Maintenance Instruction
Adjusting the drive belt
Issue I

Alexander Schleicher
GmbH & Co.
Segelflugzeugbau
D - 36163 Poppenhausen

Power-plant AE50R and IAE50R-AA

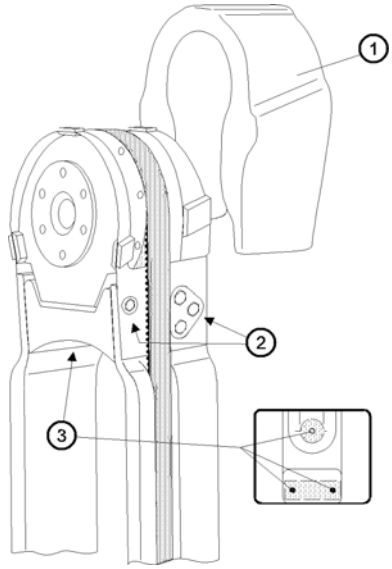
Subject:

The belt tension is adjusted such that the belt eigenfrequency - in the area where it is running in the channel inside both swivel support arms - corresponds to **48 Hz**. As experience shows the adjusted belt tension remains constant over a long period of time. If during pre-flight check there is reason to believe that the belt tension is too low or if any assembly works make it necessary to re-adjust the belt tension, this is done according to the procedure mentioned below:

Preparation:

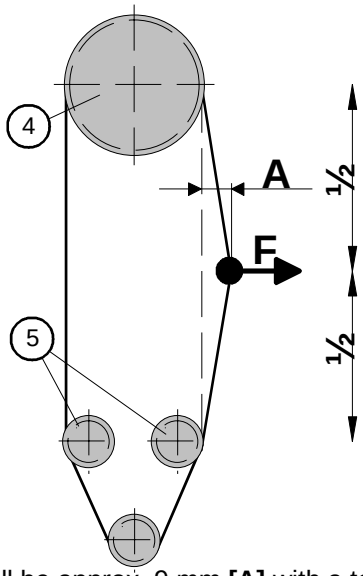
Remove the side fairing of the swivel support arms as well as the propeller head fairing **[1]**.

Un-tighten the 4 lateral fixing screws **[2]** at the propeller head (only un-tighten them, do not remove).



Initial adjustment:

Prior to the fine tuning of the belt tension via its eigenfrequency, an initial adjustment is done using a spring scale.



The belt deflection shall be approx. 9 mm **[A]** with a tensile load applied of **F=58 N,** to be measured at the point in the middle between the lower guide pulley **[5]** and the upper belt wheel **[4]**,

Change of the belt tension:

The lock-nuts of the 3 tensioning screws **[3]** must be loosened. By evenly turning in and out respectively the 3 tensioning screws the prop head is moved parallel and thus the belt tension changed.
If the propeller is fully extended, the belt tension makes it difficult to turn the tensioning screws. For adjusting the tensioning screws the propeller may be retracted a little, until the belt tension decreases.

Fine adjustment:

With the above described measuring method the adjusting tolerances of the belt tension are still relatively large. More exact results are achieved by measuring the eigenfrequency of the belt. This is done by "picking" the belt (like a guitar string) between the lower guide pulley **[5]** and the upper belt wheel **[4]**. Using a **frequency meter** the oscillation (eigenfrequency) of the belt is then measured.

After the above described initial adjustment has been done the belt tension is increased by evenly turning in and out respectively the 3 tensioning screws **[3]** so that the belt eigenfrequency will become **48 H**z.

Alexander Schleicher
GmbH & Co.
Segelflugzeugbau
D - 36163 Poppenhausen

Frequency Measurement:

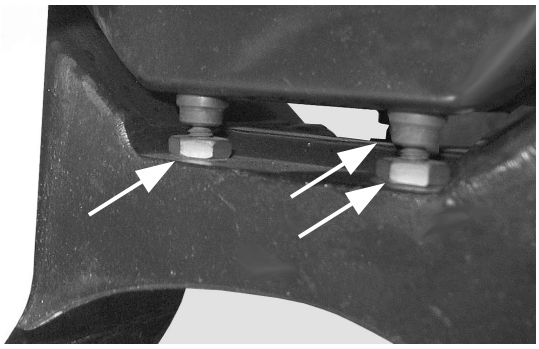
As frequency meters for the special purpose of measuring belt eigenfrequency are relatively expensive, there is a cheaper alternative: by means of a commercial quality chromatic **guitar (bass-) tuning meter** the belt eigenfrequency may also be measured and determined. Yet it is necessary to bring the belt tension before into the required range by the above described initial adjustment, as these meters do not indicate the frequency but the produced pitch. Then the fine adjustment of the belt tension is done until the tone **„G“** (contra-G“) is reached which corresponds to the required **48 Hz**.

These standard tuning meters however do not show to which octave the indicated tone belongs; so it would be imaginable that the belt inadvertently was adjusted into "one octave too high“, i.e. to the so-called **G^1**. That would correspond to about 96 Hz and would be a much too high belt tension. Therefore, it is **indispensable** to do first the above described rough initial adjustment.

Another alternative would be to use an existing notebook which features a sound card and a microphone. The measurement can then be done using any freeware **Frequency Analyse Programme**.

Tensioning screws:

If there is need to turn the tensioning screws **with thread diameter M6** so far inside that more than 6 mm free screw thread are visible on leveling pads, then so-called back-up support nuts must be fitted and locked with each tensioning screw (see arrows in the Figure next to this text). This will prevent safely a failure of the tensioning screws due to oscillation fatigue.



In order to fit the back-up support nuts first the lateral fixing screws **[2]** must be re-tightened and then the tensioning screws **[3]** must be turned back so far that the plugged-on dish end can be taken off and thus the support nut screwed on.

After turning in again the 3 tensioning screws back to the previous position, the lateral fixing screws are un-tightened again and the belt tension must be checked once again.

When the final position has been found, the tensioning screws are safely tightened and locked together with the upper support nut and the lower hexagon nut.

Note: In case of power-plants which use tensioning screws **with thread diameter M8**, no back-up support nuts are fitted.

Maintenance Instruction
Adjusting the drive belt
Issue I

Alexander Schleicher
GmbH & Co.
Segelflugzeugbau
D - 36163 Poppenhausen

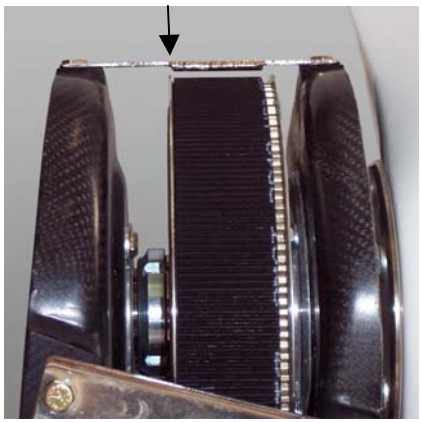
Belt running: An increased wear occurs also if the belt is running up at the washer discs of the pulley, particularly at the upper pulley.

The correct belt running must be checked with the engine idling. For this purpose the lateral fixing screws **[2]** have to be re-tightened and the engine started.

Warning: Engine must only be operated with the wings rigged or with the fuselage sitting in a special console. Never do adjustment works when the engine is running.

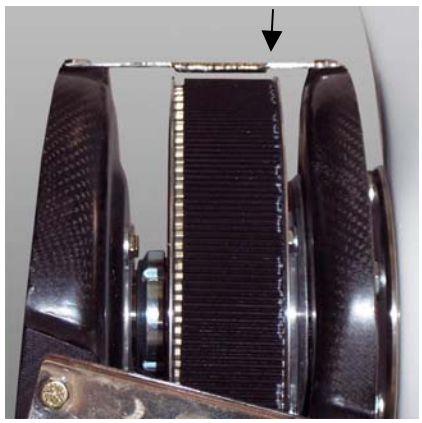
The belt is running correctly if it just touches the rear washer disc of the pulley when idling and the front washer disc when running under full RPM.

Flight direction >>>



Idling: the belt is close to the rear washer disc

Flight direction >>>



Full RPM: the belt is close to the front washer disc

If the belt is running up the front washer disc, the **front** tensioning screws have to be turned in (clockwise).

If the belt is running up the rear washer disc, the **rear** tensioning screws have to be turned in (clockwise).

NOTE: Turning the tensioning screws **[3]** affects the belt tension again, and corresponding corrections become necessary.

NOTE: After retightening all bolted connections the belt tension must be checked again by means of the frequency measurement.

Poppenhausen, August 27, 2007

Alexander Schleicher
GmbH & Co.

by order

(M. Münch)