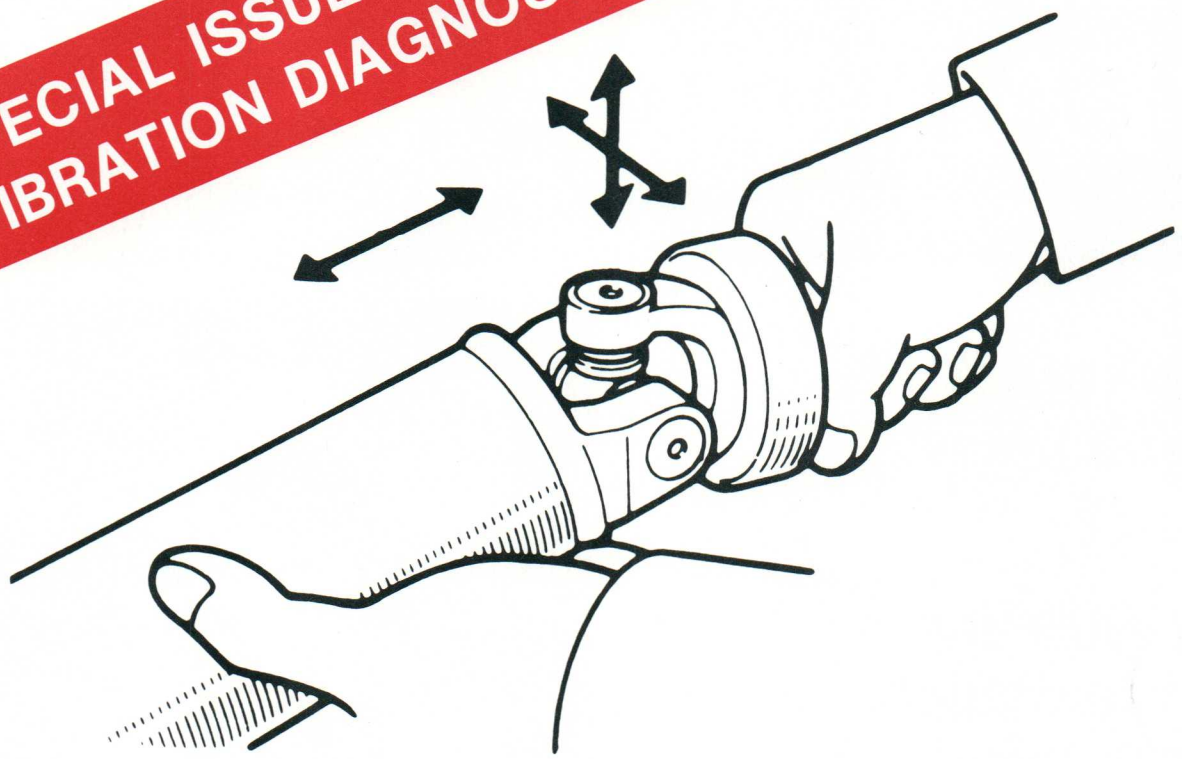
STAR
SUPPORT TO AFTERMARKET REPAIRS

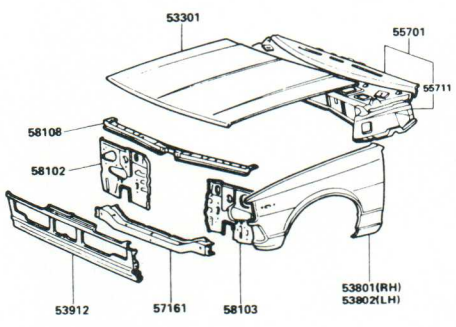
TOYOTA SERVICE NEWS

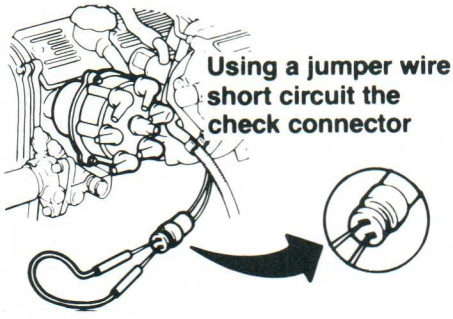
Bulletin No. 7

February 1983

SPECIAL ISSUE VIBRATION DIAGNOSIS







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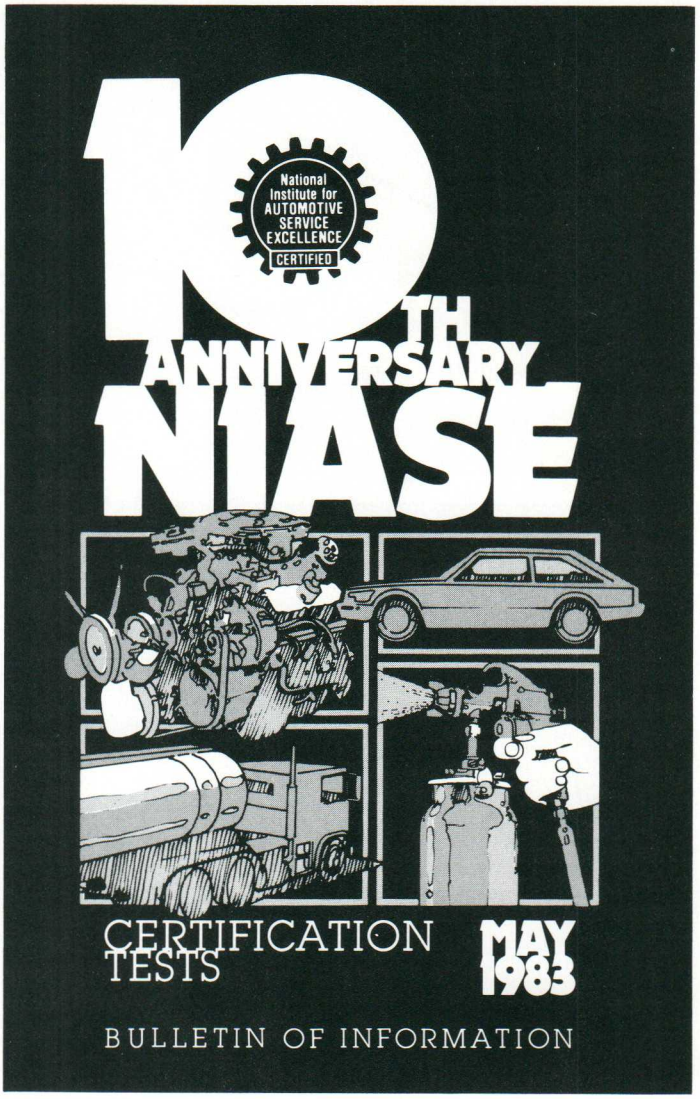

SUPPORT TO AFTERMARKET REPAIRS

TOYOTA SERVICE NEWS

Bulletin No. 7 February 1983

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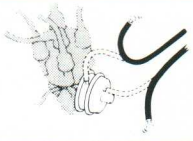
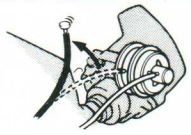
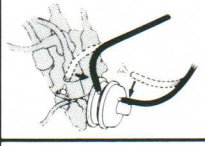
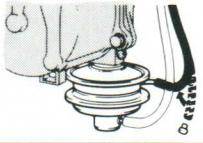
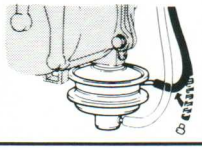
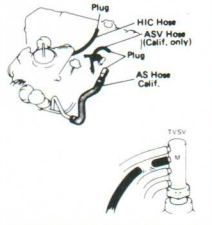
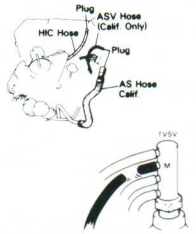
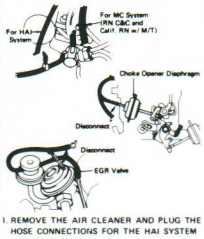
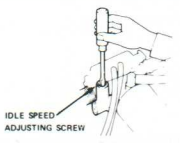
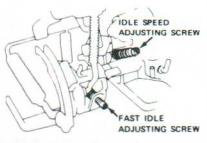
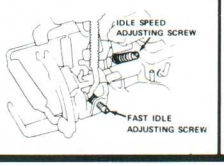
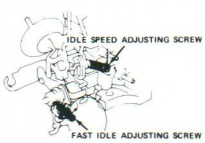
Article No. 95

1983 TOYOTA

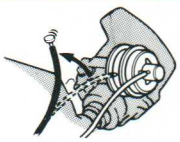
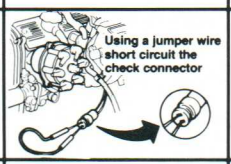
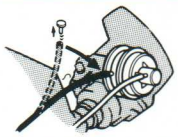
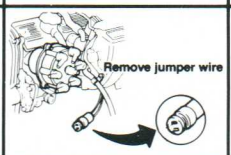
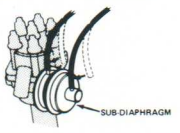
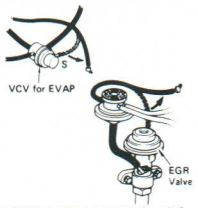
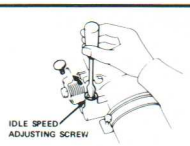
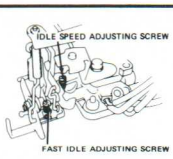
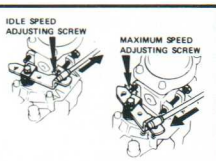
TUNE-UP SPECIFICATIONS

	4K-E	3A-C	4A-C	22R
SPARK PLUGS	5-Spd | 4-Spd	W16EXR-U11 (CALIF & FED)	W16EXR-U11 (CALIF & FED)	W16EXR-U
•ND	J16BR-U11 | P16R	W14EXR-U11 (FED ONLY)	W14EXR-U11 (FED ONLY)	
•Gap: in.	0.043	0.043	0.043	0.031
VALVE CLEARANCE (Hot)	NOT APPLICABLE			
•Intake: in.		0.008	0.008	0.008
•Exhaust: in.		0.012	0.012	0.012
INITIAL TIMING CHECK				
•Disconnect and plug vacuum hoses to distributor advance diaphragms				
•Set initial timing at 950 rpm max.	5° BTDC	5° BTDC	5° BTDC	5° BTDC
•Reconnect hoses to distributor diaphragms				
•Confirm timing advance	18° BTDC	13° BTDC	13° BTDC	12° BTDC
•Minimum manifold vacuum at idle (sea level)	15.5 in. Hg	17.5 in. Hg	17.5 in. Hg	15.5 in. Hg
IDLE				
•Final idle speed: rpm	700 (cooling fan OFF)	Without PS: 4M/T 550 | 5M/T 650 | A/T 900; With PS: All 800	Without PS: M/T 650 | A/T 800; With PS: M/T 800 | A/T 900	M/T 700 | A/T 750
Idle mixture preset at factory, adjustments not recommended	A/C idle up 1,100 ± 50 rpm	A/C idle up 1,200 ± 50 rpm	A/C idle up 950 ± 50 rpm	A/C idle up 950 ± 50 rpm
•TP: rpm	NOT APPLICABLE	1,400 (EGR, choke opener & cooling fan OFF)	1,400 (EGR & choke opener OFF)	NOT APPLICABLE
•Fast idle: rpm	NOT APPLICABLE	3,000 (EGR, cooling fan & choke opener OFF)  1. REMOVE THE AIR CLEANER AND PLUG THE A.S. HOSE AND THE HIC HOSE. 2. DISCONNECT THE HOSE FROM TVSV M PORT AND PLUG THE M PORT. 3. SET THE FAST IDLE CAM. 4. SET THE HAND BRAKE AND WITHOUT TOUCHING THE ACCELERATOR PEDAL, START THE ENGINE.	3,000 (EGR & choke opener OFF)  1. REMOVE THE AIR CLEANER AND PLUG THE A.S. HOSE AND THE HIC HOSE. 2. DISCONNECT THE HOSE FROM TVSV M PORT AND PLUG THE M PORT. 3. SET THE FAST IDLE CAM. 4. SET THE HAND BRAKE AND WITHOUT TOUCHING THE ACCELERATOR PEDAL, START THE ENGINE.	2,600 (EGR & choke opener OFF)  1. REMOVE THE AIR CLEANER AND PLUG THE HOSE CONNECTIONS FOR THE HAI SYSTEM AND MC SYSTEM. 2. DISCONNECT THE HOSE FROM THE CHOKE OPENER DIAPHRAGM AND PLUG THE HOSE END. 3. DISCONNECT THE HOSE FROM THE EGR VALVE. 4. SET THE FAST IDLE CAM. 5. SET THE HAND BRAKE AND WITHOUT TOUCHING THE ACCELERATOR PEDAL, START THE ENGINE.
LOCATION OF ADJUSTING SCREWS				

NOTE: ALWAYS REFER TO THE APPROPRIATE TOYOTA SERVICE PUBLICATION FOR THE COMPLETE ENGINE SETTING PROCEDURE.

1983 TOYOTA

TUNE-UP SPECIFICATIONS (cont.)

	22R-E	5M-GE	2F	L (Diesel)
SPARK PLUGS •ND	W16EXR-U11	P16R	W14EXR-U	NOT APPLICABLE
•Gap: in.	0.031	0.043	0.031	
VALVE CLEARANCE (Hot) •Intake: in.	0.008	NOT APPLICABLE	0.008	0.010
•Exhaust: in.	0.012		0.014	0.014
INITIAL TIMING CHECK •Disconnect and plug vacuum hoses to distributor advance diaphragms				TIMING CHECK IS NOT A NORMAL MAINTENANCE ITEM FOR L ENGINES • Install SST and dial indicator to injection pump • Rotate crankshaft clockwise until timing pulley notch is 45° before timing pointer • Set dial indicator at 0 • Rotate crankshaft pulley until pulley notch is aligned with timing pointer (this is TDC of the compression stroke for cylinder 1 or 4) • Read dial indicator 
•Set initial timing at 950 rpm max.	5° BTDC	10° BTDC	7° BTDC	LN44-1111497 (DLX) & Before LN44-1111500 (SR-5) Low Altitude 1.00mm High Altitude 1.12mm LN44-1111498 (DLX) & After LN44-1111501 (SR-5) Low Altitude 1.12mm High Altitude
•Reconnect hoses to distributor diaphragms				
•Confirm timing advance	12° BTDC	NOT APPLICABLE ADDITIONAL ADVANCE ONLY WHEN ENGINE IS COLD	PINCH THE VACUUM HOSE BETWEEN THE HAC VALVE AND DISTRIBUTOR SUB-DIAPHRAGM AT THE HAC SIDE. TIMING MARK WILL ADVANCE.	NOT APPLICABLE
•Minimum manifold vacuum at idle (sea level)	15.5 in. Hg	17.0 in. Hg	16.5 in. Hg	NOT APPLICABLE
IDLE •Final idle speed: rpm Idle mixture preset at factory, adjustments not recommended	750 A/C idle up 950 ± 50 rpm	650 A/C idle up 900 ± 50 rpm	650 A/C idle up 950 ± 50 rpm	TURN THE THROTTLE KNOB ON THE DASHBOARD COUNTER CLOCKWISE TO RETURN THE ENGINE TO NORMAL IDLE BEFORE SETTING IDLE SPEED 700 idle speed 4,900 max. speed A/C idle up 950 ± 50 rpm
•TP: rpm	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
•Fast idle: rpm	NOT APPLICABLE	NOT APPLICABLE	1,800 (EGR, EVAP, and vacuum advance OFF)  1. STOP THE ENGINE AND FULLY PULL OUT THE CHOKE KNOB. 2. DISCONNECT THE HOSES FROM THE DISTRIBUTOR MAIN DIAPHRAGM AND SUB-DIAPHRAGM AND PLUG THE HOSE ENDS. 3. DISCONNECT THE HOSES FROM PORTS OF THE VCV FOR EVAP AND EGR VALVE, AND PLUG THE HOSE ENDS. 4. FULLY OPEN THE CHOKE VALVE. 5. SET THE HAND BRAKE AND START THE ENGINE.	NOT APPLICABLE
LOCATION OF ADJUSTING SCREWS		Idle speed automatically adjusted by ISCV		

NOTE: ALWAYS REFER TO THE APPROPRIATE TOYOTA SERVICE PUBLICATION FOR THE COMPLETE ENGINE SETTING PROCEDURE.

Article No. 96

VEHICLE VIBRATION

This information has been prepared to assist in the diagnosis and repair of vehicle vibrations. It is intended as an informational guide only, and while written for Toyota vehicles, the general principles apply to all vehicles. To be effective, the entire bulletin must be read prior to diagnosing a complaint vehicle.

Vehicle vibrations may originate in several of the automobile's systems or components. Therefore, it is important to develop an organized approach in order to accurately locate and correct problems. The following chart, tables and procedures are provided for this purpose.

NOTE: This bulletin has been prepared for use on vehicles with conventional rear wheel drive only. It does not necessarily apply to FWD or 4WD vehicles.

ROAD TEST

- Inspect general condition of vehicle.
- Install tachometer (if not so equipped).
- Test drive vehicle to verify vibration;
  - if condition is normal, explain to customer
  - if abnormal, note vehicle speed and RPM range.
  - identify characteristics and proximity of vibration.
- Return to service facility.

↓

In service stall, increase engine speed to RPM noted during road test. Transmission in neutral or clutch depressed. Is vibration felt?

Yes → Engine Vibration (see Table A)

↓ No

Lift vehicle to permit operation with driveline at **road height** relation to body (support by rear axle or trailing arms). Increase vehicle speed to range noted on road test. Is vibration felt?

NOTE: Some vibrations felt on hoist will not be felt under actual driving conditions. Some actual driving vibrations will not be present on hoist due to load. If necessary, lightly apply brakes to verify.

No → Front end Vibration (see Table B) or Rear Tire Run-out or Uniformity (see Table C)

↓ Yes

Remove rear tires and wheels from vehicle. Install lug nuts to retain brake drums. Retest. Is vibration felt?

No → Balance rear tires (see Table C)

↓ Yes

Driveline Vibration (see Table D)

The following sections indicate possible causes and repairs for vibrations. Please see the procedure indicated for repairs to be made. It is important to follow the steps as listed as they are arranged in order of most probable cause.

TABLE A – ENGINE VIBRATION

Possible Cause	Repair
1. Engine condition and operation	Check engine condition/operation
2. Engine accessories, belts, pulleys	See Procedure A
3. Engine component imbalance	See Procedure B

CAUTION: Determine if vibration is characteristic of engine type before beginning repair for imbalance. If normal, do not attempt to repair.

TABLE B – FRONT END VIBRATION

Possible Cause	Repair
1. Tire/wheel imbalance	See Procedure C
2. Tire/wheel run-out	See Procedure D
3. Steering and suspension	See Procedure E
4. Wheel alignment	Use normal procedures.
5. Tire non-uniformity	Replace tire.

TABLE C – REAR TIRE/WHEEL VIBRATION

Possible Cause	Repair
1. Tire/wheel imbalance	See Procedure C
2. Tire/wheel run-out	See Procedure D
3. Tire non-uniformity	Replace tire.

TABLE D – DRIVELINE VIBRATION

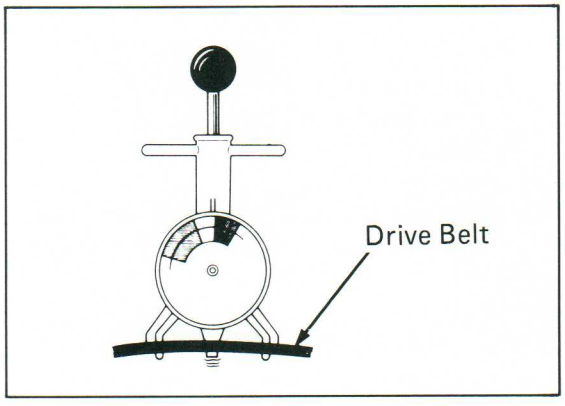
Possible Cause	Repair
1. Driveshaft/differential phase match	See Procedure F
2. Universal joints	See Procedure G
3. Driveshaft run-out	See Procedure H
4. Driveshaft imbalance	See Procedure I
5. Companion flange run-out	See Procedure H
6. T/M extension hsg. bushing	Check bushing for wear.
7. Center support bearing	Check bearing for wear.
8. Sleeve yoke spline	Check spline for sticking.
9. Ring and pinion run-out	See Procedure J
10. Axle shaft/hub run-out	See Procedure K

Engine-Related Vibration

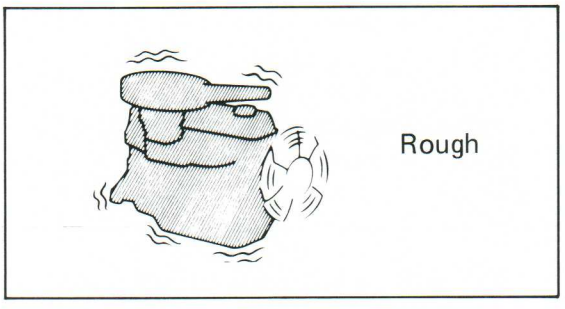
Before beginning repairs of engine-related vibration, ensure proper engine condition and operation by thorough analysis. Additionally, confirm that vibration is not characteristic of the particular engine type by inspecting other similar vehicles. If condition is normal, do not attempt to repair it.

PROCEDURE A – Engine Accessories, Belts, Pulleys

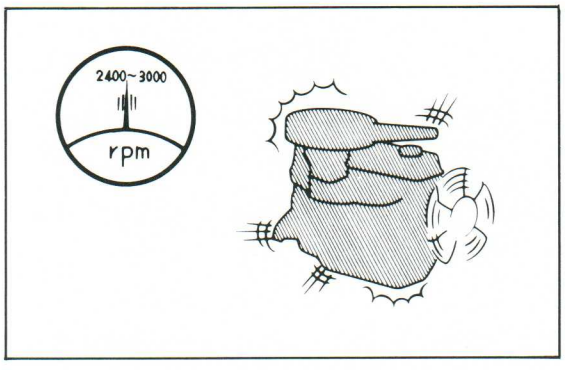
1. After confirming vibration RPM and proper engine tune, stop engine.
2. Carefully inspect engine accessory drive belts and pulleys for damage, misalignment, and wear. Correct as necessary.
3. Check and adjust drive belt tension and accessory mounting tightness.



4. Start engine and allow it to idle. Observe operation of belts and pulleys and listen for abnormal noise. Watch carefully for irregular motion of belts. If belts are found to be shaking, wavering or jumping, replace belt and recheck. If irregular motion continues, check for pulley run-out, flange width uniformity and for proper accessory operation. Correct as necessary and recheck vibration.



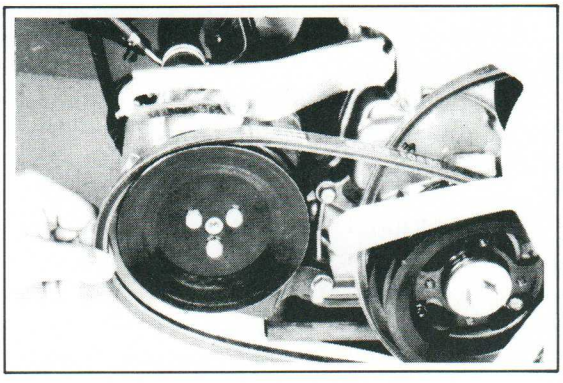
5. Increase engine speed to vibration RPM. Again, observe belts for proper operation. Listen carefully to each component to locate cause of vibration. Remove suspected accessory belt to verify.



6. If vibration persists, stop engine and remove drive belts one at a time. Recheck vibration after each belt is removed. When vibration is eliminated, repair accessory system last disconnected.

   CAUTION: Be careful to avoid engine overheating when operating with water pump and/or fan disconnected.

7. To repair accessory system, install new belt and check mounting. If still bad, repair/replace accessory unit as necessary.



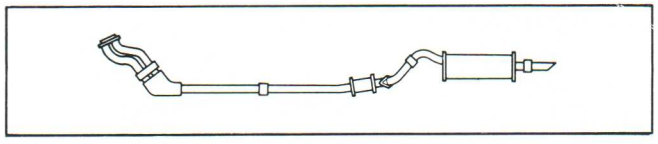
PROCEDURE B – Engine Component Imbalance

If previous inspections and repairs have not corrected vibration, it may be due to rotating or reciprocating imbalance. These conditions are extremely uncommon. Therefore, the technician should exercise extreme care when proceeding. Review all diagnosis notes and retest as appropriate.

1. Operate engine with all accessory drive belts removed.

   CAUTION: Avoid engine overheat while operating with belts removed.

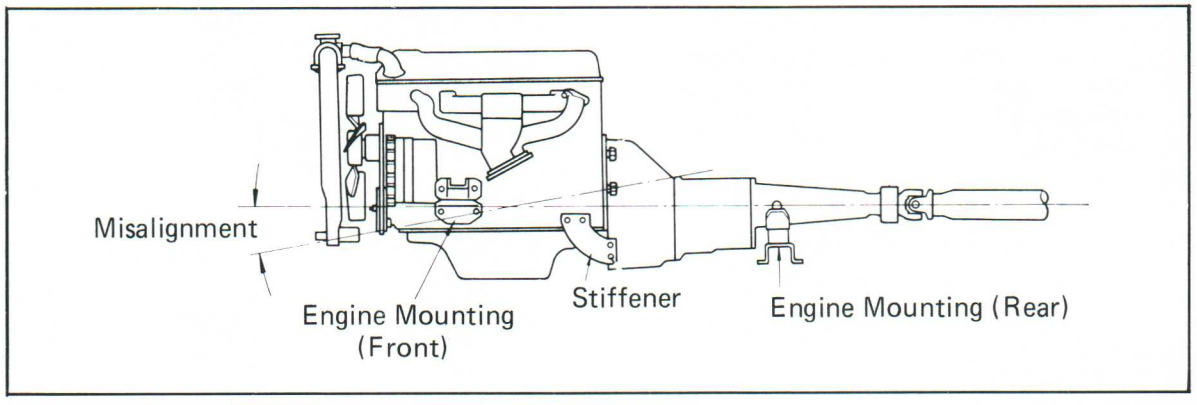
2. Inspect exhaust system at full operating temperature. Look for frame contact and stressed or stretched hangers. Loosen exhaust system flanges and hangers (not manifold to head), engage a forward and reverse gear to rock engine, and retighten all exhaust components. Retest.



3. Loosen engine mount to frame bolts slightly and rock engine in a forward and reverse gear. Stop engine and retighten engine mounts. (See diagram below.)

4. If condition still exists, loosen engine to transmission bolts slightly and rock engine in a forward and reverse gear. Retighten all bolts.

5. If condition still exists, vibration is most likely due to imbalance of rotating components (i.e., clutch, flywheel, torque converter, etc.).



Tire/Wheel Vibration

PROCEDURE C – Tire and Wheel Imbalance

Tire and wheel imbalance is evidenced by a constant low-frequency vibration at speeds from 30 MPH and above.

Tire and wheel balance should be done by using either an off-the-car or on-the-car spin balancer. Static or bubble balancers are not recommended.

Before proceeding with the balance, check air pressure, lug nut torque, front wheel bearing preload and visually inspect the tire for any tread or sidewall irregularities. Also make sure that the tread area of the tire is free of any debris and inspect the wheel for any irregularities.

In order to achieve an accurate balance, it is important that the balancing equipment is in good working condition. Periodic equipment checks and recalibrations are necessary. Stud mounting adaptors are recommended on balance equipment to achieve the most accurate balance.

Non-factory type equipment also must be taken into consideration. Aftermarket tire/wheel assemblies, or any suspension or steering modifications can be the cause or contributor to vibration problems.

PROCEDURE D – Tire and Wheel Run-out

Though not as common as imbalance, tire and wheel run-out also can be a cause of vibration problems. Tire and wheel assemblies must be checked for both radial and lateral run-out. This procedure is divided into three sections.

1. Radial run-out
2. Lateral run-out
3. Tire and wheel phase matching

If a vibration still exists after it is certain that an accurate balance has been achieved and run-out and tire to wheel phase match are correct, it may be necessary to phase match the tire/wheel assembly to the hub as follows:

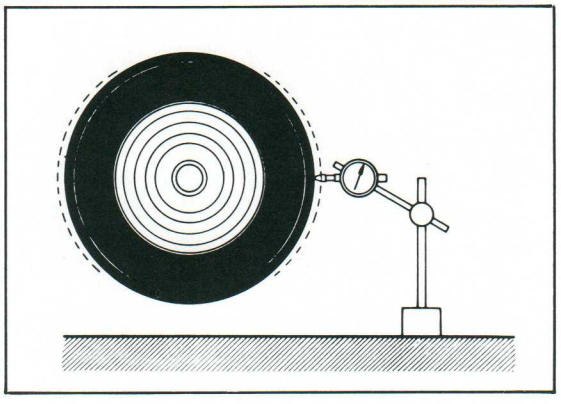
- Raise vehicle.
- Place a mark on the wheel and lug to indicate Position No. 1
- Remove the tire/wheel and rotate to the next hub stud position. Test drive the vehicle. It may be necessary to perform this step four times, test driving after each repositioning.

SECTION 1. – Radial Run-out

Radial run-out or "out-of-round" can be identified as a low frequency thumping or tramping vibration that can be felt at speeds of 30 MPH and above. The following diagrams show the procedures for checking radial run-out. Make sure that tires are warm and recently driven to ensure that there are no "flat spots."

1. Wrap the center tread band with tape to provide a smooth running surface.
2. Position dial indicator pickup against tape to measure radial run-out.
3. Rotate tire slowly while reading run-out measurement. Note amount and mark maximum and minimum run-out points. If run-out exceeds specification, phase match tire and wheel assembly. (See Section 3, Phase Matching)

   Specification: 1.4 mm (.055 in.)
   For Toyota Vehicles

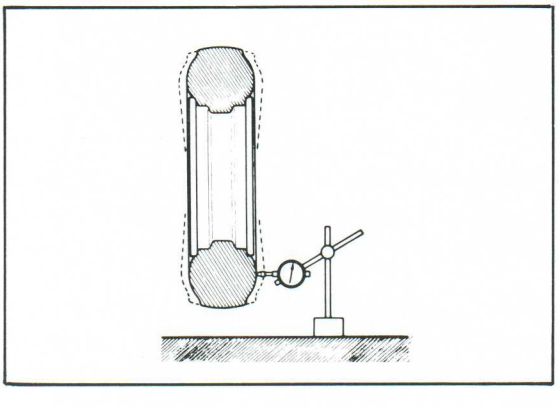


SECTION 2. – Lateral Run-out

Lateral or "side-to-side" run-out can be identified as a low frequency side-to-side shake or shimmy at speeds of 45 MPH and above.

1. The dial indicator pickup should be positioned on a smooth running surface as close to the center of the tire sidewall as possible.
2. Rotate tire slowly while reading the run-out measurement. Note amount and mark maximum and minimum run-out points. If run-out exceeds specification, phase match tire and wheel assembly. (See Section 3, Phase Matching)

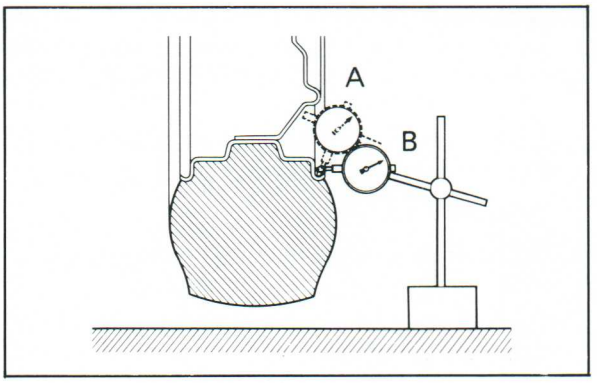
   Specification: 2.0 mm (.080 in.)
   For Toyota Vehicles



If the wheel is suspected to have excessive radial or lateral run-out, it should be checked by the following procedure.

1. Locate the dial indicator at position "A" and measure radial run-out.
2. Locate the dial indicator at position "B" and measure lateral run-out.
3. If the wheel exceeds specification for either measurement, replace wheel.

Specification: 1 mm (0.04 in.)
For Toyota Vehicles

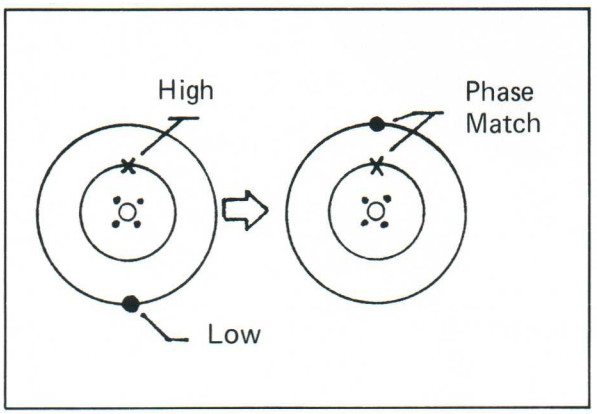


SECTION 3. – Tire and Wheel Phase Matching

Excessive "tire and wheel assembly" radial or lateral run-out may be corrected by tire-to-wheel phase matching.

NOTE: The procedures for correcting radial or lateral run-out are the same.

1. Dismount tire from wheel and reassemble matching **minimum tire** run-out point to the **maximum wheel** run-out point.
   - • – minimum tire run-out
   - X – maximum wheel run-out
2. Recheck assembly run-out to confirm improvements.
3. Repair or replace components as necessary. If wheel run-out is within specification, replace tire.
4. Install best tire/wheel assemblies to front axle, if possible.



PROCEDURE E – Steering and Suspension

When diagnosing and correcting front end-related vibrations, it is always important to conduct a general front end steering and suspension inspection. The following components should be checked for adjustment, wear, damage and modifications. Refer to appropriate Toyota Repair Manual for specific instructions.

- Proper vehicle manufacturer specified tire air pressure
- Front wheel bearing preload and condition
- Worn, damaged, loose or modified components:
  - – Tire and wheel assemblies
  - – Ball joints
  - – Tie rods
  - – Bushings
  - – Idler arm, pitman arm (if applicable)
  - – Steering rack bushings (if applicable)
  - – Shock absorbers
  - – Springs
  - – Others
- Steering preload
- Collision damage or improper collision damage repair

If any of the above-mentioned items are suspected, adjust, repair or replace as necessary.

Driveline Vibration

PROCEDURE F – Driveshaft/Differential Phase Matching

Before beginning diagnosis of driveline vibration, inspect the general condition of driveline components. Look for any signs of damaged or loose parts, or for foreign material such as undercoating on the driveshaft tube. Correct any discrepancy immediately and retest to verify vibration. Vehicle must be lifted by axle during diagnosis to maintain proper relationships between moving components.

Remove driveshaft and reinstall to differential flange after rotating 90 degrees clockwise from original position. Test for improvement. Repeat this procedure to find the position at which the vibration is smallest.

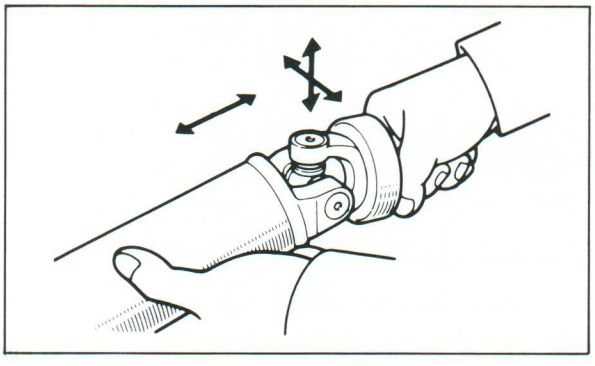
PROCEDURE G – Universal Joint Inspection

1. Mark driveshaft position at rear joint to pinion companion flange.
2. Remove driveshaft.
3. Inspect spider bearings for wear or damage.
4. Verify smooth joint movement in each direction. Joint should move easily by hand. Overly tight joints may be loosened by lightly striking yoke with hammer. If this procedure does not correct tightness, replace joint if possible.
5. Check spider bearing free play by turning yoke while holding shaft tightly

   Specification: Snap ring type joints (replaceable) 0.05 mm (0.002 in.) For Toyota Vehicles

   Specification: Shell type joint (non-replaceable) 0 mm (0 in.) For Toyota Vehicles

6. Repair/replace components as necessary.
7. Reinstall shaft. Verify effect of any change made.

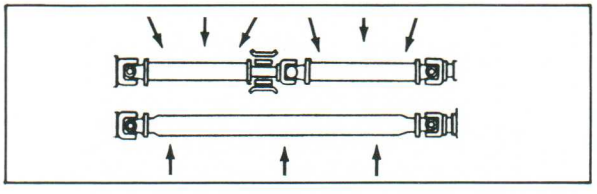


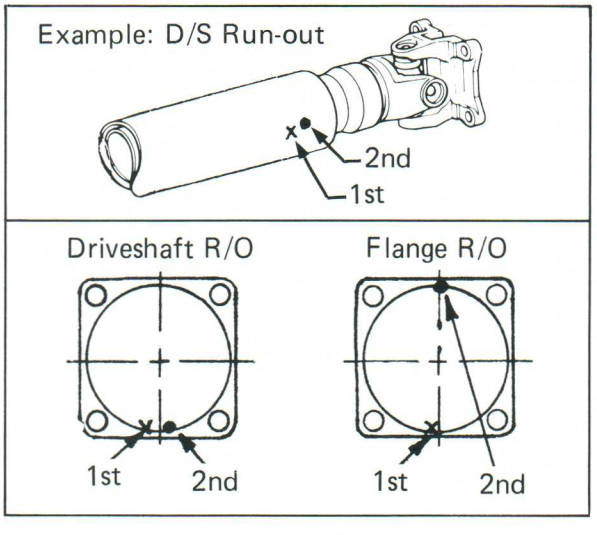
PROCEDURE H – Driveshaft/Companion Flange Run-out

1. Using a dial indicator, measure run-out at the front, center and rear of a one-piece shaft. Measure at six places for a two-piece shaft according to the illustration.
2. If run-out exceeds specification at any point except the rearmost position, replace the component and retest. If run-out is only excessive at the rear joint, proceed to the next step.

   Specification: 0.8 mm (0.031 in.) For Toyota Vehicles

3. Mark the driveshaft tube at the point of excessive run-out with a crayon or paint.
4. Disconnect and reindex the driveshaft 180 degrees. Reconnect and measure run-out. Mark high spot. If run-out is within specification at this time, retest for vibration. If run-out is beyond specification, proceed to the next step.



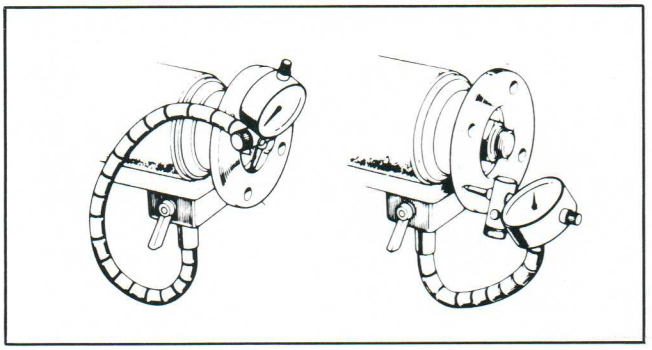


5. The relationship of the two marks will determine the cause of excessive run-out. If the two marks are at approximately the same location on the shaft, the shaft should be replaced for run-out. If the marks are on opposite sides, the companion flange is likely the cause and should be checked.

6. Remove the driveshaft. Measure run-out of the companion flange face and inner surface. If excessive, mark each surface at the high spot. Remove the flange, rotate 180 degrees, reinstall, and recheck and mark run-out. As with the driveshaft, if the marks are at the same position, replace the flange. If at opposite positions, check and correct for differential pinion run-out. (See Procedure I)

Specification: 0.10 mm (0.0039 in.)
For Toyota Vehicles

NOTE: Refer to Repair Manual for proper reassembly of flange and pinion.



This completes the Driveshaft Run-out Section.

PROCEDURE I — Driveshaft Balance

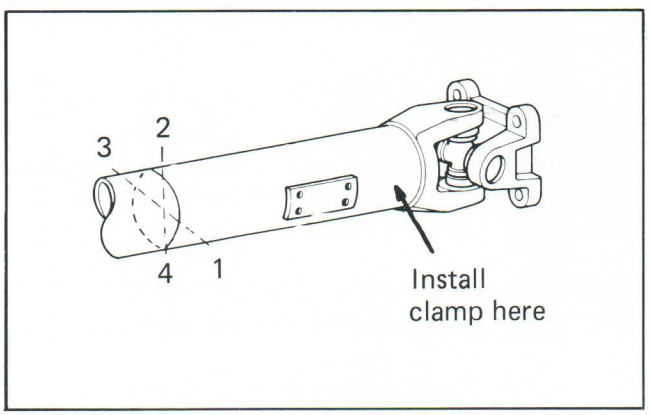
Two methods of on-the-car driveshaft balancing exist. The first method presented uses standard hose clamps to locate the position of imbalance and the newly available weighted driveshaft bolts to counter the imbalance. Although somewhat of a trial-and-error method, it is a simple procedure requiring a minimum of time and equipment to accomplish good results. If unable to correct persistent vibration with this method, a second method is presented which utilizes strobe-type wheel balancing equipment for precision balancing. Additionally, the driveshaft may be removed and balanced by a sublet shop if deemed necessary. This is recommended for one-piece driveshafts only.

Balance Method 1

1. Install a large screw-type hose clamp 5-10 cm from the rear of the driveshaft tube. Locate clamp head in line with factory balance weight if possible.

2. Mark the driveshaft in four places at 90 degrees intervals, as shown in the illustration. Use the clamp head as position # 1.

3. Accelerate driveline to subject speed range and evaluate vibration.



4. Rotate clamp to other three positions and evaluate vibration at each step. Select best position. If two positions are equally improved, position clamp between these positions. If unable to eliminate vibration, install a second clamp in the same position and evaluate.

5. If no change is detected, rotate clamps in opposite directions slightly and retest. Continue until best location is established. Mark locations with crayon or paint.

6. Confirm results with actual road test. If satisfactory, remove hose clamps and install special weighted bolts to provide identical balancing effect (see illustration).

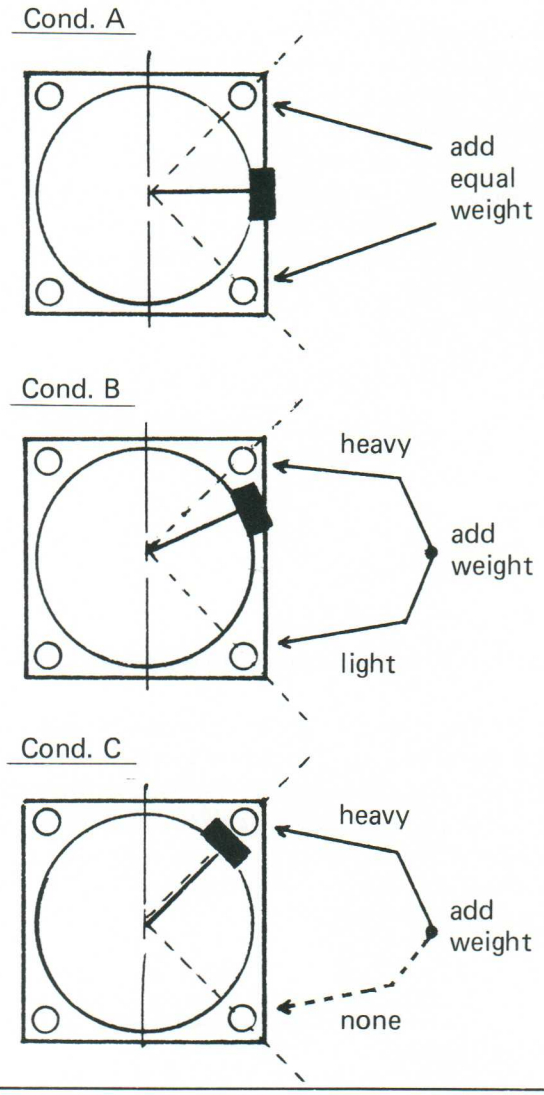
Standard bolt weight	=	13 gram
#2 weighted bolt	=	15 gram
#4 weighted bolt	=	17 gram
#6 weighted bolt	=	19 gram

CAUTION: Hose clamp must be removed from driveshaft after balancing to prevent possible contact with underside of body at full suspension compression.

WEIGHTED DRIVESHAFT BOLT

Installation Instructions

■ : Indicates hose clamp head position.

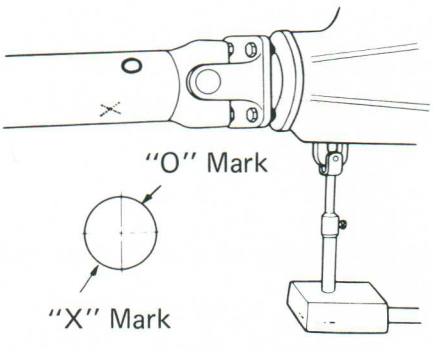


Balance Method 2

1. With vehicle properly lifted, locate the wheel balancer pickup at the underside of the differential carrier, as shown. The strobe will now flash when the heavy side of the driveshaft is down.

2. Mark the driveshaft with an "X" and an "O" directly opposite each other for reference.

3. Start the engine and accelerate the driveline to the complaint speed range.



4. Shine the strobe light on the marks on the driveshaft. Note the position of the marks. If the strobe equipment has a meter indicating weight, note this reading also.

   NOTE: If the "X" and "O" alternately appear at the same location, the balance of the driveshaft is satisfactory.

   NOTE: On many four-cylinder-engined vehicles, the weight meter may not indicate zero even if the driveshaft balance is correct, due to engine firing pulses.

5. Stop the engine and rotate the driveshaft so that the marks are in the position observed during strobe testing. This position places the heavy side of the driveshaft straight down.

6. Install weighted bolts to upper side to provide proper balance (see Method 1, Step 6.).

This completes Driveshaft Balance Section

PROCEDURE J – Ring and Pinion Vibration

1. Remove differential cover or carrier as necessary.

2. Measure ring gear run-out. If excessive, remove ring gear from carrier.

   Specification: 0.07 mm (0.0028 in.)
   For Toyota Vehicles

3. Measure differential carrier run-out at the ring gear mounting face. Also, check for any foreign material or burrs which may have prevented ring gear from seating correctly.

4. If differential carrier run-out is within specification, replace ring and pinion. If differential carrier run-out is the cause of excessive ring gear run-out, replace carrier assembly. Recheck vibration.

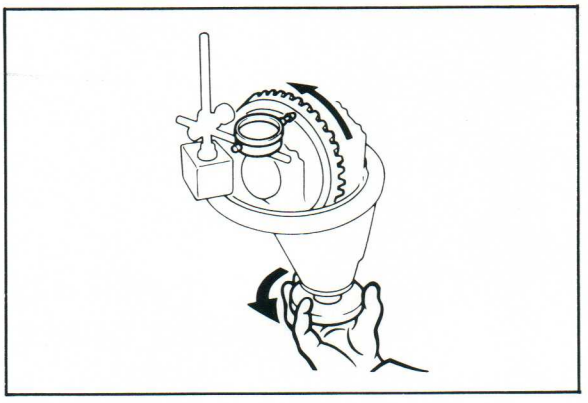
   Specification: 0.07 mm (0.0028 in.)
   For Toyota Vehicles

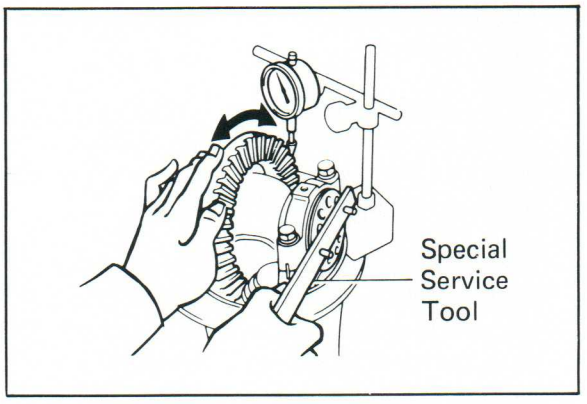
5. If ring gear run-out is within specification, check ring gear backlash. If ring gear backlash is not within specification, adjust as necessary.

   Specification: 0.13-0.18mm
   (0.0051-0.0071 in.)
   For Toyota Vehicles

6. Recheck ring gear backlash at **every** tooth on ring gear. If ring gear backlash **vibration** is excessive, replace ring and pinion.

   Specification: 0.1 mm (0.004 in.)
   For Toyota Vehicles





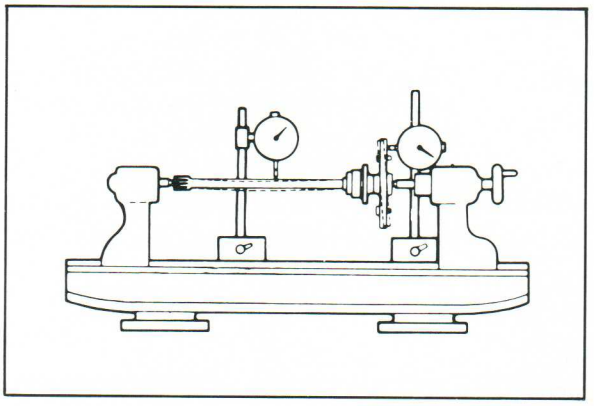
PROCEDURE K — Axle Shaft/Hub Run-out Inspection

1. Measure hub face run-out with dial indicator. If run-out exceeds specification, replace hub.

   Specification: 0.1 mm (0.004 in.)
   For Toyota Vehicles

2. Remove axle shaft from housing. Utilizing V-blocks or machine centers, measure axle shaft run-out. If run-out exceeds specification, replace axle.

   Specification: 1.5 mm (0.059 in.)
   For Toyota Vehicles



PART APPLICATION

Special weighted bolts from Procedure 1, Method 1, Step 6, are applicable to all Toyota models with standard rear-wheel-drive driveshafts.

PART NUMBER INFORMATION

New Part Number	Part Name
90101-08085	Bolt, Driveshaft, Weighted, 2 gram
90101-08086	Bolt, Driveshaft, Weighted, 4 gram
90101-08087	Bolt, Driveshaft, Weighted, 6 gram
90170-08007	Nut (standard part)
94512-00800	Washer, Lock (standard part)

Article No. 97

DOOR STRIKER ADJUSTMENT
1981,'82 CRESSIDA, 1982 CELICA & SUPRA

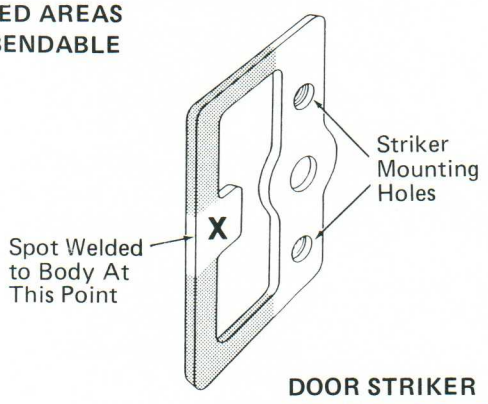
The current models of Celica, Supra and Cressida are now equipped with a new type of door striker mount. (See illustration.) This type of mount gives the appearance that the striker is in a fixed position, however, adjustment is possible by bending the mount using the following procedure

- Loosen the striker mounting screws (approximately 1 turn).
- Force the striker in the direction required (See Footnote).

  For inboard adjustment: Using a soft-faced mallet, drive the striker inward to the desired position. Be sure to adequately protect the painted surfaces to avoid damage.

  For outboard adjustment: Use a suitable prybar to force the striker outward to the desired position. Be sure to use a small piece of wood or other suitable material to pry against to avoid damage to the vehicle body.

- Retighten mounting screws and check adjustment. Repeat, if necessary.



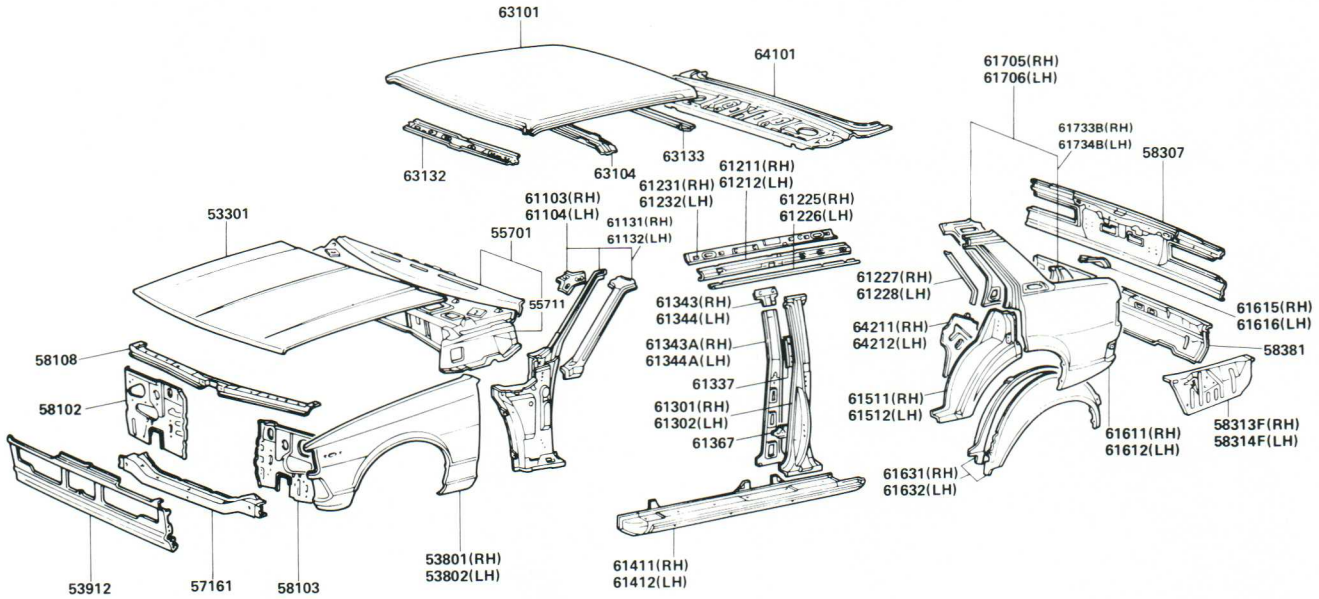
DOOR STRIKER MOUNTING PLATE

Footnote:

The Celica & Supra striker will adjust approximately 4mm total.
The Cressida striker will adjust approximately 6mm total.

Article No. 98

GET YOUR BODY TOGETHER!



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Corolla Tercel	1980,81,82	AL10, 21, 22, 25	98367	$ 6.95
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