

Narrogin Gliding Club

DG 505 Elan Orion VH-NGN

Pre-flight technical notes
Revision 1.4

The following notes must be consulted before the first flight and memorised.

Batteries

The aircraft has two batteries. One is mounted in the tail fin and accessed by removing the horizontal stabiliser. The other is secured on the parcel shelf behind the rear seat. The batteries remain in the aircraft at all times and are charged via an inlet plug to the right of the front seat radio *ONLY*. If the batteries are being charged the adjacent indicator will illuminate.

Caution

- 1. Before charging the batteries, turn off the master switch.*

Instruments

Front Console

Power

Aircraft power is via the Master Switch using up ON configuration. This switches on both batteries which remain independent of one another but share a common buss.

Circuit Breakers.

Two circuit breakers are fitted to provide over current protection for the electrical instrumentation. One provides for the radio (front and rear seat), the U/C alarm and the 12 volt outlet plug mounted on the rear console (*this is not the charge plug*). The second circuit breaker provides for the Borgelt system (B400 and B500). If a circuit breaker trips, simply push it in after waiting 30 seconds. Adjacent to the master switch is a small toggle which provides power isolation for the Borgelt system.

Caution

- 1. DO NOT reset any circuit breaker more than twice in succession without checking the reason for the trip, particularly in flight.*

B400

This is mounted in the centre of the panel. The small toggle to the right top corner of the instrument controls the vario volume. Volume up is achieved by moving the toggle in a North West direction or at 315 degrees. Volume down is in the opposite direction. The small switch to the right of the LCD B500 display changes over the power supply for the

B400 to internal batteries. This should only be used if the main battery fails. Further information should be sought from the applicable manual

B500

Given the complexities of this instrument its function and use is noted elsewhere.

Radio

The radio consists of a base unit mounted in front of the control stick and a remote head mounted in the rear console. The standard control stick push to talk (PTT) applies to both front and rear seats. The radio can be configured to monitor the alternate frequency therefore the primary frequency should be checked before transmitting. For basic use and configuration, refer to the attached guide.

Colibri

Provision is made for a Colibri data logger. The RJ12 (telephone) plug at the bottom of the device provides power to the logger and a data path to the B500. Descriptive use of the instrument is separate to this document.

Ballast Indicators

Two green LEDs are fitted below the B500 head. These indicate the condition of the tail ballast tank designated Fin Tank B. One will illuminate when Tank B is full and the other when it is empty.

Caution

- 1. These do not indicate conditions for Tank A. For a detailed description of ballast requirements refer below and to the ballast chart in the aircraft.*

Rear Console

Power

Auxiliary 12vdc power is available from the outlet plug. Device current demands must be limited to 2 amps. Typically this outlet is designed for a hand held radio, a personal data assistant (PDA) or a Mountain High oxygen system. The polarity is positive to the right looking at the plug.

B400/500

Both Bolgelt instruments are repeaters of the main units mounted in the front console and as such have no input or adjustment considerations.

Radio

The radio is a remote control head of the Xcom 760 mounted in the front console. It will replicate all aspects of the current setup and provide a means to change any configuration.

Caution

- 1. Ensure the pilot in charge (PIC) is aware of any radio changes that may have taken place in flight.*

Canopies

The two canopies are independent ie not interlocked. Both are opened by moving the respective port latch inward toward the pilot and tilting the canopy toward the starboard side. The latch on the opposite side will eject the canopy when both are used in conjunction.

To lock the canopy, push the latch toward the front of the aircraft, the latch must be flush with the canopy frame to be secure.

Under Carriage

The undercarriage lever is on the left side of the aircraft below the air brake handle.

Retraction is by way of rotating the handle inward and pulling back in a firm continuous motion and allowing the handle to return to rest against the aircraft hull.

Extending the under carriage is the opposite function. The undercarriage is fitted with an alarm which will sound if the airbrakes are extended with the U/C retracted

Caution

- 1. The under carriage lever must be full forward and against the hull to be locked down, if it is not, the U/C is **NOT LOCKED DOWN***

Wings

Two wing configurations are available, 17.2 m and 20 m. The 17.2m is by way of two end caps which must be secured in place with the correct allen screws and key which are kept in the tool kit on the rear shelf.

To use the 20m config, remove the end caps and store them securely. Fit the 20m winglets by depressing the lock pin on top of the wing tip spar while inserting it into the wing spigot. Once the tip is secure, an audible click should be heard as the lock pin engages into the wing spar. If the sound cannot be heard, the upper wing surface should be checked for evidence of the pin head which should appear flush with the wing surface. Once the wing tip is secure, apply white tape to the gap between the wing and winglet. To remove the winglets, the pin must be depressed with the tip removal tool in the tool kit while the wing tip is wiggled back and forth. Make sure the tool is replaced in the aircraft tool kit after use

Wheels

The aircraft has three wheels and will always rest on the tail wheel in an unloaded configuration. However, dependant on total pilot weight it may well rock to the front wheel.

Caution

- 1. The second pilot must enter the aircraft with care to ascertain if it will rock to the nose wheel.*

Wheel brake

The wheel brake is integral with the airbrake system and is very effective. The brake is progressively applied near the maximum airbrake position. The wheel brake is hydraulic and the master cylinder is mounted behind the parcel shelf battery. Level checks should be made as part of the DI.

Caution

- 1. Full airbrake approaches should be avoided and must not be sustained after “check 1”.***
- 2. Care must be exercised with a combination of “check 2” and full airbrake (max wheel brake) until the nose wheel is on the ground.***

Ballast controls

There are two different ballast systems for the aircraft. One is intended as a performance enhancer and the other to control centre of gravity (CofG) locations.

Main ballast

The performance (mass) ballast system includes two bag style wing tanks and a tail tank, which is designed to balance the load of the water in the wing tanks to optimise the climb rate. The tail tank is designated “FIN TANK A”. Use of Fin Tank A is optional.

The wing tanks are independent of one another and specific operational conditions must be applied because of this. The maximum volume per tank is 80ltrs (kgs) = 160kg total. Fin Tank A can be filled only with strict adherence to the correct placard, which specifies the amount of water to put into Fin Tank A as a function of the amount of water in the wings.

The filling and dumping valve controls are located forward of the front seat air vent and consist of a tail tank actuator and two wing tank levers. Filling the wing tanks can be achieved by moving the tail tank dump lever toward the front of the aircraft followed by rotating the wing tank valve actuators inward toward the pilot. Filling the wings is achieved by attaching a nozzle and funnel to the inboard underside of the wing and graduating the required amount. Once the tank is filled to the correct amount, the actuator can be closed and the filling nozzle can be removed. Repeat this for the alternate wing. Once both valves are closed, Fin Tank A can then be filled as required. This is achieved by connecting the transparent funnel equipped filling hose (supplied with the aircraft) to the filling point, which is one of two hoses that come out of the left rear end of the fuselage beside the rudder. The fill hose is marked. The other hose is a vent for the fin tanks. When the water level in the tube corresponds with the required quantity marking for Fin tank A on the fin, the valve can be closed by closing the fin tank dump lever in the cockpit.

To release the ballast, the Fin Tank A valve lever must be moved forward to dump the fin tank before the wing tanks can be dumped. Both wing tanks must be dumped simultaneously using both wing valve levers.

C of G ballast

This refers to Fin Tank B, which is designed to balance the load of the rear seat pilot to optimise the climb rate. Use of Fin Tank B is also optional.

The amount of water to put into Fin Tank B is a function of the mass of the rear pilot.

Fin Tank B is filled by rotating a valve coupling out of the lower side of the fin, in front of the tail wheel, and connecting the filling hose and funnel. To rotate the coupling, press upwards towards the forward end of the cover. Push the cap ring of the coupling upwards to allow the hose nipple to be plugged into the coupling. This operates the valve which is built in to the end of the coupling. This valve closes automatically when the hose nipple is removed.

Fill level of the tank is referenced by holding the fill tube against the tail fin markings.

Refer to the cock pit placard for volume requirements. Strict adherence to requirements is essential.

Caution

- 1. All up weight (AUW) and maximum take of weight (MTOW) must be considered carefully before any ballast is added.*
- 2. By design, Fin Tank B cannot be dumped in flight. It is therefore essential that the status of Fin Tank B is checked to be correct for the flight as part of the pre-flight checks.*
- 3. Fin Tank B must be empty before the aircraft is flown solo.*
- 4. The dump rate of the wing tanks is 0.5 ltrs per second. 3 minutes minimum should be allowed with full tanks.*
- 5. All ballast **MUST** be drained at the conclusion of flying for the day or damage to the tanks may result.*

Front Panel Controls and Switches

❶ **DUAL** - Press once to activate dual receive capability. The DUAL WATCH icon will be illuminated in the LCD Screen. Press again to deactivate.

❷ **ON** - Press for 1 second to turn the transceiver on. Depress for 2 seconds to turn the unit off.

❸ **MODE** - Activates the various different modes. See mode section below.

❹ **MEM** - Accesses the 99 memory locations. See memory operation sections below.

❺ **Flip Flop (Transfer)** Press to transfer the bottom line to the top and vice-versa. The top frequency is the active transmit channel and the bottom line is the standby frequency. (The radio will not transmit on either the weather or extended receive channels.) Also used as escape from other screens.

❻ **VOL/SQH** - Default is transceiver volume. Rotate the control to adjust the **Vol** level between 0 and 63. The default for normal operation is 50.

To activate the squelch, press the knob in once and the word **SQH** will be displayed. Rotate the control to the left to decrease and open the squelch. Rotate to the right to increase and close the squelch. Squelch values range from 0 to 63 with the default for normal operation around 25. After 3 seconds of no activity the control reverts back to volume and the screen returns to default. These controls also adjust the intercom squelch and volume when using the mode buttons as described below. The correct Squelch setting is 2 units above the static threshold.

❼ **F/CH** This control adjusts the standby frequency. In normal use, rotating the control adjusts the MHz. value. Press the control to adjust the kHz. value. After 3 seconds of inactivity the control will revert to MHz. adjustment. See AdjAct section on page 14 for additional information.

Emergency Frequency - Press both ❼ and Ⓣ buttons together and you will automatically activate the emergency frequency 121.5 - press the flip/flop to exit.

