

DUV A700

Dalton Pro ATV Clutch Kit

Model: 2014+ Arctic Cat Wildcat 700 Trail/Sport
Stock or oversized tires, adjustable kit

Kit #: DUV A700

Components: 1 Dalton Black / Orange primary spring (DPSS-B/O)
1 Dalton Ivory/ / Orange secondary spring (DPSS-IV/O)
1 set of Dalton Quick Adjust flyweights/hardware * (QAW-54)
3 packs 1/4" UNC "Quick Adjust" set screws (QACA-SH)
6 pcs step washer/spacers for flyweights
1 pc Flat washer/ Spring seat.

- *Note: This Flyweight design and location of mass is significantly different than stock . Comparing "grams" or "required spring pressures" would be irrelevant if comparing to, or working with stock type flyweights.*



Tools: *Primary clutch puller bolt* is recommended . A primary clutch puller makes for easier drive clutch service if you intend to do more clutch work in future(maintenance), or remove the drive clutch for easier work and inspection. Arctic Cat dealers have them or can order Dalton part # DCP-P.

Also required will be a secondary compression tool. (This model/kit is dealer installation recommended) and a torque wrench.

Description :

Optimum CVT clutch calibration for the Wildcat Trail 700 series.

This kit offers a more smooth and positive engagement of the belt.
One clutch kit that can be set up for different terrain and tires sizes means accurate clutch tuning for your situation.
Improved acceleration and performance in bottom and midrange, better clutch reaction to load conditions.

This kit includes Dalton's patented "**Quick Adjust**" flyweight system that allows you to add or subtract weight from the flyweights without even removing the flyweights from the drive clutch.

Instead of using generic flyweights, extensive testing lead to development of a new custom base flyweight specific to this model. The new "Quick Adjust" flyweight in this kit has a different specific base weight, and location of mass which allows superior belt grip and RPM control .

-Stock tires or oversized

-New custom Wildcat 700 specific flyweight profile

-Set up manual includes set up instructions for different applications.

PLEASE READ ALL INSTRUCTIONS CAREFULLY FIRST !

This model is a Dealer installation and has reference to the service manual.

Dealer -Please take the time to thoroughly read and understand these pages before continuing.

WARNING

Clutch components should only be installed by factory trained mechanics and personnel with a complete knowledge of variable rate belt transmission systems or CVT's. There are references to parts diagrams and service manuals. Dalton Pro clutch components are made from high quality materials in a controlled procedure. Do not modify components.

CVT clutches are assembled under spring pressure. DO NOT attempt to disassemble clutches if not experienced or qualified. This is a performance kit and is intended for the use of experienced adult riders, who are trying to obtain a higher level of performance for racing, etc. This kit should not be installed on any vehicle that will be used by any person of MINOR AGE. Dalton Industries has no control over the use, misuse, or installation of these components and assumes no responsibility for any injury or damage.

IMPORTANT !

Take the time to read the associated documents and set up instructions for the components in this kit before continuing with installation. This kit contains various set up options and recommended settings for different applications.

INSTALLATION: (dealer)

Important: Always remove the KEY from the ignition before working on clutches.

- 1) Park the vehicle on level surface. Elevate rear of vehicle and support in safe manner. It helps to jack up the rear of the vehicle just enough to unload the suspension. This will allow clutch cover access.
- 2) Remove Left rear tire.
- 3) Remove the cap screws securing the outer clutch cover shroud and remove the cover to expose clutches.
- 4) Remove the center bolt from the secondary (rear) clutch.
- 5) Remove the outer sheave of the secondary, as well as the drive belt. (***Take note of direction of belt before removal.**)

NOTE: Take note of the shims in the clutch and account for them for re-assembly. (see service manual)

- 6) Remove the inner secondary sheave and take note of shims, etc. Note alignment marks on both of the sheaves.

- 7) Mark the steel spring retainer cup for later re-alignment. Remove the screws and slowly release the spring pressure with a spring compressor tool.

- 8) Install the supplied steel spring washer/seat and secondary spring (DPSS-IV/O) into the clutch.

Note: We use a steel spring seat against the aluminum sheave for better spring operation and durability. Install the steel washer on the aluminum sheave before setting the spring on.

- 9) Re-align and install the steel spring retainer cap assembly as per factory service manual.



10) Primary Clutch

Remove the center bolt of the primary (motor clutch) using a torx T-60. Take note of washer, etc.

11) Install the primary clutch puller and remove the primary clutch.

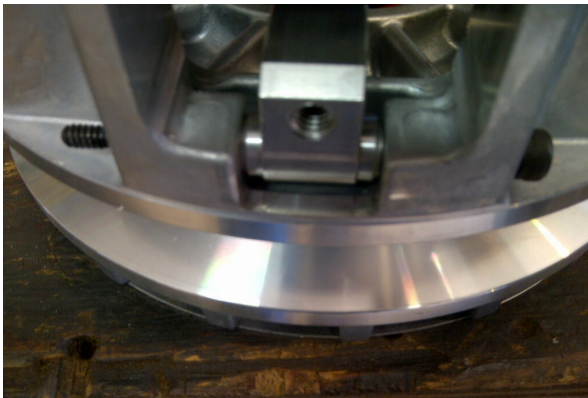
Dalton puller is part number DCP-P (OEM#0744-062)

12) Mark the cover for location during re-assembly. **Be sure to look for alignment marks on cover plate or mark the clutch with a magic marker for orientation during re-installation.**

Remove cover with the assistance of a compression tool to contain the cover.

Caution: *Be careful when removing cover plate bolts, the primary spring is under pressure.*

With the primary clutch cover plate off (primary clutch pressure spring removed) with the primary on the bench, move the sheave inward and remove stock flyweights.



13) * **Set up the flyweights as described** in this [instruction manual](#) for your desired application See **“Set-Up Guide”**

Take note of **“your set up”**, and set up the flyweights, **then install the flyweights into the drive clutch.** The guide is within this instruction set. You should go by tire size first, then read details of each set up.

Step Washer : SMALL STEP goes **OUTWARD** from the flyweight on each side of weight (see picture). Step washer replaces the flat washer that is used with stock weights.

Caution: Always assemble clutches as per factory service

manual. Be certain all components are re-installed properly.

14) ** **Install the provided primary spring** into the primary clutch and re-install the cover plate onto the drive clutch (primary clutch).

15) Install primary clutch. Be certain the crank taper/ clutch taper are clean and dry. **Torque to 60 ft/lbs.**

16) Install secondary sheave, drive belt (note direction of belt) , and moveable sheave as per service manual. Be sure to note the installation of the spacer washers inside the secondary (and if applicable alignment shims behind the secondary) are all there exactly as removed, and in place properly during the re-installation. Using an appropriate strap or oil filter wrench , and ensuring the splines of the sheave and input shaft are properly engaged, secure the clutch with the bolt and washer . **Torque Secondary to 35 ft/lbs.**

17) **Install cover shroud.** Inspect the cover/seal to make sure it is in good condition and replace if necessary. Carefully inspect cvt air duct and clamps, etc that are near. **Torque cap screws on cover shroud to 50 inch/lbs**

18) Install Rear wheel assembly and test. If you have installed a new belt be sure to break in the belt with an easy ride without extended wide open throttle or load situations and let the belt cool before hard use.

OVERVIEW - and general CVT tuning (All operators should understand the system)

There are books written on CVT clutch tuning and some in depth principles of controlling the rate of shift of the belt on belt drive systems. The following is a very general guide to help those unfamiliar with understanding some basic principals of the system.

The cvt system on your atv is a variable rate system. It is a two pulley system that gives different belt ratio as it shifts. As the belt goes up on the primary motor clutch, it also goes down into the driven (or secondary clutch) giving a higher clutch ratio and more speed.. Conversely , as the machine comes under load or slows down its speed , it back shifts to a lower ratio so that it will be able to pull away again after slowing or stopping. A system that is properly calibrated for its intended application will UP SHIFT as quick as possible *while still maintaining the proper rpm for the engines power curve*. If a system is up shifted TOO quickly it lowers the engine rpm to a level below peak hp....if it up shifts too slowly it will rev higher during the shift phase than that rpm where the engine makes best power . This same system should also BACK SHIFT properly. Back shifting properly means maintaining that optimum rpm as best possible, as the vehicle comes under load. The best key to good belt life is having the belt in the correct ratio for the load present, so that slippage is minimized. A very important part of cvt calibration is making sure the backshifting is happening exactly when it should.

It is very important to realize that on most ATV/UTV situations, that the “**clutch phase** “(the time that the belt goes from low ratio to high ratio) is only for a distance of approximately 500 feet at wide open throttle.(typical hard packed run) or around 45-50 mph. **After** which ...the clutch components are open all the way, and have little effect on rpm, as the belt is already up on the top of the primary clutch . Once the belt is to the top, it is to the top... and the engine starts to build rpm as the belt is out of ratio. Clutch components cannot control rpm after full shift out is achieved. ***Clutch components change the rate of shift of the belt...once the belt is shifted out ,clutch kits can not offer top speed increases.***

Different tuning components can control the rate of up shift and back shift of the belt to maintain a desired rpm range. The goal of a cvt system is to keep the belt in the proper ratio at any given speed and load situation. The factory has set up your system to be what they consider a decent “all around” calibration. Sometimes the factory calibration is better for one situation than another . Many users of ATV’s, for various reasons, like to change the desired effects and purpose of their machine to a more case specific application, whether it be oversized tires for mud, drag racing, sand applications, pulling competition, high altitude operation where less power is available, different engine(rpm) characteristics from engine modification etc. In different situations like this , performance can be optimized by re- calibrating the shift pattern of the cvt.

An example of a need to change the shift pattern would be adding larger mud tires. When installing larger tires there are a couple of factors that effect the clutching. The larger tires result in taller gearing. With a taller gearing situation, the last thing you would want to do is up shift too fast, as you are already starting off in a higher gear from the tires. The other factor is rotating mass. Heavier, large diameter rotating mass is a real negative for acceleration. Although most experienced tuners know that a atv with even slightly oversized tires will never be quite as quick as one with stock lightweight tires, clutch tuning can help compensate for some of the losses and help restore performance to acceptable level.

There are some vehicles that simply respond well to clutch calibration and make the vehicle function better, even with stock tire sizes.

Whether it is a vacation week at a different place or situation , or a user with multiple sets of tires, the adjustability this kit makes it very flexible.

Weights, Springs, and Components : A quick reference guide to the tuning components

Flyweights (weights) are the principal control of operating rpm during the clutch phase.

Heavier Weights- Quicker up shift and lower rpm during the “**clutch phase**”.

Depending on the situation, sometimes you can get away with a quicker up shift. It is important to remember that the primary spring is the opposing force to the clutch weights, and that changing the rating of the primary spring can effect the amount of force required from the flyweights.

Lighter weights- Slower up shift during the clutching phase. Slower up shift increases rpm.

Note: Remember, sometimes different curvature and profile can make total GRAMS irrelevant to each other. **You can only compare flyweights by grams if the curve and distribution of mass of two flyweights are the same.** Curvature and distribution of mass are also tuning methods.

Springs (general)- Stiffer springs slow the up shift. Softer springs up shift faster. The initial load (first part of the compression) of a primary spring controls engagement. Sometimes a stronger compressed load rating spring (second part of spring compression) can allow the use of more flyweight and the combination is effective for a situation ,but not all situations are the same. A spring is another type of tuning component. A spring is always chosen relative to the flyweight and the rest of the system. There are primary (motor clutch) springs, and secondary (driven clutch) springs.

It is NOT that quicker or slower up shift is BETTER....it is totally dependent on the situation. The goal is to achieve the best shift pattern for the application at hand, so that the engine stays in its best rpm zone, whether it be a stock or modified engine, or a different terrain tire or situation. Some people are wrongly informed that higher rpm is always better, which is not necessarily the case. Sometimes to over-rev is a worse hp drop than revving too low.

The key is shifting (upshift and back shift) the belt at the correct rate to always keep the belt in the correct ratio on the pulley system for the situation. This keeps rpm in the correct zone as much as possible, while preventing belt slippage from being in the wrong belt ratio at the wrong time. Slippage is heat, and excessive heat is the enemy of the system.

****Primary springs.** The spring in the primary (motor) clutch has many functions. These springs are often compared at two different load heights. The initial load comparison (commonly at 2.5”) is a controlling force for “engagement RPM” . That is the rpm at which the clutch system engages the belt and moves the vehicle. Primary springs are also compared by “compressed load “ (compared at 1.25” compression) which has effect on the flyweights as opposing force, and helps control shift rpm like flyweights do.

In order to change **engagement rpm only** on a given set up, for rider preference, one should use similar “compressed load” on a given spring, but could alter the “initial load” to suit engagement requirements. There is a load chart on the components page of www.daltonindustries.com that compares springs.

The Primary spring in this kit is identified as Black/Orange, with part number DPPS-B/O

Secondary Springs . Secondary spring is another tuning component. The secondary clutch is load sensing, and should be balanced with the primary clutch calibration. This kit is designed for and requires the use of the provided secondary spring .

Dalton Pro Quick Adjust Cam Arms - Adjustable flyweights.

Dalton's patented quick adjust method means that you can add and subtract flyweight mass from the main body of the flyweight without removing the weights from the drive clutch.

With the **quick adjust threaded passage** that you can adjust **from outside the clutch** for weight adjustments.

The threaded passage can be used to adjust the weight of the flyweight by adding or subtracting the supplied threaded set screws. The grams can be ** added or subtracted by simply turning the clutch so that the desired weight is up at the top, and using the supplied allen key to add or subtract set screws thus changing the total mass of the flyweight.*

If you were to, for example, switch from one size of tires to another, ..you could adjust your clutch to the recommended setting by simply removing the cover shroud, and make weight adjustments (according to instruction sheet), then re-install the cover. No puller or clutch disassembly required. You do not even need to remove the belt.

Set up and adjustment guidelines are on the "set up" page for different applications.

Always be certain that you keep track of the weights you have adjusted...it helps to mark the clutch in number from 1-3 to keep track. Be certain to not cause an imbalance by double adding to one passage and not all of them the same. Keep track of screws remaining.

NEVER install screws so that they protrude out past the entry point of the threads!

Make sure all screws go in all the way and bottom for secure fastening (do not over tighten) It is best to not use the full length 1" set screw as the first one in the hole to bottom out. ..it has so much thread pitch contacting, that it may bind from internal distortion at the end of the tapped hole.*

Adjusting the Dalton "Quick Adjust" flyweights can easily be done without removing the flyweights from the clutch. You can add or subtract grams for the situation without even removing the belt.

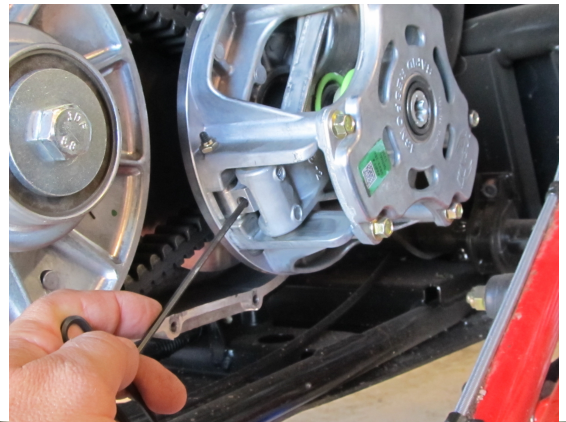
Using the Quick Adjust set screws:

This can be done on the bench for initial set up, and as mentioned above, it can easily be adjusted later while the flyweight is still in the clutch.

- 1) Carefully install the set screw into the threaded passage . Be careful not to cross thread the set screws.
- 2) Wind the set screw all the way in until it is snug at bottom of threads. Do not over tighten
- 3) Add additional screws as required, always bottoming on the one inside. If screws are used repeatedly tuning a special or modded application, blue (removeable) loctite should be lightly applied to the threads when tuning is done.

Set Screws in this application (1/4" UNC) weight :

1/4" long = .7g	1/2" = 1.9g	3/4" = 3.1g
3/8" long = 1.3g	5/8" = 2.5g	1" = 4.3g



FLYWEIGHT SET UP GUIDE – 2014+ Arctic Cat Wildcat 700

Springs. The primary and secondary springs provided in this kit are to be **used in all of the flyweight set ups below.** Proper “opposing spring pressures to the flyweight used” are a part of the calibration and without that the flyweight set up would be irrelevant.

RPM : The **Wildcat 700 Trail** model performs best when operated in the zone of **7250-7550 rpm** (during the clutch phase). Make sure you know what “clutch phase” is from above notes. It may be normal to first shift at a slightly lower rpm and climb in the very early part of the run. It is not always that more rpm is better. Different terrain and situations require you to set up differently to find the sweet spot for your application. Set up clutching for the situation most important to you.

Remember, the clutch phase is over after the clutches are fully shifted and the belt is to the top of the primary. After a distance of approx 500 ft or around 50 mph the clutches are fully shifted on this vehicle. After the clutches are fully shifted it is not necessarily the clutch tuning components that control the rpm.

The following set ups are for use WITH the use of the provided springs, and the supplied flyweight set.

Read TIRE SIZE FIRST for your set up:

2014+ Wildcat 700 (QAW-54 base weight) 0-4000 ft elevation*

25” Tires - Stock machine For stock type (light) 25” Typical trail riding and mixed use.

QAW 54 base weight with the following:

- (1) 3/4” long set screw in threaded passage of each flyweight.

26” tires (most)

QAW-54 with

- (1) 5/8” long set screw in each flyweight

27”-28” aftermarket tires (most)

QAW-54 with

- (1) 1/2” long set screw in each flyweight

29-30” Aftermarket tires. Most mixed use tires. Also for 28” Extreme mud tires (Outlaws, Outlaw 2, etc)

QAW-54 with

- (1) 3/8” long set screw in each flyweight.

29.5”+ Extreme mud tires. Heavy mud use with pure mud tires.

QAW-54 with

- (1) 1/4” long set screw in each flyweight.

***Sand Dune, or higher elevation** use less flyweight mass. Different types of sand and paddles create more load. Usually sand and paddles requires a gram or two less mass, test to achieve the best for your own situation.

The above is a guideline. There is no way we can test every size and brand/application of tires. The sizing and weight of tires has large differences from different manufacturers. Dalton “Quick Adjust” flyweights make it easy to fine tune to any situation. The “overview” page has excellent fine tuning info.

Thank You for choosing Dalton Industries !

