Darling Downs
SOARING CLUB

Grob Astir Jeans
Pilot Handling Notes

These notes are a conversion guide only and not a substitute for the Manufacturer's Flight Manual.

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General notes on conversions

1. Your conversion to a new type must be authorized by an instructor who has flown the aircraft type.
2. He/she must outline the important features of the aircraft.
3. You should not do your first conversion in crosswind or gusty conditions.
4. Spend some time getting comfortable with the cockpit layout.
5. Get someone to lift the tail to show the takeoff and landing nose attitudes.

Basic overview

The Grob Jeans is a single seat, 15m sailplane constructed of fibreglass and manufactured by Grob, Germany.

If this is your first single seater new features from previous two seaters are:

- ❒ Light controls
- ❒ More responsive.

It differs from the Puch and the Grob in that it is tail-heavy rather than nose-heavy (for takeoff and landing).

External features

Main Wheel & Tail Wheel Configuration	Tail-heavy
Airbrakes	Effective
Flaps	Not fitted
Wings	2
Pitot and Static Ports	
Undercarriage	Fixed
Tailplane	T-tail
Dolly wheel	Castoring wheel which fits into a hole in the rear of the fuselage just in front of the tailplane.

Limitations

V_{ne}	Max permitted speed	135 kts
V_a	Max speed for manoeuvring	135 kts
	Max speed rough air	92 kts
V_t	Max speed on aerotow	92 kts
V_w	Max speed on winch / auto launch	64 kts
Max All Up Weight (MAUW)		380 kg
Min cockpit weight, including parachute		70 kg
Max cockpit weight, including parachute		107 kg
Release Weak Link		500 kg

Cockpit features

Canopy mechanism & jettison	Side opening, red jettison knob on right side of cockpit.
Ballast	do you need ballast? See ballast secion next.
Instrument types and layout: ASI Altimeter Radio Pneumatic Vario Audio Vario	
Radio	Microair
Seat adjustment	None
Control column	Standard
Ventilation	Black knob on top right of instrument panel
Trim	Green lever on left
Wheel brake	On control stick
Tow Release	Nose hook, conventional yellow handle
Water Ballast lever	N/A
Retractable undercarriage	N/A.
Rudder pedal adjustment	Black knob on top left of instrument panel
Battery	Standard club battery located behind seat in compartment.

Ballast

There are 6 ballast weights specific to the aircraft and are fitted in the compartments just in front of the seat.

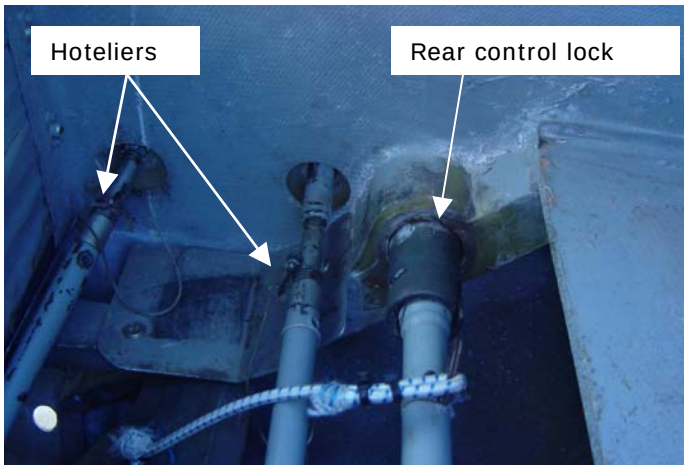
Min Pilot Weight (no ballast)	70 kgs
Max Pilot Weight inc chute	107 kgs
For Pilot & chute 65-70kgs	2 ballast wts
For Pilot & chute 60-65 kgs	4 ballast wts
For Pilot & chute 55-60 kgs	6 ballast wts

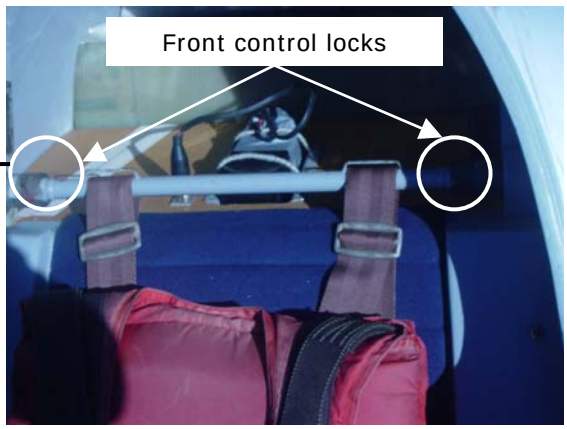
Ballast Compartment

Daily inspection notes

In addition to routine daily inspection issues:

- ❒ **Tyre Pressures: Main wheel: 36 psi (250kPa)**
- ❒ Always remove inspection hatch behind cockpit and check for security of hotelier fittings and rear control locks.
- ❒ Inspect the hotelier on the tailplane





First flights

Some thoughts on what objectives to set for yourself in your first few flights in the Hornet:

Before flight:

- ❒ get organized and be ready to fly when you want to without rushing
- ❒ pick favourable conditions – avoid crosswinds, strong winds, low cloud, poor vis etc
- ❒ check you have a good, competent wing runner who knows its one of your first flights on type
- ❒ get out on the grid, get comfortably strapped in and to set for the launch
- ❒ check again you can reach and operate all controls and instruments comfortably

Aerotow takeoff:

Set the trim to forward. Note the trim is a spring trim and may move with the stick on takeoff.

Max towing speed is 92 kts.

Glide performance:

The glide is approximately 35:1
All control movements require only very low operating forces (it is light on the stick).
It is quite stable.

Stalling:

The glider stalls in the conventional manner. It is a gentle stall preceded by gentle pre-stall buffeting. Recovery is progressive forward movement of the stick until unstalled.

Stall speed is 32-35 kts.
Stall speed (brakes open) is slightly more than this.

Spinning:

The Jeans has typical spin characteristics and recovers easily with the standard spin recovery technique.

Circuit:

- ❒ Plan a normal circuit.
- ❒ Be sure to have good speed control throughout the circuit.

Approach and landing

- ❒ Use and approach speed (no wind) of 50kts.
- ❒ The brakes are effective.
- ❒ Set up the approach for ½ brake. Avoid putting the brakes away in the latter part of the approach.
- ❒ Keep your approach speed constant
- ❒ Don't try to "land the glider" before it is ready

The flight

- Takeoff and tow to 2000+ft to allow time to get familiar with the glider's handling characteristics
- Do not plan a long flight (max ½ hr). Aim to land in the same conditions as you took off in.
- Do some normal and steep turns; check the rate of roll and rudder required while reversing direction
- Think of what you expect the symptoms of the approach to the stall and the stall itself will be then try slow flight and then a clean stall. Note the handling on recovery. Then set up flight at an appropriate approach speed and then extend the brakes. Note the attitude and trim changes and the manoeuvrability in the landing configuration.
- Check the handling characteristics during stalls when turning, clean and in the landing configuration (brake out). Pay particular attention to the symptoms of the stall onset.
- Try flying at higher speeds; note the attitude changes and handling at other flap settings for faster flight. Note that once trimmed for thermaling flight, no additional trim change is required for high speed flight. Join the circuit with time to assess conditions, perform pre-landing checks and fly a normal circuit for a normal final approach. Fly the approach to an aiming point set a little into the field to cater for any unintentional undershoot.
- On later flights, explore out of position towing by boxing the towplane slipstream.
- Try flying at V_A and if it is smooth, at V_{NE}. Note the handling and performance at these speeds.

Aerobatics

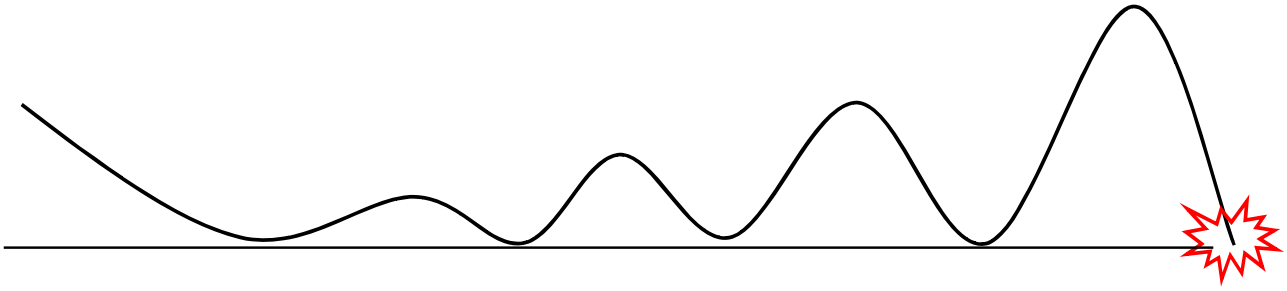
The aircraft is approved for loops, spins, stall turns and lazy eights.

Need to know

- ❒ Your responsibilities and limitations when flying this glider.
- ❒ How to rig, DI, operate (including the limitations) and derig the glider.
- ❒ Make yourself familiar with the Jeans Trailer.

Enjoy your flying in the Jeans

Supplementary Notes – Pilot Induced Oscillations (PIOs)[1]



In an aircraft like the jeans, a PIO can occur when the glider touches down on the main-wheel and bounces back into the air. The pilot pitches the nose down and the glider strikes the ground, resulting in the nose pitching up rapidly.

What happens next is that the nose pitching up causes the tail to pitch down, striking the ground. After the tail strikes the ground, the glider pitches nose down again, striking the wheel even harder. This process continues in a divergent oscillation which increases until something else occurs - usually, and all too often, structural failure just ahead of the fin unless the pilot takes action to correct the oscillation.

To remedy the problem, it's simple - neutralize the controls after the first bounce - the glider will level out above the ground. Do not force the nose back down on or towards the ground. If the glider has bounced or climbed just a few feet, it will sink at a relatively gentle rate, and safely back to the ground of its own volition. If it is a BIG bounce, gently lower the nose and this time flare at the correct height. If the airbrakes are more than one-half open, gently closing them a little will allow additional time to flare correctly. Remember that lowering the nose decreases both angle of attack and lift, causing the glider to sink quite rapidly. Consequently, any forward stick movement must be gentle.

The idea is to damp out the oscillation motion - i.e. pitch down gently (stick moving forward) as the nose comes up, and vice versa. When the oscillation stops, centralize the controls and let the glider land itself (as in Case One). DO NOT FORCE the nose back onto the ground. If for any reason the glider continues to oscillate (if your timing is bad and you aggravate the oscillation), neutralize the controls and apply full airbrake. This will quickly reduce energy and stop the glider from flying, even if in a rather unpleasant and abrupt manner. It is less likely to cause damage than permitting the oscillation to continue unchecked.

The undignified and possibly expensive method of arrival can be avoided by

1. Establishing the landing approach at the correct airspeed for the conditions. The greater the airspeed, the greater the pitch sensitivity.

2. Establishing the landing approach with **half or more airbrake** (the more the airbrakes are closed, the less pitch stability the Grob will have, making a PIO more likely if otherwise mishandled).

3. Flare at the correct height. Don't fly the glider into or force it onto the ground. Aim to arrive with low energy, touching down with the main-wheel and tail-wheel simultaneously.

It should be noted that a correct approach (i.e. preparation for the flare and touchdown) is important in preventing this problem. Fly the correct approach speed (not too fast or too slow) using at least one-half airbrake, thus eliminating the pitch instability. These simple steps will greatly reduce the problem and risks of pilot induced oscillations.

[1] Taken from Soaring Safety Foundation, USA, Dean Carswell.