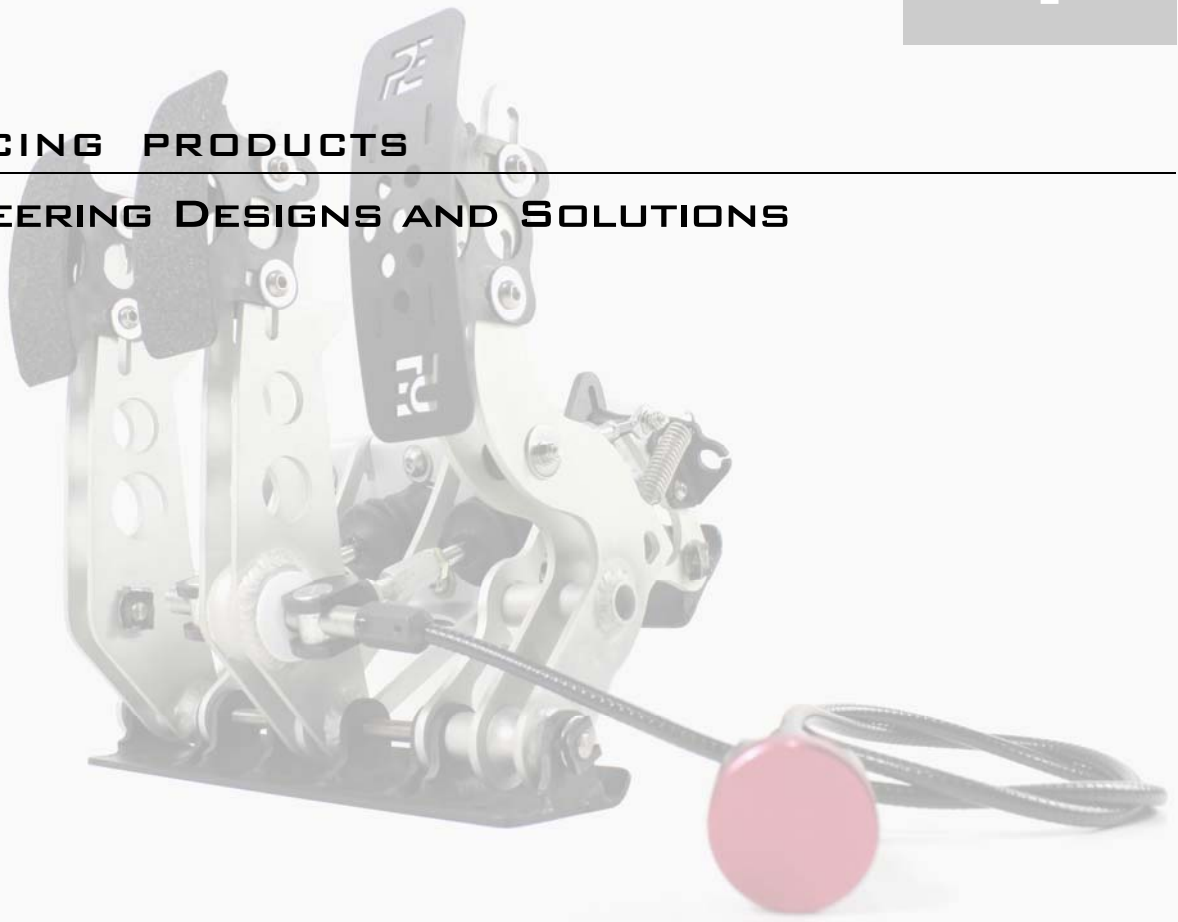


Volume

1

PE RACING PRODUCTS

ENGINEERING DESIGNS AND SOLUTIONS



Pedal Assembly Manual & Installation Instructions

A PE RACING PRODUCT

Pedal Assembly Manual – Installation Instructions



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Terms and Conditions

Limited Warranty

PE Racing stands behind the quality of its products. PE Racing makes the following warranty to purchasers of its products:

All new PE Racing products carry a six-month warranty from the date of purchase. If proof of purchase cannot be provided, warranty will be determined by date of manufacture. The liability of PE Racing is limited to the replacement of defective products or parts found under examination by manufacturer to be defective in material or workmanship within 6 months after purchase, and which has not been caused by an accident, improper use, alteration, tampering, excessive use, misuse, modification or abuse. The damage of the user shall be deemed liquidated in the costs of replacement of the product or part.

We require that all products come back to us for inspection and testing prior to shipping out any replacement. Prior authorization must be obtained before returning any product for warranty.

The customer is responsible for all return shipping and insurance charges. If your product is under warranty, it will shipped back to you at our cost. Warranty will be void if failure results from misuse of product or damage caused by some other improper action. Warranty will be void for misdiagnosis or customer error.

PE RACING MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY with respect to your PE Racing product other than the limited warranty set forth above. No PE Racing dealer, agent, or employee is authorized to make any modification, extension, or addition to this warranty, unless enforceable or unlawful under applicable law, PE Racing disclaims all implied warranties, including the implied warranties of merchantability, non infringement, and fitness for a particular purpose, and the liability of PE Racing, if any, for damages relating to any allegedly defective product shall under any tort, contract, or other legal theory be limited to the actual price paid for such product and shall in no event include incidental, consequential, special, or indirect damages of any kind even if PE Racing is aware of the possibility of such damages. Some countries/states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

Sales Tax

Australian sales attract 10% goods & services tax. If you have any further questions regarding these terms and conditions please contact us.

Disclaimer

The installation of PE Racing products or parts may adversely affect other vehicle components, safety equipment or manufactured goods (collectively "goods"). PE Racing assumes no responsibility for any damage to other goods, or bodily injury that may arise due to failure of other goods, due to installation and/or use, either proper or improper, of its products or parts. The liability of PE Racing is limited as per Limited Warranty. PE Racing assumes no responsibility for errors, omissions, diagrams, pictures, illustrations or text in these instructions or the documents contained herewith. By purchasing or using this product, the user agrees that if any provision of this Disclaimer is held to be illegal, invalid or unenforceable under present or future law, such provision shall be fully severed from the Disclaimer and this Disclaimer shall be construed and enforced as if such illegal, invalid or unenforceable provision never comprised a part hereof, and the remaining provisions hereof shall remain in full force and effect and shall not be affected by the illegal, invalid or unenforceable provision, there shall be added automatically as part of this Disclaimer a provision as similar in its terms to such illegal, invalid or unenforceable provision as may be possible and be legal, valid and enforceable.

This PE Racing product ("this Product") is designed, and intended, only for off-road, legal racing/pulling/competition uses involving the motor vehicle in which it is installed (the "Vehicle"), and not for use on public highways, streets, and other roads. The person or entity buying this Product and/or using this Product

[even if different from such buyer] (the "User") agrees to use the Vehicle only for off-road, otherwise legal racing/competition purposes in controlled environments.

Use of this Product in the Vehicle on public highways, streets, and other roads may violate applicable federal, state, or local clean air, emission, noise, and other environmental laws, or applicable motor vehicle, traffic, and other laws. The User must review and comply, and is solely responsible for reviewing and complying with, all applicable clean air, emission, noise, other environmental laws, as well as all applicable motor vehicle, traffic, safety, and other laws, in connection with User's installation and use of this Product with the Vehicle. Use of this Product may violate warranties from the manufacturer of the Vehicle or from others. The User must review and comply, and is solely responsible for reviewing and complying, with the terms and conditions of any such warranty. Use of this Product may make the Vehicle non-compliant with applicable laws, make the Vehicle capable of generating unsafe driving speeds, make the Vehicle capable of exceeding tire speed ratings, make the Vehicle capable of exceeding RPM ratings of the engine, exceed stress limits of the engine, transmission, chassis, body, and other components of the Vehicle, destroy or damage mechanical, electrical, structural, or other components of the Vehicle, may require superior driving skills and techniques to handle the Vehicle, may make the Vehicle unsafe, and may lead to personal injury or property damage. The User must ensure, and is solely responsible for ensuring, the proper installation of this Product in the Vehicle in a professional manner, adhere to any written instruction of Perusic Engineering, in accordance with industry standards and in a good and workmanlike manner, and in accordance with applicable law. The User must ensure, and is solely responsible for ensuring, the proper, legal, and safe use of the Vehicle. Use of the Product in the Vehicle is at the sole risk and discretion of the User. The User acknowledges that motorsports, racing, and other competitions are dangerous and may cause death, other personal injury, or property damage. Except as expressly provided in the written Limited Warranty from PE Racing issued for this Product, and to the greatest extent provided by applicable law, this Product is sold on an AS IS, WHERE AS, and WITH ALL FAULTS basis, and PE Racing disclaims any and all warranties of any kind, whether express or implied, relating to this Product, including without limitation any implied warranty of merchantability, any implied warranty of fitness for a particular purpose, any warranty as to success in races or other competition, or any warranty made by any distributor or other third party. Any such Limited Warranty is conditioned upon the User's compliance with the terms and conditions of this Disclaimer.

Limitation of Liability

PE Racing is a subsidiary of Perusic Engineering Pty Ltd, From herein PE Racing will imply Perusic Engineering Pty Ltd/ Perusic Engineering also.

To the greatest extent provided by applicable law, the User, for himself/herself/itself and his/her/its heirs, personal representatives, successors, and assigns, hereby releases, discharges, indemnifies, and holds harmless PE Racing and its agents, employees, officers, managers, members, subsidiaries, parents, successors, and assigns (the "PE Racing Parties") from any and against any and all claims, causes of action, damages, injuries, losses, expenses, attorneys fees, and harm of any kind, whether or not foreseeable, directly or indirectly relating in whole or part to the use or installation of this Product in violation of the terms and conditions of Disclaimer, any PE Racing manual, directions, or instructions, and applicable law, any use of the Vehicle in violation of the terms and conditions of Disclaimer and applicable law, and any other use of the Vehicle, regardless of the acts or omissions, whether negligently or otherwise occurring, of any PE Racing Party. To the greatest extent provided by applicable law, each PE Racing Party will not be liable for, and the User waives any right to seek against any PE Racing Party, any consequential, indirect, special, statutory, exemplary, punitive, or incidental damages caused by the installation or use of this Product, and the liability of the PE Racing Parties in the aggregate will be limited to the standard retail purchase price of this Product. Installation or other use of this Product constitutes the User's acknowledgement that the User has read and understand the warnings, cautions, terms and conditions in Disclaimer and that the User agrees and consents to the terms and conditions of Disclaimer; OTHERWISE DO NOT INSTALL OR USE THIS PRODUCT.



Warning

“During installation, make sure that no interfere is present with any hoses, cables or wiring when each of the pedals are moved all the way in either direction. Also make sure, through the full range of adjustments made that the master cylinders and bias assembly do not bind, or exceed the stroke limit and bottom out. Ensure the throttle linkages do not approach an over centre position as this may lead to the throttle jamming. The improper installation of this kit and related components could result in serious injury or death.”

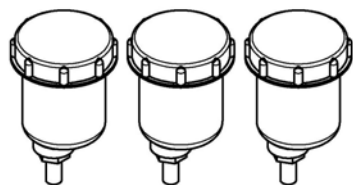


Caution

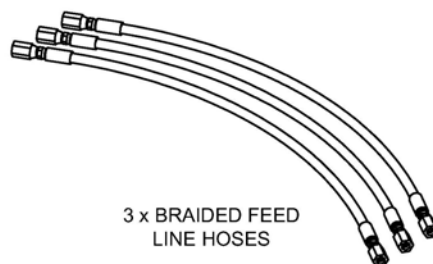
This product should be regularly inspected, cleaned, adjusted as necessary, and maintained by replacing any damaged items to ensure reliability and function.

Kit's Contents

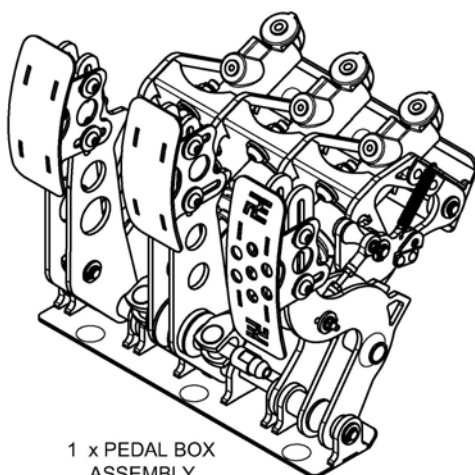
♦ What's included



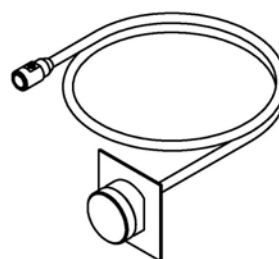
3 x REMOTE MOUNT
RESERVOIRS



3 x BRAIDED FEED
LINE HOSES



1 x PEDAL BOX
ASSEMBLY



1 x REMOTE BIAS
ADJUSTER CABLE

Trial Fitting and Pre-Adjustments

Refer notes and illustrations provided in following sections of this instruction manual.

Trial fitting the assembly in place before drilling any holes is highly recommended. Following the steps below will ensure your successful installation and compliment the overall operation, comfort and usefulness of your pedal box.

Recommended Trial Fitting Order

- ◆ Set throttle linkage stroke
- ◆ Set throttle motion ratio
- ◆ Assembly positioning options in your vehicle
- ◆ Fit a Full Throttle Stop to your vehicle (not provided)
- ◆ Fit Remote Reservoirs and Hoses
- ◆ Set Clutch lever position, stroke adjustment and stop position
- ◆ Set Brake bias bar
- ◆ Set Brake lever position, stroke adjustment and stop position
- ◆ Fit plumbing to master cylinders
- ◆ Fit remote bias cable
- ◆ Pedal faces adjustment
- ◆ Ensure comfort
- ◆ Ensure no clearance problems exist
- ◆ Once satisfied, Remove master cylinders
- ◆ Mark mounting holes and drill to suit fasteners
- ◆ Fix assembly and ensure no twisting is induced (shim as necessary)
- ◆ Disconnect cables and hoses
- ◆ On completion of trial fitting with all connections and adjustments, remove the assembly.
- ◆ Re-Assemble pedal box on workbench

Final Fitting & Adjustments

Refer notes and illustrations provided in following sections of this instruction manual.

Final fitting would typically be a replicate of the trial fitting. Care should be taken to ensure all services are mounted safely. Where cables and hoses pass through panels, ensure no chaffing is present by using appropriate bushings/ bulkhead fittings or glands /grommets. Fasten all loose lines and cables appropriately to allow any freedom of movement required, but not allowing interference to drivers' feet and pedals through full operation of all pedals.

Recommended Final Fitting Order

- ◆ Fix pedal box to your vehicle
- ◆ Fit Full Throttle Stop to your vehicle
- ◆ Fit reservoirs
- ◆ Fit plumbing
- ◆ Fit throttle cable
- ◆ Fit Remote bias cable
- ◆ Final adjustments
- ◆ Bleed the Brake System
- ◆ Bleed the Clutch System
- ◆ Apply full pressure
- ◆ Check for leaks
- ◆ Check all operational clearances and adjust as necessary
- ◆ Final inspection
- ◆ Test, inspect and adjust as necessary
- ◆ Regularly inspect, clean, maintain and adjust as necessary

Mounting Position Options

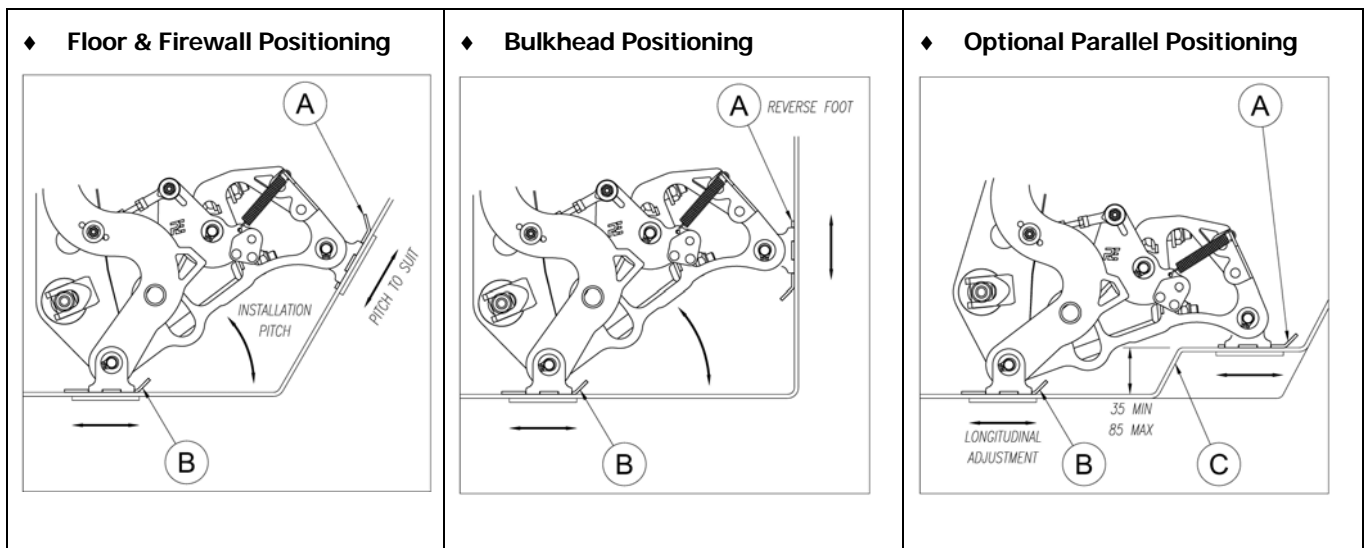
It is very important that the pedal assembly is mounted securely to an adequate frame or panel. Increased rigidity provides increased accuracy, control and pedal feel by the driver. The mounting is required to resist the loads of a driver's legs in panic situations, typically 130-200kg combined on the clutch and brake pedals. Together these loads are required to be withstood by the vehicle structure and the method of attachment to your vehicle. Seek professional advice if you are not confident with the mounting.

See Diagrams below for the position options. When installing, check that no interferences will be present by temporarily clamping the assembly in place and have the driver trial the position by operating all the pedals. The pedal levers, pedal faces and pushrod adjustments may need to be completed to achieve a comfortable position while selecting your preferred mounting location and incline angle. If further adjustments are required, temporarily complete the adjustments prior to moving on with permanent mounting. Follow the directions on adjustments which are detailed in later steps, and then return to this section to continue.

Putting multiple mounting holes in two parallel platforms (C) mounted on the vehicle will enable easy longitudinal adjustments, allowing the entire pedal assembly to be moved fore and aft to suit different drivers.

The lower foot (B) and upper foot (A) support for the pedal assembly, spread the loads and thus decrease any concentrated loads to your vehicle panels when installed. When mounting thru sheet metal panels, ensure a large mud guard washer (or equivalent) is used under all fixing heads to provide a larger clamp area to reduce localised stresses.

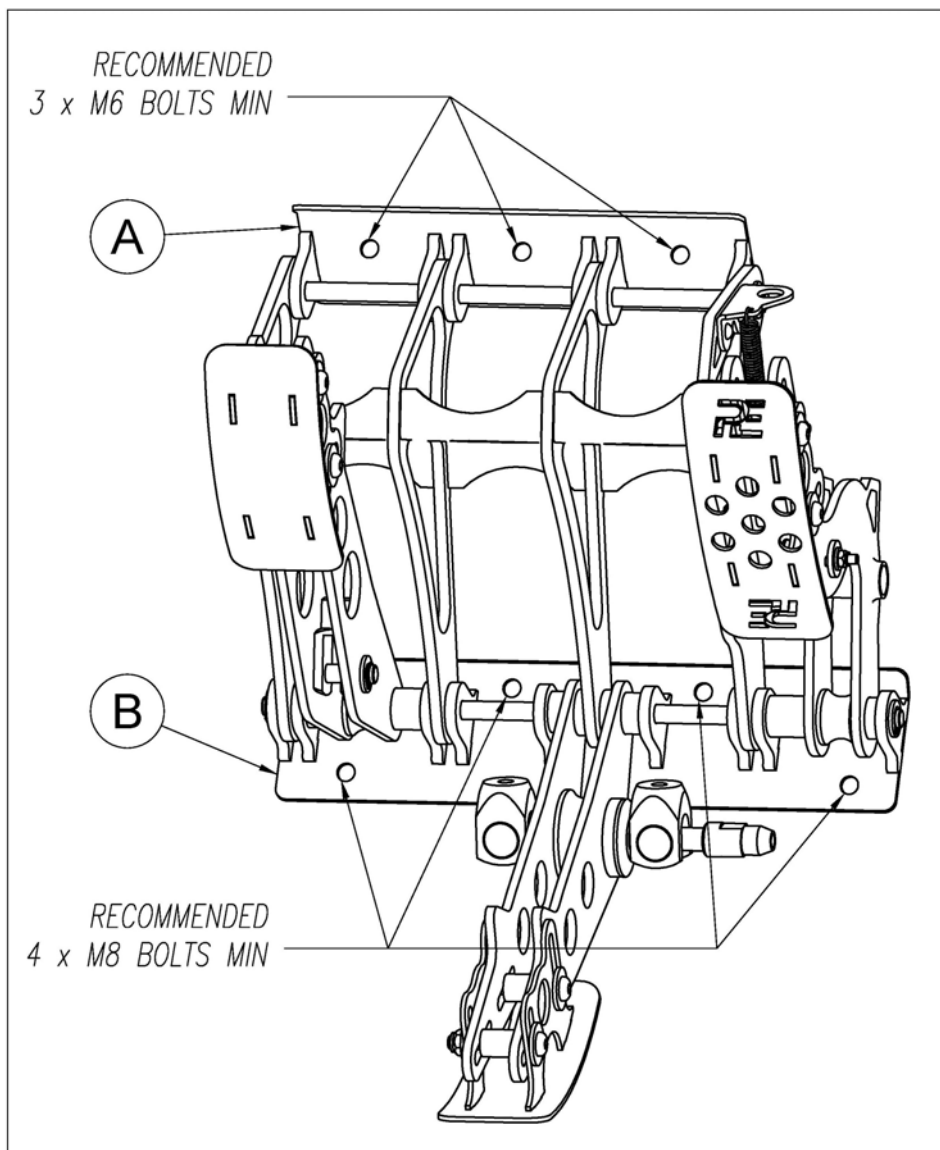
When the final position is selected, continue with the next step.



Mounting the Pedal Box

Be sure to use high quality fine thread self locking fasteners at the suggested locations with large diameter washers to both sides. Proper mounting is achieved by providing an adequate spread of fasteners to both mounting flanges. The minimum suggested fixings are 4x M8 fasteners to the lower flange and 3x M6 fasteners to upper flange. An increase in size of fixings would increase the factor of safety. Consider your mounting options and consult a professional as required before commencing any drilling for the fastening of your pedal box assembly. To access the upper foot mounting holes (A), remove the master cylinders. To access the lower foot mounting holes (B), depress the clutch and throttle arms and retract the brake lever arm.

On completion, temporarily fix the assembly in place and check that no twisting is induced when tightened. If twisting is present, shim the appropriate locations to eliminate the twisting. This will ensure smooth operation.



Throttle Stroke Adjustment

Features an inbuilt spring return and easy adjustment of the throttle linkage geometry to achieve the desired throttle cable stroke and motion ratio.

Setting the correct throttle travel is vital to the performance of your engine. It is just as important to achieve the correct motion ratio to suit your intake linkage system.

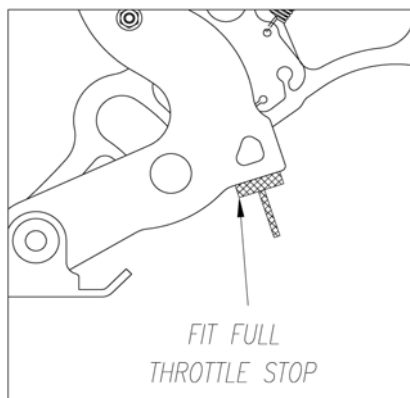
Install a permanent Full Throttle Stop as shown (to suit). This will eliminate twisting of the throttle lever in the depressed position. Fit your own suitable throttle cable through the support flange and connect to the linkage inserting via the slot provided to the inside face. With your throttle cable attached, adjust the throttle travel so that the engine throttle fully opens without straining the cable or linkage. The adjustable link provides adjustment. The pedal positive stop must stop pedal movement, not the linkage, which could bend or break.

The throttle stroke length is achieved via moving the adjustable rod connection along the slot in the linkage. Clamp the adjustable rod (A) to the required position in the slot provided in the linkage (B). Very fine settings can be achieved ranging from 30mm to 55mm stroke. The outer portion of the slot (B) will provide decreased stroke length, and the inner position will provide increased stroke length. Measure what your throttle stroke requirement is. Set the travel required, including any linkage adjustments at your throttle body/ bodies.

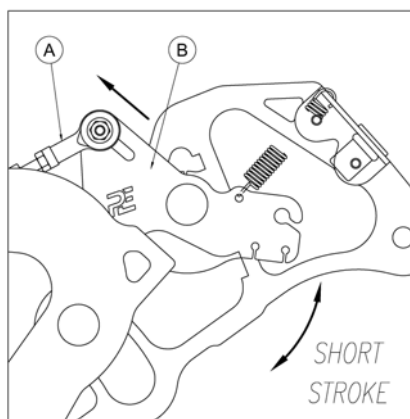
Check the throttle lever travel and ensure the inbuilt stops engage at both ends, alternatively only the full throttle stop could be utilised as a minimum requirement. As necessary adjust and tighten jam nuts and all related fixings.

Once the correct travel length is achieved, you may proceed to check the motion ratio.

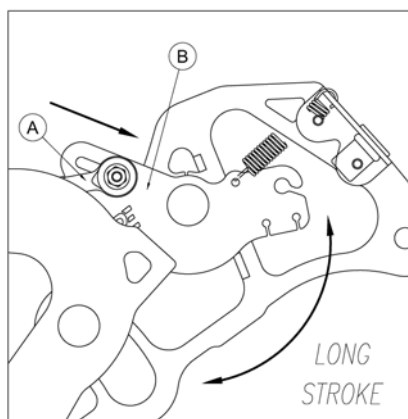
♦ Full Throttle Stop (not provided)



♦ To reduce stroke



♦ To increase stroke



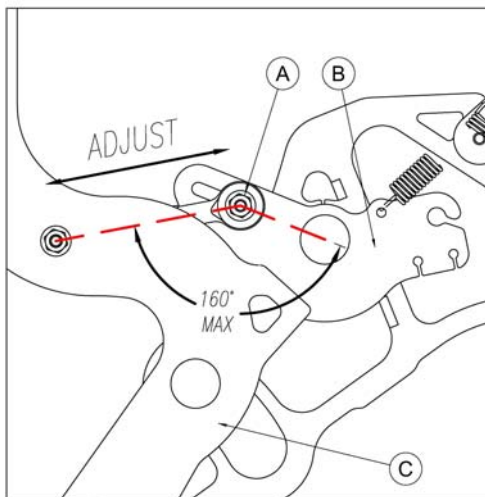
Throttle Motion Ratio Adjustment

The length of the adjustable rod with spherical ends will determine the motion ratio of your throttle. Adjusting the length slightly will change the responsiveness at low or high throttle percentages. The motion ratio can be set to correct the motion of your throttle butterfly (or slide) to give a more consistent area opening rate. Do not allow the link to get close to an over centre position at any time. A minimum of 160 degrees should be maintained between the adjustable rod (A) & link (B), also a minimum of 160 degrees should be maintained between the adjustable rod (A) & throttle lever (C) at both no throttle & full throttle positions. On completion check the stroke length, and re-adjust as necessary.

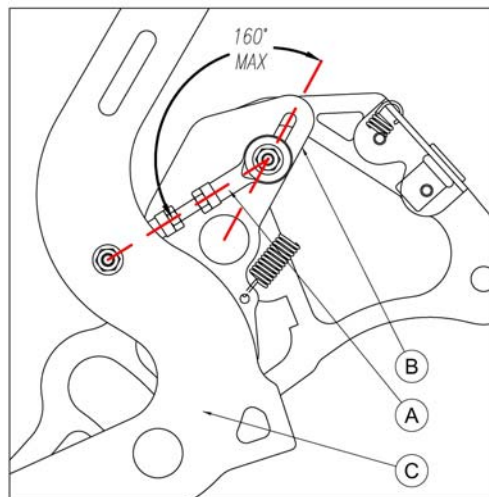
The adjustable rod with spherical ends allows fine motion ratios to be set to suit your throttle rate requirements. Ensure the throttle contacts the lever travel stops in both directions (or, full throttle as a minimum requirement) without straining the throttle cable. Ensure no binding takes place.

Ensure all connections are tight on completion of any adjustments.

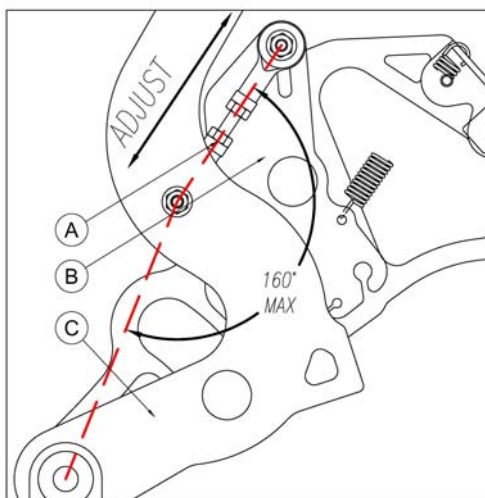
◆ No Throttle Position (Max Stroke)



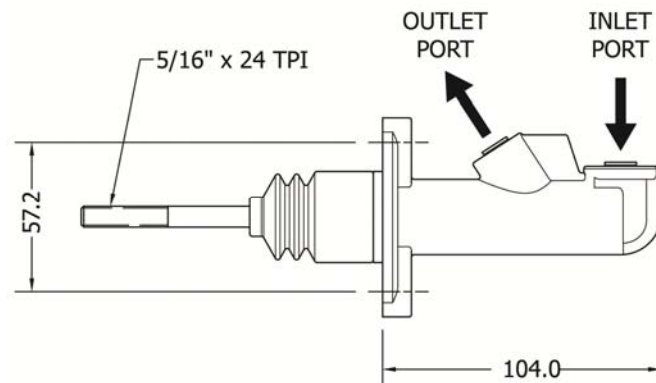
◆ Full Throttle Position (Max Stroke)



◆ Full Throttle Position (Min Stroke)



Master Cylinder & Plumbing



Master Cylinders Overview

The Racing Pedal Box by PE Racing is designed to accept the Girling type universal master cylinders in a variety of cylinders bore sizes ($5/8''$, $0.7''$, $3/4''$ or $13/16''$) with a maximum stroke of 34.9mm (1.375"). The clutch and brake pedal levers are conservatively designed to travel through 30° , resulting in 30mm cylinder stroke (giving 5mm piston clearance in the cylinder).

The pedal travel can be varied by pushrod length adjustments. The pedal levers can be adjusted for minimised stroke (shortening the pushrod) or to go to a maximum travel of 35° for increased travel, but care should be taken to ensure no binding occurs within the master cylinders at the higher pedal travels.

Increasing pedal travel increases cylinder stroke improving an overall mechanical advantage on the clutch lever. Decreasing master cylinder bore sizes further increases the overall mechanical advantage for both clutch and brake levers.

For additional information, refer "how it works" notes later in this manual. It is a good practice to match the brake callipers to your master cylinder sizes or vice versa. If you are unsure, seek professional advice.

The standard pedal box kit includes 3 master cylinders (2 cylinders with $3/4''$ bore /0.75" and 1 cylinder with $5/8''$ bore /0.625"), 3 reservoir bottles and 3 braided hoses (for reservoirs to cylinders).

Fix master cylinders in the appropriate locations to the frame with high tensile M8 bolts, washers and self locking (or nyloc) nuts.

Master cylinder pushrods may be too long for shorter stroke applications and may have to be shortened to obtain the desired pedal starting position. If you do shorten the pushrods for any reason, chamfer the end of the threads after cutting.

Master Cylinders Plumbing

Attach the hydraulic feed lines to the master cylinders. The clutch and brake system is gravity fed by the reservoirs which need to maintain a head of fluid. Mounting the reservoirs at a level above the brake callipers and master cylinders is extremely important for maintaining a firm pedal, easy bleeding and, is more reliable than using a residual pressure valve. Locate your reservoirs as high as possible using the lines provided.

Connect your brake and clutch lines to the outlets of each master cylinder using banjo fittings. Banjo type fittings will provide more convenient fitting/ removing access and increase the available clearances from the pedal movements. The table below indicates the thread types for your master cylinder inlet and outlet ports.

Bleeding the System

For bleeding the system, as per any balance bar system, always bleed a front and rear calliper at the same time to allow full master cylinder stroke.

Bleed the clutch system and check that the lever stop is set correctly.

” On completion, apply full pedal pressure and check for leaks”.

Master Cylinder Data

All cylinders in the table below have a maximum stroke of 34.9mm (1.375”).

The values for volume displacement are calculated at the maximum stroke.

CYLINDER DESIGNATION				CYLINDER BORE		MAX DISPLACEMENT	
BORE Inches	BORE cm	INLET PORT THREAD TYPE	OUTLET PORT THREAD TYPE	AREA IN ²	AREA cm ²	VOLUME IN ³	VOLUME cm ³
5/8" 0.6250"	1.59	7/16" x 20 TPI	3/8" x 24 TPI	0.31	2.0	0.4	6.9
0.700"	1.78	7/16" x 20 TPI	3/8" x 24 TPI	0.38	2.5	0.5	8.7
3/4" 0.75"	1.91	7/16" x 20 TPI	3/8" x 24 TPI	0.44	2.9	0.6	9.9
13/16" 0.8125"	2.06	7/16" x 24 TPI	7/16" x 24 TPI	0.52	3.3	0.7	11.7

Pedal Positioning & Adjustments

Pedal Comfort Position

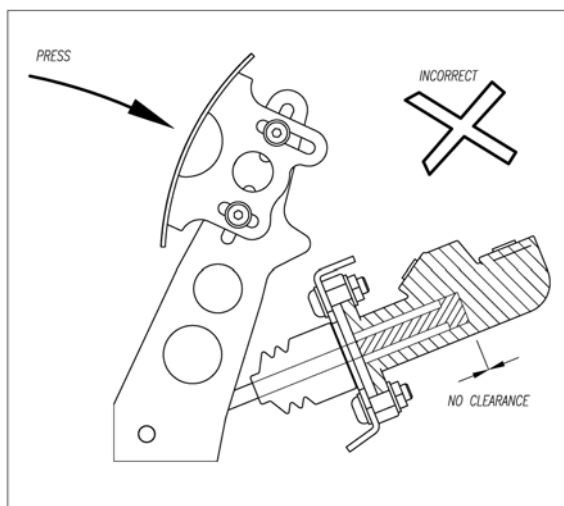
Adjustable pedal geometry is incorporated for driver feel and comfort. The pedal positions can be adjusted using the adjustment slots provided. The proper pedal positioning is highly dependent on driver preferences. The stroke of the clutch and brake levers is set by adjusting the length of the master cylinder pushrods. The brake lever should act on the maximum possible comfortable stroke to increase the available and mechanical advantage and travel in emergencies. In all cases, ensure that the cylinders do not bottom out before their respective inbuilt pedal stop positions. Ensure the pushrods engage at least 12mm into the clevises. In short, set the pedals so that the driver is comfortable and safe.

Mechanical advantage, commonly termed as pedal ratios on this assembly can be adjusted by moving the pedal face up or down using the slots provided. Note that the overall mechanical advantage also relies on cylinder bore and effective stroke used.

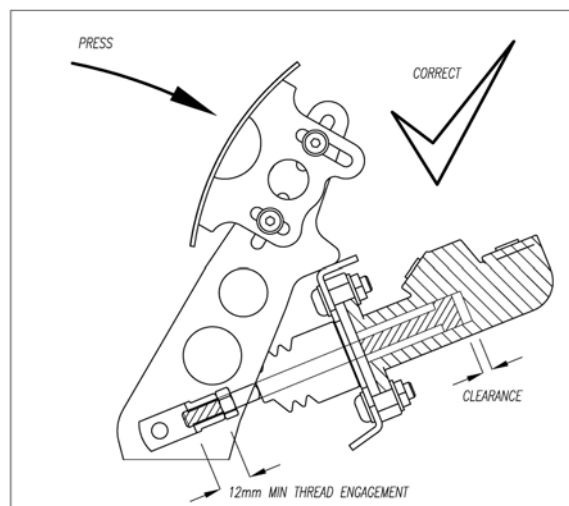
Clutch Pedal

With the system properly bled, set the desired stroke by adjusting the pushrod length. Most racing clutch and release bearings require the use of a clutch stop to eliminate over travel. Setting this stop correctly will prevent any unnecessary damage to the clutch and allow the clutch to release cleanly. The clutch stop setting should be a little past the point of clear clutch release (around 4-8mm measured at the pedal face). Care should be taken, because over travel on the clutch may cause damage.” The clutch lever arm has an inbuilt stop position, adjust the rod length to correct the fluid displaced, alternatively you may change to a different master cylinder bore size to achieve the correct fluid displacement for your desired pedal travel range. The chart showing available master cylinders shows the fluid displacement of each bore size. This should be used for selection of the correct master cylinder bore or travel required to suit your clutch slave cylinder fluid displacement. Remember, the greater the effective stroke used, the greater the mechanical advantage. Should your set stroke length be much shorter than the available cylinder stroke, it would be advisable to reduce the cylinder bore size to one that meets the correct fluid displacement at your desired pedal stroke setting.

◆ Pedal Depressed Position



◆ Pedal Depressed Position



The position of the clutch pedal face is mostly a matter of driver preference. Adjust the pedal face position to suit using the slots provided and ensure fixings are tightened.

Brake Pedal - With the system properly bled, and the pedal depressed, the pedal face should be vertical or leaning slightly towards the driver. The driver should not be stretching their toes to reach this pedal position, and their

knees should be slightly bent. Keep in mind, as a typical race progresses, any problems with pad knock back or fade will only increase the pedal travel distance. Ensure that the full pedal travel can be reached in an emergency. Tighten all pushrod lock nuts after the pedal lever positioning is set. On completion adjust the pedal face position to suit using the slots provided and ensure fixings are tightened.

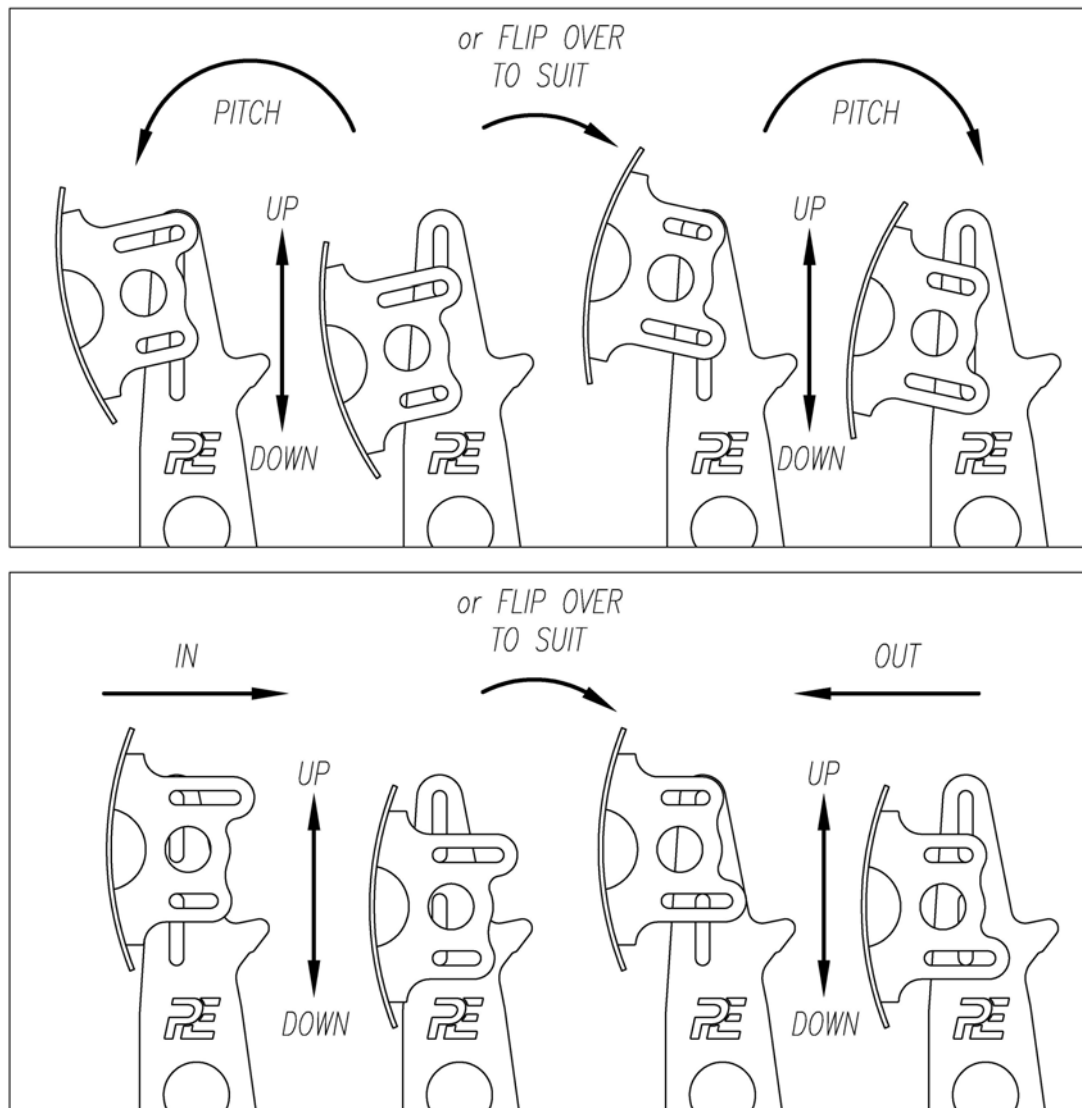
Throttle Pedal - A good starting point for the throttle pedal position is to have it even with the brake pedal while the brake pedal is in the depressed position. This allows a driver to quickly change back to the throttle after braking. Set the throttle pedal face accordingly and check that all fasteners are tightened. The throttle lever has fixed travel limits. Adjust the pedal face position to suit using the slots provided and ensure fixings are tightened.

Pedal Face Adjustments

The pedal face position is adjusted to suit using the slots provided. The adjustment bolts should always have large diameter washers at both faces and have the crush tubes in place. The pedal face may be moved up/down, in/out, flipped over or pitched about the vertical position using the slots provided to suit your installation.

On completion, ensure fixings are tightened.

♦ Adjustment Slots to Lever Arms & Pedal Faces



Balance Bar

How it works

Initially there are several variables which, when understood enable you to refine your brake balance settings effectively. The variables are: master cylinder bore sizes for front and rear, balance bar position, calliper pistons total bore areas for front and rear, brake pad material & area, brake rotor diameter and pad area. All of these elements are important and the relationship between them is helpful to understand. Consult a professional as necessary prior to committing to brake callipers, brake rotors and brake pads. Any homework done early in the design stage of your braking system will reduce any unnecessary expense. Generally many vehicles transfer so much weight to the front under heavy braking, that as much as 80% of braking effort is required by the front brakes, typically leaving 20% for the rear brakes. Your particular vehicle may only transfer 65% to the front and 35% to the rear, so again, doing a little homework at the early design stages is vital to obtaining the correct brake components. Also, keep in mind the operating temperature of your braking system is vital. It is important that both front and rear brakes have the same temperature gradient at all times. This will ensure no irregular front to rear braking forces are present. A poorly designed braking system will lock the fronts at some times and lock the rears at others. This would typically be a result of mismatched operating temperatures relative to each other. Seek professional advice as required. Most modern vehicle scales have the ability to determine the centre of gravity and weight distribution, which is used for the calculation of the front and rear braking efforts required.

Remote Bias Cable

Fit the remote bias adjuster knob in a location that is convenient to reach and see while driving. The Adjustment knob should be mounted thru a panel or support bracket at a location which allows the flexible cable to reach to the balance bar from the throttle side only. Note that the throttle lever is shaped to provide full clearance to the remote cable under the condition that the brake lever is in the fully depressed position. Under no circumstances should you reverse the cable and balance bar to approach to be from the clutch lever side.

Fix the cable to the remote adjuster knob and the balance bar threaded section using the provided set screws. Should you wish to shorten the cable, ensure all ends are de-burred and long enough to operate efficiently. The bias adjustment is only to be used when the brake lever is in the relaxed position.

Never operate the bias adjustment while the brake pedal is in the depressed position, or under braking.

Adjustment and Operation

When driving on a consistent surface, you may ideally want the front tires to lock-up with a slightly less pedal effort than the rears. This will assist to keep the vehicle stable while entering a corner under braking conditions and prevent unnecessary spinning out. With the pedal in the relaxed position, turn the adjusting nut on remote cable so that it advances the spherical bearing closer to the selected master cylinder, increasing the braking force produced by that master cylinder.

The spherical bearing in the balance bar has a wide range of adjustment. If you find that after testing, that you are at the edge of the adjustment range, you will need to make a change to the master cylinder bore sizes, or possibly changes to the front/ rear calipers, pads or rotors. Refer the "how it works" notes above. Should you choose to correct the balance issue by changing the master cylinder bore sizes, there are three possible changes that you can make (See below). Each change is aimed to move the spherical joint back towards the ideal centre position.

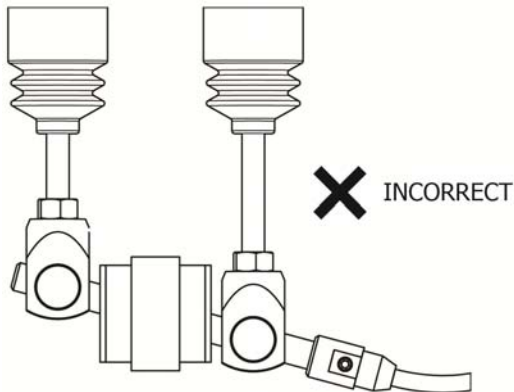
Option 1: Decrease the master cylinder bore size closest to the spherical joint to a few sizes down (typically by -1/8"). This will reduce the braking force required to that circuit, but increase pedal travel. The spherical bearing will be re-adjusted towards the centre position.

Option 2: Increase the master cylinder bore size furthest to the spherical joint to a few sizes up (typically by +1/8"). This will increase the braking force required to that circuit, but decrease pedal travel. The spherical bearing will be re-adjusted towards the centre position.

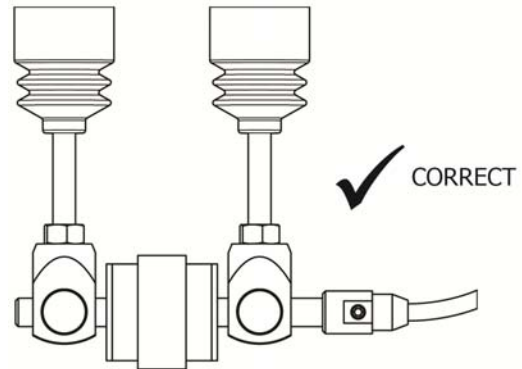
Option 3: Increase the master cylinder bore size farthest from to the spherical joint by one size up (+1/16"). Decrease the master cylinder bore size closest from to the spherical joint by one size down (-1/16"). This will maintain the same amount of brake force and pedal travel. The spherical bearing will be re-adjusted towards the centre position.

Option 4: After testing and refining your brake balance, note your ideal settings by recording the number of turns in or out from a referenced location or by recording the line pressure distribution. Fine adjustment during driving will maintain your ideal balance to suit varying conditions such as changes in weather, fuel usage, weight distribution, tyre wear, road surface and your driving style.

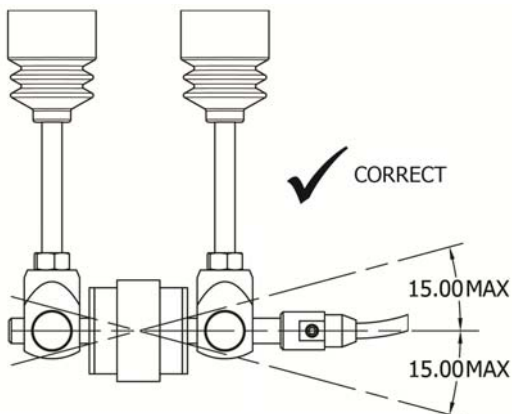
◆ **Depressed Pedal Position**



◆ **Depressed Pedal Position**



◆ **Relaxed Pedal Position**



NOTE: ENSURE NO BINDING TAKES PLACE

Installation Post Checks

- ◆ Care should be taken to ensure all services are mounted safely.
- ◆ Check all fixings and locknuts are tight.
- ◆ Ensure the permanent Full Throttle Stop is set correctly & tight.
- ◆ Ensure the throttle cable connections are tight and return springs are fitted at both ends.
- ◆ Ensure the throttle linkages do not approach an over centre position as this may lead to the throttle jamming
- ◆ Fasten all loose lines and cables appropriately to allow any freedom of movement required, but not allowing interference to drivers' feet and pedals through full operation of all pedals.
- ◆ Where cables and hoses pass through panels, check for chaffing and correct as necessary.
- ◆ Ensure the reservoirs have the correct fluid and level.
- ◆ Ensure the system is fully bleed
- ◆ Check for leaks while you have an assistant holding full pedal pressure.
- ◆ Check all clearances and make any adjustments necessary.
- ◆ Test, inspect and adjust as necessary.
- ◆ This product should be regularly inspected, cleaned, adjusted as necessary, maintained for endured reliability and function.

"The improper installation of this kit and related components could result in serious injury or death".

Spare Parts

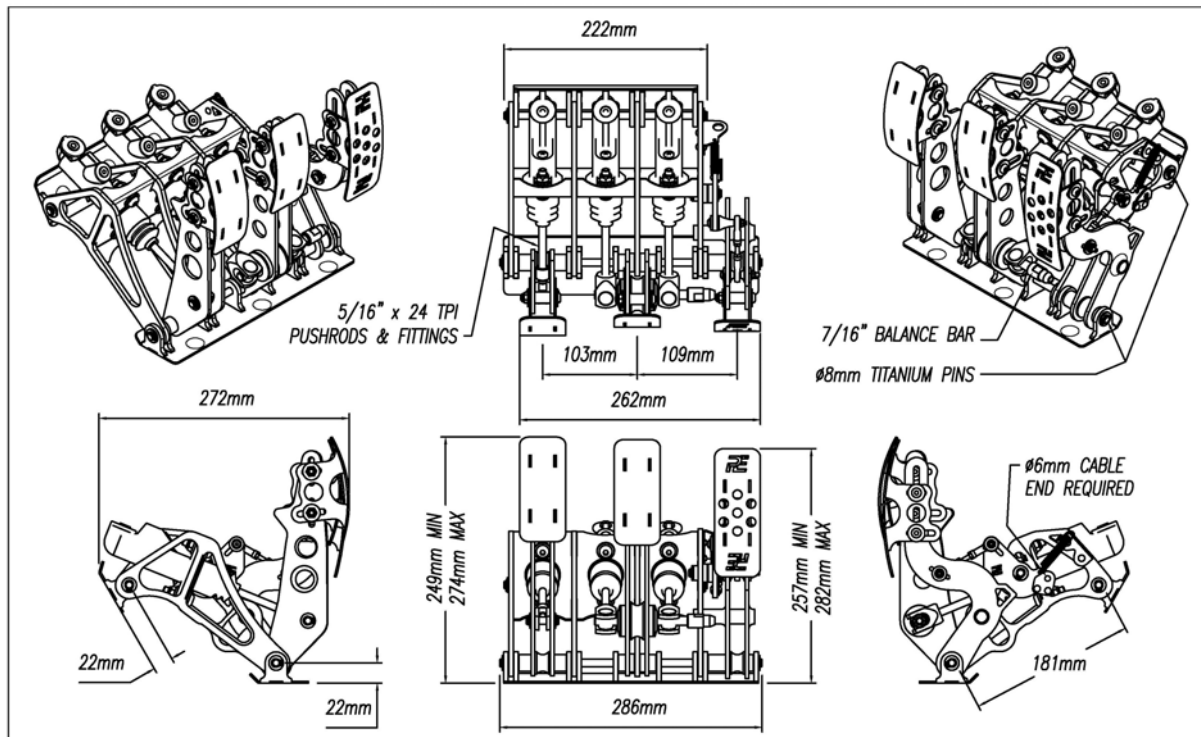
Exploded view diagram of a racing pedal assembly. The diagram shows the following components: 1. Clutch pedal assembly, 2. Brake pedal assembly, 3. Body frame assembly, 4. Clutch master cylinder, 5. Front brake master cylinder, 6. Rear brake master cylinder, 7. Throttle linkage assembly, 8. Throttle pedal assembly, 9. Balance bar & remote adjuster, 10. Reservoir bottles, 11. Braided feed hoses.

SPARE PARTS			
ITEM	DESCRIPTION	QTY	SPECS
1	CLUTCH PEDAL ASSY	1	KIT
2	BRAKE PEDAL ASSY	1	KIT
3	BODY FRAME ASSY	1	KIT
4	CLUTCH MASTER CYLINDER	1	REFER TABLE
5	FRONT BRAKE MASTER CYLINDER	1	KIT
6	REAR BRAKE MASTER CYLINDER	1	KIT
7	THROTTLE LINKAGE ASSY	1	KIT
8	THROTTLE PEDAL ASSY	1	KIT
9	BALANCE BAR & REMOTE ADJUSTER	1	KIT
10	RESERVOIR BOTTLES	3	SET
11	BRAIDED FEED HOSES	3	SET

CYLINDER DESIGNATION				CYLINDER BORE		MAX DISPLACEMENT	
BORE IN	BORE cm	INLET PORT THREAD TYPE	OUTLET PORT THREAD TYPE	AREA IN²	AREA cm²	VOLUME IN³	VOLUME cm³
0.6250	1.59	7/16" x 20 TPI	3/8" x 24 TPI	0.31	2.0	0.42	6.91
0.7000	1.78	7/16" x 20 TPI	3/8" x 24 TPI	0.38	2.5	0.53	8.67
0.7500	1.91	7/16" x 20 TPI	3/8" x 24 TPI	0.44	2.9	0.61	9.95
0.8125	2.06	7/16" x 24 TPI	7/16" x 24 TPI	0.52	3.3	0.71	11.67

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Dimensions & Specifications



SPECIFICATIONS

- Materials : 6061-T6 & 5005-H34 Alloys, Tig Welded Alloy Construction
- Finish: Anodised in Black & Clear
- Master Cylinders: Alloy Construction with 34.9mm stroke (1.375")
- Mounting Location: Floor and Firewall, or Floor and Bulkhead
- Reservoir Capacity: 3 off Remote mounted Plastic with 105cc Fluid Capacity each
- Reservoir Dimensions: 76.2mm (3") diameter and 88.9mm (3.5") high
- Hydraulic Feed Lines: Teflon lined Stainless Braided Hose AN-4 Fittings
- Fixings: Stainless Steel
- Pins : Titanium Gr2
- Net Weight: 4lb 7oz (2.02kg) Incl. Throttle Linkage Kit
- Gross Weight: 7lb 11oz (3.45kg) Incl. Master Cylinders, Balance Bar & Fittings
- Pedal Ratio: Adjustable 3.5:1 to 3.9:1

Safe Working Loads

- Clutch Pedal Force 90kg (138 Lb Or 883 N)
- Brake Pedal Force 160kg (352 Lb Or 1570 N)
- Throttle Pedal Force 50kg (110 Lb Or 490 N)
- Throttle Cable Force 10kg (22 Lb Or 98 N)
- Return Spring Force 5kg (11 Lb Or 50 N)

