DUV - K750 TX

Dalton Pro ATV Clutch Kit

Model: 2008 Kawasaki Teryx 750 4x4 Utility Vehicle

Kit #: DUV-K750TX

Components: 1 Dalton Orange/blue primary spring (DPPS-O/BL)
1 Dalton Amber primary spring (DPPS-AM)
1 Dalton Silver Secondary spring (DPSS-S)
1 set of Dalton Quick Adjust flyweights/hardware (DPKA-1U)
2 pkg aluminum rivets (.85gram) (DFRA-Y)
2 pkg hollow steel rivets (2.4gram) (DFRH-Y)

Tools: *Primary clutch puller bolt* is required. Kawasaki dealers have them or can order Dalton part # DCP-J. (dealer installation recommended),also a shop press or clutch compression tool for secondary.

Description :

Kit is designed specifically to fit the *08 750 Kawasaki Teryx RUV*.This kit was developed to improve acceleration and back shift performance in a variety of conditions and also to help recover performance lost from installing large aggressive tires and mud conditions . Improved acceleration and back shifting under load . Also offers flexibility to tune your clutch to rider preference and conditions while still maintaining maximum belt grip. This kit uses Dalton's patented "Quick Adjust Cam Arms" which allow you to add or subtract mass from the main body of the flyweight without even removing the weight from the clutch. This helps make for quick and easy adjustment for tire sizes, conditions, and changes in rpm requirements from internal engine mods, etc . Although the teryx is calibrated fairly for the **totally** stock machine ,there is still improvement even to a stock machine. This kit is very adaptable to mods/changes you may do the vehicle in the future ,and you can adjust it to maximize the power delivery to the ground in many different changes/mods and situations. It is like having MANY clutch kits in one.

The Teryx RUV is calibrated very different from the factory than the 4x4 atv models. It is a much heavier vehicle than a regular atv, It is often used with two persons on board, and loaded with more weight. This even required different final drive gearing and CVT clutch tuning from the factory .It uses stock flyweights with a much different profile and curve, as well as the flyweight starting position different than found on ATV models. Through field testing, we found that when using any of our typical ATV clutch products (especially flyweights) that were applicable to prairie/Brute models we could do simple timed runs, etc. using these and get decent results in simple drags ,but belt heat was higher and not acceptable. We designed new flyweight for this application that is specific to this model that has its own new curvature , position of mass, and our "quick adjust" system . These flyweights were designed to work in conjunction with the new springs that were also developed for this model.

The stock secondary spring on the 750 Teryx is different than Prairie/Brute Force models .It is a larger diameter and uses different retaining cups and different load rating dimensions. We developed a new secondary spring that is diverse enough , when used in this kit , to cover many applications. Although it is well known that oversize tires DO hurt both acceleration and speed, This kit can help bring your Teryx back to life after putting on the aggressive mud tires.

PLEASE READ ALL INSTRUCTIONS CAREFULLY FIRST!

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. Dalton Pro clutch components are made from high quality materials in a controlled procedure. NEVER cut, weld or manipulate clutch components
Some 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 ant 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.

DUV -K750TX **INSTALLATION: (dealer recommended)**

Important: Always remove the KEY from the ignition before working on clutches. If the electric servo motor is activated for the engine brake system while the cover is removed it will have to be re set by a factory technician.
1) Remove passenger seat, seat bracket ,and accessories as necessary to access CVT clutch area .It is tricky the first time ,but with finesse the aluminum cover comes off without removing the rear engine mount bracket. Remove the cover bolts to remove the aluminum cover shroud. There should be enough slack in the servo wiring to swing the whole cover assembly out of the way of your work.(use caution, do not pull or damage any wires.)

2)**Take note of **Belt Deflection before** removing the clutches. Belt deflection is a CRITICAL adjustment on this model. Proper belt tension is relative to the start off ratio of the clutches and critical to good belt life. **Belt Deflection** should be within factory specification of 22-26mm(approx 7/8 inch). If the belt is too loose or not in spec (sometimes from factory), your secondary pulley clutch will have to be disassembled to remove shim/shims to adjust before re-installing . Consult factory service manual.(this is a dealer recommended install)
Note: Our testing has shown best results on Kawasaki V-Twin models with the factory belt , and calibration for this kit is associated with that factory belt compound.
3)Remove the center bolt from the primary(motor) clutch. ATTENTION...this drive clutch center bolt is **left hand thread** After removing center bolt, use the proper puller bolt (Dalton part # DCP-J or Factory Kawasaki puller) to remove the drive clutch from the engine **Important...** start the puller bolt in by hand to insure proper threading. *Take note of the direction of the belt. It should be installed with the letters on the belt so that you can read them* **.**
4)With the clutch removed, remove the cover from the primary clutch by removing the 10mm bolts. NOTE: take note of the alignment marks on the cover itself and the spider for re-installation . Take note of the metal washer under the primary spring. It must still remain there for use with the supplied new primary spring.
5)Remove stock flyweights.
6)AFTER setting up the provided flyweights ***properly for your application** (READ all pages before continuing) install the new flyweights into the clutch and install the new primary spring. Set the primary(motor) clutch aside for now and remove the secondary clutch..
7) Using a shop press or clutch compression tool, compress the spring retainer cap on the secondary clutch and remove the snap ring and slowly release the retainer cap ****It is NOW that you would remove shims for adjusting belt deflection if necessary*** .Install the supplied secondary spring and re-install secondary clutch onto the vehicle as per service manual.
8)Re-install the belt first on the secondary clutch(note direction again) and then install the primary clutch with the belt in it, onto the crankshaft and torque to proper specification.

***see attached* " Flyweight set- up "** for recommended set up .
Torque specifications: Primary center bolt= 69 ft/lbs.
Primary cover bolts= 113 in/lbs.

Install cover shroud. Be careful to insure wires from servo motor are tucked neatly out of harms way and zip tied, etc as necessary.
****Reminder: did you note BELT DEFLECTION?** - this is a critical element of calibration .

OVERVIEW - and general CVT tuning

There are books written on CVT clutch tuning and some in depth principals 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

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It is VERY important to realize that on most ATV situations, that the "**clutch phase** "(the time that the belt goes from low ratio to high ratio) is only for a distance of approximately 600 feet at wide open throttle,(and even much less than that on TERYX) or around 45 mph. **After** which ...the clutch components are open all the way ,and have little effect ,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 a decent "all around" calibration, that means it can ride in different terrain, or haul a trailer, or maintain decent emissions, and be a "general" calibration that the factory feels is a suitable compromise in many respects . .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 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.*

General tuning info continued on next page.

Dalton Quick Adjust Cam Arms -and general tuning info

General tuning info: following are a few general rules of thumb.
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 - Stiffer springs slow the up shift. Softer springs up shift faster. Sometimes a stronger spring in the primary and/or secondary clutch can allow the use of more weight and the combination is effective for a situation ,but not all situations are the same. A spring is another type of tuning component.

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.

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.
There is one rivet hole at the tip of the flyweight that can be used to change the "range" of the flyweight with different optional mass rivets(this rivet must be done with flyweight removed from clutch), as well as **the patented quick adjust threaded passage** that you can adjust **from outside the clutch** for most common changes and weight adjustments.
The threaded passage can hold up to 3 of the supplied threaded set screws that weigh 1.2 grams each. 3.6 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 most often adjust your clutch to the recommended setting by simply removing the plastic cover shroud, and make weight adjustments(according to instruction sheet), then re-install the plastic cover. No puller or clutch disassembly required.

Set up and adjustment guidelines are on the following 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 1-4 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.

Make sure all screws go in all the way and bottom for secure fastening.(do not over tighten)*

SET UP GUIDE - 08' Kawasaki TERYX RUV
The following Dalton Quick Adjust Flyweight set ups can be performed with either the provided AMBER(DPPS-AM) primary spring,..or the Orange/blue (DPPS-O/BL)*These two primary spring are most*

applicable in this application. We are constantly developing product and more options may be on our website in future.

Amber (part# DPPS-AM).This Amber primary spring is a new one developed to work in this application. This new progressive wound spring creates the required mid- load force needed for use with the rest of this kit without getting engagement too high. Most of our test riders seemed to prefer this engagement level and this spring was developed to work around that engagement and still maintain enough compressed load rating. One of the great features of this kit is the adjustability for individual rider preference, as primary springs are simple and quick to change and experiment with.

Orange/Blue(part # DPPS-O/BL) spring provided is more aggressive . The "engagement" rpm is slightly higher with the Orange/Blue, This spring was preferred by our test riders in some situations, like when using large mud tires on the stock vehicle. It is not necessarily that we prefer the slightly higher engagement in that situation, but the stronger early load rating on the spring controls up shift a bit differently and many seem to like the low speed response a bit better with it , particularly with heavier Mud type tires. You can certainly ,however, use the Amber with lower engagement to suit your preference, as these two springs have similar mid load ratings.

Quick Adjust Flyweights - Set up (DPKA-1U base weight is 74g) **Kit# DUV-K750TX** (Teryx)

0-4000 ft elevation -Typical trail machine, occasional mud.

26" Tires - Stock machine (and with aftermarket CDI ignition when used with stock exhaust)
- DPKA-1U w/aluminum rivet installed in tip - use 2 set screws in threaded passage. Amber primary spring/Silver secondary spring.

26" Tires - Stock engine ,**Aftermarket CDI , *Pipes, Light air box mod and proper jetting**(please direct ALL jetting/air mod questions to manufacturer of the pipes, mods)
-DPKA-1U w/aluminum rivet installed in tip. -Use 3 set screws in the threaded passage. Amber primary spring / Silver secondary spring.

27-28" tires - Stock machine (and with aftermarket CDI when used with stock exhaust **)**
-DPKA-1U w/aluminum rivet installed in tip - use 1 set screw in the threaded passage. Amber primary spring/Silver secondary spring. Some may prefer the optional orange/blue primary spring in the kit.

27-28" tires - Stock engine, Aftermarket exhaust, **CDI ignition ,*pipes , light air box mod and jetting** (PLEASE direct ALL jetting /air mod questions to the supplier of the modifications you are using!)
-DPKA-1U with aluminum rivet installed in tip. -Use 2 set screw in the threaded passage ,Amber primar spring/Silver secondary spring. Some may prefer the orange/blue primary spring. * *This is somewhat speculative because of the wide variance in TIRES. EG..27-28 mud light measures smaller and relatively light ....28 Outlaw mud tire is Very heavy and may require only one or no set screw in the threaded passage* for desired preference and application.

30" tires -All. Typical mixed terrain ,trail, occasional mud. Use DPKA-1U with aluminum rivet in tip and no set screws in the threads. For larger and more mud use remove the rivet to help with back shift and RPM.

**Pipes tested were Muzzy's w/equal length headers.-others results may vary.*

SAND / HIGH ALTITUDE(above 4000')- Normally riding in sand is more inclined to have hills and the riders prefer back shift and throttle response because sand is power robbing..High altitude is also less

oxygen, and less power. Quick Adjust flyweights make it easy to tune to your preferred set up. Start of with **one less set screw** and test for preference.. At altitudes 6000'and higher remove the aluminum rivet at the tip of the flyweights.

Set up guide continued- Other factors: Modifications/Custom considerations

30"+Tires Extreme Mud/Competition- Some extreme sticky mud competition situations are severe. When running ANY large Mud Tire, or very sticky mud, this vehicle is prone to slippage. **Even in the factory owners manual** there are references to use in mud and warnings to stop and get winched out before excessive slippage occurs. **READ your operations manual regarding this!** Sometimes you have to let off the gas...even if your buddies are watching. Clutch components can help keep the belt in the correct ratio and help keep rpm and offer improved belt grip, but there is inherent limitations in the system. When you install tires that are much larger and out of the effective gearing range, that are much heavier than the vehicle was designed for you should be aware of the facts ,and **learn the limitations of your vehicle.**

Engine /Clutch Modification- Performance enthusiasts often opt for modification. Most typical "bolt on" mods such as pipes, air box mods ,cdi ignition boxes , etc do not require much different clutching than listed in set up instruction.

If you have extensive or internal engine mods, particularly if running *longer duration camshafts* from **specialty engine shops** ,it is common to use less(2-3 grams) flyweight mass than listed above to achieve a higher rpm during the "clutch phase".Typically leave the tip rivet out and tune from there. Custom ,long duration Cams make peak hp at higher rpm.(special engine shop cams are not like typical bolt in cams that will work with stock piston. Typical bolt- ins ,.. eg. Web or Hotcam do not require nearly as much rpm as the above mentioned, and possibly the similar weight amount in the flyweights as in the listings will be fine)Possibly some big bore kits that use bigger pistons ,but still use the more typical "bolt in " type cams may require more weight in the weights. You MUST work closely with your engine builder to know peak torque and hp rpm required .Clutch for rpm at the 200 ft mark during testing(before the clutch phase is over) Other mods, like Nitrous Oxide injection, etc will require more total flyweight mass.

Similarly, if people experiment with other aftermarket clutches or change sheave angles of the factory clutch for more overdrive, etc. ,it can change the shift pattern slightly and flyweight total mass may need to be tested for optimum efficiency. If you wade into the world of modified, you MUST learn to test on your own to get full benefit.

******Important tuning notes-*** *As you can see from set up recommendations above, accurate clutch tuning can be variable. Tires in particular have a very wide range of sizes , as well a market inconsistency with respect to size and weight. Not to mention rider preference and intended use.* ***We can not give recommendations for EVERY tire/mod or intended use in the market.*** *There are excellent guidelines above for common situations.*

There is no way that we can test for every tire type and size ,or intended use, particularly if modifications are made to a stock machine. The wide range of adjustability makes this a great kit for ease of fine tuning on custom mod vehicles . ***In applications that are not stock, field testing is to be expected.***

Installation and removal of Mass Rivet(tip weight)

1)Push the rivet ALL the way into the appropriate hole in the tip of the flyweight.
2)Using a large shop vise hold the weight in a manner in the vise that holds the rivet all the way through the hole
3) Squeeze/expand the rivet. Place all 4 rivets pointing the same direction.

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) Insert a flat ended punch with a straight shaft of 1/8" diameter into the drilled hole and tap the rivet through the hole to remove.

Using the Quick Adjust set screws:

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

1) Carefully install the set screw into the threaded passage.
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.

Important: be sure to keep track of what you are installing and where it is installed. It helps to mark the clutch with a permanent marker from 1-4 to be sure you install the same amount of set screws in each hole.