

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:

Fuel Delivery: | Fuel:

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the tire and wheel. Refer to Tire and Wheel Removal and Installation.
3. Inflate the tire to the manufacturer specified pressure as stated on the tire.
4. Submerge the tire/wheel into a water bath in order to locate the leak.
5. Inscribe a mark on the wheel in order to indicate the leak areas.
6. Inscribe a mark on the tire at the valve stem in order to indicate the orientation of the tire to the wheel.
7. Remove the tire from the wheel. Refer to Tire Dismounting and Mounting.

Important: Do not damage the exterior surface of the wheel.

8. Use number 80 grit sandpaper to scuff the inside of the rim surface at the leak area.
9. Use general purpose cleaner such as 3M®, P/N 08984 or equivalent, to clean the leak area.
10. Apply 3 mm (0.12 in) thick layer of adhesive/sealant, GM P/N 1052366 or equivalent, to the leak area.
11. Allow for the adhesive/sealant to dry.
12. Align the inscribed mark on the tire with the valve stem on the wheel.
13. Install the tire to the wheel. Refer to Tire Dismounting and Mounting.
14. Inflate the tire to the manufacturer specified pressure as stated on the tire.
15. Submerge the tire/wheel into a water bath in order ensure the leak is sealed.
16. Balance the tire and wheel. Refer to Tire and Wheel Assembly Balancing - Off Vehicle.
17. Install the tire and wheel. Refer to Tire and Wheel Removal and Installation.
18. Lower the vehicle.

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Finish Damage Evaluation Procedure

Note:

- If the wheels are chrome-plated, do not re-plate or refinish the wheels.
 - If the wheels are polished aluminum, do not refinish the wheels in the dealer environment. Utilize a refinisher that meets manufacturer guidelines.
1. Inspect the wheels for damage from uncoated wheel balance weights or from automatic car wash facilities.
 2. Inspect the wheels for the following conditions:
 - Corrosion
 - Scrapes
 - Gouges
- Verify the damage is not deeper than what sanding can remove.
 - Inspect the wheels for cracks. If a wheel has cracks, discard the wheel.
 - Inspect the wheels for bent rim flanges. If a rim flange is bent, discard the wheel.

Refinishing Procedure

Warning: To avoid serious personal injury when applying any two part component paint system, follow the specific precautions provided by the paint manufacturer. Failure to follow these precautions may cause lung irritation and allergic respiratory reaction.

1. Remove the tire and wheel assembly from the vehicle. Refer to Tire and Wheel Removal and Installation.
 2. Remove the balance weights from the wheel.
 3. Remove the tire from the wheel. Refer to Tire Dismounting and Mounting.
 4. Use a suitable cleaner in order to remove the following contaminants from the wheel:
- Lubricants
 - Wax
 - Dirt

Note:

- Do not re-machine the wheel.
- Do not use chemicals in order to strip the paint from the wheel.
- Use plastic media blasting in order to remove the paint from the wheel.
- If the wheel had a machined aluminum finish, spin the wheel and use sand paper in order to restore the circular machined appearance.

Note: The wheel mounting surface and the wheel nut contact surface must remain free of paint.

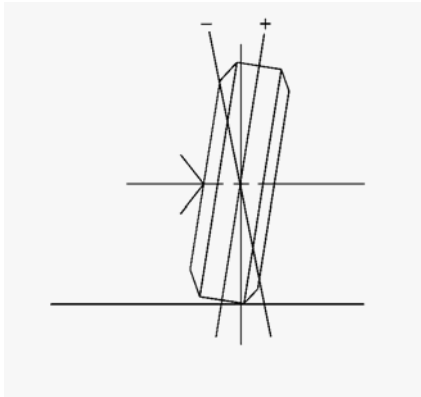
- Mask the wheel mounting surface and the wheel nut contact surface.
- Follow the paint manufacturer's instructions for painting the wheel.
- Unmask the wheel.
- Install a new valve stem.

Note: Use new coated balance weights in order to balance the wheel.

- Install the tire to the wheel. Refer to Tire Dismounting and Mounting.
 - Use a suitable cleaner in order to remove the following contaminants from the wheel mounting surface:
- Corrosion
 - Overspray
 - Dirt
- Install the tire and wheel assembly to the vehicle. Refer to Tire and Wheel Removal and Installation.

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Camber is the tilting of the wheels from the vertical when viewed from the front of the vehicle. When the wheels tilt outward at the top, the camber is positive (+). When the wheel tilts inward at the top, the camber is negative (-). The amount of tilt is measured in degrees from the vertical. Camber settings influence the alignment and the tire wear.

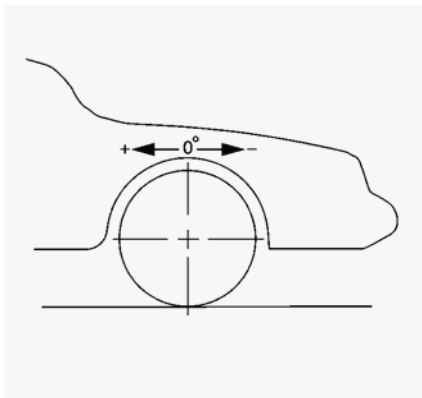
Too much positive camber will result in premature wear on the outside of the tire and cause excessive wear on the suspension parts.

Too much negative camber will result in premature wear on the inside of the tire and cause excessive wear on the suspension parts.

Unequal side-to-side camber of 1 degree or more will cause the vehicle to pull or lead to the side with the most positive camber.

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Caster is the tilting of the uppermost point of the steering axis either forward or backward, when viewed from the side of the vehicle. A backward tilt is negative (-). Caster influences directional control of the steering but does not affect the tire wear. Caster is affected by the vehicle height. It is important to keep the body at its designed height. Overloading the vehicle or a weak or sagging rear spring will affect caster. When the rear of the vehicle is at its designated trim height, the front suspension moves to a more positive caster. If the rear of the vehicle is higher than its designated trim height, the front suspension moves to a less positive caster.

With too little positive caster, steering may be touchy at high speed and wheel returnability may be diminished when coming out of a turn. If one wheel has more positive caster than the other, that wheel will pull toward the center of the vehicle. This condition will cause the vehicle to pull or lead to the side with the less positive caster.

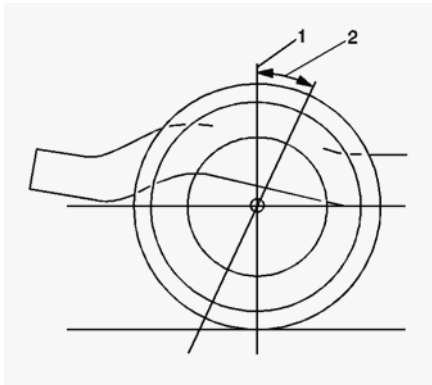
Cross Caster is the difference between the left caster value and the right caster value.

Cross caster = L caster - R caster

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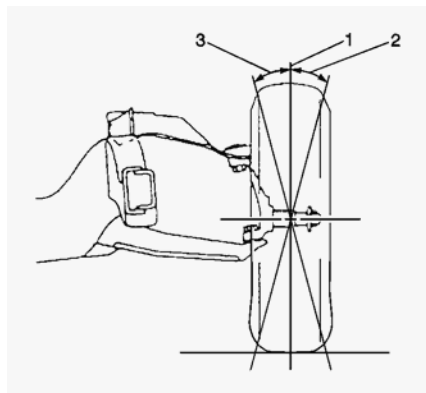
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1. The caster and camber adjustments are made by rotating the front and rear adjuster cam bolt which are located in the lower control arm.



Note: Be sure to compensate for frame angle where required.

2. Determine the caster angle (2).



3. Determine the positive camber (2) or negative camber (3) angle.



4. Loosen the front and rear control arm cam adjustment nuts (1).
5. Adjust the caster and the camber angle by turning the cam bolts until the specifications have been met.

Caution: Refer to Fastener Caution.

Note: When the adjustments are complete, hold the cam bolt in order to ensure the cam bolt position does not change while tightening the nut.

6. Tighten the front and rear adjuster nuts to **186 Y (137 lb ft.)**.
7. Verify that the caster and the camber are still within specifications. Refer to Wheel Alignment Measurement.
8. With the caster and camber in specifications, adjust the toe. Refer to Wheel Alignment - Steering Wheel Angle and/or Front Toe Adjustment.

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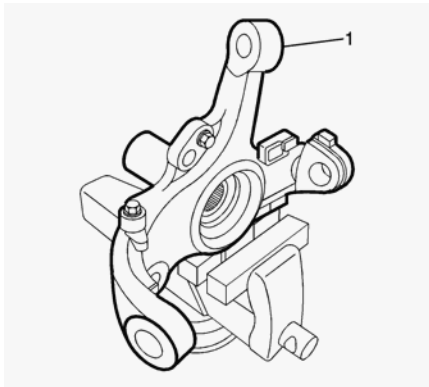
Special Tools

- *CH 50786* Seal Installer
- *DT 29369-1* Bearing Remover
- *EN 45000* Seal Remover
- *GE 8092* Universal Driver
- *GE 23907* Slide Hammer
- *J 36838* Bearing Installer

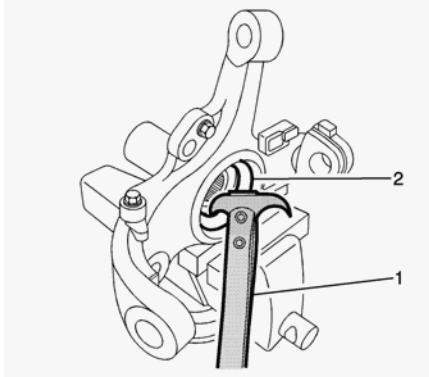
For regional equivalent tools, refer to Special Tools.

Removal Procedure

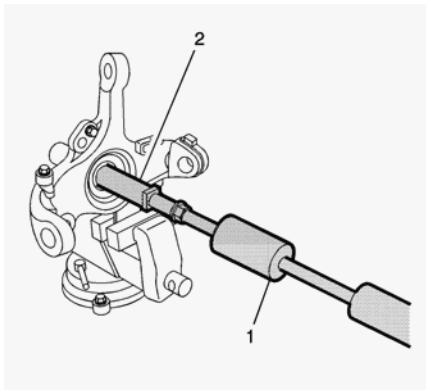
1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the steering knuckle from the vehicle. Refer to Steering Knuckle Replacement.



3. Install the steering knuckle (1) in a soft jawed vise.



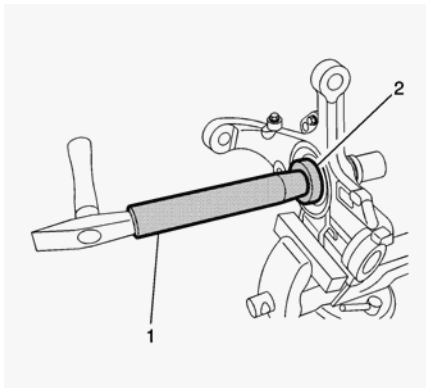
4. Using the *EN 45000* remover (1), remove the seal (2).



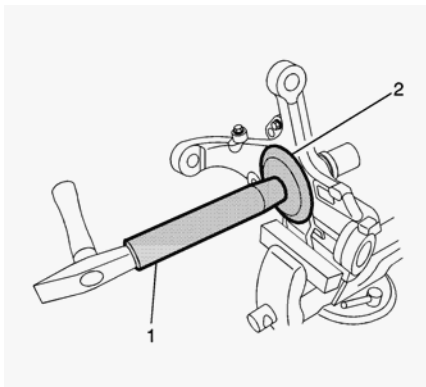
5. Using the *GE 23907* hammer and the *DT 29369-1* remover (2), remove the bearing.

Installation Procedure

1. Position the inner bearing in the steering knuckle



2. Using a hammer the *GE 8092* driver (1) and the *J 36838* installer (2), install the inner bearing in the steering knuckle.



3. Using a hammer the *GE 8092* driver (1) and the *CH 50786* Seal Installer (2), install the seal.
4. Apply grease to the needle bearings before installing the wheel drive shafts.
5. Install the steering knuckle in the vehicle. Refer to Steering Knuckle Replacement.
6. Remove the supports and lower the vehicle.

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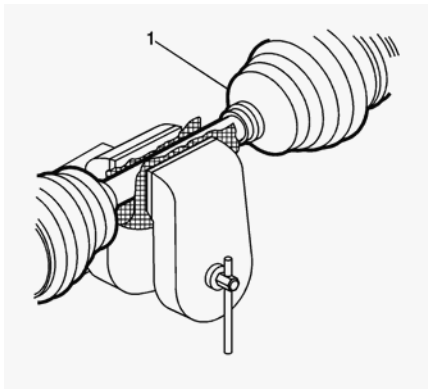
Special Tools

DT 35910 Drive Axle Seal Clamp Pliers

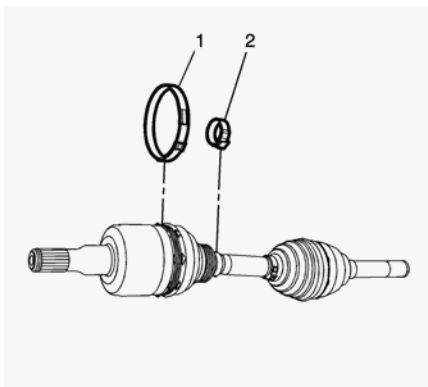
For equivalent regional tools, refer to Special Tools

[Disassemble Procedure](#)

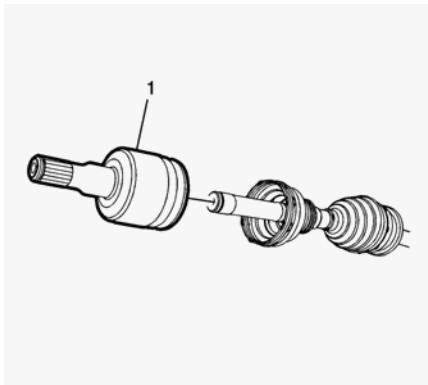
1. Remove the wheel drive shaft from the vehicle. Refer to Front Wheel Drive Shaft Replacement



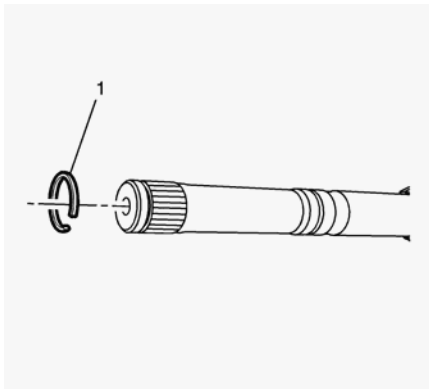
2. Position the wheel drive shaft in a soft jawed vise and clamp securely.



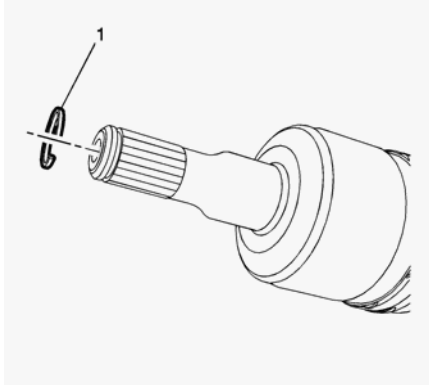
3. Using a flat-bladed tool, remove the boot retaining clamp (2).
4. Using side cutters, remove the boot clamp (1).



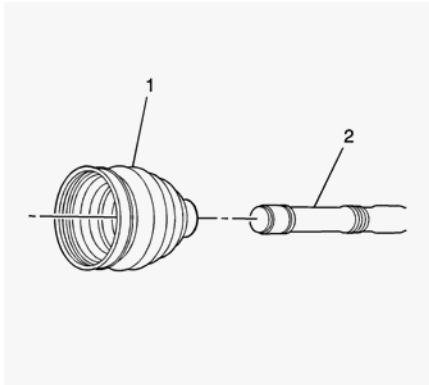
5. Using a soft faced hammer, remove the constant velocity joint (1) from the wheel drive shaft.



6. Remove and discard the snap ring (1), replace with NEW only.

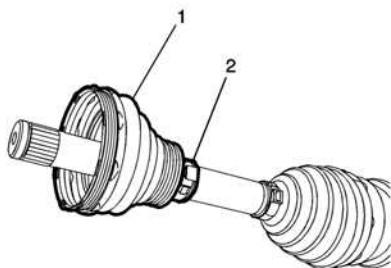


7. Remove and discard the snap ring (1), replace with NEW only.



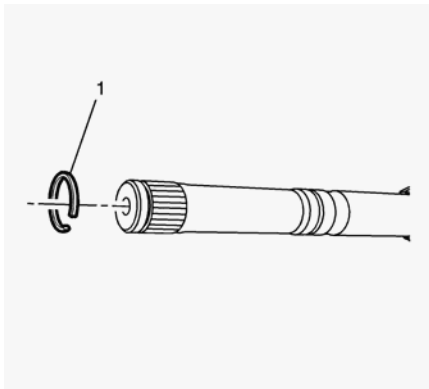
8. Remove the boot (1) from the wheel drive shaft (2).

Assemble Procedure

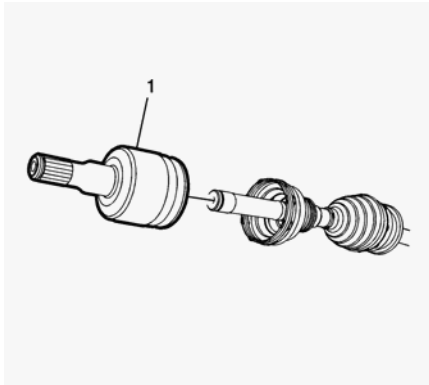


Note: Ensure the boot clamp is positioned correctly in the seal groove.

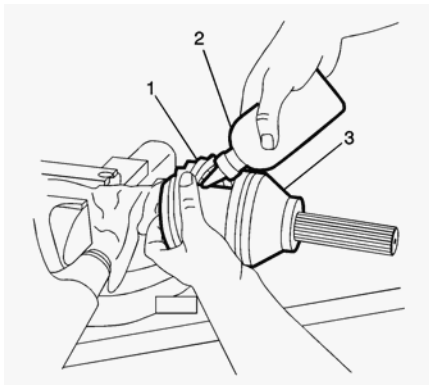
1. Position the boot (1) and the in board clamp (2) on the wheel drive shaft.



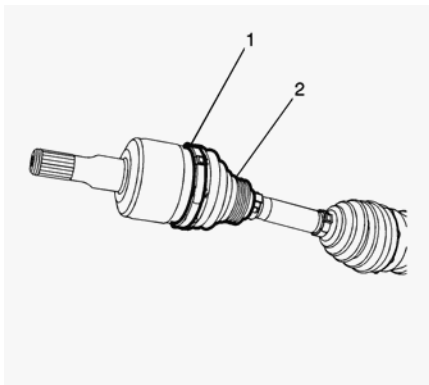
2. Install the NEW snap ring (1).



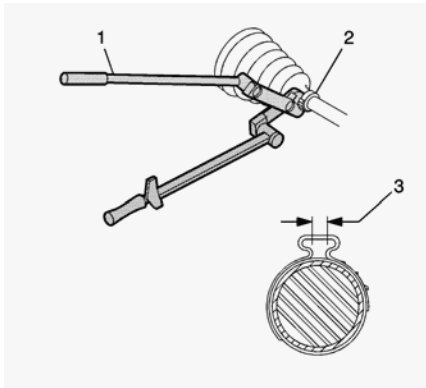
3. Using a hammer, install the constant velocity joint (1) on the wheel drive shaft.



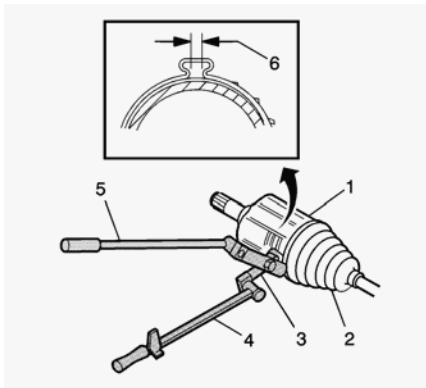
4. Place approximately half of the lubricant (2) inside the CV joint boot (1) and the other half in the CV joint (3).



5. Install the outboard boot clamp (1) and the boot (2) on the constant velocity joint.



6. Using *DT 35910* pliers and a torque wrench (1) , close the boot clamp (2) until the gap (3) measures **2.15 mm (.085 inch)** or **136 Y (100**



7. Using the *DT 35910* pliers (3), breaker bar (5), torque wrench (4), close the clamp until the gap (6) **2.15 mm (.085 inch)** or **176 Y (130 II**
 8. Rotate the housing in a circular motion to distribute the grease in the constant velocity joint.
 9. Install the wheel drive shaft to the vehicle. Refer to Front Wheel Drive Shaft Replacement

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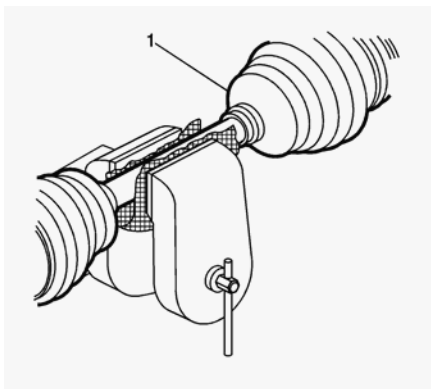
Special Tools

DT 35910 Drive Axle Seal Clamp Pliers

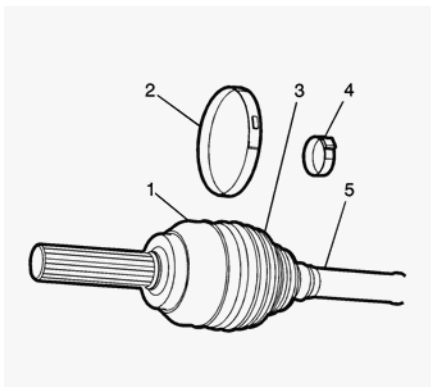
For regional equivalent tools, refer to Special Tools.

[Disassemble Procedure](#)

1. Remove the wheel drive shaft from the vehicle. Refer to Front Wheel Drive Shaft Replacement.

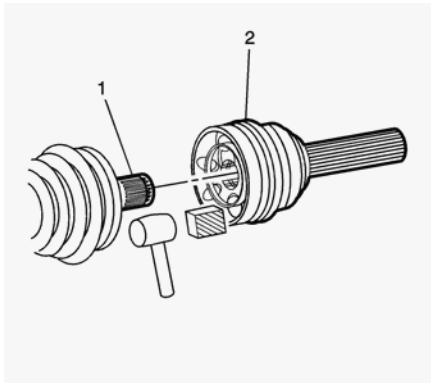


2. Clamp the drive axle shaft in a soft jawed vice.

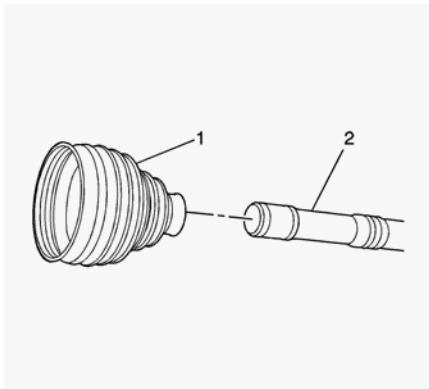


Caution: Do not cut through the wheel drive shaft inboard or outboard boot during service. Cutting through the boot may damage the seal the housing and the tripot or the constant velocity joint bushing. Damage to the sealing surface may lead to water and dirt intrusion and failure of the constant velocity joint.

3. Using a flat-bladed tool, remove the boot clamp (2) from the constant velocity (CV) joint (1) and the boot (3).
4. Using a pair of side cutters, remove and discard the boot clamp (4) from the boot (3) and the wheel drive shaft (5). Replace with NEW clamp.

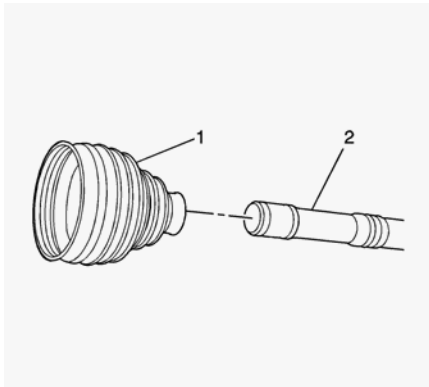


5. Using a block of wood and a hammer, remove the CV joint (2) from the wheel drive shaft (1).

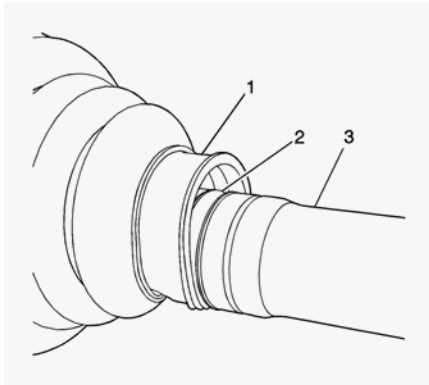


6. Remove the boot (1) from the wheel drive shaft (2).

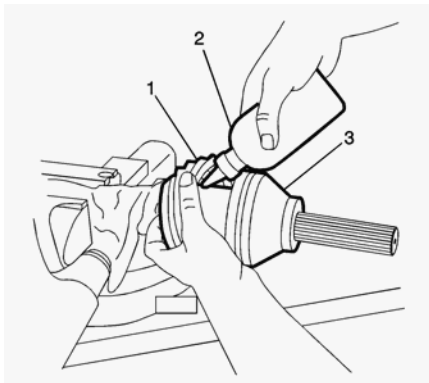
Assemble Procedure



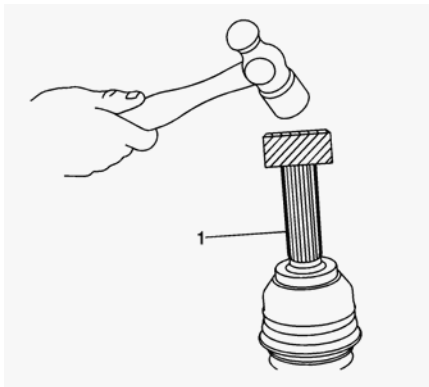
1. Position the boot (1) on the wheel drive shaft (2).



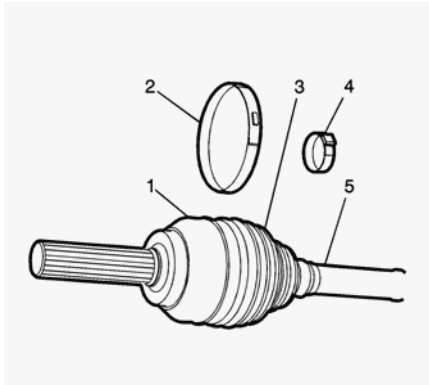
2. Ensure that the boot (1) is properly seated in the groove (2) in the wheel drive shaft (3).



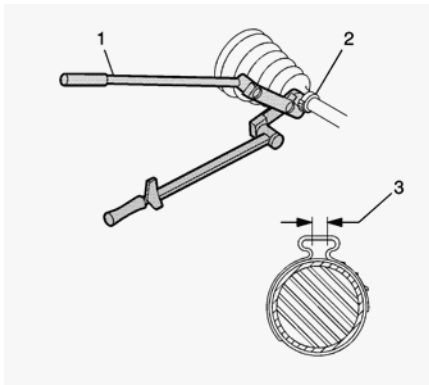
3. Place approximately half the lubricant (2) inside the CV joint boot (1) and the other half in the CV joint (3).



4. Using a block of wood and a hammer, install the CV joint on the wheel drive shaft (1).

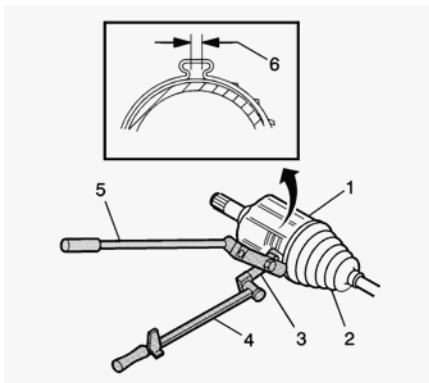


5. Install the inboard boot clamp (4) on the boot (3) and the wheel drive shaft (5).
6. Install the outboard boot clamp (2) on the boot (3) and the CV joint housing (1).



Note: Ensure that the boot clamp is properly positioned around the entire circumference of the boot.

7. Using the DT 35910 pliers (1), close the clamp (2) until the gap (3) to the proper measurement.



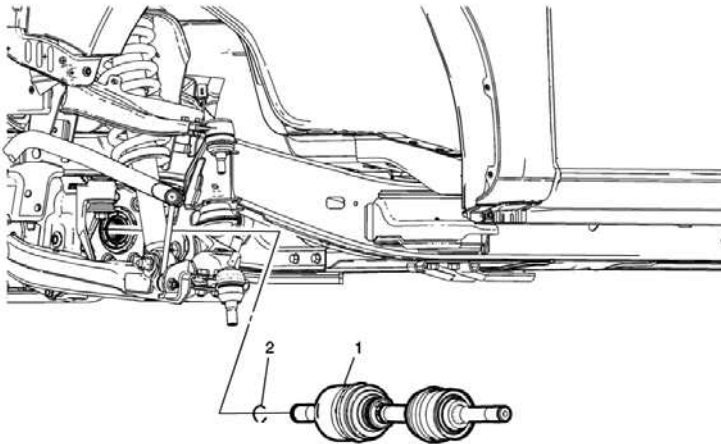
Note: Ensure that the boot clamp is properly positioned around the entire circumference of the boot.

8. Using the DT 35910 pliers (3), breaker bar (5), torque wrench and or a ratchet (4), close the clamp (6) to the proper measurement.
9. Remove the wheel drive shaft from the bench vise.

10. Move the CV joint in a circular motion 4 to 5 times to distribute the lubricant.
11. Install the wheel drive shaft in the vehicle. Refer to Front Wheel Drive Shaft Replacement.

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Front Wheel Drive Shaft Replacement

Callout	Component Name
Preliminary Procedure	

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation.

Front Wheel Drive Shaft

Procedure

1. **Note:** It is not necessary to separate the brake caliper from the mounting bracket for this procedure. Remove as a assembly.
 1. Remove steering knuckle from the vehicle. Refer to Steering Knuckle Replacement.
 2. Apply a small amount of grease to the needle bearings before installing the wheel drive shaft.
 3. Check the fluid level of the front drive axle and fill if needed. Refer to Front Axle Lubricant Level Inspection.

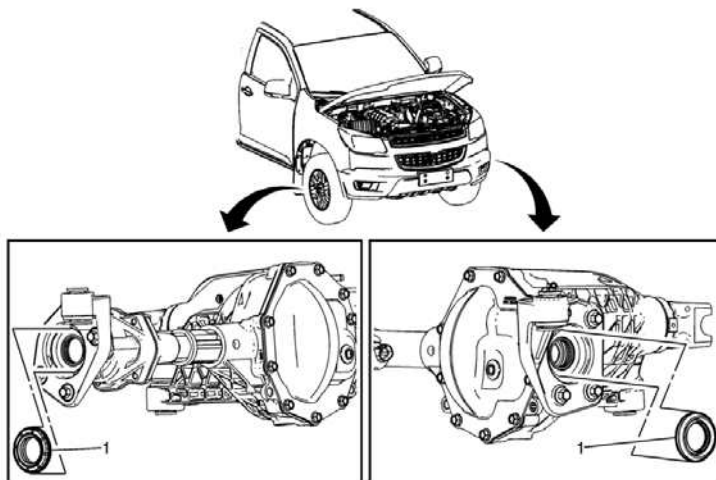
Front Wheel drive Shaft Snap Ring

2. **Procedure**

Remove and discard the snap ring. DO NOT reuse, replace with NEW only.

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Front Wheel Drive Shaft Seal Replacement

Callout

Component Name

Preliminary Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the appropriate (right or left) wheel drive shaft from the vehicle. Refer to Front Wheel Drive Shaft Replacement.

Front Wheel Drive Shaft Seal

Procedure

1. Using the *DT29369-1* remover and the *GE 23907-1* hammer, remove the front wheel drive shaft seal.
2. Using the *DT 45225* installer and the *DT 8092* handle, install the front wheel drive shaft seal.

1

Special Tools

- *DT 8092* Driver Handle
- *DT 29369-1* Bushing and Bearing Remover
- *DT 45225* Axle Seal Installer
- *GE 23907-1* Slide Hammer

For regional equivalent tools, refer to Special Tools.

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Special Tools

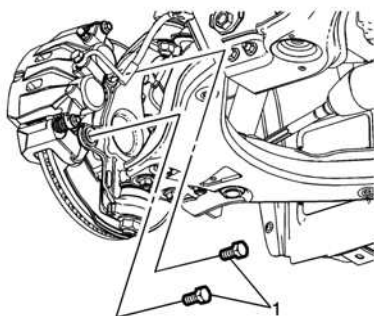
- CH-50787 ABS Sensor Rotor Remover
- CH-50788 ABS Sensor Rotor Installer

For equivalent regional tools refer to Special Tools.

[Removal Procedure](#)

Warning: Refer to Brake Dust Warning.

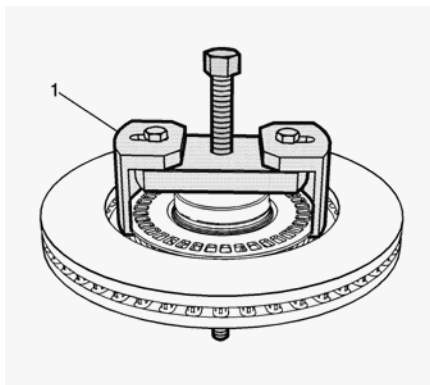
1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the front tire and wheel assembly. Refer to Tire and Wheel Removal and Installation.



3. Remove the front caliper bracket bolts (1).
4. Without disconnecting the brake caliper hose, remove the brake caliper and bracket assembly and support with heavy mechanics wire

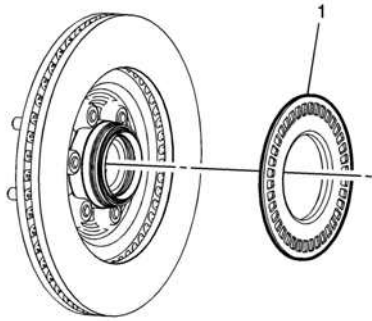
Note: It is not necessary to separate the wheel hub from the brake rotor.

5. Remove the brake rotor and hub assembly. Refer to Front Wheel Hub, Bearing, and Seal Replacement.



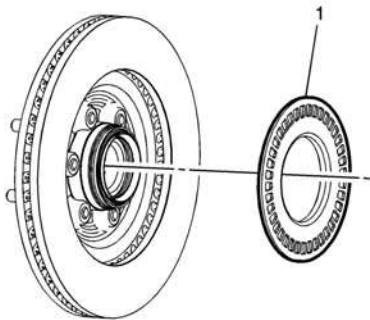
6. Assemble the CH-50787 ABS Sensor Rotor Remover (1) to the front wheel speed sensor reluctor wheel.

- Place the cup squarely over the wheel hub.
- Assemble the remover hooks under the front wheel speed sensor reluctor wheel.

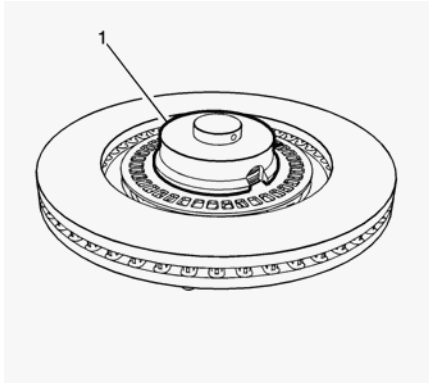


- Slowly tighten the forcing screw of the *CH-50787* ABS Sensor Rotor Remover and remove the front wheel speed sensor reluctor wheel (1) and brake rotor assembly.

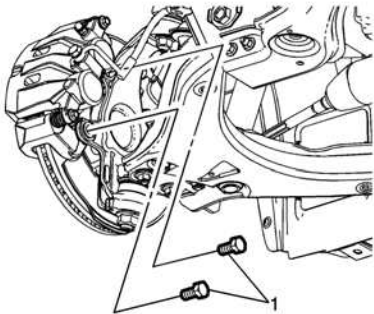
Installation Procedure



1. Place the wheel speed sensor reluctor wheel (1) squarely on to the wheel hub and brake rotor assembly.



2. Using the *CH-50788* ABS Sensor Rotor Installer (1) press the front wheel speed sensor reluctor wheel on to the front brake rotor and hub until fully seated.
3. Install the brake rotor and hub assembly. Refer to Front Wheel Hub, Bearing, and Seal Replacement.
4. Install the brake caliper and bracket assembly to the suspension knuckle.



Caution: Refer to Fastener Caution.

5. Install the front caliper bracket bolts (1) and tighten to **225 Y (166 lb ft)**.
6. Install the front tire and wheel assembly. Refer to Tire and Wheel Removal and Installation.

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The factory installed tires are designed to operate satisfactorily with loads up to and including the full rated load capacity when these tires are inflated to the recommended pressures.

The following factors have an important influence on tire life:

- Correct tire pressures
- Correct wheel alignment
- Proper driving techniques
- Tire rotation

The following factors increase tire wear:

- Heavy cornering
- Excessively rapid acceleration
- Heavy braking

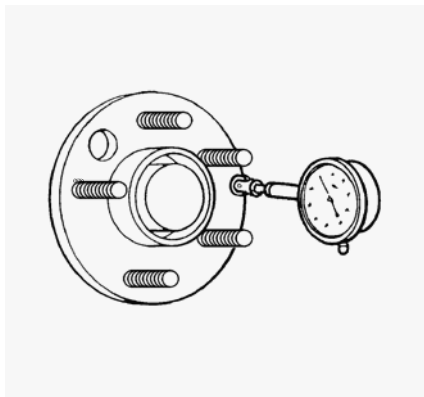
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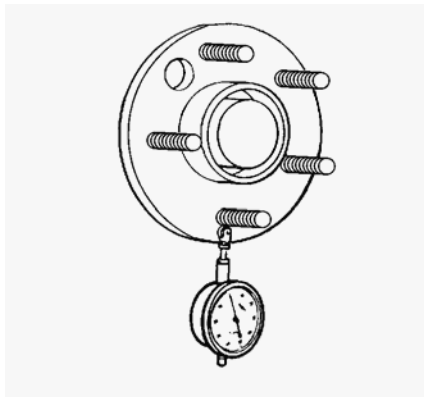
Special Tools

GE-8001 Dial Indicator Set , or equivalent

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Mark the location of the wheels to the wheel studs and mark the specific vehicle position on each tire and wheel – LF, LR, RF, RR.
3. Remove the tire and wheel assemblies from the vehicle. Refer to Tire and Wheel Removal and Installation.
4. Remove the brake rotors and/or brake drums from the vehicle. Clean the mounting surfaces of the brake rotors, the brake drums, if equipped hub/axle flanges of any loose debris, rust, and corrosion.



5. Position the GE-8001 Dial Indicator Set , or equivalent, on the machined surface of the wheel hub/axle flange outside of the wheel studs.
6. Rotate the hub one complete revolution in order to find the low spot.
7. Set the GE-8001 Dial Indicator Set , or equivalent, to zero at the low spot.
8. Rotate the hub one more complete revolution and measure the total amount of wheel hub/axle flange runout.
Specification – Guideline
Wheel hub/axle flange runout tolerance guideline: 0.132 mm (0.005 in)
9. If the runout of the wheel hub/axle flange IS within specification and the vehicle is equipped with wheel studs, proceed to step 13.
10. If the runout of the wheel hub/axle flange IS within specification and the vehicle is equipped with wheel bolts, proceed to step 19.
11. If the runout of the wheel hub/axle flange is marginal, the wheel hub may or may not be the source of the disturbance.
12. If the runout of the wheel hub/axle flange is excessive, replace the wheel hub/axle flange. Measure the runout of the new wheel hub/axle flange.



13. Position the GE-8001 Dial Indicator Set , or equivalent, in order to contact the wheel mounting studs.
Measure the stud runout as close to the flange as possible.
14. Turn the hub one complete revolution to register on each of the wheel studs.
15. Zero the GE-8001 Dial Indicator Set , or equivalent, on the lowest stud.
16. Rotate the hub one more complete revolution and measure the total amount of wheel stud – stud circle – runout.
Specification – Guideline
Wheel stud runout tolerance guideline: 0.254 mm (0.010 in)
17. If the runout of the wheel studs – stud circle – is marginal, the wheel studs may or may not be contributing to the disturbance.
18. If the runout of the wheel studs – stud circle – is excessive, replace the wheel studs as necessary. Measure the runout of the new wheel studs.
19. Inspect the threads and the tapered seat portion on each of the wheel bolts for damage.
20. Wheel bolts exhibiting damaged threads and/or damaged tapered seats require replacement.
21. Place the threaded portion of each wheel bolt along a straight edge to inspect for straightness.

22. Wheel bolts that are not straight require replacement.

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

At a constant highway speed on a typical straight road, lead/pull is the amount of effort required at the steering wheel to maintain the vehicle's straight path.

Important: Vehicles will tend to lead/pull in the direction of the road slope as part of normal operation.

Lead/pull is usually caused by the following factors:

- Road slope
- Variability in tire construction
- Wheel alignment (front cross caster and camber)
- Unbalanced steering gear
- Electronic Power Steering (EPS) steering position and torque sensors not calibrated correctly, if equipped.

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Fuel Delivery: | **Fuel:**

Ideally, the scrub radius is as small as possible. Normally, the SAI angle and the centerline of the tire and the wheel intersect below the road surface, causing a positive scrub radius. With struts, the SAI angle is much larger than the long arm/short arm type of suspension. This allows the SAI angle to intersect the camber angle above the road surface, forming a negative scrub radius. The smaller the scrub radius, the better the directional stability. Installing aftermarket wheels that have additional offset will dramatically increase the scrub radius. The newly installed wheels may cause the centerline of the tires to move further away from the spindle. This will increase the scrub radius.

A large amount of scrub radius can cause severe shimmy after hitting a bump. Four-wheel drive vehicles with large tires use a steering damper to compensate for an increased scrub radius. Scrub radius is not directly measurable by the conventional methods. Scrub radius is projected geometrically by engineers during the design phase of the suspension.

2013 Chevrolet Colorado

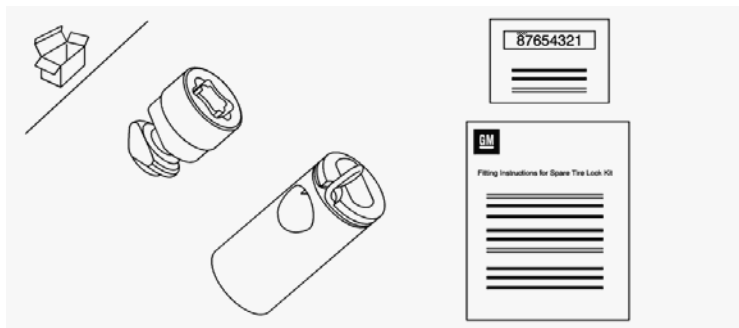
Submodel: | **Engine Type:** | **Liters:**
Fuel Delivery: | **Fuel:**

Setback applies to both the front and the rear wheels. Setback is the amount that one wheel may be aligned behind the other wheel. Setback may be the result of a road hazard or a collision. The first clue is a caster difference from side-to-side of more than 1 degree.

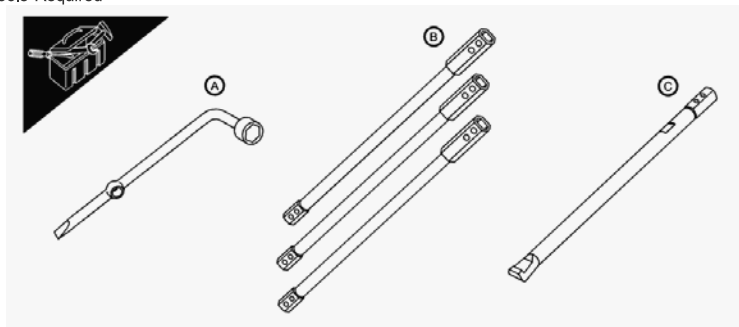
2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

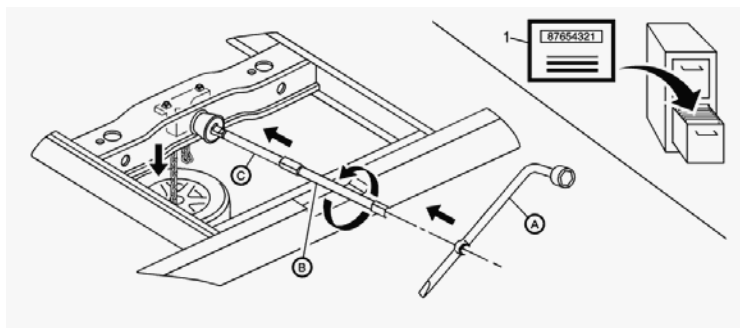
Kit Contents



Tools Required

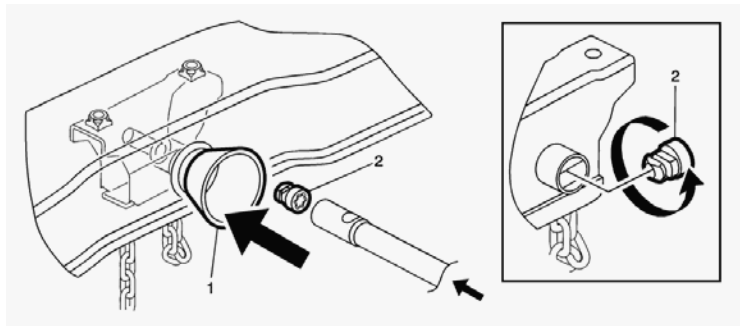


Procedure

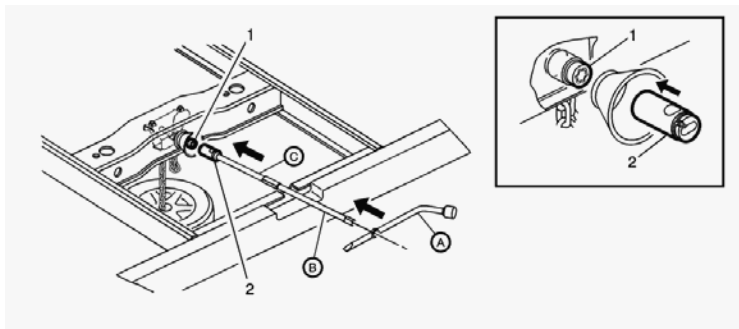


Note: Store the enclosed key I.D. code card (1) in a safe place for ordering a replacement key.

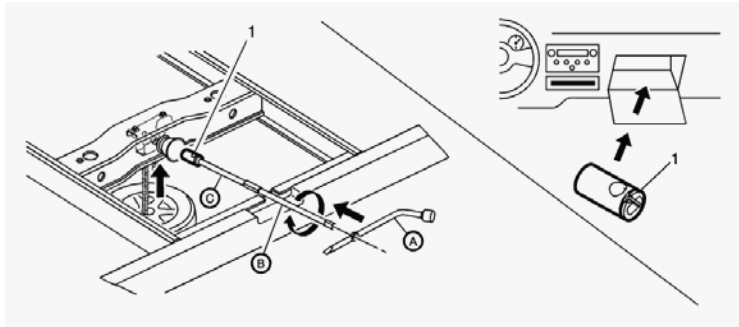
1. Lower the spare tire (according to your vehicle owners manual) using the jack tools supplied with the vehicle (A, B, C).



2. With the spare tire lowered, position yourself under the bed of the truck to locate the drive shaft location inside the cone-shaped opening. The spare tire lock (2) is designed to fit into the rectangular cavity.



3. Connect the special key (2) supplied with the lock to the vehicle's jack extension tools (A, B, C). Insert the lock (1) into the key until the patterns fit together. Push assembly tools with lock (1) and key (2) into the drive shaft opening and rotate clockwise to fully seat lock in



4. To raise the spare tire, insert the key (1) and jack extension tools (A, B, C) until the key engages the mating lock pattern. Rotate the jack extension tools (A) clockwise to raise the spare tire fully into the stowed position according to the vehicle owner's manual. Remove the special key (1) from the vehicle's glove box. Return the jack tools to their proper stored location.

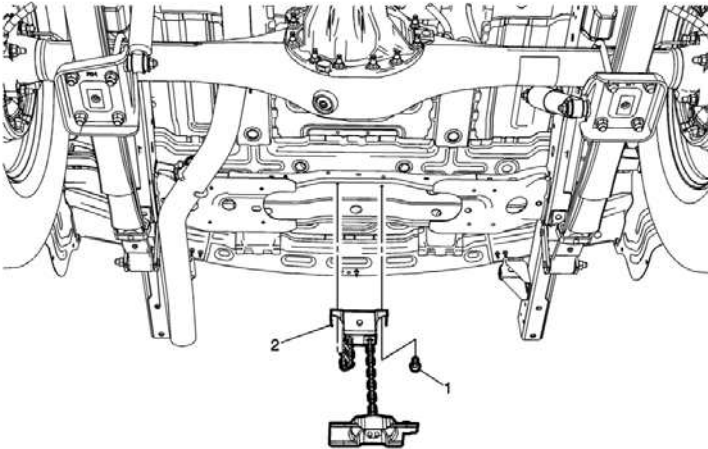
Note: To place an order for a spare or replace a lost key, contact:

- Tecnofix Com. e Tecnologia em Dispositivos de Segurança
 AV. Junta Mizumoto, 307 Butantã-São Paulo, SP - 05537-070
 Phone/fax: 11 3739.08.44
 E-mail: contato@tecnofixbrasil.com.br
- McGard Japan G.K.
 7th Floor, Poruto Koike Building
 5-2 Shintoshin, Chuo-Ward, Saitama City, Saitama Prefecture, Japan 330-0081
 E-mail: info.japan@mcard.com

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:

Fuel Delivery: | Fuel:

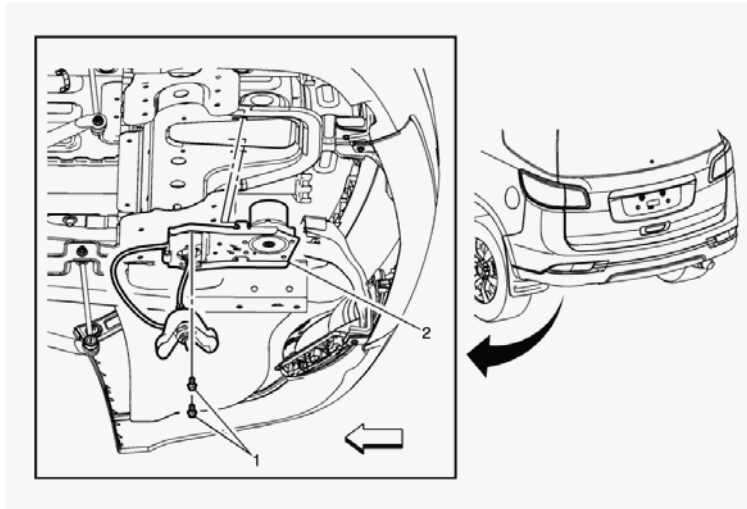


Spare Wheel Carrier Hanger Replacement

Callout	Component Name
Preliminary Procedure	
1.	Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2.	Remove the spare tire.
	Spare Wheel Carrier Hanger Bolt (Qty: 2)
	Caution: Refer to Fastener Caution.
1	Tighten
	22 Y (16 lb ft)
2	Spare Wheel Carrier Hanger

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:



Spare Wheel Carrier Hanger Replacement

Callout

Component Name

Preliminary Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the spare tire.

Spare Wheel Carrier Hanger Bolt (Qty: 2)

Caution: Refer to Fastener Caution.

1

Tighten

22 Y (16 lb ft)

2

Spare Wheel Carrier Hanger

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

Tools Required

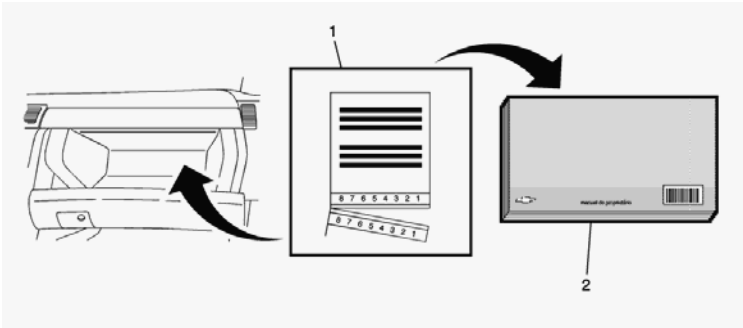
Torque wrench

Installation

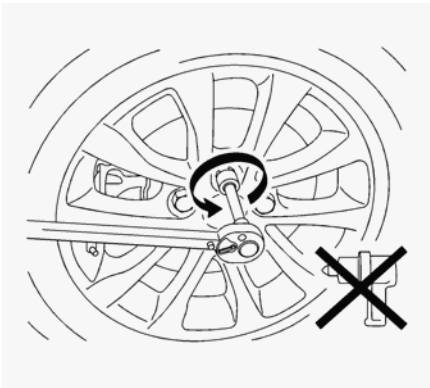
Kit Contents

Qty	Description
4	Wheel Lock
2	Wheel Lock Key
1	Installation Manual

Installation Procedure



1. Remove the identification label (1) from packing; attach it to the owner's guide (2) and store it in a safe place.



2. Using a wheel lock key along with the vehicle wheel wrench, remove only one nut of each wheel and its cap (if equipped).

Note:

- The wheel lock procedure is valid for all Chevrolet vehicles, varying only the installation kit for each vehicle.
- To avoid damaging the wheel locks, do not use pneumatic gun.



- Note:** So as to avoid damaging the wheel locks, do not use pneumatic gun.



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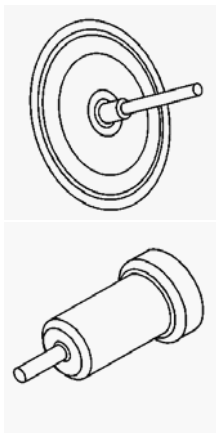


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2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

Illustration



Tool Number/ Description

CH 41013

J 41013

Rotor Resurfacing kit

CH 42450—A

J 42450—A

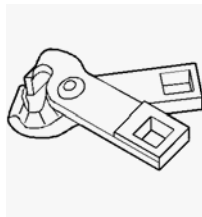
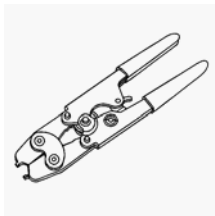
Wheel Hub Resurfacing Kit

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:

Fuel Delivery: | Fuel:

Illustration



Tool Number/ Description

DT 35910

CH 804

J 35910

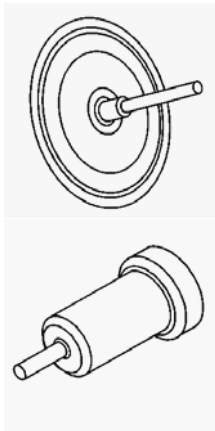
MKM 804

Wheel Drive Shaft Clamping Pliers

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

Illustration



Tool Number/ Description

CH 41013

J 41013

Rotor Resurfacing kit

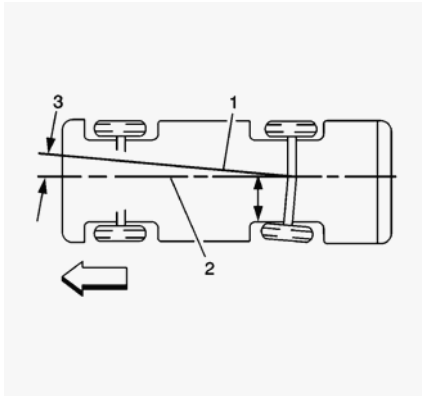
CH 42450—A

J 42450—A

Wheel Hub Resurfacing Kit

2013 Chevrolet Colorado

Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:



The front wheels aim or steer the vehicle. The rear wheels control tracking. This tracking action relates to the thrust angle (3). The thrust angle is the angle the rear wheels take. Ideally, the thrust angle is geometrically aligned with the body centerline (2).

In the illustration, toe-in is shown on the left rear wheel, moving the thrust line (1) off center. The resulting deviation from the centerline is the thrust an

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Warning: Failure to adhere to the following precautions before tire balancing can result in personal injury or damage to components:

- Clean away any dirt or deposits from the inside of the wheels.
- Remove any stones from the tread.
- Wear eye protection.
- Use coated weights on aluminum wheels.

Tire and Wheel Assembly Balancer Calibration

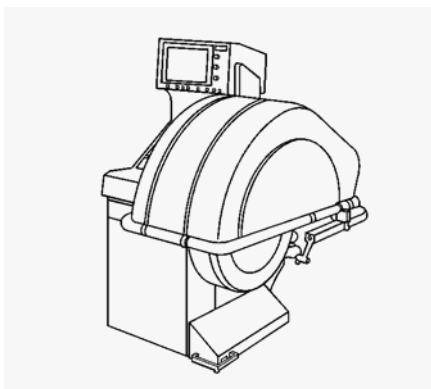
Tire and wheel balancers can drift out of calibration over time, or can become inaccurate as a result of heavy use. There will likely not be any v that a calibration problem exists. If a balancer is not calibrated within specifications, and a tire and wheel assembly is balanced on that machin may actually be imbalanced.

Tire and wheel assembly balancer calibration should be checked approximately every 2 weeks, if the machine is used frequently, and/or when readings are questionable.

Tire and Wheel Assembly Balancer Calibration Test

Note: If the balancer fails any of the steps in this calibration test, the balancer should be calibrated according to the manufacturer's instructions cannot be calibrated, contact the manufacturer for assistance.

Inspect the calibration of the tire and wheel assembly balancer according to the manufacturer's recommendations, or perform the following test.



1. Spin the balancer without a wheel or any of the adapters on the shaft.
 2. Inspect the balancer readings.
Specification
Zero within 7 g ($\frac{1}{4}$ oz)
 3. If the balancer is within the specification range, balance a tire and wheel assembly – that is within radial and lateral runout tolerances - using the same balancer.
 4. After the tire and wheel assembly has been balanced, add an 85 g (3 oz) test weight to the wheel at any location.
 5. Spin the tire and wheel assembly again. Note the readings.
- In the static and dynamic modes, the balancer should call for 85 g (3 oz) of weight, 180 degrees opposite the test weight.
 - In the dynamic mode, the weight should be called for on the flange of the wheel opposite the test weight.
 - With the assembly imbalanced to 85 g (3 oz), cycle the balancer 5 times.
 - Inspect the balancer readings:
Specification
Maximum variation: 7 g ($\frac{1}{4}$ oz)
 - Index the tire and wheel assembly on the balancer shaft, 90 degrees from the previous location.
 - Cycle the balancer with the assembly at the new location.
 - Inspect the balancer readings:
Specification
Maximum variation: 7 g ($\frac{1}{4}$ oz)
 - Repeat steps 8 through 10 until the tire and wheel assembly has been cycled and checked at each of the 4 locations on the balancer she

Tire and Wheel Assembly Balancing Guidelines

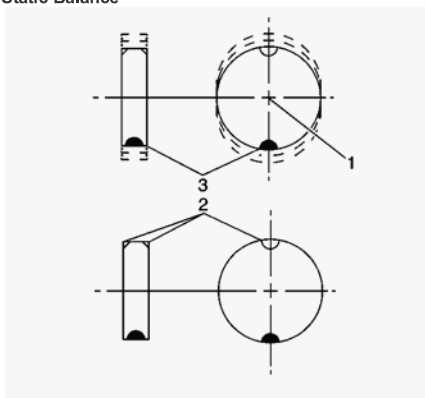
Note: Tire and wheel assemblies which exhibit excessive runout can produce vibrations even if the assemblies are balanced.

It is strongly recommended that the tire and wheel assembly runout be measured and corrected if necessary BEFORE the assemblies are bala

If the runout of the tire and wheel assemblies has not yet been measured, refer to Tire and Wheel Assembly Runout Measurement - Off Vehicle proceeding.

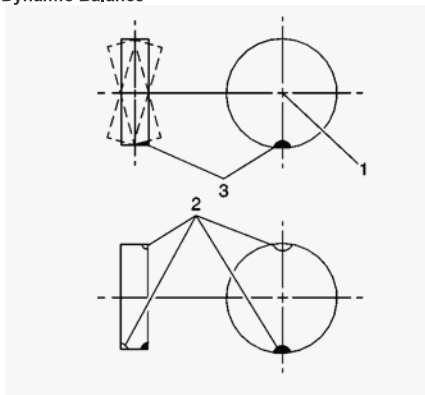
There are 2 types of tire and wheel balance:

Static Balance



Static balance is the equal distribution of weight around the wheel circumference. The wheel balance weights (2) are positioned on the wheel in effects of a heavy spot (3). Wheels that have static imbalance can produce a bouncing action called tramp.

Dynamic Balance



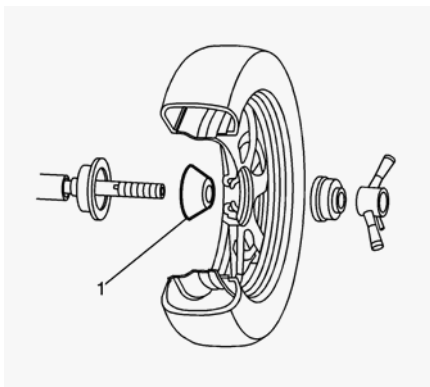
Dynamic balance is the equal distribution of weight on each side of the tire and wheel assembly centerline. The wheel balance weights (2) are positioned on the wheel in order to offset the effects of a heavy spot (3). Wheels that have dynamic imbalance have a tendency to move from side to side and are called shimmy.

Most off-vehicle balancers are capable of checking both types of balance simultaneously.

As a general rule, most vehicles are more sensitive to static imbalance than to dynamic imbalance; however, vehicles equipped with low profile high performance tires and wheels are susceptible to small amounts of dynamic imbalance. As little as 14–21 g ($\frac{1}{2}$ – $\frac{3}{4}$ oz) imbalance is capable of causing vibration in some vehicle models.

Balancing Procedure

Note: When balancing tire and wheel assemblies, use a known good, recently calibrated, off-vehicle, two-plane dynamic balancer set to the fine available.



Note: Carefully follow the wheel balancer manufacturer's instructions for proper mounting of the center cone (1).

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Mark the location of the wheels to the wheel studs and mark the specific vehicle position on each tire and wheel – LF, LR, RF, RR.
3. Remove the tire and wheel assemblies one at a time and mount on a spin-type wheel balancer. Refer to Tire and Wheel Removal and
4. Carefully follow the wheel balancer manufacturer's instructions for proper mounting techniques to be used on different types of wheels.

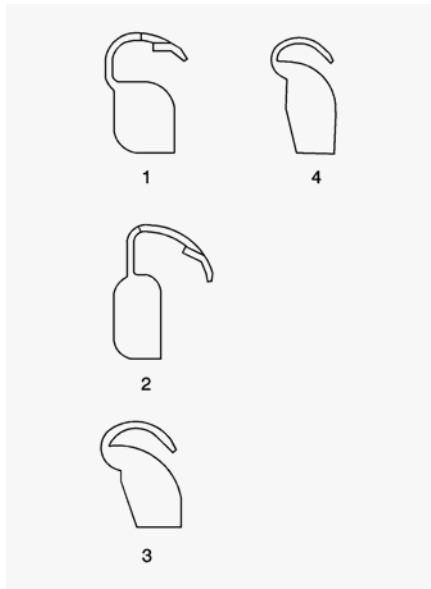
Regard aftermarket wheels, especially those incorporating universal lug patterns, as potential sources of runout and mounting conce

5. Be sure to use the correct type of wheel balance weights for the type of wheel rim being balanced. Be sure to use the correct type of balance weights on aluminum wheels. Refer to Wheel Weight Usage.
6. Balance all four tire and wheel assemblies as close to zero as possible.
7. Using the matchmarks made prior to removal, install the tire and wheel assemblies to the vehicle. Refer to Tire and Wheel Removal and Installation.
8. Lower the vehicle.

Wheel Weight Usage

Tire and wheel assemblies can be balanced using either the static or dynamic method.

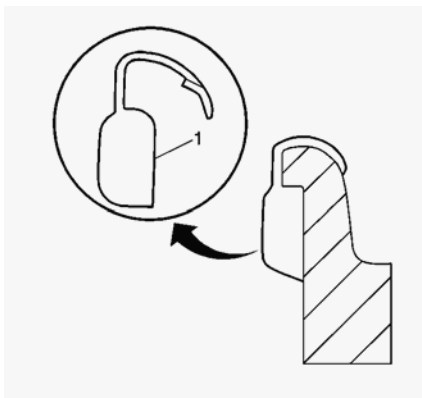
Clip-on Weights



Note: When balancing factory aluminum wheels with clip-on wheel balance weights, be sure to use special polyester-coated weights. These coated weights reduce the potential for corrosion and damage to aluminum wheels.

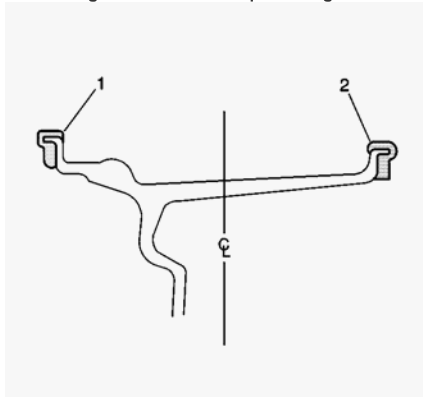
These coated weights reduce the potential for corrosion and damage to aluminum wheels.

- MC (1) and AW (2) series weights are approved for use on aluminum wheels.
- P (3) series weights are approved for use on steel wheels only.
- T (4) series coated weights are approved for use on both steel and aluminum wheels.



Note: Use a nylon or plastic-tipped hammer when installing coated clip-on wheel balance weights to minimize the possibility of damage to the wheel rim. The contour and style of the wheel rim flange will determine which type of clip-on wheel weight (1) should be used. The weight should follow the contour of the flange. The weight clip should firmly grip the rim flange.

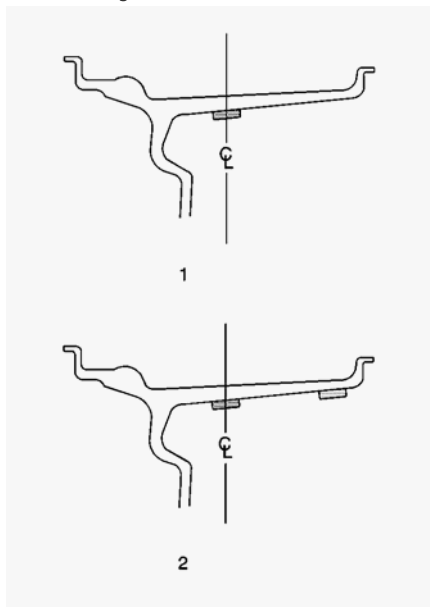
Wheel Weight Placement – Clip-on Weights



When static balancing, locate the wheel balance weights on the inboard flange (2) if only 28 g (1 oz) or less is called for. If more than 28 g (1 oz), the weights as equally as possible between the inboard (2) and outboard (1) flanges.

When dynamic balancing, locate the wheel balance weights on the inboard (2) and outboard (1) rim flanges at the positions specified by the wheel balancer.

Adhesive Weights



Note: When installing adhesive balance weights on flangeless wheels, do NOT install the weight on the outboard surface of the rim.

Adhesive wheel balance weights may be used on factory aluminum wheels. Perform the following procedure to install adhesive wheel balance weights:

1. Determine the correct areas for placement of the wheel weights on the wheel.
- When static balancing, locate the wheel balance weights along the wheel centerline (1) on the inner wheel surface if only 28 g (1 oz) or less more than 28 g (1 oz) is called for, split the weights as equally as possible between the wheel centerline and the inboard edge of the inner wheel surface (2).
 - When dynamic balancing, locate the wheel balance weights along the wheel centerline and the inboard edge of the inner wheel surface (2) as specified by the wheel balancer.
 - Ensure that there is sufficient clearance between the wheel weights and brake system components.

Note: Do not use abrasives to clean any surface of the wheel.

- Using a clean cloth or paper towel with a general purpose cleaner, thoroughly clean the designated balance weight attachment areas of an overspray, dirt or any other foreign material.
- To ensure there is no remaining residue, wipe the balance weight attachment areas again, using a clean cloth or paper towel with a mixture of alcohol and half water.
- Dry the attachment areas with hot air until the wheel surface is warm to the touch.
- Warm the adhesive backing on the wheel balance weights to room temperature.
- Remove the protective covering from the adhesive backing on the back of the balance weights. DO NOT touch the adhesive surface.
- Apply the wheel balance weights to the wheel, press into place with hand pressure.
- Secure the wheel balance weights to the wheel with a 90 N (21 lb) force applied with a roller.

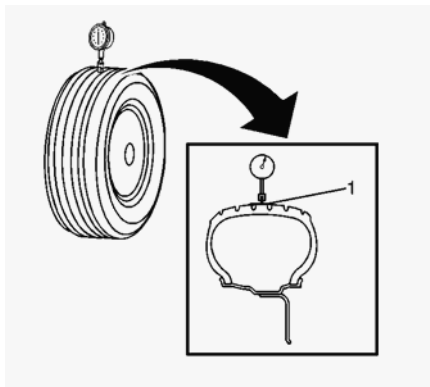
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1. Raise and support the vehicle.
2. Mark the location of the wheels to the wheel studs and mark the specific vehicle position on each tire and wheel – LF, LR, RF, RR.
3. Remove the tire and wheel assemblies from the vehicle.
4. Closely inspect each tire for proper and even bead seating.
5. If any of the tire beads were not properly or evenly seated, reseal the tire bead, then proceed to step 6. Refer to Tire and Wheel Removal and
6. Mount a tire and wheel assembly on a spin-type wheel balancer.

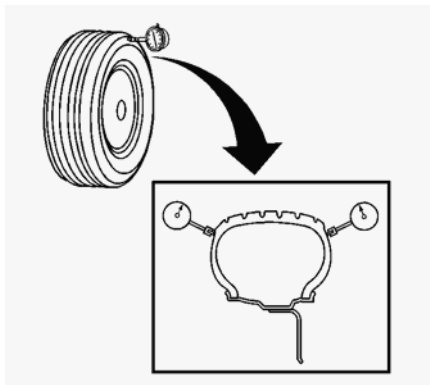
Locate the tire and wheel assembly on the balancer with a cone through the back side of the center pilot hole.



7. Wrap the outer circumference of each tire with tape (1) in the center tread area.
Wrapping the tread with tape allows for a smooth and accurate reading of radial runout to be obtained.
8. Position the dial indicator on the taped portion of the tire tread such that the dial indicator is perpendicular to the tire tread surface.
9. Slowly rotate the tire and wheel assembly one complete revolution in order to find the low spot.
10. Set the dial indicator to zero at the low spot.
11. Slowly rotate the tire and wheel assembly one more complete revolution and measure the total amount of radial runout.

Specification

Maximum tire and wheel assembly radial runout – measured off-vehicle: 1.27 mm (0.050 in)

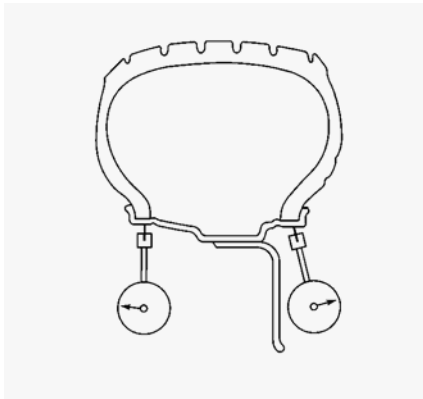


12. Position the dial indicator on a smooth portion of the tire sidewall, as close to the tread as possible, such that the dial indicator is perpendicular to the sidewall surface.
13. Slowly rotate the tire and wheel assembly one complete revolution in order to find the low spot. Ignore any jumps or dips due to sidewall splice.
14. Set the dial indicator to zero at the low spot.
15. Slowly rotate the tire and wheel assembly one more complete revolution and measure the total amount of lateral runout. Ignore any jumps or sidewall splices and attain an average runout measurement.

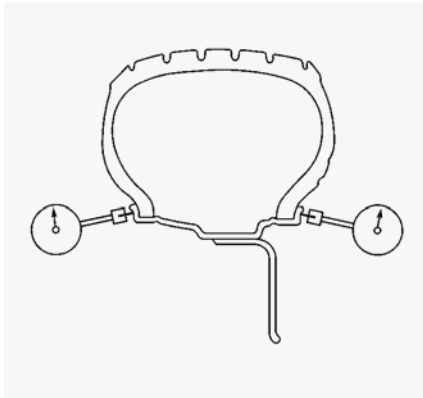
Specification

Maximum tire and wheel assembly lateral runout – measured off-vehicle: 1.27 mm (0.050 in)

16. Repeat steps 6 through 15 until all of the tire and wheel assembly radial and lateral runout measurements have been taken.
17. If ANY of the tire and wheel assembly runout measurements were NOT within specifications, proceed to step 19.
18. If ALL of the tire and wheel assembly runout measurements WERE within specifications, then the off-vehicle tire and wheel assembly runout acceptable.



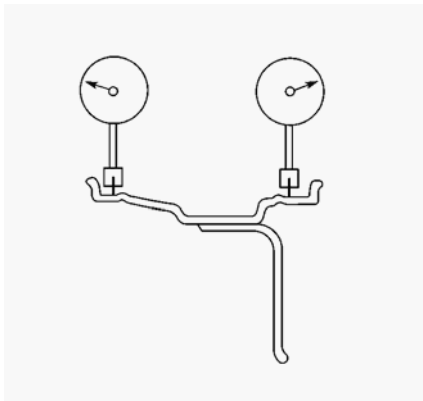
19. Position the dial indicator on the horizontal outer surface of the wheel rim flange – with the tire still mounted – such that the dial indicator is perpendicular to the rim flange surface.
Wheel runout should be measured on both the inboard and outboard rim flanges, unless wheel design will not permit. Ignore any jumps or dips, paint drips, chips, or welds.
20. Slowly rotate the tire and wheel assembly one complete revolution in order to find the low spot.
21. Set the dial indicator to zero at the low spot.
22. Slowly rotate the tire and wheel assembly one more complete revolution and measure the total amount of wheel radial runout.
Specification
 - Maximum aluminum wheel radial runout – measured off-vehicle, tire mounted: 0.762 mm (0.030 in)
 - Maximum steel wheel radial runout – measured off-vehicle, tire mounted: 1.015 mm (0.040 in)



23. Position the dial indicator on the vertical outer surface of the wheel rim flange – with the tire still mounted – such that the dial indicator is perpendicular to the rim flange surface.
Wheel runout should be measured on both the inboard and outboard rim flanges, unless wheel design will not permit. Ignore any jumps or dips, paint drips, chips, or welds.
24. Slowly rotate the tire and wheel assembly one complete revolution in order to find the low spot.
25. Set the dial indicator to zero at the low spot.
26. Slowly rotate the tire and wheel assembly one more complete revolution and measure the total amount of wheel lateral runout.
Specification
 - Maximum aluminum wheel lateral runout – measured off-vehicle, tire mounted: 0.762 mm (0.030 in)
 - Maximum steel wheel lateral runout – measured off-vehicle, tire mounted: 1.143 mm (0.045 in)
27. Repeat steps 19 through 26 until all of the wheel radial and lateral runout measurements have been taken on each of the – tire and wheel – as assembly runout measurements which were NOT within specifications.
28. If any of the wheel runout measurements were NOT within specifications, proceed to Measuring Wheel Runout – Tire Dismounted.
29. For any of the wheel runout measurements which WERE within specifications, while the – tire and wheel – assembly runout measurements were within specifications, replace the tire, then balance the assembly. Refer to Tire and Wheel Assembly Balancing - Off Vehicle.
30. After replacement of any tires, always re-measure the runout of the affected tire and wheel assembly, or assemblies.
31. Using the matchmarks made prior to removal, install the tire and wheel assemblies to the vehicle.
32. Lower the vehicle.

Wheel Runout Measurement – Tire Dismounted

1. On the tire and wheel assembly, or assemblies with wheel runout measurements – tire mounted – which were NOT within specifications, mark the tire and wheel in relation to each other.
2. Dismount the tire from the wheel. Refer to Tire Dismounting and Mounting.
3. Mount the wheel on a spin-type wheel balancer.
4. Locate the wheel on the balancer with a cone through the back side of the center pilot hole.



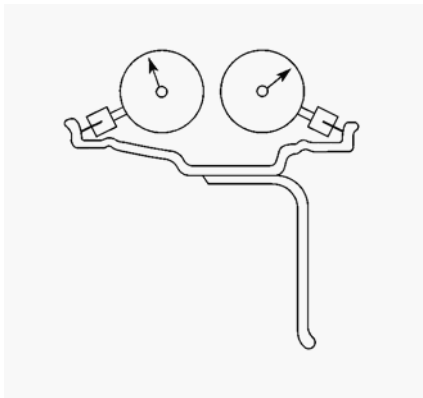
5. Position the dial indicator on the horizontal inner surface of the wheel rim flange – with the tire dismounted – such that the dial indicator is perpendicular to the rim flange surface.

Wheel runout should be measured on both the inboard and outboard rim flanges. Ignore any jumps or dips due to paint drips, chips, or other surface irregularities.

6. Slowly rotate the wheel one complete revolution in order to find the low spot.
7. Set the dial indicator to zero at the low spot.
8. Slowly rotate the wheel one more complete revolution and measure the total amount of wheel radial runout.

Specification

- Maximum aluminum wheel radial runout – measured off-vehicle, tire dismounted: 0.762 mm (0.030 in)
- Maximum steel wheel radial runout – measured off-vehicle, tire dismounted: 1.015 mm (0.040 in)



9. Position the dial indicator on the vertical inner surface of the wheel rim flange – with the tire dismounted – such that the dial indicator is perpendicular to the rim flange surface.

Wheel runout should be measured on both the inboard and outboard rim flanges. Ignore any jumps or dips due to paint drips, chips, or other surface irregularities.

10. Slowly rotate the wheel one complete revolution in order to find the low spot.
11. Set the dial indicator to zero at the low spot.
12. Slowly rotate the wheel one more complete revolution and measure the total amount of wheel lateral runout.

Specification

- Maximum aluminum wheel lateral runout – measured off-vehicle, tire dismounted: 0.762 mm (0.030 in)
 - Maximum steel wheel lateral runout – measured off-vehicle, tire dismounted: 1.143 mm (0.045 in)
13. Repeat steps 2 through 12 until all of the wheel radial and lateral runout measurements – tire dismounted – have been taken on each wheel.
 14. If any of the wheel runout measurements – tire dismounted – were NOT within specifications, replace the wheel.

Always measure the runout of any replacement wheels.

15. For any of the wheel runout measurements which WERE within specifications, while the tire and wheel assembly runout measurements were within specifications, replace the tire, then balance the assembly. Refer to Tire and Wheel Assembly Balancing - Off Vehicle.
16. Using the matchmarks made prior to dismounting the tire, or tires, mount the tire, or tires to the wheel, or wheels, then balance the assemblies. Refer to Tire and Wheel Assembly Balancing - Off Vehicle.

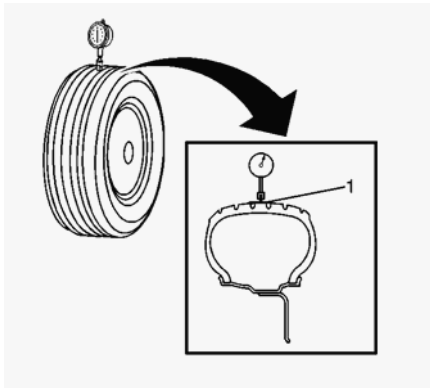
Always measure the runout of any of the tire and wheel assemblies which have had the tires dismounted and mounted.

17. Using the matchmarks made prior to removal, install the tire and wheel assemblies to the vehicle.
18. Lower the vehicle.

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Fuel Delivery: | Fuel:

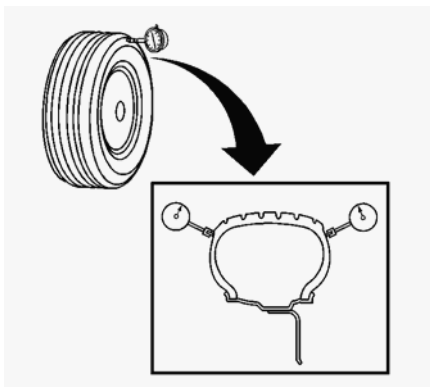
1. Raise and support the vehicle.
2. Closely inspect each tire for proper and even bead seating.
3. If any of the tire beads were not properly or evenly seated, reseal the tire bead, then proceed to step 4. Refer to Tire and Wheel Removal and



4. Wrap the circumference of each tire with tape (1) in the center tread area.
Wrapping the tread with tape allows for a smooth and accurate reading of radial runout to be obtained.
5. Position the dial indicator on the taped portion of the tire tread such that the dial indicator is perpendicular to the tire tread surface.
6. Slowly rotate the tire and wheel assembly one complete revolution in order to find the low spot.
7. Set the dial indicator to zero at the low spot.
8. Slowly rotate the tire and wheel assembly one more complete revolution and measure the total amount of radial runout.

Specification

Maximum tire and wheel assembly radial runout – measured on-vehicle: 1.52 mm (0.060 in)



9. Position the dial indicator on a smooth portion of the tire sidewall, as close to the tread as possible, such that the dial indicator is perpendicular to the sidewall surface.
10. Slowly rotate the tire and wheel assembly one complete revolution in order to find the low spot. Ignore any jumps or dips due to sidewall splice.
11. Set the dial indicator to zero at the low spot.
12. Slowly rotate the tire and wheel assembly one more complete revolution and measure the total amount of lateral runout. Ignore any jumps or sidewall splices and attain an average runout measurement.

Specification

Maximum tire and wheel assembly lateral runout – measured on-vehicle: 1.52 mm (0.060 in)

13. Repeat steps 4 through 12 until all of the tire and wheel assembly radial and lateral runout measurements have been taken.
14. Lower the vehicle.

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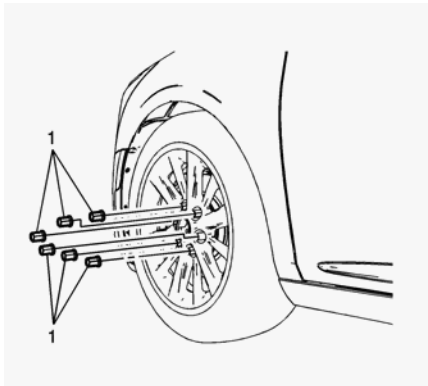
Special Tools

- CH-41013 Rotor Resurfacing Kit
- CH-42450-A Wheel Hub Resurfacing Kit

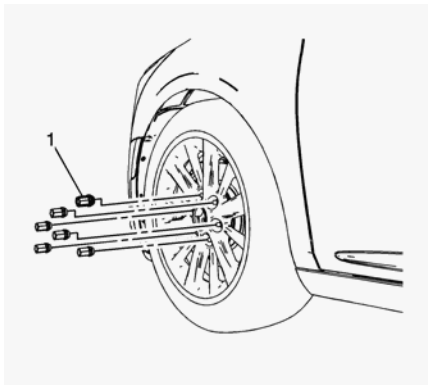
For equivalent regional tools, refer to Special Tools.

Removal Procedure

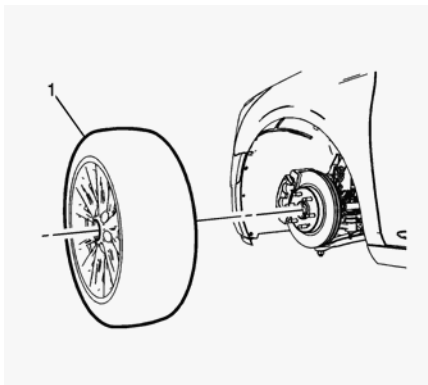
1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the wheel center cap, if equipped.



3. Remove the wheel nut caps (1), if equipped.



4. Remove the wheel nuts (1).



5. Remove the tire and wheel assembly (1).

Warning: If penetrating oil gets on the vertical surfaces between the wheel and the rotor or drum it could cause the wheel to work loose driven, resulting in loss of control and an injury accident.

Caution: Removing the wheel may be difficult because of foreign materials or a tight fit between the wheel and the hub/rotor. Slightly tap wall with a rubber mallet in order to remove the wheel. Failure to follow these instructions may result in damage to the wheel.

Caution: Never use heat to loosen a tight wheel bolt or nut. This can shorten the life of wheel and damage wheel bearings.

6. If the tire and wheel assembly is difficult to remove or cannot be removed, perform the following steps:

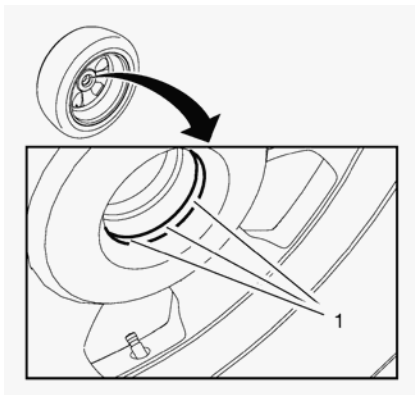
- Hand install the wheel nuts.
- Loosen the wheel nuts 2 complete turns.
- Lower the vehicle.
- Rock the vehicle from side to side.
- Repeat the procedure if necessary.
- When the tire and wheel assembly loosens, raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
- Remove the wheel nuts.
- Remove the tire and wheel assembly.

Installation Procedure

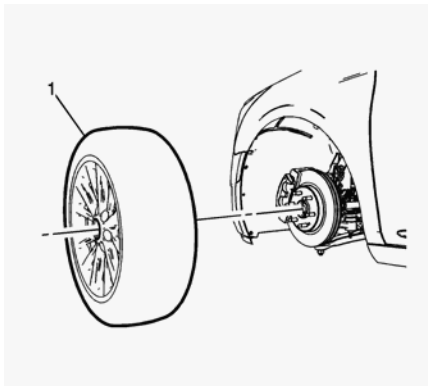
Warning: Before installing the wheels, remove any buildup of corrosion on the wheel mounting surface and brake drum or disc mounting. Installing wheels with poor metal-to-metal contact at the mounting surfaces can cause wheel nuts to loosen. This can cause a wheel to move while the vehicle is moving, causing loss of control and possibly personal injury.

Note: Do not use power grinding tools to clean the brake rotor or drum to wheel mating surfaces.

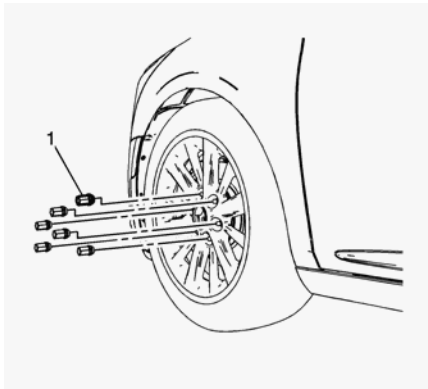
1. Using a wire brush or wire wheel, clean the wheel to brake rotor or drum mating surface.
2. Using the *CH-41013* Rotor Resurfacing Kit, clean the rotor or drum to wheel contact area.
3. Using the *CH-42450-A* Wheel Hub Resurfacing Kit, clean the surfaces around the wheel studs.
4. Clean the threads of the wheel studs.
5. If the threads of the wheel stud are damaged, replace the wheel stud. Refer to Wheel Stud Replacement or Wheel Stud Replacement.
6. After cleaning all of the wheel and brake rotor or drum contact areas, use brake cleaner or denatured alcohol to remove any dirt and debris from the wheel nuts and the brake rotor or drum.
7. Inspect and clean the contact areas of the wheel. Refer to Wheel Mounting Surface Check.



8. Apply a small amount of lubricant to the inner diameter of the wheel hub pilot hole (1) where it contacts the wheel hub flange. Refer to Fluids, Lubricants, and Sealers.

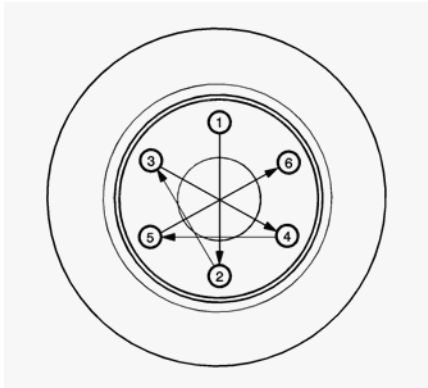


9. Install the tire and wheel assembly (1).



Warning: Never grease or lubricate wheel nuts, studs and mounting surfaces. Wheel nuts, studs, and mounting surfaces must be clean. Tightening the lubricated parts can cause damage to the wheel studs. This can cause a wheel to come off when the vehicle is moving, control and possibly personal injury.

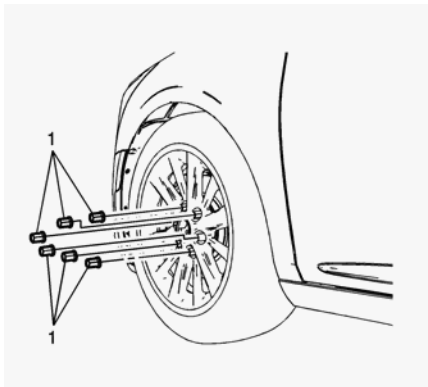
10. Hand install the wheel nuts (1).



Caution: Improperly tightened wheel bolts or nuts can lead to brake pulsation and rotor damage. In order to avoid expensive brake repair, tighten the wheel bolts or nuts to the proper torque specification.

Caution: Refer to Fastener Caution.

11. Using a torque wrench and the appropriate socket, alternately and evenly tighten the wheel nuts to **118 Y (87 lb ft)** in the sequence illustrated.



12. Install the wheel nut caps (1), if equipped.
13. Install the wheel center cap, if equipped.

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Caution: Use a tire changing machine in order to dismount tires. Do not use hand tools or tire irons alone in order to remove the tire from the wheel. Dismounting the tire by hand could result in injury to the hands or the wheel rim could result.

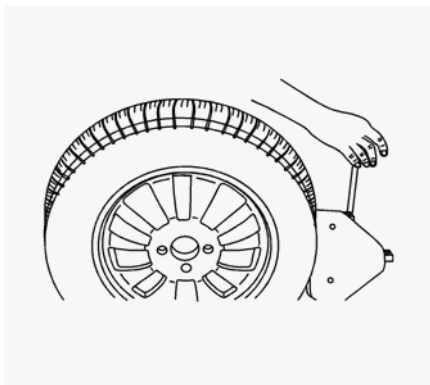
Caution: Do not scratch or damage the clear coating on aluminum wheels with the tire changing equipment. Scratching the clear coating could cause the wheel to corrode and the clear coating to peel from the wheel.

Caution: Damage to either the tire bead or the wheel mounting holes can result from the use of improper wheel attachment or tire mounting procedure. Failure to follow the proper procedures could cause the tire changer to apply too much force on the tire to bend the wheel at the mounting surface. Such damage may result in vibration and/or shimmy, and under severe usage lead to cracking.

1. Remove the valve core from the valve stem.
2. Deflate the tire completely.

Note: Rim-clamp European-type tire changers are recommended.

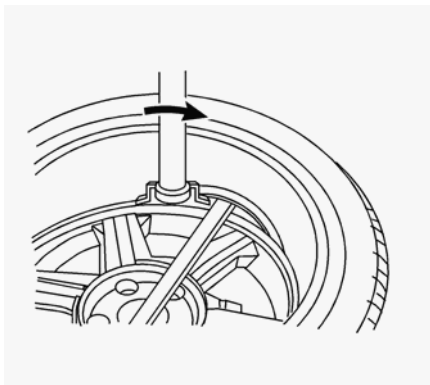
3. Use the tire changer in order to remove the tire from the wheel. Follow steps 4–7 to remove the tire from the wheel.



4. When separating the tire bead from the wheel, position the bead breaking fixture 90, 180 and 270 degrees from the valve stem.

Caution: Failure to position valve stem in proper position while dismounting and mounting the tire may result in the TPM sensor to become damaged.

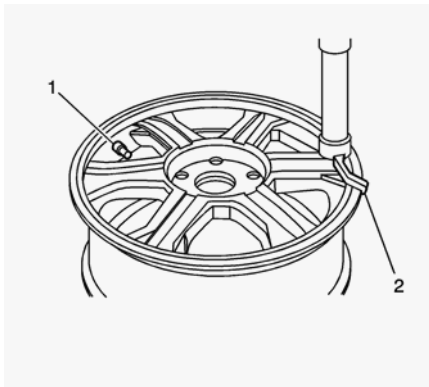
5. Position the wheel and tire so the valve stem is at the 7 o'clock position relative to the head. The tire iron or pry bar can be inserted when pry bead up and over the mounting/dismounting head.



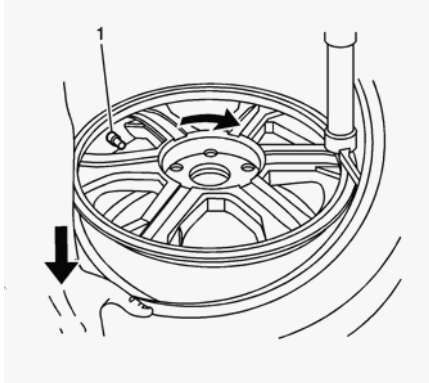
6. Position the wheel and tire so the valve stem is again at the 7 o'clock position relative to the head. The tire iron or pry bar can be inserted when pry inner tire bead up and over the mounting/dismounting head.
7. Remove all residual liquid sealant from the inside of the tire and wheel surfaces.
8. Use a wire brush or coarse steel wool in order to remove any rubber, light rust or corrosion from the wheel bead seats.

Caution: When mounting the tires, use an approved tire mounting lubricant. DO NOT use silicon or corrosive base compounds to lubricate the tire or wheel rim. A silicon base compound can cause the tire to slip on the rim. A corrosive type compound can cause tire or rim deterioration.

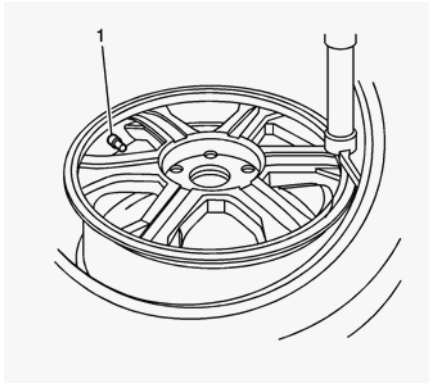
9. Apply mounting lubricant to the tire bead and the wheel rim.



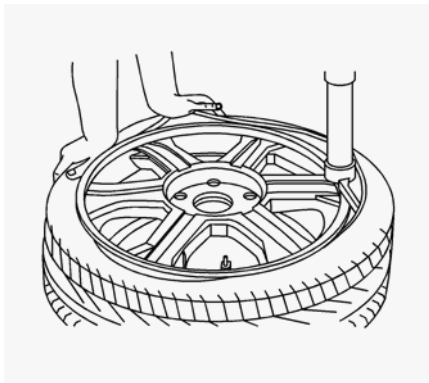
10. Position the rim so the valve stem (1) is at the 7 o'clock position relative to the head (2). This will protect the sensor when the bottom bead se



11. Using the tire machine, rotate the tire/wheel assembly clockwise when transferring the tire bead to the inside of the wheel rim. Ensure that th is at the 7 o'clock position.



12. After the bottom bead is on the wheel, reposition the wheel and tire so that the valve stem (1) is at the 7 o'clock position relative to the head. the sensor while mounting the tire bead to the outside of the wheel.



13. Use the tire changer in order to install the tire to the wheel.

Warning: To avoid serious personal injury, do not stand over tire when inflating. The bead may break when the bead snaps over the safety hump exceed 275 kPa (40 psi) pressure when inflating any tire if beads are not seated. If 275 kPa (40 psi) pressure will not seat the beads, deflate, re beads and reinflate. Overinflation may cause the bead to break and cause serious personal injury.

14. Inflate the tire until it passes the bead humps. Be sure that the valve core is not installed at this time.

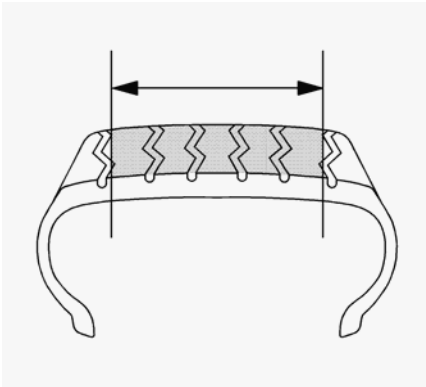
15. Install the valve core to the valve core stem.
16. Inflate the tire to the proper air pressure.
17. Ensure that the locating rings are visible on both sides of the tire in order to verify that the tire bead is fully seated on the wheel.

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Warning:

- Tire changing can be dangerous and should be done by trained professionals using proper tools and procedures. Always read and understand any warnings contained in their customers literature or molded into the tire sidewall.
- Serious eye and ear injury may result from not wearing adequate eye and ear protection while repairing tires.
- NEVER inflate beyond 275 kPa (40 pounds) pressure to seat beads.
- NEVER stand, lean or reach over the assembly during inflation.



Repairable area on a radial tire.

Note:

- NEVER repair tires worn to the tread indicators 1.59 mm (2/32 in) remaining depth.
- NEVER repair tires with a tread puncture larger than 6.35 mm (1/4 in).
- NEVER substitute an inner tube for a permissible or non-permissible repair.
- NEVER perform an outside-in tire repair (plug only, on the wheel).
- Every tire must be removed from the wheel for proper inspection and repair.
- Regardless of the type of repair used, the repair must seal the inner liner and fill the injury.
- Consult with repair material supplier/manufacturer for repair unit application procedures and repair tools/repair material recommendations.

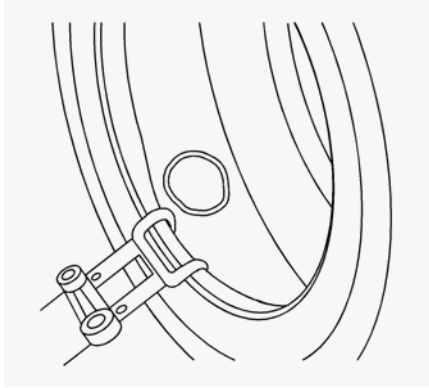
Three basic steps for tire puncture repair:

1. Remove the tire from the wheel for inspection and repair.
2. Fill the injury (puncture) to keep moisture out.
3. Seal the inner liner with a repair unit to prevent air loss.

External Inspection

1. Prior to demounting, inspect the tire surface, the valve and the wheel for the source of the leak by using a water and soap solution. Mi area and totally deflate the tire by removing the valve core.
2. Demount the tire from the wheel and place the tire on a well-lighted spreader.

Internal Inspection



1. Spread the beads and mark the puncture with a tire crayon.
2. Inspect the inner tire for any signs of internal damage.
3. Remove the puncturing object, noting the direction of the penetration.
4. Probe the injury with a blunt awl in order to determine the extent and direction of the injury.
5. Remove any loose foreign material from the injury.
6. Punctures exceeding 6.35 mm (1/4 in) should not be repaired.

Cleaning



1. Clean the area around the puncture thoroughly with a proper liner cleaner, clean cloth and a scraper. This step serves to remove dirt and lubricants to insure proper adhesion and non-contamination of the buffing tool.
2. Refer to information on the product or manufacturer's Material Safety Data Sheet and follow guidelines for handling and disposal.

Clean the Injury Channel



1. Use a proper hand reamer, carbide cutter or drill bit to ream the puncture channel from the inside of the tire in order to clean the injury.
2. Remove steel wires protruding above the liner surface to prevent damage to the repair unit.
3. Consult your repair material supplier for recommended reaming tool(s).

Fill the Injury



1. It is necessary to fill the injury channel to provide back up for the repair unit and to prevent moisture from entering the tire fabric and s
2. For combination repair/plug units skip this step. Cement the injured channel and fill the injury from the inside of the tire with the repair material manufacturer's recommendations. Without stretching the plug, cut the plug off just above the inside tire surface.
3. Consult your repair material supplier for proper repair material selection.

Repair Unit Selection



Note: Do not install the repair unit in this step.

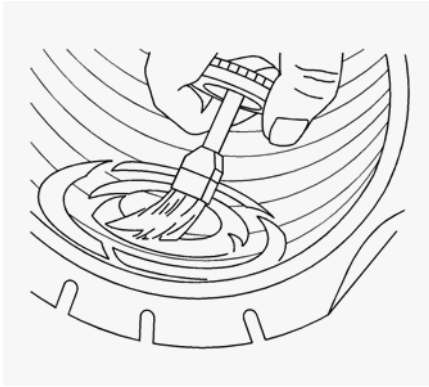
1. Center the repair unit over the injury as a reference and outline an area larger than the unit so that buffing will not remove the crayon m
2. Remove the repair unit.
3. DO NOT overlap previous or multiple repair units.
4. Consult your repair material supplier for proper repair unit selection.

Buffing



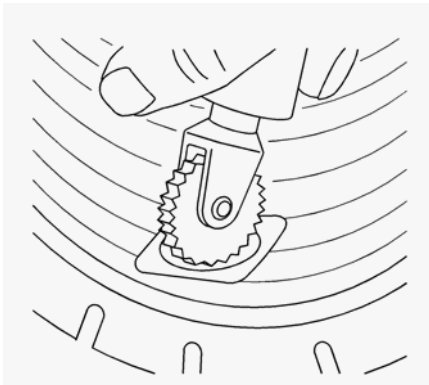
1. To prevent contamination and preserve the outline, buff within the marked area thoroughly and evenly with a low speed buffing tool usi brush or gritted rasp.
2. Buff to a smooth velvet surface (RMA #1 or #2 buffed texture).
3. Use caution not to gouge the inner liner or expose casing fabric.
4. Remove any buffing dust with a vacuum cleaner.
5. Consult your repair material supplier for a proper buffing tool.

Cementing



Apply chemical cement according to the repair material manufacturer's procedures.

Repair Unit Application



The tire must be in the relaxed position when the repair unit is installed. Do not spread the beads excessively.

Two-Piece Plug and Repair Units

1. If applicable, install the repair unit so that the alignment is correct.
2. Center the repair unit over the injury and stitch down thoroughly with the stitching tool, working from the center out.



3. Being careful not to stretch the plug material, cut the plug flush with the outer tread.

Combination Repair/Plug Units

1. Pull the plug through the injury until the repair just reaches the liner. Stitch down thoroughly.
2. Follow the repair material manufacturer's recommendations for further installation instructions.

Consult your repair material supplier for the proper stitching tool.

Safety Cage



Some run flat tires may require more than 275 kPa (40 psi) to seat the bead. In such a case, a tire safety cage must be used. Consult the tire individual repair policy.

Final Inspection



1. After remounting and inflating the tire, check both beads, the repair and the valve with a water and soap solution in order to detect leaks.
2. If the tire continues to lose air, the tire must be demounted and reinspected.
3. Balance the tire and wheel assembly. Refer to Tire and Wheel Assembly Balancing - Off Vehicle.

For additional tire puncture repair information, contact:

Rubber Manufacturers Association (RMA)
1400 K Street, N.W., Suite 900
Washington, DC 20005-2403
Telephone: 202-682-4800
E-mail: info@rma.org

Website: www.rma.org

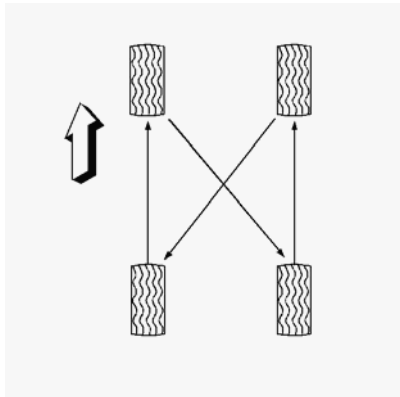
2013 Chevrolet Colorado

Submodel: | **Engine Type:** | **Liters:**

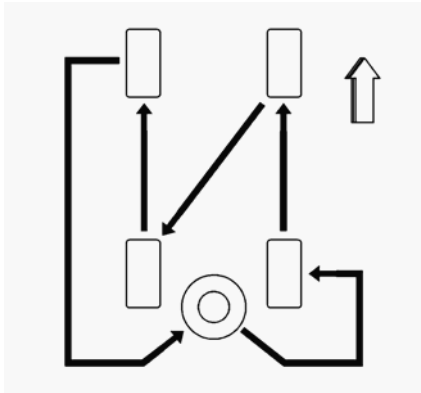
Fuel Delivery: | **Fuel:**

In order to equalize wear, rotate the tires at the specified intervals. Also, rotate the tire and wheel assembly whenever you notice uneven tire wear.

Radial tires tend to wear faster in the shoulder area, particularly in front positions, due to design. Radial tires in non-drive locations may develop an irregular wear pattern that can generate tire noise. This especially makes regular tire rotation necessary.



- For vehicles with single rear wheels (4 tires), rotate the tires as shown.



- For vehicles with single rear wheels (5 tires), rotate the tires as shown.

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Fuel Delivery: | Fuel:

Special Tools

EL-38792-A Electronic Vibration Analyzer (EVA) 2

If after following the tire and wheel vibration diagnostic process, some amount of tire and wheel vibration is still evident, an on-vehicle high-speed spin balancer may be used to perform an on-vehicle balance in an attempt to finish balance the tire and wheel assemblies, wheel hubs, brake rotors, brake drums, if equipped, and wheel trim, if equipped, simultaneously. On-vehicle balancing can also compensate for minor amounts of residual runout encountered as a result of mounting the tire and wheel assembly on the vehicle, as opposed to the balance which was achieved on the off-vehicle balancer.

In order to perform an on-vehicle balancing procedure, carefully follow the on-vehicle balancer manufacturer's specific operating instructions and carefully consider the following information before proceeding:

- Vehicles equipped with low profile, wide tread path, high performance tires and wheels are susceptible to small amounts of dynamic imbalance.
- When performing an on-vehicle balance, great care must be taken when placing the wheel balance weights on the wheels. If the wheel balance weights are not placed accurately, they can actually induce dynamic imbalance and thus increase the severity of the vibration.
- Inspect the vehicle wheel bearings to ensure that they are in good condition.
- Thoroughly inspect all on-vehicle balancing equipment and ensure that it is fully within the manufacturer's recommended specifications.
- Do not remove the off-vehicle balance weights. The purpose of on-vehicle balance is to fine tune the assembly balance already achieved off-vehicle, not to start over.
- Leave all wheel trim installed whenever possible.
- If the on-vehicle balancer calls for more than 56 g (2 oz) of additional weight, split the weight between the inboard and outboard flanges of the wheel, so as not to upset the dynamic balance of the assembly achieved in the off-vehicle balance. For wheel balance weight information, refer to Tire and Wheel Assembly Balancing - Off Vehicle.
- If available, tape-off an area on top of the fenders and the quarter panels, then place the vibration sensor of the *EL-38792-A* Electronic Vibration Analyzer (EVA) 2 on the fender or quarter panel above the specific tire and wheel assembly while it is being on-vehicle balanced.

The *EL-38792-A* Electronic Vibration Analyzer (EVA) 2 will provide a visual indication of the amplitude of the vibration, and the effect that the on-vehicle balance has on it.

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Note: After remounting a tire and wheel assembly to a hub/axle flange, remeasure the tire and wheel assembly on-vehicle runout in order to verify that the amount of runout has been reduced and brought to within tolerances.

1. Mark the location of the high spot on the tire and wheel assembly as determined during the on-vehicle tire and wheel assembly runout measurement.
 2. Place a reference mark on the wheel stud that is located closest to the wheel valve stem.
- Always refer to the reference mark on the wheel stud as the 12 o'clock position.
 - Refer to the location of the high spot by its clock position on the tire and wheel assembly, relative to the marked wheel stud.
 - Remove the tire and wheel assembly from the hub/axle flange. Refer to Tire and Wheel Removal and Installation.
 - Rotate the tire and wheel assembly as close to 180 degrees as possible on the hub/axle flange, so that the wheel valve stem is now approximately at the 6 o'clock position in relation to the marked wheel stud.
 - Reinstall the wheel lug nuts to secure the tire and wheel assembly in the new position. Refer to Tire and Wheel Removal and Installation.
 - Remeasure the tire and wheel assembly on-vehicle runout. Mark the new location of the assembly on-vehicle runout high spot on the tire. Refer to Tire and Wheel Assembly Runout Measurement - On-Vehicle.
 - If the assembly on-vehicle runout has been reduced and is within tolerance, no further steps are necessary.
 - If the assembly runout has NOT been reduced, perform the following steps:
 1. If the clock location of the high spot remained at or near the original clock location of the high spot, the hub/axle flange and/or the brake rotor/drum mounting flange is the major contributor to the assembly on-vehicle runout concern.
 2. If the clock location of the high spot is now at or near a position 180 degrees from the original clock location of the high spot, the tire and wheel assembly is the major contributor to the assembly on-vehicle runout concern.
 3. If the clock location of the high spot is now in-between the 2 extremes, then both the tire and wheel assembly and the hub/axle flange are contributing to the assembly on-vehicle runout concern. Rotate the tire and wheel assembly as close to an additional 90 degrees as possible in both the clockwise and the counterclockwise directions to obtain the lowest amount of assembly on-vehicle runout.

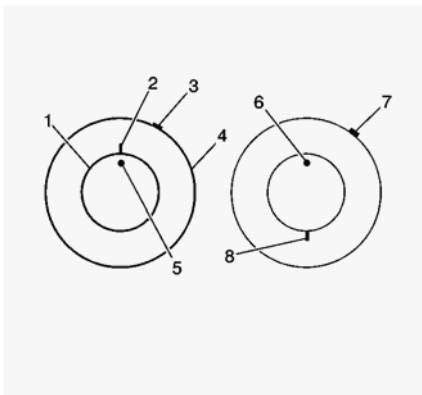
2013 Chevrolet Colorado

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Fuel Delivery: | Fuel:

Tire and Wheel Runout Specifications		
Application	Specification	
	Metric	English
Tire and Wheel Assembly– Lateral and Radial		
• Off-Vehicle	1.27 mm	0.050 in
• On-Vehicle	1.52 mm	0.060 in
Wheel, Aluminum		
• Lateral	0.762 mm	0.030 in
• Radial	0.762 mm	0.030 in
Wheel, Steel		
• Lateral	1.143 mm	0.045 in
• Radial	1.015 mm	0.040 in
Wheel Hub/Axle Flange– Guideline	0.132 mm	0.0052 in
Wheel Stud– Guideline	0.25 mm	0.010 in

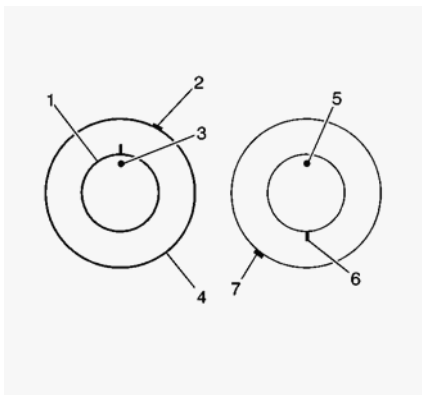
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Fuel Delivery: | Fuel:



Note: After remounting a tire to a wheel or after replacing a tire and/or a wheel, remeasure the tire and wheel assembly runout in order to verify that the runout has been reduced and brought to within tolerances. Ensure that the tire and wheel assembly is properly balanced before reinstalling to the vehicle.

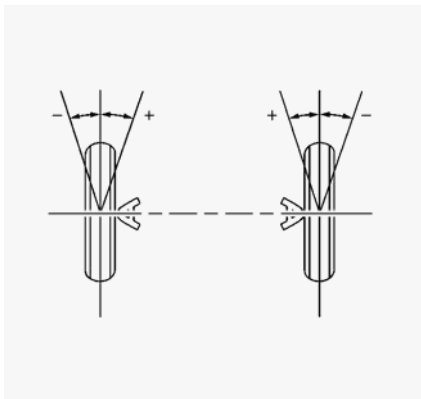
1. Mark the location of the high spot (3) on the tire as determined during the off-vehicle tire and wheel assembly runout measurement.
 2. Place a reference mark (2) on the tire sidewall at the location of the valve stem (5).
- Always refer to the valve stem as the 12 o'clock position.
 - Refer to the location of the high spot (3) by its clock position on the wheel, relative to the valve stem.
 - Mount the tire and wheel assembly on a tire machine and break down the bead. Do not dismount the tire from the wheel at this time.
 - Rotate the tire 180 degrees on the rim so that the valve stem reference mark (8) is now at the 6 o'clock position in relation to the valve stem (6). Lubricate the bead in order to easily rotate the tire on the wheel.
 - Reinflate the tire and seat the bead properly.
 - Mount the assembly on the tire balancer and remeasure the runout. Mark the new location of the assembly runout high spot on the tire.
 - If the assembly runout has been reduced and is within tolerance, no further steps are necessary. Balance the tire and wheel assembly, then install to the vehicle. Refer to the following:
- Tire and Wheel Assembly Balancing - Off Vehicle
 - Tire and Wheel Removal and Installation
- If the clock location of the high spot remained at or near the original clock location of the high spot (7) and the assembly runout has NOT been reduced, the tire is the major contributor to the assembly runout concern.



- If the clock location of the high spot has moved, however the assembly runout has NOT been reduced, perform the following steps:
1. If the clock location of the high spot (7) is now at or near a position 180 degrees from the original clock location of the high spot, the tire is the major contributor to the assembly runout concern.
 2. If the clock location of the high spot is now in-between the 2 extremes, then both the tire and the wheel are both contributing to the assembly runout. Rotate the tire an additional 90 degrees in both the clockwise and the counterclockwise directions to obtain the lowest amount of assembly runout.

2013 Chevrolet Colorado

Submodel: | **Engine Type:** | **Liters:**
Fuel Delivery: | **Fuel:**



Toe is a measurement of how much the front and/or rear wheels are turned in or out from a straight-ahead position. When the wheels are turned in, toe is positive (+). When the wheels are turned out, toe is negative (-). The actual amount of toe is normally only a fraction of a degree. The purpose of toe is to ensure the wheels roll parallel.

Toe also offsets the small deflections of the wheel support system that occur when the vehicle is rolling forward. In other words, with the vehicle's wheels set with toe-in, the wheels tend to roll parallel on the road when the vehicle is moving.

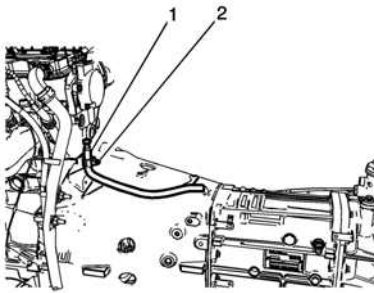
Improper toe adjustment will cause premature tire wear and cause steering instability.

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Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:

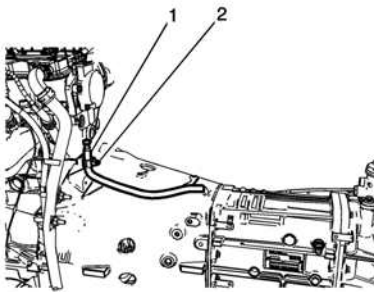
Removal Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.



2. Disconnect the transmission vent hose assembly (1) from the engine compartment bracket (2).
3. Disconnect the transmission vent hose assembly (1) from the transmission.
4. Remove the transmission vent hose assembly (1) from the vehicle.

Installation Procedure



Important: Ensure the vent hoses are free of kinks and routed clear of sharp objects.

1. Connect the transmission vent hose assembly (1) to the engine compartment bracket (2).
2. Connect the transmission vent hose assembly (1) to the transmission.
3. Lower the vehicle.

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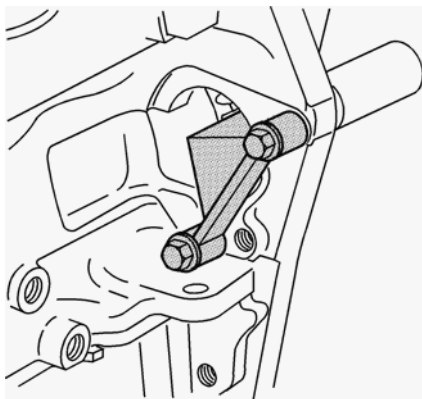
Submodel: | **Engine Type:** | **Liters:**
Fuel Delivery: | **Fuel:**

Special Tools

- EN 46106 Flywheel Holding Tool
- EN 46110 On-Vehicle Valve Spring Compressor
- EN 46116 Valve Stem Seal Remover/Installer
- EN-48313 Timing Chain Retention Tool
- J 39313 Spark Plug Port Adapter

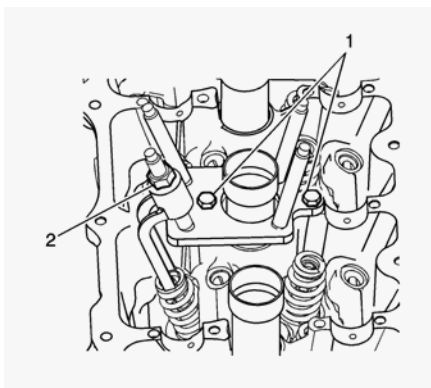
Removal Procedure

1. Remove the starter motor. Refer to Starter Replacement.
2. Remove the camshafts and rocker arms. Refer to Camshaft Replacement - Left Side and Valve Rocker Arm Replacement - Left Side.

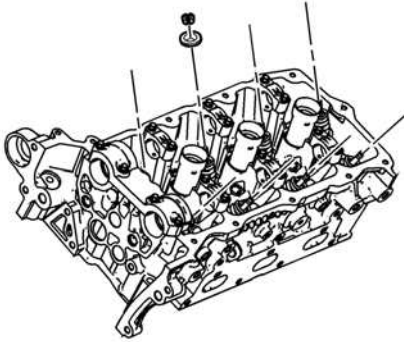


Note: If the EN 46106 Flywheel Holding Tool is not installed, the crankshaft may rotate. If the crankshaft rotates, disassembly and reassembly of the entire camshaft timing system may be required.

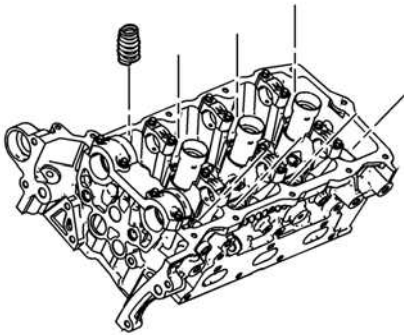
3. Install the EN 46106 Flywheel Holding Tool in order to prevent crankshaft rotation.
4. Remove the spark plug from the applicable cylinder. Refer to Spark Plug Replacement.
5. Install the J 39313 Spark Plug Port Adapter to the applicable cylinder.
6. Connect the J 39313 Spark Plug Port Adapter to a compressed air source.



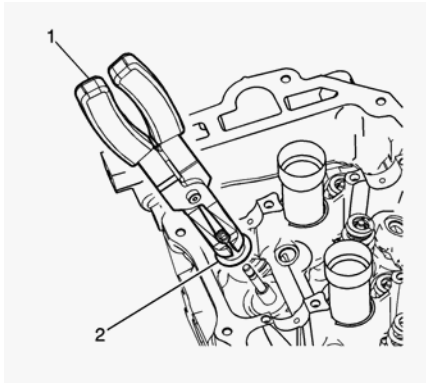
7. Install the EN 46110 On-Vehicle Valve Spring Compressor above the applicable cylinder as shown.
8. Tighten the EN 46110 On-Vehicle Valve Spring Compressor nut (2).



9. Remove the valve keepers.
10. Loosen the *EN 46110* On-Vehicle Valve Spring Compressor nut.
11. Remove the valve spring retainer.

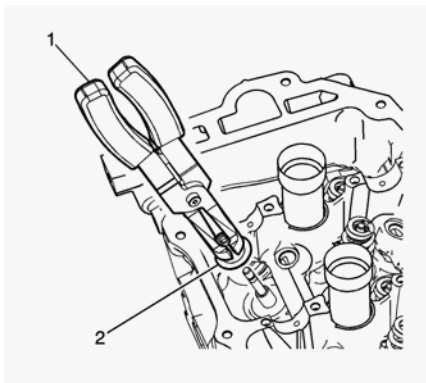


12. Remove the valve spring.

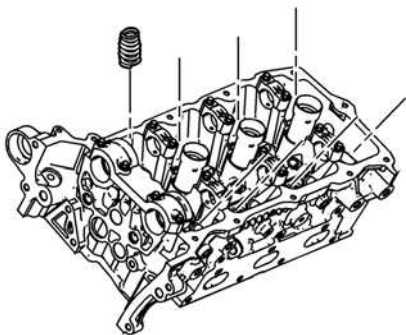


13. Use the *EN 46116* Valve Stem Seal Remover/Installer (1) in order to remove the valve stem seal (2).

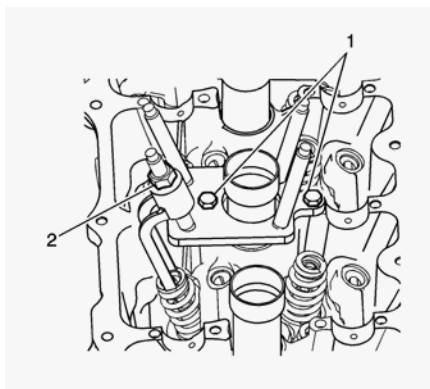
[Installation Procedure](#)



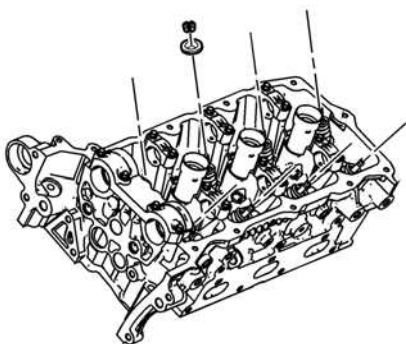
1. Use the *EN 46116* Valve Stem Seal Remover/Installer (1) in order to install the valve stem seal (2).



2. Install the valve spring.
3. Install the valve spring retainer.



4. Install the *EN 46110* On-Vehicle Valve Spring Compressor above the applicable valve spring as shown.
Tighten the *EN 46110* On-Vehicle Valve Spring Compressor nut (2).



5. Install the valve spring keepers.
6. Remove the *EN 46110* On-Vehicle Valve Spring Compressor.
7. Disconnect the *J 39313* Spark Plug Port Adapter from the compressed air source.
8. Remove the *J 39313* Spark Plug Port Adapter.
9. Install the spark plugs. Refer to Spark Plug Replacement.
10. Install the rocker arms and camshafts. Refer to Valve Rocker Arm Replacement - Left Side and Camshaft Replacement - Left Side.
11. Remove the *EN 46106* Flywheel Holding Tool.
12. Install the starter motor. Refer to Starter Replacement.

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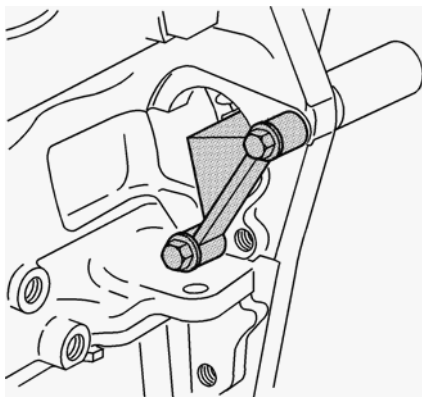
Submodel: | **Engine Type:** | **Liters:**
Fuel Delivery: | **Fuel:**

Special Tools

- EN 46106 Flywheel Holding Tool
- EN 46110 On-Vehicle Valve Spring Compressor
- EN 46116 Valve Stem Seal Remover/Installer
- EN-48313 Timing Chain Retention Tool
- J 39313 Spark Plug Port Adapter

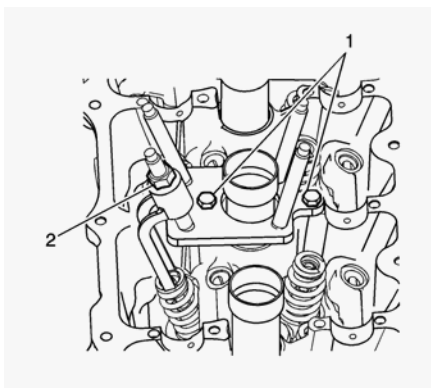
Removal Procedure

1. Remove the starter motor. Refer to Starter Replacement.
2. Remove the camshafts and rocker arms. Refer to Camshaft Replacement - Right Side and Valve Rocker Arm Replacement - Right Side.

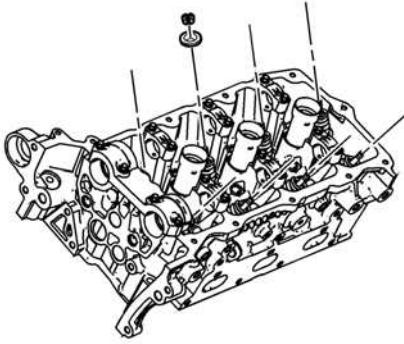


Note: If the EN 46106 Flywheel Holding Tool is not installed, the crankshaft may rotate. If the crankshaft rotates, disassembly and reassembly of the entire camshaft timing system may be required.

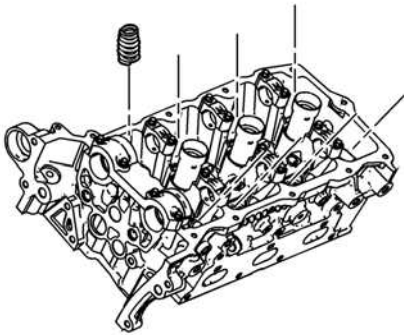
3. Install the EN 46106 Flywheel Holding Tool in order to prevent crankshaft rotation.
4. Remove the spark plug from the applicable cylinder. Refer to Spark Plug Replacement.
5. Install the J 39313 Spark Plug Port Adapter to the applicable cylinder.
6. Connect the J 39313 Spark Plug Port Adapter to a compressed air source.



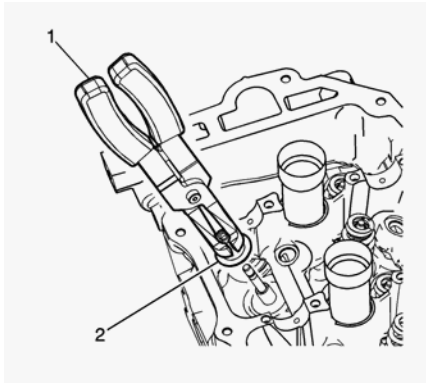
7. Install the EN 46110 On-Vehicle Valve Spring Compressor above the applicable cylinder as shown.
8. Tighten the EN 46110 On-Vehicle Valve Spring Compressor nut (2).



9. Remove the valve keepers.
10. Loosen the *EN 46110* On-Vehicle Valve Spring Compressor nut.
11. Remove the valve spring retainer.

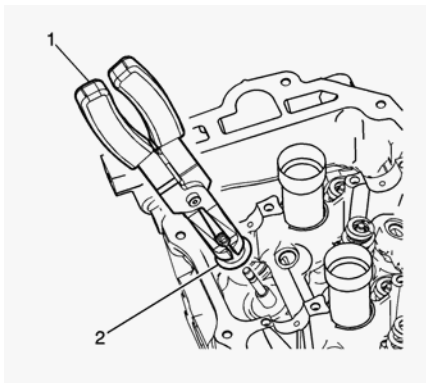


12. Remove the valve springs.

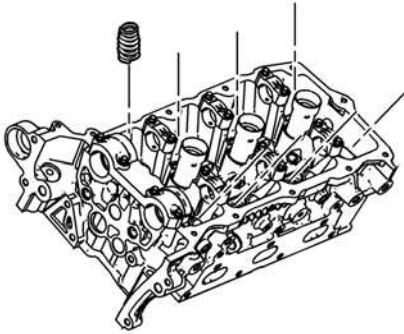


13. Use the *EN 46116* Valve Stem Seal Remover/Installer (1) in order to remove the valve stem seal (2).

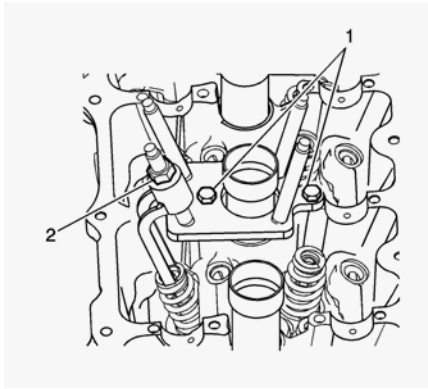
[Installation Procedure](#)



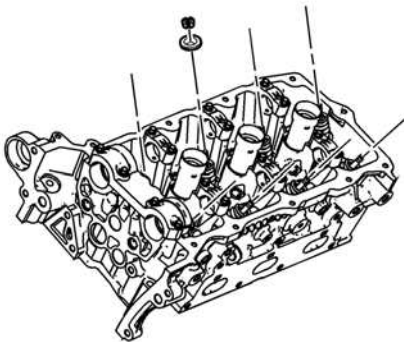
1. Use the *EN 46116* Valve Stem Seal Remover/Installer (1) in order to install the valve stem seals (2).



2. Install the valve spring.
3. Install the valve spring retainer.



4. Install the *EN 46110* On-Vehicle Valve Spring Compressor above the applicable valve spring as shown.
Tighten the *EN 46110* On-Vehicle Valve Spring Compressor nut (2).



5. Install the valve spring keepers.
6. Remove the *EN 46110* On-Vehicle Valve Spring Compressor.
7. Disconnect the *J 39313* Spark Plug Port Adapter from the compressed air source.
8. Remove the *J 39313* Spark Plug Port Adapter.
9. Install the spark plugs. Refer to Spark Plug Replacement.
10. Install the rocker arms and camshafts. Refer to Valve Rocker Arm Replacement - Right Side and Camshaft Replacement - Right Side.
11. Remove the *EN 46106* Flywheel Holding Tool.
12. Install the starter motor. Refer to Starter Replacement.

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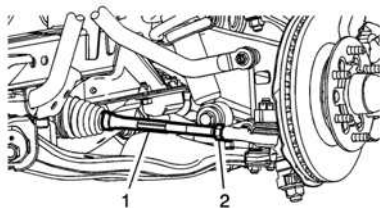
Submodel: | **Engine Type:** | **Liters:**

Fuel Delivery: | **Fuel:**

Wander is the undesired drifting or deviation of a vehicle to either side from a straight path with hand pressure on the steering wheel. Wander is a symptom of the vehicle's sensitivity to external disturbances, such as road crown and crosswind, and accentuated by poor on-center steering feel.

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Submodel: | Engine Type: | Liters:
Fuel Delivery: | Fuel:



1. Loosen the tie rod nut (2).
2. Rotate the tie rod (1) the required toe specification setting. Refer to Wheel Alignment Measurement.

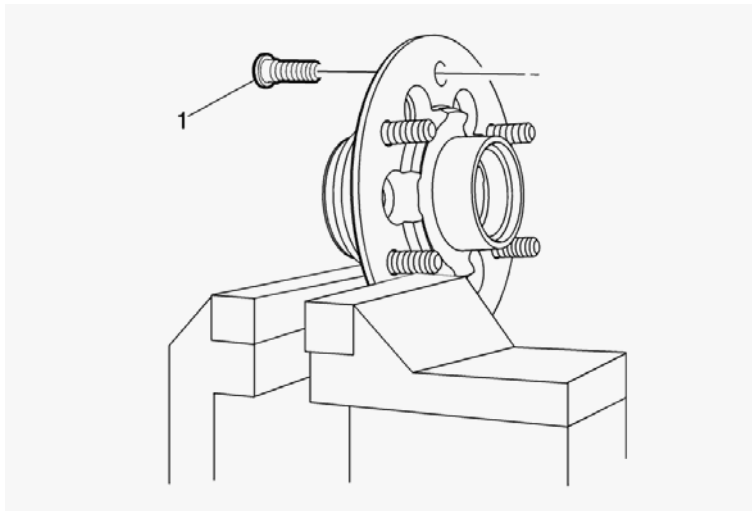
Caution: Refer to Fastener Caution.

3. Tighten the jam nut on the tie rod to **70 Y (52 lb ft)**.
4. Check the toe setting after tightening.
5. Re-adjust the toe setting if necessary.

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Submodel: | Engine Type: | Liters:

Fuel Delivery: | Fuel:



Wheel Stud Replacement

Callout

Component Name

Preliminary Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation.
3. Remove the front brake rotor from the vehicle. Refer to Front Brake Rotor Replacement.

Wheel Stud

Procedure

1

1. Position the wheel hub in a vise.
2. Using a hammer, remove the wheel stud from the wheel hub.
3. Position the wheel stud in the wheel hub.

Note: When installing the wheel nut, reverse the wheel nut so that the flat part of the wheel nut is against the washers.

4. Using 4 or 5 flat washers and a wheel nut, tighten the wheel nut until the wheel stud is fully seated in the wheel hub.

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Submodel: | Engine Type: | Liters:

Fuel Delivery: | Fuel:

Steering and vibration complaints are not always the result of improper alignment. One possible cause is wheel and tire imbalance. Another possibility is tire lead due to worn or improperly manufactured tires. Lead/pull is defined as follows: At a constant highway speed on a typical straight road, lead/pull is the amount of effort required at the steering wheel to maintain the vehicle's straight path. Lead is the vehicle deviation from a straight path on a level road without pressure on the steering wheel. Refer to Radial Tire Lead/Pull Correction in order to determine if the vehicle has a tire lead problem.

Before performing any adjustment affecting wheel alignment, perform the following inspections in order to ensure correct alignment readings:

- Inspect for visible damage to the suspension components and replace as necessary.
- Inspect the tires for the proper inflation and irregular tire wear. Refer to Vehicle Certification, Tire Placard, Anti-Theft, and Service Parts ID Label and Tire Diagnosis - Irregular or Premature Wear.
- Inspect the runout of the wheels and the tires. Refer to Tire and Wheel Runout Specifications.
- Inspect the wheel bearings for backlash and excessive play. Refer to Wheel Bearings Diagnosis.
- Inspect the ball joints for looseness or wear.
- Inspect the tie rod ends for looseness or wear.
- Inspect the control arms and stabilizer shaft for looseness or wear.
- Inspect the steering gear for looseness at the frame. Refer to Fastener Tightening Specifications.
- Inspect the struts/shock absorbers for wear, leaks, and any noticeable noises. Refer to Suspension Strut and Shock Absorber Testing - On Vehicle.
- Inspect the vehicle trim height. Refer to Trim Height Inspection.
- Inspect the steering wheel for excessive drag or poor return due to stiff or rusted linkage or suspension components.
- Inspect the fuel level. The fuel tank should be full or the vehicle should have a compensating load added.

Give consideration to excess loads, such as tool boxes, sample cases, etc. If normally carried in the vehicle, these items should remain in the vehicle during alignment adjustments. Give consideration also to the condition of the equipment being used for the alignment. Follow the equipment manufacturer's instructions.

Satisfactory vehicle operation may occur over a wide range of alignment settings. However, if the setting exceeds the service allowable specifications, correct the alignment to the service preferred specifications. Refer to Wheel Alignment Specifications.

Perform the following steps in order to measure the front and rear alignment angles:

1. Install the alignment equipment according to the manufacturer's instructions.
2. Jounce the front and the rear bumpers 3 times prior to checking the wheel alignment.
3. Measure the alignment angles and record the readings.

Note:

- Record the "Before" and "After" alignment measurements.
 - When performing adjustments to vehicles requiring a 4-wheel alignment, set the rear toe adjustment first in order to obtain proper front alignment angles.
4. Adjust alignment angles to vehicle specification, if necessary. Refer to Wheel Alignment Specifications.