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The Webra T $\frac{1}{4}$  4-stroke motor

Operating instructions

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T $\frac{1}{4}$  operating instructions

Motor installation:

The motor must be fixed securely in the model and must not be able to vibrate. The best method is to use an aluminium motor mount (Order No. 3724), to which the unit is secured with M $\frac{1}{4}$  screws.

Tank installation:

The centre of the tank should be at the same level as the needle valve. Keep all tank connections as short as possible! If possible, pack the tank in foam to prevent it vibrating. The tank should be pressurized, and a pressure line should be taken from the nipple on the silencer to the tank for this purpose. The other tank vent must be carefully sealed off after fuelling.

Running-in:

If possible, run in the motor in the model.

Propeller: 14" x 6" or 15" x 6".

Fuel: 80% methanol and 20% castor oil,  
or Webra Sprit S.

Run a tankful of fuel through the motor on the ground, maintaining a very rich mixture setting, and varying the throttle setting. Then lean out the carburettor until the motor runs evenly, but does not reach maximum R.P.M. when the throttle is opened.

Set the idle setting at about 2000 - 3000 R.P.M. You can now fly the model, varying the throttle settings. Each flight you should set the mixture slightly leaner, until the motor is giving peak power.

Using the motor:

Propellers: 14" x 6", 15" x 6", or 16" x 4".

Fuel: Webra Sprit ST  $\frac{1}{4}$  (Sprit S)

Starting:

Run a few drops of fuel into the carburettor intake (Spalte 2) and rotate the propeller a few times in the direction of running (anti-clockwise). Now connect the glowplug to the plug battery (2.0 V.). The element should glow bright red. Flick the propeller

as hard as possible anti-clockwise until the motor fires and runs. If it runs fast and stops quickly, open the needle about 1 turn, run a few more drops of fuel into the carburettor intake and try again. If the motor runs slowly for a few seconds and then stops, close the needle about 1 turn and repeat the starting procedure. If necessary, clamp the fuel line. If you are using an electric starter, ensure that the motor is not flooded with fuel.

Motor maintenance:

Take great care to prevent foreign bodies getting inside the motor. If this should happen, you must remove the crankcase backplate and the cylinder head. Rinse out the motor with petrol or glow fuel.

Only dismantle the motor if absolutely necessary, or send it back to the manufacturer for repair.

Changing the toothed belt:

1. Unscrew the front crankshaft housing.
2. Unscrew the spinner, and remove the propeller driver and key.
3. Press out the crankshaft - be careful not to lose the woodruff key which is in the gearwheel.
4. Fit the new toothed belt onto the gearwheel, and pass it into the opening in the crankshaft housing.
5. Place the woodruff key in the slot in the crankshaft.
6. Press the crankshaft into place, sliding the gearwheel and spacer sleeve onto it.

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7. Screw the crankshaft housing to the crankcase. Removing the backplate will make it easier to slide the connecting rod onto the crankpin.
8. Unscrew the cylinder head.
9. Rotate the toothed belt gearwheel in the cylinder head until the register marks on the bevel gear and on the cylinder head are aligned. Similarly, the register marks on the crankshaft gear and the crankshaft housing must be correctly aligned.
10. Slip the toothed belt over the gearwheel in the cylinder head, and tension with the tensioning pulley.

Unscrewing the cylinder head:

1. Remove the toothed belt.
2. Remove the cylinder head cover.
3. Remove the six head screws.
4. Lift off the cylinder head with the by-pass pipe.

Removing the bevel slide

1. Remove the circlip.
2. Pull out the bevel gearwheel.
3. Remove the woodruff key; the bevel slide can now be removed.

Please note: The thread length of the glowplug must not be more than 5.5 m.m.

We hope you have a great deal of pleasure and success with your Webra motor.

Adjusting the Dynamix carburettor:

1. The first task is to set the throw of the throttle slider so that at full throttle the entire area is exposed, while at idle, a gap of about 0.3 - 0.5 m.m. remains open. If the throw is too great or too small, the throttle arm can be shortened or lengthened to correct this. Shortening the throttle arm increases the throw of the throttle slider, (Spalte 2) and lengthening it reduces the throw.

2. Now open the jet needle (1) 6-8 turns, and start the motor with the idle jet needle half closed. After a few seconds warm-up, open the throttle fully, and adjust the motor for maximum power in the usual way, using the needle valve (1). Too lean a setting can be damaging to the motor, and should be avoided at all costs.

3. Final adjustment of the idle setting is only possible when the motor has been run-in. The carburettor has been set at the factory, and only minor adjustments will need to be made. The idle mixture setting is adjusted via the knurled nut (2), which is located on the throttle slider. Note that screwing this nut in (clockwise) produces a richer idle mixture, while unscrewing it (anti-clockwise) produces a leaner mixture.

Simplified diagram of the Dynamix carburettor (MC).

A) Idle

B Full throttle

- |                             |                                 |
|-----------------------------|---------------------------------|
| 1. Full throttle jet needle | 4. Radio operated adjustor (MC) |
| 2. Idle jet needle          | 5. Fuel supply.                 |
| 3. Throttle arm             | 6. Fuel supply nipple.          |



# CIRCUS HOBBIES

INC. • 3132 S. HIGHLAND DRIVE • LAS VEGAS, NV. 89109 • (702) 731-6472

## OPERATION INSTRUCTION FOR WEBRA T-4 & T-4 II (PART #W1040RC & W1041RC)

6/6/83

### ENGINE INSTALLATION

Mount the engine firmly and avoid unnecessary vibration. Aluminum engine mounts are recommended, such as Webra Part No. W3724. Mount the engine with 4mm bolts.

### FUEL TANK INSTALLATION

The tank centerline should be at spray bar level and as near to the engine as possible. The use of a pressurized fuel system is recommended, the necessary pressure is supplied by the silencer.

### BREAK IN THE ENGINE

Break motor in after it is installed in to the model.

### PROPELLER

Recommended size: 14x6, 15x6 or 16x4.

### FUEL

Use 80% methanol 20% castor oil, or equivalent synthetic oil.

Note: Nitro fuels should not exceed 5%.

Break the motor in with a rich setting. Use about one tank of fuel, after one tank of fuel, turn needle valve until engine runs smooth but not at maximum power. Start flying your model with different carburetor settings and work the engine slowly up to maximum power.

### STARTING ENGINE

Open the needle valve approximately  $3\frac{1}{2}$  turns. Put a few drops of fuel in the carburetor and turn the engine over a few times. Connect the glow plug battery to the plug and flip the prop smartly in a counter clockwise direction. If the engine runs at a constant speed for a few seconds and then stops, open the needle valve another  $\frac{1}{2}$  turn. If the engine runs very slow for few seconds and then stops, close the needle valve a  $\frac{1}{2}$  turn and try again. Do not flood the engine.

### KEEP ENGINE CLEAN

If any dirt or other foreign matter gets in to the engine, it may damage the inner parts of the engine if turned over -  
DO NOT TURN OVER.

Flush the engine out with gasoline. Do not disassemble the engine if you don't know how. Return it Circus Hobbies for repair.



# CIRCUS HOBBIES

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## T-4 & T-4 II SPECIFICATIONS

	<u>W1040</u>	<u>W1041</u>
Displacement cu.in.	.91	.91
Horse power (SAE)	.078	.078
Maximum RPM	9300	9300
Bore in.	1.05	1.05
Stroke in.	.975	.975
Weight oz.	33	32
Carburator	Dynamix	TN
Pump	3713	-
Glow plug	Webra 6	Webra 6
Muffler	1100/T4	1100/T4
Motor mount	3724	3724
Prop recommended	14 x 6	14 x 6

1. Before attempting to start this engine, read these safety instructions and adhere to all warnings.

This model engine will give you considerable pleasure, satisfaction and performance if you strictly follow these safety instructions and take heed of the warnings as to its proper and safe use. Remember at all times, IT IS NOT A TOY, but a precision built machine with more than enough power to harm you and others, if misused or, if you fail to observe these safety precautions. Do not permit your pleasure to do harm or cause tragedy. You alone are responsible for operating this engine safely, so act sensibly and with great care at all times.

2. At all times

1. Mount the engine securely in a "bench mount" (available from your dealer) DO NOT CLAMP THE ENGINE IN A VICE. When you mount the engine in a model use a good quality engine mount as recommended in the plans (or by your dealer) and make certain that both engine and mount are securely bolted in place.
2. When running the engine ensure that all spectators, especially children, are at least 20 feet away from you.
3. Use the correct size and pitch of propeller for your engine - see your instruction book, model plans, or get the recommendations of your dealer or propeller manufacturer. If your engine is over 40 cu.ins.size, we recommend that you use wooden propellers only. All non-wood props require special care and handling as detailed by the prop manufacturer.
4. Install the propeller with the convex curved side facing forward. Securely tighten the propeller nut against the washer and propeller. Use a propeller wrench (available from your dealer).
5. Keep your face and body away from the path of the propeller blades when starting or running the engine. NEVER lean your face over the engine when starting or running the engine.
6. Keep your hands away from the propeller as much as possible. Use a "Chicken Stick" or electric starter for cranking the engine (both available from your dealer). DISREGARD any instruction in any instruction manual that recommends using fingers.
7. Make all carburettor adjustments from behind the propeller.
8. To stop the engine: - cut off fuel supply, or  
 - cause the throttle linkage to shut off the air, or  
 - pinch, or disconnect the fuel line to the carburettor

DO NOT USE HANDS, FINGERS OR ANY PART OF THE BODY TO STOP THE PROPELLER! DO NOT THROW ANY OBJECT INTO A PROPELLER TO STOP IT!

9. Discard any propeller which is nicked, scratched, cracked or damaged in any way. NEVER ALTER, REPAIR, BEND OR SHAVE A PROPELLER.

Engine vibration can loosen a propeller. Always check this point before starting up and retighten as necessary.

10. If you are carrying your model with the engine running, be especially cautious, keep your eye on the propeller and keep it away from yourself and others.
11. Under no circumstances fly Control Line Models under or near any overhead wires.

3. We recommend

- a) That you use safety glasses or a shield when starting and running your engine.
- b) That you do not run the engine in the vicinity of loose gravel or sand. The propeller may throw such materials into your face and eyes.
- c) That you dont allow loose clothing (shirt sleeves, ties, scarves etc.) to get near the propeller. All loose objects such as pencils, screwdrivers etc. should be kept out of top pockets to prevent them falling into the propeller.
- d) That you keep glow plug clips and cords well away from the propeller.
- e) That the edges of spinners do not touch propeller blades.
- f) That you keep fuel in safe place, well away from sparks, heat and anything which could ignite the fuel. Model fuel is highly flammable and must be handled with caution. Do not let anyone who is smoking near running engines or fuel.

4. Caution

- a) Model engines get very hot while running, do not touch them until they have cooled.
- b) Never run an engine in an enclosed space (garage, basement etc.) Model engines produce deadly carbon monoxide gas. Run your engine only in the open air.
- c) Remember at all times that any model powered by an internal combustion engine (airplanes, power boats, racing cars, helicopters) develop considerable power, more than enough power to seriously injure people and/or do considerable damage to property. To handle such models requires common sense, skill and constant observation of safety precautions.
- d) KNOW HOW AND WHAT TO DO - Get training from an experienced modeller, before you start your engine or operate your model.

5. Remember

- USE GOOD SAFETY SENSE at all times
- RESPECT THE POWER of your engine. Follow all instructions, warnings and safety rules.
- YOU and YOU ALONE are responsible for the SAFE OPERATION of your engine.
- If you have any questions, or are in any doubt about any safety factor, contact your dealer or ourselves.