



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

STS3HC 40-10BY
STS3HC 92-11BY

**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.

U.S. Patent # 6,346,056

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

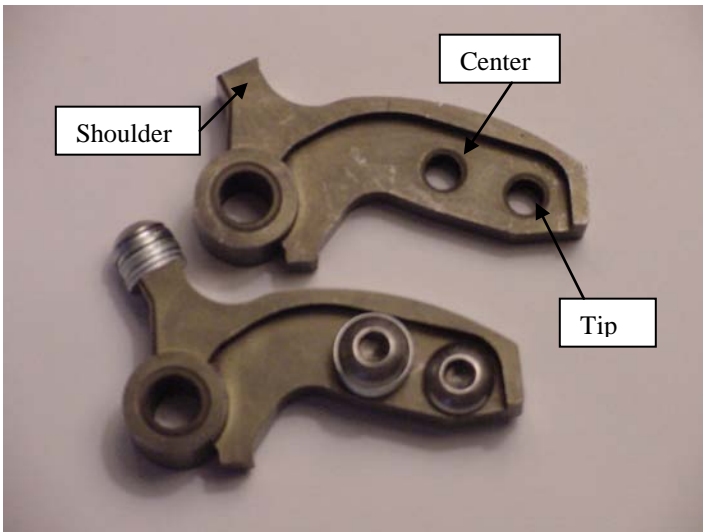
- **DO ACCEPT** only genuine HEEL CLICKER™ parts. This kit is assembled with made-to-specification parts. Accept no substitutes.
- **DO ALWAYS** use the same combination of fasteners on each weight arm and shoulder. NO EXCEPTIONS.
- **DO** make sure the weight arms are balanced (weigh the same) before 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 bolts 3.3 grams each
- Six (6 approx.) 6.0mm steel washers 1.0 gram each
- Six (6) ¼ stainless steel lock 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
- Three 5mm lock washers 0.5 gram each
- Primary spring(s), Red (230-360) Gray (230-330) White(170-300) or Black (140-400)
- One Heel Clicker™ Super Torquer Systems sticker
- 6 Nylon or Metal centering washers
- One Secondary Spring (92-11Y kits only) Yellow 38-100lb. comp., 50lb/in. twist

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.
*** Note*** The RX-1/Apex four strokes do not calculate the same way. You will find the same weight used for the SRX and Viper is the same as the RX-1 and Apex. Through testing we have learned that weight distribution is more important to performance of the RX-1 than actual weight. The 92-11 is only a part number so do not expect a 103 gram weight in this kit. Do not use the following calculation for the RX-1 or Apex models—see the set-up chart provided.
- 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 3.3 grams the center hole and 3.3 grams to the tip location and 4.8 grams in the shoulder. Put the bolts and washer(s) on the front profile side. See photo above for placement.

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>
APEX	92-11	4.8	6.0	0.0	White
RX-1	92-11	3.3	0.0	3.3	White
Phazer	40-10	0.0	0.0	0.0	Red
Vector	40-10	3.3	0.0	0.0	Red
700 SXR	40-10	1.2	3.3	0	Red
600 SRX	40-10	1.2	3.3	0	Red
Viper (stock helix)	40-10	3.3	0.0	4.3	Gray
Viper(46/36 helix)	40-10	3.3	3.3	3.3	Gray
Viper (piped 9000)	40-10	4.8	0.0	3.3	Red
700 SRX (98&99)	40-10	4.3	3.3	3.3	Red
700 SRX (00&01)	40-10	4.3	3.3	3.3	Red
700 SX/SRX (piped) (8300 RPM)	40-10	3.8	3.3	3.3	Gray

3C) 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.

3D) 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 than the OEM washers. Using the OEM washers with the Heel Clicker weight will cause the weight to shake back and forth and eventually break the weight. Always use our washers. **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 230-360 spring and is intended to be used for trail riding or racing applications. The white spring is for the RX-1 and is a 170-300. The Black Spring 140-400 is for mountain use and triple piped high rpm use. Other manufacturer's springs can be used with these weights however the weight set-up will likely change.
- 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 up shift faster. This additional weight will also drop the engine engagement RPM's. Listed below is the engine engagement RPM you can generally expect with these weight combinations added to the shoulder.

<i>Set up</i>	<i>Gray spring</i>	<i>Red spring</i>	<i>White spring</i>	<i>Black spring</i>
No weight added	5400	5400	5400	5000
1.1 grams added	5250	5250	5200	4800
3.2 grams added	4900	4900	4800	4400
4.0 grams added	4600	4600	4400	4000
5.4 grams added	4300	4300	4000	3600

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 snow cross 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. RX-1 owners, make sure you install the Yellow

Secondary spring. The Heel Clicker weight is only 59 grams compared to the OEM 82 gram weight. The OEM secondary spring is too stiff to fully allow the clutches to shift out, resulting in slower top speeds.

Can I use the other spring in this kit? Yes, as mentioned above, the Red spring is an aggressive snow cross and mountain spring. It has a 360lb. end load for very fast back shifting. The Gray spring has a 330lb. end load. It up shifts 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 quicker 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. Our 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? The Black spring has 90lbs. less preload than the Red or Gray spring. It will lower engagements by approx. 800 RPM. Also any OEM Yamaha clutch spring will work with our weights. You may find them too soft for aggressive trail use.

What primary clutch rollers work the best with the Heel Clicker weights? We have found the small and medium diameter rollers (14.5 and 15.0mm) work the best. **The 16.0&16.5mm rollers 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 larger diameter rollers. Yamaha uses the 16.5mm roller for RX-1 mountain calibrations, 15mm rollers need to be used for this machine. The 700 SRX is calibrated with the 15.6mm roller, and the 700 Viper is calibrated with the 14.5mm rollers, and RX-1 has 15.0mm 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. We like Helix compound angle 46/36 for the Viper and a 50/40 degree helix for the 700 SRX. **The RX-1 needs no helix change. Simply install the Yellow Secondary spring provided in the 6-2 twist.**

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. The RX-1 produces max track Power at 10,200 engine rpm.

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. Helix angles such as 44/38 are common.

RX-1 Track Ratcheting? It has been observed that the track ratchets when the track is tightened to the normal specifications. This occurs with stock clutching components. Over tightening the track to solve ratcheting will simply stop the clutches from shifting causing over rev and belt problems! If you over tighten the track to solve this problem. Add at least 2 additional grams of weight to the shoulder location to solve belt slippage.

Limited Warranty

Super Torquer Systems, Inc., (“Manufacturer”) warrants that the clutch arms sold hereunder will be free from defects in material and workmanship when subject to normal and proper use for the original purchaser’s ownership. If the clutch arms do not conform to this limited warranty during the warranty period of one (1) year from the date of purchase, the Buyer shall notify Super Torquer Systems, Inc., in writing of the claimed defect and demonstrate to Manufacturer’s satisfaction that said defects are covered by this limited warranty. If the defects are properly reported to Manufacturer within the warranty period, and the defects are of such type as to be covered by this warranty, the sole and exclusive obligation of the Manufacturer shall be, at its own expense, to furnish replacement product, or at Manufacturer’s option, replacement parts for the defective product. Removal, shipping and installation of the replacement product or parts shall be at the Buyer’s expense.

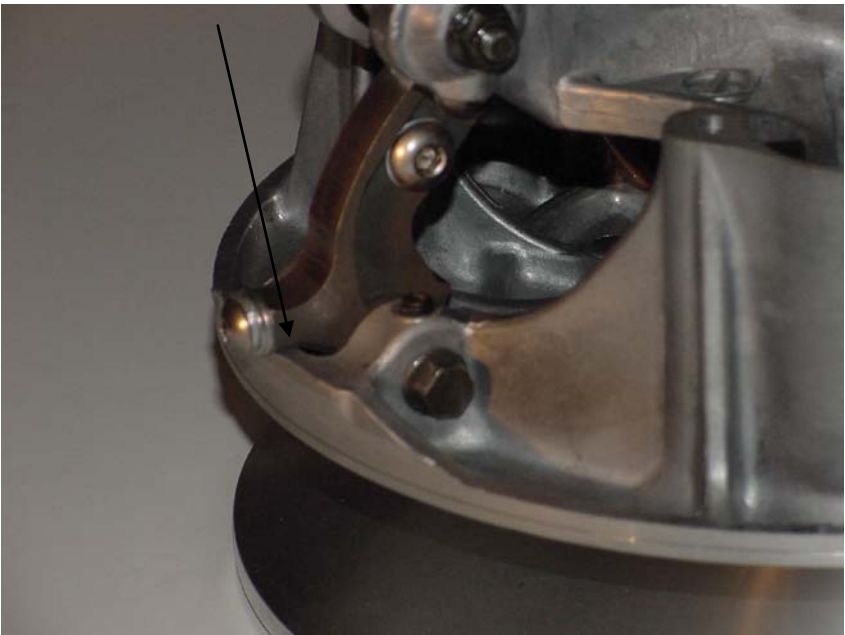
Manufacturer does not warrant against damages or defects arising out of improper or abnormal use or handling of the clutch arms; against defects or damage occurring from improper installation, against sudden impact arising from abnormal occurrences (ex., belt breaking or clutch slams shut unexpectedly); nor damages incurred to the machine from the use of this product.

Purchaser is responsible to do maintenance checks on the complete CVT system on a regular basis to ensure proper operation. Normal wear components including, but not limited to, springs and bushings are not covered by warranty.

Caution during Installation Viper, Vector & RX-1

It has been observed that the shoulder of the weight in “some” occasions will contact the movable sheave at the same time the full shift out point is reached (see figure below). This occurs in clutches that use 14.5&15.0mm rollers such as the SXR, and Viper, RX1 models or if you cut your clutches for over drive. Check to ensure that there is a minimum gap between the movable sheave and the shoulder of the weight. A minimum of .005 is required at the full shift out point. If no gap exists, simply remove enough material from the movable sheave with a Dremel sanding drum or a file to achieve this gap. The small amount (if needed) should not affect clutch balance, but the same amount should be removed from the clutch at each weight location.

The Heel Clicker weight is exact in dimensions and variation in stack up dimensions during the machining process of the spider and movable sheave causes this situation. Check all three weights for proper clearance.



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