



**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

OBP Pedal Box Fitting Tech Session

A good quality bias pedal box is an absolute must for any serious track day car or race car. Most car brakes systems, even when fitted with ABS, use a vacuum servo to increase the pedal force and help with braking, however in a track or race use this system is often not up to the job and you get an inconsistent brake pedal due to heat build up and general wear and tear. Also on most 'standard' brake system the master cylinder is typically only one unit that splits the braking effort to each brake within only one cylinder, this means that break bias is effectively set and although an inline adjuster valve can be fitted to change the bias. This is not ideal or as ultimately effective as a bias / balance pedal box setup. Most saloon cars now use a dual line brake system so this means just fitting bias lever is not possible.

Link To: [Obp Pedal Boxes](#)

What is a Bias Pedal Box?

A bias pedal box system firstly removes the vacuum servo that can give the inconsistent brake pedal and the pedal force from brake pedal is connected directly to the brake cylinders. This means there is no longer a reliance on a vacuum from the engine to help with the braking force.

This means the pressure you hit the brake pedal with is exactly the pressure the brakes work with giving you more feel for what the brakes are doing. The other and most important part of the pedal box system in that it uses two brake cylinders as opposed to only one. This means you have one cylinder for the front brakes and one cylinder for the rear brakes, the two cylinders are connected by the adjustable 'bias / balance' bar, giving you control over adjusting the braking efforts between the front and rear brakes helping you to fine tune your brake to suit both your driving style and the weather conditions, typically in the dry you would want the front brakes doing most of the braking and in the wet or damper conditions you would adjust the braking effort more towards the rear.

The bias setup procedure will be explained later. Also a 'full' pedal box system will typically replace both the accelerator and clutch pedals/systems.



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Will A Bias Pedal Box Work With My Cars ABS system?

In a word with a standard manufacture ABS system NO..... however expensive 'Motorsport' ABS systems are available but these are very rarely used.

The main problem with a using a bias pedal box with a 'standard' manufacture's system is that one of the main reasons for fitting a bias pedal box is to give you more control over your car's front to rear brake balance and a cars ABS system works to prevent your cars wheels locking up under braking..... therefore a 'standard' car's ABS isn't programmed to allow both the adjustment front to rear of the brake balance because as it sense's wheel 'lockup' it would then try moving the brake pressure to the other wheels to prevent the wheel locking and therefore acting against your chosen brake balance.

Choosing the Pedal Box for Your Application.

The main options when choosing a pedal box are whether you go for the standard 'over the top' type system or a 'floor mounted' system, the main criteria for this is basically the available space to fit it.

You need to take into consideration whether your car has a cable or hydraulic clutch system also bare in mind that whilst you are changing the pedal box it may be worth also converting the clutch system to a hydraulic system if it is not already.

Something that is more important in later cars you need to check how your throttle is controlled, a great deal of newer cars use a 'fly by' wire system to control the throttle rather than a mechanical cable.

Finally OBP Ltd do make a number of 'custom' pedal boxes which are normally floor mounted systems that bolt straight to the floor pan. If in any doubt contact us for advice.

Fitting Your OBP Pedal Box.

Firstly if fitting a pedal box to a 'road'/saloon type car you will need to remove all your standard pedal box system and its ancillaries such as the servo and ABS



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systems etc... However, before you do this either measure or take photos of the positions of the standard brake pedal so that you know you fit your new pedal box in the right place. These photos are helpful because you may need to refit some items as some cars use the pedal box to support the bottom of the steering column.

If you are fitting a Track-Pro obp pedal box that has been specifically designed for your car the pedal box will bolt directly in to place and be shaped to suit your cars floor plan.



When bolting the pedal box in make sure you use high tensile bolts and large washers to spread the load when the brake is applied, never use riv-nuts or similar fixings to mount a pedal box!!!

If you are fitting a universal pedal box more care is need when deciding where and how to mount the pedal box. Firstly the pedal box needs to be mounted to a strong and secure surface. Secondly again make sure you use high quality fixes to secure the pedal box.

Also when fitting the bias adjuster firstly check your race regulations allow brake balance whilst the car is 'in use'. Mount the adjuster in accordance with the regulations.

	= = = = =	
	Thank You Simon Green from Simon Green Motorsports.	
	Your work and assistance is always top class.	
	simon@simongreenmotorsport.com	
	www.simongreenmotorsport.com	
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Fitting Master Cylinders, Plumbing In and Bleeding Brakes.

When fitting the cylinders first it will be easier to build the pedal box assembly up out of the car and then fit the whole unit in to your car in one piece only leaving the plumbing up of the brakes, clutch and the fitting of the throttle cable.

The normal sizes for the master cylinders are:

- 0.750" Clutch
- 0.750" or .700" Rear Brakes
- 0.625" Front Brakes

The front brakes have a smaller bore master cylinder so that they will always have slightly more pressure when the bias bar is in the 50/50 position. The full set up of the bias bar will be explained later in this guide.

When plumbing the brakes in this will be one of the most time consuming part of the job. At this point you will require a rethink of the plumbing of the system and it will most probably work easier to fully re-plumb the whole system as standard car system can be complicated with dual line systems etc.

The easiest way to plumb the bias pedal box in is as follows:

- Front brakes – Single line up to a 4 way t-piece and then split into two lines of equal lengths to each front calliper. In this t piece you will install an inline BRAKE LIGHT pressure switch this will save lots of hassle and time mounting the standard switch.
- Rear brakes – Single line through a hydraulic hand brake (if fitted) to a t-piece and then split into two lines of equal lengths to each rear calliper.
- Clutch – simply a single line to the slave cylinder in/or on the gearbox.

The pressure lines you use (either hard line or flexible) are again down to personal preference, although where any flexible lines are used they need to be done in high quality Motorsport spec braided lines.



On the cylinders you will find that there are two different size threads, these are 3/8" UNF (PRESSURE) and 7/16" UNF (FEED) threads. The 3/8" UNF fitting is the pressure feed out to the calliper or clutch and the 7/16" UNF is the fluid feed into the master cylinder.

Brake Bias and Balance bar Setup.

Finally is the last and most important part – the brake bias and balance bar setup!! 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 centre in the pedal tube, 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 push rods through their respective clevises to obtain the desired position.

In Some applications you will need to have 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 push rod is completely free of pressure when the pedal is relaxed. **Figure 2**

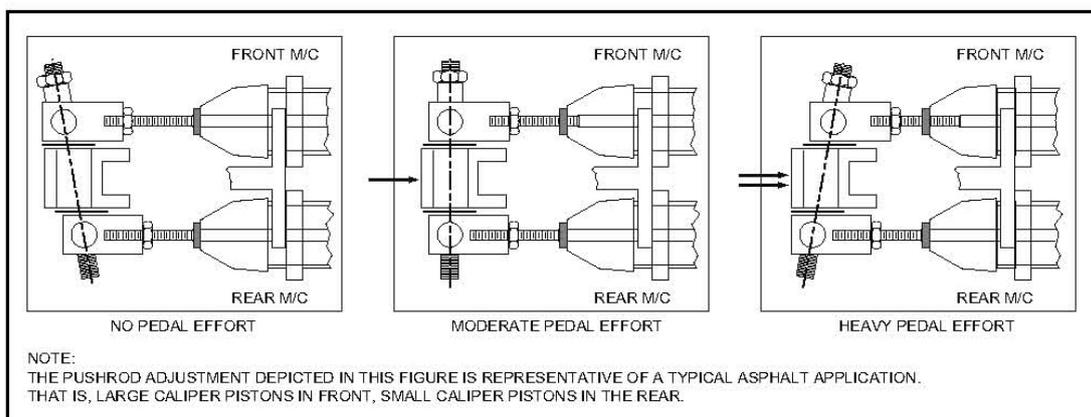


Figure 2. Balance bar lever adjustment



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

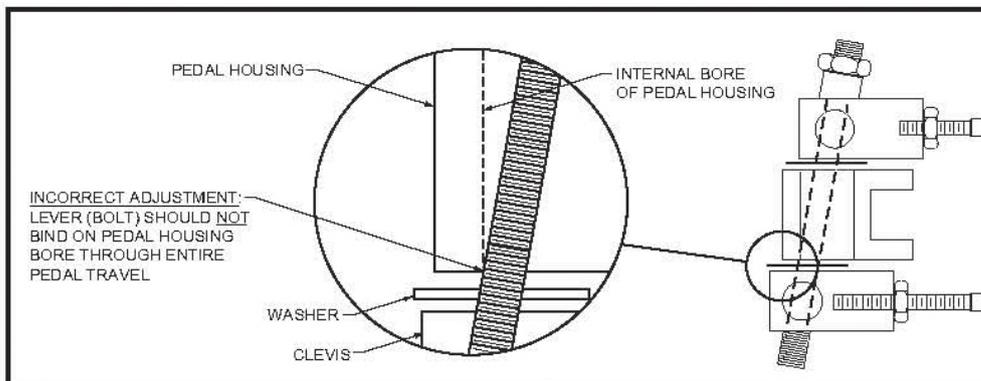


Figure 3. Balance bar lever interference

Figure 3 Balance bar lever interference.

Lever movement should be unimpeded throughout pedal travel. In the neutral position, clevises should have between 1mm to 2mm total clearance between the sides of the pedal. Make sure that the master cylinder push rods remain true in relationship to the cylinder during entire pedal travel; push rods should not be pushing master cylinder pistons at an angle. See **Figure 4**.

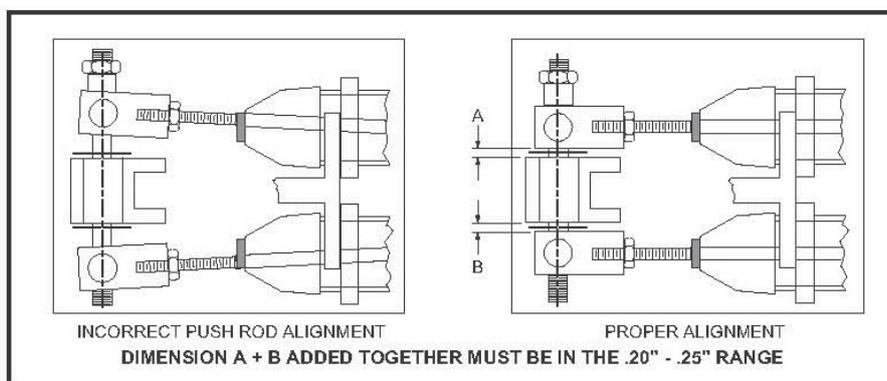
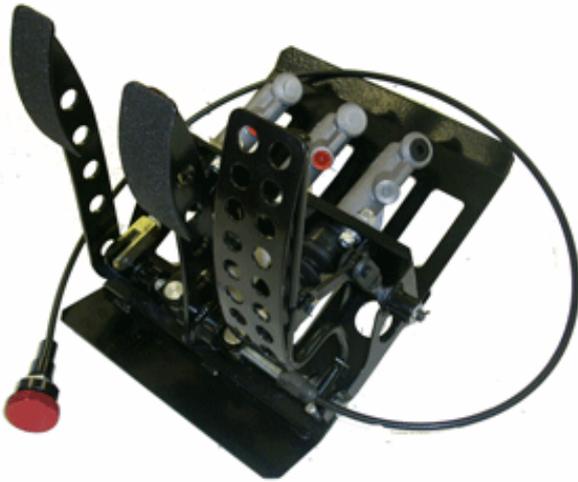


Figure 4. Example of pushrod alignment

NOTE: In its non-depressed position, the pedal and balance bar should allow the push rod of the master cylinders to fully return.

This can be checked by feeling push rods for very slight movement, not loose movement.



**Track-Professional (TRACK-PRO)
High Performance 3 Pedal
Bias Adjustable Brake System**

Track-Professional (TRACK-PRO)

Mounting Location: Floor Pan Fit
Pedals: Light Weight Steel
Clutch: Hydraulic or Cable
Pedal Ratio: 6:1
Weight: 6.7 lbs (3 Kg) *

Optimum Balance Products Ltd (obp Ltd)
Track-Pro pedal systems have been designed specifically for easy fit in production cars.

We have designed this system so it is incredibly easy to install. This new, unique and revolutionary system bolts to the floor and uses the floor pan angle to mount the master cylinders. NO welding or cutting is required.

These pedal boxes represent a major step forward in car control, giving the driver better feel, greater dexterity and the most important bit "Quicker Lap Times".

* With Bias Bar No M/Cyls



Light weight accelerator linkage included. Will accept single or twin cables.



Adjustable spring loaded accelerator pedal. Allowing the pedal to be positioned exactly to your requirements.



Balance bar giving you total control over the front to rear braking.



Easy to install bolt on unit for cable clutch operation.



New Revolutionary Floor Pan fit. Incorporating the angle of the floor pan as part of the installation design. No cutting or welding is needed to install.

