OPERATING INSTRUCTIONS FOR THE O.S. TYPE 7M CARBURETTOR

The O.S. Type 7M carburettor is an entirely new carburettor of advanced design that has been specially developed to meet the demands of F.A.I. F3A contest flying.

The Type 7M carburettor enables the user to adjust mixture strength separately for the idling, half-throttle and full throttle ranges, in order to obtain optimum throttle response and complete reliability throughout the engine’s operational spectrum. Adjustment is simplified by the fact that each control works independently and does not affect response over other speed ranges.

Four adjustable controls are provided on the Type 7M carburettor but it is quite simple to adjust. The controls are:

1. The Needle-Valve: For adjusting the mixture strength when the throttle is fully open.
2. The Mid-Range Mixture Control Screw: For adjusting the mixture strength when the throttle is set for medium speeds — i.e. the range which is most widely used in contest flight.
3. The Idle Mixture Control Screw: For adjusting the mixture strength when the engine is running at low speeds — i.e. the range between idling speed and approximately "quarter-throttle".
4. The Throttle Stop Screw: For establishing the minimum idling speed.

PROVISIONAL SETTINGS

Before starting the engine, check that the controls are set as follows:

A. Open the Needle-Valve three full turns (or 1 1/2 — 2 turns if muffler pressurized fuel feed is used) from the fully closed position.
B. The Mid-Range Mixture Control Screw is factory set at approximately the best position. If the adjustment has been moved, turn the screw clockwise until it stops, then turn back counter-clockwise two complete turns.
C. The Idle Mixture Control Screw has an eccentric head which moves approximately one-half turn from the full rich to full lean positions. Make sure that this is set at the mid-way position. (Fig. 1)

ADJUSTING THE CARBURETTER

The key to quick and positive adjustment is to adjust the controls in the following order:

1. The Idle Mixture Control Screw
2. The Mid-Range Mixture Control Screw
3. The Needle-Valve

1) Start the engine and allow it to idle for at least five seconds with the throttle closed.
Now open the throttle. If the engine hesitates before picking up speed, it is probable that the idling mixture is too rich. Check this by closing the throttle again and letting the engine idle for a little longer. Re-open the throttle. If the engine now pours out a good deal of smoke and hesitates, or even stops, this will confirm that the mixture is too rich. To correct this condition, gradually turn the Idle Mixture Control Screw clockwise.
If, instead of being set too rich, the Idle Mixture Control Screw is set too lean, the engine may stop when the throttle is closed, or it may lose speed while idling and then cut out abruptly (without smoke) when the throttle is re-opened. In this case, turn the Idle Mixture Control Screw in the counter-clockwise direction.

The engine should now be running smoothly again. Next, adjust the Mid-Range Mixture Control Screw so that the engine is running at its best speed when the throttle is set for medium speeds. Finally, adjust the Needle-Valve so that the engine is running smoothly at full throttle.
2) 中速調整

中速用の混合気調整は、実際に飛行させながら行うべきですが、まず地上で実体の調整を行います。
ストロットルレバーを操作し、ストロットルハンドルがはば半分開く位置（中速位置）で運転します。中速で混合気が薄すぎるときピード気味になり、混合気を薄くすると白色的未燃焼ガスを含んだ排気になります。混合気が薄すぎる場合は中速調整エンジンをやめ、速訂する場合は右へとまわります。中速調整エンジンの開度は時々約30°（高回転）でして
ください。中速で約10秒運転した後、急速にストロットル開きエンジンの加速をみてください。スムーズに立ち上がるまで調整します。

チーナとサイレンサーを使用している場合は、高速でサイレンサー
になじ同調していると、高速から中速のストロットルを動かすだけで
はエンジンの回転は中速ににくいです。いったん中速調整エンジンを
ストロットルを操作し、同一を外してから中速にしてください。

3) 高速調整

高速にフルストロットルでの混合気の調整をニードルバルブで行います。
いずれの場合も調整途中で位置が大きくずれ、調整がかりにくいなくなっ
た場合は、最初の位置に戻り、再調整してください。エンジンが十分
にプレーキライズされていないと、最初の調整位置を若干長くする必要
がありますので、時々前記の要領で調整を行ってください。

・注意：中速調整後、アイドリングネックを動かすと、中速の特性に影響を
受ける。必ず注3→①→②の順番で調整してください。

図2

Set linkage so that the angles of the low side and the high side of the throttle lever throw are equal.

図3

このようなリンケージは不可
INCORRECT THROTTLE LEVER THROW

O.S. エンジン

小川精機株式会社
〒546 大阪市北区京橋1丁目6番15号
電話（06）702-0225（番号）

Do not turn the Idle Mixture Control Screw more than 15 degrees at
a time and do not touch either of the other two mixture control
screws at this stage.

2) Correct mid-range mixture strength is best confirmed by actual
flight tests. However, preliminary adjustment, prior to flight, can be
established in the following manner:
Set the throttle approximately half open.
If the mixture is too rich, this will be indicated by an excessively
smoky exhaust. To correct these conditions, turn the Mid-Range
Mixture Control Screw in a clockwise direction. If, on the other
hand, the mixture is too lean, the engine may overheat and lose
power if running is prolonged. This condition should be corrected
by turning the Mid-Range Mixture Control Screw in a counter-
clockwise direction. Do not rotate the screw excessively: steps of
about 45 degrees are best.
Check acceleration or ‘pick-up’ by opening the throttle abruptly
after the engine has been running at half-throttle for not less than
10 seconds. Fine-tune the Mid-Range Mixture Control Screw
to achieve the desired response.
If the engine is equipped with a tuned silencer, closing the throttle
from full-throttle to half-throttle may not produce the required
level of speed reduction, due to the effect of the tuned silencer. In
this case, close the throttle below the half-throttle position to bring
the silencer ‘out of tune’, then re-open it to the required mid-range
speed.

3) Finally, adjust the Needle-Valve in the normal manner at full
throttle. It is customary to set the needle-valve a little on the rich
side of the setting at which maximum rpm are reached.

Remember that, with all three controls, clockwise rotation makes
the mixture weaker or ‘lean’ (ultimately resulting in a tendency to run
hot or cut out) while counter-clockwise rotation makes the mixture
progressively richer (indicated by a smoky exhaust or uneven running).
However, if you become confused through turning an adjustment too
far, simply re-set the control in accordance with the recommended
‘Provisional Settings’ paragraph and begin adjustment again.

After the engine is fully run-in and/or when a different fuel is used.
It may be necessary to change the screw positions very slightly.

THROTTLE STOP SCREW

Rotate this screw to obtain the required idling speed: counter-clockwise
to reduce idling speed, clockwise to increase idling speed. The adjust-
ment can be held firmly by gently tightening the locknut.

THROTTLE LEVER

Three different throttle arms are provided. Fit the one most appro-
priate to your installation.

NEEDLE-VALVE EXTENSION

The needle-valve fitted to this carburettor is designed to accept an ex-
tension arm so that, when the engine is enclosed within a fuselage, the
needle-valve may be adjusted from the outside. An L-shaped steel wire
rod of approximately 1.6 mm (or 1/16") dia. and appropriate length,
should be inserted into the centre-hole and secured by tightening the
set-screw in the control-knob with the small Allen key wrench provided.

<table>
<thead>
<tr>
<th>件名</th>
<th>件名</th>
<th>件名</th>
</tr>
</thead>
<tbody>
<tr>
<td>27481000</td>
<td>キャブレター ー 式</td>
<td>Carburettor Complete</td>
</tr>
<tr>
<td>27481900</td>
<td>ニードル・バルブ ー 式</td>
<td>Needle Valve Assembly</td>
</tr>
<tr>
<td>45581970</td>
<td>ニードル（“O”リング付）</td>
<td>Needle (with 0 ring)</td>
</tr>
<tr>
<td>27381940</td>
<td>ニードル・ホルダー ー 式</td>
<td>Needle Valve Holder Assy</td>
</tr>
<tr>
<td>29150109</td>
<td>キャブレター・パッキン</td>
<td>Carburetor Rubber Gasket</td>
</tr>
<tr>
<td>27181600</td>
<td>ローター・ストッパー ー 式</td>
<td>Throttle Stop Screw Assembly</td>
</tr>
<tr>
<td>27381301</td>
<td>アイドル調整バルブ ー 式</td>
<td>Idle Adjusting Valve Assembly</td>
</tr>
<tr>
<td>27481400</td>
<td>ストロットルアーム ー 式</td>
<td>Throttle Lever Assembly</td>
</tr>
<tr>
<td>24881824</td>
<td>“O”リング（アイドルバルブ用）</td>
<td>0 Ring (for Idle Valve)</td>
</tr>
<tr>
<td>24981837</td>
<td>“O”リング（ニードル用）</td>
<td>0 Ring (for Needle)</td>
</tr>
</tbody>
</table>

The specification is subject to alteration for improvement without notice.

PARTS LIST

<table>
<thead>
<tr>
<th>品名</th>
<th>品名</th>
<th>品名</th>
</tr>
</thead>
<tbody>
<tr>
<td>27481000</td>
<td>キャブレター ー 式</td>
<td>Carburettor Complete</td>
</tr>
<tr>
<td>27481900</td>
<td>ニードル・バルブ ー 式</td>
<td>Needle Valve Assembly</td>
</tr>
<tr>
<td>45581970</td>
<td>ニードル（“O”リング付）</td>
<td>Needle (with 0 ring)</td>
</tr>
<tr>
<td>27381940</td>
<td>ニードル・ホルダー ー 式</td>
<td>Needle Valve Holder Assy</td>
</tr>
<tr>
<td>29150109</td>
<td>キャブレター・パッキン</td>
<td>Carburetor Rubber Gasket</td>
</tr>
<tr>
<td>27181600</td>
<td>ローター・ストッパー ー 式</td>
<td>Throttle Stop Screw Assembly</td>
</tr>
<tr>
<td>27381301</td>
<td>アイドル調整バルブ ー 式</td>
<td>Idle Adjusting Valve Assembly</td>
</tr>
<tr>
<td>27481400</td>
<td>ストロットルアーム ー 式</td>
<td>Throttle Lever Assembly</td>
</tr>
<tr>
<td>24881824</td>
<td>“O”リング（アイドルバルブ用）</td>
<td>0 Ring (for Idle Valve)</td>
</tr>
<tr>
<td>24981837</td>
<td>“O”リング（ニードル用）</td>
<td>0 Ring (for Needle)</td>
</tr>
</tbody>
</table>

The specification is subject to alteration for improvement without notice.

O.S. エンジン

小川精機株式会社
〒546 大阪市北区京橋1丁目6番15号
電話（06）702-0225（番号）

O.S. ENGINES MFG.CO., LTD.
6-15 3-chome Imagawa Higashisumiyoshi-ku
Osaka 546, Japan. TEL. Osaka (06) 702-0225
Please Note:

1. The drive washer (Prop. Driver) fitted on this engine differs from that printed in the instruction leaflet. This is a lock cone type drive washer. Revised code number of this drive washer is as follow and the spare parts list printed on the instruction leaflet should be amended accordingly.

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>26708119</td>
<td>Drive Washer (Lock cont type)</td>
</tr>
</tbody>
</table>

2. A key slot for a woodruff key is provided on the crankshaft. You may use the key lock type drive washer listed on the spare parts list as your preference,