



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

**STS3POL 35-20, 40-20, & 50-20**  
**STS4AC 40-20, 50-20**

## **How to Install and Use the Heel Clicker Two Speed™ Clutch Weight System and Most Frequently Asked Questions** (Polaris P-85 clutch or Nine & Six Tower Arctic Cat designs 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 Two Speed 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 Two Speed™ 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 NOT put any part of your body in contact with the rotating primary clutch.
- DO ensure the bolt/washers are fully seated in place.
- DO Make sure the weight arms are balanced (weight 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 pivot bolt and nut are in 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 use any combination of bolt and washers that exceeds 15.0mm wide.
- DO NOT grind or alter any portion of the weight arm or shoulder.
- DO NOT adjust the weight 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.
- DO NOT operate the machine without proper guarding in proper placement. And ensure clearance to all guarding and chassis components.
- DO NOT use this product with overdrive helixes. These helixes allow the belt to ride higher in the primary clutch and possibly out of the primary clutch at full shift out. This will result in clutch and clutch weight damage.
- DO NOT allow the primary drive belt to ride over the top of the primary clutch at full shift out. The top of the belt should be no more than even with the top of the sheave faces.

## **Provided in this kit are the following items**

Three (3) Bushed Heel Clicker™ weights

Two primary springs (Gold, Black) Polaris or (Gold/Red, Black/Red) Arctic Cat

Nine 1/4x28x3/8" bolts 3.0 grams each

Fifteen M6 stainless steel washers (Tip Center&Shoulder) 1.0 grams each

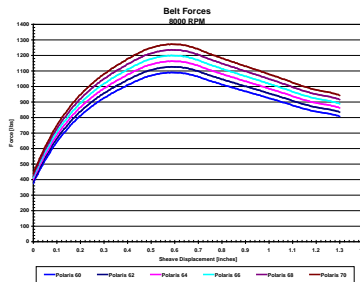
One Heel Clicker™ sticker

One set of installation instructions

## NOW YOU ARE READY TO INSTALL YOUR NEW Heel Clicker Two Speed™ CLUTCH KIT.

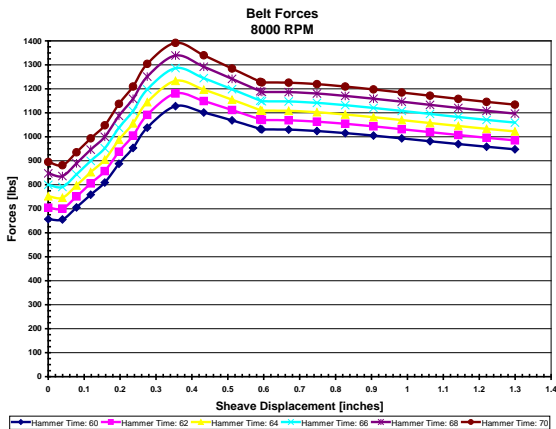
- 1) Remove the drive clutch from the machine. Disassemble the spring cover and remove the drive spring and clutch weights. When removing the spring, make sure to hold the cover plate down. The spring is preloaded and will cause damage or injury if precautions are not taken.
- 2) In some cases it will be possible to install this kit without removing the clutch from the machine. Just make sure you have room to compress the spring and start the cover bolts without damaging the cover bushing.
- 3) **You are now ready to tune the Heel Clicker Two Speed™ weights** for your particular application. The Heel Clicker Two Speed™ weights are adjustable in both the arm and the 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., approximately 35, 40 or 50 grams) and the dash number is the weight of the shoulder and pin combination (approximately 20 grams for steel).

To help understand how the Heel Clicker Two Speed Weights work, two graphs are shown below. The first graph shows force curves of 5 different Polaris clutch weights. Arctic Cat and Yamaha weights work the same with very small differences. Each weight from 60-70 grams is shown. The graph shows that standard OEM weights all work the same regardless of weight. They are designed to accelerate hard through the middle of the shift curve, but lacks belt squeezing and upshift force on the bottom and on top. All OEM and aftermarket, i.e., conventional-style, weights work the same way regardless of who made them.



The same force curve for the Heel Clicker Two Speed 40-20 weight is shown below. The 40-20 has a base weight of 60 grams as explained earlier. In the graph below, 2 grams are added to the shoulder for each line. This graph demonstrates that the Heel Clicker Two Speed weight flattens the force curve allowing for hard

acceleration throughout the entire shift curve. It also shows that adding weight to shoulder effects the entire shift curve equally. This means total adjustment can be achieved at the shoulder location.

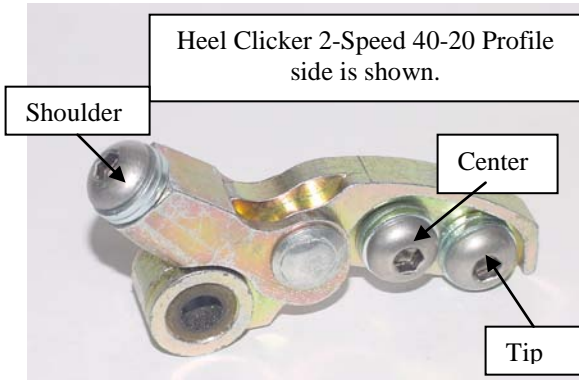


The above Heel Clicker Two Speed force curve is shown with no additional weight added to the center or tip location. A direct comparison between the OEM and Heel Clicker weight can be made. As you can see from this chart, if we added the same weight to the tip location instead of the shoulder location, the force curve would be completely flat.

The arm will be adjusted first based on information from your old clutch weight or from the applications chart provided. We provide set up information for most stock sleds. This information is gathered from track dyno and field testing. Many customers add modifications to their sleds such as adding pipes. This changes the RPM band where the engine makes peak power. Adjustments will have to be made to our specs.

To figure out how much mass you need to add to the base Heel Clicker™ clutch weight, just simply match the weight of your current weight arm, or see the applications chart listed below. For example if you have a 62 gram Polaris or AC weight, it will be replaced with a 40-20 Heel Clicker Two Speed™ clutch weight. The 40-20 weighs between 65-66 grams. This is an accurate starting point and very little or no calibration is needed.

Make sure to check the applications chart for proper information. The springs provided with the Heel Clicker Two Speed kit are stronger than the stock OEM springs. This allows for upward adjustments in the weights if needed. The Heel Clicker Two Speed weight is adjustable 13-15 grams upward depending on the weight. Unless otherwise noted, use the stock OEM helix. It is always best to use the applications chart listed below. Many of these setups are dyno tuned setups and are meant for maximum horsepower transfer.



Thread the bolts into the adjustment hole and add the washer (if needed) in the arm. See photo (above) for placement. Never use more than one (for 50-20) or two (for 35-20 or 40-20) of the one gram washers in each center, tip and shoulder hole location. Spider clearance will become an issue if you exceed this specification. Bushing failure will occur.

The above picture shows a 40-20 weight with 5.0 grams added to the shoulder, 5.0 grams to the center, and 5.0 to the tip location. The bolts should be inserted from the front profile or pocketed side (as shown) only.

**Application Chart for Heel Clicker Two Speed™ Clutch Weights**

**Arctic Cat Models**

<b>Model</b>	<b>HC Weight</b>	<b>Shoulder</b>	<b>Center</b>	<b>Tip</b>	<b>Spring</b>
F-6	40-20	0.0	0.0	0.0	Black/Red
F-7 (03/04)	40-20	3.0	3.0	0.0	Black/Red
F7 (05/06)	50-20	3.0	0.0	0.0	Gold/Red
800 ZR	50-20	5.0	0.0	5.0	Gold/Red
900 ZR	50-20	3.0	0.0	3.0	Gold/Red
800 Mtn Cat	50-20	4.0	0.0	0.0	Black/Red
900 Mtn Cat	50-20	5.0	5.0	0.0	Black/Red
F-8	50-20	5.0	4.0	4.0	Gold/Red
F-1000	40-20 4-Tower	5.0	4.0	0.0	Gold/Red
F-1000	50-20 3-Tower	5.0	5.0	5.0	Gold/Red
M-800	50-20	3.0	0.0	3.0	Black/Red
M-1000	40-20 4-Tower	5.0	5.0	0.0	Black/Red
M-1000	50-20 3-Tower	5.0	3.0	0.0	Black/Red

**\*\*\*\*Note\*\*\*\* Older small pin AC clutches use the “STS3POL” kits**

**’04-’06 AC Clutches use “STS3AC” kits (Pol springs); ’07+ use “STS4AC” kits.**

**Note: Some AC kits require centering shims (included in kit if req’d).**

## Polaris Models

<b>Model</b>	<b>HC Weight</b>	<b>Shoulder</b>	<b>Center</b>	<b>Tip</b>	<b>Spring</b>
XC 500	35-20	0.0	0.0	0.0	Black
XC 600VES	40-20	3.0	0.0	0.0	Black
XC 700	40-20	3.0	0.0	0.0	Gold
XC 800	40-20	5.0	0.0	0.0	Gold
XCR 800	35-20	0.0	3.0	0.0	Gold
XC 700VES	40-20	3.0	0.0	0.0	Black
XC 800VES	40-20	0.0	3.0	0.0	Black
Switchback 6	35-20	4.0	3.0	0.0	Black
Switchback 7	40-20	3.0	0.0	3.0	Gold
Fusion 600 '06	35-20	3.0	0.0	3.0	Black
Fusion 600 '07	50-20	0.0	0.0	0.0	Black
Dragon IQ 600	50-20	0.0	0.0	0.0	Gold
Dragon IQ 700	50-20	3.0	3.0	0.0	Black
Dragon IQ FST	50-20	5.0	0.0	0.0	Gold
Fusion 900	50-20	5.0	4.0	4.0	Black
RMK 700	40-20	3.0	0.0	0.0	Black
RMK 800	40-20	5.0	3.0	0.0	Black
RMK800VES	35-20	4.0	0.0	0.0	Black
RMK 900	40-20	4.0	0.0	0.0	Black
Drag. 700 Mtn	40-20	4.0	4.0	0.0	Black
Drag. 800 Mtn	40-20	5.0	5.0	0.0	Black

**As mentioned earlier, a maximum of one washer (tip& center) in the 50-20 and two washers for the 40-20 are allowable. A maximum of two washers can be added to the bolt at the shoulder location. Each washer weights 1.0 grams. The bolts should be inserted from the pocketed or profile side of the weight only. See picture above for profile side. Loctite (blue) can be used if desired. Adding more washers than the recommended amount will result an interference fit in the spider and cause the weight to bind and stop shifting.**

Install The Heel Clicker clutch weights using your weight pins. Rotate the weights and check for any interference between the weight and spider. Make sure the weight and roller maintain contact through the entire shift out. If the weight sticks or stops rotating before full shift-out occurs, check the bolts to make sure they are properly tightened and are flush with the body of the weight. Torque all stationary pins to the manufacturer's specifications.

- 4) Install one of the clutch springs supplied with this kit. The **Gold spring** is a 190-340. The **Black Spring** is a 170-360. The 2007 and newer Arctic Cat clutches have a different spring pocket height. Springs included in those kits achieve the same rates as listed but are identified with a red dot on the end.
- 5) Install spring cap and torque all bolts to the manufacturer's specifications.
- 6) Install clutch on engine and torque clutch bolt to the manufacturer's specifications.

## Most Frequently Asked Questions

**I seem to have lost top speed?** Make sure full shift out rpm has not changed. The Heel Clicker Two Speed Weight throws much harder on the top end which may pull the peak RPM down. For all Polaris 500-800 models, a 7900rpm maximum is needed. For ACat ZR 800&900 models, 7500rpm maximum. For all F5, 6, 7 models, attain a 7700rpm maximum. Reducing the shoulder weight by 1.0 gram will increase engine rpm by approx. 100rpm. This is why all our specifications have shoulder weight adjustments. They can be easily changed without removing the weights from the clutch in a matter of minutes.

**When should I start adding weight to the center and tip locations?** In the applications chart, you will notice that adjustments are made at the shoulder location. Remember the Heel Clicker Two Speed weight flattens the shift curve which means all the adjustments can be made at the shoulder location. If you need more than 5.0 grams added to the shoulder then add 3.0 grams at the center location and 3.0 at the shoulder location. **Never add more than 2 washers to the shoulder location! An interference fit may occur with some models.**

**What Helix or secondary spring should I run with the Heel Clicker weights?** We have found the stock helixes work fine for most. The Heel Clicker Two Speed weight works just like a multi-angled helix. It pulls hard on the bottom just like putting in a steeper helix. When the shoulder rotates forward it acts like tip weight pulling the belt to full shift out faster over-riding any stiff secondary spring or shallow helix.

**\*\*\* DO NOT use with overdrive helixes. These helixes allow the drive belt to run over the top and sometimes out of the primary clutch during deceleration. This will result in damage to your clutch and machine.**

## **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, rivets and bushings are not covered by warranty.

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