

mainair sports



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DOC REFERENCE TOM - 1-440 DUAL

AIRCRAFT COVERED: Gemini Sprint
Tri-Flyer Sprint
Striker Gemini
Striker Tri-Flyer

Operation and maintenance manual

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The following manufacturers bulletins form part of this manual.

<u>No.</u>	<u>Date Received</u>

SPECIFICATIONS - GEMINI TRIFLYER/SPRINTInvoice No.....
CUSTOMERSPECIFICATIONS - POWER UNIT

Serial No.	
Date of Manufacture	
Aircraft Registration No.	
Engine Model	440 FUJI Robin EC 44 PM
Engine Serial No.	
Reduction Type	Tooth belt
Propeller	62" x 27"
Dry weight	94.5kg - GEMINI - 86kg TRI-FLYER
Fuel Mix	32:1 - run in - 40:1 after 10 hours
* Recommended Max Engine Speed	6900 rpm
ended Max Flight Engine Temps.	EGT 1500°F (815°C) CHT 425°F (218°C)
FUEL CAPACITY AND WEIGHT	4.75 GALS - 15kg.

SPECIFICATIONS - WING

Manufacturer	Southdown Sailwings Ltd.
Model	Sprint
Serial No.	
Area	180 sq ft
Max Suspended Load	290 kg
Weight	48 kg

SPECIFICATIONS - COMBINATION

Dry weight	142.5 kg GEMINI - 134kg TRI-FLYER
Max total all-up weight	338 kg (2 x 90kg occupants 4.75 galls fuel)
Max load factor	4G
Load composition	1 or 2 occupants-max 180kg + fuel
Stall speed at max load	26 kts (30 mph) loss of height 100 ft - TAS
Stall speed at min load	25 kts (29 mph) loss of height 90 ft - TAS
Stall height loss at 30° bank	85 ft
Max nose down at stall	8°
Cruise Speed	35 kts (40 mph) TAS
Never-exceed speed (Vne)	51 kts (58 mph) TAS
Permitted Manoeuvres	non-aerobatic angle of bank not to exceed 60°
Pitch Angle	Nose up/down not to exceed 30° - no whip stalls
Approach Speed	Engine at idle 36 kts (42 mph)
Landing run at max load	Clear 15 Mtr obstacle 150 mts
Take-off run	Clear 15 mtr obstacle 172 mts at max load
Max Wind operating cond.	18 Kts (21 mph)
Max cross wind conditions	8 Kts 90° (10 mph)
Best rate-of-climb speed	34 kts (39 mph)
Power-off rate of descent	680 ft per min
Power-off Ground Distance Covered	5440 ft (still air)
Control bar sense	Push nose up, pull nose down, push bar right Bank left. Push bar left - bank right.

Note all speeds are TAS (indicated air speed)

Note: Recommended maximum engine temperatures and speed can be exceeded for very short periods without immediate damage. However you are strongly recommended not to exceed the limitations at any time. Engine speed (rpm) cylinder head temperature and exhaust gas temperature gauges are all available to enable accurate monitoring. If the aircraft is operated in accordance with the above specifications with a maximum outside air temperature of 15° c, and the fuel/air mix is correctly adjusted, the limits recommended will not be exceeded. Beware of high temperature days and long periods of stationary running.

SPECIFICATIONS - STRIKER GEMINI/TRI-FLYERInvoice No.....
CUSTOMERSPECIFICATIONS - POWER UNIT

Serial No.	
Date of Manufacture	
Aircraft Registration No.	
Engine Model	440 FUJI Robin EC 44 PM
Engine Serial No.	
Reduction Type	Tooth belt
Propellor	62" x 27"
Dry Weight	94.5 kg GEMINI - 86kg TRI-FLYER
Fuel Mix	32:1 - run in - 40:1 after 10 hours
* Recomm- ended { Max Engine Speed	6900 rpm
{ Max Flight Engine Temperature	EGT 1500°F (815°C) CHT 425°F (218°C)
FUEL CAPACITY AND WEIGHT	4.75 GALS - 15KG

SPECIFICATIONS - WING

Manufacturer	Flexiform Skysails Ltd.
Model	Striker
Serial No.	
Area	206 sq ft
Max Suspended Load	300 kg
Weight	50 kg

SPECIFICATIONS - COMBINATION

Dry weight	144.5 kg GEMINI - 136kg TRI-FLYER
Max total all-up weight	338 kg (2 x 90kg occupants 4.75 galls fuel)
Max load factor	4 - G
Load composition	1 or 2 occupants (max 180 kg) + fuel
Stall speed at max load	25.5 kts (30 mph) loss of height 100ft
Stall speed at min load	25 kts (29 mph) loss of height 90 ft
Stall height loss at 30° bank	85 ft
Max nose down stall	8°
Cruise speed	35 kts (40 mph)
Never exceed speed (Vne)	47 kts (54 mph)
Permitted manoeuvres	non-aerobatic angle of bank not to exceed 60°
Pitch angle	Nose up/down not to exceed 30° no whip stalls
Approach speed	Engine at idle 35.5 kts (41 mph)
Landing run at max load	Clear 15 mtr. obstacle 189 mts.
Take - off run at max load	Clear 15 mtr. obstacle 180 mts. at max load
Max wind operating cond.	18 kts (21 mph)
Max cross wind conditions	8 kts (10 mph) at 90°
Best rate-of-climb speed	34 kts (39 mph)
Power-off rate of descent	600 ft per min
Power-off Ground Distance Covered	4860 ft (still air)
Control bar sense	Push nose up, pull nose down. Push bar right bank left. Push bar left - bank right.

Note: Recommended maximum engine temperatures and speed can be exceeded for very short periods without immediate damage. However you are strongly recommended not to exceed the limitations at any time. Engine speed (rpm) cylinder head temperature and exhaust gas temperature gauges are all available to enable accurate monitoring. If the aircraft is operated in accordance with the above specifications with a maximum outside air temperature of 15° c, and the fuel/air mix is correctly adjusted, the limits recommended will not be exceeded. Beware of high temperature days and long periods of stationary running.

8-2-85

SPECIFICATION OF GEMINI/TRIFLYER TRIKES WITH ROTAX ENGINES

The Rotax engine option is available under C.A.A. Type Approval modification number 5.

The specification of the aircraft remains the same except for the following changes:

Engine Model	-	Rotax 447
Engine Serial	-	
Reduction Type	-	Integral Gearbox
Propeller	-	62" x 37" LH
Dry weight	-	86.5 kg Gemini - 78 kg Triflyer
Fuel mix	-	40:1 run in; 50:1 after run in
Recommended max engine temp's	-	EGT 1500°F (815°C) CHT 425°F (218°C)
Recommended max engine speed	-	6900 rpm

Please refer to Rotax engine manual for maintenance of engine and gearbox.

The gear oil drain plug is now fitted with a magnetic collector. This should be inspected, cleaned and details of any deposit recorded in the manual.

6/9/83

Civil Aviation Authority

Noise Type Certificate

Aircraft Type Certificate Number: 5M

Name and Type Designation
of Aircraft: GEMINI - FLASH, SPRINT, STRIKER 2 SEAT MICROLIGHTS

Manufacturer: MAJNAIR SPORTS LTD

It is hereby certified that the type of aircraft named in this certificate is acceptable for United Kingdom noise certification. The basis for certification is stated below. Approved variants and their power plants, their maximum noise certificated weights and the corresponding noise figures are as stated on the reverse.

ECAR SECTION N ISSUE 3 CHAPTER N3-5.2.3


for the Civil Aviation Authority

21ST JUNE, 1984
original Date of Issue

21ST JUNE, 1984
Date of this Issue No 1

Civil Aviation Authority

Noise Type Certificate

Aircraft Type Certificate Number: M2

Name and Type Designation
of Aircraft: TRIFLYER SPRINT AND TRIFLYER STRIKER 2 SEAT MICROLIGHTS

Manufacturer: MAJNAIR SPORTS LTD

It is hereby certified that the type of aircraft named in this certificate is acceptable for United Kingdom noise certification. The basis for certification is stated below. Approved variants and their power plants, their maximum noise certificated weights and the corresponding noise figures are as stated on the reverse.

ECAR SECTION N ISSUE 3 CHAPTER N3-5.2.3


for the Civil Aviation Authority

30th April, 1984
original Date of Issue

30th April, 1984
Date of this Issue No 1

6/9/83

Approved Variants	Date of Approval	Power Plant	Maximum Noise Certified Weight	Noise Figures	
				SEL IN dBA	Flyover
Mainair Triflyer Sprint	30.4.84	Fuji Robin EC44PM 440 cc engine Mainair Sports 440 62" dia 27" pitch propeller 2.67 reduction gear Rota Flow muffler	-	83.4	
Mainair Triflyer Striker	30.4.84	Fuji Robin EC44PM 440 cc engine Mainair Sports 440 62" dia. 27" pitch propeller 2.67 reduction gear Rota Flow 440 Muffler	-	82.2	

Approved Variants	Date of Approval	Power Plant	Maximum Noise Certified Weight	Noise Figures	
				SEL IN dBA	Flyover
MAINAIR GEMINI FLASH	21.6.84	FUJI ROBIN EC44PM 440 cc ENGINE MAINAIR SPORTS ROUND TIP 62" DIA. 30" PITCH PROPELLER ROTA FLOW MUFFLER	-	82.4	
MAINAIR GEMINI SPRINT	21.6.84	FUJI ROBIN EC44PM 440 cc ENGINE MAINAIR SPORTS ROUND TIP 62" DIA. 30" PITCH PROPELLER ROTA FLOW MUFFLER	-	82.5	
MAINAIR GEMINI STRIKER	21.6.84	FUJI ROBIN EC44PM 440 cc ENGINE MAINAIR SPORTS ROUND TIP 62" DIA. 30" PITCH PROPELLER ROTA FLOW MUFFLER	-	83.4	

**United Kingdom
Civil Aviation Authority**

Noise Type Certificate


Aircraft Type Certificate Number: 12M

Name and Type Designation of Aircraft: Gemini - Flash, Sprint 2 Seater Microlight

Manufacturer: Mainair Sports Ltd.

It is hereby certified that the type of aircraft named in this certificate is acceptable for United Kingdom noise certification. The basis for certification is stated below. Approved variants and their power plants, their maximum noise certificated weights and the corresponding noise figures are as stated on the reverse.

BCAR Section N Issue 3 Chapter N3-5, 2, 3.

 for the Civil Aviation Authority
20th March 1985 original Date of Issue

20th March 1985 Date of this Issue No. 1



Approved Variants	Date of Approval	Power Plant	Maximum Noise Certificated Weight		Noise Figures SEL in dBA
			Take-off	Landing	
Mainair Gemini Rotax	20-3-85	Rotax 447 Fan cooled inverted. Newton 62" dia. 38" Pitch Propeller			80.3
		Rotax Underslung 2x90° Muffler 2.58:1 Reduction Gear			
Mainair Gemini Rotax	20-3-85	Rotax 447 Fan cooled inverted. Mainair 62" dia. 37" Pitch Propeller			80.9
		Rotax Underslung 2x90° Muffler 2.58:1 Reduction Gear			
Mainair Gemini Flash	20-3-85	Fuji Robin EC44PM inverted Mainair 62" dia. 30" Pitch Propeller			78.2
		Mainair Rotaflow Muffler 2.66:1 Reduction Gear			
Mainair Gemini Sprint	20-3-85	Fuji Robin EC44PM inverted Mainair 62" dia. 30" Pitch Propeller			78.8
		Mainair Rotaflow Muffler 2.66:1 Reduction Gear			

PRE-FLIGHT CHECK LIST

Models: GEMINI SPRINT - TRI-FLYER SPRINT

WING - GROUND RIGGING CHECK

- 1) Control frame corner wires LH
- 2) Sidewires/LE - open pocket - top rigging
- 3) LH leading edge - leech lines - tip sail fixing
- 4) LH battens - keel wires
- 5) Keel sail fixing - fin assembly
- 6) Cross tube tension attachment - pull cord
- 7) RH battens - leech lines - RH tips - sail fixing
- 8) RH leading edge - open pocket - side & top rigging
- 9) Side wires & RH control frame corner
- 10) RH leading edge front section
- 11) Nose wires and pin
- 12) Sight for symetry - nose batten
- 13) LH leading edge front section
- 14) Control frame Apex

RIG WING TO TRIKETRIKE

- 1) Trike connection - ring fitted - fore aft location
- 2) Back up loop
- 3) LH seat lock
- 4) Exhaust check
- 5) LH axle & wheel assy.
- 6) Belt fit & reduction drive
- 7) Prop fixing & blade check
- 8) RH axle & wheel assy.
- 9) Carb attachment - plug caps tight
- 10) Fuel line & connections - clean filters
- 11) Tanks secure & full - breather clear
- 12) RH seat lock
- 13) Rear seat fitting tube
- 14) Cockpit, instruments - required maps
- 15) Front strut
- 16) Nose wheel
- 17) Check non-wire locked nuts.

PRIOR TO FLIGHT

- 1) Full control movement
- 2) Ignition off
- 3) Fuel primed - choke as required
- 4) Seat belts fitted
- 5) Helmets fixed
- 6) No loose items
- 7) Intercom clear
- 8) Prop clear
- 9) Start engine - run for minimum of 5 minutes or until CHT reads 250°F. MIN.
- 10) Check clear prior to launch

NOTE:- We suggest you cut out this check list, glue it to a card and cover it in clear film (available from stationers). It can then be kept with the aircraft.

PRE-FLIGHT CHECK LIST

Models: STRIKER GEMINI. STRIKER TRI-FLYER

WING - GROUND RIGGING CHECK.

- 1) Control Frame wires LH
- 2) Side wires and fastenings, top rigging
- 3) LH leading edge, tip sail fixing
- 4) LH battens - keel wires
- 5) Keel sail fixing - centre batten straps
- 6) Leech lines, top keel wire
- 7) RH battens - RH sail fixing
- 8) RH L/E side wires & fastenings, top rigging
- 9) Control frame wires RH
- 10) Nose plate and wires + inboard L/E sections
- 11) Bowsprit slider retaining pin, sight for symmetry
- 12) Keel - Apex block retaining pin

RIG WING TO TRIKE

TRIKE

- 1) Trike connection - ring fitted - fore aft location
- 2) Back up loop
- 3) LH seat Lock
- 4) Exhaust check
- 5) LH axle & wheel assy.
- 6) Belt fix & reduction drive
- 7) Prop fixing and blade check
- 8) RH axle & wheel assy.
- 9) Carb attachment - plug caps tight
- 10) Fuel lines and connections - clean filters
- 11) Tanks secure and full, breather clear
- 12) RH seat lock
- 13) Rear seat fitting tube
- 14) Cockpit, instruments - required maps
- 15) Front strut
- 16) Nose wheel
- 17) Check non-wire locked nuts.

PRIOR TO FLIGHT

- 1) Full control movement
- 2) Ignition off
- 3) Fuel primed - choke as required
- 4) Seat belts fitted
- 5) Helmets fixed
- 6) No loose items
- 7) Intercom clear
- 8) Prop clear
- 9) Start engine - run for minimum of 5 minutes or until CHT reads 250^oF MIN.
- 10) Check clear prior to launch

NOTE:- We suggest you cut out this check list, glue it to a card and cover it in clear film (available from stationers). It can then be kept with the aircraft.

AMENDMENT SHEET

Page 8.

Date of issue - 6th September 1983

Date	Amendment details
27-11-84	NEW PAGE 26 - DWG 99-00-300 ISSUE C
27-4-85	NEW PAGE 5A - NOISE CERTIFICATE FOR INVERTED FUJI + ROTAX + FLASH - No 12M
8-5-85	NEW PAGE 27A - WIRING BOX DETAILS - DWG 99-44-S1
9-5-85	NEW PAGE 3A - ROTAX 447
29-6-85	PAGE 13 - DWG 99-44-285 - FLASH CONNECTION ADDED
8-7-85	WIRING BOX DWG 99-44-S1 - PAGE 27 AMENDED TO ISSUE A - ROTAX
9-7-85	PAGE 28 - SIDE VIEW TO ISSUE 'B' - ROTAX GEARBOX ADDED

DISCONNECT FRONT STRUT,
AND FOLD TRIKE DOWN

Top Engine Mounts
Main bolts tight
Rubber mount bolts tight
Nut caps fitted

Keel Vertical Strut Junction
Bolts tight and wired
Pulleys free
End caps fitted
Knot tight and heat shrunk
Nut caps fitted

Wheels Front
Fully greased
Bolts tight
Free running
Inflated correctly
Nut caps fitted

Airframe
Check keel/strut alignment

Lower Engine Mounts
Main bolts tight
Rubber mount bolt tight
Nut caps fitted

Keel/Axles
Bolts tight
End caps fitted
Nut caps fitted
Axle side struts
Bar brackets tight
Bolts tight
Axle tie wire O.K.

Front Fork
Steering head tight
Main bolt tight
Pivot greased
Wadguard secured
Brake bolt tight
Rubbers fitted
Accelerator Cable fixed & wired
Spring fastened correctly
Nut caps

Top Assembly
Bolts all tight
Pivot channels O.K.
Lock ring in top bolt
Rear engine rigging

Engine Rigging
Bolts tight on thimble eyes
Nut caps

Side Struts
Bolts tight
Rubber suspension greased
Bar brackets correct top & bottom
Main channel bolt tight
Limitation wires fitted

Pull Start
Knot tight
Pulley free running
Bolt tight
Nut caps fitted

Engine Trike
Fit front strut
Check bolt fit on front strut
Check rings & wing nuts
Check stickers - MAS & flag
Throttle placard
Tank Placard
Main Placard
Name Plate
Test Run

Engine Electrics
Parts located & placed correctly
Fixing bolts tight
Cable strapped up and tie ends cut
Cables heat shrunk
Cable loops for folding O.K.
Spark plug caps retained

Wheels - rear
Both greased
Both retained correctly (split pin open)
Inflated correctly
Free running

Seat Frame
BOLTS TIGHT
BOLTS TIGHT at keel
Bolts tight at channel
Tangs fitted on Remstraps
Folding joint bolts tight & wired
Spacer fitted at joint
Nut caps fitted
SEAT WOOD

Additional Parts
Engine manual - check engine type
Instruction book and plastic folder
Serial number
Constructors initial
Tool kit with:
plug spanner and rod,
screwdriver and spanner,
Prop bag - fit to check length
Invoice No. on plans and recorded
Transit tie and strut tie

Fuel Line
Smooth runs - no kinks in tube
Ends well fitted
Filter fitted correctly
Breather fitted
Tank strapped tight - CHECK FI
Gauge fitted
Quick-release elastic

Reduction Drive
Pulley alignment checked
Belt fit to teeth checked
Main bolts and front bolts tight.
Drive pin in main pulley or bolts wired
Belt correct fit
Belt tension correct
Bearing housing bolt all tight
Check top and lower nuts
Nut caps fitted
Bearing unit greased
Spark Plugs fitted and elastic

SEAT WOOD
Bolts tight
Rubbers fitted
Nut caps fitted
End plugs fitted

Instrument
Winter A.S.I.
Thommen Altimeter
Red line on engine ints.

Exhaust
Safety Tie wire
Nuts all locked & lock washers fitted
Rubber mounts tight
Rubber mounts not distorted
Prop clearance O.K.

Cockpit
Nose Strut fitted
Rear supports
Dash mounting
Nut caps fitted
Map pocket fitted
Windscreen fitted
Stripe and name
Fabric Rear
Tank Inlet

SEAT WOOD
Bolts tight
Rubbers fitted
Nut caps fitted
End plugs fitted

Checked by.....
Agent check.....

GENERAL INFORMATION

1. Operating limitations
 This aircraft must be operated under visual flight rules (VFR) at all times. Minimum equipment to operate under VFR is as follows:
 Altimeter - recommend Thommen type 200-26
 Air Speed Indicator - recommend Winter - 0-65 MPH - Venturi type
 Appropriate maps - air charts for operational area
 See drawing 99-44-1 for instrument installation. See page 11
2. Cross-wind conditions - take-off and landing
 Cross-winds to 15 knots (17 mph) have been demonstrated but we recommend an 8 knot (10 mph) maximum. No special techniques are required but be ready to correct steering direction on touchdown, and to prevent the upwind wing from rising.
3. Power-off landings
 Maintain minimum air speed of 36 knots (42 MPH). Ensure adequate obstacle clearance. Beware of landing short and practise techniques under controlled conditions.
4. In-flight re-start
 We do not recommend switching off the engine during flight unless practising under controlled conditions. If it is necessary to re-start in the air, set approximately 20% throttle and do not use choke if engine is warm. Control bar position should be neutral.
5. Load Distribution and C.G.
 Maximum total all-up weight must not be exceeded. Single or dual seat occupancy will affect the control bar position slightly. Please refer to drawing No. 99-44-285 Page 13.
6. Flight Limitation Pacards
 The placard which details flight limitations is on the main keel tube immediately behind the front fork.
 The throttle direction placard is on the hand throttle mounting tube.
 The fuel tank placard is on the side strut immediately adjacent to the fuel tank filler neck.
 The registration plate is fastened to the engine top mounting plate.
 The serial number is stamped on the end of the main seat channel
7. Fuel/Oil mix
 Tri-flyer trikes use 2-stroke oil mix at the following ratio:
 Whilst running in (see page 21) 30:1 and after that 40:1
 The petrol should be of 2 star grade and we do not recommend the use of synthetic oils or special racing oils. A good quality 2-stroke oil available from most garages is ideal. Shell, Mobile and Texaco 2-stroke oils are suitable for this purpose.
8. Rubber Suspension Bushes
 The telescopic side struts contain a rubber bush which acts in compression. These are lubricated at the factory with Rocol MX33 grease. They should be checked and re-lubricated every 50 hours. See page 24.
9. Propeller Bearing Hub
 Use standard wheel bearing grease and single-shot lubricate every 10 hours. See page 24
10. Single Seat Operation Ensure rear seat belt buckles are all firmly connected together to prevent them reaching propeller. Adjust seat strap until position is comfortable.

GENERAL INFORMATION CONTINUED

10. Single Seat Operation Ensure rear seat belt buckles are all firmly connected together to prevent them reaching propellor. Adjust seat strap until position is comfortable. Pilots who weigh under 70 kg should add sand ballast to the rear seat belt ballast bag to compensate.

11. Fuel Tank

4.75 gallon plastic - Tri-Flyer

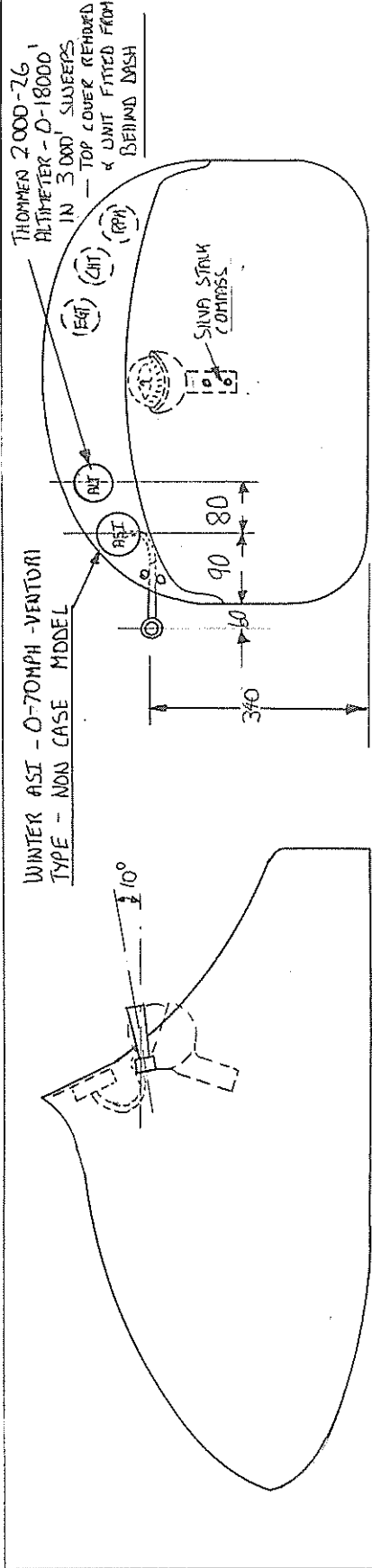
This tank fits behind the seat. To install, position the tank on the keel tube and locate in the metal strap which is fixed to the vertical strut. The tank strap fits underneath the keel, around the vertical strut and is pulled tight across the front of the tank so as to press the tank firmly onto the keel and into the bracket. Fit the hose connector and retaining elastic and prime fuel checking for leaks. Ensure the fuel line is not kinked or trapped and position the breather tube in the clip on the engine casing.

ENSURE TAP IS OPEN.

GEMINI (Cockpit)

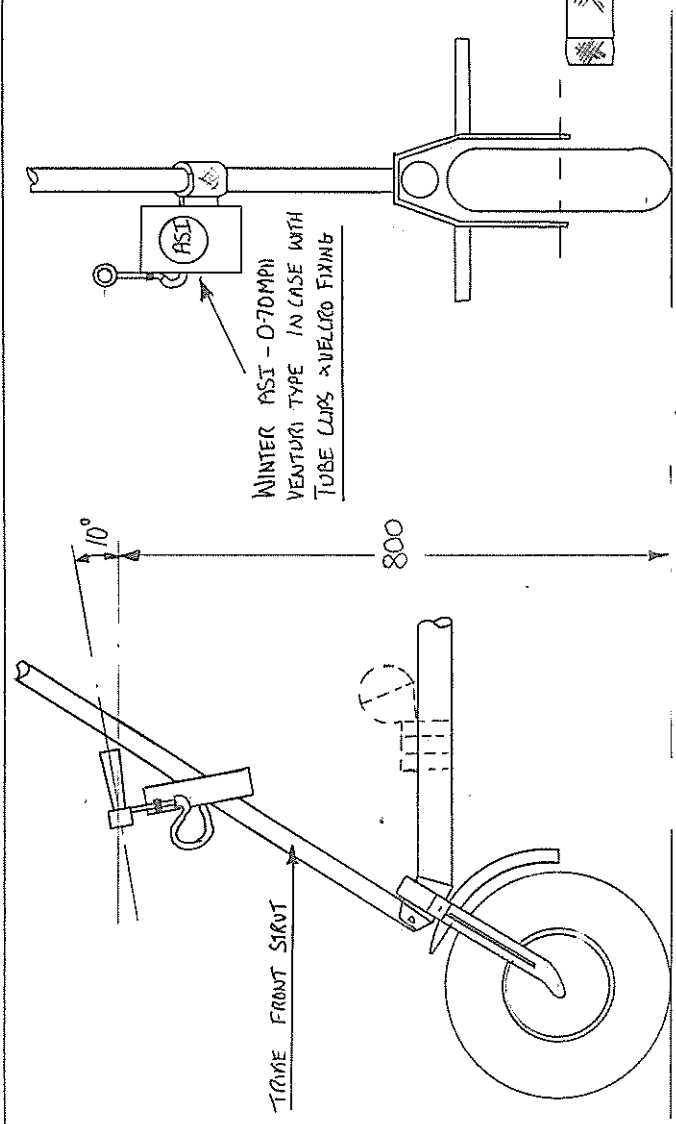
The sequence is exactly the same save that the tank has to be fitted from above. The tank seat support straps are slipped off the retaining tube at the main seat channel. This allows the rear seat to be slid down the seat frame giving good access. The fabric cockpit has to be fitted over the filler neck and it may help to remove the gauge whilst doing this. After fitting and checking, slip the seat loops back up between the channel and seat frame back and locate them on the retaining tube.

DRAWING NO	99.44-1
TITLE	INSTRUMENT LAYOUT - 440 DUALS
DATE	15-1-84
REF	DATE
	AMENDMENT



GEMINI INSTRUMENT LAYOUT ①

NON MANDATORY INSTRUMENTS
 COMPASS - SILVA TYPE PN - NOTE - IF FITTED DEVIATION MUST BE ASCERTAINED & CORRECTION CHART FITTED
ENGINE INSTRUMENTS
 - BY WESTAC - 2 1/4" STANDARD RANGE - TACHO-EGT-CHT IF FITTED BY MAS MUST HAVE RED LINE ON LHS FOR MAXIMUMS.



TRI-FLYER - ASI POSITION ②

DRAWING No 99-44-285

DATE 24-11-71

TIME TRIKE CoG

AMENDMENTS

REV A BAR POSITION DIMENSIONS DELETED

REV B ITEM 3 CHANGED FROM 24 JUNE 71 TO FLASH WIP STRAPLET DELETED

REV C

REV D

REV E

REV F

REV G

REV H

REV I

REV J

REV K

REV L

REV M

REV N

REV O

REV P

REV Q

REV R

REV S

REV T

REV U

REV V

REV W

REV X

REV Y

REV Z

REV AA

REV AB

REV AC

REV AD

REV AE

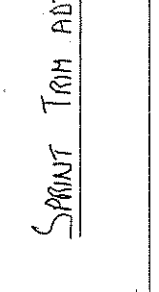
REV AF

REV AG

TRIM ADJUSTMENT
 MOVE SLIDER BOX ONE PITCH AT A TIME UNTIL HANDS OFF SPEED CORRESPONDS TO DATA IN MANUAL

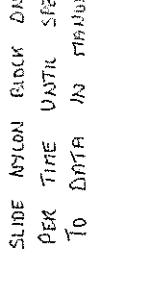


SPRINT TRIM ADJUSTMENT



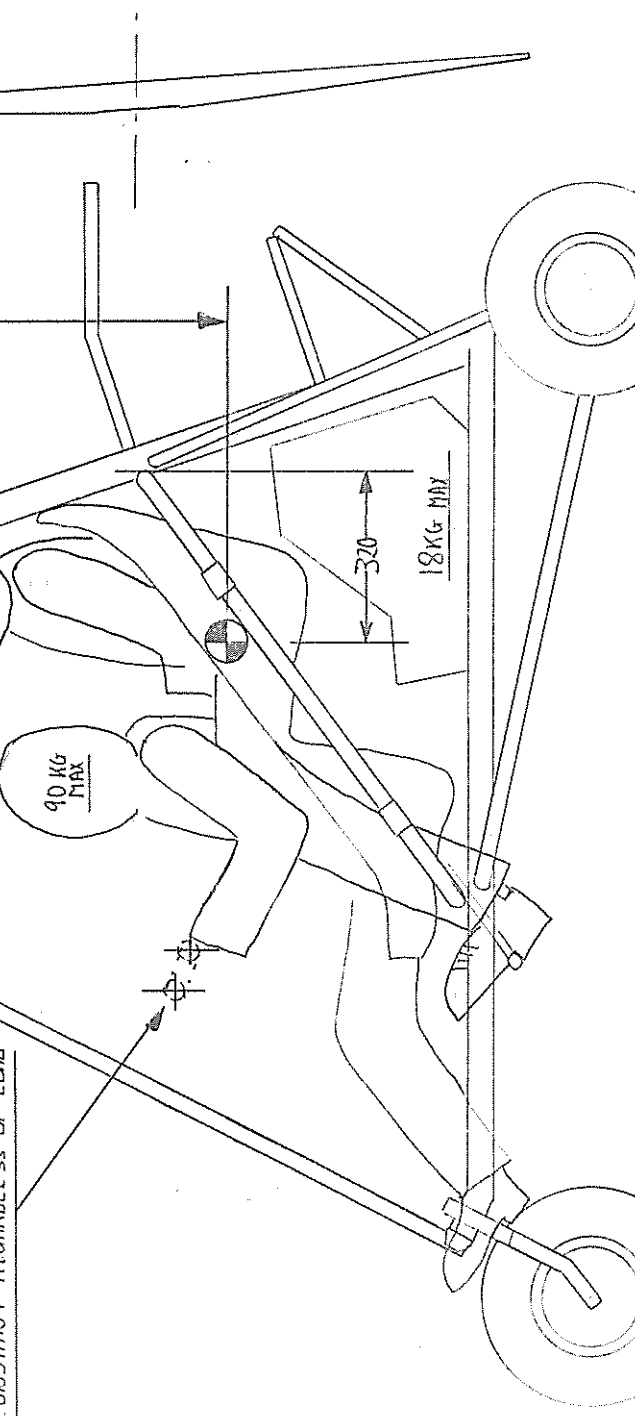
TRIM ADJUSTMENT
 REMOVE HEX SOCKET BOLT AND SLIDE NYLON BLOCK ONE PITCH PER TIME UNTIL SPEED CORRESPONDS TO DATA IN MANUAL

FLASH WING TRIM ADJUSTMENT



C.G. OF GEMINI TRI-FLYER TRIKE UNIT AT MAX LOAD

CONTROL BAR MOVES ACCORDING TO TRIM & LOAD. IT IS SELF COMPENSATING - MAX LOAD DECREASES TRIKE HANGING ANGLE BUT ALSO DECREASES WING A OF A. MINIMUM LOAD INCREASES TRIKE HANGING ANGLE BUT ALSO INCREASES WING A OF A - RESULT IS THAT CONTROL BAR POSITION IN RELATION TO FRONT TRIKE STRUT IS FAIRLY CONSTANT REGARDLESS OF LOAD



1

OPERATION PROCEDURE

AIR LAW

All microlight aircraft must operate within current air law. All pilots must familiarise themselves with air law, particularly with C.A.P. 85. Much of the U.K. is subject to flying limits, and there are many and varied air lanes and special areas around airports and similar installations. You should purchase a current air space map and familiarise yourself with the limits shown. Failure to comply with certain restrictions may result in a heavy fine and confiscation of the aircraft. Mainair Sports stock many useful publications and air maps.

TRANSPORT

Trike. We recommend that the Triflyer be trailered to and from the flying field. Although the trike unit can be folded or lifted onto a roof rack, it's quite hard work and the ease and simplicity of a 'T' trailer is very convenient. Whichever way you transport your trike, make sure it is firmly fastened and does not sway around. Tie it at each axle leg and at the front wheel fork or keel. It is necessary to fasten a tie down rope from one axle to the propeller hub and back down to the other axle. This will hold the engine assembly firmly and stop undue wear and movement during transportation. "Special transit ties are available from MAS.

Glider Wing. The total convenience of a folded wing is amazing. It folds to such a neat package that one can lose sight of the fact that it is a piece of high technology which needs a lot of care. You should follow the manufacturer's rigging instruction carefully and pad and protect vulnerable areas with foam carpet padding. The wing should be fully supported and we recommend a pair of single bar roof-racks spread as far as the vehicle roof gutter will allow. On most cars this will still leave a considerable length of glider unsupported over the bonnet, and a front support is essential. This can be a simple wooden prop locating on the bumper bar or a custom-made support. It makes no difference, as long as the glider is supported and it does not bounce and sway around during transport. Each rack should be well padded where the glider rests, and although you should tie firmly, be careful not to over-tighten and damage the wing. Tie the glider and trike with pieces of rope. Elastic hook bungees are very convenient, but not always safe.

OPERATING AREAS

Trike microlights are aircraft and should be operated as such. Stay away from populated areas which will be restricted by buildings, trees, power lines etc. Fly from airfields and open places, and if you have to consider whether a field is long enough to take-off in, it probably isn't. Take-off runs vary with the trike model and conditions, the air density of the day, and the pilot's skill and weight. Until you are totally familiar regarding the size of field needed, fly from recognised microlight airfields or huge open areas. Be ready for the engine to fail 50ft up and make sure you have lots of room ahead to make a safe landing. Treat your field and the population around it with consideration. Having gained all your initial experience elsewhere at a recognised site, launch from your field and then fly away. The quickest way to annoy people living near a used field is to continually fly in and out subjecting them to, what is in reality, a pretty aggravating noise, especially at week-ends. If they hear you just once or twice during the whole day they are most unlikely to complain and you have a chance of keeping your field. Obey air law at all times and do not fly beyond your limits. Weather knowledge has to be learned. There are many useful publications on micro meteorology which should be studied.

RIGGING

Wing - Unload your equipment and start by rigging your glider. Select a clean, smooth area and carefully rig the glider in accordance with the manufacturer's instructions. Obviously, it must be pointing into wind, and it is best to leave it lying flat on the ground rather than with the control frame rigged. Resting on the nose with the control frame rigged can make even the slightest breeze put large loads on top of the sail which may distort and damage the battens. Naturally, you will need to fully rig the glider in order to carry out a pre-flight check, and this should be a three-stage affair. The first full check is carried out on the wing itself in accordance with the manufacturer's advice. Check all nuts and bolts, all sail fittings and batten connections. Check all wire terminations, feel and look at all the tubes for damage. Most manufacturers have a sequence of pre-flight checking which is suited to their particular model. Enclosed with this manual is a general check list which can also be used. Having satisfied yourself that the glider is in perfect order, turn your attention to the trike unit.

TRIKE RIGGING

Single-Seater - If transported with the axles folded, open them out supporting the trike so that it does not fall over. Pull both axles back, locate and tension the rear catch; secure with the bolt, wing nut and split ring. (OR AXLE STRUTS) Standing at the front, untie the retainer you have used between the vertical strut and keel during transportation and lift up the vertical strut, pushing the seat frame firmly down. Slide in place the front strut and fit both bolts and rings to hold it in place.

Dual-Seater - The dual-seater trike must be trailered and we do not recommend folding the axles in except for storage. During transport the 1" tube at the top of the vertical strut should be fixed into the fork and the keel to carry the main load, or for Gemini units the vertical strut is strapped down to the keel with the location plug fitted into the cockpit front strut. For assembly, unfasten this and lift up the vertical strut, pushing the seat frame firmly down. Fit the front strut and fix into place with the bolts and rings. Pin the telescopic seat struts with the 'R' clips.

General - Although the front strut will have to be removed for attaching the trike to the glider, we recommend that the trike is thoroughly warmed up and run for five or ten minutes before flight. The last person who ran a trike without locking the vertical strut in place needed forty stitches in his head from contact with a propeller as the trike folded down during the running! The accident was not with a Triflyer, but the potential is there.

Locking Nuts - Major critical nuts are wire locked but you must always check all lock nuts to ensure they are not coming loose.

FUEL

After rigging the trike, fill up with the correct grade of fuel; the fuel is the life blood of the trike; treat it with respect and never fill up using dirty funnels or tubes. Do not put the petrol cap or filler cap on the floor, as this can pick up dirt, and watch that dust does not fall into the fuel tank. We recommend that the fuel is filtered, both when you fill up your mobile container, and also as you pour it into the trike tank. A tiny particle of dirt can clog a jet and cause a serious accident. Observe strict fire precautions and do not allow anyone to smoke. Be polite at all times, but be as impolite to smoking spectators as you need to be to prevent a fire hazard. Fully inspect all fuel lines and periodically replace the fuel filter. On most models there is also a filter attached inside the fuel tank, and this, too, may need cleaning. Wipe down all fuel spills and fasten all containers tightly as soon as you have used them. Remove all spare fuel containers away from the immediate area and away from spectators.

FUEL TAP This is provided for emergency use only. The quick release fuel connectors are self sealing. Be careful not to take off with the fuel tap closed.

CONNECTING TRIKE TO GLIDER

Rig the glider, nose into wind and standing on control frame. If the wind is more than 5 m.p.h. or is gusting, have a helper hold the glider level to reduce negative loads on the sail. Wheel up the trike unit, rolling the front wheel over the glider base bar. Connect the trike bracket and secure the bolts and nuts with the retaining rings. Turn the propeller horizontal and lift up the glider and vertical strut. Pushing in the control frame will push the seat frame into position and it helps to have a couple of ties to fasten the control frame back to the seat frame to stop the wing from swinging about. Fit the front strut in place, fitting all retaining rings.

Now, carry out the third part of the pre-flight checking the integrity of the whole combination.

STARTING UP

A trike is a lethal machine. A spinning propeller can be all but invisible and there have been countless accidents; don't think that it can't happen to you! Locate the front wheel against something immovable, such as a wall, being aware that as soon as the engine starts there is propulsion and the trike will want to move. Clear all spectators away, particularly away from the area which would be affected by a fractured propeller. In practise, this means that everyone should be in front of the trike, but well clear at each side. Select a member of your crew to keep people away - as they tend to drift closer and you may be too busy to notice them. Check to make sure there is nothing that could be sucked into the propeller, such as seat belts, scarves, cleaning cloths, maps, clothing, etc., etc. Switch on the fuel and seat yourself in the trike. Open the hand throttle about $\frac{1}{2}$ and select around half choke. These amounts will vary with the machine and you will need to experiment a little. **BE AWARE OF THE DANGER OF STARTING UP WITH THE HAND THROTTLE OPEN TOO FAR.**

Switch on the ignition, calling loudly: "Switches on." Get hold of the pull start or electric ignition switch, and before turning the engine at all, look around and shout: "Clear prop." Do not feel embarrassed or self-conscious, you are starting an aeroplane and it's a serious business. Calling these warnings should be a habit. If all is clear, start up. Continuously check for drifting spectators and run the engine until it is warm and runs smoothly without choke. If the engine does not start after a few pulls, it's likely to be flooded and it will be necessary to remove the plugs, clean and dry them, and start again.

Two-strokes are notorious for not starting just when you have a large crowd of expectant admirers. Running the engine upside-down does not help plug fouling problems,* but most starting difficulties can be overcome by careful maintenance. Fuel left in the carburettor can evaporate into the cylinder, leaving two-stroke oil behind and this can be prevented by draining the carburettor or always rotating the prop to close off the inlet port when the unit is left for any time. Early on in the engine's life, it can be expedient to remove the plugs for cleaning immediately before starting up, but once the engine is warm starting problems should disappear, if they do not, then look at other things and refer to the engine manual.

* Certain models only.

LAUNCHING

Before taking off make sure that no other aircraft will be obstructed as you launch. Look carefully for aircraft on finals and follow any circuit procedures operating at the time. If operating from an airfield familiarize yourself with airfield practise.

FLYING

Trike flying is pure flying. Never before has there been such a simple-to-fly craft which is so efficient. Its simplicity can be deceptive, and just as you are sitting back enjoying yourself, things can go wrong. Engine failure is the main problem and in general there are two main reasons: fuel or ignition. Silly things can happen: the plug cap can vibrate off. Serious things can happen: the fuel line may wear through on a sharp edge covering a hot engine with petrol which may ignite, be sucked in and thrown out by the propeller setting fire to your fabric wing.

Frequent inspection and maintenance is the only path to enjoyable flying. Always fly in easy reach of landing fields, and beware of the temptation to show off in front of friends and spectators. So many good and experienced pilots have been killed doing just that. Flown sensibly, for fun, and with care, your trike will give you many hours of pleasurable flying.

TRI-FLYER OPERATION

Operation of your trike is obviously your own total responsibility. Many people have been maimed for life and a lot have died as a result of flying Rogello type and microlight aircraft under power. No person should ever take anyone for a flight in a Tri-flyer unless he is a qualified and capable instructor, operating under controlled conditions. A full knowledge of hang-glider behaviour, air law, aircraft limitations and meteorology is necessary for operation of any trike and glider combination. No Tri-flyer trike should ever be connected to a glider wing unless it has been ascertained that the wing is suitable for this purpose. Two-seater trike units must only be operated with specifically designed two-seater wings.

RUNNING INWARNING NOTICE ON FUJI ROBIN ENGINES

Neither the original engine manufacturer or the main distributor will offer any kind of guarantee for the Fuji Robin engines. It is a condition of sale that no liability will be accepted for any failure or damage whatsoever caused at any time after delivery of the engines. Even if the engine blows up within ten minutes of running, since we cannot get the manufacturer to accept responsibility, we have no choice but to pass the full and total responsibility to you, the customer. The Robin engine is a snowmobile unit proved to be very reliable in its design mode. It is being used beyond these design limitations, and even though hundreds of Robins are operating successfully, we do not claim it as an aircraft engine; we do not claim it will run safely for ever; and we want you to be fully aware that it has the potential for letting you down at any time.

All engines need running in properly, particularly engines used on aircraft. Correct running in will lead to greater safety and longer engine life. The engine manufacturers recommend that you use a 30:1 2-stroke fuel mix for the first ten hours and after that 40:1. Avoid full-throttle operation for long periods, especially during the first ten hours. We suggest that you static run the engine for at least five to six hours prior to flight. This period will help running in and bring small problems to light. During running in, do not hold the engine at full revs all the time, but increase and decrease the throttle setting, holding it for thirty seconds or so. Generally avoid working the unit too hard, but some full-throttle operation will be necessary to break down the oil interface between the piston rings and cylinder walls. Continuously monitor the engine temperature and spark plug conditions: too weak a mixture can lead to burned plugs, overheating and engine seizure; whilst too rich a mixture can lead to the same result. Please refer to the engine manual for further information.

GENERAL MAINTENANCE

WE RECOMMEND THAT REPAIRS OR REPLACEMENT OF PRIMARY AND SECONDARY COMPONENTS IS CARRIED OUT AT AN APPROVED MICROLIGHT FACILITY.

The essence of enjoyable triking is maintenance. Launching and landing in fields and open spaces, which are often bumpy and rough, subject both your trike and glider to the most appalling loads, and it is inevitable that things will go wrong. Vibration caused by the 2-stroke engine can fracture components and vigilant inspection is essential. Every flight should be preceded by a full pre-flight check and any noticeable failures or potential failures should be rectified before flight.

It is essential to grease all three wheels and to keep the tyres correctly inflated. The control cables should be graphited occasionally, but removing all accumulated dust from them is essential. As they operate, they wear out and this dust will one day jam them unless they are kept clean. A frequent strip down to inspect the nipples and joints is good practise.

You must pay particular attention to the exhaust system and its mountings. Frequently inspect for stress-induced fractures and have these repaired as soon as they become evident. Carefully check the rubber mountings and replace any which show signs of fatigue.

Inspect all rubber engine mountings and the whole engine mounting assembly on a daily basis. Get used to frequently going over the whole trike checking cables for stretch and elongation, aluminium plates and channels for worn holes and loose fitting bolts, and the general integrity of the trike structure itself. Also keep an eye on such obvious things as the seat and harness straps.

Ensure that the fuel tank is strapped tightly in place at all times, and inspect to ensure that no chaffing is taking place. Inspect and frequently clean out or replace the fuel line filter, and in addition, wash out the air filters from time to time. Ensure that all cable runs are straight and free from damage and carefully inspect the electrical ignition system.

Remember, preventative maintenance is the only way to trouble-free and pleasurable trike flying. Please refer to maintenance schedules.

PROPELLER CARE

Wooden propellers need careful handling if they are to perform well for you. Avoid using your trike on dusty, stoney ground, or anywhere where abrasive materials are sucked through the prop. The leading edges of the propeller can be protected with high-impact helicopter rotor tape. If this eventually shows signs of looseness, it should be replaced.

It has been proved that wooden propellers go out of balance with time. Moisture absorption is the problem, and it can be reduced by thoughtful handling. Always store the trike unit with the blade in the horizontal position and store the unit in a dry, warm place.

Maintain a high-quality varnish finish and frequently check and rebalance the propeller, if required.

There are many publications and articles available on propeller maintenance; you are advised to locate and read them.

FUEL SYSTEM - see drawing No. 99-00-300 - page 26

ELECTRICAL SYSTEM - see drawing No. 99-44-50 - page 27

SPARE PARTS ORDERING - SEE DRAWINGS 99-44-280 AND 281 - ORDER BY DRAWING NO AND ITEM NO. - GIVE FULL PART DESCRIPTION AND TRIME SERIAL NO.

MAINTENANCE AND REPAIRS

Small Repairs

Small repairs may be necessary from time to time. These include such items as repair welding to the exhaust system, replacement of worn elastic retainers and similar small jobs.

Only factory approved components should be used as replacement parts, and failure to do this may invalidate the permit to fly.

The propeller will need constant attention to maintain its performance, and impact damage can be repaired by filling in small areas with proprietary-wood fillers (plastic wood). More serious damage must be repaired by a qualified person. Please see page 22.

Care and Cleaning

Microlights operate from fields, beaches etc. and are subject to contamination from salt and water on beaches and mud and manure etc. on fields. We recommend that your machine is cleaned thoroughly after every day's use, particularly if used on the beach or near salt water conditions.

Salt Water or Beach Conditions: After each day it is essential that you hose off your machine completely with fresh, clean water. Pay particular attention to areas where sand can lodge such as between the axle plates and under small brackets and fittings. It is important to ensure that all tubes are plugged to prevent the ingress of salt water, but if you suspect that this may have happened, it is essential to remove these plugs and wash out any contamination. Salt water will corrode aluminium at an alarming rate.

Wheels: If the wheel bearing has been immersed in salt water, it will be necessary to remove the wheel, clean away the old lubricant and re-lubricate.

Fields: Mud and manure must be hosed off as soon as possible, since not only can it hide defects, but it can also contain corroding elements. A strong hose down with clean water is recommended, again paying particular attention to areas between plates and fittings.

Sail: The sail should be kept clean and free from grit. The best technique is to hose with fresh water, but stubborn stains can be removed by the application of a mild detergent. We recommend proprietary washing-up liquid, but it is essential to remove all traces of soap as a reaction can occur between soap and sunlight on the fabric. Make sure you do not collect grit and dirt between the leading edge and the keel tubes as this can abrade the fabric.

Aluminium Tube: Never use any abrasive materials on aluminium tube. Most contaminants can be removed easily when wet, but a soft bristle brush and mild soap may be useful for more stubborn stains.

RECOMMENDED MAINTENANCE SCHEDULES

DAILY - see pre-flight check lists on page 6,7 and General Maintenance Information on pages 22.

Regular daily checks are essential and the following schedule is advisory only. Each unit will require a varied schedule depending on utilisation and modes of operation. We may revise the schedule in the light of experience and would welcome comments from users.

EVERY 10 HOURS OR 6 WEEKS

<u>Wheels</u>	Remove from axles, clean out and renew grease.
<u>Front Fork</u>	Regrease
<u>Foot Throttle</u>	Lubricate
<u>Control Cables</u>	Clean and check
<u>Fuel Line Filters</u>	Clean or replace - check internal tank filter.
<u>Carburettor Air Filters</u>	Clean by washing in clean petrol (not 2-stroke)
<u>Reduction Drive</u>	Inspect main bearing housing, check belt alignment and tension; adjust, if necessary. Inspect main bolts for integrity. Grease bearing hub.
<u>Propeller</u>	Inspect and repair, if required.
<u>Exhaust</u>	Inspect carefully for fractures and repair, if required. Also inspect rubber mounting and renew if necessary.

EVERY 25 HOURS OR 12 WEEKS

<u>Propeller</u>	Remove and re-varnish. Re-balance.
<u>Bolts</u>	Physically check each bolt for security.
<u>Spark Plugs</u>	Renew with correct type.
<u>Air Frame</u>	Inspect for corrosion.

EVERY 50 HOURS OR 6 MONTHS

Strip and inspect the following joints for plate damage, hole elongation, bush wear and stress fractures. Replace all bolts and locknuts.

Front Fork Assembly	Vertical Strut Pivot
Rear Axle/Keel Joints	Top Suspension Bracket
Rear Axle End Joints	Strut Fixings.

<u>Exhaust</u>	Replace manifold springs and rewire in place
<u>Fuel Line Filters</u>	Renew line filter, pressure clean tank pipe filter
<u>Carburettor Air Filters</u>	Renew or clean thoroughly
<u>Axle Tie Wires</u>	Renew
<u>Exhaust Rubber Mountings</u>	Renew
<u>Air Frame</u>	Inspect for corrosion
<u>Telescopic Side Struts</u>	Strip and re-lubricate. Replace rubber if required.
<u>Front Fork Bearing Assembly</u>	Inspect and Renew, if required.

RECOMMENDED MAINTENANCE SCHEDULES - continuedEVERY 100 HOURS OR 12 MONTHS

<u>Rigging</u>	Renew all wire rigging
<u>Fuel Line</u>	Renew all fuel line - see note below
<u>Engine Control Cables</u>	Fully strip, clean and replace, as required.
<u>Engine</u>	Strip and clean carburettor bowls checking needle wear and operation. Carry out static thrust check and rev check. Engine may need strip and de-coke.
<u>Ignition Switch</u>	Replace
<u>Wheel Bearings</u>	Replace
<u>Drive Belts</u>	Replace
<u>Top Suspension Channels</u>	Replace
<u>Wing Connection Bolts</u>	Replace
<u>Seat Frame</u>	Remove pivot clamps and inspect for clamp damage and tube wear.
<u>Air Frame</u>	Inspect for corrosion

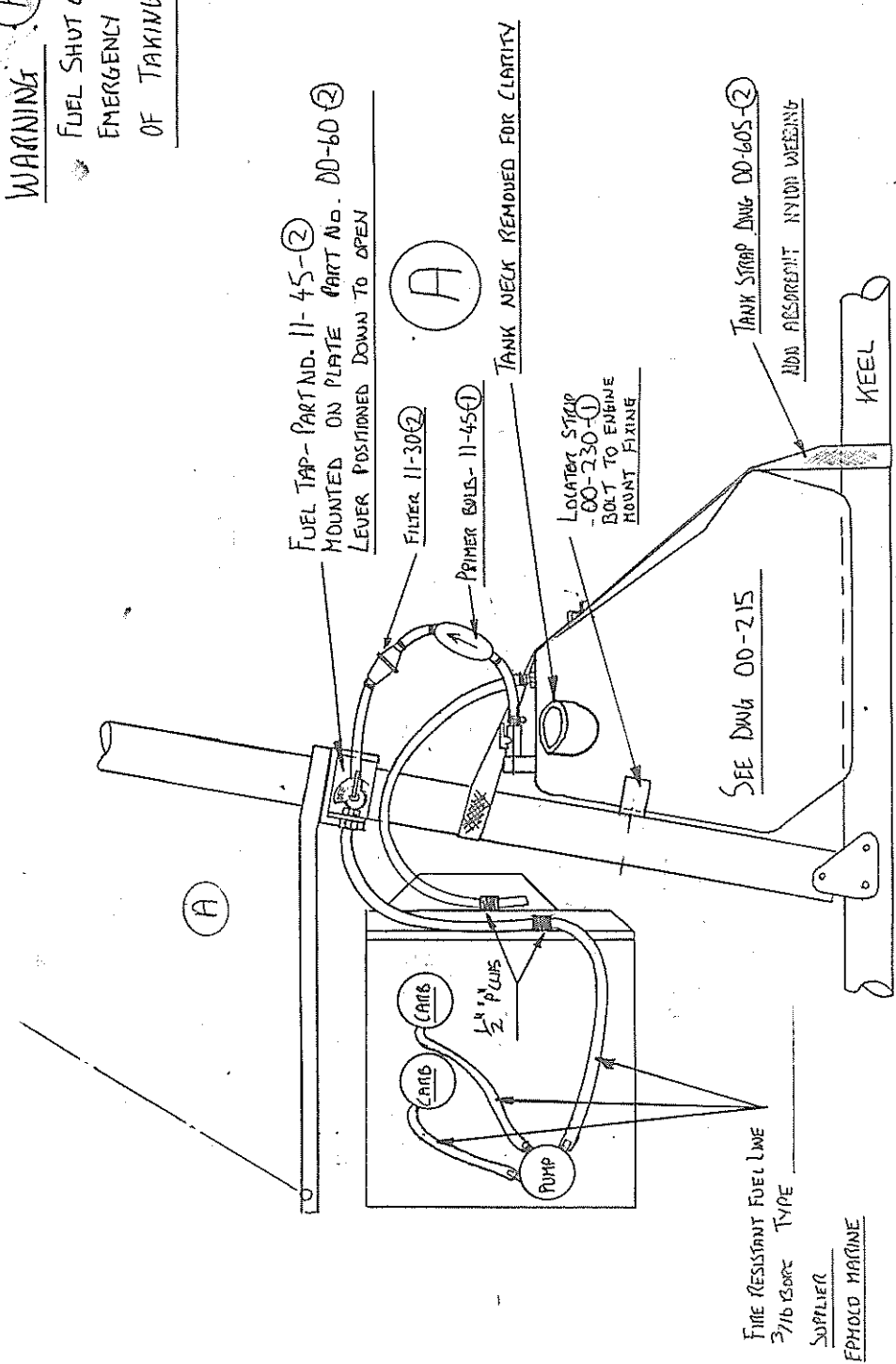
EVERY 200 HOURS OR 2 YEARS

<u>*Main Propeller Shaft</u>	Replace	* Applies to Inverted Engine Assemblies only
<u>*Main Propeller Shaft Bearings</u>	Replace	
<u>*Main Reduction Bearing Jacking Studs</u>	Replace	
<u>Wing Connection Bracket</u>	Replace	
<u>Upright Engine Reduction Drive</u>	Carry out full strip down and inspect - replace bearing unit if it shows signs of wear.	
<u>Air Frame</u>	Carry out full strip down to inspect all tubes for wear and corrosion damage.	

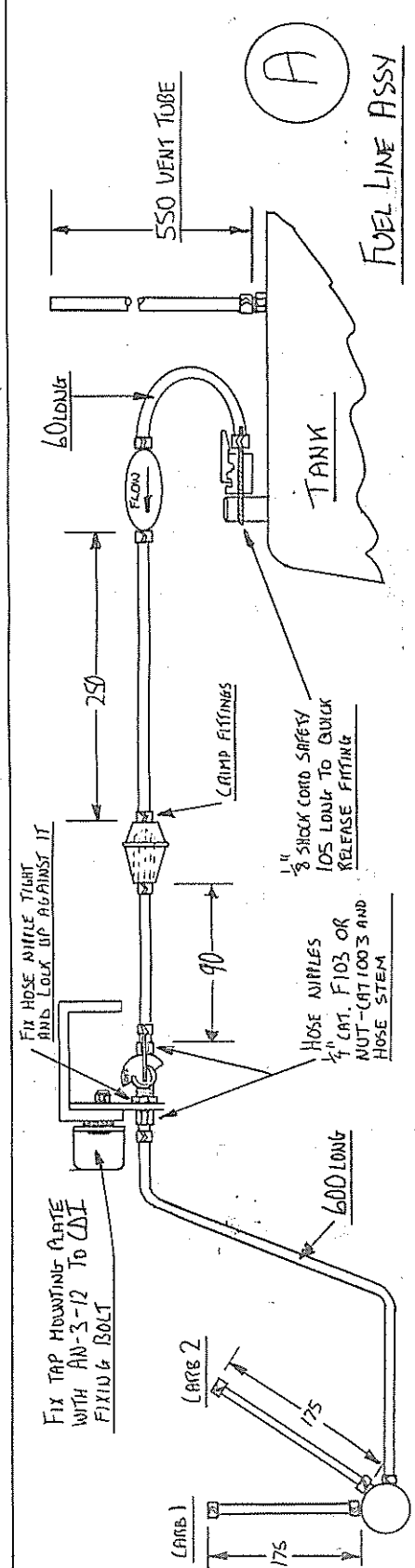
Fuel line note: The fuel line is a special fire resistant type and must be obtained directly from Mainair Sports Ltd. No replacement fuel line must be used unless it is factory approved.

DRAWING No. 99-00-300	
TITLE	FUEL TANK LAYOUT
DATE	22-12-82
NOTE	AMENDMENT
17-2-84	A
REF	FUEL TAP FITTED - CONNECTOR & LINE MADE INSIDE COUPLER - NEW HOSE ADDED - NEW HOSE LENGTHS DETAILS - TOP DELETED FROM ENG. DRAW.

WARNING
 FUEL SHUT OFF TAP IS FOR EMERGENCY USE ONLY - BEWARE OF TAKING OFF WITH TAP CLOSED



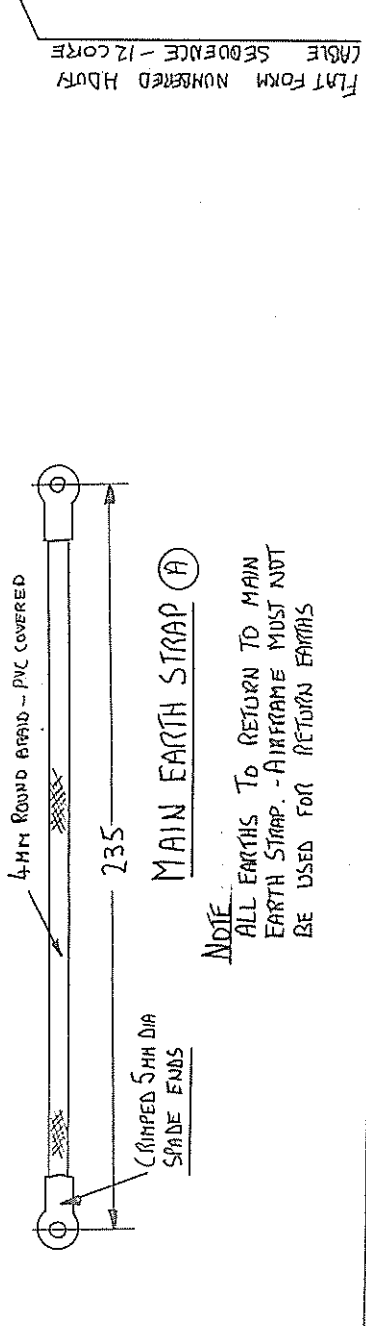
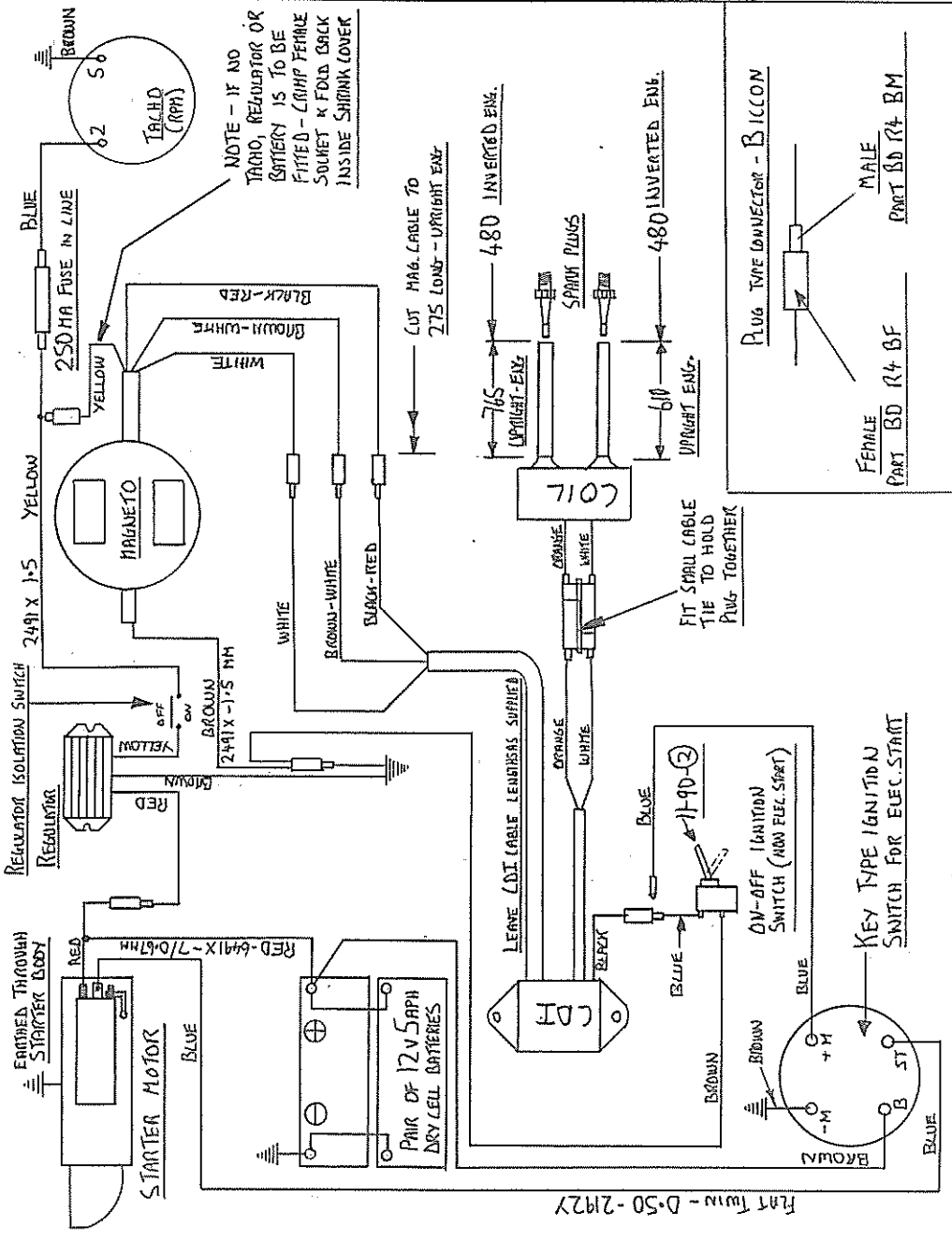
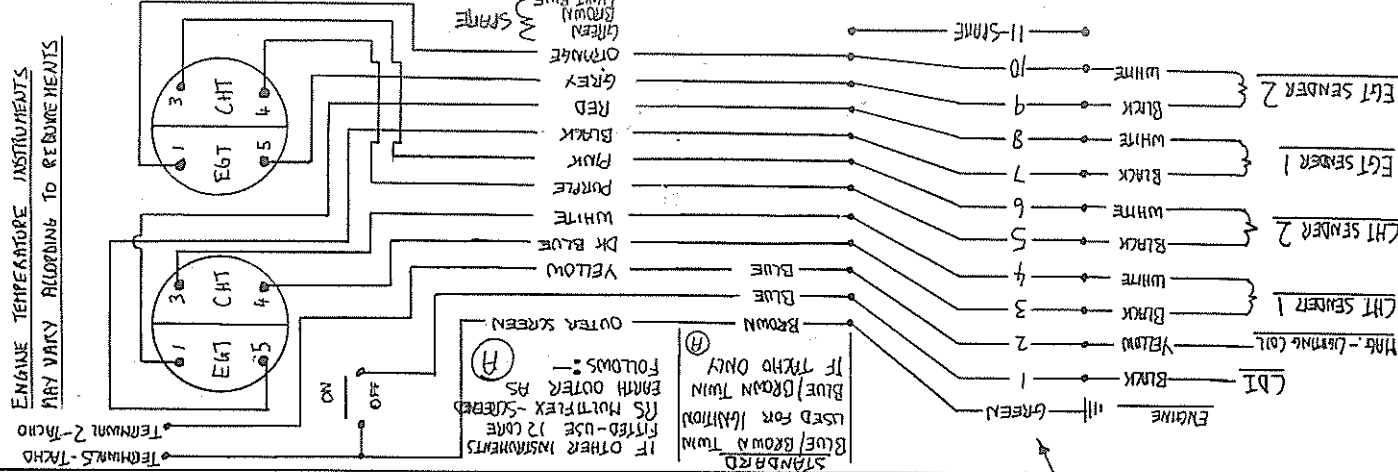
FIRE RESISTANT FUEL LINE
 3/16 BORE TYPE
 SUPPLIER
 EPHOLD MACHINE



DRAWING NO 99-44-50	
TITLE - WIRING DIAGRAM	DATE 7-1-84
REF DATE	AMENDMENTS
A	INSTRUMENT 12 CORE EGT MOUNTING - TYPICAL STANDARD FACTORY STRAP

CABLE TIES - HELLEMAN - INSUL
SMALL - 14713-5 - LK-0A
LARGE - 27514-5 - 1K-2A

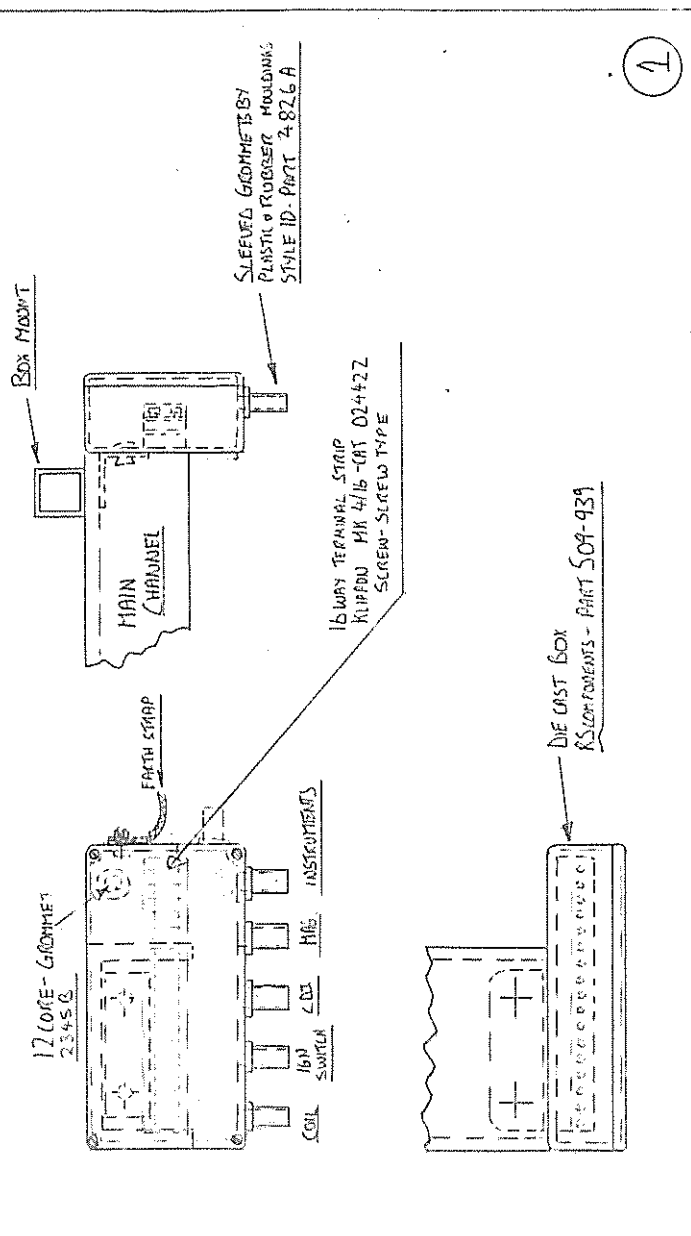
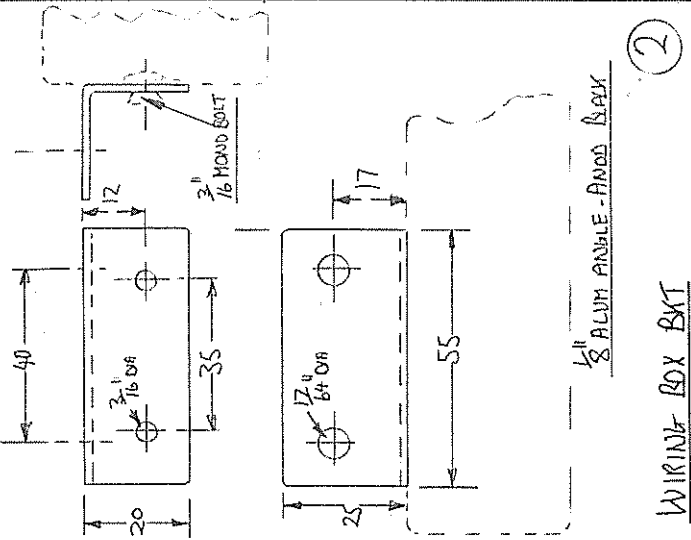
- 6 DUAL EGT
- 5 DUAL CHT
- 4 TACHO
- 3 ELECTRIC START
- 2 STANDARD - NO ELECTRICAL START, BATTERIES OR INSTRUMENTS



Part Two - D-50-21927

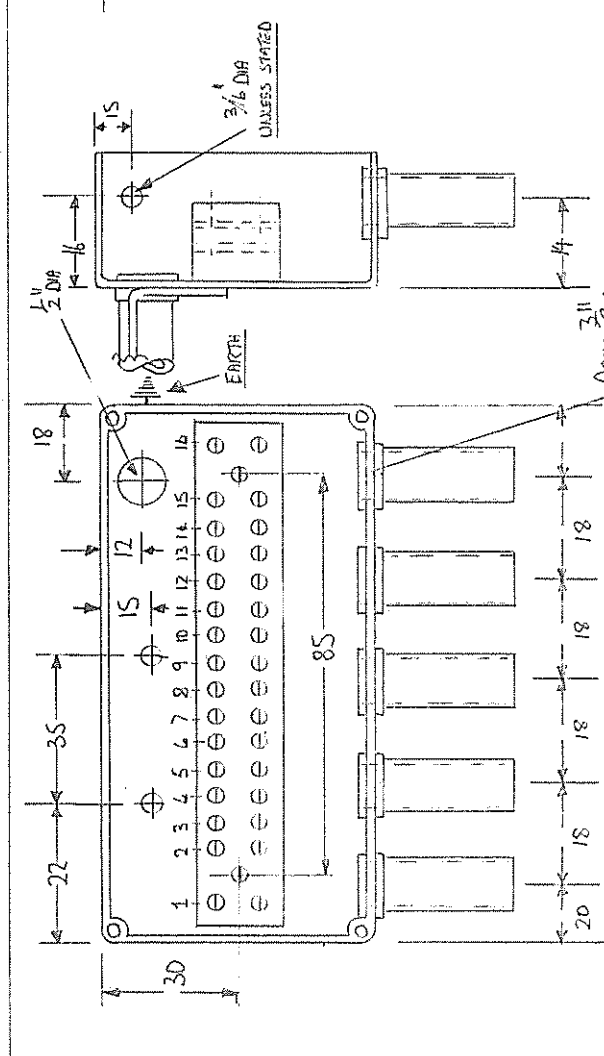
DWG NO. 99-44-51
 TITLE WIRING BOX DETAILS
 DATE 30-1-85
 SUPERCEDES
 SEE ALSO 99-44-50

REF	DATE	AMENDMENT
A	8 MAY 1985	TOTAL WIRING DETAILS ADDED



WIRING BOX BKT

NO.	ROBBIN COLOUR		FUNCTION
	TOP IN	BOT OUT	
1	WHITE	BLUE	COIL/COIL
2	ORANGE	BROWN	LINE TO IGN SWITCH
3	BLACK	BLUE	CDI - ENGINE
4	BLACK	RED	CDI - ENGINE
5	WHITE	WHITE	CDI - ENGINE
6	BROWN	GREEN	IGN SWITCH
7	WHITE	WHITE	IGN SWITCH
8	YELLOW	YELLOW	IGN SWITCH
9	BLACK	BLUE	TACHO
10	WHITE	WHITE	CHT 1
11	BLACK	ORANGE	CHT 1
12	WHITE	PINK	CHT 2
13	BLACK	BLACK	CHT 2
14	WHITE	RED	EGT 1
15	BLACK	GREY	EGT 1
16	WHITE	ORANGE	EGT 2
17			EARTH



MAINAIR SPORTS LTD
 SHAWCLOUGH ROCHDALE
 LANCs - ENGLAND
 (0706 55131)
 TOLERANCES UNLESS STATED OTHERWISE
 GENERAL ± 0.004
 DIMENSIONS IN MILLIMETERS ± 0.025

②

③

①

S.P.M.

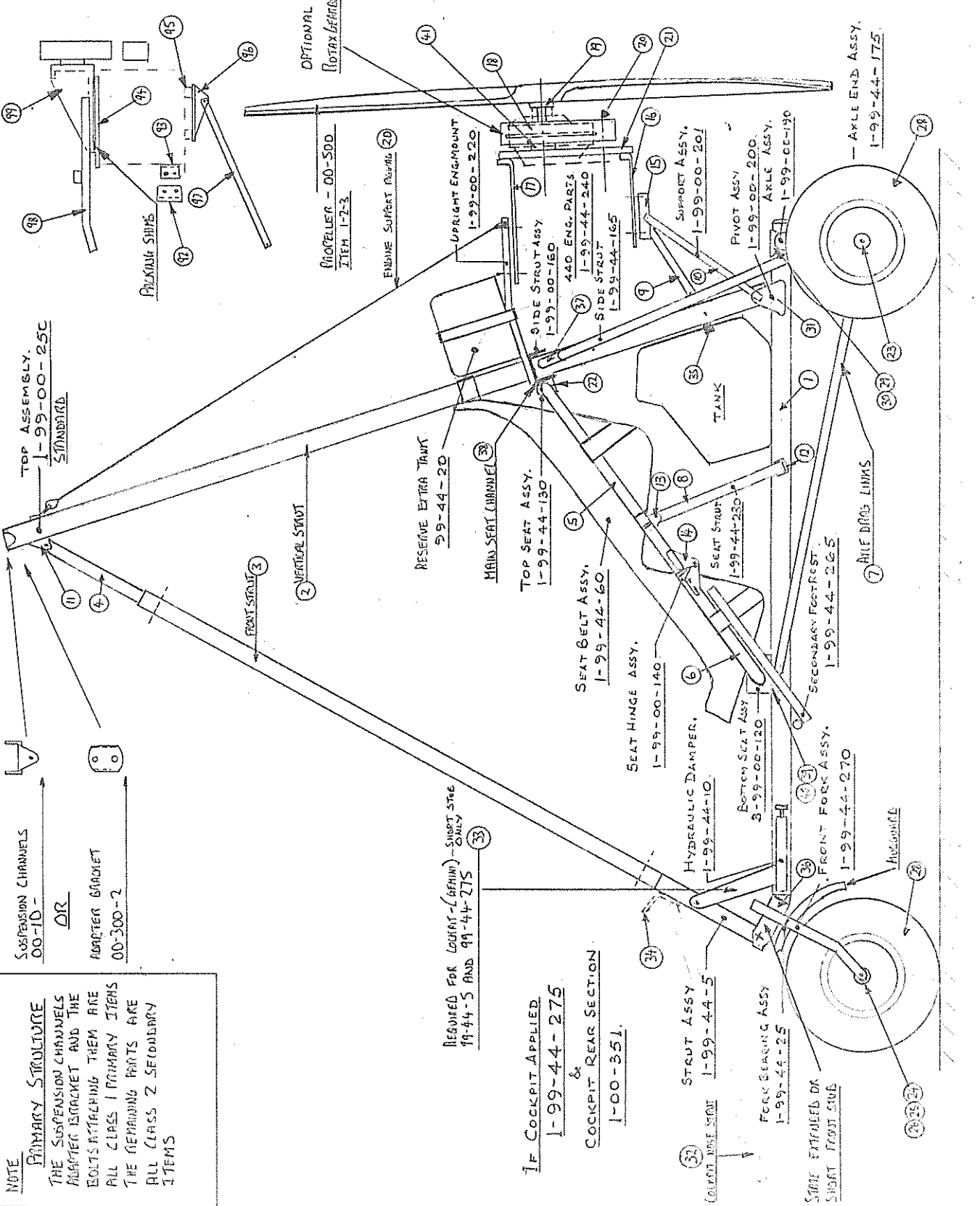
DRAWING NO 99-44-280
 TITLE SIDE ELEVATION DATE 2-11-63
 440 DUAL SEATER

DATE	REF	AMENDMENT
3078	A	INVERTED ENGINE DETAILS ADDED
2785	B	ROTAX GEARBOX ADDED

INVERTED ENGINE PARTS - STATE ENGINE USE

- 41 INVERTED INJECTORS
- 42 INVERTED COIL POINTS
- 43 INVERTED LOWER ENGINE STAYS
- 44 INVERTED VALVE MINUTS
- 45 STANDARDS OR "C" BRACKET
- 46 INVERTED FRONT TOE PLATE
- 47 LOWER CRANK SHAFT - FRONT CRANK
- 48 LOWER CRANK NECK - W/ BALL BEARING RICE

- 49 BEARING AND UDW
- 50 SUPPORT PLATE & COIL RITE
- 51 BOTTOM SEAT CHANNEL BRACKET
- 52 MAIN CHANNEL
- 53 FRONT SUB - STEE PLATE OR BRKT
- 54 COCKPIT TOP BRACKET - SHIRT STRUT ONLY
- 55 COCKPIT REEL SUPPORT PLATES
- 56 VERTICAL SEAT STAYS - SOME EXTENDED TO STUB
- 57 BOTTOM ANGLE PLATE
- 58 TOP ANGLE PLATE
- 59 MAIN DIMPLES - FRONT WHEEL
- 60 FRONT ANGLE BOLT
- 61 FRONT ANGLE SIDE BUSHES
- 62 REAR ANGLE
- 63 SEAT REAR BARS
- 64 FRONT LOFTIN PLATE
- 65 HORN POLLEY - 4ST
- 66 440 TORQUE BEAT - 300R
- 67 ENGINE MOUNTING PLATE UNDER - UPRIGHT ENG.
- 68 ENGINE MOUNTING PLATE - OVER - UPRIGHT ENG.
- 69 SEAT ANGLE PLATE
- 70 "A" BRACKET
- 71 FRONT SEAT TOP CHANNEL
- 72 ENGINE HOIST LOWER STAYS - UPRIGHT ENG
- 73 TELESCOPIC SEAT STAY
- 74 SEAT FRAME LOWER
- 75 SEAT FRAME UPPER
- 76 FRONT SEAT TOP SECTION
- 77 VERTICAL SEAT
- 78 REEL



NOTE
PRIMARY STRUCTURE
 THE SUSPENSION CHANNELS AND THE ADAPTER BRACKET AND THE BOLTS ATTACHING THEM ARE ALL CLASS 1 PRIMARY ITEMS THE REMAINING PARTS ARE ALL CLASS 2 SECONDARY ITEMS

SUSPENSION CHANNELS 00-10 - OR ADAPTER BRACKET 00-300-2

REQUIRED FOR LOUFR-(GENM)-SHORT STRUT ONLY 19-44-5 AND 99-44-275

IF COCKPIT APPLIED 1-99-44-275 & COCKPIT REAR SECTION 1-00-351.

STRUT ASSY 1-99-44-5
 FORK GEARING ASSY 1-99-44-25

CLAYTON RUBBER SHOE
 SHIRT FRAME OR SHIRT FOOT SUB

Secondary Foot Rest. 1-99-44-265

SEAT BELT ASSY. 1-99-44-60

SEAT HINGE ASSY. 1-99-00-140

HYDRAULIC DAMPER. 1-99-44-10

FRONT FORK ASSY. 1-99-44-270

AXLE END ASSY. 1-99-44-175

SEAT BELT ASSY. 1-99-44-60

SEAT HINGE ASSY. 1-99-00-140

HYDRAULIC DAMPER. 1-99-44-10

FRONT FORK ASSY. 1-99-44-270

AXLE END ASSY. 1-99-44-175

SEAT BELT ASSY. 1-99-44-60

SEAT HINGE ASSY. 1-99-00-140

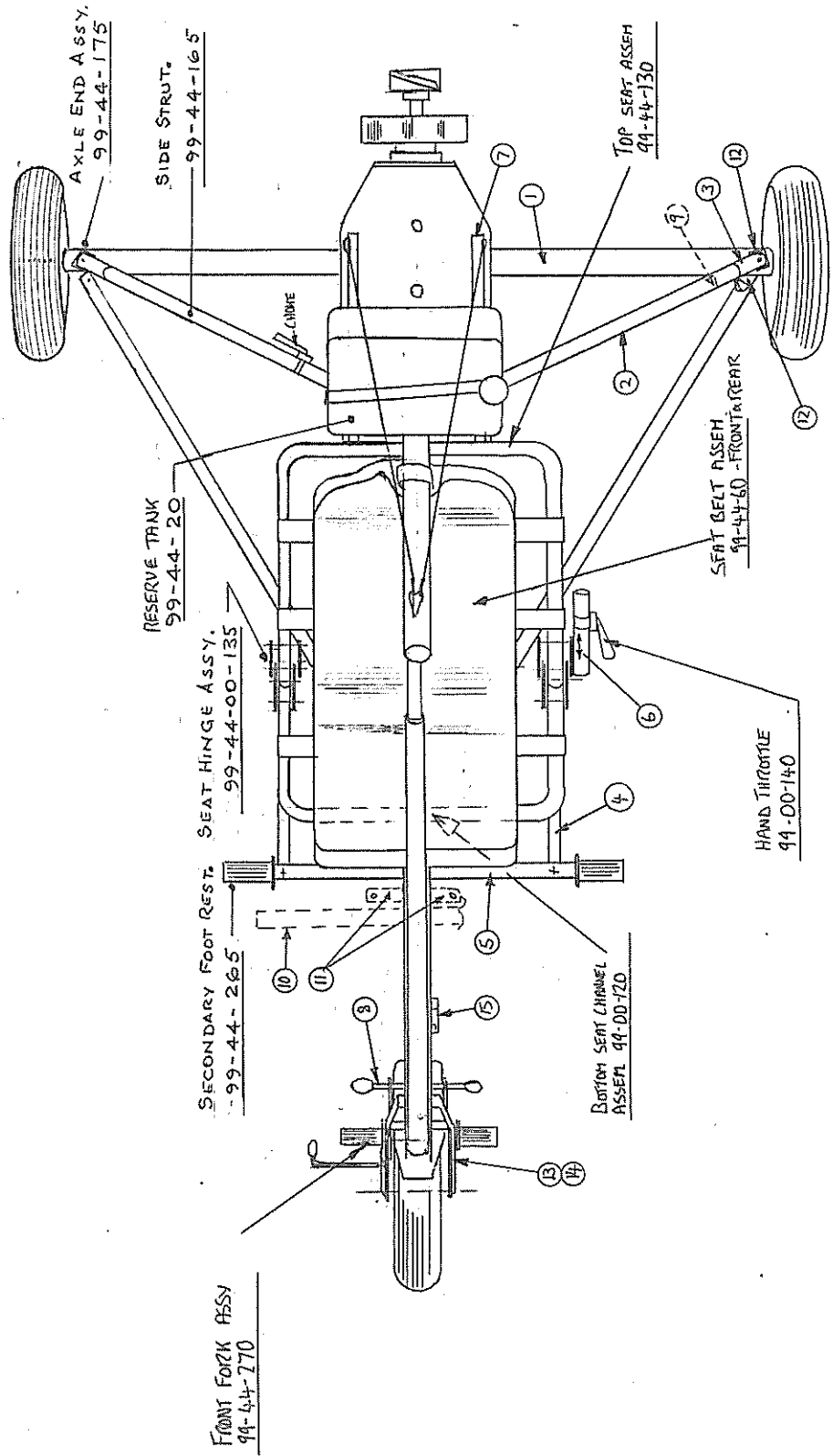
HYDRAULIC DAMPER. 1-99-44-10

FRONT FORK ASSY. 1-99-44-270

AXLE END ASSY. 1-99-44-175

DRAWING N° 99-44-281,
 TITLE, ANN -440 DUAL
 SEATER
 DATE, 4-11-63

DATE	REF.	AMENDMENT



15	PULL STRUT PAULLEY - 2 COP
14	REAR HINGE ASSEMBLY SET - FRONT FORKS
13	FRONT FORK ASSEM
12	W. EAR CRANKET
11	COUNTY REAR BARNETS
10	SEAT STRUT RUBBER SUSPENSION ROD
9	FRONT WHEEL BRAKE
8	BOX ENGINE MOUNT
7	HAND THROTTLE TUBE
6	FOOT REST CROSS TUBE
5	FOOT REST DOWN TUBE
4	SEAT STRUT LOWER SECTION
3	SEAT STRUT OUTER SECTION
2	WHEEL TUBE