

WEBER **CARBURETTORS**

**Range Rover 3.5 /
Rover 3.5 SD1**
3500cc - 1970-87
Kit No. 17900238
Replaces Twin SU / Stromberg

PRELIMINARY CHECKS

- Ensure that before commencing installation of this kit the engine is in a good serviceable condition in respect of the following items :-
 - Cylinder compression pressure / engine blow-by.
 - Ignition timing (initial setting, mechanical and vacuum advance function).
 - Ignition system (points condition and setting (dwell), coil Kv output, H.T. leads and spark plug condition).
- Check parts list to ensure all parts are present and correct.
- The inlet manifold supplied in the kit is of high quality manufacture. It is recommended however that all the internal passages and threaded holes are inspected to ensure that there are no obstructions or particles present.
- During the course of the installation, examine the condition of the water hoses and replace where necessary. Ensure suitable inhibitor / antifreeze is used when refilling the cooling system.
- It will be necessary to use a suitable silicon based sealant and thread sealer during the installation of this kit.

DISCONNECT THE BATTERY EARTH TERMINAL

AIR INTAKE REMOVAL

- Remove the two aluminium elbows connecting the air cleaner to each carburettor.
- Disconnect the two small vacuum pipes from the connection to the temperature switch located on the air filter.
- Remove the hot air intake ducting hose and retaining bracket, as they are no longer required.
- Disconnect and remove the hot / cold air change over box located above the inlet manifold.
- Disconnect the pipes leading to the air cleaner from the pulse air valves located above each exhaust manifold (*where fitted*).
- Disconnect from the engine breather filters located above each rocker cover the hoses leading to each of the carburettors
- Disconnect the engine crankcase breather pipe leading from the underside of the air cleaner assembly at the connection to the steel pipe at the rear of the crankcase.
- Lift the air cleaner assembly off the locating dowels.

WATER HOSE DISCONNECTION

- Allow the engine to cool then carefully release any remaining pressure from the cooling system, by momentarily releasing the radiator expansion bottle cap.
- Drain the cooling system by disconnecting the radiator bottom hose at it's connection to the water pump. Alternatively, remove one of the cylinder block drain plugs located behind the exhaust manifolds.
- Disconnect and remove the top hose leading from the radiator to the thermostat housing.
- Locate the small bore water hose leading from the radiator to the inlet manifold, carburettor mounting post. Cut this pipe approximately 2" / 50mm from the radiator. Blank the hose off using the aluminium plug (1) and clip (2), provided.
- Disconnect the heater outlet hose leading to the steel hose located beneath the inlet manifold, from the upper hose connection on the bulkhead.
- Disconnect the heater inlet hose leading to the rear of the inlet manifold, from the lower hose connection on the bulkhead.
- Disconnect the thermostat by-pass hose and the heater return hose connections from the water pump.
- For vehicles fitted with automatic choke.**
Disconnect the water supply and return hoses from the carburettor automatic choke housings.

VACUUM PIPEWORK DISCONNECTION

- Disconnect the vacuum advance pipe from it's connection to the distributor diaphragm.
- For vehicles fitted with vacuum retard.**
Disconnect the vacuum retard pipe from the distributor diaphragm. Disconnect and remove the bracket which retains the distributor vacuum retard pipe fuel trap from the inlet manifold, the earth wire which connects to this bracket (*where fitted*) must be relocated to one of the rocker cover retaining screws.
- Disconnect the brake servo pipe from the connection to the inlet manifold.

FUEL LINE DISCONNECTION

- Range Rover**
Remove the plastic fuel supply line from the steel pipe connection on the remote fuel filter, located on the inner wing.
SD1 saloon
Remove the fuel supply line from connection on the fuel filter and securing bracket.
- Cut the fuel return line (plastic pipe) as close to the carburettor connection (*where fitted*).

MANUAL CHOKE CABLE DISCONNECTION

- Slacken the inner cable clamp screw on the carburettor actuating lever.
- Release the spring clip and remove the outer cable from the anchor bracket.

ELECTRICAL DISCONNECTION

- Disconnect the wire from the temperature sender, located at the front on the manifold, behind the water pump.
- Disconnect the loom retaining clip from the air filter mounting post, located at the rear of the manifold.
- Disconnect the electrical feed wire at it's connection to the high temperature warning light switch, located on the top of the manifold (*certain model only*). The new manifold has no machined aperture to accept this switch. However, a cast boss is provided for those who wish to modify.

CARBURETTOR / MANIFOLD ASSEMBLY REMOVAL

- Undo the ten inlet manifold retaining bolts. Note the location of each of them, for reassemble into their correct positions.
- Lift the manifold upwards and clear of the engine.
- Clean the area surrounding the valley plate to avoid any contamination, when the plate is removed.
- Remove the valley plate clamps located at the front and rear of the engine. Lift the plate clear of the crankcase and remove the two rubber sealing strips.
- Thoroughly clean all mating surfaces. Failure to do so may result in an oil / water leak.
- Remove the following parts from the original manifold :-
 - The brake servo union.
 - The thermostat housing (with by-pass hose *on early models*) and the thermostat.
 - The rear water outlet flanged union with the heater hose and the throttle return spring bracket.
 - The steel water pipe with the heater hoses from the underside of the inlet manifold.
 - The water by-pass hose from the front of the manifold (*where fitted*).
 - The water temperature sender switch from the front of the manifold.
 - The high temperature warning switch from the top of the manifold (*certain model only*).

For automatic transmission vehicles.

- Remove the kick down actuating linkage from the rear of the manifold. By undoing the single retaining screw / air filter mounting post. the kick down actuating linkage will now slide from the end of the throttle control rod. Retain the kick down actuating linkage for the new installation.
- Clean the threads and gasket faces of the above components before reassembly.

MANIFOLD ASSEMBLY AND FITTING

- Fit the original rear water outlet union with heater hose, using the gasket (3) and the original screws to the new inlet manifold (4).
For automatic transmission vehicle only.
Refit the return spring anchor bracket to this flanged union.
- Fit the original water temperature sender switch using a suitable thread sealant to the threaded hole located adjacent to the thermostat housing in the new manifold (4).
- For those wishing to refit the high temperature warning light switch. The triangular cast boss located on top of the manifold, must be machined in the same manner as the original. This operation is not necessary as the original feed wire can be secured safely to the loom using one of the cable ties (5), provided.
N.B. This wire must be insulated from grounding.
- Refit the brake servo union to the threaded position on top of the manifold using a suitable thread sealant.

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- e. Fit the new valley sealing strips (6) to both ends of the crankcase, using a silicon based sealant. Position the new valley plate (7) over the sealing strips (6) and retain in place using the new valley plate clamps (8) and the original screws, do not fully tighten.

N.B. Ensure that the sealing strips (6) are still positioned properly.

f. Range Rover

Reconnect the original steel water pipe and hoses, between the heater outlet (upper) connection on the bulkhead and the union at the rear of the water pump nearest the distributor. Secure both connections using two of the hose clips (9), provided.

SD1 and other models

Should use the original connection on the casting for the radiator bottom hose.

g. For vehicles which had a water by-pass hose connection between the original inlet manifold and the water pump.

Refit the hose to the remaining connection at the rear of the water pump. Then fit the blanking plug (10) to the open end of the hose. Secure both connections using two of the hose clips (9), provided.

N.B. The by-pass connection is not necessary, provided that the connection to a through flow heater unit are maintained and there is no restriction in the heater circuit. Alternatively for applications which had a valve controlled water supply to the heater unit, it is recommended that the thermostat housing is replaced with Rover Part number 611333, which incorporates a by-pass connection.

h. For vehicles using a thermostat housing incorporating a by-pass connection.

Remove the blanking plug from the by-pass port in the inlet manifold adjacent to the thermostat position.

i. Fit the thermostat housing and thermostat to the new manifold (4) using the gasket (11), screws (12) and spring washers (13).

N.B. the small vent hole in the thermostat flange should be uppermost to prevent air locks.

j. Place the new inlet manifold (4) onto the valley plate and refit the ten original bolts.

N.B. The bolt second bolt in from the bulkhead on the left-hand side will require two spacers (14), provided, placed under the bolt head.

k. Tighten the manifold retaining bolts from the centre outwards to a torque of 25lbs/ft.

l. Tighten the valley plate clamps fully to stretch the plate into position.

j. Place the new inlet manifold (4) onto the valley plate and refit the ten original bolts.

WATER HOSE CONNECTION

a. Reconnect the heater inlet hose, leading from the union at the rear of the manifold to the remaining connection on the bulkhead. Secure using one of the clips (9), provided.

b. Refit the radiator top hose to the thermostat housing and secure using the original clip.

c. For vehicles fitted with a thermostat by-pass connection.

Connect the by-pass hose to the rear of the water pump. Secure using one of the clips (9), provided.

d. Refill the cooling system and check for leaks around the manifold / head gasket face and all of the hose connections.

ELECTRICAL CONNECTION

a. Reconnect the temperature sender wire to the switch at the front of the manifold.

CARBURETTOR FITTING

a. Fit the four new carburettor mounting studs (16) to the manifold and tighten using two of the nuts (17), locked together.

b. Fit the new carburettor with base gasket (18) to the manifold with the fuel inlet union towards the rear of the vehicle.

c. Fit the accelerator anchor bracket (19) to the carburettor mounting stud beneath the fuel inlet union.

d. Secure the carburettor and accelerator anchor bracket (19) in position using the four new nuts (17), plain washers (20) and spring washers (13), provided.

ACCELERATOR CABLE CONNECTION

a. Cut the accelerator inner cable as close to the nipple as possible.

b. For vehicles with a threaded outer cable adjuster.

Feed this adjuster through the cable hole in the accelerator anchor bracket (19) and retain it in the centre of adjustment.

b. For vehicles with a plain outer cable adjuster.

Fit the cable adjuster (21), provided, in the centre of adjustment, into the cable hole in the accelerator anchor bracket (19) and then feed through the inner cable.

c. Ensure that the choke is fully off then clamp the accelerator inner cable to the carburettor throttle lever using the swivel ferrule (22) and clamp screw (23), provided.

d. Fit the throttle return spring (24) between the accelerator anchor bracket (19) and the carburettor throttle lever 2mm hole.

e. Adjust the outer cable adjuster to give full throttle without stressing the linkage.

IMPORTANT:- Check the throttle operation before starting or road testing vehicle.

KICK DOWN CONNECTION

(Automatic transmission models only)

a. Fit the crank lever (25) to the underside of the accelerator anchor bracket (19), as shown in Fig.5. Secure using the pivot pin (26), wavy washer (27), plain washer (20) and the nyloc nut (28), provided. (Lubricate the pivot pin during assembly).

b. Connect the (short) link rod (29) between the carburettor throttle lever and the cranked lever (25) as shown (ball joint positioned downwards).

c. Assemble together the original kick down actuating linkage and the new lever / end pivot (30), as shown in Fig.5.

N.B. Do not tighten the grub screws.

d. Fit one of the pivot journals (31) onto the end of the kick down actuating lever assembly (30). Position the remaining pivot journal (31) on the opposite end of the shaft, then fit to the mounting bracket (15) on the inlet manifold as shown. Secure both pivot journals (31) using the two M8 hex screws and spring washers (13), provided.

e. Connect the kick down rod leading from the gearbox to the original kick down actuating lever, using the new M6 washer (33) and split pin (34), provided.

N.B. Grease the contact area.

f. Connect the (long) link rod (35) between the new kick down actuating lever (30) and the cranked lever (25), (ball joint positioned upwards).

g. Secure the new kick down actuating linkage (30) to the original section using the two grub screws. Ensure one grub screw engages with the slot in the original section.

h. Adjust the (long) link rod (35) with the carburettor in the idle position to remove any play between the link rod leading from the gearbox and the slotted actuating lever on the manifold.

N.B. This adjustment will have to be rechecked should the idle position change during the setting up procedure.

i. Recheck the throttle operation to ensure that the full range of movement is available and that the carburettor returns to idle. An extra spring (24) can be fitted between the kick down actuating lever (30) and the original spring mounting position on the manifold, as required.

IMPORTANT:- Check the throttle operation before starting or road testing vehicle.

VACUUM PIPEWORK CONNECTION

a. Connect the distributor vacuum advance diaphragm to the vacuum port at the front left-hand side of the carburettor, with one of the vacuum pipes (36), provided (elbow end to the distributor).

b. For vehicles without distributor vacuum retard.

Fit the blanking cap (37), provided, to the vacuum port at the front right-hand side of the carburettor.

b. For vehicles equipped with distributor vacuum retard.

Connect the elbow end of the remaining vacuum pipe (36), provided, to the back of the distributor diaphragm. Route the vacuum pipe over the radiator top hose to create a fuel trap to prevent drainage. Then connect to the vacuum port at the front right-hand side of the carburettor.

N.B. Both vacuum advance and retard pipes may be shortened as necessary to obtain the best routing.

c. Range Rover models with vacuum controlled differential lock.

Extend the original vacuum line with the remaining vacuum pipe (36). Connect into the distributor vacuum retard line with the 4mm 'T' connector (38), provided. Shorten the pipe as necessary and ensure it does not obstruct the throttle linkage.

d. Connect the brake servo pipe to the same position on the new manifold, secure it in place using one of the hose clips (9), provided.

FUEL LINE CONNECTION

a. Range Rover

Connect the new 1.2m fuel line (39) between the fuel filter outlet steel pipe located on the inner wing and the curved fuel inlet union on the new carburettor. Shorten as necessary to obtain the best routing around to the rear of the carburettor. Secure both connections using the hose clips (2), provided.

N.B. It is recommended that the fuel filter element is renewed.

a. SD1 saloon

Shorten the original fuel supply line to achieve a suitable fuel line route between the bulkhead and the fuel inlet union on the carburettor, utilizing the new 1.2m fuel line (39) cut to the required length. Secure both connections using the hose clips (2), provided.

b. For vehicles fitted with a fuel return line.

Cut the new 1.2m fuel line (39) approximately 50mm from the carburettor fuel union and insert the plastic 'T' connector (40), provided. Secure both connections using the hose clips (2), provided.

c. Connect the restricted side branch of the plastic 'T' connector (40) to the original fuel return line using the 6mm bore hose (41) and clips (42), provided.

d. SD1 saloon

Fit the fuel filter (43), provided, into the fuel line (39) and secure both connections using the hose clips (2), provided.

N.B. The fuel filter (43) must be fitted in the correct directional flow and in a position which does not obstruct the throttle linkage or breather system after the completion of the air filter fitting. The fuel line should be secured where possible (allowing for engine movement) using the large nylon tie wraps (44).

CHOKE CABLE CONNECTION

(For vehicles originally fitted with an automatic choke)

The new choke cable (45), provided, utilizes a threaded front bezel to assist installation. Where it is preferred to mount the choke cable into the fascia or centre console.

- Completely remove the inner choke cable and bezel from the outer cable.
- Place one of the choke mounting plates (46), provided, onto the cable mounting sleeve. Then fit into the mounting position from the rear of the fascia. Place the remaining mounting plate (46) onto the cable mounting sleeve and adjust the rear fixing nut so that approximately 4mm of thread protrudes through the fascia. Refit the bezel and secure the assembly with a 6mm allen key.
- Alternatively, the choke cable (45) may be mounted in a convenient position below the fascia using the mounting bracket (47) and screws (48), provided. Route the choke cable carefully behind the fascia and through the bulkhead, utilizing existing grommets where possible and avoiding tight bends.

CHOKE CABLE CONNECTION

(For all vehicles)

- Align the choke cable with the carburettor choke anchor bracket avoiding tight bends where possible. Cut the outer cable only to the correct length allowing for engine movement.
- Refit the inner cable where previously removed, take care to thread the inner cable through the carburettor actuating lever.
- Secure the inner and outer cables to the actuating lever and anchor bracket. Then cut off any excess inner cable, where possible.
- Check the choke for smooth operation and complete return.
N.B. It may be necessary to depress the throttle pedal slightly when changing the position of the choke.

ENGINE BREATHER PIPE INSTALLATION

(For vehicles not equipped with an exhaust air rail system and for owners who do not wish to reconnect this system) Fig.1 or Fig.2

- Blank off the outlets from both exhaust air rail check valves, located above each exhaust manifold. Using two short lengths of 19mm bore hose (49), blanking plug (10) and secure it in place using one of the hose clips (9), provided.
- Connect the 300mm length 8mm bore hose (50), provided, between the brass union at the rear of the carburettor and the crankcase ventilation pipe located at the rear of the crankcase valley Fig.1, or on the right-hand rocker cover Fig.2, shorten as necessary. Secure the connections using the hose clips (2), provided.
- For vehicles with two identical breather connections on both rocker covers.**
Cut a 127mm and a 280mm section of 13mm bore hose (51). Connect the 280mm section to the breather flame trap on the left-hand rocker cover and the 127mm section to the right-hand as shown in Fig.1.
- For vehicles with only one breather connection on the left-hand rocker cover.**
Cut and join together the 19mm bore hose (49), with the elbow connector (52), provided. Connect to the vehicle as shown in Fig.2.

ENGINE BREATHER / EXHAUST AIR RAIL CONNECTION

(For vehicles fitted with an exhaust air rail system)

- Connect the 300mm length 8mm bore hose (50), provided, between the brass union at the rear of the carburettor and the crankcase ventilation pipe located at the rear of the crankcase valley Fig.3, or on the right-hand rocker cover Fig.4, shorten as necessary. Secure the connections using the hose clips (2), provided.
- For vehicles with two identical breather connections on both rocker covers.**
Cut and join together the 19mm bore hose (49), with the two 'T' connectors (53) and (54), provided. Connect to the vehicle as shown in Fig.3.
- Cut and join together the 13mm bore hose (51), with the 'T' connector (55), provided. Then join to 'T' connector (54) to complete the combined breather and air rail system as shown in Fig.3. Connect to the vehicle and secure to the air rails with the two hose clips (9), provided.
- For vehicles with only one breather connection on the left-hand rocker cover.**
Cut and join together the 19mm bore hose (49), with the two 'T' connectors (53) and one elbow connector (52), provided. Connect to the vehicle as shown in Fig.4. Secure to the air rails with the two hose clips (9), provided.

AIR FILTER INSTALLATION

N.B. For those using the engine breather system shown in Fig.1. Remove the elbow union from the base of the air filter (push fit) and replace with the connector (56), provided.

- Place the air filter (ring) gasket (57) onto the carburettor top cover.
- Position the base section of the air filter (58) over the carburettor (in relation to the relevant breather system). Then connect the engine breather system to the filter base.
- Check the routing of all hoses / fuel lines to ensure that the air filter base does not constrict the hoses or cause obstruction of the throttle / kick down linkage.
- Fit the air filter element and top cover. Secure with the sleeve nut (59) and bevelled washer (60), provided.

STARTING PROCEDURE AND IDLE MIXTURE ADJUSTMENT

- Reconnect the battery earth terminal.
- Depress the throttle slightly. Pull the choke knob fully out. Turn the key to crank and start the engine. Then push in the choke knob to maintain approximately 1,200 RPM until normal working temperature has been attained. Then the choke knob can be fully returned.
- Set the engine idle speed to approximately 850 RPM by adjusting the idle stoop screw (located on the right-hand side of the carburettor).
- Adjust the idle mixture screws (located at the front of the carburettor), evenly to obtain the highest engine speed.
- Repeat the last two operations (c & d) as necessary, so that the highest engine speed, by adjusting the mixture screw is 850 RPM.
- The final adjustment should be made by turning the mixture screws approximately half a turn clockwise to weaken the mixture and so obtain an emission value of C.O. 1.5-2.0 % Vol. The engine should now stabilize at approximately 800 RPM.
- For vehicles fitted with an automatic gearbox only**
Recheck the kick down adjustment sequence.

IMPORTANT : In order to achieve the maximum benefit from your new WEBER carburettor, we advise that the condition of your engine be checked. Also a routine engine tune is recommended, all settings to the manufacturers specifications, and replace service items where necessary. Where varying engine conditions exist some individual calibration changes / adjustments may be necessary.

Should you experience any difficulties regarding the application of this kit please contact your nearest WEBER dealer.

As our policy is for continual improvement we reserve the right to alter specifications without prior notice.

Please complete and return the free post reply card provided with this kit.

CALIBRATION

Rover V8 3500cc (High & low compression)

	Primary	Secondary
Main jet	0.080	0.095
Needle	0.062/0.052	
Spring	Orange	
Float Height	11/32"	

SPARE PARTS				DRG.						DRG.	
PART NO.	DESCRIPTION	QTY.	NO.	PART NO.	DESCRIPTION	QTY.	NO.	PART NO.	DESCRIPTION	QTY.	NO.
99900452	6mm Alloy Plug	1	1	99902012	Pivot Journal	2*	31				
99900012	13mm Hose Clip	10	2	99900493	M8 x 20 long Hex. Screw	2*	32				
99900960	Rear Union Gasket	1	3	99900304	M6 Plain Washer	1*	33				
ME 1000	Inlet Manifold	1	4	32610002	Split Pin	1*	34				
99900057	Tie Wrap (150mm)	5	5	99902045	Linkage Rod (190mm)	1*	35				
99900958	Sealing Strip (Valley)	2	6	99900687	Vacuum Pipe	3	36				
99900959	Valley Plate (Gasket)	1	7	99901195	Blanking Cap	1	37				
99902023	Valley Plate Clamp	2	8	99902193	4-4-4 'T' Connector	1	38				
99901544	30mm Hose Clip	10	9	99900019	8mm x 1.2m Fuel Hose	1	39				
99900994	19mm Blanking Plug	3	10	99901415	8-6-8 'T' Connector (Restricted)	1	40				
99900942	Thermostat Gasket	1	11	99900283	Fuel Hose 6mm x 15cm	1	41				
99900373	5/16" UNC x 1" Screw	2	12	99900091	11mm Hose Clip	2	42				
99004506	5/16" Spring Washer	6/8*	13	99900062	RTF 1018 Fuel Filter	1	43				
99900331	Spacer	2	14	99900334	Tie Wrap (190mm)	4	44				
99902011	Kick Down Mounting Bracket	1*	15	99902034	Choke Cable	1	45				
99004507	5/16" UNC/UNF Stud	4	16	99900815	Choke Cable Mounting Plate	2	46				
99901016	5/16" UNF Nut	4	17	99900786	Choke Mounting Bracket	1	47				
	Carburettor Flange Gasket	1	18	99900059	No.10 x 5/8" Screw	3	48				
99902010	Accelerator Bracket	1	19	99901620	19mm x 1.5m Hose	1	49				
99900060	M8 Plain Washer	4/5*	20	99900099	8mm x 30cm Hose	1	50				
99901430	Cable Adjuster	1	21	99902037	13mm x 66cm Hose	1	51				
99900932	Swivel Ferrule	1	22	99900450	19mm Elbow Connector	2	52				
99900727	M6 x 16mm Clamp Screw	1	23	99902041	19-19-19 'T' Connector	2	53				
99901155	Return Spring	1/2*	24	99902040	19-13-19 'T' Connector	1	54				
99902033	Crank Lever	1*	25	99902039	13-13-13 'T' Connector	1	55				
99900693	Pivot Pin	1*	26	99902038	13-19-13 'T' Connector	1	56				
55530010	Wavy Washer	1*	27		Air Filter Ring Gasket	1	57				
99900495	M8 Nyloc Nut	1*	28	A1020	Air Filter	1	58				
99901644	Linkage Rod (92mm)	1*	29	99901868	M6 x 48mm Sleeve Nut	1	59				
99902014	Actuating Lever / Pivot	1*	30	99900480	M8 Bevelled Washer	1	60				

* - Parts Contained in 'Automatic gearbox fitting kit' part number LP8000

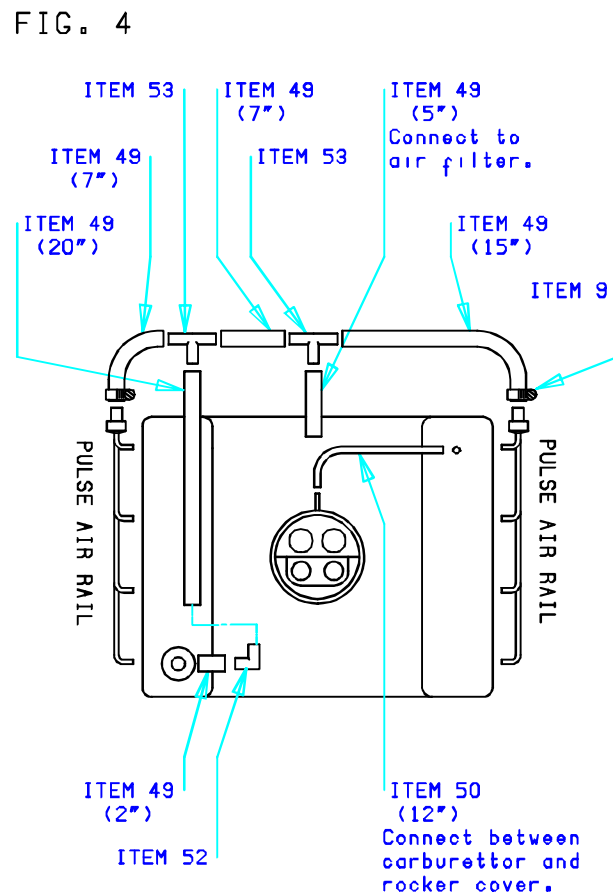
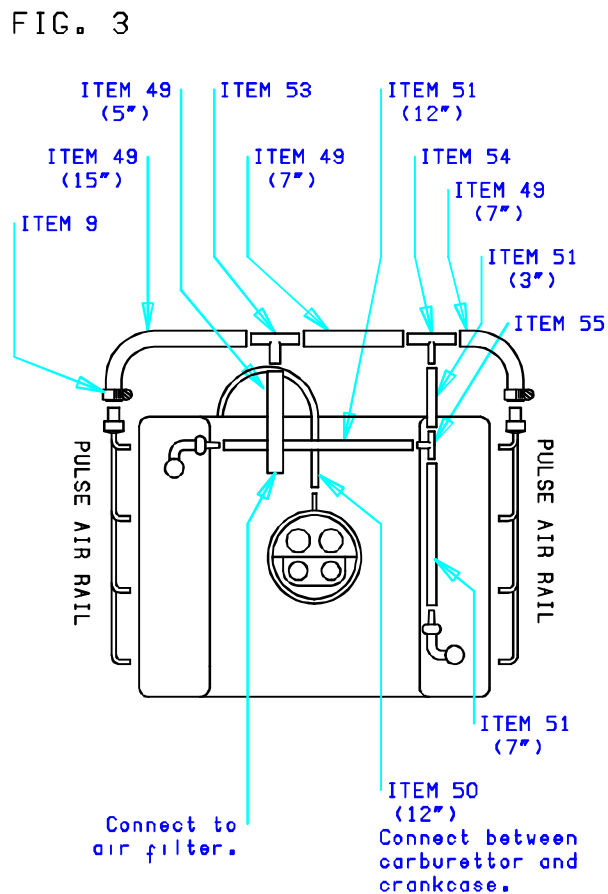
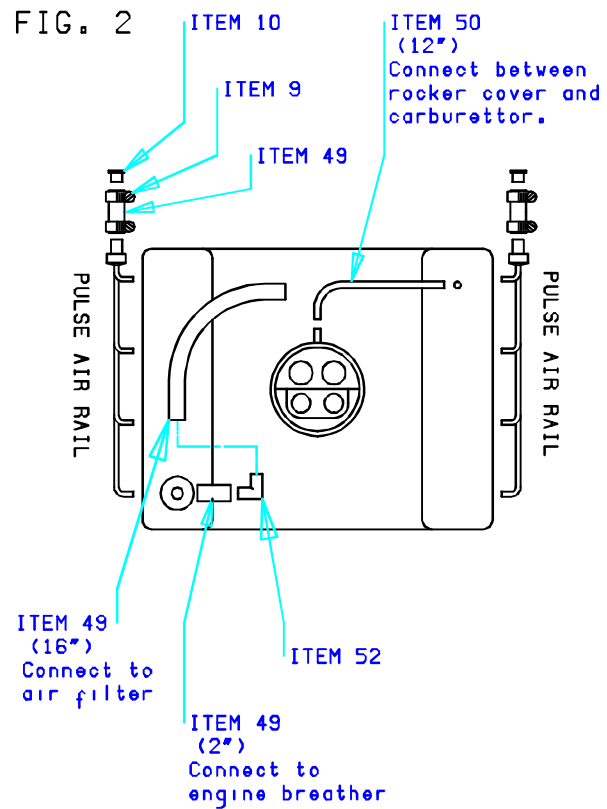
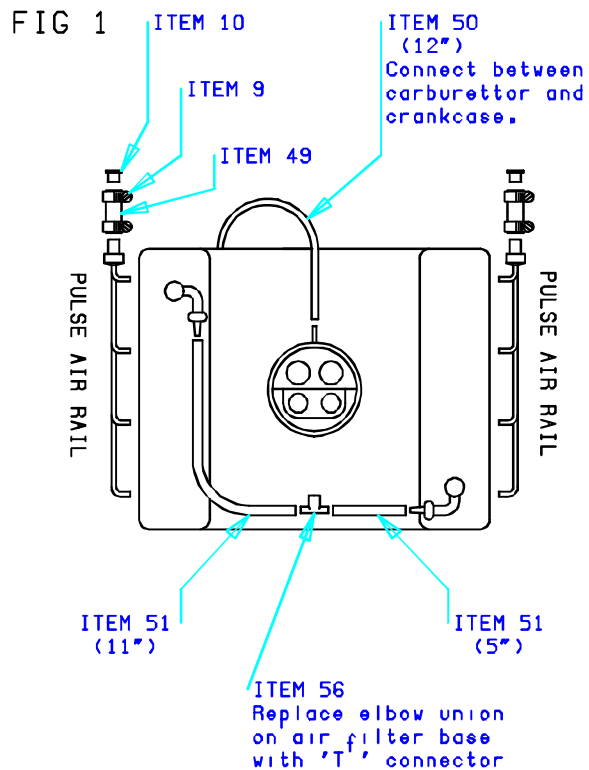
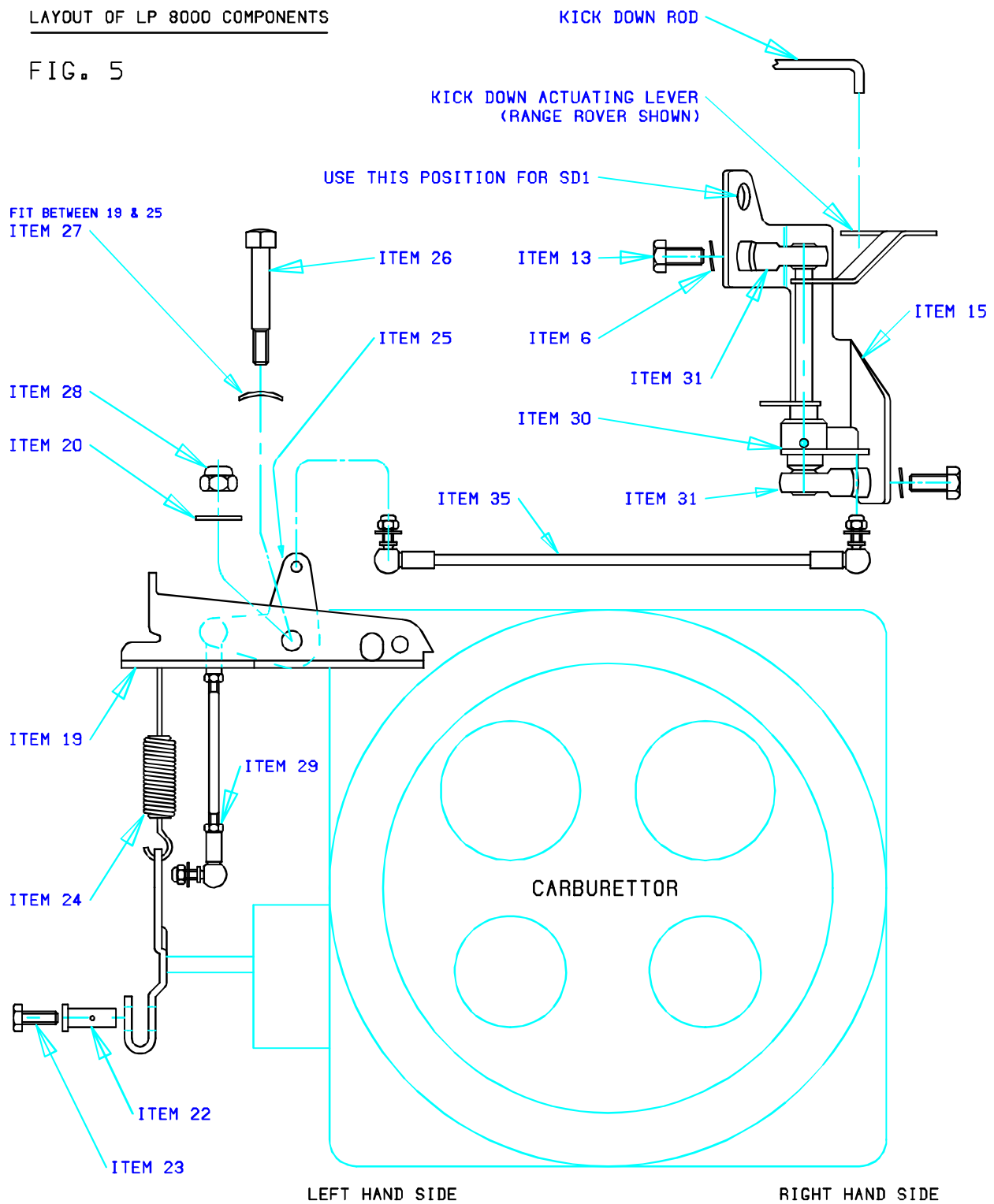
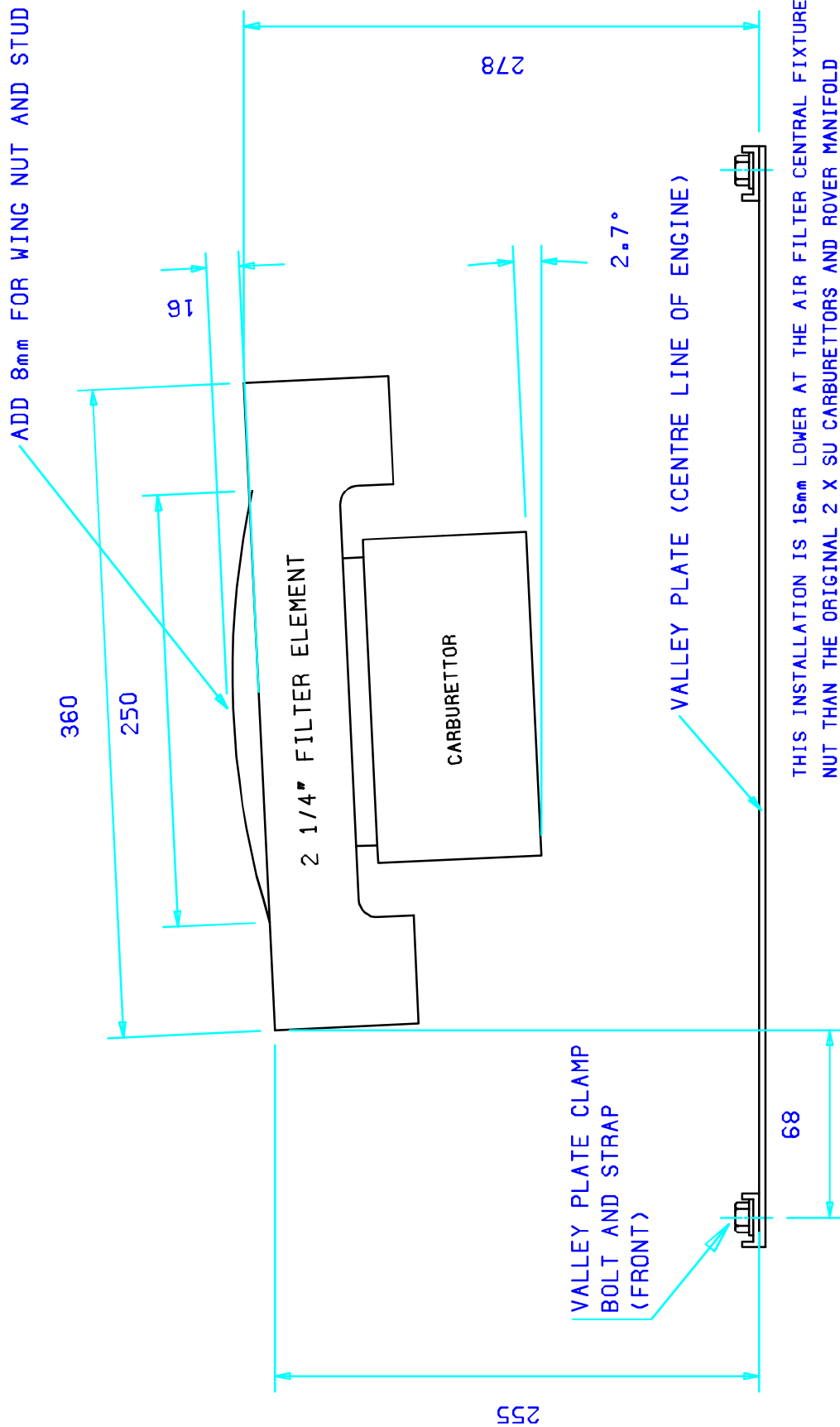


FIG. 5





THIS INSTALLATION IS 16mm LOWER AT THE AIR FILTER CENTRAL FIXTURE NUT THAN THE ORIGINAL 2 X SU CARBURETTORS AND ROVER MANIFOLD

THE CARBURETTOR FACE ON THE MANIFOLD CAN BE MACHINED UP TO A MAXIMUM OF 4° EXTRA TO OPTIMISE BONNET HEIGHT CLEARANCE.

ALL DIMENSIONS IN MILLIMETRES