Penguin r/c SIMULATION

PS1000 | **PS1002** | **PS1004** - Catalog and Instructions

Features

Realistic High Tension spring actuated Paddle Shift Units (*adjustable via options*)

Real Structural 3K Carbon Fiber Shift Lever module. *(Produced in the US)*

3D Printed interior structure for optimal shifter actuation.

Adjustable throw and tension pre-loading.

Fast Switch Actuation reduces errors in shifting and allows for very low throw distances.

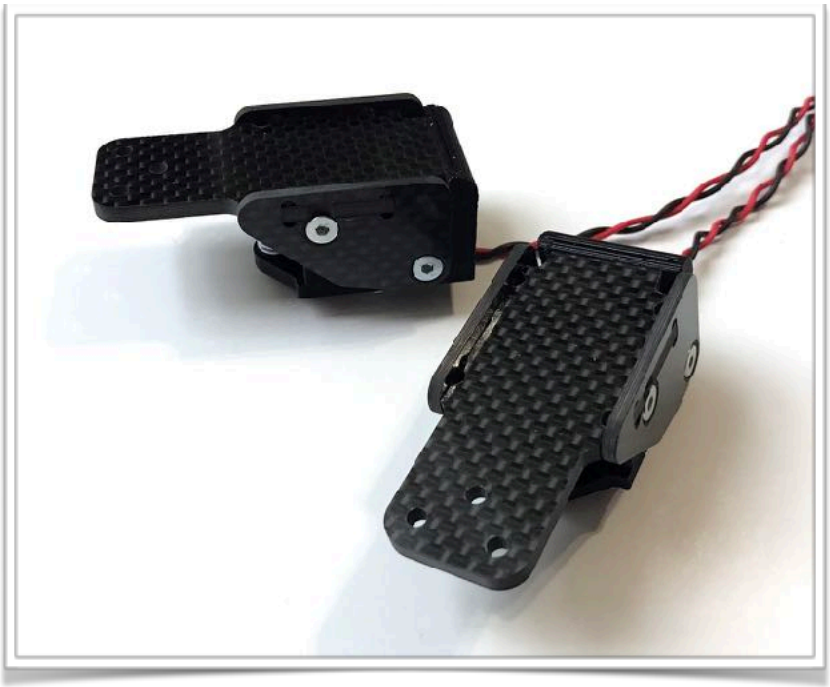
Quiet actuation profile.

Options

Multiple Paddle shape options for differing applications. *(PS1002_xx)*

Multiple spring tensions and pre-load options to increase or decrease shift actuation stiffness. *(PS1003_xx)*

Economy Black G10 option *(lc)* available when purchased with a Penguin r/c wheel box or custom wheel box.



PS1000 Paddle Shift Switch

(PS1000 & PS1000lc)

The PS1000 was designed to replicate the tactile accuracy of spring based paddle switch units used in real race cars. The spring tension provided by these shifters is about three times that of options in consumer wheels. the PS1000 Spring setup differ from magnetic units in that they have progressive tension actuation as opposed to digressive *(reducing)* tension. Progressive tension can reduce finger fatigue over time.

Design and Use:

The switches used in the PS1000 are rated for over five million actuations and are designed with a stress reduction system in the units to improve longevity and accuracy.

Features

2.25mm thick Real Structural 3K Carbon Fiber. *(Produced in the US)*

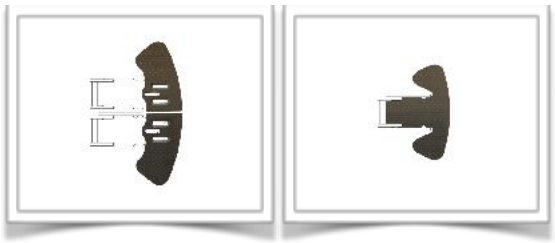
Triangulated mounting to reduce possible paddle movement in all directions.

10mm infinitely adjustable width mounting *(n/a P1002_L_01)*

Options

3.0mm thick Real Structural 3K Carbon Fiber *(optional all except PS1002_L_01 - Produced in the US)*

PS1002_01 PS1002_02 PS1002_03



PS1002_04 PS1002_L_01

Paddle Options...

PS1002_01 - Asymmetric:

Asymmetric design with additional length toward the upper wheel so the paddle is accessible over more of the wheel circumference during use.

PS1002_02 - Large:

Traditional symmetrical GT style and size paddle.

PS1002_03 - Small:

Small GT paddle for those not requiring as much circumferential access.

PS1002_04 - Quad Split:

Quad Split Paddles match the size and shape of the PS1002_2 paddle set but in split paddle form for quad shift units.

PS1000 Lever Options...

PS1002_L_01 - Narrow Lever:

Very narrow width mid size paddle. Great for formula style wheel setups.

Features

High quality US produced compression springs for tactile adjustment of PS1000.

PS1003_s PS1003_h PS1003_eh

PS1003_m PS1003

PS1000 Tactile Options...

PS1003_s - Soft Spring:
35% softer spring then the standard PS1000.

PS1003_h - Hard Spring:
75% harder spring then the standard PS1000.

PS1003_eh - Extra Hard Spring:
185% harder spring then the standard PS1000.

PS1003_m - Medium Spring:
Standard Spring included int the PS1000 kit.

PS1003 - Preload and Limiter Kit:
Includes a combinations of spacers and screws that can be used to alter throw and initial actuation feel of the PS1000 .

Features

3mm thick Real Structural 3K Carbon Fiber. *(Produced in the US)*

Triangulated PS1000 and 10mm inline mounting provisions to allow for mounting many paddle types.

Multiple 10mm spaced mounting positions to allow for a wide range of width options. When used with PS1000 Paddles the span is infinitely adjustable.

Options

PS1004_05 and _05f - Paddle Plate Reinforcement Kits are available for the PS1004_01, 02, and 03 to allow for even greater stiffness to the paddle mounting.

PS1004

PS1004a

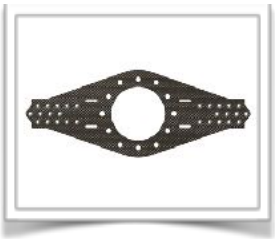
Adaptive Mounting Options...

PS1004 - Spacer kit:

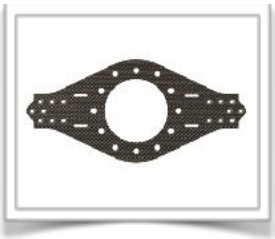
3mm G10 spacer kit allows the PS1000 shift units to be moved 3mm further back from the main mount plate. Multiple PS_1004 sets can be used, however, longer 3mm mounting screws may be needed. *(not included)*

PS1004_a - 10mm mount adaptor plate:

3mm G10 plates provide provisions for mounting the PS1000 shift units to a 10mm inline mounting plate (OR) in reverse allows you to choose a paddle with an inline 10mm mounting to be used with the PS1000 triangulated mounting.



PS1004_01



PS1004_02

PS1004_03

Paddle Plate Options...

PS1004_01:

Paddle Shift mounting plate for use with 72mm *(momo)* or 74mm *(nardi)* PCD with wheel diameters of 280 - 380mm.

PS1004_02:

Paddle Shift mounting plate for use with 72mm *(momo)* or 74mm *(nardi)* PCD with wheel diameters of 280 - 320mm.

PS1004_03:

Paddle Shift mounting plate for use with 50.8mm *(formula)* PCD with wheel diameters of 260 - 300mm.

Features

3mm thick Real Structural 3K Carbon Fiber. *(Produced in the US)*

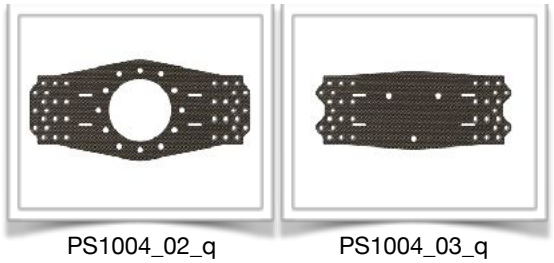
Triangulated PS1000 and 10mm inline mounting provisions to allow for mounting many paddle types.

Multiple 10mm spaced mounting positions to allow for a wide range of width options. When used with PS1000 Paddles the span is infinitely adjustable.

PS1004_04_f features include centerline or high offset mounting.

Options

PS1004_05 and 05f - Paddle Plate Reinforcement Kits are available for the PS1004_02_q, and 03_q to allow for even greater stiffness to the paddle mounting.



PS1004_02_q PS1004_03_q

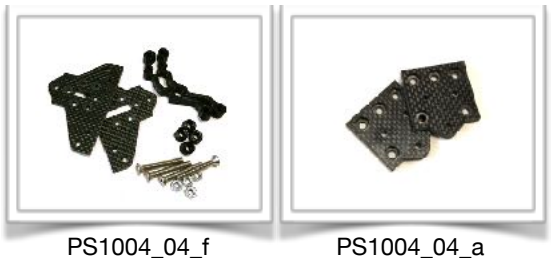
Quad Paddle Plate Options...

PS1004_02_q:

Quad Paddle Shift mounting plate for use with 72mm *(momo)* or 74mm *(nardi)* PCD with wheel diameters of 280 - 320mm. This plate allows for the mounting of 2, 3, or 4 paddles.

PS1004_03_q:

Quad Paddle Shift mounting plate for use with 50.8mm *(formula)* PCD with wheel diameters of 260 - 300mm. This plate allows for the mounting of 2, 3, or 4 paddles.



PS1004_04_f PS1004_04_a

Aftermarket Plate Options...

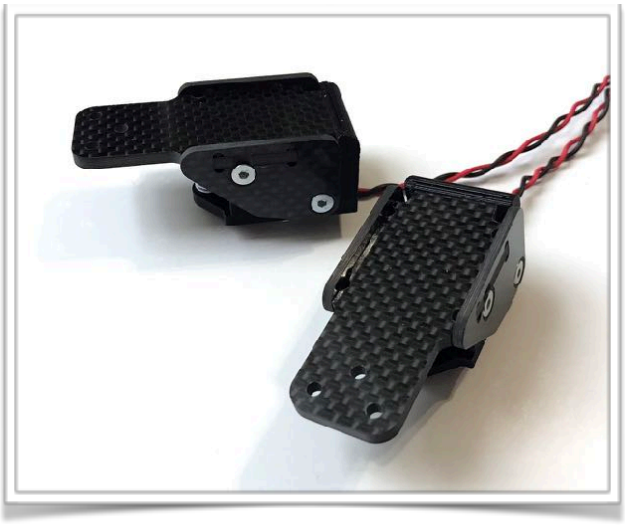
PS1004_04_f - Fanatec Mounting Plate Kit:

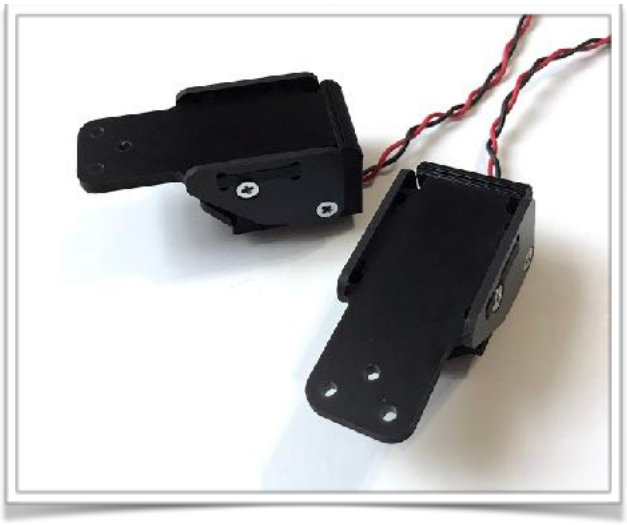
Adaptor Kit to allow the mounting of the PS1000 Shift Units to Clubsport wheels using the four screw aluminum QR mounting bracket. Thoroughly tested with the two most common wheels the BMW and the Formula.

PS1004_04_a - Accuforce Mounting Plate Kit:

Adaptor plates designed to mount the PS1000 Shift units to the stock Accuforce wheel box using their standard mounting.

Instructions...





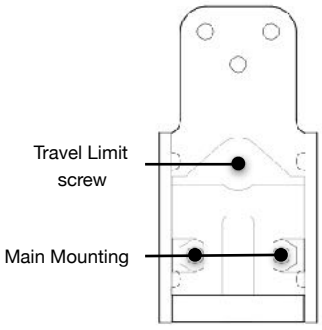
PS1000 *(PS1000, PS1000lc)*

Connecting the PS1000 Shift Units:

The PS1000 Shift units have two wires that need to be connected to your controller system allowing for a closed loop connection. You can use an existing button controller system *(adding to replacing an existing button or shift button)* or if you choose to develop one yourself. The electronics in the PS1000 are of a momentary normally open single pole design. Generally for most connections there is no polarity to the switch contacts though the wires included include both a red and black line. *(included wires are approx. 200mm in length)*

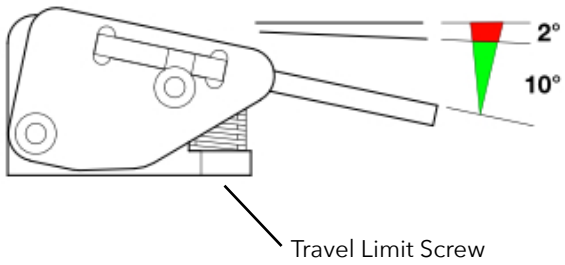
Mounting the PS1000 Shift Units:

Mounting of the PS1000 shift units is accomplished through the use of three screws in a triangulated pattern to help eliminate any wobble that may occur. The screw at the tip of the triangle that passes through the spring is also used for the travel limit of the paddle and does not need to be fully tightened to be effective. The remaining two screws are the main mounting screws and should be secured fully. The screws provided are of optimal lengths for attachment to a 3mm thick mounting plate. If a thicker mounting plate is used, longer M3.0 screws may be needed to secure the shift units and to reduce the paddle throw if desired. Replacement screw length should be extended by the approx. additional thickness of the mounting plate over 3mm. If you have issues finding appropriate screws for this purpose please contact us. *(templates and dimensions are on the technical specification pages)*



PS1000 *(PS1000, PS1000lc)*

continued…



Travel Limit Length	Mounting plate thickness (mm)	Travel Limit Screw Length	MAX Degrees of travel* (approx)
18mm	x	18 + (x) =	2
17mm	x	17 + (x) =	4.5
16mm	x	16 + (x) =	7
15mm	x	15 + (x) =	9
14mm	x	14 + (x) =	11
13mm	x	13 + (x) =	FULL

(*) when screw is fully seated to mounting plate *(not required)*

Adjusting the PS1000 Shift Units:

The paddle lever throw for the PS1000 Shift units can be fully adjusted to preference by using the Travel Limit Screw. The PS1000 has a very fast actuation point that generally occurs within the first 2 degrees* of travel, setting the Travel Limit screw to a setting that does not allow this initial travel will stop the switch from activating. Any degree setting past that point is fully up to user preference up to a total of 12 degrees of travel. If you like a sharper feel to the actuation shorter travel is recommended. Longer travel will give a softer feel to the paddle as you will allow the paddle to move further before the paddle is stopped. The maximum travel limit screw length is 18mm + the thickness of the mounting plate for a fully seated screw (i.e. 18mm + 3mm material = 21mm travel limit screw used for 2 degrees of travel). The standard screw provided with the PS1000 Shift units is a 3x20mm flathead. This screw when fully seated in a 3mm mounting plate provides about 4.5 degrees of travel. It is NOT necessary to fully seat the Travel limit screw so finite adjustments can be made to the travel by just backing the screw out. If you need more travel and are unable to back the screw out you can get a shorter 3mm screw so that it can be fully seated but allow for more travel. The shortest recommended travel limit screw would be one that will hold the Spring Bushing in place when fully seated though a 13mm screw will allow full paddle travel.

(*) 2 degrees is an approximate, some units may require a slightly shorter or longer throw for actuation, This will only be noticeable if you are trying to achieve the shortest actuation throw possible.

Notes:

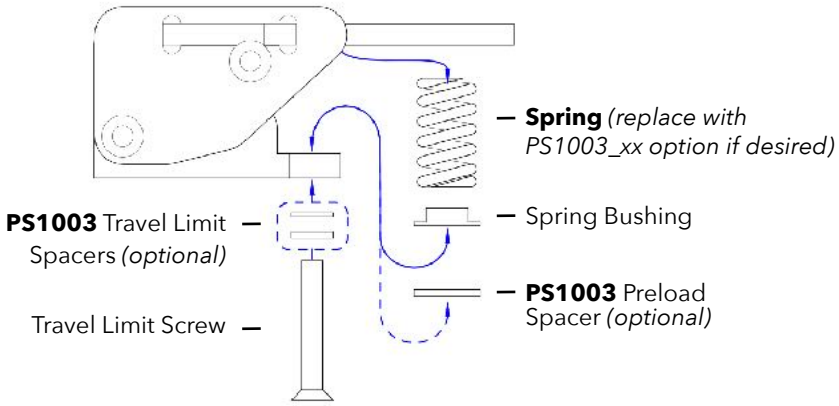
Grinding tactile feel issue - Due to the travel limit screw being placed in the middle of the actuation spring, under certain circumstances the spring may rub the travel adjustment screw creating a grinding feel in the paddle during travel. This issue is easily corrected by turning the spring so it sits more perpendicular with the internal screw.

Installing PS1000 Tactile Options:

PS1003 - Preload and Limiter Kit - The PS1003 Preload and Limiter Kit provides additional adjustment to the PS1000 feel in that you can adjust the amount of force that is required to initially move the shift lever based on the spring installed in the PS1000. This is done by adding spacers underneath the spring positioning bushing, Each large aluminum spacer included in the kit is 1mm thick and you can add up to 4 of them before possibly running into issues with over compression of the spring. At the point of over compression it is best to move to a harder spring. Also included in the kit are additional 3mm limiting screws in different lengths and spacers to allow seating of the screw should you need a longer throw on the paddle but cannot adjust the included Travel Limit screw any further due to your particular mounting.

PS1000 *(PS1000, PS1000lc)*

Tactile Options continued…



PS1003_s, _m, _h, and _eh - Spring Kits - The various P1003 spring kits allow you to adjust the overall feel of the paddles from soft to very hard. This adjustment is all about personal preference as everyone likes a different feel from their controls. We have selected the medium weight springs *(PS1003_m)* as the standard spring for the PS1000 since it provides a good weight to the shift action to give a solid positive feel without being super heavy. This spring is considerably heavier than that of most consumer level shift units that come standard with the wheels.

The Springs in the units can be changed by fully backing out the travel limit screw. This will allow the spring unit and positioning bushing to be removed from the shift unit by sliding the spring out from between the lever and inner structure. Be careful not to lose the positioning bushing as it is small and required to keep the spring from moving. Once the stock spring is removed you can replace the spring with one of the optional sets, the positioning bushing is placed on the bottom of the spring. Reinstall the travel limit screw to secure the spring in the correct location and reset your paddle travel.

Installing PS1000 Adaptive Options:

PS1004 - Spacer Kit - The PS1004 spacer plate is placed between the base of the PS1000 shift unit and the mounting plate used. This spacer moves the shift unit 3mm further from the wheel for each one used. The PS1000 comes with long enough 3mm Mounting screws to be able to stack (two) of these plates along with a 3mm mounting plate thickness. When using these spacer plates the travel limit screw will need to changed to retain the same degree limit previously set,. To calculate the difference add 3mm in overall length of your current Travel Limit Screw for each spacer used. If you have issues locating appropriate 3mm screws for this purpose please contact us.

PS1004_a - 10mm Mount Adaptor Kit - This Adaptor plate allows the PS1000 shift units to be mounted to 10mm inline mounting plates. These Adaptors move the PS1000 units 3mm further back from the mounting plate in order for the mounting conversion to occur. To use place the included nuts into the counterbored inline positions and mount the plate to the PS1000 as normal, then use the included screws to mount the unit to the Inline 10mm mounting.

Notes:

Using 10mm inline paddles - The PS1004_a adaptor set can be used to mount Paddle Shift Units from other manufacturers that use a 10mm inline mounting provision to products designed with the Penguin r/c triangulated mount. *(i.e. Wheel Boxes and Wheel Plates)* To use, install the provided nuts into the triangulated mounting in the PS1004_a and attach the 10mm mount paddle to the plate, finish by installing on your Penguin r/c product.

PS1002_xx

Installation…

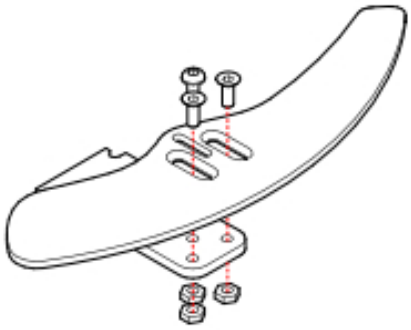


Figure 1: Paddle Mounting

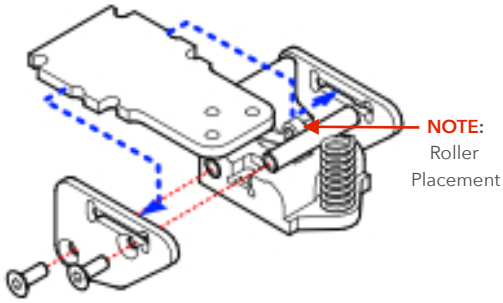


Figure 2: Lever Replacement & Lever Paddle Mounting

Mounting the PS1002 paddles *(figure 1)*:

Most of the PS1002 Paddles are mounted with a fully adjustable triangulated mounting system. You can mount the paddles to the front or the back of the PS1000 levers depending on the distance needed for the paddles. We recommend mounting to the Back or Top of the lever so that the edge of the lever does not come in contact with your fingers during actuation. To mount the paddles place all three screws into the paddle with the two countersunk screws in the countersunk slot and the Button head screw in the center location. Loosely tighten the paddle to the lever with the included nuts, the paddle should slide with a little friction. Once you find the position you feel is optimal for the paddle tighten the center button head screw to lock in the location, then tighten each of the flat head screws to further secure the paddle in place. Once secure the paddle should not move or rotate on the mounting. It is recommended to tighten the center button head screw first as tightening the flat head screws prior to the button head can cause tracking which will alter the positioning of the paddle.

Notes:

Paddle Spacing - It is possible to space the paddle further away from the lever if wanted by using longer screws and spacers between the paddle and lever of the PS1000. Depending on the desired effect this could be a better Paddle spacing option than using the PS1004 spacer plates.

Mounting the PS1002_L paddles *(figure 2)*:

The "L" Paddles provide a full lever replacement for the PS1000 Paddle shift units. These paddles give the most secure mounting but do not allow any width adjustment. To mount the "L" paddles you must disassemble a portion of the PS1000 switch unit. First remove the spring by removing the Travel Limit Screw. Disassemble the lever by removing the two retaining screws holding on one of the side plates. Once the side plate is loose you should be able to pull the side plate off and and remove the standard lever. Replace the lever with the "L" paddle by slotting the paddle into the side plates and reinstalling the removed side plate. Complete the lever replacement by reinstalling the spring.

Notes:

CAUTION switch position information - When installing the Lever or "L" style paddle please be sure that the switch roller is located on the Top/Back of the front cross member and will come in direct contact with the lever plate. If it ends up under the cross member you may experience binding that can cause damage to the switch.

PS1004_xx

Mounting and Installation…

PS1004 Paddle Plates *(01, 02, 03, 02_q, 03_q)*:

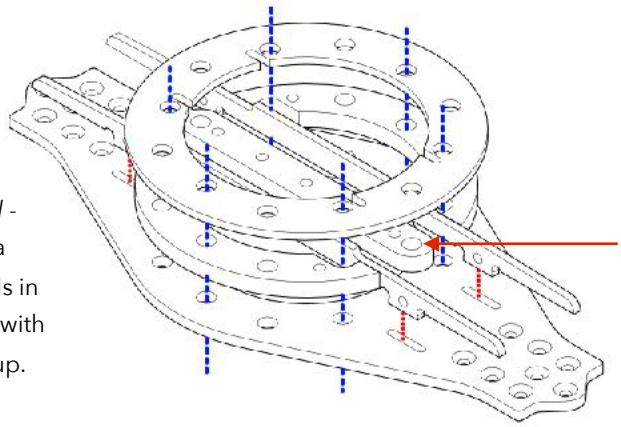
The PS1004 series Paddle Plates are designed to give maximum flexibility when just adding paddles to a wheel OR when adding a custom button plate that requires a Paddle Mount to your system. All of the plates offer at least three different mounting width locations spaced 10mm apart. The quad Paddle Plates can be used as triple paddle or even dual paddle plates by using the mounting positions down the center of the plate.

Notes:

Outer Most Mounting *(limit screw)* - The outer most mounting width provision on some of these plates allows the PS1000 Travel limit screw to overhang the outside of the plate and NOT be secured into the plate. When this occurs you will need to adjust the travel limit screw in order to retain desired paddle throw..

10mm Inline Mounted Paddles - This style paddle can be mounted to just about any hole set on the PS1004 series plates, however, it is recommended that they NOT be placed in any of the locations with slotted countersinks as those locations could be prone to a shift in location if not mounted tight enough.

PS1004_05 *displayed* - PS1004_05f Formula reinforcement kit installs in much the same manner with a different spacer set-up.



NOTE: Not used with 70mm PCD steering wheels.

PS1004_05 and 05f Paddle Plate Reinforcement Mounting:

The PS1004_05 and 05f Reinforcement Plate Kits are designed to further solidify the PS1004 series *(01, 02, 02_q, 03, and 03q)* paddle mount plates by strengthening the lateral movement on the plate through a graphite ladder design. The 05f version is not shown but installs in a very similar manner to the standard 05 version shown above. The 05f kit it is designed for use with the Formula 50.8mm PCD plates. *(PS1004_03 and 03_q).* These kits are mounted on the Countersunk side of the Paddle plate opposite the paddle mounting.

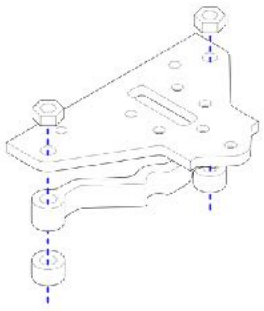
Notes:

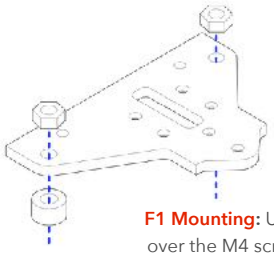
PS1004_05 - when using a 70mm PCD wheel the center spacer bar is not required and should not be placed. This piece is only used with 74mm PCD wheels to solidify the mounting and remove any distortion that could be caused.

PS1004_xx

Mounting and Installation continued…

GT Mounting: Use (2) M5 Spacers *(which sit below the circuit board)* on the M4 screw to allow the longer M7 spacer to lay flat across the Fanatec circuit board. Place spacer as shown so that it provides the correct leverage resistance. If you choose to use the optional offset mounting the long spacer will need to be flipped so that the spacer is completely under the Paddle Mounting Plate.





F1 Mounting: Use (2) M5 Spacers over the M4 screws on top of the Fanatec Quick Release Bracket.
NOTE: Use standard Fanatec Spacers Under the Bracket

PS1004_04_f Fanatec Mounting Kit:

The Fanatec mounting plates are designed to allow the PS1000 paddle switches to be mounted to your Fanatec GT or Formula wheel using the Fanatec QR Bracket. The PS1004_04 plates may be mounted so the paddles alight with the centerline of the wheel or in offset high mounting position by using the plates on opposite sides of the wheel. Use the Supplied 4mm bolts, nuts, and spacers to mount the plates. *(spacer locations indicated above)* Also included in the package are two wired plugs which can be soldered to the leads of the PS1000 Paddle switches to allow for easy connection into the existing Fanatec circuit board.

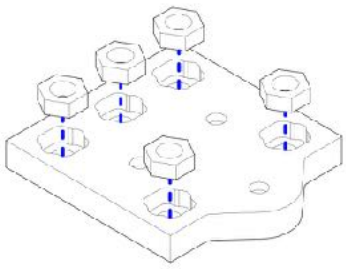
Notes:

Fanatec Back Housing - Under most circumstances you will need to either modify or leave the rear housing for your Fanatec wheel OFF of the wheel as the PS1000 are of a different shape, size, and location than the stock parts.

PS1004_04_a Accuforce Mounting Kit:

The Accuforce mounting kit allows for the direct connection of the PS1000 switch units to your existing Accuforce button box. After mounting the PS1000 Switch Units to the plates you can mount the combined units to the existing locations on the Accuforce button box with the original mounting hardware. To adjust the PS1000 travel limit screw these plates are designed to use a 3mm mounting plate thickness calculation. In order to back the travel limit screw beyond the actual plate thickness some of the plastic material from the Accuforce button box may need to be trimmed. Included with the package are 2 terminal plugs to be soldered to the PS1000 wiring to allow for direct connection to the Accuforce electronics.

Nut Installation: Install the (5) included M5 nuts into the Mounting plate prior to installing the PS1000 switch units.



About, Contact, and Customs Information…

Contact Information

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Catalog Notes

Pricing - There are no prices in this catalog. Current pricing can be found on our website along with further information.

Ordering - Throughout this catalog there are "Visit our website…" links that will open up the ordering page for the items in this catalog.

Questions - Feel free to email us at any time.

About us…

Penguin r/c was opened in April of 1997 with the intent of creating the best products that could be made for reasonable prices. Originally we started business focusing on aftermarket parts and chassis upgrades for high performance remote control vehicles, pinpointing the areas where existing cars could be made to perform beyond their original design. Penguin r/c made a name for itself by achieving this goal through products where the additional performance gained far outweighed the cost of the parts. Having racked up a couple of championships and a good name in the market place we slowly transitioned into becoming a more involved OEM supplier for other manufactures in the r/c industry and other industries. We still sell and support our r/c products to this day and will continue to do so with every product we produce. In 2010 we started manufacturing parts for a high-end simulation company and found a renewed love for racing in the form of iRacing and Simulation equipment. In 2018 we decided that we could bring our expertise in manufacturing and design to the Simulation products market and started researching and designing what you see today. We hope to bring the same values and customer support to the simulation marketplace as we have for years as an OEM manufacturer and part supplier to the r/c industry.

Custom Designs…

Penguin r/c is capable of Custom Manufacturing and Design of prototype and production parts for individuals and companies. Most of our manufacturing is done in-house which allows us significant control over the quality and assembly of parts we manufacture and allows us to make prototypes that have the quality and durability of production pieces. If you have anything that you would like to produce please feel free to contact us about the possible product.