

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-133-15  
Relating to Exemptions under Section 27156  
of the Vehicle Code

REDLINE, INC., A SUBSIDIARY OF IMPAC  
REDLINE CARBURETOR CONVERSION KITS #K8256, #K8257 AND #K8201  
USING ONE (1) WEBER MODEL 32/36 DGAV 33B1

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 Conversion Kits #K8256, #K8257 and #K8201 using one (1) Weber 32/36 DGAV 33B1 carburetor have been found not to reduce the effectiveness of required motor vehicle pollution control devices and, therefore, are exempt from the prohibitions of Section 27156 of the Vehicle Code for the vehicles listed below:

<u>Year</u>	<u>Make</u>	<u>Model</u>	<u>Redline Kit No.</u>
1968-1974	Opel	Kadette, Manta, GT with coolant heated choke	K8256
1968-1974	Opel	Kadette, Manta, GT with electrically heated choke	K8257
1970-1974	Audi	100 Models, Fox	K8201

The following modifications to the exhaust emission control system are permitted:

- 1) The throttle positioner (dashpot), on vehicles so equipped, may be removed.
- 2) The vacuum hose routing may be changed as specified in the installation instructions.

All other original equipment emission control devices must be retained. The vehicle must be tuned to the vehicle manufacturer's specifications.

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 CONVERSION KITS #K8256, #K8257 AND #K8201.

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.

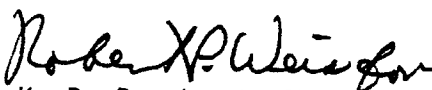
Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

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 26<sup>th</sup> day of August, 1987.

  
K. D. Drachand, Chief  
Mobile Source Division

State of California  
AIR RESOURCES BOARD

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EVALUATION OF THE REDLINE CARBURETOR CONVERSION KITS  
NO. K8256, NO. K8257 AND NO. K8201 USING ONE (1) 32/36  
DGAV 33B1 WEBER CARBURETOR FOR EXEMPTION FROM THE  
PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE  
WITH SECTION 2222, TITLE 13 OF THE  
CALIFORNIA ADMINISTRATIVE CODE

August, 1987

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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

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

## 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 Conversion Kits No. K8256, No. K8257 and No. K8201 using one (1) Weber model 32/36 DGAV 33B1 carburetor.

These Redline Carburetor Conversion Kits are designed to replace the Solex carburetors found on 1968-1974 Opel vehicles and 1970-1974 Audi vehicles.

Redline has previously demonstrated that the Weber 32/36 DGAV 33B1 carburetor does not cause an increase in emissions when used to replace the original equipment manufacturer (OEM) Solex carburetors found on 1972-1976 BMW vehicles. Executive Order D-133-6 was issued granting Redline an exemption for those BMW vehicles.

The Opel and Audi vehicles are equipped with the same model Solex carburetor as used on the BMW vehicles. The Opel and Audi vehicles have less complex emission control systems than the 1976 model-year BMW 2002 which was used as a test vehicle for the evaluation of the Redline carburetor conversion kit for the 1972-1976 BMW vehicles. Because of the previous demonstration of the Weber's ability to perform, with respect to emissions, on newer model-year BMW vehicles with engines of a similar design and with more complex emission control systems and data submitted by Redline which demonstrates the compatibility of the Weber carburetor with the auxiliary emission control devices used on these vehicles, the staff concludes that the Weber 32/36 DGAV 33B1 carburetor will not cause an emissions increase when used to replace the Solex carburetors used on the Opel and Audi vehicles. Therefore the staff recommends that the exemption be granted as requested for the following vehicle applications:

<u>Year(s)</u>	<u>Make</u>	<u>Vehicle Model</u>	<u>Redline Kit No.</u>
1968-1974	Opel	Kadette, Manta, GT with coolant heated choke	K8256
1968-1974	Opel	Kadette, Manta, GT with electrically heated choke	K8257
1970-1974	Audi	100 Models, Fox	K8201

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EVALUATION OF THE REDLINE CARBURETOR CONVERSION KITS NO. K8256, NO. K8257 AND NO. K8201 USING ONE (1) 32/36 DGAV 33B1 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 Compton, 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 three Carburetor Conversion Kits designated as Redline Kits No. K8256, No. K8257 and No. K8201 using one (1) Weber model 32/36 DGAV 33B1 carburetor to replace the original equipment manufacturer (OEM) Solex two-barrel carburetors found on the following vehicles:

<u>Year(s)</u>	<u>Make</u>	<u>Vehicle Model</u>	<u>Redline Kit No.</u>
1968-1974	Opel	Kadette, Manta, GT with coolant heated choke	K8256
1968-1974	Opel	Kadette, Manta, GT with electrically heated choke	K8257
1970-1974	Audi	100 Models, Fox	K8201

This report describes the evaluation of the Redline Carburetor Conversion Kits and the findings.

II. CONCLUSION

Based on a previous demonstration that the Weber 32/36 DGAV 33B1 does not cause an increase in emissions when used to replace the Solex carburetors on later model-year BMW vehicles with more complex emission control systems than the Opel or Audi and data submitted by Redline which demonstrates the compatibility of the Weber carburetor with the auxiliary emission control devices used on these vehicles, the staff concludes that the installation of the Weber 32/36 DGAV 33B1 carburetor will not have an adverse effect on emissions when installed on the vehicles described above.



### III. RECOMMENDATION

The staff recommends that Redline, Inc. be granted this exemption from the prohibitions of Vehicle Code Section 27156 for the Redline Carburetor Conversion Kits No. K8256, No. K8257 and No. K8201 for use on the vehicles described above and that Executive Order D-133-15 be issued.

### IV. DEVICE DESCRIPTION

The Redline Carburetor Conversion Kits No. K8256, No. K8257 and No. K8201 are similar in design. Each kit uses one (1) model 32/36 DGAV 33B1 Weber carburetor as an economical replacement for the OEM carburetors found on the vehicles described previously. Two kits are specified for the 1968-1974 Opel vehicles because two types of choke heaters are used on these vehicles. Kit No. K8256 is used on vehicles with coolant heated chokes and kit No. K8257 is used on vehicles with electrically heated chokes.

The Opel and Audi vehicles described previously are equipped with Solex carburetors. The Solex carburetor is of the progressive two-barrel design with a vacuum operated secondary barrel (See Appendix 1).

The Weber 32/36 DGAV 33B1 (Weber) is a progressive two-barrel downdraft carburetor which is similar in basic design to the Solex carburetor (see Appendix 2). The Weber utilizes a mechanically operated secondary barrel which begins to open when the primary barrel is open approximately 70 percent. It has provisions for vacuum operated emission control systems, including distributor vacuum advance/retard units, EGR and air injection control systems.

A variety of emission control devices are used on these vehicles. Some are integral to the OEM carburetor and others are external devices which either control specific functions of the OEM carburetor or are activated by

movement of the throttle. The installation of the Weber carburetor retains these devices or duplicates the functions of the devices in a different manner, however, the 1974 Opel vehicles utilize a throttle positioner (dashpot) system which is not retained when the Weber carburetor is installed.

The Redline Kits No. K8256, No. K8257 and No. K8201 come complete with a Weber DGAV carburetor, an air cleaner adaptor, all the hoses, gaskets and hardware necessary to install the Weber carburetor on the Opel or Audi vehicles. Installation instructions, which are included in every kit, show the kit installer how to properly install the Weber carburetor. Vacuum port diagrams, contained in the instructions, show the proper vacuum hose connections to the Weber carburetor (see Appendix 3). A facsimile of the identification labels is shown in Appendix 4. The Weber carburetor calibrations are shown in Appendix 5.

#### V. DEVICE EVALUATION

The evaluation of the Redline kits No. K8256, No. K8257 and No. K8201 consisted of an analysis of the submitted data, a study of the emission control systems used on the Opel and Audi vehicles and emissions tests performed on a 1976 BMW 2002.

Redline submitted an emissions system evaluation which shows which OEM systems can be reconnected to the Weber carburetor and function nearly the same and which systems must be disconnected. To demonstrate the Weber carburetor was compatible with the vacuum actuated emission control devices used on the Opel and Audi vehicles, Redline submitted carburetor flow bench data which compares the vacuum signal strength between the OEM Solex and the Weber for the vacuum advance diaphragm and the EGR valve (see Appendix 6).

While this data was generated on a dry flow bench which may not precisely duplicate the function of either carburetor on an actual engine or duplicate the function of either carburetor under transient conditions the staff concludes that its use for comparing the OEM and Weber carburetors is valuable. The staff further concludes that favorable results from this dry flow steady-state bench testing indicates favorable performance under actual operating conditions.

#### 68-74 Model Year Opel

Graph A-6.1 shows the dry flow bench depression of the OEM Solex carburetor for a 1974 Opel (Solex) and the Weber 32/36 DGAV 33BI (Weber) versus the throttle opening in degrees. Graph A-6.2 shows the vacuum signal strength versus spark advance in crankshaft degrees. From this it can be seen that the only area of interest on Graph A-6.3 is between 11.0 and 13.0 cm. Hg. Graph A-6.3 shows that the Weber signal is stronger than the Solex. At small throttle openings the Weber will provide full vacuum advance approximately 3 throttle plate degrees sooner than the Solex will provide full vacuum advance. At small throttle openings, which correspond to light loads and low vehicle speeds, the staff concludes that a slight change vacuum advance versus throttle angle will not have a significant effect on emissions. At large throttle openings the Weber will begin reducing vacuum advance approximately 12 throttle plate degrees later than the Solex will begin reducing vacuum advance. Therefore the Weber will provide for slightly more spark advance at larger throttle openings. At large throttle openings, which correspond to heavy loads and high engine and vehicle speeds the distributors' centrifugal advance mechanism is providing approximately 30° of spark advance. The Weber will provide for 5° additional spark advance which amounts to a 16% change in total spark advance. Based on previous evaluations

of other Weber carburetor conversion kits that modify the vacuum advance versus throttle angle curve in a similar manner and showed no increase in exhaust emissions when tested on a back-to-back CVS-75 (stock vs. modified) basis, the staff concludes that the change in spark advance due to the Weber carburetor will not significantly effect emissions from the Opel vehicles during typical urban driving conditions. Any differences in the two vacuum signal strength curves outside of the area of interest are irrelevant.

Graph A-6.4 shows the vacuum signal strength versus EGR flow. From this it can be seen that the only area of interest on Graph A-6.5 is between 9.0 and 25.0 cm. Hg. At small throttle openings the Weber signal matches the Solex. At large throttle openings the Weber signal is stronger than the Solex which will keep the EGR flow on longer than the Solex. This should theoretically slightly reduce emissions. Any differences in the two vacuum signal strength curves outside of the area of interest are irrelevant. Also submitted was a comparison of the automatic choke operation between the two carburetors which shows that they function nearly the same.

A study of the emission control systems shows that the 1968-1974 Opel vehicles have only one emission control component which is not compatible with the Weber carburetor. It is the throttle positioner or dashpot used on 1974 vehicles only. It is a device used to hold the throttle plate open slightly during deceleration to control hydrocarbon emissions.

Redline has previously demonstrated that the Weber DGAV series carburetors do not need an external device to control hydrocarbons on deceleration by performing emissions tests used for the evaluation of other Redline kits which required the removal of a similar throttle positioner device (see staff reports accompanying E.O. No's. D-133-6, D-133-7, D-133-10A, D-133-10B, D-133-12 and D-133-13).

### 70-74 Model Year Audi

Graph A-6.6 shows the dry flow bench depression of the OEM Solex carburetor for a 1974 Audi (Solex) and the Weber 32/36 DGAV 33B1 (Weber) versus the throttle opening in degrees. Graph A-6.7 shows the vacuum signal strength versus spark advance in crankshaft degrees. From this it can be seen that the only area of interest on Graph A-6.8 is between 10.0 and 15.0 cm. Hg. At small throttle openings the Weber will provide full vacuum advance approximately 3 throttle plate degrees later than the Solex will provide full vacuum advance. At small throttle openings, which correspond to light loads and low vehicle speeds, the staff concludes that a slight change vacuum advance versus throttle angle will not have a significant effect on emissions. At large throttle openings the Weber will begin reducing vacuum advance at the same throttle opening as the Solex, but reduces the vacuum advance at a slightly faster rate. This will cause the spark timing to be slightly retarded ( $5^{\circ}$ ) with respect to stock. Since the distributors' centrifugal advance mechanism is providing  $30^{\circ}$  of spark advance, at these throttle openings, the  $5^{\circ}$  change amounts to a 16% change in total spark advance. Based on previous evaluation of other Weber carburetor conversions that modify the vacuum advance versus throttle angle curve in a similar manner and showed no increase in exhaust emissions when tested on a back-to-back CVS-75 (stock vs. modified) basis, the staff concludes that the change in spark advance due to the Weber carburetor will not significantly effect emissions from the Audi vehicles during typical urban driving conditions. Any difference in the two vacuum signal strength curves outside of the area of interest are irrelevant. Some Audi vehicles also utilize a vacuum retard system. This system receives its signal from a manifold vacuum source and, therefore, is not affected by the Weber carburetor.

Graph A-6.9 shows the venturi vacuum signal of the Solex and the Weber. From this it can be seen that both carburetors produce nearly the same signal which should cause the EGR to function the same with the Weber installed.

A study of the emission control systems shows that the 1970-1974 Audi vehicles have no emission control components which are not compatible with the Weber carburetor. Also submitted was a comparison of the automatic choke operation between the two carburetors which shows that they function nearly the same.

Emissions tests performed on a 1976 BMW 2002 demonstrated that the replacement of the Solex DIDTA carburetor with the Weber DGAV carburetor did not have an adverse emissions effect. For details of this evaluation and the actual test results please refer to the May, 1986, staff report entitled "EVALUATION OF THE REDLINE CARBURETOR CONVERSION KIT NO. K8205 FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13 OF THE CALIFORNIA ADMINISTRATIVE CODE."

#### VI. DISCUSSION

The staff evaluation of the Redline carburetor conversion kits K8256, K8257 and K8201 revealed the following:

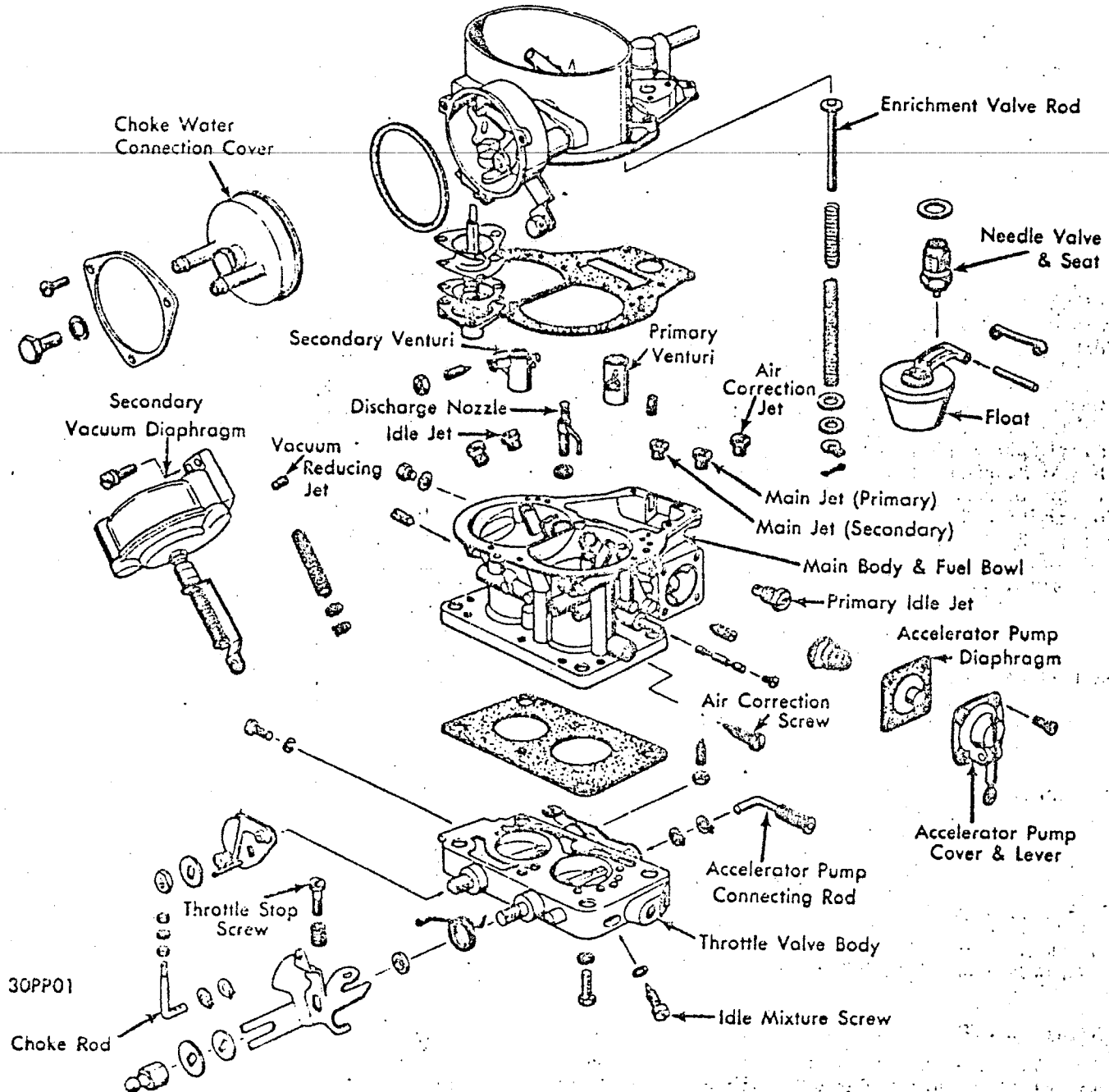
1. The Weber carburetor vacuum signal strength curves for vacuum advance and EGR are nearly the same as OEM.
2. It has been previously demonstrated that the disconnection of the throttle positioner when the Weber carburetor is installed does not cause an adverse emissions effect.
3. The emissions tests performed on a 1976 BMW 2002 showed no significant increase in emissions with the Weber carburetor installed.

4. The vehicles for which these carburetor kits are applicable to are at least 13 years old.

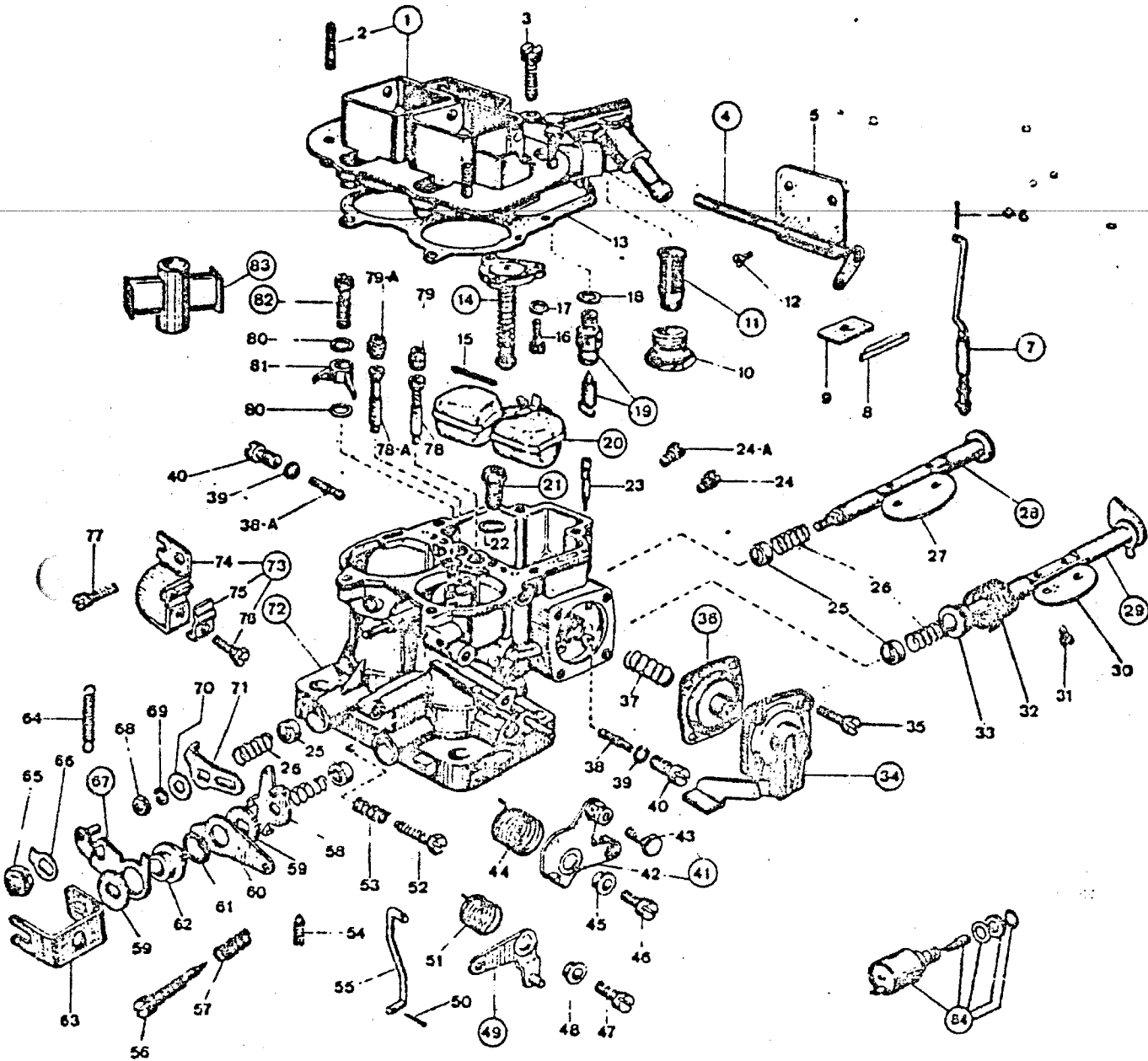
Based on the above points the staff has determined that the Redline carburetor conversion kit Nos. K8256, K8257 and K8201 cannot be classified as replacement parts but should be granted an exemption based on this engineering evaluation which has determined that the Weber carburetor will function nearly the same as OEM and therefore will not have an adverse effect on emissions.

The staff recommends that an exemption be granted and that Executive Order D-133-15 be issued.

SOLEX DIDTA 2-BARREL (Cont.)







CARBURETOR  
REDLINE-WEBER  
32/36 DGAV 33B1  
K 8201  
CARB E.O. No. D133-X

K8256/8257

Stage of Development 1Prototype # 22680 256

Location of # \_\_\_\_\_

Carburetor Model 32/36 DGAV 33B1Part # 22680 033BApplication \_\_\_\_\_ Model 1.9 L Opel Year 68-74 NA = Not Applicable  
AF = As FactoryEngine Size \_\_\_\_\_ Air Cond. - Yes \_\_\_\_\_ No X

Transmission

MT

AT

Calibrated Parts

Adjustments

Value

Main venturi	26/27	<u>Float levelling:</u>	
Auxillary venturi	3.5/3.5	with gasket (brass)	mm
Main jet	140/140	with gasket (plastic)	mm
Air corrector jet	160/170	without gasket (brass)	mm
Emulsion tube	F50/F50	without gasket (plastic)	35.25 mm
Full power fuel bush	100	from face to carburetor bowl	mm
Full power air bush		Maximum float stroke	51 mm
Power valve	P.n.		
Fuel enrichment bush	130	<u>Accelerating pump:</u>	
Air enrichment bush		10 complete pump strokes	
Mixture enrichment tube/hole	250	delivery	8.5-13.5 cm <sup>3</sup>
Auxillary venturi mixture enrichment bush		Throttle opening pump	
		Stroke adjustment	mm

Calibrated Parts (cont'd.)	Adjustments (cont'd.)	Value
idle jet 60/50	<u>Main throttle plate adjustment</u> 1st throttle opening at start of 2nd one	7 mm
idle air bush 170/70		
irreversibility hole	<u>Dash-pot</u> Throttle opening at dash-pot contact	mm
idle mixture adjusting hole/bush 160		
idle mixture bush		
Sonic idle air bush/hole	<u>Manual starter</u>	
<u>By-pass idle air hole</u> By-pass idle mixture hole		
Spark advance hole 1.00 ± .20		
Progression hole 100/120 T <sup>1</sup>	Mechanical pull-down	mm
80/120 T <sup>2</sup>	Fast idle	mm
T <sup>3</sup>	Pneumatic pull-down	mm
T <sup>4</sup>	Minimum pneumatic pull-down	mm
T <sup>5</sup>	Maximum pneumatic pull-down (half choke)	mm
Progression slot	Starter rod complete	P.n.
	Starter spring	P.n.
	<u>Automatic starter</u>	
Throttle plate angle 78/78	Starter plate clearance adj.	mm
Needle valve	Mechanical pull-down	7-9mm
Fuel recycle hole	Fast idle on starter piston	

## Calibrated Parts (cont'd.)

## Adjustments (cont'd.)

Value

Pump jet	50		Fast idle	1.0 - 1.1	
			Fast idle cam timing	2.25	
Pump discharge	30		Pull-down lever/modular clr.		mm
Inlet valve w/discharge pump			Minimum pneumatic pull-down	4 ± .5	mm
Pneumatic pump jet			Maximum pneumatic pull-down	6 ± .5	mm
Pneumatic pump discharge			Fixed index mark		
Mechanical pump diaphragm		47407.048 P.n.	Moving index adjustment		
Starter jet			Bimetal assembly	57804.079	P.n.
Starter air jet			Pull-down diaphragm spring	47600.141	P.n.
Gasket kit		P.n.	Starter spring		P.n.
Tune up kit		P.n.	Starter spring	47610.080	P.n.
Master repair kit		P.n.			

ADDITIONAL NOTES

Machine .100" off the end of the throttle shaft.

Date: 1/86

K8256

CHOKE COMPARISON NOTES

Vehicle Opel (WC) Date of Mfg 4/73 MOD \_\_\_\_\_  
Choke type H20 Stock Weber  
Time to pull off: 32 DIDTA  
Notes: 3m40s 3m10s

Mechanical Pull down clearance:  
Notes: 7.0 7mm

Primary opening @ fast idle:  
Notes: 1.5 1.2

Pull down lever clearance:  
Notes: N/A .5

Minimum pneumatic pull down:  
Notes: 2.7 6.5

Maximum pneumatic pull down:  
Notes: N/A 8

Choke bimetal Part No.:  
Notes: N/A N/A

Pull down diaphragm spring number:  
N/A N/A

Voltage requirement      V \_\_\_\_\_

Water fitting size 10mm 10mm

Stage of Development 1

Prototype # 22680 201

Location of # \_\_\_\_\_

Carburetor Model 32/36 DGAV 033B-1

Part # 22680 033B

Application \_\_\_\_\_ Model 100LS W Year 70-74

NA = Not Applicable  
AF = As Factory

Engine Size 1.8 Air Cond. - Yes X No \_\_\_\_\_

Transmission MT AT

Calibrated Parts		Adjustments	Value
Main venturi	26/27	<u>Float levelling:</u>	
Auxillary venturi	3.5/3.5	with gasket (brass)	mm
Main jet	140/140	with gasket (plastic)	mm
Air corrector jet	160/170	without gasket (brass)	mm
Emulsion tube	F50/F50	without gasket (plastic)	35.25 mm
Full power fuel bush	100	from face to carburetor bowl	mm
Full power air bush		Maximum float stroke	51 mm
Power valve	P.n.		
Fuel enrichment bush	130	<u>Accelerating pump:</u>	
Air enrichment bush		10 complete pump strokes	
Mixture enrichment tube/hole	250	delivery	8 - 13.5 cm <sup>3</sup>
Auxillary venturi mixture enrichment bush		Throttle opening pump	
		Stroke adjustment	mm

Calibrated Parts (cont'd.)

Adjustments (cont'd.)

Value

idle jet	60/50		<u>Main throttle plate adjustment</u> 1st throttle opening at start of 2nd one	7	mm
idle air bush	170/70				
irreversibility hole			<u>Dash-pot</u>		
idle mixture adjusting hole/bush	160				
idle mixture bush			Throttle opening at dash-pot contact		mm
Sonic idle air bush/hole					
<u>By-pass idle air hole</u>			<u>Manual starter</u>		
By-pass idle mixture hole					
Spark advance hole	1.00 ± .20		Mechanical pull-down		mm
Progression hole	100/120	T <sup>1</sup>	Fast idle		mm
	80/120	T <sup>2</sup>	Pneumatic pull-down		mm
		T <sup>3</sup>	Minimum pneumatic pull-down		mm
		T <sup>4</sup>	Maximum pneumatic pull-down (half choke)		mm
		T <sup>5</sup>	Starter rod complete		P.n.
			Starter spring		P.n.
Progression slot			<u>Automatic starter</u>		
Throttle plate angle	78/78		Starter plate clearance adj.		mm
Needle valve			Mechanical pull-down	7-9mm	
Fuel recycle hole			Fast idle on starter piston		



Calibrated Parts (cont'd.)

Adjustments (cont'd.)

Value

Pump jet 50	Fast idle 1.0 - 1.1	
	Fast idle cam timing 2.25	
Pump discharge 30	Pull-down lever/modular clr.	mm
Inlet valve w/discharge pump	Minimum pneumatic pull-down 4 ± .5	mm
Pneumatic pump jet	Maximum pneumatic pull-down 6 ± .5	mm
Pneumatic pump discharge	Fixed index mark	
Mechanical pump diaphragm 47407-048 P.n.	Moving index adjustment	
Starter jet	Bimetal assembly 57804.079	P.n.
Starter air jet	Pull-down diaphragm spring 47600.141	P.n.
Gasket kit P.n.	Starter spring	P.n.
Tune up kit P.n.	Starter spring 47610.080	P.n.
Master repair kit P.n.		

ADDITIONAL NOTES

Machine .100" off the end of the throttle shaft.

Date: 10/85

K8201  
CHOKE COMPARISON NOTES

Vehicle 100 LS Date of Mfg 8/71 MOD \_\_\_\_\_

Choke type \_\_\_\_\_ Stock Weber

Time to pull off: \_\_\_\_\_  
Notes: 32/35 TDID  
4m0s 2m15s

Mechanical Pull down clearance:  
Notes: 3.2 5mm

Primary opening @ fast idle:  
Notes: 1.64 1.2mm

Pull down lever clearance:  
Notes: N/A .5mm

Minimum pneumatic pull down:  
Notes: N/A 6mm

Maximum pneumatic pull down:  
Notes: N/A 8mm

Choke bimetal Part No.:  
Notes: N/A 57804.333

Pull down diaphragm spring number: \_\_\_\_\_

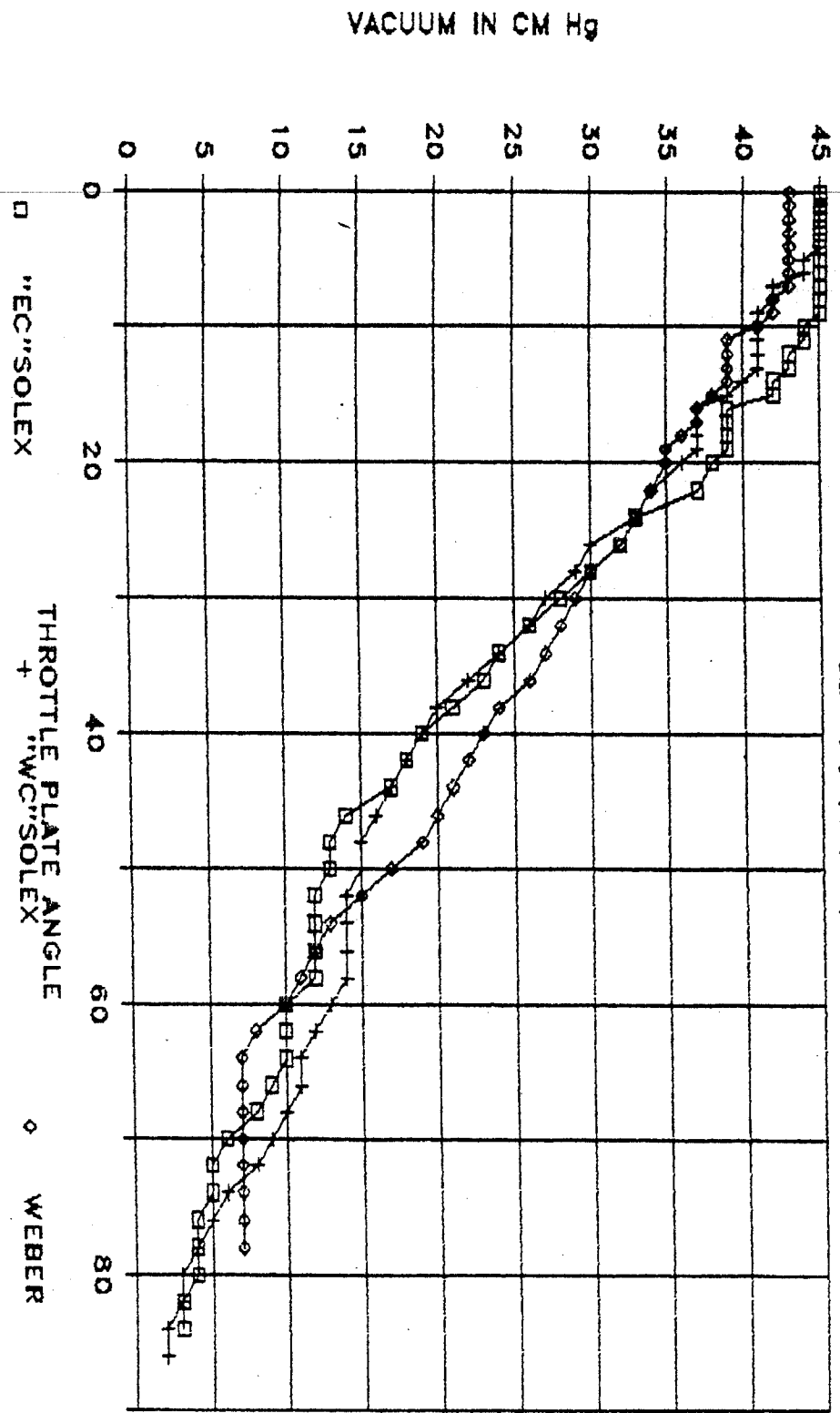
Voltage requirement \_\_\_\_\_ V \_\_\_\_\_

Water fitting size 10mm 10mm

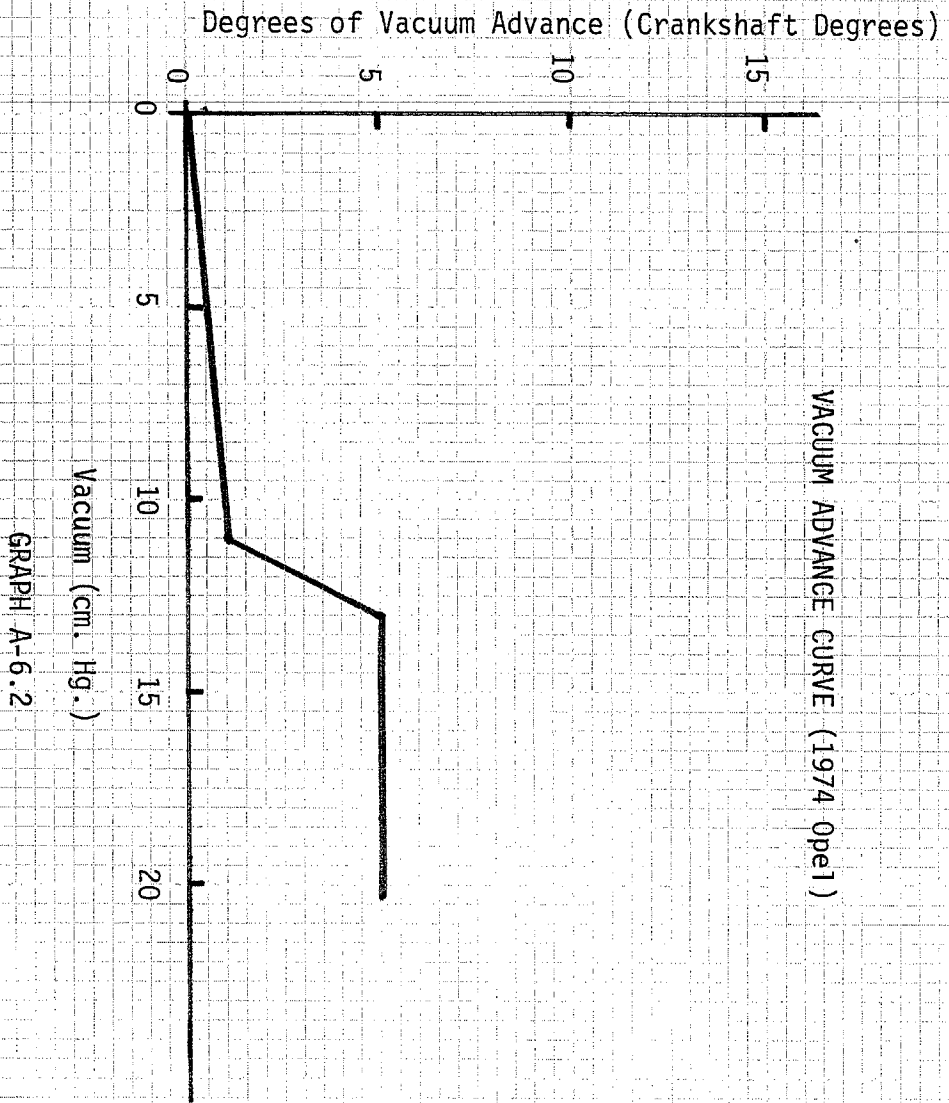
Solex carb is no longer available  
Carb from vehicle is in poor condition  
Choke system is inoperative except bimetal  
Bimetal shows age by having a prolonged opening time

# FLOW BENCH DEPRESSION K8256

'68-'74 1.9L OPEL

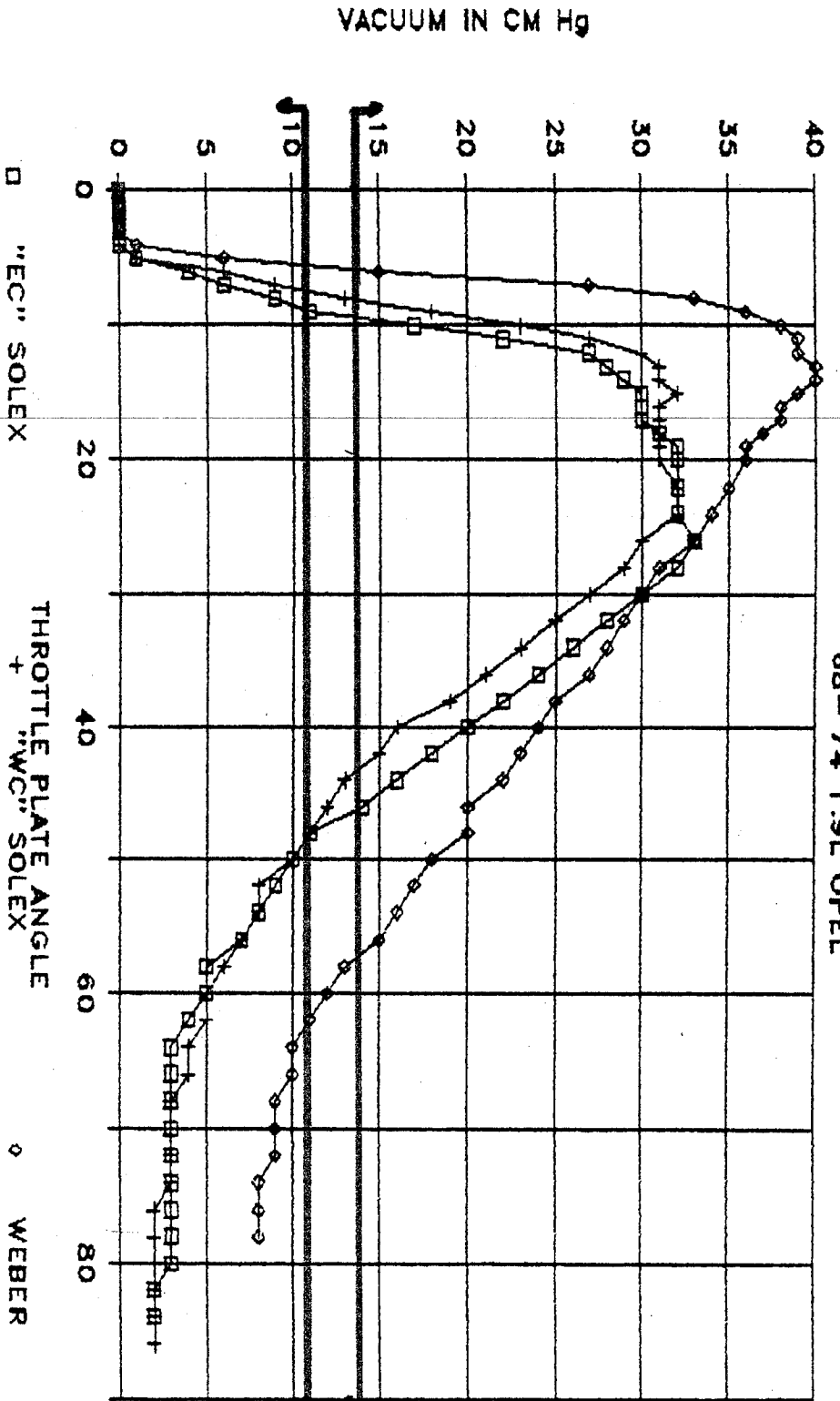


GRAPH A-6.1



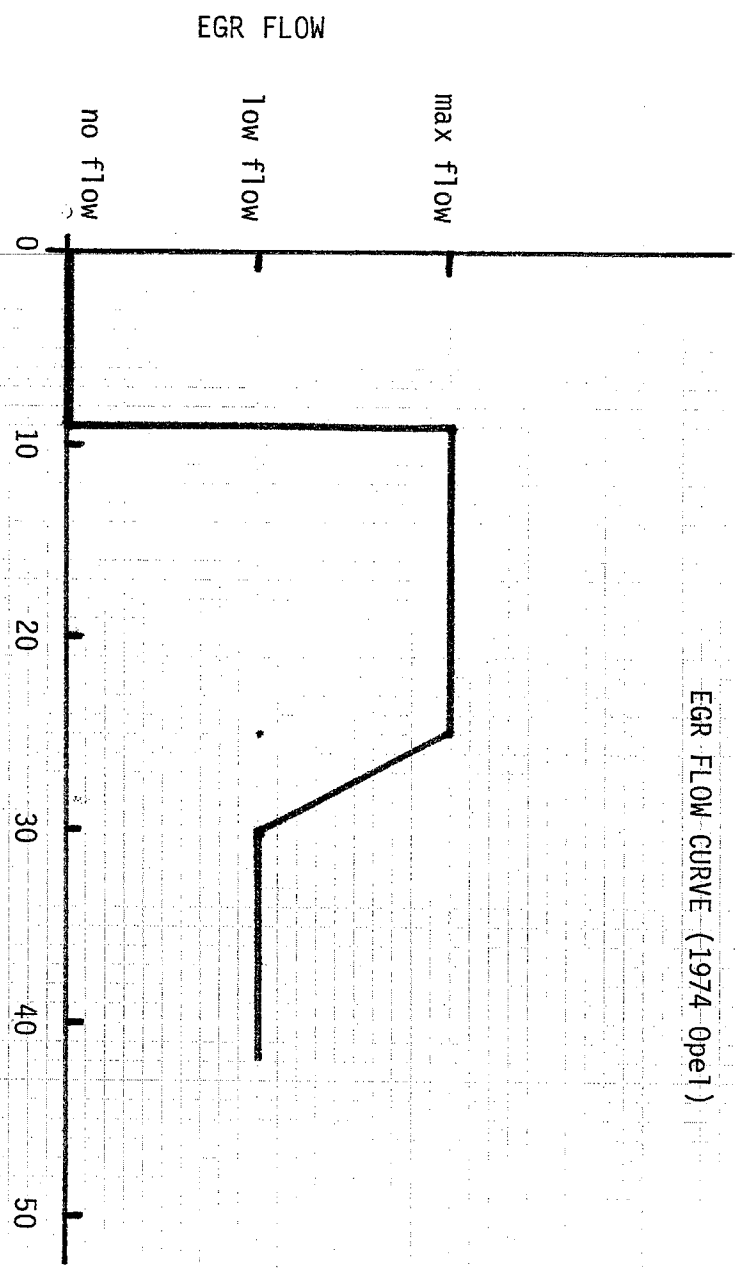
# SPARK ADVANCE K8256

68-'74 1.9L OPEL



GRAPH A-6.3

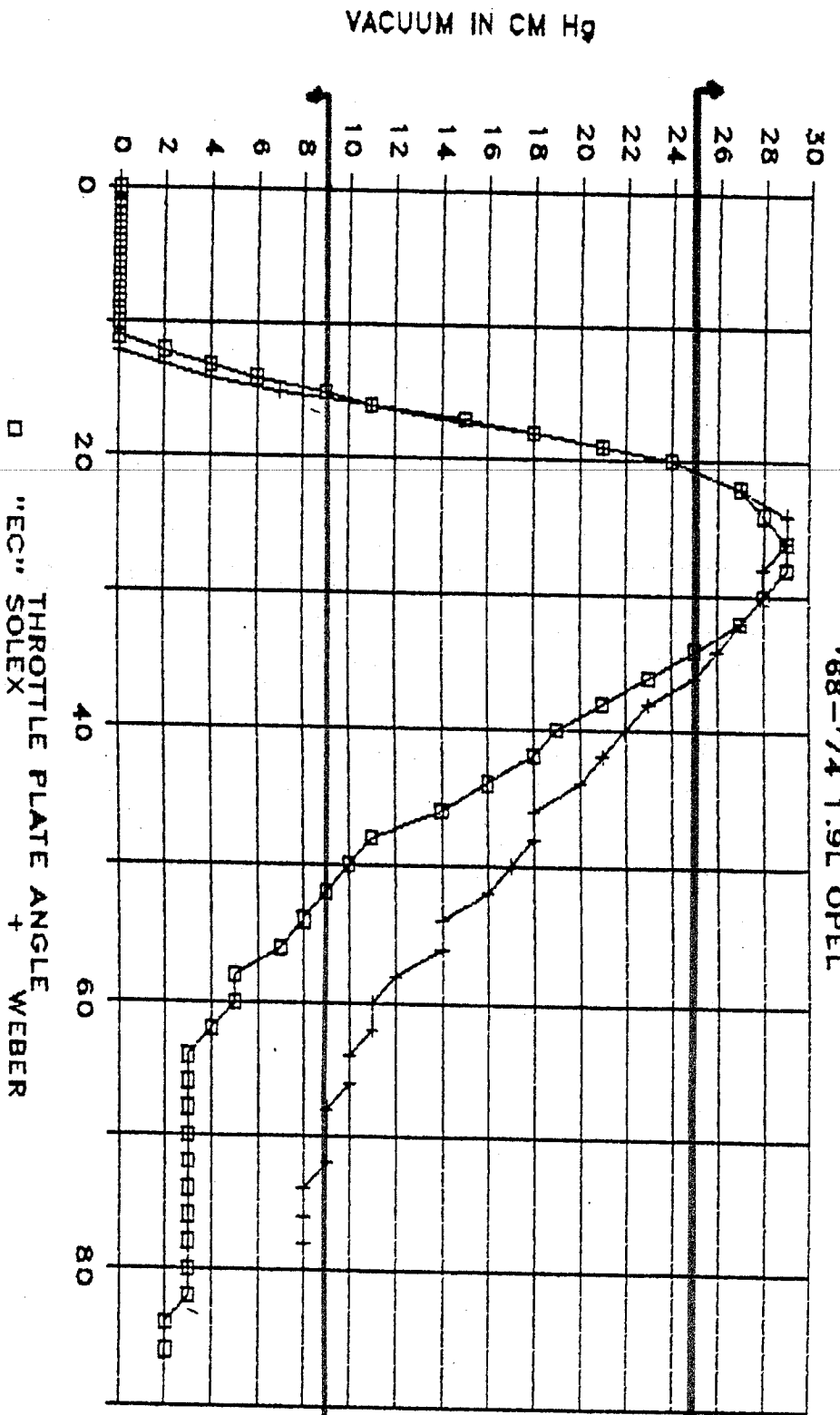
EGR FLOW CURVE (1974 Opel)



GRAPH A-6.4

# EGR VACUUM K8256

'68-'74 1.9L OPEL



At 25.0 cm. Hg. and above the EGR valve approaches the low flow position.

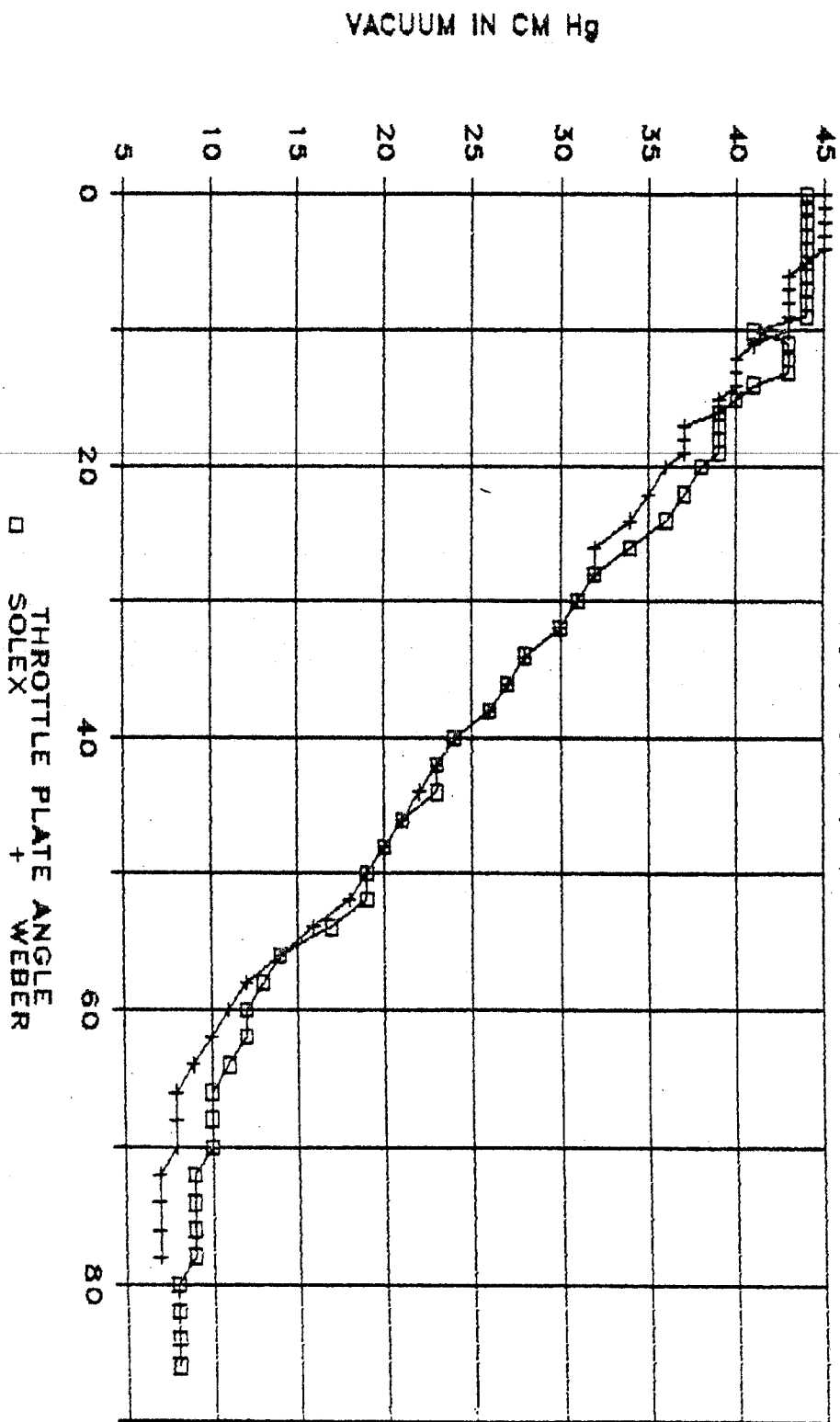
Between 9.0 and 25.0 cm. Hg. the EGR valve is in the max flow position.

At 9.0 cm. Hg. and below the EGR valve is in the no flow position.

GRAPH A-6.5

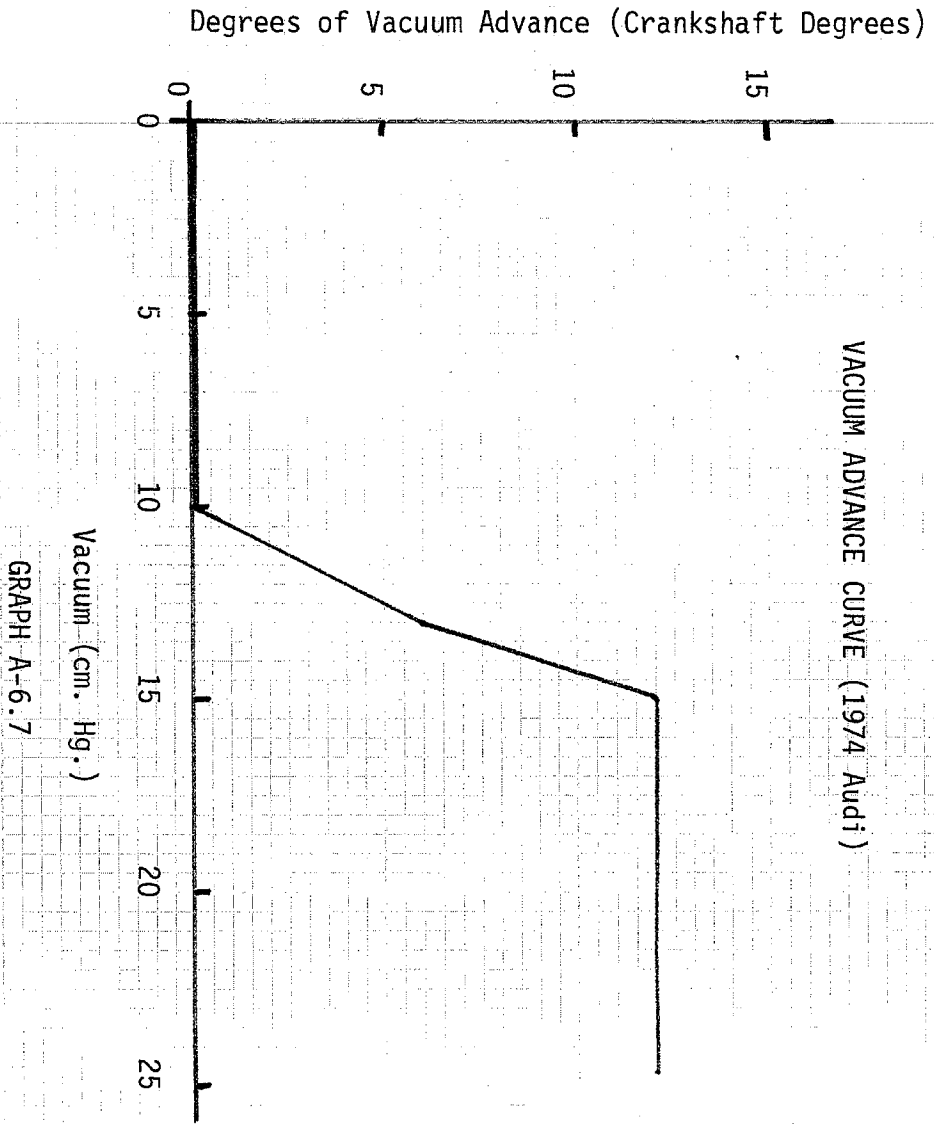
# FLOW BENCH DEPRESSION K8201

'70-'74 1.7L & 1.8L AUDI 100LS



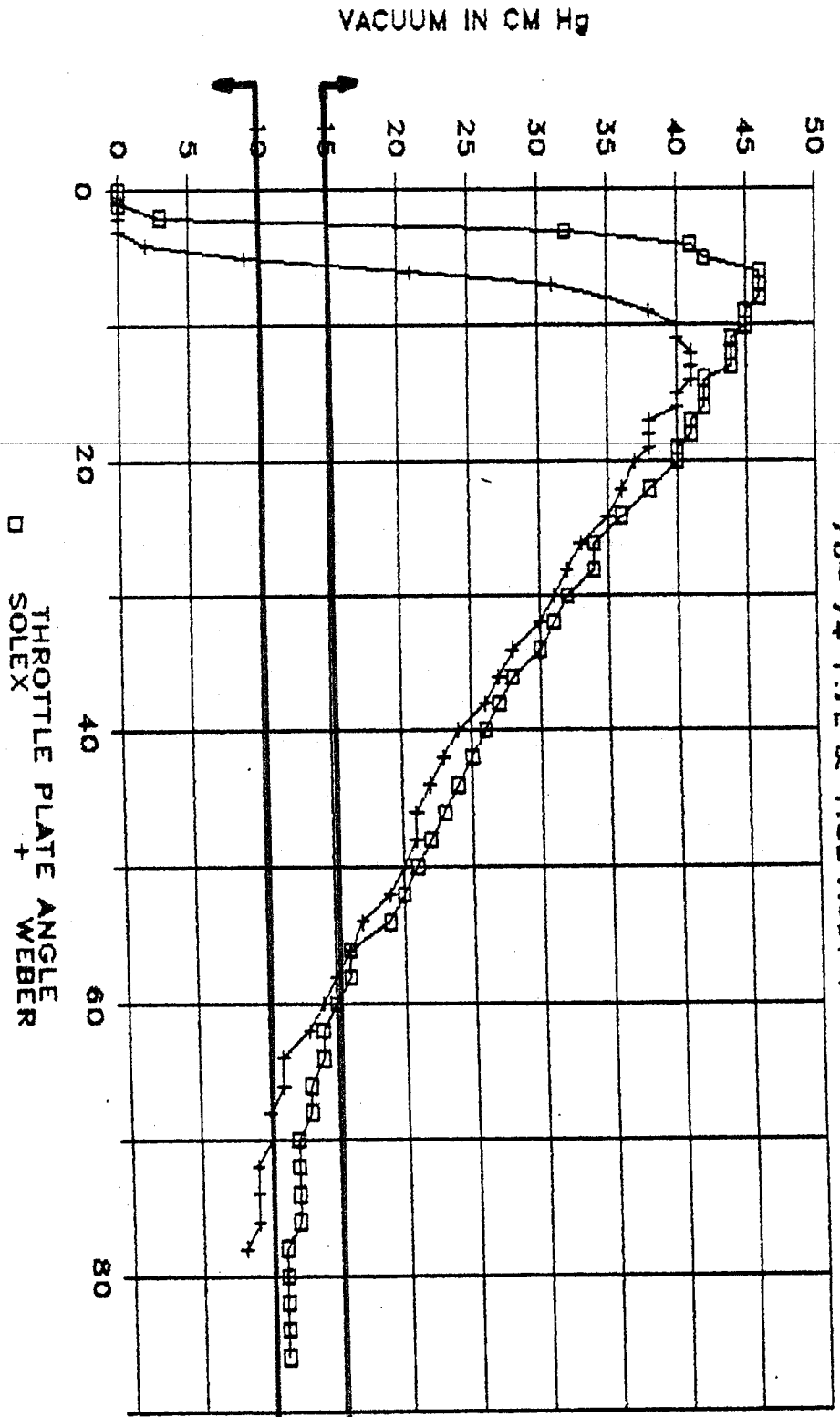
GRAPH A-6.6





# SPARK ADVANCE K8201

70-74 1.7L & 1.8L AUDI 100 LS



At 15.0 cm. Hg. and above the vacuum advance unit will provide 12° of vacuum spark advance.

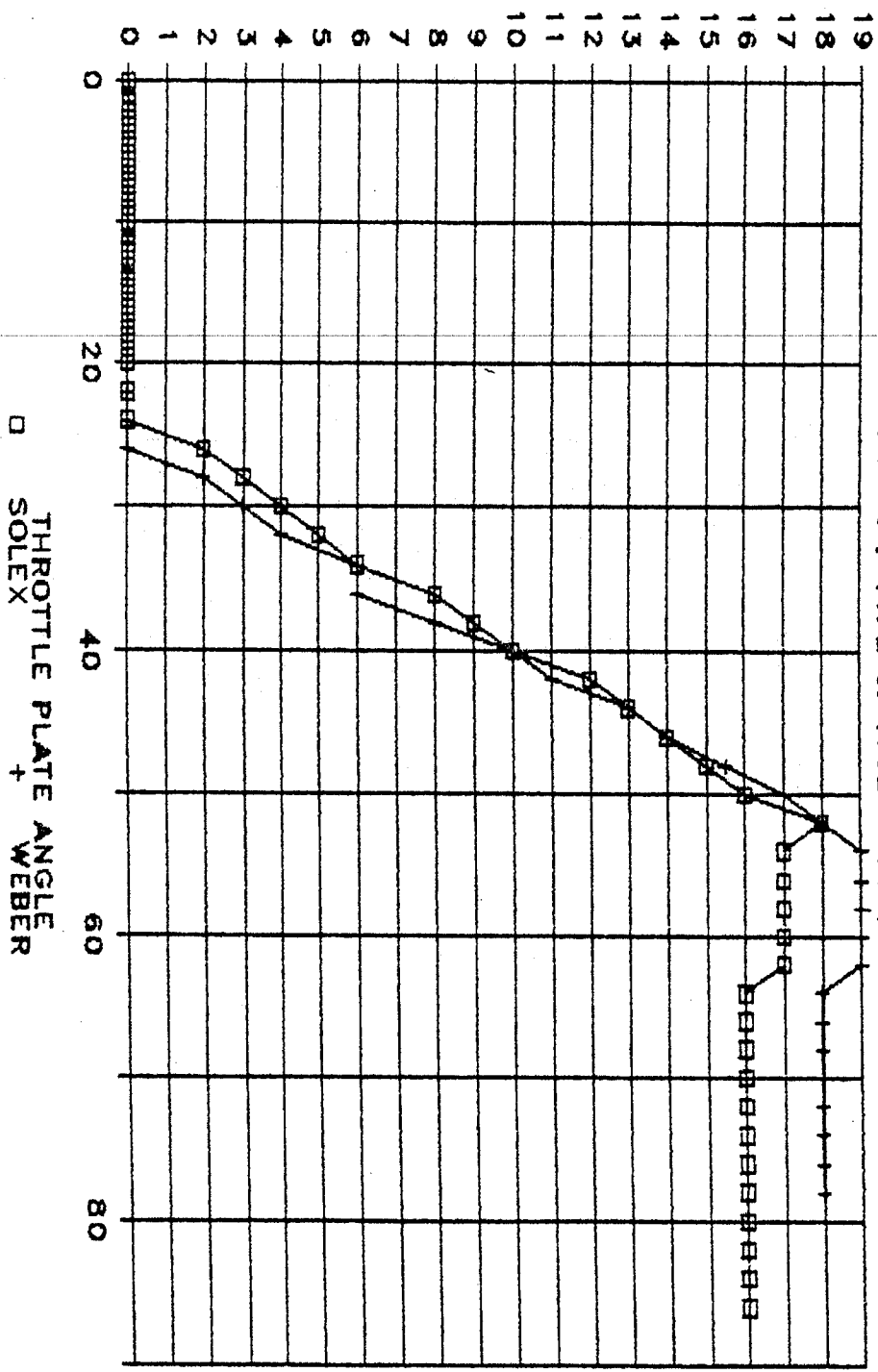
Between 10.0 and 15.0 cm. Hg. the vacuum advance unit will vary between 0° and 12° of vacuum spark advance.

At 10.0 cm. Hg. and below the vacuum advance unit will be inactive resulting in 0° vacuum spark advance.

GRAPH A-6.8

# EGR VACUUM K8201

'70-'74 1.7L & 1.8L AUDI 100 LS



GRAPH A-6.9



**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.**

## OPEL

**'68-'74 KADETTE, GT, MANTA, 1.9L**  
**For Kit Nos. K8256 (Water Choke)**  
**K8257 (Electric Choke)**

**Using (1) Weber 32/36 DGAV 33 B1 CARBURETOR**

### 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 - 32/36 DGAV 33 B1 Weber Carburetor  
 1 - Hardware Kit with Fuel and Vacuum Line  
 1 - Air filter Adaptor

### 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. Use the under hood emissions diagram, or the factory service manual for reference when identifying hoses.

### DISASSEMBLY

1. Remove the vehicle's gas cap.
  2. Disconnect the vehicle's battery.
  3. Water choke vehicles: Drain the engine coolant from the radiator. **Caution:** Coolant may be very hot!
  4. Using either the map inside the vehicle's engine compartment, or a factory service manual for your year/model vehicle; tag each hose, vacuum line and electrical wire/connector attached to the original carburetor and air filter assembly for proper identification during resassembly. Disconnect all connections once they are identified.
- Electric choke vehicles: Disconnect the wire from the choke assembly.

This kit sold under the provisions of California Air Resources Board Executive Order No. D-133-15 (C.A.R.B. E.O. D-133-15). Products with C.A.R.B. E.O. numbers are exempt from the prohibitions of Section 27156 of the California Vehicle Code. Performance kits so noted are legal for use on public Highways in California.

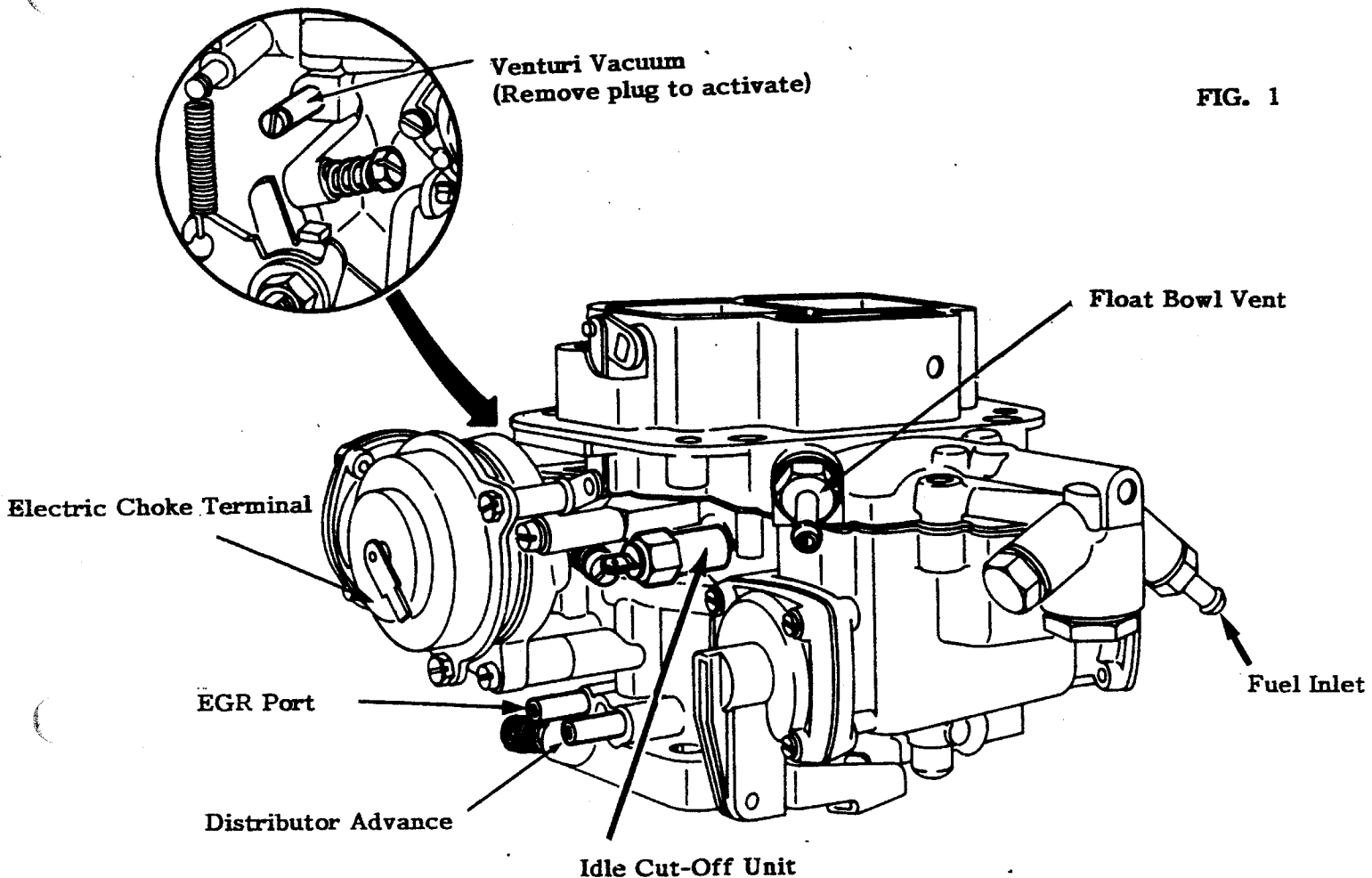
5. Remove the air filter assembly.
  6. Remove the clamp from the air filter mounting neck by drilling out the spot welds that attach it to the filter. Set aside the clamp for later use.
  7. Shorten the air filter mounting neck by 3/16".
  8. Bend the PCV vent attachment tube on the air filter 1/4" towards the front of the vehicle.
  9. Disconnect the fuel line at the fuel pump.
  10. Disconnect the throttle linkage.
  11. Loosen and remove the four (4) nuts that secure the carburetor to the intake manifold. Remove the carburetor and insert a clean rag into the intake ports to prevent dirt and gasket material from entering the engine.
  12. Remove the throttle shaft ball nut and lock tab from the original carburetor and set it aside for later use.
  13. Remove the stock carburetor mounting studs from the intake manifold.  
**NOTE:** For correct stud removal or installation, use a stud removal/installation tool of appropriate size or use the "double-nut" method.  
  
**DOUBLE-NUT METHOD:** Install two (2) nuts approximately 1/2 way down onto the stud and lock them together. Using suitable wrench, turn the lower nut to remove the stud and the upper nut to install the new stud.
- ASSEMBLY:
14. Clean the intake manifold flange surface thoroughly.
  15. Install the supplied 8mm studs using the supplied Loc-tite into the intake manifold using the "double-nut" method described in step 13.
  16. Remove the throttle lever from the Weber carburetor. Install the supplied throttle lever onto the Weber carburetor using the original throttle shaft ball nut and lock tab removed in step 12. Tighten the nut to 10 in/lbs. **CAUTION: OVERTIGHTENING OF THE NUT MAY RESULT IN BINDING OR STICKING OF THE THROTTLE SHAFT: CHECK THROTTLE OPERATION FOR FREE MOVEMENT. IF THERE IS ANY INDICATION OF BINDING OR STICKING, CORRECT AS NECESSARY BEFORE PROCEEDING.**
  17. Remove the rag from the intake manifold and slide the supplied carburetor base gasket over the studs.
  18. Slide the Weber carburetor (with the linkage toward the rear of the vehicle) over the intake manifold studs and secure (finger tight at this point) the Weber carburetor to the manifold using the supplied nut and washers.
  19. Reinstall the throttle linkage onto the ball of the throttle shaft nut. **CAUTION: CHECK THROTTLE OPERATIONS FOR FREE MOVEMENT. IF THERE IS ANY INDICATION OF BINDING OR STICKING, CORRECT AS NECESSARY BEFORE PROCEEDING.**
  20. When all functions are ensured correct, tighten the carburetor securing nuts to 12 ft/lbs.
  21. Install new fuel line, using the line and clamps supplied. We also suggest installing a new fuel filter at this time.
  22. Referring to Fig. 1, connect the following hoses, vacuum lines and electrical wires to the Weber carburetor:
    - A. The float bowl vent hose is connected to the fitting of the Weber carburetor labeled 'Bowl Vent'.

- B. The distributor advance hose is connected to the port on the Weber carburetor labeled 'Distributor Advance'.
- C. '73 vehicles: The EGR hose is connected to the port on the Weber carburetor labeled 'EGR'.
- D. '74 vehicles: The EGR Shut-Off Valve hose is connected to the port on the Weber carburetor labeled 'EGR'.
- E. Water choke vehicles: The water hoses are connected to the water choke housing of the Weber carburetor.
- F. Electric choke vehicle's: The wire that led to the original electric choke is connected to the choke terminal of the Weber carburetor.

- G. The wire that led to original idle cut-off solenoid is connected to the idle cut-off solenoid of the Weber carburetor. (If the vehicle was not equipped with an idle cut-off solenoid, it will be necessary to connect a wire to connect a wire to the idle cut-off solenoid that supplies 12 volts (positive) to the idle cut-off solenoid only when the ignition is in the 'run' position.

- 23. Install the supplied air filter adaptor onto the Weber carburetor using the four (4) allen-bolts. Tighten the bolts to 8 ft/lbs.

- 24. Reinstall the original air filter assembly and clamp as modified in steps 6, 7 and 8. Tighten the clamp to secure the filter assembly to the Weber carburetor. Reconnect any lines removed from the air filter in step 4.

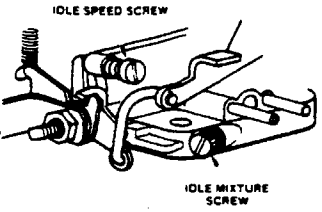


25. Reconnect the battery and replace the gas cap.
26. Refill the cooling system (if drained in step 3).
27. Depress the throttle pedal once to initiate the choke and then start the engine. (Realize that the float bowl is empty, and that it will require cranking the engine a few moments in order to fill the bowl with enough fuel to start the engine.)

**WEBER MODEL DGV/DGAV  
FAST IDLE ADJUSTMENT**

With the engine warmed-up and turned OFF, open the throttle and manually engage the choke by closing the choke plates (*butterflies*). Release the throttle, then release the choke plates. The fast idle cam should be activated and the fast idle speed screw should be positioned on the cam shoulder. Start the engine. **DO NOT DEPRESS THE THROTTLE PEDAL OR CHOKE WILL BECOME INOPERATIVE.** To adjust the fast idle speed; turn the fast idle speed screw in (*clockwise*) to increase speed and out (*counter-clockwise*) to decrease speed.

**MODEL DGV/DGAV  
LEAN BEST  
IDLE SETTING  
PROCEDURE**



**NOTE:** Before adjusting carburetor, be sure engine is at operating temperature, (choke is fully off) air cleaner is removed and vacuum lines are plugged off.

- (1) The Weber DGV/DGAV idle speed screw should be adjusted to its "preliminary" set-point before adjusting the idle mixture. To set the idle speed screw follow these steps:
  - (2) Back "out" the idle speed screw until the tip of the screw no longer touches the throttle lever. Then slowly turn the screw in until it just comes in contact with the throttle lever.
  - (3) From the "contact" position, turn the idle speed screw "in" one (1) full turn.
  - (4) If a tachometer is available, install it prior to starting the engine. If a tachometer is not available set idle mixture "by ear."
  - (5) Start engine, be sure choke is not engaged, and proceed to adjust the idle mixture.
  - (6) Turn the idle mixture screw "in" (clockwise) until the engine RPM begins to fluctuate on the tachometer. (If adjusting by ear, until a noticeable drop in speed is heard.)
  - (7) Back "out" (counterclockwise) the idle mixture screw slowly, until the engine idle becomes steady. Try to obtain the leanest setting without affecting the idle speed. If necessary, repeat steps 6 and 7 until the best setting is achieved.
  - (8) Once the idle mixture is set, fine tune the engine's idle speed; if necessary, by readjusting the idle speed screw (**Note: Turning "in" (clockwise) the idle speed screw will increase engine speed. Turning "out" (counterclockwise) the idle speed screw will decrease the engine speed.**)
  - (9) If idle speed is reset, go back and repeat steps 6 and 7.

If you should have any questions after reading these instructions, please contact the Weber Technical Service Department during normal business hours at the number listed below.

**(213) 604-0275**

8:00 a.m. - 5:00 p.m. (Pacific Time)

--Monday through Friday--

# INSTALLATION INSTRUCTIONS



**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.**

## AUDI

'70-'74 100LS 1.8L AND '73-'75<sup>4</sup> FOX

For Kit No. K8201

Using (1) Weber 32/36 DGAV 33 B1 CARBURETOR

### 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 - 32/36 DGAV 33 B 1 Weber Carburetor  
1 - Hardware Kit w/fuel & vacuum line  
1 - Air Filter Adaptor

### 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. Use the under hood emissions diagram, or the factory service manual for reference when identifying hoses.

### DISASSEMBLY

1. Remove the vehicle's gas cap.
2. Disconnect the vehicle's battery.
3. Water choke vehicles: Drain the engine coolant from the radiator.  
**Caution:** Coolant may be very hot!  
Electric choke vehicles:  
Disconnect the wire from the choke assembly.
4. Using either the map inside the vehicle's engine compartment, or a factory service manual for your year/model vehicle; tag each hose, vacuum line and electrical wire/connector attached to the original carburetor and air filter assembly for proper identification during reassembly. Disconnect all connections once they are identified.

This kit sold under the provisions of California Air Resources Board Executive Order No. D-133-15 (C.A.R.B. E.O. D-133-15). Products with C.A.R.B. E.O. numbers are exempt from the prohibitions of Section 27156 of the California Vehicle Code. Performance kits so noted are legal for use on public Highways in California.



5. Remove the air filter assembly.
6. Disconnect the fuel line from the original carburetor. Plug the end of the fuel line to prevent leakage.
7. Disconnect the throttle linkage from the original carburetor.
8. Loosen and remove the four (4) nuts that secure the carburetor to the intake manifold. Remove the carburetor and insert a clean rag into the intake ports to prevent dirt and gasket material from entering the engine.
9. Fox Only: Remove the throttle lever from the original carburetor. Separate the lever halves at the spot welds and grind the welds smooth. (See Fig. 1)

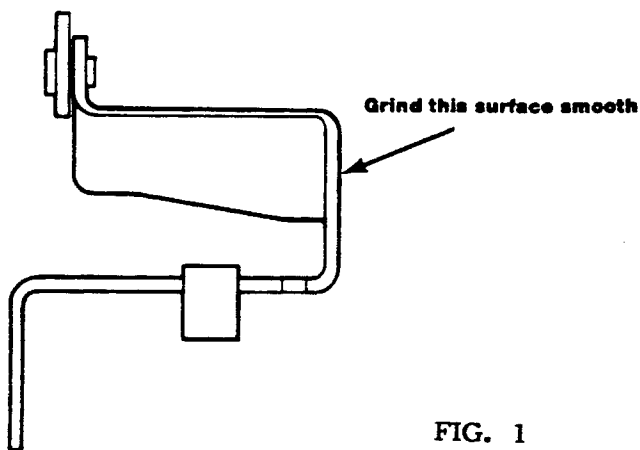


FIG. 1

10. Remove the stock carburetor mounting studs from the intake manifold. **NOTE:** For correct stud removal or installation, use a stud removal/ installation tool of appropriate size or use the "double-nut" method.

**DOUBLE-NUT METHOD:** Install two (2) nuts approximately 1/2 the way down onto the stud and lock them together.

Using a suitable wrench, turn the lower nut to remove the stud and the upper nut to install the stud.

#### ASSEMBLY:

11. Clean the intake manifold flange surface thoroughly.
12. Install the supplied 8mm studs with the supplied Loc-tite into the intake manifold using the "double-nut" method.
13. Remove the throttle lever from the Weber carburetor.

**FOX:** Install the original lever modified in Step 9 onto the Weber carburetor. **100LS:** Install the supplied throttle lever onto the Weber carburetor.

Secure the appropriate throttle lever to the Weber carburetor and torque the nut to 10 in/lbs.

**CAUTION: OVER-TIGHTENING OF THE NUT MAY RESULT IN BINDING OR STICKING OF THE THROTTLE SHAFT. CHECK THROTTLE OPERATION FOR FREE MOVEMENT. IF THERE IS ANY INDICATION OF BINDING OR STICKING, CORRECT AS NECESSARY BEFORE PROCEEDING.**

14. Remove the rag from the intake manifold and slide the supplied carburetor base gasket over the studs.
15. **100LS ONLY:** Modify air filter bracket as shown in Fig. 2 to provide clearance required to fit the bracket to the Weber carburetor.

Remove this section to fit bracket to 32/36 DGAV

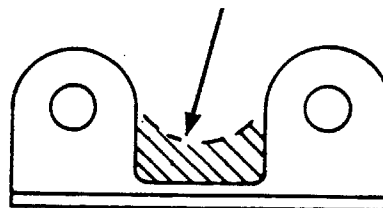


FIG. 2

16. Slide the Weber carburetor (with the linkage toward to rear of the vehicle) over the instake manifold studs. On 100LS vehicles, slide the modified air filter bracket over the appropriate studs. Secure (finger tight at this point) the Weber carburetor to the manifold using the supplied nuts and washers.

17. Reinstall the throttle linkage onto the Weber carburetor.  
**CAUTION: CHECK THROTTLE OPERATION FOR FREE MOVEMENT. IF THERE IS ANY INDICATION OF BINDING OR STICKING, CORRECT AS NECESSARY BEFORE PROCEEDING.**

18. When all functions are ensured correct, tighten the carburetor securing nuts to 12 ft/lbs.

19. Install new fuel line, using the line and clamps supplied. We also suggest installing a new fuel filter at this time.

20. Referring to FIG. 3, connect the following hoses, vacuum lines and electrical wires to the Weber carburetors:

- A. The float bowl vent hose to the fitting of the Weber carburetor labeled 'Bowl Vent'.
- B. FOX ONLY: The top fitting of the EGR valve to the port on the Weber carburetor labeled 'EGR' and the bottom fitting of the EGR valve to the port on the Weber carburetor labeled 'Venturi Vacuum'.
- C. 100LS ONLY: Hose from vacuum amplifier (if applicable) that was connected to the primary barrel of the original carburetor to the port on the Weber carburetor labeled 'Venturi Vacuum' and the hose from the vacuum amplifier that was connected to the base near the secondary barrel of the original carburetor to the intake manifold vacuum block.
- D. The distributor vacuum advance hose connects to the port on the Weber carburetor label 'Distributor Advance'.
- E. Electric Choke vehicles: The wire that led to the original electric choke is connected to the choke terminal of the Weber carburetor.

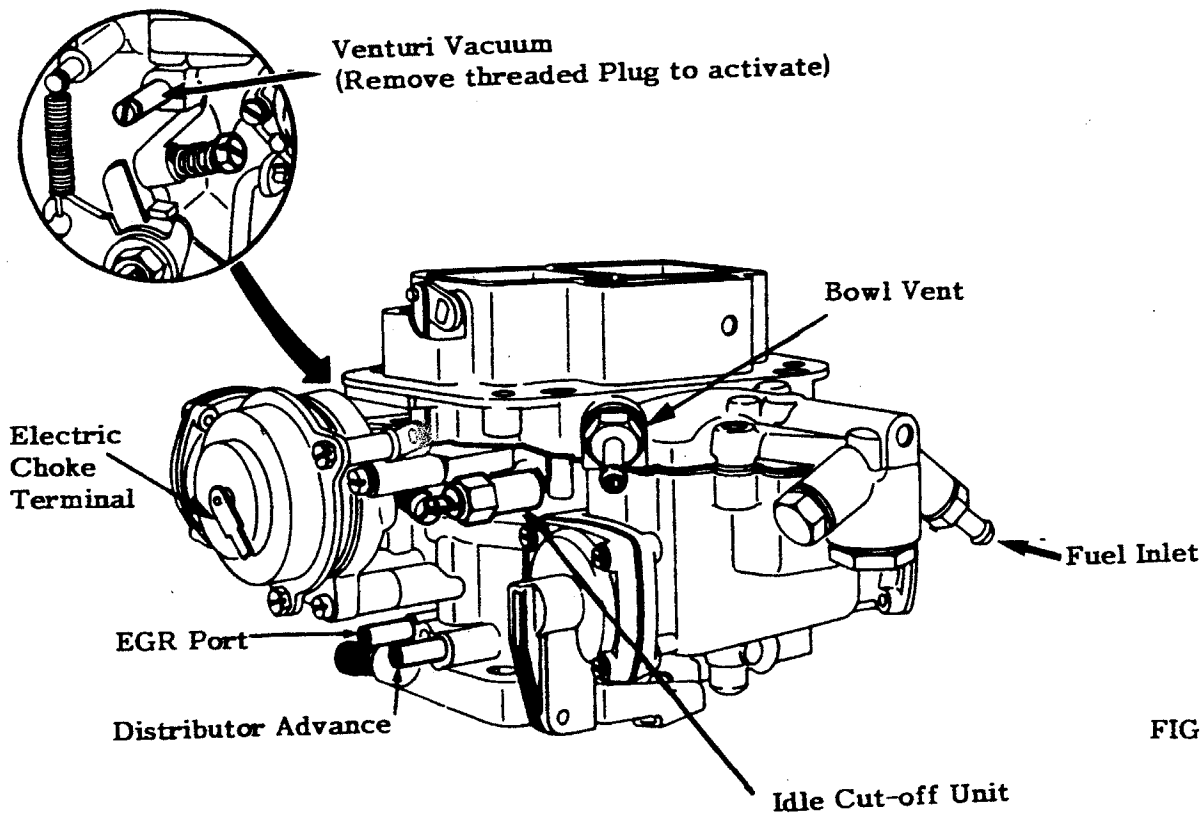
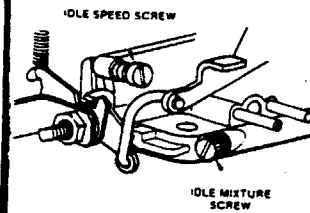


FIG. 3

- F. Water choke vehicles: The water hoses and/or fittings must be blocked or bypassed and the supplied jumper wire will be used to connect the electric choke and the idle cut-off unit.
- G. The wire that led to the original idle cut-off solenoid is connected to the idle cut-off solenoid of the Weber carburetor. (If the vehicle was not equipped with an idle cut-off solenoid, it will be necessary to connect a wire to the idle cut-off solenoid that supplies 12 volts (positive) to the idle cut-off solenoid only when the ignition is in the 'run' position.
21. Install the supplied air filter adaptor onto the Weber carburetor using the four (4) allen-bolts supplied. Tighten the bolts to 8 ft/lbs.
  22. Reinstall the original air filter assembly and reconnect any lines removed from the air filter in Step 4.
  23. Reconnect the battery and replace the gas cap.
  24. Refill the cooling system (if drained in Step 3).
  25. Depress the throttle pedal once to initiate the choke and then start the engine. (realize that the float bowl is empty, and that it will require cranking the engine a few moments in order to fill the bowl with enough fuel to start the engine.)
  26. A. Check for fuel and vacuum leaks and correct as necessary.  
B. Warm the engine up to operating temperature and recheck Step A.  
C. Set idle speed and mixture strength to factory specifications.
  27. **CHECK FOR ADEQUATE HOOD CLEARANCE BEFORE CLOSING THE HOOD.**



**MODEL DGV/DGAV  
LEAN BEST  
IDLE SETTING  
PROCEDURE**

**NOTE:** Before adjust carburetor, be sure engine is at operating temperature, (choke is fully off) air cleaner is removed and vacuum lines are plugged off.

- (1) The Weber DGV/DGAV idle speed screw should be adjusted to its "preliminary" set-point before adjusting the idle mixture. To set the idle speed screw follow these steps:
  - (2) Back "out" the idle speed screw until the tip of the screw no longer touches the throttle lever. Then slowly turn the screw in until it just comes in contact with the throttle lever.
  - (3) From the "contact" position, turn the idle speed screw "in" one (1) full turn.
  - (4) If a tachometer is available, install it prior to starting the engine. If a tachometer is not available set idle mixture "by ear."
  - (5) Start engine, be sure choke is not engaged, and proceed to adjust the idle mixture.
  - (6) Turn the idle mixture screw "in" (clockwise) until the engine RPM begins to fluctuate on the tachometer. (If adjusting by ear, until a noticeable drop in speed is heard.)
  - (7) Back "out" (counterclockwise) the idle mixture screw slowly, until the engine idle becomes steady. Try to obtain the leanest setting without affecting the idle speed. If necessary, repeat steps 6 and 7 until the best setting is achieved.
  - (8) Once the idle mixture is set, fine tune engine's idle speed; if necessary, by readjusting the idle speed screw (**Note: Turning "in" (clockwise) the idle speed screw will increase engine speed. Turning "out" (counterclockwise) the idle speed screw will decrease the engine speed.**)
  - (9) If idle speed is reset, go back and repeat steps 6 and 7.

If after following these instructions, you require further assistance, please call the Weber Tech. Service Dept.

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8:00 a.m. - 5:00 p.m. (Pacific Time)

—Monday through Friday—

**WEBER MODEL DGV/DGAV  
FAST IDLE ADJUSTMENT**

With the engine warmed-up and turned OFF, open the throttle and manually engage the choke by closing the choke plates (*butterflies*). Release the throttle, then release the choke plates. The fast idle cam should be activated and the fast idle speed screw should be positioned on the cam shoulder. Start the engine. **DO NOT DEPRESS THE THROTTLE PEDAL OR CHOKE WILL BEC INOPERATIVE.** To adjust the fast idle speed: turn the fast idle speed screw in (*clockwise*) to increase speed and out (*counter-clockwise*) to decrease speed.