SU BUTEC
Automotive Components

Service Manual

HS CARBURETTERS
TUNING & SERVICING

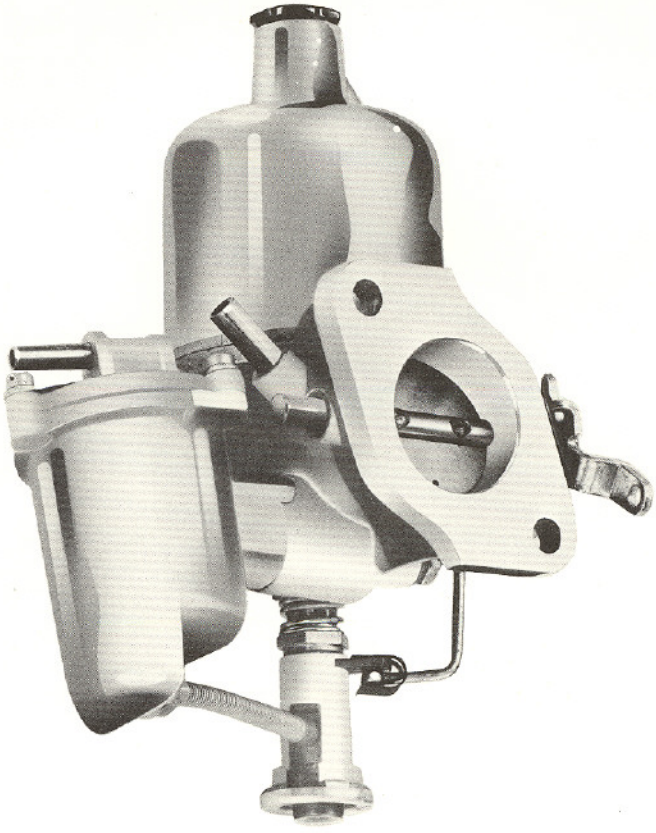

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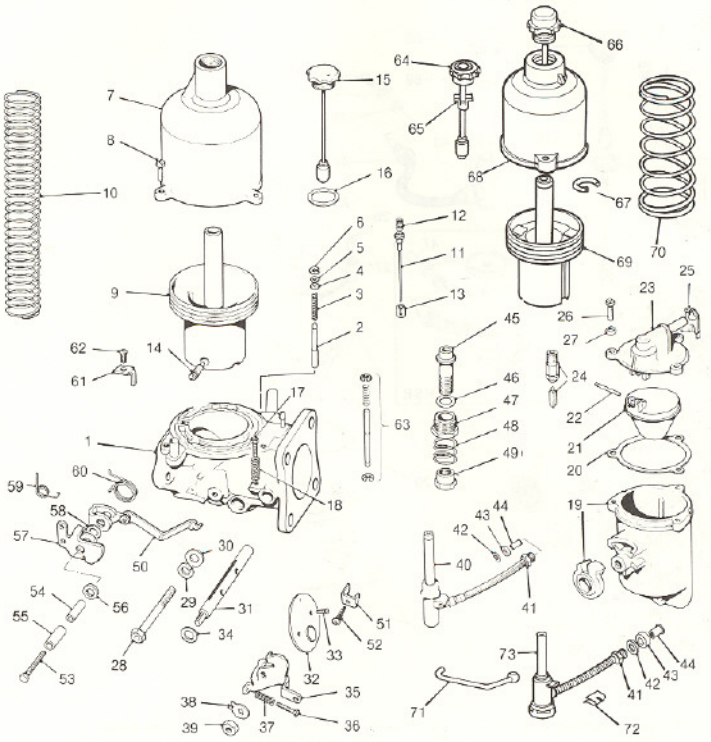
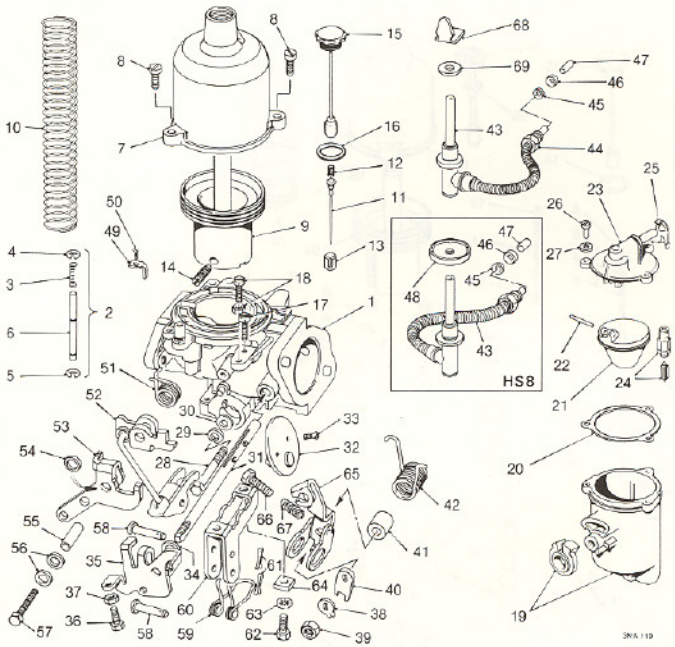
Fig 1. The Type HS Carburetter Components



1 Body
2 Piston lifting pin
3 Spring for pin
4 Sealing washer
5 Plain washer
6 Circlip
7 Suction chamber
8 Suction chamber screw
9 Piston
10 Spring
11 Jet needle with collar
12 Needle spring
13 Needle guide
14 Needle guide – locking screw
15 Piston damper
16 Damper sealing washer
17 Throttle adjusting screw
18 Spring for screw
19 Float-chamber and spacer
20 Chamber joint washer
21 Float
22 Float hinge pin
23 Float-chamber lid
24 Float needle and seat
25 Baffle plate
26 Float-chamber lid screw
27 Spring washer
28 Float-chamber securing bolt
29 Spring washer
30 Plain washer
31 Throttle spindle
32 Throttle disc assembly
33 Throttle disc securing screw
34 Throttle spindle washer
35 Throttle return lever
36 Fast-idle screw
37 Spring
38 Throttle spindle nut lock washer
39 Throttle spindle nut
40 Jet assembly
41 Jet assembly sleeve nut
42 Washer
43 Gland
44 Ferrule
45 Jet bearing
46 Skid washer
47 Jet locking nut
48 Spring
49 Jet adjusting nut
50 Pick-up lever assembly
51 Pick-up lever link
52 Lever to jet securing screw
53 Pivot bolt
54 Pivot bolt tube – inner
55 Pivot bolt tube – outer
56 Distance washer
57 Cam lever
58 Washer
59 Cam lever spring
60 Pick-up lever spring
61 Piston guide key
62 Key securing screw
63 Piston lifting pin – alternative
64 Piston damper, ball bearing S.C. (early type)
65 Bearing retention clip (early type)
66 Piston damper, ball bearing S.C. (later type)
67 Bearing retention clip (later type)
68 Suction chamber, ball bearing
69 Piston, ball bearing (later type)
70 Spring, ball bearing
71 Jet drop link (capstat jet)
72 Jet drop link clip (capstat jet)
73 Jet assembly (capstat)

Fig 2. The Type HS4C & HS8 Carburetter Components



1 Body
2 Piston lifting pin assembly
3 Lifting pin spring
4 Circlip
5 Circlip
6 Lifting pin
7 Suction chamber
8 Suction chamber screw
9 Piston
10 Spring
11 Jet needle with collar
12 Needle spring
13 Needle guide
14 Needle guide locking screw
15 Piston damper
16 Damper sealing washer
17 Throttle adjusting screw
18 Jet adjusting screw and locknut
19 Float-chamber and spacer
20 Chamber joint washer
21 Float
22 Float hinge pin
23 Float-chamber lid
24 Float needle and seat
25 Baffle plate
26 Float-chamber lid screw
27 Spring washer
28 Float-chamber securing bolt
29 Spring washer
30 Plain washer
31 Throttle spindle
32 Throttle disc assembly
33 Throttle disc securing screw
34 Throttle spindle washer
35 Throttle return lever
36 Fast-idle screw
37 Fast-idle screw locknut
38 Throttle spindle nut lock washer
39 Throttle spindle nut
40 Lost motion lever
41 Spacer
42 Throttle return spring
43 Jet assembly
44 Jet assembly sleeve nut
45 Washer
46 Gland
47 Ferrule
48 Temperature compensator
49 Piston guide key
50 Key securing screw
51 Pick-up lever spring
52 Jet fork assembly pick-up lever
53 Cam lever
54 Skid washer
55 Pivot bolt tube
56 Washers
57 Pivot bolt
58 Clevis pin
59 Jet return spring
60 Jet assembly securing bracket
61 Split pins
62 Securing bracket bolt
63 Starlock washer
64 Spacer
65 Throttle actuating lever
66 Lost motion adjusting screw
67 Spring
68 Jet fork centring washer
69 Washer

TYPE HS CARBURETTER FEATURES

The type HS carburetter embodies the successful SU constant depression principle in a compact range of easily-serviced units. The range is from HS2 31.75 mm (1.25 in) throttle diameter to HS8 50.8 mm (2.00 in) throttle diameter in 6.35 mm (0.25 in) steps. The float chamber, which can be left-hand or right-hand, mounted at angles up to 30° from its nominal position (so that carburetters can be used partially downdraught), controls the fuel level. The float chamber can be rigidly or flexibly mounted to the side of the unit. Fuel path from the float chamber to the main body of the Carburetter is via the flexible nylon tube which is an integral part of the jet assembly.

The float chamber lid is removable complete with float and needle valve assembly for ease of servicing.

Cold start enrichment on every HS carburetter is achieved by lowering the jet. This is done by rotation of a cam lever (see Fig. 3) from which a linkage is connected to the jet.

Mixture adjustment on types HS2, 4 and 6 is by means of the jet adjusting nut (see Fig. 3a) acting directly onto the jet. On HS4C and HS8 carburetters the same effect is achieved by a jet adjusting screw (see Figs. 3b and 3c) acting on the jet linkage.

The method used for fuel temperature compensation on all HS carburetters is very fine adjustment of the jet position. When the temperature rises, and fuel viscosity lowers, the jet is moved towards the needle to compensate by weakening the setting. As the temperature lowers the opposite occurs. On HS2, 4 and 6 carburetters the movement of the jet is powered by a wax capsule (capstat) at the base of the jet. On HS4C and HS8 carburetters the movement is caused by a bi-metal disc between the jet and the operating linkage.

Special features

- Proven constant depression principle
- RH or LH float-chamber mounting
- Flexibly or rigidly-mounted float-chamber
- Three adjustments: mixture, slow-run and fast-idle
- Spring-loaded jet needle assembly
- Compact overall dimensions

Optional features

- Crankcase ventilation control
- Overrun limiting valve
- Temperature compensation
- Ball bearing suction chamber (Not HS2 or HS8)
- Tamperproof adjustment

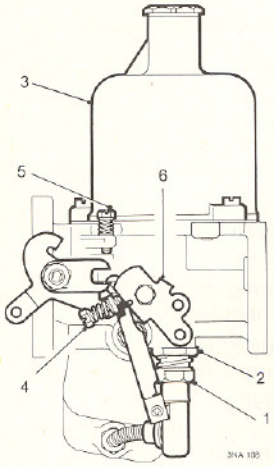
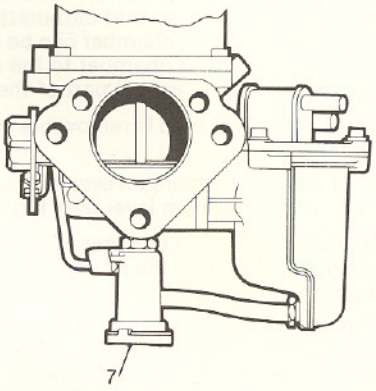
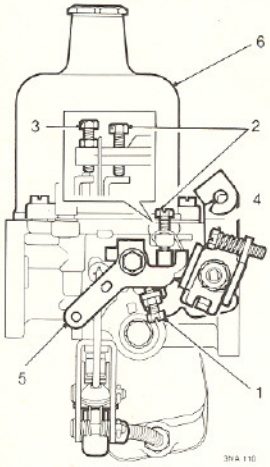


Fig 3(a). HS2 – HS4 – HS6

1 Jet adjusting nut
2 Jet locking nut
3 Suction chamber assembly
4 Fast-idle adjusting screw
5 Throttle adjusting screw
6 Cam lever
7 Temperature compensator (capstat)





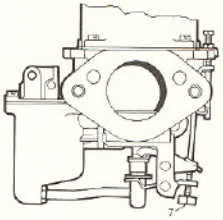
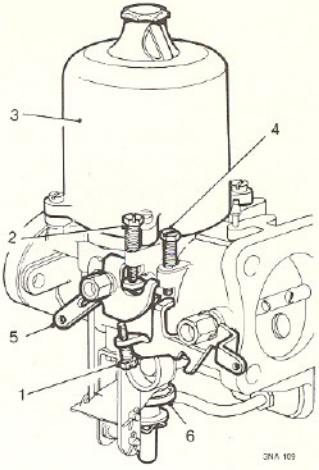


Fig 3(b). HS4C

1 Fast-idle adjusting screw
2 Throttle adjusting screw
3 Jet adjusting screw
4 Lost motion adjusting screw
5 Cam lever
6 Suction chamber assembly
7 Jet adjusting screw (later type)



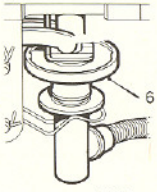
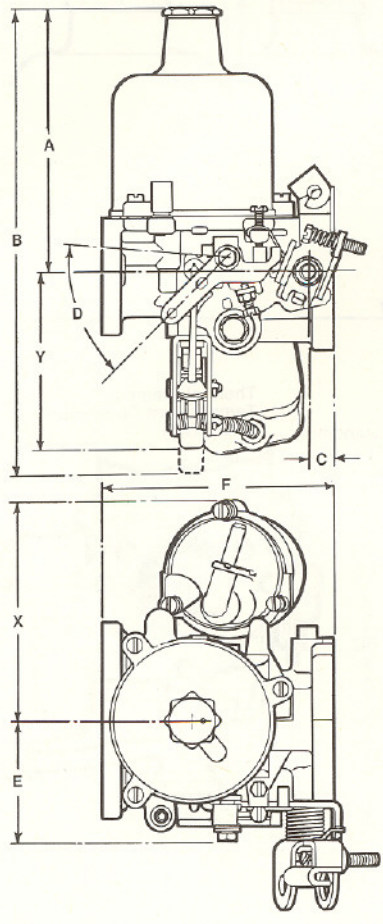


Fig 3(c). HS8

1 Fast-idle adjusting screw
2 Jet adjusting screw
3 Suction chamber assembly
4 Throttle adjusting screw
5 Cam lever
6 Temperature compensator

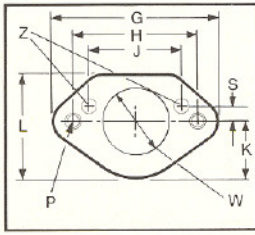
Fig 4(b). Dimensions HS4C-HS8 carburetters.



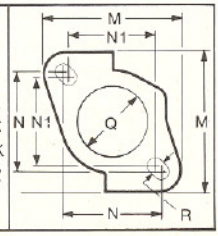
	HS4C	HS8
A:	120.0 mm (4.72 in)	122.24 mm (4.812 in)
B:	213.0 mm (8.38 in)	219.87 mm (8.655 in)
C:	11.7 mm (0.461 in)	12.7 mm (0.500 in)
D:	50° total movement	45° total movement
E:	53.97 mm (2.125 in)	57.2 mm (2.25 in)
F:	105.0 mm (4.134 in)	131.0 mm (5.155 in)
G:	88.33 mm (3.47 in)	104.8 mm (4.125 in)
H:	68.33 mm (2.69 in)	82.55 mm (3.25 in)
J:	50.8 mm (2.00 in)	65.6 mm (2.582 in)
K:	29.46 mm (1.16 in)	30.16 mm (1.187 in)
L:	53.26 mm (2.10 in)	59.53 mm (2.34 in)
M:	73.8 mm (2.905 in)	73.66 mm (2.90 in)
N:	54.0 mm (2.126 in)	54.0 mm (2.126 in)
N1:	48.32 mm (1.90 in)	—
P:	5/16 in x 18 U.N.C.	8.73 mm (0.343 in) dia. or 5/16 in x 18 U.N.C.
Q:	38.1 mm (1.50 in)	50.8 mm (2.0 in)
R:	8.75 mm (0.344 in) width	8.73 mm (0.343 in) dia.
S:	7.87 mm (0.312 in)	17.46 mm (0.687 in)
X:	100.22 mm (3.994 in)	104.8 mm (4.125 in)
Y:	82.0 mm (3.32 in)	86.16 mm (3.392 in)

HS4C

Intake Flange

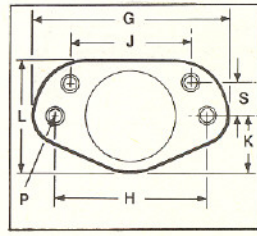


Engine Flange



HS8

Intake Flange



Engine Flange

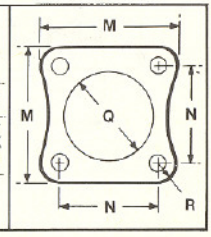
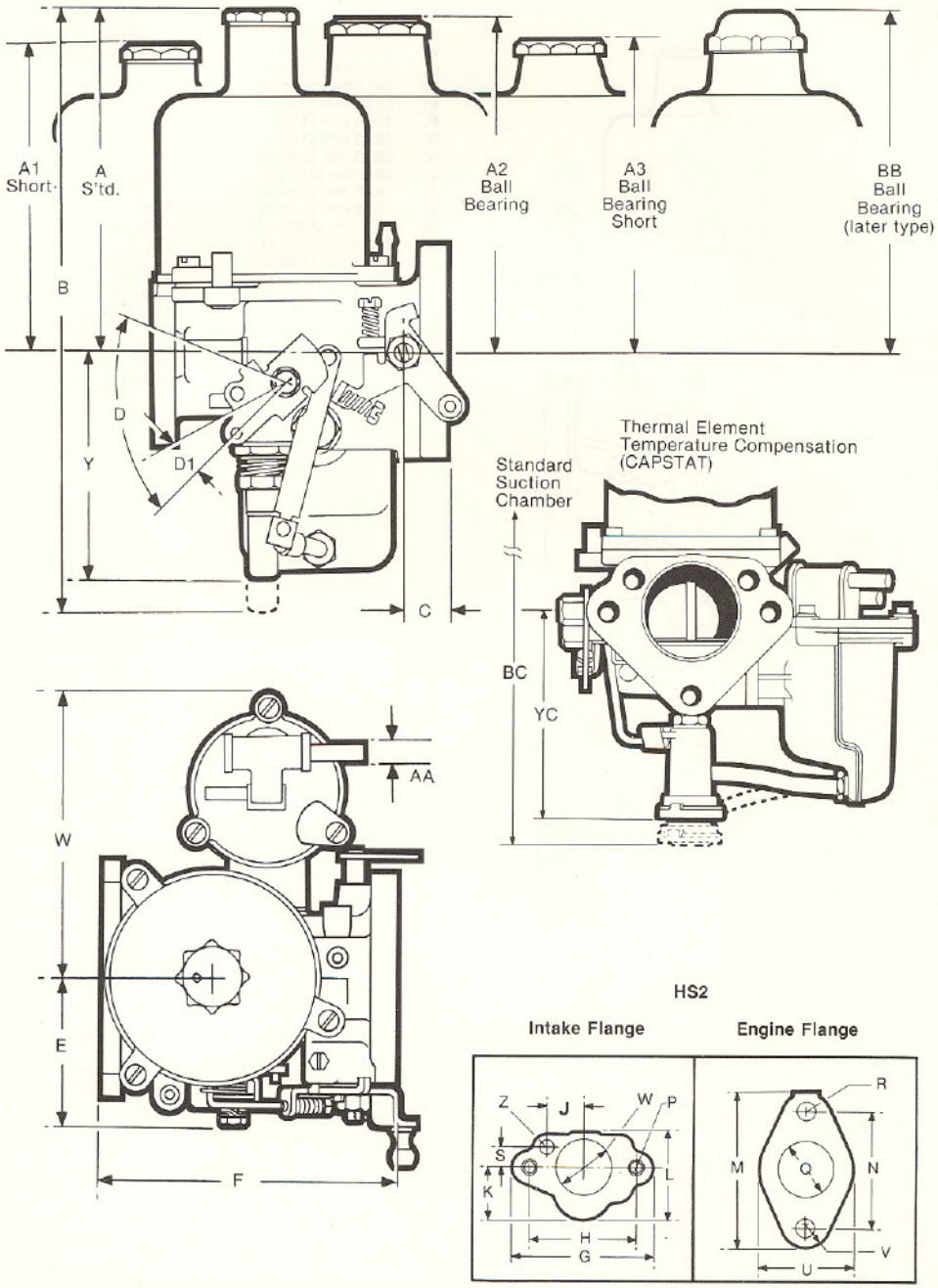


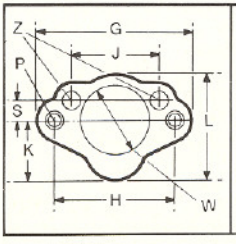
Fig 4(a). Dimensions HS2 – HS4 – HS6 Carburetters



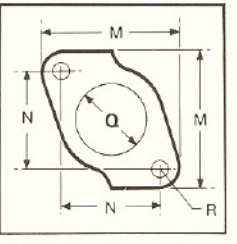
	HS2	HS4	HS6
A:	111.12 mm (4.375 in)	119.6 mm (4.71 in)	121.26 mm (4.77 in)
A1:	—	107.0 mm (4.21 in)	108.56 mm (4.27 in)
A2:	—	112.4 mm (4.42 in)	114.01 mm (4.49 in)
A3:	—	107.6 mm (4.23 in)	109.18 mm (4.3 in)
B:	—	211.2 mm (8.31 in)	214.4 mm (8.44 in)
Bc:	—	218.06 mm (8.58 in)	221.26 mm (8.71 in)
C:	11.91 mm (0.47 in)	14.68 mm (0.578 in)	14.68 mm (0.578 in)
D:	70° total movement	75° total movement	77° total movement
D1:	25° fast-idle	40° fast-idle	35° fast-idle
E:	47.0 mm (1.85 in)	50.8 mm (2.0 in)	53.4 mm (2.10 in)
F:	85.72 mm (3.375 in)	102.4 mm (4.032 in)	101.6 mm (4.0 in)
G:	78.0 mm (3.07 in)	83.0 mm (3.268 in)	92.0 mm (3.23 in)
H:	60.0 mm (2.36 in)	65.0 mm (2.56 in)	72.0 mm (2.836 in)
J:	20.63 mm (0.81 in)	47.6 mm (1.874 in)	50.8 mm (2.00 in)
K:	28.57 mm (1.12 in)	31.75 mm (1.25 in)	33.34 mm (1.312 in)
K1:	—	—	46.0 mm (2.812 in)
L:	48.0 mm (1.89 in)	55.75 mm (2.195 in)	58.84 mm (2.312 in)
M:	85.0 mm (3.34 in)	73.66 mm (2.90 in)	73.66 mm (2.90 in)
N:	65.0 mm (2.56 in)	54.0 mm (2.126 in)	54.0 mm (2.126 in)
N1:	—	—	—
P:	5/16 in x 18 U.N.C.	8.73 mm (0.343 in) dia. or 5/16 in x 18 U.N.C.	8.73 mm (0.343 in) dia. or 5/16 in x 18 U.N.C. (3-hole flange only)
Q:	31.75 mm (1.25 in)	38.1 mm (1.50 in)	44.45 mm (1.75 in)
R:	10.32 mm dia. (0.406 in dia.)	8.73 mm (0.343 in) dia.	8.73 mm (0.343 in) dia.
S:	11.17 mm (0.44 in)	10.32 mm (0.406 in)	14.29 mm (0.562 in)
T:	—	—	36.0 mm (1.417 in)
U:	52.0 mm (2.047 in)	—	—
V:	13.0 mm (0.512 in)rad.	—	—
W:	31.75 mm (1.25 in)	35.3 mm (1.39 in)	41.25 mm (1.625 in)
X:	95.25 mm (3.75 in)	98.42 mm (3.875 in)	99.22 mm (3.906 in)
Y:	77.0 mm (3.031 in)	80.4 mm (3.165 in)	81.96 mm (3.23 in)
Yc:	—	88.42 mm (3.48 in)	90.0 mm (3.54 in)
Z:	8.0 mm (0.315 in) dia.	8.0 mm (0.315 in) dia.	8.0 mm (0.315 in) dia.
AA:	6.35 mm (0.250 in) o/dia.	6.35 mm (0.250 in) o/dia.	6.35 mm (0.250 in) o/dia.
BB:	—	122.03 mm (4.80 in)	123.64 mm (4.868 in)

HS4

Intake Flange

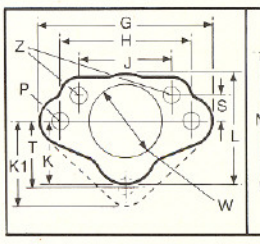


Engine Flange

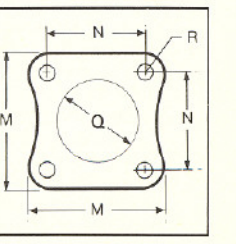


HS6

Intake Flange



Engine Flange



TUNING – TYPE HS CARBURETTERS

Foreword

These instructions are intended as a general guide for tuning and servicing the Type HS carburetters and variants in both single and multi-installations. It is essential, particularly where vehicles are equipped and tuned to comply with engine emission control regulations, that the carburetters are tuned in accordance with the vehicle manufacturer's tuning data.

To achieve the best results when tuning, the use of a reliable tachometer, balancing meter and an exhaust gas analyser (CO meter of the infra-red non-dispersive type or equivalent are required). **These instruments are essential when tuning vehicles equipped to conform with exhaust emission regulations.**

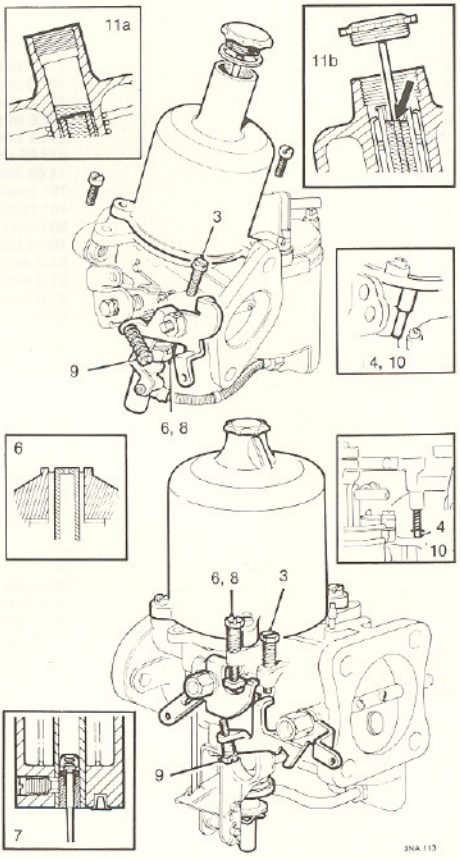
Before servicing or tuning a carburetter in an endeavour to rectify poor engine performance, make sure that the maladjustment or fault is not from another source by checking the following:

Valve clearance
Spark plug condition
Contact breaker (dwell angle)
Ignition timing and advance
Presence of air leaks into the induction system

Each instruction in this leaflet has a sequence number and to complete a tuning or servicing operation efficiently it is essential that the instructions are performed in the numerical sequence. Where applicable, the sequence numbers identify the relevant components in the appropriate illustration.

Note: Under certain circumstances it may be illegal for non-qualified personnel to adjust tamperproofed settings.

Before tuning it will be necessary to remove tamperproofing where fitted.



Single and multi-carburetter installations

1 Remove the air cleaner(s).
2 Check the throttle for correct operation and signs of sticking.
3 Unscrew the throttle adjusting screw (each screw multi-carburetters) until it is just clear of the throttle lever with the throttle closed, then turn the screw clockwise 1½ full turns (single), one turn on each (multi-carburetters).
4 Raise the piston of each carburetter with the lifting pin and check that it falls freely onto the bridge when the pin is released. If the piston shows any tendency to stick, the carburetter must be serviced.
5 Lift and support the piston clear of the bridge so that the jet is visible; if this is not possible due to the installed position of the carburetter, remove the suction chamber assembly.
6 Turn the jet adjusting nut/screw up/anti-clockwise, until the jet is flush with the bridge or as high as possible without exceeding the bridge height. Ensure that the jets on multi-carburetters are in the same relative position to the bridge of their respective carburetters.
7 Check that the sintered needle guide is flush with the underside face of the piston.
8 Turn the jet adjusting nut/screw two turns down/clockwise (each nut/screw on multi-carburetters).
9 Turn the fast-idle adjusting screw anti-clockwise (each screw multi-carburetters) until it is well clear of the cam.

10 Refit the suction chamber assembly if it has been removed and, using the lifting pin, check that the piston falls freely onto the bridge.

Note: If ball bearing suction chambers are fitted take care not to wind up the piston spring when refitting the suction chamber – see servicing section, reassembly.

11 Check the piston damper oil level:
(a) *Standard suction chambers.* Unscrew the cap and withdraw the damper. Top up with engine oil (preferably S.A.E. 20) until the level is 13.0 mm (½ in) above the top of the hollow piston rod, refit the damper and screw the cap firmly into the suction chamber.
(b) *Ball bearing suction chambers (early type.)* Unscrew the cap and raise the piston and damper to the top of their travel. Fill the recess in the damper retainer with engine oil (preferably S.A.E. 20), lower the damper until the cap contacts the suction chamber, repeat this procedure until the oil level is just visible at the bottom of the retainer recess. Screw the cap firmly into the suction chamber.

It is essential that the bearing retainer is not displaced from its position in the piston rod.

(c) *Ball bearing suction chambers (later type).* Unscrew the damper cap and withdraw the damper. Top up with engine oil (preferably S.A.E. 20) to within 6.5 mm (¼ in) of the top of the hollow piston rod. Refit the damper and screw in firmly.

12 *Vehicles with emission control.* Connect a reliable tachometer to the engine in accordance with the instrument manufacturer's instructions.

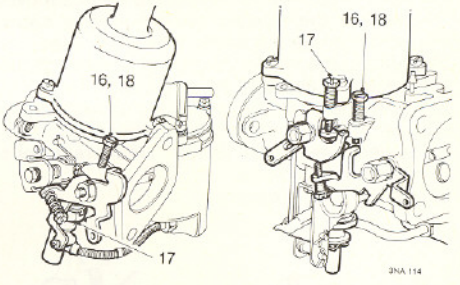
13 Start the engine and run it at a fast-idle speed until it attains normal running temperature, then run it for a further five minutes.

14 Increase the engine speed to 2,500 r.p.m. for 30 seconds.

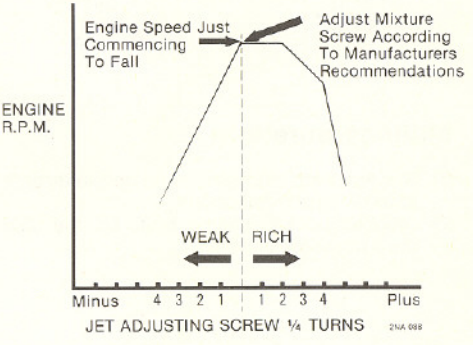
15 *Vehicles with emission control.* Connect an exhaust gas analyser to the engine in accordance with the instrument manufacturer's instructions.

Setting can now commence. If the correct setting cannot be obained within three minutes, increase the engine speed to 2,500 r.p.m. for 30 seconds and then re-commence tuning. Repeat this clearing operation at three-minute intervals until tuning is completed.

Single carburetters



16 Adjust the throttle adjusting screw until the correct idle speed is obtained (see vehicle manufacturer's tuning data).

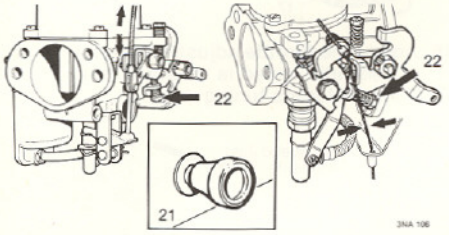


17 Turn the jet adjusting nut/screw down/clockwise, to enrich or up/anti-clockwise to weaken, until the fastest speed is indicated; turn the nut/screw up/anti-clockwise until the engine speed just commences to fall. Turn the nut/screw down/clockwise very slowly the minimum amount until the maximum speed is regained. From this setting adjust the mixture screw according to the vehicle manufacturer's recommendations.

18 Check the idle speed, and readjust it as necessary with the throttle adjusting screw to obtain the correct setting.

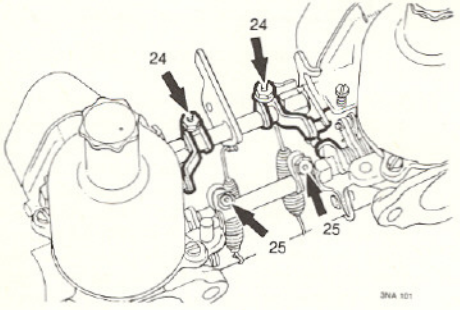
19 *Vehicles with emission control.* Using the exhaust gas analyser, check that the percentage CO reading is within the limits given by the vehicle manufacturer. If the reading falls outside the limits given, reset the jet adjusting nut/screw by the minimum amount necessary to bring the reading just within the limits given. If an adjustment exceeding three flats of the nut/half a turn of the adjusting screw is required to achieve this, then the carburetters must be removed and serviced.

20 With the fast-idle cam against its return stop, check that a 1.6 mm (1/16 in) free movement of the mixture control (choke) cable exists before the cable moves the cam.
21 Pull out the mixture control (choke) until the linkage is about to move the jet.
22 Turn the fast-idle adjusting screw clockwise until the correct fast-idle speed is obtained (see the vehicle manufacturer's recommendations).
23 Refit the air cleaner.

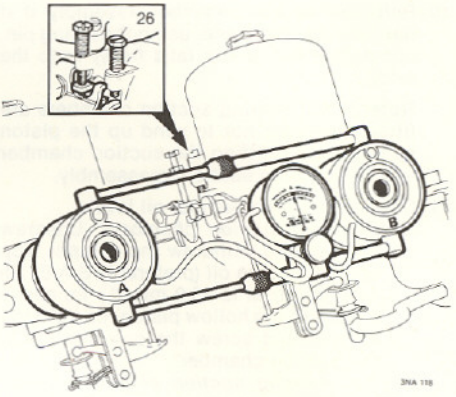


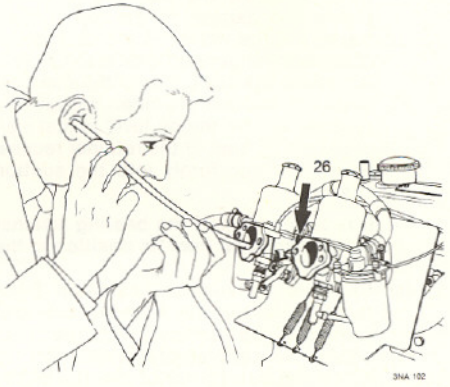
Multi-carburetters

24 Slacken both clamping bolts on the throttle spindle interconnections.
25 Slacken both clamping bolts on the cold start interconnections.



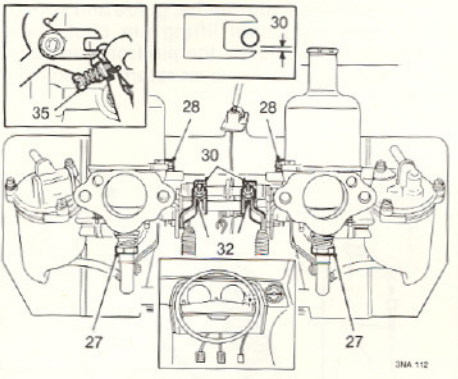
26 Using a balancing meter in accordance with the maker's instructions, balance the carburetters by altering the throttle adjusting screws until the correct idle speed and balance is achieved. Alternatively, use a 'listening tube' to compare the intensity of the intake hiss on all carburetters and turn the throttle adjusting screws until the hiss is the same.
27 Turn the jet adjusting nut/screw on each carburetter down/clockwise to enrich or up/anti-clockwise to weaken, by the same amount until the fastest speed is indicated; turn each nut/screw up/anticlockwise until





the engine speed just commences to fall. Turn each screw very slowly down/clockwise by the minimum amount until the maximum speed is regained. From this setting adjust the mixture screws according to the vehicle manufacturer's recommendations. (*See graph – Single carburetters*)
28 Check the idle speed and readjust it as necessary with the throttle adjusting screws, turning each by the same amount.
29 *Vehicles with emission control.* Using the exhaust gas analyser, check that the reading is within the limits given in the vehicle manufacturer's tuning data. If the reading falls outside the limits given, reset both the jet adjusting nuts/screws by the minimum amount necessary to bring the readings just within the limits. If an adjustment exceeding three flats/half a turn is required to achieve this, the carburetters must be removed and serviced.
30 Set the throttle interconnection clamping levers, in accordance with the vehicle manufacturer's instructions, so that a

clearance exists between the link pin and the lower edge of the fork. Tighten the clamp bolts, ensuring that there is approximately 0.8 mm (1/32 in) end-float on the interconnection rod.



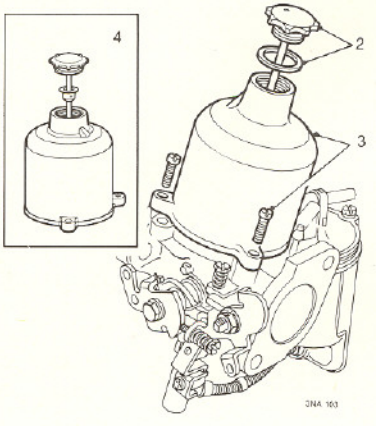
31 Run the engine at 1,500 r.p.m. and check the throttle linkage for correct connection by rechecking the carburetter balance.
32 With the fast-idle cams of each carburetter against their respective stops, set the cold start interconnections, so that all cams begin to move simultaneously.
33 With the fast-idle cams against their stops check that a 1.6 mm (1/16 in) free movement of the mixture control (choke) cable exists before the cable moves the cams.
34 Pull out the mixture control (choke) until the linkage is about to move the jet.
35 Using the balancing meter or listening tube to ensure equal adjustment, turn the fast-idle adjusting screws to give the correct fast-idle speed.
36 Refit the air cleaners.

SERVICING

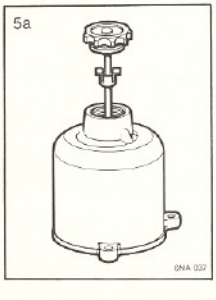
TYPE HS2, HS4 & HS6 CARBURETTERS

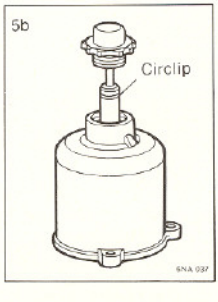
Dismantling

1 Thoroughly clean the outside of the carburetters.
2 *Standard suction chambers.* Remove the piston damper and its washer, if fitted.
3 Unscrew the suction chamber retaining screws.

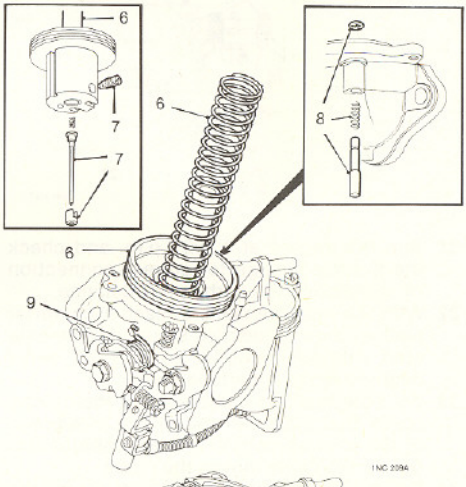


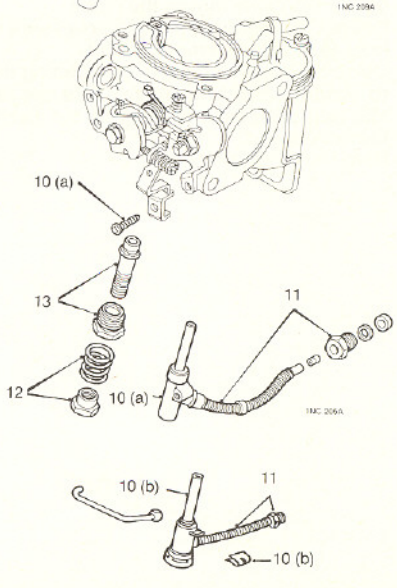
4 Lift the chamber assembly vertically from the body without tilting it.
5 (a) *Ball bearing suction chambers (early type).* Hold the piston firmly and pull the suction chamber, taking care not to bend the damper rod, until the bearing retainer is freed from the piston rod. Remove the damper.
(b) *Ball bearing suction chambers (later type).* Remove the piston damper. Lift the piston and remove the bearing retaining circlip.



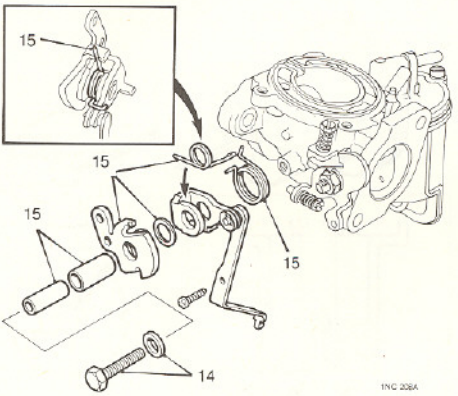


6 Separate the suction chamber, the spring and the piston assembly and empty the oil from the piston rod.
7 Unscrew the needle guide locking screw, then withdraw the needle, guide and spring.
8 Remove the piston lifting pin circlip and spring and withdraw the pin from the body.
9 Release the pick-up lever return spring from its retaining lug.

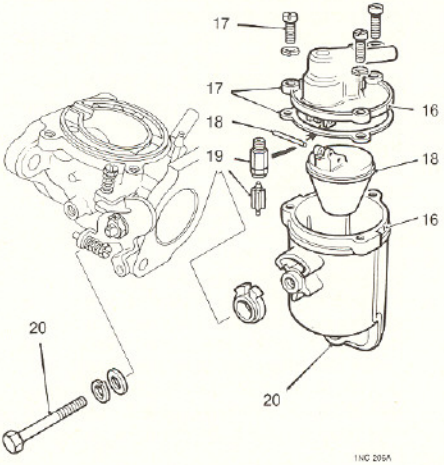




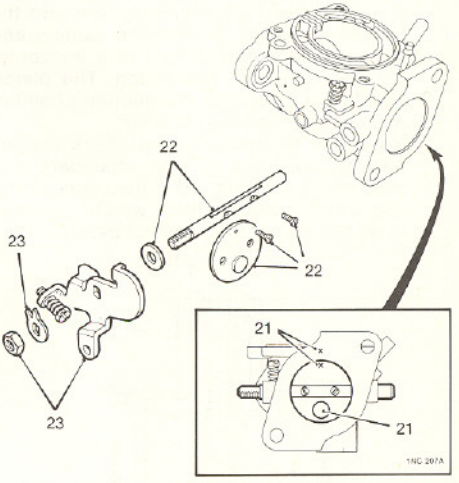
10 (a) *Standard jet.* Support the plastic moulded base of the jet and remove the screw retaining the jet pick-up lever and link bracket (when fitted).
(b) *Capstat jet.* Remove the clip holding the wire link to the jet housing.
11 Unscrew the jet tube sleeve nut from the float-chamber and withdraw the jet assembly. Note the gland, washer and ferrule at the end of the jet tube.
12 Remove the jet adjusting nut and spring.
13 Unscrew the jet locking nut and detach the nut and jet bearing, withdraw the bearing from the nut.



14 Unscrew and remove the lever pivot bolt and distance washer.
15 Detach the cam lever assembly and return springs, noting the pivot bolt tubes, skid washer and the locations of the cam and pick-up lever springs.



16 Mark the float-chamber lid location to facilitate accurate reassembly.
17 Remove the lid securing screws and detach the lid with its joint washer and float.
18 Hold the float hinge pin at its serrated end and withdraw the pin and float.
19 Extract the float needle from its seating and unscrew the seating from the lid.
20 Remove the float-chamber securing bolt and the chamber.



21 Close the throttle and mark the position of the throttle disc in relation to the carburetter flange. **Do not mark the disc in the vicinity of the overrun valve.**
22 Remove the throttle disc retaining screws, open the throttle and carefully withdraw the disc from the throttle spindle taking care not to damage the overrun valve.
23 Tap back the tabs of the lock washer securing the spindle nut, remove the nut and detach the throttle lever, washer and the throttle spindle; note location of the lever in relation to the spindle and carburetter body.

Inspection

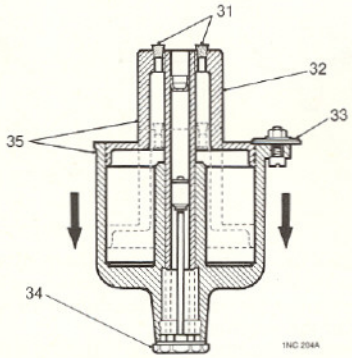
24 Examine the throttle spindle and its bearings in the carburetter body; check for any excessive play, and renew any parts as necessary.
25 Examine the float needle and seating for any damage and excessive wear; renew if necessary.
26 Check condition of all gaskets; renew as necessary.

27 Examine the carburetter body for cracks and damage, and for security of the brass connections and the piston key.

28 Clean the inside of the suction chamber and the piston rod guide with fuel or methylated spirit (denatured alcohol) and wipe dry. **Abrasives must not be used.**

29 Examine the suction chamber and piston for damage and signs of scoring.

30 *Ball bearing suction chambers.* Check that all the balls are in the piston ball race (2 rows, 6 per row). Fit the piston into the suction chamber, without the damper and spring, hold the assembly in a horizontal position and spin the piston. The piston should spin freely in the suction chamber without any tendency to stick.
Note: The following timing check applies only to standard suction chambers and need only be carried out if the cause of the carburetter malfunction which necessitated the dismantling has not been located.



31 Temporarily plug the piston transfer holes.

32 Fit the piston into the chamber without its spring.

33 Fit a nut and screw, with a large flat washer under the nut, into one of the suction chamber fixing holes, positioning the washer so that it overlaps chamber bore.

34 Fit the damper and washer, if fitted.

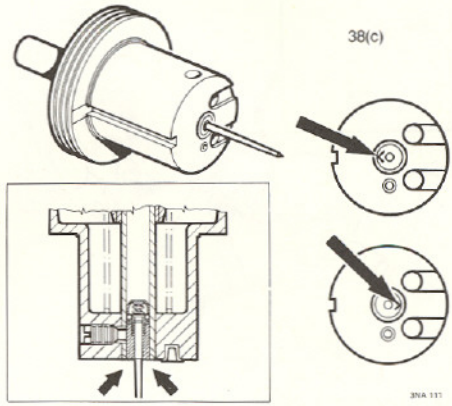
35 Check that the piston is fully home in the chamber, invert the assembly to allow the chamber to fall away until the piston contacts the washer.

36 Check the time taken for the chamber to fall the full extent of the piston travel. For carburetters 38.0 mm (1½ in) to 47.6 mm (1⅞ in) bore, the time taken should be 5 to 7 seconds.

37 If the times are exceeded check the piston and chamber for presence of oil, foreign matter and damage. If after re-checking the time is still not within these limits, renew the suction chamber assembly.

Reassembling

38 Reverse the procedure in 1 to 23 noting the following:
(a) Ensure that the throttle disc is fitted in its original position.
(b) New throttle disc retaining screws must be used when refitting the disc. Ensure that the throttle disc is correctly positioned and closes correctly before tightening the retaining screws. Spread the split ends of the screws sufficiently to prevent turning.



(c) Use a **new** retaining screw and a new needle guide ensuring that the needle guide fitted gives the needle bias in the required sense (either toward throttle disc or toward air cleaner).
Before tightening the retaining screw check that the needle guide is in its correct position relative to the piston face, either flush with the bottom of the piston on standard pistons or flush with the recess on recessed pistons.

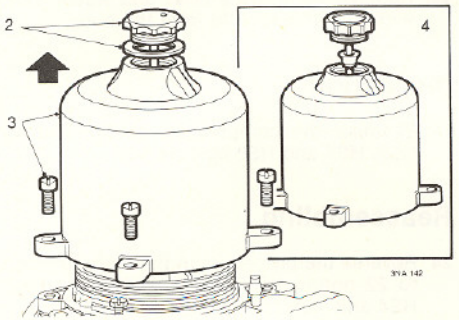
(d) *Ball bearing suction chambers.* To prevent the piston spring from being 'wound up' during reassembly, temporarily fit the piston and suction chamber, less the piston spring, to the body and pencil mark their relative positions to each other. Fit the spring to the piston, hold the suction chamber above the piston, align the pencil marks and lower the chamber over the spring and piston. It is essential that the bearing retention clip (early type) or the bearing retention circlip (later type) is correctly fitted.

SERVICING

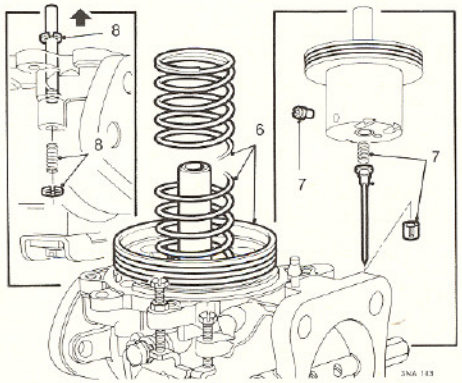
TYPE HS4C AND HS8 CARBURETTERS

Dismantling

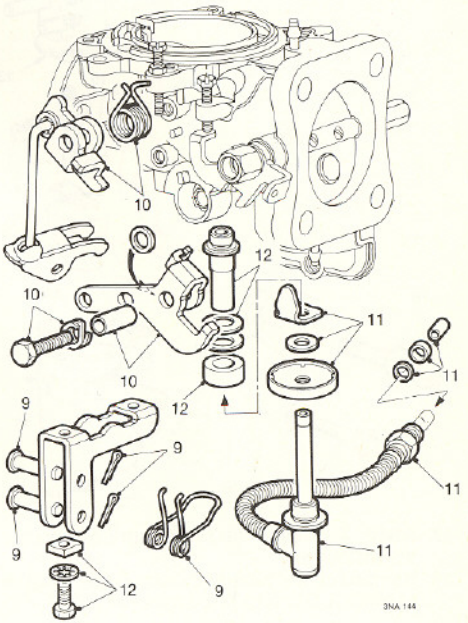
1 Thoroughly clean the outside of the carburetter.
2 *Standard suction chambers.* Remove the piston damper and its washer, if fitted.
3 Unscrew the suction chamber retaining screws.
4 Lift the chamber assembly vertically from the body without tilting it.



5 (a) *Ball bearing suction chambers (early type).* Hold the piston firmly and pull the suction chamber, taking care not to bend the damper rod, until the bearing retainer is freed from the piston rod. Remove the damper.
(b) *Ball bearing suction chambers (later type).* Remove the piston damper. Lift the piston and remove the bearing retaining circlip.
Note: Ball bearing suction chambers are not available for HS8 carburetters.
6 Separate the suction chamber, the spring and the piston assembly and empty the oil from the piston rod.

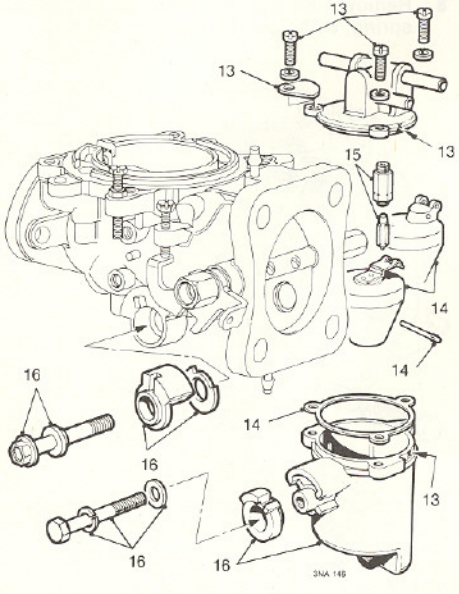


7 Unscrew the needle guide locking screw, then withdraw the needle, guide and spring.
8 Remove the piston lifting pin circlip and spring, withdraw the pin from the body.



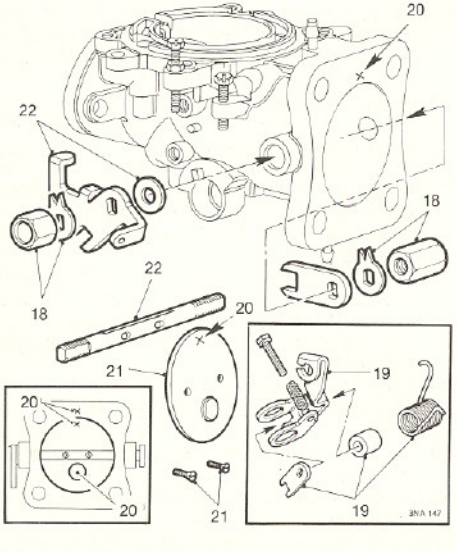
9 Remove the split pins retaining the jet spring anchor pin and jet fork pivot pin. Remove the pins, spring and jet fork from the bracket.
10 Release the cam lever return spring from its lug, remove the bolt, washers, cam lever, bush and link arm assembly.
11 Unscrew the jet tube sleeve nut from the float chamber and withdraw the jet assembly complete with centring washer, copper washer and ferrule at the end of the jet tube.
12 Remove the bolts, Starlock washers and spacers securing the fork bracket to the carburetter body and withdraw the jet bearing together with the bush and Bellville washers.
13 Mark the relative position of the float lid and chamber, remove the float lid retaining screws, washers and identification tag.
14 Remove the float lid and gasket, withdraw the float hinge pin and remove the float.
15 Withdraw the float needle and unscrew the needle seat.

16 Remove the float chamber securing bolt, float chamber and metal spacer or rubber mounting and backing washer.



17 HS4C – release the return spring from the throttle lever.

18 Bend back the tabs and remove the throttle spindle nut(s) and tab washer(s).



19 HS4C – withdraw the lost motion lever, throttle actuating lever, return spring and spacer.

20 Close the throttle and mark the position of the throttle disc in relation to the carburetter flange.
Do not mark the disc in the vicinity of the overrun valve.

21 Unscrew the disc retaining screws, open the throttle and ease the disc from its slot in the throttle spindle taking care not to damage the overrun valve.

22 Remove the throttle lever and washer and withdraw the spindle from the body.

Inspection

23 Examine the components as detailed for HS2, HS4 and HS6 carburetters.

Reassembling

24 Reverse the procedure in the instructions 1 to 22 noting the points detailed for HS2, HS4 and HS6

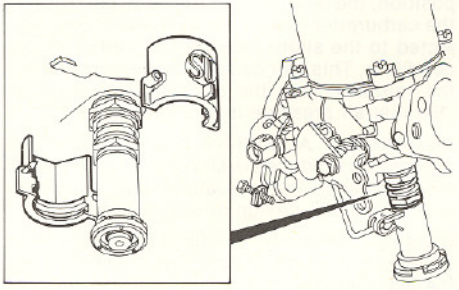
TAMPERPROOFING HS CARBURETTERS

Due to tamperproofing requirements the mixture adjustment and idle speed adjustment of carburetters produced since 1976 will be sealed in the following manner.

Note: Under certain circumstances it may be illegal for non-qualified personnel to adjust tamperproofing settings.

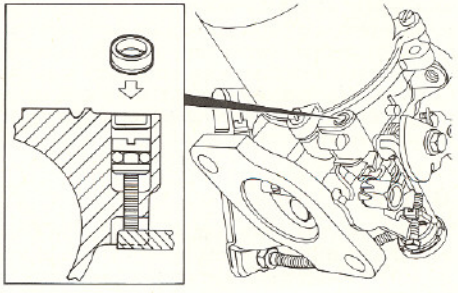
HS2, HS4 and HS6

Sealing of Mixture Adjustment



A pair of semi-circular plastic shrouds with a 'snap' fastening are fitted around the mixture adjusting nut after the correct mixture has been obtained. If an attempt is made to remove these shrouds the fasteners will break off.

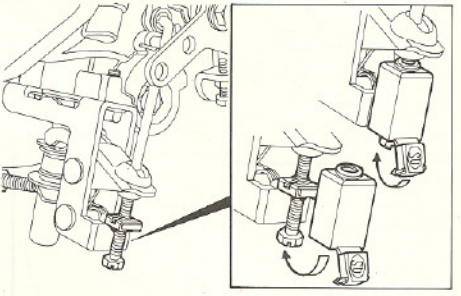
Sealing of Idle Speed Adjustment



The body casting of the HS carburetter has been modified and now incorporates a circular housing surrounding the slow-run screw. A pressed aluminium plug is fitted into a counterbored hole in this housing after the correct idling speed setting has been achieved.

If an attempt is made to remove this plug, damage to the plug will result.

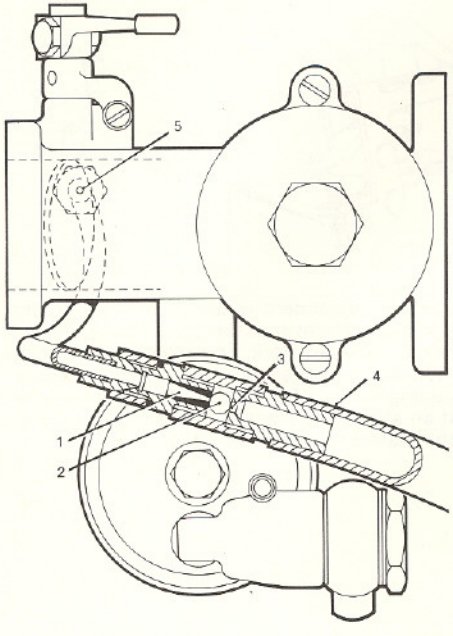
Type HS4C



Mixture adjustment is removed from the pick up lever (cam lever assembly) and repositioned below the jet fork. A box-shaped plastic moulding with a snap lid is placed over the adjusting screw. After setting, the lid is fastened. If an attempt is made to remove the moulding the fasteners will break off.

ADDITIONAL WEAKENING DEVICE

As applied to a carburetter with separate float chamber.



An engine normally requires a richer mixture when running at full throttle than under cruising conditions. The SU carburetter automatically achieves this on the majority of installations due to the pulsating nature of the air flow at full throttle as compared with the steady flow when cruising with the throttle partly shut. This effect, known as 'mixture ratio spread', is also affected by the design of the air intake and induction passages.

Certain engines however demand a greater 'mixture ratio spread' than can be met by the above factors. In such cases the additional weakening device is used.

Description

The rate of fuel discharge from the jet is governed by the difference in air pressure between that existing over the fuel in the floatchamber and that over the jet.

The weakening device is a fitting attached to the float-chamber lid designed to reduce air pressure (create a depression) in the float-chamber when the throttle is partly shut, thereby reducing the rate of fuel discharge from the jet. The lid is otherwise sealed by a gasket between the lid and bowl.

The fitting on the lid consists of a venturi (1) which is connected at one end to a drilling in the carburetter body close to the throttle disc edge (5); the other end, which contains a calibrated air bleed (3), is connected to the air intake passage by a flexible tube (4). A central drilling (2) communicates with the float-chamber.

Operation

Idling With the throttle in the normal idling position, the drilling (5) in the body emerges on the carburetter side of the disc and is only subjected to the slight depression exerted in that condition. This will cause a flow of air through the venturi (1) but the effect of this on float-chamber air pressure is negligible.

Full Throttle As with the idling position, the depression produced is slight and any effect on the air pressure in the floatchamber is compensated for in the design of the jet needle.

Cruising When the throttle is partly open, the drilling (5) is on the engine side of the disc and the high manifold depression causes air to be drawn through the venturi (1). The use of a venturi (instead of a plain orifice) ensures that the air velocity through it will reach a maximum value which remains constant once the predetermined depression figure has been attained.

The air bleed (3) admits air into the system and the resultant float-chamber depression produces the required reduction in fuel discharge.

This arrangement allows the maximum weakening effect to be produced when the throttle disc is closed a small amount from the full open position (when only a slight increase in manifold depression is obtained) and ensures that further closing of the throttle does not increase the weakening effect to the point at which misfiring may occur.

General

The size of the venturi is standard, the only variable on different vehicles is the size of the air bleed which is marked on the hexagon.

The flexible tube (4) connecting the air bleed union to the air intake passage has a substantial effect on mixture strength. As the air velocity through the air intake increases, a depression is communicated to the floatchamber, the effect of which is compensated for in the jet needle design, thus the removal of the connecting tube would cause some alteration to mixture strength.

The additional weakening device is not usually applicable to types of carburetter on which it was not fitted as original equipment, since the resultant weakening effect would be excessive.
Note: On certain vehicles without a weakening device a connecting tube is used between the float-chamber lid and the air intake passage. In this instance its effect is similar to that described above.

Servicing

Servicing is confined to keeping the device clean internally and maintaining the connecting pipes and washers in good condition.