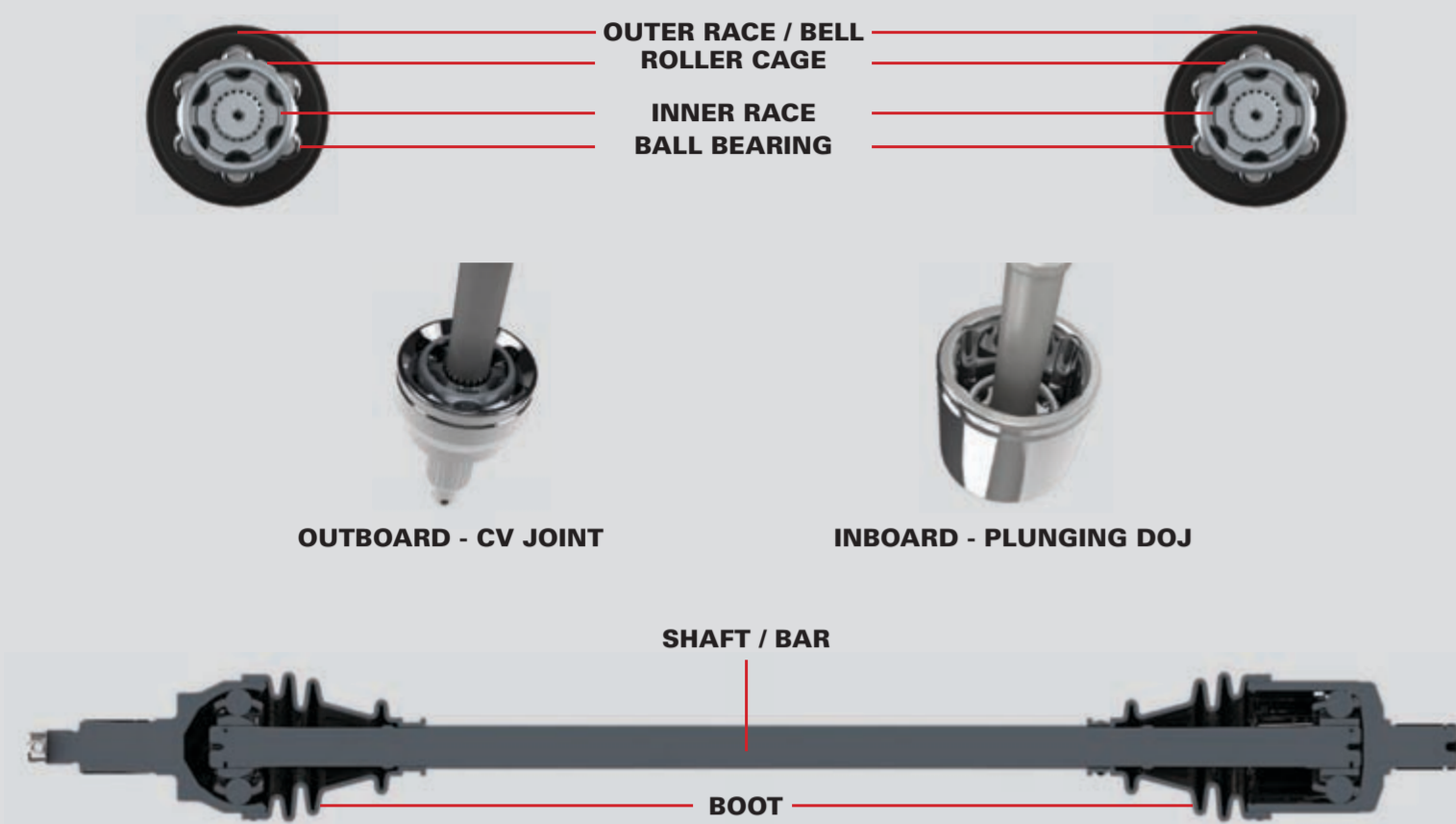


# HALF SHAFT ANALYSIS

## HALF SHAFT TERMINOLOGY



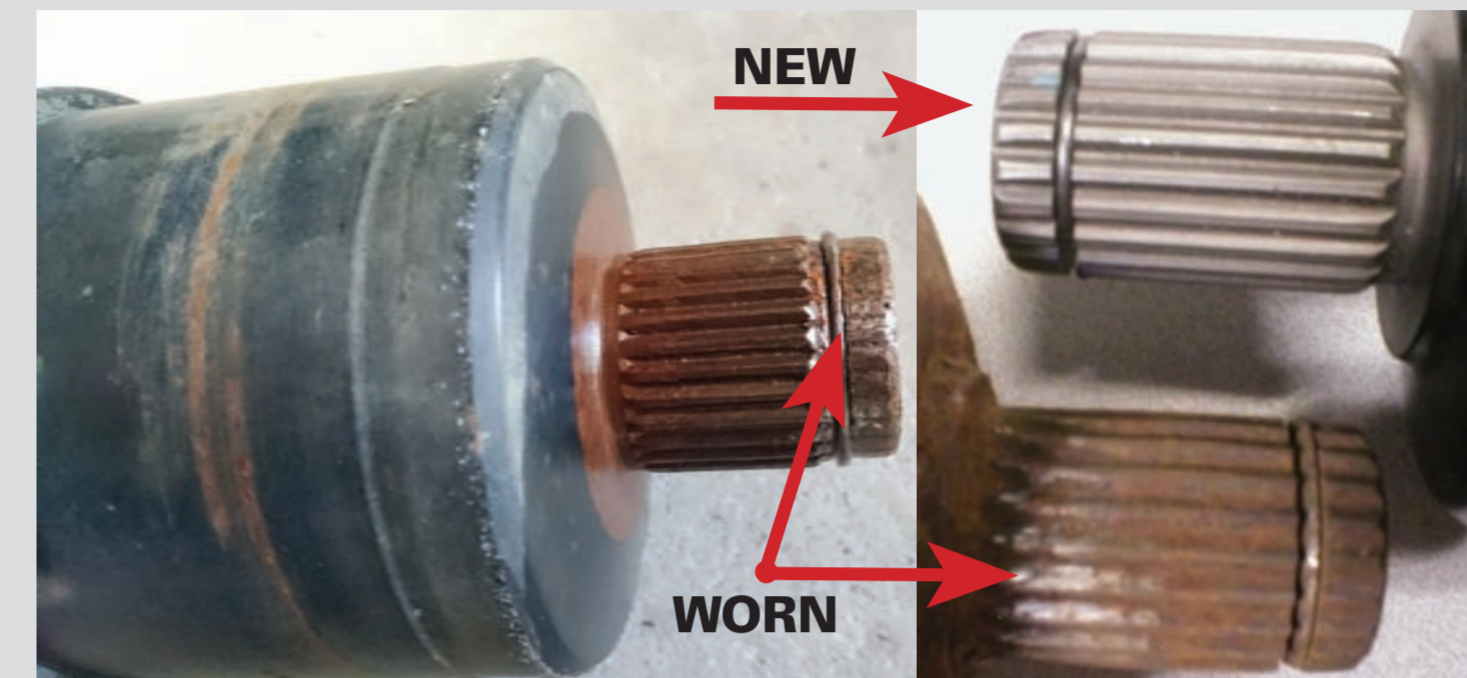
## OUTER RACE / BELL - CRACKED



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** The outer race/bell has cracked or broken out. Depending on the severity of the failure, this may be noticed as a noisy joint.  
**CAUSE:** An outer race/bell that is cracked or broken out can be caused by a lift kit, suspension changes, or anything that raises the ride height to something other than the manufacturer suggested specification range or an overload while the joint is at an extreme angle.  
**RECOMMENDATION:** The joint assembly can be replaced if there is no further damage, or replace the half shaft assembly.  
**WARRANTY:** Submit an Ask Polaris case for first time failures within the warranty period if the failure is a result of a component defect. Modifications to the driveline, powertrain or chassis may void coverage.

## OUTER RACE / BELL - STUB SHAFT WEAR / FRETTING



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** The stub shaft on the outer race/bell is worn where it inserts into the gearcase or transmission.  
**CAUSE:** Wear on the stub shaft of the outer race/bell is caused by movement of the splined shaft inside the hub.  
**RECOMMENDATION:** The joint assembly can be replaced if there is no further damage, or replace the half shaft assembly.  
**WARRANTY:** Submit an Ask Polaris case for first time failures within the warranty period if the failure is a result of a component defect. Modifications to the driveline, powertrain or chassis may void coverage.

## INBOARD / DOJ OUTER RACE / BELL - STUB SHAFT FAILURE



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** The stub shaft on the inboard/DOJ outer race/bell is failed where it inserts into the gearcase or transmission.  
**CAUSE:** A stub shaft failure is typically caused by an overload event.  
**RECOMMENDATION:** The joint assembly can be replaced if there is no further damage, or replace the half shaft assembly.  
**WARRANTY:** Submit an Ask Polaris case for first time failures within the warranty period if the failure is a result of a component defect. Modifications to the driveline, powertrain or chassis may void coverage.

## BAR / SHAFT - 45 DEGREE HELICAL FRACTURE



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** A bar/shaft 45 degree helical fracture can be identified by an angular or twisted (not straight) shear through the entire bar/shaft.  
**CAUSE:** A bar/shaft 45 degree helical fracture is caused by manufacturing defects such as material or process issues.  
**RECOMMENDATION:** The bar/shaft can be replaced if there is no further damage to the joints, or replace the half shaft assembly.  
**WARRANTY:** Submit an Ask Polaris case for first time failures within the warranty period if the failure is a result of a component defect. Modifications to the driveline, powertrain or chassis may void coverage.

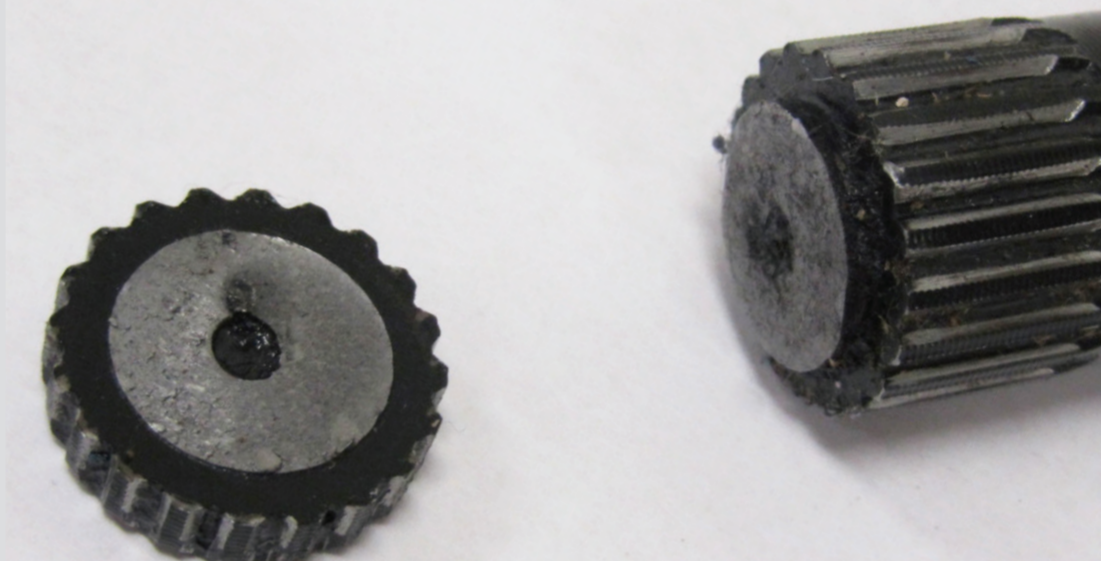
## BAR / SHAFT - STRAIGHT DUCTILE FAILURE



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** This failure can be identified by a "straight" shear through the entire bar/shaft.  
**CAUSE:** A bar/shaft straight ductile failure is caused by an overload event and is a designed failure point to protect the driveline/gearcase/transmission. Examples of what can cause this failure are situations such as power on landing, or going from operation in no/low traction conditions to high traction conditions quickly (such as spinning the tires on loose gravel and contacting dry pavement while they continue to spin).  
**RECOMMENDATION:** The bar/shaft can be replaced if there is no further damage to the joints, or replace the half shaft assembly.  
**WARRANTY:** No, because the bar/shaft failed as intended to protect the driveline components and did not fail as a defect, it does not qualify for warranty coverage.

## BAR / SHAFT - SHEAR AT CIRCLIP LOCATION



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** A bar/shaft shear at the circlip location.  
**CAUSE:** A bar/shaft shear at the circlip location is caused by a missing or failed circlip.  
**RECOMMENDATION:** The bar/shaft can be replaced if there is no further damage to the joints, or replace the half shaft assembly.  
**WARRANTY:** Submit an Ask Polaris case for first time failures within the warranty period if the failure is a result of a component defect. Modifications to the driveline, powertrain or chassis may void coverage.

## BAR / SHAFT - BENT



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** Bar/shaft is bent or bowed. This can be seen while rotating the half shaft as it creates a "jump rope" effect.  
**CAUSE:** Bar/shaft bending is caused by loading the bar/shaft past its elastic limit. The bar/shaft is acting as designed to protect the driveline/gearcase/transmission. Examples of what can cause this failure are situations such as power on landing, or going from operation in no/low traction conditions to high traction conditions quickly (such as spinning the tires on loose gravel and contacting dry pavement while they continue to spin).  
**RECOMMENDATION:** The bar/shaft can be replaced if there is no further damage to the joints, or replace the half shaft assembly.  
**WARRANTY:** No, because the bar/shaft failed as intended to protect the driveline components and did not fail as a defect, it does not qualify for warranty coverage.

## CV / DOJ ROLLER CAGE - CRACKED / BROKEN



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** The roller cage has cracked/broken. Depending on the severity of the failure, this may be noticed as a noisy joint.  
**CAUSE:** A roller cage that is cracked or broken can be caused by a lift kit, suspension changes, or anything that raises the ride height to something other than the manufacturer suggested specification range or an overload while the joint is at an extreme angle.  
**RECOMMENDATION:** The joint assembly can be replaced if there is no further damage, or replace the half shaft assembly.  
**WARRANTY:** Submit an Ask Polaris case for first time failures within the warranty period if the failure is a result of a component defect. Modifications to the driveline, powertrain or chassis may void coverage.

## CV / DOJ INNER RACE - CRACKED / BROKEN



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** The inner race has cracked/broken. Depending on the severity of the failure, this may be noticed as a noisy joint.  
**CAUSE:** An inner race that is cracked or broken can be caused by a lift kit, suspension changes, or anything that raises the ride height to something other than the manufacturer suggested specification range or an overload while the joint is at an extreme angle.  
**RECOMMENDATION:** The joint assembly can be replaced if there is no further damage, or replace the half shaft assembly.  
**WARRANTY:** Submit an Ask Polaris case for first time failures within the warranty period if the failure is a result of a component defect. Modifications to the driveline, powertrain or chassis may void coverage.

## JOINT FAILURE - OVER ANGULATION



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** A joint failure from extended use at over angulation can be identified by a noisy joint, or several possible damaged components. There may be nicks/indentations in the joint circlip from ball bearing contact, worn ball bearings, a damaged inner race, or damage to the cage and outer race/bell.  
**CAUSE:** A joint failure from over angulation can be caused by a lift kit, suspension changes, or anything that raises the ride height to something other than the manufacturer suggested specification range.  
**RECOMMENDATION:** The joint assembly can be replaced if there is no further damage, or replace the half shaft assembly.  
**WARRANTY:** No, because the joint failed as a result of unapproved modifications and did not fail as a defect, it does not qualify for warranty coverage.

## BOOT - TORN / RIPPED / PUNCTURED



WARRANTY:  SUBMIT A CASE FOR COVERAGE REVIEW  NO

**DESCRIPTION/SYMPOMS:** The boot has been punctured/ripped/torn and will leak grease. Continued operation of a vehicle with a damaged boot can result in low/no lubrication of the joint and may produce noise.  
**CAUSE:** A boot that has been punctured/ripped/torn has been contacted and damaged by a foreign object.  
**RECOMMENDATION:** Remove the boot and inspect for further damage. If the joint is not damaged, replace the boot.  
**WARRANTY:** No, because the boot failed as a result of a foreign object and did not fail as a defect, it does not qualify for warranty coverage. Joint damage that results from a torn/ripped/punctured boot does not qualify for warranty coverage.