STROMBERG CD TYPE 1-BARREL

Land Rover 6 Cyl. (1971-72)
Saab 99 (1971 & 1973)
Mercedes Benz 220 (1971-73)

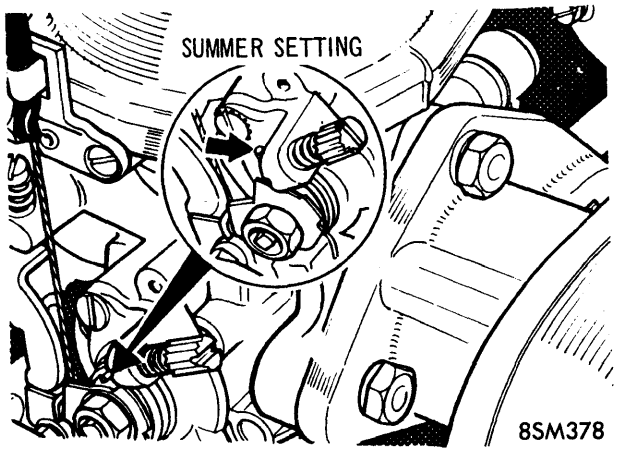
DESCRIPTION

Stromberg CD carburetor is constant depression type, with three main sections. Central section is carburetor housing, bottom section if float chamber, and top section is vacuum chamber. Carburetor operates on principle of varing effective areas of choke and jet orifice in accordance with degree of throttle opening, engine speed, engine temperature, and engine load. Fuel passes into float chamber where flow is controlled by needle valve and twin floats (on a common arm). Fuel in jet orifice is controlled at same level as float chamber, by means of cross drillings in carburetor body.

OPERATION

CHOKE OPERATION

Choke consists of a valve disc which, when the choke spindle is rotated, opens four fuel holes of different sizes and opens an emulsion air duct. With choke knob pulled all the way out, all four holes are in operation and emulsion air jet is wide open. At intermediate choke positions, one or more fuel holes are open and emulsion air duct remains wide open, so long as any fuel holes are open. When choke is pushed in, this closes both fuel and emulsion air ducts. Function of emulstion air ducts is to improve distribution of choke fuel mixture among all cylinders.



CHOKE LIMITING SPINDLE

IDLING

There is no separate circuit for idling. Idle speed is set by adjustment of throttle stop screw which limits closure of throttle when accelerator pedal is released.

JET/NEEDLE RELATIONSHIP

Jet/needle relationship governs correct idle mixture and correct mixture strength throughout range. The needle profile has been evolved to compensate for known air leak, therefore a constant air/fuel ratio is maintained. On throttle opening, piston rises withdrawing tapered jet metering needle from jet orifice flow is increased proportionate to greater air flow. The metering needle is variable along its length and has been machined to very close limits.

ACCELERATION

In order to produce a temporarily richer mixture on rapid opening of throttle (acceleration), a damping devise is provided in the spindle of vacuum piston. This oil damper prevents piston from rising too rapidly. Delay (or dampering) allows fuel from jet to be mixed with a smaller amount of air than usual, and enriches mixture. This enriched state is necessary for sudden throttle increase.

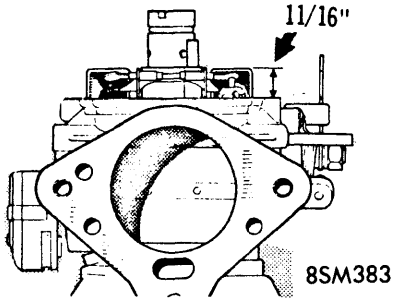
ADJUSTMENTS

FLOAT LEVEL ADJUSTMENT

Invert carburetor so float tag closes needle valve. Measure from face of carburetor body (with gasket removed) to top of each float. Correct height should be as specified. Bend float tang if necessary.

Float Level

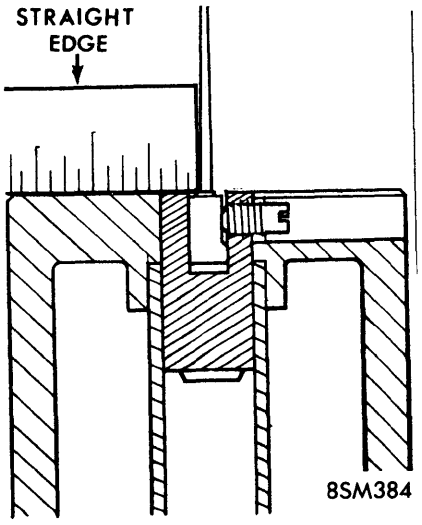
Application	Specification
Land Rover	.068"
Mercedes	.068"
Saab (1971-72)	.068"
(1973)	.063-.066"



CHECKING FLOAT HEIGHT

METERING NEEDLE ADJUSTMENT

Check spring action of needle in its housing at top of shank. Fit needle into base of piston. Using a straight edge placed



POSITIONING NEEDLE IN PISTON

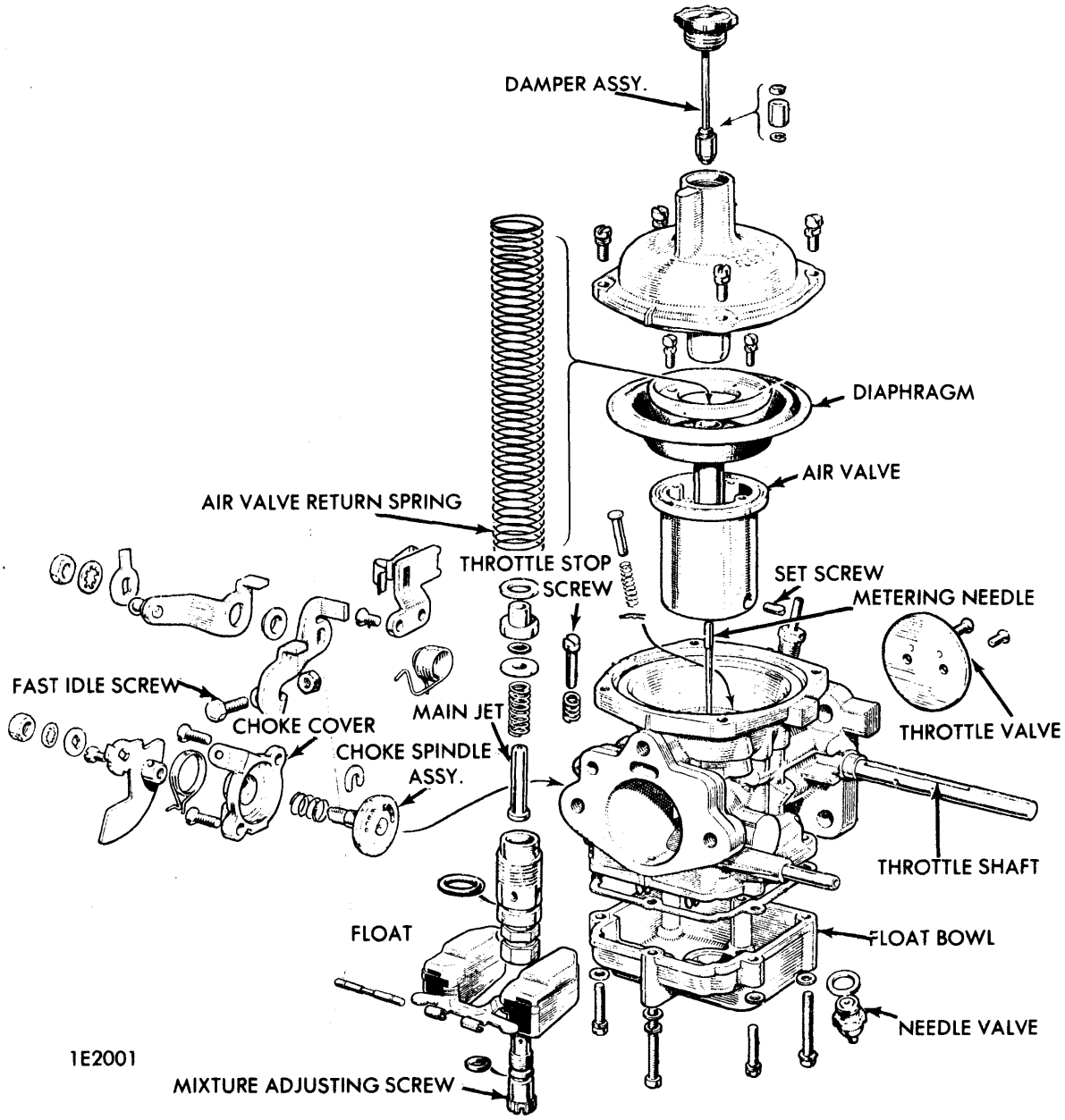
STROMBERG CD TYPE 1-BARREL (Cont.)

against shoulder on needle, press assembly into piston until straight edge aligns shoulder of needle with flat surface of piston. Lightly tighten locking screw, take care not to collapse needle housing. Shoulder alignment of needle is critical and care must be taken during this operation. Correctly fitted, needle will be exactly flush with piston face. Carefully enter piston and diaphragm assembly into main body, guiding needle into jet with a finger in air intake. Locate outer tag of diaphragm into recess at top of body. Check by looking down piston to ensure two vacuum transfer holes are towards and in line with throttle spindle and needle is centered in jet. Replace piston spring, hold piston against spring with a finger through air intake fit cover. Cover must be fitted with damper ventilation boss towards air intake. Replace cover screws and tighten down evenly. Check movement of piston, freedom of movement over full travel is essential and when released from uppermost position, piston should fall with sharp click onto bridge of carburetor. Fill piston damper, fit new seal and refit damper assembly. *NOTE — Disassemble and reassemble each carburetor individually to avoid possibility of similiar parts being interchanged between carburetors.*

IDLE MIXTURE ADJUSTMENT

All Exc. 1973 Saab 1) — Remove damper and hold piston (air valve) down on bridge of throttle bore. Screw jet mixture screw in until jet contacts bottom of piston. From this position, unscrew three turns.

2) Loosen clamping bolts on throttle spindle. Unscrew throttle stop screws to permit primary throttles in each carburetor to close completely. Screw in stop screws to a point where ends of screws are just touching casting. Rotate each screw 1 1/2 turns to open throttles an equal amount and to provide a basis from



STROMBERG CD CARBURETOR (TYPICAL)

STROMBERG CD TYPE 1-BARREL (Cont.)

which final idling speed can be set. Make sure fast idle screw is clear of fast idle cam or incorrect synchronizing will result. Check that both cams are in contact with stops.

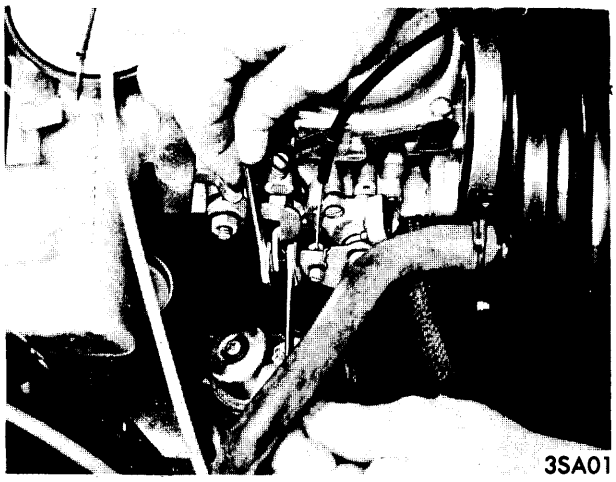
3) Start engine and run until it reaches operating temperature. Adjust idle stop screws to obtain 600-650 RPM (800-850 RPM for 1972). Check mixture by using a long thin screwdriver to raise piston slightly. If engine RPM increases when piston is raised, mixture is too rich. If engine stops, mixture is too lean. Engine RPM should remain the same or fall slightly, when piston is lifted. *NOTE — Turning mixture screw clockwise is leaner, and counterclockwise is richer.*

Saab (1973) — With tachometer connected and engine warmed to normal operating temperature, adjust idle speed to 800-850 RPM with throttle screw. Adjust air screw to obtain smoothest possible idle. After setting the idle speed prepare to read the CO level. Before reading the CO% ensure engine electrical system is functioning properly and ambient temperature is 59-77°F. If CO% is higher than 4.5%, adjust for a leaner mixture.

CHOKE ADJUSTMENT

All Exc. 1973 Saab — Adjust position of choke control cam by operating choke control lever to position cam, cam securing nut, and fast idle abutment screw in line. Tighten lock nut to secure location of screw.

Saab (1973) — Check that the distance between adjustment screw on throttle shaft and choke cam is .020-.039". Ensure that choke completely closes.



CHOKE ADJUSTMENT (SABB 1973)

OVERFLOW VALVE ADJUSTMENT

1) Run engine at idle speed and check that overflow valve is closed. If it is not possible to determine if the valve is closed at this point, turn the adjustment screw a few revolutions counterclockwise. Readjust the engine speed to idle.

2) Open the overflow valve completely by turning the adjustment screw clockwise until the engine speed ceases to increase (1500-1800 RPM). Close valve using the adjustment screw until overflow valve just closes. Engine should now have returned to normal idle speed. An additional ½ to ¾ turn is necessary as the final adjustment.

3) To check the overflow valve adjustment; accelerate engine to 3,000 RPM and release throttle, engine speed should return to idle after a short lag.

OVERHAUL

DISASSEMBLY

1) Take off vacuum chamber and take out spring. Remove piston and diaphragm. Undo the locking screw and take out fuel needle. Remove diaphragm from piston by removing locking screws, and plastic and metal washers.

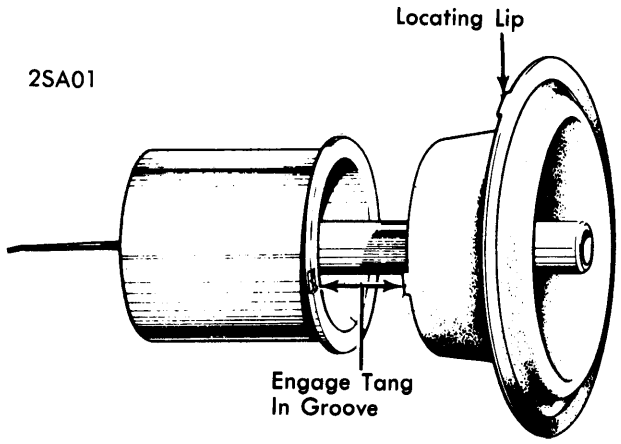
2) Carefully disengage float spindle from bridge and remove float. Unscrew and remove jet retainer with adjusting screw, jet, spring, bushings, and washer. Save "O" ring. Remove float valve and washer; then remove choke mechanism.

CLEANING

Use compressed air to clean holes in valve plate of choke mechanism. Check diaphragm for damage. Check fuel needle for wear, if bent or worn, replace. Check that choke plate and matching surface are free from scratches.

ASSEMBLY

1) Mount diaphragm on vacuum piston so that locating lip (see illustration) engages corresponding recess in piston and inner edge fits easily into matching groove of piston. Place plastic and metal washers carefully in position. Line up screw holes with those in piston and diaphragm. Without twisting diaphragm, tighten screws. *NOTE — If diaphragm is so extended that it will not fit into piston; replace it.*



FITTING THE DIAPHRAGM

2) Install self centering needle so that its plastic washer is flush with lower surface of vacuum piston (see illustration). Install piston complete with diaphragm and spring in carburetor body. *NOTE — Make sure that outer lip of diaphragm engages matching recess in housing.*

3) Insert adjusting screw and new "O" ring in jet retainer. Fit new "O" ring on jet retainer and place spring, guide bushing, "O" ring, and aluminum washer on jet and install complete assembly in carburetor housing. Screw in adjusting screw until the top of jet touches piston with piston in its lowest position. Back off adjusting screw 2 3/4 turns. This is basic setting.

4) Mount float with spindle. Flat side of float faces away from carburetor housing. Check float level. Correct level is

STROMBERG CD TYPE 1-BARREL (Cont.)

0.63 to 0.71 above edge of carburetor housing (see illustration). Place float chamber cover on carburetor until it contacts "O" ring. Insert screws and give them a few turns. Push down float cover until it butts firmly, and tighten screws.

5) Mount choke mechanism, and be sure calibrated holes face cam plate.

TROUBLE SHOOTING

1) Incorrect fuel level caused by maladjustment of floats or worn or dirty needle valves. Check float level. Wash needle valve in clean gas, replace valve if worn.

2) Piston sticking. Check free movement of spring loaded metering valve needle. Clean piston rod and guide. Lubricate rod and guide with a few drops of oil.

3) Metering needle incorrectly fitted. Check that shoulder of needle is flush with face of piston. Check that correct needle is fitted. Check that needle housing has not been distorted by over-tightening of screws.

4) Partially or fully obstructed diaphragm ventilation holes. Check air cleaner element and casing are correctly fitted, and that carburetor air horn gaskets are not causing obstruction.

5) Diaphragm incorrectly fitted or damaged. Check location with vacuum chamber cover removed. Two depression holes at base of piston should be in line with and towards throttle spindle. Replace diaphragm if damaged.

6) Throttles not synchronized. Reset correctly using a balance meter.

7) Hesitation or Flat Spot. Damper inoperative. Check the oil level, if necessary top off with light engine oil. Check to see that piston return spring has not been omitted.