

## DaltonPro Clutch kit

**DBM 1000 T-15**

**Model:** 2015 Can-Am Maverick XDS 1000 Turbo.

**Kit #:** DBM 1000T-15 Adjustable Clutch Kit . Stock and Oversized tires

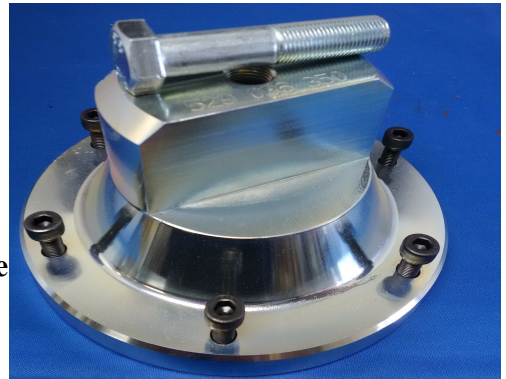
**Components:**

|   |                 |
|---|-----------------|
| 1) Dalton Yellow/Silver secondary clutch spring       | (DPSS-Y/S)      |
| 1) Dalton Green w/Black/Silver primary spring         | (DPPS- G/B/S)   |
| 3) DaltonPro adj. flyweights (c/w thrust washers)     | (Part# DB435T)  |
| 1) Custom private label helix -c/w spring seat washer | (Part# MT6)     |
| 1) pkg hollow aluminum mass rivets                    | (DFRA – Y .85g) |
| 1) pkg hollow steel gold mass rivets                  | (DFRH– Y 2.4g)  |
| 1) pkg solid gold mass rivets                         | (DFR-Y 3.1g)    |

1) includes **Instruction manual and “CVT clutching overview”**

### Tools / Products required:

1. **Can Am Clutch holder part#529 036 320**
2. **Clutch puller Can Am part# 529 035 746 (or Dalton part number DCP-E)**
3. **Driven pulley extractor/adapter ( vehicle tool kit to spread the secondary and belt removal)**
4. **\*\* Governor Cup Puller part# 529 036 350 – “critical tool” to separate the primary on the turbo model**
5. **Pulley spring compressor tool Can Am part # 529 036 012 to compress the secondary change helix and spring**
6. **Blue loctite 243**
7. **brake parts cleaner (non residue)**
8. **Clutch holder Can Am part# 529 036 320**



**529 036 350 Gov. Cup puller**

**\*\*WARNING - The proper tools, like this one, for separating the governor cup are essential. Failure to use the proper tool, or the use of other presses and pulling tools/devices will most likely result in broken or non-usable clutch. This job should only be done by qualified service personnel with the proper tools for the job. This vehicle also has different clutches than previous Can Am models.**

**Description:** **Better belt grip and improved belt performance .** This is primarily a kit developed to help recover power losses and belt performance when using oversized tires. The kit does, however, have settings for stock tires for those that use the vehicle in soft terrain or switch tires seasonally, etc. This one clutch tuning package can optimize CVT calibration for different tire sizes and applications. This kit includes adjustable mass flyweights for more flexible tuning options. **A new case specific flyweight** was built for this application and designed to work with the other parts provided in the kit. Adjustments can be made to help compensate for oversized tires, or terrain conditions. Includes “set-up manual” as well as clutching overview for this model.

### WARNING

**Clutch components should only be installed by factory trained mechanics and service personnel with a complete knowledge of CVT (Variable Rate Belt Transmissions), and have the required proper tools and holding fixtures to do so.** For example, if your shop does not have the proper equipment to hold a clutch and torque to the proper specification and procedure, there is good probability of damage/part failure and possible injury. Make sure to consult your dealer service manual, and also that clutches have been properly inspected for fatigue, cracks, wear. ATV clutches are assembled under spring pressure. **DO NOT** attempt to disassemble clutches if you are not qualified, as serious personal injury could result.

## **Installation Instructions** (Dealer Installation)

**IMPORTANT:** Always remove the key from the ignition when working around clutches.

*This is a dealer installation. There are procedures listed in the Can am service manuals for drive clutch service. There are BRP holding tools and special tools required for these clutches as well. The following is only a basic guideline, always consult your dealer service manual for more detailed description.*

### **READ AND UNDERSTAND THIS ENTIRE DOCUMENT BEFORE INSTALLING !!**

- 1) Remove drivers side seat and console panels as necessary to gain access to clutch cover shroud. Remove cover bolts and plastic cover to expose CVT clutch system. There are procedures in the service manual (pages 220-224) for removing airways and cvt cover.

Using the clutch driven pulley adapter, spread the secondary to make slack to remove the belt.

**Using the spreader in the tool kit, remove the belt.**

**NOTE DIRECTION OF BELT** (arrow) when you remove it. *Make sure belt remains clean & free of any oils / grease, a non-residue cleaner like brake cleaner maybe used to clean clutch surfaces, etc.*



- 2) Remove the secondary pulley (rear clutch) by removing the center bolt.  
*NOTE: BRP states that this bolt is a stretch bolt and it should be replaced any time it is removed.*

- 3) **Change the helix and secondary spring using the Pulley Spring Compressor Tool (part# 529036012)**

- 4) **First, remove the stock helix using the compressor tool.**

Mark the clutch and take note of arrows on both halves of the secondary pulley for re-assembly. When you assemble the new helix and spring, there is an arrow on the helix and pulleys that must be aligned. It is important to have the **arrow aligned and the roller of the clutch in the proper slot of the helix.**



Do not remove the four helix bolts without the compressor tool in place to hold the unit together. With the compressor tool in place, remove the helix bolts and slowly release the compressor to allow the pressure to come off the helix and spring assembly.

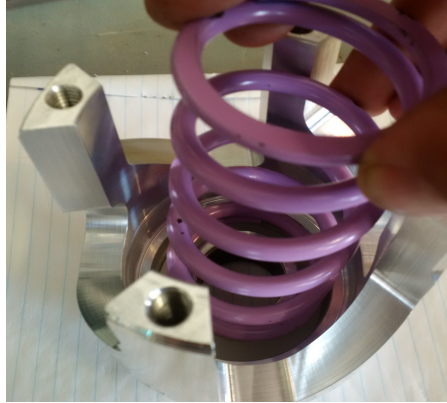
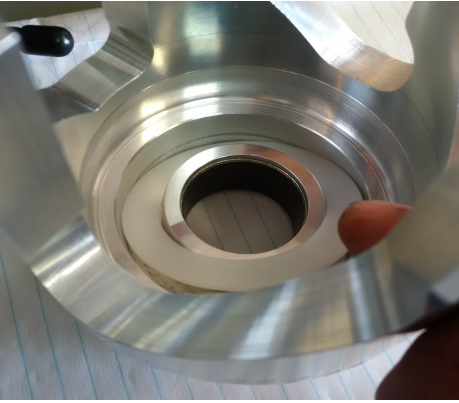
Take note of the plastic “spring seat” (looks like a plastic washer that has a lip on the ID) in the stock secondary sheave. This is in the “clutch sheave end” of the spring. You will still need it there, so make sure it stays as part of the assembly when the new spring is installed to the

clutch. The other end of the new spring will go to the helix and sit on the included plastic washer.

Install the plastic washer down into the helix. When a spring compresses, it sometimes has some slight torsional movement. This is why the factory often use composite surface for both wear resistance and fluid motion of the spring as it compresses.

(if there is a round corner on the outside edge of the spring seat washer, put the round side down into helix).

Then install secondary spring in the helix and hold it there to keep the glide washer in place until the assembly is together.



**Make sure arrows and helix ramp are in the correct position on the roller before assembly.**

The new helix must be installed using the compressor tool. It is very important to make sure the shaft is through the helix bushing before compressing the tool all the way. It is best to partially compress by hand first and make certain that the shaft is started through the helix bushing before using the tool to compress all the way.

Apply BLUE LOCTITE #243 to the threads of the helix bolts and torque to specification( 18 ft lbs) while the compressor tool is still holding the assembly together all the way. Once the 4 helix bolts are installed, the compressor tool can be removed. (BRP recommend using 4 new bolts)

- 5) You can now install the secondary clutch back onto the machine. The clutch must always be torqued to the manufacturers torque procedure.

**Note: BRP recommend this bolt that holds the secondary on be replaced each time it is removed !**

**Torque the secondary ONLY by the BRP recommended procedure !** (use blue loctite)

Secondary clutch must always be torqued only as specified. (15 Ft./Lbs + 180 degrees of rotation of the bolt) many engine mechanics are familiar with this type of torque procedure and some have a degree wheel for their torque wrench.

## 6) **Primary Clutch**

Removing the primary clutch from the vehicle. Prior to removing the primary clutch, mark the sliding sheave and governor cup/spider (both parts, close to the flyweight) to have reference for indexing later.

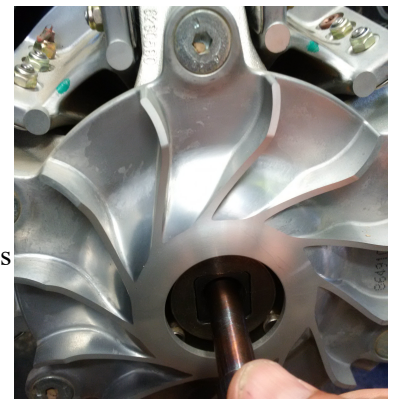
The primary clutch holder is used to lock the primary from turning.



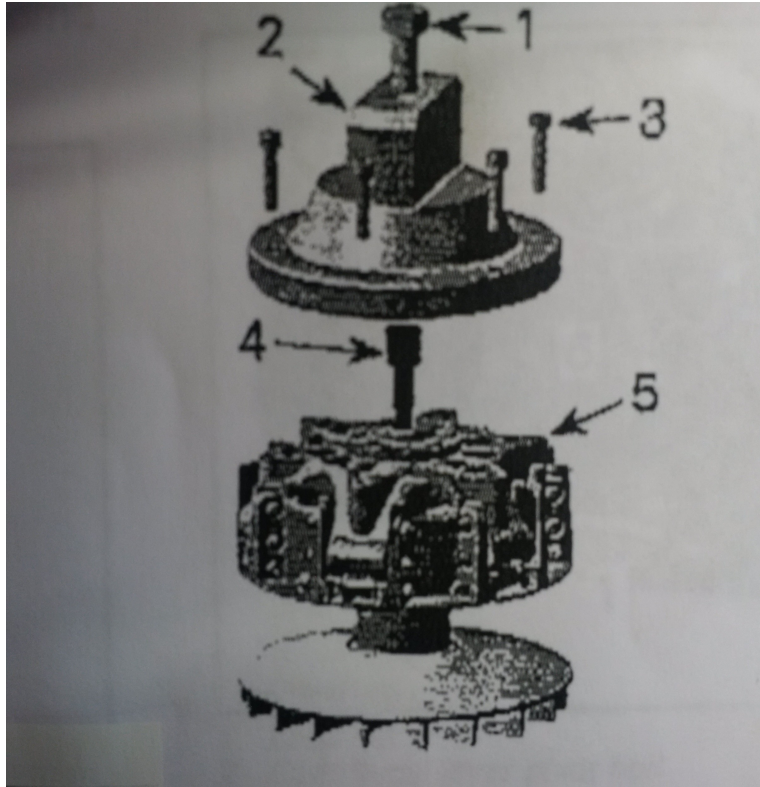
Remove the center bolt from the primary clutch. Take note of washer on the bolt and keep it together. **Keep hand pressure against the primary assembly until the puller is installed.**

- 7) Install the primary clutch puller. Screw the clutch puller through the clutch and it will press against the crankshaft to remove the primary clutch assembly.

**NOTE:** Do NOT remove the puller from the assembly as the assembly is spring loaded.



- 8) Remove fan from the Governor cup. (6 bolts)
- 9) Leave the puller protruding from top of sheave shaft to a maximum protrusion of 2.5"
- 10) The puller is left protruding to work with the Governor cup puller to separate the primary clutch so that you can change primary springs or flyweights. This is a required tool. Do not proceed without the proper tool. The following diagram shows the tool pictured along with the primary clutch and puller still assembled.



- Part#4 pictured is the puller head extended 2.5" (it goes up into the tool)
- Part#2 is the governor cup puller
- Part#3 is the M8 x 35 puller screws that mount the tool to the clutch
- Part#1 is the screw part of the tool that is turned against the head of the puller to separate the clutch. You tighten the puller tool retaining screws to 15 ft lbs. (part#3)

The governor cup puller is used in a vise. Be sure to follow the procedures in the service manual.

**CAUTION: the assembly is spring loaded and will bounce apart. Be sure to have help or containment.**

- 11) Remove the governor cup puller tool from the drive clutch.
- 12) Make sure the governor and sliding sheave are marked for index. Carefully lift the governor/spider assembly from the moveable sheave. Be careful not to lose or damage the slider shoes on the sides of each arm.
- 13) Removing centrifugal levers (flyweights)

CAN-AM ATV drive clutch has places for 6 flyweights. On this 1000cc Maverick model all 6 positions are filled, and as many of you know (CAN AM service techs) there are other Can Am models with only 3 or 4 of the positions filled and some are not used at all. Example: Outlander 400 has only 4 flyweights.... With 2 of the 6 positions empty (180 degrees opposite each other). Some



models only use 3 positions. In this case, we will be removing and replacing only 3 of the flyweights with adjustables and leaving 3 of the stock ones intact. In this picture you can see that 3 of the stock weights are still in the assembly.

The 3 stock and 3 adjustable weights are alternating. The 3 stock are 120 degrees apart, as are the 3 new ones. – Every second one is replaced. THIS IS THE ONLY CONFIGURATION THAT 3 WEIGHTS CAN BE REPLACED.

It is well known in the snowmobile racing world, with 4 and 6 weight Drive clutches, that weights are often mixed. However, it must be: a) evenly spaced (every second one or 120' apart), or b) Directly opposite to each other (180' apart) with the same weights.

14) **Set Up / Install adjustable flyweights:**

- A) After setting up the provided flyweights **properly for your application** (\* See attached “flyweight set – up” for recommended application), install the new flyweights into the clutch and secure the pins / nuts the same way as they were removed. **Be certain to put THE PROPER THRUST WASHERS supplied with the Dalton flyweights** in this kit (they ARE different from the stock ones) in place on each side of flyweight before putting the pin through the weight.
- B) Carefully slide the spider assembly back down onto the moveable sheave assembly, making sure the plastic buttons are still in place properly and the *spider is in the **CORRECT POSITION with ROLLERS over each flyweight*** and the marks you made in the correct position.

**It is also important that you line up the internal square male and female parts so that the taper will lock together properly. This clutch is different from previous Can Am models.**

- C) See picture to make sure you have located the Maverick stock hex slider to the correct position and make sure it stays that way until completely installed.



With the moveable sheave / spider assembly back together, keep it together and re-install as a unit, along with the primary spring. Install the primary spring into the clutch first, then install the whole unit and **\*torque to spec.**



**\* CAUTION: This is NOT a regular torque spec, but a torque method.**

- D) For this application the primary clutch bolt should be set to a torque spec of **59 ft/lbs + 90 degrees of ROTATION.** After the torque value is reached the bolt is tightened 90 degrees. **Do not “assume” or guess at this torque spec, it is a critical element of this installation.**

\*This outer moveable sheave /spider assembly attaches to the clutch via a set of matching tapers. Be certain the **tapers are clean and dry** (only use quick drying, non-residue cleaner like **brake cleaner**, never lube or oil. It is **critical that you torque the outer primary assembly properly.** The male and female tapers must be a clean dry fit so they can lock together properly. .

**Before installing belt make sure all sheave surfaces are clean and dry using non residue cleaner (Brake Cleaner) on a clean rag first then wipe.**

\*\*Install belt. Examine belt for inspection or replacement: (flat spots on edge from burning on take off or holding brake etc)

- *Note direction arrow on the belt.*

**\*\* The Factory Can Am belt is the best belt for this vehicle. As much as we would like to recommend a cheaper priced alternative, the factory belt is superior and recommended for this application. In fact the components in this kit and the “set up guide” are calibrated to this belt compound. The drive belt is a **CRITICAL** component in tuning this vehicle.**

- 15) Re-install plastic cover shroud, **Note:** Be certain that the cover gasket is properly in place and use caution not to cross thread the cover bolts.

Carefully inspect all wires, cvt vent tube clamps, etc during re-assembly.

## FLYWEIGHT SET-UP

The use of the CVT tuning components controls rate of up shift and backshift. In some instances of lower or higher resistance, there is better acceleration or performance with different amounts of weight and opposing spring pressures. Some people assume that “more rpm” is always better, which is not always the case. There are some instances where upshifting fast (and thus lowering rpm) can prove beneficial. However, the terrain and application can dictate the importance of the backshifting and required clutch rpm for overall use. The following is a guideline for a stock vehicle with the tires listed and typical applications. **Use TIRE SIZE first**, and read the notes before determining.

### **28” tires , most mixed use (including stock)- typical mixed use and trails.**

- DB435 flyweights + 2.4g hollow steel gold rivets added to each.
- \* Use STOCK primary spring
- MT6 helix with yellow/silver secondary spring

\*When often used in SAND terrain ...including the use of 28” paddle tires and sand duning, use the supplied Green/Black/Silver primary spring added to the above set up.

### **28” Extreme Mud tires (Outlaws, etc)**

- DB435 flyweights + 2.4g hollow steel gold rivets added to each
- Use Green/Black/Silver primary spring
- MT6 helix with yellow/Silver secondary spring

### **29-30” Tires.**

- DB435 flyweights + 2.4g hollow steel gold rivet in each
- Green/Black/Silver primary spring
- MT6 helix with Yellow / Silver secondary spring

### **30” Tires for primarily sand dune use**

- DB435 flyweights , no rivet (empty) \* and test rpm during clutch phase.(see tuning info)
- Green/Black/Silver primary spring
- MT6 helix with Yellow/Silver secondary spring

\* Sand, and sand tires are speculative and vary.

### **32” Tires**

- DB435 flyweights , empty \* and test clutch rpm. (see tuning info)
- Green/Black/Silver primary spring
- MT6 helix with Yellow/Silver secondary spring.

\* tire types are speculative. (If the most common important use is in low range as a mud or crawling tire use 2.4gram rivet in each, if desert / trail running and often in high with 32”, start off empty and test rpm in the clutch phase– see “clutch tuning”).

**The settings above are for stock HP vehicle.** There are some extra rivets included for fine tuning or personal experimenting with tires and situations,etc. There can always be variations from vehicle to vehicle, and we often see it with stock clutching where one vehicle will turn different clutch rpm than another. The above settings are base results for stock 2015.

**The amount of weight and primary spring pressure here is related to the profile cut on the custom helix in this kit and the secondary spring pressure.** Changing any one variable or tuning component in a CVT system can make the rest of the set up totally irrelevant.

**Modifications or extra power added may require more weight or different testing and components.** Clutch tuning has a lot of variables. Horsepower output and characteristics are some of the variables, just like weight (load), tire size (gearing) etc. There is no way to cover every exact situation, If you have different engine output, testing may be required. One of the key benefits of having adjustable flyweights and knowledge of the effects of spring pressures, etc. is that the kit may be able to be adapted with proper testing.

**\*\* For Installation and removal of Mass Rivets see following page**

## INSTALLING AND REMOVING MASS RIVETS



- 1) Push the rivet ALL the way through the hole in the flyweight. (**remember to keep all rivets same direction**)
- 2) Using a LARGE shop vise, hold the rivet in a manner that keeps the rivet all the way through the hole so that you will be expanding the part that protrudes from the other side.
- 3) Squeeze/expand the rivet using strong pressure on the vise.

**For later removal of rivets if desired,use the following procedure:**

- 1) Mark lightly the center of the flush side of the rivet with a center punch.
- 2) Using a 3/16" drill bit, drill approximately **half way** into the rivet.
- 3) Make certain that the flyweight is SUPPORTED all around the rivet before trying to drive out the old rivet. A hole in a steel surface or a large vise that is slightly open (close to the rivet ) is good support for the flyweight.
- 4) Insert a flat ended punch with a smaller diameter straight shaft than the drilled hole(1/8" straight shaft punch) , and tap the rivet right through the hole.

**Read the following pages before operation.**

**It is a huge benefit to the vehicle operator to understand the CVT system on this vehicle, both for the function of the belt and tuning components, and the limitations and proper use of the drive system.**

## MAVERICK XDS TURBO 2015 - General Overview and CVT basics

### Clutching, belts, and potential problems.

This vehicle has excellent hp in stock form. This vehicles has plenty of power, along with very tall final drive gearing making it capable of reaching very high top speeds. Because of this combination, the potential is here to aggressively overheat belts, particularly when operating at LOW SPEEDS in HIGH RANGE. Any time this vehicle is operated at low speeds it should be in LOW range.

Some operators, who may be simply uninformed, may state things like.... “It has all kinds of power and I should be able to leave it in high!” Although that may sound logical, it is simply not so. This is not a hydrostatic or oil pressure automatic, it is not even a wet clutch type of CVT. It is, like some other brands, a system that engages the belt each time the vehicle is required to move. With this type of system, it is important to understand the way the system functions, so you can maximize FUN and avoid belt problems.

The important thing to know here is that in LOW range the belt travels farther up the clutch at a given speed. For example, if you are riding at 10 mph in HIGH, the belt may still be very low in the primary clutch (close to the hub). If you switch to LOW range and travel the same mph...the belt rides up at a higher point on the primary clutch, offering MUCH more belt grip and substantially lower belt temperature. When going slow, use low. This simple fact, if not understood, can aggravate the belt wear , and temperature dramatically.

Another mistake that is sometimes done is to hold the brake and rev up the engine past engagement . This will only burn a flat spot on the drive belt and make it unuseable, and should not be done on this type of system.

When straying from normal tire sizes and trail operation to other surfaces like mud and sand , it can become increasingly important to have proper clutch calibration to help compensate for the changes. Clutch calibration does one main thing...it changes the “rate of shift of the belt”. The way to help eliminate unnecessary slippage and (thus heat) is to have the belt in the correct ratio on the pulleys for the loads present. We can manipulate that shift pattern with clutch tuning components.

You cannot make tires that are too big smaller, or the sand dunes flatter or more firm with less rolling resistance. However, by calibrating clutches we can help to compensate and make these situations easier on the drive belt and improve vehicle performance.

### Clutch tuning

Before setting up and installing your clutch kit, take a moment to read a bit of basic clutch tuning theory. CVT tuning can get very involved and there are books written on theory of operation itself . There are various ways to change the way the system reacts from changing or altering the tuning components (spring rate, flyweights, etc). Flyweights alone can be a long discussed topic, as on a flyweight type system, the curvature, distribution of mass, etc can dramatically change shift characteristics. Many inexperienced tuners often make the mistake of comparing flyweights by “grams” alone. If the curvatures, profile, and location of mass are not the same,...then the “grams” are irrelevant. We have tested and developed various flyweights for this model during testing, and the chosen curvature and mass locations, as well as the adjustability were the result. Following is a basic overview to help you understand if you are unfamiliar with cvt function.

Changing CVT tuning components is done for many different reasons, but the thing that you are doing is ultimately **changing the rate of upshift and back shift of the belt** in the pulley system. The factory sends the machine with a calibration that they feel is a good “all around” set up. The factory set up not only has to be able to tow a trailer, do ok in a drag race, climb and backshift decently, but it also has to consider fuel economy and emissions during its testing. Many owners of ATV's and UTV's have a desire to re-calibrate the clutch system more specifically to their needs based on their own usage, and situation. Common reasons are racing, oversized tires, altitude, mud running, or towing. For instance , if you are a fan of mud and big tires, it is obvious that the taller final drive ratio from installing the tires changes things. With larger tires and more rotating weight, the last thing you would want would be to upshift too quickly and kill the rpm too rapidly, so you want that initial upshift to be slower. If you install tires much larger than the acceptable envelope that the manufacturer recommends, you can easily burn belts, the CVT tuning components can't change the actual gear ratio resulting, but by re-calibrating the cvt drive system ,you can often change the shift pattern to help get better results for your application. It will hold its correct rpm better by properly shifting on its own to the proper belt ratio as it comes under load (backshifting), based on what you set it up to do. If you were to install larger tires, and your machine was still upshifting quickly (like you can get away with with small stock tires) it would lower the rpm to a point **lower than the peak hp rpm** and performance would suffer. The belt would also not be in the proper ratio for the loads present with the bigger tires resulting in more slippage and heat....causing delamination and failure of the drive belt.



It is also very **important to remember** that cvt tuning parts only control the rpm during the “**clutching phase**” The clutch phase is when the **belt** is going from low ratio to high ratio on the clutch pulleys. ATV's and UTV's are not like snowmobiles,..on ATV's / UTV's the “**clutch phase**” is over in a distance of approximately 500 ft on a full throttle run . Once the belt is to the top of the primary clutch, it is to the top, and clutch components no longer control the rpm after that point. After that “fully shifted” point (with stock tires on hardpac) the engine will often start to overrev, but it is because the belt can shift no farther to control the rpm. It is important to remember that clutch components are not the controlling factor for rpm after that belt is fully shifted. For Clutch RPM testing it is good to use short distances(200 ft and 400 ft) to determine clutch rpm. **Dalton adjustable flyweights** help make it flexible.

**Operating RPM** - CVT tuning is often focused on operation rpm, but remember it is rpm during the “clutching phase” that is effected by clutch tuning components.

**2015 Maverick Turbo** – best peak operating rpm is **7200-7650 during the clutching phase**. Some modifications make the vehicle “happy” at higher or lower rpms, but on a STOCK engine this is the best tested rpm zone. Remember that when on a long road run the clutch phase is over in a short distance, and that your rpm may be higher after the belt is fully shifted but on long runs that rpm may not necessarily be a result of clutch components.

## The Components

**Flyweights-** Flyweights are one of the principal items to control rpm during the clutch phase. **Heavier weights** upshift *faster* and thus *lower* the rpm. **Lighter weights** upshift *slower* and thus *increase* rpm during the clutch phase.

**It is NOT that lower, or higher rpm is better.** Ideally, you want the clutch calibrated to shift the belt at the correct rate to hold the rpm at the rpm that the engine makes best HP. If an engine makes peak hp at 7400, then having it calibrated to run at 8000 is probably much worse than if set up to run at 7100, as many crankshaft engine dynos will easily prove. The proper amount of flyweight mass is determined by both the **other cvt tuning components being used**, the **given situation** or intended use of the vehicle, and ultimately the **field tested results for best efficiency for the situation** at hand. The Maverick has different design flyweights than previous BRP atv /side x side models.

**Primary Springs-** Primary springs have some overlapping uses. The springs are usually compared by using their pressure load rating at two intervals. The **first load rating** is often referred to for **engagement**( stall rpm) first load number on a primary spring is the principal component to control engagement rpm.

The fully compressed or **second load rating** is used as the principal **opposing force to the flyweight**. Stronger fully compressed load ratings are a factor in how much flyweight mass you can run. You can often switch from one primary spring to another and leave flyweight mass the same and achieve as different shift pattern.

Primary springs can also be used to effect “engagement RPM” and other factors.

**Secondary Springs-** Secondary clutch springs are a component that has some overlapping features . Its principal function is torque feedback sensing, that is, that it initiates backshifting of the belt to proper ratio to maintain rpm. The secondary, however does have effect on upshift characteristics as well.

CVT's are about efficiency. Proper balance of components for efficiency is the way to good belt life. The key to preventing slippage is having the belt in the correct ratio at the right time. For this kit we have included a new secondary spring that the rest of this package is calibrated to.

**Thank you for choosing Dalton Industries !**