**SECTION 1**

Self Declared Maintenance Programme for Schempp Hirth Arcus M.

Owner:

The aircraft specified below will be maintained to the BGA GMP, modified to remove inspections not applicable to this glider, and with the airframe and engine maintenance requirements of the Schempp Hirth Maintenance manual added.

Reference to these documents are given on Page 2

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**This Self Declared (Customised) maintenance programme applies to the Schempp-Hirth ARCUS M Motor glider**

**Aircraft Manufacturer:** Schempp-Hirth GmbH **Type:** Arcus M **Engine:** SOLO 2625-02i **Propeller:** KS-1G-160-R-120

**Registration:** **Works Serial No.** **BGA No.**  **Competition No.**

**Owners:**

**Address:**

1. **Maintenance Documents**

|  |  |  |
| --- | --- | --- |
| **Section** | **Document Type** | **Issue / Amendment state** |
| BGA GMP | Generic Maintenance Programme | Latest issue |
| Airframe | Flight Manual  Maintenance Manual | Initial Issue Oct 2012  Initial Issue Oct 2012 |
| Engine | Operating Manual | Edition 1 Sept 2010 |
| Propeller | Operating Manual | Revision 3 June 2005 |
| Other Equipment |  |  |

1. **Maintenance Check Cycle**

|  |  |  |
| --- | --- | --- |
| **Check Title** | **Content** | **Period** |
| Daily Inspection | FM Section 4.3 | Before first flight of day |
| Pre-Flight Inspection | FM Section 4.4 | Prior to each flight |
| Annual Inspection | MM Sections 3, 4, & 9 | Not exceeding 12 months ± 1 month |
| 25 hour Inspection | MM Section 4.2 | Not exceeding 25 engine hours |

**SECTION 2**

**In addition to the Daily Inspection actions listed in Section 2 of the BGA GMP, safe operation of the Arcus M depends upon careful daily inspection of the powerplant system:**

1. **Powerplant**: Check engine controls and switches, confirm fuel and engine time correspond with DI book last entry, confirm safe with ignition off. With engine retracted check doors flush secure. With engine raised and doors open; Inspect doors, engine, accessories and engine bay as visible for damage, security, and signs of overheating or leaks. Inspect propeller blades, hub and folding device for damage and security. Check drive belts condition and even tension. While turning engine over check belt rollers for free movement, even compression and smooth and noise free operation. Check engine restraint wire and door bungees (if fitted). Check coolant level and filler cap tight. Inspect air intake and filters. Inspect Exhaust system for damage, security and evidence of leaks. Check engine bay wiring for security and freedom from chaffing. Check fuel tank water drain. Check sufficient fuel quantity of correct grade for intended flight. Set fuel contents recorder.

**Section 3 - Maintenance Work Order**

**Maintenance Work Order**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| G- | BGA No: | | Aircraft Type: ARCUS M | Aircraft Serial No: |
|  | |  | | |
| Details of work requested: | | | | |
| Annual / ARC extension or renewal | | Maintenance check: 25 hours | | |
| Details of Other Work | | | | |
| As owner or operator of the aircraft I authorise the above BGA Maintenance facility to carry out the specified work as detailed:  Signed:…………………………………………………..Name:……………………………………………….Date:……………………………….. | | | | |

**SECTION 4**

Maintenance Schedule - Annual (and Airworthiness Certificate renewal) Inspection

|  |  |  |  |
| --- | --- | --- | --- |
| Task Item | Description | Inspection detail | Operation |
|  | | | |
| 0 | All Tasks General | Inspect for security, damage, wear, integrity, drain / vent holes clear, signs of overheating, leaks, chafing, cleanliness, and condition as appropriate to the particular task. Whilst checking GRP Composite structures check for signs of impact or pressure damage that may indicate underlying damage. The manufacturer’s maintenance manual must be used for specific maintenance instructions. The aircraft must be clean prior to starting inspections. | Insp/chk |
| 1 | Fuselage Paint/Gelcoat | Inspect all external surface gel coat and paintwork.  Check that registrations marks are correctly applied. | Insp/chk |
| 2 | Fuselage structure | Check frames, formers, tubular structure, skin and attachments for damage. Inspect for signs if corrosion on tubular framework. All fittings which are mounted on GFRP / CFRP structures must be checked for tight attachment. Also check the CFRP / GFRP structure at the fittings for cracks, white spots and delamination. | Insp/chk |
| 3 | Underside of fuselage Nose | Inspect for evidence of impact with ground, in particular around skid or nose wheel. Inspect nose tow release unit and aperture. | Insp/chk |
| 4 | Rudder | Check rudder assembly, hinges, attachments and balance weights. | Insp/chk |
| 5 | Pot Pitot/Ventilator | Pot Pitot/Ventilator Check, check operation of ventilator. | Insp/chk/Op |
| 7 | Wing Attachments | Inspect the wing structural attachments. Check for damage, wear and security. Check for rigging damage. Check condition of wing attachment pins. | Insp/chk |
| 8 | Canopy, locks, jettison | Inspect canopy and frame and transparencies for cracks unacceptable distortion and discoloration. Check operation of all locks and catches. Carry out an operational test of the canopy removal system. Check the guides for the locking rod on the canopy frame, the locating pins on the fuselage for delamination/cracks, lubricate. Check the front CFRP hinge for delamination/cracks and the rear hinge for deformation. Refit canopy, ensuring canopy removal system handle is correctly positioned and normal canopy operation is satisfactory. | Insp/chk/Op |
| 9 | Seat / cockpit floor | Inspect seats. Check that all cushions fastenings are correctly installed and as appropriate, energy absorbing foam cushions are fitted correctly. Ensure that all seat adjusters fit and lock correctly. Seat trim inspection ref BGA Inspection 019/10/2001 | Insp/chk |
| 10 | Cleanness / loose article check | Check cockpit floor under seat pans and in rear fuselage for debris and foreign items. | Insp/chk/Op |
| 11 | Front Skid/Nose Wheel & mounts | Inspect for evidence of hard/heavy landings. Check skid wear (If fitted) or Inspect wheel, tyre and wheel box. Check tyre pressure. | Insp/chk/service |
| 12 | Mainwheel & Brake assembly | Check for integrity of hydraulic seals and leaks in pipe work. Check brake lining wear. Check disk wear. Check brake adjustment. CAUTION: BRAKE DUST MAY CONTAIN ASBESTOS. Check operation of brake. Check level of brake fluid and replenish if necessary. CAUTION: OBSERVE SAFETY PRECAUTIONS. If DOT 4 automotive brake fluid is used; change at regular intervals as it absorbs water. (Instructions on how to remove the main wheel for cleaning, lubricating and for maintenance work on the brake system are given in section MM 5.4.) | Insp/chk/service |
| 13 | Undercarriage suspension | Check springs, shock absorbers, and attachments. Check for signs of damage | Insp/chk |
| 14 | Undercarriage retraction system | Check retraction mechanism and controls, warning system if fitted, gas struts, doors and linkages/springs, over centre/locking device. Door sealing tapes. Perform retraction test. | Insp/chk/Op/chk |
| 15 | Tail skid / wheel | Remove, Inspect for evidence of hard/heavy landings. Inspect wheel, tyre and wheel box. Check tyre pressure | Insp/chk/service |
| 16 | Release hooks | Inspect nose and C of G release hooks and controls Check operational life. Carry out operational test. If more than one release hook or control is fitted check operation of all release hooks from all positions. (for removal and reinstallation of the tow releases refer to section MM 5.2) | Insp/chk |
| 17 | Harnesses | Inspect all harnesses for condition and wear of all fastenings, webbing and fittings. Check operation of release and adjustments. See BGA AMP manual Leaflet 4-8. On gliders used for private flight only – seat harnesses may be lifed on condition provided there is no Airworthiness Directive mandating replacement. | Insp/chk/Op/chk |
| 18 | Rudder pedal assemblies | Inspect rudder pedal assemblies and adjusters | Insp/chk |
| 19 | Rudder control circuit & stops | Inspect rudder control rods/cables. Check that control stops are contacting and secure. Pay particular attention to wear and security of liners and cables in “S” tubes. Lubricate with Vaseline. | Insp/chk |
| 20 | Elevator control circuit & stops | Inspect elevator control rods. Check that control stops are contacting and secure. Inspect self-connecting control devices. | Insp/chk |
| 21 | Aileron control circuit & stops | Inspect aileron control rods. Check that control stops are contacting and secure. Inspect self-connecting control devices. | Insp/chk |
| 22 | Trimmer control circuit | Inspect trimmer control rods. Check friction/locking device. | Insp/chk |
| 23 | Air brake control circuit | Inspect air brake control rods. Check friction/locking device (if fitted) Inspect self-connecting control devices. | Insp/chk |
| 24 | Wheel brake control circuit | Inspect wheel brake handles attachments and control cables. | Insp/chk |
| 25 | Instrument panel assemblies | Inspect instrument panel and all instruments/equipment. Check that instrument readings are consistent with ambient conditions. Check marking of all switches, circuit breakers and fuses. Check operation of all installed equipment as possible i.a.w. Manufacturer’s instructions. | Insp/chk/  Op/chk |
| 26 | Pitot/static system | Inspect pitot probes, static ports all tubing (as accessible) for security, damage, cleanliness, and condition. Drain any water from condensate drains. | Insp/chk Service |
| 27 | ASI Calibration | Carry out calibration of the airspeed indicators (in situ permissible) i.a.w. manufacturer’s instructions (Use manufacturers limits. If Not avail. Max error 2 knots) | Op/chk |
| 28 | Altimeter datum | 28 Check barometric sub scale. (max. error 2 Mb) | Op/chk |
| 29 | Electrical Installation/ fuses/trips | Check all electrical wiring for condition. Check for signs of overheating and poor connections. Check fuses / trips for correct rating. Check for signs of overheating and poor connections | Insp/chk |
| 30 | Battery | Check battery mounting for security and operation of clamp. Check for evidence of electrolyte spillage and corrosion. Check that battery has the correct main fuse fitted. It is recommended to carry out battery capacity test on gliders equipped with radio, used for cross-country, airways or competition flying. Battery capacity test is required if a transponder is fitted. See BGA AMP manual leaflet 4-9. | Insp/chk /Service |
| 31 | Oxygen systems | Inspect oxygen system. Check bottle hydrostatic test date expiry i.a.w. Manufacturers recommendations. Ensure that bottle is not completely empty (200psi min) refill with aviators oxygen only. Clean masks and regulators with approved cleaning wipes. Ensure that oxygen installation is recorded on weight and C of G schedule. CAUTION: OBSERVE ALL SAFETY PRECAUTIONS | Insp/chk /Service |
| 32 | Radio installations and placards, Transponders | Check radio installation, microphones, speakers and intercom if fitted. Check that call sign placard is installed. Carry out radio ground function test. Record type fitted. If installed, Carry out transponder maintenance and inspection i.a.w. EASA Safety Information Bulletin SIB No: 2011-15R2, 19 July 2013. | Insp/chk |
| 34 | Removable ballast | Check removable ballast mountings and securing devices for condition. Check that ballast weights are painted a conspicuous colour. Check that prevision is made for the ballast on the loading placard. | Insp/chk |
| 35 | Colour coding of controls | Ensure that controls are colour coded and in good condition, as follows; Tow release: Yellow Air Brakes: Blue Trimmer: Green Canopy normal operation: White Canopy jettison: Red Other controls: clearly marked but not using any of the above colours | Insp/chk |
| 36 | Equipment stowed in Centre section | Centre section Inspect equipment for security, damage and condition. Check validity of any safety equipment. Check manufacturers and NAA (if required) date plates. | Insp/chk |
| 39 | Water ballast system | Check water ballast system, wing and tail tanks as fitted. Check filling points, level indicators, vents, dump for operation and leakage. **:** If there is suspicion or proof of leaking water tanks, the manufacturer shall be contacted. Check the wing water dump valves for their effective valve lift - the difference in maximum valve lift between the left and the right tank should not be more than 10 mm (0.39 in).  Check the fin ballast valve and its actuating mechanism for proper function. If the dump valve leaks, it is accessible after removing the rudder, see section 5.1. Check that all tank spill holes are clear. | Insp/chk |
| 40 | Tailplane and elevator | With tailplane de-rigged check tailplane and attachments, self connecting and manual control connections, Check condition and fitment of sealing tape ref BGA Inspection 009/10/2000 Control tape and Mylar seal inspection ref BGA Inspection 011/12/2000 | Insp/chk |
| 41 | Left wing | Check mainplane structure externally and internally as far as possible. Check gel coat. Check registration marks are correctly applied Ensure compliance with Generic Requirement 8 | Insp/chk |
| 42 | Left wing controls | Inspect aileron and Flaperon assemblies, hinges, control connections, springs, tapes and seals. Ensure that seals do not impair full range of movement. Control tape and Mylar seal inspection ref BGA Inspection 011/12/2000 | Insp/chk |
| 43 | Left air brake | Inspect air brake/spoiler panel(s) operating rods, closure springs, | Insp/chk |
| 44 | Left Flap | Check flap system and control. Inspect self-connecting control devices. | Insp/chk |
| 45 | Right wing | Check mainplane structure externally and internally as far as possible. Check gel coat. Check registration marks are correctly applied | Insp/chk |
| 46 | Right wing controls | Inspect aileron and Flaperon assemblies, hinges, control connections, springs, tapes and seals. Ensure that seals do not impair full range of movement. Control tape and Mylar seal inspection ref BGA Inspection 011/12/2000. | Insp/chk |
| 47 | Right air brake | Inspect airbrake /spoiler panel(s) operating rods, closure springs, | Insp/chk |
| 48 | Right Flap | Check flap system and control. Inspect self-connecting control devices. | Insp/chk |
| 49 | Bonding/vents/drains | Check all bonding leads & straps. Check all vents and drains are clear from debris. | Insp/chk |
| 50 | Lubrication | Lubricate aircraft in accordance with manufacturers requirements  The aircraft should be lubricated with acid-free grease and oil customary in trade. Fuselage: (see diagram 1, 4 and powerplant overview diagram 8). Lubricate all accessible control circuits (bearings with a sealed grease filling do not require any service). It is recommended that the guide tubes for the rudder pedal adjustment and the cables in the the S-shaped guides on the pedals are treated with VASELINE to ensure a smooth pedal adjustment. Also lubricate the linkages locking/opening the canopy and the mechanism attaching/detaching it. Lubricate the telescoping tube of the powerplant pylon spindle drive and the pylon bearings. Lubricate the attachment points of the spindle drive and the propeller pylon.  Horizontal and vertical tailplane surfaces: Lubricate the accessible rudder and elevator hinges. Wing panels (see diagram 3): Lubricate all accessible connecting points in the flap/aileron actuators and airbrake control circuits and their hinges as well as the attachment points of the airbrake covers. | Lub |
| 51 | Markings | Check side and under-wing markings are correct Ident plate for CAA registered aircraft present. BGA Number on fuselage for BGA registered aircraft. | Insp/chk |
| 52 | Mandatory checks | Check for compliance of all mandatory modifications, airworthiness directives and inspections applicable to the Airframe, accessories & equipment. Record compliance in the logbook. State of design Type certificate and STC holder AD list, BGA Compendium, BGA Technical News Sheet, BGA Mandatory inspections, Manufacturers mandatory check list and (TCDS) and EASA bi weekly bulletins. | Check Records |
| 53 | Manufacturers recommendations and life inspections | Review manufacturers maintenance schedules and instructions for continued airworthiness for the airframe to establish if any additional work, servicing or preservation action is required (enter in tasks 90 to 100) Check airframe life inspection status (6000 hour inspections etc). | Insp/chk |
| 54 | Control deflections & free play | Check and record range of check free play. With the aircraft rigged, check the deflections of the control surfaces with the help of an assistant (see section 2.1) and also check the control circuits. Check that the gap between the wing flaps is in the worst case at least 1.5 mm (0.06 in.). Check that the gap between the inner flap and the wing-fuselage fairing is at least 2.0 mm (0.079 in). Check that the gap between the inner edge of the airbrake covers and the cut out in the wing is at least 1.5 mm (0.06 in). Check the wing attachment fittings and control connections for excessive play (see section 2.3 through 2.5). Bearings with excessive radial play must be replaced. Shim as required for excessive fore/aft play. | Insp/chk |
| 55 | Duplicate inspections | Record each item requiring a duplicate inspection on an additional worksheet and complete prior to releasing aircraft back to service. | Insp/chk |
| 56 | Weighing | Review weighing record to establish accuracy against installed equipment Check date of last weighing (Maximum period for re-weigh is 8 years or after painting) See Generic Requirement 10 and BGA AMP manual Leaflets 4-1 & 4-2. | Insp/chk |
| 57 | Speed/weight/ manoeuvre placard | Check placard is correct and legible and accurately reflects the status of the aircraft | Insp/chk |
| 58 | Hours | Hours at this inspection Record Log book Record | Insp/chk |
| 59 | Launches | Launches at this inspection Record | Insp/chk |
| 60 | Modifications | Review Log Book and verify that any modifications incorporated since last Airworthiness Certificate or ARC renewal have been approved and correctly embodied and recorded | Insp/chk |
| 61 | Log Book | Complete log book entry. Ensure that all flying records are entered and up to date. | Record |
| 62 | Flight manual | Verify that the Aircraft Flight Manual or Operating Handbook is at the latest revision. | Check |
| 62 Check Tasks 63 to 89 are only applicable to Self- Launching Sailplanes with retractable engine/propeller | | | |
|  | Limit switches | Check operation of all limit switches & strike plates. Ensure not damaged by impact. | Insp/chk |
| 63 | Engine pylons & mountings | Inspect engine and pylon installation. Check engine compartment and fire sealing. | Insp/chk |
| 64 |  |  |  |
| 65 | Pylon/engine stops | Check limit stops on retractable pylons. Check restraint cables | Insp/chk |
| 66 | Electric actuator | Inspect electric actuator, motor, spindle drive and mountings | Insp/chk |
| 67 | Electrical wiring | Inspect all electrical wiring. Pay special attention to wiring that is subject to bending during extension and retraction of engine/pylon. | Insp/chk |
| 68 | Limit Switches | Check operation of all limit switches & strike plates. Ensure not damaged by impact. | Insp/chk |
| 69 | Fuel tank | Check fuel tank mountings and tank integrity. Check fuel quantity indication system if fitted. | Insp/chk |
| 70 | Fuel pipes & vents | Check all fuel pipes especially those subject to bending during extension and retraction of engine/pylon. Check vents clear. Ensure overboard drains do not drain into engine compartment. Check self-sealing couplings. | Insp/chk |
| 71 | Fuel cock or SOV | Check operation of fuel cock or shut off valve & indications | Op/chk |
| 72 | Fuel pumps and filters | Clean or replace filters as recommended by manufacturer Check operation of fuel pumps for engine supply or tank replenishment Check fuel pump controls and indications | Insp/chk |
| 74 | Spark plugs | Carry out spark plug service. It is recommended to replace spark plugs at annual intervals Service. | Service |
| 75 | Harnesses & Magneto | Inspect low tension and high-tension wiring, connectors, spark plug caps. Check ignition to engine timing. | Insp/chk |
| 76 | Propeller | Inspect propeller, hub, folding mechanism, brake, stow sensors. Check overhaul period. Manufacturers TBO must be observed if specified. | Insp/chk |
| 77 | Doors | Check engine compartment doors, operating cables, rods. | Insp/chk |
| 78 | Safety springs | Check all safety and counterbalance springs. | Insp/chk |
| 79 | Extension and retraction | Check extension and retraction operation times are within limits specified by manufacturer. Check light indications and interlocks for correct operation. | Op/chk |
| 80 | Exhaust | Inspect exhaust system, silencer, shock mounts and links. See CAA CAP 562 CAAIP Leaflet B-190 for further guidance | Insp/chk |
| 81 | Engine installation | Inspect engine and all accessories. Carry out compression test and record results. | Insp/chk |
| 82 | Lubrication |  |  |
| 83 | Engine instruments and Engine control software | Inspect all engine instruments and controls. Check control unit, mounts, bonding and connections. Carry out internal self-test if fitted. Check latest issue of firmware for ECU. | Insp/chk |
| 84 | Engine battery (if separate to airframe battery) | Service Inspect battery and mountings. If main fuse is fitted check rating and condition. | Insp/chk |
| 85 | Engine battery | Carry out capacity test. See BGA AMP manual leaflet 4-9. | Insp/chk |
| 86 | Placards | Check all placards in accordance with flight manual and are legible | Insp/chk |
| 87 | Fuel leaks | With the engine fully serviced check the fuel system for leaks. Check operation of gauging and low-level warning system. | Insp/chk |
| 88 | Mandatory checks | Check for compliance of all mandatory modifications, airworthiness directives and inspections applicable to the engine, propeller, accessories & equipment. Record compliance in the logbook. State of design Type certificate and STC holder AD list, BGA Compendium, BGA Technical News Sheet, BGA Mandatory inspections, Manufacturers mandatory check list. | Insp/chk |
| 89 | Manufacturers recommendations | Review manufacturers maintenance schedules and instructions for continued airworthiness for the engine/propeller to establish if any additional work is required (enter in tasks 90 to 100) Where a recommended engine TBO is specified, | Insp/chk |
| 90 to 100 Additional maintenance tasks not included in schedule (complete as required. If necessary use additional sheets) Add BGA inspections, repetitive Airworthiness Directives, Manufacturer’s Instructions for Continued Airworthiness as applicable to particular aircraft. See AMP 2-14 for guidance on customisation. | | | |
| 90 | Rudder (With built in tail wheel) | Check lower mounting (see MM page 5.1.1), bracket for cracks and damages, especially in the welding seams. Check the skin around the axle for delamination. Remove the tail wheel (see page 5.1.1) and check the tire pressure of the tail wheel (3.0 bar / 44 psi). Furthermore, check the 4 mounting bolts at the lower rudder mounting for corrosion and damage. Check rudder assembly, hinges, attachments, balance weights. | Insp/chk |
| 91 | Toilet equipment | Check for cleanliness freedom from leaks |  |
| 92 | Inspection of wing fuel tanks | Carry out inspection of flexible wing fuel tanks in accordance with ARCUS MM procedure. |  |
| 93 | Inspection of Propulsion system | Carry out inspection of propulsion system in accordance with ARCUS MM procedure and sign inspection sheets pages P1.1.to P4.2 |  |
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**Section 6 Time Limited Tasks**

All entries must be accompanied by the appropriate certification entry in the relevant Log Book

|  |  |  |  |
| --- | --- | --- | --- |
| **Registration G-SMAR** | | **Schempp- Hirth ARCUS M** | |
| **Item:** | **Reference:** | **Time of Operation:** | **Compliance Due:** |
| Airframe  Works No 106 | MM 3.3 | 6000 hrs (INSP)  9000 hrs (INSP)  Then every 1000 hrs until 12000 hrs | 6000 hrs |
| Engine  SOLO 2625-02i  Ser No 293/143 | Engine MM | TBO 400 eng. hrs | 400 eng. hrs |
|  | Engine MM | 25 eng. hrs | At 25 eng. hrs or Annual |
| Propeller  KS-1G-160-R-120  Ser No. 133 | Propeller MM | TBO 200 eng. hrs | 200 eng. hrs |
| Nose Tow Release  TOST E85  Ser No. 161 804 | LBA AD 1998-018/3 | TBO 2000 launches | 2000 AT Launches |
| CG Tow Release  Ser No. 64 549 | LBA AD 1998-018/3 | TBO 2000 launches | 2000 M,W Launches |
| Engine Drive Belts  V-belt set (5) | MM 5.10 | TBR 50 eng. hrs.  5 years | 50 eng. hrs.  27 Sept 2018 |
| Pylon arresting cable | MM 5.6 | TBR 50 eng. hrs | 50 eng. hrs |
| Wing Fuel Tanks | MM 5.8 | 5 years (INSP) | 27 Sept 2018 |
| Seat Harnesses | MP/02411/P | Annual (INSP)  On Condition Replace | On Condition |
|  |  |  |  |
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