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# PrecisionBalance Troubleshooting Guide

What to do when vibration still exists after **PrecisionBalance** has been installed.

**1. Check lateral & radial run out on each steer. If run out exceeds 1/8", check for:**

- Cocked rim(s) on hub assembly; if so re-lug wheel to hub – tighten the nuts one quarter turn at a time in a criss-cross sequence until they are tightened.
- Improper tire bead seat on wheel
- If the above check ok, replace tire.

\*\* Note: Rotating the tire 180 degrees on the wheel may help reduce run out.

**2. If run out does not exceed 1/8" of lateral & radial, deflate tire and rotate 180 degrees on wheel. Place valve stem at the 12 o'clock position and re-inflate tire to proper PSI. Test drive truck – If vibration still exists, take two wheel assemblies from a truck that is riding good and lug those assemblies to the truck in question. If vibration still exists, most likely there is another issue/probable cause of the vibration than the tire and/or wheel that were originally on the truck. If vibration is gone, demount the tires that were originally on the truck and check for ply separation. Contact the tire dealer and/or tire manufacturer for further inspection of the tire.**

**Please note the following are other possible causes that result in vibration/shimmy:**

- Defective suspension & steering components
- Excessive loose wheel bearing
- Improperly torqued lug nuts
- Defective shock or shock mounting
- Steering gear loose
- Ply separation or blister in tire
- Drive train misalignment
- Defective Tire

Look for wallowed out or elongated ball seats on stud located wheels. On hub piloted wheels look for elongated stud holes. Over torquing can lead to damaged ball seats on stud located wheels and can damage the disc service of hub piloted wheels resulting in the potential of contributing to excessive run out. Remove damaged wheels from service.

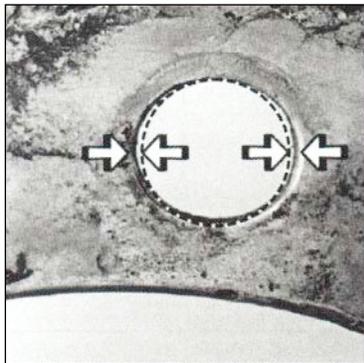


Fig. 1 Damaged hub piloted bolt hole. Elongation from true round (dashed circle) indicated by arrows.

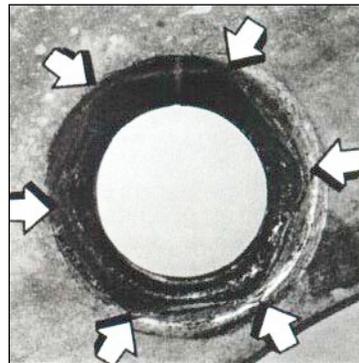
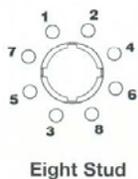
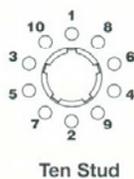


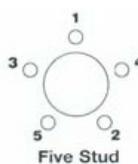
Fig. 2 Damaged ball seat contact area. Pounding of nut on ball seat contact area identified by arrows.



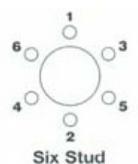
Eight Stud



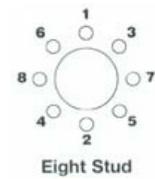
Ten Stud



Five Stud



Six Stud



Eight Stud



Ten Stud

Fig. 3 Tightening sequence for hub piloted wheels.

Fig. 4 Tightening sequence for stud located wheels

# PrecisionBalance Troubleshooting Guide

| Symptom                          | Possible Cause(s)  | Symptom                     | Possible Cause(s)   |
|----------------------------------|--|-----------------------------|---|
| <b>Pull Left/Right</b>           | <ul style="list-style-type: none"> <li>Uneven tire pressure</li> <li>Uneven tread wear</li> <li>Mismatched tires</li> <li>Uneven camber</li> <li>Uneven caster</li> <li>Brake drag</li> <li>Suspension/frame sag</li> <li>Unbalanced power assist</li> <li>Bent Spindle</li> <li>Worn suspension components (front-rear)</li> <li>Excessive tandem scrub</li> </ul>                                      | <b>Hard Steering</b>        | <ul style="list-style-type: none"> <li>Low air pressure</li> <li>Steering gear binding</li> <li>Steering lubricant low</li> <li>Excessive positive caster</li> <li>Defective power steering belt</li> <li>Power steering fluid level low</li> <li>Power steering pressure low</li> <li>Steering and suspension component dry</li> </ul> |
| <b>Centerline Steering Error</b> | <ul style="list-style-type: none"> <li>Incorrect front toe</li> <li>Rear wheel misalignment</li> <li>Excessive steering and suspension play</li> <li>Excessive gearbox play</li> <li>Gearbox loose at the frame</li> </ul>   | <b>Loose Steering</b>       | <ul style="list-style-type: none"> <li>Excessively loose wheel bearings</li> <li>Worn steering and suspension components</li> <li>Steering loose on mounting</li> <li>Excessive internal wear in steering gear</li> <li>Loose or worn steering shaft coupling</li> <li>Steering gear misadjusted</li> </ul>                             |
| <b>Shimmy</b>                    | <ul style="list-style-type: none"> <li>Excessive positive caster</li> <li>Wheel imbalance</li> <li>Defective suspension and steering components</li> <li>Excessive wheel and tire run out (lateral)</li> <li>Worn tires</li> <li>Under inflation</li> <li>Steering gear loose</li> <li>Excessive loose wheel bearings</li> <li>Ply separation or blister</li> <li>Improperly torqued lug nuts</li> </ul> | <b>Excessive Road Shock</b> | <ul style="list-style-type: none"> <li>Excessive positive caster</li> <li>Low air pressure</li> <li>Worn tires</li> <li>Wrong tire type</li> <li>Wrong shocks</li> <li>Worn shocks</li> <li>Springs wear or sagged</li> </ul>   |
| <b>Vibration</b>                 | <ul style="list-style-type: none"> <li>Wheel imbalance</li> <li>Excessive wheel and tire run out (axial)</li> <li>Drum imbalance</li> <li>Drive shaft imbalance</li> <li>Defective U joints</li> <li>Improper tire inflation</li> <li>Drive train misalignment</li> <li>Defective shock or shock mounting</li> <li>Defective tire</li> </ul>   | <b>Braking Instability</b>  | <ul style="list-style-type: none"> <li>Brakes incorrectly adjusted</li> <li>Contaminated brake linings</li> <li>Defective suspension components</li> <li>Incorrect alignment</li> <li>Bent Spindle</li> <li>Excessive negative caster</li> <li>Uneven or low tire pressure</li> </ul>   |
| <b>Noise (abnormal)</b>          | <ul style="list-style-type: none"> <li>Defective wheel bearing</li> <li>Over inflation</li> <li>Course tread pattern</li> <li>Incorrect alignment (all wheels)</li> <li>Incorrect turning angle</li> <li>Loose or rubbing suspension or steering component</li> <li>Driveline misalignment</li> </ul>  | <b>Poor Returnability</b>   | <ul style="list-style-type: none"> <li>Incorrect camber</li> <li>Incorrect caster</li> <li>Bent spindle</li> <li>Low air pressure</li> <li>Binding suspension and steering components</li> <li>Binding steering gear</li> </ul>   |
|                                  |  | <b>Wander/Instability</b>   | <ul style="list-style-type: none"> <li>Incorrect alignment</li> <li>Worn tires</li> <li>Low air pressure</li> <li>Mismatched tire</li> <li>Worn suspension and steering components</li> <li>Worn or loose steering gear</li> <li>Bent spindle</li> <li>Misadjusted steering gear</li> <li>Excessively loose wheel bearings</li> </ul>   |

