CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP

MICROLIGHT TYPE APPROVAL DATA SHEET (TADS)

NO: BM 64 ISSUE: 3

TYPE: Thruster T600T 450 JAB

(1) MANUFACTURER: Thruster Aircraft (UK)
Continued Support: Thruster Aircraft LLP
North Hanger
Wickenby Airfield
Langworth, Lincs
LN3 5AX

(2) UK IMPORTER: N/A

(3) CERTIFICATION: BCAR Section S Issue 2

(4) DEFINITION OF BASIC STANDARD: Mod TAS001 Issue 1 dated 18 April 1995. Master Drawing List form F20 [450] Issue 1 dated 1st May 2000, Mod TAS 020, Mod TAS 022 and Mod TAS 024

(5) COMPLIANCE WITH THE MICROLIGHT DEFINITION

(a)	MTOW	450	kg
(b)	No. Seats	2	
(c)	Maximum Wing Loading	28.68	kg/m²
(d)	Vso	37 32.5	kts IAS kts CAS
(e)	Permitted range of seat loading*	55-86	kg per seat
(f)	Typical Empty Weight (ZFW)	262	kg
(g)	Max ZFW + 172 kg crew + 1 hr fuel (15litres /10.8kg)	450	kg
(h)	Max ZFW + 86 kg pilot + full fuel (50litres /36kg)	389	kg
(i)	Max ZFW at initial permit issue	267	kg

**Note: It is the Pilot's responsibility that the aircraft is not flown outside the permitted MTOW*

INVESTOR IN PEOPLE

(6) POWER PLANTS

Designation	T600T [450]			
Engine Type	Jabiru			
Reduction Gear	None			
Exhaust System	Jabiru			
Intake System	Single Air Filter			
Propeller Type	Warp-Drive 2 Blade			
Propeller Dia x Pitch	64" at 8.5^{o} at tip			
Noise Type Cert No.	44m Issue 17			
AAN approving configuration	28050			

(7) MANDATORY LIMITATIONS:

(a) Max Take-Off Weight 450 kg

(b) CG Limits Aft Limit: 501mm Aft of datum
FWD Limit: 415mm Aft of datum

(c) CG datum Front Leading Edge Spar

(d)

Cockpit Loadings		Port	Starboard	Total
	Min:	55 kg	Either Seat	55 kg
	Max:	90 kg	90 kg	180 kg

(e) Never Exceed Speed 102 KIAS

(f) Manoeuvring Speed 71 KIAS

(g) Permitted Manoeuvres Non Aerobatic
Normal acceleration limits, +4 / -2g
Max bank angle 60°

(h) Fuel Contents (Max Useable) 49.7 Litres

(i) Power Plant (see Table below)

Engine	Jabiru 2200A 4 Stroke			
Max RPM	3300 RPM			
MAX CHT	175°C 348°F			
MAX EGT				
Fuel Spec	AVGAS 100 LL & AVGAS UL91 & 100/130 Leaded and Unleaded Automotive Gas above 95 Octane Ron			
Engine Oil Spec	See Manual			
Gearbox Oil Spec	N/A			
Fuel/Oil Mix	Fuel Only			
Coolant Temperature	Air Cooled			
Oil Pressure	Min 31psi (220 kPa) Max 76psi (525 kPa)			
Oil Temperature	Min 15°C (59°F) Max 118°C (224°F)			
Fuel Pressure	N/A			

(8) INSTRUMENTS REQUIRED:

ASI	Altimeter	RPM	CHT / EGT	Compass	Oil Temp	Oil Pressure	VSI	Slip ball
Required 0 to 120KIAS	Required 0-20,000ft	0-4000	CHT only 0-700° F 0-370°C	Optional	Required 0-150°C 0-327°F	Required 0-10 Bar 0-140psi	Optional	Optional

(9) CONTROL DEFLECTIONS:

Elevator UP:	30° ± 2°	Tailplane trim UP:	N/A
Elevator DOWN:	30° ± 2°	Tailplane trim DOWN	N/A
Ailerons* UP:	40° ± 2°	Rudder LEFT:	25° ± 2°
Ailerons* Down:	30° ± 2°	Rudder RIGHT:	25° ± 2°

(10) PILOT'S NOTES, MAINTENANCE MANUALS REFERENCES:

10.1 Manuals approved for use with this aircraft**.**

(a) POH 210-075, Jabiru 2200 Instruction and maintenance manual

10.2 The following placards are to be fitted:-

(a) Flight Limitations Placard (to be visible to pilot)
See Annex D.

(b) Engine Limitations Placard (to be located near to engine instruments)
See Annex D.

(c) Fuel Limitations Placard (to be located near to filler cap)

A placard is to be fitted showing fuel capacity (litres), fuel type(s), fuel:oil ratio (if relevant) and if MTOW can be exceeded with full fuel and maximum cockpit weight, the fuel loads at MTOW for cockpit weights of 180kg / 170kg / 160kg etc. at 10kg intervals down to the maximum fuel load. An example is shown at Annex D.

(d) Switches
See Annex D.

(11) MANDATORY MODIFICATIONS / SERVICE BULLETINS / AIRWORTHINESS DIRECTIVES ETC:

See Annex A for required modifications.

Annual Bettsometer test is to be carried out to 1320 grammes with wing sails fitted and tensioned to flight. Test must be to both upper and lower surfaces.

(12) MINIMUM PERFORMANCE AT MAX TAKE-OFF WEIGHT

Rate of Climb:	480 fpm at 55 IAS.
Stall or Minimum Flying Speed:	37kts IAS (32.5kts CAS) at MTOW / idle.

CIVIL AVIATION AUTHORITY – SAFETY REGULATION GROUP

MICROLIGHT TYPE APPROVAL DATA SHEET (TADS)

NO: BM 64 ISSUE: 3

Issue History

Issue No.		Reason and signatory
1	08/05/02	Initial Issue - AAN 28050 A J MAXWELL
2	17/12/07	Editorial Corrections A J MAXWELL
3	05/05/12	Editorial Corrections, Corrections to Cockpit Loading, Control Deflections, AAIB Safety action addition of "Area Of Special Attention" ANNEX E A LOVE

Illustration of Aircraft – Photograph

ANNEX A – MANDATORY MODIFICATIONS

1. None

NB: A definitive list of Mandatory actions is to be obtained by reference to CAA published Mandatory Permit Directories. The list on this TADS is not necessarily up-to-date. Also see Thruster website @ www.thruster.co.uk for latest information.

ANNEX B - APPROVED OPTIONAL MODIFICATIONS

The installation of all optional modifications is to be inspected by a BMAA inspector and an entry made in the appropriate logbook(s). Note that other approved modifications may exist which are not listed here. Also see Thruster website @ www.thruster.co.uk for latest information.

Thruster Mod	Date	Title
TAL 03-9	12/02/1992	GRP Wheel Spats
TAS 010	10/07/1997	Ultralam Wing Skins
TAS 018	29/09/1997	Disabled Person Mod “Crip Kit”
TAS 026	01/03/2004	Lever for existing Bungee Trim System
TAS 030	01/03/2004	Carburettor Inlet Heater
TAS 031	01/03/2004	Wing Strobe Lights
TAS 033	01/03/2004	Roll Trim Bias
TAS 034	01/03/2004	Battery Isolator Switch
TAS 035	01/03/2004	Extended Control Colum Stick (Training Aid)

ANNEX C
WEIGHING INFORMATION

1.	CG Datum:	Front of Leading Edge Spar Tube
2.	Weighing attitude:	Wings Level Fuse Tube Horizontal
3.	Mainwheel moment arm:	31.5mm Aft of datum
4.	Tailwheel moment arm:	4075mm Fwd of datum
5.	Fuel moment arm:	1030mm Aft of datum
6.	Crew moment arm:	a) 423 mm Aft of datum (Forward Seat Position) b) 448 mm Aft of datum (Mid Seat Position) c) 473 mm Aft of datum (Rear Seat Position)
7.	Crew weights:	Minimum 55 kg / maximum 86 kg
8.	Aft CG Limit:	501 mm Aft of datum
9.	Fwd CG Limit:	415 mm Aft of datum

ANNEX D

EXAMPLE PLACARDS

1. On cockpit fascia

OPERATIONAL LIMITATIONS
THE AIRCRAFT MUST BE OPERATED IN
COMPLIANCE WITH THE OPERATING
LIMITATIONS STATED IN THE FORM OF
PLACARD MARKINGS AND MANUALS.
NO AEROBATIC MANOUVRES
INCLUDING SPINS ARE PERMITTED

2. Adjacent to fuel cock

FUEL
–ϕ–
OFF
–θ–
ON

3. Adjacent to master switch on Instrument panel

MASTER
ON
↑
↓
OFF

4. On cockpit fascia adjacent to A.S.I.

V_A 71Kias / V_{NE} 102Kias

5. Adjacent to Fuel pump switch on Instrument panel

FUEL
PUMP
ON
↑
↓
OFF

6. On Keeltube at rear of Engine [Port and Starboard]

DANGER PROPELLER ARC

7. On roof Panel adjacent to Trim Cord

ELEVATOR TRIM
PULL ←←————NOSE UP

8. On cockpit fascia adjacent to RPM gauge

MAX RPM 3300

9. On cockpit fascia

C of G LIMITS
0.389m TO 0.501m AOD
COCKPIT LOADING
MAX 172KG
MTOW 450KG

10. On cockpit fascia

WARNING
IT IS THE RESPONSIBILITY OF THE PILOT IN COMMAND TO ENSURE THAT THE C OF G AND MTOW ARE WITHIN OPERATIONAL LIMITS

11. On cockpit fascia

COCKPIT LOAD (kg)	ALLOWABLE FUEL (LITRES)

*[**Note:** This Placard is completed by Thruster Air Services for each individual Aircraft prior to its release.]*

12. On cockpit fascia

NO SMOKING
FASTEN SEATBELTS

13. Adjacent to Oil Pressure gauge on Instrument panel *

MAX OIL PRESSURE 76 PSI
MIN OIL PRESSURE 31 PSI

14. Adjacent to CHT gauge on Instrument panel

MAX CHT 175 deg C

15. Adjacent to Oil Temp. gauge on Instrument panel

MIN OIL TEMP 15deg C
MAX OIL TEMP 118deg C

* ***The Placard displayed will be either Metric or Imperial units dependant on the scaling of the Gauge fitted.***

16. On cockpit fascia.

CLASSIFICATION

SMALL LIGHT AEROPLANE

17. On Fuel Tank adjacent to filler cap

FUEL AVGAS 100LL & AVGAS 100/130
Leaded and Unleaded Automotive Gasoline
Above 95 Octane Ron
CAPACITY 49.7 LITRES USABLE

18. On seat rail adjacent to Throttle lever both Port and Starboard.

POWER ON
↑
↓
POWER OFF

19. On cockpit fascia.

AIRCRAFT TYPE T600T (450) JAB

REGISTRATION……..

Ser No. …….

EMPTY WEIGHT: DATE WEIGHED
…….Kg ……..

20. On cockpit fascia adjacent to Key Start Switch

TURN TO START

21. On cockpit fascia.

PARKING BRAKE ONLY TO BE USED WHEN STATIONERY

ANNEX E

Areas for Special Attention During Inspections

1. Carburettor Heating System to minimise risk of Carburettor Icing. An accident caused by Carburettor Icing has been reported which was due in part to the Electric Carburettor Heating system being fitted on the inlet of the Carburettor rather than the outlet in the vicinity of the butterfly valve. Check that the installation is correct and operational.

UNITED KINGDOM
CIVIL AVIATION AUTHORITY

MPD No: 2001-005

Issue Date: 10 October 2001

MANDATORY PERMIT DIRECTIVE

The following action required by this Mandatory Permit Directive (MPD) is mandatory for applicable aircraft registered in the United Kingdom operating on a UK CAA Permit to Fly.

MPD: 2001-005 THRUSTER AIR SERVICES

Subject: Warp Drive propellers.

Applicability: Thruster Air Services Thruster T600 Series microlights fitted with Jabiru 2200A engines.

Reason: A report has been received of a crack in the hub of a Warp Drive 2 bladed propeller fitted to a Jabiru 2200A engine on a Thruster T600 Sprint. Inspection of a Thruster T600N has identified hub cracking on an aircraft that had completed 196 hours.

Compliance: Before further flight from the effective date of this MPD check the propeller hub in accordance with the requirements of paragraph A of Thruster Air Services Service Bulletin TAS/SB07. Repeat the check prior to each flight. Ensure the propeller is correctly torqued in accordance with the requirements of paragraph B of Thruster Air Services Service Bulletin TAS/SB07. Report all findings to Thruster Air Services.

A copy of the Service Bulletin and further information can be obtained from:

Thruster Air Services
Malthouse
Ginge
Near Wantage
OX12 8QS

Tel: 01235 833305
Fax: 01235 833390
Email: gordon@thruster.co.uk

Record compliance with this MPD in the aircraft log book.

This MPD becomes effective on 12 October 2001.

Enquiries regarding this MPD should be made to the United Kingdom Civil Aviation Authority, Applications and Certification Section, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR Telephone: +44(0)1293 573149 Telefax: +44(0)1293 573993.

United Kingdom
Civil Aviation Authority

MPD No: 2001-014

Issue Date: 28 November 2001

MANDATORY PERMIT DIRECTIVE

The following action required by this Mandatory Permit Directive (MPD) is mandatory for applicable aircraft registered in the United Kingdom operating on a UK CAA Permit to Fly.

MPD : 2001-014 THRUSTER AIR SERVICES

Subject: Warp Drive propellers.

Applicability: Thruster Air Services Thruster T600 models fitted with Jabiru 2200A engines and Warp Drive propellers with HP-L and HP2-914 hubs.

Reason: Thruster T600, 450 kg microlights were originally fitted with Warp Drive propellers consisting of 64" propeller blades and HP-L hubs. Cracks were found in a number of the HP-L hubs resulting in the issue of Service Bulletin TAS/SB07 on 21 September 2001. Further investigation using dye penetrant revealed that cracking was more widespread. Following a recommendation from Thruster Air Services the CAA suspended the Permits to Fly for the aircraft involved. Investigation has shown the cracking to be initiated by fretting fatigue.

A new hub, under designation HP2-914, is now available which Thruster considers is more robust than the HP-L version.

Thruster will be monitoring the nominated fleet leader aircraft, which will be fitted with an HP2-914 hub. This aircraft will have visual and dye penetrant inspections performed on the hubs at 25, 50, 100, 150 and 250 hours since new. In addition the second lead aircraft must be subject to the same inspection when it reaches the limit declared in SB TAS/SB08. Once both hubs have completed satisfactory inspection at each stage, Service Bulletin TAS/SB08 will be re-issued to increase the declared life limit of the hubs for any remaining aircraft.

Compliance: Before further flight from the effective date of this MPD replace HP-L hubs with HP2-914 hubs in accordance with Thruster Air Services Service Bulletin TAS/SB08.

Except for the fleet leader HP2-914 hubs in service may not exceed the life limit declared in the latest issue of Service Bulletin TAS/SB08.

Additionally all HP2-914 hubs must be removed in accordance with Thruster Pilots Operating Handbook and visually inspected at 25, 50, 100, 150 and 250 hours in the region defined in Appendix A of TAS/SB08. If any fretting is evident the hub must be rejected. If no fretting is evident the propeller may be re-fitted in accordance with Thruster Pilots Operating Handbook.

continued overleaf

Enquiries regarding this MPD should be made to the United Kingdom Civil Aviation Authority, Applications and Certification Section, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR Telephone: +44(0)1293 573149 Telefax: +44(0)1293 573993.

A copy of the Service Bulletin and further information can be obtained from:

Thruster Air Services
Malthouse
Ginge
Near Wantage
OX12 8QS

Tel: 01235 833305
Fax: 01235 833390
Email: gordon@thruster.co.uk

Record compliance with this MPD in the aircraft log book.

This MPD becomes effective on 30 November 2001.

United Kingdom Civil Aviation Authority

MPD No: 2003-003

Issue Date: 30 April 2003

MANDATORY PERMIT DIRECTIVE

The following action required by this Mandatory Permit Directive (MPD) is mandatory for applicable aircraft registered in the United Kingdom operating on a UK CAA Permit to Fly.

MPD: 2003-003 THRUSTER AIR SERVICES

Subject: Leading edge spar attachment bracket.

Applicability: Thruster Air Services Thruster T600 Series microlights.

Reason: During a routine airframe inspection of a Thruster T600N small cracks were found on the leading edge spar attachment bracket Part No 080-267; the cracks were located on the bend radius close to the outer edge of the bracket. The microlight had logged approximately 450 flying hours and since new had been tethered down outside when not flying. The tie down cables had been attached to the lift strut ends adjacent to the stainless brackets. It is likely that this particular microlight has undergone a significant number of cyclic stress reversals particularly due to being tethered outside in all weathers.

Compliance: Before further flight from the effective date of this MPD inspect the leading edge spar strut brackets for cracks in accordance with Thruster Air Services Service Bulletin TAS/SB09 Issue 2. At the same time an inspection is also required of the trailing edge, jury strut and rear lift cable brackets for cracks, as these brackets are all of a similar design. Replace any cracked brackets before further flight. Return cracked brackets to Thruster Air Services. Repeat these inspections prior to the first flight of the day. The pilot may perform these inspections.

A copy of the Service Bulletin and further information can be obtained from:

Thruster Air Services
Malthouse
Ginge
Near Wantage
OX12 8QS

Tel: 01235 833305
Fax: 01235 833390
Email: gordon@thruster.co.uk

Record compliance with this MPD in the aircraft log book.

This MPD becomes effective on 5 May 2003.

Enquiries regarding this MPD should be made to the United Kingdom Civil Aviation Authority, Applications and Certification Section, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR
Phone: +44 (0) 1293 573149 Fax: +44 (0) 1293 573993

Civil Aviation Authority	**United Kingdom Civil Aviation Authority**	**MPD No: 2010-006 R1** Issue Date: 28 October 2010

MANDATORY PERMIT DIRECTIVE

In accordance with Article 22(1) of the Air Navigation Order 2009 as amended the following action required by this Mandatory Permit Directive (MPD) is mandatory for applicable aircraft registered in the United Kingdom operating on a UK CAA Permit to Fly.

MPD: 2010-006 R1 THRUSTER AIR SERVICES

Subject:	Exfoliation Corrosion Splits Aluminium Flying Strut Ends.
Applicability:	Thruster T600, T300 and TST series microlight aircraft with aluminium alloy flying strut ends.
Reason:	Corrosion splitting in this primary structure may weaken the part sufficiently that it may result in the loss of a wing and consequent loss of the aircraft. This MPD has been revised in the light of the type design organisation's investigations, to apply corrosion protection and increase period between inspections.
Compliance:	Before further flight (as required by the original MPD), carry out the inspection called up in Thruster Air Services Service Bulletin TAS/SB 13 Issue 2 (or later approved revision). If any crack is found replace the parts with sound fittings. If compliance has been achieved within the last 10 flying hours in accordance with issue 1 of this MPD/SB, the results remain valid for the remainder of that 10 hours. Inspection may be carried out by the pilot/owner. Carry out further inspections every 100 hours /6 months whichever is sooner. Replacement of the strut ends with steel end fittings terminates the need for repeat inspection.

Ensure compliance with this MPD is recorded in the aircraft logbook.

Effective Date:	4 November 2010

1. This MPD was not published for consultation.
2. Enquiries regarding this MPD should be referred to Aircraft Certification Department, Civil Aviation Authority, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex, RH6 0YR, United Kingdom.

   Tel: +44 (0)1293 573726 Fax: +44 (0)1293 573976 Email: department.certification@caa.co.uk

Civil Aviation Authority

EMERGENCY MANDATORY PERMIT DIRECTIVE

Number: 2011-004-E

Issue date: 20 May 2011

In accordance with 22(1) of Air Navigation Order 2009 as amended the following action required by this Mandatory Permit Directive (MPD) is mandatory for applicable aircraft registered in the United Kingdom operating on a UK CAA Permit to Fly.	
Type Approval Holder's Name: **Thruster Air Services**	Type/Model Designation(s): **Thruster T600**
Title:	**Propeller flange to crankshaft attachment screw replacement**
Manufacturer:	Thruster Air Services
Applicability:	All Thruster T600 series aircraft fitted with Jabiru 2200A series engines driving 2 blade ground adjustable Warp Drive propellers of 64 inch nominal diameter**.**
Reason:	To prevent propeller detachment in flight.
Effective Date:	22 May 2011
Compliance/Action:	Compliance is required as follows: 1. Engines which have accumulated less than 500 hours since new on the effective date of this MPD - upon reaching 500 hours: 2. Engines which have accumulated more than 500 hours but less than 1000 hours since new on the effective date of this MPD – within 5 flight hours: 3. Engines which have accumulated 1000 hours or more since new on the effective date of this MPD – before further flight: Carry out propeller flange to crankshaft screw replacement, in accordance with Thruster Air Services Ltd Service Bulletin TAS/SB 014. Visually inspect the removed screws for evidence of failure, elongation or cracking. Report any instances of screw damage or failure to Thruster Air Services Ltd. in accordance with bulletin TAS/SB014. Rectify any damage to mating parts in accordance with manufacturer's instructions before further flight. Thereafter, Replace propeller flange attachment screws at intervals not to exceed 500 hours.

ENSURE COMPLIANCE WITH THIS MPD IS RECORDED IN THE AIRCRAFT LOGBOOK		
Reference Publications:	Thruster Air Services TAS/SB014 Jabiru Service Bulletin JSB 022-1	
Remarks:	[1]. This MPD was not posted for consultation because of the urgency of the requirement. [2]. Enquiries regarding this Mandatory Permit Directive should be referred to: Airworthiness Evaluation and Surveillance, Civil Aviation Authority, Safety Regulation Group, Aviation House, Gatwick Airport South, West Sussex RH6 0YR.	
	Tel: +44 (0)1293 573726	Fax: +44 (0)1293 573976
	E-mail: department.certification@caa.co.uk	