DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - TIRE AND WHEEL VIBRATION

Tire and wheel imbalance, runout and tire road force variation can cause vehicles to exhibit steering wheel vibration and/or seat vibration.

VEHICLES WITH A VIBRATION OR SHAKE

The following procedure is to identify, prevent and correct tire flat spotting.

Description

Immediately following delivery, some vehicles may exhibit a vibration or shake due to temporary tire flat-spotting. The vibration may be felt in the steering wheel or seat and will be most noticeable at highway speeds 96 kph (60 mph). This could be misinterpreted as an out of balance tire. Flat Spotting can occur if the vehicle has not been moved for a few days or for a longer period of time. In most cases it is temporary condition. In extreme cases it can be permanent.

Tire pressure is often inflated to the maximum sidewall pressure at the vehicle assembly plant to prevent "flat spots" on tires during new vehicle shipping and vehicle storage. Inflating tires to the maximum sidewall tire pressure helps to preserve the integrity of the tire and reduces potential technical issues.

It is important to remove temporary flat spotting before performing tire balance, tire run-out or tire road force checks. If the flat spotting is not removed it can result in incorrect measurements.

Flat Spotting Removal

> *NOTE:*
>
> *If the vehicle has been sitting for an extended period of time it is recommended to drive the vehicle to warm the tires. This process could eliminate flat spots that can cause vibration.*

1. Drive the vehicle at highway speeds until the vibration (flat spotting) is eliminated.

   > *NOTE:*
   >
   > *In most cases, flat spot vibrations will be eliminated within 20 minutes (about 20 miles) of driving at highway speeds. If the vehicle has been stored without moving for an extended time, it may be necessary to drive the vehicle longer at highway speeds. If the vibration is not completely eliminated during the test drive, proceed to Step 2.*

2. Within 10 minutes after driving the vehicle, raise the vehicle so there is no load on the tires.
3. Check the tire and wheel assemblies for balance, run-out, and road force variation. Refer to STANDARD PROCEDURE .

4. Only install new tires after the vehicle has been driven as directed and all appropriate wheel and tire diagnostics have been completed.

DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - TIRE AND WHEEL VIBRATION > VISUAL INSPECTION

Visual inspection of the vehicle is recommended prior to road testing or performing any other procedure. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .

Inspect for the following:

- Verify correct (OEM) wheel and tire, as well as presence of wheel weights.
- Inspect tires and wheels for damage, mud packing and unusual wear; correct as necessary.
- Check and adjust tire air pressure to the pressure listed on the label attached to the driver's door opening.

DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - TIRE AND WHEEL VIBRATION > ROAD TEST

> *NOTE:*
>
> *If a Noise & Vibration Analyzer is available, use it to diagnosis the issue during the road test.*

> *NOTE:*
>
> *If the vehicle has been sitting for an extended period of time it is recommended to drive to warm the tires. This process could eliminate flat spots that can cause vibration.*

Road test vehicle on a smooth road **at and near the designated speed** where legal speed limits allow. Lightly place hands on steering wheel at the 10:00 and 2:00 positions and observe for:

- Steering wheel oscillation: clockwise/counterclockwise
- Steering wheel high frequency movement: rapid vibration up and down
- Seat high frequency movement: rapid vibration up and down

To rule out vibrations due to brakes or powertrain:

- Lightly apply brakes at the designated speed; if vibration occurs or is enhanced, vibration is likely due to a brake concern.
- Shift transmission into neutral while vibration is occurring; if vibration is eliminated, vibration is likely due to a powertrain (differential or driveline) concern.

DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - TIRE AND WHEEL VIBRATION > TIRE/WHEEL BALANCE AND ROAD FORCE VARIATION

NOTE:

If wheel balance equipment is capable of testing tire road force variation and the tire/wheel assemblies are within specification, place the tires with the greater road force variation on the rear of the vehicle.

Balance the tire and wheel assemblies as necessary, and if wheel balance equipment is capable, also test for tire and wheel runout and road force variation following the wheel balancer manufacturer's instructions and using the information listed in Tire And Wheel Balance. Refer to STANDARD PROCEDURE . Repeat the road test above to verify the vibration is repaired.

STANDARD PROCEDURE > TIRE AND WHEEL BALANCE

BACK CONE MOUNTING

	A multimedia supplement to the instructions contained in this article is available. To view the multimedia example of the condition described go to; **http://www.youtube.com/user/Mitchell1Tips then type "A00619574.vid1" into the "Search Channel" box.**

FLANGE PLATE MOUNTING

	A multimedia supplement to the instructions contained in this article is available. To view the multimedia example of the condition described go to; **http://www.youtube.com/user/Mitchell1Tips then type "A00619574.vid2" into the "Search Channel" box.**

CHROME/PLASTIC CLAD WHEEL SERVICE

	A multimedia supplement to the instructions contained in this article is available. To view the multimedia example of the condition described go to; **http://www.youtube.com/user/Mitchell1Tips then type "A00619574.vid3" into the "Search Channel" box.**

FORCE MATCHING

	A multimedia supplement to the instructions contained in this article is available. To view the multimedia example of the condition described go to; **http://www.youtube.com/user/Mitchell1Tips then type "A00619574.vid4" into the "Search Channel" box.**

NOTE:

Always verify the wheel and tire balance before removing any wheel weights. If assembly is within specification and weights are not corroded or loose, do not remove weights. The process of removing and adding weight could damage wheel protective coating.

NOTE:

Balance and road force variation equipment must be calibrated and maintained per equipment manufacturer's specifications.

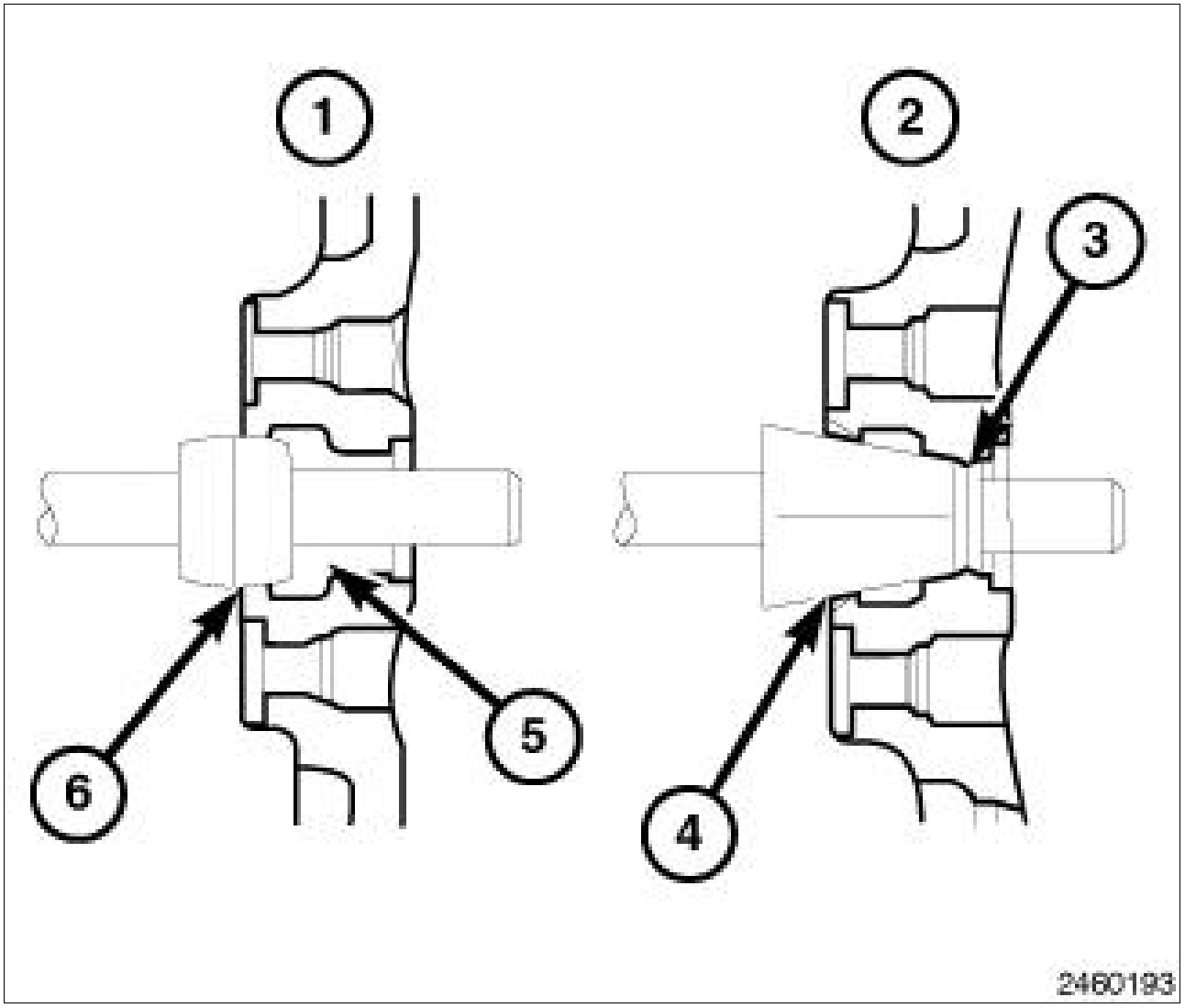
NOTE:

If a tire sealant & inflator kit was used to temporarily repair small punctures then the tire must be removed from wheel and all the sealant must be removed with a water damped cloth before repairing & balancing the assembly.

NOTE:

Some wheels may not have an outer flange. Apply adhesive weights on midplane surface to balance.

Fig 1: Balancing Wheels Using Cone/Collet



Courtesy of CHRYSLER GROUP, LLC

NOTE:

Use of the proper collet will prevent potential damage to the Chrome Clad wheels.

NOTE:

Balance equipment could read an incorrect balance result when measuring Chrome Clad wheels. This is caused by the equipments mounting cone/collet contacting the cladding or the cone/collet is not balanced. A dual-taper collet (1) type wheel centering tool is recommended as opposed to a high-taper cone (2) type wheel centering tool. Always use the manufacturer's recommended balance equipment.

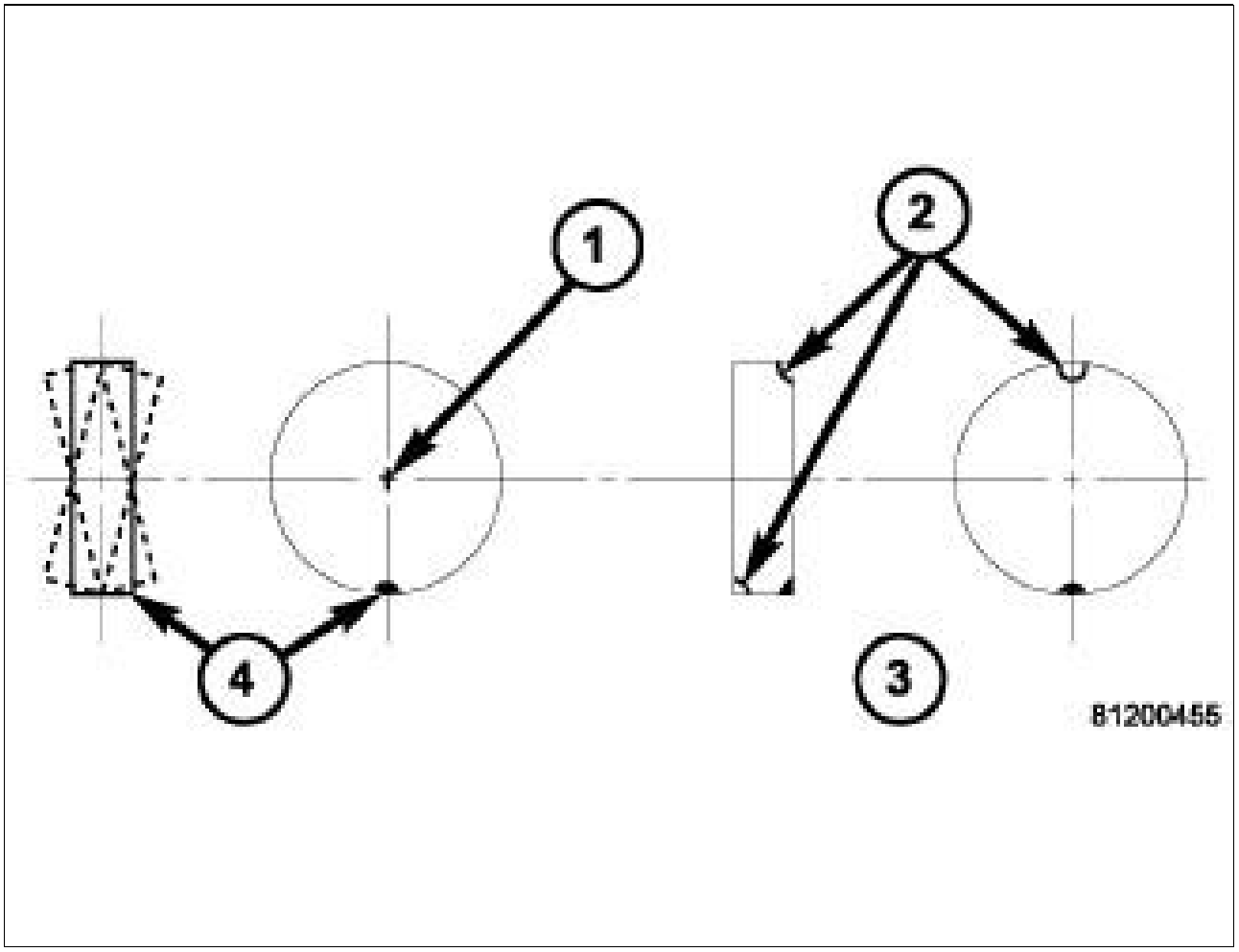
- *Dual-taper collet type (1)*
- *High-taper cone type (2)*

- *Possible obstruction (3)*
- *May not seat properly (4)*
- *No obstruction (5)*
- *Properly seated (6)*

NOTE:

If wheel balance equipment is capable of testing tire road force variation and the tire/wheel assemblies are within specification, place the tires with the greater road force variation on the rear of the vehicle.

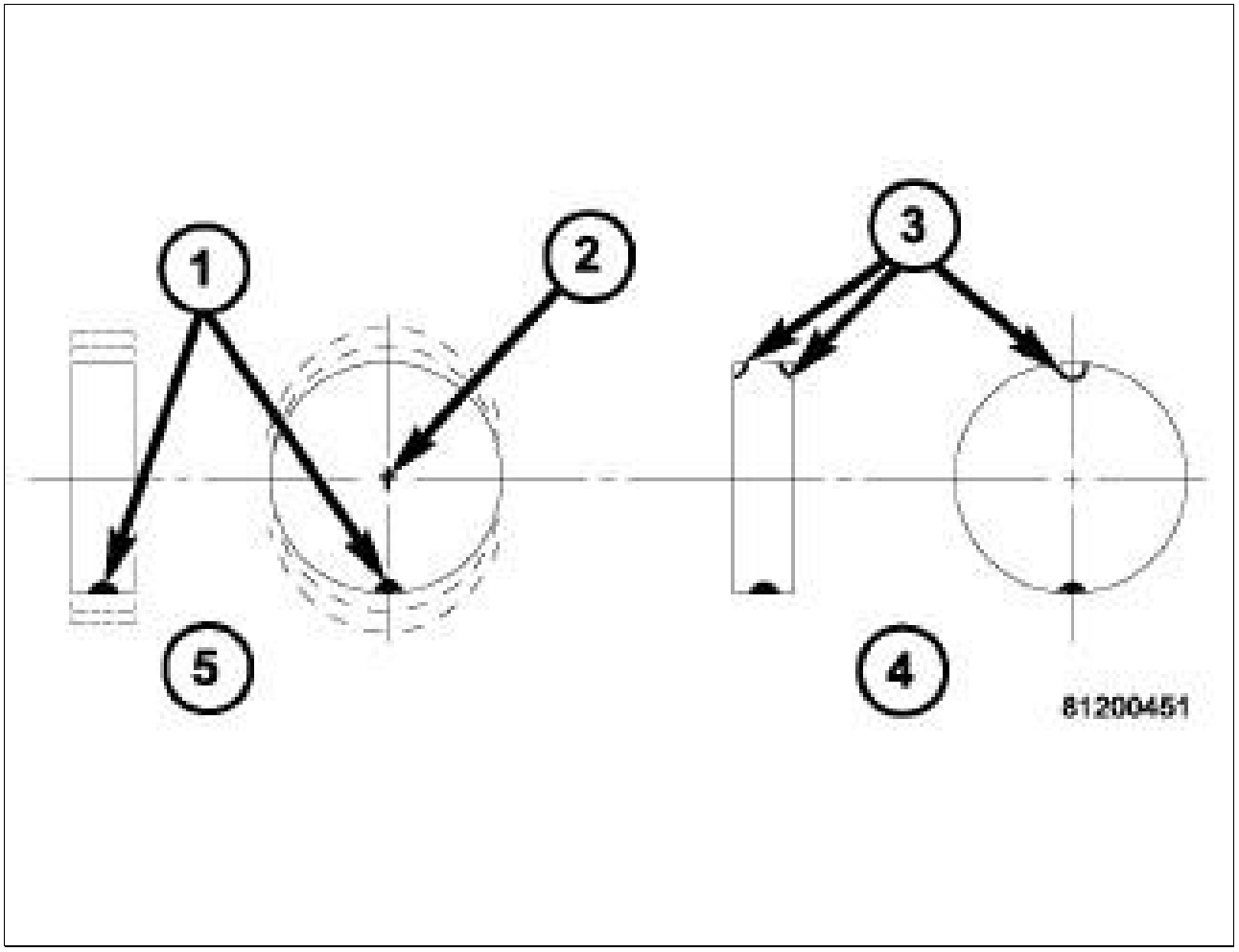
Fig 2: Dynamic Balancing



Courtesy of CHRYSLER GROUP, LLC

For dynamic balancing (**recommended**), the balance equipment is designed to indicate the location and amount of weight to be applied to both the inner and outer rim flanges (2).

Fig 3: Static Balancing



Courtesy of CHRYSLER GROUP, LLC

For static balancing (**not recommended**), find the location of the heavy spot causing the imbalance (1). Counter balance the wheel directly opposite the heavy spot. Determine weight required to counterbalance the area of imbalance. Place half of this weight on the **inner** rim flange and the other half on the **outer** rim flange (3) at the predetermined spots.

Aluminum wheels use a different type wheel weight than steel wheels. Be sure to use the correct wheel weight for the wheel type.

Always verify the balance. When using off-vehicle equipment, remount the tire and wheel assembly 180 degrees on the balancer spindle and recheck balance. Balance variation from one spot to the other should not be more than 0.125 (?) ounce. If variation is more than 0.125 ounce, balancing equipment could be malfunctioning, or the wrong collet/cone may have been used.

If difficult to balance, break down the tire and wheel assembly and check for loose debris inside the tire. Prior to disassembly, mark (index) the tire at the valve stem. Use this mark in order to remount the tire in its original orientation with respect to the wheel.

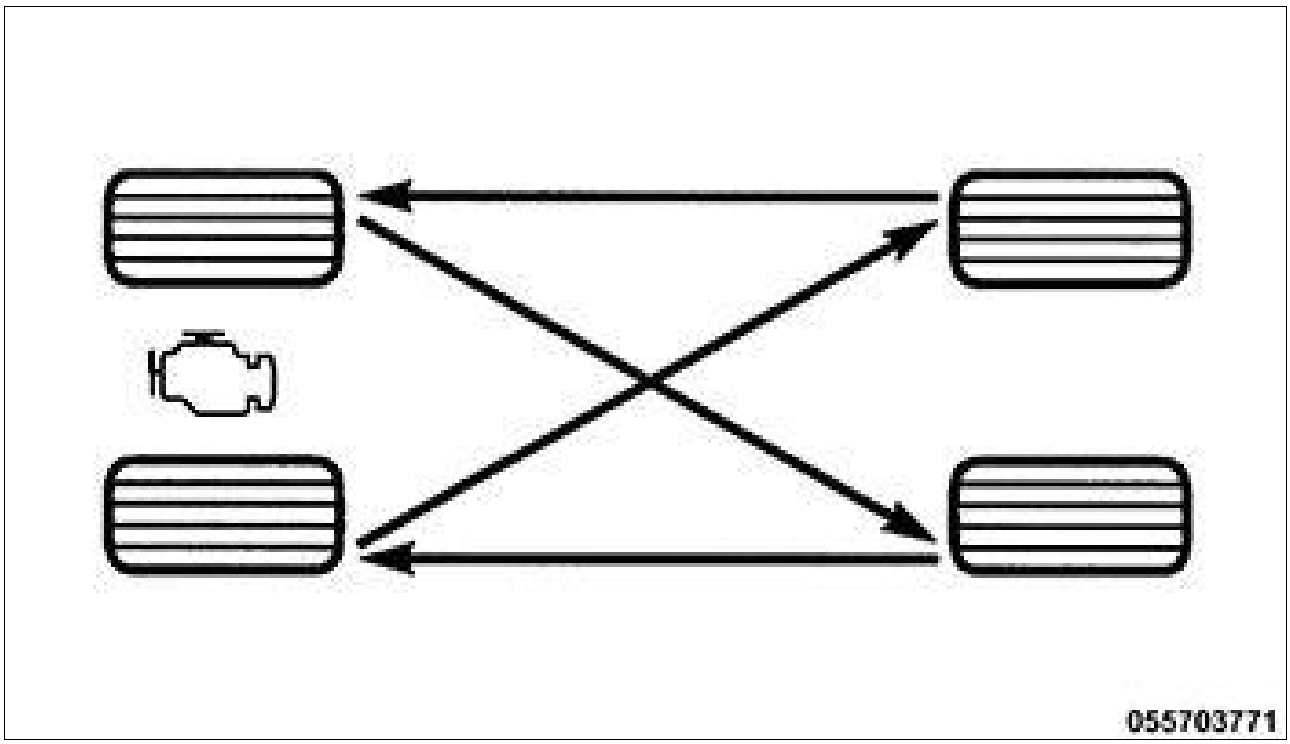
STANDARD PROCEDURE > TIRE AND WHEEL ROTATION

Tires on the front and rear operate at different loads and perform different steering, driving, and braking functions. For these reasons they wear at unequal rates and tend to develop irregular wear patterns. These effects can be reduced by rotating the tires at regular intervals. The benefits of tire rotation are:

- Increase tread life
- Maintain traction levels
- A smooth, quiet ride

The suggested methods of tire rotation is shown in the following illustrations. Other rotation methods can be used, but they will not provide all the tire longevity benefits.

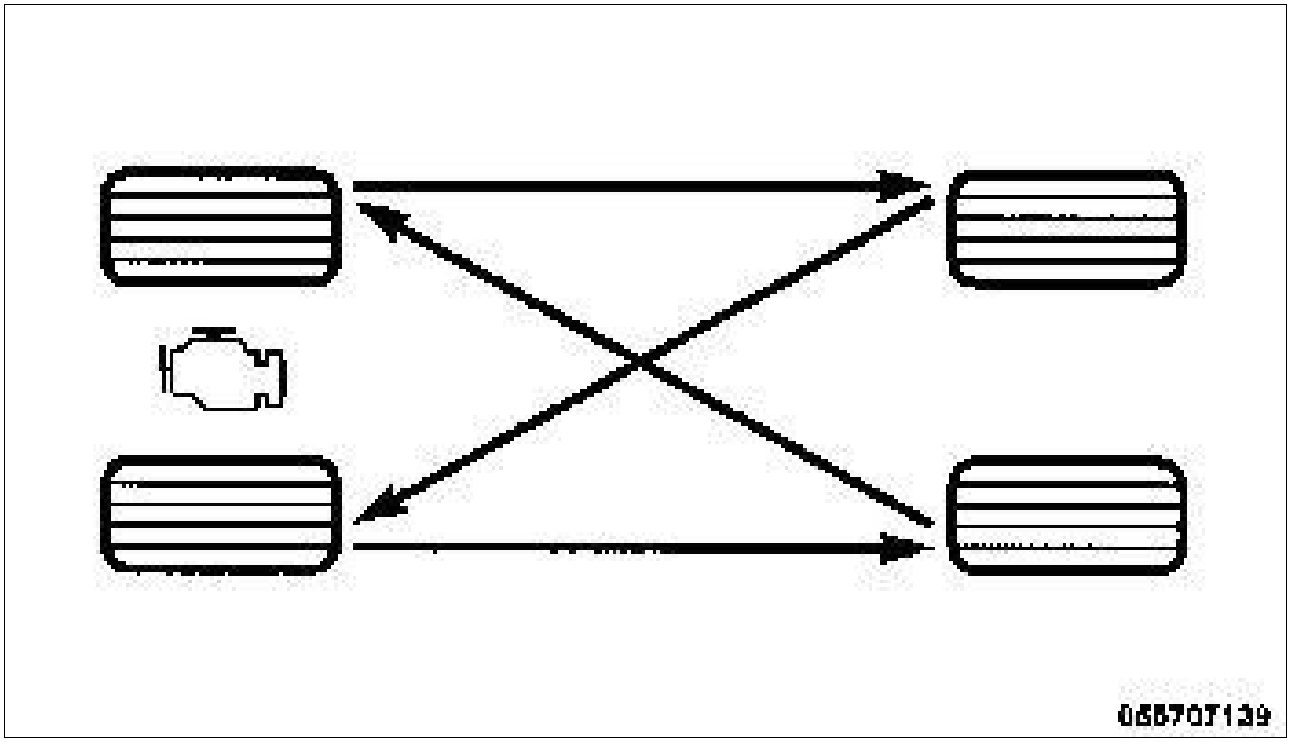
Fig 1: Tire & Wheel Rotation - 4WD



Courtesy of CHRYSLER GROUP, LLC

Four Wheel Drive (4WD) Tire Rotation

Fig 2: Tire & Wheel Rotation - FWD



Courtesy of CHRYSLER GROUP, LLC

Front Wheel Drive (FWD) Tire Rotation

SPECIFICATIONS > TECHNICAL SPECIFICATIONS

STANDARD/OPTIONAL

Version	Wheels	Standard tires	Temporary/Compact spare tire (for models/where applicable)	
			Rim	Tire
1.4 MultiAir Turbo	6.5J x 16" ET 40	215/65 R16 98H	4.0 B x 16H ET22	T145/90 R16 106M
	7J x 17" ET 40	215/60 R17 96H		
	7J x 18" ET 40	225/55 R18 98V		
1.6 16V Multijet	6.5J x 16" ET 40	215/65 R16 98H		
	7J x 17" ET 40	215/60 R17 96H		
	7J x 18" ET 40	225/55 R18 98V		
2.0 16V Multijet	6.5J x 16" ET 40	215/65 R16 98H		
	7J x 17" ET 40	215/60 R17 96H		
	7J x 18" ET 40	225/55 R18 98V		

WINTER TIRES (TRAILHAWK ONLY)

	Rim	Tire
1.4 MultiAir Turbo	6.5J x 16" ET 40	215/65 R16 98Q (M+S)
	7J x 17" ET 40	215/60 R17 96Q (M+S)
	7J x 18" ET 40	225/55 R18 98Q (M+S)
1.6 16V Multijet	6.5J x 16" ET 40	215/65 R16 98Q (M+S)
	7J x 17" ET 40	215/60 R17 96Q (M+S)
	7J x 18" ET 40	225/55 R18 98Q (M+S)
2.0 16V Multijet	6.5J x 16" ET 40	215/65 R16 98Q (M+S)
	7J x 17" ET 40	215/60 R17 96Q (M+S)
	7J x 18" ET 40	225/55 R18 98Q (M+S)

TIRE PRESSURE

The proper tire pressure specification can be found on the Tire And Loading Information Label provided with the vehicle (usually on the driver's door opening (B-pillar) or rear shutface of driver's door).

SPECIFICATIONS > TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

DESCRIPTION	N.m	Ft. Lbs.	In. Lbs.	NEW FASTENER*
Wheel Mounting Bolts	120	89	-	
***NEW FASTENER:** Do not reuse these fasteners. If removed, a new fastener must be installed and tightened to specifications.				

REMOVAL AND INSTALLATION > LEFT FRONT WHEEL > REMOVAL - LEFT FRONT

Fig 1: Tire & Wheel Lug Bolts

Courtesy of CHRYSLER GROUP, LLC

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the wheel lug bolts (1).
3. Remove the tire and wheel assembly.

REMOVAL AND INSTALLATION > LEFT FRONT WHEEL > INSTALLATION - LEFT FRONT

1. Clean wheel mounting surfaces of any corrosion or dirt.
2. Position the tire and wheel assembly on the hub pilot as a guide.
3. Install all five wheel mounting bolts, and tighten in a star pattern to the proper specification. Refer to SPECIFICATIONS .
4. Remove the support and lower the vehicle.

REMOVAL AND INSTALLATION > RIGHT FRONT WHEEL > REMOVAL - RIGHT FRONT

Fig 1: Tire & Wheel Lug Bolts

Courtesy of CHRYSLER GROUP, LLC

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the wheel lug bolts (1).
3. Remove the tire and wheel assembly.

REMOVAL AND INSTALLATION > RIGHT FRONT WHEEL > INSTALLATION - RIGHT FRONT

1. Clean wheel mounting surfaces of any corrosion or dirt.
2. Position the tire and wheel assembly on the hub pilot as a guide.
3. Install all five wheel mounting bolts, and tighten in a star pattern to the proper specification. Refer to SPECIFICATIONS .
4. Remove the support and lower the vehicle.

REMOVAL AND INSTALLATION > LEFT REAR WHEEL > REMOVAL - LEFT REAR

Fig 1: Tire & Wheel Lug Bolts

Courtesy of CHRYSLER GROUP, LLC

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the wheel lug bolts (1).
3. Remove the tire and wheel assembly.

REMOVAL AND INSTALLATION > LEFT REAR WHEEL > INSTALLATION - LEFT REAR

1. Clean wheel mounting surfaces of any corrosion or dirt.
2. Position the tire and wheel assembly on the hub pilot as a guide.
3. Install all five wheel mounting bolts, and tighten in a star pattern to the proper specification. Refer to SPECIFICATIONS .
4. Remove the support and lower the vehicle.

REMOVAL AND INSTALLATION > RIGHT REAR WHEEL > REMOVAL - RIGHT REAR

Fig 1: Tire & Wheel Lug Bolts

Courtesy of CHRYSLER GROUP, LLC

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the wheel lug bolts (1).
3. Remove the tire and wheel assembly.

REMOVAL AND INSTALLATION > RIGHT REAR WHEEL > INSTALLATION - RIGHT REAR

1. Clean wheel mounting surfaces of any corrosion or dirt.
2. Position the tire and wheel assembly on the hub pilot as a guide.
3. Install all five wheel mounting bolts, and tighten in a star pattern to the proper specification. Refer to SPECIFICATIONS .

4. Remove the support and lower the vehicle.

REMOVAL AND INSTALLATION > FRONT WHEELS (TWO) > REMOVAL - TWO FRONT WHEELS

For the removal of the front two wheels. Refer to REMOVAL AND INSTALLATION .

REMOVAL AND INSTALLATION > FRONT WHEELS (TWO) > INSTALLATION - FRONT TWO WHEELS

For the installation of the front two wheels. Refer to REMOVAL AND INSTALLATION .

REMOVAL AND INSTALLATION > REAR WHEELS (TWO) > REMOVAL - TWO REAR WHEELS

For the removal of the two rear wheels. Refer to REMOVAL AND INSTALLATION .

REMOVAL AND INSTALLATION > REAR WHEELS (TWO) > INSTALLATION - TWO REAR WHEELS

For the installation of the two rear wheels. Refer to REMOVAL AND INSTALLATION .

REMOVAL AND INSTALLATION > WHEELS (FOUR) > REMOVAL - ALL WHEELS

For the removal of all four wheels. Refer to REMOVAL AND INSTALLATION .

REMOVAL AND INSTALLATION > WHEELS (FOUR) > INSTALLATION - ALL WHEELS

For the installation of all four wheels. Refer to REMOVAL AND INSTALLATION .

TIRE PRESSURE MONITORING > DESCRIPTION AND OPERATION > DESCRIPTION AND OPERATION

Description

The vehicle can be equipped with the tire pressure monitoring system (TPMS). The system can constantly monitor all four pressure values of the tires through sensors fitted on the valve stems, and can warn the driver, through the instrument panel, if tire pressure decreases or if there is a problem in

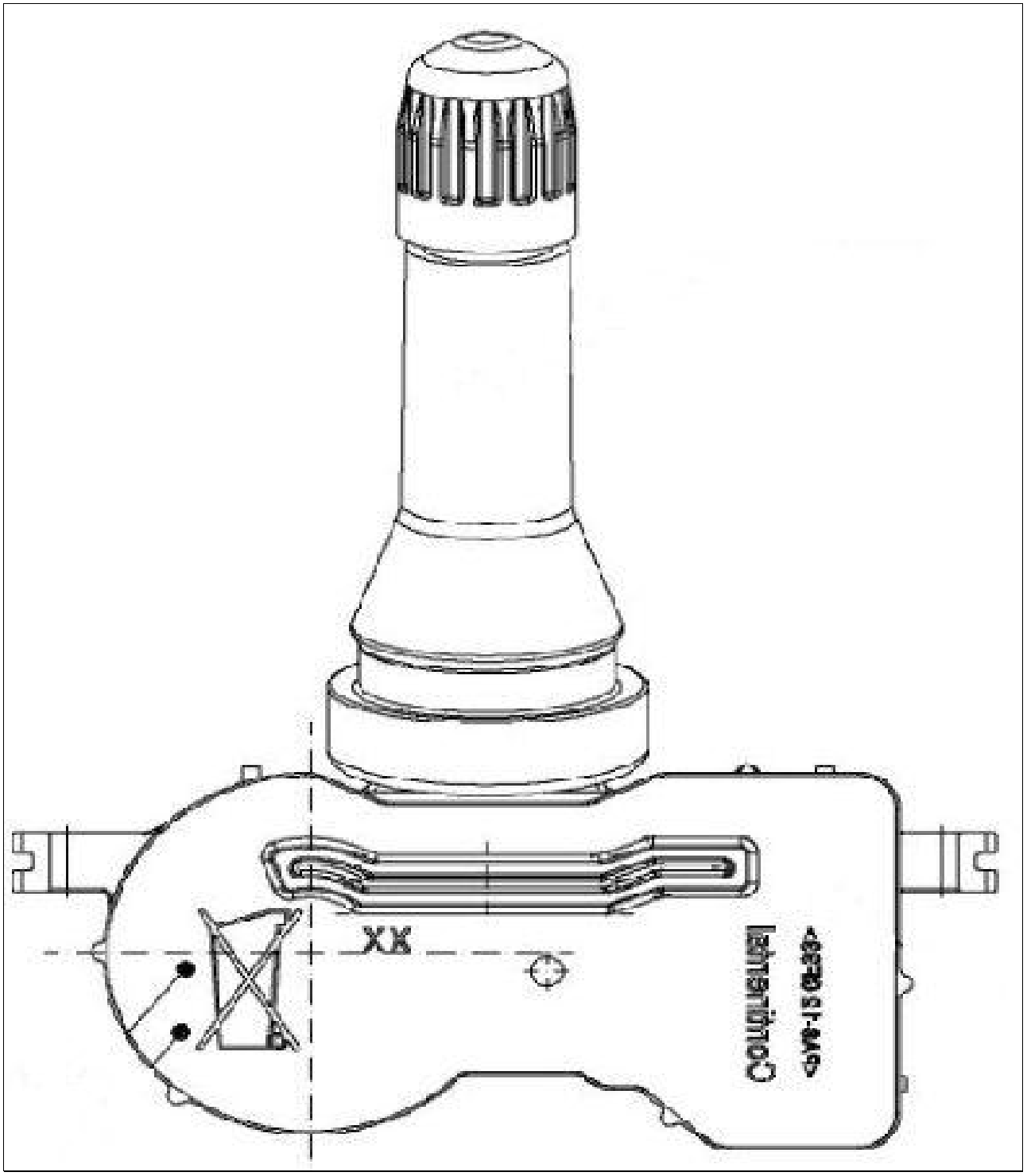
the operation of the system itself.

The TPMS is provided as standard on all models and shows the tire pressure values through a dedicated submenu in the instrument panel display. Once the pressure value of a tire is influenced by deflation, the relative pressure value will flash in the instrument panel through the EVIC, which can be 3.5" or 7" (also called DID). The system also resets automatically after the wheels have been rotated, thus guaranteeing correct information about tire pressure and displaying it at all times in the EVIC. When tire pressure is 7-8 psi (48-55 kPa) below the specification listed on the label, the system emits an acoustic signal, illuminates the ISO low tire pressure warning light, and displays the pressure of the four active tires in the EVIC display.

If a system fault is detected, the warning light will flash for 75 seconds, then remain on continuously. Dashes will take the place of the pressure reading if a sensor is not correctly operating. A five-sensor system is available for vehicles with a full-size spare wheel (in markets where provided).

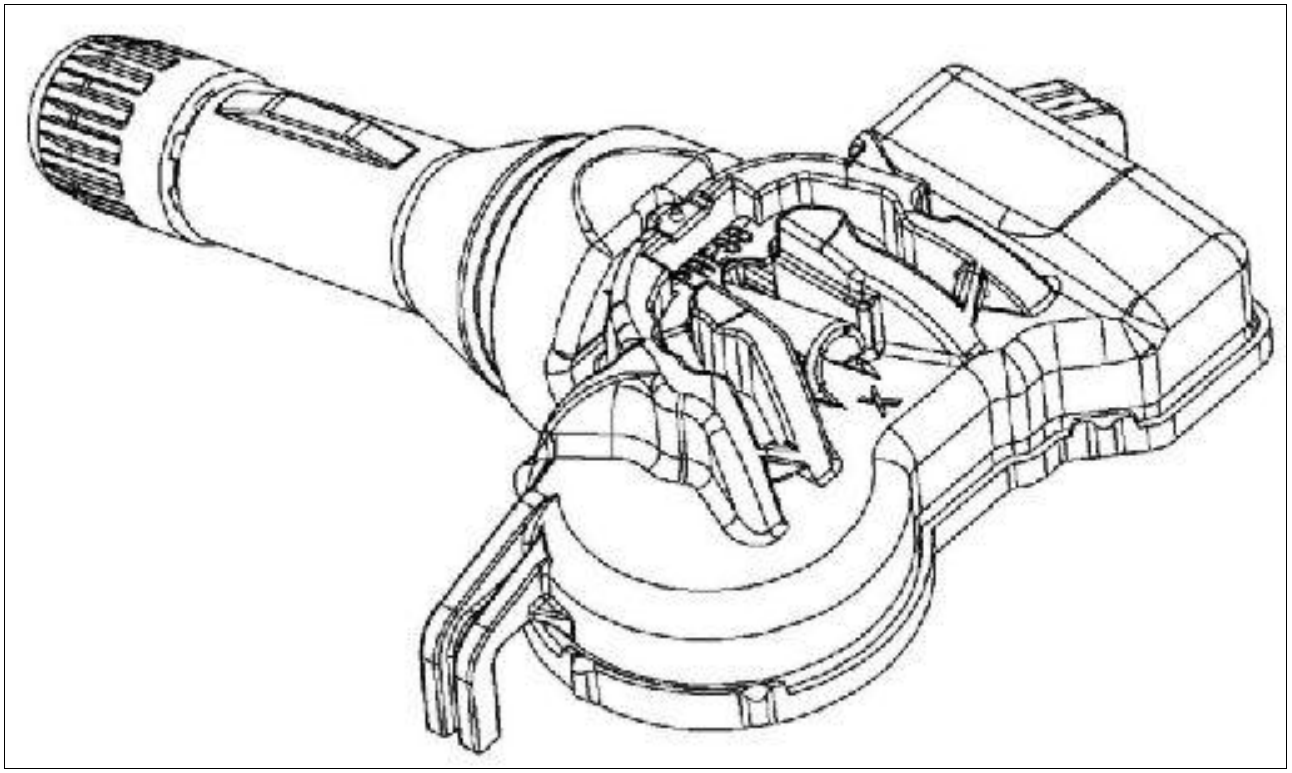
Tire Pressure Sensor

Fig 1: Tire Pressure Sensor (1 Of 2)



Courtesy of CHRYSLER GROUP, LLC

Fig 2: Tire Pressure Sensor (2 Of 2)



Courtesy of CHRYSLER GROUP, LLC

The TPM system use four or five tire pressure sensors designed for mounting in place of a traditional tire valve. The tire pressure sensor includes a stem that looks similar to a standard stem. The sensor body, located at the bottom of the stem contains a sensor, a processor, a transmitter/receiver, and a battery that lasts up to ten years. If the battery fails, the sensor must be replaced.

The sensors wirelessly transmit tire pressure information at a frequency of 433 MHz. The tire pressure sensors send a tire pressure sensor value every 30 seconds when the vehicle is in motion and approximately every 13 hours when the vehicle is not in motion. The sensors also transmit a unique ID code to differentiate the sensors from those on nearby vehicles.

Operation

NOTE:

TPM thresholds have been established for the original tire size equipped on the vehicle. Use original size tires only to maintain system accuracy.

The Radio Frequency Hub (RF-Hub) module receives the radio signals from the tire pressure sensors and sends the relevant values to the other modules via CAN-C. The RF-Hub module identifies the sensor position, receives the sensor data, compares the pressure data with the standard pressure values stored in the non-volatile memory, determines whether there is a problem in the tire pressure and stores the warnings regarding tire pressure and system faults.

The RF-Hub uses the tire rotational direction and the signal strength to determine the location of each tire pressure sensor. When the vehicles is travelling forwards, tires on the right side of the vehicle rotate

clockwise and tires on the left side rotate counter clockwise. Since the RF-Hub is located above the headliner in the rear of the vehicle, rear sensors will have a stronger radio signal than front sensors.

When a sensor is installed in a tire on the vehicle, the RF-Hub can automatically identify the sensor and its location during the first ensuing drive cycle. Identification will take approximately 10 minutes but the speed of the vehicle must exceed 15 mph (24 km/h). The TPM-RKE 9936 analyzer can also be used to program the new sensor identification number in the RF-Hub module.

For the removal and installation of the RF-Hub module. Refer to MODULE, RADIO FREQUENCY (RF HUB), REMOVAL AND INSTALLATION .

The sensor IDs can also be programmed using a Scan Tool. Scan each TPM sensor at each road wheel, and store each Sensor ID in the correct location:

- Left Front
- Left Rear
- Right Front
- Right Rear

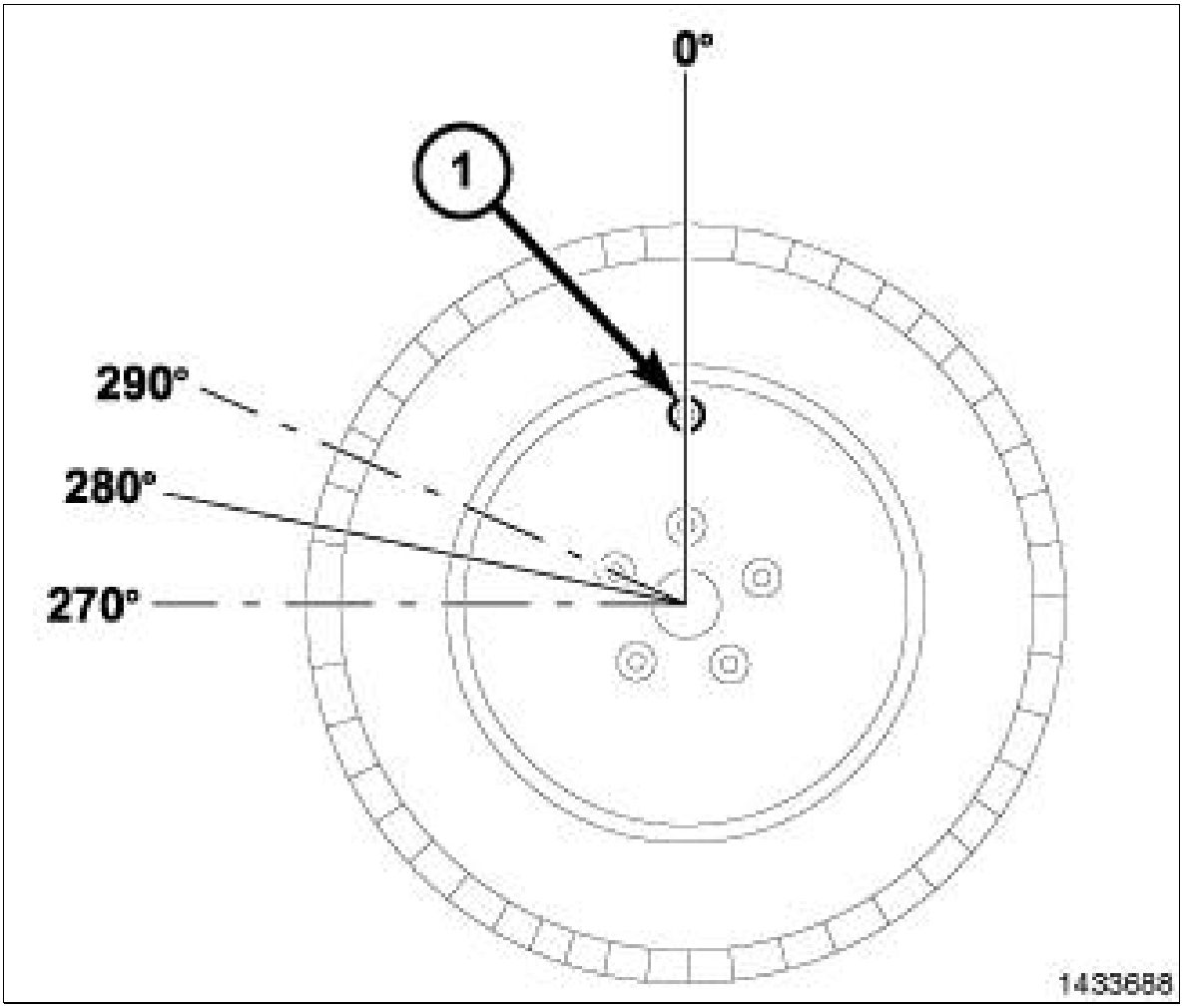
Connect the Scan Tool. Then follow the programming steps outlined in the Scan Tool.

TIRE PRESSURE MONITORING > SENSOR, TIRE PRESSURE MONITORING (TPM) > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

1. Raise and support vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove tire and wheel assembly.

> ⚠ *CAUTION:*
>
> *The cap used on this valve stem contains an O-ring seal to prevent contamination and moisture from entering the valve stem. Do not substitute a regular valve stem cap in its place.*

Fig 1: Start Mount/Dismount Tool Within 10 Degrees Of Valve Stem



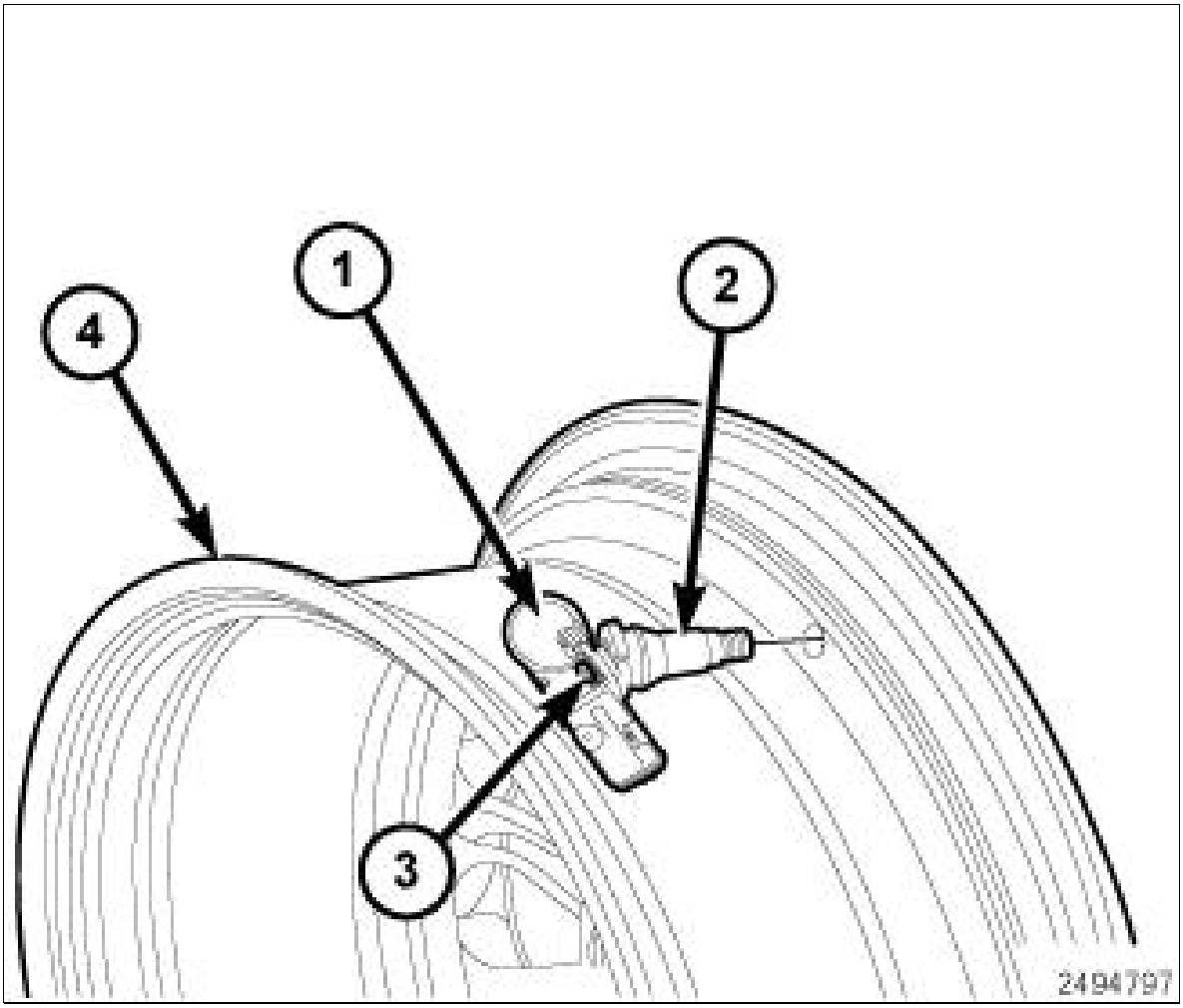
Courtesy of CHRYSLER GROUP, LLC

3. Dismount tire from wheel following tire changer manufacturers instructions while paying special attention to the following to avoid damaging the pressure sensor:

    a. When breaking the tire bead loose from the wheel rim, avoid using the Bead Breaker in the area of the sensor (1). That includes both outer and inner beads of the tire.

    b. When preparing to dismount the tire from the wheel, carefully insert the mounting/dismounting tool 280° from the valve stem ± 10°, then proceed to dismount the tire from the wheel. Use this process on both outer and inner tire beads.

Fig 2: Sensor Mounting To Wheel



Courtesy of CHRYSLER GROUP, LLC

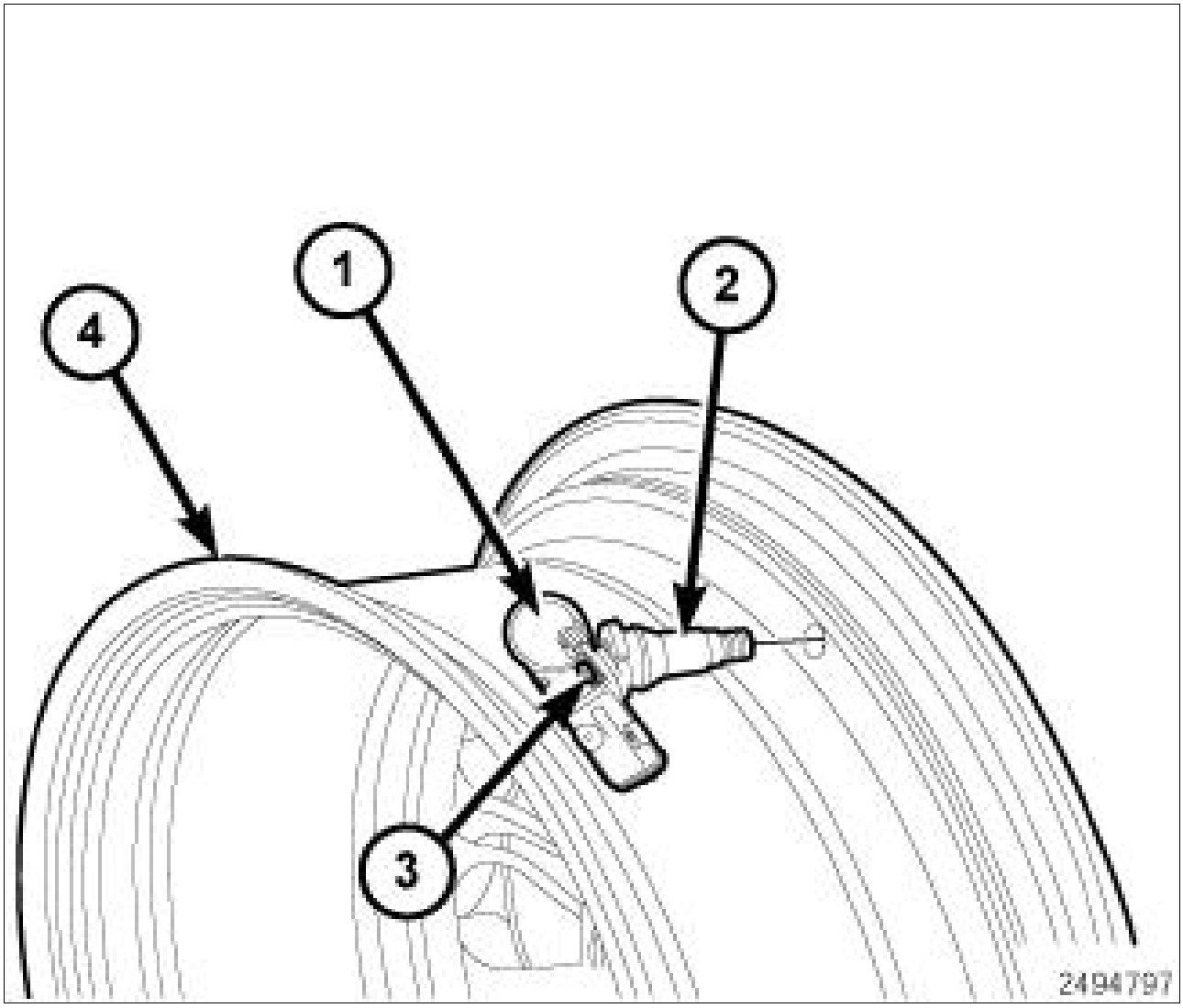
4. Remove the sensor to valve stem retainer screw (3) and remove the sensor (1) from the valve stem (2).
5. Remove the valve stem (2) from the wheel (4).

TIRE PRESSURE MONITORING > SENSOR, TIRE PRESSURE MONITORING (TPM) > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

NOTE:

If replacing tire pressure sensor, a new valve stem will be pre-mounted to the sensor as an assembly. Verify that the sensor is positioned properly before seating the valve stem. If replacing a valve stem only (using the existing tire pressure sensor), the new valve stem will include a new tire pressure sensor mounting screw. Always use a new mounting screw when attaching a sensor to a valve stem.

Fig 1: Sensor Mounting To Wheel



Courtesy of CHRYSLER GROUP, LLC

> ⚠ *CAUTION:*
>
> *Any time a sensor is to be reinstalled in a wheel, a new valve stem assembly must be installed to ensure air tight sealing.*

1. Wipe area clean around sensor/valve stem mounting hole in wheel (4). Make sure surface of wheel is not damaged.

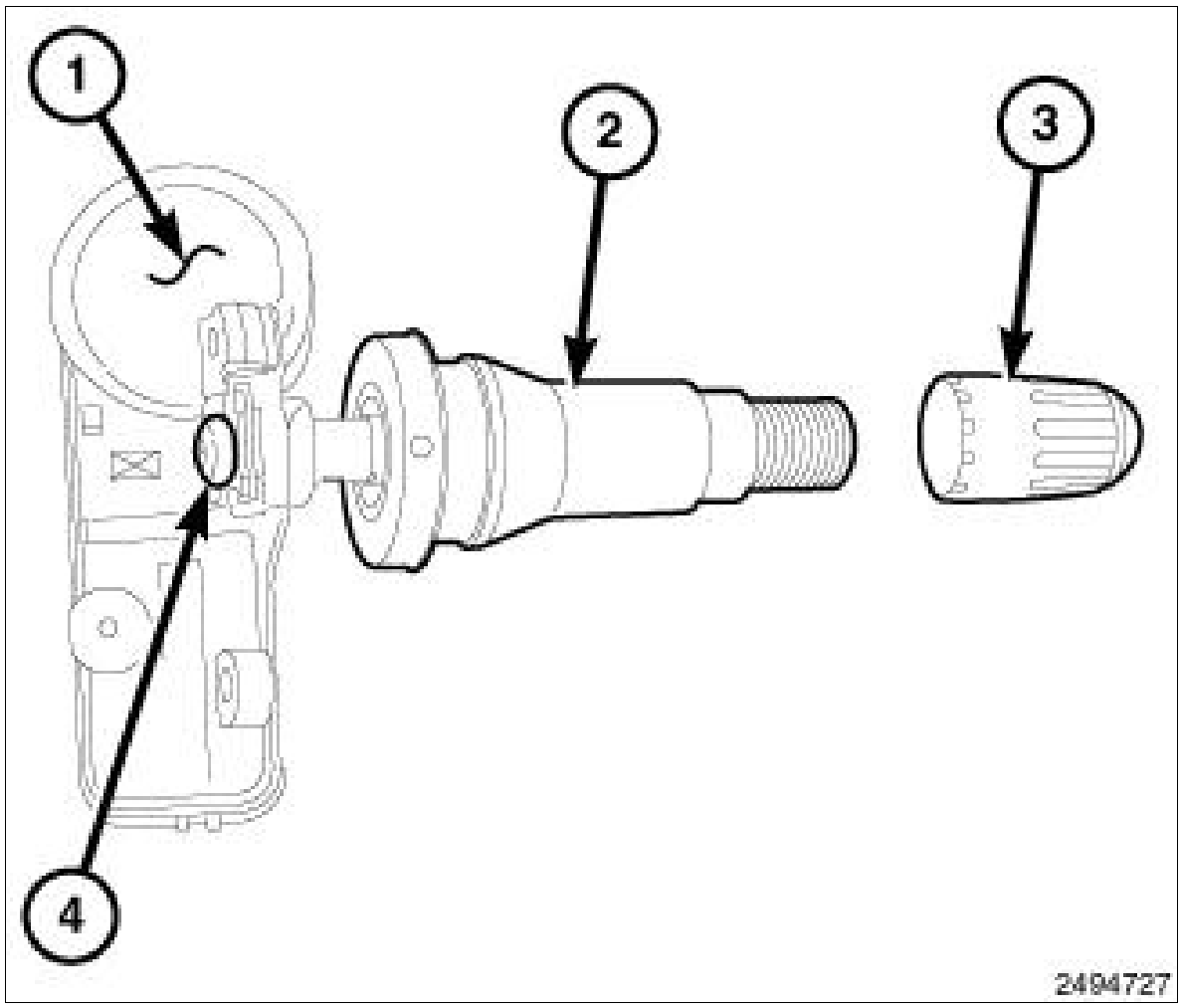
> *NOTE:*
>
> *A new valve stem is pre-lubricated for proper installation with a standard tool.*

NOTE:

If replacing tire pressure sensor, a new valve stem will be pre-mounted to the sensor as an assembly. Verify that the sensor is positioned properly before seating the valve stem.

2. Insert valve stem (2) through wheel (4) and pull through to seat with standard valve stem installation tool.

Fig 2: Tire Pressure Monitoring Sensor Components

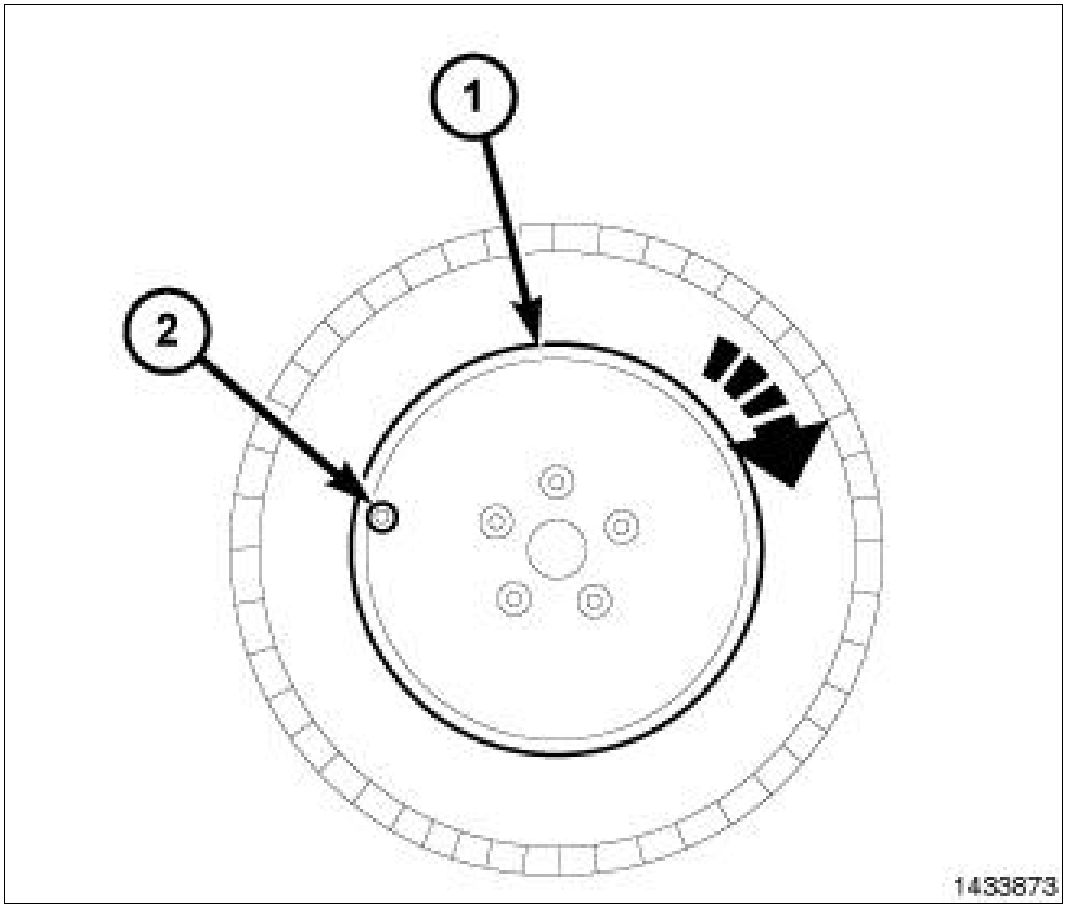


Courtesy of CHRYSLER GROUP, LLC

3. If replacing the valve stem (2) only (using the existing tire pressure sensor), verify that the flat sides of the brass extension on the bottom of the valve stem (2) are at a 90 degree angle with the wheel. Position the pressure sensor (1) over the brass extension, install the retainer screw (4) and tighten to 1.4 N.m (12 in. lbs.).

4. Mount tire on wheel following tire changer manufacturers instructions, paying special attention to the following to avoid damaging tire pressure sensor:

Fig 3: Mounting Tire Using Rotating Wheel Machine

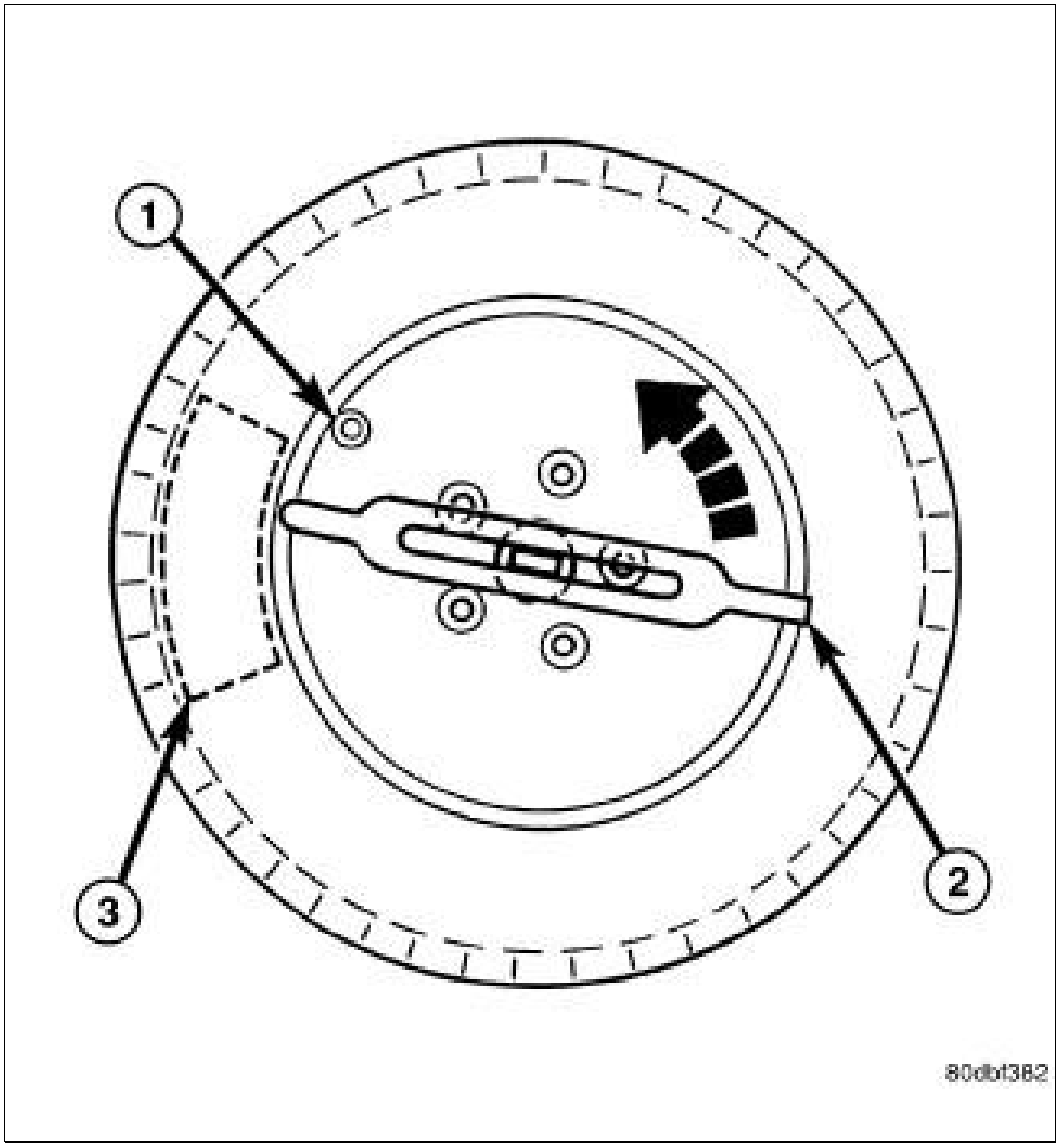


Courtesy of CHRYSLER GROUP, LLC

a. Rotating Wheel Tire Changers - Once the wheel is mounted to the changer, position the sensor valve stem (2) approximately 280° from the head of the changer (located at 1) in a clockwise direction before rotating the wheel (also in a clockwise direction) to mount the tire. Use this procedure on both the outer and inner tire beads.

1 - HEAD OF CHANGER LOCATED HERE
2 - VALVE STEM

Fig 4: Mounting Tire Using Rotating Tool Machine



Courtesy of CHRYSLER GROUP, LLC

b. Rotating Tool Tire Changers - Position the wheel on the changer so that the sensor valve stem (1) is located approximately 210° clockwise from the installation end of the mounting/dismounting tool (2) once the tool is mounted for tire installation. Make sure the sensor is clear of the lower bead breaker area (3) to avoid damaging the sensor when the breaker rises. Rotate the tool (2) in a counterclockwise direction to mount the tire. Use this procedure on both the outer and inner tire beads.

1 - VALVE STEM
2 - INSTALLATION END OF MOUNTING/DISMOUNTING TOOL
3 - BEAD BREAKER (KEEP CLEAR OF SENSOR)

c. Adjust air pressure to that listed on Tire Inflation Pressure Label (Placard) provided with vehicle (usually applied to driver's side B-pillar). Make sure **original style** valve stem cap is securely installed to keep moisture out of sensor.

d. Install the tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .

e. Remove the support and lower the vehicle.

f. Perform one of the following to make the system learn the new sensor ID:

g. Use the TPM-RKE Analyzer, 9936, with the Scan Tool to program the RF Hub with the tire pressure sensor ID. This is part of the TPM Diagnostic Verification Test. Refer to STANDARD PROCEDURE .

h. Once the vehicle has remained stationary for more than 20 minutes, drive vehicle for a minimum of 10 minutes while maintaining a continuous speed above 15 mph (24 km/h). During this time, the system will learn the new sensor ID. This is part of the TPM Diagnostic Verification Test. Refer to STANDARD PROCEDURE .

NOTE:

If a sensor cannot be trained, refer to appropriate diagnostic information.

TIRES > DESCRIPTION > TIRE

Tires are designed and engineered for each specific vehicle. They provide the best overall performance for normal operation. The ride and handling characteristics match the vehicle's requirements. With proper care they will give excellent reliability, traction, skid resistance, and tread life.

Driving habits have more effect on tire life than any other factor. Careful drivers will obtain, in most cases, much greater mileage than severe use or careless drivers. A few of the driving habits which will shorten the life of any tire are:

- Rapid acceleration
- Severe application of brakes
- High-speed driving
- Taking turns at excessive speeds
- Striking curbs and other obstacles
- Operating vehicle with over or under inflated tire pressures

Radial ply tires are more prone to irregular tread wear. It is important to follow the tire rotation interval shown in TIRE AND WHEEL ROTATION . This will help to achieve a greater tread-life potential.

TIRES > DESCRIPTION > TIRE > TIRE IDENTIFICATION

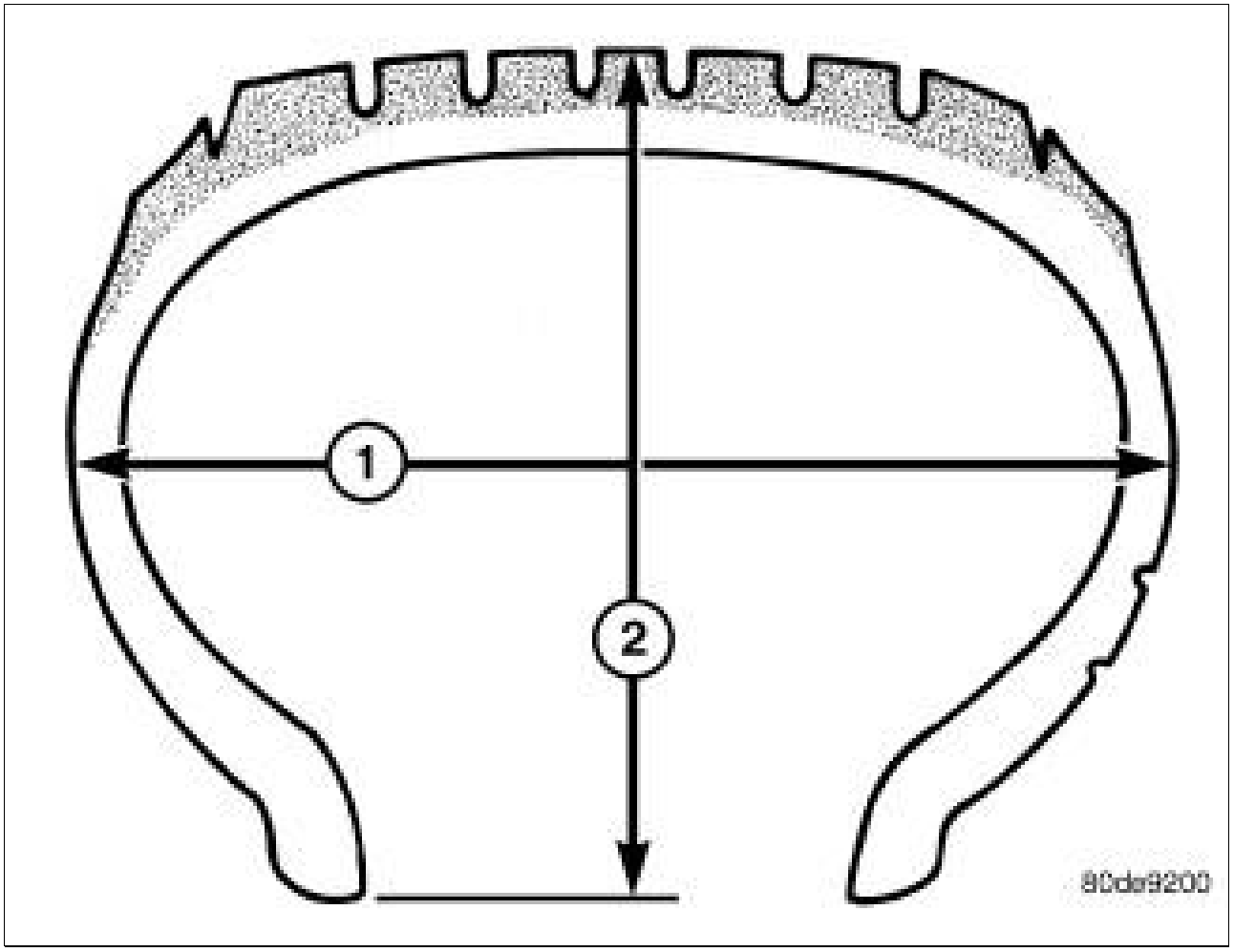
Tire type, size, load index and speed rating are encoded in the letters and numbers imprinted on the side wall of the tire. Refer to the TIRE IDENTIFICATION chart to decipher the code. For example purposes, the tire size P225/60 R 16 97 T is used in the chart. An All Season type tire will also have either M + S,

M AND S, or M - S (indicating mud and snow traction) imprinted on the side wall. An Extra or Light Load marking "XL" or "LL" may also be listed on the sidewall. The absence of an "XL" or "LL" marking infers a standard load tire.

TIRE IDENTIFICATION

Reading Tire Codes		
P	TIRE TYPE (Not present on all tires)	P - Passenger
		T - Temporary
		C - Commercial
		LT - Light Truck
225	SECTIONAL WIDTH	SHOWN IN MILLIMETERS
60	ASPECT RATIO	SHOWN IN PERCENTAGE*
R	CONSTRUCTION TYPE	R - RADIAL
		B - BIAS BELTED
		D - DIAGONAL (BIAS)
16	WHEEL DIAMETER	SHOWN IN INCHES
97	LOAD INDEX	**
T	SPEED RATING	**

Fig 1: Tire Aspect Ratio



Courtesy of CHRYSLER GROUP, LLC

1 - SECTIONAL WIDTH
2 - SECTIONAL HEIGHT

NOTE:

** Height (2) ÷ Width (1) = Aspect Ratio.*

NOTE:

*** Consult the tire manufacturer regarding any questions on tire specifications or capabilities.*

TIRES > DESCRIPTION > TIRE > TIRE CHAINS

Refer to the Owner's Manual supplied with the vehicle to determine whether the use of tire chains is permitted on this vehicle.

TIRES > DESCRIPTION > REPLACEMENT TIRES

> *WARNING:*
>
> *Failure to equip the vehicle with tires having adequate speed capability can result in sudden tire failure.*

> *WARNING:*
>
> *In order to maintain the speed capability of the vehicle, replacement tires must have speed ratings equal to or higher than those fitted to the vehicle as original equipment. If tires with lower speed ratings are fitted, the vehicle's handling may be affected and the speed capability of the vehicle may be lowered to the maximum speed capability of the replacement tires. To avoid an accident resulting in severe or fatal injury, consult the tire manufacturer in regards to maximum speed ratings.*

It is recommended that tires equivalent to the original equipment tires be used when replacement is needed.

Failure to use equivalent replacement tires may adversely affect the safety and handling of the vehicle.

The original equipment tires provide a proper combination of many characteristics such as:

- Ride
- Noise
- Handling
- Durability
- Tread life
- Traction
- Rolling resistance
- Speed capability

The use of tires smaller than the minimum tire size approved for the vehicle can result in tire overloading and failure.

Use tires that have the approved load rating for the vehicle and never overload them. Failure to equip the vehicle with tires having adequate speed capability can result in sudden tire failure and loss of

vehicle control.

The use of oversize tires may cause interference with vehicle components. Under extremes of suspension and steering travel, interference with vehicle components may cause tire damage.

TIRES > DESCRIPTION > SPARE TIRE

A compact (temporary) spare tire is standard equipment on this vehicle. A full-size spare is available on some models.

The compact spare tire is designed for emergency use only. The original tire should be repaired or replaced at the first opportunity, then reinstalled. Do not exceed speeds of 80 km/h (50 mph) when using the compact spare tire. Refer to the Owner's Manual for complete details.

TIRES > DIAGNOSIS AND TESTING > TIRE NOISE

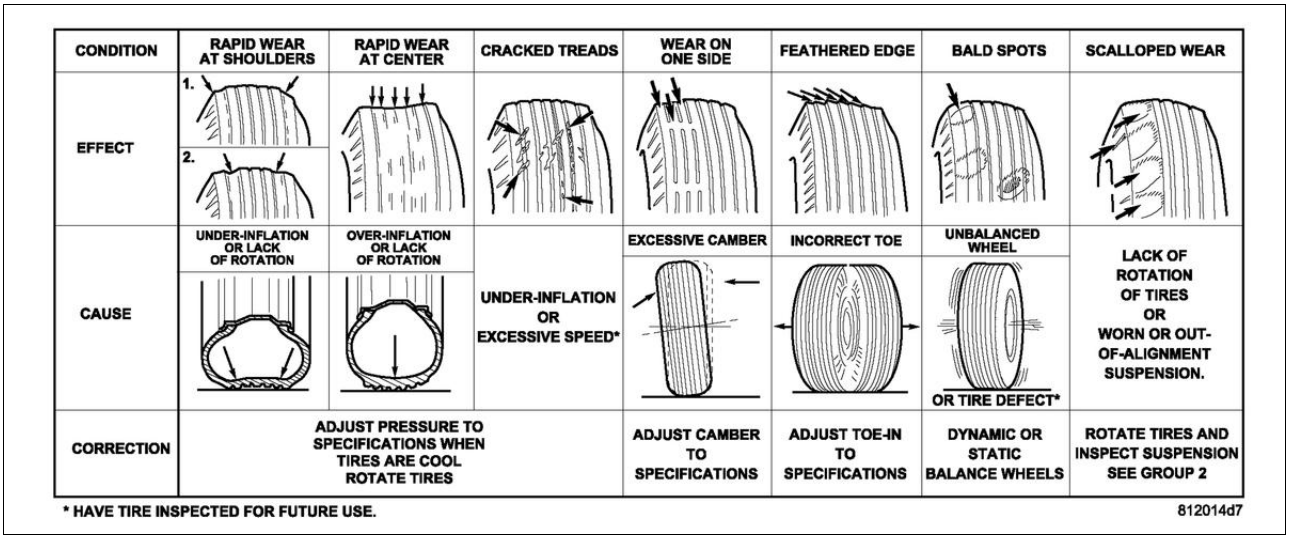
Unusual tire noise can be associated with tire and wheel vibration or irregular tire wear. For vibration issues, refer to DIAGNOSIS AND TESTING . For irregular tire wear issues, refer to TIRES, DIAGNOSIS AND TESTING .

TIRES > DIAGNOSIS AND TESTING > TIRE/VEHICLE LEAD

Refer to DIAGNOSIS AND TESTING .

TIRES > DIAGNOSIS AND TESTING > TIRE WEAR PATTERNS

Fig 1: Identifying Tire Wear Patterns



Courtesy of CHRYSLER GROUP, LLC

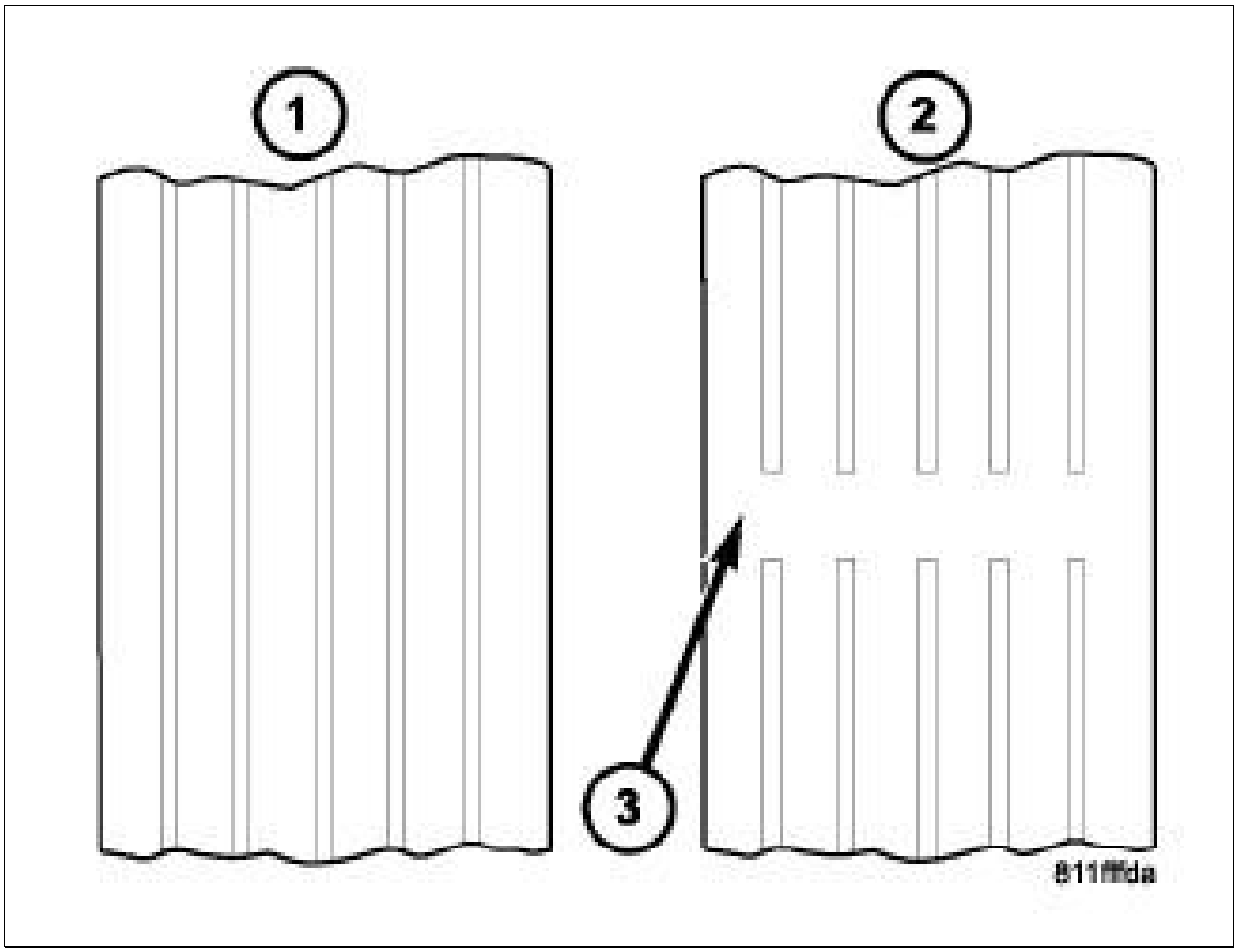
Under inflation will cause wear on the shoulders of tire. Over inflation will cause wear at the center of tire.

Excessive camber causes the tire to run at an angle to the road. One side of tread is then worn more than the other.

Excessive toe-in or toe-out causes wear on the tread edges and a feathered effect across the tread.

TIRES > DIAGNOSIS AND TESTING > TREAD WEAR INDICATORS

Fig 1: Identifying Tread Wear Indicators



Courtesy of CHRYSLER GROUP, LLC

Tread wear indicators are molded into the bottom of the tread grooves. When tread depth is 1.6 mm (1/16 in.), the tread wear indicators will appear as a 13 mm (1/2 in.) band (3).

Tire replacement is necessary when indicators appear in two or more grooves or if localized balding occurs.

TIRES > STANDARD PROCEDURE > TIRE INFLATION PRESSURES

The specified tire pressures have been chosen to provide safe operation, vehicle stability, and a smooth ride. The proper tire pressure specification can be found on the Tire And Loading Information Label provided with the vehicle (usually on the driver's door opening (B-pillar) or rear shutface of driver's door).

A quality air pressure gauge is recommended to check tire air pressure. Tire pressure should be checked cold once per month. Check tire pressure more frequently when the weather temperature varies widely. Tire pressure will decrease when the outdoor temperature drops. After checking the air pressure, replace valve cap finger tight.

Inflation pressures specified on the Tire Inflation Pressure Label are always the cold inflation pressure of the tire. Cold inflation pressure is obtained after the vehicle has not been operated for at least 3 hours, or the vehicle is driven less than one mile after being inoperative for 3 hours. Tire inflation pressures may increase from 2 to 6 pounds per square inch (psi) during operation. Do not reduce this normal pressure buildup.

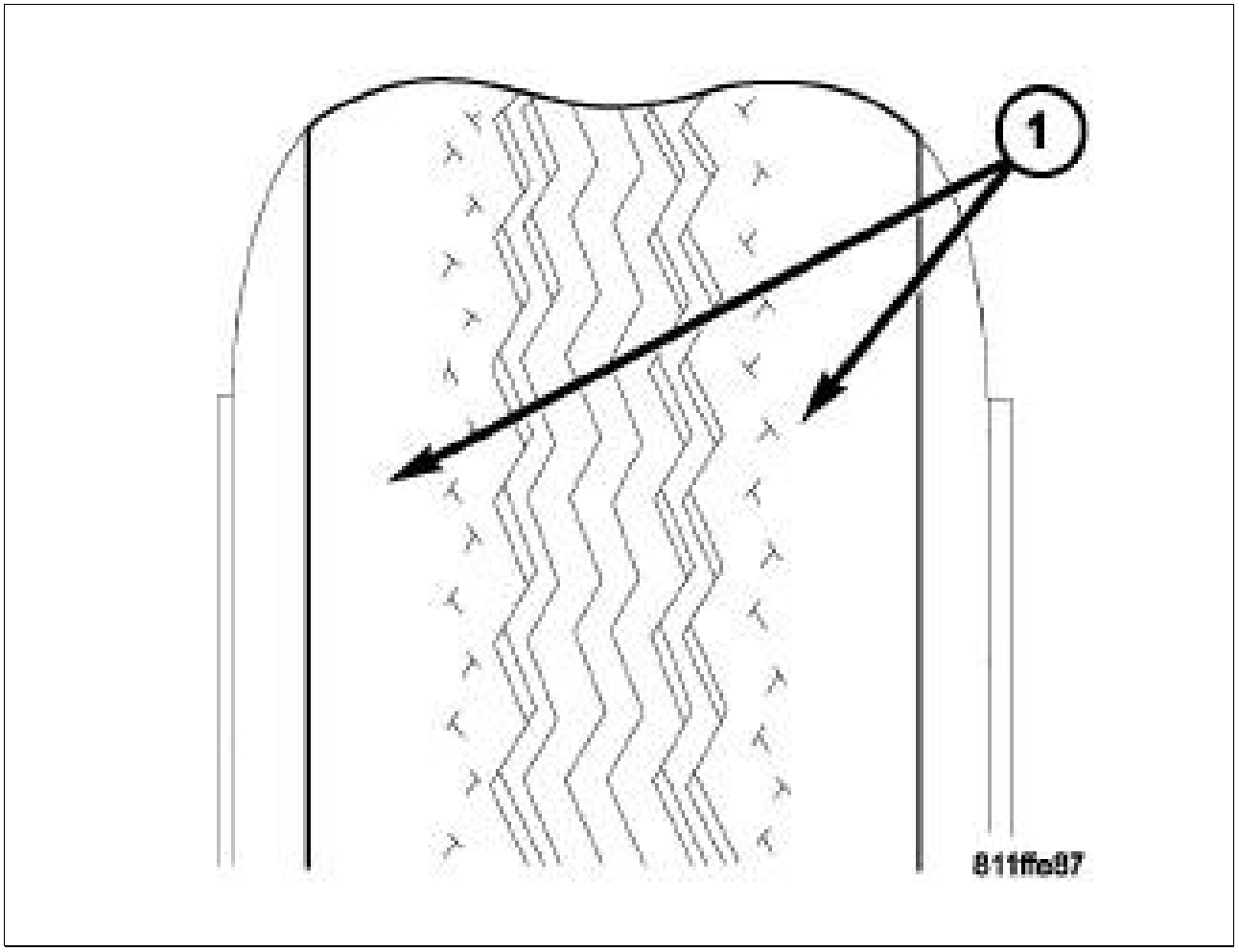
Improper inflation can cause:

- Uneven wear patterns
- Reduced tread life
- Reduced fuel economy
- Unsatisfactory ride
- The vehicle to drift.

WARNING:

Over or Under inflated tires can affect vehicle handling. The tire can fail suddenly, resulting in loss of vehicle control.

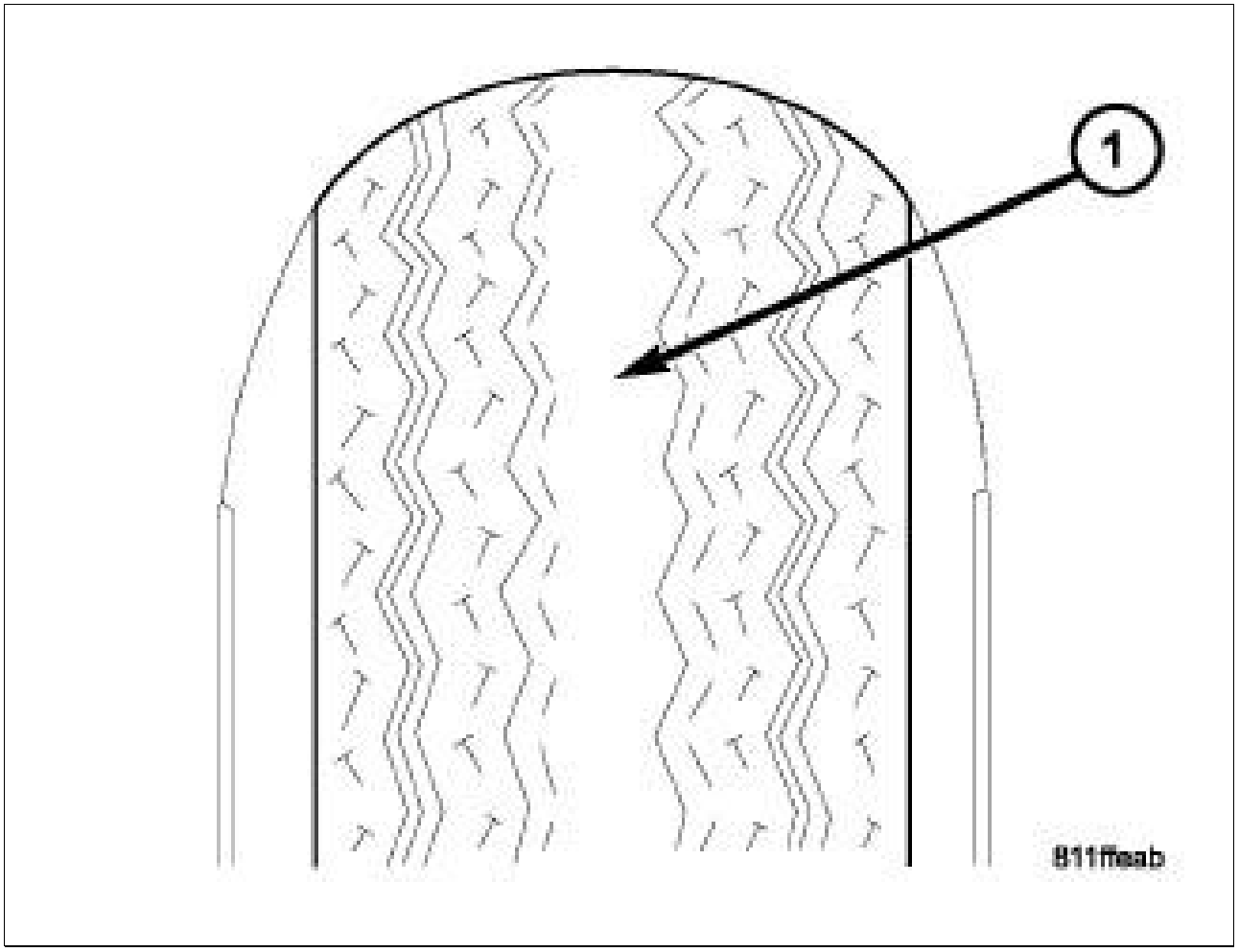
Fig 1: Under Inflation



Courtesy of CHRYSLER GROUP, LLC

Under inflation causes rapid shoulder wear, tire flexing, and can result in tire failure (1).

Fig 2: Identifying Over Inflated Tire

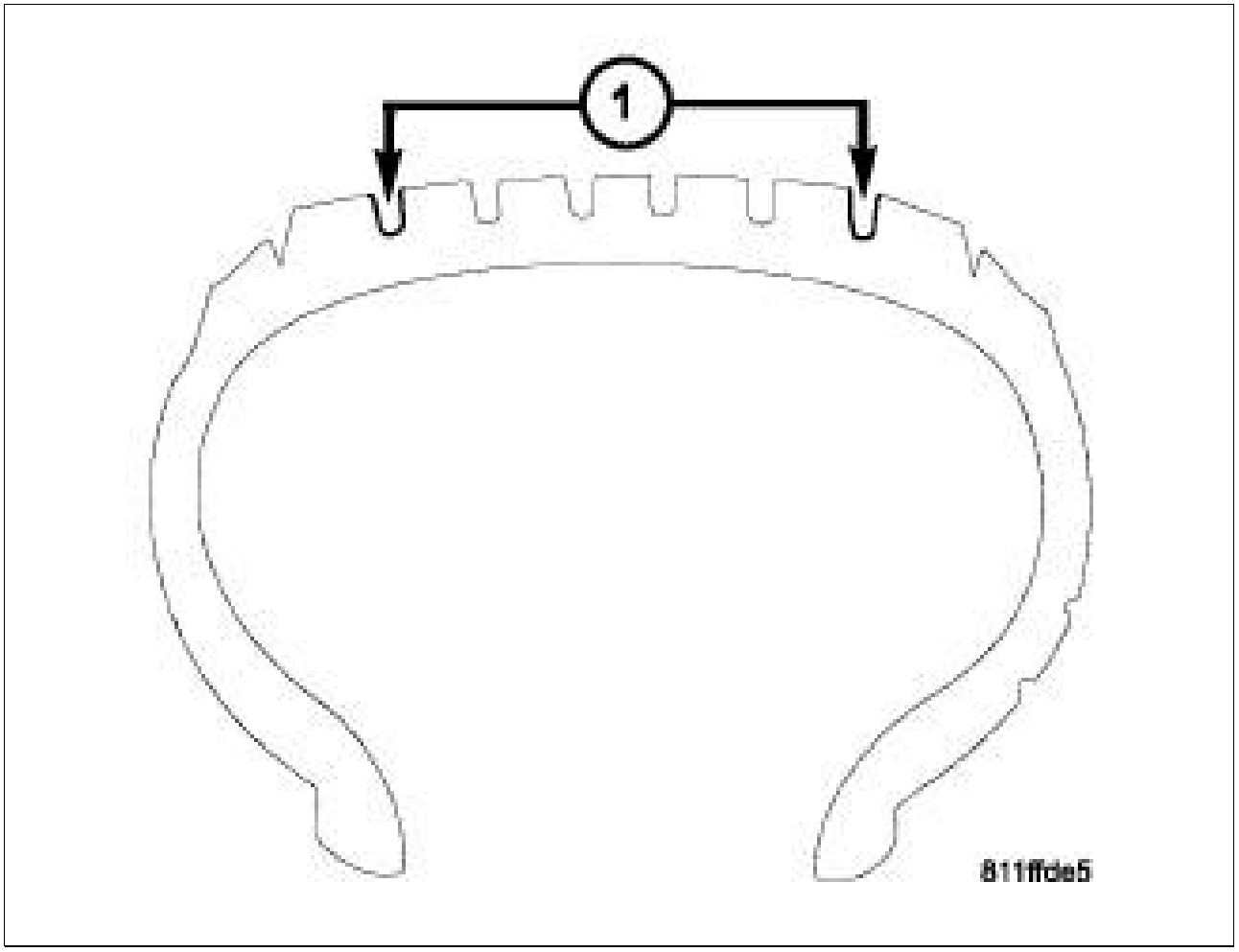


Courtesy of CHRYSLER GROUP, LLC

Over inflation causes rapid center wear and loss of the tire's ability to cushion shocks (1).

TIRES > STANDARD PROCEDURE > TIRE LEAK REPAIRING

Fig 1: Identifying Tire Repair Area



Courtesy of CHRYSLER GROUP, LLC

For proper repairing, a radial tire must be removed from the wheel. Repairs should only be made if the defect, or puncture, is in the tread area (1). The tire should be replaced if the puncture is located in the sidewall.

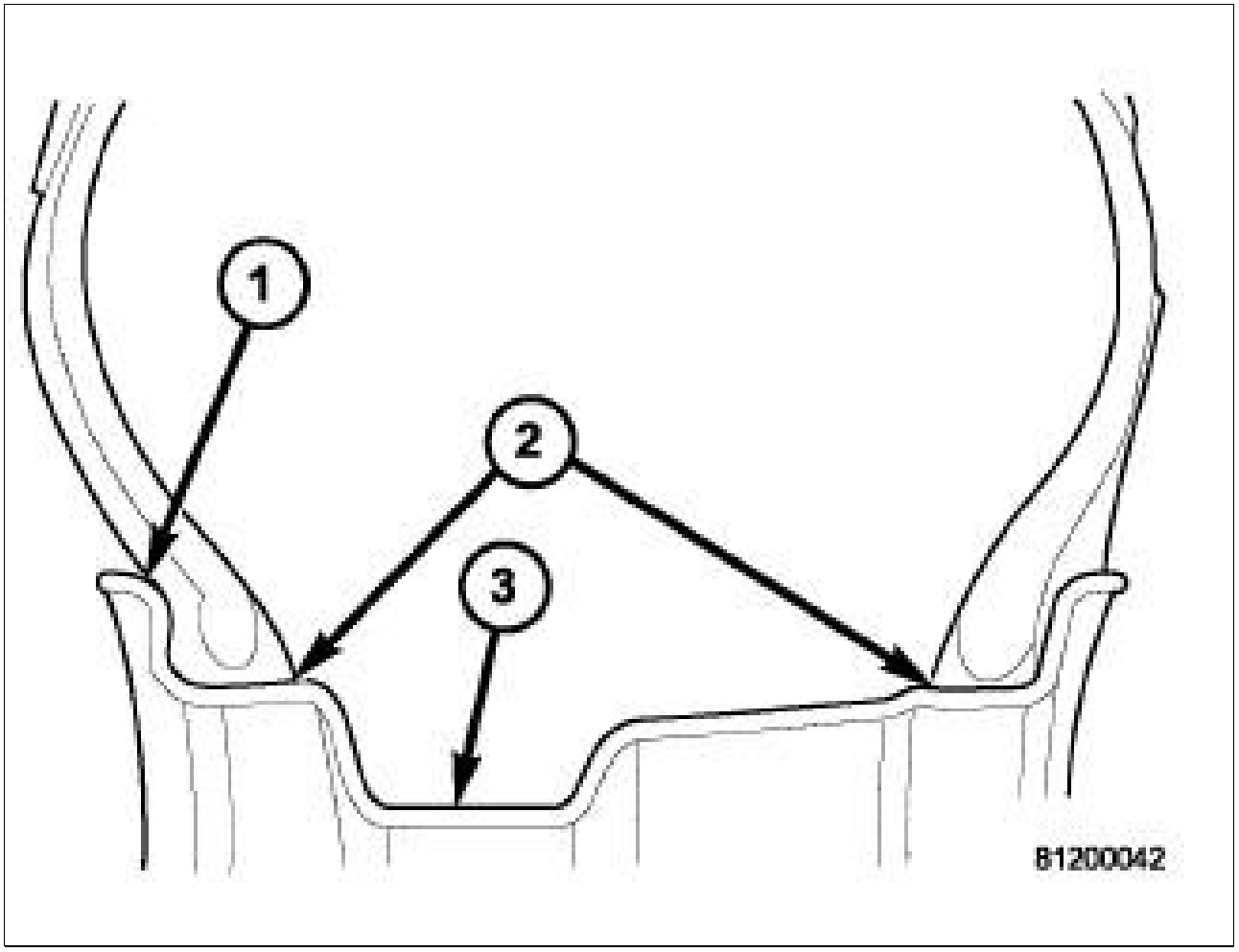
Deflate tire completely before attempting to dismount the tire from the wheel. **Use a lubricant such as a mild soap solution when dismounting or mounting tire.** Use tools free of burrs or sharp edges which could damage the tire or wheel rim.

Before mounting tire on wheel, make sure all rust is removed from the rim bead and repaint if necessary.

Install the wheel on vehicle.

WHEELS > DESCRIPTION > DESCRIPTION

Fig 1: Identifying Wheel/Rim Design



Courtesy of CHRYSLER GROUP, LLC

All vehicles use either steel or cast aluminum drop center wheels. The original equipment wheels are designed for proper operation at all loads up to the specified maximum vehicle capacity.

Every wheel has raised sections between the rim flanges (1) and drop well (3) called safety humps (2). In case of air loss, these raised sections help hold the tire in position on the wheel until the vehicle can be brought to a safe stop. When being installed on the wheel, initial inflation of the tire forces the tire bead over these raised sections into place.

The wheel studs and nuts are designed for specific wheel applications and must be replaced with equivalent parts. Do not use replacement parts of lesser quality or of a substitute design. All aluminum and steel wheels have wheel stud nuts with an enlarged nose. This enlarged nose is necessary to ensure proper retention of the wheels.

WHEELS > DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - WHEEL INSPECTION

Inspect wheels for:

- Excessive runout

- Dents, cracks or irregular bends
- Damaged wheel stud (lug) holes
- Air Leaks

NOTE:

Do not attempt to repair a wheel by hammering, heating or welding.

If a wheel is damaged, an original equipment replacement wheel should be used. When obtaining replacement wheels, they should be equivalent in load carrying capacity. The diameter, width, offset, pilot hole and bolt circle of the wheel should be the same as the original wheel.

WARNING:

Failure to use equivalent replacement wheels may adversely affect the safety and handling of the vehicle.

WARNING:

Replacement with used wheels is not recommended. The service history of the wheel may have included severe treatment or very high mileage. The rim could fail without warning.

WARNING:

FCA US LLC does not recommend that customers use "reconditioned" wheels (wheels that have been damaged and repaired) because they can result in a sudden catastrophic wheel failure which could cause loss of control and result in injury or death. For clarification:

- *Cosmetic refinishing for the purpose of repairing a superficial flaw is an acceptable procedure providing it is limited to paint or clear coat only, the wheel is not modified in any way, and there is no exposure to paint curing heat over 200 degrees Fahrenheit (93 degrees Celsius).*
- *Damaged wheels are those which have been bent, broken, cracked or sustained some other physical damage which may have compromised the wheel structure.*
- *Repaired indicates that the wheel has been modified through bending, welding, heating, straightening, or material removal to rectify damage.*
- *Re-plating of chrome plated wheels is not an acceptable procedure nor is chrome plating of original equipment painted or polished wheels, as this may alter mechanical properties and affect fatigue life.*

WHEELS > CLEANING > CLEANING

All wheels and wheel trim, especially aluminum and chrome plated, should be cleaned regularly using mild soap and water to maintain their luster and to prevent corrosion. Wash them with the same soap solution recommended for the body of the vehicle.

When cleaning extremely dirty wheels, care must be taken in the selection of tire and wheel cleaning chemicals and equipment to prevent damage to the wheels. Mopar® Wheel Treatment or Mopar® Chrome Cleaner is recommended. Any of the "DO NOT USE" items listed below can damage wheels and wheel trim.

DO NOT USE:

- Any abrasive cleaner
- Any abrasive cleaning pad (such as steel wool) or abrasive brush
- Any cleaner that contains an acid which can react with and discolor the chrome surface. **Many wheel cleaners contain acids that can harm the wheel surface.**
- Oven cleaner
- A car wash that uses carbide-tipped wheel cleaning brushes or acidic solutions.