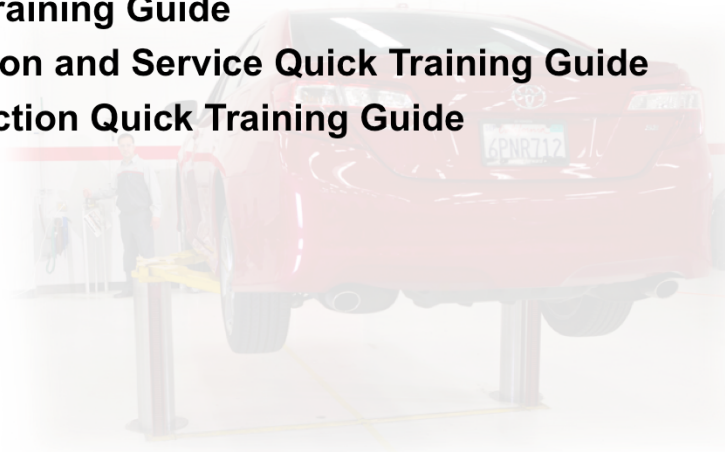


Appendix

- ▶ **A. Multipoint Inspection Form (MPI)**
- ▶ **B. MPI Quick Training Guide**
- ▶ **C. Tire Inspection and Service Quick Training Guide**
- ▶ **D. Brake Inspection Quick Training Guide**



NOTES:

This page is intentionally blank.



SERVICE INFORMATION

Signature: _____

Comments _____

Technician Team: _____

requires immediate attention

This page is intentionally blank.



Multipoint Inspection (MPI) Quick Training Guide QT012A

This QTG provides tips and guidelines for performing a multipoint inspection using the Multipoint Inspection Form.



Click the ENTER button to view the Quick Training Guide.

Toyota Multipoint Inspection (MPI) Quick Training Guide QT012A

General Information

Exterior & Interior

Under Hood & Fluids

Under Vehicle & Brakes

Tires

General Information

Completing the MPI efficiently and effectively gives the ASM ample time to obtain customer approval for additional needed work while the vehicle is already in for service. This leads to greater customer satisfaction and more work for the technician.

Refer to these notes to ensure the information at the top of the MPI form is correct.



CUSTOMER AND VEHICLE INFORMATION

Date _____ Time In: _____

Customer Name: _____

Address: _____

Today's Contact Phone #: _____

Email: _____

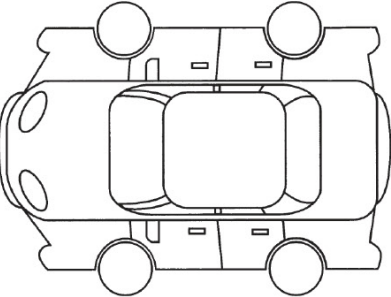
Year/Make/Model: _____

Mileage: _____ License#: _____

VIN: _____

1/4 Time: _____ Promise Time: _____ Hat Tag#: _____

4 VEHICLE CONDITION



SERVICE INFORMATION

Description of service to be performed: _____

Initial Estimate: _____

I hereby authorize the repair work and inspection described to be performed along with the necessary materials and agree that dealer is not responsible for loss or damage to vehicle or articles left in vehicle in case of fire, theft, or any cause beyond their control. I hereby grant you and/or your employees permission to operate the vehicle as necessary for testing and inspection purposes.

Customer declines access to spare tire ☐ 5

Customer declines access to glove box ☐

Signature: _____

1 Review the customer information to be sure it is complete.

2 Verify the vehicle information is correct, especially mileage and VIN.

3 Verify the promise time matches what is on the R.O.

4 Perform a walkaround inspection of the vehicle and note any pre-existing damage not noted by the ASM. If the ASM has already identified any damage, then verify and initial the ASM's notes.

5 Note the check boxes for access to spare tire and glove box. If these boxes are checked and you find it necessary to have access to the glove box or trunk area to properly service the vehicle, contact the ASM.

6 Make special note of the 1/4 time. If there are any additional concerns found during inspection that require the customer's authorization for additional work, the customer is more likely to agree if contacted within the first 1/4 of the service time. For example, if the customer brings her vehicle in at 10:00 am and the promise time is 2:00pm, then the service time is 4 hours and the 1/4 time is 1 hour, or 11:00am. Therefore, the inspection should be completed and the results delivered to the ASM no later than 11:00am.

Toyota Multipoint Inspection (MPI) Quick Training Guide QT012A

General Information

Exterior & Interior

Under Hood & Fluids

Under Vehicle & Brakes

Tires

Exterior & Interior Inspection

General Instructions

- Perform operational and visual checks of all components listed. Checks must be done in all allowable modes.
- Be sure to document component/system condition using the check boxes, and include comments if the yellow or red box is checked.



Checked and OK at this time



May require future attention



Requires immediate attention

Exterior Inspection Tips

- This operation works best with two technicians—one on the outside of the vehicle giving directions for component operation and the other on the inside operating components and filling out the MPI form.
- Component operation must be checked in all modes.
- This is another opportunity to inspect vehicle body condition.
- When checking lights, check for damage to the lenses and for moisture intrusion.
- May want to note windshield chips, even though this does not pose a safety concern.

Exterior	
☐	Horn operation
☐	Head lights / tail lights / turn signals / brake lights / hazard warning lights / exterior lamps (check for damage and operation)
☐	Windshield wiper and washer operation
☐	Windshield glass
☐	Fuel tank cap gasket

Interior Inspection Tips

- Be sure to check interior lights in all modes, but make sure to retain customer's settings.
- Cabin air filter, if dirty, should be given to the ASM with the MPI form for the customer consultation.
- If the parking brake is out of adjustment, indicate how many clicks on the MPI form comment section. Keep in mind possible brake lining wear.

Interior	
☐	Dome light / amp light / dimmer combination meter
☐	Cabin air filter
☐	Parking brake operation

Toyota Multipoint Inspection (MPI) Quick Training Guide QT012A

General Information

Exterior & Interior

Under Hood & Fluids

Under Vehicle & Brakes

Tires

Under Hood & Fluids



Checked and OK at this time



May require future attention



Requires immediate attention

Under Hood			
☒	☒	☒	Air filter
☒	☒	☒	Battery condition (cables / clamps / corrosion)
☒	☒	☒	Battery state of health
☒	☒	☒	Cooling system (leaks)
☒	☒	☒	Hoses (cracks / damage / leaks)
☒	☒	☒	Drive belts (cracks / damage / wear)
☒	☒	☒	Radiator core / air condition condenser (if equipped)

Under Hood Inspection Tips

- Air filter, if dirty, should be given to the ASM with the MPI form for the customer consultation.
- Battery terminals should be free of corrosion, debris, and tightly secured to the terminal. Battery anti-corrosion spray may be applied after cleaning terminals.
- Only use approved Toyota battery testers to test battery SOC. Print battery report and attach it to the RO.
- Inspect coolant level and condition. Coolant should not have any foreign debris or discoloration. Some fluctuation in level is normal, but reservoirs below min line should be inspected thoroughly for leaks.
- Drive belts should be visually inspected for signs of damage. To determine wear, most late model vehicles require a belt wear gauge.

Checked and OK at this time

Fluid was added as needed

Mark stick to indicate level

Fluids	
☒	OK
☒	Filled
☒	Windshield Washer
☒	Coolant (_____ degree of protection)
☒	Power steering (if equipped)
☒	Brake reservoir
☒	Clutch reservoir (if equipped)
☒	Transmission / transaxle
☒	Differential (if equipped)
☒	Transfer case (4WD models)

Fluids Inspection Tips

- Place a mark on the illustrated dipstick to indicate oil level when vehicle was brought in. Oil consumption may be identified at this point, if done consistently.
- If the brake fluid is above the MIN line, but not at the FULL line, do not top off. This could indicate brake lining wear.
- Automatic transmissions not equipped with a dipstick, should be visually inspected for leaks only (unless noted in the scheduled maintenance guide for level inspection).

Toyota Multipoint Inspection (MPI) Quick Training Guide QT012A

General Information

Exterior & Interior

Under Hood & Fluids

Under Vehicle & Brakes

Tires

Under Vehicle and Brake Inspection



Checked and OK at this time



May require future attention



Requires immediate attention

Under Vehicle									
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Propeller / driveshaft (damage / leaks / U-joints)
Drive / CV shaft (damage / leaks / boots)
Axle hub & bearing (damage / leaks / noise)
Steering linkage (damage / leaks / worn components)
Suspension (damage / leaks / worn components)
Fluid leaks (engine / transmission / differential)
Exhaust system (damage / leaks / corrosion)
Fuel lines & connections / fuel tank bands / fuel tank vapor vent system hoses (damage / leaks / corrosion)

Brakes									
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Brake lining:

LF _____ mm RF _____ mm LR _____ mm RR _____ mm

Front / Rear Disc Brakes

12-7 mm 6-4 mm 3-0 mm

Rear Drum Brakes

4-3 mm 2 mm 1-0 mm

Brake lines / hoses / parking brake cable

Discs / drums / calipers / wheel cylinders

Under Vehicle Inspection Tips

- Check all components for excessive play or looseness.
- Verify all boots are in good condition.
- Check dust covers on suspension components for cracks or grease. If cracks or grease are found, refer to the Repair Manual for components that may need replacement.
- Remember to categorize any worn components as immediate/safety related or maintenance/non-critical.
- Fluid leaks, especially minor leaks/seepage, should be detailed in the comments section for severity.

Brake Inspection Tips

- Check that hoses are in good condition and have no leaks, cracks, breaks or excessive wear.

Disc Brakes

- Check rotors for excessive discoloration, rust, scoring or uneven wear. If there is excessive wear, measure rotor thickness and runout.
- Check calipers for leakage, damage (broken or missing components), or inoperative condition.

Drum Brakes

- Check brake drums for excessive discoloration, rust, scoring or uneven wear.
- Check wheel cylinders for leaking, cracked boots or corrosion.
- Check adjuster for broken or damaged components, corrosion, or inoperative condition.
- Check for excessively rusted or broken spring.

Toyota Multipoint Inspection (MPI) Quick Training Guide QT012A

General Information

Exterior & Interior

Under Hood & Fluids

Under Vehicle & Brakes

Tires

Tire Inspection



Checked and OK at this time



May require future attention



Requires immediate attention

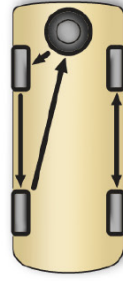
LF tire pressure on arrival /
/ LF tire pressure after service

Tires			
Factory Specs (P.S.I.)	F _____	R _____	Spare _____
Tire pressure P.S.I. checked / adjusted to:			
LF _____	RF _____	LR _____	RR _____
Spare _____	Spare not checked/adjusted		
Tread depth:			
LF _____	RF _____	LR _____	RR _____
Tire damage / abnormal wear:			
LF _____	RF _____	LR _____	Spare _____
Rims / wheels / lug nuts:			
LF _____	RF _____	LR _____	RR _____
Tires Rotated	Torque Spec: _____		

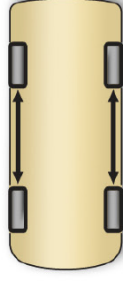
Tire Damage / Abnormal Wear. Prior to performing any tire service, inspect tires for any of the following:

- Irregular or abnormal treadwear
- Road hazard or impact damage
- Tread separation
- Wheel damage and bead seating
- Ply or sidewall separation

Tire Rotation:



With full size spare

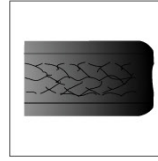


Without full size spare

Tire Pressure. Do not inflate the tires to the specifications listed on the tire sidewall. The pressure listed on the sidewall is for maximum load conditions only, not for normal operation. Recommended tire pressure can be found on the Tire and Loading Information label located on the driver's door "B"-pillar.

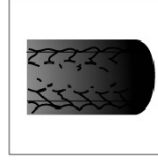
Abnormal Wear

Underinflation



Low pressure, overloading, not rotating

Overinflation



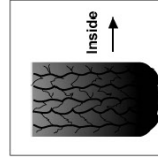
High pressure, not rotating (rigid axle)

Shoulder Wear



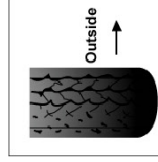
Typical of high speed cornering

Feathered Wear



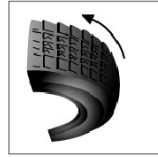
Toe error

Edge Wear



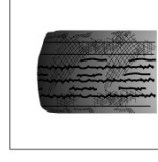
Camber error, high caster

Heal & Toe Wear



Camber error, high caster

Diagonal Wear



Rear toe/thrust error, soft tread, tread squirm

Cupping Wear



Balance, runout, worn or loose steering/suspension components



Tire Inspection and Service Quick Training Guide – QT412A

This QTG provides information and guidelines for inspecting and servicing tires.



Click the ENTER button to view the Quick Training Guide.

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

Service

General Information

Tire Information Placard

Specifications for tire size and inflation pressure are listed on the Tire Information Placard located on the driver's door "B"-pillar. Maximum load values are also listed on this label.

Replacement Tires

Replacement tires should always be equivalent to OEM in construction type, size, speed, and load ratings. This information is found on the tire's sidewalls or vehicle repair manual. See the "Service" section of this Quick Training Guide for more information.

Run Flat Tires



Run-flat tires will have the letters "RFT" printed on the sidewall. Replacing run flat tires requires the use of special tire changing equipment. Be sure to follow the latest service procedures when servicing run flat tires.

Directional Tires



Directional tires can be identified by a rotation arrow symbol on the sidewall.

Summer, Winter and All Season Tires

Summer tires are high-speed performance tires best suited to highway driving under dry conditions. Since summer tires do not have the same traction performance as winter tires, summer tires are inadequate for driving on snow-covered or icy roads.

Winter tires are recommended for driving on snow-covered roads or icy roads. If winter tires are needed, select tires of the same size, construction and load capacity as the originally installed tires. Since radial tires are original equipment, make sure the winter tires also have radial constructions. Do not install studded tires without first checking local regulations for possible restriction. Winter tires should be installed on all wheels.

All Season Designation



All season tires are designed to provide better traction in snow and to be adequate for driving in most winter conditions, as well as for use year round. All season tires, however, do not have adequate traction performance compared with snow tires in heavy or loose snow. Also, all season tires fall short in acceleration and handling performance compared with summer tires in highway driving.

Click the tabs at the top to view each section

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

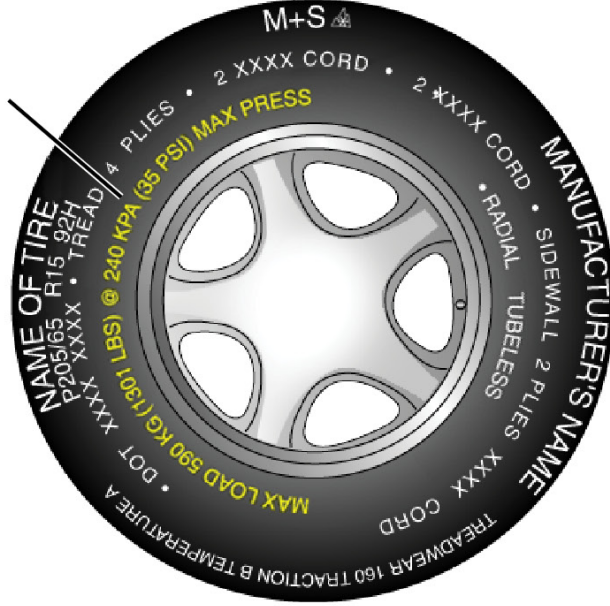
Tread Depth

Inflation

Service

Sidewall Data

Load and Inflation



Load and Inflation

Pressurized air inside the tire supports the vehicle's load. The required inflation pressure increases when the load applied to the tire increases. Heavy loads cause the internal tire temperature to rise. This extra heat weakens the bond between the individual tire components and causes tread separation and/or failure.

- Maximum load and the corresponding inflation pressure to support that load are specified on both passenger car and light truck tires.
- For example: 1010 LBS @ 32 PSI MAX.
- This pressure specification is the maximum inflation pressure for the tire and should only be used when specified by the manufacturer.

Information for proper inflation pressure during normal load conditions can be found in the **Owners Manual** or the **Tire Information Placard** located on the driver's door "B"-pillar.

- These specifications should always be followed during normal load conditions.

An **XL** in the load index indicates the tire's ability to handle higher inflation pressure in order to accommodate special performance requirements

Load & Inflation

UTQGS

Size Designation

DOT Label

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

Service

Load & Inflation

UTQGS

Size Designation

DOT Label

Click all side tabs

Improved

AA Rating A

Improved

Improved

B Rating B

Minimum

Improved

C Rating C

Minimum

Improved

Traction Rating

Minimum

Improved

Temperature Rating

Minimum

Measures:

Resistance to wear

Wet traction ability

Ability to dissipate heat

Note

Treadwear values use a base value of 100. A value of 150 indicates a tire that will last 1.5 times longer than the tire rated 100.

NAME OF TIRE

P205/65 R15 92H

XXXX • TREAD

XXXX

DOT XXXX

MAX LOAD 590 KG (1301 LBS) @ 240 KPA (35 PSI) MAX PRESS

4 PLYES • 2 XXXX CORD • 2 XXXX CORD

M+S

Improved

Traction Rating

Minimum

Improved

Temperature Rating

Minimum

Measures:

Resistance to wear

Wet traction ability

Ability to dissipate heat

Note

Treadwear values use a base value of 100. A value of 150 indicates a tire that will last 1.5 times longer than the tire rated 100.

Sidewall Data

Uniform Tire Quality Grading System

The United States Department of Transportation (DOT) requires all passenger car tires (excluding snow tires, temporary spare tires, and deep tread design tires) be rated and labeled for **treadwear, traction, and temperature**. This is known as the Uniform Tire Quality Grading System. The UTQGS is not a guarantee of tire life or performance.

UTQGS

© Toyota Motor Sales, U.S.A., Inc., September 21, 2012

4 of 14

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

Service

Sidewall Data

Size Designation



Click all side tabs

Load & Inflation

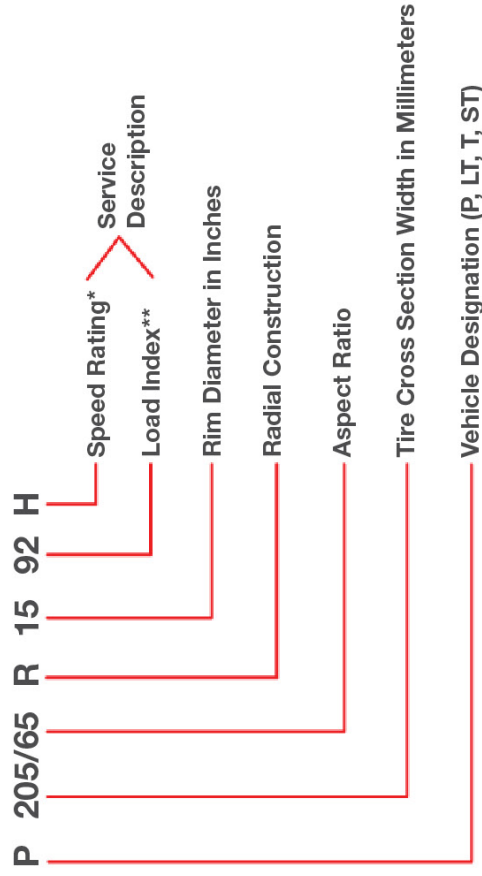
UTQGS

Size Designation

DOT Label

Size Designation

The size designation lists a tire's dimensions and applicable load and speed ratings. The **ISO** (International Standards Organization) sizing method is considered the industry standard for sizing passenger car tires.



* Indicates the speed category (or range of speeds) at which the tire can carry a load under specified service conditions.

** Indicates how much load the tire is designed to carry at its industry specified pressure.



Do not replace any tire with speed or load ratings lower than what is specified for the vehicle.

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

Service

Sidewall Data

DOT Label



Department of Transportation (DOT) Label

The DOT certification label is a series of numbers and letters located on the tire's inner sidewall. It indicates a tire's compliance and certification with Department of Transportation safety standards and may be required for warranty purposes. This label designates the manufacturer, tire size, and production date of the tire. The production date is a three- or four-digit number; the first two digits signify the week, the last one or two digits indicate the year the tire was manufactured.

Tire Serial Number

DOT CX 9N YEM 3711

Year

Week

Tire Manufacturer and
Plant Code

Manufacturer Code

Tire Size Code

Production Date



A trained technician should inspect tires at least once every 6 years.

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

Service

Visual Inspection

Inspection Items

Prior to performing any tire related service, such as rotation or diagnosing handling complaints, tires should be inspected for:

- Irregular or abnormal treadwear
- Tread separation
- Ply or sidewall separation
- Road hazard or impact damage



- Large bulges or blemishes indicate separation of the tire plies. This type of condition is usually caused by an impact or from construction problems. The tire should be replaced.
- A slight waviness of the sidewall on a radial tire does not necessarily indicate a problem. Some surface imperfections are a result of the radial ply design.

Maintenance

Maintaining normal treadwear throughout the life of a tire requires:

- Maintaining proper inflation pressure
- Rotating tires regularly
- Maintaining proper wheel balance
- Maintaining correct wheel alignment

Wear Patterns I

Wear Patterns II

Wear Patterns III

Click all side tabs

Wear Patterns I

Underinflation



Description

- Underinflation wear is described as excessive tread wear at both the inside and outside shoulders of the tire.
- With too low an inflation pressure, the tread surface becomes concave and a greater load is placed on the edges of the tread.
- Some shoulder/edge tread wear is typical on the front tires of FWD cars. Proper tire rotation will generally minimize this wear.

Causes

- Low inflation pressure
- Consistent overloading
- Lack of regular tire rotation

Overinflation



Description

- Overinflation is characterized by wear at the center of the tread only.
- The high inflation pressure results in a convex tread surface in which the center of the tread bears the greatest load.
- The rear tires of trucks and other rigid axle vehicles may exhibit similar wear. Regular rotation should minimize this effect.

Causes

- High inflation pressure
- Lack of regular tire rotation (rigid axle)

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

Service



Visual Inspection

Wear Patterns II

Shoulder Wear



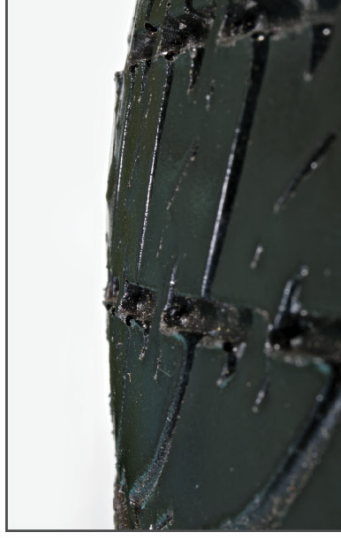
Description

- Individual shoulder wear describes excessive tread loss from one shoulder of a tire.
- This wear can occur at one or both tires on an axle pair.
- Wear at both outside shoulders of the front tires is a characteristic of excessive toe-in with radial tires or excessive high speed cornering.
- Wear at both inside shoulders of the front tires is characteristic of excessive toe-out or insufficient toe.
- See also Feathered Wear.

Causes

- Toe error
- High-speed cornering

Feathered Wear



Description

- Feathered wear is best defined as a saw tooth pattern across the tire's tread surface, generally caused by toe errors.
- This error forces the tire to slip sideways as the vehicle moves forward.
- Excessive toe-in results in tread that is laid inward toward the center of the vehicle and toe-out results in tread that is laid outward from the center of the vehicle.
- Individual tires showing a turning angle problem (toe-out on turns).

Causes

- Toe error
- Turning angle errors

Edge Wear



Description

- Edge wear or shoulder wear that retains a sharp edge where the tread meets the sidewall is characteristic of camber error.
- As the tire is tilted, one side of the tire actually turns faster than the other; resulting in tread slippage and rapid wear.
- Tread wear only on the inside edge indicates excessive negative camber and tread wear only on the outside edge indicates excessive positive camber.
- Vehicles with high positive caster may exhibit this type of wear at both tread edges from urban driving.

Causes

- Camber error
- High caster/urban driving
- Lack of regular tire rotation

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

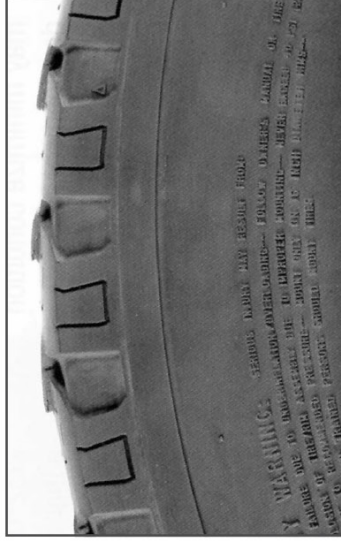
Service



Visual Inspection

Wear Patterns III

Heel & Toe Wear



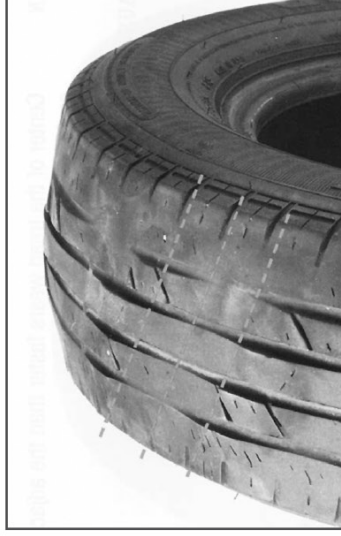
Description

- Heel and toe wear describes partial wear of individual tread blocks, appearing as saw tooth wear in the direction of tire rotation.
- This wear results from the tread blocks slipping momentarily as the tread leaves the pavement.
- As the leading edge of the tread block leaves the pavement the trailing edge or heel cannot resist the force applied and slips.
- This wear pattern is most common on non-drive wheels and can often be corrected by more frequent rotation.

Causes

- Soft tread compounds
- Tread block squirm (lack of rigidity, all season tires most common)
- Lack of regular tire rotation

Diagonal Wear



Description

- Diagonal wear describes a cupping-like condition which appears diagonally across the tread surface.
- When operating at high slip angles, the entire tread surface cannot resist the twisting forces applied, and slippage occurs much like heel and toe wear.
- It is important to note that diagonal wear is not the same as cupping.
- Similar to heel and toe wear, diagonal wear is most likely to occur on non-drive wheels.

Causes

- Rear toe/thrust error
- Soft tread compounds
- Tread block squirm (lack of rigidity, all season tires most common)
- Heel and toe wear may degenerate into diagonal wear

Cupping Wear



Description

- Cupping describes spotty or localized wear caused by tread slippage at regular intervals.
- Anything that causes the tire's tread to wobble or move as it contacts the road surface may cause cupping.

Causes

- Improper wheel balance and/ or runout
- Worn or loose suspension components (shocks, struts, ball joints, wheel bearings)
- Worn or loose steering components
- Brake problems
- Tire flat spot or internal problem

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

Service

Tread Depth

As a tire's tread surface wears, its traction capability decreases, along with the safety and handling performance of the vehicle. For this reason, the amount of tread remaining on a tire should be inspected whenever a vehicle is brought in for service or when a customer has a handling concern.

Tread depth is the measured distance from the outer tread surface to the tire body plies. The best way to measure tread depth is with a tread depth gauge. Measure in four places across tread to check for unusual or irregular treadwear before the tire is completely unusable.



- On tires for dry or all season conditions, the minimum allowable tread depth is 2/32" or 1.6 mm.
- For snow tires, the minimum tread depth is increased to 5/32" or 4 mm.



For tires on the same axle, treadwear should be fairly equal. Otherwise, an excessively worn tire will have a smaller rolling diameter and may induce a pulling complaint.

Treadwear Indicators

Treadwear indicators are solid bars of rubber, usually about 12 to 15 mm in width that appear across the tread surface at equal distances. Treadwear indicators generally appear when the tread depth nears its minimum. Small arrows on the sidewall near the tread mark the locations.



If you can see the indicators in two or more adjacent grooves, the tire should be replaced.

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

Service

Inflation

Inflation Pressure

Proper care and service of automotive tires begins with inflation pressure. The air inside the tire supports the weight of the vehicle and must be at the correct inflation pressure to ensure:

- Acceptable tire life
- Safe and predictable handling
- Expected fuel economy

Information for proper inflation pressure during normal load conditions can be found in the **Owner's Manual** or the **Tire Information Placard** located on the driver's door "B"-pillar.



The tire pressure listed on the tire sidewall is the maximum inflation pressure for the tire and should only be used for maximum load conditions.

Cold Weather Adjustment

To prevent frequent low tire pressure warnings during cold weather, tire pressure must be increased to compensate for the pressure drop caused by cold temperatures.

For instructions, see "Tire Pressure Compensation" in the Tire Pressure Monitoring Systems Quick Reference Guide.



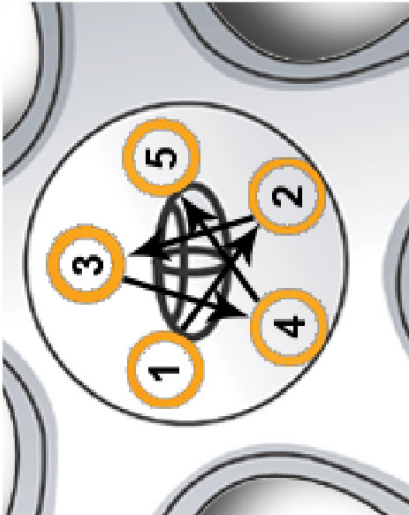
- Since tires are not completely airtight, customers should inspect the tire inflation pressures every two to four weeks. Technicians should inspect the inflation pressures each time the vehicle is serviced.
- Do not rely on a visual inspection to determine if a tire is properly inflated.
- Inflation pressure is **specified for cold tires**, meaning the vehicle has not been moved for at least three hours or has been driven less than one mile.
- Do not reduce the pressure of warm tires. This will cause the pressure to be low when the tires are cold.
- Always be sure to replace the valve stem caps to prevent contaminants from damaging the air valve and to help retain small amounts of air that may leak past the valve.
- The tire inflation pressure should always be the first inspection made when attempting to diagnose a handling complaint.



For checking tire pressure, a dial gauge is recommended.

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information	Sidewall Data	Visual Inspection	Tread Depth	Inflation	Service
General Repair Dismount/Mount					
Click all side tabs					
Service General Replacement Tires As tread depth reaches the minimum allowable point of 2/32" or 1.6 mm, the tires must be replaced. When selecting replacement tires, always install tires of an equal or greater load and speed rating than original equipment. - Never mix tires of different construction types (radial and bias). All current Toyota vehicles are designed to operate with radial tires and replacement tires should always be of radial ply design. - To maintain consistent acceleration, cornering and braking forces, replace all four tires as a set. If this cannot be done, the tires should at least be replaced as a pair per axle. The only exception to this would be in the case of a tire being replaced because of damage. In this case the replacement choice should attempt to maintain nearly equivalent tread on both tires of an axle. - Replacement tires should also maintain the same rolling diameter for each tire/wheel assembly on axle pairs. This is necessary to prevent handling problems as well as accelerated differential wear. - For safety and handling, studded snow tires must be installed on all four wheels of front wheel drive vehicles. Rear wheel drive models may have studded snow tires installed on the rear axle only.		Wheel Removal/Installation - When removing wheels be sure to mark the stud closest to the valve hole to retain any phase matching or on-car balance. - Use the proper torque sequence and correct torque value to prevent creating excessive runout, or warping the wheel, hub, or brake rotor. - Tighten all wheel nuts in two steps. First, using a torque wrench, tighten to half of the specified torque value and then tighten to full torque. - Always follow a star pattern when tightening wheel nuts.			
					
		Tire Rotation Under normal conditions, tires should be rotated every 5,000 miles. Driving styles and conditions may require even more frequent rotation to optimize tread wear. Once the tire has developed uneven or irregular tire wear, rotation will not generally correct the condition and it will be necessary to replace the effected tires. Rotation Pattern Toyota recommends a front to rear rotation for most models. Since directional wheels, directional tires and tire size differences between the front and rear of the vehicle may limit or restrict rotation, it is best to refer to the Repair Manual or the Owner's Manual for each model.			
		Precautions - Unidirectional tires or wheels must be kept on the same side of the vehicle, left or right. - When non-directional tire or wheel sizes vary front to rear, they should only be rotated on their axle. - Always reset the cold tire pressure after a rotation.			

©Toyota Motor Sales, U.S.A., Inc., September 21, 2012

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information

Sidewall Data

Visual Inspection

Tread Depth

Inflation

Service

Service

Tire Repair

In most cases, a tire that has gone flat can be easily repaired. The location and extent of damage will determine the tire's serviceability.

For a safe and proper repair, punctured tires must be removed from the wheel for internal inspection and repair. Toyota **does not recommend** repair methods such as aerosol "Flat Fix", outside-in or tire plugs. These methods are only emergency or temporary repairs that can create wheel balance problems.

Acceptable repairs include:

- An improperly seated bead can be repaired by deflating the tire and remounting it on the rim.
- A puncture of up to 3/16" in diameter can be safely repaired within the tread area only.
- Tires with speed ratings of S or greater should not be repaired within 1/2" of the tire sidewall.

Do not repair a tire which meets any of the following conditions:

- Tread worn to 1.5 mm or less
- Damage areas within 40 centimeters of each other
- Sidewall or tread ply separation
- Bead damage
- Sidewall punctures or cuts
- Excessive rubber cracking which reaches the carcass

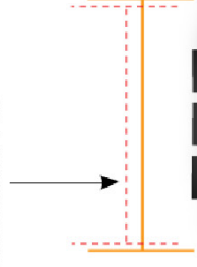


General

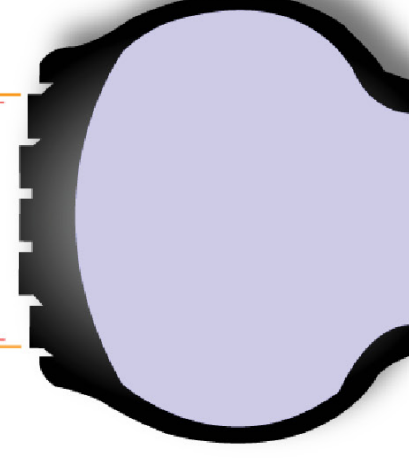
Repair

Dismount/Mount

Repairable Area for Speed Rated Tire



Repairable Area for Non-Speed Rated Tire



Precautions

- Some aerosol repair compounds are highly flammable. Exercise extreme caution when servicing a tire which may contain these compounds. Work in a well ventilated area and be very cautious when breaking the bead.
- If a Puncture Repair Kit was used, always dispose of the tire properly.

Toyota Tire Inspection and Service

Quick Training Guide QT412A

General Information	Sidewall Data	Visual Inspection	Tread Depth	Inflation	Service
GeneralRepairDismount/Mount Click all side tabs					
Service Dismounting Specific procedures for proper tire mounting and dismounting will vary depending on center post and rim clamp tire changing machines. Rim clamp type machines are recommended to prevent damage to the lightweight wheels used on many vehicles. Phase Matching If the tire is to be reinstalled on the wheel, make an alignment mark on the tire where the valve stem is located. If the wheel and tire have been phase-matched, this allows the tire to be reinstalled in its original position. Recommendations - Always remove the valve stem core to ensure complete deflation. If equipped with a TPMS sensor, remove the nut and grommet securing the transmitter and allow it to drop inside the tire before breaking the bead. Remove wheel weights and clean both bead seats with a wire brush. Inspect the bead seats and wheel flanges for damage, replace the wheel if damaged. Do not attempt to straighten damaged wheels. Replace rubber valve stems and fit kits on tire pressure sensors when replacing tires. The rubber used for the stem and the valve assembly itself has an equivalent life to that of the tire.	Mounting The following precautions should be followed when mounting tires. These precautions may vary based on the type of tire changing machine. Beads must be lubricated with a tire soap or bead lubrication solution to prevent damage. Conventional soap and water may not dry and the tire may shift on the rim canceling the effect of balancing or phase matching. Do not use petroleum products, antifreeze, or silicone as a lubricant. - When installing the lower tire bead, position the wheel on the mounting machine with the mounting head just past the TPMS sensor so that it will not contact the sensor during rotation. - When installing the upper bead, re-position the wheel on the mounting machine with the mounting head just past the TPMS sensor so that it will not contact the sensor during rotation. - When seating the beads, inflate the tire to 40 psi maximum. Never exceed 40 psi. If the bead will not seat, deflate the tire and try again. Do not stand over the tire/wheel assembly when seating the beads. Retighten the nut to the specified torque and then check for air leaks. - After the bead is seated, allow the tire to deflate and install the valve core. Inflate the tire to the required cold inflation pressure for the vehicle. Verify that both beads are seated uniformly. Wheels should always be dynamically balanced after mounting Note Regarding Run Flat Tires For run flat tires, a safety bead is required on both sides of the rim. Because of the stiffness of the sidewalls and the added air pressure needed to seat the bead during tire installation, a safety cage is recommended when mounting run flat tires.				



Brake Inspection

Quick Training Guide – QT512A

This QTG describes how to visually inspect and measure brake system components.



Click the ENTER button to view the Quick Training Guide.

Toyota Brake Inspection

Quick Training Guide QT512A

Fluid & Hoses

Disc Brakes

Drum Brakes

Brake Pedal & Parking Brake

Fluid & Hoses

Check Fluid Level

If the brake fluid is below the MAX line, but above the MIN line, do not top off unless you are replacing brake pads/linings because the fluid level is an indicator of pad/lining wear. If the fluid level is below the MIN line, the brake system may require bleeding.

- Before checking brake fluid level, turn the ignition OFF and pump the brake pedal 40 times to release pressure from the accumulator and return brake fluid to the reservoir. (The number of times the brake pedal must be pumped may vary depending on model. Refer to the Repair Manual for details.)



When checking fluid level on vehicles with Electronically Controlled Brakes (ECB), the ECB system must be operating. Fluid inspection procedures for ECB systems without Power Source Backup may be different so be sure to check the Repair Manual.

Examine Fluid Condition

The brake fluid should be clear with a light amber color.

- Fluid that is brown or muddy indicates a serious problem.
- On vehicles with a hydraulic brake booster, fluid that appears “milky” contains excessive air and should be bled.

Precautions

- Brake fluid is a solvent; it will dissolve paint on contact.
- Uncapped brake fluid absorbs moisture, which will reduce boiling point and corrode metals.
- Brake fluid must be disposed of according to local regulations and EPA guidelines.



Check for Leaks

- Check for leaks at the master cylinder, brake booster and at all visible hoses, brake lines and fittings.

Check Condition of Hoses and Brake Lines

- Flexible hoses should be free of any cracks, bumps or bulges.
- Metal brake lines should not show any signs of damage or wear.



Toyota Brake Inspection Quick Training Guide QT512A

Fluid & Hoses

Disc Brakes

Drum Brakes

Brake Pedal & Parking Brake

Disc Brakes

Visual Inspection

Discs

- When inspecting the disc, check for excessive discoloration, rust, scoring, or uneven wear.
- The disc should be fairly uniformly shiny from the inside to the outer edge, with no rust or signs of glazing or hot spots, and no visible cracks.
- If you see slight lines in the disc braking surface, drag the back of your fingernail across the disc; you should not be able to feel any scoring.
- If there is excessive wear, measure rotor thickness and runout.

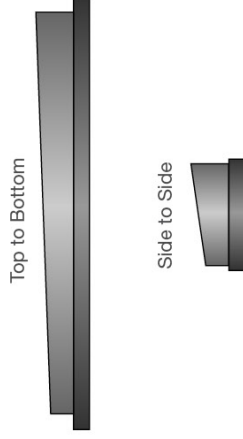


Example of Disc Scoring

Uneven Pad Wear

Inspect the pads for uneven wear.

Tapered Wear is a difference in lining thickness between the top and bottom or between the left and right sides of a pad.



- When tapered wear is found, inspect the brakes for sticking slide pins, disc runout or some other cause of the uneven wear.

Unequal Wear is a difference in lining thickness between two pads on the same wheel.



- When there are noticeable differences in pad thicknesses, inspect the brakes for sticking pistons or slide pins, or some other cause of the uneven wear.
 - In floating caliper brakes, some variation in thickness between the inner and outer pads may occur.

Pad Glazing

Examine pads for signs of glazing (unusually shiny friction surface).

- Replace the pads if they are glazed.

Calipers

- Check caliper assembly for leakage, missing components, or inoperability.
- Check piston for rust or scoring
- Check dust boot for cracks, leaks or deterioration.



Example of Leaking Caliper Piston

[Click all side tabs](#)

Toyota Brake Inspection Quick Training Guide QT512A

Fluid & Hoses

Disc Brakes

Drum Brakes

Brake Pedal & Parking Brake

Disc Brakes

Disc Measurement

Disc Thickness

Using a micrometer, measure the disc thickness.

- If the disc thickness is less than the minimum specified in the Repair Manual, replace the disc.
- If replacing the disc, replace the disc on the other side as well.
- When there is a brake vibration concern, measure the thickness at 8 equidistant points on the disc.
 - If the difference between any two measurements exceeds 0.02mm (0.0008 in.), resurface the disc or replace it.



Disc Runout

To measure disc runout:

- Use the SST to hold the disc, then tighten the 5 wheel nuts, and torque to specifications.
- Use a dial indicator to measure the disc runout 10mm away from the outer edge of the disc.



Write all measurements on the back of the Repair Order.

Visual Inspection

If the runout exceeds the specification in the Repair Manual, change the installation position of the disc to minimize the runout.

- If the runout exceeds the maximum even when the installation position is changed, measure hub flange runout. If hub flange is within specification, grind the disc.
- After grinding, if the disc thickness is less than the minimum, replace the disc.

Disc Measurement

Pad Measurement



 Click all side tabs

© Toyota Motor Sales, U.S.A., Inc., September 21, 2012

Toyota Brake Inspection

Quick Training Guide QT512A

Fluid & Hoses

Disc Brakes

Drum Brakes

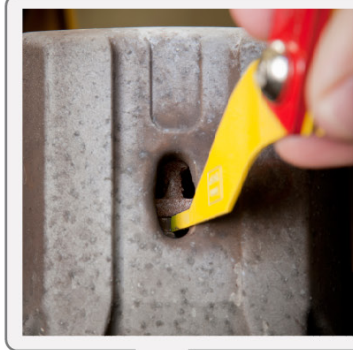
Brake Pedal & Parking Brake

Disc Brakes

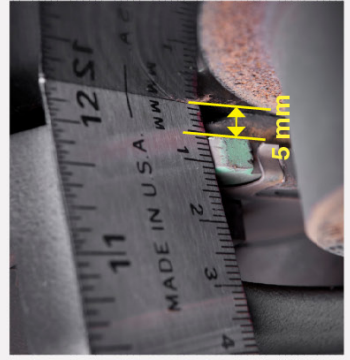
Pad Measurement

Using a ruler or a brake lining thickness gauge, measure the pad thickness through the inspection hole in the caliper.

- Measure the thickness of the pad lining only, not the metal backing. Pads must be replaced when the lining thickness is less than 1mm.
- Write the measurements on the back of the Repair Order & MPI form.



In some caliper designs, only the inner pad is visible in the inspection hole. In such cases, inspect the outer pad in the location shown.



Brake Lining Thickness Gauge

Evaluation

Check the amount of pad wear since the last inspection to estimate the condition of the pad at the next inspection.

Example:

Last inspection: 6 months ago
 Previous lining thickness: 5mm
 Current lining thickness: 3mm
 Amount worn in 6 months: ... 2mm

Since the pad is wearing at the rate of 2mm per 6 months and the current pad lining thickness is 3mm, it is likely the pad will be worn down to 1mm by the time of the next 6-month service.

If you estimate the pads will reach the minimum thickness before the next scheduled service, recommend to the customer that the pads be replaced.

[Click all side tabs](#)

Toyota Brake Inspection Quick Training Guide QT512A

Fluid & Hoses

Disc Brakes

Drum Brakes

Brake Pedal & Parking Brake

Drum Brakes

Visual Inspection

Brake Drum

- Check for excessive discoloration, scoring, rust or uneven wear.

Brake Linings

- Check for uneven wear or signs of glazing (unusually shiny friction surface).

Wheel Cylinders

- Check for leakage, cracked boots, corrosion, scoring of piston or bore, or inoperability.

Adjuster

- Check for broken or damaged components, corrosion or inoperative condition.

Return Spring

- Check for excessively rusted or broken spring.



Minor discoloration of brake drum is OK.

Measurement

Brake Drum

Inside Diameter: Using a brake drum gauge or equivalent, measure the inside diameter of the drum.

- If the diameter is greater than the maximum listed in the Repair Manual, replace the drum.

Out of Round: Check with a drum micrometer or with a dial indicator on a brake lathe.

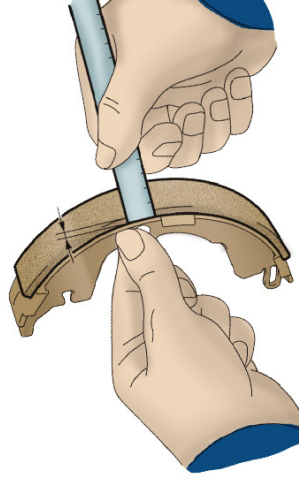
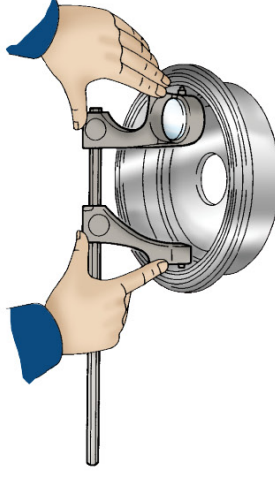
- If the drum is out of round by 0.002 inch or more, replace the drum.

If a new drum is needed on one side of the axle, replace the drum on the other side as well.

Brake Linings

Use a ruler to measure the thickness of the lining material. (Do not include the metal backing in the measurement.)

- If the thickness is less than 1.0mm, or if the lining shows signs of uneven wear or glazing, replace the brake shoes.



Toyota Brake Inspection Quick Training Guide QT512A

Drum Brakes

Brake Pedal & Parking Brake

Brake Pedal & Parking Brake

Pedal Height

Measure the shortest distance between the brake pedal pad surface and floor panel. (Turn back the carpet if necessary.)

- If the pedal height is not as specified in the Repair Manual, adjust the push rod length.

Freeplay

Stop the engine and firmly depress the brake pedal several times until no vacuum is left in the booster. Depress the pedal until a slight resistance is felt. Measure the distance as shown in the illustration.

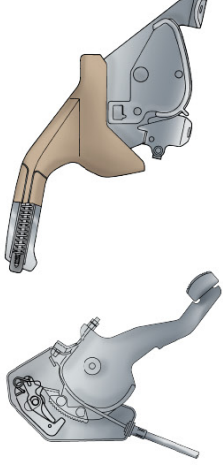
- If the pedal freeplay is not as specified, check the stop light switch clearance.

Reserve Distance

Release the parking brake. With the engine running, depress the brake pedal and measure the pedal reserve distance. (Measure the distance at the same point used for the brake pedal height inspection.)

- If the distance is not as specified, troubleshoot the brake system.

Verify the pedal height is correct before measuring freeplay and reserve distance.

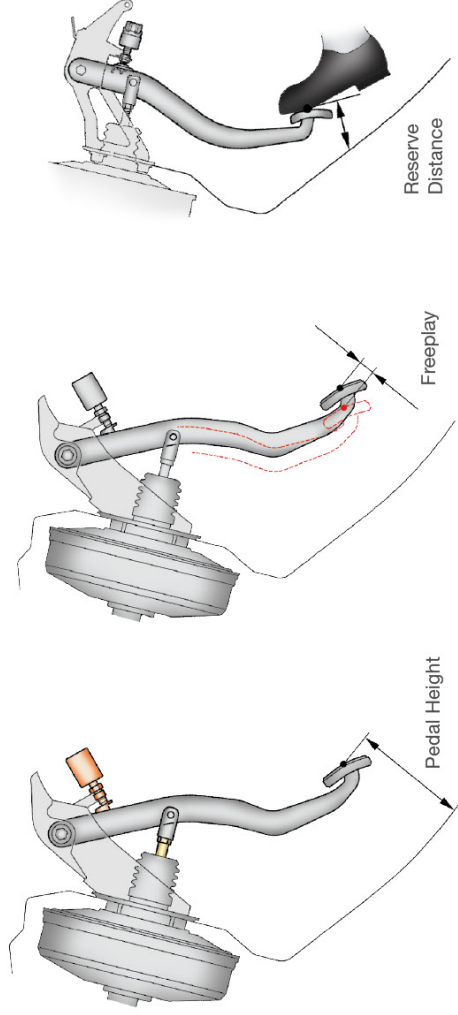


Parking Brake Pedal/Lever Travel

Slowly apply the parking brake all the way, and count the number of clicks.

- If the number of clicks is not within the range specified in the Repair Manual, adjust the brake/pedal travel. See the Repair Manual for the specific adjustment procedure.

If equipped with a parking brake warning light, verify that the light illuminates on the first click.



This page is intentionally blank.