C42-E
540kg LSA

Pilot's Operating Handbook

POH/C42E/003/Rev.1
China

Airplane Registration Number ___________________

Airplane Serial Number _________________________

Issue 3 Rev. 1

Date of Issue: 31th March 2016

COMCO IKARUS GmbH
Leichtflugzeuge

RECORD OF MANUAL REVISIONS

Issue No.	Change/Description	Date	Signature
1.	Initial Issue. Based on ASTM **F 2245-11**	06/07/2011	[signature]
2.	Page 6: Manufacturer Contact Information added 4.1 Preflight check, item 17 corrected, Neuform propeller servicing note information added 5.4 Cruise conditions corrected 9.4 Flying without doors, Reference to PFA and BMAA removed, Owner change of address notice now Section 9.6 9.7 Notification of defects, Form FB-105 added 9.8 Daily inspection duplicate removed	21/01/2013	[signature]
3	4.8 Flap speed conversion to kt corrected 3.17 Grammatical correction 4.1 Overhaul and Inspection Neuform Propeller 4.8 Flap speed conversion to kt and km/h corrected	18/02/2015	[signature]
3 Rev.1	Record of manual revisions corrected 9.8 Cowl flap added	31.03.2016	[signature]

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INTRODUCTION

The C42 E aircraft is a Light Sport Aircraft (LSA), conforming to the definition of the LSA catagory.

To operate the aircraft the pilot must hold a license or certificate appropriate to this category of aircraft. The aircraft is not to be flown unless it is registered, carries registration markings in accordance with the requirements of the country in which the aircraft is to be flown, and has a Permit to Fly or certificate of Airworthiness valid in the country of operation.

The aircraft is to be flown under daytime VFR conditions. Flight in conditions other than daytime VFR without the correct aircraft equipment and pilot ratings is extremely dangerous and can result in serious injury or death.

Pilots holding licences for other categories, even higher ones, are required to be checked out by an appropriately qualified instructor prior to flying this aircraft as it possesses characteristics that are unique to light sport type aircraft. These characteristics include low inertia, susceptibility to turbulence and wind gradient and special engine considerations.

The safety of all occupants, the aircraft and persons on the ground are the sole responsibility of the the Pilot in command. Do not operate this aircraft in a manner that would endanger the occupants, the aircraft or persons on the ground.

Bear in mind that the engines used in C42 E aircraft are not certified aviation engines and thus may not offer the same safety standards found in other classes of aircraft. Prepare your flight so that you can always reach an emergency landing area should you experience engine failure. On cross country flights, ALWAYS keep an emergency landing field in sight.

Changes to the control system, structure, wings and engine are prohibited. These changes would invalidate any certificate of Airworthiness or permit to fly and as such would result in an insurance becoming null and void.

All operating difficulties and equipment failures should be reported to your dealer or the manufacturer.

Background History

The aircraft is largely designed and manufactured by Comco Ikarus Gerätebau GmbH, based at Mengen Airport in Southern Germany. It is the natural successor to the Company's market leader, the C22, of which over 1200 examples have been built. To date over 1000 examples of the C42 E have been built and flown.

The prototype C42 E was first flown in 1995; the first production flight took place in Spring 1996. The lead aircraft has completed over 2400 hours. Versions of the C42 E have been accepted in the UK by the Light Aircraft Association as a kit built and the CAA as a type approved series built microlight.

Certification

ASTM Standards used on this airplane:

F2245 Specification for Design and Performance of a Light Sport Airplane
F2746 Specification for Pilot's Operating Handbook (POH) for Light Sport Airplane
F2339 Practice for Design and Manufacture of Reciprocating Spark Ignition Engines for Light Sport Aircraft
F2279 Practice for Quality Assurance in the Manufacture of Fixed Wing Light Sport Aircraft
F2295 Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft

Manufacturer Contact Information
COMCO IKARUS GmbH
Am Flugplatz 11

88367 Hohentengen / Swabia
Germany

Tel: +49 7572 600 80
Fax: +49 7572 3309
Email: post@comco – ikarus.de

Backup Certification Data Contact Information
COMCO IKARUS GmbH
Am Flugplatz 11

88367 Hohentengen / Swabia
Germany

Tel: +49 7572 600 80
Fax: +49 7572 3309
Email: post@comco – ikarus.de

Owner ________________________________

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This Pilot Operating Handbook belongs to the aircraft:__________________ and is to be kept in the aircraft at all times.

1 GENERAL INFORMATION

The C42 E is a conventional modern light aircraft. Constructed around a tubular aluminum framework with composite fairings and laminate-fabric flying surface coverings it is aerodynamic, lightweight and easy to maintain and repair. Fitted with an efficient Rotax 912ULS four-stroke flat-four engine it requires minimal maintainence and yet returns excellent fuel economy and a high power to weight ratio.

Gross weight:	540kg	1191lb		
Top speed:	111kt IAS		sea level, Rotax 912ULS	
Cruise speed:	100kt IAS		75% power, sea level, Rotax 912ULS	
Fuel Range:	320nm		65L tank, 75kt≙ 140 kmh cruise, sea level, 1hr reserve	
Climb rate:	930fpm at 66kt IAS		Rotax 912ULS	
Stall speed:	VS0	35kt IAS	full flap	37 kt ≙ 68 kmh
	VS1	38kt IAS	half flap	40 kt ≙ 74 kmh
	VS	42kt IAS	no flap	43 kt ≙ 80 kmh
Fuel capacity:	65L	17US Gallons		
Fuel Type:	Unleaded Premium Autogas		MON 85, RON 95, AKI 91 minimum	
	AVGAS 100LL		See Rotax manual for advice	
Maximum power:	Rotax 912ULS	100hp	at 5800rpm	note 5500rpm max continuous

2 LIMITATIONS

Airspeed markings - all speeds are Indicated Air Speeds (IAS).

White Arc:	40 to 78 mph (35 to 68 kt) —full flap operating range.
Green Arc:	48 to 110 mph (42 to 96 kt) — normal operating range.
Yellow Arc:	110 to 139 mph (96 to 121 kt) CAUTION, DO NOT USE IN TURBULENCE.
Red Line:	139 mph (121 kt) V_{NE} VELOCITY NEVER EXCEED.
Yellow Triangle:	62 mph, 54 kt - Recommended Minimum Approach Speed

Airspeeds - all speeds are Indicated Air Speeds (IAS).

V_{S0} Stall speed, full flaps:	40 mph,	35 kt
V_{S1} Stall speed, flaps retracted:	48 mph,	42 kt
V_{FE} Max. flap extended speed :	78 mph,	68 kt
V_A Max. manoeuvring speed,	103 mph,	90 kt
V_{NE}, Never Exceed Speed:	139 mph,	121 kt

V_{NE} & V_A limitations are affected when flying with doors removed: VNE (Velocity Never Exceed): 93 mph, 81 kt.

Service Ceiling: not defined.

Structural limitations:

Positive limit load factor	4g (at all speeds)
Negative limit load factor	-2g

Approved Manoeuvres

Non-aerobatic operation only.
Any manoeuvre necessary for normal flight.
Stalls.
Steep turns with bank angles not exceeding 60°

Fuel

Fuel capacity:	65L	17US Gallons
Fuel Type:	Unleaded Premium Autogas AVGAS 100LL	MON 85, RON 95, AKI 91 minimum See Rotax manual for advice

Maximum engine power output

Rotax 912ULS 100hp at 5800rpm note 5500rpm max continuous

Operational Limitations

This aircraft

- must be flown under daylight, VFR conditions only.
- must not be flown in known airframe icing conditions.
- must not be flown in conditions of moderate turbulence or above, or in winds exceeding 22 kts, at surface level, less if gusty.
- max. demonstrated Crosswind component 15 kt

Weight and Balance

- Maximum Take-Off Weight (MTOW): 540 kg
- Center of Gravity in Flight (COG): 350 mm - 523 mm (behind leading edge)

3 EMERGENCY PROCEDURES

3.1 General Information

The C42 E is a very easy to fly aircraft, capable of controlled landing at slow speed onto moderately rough surfaces.

3.2 Emergency Airspeeds

Best glide speed	76mph, 65kt	Glide angle 10:1
Approach speed	62mph, 54kt	Yellow triangle marker on ASI
Stall speed full flap	40mph, 35kt	Bottom of white arc on ASI

Emergency Checklists:

3.3 Engine fire during startup

Magneto switches	OFF
Master switch	OFF
Main fuel shut off valve	OFF

Evacuate aircraft

If safe to approach aircraft discharge fire extinguisher through radiators and cowling exits.

3.4 Engine failure during takeoff

If sufficient runway ahead land and apply brakes.
If not, ensure the nose is lowered promptly to maintain flying speed.
If lower than 500', land straight or near to straight ahead. Do not attempt to turn back to the airfield.
If you have sufficient height and time make a MAY DAY call. Stay on the frequency you are already on if contact established. Remember it is more important to keep flying the aircraft on your planned approach than any other action.

3.5 Loss of engine power in flight

Set attitude for best glide at 65 knots and trim (This is a good compromise speed and easy to achieve quickly). Assess the wind direction and select a suitable landing area into wind. Plan your approach and execute this action.

Activate carburetor heat control.

If you have time check the reason for engine failure:

Master switch	ON
Magneto switches	ON
Main fuel shut off valve	ON
Choke	OFF

Try restart:

Auxiliary fuel pump	ON
Throttle	set 1/4 open

Press starter

If restart not achieved and you still have sufficient height and time make a MAY DAY call. Stay on the frequency you are already on if contact established. Remember it is more important to keep flying the aircraft on your planned approach than any other action.

Do not turn your back on the planned landing site or make a 360 degree turn. A constant aspect approach is recommended coupled with beats and turns and or sideslip to increase rate of descent.

IMPORTANT: SHUT DOWN CHECKS (Prior to landing)

Throttle	closed
Master switch	OFF
Magneto switches	OFF
Main fuel shut off valve	OFF
Security	harnesses tight, reassure passenger

1 Stage of flap can be applied at any time during your descent.

During your initial approach you should be aiming at the middle off the landing site bringing your aiming point back to one third in after applying full flap. All emergency landings should be made into wind with full flap to minimize landing speed.

Remember - KEEP FLYING THE AIRCRAFT AT ALL TIMES.

3.6 Emergency landing without engine power

Set attitude for best glide at 60 knots and set the flaps to position 2 (11° / half flap) (This is a good compromise speed and easy to achieve quickly). Assess the wind direction and select a suitable landing area into wind. Plan your approach and execute this action.

If you have sufficient height and time make a MAY DAY call. Stay on the frequency you are already on if contact established. Remember it is more important to keep flying the aircraft on your planned approach than any other action.

Do not turn your back on the planned landing site or make a 360 degree turn. A constant aspect approach is recommended coupled with beats and turns and or sideslip to increase rate of descent.

IMPORTANT: SHUT DOWN CHECKS (Prior to landing)

Throttle	closed
Master switch	OFF
Magneto switches	OFF
Main fuel shut off valve	OFF
Security	harnesses tight, reassure passenger

1 Stage of flap can be applied at any time during your descent.

During your initial approach you should be aiming at the middle off the landing site bringing your aiming point back to one third in after applying full flap. All emergency landings should be made into wind with full flap to minimize landing speed.

Remember - KEEP FLYING THE AIRCRAFT AT ALL TIMES.

3.7 Precautionary landing with engine power

If engine trouble is suspected and a suitable landing area is available execute a normal glide approach. Assume that the engine may not produce any power.

If no suitable landing area is immediately available do not allow height to be lost whilst proceeding to a more suitable area. Use the engine as required and available to maintain sufficient height to allow plenty of time to execute a good emergency landing without power, should the engine fail completely.

In the case of precautionary landing for reasons other than engine trouble, for instance deteriorating weather, remember the aircraft will fly slowly and safely with full flap deployed at approach speed, 54kt, and will continue to fly down to stall speed at 35kt. Do not continue to fly at high speed if visibility is very bad.

3.8 Fire in flight

Main fuel shut off valve OFF
Electric fuel pump OFF
Full throttle, (to burn the remaining fuel fast).
Maximum permissible airspeed to put out the flames.
Call MAYDAY
Follow emergency landing without engine power procedures.

3.9 Loss of oil pressure

Follow precautionary landing with engine power procedure.

3.10 High oil pressure

Follow precautionary landing with engine power procedure.

3.11 Emergency descent

Retract flap.
Close the throttle, establish a straight dive at V 96kt.
If conditions are smooth, this may be increased to close to V_{NE}, 121kt.
As the required level is approached, begin to level out gently and resume normal flight.

3.12 Alternator failure

Follow precautionary landing with engine power procedure.

3.13 Overvoltage

Unless navigational or radio equipment is required, turn off master switch. Note there is a risk that electronic equipment may fail due to the overvoltage condition.
Follow precautionary landing with engine power procedure.

3.14 Inadvertent spin

Close throttle.
Centralize stick and rudder controls.
The aircraft will recover very quickly to a steep dive.
Retract flap if deployed (unlikely, the aircraft is very hard to spin with full flap).
Gently ease of out the dive and return to normal flight.

3.15 Inadvertent icing encounter

Activate carburetor heat control. Fly clear of conditions as soon as possible. If airframe icing is suspected do not fly at low speed until sure any ice has cleared.

3.16 Loss of primary instruments

Land as soon as possible at a suitable airfield. Consider runway length and availability of emergency services.

3.17 Loss of flight controls

- I Should you lose elevator control due to a mechanical failure, trim the aircraft to 70 mph, 60kt. With a reduced power setting, make a shallow power-on landing approach, throttle back and flare using the trim. Avoid use of the flap.
- II If you lose aileron control, you can fly the aircraft with rudder alone.
- III If you lose rudder control, the aircraft can be flown with the ailerons alone.

In extreme turbulence leading to an uncontrolled flight situation activate the rescue system.

4 NORMAL PROCEDURES

4.1 Preflight check

Daily Inspection / Pre-flight Inspection

1. Engine and cowling secure and undamaged.
2. Check coolant level correct.
3. Check oil level within limits.*
4. Check fuel level
5. Propeller clean and undamaged[1], bolts secure.
6. Front gear; tyre pressure, tyre condition and tyre creep.
7. Left main gear; tyre pressure and condition.
8. Left side wing, structure and covering.
9. Left wing strut attachment secure.
10. Left aileron, control linkage and hinges secure.
11. Left flap, control linkage and hinges secure.
12. Left side of the fuselage, undamaged
13. Tail group secure and surfaces undamaged.
14. Elevator hinges and control linkage secure.
15. Trim tab and linkage secure.
16. Rudder hinges and control cables secure.
17. Repeat items 7 through 12 for right side.
18. Fuel filler cap secure.
19. Windscreen clear and undamaged.
20. ASI pitot unobstructed and extended to end of red mark.
21. Cockpit area inside and out, check controls full movement, free and correct direction.
22. Instruments serviceable.
23. Open fuel tank sump drain and check for contamination.
24. Check tank water drain for leaks.

*When checking the oil level it may be necessary to pump the oil back into the reservoir to obtain a correct reading and to avoid overfilling. This can be done by removing the oil filler cap and ensuring the master switch and magnetos are off and slowly rotating the propeller ONLY in the operating direction until a gurgling sound is heard from the reservoir tank.

[1] With composite propellers, minor damage to the external surface, such as a deep scratch which breaches the outside fabric, can result in significant loss of strength and a dangerous condition. For this reason it is important to inspect the blades carefully before flight. Look particularly for scratches along the chord of the blade which may have severed one or more yarns of fibre. When in doubt, seek expert advice.

For overhaul and inspection intervals please refer to your propeller operating manual.

4.2 Engine starting

Description:

The 912ULS is 4 cylinder, four stroke, horizontally opposed engines. This is cooled by a combination of air-cooled cylinders and liquid cooled heads. The engine oil is cooled with a special oil / water heat exchanger.

The C42E aircraft utilise an oil/water heat exchanger in place of the oil radiator. A carburettor heat control is also fitted which draws air from around the exhaust, via the usual air filter. This should only be activated if carburettor icing is suspected (see Emergency Procedures sction).

Fuel Type: Min. AKI 91 Octane for the 100 hp engine (RM/2 method) automotive gasoline leaded or unleaded or AVGAS 100 LL . Prolonged use of AVGAS can cause damage to the Rotax 912ULS, precludes use of fully synthetic oil and requires more frequent oil and oil filter changes. Please study the Rotax engine operating manual.

CAUTION: Never handle the propeller with the ignition on.

To Start ensure that :

Brakes	ON
Aircraft	FACING A SAFE DIRECTION AND AREA CLEAR ALL AROUND
Flap	NEUTRAL (no flap)
Non essential electrics	TURNED OFF
Carb Heat	OFF
Main fuel shut off valve	OPEN
Master switch	ON
Electric fuel pump	ON
Throttle at idle	FULL AFT
Magnetos (both)	ON
Propeller area	CLEAR
Rear of aircraft	CLEAR
Choke	PULLED OUT
Shout	“CLEAR PROP”
START ENGINE	
After engine starts, choke	OFF
Check:	OIL PRESSURE RISING*.

*** If Oil pressure does not rise turn off engine immediately.**

Note: If the engine doesn’t start, repeat the procedure. If the engine floods, close the main fuel valve, half open the throttle and turn over the engine. When it starts, reduce the throttle quickly to idle (2000 rpm) and turn on the fuel.

<u>**Open the main fuel valve - don’t forget!**</u>

Note: A water-cooled four stroke engine requires a fairly long warm up period. Run the engine at 2000 rpm for 2 minutes minimum then at 2500 rpm until the oil temperature is at least 120°F (50° C). Perform an ignition system check at 4000 rpm by turning off each ignition switch in turn. The engine speed drop should not exceed 300 rpm with a maximum difference of 115 rpm.

Failure to let the oil temperature reach 50°C can result in carburettor ice forming during takeoff. It is imperative that this procedure is followed otherwise serious injury or death may result.

After Start

Aircraft holding on brakes	
Auxiliary fuel pump	OFF
Oil pressure within limits	
Set rpm to 2000 for 2 minutes, then 2500rpm until warmed	
Choke is	OFF
Check idle	
Charging lamp showing	OFF
Radio	ON (If fitted)
Check clear for taxi	
Reduce throttle to idle before releasing brake	

4.3 Taxiing

During Taxi

Brakes operating properly
Check compass and slip ball
Use elevator as necessary to keep the weight off the nose-wheel

The nose wheel steering is conventional and is directly connected to the rudder pedals. Push the right pedal to turn right. Push the left pedal to turn left. Taxiing is simple; the turning radius of the C42 E is small, and the aircraft handles cross winds during taxiing very well.

When taxiing with a strong tail wind, hold the control stick firmly in the neutral position.

When taking off or landing on bumpy grass strips, exercise caution to avoid striking the propeller. This may require performing soft field take-off and landing procedures.

Note: with a fully aft cg it is possible for the aircraft to tip back and sit on its tail skid, particularly if taxiing over uneven ground.

4.4 Normal takeoff

Pre-Flight Vital Actions

Park into wind
Brakes on and locked
Set throttle at 2000 rpm (If still warming 2500 rpm)
Controls full and free and correct sense
Harnesses and hatches secure (no light visible along bottom of door)
Loose items stowed
Flight instruments set and correct
Engine temperatures and pressures within limits
Magneto check at 4000 rpm (max drop 300 rpm)
Throttle to idle (1450 -1600 rpm)
Reset throttle to 2000 rpm
CARB Heat on
Fuel ON and contents sufficient for flight
Aux fuel pump ON
Trim set for take off

Flap set to position 2 (11degrees / half flap) if required
CARB Heat off.
Check ALL CLEAR
Check full power during take off roll

Complete the pre-take checklist 'VITAL ACTIONS' above. Ensure the trim is set to one step above neutral, as indicated by a centre-scale reading on the trim indicator and the flap are set as required (Max position 2, 11 degrees, half flap). Always take off into the wind when possible. The maximum demonstrated 90 degree crosswind component is 17 mph (15 knots).

The stick position should be positively aft of neutral and maintained during the ground roll to minimise the loading on the nose wheel. Smoothly bring the throttle to the full forward position, check the tachometer for full throttle rpm.

It will be necessary to hold right rudder to counteract slipstream effect and engine torque during the ground roll and climb out. The nose wheel lifts off at approximately 30 mph, (26 kt). Accelerate with the nose wheel off the ground 2-4 inches, (5-10 cm). The aircraft will take off at 44 mph (38 kt).

After takeoff, let the aircraft accelerate to the best rate of climb speed Vy 76 mph, (66 kt), flap extended to position 2 (half flap). At between 150 and 200 ft raise the flap to the cruising flight position 1 (-5° degrees or no flap). Be ready for the pitch trim change to nose-down. Trim the aircraft as required for the climb.

Best angle of climb speed Vx is 55 mph, (48 kt) flap at position 2(half flap). However this climb speed and angle are not recommended because in the event of an engine failure it is possible that control of the aircraft may be lost. The aforementioned procedure is therefore recommended. This should ensure full control is maintained in the event of an engine failure shortly after takeoff providing immediate engine failure action is taken.

After Take Off
Flap up above 150 feet
Aux fuel pump off above 1000 feet
Engine temperatures and pressures within limits

Cross wind take off :
Take off should be made as described above but with into wind aileron. Maintain track down the centreline with rudder and further maintain into wind aileron as required to stop your drift during the take off roll and rotation. (Out of wind wing main wheel can lift off first during take off). Resume wings level balanced flight after take off.

The maximum demonstrated 90 degree cross wind component is 17 mph (15 kts)

4.5 Best angle of climb speed

Best angle of climb speed Vx is 55 mph, (48 kt) flap at position 2(half flap). However this climb speed and angle are not recommended because in the event of an engine failure it is possible that control of the aircraft may be lost.

4.6 Best rate of climb speed

The best rate of climb speed is Vy 76 mph, (66 kt), flap at position 1(no flap).

4.7 Cruise

Note: Typical economic cruise speeds lie in the range 80 to 105 mph (70 to 90 kt); 109 mph (95 kt) with the 100 hp engine.
Maximum continuous engine speed is 5500 rpm for the 100 hp 912ULS.

Variations in rpm and cruise performance occur with different loads.

Typical cruising flight (100 hp)

Engine speed:	4800 rpm.
Airspeed:	100 mph (85 kt)
Fuel flow:	3.6 US gallons per hour, (14l/h)

The maximum speed in cruising flight is 118 mph (103 kt).

Note: ***This maximum speed applies only in smooth conditions with no turbulence. In turbulent air, speed must be kept below V = 110 mph (96 kt).***

4.8 Approach

Entering a conventional circuit in the cruise 92 mph (80 kts) when on the base leg reduce power, maintaining attitude allowing a reduction in airspeed to 78 mph (68 kts ≙ 125 km) (white arc) select flap at position 2 (11°, half flap)15 degrees flap (1 stage) simultaneously lowering the nose to maintain 67 mph (58 kts) and trim.

On final approach if the crosswind component is less than 12 mph (10 kts) you can select full flap simultaneously lowering the nose to maintain 55 kts. Continue your approach at 63 mph (55 kts) and trim if required. Minimum approach speed in this configuration is 62 mph (54 kts).

In calm conditions it is acceptable to use side slip technique to increase your rate and angle of descent, but it is recommended the aircraft is returned to a standard approach configuration before reaching 100 ft above the runway.

4.9 Normal landing

In the landing phase during the hold off when the main wheels touch ensure that the nose wheel is maintained clear of the runway during the landing roll bringing the stick steadily rearward until it reaches the backstop and allow the nose wheel will settle onto the runway as the speed decays.

Caution should be exercised when applying brakes as it is possible to lock the main wheels under certain conditions. It is preferable to allow the aircraft to de-accelerate to a walking pace before applying any braking action.

Cross wind landing technique:

Establish the aircraft on a powered approach, tracking the centreline and allowing for drift. For crosswind components of 12 mph (10 knots) or above only flap position 2 (half flap) is recommended. Approach speed should be 66 mph (58 kts).

The generic wing down approach is recommended. If you are not fully aware of crosswind techniques you should consult an approved instructor. The following description is for guidance and not a substitute for proper instruction.

Below 200 feet on the approach, apply rudder to align the nose of the aircraft with the centreline of the runway simultaneously lowering the into-wind wing with aileron to maintain your track down the centreline (preventing drift).

Smoothly allow the aircraft to settle on to the runway, the into wind wheel will contact the runway first maintaining directional control with the rudder and progressively increase the into-wind aileron deflection as the airspeed reduces.

Allow the nose wheel to settle on to the ground earlier than normal to transfer steering authority. Avoid "fully holding off" before touchdown as drift angle increases and airspeed decays, the control authority also reduces.

4.10 Short field takeoff and landing procedures

Takeoff

Select first stage flap. Position aircraft to make as much runway available as possible. Hold the aircraft on the brakes as power is smoothly increased to full, release brakes at full power or as the aircraft starts to cree p despite the brakes. Hold the elevator only slightly up.
The aircraft should accelerate quite strongly, if not then abort the takeoff. At around 40kt rotate and lift off. Allow the aircraft to continue to accelerate to at least 48kt, best angle of climb speed, before establishing a climb at the desired speed.

Landing

Select full flap and establish a powered approach at the 54kt recommended minium approach speed (the yellow triangle on the ASI). Maintain this airspeed with the elevator whilst adjusting the power to control the flight path and descent rate to position low over the end of the runway ready to close the throttle and round out. Do not hold off excessively, rather allow the aircaft to settle at which point the brakes may be applied to shorten the ground roll.

4.11 Soft field takeoff and landing procedures

Takeoff

Select flap position 2 (half flap). Try to avoid stopping before commencing the takeoff roll. Apply full power and hold full up elevator until the nose wheel rises, then ease the elevator and balance the aircraft on the main wheels as it accelerates until it lifts off. Set the attitude to allow the aircraft to accelerate further whilst still in ground effect, to at least 48kt, before establishing the climb.

Landing

Select flap position 3 (full flap) and establish a powered approach at the 54kt recommended minium approach speed (the yellow triangle on the ASI). Maintain this airspeed with the elevator whilst adjusting the power to control the flight path and descent rate to position low over the end of the runway ready to close the throttle and round out. Hold off as long as possible to touch down as slowly and gently as possible. Do not use the brakes. Use the elevator to keep the nose wheel off the ground as long as possible, or as long as steering authority is maintained. Keep full up elevator whilst taxiing, except when taxxing in strong wind conditions.

4.12 Balked landing procedures

Smoothly apply full power.
Establish the aircraft in a climb at 60kt.
Retract the flap if deployed.

Other information:

4.13 Turning flight

In turning flight, it is necessary to co-ordinate the use of the ailerons and the rudder. At normal cruising speeds 80 mph (70 kts) to 103 mph (90 kts) initiate the turn with aileron maintaining balance as necessary with rudder. At bank angles exceeding 45 degrees the pitch trim force required to maintain level flight increases noticeably. Banks exceeding 60 degrees are prohibited. In steep bank turns remember to maintain the attitude at entry and maintain airspeed with power. Failure to maintain correct attitude can result in a spiral dive developing. At 60 degrees of bank the stall speed is multiplied by a factor of 1.41 and you will be pulling 2g.

4.14 Slow flight, stalling and use of flaps

In cruising flight configuration with the landing flap retracted and at speeds below 62 mph (54 kt) the top of the engine cowl will be well above the horizon. Control inputs of the aileron and rudder will be severely dampened and the overall response of the aircraft markedly reduced. Only gentle turns should be made of up to 20 degrees of bank ensuring the aircraft remains in balance. In slow flight if a wing drops, centrally reduce back pressure on the stick and lower the nose. Prevent further yaw with the rudder and do not attempt to lift the wing by aileron input.

At approximately 49 mph (43 kt) there will be a slight buffeting of the airframe. The aircraft is still controllable. However, aileron input should not be used and the stick kept central with any tendency for the wing to drop use opposite rudder to prevent yaw.

If stalls are entered very gently the aircraft can enter a controlled mushing descent, control can still be maintained with rudder. (It is important not to over use rudder and potentially put the aircraft into a reverse spin entry).

When the aircraft stalls the nose will drop. By removing back pressure the aircraft should recover. Typical height loss in the wings-level stall is approximately 100 ft., and max. Pitch attitude change 25° below the horizon. In turning flight stalls the typical height loss is 120 ft. At flap position 3 (full flap, 32 degrees) the pre-stall buffet, 41 mph (36 kts), is markedly more noticeable and there is an increased tendency for the wing to drop if balanced flight is not maintained.

4.15 Shutting down the engine

During the descent and subsequent taxiing, the engine will have cooled down enough to permit immediate shut-down after parking. In the case of increased operating temperatures the engine should be allowed to idle for at least 2 minutes to return to normal operating temperature before shut down.
Turn off all electrical accessories and radios before shutting down the engine.

5 PERFORMANCE

5.1 Takeoff distance to clear 15m, 50' obstacle

Take off ground roll:	100m
Take off distance to clear 15m:	250m total at 54kt, half flap, Rotax 912ULS. (Including ground roll)

5.2 Landing distance to clear 15m, 50'obstacle

Landing ground roll:	90m
Landing distance to clear 15m:	310m total at 54kt, full flap. (Including ground roll)

5.3 Climb rate

Best climb rate:	930fpm Rotax 912ULS, at 66kt
Best angle of climb speed:	48kt

5.4 Cruise conditions

Because lightweight aircraft are more strongly affected by loading, conditions and propeller setting the pilot is encouraged to plan very conservatively until experience is gained of his aircraft's fuel consumption at the conditions in which his aircraft is normally operated.

Typical economic cruise speeds lie in the range 80 to 115 mph (70 to 100 kt) with the 100 hp engine.

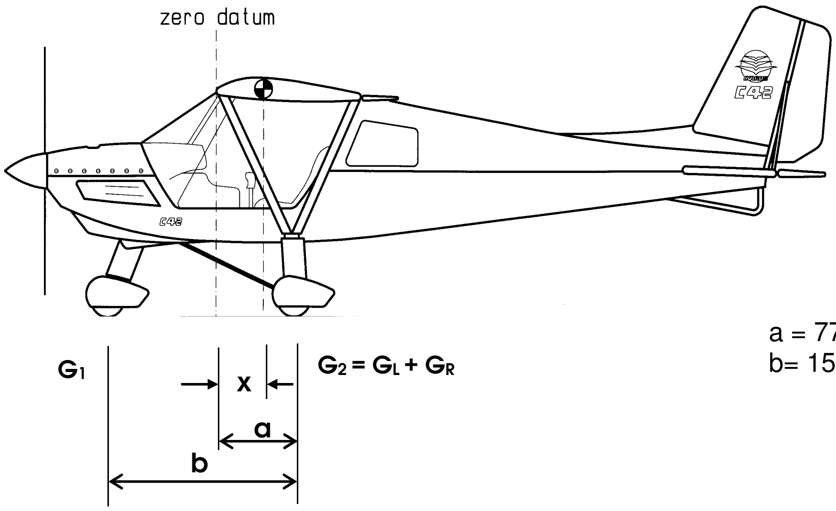
Note: ***This maximum speed applies only in smooth conditions with no turbulence. In turbulent air, speed must be kept below V =110 mph (96 kt).***

6 WEIGHT AND BALANCE

6.1 Weight and balance calculations

The centre of gravity is measured in mm behind the zero datum. Zero datum is the leading edge root.

The aircraft's empty weight and cg are derived first: Place the aircraft in a level position on three scales, such that the stabilizer is horizontal (0°), as shown below. Therefore lift the wing or push down the rear fuselage just in front of the tail and put a distance below the scales to level the aircraft. Record the reading of each scale.



a = 770mm
b= 1540mm

Calculate the position of the empty cg, from the formula:

$$X = a - \frac{G_1 \times b}{G_1 + G_2} = ...mm$$

(a and b are values to be measured for the specific aircraft).

Insert the values for total empty weight, (G_1 + G_2) and cg distance aft of datum, (X), into the table below. Multiply Empty Weight (kg) by cg distance aft of datum (mm) to derive empty weight moment (kg.mm) in the last column.

Complete the remaining weights for seat loads, fuel and baggage and multiply these by the lever arm lengths (given below).

Add up the weights and moments, then divide the total weight by the total moment to give laden cg location aft of datum.

Ensure that this cg location lies within the limits 350 to 523 aft of datum.

Loading plan

Position	weight x	lever arm =	moment
	kg	mm	kg.mm
Empty weight			
1. Seats 2. Under seat bags 3. Fuel 4. Samsonite case		400 400 950 950	
Total Weight	kg	Total Moment	kg.mm

centre of gravity CG = Total Moment kg.mm / Total Weight kg = mm

6.2 Conditions of weighing

The dry empty weight of the aircraft is defined under the following conditions:

All normal installed equipment fitted.
Oil and coolant levels normal.
No usable fuel.

Note: **Remaining within the maximum Take-off Weight (MTOW) of 540 kg, 1191lb is the pilot's responsibility.**

6.1 Equipment list

When weighing the aircraft make a note of the aircraft configuration. Such an equipment list may include:

Spats
Seat cushions
Radio
Intercom
GPS
Baggage bag
Reserve parachute

7 DESCRIPTION OF AIRPLANE AND SYSTEMS

The C42 E is a simple aircraft whose structures and systems are readily inspected and maintained. However, since some of its systems differ from those found on conventional aircraft; this section should be studied before dismantling, repair or inspection.

7.1 Airframe

Fuselage
A 165 mm diameter aluminium tube runs from nose to tail and carries all the major assemblies: engine, seats, undercarriage, fuel tank, and tail empennage. The cockpit structure, consisting of a thin walled aluminium tube frame, includes a welded aluminium box-section frame at its top to which the wing spars' roots attach, and which provides compression load carry-through for both spars.

The composite seats are supported around their edges by attachment to the cockpit frame. Around the outboard edges of the seats, some of these loads are passed via the composite lower fairing to a lateral beam consisting of a 56mm reinforced box section. The ends of this beam accommodate the wing struts and withstand tension loads from them.

All load carrying (structural) members of the airframe are aluminium alloy tubes; most of which terminate in spherical bearings.

Wing
The wing has a ladder construction comprising leading and trailing edge tubes, connected by compression struts at intervals along its span. The triangulated wing struts, terminating at a fixed point at the top of the undercarriage, brace the wing against fore and aft loads. In normal +g flight these struts are under tension.

In +g flight both leading and trailing edge tubes inboard of the wing struts junctions, experience compression loads from the wing struts, as well as direct bending from lift loads.

The wing, tail empennage and all control surfaces are constructed of thin walled aluminium tubing. They are covered by a reinforced polyester fabric, sewn into complete envelopes and fitting tightly over their frames.

Undercarriage
The tricycle undercarriage has suspension on all wheels and damping on the main wheels. The front fork is directly connected to the rudder pedals. Hydraulic disc brakes operate on the main wheels only.

Main wheels' suspension stiffness can be adjusted by varying the air pressure in the damper units via the valves in their casings. A special high pressure pump is required for this purpose.

7.2 Control Systems

Pitch
A central control stick, accessible by both occupants, is located over the fuselage between the seats. Fore and aft movement of this stick is transferred, via longitudinal push tubes, to a motion reversal lever installed midway between the cockpit and tail. This installation also accommodates the pitch stops. A second push tube, of similar length, runs from this lever to the elevator horn. A rearward movement of the stick lifts the elevator; forward movement depresses it.

Each push rod terminates in a spherical bearing (Rose joint) maintaining loads through the centres of the tubes. The threaded roots of these fittings can be susceptible to failure if bending loads are applied; it is important to ensure complete freedom of the joints at extremes of their movements, such that bending loads cannot be applied.

Roll
The stick is also connected to a torque tube mounted on top of the fuselage tube between the seats, and turning on a Rose joint at each end. The rear of the torque tube carries a pair of horns from which run control cables, one for each side. These cables are led behind and over the cockpit, via pulleys, to a central bellcrank. From here, motion is transferred via push tubes to a bellcrank in each wing, mounted on a wing compression strut forward of the aileron. A second tube links this bellcrank to the aileron horn.

The geometry of the aileron control system produces some asymmetry in the deflections of the ailerons, effectively eliminating adverse yaw.

Movement of the stick to the right results in a lifting of the right hand aileron and depression of the left, and vice versa.

Yaw
Dual rudder pedals are mounted on common torque tubes, bearing in bushes installed directly into the fuselage tube. Control cables run from points near the top of the pedals' arms direct to the rudder horns.

Push rods connected to arms on the font fork, permit direct steering to be made via the rudder pedals. These push rods are curved to permit slight bending in the event of large opposing forces from two pilots being applied to the rudder pedals. In this event, a large proportion of the load is borne by the rudder cables themselves.

Two light springs are fitted to the rudder pedals to aid centering.

Pushing the right rudder pedal forward results in the rudder moving to the right; pushing the left pedal forward results in the rudder moving to the left.

Trim
An electric pitch trim system is controlled from a rocker switch in the dash. Pressing the top of the rocker switch lifts the trailing edge of the trim tab and results in a pitch down trim; pressing the bottom depresses the trim tab and results in a pitch up trim. The switch controls a small servo motor near the trailing edge of the fixed stabilizer. A short push rod runs from this servo motor to the trim tab horn. Raising the trim tab in flight results in a down deflection of the trailing edge of the elevator and a nose down pitch. A panel-mounted meter indicates trim position.

If the trim runs away to one extreme or fails in one position, no undue stick force is required to maintain control.

Brakes
The control stick carries a brake lever with an integrated master cylinder. Hydraulic lines carry pressure to a small disc brake on each of the main wheels. The brakes work together.
On systems fitted with the Beringer brake modification a pressure limiting device is incorporated in the system between the brake handle and the brake callipers.

7.3 Instrument panel

Battery
A small lightweight lead acid battery is installed beneath the instrument panel for engine starting. It has a capacity of 5 amp hours and very high current capability. No maintenance is required, apart from keeping the contacts clean and dry. The battery is charged from the engine's in-built alternator, via a rectifier-regulator unit.

The engine ignition system is independent of the rest of the electrical system and does not require the battery to operate.

Fuses
Fuses are provided to protect wiring to all the electrical services with the exception of the starter motor. If a fuse blows, it is important to determine the cause of the failure before replacing the fuse. Under no circumstances replace the fuse with one of a higher rating.

Instruments
A variety of electrical instrument configurations is available, with an essential minimum as follows:

Fuel gauge
Oil Temperatur gauge (Oil-T)
Oil Pressure gauge (Oil-P)
Cylinder Head Temperature gauge (CHT) *****
Tacho (rpm)
Compass

Note: there may be a significant difference between the CHT reading and that of the coolant temperature, with the CHT gauge likely to read low, and to have a slower response. Although the CHT gauge may indicate an acceptable temperature, it must not be assumed that the coolant temperature lies within limits.

Switches
A master switch provides isolation of the battery from the main bus. The master switch must be closed (on) before attempting to start the engine, and must remain on to ensure that the battery is charged properly.

Separate isolating switches are provided for the remaining services or groups of services. Where a radio is installed, it is wise to turn off the radio switch before starting to reduce the risk of high spurious voltages damaging the radio.

NOTE: - The ignition switches stop the engine by grounding the ignition circuit. The engine is started and runs with the switches open, and is stopped by closing the switches. The ignition switches are therefore mounted in the reverse sense to the other switches to enable the normal aviation switch sense to be maintained. ie. up for ON, down for OFF.

It is also important to note that disconnection of the ignition switch wires, by accident or during maintenance, renders the engine live. Great care must be exercised in this case to ensure that the engine cannot be started accidentally. Normally remove the spark plugs' caps.

7.4 Engine

The 100 hp Rotax 912ULS is installed and drives the propeller via a gearbox with a reduction ratio of 2.43:1 respectively. The power plants is flat 4 cylinder, 4 stroke engines with air and oil cooled cylinders and water-cooled heads. Full descriptions of the engine, its performance and maintenance requirements are to be found in the Rotax manual.

According to ROTAX Manual:

Oil Pressure:		2 - 5 bar
Oil Temperature:	min.	50° C
	max.	130° C
	preferred range	90 - 110° C
Maximum coolant temperature		115°C
Maximum Cylinder Head Temp. (CHT)		
	912ULS (100hp)	135°C

Above CHT and coolant temperatures assume 50% glycol/water coolant mixture.

Exhaust system

The engine is fitted with a Hagerman Exhaust and Silencer System. This system is built largely from stainless steel components.

7.5 Propellers

The following propeller types and settings are approved for use:

100hp: Neuform CR3 3 blade (1,75 m Ø)
Pitch 27º @ 310mm from hub edge
Full throttle ground static RPM 4700rmp - 4800rpm (prop ≈ 1950 rpm)

Slight adjustment to the pitch of each of the above propellers may be necessary to obtain the correct ground static rpm. An optical tacho on the propeller is the preferred method of measuring the engine speed.

All approved types have blades with ground-adjustable pitch and should be set to the pitch angles given. This pitch angle is prescribed at a specific radius from the point at which the blade exits from the hub.

The propeller had aluminium alloy hubs machined to close tolerances. This permits secure clamping of the blade roots under the high centrifugal forces experienced by the blades in service. Proper blade root securing bolt tension is essential to maintain this security.

The Neuform propeller blades are moulded in composite material, either carbon fibre in epoxy resin. Blades of this type carry all of their strength and rigidity in the external skin.

8 HANDLING AND SERVICING

8.1 Ground handling

The aircraft may be pushed or pulled by hand. Force should only be applied by grasping one or more blades close to the propeller hub, by holding the forward lift strut where it attaches to the wing, or by holding the horizontal tailplane close to the fuselage. The horizontal tailplane or the rear fuselage close by may also be pressed downwards in order to lift the nose wheel off the ground if required.

Jacking the Aircraft

Either of the main wheels can be brought clear of the ground by one person lifting the wing at the top of the wing struts. (Never apply any significant up load to the centre of the struts). The aircraft can then be chocked by placing a wooden block under the bottom part of the stub axle. This is also a suitable jacking point where a second person is not available to lift the wing.

The nose wheel is easily lifted by applying a load to the rear fuselage, just forward of the tail. Where one person only is available, place weights on the tail, suitably padded to prevent damage to the fabric, until the nose wheel becomes light. Place a piece of timber under the tail skid, then push the tail down on to it. Add further weights to the tail to stabilise the aircraft in this attitude.

8.2 Towing instructions

The aircraft should not be towed by powered means.

8.3 Tie-down instructions

The aircraft may be tied down temporarily using ropes or straps around the propeller hub and around the lift struts where they attach to the wing.

8.4 Fluids

See Rotax manual.

8.5 Approved fuel grades

See Rotax manual.

8.6 Approved oil grades

See Rotax manual.

8.7 Cleaning and care

Cleaning

Clean the wing coverings with warm water and a mild detergent, such as washing up liquid, to remove oil. Never use solvents. All metal parts are anodized aluminum or stainless steel and need no special attention.

Dirt or mud on wing surfaces should be removed with clean water. Avoid the use of a pressure washer or hose pipe as this can introduce water into places it shouldn’t go, (engine, fuel tank, pitot head, pilot’s seat).

Repair

Repair even the smallest tears in the covering fabric.
Carefully clean the area around the tear, then attach a small patch with contact adhesive covering an area at least 15 mm larger than the damage all round. Alternatively apply a small patch of self-adhesive material. For larger areas of damage, consult the manufacturer.

In the event of technical problems, contact the manufacturer.

9 SUPPLEMENTS

9.1 Attaching the wings to the folding mechanism. (Optional).

The C-42 E has an optional folding wing which minimises hangar space. For road transport however you must remove the wings completely. To attach the wings to the folding system:

Step 1. Fit the jockey wheel to the stern post, fit the traingular wooden support brackets to the bottom of the tailplane struts, with the aluminium strip uppermost.

Step 2. Remove the stop ring from the slide tube in the cockpit roof.

Step 3. Place a wing parallel to the fuselage with its tip supported on the tail by the wooden support bracket.

(With both wings folded back and supported by the tail, the aircraft will rock back to sit on its tail. With only one wing on the tail, the aircraft can be tipped forward to a stable attitude resting on its nose wheel. Be aware of these movements during rigging and derigging operations. Take care to protect the wing from damage by contact with the ground).

Step 4. Lift the wing root and slide the attachment block (roller) 2 inches (5cm) over the slide tube.

Step 5. Attach the stop cable on the leading edge to the quick link on the slide tube.

Step 6. Attach the stop ring to the end of the slide tube.

If both wings are in the folded back position the C42 E can be easily moved by one person into a small hangar space.

9.2 Rigging the wings

If you are tall but weak, it may be easier to manipulate the wing during rigging by holding it at its tip. If you are short and strong, the better handling point is the top of the wing struts. If you are short and weak, fetch a friend. If you are short, weak and friendless, don't derig.

Before attempting rigging, take a look at the wing roots and the way in which the rigging mechanism works. Note that the fulcrum (the roller bracket) is located near the wing root, and also in line with the rear spar attachment point. The front spar attachment point however is located some way inboard. This means that lifting the wing tip will result in the front spar clearing its fitting before the rear one. This can be used to advantage during rigging.

Step 1. Ensure that the spar channels in the cockpit roof are aligned with the top surface of the cockpit roof frame. Lock the controls, place the flap lever in the fully up position and ensure the brake is on.

Step 2. Bring the left wing strut into its correct position on the left wing and attach the auxiliary (jury) struts on the front and rear wing struts to the leading and trailing edge fittings.

Step 3. If this is the first side to be rigged and the second wing half is still resting on the tail, lift the wing at its tip with one hand. With the other hand, steadily lift the tail so that the aircraft rests on its nosewheel.

Step 4. Carry the wing into its 90° position relative to the fuselage, taking care not to damage the door and fuselage with the front spar.

Step 5. Turn the wing into a horizontal position and push it gently towards the fuselage.

Step 6. Lifting the tip, slowly insert the wing roots into position in their channels, leading edge first. It may be necessary to gently rock and twist the wing to engage the spar hooks on to their pins.

Step 7. Ensure that front and rear wing spars are properly engaged in their channels. Then insert the lower end of the wing struts into the open box-section end at the top of the shock absorbers.

Step 8. Attach front wing bolt and safety pin, using the tool provided.

Step 9. Attach rear wing bolt and safety pin.

Step10. Attach the strut bolt through the box-section end and lower steel block of the wing struts ends. Install the safety pin.

Step11. Check that all three bolts have their safety pins installed.

Step12. As a final check, lift the wing at the wing tip to ensure proper attachment of the wing strut block to the box-section end.

Step 13. Connect the pitot tube to its fitting situated to the left of the pilot's headrest. Pull out the pitot tube forwards to its full extent.

Step 14. Repeat steps 1 through 12 for the other wing. Now you may remove the control lock.

Step 15. Attach right and left aileron push rods to the central bellcrank connection. Carefully ensure that the slide mechanisms of the special link connectors are properly engaged (closed and locked).

Step 16. On the flap drive tube, take the split sleeve fitted around the sprung taper pins (and through which they protrude), spread it a little, then rotate it over the pins. Using this sleeve as an aid, squeeze it, thus compressing the pins. Then move the sleeve so that the drive fitting moves freely on its tube.

Step 17. Align the flap root tube and its drive fitting on the fuselage. Slide the flap drive fitting over the junction so that its cutaways engage snugly in the roots of the flap frame tubes and the sprung pins are fully out. Rotate the split sleeve so that its holes align with the tips of the pins again, permitting the pins to spring out fully. Left and right landing flap must be securely locked and it may be necessary to wiggle the fitting a little to ensure proper engagement, particularly when the aircraft is new.

Step 18. Position and fasten the wing centre section (cockpit roof).

9.3 Folding the wings to hangar the aircraft:

Step 1. Apply the brake. Fit the dolly wheel to the stern post.

Step 2. Push in the pitot tube on the left wing.

Step 3. Remove wing centre section.

Step 4. Disconnect the pitot tube from its fitting above the pilot's seat back.

Step 5. Place a triangular wooden support bracket (supplied) on to the lower part of the tailplane strut at each side, with the aluminium strip uppermost.

Step 6. Set the flap control in its fully up position.

Step 7. Disconnect the landing flaps by first spreading and rotating the aluminium split sleeve on the flap drive fitting. Then push in the spring loaded pins by squeezing the split sleeve.

Step 8. With the trailing edge of the flap resting on your shoulder, squeeze the split sleeve with one hand and, holding the knurled ring in the other, push the assembly inboard until it clears the drive tube junction. Lower the flap gently.

Step 9. Unlock the aileron push rods from central bellcrank connections.

Step 10. Remove the keep rings from the front and rear spar pins and the lower strut pin, at each side, (total 6 rings).

Step 11. Unlock the strut block from lower box section end by removing the strut pin, using the special tool provided.

Step 12. Unlock the rear wing spar by removing its pin.

Step 13. Unlock front wing spar by removing its pin, hold down the top of the screen to prevent damage.

Step 14. Close the door.

Step 15. Lift the left wing at its wing tip, or strut tops, so that wing strut block leaves the square box-section end. By lifting the wing high you will first disconnect the front spar hook from its pin and frequently the rear spar at the same time. If the rear spar does not disengage, gently rock the wing from side to side, pulling gently and twisting it until it does.

Step 16. Pull out the wing until it stops on the stop wire. Ensure that the stop wire runs over the TOP of the aileron operating push tube before folding back the wing.

Step 17. Draw back the wing away from the fuselage until the movement is stopped by the stop ring on the slide tube.

Step 18. Rotate the wing into a vertical position - underside of the wing to the front; trailing edge down.

Always hold the wing tip higher than the root to prevent damage to the door and fuselage with the spars' ends.

Step 19.Carry the wing tip back into a position parallel to the fuselage. If the wing has been supported at the strut tops, it will be necessary to set it down and pick it up again by its tip for the next step. During this operation, ensure that the wing cannot tip forwards by walking your hands along the leading edge to the tip.

Note that the aircraft will tip back upon folding the second wing.

Step 20. Separate the Velcro for 2 or 3 inches (50 to 75 mm) along the aileron root at a point where the support bracket meets it.

Step 21. Place the wing trailing edge onto the retainer bracket on the tail.

Step 22. Remove the pin from the top of each jury strut.

Step 23. Rotate the jury struts carefully so that they lie parallel and next to each other.

Step 24. Undo the inboard zip on the wing's lower surface, adjacent to the jury struts.

Step 25. Fold in the main struts to lie flat against the lower wing surface. Secure the strut bottom with the bungee attached to the wing root.

Step 26. Fold back the right wing according to steps 1 to 25.

9.4 Flying Without Doors

Both doors must be removed. It is not permissible to remove just one door.

Ensure when flying with the doors removed that there are no loose items, take special care to check under the seats. Items stowed under the seat must be in a soft container that is unable to slide forward or interfere with the throttle (A suitable container is available from the manufacturer). Also wear suitable clothing that will not flap or flail around in the cockpit. It is recommended that maps are placed in a suitable map holder that can be anchored to the pilot or passenger.

Follow the instructions for removing and replacing the doors carefully.

- Open door and remove safety clip from gas strut and safety ring from rear clevis pin but do not unclip gas strut or remove clevis pin at this stage.
- Place a piece of tape over the hinge bolt to prevent it turning in or out.
- Carefully support the door and unclip the door strut ball joint then remove the clevis pin.
- Carefully slide the door off the front locating spigot & store the door somewhere safe.
- Re-fitting is simply a reversal making certain to re-fit safety rings & clips.
- Carefully inspect your work.

9.5 Air pressure for tires and shock absorber:

Main wheels	1.8 - 2.5 bar	26 to 36 psi.
Front wheel	1.5 - 1.8 bar	22 to 26 psi.
Shock absorbers	29 - 33 bar	425 to 486 psi

Caution: a special high pressure pump must be used for setting the shock absorber pressures.

9.6 Owner change of address notice

The manufacturer will issue updates and service bulletins from time ot time, therefore it is essentail that you inform the manufacturer of any change of address promptly. The manufacturer’s address is given in the Introduction.

9.7 Notification of technical defect and/or damage to the aircraft

Any faults, problems or concerns should be reported to the manufacturer.
The manufacturer's address is given in the Introduction.

Type of aircraft:________________________ Serial no.:________________________________

Year of construction:____________________ Engine: _________________________________

Supplied by (Dealer name):____

Owner:____

Registration: ____

No. of flight hours when damage/defect occurred:____

Engine hours:____

No. of flight hours (pilot) on aircraft:____

Description of damage/defect:____

____

____

Description of how damage occurred____

____

____

Notified by Name: ____

Date: ____

Signature: ____

FB-105 Customer Failure Report

9.8 Checklists

Daily Inspection / Pre-flight Inspection

Daily Inspection: *Remove engine cowling and thoroughly inspect engine installation.*

Cockpit

- Panel secure, all switches OFF, master key out, instruments normal, glass intact.
- Cockpit area inside and out, check controls full movement, free and correct sense.
- Check aileron quick release connections, cable and pulley runs.
- Lift central flap between seats and check no interference of control lines.
- Check rudder cable attachments and nose wheel control rod attachment.
- Check throttle operation normal.
- Check flap operation normal.
- Check security and operation of seat belts.
- Check under seats and stow loose items.

Outside

- Engine and cowling secure and undamaged.
- Check oil level within limits.*
- Check coolant level correct.
- Propeller clean and undamaged.
- If Neuform Variable Pitch fitted check blade bearing play and check full pitch range movement.
- Check spinner secure and undamaged.
- Check cowling air intakes unobstructed.
- Front gear assembly, tyre pressure, condition and creep.
- Starboard door hinges, gas strut attachments and door lock operation normal
- Starboard main gear assembly, tyre pressure, condition and creep.
- Starboard wing assembly, structure and covering.
- Starboard aileron, control linkage and hinges secure.
- Starboard flap, control linkage and hinges secure.
- Fuel filler cap secure.
- Check fuel quantity.
- Starboard fuselage clean and undamaged.
- Tail group assembly secure and surfaces undamaged.
- Elevator hinges and control linkage secure.
- Trim tab and linkage secure.
- Rudder hinges and control cables secure.
- Check same on port side.
- Remove baggage panel, check no loose items and re-secure.
- ASI pitot unobstructed and fully extended.
- Windscreen clear and undamaged.
- Open fuel tank sump drain and check for contamination.
- Check tank drain for leaks.

**When checking the Oil level it may be necessary to pump the oil back into the reservoir to obtain a correct reading and to avoid overfilling. This can be done by removing the oil filler cap and ensuring the master switch and magnetos are off and rotating the propeller ONLY in the operating direction until a gurgling sound is heard from the reservoir tank.*

START CHECKS

Brakes ON facing safe direction, area all clear
Flaps neutral
Main fuel tap ON
All switches OFF, radio, transponder OFF
Carb heat OFF
Master switch ON
Aux fuel pump ON for 5 secs when cold
Cowl flap closed for warm up (if fitted)
Magnetos ON
Throttle set and choke if required
Check area clear
Shout 'CLEAR PROP'
START engine set 2000 rpm, when cold set at 2500 rpm
Strobe ON (if fitted)
Check aux fuel pump OFF and choke OFF
Record Hobbs reading and time
Radio ON transponder on standby

DURING TAXI

Check brakes, slip ball and compass

PRE FLIGHT (VITAL ACTIONS)

Park into wind
Brakes on and locked
Set throttle at 2000 rpm (when cold set 2500 rpm)
Controls full and free and correct sense
Harnesses and hatches secure (no light visible at bottom of door)
Loose items stowed
Flight instruments set and correct
Engine temperatures and pressures within limits
Magneto check at 3500 rpm (max drop 200 rpm)
Throttle to idle
Reset throttle to 2000 rpm
Carb heat ON
Fuel ON, Aux fuel pump ON, contents sufficient
Trim set for take off and flaps set as required
Carb heat OFF (should have been on a minimum 15 secs)
Cowl flap open (if fitted)
Check all clear for take off
Check full power during take off roll (min 5000 rpm)

AFTER TAKE OFF

Flaps neutral above 100 feet
Aux fuel pump an above 1000 feet
Engine temperatures and pressures within limits

SPEEDS	In the approach:
In the climb:	Flaps set neutral: 60 kts
Flaps set 1 stage: 58 kts	Flaps set 1 stage: 58 kts (xwind 10 kts +)
Flaps set neutral: 70 kts	Flaps set 2 stage: 55 kts

ON ROUTE

Location and heading
Instruments both flight and engine good
Fuel sufficient
Elapsed time and time reading
Carb heat ON for 15 secs and turn OFF

DOWNWIND / *AIRFIELD APPROACH*
Altimeter set to QFE
Brakes OFF
Aux fuel pump ON
Fuel sufficient for go around
Carb heat ON
Engine temperatures and pressures good
Activity

BASE LEG
Flaps set 1 stage

FINAL
Flaps set 2 stage if required
Carb heat OFF
Clear to land

RUNWAY CLEAR
Flaps up (neutral)
Aux fuel pump OFF
Lights OFF

SHUTDOWN
Brakes ON
Magneto check at 2000 rpm
Radio, Transponder, Nav aids OFF
Throttle to idle
Aux pump OFF, Lights OFF
Check Hobbs reading and record time
Magnetos OFF
Strobe OFF (if fitted)
Master switch OFF

EMERGENCY SHUT DOWN

T Throttle closed
I Ignition and magnetos OFF
F Fuel OFF
S Security Harnesses Hatches

EXTREME MANOUVRE

H Height sufficient
A Airframe suitable
S Security and loose items
E Engine temps and pressures
L Location
L Lookout