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0.2 Record of revisions

Any revision of this Manual must be recorded in the following table and in case of approved Sections endorsed by the responsible airworthiness authority.
The new or amended text in the revised page will be indicated by a black vertical line in the left hand margin, and the Revision No. and the date will be shown on the bottom left hand of the page.

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3.1 Maintenance

In this section there is defined a list of inspections to ensure safe operation of the 304S Jet during its lifetime. The periodical inspections shall be performed by qualified staff authorized to perform the work at the time of sailplane inspections.

3.1.1 Inspections periods

- After every 100 flight hours (sailplane);
- At annual inspection;
- After rough landings, after ground loops (see 3.3.1);
- Before long storing in a hangar or in a trailer;
- After 50 hrs of motor run time

3.1.2 Inspection after every 100 flight hours

Apart of required check list for the glider after every 100 flight hours, it is necessary to check also thoroughly the propulsion system according next check list:

	Inspection after every 100 flight hours (sailplane)	Date of inspection:	
No	**Checking**	**Conformity Yes / No**	**Signature**
1	EDD instrument wiring and functioning		
2	Inspect engine as per motor manual TJ42/OPRM section 8.1 and 8.5, especially thermo-couples position (TJ42/OPRM 6.5)		
3	Check the engine attachment for damages, corrosion or malfunction		
4	Check stops setting and if play in engine actuating mechanism in extended position does not interfere with engine door bay doors		
5	Check all bolted connections		
6	Check fuel hoses for any damage		
7	Check 12V battery condition		
8	Check proper function of engine extension/ retraction		
9	Check proper function of engine bay door mechanism		

3.1.3 Annual inspection

It is necessary to check the sailplane every 12 months in accordance with the 100 flight hours inspection and following additional steps. Additionally, check if there was any update of G 304S Jet manuals!

	Annual Inspection	Date of inspection:	
No	**Checking**	**Conformity Yes / No**	**Signature**
1	Check steps for 100 flight hours inspection		
2	Check resistance of the glow plug ≤ 1.1 Ohm		
3	RPM sensor clearance between 0.1 – 0.15 mm		
4	Drain a 150 ml fuel specimen and check for water and dirt presence		
5	Replace the fuel filter. Appropriate fuel filter is delivered by HPH Ltd.		
6	Perform ground test run of the engine according to flight manual supplement G304SJet/AFMSupp point 4.3.1		
7	Check the battery state of charge. Voltage of fully charged battery may not drop bellow 10.5V during start up.		

NOTE
To reduce number of engine cycles do not perform engine ground check at power higher than 50% if not necessary.

3.1.4 Inspection before long storing in a hangar or in a trailer

	Inspection before 3 month (and longer) storage	Date of inspection:	
No	**Checking**	**Conformity Yes / No**	**Signature**
1	Drain the fuel tank		
2	Lubricate the engine as per motor manual TJ42/OPRM section 8.2 and 8.3		
3	Charge the battery and store it in a dry place at room temperature		

3.1.5 **Inspection after 50h of motor run time**

If the operating time limit of 50 motor run hrs (tolerance +10 hrs) is reached the engine assembly has to be sent to HPH or to an organization authorized to maintain the engine for replacement. The DECU counters will prevent starting the engine above the limit.

	Inspection after 50 hrs motor run	Date of inspection:	
No	**Checking**	**Conformity Yes / No**	**Signature**
1	Log the DECU counters values. Contact HPH		
2	Remove the engine from the fuselage according to procedure 3.2.2 of this manual		
3	Remove the DECU		
4	Pack and ship engine and DECU to HPH. Follow Service Letter SL-2024-01 for packing and shipping instructions.		
5	Replaced parts: bearings, fuel and lubricating system, stick burning chambers, inside burning chamber, innercone hull, o ring set, bendex complete		
6	Install the engine – apply opposite procedure under point 2, install the DECU		
7	Check new counter values in DECU.		
8	Perform ground test run of the engine according to flight manual supplement G304SJet/AFMSupp point 4.3.1		

3.2 Engine troubleshooting

3.2.1 Startup problems

It is possible that engine start up takes longer time or makes difficulties after several tens of engine startups. In this case contact manufacturer (HpH l.t.d) with detail description of engine behavior. The best way is video of EDD display during engine startup attempt.

The problem is most likely caused by low battery performance or excessive wear of the glow plug element (ignition lance).

It is strongly recommended to replace 12V Lead Battery for Engine (located under the instrument panel) after 5 years of service.

If the glow plug is worn (see 3.1.3. step 2 for check procedure) the new lance with changing instructions will be send by manufacturer. In other case engine check by manufacturer is necessary.

3.2.2 Removing the turbine:

- Extend the mechanism.
- Unplug first the cable that leads from turbine to the connector in the firewall and make it loose from the mechanism by cutting the plastic straps.
- Make loose the reinforced fuel line.
- Remove the low part of the cowling (leg).
- Unplug the fuel pipe in the front of the holder.
- The turbine can be removed from the holder mechanism by unscrewing the two M6 bolts.

CAUTION
Removing and reinstallation can be done by authorized personnel only.

CAUTION
When disassembling the mechanism, keep an eye on the spacing washers. Always mount back the original number when reassembling.

3.3 Special Inspection Procedure

3.3.1 **After rough landings, after ground loops;**

In addition to the inspection described in manual 304S/MM chapter 3.3.1

	Inspection after rough landing	Date of inspection:	
No	**Checking**	**Conformity Yes / No**	**Signature**
1	Check the engine attachment for damages or malfunction		
2	Check extension mechanism stops and proper mechanism function		
3	Check all bolted connections		
4	Check fuel hoses attachments sealing		
5	Check wiring harness condition		
6	Perform ground test run of the engine according to flight manual supplement G304SJet/AFMSupp point 4.3.1		

3.4 Free Play in the Control Circuits

Not affected.

3.5 Free Play in Wing and Tail plane Attachments

Not affected.

3.6 Primary and secondary structures

Not affected.

3.7 Damage

During maintenance tasks check also for cracks in welding of the metal parts, look for deformed parts or cracked parts. Check whether the visible engine parts are in correct positions when retracted and extended. Check for strange sounds during retraction. Check for unusual temperature rises or power loss during operation. Check signs of foreign object ingestion after engine operation.

If the damage of the engine part is found, it must be reported to the HPH.

Engine must be withdrawn from service if cracks of the compressor or turbine wheel are found.

3.8 Repairs

All damaged or malfunctioning parts must be replaced with new parts.

New parts like glow plug, starter, EGT thermocouple, fuel valves, external fuel lines must be ordered at HPH. Follow procedures for replacement shipped with a new part.

Lifetime is counted by DECU. In case a (defective) DECU is replaced the hours and cycles of the turbine engine need to be considered in newly installed unit.

If compressor or turbine or bearings must be replaced, the engine assembly has to be sent to HPH or to an organization authorized to maintain the engine for replacement. Then follow steps:

- Log the DECU counters values. Contact HPH.
- Remove the engine from the fuselage according to procedure 3.2.2 of this manual.
- Remove the DECU.
- Pack and ship engine and DECU to HPH.
- Follow Service Letter SL-2024-01 for packing and shipping instructions.

3.9 Removal and Re-Installation of Releases

Not affected

3.10 Control Surface Moments

Not affected

4. AIRWORTHINESS LIMITATIONS

The Airworthiness Limitations Section is EASA approved
and variations must also be approved.

4.1 TJ 42 Jet engine

Total service life of the rotor	1484 motor run cycles (RPM higher than 50% = 1 cycle)

Service life of shaft, compressor and turbine wheel is 1484 cycles above 50% RPM (it corresponds approximately with 100 hrs of typical engine use). The DECU counters will prevent starting the engine above this limit.

Compressor wheel, compressor nut, shaft, turbine wheel, turbine wheel nut must be replaced mandatory after reaching their life limit.

When the limit is reached the engine assembly has to be sent to HPH or to an organization authorized to maintain the engine for replacement.

Then follow steps:

- Log the DECU counters values. Contact HPH.
- Remove the engine from the fuselage according to procedure 3.2.2 of this manual.
- Remove the DECU.
- Pack and ship engine and DECU to HPH.
- Follow Service Letter SL-2024-01 for packing and shipping instructions.
- Follow instructions shipped back with overhauled engine
- Log new DECU counter values.

CAUTION
Lifetime is counted by DECU. In case a (defective) DECU is replaced the hours and cycles of the turbine engine need to be considered in newly installed unit.

6. INSTRUCTIONS FOR REPAIRS

Follow instructions at chapter 3.8 of this supplement for TJ-42 repairs.