

HEEL CLICKER CLUTCH SYSTEMS

Congratulations! You have purchased the finest clutch kit available. This **patent-pending** "dual quadrant" technology is revolutionary to the industry! This technology is **ONLY AVAILABLE** from Super Torquer Systems!

STS3HC 40-10Y

How to Install and Use the Heel Clicker™ Clutch Weight System and Most Frequently Asked Questions (Yamaha YXR clutch design only)



WARNING! READ BEFORE INSTALLATION!

Personal injury and damage to property can result from the improper installation and use of any product, including the Heel Clicker Clutch Kit. Installation of this kit should not be attempted unless you are a trained service technician or have a thorough and complete knowledge of CVT systems and their repair and tuning. Novice tuner should not attempt installation. It is recommended that a qualified dealership or repair facility install this kit.

DEFINED WARNING: This is a high performance product for use in sanctioned racing events only and is not for installation or operation by "consumers" as defined by the Magnuson-Moss Warranty Act. **DO NOT** install any performance parts unless you have the technical ability to properly set up the entire machine to compensate for the installation of these parts.

The expertise and necessary work needed to install products varies from one product to another. Instructions (where provided) are given to assist in installation only and are not a substitute for mechanical expertise. References to performance gains, reliability, ease of installation and tuning are based on our experiences. This is **NOT** a guarantee of similar performance in every installation. While we sell tested and proven products, individual results may vary.

Before you begin to install your Heel Clicker™ clutch kit, please note the following:

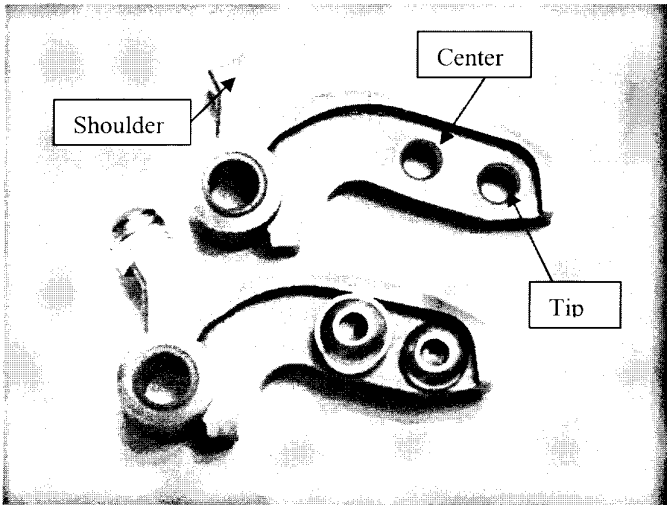
- **DO ACCEPT** only genuine HEEL CLICKER™ parts. This kit is assembled with made-to-specification parts. Accept no substitutes.
- **DO ALWAYS** use the same combination of fasteners on each weight arm and shoulder. NO EXCEPTIONS.
- **DO** make sure the weight arms are balanced (weigh the same) before installation.
- **DO** make certain you have any excess side play shimmed out of the pivot area of your weight arm.
- **DO** make sure your Stationary pin and nut are new or in like-new condition and securely fastened.
- **DO** make sure your drive belt is in good condition. Also, verify that your center-to-center and offset adjustments are correct.
- **DO** use LOCTITE™ (not included in kit) or similar product on each fastener after you determine the proper combination for your setup.
- **DO NOT** grind or alter any portion of the weight arm or shoulder.
- **DO NOT** adjust the mass while the weight is mounted on the stationary pin in the clutch.
- **DO NOT** operate your machine without checking the full range of motion of each weight to make sure you clear the spider assembly and related areas.
- **DO NOT** exceed 9,000 RPM's.
- **DO NOT** allow an unqualified person to make any adjustments to your clutch kit.
- **DO NOT** install a Heel Clicker™ clutch kit in any clutch assembly that has excess wear, damage, or is in otherwise questionable condition.

Provided in this kit are the following items:

- Three (3) bushed Heel Clicker™ clutch weights
- Six (6) ¼x28x ½ stainless steel button headed bolts 4.0 grams each
- Six (6) ¼x28x 3/8 stainless steel button headed bolts 3.3 grams each
- Nine (9 approx.) 6.0mm steel washers 1.0 gram each
- Fifteen (15 approx.) 5.0mm steel washers 0.5 grams each
- Three (5.0x0.8x12.0)mm stainless steel set screws 1.2 grams each
- Three (5.0x0.8x12.0)mm stainless steel button head bolts 2.3 grams each
- Two primary clutch springs, Red (230-360), Gray (230-330)lbs.
- One Heel Clicker™ Super Torquer Systems sticker
- 6 Nylon centering washers

**NOW YOU ARE READY TO INSTALL YOUR NEW
HEEL CLICKER™ CLUTCH KIT.**

- 1) Remove the drive clutch from the machine. Disassemble the cover and remove the drive spring, and clutch weights
- 2) **You are now ready to tune the Heel Clicker™ weights** for your particular application. The Heel Clicker™ weights are adjustable in both the traditional arm and the new shoulder. At this time, it is important to understand the nomenclature of the Heel Clicker™ weights. The first number identifies how many grams just the arm weighs without any adjustment hardware (i.e., 40 grams) and the "10" is the weight of the shoulder (in grams) without any tuning hardware attached. The arm will be adjusted first based on information from your old clutch weight that is assumed to have been appropriate for your sled.
- 3A) Weigh your current clutch weight. This is the amount of weight you want just the arm ("traditional" weight) "of your Heel Clicker™ weight to be.



- 3B) Figure out how much mass you need to add to the Heel Clicker™ clutch weight arm so that it matches the specification in these instructions. For example if you have a 52 gram weights in your 2001 SRX 700, it will be replaced with a STS3HC 40-10 Heel Clicker™ weight. Place 7.3 grams the center hole and 3.3 grams to the tip location and 5.3 grams in the shoulder. Put the bolts and washer(s) on the front side. See photo above for placement. This picture also shows proper calibration of an SRX 700 set up.

Application Chart for Heel Clicker™ Clutch Weights

<u>Model</u>	<u>HC Part Number</u>	<u>Shoulder</u>	<u>Center</u>	<u>Tip</u>	<u>Spring</u>
600 SX	40-10	3.2	0	0	Gray
700 SX	40-10	3.2	3.3	0	Red
700 SXR	40-10	3.2	3.3	0	Red
600 SRX	40-10	3.2	3.3	0	Red
Viper(stock helix)	40-10	4.7	3.3	0.0	Red
Viper(48/34 helix)	40-10	4.7	3.3	3.3	Gray
700 SRX (98&99)	40-10	4.7	5.3	3.3	Red
700 SRX (00&01)	40-10	4.7	7.3	3.3	Red
700 Mountain Max	40-10	3.3	0	0	Red
700 SX/SXR (piped) (9000 RPM)	40-10	3.3	0	3.3	Red
700 SX/SRX (piped) (8300 RPM)	40-10	4.7	7.3	3.3	Gray

- 3E)** A maximum of three washers can be used when adjusting the arm weight. Adding more than three washers will cause interference between the head of the bolt and the spider.
- 3F)** Install all three clutch weights using the OEM stationary pins and the six nylon washers provided with this kit. The washers supplied with this kit are wider and have a relief pocket cut into them. The pocket should be facing the weight on both sides. The pocket is use to give clearance for the weight bushing. **Do not use the standard OEM white washers with our clutch weight.** Torque all bolts to the manufacturer's specifications.
- 4)** Install the clutch spring supplied with this kit. The Red spring is a 230-350 spring and is intended to be used for trail riding or racing applications. Other manufacturer's springs can be used with these weights, so don't be afraid to try other springs.

- 5) Install (tall) spring cap and torque all bolts to the manufacturer's specifications. **You need Yamaha tall cover, P/N 8DF-17630-00, if your machine didn't come with it! SX 600 & 700 prior to 2000 need the tall cover. Check to make sure you have this cover.** All Yamahas built after 1999 have the tall cap cover.
- 6) **Install clutch on engine and torque clutch bolt to the manufacturer's specifications.**

The final adjustment involves tuning the shoulder for maximum performance. As explained earlier, the shoulder of the weight already weighs 10 grams. This means the Heel Clicker™ weight will already weigh 10 grams more than the weight you are replacing. This extra weight will prevent the belt from slipping and act as a progressive angled helix. Add as much weight as the engine can handle without losing responsiveness. Based on the power your particular engine, more weight can be added to the shoulder. Extra weight is provided in this kit in the form of a 1.2 gram set screw and a 2.3 gram bolt. Additional 0.5 gram 5.0mm washers are provided for fine tuning. Additional fasteners are available through Super Torquer Systems, if desired.

When using these fasteners always use the lock washer with the bolts and blue Loctite with the set screw. The addition of these fasteners will increase the load on the belt and make the clutches upshift faster. This additional weight will also drop the engine engagement RPM's. Listed below is the engine engagement RPM you can expect with these weight combinations added to the shoulder.

<i>Set up</i>	<i>Gray spring</i>	<i>Red spring</i>
No weight added	5400	5400
1.1 grams added	5250	5250
3.2 grams added	4900	4900
4.0 grams added	4600	4600
5.4 grams added	4300	4300

Most Frequently asked Questions

I seem to have lost top speed? Moving weight to the tip hole will increase top speed. **Our specifications are given for aggressive trail and snowcross conditions. Top speed on hard pack snow or ice conditions is achieved by moving weight to the tip location instead of the center location. Keep the amount of weight the same, just move it. This is a key tuning tip used by many top tuners. Also see Helix Recommendations below.**

Can I use the other spring in this kit? Yes, as mentioned above, the Red spring is an aggressive snowcross and mountain spring. It has a 360lb. end load for very fast backshifting. The Gray spring has a 330lb. end load. It upshifts very fast and is used when achieving top speed quickly is needed. In the instructions we

recommend the Red spring, but we do recognize the need to achieve maximum top speed is the goal of some customers.

How many and what length of studs should I use? This depends on many things, but testing shows that 144 studs 1.080 inches long with traction rods work great for aggressive trail riding. **Customers without sufficient traction will not be taking advantage of the large power increases as seen at the track.**

How can I get more engagement RPM? See the engagement chart above. By removing weight from the shoulder location engagement RPM will rise. Also, using larger diameter rollers will tuck the weight and engagement RPM will also raise. Placing weight in the hole on the tip will also work.

Can I use Yamaha spring shims to get a higher engagement RPM? No. Both Blue and Red springs are designed to work between 2.9-1.6 inches. Using shims will diminish the spring quickly.

How can I get less engagement RPM? We also offer a Blue spring that is 40lbs. less than the Red spring. Also any OEM Yamaha clutch spring will work with our weights. You may find them too soft.

What primary clutch rollers work the best with the Heel Clicker weights? We have found the larger diameter rollers (15.0 and 15.6mm) work the best. You can simply not hook up with the small diameter rollers unless you have massive traction. The 16.0mm offered by Yamaha will not work with this weight. The pocket in the weight is made for the 15.6mm roller maximum. Belt clearance will be an issue if you use the 16.0mm diameter roller. Yamaha doesn't use the 16.0mm roller for any of their current OEM calibrations. The 700 SRX is calibrated with the 15.6mm roller, and the 700 Viper is calibrated with the 14.5mm rollers.

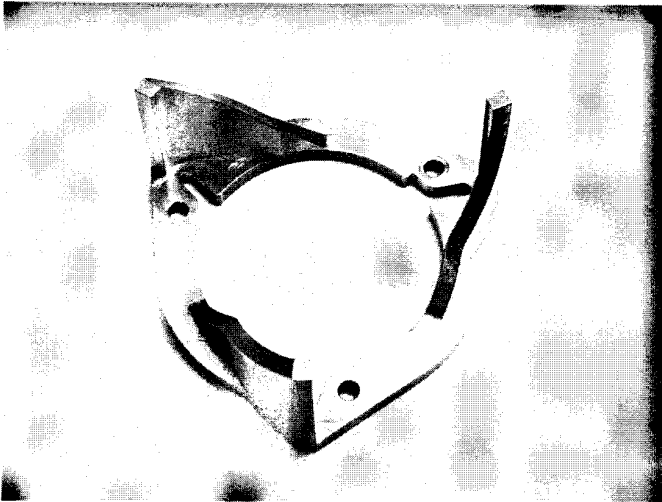
What Helix should I run with the Heel Clicker weights? We have found the stock helixes work well, but tend to slip the belt at top speed. Running shallower helix angles will work better. Helix compound angle 48/34 for the Viper and a straight 43 degree helix for the 700 SRX work well. Remember when shallowing out the helix more tip weight needs to be added to the tip hole of the clutch weight. Both the Viper and SRX show the best performance when RPM is kept at 8400, calibrate accordingly.

We carry these helixes as a customer service and sell them to you at our cost. Most of our customers already own many helixes. If we can save you money in this area, we will. The 43 degree helix for the 700 SRX is already offered by Yamaha (PN# 8BV-17604-30-00). These are proven race setups that win at the highest level.

Can I run a Roller Secondary with the Heel Clicker Weights? Yes. Depending on the roller secondary you buy the recommended helix will change. Many customers drop down in helix when using our weights. Angles such as 44/38 Helixes are common.

*Helix*TM Secondary Technology

New for 2002 is our revolutionary solution to many design problems with the Yamaha secondary clutch. OEM and after market products for the secondary clutch do not address the problem of applying just enough force to the belt to stop it from slipping, while still maintaining constant upshifting, and backshifting. The *Helix*TM system uses a decreasing radius to solve the problem. As the Belt moves down sheave faces, the contact point from the roller to the helix also moves down towards the center maintaining force on the belt without a multi-angled helix. This means the rapid up shifting without belt slippage. This is a direct bolt on kit, Fifteen minute installation. Call us today for more details.



Shown here is the new decreasing radius Helix used in the *Helix*TM roller secondary kit. All patents pending