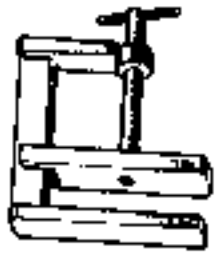
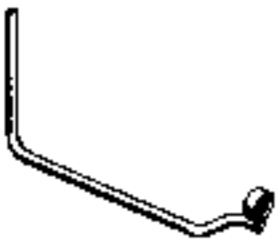
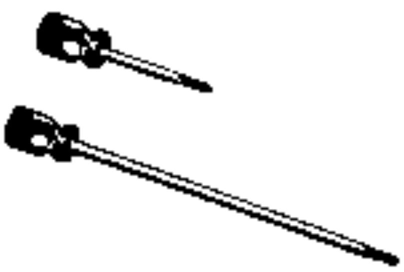
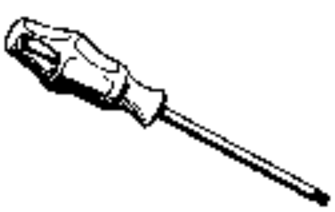
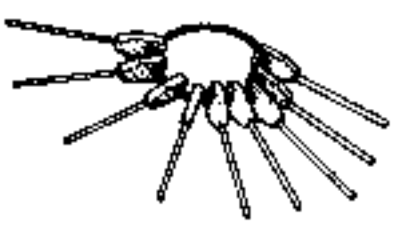
	METHOD Ref.	Part No.	DESCRIPTION
 85 654	**Mot. 453-01**	00 00 045 301	Hose clamps
 73 106	**Mot. 503**	00 00 050 300	Spanner for nuts on carburettor base - 12mm across flats
 75 723-1	**Mot. 828-01**	00 00 082 801	Flexible screwdriver for carburettor screws fitted with tamperproofing caps
 93 792	**Mot 1130**	00 00 113 000	Screw ended tools for extracting tamperproofing caps
 92 336	**Mot 1136**	00 00 113 600	Torx screwdriver for removing the carburettor
 75 742	**Ele. 556**	00 00 055 600	Cranked spanner for distributor securing nuts, 11mm across flats
 80 079	**M.S. 787**	00 00 078 700	Set of gauge pins for adjusting carburettors

SUPPLIER FACOM

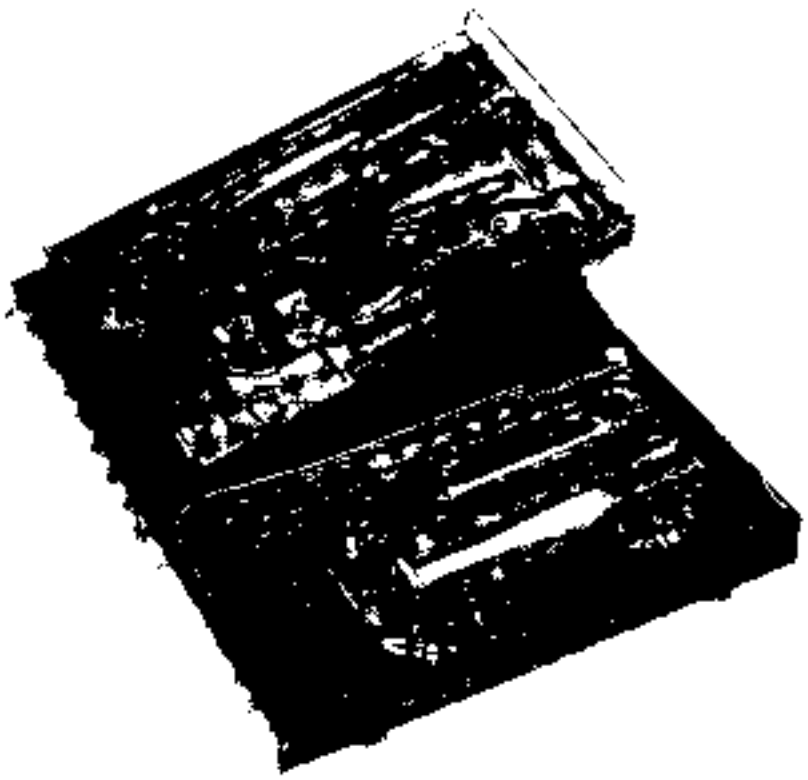
Bridge Wharf
Bridge Roac
CHERTSEY

0932-566099

D 400 ignition-carburation tool kit

A kit of 56 tools specially designed for carrying out all the required operations on the ignition and carburation systems of private cars and contained in a red enamel box with unbreakable internal compartments for the tools.

Overall dimensions: 452 x 270 x 105mm



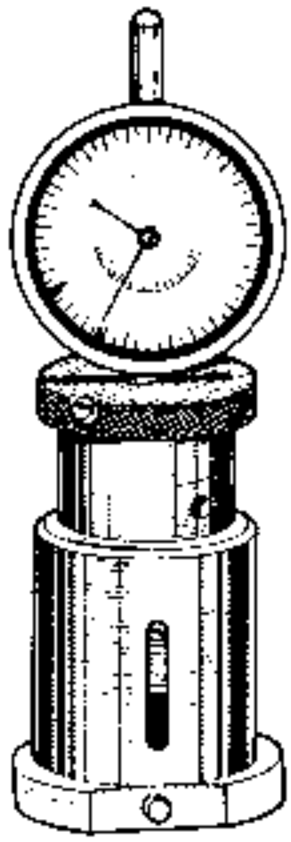
98025

Tool for measuring the throttle plate angle

77 01 381 152

SOLEX

21 532 044



83 033

See MR 500**
Bulletin 9/1

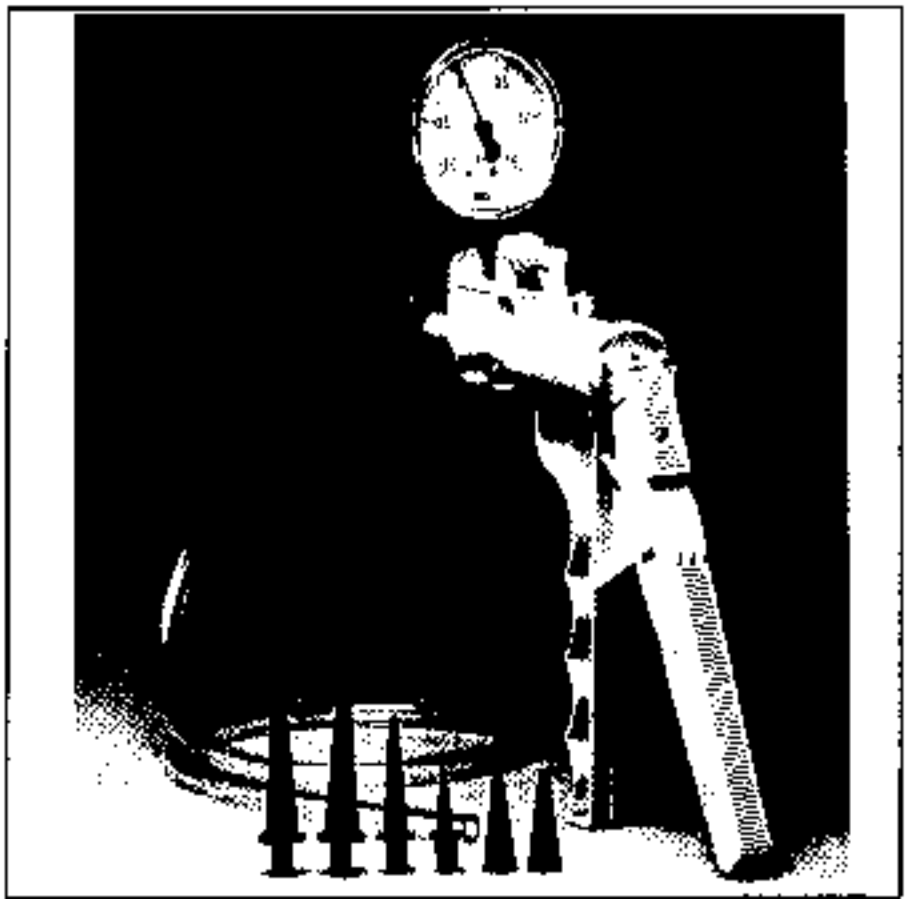
MANUALLY OPERATED PRESSURE/ VACUUM PUMP

Specifications: Pressure from 0 to 1.5 bars
Vacuum from 0 to 1 bar

Description: The pump is made from plastic and comprises a pistol grip and a pump lever. It is supplied with a connecting hose and six nozzles of different diameters.

Function: The testing or adjusting of components that operate under a vacuum or a low pressure:

- emission control systems
- vacuum capsules
- turbocharging systems
- all pneumatically controlled accessories.



Its function is to produce an Air/Fuel mix which is:

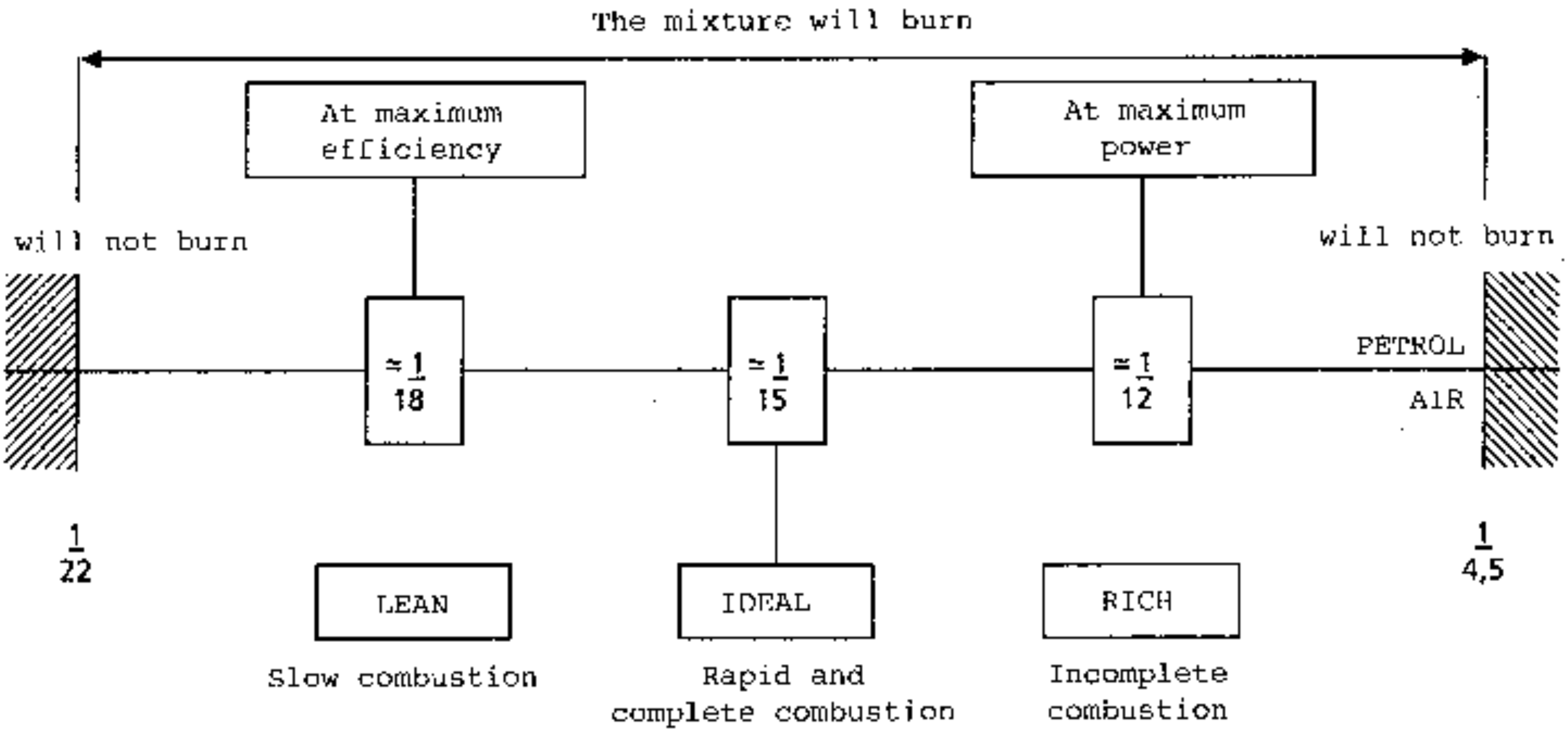
Homogeneous	Gaseous	Correctly proportioned

that is to say which is in combustible form

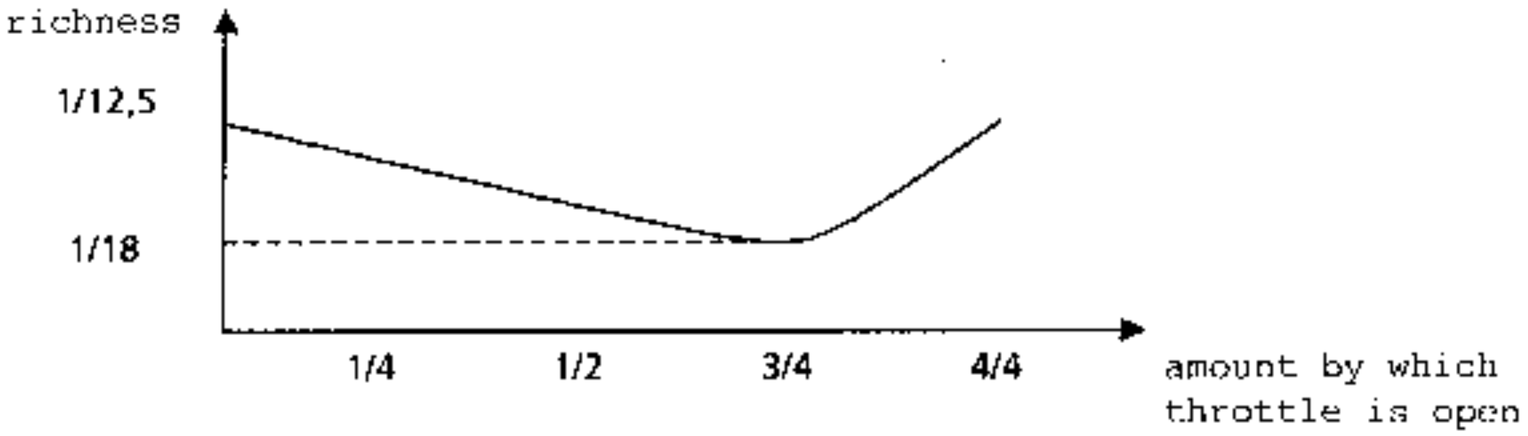
- Homogeneous and in gaseous form: The object is to convert the fuel from a liquid to a gaseous state. To do this it must be atomised. To facilitate this condition change, we place the fuel input in a low pressure area which is perpendicular to the air intake flow.

- Metered in the correct proportions: The mixture must fulfil, as effectively as possible, the operating requirements of the engine at any given moment.

CHARACTERISTICS OF CERTAIN MIXTURE PROPORTIONS



Generally speaking, the proportions of the mixture will vary to suit the amount of mixture entering the combustion chambers (that is to say the position of the throttle) as follows:



The various carburettor circuits should, therefore, provide for the necessary changes in the strength of the mixture.

A carburettor consists of:

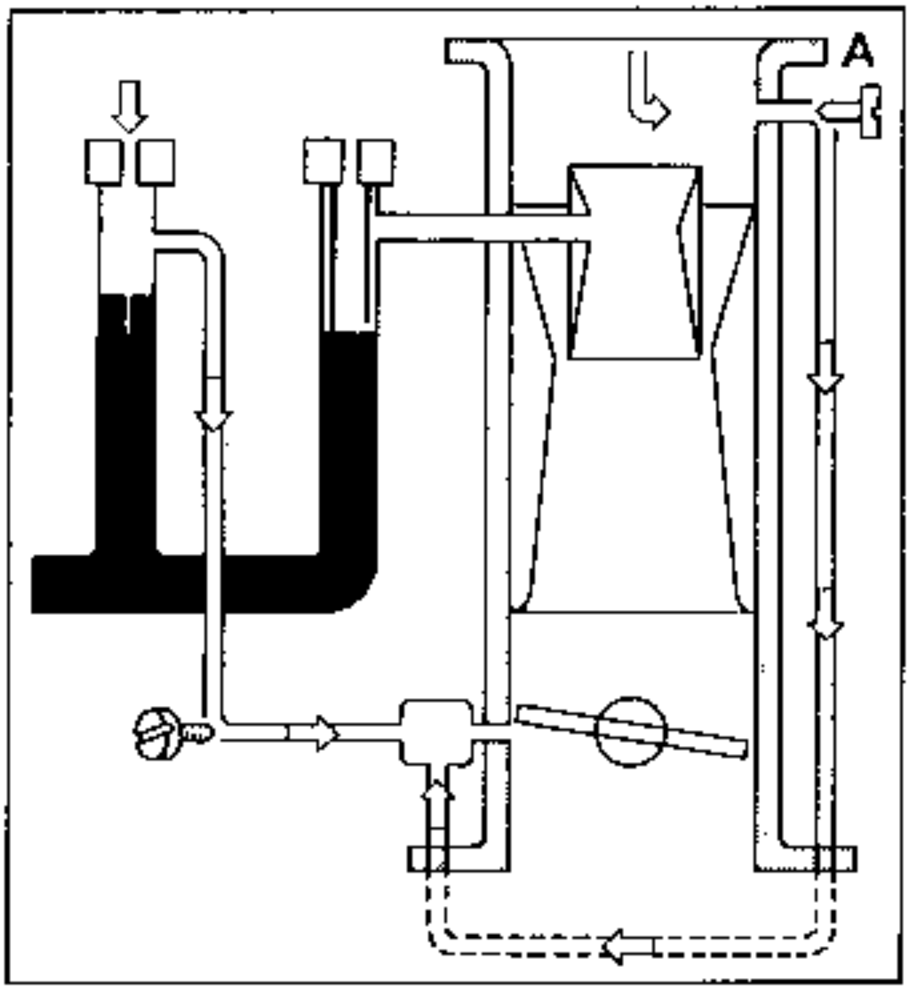
- the constant level float chamber
- the idling jet system
- the main jet system
- the choke system

and, in addition, depending on the requirements of the engine to which it is fitted,

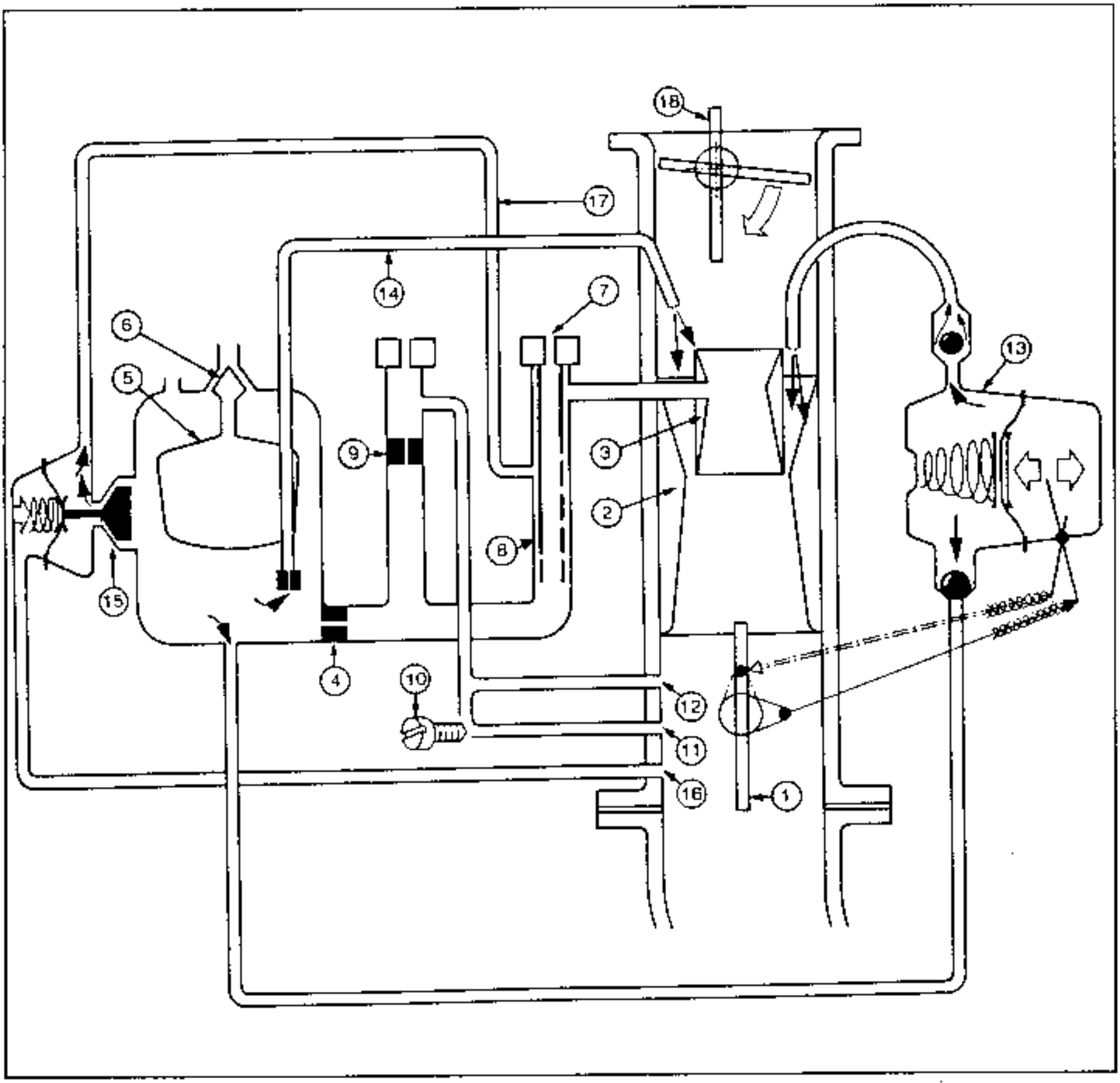
- systems which cater for:
  - acceleration
  - enrichening the mixture at heavy loads
  - enrichening the mixture at high speeds
  - carrying out the functions of emission control

You will see below the diagram representing a basic carburettor incorporating these systems.

It is to be noted, however, that another type of idling system exists which provides a more homogeneous mix and therefore a cleaner exhaust.



In this carburettor, the throttle plate is in a given pre-determined position



1 Throttle plate
2 Choke tube
3 Secondary venturi
4 Main jet
5 Float
6 Needle valve
7 Air compensator jet
8 Emulsion tube
9 Idling jet
10 Mixture screw (for adjusting the fuel input)
11 Idling circuit
12 Progressive circuit
13 Accelerator pump
14 High speed enrichener
15 Power enrichener
16 Vacuum take-off for power enrichener
17 Power enrichener fuel input ducting
18 Choke flap

ENGINE DEFECTS

Methods of determining the cause of a defect

THE ENGINE WILL NOT START

DIFFICULTY WITH STARTING WHEN COLD

DIFFICULTY WITH STARTING WHEN HOT

THE ENGINE LACKS POWER (Poor performance)

HIGH FUEL CONSUMPTION

THE ENGINE STARTS THEN STOPS

UNSTABLE IDLING SPEED (Hunting)

ACCELERATION FLAT SPOTS, SNATCHING: AT CONSTANT SPEED OR GENTLE ACCELERATION

LACK OF POWER AT CONSTANT SPEED, FLAT SPOTS DURING MEDIUM ACCELERATION

BACK FIRING

PRE-IGNITION

PINKING

BLACK SMOKE

EXCESSIVE OIL CONSUMPTION (Blue smoke)

EFFECTS OF THE VARIOUS CARBURETTOR SETTINGS

ENGINE DEFECTS

Method of Determining the Cause of a Defect

The checks are to be carried out in the order stated on each of the fault finding charts. This is because defects or their probable causes have been classified in the order in which they are most likely to occur, starting with the most common cause and finishing with the rarest.

On the following pages:

- Find the page with the defect in question at the top.
- Pass to line 1 to determine the most probable cause and carry out the necessary checks.
- If the results of these checks are negative, carry out the adjustment or rectification operation and test the vehicle.
- If the results are positive or if the defect persists after adjustment or rectification, pass to number 2.
- On line 2, note the defect or probable cause and carry out the necessary checks.
- If the results of the checks are negative etc.
- If the results of the checks are positive etc.
- and so on to numbers 3, then 4, then 5 ...

EXAMPLE: if a vehicle is suffering from flat spots during acceleration:

- We find the most frequent cause in line 1, i.e.: incorrect idling speed mixture. Check the idling speed mixture.
- If the idling speed mixture is incorrect, adjust the carburettor to the specified figures and test the vehicle to see if the flat spots have disappeared.
- If the idling speed mixture is correct or if the acceleration flat spots persist, pass to item 2.
- On line 2 we find that the second most likely cause is a defect in the accelerator pump. Check that it is spraying properly, the direction of its jet, the length of its stroke etc.
- If the pump is correctly adjusted or if a road test shows that the flat spots are persisting (or if the vehicle has no accelerator pump), move on to no. 3.
- Etc. so that you check, in succession:
  The air filter, the cam angle, the ignition static timing, the distributor curve, the spark plugs, the carburettor condition and settings, the throttle plate angle, the position of the air compensator jet, for air entering the system and finally the valve clearances.

ENGINE DEFECTS

THE ENGINE WILL NOT START

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Starter motor speed insufficiently high.	Check: the battery, wiring, connectors and starter motor.
2 - Spark plugs defective.	Check: spark gaps, correct type, condition (fouling up caused by town driving).
3 - Absence of or too low a high tension voltage at the plugs.	Check the H.T. circuit. Conventional ignition: Check: the cam angle, low tension supply, coil, contact breaker, condenser, and the power module. Electronic ignition (AEI) Check: the coil, sensor, electronic module and the module supply.
4 - Dirty air filter.	Check the cartridge and replace it if necessary.
5 - Choke not operating correctly (cold engine - warm engine).	Return springs broken, component parts gummed up or worn, insufficient initial opening.
6 - Insufficient fuel arriving at the carburettor.	Check: the pressure-filters, pipes, immersion tube and fuel tank contents.
7 - Incorrect initial timing. (Setting, timing mark incorrectly positioned).	After checking the cam angle, reset the initial timing.
8 - Damp or poor insulation: plug leads, distributor cap, rotor arm.	Dry the components and check condition of insulation and spark plug caps.
9 - Needle valve - Incorrect fuel level.	Check that the needle valve operates correctly - Adjust the fuel level.
10 - Plug leads in incorrect order.	Re-establish the correct firing order.
11 - Oil too thick in cold weather.	Fill the engine with oil of the correct viscosity for the ambient temperature.
12 - Compression pressures too low.	Check: valves and piston rings.
13 - Jets blocked or incorrect type.	Consult the carburettor setting specifications. Check or replace the jets.
14 - Valve timing incorrect (belt or chain jumped a tooth).	Check: the chain or belt tensioner and reset the valve timing.

ENGINE DEFECTS

DIFFICULTY IN STARTING FROM COLD

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Starter motor speed insufficiently high.	Check: the battery, wiring, connectors and starter motor.
2 - High tension spark too weak.	Check the H.T. circuit. Conventional ignition: Check: the cam angle, low tension supply, coil, contact breaker, condenser and the power module. Electronic ignition (AEI) Check: the coil, sensor, electronic module and the module supply.
3 - Damp, insulation: plug leads, distributor cap, rotor arm	Dry the components and check condition of insulation and spark plug caps.
4 - Spark plugs defective.	Check: spark gaps, type, condition (fouling up caused by town driving).
5 - Insufficient or no fuel arriving at the carburettor.	Check: that there is fuel in the tank, fuel pressure, filters, pipe kinked or blocked.
6 - Carburettor defective: - Choke not operating correctly. - Positive throttle opening incorrect. - Main jet blocked. - Fuel level incorrect.	 Adjust the choke cable, in the case of semi-automatic chokes (check that the choke flap is closing correctly). Correctly adjust the positive throttle opening. Unblock the jet. Check the operation of the needle valve. Adjust the fuel level.
7 - Air leaking into one of the systems.	Check: the vacuum circuits and connections - the reintake system jets - the capsule diaphragm - the manifold and carburettor gaskets - the throttle shaft.
8 - Oil incorrect (level - viscosity - dilution).	Change the oil.
9 - Compression pressures too low.	Check: the valves and the piston rings.

ENGINE DEFECTS

DIFFICULTY IN STARTING FROM HOT

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
A-Engine Flooding	
1 - Choke system not cutting out.	Check that the choke is operating correctly and carry out any necessary rectifications.
2 - Percolation (carburettor too hot causing fuel or fuel vapour to enter the intake system).	Check that the float chamber idling vent valve is operating correctly. Check that the seals and insulating pad are in place and of the correct type.
3 - Fuel level too high. Leaky needle valve. Perforated float.	Replace any defective parts and adjust fuel level.
4 - Idling mixture too rich.	Adjust the idling speed and CO %.
B-Engine not Flooding	
5 - Conventional ignition: Cam angle incorrect.	Adjust the cam angle and reset the timing.
6 - Plugs defective.	Check: the spark gaps, correct type, condition (fouling up caused by town driving).
7 - Conventional ignition: Incorrect initial timing.	After checking the cam angle, reset the initial timing.
8 - HT spark too weak.	Check the H.T. circuit: Conventional ignition: Check: the cam angle, low tension supply, coil, contact breaker, condenser and the power module. Electronic ignition (AEI) Check: the coil, sensor, electronic module and the module supply.
9 - Air leaking into one of the systems.	Check: the vacuum circuits and connections - the reintake system jets - the capsule diaphragm - the manifold and carburettor gaskets - the throttle shaft.
10 - Carburettor defective: - Needle valve or float sticking, fuel level too low. - Idling jet blocked. - Idling speed too low or too lean	Replace any defective parts and adjust the fuel level. Clean and blow out the jet. Adjust the idling speed and the CO %.
11 - Compression pressures too low.	Check: valves and piston rings.
12 - Coolant too hot or too cold.	Check or replace the thermostat - check whether the radiator is dirty.

ENGINE DEFECTS

ENGINE LACKS POWER (Poor Performance)

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Throttle insufficiently far open when the accelerator is fully depressed,	Adjust the throttle control.
or second barrel not opening on double barrelled carburettors.	Check and adjust the second barrel locking system.
2 - Choke flap not operating correctly (when the engine is cold or hot).	Return springs broken, gummed up or component parts worn.
3 - Dirty air filter.	Check the cartridge and replace it if necessary.
4 - Conventional ignition: Incorrect initial timing. Cam angle correct.	Adjust the cam angle and reset the timing.
5 - Spark plugs defective.	Check: the spark gaps, correct type, condition (fouling up caused by town driving).
6 - Distributor curves incorrect.	Conventional ignition: Check: type and settings. Electronic ignition (AEI): Check: sensor and electronic module.
7 - Lean mixture (spark plug electrodes white)	
7.1.-Air leaking into the system.	Check: the manifold and carburettor gaskets, vacuum take-off points & circuits reintake system jets, capsule diaphragm, clearance round throttle shaft.
7.2.-Carburettor freezing-up.	Check the carburettor base heating system, that the air distribution flap is in the WINTER position or the thermostatic system operating correctly.
7.3.-Fuel supply insufficient, filter dirty, fuel pump defective.	Check fuel flow and pressure. Replace any defective parts.
7.4.-Carburettor defective:	
- Fuel level too low.	Adjust the fuel level to the specified figure.
- Air compensator jet too big or missing.	Check size of jet and carry out a test with a smaller jet.
- Power enrichener or econostat system defective.	Check that the power enrichener system is of the correct type and operating correctly.
8 - Engine tending to pink.	Wrong type of fuel being used.

ENGINE DEFECTS

ENGINE LACKS POWER (Poor Performance) (continued)

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
9 - Carburettor freezing-up	Check the carburettor base heating system and that the air distribution flap is in the WINTER position.
10- Valve clearance incorrect.	Readjust.
11- Stiffness in the engine moving parts assembly.	Find which cylinder is responsible by a process of elimination, with the spark plugs removed (connecting rods - pistons etc.).
12- Oil too thick in cold weather.	Fill the engine with oil of a viscosity suitable for the ambient temperature.
13- Coolant too hot or too cold.	Check or replace the thermostat - check whether the radiator is dirty.
14- With the vehicle just moving.	Check: that the brakes are not rubbing - that the wheel bearings are in good condition and that no parts are rubbing.
15- Valve timing incorrect (chain or belt jumped a tooth).	Check the operation of the chain or belt tensioner and set the timing.
16- Exhaust blocked - silencer baffles loose.	Replace any defective parts.
17- Engine in generally poor condition	Overhaul engine.

HIGH FUEL CONSUMPTION

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Dirty air filter.	Check cartridge and replace if necessary.
2 - Conventional ignition: Incorrect initial timing	After checking the cam angle, reset the ignition timing.
3 - Idling speed mixture adjustment incorrect.	Adjust to the specified figures using officially approved test equipment.
4 - SUMMER-WINTER distribution flap in incorrect position.	Check, on thermostatic systems, that the capsule is operating correctly.

ENGINE DEFECTS

HIGH FUEL CONSUMPTION
(continued)

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
5 - Choke not cutting out correctly.	Check that the system cuts out completely (cable travel).
6 - Spark plugs defective.	Check: the spark gaps, correct type, condition (fouling up caused by town driving).
7 - Conventional ignition: Distributor of the wrong type.	Replace the distributor.
- Electronic ignition (AEI): Ignition module of the wrong type.	Replace the module.
8 - Tyre condition and type - tyre pressures too low.	Check the fuel consumption with tyres of the correct type correctly inflated.
9 - Vehicle just moving.	Check whether the brakes are rubbing - the condition of the wheel bearings - that no parts are rubbing.
10 - The presence of any accessory that alters the drag coefficient of the vehicle.	Carry out comparative road tests with and without the accessories.
11 - Carburettor condition and settings incorrect.	
11.1.-Fuel level too high, float perforated.	Check that the needle valve is operating correctly. Replace the float, adjust the fuel level.
11.2.-Main jet too large or loose.	Check that the main jet is tight and of the correct size.
11.3.-Air compensator jet blocked or too small.	Clean the jet and check its size.
12 - Fuel pump output - pressure too high.	Check the pump pressure and adjust it. Check the return-to-tank circuit.
13 - Crank case gas reintake system blocked.	Check that the crank case gas reintake circuit is correct.
14 - Oil defects (wrong level - wrong grade - dilution).	Change the oil.
15 - Compression pressures too low.	Check: the valves and piston rings.
16 - Coolant too hot or too cold.	Check or replace the thermostat - check whether the radiator is dirty.

ENGINE DEFECTS

ENGINE STARTS AND THEN STOPS

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
A-The engine is flooding	
1 - Air filter dirty.	Replace the cartridge.
2 - Choke flap initial opening.	Check the choke flap operation and adjustment.
3 - Fuel level too high - float perforated.	Check the operation of the needle valve, replace the float, adjust the fuel level.
4 - Vapour lock (a bubble of vapour in one of the fuel pipes).	Check that there are no hot spots on any of the fuel pipes.
5 - Choke flap not operating correctly. (When the engine is cold, warm).	Return springs broken. System components gummed up or worn. Positive opening insufficient.
B-The engine is not flooding	
6 - Conventional ignition: Incorrect initial timing.	After checking the cam angle, reset the timing.
7 - Plug leads incorrectly connected.	Restore the correct firing order.
8 - Conventional ignition: Contact breaker points or condenser in poor condition.	Check: the resistance, that the components are not gummed up, the setting, the cam angle and the insulation.
- Electronic ignition (AEI):	Replace the module or the sensor.
9 - Fuel pump output or pressure incorrect.	Check the condition of the pump and measure the pressure. Check the fuel pipe and immersion tube in the tank.
10 - Air leaking into the intake system.	Check: manifold and carburettor gaskets, vacuum unions and pipes, reintake system jets, capsule diaphragm, throttle shaft clear.
11 - Carburettor: Choke flap opening too quickly or too wide (weak spring, opening assistance system incorrectly adjusted).	Replace defective spring, adjust flap assistance system.

ENGINE DEFECTS

UNSTABLE IDLING

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Idling circuit or jet defective, idling ducting partially blocked, dirty throttle plate.	Remove the jets and clean them, blow out the ducting, adjust the idling speed and CO%.
2 - Conventional ignition: Incorrect initial timing or cam angle incorrect.	Adjust the cam angle and reset the timing.
3 - Spark plugs defective.	Check: the spark gaps, correct type, condition (fouling up by town driving).
4 - Conventional ignition: Distributor curve incorrect.	Check: type and adjustment.
- Electronic igntion (AEI): Module or sensor defective.	Check: the module or the sensor.
5 - Air leaking into the intake system.	Check the vacuum circuits and connections, the reintake circuit jet, the carburettor fastenings.
6 - Throttle angle incorrect on constant CO type carburettors.	Adjust the throttle to the specified angle.
7 - Fuel level incorrect.	Check the needle valve and float. Adjust the fuel level.
8 - Enrichener or flap assistance system diaphragm leaking.	Recondition the system and any defective diaphragms.
9 - Carburettor body distorted - throttle shaft worn.	Replace any defective parts.
10 - Air calibration jets blocked or missing.	Recondition the carburettor.

ENGINE DEFECTS

ACCELERATION FLAT SPOTS OR SNATCHING AT CONSTANT SPEED OR GENTLE ACCELERATION

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
A-Cold engine 1 - Choke system cutting out too quickly.	Check the thermostatic spring position and operation and the positive throttle opening.
- Electric heater not operating.	Check temp. switch and heater circuit.
B-Warm engine 2 - Idling speed mixture adjustment incorrect.	Adjust to the specified figures using approved equipment.
3 - Dirty air filter.	Check the cartridge and replace it if necessary.
4 - Conventional ignition: Incorrect initial timing. Cam angle incorrect.	Adjust the cam angle and reset the timing.
- Electronic ignition (AEI): Module and sensor defective.	Check: the module and the sensor.
5 - Conventional ignition: Distributor curves incorrect.	Check: the distributor type and adjustment.
- Electronic ignition (AEI): Module and sensor defective.	Check: the module and the sensor.
6 - Spark plugs defective.	Check: the spark gaps, their type, condition (fouling up by town driving).
7 - Throttle angle incorrect on constant CO carburettors.	Adjust the throttle to the specified angle.
8 - Air filter condition and position, (summer-winter) or thermostatic capsule adjustment.	Replace the air filter cartridge and adjust or replace the thermostatic capsule.
9 - Defective accelerator pump.	Check the atomisation, the position of the jet and the travel adjustment.
10 - Air leaking into the intake system.	Check the vacuum circuits and connections, the reintake circuit jet, the carburettor fastenings.
11 - Position of air compensator jet.	If incorrect, replace the float chamber.
12 - Float chamber fuel level too low.	Adjust the level to the specified height.
13 - Progressive orifices partially blocked, throttle plate dirty.	Clean with a "carburettor cleaning" product.
14 - Idling jet too small.	Check that the jet is of the correct size and carry out a test with a slightly lager jet

ENGINE DEFECTS

LOW POWER AT CONSTANT SPEED, FLAT SPOTS AT MEDIUM ACCELERATION

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
A-Rich mixture (spark plug electrodes black)	
1 - Dirty air filter.	Replace the filter cartridge.
2 - Fuel level too high.	Adjust the level to specified height.
3 - Main jet loose or too large.	Check that the main jet is tight and of the correct size.
4 - Air compensator jet too small.	Check that the air compensator jet is the correct size.
5 - Fuel pressure too high.	Check that the circuit is correct. Replace the fuel pump.
6 - Carburettor freezing-up.	Check the carburettor base heating system and that the air distribution flap is in the WINTER position.
B-Weak mixture (spark plug electrodes white)	
7 - Fuel level too low.	Adjust the fuel level to the specified height.
8 - Main jet too small.	Check the size of the jet and carry out a test with a slightly larger jet.
9 - Air compensator jet too large or missing.	Check that the jet is the correct type and carry out a test with a smaller jet.
10 - Enrichener system defective.	Check the operation, condition of diaphragm and condition of vacuum circuit.
11 - Fuel supply insufficient, filter dirty, fuel pump defective.	Check the fuel pressure and output. Replace any defective parts.
12 - Air leaking into the intake system.	Check: the vacuum circuit and connections, the reintake circuit jet, the capsule diaphragm, the manifold and carburettor gaskets and the throttle shaft.

ENGINE DEFECTS

BACK FIRING

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Incorrect idling mixture.	Adjust the mixture to the specified figures using approved equipment.
2 - Conventional ignition: Incorrect initial timing.	After first checking the cam angle, reset the timing.
3 - Carburettor in poor condition and incorrectly adjusted.	Remove the carburettor and recondition it.
4 - Octane rating of the fuel used too low.	Carry out a test with a test bottle full of the correct fuel.
5 - Air leaking into the exhaust.	Check the exhaust system, the manifold and its gasket.

PRE-IGNITION

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Idling speed mixture incorrect.	Adjust to the specified figures using approved equipment.
2 - Octane rating of the fuel used too low.	Carry out a test with a test bottle full of the correct fuel.
3 - Spark plugs defective or incorrect type.	Check: the spark gaps, correct type, condition (fouling up by town driving).
4 - Coolant too hot or too cold.	Check or replace the thermostat - check whether the radiator is dirty.

PINKING

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Conventional ignition: Incorrect initial timing.	After checking the cam angle, reset the timing.
2 - Distributor of the wrong type.	Replace the distributor.
3 - Conventional ignition: Distributor curves incorrect.	Check: that the curves and adjustments are correct.
4 - Fuel used of too low an octane rating.	Carry out a test with a test bottle full of the correct fuel.
5 - Carburettor and adjustment defective.	Dismantle and recondition the carburettor.

ENGINE DEFECTS

BLACK SMOKE

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Air filter dirty.	Check the cartridge and replace if necessary.
2 - Idling speed mixture adjustment too rich.	Adjust to the specified figures using approved equipment.
3 - Choke not cutting out correctly.	Check that the choke cuts out correctly (cable travel).
4 - Choke flap not operating correctly (cold or hot engine).	Controls or return springs broken. Component parts gummed up or worn.
5 - Needle valve - fuel level too high.	Check the needle valve - adjust the fuel level.
6 - Fuel pump output or pressure too high.	Check the condition of the pump and measure the pressure.
7 - Carburettor condition or adjustments defective.	Remove and recondition the carburettor.

OIL CONSUMPTION (Blue smoke)

DEFECTS - PROBABLE CAUSES	CHECKS - REMEDIES
1 - Oil vapour reintake system defective.	Pipes blocked, kinked or jet incorrect.
2 - Oil defective (level - viscosity - dilution).	Change the oil.
3 - Compression pressures too low.	Check: the valves and piston rings.
4 - Valves leaking round the stems.	Check: the seals, when applicable, and the amount of wear.
5 - General engine condition.	Overhaul the engine.

The Effect of the Various Carburettor Settings

INTRODUCTION

Before deciding that the carburettor and the engine fuel system are defective, it is important to check the condition of:

- the engine (compression pressures, valves, valve clearances),
- the ignition system (condition of the plugs, the distributor, points, initial timing, centrifugal advance and vacuum correction),
- the cooling system and the operation of the thermostat.

In the same way, it is obvious that:

- the engine is started from cold with the choke operating (choke knob pulled fully out), or the semi-automatic cold starting system set (accelerator fully depressed and pedal released),
- the engine is started when hot with the choke not operating (no pressure on the accelerator or the pedal slightly pressed down without, however, pumping the pedal)
- the engine runs at idling speed when cold with the choke in the intermediate position or, with the semi-automatic choke in the position it occupies when the accelerator has briefly been depressed,
- the engine idles, when warm, with the choke not operating and the accelerator released.

THE CHOKE SYSTEM

- Choke not fully closed.	Starting difficult, or impossible, in cold weather.
- Initial opening too great.	Too high an engine speed when cold.
- Initial opening too small.	Engine speed too low and engine tends to stall when cold.
- The choke opening after starting is insufficient.	The engine tends to flood, produces black smoke and over revs.
- The choke opening after starting is too great.	The engine stalls when cold and suffers from acceleration flat spots.

FUEL LEVEL

- Float perforated or sticking in open position or needle valve leaking.	Black smoke, impossible to adjust the idling speed, main jet delivering fuel at idling speed.
- Fuel level too high.	Main jet system comes into operation too quickly, CO content more than 1% at intermediate speeds (1100 to 2000 rpm off load).
- Fuel level too low.	Main jet system does not come into operation quickly enough. Acceleration flat spots. Uneven running at intermediate speeds of 1000 to 2000 rpm off load, CO less than 0.5%.

The Effect of the Various Carburettor Settings

THROTTLE PLATE ANGLE ON CONSTANT CO CARBURETTORS

- Throttle too closed.	Difficulty in adjusting the idling speed (too low) and carburation defects during progressive transfer.
- Throttle too open.	Difficulty in adjusting the idling speed (too high) defective carburation during progressive transfer.

ACCELERATOR PUMP

- Travel and delivery excessive.	Black smoke during acceleration (excessive fuel consumption especially in town driving conditions).
- Travel and delivery insufficient.	Acceleration flat spots and a tendency to stall when accelerated.

IDLING JET

- Jet too large, loose or has been opened out.	High fuel consumption especially in town, CO greater than 1% at intermediate speed.
- Jet too small, dirty or partially blocked.	Idling speed unstable, snatching, CO very low at intermediate speeds (1100 to 2000 rpm off load).

MAIN JET

- Jet too large, loose or has been opened out.	High fuel consumption, black smoke.
- Jet too small, dirty or partially blocked.	Low power, white smoke, uneven running, snatching at constant speeds.

AIR COMPENSATOR JET

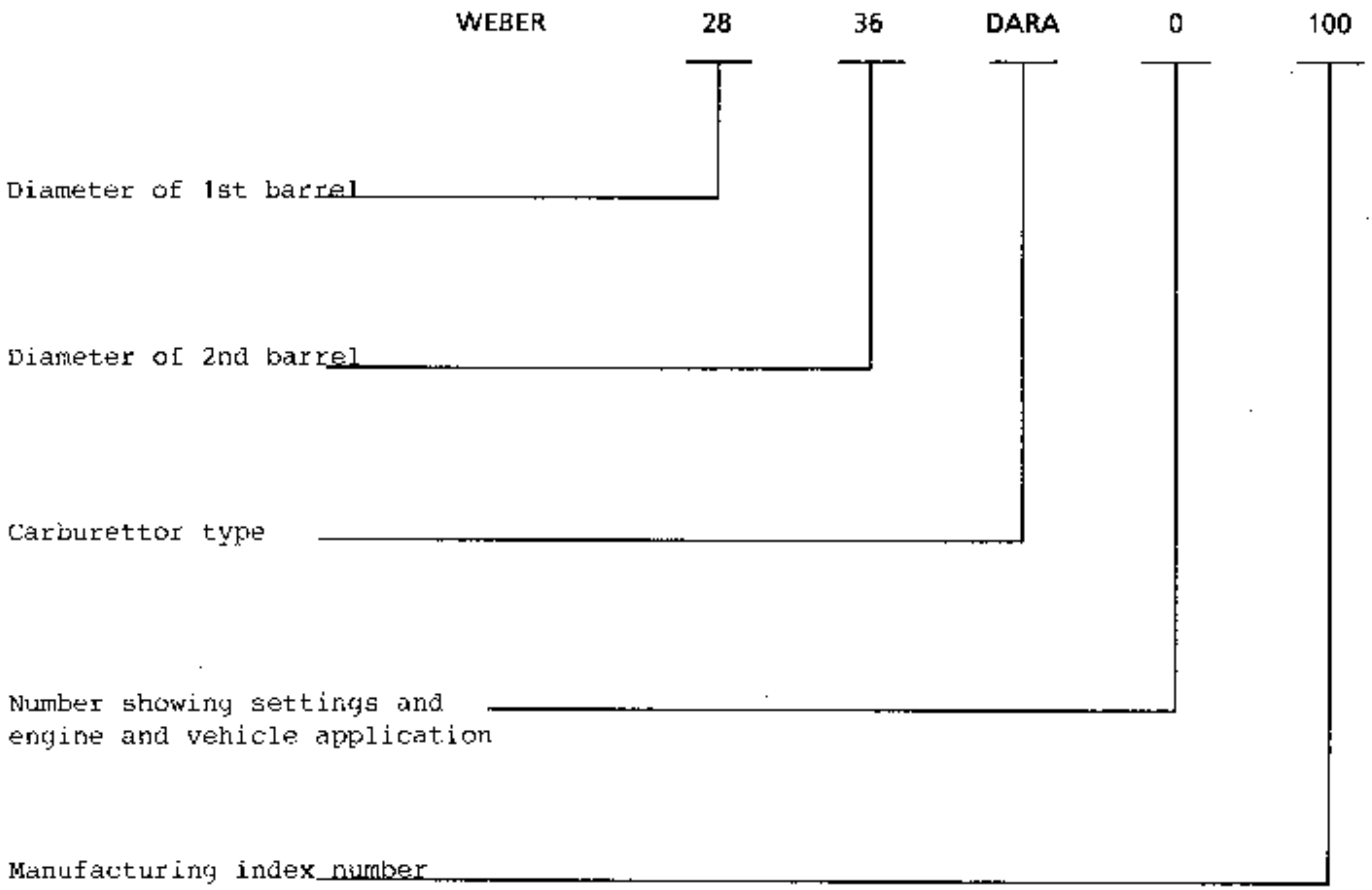
- Jet too large, loose or has been opened out.	Main jet system mixture too weak.
- Jet too small, dirty or partially blocked.	Main jet mixture too rich.

PNEUMATICALLY OPERATED POWER ENRICHENER

- Enrichener not delivering.	Low power, carburation defects at full load.
- Enrichener continuously delivering fuel.	Black smoke under partial loading, high fuel consumption.
- Diaphragm perforated.	Air entering the system, fuel escaping into the vacuum system.

The identification marks are stamped on the base of the carburettor or on its body.

EXAMPLE:



DESCRIPTION

The type DARA or DIR WEBER carburettor is a double-barreled carburettor with a differential throttle opening system.

It incorporates the following individual systems:

- The base of the carburettor is heated by hot water.

DARA:
- The choke flap is thermostatically operated by a unit heated by hot water from the cooling system.

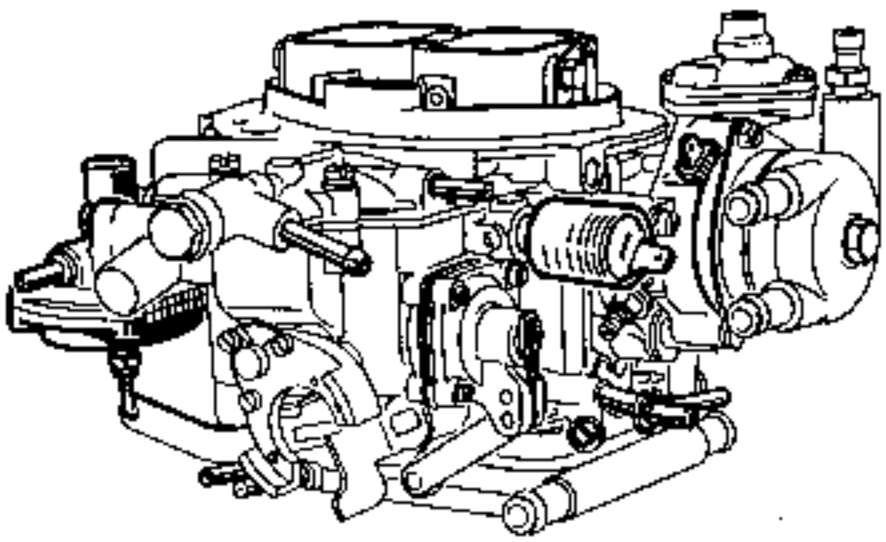
DIR:
- The choke flap is manually operated.

- An idling system which may be of the "limited CO" or "constant CO" type.

- A power enrichening system.

- And, depending on the application, 1 or 2 high speed enrichening systems.

DARA



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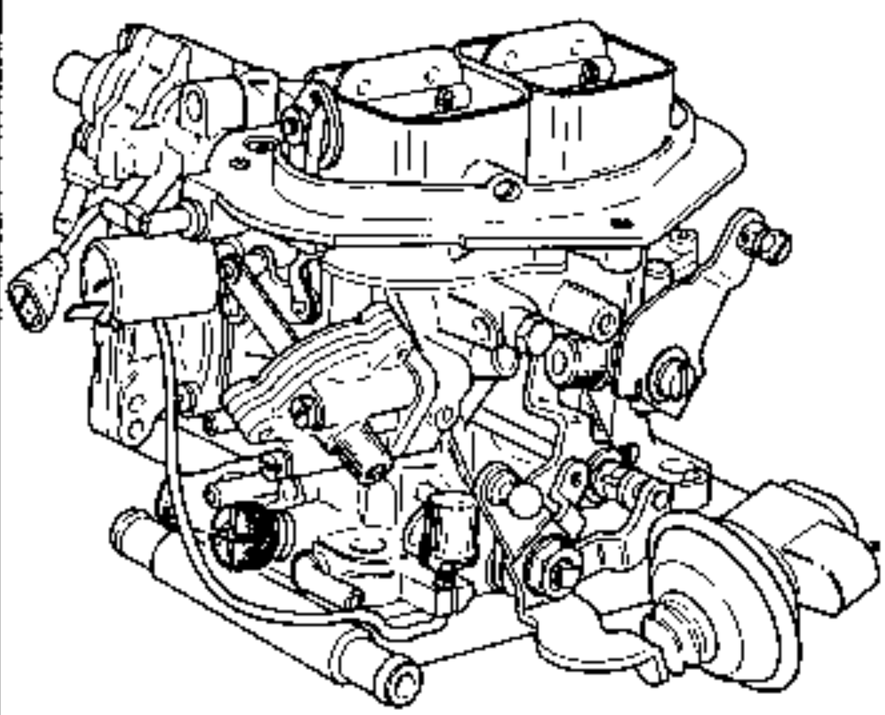
DIR



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THE MAIN JET SYSTEM

The systems in the two bodies are similar. Only their settings are different.

The throttle on the 2nd body is mechanically operated via the throttle on the 1st body.

The fuel, from the pump, passes through the filter (1) and is maintained at a constant level by the float (2) and the needle valve (3) which rests against lug (4).

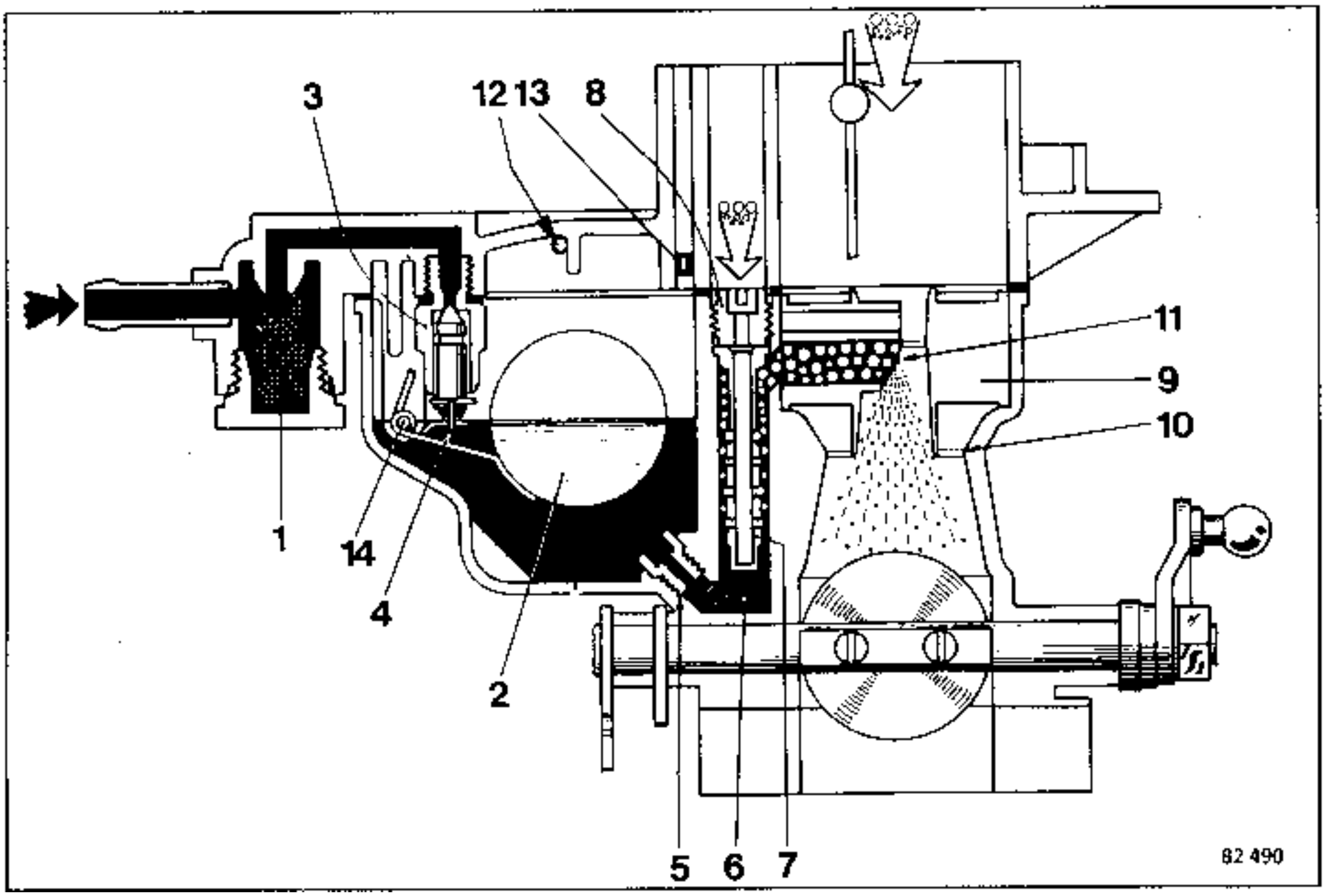
Lug (14) limits the amount by which the float can move.

The main jet (5) regulates the quantity of fuel arriving at the well (6).

The emulsion tube (7) and the air compensator jet (8) prepare a mixture the strength of which is roughly constant.

The secondary venturi assembly (9) in the choke tube (10) draws the mixture through the duct (11).

Holes (12) and (13) maintain a given pressure in the float chamber.



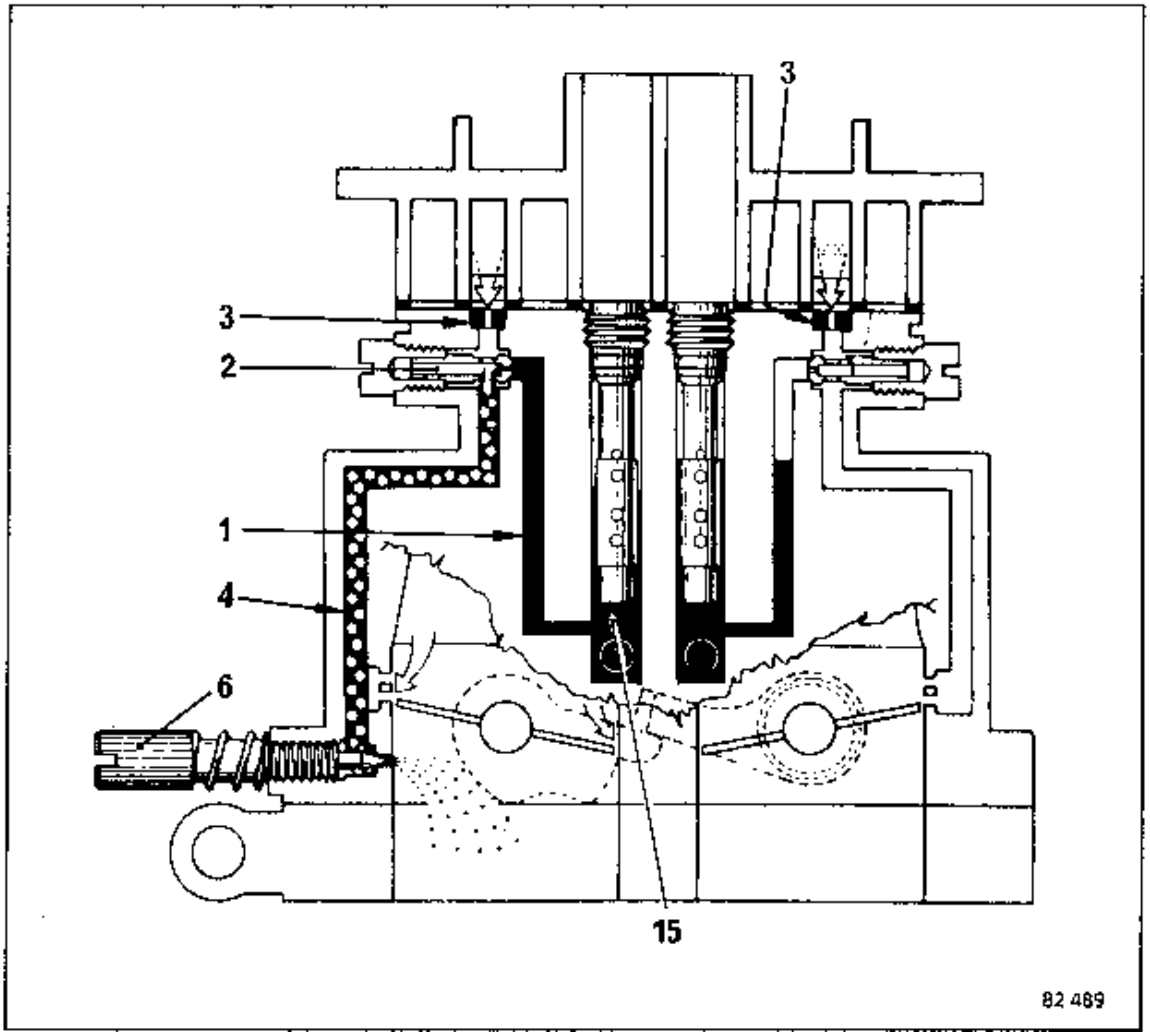
THE LIMITED CO IDLING CIRCUIT

The idling jet (2) is fed:

- with fuel, through duct (1) which takes it from the emulsion well (15) which is on the output side of the main jet,

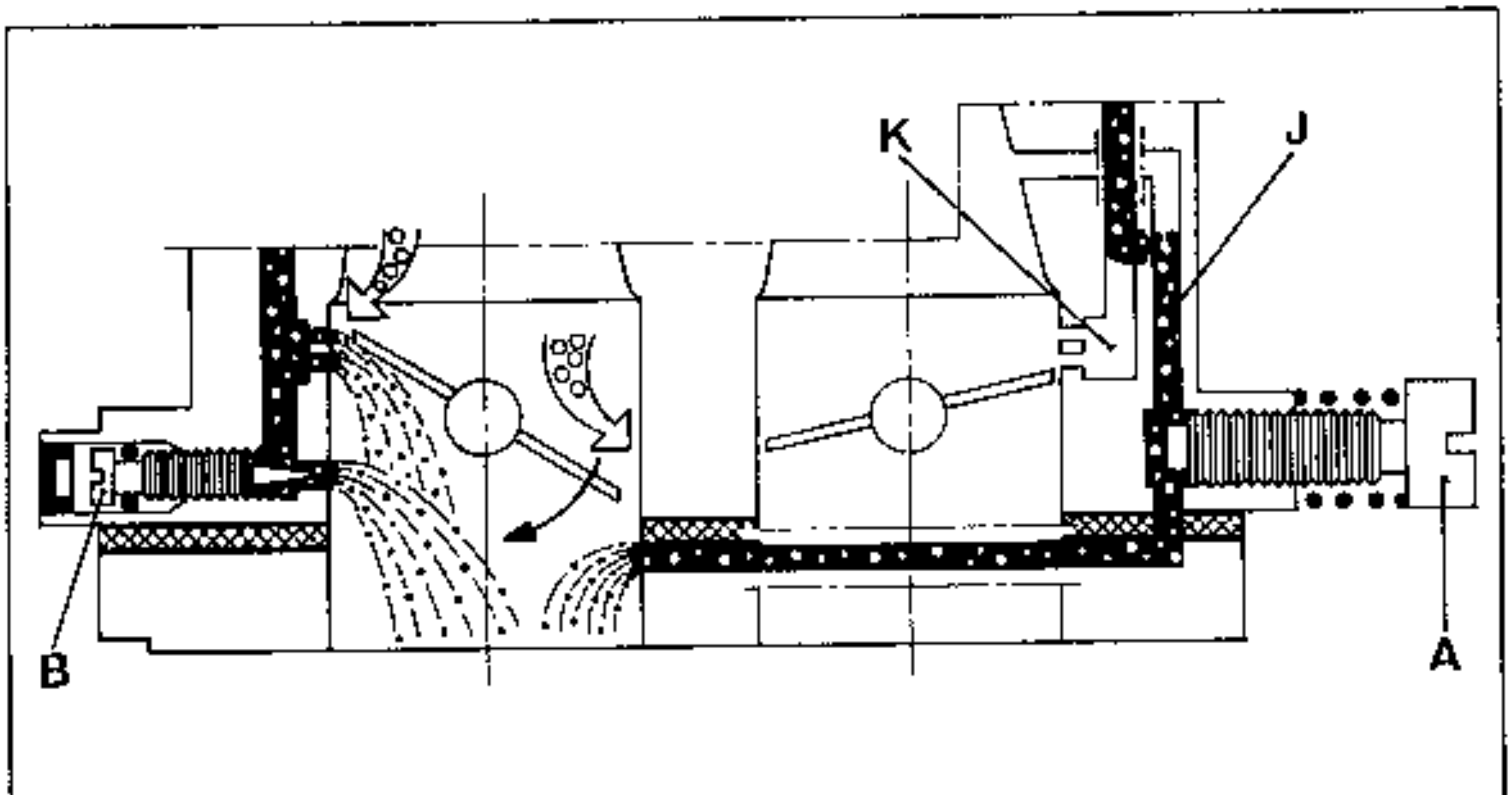
- air through jet (3).

The emulsion, produced by jet (2), passes through duct (4) to the mixture screw (6) and is mixed with the air being drawn in by the engine in the air intake duct.



CARBURETTORS EQUIPPED WITH A CONSTANT CO CIRCUIT

This circuit consists of the idling circuit used on all DIRA carburettors, with exactly the same type of mixture screw (B) and an additional circuit, to which is fitted an idling speed adjusting screw (A) (the air correction screw).



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The additional circuit comprises a duct (J) connecting the flange on the second body to the heated flange, passing from there to the output side of the throttle on the 1st body. The duct is also connected to the progressive circuit on the 2nd body (K).

A constant CO idling system involves adjusting the angle of the throttle on the 1st body and locking its stop screw.
The throttle on the 2nd body is adjusted so that it just closes without sticking.

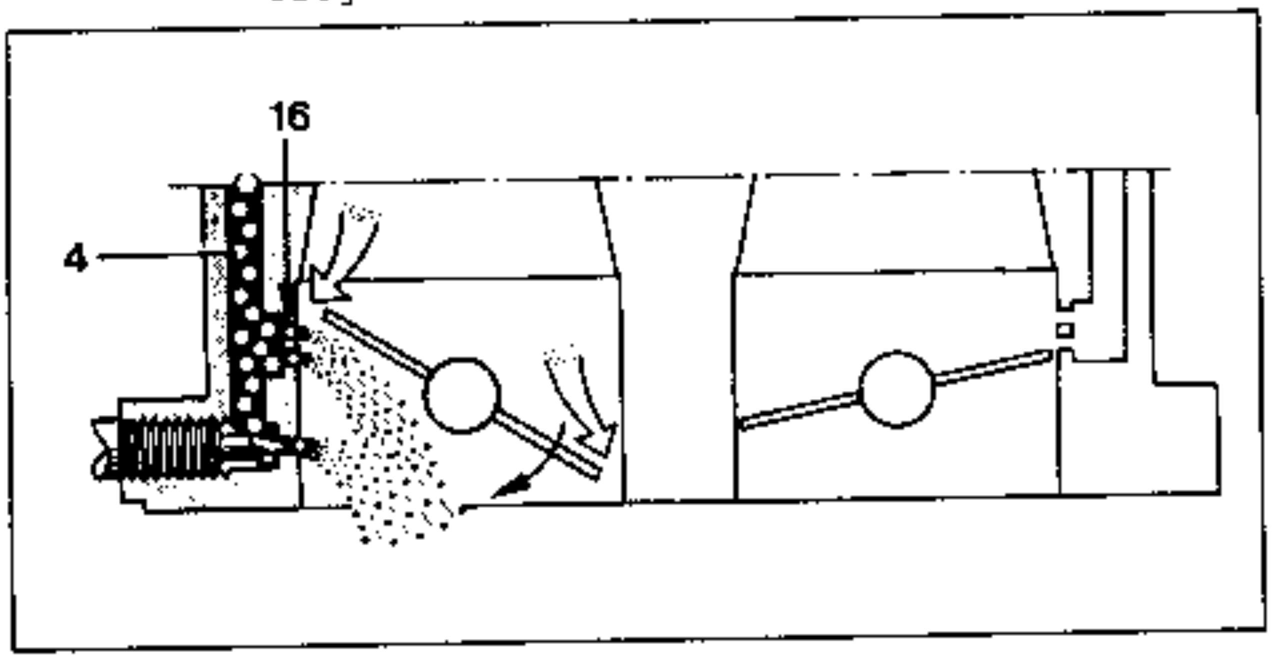
THE PROGRESSIVE CIRCUIT

On the 1st body this consists of holes (16) drilled in the idling circuit duct (4).

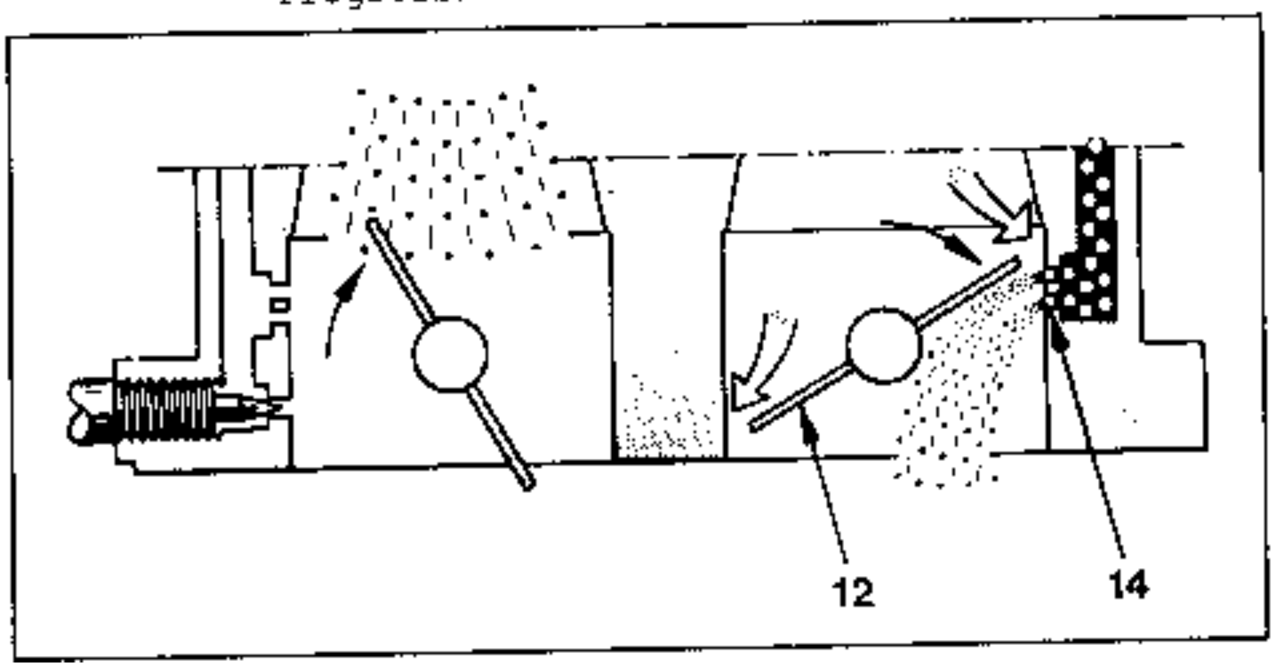
As soon as the throttle starts to open, fuel will flow from the holes (16) which are then subject to the engine vacuum.

On the 2nd body, the progressive circuit is identical to the idling circuit on the 1st body, with holes (14) to avoid a flat spot in the supply of fuel to the engine when the 2nd body cuts in (time for the main jet circuit on the 2nd body to fill with fuel).

Progressive action on the 1st body



Progressive action on the 2nd body



THE ACCELERATOR PUMP

Drawing the fuel in:

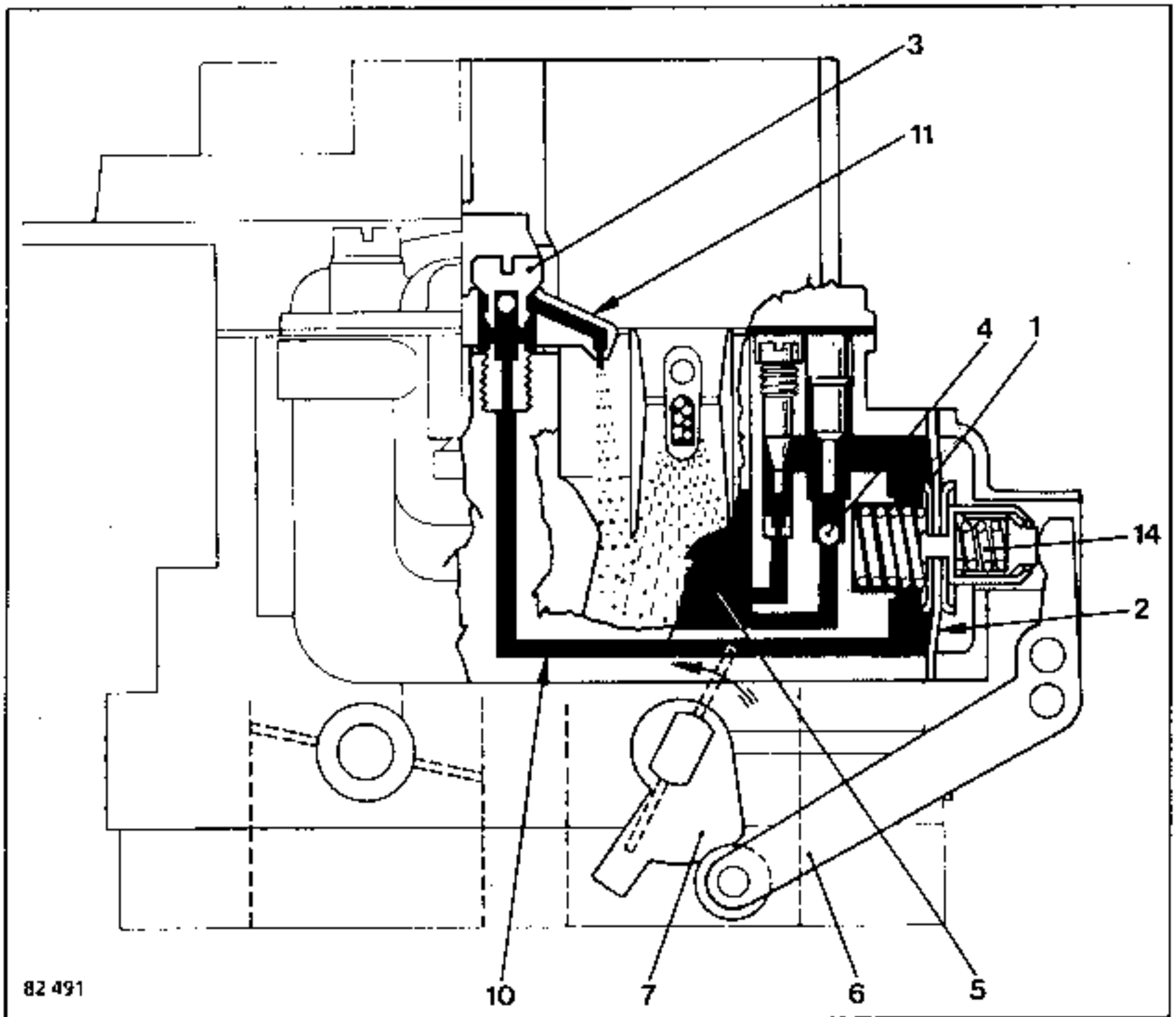
- The spring (1) pushes across the diaphragm (2), the output valve (3) closes, the input valve (4) opens and fuel is drawn into the pump from the float chamber (5).

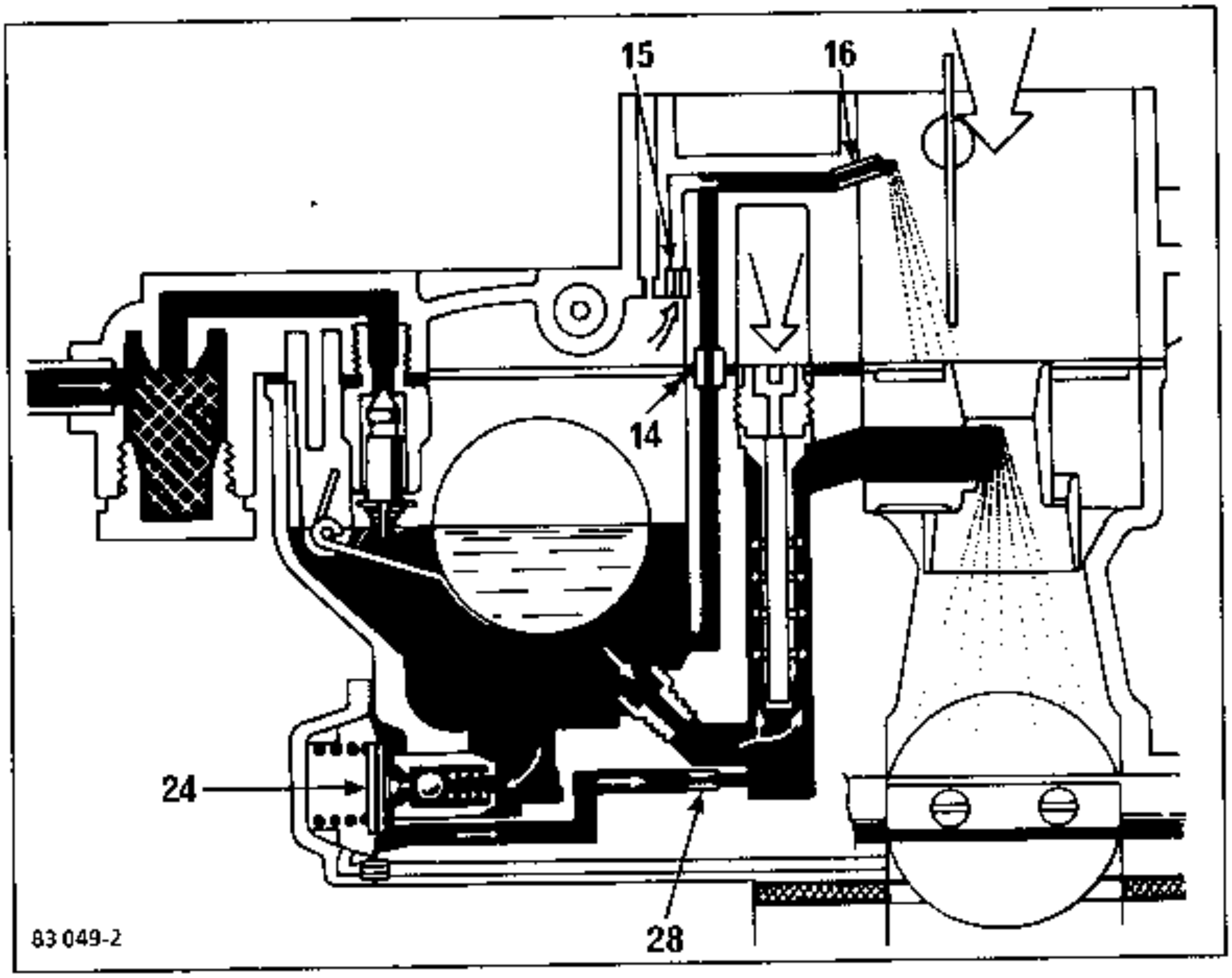
Fuel output:

- As the cam (7) turns, it takes with it lever (6) which moves the diaphragm (2) and compresses the spring (1).

- Valve (4) closes and fuel is forced out through duct (10), causing valve (3) to open and the fuel to be forced out of the injector (11).

Spring (14) extends the injection period after the lever (6) has stopped moving.





POWER ENRICHENER

At full load and at low speed, on the first barrel, the vacuum is insufficient to pull across the diaphragm (24) and additional fuel, calibrated by the jet (28) is passed into the well in the first body.

HIGH SPEED ENRICHENER

At full load and speeds approaching the maximum, the vacuum draws fuel directly from the float chamber through jet (14) and air through jet (15).

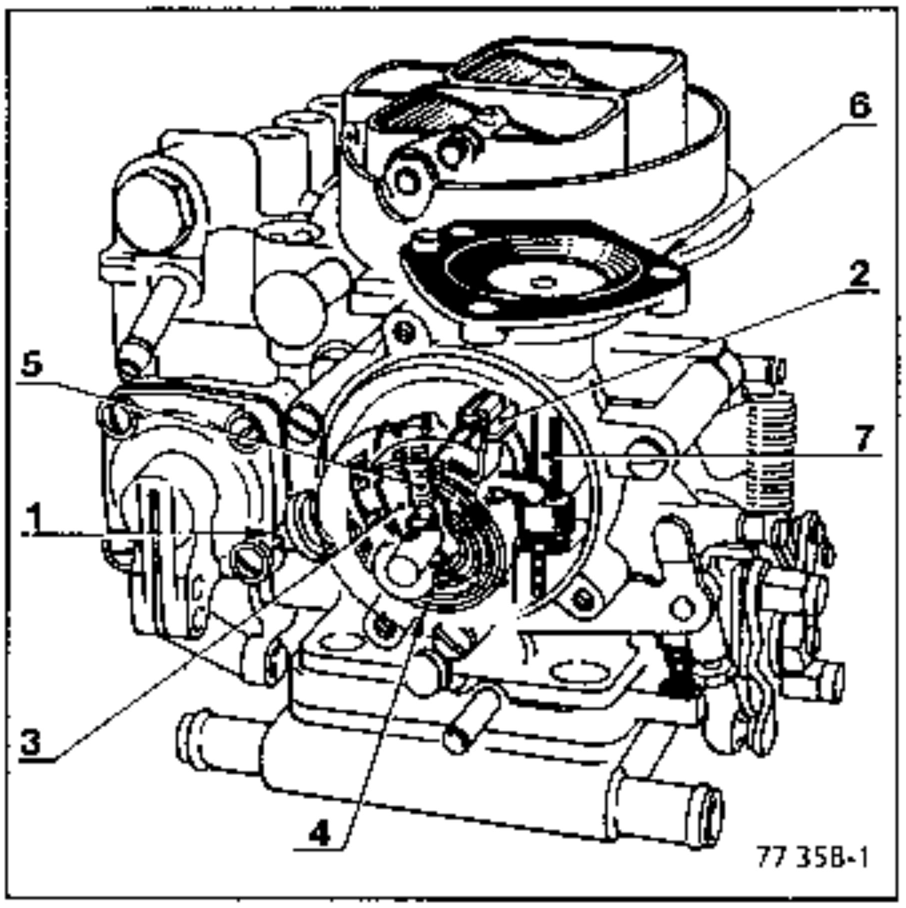
The emulsified mixture that results is passed into the top of the choke tube through jet (16).

THE CHOKE SYSTEM

This is of the semi-automatic type which means that, to pre-set it, one must fully depress the accelerator and allow it slowly to return to the normal position.

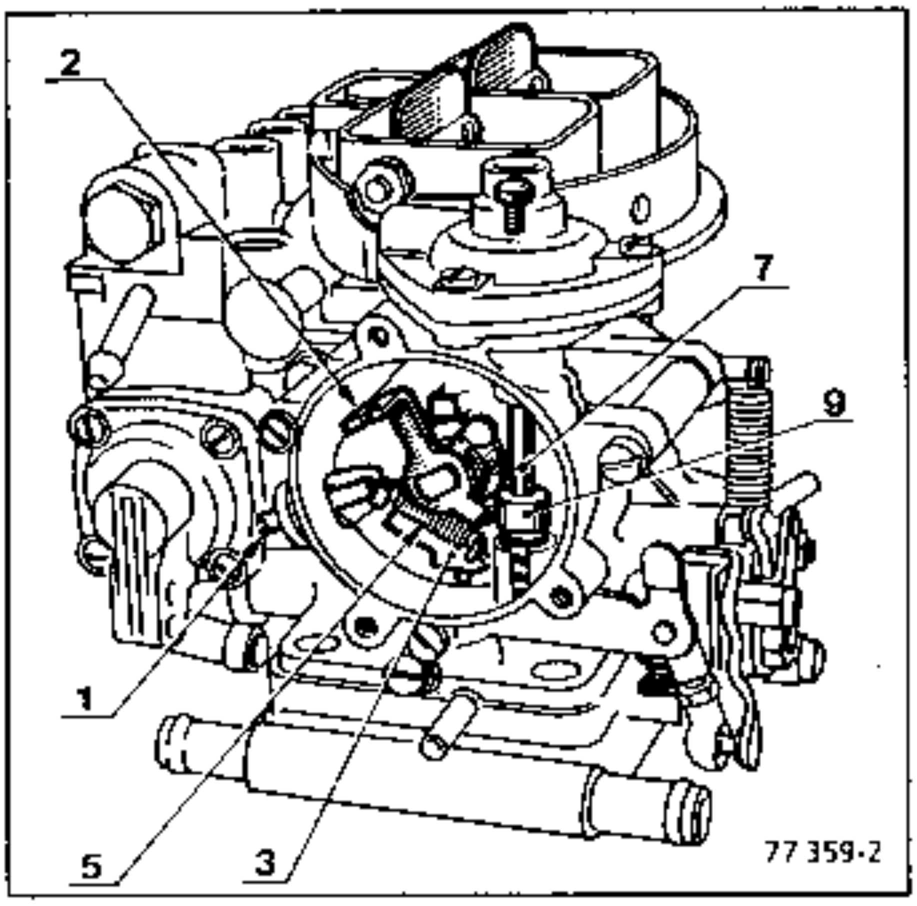
When the engine is cold, the thermostatic spring (4), via the lever (2), holds the choke flaps in the closed position. At the same time, the cam lever (3) adopts the position shown in this illustration to hold the main throttle partially open through the adjusting screw (1).

When the engine is started, the thermostatic spring (4) and spring (5) oppose, in part, the opening of the choke flaps to produce a rich mixture and easy starting.



Pneumatic initial opening

As soon as the engine is running, the vacuum acts on the diaphragm (6) connected to rod (7) to turn the lever (2) against the effect of the thermostatic spring (4) to establish the correct mixture to permit the engine to run evenly.



The temperature of the coolant rises and heats the thermostatic spring (4) and as this expands, with the movement of the main throttles, alters the position of the cam lever (3) gradually to eliminate the choke.

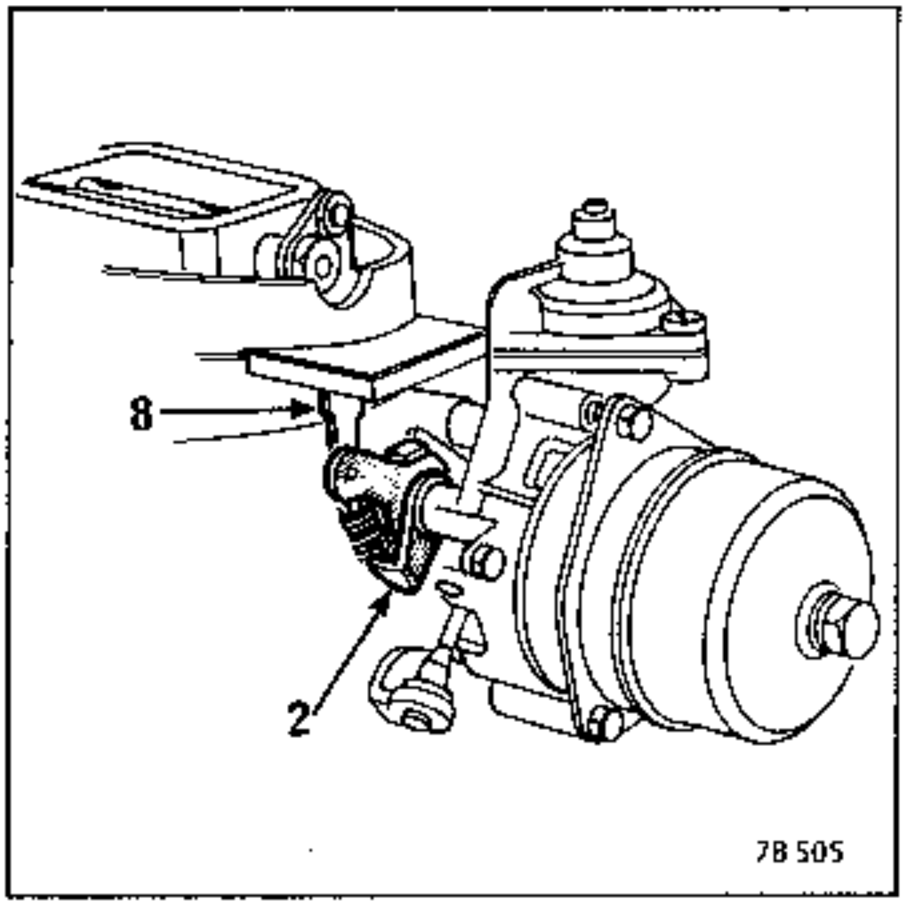
When the engine reaches its normal operating temperature, the thermostatic spring (4) has turned the lever (2) to fully open the choke flaps.

Under the influence of spring (5), the cam lever has also turned and the screw (1), being no longer in contact, permits the primary throttle to return to the idling speed position.

A compensator (9) reduces the pneumatic opening, when compressed.

Mechanical initial opening

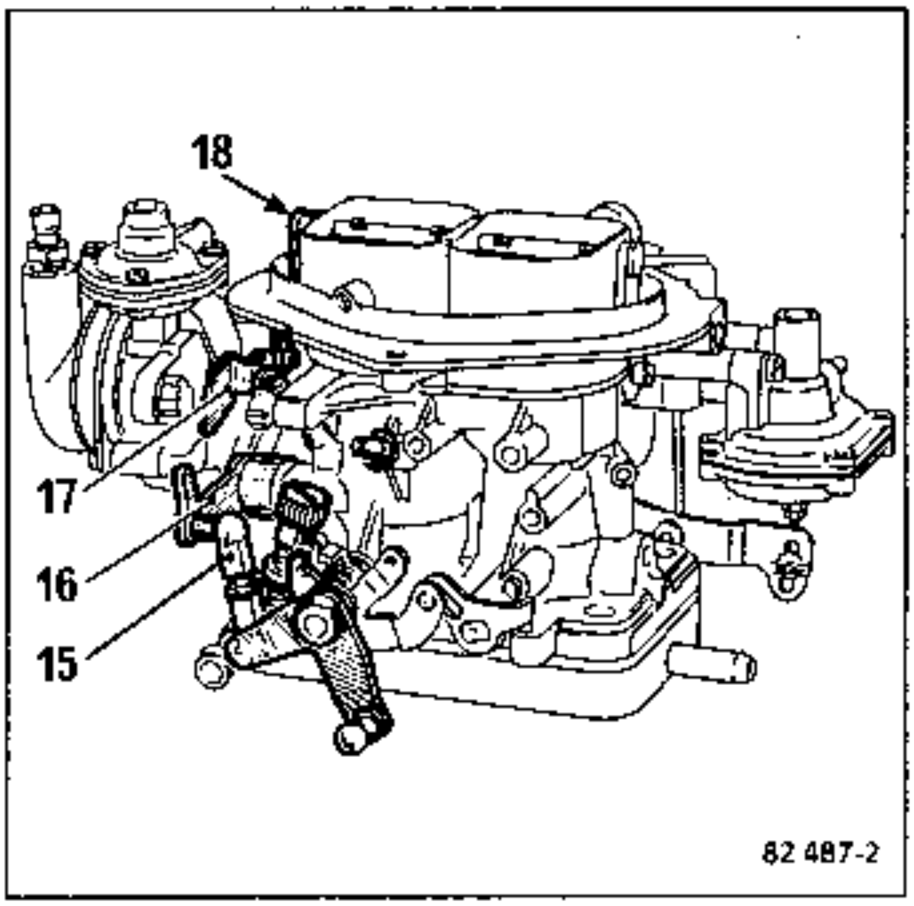
When the choke has been pre-set, as soon as the engine starts, the vacuum pulls open the choke flaps. The amount by which they will open is limited by the movement of the lever (8) making contact with the lever (2) (they are not adjustable).



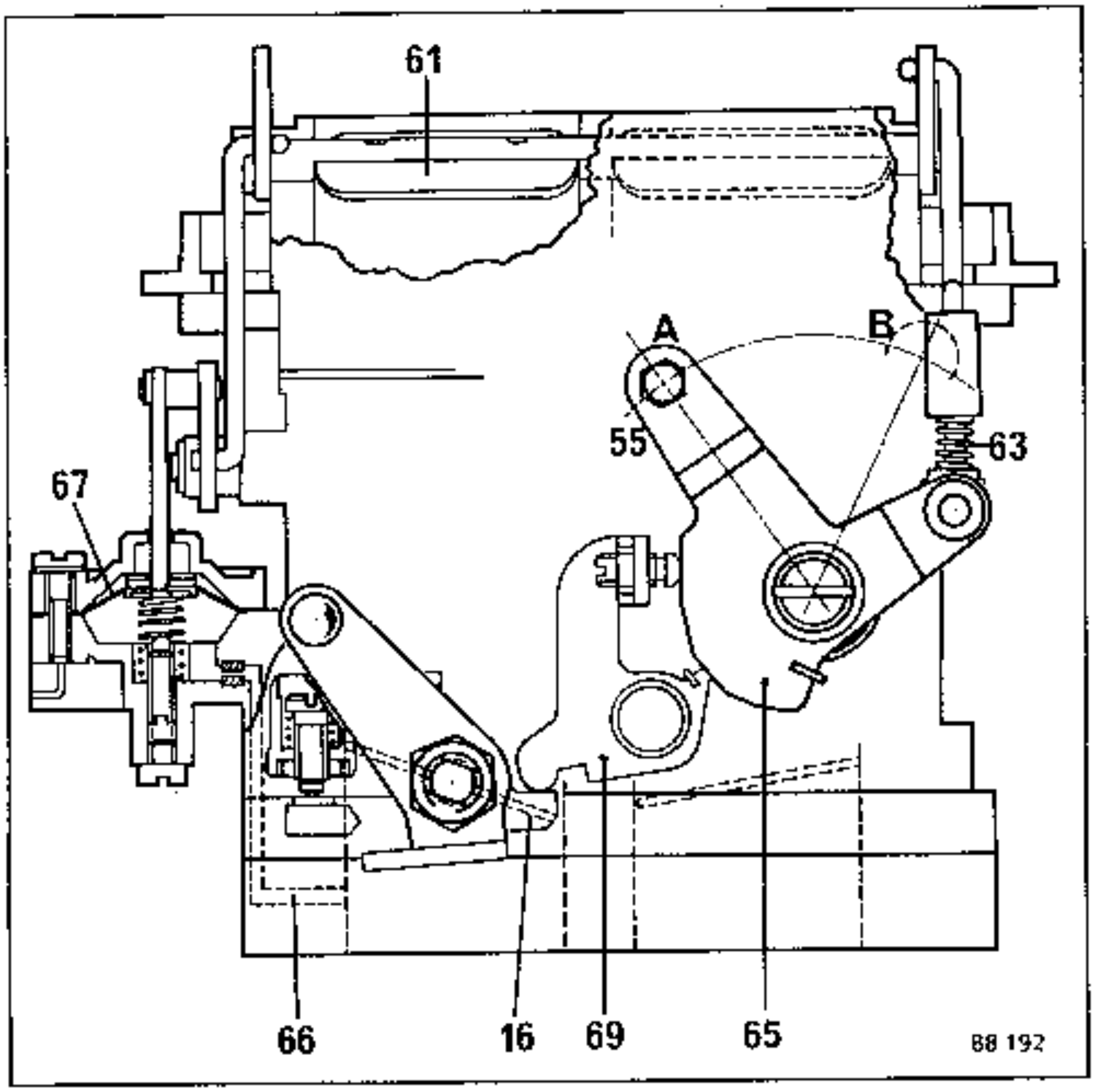
The clearing system

If necessary (following flooding of the engine with excess fuel) a mechanical system permits one to open the choke flaps.

When the accelerator is fully depressed, rod (15) moves lever (16) to rotate lever (17) which, acting through lever (18) opens the choke flaps.



THE CHOKE SYSTEM

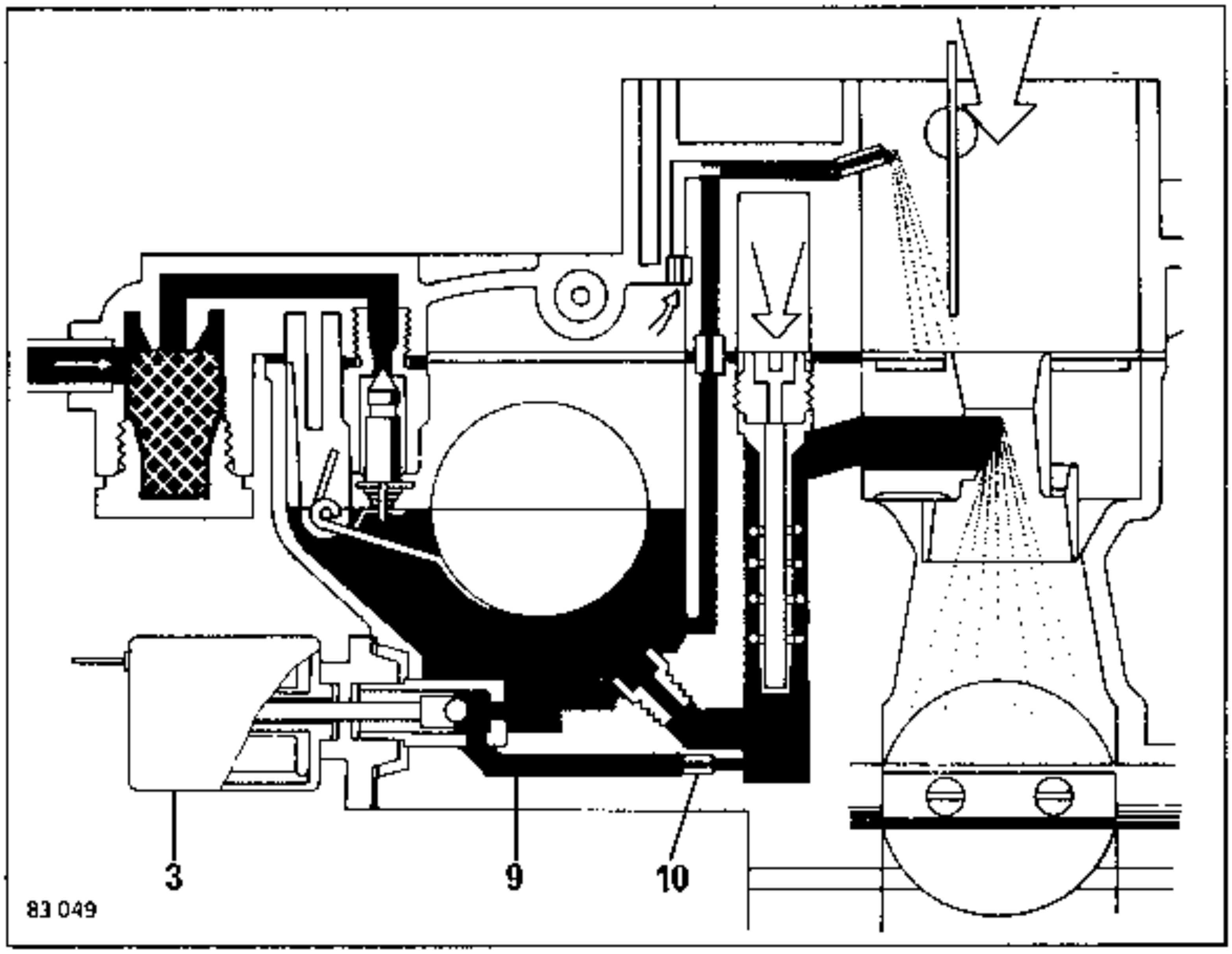


Lever (55) has a cam (65) on it and when pulled closes the choke flap or flaps (61).

The cam, via lever (69) partially opens the throttle on the no. 1 barrel (16).

The vacuum from under the throttle is communicated to a pneumatic capsule (16) via a duct (16) to open the choke flap (or flaps) after the engine has started, by compressing spring (63).

THE ELECTROMAGNETIC CHOKE SYSTEM

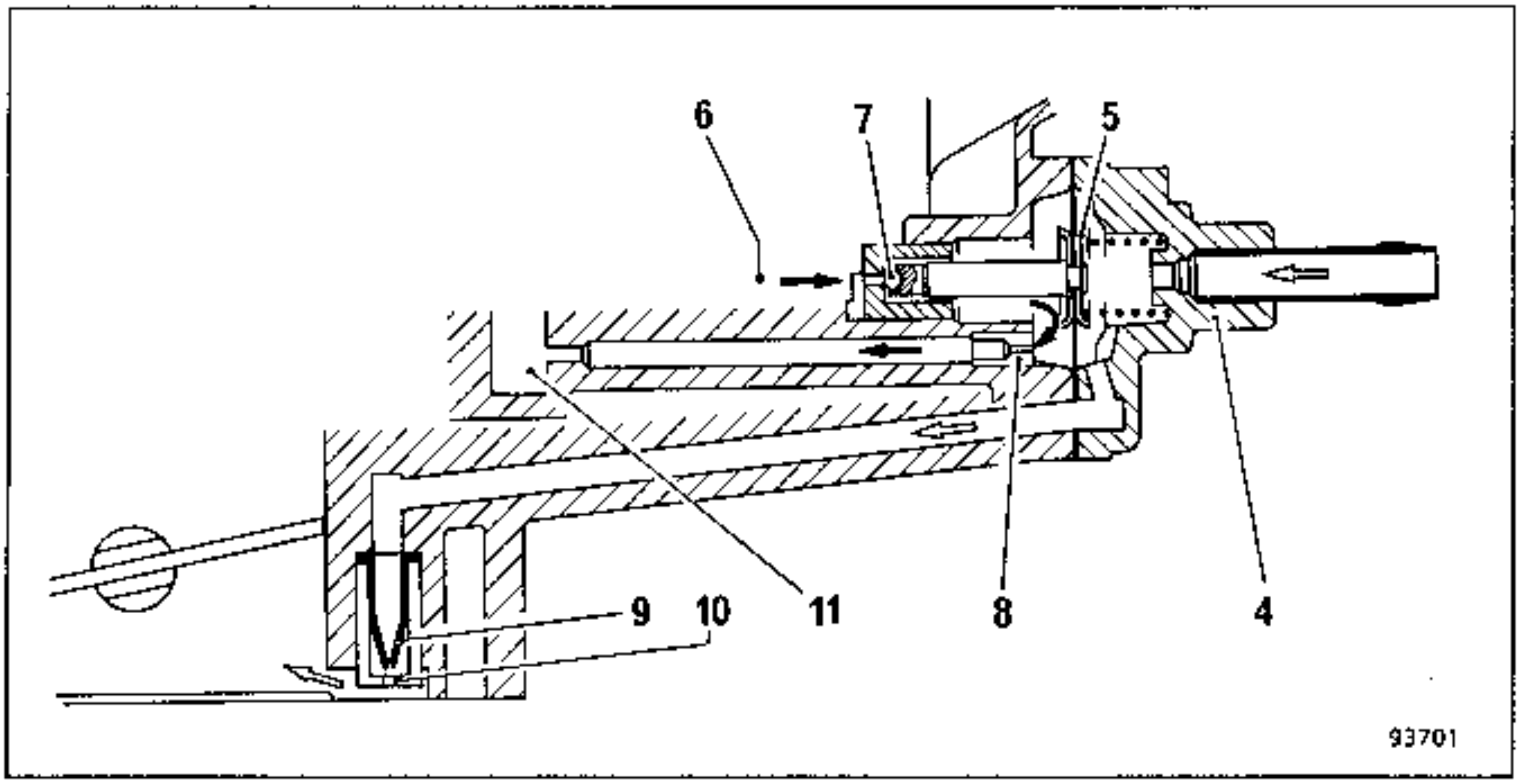


An oil temperature switch (normally set at +15°C) provides a current supply to the solenoid (3).

When the engine is started, the solenoid (3) is fed with current and opens the circuit (9) to allow fuel to enter the main well through jet (10).

As soon as the oil temperature rises, the temperature switch closes off this circuit.

THE PNEUMATIC CHOKE SYSTEM

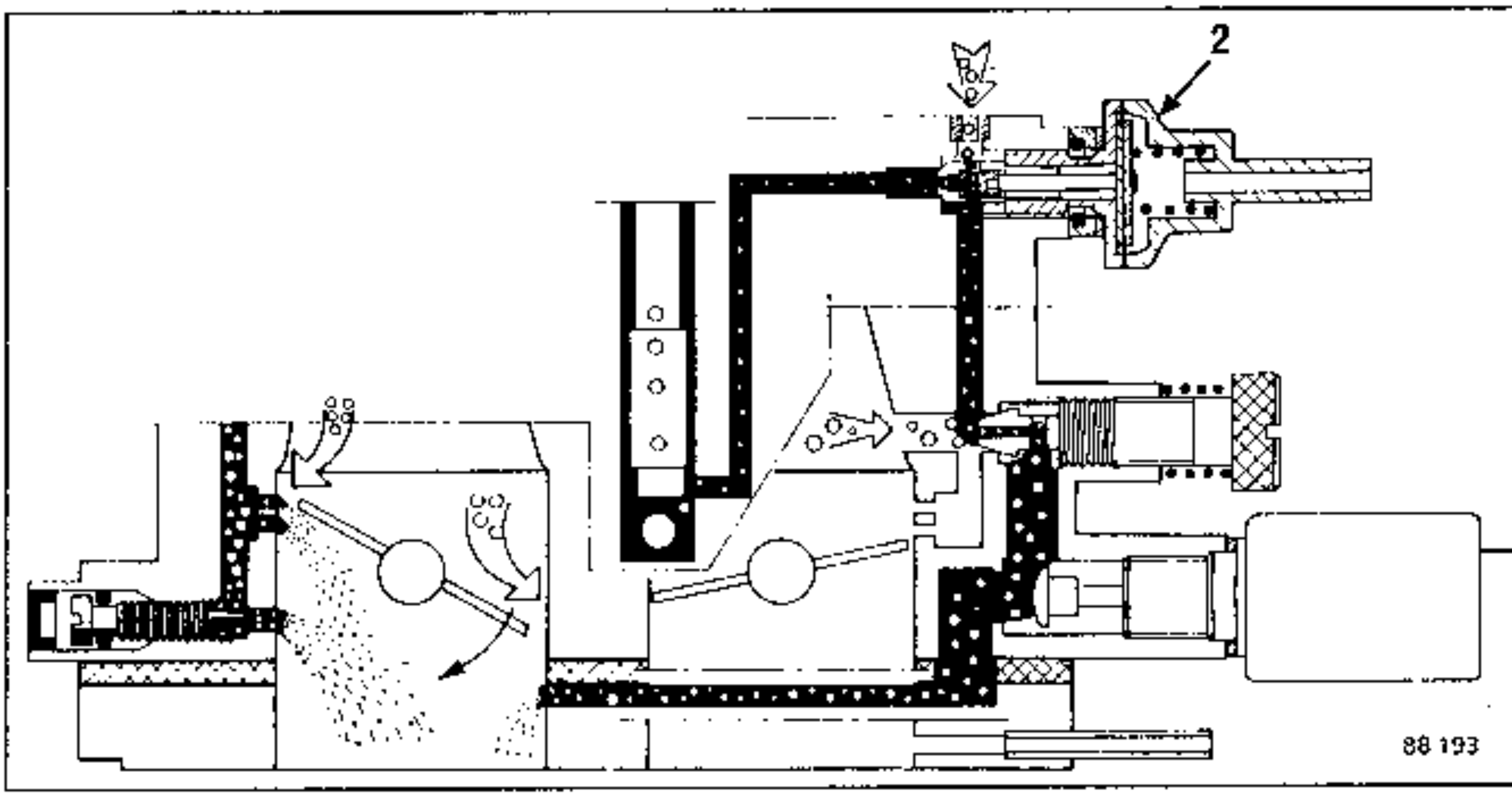


PRINCIPLE OF OPERATION

When the engine is started from cold (oil temperature less than 15°C)
There is a current supply to the solenoid valve which closes off the vaccum circuit. The manifold vacuum acting on the diaphragm (5) opens the valve (7) and fuel from the float chamber (6) passes into the choke system (4) and from there into the emulsion well (11) through jet (8).
When the engine is accelerated, the manifold vacuum falls and the fish-tail valve (9) closes to maintain vacuum on the diaphragm (5).

When the engine is warm (at oil temperatures higher than 40°C)
The current supply to the solenoid valve is cut off and the vacuum circuit is open. The jet (10) limits the amount of air that enters the circuit between the carburettor base and the float chamber cover, the vacuum on the input side of the jet (10) falls and the valve (7) closes to cut off the fuel supply via the choke system.

THE IDLING SPEED ENRICHENING SYSTEM



The carburettor (1) is fitted with a jet holder (2), comprising a diaphragm valve and fitted in place of the idling jet on the second barrel. It increases the strength of the mixture when subject to the inlet manifold vacuum.

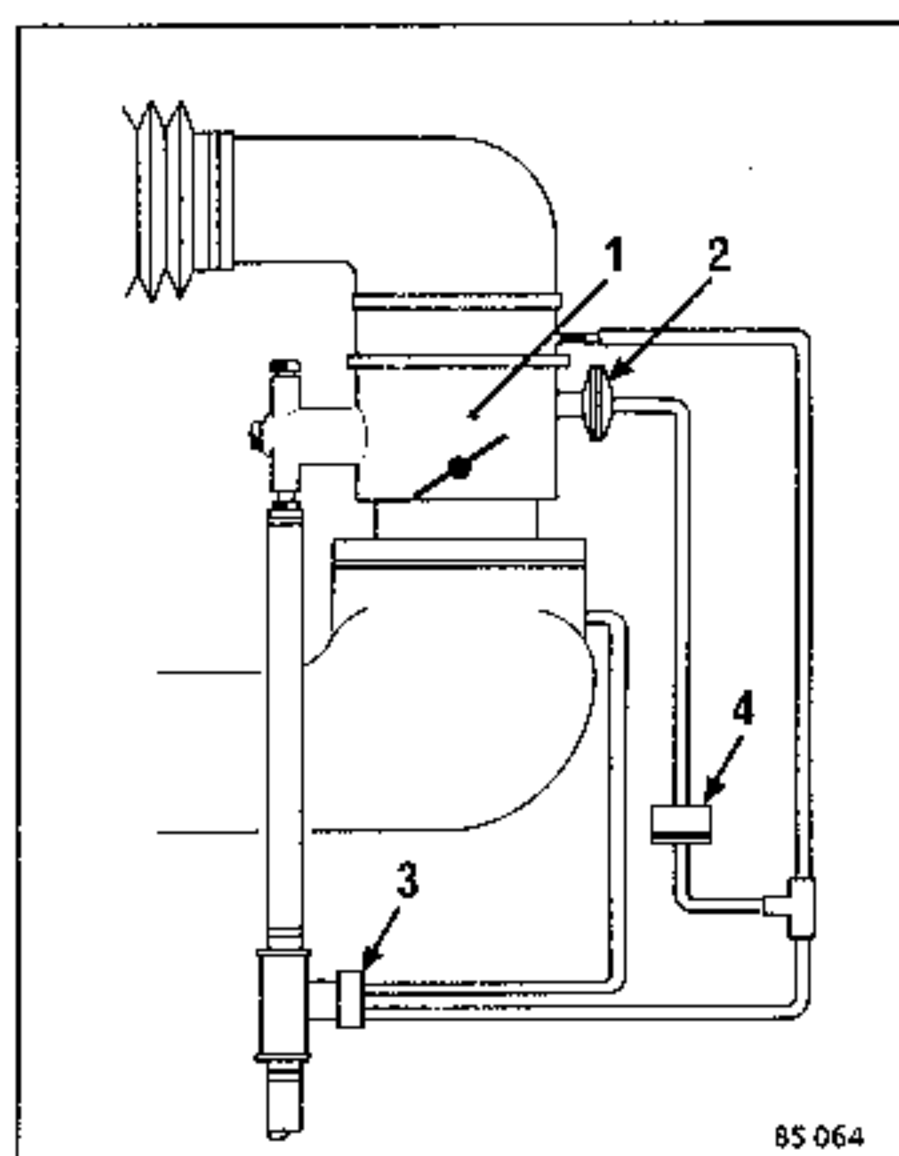
A temperature valve (3) on the choke water circuit is connected on one side to the inlet manifold and on the other to the jet holder diaphragm (2).

At water temperatures of less than 15°C, the temperature valve is open and the vacuum acts on the jet holder diaphragm (2) to increase the strength of the mixture.

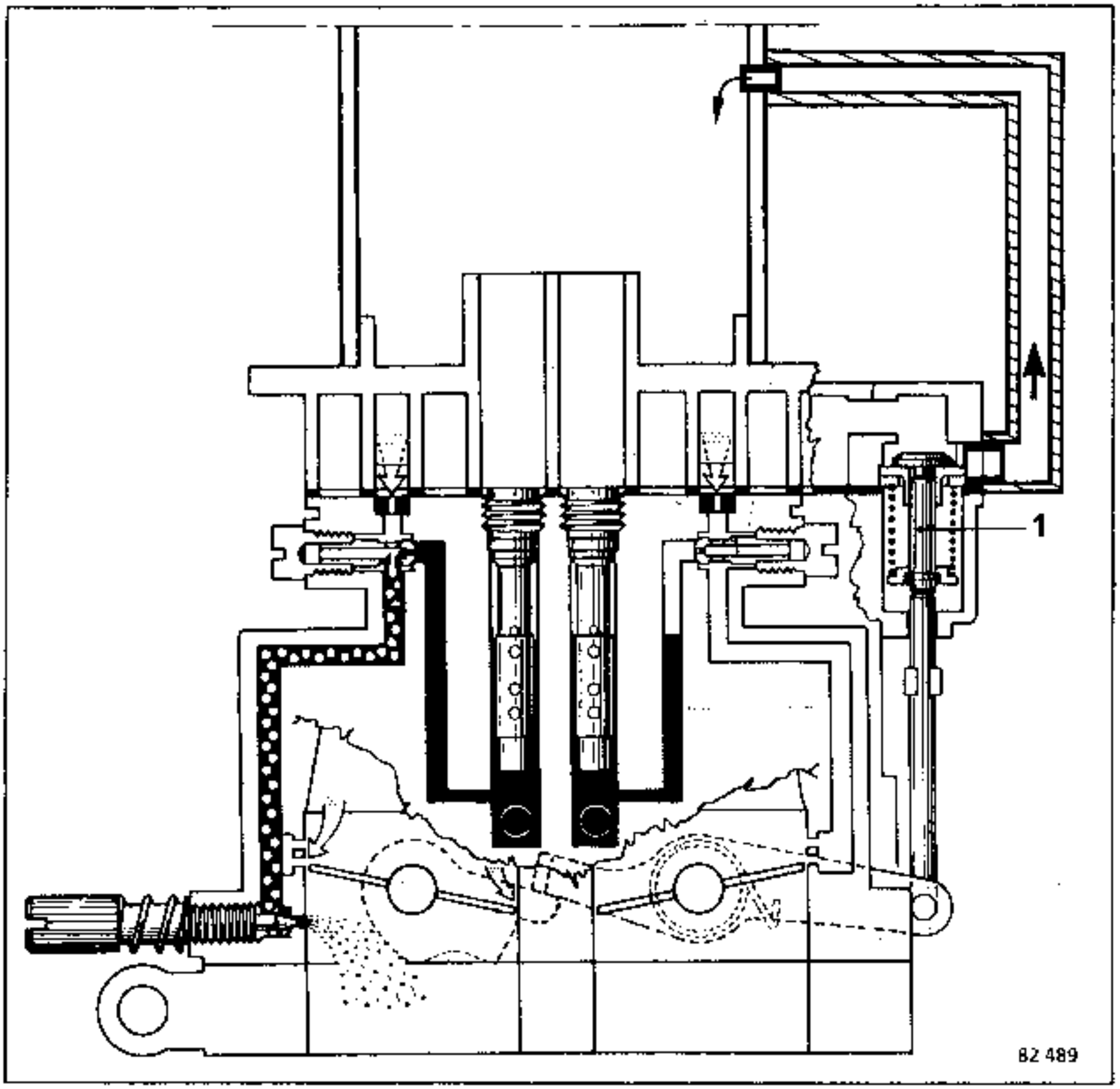
At temperatures of more than 15°C, the valve is closed to cut off the vacuum circuit.

The circuit between the jet holder (2) and the temperature valve (3) is connected to the carburettor cover permitting the vacuum in the circuit to fall when the temperature valve (3) closes.

A retarding valve (4) (blue colour on temperature valve side) maintains the vacuum for a few seconds after the tempera ture valve (3) has closed.



THE DEGASSING VALVE



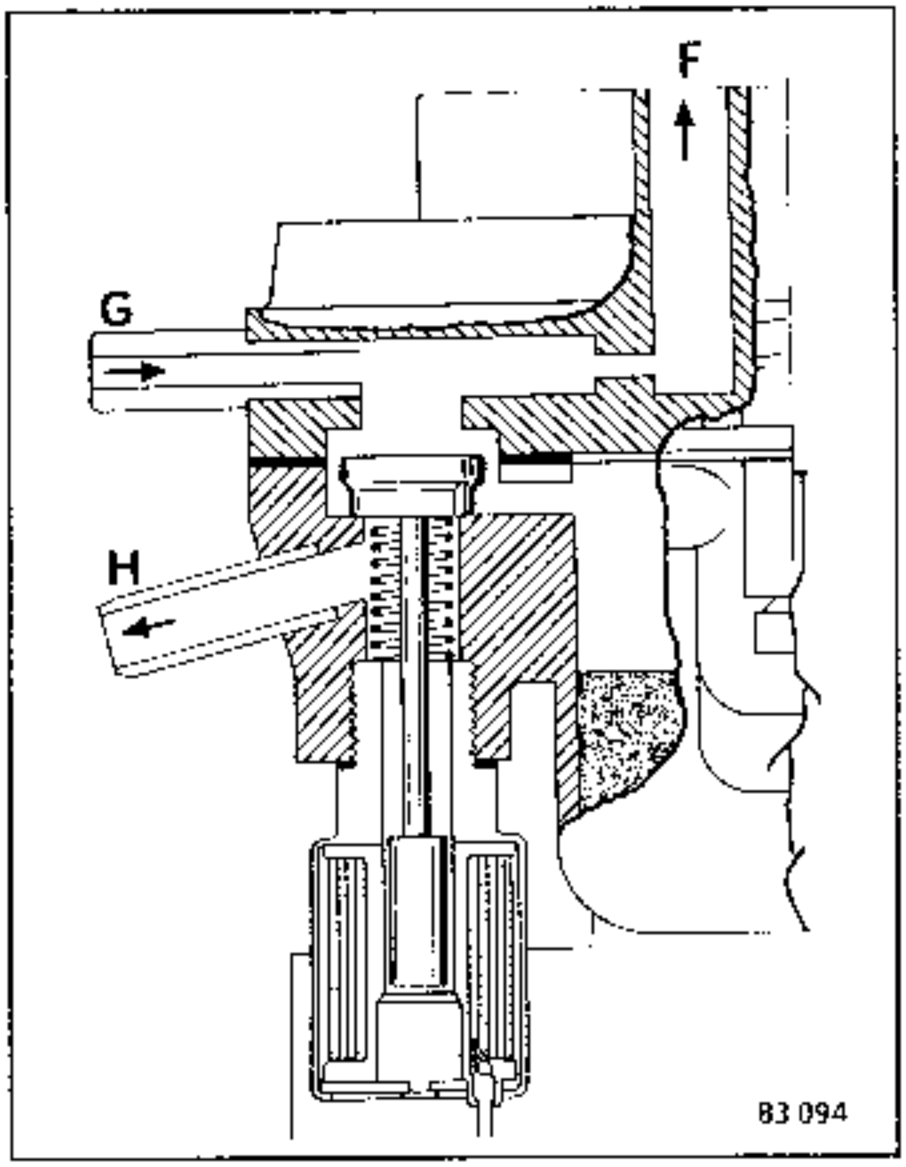
The float chamber either has a direct vent or a valve which, depending on the case, vents it externally or internally in to the air intake on the input side of the carburettor.

In most cases, the carburettor has a valve (1) which is controlled by the movement of the throttle.

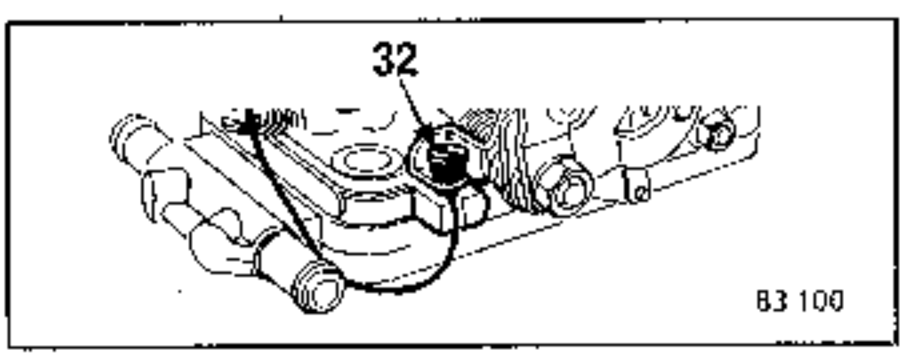
a) At idling, the valve is open and vents the float chamber externally.

b) When the throttle is open, this valve is closed, to close the external air vent and vent the float chamber into the air intake ducting.

SOLENOID OPERATED DEGASSING VALVE



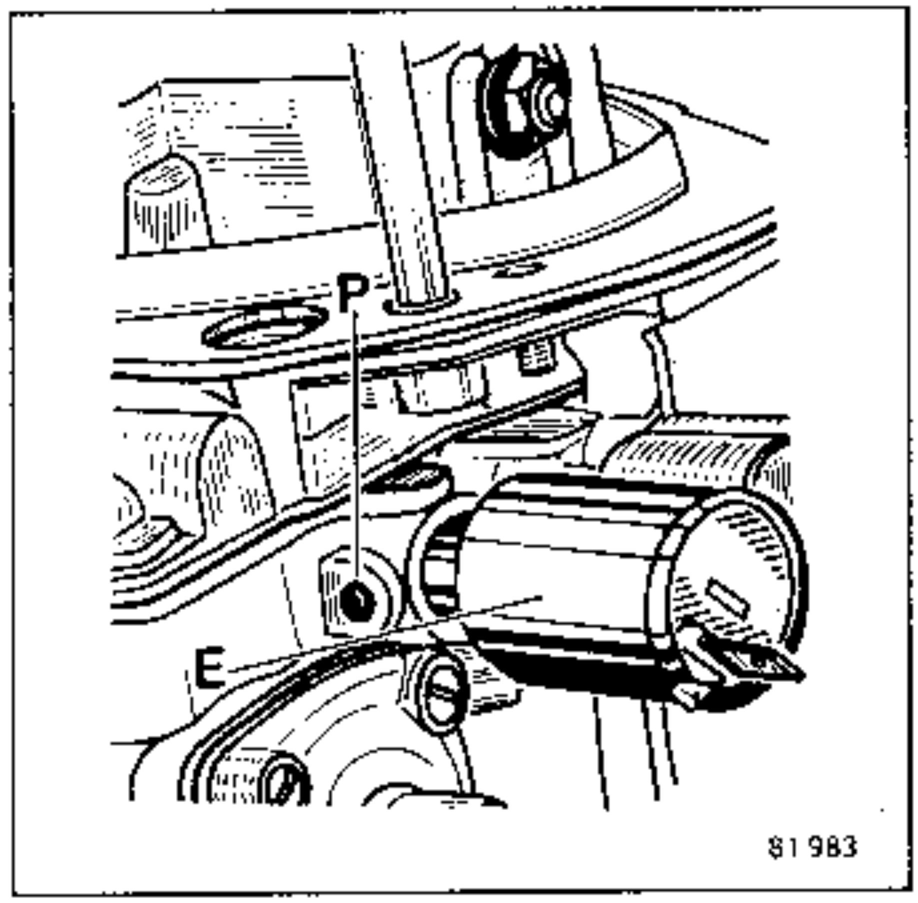
This is controlled by a switch on the idling speed stop (32) which controls a relay.
At idling, the valve is switched off and the external vent is open through hole H.
During acceleration, the coil is energized and pulls over the valve to close the hole H and connect the float chamber to the air intake side of the carburettor through holes F and G.



THE IDLING SPEED SHUT-OFF

This is a solenoid valve on the first barrel idling jet (E) which cuts off the idling circuit when de-energized, that is to say when the ignition is switched off.
To check whether it is operating correctly, start the engine, run it at idling speed and disconnect the supply wire. The engine should stop.

It is screwed into the carburettor body and locked by a small allen screw (P) which has to be loosened to remove the shut-off system.

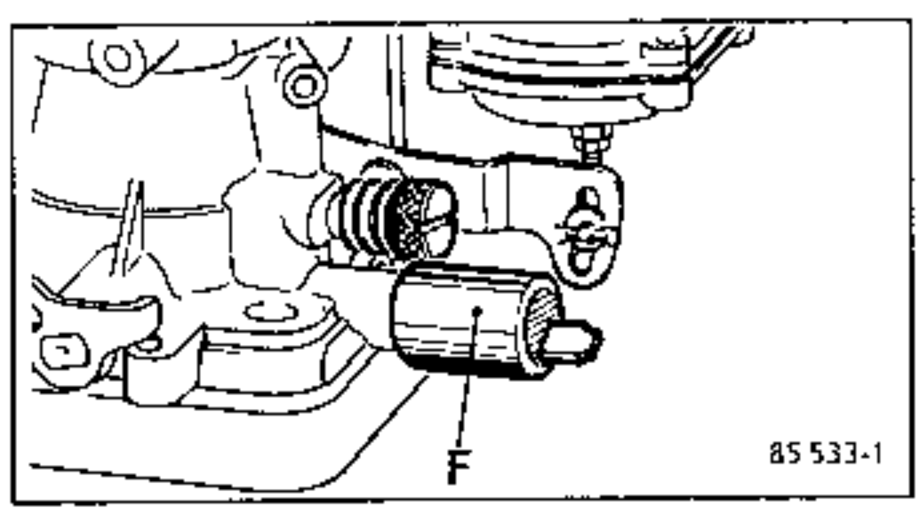


CONSTANT CO IDLING SHUT-OFF

This is a solenoid valve of the idling speed shut-off type (E) which is not energized when the ignition is switched off and which closes the constant CO circuit.

Note: To check its operation, run the engine at idling then disconnect :
- the idling shut-off supply wire (E), the speed should fall.
- the constant CO shut-off (F), the speed should fall.

When both these wires are disconnected, the engine should stop.



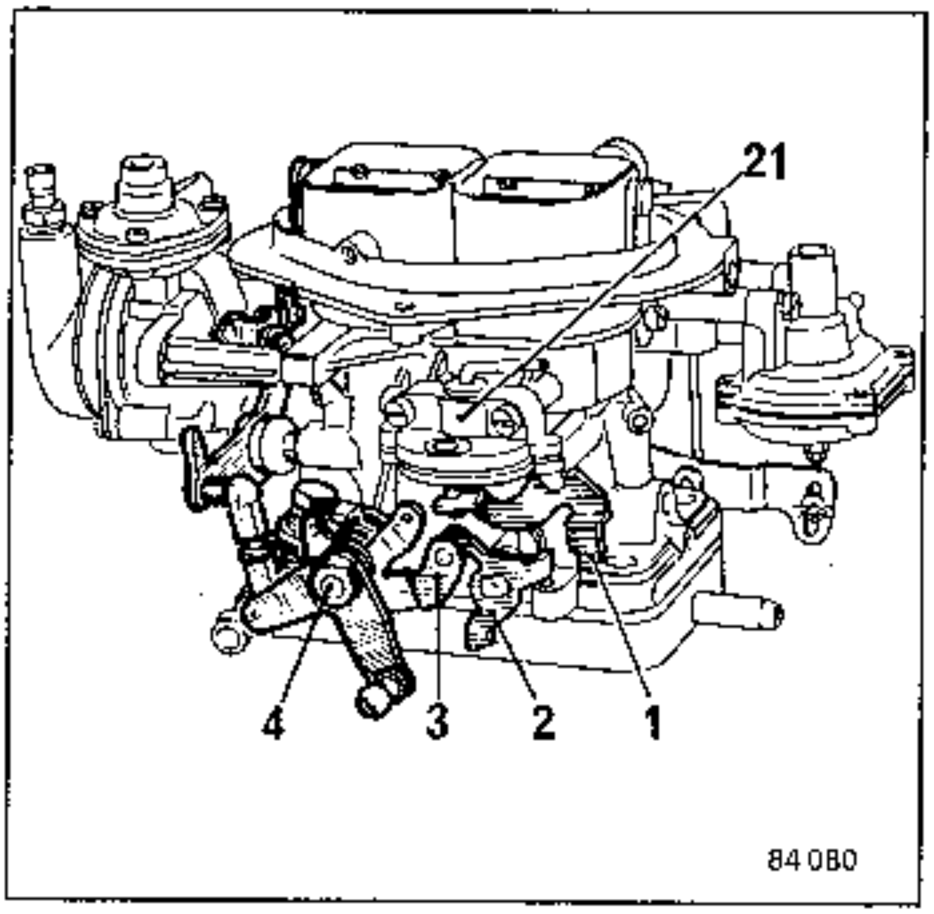
THE DARA 2nd BODY LOCKING SYSTEM

(This system is special to certain emission control carburettors, Switzerland for example)

The system has a diaphragm (21) which controls a lever (1) which prevents the throttle on the 2nd barrel (2) opening when the diaphragm is subject to vacuum.

The 2nd barrel throttle has a return spring which holds the throttle fully open.

A system of levers (3) on the first barrel throttle (4) closes the 2nd barrel throttle in the idling position.

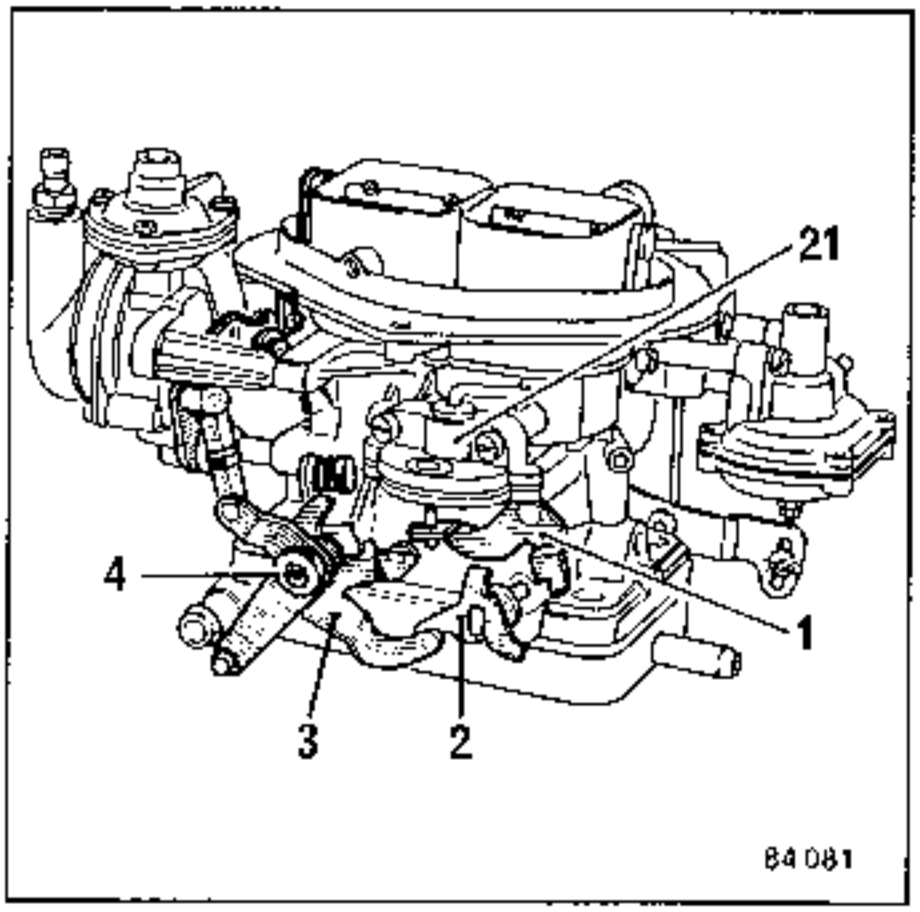


a) Normal operation when the engine is warm.

The temperature valve provides no supply to the diaphragm system (21) and the 2nd barrel throttle (2) is free to move.
When the first barrel throttle (4) is three quarters open, the lever (3) frees the 2nd barrel throttle link (2) which opens under the effect of its return spring.

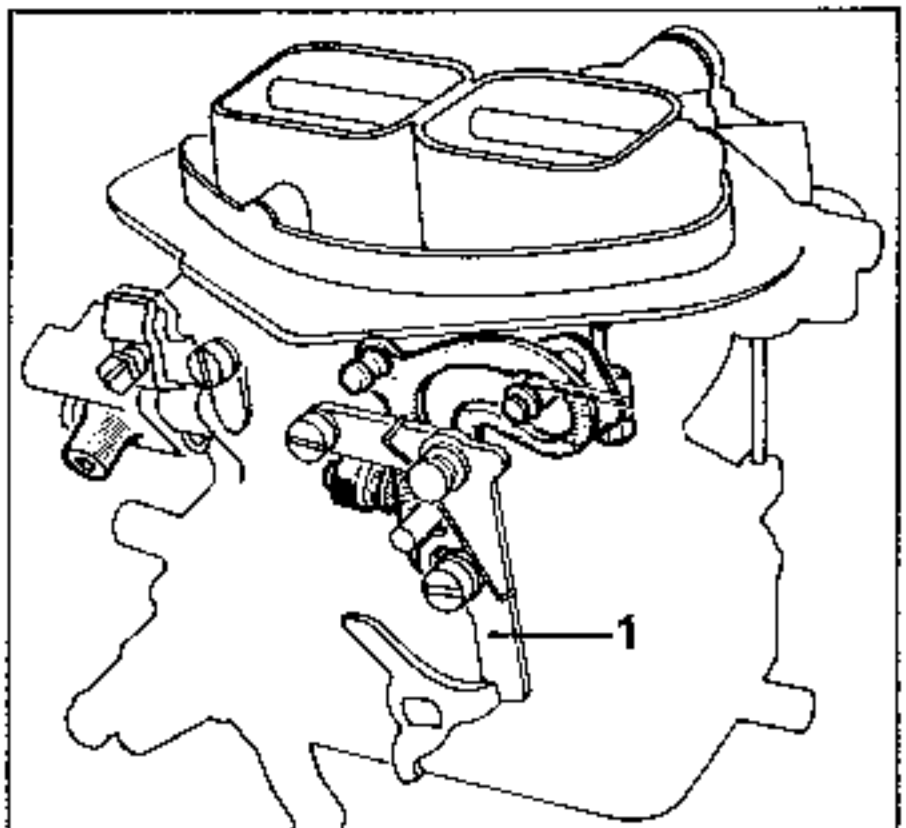
b) When the engine is cold

The temperature valve allows vacuum to pass to the diaphragm (21), the link (1) stops the 2nd barrel throttle (2) opening.
When the first barrel throttle is three quarters open (4), lever (3) frees the 2nd barrel throttle link (2).
The 2nd barrel throttle slightly opens to make contact with the link (1) which prevents it opening further.



DIR 2nd BARREL LOCKING SYSTEM

When the choke is operating (choke flap closed) lever (1) locks the 2nd barrel throttle in the closed position to prevent it opening during the engine warm-up phase whilst the choke is operating.



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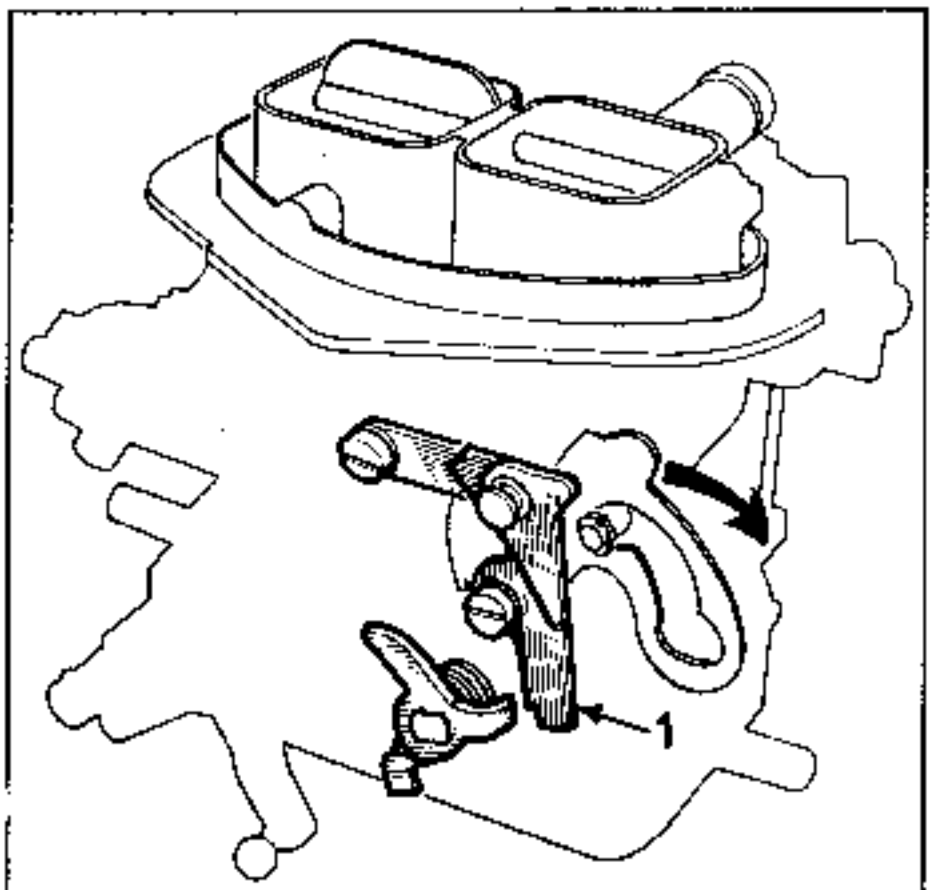
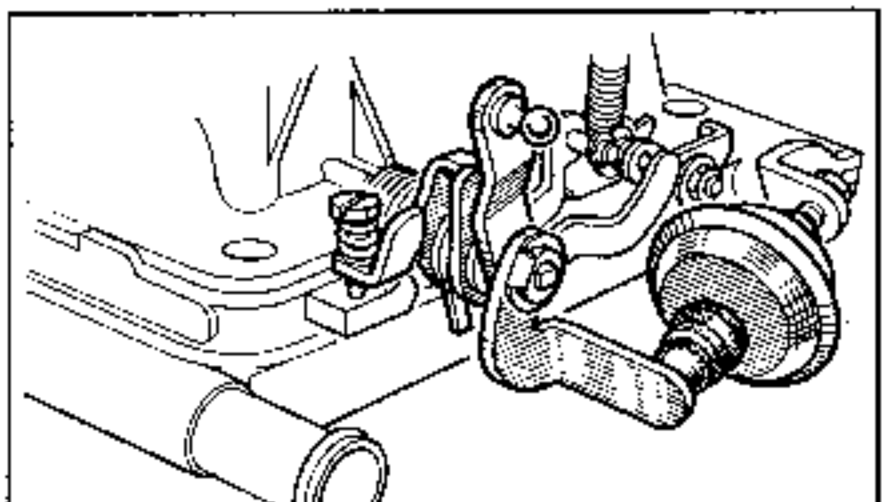
When the choke knob is pushed fully in (to open the flap) lever (1) moves to free the 2nd barrel throttle.



IDLING SPEED RETURN DAMPER

Certain 32 DIR carburettors have a dash-pot which, during deceleration, delays the return of the throttle on the first barrel against its stop by 2 to 4 seconds.



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DESCRIPTION

These carburettors, the design of which is virtually identical, are equipped with:

- double barrels with an offset mechanical opening system,
- a power and high speed enrichener,
- an accelerator pump which is mechanically operated by a cam,
- a mechanically operated float chamber degassing valve,
- a carburettor base heating system.

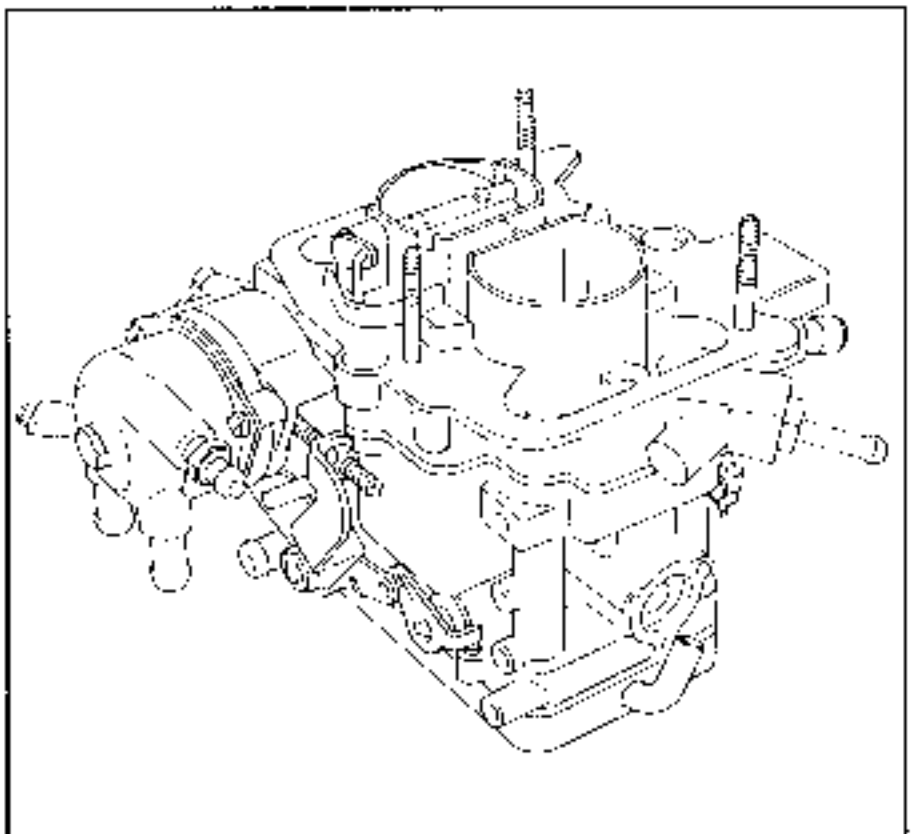
The DRTM carburettor differs from the DRT and DRTA by the fact that the fastenings securing the carburettor to the manifold and the cover to the carburettor are separate.

On the DRT and DRTA carburettors, 4 bolts pass through the carburettor body securing both the cover to the carburettor body and the carburettor to the manifold. There are two additional screws securing the cover to the carburettor body.

DRT and DRTM carburettors are equipped with a manually operated choke.

The DRTA carburettor has a semi-automatic choke.

DRTA



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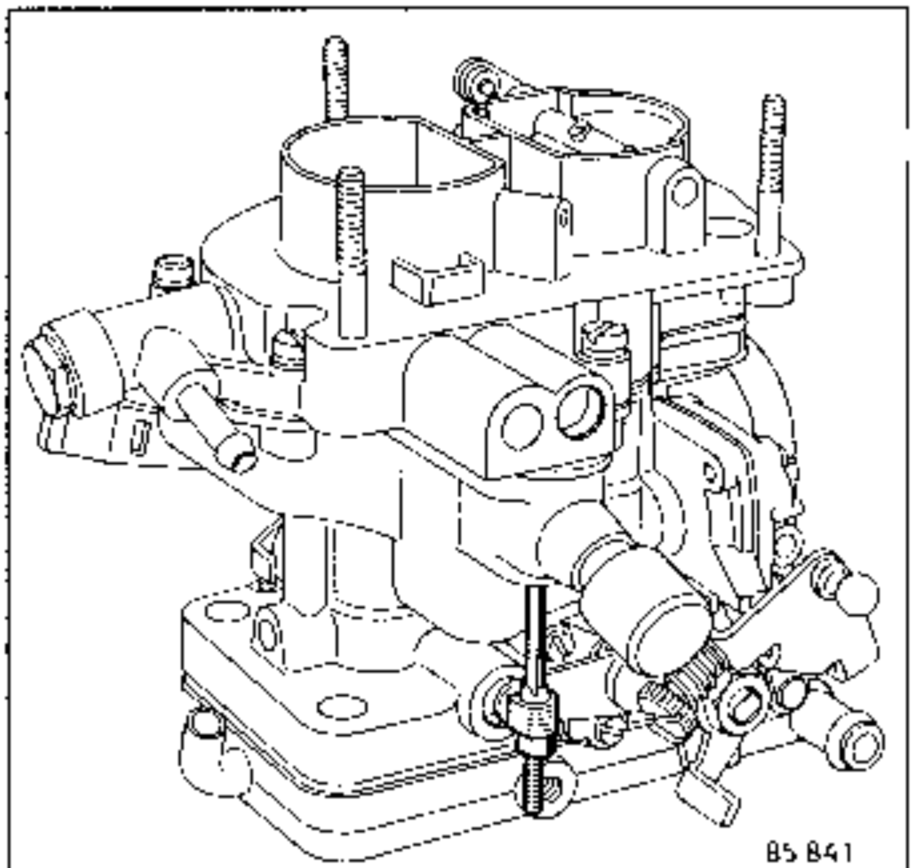
DRTM



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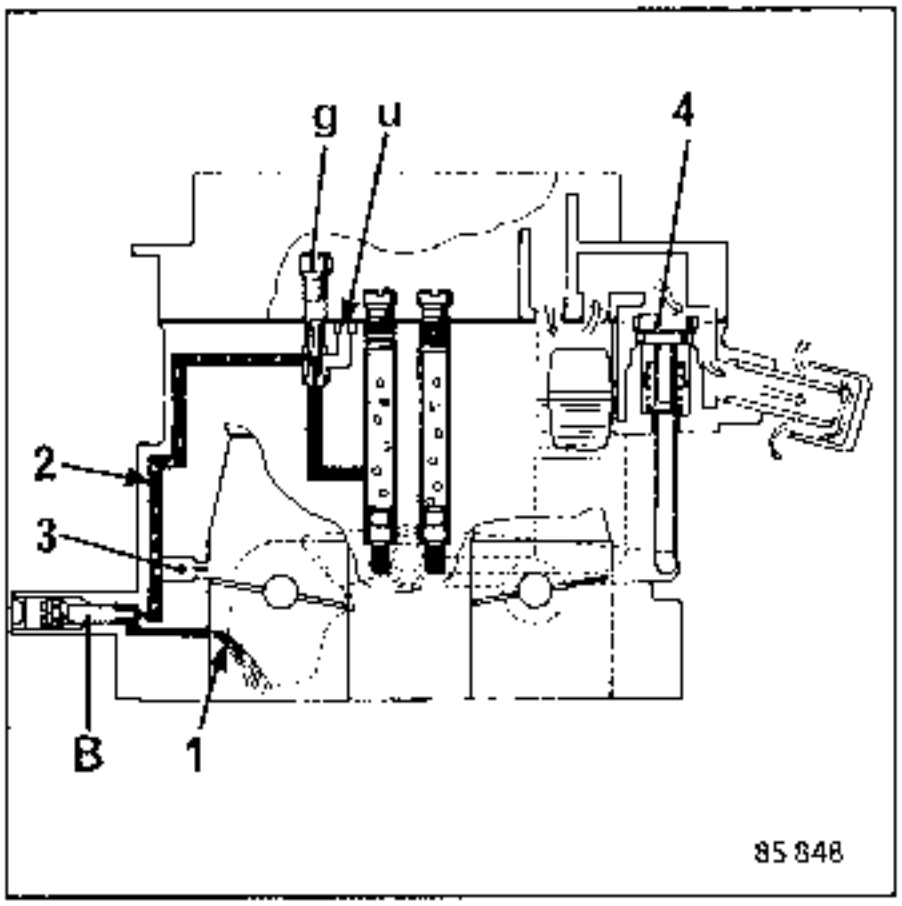
THE IDLING SPEED CIRCUIT

The fuel entering through duct (2) is metered by the idling jet (g) then emulsified with air passing through jet (u). It is atomised as it enters the carburettor body through holes (1) and (3). Hole (1) only operates at idling and the others during progression.

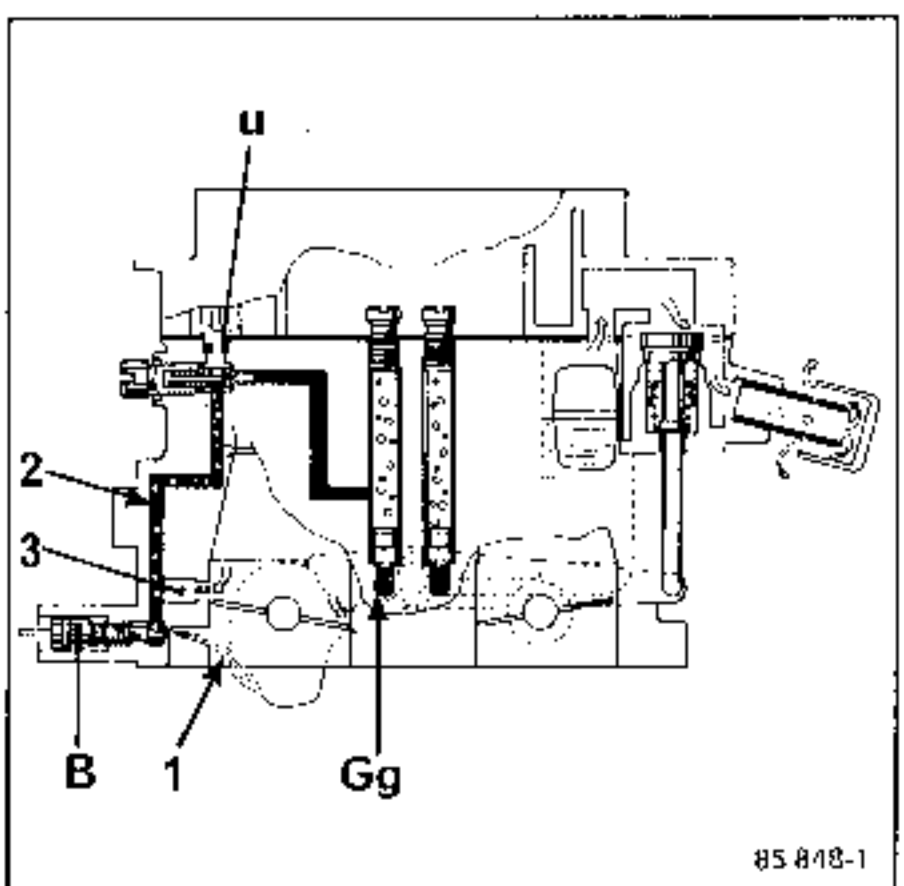
The mixture screw (B) adjusts the idling speed mixture.

At idling speed, the fuel vapour from the float chamber is vented externally.

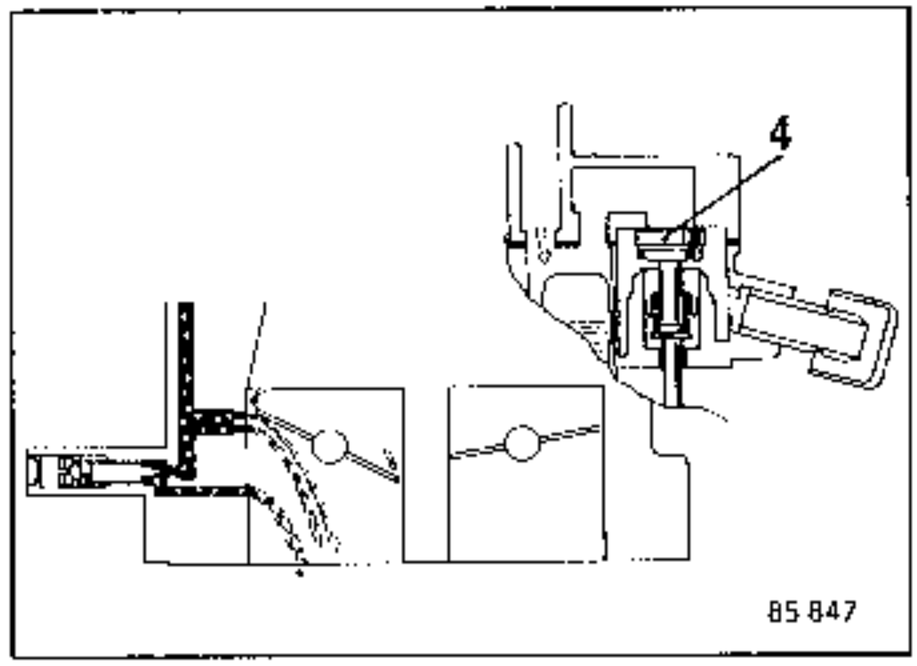
DRTM



DRT - DRTA



At partial load or full load, valve (4) closes and the fuel vapour passes into the air intake.

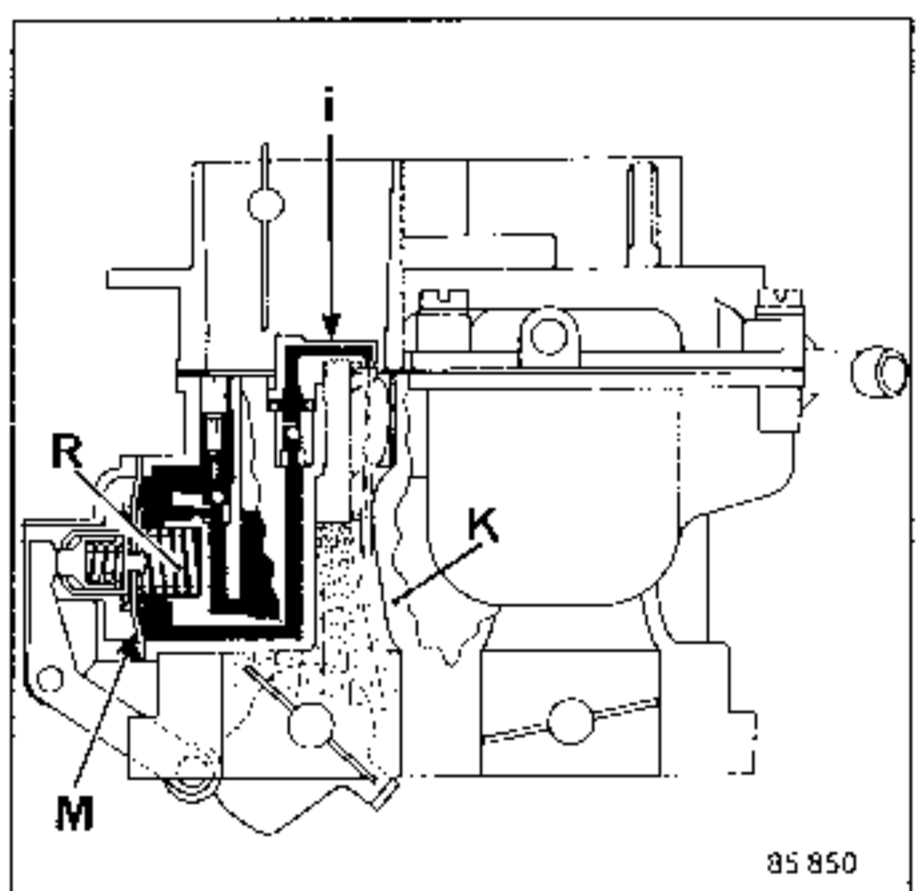


THE ACCELERATOR PUMP

This is of the diaphragm type, mechanically operated by a cam and a lever. It cannot be adjusted.

In the idling position, with the throttle closed, diaphragm (M) is pushed outwards by spring (R) permitting the pump cavity to fill.

When the throttle opens, the diaphragm (M) flicks over to force the fuel through a ball valve and a jet (i) into the choke tube input (K). The size of the jet controls the speed of injection.

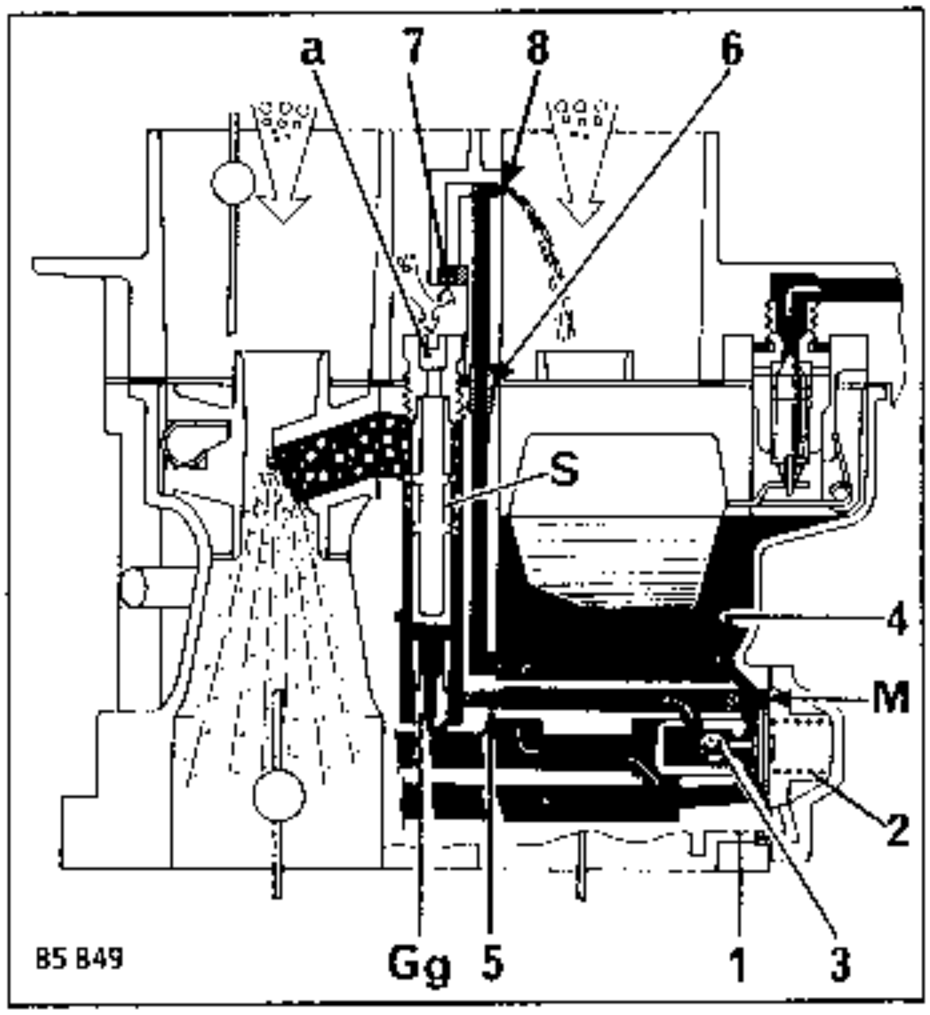


THE MAIN JET SYSTEM

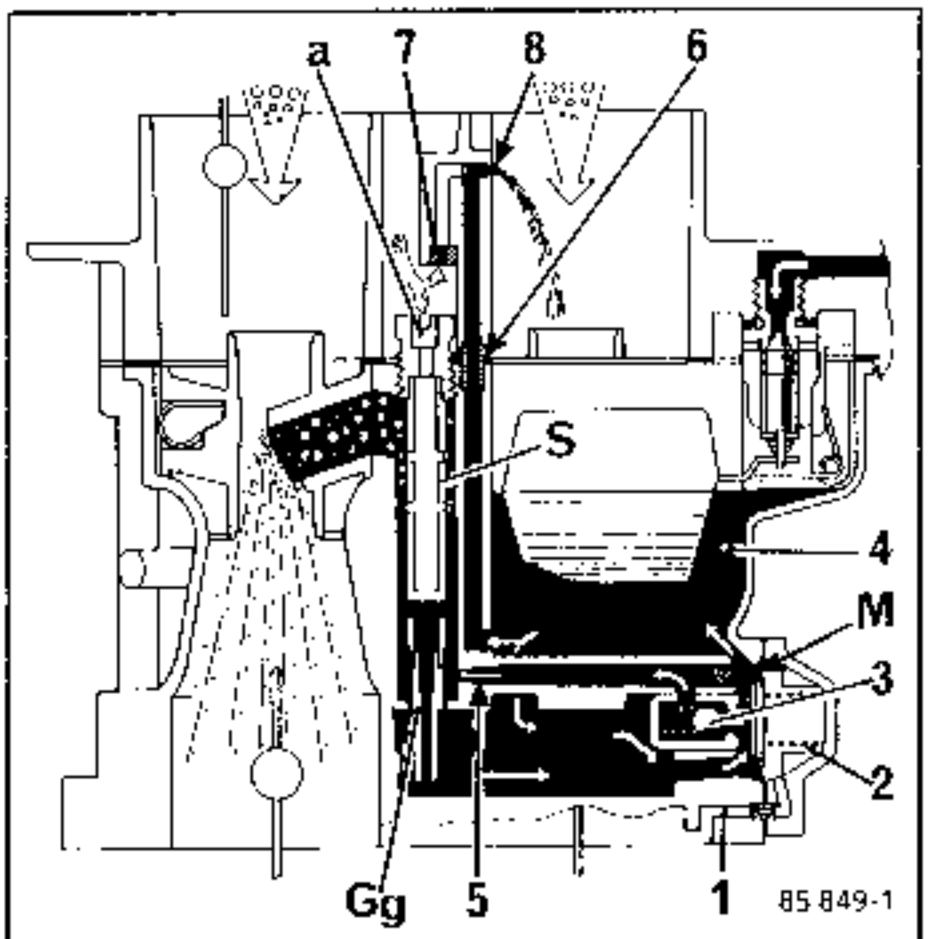
When the engine is running normally, the fuel it requires enters through the main jets (Gg).

The air-fuel mixture is automatically metered by the compensator jets (a) and the emulsion tubes (S)(mounted in the wells and retained by the air compensator jets (a))

DRTM



DRT - DRTA



THE POWER ENRICHENER

First barrel.

Valve (3) is affected :

- By the vacuum in the inlet manifold acting on diaphragm (M) to which it is connected by the duct (1).
- By the spring (2)

At given load and speed conditions, the spring (2) becomes preponderant and pushes over the valve (3).

The fuel coming from the float chamber (4) is calibrated by the jet (5) and enters the main air intake to assist in strengthening the mixture.

THE HIGH SPEED ENRICHENER

Second barrel.

At full load and speeds approaching maximum, the vacuum draws fuel directly from the float chamber through jet (6) and air through jet (7). The emulsified mixture passes into the top of the choke tube through the calibrated jet (8).

THE CHOKE SYSTEM

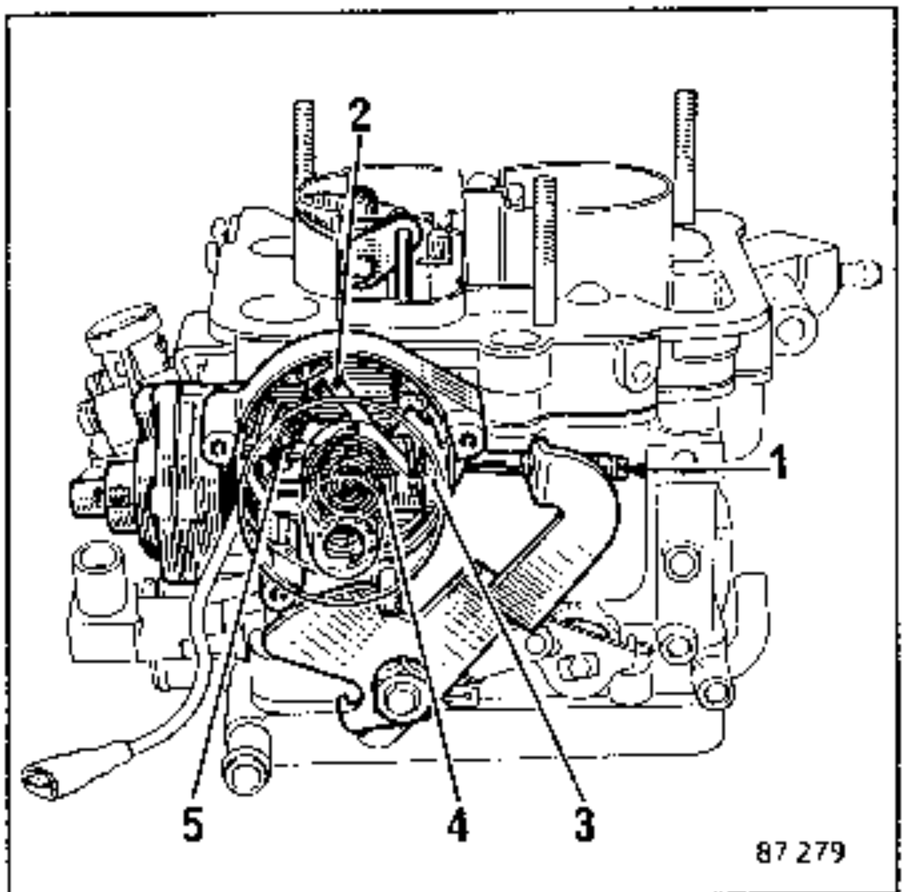
TYPE DRTA CARBURETTOR

This is of the semi-automatic type which means that, to pre-set it, one must fully depress the accelerator and allow it slowly to return to the normal position.

Principle of operation

When the engine is cold, the thermostatic spring (4), via the lever (2), holds the choke flaps in the closed position. At the same time, the cam lever (3) adopts the position shown in this illustration to hold the main throttle partially open through the adjusting screw (1).

When the engine is started, the thermostatic spring (4) and spring (5) oppose, in part, the opening of the choke flaps to produce a rich mixture and easy starting.



Pneumatic initial opening

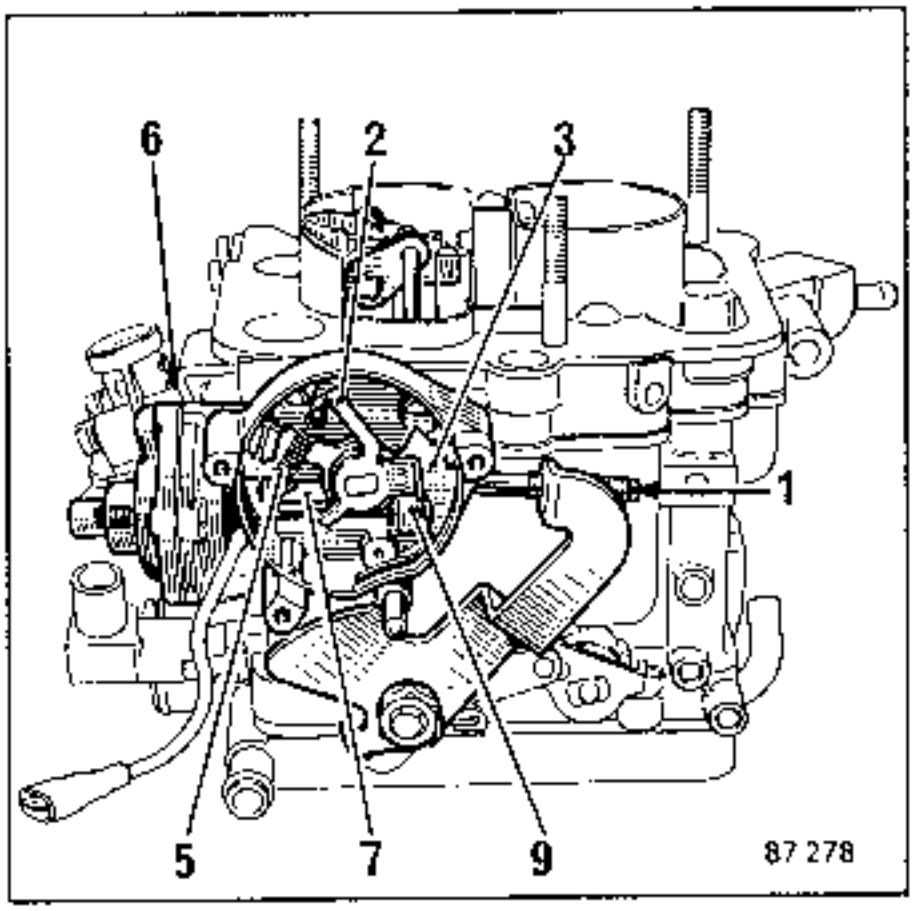
As soon as the engine is running, the vacuum acts on the diaphragm (6) connected to rod (7) to turn the lever (2) against the effect of the thermostatic spring (4) to establish the correct mixture to permit the engine to run evenly.

The temperature of the coolant rises and heats the thermostatic spring (4) and as this expands, with the movement of the main throttles, alters the position of the cam lever (3) gradually to eliminate the choke.

When the engine reaches its normal operating temperature, the thermostatic spring (4) has turned the lever (2) to fully open the choke flaps.

Under the influence of spring (5) the cam (3) has also turned and the screw (1) being no longer in contact, permits the primary throttle to return to the idling speed position.

A compensator (9) reduces the pneumatic opening, when compressed.



Choke warm-up assistance system

This consists of a heating element which cuts out the effect of the choke more rapidly under the following conditions:

- when the engine oil temperature is higher than 15°C.

Checking

With the engine cold and running:

- Disconnect the supply wire from the unit and replace it by a test light.
- At oil tempertures less than 15°C: the light should be off.
- At oil temperatures higher than 15°C: the light should switch on and remain on as long as the engine is warm and the ignition on.

Carburettor clearing system

If necessary (if the engine is flooded by an excess of fuel) a mechanical system permits one to open, partially, the choke flap by fully depressing the accelerator.

IDLING SHUT-OFF SYSTEM

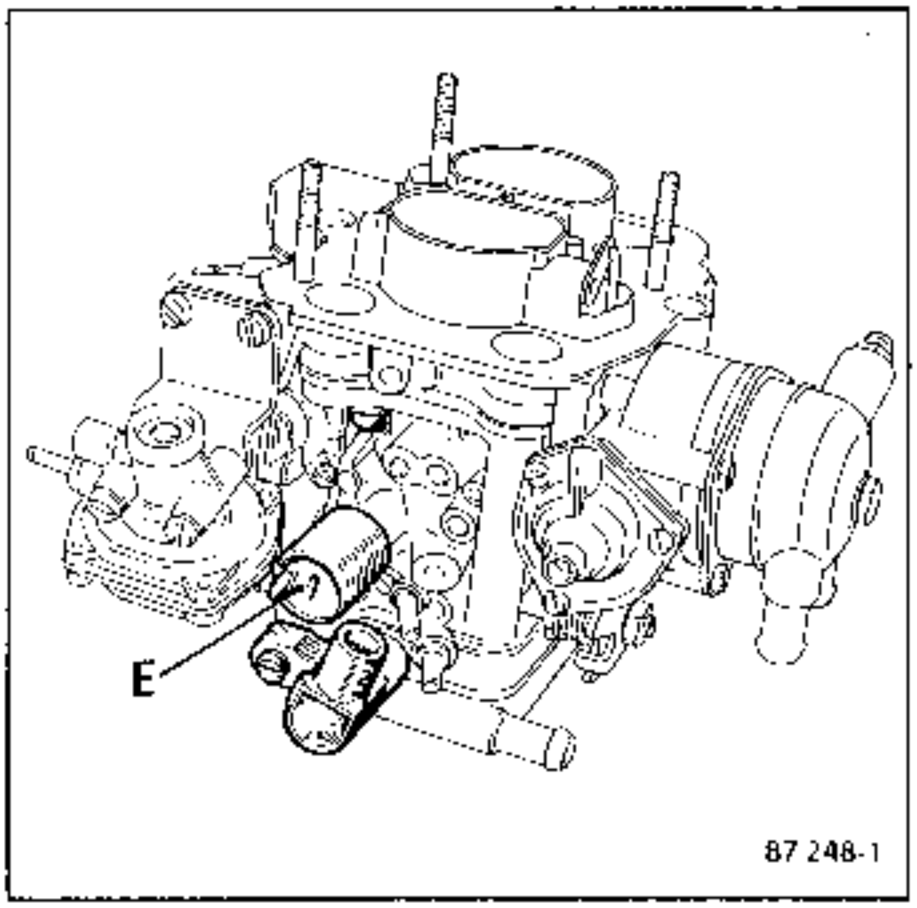
On BM vehicles only.

Idling speed shut-off (E)

This consists of a solenoid valve which closes the idling speed circuit as soon as it is de-energized, when the ignition is switched off.

Checking

Run the engine at idling speed and disconnect the wire. The engine should stop.



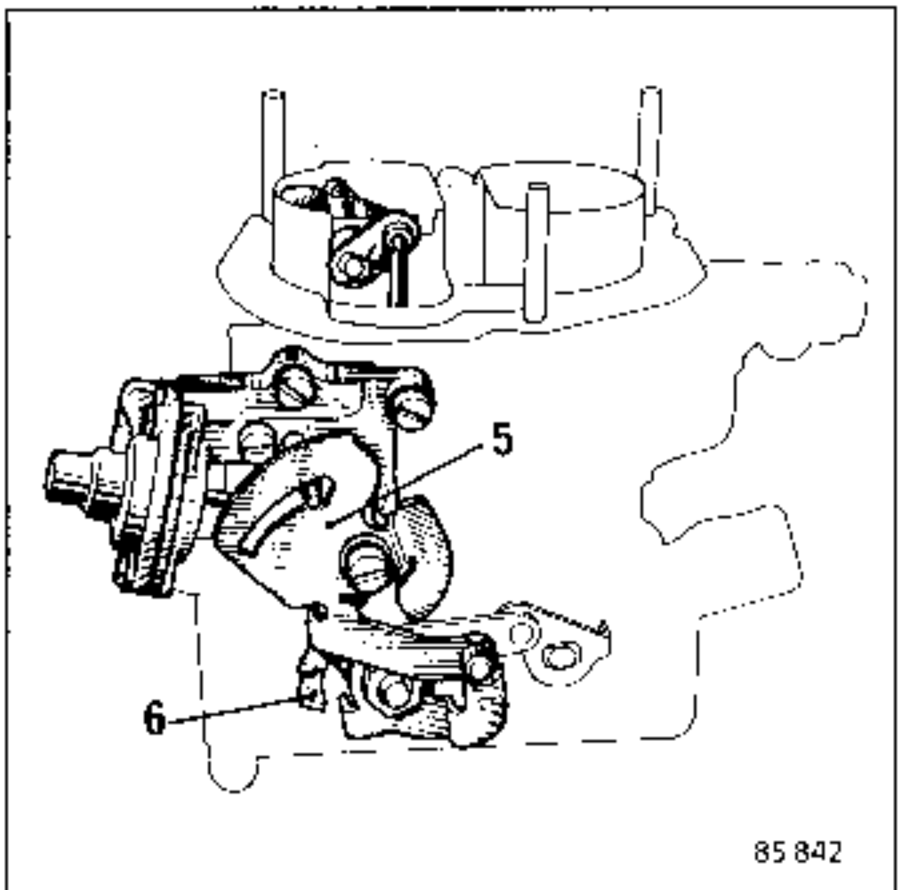
THE CHOKE SYSTEM

CARBURETTOR DRT - DRTM

The choke flap is manually operated and only fitted to one barrel.

A system of levers prevents the throttle on the 2nd barrel opening whilst the choke is operating. In the cold starting position, with the choke on the first barrel closed, the first barrel positive throttle opening lever (5) moves down the 2nd barrel throttle operating link (6). In this position, the throttle on the 2nd barrel remains closed even when the accelerator is fully depressed.

When the choke flap is open, the control lever (5) frees the link (6) and the return spring brings it into contact with the first barrel throttle lever. When the engine is accelerated, lever (6) makes contact with the control on the first barrel and this causes the 2nd barrel throttle to open.

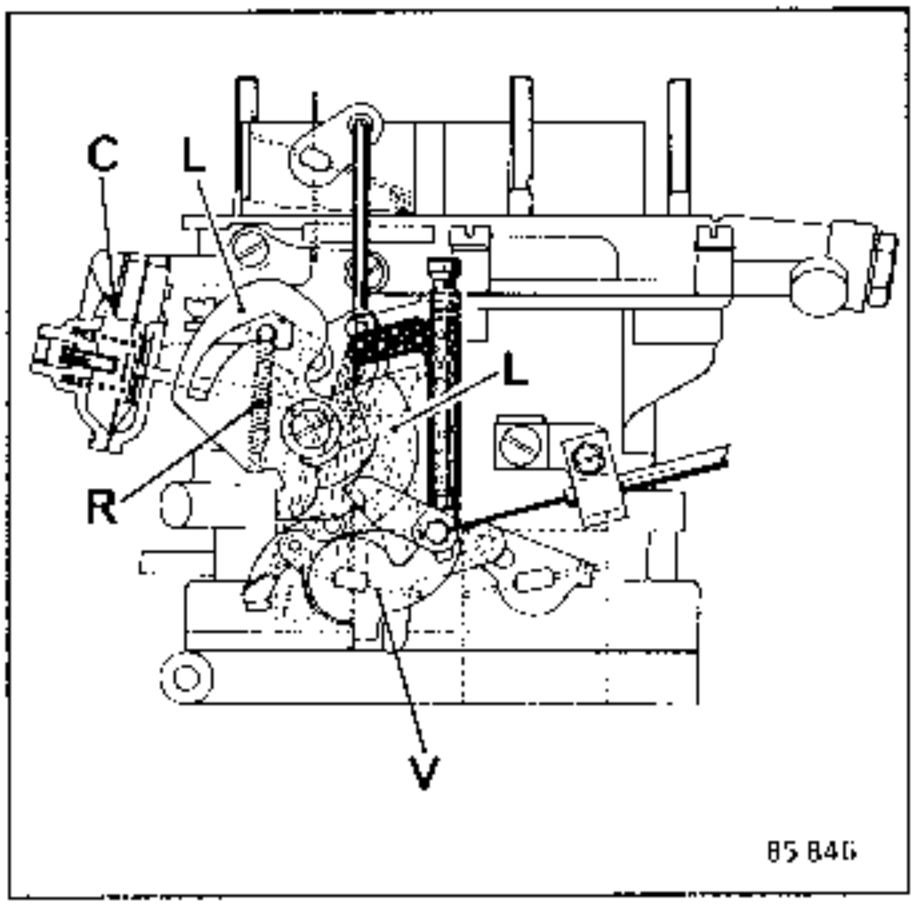


The choke flap

When starting the engine from cold, with the choke knob pulled fully out (the "very cold" position) a system of levers with a compression spring (R) holds the choke flap closed.

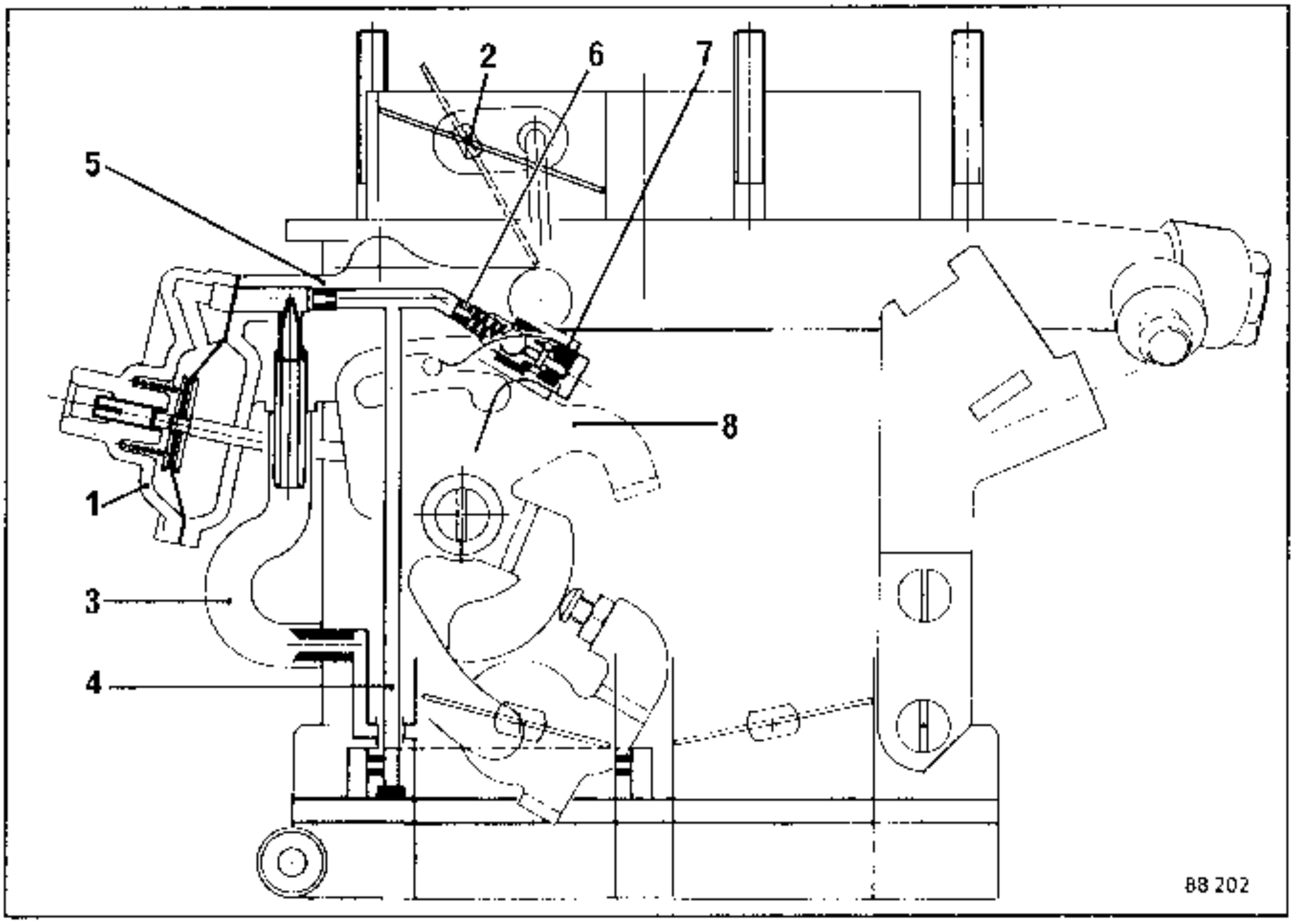
The throttle (V), operated by a cam lever (L) and the positive throttle opening lever, partially opens by a fixed amount which permits the engine to start at low temperatures.

As soon as the engine has started, the vacuum acts on the capsule diaphragm (C) and this opens the choke flap by compressing the spring (R).



The vacuum acting directly on the choke flap can also open it slightly because of slot (L) and spring (R) compressing.

PNEUMATICALLY CONTROLLED CHOKE SYSTEM



The choke on DRT carburettors has a pneumatic capsule (1) which opens the choke flap (2). During the cold starting phase, with the choke pulled out, the position of the flap will vary to suit the load on the engine.

The pneumatic capsule (1) is subject to the inlet manifold vacuum through circuit (3) which has a calibrated venturi and circuit (4) which comprises jets (5) and (6) and a valve (7).

When the choke is pulled fully out

Valve (7) is open and this causes the vacuum acting on the capsule (1) to drop. Furthermore, the amount by which the flap (2) opens is limited by the mechanical stop on the control cam (8).

Choke pushed half-way in

a) Engine running at idling speed

The valve (7) is closed, the inlet manifold vacuum is strong and it fully opens the flap (2).

b) Engine under load with the throttle open

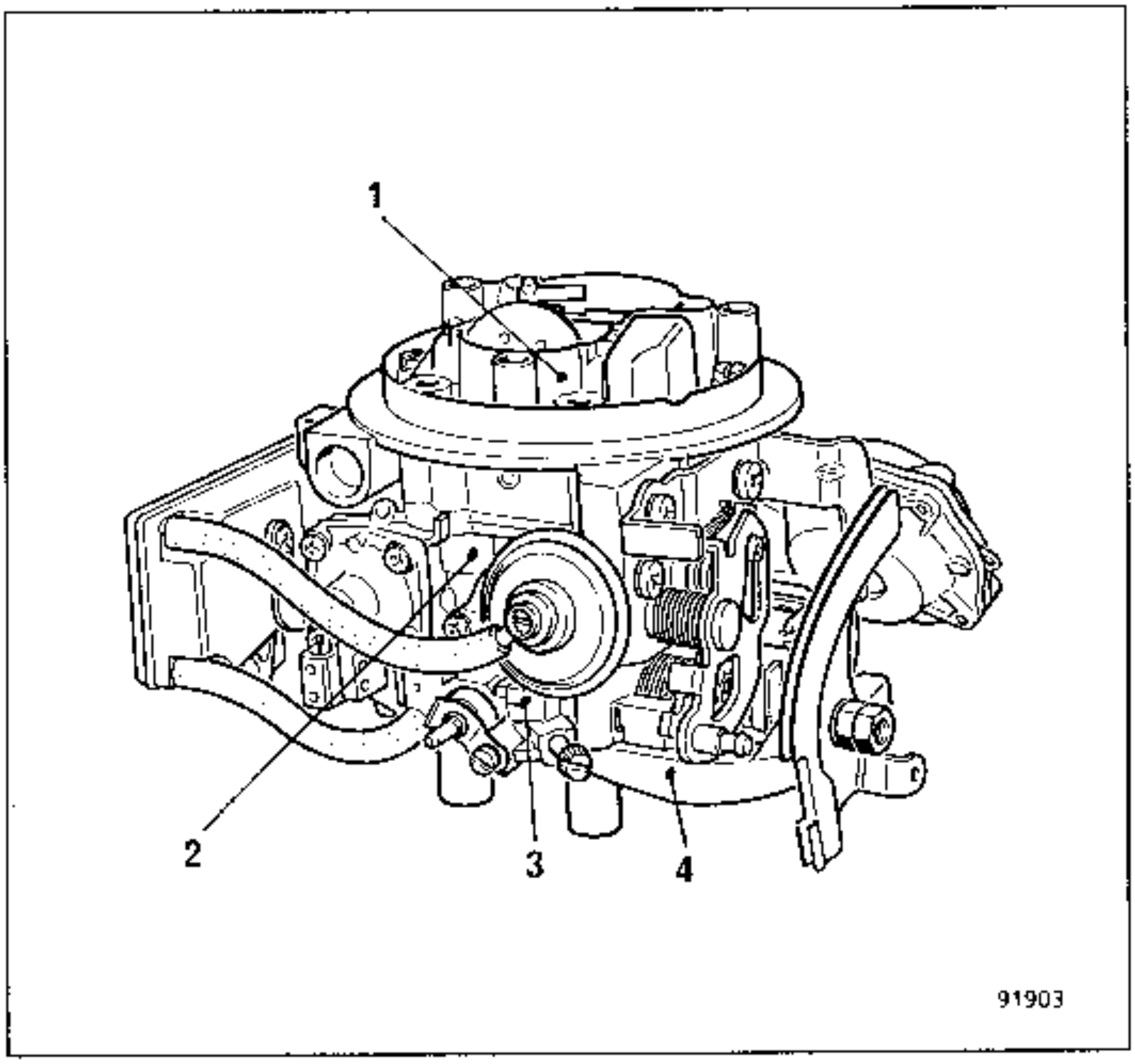
Depending on the amount by which the throttle is open, the vacuum circuit (4) may be communicating with the upper edge or the lower edge of the throttle plate and this causes the vacuum in circuits (3) and (4) to vary and thus vary the amount by which the choke flap is open.

DESCRIPTION

The WEBER 32 TLDR carburettor is a double barrelled carburettor with a pneumatic offset throttle opening system.

It is fitted with :

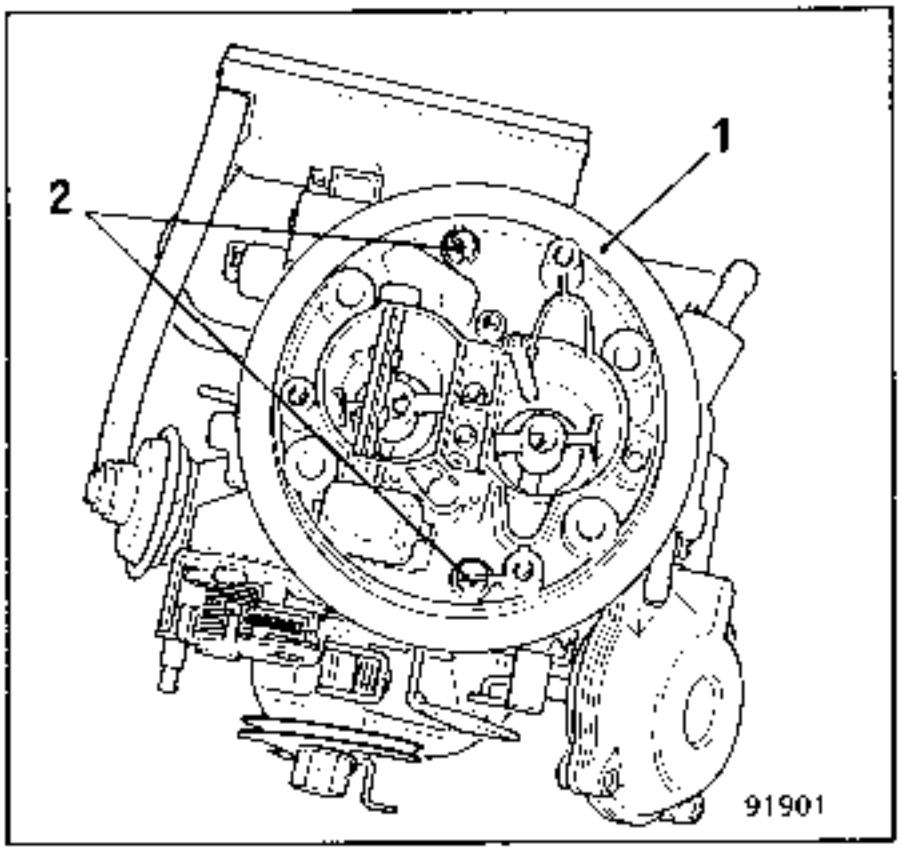
- a manually operated choke on the first barrel,
- a system locking out at the second barrel whilst the choke is operating,
- a system for partially opening the choke flap,
- a cam operated accelerator pump,
- a pneumatic capsule that operates the second barrel,
- an accumulator compartment on the choke flap assistance system (initial opening system) mounted directly on the carburettor,
- an idling circuit heating element on the first barrel,
- two barrels 32mm in diameter, the throttle opening on which is limited to 82°.

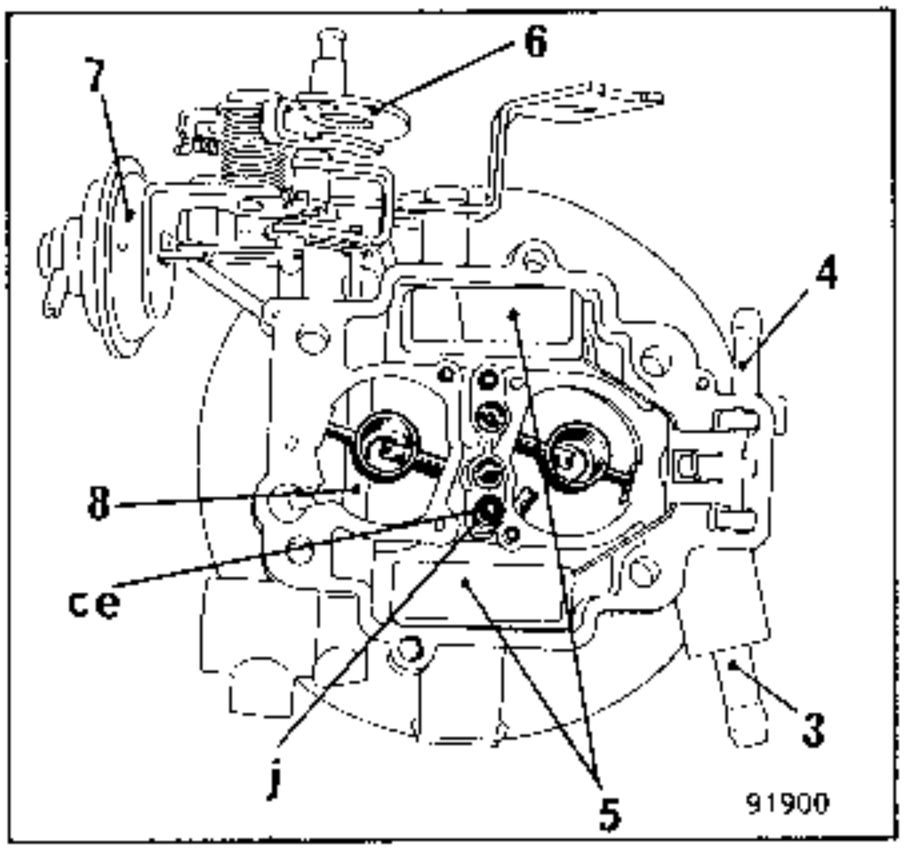


The carburettor consists of four sections

- the float chamber cover (1)
- the float chamber (2)
- the body-throttle assembly (3)
- the throttle control plate (4)

1°) THE FLOAT CHAMBER COVER



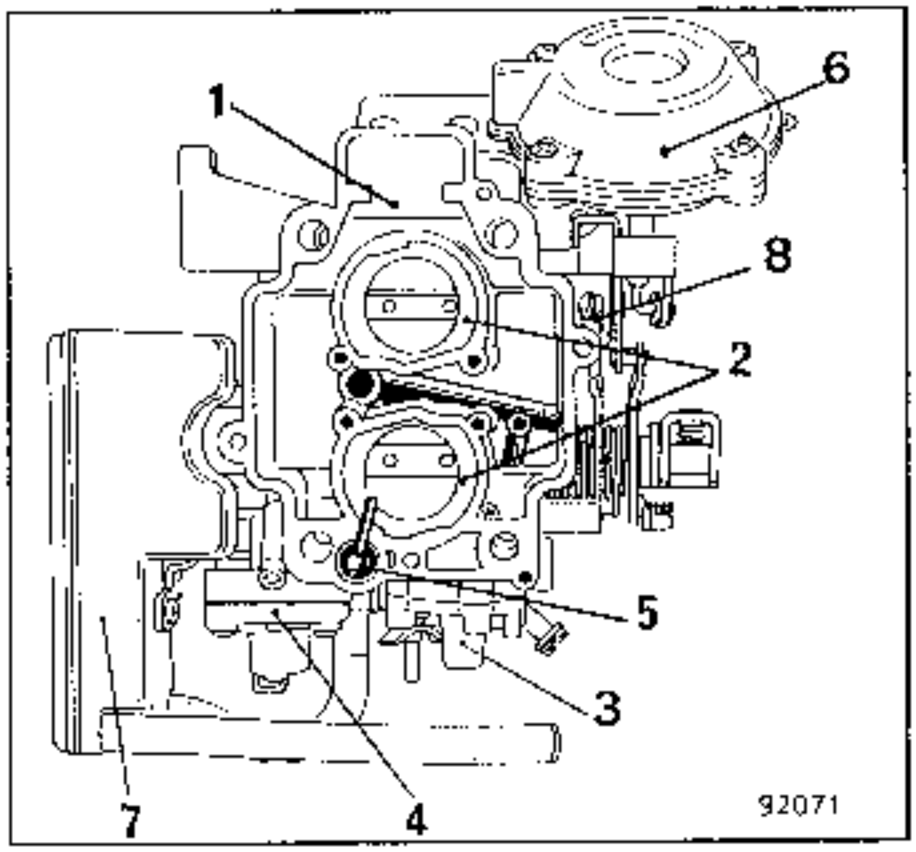


The float chamber cover (1) is secured to the float chamber by screws (2).

It comprises:
- the main jet circuits with their adjusting components (jets, venturis...)
- the fuel supply components: fuel input (3) and return (4), floats and needle valve,
- the choke components: cam (6) and diaphragm (7) for assisting the choke flap (8).

Note: When removing and refitting the float chamber cover, take care not to damage the O ring (j) round the enrichener jet (Ce)

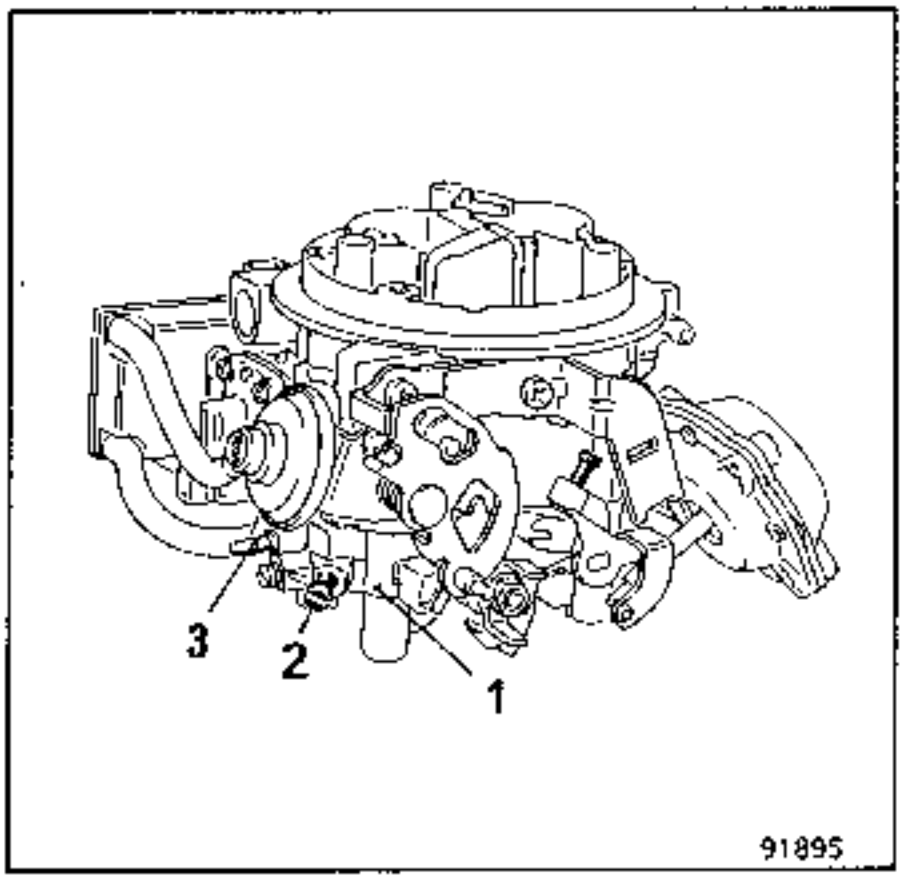
2°) THE FLOAT CHAMBER



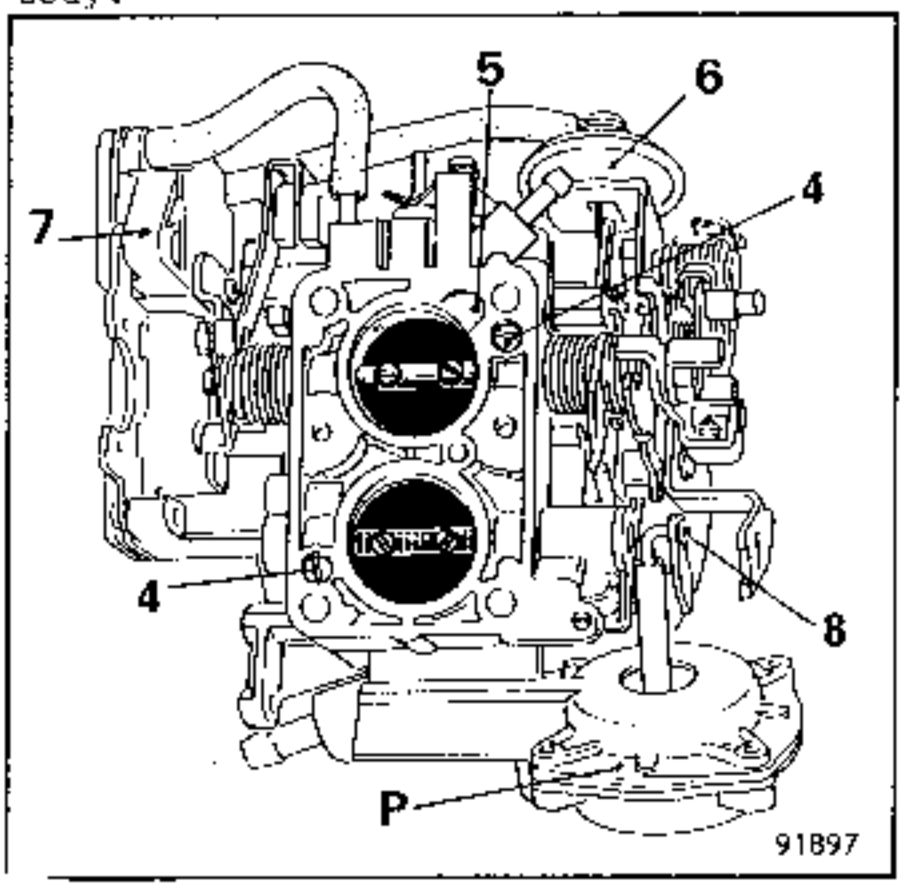
The float chamber assembly (1) comprises:

- the choke tubes (2) for the two barrels,
- the pneumatic enrichener (3) with its fuel and vacuum circuits,
- the accelerator pump (4) and pump injector (5),
- the float chamber also carries :
  - the second barrel opening pneumatic assembly (6).
- the diaphragm assistance accumulator (7).
- the idling speed adjusting screw (8).

3°) THE BODY - THROTTLE ASSEMBLY

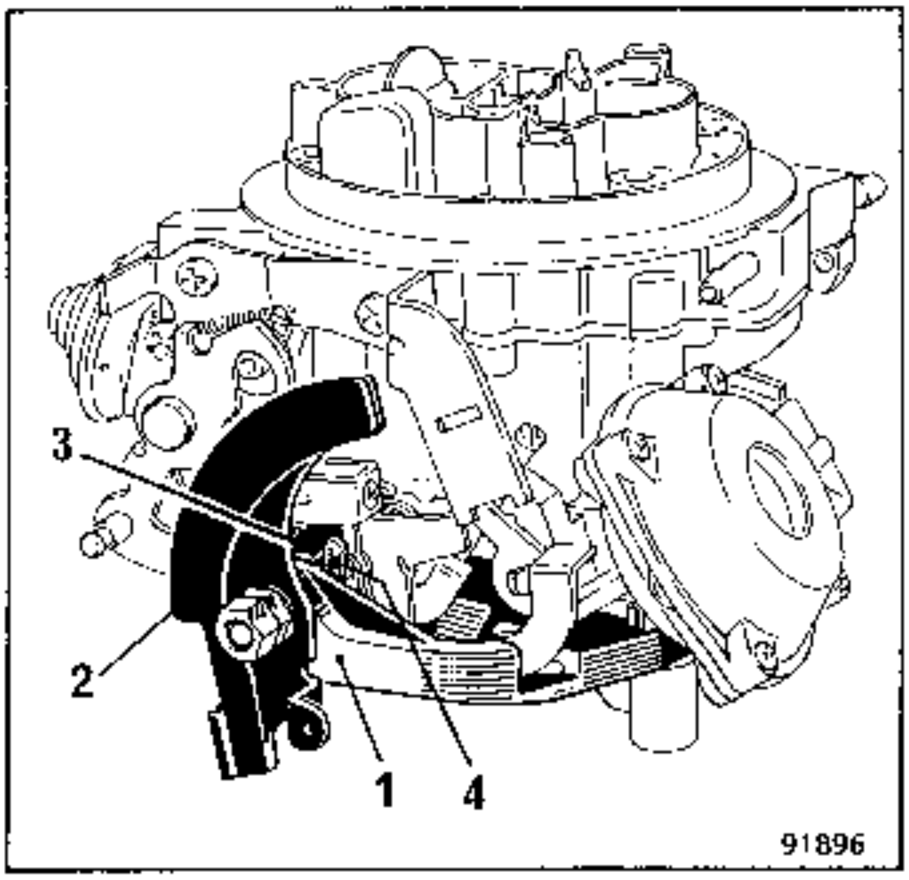


The body - throttle assembly (1) carries the throttle plates and their mechanisms together with the mixture screw (2) and the first barrel idling circuit heater element (3) which is secured to the float chamber by two screws (4). There is a gasket between the float chamber and the body.

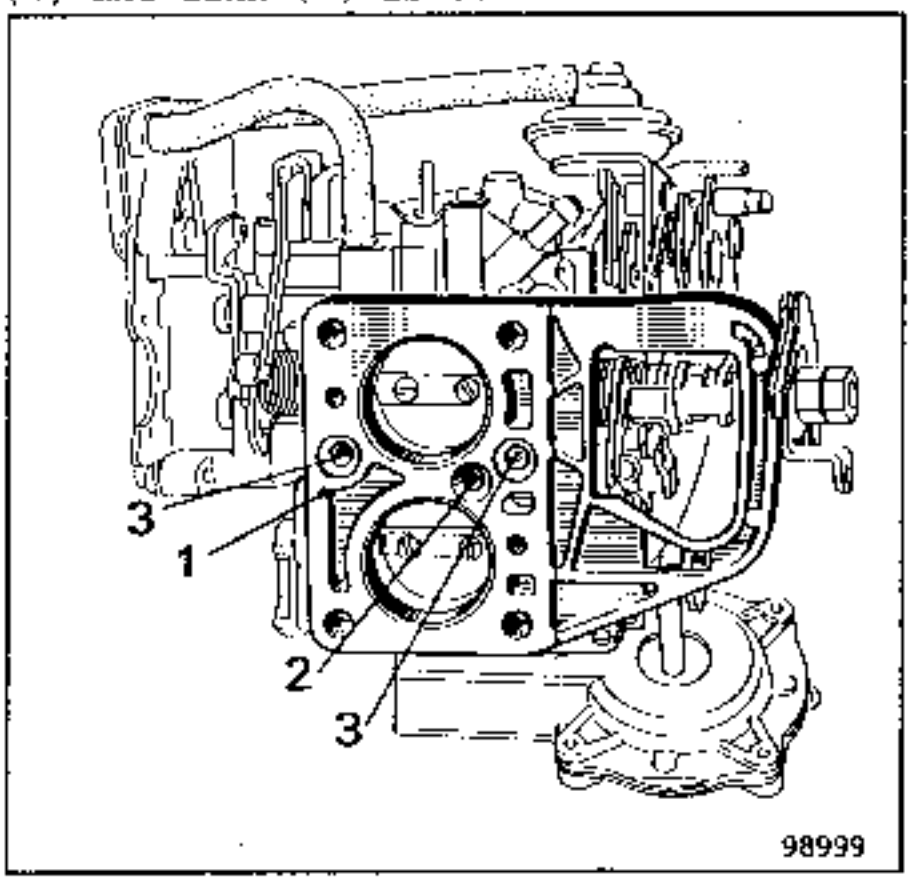


The vacuum take-off (5) initially opens the choke flap via the capsule (6) and the accumulator (7). Before removing the body (1) one must release the pneumatic unit (P) from the second barrel at the nylon eye (8).

4°) THE THROTTLE CONTROL PLATE ASSEMBLY



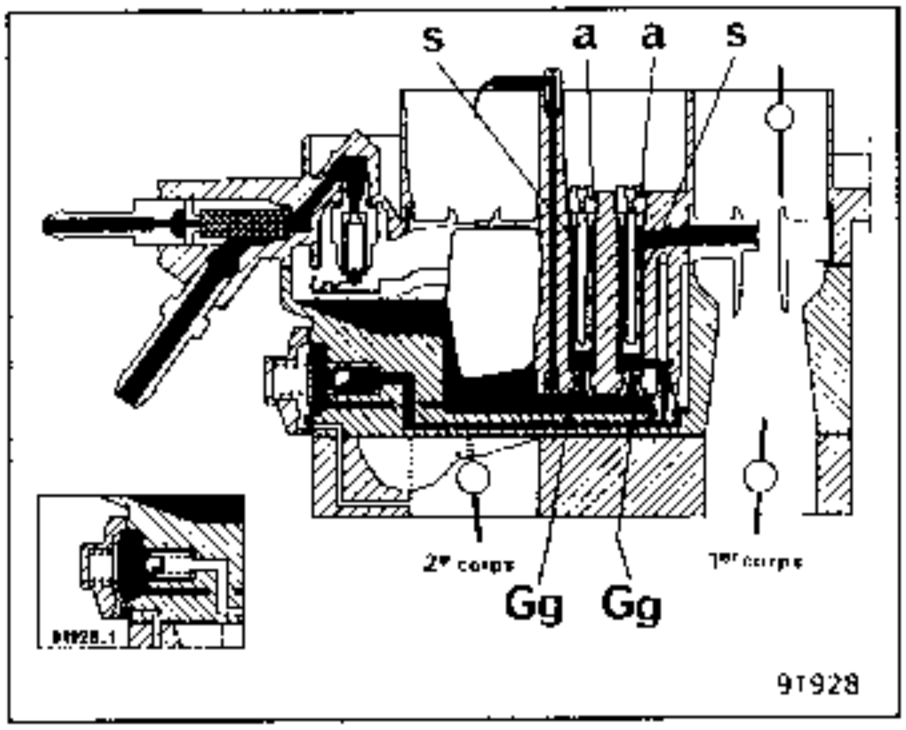
The throttle control plate assembly (1) carries the quadrant (2) round which the accelerator cable lies, in a groove provided for this purpose.
The quadrant (2) operates the throttles via the engagement of the two links (3) and (4). Link (3) is secured to quadrant (4) and link (4) is secured to the throttles.



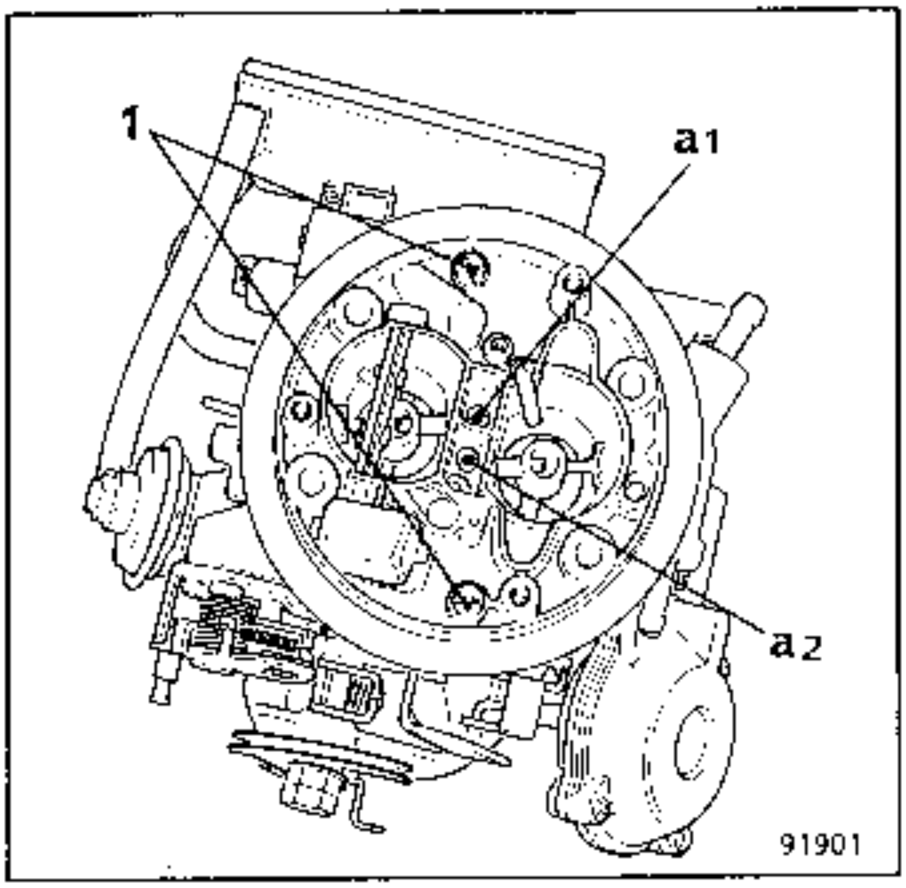
The throttle control plate (1) is secured to the carburettor body by a screw (2) and located by two dowels (3). There is a gasket between the body and the throttle control plate.

THE MAIN JET CIRCUIT

When the engine is running normally the fuel required enters through the main jets (Gg).



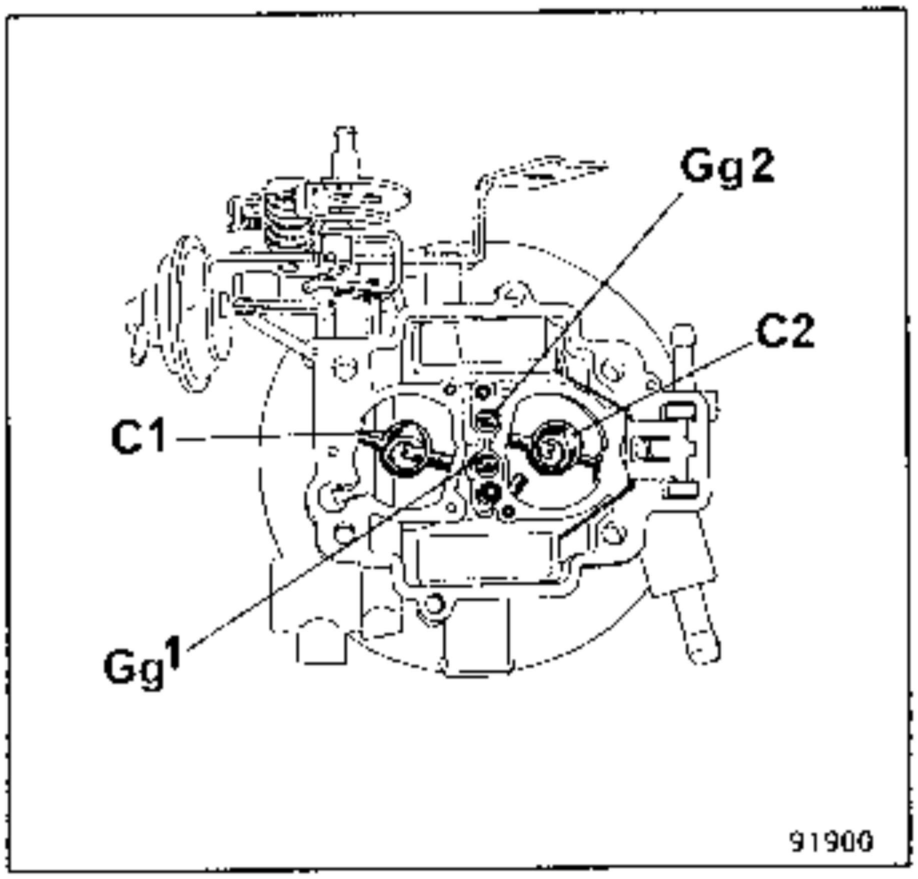
The air-fuel ratio is metered by air compensator jets (a) and emulsion tubes (S) (located in the wells and retained by the air compensator jets (a)).



Access to the air compensator jets and emulsion tubes is directly through the float chamber cover.

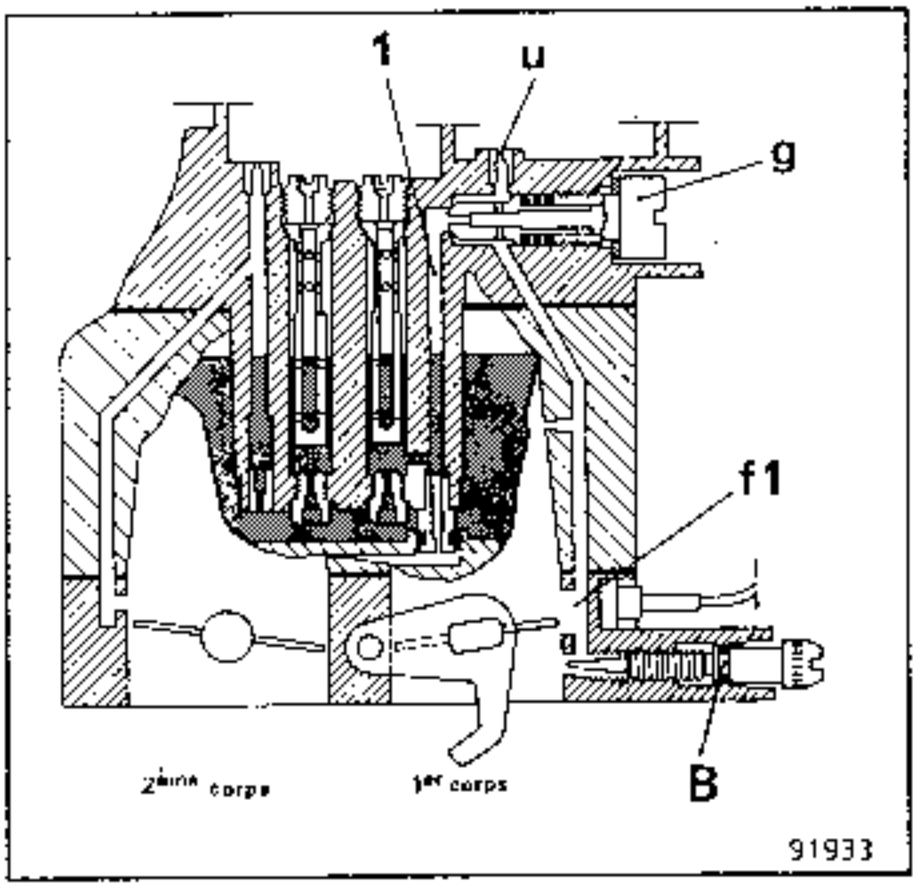
a1 Air compensator for first barrel
a2 Air compensator for second barrel

Access to the main jets and secondary venturis involves removing the float chamber cover. To do this, take out the two screws (1).



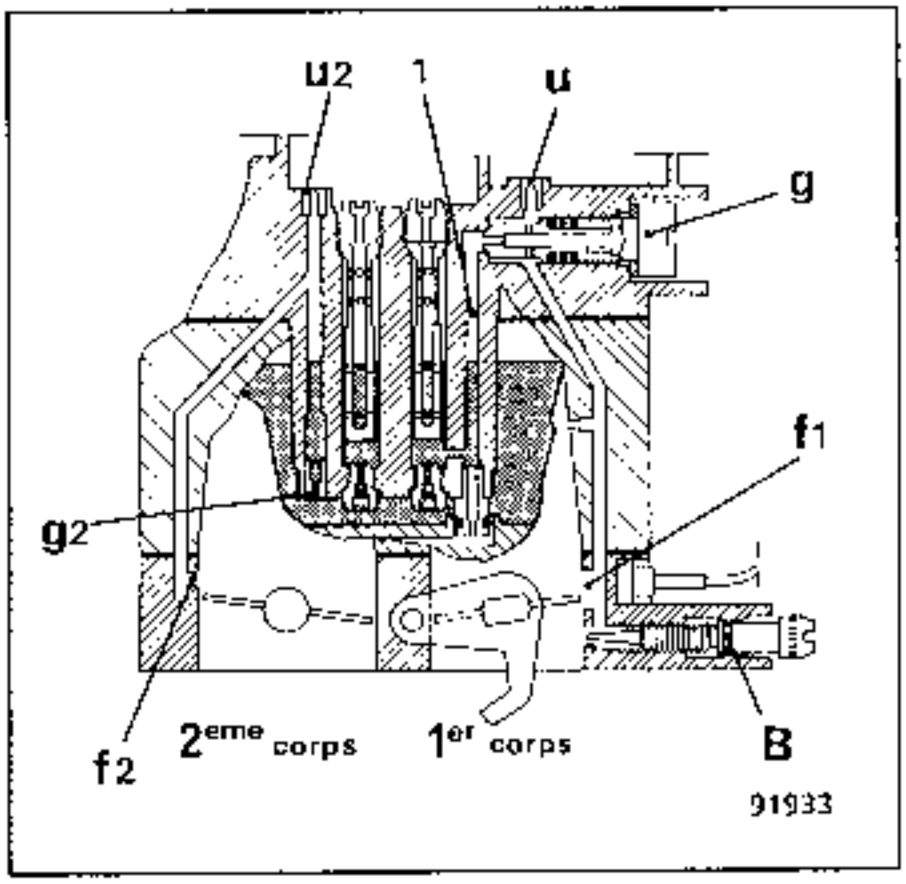
Gg1 : Main jet, first barrel
C1 : Secondary venturi, first barrel
Gg2 : Main jet, second barrel
C2 : Secondary venturi, second barrel

FIRST BARREL IDLING CIRCUIT

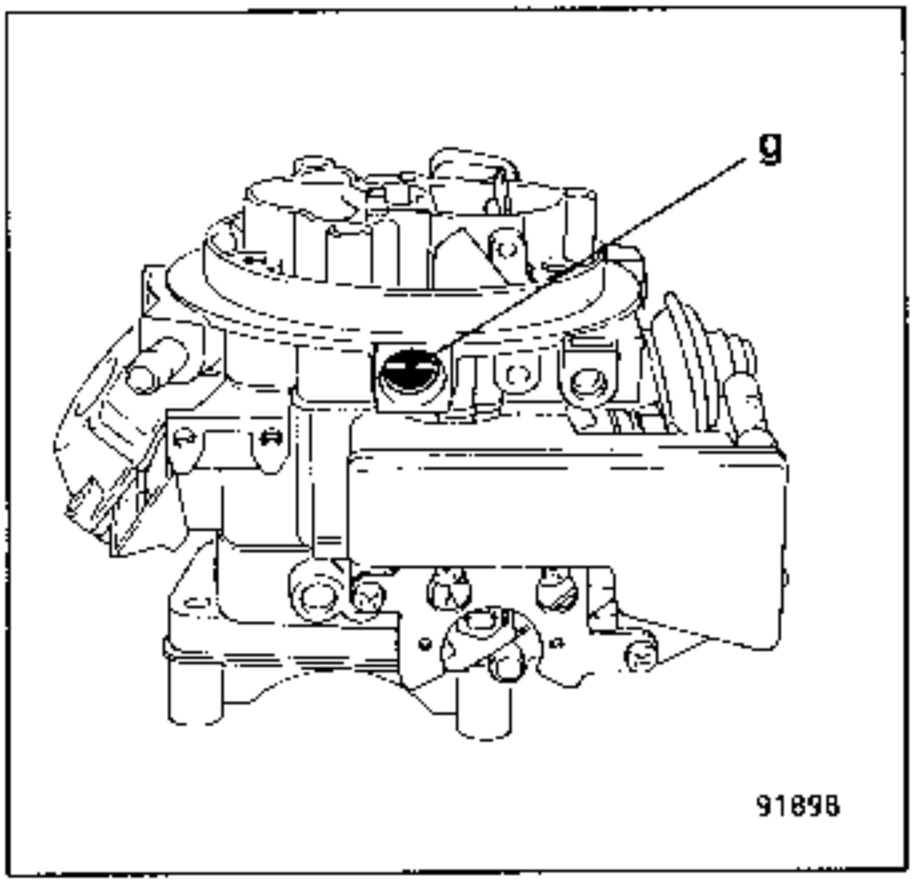


The fuel entering via duct (1) is metered by the idling jet (g) then emulsified with air entering through jet (u). It is atomised as it enters the carburettor body through slot (f1).
The mixture screw (B) adjusts the strength of the mixture at idling speed.

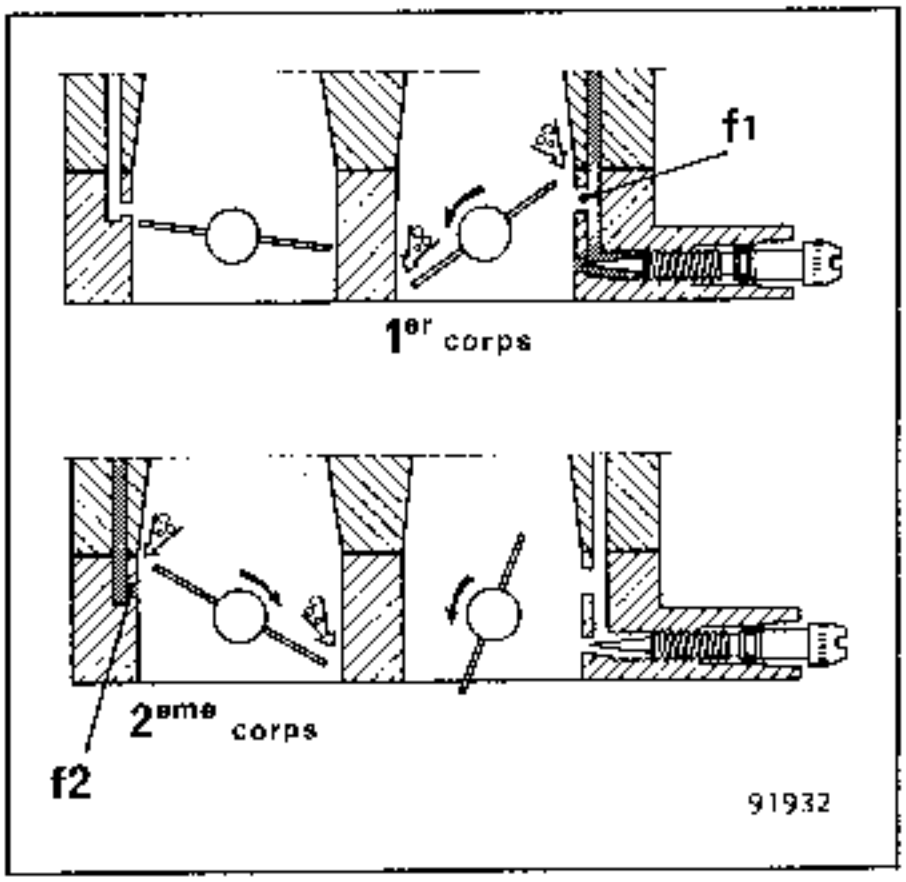
IDLING CIRCUIT PROGRESSIVE TRANSFER (1st and 2nd barrels)



When the throttle on the second barrel is slightly opened it uncovers the slot (f2) which is fed with fuel through jet (g2) and air through jet (u2).

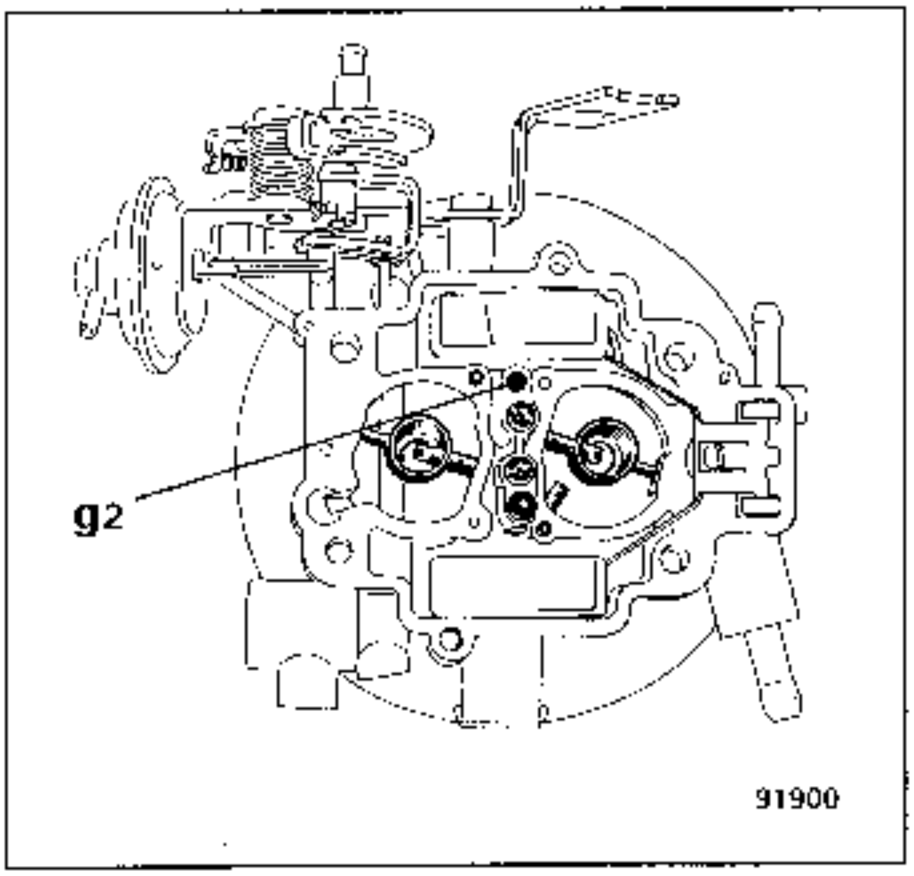


Access to the idling jet (g) on the first barrel is direct, without it being necessary to remove anything.



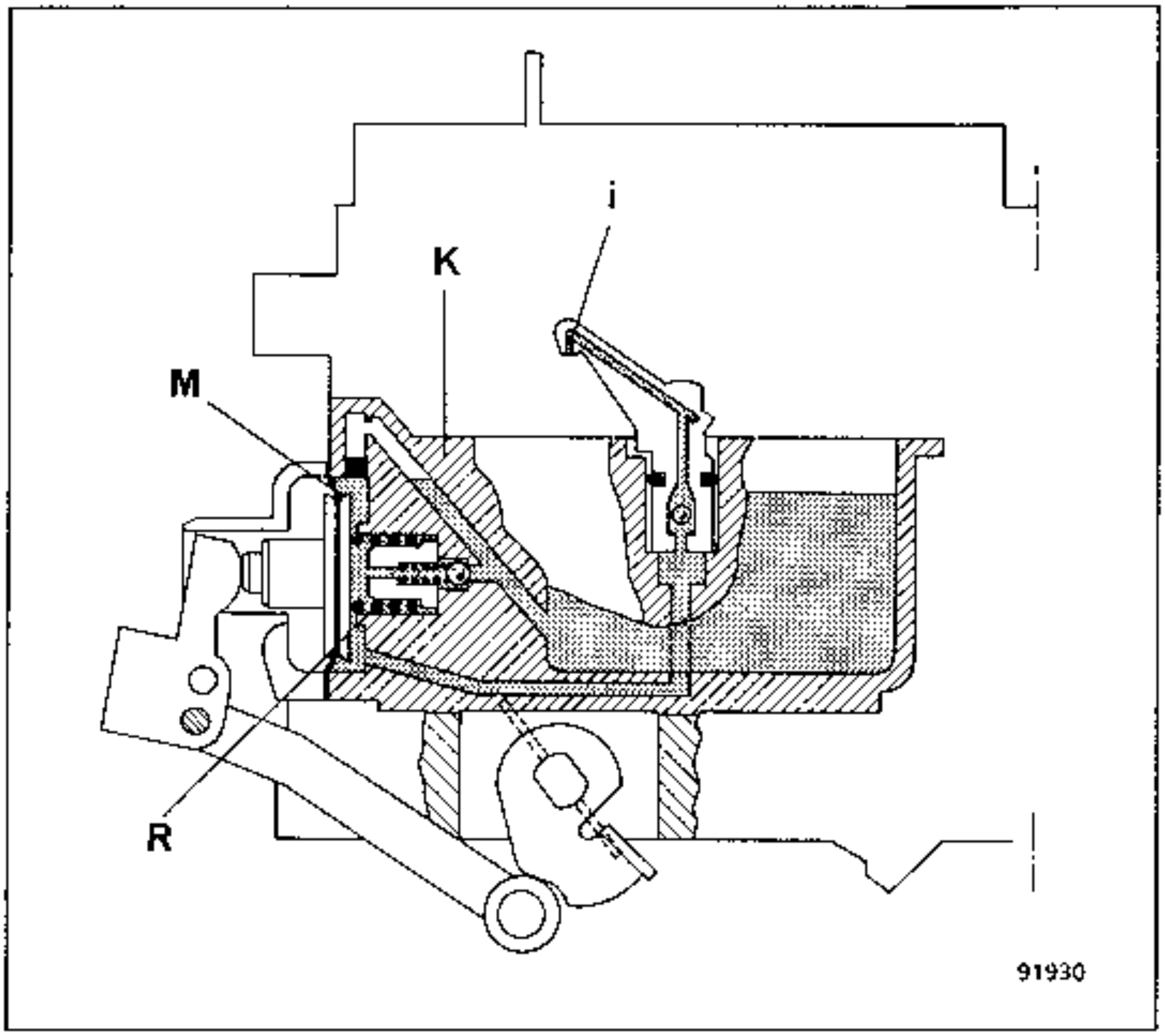
On both first and second barrels, idling circuit progression is provided by a slot:

- **f1** on the first barrel
- **f2** on the second barrel.



Access to the idling jet on the second barrel (g2) involves removing of the float chamber cover (the jet cannot be removed).

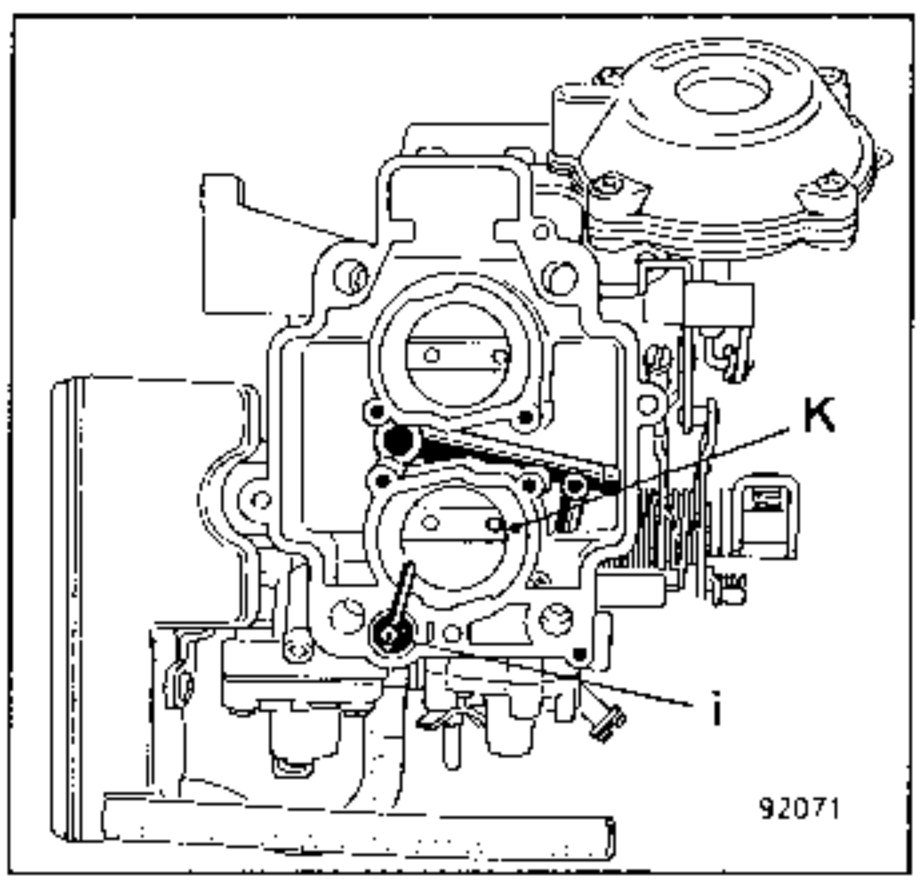
THE ACCELERATOR PUMP



The body of the mechanically operated accelerator pump is part of the same casting as the float chamber cover.

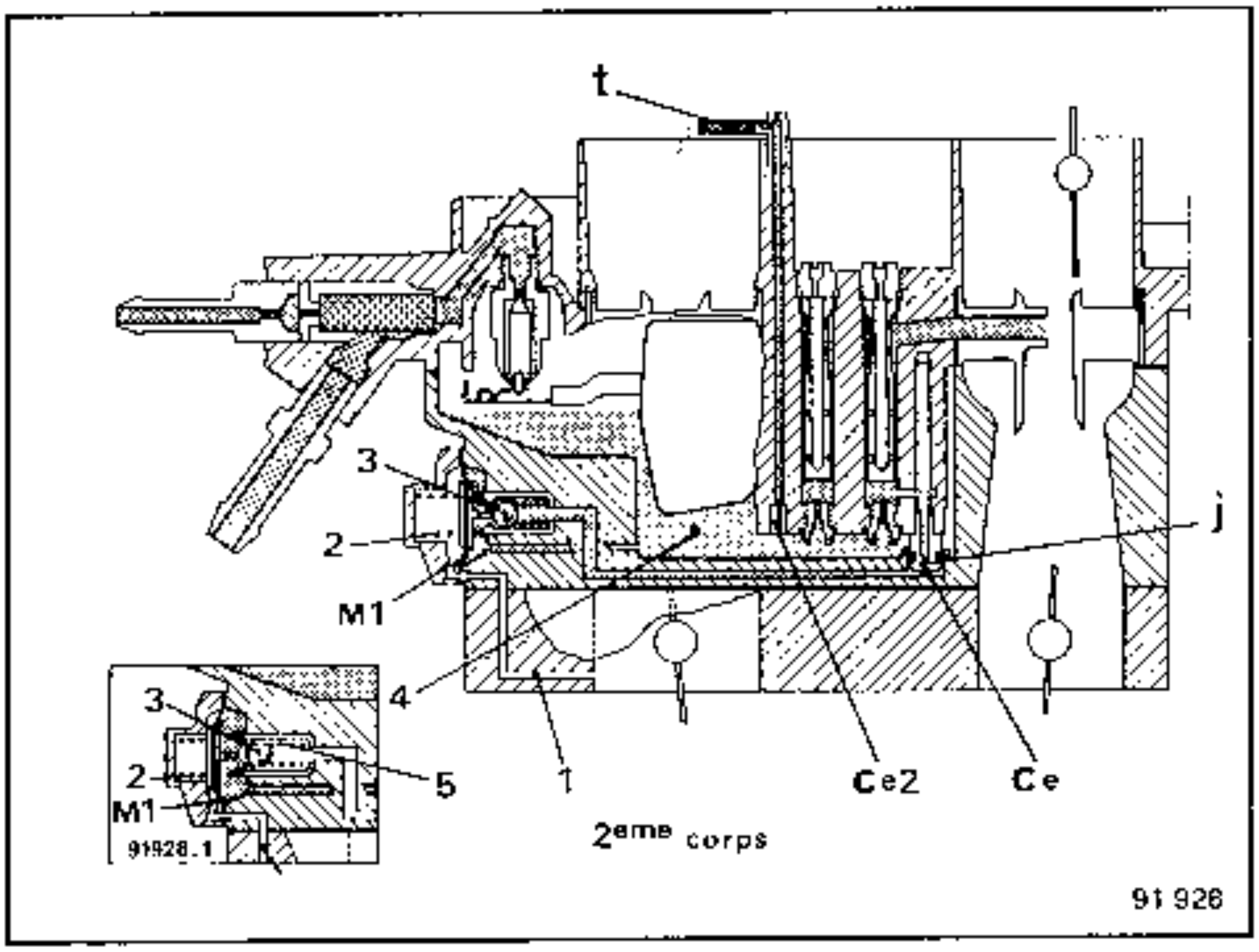
In the idling position, with the throttle closed, diaphragm (M) is pushed outwards by spring (R) and the pump cavity can fill with fuel.

Diaphragm (M) is connected to the accelerator by a cam connected to the throttle shaft.
When the throttle opens, the movement of its shaft causes the diaphragm (M) to flick over and force fuel through a ball valve and a calibrated injector (i) at the input end of the choke tube (K).
The size of the injector determines the speed of injection. Pump travel cannot be adjusted.



To gain access to the pump injector (i) one must remove the float chamber cover.

THE POWER ENRICHENER



Valve (3) is affected by :

- the vacuum in the inlet manifold acting on diaphragm (M1) to which it is joined by duct (1),
- the spring (2).

At given load and speed conditions, spring (2) becomes preponderant and pushes over the valve (3).

Fuel from the float chamber (4) metered by the jet (Ce) enters the main circuit and helps strengthen the mixture.

When the effect of the vacuum in the manifold overcomes that of the spring (2), the diaphragm (M1) is pushed back and the valve ball (3) is held against its seat by the spring (5). There is no enrichening of the mixture.

The power enrichener (Ce) delivers fuel to the first barrel.

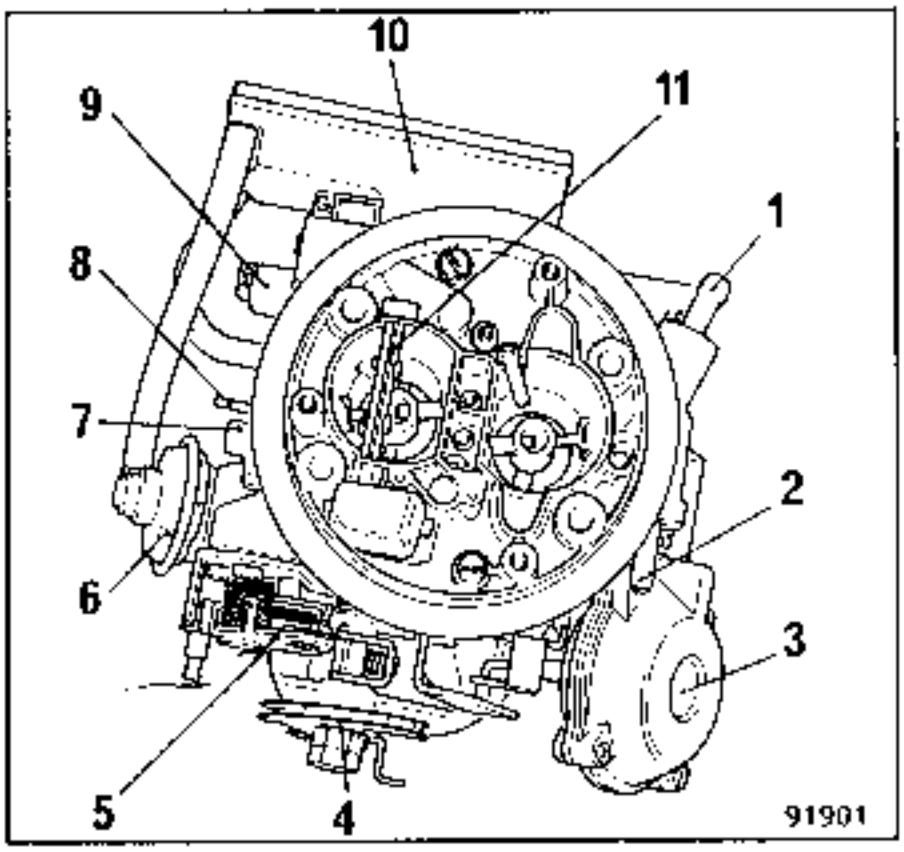
Note: Check, before refitting the float chamber cover, that the O ring (j) that seals between the enrichener duct in the float chamber and that in the float chamber cover is not damaged.

THE HIGH SPEED ENRICHENER OR ECONOSTAT

Under certain conditions of load and speed, the vacuum draws fuel directly from the float chamber through jet (Ce2). It is atomised at the top of the choke tube by the econostat tube (t).

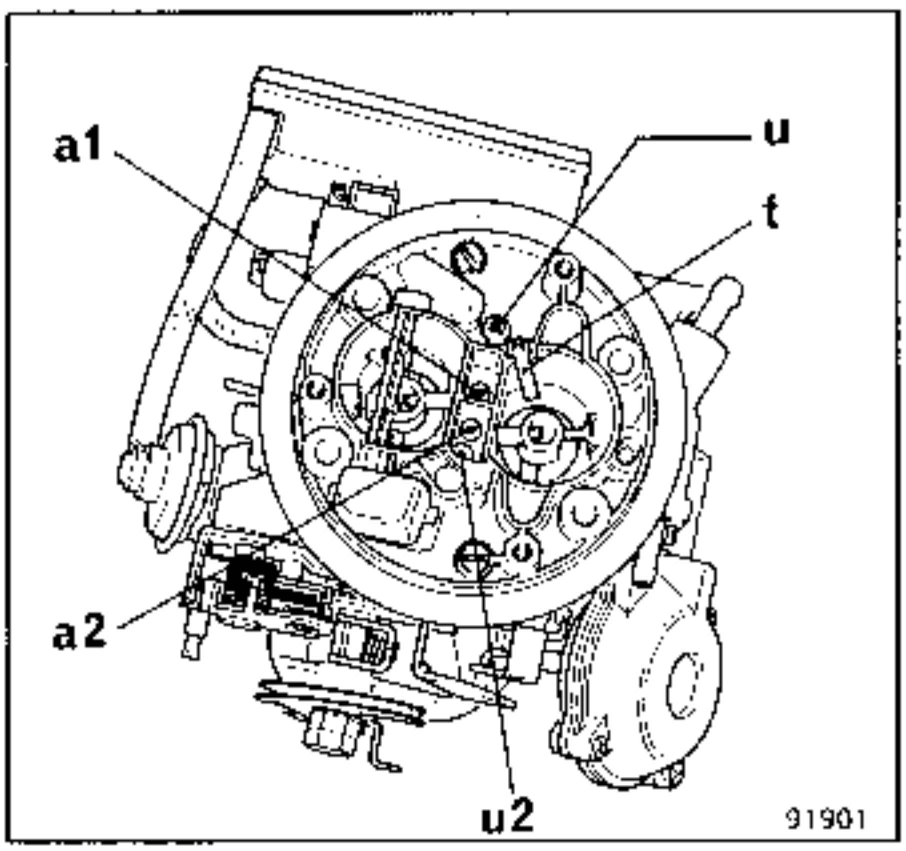
The high speed enrichener (Ce2) delivers its fuel into the second barrel.

CIRCUITS AND FUNCTIONS

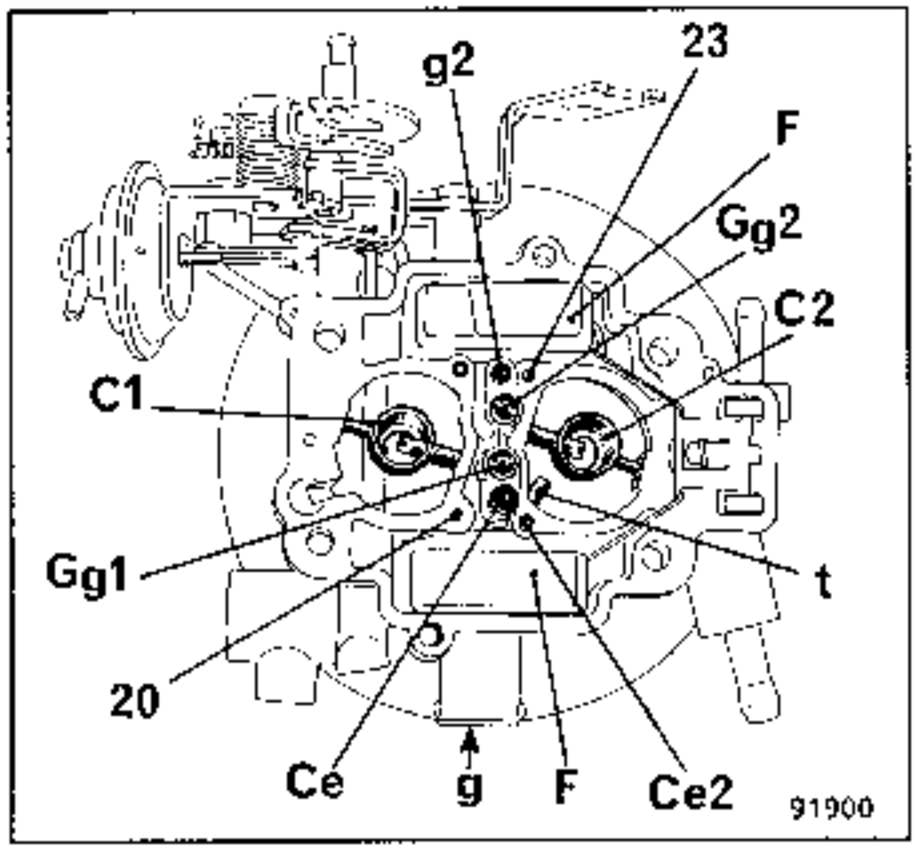


1 Fuel input
2 Return to tank (calibrated Ø 0.70mm)
3 2nd barrel opening control unit
4 Throttle control
5 Choke flap cam
6 Choke flap initial opening capsule
7 Enrichener
8 1st barrel idling circuit heating element
9 Accelerator pump
10 Choke flap initial opening accumulator

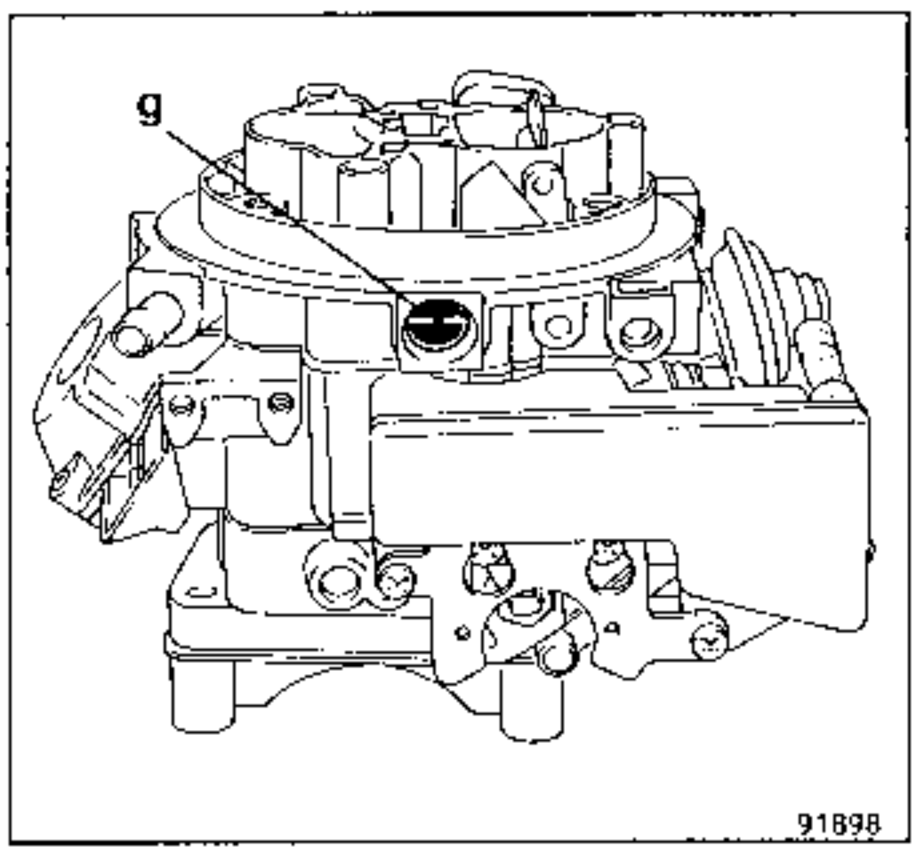
11 Choke flap



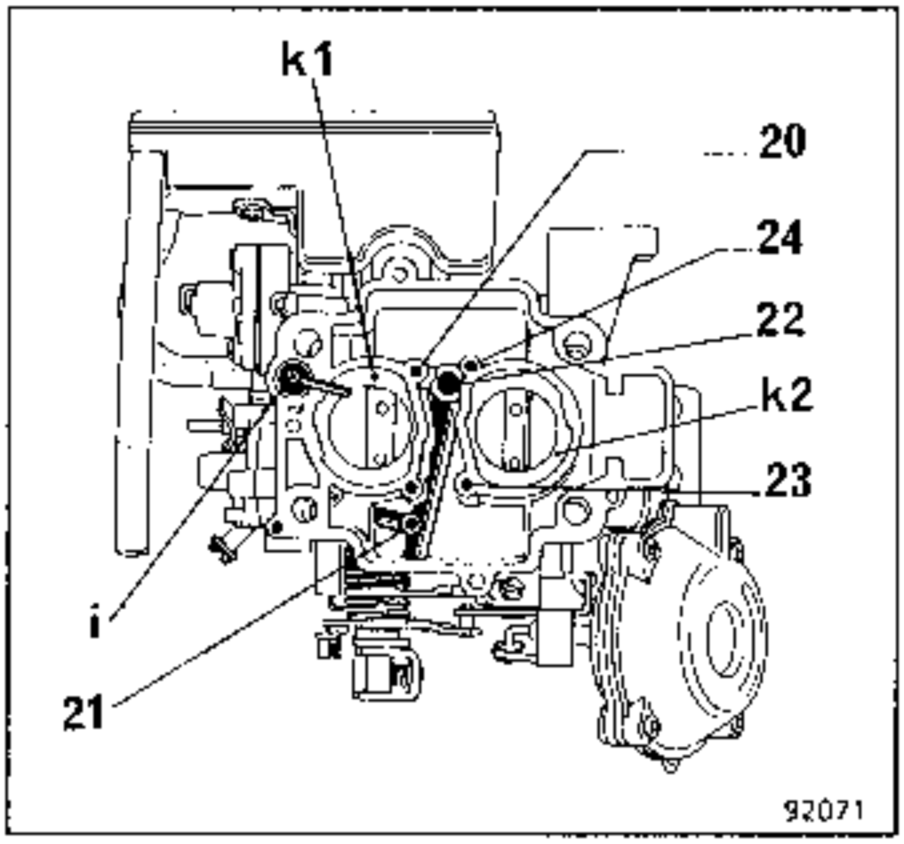
a1 1st barrel air compensator
u 1st barrel idling vent
a2 2nd barrel air compensator
u2 2nd barrel idling vent
t High speed enrichener output tube (econostat) on 2nd barrel



C 1 1st barrel auxiliary venturi
Gg1 1st barrel main jet
Ce Power enrichener jet
g 1st barrel idling jet
F Floats
20 1st barrel idling duct (to f. chamber)
C2 2nd barrel secondary venturi
Gg2 2nd barrel main jet
g2 2nd barrel idling jet
t Econostat output tube
Ce2 Econostat jet
23 2nd barrel idling duct (to f. chamber)



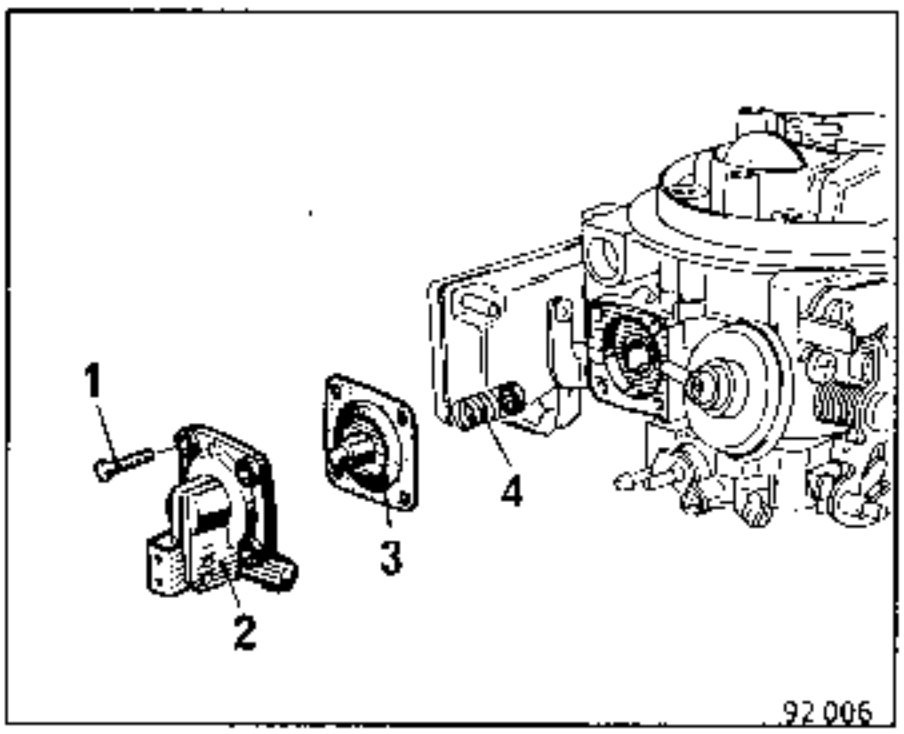
CIRCUITS AND FUNCTIONS (continued)



K1 1st barrel choke tube
K2 2nd barrel choke tube
i Pump injector
20 1st barrel idling duct (to slot)
21 Suction aperture (power enrichener)

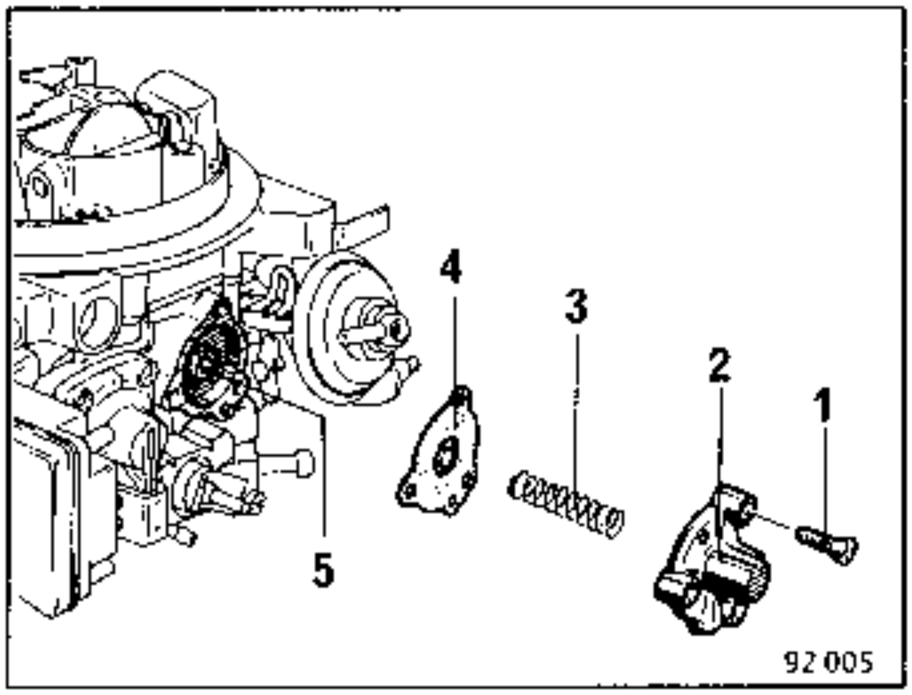
22 Power enrichener duct (to enrichener jet)
23 2nd barrel idling duct (to slot
24 Econostat suction duct (from float chamber)

THE ACCELERATOR PUMP



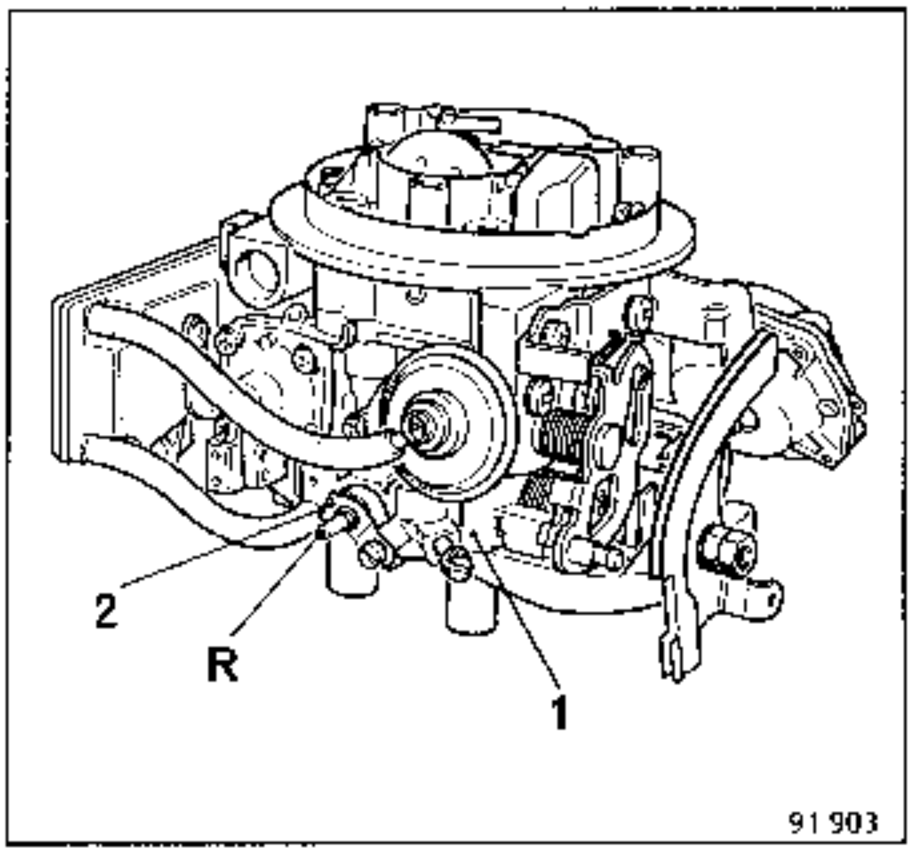
1 Securing screw
2 Pump cover
3 Diaphragm
4 Spring

Power enrichener:



1 Securing screw
2 Cover
3 Spring
4 Diaphragm (needle side towards valve)
5 Ball valve

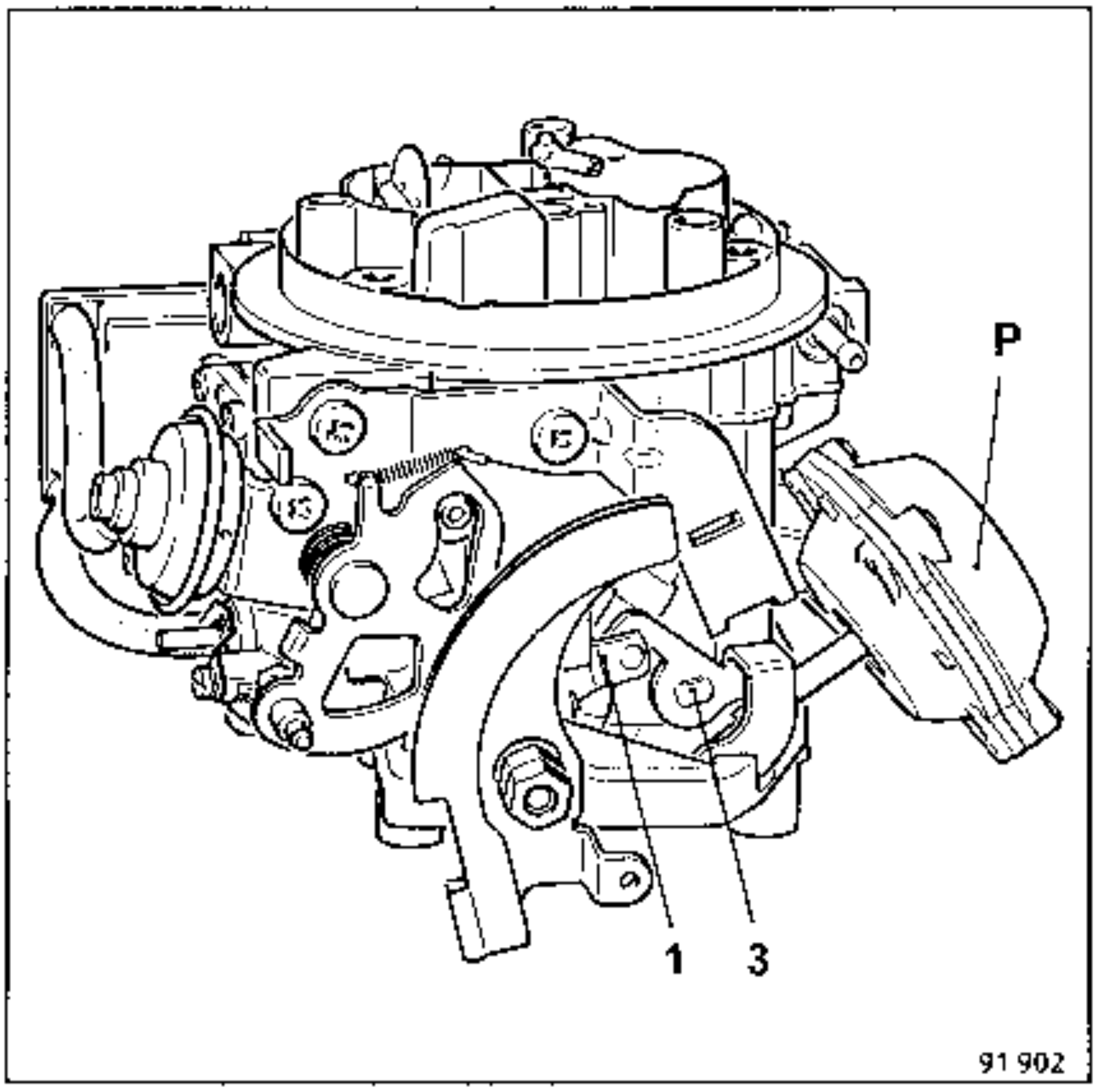
1st BARREL IDLING CIRCUIT HEATER



The idling circuit on the 1st barrel is heated by a positive temperature co-efficient (PTC) electrical element (R) mounted on the throttle body (1) and held in place by a tab (2).

NOTE: Whenever removing or refitting the element (R) or the carburettor, ensure that there is a perfect connection between the vehicle harness and the element (R): There is a risk of short circuiting. Lubri- the connection area with electronex to improve contact.

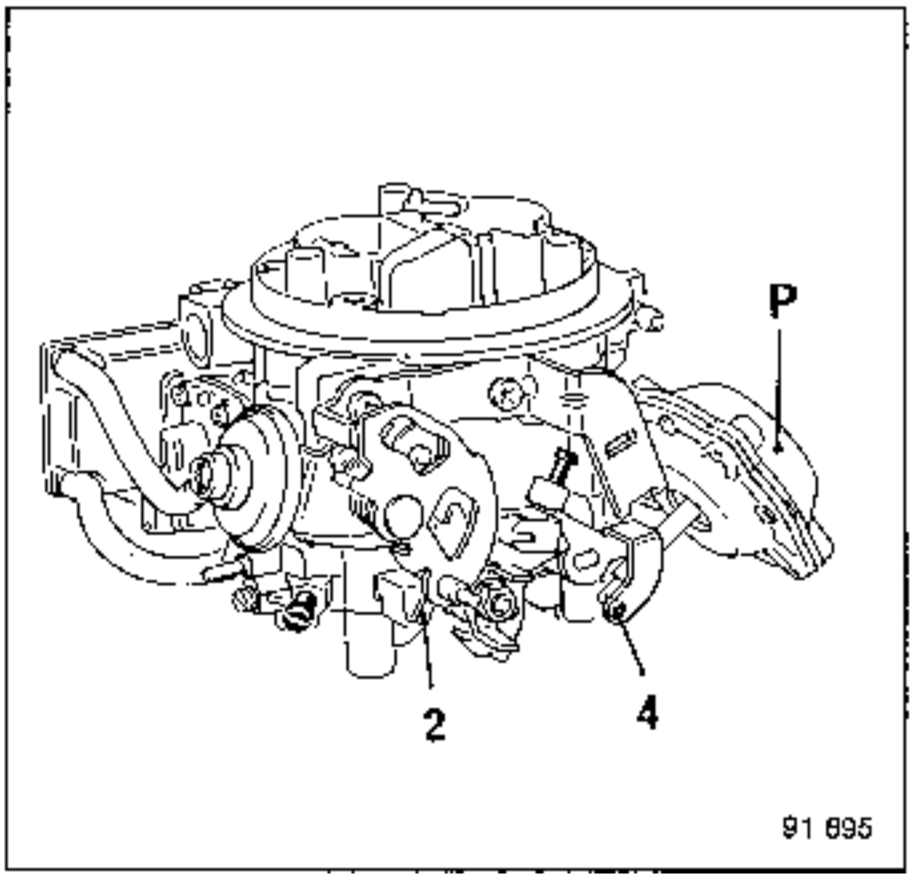
2nd BARREL PNEUMATIC CONTROL SYSTEM



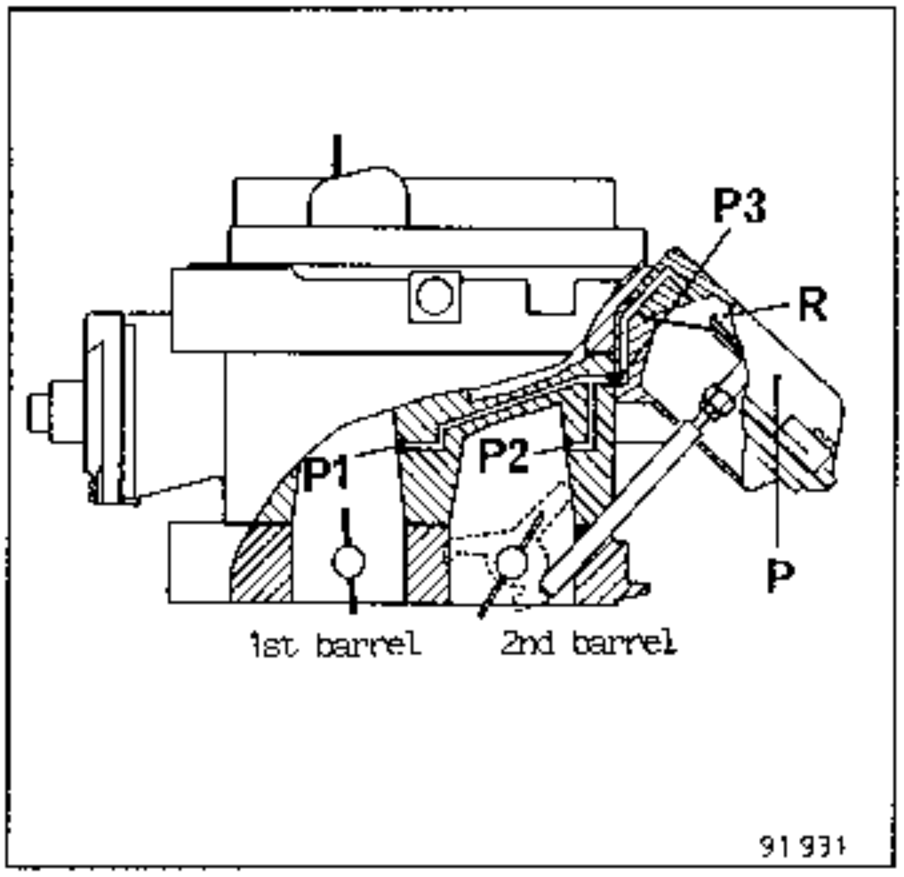
The throttle on the 2nd barrel of the WEBER 32 TLDR is opened by a pneumatic unit (P).

When the throttle on the 1st barrel has opened by a certain amount, lever (1) moved by link (2) frees lever (3) on the 2nd barrel so that its throttle can open if the vacuum is sufficiently high at the neck of the 1st barrel choke tube.

Pneumatic unit (P) moves lever (3) on the 2nd barrel through a crimped nylon eye (4).



2nd BARREL PNEUMATIC CONTROL SYSTEM (continued)



Principle of Operation

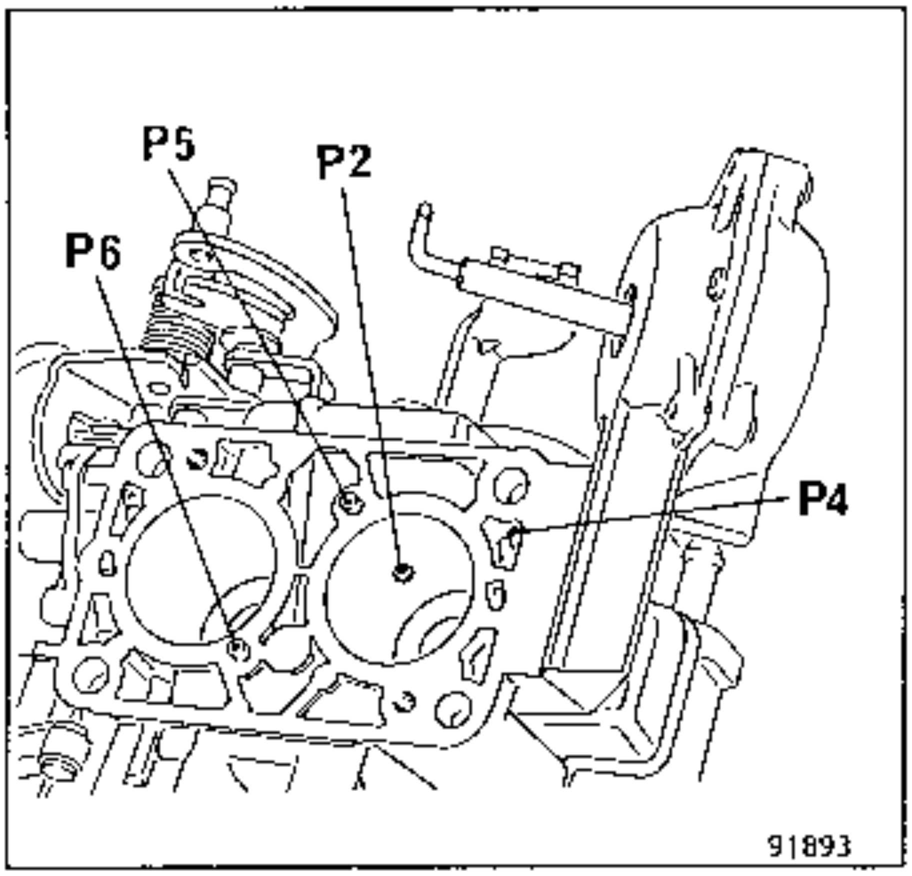
When the 1st barrel throttle has opened by a certain amount, the vacuum in the neck of the choke tube (P1) is strong enough to overcome spring (R) in the control unit (P) and the leak passage (P2).

Control unit (P) opens the 2nd barrel throttle, the vacuum at the neck of choke tube (2) balances out with that at the neck of the 1st barrel (P1) and helps open the 2nd barrel throttle.

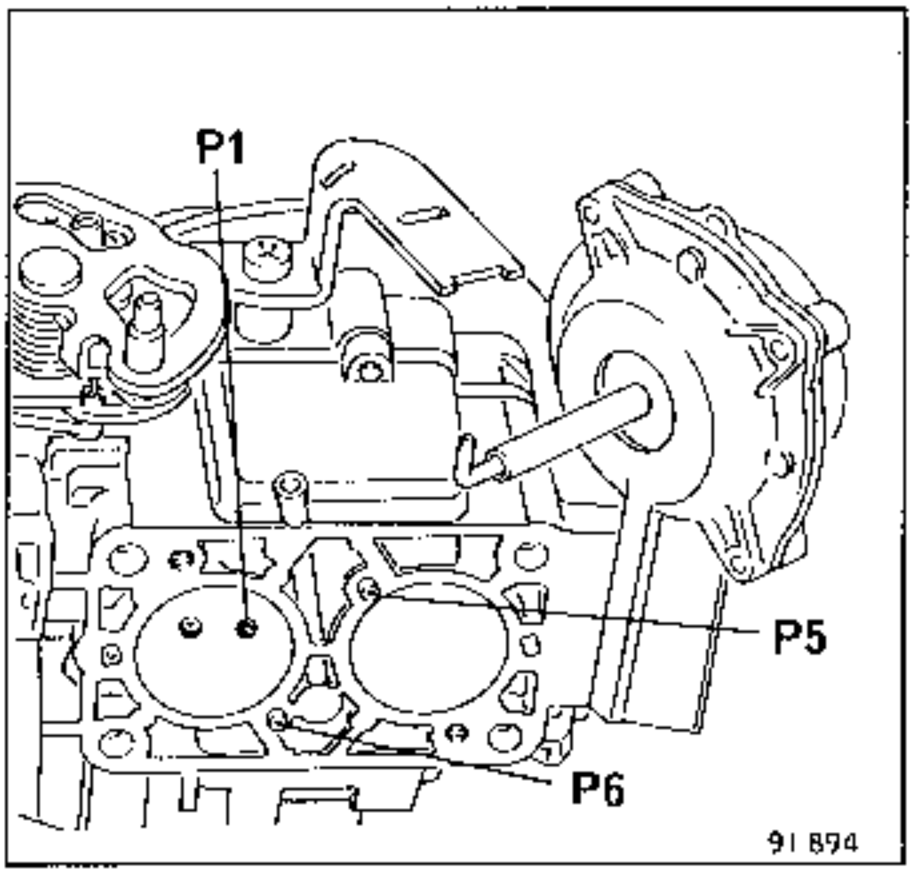
When the 1st barrel throttle closes again, the vacuum in (P2) is no longer strong enough to overcome the spring (R) in the control unit and the leak effect (P1). The 2nd barrel throttle closes.

As long as the effect of the spring (R) and the leak (P2) are greater than the vacuum at (P1) the throttle on the 2nd barrel cannot open.

There is also a mechanical locking ramp that closes the throttle when the foot is lifted from the accelerator.



P2 : Control unit take-off on 2nd barrel.



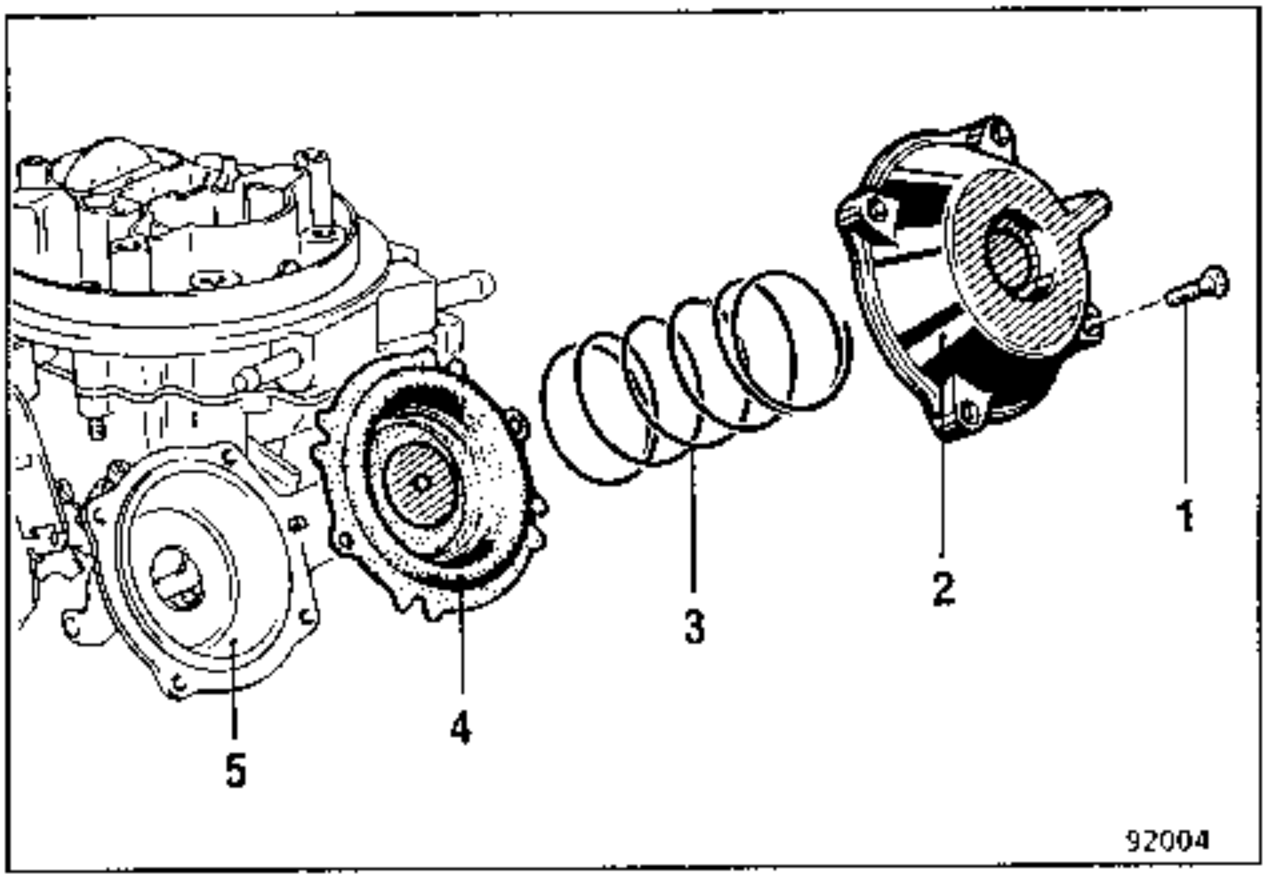
P1 : Control unit take-off on 1st barrel

Take-off points P1 and P2 communicate, through hole P4 with a hollow duct around the 2nd barrel at the upper part of the throtte body and take-offs P5 and P6.

Consequently, the seal between the float chamber and the throttle body must be absolutely perfect.

2nd BARREL PNEUMATIC CONTROL SYSTEM (continued)

Pneumatic control unit component parts



1 Securing screw
2 Cover
3 Spring
4 Control diaphragm and rod (not shown on drawing)
5 Body

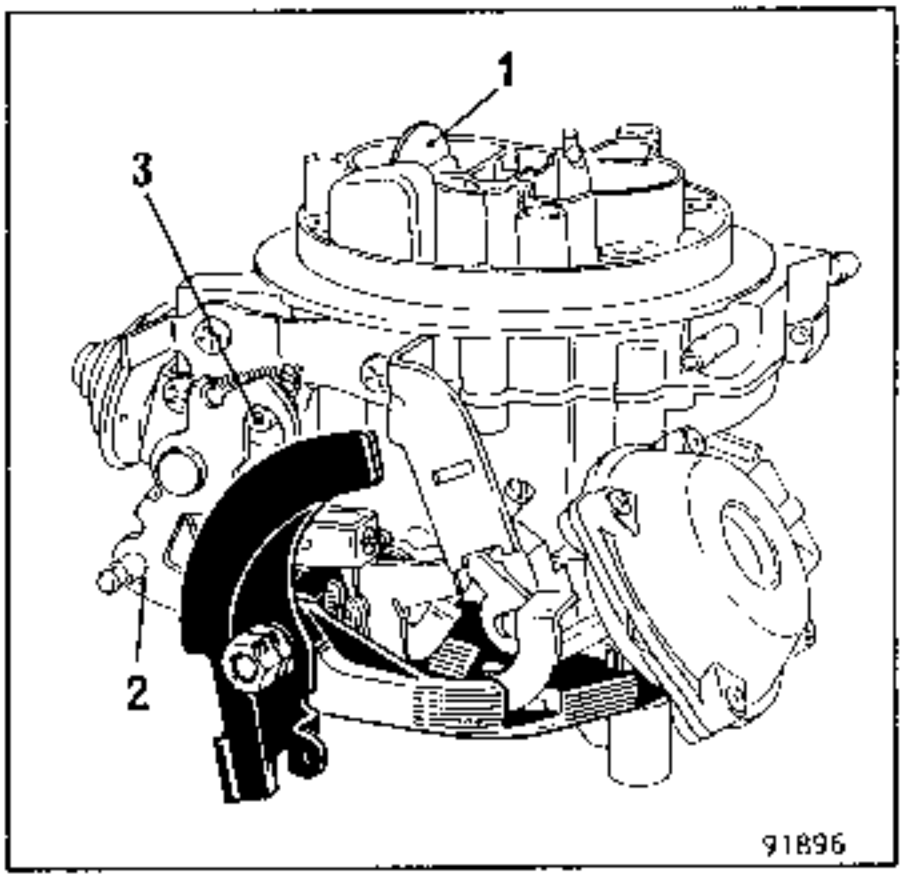
Checking the system

One can check that the 2nd barrel is operating correctly when the engine is running:

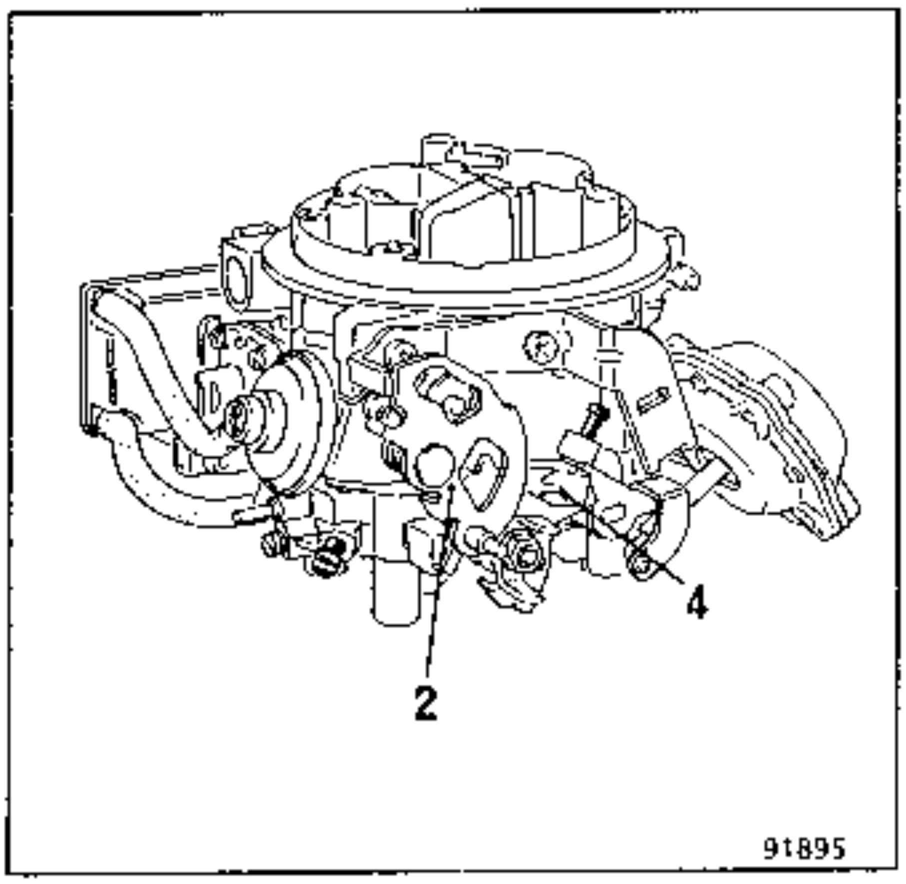
- At idling speed by accelerating, sharply, for a few seconds. As the engine speed rises one should see the 2nd barrel throttle open briefly.

THE CHOKE SYSTEM

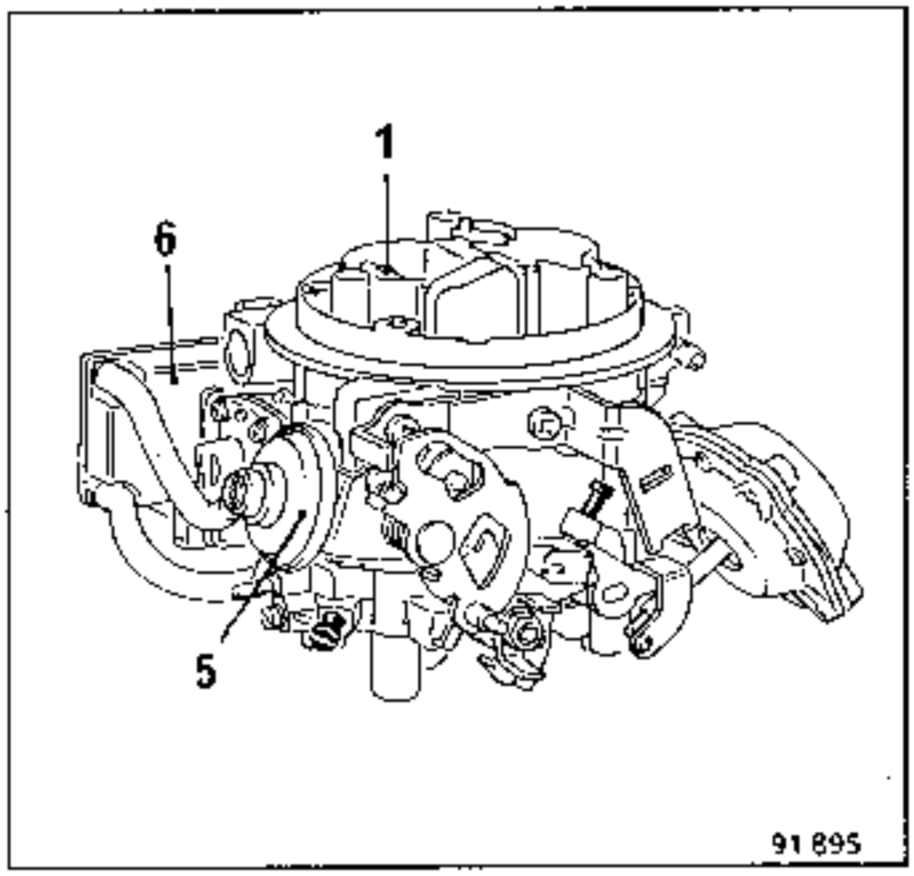
The mixture is made richer by the closing of an eccentric flap (1) operated by cam (2) and a rocker (3) connected to the flap by a lever.



Cam (2) also partially opens the throttle through lever (4).



The fast idling that results from the partial opening of the throttle warms up the engine more quickly and permits the vehicle to be used, immediately.

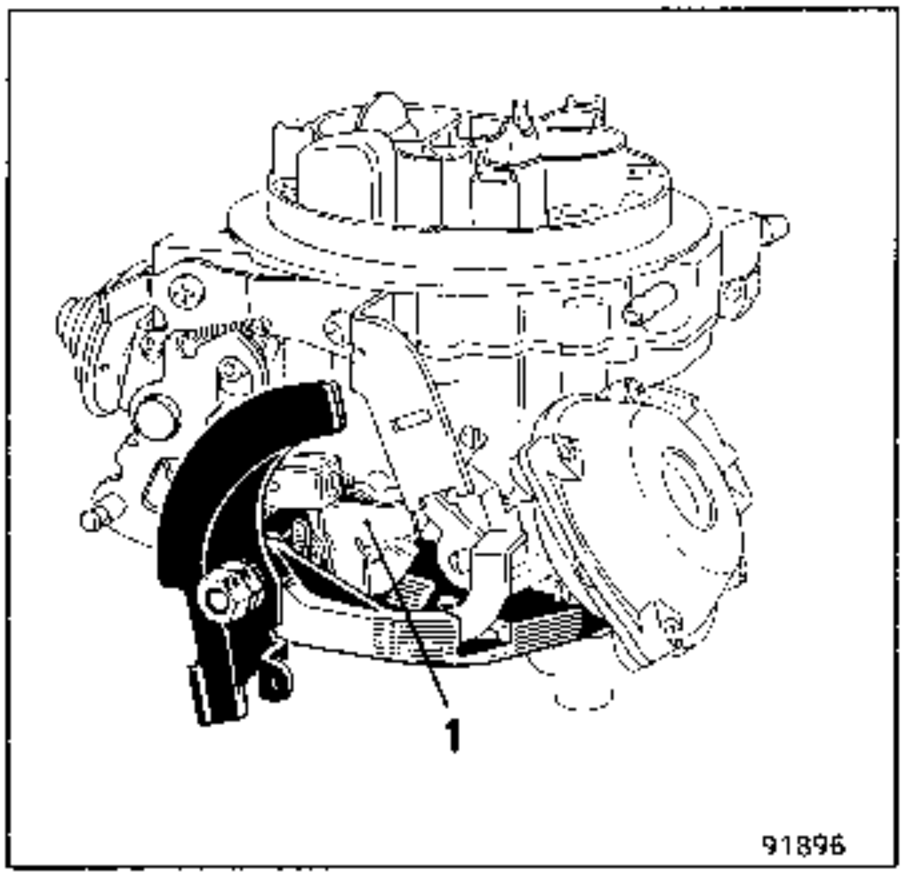


After the engine starts, and its speed is accelerating, the pneumatic capsule (5) controlled by the vacuum in the inlet manifold partially opens the choke flap (1) to prevent the engine flooding.
An accumulator (6) connected in series into the vacuum capsule (5) vacuum circuit prevents the capsule opening the flap too quickly and thus prevents the engine stalling.

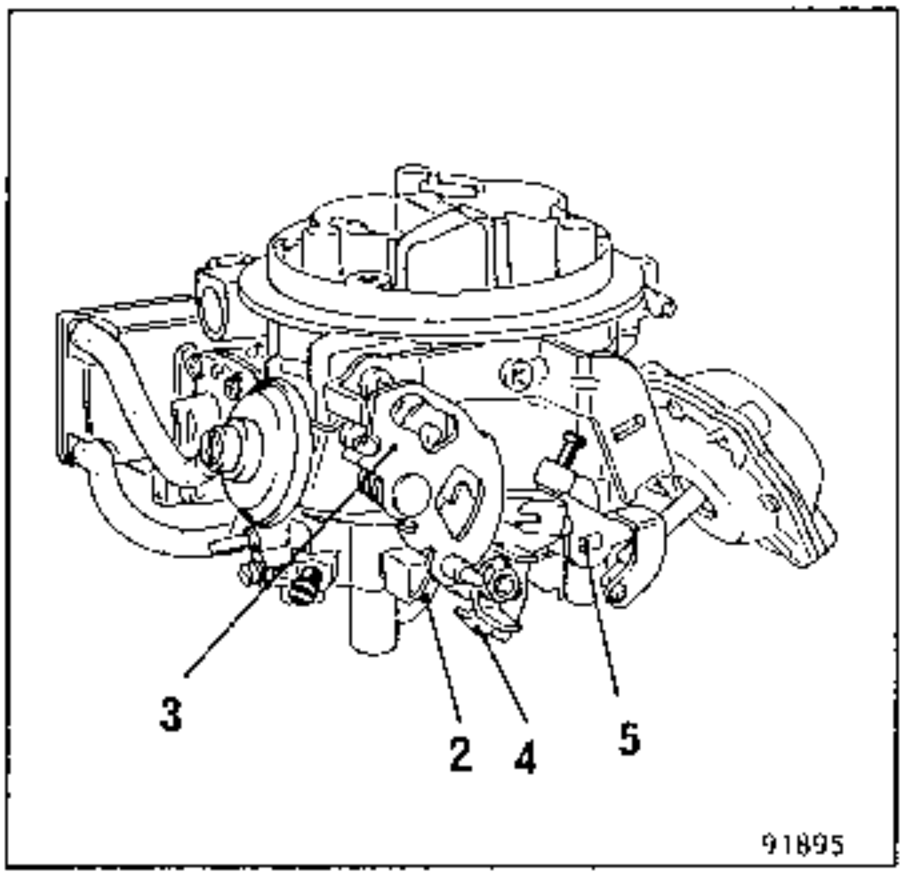
THE CHOKE SYSTEM (continued)

The 2nd barrel locking system

When the choke is fully engaged and up to a certain point on the choke knob travel, a lever system prevents the throttle opening on the 2nd barrel.



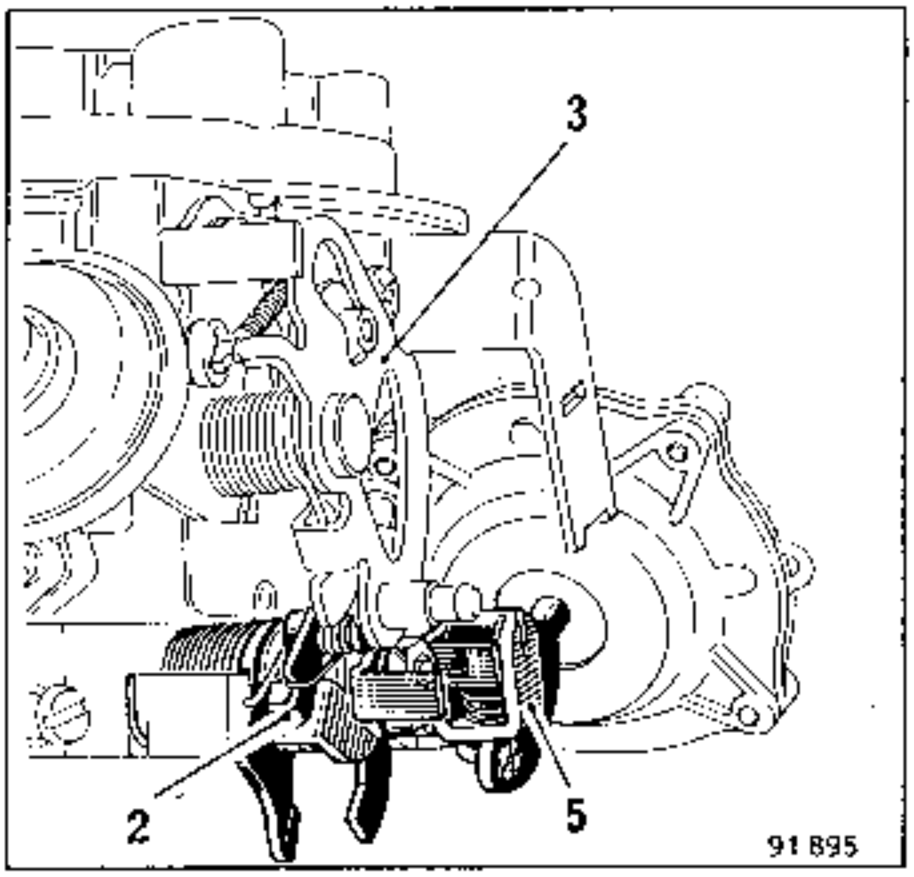
1 2nd barrel throttle lever



2 Rocker

The 1st and 2nd barrel control systems are connected to a rocker (2) which is secured to the 2nd barrel throttle lever (1), the position of which depends on the position of the choke knob.

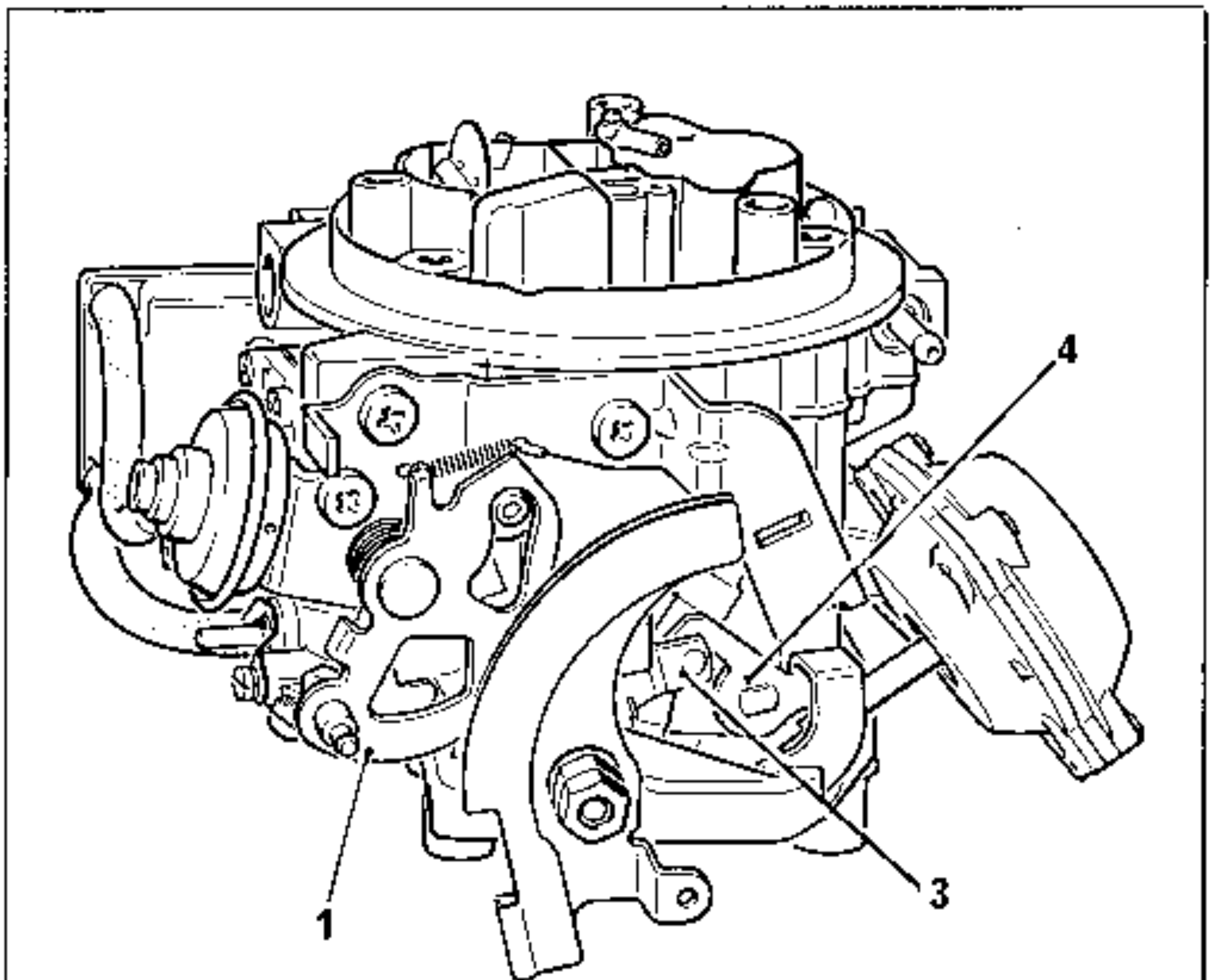
When the choke is operating, the flap cam (3) holds the rocker (2) in such a position that it cannot be moved by the 1st barrel lever (4) and the throttle on the 2nd barrel (5) cannot open.



Choke position: The throttle on the 2nd barrel cannot open.

THE CHOKE SYSTEM (continued)

Releasing the lock on the 2nd barrel



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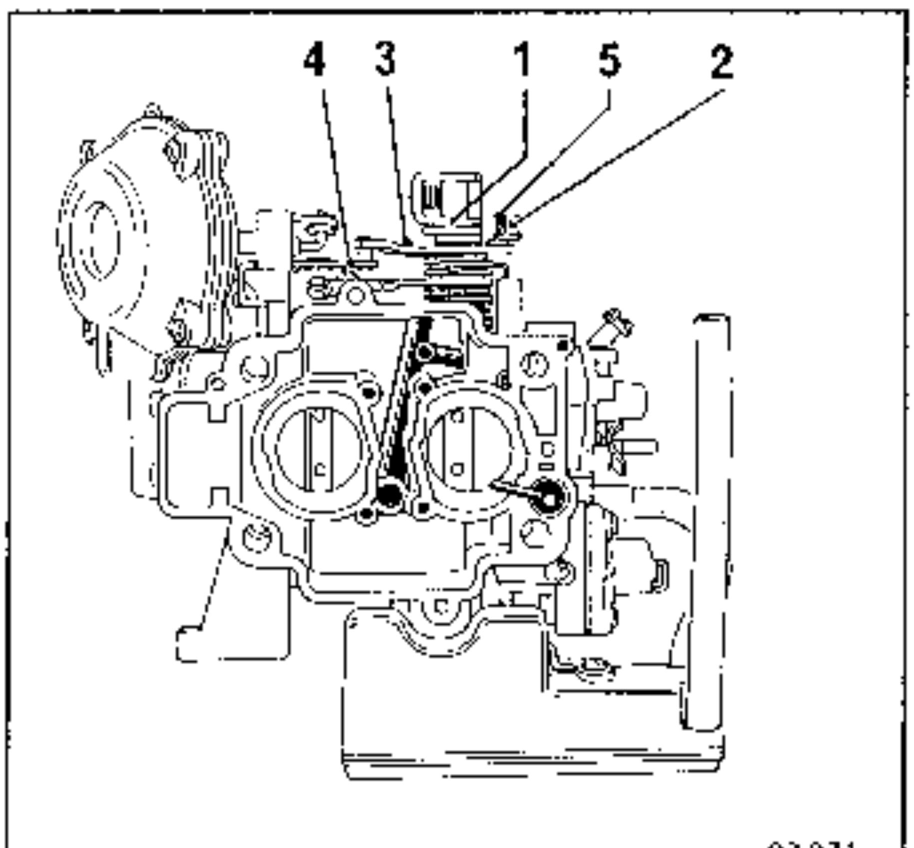
When the choke knob has been pushed in by a certain amount, cam (1) no longer acts on rocker (2) which, pulled across by spring (5) is secured to lever (3) and permits the lever on the 2nd barrel (4) to be operated by the rocker assembly (2) and (1) and lever (4). The 2nd barrel throttle can then be opened (if the pneumatic control unit is open).



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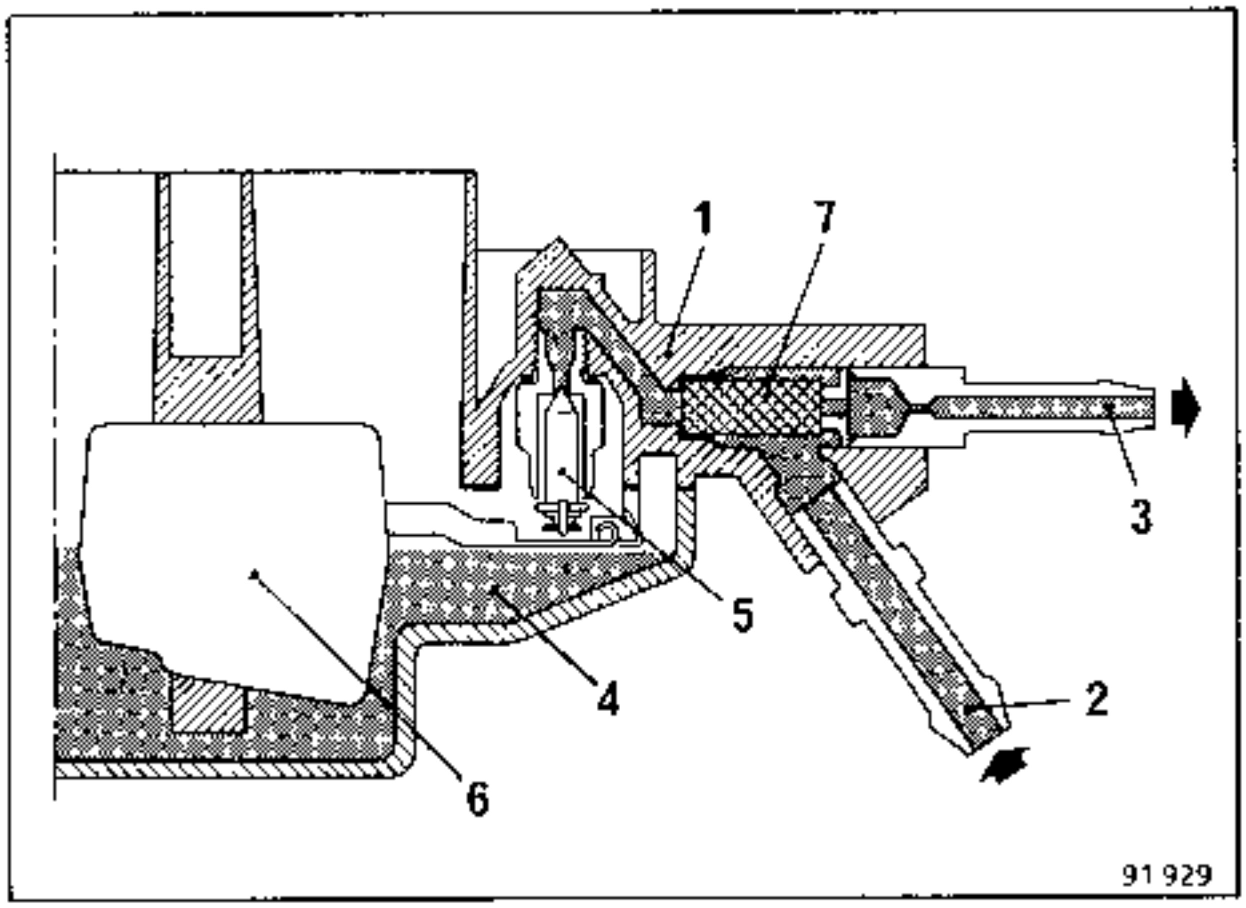
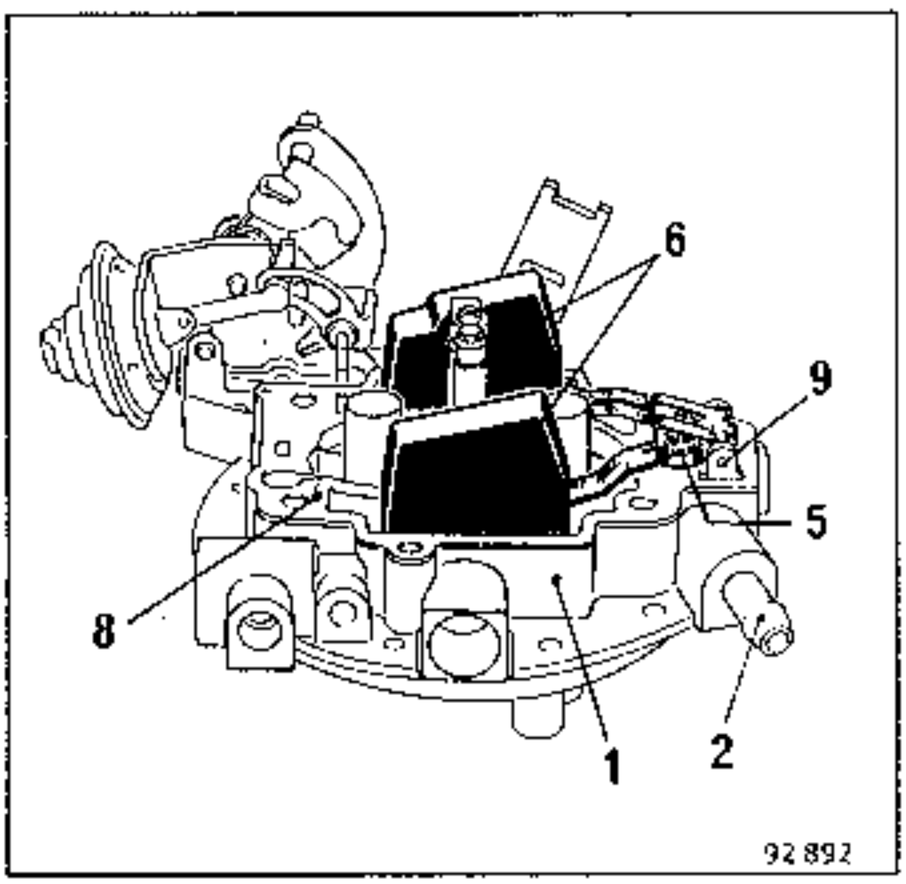
THE FLOAT CHAMBER



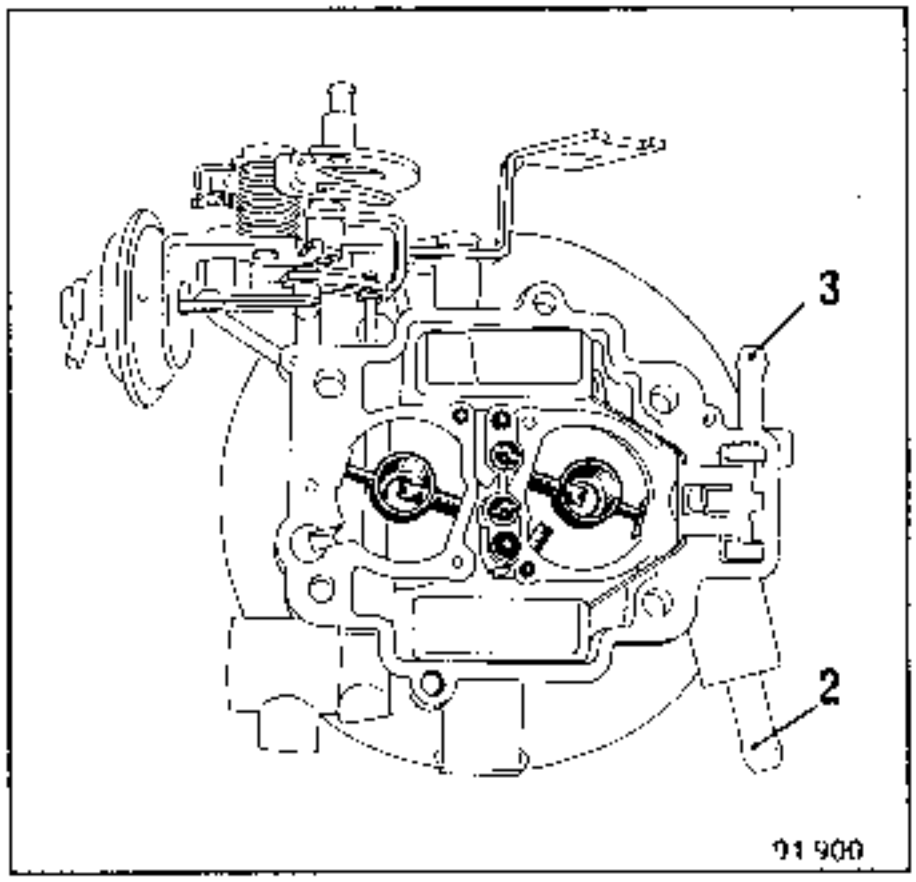
The float chamber cover(1) carries the fuel input (2) and return to tank (3) systems and ensures that the level in the float chamber (4) is constant by means of a needle valve (5) secured to two floats (6).

The return to tank (3) is calibrated.

Filter (7) cannot be removed.



To replace the float chamber gasket (8) one must remove the floats(6) after taking out pin (9).



The fuel input (2) and return (3) diameters are different:

- large diameter : fuel input (2)
- small diameter : return to tank (3)

FAULT FINDING AND DECIDING ON THE EXTENT OF THE WORK TO BE CARRIED OUT

Only by removing the carburettor and working on it, on the bench, can one inspect it thoroughly and carry out a complete overhaul.

However, if one is not certain that the carburettor is actually structurally defective (air leaking at the joint between it and the manifold, throttle, choke or accelerator pump sticking out or stiff) it is first to be inspected on the engine.

The general cleanliness of the carburettor and absence of excessive wear on the levers, cams, links and pins will already be a good sign.

A second indication of its condition will be the reaction of the engine to the idling speed adjusting operations:

- One should be able to reduce the engine speed appreciably below that recommended by the manufacturer by tightening the adjusting screw (when the idling speed is adjusted by the air screw) or by loosening it (when the idling speed is adjusted by the throttle stop screw.
- By tightening the mixture screw one should be able to induce the symptoms of a lean mixture (the engine will run unevenly) and will cause the C.O. % to fall.
- By loosening the mixture screw, one should be able to produce symptoms of an over rich mixture (the engine will race) and cause the C.O. % to increase.

If the results of one or other of these tests are negative the carburettor will have to be removed for rectification on the bench.

LIMITS TO THE AMOUNT OF WORK WHICH CAN BE CARRIED OUT ON THE ENGINE

Under the best circumstances, it will be possible to remove the float chamber cover and in this case one can then :

- Remove all jets thus made accessible and check that they are of the correct size for the application in question.
- Blow out any dirt from the float chamber and certain of the ducts with compressed air.
- Check the needle valve and the float assembly. It is, however, to be noted that one cannot carry out an absolute leak test on a needle valve. Normally the tooling required to measure the "specified leak" (the amount of leakage during a given period) is not available. The float dimensions and, when the float is secured to the float chamber cover, the float - needle valve assembly dimensions, can easily be checked with the gauges that cover a wide range of applications.
- Replacing any seals and gaskets removed and certain parts that are supplied as kits for example : the float chamber gasket and needle valve seal (see spare parts catalogue).

REPAIR WORK CARRIED OUT ON THE BENCH

DISMANTLING - INSPECTION

Bench work starts by fully dismantling the unit so that the parts to be replaced can be separated from those to be removed.

One cannot establish an exact relationship between the vehicle mileage and whether or not all or part of the carburettor will have to be replaced. The wear on this unit will always be a function of the stress to which it is subjected and the way in which the vehicle has been used: the proportion of long distance and town driving as part of the overall mileage, the number of times it starts and stops and the length of time it is driven and, consequently, the frequency of the warm-up and cooling periods etc.

Deciding on what requires doing therefore depends on a very close inspection of each component and a knowledge of the part it may have played in any operating defects noted.

The body: there should be no distortion preventing it from bedding down correctly on the inlet manifold gasket or preventing the throttle from closing and fitting exactly into its bore (check the idling speed)(fig. 4).

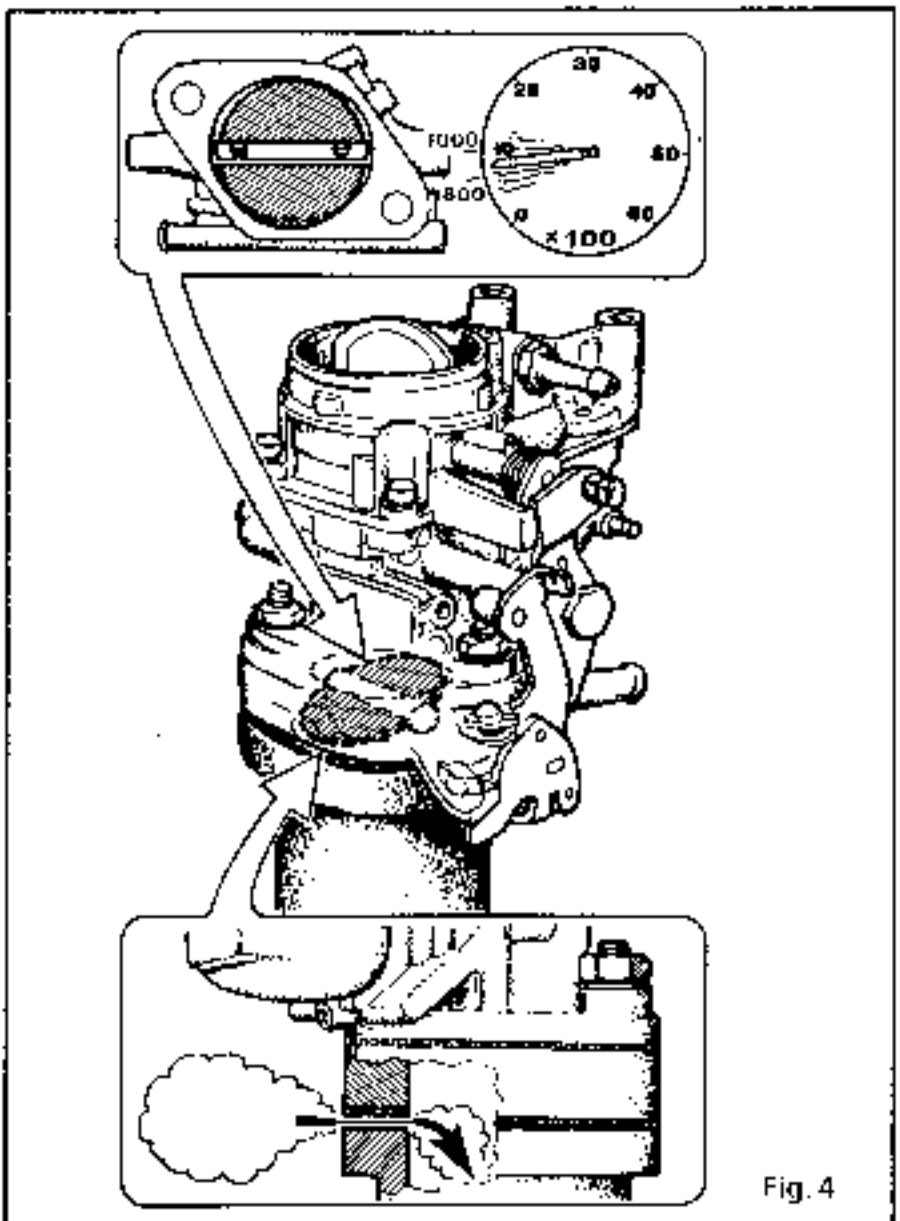


Fig. 4

When the throttle is closed, it should be central so that there is play between the lever secured tot he throttle shaft and the corresponding end of the shaft bearing (Fig. 5). If there is not clearance at one or both ends the throttle may stick or be stiff at some point in its movement.

Too much clearance between the throttle shaft and its bearings (Fig. 6) will cause the idling speed to be unstable and also be responsible for snatching during progressive transfer. It prevents the throttle from being accurately adjusted.

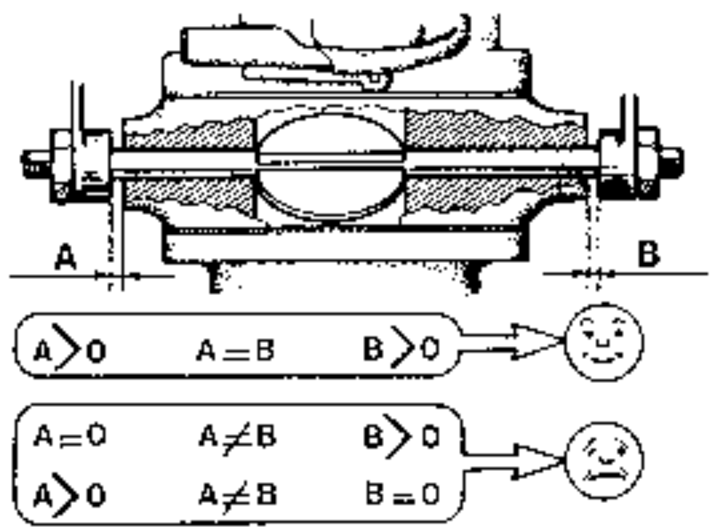


Fig. 5

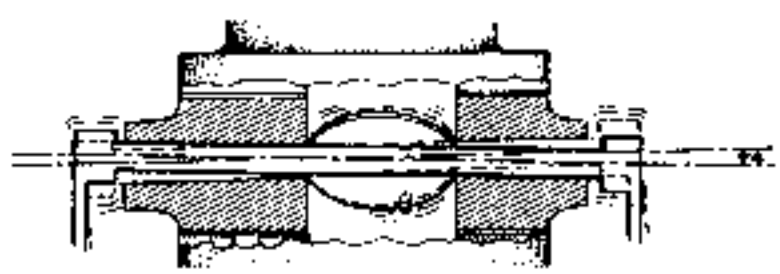


Fig. 6

REPAIR WORK CARRIED OUT ON THE BENCH

The float chamber cover: distortion at the air intake may cause the choke flap to stick or be stiff at some point in its movement. Excessive play between the choke flap shaft and its bearings will make it impossible to adjust, accurately, the cold starting position and may also cause an overhang to develop and a risk of the choke sticking.

The face on which the cover locates on the float chamber must be flat to avoid leakage.

Removable jets: never insert tools or plugs into these as you could alter their delivery. This is identified by the number engraved on the jet and it is this number that will appear, under the appropriate symbol, in the specification charts. Inspect them for tool damage in the screwdriver slots.

CLEANING - REASSEMBLY

Before reassembling the carburettor, the parts to be refitted are to be cleaned. Products are available that dissolve the deposits that form on the walls and in the ducts of a carburettor without attacking the casting alloys. One must first, however, remove all the jets to provide a free flow through the ducts and remove all the seals and diaphragms that could be damaged.

Complete the operation by thoroughly rinsing the component and blowing it out with compressed air.

> Warning: before cleaning, remove any parts such as the automatic transmission load potentiometer, wiring or sealed connectors that could be damaged by the cleaning fluid

When reassembling we recommend the following general precautions:

- Refit the removable jets before commencing general assembly.
- Ensure that the gaskets between the body and the float chamber and between the float chamber and its cover are the right way round so as not to block certain ducts.
- Before fitting the cover to the float chamber, check the constant level assembly.
- When fitting the cover to the float chamber or the body to the float chamber, ensure that the levers that rest on the cams or which have studs on them that enter forks or slots (the choke controls in particular) are correctly fitted. When applicable, connect up the links and check that the controls operate without any sitffness or sticking.

PRE-ADJUSTMENTS

The idling speed screw:

a) Limited CO idling systems
Unscrew the throttle stop screw until the throttle is closed then screw it in by one to two turns.

b) Constant Co idling system
Screw the air screw fully in without forcing it then unscrew it by approximately three turns.

The mixture screw

Since the introduction of emission control carburettors, mixture screws have a fine pitch of 0.50 mm.
CLose the mixture screw then unscrew it by 4 to 5 turns.

FUEL LEVEL

Definition

The fuel level, in the float chamber, is defined as the height of the fuel reached under a given input pressure.

To carry out this check, a level control instrument is required, which is connected to the lower part of the float chamber (at a jet input plug for example).

If this method cannot be used, needle valve fitting dimensions are used instead, as they correspond to the fuel level, in particular when the float is of the non-distorting type or the needle valve - float form a single assembly.

Method of adjustment

Hold the float chamber cover vertically so that the weight of the float closes the needle valve (1) without forcing the ball (2) inside the needle valve.

Check dimension (A) between the float chamber cover gasket and the float.

Then check dimension (B) which is the float travel.

Dimension A

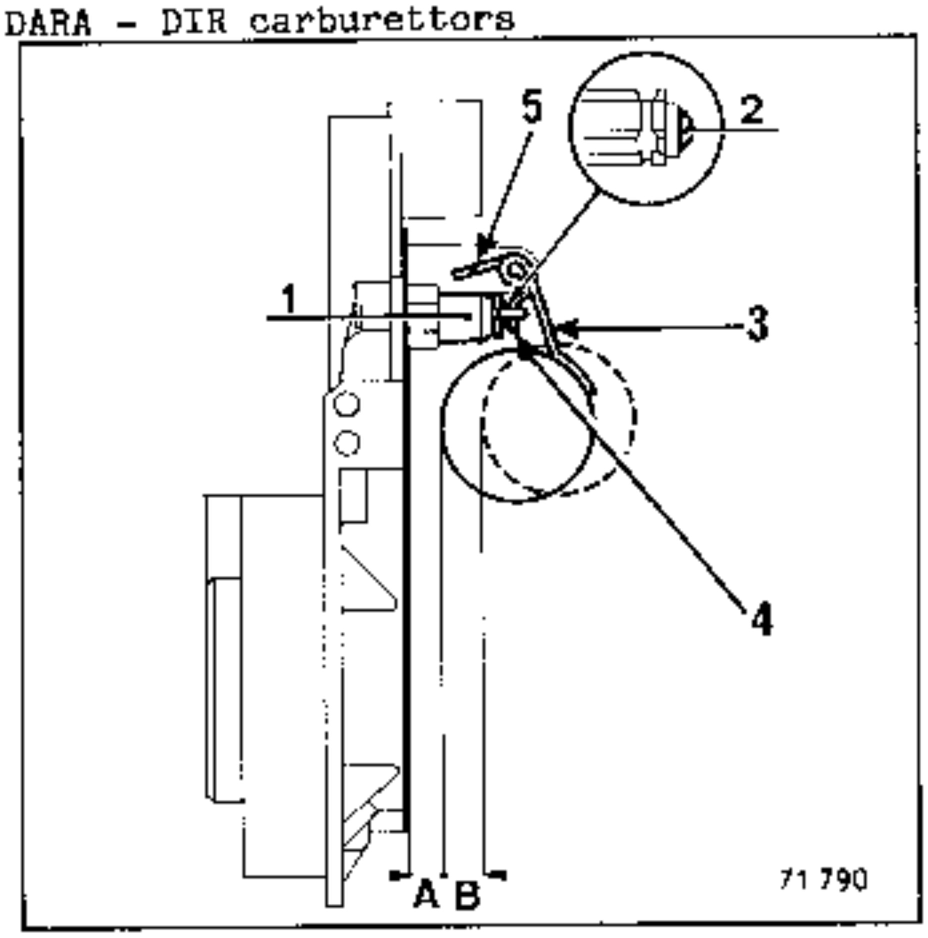
To adjust this dimension, bend tab (3) whilst ensuring that tab (4) is perpendicular to the needle valve centre line.

Dimension B

To adjust this dimension, bend tab (5).

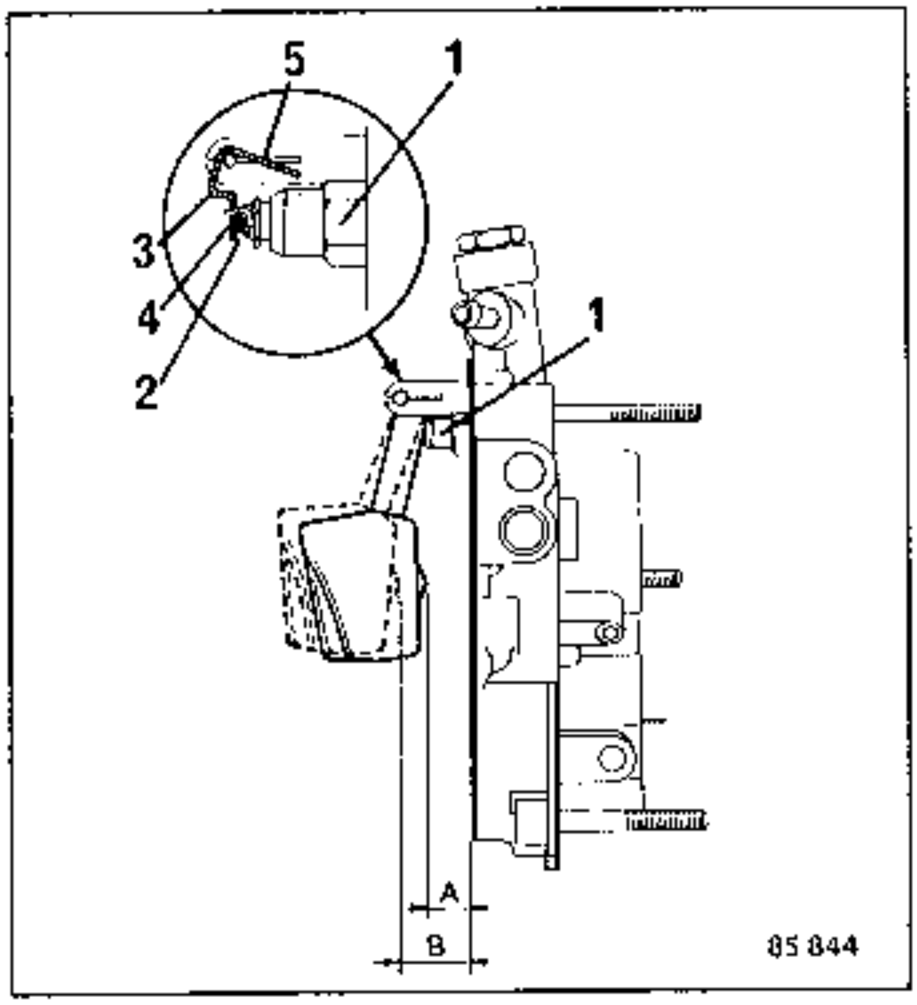
WARNING: on DIR and DARA carburettors, dimension B is always to be added to dimension A to determine the maximum float travel.

DARA - DIR carburettors



EXAMPLE: 28 - 36 DARA 0
Float level = 7 mm (dimension A)
Float travel = 8 mm (dimension B)

DRT - DRTA - DRTM carburettors



Example: DRT suffix 100
Float level = 7 mm (dimension A)
Float travel = 13 mm (dimension B)

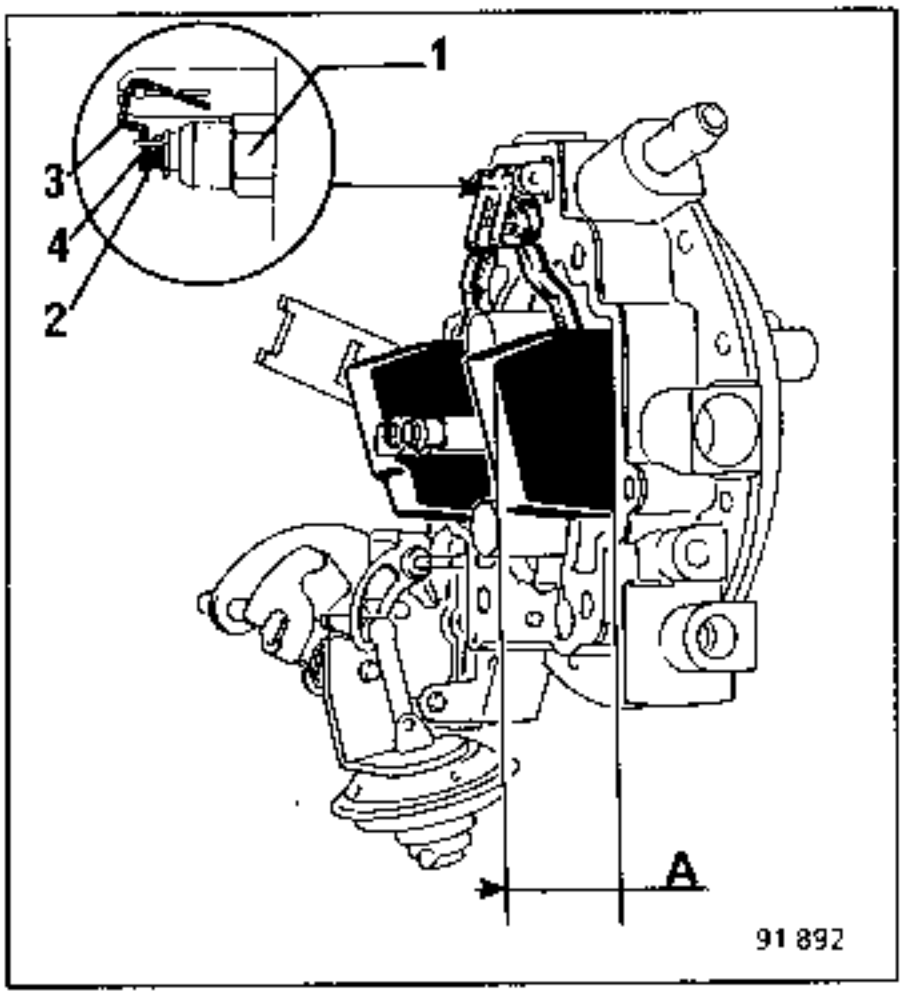
TLDR CARBURETTOR

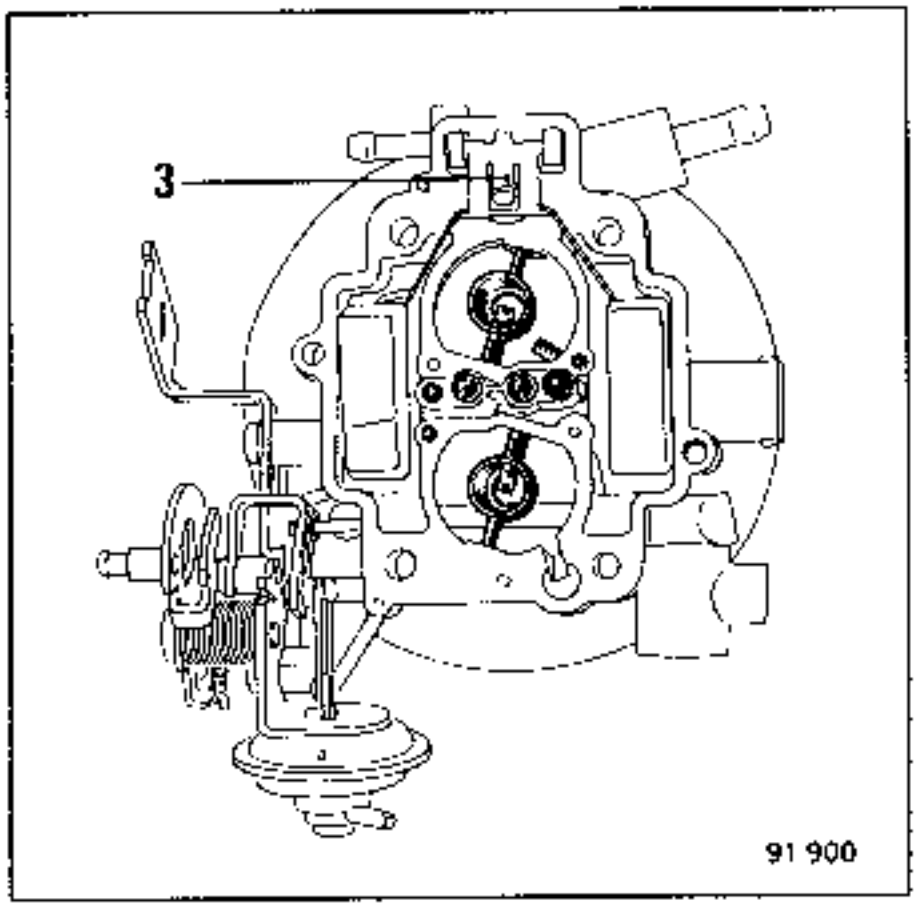
Fuel level

The fuel level height is adjusted by bending the tab. The needle valve is fitted with a spring and a ball which damps any oscillation.

Adjustment

Hold the float chamber cover vertically so that the weight of the float closes the needle valve (1) without forcing the ball (2) inside the needle valve.
Check dimension (A) between the float chamber cover and the floats (top of each float).

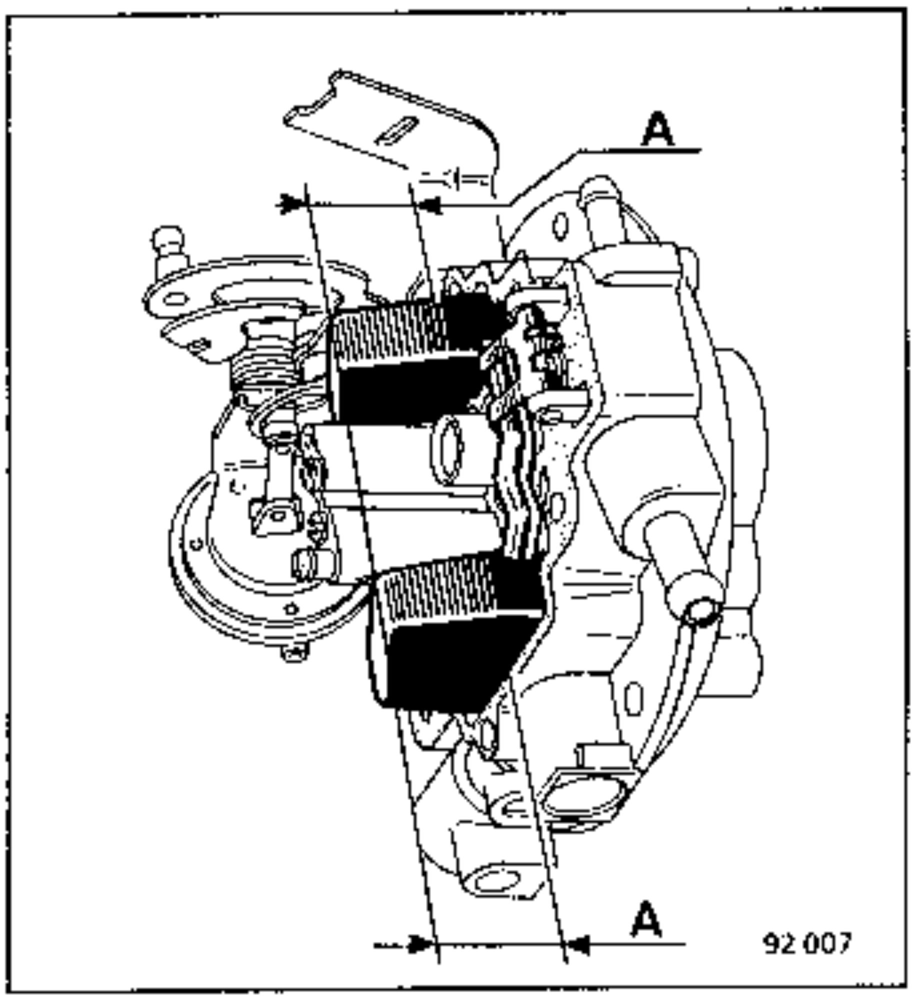




Dimension A

To adjust this dimension, bend tab (3) whilst ensuring that tab (4) is perpendicular to the needle valve centre line.

Dimension A = 31 mm



THE THROTTLE ANGLE

One of two instruments may be used :

A - Instrument Mot. 522 which takes the reading in millimeters.
B - The SOLEX instrument which takes the reading in degrees.

A - Measuring method using instrument Mot. 522

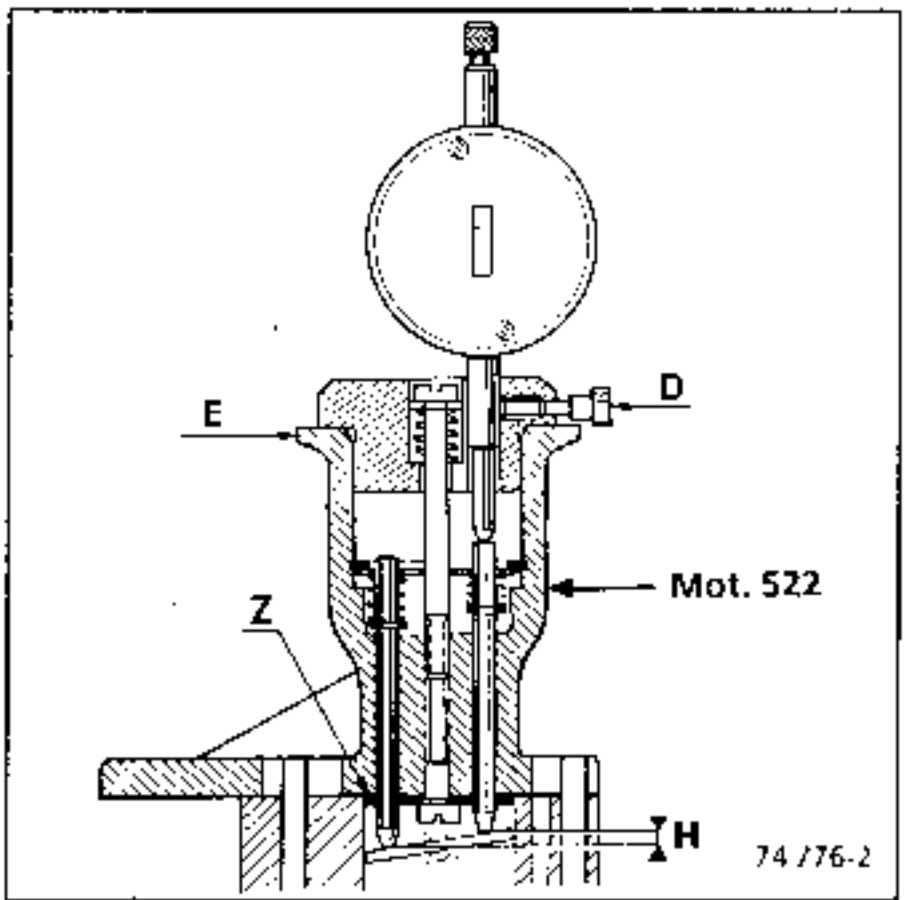
Remove the heating flange.

Disconnect the fast idling link (L).

Secure the dial indicator support in place whilst checking that washer (Z) correctly enters the first barrel of the carburettor.

Place the dial indicator on the throttle lowest point (the clamping screw (D) is on the same side as the stud (E)).

Zero the dial indicator.

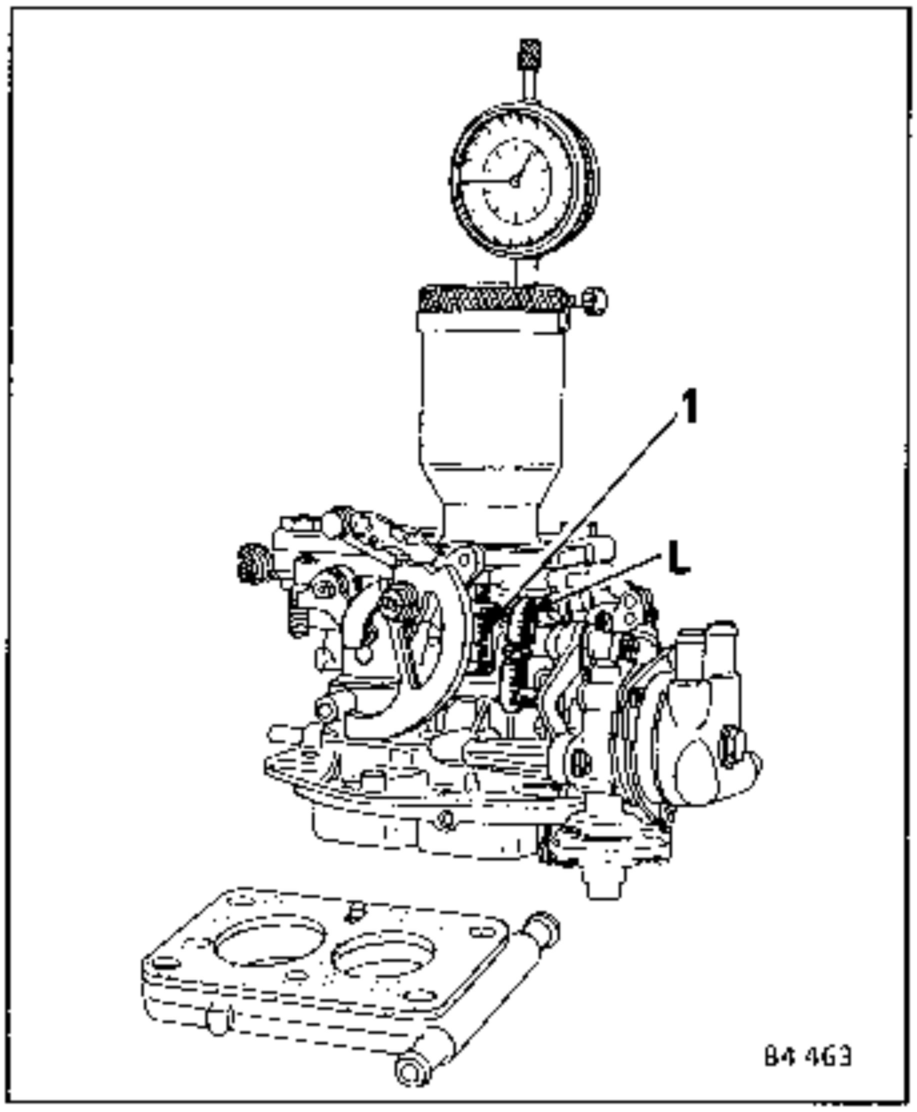


Turn the knurled component through 180° whilst lifting the dial indicator plunger to bring it to the highest point on the throttle (screw D on the opposite side to stud (E) as shown in he previous illustration).

Read dimension (H) between the lowest point and the highest point on the throttle.

If this is not correct, adjust it to half the difference between the dimension measured and the adjustment figure by turning screw (1).

Carry out a complete re-check to ensure that the adjustment is correct.



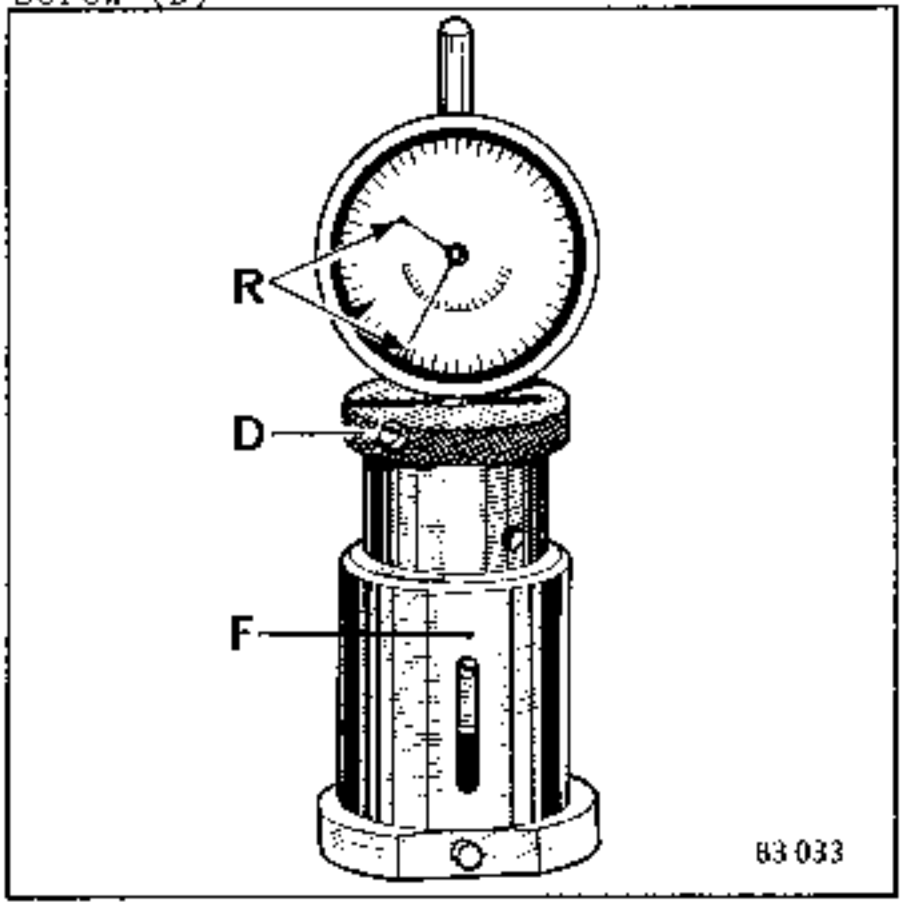
B - Method using the SOLEX measuring measuring instrument

This instrument, which has been designed to measure, directly, the throttle angle, has two pads, one fixed and the other moving. The moving pad is connected to a dial graduated in degrees and minutes. A sliding ring that rests on the carburettor flange keeps the instrument perpendicular.

CALIBRATING

Place the instrument on a surface plate with the ring (F) against the plate. As the two pads will be in a horizontal plane, check that the two pointers are aligned, respectively, with the triangular red and black position marks on the dial (R).

If they are not in line with these position marks, loosen screw (D), align the pointers with the position marks by moving the dial indicator and then tighten screw (D)



CHECKING THE CARBURETTOR

Remove the heating flange.

Disconnect the fast idling link (L).

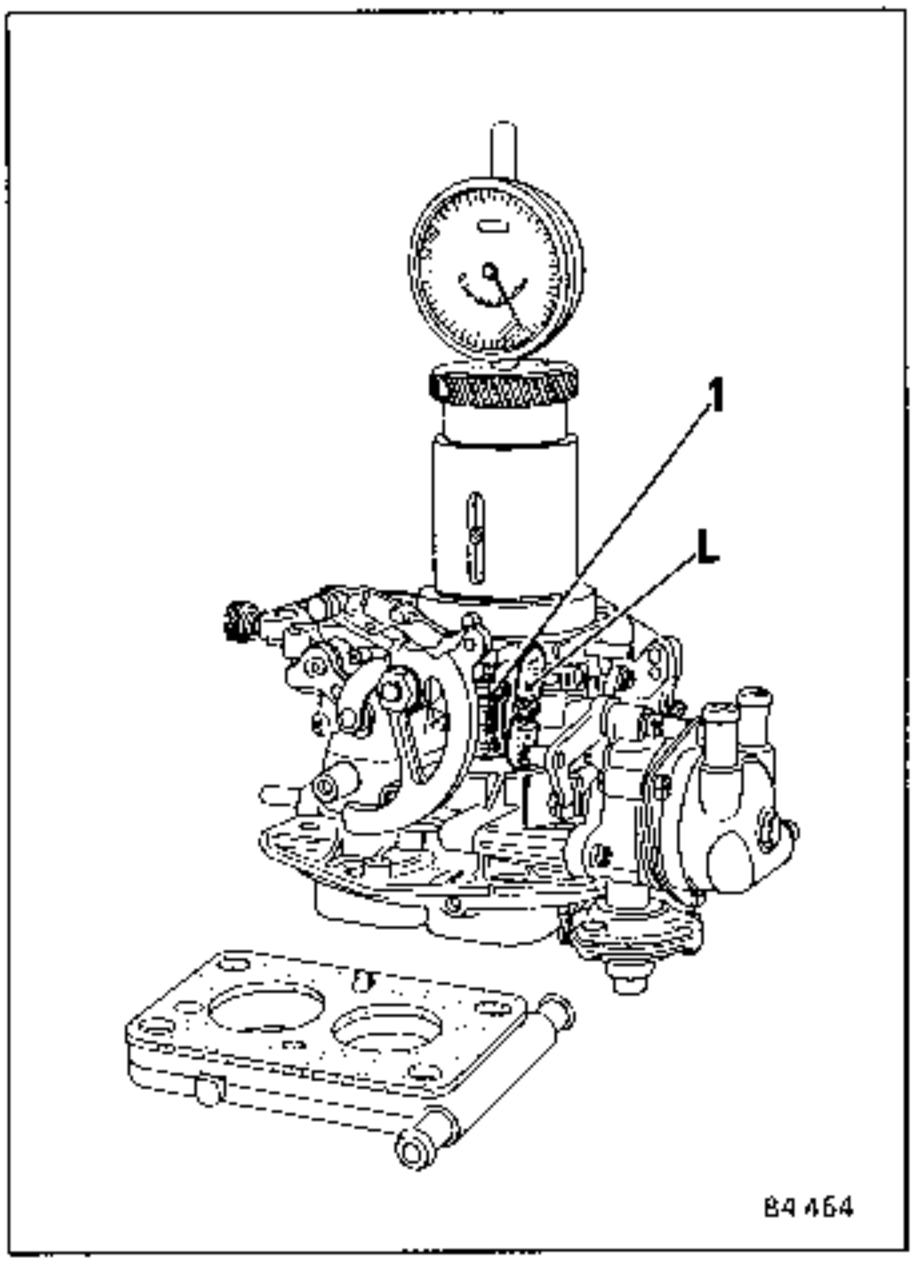
Fit the counterweight, as near horizontal as possible.

Place the measuring instrument in position with the fixed pad on the top of the throttle plate.

Bring the ring (F) down onto the carburettor flange, centralising it as close as possible with the carburettor bore and aligning the red position marks (G) with the throttle shaft centre line.

Note the angle shown on the dial.

If it is not correct, adjust it by turning screw (1).

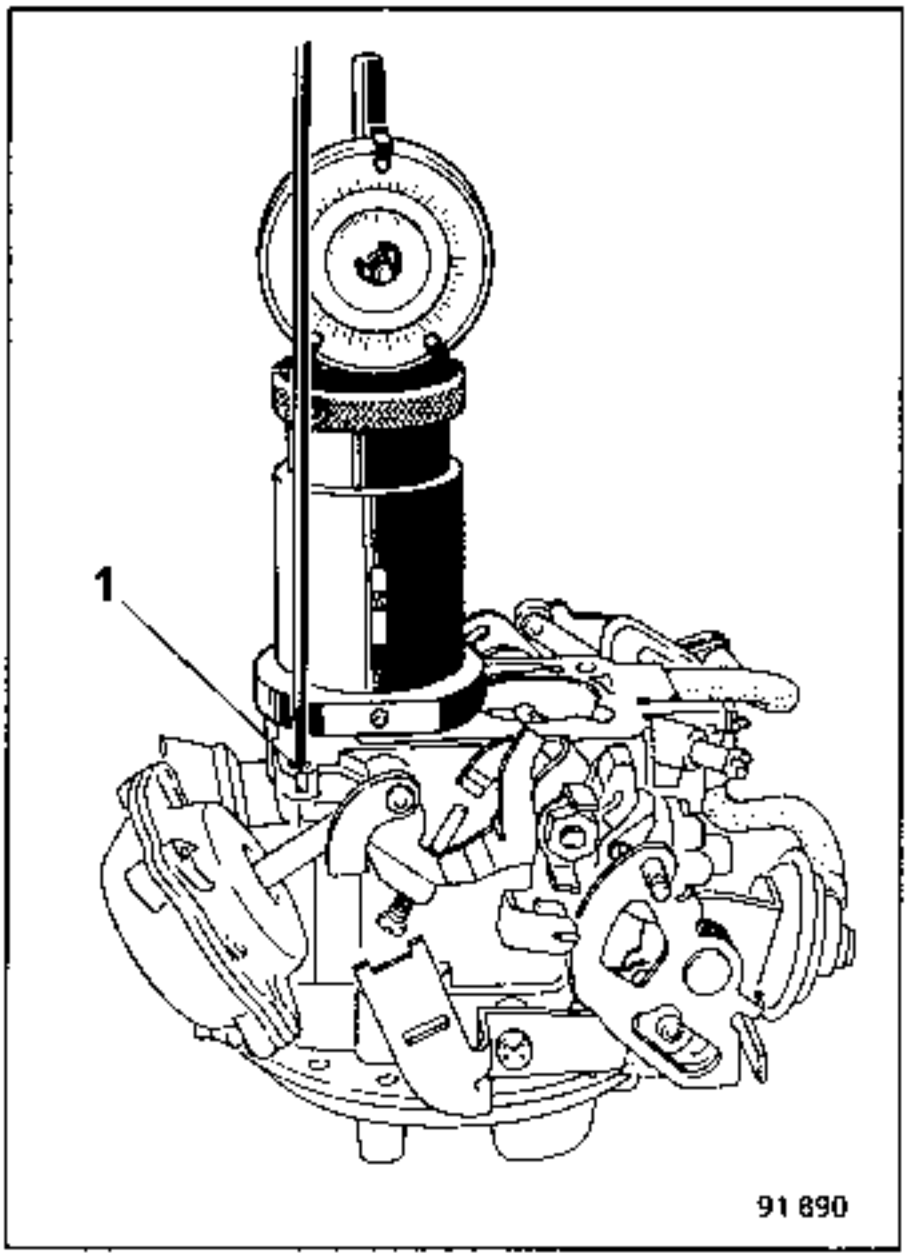


Cross-reference between the degrees-mm reading and the Mot.522 reading.

Degrees	mm	Degrees	mm
8°	= 3.37	9°45'	= 4.12
8°15'	= 3.48	12°30'	= 5.32
8°30'	= 3.59	12°40'	= 5.39
8°45'	= 3.70	12°50'	= 5.46
9°	= 3.80	13°	= 5.54
9°15'	= 3.91	13°40'	= 5.83
9°30'	= 4.02	14°	= 5.98

THE THROTTLE ANGLE ON THE 2nd BARREL

For most carburettors, the data sheets do not give adjustment figures for the throttle on the 2nd barrel.
However, the throttle should always be slightly open so that a small flow of air passes around it and stops it sticking in the closed position.
The correct position is when the throttle is open by 0°30'± 10'



Remove the throttle plate with its spacer and gaskets.
Unscrew the screw (1) until the throttle is fully closed and then screw it in again to open it by 0°30'.

THE POSITIVE THROTTLE OPENING

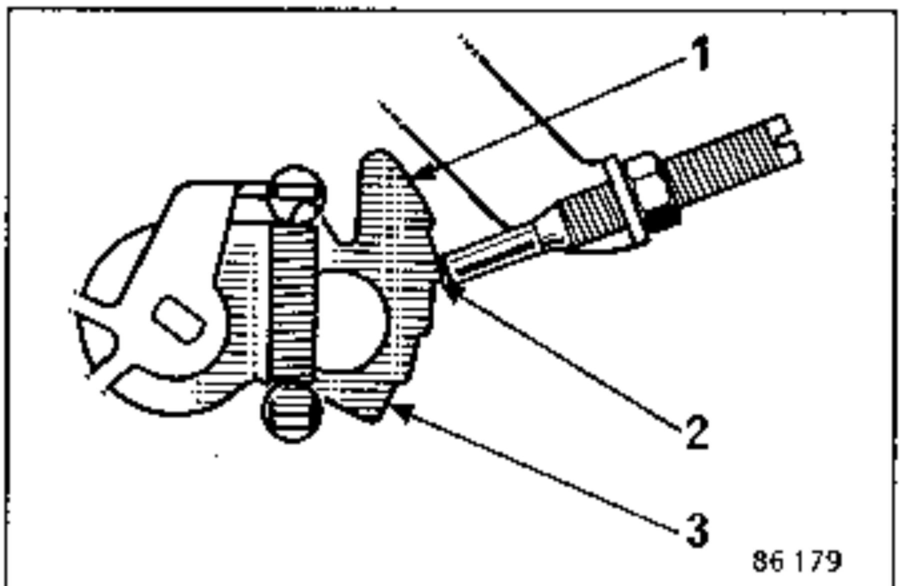
Definition

This is the partially open position that the throttle plate adopts when the choke is closed.

As the centre of the throttle shaft is on the centre line of the carburettor bore, equal amounts of the throttle plate are on either side of the bore. One can therefore take the measurement on one side or the other.

However, one should also check that the positive throttle opening is roughly equal on both sides.

On carburettors equipped with an automatic choke, the positive throttle opening will vary to suit the positio of a cam, the largest radius of the cam being the
"VERY COLD" (1) position.
"MEDIUM COLD" position (2)
"MEDIUM COLD 1st notch" position (3)



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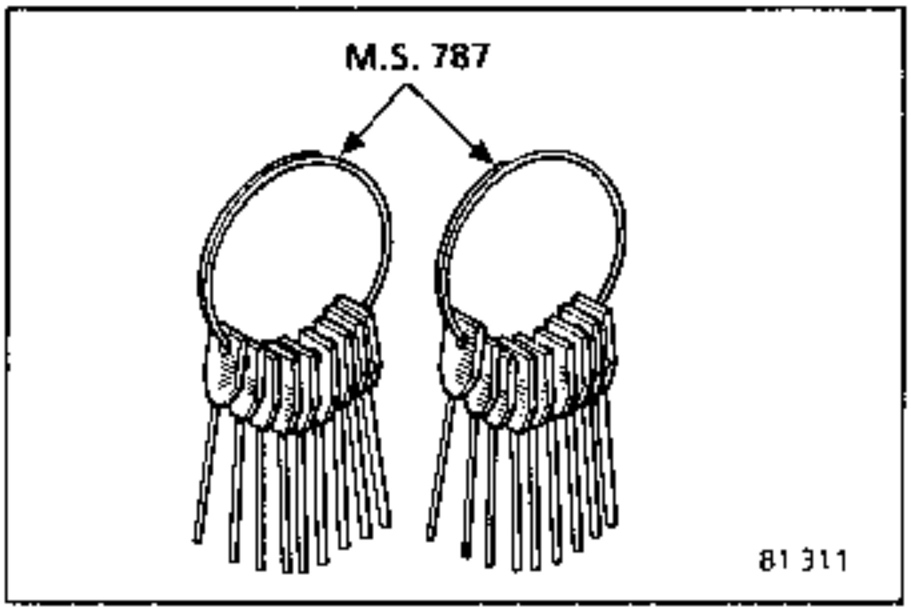
Tooling

Set of gauge pins M.S.787.



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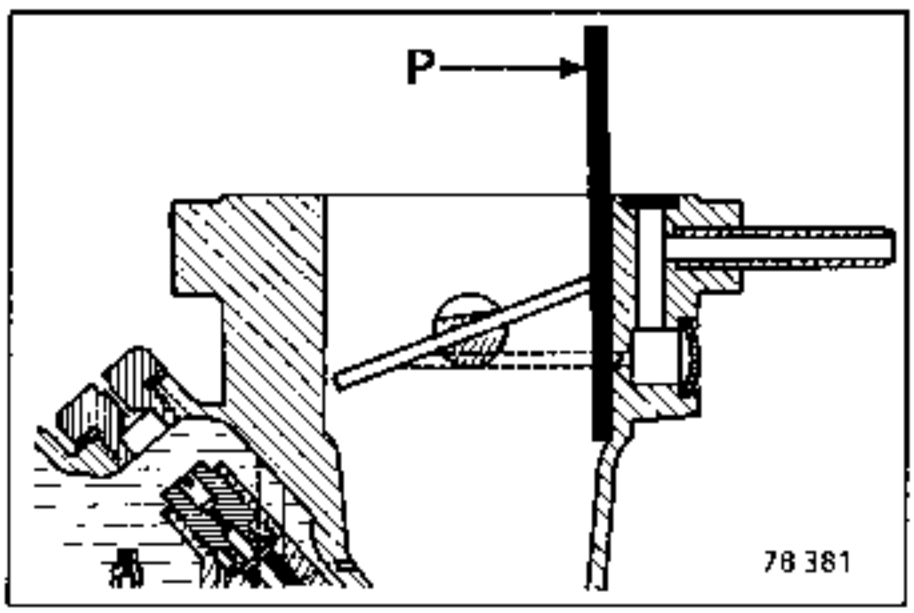
Method

A - Carburettor with manual choke type
DIR - DRT - DRTM

Close the choke by pulling the choke lever to the end of its travel and measure the throttle gap.
This is measured, using a gauge pin (P) placed between the throttle plate and the carburettor bore.



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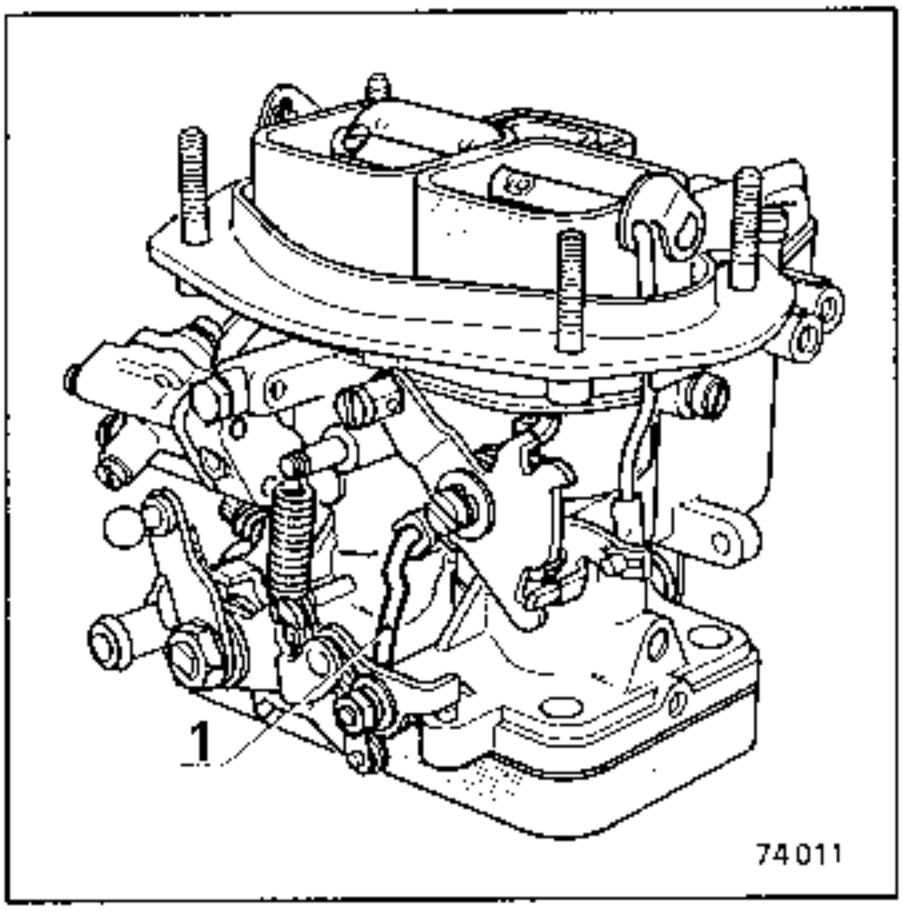
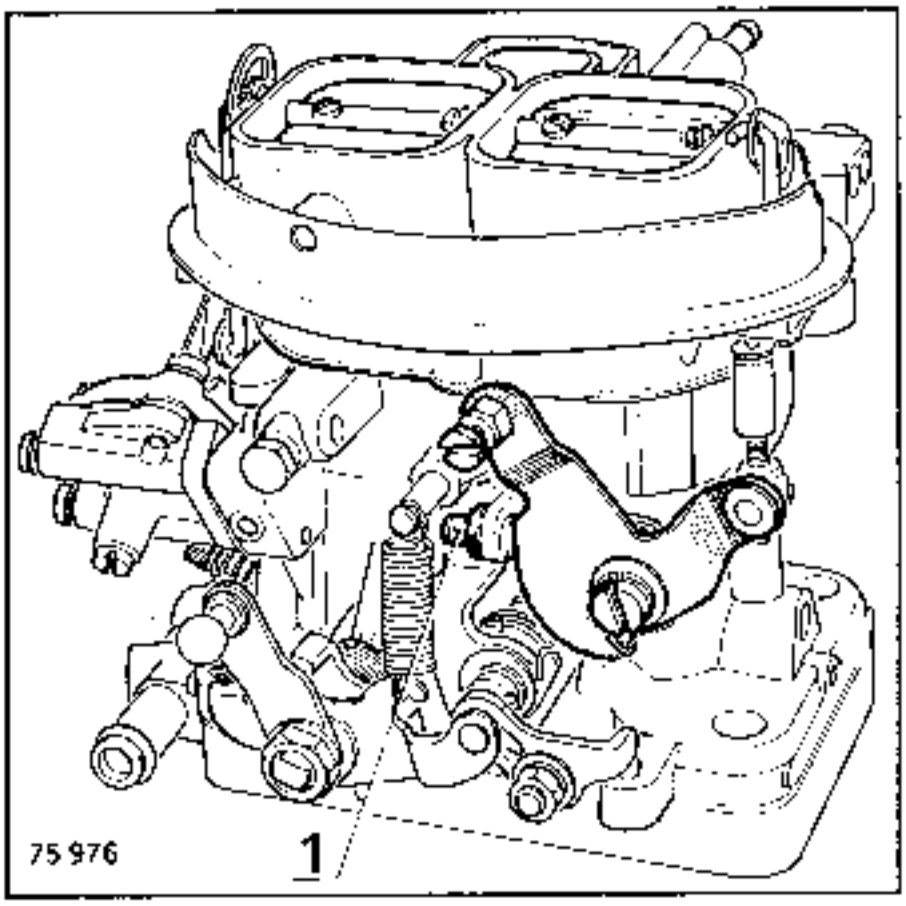
32 DIR

Depending on the system used :

Bend the connecting rod (1).

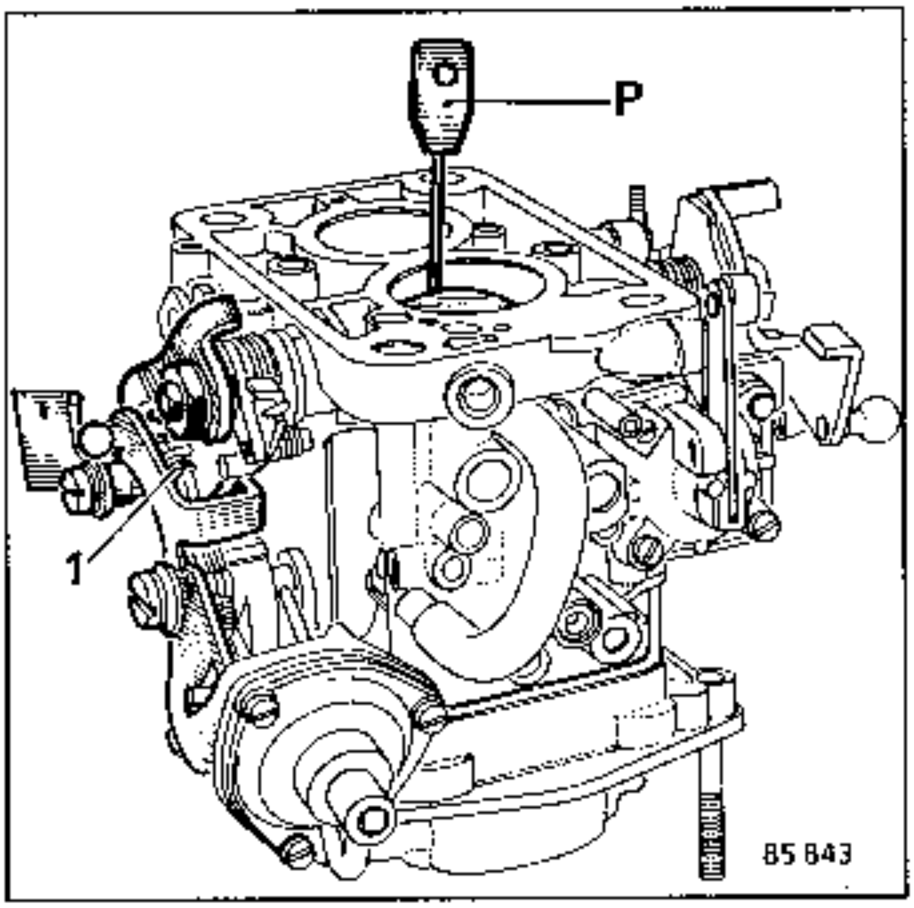


Turn the screw (1) after loosening its lock nut.



32 DRT - DRTM

Adjust screw (1) after loosening its lock nut.



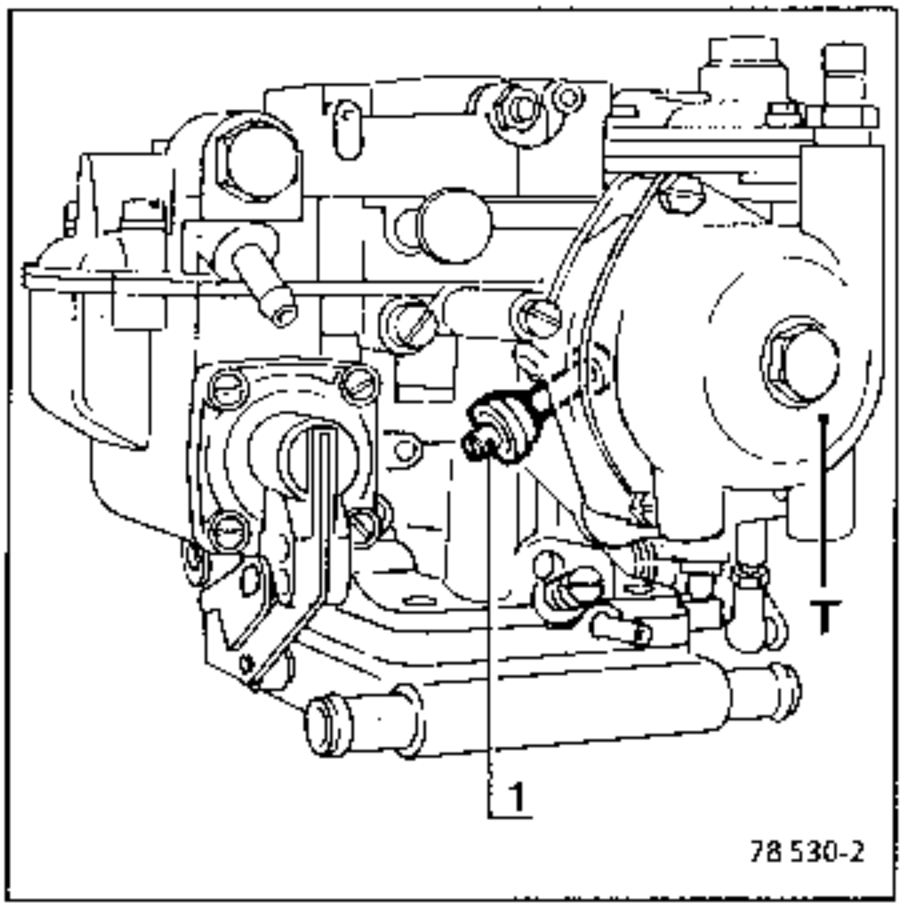
B - Automatic choke type carburettors DARA - DRTA

To pre-set the carburettor, push the throttle lever through its full travel and allow it to return slowly to close the choke flaps. Generally, this movement corresponds to the "MEDIUM COLD" position on the carburettor at an ambiant temperature of approximately 20°C.

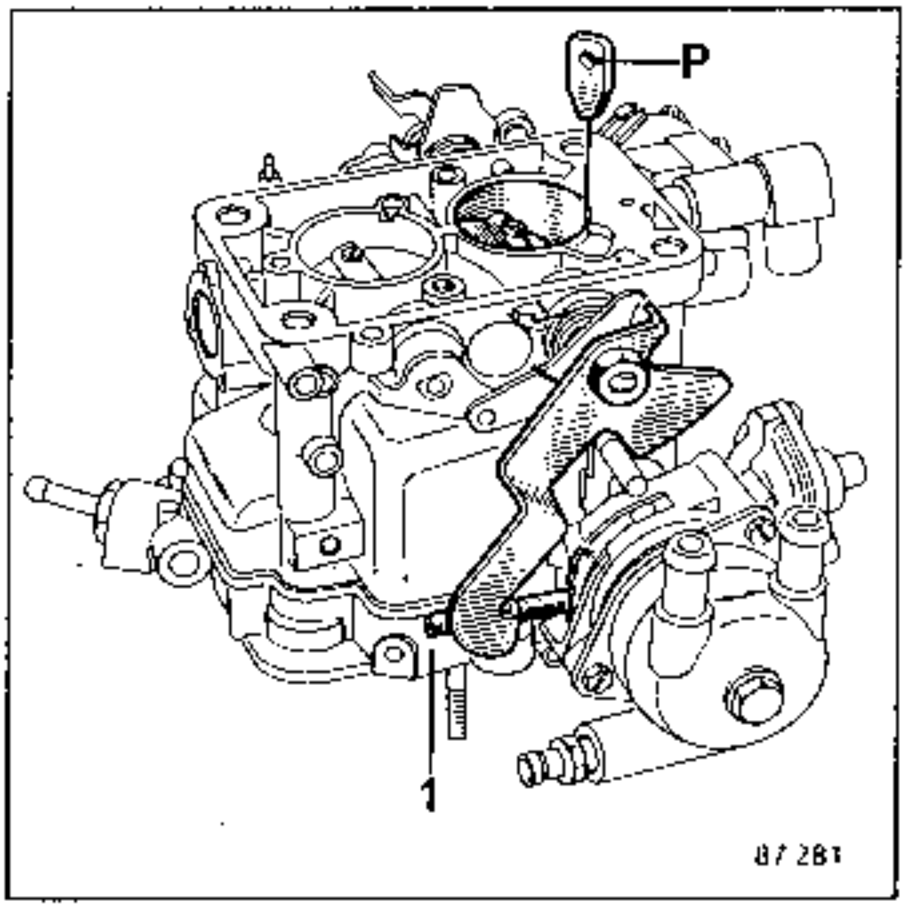
For a more accurate adjustment, remove the thermostatic unit and place the cam in the position shown on the data sheet.

Turn scew (1) to obtain the required throttle plate gap.

DARA



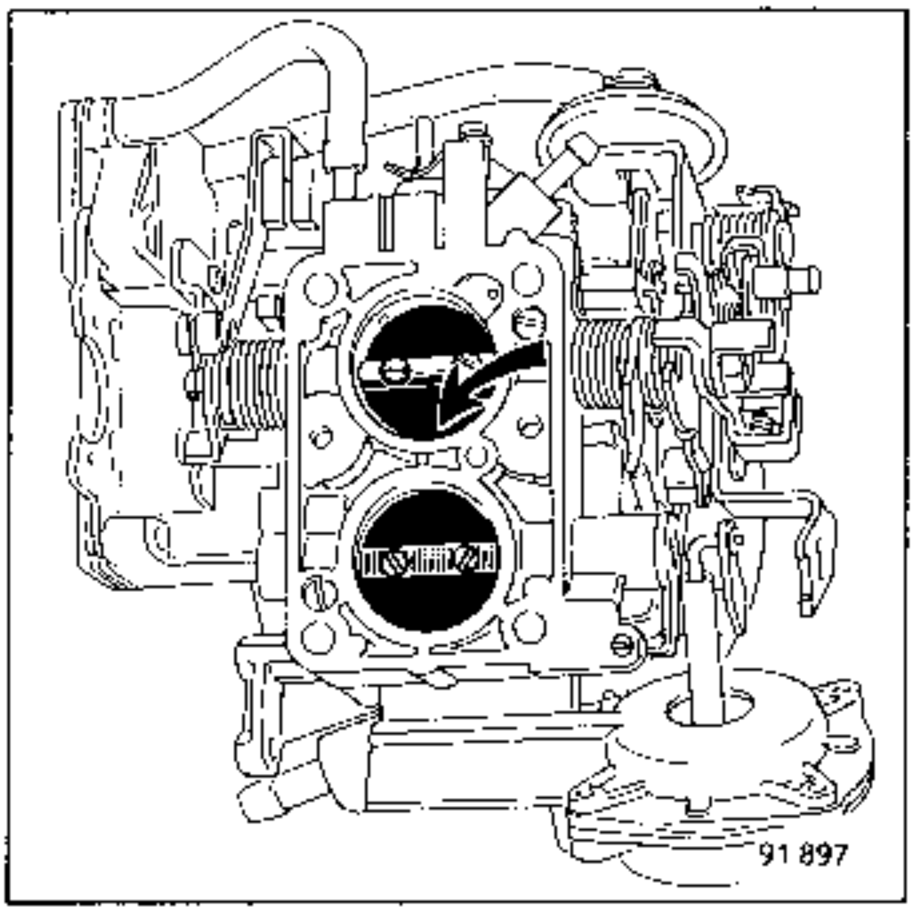
DRTA



C : TLDR carburettors

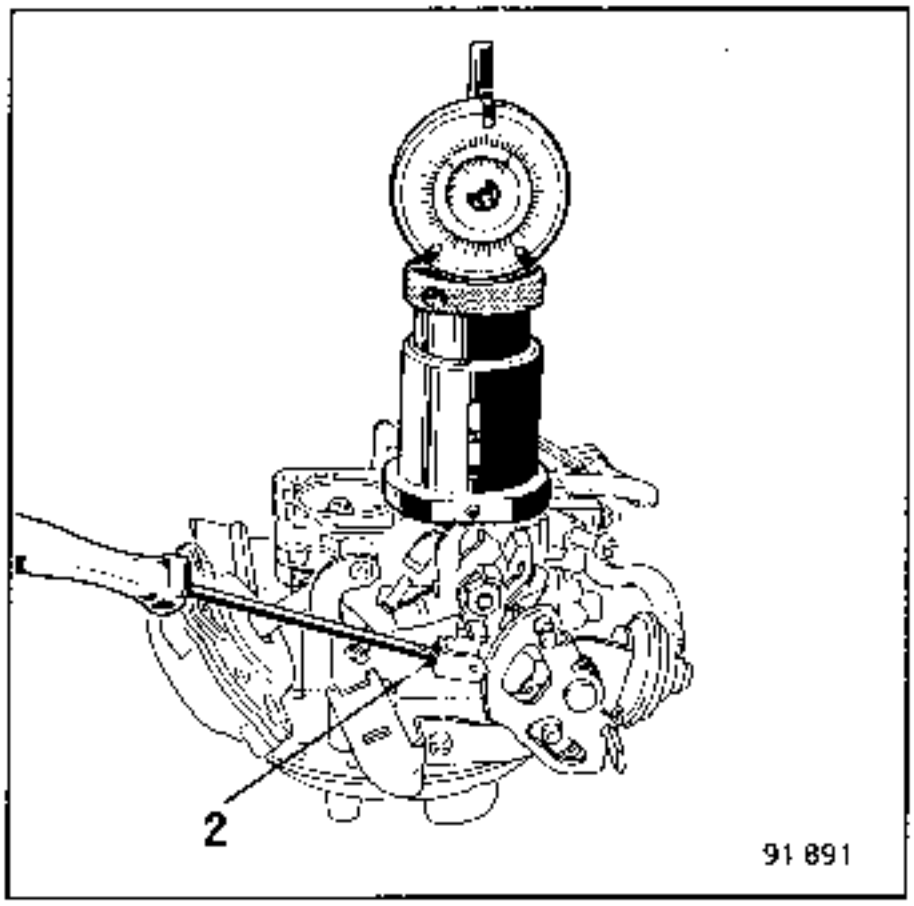
Place the choke flap in the very cold position.

Turn the screw (2) to obtain the recommended initial opening gap (in mm) as shown by the arrow, see figure.



Using the angle measuring instrument

Move the throttle plate assembly together with the spacer and the gaskets.
(see method on page 12-67)



CHOKE FLAP INITIAL OPENING

Definition

This is the amount by which the choke flap (or flaps) partially opens after the engine has started from cold (C.O.A.S.).

It may be opened either :

Mechanically: in this case it will be by an amount determined by its actual structure. As the choke flap shaft is not central, it is opened by the effects of the air flowing through the carburettor.

Pneumatic: in this case it is operated by a pneumatic capsule controlled by the vacuum on the input side of the throttle. On certain carburettors, both these systems are combined.

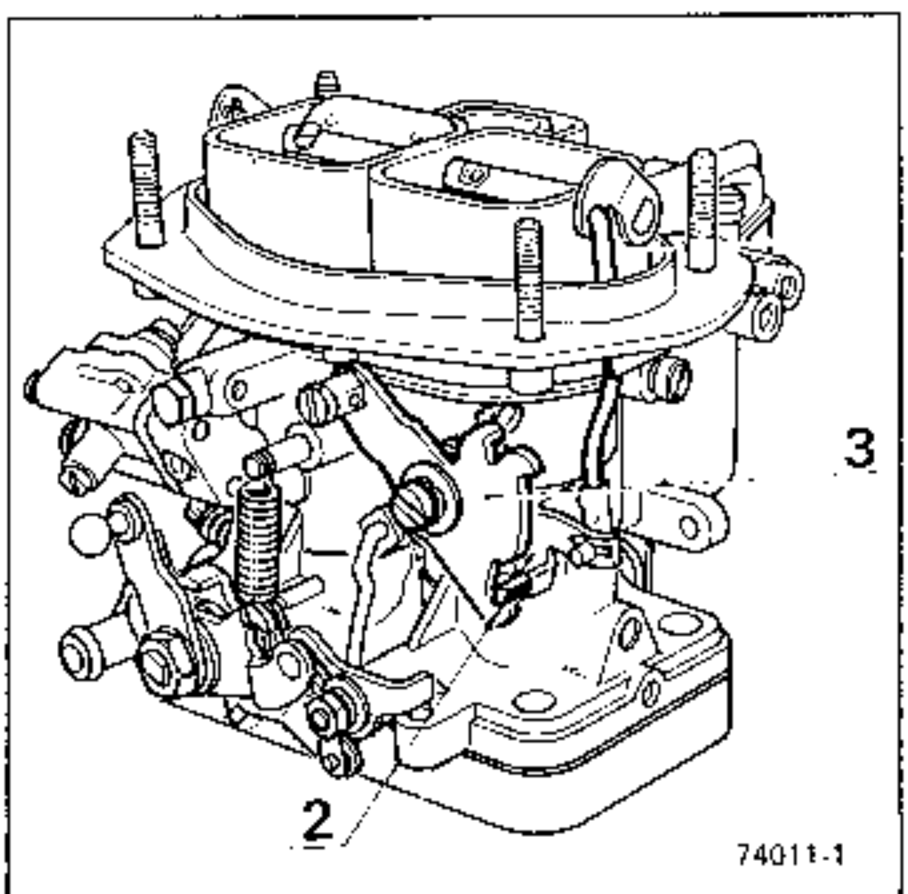
Tooling

Use twist drills as gauges to measure the initial opening.

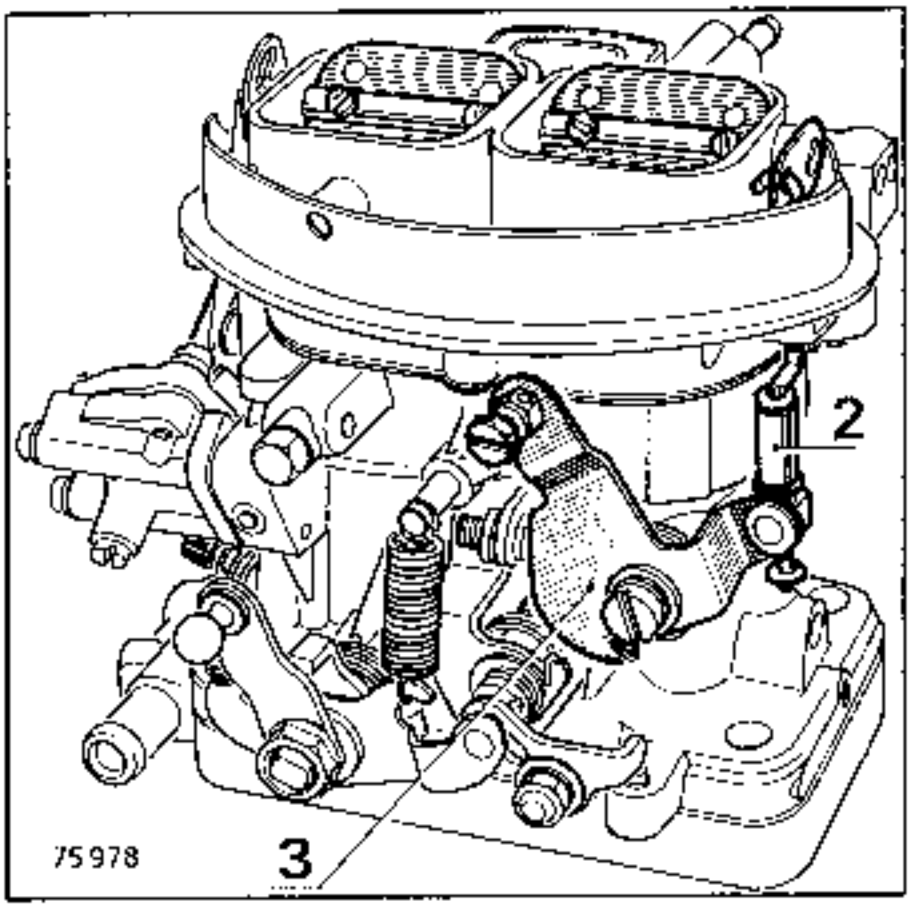
MECHANICAL INITIAL OPENING

DIR-DRT-DRTM
Close the choke flaps then:

On the DIR, 1st model: bring stud (2) into contact with lever (3) by pushing the choke flap.

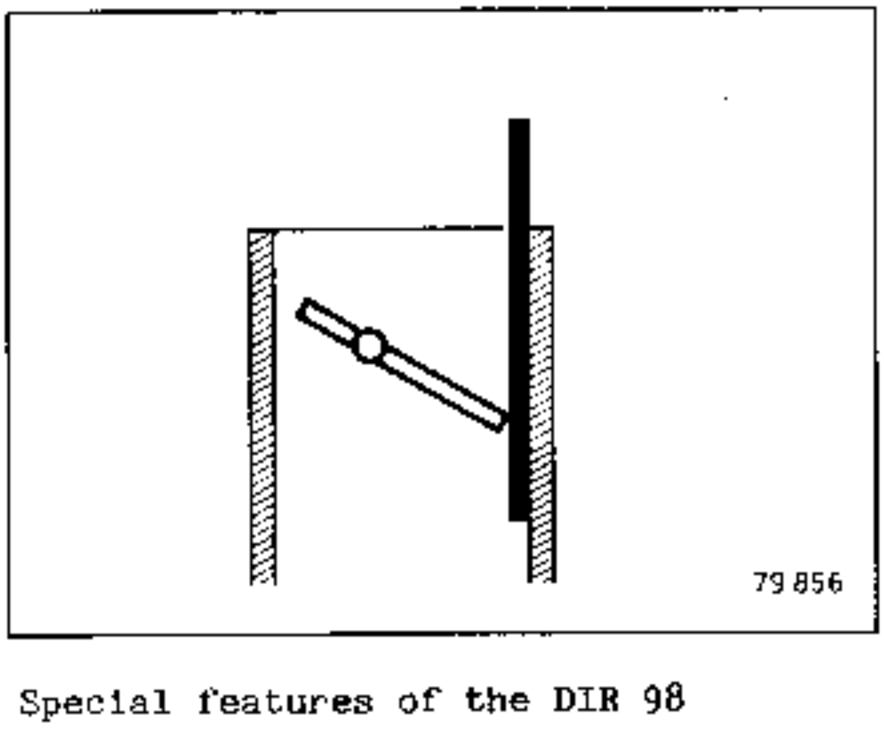


DIR 2nd model: bring tube (2) against the cam (3) by pushing the choke flap.



Measure the choke flap initial opening, on the largest side, with a gauge pin.

Note: This function is not adjustable and is determined by the structure of the carburettor.



Special features of the DIR 98

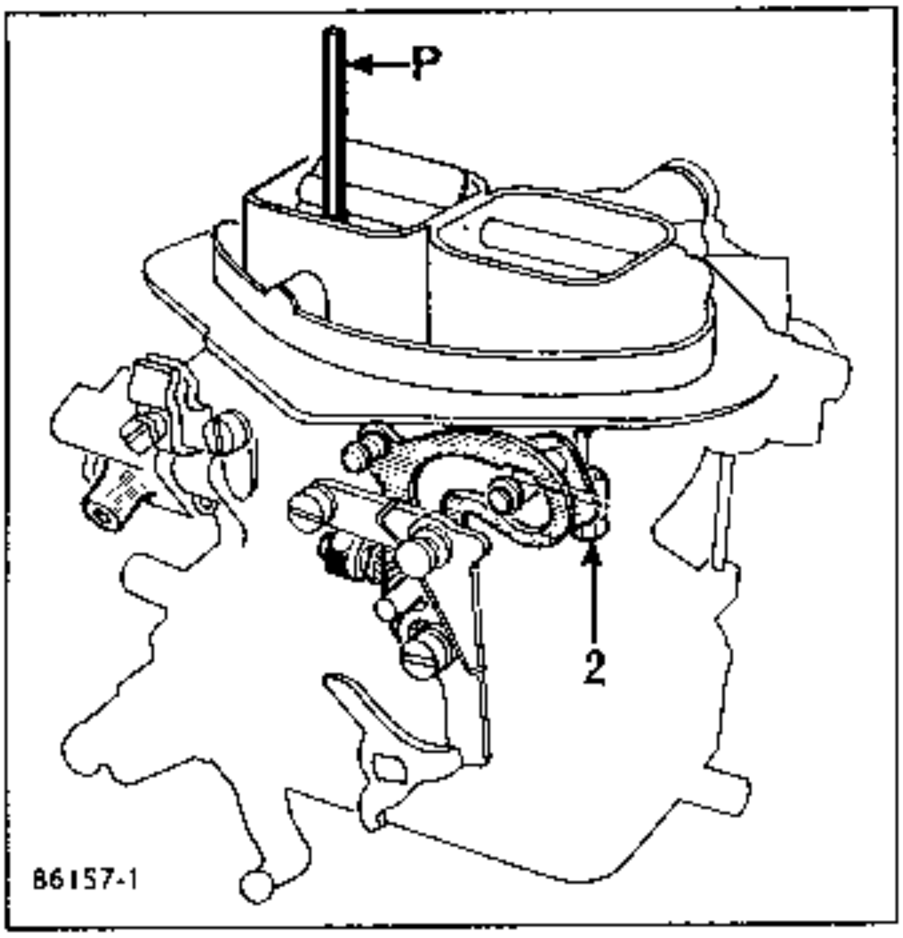
Control lever in the very cold position.

Bring the plunger into contact with the lower part of the inner cam.

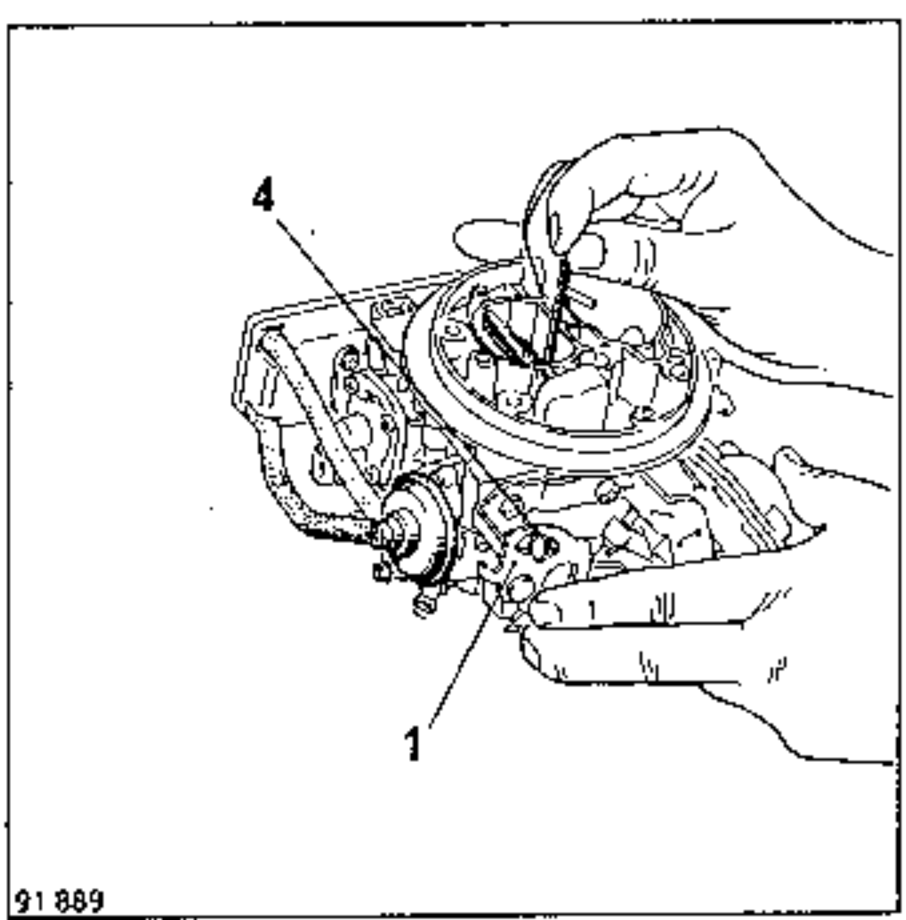
With a gauge pin, measure the choke flap gap on the largest side.

It is adjusted by turning screw (2).

MECHANICAL INITIAL OPENING SYSTEM (cont.)



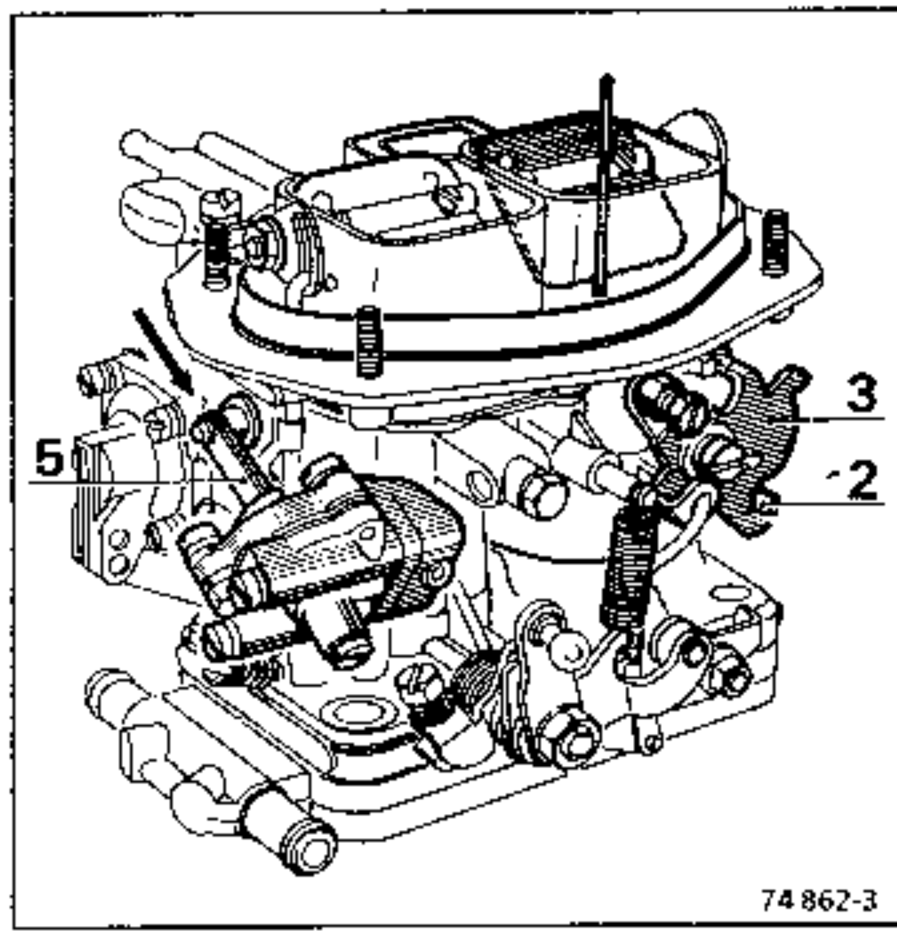
32 TLDR
Close the choke flap by turning cam (1). Check the choke flap initial opening, with a drill, holding the assembly fully open by hand. Roller (4) should be against the upper profile of the cam (1).



PNEUMATIC INITIAL OPENING

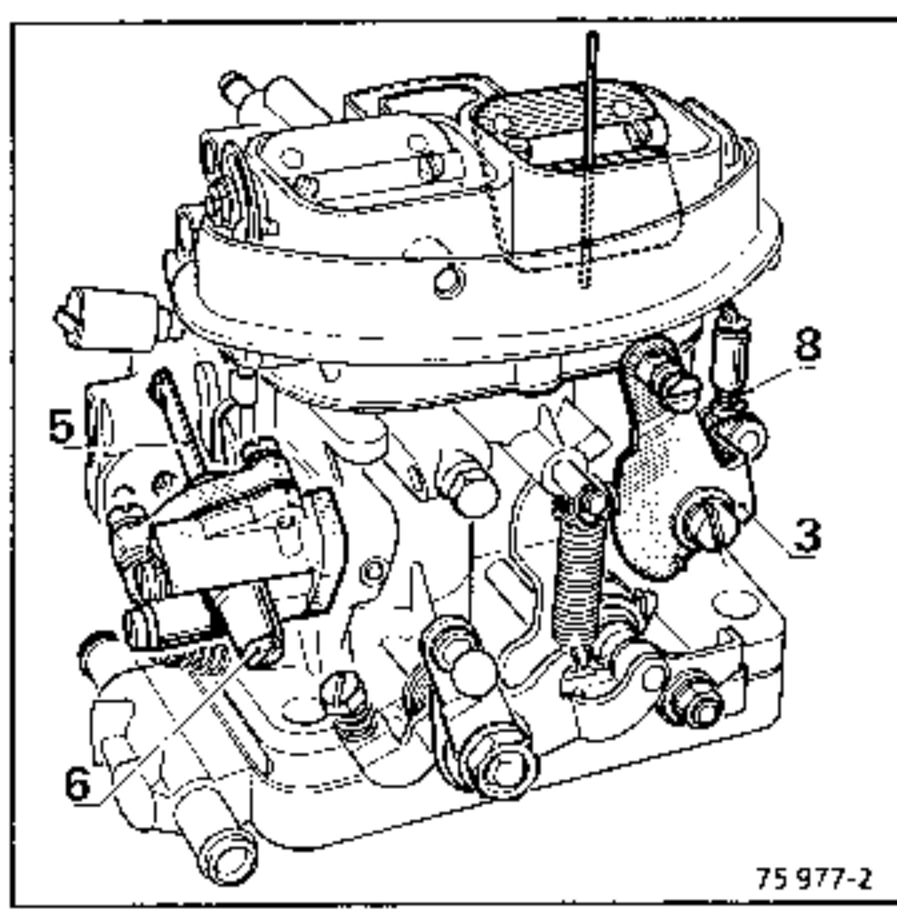
DIR 1st model

Push rod (5) against its stop and then place lever (3) against stud (2).



DIR 2nd model

Push rod (5) to bring it against its stop then close the choke flap with cam (3) until the spring (8) is lightly compressed.

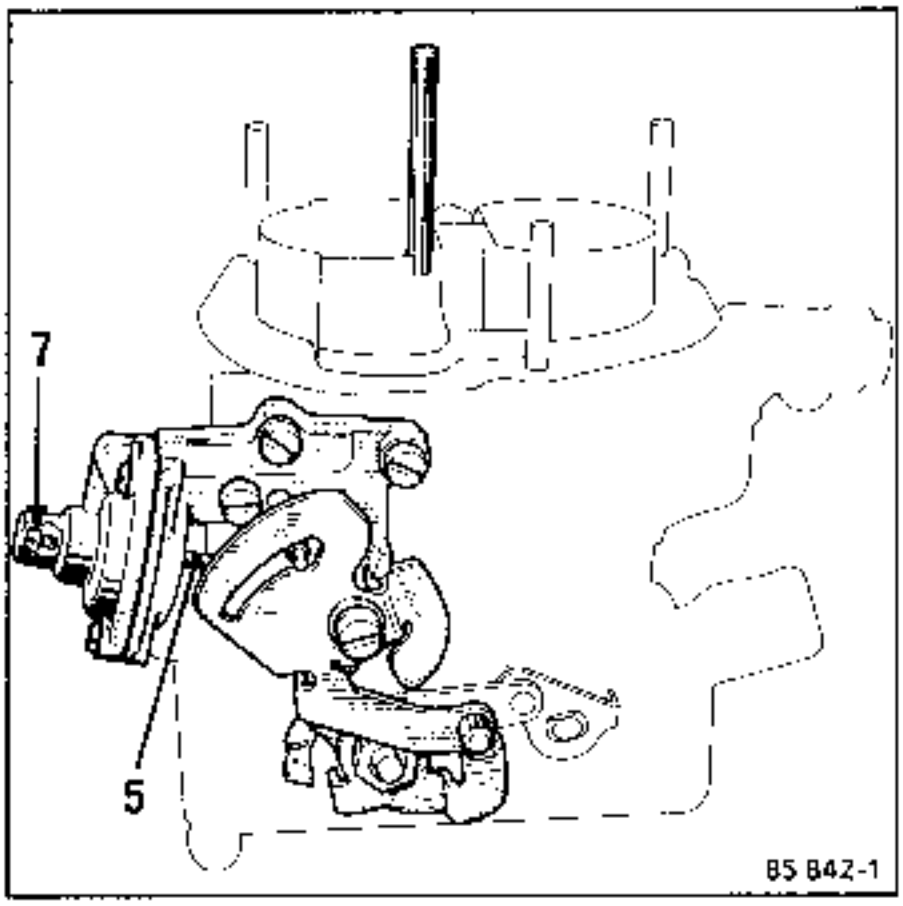


PNEUMATIC INITIAL OPENING (continued)

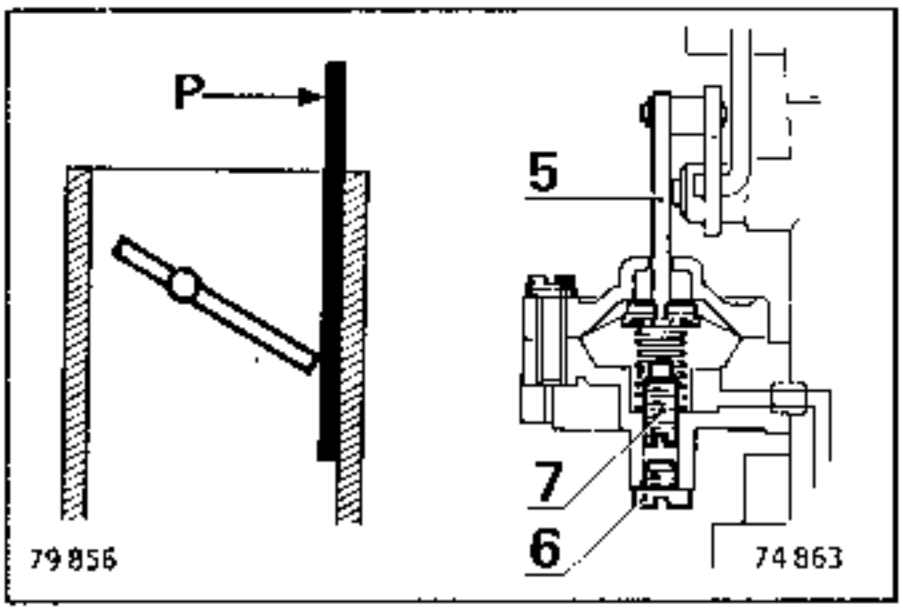
DIR 3rd type - DRT-DRTM

Push rod (5) against its stop then close the choke flap which will make contact with the pneumatic control levers.

DRT-DRTM



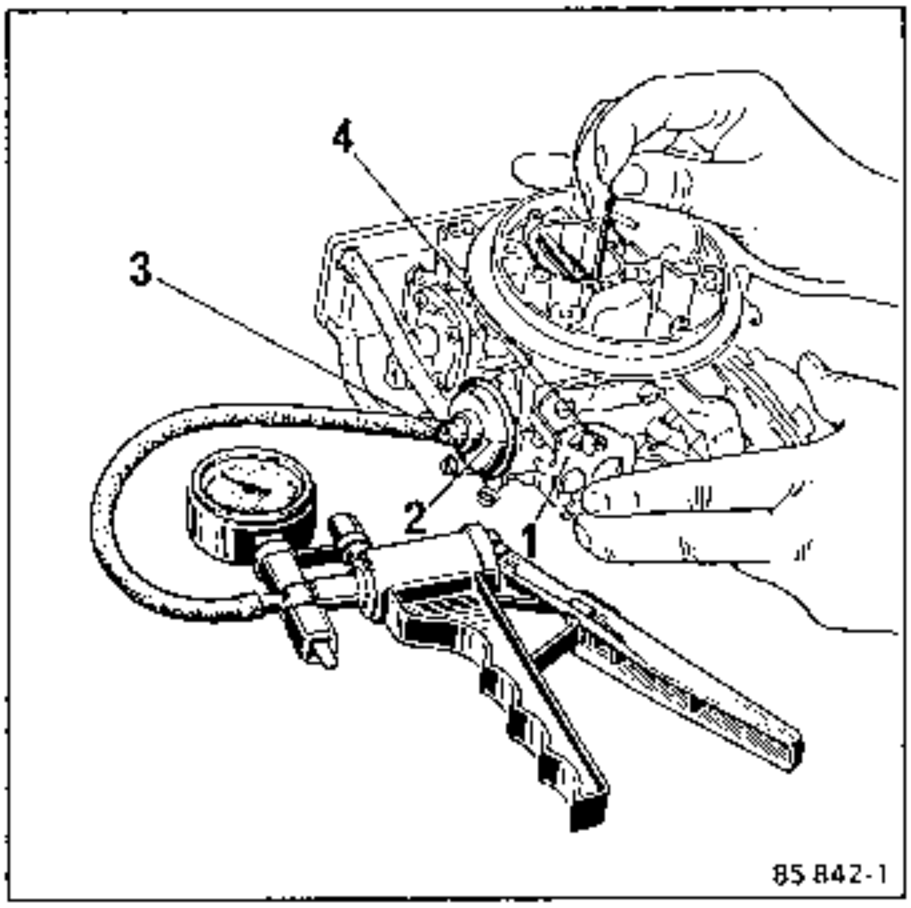
DIR



Adjusting

Measure the gap with a gauge pin (5), on the same side as the largest offset. If it is not correct, remove the screw (6) or the sheet steel cap and adjust the assembly by turning screw (7) which is inside.

32 TLDR
Close the choke flap at the cam (1).



Using a manual vacuum pump, connected to the capsule (2), maintain the specified vacuum and check the choke flap initial opening with a drill.

If necessary, turn screw (3) to obtain the required gap.

DARA-DRTA

a) **When the compensator is not fully depressed** (or if there is no compensator)

Remove the thermostatic unit.

Push the throttle lever so that the choke flap or flaps can be closed. Bring rod (7) against the pneumatic capsule.

Hold lever (2) against rod (7).

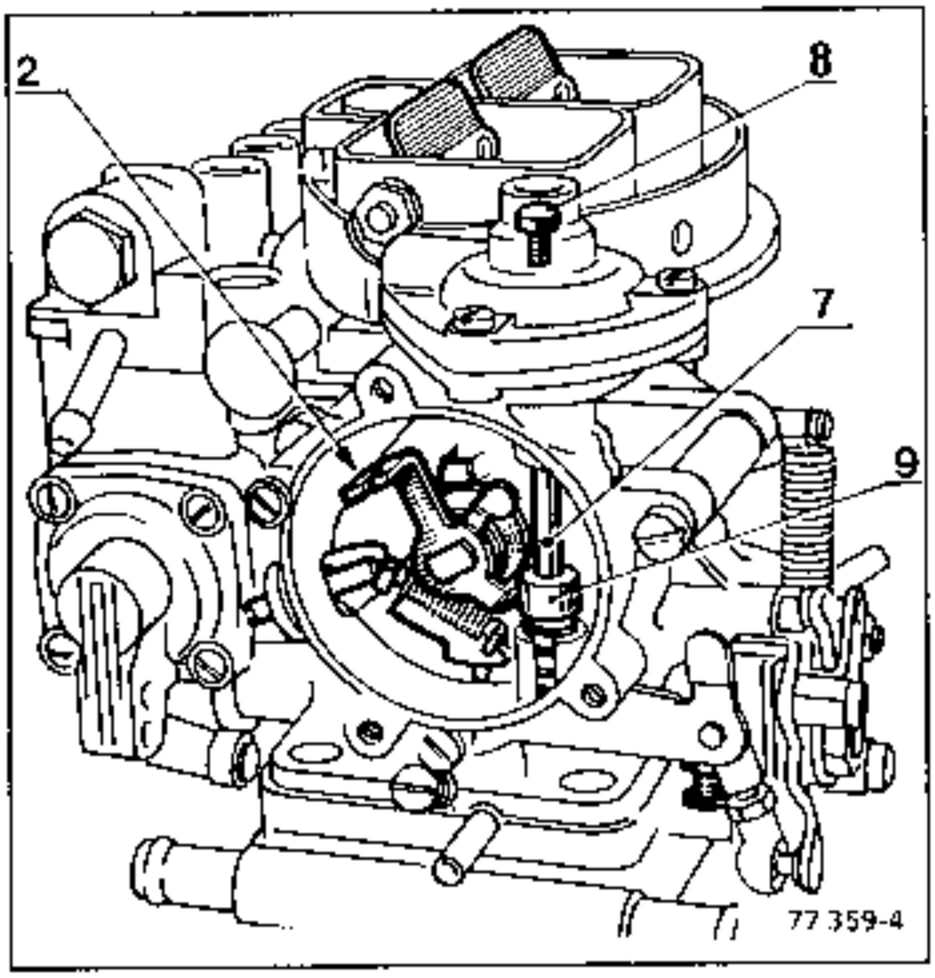
Measure the initial opening between the widest offset on the choke flap and the carburettor air duct.

Adjust the assembly by means of screw (8) which is inside the pneumatic capsule cover.

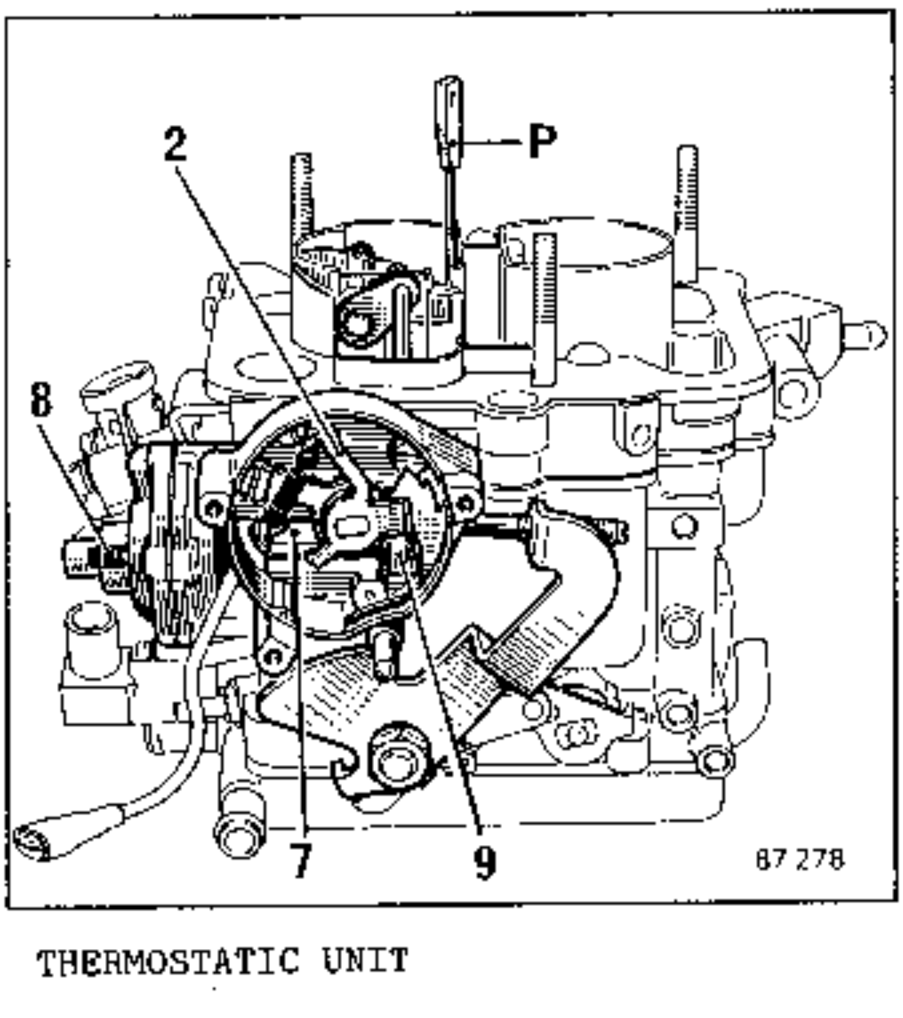
b) **Compensator fully pushed in**
Rod (7) should still be against he stop screw (8). Using lever (2) push in the compensator (9) and check the choke flap initial openings.

There is no adjustment figure for this function. The value is obtained by the structure of the carburettor (travel limited by sleeve (9) on rod (7)).

DARA



DRTA

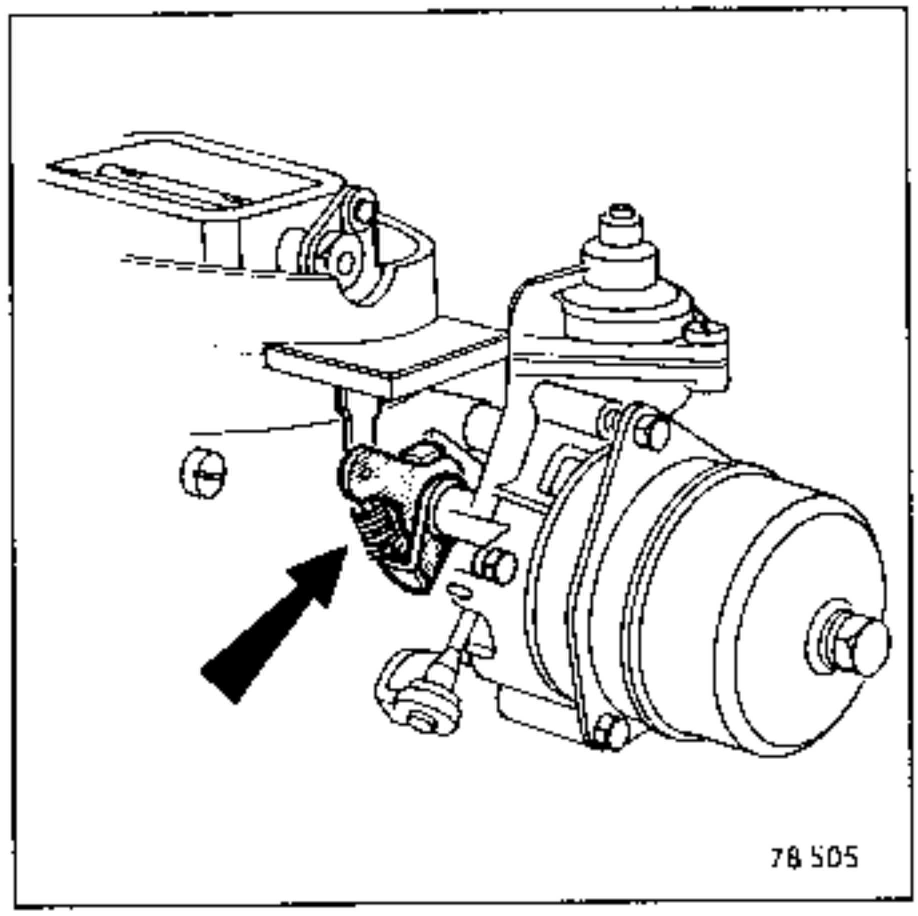


THERMOSTATIC UNIT

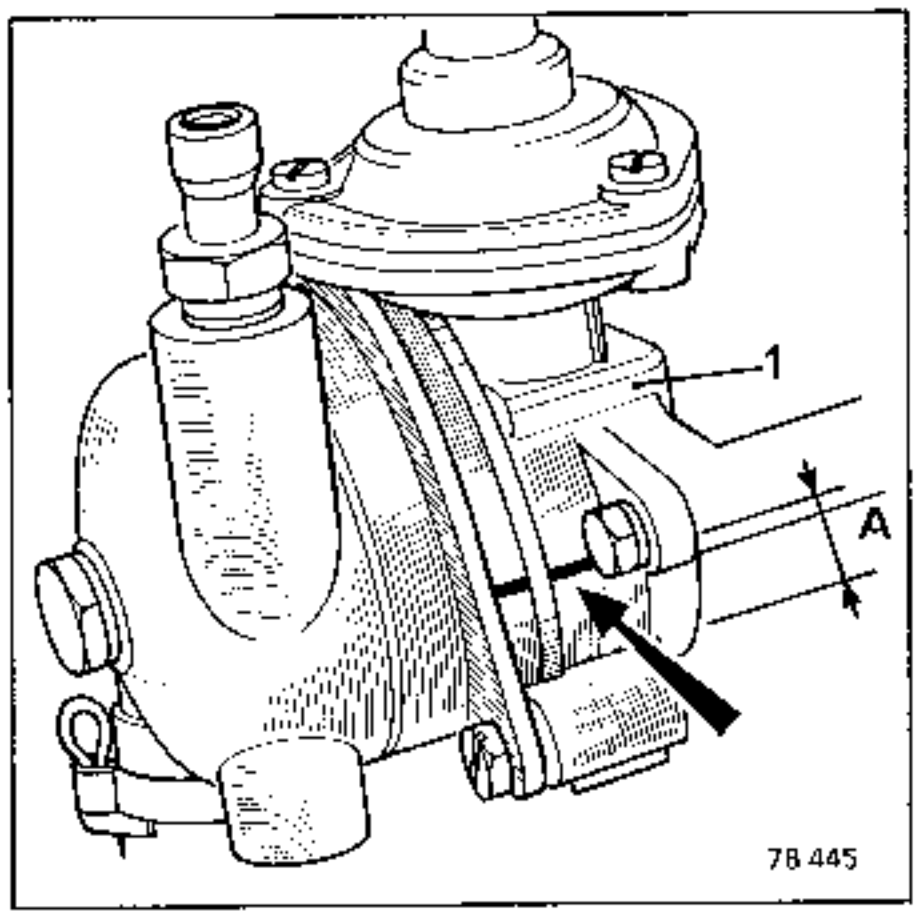
Precautions to be taken

The connection between the thermostatic unit shaft and the control link that operates the choke flap or flaps has a spring on it which provides for flexible opening of the mechanical initial opening system.

Check that it is in position and in good condition.



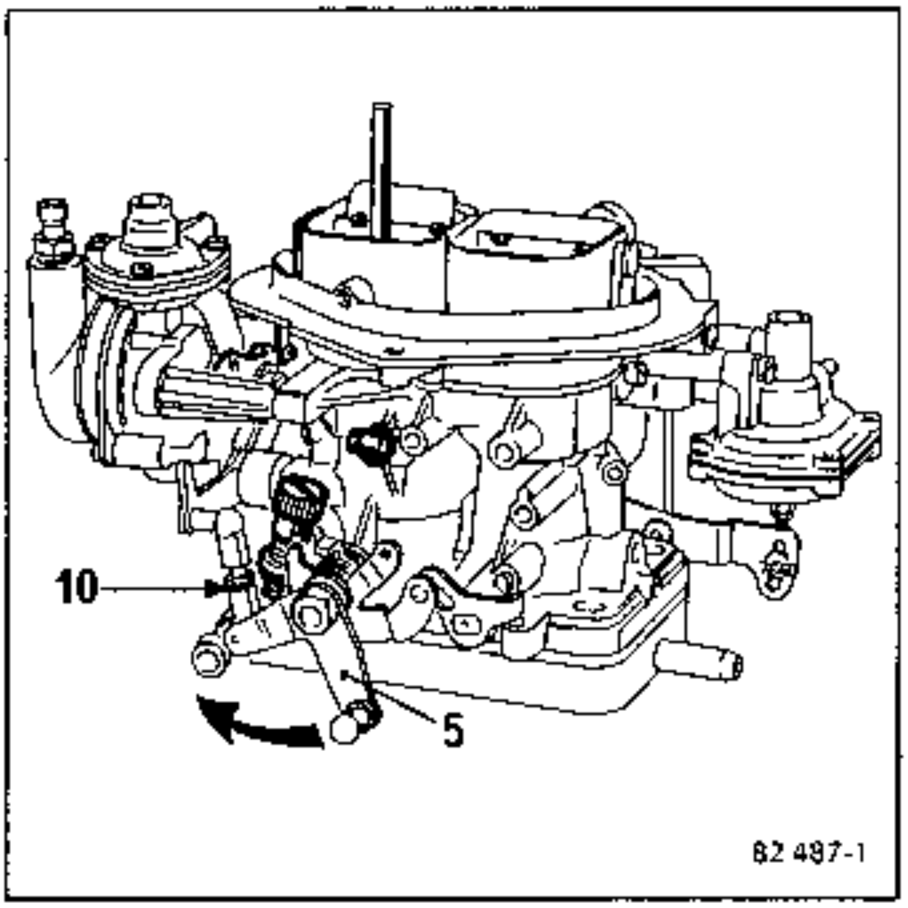
The thermostatic spring support cover and the unit itself each have a position line on them and these lines must be aligned.



NOTE: Replacement parts for units (1) may be found not to be identified. If this is the case, measure dimension (A) between the boss and the position mark on the original component and mark the new component to the same dimension.

THE CLEARING SYSTEM

- Pre-set the choke.
- Move the throttle lever (5) into the "full throttle" position.
- By means of a gauge pin, check the choke flap inital opening (on the large off-set side).
- To adjust it, turn the screws (10) then check and, if necessary, correct the positive throttle opening.



WARNING: By turning screw (10) one alters the positive throttle opening and it is therefore essential to adjust this setting if screw (10) has been adjusted.

THE FLOAT CHAMBER DEGASSING VALVE

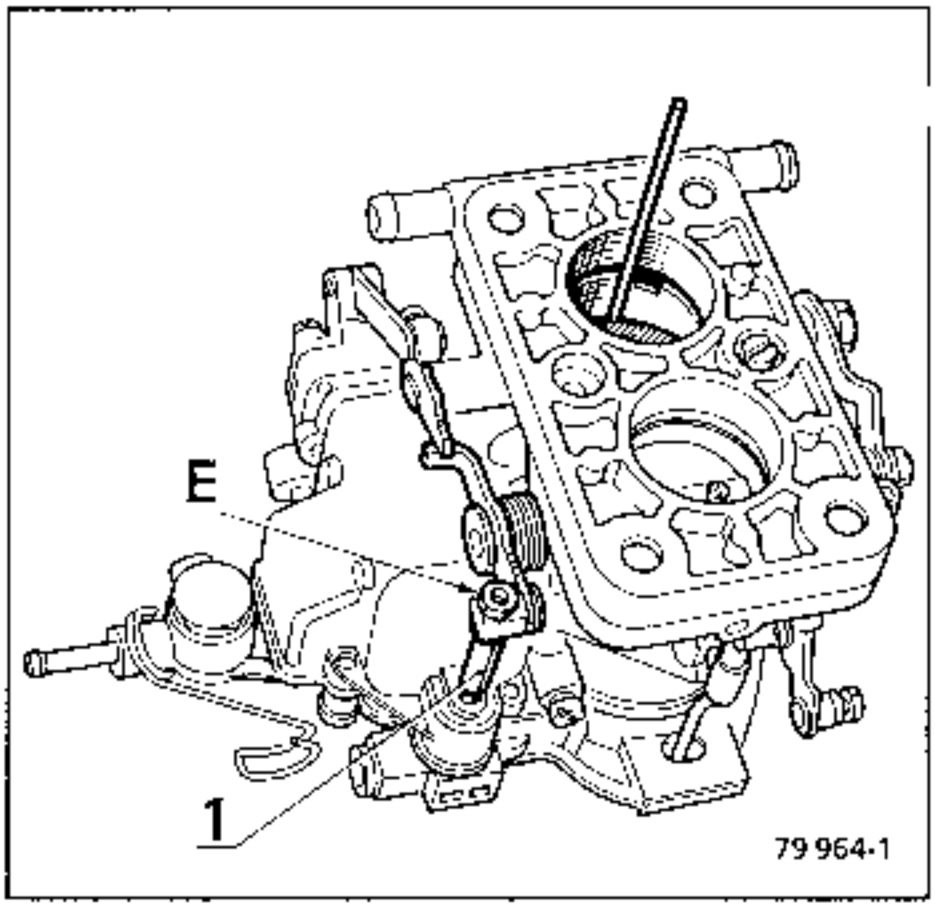
Certain carburettors are equipped with a degassing valve that vents the float chamber in the idling position.

Adjustment

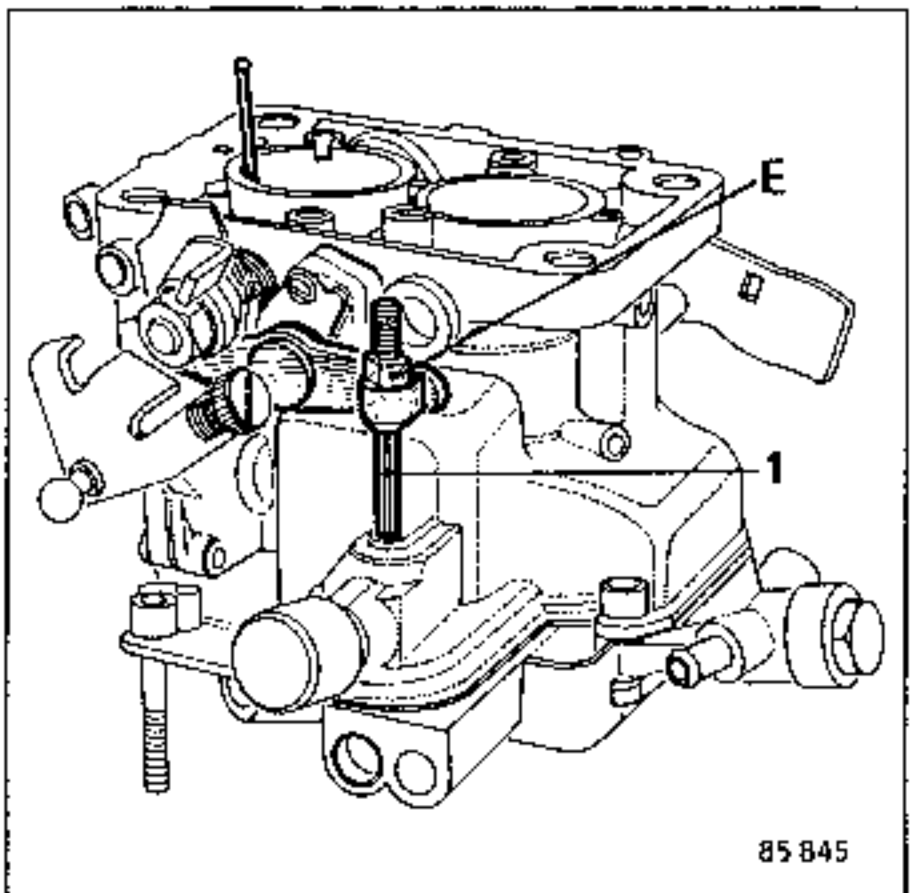
With the choke flap open, press down the degassing valve control rod (1) and measure the throttle gap.

If the gap does not correspond to that stated on the data sheet, turn nut (E) to obtain the required figure.

DARA - DIR



DRT - DRTA - DRTM



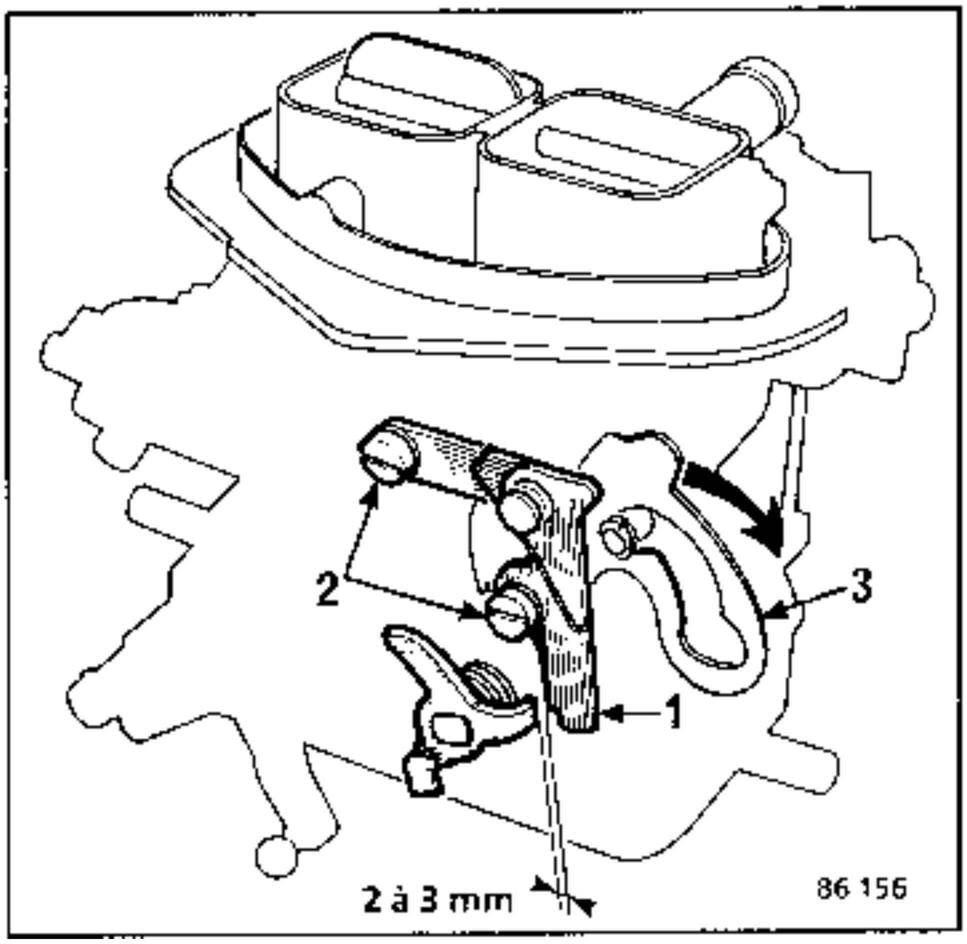
THE LOCKING SYSTEM ON THE 2nd BARREL

DIR

When the choke flap is open and lever (3) pushed fully down, check that lever (1) frees the throttle on the 2nd barrel.

- clearance 2 to 3 mm.

If there is insufficient clearance, loosen the screws (2), push lever (3) fully down in the direction shown by the arrow and re-tighten screws (2).



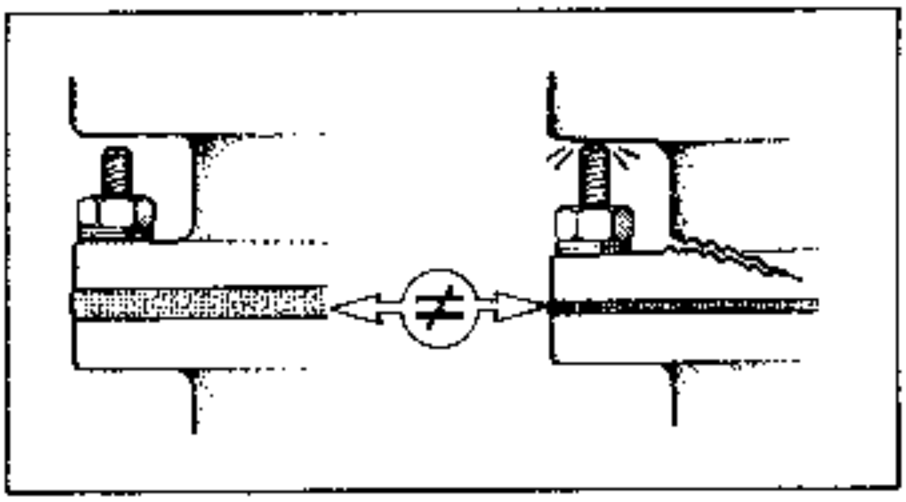
REFITTING THE CARBURETTOR

There must be no leakage between the carburettor and the inlet manifold when this is refitted. Any entry of air that is not controlled by the the throttle could make it impossible to adjust the idling speed (furthermore, air entering between the cylinder head and the manifold would have the same effect).

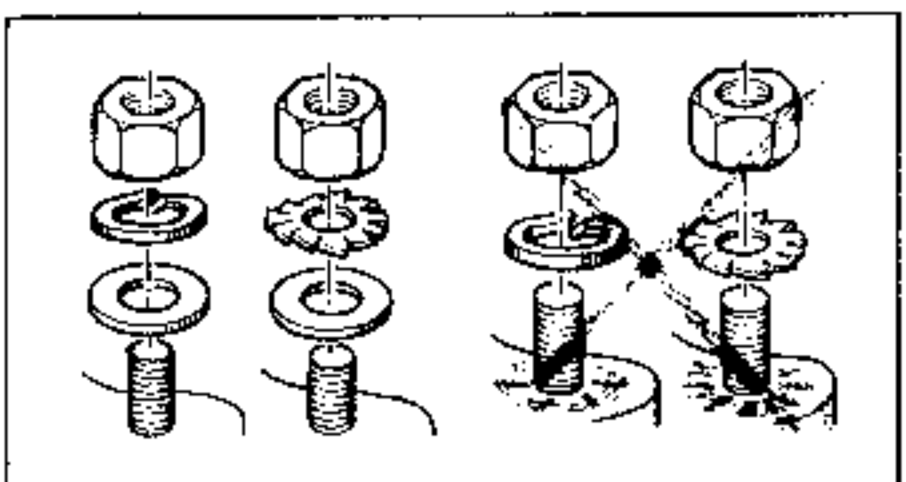
Before placing the carburettor on the inlet manifold, it is therefore important to check that the contact area between the manifold flange and the carburettor is flat and clean.

The carburettor gasket or, when applicable, the insulating pad and the gaskets on either side of it, are to be new and are to be fitted without jointing compound as this could, when the assembly is tightened, enter the carburettor ducts in the immediate vicinity of the gasket face.

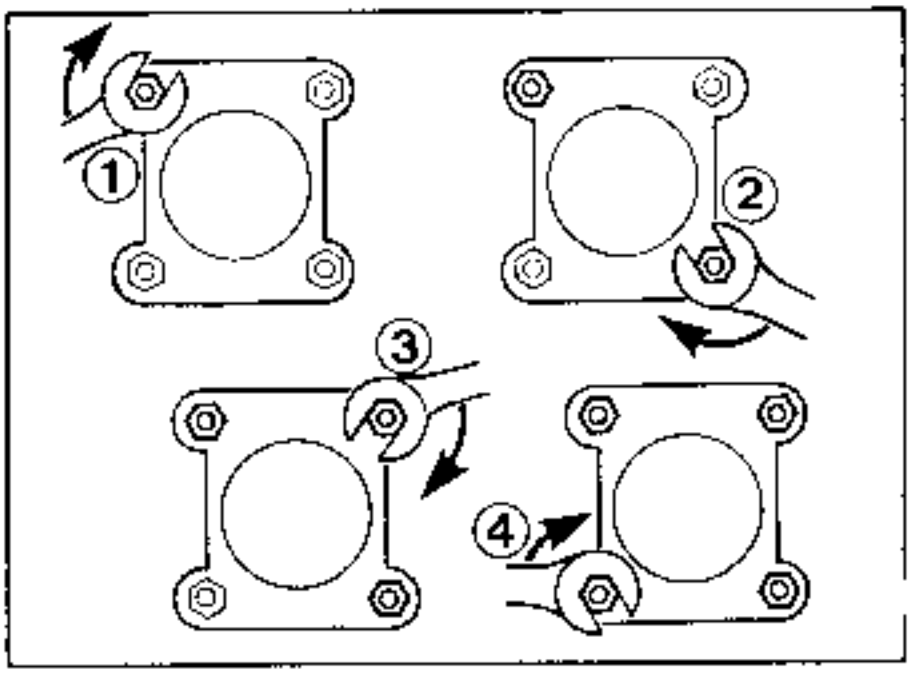
After having placed the carburettor on its studs, ensure that it is in full contact with the gasket, without any of its components making contact with the ends of the studs.



Do not place the spring or shakeproof washers under the nuts without placing flat washers between them and the carburettor. If this is not done, they will bite into the carburettor and may later come loose.



Tighten the nuts evenly to pull down the carburettor evenly, firmly, but not excessively.



THROTTLE AND CHOKE CONTROLS

The throttle is almost always controlled by a cable. The cable cover should be correctly locating against its stops at both ends and the cable should be correctly tensioned without, however, remaining under tension when the system returns to the idling speed position. One should be able to open the throttle, fully, by depressing the accelerator pedal.

The choke system is operated by a cable and the carburettor end of the cable cover should be locked, firmly, but not excessively, in its clamp. The cable is to be adjusted so that the choke system (choke plate closed or choke flap fully open) before the control knob comes against its stop. The clearance must, however, remain less than that above which the warning light on the instrument panel, if there is one, remains switched on.

MISCELLANEOUS PIPES AND CONNECTIONS

Check the condition of the fuel, gas recirculation and carburettor base heating hoses.

Do not hesitate to replace any hose that showns signs of ageing , such as hardening or crazing.