

# Modern Automotive Technology Chapter 60

Drive Shaft & Transfer Case  
Diagnosis, Service & Repair



*North Montco*  
*Technical Career Center*

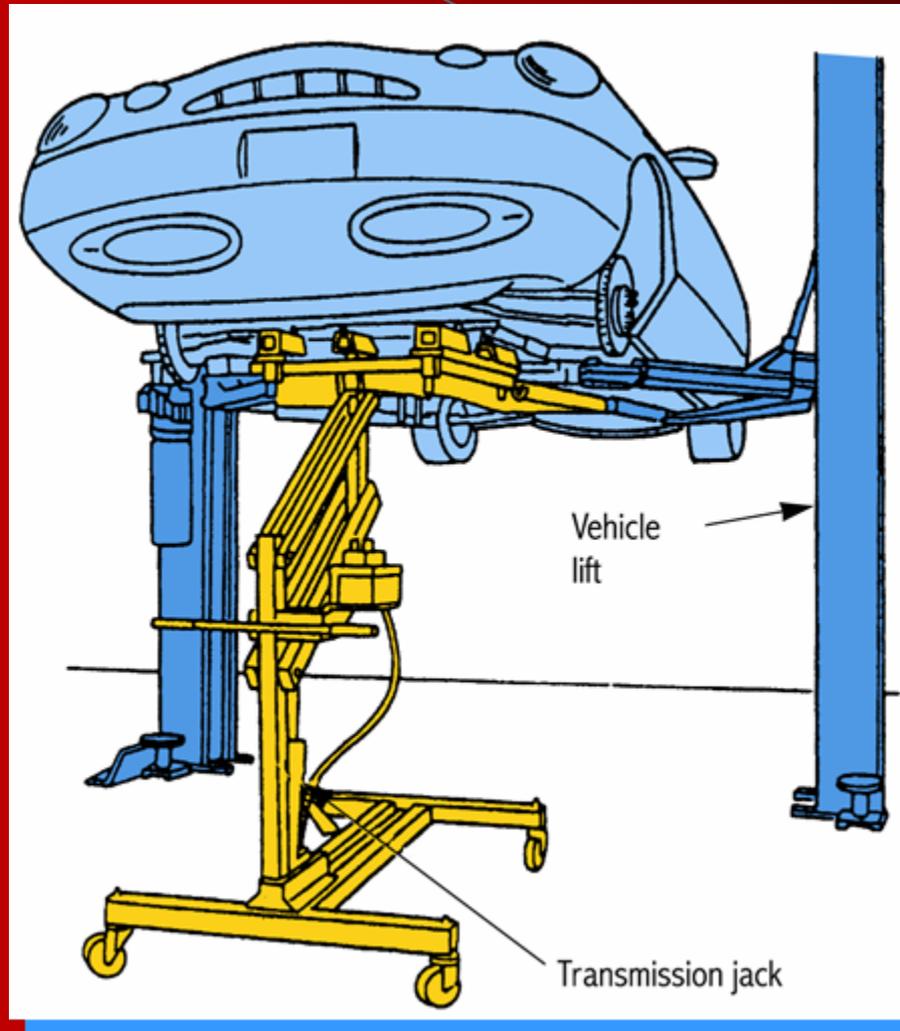
# Learning Objectives

- Troubleshoot common drive shaft problems.
- Check universal joint wear.
- Measure drive shaft runout.
- Remove and replace a drive shaft assembly.
- Replace universal joints.
- Perform basic service operations on a transfer case.
- Cite and practice good safety procedures.

# Chapter 60

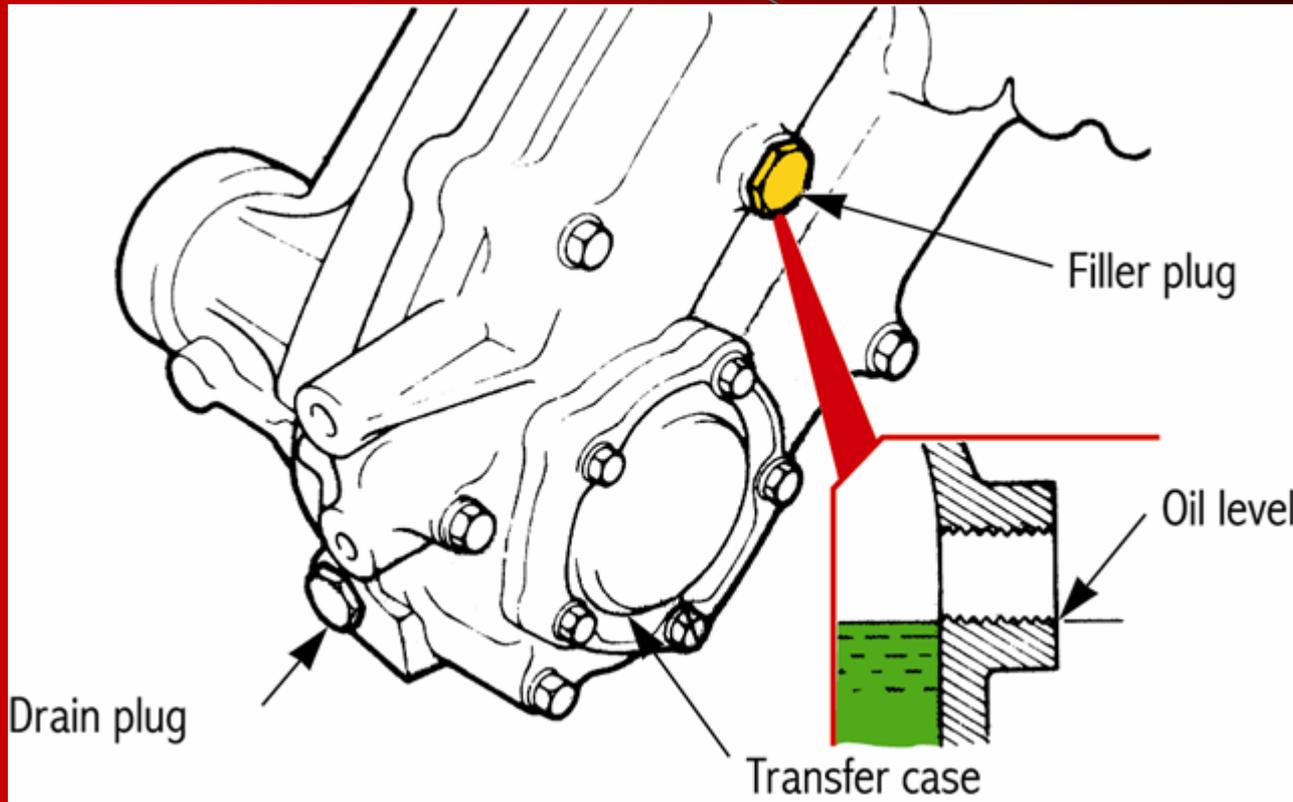
1. Because a Transfer Case is heavy, use a transmission jack when removing.
2. Before disassembling a Universal Joint, scribe/mark each component.

# Transfer Case Removal



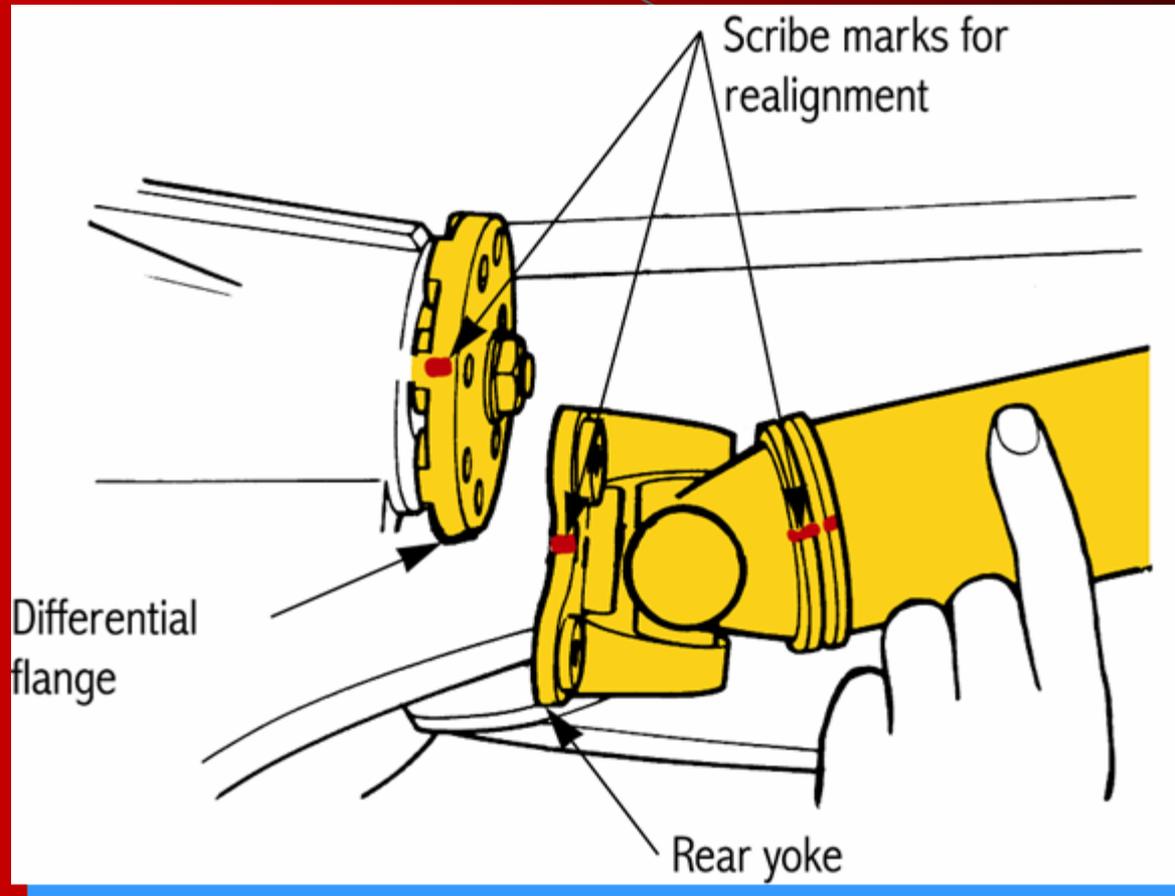
Use a hoist and transmission jack

# Transfer Case Oil



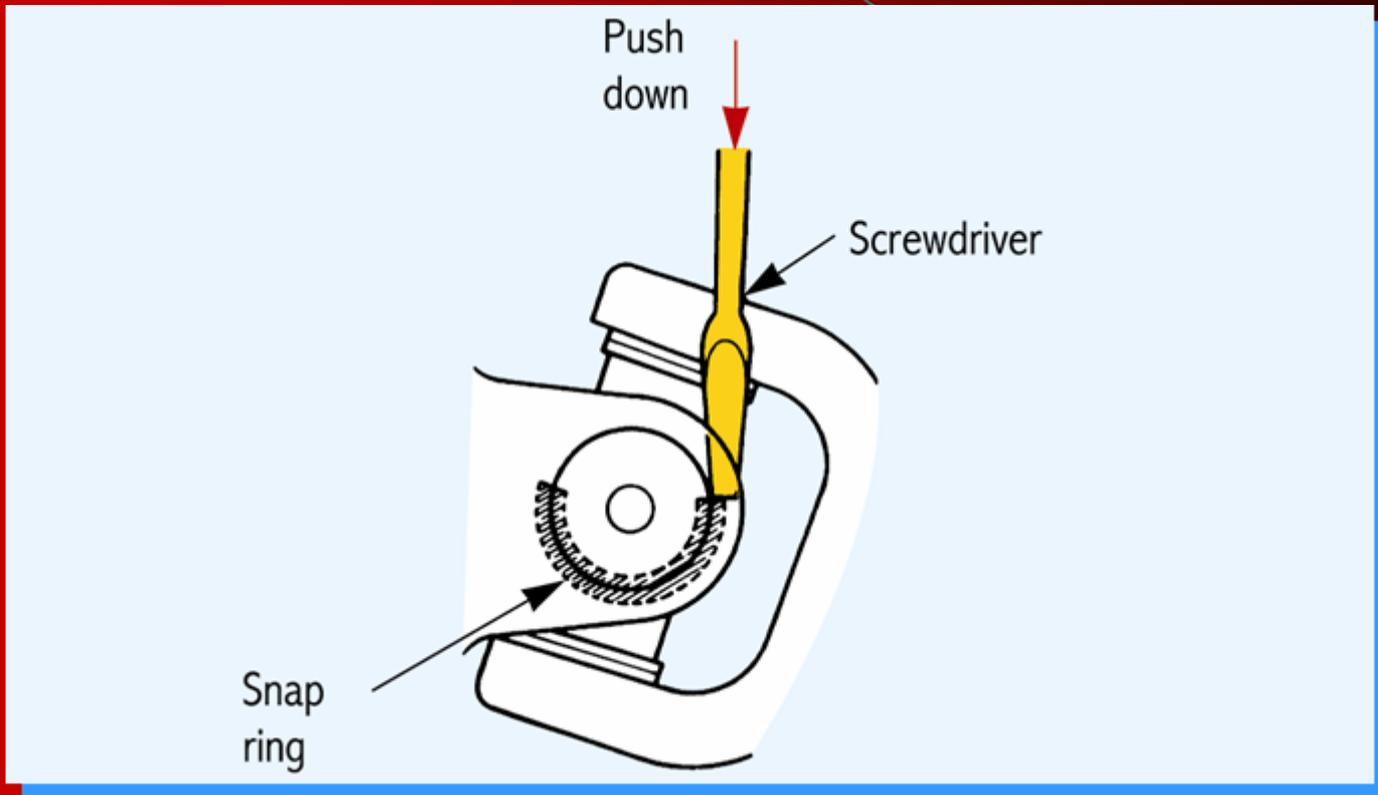
Check the oil condition and level first.  
Replace dirty or contaminated oil

# Drive Shaft Removal



Scribe marks on the yokes and universal joints to assist in reassembly

# Universal Joint Disassembly

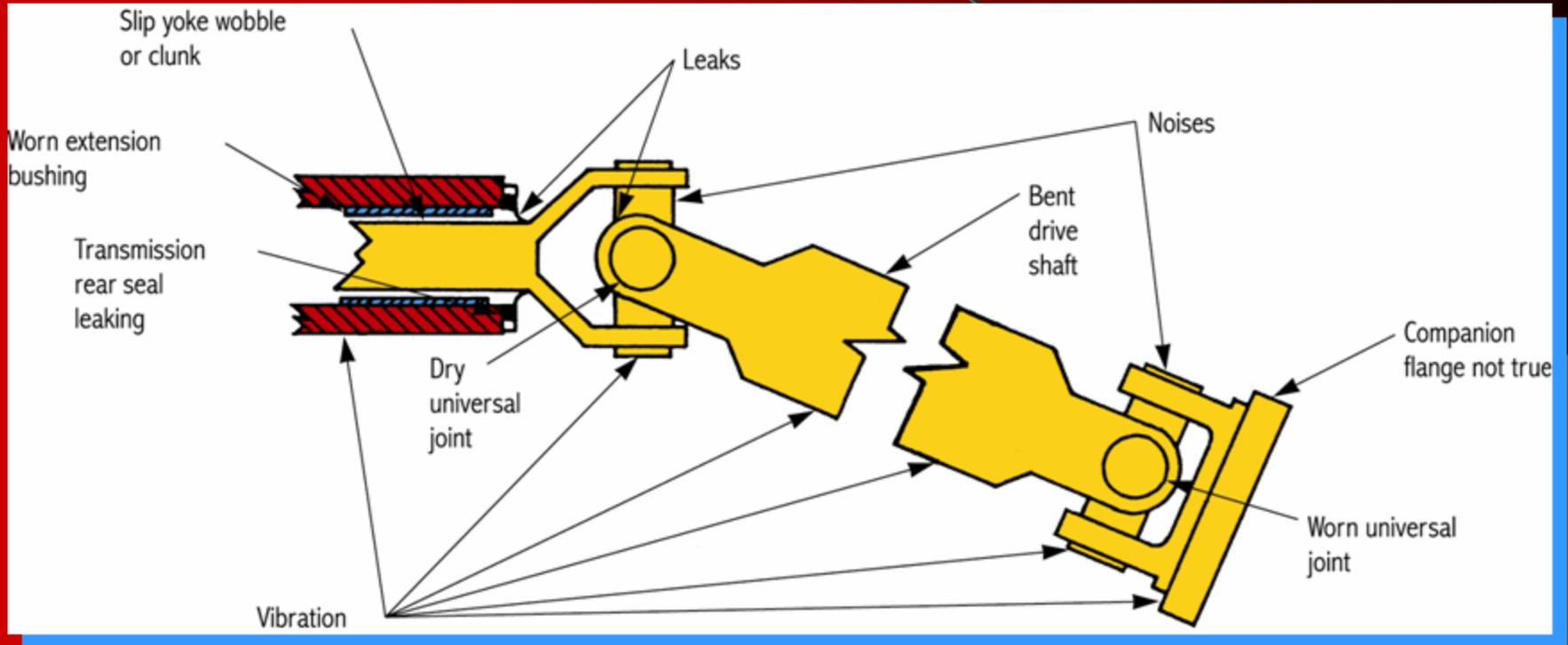


Remove retainers from the caps or yokes

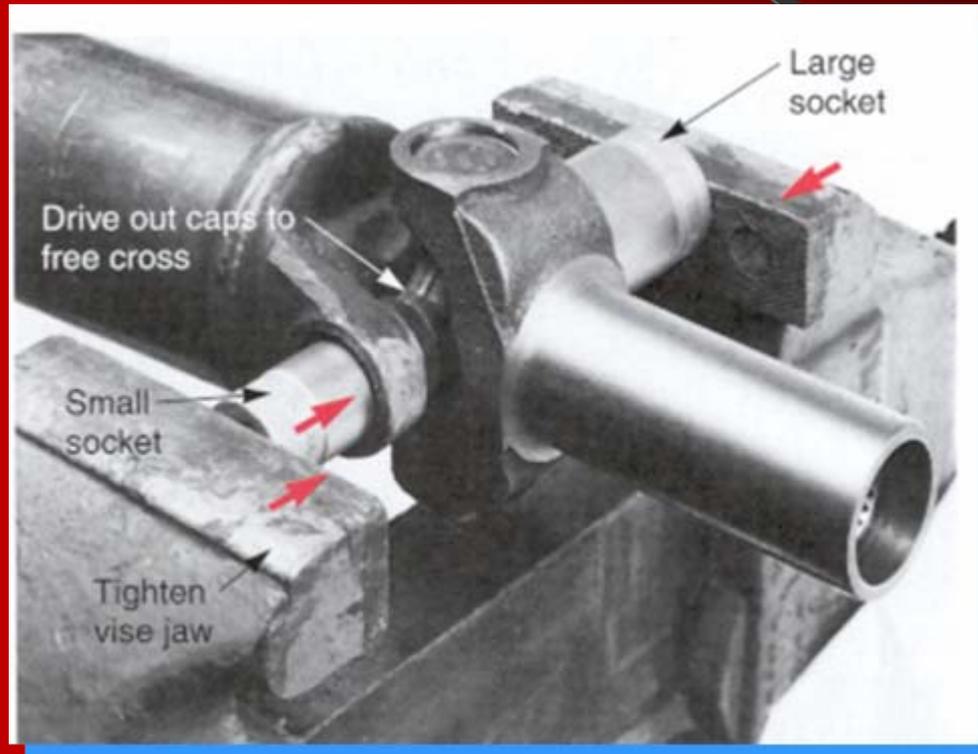
# Chapter 60

3. Some universal joint caps are secured by a special Plastic Resin injected into/around the universal joint cap.
4. A Worn Universal Joint can cause squeaking, grinding, clunking, or clicking sounds.

# Drive Shaft Problems



# Universal Joint Disassembly



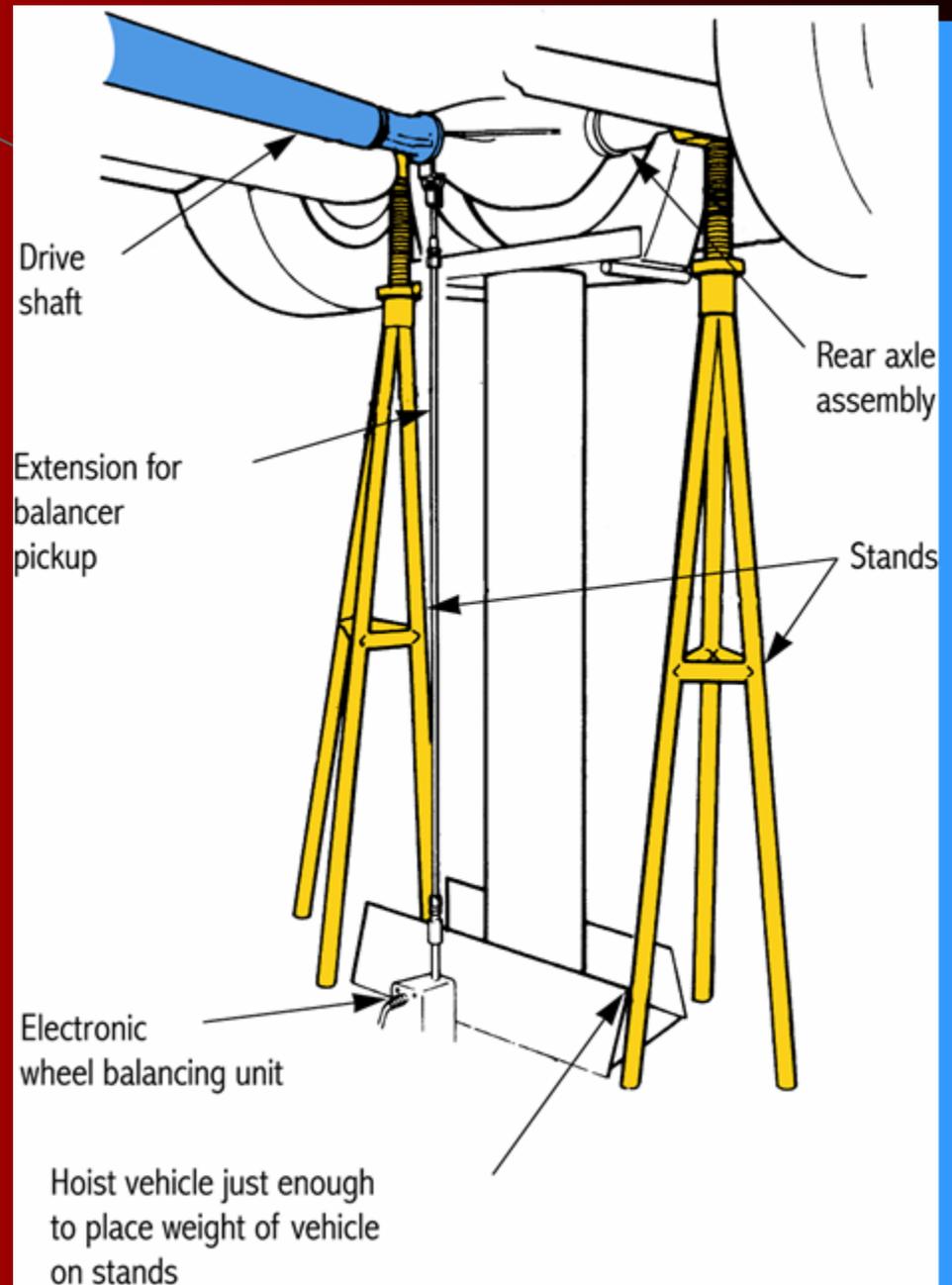
Use a vise and two sockets

# Chapter 60

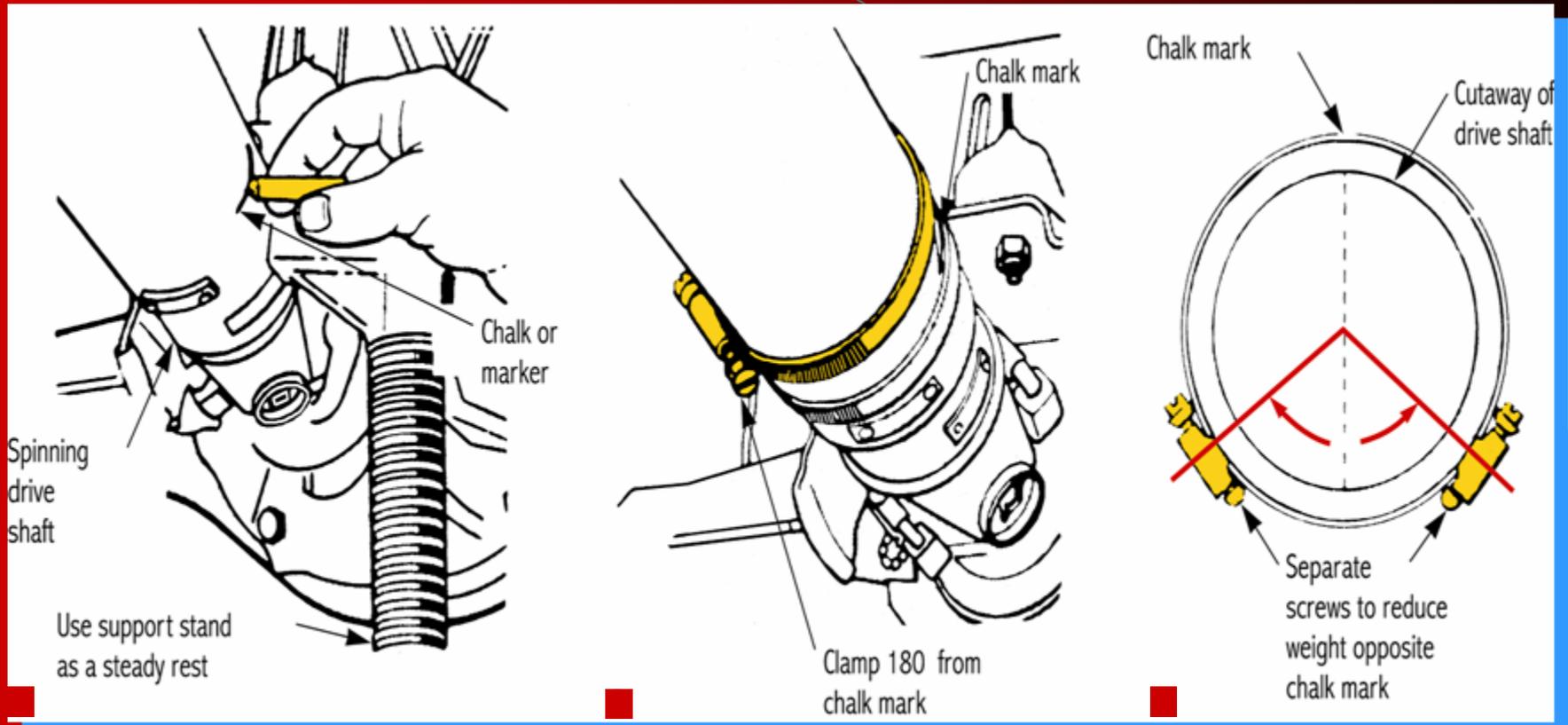
5. When balancing a drive shaft, if needed, install two Screw or Worm-Type hose clamps.
6. A Grease Gun can be used to lubricate universal joints that have fittings.

# Balancing a Drive Shaft

Place the vehicle on a twin post lift so that the rear axle housing is supported



# Balancing a Driveshaft

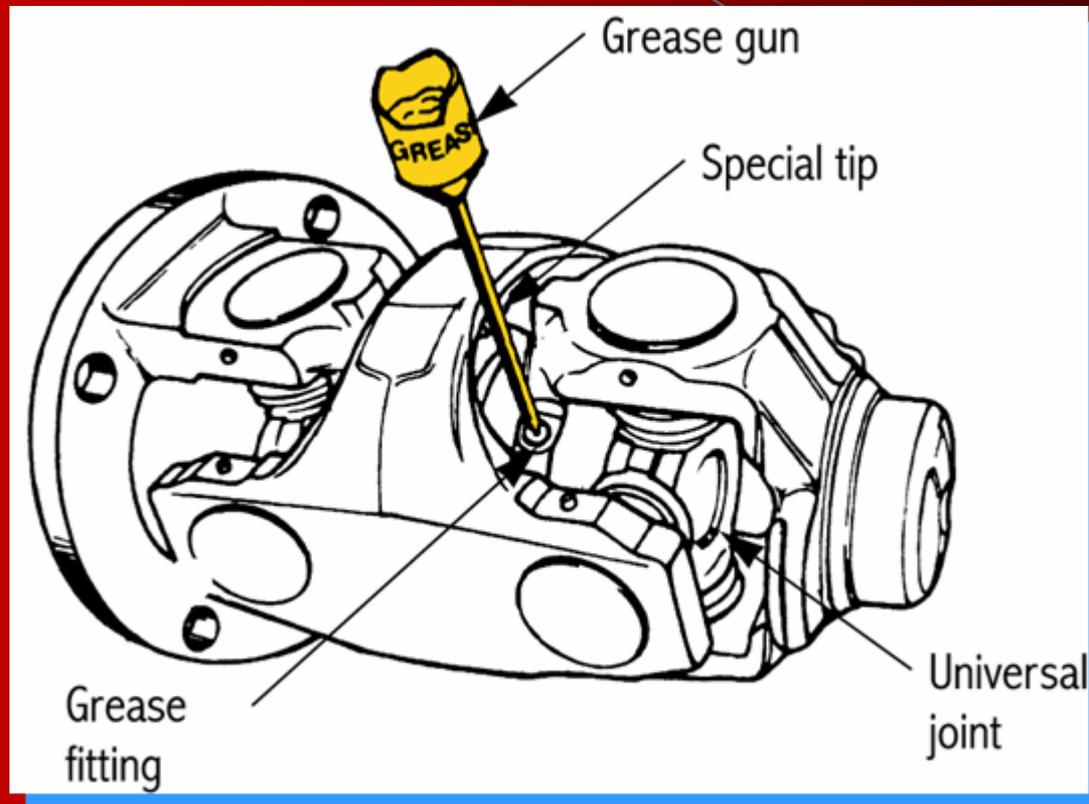


Mark the  
drive shaft

Install hose  
clamps

Adjust the  
clamps

# Greasing a Universal Joint

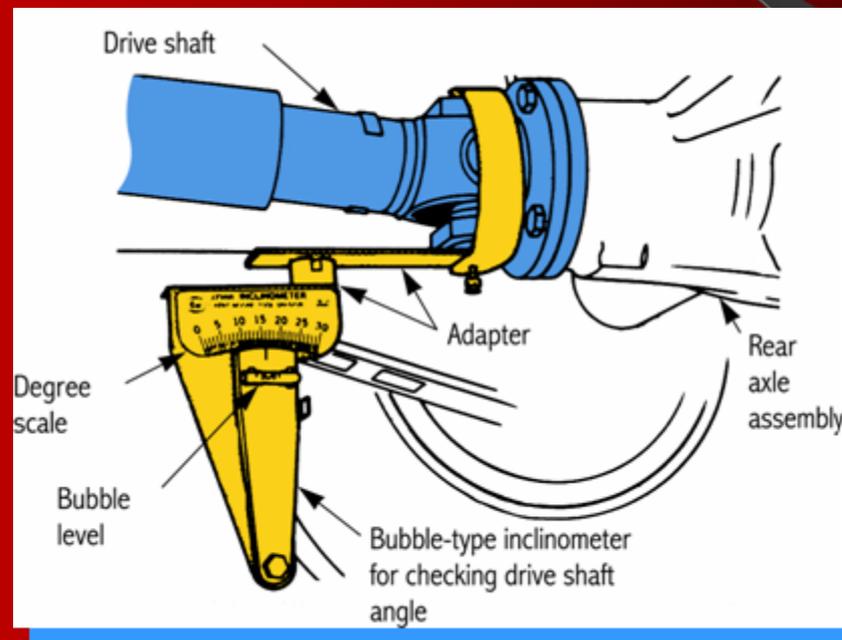


Narrow clearance may require a special long stem or needle

# Chapter 60

7. One way to check drive shaft angle is to use a Bubble Gauge.
8. Drive Shaft Vibration can be caused by any problem that affects drive shaft balance, runout, and angle.

# Measuring Driveline Angle



Adjusted by placing shims under the rear axle housing or transmission mount

# Drive Shaft Vibration

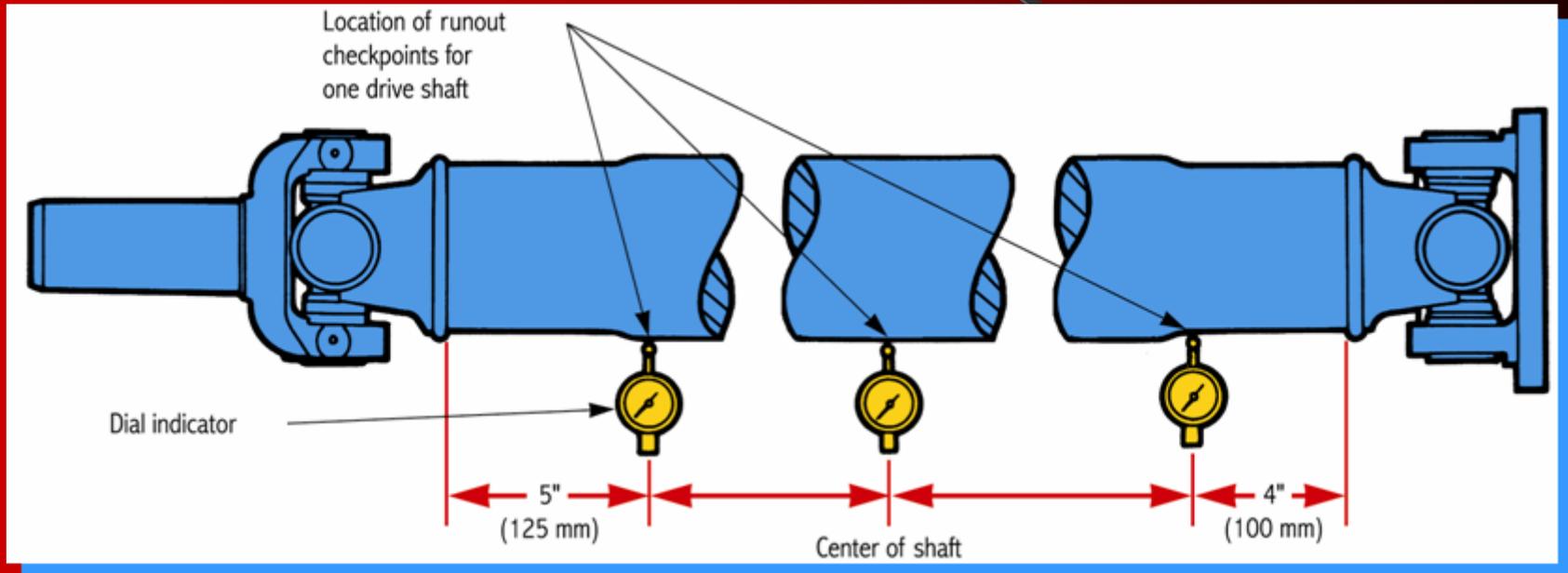
- Caused by problems that affect drive shaft balance, runout, and angle
- Vibration is more rapid than that caused by wheel or tire imbalance
- Because the drive shaft turns at engine speed in high gear, vibration frequency matches that of a clutch or engine vibration

# Chapter 60

9. A dial indicator is normally used to measure Drive Shaft Runout.

10. Grinding & Squeaking from the drive shaft is frequently caused by worn universal joints.

# Measuring Runout



Turn the drive shaft slowly, noting indicator movement

# Drive Shaft Noise

- Grinding and squeaking are often caused by worn universal joints
- Clunking is often caused by slip yoke wear, or extension housing bushing wear allowing the yoke to flop up and down as torque changes
- Whining may be caused by a dry, worn center support bearing

# Learning Objectives

- Troubleshoot common drive shaft problems.
- Check universal joint wear.
- Measure drive shaft runout.
- Remove and replace a drive shaft assembly.
- Replace universal joints.
- Perform basic service operations on a transfer case.
- Cite and practice good safety procedures.