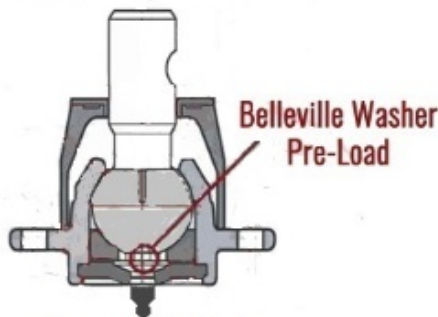


BALL JOINT INSPECTION

Before the process of checking the ball joint for wear, there are two important items to identify:

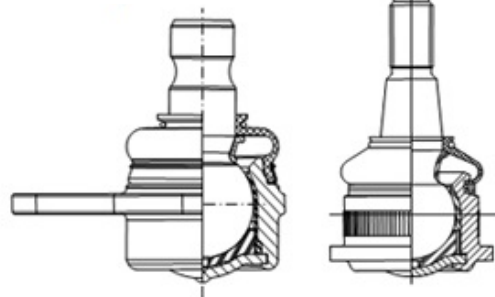
1. Firstly it has to be established whether the ball joint is Load Carrying or Locating by following the weight path.
2. Is it a (a) Friction or Spring Loaded type, usually using a "Bellville" type tensioner, or is it an (b) "Encapsulated" type of ball joint, this type, generally is not fitted with a grease nipple.

(a) Spring Loaded/Friction Ball Joint

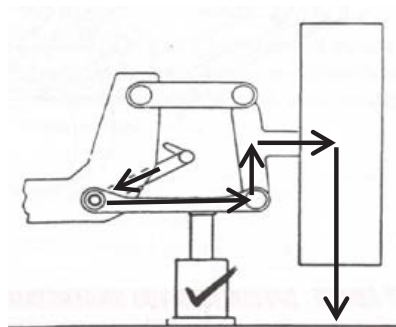
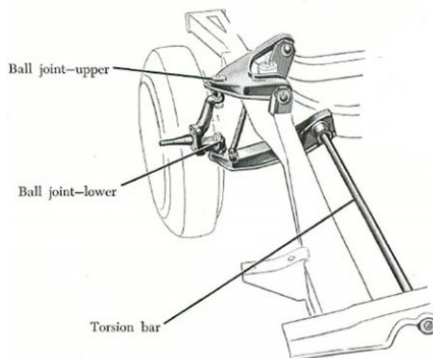


Grease Nipple Fitted

(b) Encapsulated Ball Joint



Usually has no Grease Nipple



When identifying what is the "Loaded" or "Locating" joint, firstly you have to look at where the spring is mounted within the suspension. Is the coil spring sitting on the lower or upper arm. Is the Torsion bar attached to the upper or lower arm.

In the case of a "Strut" type suspension (whether Chapman or McPherson), the load bearing area is the top mount and the lower ball joint will be of the locating type.

A front end with a torsion bar, is no different than a front end fitted with coils springs, it still has a "weight path".

If the bar is attached to the lower arm, the load is transmitted from the wheel through the lower ball joint to the lower control arm, through the lower inner bush to the bar. If the torsion bar is attached to the upper arm, then the weight path is from the wheel through the stub axle to the upper ball joint to the upper inner bush through to the bar.

To check the ball joint for movement, the weight has to be removed, so on a lower mounted bar the jack is placed under the L.C.A. If the bar is mounted to the upper arm, the jack is placed under the cross member. In both cases the wheel needs to be off the ground to release the load.

SUSPENSION **BALL JOINT INSPECTION**

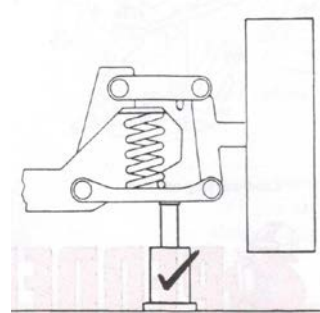
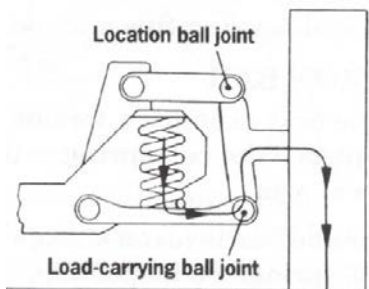
SHOCK ABSORBER, SUSPENSION, BRAKES, TOWBARS
AND WHEEL ALIGNMENT SPECIALISTS

DOUBLE CONTROL ARM SUSPENSION

A double control arm suspension, with a coil spring mounted on the lower arm, the “loaded” ball joint is the lower and the locating ball joint is the upper.

To release the load from the ball joint, place the lifting device under the lower arm and raise the wheel enough to check for movement both vertically and laterally in both the upper and lower ball joints.

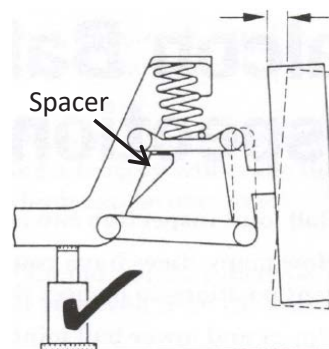
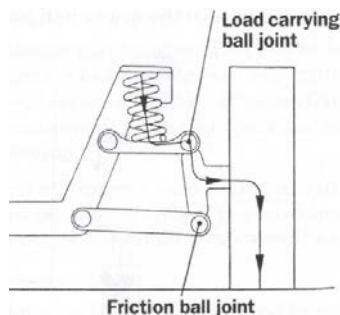
You also have the ability to check the upper inner pivot bushes and mounts, as well as the wheel bearings for any movement.



This type of front suspension, the spring is mounted on the top control arm, so therefore the loaded ball joint is the upper and the lower ball joint is the locating one.

The placement of the lifting device is very important, because it is different than the other types of front ends. It is to be placed under the cross member and raised, to let the control arm droop.

To obtain a more accurate result, a spacer is placed between the upper arm and the rail to keep the control arm as level as possible, to keep the ball joint in its normal operating position. This will release any load on the ball joints and wear will be detected when moving the wheel, laterally or vertically.



STRUT TYPE SUSPENSION

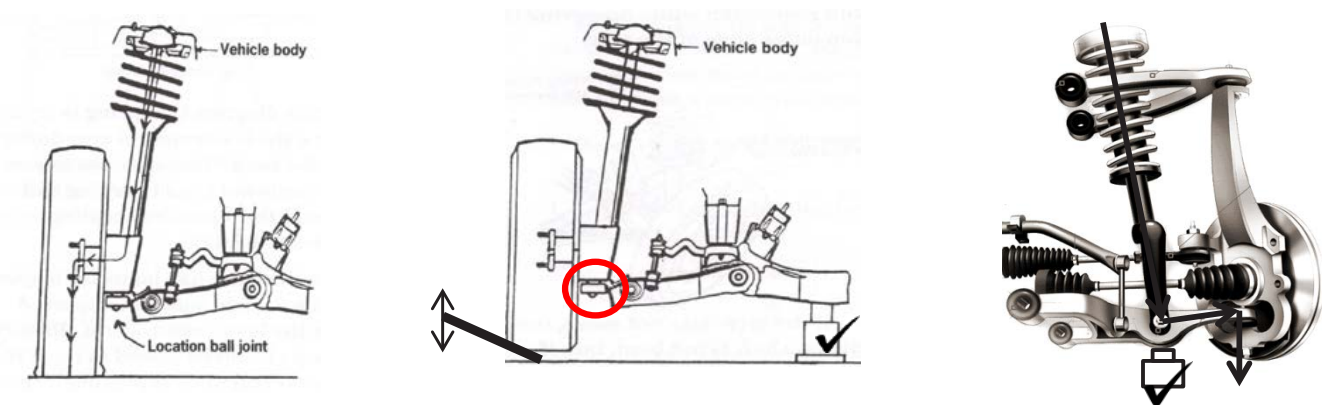
Whether they are McPherson or Chapman design, the weight bearing area, is the upper mount where it attaches to the body.

The lower ball joint is a locating ball joint. Place the lifting device under the cross member and raise the vehicle. You can place the lifting device under the side of the car, using the jacking points, to raise one side at a time.

Once again, to obtain a more accurate result, it is preferable to have the lower control arm as close as possible to its normal operating angle. To check for vertical movement, place a leverage bar between the tyre and the hard surface. Using light force on the leverage bar move it up and down while looking at the ball joint checking for movement.

Also check for lateral movement, which should be zero. With the suspension strut attached to the lower control arm, the weight path follows from the mount to the spring, to the strut, then to the lower control arm through the lower ball joint to the wheel.

The raising point is at the lower mount on the control arm, when the wheel is raised, check for any vertical movement using a lever under the wheel and using the wheel for leverage, check for any lateral movement. As most modern vehicles are fitted with the encapsulated design ball joints, there is zero tolerance for movement.



Important Points to remember:

- Identify the “Loaded” and “Locating” Ball Joint.
- Raise the vehicle to release the weight on the “loaded” ball joint.
- Try to keep the working attitude of the ball joint in the same position when the vehicle is raised.
- On an encapsulated ball joint, there is zero tolerance for movement, both laterally and vertically and are not generally fitted with a grease nipple.
- On a locating ball joint, they can be a “Friction” or a spring loaded ball joint, there may be a minimal amount of vertical movement, (1 to 4mm) but NO lateral free play movement.
- Worn Ball Joints will have an effect on the geometry of the front end and intturn cause unstable steering because of the changing geometry angles including the “Toe” measurement. This will also create premature wearing of the tyres.
- Every time a ball joint has been fitted to the car, a wheel alignment is required.