SOLAR WINGS AVIATION LTD

OPERATORS HANDBOOK

PEGASUS QUASAR 2

ROTAX 582/40 LIQUID COOLED ENGINE
Incorporating Ducati dual CDI ignition

SOLAR WINGS AVIATION LTD

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MAIN INDEX

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SECTION 1
GENERAL DESCRIPTION

GENERAL

The Pegasus Quasar 2 is an advanced weight-shift controlled aircraft. It may be flown solo or dual without ballast. Its rugged construction is complemented by a short take-off and landing run and excellent rate of climb, allowing pilots to carry out a wide variety of operations from airfields quite often inaccessible to conventional aircraft. Using more appropriate airfields and the instructor control bars, it can also be used as a safe and reliable training machine. The aircraft has been developed for advanced cross-country touring performance; a stable hands-off cruise of 60-65 mph and a long range tank make cross-country trips of up to 200 miles quite practicable.

The trike design incorporates a comfortable rigid seating system, main-wheel compensated brakes which can be locked for parking or rigging, and rugged all-round suspension. The wing developed for the Quasar 2 incorporates a pitch trimmer, so that the pilot can trim the aircraft at the best speeds for climb, cruise or approach. This feature together with a special roll linkage makes the aircraft much easier to fly, especially in turbulence or when maintaining steady climbing or fast cruising speeds. The trimmer also increases the pitch stability in slow flight, which is a distinct advantage for training, or when flying in turbulent conditions.

The 582/40kw Liquid Cooled engine with 3.47:1 C type gearbox and Arplast 168 propeller provide ample performance with a very low noise level. Fuel consumption is also better as can be seen from the graph. Note that fuel consumption increases greatly at high speed, but that a true 30+ mpg is possible at 50-55 mph. (See Graph 2 in section 2)

The engine is (effectively) cooled by a radiator installed in the lower cowl, fed by twin intakes under the rear seat. Access to the engine for daily inspection is achieved by a hinging starboard cowl, opened by operating the toggle latches which have secondary guards.

1.0 PRIMARY STRUCTURES AND SYSTEMS - THE WING

1.1 The Sail

The Quasar 2 is the product of one the most experienced flex-wing design teams in the world today. The sail fabric is cut with exacting accuracy from a stabilised polyester using a tight, virtually non-porous and tear-resistant weave construction.Double-stitched seams using a compatible thread ensure complete panel join integrity. Sail reinforcement is achieved by including extra material at high stress points. A Trilam sandwich leading edge and a Kevlar trailing edge maintain the wing's performance over a long life.

The aerofoil section is defined by pre-formed aluminium and pre-formed aluminium composite ribs, with chordwise tension being maintained by attachment to the trailing edge. The predictable low speed stall exhibited by the Quasar 2, is achieved mainly by the clean lines of the aerofoil's leading edge radius and owes as much to the design and production teams expertise as it does to the insertion of a full length Mylar insert.

1.2 The Airframe

All the main tubing used in the airframe is HT 30 TF aluminium alloy supplied by British Aluminium from aircraft quality billets using a special process of mandrel extrusion followed by being drawn to agreed industry specifications. All external tubing and main inserts are anodised to give maximum protection against corrosion. There are no welded components in the frame, and sheet fittings are plated, anodised or stainless steel. All bolts are of high tensile steel. Rigging wires are PVC covered where necessary to afford protection to the occupants and to also serve as an anti-kink measure.

2.0 PRIMARY STRUCTURES AND SYSTEMS - THE TRIKE

2.1 The Power Unit

The engine is a Rotax liquid cooled twin-cylinder two-stroke of 582cc rated at 52 bhp at 6000 rpm. This engine has twin carburettors and has dual CDI ignition circuits. The ignition system comprises two sets of source coils within the alternator which power two sets of ignition coils mounted on the inlet side of the crankcase. The spark timing is achieved electronically by trigger coils working on projections from the engine flywheel. **Damage may result if the engine is turned over with any H.T. leads disconnected.**

The engine is cooled by a pumped liquid cooling system, which circulates a 33% anti-freeze mixture. The radiator located in the rear of the cowl provides ample cooling even in the hottest conditions. The header tank located on the cylinder head should be kept topped up.

The reduction drive utilises a purpose-built C type gear box with a 3.47: 1 reduction and a composite, ground adjustable three bladed propeller. Forced vibrations from the power unit are isolated from the main frame by :

a) Mounting the engine on anti-vibration rubber bushes.

b) An integral torsional vibration absorber built into the gearbox.

2.2 The Rolling Chassis

The main structure of the trike is of square section high strength aluminium alloy tube(HE30TF). A rigid GRP tandem seat is fitted which locates onto the folding tubular seat frame. The seat incorporates a foldable backrest for the front pilot.

The rear undercarriage comprises an advanced composite flexible beam with integral spats which carry the braked mainwheels. The outer sections of the spats are removable for cleaning and inspection.

The nose undercarriage is steerable and incorporates footrests and throttle/brake controls. A trailing link elastomer suspension system is fitted.

Crosswind will also tend to reduce range. It can be converted into an effective headwind by calculating a velocity triangle. As a conservative estimate, up to the point where the crosswind is half the flying speed, use an effective headwind of 1/3 the crosswind for the purpose of determining the range.

9.0 ELECTRICAL SYSTEM SPECIFICATION

9.1 The Alternator

The alternator gives a nominal maximum current of 12.5 amps AC or voltages up to about 75 volts RMS with very low current. The nominal power rating is 170 watts. The power available is a function of engine revs and electrical load characteristics.

9.2 Power Wiring

The power wiring loom consists of insulated conductors inside a woven nylon sheath with a rubber connector at the rear end and spade terminals at the front. A 2 core cable and switch for engine ignition control is also included for each ignition circuit.

The wires in the loom can withstand the maximum current that the alternator can supply in all circumstances including a short circuit. Therefore, it is unnecessary to supply overload protection devices such as fuses to protect these wires and, in fact, none are fitted. However, note that airworthiness requirements specify that all electrical equipment attached to the wiring system must be protected by overload protection devices and that no protective device may protect more than one circuit essential to flight safety. To this end a multiway fuseholder is provided at the front of the aircraft for the attachment of electrical equipment.

The power wiring circuit diagram indicates the manner in which optional items of extra equipment should be attached to the loom. This is in order to simplify servicing by establishing a standard wiring system. Operators wishing to fit equipment themselves are requested to follow the layout indicated on the circuit diagram where appropriate.

9.3 Sensor Wiring

The sensor wiring system comprises a multicore cable intended for transmission of signals not involving significant power levels. The relevant circuit diagram follows this section. No items requiring significant power with an alternating component should have their supply lines attached to this cable as electrical interference with sensor signals may occur.

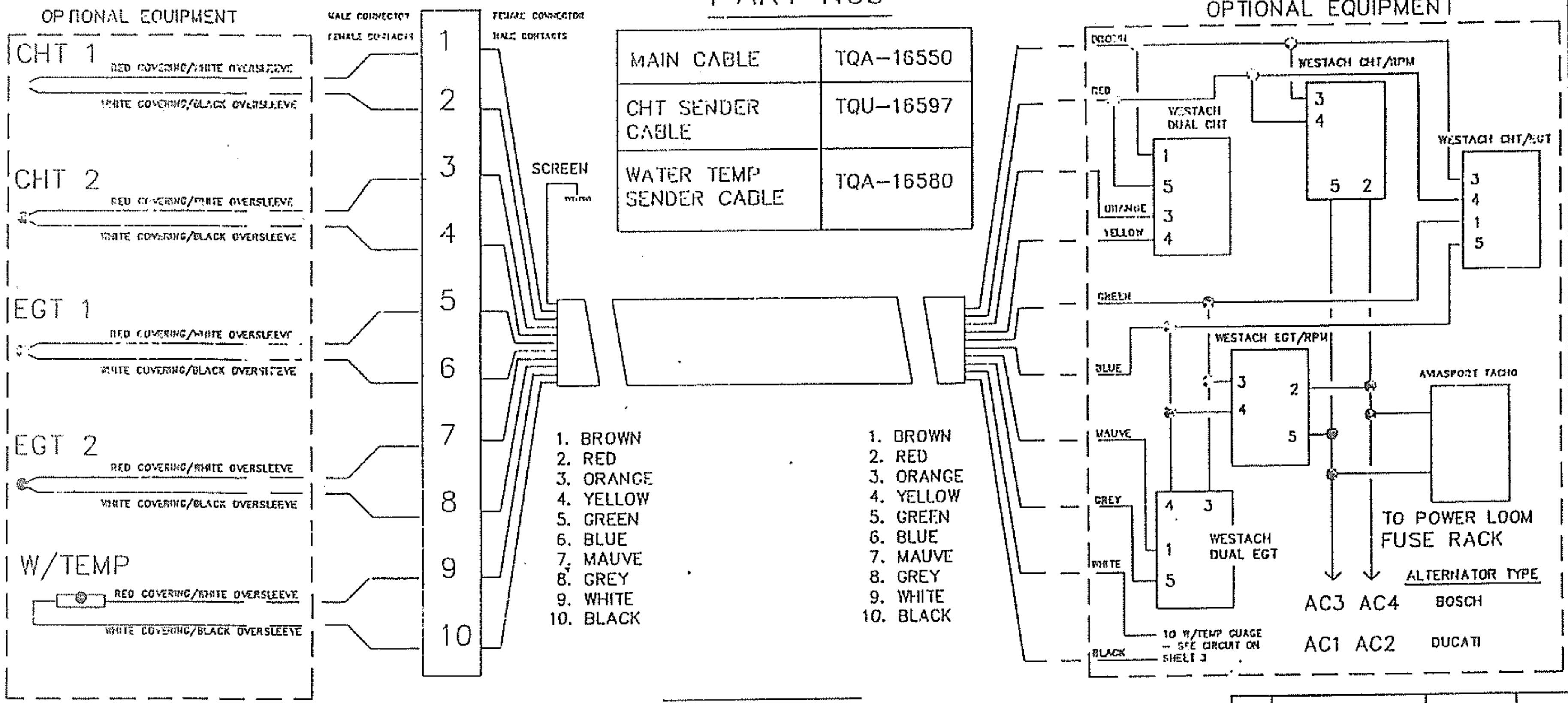
The circuit diagram indicates the manner in which some optional items of equipment should be attached to the cable. This is in order to simplify servicing by establishing a standard wiring system. Operators wishing to fit equipment themselves are requested to follow the layout suggested on the circuit diagram where appropriate.

{---ENGINE AREA---} {--DASHBOARD AREA---}

<— SENDER CABLES —> <— MAIN CABLE —>

PART Nos

MAIN CABLE	TQA-16550
CHT SENDER CABLE	TQU-16597
WATER TEMP SENDER CABLE	TQA-16580



MASTER IN YELLOW

SCHEMATIC

SHEET 1 of 3

SEE SHEET 2 FOR MANUFACTURING DETAILS / SHEET 3 FOR IDENTIFICATION . WATER TEMP GAUGE CIRCUIT

	DATE	NAME
DRAWN	100290	E JELONEK
APPROVED		[signature]
CHECKED		

SIGNAL WIRING

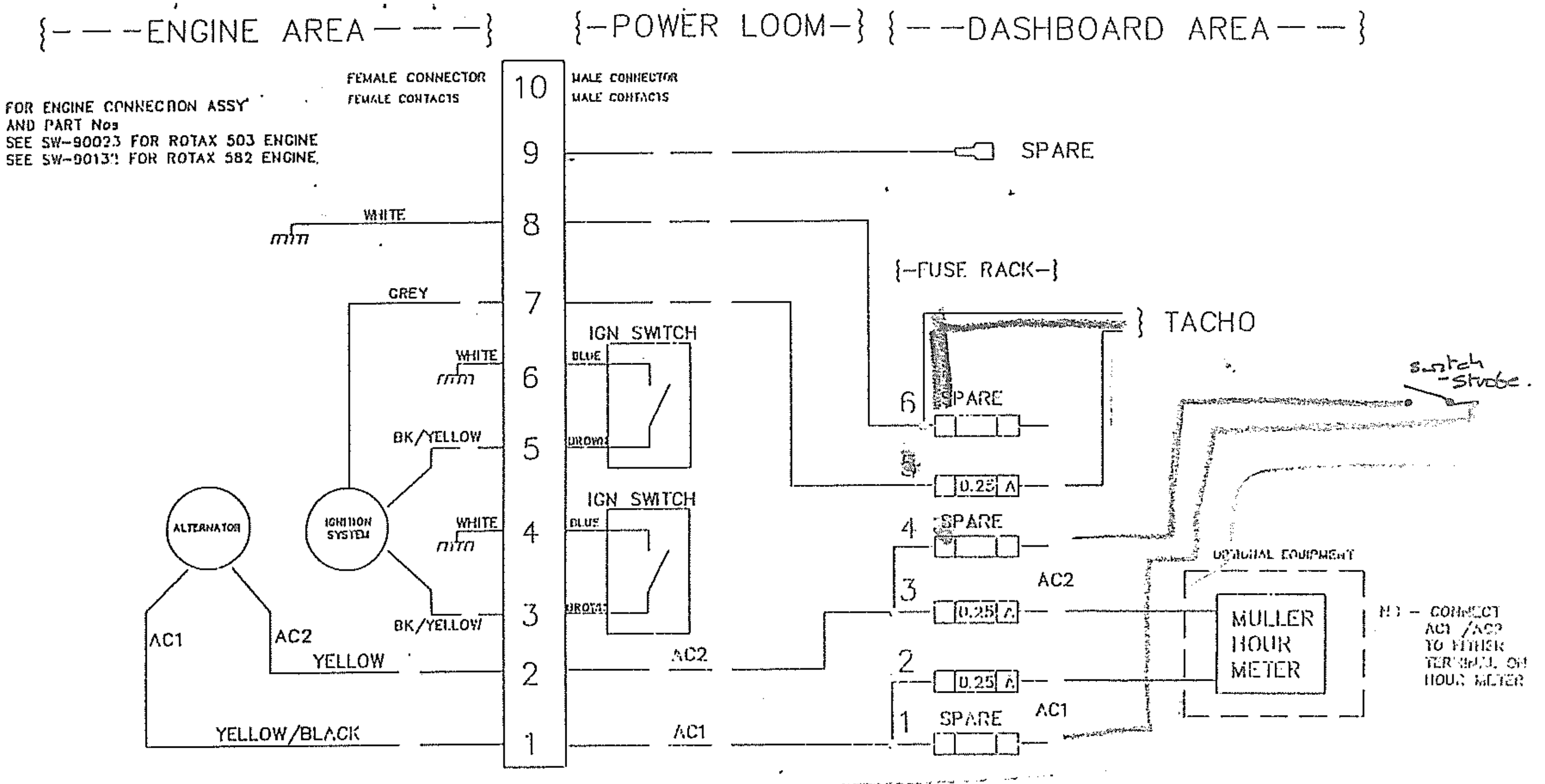
Drawing No.

SW-89246

Iss.	DESCRIPTION OF Iss	APPROVED	DATE
B	NEW MAIN CABLE /CLARIFY DWG	[signature]	310392
A	INITIAL ISSUE	[signature]	100290

SOLAR WINGS AVIATION Ltd
56 George Lane
Marlborough
Wiltshire SN8 4BY
Tel: 0672 - 55066

WIRING SCHEMATIC



MASTER IN YELLOW

POWER LOOM

PART No TQU--16534

SHEET 1 of 3

SEE SHEET 2 and 3 FOR MANUFACTURING DETAILS/
SHEET 3 FOR IDENTIFICATION

	DATE	NAME
DRAWN	03/06/94	E JELONEK
APPROVED	03/08/94	[illegible]
CHECKED	03/08/94	

POWER WIRING
ROTAX DUAL IGNITION

Drawing No.
SW- 39169

ISS.	DESCRIPTION OF ISS	APPROVED	DATE
B	ADD WIRE / CHANGE OPTIONS		310392
A	INITIAL ISSUE		

SOLAR WINGS AVIATION Ltd
56 George Lane
Marlborough
Wiltshire SN8 4DY
Tel: 0572 - 515066

2.3 The Fuel Tank and System

Fuel is fed from a single 40 litre fuel tank mounted beneath the seats. The fuel system has a fuel cock and external filter backed up by an internal strainer fitted to the end of the fuel tank pick-up pipe. External fuel pipes are fire-resistant.

3.0 SECONDARY STRUCTURES AND SYSTEMS

3.1 Engine Controls

The primary throttle control is foot-operated (forward for full power and rearward for power off) and complemented by the friction-damped hand throttle (forward on and rearward off) on the port side of the seat frame.

The choke control is by means of an over-centre lever located in the starboard cowl front. The lever is down for choke off. Normal operation is always with choke off.

Two ignition-kill switches (up for on/down for off) are fitted, one in front of the other, on the starboard side of the seat frame. The two switches should normally be operated together by stroking with a finger or thumb.

The engine start system is a pull-start running from a pulley half way up the main pylon.

3.2. Braking System

The drum brakes are mounted in the rear wheels and are operated by a foot pedal on the left side of the front fork steering bar. A brake locking device is provided for parking and engine run-up purposes. To lock, press the brake pedal and, with the left hand, lift the adjacent locking lever and engage one of its slots with the hoop on the side of the steering assembly. Release occurs automatically the next time the brake pedal is pressed.

3.3 Fuel

The preferred fuel is 83 MON or 90 RON minimum octane rating unleaded petrol. 4 star leaded fuel can also be used. 100ll AVGAS can be used, but the relatively high lead content causes more plug fouling. Plugs should be checked every 10 hours if using AVGAS. The fuel must be well mixed at a ratio of 50:1 with a non detergent good quality 2 stroke oil.

Whichever type of fuel is used, use a reputable source of supply and use the water drain facility provided in the fuel tank. Push the drain mushroom upwards and sample the fuel in a transparent container before the first flight of the day. Any water present will sink to the bottom.

IMPORTANT- DO NOT MIX MINERAL WITH SYNTHETIC OILS AS EMULSIONS CAN BE FORMED WHICH BLOCK THE FUEL SYSTEM. FILTERED FUEL ONLY SHOULD BE ADDED TO THE FUEL TANK.

3.4 Seat Belts

Lap straps are provided for both occupants. In addition, a single diagonal shoulder restraint is provided for the front seat and twin shoulder restraints for the rear.

3.5 Cockpit and Fairing

All fairings are made of lightweight composite materials and serve the dual functions of giving the pilot a degree of weather protection as well as improving the aerodynamics of the aircraft. The screen should be kept clean. The engine is also fully cowled using a fire-retardant GRP.

3.6 Electrical System

The Pegasus Quasar2-582 is fitted with two standard wiring systems; one for transmission of electrical power derived from the engine alternator and the other for sensor signals to be used in instrumentation. Two independent sets of cables to the two separate ignition switches are provided.

The power available from the alternator is a function of engine revs and the electrical load (see wiring diagrams in sec.2). Full power is dependent on revs and load.

Connection to the wiring is via crimp connections in rubber connector housings and, in the case of the power wiring loom, via spade terminals to a multiway fuseholder at the front of the aircraft.

SECTION 2
GENERAL INFORMATION

1.0 AIRCRAFT

Empty Weight CG. Position:	150.6 cms rearward from front wheel axle.	
Useful Load :		
1. Max pilot weight:	198.0 lbs	90.0 kg
2. Max passenger weight:	198.0 lbs	90.0 kg
3. Max weight of fuel(40litres):	66.0 lbs	30.0 kg
Total	**462.0 lbs**	**210.0 kg**
Max All Up Weight:	858.0 lbs	390.0 kg
Min All Up Weight:	521.0 lbs	237.0 kg

2.0 WING

Wing Span:	33.95 ft.	10.35 m.
Sail Area:	167.8 sq ft.	15.6 sq. m.
Aspect Ratio:	6.86	

3.0 TRIKE

Length (erect):	111.0 ins	282.0 cm
Length (fold down):	114.0 ins	289.0 cm
Width:	72.0 ins	183.0 cm
Track:	65.0 ins	165.0 cm
Height (erect):	98.0 ins	249.0 cm
Height (fold down):	61.0 ins	155.0 cm
Minimum payload:	156.0 lbs	55.0 kg
Fuel Tank Capacity:	41.6 Litres	9.16 Imp. Gals.

Useable Fuel:	40.0 Litres	8.81 Imp. Gals.
Unuseable Fuel:	1.6 Litres	0.35 Imp. Gals.
Fuel:	M.O.N. 83 or R.O.N. 90 Octane minimum, unleaded preferred, or 4-star petrol.	
Fuel Petrol/Oil Mix Ratio:	50:1	
Gearbox Oil:	EP90 Hypoid	

FILTERED FUEL ONLY TO BE ADDED TO THE FUEL TANK

4.0 ENGINE

Model:	Rotax 582/40
Capacity:	582 cc
Power Output:	40 Kw (54 bhp) @ 6000 rpm.
Reduction ratio:	3.47 : 1
Propeller type Arplast:	168 DAM.
Propeller Pitch Setting:	24° at 53.5 cm radius.

NOTE:

For all other engine data refer to the engine manufacturers handbook supplied as a supplement to the Aircraft Operators Handbook. See also section 3 (Limitations.).

5.0 AIRCRAFT WEIGHT

5.1 Equipment List

Equipment approved for fitting to the Pegasus Quasar2-582 without violation of the UK Permit to Fly is as listed below :

ITEM NUMBER	ITEM	WEIGHT
1. PZL ASI	0.85 lbs	0.384 kg
2. WINTER ASI(inc pitot & piping)	0.38 lbs	0.174 kg
3. Large SILVA compass and mounting	0.66 lbs	0.3 kg

4. AIRPATH compass	0.54 lbs	0.244 kg
5. Small WINTER altimeter	0.24 lbs	0.11 kg
6. UNITED INSTRUMENTS altimeter	0.83 lbs	0.376 kg
7. WINTER VSI including flask	0.77 lbs	0.35 kg
8. UNITED INSTRUMENTS VSI	0.75 lbs	0.342 kg
9. WESTACH hourmeter(inc DC module)	0.30 lbs	0.134 kg
10. WESTACH twin cht gauge	0.22 lbs	0.1kg
11. WESTACH water temp gauge	0.22 lbs	0.1kg
12. WESTACH rev counter/cht gauge	0.22 lbs	0.1kg
13. WESTACH rev counter	0.22 lbs	0.1kg
14. WESTACH egt/rev counter	0.22 lbs	0.1kg
15. AVIASPORT rev counter	0.40 lbs	0.180 kg
16. Westach twin egt gauge	0.22 lbs	0.1 kg

5.2 Equipment Fitted

Equipment fitted (by item number) as shown in Equipment List:

:	:	:	:	:	:	:	:	
:	:	:	:	:	:	:	:	
:	:	:	:	:	:	:	:	
:	:	:	:	:	:	:	:	

5.3 Empty Weight of Quasar - 2 Reg. : G-M

Total Equipment Fitted (as shown above):	lbs	kg
Wing:	lbs	kg
Trike:	lbs	kg
Unuseable fuel (1.6 litres):	2.53 lbs	1.15 kg
Total:	lbs	kg

This defines the aircraft weight as originally manufactured.

- Includes gearbox oil, unuseable fuel, seat, harnesses, optional instruments and equipment as specified in para 5.2 above.

5.4 Empty Weight Limitation

MAXIMUM PERMISSIBLE EMPTY WEIGHT	397.4 lbs	180.65 kg

6.0 RUNNING GEAR

Tyre Pressures - front and rear	22.0 psi	1.5 bar

7.0 PLACARDS, DECALS AND LOCATIONS

TITLE	LOCATION.
Flight Limitations:	Upper side of map box.
In Flight Restart Limitations:	Upper side of map box.
Engine Limitations:	Upper side of map box.
Aircraft Weights:	Upper side of map box.
Map Box Weight limitations:	Upper side of map box.
Fuel Type, Capacity and Mix Ratio:	Adjacent to Fuel filler neck and on upper side of map box.
Fuel Cock On/Off Positions:	On Engine Cowl Top.
Ignition Switch On/Off Positions:	On Ignition Switch Bracket.
Propeller Pitch Setting:	On Engine Cowl Top.
Hand Throttle:	On throttle unit.
Wiring Loom Disconnection Warning:	On Pylon near wiring loom.
Connector Block Wiring:	On basetube below connector block.
Fuse allocations:	On basetube below fuse rack.
Trimmer Setting:	On starboard upright.
Tip turn adjusters:	On leading edge tube tips.

8.0 PERFORMANCE

8.1 General

Best safe descent rate power off at max. auw: 400 fpm. 2 mps. 4 kts.

Airspeed for best safe descent rate power off: 38 mph. 60 kph. 33 kts.

Distance covered from 2000 ft(610 m) in still air, power off at max auw:

3.3 nautical miles (3.8 statute miles,6 km) at 30 kts (35 mph,55 kph)

2.2 nautical miles (2.5 statute miles,4 km) at 40 kts (46 mph,74 kph)

Best rate of climb at max auw: 600 fpm 3.0 mps 6 kts

Airspeed for best rate of climb at max auw: 45 mph 73 kph 40 kts

Take off distance to clear 50 ft at max. auw: 590 ft. 180 m

Landing distance from 50 ft (no brakes) at max. auw,: engine idling at 1800 rpm (static) 623 ft. 190 m

Flight manoeuvre loads: +4 g. -0 g.

Vne: 90 mph. 144 kph. 78 kts.

Trimmed cruise at max or min. AUW: 60 - 65 mph. 96 -104 kph 52 - 57 kts.

Trimmed slow speed at max AUW: 46 mph. 74 kph 40 kts.

Trimmed slow speed at min AUW: 40 mph. 64 kph 35 kts.

8.2 Stalls

Wings level stall speed power off at max. auw: 26 mph 42 kph 23 kts.

Height loss during power off recovery at max. auw: 50 ft. 15.2 m

Maximum pitch down below horizon during recovery at max auw: 30 degrees

Wings level stall speed power on at max. auw:

No stall exhibited, mushing commences at 26 mph 42 kph 23 kts.

Height loss during power on recovery at max. auw: 0 ft. 0 m

Maximum pitch down below horizon during power on recovery at max auw: 0 degrees

Wings level stall speed power off at min. auw: 21.5 mph 34.5 kph 19 kts

Height loss during power off recovery at min auw: 30 ft. 9 m

Maximum pitch down below horizon during recovery at min auw: 30 degrees

Wings level stall speed power on at min. auw:
Stall buffet and mushing commences at 21.5 mph 34.5 kph 19 kts

Height loss during power on recovery at min auw: 0 ft. 0 m

Maximum pitch down below horizon during power on recovery at min auw: 0 degrees

30 degree banked stalls power off at max auw:
No stall exhibited, minimum possible speed is 32 mph 51 kph 28 kts

30 degree banked stalls power on at max auw:
No stall exhibited, minimum possible speed is 32 mph 51 kph 28 kts

30 degree banked stalls power off at min. auw:
No stall exhibited, minimum possible speed is 30 mph 47 kph 26 kts

30 degree banked stalls power on at min. auw:
No stall exhibited, minimum possible speed is 30 mph 47 kph 26 kts

Notes on Stalls

i) The aircraft is control-limited so that a true stall is not possible without an accelerated entry.The aircraft will continue to fly under control, although the roll response will be slow. Some pre-stall buffet may be felt.

ii) Under full power the aircraft will continue to climb in this condition.

iii) With no power the aircraft will descend in a controlled mush.

iv) It is important to understand that the data recorded during stall tests were ascertained using the CAA requirement of a reduction of airspeed by 1kt per second until the stall is attained.If radical and therefore unauthorised stalls are undertaken, the aircraft may then lose significant height before recovery is made.See also Section 7, Para 13, Stall Characteristics.

v) Setting the trimmer to a slow setting will give a quicker recovery due to additional reflex.

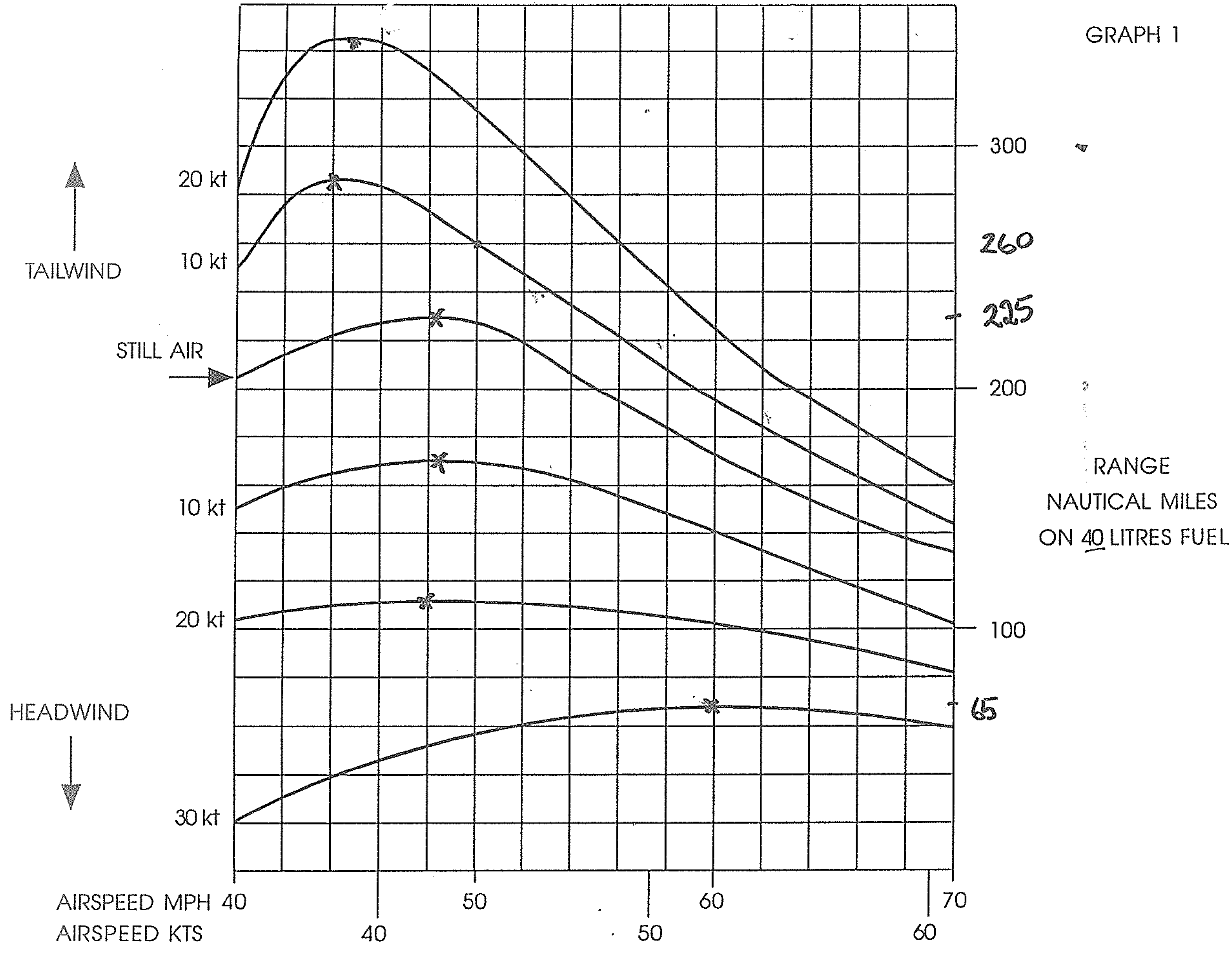
8.3 Fuel Consumption and Range

A fuel consumption curve is presented in graph 1. The curve was obtained on a 15°C day, at 2000 ft in level flight with two 75kg pilots. It can be seen that the endurance can vary between 5hours and 2, with the curve steepening at speeds over 55mph.

For climbing flight after takeoff at full power, the fuel consumption is 22l/h.

The fuel consumption curve has been converted into curves of range on 40L of fuel for still air, and different headwinds/tailwinds, in graph 2. It can be seen that the most economical speed is 50mph in still air. In a tailwind, it is more economical to fly slower. In a headwind of 20 kt the best speed to fly for range varies very little between 40 and 60 mph. At a headwind of 30 kt, however, it is definitely best to fly at 65 mph.

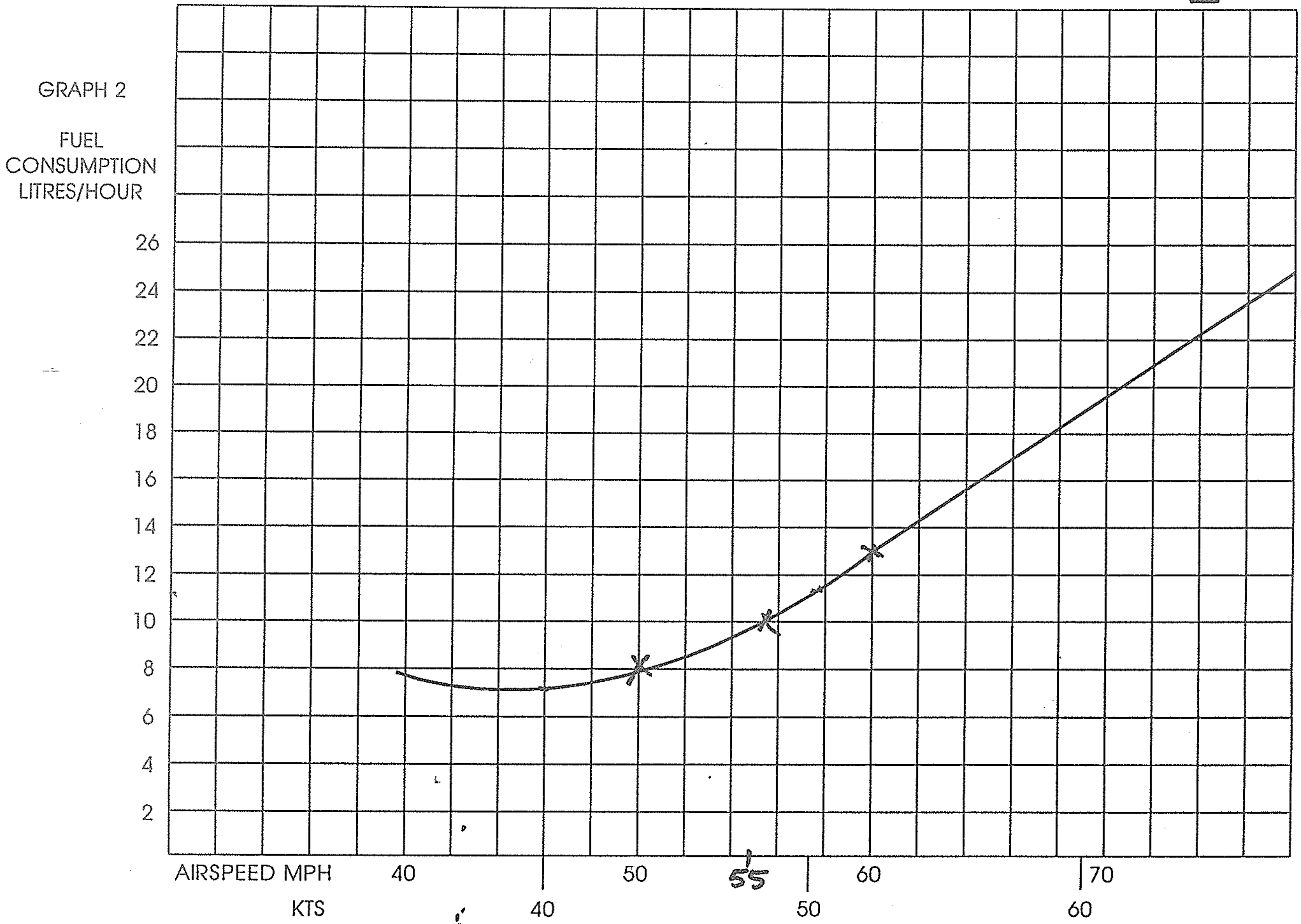
GRAPH 1



TAILWIND
20 kt
10 kt
STILL AIR
10 kt
20 kt
HEADWIND
30 kt
300
260
225
200
100
65
RANGE
NAUTICAL MILES
ON 40 LITRES FUEL
AIRSPEED MPH 40
50
60
70
AIRSPEED KTS
40
50
60

PEGASUS QUASAR 2 582/40, DUAL, ARPLAST 168 PROP, 22˚ PITCH

GRAPH 2



SECTION 3
AIRWORTHINESS OPERATING LIMITATIONS

1.0 Powerplant Limitations.

1.0 Powerplant Limitations

Max RPM:	6800
Fuel:	MON 83 or RON 90 octane minimum petrol, unleaded recommended.
Oil Premix:	2% Super two stroke oil, spec TSC3, for example Castrol TTS.
Coolant max temperature:	80°C
Anti Freeze protection to at least: (Use an Ethylene Glycol mix of 33%).	-15°C
Gearbox Lubrication gear oil:	API-GL5 or GL6, SAE 140EP or 85W-140 EP.
Propeller Pitch Setting	24 degrees at 53.5cm radius.

GENERAL

In accordance with Condition no. 4 of the Permit to Fly, the aircraft must be operated in compliance with the following limitations :

The aircraft is to be flown only under visual flight rules (VFR).

The minimum instrumentation required to operate the aircraft is:

Air speed indicator, altimeter, tachometer and coolant temperature.

All aerobatic manoeuvres including whipstalls, wingovers, tailslides, loops, rolls and spins are prohibited. The aircraft must be flown such as to maintain positive normal acceleration (positive 'g') at all times.

Negative 'g' must be avoided.

Do not pitch nose up or nose down more than 30 degrees from the horizontal.

Do not exceed more than 60 degrees of bank.

Max empty weight	181.2 kgs.
Max take off weight	390.0 kgs.
Min total occupant weight	55 kgs.
Max total occupant weight	180 kgs.
Max number of occupants	2
Manoeuvring Airspeed (Va)	59 mph 94 kph 52 kts
Max load Factor at Va	4 g
Vne.	90 mph. 144.0 kph 78 kts
Max Load Factor at Vne	4 g
Max wind operating conditions	28 mph. 45 kph 24.6 kts

90 degree cross winds of up to:

	Min AUW.	Max AUW.
Taxiing:	17 mph/27 kph/15kts	17 mph/27 kph/15kts
Take Off:	11 mph/18 kph/10kts	13 mph/21 kph/11kts
Landing:	11 mph/18 kph/10kts	13 mph/21 kph/11kts

........have been demonstrated during test but lower limits for takeoff and landing apply for pilots of average ability (see section 7paras 4 and 7.1).

When flown solo the aircraft must be flown from the front seat only.

SECTION 4
RIGGING THE AIRCRAFT

1.0 GENERAL

As you rig your aircraft, you should always be meticulous in your inspection of each component.This is the best time to see potential faults which may be missed when the aircraft is fully rigged. Never allow yourself to be distracted during assembly of your aircraft and always rig to a repeatable sequence. Do not rely on the pre-flight check to find faults, but look carefully at all aspects of your aircraft as you put it together. Great care should be taken with wings which are left fully rigged, for checks cannot be omitted on that account, and the full inspection procedures should be followed. The design brief for the Pegasus Quasar called for easy inspectability, so those components not open to view may be reached from zipped inspection panels. (See section 1 figures SW 90176 and 90177)

Special attention should be paid to the following:

1.1 The symmetry of the wing and the angle of the kingpost.

1.2 All tubes straight, undented and without cracks.

1.3 All cables unkinked, unfrayed and with undamaged sleeves.

1.4 All nuts and bolts secure and locked appropriately.

1.5 All quick-release fittings secure.

1.6 Hang-point and hang-bolt undamaged and secure.

1.7 All sail seams intact, with no frayed stitching.

1.8 No tears in the sail.

1.9 Double check 1.7 and 1.8 in sail areas of high stress.

Particular areas of high stress are:

- 1.9.1 Both tip fabric areas including tip fastening.
- 1.9.2 Both leading edge upper surfaces.
- 1.9.3 At the nose of the wing check that the securing screws and grommets have not become detached from the sail.
- 1.9.4 The trailing edge stitching, grommets and shock cords.
- 1.9.5 Keel pocket, particularly at the point of attachment to the upper surface.
- 1.9.6 Keel pocket to keel tube fastening.
- 1.9.7 The point of attachment in the root area of the undersurface to the upper surface.
- 1.9.8 All cable entry and exit points with particular regard to the rear upper rigging cable entry.
- 1.9.9 The area above the crossboom centre ball.

1.10 Sail tip adjuster settings correctly aligned and secure.

1.11 Battens undistorted, undented and in good condition.

2.0 WING RIGGING

2.1 Select a clean, dry area and lay the wing down, opening the zip to reveal the control frame and underside of the wing.

2.2 Open out the control frame and attach the base bar to the corner joints. Inspect the basebar holes for damage.

2.3 Lift the wing from the front and rotate it so that the wing is now laying on the ground with the assembled control frame flat on the ground underneath.

2.4 Remove all the sail ties and open each wing about a metre. Lift the spring retained kingpost and checking that the crossboom restraint cables pass cleanly either side, locate the king post onto the spigot.

2.5 Ensure that the upper cables are free from kinks and with the over-centre lever in the open position locate the king post crown into the top of the king post.

2.6 Open the wings in stages, alternating between wings to prevent damage to the crossboom and fittings. Stop and check if any undue resistance is felt.

2.7 Ensure that all wires are untangled and free from twist, particularly at the connections.

2.8 Excluding the nose rib, fit all the top surface ribs starting with the out-board main ribs and working in-board towards the root. Do not force the ribs if they seem hard to push fully home.

2.9 On all the complete aluminium upper surface ribs fit the single lower elastic and on all aluminium/composite ribs fit the end caps. If the elastics appear overtight at this stage, leave them off until after the final tensioning of the crossboom when it is easier to push the ribs finally home and requires less effort to fit the elastics.

2.10 After fitting the upper surface ribs, unzip the keel fin access panel and remove the safety pin from the crossboom restraint cable stud. Using the nylon cord pull back the crossboom until the keyhole tang can be located on the restraint cable stud.Make sure that:

a) The tang is located in the stud recess.

b) The restraint cables are not twisted.

c) The safety pin secures the cable onto the stud and is re-fitted correctly into restraint cable stud.

d) The fin access panel is zipped up.

2.11 With the crossboom now tensioned, ensure that the previously fitted ribs are pushed fully home and that the upper and lower elastics are fitted to all ribs.

2.12 Locate the washout tubes onto the sockets, ensuring they are seated firmly down to the limit.

2.13 Proceed to the front of the wing, lift and support the nose of the wing on the knee. Locate, fit and push fully home the nose rib, finally locating the front end onto the spigot provided on the keel tube.

2.14 The wing may now be erected fully by raising it allowing the control frame to swing forward.Do not lift the nose too high while doing this, lest the rear of the ribs sustain damage from contact with the ground. Hook the S-catch onto the rear pin of the nose channel and then, to tension the rigging, lever the S-catch forwards and lock it by passing the pip-pin through the S-catch and S-catch Channel.This operation is helped by having an assistant lift the keel at the rear at the same time as you lift the nose.

2.15 After inspecting all parts visible through the nose aperture, fit the nose cone upper velcro to the wing top side velcro and, ensuring symmetry, pull the lower part of the nose cone around the lower front rigging cables.
Join the nose cone rigging cable slot edges with the velcros provided and attach the nose cone underside to the wing undersurface velcro.

2.16 Adjust either the upper or lower wing attachment velcro patches to give the smoothest and most symmetrical fit.

WARNING - NOSE CONE MUST BE FITTED BEFORE FLYING. FAILURE TO DO SO WILL ADVERSELY AFFECT STABILITY AND CONTROL.

2.17 In light winds the nose can be lowered and the wing allowed to rest on the nose and control frame.In turbulence or strong winds it is best to have an assistant hold the wings level at the nose whilst the under surface ribs are located.

2.18 Push fully home the undersurface ribs so that the curved aluminium section is facing rearwards and downwards.Fit the single elastic to each undersurface rib rear.

2.19 Proceed to the rear of the wing and tension the overcentre lever in the rear top rigging.

3.0 TRIKE RIGGING

3.1 Rigging the trike is the relatively simple operation of lowering and raising the pylon whilst connecting the trike to the wing.

3.2 To erect the trike from the folded state, the pylon should be raised and locked geometrically by pushing down on the seat-frame hinges. Fit the front strut and ensure that the upper and lower securing pins and rings are fitted correctly.

It is particularly important that the two lower pins pass through both the lower and upper sections of the front strut.

Now is a good time to inspect the interior of the trike including the engine mounts and fuel lines. Depress the drain valve on the underside of the fuel tank and drain off a little fuel into a container. Check for discolouration due to contamination and for water present in the fuel. If in doubt, drain off all contaminated fuel and replace it.

Also check for loose objects in the belly pan.

Note: In the event of there being any significant wind, the trike rigged in the above state without the wing being attached makes it considerably easier to carry out the engine run-up and any remedial action required, without worrying about the control of the wing.

3.3 To convert the tandem seat for solo operation, it is merely necessary to secure the rear seat belt buckle and to tighten the straps so that there is no slack.

3.4 The fully-rigged wing may now be parked nose down. If there is to be a delay before fitting the wing to the trike, and if the wind strength is above 7 mph, the wing should be laid flat; if the wing is laid flat in winds above 16 mph the nose should be tethered.

4.0 CONNECTING THE WING TO THE TRIKE

4.1 Before mating the wing to the trike, complete the walk-around inspection of the wing as detailed in the pre-flight checks. Then position the wing on its control frame, into wind, with its nose on the ground. Move the propeller to a position which will allow the wing keel tube to rest on the hub while the wing is being lifted and, with the pylon of the trike folded down and ignition switched off, wheel the trike in behind the wing, rolling the front wheel over the control bar.

Lift the pylon high enough to connect to the roll bracket on the wing. With correct alignment the bolt will pass smoothly through. Tighten the special nut firmly with the integral tommy bar. Lead the safety lanyard around the rear of the pylon, and clip it to the tommy bar eye.

Go to the nose of the wing, and then rotate the wing about its control bar until the keel tube rests on the propeller hub. Do not use force, and in strong winds maintain a firm grip on the wing. The front wheel will roll back behind the control bar.

The rear wheels should now be chocked or the parking brake applied. Lift the wing by the base bar, and push down the seat frame hinges to lock. Fit the front strut, pins and locking rings. Fit the seat moulding and feed the seat belts through the seat apertures. Secure the side panels to the seat sides. Turn the aircraft cross-wind and lower the into-wind wing. Secure the control frame upright to the front strut.

SECTION 5
PRE-FLIGHT INSPECTION

1.0 PRE-FLIGHT INSPECTION (WING)

Assuming the machine is now fully assembled and is ready for the final pre-flight checks. Start at the nose and move around the wing making the following checks:

Nose catch secure and locked

Leading-edge spar undented

Crossboom junction secure (zip flap closed)

Sail secure on tip

Washout tube secure and undamaged

Ribs secure

Reflex retention lines secure

Crossboom tensioner secure

Keel pocket and fin components undamaged

Top rigging over centre lever is tensioned

Hang-point secure and freely rotating

Control frame locked

Trimmer friction set and functioning

Control frame cables secure

Reflex and trimmer lines straight & secure

Condition and security of composite flexible ribs

All other ribs secure

Washout tube secure and undamaged

Crossboom junction secure

Leading edge spar undented

Nose rib and nose cone secure and correctly fitted

Top rigging secure.

2.0 PRE-FLIGHT INSPECTION (TRIKE)

After returning to the nose, move around the trike making the following checks:

Ignition off; engine controls closed

Front strut secure

Front tyre inflated and in good condition

Front forks and suspension in good condition

Axles secure

Rear tyres inflated and in good condition

Seat-frame secure

Control cables - no kinks

Engine mountings secure

Exhaust secure

Carburettor secure

Gearbox - no oil leakage

Propeller secure and undamaged

Plugs and leads secure

Close cowl and check latches shut

Fuel tank secure;fuel contents adequate

Brake, throttle and steering functioning correctly

The aircraft is now ready for engine starting procedures.

SECTION 6
PREPARATION FOR FLIGHT

1.0 GENERAL

The engine can be started from outside the aircraft, but DOUBLE CHECK:

Parking brake set and check by pushing firmly on propeller hub.

Throttles both working and shutting fully.

Never set more than 1/4 throttle.

Stand squarely in front of the starboard u/c leg.

Check ignition switch operation and be prepared to turn off rapidly if required, before starting according to 3.0 below.

The above procedure is useful for the first start of the day, when the engine is cold and unprimed. All subsequent starts should be with the pilot being strapped into the front seat.Any passenger should also be strapped in and briefed.

Passenger Briefing:

Do not touch the ignition switches.

Do not touch the hand throttle.

Do not touch the control frame.

Fold arms, or rest them on knees.

Avoid loose scarves, and tie up very long hair.

Ensure cameras, maps etc are secure.

Emergency exit from the starboard side if possible.

Describe takeoff, landing and intention of flight.

2.0 STRAPPING IN

Lap straps should be adjusted snugly across the hips to reduce any tendency for either occupant to slide forwards under the strap. Shoulder straps should be adjusted with a little slack to allow any necessary movement during flight and to ensure that the lap straps remain in place without slipping upwards in the event of accident.

NOTE. WEARING A CRASH HELMET IS ESSENTIAL.

3.0 STARTING ENGINE

All controls should be checked closed and ignition should be off. The parking brake should be applied. Unless the engine is hot, apply full choke. Turn the fuel on.

Set the throttle NO MORE THAN 1/4 OPEN. The choke system will not work unless the throttle is almost shut. Prime the engine using the primer bulb by the fuel tank. The carburettors can be primed by gently blowing into the carburettor overflow tubes. This causes fuel to be forced into the intake tract.

Check visually that the propeller area is clear and call "Clear Prop" loudly. Switch on the ignition when the area is clear, take hold of the starting handle, pull gently until it is felt to engage and lock, and then pull forcefully. Repeat until the engine starts. If the engine refuses to start, close the controls and switch off the ignition before investigation.

Generally, the engine will not start through lack of fuel. It is possible, when the engine is hot, to flood it through unnecessary use of the choke. In this case, try again at full throttle with the choke off- in this case a pilot MUST be strapped in and throttle set BY FOOT ONLY.

4.0 ENGINE RUN-UP

When the engine starts, increase the rpm to a little above tickover and gradually weaken the mixture until the engine idles normally with the choke off. Warm up the engine.Before flight a full-throttle check is carried out for at least two minutes.The brakes will hold against a full power run-up but the aircraft may slide on wet grass or slippery surfaces. In this case check the engine at reduced RPM. During this operation the pilot must be mentally prepared to switch off the ignition at very short notice. If the engine is stopped after a period of running, the ignition should be switched off at tickover. Switching off at high rpm floods the engine, distorts the cylinders through rapid cooling and makes restarting difficult.

The engine maintenance manual should be consulted for information on gear oil reservoir levels and specifications, carburettor tuning, timing etc.

SECTION 7
FLIGHT CHARACTERISTICS

1.0 GENERAL FLIGHT CONTROL

Roll

The wing is rolled by the action of the pilot rolling the wing relative to the trike. The roll response is aided by the intentional flexing of the airframe and sail designed into the Q2 wing.

The Q2 also incorporates a floating keel and hangpoint roll linkage to reduce the effort required to produce and stop a roll, especially in response to small pilot inputs. This makes the aircraft much easier to fly in turbulence.

Because the wing is only deflected a certain amount by the pilot's roll input, the roll rate achieved will be faster at high speeds than low speeds. The roll response will be typically 4 seconds to reverse a 30 degree roll at 1.3Vstall, fully loaded, to 2 seconds at VNE. At minimum loading, response is approximately 0.5 seconds faster.

The Quasar trike is designed to be stable in yaw, so that there is no dutch roll instability at high speeds, making it easy to maintain a steady heading in turbulence, especially at minimum loading.

Pitch

The Q2 wing incorporates a pitch trimmer so that the pilot can select a range of steady trimmed speeds. This feature makes for easy cross-country cruising performance, or slow, stable flight for climbing, gliding, or when instructing.

At the slow trim setting, the pitch stability is increased.

The Q2 wing exhibits very mild stall characteristics. The aircraft will not readily stall even with the control bar pushed fully out. See para 13 for stall characteristics.

Weather Conditions

Microlighting is, in general, a fair-weather sport. Light rain will not noticeably influence flying control. Ice, however, is more serious and can occur through icing conditions, or by flying a wing which is wet from the bag, without giving it time to dry out. Severe icing can affect handling and speeds markedly and at the first sign you should cease flying or fly below icing conditions.

Although the Quasar copes well with turbulence, care should be taken in gusty or very thermic conditions to maintain at least 45kt on climb-out and approach, to ensure good roll response and to avoid gust-stalling. Cross-wind limits must be observed.

Tuning

It is important that the wing is trimmed so that it will fly straight at a range of steady speeds. A wing which exhibits a constant turn when flying 'hands off' will be tiring to fly and uncomfortable in turbulence, particularly when landing or taking off. A properly tuned wing will fly completely 'hands off' throughout the whole range of power settings. Refer to section 10 for tuning details.

2.0 FLIGHT CONTROLS

The Pegasus Quasar microlight wing is controlled by standard 'weight-shift' techniques.The speed of response and lightness of action should be borne in mind for those pilots converting from other makes of wing.

Control Bar Movements	Aircraft Response
Bar pulled rearwards. Nose pitched down	aircraft speeds up
Bar pushed forwards. Nose pitched up	aircraft slows down
Bar pushed across to the right	aircraft rolls to the left
Bar push across to the left	aircraft rolls to the right
Trimmer wheel turned clockwise	nose pitch up

It is absolutely essential that 3-axis pilots undertake a weight-shift conversion course on a dual-control machine before flying the Pegasus Quasar. Flex-wing pilots unfamiliar with the type should undertake a check flight before becoming P1.

3.0 GROUND HANDLING

Flexwing microlights are unique in their ground handling ability. In winds over 5 mph, always turn the aircraft until one wing is resting on the ground which will help stabilise the craft until you are ready for flight. A ground picket or weight (fuel can or similar) is very useful to tie the wing tip to in order to prevent damage to the tip and to hold the wing steady. When taxiing cross wind do not make the mistake of letting the up-wind wing go up as this will greatly increase the risk of the craft being blown over. Instead, roll the wing slightly into the cross wind. When taxiing down wind, push the bar out to prevent the wind getting under the sail and taxi faster than usual.

3.1. Foot Operated Brake

To slow the aircraft down after landing or taxiing, and to facilitate easy engine run-up checks before takeoff,a foot operated brake system has been introduced.This consists of a foot operated lever which controls two drum brake units in the rear wheels.

There is also an incorporated parking brake which locks the brake pedal by means of a hand lever and detent system. This acts as an added safety feature during engine run-up. To engage the parking brake, press the brake pedal and lift the hand lever until it engages with the hoop on the side of the steering assembly. Release occurs automatically the next time the brake pedal is pressed. The parking brake lever should be operated by hand only.

3.1.1 OPERATING LIMITATIONS:

3.1.2 TAXIING

Due to the drop in braking efficiency in wet and icy conditions, extra stopping distance should be allowed for.

3.1.3 ENGINE RUN-UP

(i) Operators should note that above 5000 engine rpm the aircraft may tend to creep forward with the rear wheels locked on some surfaces.

(ii) Due to the drop in braking efficiency in wet and icy conditions,allowances should be made by the operator for creep to occur at a lower rpm than stated in (i) above.

3.1.4. INSPECTION

The amount of wear that takes place on the tyres and drum brake shoes will vary from one aircraft to another, depending on the type of surface the aircraft normally takes off and lands on. Close inspection of the rear tyres and brake shoes should be made at intervals of no more than 100 hours.

4.0 TAKEOFF

Performance

At sea level, 15 degrees C, on firm ground with grass of moderate length, the take-off run in zero wind at Max AUW(390 kg.) may be 180 metres. Flown solo with a 90 kg. pilot in the same conditions, a take-off run of as little as 120 metres is possible.The take-off run is considered to be the horizontal distance covered by the aircraft, from being stationary until it reaches a height of 15 metres above the average elevation of the runway used.

These figures could be shorter if the take-off should be from tarmac, but longer if from wet ground, if the ground slopes upwards, or if there is any tailwind. A significant headwind would reduce the length of the take-off run considerably.Crosswind components of up to 6 mph(10 kph, 5 kts) at Min Auw. and 11 mph (17 kph, 10 kts) at Max Auw. are within limits for pilots of average ability. Higher crosswind components have been safely demonstrated during test (see para 3.0) but only experienced pilots should approach these limits. Such pilots should exercise great care in strong crosswind conditions.

Density altitude will affect takeoff performance: for example at 4000 ft altitude the takeoff run will be 1.9 times as long, and if the temperature is 32 degrees C at 4000 ft, the run will further increase to 2.1 times as long.

4.1 Before Takeoff Checklist

Wing visual check: nose, fwd rigging, side rigging, tip rods, battens, rear rigging, hangpoint bolt, control frame and bolts, basebar bolts.

Trike: front strut pins/rings, brake operation, steering free, baggage box lids secure, harnesses, side skirts secure, ignitionswitch check operation, fuel quantity, fuel tap on, intake and exhaust system secure, hand and foot throttle operation.

Check Instruments, intercom and radio.

Check brakes on, at engine idle turn off both magneto switches, check for dead cut, and turn on again. Idle speed should be set 1700-1900 rpm. Run engine to 5000 rpm, then turn off front magneto. Listen for any missfire and observe mag drop, to be 500 ± 50 rpm. There must be a noticeable drop, which is accompanied by a slight change in engine note. Check the other magneto in the same way, mag drop to be 300 ± 50 rpm.

Note that these mag drops are indicated rpm drops on the Aviasport tachometer. Actual rpm dròps should be 300 ± 50 rpm on either magneto.

Check CHT and/or water temperature registering, altimeter set.

Brakes off and ignition both on for takeoff.

Check operation of controls and trim operation; set trimmer to takeoff.

4.2 Takeoff Technique

Take-offs are straight forward.The hand throttle should not be used during take-off. The correct technique on smooth surfaces is to allow the wing to trim in pitch during the initial stages of the take off run so as to reduce the drag and increase the acceleration.In smooth air conditions, push forward fully at around 20 mph(32 kph, 18 kts) until the aircraft un-sticks and then adjust the bar pressure to maintain a steady climb at around 45 mph(72 kph, 40 kts). When established in the climb, adjust the trimmer to remove the bar pressure. For more turbulent air conditions, keep the aircraft on the ground until around 45 mph(74 kph, 40 kts) has been achieved and then gently ease the bar forwards until the aircraft rotates. Climb at 45kt for the first 200 ft. This allows a more positive initial climb and a more rapid control response.

In smooth air conditions on rougher ground, push the bar out to its fullest extent for the whole takeoff run, to get the weight off the wheels as soon as possible. The trike unit will then swing forward under the wing. Allow the base bar to float back as this happens and climb away in the manner indicated above.It follows that taking off from rough ground in turbulent air conditions could either result in a slower takeoff speed than is desirable or in greater stress to the aircraft structure during a fast takeoff run. Therefore, consider carefully the advisabilityof flying in such circumstances.

WARNING - Allowing a steep climb to develop at a slow airspeed immediately after takeoff is dangerous.If the engine fails, the aircraft will pitch nose down through a large angle before taking up a glide. Roll control is also impaired at low airspeed. Therefore DO NOT PERFORM STEEP CLIMB-OUTS.

4.3 Solo Flight Take-off

It is normal for the aircraft to be flown solo from the front seat, there being no ballast required if the pilot weight is above 55 kg. The initial rotation of the trike to a nose-up attitude will be more pronounced when flying solo. For the initial 200 ft(61m) of climb, the attitude of the trike should be controlled to allow for the possibility of engine failure. The full-power setting may have to be reduced to achieve a comfortable climb angle.

5.0 CLIMB

The best climb speed is 40kt (46mph, 73kph) at maximum loading and 38kt (43mph, 68 kph) at minimum loading. Once established in the climb, the bar force can be eliminated with the trimmer. The best climb rate is 600fpm at maximum all up weight, sea level, 15 degrees C conditions. Beware of the effect of density altitude on the climb performance. The climb rate will reduce to around 0.65 of the sea level figure at 4000 ft, and if the temperature at 4000 ft is 32 degrees C, the factor will be 0.52.

6.0 EN-ROUTE

During all aspects of flight the aircraft should be flown so that in the event of engine failure or loss of power, safe landing areas are always within reach. Providing the aircraft is being flown sensibly, an engine failure need not lead to an accident and any competent and well-trained pilot should be able to cope.

The trim should be set to remove any bar force. Periodically check fuel, engine, instruments including altitude.

7.0 DESCENT RATE

Fully loaded the engine-off sink rate is around 400 fpm(2.0 mps, 4.0 kts) at 33kt (38mph, 60kph) and increases as speed is increased.

8.0 PITCH

Whether flown solo or dual, pitch control is very smooth and positive, progressive and damped, providing good "feel" at all times and in all manoeuvres. Pitch control is lighter when flown solo than dual. Pitch control forces are also affected by the trimmer; heavier in the slow trim setting than the fast.

DO NOT PITCH NOSE UP OR NOSE DOWN MORE THAN 30 DEGREES FROM THE HORIZONTAL.

9.0 ROLL CONTROL AND TURNS

Whether flown solo or dual, roll control presents no difficulty. At normal cruising speeds of 45mph(72 kph, 40 kts) upwards, turns may be initiated by simply moving the trike in the required direction. As the turn develops, the bar should be eased out to maintain the desired airspeed. As the desired bank angle is reached, the turn control input should be relaxed. Increasing bank angles require increasing bar-out pitch control forces to coordinate the turn. Roll control becomes slower at low airspeeds, so the bar should be pulled in slightly to increase airspeed before commencing the turn. For roll-out the trike is moved towards the higher wingtip, and the nose is lowered as the horizon levels.When the aircraft is flown solo, the roll response is faster for the same control force.

Roll response is also less damped especially at high speeds in excess of 65mph (104 kph, 57 kts). Small control inputs should be used. Co-ordinated turns can be achieved with a maximum bar movement of 3 inches(7.6cm).

DO NOT EXCEED MORE THAN 60 DEGREES OF BANK.

10.0 TRIM

The Pegasus Quasar2 incorporates a pitch trimmer that can be readily adjusted in flight to trim anywhere between approximately 35kt (40mph, 64kph) and 52kt (60mph, 96 kph).The trimmer wheel on the right hand upright operates clockwise for nose-up, the setting of the trimmer being indicated on a scale below. The trim wheel is prevented from unwinding by friction, which should be set at a comfortable level by means of the locknuts.

The trimmer works by arranging the wing to have a relatively forward hang point so that the wing trims fast with the reflex lines slack. Reflex is then introduced by the trimmer which tightens the middle pair of reflex lines, which makes the wing pitch up, giving slow flight at high pitch stability.

The trimmer's basic function is to remove bar pressure, so that the aircraft can be set to climb, cruise or glide speeds as desired without tiring the pilot.

Its secondary function is to allow the pilot to increase the positive pitching aerodynamics of the wing, so that the wing is more pitch stable when flying in turbulence, for example. This characteristic is also useful in the early stages of flying training.

The basic operation of the trimmer is to set the desired power setting and attitude so that the aircraft is in a steady state, and then adjust the trimmer till the bar force disappears.

Roll control will tend to become sluggish at very slow speeds and it is not recommended to trim at less than 40kt on landing approaches (smooth air) or 45kt (rough air).

The aircraft will tend to be more spirally stable trimmed fast than slow.

The aircraft should not be flown without the trimmer, as the bar forces to maintain climbing flight or to flare on landing will be quite heavy.

11.0 EFFECT OF POWER ADJUSTMENT ON PITCH

As the thrust line is set low, the effect of reducing power is to lower the nose of the trike, and an increase in power will cause it to rise. There is no need to alter the control bar position as power is adjusted.

12.0 HAND THROTTLE

The engine rpm can be set with the cruise control lever and then the pressure on the foot pedal may be removed until an increase in rpm is required. Thereafter, the rpm will always return to the cruise setting when foot pressure is removed.To obtain the full rpm range on the foot pedal, the hand throttle lever must be in the fully-off position.

13.0 STALL CHARACTERISTICS

Fully loaded, the stall occurs at 26 mph(42 kph, 23 kts) and is clean and easily handled. As the speed is reduced, aft bar pressure increases, noticeably so immediately prior to the stall. You will also notice a slight nodding tendency and a stiffening of roll response. As the wing stalls, the nose pitches down and corrective action is to bring the bar back slightly to prevent the aircraft re-entering the stall state. Pulling the bar violently in to the chest and holding it there will result in an unnecessary rapid nose-down rotation and consequent steep nose-down attitude. The The quickest stall recovery will result if the bar is pulled back no further than trim, then as soon as the trike nose drops below the horizon the bar should be pushed out and power applied to check the nose down rotation, and then the pitch adjusted to resume normal flight.

If the bar is held lightly enough to damp out oscillations, the aircraft will automatically recover from a stall and return to trimmed flight. Slight wing drop may be found but is easily corrected. If necessary, hold the bar firmly to counter any tendency for the nose to pitch up excessively during the recovery. The Pegasus Quasar wing is remarkably stable, and even if stalled in a turn will not spin, but pitch down, increase air speed and roll out into a shallow turn or straight flight.

Stall recovery is fastest with the trimmer set slow, as the reflex held into the wing will quickly pitch it out of the dive. It is recommended that stalling exercises are done with the trimmer in the middle position (approximately 43 kt).

WARNING

Whipstalls are prohibited (See para 3.0).

14.0 LANDING

Pre-approach checks:

Brakes off

Altimeter set

Trim to 45kt

Harnesses/helmets

Fuel sufficient to go around

Wind direction

Periodically warm the engine in the descent.

The hand throttle should not be used during landing. Trim your approach airspeed at about 50-55 mph(80-88 kph, 44-48 kts) and be aware of wind gradient during strong wind days.Never approach at less than 40kt even in smooth conditions.

The flare is conventional, but the light pitch response can cause over correction and 'ballooning'.Allow the speed to bleed off whilst gradually pushing out until the bar contacts the front strut as the mainwheels touch. Safeguard the nosewheel by keeping the bar pushed out until the speed decays and the nosewheel drops. The practice of immediately pulling the bar in once on the ground puts unnecessary load on the nosewheel; the wing should be set at a neutral incidence and the brakes used if required.

The brakes will effectively slow the aircraft, although locking them can cause tyre damage and snaking.

Correct airspeed on finals is of great importance for engine-off landings, the approach speed must not be allowed to decay, and there must be a margin to permit rotation before touchdown.

15.0 CROSS-WIND LANDING

The Pegasus Quasar copes well with cross-wind landings, but sensible pilots take great care to land exactly into wind wherever possible. If a cross-wind landing is unavoidable, approach at slightly higher speed than normal, and then bleed off the speed 1 or 2 metres above the ground where the cross wind is least. Be ready for the twisting of the Trike unit as soon as the rear wheels touch. Whenever possible utilise whatever into-wind distance you can. Cross-wind components of upto 6 mph(10 kph, 5 kts) at min. AUW.

and 11 mph (17 kph, 10 kts) at max. AUW are within limits for pilots of average ability. Higher crosswind components have been safely demonstrated during test(see para 3.0) but only experienced pilots should approach these limits. Such pilots should exercise great care in strong crosswind conditions.

Because of the high torsional loads which can be imparted to the trike pylon and wing keel tube, always carry out a detailed inspection after every cross-wind landing.

16.0 EMERGENCY PROCEDURES

16.1 Engine Failure in Flight

The first priority in any engine failure situation is to **FLY THE AIRCRAFT.** Set up a steady glide, trimmed at 45 mph (40kt, 72kph).

The second priority is to **SELECT A FORCED LANDING AREA.** Be particularly vigilant for power lines, electric fences, slope and lee turbulence from obstacles. Determine wind direction from smoke, or otherwise if there is time, make a steady 360 degree turn to determine drift. Refer to your map for altitude above the forced landing zone. Plan a proper approach into the area, and set up a glide towards it.

With these things in mind, if there is time to attempt a restart, check:

1) Both ignition switches on.

2) Fuel contents.

3) Fuel turned on.

4) Choke off unless cold or if suspected fuel starvation.

5) Throttle 1/4 open.

With the aircraft in a stable hands off glide, pull the starting handle strongly. **RETAIN A GRIP ON THE HANDLE ALL THE WAY BACK TO THE PYLON AFTER PULLING.**

Stop attempting to restart if unsuccessful after 3 or 4 attempts, or if below 1000 ft agl. More motorgliders have been damaged by useless attempts to restart a dead engine at too low an altitude than anything else.

FORCED LANDING DRILL

1) Throttles shut.

2) Both ignition switches off.

3) Fuel off.

4) Brakes off.

5) Harness secure (do not overtighten pilots shoulder strap).

6) Plan approach

16.2. Engine-off Landings

Always be prepared for the engine to fail when it is least convenient and therefore always ensure that you are within gliding distance of a suitable emergency landing field. Regular practice of glide approaches on engine idle at your home base will pay dividends. Warm the engine periodically when doing this.

The Approach

The most important part of the approach is the base leg. Aim to start the base leg at approximately 800 feet agl and set up an approach speed glide of 50-55 mph. Gauge the right moment to turn onto finals at 4-500 feet as the base leg progresses. On finals, quite a lot of glide angle control can be made by varying the airspeed.

The best glide of the Quasar-TC is approximately 10:1 at 40 mph, (35kt, 64kph) but this can be reduced to 5:1 at 70 mph (60kt, 112kph). It is inadvisable to make the final approach slower than about 50 mph (43kt,80 kph) unless the field is very small, as wind gradient may reduce the airspeed too much for the final flare. The best technique is to maintain the 55 mph (48kt, 88kph) airspeed through the wind gradient to a low level, say 3 ft, and then progressively ease the bar out as the speed decays until a smooth touchdown is made.

16.3. Engine Failure on Take-Off

In order to minimise the potential safety hazard in the event of an engine failure on take-off, never climb-out at a steep angle when close to the ground and always use an airfield long enough to allow a safe engine off landing straight ahead when the aircraft is too low to turn into a shortened circuit. Resist the temptation to pull the control bar violently in after such a power failure as this will produce a steep nose down attitude. instead, let the bar assume the neutral trim position until the aircraft regains airspeed and levels out. For minimum height loss, the nose-down rotation of the aircraft can be checked by pushing out once the nose has dropped below the horizon. The bar can then be eased in again to take up a glide. From that point, treat the situation as an engine off landing.

16.4 Instrument Failure

The essential instruments required by the conditions of the Permit to Fly are an altimeter and an airspeed indicator. In the event of failure of either of these it is not permissible to continue flying and a landing should be made as soon as it is possible and safe to do so. Failure of other instruments does not constitute grounds for abandoning a flight providing safety is not dependent upon them.

16.5 Engine Overheating

With a well maintained engine,overheating should not occur. The two basic reasons are weakening of the fuel/air mixture, and cooling system failure. Condition of the fuel filter, float bowls and fuel itself are very important.

If the aircraft is not fitted with a CHT gauge, fuel starvation may be detected by a sluggishness of the engine to respond to the throttle, a reduction in rpm, and a change in the exhaust note. If the aircraft is fitted with CHT gauges, then the maximum CHT limit is 480°F or 250°C. Normally, the engine will run at up to 300°F in a continuous full power climb.

If fuel starvation is suspected, then it may be possible to keep the engine running by pulling out the choke. Reducing the throttle setting may also keep the engine running. These measures should only be used to fly the aircraft to the nearest safe landing area, where a forced landing should be planned. If temperatures continue to rise, execute a forced landing as above.

DO NOT ATTEMPT TO TAKE OFF AGAIN WITHOUT POSITIVELY IDENTIFYING THE PROBLEM, SOLVING IT AND RUNNING THE ENGINE AT TAKE OFF POWER FOR AT LEAST SEVEN MINUTES.

16.6 Fire

If a fire occurs on the ground, then immediately close both throttles, switch off the engine and exit the aircraft, turning off the fuel as you go.

A fire in the air is a considerably greater hazard. Two possible causes are electrical or fuel. Smoke or fire at the front of the aircraft is almost certain to be electrical in origin while occurrence at the rear could be from either cause.

In the case of an electrical fire, turn off all electrical equipment and land as soon as is safely possible.

In the case of a fuel fire, select a landing area, turn off the fuel and the ignition and perform an engine-off landing as described above.

SECTION 8
POST FLIGHT INSPECTION

After flight, and particularly if you have had a heavy landing or suspect damage may have occurred through ground handling or cross wind landings, you must inspect the aircraft thoroughly. Please check the maintenance and repair section in this manual and pay special attention to the areas of inspection outlined in para 1.

If leaving the aircraft rigged, the trimmer should be left slack.

SECTION 9
DE-RIGGING THE AIRCRAFT

The de-rigging procedure is a direct reversal of that for rigging. As with the preparation before flight, it is also important when de-rigging that the pilot carries out an inspection.

1.0 With the parking brake on, lower the wing until the control frame base bar is on the ground. Unbolt the trike from the hang-point and wheel out the trike unit.

2.0 After detaching the wing from the trike, reverse the procedures listed in section 4, paras 2.1 to 2.19. When preparing the wing for stowage in the bag, furl the wing fabric carefully, ensuring that the protection patches are correctly positioned at the following positions:

a) Control frame knuckle joints.

b) Roll bracket and upper control frame.

c) Washout tube plugs.

Rigging cables should be stowed simply and, especially at the control frame, logically.

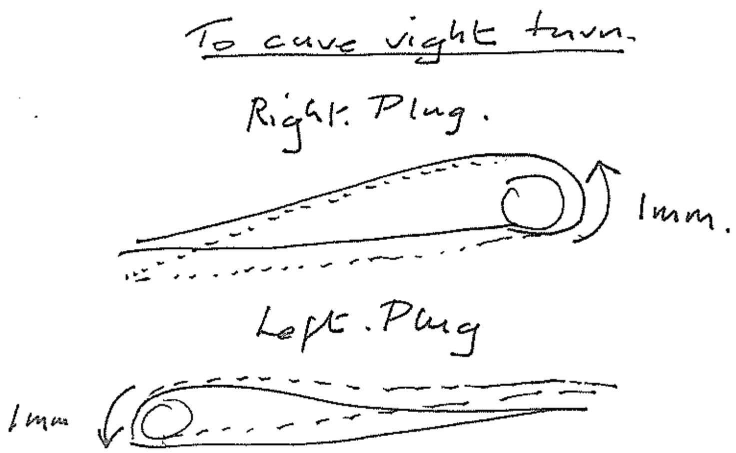
3.0 If storing the wing rigged, it should be parked in a sheltered location nose-down. Undo the wing undersurface inspection zips and pass tie-down ropes around the cross-boom or side-wires. The nose cone should be removed and stowed under the leading edge mylar.

The basebar and nose should rest on a soft, even surface; in particular avoid sharp stones which can damage the basebar.

The trimmer should be left slack (fully fast).

4.0 For overnight parking, the wing should be laid flat on the ground, into wind. De-tension the cross-boom, remove the kingpost top and lay the washout rods flat. Use water ballast or a tie-down stake on the nose. On thermic days, water ballast on the trailing edge will stop the sail being lifted from behind.

SECTION 10
TUNING THE WING



1.0 NEW AIRCRAFT

PRIOR TO DELIVERY TO THE CUSTOMER ALL NEW AIRCRAFT ARE FLOWN AND SET UP BY EITHER THE FACTORY OR BY APPOINTED DEALERS.A FULL CHECK FLIGHT IS CARRIED OUT AND ADJUSTMENTS MADE TO THE WING TO ENSURE THAT IT IS PROPERLY TRIMMED OUT AND FLIES HANDS OFF AT THE RIGHT SPEED. OWNERS ARE DISCOURAGED FROM MAKING ANY ADJUSTMENTS AND ACCORDINGLY IF YOU FEEL YOUR NEW PEGASUS AIRCRAFT IS NOT PERFORMING AS IT SHOULD, IT IS ESSENTIAL THAT YOUR DEALER IS IMMEDIATELY INFORMED.IF NECESSARY THE DEALER WILL ARRANGE FOR THE AIRCRAFT TO BE RETURNED TO THE FACTORY FOR TESTING.

THE FOLLOWING NOTES ARE FOR GUIDANCE ONLY AND SINCE TUNING OF FLEX WINGS IS A SPECIALISED TECHNICAL PROCEDURE, NO ADJUSTMENT SHOULD BE MADE WITHOUT A FULL UNDERSTANDING OF THE PRINCIPLES INVOLVED.

BEFORE MAKING ANY ADJUSTMENTS CHECK FOR CORRECT RIB PROFILES. NEVER EXCEED THE ADJUSTMENTS SPECIFIED IN THIS TUNING GUIDE.

ANY ADJUSTMENTS MADE SHOULD BE ENTERED IN THE AIRCRAFT TECHNICAL LOG.

2.0 WING TRIM

A well tuned wing will fly in a straight line hands off and will respond to control inputs equally in each direction.However, fabric can stretch slightly with age and battens can alter shape and get bent or distorted. The most common problem with flex wings is the tendency for the wing to acquire a turn one way which can be irritating and tiring on a long flight. Turns like this can almost always be tuned out and are invariably due to rib shape. However, it may be that airframe damage has occurred so the first thing to do is to check the frame carefully, inspecting for bends and distortion particularly in the leading edges.If the frame is alright, you should check the ribs against the template and adjust accordingly.

3.0 TUNING GUIDE

For successful tuning, the weather conditions must be smooth, small adjustments must be made one at a time, and notes must be made immediately any changes have been made and check flown. The loading of the aircraft must also be similar for trials to have comparable results.

3.1 Tuning turns

Example: The aircraft turns right at all speeds. The trim speed is correct.

Solution : In this case the tip turn adjusters developed for the Q2 can be used. On the tips you will find an adjustment scale where the leading edge emerges from the sail.DO NOT EXCEED THE ADJUSTMENT RANGE WHICH IS ±5MM FROM THE INITIAL FACTORY SETTING. Rotate the starboard tip plug 1mm on the scale anti-clockwise (i.e. trailing edge down). Rotate the port tip 1mm anti-clockwise (i.e. trailing edge up). Check results before moving the tips further.

Example: At high speed, the aircraft turns to the right. At low speed, the turn is not so pronounced. The trim speed is correct.

Solution : Use the tip four ribs 7-10 on the starboard side to tune out the turn. The tip ribs respond well to "tab effect", i.e. application of reflex near to the trailing edge will produce a downforce at the trailing edge which will increase the incidence of the section as a whole. The overall effect is to increase the lift on the side where reflex is applied, so correcting the turn. The effect becomes more pronounced as the speed rises. The reflex should be applied 200mm from the trailing edge and applied in small increments up to a maximum of 25mm.

3.2 Tuning in pitch

The Q2 wing is designed to be stable in pitch with the trimmer fully fast, at a trim speed of 50-56kt (57-65mph, 91-104kph). The bar force when pulling in must steadily rise to at least 7kg to achieve 60kt (70mph, 111kph).

The trimmer then operates by raising the middle pair of reflex lines to pitch the nose up and slow the aircraft to a minimum speed of 35kt (40mph, 64kph) at solo loading and 40kt (46mph, 73kph) at maximum all-up weight.

When making adjustments in pitch, always tune in smooth air and climb to test altitude with the trimmer set at 45kt (51mph, 83kph), before winding the trimmer gradually to the test position.

The settling of the sail on the airframe generally tends to slow the wing down and make it more stable both in pitch and laterally/directionally, as the washout increases.

If the wing has slowed unacceptably with the trimmer fully fast, then the tip adjusters can be rotated both together by 1mm on the scale so as to bias the trailing edges downwards. Check the result at each 1mm adjustment until the trim speed and pitch feel are correct. Do not exceed 5mm of adjustment without contacting the factory flight test department.

As a rough guide, the sail should ride approximately 25mm clear of the washout rods when flying solo at fast trim.

If the trim speed is too fast at the fast trim setting, then the tips can be rotated both upwards until the correct speed is set. Again, use small adjustments to achieve the desired result. If the wing is very new (less than 5hrs) then it will probably settle down by 3-4kt over the next 20hrs.

Once the fast trim has been set, then the slow trim can be checked by winding to the full slow position. Because the trailing edge rises higher under flight loads when at high loadings, the slow trim will be 5kt faster at maximum all-up weight than at minimum loading.

The minimum trim speed should not be lower than 35kt (40mph, 64kph) at solo loading and the pitch control should feel very stable and damped at this setting.

It is not desirable to trim slower than 40kt (46mph, 73kph) when on approach or when climbing from takeoff as the roll control becomes more delayed and the chances of getting gust stalled are greater.

3.3 Roll response

Roll response should not exceed 3 seconds at 45kt to reverse a 30 degree bank at a control force of 15kg. In addition, the response to very small inputs of 1-2kg should be good so that it is possible to fly through moderate turbulence with one hand on the bar.

If the roll response is unsatisfactory, firstly check that the main roll bearing and associated control frame top joints are all moving smoothly. A silicone aerosol spray will help.

The fore and aft rigging should not be too tight- if necessary adjust the tensioner on the fin, but always leave at least 10mm of thread in the barrel and ensure that the locknut is tight.

4.0 WARNING

Those operators who wish to tune the Quasar2 should contact a Solar Wings agency for additional advice.Before any tuning is attempted, a careful and thorough check of the airframe is essential. A sudden indication that the wing requires tuning may be the result of damage caused in an unreported accident or from a heavy landing.

SECTION 11
MAINTENANCE

1.0 GENERAL

Apart from the consequences of heavy landing, or of exceeding flight limitations, the major factors for attention are corrosion and fatigue. There is no inherent fatigue problem with the Pegasus Quasar2, but excessive loads and vibration can weaken the structure, and a regular watch for hair-line cracks, most likely in areas under high stress, such as around bolt holes, will give warning.All Pegasus Quasar2 components can be replaced without difficulty.Repairs should be undertaken by the Solar Wings factory or a Solar Wings approved repair agency.

1.1 Aluminium Tubework

Care and consideration in de-rigging and transportation will pay huge dividends in airframe life.Any damage to any one of the structural members is serious and can usually only be repaired by replacement. Tubes suffer from abrasion or indentation, the first accelerating fatigue fracture and the second reducing the strength of the part. If you bend, dent or damage the tubular members in any way, seek immediate professional advice before flying again and have replacement parts fitted.

1.2 Composite Components

The rear undercarriage beam is immensely strong. Overloading through heavy landings may be shown by localised crazing around bolt holes. The undercarriage pickup fittings should be regularly checked for wear. The beam must not be painted any dark colour in order to prevent any loss of strength through solar heating.

Special care must be taken to ensure the drain holes in the fuselage belly pan and map boxes are clear and that no foreign objects are loose in the bottom.

1.3 Fastners

Only fasteners purchased from Solar Wings either direct or through an approved stockist should be used for replacement. Any fastener which is bent or shows sign of wear or corrosion should be immediately replaced. Nylock nuts should only be used once.

1.4 Rigging Cables

The main danger with the rigging lies in kinking the cable, usually caused by careless rigging and de-rigging.Once a cable has a kink, the strands are damaged and replacement is the only cure. The side cables are particularly important and should receive a frequent detailed inspection. Check for cable damage along the length but the main failure area lies immediately adjacent to the swaged fitting. Look carefully for signs of strand fracture at this position.Corrosion is a serious problem particularly in coastal areas and shows itself as a white powdery deposit.Corrosion cannot be cured and replacement is the only answer.

1.5 Fittings

Many fittings on Pegasus aircraft are manufactured from aluminium alloy and then anodised.Damage can occur through scratching or by the stress of an unduly heavy landing or crash, or by general wear. Look for elongated holes and stress lines in the aluminium. Damaged items should be replaced.

2.0 WING

2.1. General

Careful attention to the recommended rigging and derigging sequences will protect the wing from the risk of unnecessary damage. The wing must always be transported inside its bag, and the bag zip must face downwards to prevent the entry of rainwater. During transportation, or when stored on slings, the wing must be supported at its centre and at two points not more than one metre from each end. Supports should be softly padded, and any support systems used for transport, such as roof racks, must use attachment straps which are sufficiently secure to eliminate the possibility of damage from vibration and abrasions.

2.2 Wing Fabric Maintenance

Despite the best care you can take, you may still have accidents with the odd wall or wire fence or your protection pads may slip and you will be faced with slight damage to the fabric.Where this takes place influences repair, high load areas such as a trailing edge being critical. Any cuts or tears through the trailing edge, sail fixing points or similar high load areas must be repaired at either the Solar Wings factory or a Solar Wings approved workshop. Small damage to panels, leading edge cover etc. can be repaired with self adhesive tape which is cut to size, pressed into place on the clean dry sail and warmed gently with a hair dryer to melt the adhesive, being careful not to apply too much heat. We define small damage as abraded holes no more than 10mm diameter and small cuts no longer than 15mm.Anything larger should be inspected by a qualified engineer.

Long term exposure to ultra violet light should be avoided - keep the wing de-rigged in the bag or rigged under cover.

2.3 STITCHING DAMAGE

All the seams are firstly joined with a double sided sail adhesive tape and then double zig zag sewn.Thread damage never ever gets better and eventually runs. Since the wing is held together with stitches, its pretty obvious what will happen when the stitching fails. If you abrade a seam, then have the damage repaired before it gets worse. Small non loaded areas can often be repaired in-situ by the tedious but effective method of hand sewing back through the original stitch holes. Never use anything but matching polyester thread which is available from Solar Wings or any good workshop or sail makers.

2.4 Wing Fabric Cleaning

The best answer to dirty sails is to keep them clean, but if all else fails and you need to wash your wing, then select a dry day and have access to a good hose and clean water supply.Never use strong soaps or detergents since soap residue can re-act with ultra violet light and degrade your fabric. We recommend a very mild liquid soap (washing up liquid) and a soft sponge. Gently wash the fully rigged wing, frequently hosing clean. Copious amounts of clean water will not harm the wing and can be very beneficial in removing sand and grit which may get trapped inside the leading edge pocket usually in the nose or wing tip areas.Ensure the wing is completely dry before de-rigging.

2.5 Ribs

The ribs form the wing shape and hence dictate the whole performance of the wing. They need treating with care, and since they are subject to constant tension both during flight and rigging, tend to lose their shape and flatten out. It is essential that they are reformed at frequent intervals and checked against the template.The best way to reform is to hold the batten against your knee and, whilst applying pressure to bow the batten, slide it side to side over the area you want to bend. Direct point bending will usually result in either a poor shape or a broken batten.

3.0 TRIKE

3.1 General

The Pegasus Quasar2 trike has been designed to permit easy inspection and operators should have no difficulty in assessing problems or recognising damage if visual checks are carried out conscientiously. The trike may be transported fully assembled or folded down providing the pylon is supported to prevent excessive stress being applied to the structure. The trike may also be stored either fully rigged or folded, again providing the pylon is supported and not allowed to rest on the pod fairing.

General care should include:

Washing down the tube work and composite parts with warm water and a light detergent followed by rinsing with fresh water.

Fabric sponged with warm water and a mild detergent and rinsed with fresh water.

The pod and wheel spats washed and polished using commercially obtainable shampoos and polishes.

The cockpit area should have all litter removed.

3.2 Engine

For engine maintenance details see engine manufacturers manual.

3.3 Propeller

The condition and torque settings of the propeller bolts should checked with the frequency recommended in the inspection schedules laid out below.

Torque should be applied by progressively tightening all the bolts to 15 ft lbs in the following sequence :

1 - 4 - 2 - 5 - 3 - 6

Other general maintenance should include replacing any leading edge tape as required by inspection and regular wiping off of the propeller with a damp cloth to remove insect and other foreign body build-up. If left unchecked, both the condition of the tape and particle build-up can significantly reduce propeller efficiency.

3.4 Propeller Pitch Setting

The correct pitch setting for the Arplast propeller is specified in section 2 para 4.

Slacken the bolts clamping the hub around the root of each blade and then slacken the main propeller mounting bolts. Each blade has a datum enscribed into the alloy collar at the root. Aligning this datum with the seam between the propeller hub halves sets the correct pitch.

Alternatively, The pitch gauge supplied with the propeller is laid across the face of the hub so that the attached pitch setting plate rests on the underside of the blade at the distance from the hub centre specified in section 2 para 4. The blade is then twisted until the undersurface leading and trailing edges both rest on the pitch setting plate.

Re-tighten the bolts at the root of each blade to 6 ft lbs and re-tighten the main mounting bolts as described above.

Full throttle static RPM should be 6000 RPM ±100 RPM.

4.0 LUBRICATION

4.1 Trike

a) The rear steering bar, foot throttle, hand throttle and choke lever pivots should be lubricated with machine oil weekly.

b) All other bearings are life sealed and require no additional lubrication.

c) Refer to the engine manufacturers handbook for gearbox lubrication details.

d) The brass bush at the top of the pylon should have a light application of general purpose grease to prevent corrosion against the hangpoint bolt.

4.2 Wing

a) The keel tube roll bracket nylon requires to be sprayed monthly with a commercial silicone spray.

5.0 RECOMMENDED INSPECTION SCHEDULES

Solar Wings strongly recommends that all parts are visually inspected and assessed by an approved Solar Wings inspector and any repairs carried out as outlined in section 12.

5.1 Trike and Wing

Complete strip down and inspection including replacement of appropriate mandatory lifed components: 500 hours.

5.2 Trike

5.2.1 ENGINE

Engine
For inspection schedules refer to the engine manufacturers manual.

Engine mountings
Cracks, bond failure and reduced stiffness: 25 hours.

Engine controls
Cable fraying, adjustment and operating freedom: 25 hours

Engine electrical connections
Tightness and corrosion: 25 hours

Engine airfilters
Clean and re-oil as per Filter manufacturers instructions: Maintenance periods are a function of environment and are therefore cleaned upon inspection or a minimum of: 50 hours.

5.2.2 FUEL SYSTEM

Fuel filters
Replace at: 25 hours.

Fuel lines
Cracks, end fitting security, and joints: 25 hours

Fuel tank including vents
Clean and check vent function: 25 hours

Fuel pump diaphragm
Check for cracks and signs of perishing: 50 hours

Fuel tank
Flush and check for abrasion from mountings: 50 hours

5.2.3 TRANSMISSION

Propeller
Check for leading edge damage, delamination and splits: 25 hours.

Propeller
Check propeller bolts for tightness, and correct pitch: 25 hours

Gearbox bearing
Check for play: 50 hours

Gearbox oil level
10 hours

5.2.4 FRAME

All tube work
Check for damaged or fatigue cracked tubes: 50 hours.

All fixings
Elongation of holes and tube damage: 50 hours

Seat frame and seat belts including hinge plates
Tube cracks and elongation of holes: 25 hours

Seat base bracket
check for damage and welds: 50 hours

Hang point bolt and bush
Grease and check for wear and damage: 10 hours

Undercarriage pickup fittings
Check for wear: 25 hours

5.2.5. CABLES

All cables
Check for broken strands, thimble damage and stretch: 25 hours

5.2.6. STEERING

Front forks
Check for straightness, elongation and cracks: 25 hours

Connecting link
Check for cracks, and rod end security: 25 hours

Steering head bearings
Check for smooth running and lack of play: 25 hours

Rear steering bar pivot
Check for cracks and straightness: 25 hours

5.2.7 WHEELS AND TYRES

Rear Brakes
Check brake shoes and lubricate mechanism: 500 landings or every 6 months.

Tyres
Check for splits, wear, perishing and pressures: 25 hours

Wheel hubs
Check for damage: 25 hours

Wheel bearings
Check for play and grease: 25 hours

5.2.8 BODYWORK

Pod
Check for Splits and general soundness: 50 hours

Spats
Check for splits and general soundness: 50 hours

Engine Cowl
Check for splits and general soundness: 50 hours

Other fairings
Check for general soundness: 50 hours

5.3 Wing

5.3.1. FRAME

Visual check on all exposed parts and those parts accessible through inspection zips
Check tube and fastener condition: 25 hours.

5.3.2 CABLES

Lower
Check for broken strands, thimble damage and stretch: 25 hours.

Upper
Check for broken strands, thimble damage and stretch: 25 hours.

Restraint
Check for broken strands, thimble damage and stretch: 25 hours.

5.3.3 FASTENERS

All fasteners
Check for wear, straightness and signs of fatigue: 25 hours.

5.3.4 TRIM SYSTEM

Check condition of operating cable, both pulleys, and vee bridle. Check trimmer knob friction adjustment. Check glassfibre ribs for splitting especially where the glassfibre joins the aluminium section: 25 hours.

NOTE:These inspections do not obviate the need for the Pre-flight and Post flight inspections outlined in sections 5 and 8.

6.0 RECOMMENDED COMPONENT LIFE

6.1 General

In the main, the safe working life of the structural components of the Pegasus Quasar2 is dictated by the environment in which the aircraft is used and the care taken during day to day operations. Inspection therefore, is an essential tool in deciding the continued use of most components. However,by the nature of their material, construction and position within the structure, certain components have a critical fatigue life and it is mandatory that these components are replaced within the time stated below.

6.2 Wing

Crossbooms	2000 hours
Leading Edges	1000 hours
Control Frame Base Bar	500 hours
Keel	1000 hours
Rigging Wires	500 hours
Roll Bracket	500 hours
Hang bolt	200 hours

6.3 Trike

Pylon	1000 hours
Front Strut and connecting channels	1000 hours
Basetube and Steering Head	1000 hours
Seat Frame	1000 hours
Undercarriage pickup bolts and channels	500 hours
Engine mounting bolts	500 hours