

Modern Automotive Technology Chapter 60

Drive Shaft & Transfer Case
Diagnosis, Service & Repair



North Montco
Technical Career Center

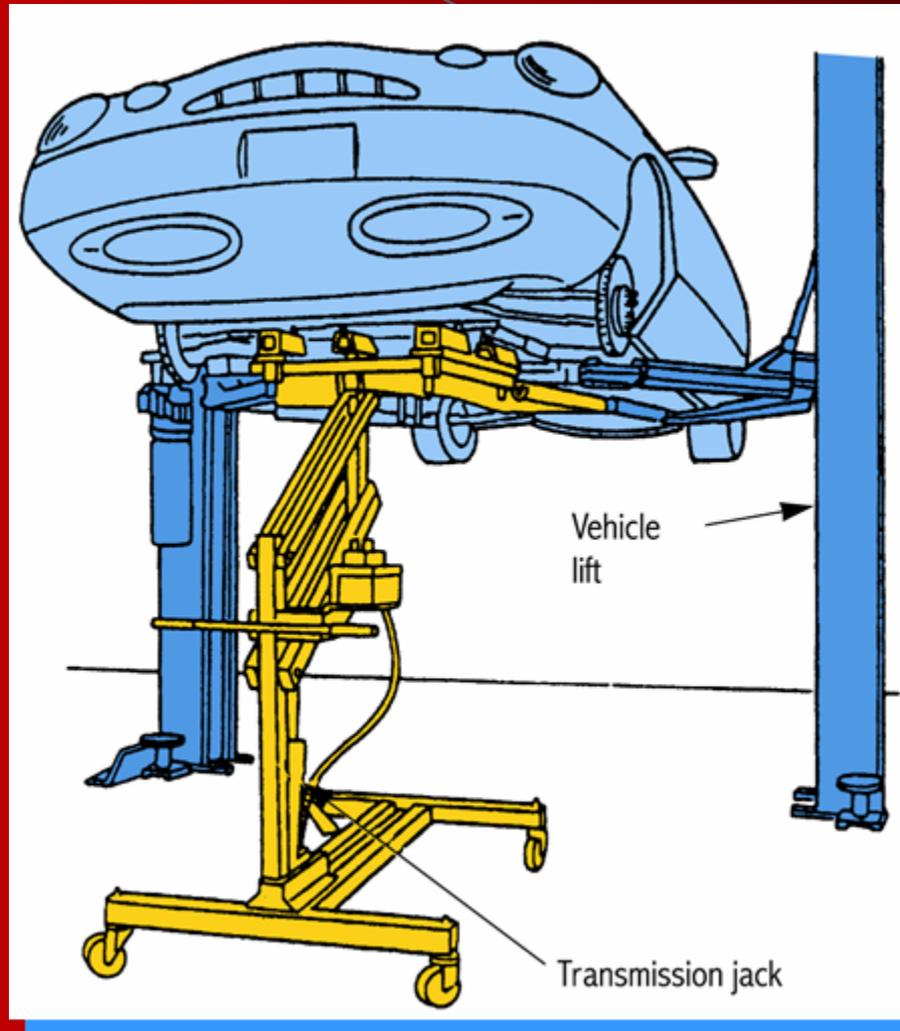
Learning Objectives

- 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

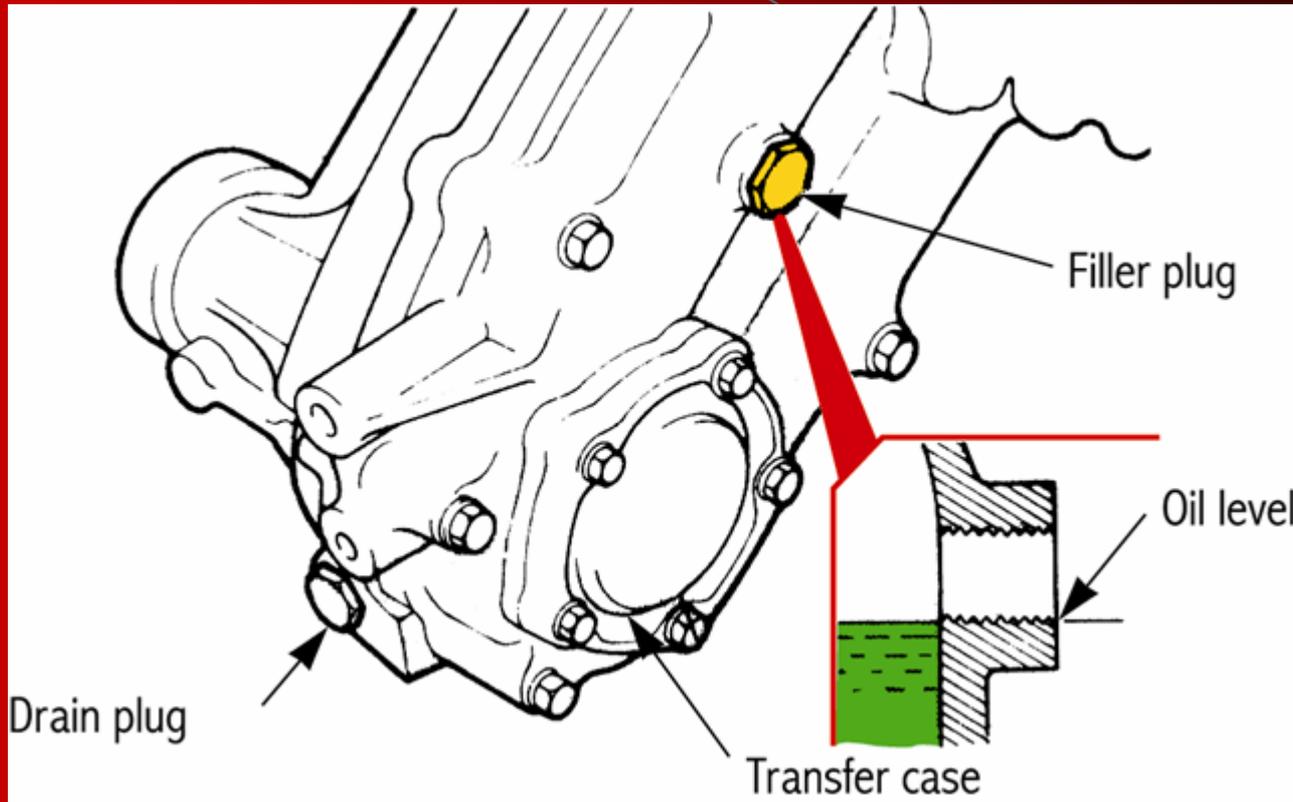
1. Because a Transfer Case is heavy, use a transmission jack when removing.
2. Before disassembling a Universal Joint, scribe/mark each component.

Transfer Case Removal



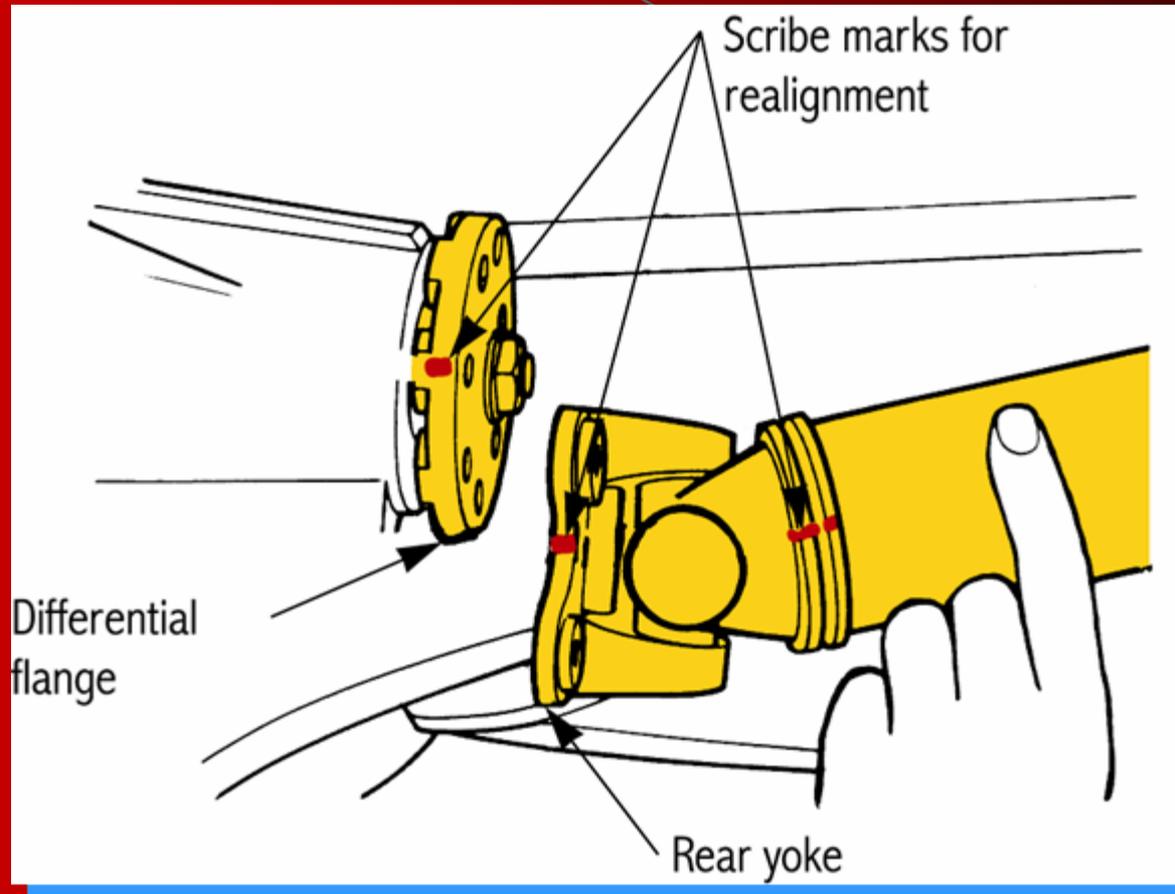
Use a hoist and transmission jack

Transfer Case Oil



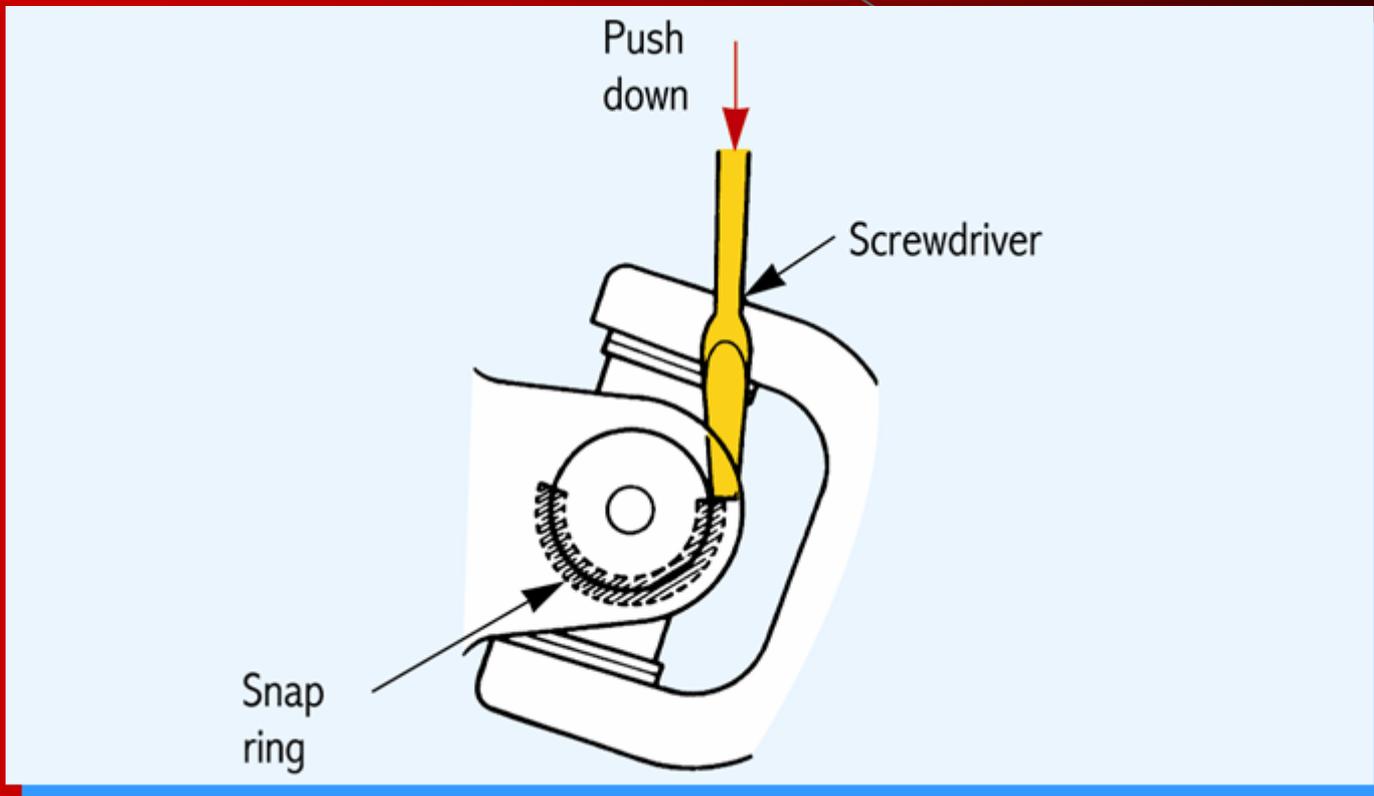
Check the oil condition and level first.
Replace dirty or contaminated oil

Drive Shaft Removal



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

Universal Joint Disassembly

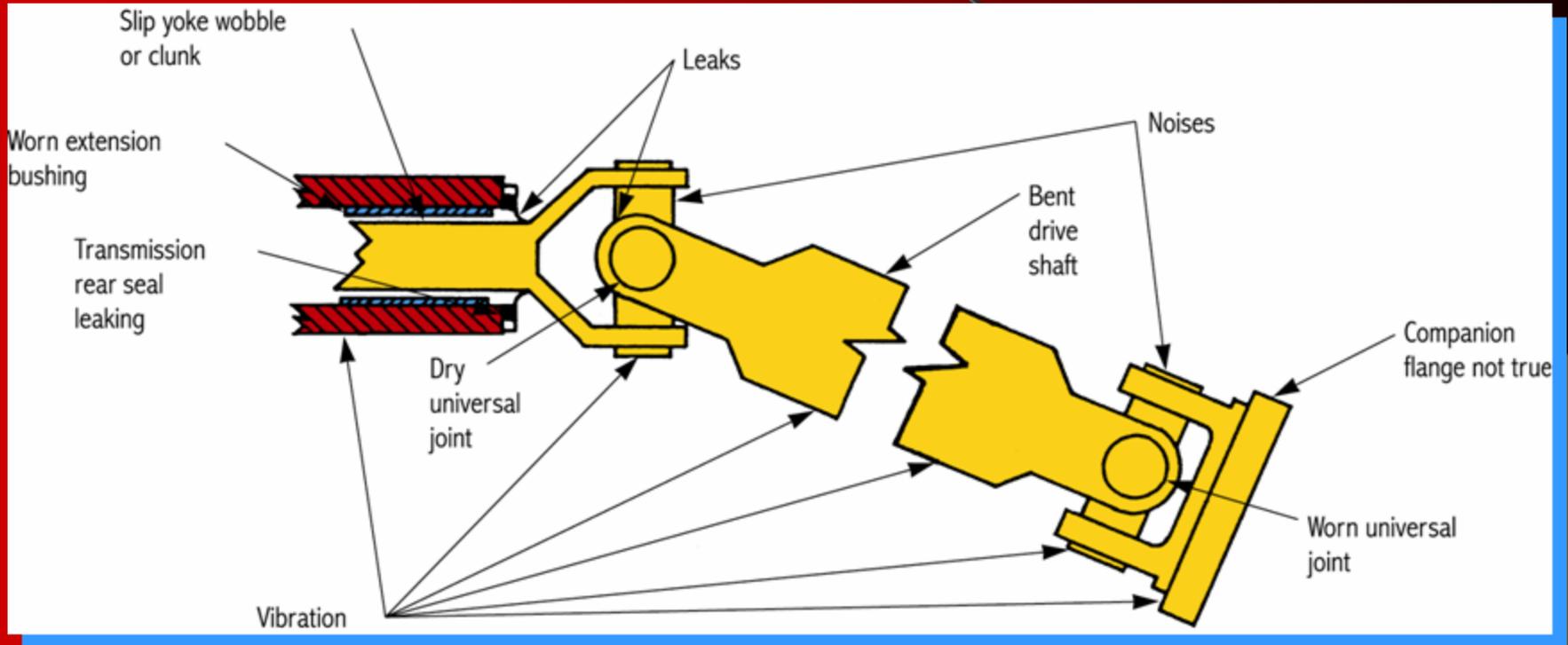


Remove retainers from the caps or yokes

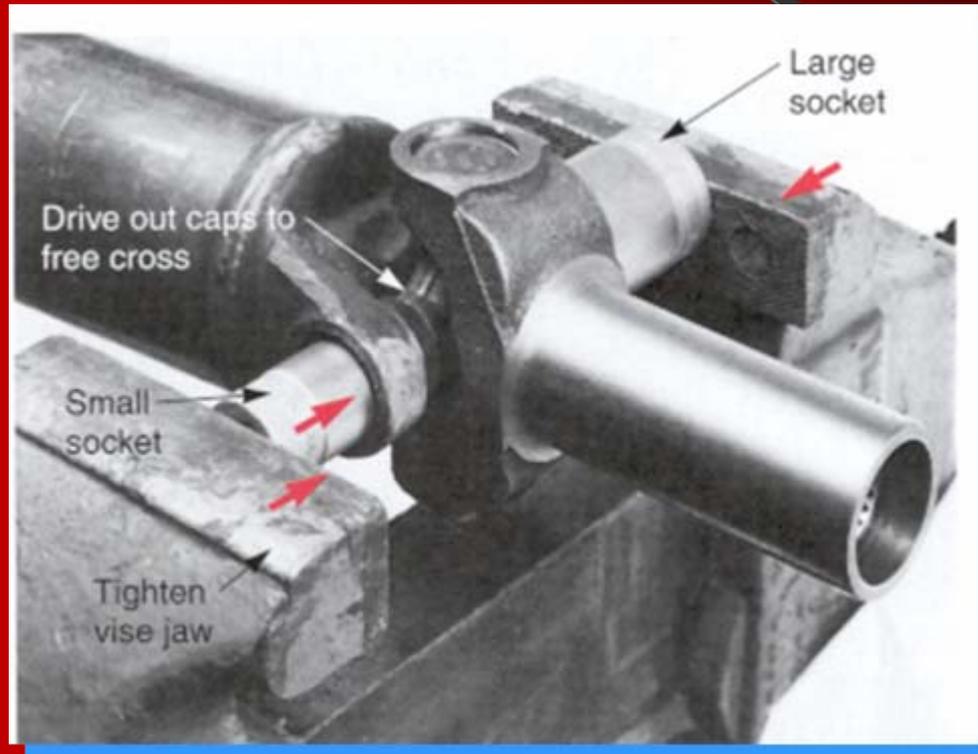
Chapter 60

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



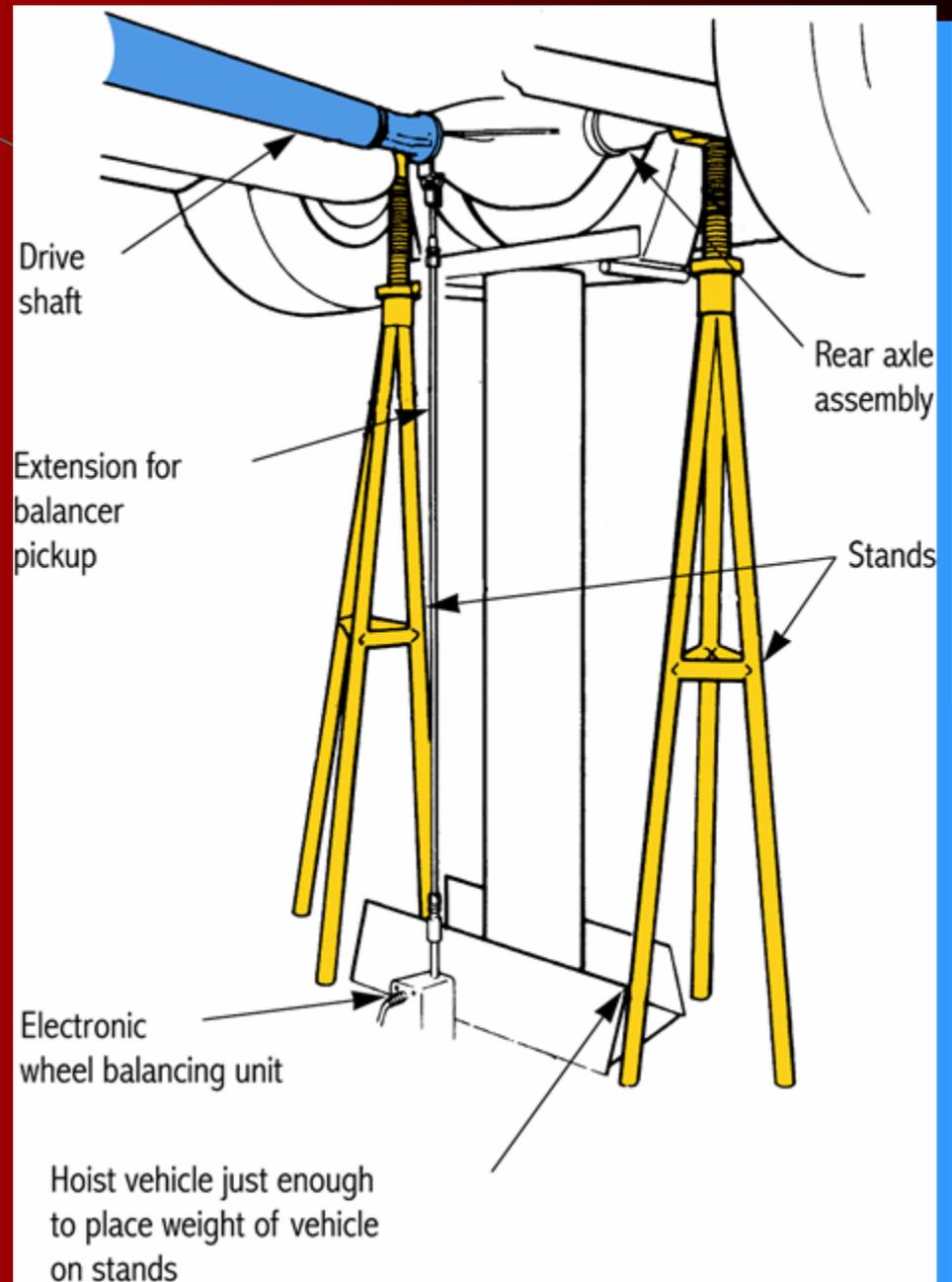
Use a vise and two sockets

Chapter 60

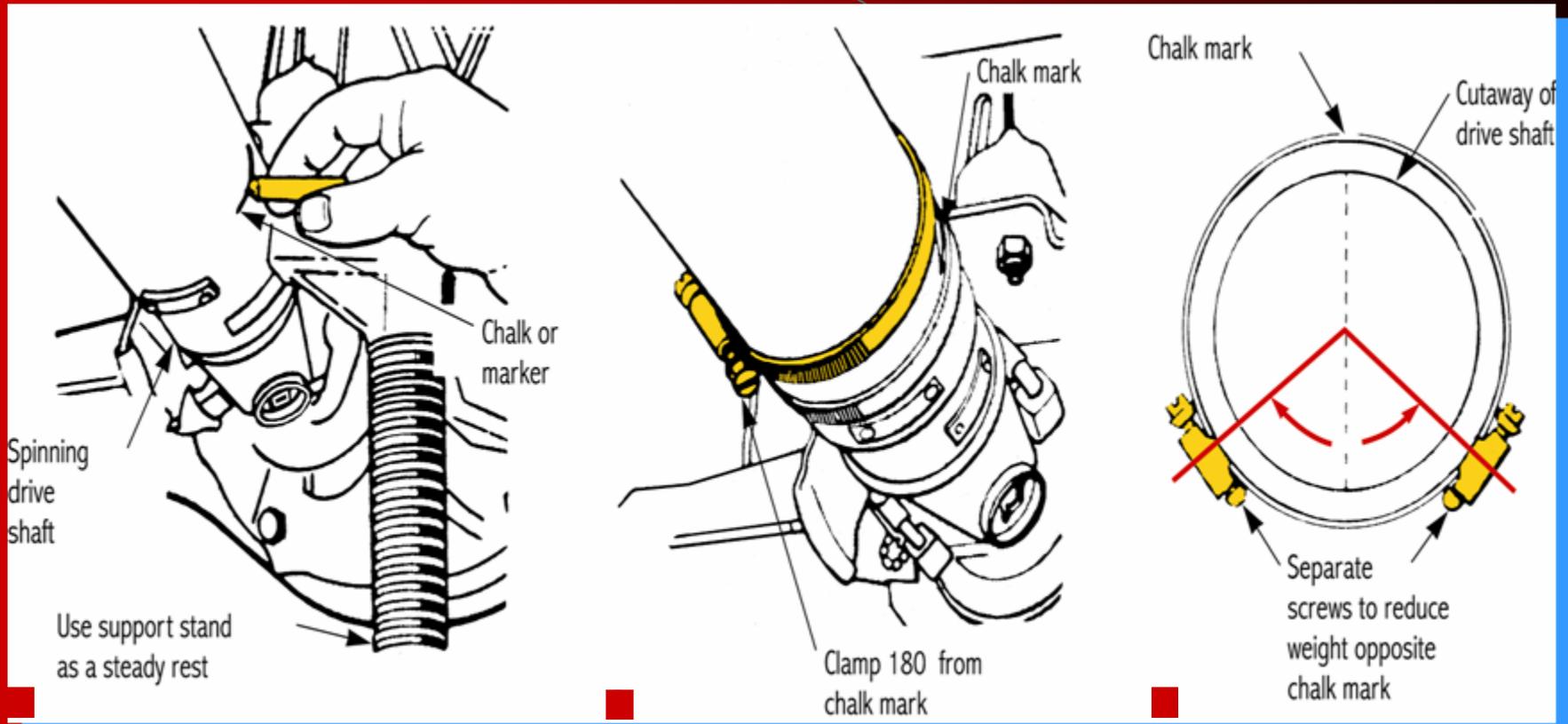
5. When balancing a drive shaft, if needed, install two Screw or Worm-Type hose clamps.
6. A Grease Gun can be used to lubricate universal joints that have fittings.

Balancing a Drive Shaft

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



Balancing a Driveshaft

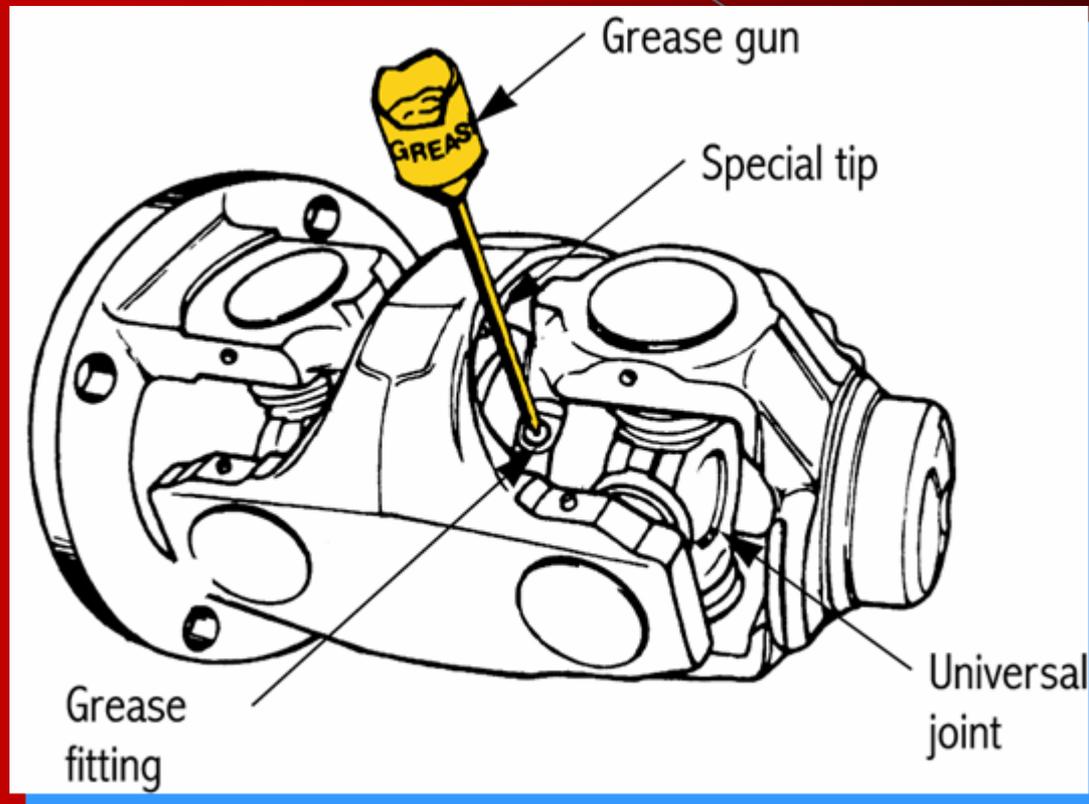


Mark the
drive shaft

Install hose
clamps

Adjust the
clamps

Greasing a Universal Joint

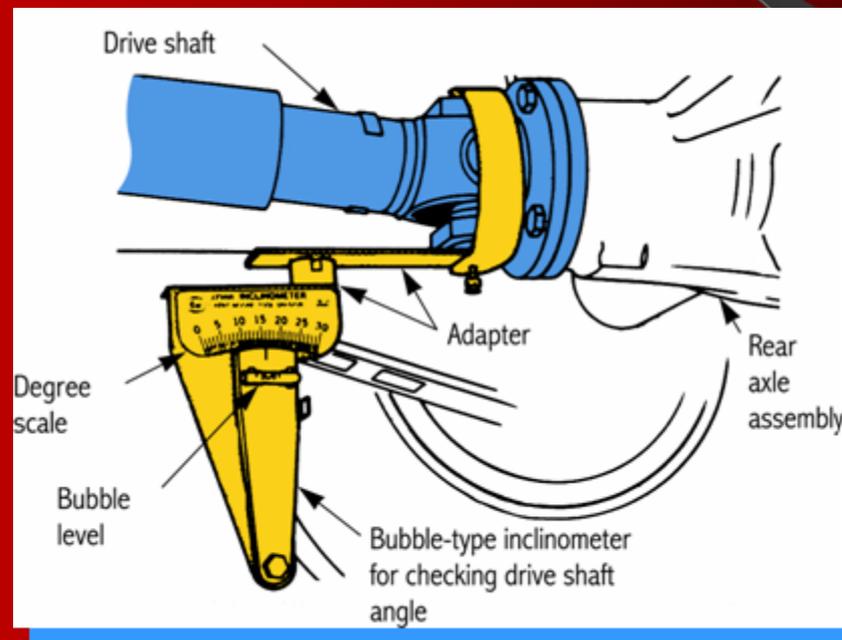


Narrow clearance may require a special long stem or needle

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

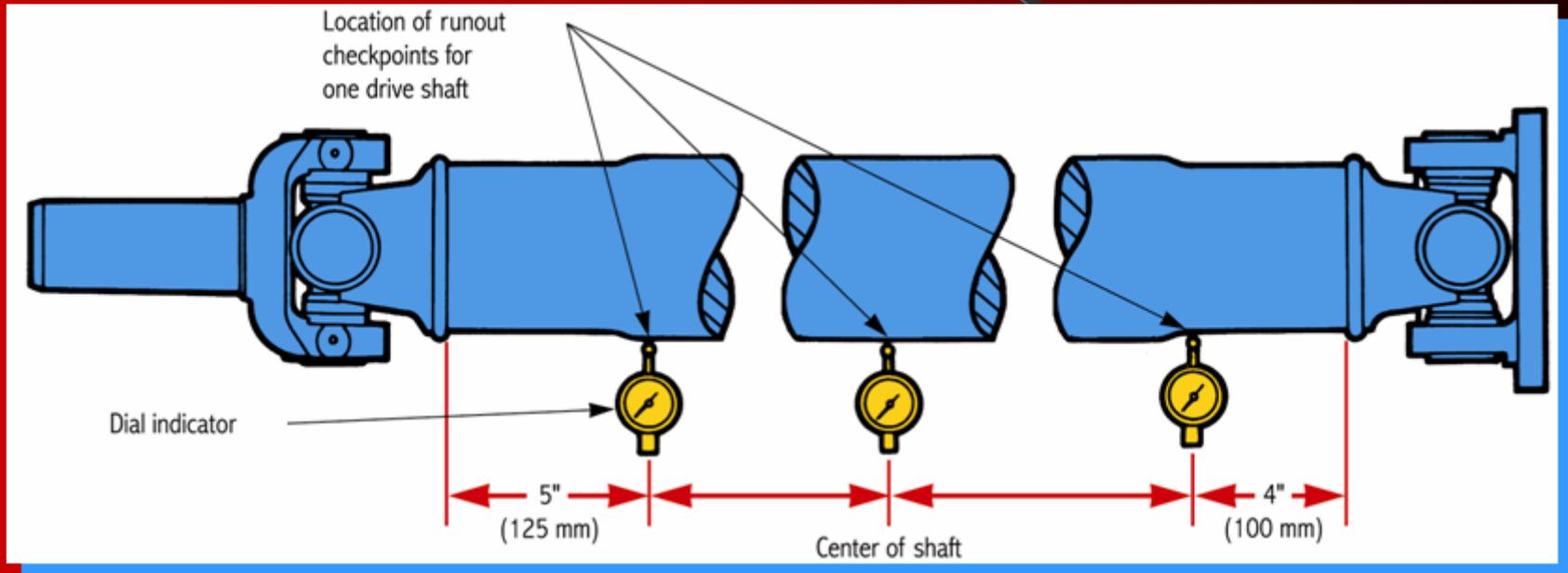
Drive Shaft Vibration

- 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.