APPENDIX 462 HP.

ISSUE 1.

1. General.

This appendix contains supplimentary information for operation with the high power engine and must be read in conjunction with the operators manual, reference SW-406-7. All the existing flight limitations still apply.

The 462cc Rotax Liquid Cooled engine originally specified in the Pegasus XL-R was selected for economical low noise operation, with engine settings designed to give 28KW at 5,500 RPM.
The 462cc High Power version of the engine gives 36KW at 6,100 RPM, which considerably improves the climb rate and takeoff performance.
The greater power does not increase the top speed, which is limited by the pitch stability of the wing.
Noise and fuel consumption at the same cruise speed and loading is very similar with the two engine versions.

The differences between the two engine installations are:

		Low Noise	High Power
Intake disc valve.	part no.	924-202	924-205
Carburetter jetting:			
Main Jet	size	160	185
Needle	type	11k2 notch 2	15k2 notch 2
Needle jet	size	2.76	2.74
Sidemount Muffler Assy	part	(parallel front pipe) 973 225	(megaphone front pipe) 973 198
Fuel pump	part	994 482 (square)	994 485 (round)
Propeller		Newton 23R 65"*44"	Newton 26R 62"*44"
Propeller		-	Arplast 162 DAM/DAP 16 deg pitch @ 53.8 cm.

Notes:
a. The Pegasus towing system is available for fitting to the High Power Rotax 462cc powered Pegasus XL-R. The towing system must be fitted in accordance with Solar Wings Modification No. 102 and operated according to the Pegasus tow system manual and BHPA aerotowing manual.

b. The Newton 26R propeller is identical to the 23R but with 1.5"" removed from each tip. Hence, original 23R propellers, in good condition, can be modified to the 26R standard on an exchange basis by Solar Wings or Newton Propeller.

c. The Arplast propeller is quieter, with more performance and produces much less airframe vibration. The DAM type is the standard composite leading edge, whereas the DAP incorporates an integral polyurethene leading edge for greater protection. The correct pitch setting is 16 degrees at 53.8cm radius, measured on the undersurface. **Different pitch settings will void the airworthiness and noise certification of the aircraft.**

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2. Flight Characteristics:
The increased power gives a shorter takeoff run, with a more pronounced nose-up rotation as the aircraft lifts off. The steady-state climb attitude is also noticeably steeper, particularly at minimum loading.

2.1 Pitch:
After takeoff, it is important to maintain a good margin of airspeed and to regulate the pitch attitude. Reduce power if necessary. A very steep climb after takeoff may feel exhilarating and look spectacular but may be impossible to recover from in time if the engine fails at low altitude.
Recovery from the climb at low airspeed in the event of engine failure is quite straightforward. Keep the bar at the trim position, as the nose drops down. Push out to check the nose-down rotation as the nose drops below the horizon, then allow the aircraft to re-trim in the glide.

2.2 Roll:
In a steady, steep climbing attitude, the roll control will start to feel lighter with reduced response. This is because of the simple fact that at a 45 degree nose-up attitude, it only takes 0.7 of the effort to move the trike from side to side relative to the wing. By the same token, the rolling moment is also only 0.7 of that in level flight.
By deliberate severe whipstalling it is possible to reach a 90 degrees nose-up attitude in which the roll authority can be ZERO!. Remember to stay within the placarded flight limitations and to maintain positive loading at all times.

2.3 Stalls:
As mentioned above, deliberate violent whipstalling at a high power output, especially at minimum loading, can take the aircraft outside its controllable envelope. The stall should be approached slowly, by reducing the speed at no more than 1kt/second, until either the bar reaches the front strut with the aircraft in a stable mush, or the nose drops.
As the nose drops, allow the bar to come back to trim. The aircraft will recover immediately and continue climbing.

2.4 Takeoff:
For the shortest takeoff on grass surfaces, hold the bar to the front strut during the entire takeoff run. Allow the bar to come back as the aircraft rotates. Maintain 40-45 mph during the first part of the climb, and regulate the climb angle if required by reducing throttle. The rotation on takeoff will be noticeably quicker when at minimum loading.

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3. Performance:
3.1. Takeoff distance to clear 15m obstacle, maximum all up weight = 365kg, grass, 15 degrees C, sea level:

Newton 26R 62"*44" propeller	Arplast 162 DAM 16 degrees pitch
130 Metres.	121 Metres.

3.2. Climb Rate, conditions as above:

Newton 26R 62"*44" propeller	Arplast 162 DAM 16 degrees pitch
600 fpm.	600 fpm.