

# **10197 M-Tek Clutch Kit**

## **Polaris Patriot Boost**



Thank you for purchasing an M-Tek Clutch Kit from MTNTK Performance. This kit is designed specifically for the Polaris Patriot Boost. We have spent a lifetime of tuning and adjusting clutching systems to get the most out of every part. We have thoroughly tested and validated this clutch kit to provide the best possible performance along with exceptional belt/clutch life. We have been boosting sleds for quite a while, and right off we knew improvements could be made the minute we rode the first time.

### **THE PROBLEMS**

**22 Patriot Boost** - This was the first and original Boost, and it came with a steep initial angle on the helix that was good for upshift, but it created a loose setup especially when riding trees. The belt would get hot and shifting would get lazy if you were on and off the throttle repeatedly.

**23 Patriot Boost** - For model year 23 Polaris dropped the clutch weight 2 grams (not good) and put a straight helix (better) in that improved upshift. The problem with this combination is it turned the sled into a buzz saw. The lighter weights contributed to little bogs and some sleds even felt like they had more turbo lag. If you don't load a turbo motor, it just doesn't spool the turbo as fast and it can make tuning unpredictable. The helix made the sled slower (than the 22) out of the hole and the weights made it hard to pick up speed. Many customers hit the rev limiter without knowing what was happening and this felt like bogs and burbles.

### **OUR SETUP**

**Custom Helix** - We have a Custom Dual Cut Helix that provides a perfect blend of out of the hole upshift with big turbo power top end pull that will upshift quick.

- There are (2) positions you can use depending on your riding and setup
  - **Position A** – Recommended for most riding, trees, technical, overall good performance. This is a LOWER initial angle with a transition to a steeper (higher) angle right when boost (power) comes on strong. This gives good bottom end performance with a good grip on the belt to prevent heat from a slipping the belt.
  - **Position B** – This is a HIGHER initial angle that transitions to a steeper angle similar to position A. This will provide faster upshift from a standstill. This will help load the engine in conditions like set-up snow, lower elevation riding, or shorter track lengths. It will help prevent mid-bogging from the track unloading/not enough traction.
  - **Roller Set** - In 2021 Polaris changed the helix rollers to a larger roller. This larger roller did nothing to improve performance in fact the larger roller is made of a softer

plastic that can deform under heavy load. We prefer to offer a helix with two cuts allowing more adjustability, and this design requires the smaller more durable roller.

**Driven Spring** - This spring will increase grip on the belt and prevent slipping which builds heat. This provides crisp power-on response and great backshift characteristics.

**Primary Spring Set** - 2 Springs that will accommodate the range of engagements and power levels for nearly all riding situations. Factory engagement or higher engagement even with tunes running higher power (heavier weights).

- **Almond Spring** – This is a very similar spring as the sled came equipped from the factory. This will retain the moderate engagement RPM. It is a beehive shaped spring to promote durability.
- **Pink Spring** – This spring will maintain the engagement RPM when running extra clutch weight for higher boost tunes. It also can be used on a stock/lower boost tune and it will raise the engagement for more punch out of the hole. This may be helpful when trying to do technical riding like hop-overs and re-entries.

**Adjustable Weights** - We are using Venom Products Rooster Weights for the Boost clutch, designed, and manufactured by the same people who test, tune, and design Polaris factory clutch parts. They fit, work, and perform exactly as they should. No gimmicky claims, you can adjust the shift to work with your riding style or tuning. Fits P22 clutch only.

## **SETUP AND ADJUSTMENT OF CLUTCH WEIGHT ARMS**

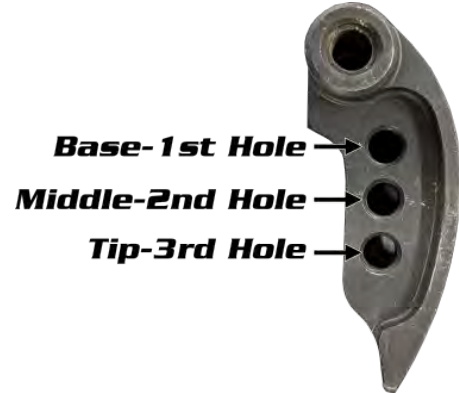
Setup of the clutch weight arms is a simple process and is easy to understand with just a few precautions to take when using and installing them.

### PRECAUTIONS:

- Always ensure that the weight arms have equal amounts of bolts/washers and the same colors and thickness. All the bolts should be in the same holes with respect to each other. Each arm's weight needs to be identical to prevent imbalance.
- It is OK to test a setup without thread locking compound on the bolts, but they should be removed and thread locking compound applied if the setup is going to continue to be used.
- As per the Venom installation guidelines, there is a maximum number of bolt/washer combinations that can be used. If the more are used then thread engagement may be insufficient, and/or the head of the bolt may contact the spider and do damage to weight, clutch, or engine.

Using the provided chart below, install the required bolts and washers to properly adjust the weight (mass) of the clutch weight arm. Based on your current power(boost) level.

- You can install the bolts/washers on either side of the arm.
- Ensure each weight arm is identical to the others.



**TUNING HELPS**

- While the weight arm is used to control engine rpm during shifting it is adjusted according to the amount the clutch is shifted – or in simpler terms, the area you need to adjust will be based on the approximate speed the sled is running. By thinking about the speed that needs to be adjusted you can easily adjust the engine RPM to run the correct RPM at that speed(MPH/Km/h).
  - **Base-1<sup>st</sup> Hole:** 0-20mph
  - **Middle-2<sup>nd</sup> Hole:** 20-35mph
  - **Tip-3<sup>rd</sup> Hole:** 35+ mph
- Higher rpm required = less weight in the desired speed area
- Lower rpm required = more weight in the desired speed area

**PROPER ENGINE OPERATING RPM all altitudes and conditions: 8250- 8400rpm**

This chart is subject to change as we determine new and better adjustments. Check back on the website periodically for updates.

<b>CLUTCH WEIGHT ADJUSTMENTS 6-10K ELEVATION</b>				
<b>74.7 BASE GRAM P22 BOOST CLUTCH</b>	<b>APPROX OVERALL WEIGHT</b>	<b>BASE 1ST HOLE</b>	<b>MIDDLE 2ND HOLE</b>	<b>TIP 3RD HOLE</b>
<b>STOCK</b>	<b>79.8g</b>	<b>EMPTY</b>	<b>GREEN FASTENER NO WASHERS</b>	<b>GREEN FASTENER NO WASHERS</b>
<b>+1 BOOST</b>	<b>80.3g</b>	<b>EMPTY</b>	<b>GREEN FASTENER 1 THIN WASHER</b>	<b>GREEN FASTENER NO WASHERS</b>
<b>+2 BOOST</b>	<b>81.3g</b>	<b>EMPTY</b>	<b>GREEN FASTENER 2 THIN WASHERS</b>	<b>GREEN FASTENER 1 THIN WASHER</b>
<b>+3 BOOST</b>	<b>82.2g</b>	<b>EMPTY</b>	<b>GREEN FASTENER 2 THIN WASHERS</b>	<b>RED FASTENER 1 THIN WASHER</b>