GPS)

LIGHT MASTER BKR	MIXTURE PUSH RICH	NAV LIGHT BKR	LAND LIGHTS L. BKR	LAND LIGHTS R. BKR	STROBES BKR	CABIN LIGHT BKR

- Beside the red door handles:



- Baggage area: 18kg/40 LBS MAX. SOFT ARTICLES ONLY
  CHECK WEIGHT AND BALANCE
- Beside fuel filler: AVIATION FUEL
  100/100LL
  106 L./28 US gal
- Oil filler cover: OIL 5.7 L. or 6 US qts.
  SAE 20W50
- Left forward fuselage: FUEL DRAIN
- Rear left side fuselage: (identification plate) ZENAIR LTD
  CH 2000 # (serial)
  MIDLAND, ON
  T.C.#A-185 FAA T.C. #TA5CH MFR.APP.#72-94



IFR - INSTRUMENT PANEL

Note: position of optional instruments may vary according to owner's specifications

LARGE FUEL TANK OPTION

The next page (9-12) replaces 2-4 or 9-9.

The large fuel tank, with a usable fuel capacity of 128 liters (33.5 US gal.), simply replaces the standard tank extending the range of the airplane as given on page 5-3.

NOTE: Special care should be taken to assure the pilot that he is within the limits of the weight and center of gravity range. (see pages 6-6 and 6-8).

LIMITATION PLACARDS FOR LARGE FUEL TANK (replaces page 2-4 or 9-9)

The following placards are installed (Boxed items for night flying option)

- On the instrument panel:
. Compass deviation chart
. NO SMOKING
. MANEUVERING SPEED VA = 108 KIAS
. CABIN HEAT PULL ON

. THROTTLE PULL CLOSE
. Fuel selector: 104 L./27.5 US gal, DEPRESS, ON, OFF
. Registration _ _ _ _ _ _
. RADIOS
USABLE FUEL
128 L./ 33.5 US gal

DAY VFR ONLY
IN NON-ICING CONDITIONS
AEROBATIC MANEUVERS
PROHIBITED
AVOID SIDESLIPS USING
LARGE RUDDER INPUTS
SEE FLIGHT MANUAL

(or with Night Flying Option)

DAY AND NIGHT VFR
IN NON-ICING CONDITIONS
AEROBATIC MANEUVERS
PROHIBITED
AVOID SIDESLIPS USING
LARGE RUDDER INPUTS
SEE FLIGHT MANUAL

INTENTIONAL SPINS PROHIBITED

UP
FLAP
DOWN

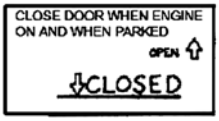
TRIM
DOWN
UP

MASTER BREAKER	MASTER SWITCH			CARB HEAT	FIELD BKR	ALTERNATOR BREAKER	AUXILIARY FUEL PUMP BKR
ON	ON	R	L BOTH		ON	ON	ON
OFF	OFF	OFF	START		OFF	OFF	OFF

OIL PRESS.	OIL TEMP.	STARTER SOLENOID	TURN & BANK	RADIOS
	FUEL PRESS.	FUEL GAUGE		
FLAP	STALL WARN.	TRIM	AUXILIARY CABIN LIGHT	12 VOLTS

LIGHT MASTER BKR	MIXTURE PUSH RICH	NAV LIGHT BKR	LAND LIGHT L. BKR	LAND LIGHT R. BKR	STROBES BKR	CABIN LIGHT BKR

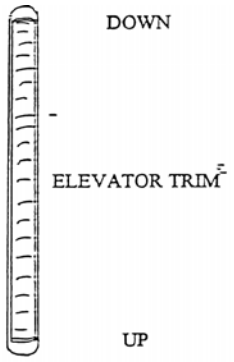
- Beside the red door handles:

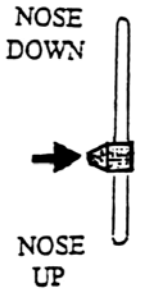


- Baggage area: 18kg/ 40 LBS MAX. SOFT ARTICLES ONLY
CHECK WEIGHT AND BALANCE
- Beside fuel filler: AVIATION FUEL
100/100LL
.130 L./ 34.5 US gal
- Oil filler cover: OIL 5.7 L. or 6 US qts.
SAE 20W50
- Left forward fuselage: FUEL DRAIN ↘
- Rear left side fuselage: (identification plate) ZENAIR LTD
CH 2000 #(serial)
MIDLAND. ON
T.A. #A-185 FAA T.C. #TA5CH MFR.APP. #72-94

MECHANICAL TRIM OPTION

When the hand operated mechanical trim option is installed, the labels from pages 2-4, 9-9 and 9-12 are replaced by following:





On page 7-2, 7-4 and 9-10 the words “trim switch” are replaced by “trim control wheel”.

On page 3-4 the paragraph “electric trim” is deleted.

Owner's Manual
And
Approved Flight Manual

Supplement Number 1

Maximum Take off weight : 1692 lbs

For U.S. Registered Aircraft Only

The CH2000 Airplanes registered in the USA maybe operated at weights up to 1692 lbs in accordance with the data contained in this supplement.

The pages of this supplement maybe used to replace the affected pages in the basic Owner's Manual and Approved Flight Manual

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for Manager, Systems and Flight Test Branch
Chicago Aircraft Certification Office

Federal Aviation Administration
Des Plaines, IL

Original Date of Approval: DEC 2 0 2002

Date of issue: DEC 2 0 2002

SUPPLEMENT NUMBER 1
LOG OF REVISIONS

Revision Date	Revised Pages	Description of Revision
4 Nov 02	All pages	Initial Issue

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