Bing Jet Chart For Rotax Engines

Engine Type	Code	Bing P/N	Main jet	Idler jet	Needle jet	Jet needle	Needle Position (top=1, bottom=4)	Idle Air Adjusting Screw Setting
277 995570	A	54/36/1511	**148** 268995	**45** 963144	**2.72** 963697	**8L2** 963714	2	1
277 995576	B	54/36/1517	**140** 268981	**45** 963144	**2.72** 963697	**8L2** 963714	2	1
377 995514	A	54/36/1505	**165** 268986	**45** 963144	**2.70** 963698	**8O2** 963711	2	0.5
377 995515	B	54/36/1506	**155** 268984	**45** 963144	**2.70** 963698	**8O2** 963711	2	0.5
447 887810	A	54/36/2002	**165** 268986	**45** 963144	**2.70** 963698	**15K2** 963718	2	0.5
447 887815	B	54/36/2001	**155** 268984	**45** 963144	**2.70** 963698	**15K2** 963718	2	0.5
503SC 887820	A	54/36/2004	**185** 261080	**45** 963144	**2.72** 963697	**15K2** 963718	3	0.5
503SC 887825	B	54/36/2003	**165** 268986	**45** 963144	**2.70** 963698	**15K2** 963718	3	0.5
503DC 887822	A	54/36/2006	**158** 268996	**45** 963144	**2.70** 963698	**11K2** 961044	2	0.5
503DC 887827	B	54/36/2005	**148** 268995	**45** 963144	**2.68** 963691	**11K2** 961044	2	1
582/532 887830	A	54/36/2103	**165** 268986	**55** 963147	**2.72** 963697	**11G2** 961043	3	1
582/532 887835	B	54/36/2101	**145** 268982	**55** 963147	**2.68** 963691	**15K2** 963718	3	1
618 PTO 887841	A	54/36/2106	**160** 268985	**50** 963140	**2.68** 963691	**9M10J** 961047	2	1.5
618 MAG 887843	A	54/36/2107	**170** 268987	**50** 963140	**2.68** 963691	**9M10J** 961047	2	1.5
618 PTO 887846	B	54/36/2104	**135** 268980	**50** 963140	**2.68** 963691	**9M10J** 961047	2	1
618 MAG 887848	B	54/36/2105	**145** 268982	**50** 963140	**2.68** 963691	**9M10J** 961047	2	1

Code A: jetted for engine <u>WITHOUT</u> Air Intake Silencer

Code B: jetted for engine <u>WITH</u> Air Intake Silencer

8.2.3) 582 UL DCDI and 582 UL DCDI mod.99

Description:	Two-cycle, two-cylinder-, in line rotary valve engine, mixture lubrication or by oil injection, liquid cooled, with integrated water pump and two-way thermostat.
Engine configurations:	dual ignition, 2-carburetors
Bore:	76,0 mm (2,99 in.)
Stroke:	64,0 mm (2.52 in.)
Displacement:	580,7 ccm (35,44 cu.in.)
compression ratio:	Theoretical: 11,5 - effective: 5,75
power output:	**a)** 48 kW (64,4 hp SAE) at 6500 RPM;
	b) 40 kW (53,6 hp SAE) at 6000 RPM;
	Match propeller to achieve above indicated full load r.p.m. as per engine version.
Torque:	**a)** 75 Nm (55,3 ft.lb.) at 6000 RPM;
	b) 68 Nm (50,1 ft.lb.) at 5500 RPM;
Max. rpm.:	**a)** 6800 RPM.
	b) 6400 RPM.
Direction of rotation:	Counter-clockwise, viewed towards p.t.o. (without reduction gearbox)
Cylinder:	2 light alloy cylinders with cast iron sleeve
Piston:	Cast aluminium piston with 2 piston rings
Ignition system:	Breakerless DUCATI capacitor discharge dual ignition with magneto generator
Generator output:	170W AC at 6000 RPM and 13,5 V
Ignition timing:	1,96 mm = .077 in. (18 ^{O}) BTDC
Spark plug:	14 mm, BR8ES
Electrode gap:	0,5 mm (.02 in.)
Rotary valve:	924 200, cut-off section 132 ^{O}
Rotary valve timing:	Opens 130^{O} BTDC - closes: 50^{O} ATDC
	Measured on crankcase openings, ± 4 ^{O} tolerance
Carburetor:	2 x BING 36, cable choke
Fuel pump:	Pneumatic fuel pump DF 52

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15) Fuel System

Schematic arrangement, 1 carburetor version

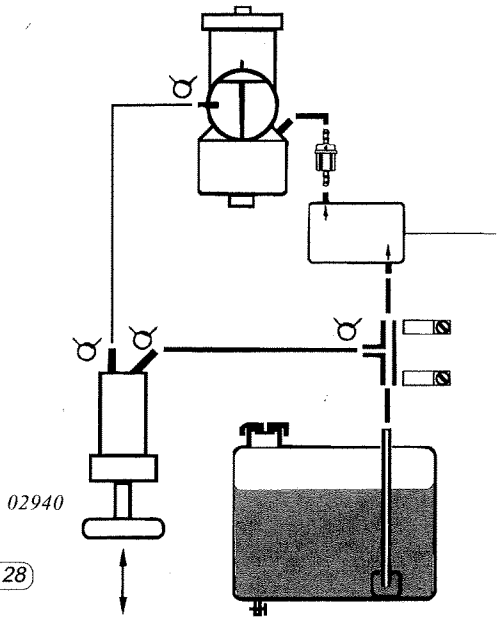

fig. 28

Schematic arrangement, 2 carburetor version

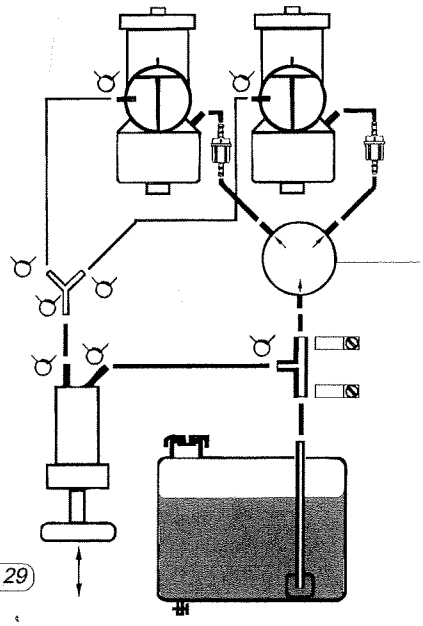

fig. 29

Fuel contamination is a major cause of engine failure. The best place to avoid contamination is at the source. Once fuel is in your container, a very harzardous potential exists.

Use a clean safety approved storage container. Filter all fuel entering and leaving this container. Do not over-fill container, allow for expansion.

▲ WARNING: Gasoline is flammable and explosive under certain conditions. Always perform fueling procedures in a well ventilated area. Do not smoke or allow open flames or sparks in the vicinity. Never add fuel while engine is running.

The carburetor(s) is (are) supplied with fuel by the fuel pump provided with the engine.

The pump is actuated pneumatically via an ,impulse line leading from the nipple on the crankcase to the fuel pump. This line should not be longer than 500 mm (20 in.) and must be of stiff and fuel-resistant material.

The fuel pump should be installed in a cool place (not on the engine itself),with the small drain hole near the impulse connection towards the bottom. This hole drains oil condensate from the pump diaphragm chamber.

If possible, the pump should be located below the fuel tank level.

If the fuel tank is considerably lower than the engine, an electric pump should be used. This pump is to be connected in parallel as in case of series-connection the fuel pressure would be excessive.

d00325

10.2.2) Check engine for seizure:

A seized engine will frequently free itself instantly and can be started again immediately, but a smear of aluminium from the piston will most probably be left on the cylinder bore, and this could cause a further seizure whenever the engine is run under heavy load, even if the cause of the original seizure (for example, fuel starvation) has been cured.

To check for a seizure, switch off ignition and remove spark plugs. Remove the exhaust manifold and inspect the pistons and cylinder through the exhaust ports as you slowly turn the engine.

Any scuff marks on the pistons or bores indicate a seizure, and the top end must be dismantled. The seize marks on the pistons must be carefully cleaned off with emery cloth, the rings checked for damage and sticking, and the cylinder bores must have every trace of aluminium removed by scraping and then with emery cloth. It is sometimes difficult to see the aluminium, but it is important to completely remove it. If the damage is more than superficial, the piston should be replaced, and the cylinder rebored.

10.2.3) Inspection of the fuel system:

Check the fuel tank vent; it must be clear, or the engine will gradually starve. Check the fuel tank itself - does the pick-up pipe in the tank have a strainer (mesh filter)? This is a fairly essential requirement, but many microlights still do not have one. If you cannot see for yourself - ask the aircraft manufacturer.

If there is no strainer, then you must thoroughly clean out the fuel tank, and always in future only fill through a filter funnel, taking the utmost care that no foreign matter enters the tank. A pick-up pipe without strainer can so easily be completely blocked by a single blade of grass in the fuel, or a flake of paint as so commonly appears from a jerrycan.

The offending blockage, having been sucked onto the tank outlet and stopped the engine dead, can, with the suction gone, float innocently back into the volume of the tank to cause the same problem again, maybe months later. Such a problem is almost impossible to trace afterwards - so don't let it happen to you, clean the tank and keep it clean.

10.2.4) Examination of fuel line between tank and fuel pump:

This section of pipe is under considerable negative pressure when the engine is running hard, and the tiniest flaw in any joint will cause air to be sucked into the system, considerably reducing the capacity of the fuel pump. Air leaks are much more dangerous when the fuel tank is mounted below the fuel pump and carburetor.

Air leaks are obviously impossible to see, but the following checks will show whether they exist.

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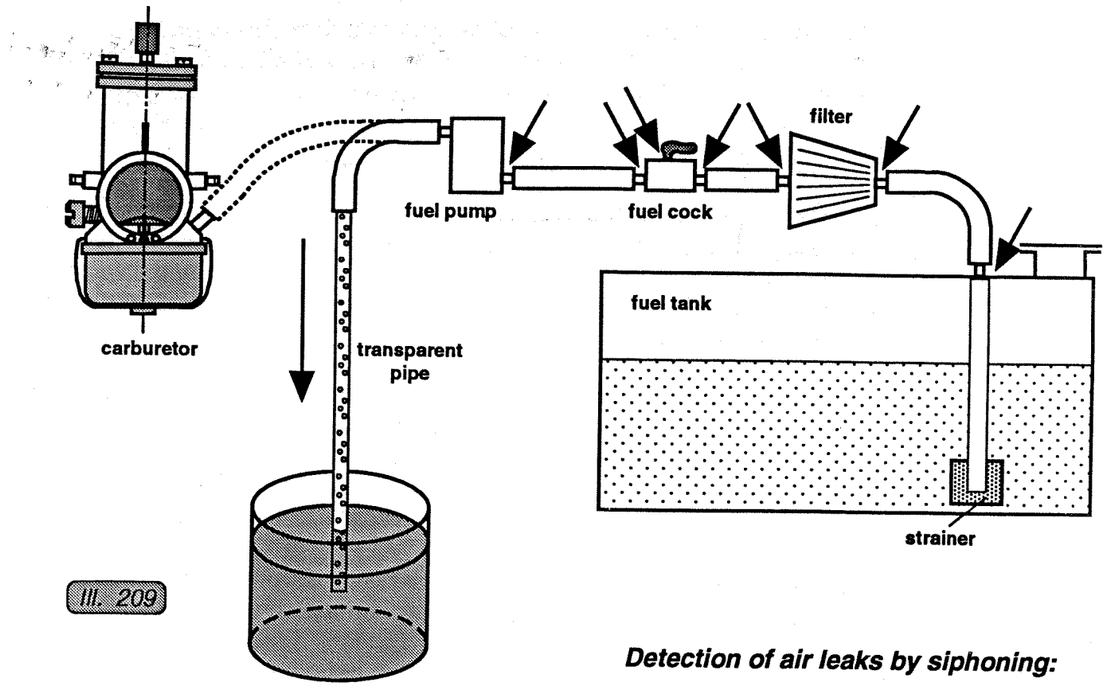


Ill. 209

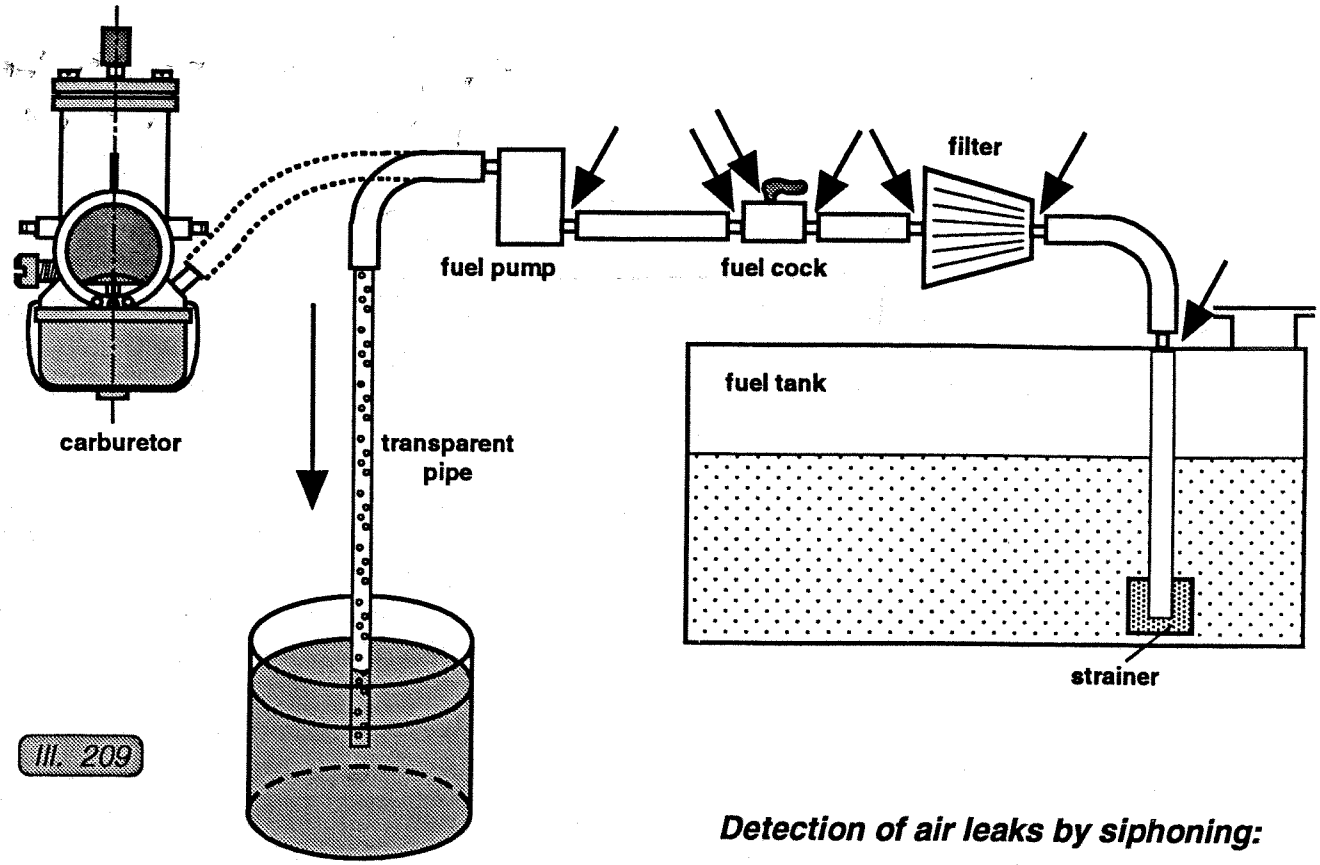
Detection of air leaks by siphoning:

Referring to Ill. 199, disconnect the fuel line from the carburetor and connect a length of transparent fuel pipe, making sure the connection is absolutely airtight. Take the transparent pipe down to ground level and start siphoning fuel from a tank to a container on the ground. All parts of the fuel system above the level in the tank will be below atmospheric pressure, and any air leaks in the system will show up as bubbles in the transparent pipe. Continue siphoning for a considerable period of time.

After an initial settling period there should be no bubbles in the fuel. If bubbles persist, find the location of the air leak(s) by process of elimination.

Another way of checking for air leaks is to replace the last portion of fuel line before the carburetor with a transparent piece. Ground run the engine and look for bubbles in the line - there should be virtually none after a few minutes settling down.

◆ NOTE: Filter and fuel tap are shown on suction side of pump to illustrate air leakage sites possible. Though, it is recommended that these be installed on the pressure side of the pump.



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10.2.5) Elimination of air leaks in the fuel line:

If air leaks are indicated, seek to eliminate them. The arrows on the diagram show possible air leakage points. Some commercial clips are often not very satisfactory on small pipes, as they tend to tighten up oval, creating a possible leak. "Crimp on" clips can be unsatisfactory if incorrectly applied, and are difficult to remove for servicing.

Replace all doubtfull fuel line clips with good quality approved ones. Quick release type connectors can cause air leaks, and also produce flow restrictions and possible blockage sites - likewise fuel tap connections and glands. If the fuel tank is below the engine, it is best to leave the fuel tap turned on all the time - use it only in an emergency.

All connections on the suction side of the fuel pump are potential air leakage sites; the less there are, the less problems are likely to arise. It is far more satisfactory if the fuel tap and filter are fitted between the fuel pump and the carburetor, on the pressure side. On installations where this is not the case, extra care must be taken to eliminate air leaks.

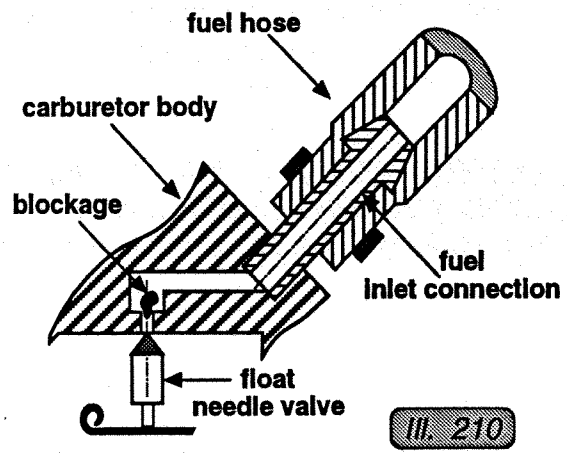
A useful way of checking the fuel system between tank and carburetor is to fit a pressure gauge in the fuel line just before the carburetor. At full throttle the pressure should be 0,2 - 0,5 bar (2.9 to 7.2 lb/in^2). A pressure gauge and fitting kit is now available from Rotax and may be permanently fitted to the aircraft, or used as a fault finding tool.

A pressure lower than 0,2 bar indicates a serious problem. We have never found a faulty pump, so always look elsewhere first.

10.2.6) Fuel supply to float chamber:

The most likely place for a blockage is just inside the carb, between inlet nipple and float valve. This is shown on illustration, and it can be seen that, of necessity, there is a flow restriction just before the needle valve.

Fuel reaching this place should have been thoroughly filtered, but on a few occasions we found a blockage here, caused by a sliver of rubber, sliced off the fuel pipe when it was pushed carelessly onto the carburetor connection. Such a blockage can be intermittent, as the particle moves about, and can be disastrous. The blockage can only be cleared by blowing out backwards.



Ill. 210

Preferably, put the fuel inlet connection into a transparent polythene bag, in order to catch any offending slivers of rubber and confirm the cause of the trouble. When refitting the fuel pipe onto the carburetor, take extra care not to create the problem again.

15) Fuel System

Schematic arrangement, 1 carburetor version

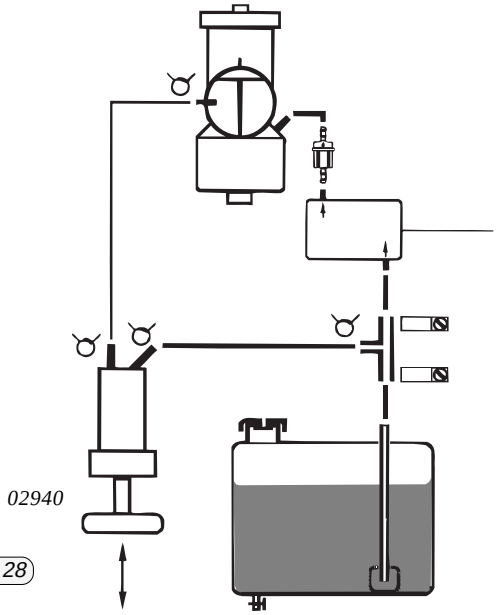
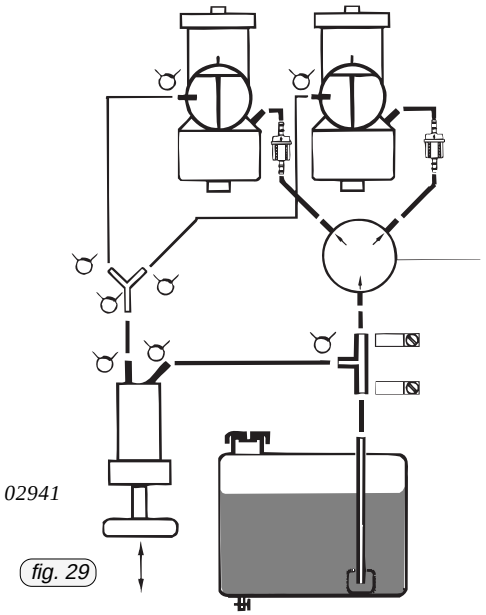


fig. 28

Schematic arrangement, 2 carburetor version



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If possible, the pump should be located below the fuel tank level.

If the fuel tank is considerably lower than the engine, an electric pump should be used. This pump is to be connected in parallel as in case of series-connection the fuel pressure would be excessive.

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The electric pump must produce a pressure of minimum 0,2 bar (3 psi), and together with the pneumatic pump max. 0,5 bar (7 psi) resp. max. 0, 4 bar (6 psi) in case of a diaphragm carburetor, and must allow free flow-through, even when switched off.

A suitable fuel filter of 0,15 mm mesh size must be fitted between pump and carburetor. Do not use paper filters. The fuel tank must have a drain cock for condensed water. A screen of 0,3 mm mesh size should be fitted to the fuel line in the tank. Never restrict the normal fuel flow.

The fuel lines and impulse line must be of a type to comply with national regulations. The minimum diameter is 5 mm (0,2 in.).

If the fuel tank is placed higher than the carburetor, the tank connection must have a fuel cock (with filter) to shut off the fuel supply when the engine is not running.

▲ WARNING: The carburetor needle valve is not sufficiently tight to seal for a prolonged period of time and during transport.

National regulations may require a fuel cock to be fitted even if the fuel tank is below the carburetor.

The carburetor needle valve is not to be used as a fuel cock.

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