Do Not Use 520 Main Jets!

Take a close look at the new jetting charts from Polaris on their new XC 700 VES & XC 800 VES twins and you'll notice how the jetting specs jump from a 500 main jet to a 540 main jet. Then when you examine the jetting charts for the 2002 RMK 800 you notice recommended main jets at low elevations with an "N" behind the jet number. What's up? Maybe Polaris discovered something very peculiar when they performed jetting calibrations for these new engines; that a 520 Mikuni hex main jet flows less fuel than a 500 Mikuni hex main jet.

It appears that Polaris engineers, working with Mikuni, discovered that while the 500 main flows 453 grams of fuel per minute, the 520 Mikuni main jet only flowed 449 grams of fuel per minute; the numerically "larger" jet was actually leaner!

We've always believed the Mikuni hex jet numbering system to represent the area of the hole in the jet, and as such was an approximate representative of the flow. Evidently Mikuni uses a different numbering system when it comes to hex jets larger than the 500 size. The 520 main is an accidental "overlap" in the two numbering systems, with less fuel flow than the 500 main. We have all thought of the increase in fuel flow as being linear as jet sizes increase, but there is clearly a "hole" in this. One could reason that once the main jet size reaches a certain threshold (like 500) that something else (like the needle jet diameter) becomes more of the limiting factor, thus the change in jet size numbering to better maintain a linear fuel flow increase.

From what we can tell, the actual diameter of the 520 main is slightly smaller than the 500; a 5/64" drill bit fits tightly into 500 mains, but not into 520 mains! According to data provided by Polaris, the 520 main flows slightly less fuel than the 500 mains; it acts more like a "495" jet size. Therefore, installing a 520 main will make an engine operate leaner than a 500, and possibly cause piston seizure if installed in an attempt to provide more fuel than a 500 main jet.

Last year Polaris listed a part number (#3130150) for a 530 main jet size, but now for 2002 all jetting charts take you from a 500 main up to a 540 main, or they will specify a new jet size with an "N" designation. We suspect the 530 main didn't flow much more than the 500, thus the jump from a 500 to a 540.

To remedy this situation of non-linear fuel delivery at the upper end of the Mikuni main jet numbering system, Mikuni has assigned new jet numbering designations to main jet sizes above 500. The new jet sizes are selected based on a more linear progression of fuel flow. The new 510N jet (Polaris part #3131400) is actually an "old" 540 main. The new 520N (#3131401) provides fuel flow equal to a 560, the 530N (#3131402) is equal to a 600, the 540N (#3131408) is a 620, 550N (#3131409) is a 660 and the 560N (#3131410) is a 700.
It is very important to realize the difference in jet sizes with and without the "N" designation! For example, there is a huge fuel flow difference between a 560N and a 560 main jet. DO NOT substitute a non-N jet where an N-jet is specified!

Main Jet	Equivalent	Fuel Flow G/Min
400	---	352
420	---	372
440	---	392
460	---	410
480	---	430
500	---	453
510N	540	466
520N	560	481
530N	600	491
540N	620	515
550N	660	538
560N	700	572

Some tuners may have discovered this strange occurrence last season with the limited build XC 700 SP and very limited EDGE RMK models. New 2002 XC 700s, 700 Classics, XC 800s and RMK 800s will all require jetting changes that are affected by this information when operated at low elevations and in temperatures below zero. Curiously, 2002 SKS 700 and RMK 700 models do not spec as big of mains as the XC 700.

Ski-Doo also makes mention of the new jet size designations in a recent service publication, so this information applies to all Mikuni carbs that use hex main jets over the 500 size.