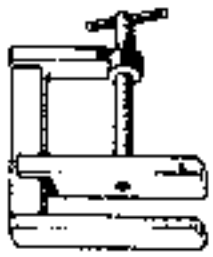
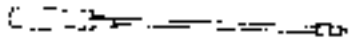
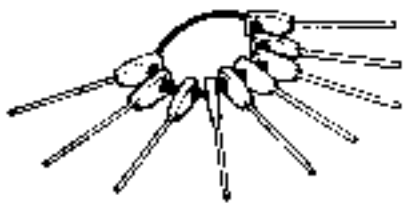
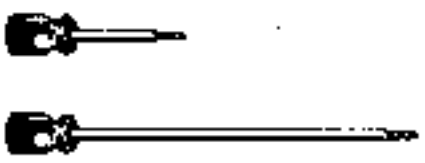
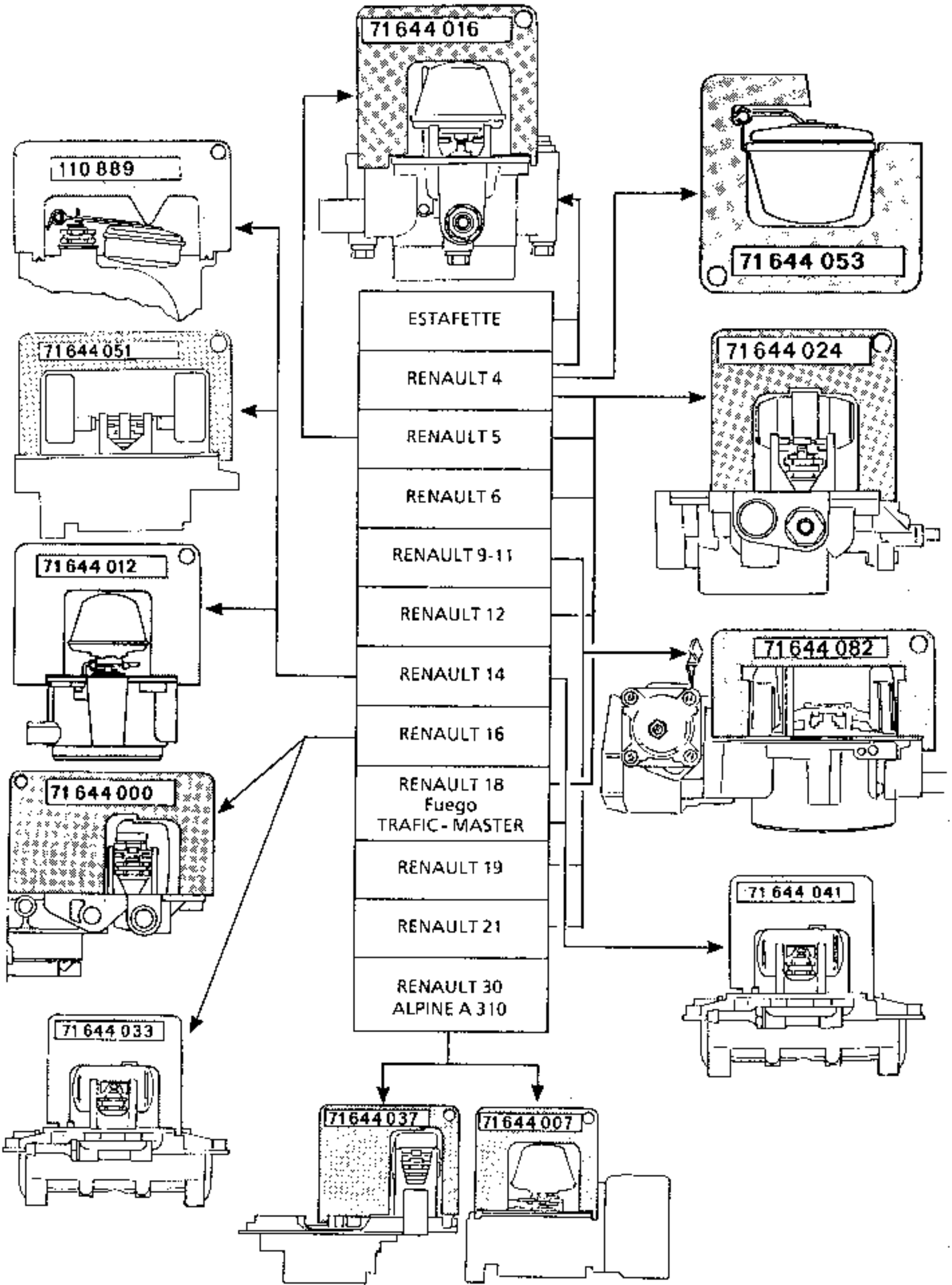
	METHOD Ref.	Ref. M.P.R.	Description
 85 654	**Mot. 453-01**	00 00 045 301	Hose clamps
 73 106	**Mot. 503**	00 00 050 300	Spanner for nuts on carburettor base - 12 mm across flats
 75 723-1	**Mot. 828-01**	00 00 082 801	Flexible screwdriver for carburettor screws fitted with tamperproofing caps
 75 742	**Elé. 556**	00 00 055 600	Cranked spanner for distributor securing nut, 11 mm across flats
 80 079	**M.S. 787**	00 00 078 700	Set of gauge rods for adjusting carburettors
 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.

SOLEX : set of 12 gauges for RENAULT vehicles part no. 77 01 381 196, see details below.

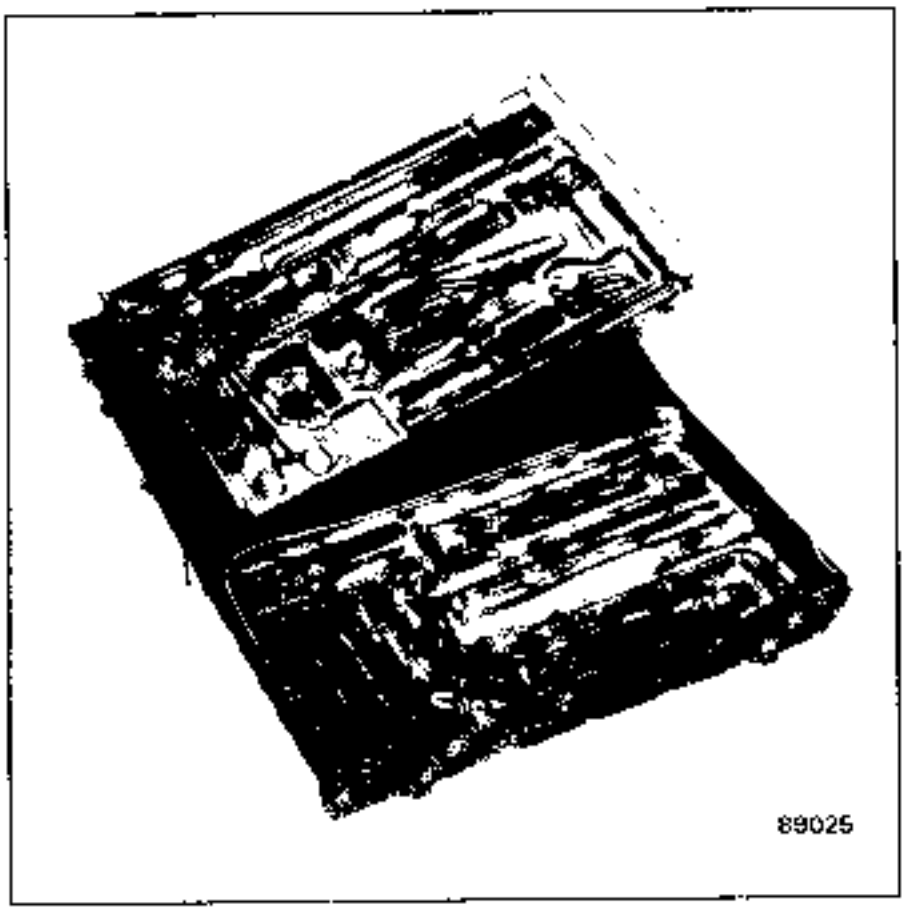


SUPPLIER **FACOM** UK LTD

D 400 ignition-carburation tool kit

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

Overall dimensions : 452 x 270 x 105 mm

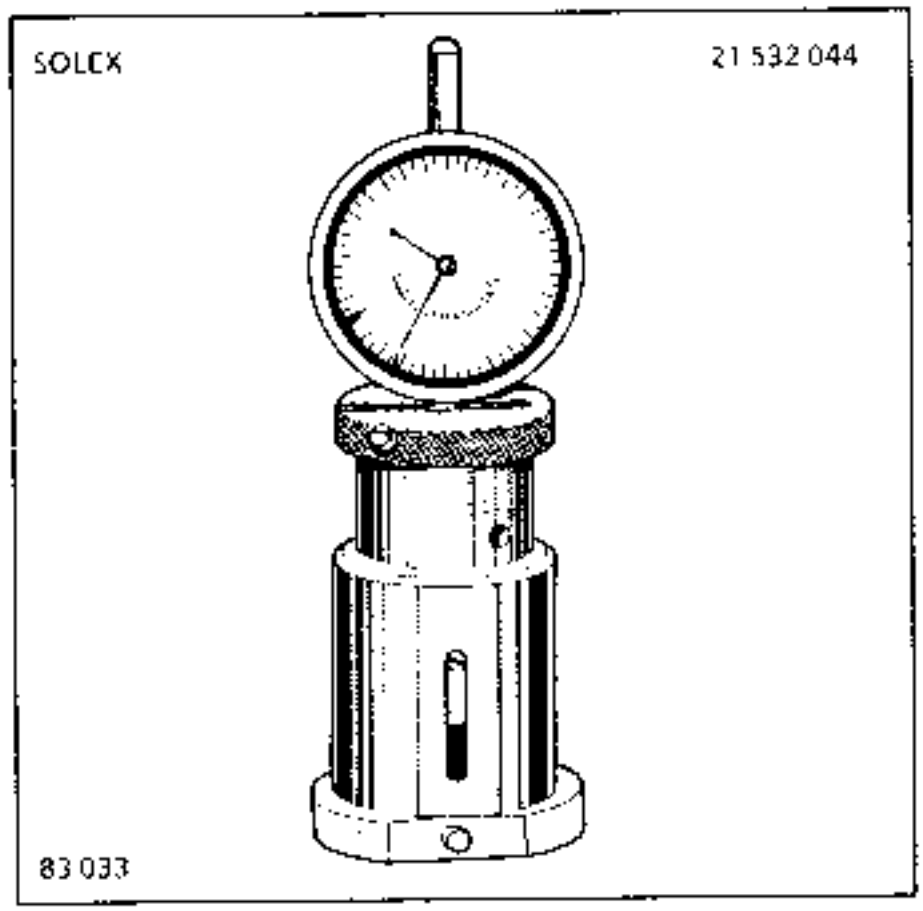


89025

SUPPLIER **R.T.U.**

Tool for measuring the throttle plate angle

Part Number : 77 01 383 152



83 033

SUPPLIER : Renault

Part Number : 77 01 385 051
Use D.E.S. Didier

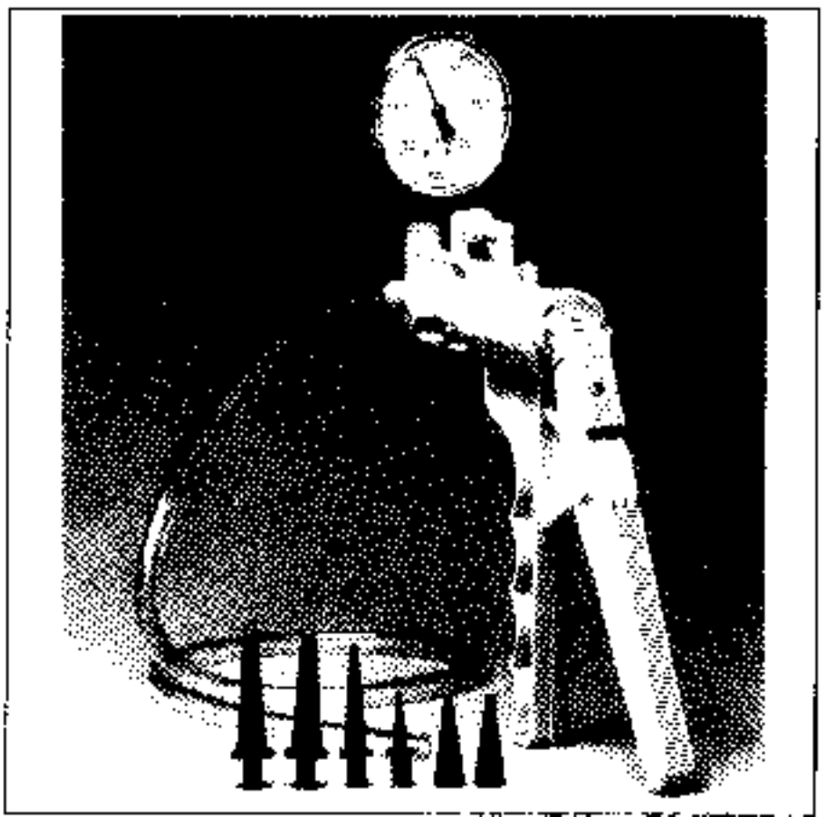
MANUALLY OPERATED PRESSURE/VACUUM PUMP

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 : To test or adjust 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 :

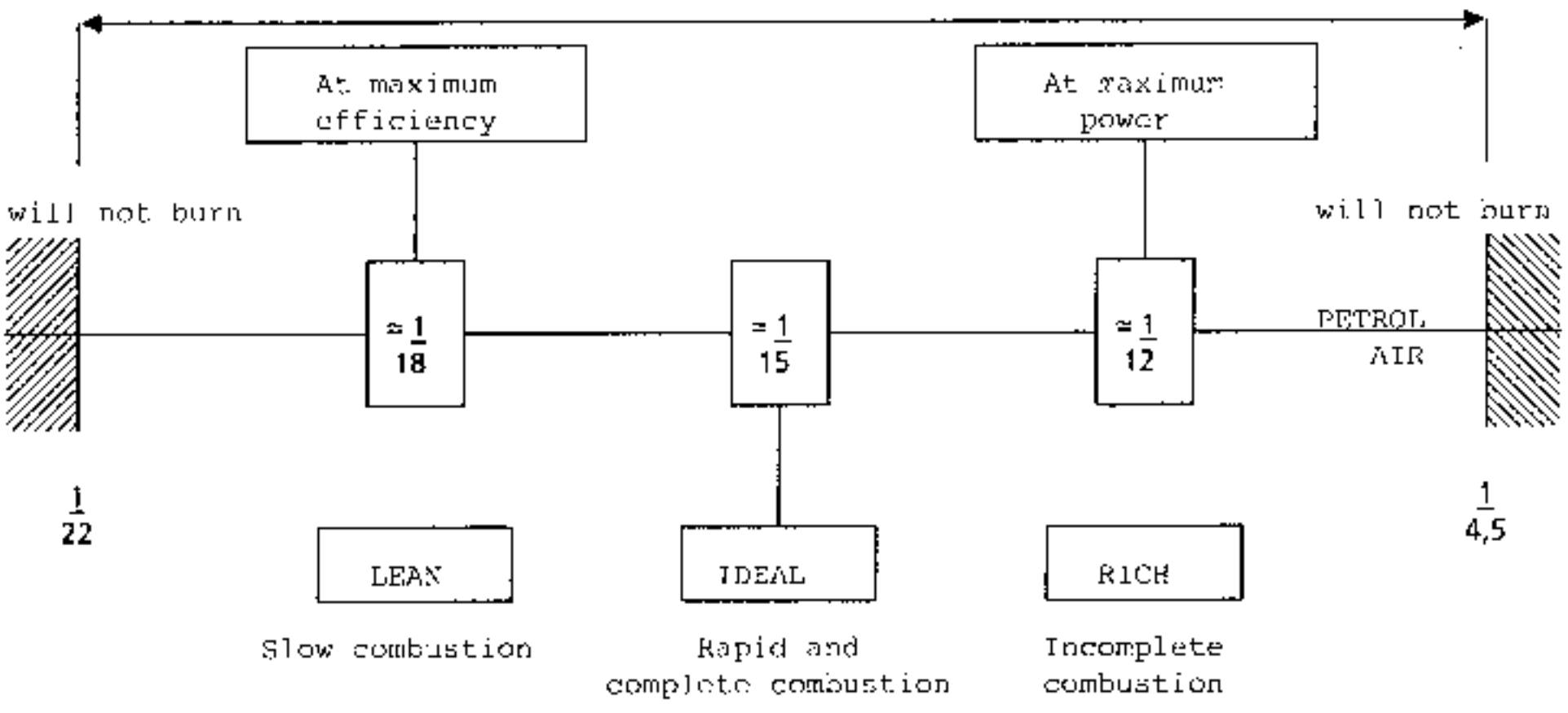
Homogeneous | Gaseous | Correctly proportioned

that is to say which is in combustible form

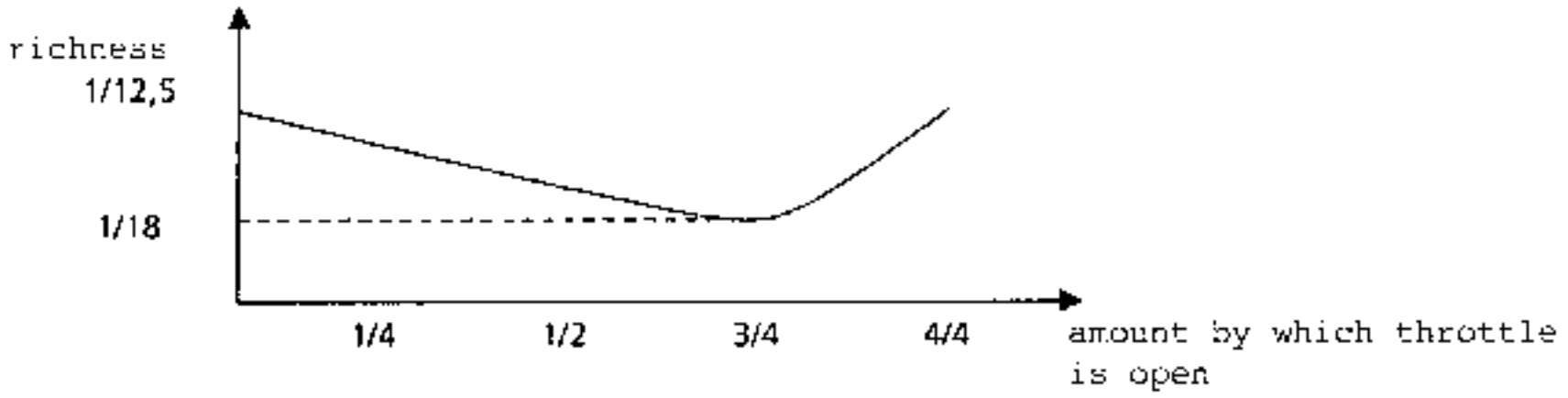
- Homogeneous and in gaseous form : The object is to convert the fuel from a liquid to a gaseous state. To do this it must be atomised. To facilitate this condition change we place the fuel input in a low pressure area which is perpendicular to the air intake flow.

- 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 :

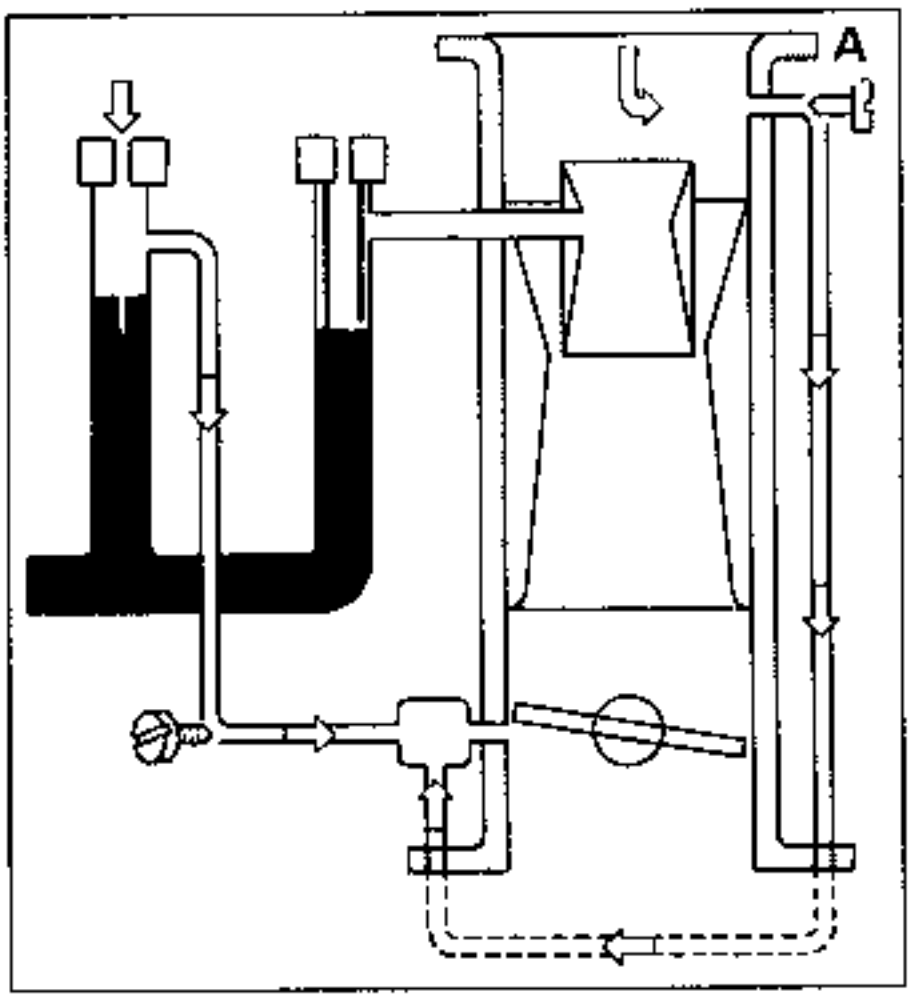
- the constant level float chamber
- the idling jet system
- the main jet system
- the choke system

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

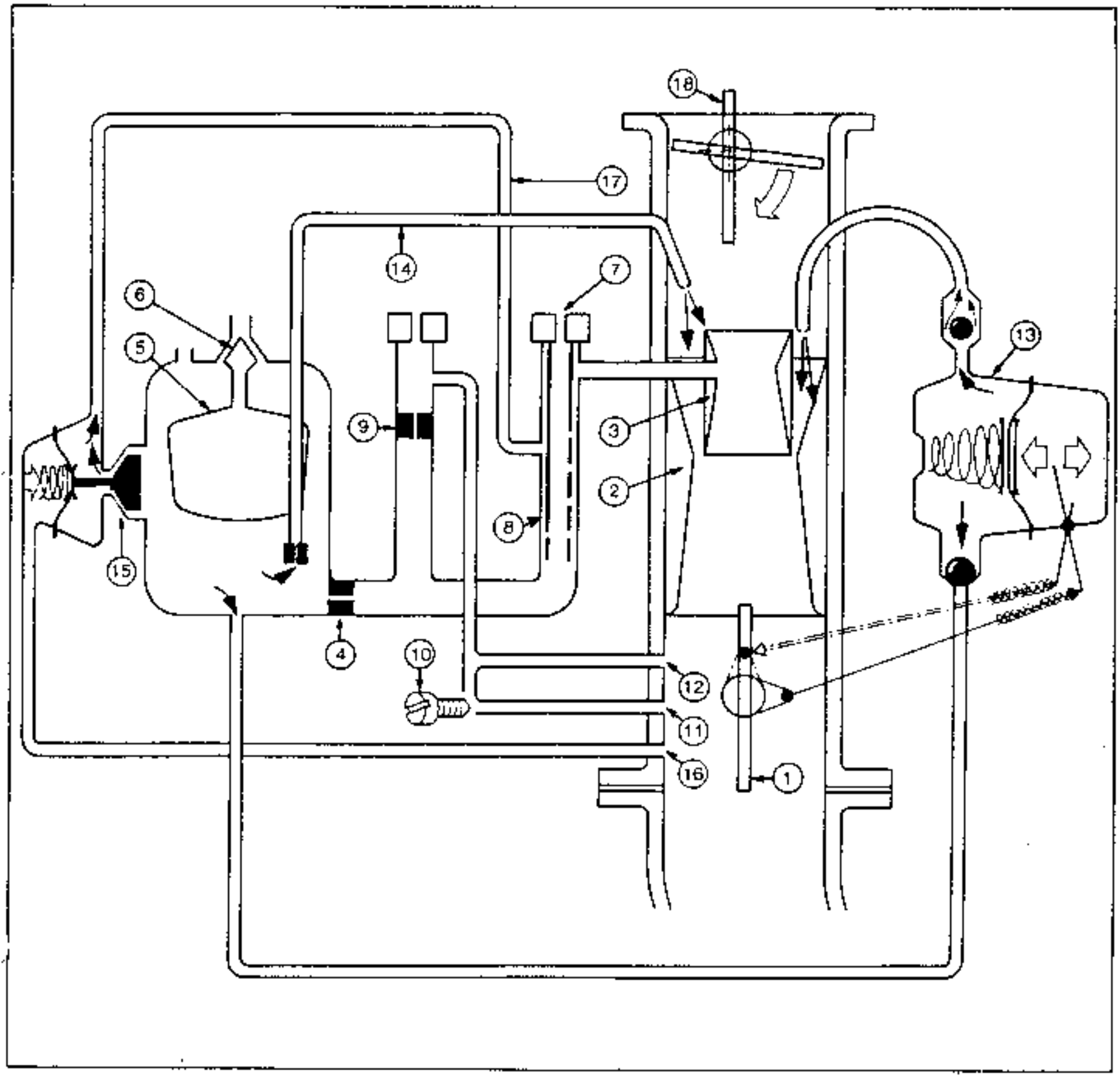
- systems which cater for :
  - acceleration
  - enrichening the mixture at heavy loads
  - enrichening the mixture at high speeds
  - carrying out the functions of emission control

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 ie. : 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 the condition of the insulation and the 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 or poor insulation : plug leads, distributor cap, rotor arm.	
4 - Spark plugs defective.	Check : spark gaps, correct 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.	Adjust the choke cable, in the case of semi-automatic chokes (check that the choke flap is closing correctly).
- Positive throttle opening incorrect.	Correctly adjust the positive throttle opening.
- Main jet blocked.	Unblock the jet.
- Fuel level incorrect.	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 incorrect.	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 : the sensor and the 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 and 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 clearances 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 ignition (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 the temperature switch & heater circ.
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, correct 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 plates dirty.	Clean with a "carburettor cleaning" product.
14 - Idling jet too small.	Check that the j t is of the correct size and carry out a test with a slightly larger 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 the 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 - Enricheher 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 CAUSE	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 carburetlor 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 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 (1000 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) and carburation defects 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 (1000 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

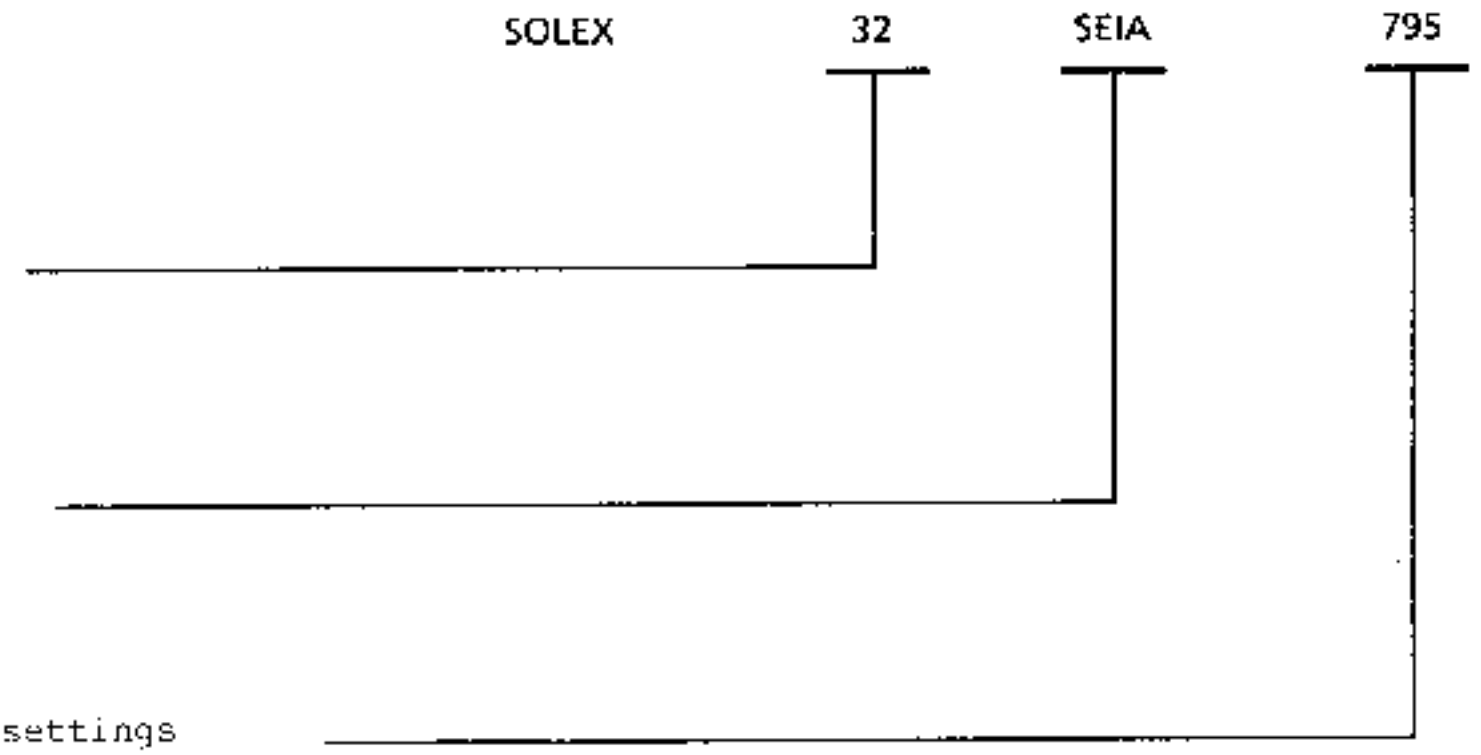
- Jet too large, loose or has been opened out.	Main jet system mixture too weak.
- Jet too small, dirty or partially blocked.	Main jet mixture too rich.

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.

SOLEX carburettors are fitted with an identification plate secured to one of the carburettor float chamber securing screws or by means of an adhesive pad to the carburettor body.

EXAMPLE :

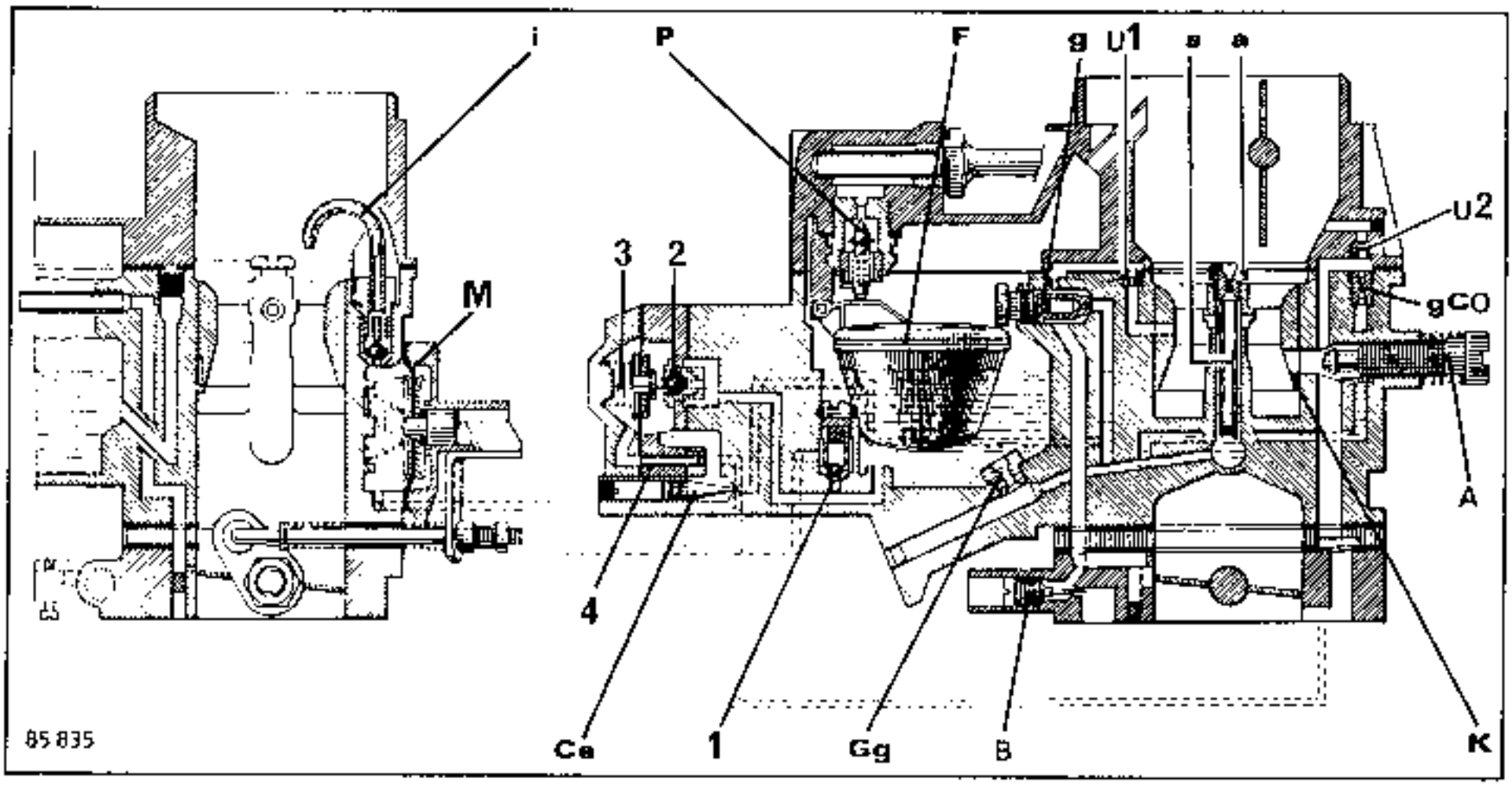


DESCRIPTION

The SOLEX 32 BIS carburettor is a vertical down draught carburettor with a manually operated choke flap.

It incorporates the following systems :

- the main jet system,
- the constant mixture or limited CO idling circuit,
- a base which is heated by hot water,
- a lever operated accelerator pump,
- a full load, all speed enrichening system.



K	Choke tube
Gg	Main jet
g	Idling jet
a	Air compensator jet
S	Emulsion tube
u1	Air calibration jet
P	Needle valve
gco	Auxiliary jet
u2	Air calibration jet
Ce	Econostat calibration jet
M	Accelerator pump diaphragm
i	Accelerator pump injector
F	Float
A	Idling speed air jet
B	Idling speed mixture jet

THE MAIN JET SYSTEM

Under normal running conditions, the engine is supplied with mixture through the diffusion assembly (C), the fuel entering through the main jet (Cg), which is screwed into the bottom of the float chamber and the air through the choke tube (K).

The air-fuel proportions are automatically adjusted by the air compensator jet (a) which is screwed into the emulsion tube holder, which is a force fit in the jet well.

THE IDLING CIRCUIT

a) Constant CO idling

The carburettor comprises a constant mixture idling system with two circuits.

The idling speed is adjusted without touching the throttle plate stop screw. The throttle plate angle is adjusted when the carburettor is assembled and should not be subsequently altered as this will considerably upset the running of the engine during acceleration and at idling.

The idling system consists of two circuits :

- the first, which is the main idling system, brings to the jet controlled by screw (B) a fuel and air mixture which is calibrated by means of the idling jet (g) and the air for which comes on one hand from the choke tube at its narrowest point and on the other hand from the float chamber cover through calibrated jet (u1).

- the second, the constant mixture system, brings to the jet controlled by the screw (A), air taken from the choke tube to which has been added, on the input side of the screw, a fuel-air mixture controlled by jet (gco) and air controlled by calibrated jet (u2).

By turning screw (A), one can adjust the engine idling speed without altering the mixture to any great extent.

b) The limited CO circuit (one circuit only)

On this the idling circuit only has one idling jet (g) and has no air adjustment screw (A). The idling speed is adjusted by turning the throttle stop screw but the mixture strength is still adjusted at screw (B).

PROGRESSIVE TRANSFER

The additional mixture required for the engine to run properly when it transfers from idling to operation on the main jet is provided by a by-pass slot fed from the same source as during idling.

The slot is in line with the upper edge ... of the throttle plate.

THE ACCELERATOR PUMP

The accelerator pump is mechanically operated by a cam.

When it is in the idling position, with the throttle closed, the diaphragm (M), pushed back by a spring, allows the pump cavity to fill with fuel through a ball valve (1).

When the diaphragm is moved by a cam secured to the throttle shaft, each time the engine is accelerated, it forces fuel out through an injector (i).

THE ENRICHENING SYSTEM (econostat)

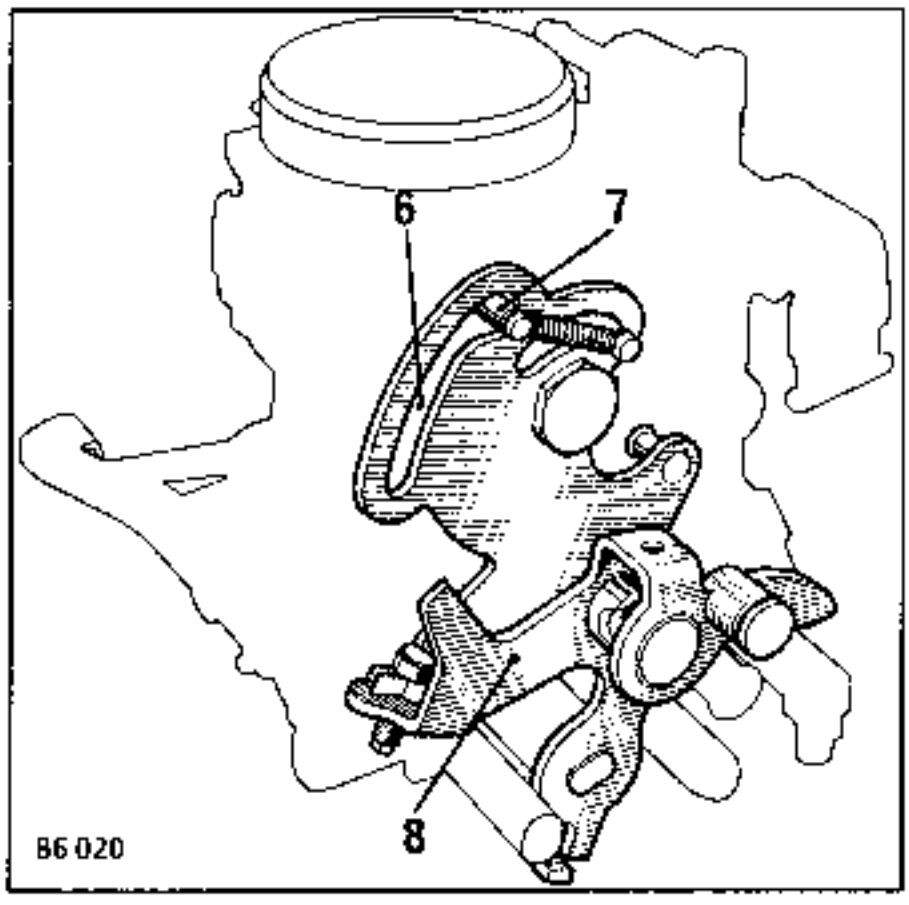
A valve (2) secured to a diaphragm moves under the combined effect of the spring (3) and the diaphragm itself. The diaphragm is subject to the vacuum in the inlet manifold to which it is connected by duct (4).

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

Additional fuel, from the float chamber, enters the main jet system through a calibrated duct (Ce).

THE CHOKE SYSTEM

The mixture is made richer, during starting, by the closing of an eccentric flap controlled by cam (6) and lever (7). Another lever (8) partially opens the throttle, at the same time.
The fast idling speed that results from the partial opening of the throttle assists the engine to warm up more quickly and also makes it possible to drive off immediately.



PNEUMATICALLY OPERATED CHOKE FLAP

Since the end of 1983, 32 BIS carburettors type 797 and 829 have been fitted with a choke system of the "ECO FLAP" type that permits the choke flap to take up a position that varies to suit the engine loading during the warm-up phase.

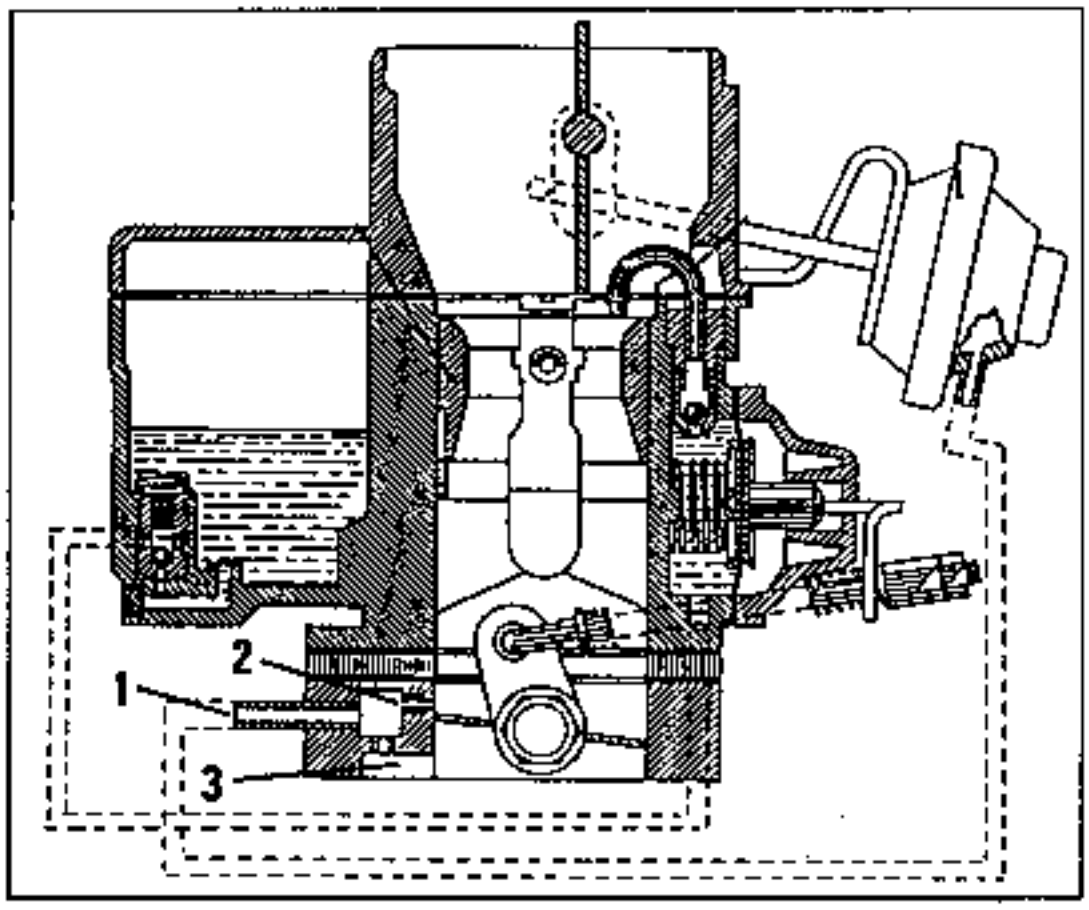
The vacuum take-off point (1) for the choke opening after starting (C.O.A.S.) assistance unit is through two calibrated jets on the carburettor body, positioned, respectively, on the input side (2) and on the output side (3) of the throttle plate when it is in the closed position.

Depending on the position of the throttle, the vacuum take-off on its input side will act either as a calibrated leak effecting the take-off point on the output side or assists it in the transfer of the manifold vacuum to the assistance unit.

a) In the Positive Throttle Opening (P.T.O.) position, the vacuum take-off point on the input side is covered. When the engine is started, the assistance unit therefore only receives part of the vacuum from the manifold. It progressively opens the flap up to the limit permitted by the control cam acting as a mechanical stop.

b) After it is turned by a small amount (approximately 25°) the flap control cam moves away from its mechanical stop position. The amount by which it opens is then no longer associated with the variations in the balance, within the assistance unit, between that part of the manifold vacuum that reaches it and the effect of the diaphragm return spring. When the engine is accelerated slowly, the amount by which the flap opens increases as soon as the throttle plate opens the vacuum take-off on its input side.

At full load, the fall in the vacuum in the manifold tends initially to allow the flap to close (up to the limit permitted by the shape of the control cam)



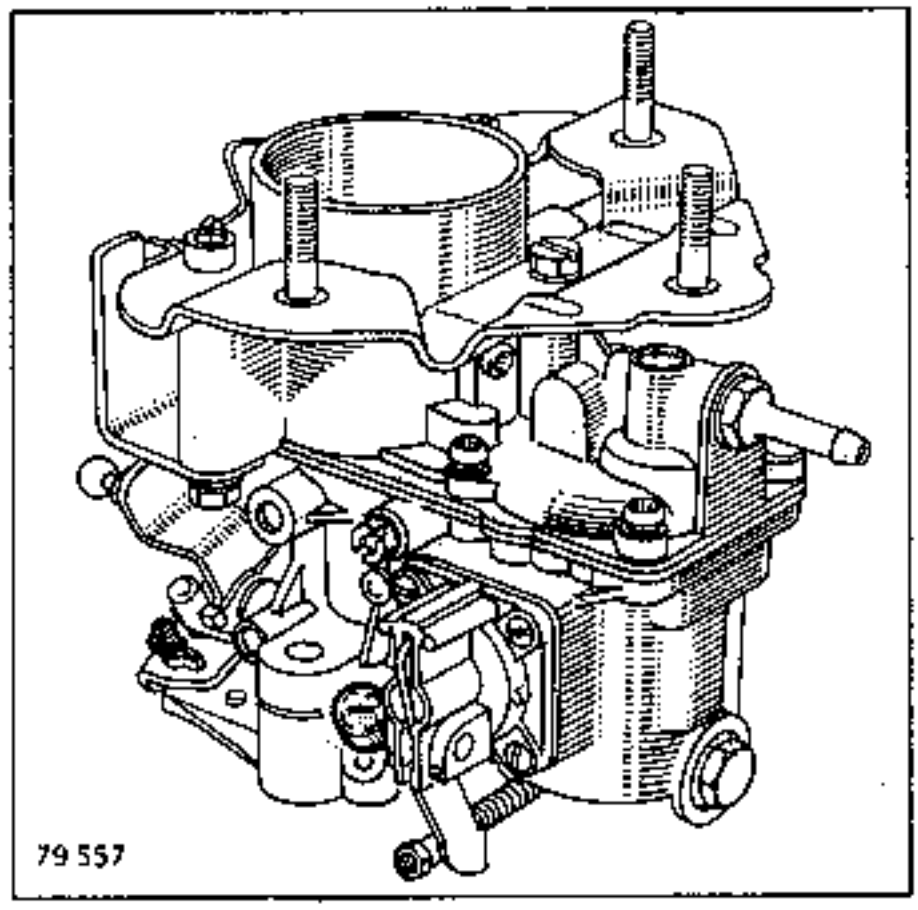
until the increase in the air intake flow causes it to re-open.

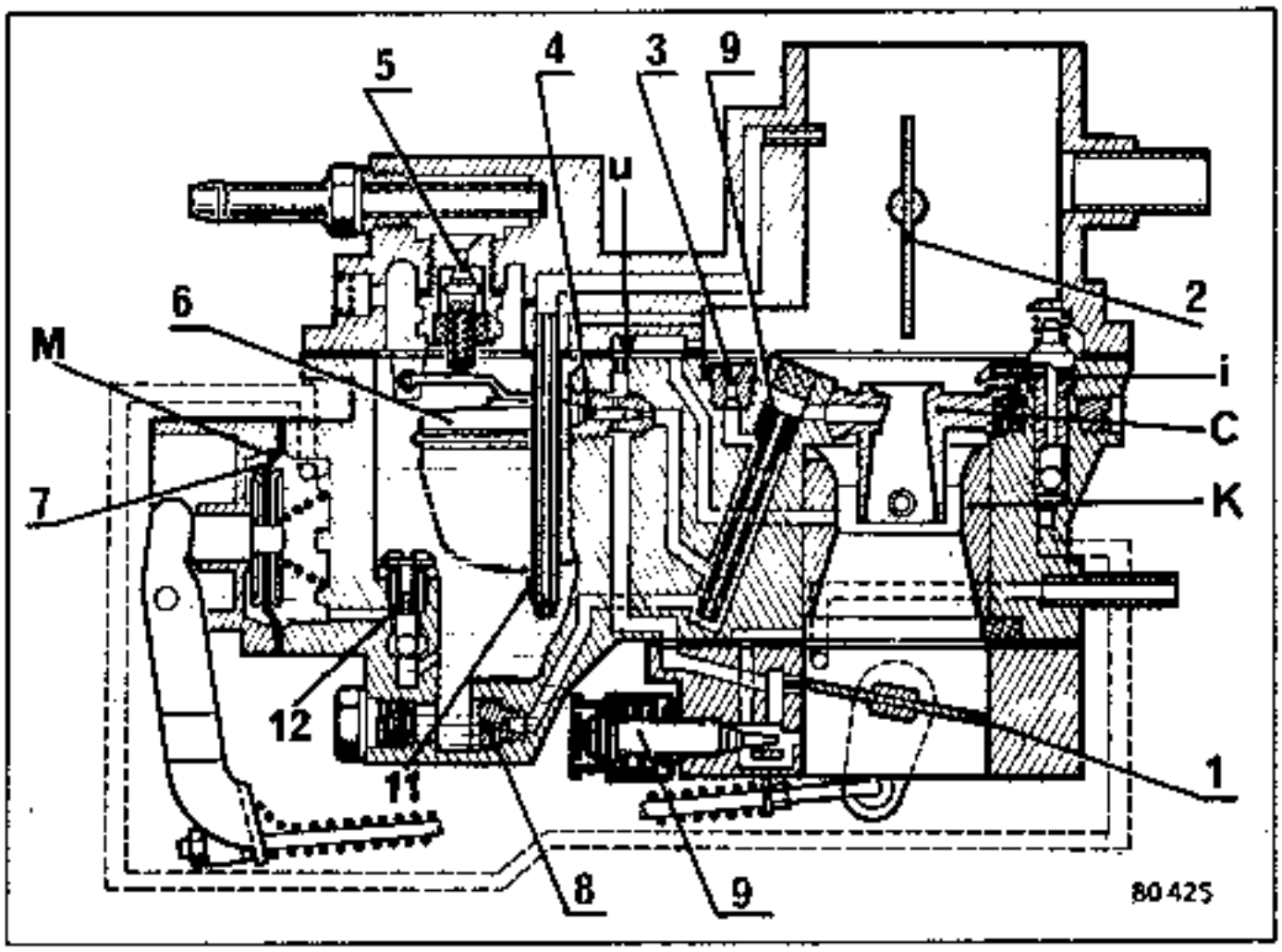
DESCRIPTION

The SOLEX 32 DIS carburettor is a vertical, down draught carburettor with a manually operated choke flap.

It incorporates the following systems :

- the main jet system
- the idling circuit
- a system for heating its base with hot water
- a lever operated accelerator pump
- a maximum speed enrichener (econostat).





1. Throttle plate
2. Choke flap
3. Air compensator jet
4. Idling jet
5. Needle valve
6. Float
7. Accelerator pump
8. Main jet
9. Emulsion tube
10. Idling speed mixture screw
11. Maximum speed enrichener (econostat)

THE MAIN JET SYSTEM

Under normal running conditions, the eng- is supplied with mixture through the diffusion assembly (C), the fuel enter- ing through the main jet (8) which is screwed into the bottom the flat chamber and the air through the choke tube (K).

The air-fuel proportions are automatic- ally adjusted by the air compensator jet (3) which is screwed into the emulsion tube holder, which is a force fit in the jet well.

THE IDLING CIRCUIT

The idling jet (4) is fed :

- with fuel through the duct from the metering well,
- with air through the calibrated orif- ice (0).

The emulsion produced by the jet (4) is passed through a duct to the mixture screw (10) and mixes with the air drawn into the engine through the intake sys- tem.

PROGRESSIVE TRANSFER

The additional mixture required for the engine to run properly when it transfers from idling to operation on the main jet is provided by a by-pass slot fed from the same source as during idling.

The slot is in line with the upper edge of the throttle plate.

THE ACCELERATOR PUMP

The accelerator pump is mechanically operated by a cam.

When it is in the idling position, with the throttle closed, the diaphragm (M) pushed back by a spring, allows the pump cavity to fill with fuel through a ball valve (12).

When the diaphragm is moved by a cam secured to the throttle shaft, each time the engine is accelerated, it forces fuel out through an injector (i).

THE MAXIMUM SPEED ENRICHENING SYSTEM (ECONOSTAT)

The jet (11) in the float chamber passes fuel into the air intake through a tube above the choke flap (2) to provide for a suitable mixture when the vehicle is operating at high speed. It gradually increases its output as the vacuum in- creases on the input side of the throttle plate.

When the engine speed falls, with the throttle still open (descending an in- cline for example), the vacuum falls and the output from the auxiliary jet gradually decreases to nothing.

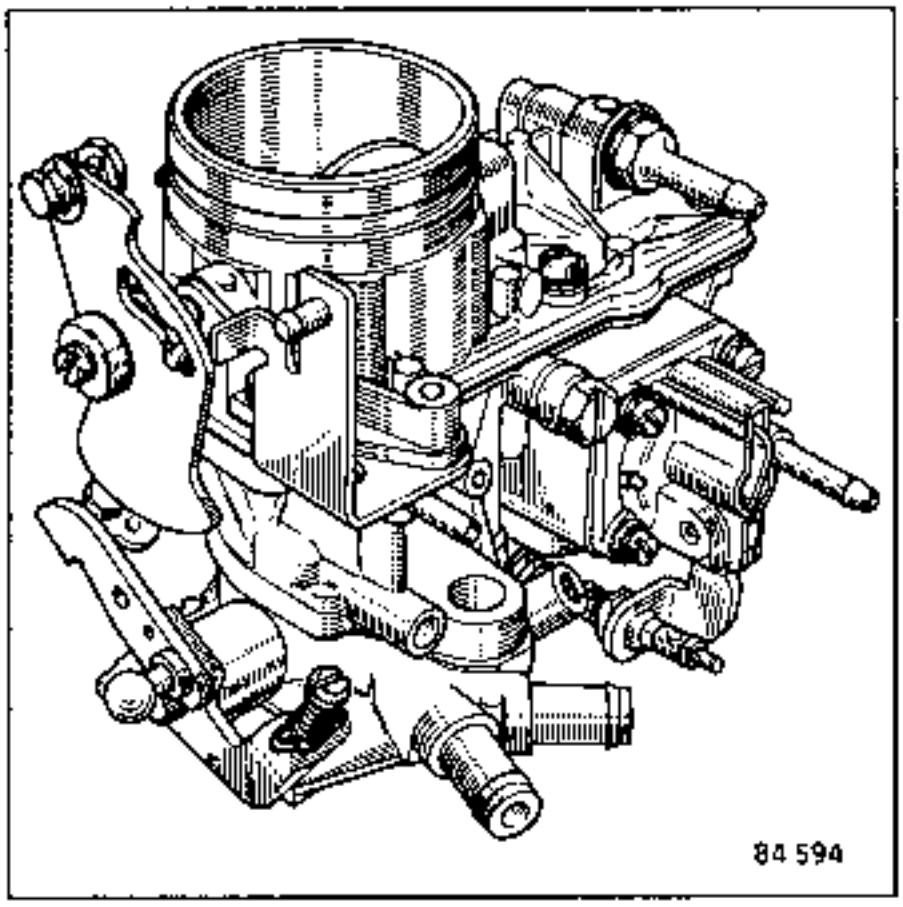
THE CHOKE SYSTEM

The mixture is made richer, during starting, by the closing of an eccentric flap controlled by a cam and a lever. At the same time another lever partially opens the throttle.

The fast idling speed that results from the partial opening of the throttle assists the engine to warm up more quickly and also makes it possible to drive off immediately.

THE MECHANICALLY OPERATED CHOKE SYSTEM

Since the end of 1983, 32 DIS carburett- ors type 806 are fitted with a choke system of the "ECO FLAP" type which works in exactly the same way as that described for 32 BIS carburettors types 797 and 829 (see page 12-24).



DESCRIPTION

The SOLEX 32 DIS supercharged carburettor is a single barrel carburettor mounted on the output side of the turbocharger. All its circuits are therefore subject to supercharging pressure.

The float chamber does not have an external vent and, as all the internal sections of the carburettor are subject to supercharging pressure, it must be absolutely leakproof.

Improved seals are fitted at the following points :

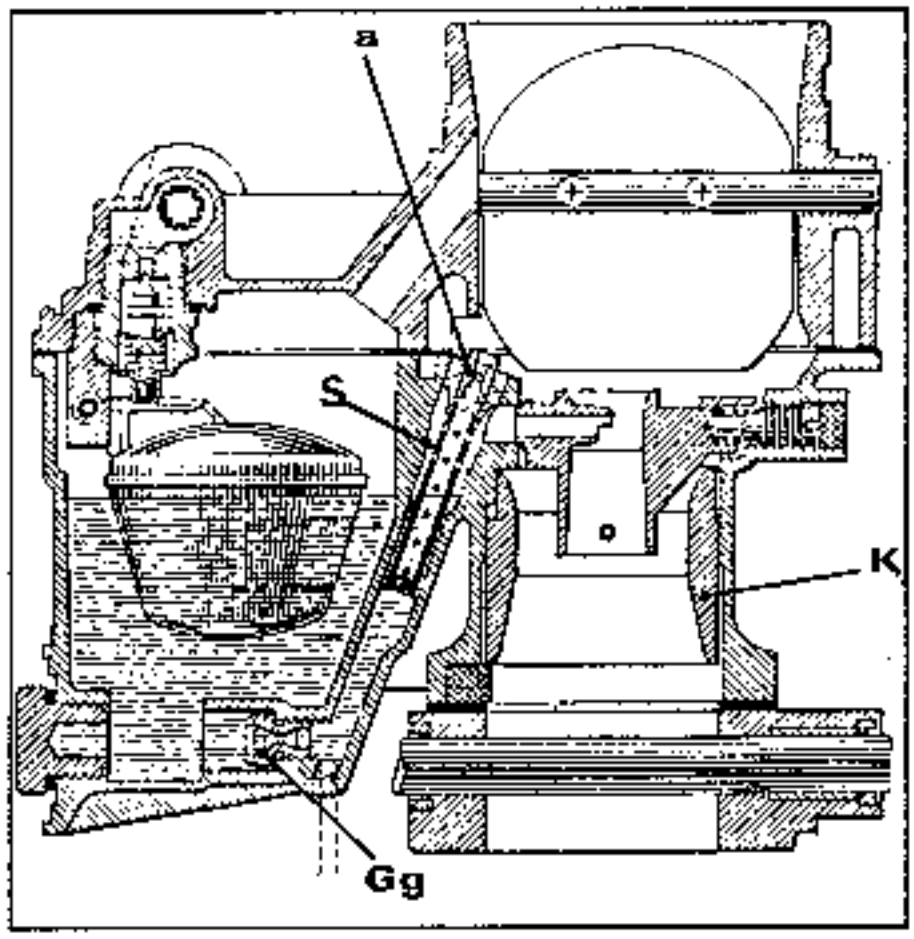
- the magnesium float chamber and cover,
- the float chamber gasket made from fabric reinforced rubber (thickness 0.6 mm),
- the throttle shaft bearings which are fitted with lip seals,
- the idling jet which has a plug and a seal,
- the mixture screw which is in a well (for tamperproofing purposes) and is equipped with an O ring,
- the accelerator pump and enrichener diaphragms which are stronger,
- the gasket face between the float chamber and its cover gasket faces which are wider than the ones on the SOLEX DIS

naturally aspirated carburettor.

THE MAIN JET SYSTEM

Under normal running conditions, the engine is supplied with fuel through the main jet (Gg) and air through the choke tube (K).

The air fuel proportions are automatically adjusted by the calibrated air intake represented by jet (a). The emulsion tube (s) extended by the jet tube, of which it is an integral part, is a force fit in its location and therefore cannot be removed.

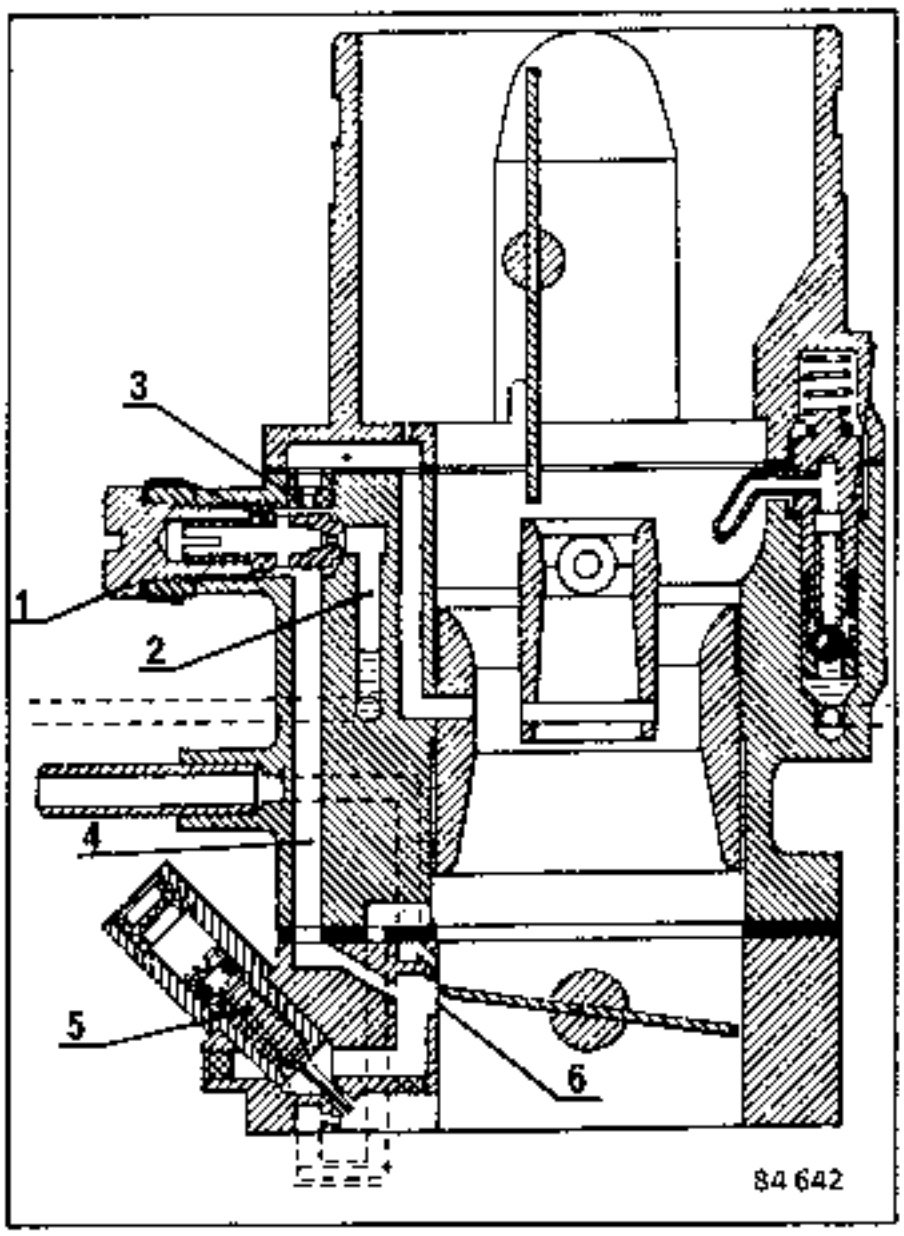


THE IDLING CIRCUIT

The idling jet (1) is supplied :

- with fuel through duct (2) which takes it from the emulsion well on the output side of the main jet,
- with air through the calibrated orifice (3).

The emulsion, created by the jet (1) is passed through duct (4) to the mixture screw (5) and mixes with air drawn in by the engine in the intake ducting.



PROGRESSIVE TRANSFER

The flow for this is through a vertical slot (6) in the idling circuit ducting (4).

As soon the throttle plate partially opens, the slot (6) is subjected to the vacuum and the fuel flows from it.

THE ACCELERATOR PUMP

The accelerator pump is mechanically operated and is contained in a body which is part of the carburettor float chamber casting.

When it is in the idling speed position, with the throttle closed, the diaphragm (M), pushed back by a spring, allows the pump cavity to fill.

The diaphragm (M) is connected to the throttle control system by a system of levers and a link connected to the throttle shaft. When the throttle opens, the movement of the shaft causes the diaphragm (M) to move, instantaneously, and force the fuel contained in its cavity through the ball valve and the calibrated jet into the input end of the choke tube. The size of the injector jet determines the speed at which it is injected.

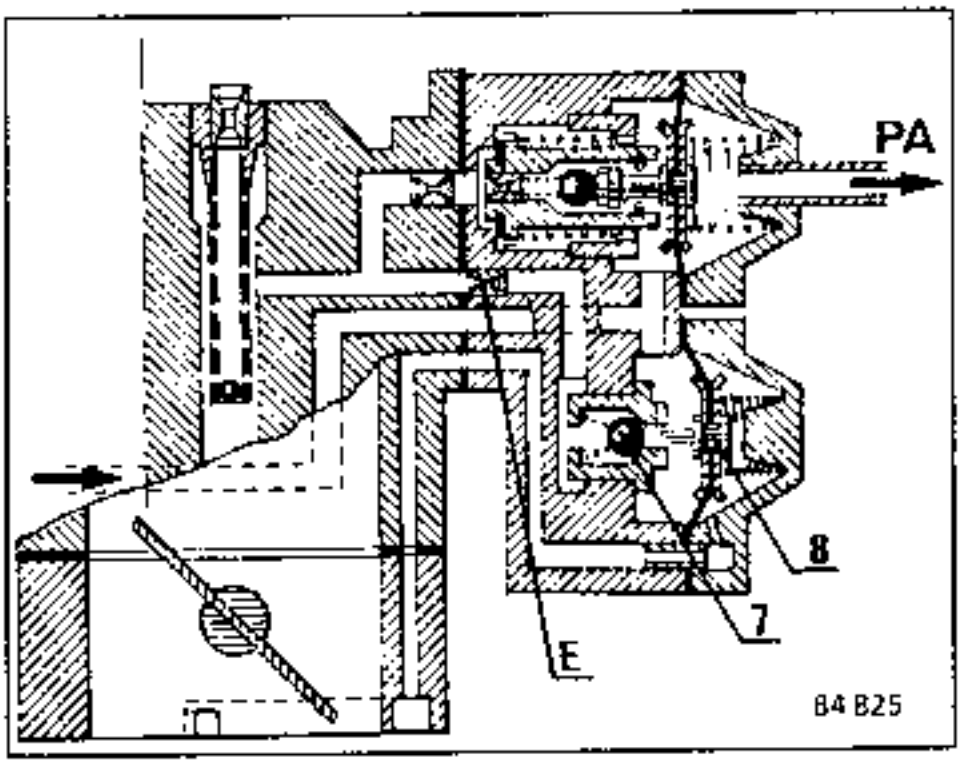
NOTE : To balance out the pressures to which the diaphragm is subject, the turbocharging pressure is supplied to the control lever side of the diaphragm through duct (1).

THE FULL LOAD ENRICHENING SYSTEM

This consists of a jet (E) operated by a ball valve (7) and a diaphragm (8) which is subject to the vacuum in the inlet manifold.

At idling speed and under partially loaded conditions, the vacuum in the manifold acts on the diaphragm and the ball is held closed.

At full load and when the engine is accelerated, the manifold vacuum and the spring act on the diaphragm, the ball valve (7) opens and establishes the enrichening circuit the flow of which is calibrated by the jet (E).



THE TURBOCHARGING ENRICHENING SYSTEM

There are 3 possible types :

The two stage type

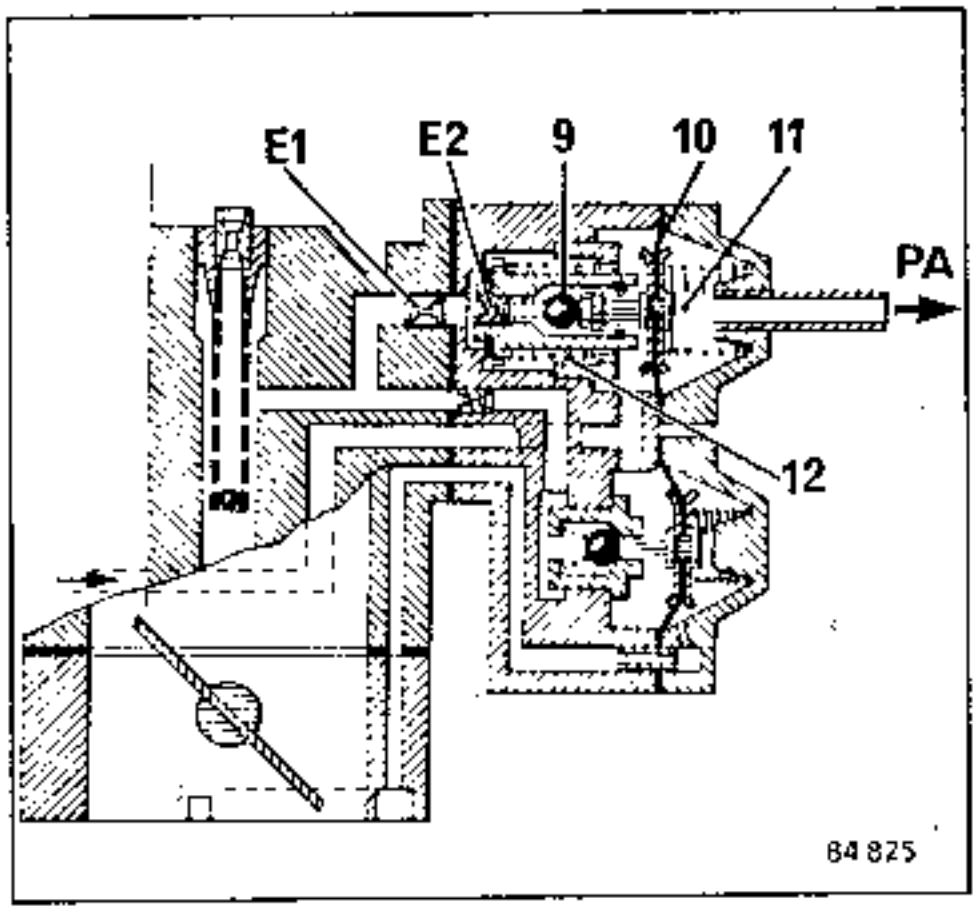
This consists of a jet (E1), a calibrated piston (E2) held against its seat by a spring (12), a ball valve (9), a diaphragm (10) and a spring (11) that holds the valve closed.

The diaphragm is subject, on one side to the fuel pressure and on the other side to atmospheric pressure.

The turbocharging pressure acting on the float chamber varies the fuel pressure.

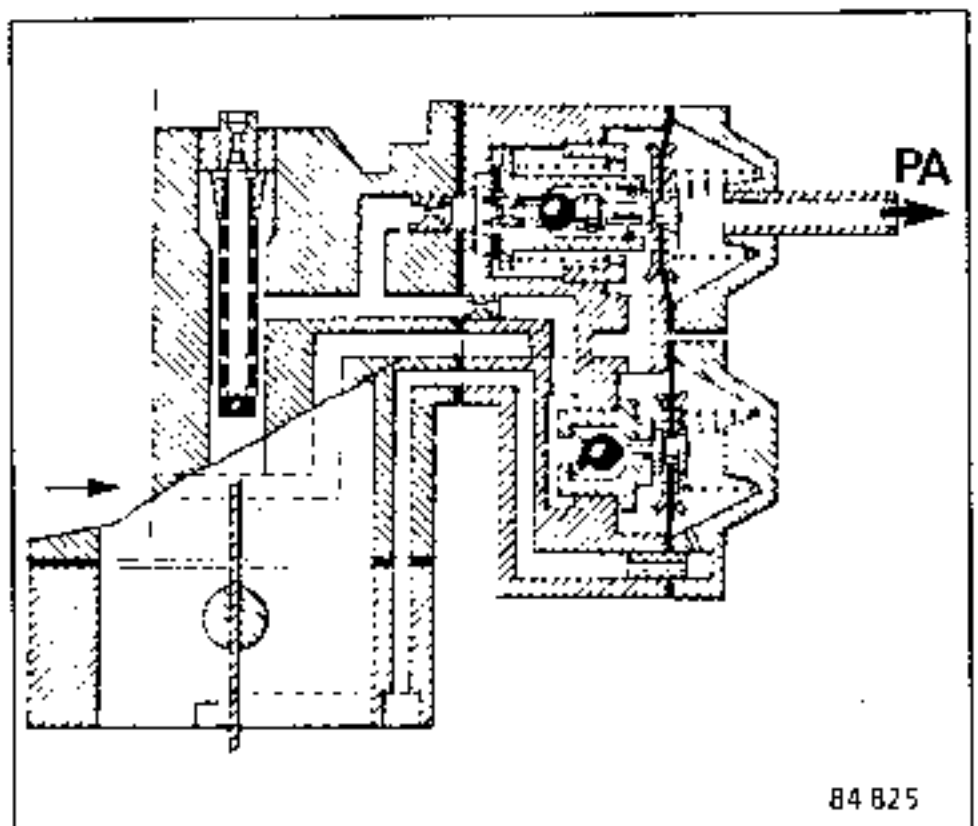
- 1st phase : (low level turbocharging)

The fuel pressure pushes across the diaphragm, the ball valve opens, the fuel passes through jets (E2) and (E1) (the fuel flow is determined by jet (E2), it being smaller).



- 2nd phase : (heavy turbocharging)

The fuel pressure pushes across the diaphragm which pulls with it the piston. The fuel passes round the periphery of the piston and the calibrated jet (E1) determines the amount of additional fuel passed into the metering well.



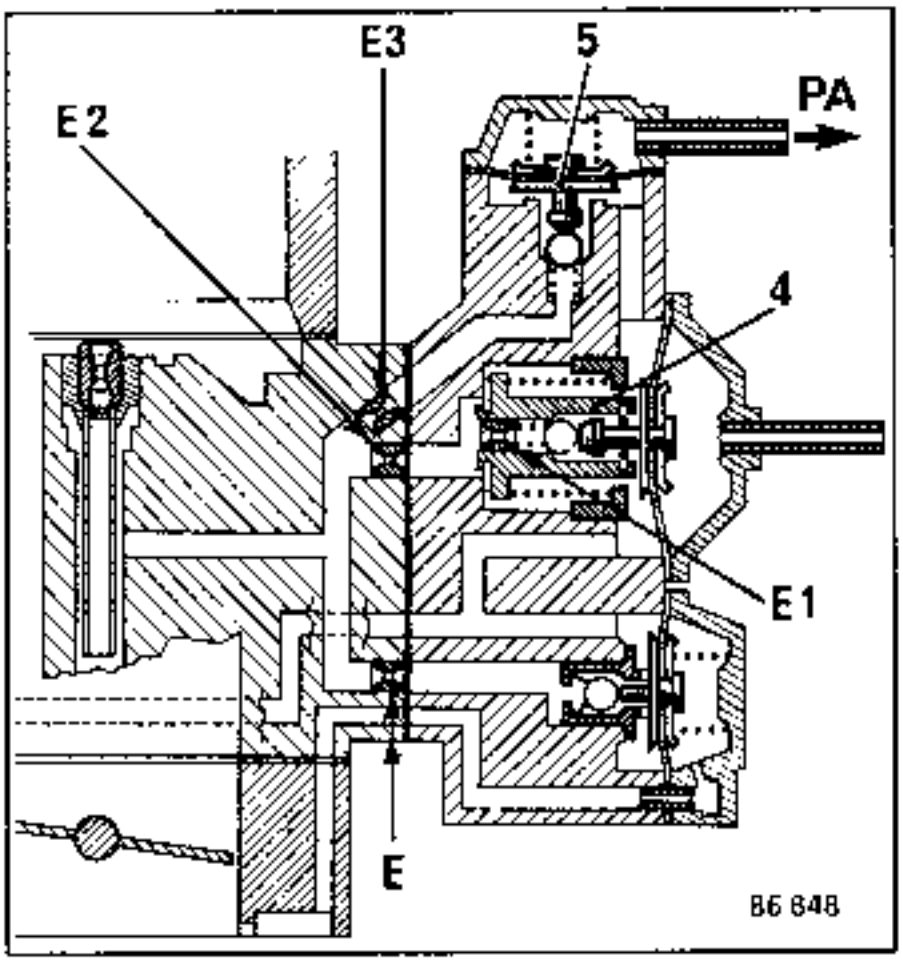
The three stage type

This arrangement has three turbocharging stages.

- 1st phase (low level turbocharging)
The fuel pressure slightly moves the diaphragm, the ball valve opens and fuel passes into the metering well through the calibrated jet (E1).

- 2nd phase (medium turbocharging)
The fuel pressure acting on the diaphragm moves the valve (4). The fuel enters the metering well through the calibrated jet (E2).

- 3rd phase (heavy turbocharging)
The fuel pressure opens the valve (5) and fuel passes through the additional circuit to the metering well through calibrated jet (E3).

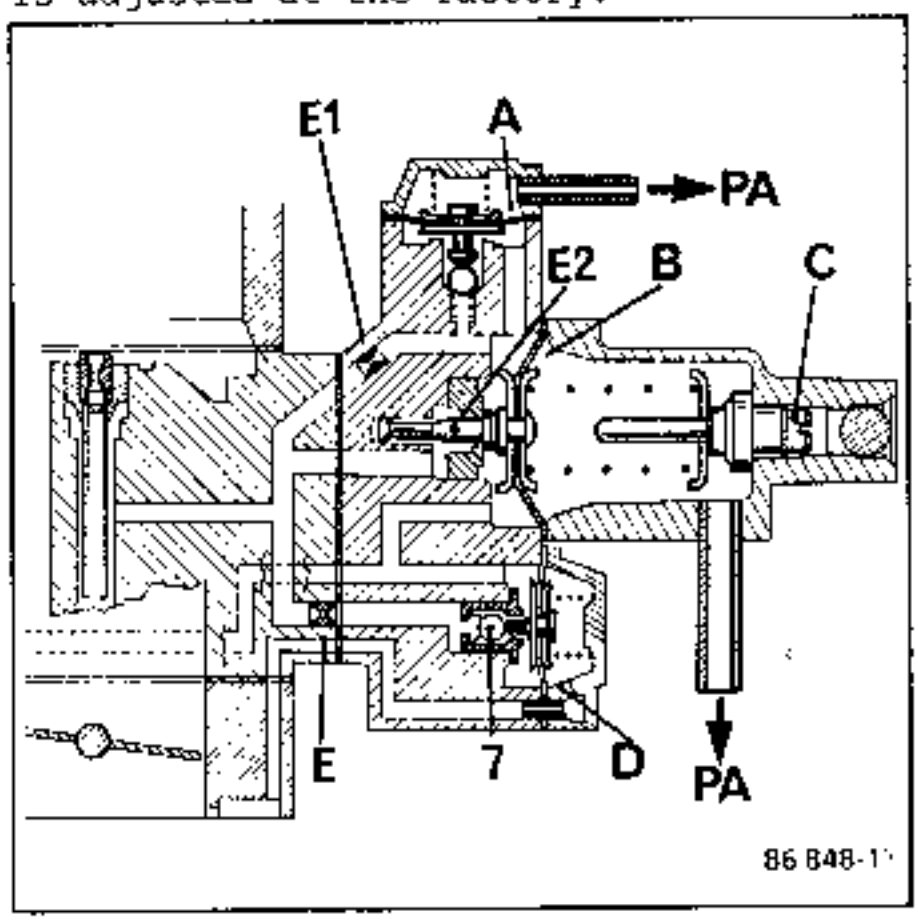


Needle type

The turbocharging enrichener consists of two additional fuel supply units.

- 1st phase : medium turbocharging higher than 320 mbars. The fuel pressure pushes across the diaphragm (A), the ball valve opens, fuel passes through the calibrated jet (E1) and enters the metering well.

- 2nd phase : medium to max. turbocharging. The fuel pressure pushes back the diaphragm (B) which, as it moves, opens the enrichener needle (E2). The output increases until the diaphragm has completed its full movement. The fuel delivery is limited by the screw (C) which is adjusted at the factory.



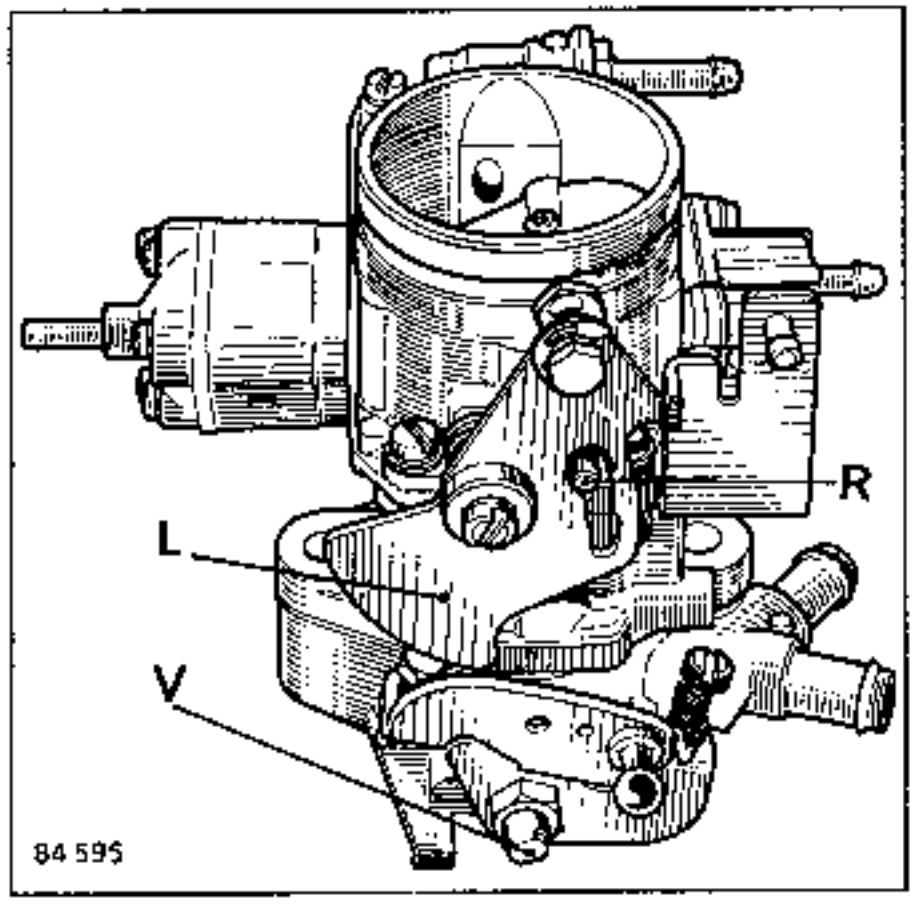
PA : The system is vented to atmosphere by two pipes, pointing downwards, to prevent fuel being projected on to the hot parts of the engine if one of the diaphragms fails.

THE CHOKE SYSTEM

When the engine is started from cold, with the choke knob pulled fully out (position known as the "very cold" position), a calibrated spring (R), acting on the lever fitted to the end of the choke flap shaft, holds the flap closed.

The throttle plate (V), which is moved by the cam lever (L) on the system that acts on the positive throttle opening lever roller, is itself partially opened by a fixed amount, a feature that allows the engine to be started at low temperatures.

As soon as the engine has started, the vacuum causes the flap, which is counterbalanced by the calibrated spring, to open, partially, and provide the required fuel supply to the engine.



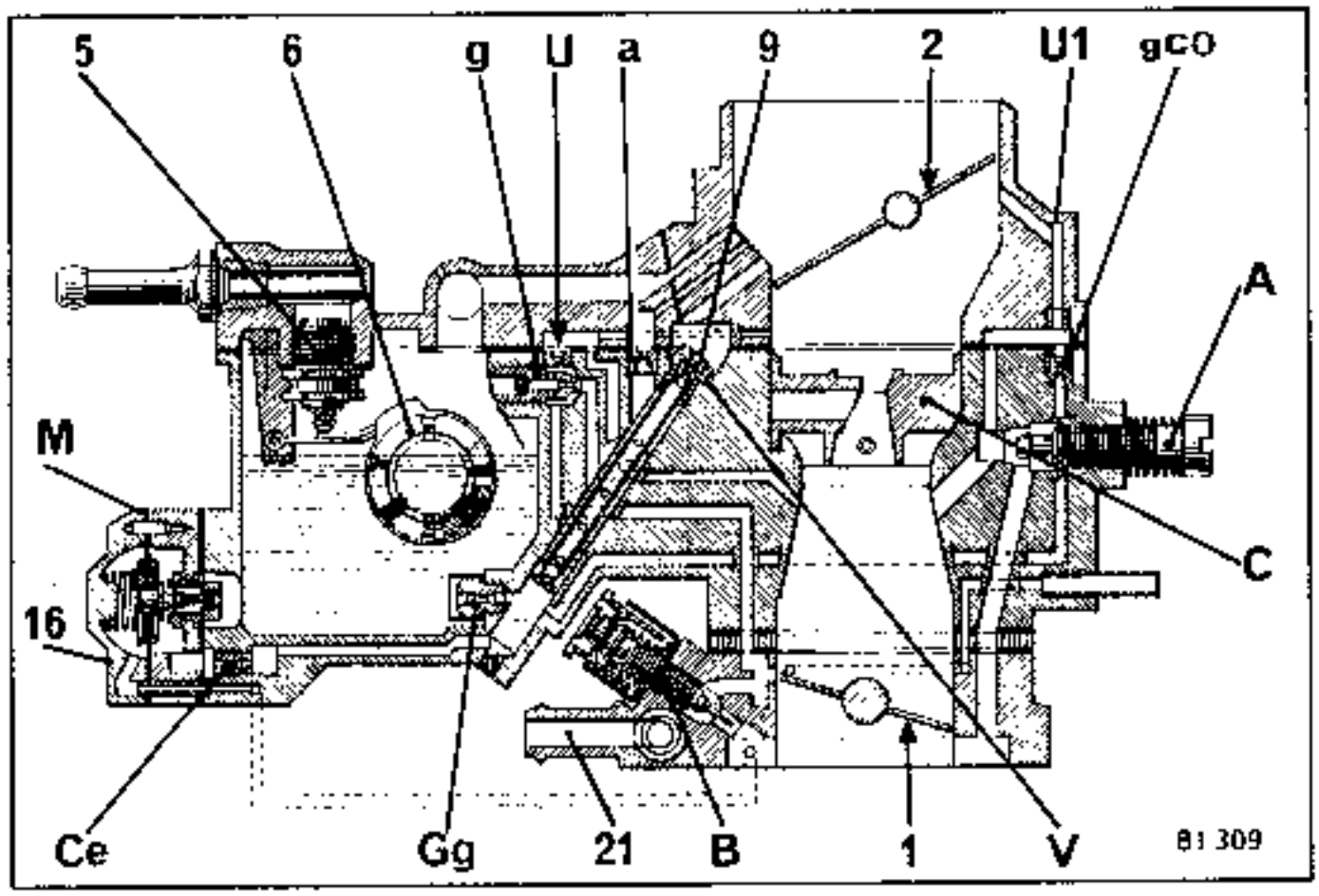
DESCRIPTION

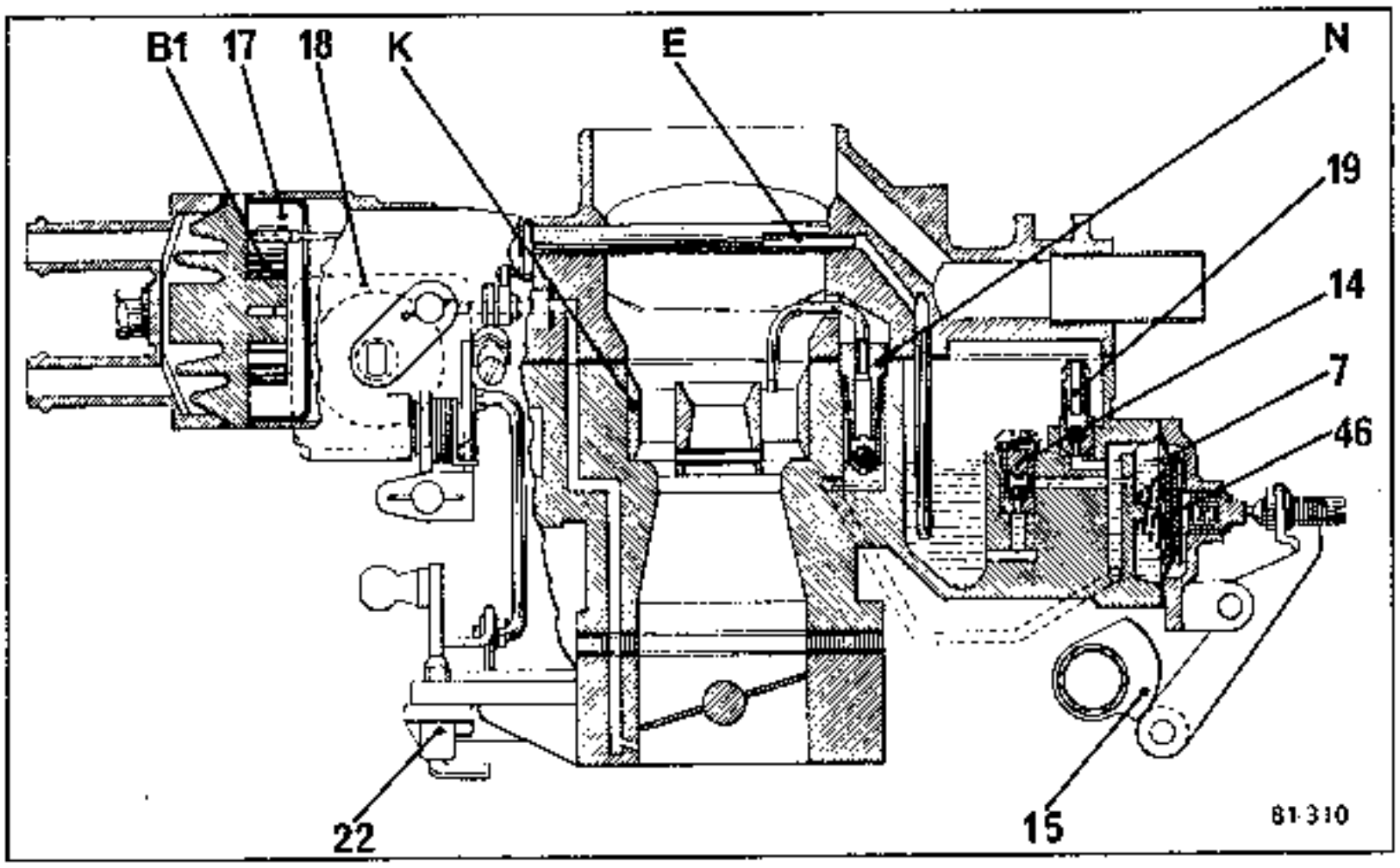
The SOLEX 32 EITA - 35 EITA carburettor is a single barrel carburettor with a semi-automatic choke system, that has to be pre-set by means of the accelerator pedal.

It comprises the following main systems :

- the main jet system,
- the constant mixture idling circuit,
- a hot water system for heating the base of the carburettor,
- a cam operated accelerator pump,
- a full load, all speed enrichening system,
- a semi-automatic choke operated by a thermostatic spring heated by hot water from the coolant system.

To cause the engine speed to fall more quickly, one must depress the accelerator once to reduce the effect of the choke system.





1 Throttle plate
2 Choke flap
a Air compensator jet
g Idling jet
5 Needle valve
6 Float
7 Accelerator pump
Gg Main jet
V Emulsion tube
B Idling speed mixture screw
A Idling speed air screw
N Pump injector
9 Degassing jet
K Choke tube
M Enrichener diaphragm
U Idling air jet

E Econostat
14 Accelerator pump valve
15 Accelerator pump cam
16 Enrichener system
17 Choke casing
18 Pneumatic initial opening cap.
19 Accelerator pump degassing valve
C Auxiliary venturi assembly
21 Connection for heating the base of the carb. with hot water
22 Throttle angle adjusting screw
46 Pump diaphragm
u1 Constant CO air jet
gCO Constant CO fuel jet
B1 Thermostatic spring
Ce Enrichener jet

THE MAIN JET SYSTEM

Under normal running conditions, the engine is supplied with the mixture through the diffusion assembly (C), the fuel entering through the main jet (Gg), which is screwed into the bottom of the float chamber and the air through the choke tube (K).

The air-fuel proportions are automatically adjusted by the air compensator jet (a) which is screwed into the emulsion tube holder, which is a force fit in the jet well.

A calibrated duct (9) vents the main jet system well.

The emulsion tube, which is a force fit in the well, has a clearly defined position. A slot shows the correct position.

THE IDLING CIRCUIT

The carburettor comprises a constant mixture idling system with two circuits. The speed is adjusted without touching the throttle stop screw. The throttle angle is set when the carburettor is assembled and should not be subsequently altered as this will considerably upset the running of the engine during acceleration and at idling.
The idling system consists of two circuits:

- the first, which is the main idling system, brings to the jet controlled by screw (B) a fuel and air mixture which is calibrated by means of the idling jet (g) and the air for which on one hand comes from the choke tube at its narrowest point and the other from the float chamber cover through calibrated jet (u).
- the second, the constant mixture system, brings to the jet controlled by screw (A), air taken from the choke tube to which has been added on the input side of this screw, a fuel air mixture controlled by jet (gCO) and air controlled by calibrated jet (u1).

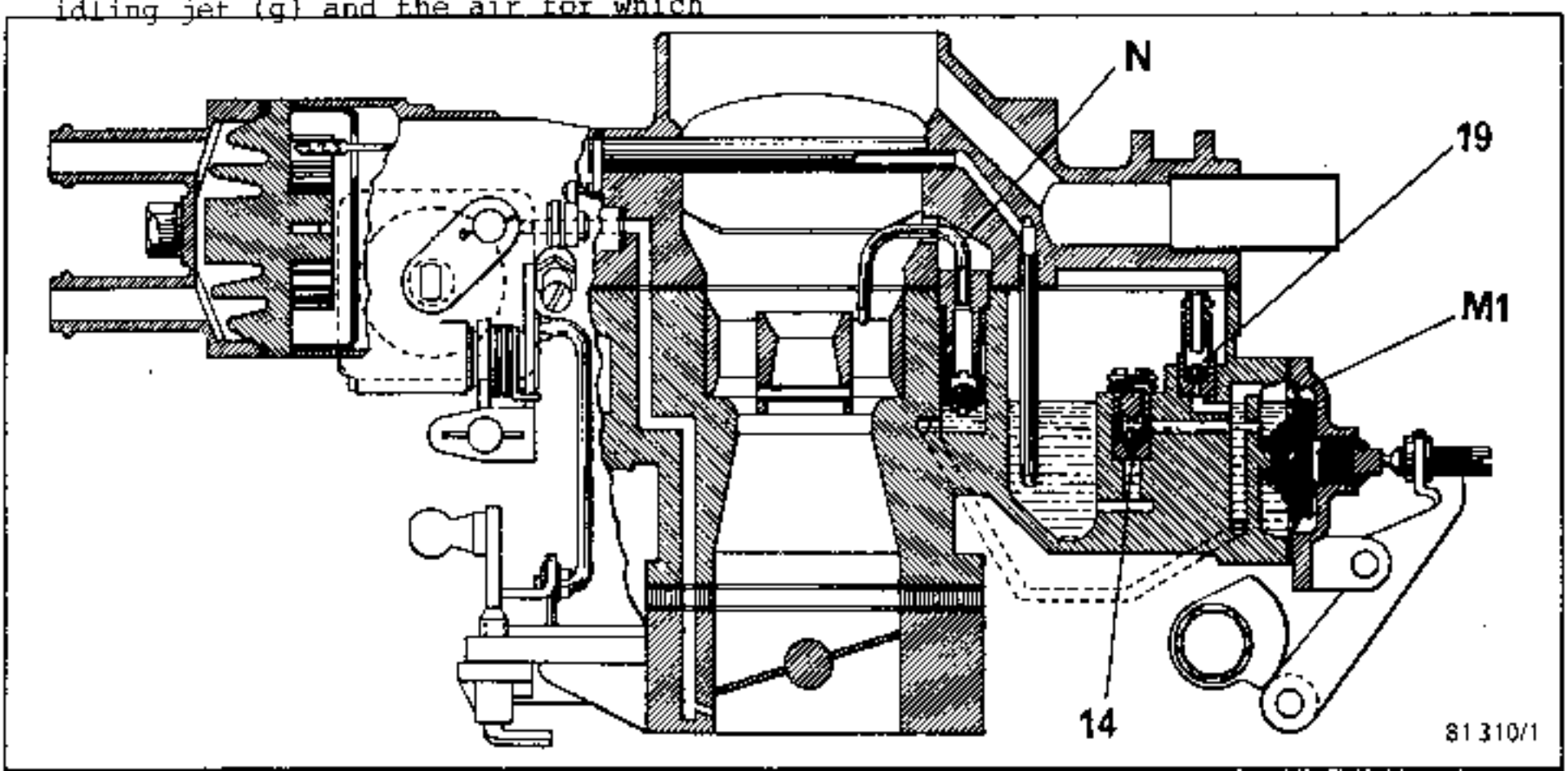
By turning screw (A) one can adjust the engine idling speed without altering the mixture to any considerable extent.

PROGRESSIVE TRANSFER

The additional mixture required for the engine to run properly when it transfers from idling to operation on the main jet is provided by a by-pass slot fed from the same source as during idling.
The slot is in line with the upper edge of the throttle plate.

THE ACCELERATOR PUMP

The accelerator pump is mechanically operated by a cam.
When it is in the idling position, with the throttle closed, the diaphragm (M1), pushed back by a spring, allows the pump cavity to fill with fuel through a ball valve (14).
When the diaphragm is moved by a cam, secured to the throttle shaft, when the engine is accelerated, it forces fuel out through the injector (N).
The degassing valve (19), in the float chamber, is connected to the accelerator pump by a duct.

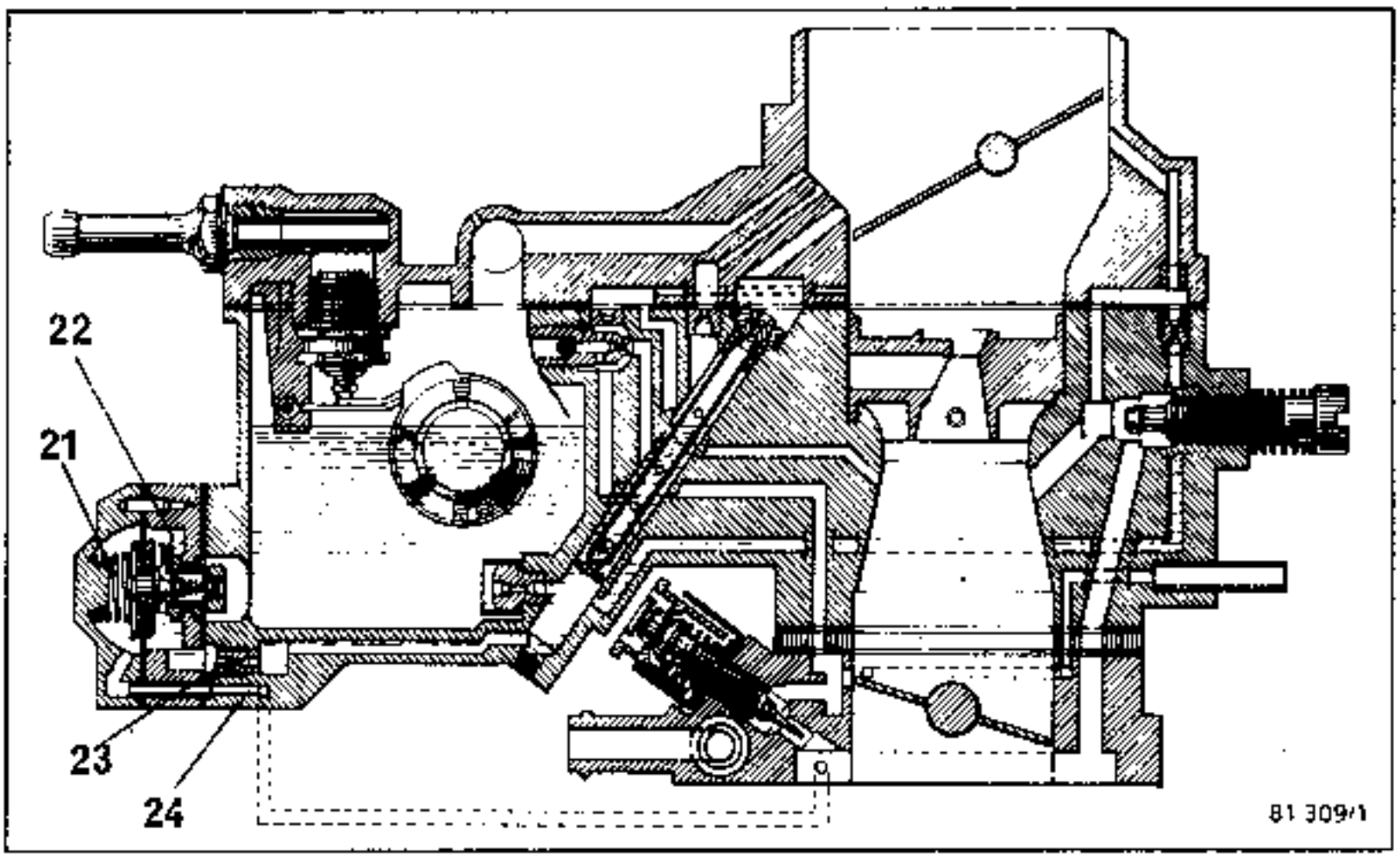


THE POWER ENRICHENER

Valve (22), which is secured to a diaphragm, moves under the combined effect of the spring (21) and the diaphragm. This is subject to the vacuum in the inlet manifold with which it communicates through the duct (24).

Under certain load and speed conditions, spring (21) becomes preponderant and opens the valve.

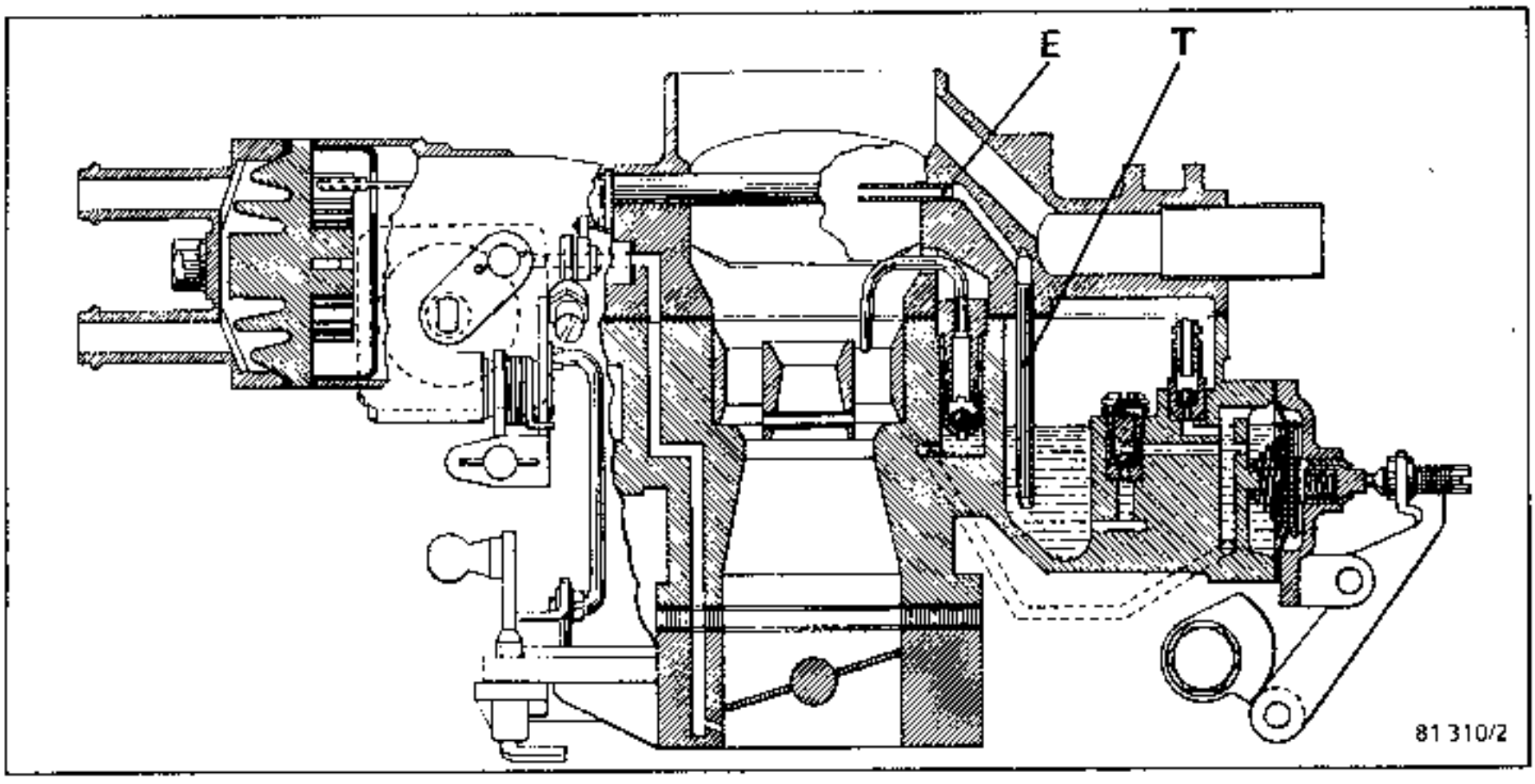
Fuel from the float chamber enters the main circuit through a calibrated duct fitted with a jet (23).



THE MAXIMUM SPEED ENRICHENER (ECONOSTAT)

To carry out the required correction at high speeds, the carburettor may be fitted with a system described as the "Econostat" which consists, in its essentials, of an injector tube (E) entering the air intake duct in line with the choke flap shaft and fed with fuel from an immersion tube (T) secured to the float chamber cover and pointing down into it.

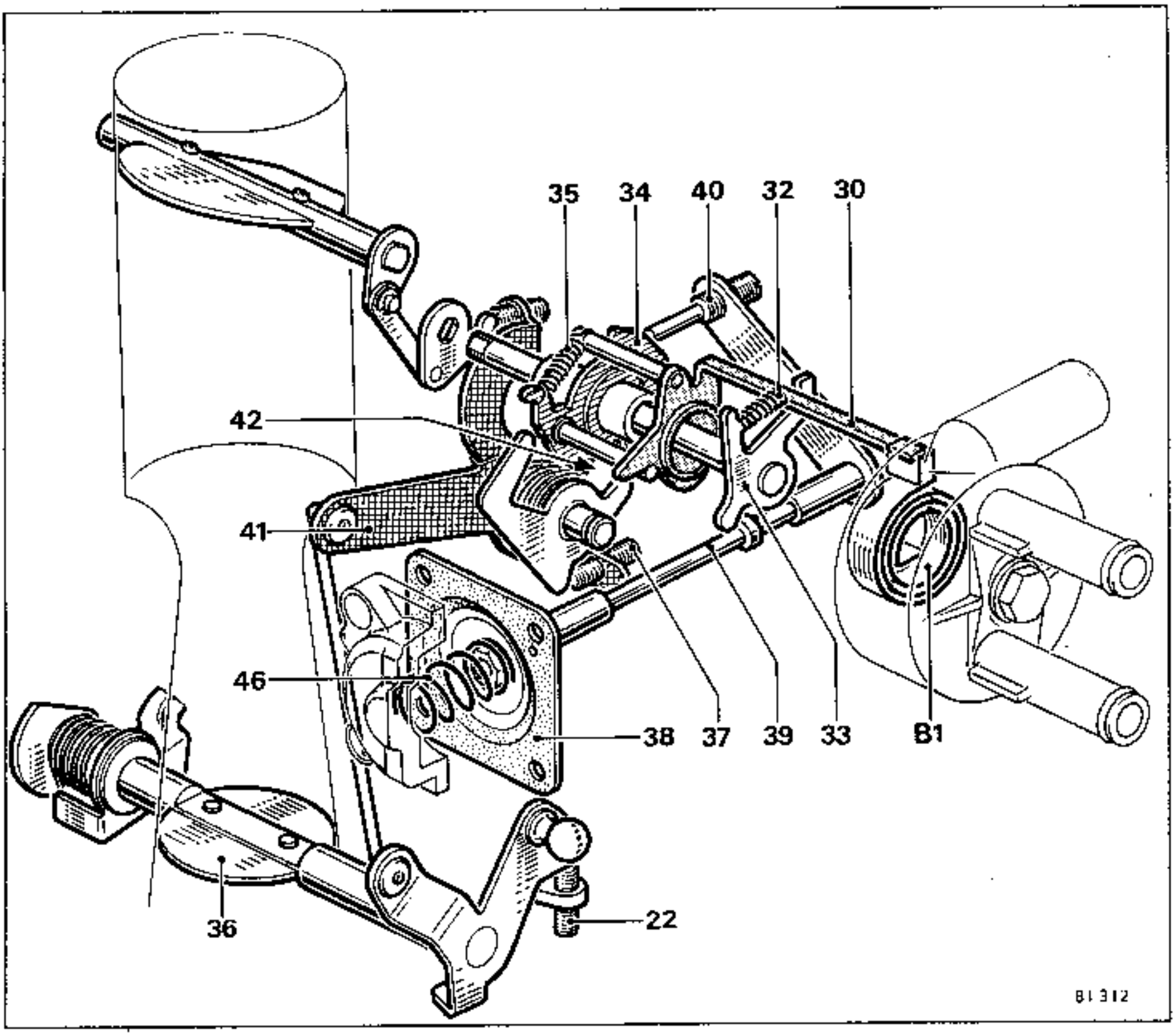
Fuel is drawn through this system by the effect of the vacuum caused by the air flow.



THE CHOKE SYSTEM

This is of the semi-automatic type which means that, to set it, the accelerator must be first fully depressed and then allowed to return, slowly, to the idling position.

It consists of a flap, at the main air intake of the carburettor, automatically controlled by a bimetallic thermostatic spring heated by the engine coolant.



B1 Thermostatic spring
22 Throttle angle adjusting screw
30 Thermostatic spring movement transfer lever
32 Spring
33 Lever secured to the choke flap
34 Double cam
35 Double cam retaining spring
36 Throttle plate
37 Positive throttle opening adjust.screw
38 Pneumatic opening diaphragm
39 Pneumatic opening control rod
40 Pneumatic opening adjusting screw
41 Positive throttle opening cam swivel lever
42 Double cam locking slot
46 Pneumatic opening return spring

Principle of operation

- When the engine is cold

The tendency of the thermostatic spring (B1) is to try to close the choke flap.

The end of lever (41) is in slot (42) in the double cam (34) and the thermostatic spring (B1) cannot close the choke flap. To release it, one must press down the accelerator to free the lever from the slot.

After this release, the thermostatic spring moves a lever (30) which transmits this movement, through a spring (32) to a lever (33) secured to the choke flap shaft.

The double cam (34), one section of which provides the positive opening and the other the pneumatic opening of the choke flap after starting, moves freely on the choke flap shaft. It is returned by a spring (35) on the lever (30) which is secured to the thermostatic spring.

When the thermostatic spring closes the choke flap, the double cam, because it is secured to the lever (30) by the spring, takes up a position which will vary depending on the temperature and, through the link and the lever, will control the positive opening of the throttle plate (36).

If the temperature is less than 0°C, the effect of the thermostatic spring will compress spring (32) and bring the cam (34) into a position where the throttle plate can open wider.

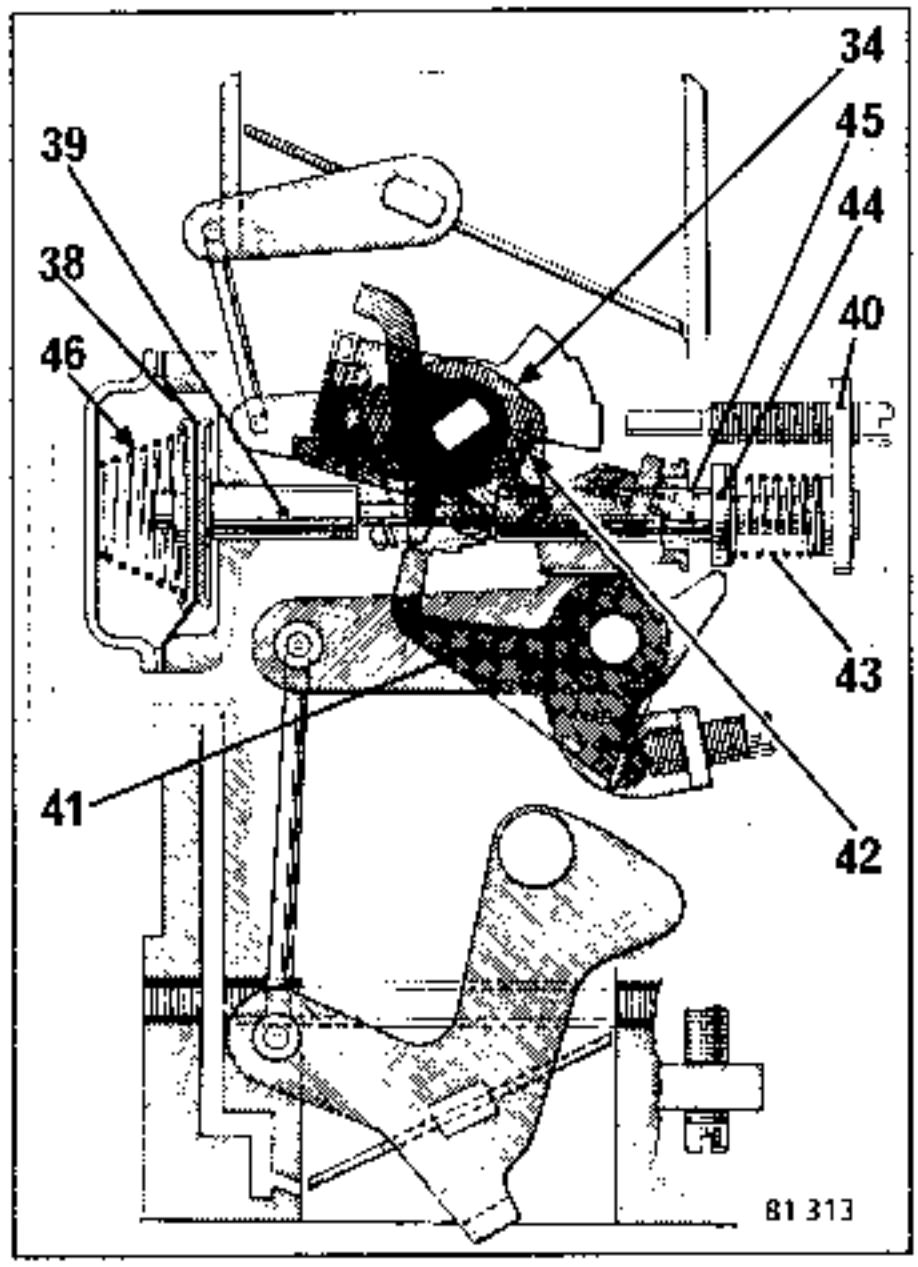
An adjusting screw (37) permits one to adjust the assembly.

When the engine is started, the thermostatic spring, by opposing the tendency to open the choke flap, induces a rich mixture that allows the engine to start, easily.

As soon as the engine is running, its vacuum acts on the diaphragm (38) of the pneumatic opening after the starting capsule. The rod (39) which is attached to this diaphragm acts on the lever and imparts a rotating movement to the choke flap (pneumatic initial opening), despite the effect of the thermostatic spring which is still tending to hold it closed, and within the limits determined by the cam.

An adjusting screw (40) resting on the cam limits the movement of the rod.

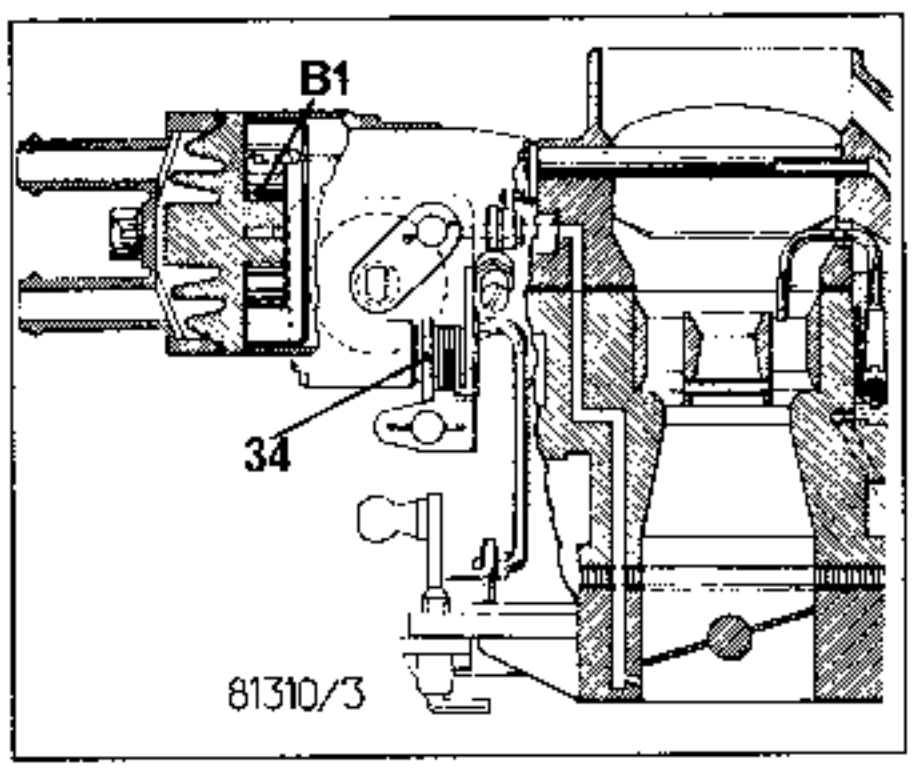
Special features
On certain carburettor types, the pneumatic initial opening takes place in two phases because of the action of a system consisting of :
- a spring (43)
- a cup (44)
- a fixed stop (45)
mounted on the rod (39).



a) when the engine starts, the vacuum acting on the diaphragm (38) is low, the spring (46) only meets with small resistance and the diaphragm moves, taking with it the rod (39) until the cup (44) makes contact with the fixed stop (45). The choke flap opens quickly.
b) when the engine is running, its speed increases and so does the vacuum acting on the diaphragm. This compresses the spring (43) until screw (40) makes contact with the double cam (34) providing the maximum choke flap pneumatic opening.

- When the engine is warm

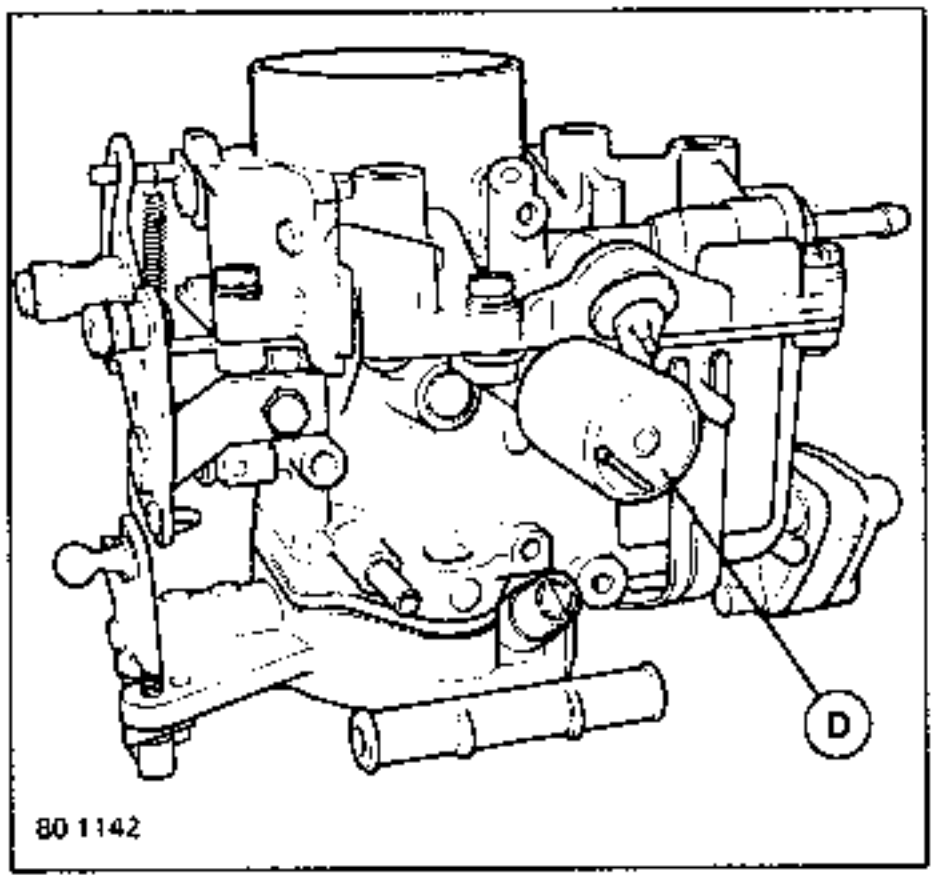
The thermostatic spring (B1) causes the choke flap to open, taking with it the double cam (34) so that the positive throttle opening is reduced until it reaches its normal idling position and the end of the lever (41) drops into the slot (42) on the double cam.

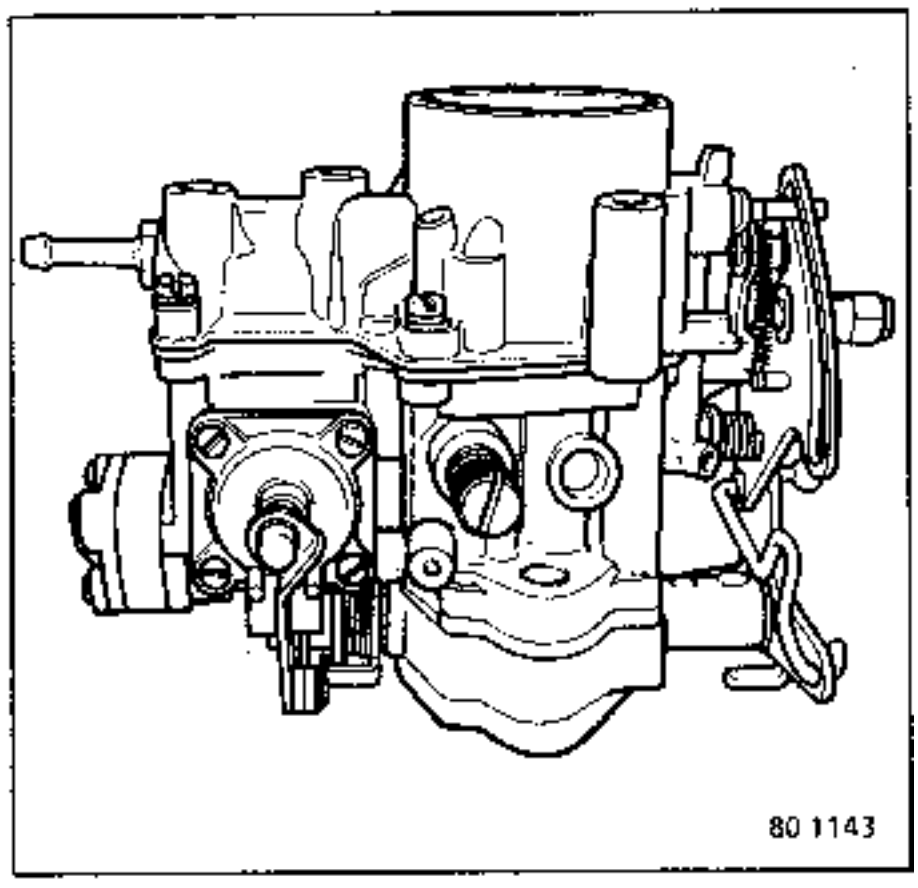


- Clearing system

If the engine floods, a lever attached to the travel opening system and a lever attached to the choke flap opening system make contact with one another at the end of the accelerator travel.

Thus, when the accelerator is fully depressed, they open the choke flap despite the fact that the thermostatic spring is trying to keep it closed.



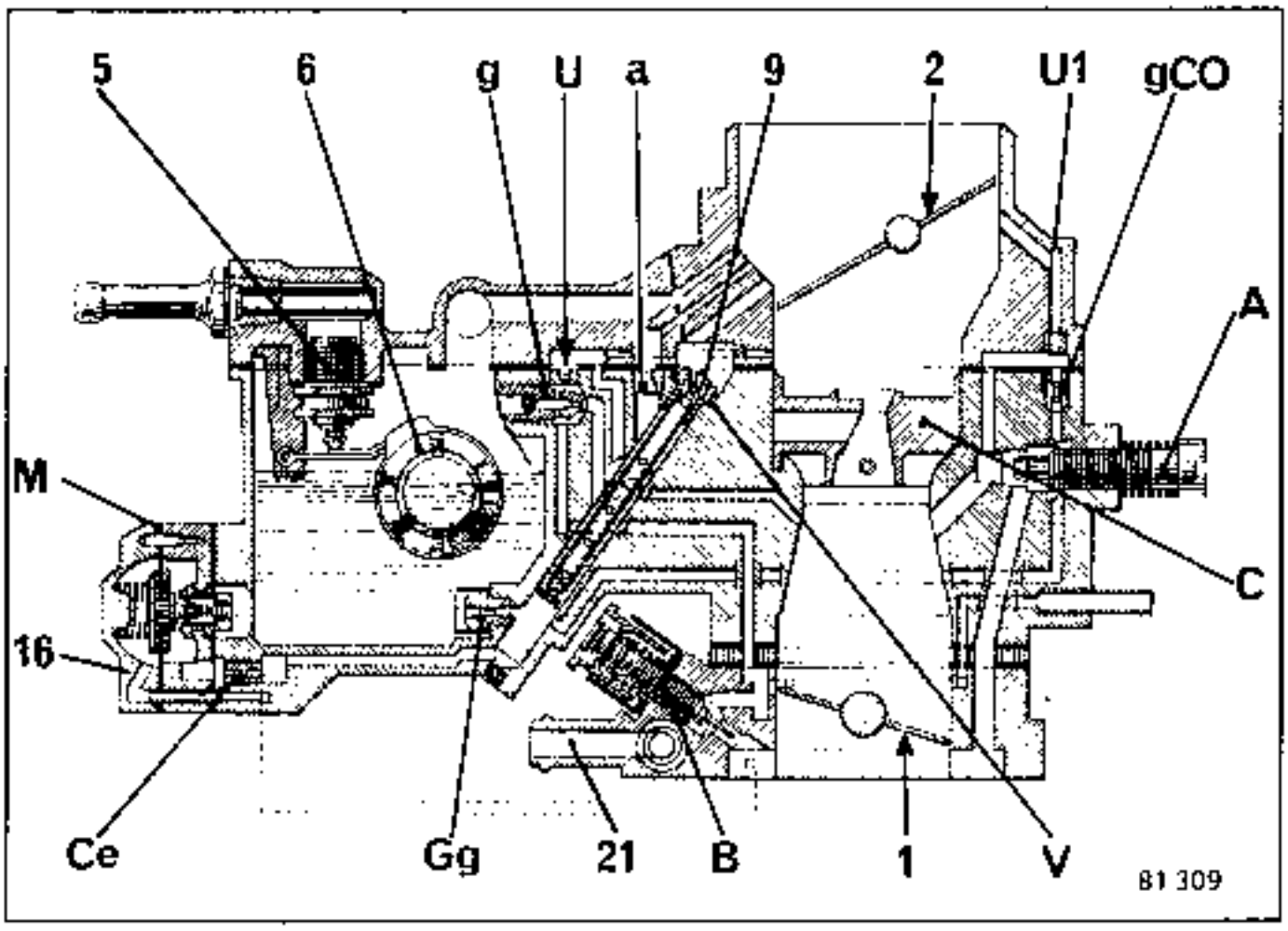


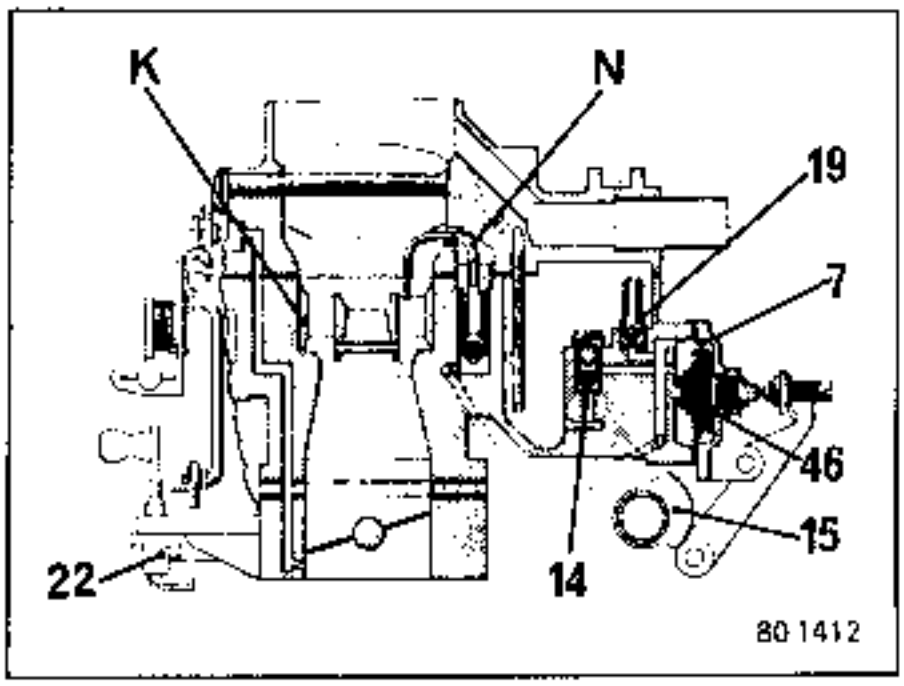
DESCRIPTION

The SOLEX SEIA carburettor is a single barrel carburettor.

It incorporates the following systems :

- the main jet system,
- the constant mixture idling circuit,
- a hot water system for heating the base of the carburettor,
- the cam operated accelerator pump,
- an all speed, full load enrichening system,
- a manually operated choke,
- an idling cut-out (on the 35 SEIA).





1 Throttle plate
2 Choke flap
a Air compensator jet
g Idling jet
5 Needle valve
6 Float
7 Accelerator pump
Gg Main jet
V Emulsion tube
B Idling speed mixture screw
A Idling speed air screw
N Pump injector
9 Degassing jet
K Choke tube
M Enrichener diaphragm
U Idling air jet
14 Accelerator pump valve
15 Accelerator pump cam
16 Enrichener system
19 Accelerator pump degassing valve
C Secondary venturi
21 Hot water connection for heating the carburettor base
22 Throttle angle adjusting screw
46 Pump diaphragm
u1 Constant CO air jet
gCO Constant CO fuel jet
Ce Enrichener jet

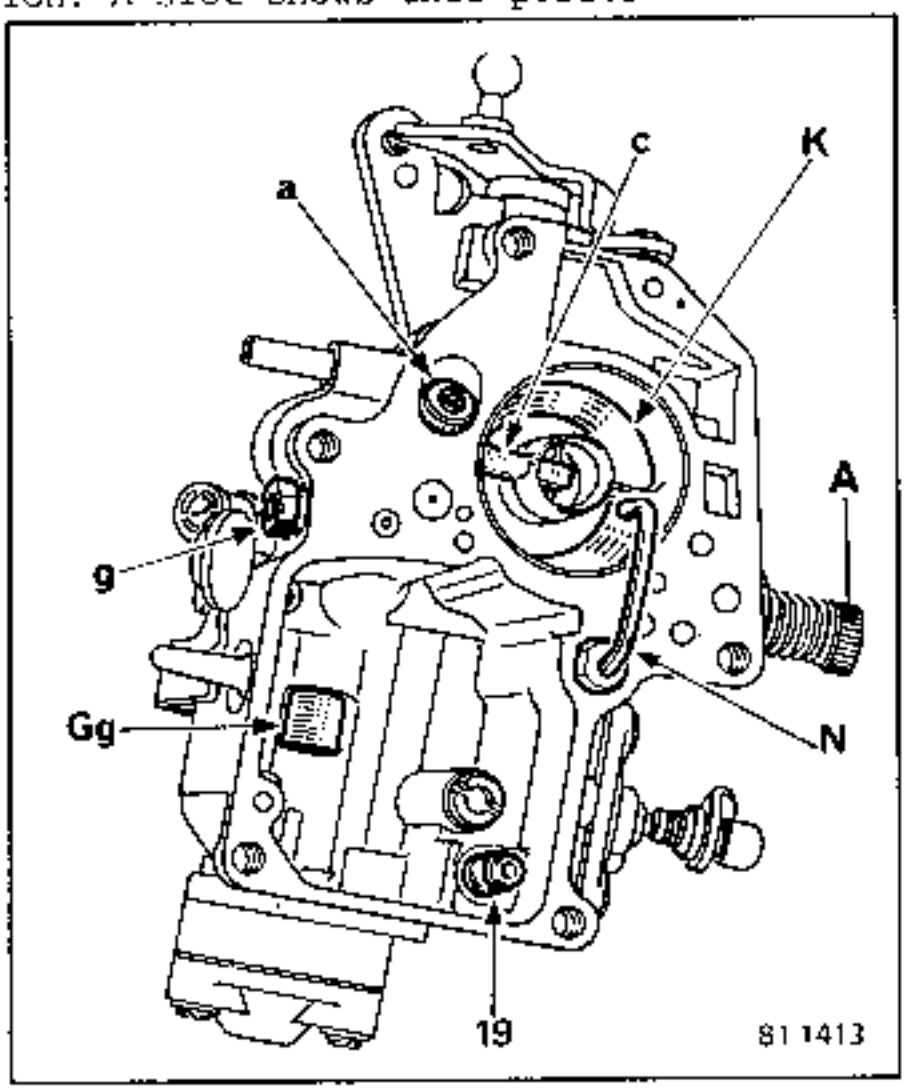
THE MAIN JET SYSTEM

Under normal running conditions, the engine is supplied with mixture through the diffusion assembly in the secondary venturi (C), the fuel entering through the main jet (Gg) which is screwed into the bottom of the float chamber and the air through the choke tube (K).

The air-fuel proportions are automatically adjusted by the air compensator jet (a) which is screwed into the emulsion tube holder, which is a force fit in the jet well.

An open duct (9) degasses the main jet system well.

The emulsion tube is a force fit in the well and has a clearly determined position. A slot shows this position.



THE IDLING CIRCUIT

The carburettor comprises a constant mixture idling system with two circuits.

The idling speed is adjusted wihtout touching the throttle plate stop screw.

The throttle plate angle is adjusted when the carburettor is assembled and should not be subsequently altered as this will considerably upset the running of the engine during acceleration and at idling.

The idling system consists of two circuits:

- the first (which is the main idling system), brings to the jet controlled by screw (B) a fuel and air mixture which is calibrated by means of the idling jet (g) and air which comes on one hand from the choke tube at its narrowest point and on the other hand from the float chamber cover to calibrated jet (u).
- the second (the constant mixture system), brings to the jet controlled by screw (A) air taken from the choke tube to which has been added, on the input side of the screw, a fuel air mixture controlled by jet (gCO) and air controlled by calibrated jet (u1).

By turning screw (A), one can adjust the engine idling speed without altering the mixture to any great extent.

PROGRESSIVE TRANSFER

The additional mixture required for the engine to run properly when it transfers from idling to operation on the main jet is provided by a by-pass slot fed from the same source as during idling.

The slot is in line with the upper edge of the throttle plate.

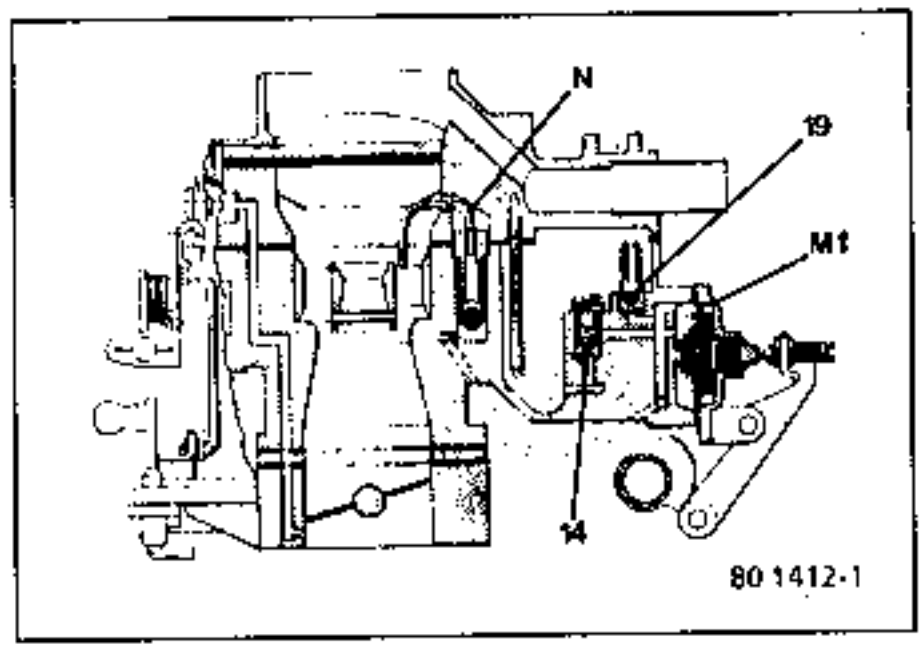
THE ACCELERATOR PUMP

The accelerator pump is mechanically operated by a cam.

When it is in the idling position, with the throttle closed, the diaphragm (M1), pushed back by a spring, allows the pump cavity to fill with fuel through a ball valve (14).

When the diaphragm is moved, by a cam secured to the throttle shaft, each time the engine is accelerated, it forces fuel out through an injector (N).

A degassing valve (19), in the float chamber, is connected to the accelerator pump by a ducting.

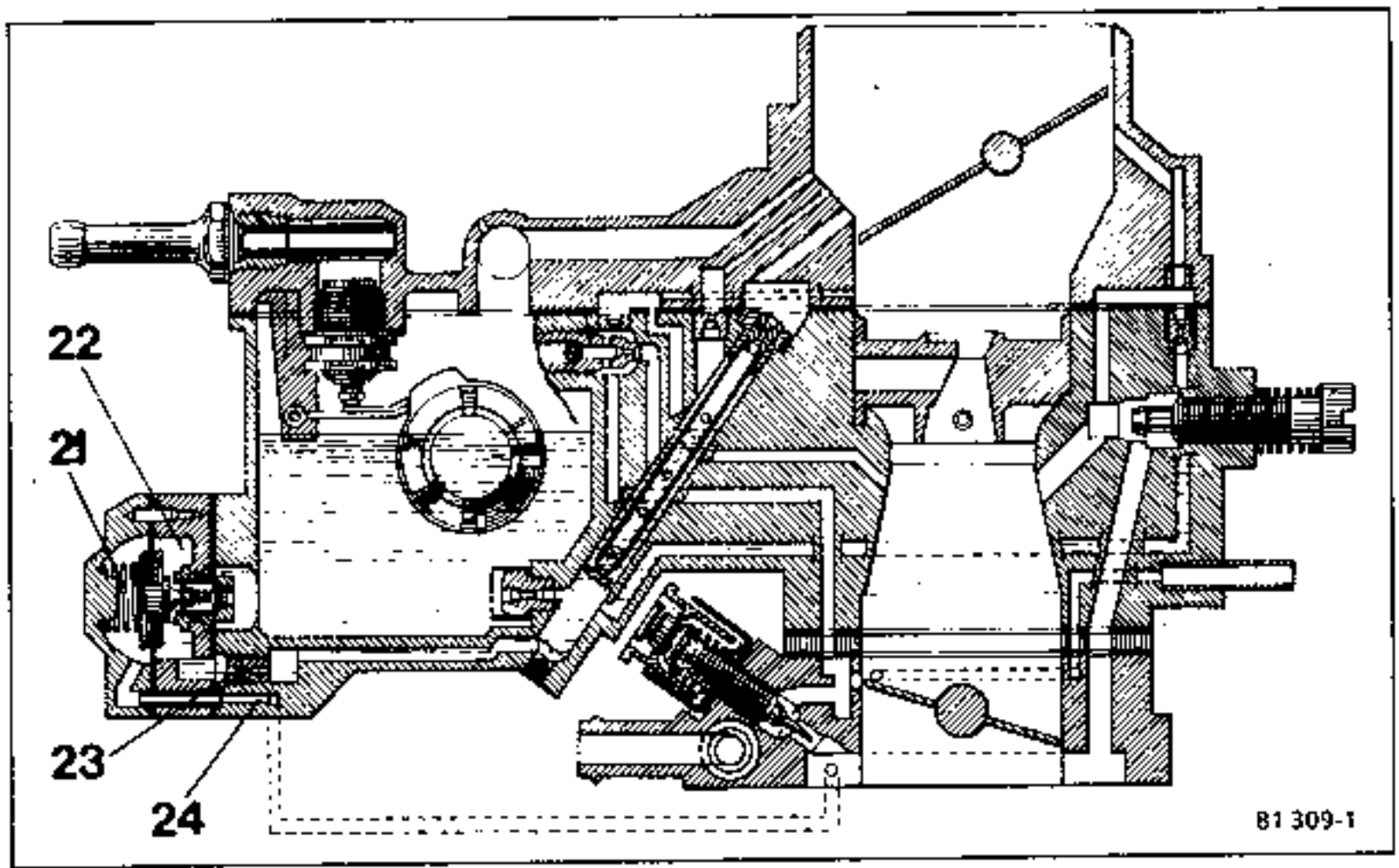


THE POWER ENRICHENING SYSTEM

A valve (22) secured to a diaphragm, moves under the combined effect of the spring (21) and the diaphragm itself. The diaphragm is subject to the vacuum in the inlet manifold to which it is connected by a duct (24).

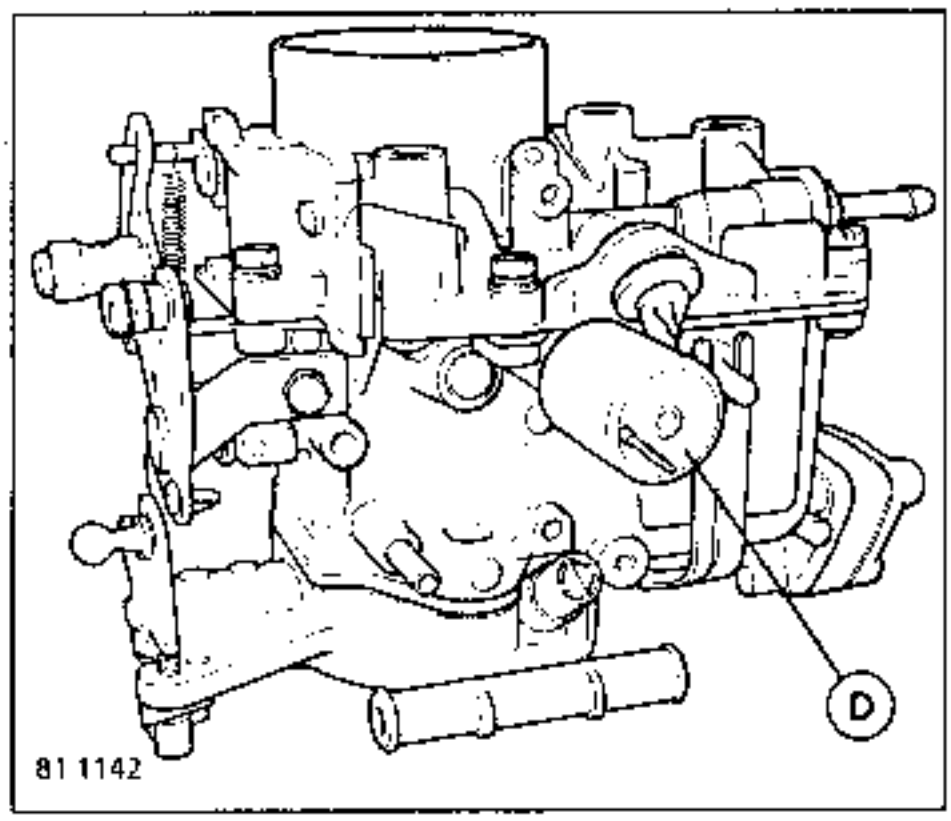
At given load and speed conditions, the spring (21) becomes preponderant and opens the valve.

Additional fuel from the float chamber, enters the main jet system through a calibrated duct (23).



THE IDLING CUT-OFF

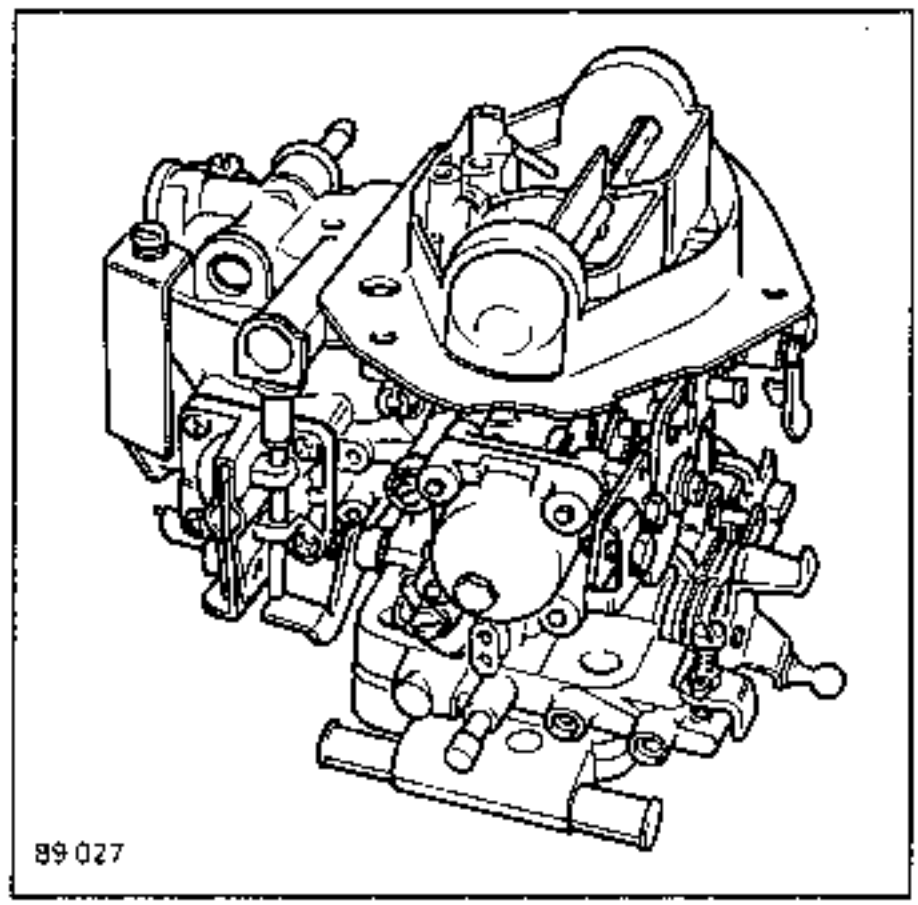
The SOLEX 35 SEIA carburettor is equipped with an idling cut-off system. It consists of a solenoid valve screwed on to the carburettor body which closes off the idling system when the current supply to it is switched off, that is to say when the ignition is switched off.

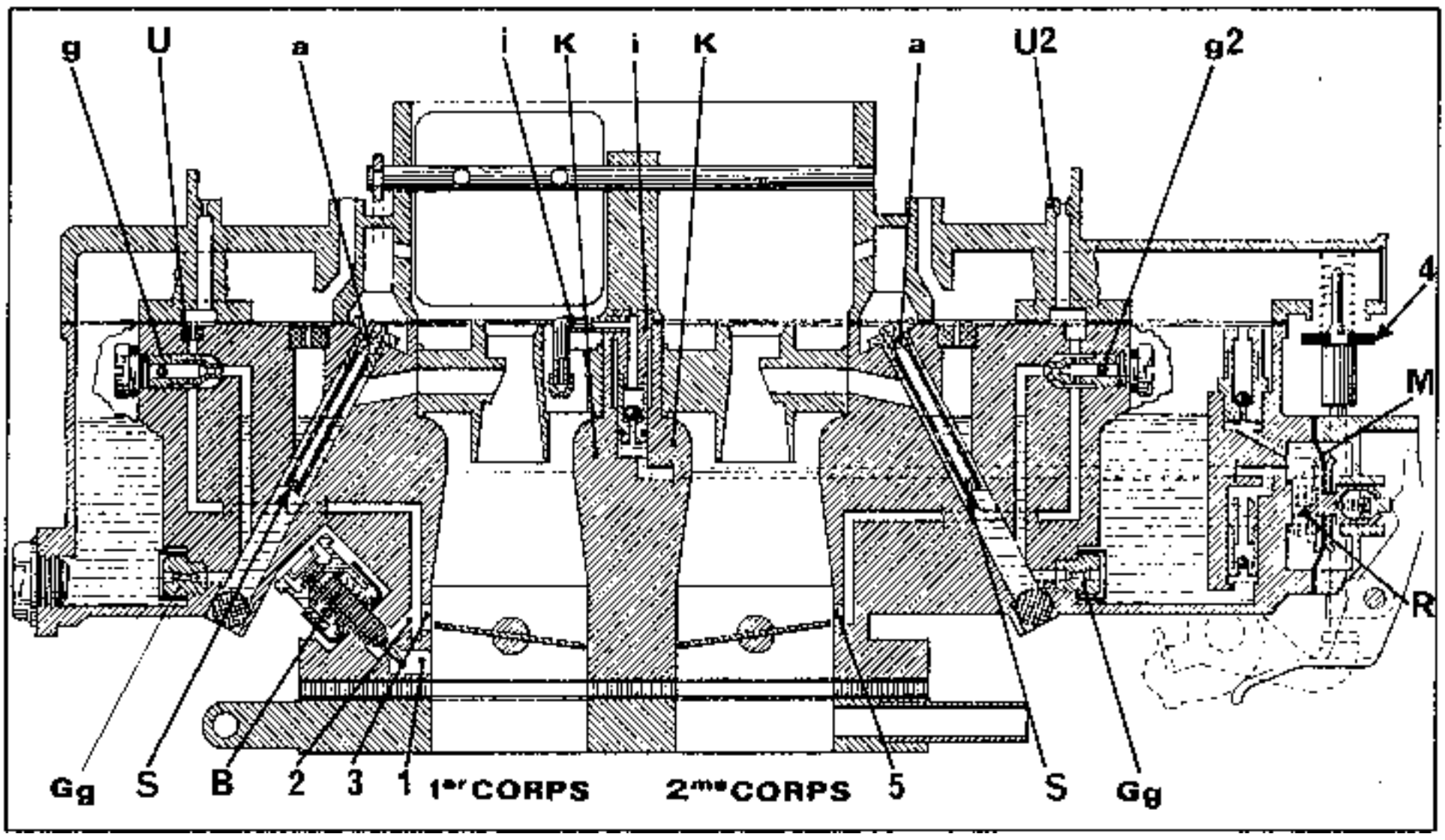


DESCRIPTION

The SOLEX 32 MIMSA carburettor is a double barrel carburettor with an offset mechanical throttle system. It incorporates :

- a manually operated choke flap on the 1st barrel,
- a system of levers that stops the throttle on the 2nd barrel opening whilst the choke flap is operating,
- a pneumatic choke flap initial opening system,
- a cam operated mechanical accelerator pump,
- a mechanical control for operating the float chamber degassing valve (4) which is :
- external when the throttles are in the idling position,
- internal when the throttle is open,
- a system for heating the base of the base of the carburettor with hot water.





THE MAIN JET SYSTEM

Under normal running conditions, the engine is supplied with fuel through the main jets (Gg).

The air-fuel proportions are automatically adjusted by the air compensator jets (a) and the emulsion tubes (S) (which are located in the wells and retained by the air compensator jets (a)).

THE IDLING CIRCUIT

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

The mixture screw (B) adjusts the strength of the mixture at idling speed.

PROGRESSIVE TRANSFER ON No. 2 BARREL

The throttle on no. 2 barrel, when slightly open, uncovers the hole (5) into which fuel flows through jet (g2) and air through calibrated jet (u2).

THE FLOAT CHAMBER DEGASSING SYSTEM

When the engine is running at idling speed, fuel vapour from the float chamber is vented to atmosphere.

When the engine is running at partial load or full load, valve (4) closes and the fuel vapour is passed into the air intake flow.

THE ACCELERATOR PUMP

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

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

The diaphragm (M) is connected to the throttle control by a link secured to the throttle shaft. When the throttle opens, the movement of its shaft causes the diaphragm (M) to move over, instantaneously, and force fuel through a ball valve and a calibrated injector jet (i) at the input end of the choke tube (K). It is the size of this injector jet that determines the speed at which injection takes place.

THE POWER ENRICHENER SYSTEM

The valve (3) is affected by :

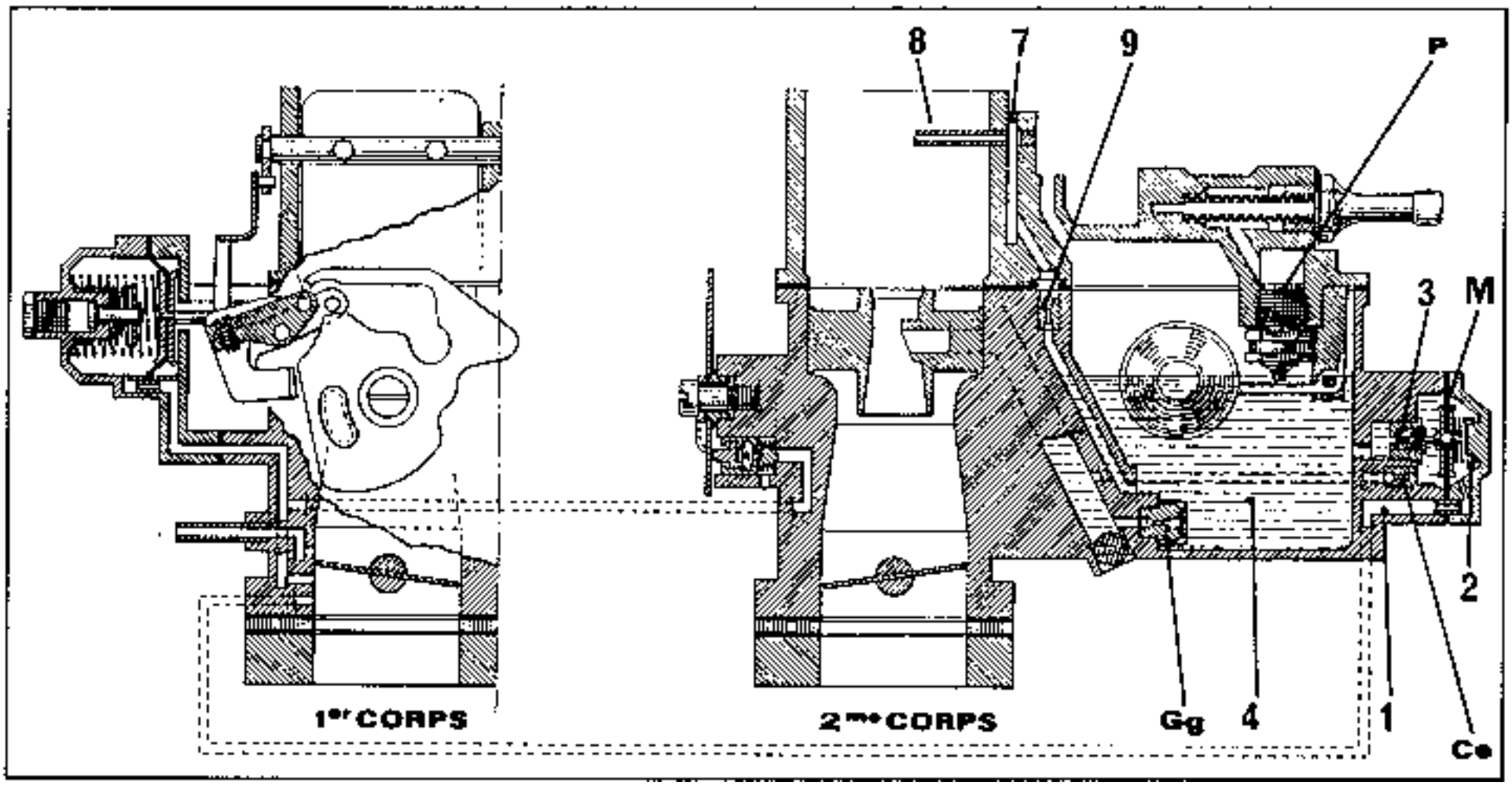
- the vacuum in the inlet manifold acting on its diaphragm (M), through duct (1),
- the spring (2).

At given load and speed conditions, the affect of the spring (2) becomes prepond-erant and it pushes over the valve (3).

Additional fuel from the float chamber (4), calibrated by jet (Ce) enters the main jet system to enrichen the mixture.

THE MAXIMUM SPEED ENRICHENER (ECONOSTAT)

At full load and speeds approaching max-imum, the vacuum draws fuel directly from the float chamber through calibrated jet (9) and air through calibrated jet (7). The emulsified mixture that results passes into the choke tube through calibrated jet (8).



THE PNEUMATICALLY OPERATED CHOKE SYSTEM

The choke opening after starting (C.O.A.S) vacuum take-off (1) has a leak hole (2) in it which is controlled by a vent valve (3). The flap control cam (4) has an elongated hole in it (5) that operates this valve.

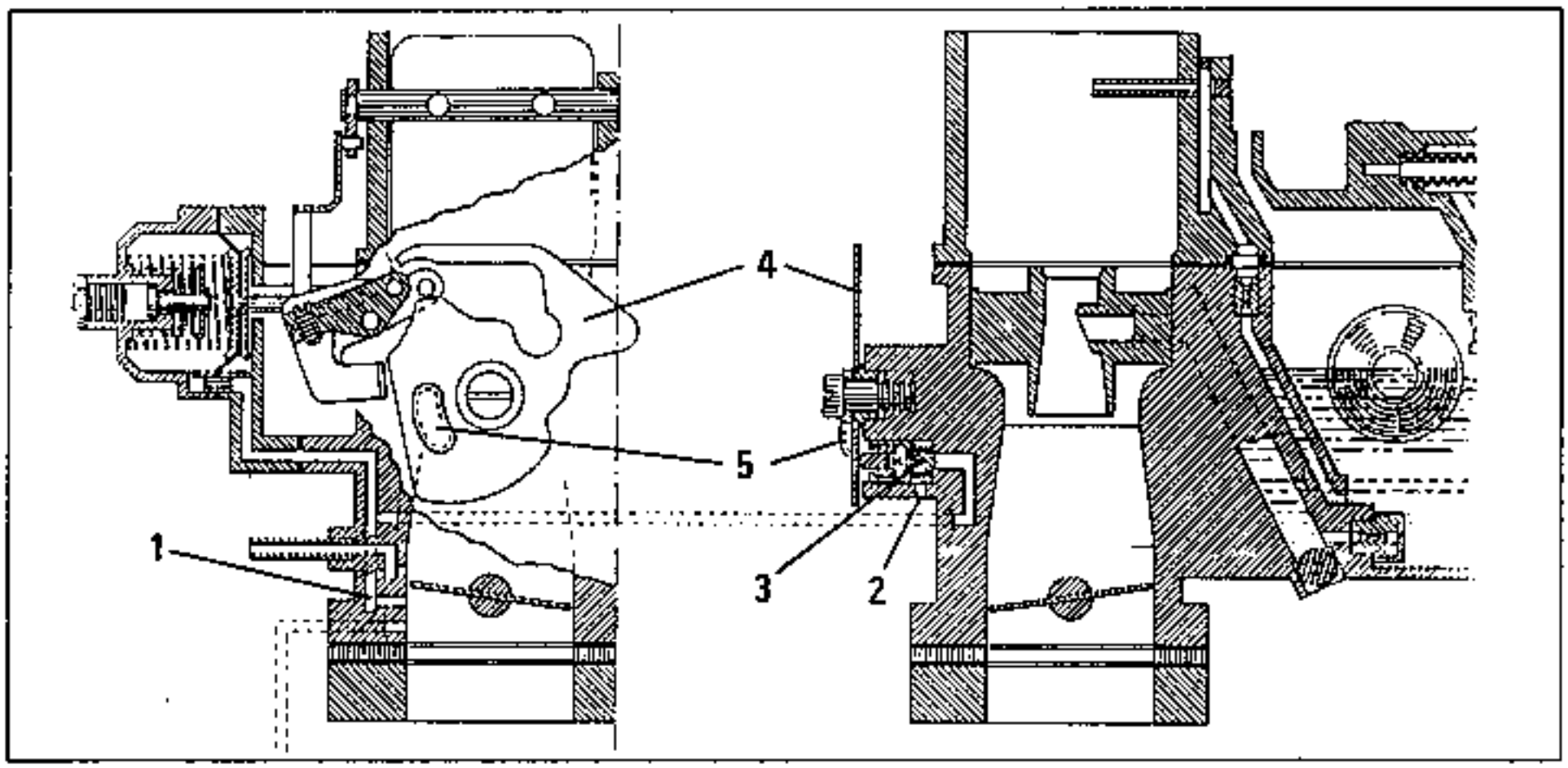
a) In the positive throttle opening (PTO) position, the elongated hole frees the valve. In this way, when the engine is started, the choke assistance unit only receives part of the manifold vacuum. It partially and gradually opens the valve up to the limit determined by the control cam acting as a mechanical stop.

b) After the control cam has moved through a small angle (approxiamtely 15°), the flap moves away from the mechanical stop although the leak valve remains open. The amount by which the flap opens is therefore no longer determined by the variations in the balance, in the assistance unit, between that part of the manifold vacuum which reaches it and the affect of the diaphragm return spring.

c) When the cam has been pushed back by approximately 45°, the leak valve will close. The assistance unit will then receive the full manifold vacuum.

When the engine is being gently accelerated, the flap will remain wide open and only enrichen the mixture by a moderate amount.

At full load, the fall in the manifold vacuum will initially allow the flap to close (up to the limit authorised by the control cam profile) until the increase in the air intake flow causes it to re-open.

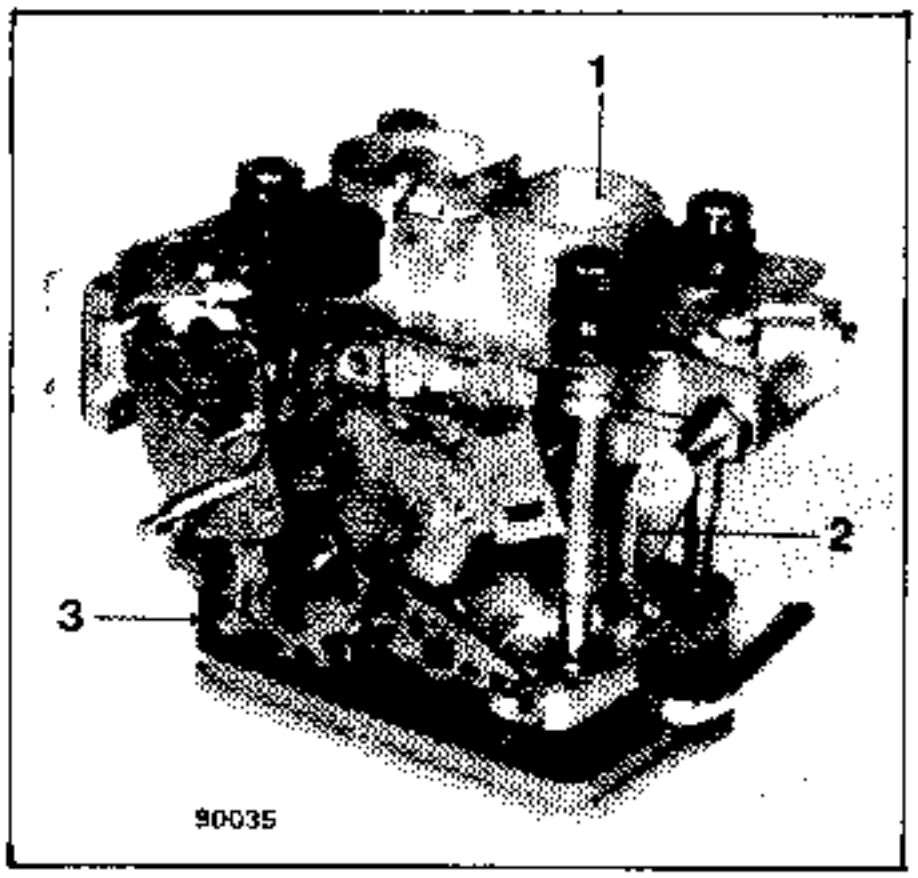


DESCRIPTION

The SOLEX 28 x 34 "Z" carburettor is a double barrel carburettor with an offset mechanical throttle opening system.

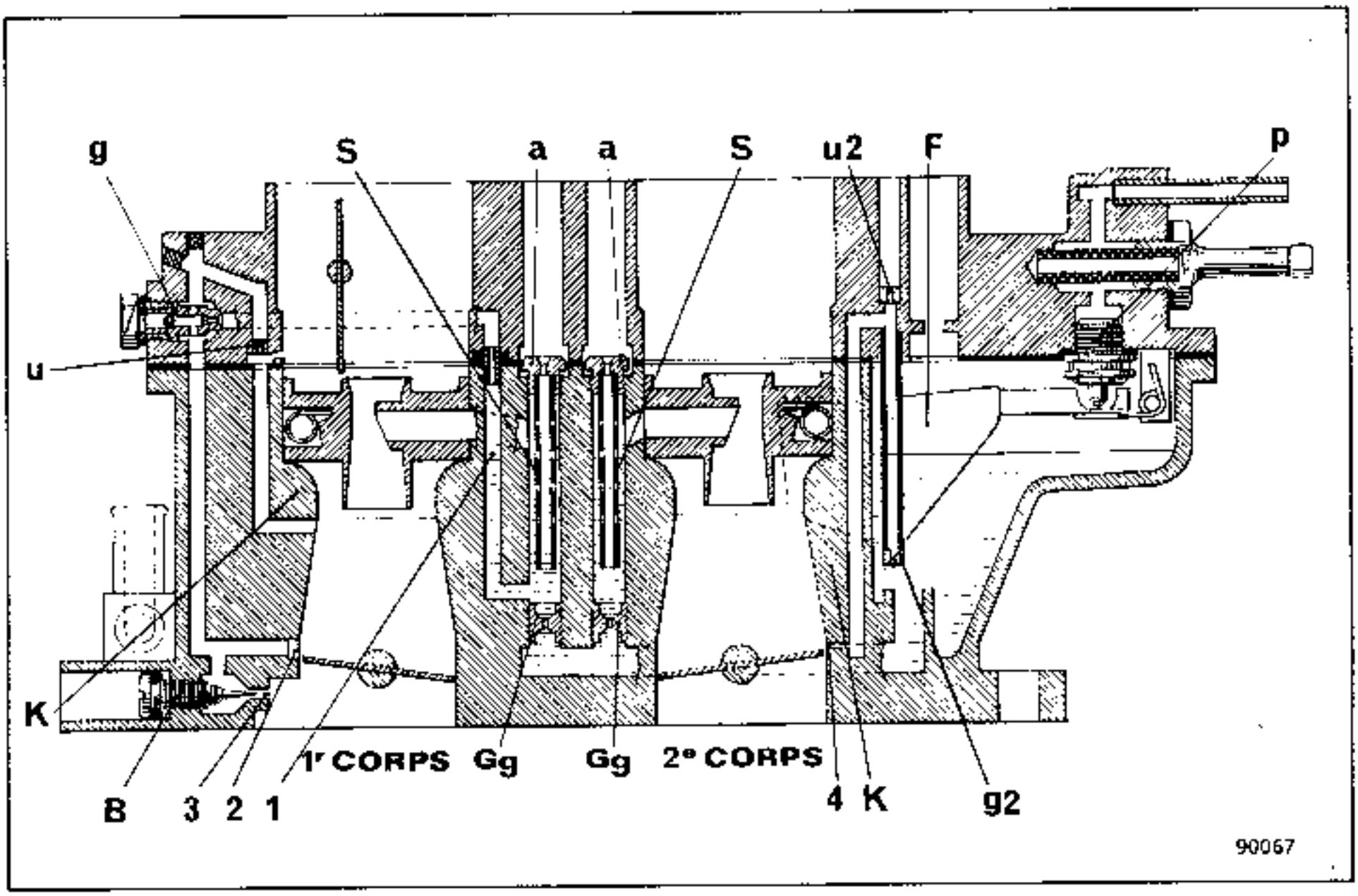
It incorporates :

- a manually operated choke flap on the 1st barrel.
- a system for preventing the 2nd barrel from operating whilst the choke is operating.
- a pneumatically operated choke flap initial opening system.
- a cam operated mechanical accelerator pump.
- a mechanical system for operating the float chamber degassing valve.
- a heating circuit for the no. 1 barrel idling system.
- two bodies, the choke tube diameters of which are different :
  - diameter 28 mm on no. 1 body.
  - diameter 34 mm on no. 2 body.



The carburettor consists of three parts:

- the float chamber cover (1)
- the float chamber (2)
- the base (3)



THE MAIN JET SYSTEM

Under normal running conditions, the engis supplied with fuel through the main jets (Gg).

Thc air-fuel proportions are automatically adjusted by the air compensator jets (a) and the emulsion tubes (S)(which are located in the wells and retained by the air compensator jets (a)).

THE IDLING CIRCUIT

The fuel entering through duct (1) is metered by the idling jet (g) and then emulsified by air entering through the calibrated jet (u). It is atomised, as it enters thc carburettor body through slot (2). Hole (3) only operates at idling speed and the slot during progressive transfer.

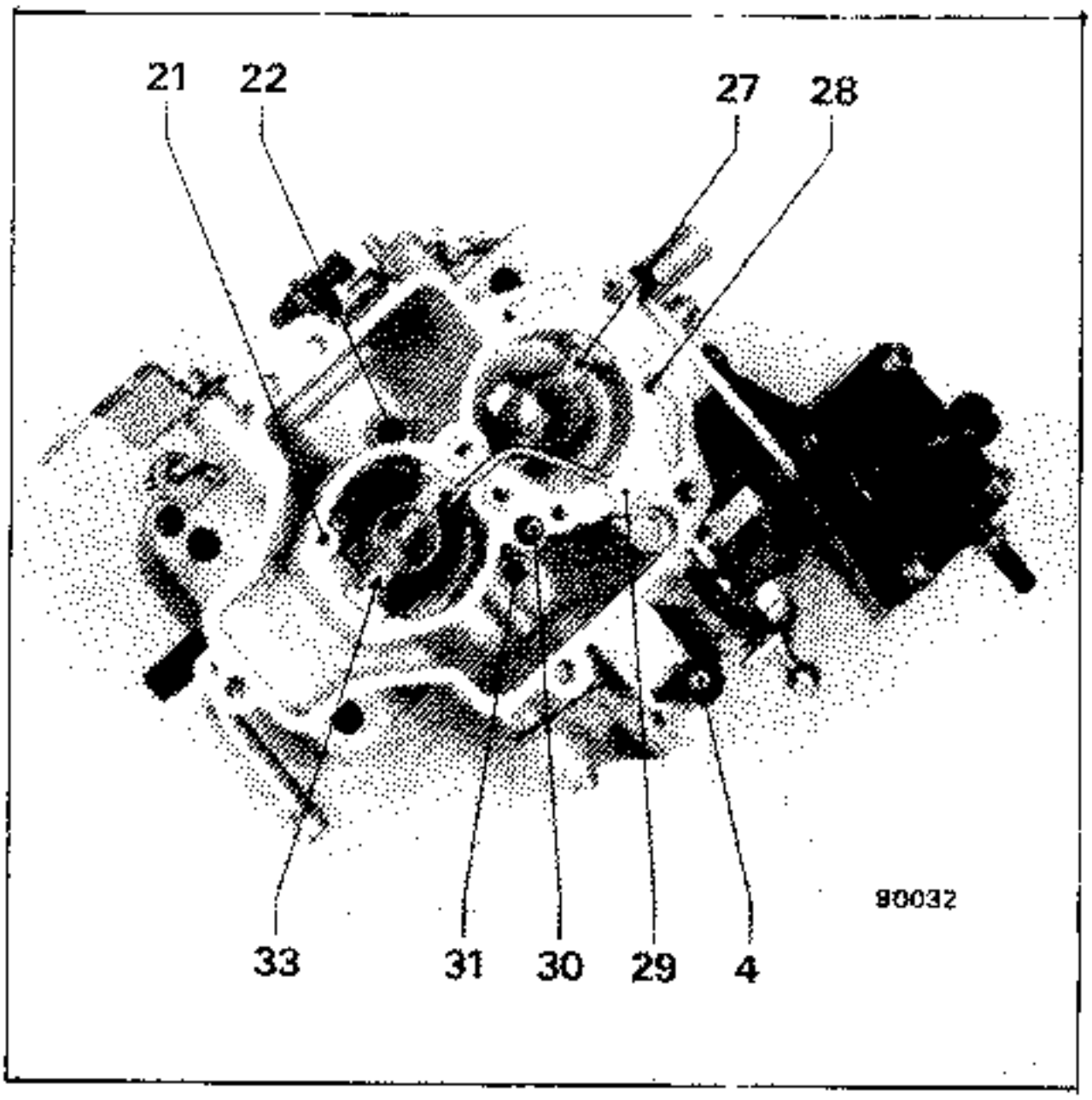
The mixture screw (B) adjusts the strength of the mixture at idling speed.

PROGRESSIVE TRANSFER ON No. 2 BARREL

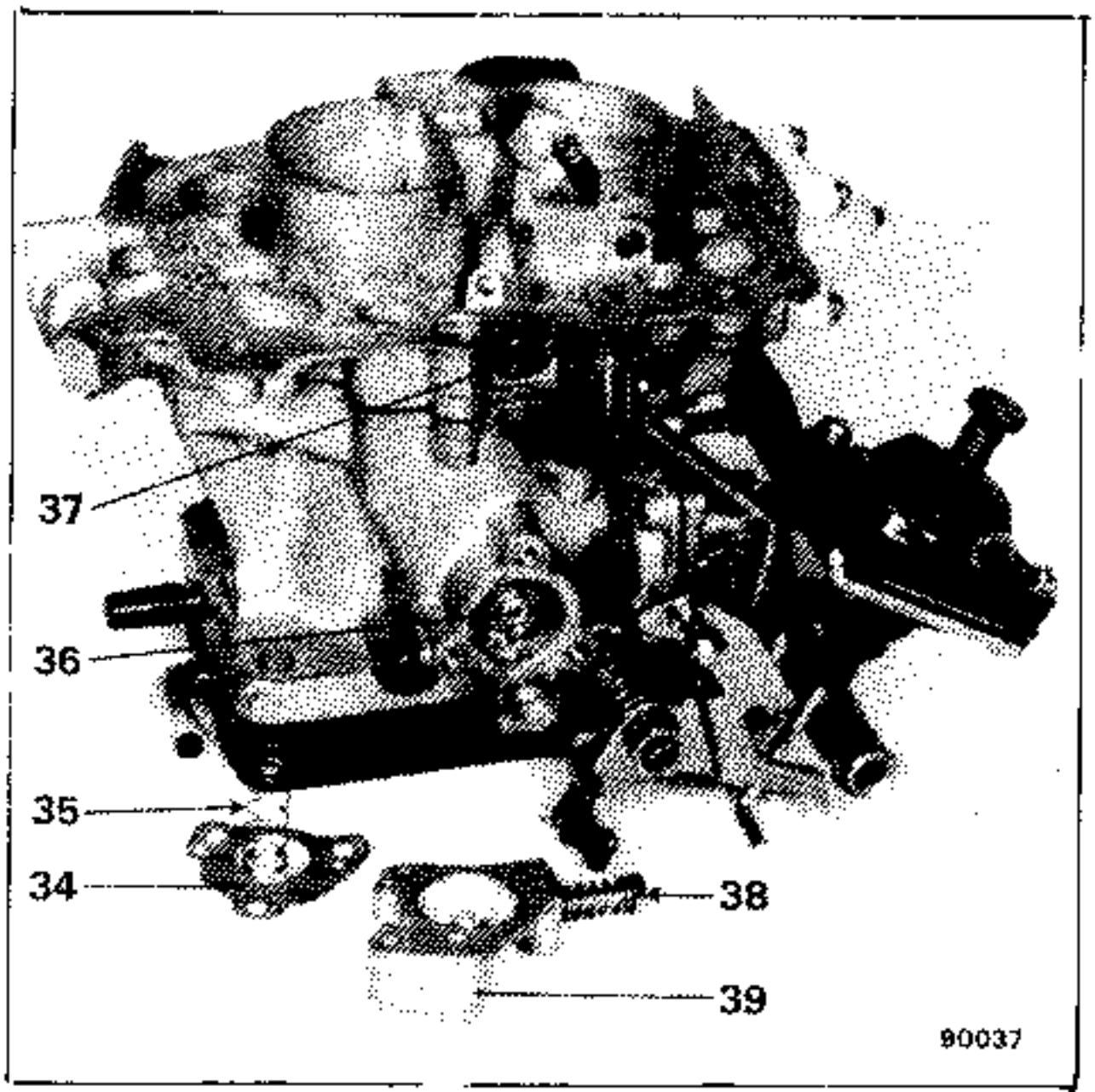
The throttle on no. 2 barrel, when slightly open, uncovers the hole (4) which is supplied with fuel by jet (g2) and air through calibrated jet (u2).

a : Air compensator jet
u : 1st barrel idling air jet
u2 : 2nd barrel idling air jet
Gg : Main jets
K : Choke tubes
F : Float
P : Needle valve
g : 1st barrel idling jet
g2 : 2nd barrel idling jet
B : Mixture screw
S : Emulsion tubes

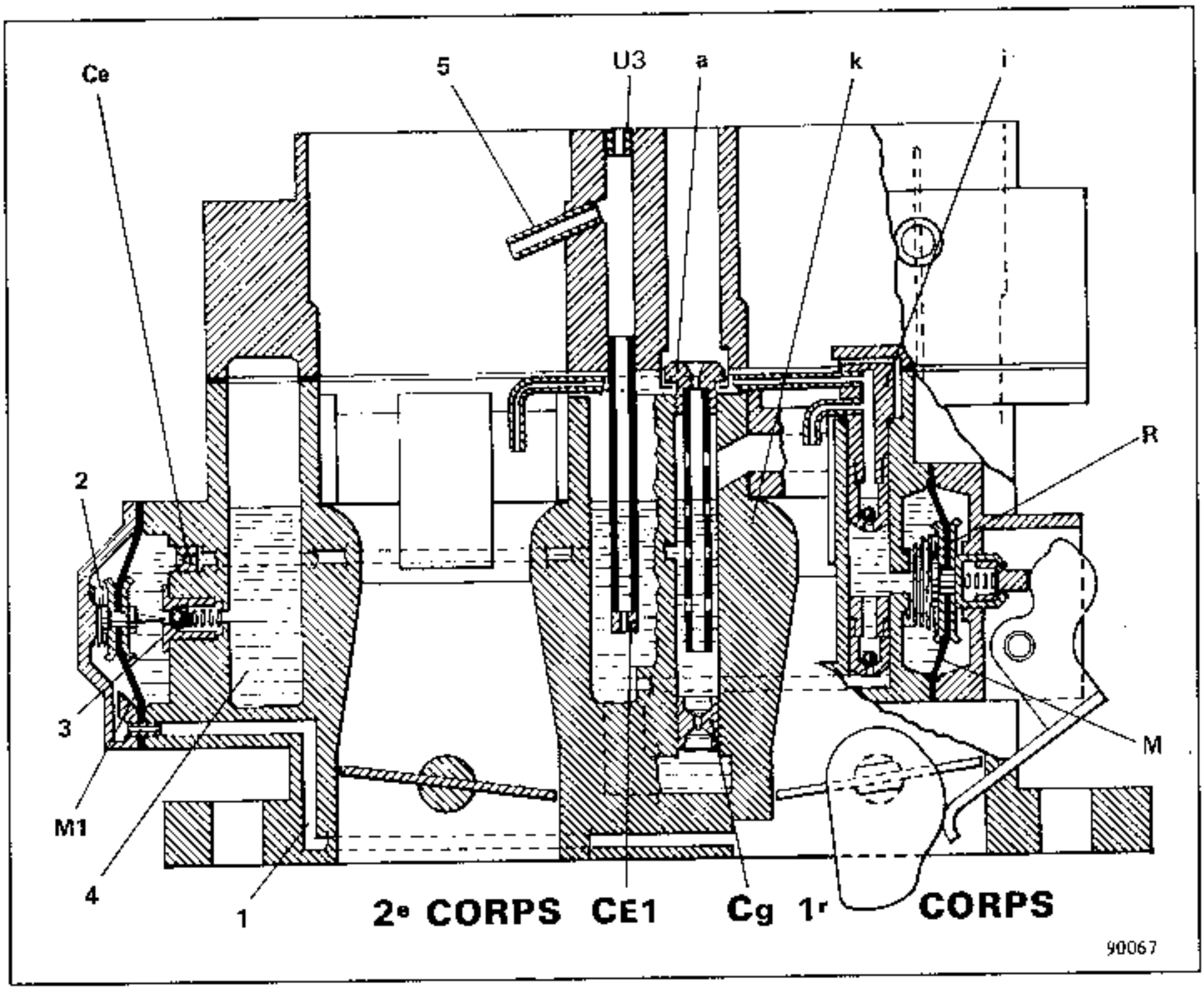
1 : Idling duct
2 : Progressive slot
3 : Mixture screw hole
4 : 2nd body progressive hole



4 : Idling speed screw.
22 : Transfer duct.
31 : Main jet chamber.
27 : 1st barrel double diff.
33 : 2nd barrel double diffuser.
30 : Idling duct.
29 : Pump injector.
28 : 1st barrel idling down duct.
21 : 2nd barrel idling down duct.



37 : 1st barrel idling jet.
36 : Pneumatic enrichener valve.
35 : Enrichener spring.
34 : Enrichener diaphragm.
38 : Idling adjustment control connecting rod.
39 : Enrichener cover.



THE ACCELERATOR PUMP

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

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

The diaphragm (M) is connected to the throttle control by a link secured to the throttle shaft. When the throttle opens, the movement of its shaft causes the diaphragm (M) to move over, instantaneously, and force fuel through the ball valve and a calibrated injector jet (i) at the input end of the choke tube (K).
It is the size of this injector jet that determines the speed of injection.

The pump stroke is not adjustable.

THE POWER ENRICHENER SYSTEM

The valve (3) is affected by :

- the vacuum in the inlet manifold acting in its diaphragm (M1), through duct (1).

- the spring (2).

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

Additional fuel from the float chamber (4), calibrated by the jet (Ce) enters the main jet system to enrichen the mixture.

THE MAXIMUM SPEED ENRICHENER (ECONOSTAT)

At full load and speeds approaching maximum, the vacuum draws fuel directly from the float chamber through calibrated jet (Ce1) and air through calibrated jet (U3). The resulting emulsified mixture passes into the choke tube through calibrated jet (5).

13: Immersion tube with the internal 2nd barrel idling speed jet.
14: 2nd barrel econostat immersion tube.
15: Fuel input.
16: Needle valve.
17: Float.
18: 1st barrel idling jet.

THE FLOAT CHAMBER DEGASSING SYSTEM

When the engine is running at idling speed, the fuel vapour from the float chamber is vented to atmosphere.

When the engine is running at partial or full load, valve (5) closes and the fuel vapour passes into the air intake ducting through an internal circuit in the carburettor.

5: Float chamber degassing valve.

THE HEATING SYSTEM

The 1st barrel idling speed circuit is heated by coolant from the engine through the heater pad (8) secured to the carburettor.

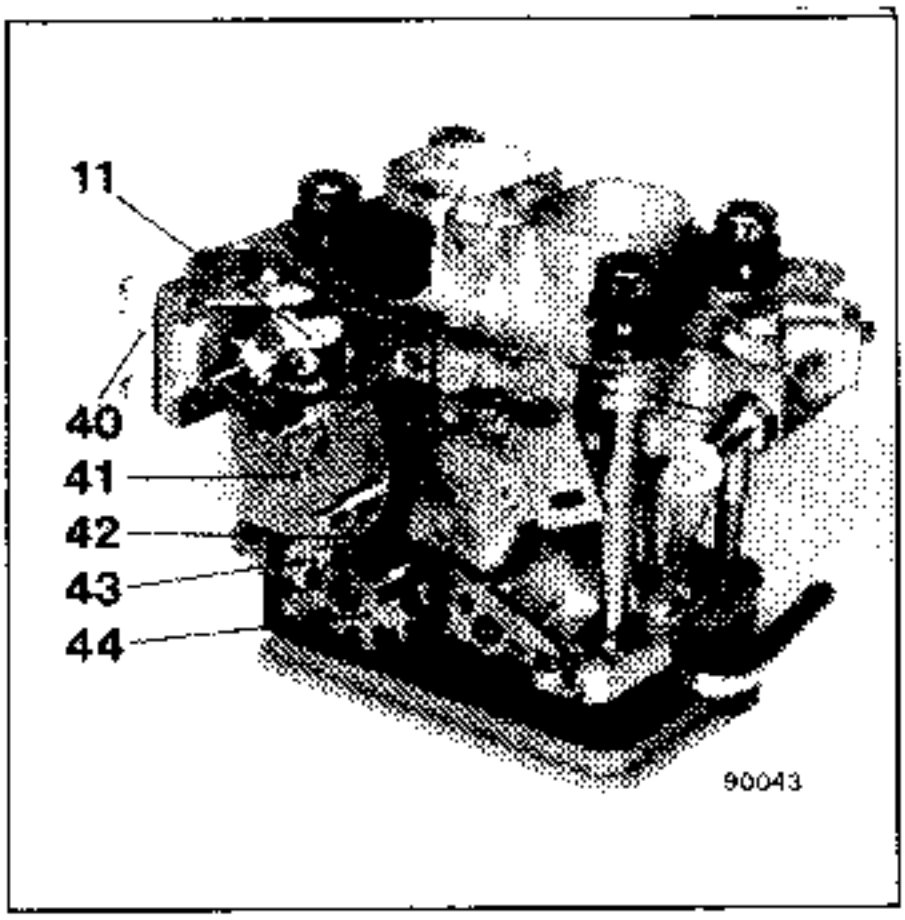
8: Heater pad.

THE CHOKE SYSTEM

The strength of the mixture is increased by closing an eccentric choke flap operated by a cam (41) and a lever (11). Another lever (44) partially opens the the throttle.

The fast idling speed that results from the throttle being partially open warms up the engine and allows it to be driven immediately.

11 : Intermediate lever.
41 : Cam.
42 : Positive throttle opening adjusting screw.
44 : Positive throttle opening lever.

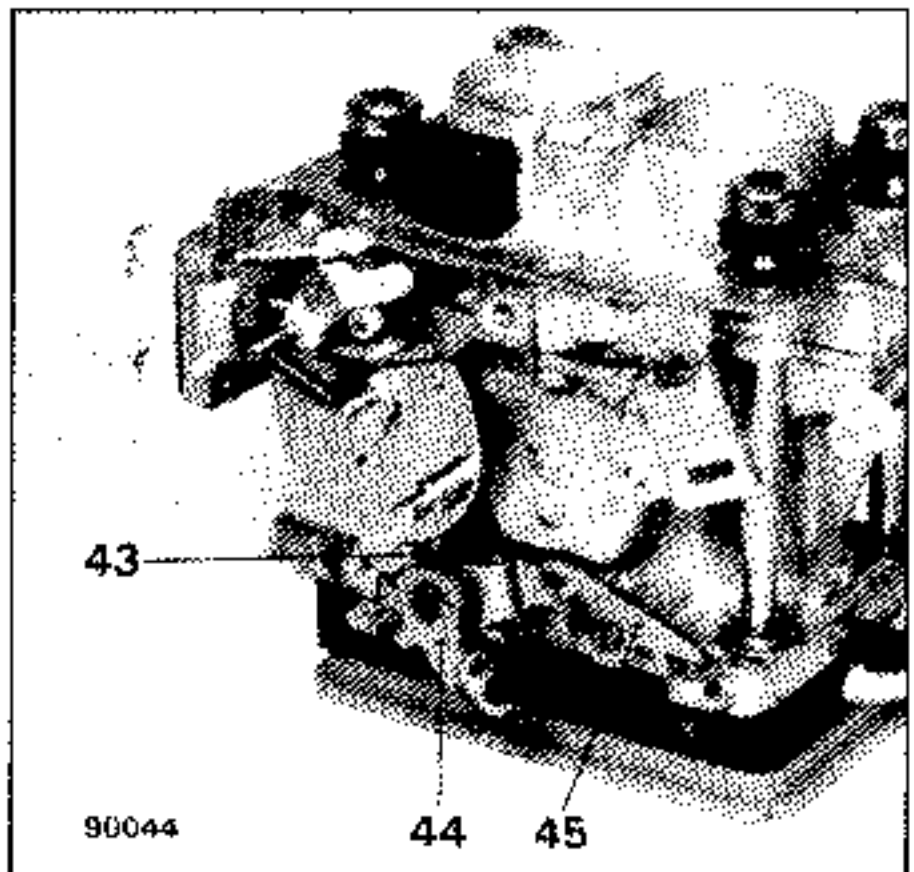


A lever system acts as a mechanical lock to prevent the second barrel opening.

The connection between the first and the second barrels is by means of a rocker secured to the 2nd barrel control lever, the position of which is related to the position of the choke.

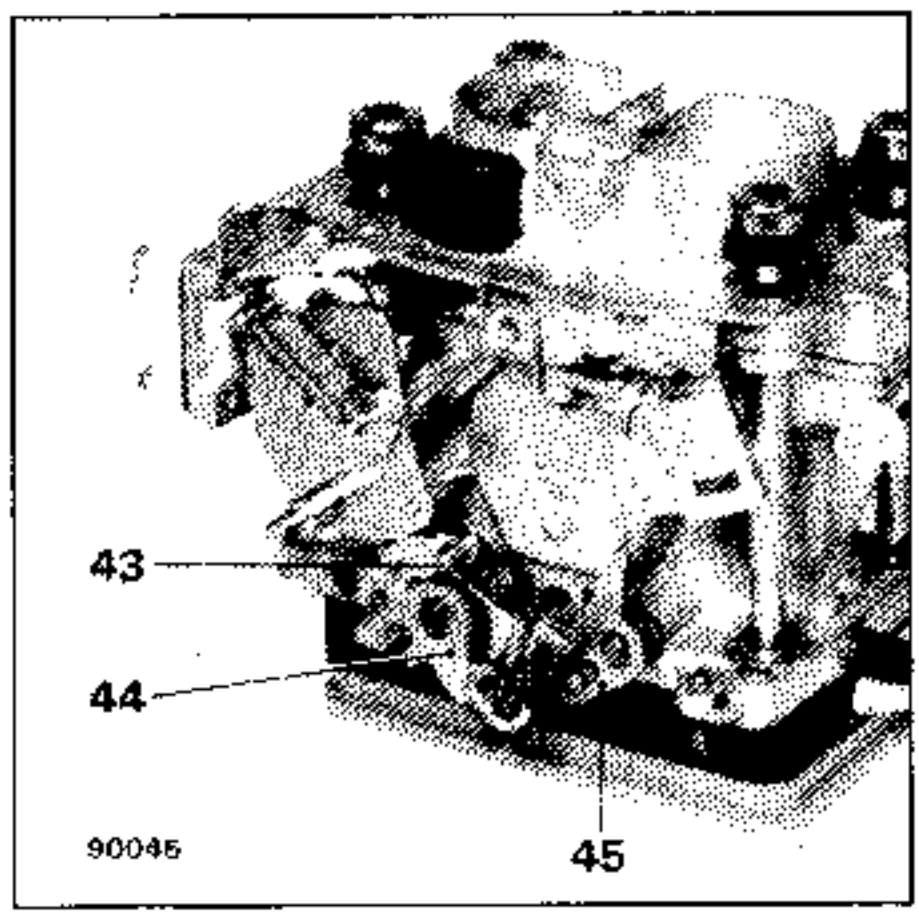
Whilst the choke is operating, the cam on the flap, because of the stud on the rocker (43) holds the rocker (43) in a position such that it cannot be operated by the 1st barrel lever (44) and the throttle on the 2nd barrel (45) will not open.

43 : Rocker.
44 : 1st barrel throttle lever.
45 : 2nd barrel throttle lever.



When the choke is pushed back in, cam (41) holds the rocker (43), by means of its stud, in a position where it can be operated by the lever on the 1st barrel (44) and the throttle on the 2nd barrel can therefore open.

The 2nd barrel locking system is not adjustable.



These carburettors differ from the 28x 34Z10 by :
- The diameter of the 1st choke tube which is 32 instead of 28.

- A pneumatic 2nd barrel throttle control system.

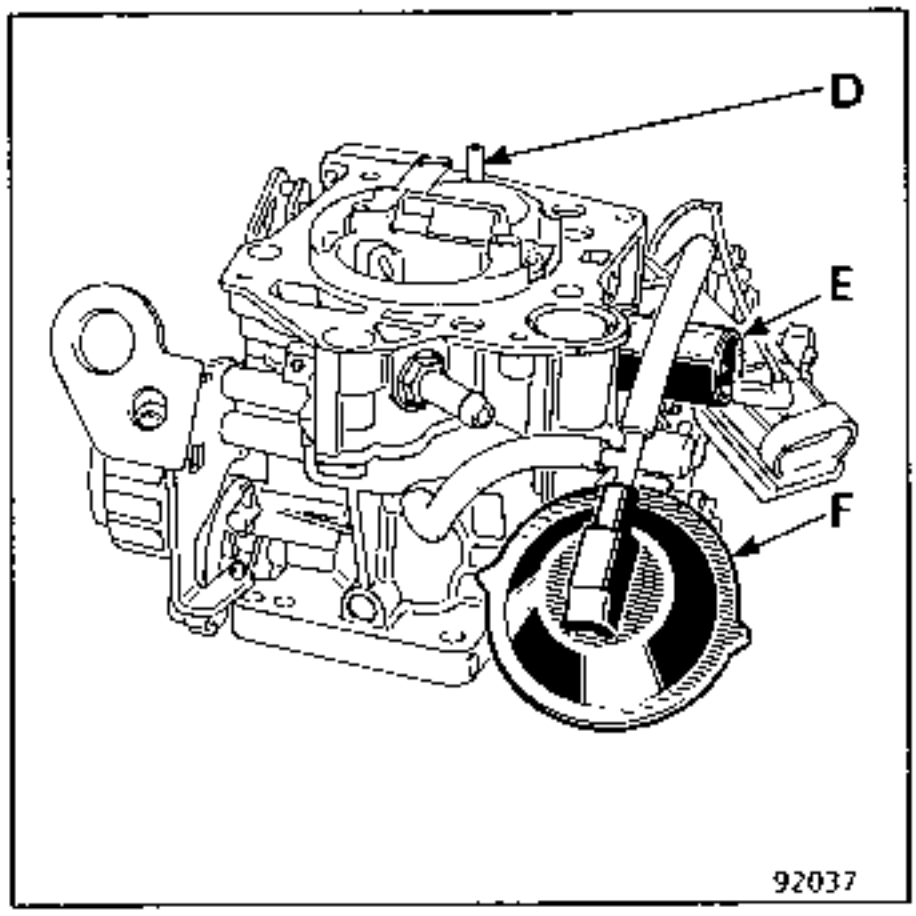
- An electric heating element on the idling circuit in place of the hot water heating system,

- A different float chamber venting system.

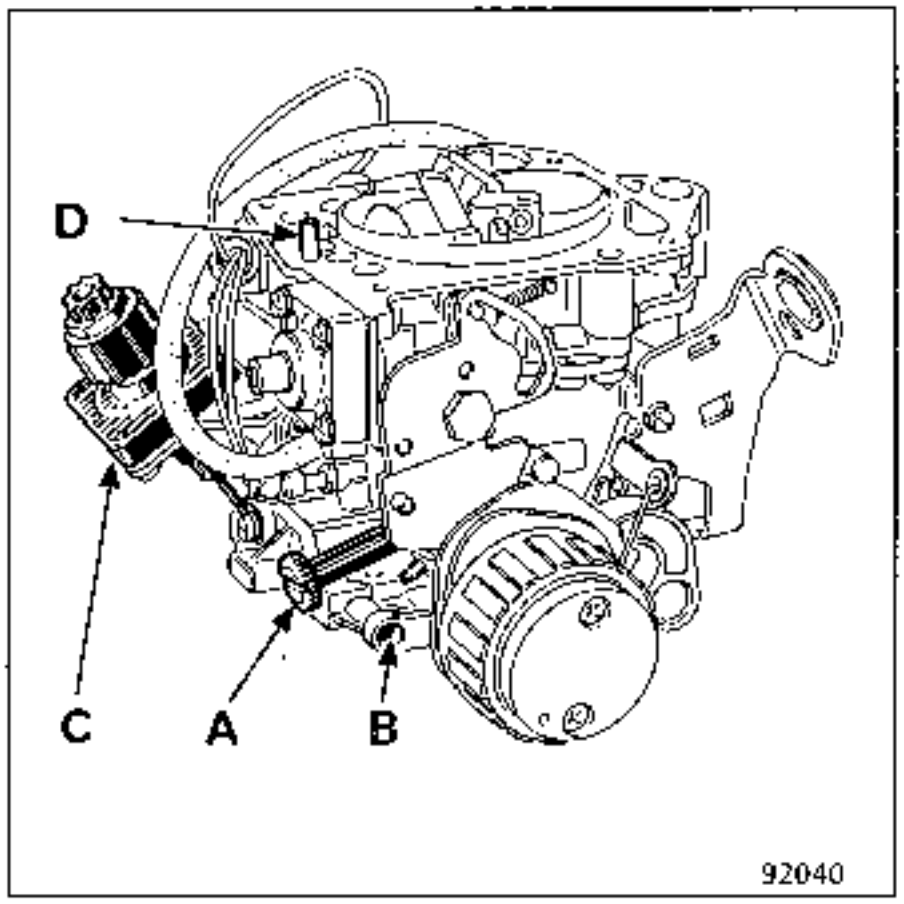
- A choke flap opening diaphragm pneumatic cavity which forms part of the carburettor air intake casing.

- A drum type return spring on the 1st barrel throttle shaft.

Note : The idling speed cut-out and the heating element are supplied with current through an "MIC" connector on the carburettor.



E Idling speed cut-off
F 2nd barrel pneumatic control system



A Idling speed air screw
B Mixture screw
C Fastidling :
- single stage AC or PS (928C)
- two stage AC + PS (928D)
D Choke flap pneumatic cavity duct.

WARNING : when the engine is run with the air intake casing removed, an air intake circuit is established which weakens the mixture.

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 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 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 re-used.

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 is 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).

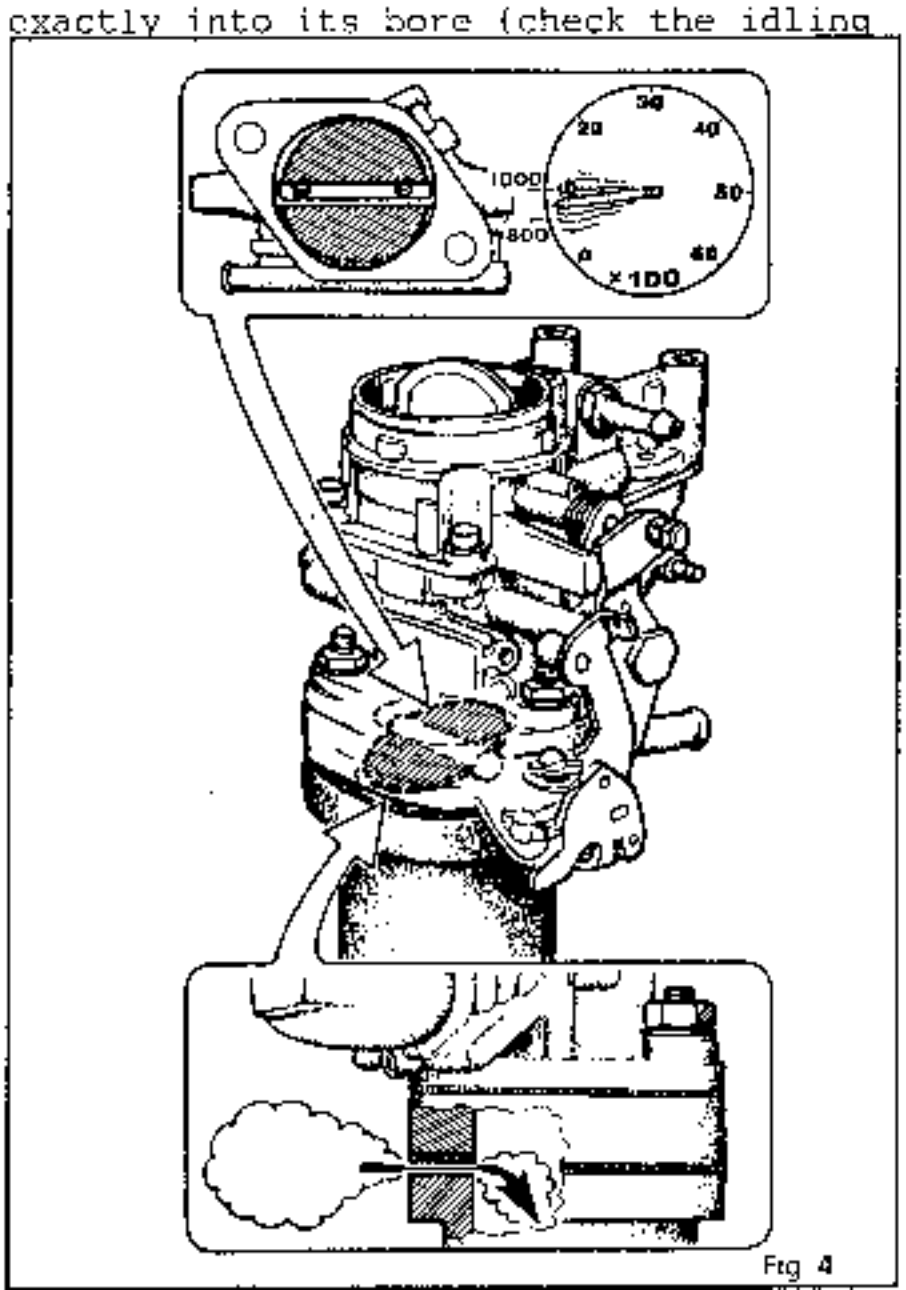


Fig 4

When the throttle is closed, it should be central so that there is play between the lever secured to the throttle shaft and the corresponding end of the shaft bearing (Fig. 5). If there is no clearance at one or both ends the throttle may stick or be stiff at some point in its movement.

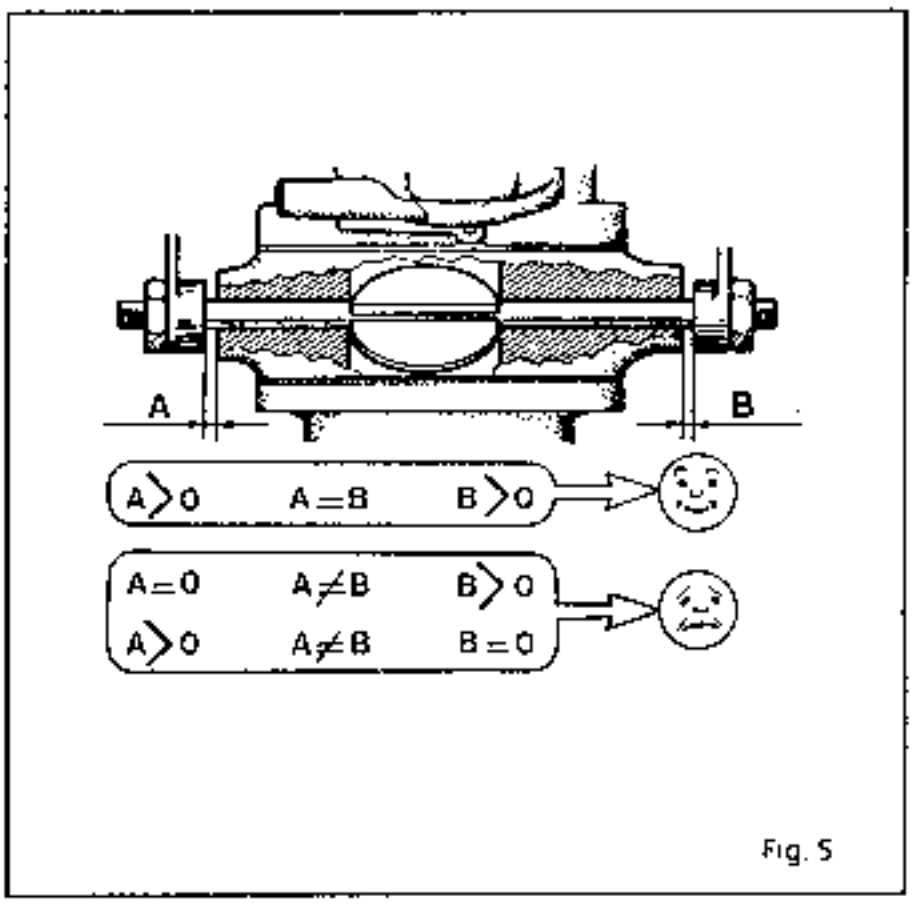


Fig. 5

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.

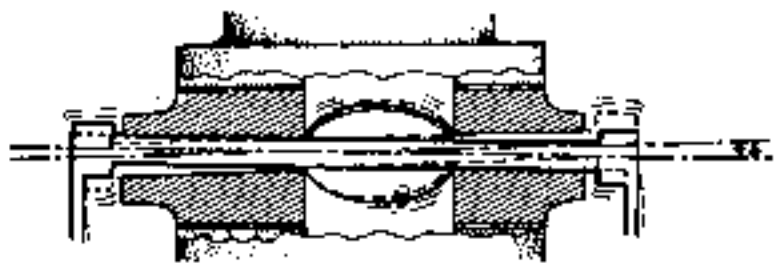


Fig 6

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.

The float chamber : this part of the carburettor is the least subject to wear and the leak tests carried out on it during manufacture make it unlikely that leaks should occur later. Ensure, however, that the face on which the float chamber locates on the carburettor body and the accelerator pump or enrichener assembly locating faces are flat (Fig. 7).

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.

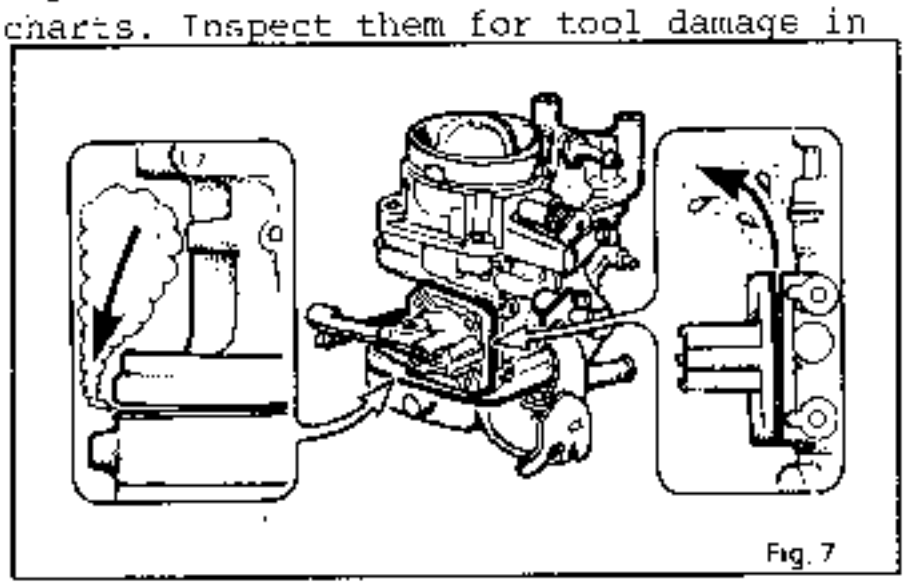


Fig. 7

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 stiffness 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.

THE FUEL LEVEL

Definition

The fuel level in the float chamber is defined as the height it reaches at a given fuel pressure.

To carry out this test, one must have available a level testing unit which is connected to the lower part of the float chamber (to a jet access plug tapping for example).

Instead of this method one can use a system of measuring the needle valve dimensions when fitted, in particular when the float arm cannot be bent, or the position of the needle valve - float as this corresponds to the fuel level.

Method

Note : the position of the float is measured without the gasket in place except on carburettors where the float has to be removed to replace the gasket

The assembly is adjusted by bending the brass float arm (1) or by squeezing down the needle valve seal when the float is in a single piece and made of a material that cannot be bent.

If the seal is already too compacted, it will have to be replaced by a new one.

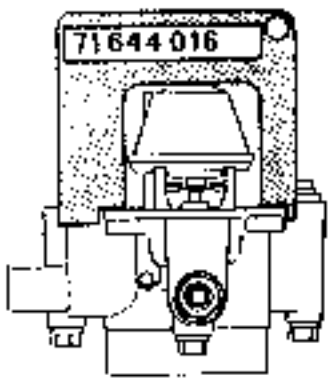
There are two methods of working depending on whether one has or has not a float checking gauge.

a) using the gauge

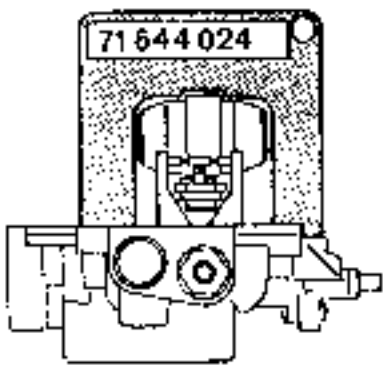
- remove the float chamber cover,
- turn the cover over and place the gauge on its gasket face.

There should always remain a slight clearance between the gauge and the top of the float with the bore or needle valve pushed in.

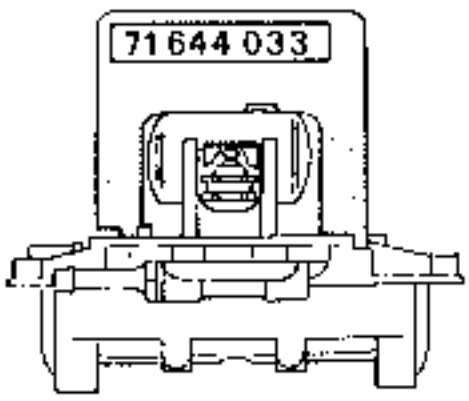
SOLEX 32 DIS
Gauge SOLEX réf. **71 644 016**



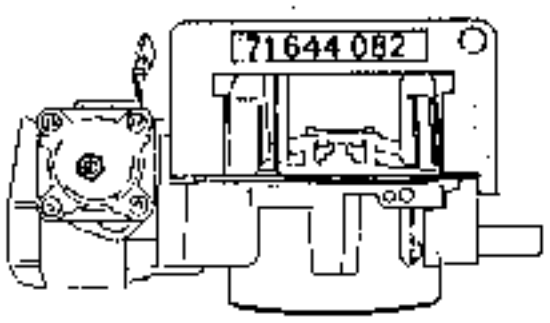
SOLEX 32-35 EITA - EISA - SEIA
Gauge SOLEX réf. **71 644 024**



SOLEX 32 MIMSA
Gauge SOLEX réf. **71 644 033**



SOLEX 28x34 Z 10 - 32x34 Z 13
Gauge SOLEX réf. **71 644 082**



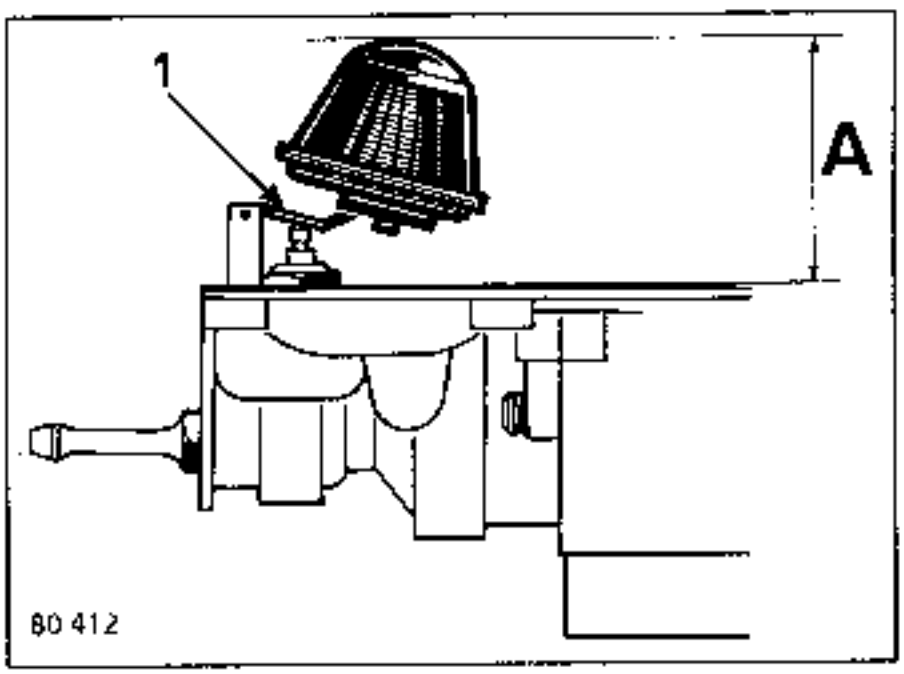
FUEL LEVEL

b) without the gauge

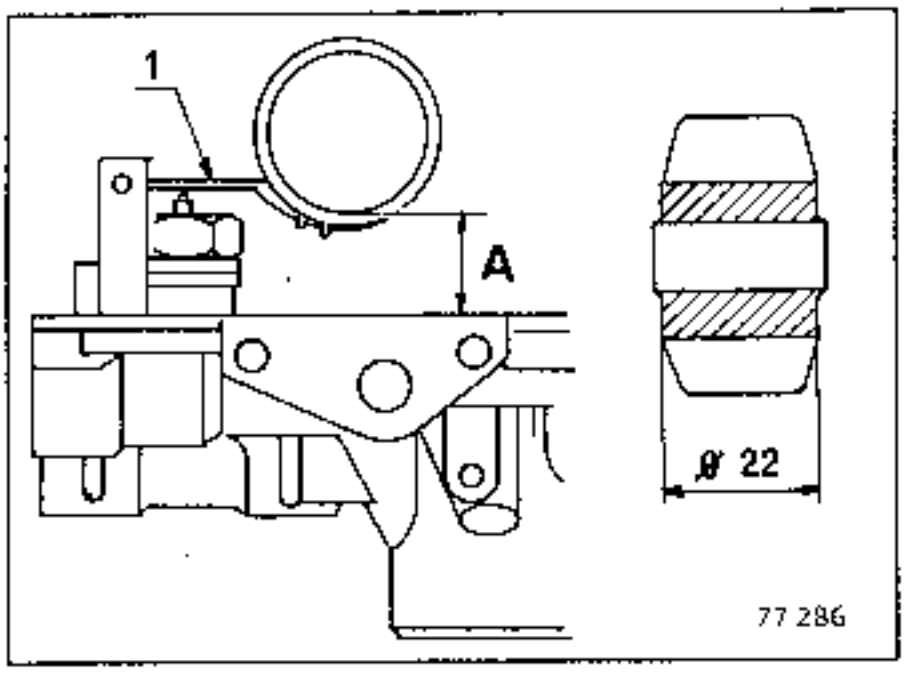
With the float chamber cover held upside-down and horizontal, check the level between the gasket face and the outer part of the float with the ball or needle valve pushed in :

DIMENSION A = see data sheet

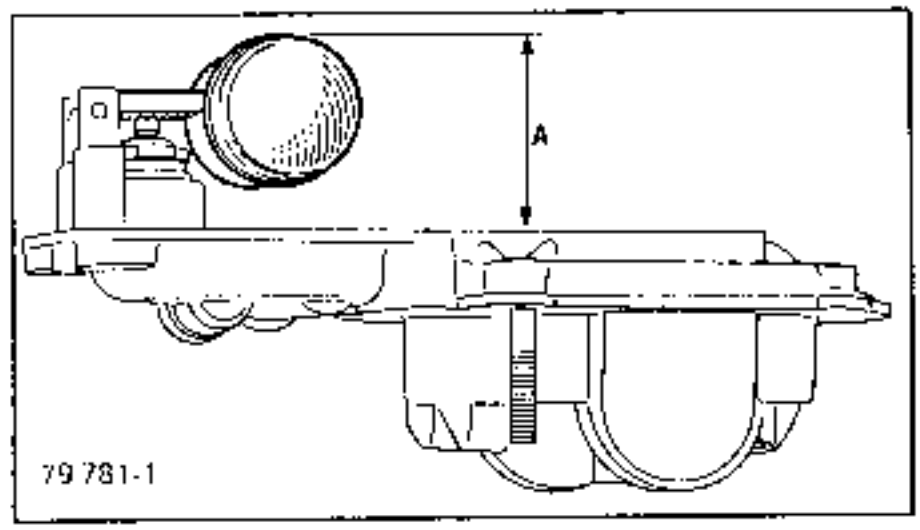
SOLEX 26 DIS and 32 DIS



SOLEX 32 - 35 EISA - EITA - SEIA



SOLEX 32 MIMSA

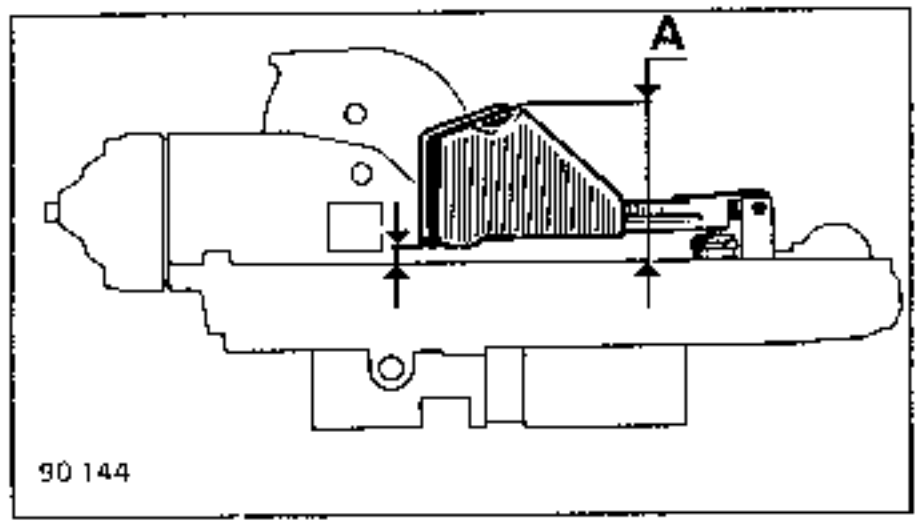


WARNING : to remove the cover one must first remove the choke assistance diaphragm to gain access to the choke flap control link.

SOLEX 32 BIS

Non-adjustable. Thickness of needle valve seal 1 mm.

SOLEX 28x34 Z 10 - 32x34 Z 13



THE THROTTLE ANGLE (constant CO system)

Method using the SOLEX measuring instrument

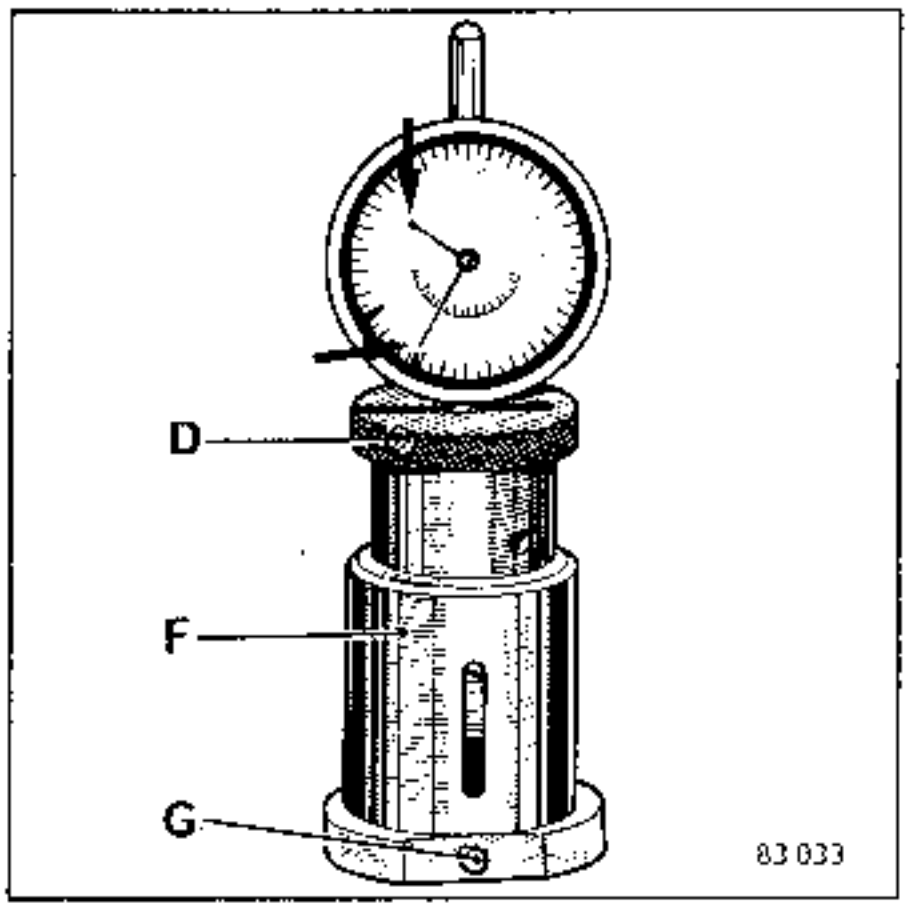
This instrument, which has been designed to measure, directly, the throttle angle, has two pads, one fixed and the other moving. The moving pad is connected to a dial graduated in degrees and minutes. A sliding ring that rests on the carburettor flange keeps the instrument perpendicular.

- 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 (see arrows).

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 then tighten screw (D).



- CHECKING THE CARBURETTOR

Open the choke flap.

Fit the counterweight, as near horizontal as possible, to the throttle plate.

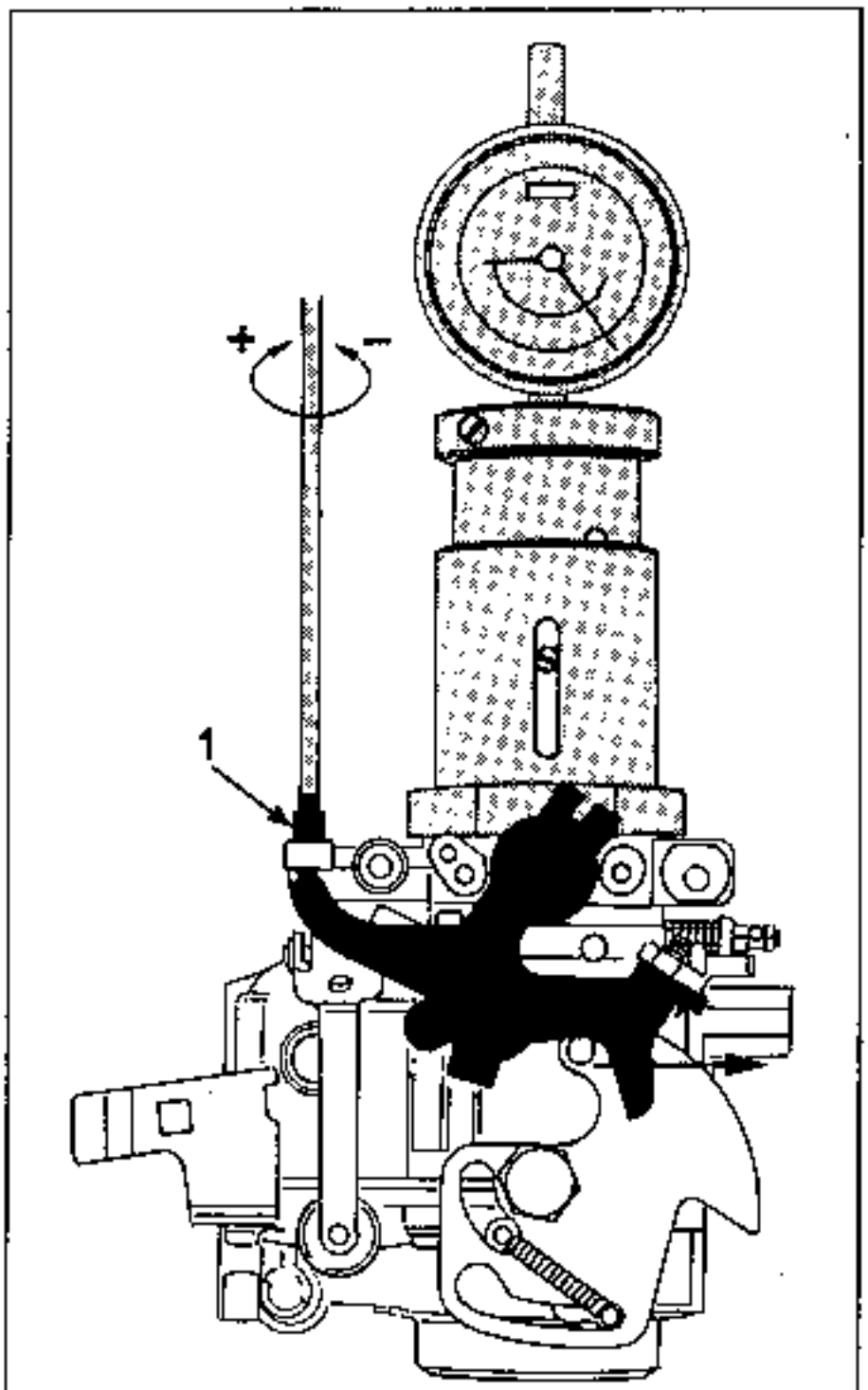
Place the measuring instrument in position with the fixed pad on the top of the throttle plate.

Bring the ring (F) down on to the carburettor flange, centralising it as closely as possible with the bore and aligning the red position marks (G) with the throttle shaft centreline.

Note the angle shown on the dial.

SOLEX 32 BIS

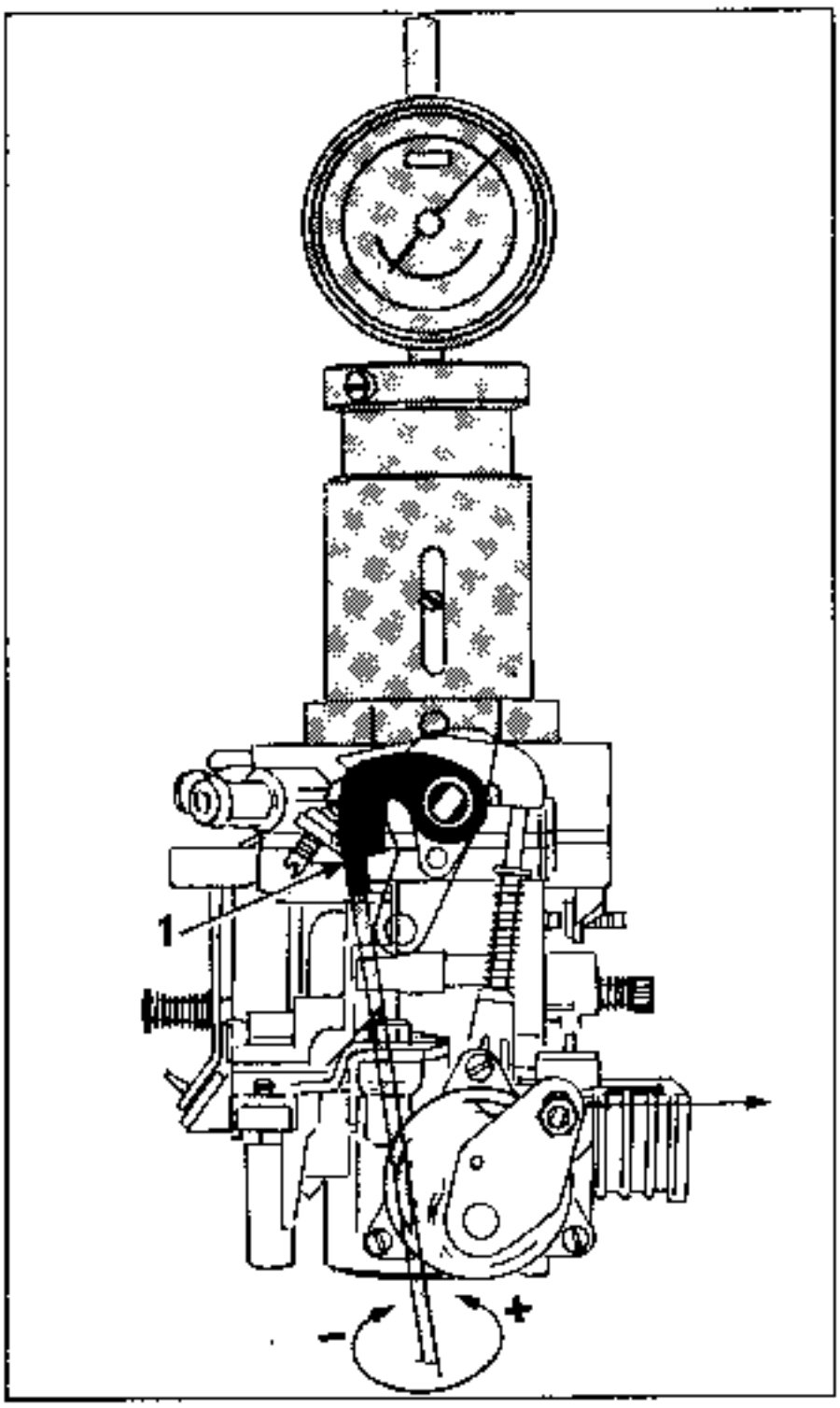
If the angle is not correct, adjust it by turning screw (1).



THROTTLE ANGLE

SOLEX 32 EISA 4

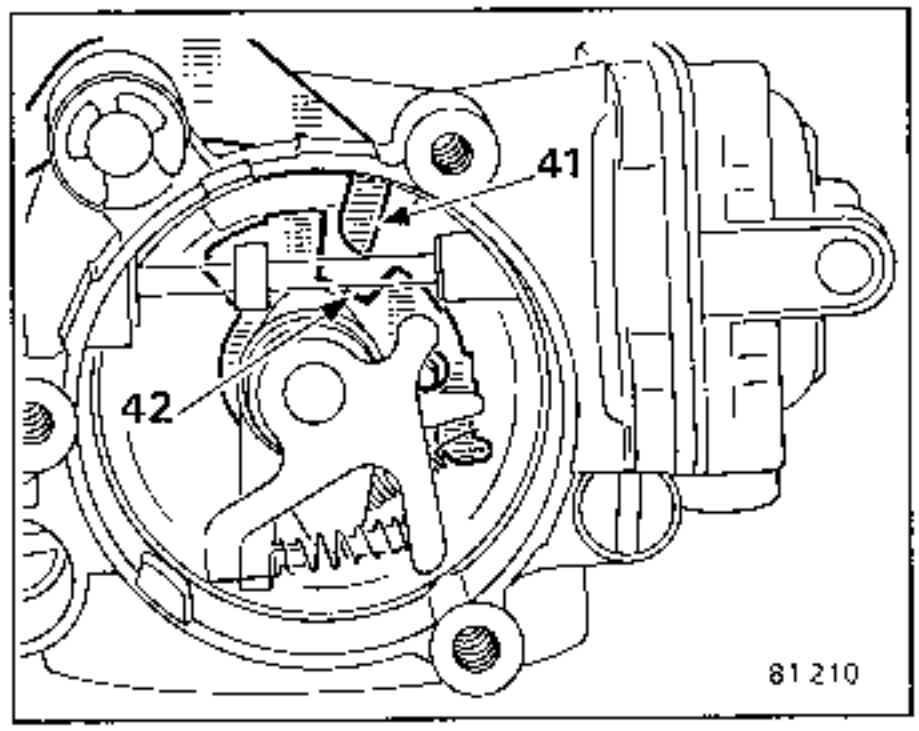
Correct the throttle angle by turning screw (1).

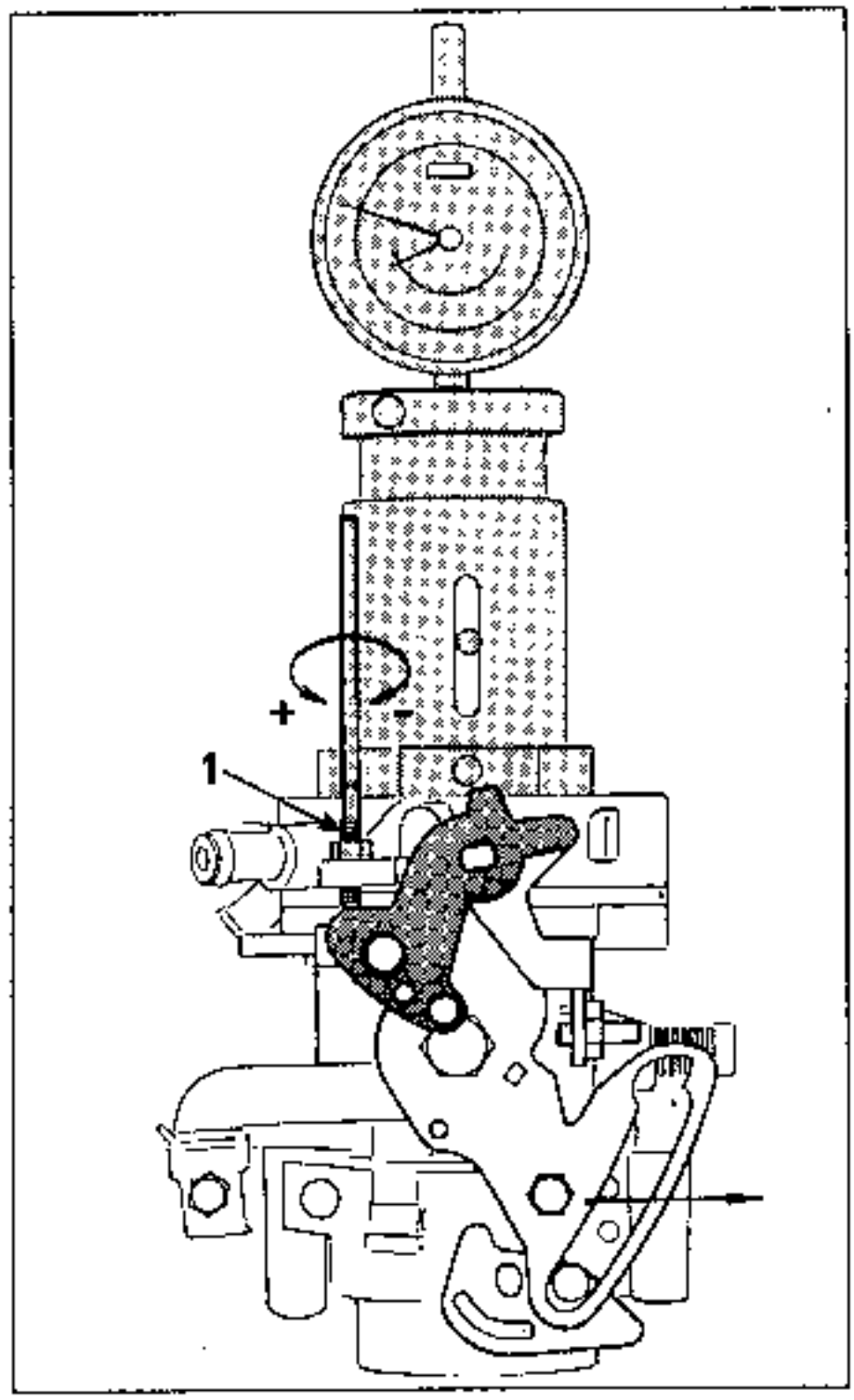


SOLEX 32 EITA - 35 EITA - 32 SEIA - 35 SEIA

Special features of the 32 EITA - 35 EITA

The choke system will have to be released before the adjustment. The positive throttle opening lever (41) must be in the slot (42) in the cam.





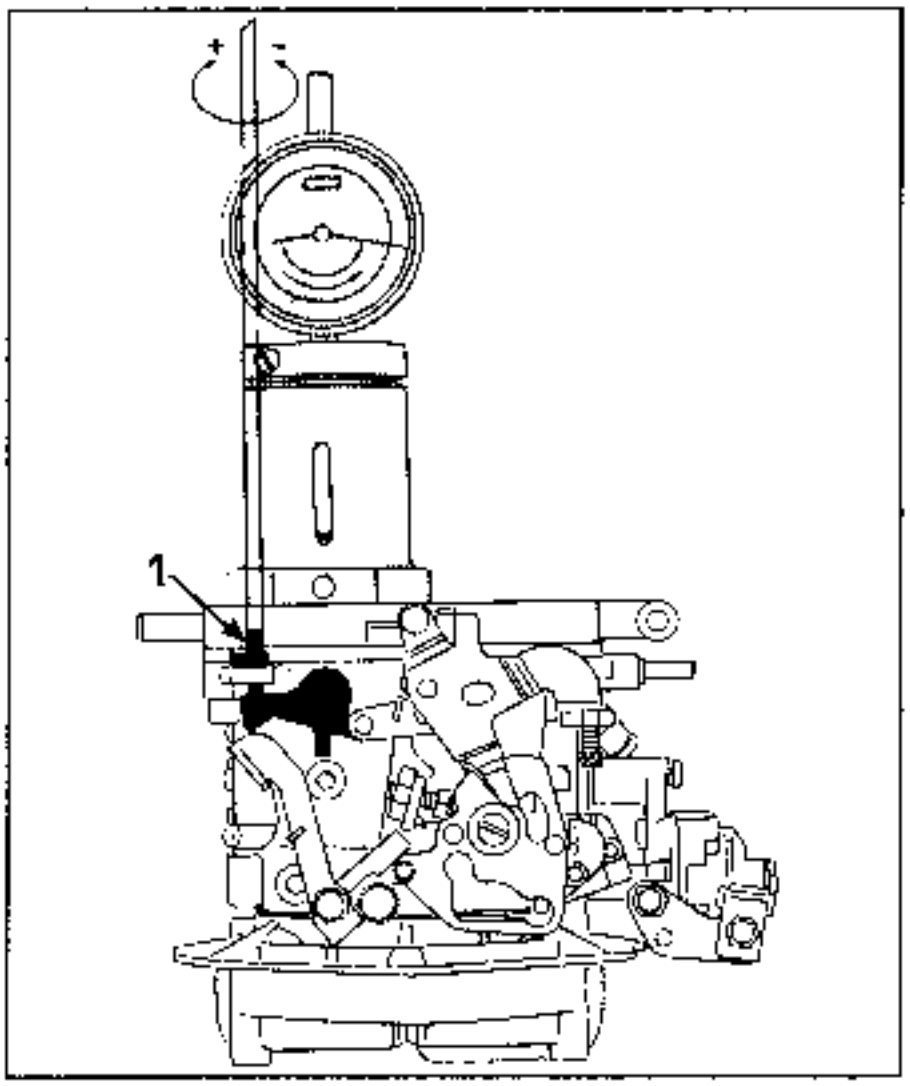
If the angle is not correct, adjust it by turning the screw (1) then fit a tamper-proofing cap.

THE THROTTLE ANGLE ON THE 2nd BARREL

SOLEX 32 MIMSA - 28x34 Z 10 - 32x34 Z 13

If the data sheet does not give a figure, the throttle should always be slightly open so that a small flow of air passes round it and stops it sticking in the closed position.

The correct position is when the throttle is open by 0° 30'.



Unscrew the screw (1) until the throttle has fully closed then screw it in again to open it by 0° 30'.

After adjustment, fit a tamperproofing cap.

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 centreline 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.

If it is not, the throttle plate will have to be recentralised on its shaft.

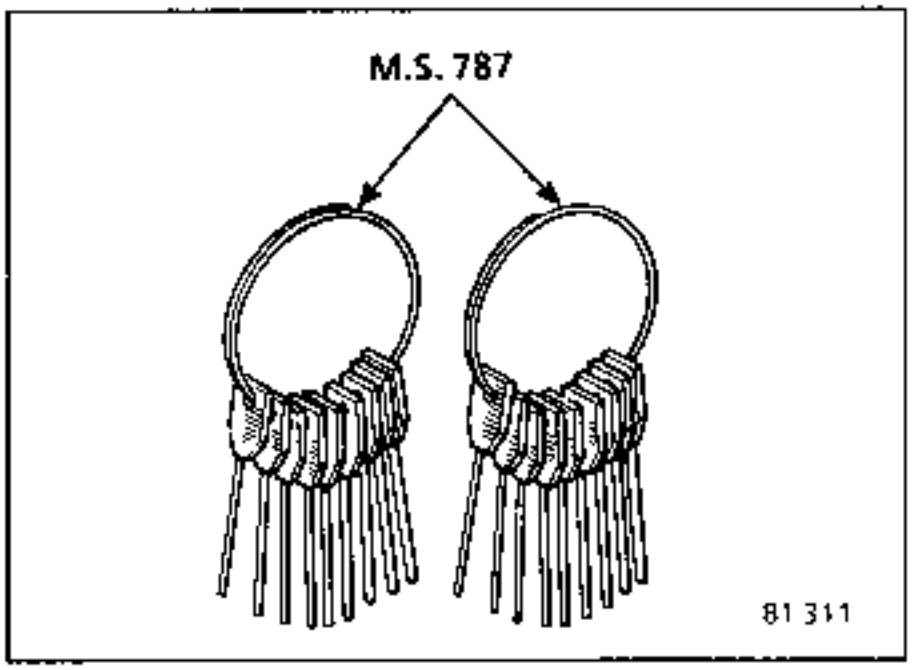
On carburettors equipped with an automatic choke, the positive throttle opening will vary to suit the position of a cam, the largest radius of the cam being the very cold position.

On manual choke carburettors, there are sometimes two positions referred to as the :

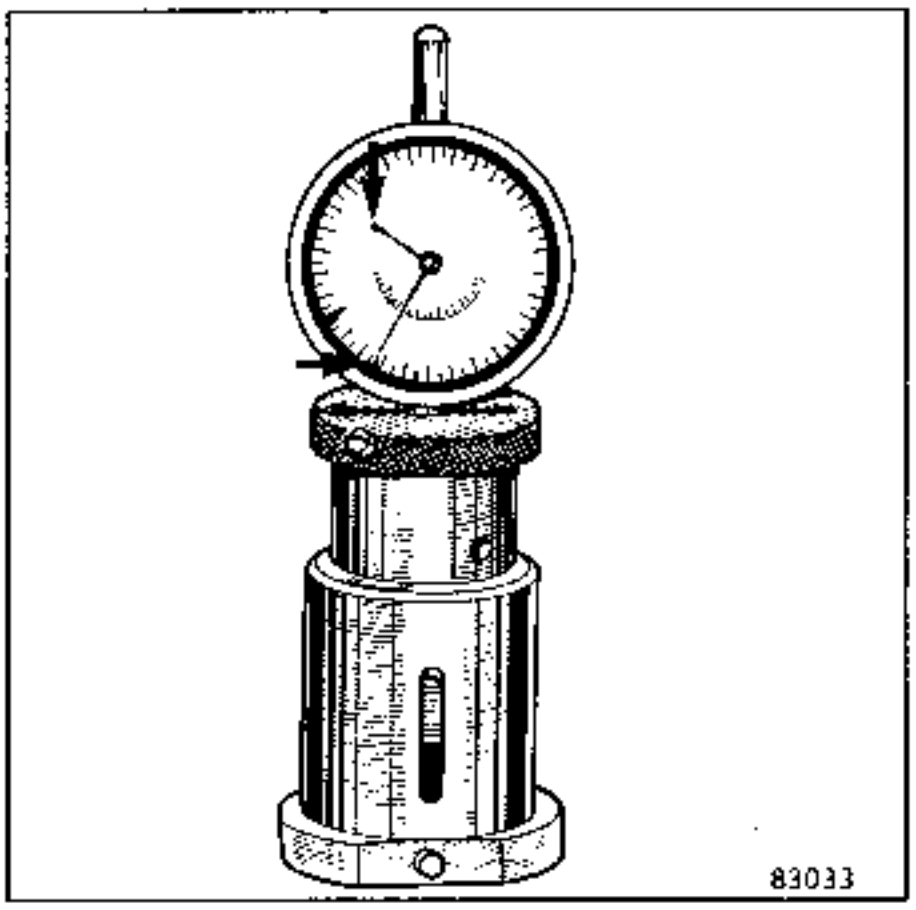
- very cold position - choke pulled fully out
- medium cold position - choke in an intermediate position identified by a stiff point (carry out the adjustment in whichever position is stipulated).

Tooling

Set of gauge pins



or SOLEX angle measuring instrument

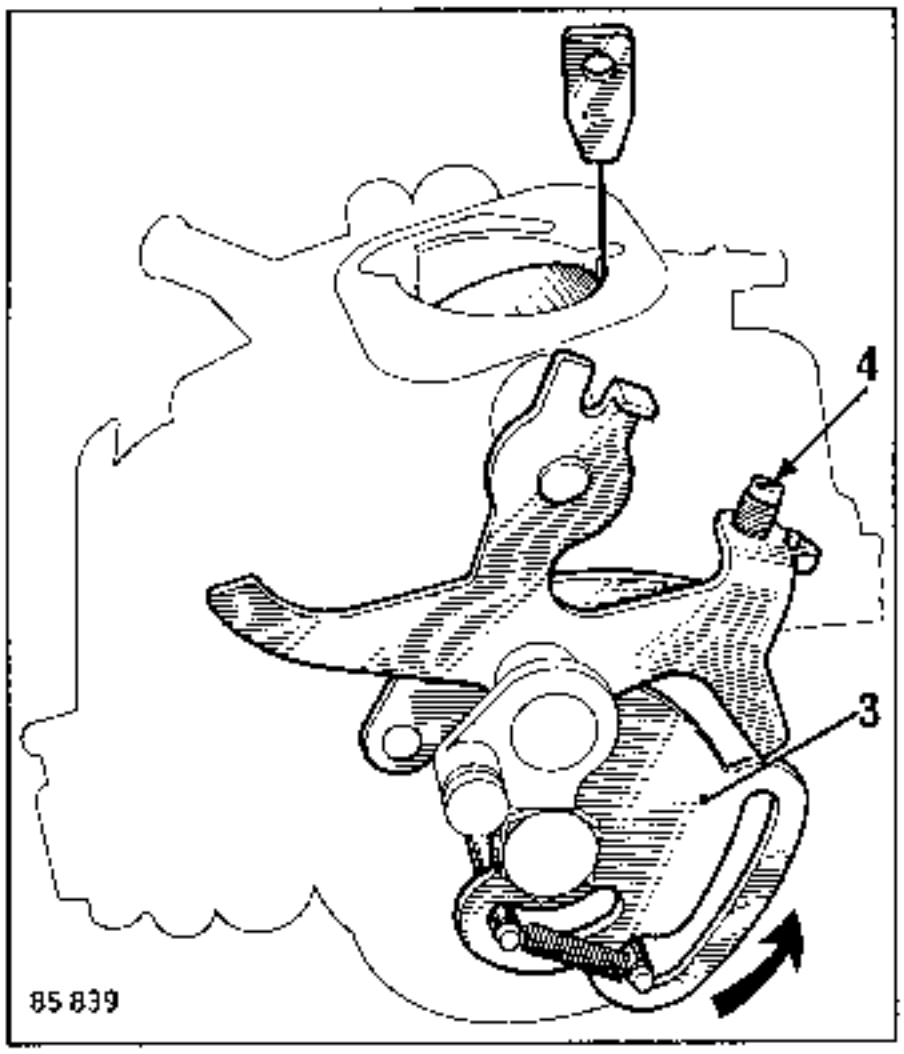


THE POSITIVE THROTTLE OPENING

Method and adjustment

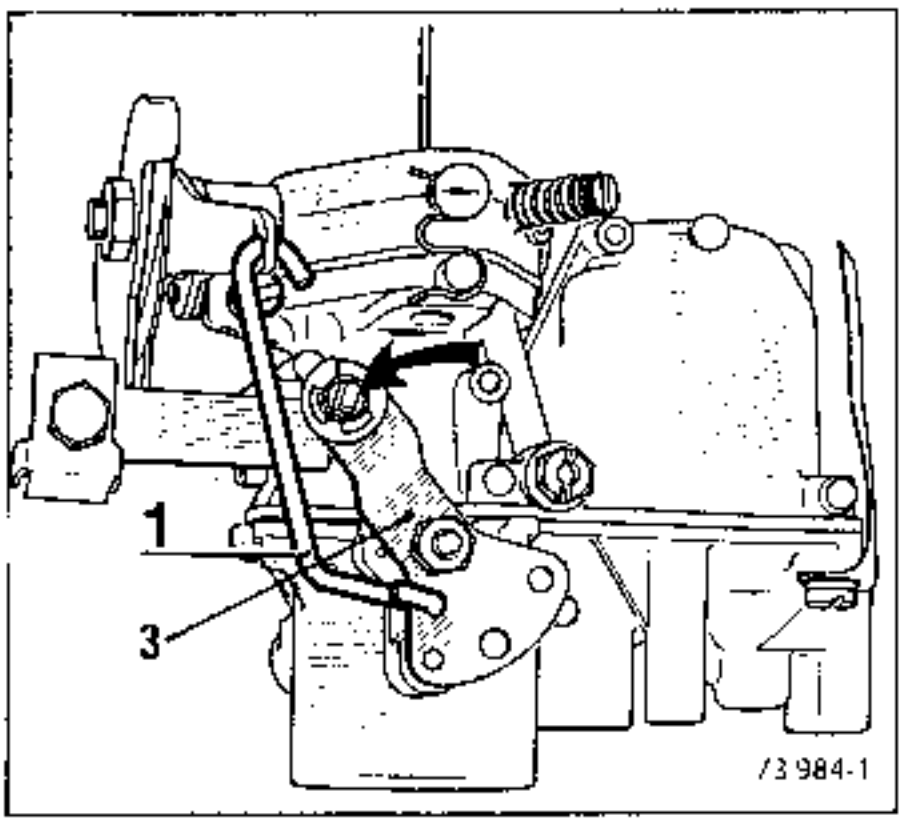
Place the choke in the very cold position by pushing lever (3) in the direction shown by the arrow and measure the positive throttle opening using gauge pins M.S.787.

SOLEX 32 BIS



Turn screw (4) after first removing the cap.

SOLEX 26 DIS

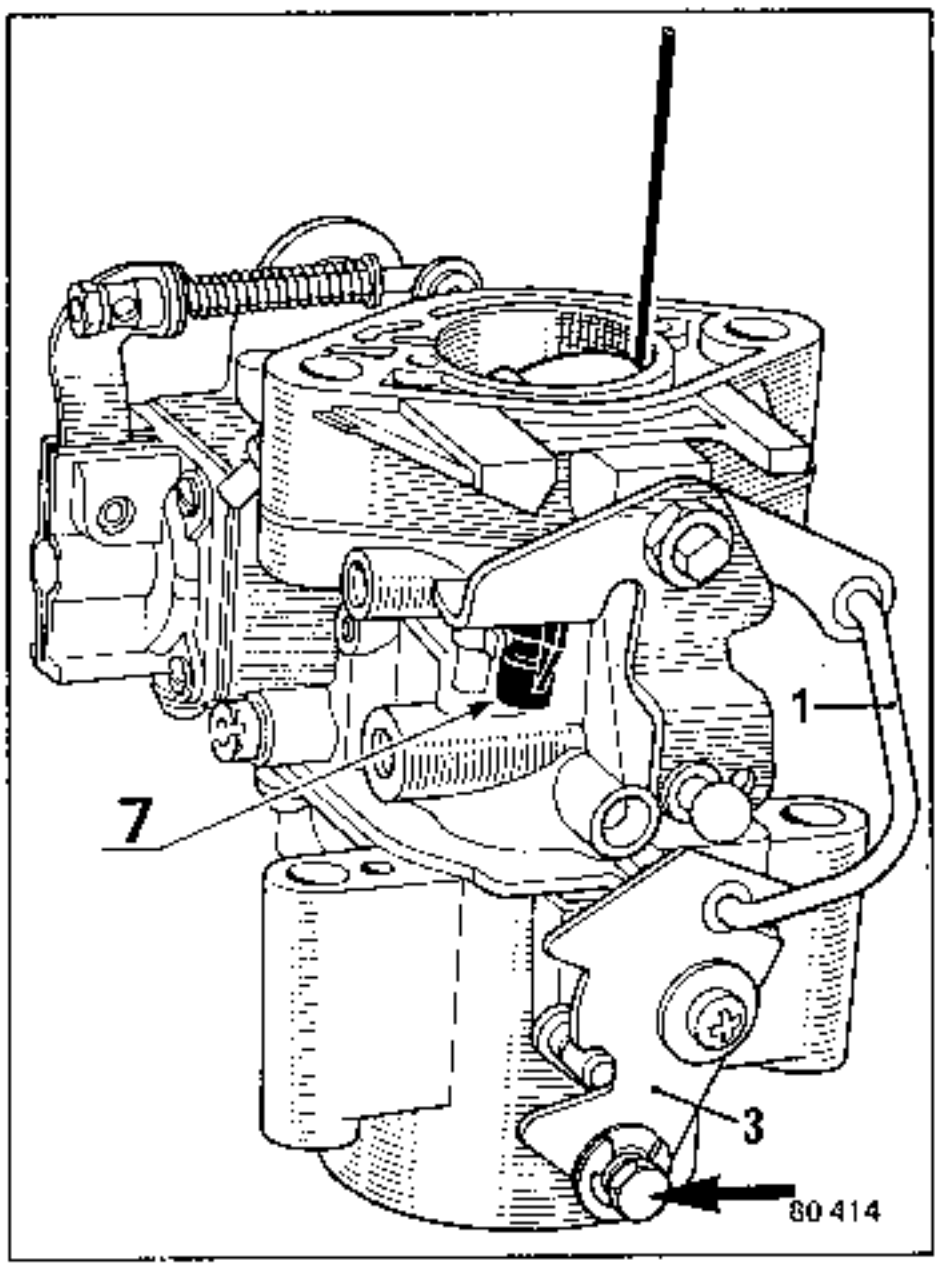


Bend the link (1) connecting the choke lever to the throttle lever.

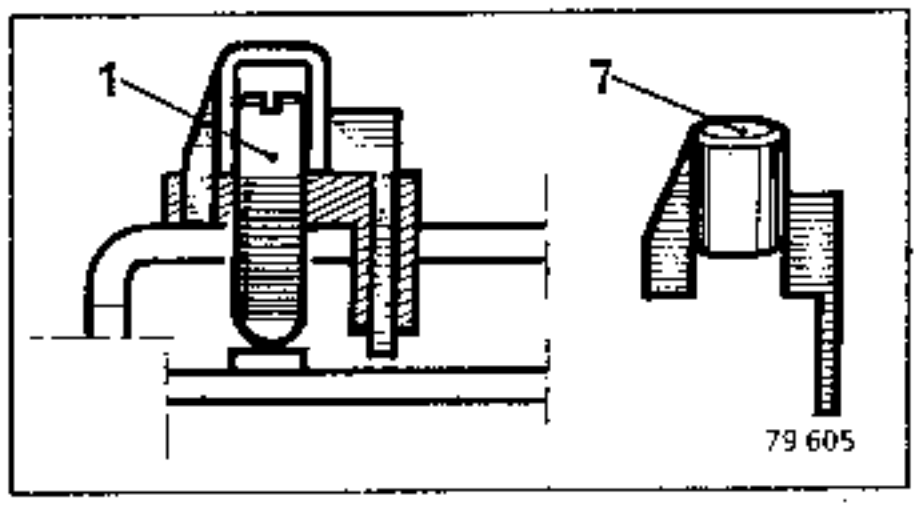
SOLEX 32 DIS

Depending on the nature of the mechanism

a) Bend the connecting link (1)



b) Turn the screw (1) after removing the cap (7)
After completing the adjustment, refit a white cap (7).

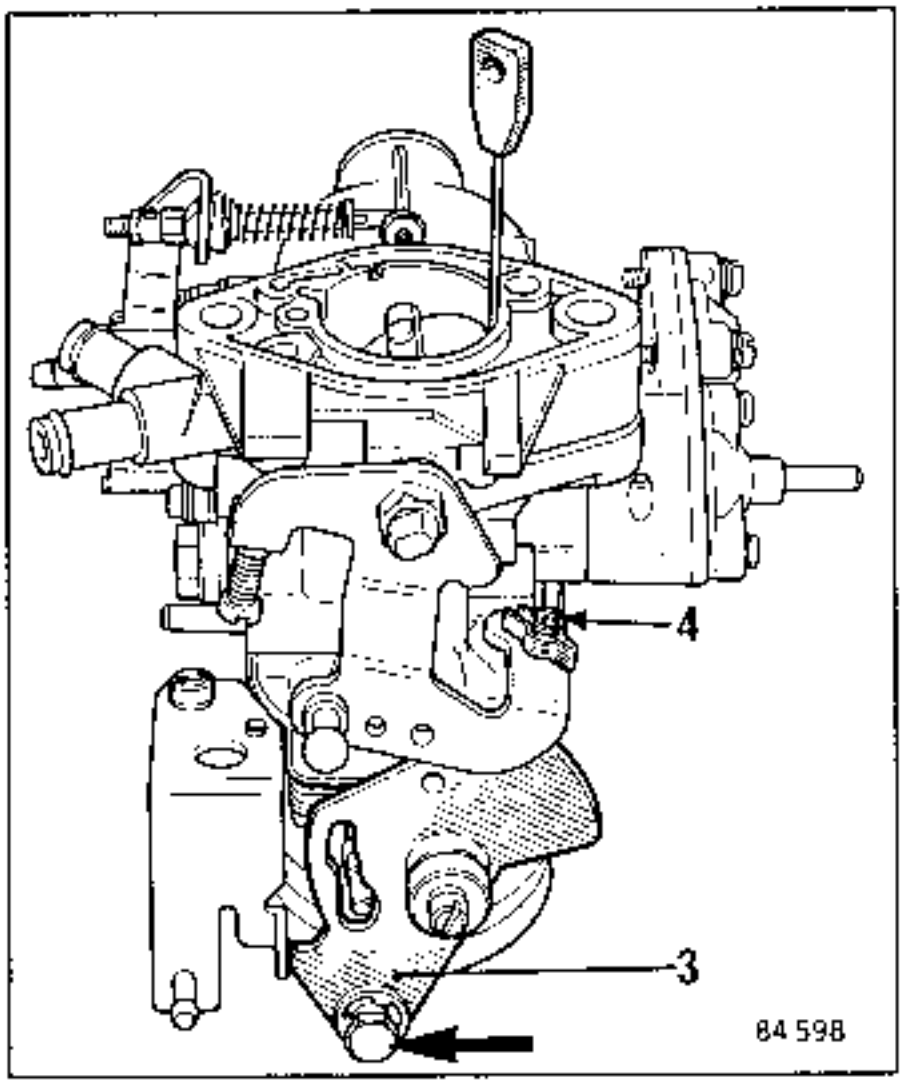


NOTE : the original cap (7) is black.

THE POSITIVE THROTTLE OPENING

SOLEX 32 DIS supercharged

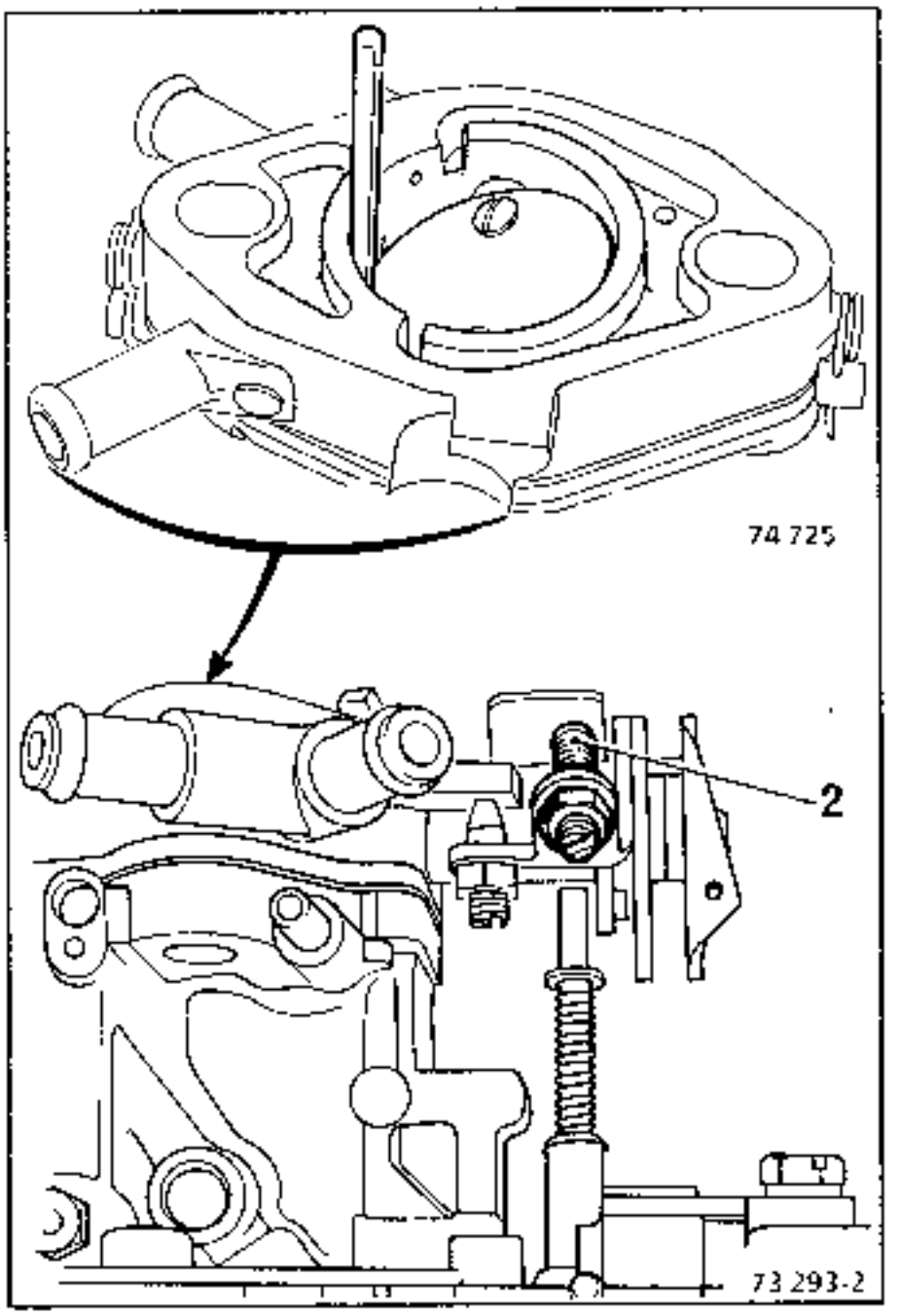
Place the counterweight of the solex angle measuring instrument on the throttle shaft and measure the amount by which the throttle is open on the opposite side to the progressive slot.



Adjust by turning screw (4).

SOLEX 32 EISA 4

Turn screw (2) after loosening its lock nut.

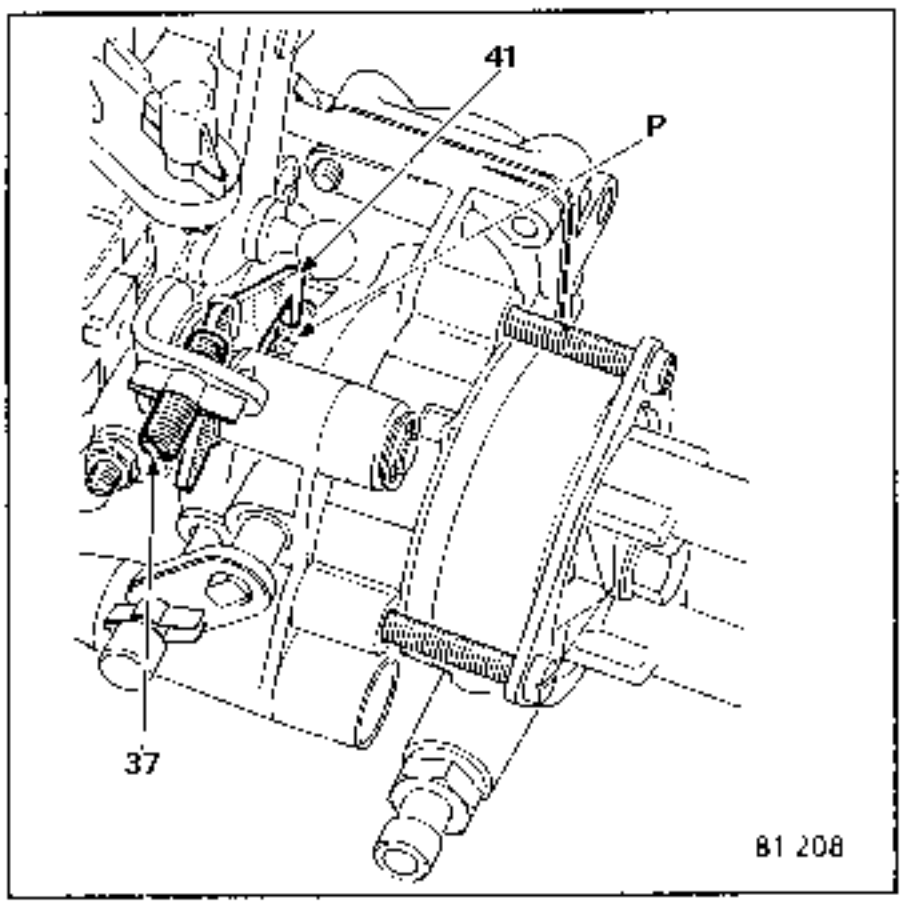


THE POSITIVE THROTTLE OPENING

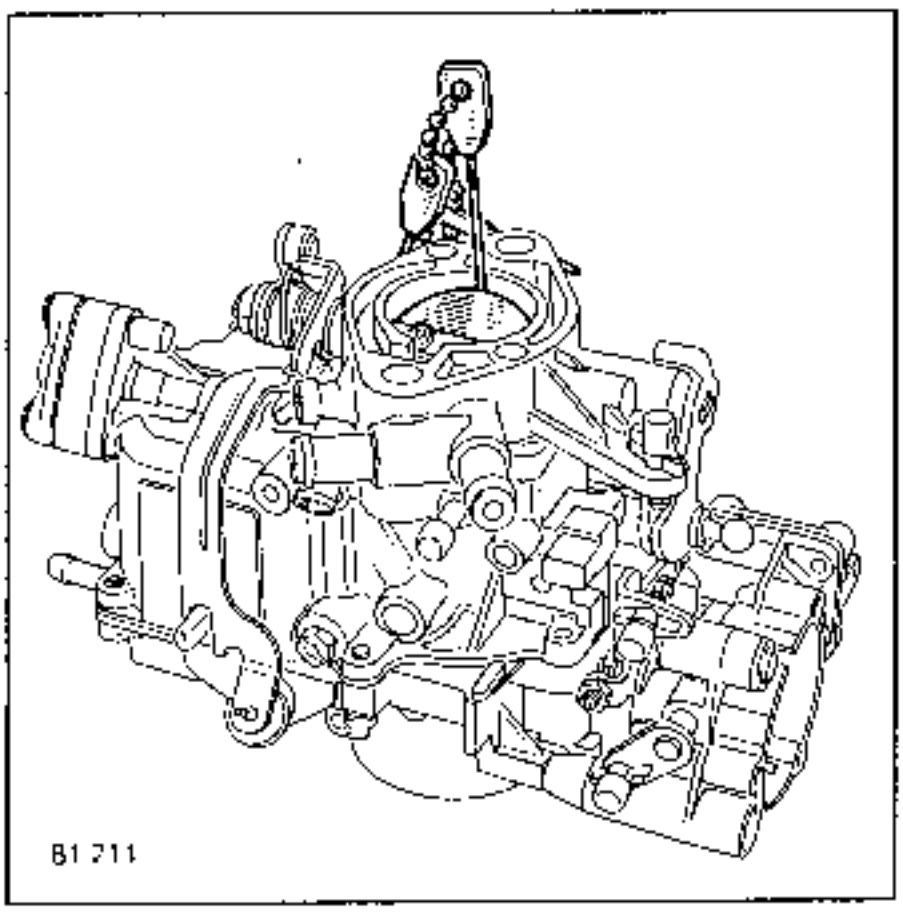
SOLEX 32 EITA - 35 EITA

Special features

Preset the choke, that is to say pull down the largest radius on the positive throttle opening cam (P) towards the base of the carburettor (to the very cold position) and bring the lever (41) against the highest part of the cam.



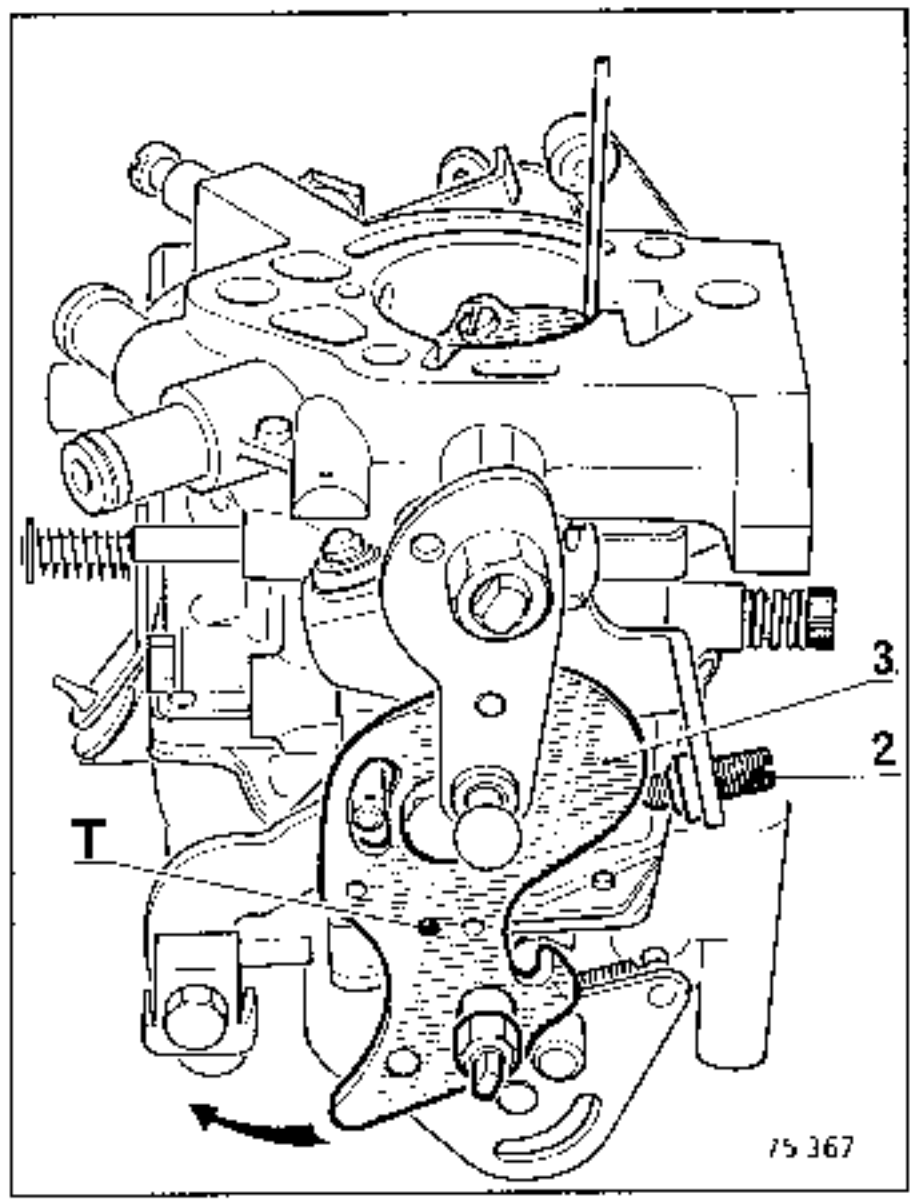
Turn screw (37).



SOLEX 32 SEIA

Special features

Place the choke flap in the medium cold or very cold position depending on the carburettor type, by pushing the lever (3) in the direction shown by the arrow.



NOTE :

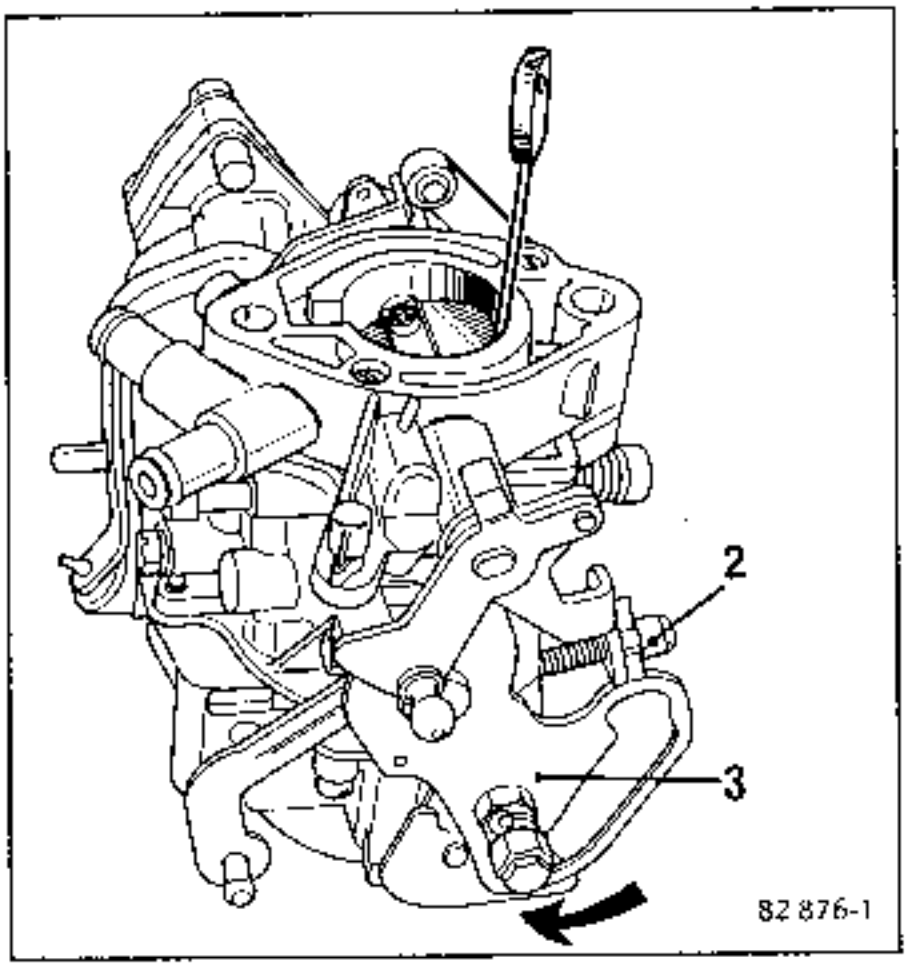
For the medium cold position, place the hole (T) in line with the ball.

For the very cold position, fully close the choke flap.

Turn screw (2) after first removing its cap.

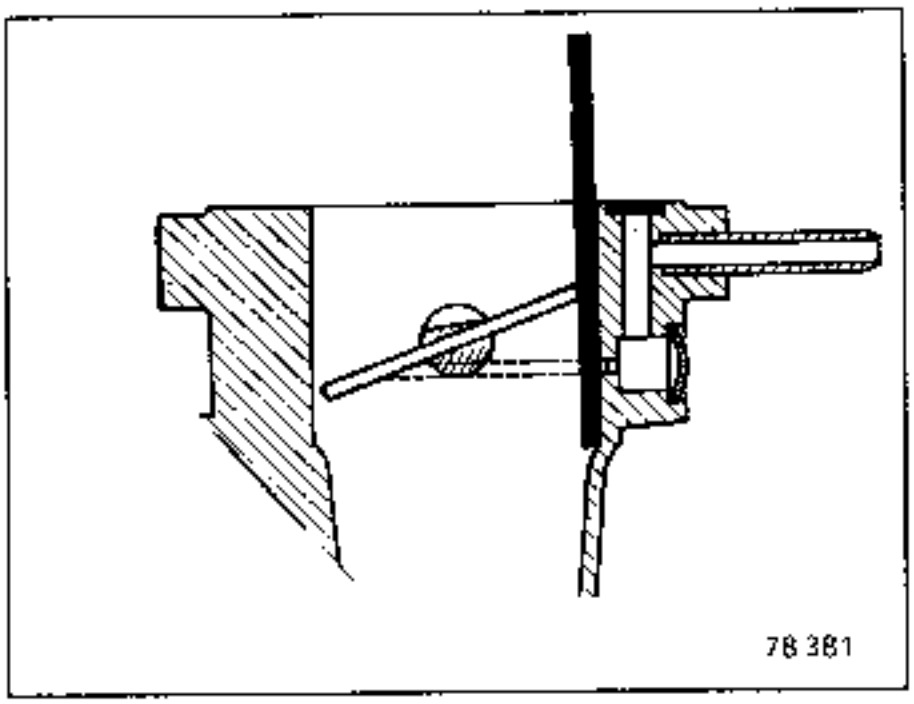
THE POSITIVE THROTTLE OPENING

SOLEX 35 SEIA

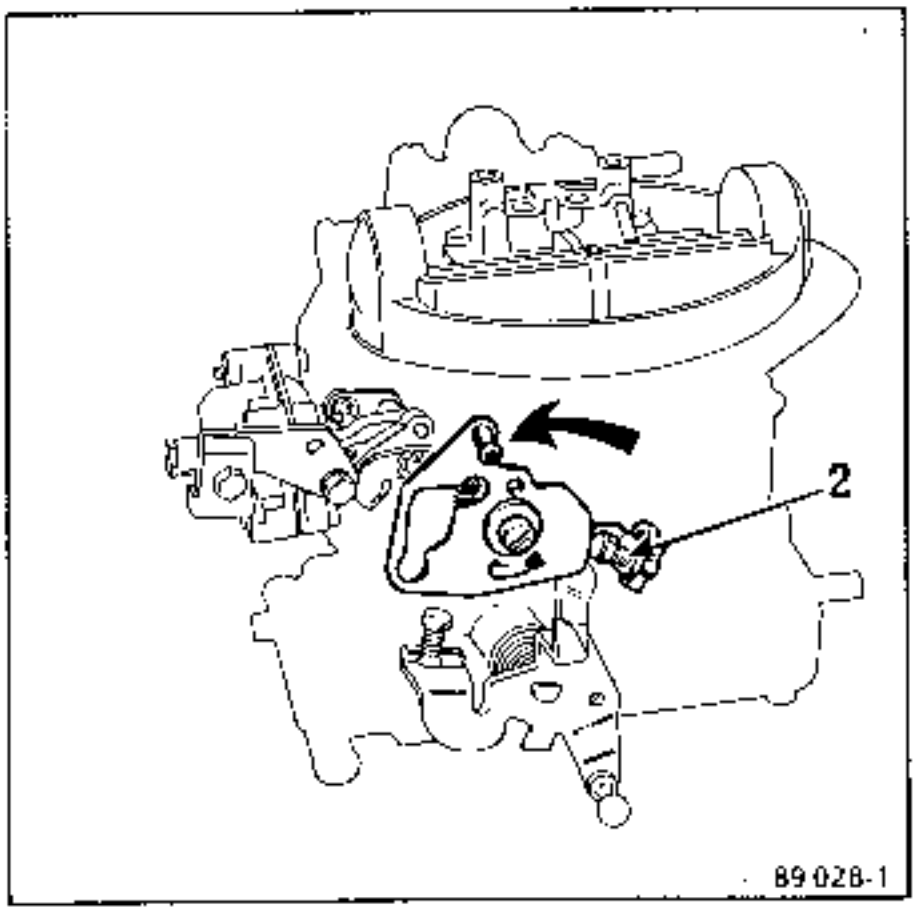


Turn screw (2) after first removing its cap.

SOLEX 32 MIMSA

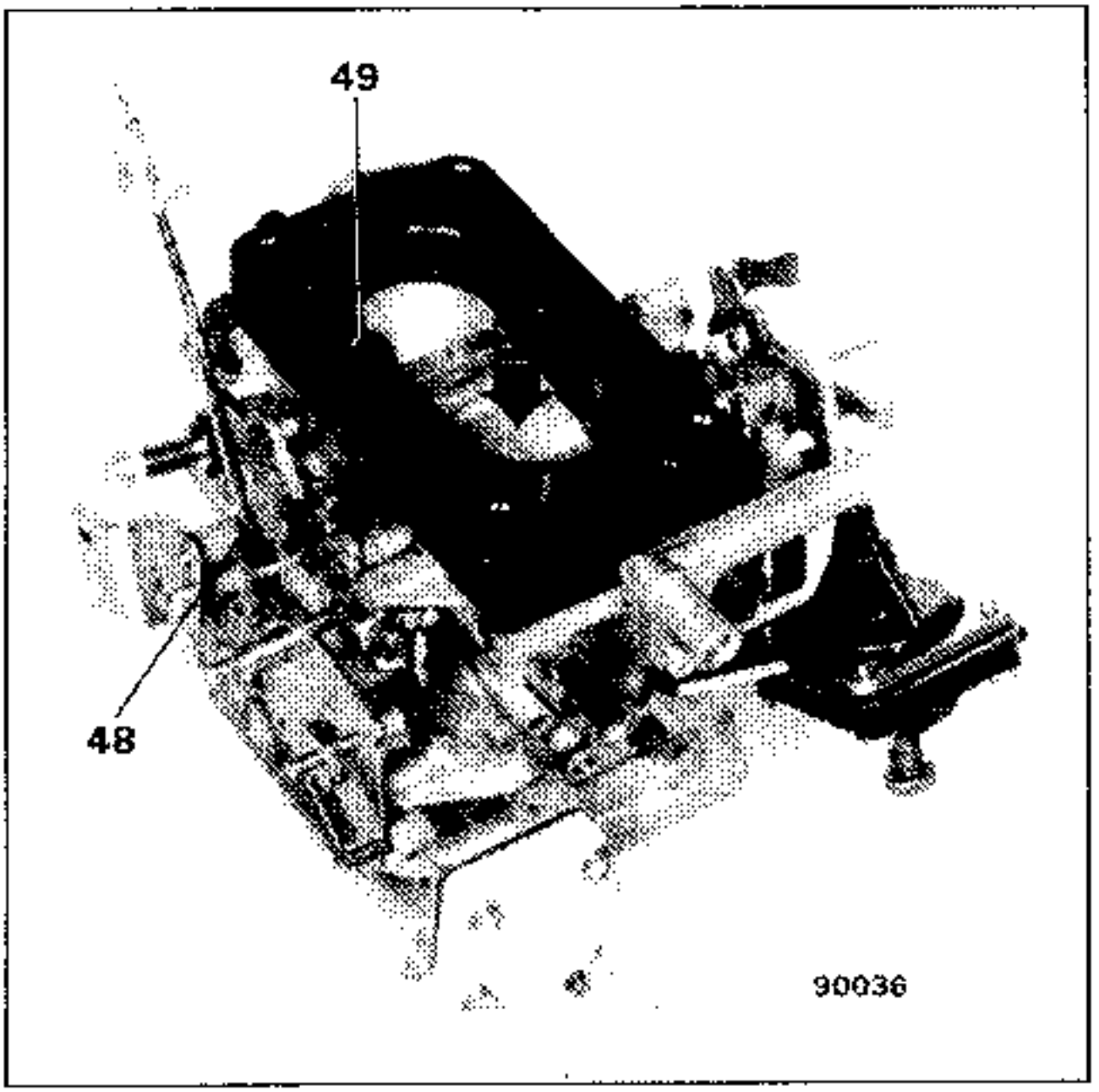


Turn screw (2) to obtain the required setting.



THE POSITIVE THROTTLE OPENING

SOLEX 28x34 Z 10 - 32x34 Z 13



48: Positive throttle opening adjusting screw.
49: Base securing screw.

Place the choke flap in the very cold position,
When using the SOLEX angle measuring instrument, remove screw (49) and take off the insulated base.
Turn the screw (48) after removing its cap.

CHOKE FLAP INITIAL OPENING

Definition

This is the amount by which the choke flap (or flaps) partially opens after the engine is 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 effect of the air flowing through the carburettor.
- Pneumatically : 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.

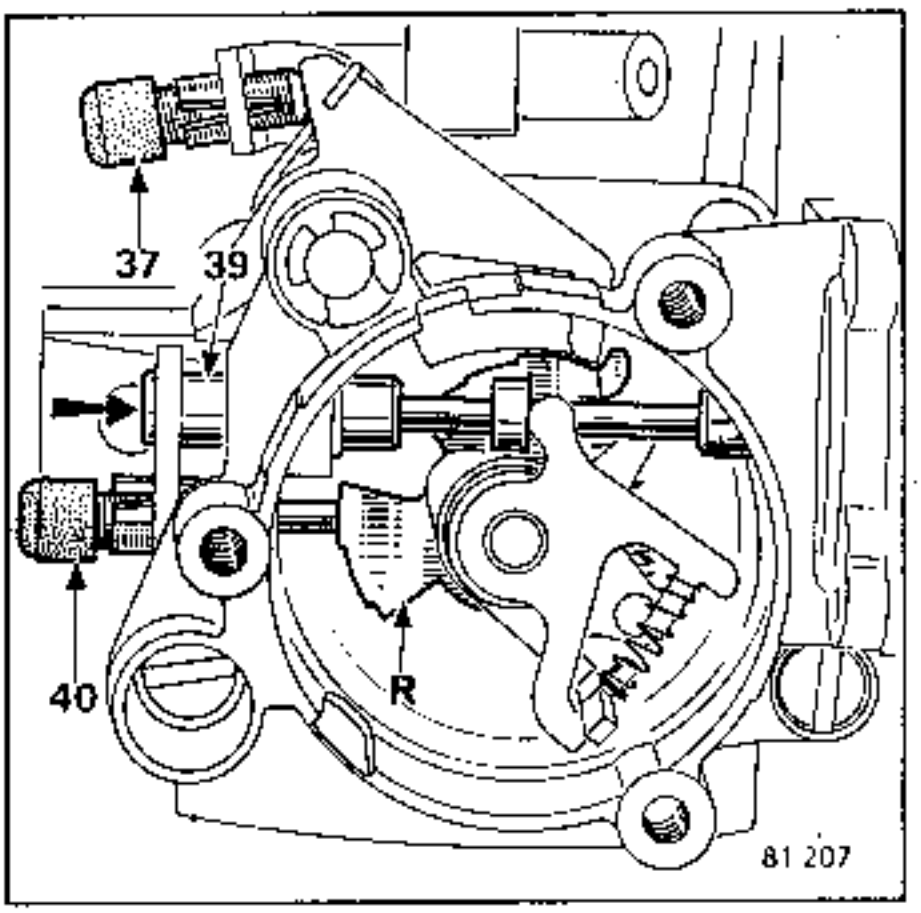
SOLEX 32 EITA - 35 EITA

Pneumatic opening system.
Remove the thermostatic unit to measure the positive throttle opening and the pneumatic choke initial opening.

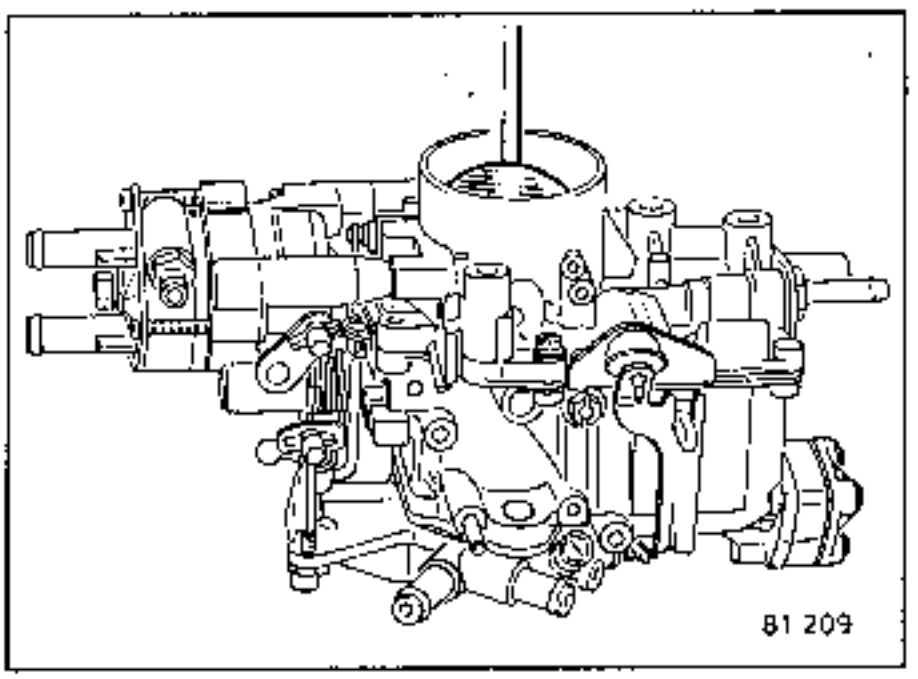
Hold the choke system in the operating position with the largest radius on the positive throttle opening cam towards the base of the carburettor.

Bring the adjusting screw (40) against the pneumatic initial opening cam (R) by applying pressure to the end of the rod (39).

Measure the amount by which the choke flap is open (at the top), with a drill.



Screw the screw (40) in or out depending on whether the choke flap opening has to be increased or reduced.



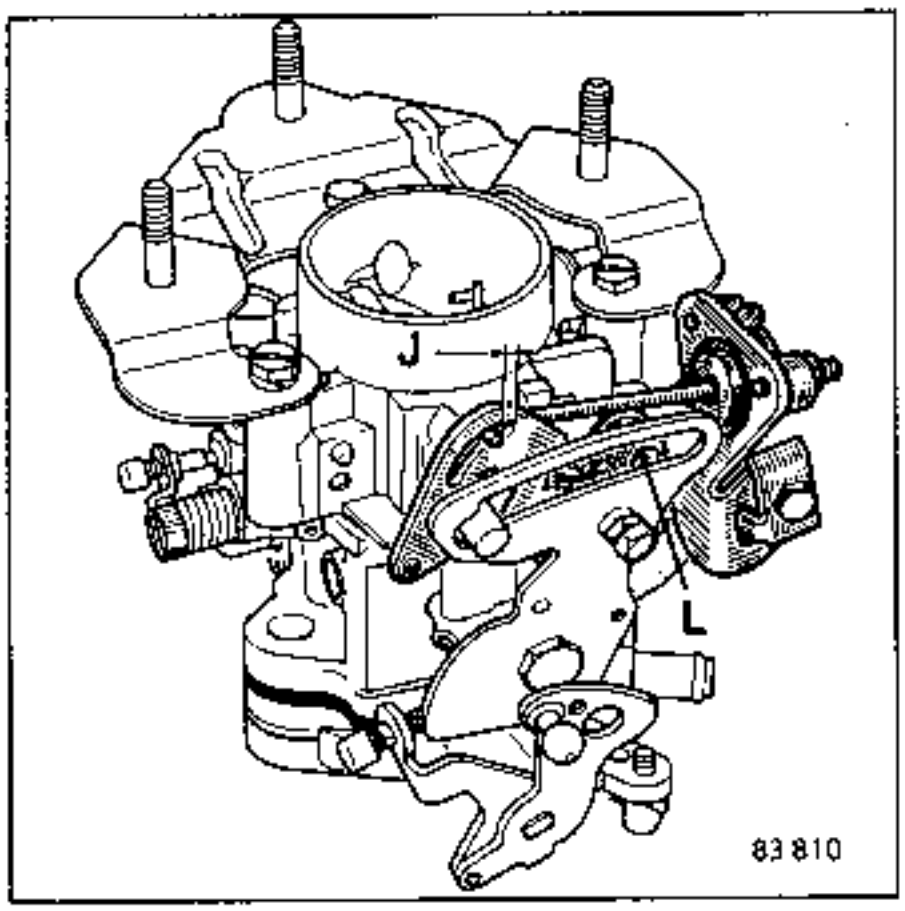
After adjustment, refit the thermostatic unit and align the position marks.

CHOKE FLAP INITIAL OPENING

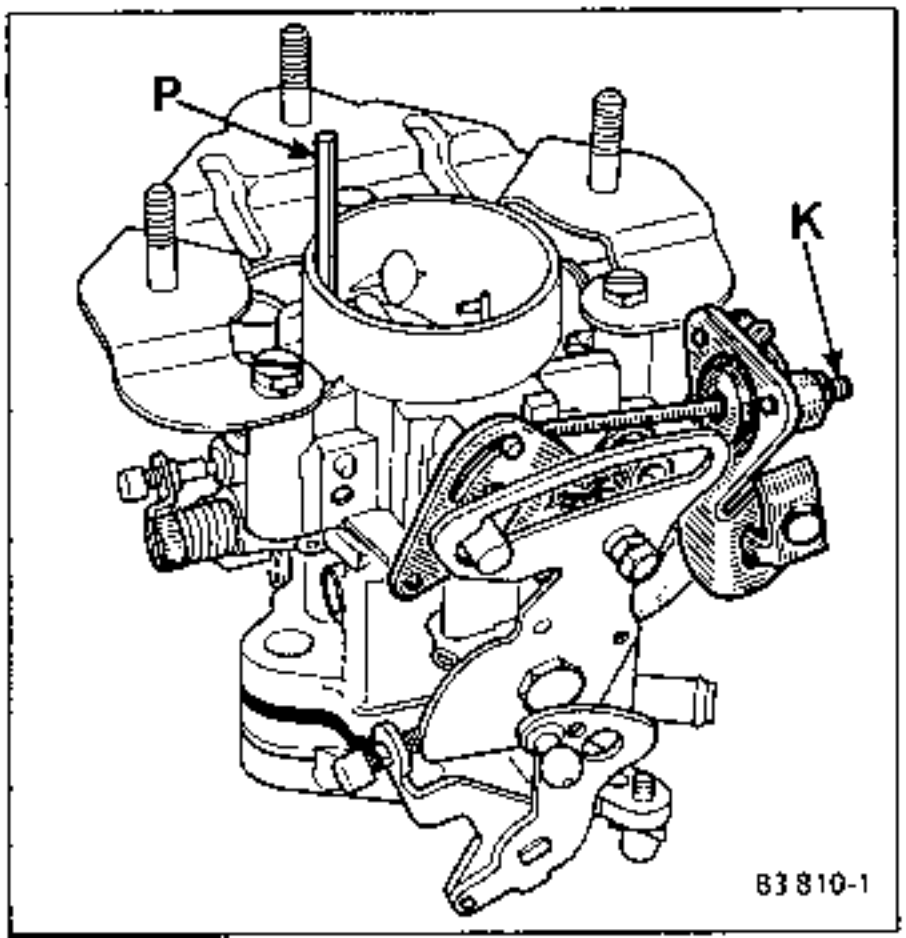
SOLEX 32 SEIA

Special features of types 781 and 707-1

With the choke control in the cold starting position.



The clearance at the diaphragm initial position should be - (J) = 1 mm.
Adjusted by moving the capsule support after loosening the securing screw (L).



Adjusting the choke opening after starting (C.O.A.S.). Diameter of drill (P) = 3.5 mm. Adjust at screw (K) after loosening its lock nut.

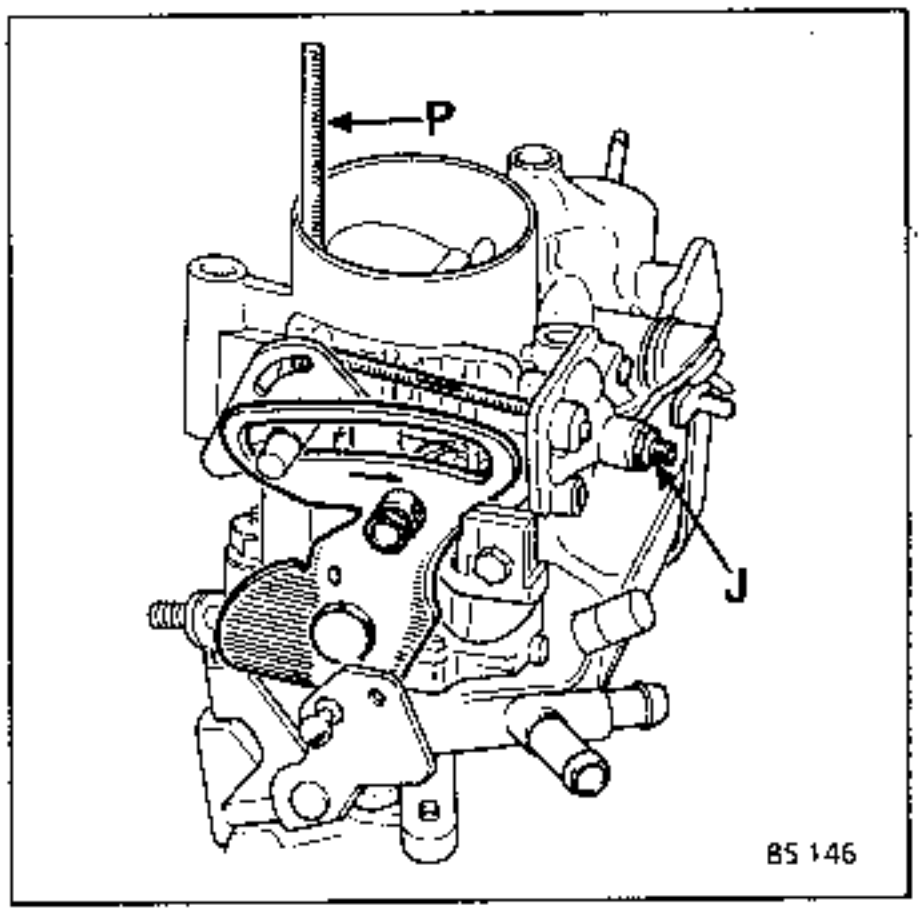
SOLEX 35 SEIA

Special features of type 738

Place the choke flap in the very cold position.

Bring the capsule control rod against its stop and measure the initial opening with a drill (P).

Adjust it, if necessary by turning screw (J).



CHOKE FLAP INITIAL OPENING

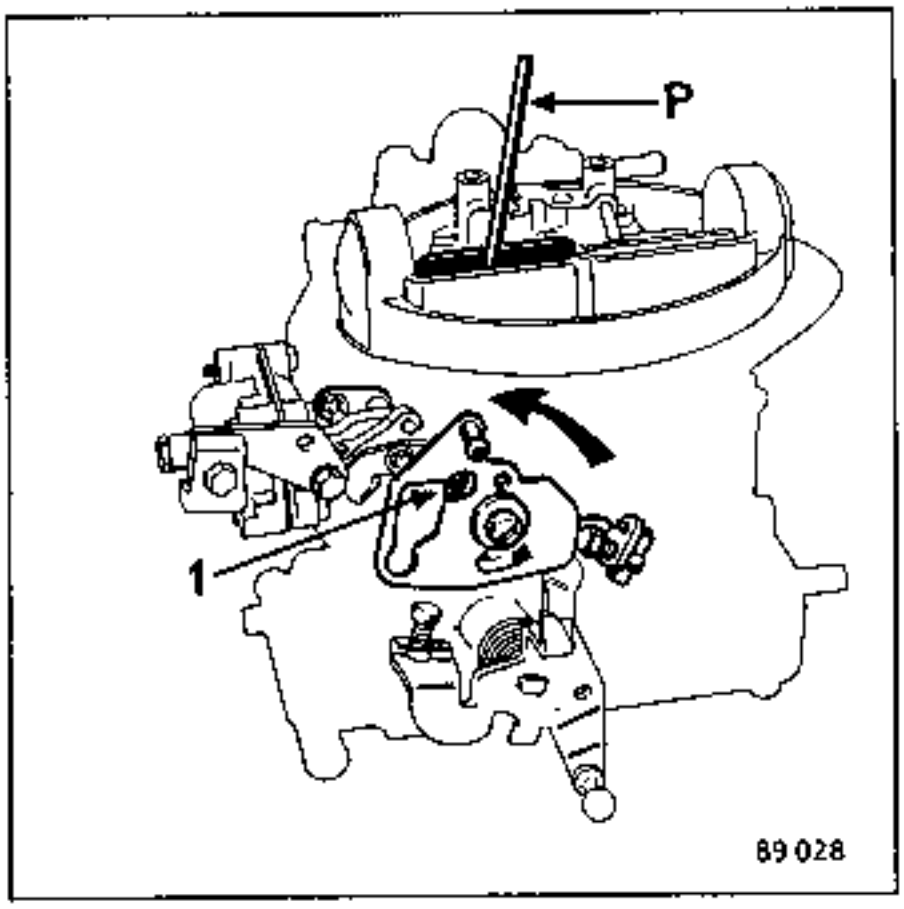
SOLEX 32 MIMSA

Mechanical opening system

Close the choke control then bring the flap against its stop.

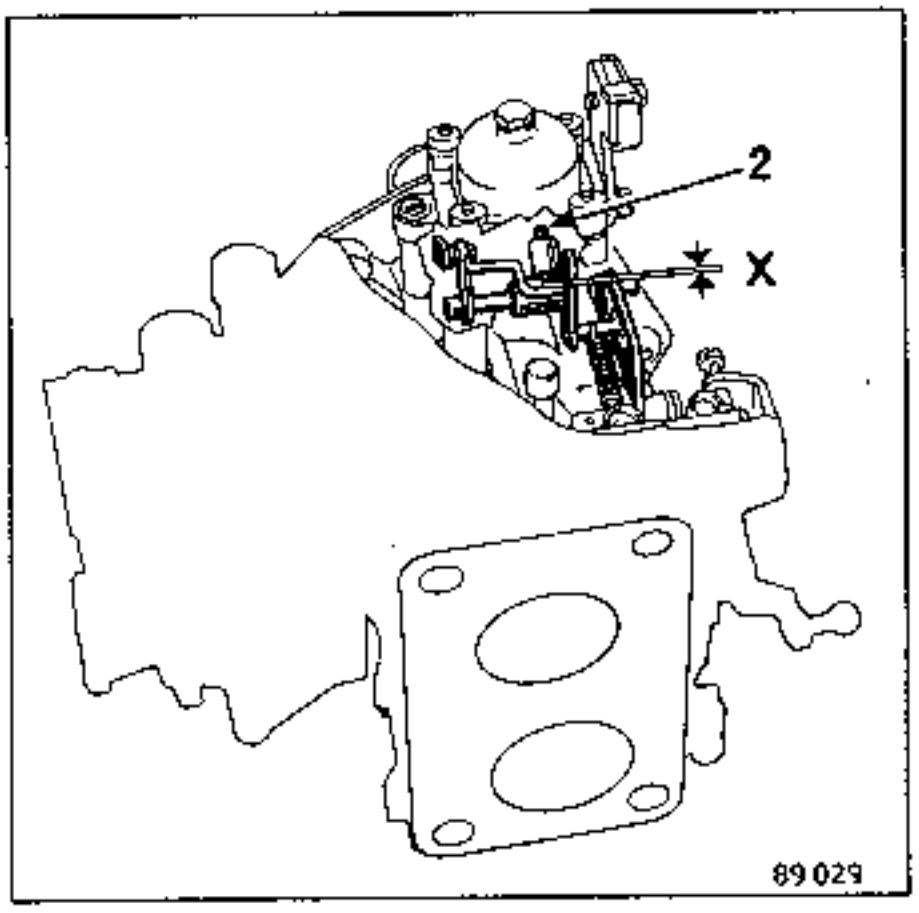
Measure the initial opening of the choke flap, at its upper edge, with a drill (P).

Note : this dimension is obtained by the shape of the cam. It can be slightly adjusted by moving the shaft (1) in the cam.



Clearance before the diaphragm moves.

Close the choke flap and adjust dimension X by turning screw (2).

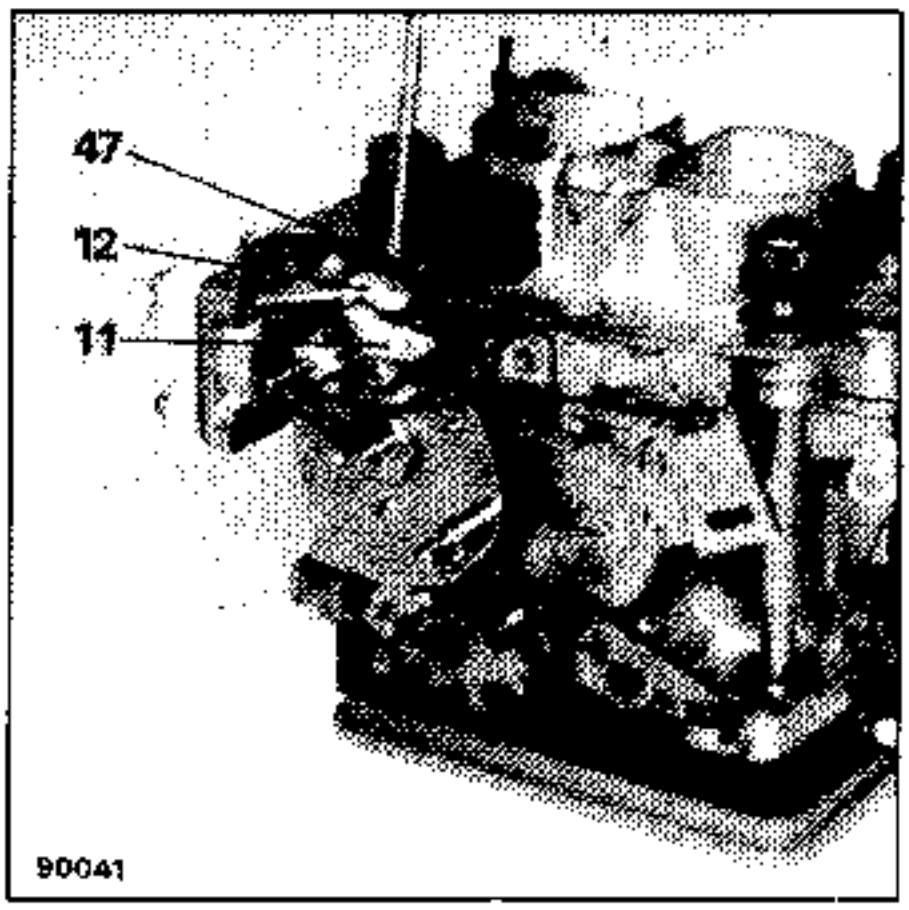


CHOKE FLAP INITIAL OPENING
(C.O.A.S.)

SOLEX 28x34 Z 10 - 32 x 34 Z 13

Clearance before the diaphragm moves

Close the choke flap and adjust dimension X by turning screw (47) (dimension X between screw and lever 11).



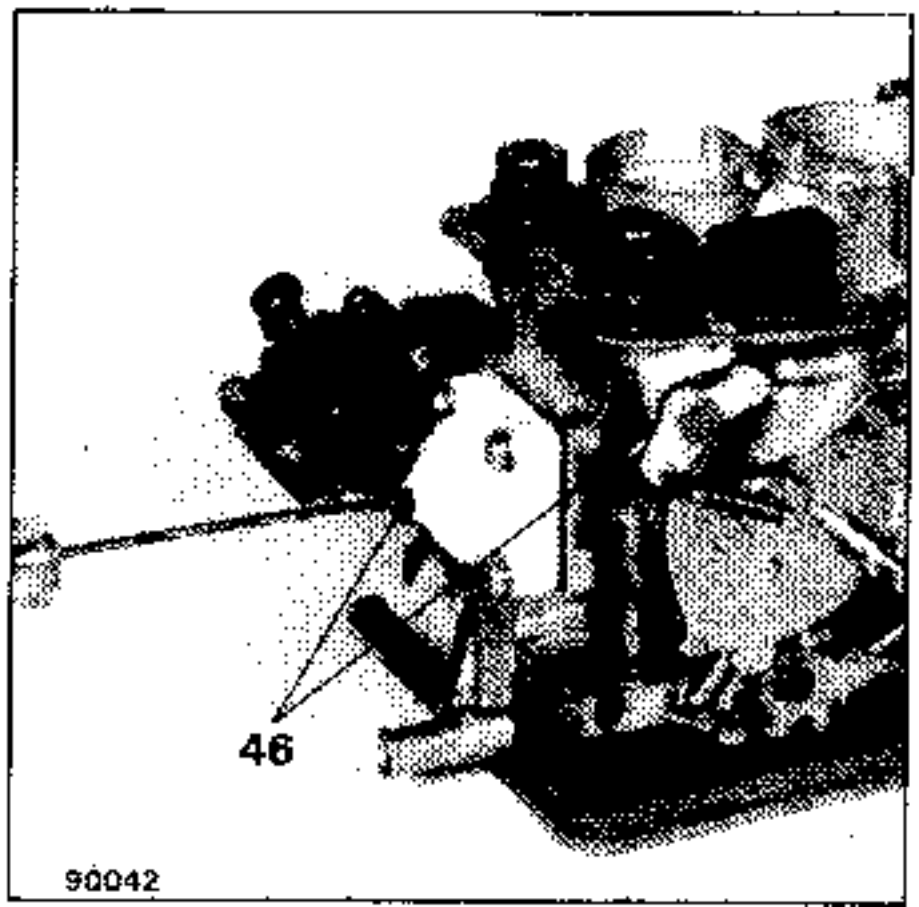
For dimension X - See data sheet.

NOTE : Dimension (X) is replaced by the amount that the choke flap opens under the effect of a slight vacuum.

Method of adjustment
Using a hand pump (vacuum pump) apply a vacuum to the choke flap opening diaphragm :
- With the float chamber cover removed, at (A).
- Through an external take-off giving directly on to it.
- Using a vacuum accumulator in the circuit after temporarily blocking the circuit in the carburettor base.

C.O.A.S. (1)
Apply the vacuum stated on the data sheet and adjust screw (47) to obtain either the point at which the flap starts to open or the gap specified.

C.O.A.S. (2)
Apply the vacuum stated in the data sheet and turn screw (46) to obtain the required gap at the choke flap.



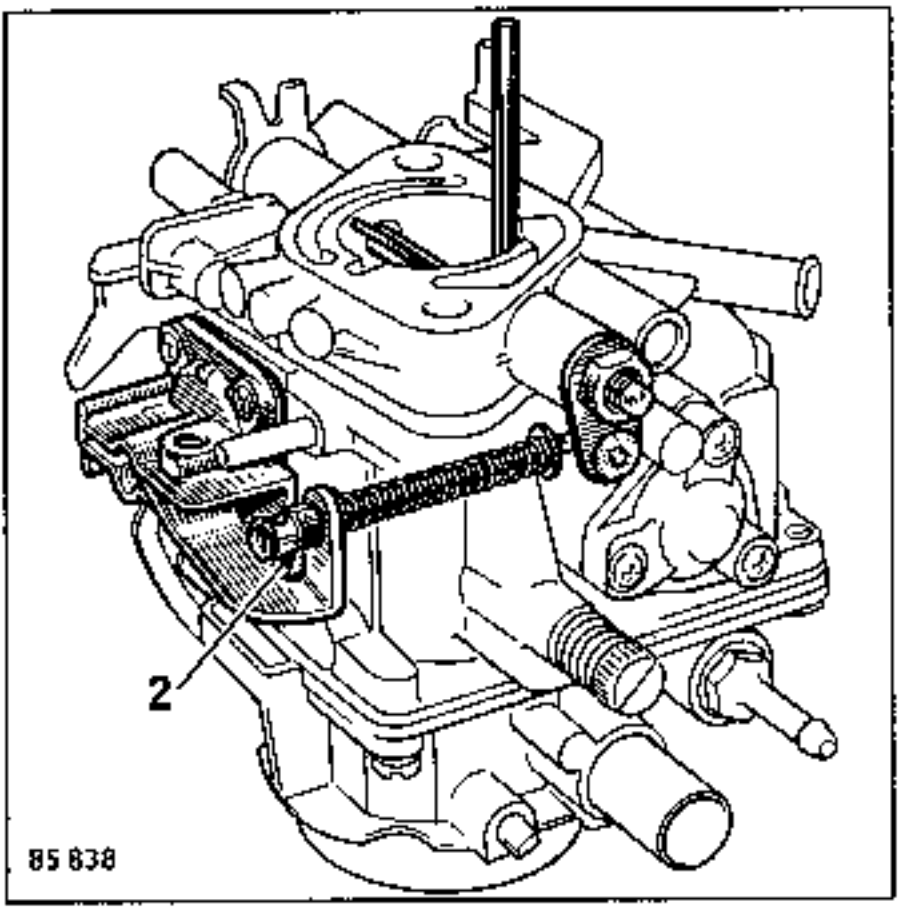
THE ACCELERATOR PUMP TRAVEL

SOLEX 32 BJS

Place a drill (5), (see the diameter on the data sheet) between the throttle butterfly and the carburettor air intake bore.

The pump should be at the end of its travel.

Adjusted by means of nut (2).

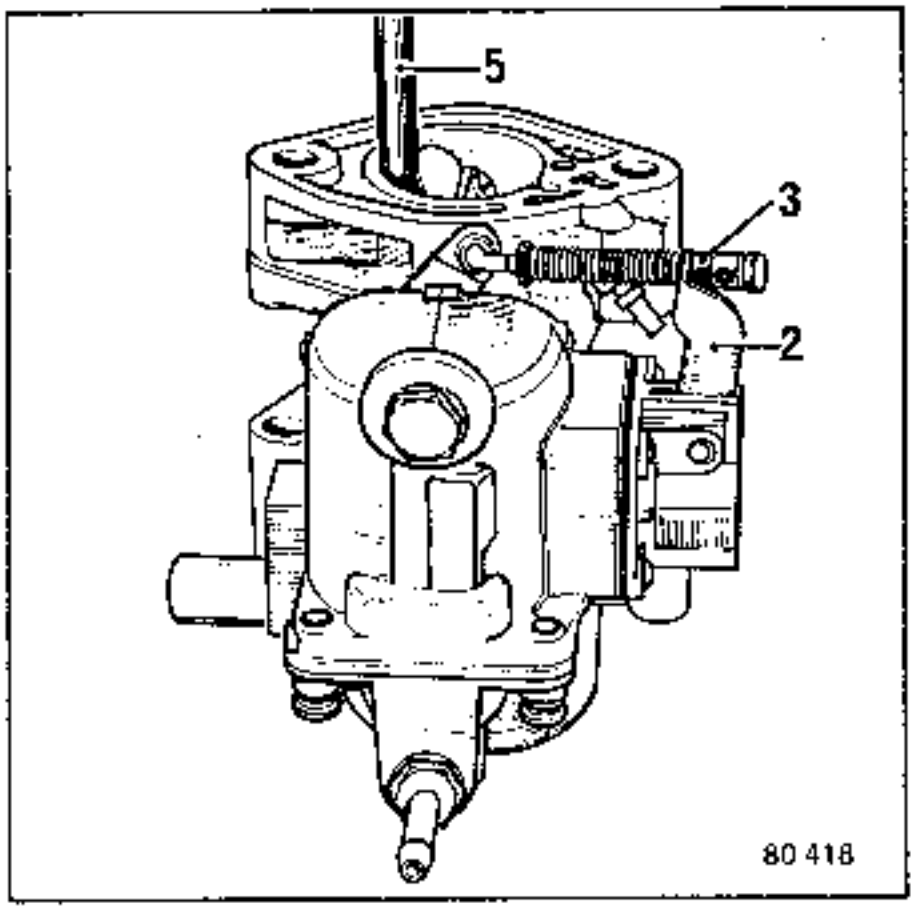


SOLEX 32 DIS

Place a drill (5), (see the diameter on the data sheet) between the throttle butterfly and the carburettor body bore.

Check that the pump lever (2) is in the "end of travel" position.

Bring the adjusting nut (3) into contact with the lever then lock it.

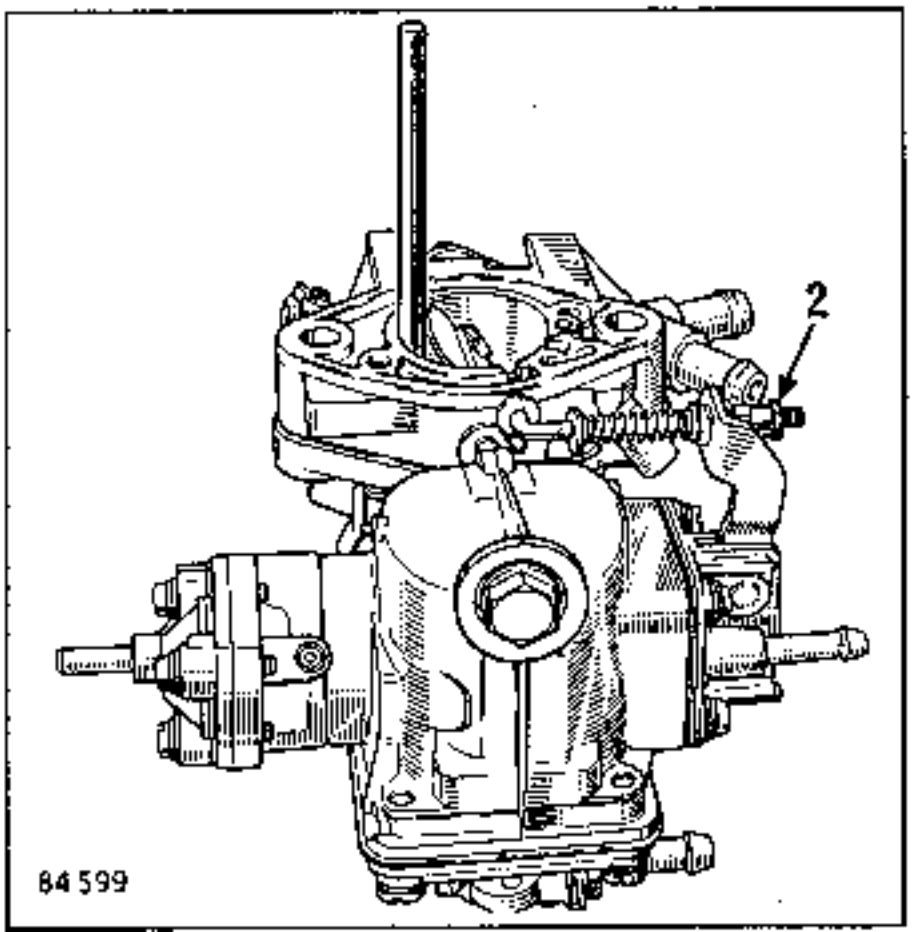


SOLEX 32 DIS supercharged

Place a drill of the diameter stated on the data sheet between the throttle butterfly and the carburettor air intake bore on the opposite side to the progressive slots.

The pump should be at the end of its travel.

It is adjusted by means of nut (2).



THE ACCELERATOR PUMP TRAVEL

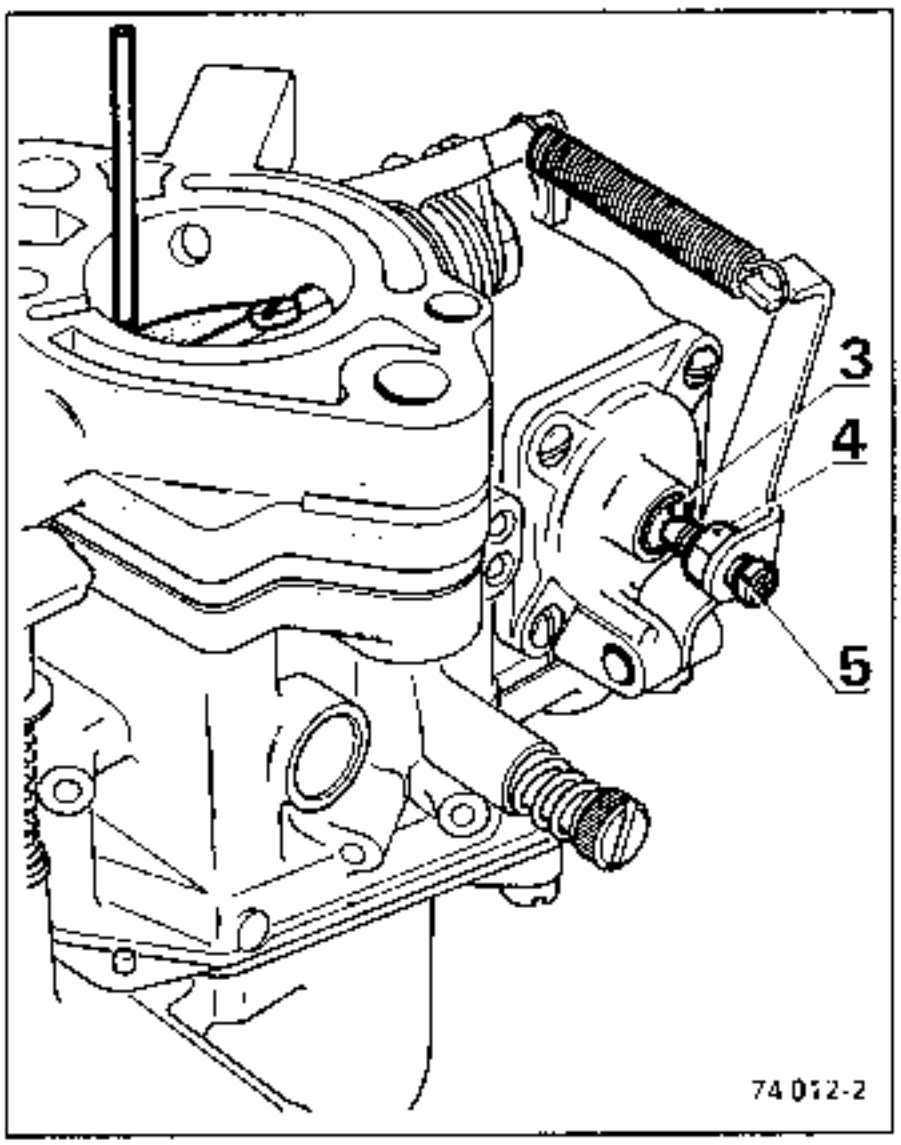
SOLEX 32 EISA 4

Spring operated pump

The accelerator pump is at the end of its travel when piston (3) is against its stop.

Measure the gap at the throttle plate. Use gauge pins M.S. 787.

The throttle plate is adjusted by turning the screw (5) until the correct gap is obtained.
Retighten the lock nut (4).

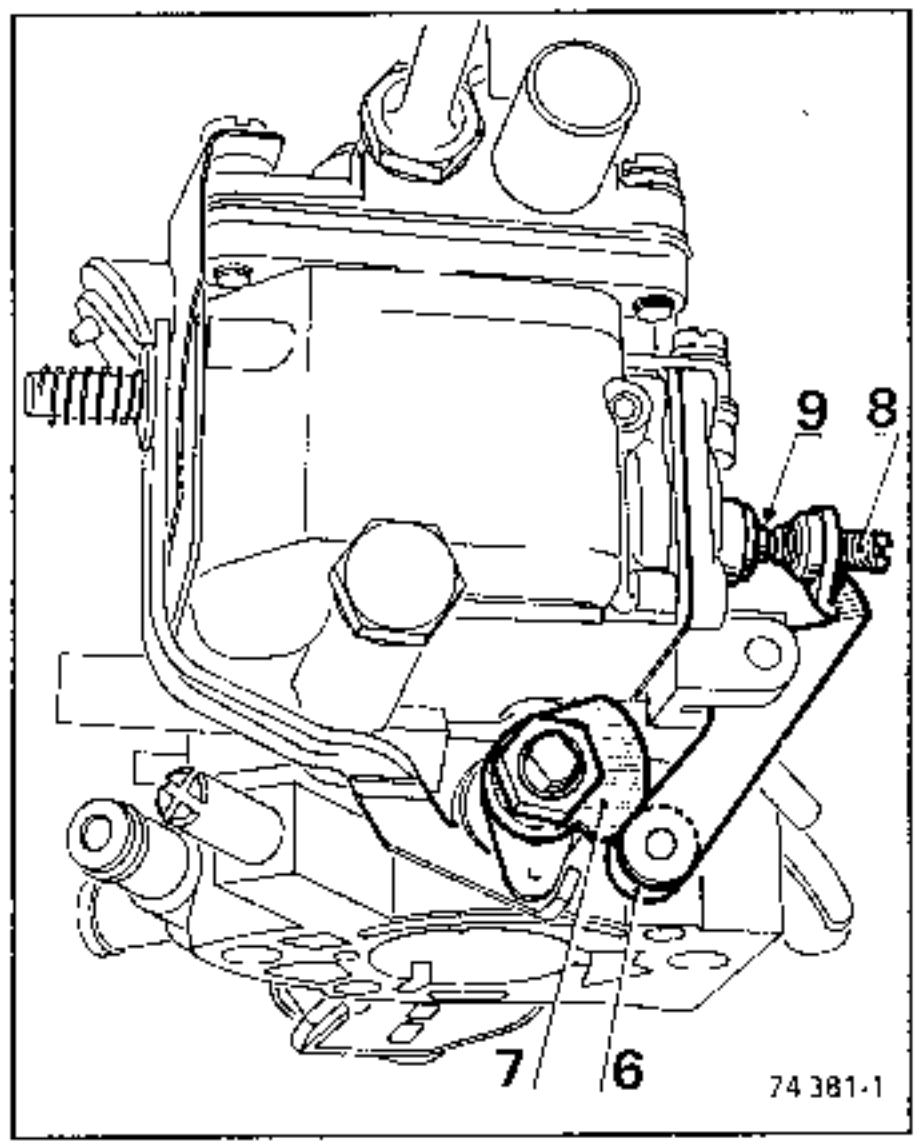


Cam operated pump

The pump end of travel position is determined by the control cam.

To adjust the throttle :

- bring the throttle into the idling speed position,
- bring the roller (6) into contact with the cam (7),
- turn the adjusting screw (8) to bring it into contact with the plunger (9) then continue to turn it by between half and one turn.



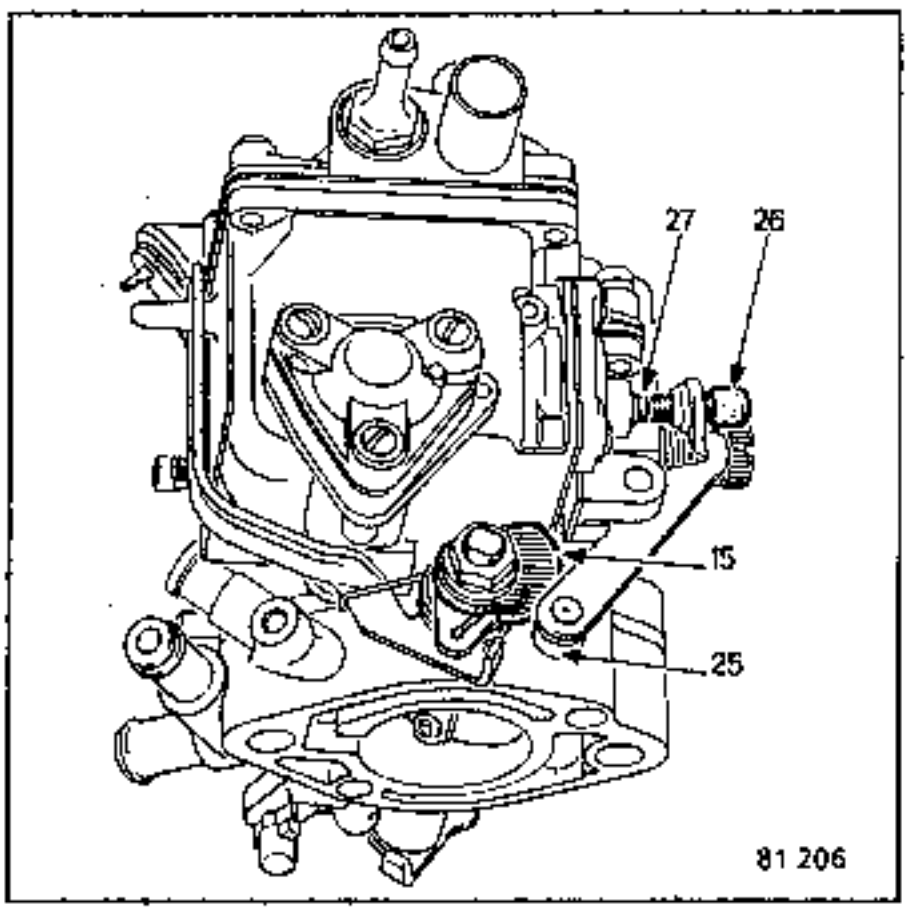
THE ACCELERATOR PUMP TRAVEL

SOLEX 32 EITA - 35 EITA

The accelerator pump end of travel position is determined by the control cam (15).

To adjust it :

- place the throttle in the idling speed position,
- bring the roller (25) into contact with the cam (15),
- screw in the adjusting screw (26) to bring it into contact with the plunger (27) then continue to turn by between half and one turn.

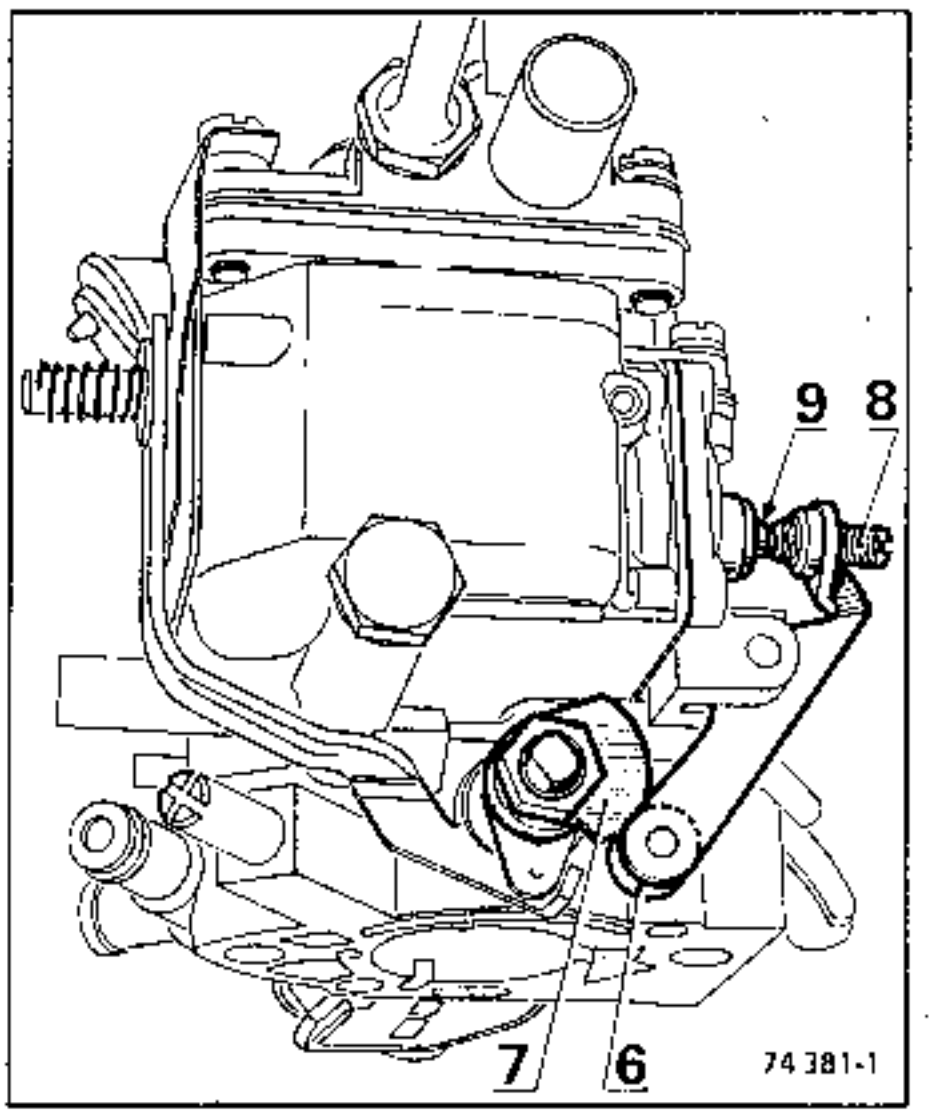


SOLEX 32 SEIA - 35 SEIA

The pump end of travel position is determined by the control cam.

To adjust the throttle :

- place the throttle in the idling speed position,
- bring the roller (6) into contact with the cam (7),
- screw in the adjusting screw (8) to bring it into contact with the plunger (9) and then continue to turn it by between half and one turn.



SOLEX 32 MIMSA

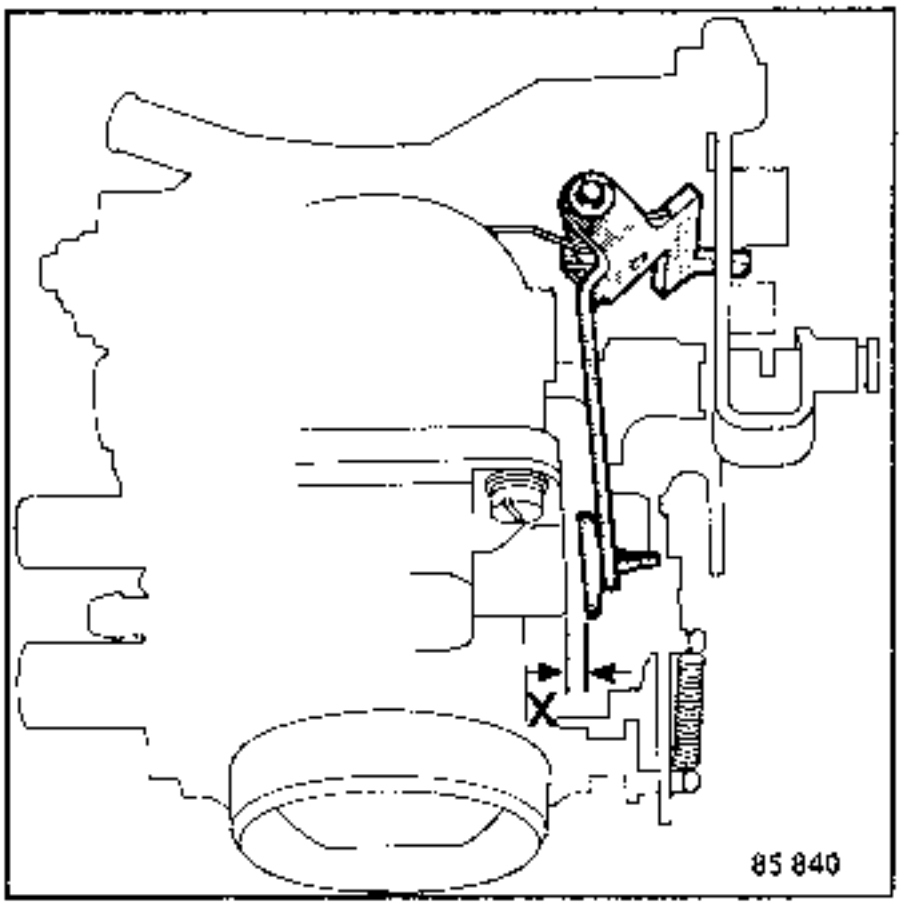
The accelerator pump is controlled by a non-adjustable cam and a lever.

THE FLOAT CHAMBER DEGASSING VALVE

SOLEX 32 BIS

With the choke control pushed fully in and the throttle plate against the idling stop, check the amount by which the valve is open : dimension (X) = 3 +/- 0,5 mm.

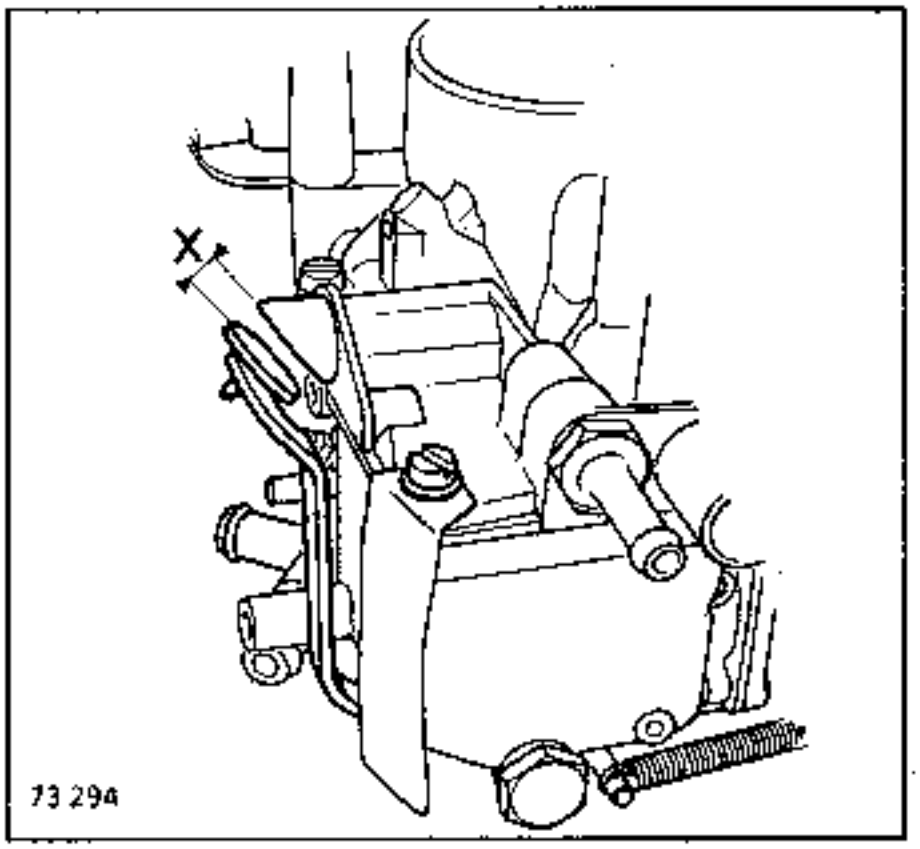
Adjust this dimension by bending the control lever.



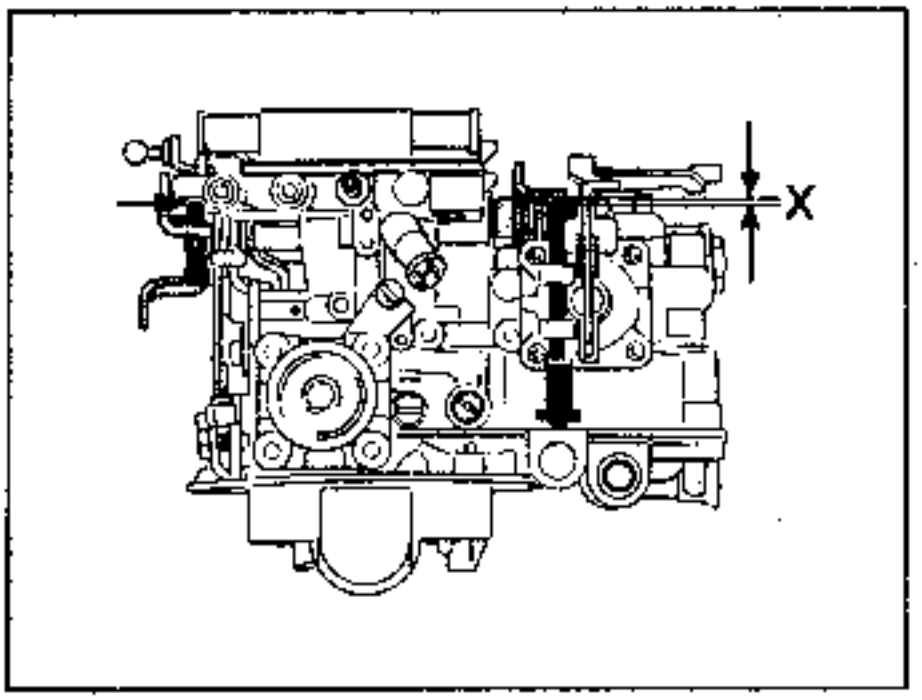
SOLEX 32 EISA 4 - 32 EITA - 35 EITA - 32 SEIA 35 SEIA

Check the dimension (X) between the valve and the float chamber cover.

If it is not correct, slightly bend the valve support lug.



SOLEX 32 MIMSA



Check the dimension (X) between the valve rod and its control lever. It should be 1 mm.

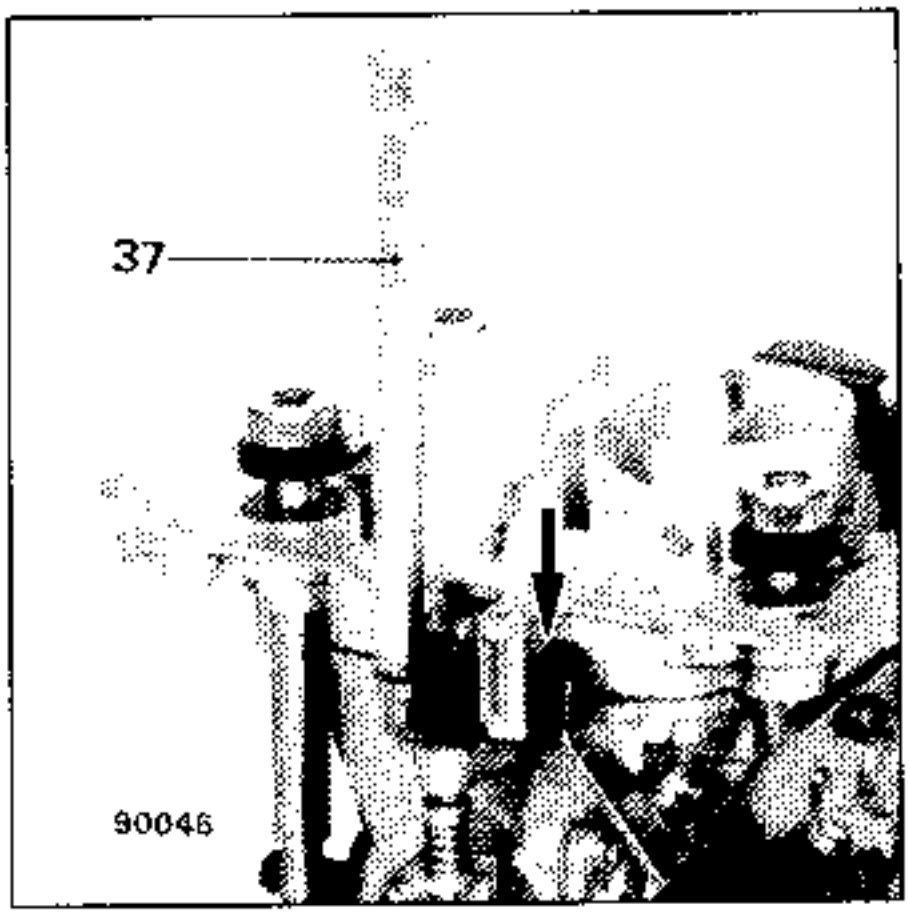
If it is not correct, slighly bend the valve lever lug.

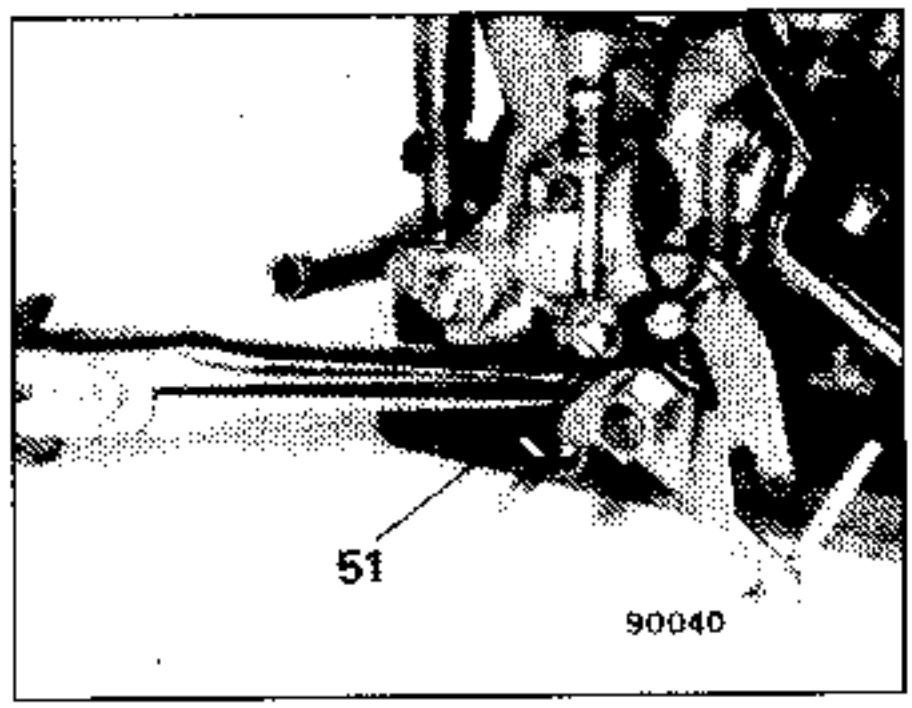
THE FLOAT CHAMBER DEGASSING VALVE

SOLEX 28x34 Z 10

1st Arrangement

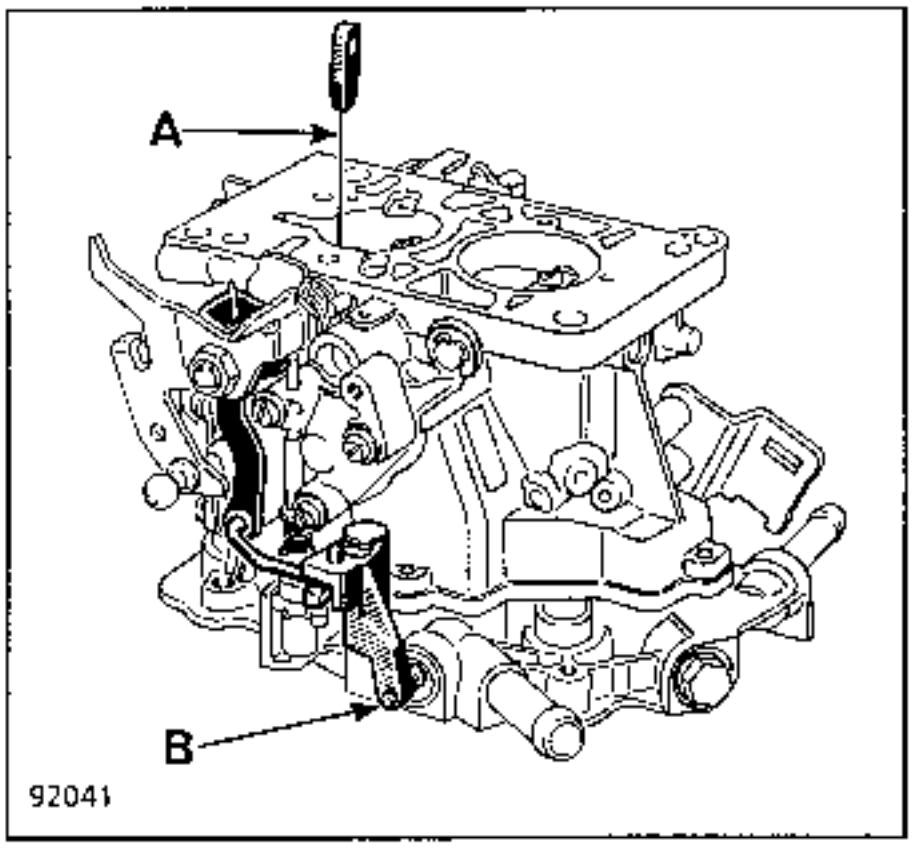
The float chamber degassing valve (arrow) is adjusted by twisting the lever (51). See the figure stated on the data sheet.





2nd Arrangement

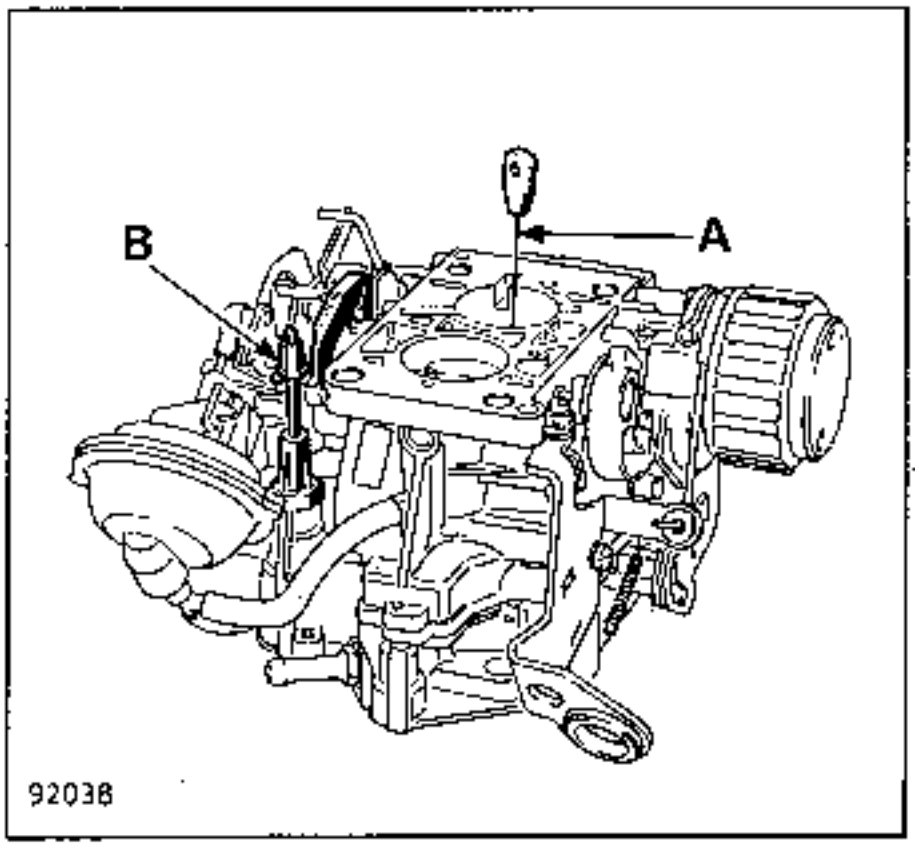
With the choke flap open, slowly open the throttle until the valve closes.
In this position, measure the throttle gap with a gauge pin (A).
If the gap is not that stated on the data sheet (0.30 mm) turn screw (B).



SOLEX 32x34 Z 13

With the choke flap open, slowly open the throttle until the valve closes. .

In this position, measure the throttle gap with a gauge pin (A).



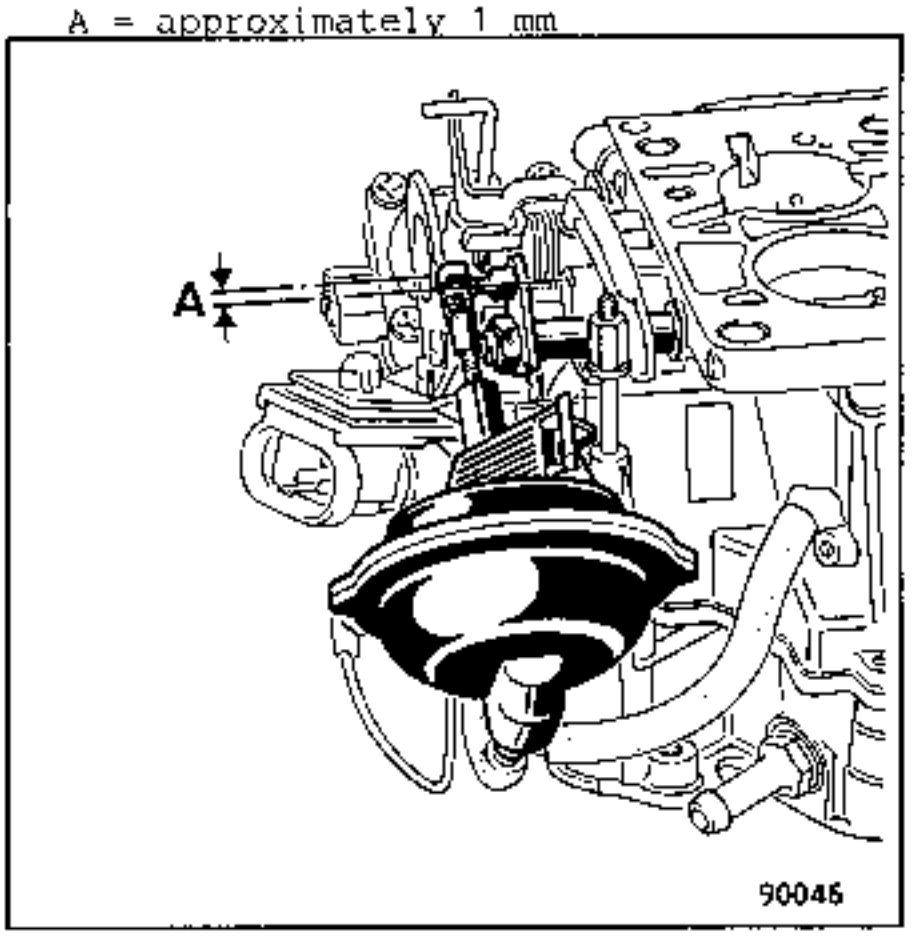
If the gap is not that stated on the data sheet, turn screw (B).

SOLEX 32x34 Z 13

PNEUMATIC 2nd BARREL CONTROL SYSTEM

The 2nd barrel control link is adjustable. When assembling the unit check that :

- with the throttle closed, there still remains a clearance (A),
- when the throttle is fully open, with the link fully compressed, an additional travel is still available roughly equal to dimension (A) :
  A = approximately 1 mm



CHECKING

- With the engine stopped or the carburettor removed, apply a vacuum of more than 100 mbars to the 2nd barrel diaphragm, using a vacuum pump, and check that :
- there are no leaks at the diaphragm,
- the 2nd barrel opens correctly by fully depressing the accelerator.
- One can check that the 2nd barrel is operating correctly, with the engine running and the circuit correctly connected, as follows :
- with the engine running at idling speed, fully open the throttle, suddenly, for a few seconds and, as the engine speed rises, check whether the 2nd barrel opens for a brief instant.

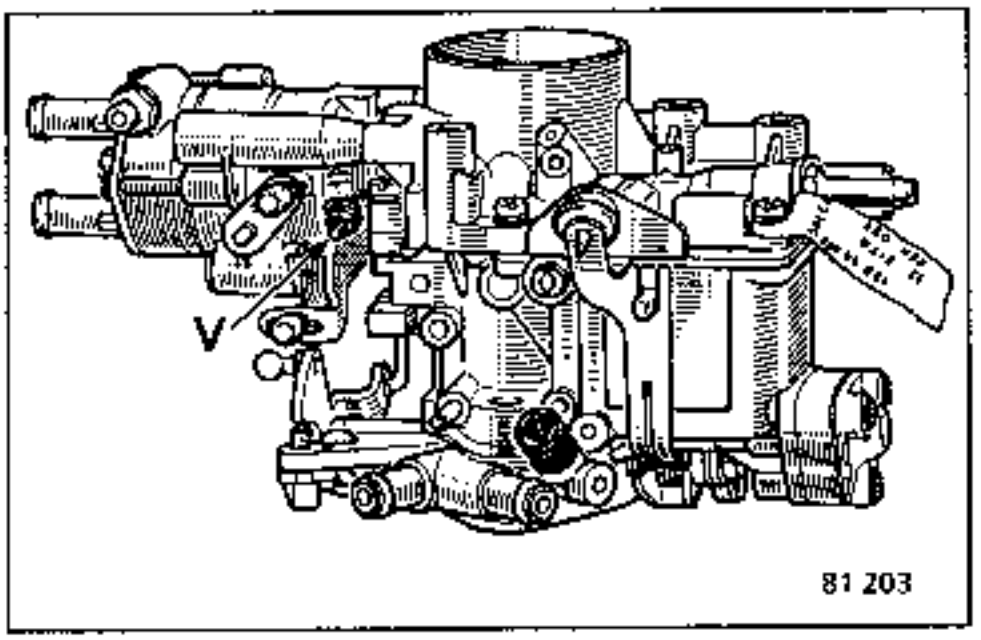
NOTE : for removing and refitting the carburettor, use a TORX screwdriver Mot.1136.

THE CARBURETTOR CLEARING SYSTEM

SOLEX 32 EITA - 35 EITA

On carburettors equipped with an automatic choke, a lever operated system permits one, when the engine is cold and the choke preset, to open the choke flap by a certain amount by opening the throttle.

Except for the SOLEX EITA carburettor on which there is an adjusting screw (V), the amount by which the choke flap partially opens is determined by the dimensions of the levers and is not adjustable.



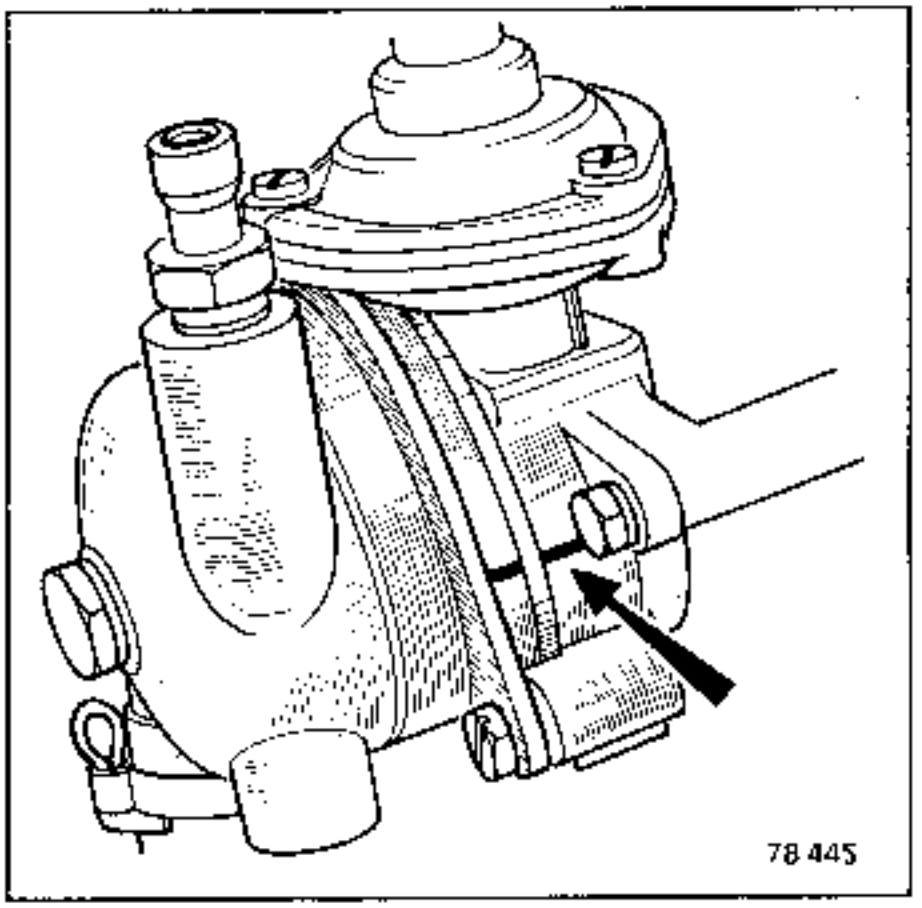
Adjusting the thermostatic unit

ADJUSTING THE THERMOSTATIC UNIT

SOLEX 32 EITA - 35 EITA

The thermostatic unit contains the thermostatic spring that controls the opening and closing of the choke flap on the basis of the temperature of the coolant which flows through it.

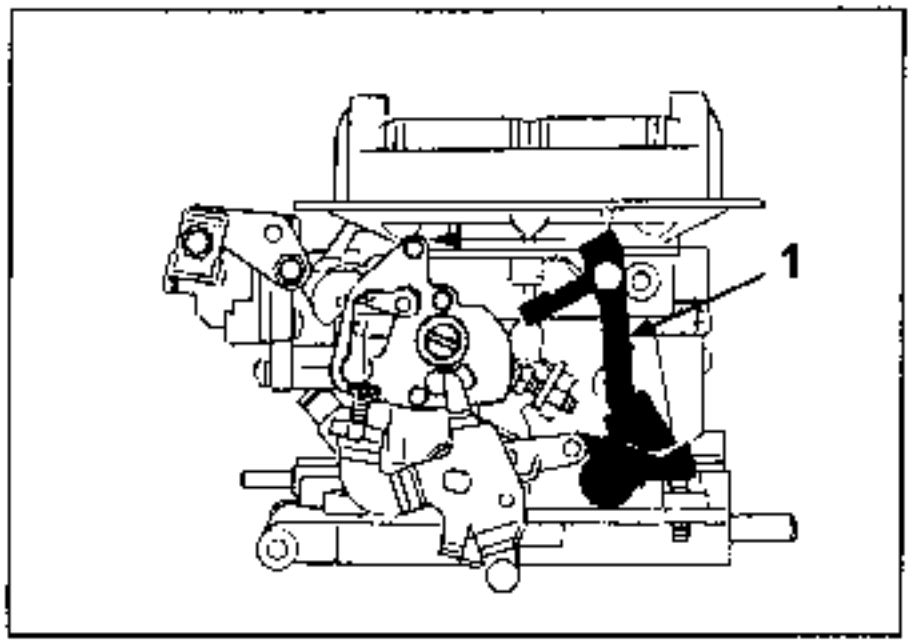
The position of the unit is marked by lines or dots that are to be aligned when fitting the unit.



THE THROTTLE LOCKING SYSTEM ON THE 2nd BARREL

SOLEX 32 MIMSA

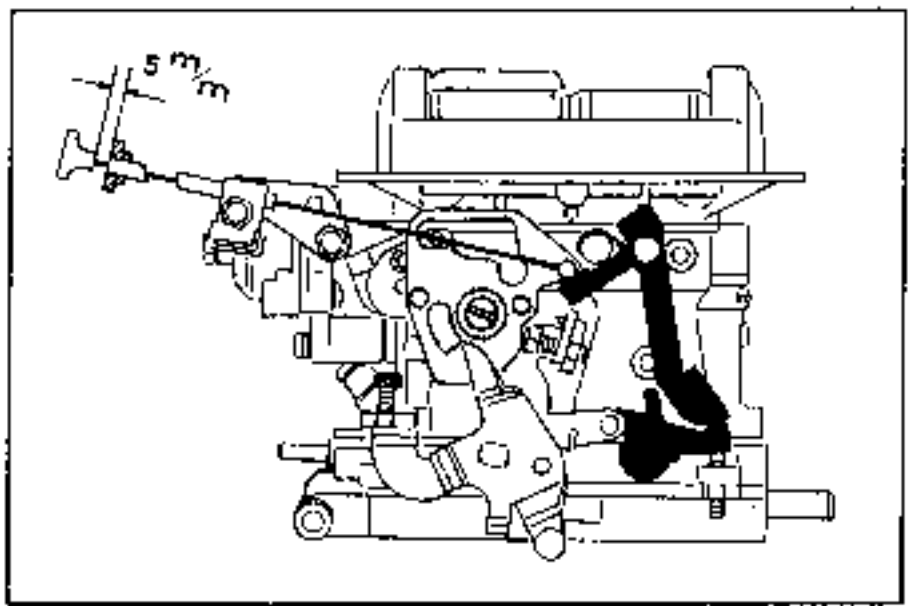
When the choke flap is closed, lever (1) prevents the throttle, on the 2nd barrel, from opening.



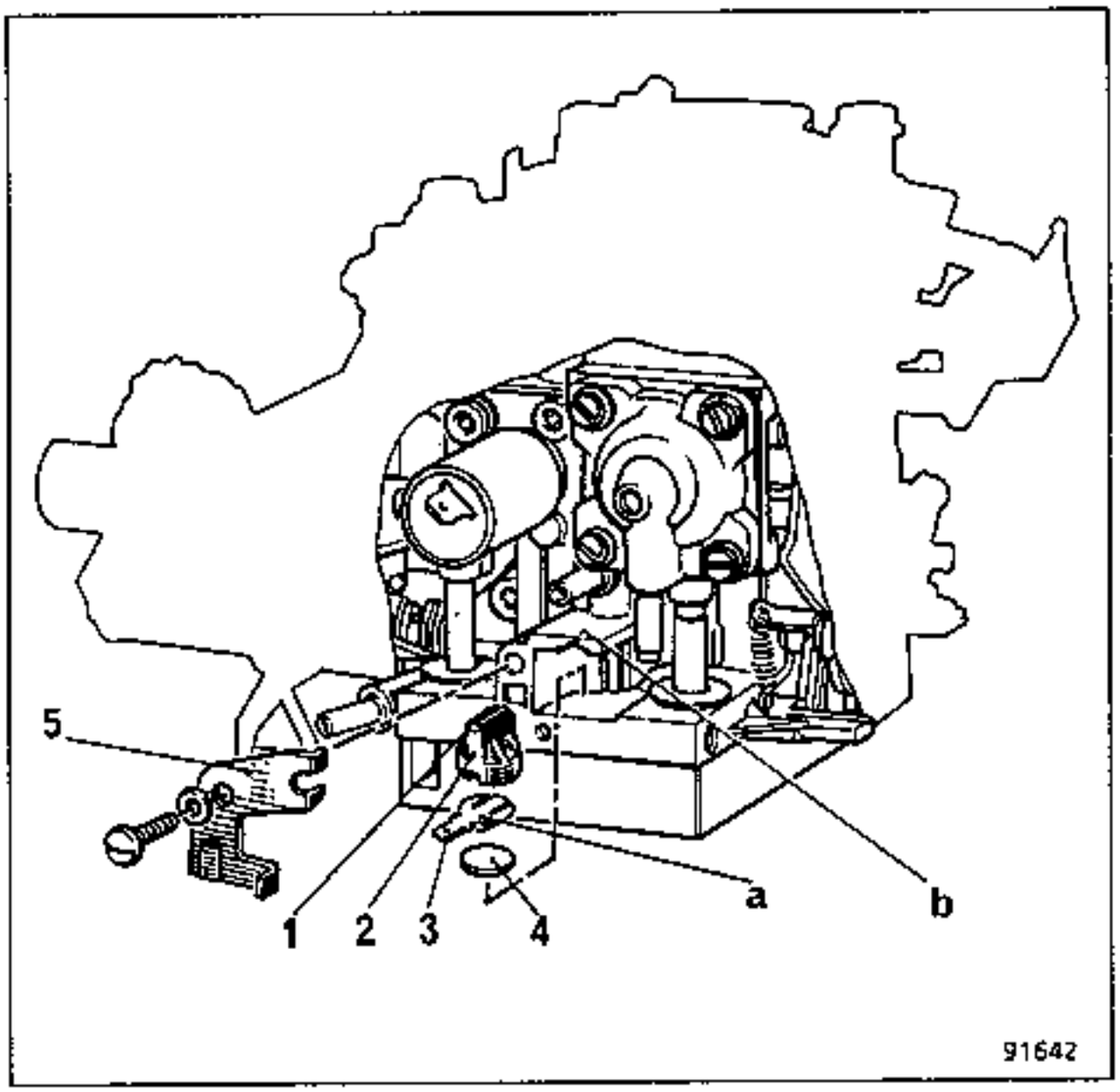
When the choke flap is open, lever (1) moves over and allows the throttle on the 2nd barrel to open.

Within a travel of 5 mm of the choke control knob, the throttle on the 2nd barrel should still open.

The system is adjusted by twisting the lever.



ELECTRIC HEATING ELEMENT



1 Positioning pin
2 Spacer
3 Connecting terminal
4 Heating element
5 Securing lug

If the heating element is ever removed, pay particular attention, when refitting it, to ensure that the components are assembled as shown in the above drawing and take particular care :

- when fitting the terminal (3) into the spacer (2). The tab (a) should be on the same side as the heating element (4).

- the correct positioning of the pin (1) with reference to the spacer (2) and its location (B) on the carburettor.

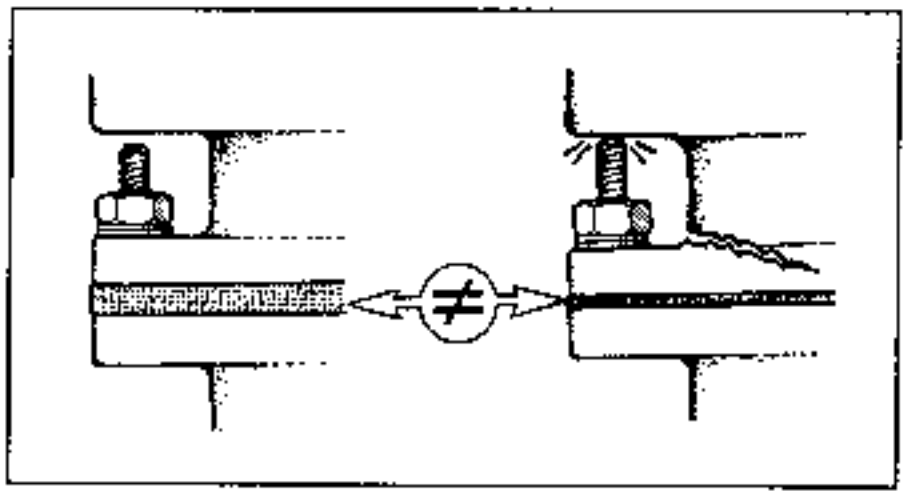
REFITTING THE CARBURETTOR

There must be no leakage between the carburettor and inlet manifold after it is is refitted. Any entry of air that is not controlled by 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).

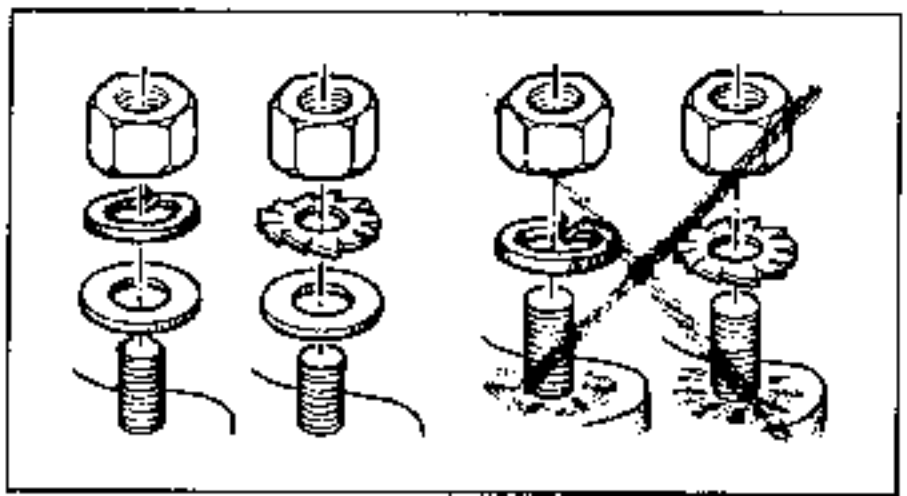
Before placing the carburettor on the inlet manifold, it is therefore important to check that the contact area between the manifold flange and the carburettor is flat and clean.

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.

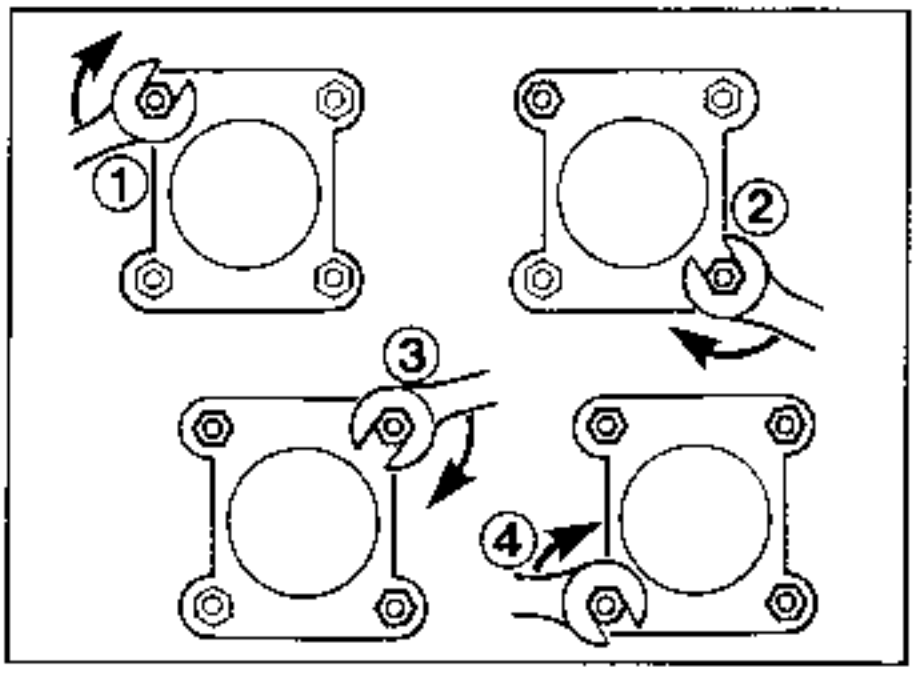
After having placed the carburettor on its studs, ensure that it is in full contact with the gasket, without any of its components making contact with the ends of the studs.



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 shows signs of ageing, such as hardening or crazing.