

# HOWE RACING ENTERPRISES

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## HOW YOU CAN CAUSE YOUR BALL JOINTS TO BREAK.

We have produced this technical bulletin to make you aware of the causes of ball joint failure. It is nearly impossible to destroy a Howe ball joint when installed and maintained properly. It is not possible to produce a ball joint that is indestructible when misused. Fortunately, ball joints don't just break on their own and you can greatly reduce or eliminate the possibility of failure if you use them properly.

### #1 MISFIT TAPER

The most common cause of ball joint failure is the result of the tapered hole in the spindle not matching the taper of the ball joint stud. There are several possible causes for this mistake. If you have this condition the ball joint will eventually break at the base of the threads from the cyclical bending of the stud. If you only replace a ball joint after a failure the replacement ball joint will also break.

1. **Wrong Parts** – Ball joint tapers are rated in inches per foot. Make sure that you are using a spindle with the same taper as the ball joint. Many aftermarket spindles are made with tapers that are not the same as the o.e.m. parts. Specifically, be aware that some aftermarket Mustang II spindles are manufactured with Chevelle tapers.
2. **Out of Tolerance** – Most racing spindles are made in the aftermarket. Most are within acceptable tolerance but not all. Do not trust any spindle taper that is "as cast". A true taper requires an accurate machining process.
3. **Poor Reaming** – Straight flute reams are made for hand use and will chatter if used in a machine or a hand drill. When the ream chatters the oscillation causes the hole to become non-concentric or "egg-shaped". A non-concentric taper will lead to eventual failure of the ball joint stud. Howe makes tapered reams that are designed for machine use and are accurate to the matching stud.
4. **Damaged Taper** – When a ball joint is damaged from an impact it often causes the taper in the spindle to become non-concentric. When this happens the taper must be corrected with a ream or the spindle must be replaced. Failure to correct this will result in your next crash.

### How to check proper fit:

You can check the fit of a new Howe ball joint stud by looking at the copper plating or by using a felt marker to cover the surface of the stud. Hand fit the ball joint stud into the spindle spinning the stud with your fingers while holding light pressure against the taper. Remove the stud from the spindle and inspect the surface of the stud. The marker should be removed over the length of the taper. If it is removed on only one end this indicates a poor fit. The lesser the engagement the faster the ball joint will fail.

### #2 OVER TRAVEL

Make sure that your ball joints are installed at angles that will not allow them to exceed their travel range.

1. **Compression** – To verify adequate compression travel remove the springs and lower the car until it stops. With the car bottomed out you must have additional travel remaining.
2. **Extension** – Damage can be caused from high amounts of spring preload against the limits of the ball joint travel. Do not stand or jump on the wheel while the ball joints are at the end of travel. This is a problem when attempting to force a long spring into the suspension.

### #3 OVER TORQUE

It is important that the ball joint is installed to the correct torque into the control arm as well as the spindle.

1. **Spindle** - Howe Ball Joints are supplied with a grade 5 castle nut. This lower grade nut is purposely used to prevent damage to the stud. If you have stripped the nut simply remove the stripped nut, clear the threads and replace with an equal grade castle nut.
2. **Control Arm** – If you are using a ball joint with a threaded housing use the torque specs as listed in the instructions using a ball joint socket. Excess torque will distort the housing and restrict the motion of the ball.

### #4 INSTALLING BALL JOINT BY THE CAP

Never install threaded housing ball joints by the cap. Only use the correct ball joint socket to turn the housing and tighten to the specification as listed in the instructions. If you install the ball joint by the cap this will cause the cap to tighten excessively onto the ball and restrict the movement of the ball joint and potentially cause its failure.