AISAN 2-BARREL – TOYOTA 20R ENGINE

Celica
Corona
Pickup

DESCRIPTION

Carburetor is a two barrel downdraft design with primary and secondary venturi. An automatic choke containing a bi-metal spring heated by coolant provides proper air/fuel mixture control during engine warm-up. Secondary throttle valve is actuated by a vacuum diaphragm unit with a kick-up (open) lever. Secondary valve begins to open when primary throttle valve opening exceeds 59°. During deceleration, a throttle positioner opens primary throttle valve slightly to maintain proper combustion of air/fuel mixture (except Federal Auto. Trans. pickup). A thermostatic valve provides air flow under secondary throttle valve when ambient air temperature is high to maintain proper combustion. Other features include choke breaker, auxiliary accelerator pump, secondary slow circuit fuel cut system (except Federal pickup), fast idle cam breaker (except Federal pickup) and deceleration fuel cut (except Federal pickup).

CARBURETOR IDENTIFICATION

Application	Part No.
Celica & Corona	
Federal①	21100-38311
Calif.	21100-38331
Pickup	
Federal②	21100-38351
Calif.	21100-38371

① – 4-speed Man. Trans. – 21100-38440.
② – Auto. Trans. pickup – 21100-38361.

ADJUSTMENTS

HOT (SLOW) IDLE RPM

See appropriate Tune-Up article in TUNE-UP section.

IDLE MIXTURE

See appropriate Tune-Up article in TUNE-UP section.

COLD (FAST) IDLE RPM

See appropriate Tune-Up article in TUNE-UP section.

NOTE – *It is recommended that Toyota carburetor adjustment kit 09240-00011 be used to make the following adjustments.*

ACCELERATOR PUMP STROKE ADJUSTMENT

Place a straightedge on top of air horn and measure full travel of pump plunger. Make measurement at boot end. Adjust travel distance to .154" (3.9 mm) by bending accelerator pump actuating rod at existing bend. *See Fig. 1.*

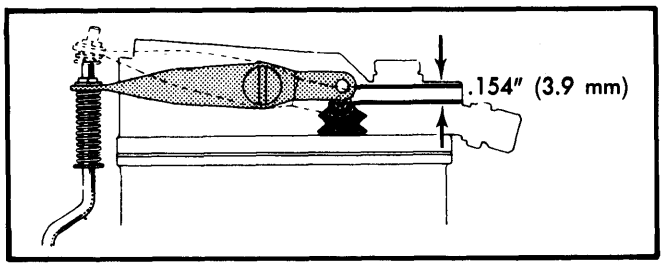

Fig. 1 Accelerator Pump Adjustment and Measurement

FLOAT LEVEL ADJUSTMENT

Allow float to hang down by its own weight. Adjust clearance between float tip and air horn to .276" (7 mm) by bending float lip (A). *See Fig. 2.*

NOTE – *Measurement must be made without gasket on air horn.*

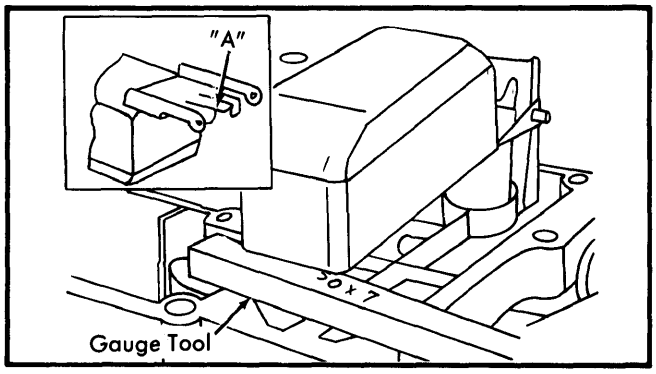

Fig. 2 Adjustment Points for Float Level

FLOAT DROP ADJUSTMENT

Lift up float. Adjust clearance between needle valve plunger and float lip to .04" (1 mm) by bending float tab (B). *See Fig. 3.*

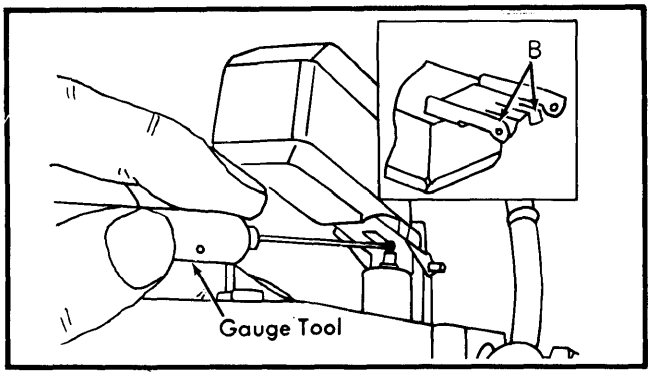

Fig. 3 Float Drop Adjustment Using Angle Gauge

UNLOADER ADJUSTMENT

Fully open primary throttle valve. Insert angle gauge. Adjust choke valve angle to 50° by bending fast idle cam follower lip. *See Fig. 4.*

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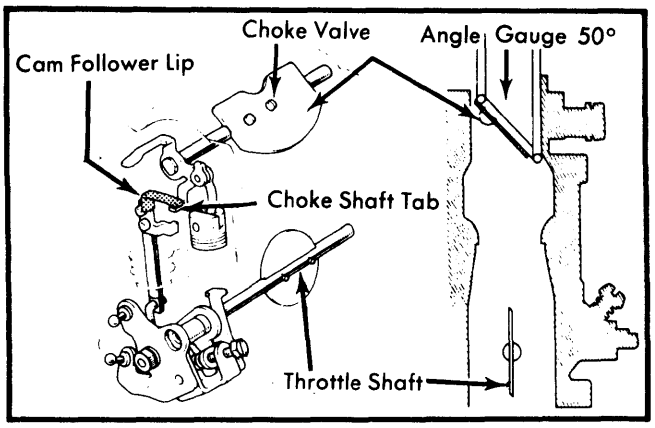

Fig. 4 Choke Unloader Adjustment Points and Measurements

PRIMARY & SECONDARY THROTTLE VALVE ADJUSTMENT

1) Fully open primary throttle valve. Insert angle gauge. Adjust primary throttle valve angle to 90° (fully open) by bending throttle lever stopper.

2) With primary throttle valve fully open, open secondary throttle valve. Insert angle gauge. Adjust secondary throttle valve angle to 75° (fully open) by bending throttle lever stopper. *See Fig. 5.*

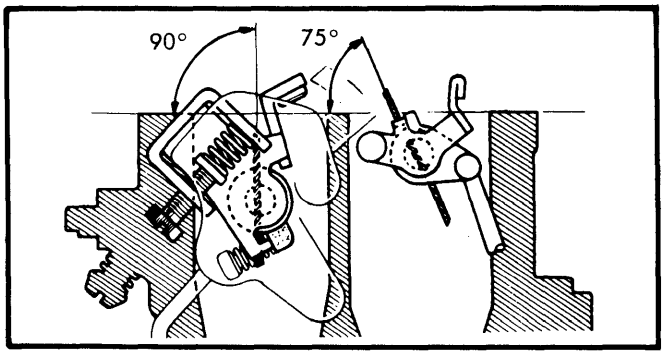

Fig. 5 Adjusting Primary and Secondary Throttle Valves

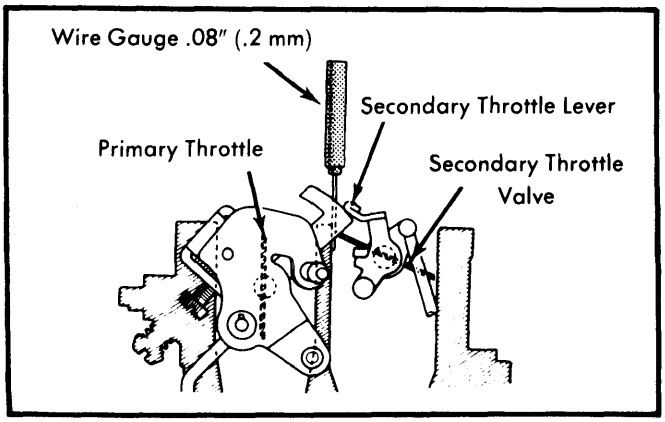

Fig. 6 Secondary Kick-Up Measurement and Adjustment

SECONDARY THROTTLE KICK-UP

Fully open primary throttle valve. Check secondary throttle valve opening. Clearance between secondary throttle valve and bore should be .008" (.2 mm). *See Fig. 6.* Bend secondary throttle lever.

AUTOMATIC CHOKE (ON VEHICLE)

With engine cold and stopped, remove air cleaner. Depress and release accelerator. Choke valve should be almost closed. Start engine and after warm-up, choke valve should be open.

FAST IDLE (BENCH ADJUSTMENT)

With choke valve fully closed, check clearance between primary throttle valve and throttle bore. If clearance is not to specifications found in *Fig. 7*, adjust by turning fast idle screw.

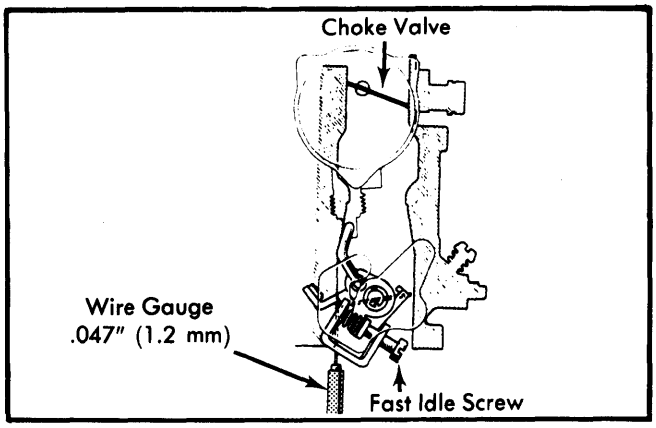

Fig. 7 Bench Adjustment of Carburetor Fast Idle

CHOKE BREAKER ADJUSTMENT

Push (depress) choke breaker rod to open choke valve. Check choke valve angle (38° from bore). Bend relief lever until correct measurement is obtained.

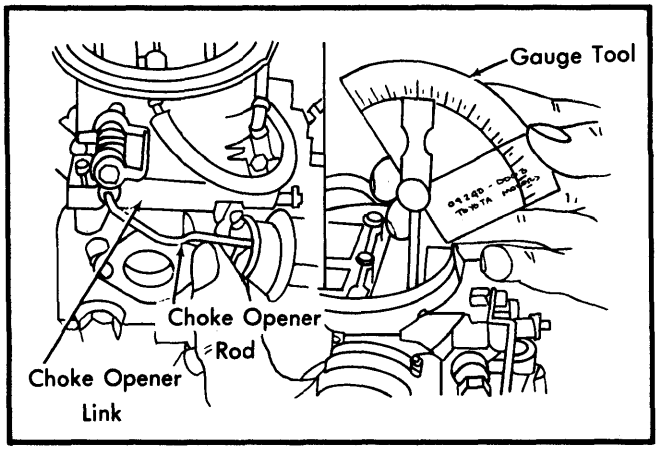

Fig. 8 Choke Opener Adjustment

CHOKE OPENER ADJUSTMENT

Push in choke opener rod. Bend choke opener link until choke valve angle is 55° (measured from bore). *See Fig. 8*

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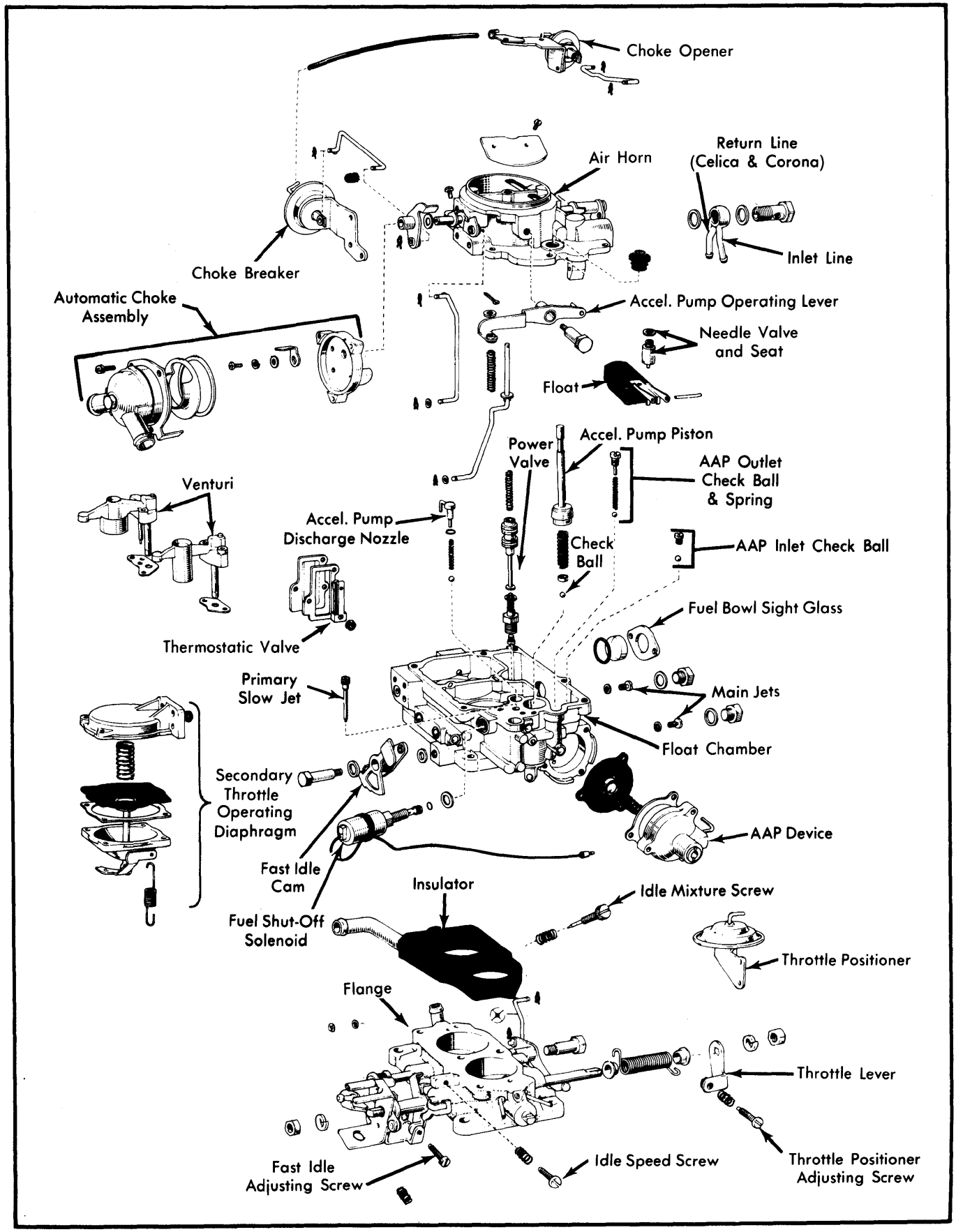

Fig. 9 Exploded View of Toyota 20R Engine Carburetor

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CHOKE UNLOADER ADJUSTMENT

With primary throttle valve fully open, insert angle gauge. Set choke valve angle to 50° (measured from bore) by bending fast idle lever.

THROTTLE POSITIONER

With throttle positioner adjusting screw on center of lever tab, insert angle gauge and measure angle between primary throttle valve and bore. Set angle to 16.5° by turning throttle positioner adjusting screw.

OVERHAUL

NOTE – *It is recommended that Toyota carburetor driver kit 09860-11010 be used during carburetor overhaul.*

DISASSEMBLY

1) Remove the following parts from the air horn assembly: Pump arm with connecting rod; connecting links and seven air horn screws; choke opener; air horn (lift off); float pivot pin and float; needle valve assembly; and pump plunger and power piston.

2) Disassemble the following components from the automatic choke: Water and coil housing, plate and gasket; choke lever and coil housing body; and breaker, relief lever and link.

3) From the main body remove or disassemble: Venturi; pump jet, "O" ring, spring and ball; damping spring, retainer and ball; slow jet and power valve; thermostatic valve and "O" ring; and sight glass and throttle positioner.

NOTE – *DO NOT disassemble thermostatic valve.*

4) Continue to disassemble body by removing: Auxiliary accelerator pump inlet plug and ball; outlet plug, spring, and ball; auxiliary pump housing; diaphragm, spring, and gasket; spring, link and diaphragm assembly; solenoid valve and fast idle cam; and carburetor body and insulator.

5) From the flange, remove: Mixture screws; throttle lever, spring and collars; and throttle positioner lever.

CLEANING & INSPECTION

CAUTION – *Do not immerse synthetic components (gaskets, plastics, rubber) or thermostat and diaphragm valves in carburetor cleaner.*

Clean all parts in suitable solvent (carburetor cleaner) and blow dry. Do not attempt to clean jets or other passages with wire or other metal objects. Inspect all parts for wear or damage and replace necessary parts.

REASSEMBLY

Reassembly of carburetor components is performed by following reverse order of disassembly. To complete carburetor assembly correctly, refer to the notes listed below:

1) Install new gaskets throughout carburetor where required. Discard all old gaskets. Check for smooth operation of all valves and linkage.

2) DO NOT overtighten power piston stop screw. If screw is too tight, the bore may be distorted resulting in sticking piston operation.

3) DO NOT install fuel level gauge glass backwards. Dot on glass should be to inside of float bowl and bubble facing outward.

4) When carburetor body is viewed from sight glass end, secondary main jet (aluminum) is located in right side opening and primary main jet (brass) in left side opening. Install both jets with flat washers.

5) After installing idle mixture adjusting screw, back screw out 1½ turns (1⅓ turns on Calif. Celica and Corona) for mixture screw preset position.

6) Ensure fuel hoses are properly connected on Celica and Corona models. Arrow marks are stamped on carburetor to identify inlet hose connection and return hose connection.

CARBURETOR ADJUSTMENT SPECIFICATIONS

Application	Idle Speed (Engine RPM)		Float Level Setting In. (mm)	Float Drop In. (mm)	Choke Opener Clearance	Choke Breaker Angle	Accel. Pump Stroke In. (mm)	Throttle Positioner Angle
	Hot	Fast						
20R Engine	800①②	2400③	.276 (7)	.040 (1)	.047 (1.2)	38°	.154 (3.9)	16.5°

① – 4-speed Man. Trans. – 700 RPM; Auto. Trans. – 850 RPM.
② – Mixture speeds – 4-speed Man. Trans. – 750 RPM.
5-speed Man. Trans. – 870 RPM.
Auto. Trans. – 920 RPM.
③ – With EGR disconnected, vacuum advance cut and fast idle cam breaker disconnected.