BROCK'S PERFORMANCE PRODUCTS, INC.

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The Brock's Performance Products®
Hayabusa Clutch Cushion ™ Kit
"Finally!.....consistently smooth clutch operation from a Busa!"

Introduction

Congratulations on your purchase of the Brock's Performance Products® **1999/2001 Suzuki GSX1300R Hayabusa Clutch Cushion TM Kit** (Part Number: S13-CCK). **Special note: The 2002-07 Hayabusa's must also have part number S13-CCK-02 in addition to this kit for proper operation.** The purpose of this kit is to remove the chatter and grab associated with normal clutch component assembly wear caused by drag race launches, insertion of heavy-duty clutch springs or the addition of a lock-up clutch unit. The Hayabusa has developed a notorious reputation for an unpredictable clutch action. This undesirable effect is compounded in high torque applications, such as in increased displacement engines. This kit produces a smooth clutch actuation and provides excellent feedback to the rider, even as the clutch wears and becomes heat-dried from repeated launches. The days of soaking your clutches before heading to the track are over! Brock's Clutch Cushion Kit is compatible with aftermarket lock-ups, billet outer baskets and inner hubs (Adaptor kit Part number S13-CCK-MTC is designed for use with these components and S13-CCK) **Caution** must be taken to assure clutch spring coil bind (Brock's HD and EHD clutch spring installed height of .790 inches minimum!) does not occur if any components are used which are not specifically outlined in these instructions. ***Damage to the sprocket cover***, which houses the hydraulic clutch slave cylinder, is likely if the springs bind. This kit, as supplied, is designed for use with stock components utilizing the Brock's Clutch Mod (Part Number: S13-CM-NOCORE) and supplied Lever Cam (Part Number: S13-CCK-LC). This product is intended for racetrack use. Considerable lever pressure is noticed after installation. We recommend a Genuine Suzuki Service Manual (Suzuki Part Number: 99500-39180-03E) for installation and reference purposes.

The **Clutch Cushion Kit** is not designed to compensate for failing clutch components. Inspect your clutch hub, outer basket and backing plate springs before installation of this kit. The clutch hub develops notches in the areas where the steel plates drive it. Slide a steel clutch plate over the hub; preload the plate to the left while holding the hub stationary and attempt to slide the steel in and out. If resistance is felt over any notches, file them smooth or replace the clutch hub (Suzuki Part Number: 21410-24F00). Perform the same test with the outer basket and a friction plate (preloading the friction to the right). File the notches or replace the outer basket (Suzuki Part Number: 21200-24830) Also inspect the outer basket backing plate springs for sag. Shake the basket. If al least 1 spring does not rattle (FYI: Even purchased new, the Busa comes with several loose springs), the baskets are usually fine for a while, assuming the notches can be filed smooth. If all of the springs are loose in the pockets, the basket is damaged! Rebuild or replace it.

The **Clutch Cushion Kit** was designed to perform best with the stock hydraulic clutch system with Brock's Lever Cam and Genuine Suzuki steel and friction plates. Frictions and steels are available through your authorized Suzuki Dealer. Part numbers will vary depending on the year of the bike. Aftermarket Clutches are not recommended. If you plan to use your existing clutch, you will have an extra (thin) friction plate left over. Keep this plate for use at a later time. We rarely install a complete new clutch assembly all at once unless a major clutch failure has occurred or definite slippage is noticed. Instead, the clutch is regularly inspected for wear and /or damage. If any friction (Drive) plates show signs of glazing or smearing of the pads, or they measures less than the service limit: Standard (No.1): 2.92-3.08mm (0.115-0.121 in) or (No.2): 3.72-3.88mm (0.146-0.153 in) we replace only those plates. The same is true of the steel plates if they are warped or galled due to heat. The Driven plate distortion limit (No.1 and No.2) service limit is 0.10mm or 0.004 inches measured on a surface plate with a feeler gage. At the track, we simply stack all of the steel plates together and look for light between the plates, replacing only the plates that are warped. It is typical for the steel plates to turn blue and show hot spots. Do not be alarmed. A no-bar rider MUST slip the clutch off of the line to prevent wheelies or tire spin; this is what generates the discoloration. The weight on the lock-up or the additional spring pressure we provide in the kit take over after the clutch is fully allowed to engage by the rider, preventing excessive clutch slippage during the run. Some slippage is desired during the run to prevent excessive tire spin or wheelies during the run and after the gearshifts.

Finally, the specifications outlined in these instructions were developed using several different engine configurations and varying horsepower outputs. Chassis set up and gearing, naturally aspirated and artificially induced horsepower, in addition to rider style affect every application differently. We have found that these specifications work the best as a starting point in a majority of situations. Some riders may wish to slightly adjust their riding style with the cushion. The bike can now be launched at lower rpms and the clutch can be fully released sooner while the throttle is gradually applied to full lock before the 1-2 shift. A smooth style is the key to long clutch and cushion life, as well as quicker elapsed times and higher MPH's due to less heat being applied to the clutch. There is no need to fight the bike.....Let it do the work and the results will show immediately

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Installation

1. Read the Introduction on page 1 and study the enclosed drawings on pages 3 and 4.
If you do not understand these, please seek assistance. You may also wish to check our Information Forum at www.brockracing.com

2. A complete listing of Brock Davidson Enterprises, Inc. warranty information and policies should be viewed on our web site: www.brockracing.com/policies.

3. There are no special tools required to install the **Brock's Clutch Cushion Kit**. Standard tools to remove/install stock clutches are required. **It is wise** to place an **object** between your clutch lever and the handle bar to **block** accidental actuation while installing this kit! (It can be as simple as a paint can lid and some tape.) Re-bleeding the clutch slave assembly is NOT a pleasurable task.

4. Begin by performing the inspections outlined on page 1. If your existing sprocket cover is cracked, the Cushion Kit WILL finish it off! Inspect the cover before installation. **Lock-up users will also destroy the cover unless a suitable brace is installed**.

5. If all components are in acceptable condition, reassemble the outer basket, Inner Clutch Hub and Clutch Mod Assembly. Tighten the Clutch Sleeve Hub Nut to the appropriate torque specification (68.5 lb-ft/95 Nm).
Warning: If you are not skilled in replacing these parts, PLEASE consult you Clutch Mod Instructions and Suzuki Manual. **Engine damage may result if the Clutch Mod is not assembled correctly or the Oil Pump Gears are not aligned properly.**

6. Position the small lip (on the recessed/counter bored side) of the Cushion Ring over the rear flange of the Inner Clutch Hub.
*** DO NOT INSERT A STEEL PLATE INTO THE ALUMINUM CUSHION RING***- See Lip/Flange placement Note and Arrows on the Clutch Assembly drawing on page 3.The installer will see the smooth side of the cushion ring when properly mounted. The Cushion ring must be CENTERED on the rear flange of the Inner Clutch Hub; NOT resting on the splines of the Inner Clutch Hub or tilted in any way.

7. Install the Dual Stage Cushion over the teeth of the Inner Clutch Hub and into the center hole of the Cushion Ring.

8. Position a STEEL plate, with the rounded edge (see note: page 3) facing AWAY from the engine, over the Clutch Hub until it touches the Cushion Ring. Be careful not to disturb the Lip/Flange placement. The rounded edge is small, feel for it with your fingers. FYI: There are a total of 9 steels and 9 Fibers used: 7 thin fibers (No.1) 3.0mm (0.12in), and 2 thick fibers (No.2) 3.8mm (0.15in) thick. A detailed drawing is included in your Suzuki Manual. *Special Note*: We usually apply a SMALL amount of oil to the friction plates before installation. There is no need to over-oil the plates!

9. Install a Thick (No.1) Fiber plate then another Steel, this time with the rounded edge facing TOWARD the engine. The remaining Steels will be positioned in this configuration. Continue the installation: Steel/ Thin (No.2) Fiber, until you finish with a Thick (No.1) Fiber. Be sure to insert the outermost Thick (No.1) Fiber drive plate claws in to other slits of the outer basket. A diagram is shown in your Suzuki manual.

10. Install the Clutch Pusher Assembly and related components in the proper order. Install the Pressure Plate, making sure that the teeth on the Pressure Plate mesh with the Clutch Hub. Note: The slave cylinders have a tendency to creep. If the teeth don't seem to align correctly, remove the pressure plate and press the Clutch Pusher Assembly toward the engine with your thumb and index finger. The Pressure Plate should now align and seat correctly.

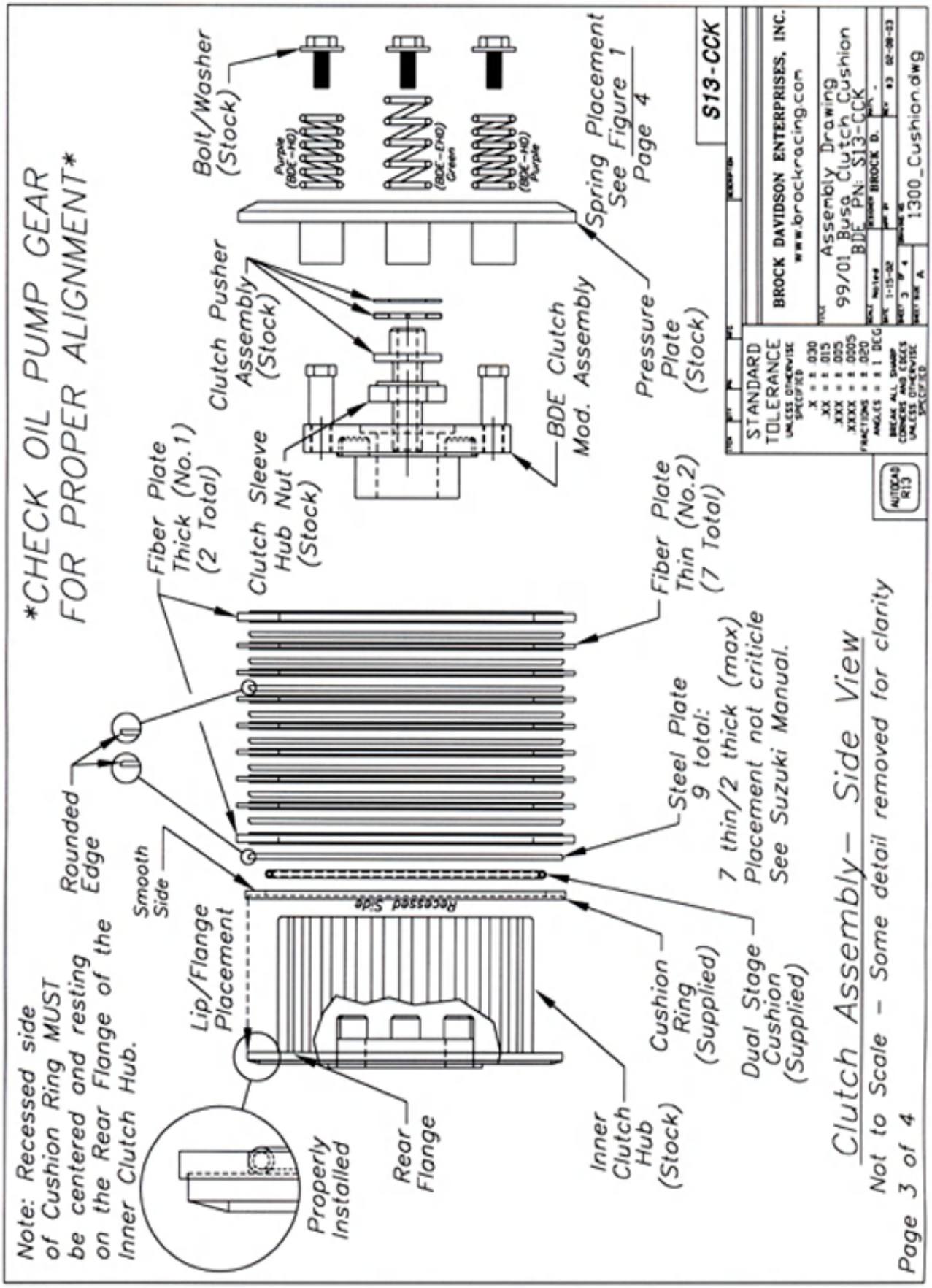
11. Position the supplied springs in the pockets as shown in Figure 1 on page 4. **Four of the springs are heavy duty (HD-Purple) and two of the springs are extra heavy duty (EHD-Green).** Compare the springs to the scale drawing. These springs are specifically designed for use with the Clutch Cushion. **The Spacers supplied with your Clutch Mod are NO Longer Required!**

12. Remove your lever block. Check the clutch for proper operation by visually inspecting the Pressure Plate movement as you manually cycle the clutch lever.

13. Check **Figure 2** on page 4 to verify the correct **No Longer Required** parts remain.
Replace the Clutch Cover (6.5-9.5 lb-ft) and remaining body work.

14. Install and adjust **Lever Cam** as described in the Lever Cam instructions. **Do not attempt to use the Hayabusa Clutch Cushion kit without the Lever Cam installed!** Clutch drag or creep may occur, leading to a potentially dangerous situation or burned clutch plates.

15. FYI: Typically, we set the Lever Cam to the #2 position and perform several dry-hops to seat the Clutch/ Mod assembly. We then adjust the Lever Cam to rider's desired position. See special note on the lever cam instructions to adjust from position #1.


CHECK OIL PUMP GEAR FOR PROPER ALIGNMENT
Bolt/Washer (Stock)
Spring Placement See Figure 1 Page 4
Clutch Pusher Assembly (Stock)
Clutch Sleeve Hub Nut (Stock)
BDE Clutch Mod. Assembly
Pressure Plate (Stock)
Fiber Plate Thick (No.1) (2 Total)
Fiber Plate Thin (No.2) (7 Total)
Steel Plate 9 total: 7 thin/2 thick (max) Placement not criticle See Suzuki Manual.
Rounded Edge
Smooth Side
Lip/Flange Placement
Cushion Ring (Supplied)
Dual Stage Cushion (Supplied)
Inner Clutch Hub (Stock)
Rear Flange
Properly Installed
Note: Recessed side of Cushion Ring MUST be centered and resting on the Rear Flange of the Inner Clutch Hub.
Clutch Assembly– Side View
Not to Scale – Some detail removed for clarity
Page 3 of 4
S13-CCK
BROCK DAVIDSON ENTERPRISES, INC.
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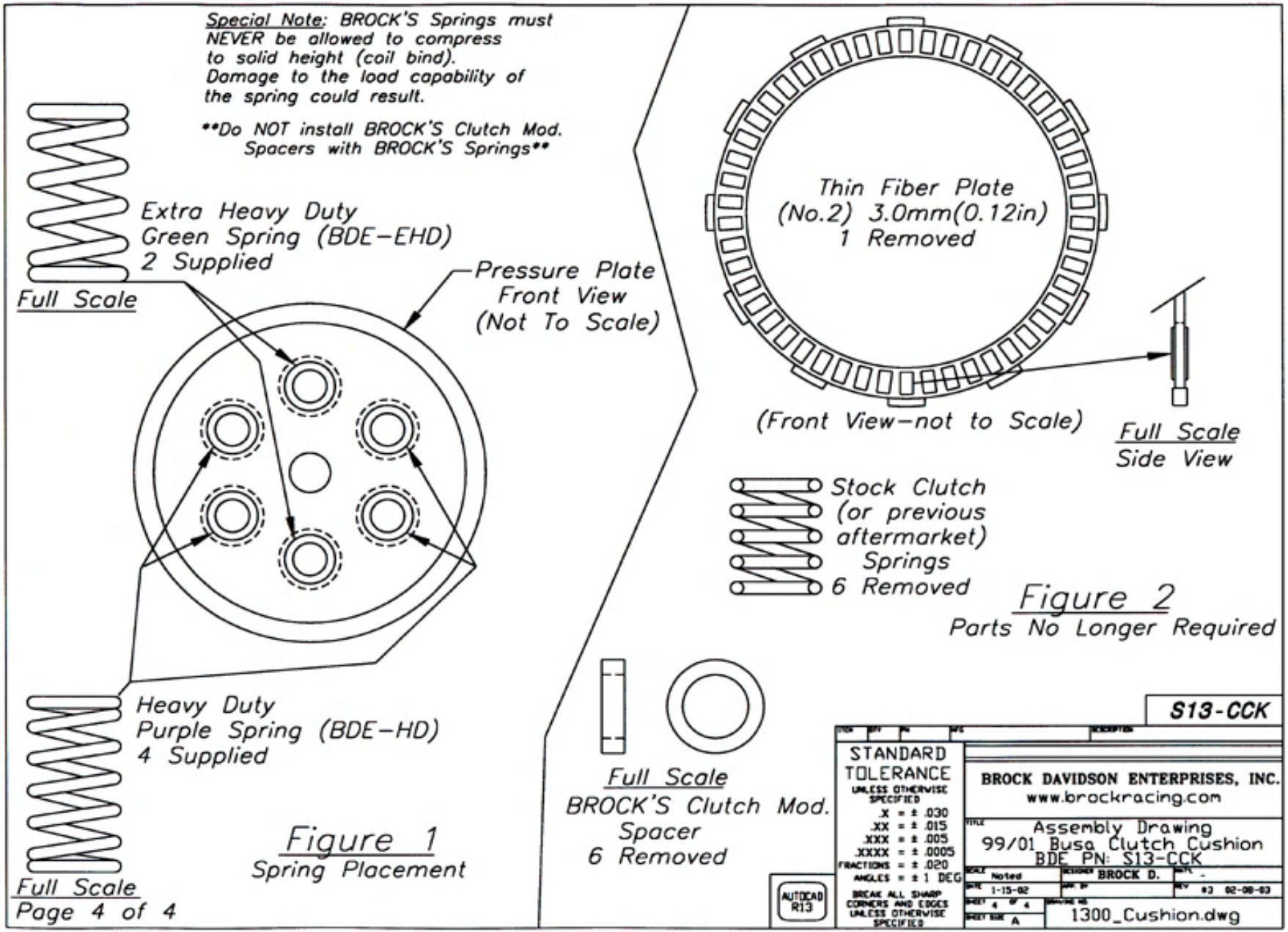
Assembly Drawing
99/01 Busa Clutch Cushion
BDE PN: S13-CCK
1300_Cushion.dwg
STANDARD TOLERANCE


Special Note: BROCK'S Springs must NEVER be allowed to compress to solid height (coil bind). Damage to the load capability of the spring could result.
Do NOT install BROCK'S Clutch Mod. Spacers with BROCK'S Springs
Extra Heavy Duty Green Spring (BDE-EHD) 2 Supplied
Full Scale
Pressure Plate Front View (Not To Scale)
Heavy Duty Purple Spring (BDE-HD) 4 Supplied
Full Scale
Figure 1
Spring Placement
Thin Fiber Plate (No.2) 3.0mm(0.12in) 1 Removed
(Front View-not to Scale)
Full Scale
Side View
Stock Clutch (or previous aftermarket) Springs 6 Removed
Figure 2
Parts No Longer Required
Full Scale
BROCK'S Clutch Mod. Spacer 6 Removed
S13-CCK
STANDARD TOLERANCE
UNLESS OTHERWISE SPECIFIED
.X = ± .030
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
FRACTIONS = ± .020
ANGLES = ± 1 DEG
BREAK ALL SHARP CORNERS AND EDGES UNLESS OTHERWISE SPECIFIED
AUTOCAD R13
BROCK DAVIDSON ENTERPRISES, INC.
www.brockracing.com
Assembly Drawing
99/01 Busa Clutch Cushion
BDE PN: S13-CCK
Noted
BROCK D.
1-15-02
#3 02-08-03
1300_Cushion.dwg
A
Full Scale
Page 4 of 4

BROCK'S PERFORMANCE PRODUCTS, INC.

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"Jockey-Inspired" Clutch Adjustment for the Busa.

Introduction

Congratulations on your purchase of the Brock's Performance Products® **1999-2008 Suzuki GSX1300R Hayabusa Lever Cam™Kit** (BROCK'S Part Number: S13-CCK-LC). The **Lever Cam** is a multi-purpose adjustment device, which allows the stock clutch lever to be fine-tuned for the needs of the Sportbike Drag Racer. As the clutch wears, the distance in which the clutch engages becomes farther away from the handle bar. Most riders have more launch control with the lever nearer to the bar, since your fingers have more strength closer to a fist than they do straight out. The stock lever cam has adjustment positions, but they are usually not enough after the clutch has been subjected to multiple drag-style launches. The **BROCK'S Lever Cam** now has six positions. Positions six, five and four are dedicated to positioning the lever closer to the bar than the stock unit will allow. From small hands to a well-worn clutch, these positions work the best. Positions three, two and one are for use with the **BROCK'S Hayabusa Clutch Cushion Kit TM (**BROCK'S Part Number: S13-CCK or S13-CCK-02) or for riders with exceptionally large hands. If your riding style dictates that you hold on to the bars with several fingers under the clutch lever, any **BROCK'S Lever Cam** position which allows the bike to be staged without moving should be chosen. If the lever cam does not stay in the desired position, the clutch lever may be worn out or damaged; replace the lever assembly. (Suzuki Part number: 57500-24F00)

Caution: Burned clutch plates or a damaged Clutch Cushion may result if the rider holds the bike in place, while creeping or dragging!

Special Note: When operating in positions six or five, or if the bike is fitted with oversized handle grips, you may notice the engine not starting! Do not be alarmed. The Hayabusa is fitted with a safety switch, which does not allow the bike to start unless the lever is pulled in. Usually, a tighter grip on the lever is enough to engage the switch. In some cases, it may need to be adjusted. The switch is located directly in front of the Clutch master cylinder/reservoir on the left handle bar (it has two-black/yellow wires leading in to it). A small Phillips head screw holds the switch in place. Loosen the screw slightly, push the switch towards the clutch lever and re-tighten the screw. For details, see the enclosed drawing on page 2.

Installation

1. Read the Introduction above and study the drawing on page 2.
If you do not understand these, please seek assistance. You may also wish to check our Information Forum at www.brockracing.com

2. A complete listing of Brock Davidson Enterprises warranty and policies should be viewed on our web site: www.brockracing.com/policies.

3. The **BROCK'S Lever Cam** can be easily installed with the clutch lever mounted on the bike. BROCK'S does not recommend removing the lever from the bike for this operation…. problems upon reassembly could occur.

4. Place a large towel or blanket under the clutch side of the bike (This is to catch the spring loaded ball.... DO IT! Or, the frustration of this assembly can become world class….!)

5. The stock lever cam is held in place by a Spring Loaded Ball as shown in the drawing on page 2.

6. Adjust the stock lever cam to the number 4 position.

7. Insert a dulled X-Acto blade or similar piece of thin metal between the stock lever cam and lever (between positions 2 and 3) to press the ball back in to the pocket in the lever.

8. While pressing the ball down towards the lever, pull the clutch lever away from the bar and push the stock cam towards the exit direction, as shown in the drawing on page 2. Have someone hold the bike/bars in place.

Caution: The stock Spring Loaded Ball will exit the pocket as you perform this motion. WEAR SAFETY GLASSES!
The ball will likely spring (shoot) out and roll away, never to be seen again...This is why we included a spare ball with your **BROCK'S Lever Cam**. You may use either ball during assembly.

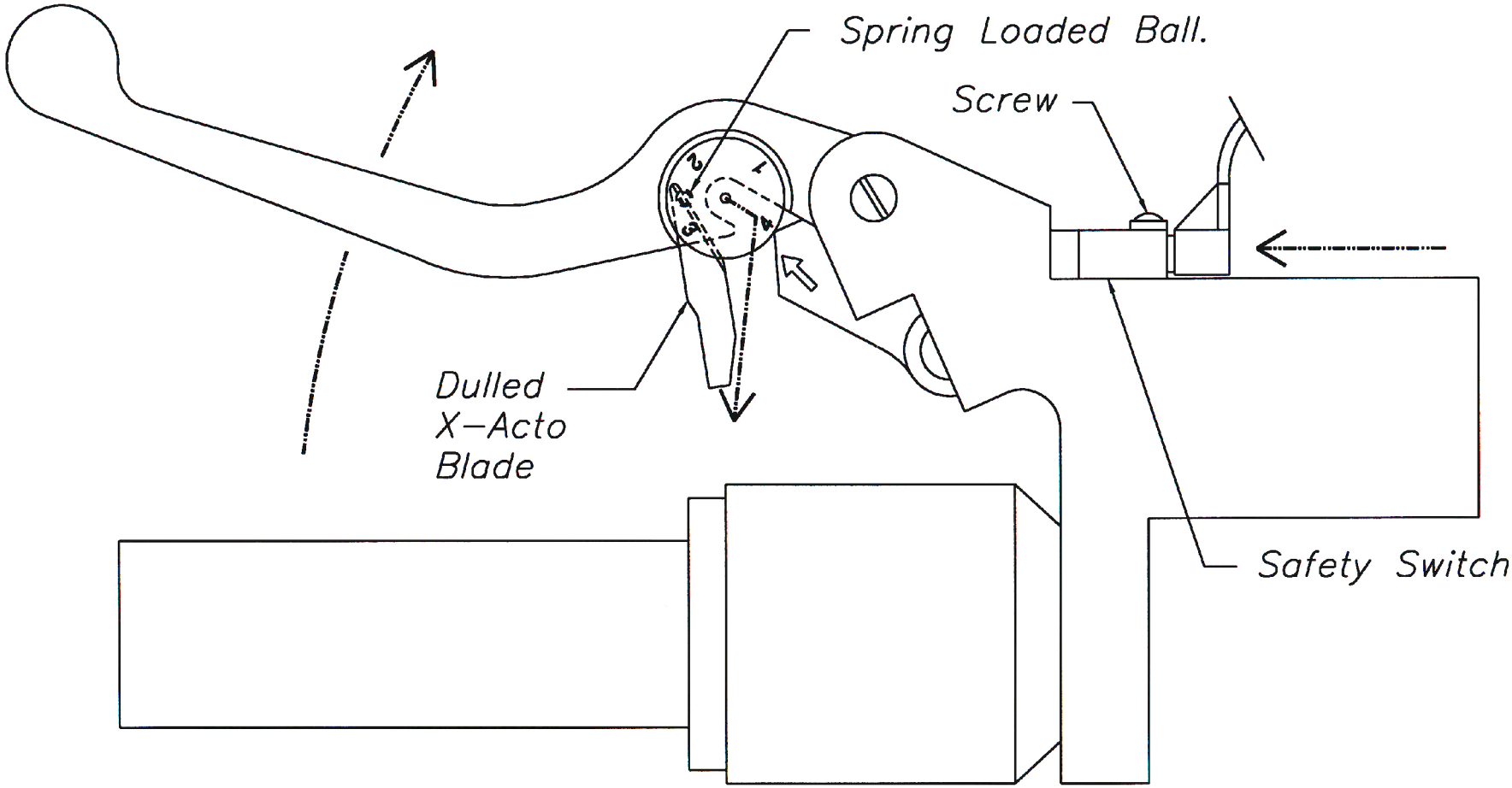
9. After the stock lever cam, ball and spring are removed, set the ball and spring aside for a moment. Dry assembly the **BROCK'S Lever Cam** by aligning position number 6 with the arrow and sliding the **BROCK'S Lever Cam** into position while holding the lever away from the bar.

10. Remove the **BROCK'S Lever Cam** and re-install the spring in to the pocket in the lever. Place the ball on top of the spring and hold it in place as you perform the action described above. The **BROCK'S Lever Cam** was designed to install far easier than the stock cam was to extract. The spring and ball hold the **BROCK'S Lever Cam** in place, just like the stock lever cam**.**

11. DANGER: DO NOT ATTEMPT TO DRIVE YOUR MOTORCYCLE UNLESS YOU ARE POSITIVE THAT THE BROCK'S LEVER CAM IS PROPERLY INSTALLED. Doing so could lead to a potentially dangerous situation.

12. Check the **BROCK'S Lever Cam** for proper operation by turning it to different positions as you feel the click.

13. Set the **BROCK'S Lever Cam** to the desired position for you application as described in the introduction.



Lever Cam Removal/Installation

Special Note: Position #1 on the BDE Lever cam is a lock position. To adjust off of position #1, turn to position #6 while slightly pulling the lever towards the handle bar. Adjust to the desired location, 6-5-4 etc.

ITEM	QTY	PN	MFG	DESCRIPTION

STANDARD TOLERANCE
UNLESS OTHERWISE SPECIFIED
.X = ± .030
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
FRACTIONS = ± .020
ANGLES = ± 1 DEG
BREAK ALL SHARP CORNERS AND EDGES UNLESS OTHERWISE SPECIFIED

AUTOCAD R13

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TITLE: Hayabusa Lever Cam Removal/Installation Dwg.
BDE PT#: S13-CCK-LC

SCALE: None	DESIGNER: BROCK D.	MATL: -	
DATE: 1-24-02	APP. BY	REV: #2/ 6-12-02	
SHEET: 2 OF 2	DRAWING NO: levercam.dwg		
SHEET SIZE: A			