Retrofit: End Position Detection IVO Propeller

<div style="text-align:center">

MANDATORY

</div>

Repeating symbols:

❖ WARNING: Identifies an instruction, which if not followed, may cause serious injury or even death.

o CAUTION: Denotes an instruction which if not followed, may severely damage the aircraft or could lead to suspension of warranty

➢ NOTE: Information useful for better handling

1. Planning information

1.1   Reference

All AutoGyro models with IVO variable pitch propeller installed.

1.2   Reason

This retrofit provides cockpit indication when the variable pitch propeller has reached its end stops, thus improving ease of use, operational reliability and minimizing the risk of misuse.

1.3   Subject

Retrofit

1.4   Compliance

Prior to next flight, at latest with next scheduled inspection (25/100 hrs).
CAUTION: Failure to comply with this instruction will cause the loss of eventual warranty on the actuating drive.

1.5   Approval

The technical content is approved under the authority of AutoGyro GmbH

1.6   Manpower

Accomplishment: 1.5 h

1.7   Mass data

No change

Gyrofliegen...
die neue Dimension!

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1.8   Electrical load data

No change

1.9   References

In addition to this technical information refer to current issue of
AutoGyro Parts catalogue www.auto-gyro.de

1.10   Other publications affected

-

1.11   Interchangeability of parts

Affected parts cannot be re-used and must be marked accordingly and/or discarded.

2.   Material Information

2.1   Material – cost and availability

Price and availability will be supplied on request by AutoGyro GmbH.

2.2   Material requirement per gyro

Should removal of a locking device (e.g. lock tabs, self-locking fasteners, etc.) be
required when undergoing disassembly/assembly, always replace with a new one

2.3   Material requirement per spare part

C.EL300 (Calidus)
V.EL301 (Cavalon)
M.EL302 (MTOsport / MT 03)
Retrofit kits have to be ordered through AutoGyro's International Partners.

2.4   Rework of parts

None

2.5   Special tooling/lubricant-/adhesives-/sealing compound

None

3. Accomplishment / Instructions

3.1 Determination of Necessity

If not installed …

3.2 Instructions

A detailed instruction is part of each retrofit kit.

3.3 Test run

Perform ground test run.

3.4 Summary

These instructions (section 3) have to be conducted in accordance with section 1.4.

The execution/completion of the mandatory Service information must be annotated in the aircraft logbook

Gyrofliegen…
die neue Dimension!

4. Function Description / Flight Manual Supplement

This controller monitors the electrical current of IVO variable pitch propeller actuating motor. This allows the detection of both (FINE and COARSE) end positions, hard stops, but also possible defects, such as worn-out brushes or cable breaks.

Cockpit indication consists of 2 orange status LEDs. Indication logic according to the following table:

Both LEDs off	Propeller is in no end position and no pitch change activated.
Upper LED blinking	Propeller changing pitch to „FINE"
Lower LED blinking	Propeller changing pitch to „COARSE"
Upper LED steady ON	End position „FINE" reached and electronic pitch change inhibit „FINE" activated. *
lower LED steady ON	End position „COARSE" reached and electronic pitch change inhibit „ COARSE " activated. *
Both LEDs flashing fast	Actuating motor does not word despite rocker switch activation. Possible defects: brushed worn-out, cable break, … **

* Electronic pitch change inhibit will be deactivated after activating pitch change in opposite direction for at least 1 second.

** Indication can only be reset by switching the master switch temporarily to OFF and then back ON. In order to avoid pilot distraction, indication of a possible defect is re-triggered after another activation of the rocker switch.

61-10-00 8-2   RETROFIT: END POSITION DETECTION IVO PROPELLER   BAS

GENERAL, REFERENCES AND REQUIREMENTS

Operational task, which can be performed by a licensed pilot or instructed personnel!

SPECIAL TOOLS, CONSUMABLE MATERIALS AND PARTS

C.EL300   Retrofit Kit Calidus

V.EL301   Retrofit Kit Cavalon

M.EL302   Retrofit Kit MT 03 / MTOsport

PRECAUTIONS AND SAFETY MEASURES

CAUTION: Failure to comply with this instruction will cause the loss of eventual warranty on the actuating drive.
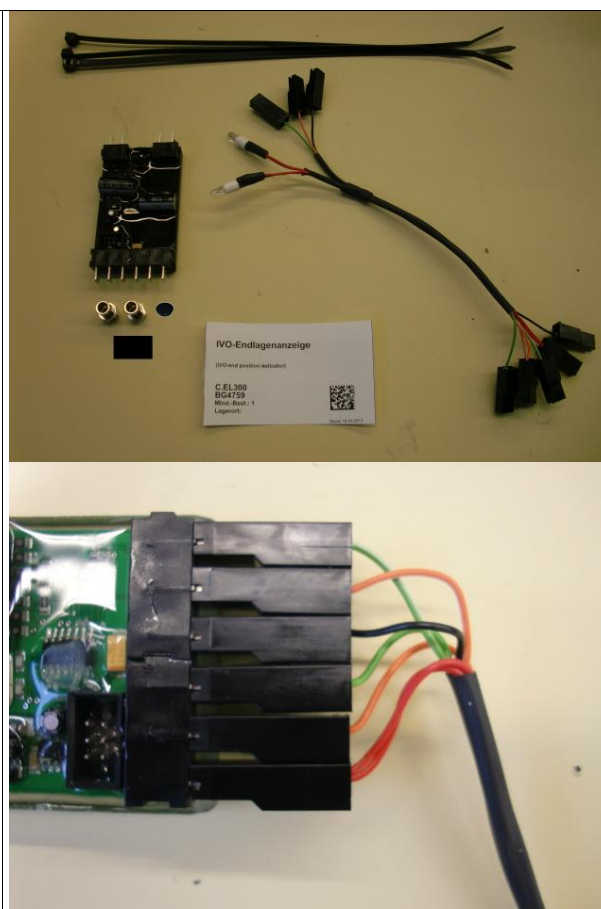
PROCEDURES

Contents of the Kit:

1. **IVO-Control** with pin assignment
2. **2 x Shrinking Hose** to isolate unused connectors
3. **2 x LED-Mount** für 5mm Status LEDs
4. **3 x Cable Ties** to fixate cables and installation
5. **Blind Plug** to cover installation bore of removed thermo switch

Pin assignment of wiring harness (top to bottom):

-   green/white
-   orange/white
-   black
-   green
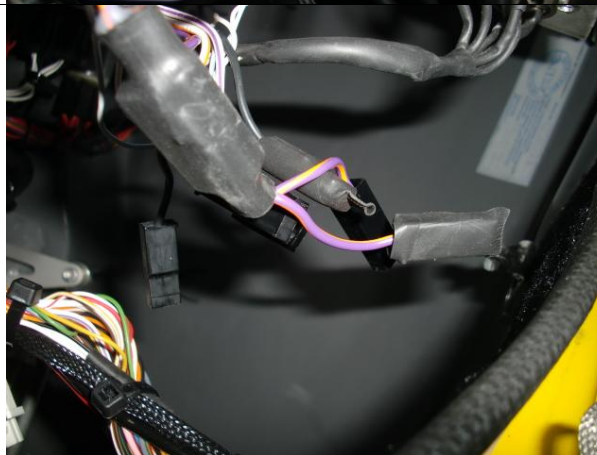-   orange
-   red

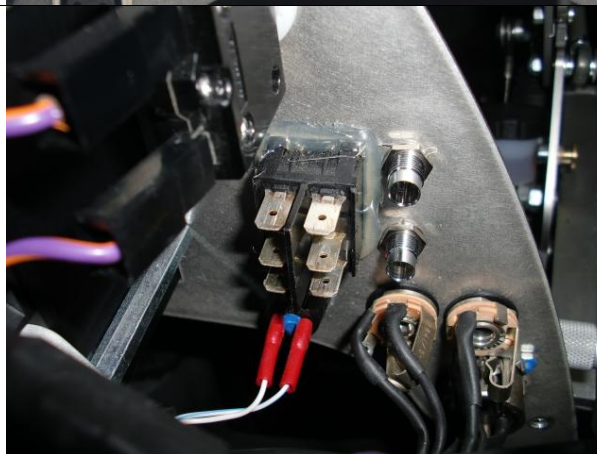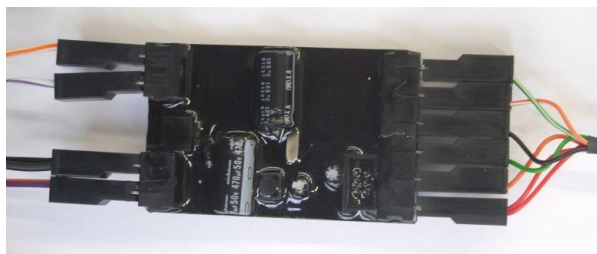|	

Step 1:
  - Remove all connectors from rocker switch
  - Remove resistor pack (if installed) and discard
  - Remove thermo switch and close bore with blind plug	

Step 2: The black ground cable has an extension with a second connector. - Isolate this second connector with the supplied shrinking hose. Sqeeze extending hot hose with pliers.	

Step 3:
  - Drill 2 8mm holes **right hand** from the rocker switch as depicted in attached photo.
  - Deburr holes
  - Insert LEDs without mounting ring and fastening nut.	

Step 4: - Fixate LED with mounting ring and nut from behind.	

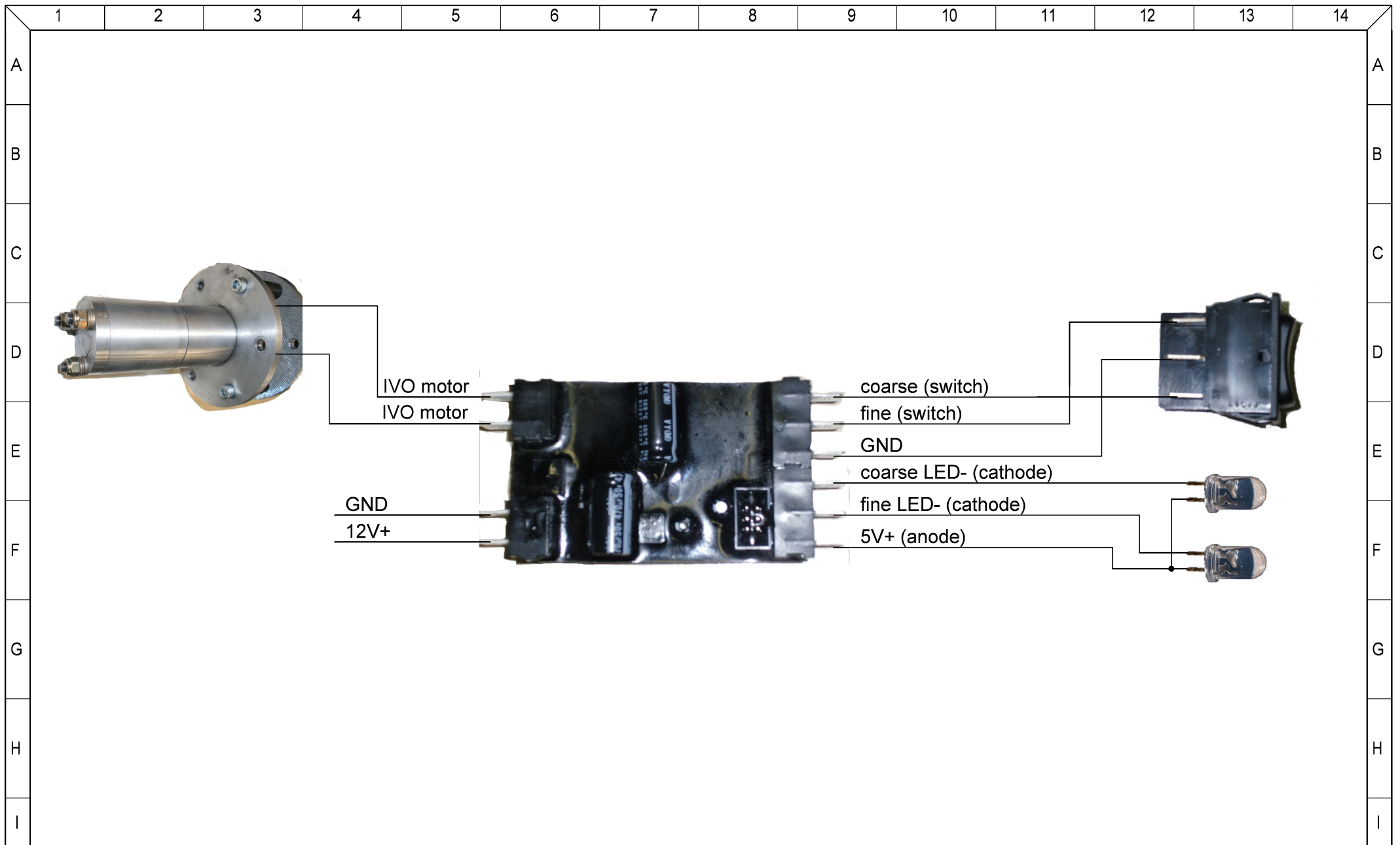|	

Step 5:
- Connect cockpit controls to control beard.
- **DO NOT MISMATCH POSITION!!!!**
Control board can be destroyed!
- Refer to photo provided (left hand side, condensors showing up):
   1. white/orange (IVO)
   2. white/violett (IVO)
   3. black (GND)
   4. violett/orange (12V+)	

Step 6: - Connect control board with rocker switch: <table><tr><th>Switch</th><th>Conn./Cable</th></tr><tr><td>1a (top)</td><td>green/white</td></tr><tr><td>1 (middle)</td><td>black</td></tr><tr><td>1b (bottom)</td><td>orange/white</td></tr></table>	

Step 7:
- Insert LEDs in mount
  (use pliers, if needed)
- LED with cable color orange goes in upper position,
  green in bottom position
- Check switching and indication logic (Master switch 'ON')
Press rocker 'fine' position:
upper LED must blink, propeller must adjust to fine (→ take-off)
Press rocker switch 'coarse' pos.:
lower LED must blink, propeller must adjust to coarse (→ cruise)	

Step 8: - Fixate cables and control board with cable ties	
Step 9: - Perform a functional check according to function description (see Manufacturer Bulletin)	

	1	2	3	4	5	6	7	8	9	10	11	12	13	14

IVO motor

IVO motor

coarse (switch)

fine (switch)

GND

coarse LED- (cathode)

fine LED- (cathode)

GND

12V+

5V+ (anode)

Änderungen			Datum	Name	Bezeichnung		Blatt	
Datum	Name	gez.:	21.02.2013	Harald Stindl	BG4652 IVO-Controlboard connection plan			
		gepr.:						
		Norm:			Zeichnungs-Nr.:		von	