OPTIMUM BALANCE PRODUCTS
GOING FAST IS DESIRABLE
BEING ABLE TO STOP IS ESSENTIAL !
Longlands, Uggmere Court Rd, Ramsey Heights,
PE26 2RQ. Tel: 01487 812 301 Fax: 01487 814 580

"High Quality Performance Race Car Parts for Professional Drivers and Race Teams"

BALANCE BAR ADJUSTING

The balance bar is an adjustable lever that pivots on a spherical bearing and uses two separate master cylinders for the front and rear brakes. The obp balance bar is part of a pedal assembly that also provides a mounting for the master cylinders. When the balance bar is centered, it pushes equally on both master cylinders creating equal pressure, given that the master cylinders are the same size bore. When adjusted as far as possible toward one master cylinder it will push approximately twice as hard on that cylinder as the other.

To set up the balance bar, thread the master cylinder pushrods through their respective clevises to obtain the desired position. Threading one pushrod into its respective clevis means threading the other one out the same amount. Sometimes this will lead to a "cocked" balance bar when the pedal is in the relaxed position, see Figure 2, "no pedal effort". This is acceptable as long as each master cylinder pushrod is completely free of pressure when the pedal is relaxed.

Figure 2

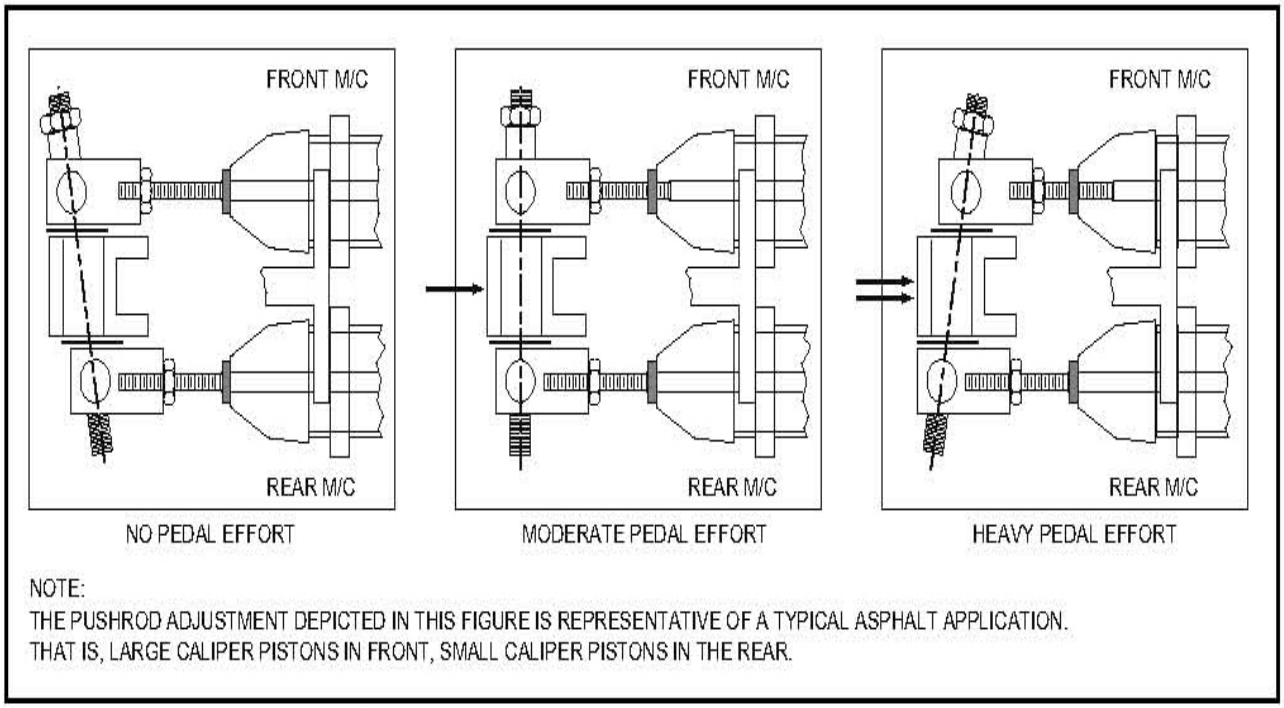


Figure 2. Balance bar lever adjustment

Figure 2. Balance bar lever adjustment. Note: The pushrod adjustment depicted in the figure is representative of a typical asphalt application. That is, large caliper pistons in front, small caliper pistons in the rear.

It is important that the operation of the balance bar functions without interference by over adjustment. This can occur when a clevis jams against the side of the pedal or the lever (bolt) hits the pedal bore during any point of pedal travel, Figure 3.

Figure 3

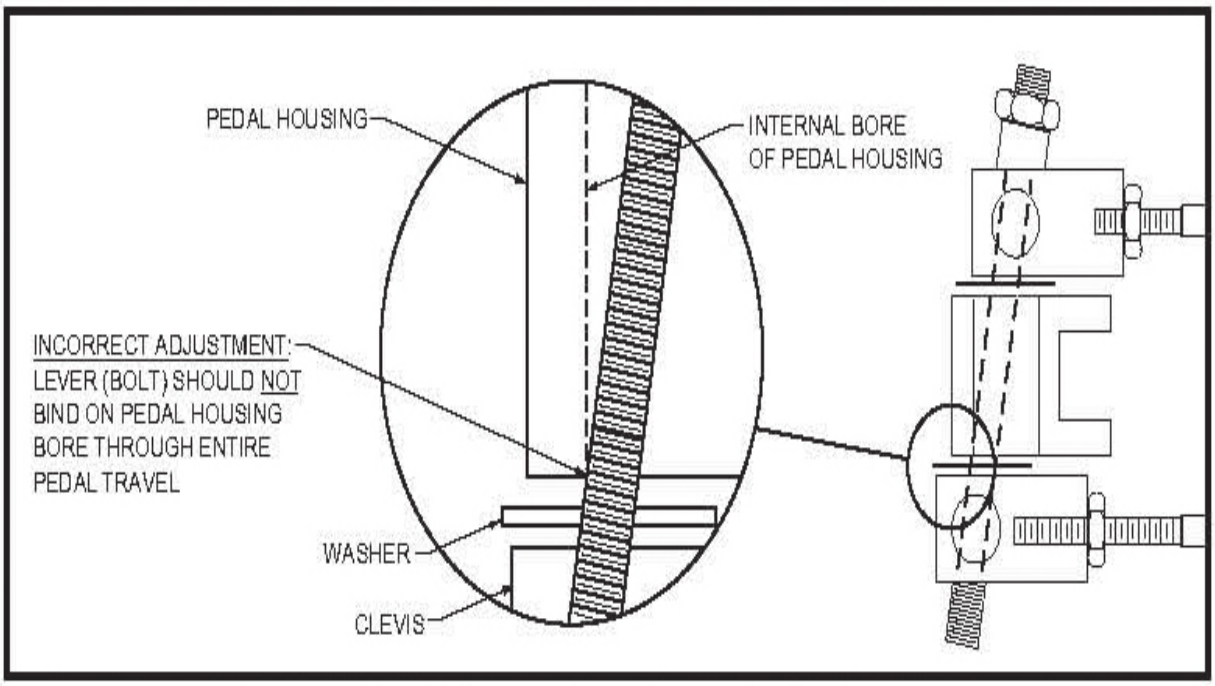


Figure 3. Balance bar lever interference

Balance bar lever interference.

Lever movement should be unimpeded throughout pedal travel. In the neutral position, clevises should have between 2mm to 4mm total clearance between the side of the pedal. Make sure that the master cylinder pushrods remain true in relationship to the cylinder during entire pedal travel; pushrods should not be pushing master cylinder pistons at an angle. See Figure 4.

NOTE: In its non-depressed position, the pedal and balance bar should allow the pushrod of the master cylinders to fully return. This can be checked by feeling pushrods for very slight movement, not loose movement.

Figure 4

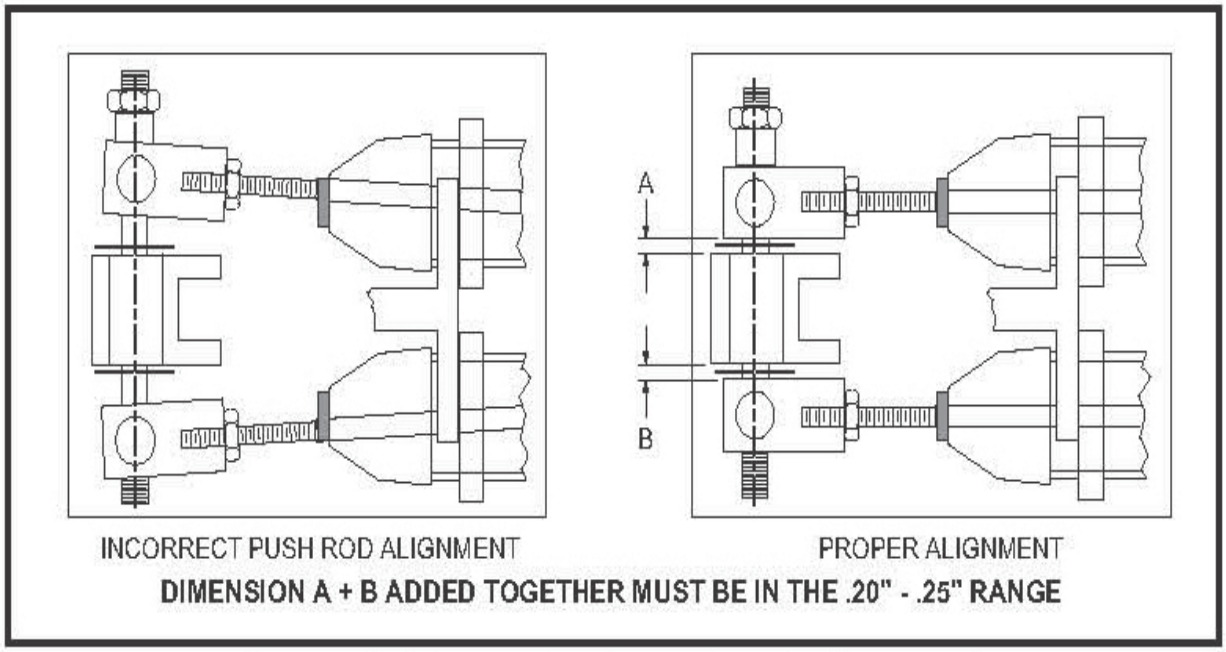


Figure 4. Example of pushrod alignment

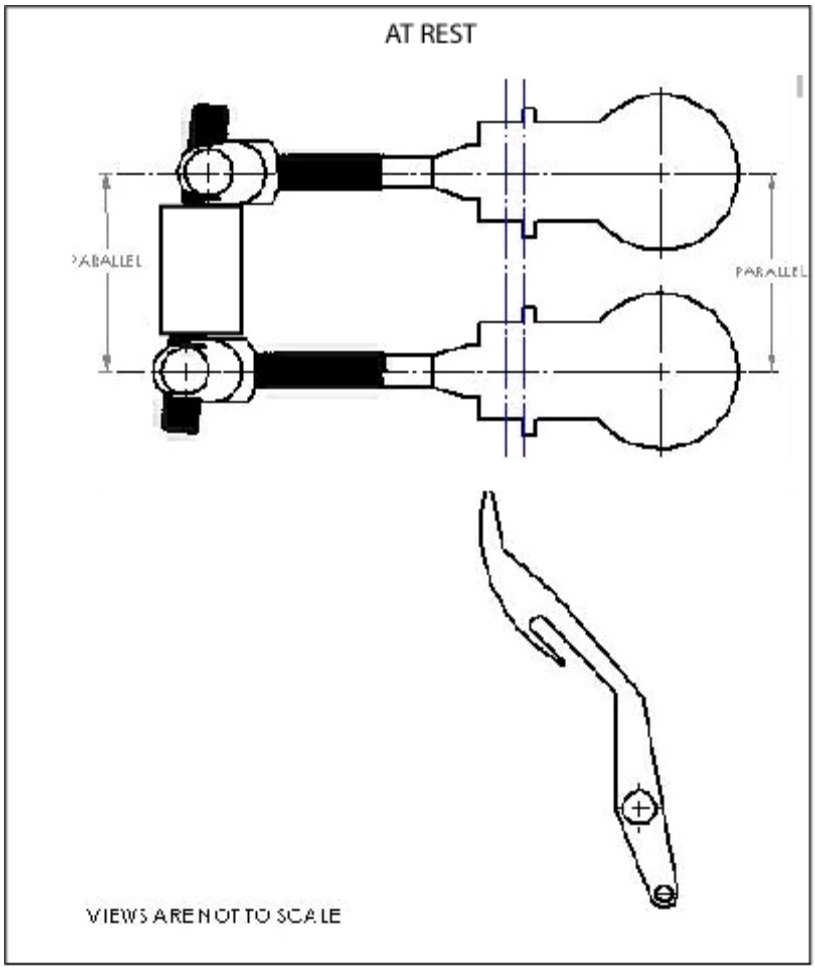
Example of pushrod alignment

PURPOSE:
The function of a bias bar is to allow the adjustment of brake line pressure distribution between two master cylinders. This is accomplished through moving the bias bar pivot towards one master cylinder pushrod or the other. If the pivot is perfectly centred between the pushrods, the force applied to each master cylinder will be equal. This is known as the “neutral position” of the bias adjuster. If the pivot is moved closer to one pushrod or the other, then the master cylinders will receive differential pressures (proportional to the distance between the bias bar pivot point and master cylinder centre lines). This adjustment gives the driver control over the braking characteristics of the car, and to alter those characteristics to account for changes in fuel load, track conditions and handling characteristics of the car.

OPTIMUM BALANCE PRODUCTS
GOING FAST IS DESIRABLE
BEING ABLE TO STOP IS ESSENTIAL !
Longlands, Uggmere Court Rd, Ramsey Heights,
PE26 2RQ. Tel: 01487 812 301 Fax: 01487 814 580

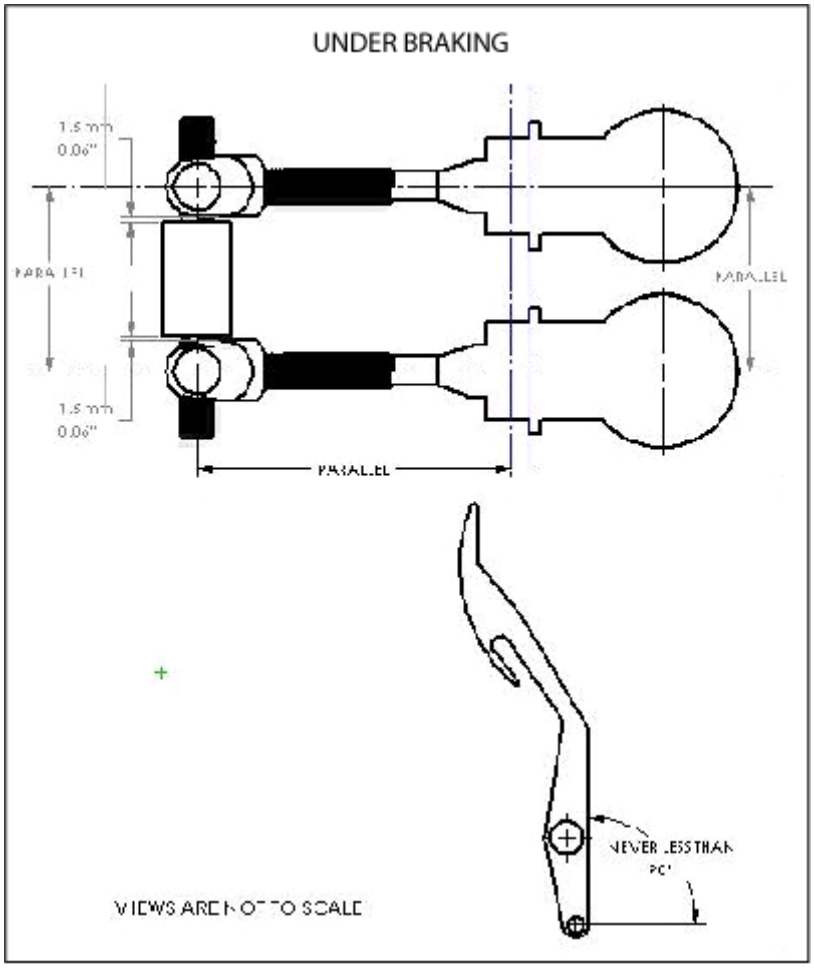
SETTING UP THE BALANCE BAR:

The balance bar is one of the most overlooked, and least understood, components on almost any racecar. As with all aspects of racecar assembly and preparation, careful attention to the geometry of the balance bar and brake pedal will yield great benefits. To start, we need to look at the proper installation of the bias bar adjuster.



First, we must insure that the bias bar pivot bearing is free to move within the pedal tube. Often this tube becomes distorted during installation. If this is the case, then the tube may be honed, until the bearing slides smoothly from one end of the tube to the other. The tube must be clean, and may be lubricated with a light oil or dry Teflon spray.

OPTIMUM BALANCE PRODUCTS
GOING FAST IS DESIRABLE
BEING ABLE TO STOP IS ESSENTIAL !
Longlands, Uggmere Court Rd, Ramsey Heights,
PE26 2RQ. Tel: 01487 812 301 Fax: 01487 814 580



With the clevises set on the adjuster each clevis and the bias tube should be no more than 1.5mm air gap is achieved. This prevents the bias bar from shifting while on the track, and altering in an unpredictable manner, the brake bias of the car. With the bias bar connected to the master cylinders, and brake lines connected, the brakes should be bled. It is critical that front and rear brake circuits be bled simultaneously. This will allow both master cylinders to use their full travel, and prevent binding the bias adjuster (the fluid reservoir must always be located above the level of the bleed screws).

With the pedal tube and clevises squared away, we now look at master cylinder pushrod length. The key is to set up the bias adjuster so that it is perpendicular to the master cylinder centre lines with the brake pedal under compression. Typically, this means that the front master cylinder pushrod will be 3mm-5mm longer than the rear master cylinder pushrod at rest. This is due to the fact that the front braking circuit has a larger fluid volume, due to the larger piston diameters in the front calipers. As a result the front master cylinder requires a higher feed rate than does the rear. If the pushrod length is equal front and rear, than the feed rate of the rear master cylinder is too high relative to the front. The result in this case is the rear circuit “hitting” before the front. With the pushrod lengths adjusted properly, the bias bar will be square under compression and the front and rear circuits will “hit” approximately at the same time.

Web: www.obpltd.com Email: sales@obpltd.com