State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-133-5
Relating to Exemptions under Section 27156
of the Vehicle Code

REDLINE, INC. A SUBSIDIARY OF IMPAC
REDLINE CARBURETOR EXCHANGE KIT NO. K8904
USING ONE (1) WEBER MODEL 32/36 DGEV33B1 CARBURETOR

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-5;

IT IS ORDERED AND RESOLVED: That the installation of the Redline Carburetor Exchange Kit No. K8904 using one (1) Weber model 32/36 DGEV33B1 carburetor has been found not to reduce the effectiveness of required motor vehicle pollution control devices and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1968 through 1972 model-year Volvo vehicles equipped with a B18, B20 or B20B engine.

The stock air cleaner and heated air intake may be removed when the Redline Kit No. K8904 is installed and replaced with an open type air cleaner.

This Executive Order is valid provided that installation instructions for this device will not recommend tuning the vehicle to specifications different from those submitted by the device manufacturer.

Changes made to the design or operating conditions of the device, as exempted by the Air Resources Board, that adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of this device using an identification other than that shown in this Executive Order or marketing of this device for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board. Exemption of a kit shall not be construed as an exemption to sell, offer for sale, or advertise any component of a kit as an individual device.

This Executive Order does not constitute any opinion as to the effect that the use of this device may have on any warranty either expressed or implied by the vehicle manufacturer.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE REDLINE CARBURETOR EXCHANGE KIT NO. K8904.

No claim of any kind, such as "Approved by Air Resources Board" may be made with respect to the action taken herein in any advertising or other oral or written communication.

Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

Section 43644 of the Health and Safety Code provides as follows:

> "43644. (a) No person shall install, sell, offer for sale, or advertise, or, except in an application to the state board for certification of a device, represent, any device as a motor vehicle pollution control device for use on any used motor vehicle unless that device has been certified by the state board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as a certified device which, in fact, is not a certified device. Any violation of this subdivision is a misdemeanor."

Any apparent violation of the conditions of this Executive Order will be submitted to the Attorney General of California for such action as he deems advisable.

Executed at El Monte, California, this 22nd day of October, 1985.

K. D. Drachand, Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF THE REDLINE CARBURETOR EXCHANGE KIT NO. K8904 USING ONE (1) MODEL 32/36 DGEV33B1 WEBER CARBURETOR FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13 OF THE CALIFORNIA ADMINISTRATIVE CODE

OCTOBER, 1985

EVALUATION OF THE REDLINE CARBURETOR EXCHANGE KIT NO. K8904 USING ONE (1) MODEL 32/36 DGEV33B1 WEBER CARBURETOR FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13 OF THE CALIFORNIA ADMINISTRATIVE CODE

by

Mobile Source Division
State of California
AIR RESOURCES BOARD
9528 Telstar Avenue
El Monte, CA 91731

SUMMARY

Redline, Inc., a distributor of Italian made Weber carburetors, has applied for exemption from the prohibitions of Vehicle Code Section 27156 for the Redline Carburetor Exchange Kit No. K8904 using one (1) Weber model 32/36 DGEV33B1 carburetor.

The Redline Carburetor Exchange Kit replaces the original equipment S.U. HIF6, HS or HD 1-barrel carburetors or the original equipment Zenith-Stromberg 175-CD-2 1-barrel carburetors on 1968-72 model-year Volvo vehicles. The original equipment air cleaner is not retained in the Redline Kit installation. The Redline Carburetor Exchange Kit utilizes an open type air cleaner which the staff has determined does not increase evaporative emissions. An anti-dieseling solenoid is installed in the idle circuit of the Weber carburetor to prevent the engine from running on after the engine has been shut off.

Comparative exhaust emission tests demonstrate that the aftermarket Redline Carburetor Exchange Kit No. K8904 using one Weber model 32/36 DGEV33B1 carburetor does not adversely affect emissions. Based on the results of the tests and the evaluation of the Redline Carburetor Exchange Kit, the staff recommends that the exemption be granted as requested for the 1968-72 model-year Volvo vehicles equipped with B18, B20 or B20B engines.

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EVALUATION OF THE REDLINE CARBURETOR EXCHANGE KIT NO. K8904 USING MODEL 32/36 DGEV33B1 WEBER CARBURETOR FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13 OF THE CALIFORNIA ADMINISTRATIVE CODE

I. INTRODUCTION

Redline, Inc. of Torrance, California, a subsidiary of Imported Parts and Accessories Corporation (IMPAC), is a distributor of Italian made Weber carburetors. The company has applied for exemption from the prohibitions of Vehicle Code Section 27156 for a Carburetor Exchange Kit designated as Redline Kit No. K8904 utilizing one (1) Weber model 32/36 DGEV33B1 carburetor. The Carburetor Exchange Kit is designed to replace the two (2) original equipment manufacturer (OEM) constant velocity carburetors as found on 1968-1972 model-year Volvo vehicles equipped with B18, B20 or B20B engines.

This report describes the evaluation of the Redline Carburetor Exchange Kit and the findings.

II. CONCLUSION

Comparative exhaust emission data and other information submitted by the applicant demonstrated that the Redline kit using one (1) Weber model 32/36 DGEV33B1 carburetor meets the Air Resources Board (ARB) requirements for exemption from the prohibitions of Vehicle Code Section 27156.

III. RECOMMENDATION

Based on the submitted comparative data of the Redline Carburetor Exchange Kit, the staff recommends that Redline, Inc. be granted exemption from the prohibitions of Vehicle Code Section 27156 for the Redline Carburetor Exchange Kit No. K8904 using one (1) model 32/36 DGEV33B1 Weber carburetor for 1968-72 model-year Volvo vehicles equipped with B18, B20 or B20B engines.

IV. DEVICE DESCRIPTION

The Redline Carburetor Exchange Kit No. K8904 uses one (1) Weber model 32/36 DGEV33B1 carburetor to replace the two (2) OEM constant velocity carburetors. The OEM carburetors are of the single barrel sidedraft design; the venturi area is automatically changed according to engine air intake. The amount of fuel passing through the main jet is governed by a tapered needle which moves proportional to the engine air intake. A choke valve and auxiliary nozzle are used for cold starting. Main components of the carburetor consist of: a float chamber, suction chamber, suction piston, piston damper, metering needle and jet, throttle valve body, choke valve and auxiliary nozzle (See Appendix A).

The Weber 32/36 DGEV33B1 carburetor is a progressive two-barrel downdraft design (see Appendix A). The Weber carburetor uses a mechanically-operated secondary which starts to open after the primary throttle opens approximately 68 percent. A diaphragm type accelerator pump is actuated by throttle movement and injects fuel into the primary barrel. The Weber is fitted with an anti-dieseling valve in the idle circuit which shuts off the fuel supply to the idle circuit whenever the ignition is switched off. The addition of this anti-dieseling valve upgrades the emission control of the Volvo vehicles since the OEM carburetors were not equipped with such a device. The calibration of the Weber carburetor is included in Appendix B.

The DGEV model Weber carburetor is fitted with an electric choke which is more precise and consistent than the manual choke used on the OEM carburetors.

Included in the Redline kit is the Weber carburetor, intake manifold, air cleaner, throttle linkage, and all necessary hoses, clamps and fasteners needed to install the Weber carburetor correctly.

V. EVALUATION PROGRAM

The applicant performed comparative CVS-75 exhaust emission tests at Import Certification Laboratories in Anaheim, California. A 1970 Volvo equipped with a B20 engine and 4-speed manual transmission was used. The baseline test was performed with the OEM carburetors. A representative production Redline Kit No. K8904 was used for the comparative testing. The results of those tests are in Table 1.

Table 1

Condition	Exhaust Emissions gm/mi HC	CO	NOx	Fuel Economy City mi/gal
Baseline	4.5	53.3	2.3	17.8
Redline Kit	3.9	55.4	1.9	17.8

A 1970 model-year vehicle was used as the test vehicle. It would be expected that vehicles of previous model-years would have the same degree of performance/emissions impact as the vehicle tested when using the same Redline Kit.

The applicant performed comparative evaporative emissions testing to demonstrate that the open-element air cleaner does not increase the evaporative emissions from the Volvo vehicles. The same 1970 Volvo was tested using the Sealed Housing Evaporative Determination (SHED) procedures. The results of these tests are shown in Table 2.

Table 2

Evaporative Emission Test Data

Condition	SHED Evaporative Emissions gm/test
Baseline	12.2
Redline Kit No. K8904	6.0

VI. DISCUSSION

The applicant's submitted comparative emissions test data are acceptable. The comparative data show that the HC and NOx emissions are below the baseline values. The change in carbon monoxide emissions is within the limits of test variability. The evaporative emissions decreased by more than 50%, as compared to the baseline, with the Weber carbuetor and open type air cleaner installed.

The kit provides the necessary components and installation instructions to allow the average mechanic to connect the OEM emission controls to the new intake manifold and carburetor so that they function properly.

This kit offers an economical alternative to the repair or replacement of the OEM constant velocity carburetors. Since the Volvo vehicles are equipped with dual carburetors which require synchronization (an adjustment/balancing procedure which requires special tools and a qualified mechanic) on a regular basis while the single Weber does not, the vehicles will stay in tune longer with the Weber carburetor.

INSTALLATION INSTRUCTIONS

WEBER CARBURETORS

READ & UNDERSTAND ALL STEPS OF THESE INSTRUCTIONS BEFORE BEGINNING THIS INSTALLATION. After unpacking, examine the carburetor and other components for shipping damage. If any damage is found, notify shipper/ supplier immediately.

VOLVO (1968 - 1972)

B18, B20 and B20B Engs (Carbureted)

For Kits No. K8904, 8906, 52-59305

Using (1) Weber 32/36 DGEV-33B1

TOOLS AND EQUIPMENT NEEDED:

Combination, box or open end wrenches (metric)
Socket set with 12 mm socket
Screwdriver (regular and Phillips)
Pliers
Gasket Scraper
Rags
Cleaning Solvent
Knife

PARTS SUPPLIED WITH INSTALLATION KIT

1 - Hardware Kit
1 - Intake Manifold
1 - Weber 32/36 DGEV-33B1 Carburetor
1 - Air Filter Assembly

Note: A new fuel filter should be installed with this kit.

TUNE-UP SPECIFICATIONS

All tune-up specifications for the Weber Carburetor remain the same as those specified by the Factory, for the original unit. Emissions tune-up should be carried out by a suitably qualified Dealer or Independent garage, using infrared gas analyzing equipment.

NOTE: Late model vehicles fitted with Emission Control Systems have many vacuum lines and electrical connections in their fuel systems. It is essential when dismantling, that disconnected lines be identified with a corresponding number tag or label system. To establish function, locate and identify the source of each line.

1. Remove the vehicle's gas cap.
2. Disconnect the battery.
3. **CAUTION:** Engine should be cold before performing this step. Drain the engine coolant from the radiator into a suitable container.
4. Remove the stock air filter and attached hoses. (**Note:** Identify each hose for proper re-assembly later.)
5. Disconnect the ignition advance vacuum line, from the bottom of the front carburetor. Disconnect the valve cover breather hose and brake assist vacuum hose from the intake manifold. Remove the vapor cannister hose from the base of the front carburetor. Disconnect the fuel line at the fuel 'Tee' between the carbs.
6. Remove the stock accelerator linkage from the bushing in the firewall to the carburetors. Disconnect the choke cable.

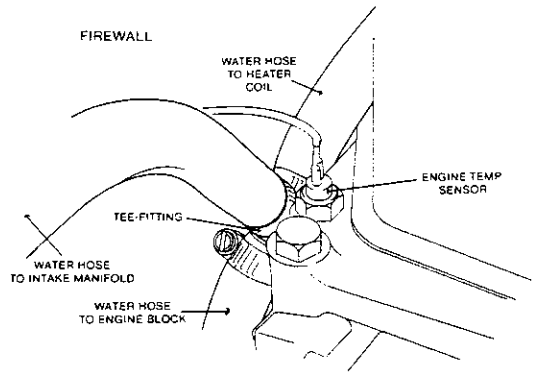


FIG. 4

11. Remove the small water chamber cover and gasket located below the thermostat housing and replace with the water outlet fitting and new gasket supplied in the kit. **Fig. 5**

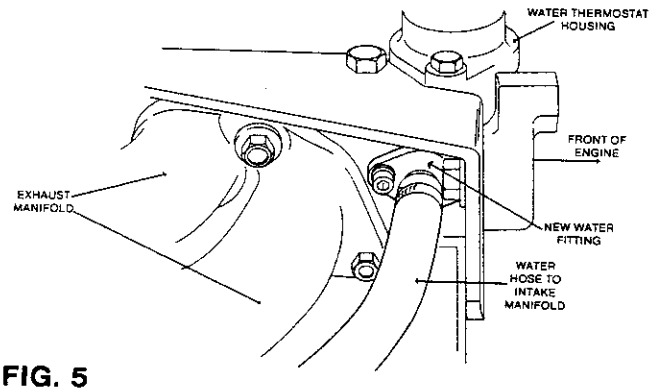


FIG. 5

12. Clean the Cylinder Head manifold flange surface thoroughly taking care to **PREVENT FOREIGN MATTER FROM ENTERING THE INTAKE AND EXHAUST PORTS.**

13. Install the modified exhaust manifold using the new gasket supplied and the original nuts and washers. Reconnect the exhaust pipe using the new gasket supplied and the original nuts.

14. Install the two water fittings supplied in the kit in the water passage of new intake manifold using sealant to prevent leakage. Install the ⅛ inch pipe fitting supplied, in the tapped hole immediately above the water chamber. **Fig. 6** Install the two stock vacuum fittings, saved from Step 8, in the two ports located on the engine side of the intake manifold. **Fig. 7 THE FITTING, WITH THE RESTRICTION IN IT MUST BE INSTALLED IN THE PORT CLOSER TO FIREWALL.**

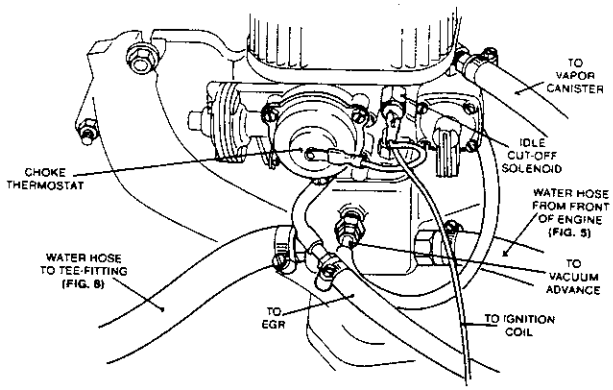


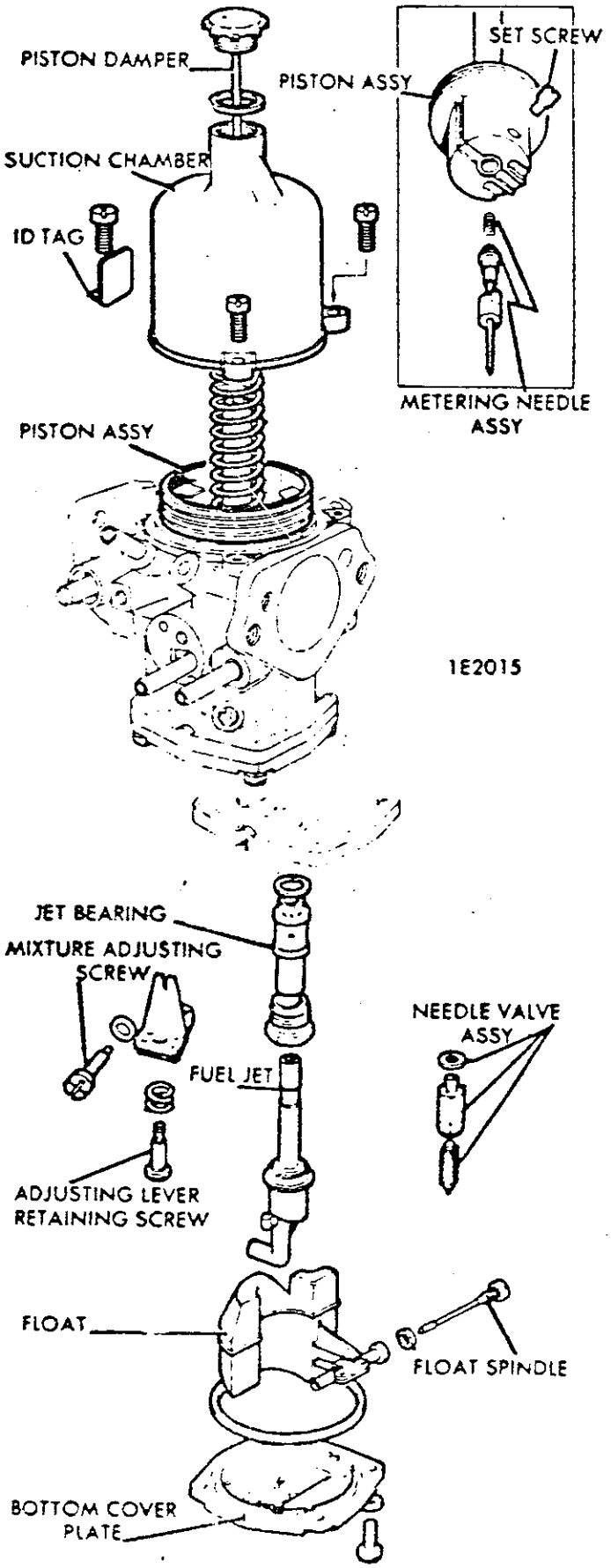
FIG. 6

15. Install the four carburetor studs supplied, into the new intake manifold using the Loctite supplied. Thread the 5/16-24 jam nut supplied, onto the rod end supplied, and screw the rod end into the tapped boss on the upper sider of the manifold casting as far as possible and lock it in place with the jam nut so that the hole is in a fore-aft direction.

16. Install the new intake manifold on the engine. **THE REAR OF THE THROTTLE ROD MUST IN INSERTED IN THE BUSHING IN THE FIREWALL AT THE SAME TIME THAT THE INTAKE MANIFOLD IS INSTALLED.** Use the original nuts and washers and take care to reinstall the bracket which supports the rear end of the heater water line.

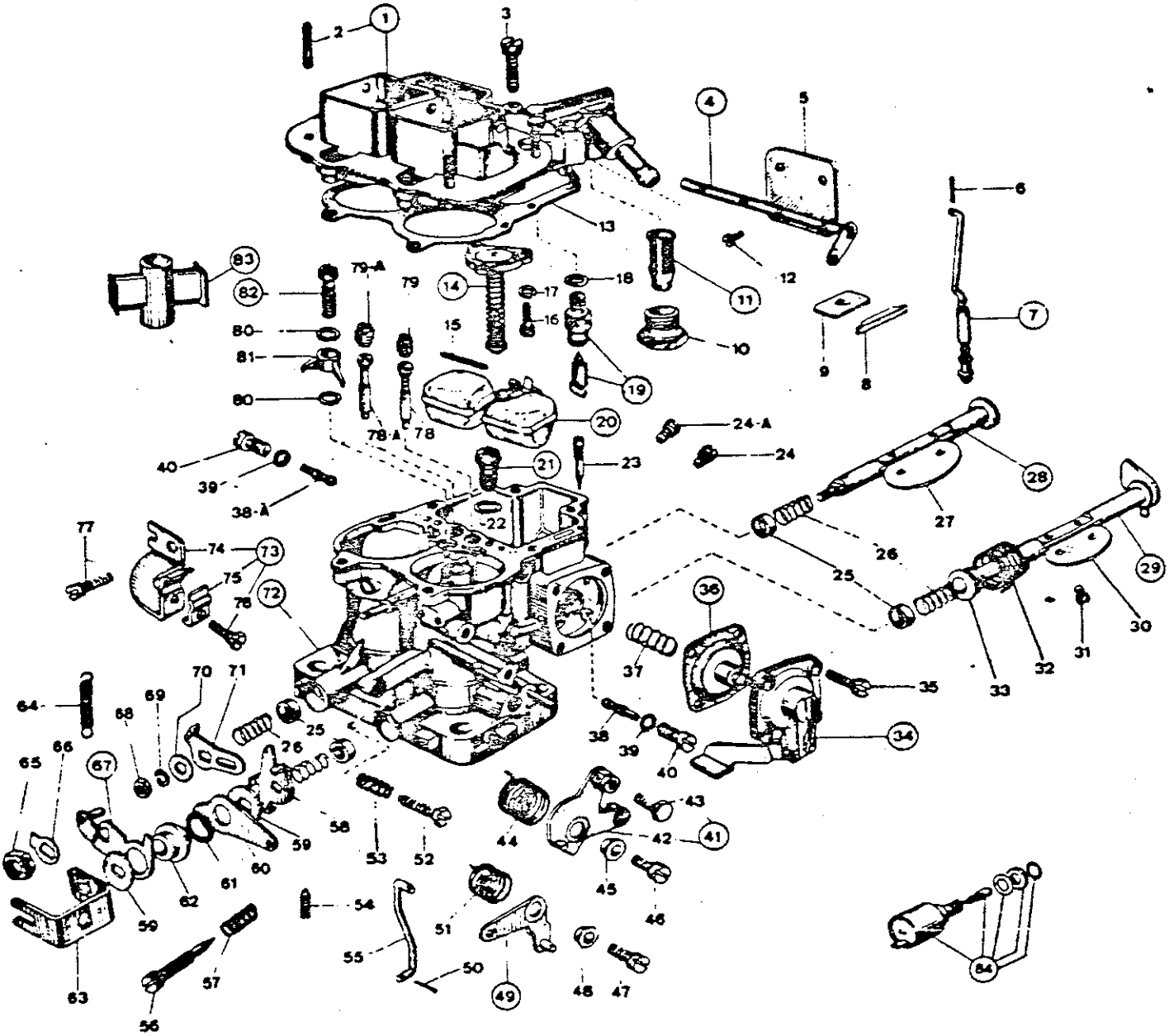
17. Install the Weber carburetor using the gasket and four nuts and washers, supplied in the kit.

S.U. HIF TYPE 1-BARREL



S.U. HIF CARBURETOR DISASSEMBLY

TYPICAL VIEW 32/36 DGV



Stage of Development PROTO Date: 9-6-85

Prototype # 8906-1 Location of # See Pump Housing

Carburetor Model 32/36 DGEV (33B1) Part # 22680-172

Application: Model VOLVO Year 61-72 Month

NA-Not Applicable
AF - As Factory

Engine Size B18 - B20 Air Cond. - (Y) N

Transmission: (MT) AT

Calibrated Parts		Adjustments		
			Value	
Main venturi	26/27	Float levelling:		
Auxiliary venturi	3.5 / 3.5	with gasket (brass)	N/A	mm
Main jet	Prim - 140 Sec 135	with gasket (plastic)	N/A	mm
Air corrector jet	Prim - 165 Sec 180	without gasket (brass)	41 / 51	mm
Emulsion tube	F-50 Both	without gasket (plastic)	35 / 51	mm
Full power fuel bush	A F	from face to carburetor bowl	N/A	mm
Full power air bush	A F	Maximum float stroke	N/A	mm
Power valve spring	57804-097 P.n.			
Fuel enrichment bush	A F	Accelerating pump		
Air enrichment bush	A F	10 complete pump strokes		
Mixture enrichment tube/hole	A F	delivery 8.5 To 13.5		cm^3
Auxiliary venturi mixture enrichment bush	N/A	Throttle opening pump	N/A	
		stroke adjustment	N/A	mm

				Value
idle jet	65/Prim	50/Sec.	Main throttle plate adjustment	
idle air bush	175 / 70		1st throttle opening at start of 2nd one	A F mm
irreversibility hole	N/A			
idle mixture adjusting hole/bush	A F		Dash-pot	
idle mixture bush	N/A		Throttle opening at dash pot contact	N/A mm
Sonic idle air bush/hole	N/A			
By-pass idle air hole	N/A			
By-pass idle mixture hole	N/A		Manual starter	
Spark Advance hole	1.0 mm		Mechanical pull-down	mm
EGR.	1.0 mm	T_1	Fast idle	mm
	A F	T_1	Pneumatic pull-down	mm
	A F	T_2	Minimum pneumatic pull-down	mm
		$T_{\_}$	Max pneumatic pull-down (half	
		$T_{\_}$	choke)	mm
			Starter rod complete	P.n.
			Starter spring	P.n.
Progression slot	N/A		Automatic starter	
Throttle plate angle	78Ø		Starter plate clearance adjustment	1.0mm
Needle valve	200		Mechanical pull-down	As Factory
Fuel recycle hole	N/A		Fast idle on starter piston	
			Fast idle	
Pump jet	.50		Fast idle cam timing A F	(mm/step nr.)
Pump discharge	.30		Pull-down lever/modular clear.	mm
Inlet valve w/discharge pump	N/A		Minimum pneumatic pull-down	6 mm
Pneumatic pump jet	N/A		Maximum pneumatic pull-down	6.5 mm
umatic pump discharge	N/A		Fixed index mark	
Mechanical pump diaphragm	47407.048	P.n.	Moving index adjustment	