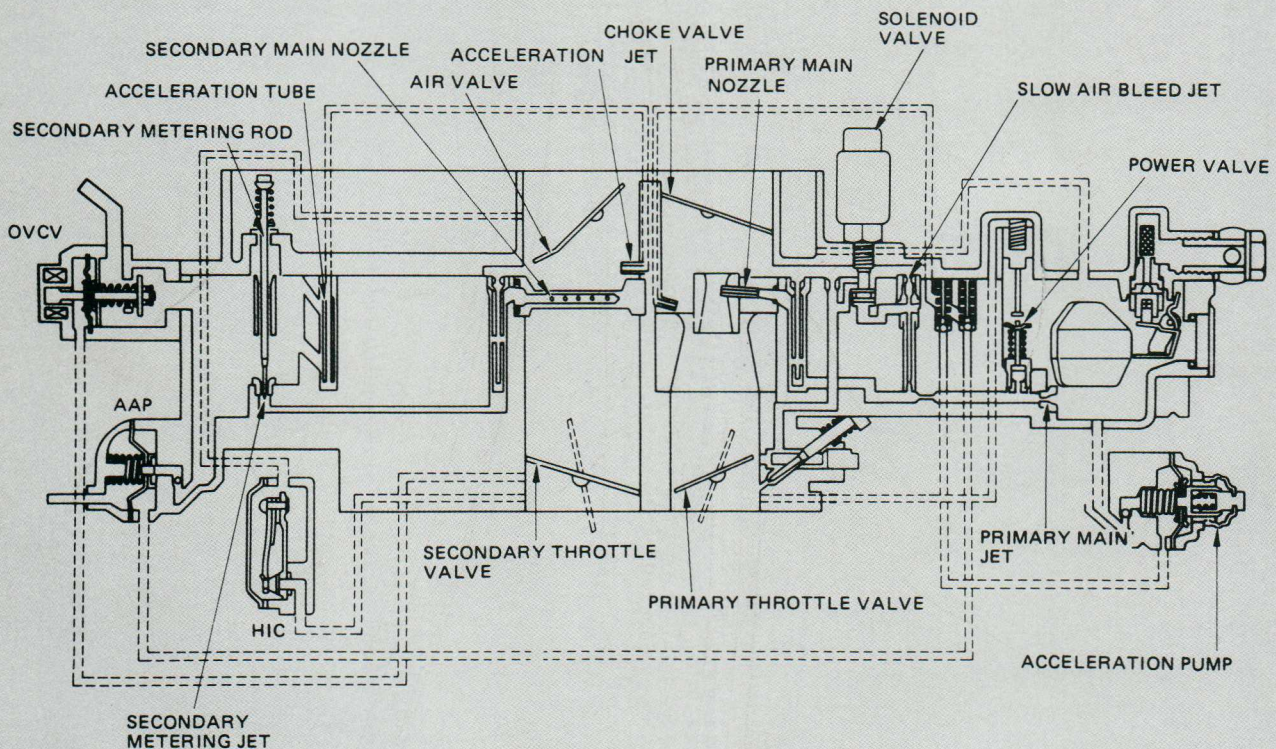


FUEL SYSTEMS

22R Carburetor



IN THIS ISSUE:

- Fuel Characteristics
- Fuel Filters
- 22R Air Valve Carburetor
- Fixed Venturi Carburetor Assembly

The only tool you need to clean EFI injectors



Clogged fuel injector nozzles can cause rough idling. Hesitation. Now there's an easy way to dissolve deposits that affect engine performance: Just open a can of Toyota EFI Injector Cleaner.

Pour the cleaner directly into your customer's half-full fuel tank and drive. Within an hour, the deposits will be gone. And the car will run clean. Because it is clean.

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Follow label directions carefully to avoid possible damage to fuel hoses.

TOYOTA SERVICE NEWS

Summer 1989

Bulletin 32

This issue of Toyota Service News reviews some of the Toyota carbureted fuel systems. Inside, you'll find information on engine fuels, fuel filters for carbureted engines, variable venturi carburetor operation and theory, and carburetor service and diagnosis.

PAGE DESCRIPTION ARTICLE NO.

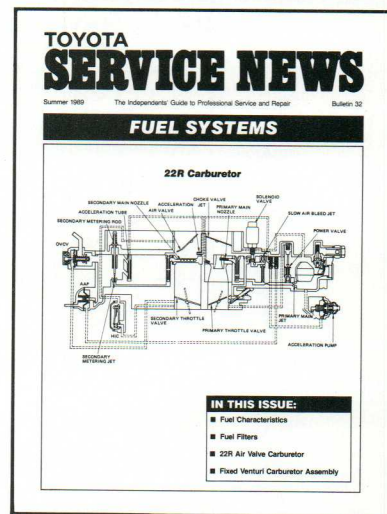
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On the Cover



Fuel Systems. They keep you running smoothly as long as you know how they work — and why. In this issue you'll find out about many fuel system components and how they work together. There's also information on how the fuel system works with the carburetor.



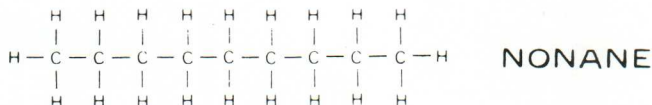
Article No. 278

FUEL CHARACTERISTICS

Fuel can make a difference in vehicle driveability. Understanding fuel characteristics will help you make a faster diagnosis. Before you begin any fuel system repair, determine the type of fuel that has been used in the vehicle. What may appear to be a fuel system problem may simply be a fuel problem.

Gasoline is a blend of various hydrocarbons that have a boiling range of 27° to 204° C (81-399° F). Some examples of hydrocarbons that make up gasoline are pentane, hexane, heptane, octane, nonane and decane.

Most, but not all, hydrocarbon molecules that make up motor fuels are organized in "chains." This means that their carbon atoms are arranged in a straight linked row, with hydrocarbon atoms bonded onto carbon atoms. These carbon atoms are also bonded directly to each other.

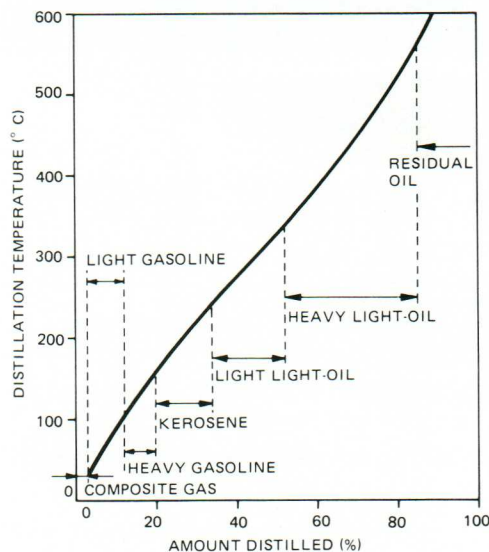


The characteristics of gasoline are primarily affected by crude oil base stock, refining and additives.

Characteristics

Some important characteristics of all gasolines are:

- They must be **non-corrosive** to fuel system components.
- They should be of the **correct volatility** to promote good low-temperature evaporation. This will prevent hard starting or poor performance during high ambient or engine temperatures.



- The **specific gravity** must be low enough (0.60 - 0.78) to assure that the fuel's boiling point promotes easy starting. Fuels with high specific gravity will deliver more power because more fuel can be compressed into a given volume.
- They must leave only minimal deposits of **ash/sulphur** (a by-product of combustion) in the combustion chamber.
- They must contain a **detergent additive** to prevent deposits from building up in the engine and fuel system.
- They must contain an **anti-icing/corrosion additive** to prevent gas lines from freezing and carburetors from icing.
- The **anti-knock quality** of the fuel must be correct for the combustion characteristics of the engine.



FUEL CHARACTERISTICS (Continued)

Normal Combustion

A "normal" combustion cycle goes through three stages:

Formation: Formation occurs when the spark jumps the plug air gap and the first stage, or flame, develops.

Hatching Out: Hatching out refers to when the nucleus is torn apart so that it sends fingers of flame into the mixture in the combustion chamber.

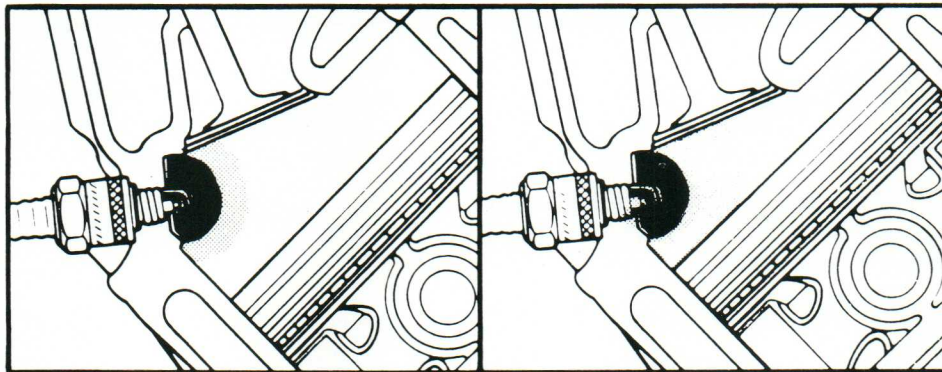
Propagation: Propagation is the effective burning of fuel when the flame front sweeps across the combustion chamber.

Abnormal Combustion

Detonation: Detonation is a form of abnormal combustion that takes place during the propagation stage of combustion. As the flame sweeps from the spark plug area across the combustion chamber, the unburned gases ahead of it are further compressed and heated to very high temperatures.

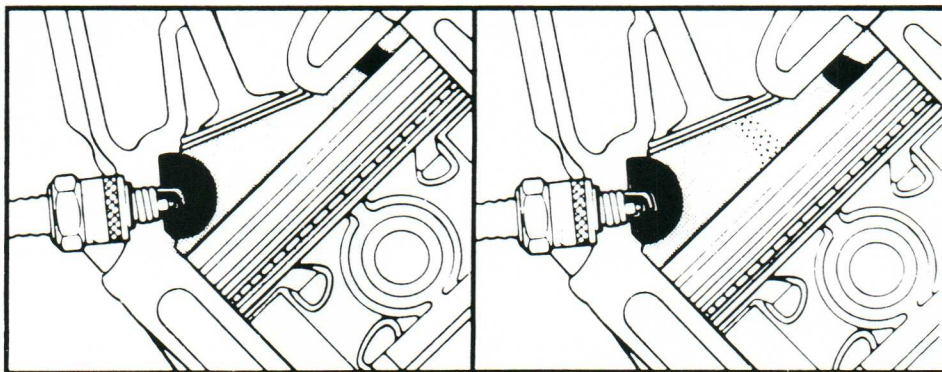
If conditions are correct, the extreme heating of the unburned part of the mixture may cause it to ignite spontaneously and explode. This secondary explosion creates another flame front which sweeps across the chamber and collides with the first. This results in shock waves, producing a knocking noise that is recognized as detonation.

Abnormal Combustion — Detonation



SPARK OCCURS ...

COMBUSTION BEGINS ...



CONTINUES ...

DETONATION



FUEL CHARACTERISTICS (Continued)

Octane Number (Anti-Knock Quality)

The octane number of gasoline is a measure of its ability to burn smoothly and deliver full power. Rapid, uncontrolled combustion will result in power loss and eventual engine damage.

The higher the octane number of a given fuel, the greater its ability to prevent abnormal combustion and detonation. Octane numbers are usually assigned by using one of two methods: **research method** or **motor method**.

The research method involves a less severe test procedure, so it will always yield a higher number than the motor method. The number shown on filling station pumps is generally an average of the two, or:

$$\frac{\text{Research} + \text{Motor}}{2}$$

The octane requirements of a given engine are determined by design parameters such as:

- Ignition timing
- Air/fuel mixture temperature
- Combustion chamber shape
- Compression ratio
- Air/fuel ratio
- Cooling system effectiveness
- Intake air turbulence
- Overall volumetric engine efficiency

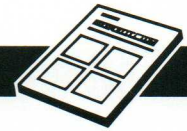
All of the above will affect the combustion characteristics of a given engine design.

Engine conditions that affect octane requirements are:

- Amount and degree of engine load
- Engine rpm
- Barometric pressure
- Ambient air temperature
- Humidity

The following **Octane Improving Agents** may be blended with gasoline to raise its basic octane number:

- **Tetraethyl lead** has been used by refiners for many years as an octane enhancer and to prevent valve wear. Since 1/1/86, U.S. regulations have limited the amount of allowable lead in regular gasoline to 0.10 grams per gallon.
- **MMT** (methylcyclopentadienyl manganese tricarbonyl) prevents both exhaust valve seat wear and raises octane quality. High concentrations of MMT can produce a hard metal compound that may cause engine wear. In addition, MMT will leave rust-colored residue in the combustion chamber and deposits on spark plugs.



FUEL CHARACTERISTICS (Continued)

- **Alcohol**, both ethyl and methyl, are used as an octane improver in gasoline. No loss of driveability will occur with fuel/alcohol blends up to 10 percent ethanol and 5 percent methanol.

Although alcohol is a good agent for raising the octane quality of fuel, it does have both advantages and disadvantages.

Advantages of blending alcohol with gasoline:

- Stretches the refiner's supply of crude oil
- Decreases the cost per gallon
- Raises the fuel octane rating
- Reduces exhaust emissions

Disadvantages of blending alcohol and gasoline:

- Premature failure of fuel system components due to alcohol corrosion
- Volatility may be increased too much, causing driving problems
- Leans out carburetor
- Will cause water to separate from gasoline

Gasoline Volatility

The volatility of gasoline is a measure of its ability to change into a vapor (how readily it boils). This is a very important characteristic since it affects everything from carburetor operation to engine performance.

Fuels of too **high volatility** may cause:

- Engine stall after a "hot soak"
- Poor hot weather performance
- Vapor lock
- Fuel starvation in fuel manifolds, pumps, lines or filters

Fuels of too **low volatility** may cause:

- Hard starting when cold
- Carburetor icing
- Poor fuel economy
- High amount of combustion chamber deposits
- Crankcase dilution

The various pump fuels available to the consumer contain a blend of many different hydrocarbons. Butane (a byproduct of crude oil) is blended with engine fuels to improve their vaporizing ability.

In winter months, more butane is used for improved cold starting. The volatility of a given sample of fuel is determined by testing its **Reid Vapor Pressure**.

Reid Vapor Pressure Test

- **Definition:** A testing procedure used to determine a fuel's ability to vaporize at 38° C (100° F). This procedure measures the butane content of the fuel to determine its volatility.
- **Application:** The higher the Reid Vapor Pressure test number, the easier fuel vaporizes. Fuels with too high volatility can cause some serious driveability problems. Typical RVP numbers are nine in the summer and 12 in the winter. In recent random samplings, however, these numbers seem to be increasing — indicating a rise in fuel volatility.



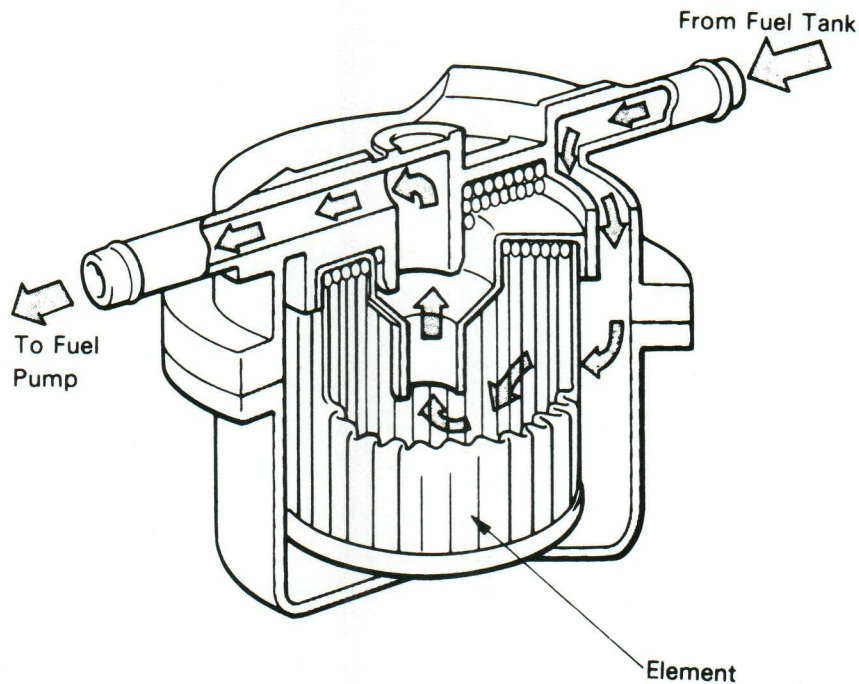
Article No. 279

FUEL FILTERS FOR CARBURETED ENGINES

Fuel filters on carbureted Toyota vehicles are located between the tank and fuel pump. Filters use a resin-treated paper element, which is designed to remove particles larger than five microns. Like other components of the fuel system, fuel filters can be damaged by water, alcohol and deposits.

Service

- **Normal service interval:** Consult your repair manual and/or vehicle owner's manual
- **Restricted fuel filters** can cause fuel starvation symptoms, low float chamber fuel levels and driveability problems.
- **Black coloration of the filter bowl** is a good indicator of alcohol deterioration of fuel system components from high alcohol concentrations.



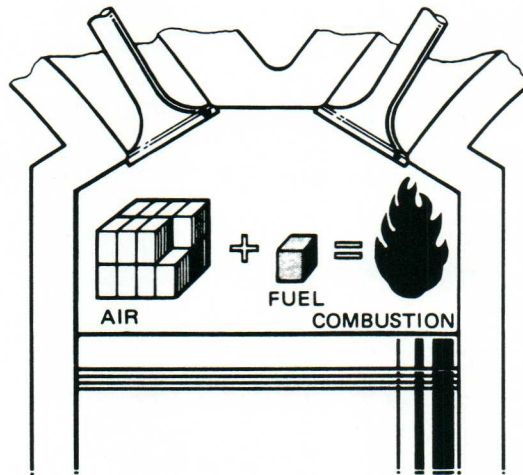


Article No. 280

AIR/FUEL RATIOS

The air and fuel mixture delivered to the combustion chamber must be of correct proportions to promote complete combustion, full power and maximum fuel economy. The amount of air and fuel delivered is expressed as the air/fuel ratio or a/f ratio, and is measured in units of weight.

The ideal a/f ratio for complete combustion is about 15 parts air and one part fuel (by weight) or 15:1. The ideal ratio for an engine is referred to as the stoichiometric a/f ratio.



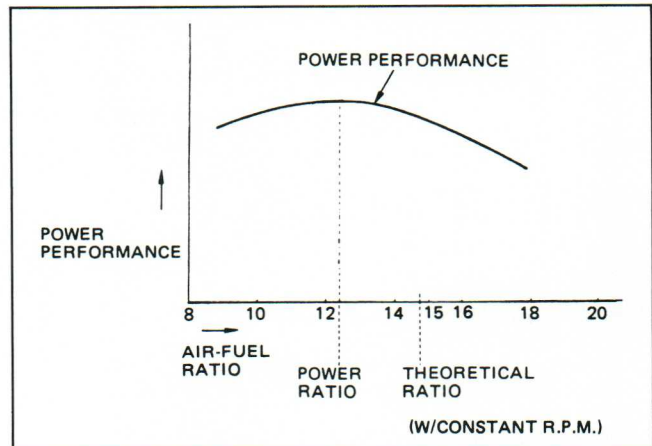
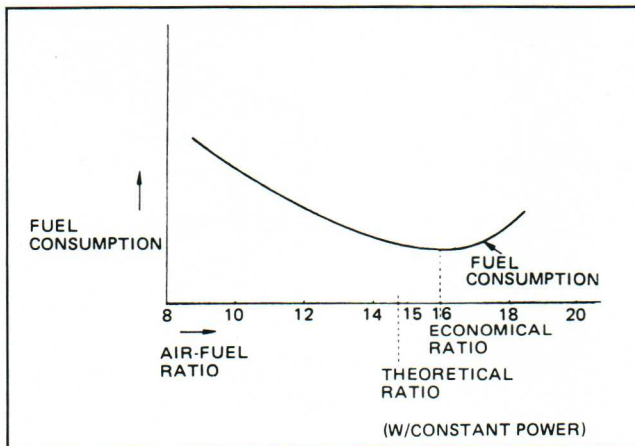
During operation, the carburetor must vary the a/f ratio to adjust for changing operating conditions such as:

- Temperature (engine and ambient)
- Engine rpm
- Engine load
- Altitude

Some examples of varied a/f ratios are:

- Starting 9:1
- Idle 12:1
- Cruise 15:1
- Power 13:1
- Deceleration 19:1

Air/fuel ratios are modified by a variety of carburetor circuits.





Article No. 281

22R (TRUCK) AIR VALVE CARBURETOR

As a continuation of our series on carburetion, this article looks at the specific adjustment requirements of the 22R carburetor with secondary air valve. This article will assist you in tuning your customer's Toyota vehicle for better performance.

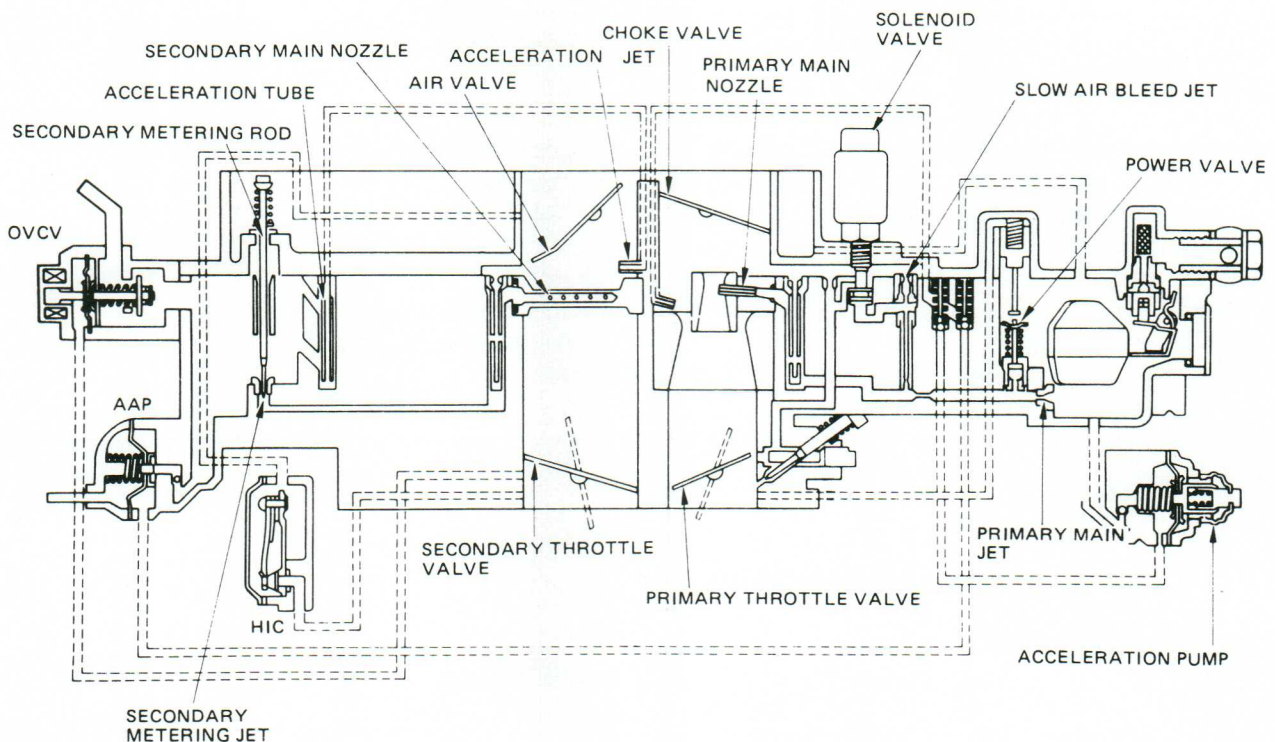
22R Carburetor with Secondary Air Valve

The 1981 model year brought about some changes to the "R" engine family. For one, the 22R replaced the 20R. The carburetor was also modified slightly. The primary differences between the 20R and the 22R carburetors are that in the 22R:

- Primary circuits are slightly different from the ones in the 20R.
- The choke circuit relies on a ceramic heating element. The 20R had a water-heated design.

- The choke coil is riveted in place. It cannot be adjusted.
- The choke breaker is non-adjustable and part of the air horn assembly.
- The choke opener is replaceable, but uses hardened linkage. It cannot be adjusted.
- The idle mixture adjustment screw is sealed with a steel plug to prevent mixture tampering. All 1981 carburetors have sealed idle mixture screws.
- The accelerator pump utilizes a "diaphragm type" pump design that is actuated by an eccentric cam. The 20R used a plunger accelerator pump.
- The overall throttle valve area is increased.

22R Carburetor





Article No. 282

ON-BENCH 22R (TRUCK) AIR VALVE CARBURETOR OPERATION

Components of the Secondary Circuit in the 22R Carburetor

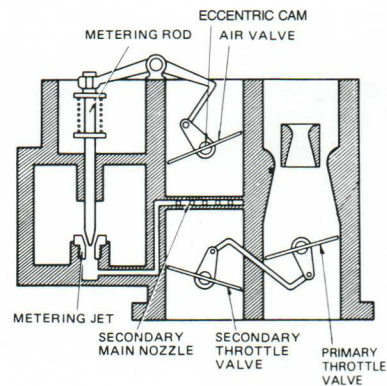
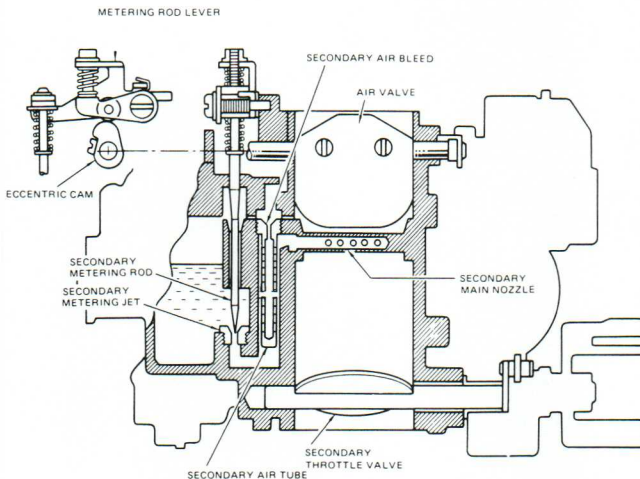
- Secondary throttle valve
- Secondary main nozzle
- Secondary air bleed
- Secondary metering jet
- Secondary metering rod
- Metering rod lever
- Eccentric cam
- Secondary air tube
- Secondary air valve

The 22R secondary circuit has changed significantly from the 20R.

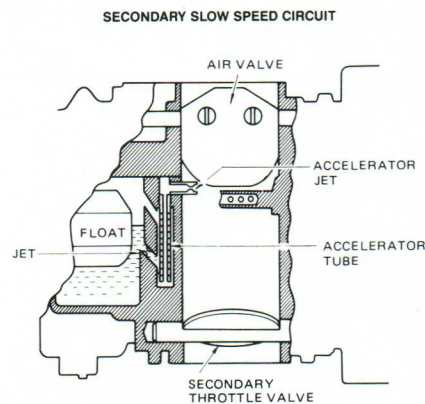
1. A vacuum-operated secondary has replaced the mechanical linkage type. This new design has an air valve which opens to start secondary fuel flow.
2. The secondary throttle plate is opened through mechanical linkage attached to the primary throttle valve. The position of the air valve acts as a variable venturi to regulate air flow speeds in the secondary (no secondary venturi is used).

3. A vacuum is created under the air valve when the secondary throttle valve opens. At this point the air valve, which is spring loaded to the closed position, will begin to open due to a combination of high atmospheric pressure pushing down on its top, and a vacuum on its underside.
4. The opening distance of the air valve depends on a difference of air pressure and the tension of the air valve spring.

Secondary circuit fuel metering occurs when the air valve cross shaft, which is connected to an **eccentric cam**, lifts a metering rod. This changes the size of the secondary main jet opening, and thereby controls enrichment.



The secondary slow speed circuit uses an **accelerator jet** to meter fuel delivery to the secondary circuit. Initial enrichment occurs as the secondary throttle valves begin to open. Fuel delivery begins when air flow through the secondary is great enough to cause a siphoning effect at the end of the jet.





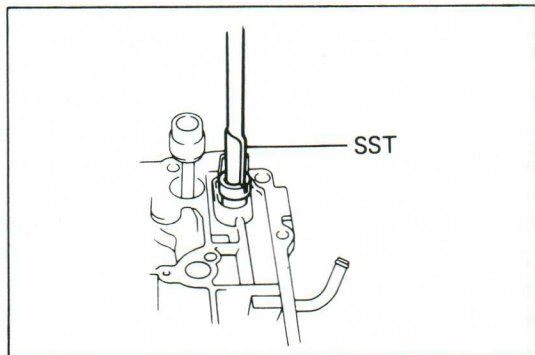
Article No. 283

ON-BENCH 4A-C (COROLLA) FIXED VENTURI CARBURETOR AIR HORN ASSEMBLY

Air Horn Assembly/Adjustments:

Install valve seat.

- Install with new gasket.

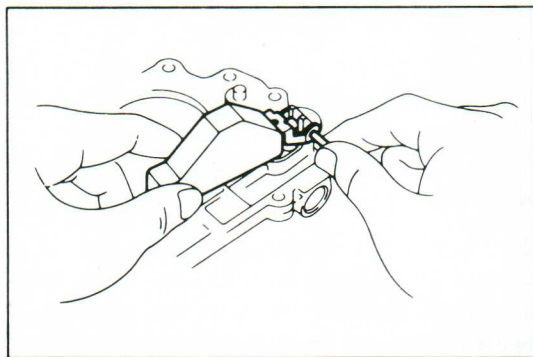


Adjust float level.

- Install needle valve, spring and plunger.

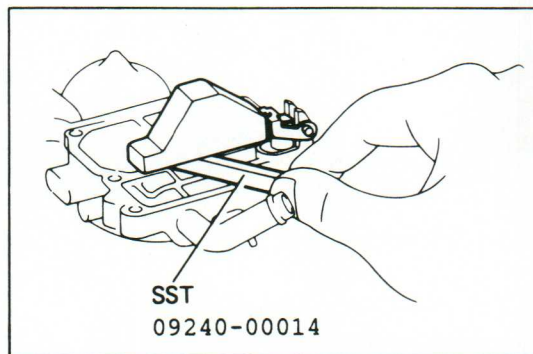
Note: Install the float clip after adjusting the float level.

- Install the float and pin.

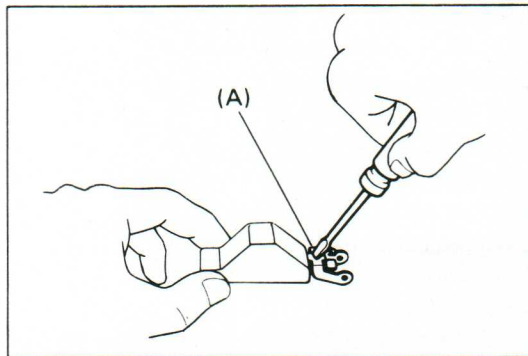


- Allow float to hang by its own weight. Check the clearance between the float and the air horn using an SST. The float level should be 7.2mm (0.283 in.).

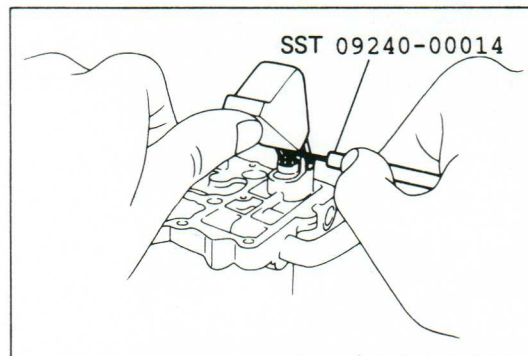
Note: Measurement is made without the air horn gasket.



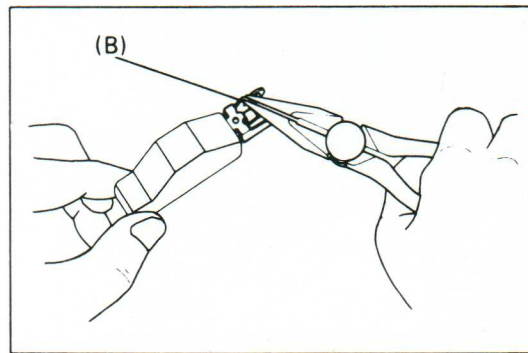
- Adjust by bending (A) portion of float lip.

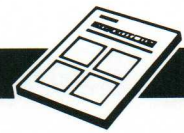


- Using SST 09240-00020, lift up the float and check the clearance between the needle valve plunger and the float lip. The float level should be 1.67-1.99mm (0.0657-0.0783 in.) when in the lowered position.



- Adjust by bending (B) portion of float lip.





Article No. 284

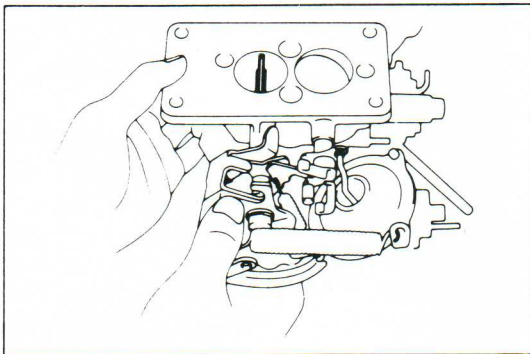
4A-C (COROLLA) FIXED VENTURI CARBURETOR BENCH ADJUSTMENT

Adjustments

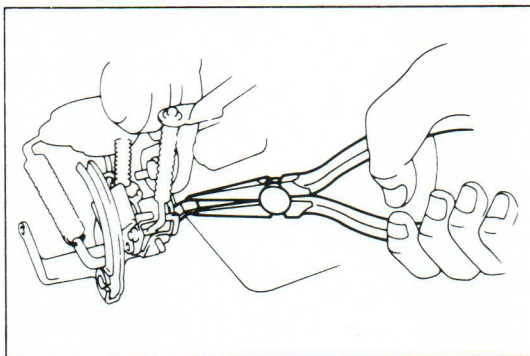
To complete the adjustments you will need SST 09240-00014 and SST 09240-00020.

Check/adjust the throttle valve opening.

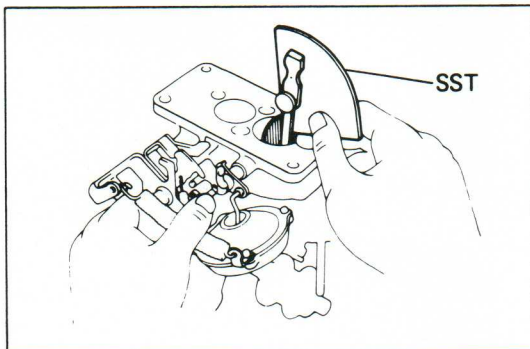
- Make sure the primary throttle valve is completely open. The standard angle should be 90°. A "T" type carburetor gauge can be used to check the angle.



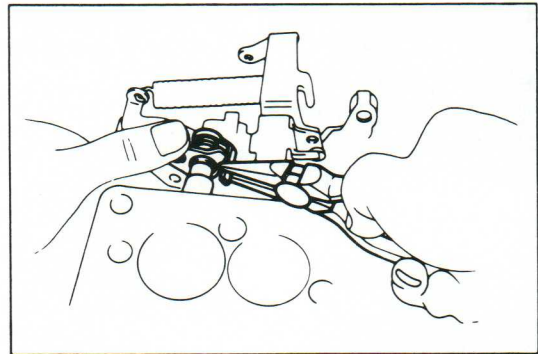
- Adjust as necessary by bending the first throttle lever stopper.



- Check to see that the secondary throttle valve is completely open. The standard angle should be 80°.

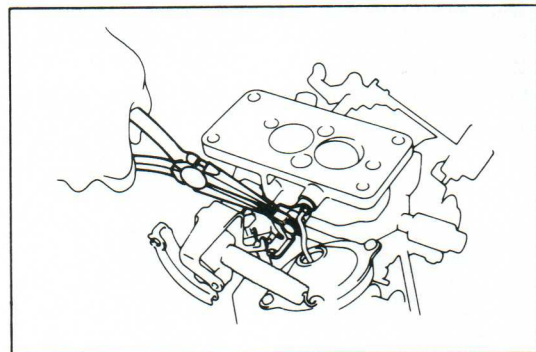
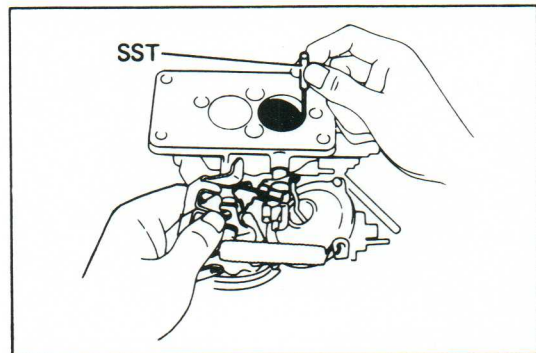


- Adjust as necessary by bending the secondary throttle level stopper.



Check/adjust the kick-up setting.

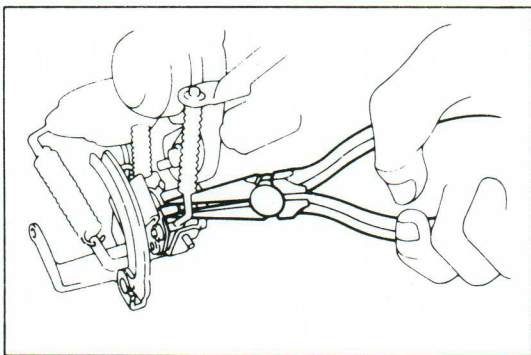
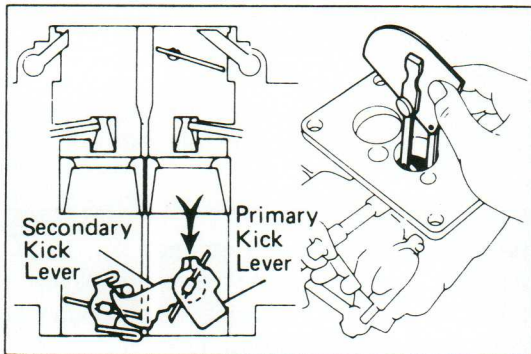
- With the primary throttle valve completely open, check the clearance between the secondary throttle valve and the body. The kick-up clearance should be (U.S. only) 0.11-0.22mm (0.0043-0.0087 in.).





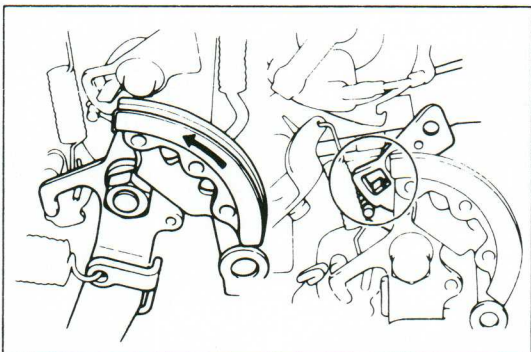
4A-C (COROLLA) FIXED VENTURI CARBURETOR BENCH ADJUSTMENT (Continued)

- Adjust by bending the secondary throttle lever.
- **Check/adjust the secondary touch angle.**
- Check the primary throttle valve opening angle when the first kick lever just touches the second kick lever. The standard angle should be 52° (measured from horizontal). Use 5.0mm wire gauge at the leading edge of the secondary throttle valve.
- Adjust by bending the first kick lever.

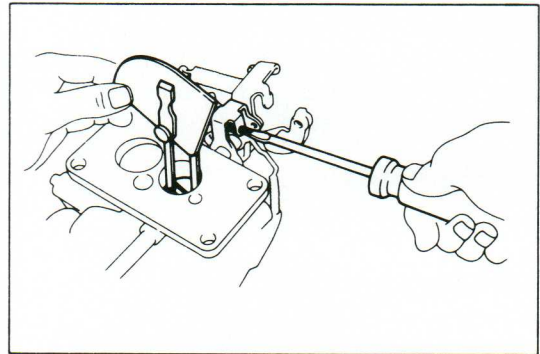


Check/adjust the fast idle setting.

- Set throttle shaft lever to first step. Adjust the idle cam as shown.
- With the choke valve completely closed, check the primary throttle valve angle.

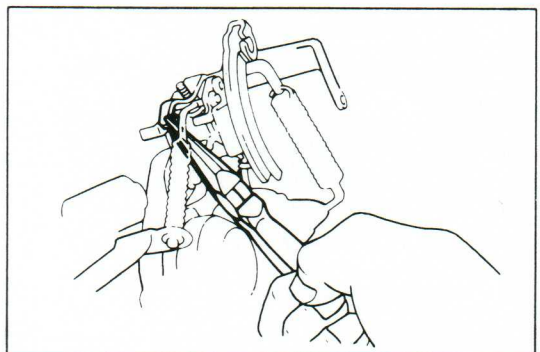
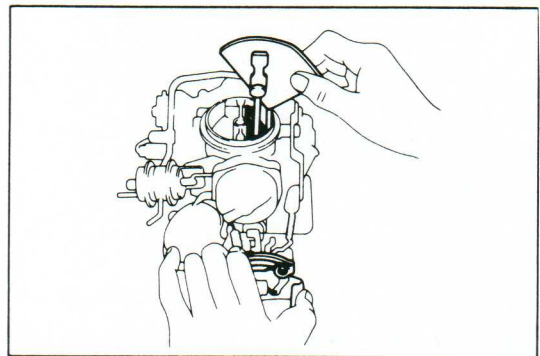


- Adjust by turning the fast idle adjusting screw. The standard angle should be 21° (measured from horizontal). Use 1.0mm wire gauge at the leading edge of the primary throttle valve.



Check/adjust the unloader.

- With the primary throttle valve completely opened, check the choke valve angle. The standard angle should be (U.S. only) 41° (measured from horizontal). Use 2.4mm wire gauge at the leading edge of the choke valve.
- Adjust by bending the fast idle lever.

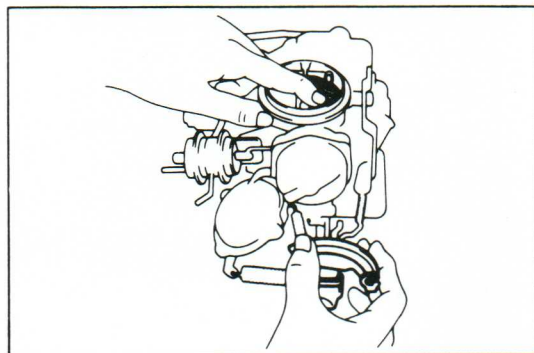




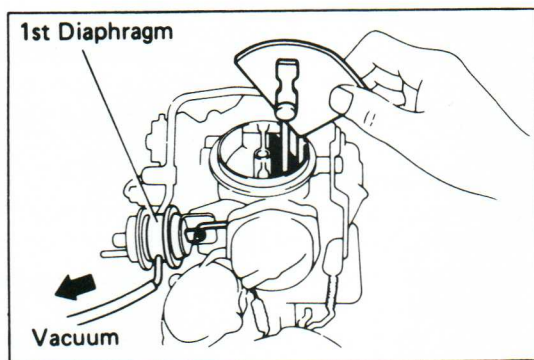
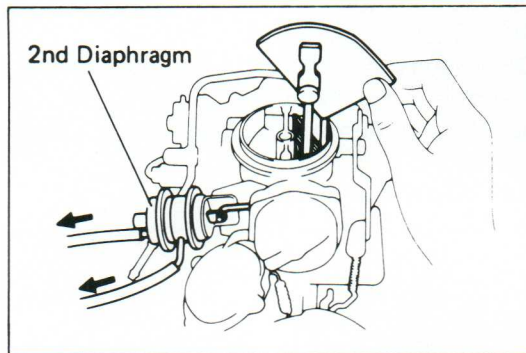
4A-C (COROLLA) FIXED VENTURI CARBURETOR BENCH ADJUSTMENT (Continued)

Check the choke breaker.

- Set the fast idle cam. While holding the throttle slightly open, push the choke valve closed and hold it closed as you release the throttle valve.



- Check the choke valve angle. The standard angle should be (U.S. only) 55° (measured from horizontal). Use 4.4mm wire gauge at the leading edge of the choke valve.

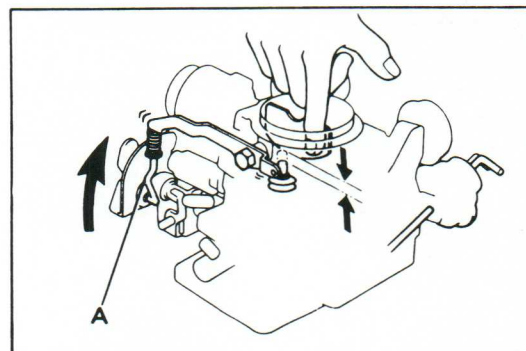
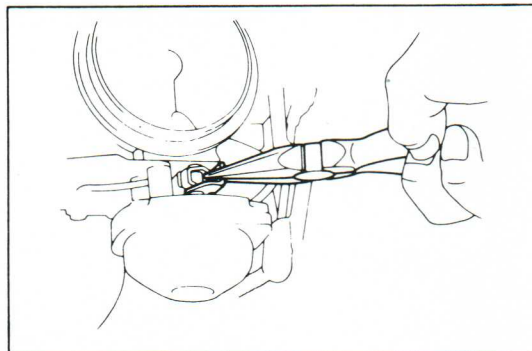
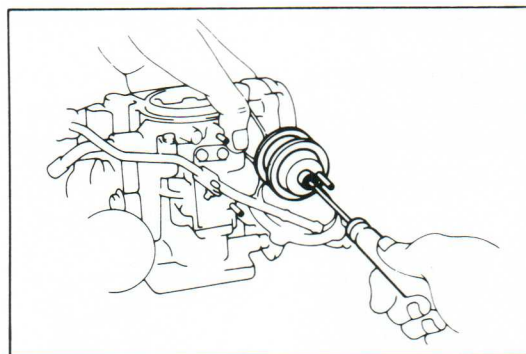


- Adjust by turning the diaphragm adjusting screw.

Check/adjust the pump stroke.

- With the choke valve fully opened, check the length of the stroke. The standard stroke is (U.S. only) 2.0mm (0.079 in.).

- Apply the vacuum to the first choke breaker diaphragm.
- Check the choke valve angle. The standard angle should be (U.S. only) 38° (measured from horizontal). Use 2.0mm wire gauge at the leading edge of the choke valve.
- Adjust by bending the "relief" lever.
- Apply the vacuum to the first and second choke breaker diaphragms.



- Adjust pump stroke by bending the (A) connecting link.



Article No. 285

4A-C (COROLLA) FIXED VENTURI CARBURETOR ON-VEHICLE ADJUSTMENT

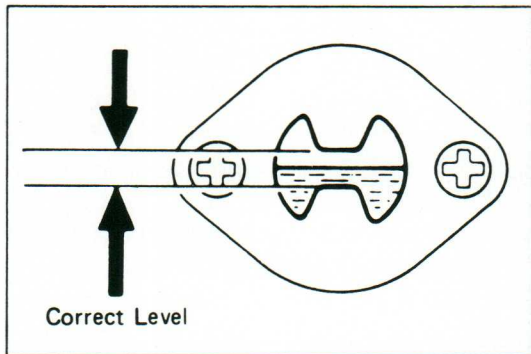
Carburetor Adjustment on Vehicle With Engine Running

Initial conditions:

- All accessories off.
- Correct ignition timing.
- Transmission in "N" range.

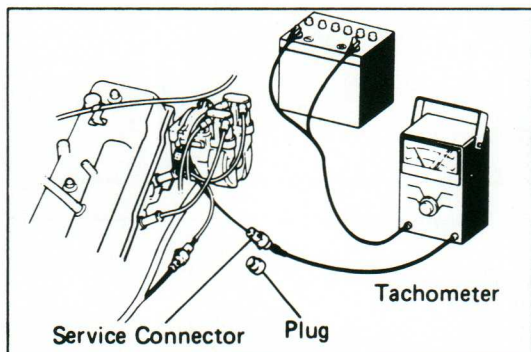
Warm engine to operating temperature. Check float level.

- Fuel level should be within limits.



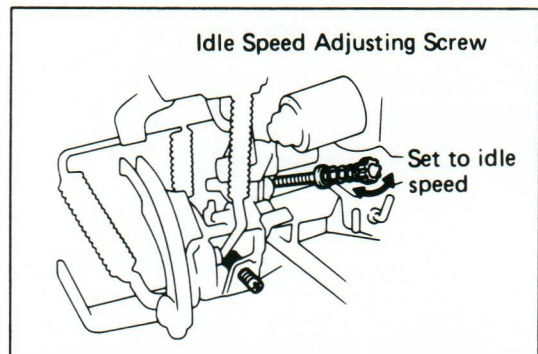
Check for fully open choke valve.

Connect the tachometer. Confirm the compatibility of your tach with the ignition system.



Adjust the idle speed.

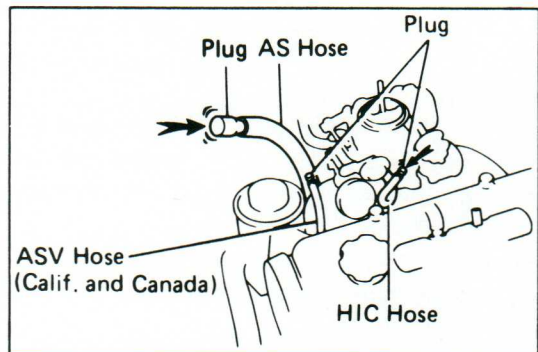
- Adjust idle speed by turning the idle speed adjusting screw. Manual transmission idle speed should be 650 rpm. Automatic transmission idle speed should be 750 rpm.



Note: Leave tachometer connected for further adjustments.

Adjust the fast idle speed.

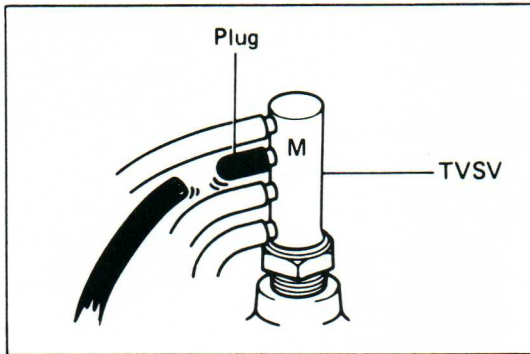
- Stop the engine and remove the air cleaner.
- Plug the AS hose (Calif.) to prevent any leakage of exhaust gas and the ASV hose (Calif.) to prevent rough idling.



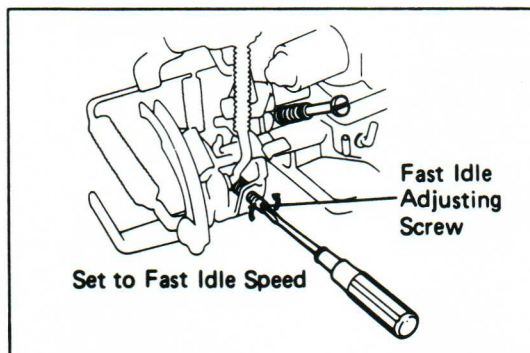


**4A-C (COROLLA) FIXED VENTURI CARBURETOR
ON-VEHICLE ADJUSTMENT (Continued)**

Disconnect the hose from the TVSV "M" port and plug the "M" port. This shuts off the choke opener and EGR systems.

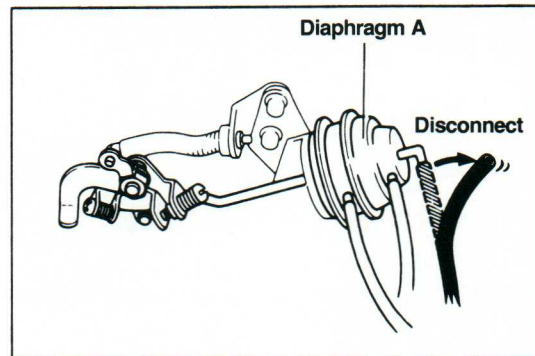


- Set the fast idle cam.
- Start the engine, but do not press the accelerator.
- Set the fast idle speed by turning the fast idle adjusting screw. Fast idle speed should be 3000 rpm.

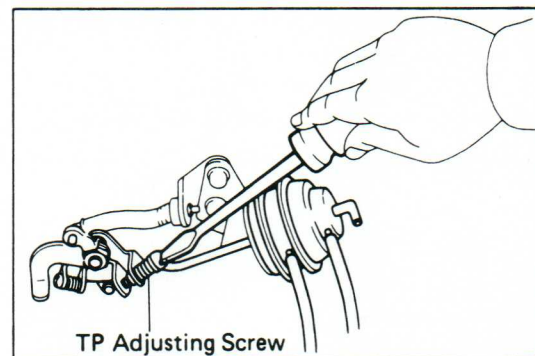


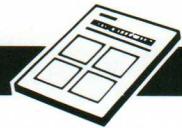
Adjust the throttle positioner (TP).

- Disconnect the vacuum hose from TP diaphragm "A."
- Check that TP is set at the first step (electrical load idle-up). The first step speed should be 800 rpm for manual transmissions; 900 rpm for automatic transmissions.



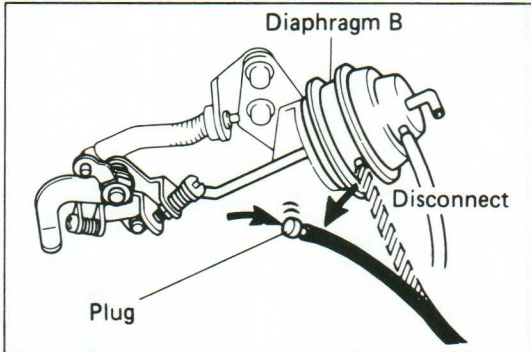
- Adjust the TP adjusting screw (cooling fan must be off).
- Reconnect the vacuum hose to diaphragm "A."



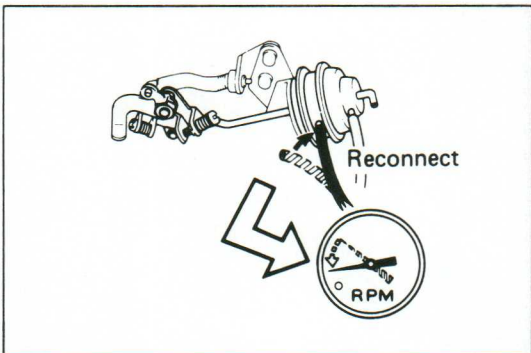


**4A-C (COROLLA) FIXED VENTURI CARBURETOR
ON-VEHICLE ADJUSTMENT (Continued)**

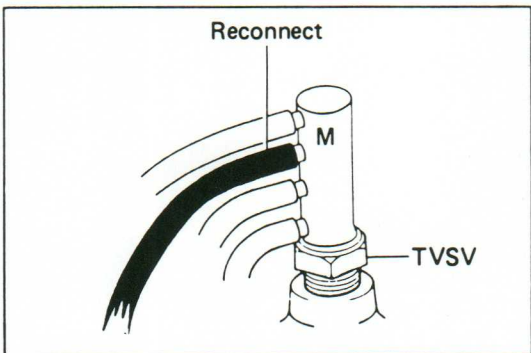
- Disconnect and plug the vacuum hose from TP diaphragm "B."
- Check that TP is set at the second step. The second step speed should be 1400 rpm for manual transmissions; 1500 rpm for automatic transmissions.



- Reconnect the vacuum hose to TP diaphragm "B," and check that the engine returns to idle speed within 2-6 seconds.

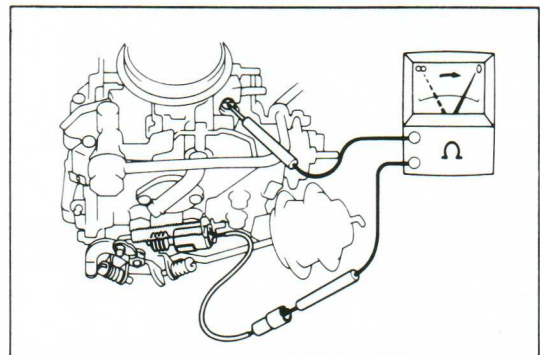


- Reconnect the vacuum hose to the TVSM "M" port.



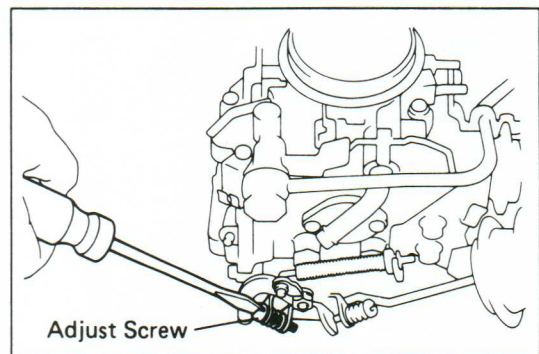
Adjust the throttle position switch.

- Disconnect the switch connector.
- Connect an ohmmeter to the switch connector and throttle body.
- Slowly raise the engine rpm.
- Check the throttle position switch setting when the ohmmeter shows continuity. The setting speed should be 1800 rpm.



Adjust by turning the throttle position switch adjusting screw.

- Stop the engine.
- Install the air cleaner, intake ducts, all hoses and wires.





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4A-C (COROLLA) FIXED VENTURI CARBURETOR ON-VEHICLE IDLE ADJUSTMENT

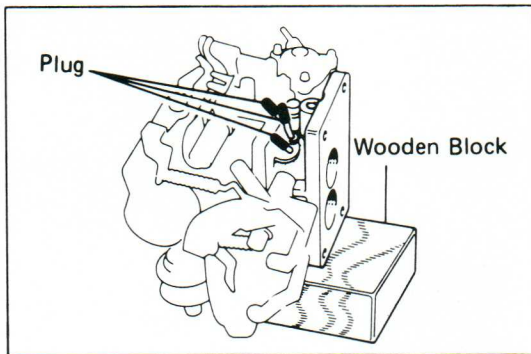
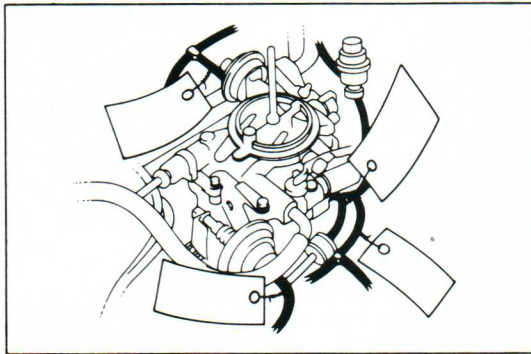
Idle Mixture Adjustment

To conform with U.S.A. and Canadian regulations, the idle mixture adjusting screw is preset and sealed with a steel plug by the manufacturer. **Normally this plug should not be removed.**

When troubleshooting rough idle symptoms and all other possibilities have been eliminated (i.e. ignition, emission, mechanical, etc.), the mixture adjustment plug (MAS) may have to be removed to gain access to the idle mixture adjustment screw.

Remove carburetor.

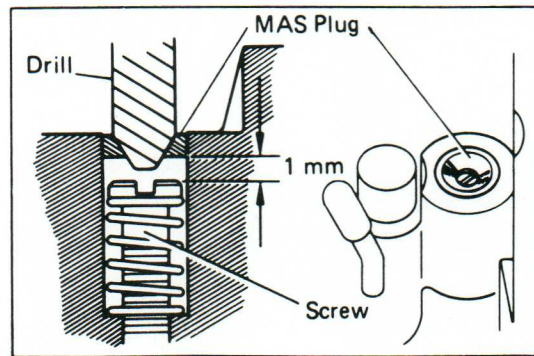
- Tag all vacuum hoses and electrical connections.
- Remove the carburetor.
- Cover the intake manifold.



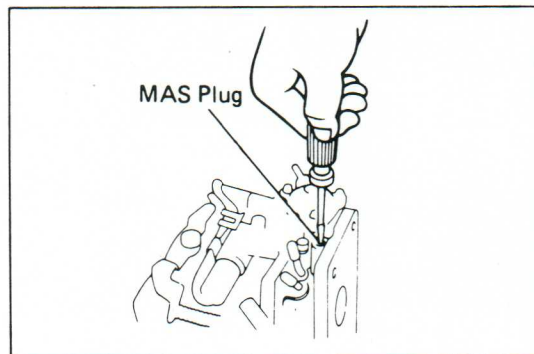
Remove the MAS plug.

- Plug all vacuum ports to prevent steel entry.
- Center punch the MAS plug.
- Drill a 6.5mm (0.256 in.) hole in the center of the plug.

Note: Drill carefully, as there is only 1.0mm (0.040 in.) clearance between the plug and the screw. The drill may force the plug off at any time.



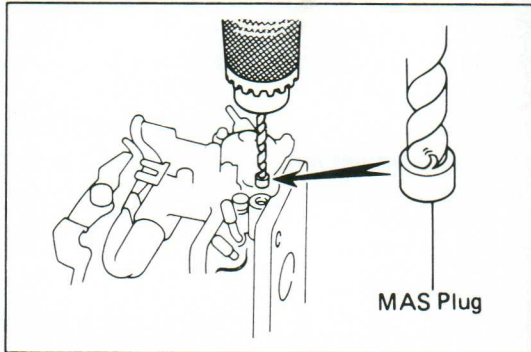
- Screw in the idle adjusting screw through the hole in the plug. **Do not overtighten the screw.**





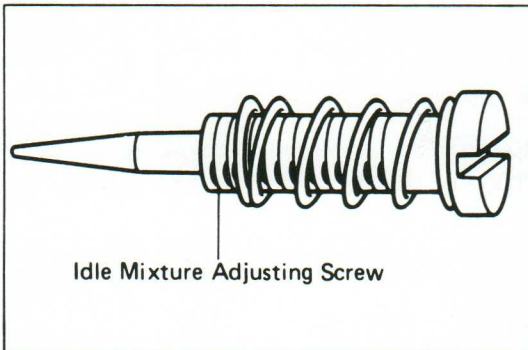
**4A-C (COROLLA) FIXED VENTURI CARBURETOR
ON-VEHICLE IDLE ADJUSTMENT (Continued)**

- Use a 7.5mm (0.295 in.) drill bit to remove the plug.



Inspect the mixture adjusting screw.

- Remove, clean and inspect the screw.
- Replace the screw if the drill bit damaged the head.



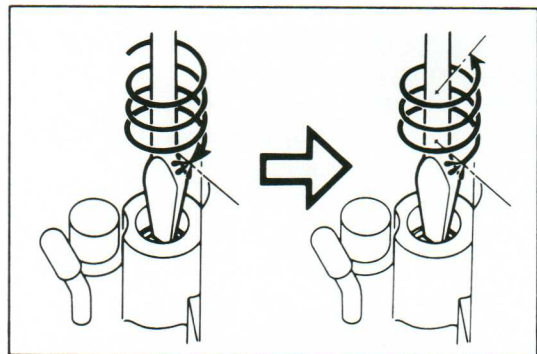
Reinstall the mixture adjusting screw.

- Install the mixture screw until it seats lightly, then back out 3/4 turns (U.S. only).

Reinstall the carburetor.

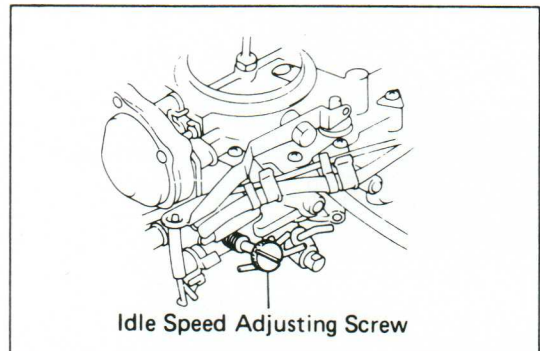
- Connect all hoses, electrical connectors and air cleaner.

Adjust the idle speed and mixture.



Initial conditions.

- Air cleaner installed.
- Engine at normal operating temperature.
- All accessories are off.
- All vacuum lines are connected.
- Transmission is in the "N" range.
- The wheels are straight ahead (power steering).
- Start the engine.

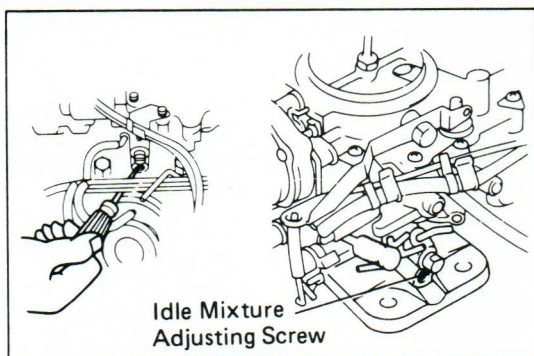




4A-C (COROLLA) FIXED VENTURI CARBURETOR ON-VEHICLE IDLE ADJUSTMENT (Continued)

Turn the *idle mixture adjustment screw* to obtain the maximum rpm.

- Set "mixture speed" by turning the **idle speed screw**. Set the idle speed to 700 rpm.
- Repeat the two procedures listed above until further turning of the **idle mixture adjustment screw** will not increase rpm above the set speed.

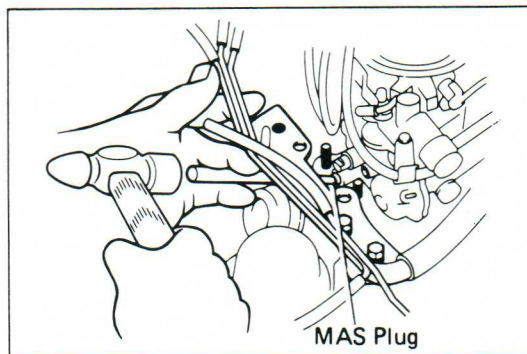


Install a new MAS plug.

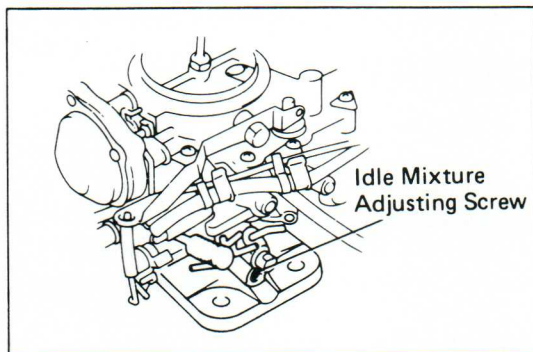
- Install the MAS plug tapered end in. It should be even with the carburetor surface.

Check/adjust the fast idle rpm.

Check/adjust the TP set speed.



- Turn the idle mixture adjustment screw to obtain a set idle mixture speed of 650 rpm.



RE MANUFACTURED AUTOMATIC TRANSMISSION

APPLICATION CHART

Vehicle	Model Number	Production Date	Engine	ATM Model	ATM Type	Avail. Date*	Reman. Part Number	Comments
COROLLA	AE82	8303-8707	4ALC	A131L	3 spd.	3/89	30510-12032-84	3FC
	AE82	8702-	4ALC	A131L	3 spd.	3/89	30510-01021-84	FX D 3FC
	AE92	8708-	4AF	A131L	3 spd.	3/89	30510-12350-84	SEDAN, WAGON 3FC AXC = 552
	AE92	8802-	4AF	A131L	3 spd.	3/89	30510-12430-84	SEDAN, WAGON 3FC AXC = 602
CAMRY	SV11	8208-8808	2SELC	A140E	4 spd.	6/89	30510-32340-84	ECT
	SV21	8608-8704	3SFE	A140E	4 spd.	6/89	30510-32320-84	ECT
	SV21	8704-	3SFE	A140E	4 spd.	6/89	30510-32320-84	DX, LX, ECT
	SV21	8708-	3SFE	A140L	4 spd.	6/89	30510-32330-84	STD
	VZV21	8802-	2VZFE	A540E	4 spd.	6/89	30510-32460-84	
CELICA	ST162	8508-8607	3SGELC	A140E	4 spd.	6/89	30510-20240-84	GTS ECT
	ST161	8508-8608	2SELC	A140L	4 spd.	6/89	30510-20450-84	
	ST162	8607-8708	3SGELC	A140E	4 spd.	6/89	30510-20400-84	GTS ECT
	ST162	8608-8708	3SFE	A140L	4 spd.	6/89	30510-20410-84	ST, GT
	ST162	8708-	3SGELC	A140E	4 spd.	6/89	30510-20350-84	GTS ECT
	ST162	8708-	3SGELC	A140E	4 spd.	6/89	30510-20390-84	GTS ECT W/ABS & CRUISE CONTROL
	ST162	8708-	3SFE	A140L	4 spd.	6/89	30510-20360-84	CP ST & GT CVT, LB GT

INTRODUCTION SCHEDULE

Availability Date*	Vehicle/ATM Model
7/89	Cressida A43DE, A340E Truck A43D, A340H Van A44DL, A45DL
8/89	Camry A540H Corolla A240L, A241H

***Availability subject to change without prior notice.
Check your Toyota Dealer for availability.**

AUTOMATIC VALUE.

TOYOTA REMANUFACTURED AUTOMATIC TRANSMISSIONS

They're here. Genuine Toyota Remanufactured Automatic Transmissions. Now you can experience automatic profits, as you increase customer satisfaction.

■ Genuine Toyota Quality.

Only Genuine Toyota parts are used, and all units are built and tested to meet original equipment specifications. Every ATM is dyno-tested for correct operation and comes complete with a torque converter. Front wheel drive units include differential assemblies, and four-wheel drive units include transfer case assemblies.

■ Excellent Warranty.

Toyota Reman ATMs are backed by an impressive 12 months limited warranty from the date of purchase from a Toyota Dealer.

■ Attractive Prices.

All units are competitively priced, especially when you compare the costs of individual overhaul parts, and the time and expense of performing the overhaul.

■ Less Repair Time.

Installation takes considerably less time than an overhaul. You'll get your customers' vehicles back on the road faster, as you free up your time for more repair business.

■ Reduced Customer Comebacks.

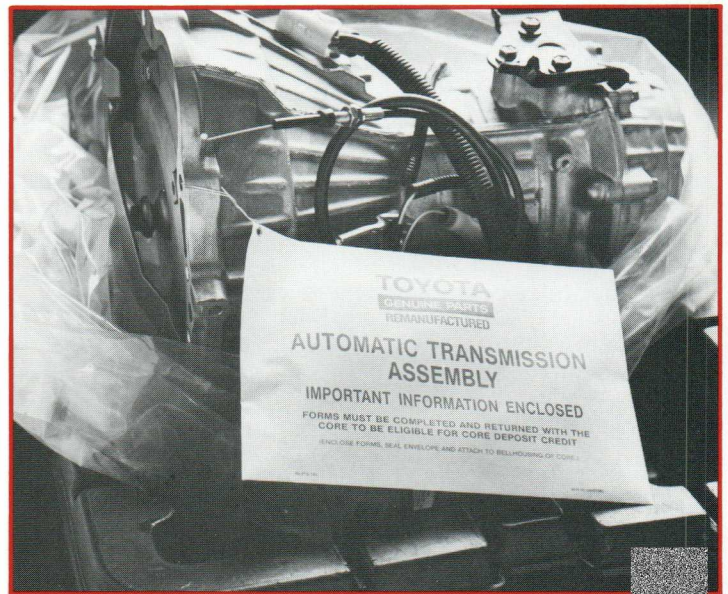
When you install a Toyota Reman ATM, you'll be fixing it right, the first time.

■ Easy-To-Follow Core Preparation

Toyota provides simple printed guidelines with every Reman ATM.

■ Count the Ways to Increased Customer Satisfaction.

- ✓ Genuine Toyota product quality
- ✓ An excellent limited warranty
- ✓ Attractive Prices
- ✓ Less Repair Time
- ✓ Reduced Customer Comebacks
- ✓ Easy-To-Follow Core Preparation



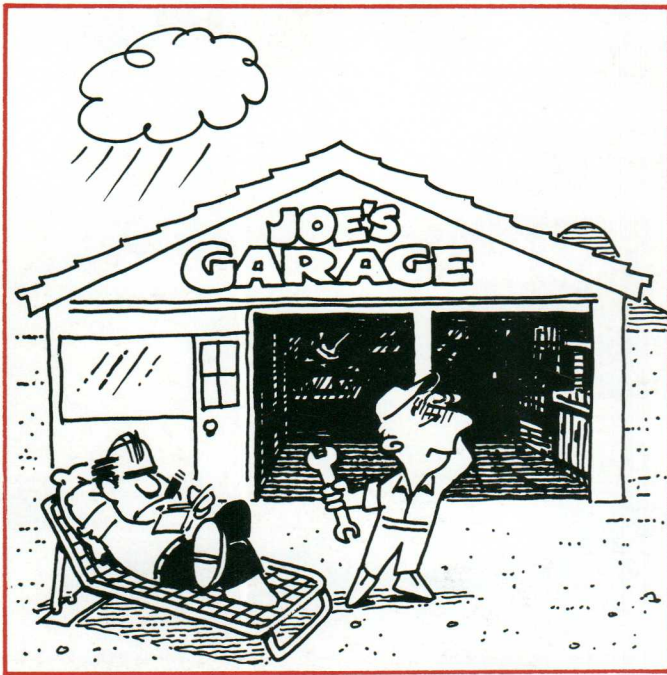
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Original Equipment Quality at Competitive Prices.

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TOYOTA QUALITY
WHO COULD ASK FOR ANYTHING MORE!

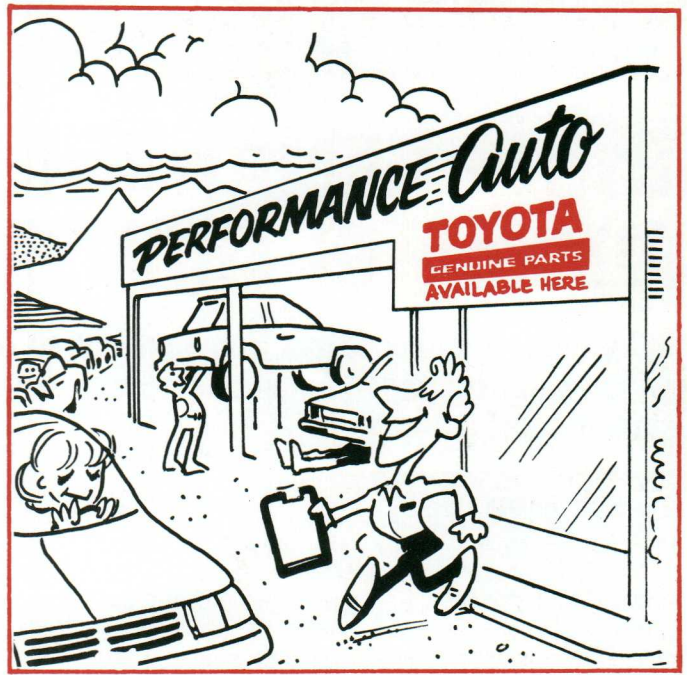
Traffic Sign.



When the flow of traffic into your shop is stop-and-go, it definitely can slow down your profitability.

But there's one sure way to attract more customers: Display Toyota Genuine Parts signage.

A Toyota Genuine Parts sign in your window or outside your shop says a lot of good things about you: That you're a professional. That you're concerned with providing excellent work. That you offer the



quality and value of Toyota Genuine Parts.

Toyota Genuine Parts signage sets your shop apart from the rest. It's a sign Toyota owners trust. And it's a sign that you care about a job well done.

Ask your Toyota dealer how you can get Toyota Genuine Parts signage for your shop.

Once Toyota owners know you're part of the team, there'll be no stopping them.