INSTRUCTIONS FOR O.S. TYPE 40C AUTOMATIC CARBURETTOR

This carburettor, as fitted to the O.S. MAX-46FX-H RING helicopter engine, incorporates an automatic mixture control device which ensures that the engine receives a correctly balanced mixture of fuel and air at all throttle settings. It ensures steady revolutions and a smooth response for reliable helicopter ascent and descent.

Two adjustable controls are provided on this carburettor.

- **The Needle Valve:**
  When set to produce maximum power at full throttle, the Needle Valve establishes the basic fuel/air mixture strength. This is then maintained by the carburettor's automatic mixture control system to cover the engine's requirements at reduced throttle settings.

- **The Mixture Control Valve (Mixture Control Screw):**
  For adjusting the mixture strength at part-throttle and idling speeds, to obtain steady idling and smooth acceleration to medium speeds. The Mixture Control Valve has been factory set for the approximate best result. First, run the engine as received, and re-adjust the Mixture Control Valve only when necessary.

A PROVISIONAL SETTINGS (see ADJUSTMENT CHART)

- Open the Needle Valve 2 turns from the fully closed position. (Be sure to use a muffler-pressurized fuel feed.)

**Note:** This carburettor is not fitted with a throttle stop screw. Instead, idling speed is adjusted by means of the throttle trim lever on the transmitter. This enables the full r.p.m. range, from idling to full power, to be controlled by the throttle stick, and then allows the engine to be stopped, from the transmitter, by closing the throttle completely with the trim lever. Set up the throttle linkage as follows:

- With the transmitter throttle trim lever fully retarded, adjust the throttle servo linkage so that the throttle rotor is (a) fully open when the transmitter throttle stick is fully advanced and (b) fully closed (i.e. engine stopped) when the stick is fully retarded.

- The idling speed is then set by advancing the throttle trim lever to the point where the engine runs, steadily and reliably, at the desired idling speed.

RE-ESTABLISHMENT OF MIXTURE CONTROL VALVE-SETTING

In the course of making carburettor adjustments, it is just possible that the Mixture Control Valve may be inadvertently screwed in or out too far and thereby moved beyond its effective adjustment range. Its factory setting can be reestablished as follows:

1. Disconnect the throttle linkage by removing the control rod from the throttle lever.
2. Fully close the throttle.
3. Turn the Mixture Control Valve clockwise gently until it stops, while keeping the throttle fully closed. Do not over-tighten the valve.
4. Turn the Mixture Control Valve 2-1/2 turns counterclockwise from the above position. This is the basic (factory) setting.

ADJUSTMENT PROCEDURE

The following adjustments are approximately correct when using a fuel containing 25% lubricant and 10—30% nitromethane. Bear in mind that fuels containing relatively large percentages of power-boosting nitromethane operate at richer mixture settings than are needed for mild fuels and will, therefore, require the Needle Valve to be readjusted accordingly. The type and percentage of lubricant used is also a factor here, as noted later in these instructions.

B As a safety measure, first check the transmitter controls, including the throttle stick and trim lever positions, and hold the main rotor securely before starting the engine.

C Warm the engine by allowing it to idle for about 30 seconds. If the engine stops, advance the throttle trim lever slightly to increase the idling rpm. Then open the throttle sufficiently to 'float' the model above the ground.
エンジンが始動したら、30秒程暖機運転を行います。この時、エンジェ
ンが着火するのではければスロットルを少しあ開けてアイドリング
を上げてください。エンジンが着火したらヘリコプターを離陸
させます。

この時、排気口から白煙を多量に出し、もつつかながら回転が上
昇するようでたら、アイドリング時の混合気が濃すぎるのでし
です。このような場合は、アイドリング調整ねじを右に回してください。

混合気が極端な濃い場合は、スロットルを開くと多量のでんが出
し回転が上がるとか、エンジンの回転が不安定にな
り、急に回転が下がったり、アイドリングの時間を長くすれば回転
が低くでもかえって止まります。

（注意）長時間運転中の間に混合気が濃い状態になっている場合は多
いので、一度ヘリコプターを離陸させた後に、アイドリング時の
混合気の状態を判断してください。

逆に排気口からはほとんど白煙が出ないままのなそうな爆発音
を出し、回転の上昇はほとんど見られません、いづれ回転が上がり
たがすぐに止まってしまうエンジンがある場合、アイドリング時
の混合気が薄すぎるのはです。このような場合は、アイド
リング調整ねじを左に回してください。

いずれの場合も一回の調整は、調整ねじの回転角で約30°ずつ行
ってください。

はしごアイドリングの調整ができれば、次にヘリコプターの調整を行
います。

ホログロスをスロットルを操作して中速（ホバリング弁付近の混合気の濃さ）を見ずける。白煙を多量に出してホログロスボンバ
が止まらない場合は混合気が薄すぎます。このような場合は、ニードルバブを締め（右に回して）ください。ただしこの時の回転
は上昇飛行に移るのものですから、少し濃い方にとどめ、締め
すぎないように十分注意してください。

排気口が薄く、スロットルスロッシが止まなくてホバリングが安
定せず、排気口が白くほのかな白煙が出た場合は、再度アイド
リングの調整を行ってください。

ここまでの調整が終わりましたらヘリコプターを着陸させて、も
う一度アイドリングの調査をみます。

着陸してエンジンがアイドリングになっているか約10秒後からスロットルを開けてみます（動かない場合はスロットルを支
えつけ、K離れない）。混合気が薄い場合は混合気が薄すぎます。このような場合、ニードルバブを緩め（左に回して）ください。

次に上昇飛行をして、ニードルバブで高速回転の調整をします。
●排気口が白く（排気口が白くほのかな白煙が出た場合）、混合気が薄いのでニードルバブを緩めます。

排気口が薄く、回転が急上昇しながら回転が伸びない場合は、混合気が濃いのでニードルバブを締めます。

これで総合的に最適なバブの位置を調整できました。次に、ヘリコ
プターの調整を行います。

ヘリコプターで一番スロットルスロッシが重要なのです。最も多
用されるホバリング前のバブです。このキャプレートは、アイド
リング調整バブ、ニードルバブの調整が出来ていなければ、ホバリング
でのスロッシ（混合気）が鈍い状態が出てしまいます。このキャプレートは、中速域の混合気が鈍い場面に、アイドリングの
調整を行い、ニードルバブの調整をします。このキャプレートでは、混合気が鈍い場合に、高いバブで上昇飛行が難しく、ヘリコプターの
バブを緩め（左に回して）ください。これで総合的にニードルバブを
開いてください。

ニードルバブが調整できましたら、バルブをもう一回、締め再び。この
ニードルバブの調整を行います。

ニードルバブの調整を行いましたら、バルブをもう一回、締め再び。

ホログロス調整が出来れば、次にヘリコプターの調整を行
います。

ヘリコプターで一番スロットルスロッシが重要なのです。最も多
用されるホバリング前のバブです。このキャプレートは、アイド
リング調整バブ、ニードルバブの調整が出来ていなければ、ホバリング
でのスロッシ（混合気）が鈍い状態が出てしまいます。このキャプレートは、中速域の混合気が鈍い場面に、アイドリングの
調整を行い、ニードルバブの調整をします。このキャプレートでは、混合気が鈍い場合に、高いバブで上昇飛行が難しく、ヘリコプターの
バブを緩め（左に回して）ください。これで総合的にニードルバブを
開いてください。

ニードルバブが調整できましたら、バルブをもう一回、締め再び。この
ニードルバブの調整を行います。

ホログロス調整が出来れば、次にヘリコプターの調整を行
います。

ホログロス調整が出来れば、次にヘリコプターの調整を行
います。
SUBSEQUENT READJUSTMENTS

Once the engine has been run-in (see engine instructions) and the carburettor controls properly set up, it should be unnecessary to alter the mixture settings, except to make minor adjustments to the Needle Valve occasionally, to take account of variations in climatic conditions.

The use of a different fuel, however, particularly one containing more, or less, nitromethane and/or a different type or proportion of lubricating oil, is likely to call for some readjustment of the Needle-Valve.

Remember that, as a safety measure, it is advisable to increase the Needle Valve opening by an extra half-turn clockwise, prior to establishing a new setting. The same applies if the silencer type is changed. A different silencer may alter the exhaust pressure applied to the fuel feed and call for a revised Needle-Valve setting.

The use of a different glowplug, or changes to the main rotor and its pitch angles may also require compensating carburettor readjustments.

CARBURETTOR CLEANLINESS

The correct functioning of the carburettor depends on its small fuel orifices remaining clear. The minute particles of foreign matter that are present in any fuel can easily partially obstruct these orifices and upset mixture strength so that engine performance becomes erratic and unreliable. It is recommended that fuel is passed through a filter when the tank is filled and that a good in-line filter is installed between the fuel tank and carburettor and, furthermore, that this filter is frequently cleaned to remove dirt and lint that accumulates on the filter screen. Finally, occasionally remove the needle-valve holder from the carburettor as shown in Photo 2 and extract any remaining foreign matter that may have lodged in the location shown in Photo 3.

ADJUSTMENT CHART

<table>
<thead>
<tr>
<th>Setting</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lean mixture</td>
<td>Open the Needle Valve 2 turns from the fully closed position. Make sure that the Mixture Control Screw is at the factory setting.</td>
</tr>
<tr>
<td>Rich mixture</td>
<td>Close the Needle Valve 2 turns from the fully open position. Make sure that the Mixture Control Screw is at the factory setting.</td>
</tr>
<tr>
<td>Mixture condition</td>
<td>Observe the mixture condition while starting the model.</td>
</tr>
<tr>
<td>Lean mixture</td>
<td>Observe the hovering mixture condition.</td>
</tr>
<tr>
<td>Rich mixture</td>
<td>Close the Needle Valve 2 turns from the fully open position. Make sure that the Mixture Control Screw is at the factory setting.</td>
</tr>
<tr>
<td>High speed flight</td>
<td>Close the Needle Valve 2 turns from the fully open position. Make sure that the Mixture Control Screw is at the factory setting.</td>
</tr>
<tr>
<td>Response too sensitive</td>
<td>Turn the Mixture Control Screw 3 clicks counterclockwise.</td>
</tr>
<tr>
<td>Response too slow</td>
<td>Turn the Mixture Control Screw 3 clicks clockwise.</td>
</tr>
</tbody>
</table>

CARBURETTER ADJUSTMENT

The needle-valve opening should be increased by an extra half-turn counterclockwise. A good in-line filter is installed between the fuel tank and carburettor and, furthermore, that this filter is frequently cleaned to remove dirt and lint that accumulates on the filter screen. Finally, occasionally remove the needle-valve holder from the carburettor as shown in Photo 2 and extract any remaining foreign matter that may have lodged in the location shown in Photo 3.
After fitting the engine in the helicopter, please observe the following recommendations when linking the throttle servo to the carburettor.

**CORRECT**
- Throttle lever movement should be disposed symmetrically, as shown.
- Locate the servo so that its output arm and the throttle pushrod are, as closely as possible, directly in line with the carburettor's throttle arm, as shown.

**INCORRECT**
- One-way throttle lever movement should not be more than 45°.

When the throttle is fully open or fully closed, the throttle lever angle should not be more than 45° either side of the mid-point of its travel (and where it is at a 90° angle to the pushrod), otherwise throttle rotor movement may become inhibited or may even lock up.

Also, some lubricants may affect the throttle rotor movement.

Please note that the throttle lever angles of the O.S. Type 40C carburettor are well within these limits -requiring only 75° from the fully open to fully closed positions.

### PARTS LIST

<table>
<thead>
<tr>
<th>No.</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>22781-140</td>
<td>Throttle Lever</td>
</tr>
<tr>
<td>002</td>
<td>22781-130</td>
<td>Throttle Lever Fixing Screw</td>
</tr>
<tr>
<td>003</td>
<td>26683-200</td>
<td>Carburettor Rotor</td>
</tr>
<tr>
<td>004</td>
<td>26683-100</td>
<td>Carburettor Body</td>
</tr>
<tr>
<td>005</td>
<td>24881-624</td>
<td>&quot;O&quot; Ring</td>
</tr>
<tr>
<td>006</td>
<td>26781-500</td>
<td>Rotor Spring</td>
</tr>
<tr>
<td>007</td>
<td>45581-820</td>
<td>Rotor Guide Screw</td>
</tr>
<tr>
<td>008</td>
<td>26681-933</td>
<td>Fuel Inlet</td>
</tr>
<tr>
<td>009</td>
<td>26681-900</td>
<td>Needle Valve Assembly</td>
</tr>
<tr>
<td>010</td>
<td>26681-969</td>
<td>Needle</td>
</tr>
<tr>
<td>011</td>
<td>26681-837</td>
<td>&quot;O&quot; Ring</td>
</tr>
<tr>
<td>012</td>
<td>26681-821</td>
<td>Set Screw</td>
</tr>
<tr>
<td>013</td>
<td>26681-940</td>
<td>Needle Valve Holder</td>
</tr>
<tr>
<td>014</td>
<td>26711-305</td>
<td>Ratchet Spring</td>
</tr>
<tr>
<td>015</td>
<td>46215000</td>
<td>Carburettor Gasket</td>
</tr>
<tr>
<td>016</td>
<td>25681-700</td>
<td>Carburettor Fixing Screw</td>
</tr>
</tbody>
</table>

The specifications are subject to alteration for improvement without notice.