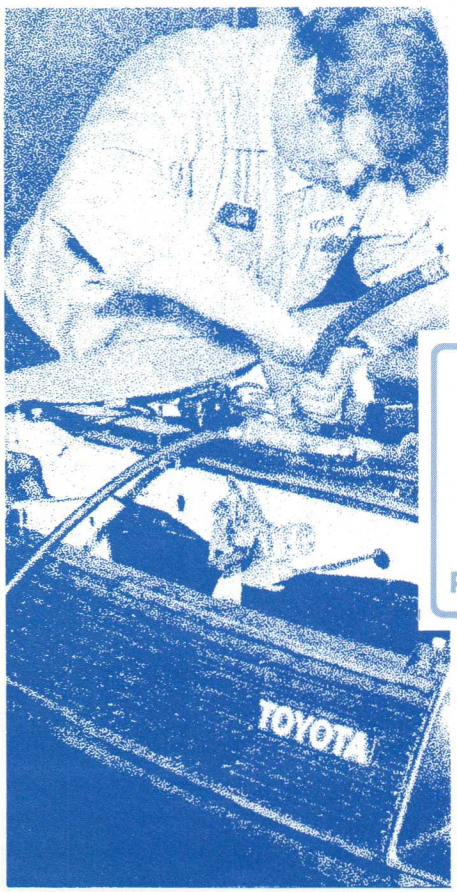
STAR
SUPPORT TO AFTERMARKET REPAIRS

TOYOTA SERVICE NEWS

Bulletin No. 2 November, 1981

IASA/TOYOTA - "a Joint Effort to offer Quality Service"



IASA PROFESSIONAL AUTOMOTIVE SERVICE

TOYOTA

PRESENTED IN COOPERATION WITH

INDEPENDENT AUTOMOTIVE SERVICE ASSOCIATION

1901 Central Drive, Suite 850/P.O. Box 929
Bedford, Texas 76021 - (817)283-6205

Dear IASA Member:

By now everyone has been told that cars of the future will all have on-board computers and bodies that work like air frames of planes. In their efforts to design lighter, more fuel-efficient automobiles, engineers will be looking for ways to replace steel with plastic and conventional engines with new and different forms of combustion and power train technology.

Repairing these automobiles will require a different set of skills and perhaps more importantly, information needed to do the job right.

Toyota Motors Sales, U.S.A. was one of the first to recognize this. The type of service information contained in this edition of **Toyota Service News** will make it possible for thousands of Toyota owners to get their vehicles repaired correctly — the first time.

Today independents repair three-fourths of the nation's automobiles. Obviously, they are the real strength of the automotive service market. Some car manufacturers have acknowledged this. A new spirit of cooperation is emerging in the automotive service industry. It is beginning to provide a flow of service information that will make thousands of independents stronger, more productive shop owners. More importantly, it will provide car owners with the type of repair service they have a right to receive.

Thanks Toyota! For Leading the Way!

Sincerely,

Allen Richey

Allen Richey
Executive Director

INDEPENDENT AUTOMOTIVE SERVICE ASSOCIATION
1901 Central Suite 850 P.O. Box 929 Bedford, Texas 76021 817/283-6205

SUPPORT TO AFTERMARKET REPAIRS

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Article No. 17

USE OF MAINTENANCE-FREE BATTERY WITH ELECTRO SENSOR PANEL (ESP) SYSTEM – CELICA AND CORONA

This article pertains to the use of the maintenance-free battery in a vehicle equipped with the Electro Sensor Panel system.

The battery phase of the ESP system cannot be made to operate, nor is it needed, with the maintenance-free battery. The battery warning light can be made inoperative without affecting the rest of the ESP system by unplugging the electrolyte sensor and connecting the wire to the blue wire of the windshield washer pump.

Article No. 18

HIGH ALTITUDE MODIFICATION KIT
STARLET, COROLLA TERCEL, COROLLA, CORONA, CELICA, AND PICKUP

A High Altitude Performance Modification package is available for vehicles which will be operated at high altitudes (over 4,000 feet), but were not equipped with high altitude specifications when sold. This modification, which requires a tuneup readjustment and the replacement of a carburetor part, will result in better engine performance, increased fuel economy, and improved emission control. This modification is in accordance with EPA regulations.

APPLICABLE 1981 TOYOTA MODELS

The following applicable vehicles should be verified by checking the "Emission Control Information" and "Vacuum Hose Information" label affixed to the underside of the engine hood.

MODEL	ENGINE TYPE	CAL/ FED	ENGINE FAMILY *1	EXHAUST EMISSION CONTROL SYSTEM *2
Starlet	4K-C	FED	BTY1.3V2AF8 78.7CID	AS/EGR/CC W/ HAC & W/O HAC
Starlet	4K-C	CAL	BTY1.3V2AC5 78.7CID	AS/EGR/OC
Corolla Tercel	3A-C	FED	BTY1.5V2AF7 88.6CID	AS/EGR/OC W/O HAC
Corolla Tercel	3A-C	CAL	BTY1.5V2EC1 88.6CID	AI/EGR/O_2S/TWC
Corolla/ Corolla Wgn	3T-C	FED	BTY1.8V2HF3 108.0CID	AI/EGR/O_2S/TWC/TWC W/O HAC
Corolla/ Corolla Wgn	3T-C	CAL	BTY1.8V2FC7 108.0CID	AI/EGR/O_2S/TWC
Celica/Corona/ Corona Wgn	22R	FED	BTY2.4V2EF6 144.4CID	AI/EGR/O_2S/TWC W/O HAC
Celica/Corona/ Corona Wgn	22R	CAL	BTY2.4V2EC3 144.4CID	AI/EGR/O_2S/TWC
Truck (2WD)/ 3/4 Ton Truck (2WD)/ Truck (4WD)	22R	FED	BTY2.4T2AF1 144.4CID	AS/EGR/OC W/O HAC
Truck (2WD)/ 3/4 Ton Truck (2WD)	22R	CAL	BTY2.4T2EM7 144.4CID	AI/EGR/O_2S/TWC

NOTE: Those vehicles not listed (Celica Supra, Cressida, Land cruiser, and Pickup cab and chassis are factory equipped with a HAC system.

*1 Engine family is indicated on the "Vehicle Emission Control Information" label.

*2 Exhaust emission control system is indicated on the "Vehicle Emission Control Information" label.
To determine if the engine is equipped with HAC system, check the "Vacuum Hose Information" label.

MODIFICATION PROCEDURE

The following procedure is required (a) to replace the primary jet in the carburetor, and (b) to adjust ignition timing, idle rpm, fast idle rpm and TP rpm.

See the "Table of Modification Kits and Specifications" (below) for the kit number and tuneup specifications that apply to your vehicle.

1. Remove air cleaner assembly.
2. Remove carburetor assembly.
3. Remove air horn subassembly from carburetor.
4. Remove passage plug and primary jet.
5. Install new primary jet using new gasket.
6. Reinstall passage plug using new gasket.
7. Reinstall air horn assembly using new gasket.
8. Reinstall modified carburetor assembly.

9. Reinstall air cleaner assembly.
10. Start engine and warm to normal operating temperature.
11. Readjust ignition timing (See Table of Modification Specifications).
12. Readjust idle rpm, fast idle rpm and TP rpm (See Table of Modification Specifications).

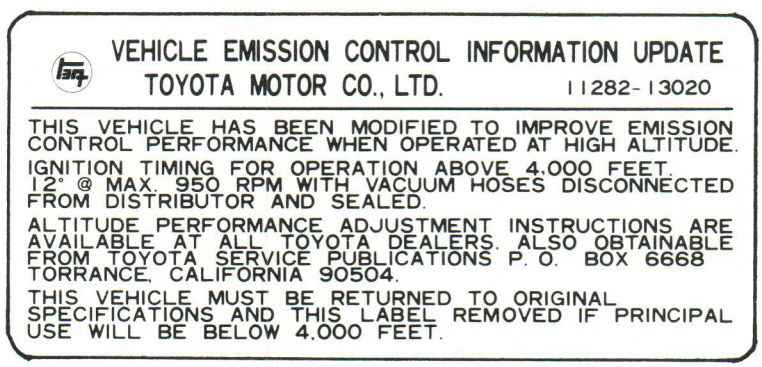
TABLE OF MODIFICATION KITS AND SPECIFICATIONS

MODEL	ENGINE TYPE	ENGINE FAMILY & SYSTEM	KIT NO.	IGNITION TIMING	IDLE SPEED* (rpm)	FAST IDLE SPEED* (rpm)	TP SPEED* (rpm)
Starlet	4K-C (FED)	BTY1.3V2AF8 W/HAC	04214-13010	8° BTDC*	650	3,500	2,000
		BTY1.3V2AF8 W/O HAC	04214-13020	12° BTDC	650	3,500	2,000
	4K-C (CAL)	BTY1.3V2AC5 All	04214-13030	12° BTDC	700	3,500	2,000
Corolla Tercel	3A-C (FED)	BTY1.5V2AF7 5 sp. manual trans. (5M/T) 3 sp. auto. trans. (3A/T)	04214-15010	9° BTDC	5M/T: 650, 3A/T: 800	3,600	1,400
		BTY1.5V2AF7 4 sp. manual trans. (4M/T)	04214-15020	9° BTDC	550	3,600	1,400
	3A-C (CAL)	BTY1.5V2EC1	04214-15030	9° BTDC	5M/T: 650 4M/T: 550, 3A/T: 800	3,600	1,400
Corolla	3T-C (FED) (CAL)	BTY1.8V2HF3 BTY1.8V2FC7 5 sp. manual trans. (5M/T) 3 sp. auto. trans. (3A/T)	04214-28010	11° BTDC	W/O PS / W/PS 5M/T: 650 / 850 3A/T: 750 / 850	W/O PS / W/ PS 5M/T: 3,400 / 3,200 3A/T: 3,200 / 3,000	1,400
	3T-C (FED) (CAL)	BTY1.8V2HF3 BTY1.8V2FC7 4 sp. manual trans. (4M/T)	04214-28020	11° BTDC	650	3,400	1,400
Celica/ Corona	22R (FED) (CAL)	BTY2.4V2EF6 BTY2.4V2EC3	04214-35010	12° BTDC	M/T: 700, A/T: 750	2,600	—
Truck	22R (FED)	BTY2.4T2AF1 (except 4WD)	04214-35020	12° BTDC	M/T: 700, A/T: 750	2,600	—
		BTY2.4T2AF1 4WD	04214-35030	12° BTDC	700	2,600	—
	22R (CAL)	BTY2.4T2EM7	04214-35040	12° BTDC	M/T: 700, A/T: 750	2,600	—

NOTE:
1. Kit consists of carburetor primary jet, gaskets, and a label.
2. Refer to the Emission Control Repair Manual for detailed tuneup adjustment procedures.
3. Specifications with * in the above table are identical to the original specification, but must be checked and readjusted.

EMISSION CONTROL UPDATE LABEL

Each High Altitude Performance Adjustment kit contains a specific label for an appropriate engine. These "Emission Control Information Update" labels must be attached to the underside of the hood next to the existing "Vehicle Emission Control Information" label. A sample of the new label is illustrated below.


VEHICLE EMISSION CONTROL INFORMATION UPDATE
TOYOTA MOTOR CO., LTD. 11282-13020

THIS VEHICLE HAS BEEN MODIFIED TO IMPROVE EMISSION CONTROL PERFORMANCE WHEN OPERATED AT HIGH ALTITUDE.
IGNITION TIMING FOR OPERATION ABOVE 4,000 FEET.
12° @ MAX. 950 RPM WITH VACUUM HOSES DISCONNECTED FROM DISTRIBUTOR AND SEALED.
ALTITUDE PERFORMANCE ADJUSTMENT INSTRUCTIONS ARE AVAILABLE AT ALL TOYOTA DEALERS. ALSO OBTAINABLE FROM TOYOTA SERVICE PUBLICATIONS P. O. BOX 6668 TORRANCE, CALIFORNIA 90504.
THIS VEHICLE MUST BE RETURNED TO ORIGINAL SPECIFICATIONS AND THIS LABEL REMOVED IF PRINCIPAL USE WILL BE BELOW 4,000 FEET.

PART NUMBER INFORMATION

See "Table of Modification Kits & Specifications" for part number of appropriate kit.

NOTE: High altitude kits for 1980 and earlier Toyota models will be available at a later date.

Article No. 19

OIL PRESSURE SWITCH
CELICA, CORONA AND PICKUP WITH 20R ENGINES

The oil pressure switch has a protective function in the electric fuel pump circuit. If there is no oil pressure, or if the oil pressure switch is not functioning properly, the electric fuel pump will not operate. Therefore, to assure continued operation of the electric fuel pump under normal engine conditions, the oil pressure switch has been improved on vehicles equipped with 20R engine.

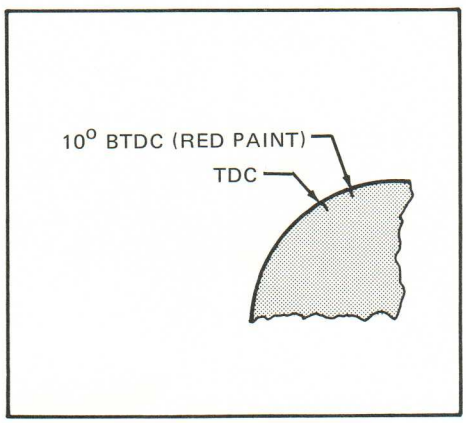
PRODUCTION EFFECTIVE: October, 1974

Article No. 20

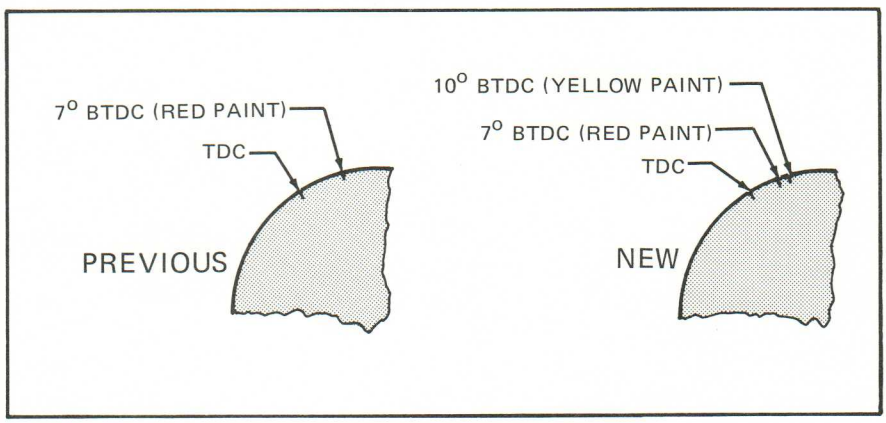
CRANKSHAFT PULLEY TIMING MARK LOCATION
CELICA, CORONA, AND PICKUP WITH 8R, 8R-C AND 18R-C ENGINES

To permit a common crankshaft pulley to be used on the 8R, 8R-C, and 18R-C engines, the ignition timing marks have been changed as shown below. A notch has been added to the 18R-C engine crankshaft pulley to indicate 10 degrees BTDC. The new notch is identified with yellow paint and is comparable to the 10 degree BTDC notch (red paint) on the 8R, 8R-C engine crankshaft pulley. When resetting ignition timing, be sure to use the correct timing mark.

PRODUCTION EFFECTIVE: June, 1974



13471-33010 Pulley (Discontinued)



13471-34012 Pulley

Article No. 21

BRAKE SYSTEM TROUBLESHOOTING CHART
ALL MODELS

The following are inspection and adjustment techniques to assure proper operation of the disc/drum brake system. We recommend the following service procedures be taken.

INSUFFICIENT BRAKE EFFECT

SYMPTOMS	INSPECTION	REPAIR PROCEDURES
1. Fluid leakage from brake system	Inspect hydraulic system	Correct deficiency
2. Brake overheating Fade	Inspect pads or linings for: Wear	 Replace
Wheel disc covered with dust brake material	Foreign matter adhering to lining	Replace
Rotors or drums blued	Review brake drag section	Refinish or replace

3. Pads worn	Inspect pads for: Pads sticking in calipers	Clean and lubricate calipers
	Wrong type pads installed	Replace with correct type
	Normal wear	Replace
	Inspect calipers for: Piston seized	Overhaul or replace
	Slides corroded	Clean and lubricate caliper slides
	Inspect rotor for: Rusted, pitted scored	Refinish or replace
4. Foreign matter adhering to pad surface	Inspect pad	Replace pad
Pulsation, noise		Refinish or replace rotor and pads
5. Brake shoe clearance out of adjustment	Inspect rear brakes for: Inoperative self adjusters	Repair
	Brake shoes binding on contact points	Lubricate points with non-melting grease
Poor stopping	Brake linings worn	Replace
6. Improper contact between brake drum and lining	Inspect wear pattern on linings	Re-arc shoes
Poor stopping power		
Pulsation		
7. Lining worn	Inspect lining	Replace lining
Noise, poor stopping power		
8. Foreign matter adhering to lining surface: Pulsation	Inspect lining	Re-arc brake shoes
Noise, poor stopping power		Refinish or re-arc drums
9. Rear brakes act too strongly — Rear end of vehicle shifts position during breaking	Inspect proportioning valve	Replace valve (cannot be rebuilt)
10. Contamination:	Inspect for corrosion, rust or residue in master cylinder	Drain system. Flush with S.A.E. approved brake fluid
	Soft or swollen parts such as seals, cups, or hoses	Replace parts needed. Refill system with S.A.E. approved brake fluid

BRAKING EFFECT INSUFFICIENT OR SLOW

SYMPTOMS	INSPECTION	REPAIR PROCEDURES
1. Vacuum check valve not functioning properly	Inspect valve for: One way operation	Replace
Heavy pedal pressure when cold	Vacuum hose clogged, disconnected or cracked	Replace
Heavy pedal pressure during normal temperature	Booster valve operating rod	Adjust
	Inspect air cleaner for element being clogged	Clean or replace

NO BRAKE EFFECT OR PEDAL HEAVY

SYMPTOMS	INSPECTION	REPAIR PROCEDURES
1. Master cylinder reservoir low on fluid	Inspect hydraulic system	Correct leakage
	Inspect pads and linings for wear	Replace
2. Heavy pedal pressure required to stop vehicle	Review brake effect insufficient section	
3. Hard stopping, no power booster effect	Inspect power booster for: Control valve malfunction	Overhaul or replace booster
	Air valve binding on booster piston rod	

BRAKES DRAG OR RETRACT POORLY

SYMPTOMS	INSPECTION	REPAIR PROCEDURES
1. Brakes overheating – Vehicle lacks power	Inspect power booster for: Air valve binding on piston	Replace
Poor gas mileage	Piston rod out of adjustment	Adjust
Brakes noisy	Valve operating rod out of adjustment	Adjust
	Inspect calipers for binding	Clean and lubricate pads with anti-seize compound
	Inspect wheel cylinders for leakage	Rebuild or replace
	Inspect for brake shoes binding on backing plate	Lubricate brake shoe contact points with non-melting grease
	Inspect brake shoe return springs for proper tension	Replace
	Inspect backing plate, cable, linkage, etc. for binding	Replace or repair
	Inspect master cylinder for: Free travel	Adjust free travel
	Clogged reservoir holes, inverted seals, contamination in master cylinder	Rebuild or replace

VEHICLE PULLS TO ONE SIDE DURING BRAKING

SYMPTOMS	INSPECTION	REPAIR PROCEDURES
1. Foreign matter on pad surface	Inspect pad	Clean, lubricate pad contact points, sand or replace pads
2. Foreign matter on lining surface	Inspect lining	Sand or replace lining
3. Brake shoe clearance out of adjustment	Inspect rear brakes for: Inoperative self adjusters	Repair
	Brake shoes binding on contact points	Lubricate brake shoe contact with non-melting grease rod
4. Improper tire inflation	Inspect tire pressure per vehicle specification	Adjust
5. Rear brake backing plate	Inspect bolts and nuts for wear	Tighten or replace
6. Wheel cylinder defective	Inspect wheel cylinder for: Leakage, scoring, contamination	Rebuild or replace
7. Brake shoe return springs	Inspect brake shoe return springs for proper tension	Replace

8. Out-of-round brake drum	Inspect brake drum	Turn drums or replace
9. Front wheel bearing	Inspect wheel bearings for: Wear-torque specifications	Replace or adjust
10. Front wheel alignment	Inspect suspension for: Wear-alignment	Replace or adjust
11. Front brake calipers	Inspect caliper for: Slides binding	Clean and lubricate slide area with anti-seize
	Piston seized	Overhaul or replace

BRAKE PEDAL MALFUNCTION

SYMPTOMS	INSPECTION	REPAIR PROCEDURES
1. Brake pedal springs back	Inspect master cylinder for: Piston side, hydraulic cylinder cup	Rebuild or replace
2. Pedal sticks and is noisy	Inspect booster for: Air valve binding on piston rod	Rebuild or replace
	Valve operating rod out of adjustment	Adjust
	Excessive clearance between booster, piston rod and master cylinder piston	Adjust

BRAKE PEDAL PULSATION WHEN APPLYING BRAKES

SYMPTOMS	INSPECTION	REPAIR PROCEDURES
1. Rotors	Inspect for: Run-out, rust condition, scoring	Refinish or replace
	Inspect pads for: Contamination, wear	Clean or replace pads
2. Brake drums	Inspect for out-of-round condition	Turn drum or replace
3. Wheel bearings	Inspect for wear, contamination	Replace
	Torque specifications	Adjust
4. Rear axle shaft	Inspect for run-out	Replace bent shaft

EXCESSIVE PEDAL PRESSURE

SYMPTOMS	INSPECTION	REPAIR PROCEDURES
1. Brake shoe clearance excessive	Inspect rear brakes for: Inoperative self adjusters	Repair
Low pedal reserve	Brake shoes binding	Lubricate points with non-melting grease
	Brake linings contact pattern	Re-arc linings
	Brake lining worn	Replace
2. Excessive play in master cylinder push rod	Inspect	Adjust
3. Master cylinder reservoir low on fluid	Inspect hydraulic system	Correct leakage
	Inspect pads and linings for wear	Replace

4. Air in brake system	Inspect hydraulic system	Bleed system
5. Excessive wear in brake drum	Inspect drum	Replace brake drum
6. Defective cup in master cylinder	Inspect master cylinder	Rebuild or replace

NOISY BRAKES

SYMPTOMS	INSPECTION	REPAIR PROCEDURES
1. Foreign matter adhering to pad surface	Inspect pad	Clean pad, replace pad, refinish or replace rotor
2. Lining glazed or foreign matter adhering to surface	Inspect lining	Re-arc brake shoes, sand or re-arc drums
3. Lining worn	Inspect lining	Replace lining
4. Brake shoe deformed or improperly installed	Inspect rear brake assembly	Repair or replace
5. Backing plate deformed or plate mounting bolts loose	Inspect rear backing plate assembly	Tighten or replace
6. Front wheel bearing loose	Inspect for: Wear	Replace
	Torque specifications	Adjust
7. Drum dirty	Inspect drum for: Wear, contamination	Clean or resurface
8. Drum loose	Inspect for: Brake drum inside wear	Turn or replace
	Improper assembly of drum attaching screws	Tighten screws

ADDED INFORMATION Consult chassis repair manual for specific model

Article No. 22

ERRATIC OR HIGH IDLE
2T-C COROLLA (49 STATES SPECIFICATIONS) ONLY

When decelerating, the throttle positioner (TP) holds the throttle valve open slightly more than at idle. This causes the fuel mixture to become leaner so that complete combustion of the mixture will take place and reduce the HC (hydrocarbon) and CO (carbon monoxide) emissions.

The 49 States Specification, 2T-C engine Corolla TP system is vacuum actuated and is controlled by a vacuum transmitting valve. Under normal conditions, this valve delays the TP's return to curb idle by two to six seconds (for M/T) or six to fifteen seconds (for A/T).

Since the TP is held ON by spring tension, and is released by venturi vacuum when manifold vacuum drops below 21.7 in. Hg, engine tune-up condition can influence proper TP operation.

Therefore, if malfunction of this system is suspected, we recommend that the following engine specifications be checked and adjusted before any component is replaced.

Idle Speed	850 ± 50 rpm
TP Speed	1500 ± 100 rpm M/T 1400 ± 100 rpm A/T
Initial Timing	10 degrees BTDC*

* Incorrect adjustment of initial timing is the most likely cause.

PRODUCTION EFFECTIVE: 1976 Corolla

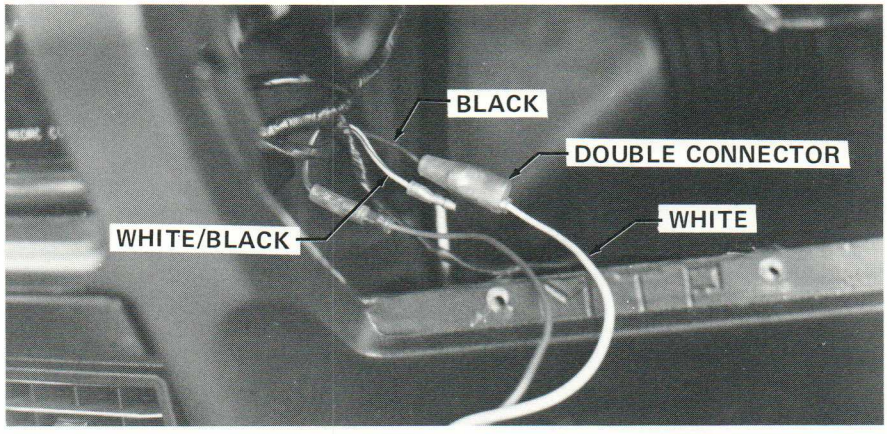
(49 States Specification 2T-C engine only)

Article No. 23

SHORTED TAIL LIGHT CIRCUIT
1974 CORONA

Part of the tail light circuit on 1974 Corona models with manual transmission is located behind the glove compartment as shown in the photo below. The black wire terminating in the double connector is "hot". The white wire leads to the glove compartment light and switch. The white/black wire terminating in a male connector is connected to ground. This wire is not connected on models with manual transmission, *and must remain disconnected.* If this wire is inadvertently mated with the double connector, a short circuit will result, and the tail light circuit fuse will be blown when the lights are turned on. When this fuse blows, the following lights are also affected in addition to the tail light:

Glove Compartment
Cigarette Lighter
Instrument Panel (including radio and heater control)
Underhood Inspection
Parking
Front Side Marker
Rear Side Marker
License



Article No. 24

TUNING FORK CLOCK

When the battery is disconnected, or the clock fuse is burned or removed, the clock will cease to operate and will not restart when the battery is reconnected or the fuse is replaced. To start the clock, the reset knob must be pulled out and then released. When the knob is released, the clock will continue to operate. This method of restart should be followed whenever a power failure occurs. Photo 1 below is a partial view of the clock mechanism, and shows the shaft (to which the reset knob is attached) in the disengaged position. In Photo 2, the reset knob has been pulled out and the cam has engaged the lever which activates the clock start mechanism.

TUNING FORK CLOCKS HAVE A MARK (ψ) ON THE FACE

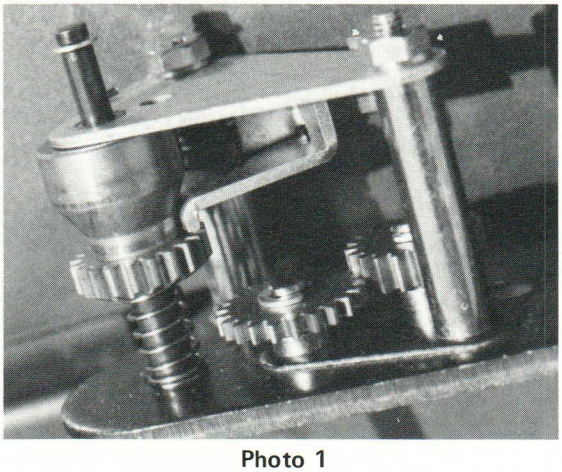


Photo 1

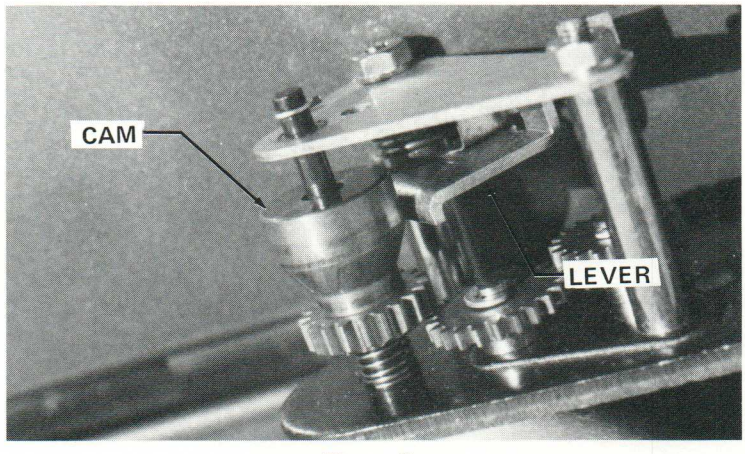


Photo 2

Article No. 25

STARTER PROBLEMS CAUSED BY USE OF NON-TOYOTA IGNITION KEYS

It has been found that duplicate keys which are not made on approved Toyota equipment can cause the ignition key lock cylinder to bind. This may cause the starter to remain engaged and consequently be destroyed.

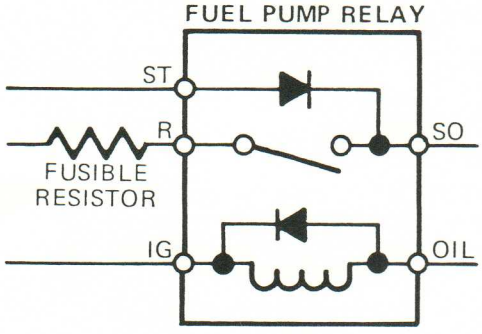
We strongly recommend that the customer purchase the Toyota-approved Curtis key duplicates.

IMPORTANT: At all times, newly cut key duplicates should be checked for proper operation of the ignition switch.

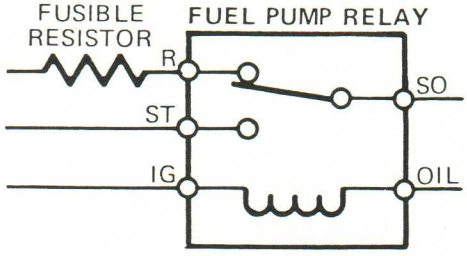
Article No. 26

IN-TANK ELECTRIC FUEL PUMP TROUBLESHOOTING CELICA, CORONA, COROLLA, AND PICKUP, 1975 – 1978

In February and March of 1975 (depending on the model of car) the fuel pump relay was changed. The exact serial numbers of the change are not available and since the relays are interchangeable, the only way to be sure which relay you are working with is by part number. The part number is printed on the cover for easy identification.



OLD



NEW

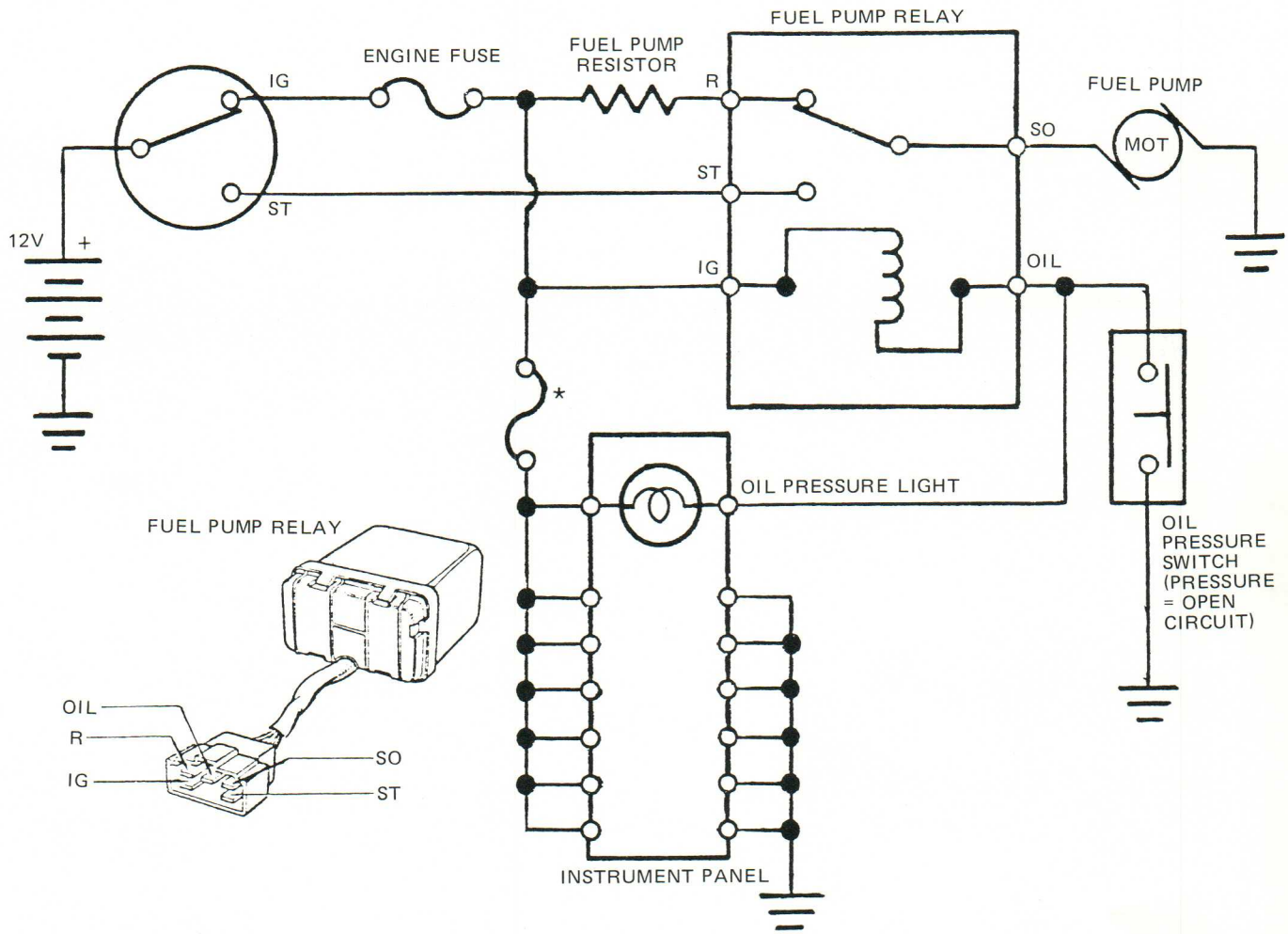
MODEL	OLD PART NO.	NEW PART NO.
Celica, Corona, Pickup	28300-20020	28300-20021
Corolla (California only)	28300-12030	28300-12031

This article contains an electrical schematic drawing for the NEW type fuel pump relay as well as troubleshooting procedures for each of the four vehicle lines utilizing the electric fuel pump.

You will note that a blown fuse to the oil pressure warning light* will allow a ground to be established from the printed circuit through the bulb (bulb may glow dimly) and back to the fuel pump relay, causing the relay to switch to the START position. Thus, the fuel pump will not operate once the engine is running with this fuse blown.

*See schematic for fuse identification.

ELECTRICAL FUEL PUMP WIRING DIAGRAM



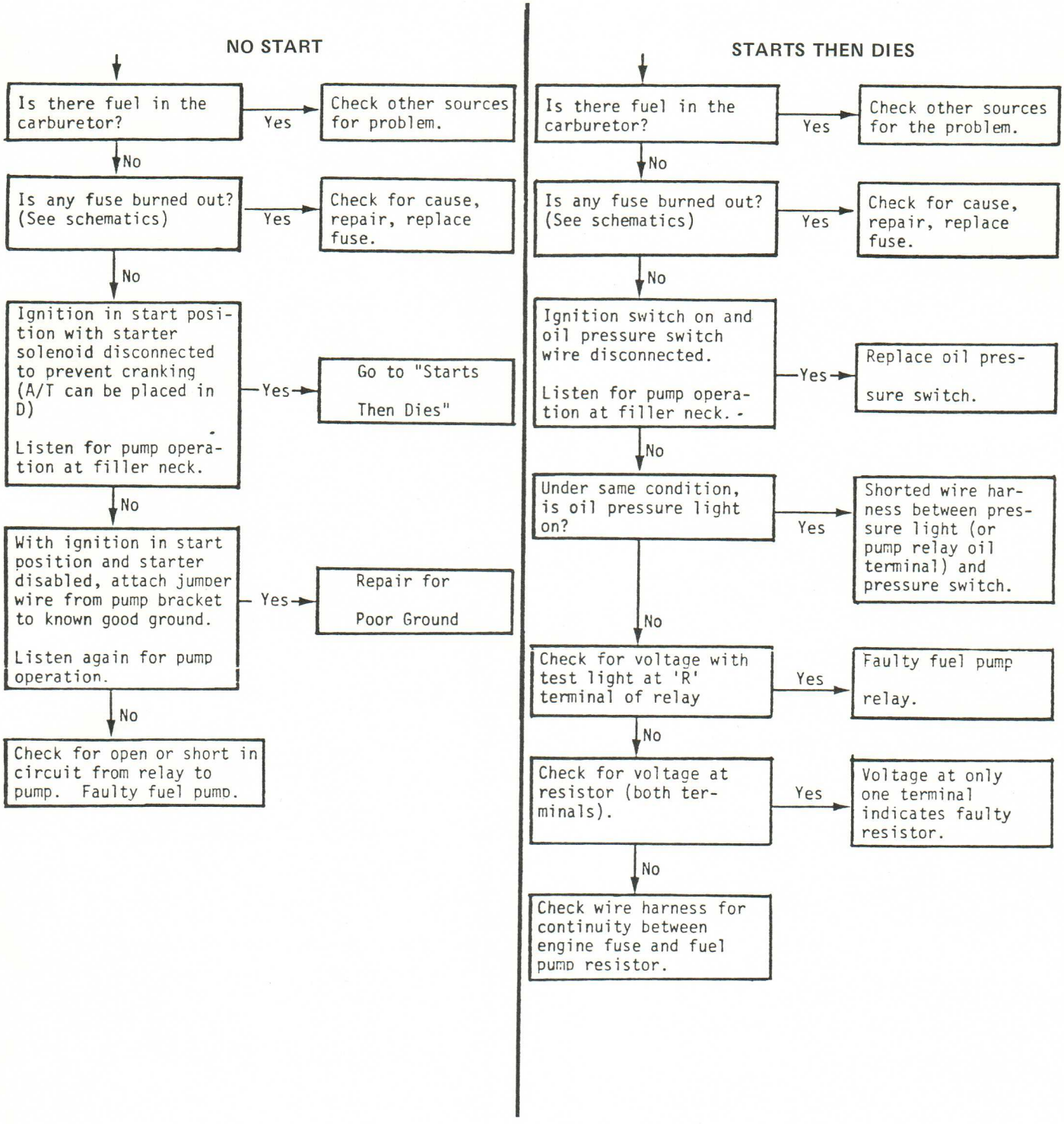
* Various fuses depending on model

Celica . . . . . .Heater fuse
Corona . . . . . .Gauge, heater fuse
Pickup. . . . . .Meter, gauge fuse
Corolla . . . . . .Defogger, backup light fuse

NOTE: This diagram pertains to 1975 models, but basic system operation is the same on later models.

Circuit is shown with engine and fuel pump operating. Relay is not energized due to open circuit of oil pressure. Switch relay points are spring loaded in the position shown.

COROLLA, CELICA, CORONA, PICKUP
TROUBLESHOOTING CHART



Article No. 27

RADIAL TUBES FOR RADIAL TIRES

When replacing an inner tube on radial tires, it must be replaced by the inner tube designed for use in a radial tire. Use of bias type inner tube is illegal in California and is not recommended for other states.

Inner Tubes

27455 (a): On and after January 1, 1975, no person shall sell or offer for sale an inner tube for use in a radial tire unless, at the time of manufacture, the tube valve stem is colored red or is distinctly marked in accordance with rules and regulations adopted by the department, taking into consideration the recommendation of manufacturers of inner tubes.

27455 (b): No person shall install an inner tube in a radial tire unless the inner tube is designed for use in a radial tire.

The following information will further clarify the above rules:

1) Radial ply tires have comparatively greater sidewall deflection when loaded than conventional bias ply tires.

2) When conventional tubes are used in radial ply tires, an open splice on tube joint area will possibly result due to the greater sidewall deflection mentioned above.

3) Radial tire tubes are specially designed and manufactured, using special materials to allow for the comparatively greater sidewall deflection with radial ply tires.

PRODUCTION EFFECTIVE

All vehicles equipped with radial ply tires.

PART NUMBER INFORMATION

NEW PART NO.	NOMENCLATURE
00031-16513	Tube for 165SR-13
00031-18513	Tube for 185SR/70-13
00031-14185	Tube for 175SR-14
00031-14185	Tube for 185SR/70-14

Article No. 28

TRANSMISSION FILLER TUBE AND DIPSTICK LENGTH CHANGE COROLLA A-40

CHANGE

The length of the Corolla A-40 automatic transmission filler tube subassembly and dipstick was changed as of August 1, 1978. Length of the dipstick from stopper to tip was increased from 14.5 inches (37cm) to 17.5 inches (44cm).

NOTE: If the shorter dipstick is used with the longer filler tube, the transmission may be overfilled, which could cause oil leakage.

PRODUCTION EFFECTIVE: August, 1977

Article No. 29

POWER TAKEOFF (PTO) LAND CRUISER

The Power Take Off (PTO) drive gear in the transfer case has been discontinued beginning with November 1974 production due to the very low volume of Power Take Off installations.

Therefore, if any Power Take Off accessories are installed, it will be necessary to remove the transfer case from the vehicle and install the Power Take Off drive gear.

Article No. 30

PRESSURE TEST GAUGE ADAPTER A-40 TRANSMISSION

An adapter to install the A-40 automatic transmission pressure test gauge has been recently made available and can be purchased from Snap-on Tool Corporation.

This adapter will aid in easy installation of the pressure gauge for diagnosing A-40 automatic transmission problems and can be used on vehicles equipped with A-40 transmission.

PRODUCTION EFFECTIVE

All A-40 automatic transmission equipped vehicles:
Corolla, Corona, Celica, Pickup.

PART NUMBER INFORMATION

MANUFACTURER	PART NUMBER	NOMENCLATURE	APPLICATION
Snap-On Tool Corp.	KRA-141	Metal Box	A-40
Snap-On Tool Corp.	AT67-1B	Oil pressure gauge assembly, 300 PSI, with female quick coupler and 6' of hose.	A-40
Snap-On Tool Corp.	AT78	Hose assembly, 5/16" x 24 UNF-2A and quick coupler male adapter.	A-40

NOTE: These are available through Snap-On dealers and are listed in their current catalog under the above numbers.

Article No. 31

20R CYLINDER HEAD MILLING SPECIFICATIONS CELICA, CORONA, AND PICKUP WITH 20R ENGINES

If it is necessary to machine the 20R cylinder head, the following limits are recommended by the factory.

The limit of allowable warpage of the 20R cylinder head surface is 0.15mm (0.0059 in.). No action is needed to correct warpage less than the above specification.

If the warpage is greater than 0.15mm, you can machine the 20R cylinder head surface to a maximum of 0.20mm (0.008 inches). (Refer to 20R engine repair manual No. 98116, pages 3-13 and 3-14).

Article No. 32

UPSTREAM TAP PLUG
COROLLA, CELICA, CORONA, AND MARK II WITH CATALYTIC CONVERTER

All Toyota passenger cars equipped with catalytic converters (CCo) also have an upstream tap located in the exhaust header pipe just ahead of the CCo. Recent reports have led to the discovery that this part is not listed in published parts information even though it is carried in National warehouse stock. In the event that this part is needed as replacement, it may be obtained by ordering the part number listed below. This is the only recommended replacement part.

PRODUCTION EFFECTIVE

All 1975 models with catalytic converters – Corolla, Celica, Corona and Mark II series.

PART NUMBER INFORMATION

PART NUMBER	NOMENCLATURE
90341-10056	Plug, upstream tap

NOTE: This part number will be included in the future issue of parts catalog (micro-fiche).

Article No. 33

TOWING CAPACITIES
1980 MODELS

MODEL	MAXIMUM TOWING CAPACITY MTC		GROSS COMBINED* WEIGHT RATING GCWR	MAXIMUM TONGUE LOAD	
	WITHOUT TRAILER BRAKES	WITH TRAILER BRAKES		WITHOUT TRAILER BRAKES	WITH TRAILER BRAKES
1200 Corolla	Not Permitted		–	–	–
1600 Corolla, Celica, Corona, Cressida	1000 lbs.		*	100 lbs.	
Pickup	1000 lbs.	2000 lbs.	5000 lbs.	100 lbs.	200 lbs.
Land Cruiser	1000 lbs.	2500 lbs.	7000 lbs.	100 lbs.	250 lbs.
FJ55** Land Cruiser Wagon	1000 lbs.	2500 lbs.	7500 lbs.	100 lbs.	250 lbs.

*Gross Combined Weight Rating (GCWR) is the maximum loaded weight of the vehicle including occupants. GCWR is calculated by adding Gross Vehicle Weight (GVW) and the loaded weight of the trailer. For 1600 Corolla, Celica, Corona, and Cressida, GVW listed on the number plate, plus 1000 lbs., equals the GCWR. These values must not be exceeded.

**For Pick-Up and Land Cruiser models, towing over 1000 lbs., up to the stated capacity, is permitted *only* for trailers equipped with brakes.

TOWING VEHICLE MAINTENANCE RECOMMENDATION

Toyota recommends revised maintenance procedures and intervals when towing a trailer. Generally, the specified interval on the following items should be reduced by 50%.

MAINTENANCE ITEM	MAINTENANCE	MAINTENANCE ITEM	MAINTENANCE
Engine Oil and Filter	Replace	A/T/M Fluid	Replace
Exhaust Pipe and Bracket	Inspect	Drive Shaft Grease (FJ)	Replace
Brake Lining and Drum	Inspect	M/T/M Lubricants	Replace
Brake Pad and Disc	Inspect	Transfer Lubricants (FJ)	Replace
Chassis and Body Bolts Torque	Inspect	Differential Lubricants	Replace

TIRE PRESSURES

Model	Tire Size	Front (PSI)	Rear (PSI)
Corolla, Celica Corona and Cressida	(Maximum cold inflation pressure for fully loaded vehicle listed on the placard on the glove box door.)		
Pickup	185 SR x 14	20	32
	7.00 x 14-6	20	36
	7.50 x 14	20	32
Land Cruiser	All	22	31
Land Cruiser Wagon	All	24	31

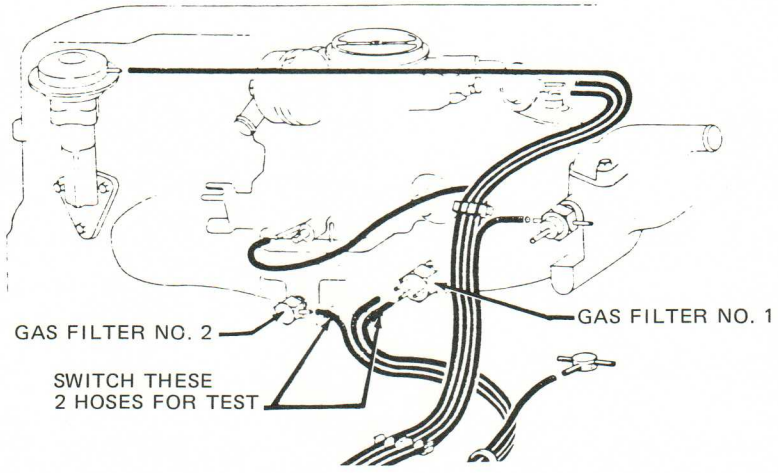
TRAILER HITCH

- A properly designed hitch of sufficient capacity for the gross trailer weight must be used.
- Any trailer hitch should be installed by a qualified technician.
- Toyota requires that the trailer hitch be removed when not actually towing a trailer.

Article No. 34

20R AFTERBURN
CELICA, CORONA, AND PICKUP WITH 20R ENGINES

Customer complaints of afterburn (popping noise from the tail pipe after normal combustion process) during sudden deceleration can occasionally be traced to partial clogging of the #1 gas filter (for vacuum system) located on the side of the intake manifold.



The afterburn condition can be readily duplicated in the shop as follows: 1) idle engine until coolant temperature exceeds 60 degree F; 2) rev engine to 2500 rpm, then quickly release throttle.

To test for a partially clogged gas filter, reverse the indicated vacuum hoses and repeat steps (1) and (2). If the afterburn disappears, replacement of gas filter #1 is recommended.

PRODUCTION EFFECTIVE

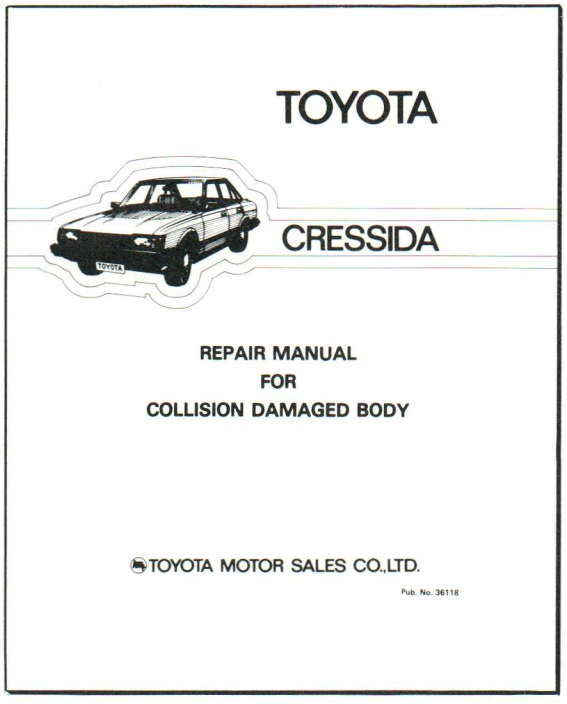
All 1975 models equipped with 20R engine.

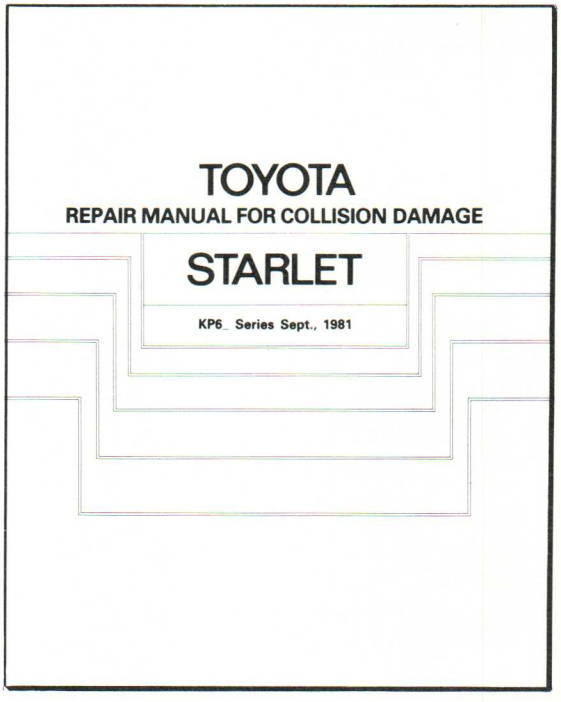
Article No. 35

Repair Manual For Collision Damaged Body
Cressida, Starlet

In the last issue of Toyota Service News we announced availability of Repair Manuals for Collision Damaged Bodies on Corolla and Corolla Tercel (manuals 36001 and 98367 respectively). Due to the response received we are pleased to announce availability of a similar manual for 1981 Cressida and Starlet series vehicles. The publication number for these manuals are 36118 for Cressida and 36158 for Starlet.

The Repair Manuals for Collision Damaged Body outline body repair instructions, description of body structures, body sealing, and body dimensions. Please note that these manuals are prepared for worldwide usage, and as such, certain procedures might not apply in the United States. Also, flat rate times are suggested times only. To order, see the Toyota Service Publication Order Form.





Article No. 36

TOYOTA SERVICE PUBLICATIONS APPLICABILITY LIST

The following application chart shows factory-prepared service manuals for Toyota vehicles imported into the U.S. All information and specifications contained in the listed publications are based on the latest data available at the time of publication. In those cases where the service information for vehicles built for the U.S.A. and other countries is similar, the illustrations may not, in every case, depict U.S.A. models. Also, where the vehicle design has not significantly changed from one year to the next, the manual designated for a particular year model may also be the manual designated for use with earlier models of the same type.

YEAR	MODEL	OWNER'S	ENGINE	CHASSIS	BODY	EMISSION CONTROL	AUTO. TRANS.	A/C SYSTEM	A/C COMPRES	SERVICE SPEC.	MAINT. PROCED.	ELECT. WIRING DIAG.	ELECT. WIRING SYSTEMS	SEAT BELT SYSTEM	COLLISION
CRESSIDA															
1978	MX32,36	9725A	98255 (4-M)	98192	98191	98269	98396 (A-40D)	00306 00371	00307 (6E171)	98257	98214	98891	—	—	—
1979	MX32,36	9746A		98192 +98315	98191 +98315	98299				98314	98227	98932	—	—	—
1980	MX32,36	9760A	98255 +98331 (4-M)			98375		00306 00371 00414		98377	98231	98943	—	—	—
1981	MX62	9779A	36057 +36058 (5M-E)	36091		36046	98396 (A-43D)	00013		36045	98236	—	98950	—	36118
1982	MX62	3729A	36057 (5-ME)							—	36144	—	98956	36091	

YEAR	MODEL	OWNER'S	ENGINE	CHASSIS	BODY	EMISSION CONTROL	AUTO. TRANS.	A/C SYSTEM	A/C COMPRES	SERVICE SPEC.	MAINT. PROCED.	ELECT. WIRING DIAG.	ELECT. WIRING SYSTEMS	SEAT BELT SYSTEM	COLLISION

COROLLA

1968	KE10,15,16	98403	98309 (3K-C)	98411	98412	98218	98413	00029	00031 (2C-90)	01632	—	—	—	—	—
1969	KE10,15,16	96072				98012					—	—	—	—	—
	KE11,17,18	96082									—	—	—	—	—
1970	KE11,17,18										—	—	—	—	—
	KE20,25,26	96302		98047	98048	98043		00084			—	—	—	—	—
1971	KE20,25,26	96382				98043 +98063	98074				—	—	—	—	—
	TE21,27,28		98311 (2T-C)								—	—	—	—	—
1972	KE20	96572				98070					—	—	—	—	—
	TE21,27,28										—	—	—	—	—
1973	KE20	9675A				98086					—	—	—	—	—
	TE21,27,28						98187 (A-40)				—	—	—	—	—
1974	KE20	9692A	NOTE 1			98106				01660-01	—	—	—	—	—
	TE21,27,28		NOTE 2						00213 (2C-90B)		—	—	—	98110	—
1975	TE31,37,38	9696A	98309 (3K-C)	98179	98166	98117		00239		42463-1	—	01772-01	—	98134	—
1976	TE31,37,38	9704A	98311 (2T-C)			98135				98137	—	98887 +42503	—		—
1976½	TE51	9712A									—		—		—
1977	KE30	9727A				98159				98161	98208	98922	—	—	—
	TE31,37, 38,51												—	—	—
1977½	TE31,37, 38,51												—	—	—
1978	KE30	9737A				98266				98257	98214	98891	—	—	—
	TE31,37, 38,51					98267							—	—	—
1979	KE30	9750A				98296			00348	98314	98227	98932	—	—	—
	TE31,38,51					98297							—	—	—
1980	TE72	9859A	98311 (3T-C)	98389	98390	98373		00458	00401 (6P127)	98377	98231	98943	—	—	36001
1981	TE71,72,75	9782A	36051 (3T-C)										—	—	
1982	TE72,75	3721A	36149 (3T-C)										98953	—	

Note 1: 98309 + 98101 Supplement
Note 2: 98311 + 98101 Supplement

COROLLA TERCEL

1980	AL10	9753A	98386 (1A-C)	98352	98353	98372	98385 (A-55)	00001	00401 (6P127)	98377	98231	98943	—	—	98367
1981	AL21	9777U	98386 (3A-C)			36040				36045	98236	98949	—	—	
1982	AL21,22,25	3730U	36148 (3A-C)										—	—	

MARK II

1969-70	RT62,72,78	96262	98023 (8R-C)	98024	98025	98012	98075 (A-30)	00054	00031 (2C-90)	01632	—	—	—	—	—
1971	RT62,72,78	96402				98043 +98052					—	—	—	—	—
1972	RT63,73,79	96532	98107 (18R-C)			98070					—	—	—	—	—
	MX12,22,28	96562	98067 (2M)	98078	98079	98070 +98070-01		00152	00036 (CC2M)		—	—	—	—	—
1973	MX13,23,29	9668A	98067 (4M)			98086 +98088-01					—	—	—	—	—
1974	MX13,23,29	9677A	98067 +98101			98106				01660	—	—	—	98110	—
1975	MX13,23,29	9698A	98128 +98122			98117			00207 (2M110)	42463-1	42458	01772-07	—	98134	—
1976	MX13,29	9707A				98135				98137	—	98887 +42503	—		—

CROWN

1969-70	MS53,55	96091	98004	98000	98001	98012	98075 (A-30)	00038	00037 (CC6DA)	01632	—	—	—	—	—
1971	MS53,55	96331				98043					—	—	—	—	—
	MS63,66,75	96391	98067	98068	98069	98043 +98051		00103			—	—	—	—	—

PICKUP

YEAR	MODEL	OWNER'S	ENGINE	CHASSIS	BODY	EMISSION CONTROL	AUTO. TRANS.	A/C SYSTEM	A/C COMPRES	SERVICE SPEC.	MAINT. PROCED.	ELECT. WIRING DIAG.	ELECT. WIRING SYSTEMS	SEAT BELT SYSTEM	COLLISION
1969	RN11	96132	98022-1 (3R)	98415		—	—	—	—	01632	—	—	—	—	—
1970	RN12	96282	98023 (8R-C)			98012	—	00087	00031 (2C-90)		—	—	—	—	—
1971	RN12					98043 +98052	—				—	—	—	—	—
1972	RN14	96452	98107 (18R-C)			98070	—				—	—	—	—	—
1972½	RN22	96612		98084			98075 (A-30)				—	—	—	—	—
1973	RN22,27	9670A				98086 +98088-1					—	—	—	—	—
1974	RN22,27	9681A	98107 +98101			98106				01660	—	—	—	—	—
1975	RN23,28	9699A	98116 (20R)	98138		98117			00197 (6P134)	42463-1	42457	01772-04	—	—	—
1976	RN23,28	9708A				98135				98137	—	98887 +42503	—	—	—
1977	RN23,28	9719A				98159				98161	98208	98922	—	—	—
1978	RN23,28	9738A				98268	98187 (A-40)			98257	98214	98891	—	—	—
1979	RN32,42	9748A		98313		98298		00428	00401	98314	98227	98932	—	—	—
	RN37,47	9755A		98313 +98343			—			98332	98228		—	—	—
1980	RN32,42	9764A	98387 (20R)										—	—	—
	RN37,47	9765A											—	—	—
1981	RN34,44	9784A	36052 (22R)										—	—	—
	RN38,48	9785A											—	—	—
	LN30,40	3714A	36105	36052							98239	36052	—	—	—
1982	RN34,44	3722A	36151 (22R)										—	—	—
	RN38,48	3723A											—	—	—
	LN44	3722A	36105	36151	—	—	—	—	36151	—	36144	98957	—	—	—

LAND CRUISER

1969-70	FJ40	96151	98087 (F)	98041	98012	—	—	—	01632	—	—	—	—	—
1969-70	FJ55	96161		98040		—	00093	00036 (CC2M)		—	—	—	—	—
1971	FJ40	96151		98041	98043	—	—	—		—	—	—	—	—
	FJ55	96161		98040		—	00093	00036 (CC2M)		—	—	—	—	—
1972	FJ40	96622		98077-1	98070	—	—	—		—	—	—	—	—
	FJ55					—	00093	00036 (CC2M)		—	—	—	—	—
1973	FJ40	9669A		98077-1 +98100	98086	—	—	—		—	—	—	—	—
	FJ55					—	00093	00036 (CC2M)		—	—	—	—	—
1974	FJ40	9678A	98087 +98101 (F)	98077-1	98106	—	—	—	01660-01	—	—	—	—	—
	FJ55					—	00093	00036 (CC2M)		—	—	—	—	—
1975	FJ40	9700A	98126 (2F)	98154	98117 +98124	—	—	—	42463-1	—	01772-05	—	—	—
	FJ55					—	00227	00205 (6D152A)		—		—	—	—
1976	FJ40	9709A			98135 +98146 (Cal)	—	—	—	98137	—	98887 +42503	—	—	—
	FJ55					—	00227	00205 (6D152A)		—		—	—	—
1977	FJ40	9720A			98159	—	—	—	98161	98208	98922	—	—	—
	FJ55					—	00227	00205 (6D152A)				—	—	—
1978	FJ40	9739A			98270	—	—	—	98257	98214	98891	—	—	—
	FJ55					—	00227	00205 (6D152A)				—	—	—
1979	FJ40	9757A		98154 98344	98333	—	—	—	98332	98228	98932	—	—	—
	FJ55					—	00227	00205 (6D152A)				—	—	—
1980	FJ40	9763A				—	—	—	98377	98231	98943	—	—	—
	FJ55					—	00227	00401 (6P148)				—	—	—
1981	FJ40	9778A		36044	36043	—	—		36045	98236	98949	—	—	—
	FJ60					—	—					—	—	—
1982	FJ40	3726A	36104			—	00015		—	36144	98957	—	—	—
	FJ60		36047			—			—			—	—	—

November 1981

YEAR	MODEL	OWNER'S	ENGINE	CHASSIS	BODY	EMISSION CONTROL	AUTO. TRANS.	A/C SYSTEM	A/C COMPRES	SERVICE SPEC.	MAINT. PROCED.	ELECT. WIRING DIAG.	ELECT. WIRING SYSTEMS	SEAT BELT SYSTEM	COLLISION

CORONA

1968	RT43,52	96202	98022-01 (3R-C)	98015	98016	98218	96014	00035	00031 (2C-90)	01632	—	—	—	—	—
1969	RT43,52					98012					—	—	—	—	—
1970	RT83	96252	98023 (8R-C)	98417	98418		98075 (A-30)	00061			—	—	—	—	—
1971	RT83,93	96312				98043					—	—	—	—	—
1972	RT85,95	96522	98107 (18R-C)			98070		00104			—	—	—	—	—
1973	RT85,89, 95	9663A				98086 +98088-1					—	—	—	—	—
1974	RT104,114, 118	9676A	98107 +98101 (18R-C)	98290	98109	98106	98187 (A-40)	00176	00036 (CC2M)	01660-01	—	—	—	98110	—
1975	RT105,115, 119	9694A	98116 (20R)			98117			00197 (6P134)	42463-1	42457	01772-03	—	98134	—
1976	RT105,115, 119	9760A				98135				98137	—	98887 +42503	—		—
1977	RT105,115, 119	9726A				98159				98161	98208	98922	—	—	—
1977½	RT105,115, 119												—	—	—
1978	RT105,119	9736A				98268				98257	98214	98891	—	—	—
1979	RT134	9747A		98316	98317	98298		00412	00401 (6P148)	98314	98227	98932	—	—	—
1980	RT134	9761A				98374				98377	98231	98943	—	—	—
1981	RT32,36	9776A	36056 (22R)	98316 +36096		36042	98265-1 +98280 (A-40D)			36045	98236	98949	—	—	—
1982	RT32,36	3728A				36142				—	36144	98957	—	—	—

STARLET

1981	KP61	9774A	36103 (4K-C)	36053	36054	36039	—	00017	00401 (6P127)	36045	98236	98949	—	—	36158
1982	KP61	3727A				36141	—			—	36144	98957	—	—	

CARINA

1972	TA12	96422	98311 (2T-C)	98061-1	98062	98070	98075 (A-30)	00104	00031 (2C-90)	01632	—	—	—	—	—
1973	TA12	9665A				98086					—	—	—	—	—

CELICA

1971	RA20	96432	98023 (8R-C)	98061	98062	98043 +98052	—	00104	00031 (2C-90)	01632	—	—	—	—	—
1972	RA21	96512	98107 (18R-C)	98061-1		98070	—				—	—	—	—	—
1973	RA21	9664A				98086 +98088-1	—				—	—	—	—	—
1974	RA21	9683A	98107 +98101 (18R-C)			98106	98187 (A-40)			01660	—	—	—	98110	—
1975	RA22	9695A	98116 (20R)			98117			00197 (6P134)	42463-1	42457	01772-02	—	98134	—
1976	RA24,29	9705A		98143	98140	98135		00259		98137	—	98887 +42503	—	98134	—
1977	RA24,29	9717A				98159				98161	98208	98922	—	—	—
1978	RA42	9732A		98263	98264	98268		00346		98257	98214	98891	—	—	—
1979	RA42	9749A	98312 (20R)										—	—	—
1980	RA42	9762A	98388 (20R)										—	—	—
1981	RA43,44	9781A	36050 (22R)										—	—	—
1982	RA63,64	3719A	36150 (22R)										98954	—	—

SUPRA

1979	MA46	9752A	98255 +98331 (4-M)	98330 +98263	98330 +98264	98334	98265-1 +98280 (A-40D)	00436	—	98332	98228	98932	—	—	—
1980	MA46	9766A	98255 +98331 (4M-E)			98375		00346	00401 (6P148)	98377	98231	98943	—	—	—
1981	MA47	9783A	36057 +36058 (5ME)			36046	98396 (A-43D)	00436		36045	98236	98949	—	—	—
1982	MA67	3718A	36145 (5M-GE)	36147 +36150		36143	36136 (A-43DL)	36147 +36150	36150	—	36144	—	98955	—	—

Article No. 37

TOYOTA SERVICE PUBLICATIONS ORDER FORM

Listed below, in numeric sequence, are part numbers for factory-prepared service publications which are used in Toyota dealerships throughout the United States. Because they are intended for use in Toyota service facilities, equipped with special factory tools, you will find that these publications incorporate excellent illustrations and considerable detail.

To determine the part number of the manual for your specific needs, please refer to the *Toyota Service Publications Applicability List.*

When service information is similar for Toyotas built for the U.S. and for other countries, the illustrations may not always show a U.S. model. Also, when the mechanical design does not significantly change from one year to the next, the same manual may be applicable to several years. Occasionally, a supplement is used to update a basic manual. All information and specifications in any manual are based on the latest data available at the time of publication. However, in the interest of Toyota's policy of continual product improvement, they are subject to change. Prices of manuals are subject to change without notice.

ORDERING INFORMATION: You may order one or more factory-prepared service manuals through your STAR jobber, Toyota dealer, or directly from Toyota Service Publications. To order directly from Toyota Service Publications, simply circle the applicable part number(s) listed below, and fill-in the requested information on the order form at the end of this article. Then remove this page and mail to Toyota, with a check payable to *Toyota Service Publications.* VISA and MASTERCARD purchases are also available.

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ORDER FORM

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(213) 639-2621

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☐ Money Order ☐ VISA ☐ MASTERCARD

☐ CHECK (Payable to Toyota Service Publications)

Credit Card No.

Expiration Date

Signature (Required if using credit card)

Subtotal	
Calif. residents add 6%	
First class postage, add $3.00*	
Total	

* First class postage orders will be shipped within 4 days of receipt. All other orders are sent Fourth Class Book Rate. For Fourth Class, please allow 4-6 weeks delivery.

THIS IS YOUR SHIPPING LABEL -- PLEASE PRINT CLEARLY

Note to dealers and companies: On shipping label please provide dealer or company name, and also the NAME OF A SPECIFIC PERSON at your location to whose attention the shipment should be sent. Thank you.

MAIL TO:

TOYOTA SERVICE PUBLICATIONS

P.O. Box 6668, Torrance, CA 90504

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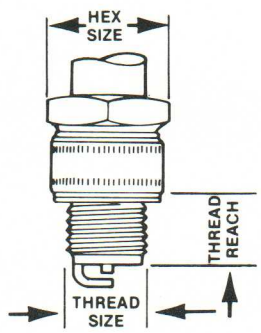
IMPORT CAR AND TRUCK SPARK PLUG CROSS REFERENCE

	CHAMPION	AC	AUTOLITE	MOTORCRAFT	BOSCH	NGK
W16FS-U	L-88A, L-86 L-10, L288, L89CM	M45FF, 45F 44FF, 44F, S44F	415, 2656 535	AE4, AE4X AV4	W8A W8AS	B-5HS
W20FP-U	L-87Y	43FS	274	AE32	W7B W6B	BP-6HS
W20ES-U	N5	S44XL, 44N, C44N S43XL, 43N, C43N	394 2616	AG3 AG3X	W7C W5C	B-6ES
W20ES-L**						B-6EB
W20ES-L11**						B-6EB11*
W22ES-U	N4	42XL, S42XL, C42N	393, 2615	AG2 AG2X	W4C2	B-7ES
W22ES-L**						B-7EB
W22ES-L11**						B-7EB11*
W24ES-U	N3		2594 2613	AG901 AG901X	W4C1, W4C3 W3C0	B-8ES
W16EX-U (A)	N12Y N11Y	44XLS, 44NS, C44NS	55	AG42	W8D	BP-5ES, BP-5ES-L BP-5EA-L
W16EX-UII* (A)						BP-5ES11*
W20EX-U (A)	N10Y N9Y	43XLS	54	AG32	W7D, W6D W6D1	BP-6ES
W20EX-U11*	N10Y4*					BP-6ES11* BP-6ES13*

*Wide Gap Plug
**Special for HONDA CVCC

NOTE: This chart is to be used as a guide only. Spark plug design and manufacturing processes between manufacturers may vary in heat range.

IDENTIFYING TOYOTA ND SPARK PLUGS



THREAD REACH

L: 11.2mm (7/16")
F: 12.7mm (1/2")
E: 19.0mm (3/4")
Blank:
thread size
14mm · 9.5mm (3/8")
18mm · 12.0mm (15/32")

SPECIAL DESIGN

Letter	Description	Example
—GU	Gold palladium with U-electrode	W22ES-GU
R	Resistor type	W16EXR-U
—U	With U-grooved ground electrode	X24ES-U
—L	Lower type (Superior in unti-carbon fouling.)	W20ES-L

WIDE GAP

10: 1.0mm (.040")
11: 1.1mm (.044")
13: 1.3mm (.050")
15: 1.5mm (.060")

W | 16 | E | X | -U | 11

THREAD AND HEX.

Letter	Taper Seat	Thread Size	Hex.
M		18mm	25.4mm
MW		18mm	20.6mm
MA	Taper Seat	18mm	20.6mm
W		14mm	20.6mm
WA	Taper Seat	14mm	16.0mm
X		12mm	18.0mm
U		10mm	16.0mm
T	Taper Seat	14mm	16.0mm

HEAT RANGE

Larger Number
— cold type
Smaller Number
— hot type

4
9
14
16
20
22
24
25
27
29
31
34
37

Hot ↕ Cold

SPECIAL DESIGN

Letter	Description	Example
A	Dual ground electrodes	W22EA
B	Triple ground electrodes	W22EB
C	Competition type	W25FC
M	Short type	W20M
N	Racing type (Nickel ground electrode)	W27EN
Pt	Racing type (Platinum ground electrode)	W27EPt
P	Projected type	W20FP-U
S	Regular type · copper cored center electrode	W24ES-U
X	Extra projected type	W16EX-U

NOTE: The above recommendations apply to normal driving conditions.
Hotter or colder heat range may may be required in some cases.

TOYOTA STAR AD MATS

SUPPORT TO AFTERMARKET REPAIRS

To help you attract additional Toyota customers utilize these ad mats....Also, check with your STAR jobber regarding his co-op advertising program.

TOYOTA
TUNE-UP

$ 0 00

We use genuine Toyota parts on your Toyota

DEALER IMPRINT

2 COL X 4"

TOYOTA
TUNE-UP

$ 0 00

We use genuine Toyota parts on your Toyota

DEALER IMPRINT

1 COL X 2"

TOYOTA
SHOCKS

$ 0 00

We use genuine Toyota parts on your Toyota

DEALER IMPRINT

1 COL X 2"

TOYOTA
TUNE-UP

$ 0 00

We use genuine Toyota parts on your Toyota

DEALER IMPRINT

3 COL X 2"

MEMBERS OF IASA SUBSCRIBE TO THE FOLLOWING:

CODE OF RESPONSIBLE AUTOMOTIVE SERVICING PRACTICES

This establishment subscribes to the following code:

- Recommend corrective and maintenance services and explain to the customer which of these are required now to correct existing problems and which are for preventive maintenance.
- Offer customer a price estimate for work to be performed.
- Obtain prior authorization for all work done, in writing or by other means satisfactory to the customer.
- Notify customer if appointments or completion promises cannot be kept.
- Furnish an itemized invoice for parts and services, priced fairly, which clearly identifies any used or re-manufactured parts. Replaced parts may be inspected upon request.
- Furnish or post copies of any warranties covering parts or services.
- Maintain customer service records for one year or more.
- Exercise reasonable care for the customer's property while it is being serviced.
- Maintain a system for fair settlement of customer's complaints.
- Cooperate with established consumer complaint mediation activities.

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Independent Automotive Service Association
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Bedford, Texas 76021 (817) 283-6205

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