

# RPMS

## **Rpms - Peak rpms get lower as day goes on (summit)**

Question) (04 800 rev, 9000', dynamo Joe clutch kit) I have noticed (only in powder) as the day progresses that my peak RPM's get lower and lower and lower, I have dropped almost ALL pin weight (down to the last 1/8" weight in each pin) while I have it on clicker (5,6) this setup is great in the hard pack, but in powder while initially is great, but as the day goes on gets progressively lower and lower peak RPM???? what to do?

Answer) A clutch kit is what it is and the calibration of it does not change over the day unless the primary or secondary springs are sagged out.

An engine will change it's personality over the day due to ring "fatigue failure"...even over a 10 second run, an engine will lose it's hot compression values - RKT has mentioned this dozens of times on dootalk or snowest.

## **Rpms - Fluctuating up and down, clutch fitness?**

Usually system high temperature is from fluctuating rpms or worn bushings or high rpms or low rpms.

It would be an investment to know what kind of shape your secondary is in.

Can you get the diameter of the big bushing checked?

The bushing is at the wear limit at 89.15 millimeters or 3.510 inches.

On the primary clutch, visually inspect the coating of the 2 bushings for wear. Using a bore gauge, measure the inner diameter of the bushings - Measure point must be 5mm (1.4") from the bushing edge.

\*Spring Cover bushing - Replace bushing or cover if the inner diameter is a 30.40mm(1.197 in)

\*Sliding sheave bushing - Replace bushing if inner diameter is 40.30mm (1.587")

## **Rpms - RKT Piston drop in kit for trail sled.**

Question) Joe I have your 800 clutch kit in a stock engine. I am getting an RKT Piston drop in kit and now the engine will go from 7800 to 8400 rpms. Is there anything I can do to get your kit to work. Right now I'm using 25g in clicker 3 with the kit primary spring.

Answer) This is an easy change to do and the piston drop in is an excellent marriage to the clutch kit. You have a 230/350 primary spring and using 25g in clicker 3. All you have to do is change out the primary spring to a 230/380, reduce pinweight to 23g and change clicker up to 4. The engine will quickly accelerate to 8400 and hang on.

## **Rpms - RKT Piston drop in kit for summit.**

Question) Joe I have your 800 clutch kit with a stock engine. I am getting an RKT Piston drop in kit and now the engine will go from 7950 to 8400 rpms. Is there anything I can do to get your kit to work. Right now I'm using 17g in clicker 3 with the kit spring.

Answer) This is an easy change to do and the piston drop in is an excellent marriage to the clutch kit. You have a 160/320 primary spring and using 17g in clicker 3. All you have to do is change out the primary spring to a 160/350, maintain the 17g and go up to clicker 4. The engine will quickly accelerate to 8400 and hang on.

## Rpms -Low engine speed on track stand

**I. N. Quisitivetuner;** Yesterday I was playing around installing the flyweights. I run the sled on the stand and I couldn't figure out why it wouldn't pull more rpms.

Joe's 600 setup sheet said to run 24.5g and I can't get more than 7300. So I'm now down to 18g and it still won't rev past 7500 and clickers are on 4.

I think if it won't turn 8200 on a warm up stand, the engine won't turn 8200 ever. I mean, that's how I used to check my other sleds & it seems to work good.

### **Joe writes:**

The kit is not designed to provide correct rpms only having to rotate a 40 lb track.

...and if you were to try the kit on a track dyno it will still reveal a few less hp at the track than stock clutching. On a track dyno you are accelerating your track weight, plus the weight of the 150~250 lb inertia wheel.

The clutch kit is calibrated to provide correct rpms when:

1] The track is engaged with the ground

2] The sled is on snow

3] In winter months

and

4] Engine provides best power because...it's...cold...outside. [best relative air density for engine power]

**I. N. Quisitivetuner;** Well wouldn't it still pull 8200 rpm's in summer & it isn't that much especially when it has nothing to resist it.

### **Joe writes:**

Resistance will increase rpms.

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Add up the 4 points I mention above 1] + 2] + 3] = "Resistance" Add 4] in there with "engine has more power" and the rpms will further increase. **[increased engine load that increases exhaust pipe temperature to change the speed of the soundwave travelling inside the pipe]**

When you have resistance, the engine has no choice but to increase rpms, the resistance "Stalls the shift of the primary clutch"

One side of the secondary sees the ground and all of its possible loads - The other side of the secondary sees the push from the engine "primary clutch".

The secondary "Converts" power from the engine and applies it to the dynamic loads the calibration is "supposed to see". [everything you can think of including track weight]

The load from the ground will increase resistance in the secondary vs. the push from the primary = Will increase rpms.

**The "correct" load will allow heat to build up in the exhaust pipe to create a faster sound wave speed to allow the engine to speed up towards its correct engine speed.**

IF You are running 18g right now on the stand and cannot get over 7500,  
THEN take it off the stand and go for a ride across the grass right now  
RESULTS and you'll reveal high rpms "overrev" and lack of acceleration after like 50 feet.

Remember; Your kit was calibrated for bumps, snow loads-heavy/fluff, dips, hardpack, suspension part wear.

When you have your sled, suspended in the air, the bumps, snow loads...etc etc, don't exist - You are only accelerating a 40 lb track.

Here is another twister....Not enough flyweight will reveal pipe surge "the zoomies" where with engines that have higher compressions of around over 145 lbs, you'll never see correct rpms, only see low rpms from - pipe surge!

Some people will know the sound of "rah rah" or some people call it the "Rah rahs" You press the throttle to the bar and the engine loses 3~400 rpms.

The throttle is pulled back to 3/4 and observe the rpms are back at 8000. Push the throttle to the bar again, observe 7700, let off the throttle, 8000. WTH???

- That is the zoomies "pipe surge" from lack of flyweight.

My advice is to install the clutch kit as per the vendor setup sheet and then go test in the environment you will actually run in so that when you pin the throttle, you'll see 2 lengths bang, leaping right off the line and keep accelerating away to top end by about 5~6 lengths while you give the "Goodbye my people" hand wave.

The engine rpms follows your thumbtip when cycling the throttle; backshift is incredible. Tach needle pegs 8100 and stays there.

...because Resistance will increase rpms.

### **Addendum**

Back in the watercross days, my race partner Rocketman Rod, a friendly competitor Scooter McLean and I were walking through the pits. A fellow racer was revving his sled up on the stand. Scooter and Rod impressed by the sound; we stopped to watch and listen.

**Scooter)** "How come Roddy's and your sled dont sound like that Joe?"

**Roddy)** "YAH JOE...how come our sleds don't sound like that, HUH?"

I stood silent looking at them till I had both of their undivided attention, then pointed at Buddy's sled.

**Joe)** "BECAUSE WE BEAT THOSE GUYS, including YOU Scooter, and furthermore Mark Maki's mom says to us "You are the guys (Roddy and Me) that my son Mark worries about all the time"...

..She don't mention nuthin bout' you Scooter.

**Scooter)** you got me there

**Roddy)** Good comeback

The moral of the story is - **Running your sled on the track stand and considering the use of it to check clutching....to check engine speed at full throttle is a testing error which reveals a non-valid result!**