



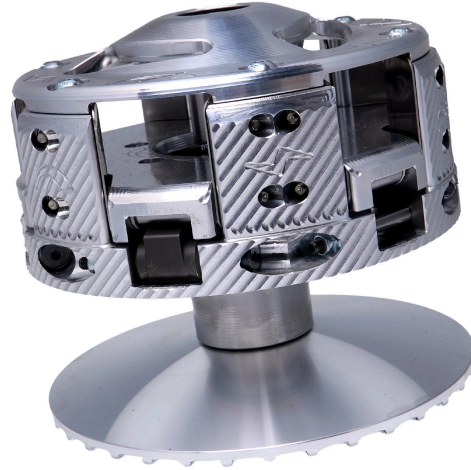
INSTALLATION AND TUNING GUIDE

KWI ULTRASHIFT CAN AM XP V2 PRIMARY CLUTCH

PART NUMBER(s): ULTRASHIFT XP V2

TOOLS NEEDED

- 1/2" Drive Impact Gun
- 5/16" Socket
- T60 Torx 1/2" Drive socket
- KWI RZR PRO clutch puller or equivalent
- 3/16in drill bit
- Rivet gun
- Black silicone or gasket maker
- 3/8" 1/4 Drive Socket
- 1/4" Drive Ratchet
- 3/8" Drive Ratchet
- 15mm 3/8 drive Socket
- 1/8" Allen wrench
- Belt removal tool
- ARP Fastener lube
- Vorhees Vise primary holding tool (or equivalent)



ESTIMATED INSTALL TIME

60 MINUTES

We are not responsible for any damage caused during installation. Follow these steps carefully to prevent damaging your clutch.

IMPORTANT NOTES- PLEASE READ

- 1. You *MUST* install the included KWI Billet cover spacer so the Ultra Shift clears the clutch cover.**
- 2. Your ULTRASHIFT is a balanced assembly when you receive it. All parts are individually balanced. The inner sheave assy balancing is done with the balance screws on the back of the primary fixed sheave. DO NOT REMOVE THE BALANCE SCREWS FOR ANY REASON.**
- 3. Your ULTRASHIFT comes with a pre-Installed baseline calibration determined by your car info that you provided in your order. You are responsible for verifying that the cam arms and spring is configured properly for your application determined by your final testing and adjustment for proper RPM.**

-

Remove OEM primary clutch and install UltraShift:

1. Remove Belt Cover:

- Use a 5/16" socket to remove the screws securing the belt box cover. Lift the cover off and set it aside

2. Remove CVT Belt:

- Use a Clutch Belt Removal Tool to safely remove the CVT belt from the pulleys.

3. Unbolt the Primary Clutch:

- Use a T60 TORX - 1/2" Drive Socket to remove the primary clutch bolt. This bolt won't be reused.

4. Detach Primary Clutch:

- Remove the six 3/8" head bolts holding the primary clutch cover in place. This has only a small amount of spring tension and can be removed easily by hand (this allows access the 2 piece center shaft). Twist and pull the 2 piece center shaft stub out.
- Grease the primary clutch puller end and thread into the clutch bolt hole and tighten using an impact driver (or breaker bar with a pry bar through the clutch to hold it) until clutch is removed.

5. Remove Primary Clutch:

- Take the primary clutch out of its position and keep it aside.

Critical Steps: Failure to follow these may result in damage.

6. Clean Crankshaft Bolt Hole:

- Use the supplied wire brush and brake cleaner to remove any debris, oil, or rust from the hole. You can use the OEM clutch bolt to chase the threads if needed. Make sure the threads are clean and the ARP stud can thread in fully by hand easily.

7. Clean Crankshaft and Clutch Taper:

- Wipe down the engine crankshaft and the taper inside your new UltraShift clutch with brake cleaner or acetone to remove all oils, dust residues.

8. Prepare ARP Stud:

- Clean all threads with brake cleaner. Lightly apply the supplied ARP lubricant ONLY to the stud threads labeled GREASE at the Allen key end, as well as to the nut and washer. DO not apply any grease to the crankshaft threads! Screw the washer and nut onto the greased end of the stud for just two turns.

9. Install New Primary Clutch:

- Place the ULTRASHIFT clutch onto the crankshaft taper. Using a 3/16 Allen Wrench, screw in the ARP stud until it lightly bottoms out, then back it out by 5 turns.

10. Torque Down:

- Hold the ULTRASHIFT from turning with the Vorhees Vise clutch holding tool or equivalent. Use a 1/2" Torque Wrench set to 140 ft/lbs to tighten the nut. Re-check torque on the nut after the first 5 minutes of riding.

Secondary clutch disassembly and reassembly

1. Remove secondary clutch bolt. (15mm socket)
2. Remove the secondary from the splined shaft by removing the bolt and c-clip (if applicable) and sliding the clutch off the shaft.
3. Separate secondary clutch halves by sliding them apart and put a threaded rod thru inner half with helix and clamp carefully with 2 washers and 2 nuts. There is substantial spring pressure, so ensure you use the correct tools.
4. Remove 3 bolts attaching helix to moveable sheave. Relieve spring tension by unscrewing threaded rod nuts. Note position and orientation of components.
5. Remove stock secondary spring and install KWI secondary spring. Reassemble secondary components in order removed and carefully compress using threaded rod or KWI tool kit.
6. Reinstall 3 screws thru sheave and into helix using blue Locktite. Torque to 35 ft lbs.
7. When the secondary is assembled, install it back on the shaft with the c-clip(If applicable) and bolt in place. Torque the secondary bolt to 35-40 ft-lbs.

Install cover spacer:

1. Remove cover from vehicle
2. Using the provided 4 inch hole saw, drill out center of cover on the primary clutch side. There is a indent circle in the center, use that as your pilot.
3. Test fitment by placing cover spacer on cover, XP lightning bolt should be at the top of the cover. Logo will look crooked but will be straight once cover is on car.



4. Once lined up, drill 4 holes using a 3/16 drill bit. Use the predrilled holes on the cover spacer for a guide.
5. Apply high temperature silicone or gasket maker around the flange of the cover spacer to assure good seal once riveted on.
6. Rivet cover spacer using supplied rivets to cover. Make sure you rivet from the inside out so the flat part of the rivet sets on the inside.
7. Check to make sure everything is sealed, reapply gasket maker or silicone to the outside if needed.
8. Reinstall clutch cover. Allow time for silicone or gasket maker to cure before riding.



Final Steps:

12. **Re-Install Belt and Cover:**
 - Put the new correct length CVT belt on (refer to **SETUP CHART** below) and reattach the belt box cover.
13. **Test Drive:**
 - Drive the vehicle and check and adjust for proper RPM at 100% throttle between 20 and 70 MPH according to the adjustment instructions on page 3 and tuning chart on page 4.

Cam Arm removal steps:

1. Remove CVT Belt:

- Use a Clutch Belt Removal Tool to safely remove the CVT belt from the clutches.

2. Remove the primary clutch cover:

- **Mark the cover and outer half with a marker** so you can ensure they are put back together in the same location for balance purposes.
- Remove cover using a 5mm Allen key to remove all the cover bolts BY HAND. Do not use power tools or you may strip the screws. The standard primary spring that comes with the UltraShift has a mild amount of spring tension and can be removed by hand. (A cover compression tool is available from KWI separately to compress the cover with high engagement springs that have higher pressures)

3. Remove the cam arms ****No need to remove the primary clutch from the crankshaft****:

- Slide the sheave all the way in toward the motor which will allow the cam arms to swing free.
- Using a Allen wrench and a long socket, remove the pins holding the primary weights in place. The pins fit may tightly in the outer half and may need to be tapped lightly to remove them - being careful to not damage the threads) Remove the 6 weight pins and nuts to remove the cam arms.

RPM ADJUSTMENT- Refer to tuning chart on page 4

- ❖ The weight of the added magnets affects RPM. The more magnets that are installed the lower the RPMs will be. 1 thick magnet from each cam arm will change Full Throttle RPM approx 100 RPM
 - ❖ Depending on your HP level your UltraShift may have 2, 3, 4 or 6 cam arms installed. **BALANCE IS CRITICAL!**
 - 2 cam arms installed-- ALL cam arms MUST have identical magnet configurations
 - 3 cam arms installed-- ALL cam arms MUST have identical magnet configurations
 - 4 cam arms installed-- ANY 2 OPPOSING cam arms MUST have identical magnet configurations
 - 6 cam arms installed-- ANY 2 OPPOSING cam arms MUST have identical magnet configurations
1. Remove the cam arms from the clutch. (SEE "Primary clutch disassembly and reassembly" ABOVE)
 2. There are 3 holes in the arms to place magnets- you can place magnets in holes as required.
 - Magnets in the hole closest to the cam arm pin will affect RPM's from 0-20 MPH.
 - Magnets in the center hole will affect RPM's from 20-50 MPH.
 - Magnets in the hole farthest to the cam arm pin will affect RPM's at 50+ MPH.
 3. Magnets MUST be distributed so that the clutch is balanced. Make sure arms have identical magnets installed. Do not overfill magnet slots!

1. Reinstall cam arms and cover:

- Install the cam arm in the appropriate slot
- Slide the weight pin thru the clutch, cam arms and weight then tighten nut to 40 in/lbs. Make sure all pins are installed the same direction for balance purposes and torque weight pin nuts to 20 in-lb (2 Nm).
- Install spring with both steel shims on bottom.
- Install cover with screws and blue loctite.
- Torque screws to 10 ft/lbs.

ULTRASHIFT V2 XP SETUP CHART								
The chart below is a guideline with very close start points with 32" tires riding at Sea Level elevation. (choose the Crankshaft horsepower/Wheel horsepower that best matches your vehicle) (identical cars may have HP differences of up to 10 HP due to engine manufacturing tolerances so clutch kit calibration adjustments are necessary in most cases)								
For High Altitudes- subtract 15% from the Published HP range of your tune to get actual effective HP. Example - 200 CHP (at sea level) x .85 = 170CHP (use the 175CHP line in the chart below as your baseline setting)								
For sand dunes or large tires (35"+)- subtract 8% from the Published HP range of your tune to get actual effective HP. Example - 200 CHP x .92 = 184CHP (use the 175CHP line in the chart below as your baseline setting)								
For tires 28" and smaller- Add 8% from the Published HP range of your tune to get actual effective HP. Example - 200 CHP x 1.08 = 216CHP (use the 215CHP line in the chart below as your baseline setting)								
For Launch Control - Install the KWI HIGH ENGAGEMENT primary spring with the correct engagement for your application. (SOLD SEPARATELY AND LISTED BELOW)								
Crankshaft horsepower (CHP) /Wheel horsepower (WHP)	# of Cam Arms	# of Magnets IN HEEL OF EACH CAM ARM	# of Magnets IN MID OF EACH CAM	# of Magnets IN TIP OF EACH CAM	Primary spring	Secondary spring / Helix	Belt Recommendation	Full throttle RPM at 55mph
200CHP/175WHP	2	3	3	3	7045112 IS STANDARD 1750 RPM LOW ENGAGEMENT SPRING KWI SILVER PURPLE IS 2900 RPM HIGH ENGAGEMENT SPRING KWI SILVER IS 3500 RPM HIGH ENGAGEMENT SPRING (HIGH ENGAGEMENT SPRINGS RAISE SHIFT RPM AND NEED ADDITIONAL MAGNETS INSTALLED IN THE CAM ARMS TO COMPENSATE FOR THE INCREASE IN SPRING PRESSURE) KWI MAROON IS STANDARD 1750 RPM LOW ENGAGEMENT SPRING KWI SILVER PURPLE IS 2900 RPM HIGH ENGAGEMENT SPRING KWI SILVER IS 3500 RPM HIGH ENGAGEMENT SPRING (HIGH ENGAGEMENT SPRINGS RAISE SHIFT RPM AND NEED ADDITIONAL MAGNETS INSTALLED IN THE CAM ARMS TO COMPENSATE FOR THE INCREASE IN SPRING PRESSURE)	OEM HELIX- KWI secondary spring (KWI WHITE spring for all secondary clutches except 2016-2020 XPT and Turbo S) (2016-2020 XPT and Turbo S use the OEM spring)	OEM POLARIS BELT OR GATES - 49R4313 - FIRST CHOICE AND MOST DURABLE BELT BY FAR, THE ONLY CHOICE FOR AGGRESSIVE RIDING AND RACING, EASILY WITHSTANDS 260 DEGREE BELT TEMPS. OR ULTIMAX USX804 - THIS IS THE GOTO BELT FOR DRAG RACING WITH YOUR ULTRASHIFT!	8550 RPM +/- 100 RPM)
225CHP/195WHP	2	4	4	2				
290CHP/250WHP	3	2	0	0				
330CHP/275WHP	3	4	2	2				8900 RPM +/- 100 RPM (AFTERMARKET TURBO KIT)
360CHP/310WHP	3							
400CHP/350WHP	4							
500CHP/450WHP	4							

PRIMARY SPRING ENGAGEMENT RPMS
(RPM MAY VARY DUE TO SPRING MANUFACTURE TOLRANCES, SPRING AGE OR VEHICLE SPECIFIC CAM ARM CONFIGURATION)

STANDARD SPRING	1700-1900
KWI SILVER PURPLE	2700-2900
KWI SILVER	3000-3500

PARTS INCLUDED

	PART DESCRIPTION	QTY	OEM PART #	OUR PART #
	ULTRASHIFT V2 PRIMARY CLUTCH	1	—	ULTRASHIFTX3PRI
	ARP STUD, NUT, WASHER AND LUBE	1	—	-
	(INCL IN CLUTCH ASSY) STD SPRING	1	—	-
	(INCL IN CLUTCH ASSY) PROR WEIGHTS	AR	—	-
	(INCL IN CLUTCH ASSY) MAGNET PACK	1	—	-
	SWAG	1	—	-
	WIRE BRUSH	1	—	-
	BILLET COVER SPACER	1	—	-
	WHITE SECONDARY SPRING	1	—	-

LIABILITY STATEMENT

As defined by the Magnuson-Moss warranty Act. Do not install any performance parts or services unless you have the technical ability to properly set-up the entire machine to compensate for the installation of those parts. The necessary work and expertise needed to install different product varies. Instructions, where provided, are given to assist in installation only; they are not a substitute for mechanical experience in setting up racing vehicles. References to performance gains, reliability, ease of installation, etc. are based on our and outside customer's experiences. This is not a guarantee of similar performance in every installation. While we sell proven products, in the end it's up to the individual to make the most of the product. Kris Werth Inc. d.b.a. KWI Clutching or its associated corporations are not responsible for any personal or property damages caused by this product. Kris Werth Inc. d.b.a. KWI Clutching or its associated corporations assumes no responsibility for damage or injury of any kind because of misuse, improper installation or improper application of any parts in anyway, by any person. Contact your local dealer to schedule installation of this kit if you are not a qualified ATV or UTV mechanic. USE OF PRODUCTS. BUYER SHALL USE, AND REQUIRE ITS EMPLOYEES, CONTRACTORS, AND AGENTS TO USE, ALL AVAILABLE SAFETY PRECAUTIONS, IN ADDITION TO ANY SPECIFICALLY SET FORTH IN ANY MANUALS, MATERIAL SAFETY DATA SHEETS, TECHNICAL DATA SHEETS, INSTRUCTION SHEETS, IF ANY, FURNISHED BY SELLER (OR AVAILABLE FROM RAW MATERIAL SUPPLIERS) RELATING TO SELLER'S PRODUCTS. IF BUYER DOES NOT RECEIVE ANY REQUIRED MATERIAL SAFETY DATA SHEETS FOR ANY PRODUCT FROM SELLER, BUYER WILL REQUEST THEM FROM SELLER. IF BUYER FAILS TO STRICTLY OBSERVE EACH AND EVERY ONE OF THE OBLIGATIONS SET FORTH IN THIS SECTION 22 OR IF BUYER'S USE OF ANY OF SELLER'S PRODUCTS IS IN VIOLATION OF ANY STANDARD OR RULE OF THE AMERICAN NATIONAL STANDARDS INSTITUTE OR OCCUPATIONAL HEALTH AND SAFETY ACT, OR OTHER APPLICABLE WORKPLACE LAW, REGULATION, OR STANDARD, BUYER WILL INDEMNIFY, DEFEND, AND HOLD HARMLESS SELLER AND SELLER AND ITS EMPLOYEES, OFFICERS, DIRECTORS, AGENTS, AFFILIATES, SUCCESSORS AND ASSIGNS FROM AND AGAINST ANY AND ALL CLAIMS, DEMANDS, DAMAGES, ACTIONS, AND CAUSES OF ACTION, AS WELL AS ANY AND ALL LIABILITY, LOSS, OR EXPENSE OF ANY KIND, INCLUDING REASONABLE ATTORNEYS' FEES ARISING FROM, CONNECTED WITH OR IN ANY WAY PERTAINING TO ANY SUCH FAILURE BY BUYER. NOTIFICATION. BUYER SHALL NOTIFY SELLER PROMPTLY, AND IN ANY EVENT WITHIN 30 DAYS, AFTER ANY ACCIDENT OR FAILURE INVOLVING SELLER'S PRODUCTS THAT RESULTS IN PERSONAL INJURY OR DAMAGE TO PROPERTY AND SHALL COOPERATE FULLY WITH SELLER IN INVESTIGATING AND DETERMINING CAUSES OF SUCH ACCIDENT OR FAILURE. ATTORNEYS' FEES AND COSTS. BUYER WILL PAY SELLER'S REASONABLE ATTORNEYS' FEES AND OTHER COSTS AND EXPENSES FOR ANY LEGAL OR EQUITABLE ACTION UNDERTAKEN BY SELLER TO ENFORCE THESE TERMS OR THE PROVISIONS OF ANY SUPPLY AGREEMENT.