

## TUNE-UP

Dasher	Rabbit Pickup
Jetta	Scirocco
Rabbit	Vanagon

### ENGINE IDENTIFICATION

Engine code prefixes are placed in the following locations:

**Vanagon** — Engine serial number is stamped on right side of crankcase joint behind fan housing.

**All Other Models** — Engine serial number is stamped on left side of engine near ignition distributor.

#### Engine Codes

Application	Code
Dasher	
Man. Trans. ....	YG
Auto. Trans. ....	YH, YK
Jetta, Rabbit, Scirocco (F.I.) ....	EJ
Rabbit (Carb.) ....	FX
Rabbit Pickup ....	EH
Vanagon ....	CV

### COMPRESSION PRESSURE

Check compression with engine warm, all spark plugs removed, and throttle wide open. Maximum variation permitted between cylinders is 42 psi (3.0 kg/cm<sup>2</sup>).

**CAUTION** — On models with electronic ignition, connect coil high tension wire to ground before cranking engine.

Application	Standard Pressure psi (kg/cm <sup>2</sup> )	Minimum Pressure psi (kg/cm <sup>2</sup> )
Vanagon .....	85-135 (6.0-9.5)	71 (5.0)
All Others .....	142-184 (10.0-13.0)	107 (7.5)

### VALVE CLEARANCE

**Vanagon** — No adjustment is needed as engine is equipped with hydraulic valve lifters.

**All Other Models** — Remove distributor cap and set engine at TDC. Align distributor rotor with No. 1 cylinder mark on distributor body. Adjust by replacing tappet discs. Discs are available in 26 thicknesses from .119-.166" (3.0-4.25 mm). Adjust valves in firing order, 1-3-4-2, with engine at normal operating temperature.

**NOTE** — Use special tool VW546 to press down cam follower, so that adjusting disc can be readily removed with tool US 4476. When depressing cam followers, turn so that openings are at 90° angle to cam.

#### Valve Clearance Specifications

Application	Intake	Exhaust
All Except		
Vanagon ....	.008-.012" (.2-3 mm)	.016-.020" (.4-.5 mm)

### VALVE ARRANGEMENT

**Vanagon** — E-I-I-E (Both banks)

**All Others** — E-I-E-I-I-E-I-E (front-to-rear).

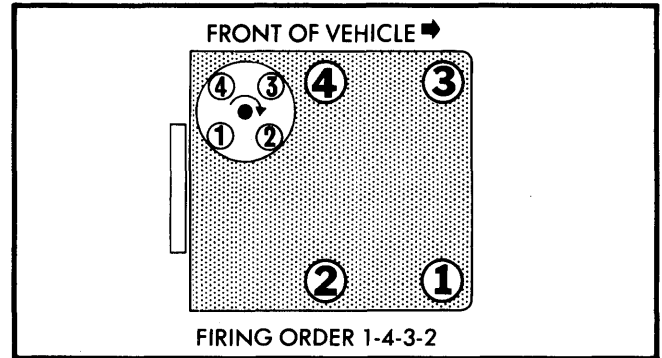


Fig. 1 Firing Order & Distributor Rotation (Vanagon)

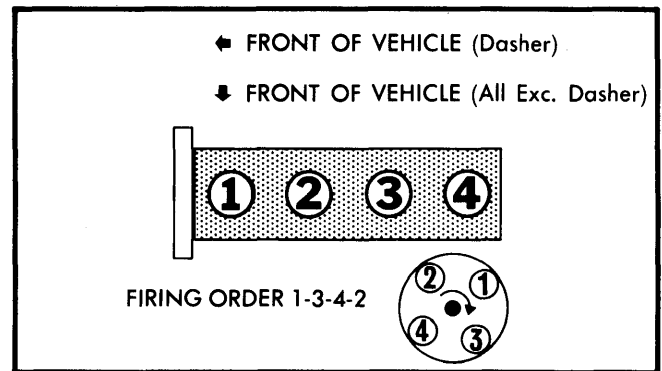


Fig. 2 Firing Order & Distributor Rotation (All Except Vanagon)

### DISTRIBUTOR

All carbureted Rabbit models and all California vehicles have electronic, breakerless ignition systems. Federal fuel injected models use conventional Bosch single point distributors.

Point Gap .....	.016" (.4 mm)
Dwell Angle .....	44-50°
Breaker Arm Tension .....	14-21 ozs. (450-600 g)
Condenser Capacity .....	.20 mfd.

### SPARK PLUGS

Application	Gap In. (mm)	Torque Ft. Lbs. (mkg)
All Models .....	.028 (.7 mm)	22 (3.0)


#### Spark Plug Type

Application	Bosch	Champion
Vanagon .....	W8CO	N288
All Others .....	W7D	N8Y

## TUNE-UP (Cont.)

### HIGH TENSION WIRE RESISTANCE

Remove distributor cap and disconnect high tension wires from spark plugs (not distributor cap). Using an ohmmeter, measure resistance from cap terminal to other end of wire. If resistance is not to specifications, or fluctuates when wire is twisted gently, replace wire(s).

**NOTE** — High tension wire resistance cannot be measured if wire ends are marked with the following symbol: 

#### Resistance (Ohms) Per Wire

Application	Ohms
All Models .....	5000-7000

### IGNITION TIMING

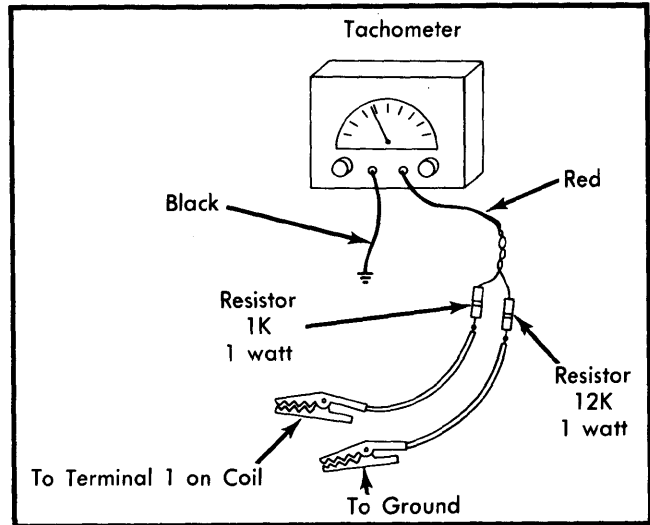
**Breaker Point Ignition** — Connect tachometer and timing light. Warm engine to normal operating temperature and check idle speed. Adjust timing with vacuum disconnected and plugged on Vanagon; connected on all other models.

**Electronic Ignition** — 1) Warm engine to normal operating temperature, then turn ignition switch off. Connect tachometer and timing light, following manufacturer's instructions. On Vanagon, make test equipment connection at fuse 10, not from coil terminal 15 (+). On Rabbit models with carburetor, use adapter to connect tachometer. See Fig. 4.

2) Disconnect both plugs at idle stabilizer unit (squeeze connector to loosen). Connect plugs together. On Rabbit models with carburetor, disconnect and plug hose at distributor vacuum retard diaphragm. On all models, check idle speed, then adjust timing by turning distributor.

### Ignition Timing Specifications

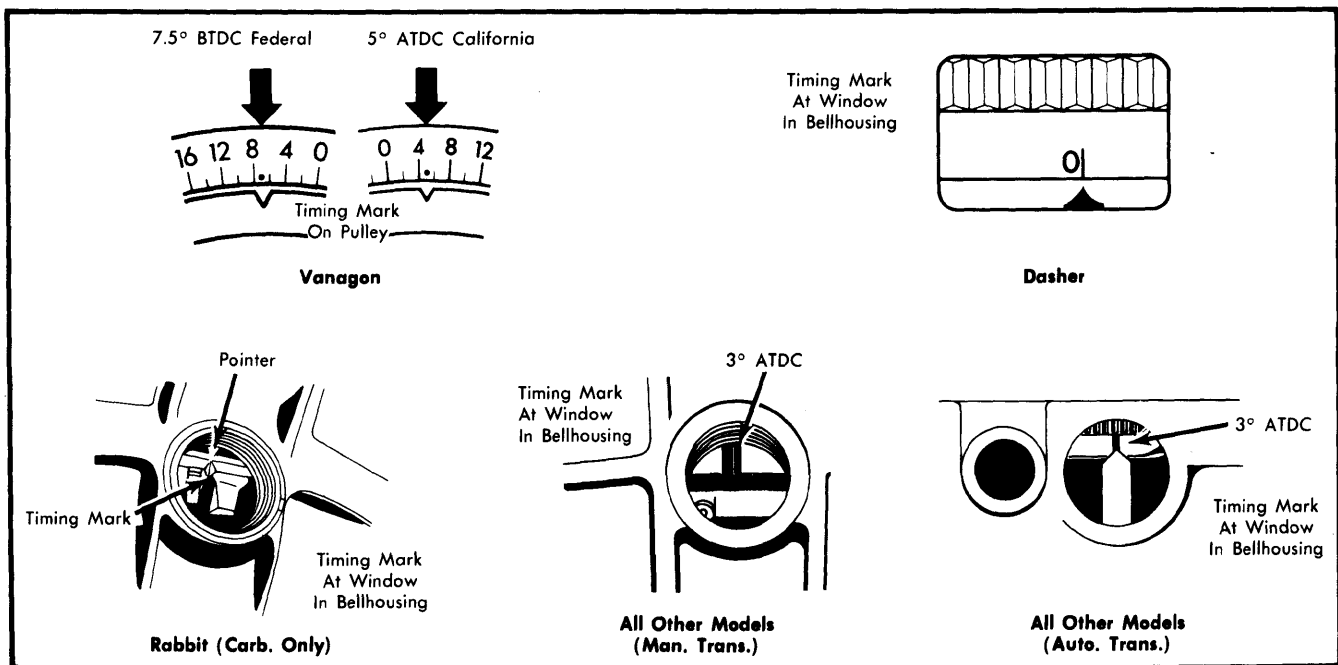
Application	RPM	Timing
Vanagon		
Fed. ....	850-950 .....	7.5° BTDC
Calif. ....	850-950 .....	5° ATDC
Rabbit (Carburetor) ....	800-1000 .....	7.5° BTDC
All Other Models .....	850-1000 .....	3° ATDC



**Fig. 4 Tachometer Adapter for Rabbit Carbureted Models**

### IDLE SPEED & MIXTURE

**Vanagon** — 1) With engine at normal operating temperature, connect CO tester at probe receptacle on exhaust



**Fig. 3 Ignition Timing Mark Locations (All Models)**

## TUNE-UP (Cont.)

pipe in front of catalytic converter. Connect tachometer. Disconnect and plug charcoal canister hose at air cleaner.

2) Adjust idle speed with idle screw. Check CO reading, and if incorrect, turn engine off and disconnect oxygen sensor (Calif. models). Disconnect idle stabilizer plugs (Calif. models) and connect together.

3) Start engine and adjust CO at screw on throttle housing. Allow engine to stabilize between readings. When CO is correct, stop engine, reconnect plugs, and remove test equipment.

**Rabbit Carbureted Models** - 1) With engine at normal operating temperature, disconnect crankcase ventilation hose, fuel evaporation hose, and air injection hoses. Plug openings on air intake (where hoses were removed) and plug both air injection check valves.

2) Turn off all electrical accessories. Connect CO meter to receptacle in manifold, and connect tachometer using adapter. See Fig. 4.

3) Start engine and check idle and CO reading. If not to specifications, stop engine. Disconnect plugs at idle stabilizer and connect together. Disconnect and plug vacuum advance and retard hoses at distributor. Start engine and adjust idle speed with idle speed screw.

**NOTE** - Engine cooling fan must not run while CO adjustment is being made.

4) If mixture must be adjusted, reconnect vacuum advance and retard, then adjust CO with CO adjusting screw (below idle speed screw). Stop engine, disconnect test equipment, and reconnect all hoses.

**All Other Models** - 1) Warm engine to normal operating temperature, then stop engine. Turn off all accessories and connect dwell meter to Blue/Brown wire near right shock tower. Set meter at 4-cylinder scale. Connect tachometer to terminal 1 at ignition coil, then disconnect both plugs from idle stabilizer unit and connect them together (Calif. models only).

2) Start engine and raise RPM until alternator light on dash goes out, then return to idle. Frequency valve must make buzzing sound and dwell meter needle must fluctuate. Adjust idle speed.

**NOTE** - Engine fan must not be running when adjusting idle speed and mixture.

3) Disconnect PCV valve hose from valve cover and plug hose. Locate hose at bottom of charcoal canister (under front body panel) and pull loose end of hose from hole in body panel. Do not plug hose.

4) Disconnect oxygen sensor and position wires so neither end can touch ground. Remove cap from test port on exhaust manifold and connect CO meter to it. Start engine and check idle speed. Adjust if necessary.

5) Dwell meter reading should be 43-47°. Check CO level and adjust by using screw under rubber cap on mixture control unit. Reconnect oxygen sensor and recheck readings. Dwell meter must fluctuate and CO level should be between 0.3-1.2%.

6) Remove test equipment. Reconnect PCV hose, canister hose, and idle stabilizer (if equipped).

### Idle Speed & CO Level

Application	Idle RPM	CO%
Vanagon		
Federal		
Man. Trans. ....	800-950 .....	0.5-1.5
Auto. Trans. ....	850-1000 .....	0.5-1.5
Calif. ....	850-950 .....	0.3-1.1
Rabbit (Carburetor) ...	⓪850-950 .....	0.5-1.5
All Other Models		
Federal .....	850-1000 .....	0.8-1.2
Calif. ....	880-1000 .....	0.8-1.2

⓪ - Idle speed when checking. Adjust to 600-750 when idle stabilizer is disconnected.

### COLD (FAST) IDLE RPM

**Rabbit (Carburetor)** - With engine at normal operating temperature, timing set and idle speed set, place fast idle adjusting screw on 3rd step of choke lever. Open choke valve fully by hand and check idle speed. Adjust if necessary.

### Fast Idle RPM

Application	RPM
Rabbit (Carburetor) .....	2350-2450

## EXHAUST EMISSION SYSTEMS

See EXHAUST EMISSION SYSTEMS section.

## GENERAL SERVICING

### IGNITION

#### DISTRIBUTOR

All carbureted Rabbit models and all California vehicles have electronic ignition. Federal fuel injected models use a conventional breaker point ignition system.

**Other Data & Specifications** - See Tune-Up article and appropriate article in DISTRIBUTORS & IGNITION SYSTEMS section.

### FUEL SYSTEMS

#### CARBURETOR

**Rabbit** - Carbureted models use a Solex 34 PICT-5 carburetor.

**Other Data & Specifications** - See Tune-Up and Solex Carburetors in FUEL SYSTEMS Section.

# 1980 Volkswagen 4 Tune-Up

## GENERAL SERVICING (Cont.)

### FUEL INJECTION

**Vanagon** — All models use Bosch AFC Electronic Fuel Injection.

**Dasher, Jetta, Rabbit, Rabbit Pickup & Scirocco** — All models use Bosch Continuous Injection System (CIS).

**Other Data & Specifications** — See *Tune-Up and Bosch AFC or CIS Fuel Injection Article in FUEL SYSTEMS Section.*

### ELECTRICAL

#### BATTERY

Application	Standard Amp. Hr.	Optional Amp. Hr.
Vanagon .....	54 .....	.....
Rabbit (Carb.) .....	45 .....	.....
Scirocco .....	65 .....	.....
All Other Models .....	45 .....	54

**Battery Location** — Battery is located under right front seat on Vanagon models, and in engine compartment on all other models.

#### BELT ADJUSTMENT

Application	① Deflections
All Models .....	.4-.6" (10-15 mm)

① — Deflection is with thumb pressure, about 16.5 lbs. (7.5 kg), applied midway on longest belt run.

#### FILTERS

Filter	Service Interval (Miles)
Oil Filter .....	Replace every 15,000
Air Filter .....	Replace every 30,000
Fuel Filter .....	Replace every 15,000

### STARTER

All models are equipped with Bosch starters.

### ALTERNATOR

Application	Rated Amp. Output
Convertible, Scirocco, Vanagon .....	65
Dasher, Pickup, Rabbit (F.I.) .....	55, 65
Jetta .....	45, 65
Rabbit (Carburetor) .....	35

### ALTERNATOR REGULATOR

Bosch & Motorola — Non-Adjustable; integral with alternator.

### CAPACITIES

Application	Quantity
<b>Crankcase (Including Filter)</b>	
Dasher .....	3.2 qts.
All Other Models .....	3.7 qts.
<b>Cooling System</b>	
Dasher .....	6.3 qts.
All Other Models .....	4.9 qts.
<b>Man. Transaxle (SAE 80W-90)</b>	
Vanagon .....	3.7 qts.
All Other Models	
4 Speed .....	1.6 qts.
5 Speed .....	2.1 qts.
<b>Auto. Transmission (Dexron)</b>	
All Models .....	3.2 qts.
<b>Auto. Trans. Differential (SAE 90)</b>	
Vanagon .....	3.0 pts.
All Other Models .....	1.6 pts.
<b>Fuel Tank</b>	
Dasher .....	11.9 gals.
Rabbit Pickup .....	15.0 gals.
Vanagon .....	16.0 gals.
All Others Models .....	10.5 gals.