Frequently Asked Questions About Polaris Sleds

What is the difference between the various XLTs, XCRs, and XCs?

To try and clear up the confusion in identifying which Xtra Lite Triple monoblock is being discussed, the following reference table should help. I've also included the later model XCR which had the case reed triple with individual cylinders and triple pipes as well. This table is for reference only.

YEAR	MODEL	CHASSIS	DISPLMNT	INTAKE-TYPE	EXHAUST	CARBS	EST. HP	SUSPENSION FR/REAR
1993	XLT & XLT-SP	Wedge	580cc	Piston Port	3 into 1	34mm roundslide	88	Std 7"/ITS 8"
1994	XLT & XLT-SP	Wedge	580cc	Piston Port	3 into 1	34mm roundslide	88	Std 7"/XC-100 8"
1995	XLT	Wedge	597cc	Piston Port	3 into 1	34mm roundslide	90	Std 7"/XC-100 8"
1995	XLT-SP	Wedge	597cc	Piston Port	3 into 1	34mm roundslide	90	Xtra-12/Xtra-12
1995	XCR-600	Wedge	597cc	Piston Port	3 into 1	38mm roundslide	92	Std 7"/XC-101 8"
1996	XLT	Wedge	597cc	Piston Port	3 into 1	34mm roundslide	90	Xtra-12/Xtra-12
1996	XLT-SP	Wedge	597cc	Piston Port	3 into 1	38mm roundslide	92	Xtra-12/Xtra-12
1996	XCR-600	Wedge	597cc	Piston Port	3 into 1	38mm roundslide	92	Std 7"/Xtra-10
1996	XCR-600 SP	Aggressive	600cc	Case Reed	3 into 3	38mm roundslide	116	Std 7"/Xtra-10
1997	XLT	Wedge	597cc	Piston Port	3 into 1	34mm roundslide	90	Xtra-10/Xtra-10
1997	XLT-SP	Wedge	597cc	Piston Port	3 into 1	38mm roundslide	97	Xtra-12/Xtra-12
1997	XLT-LTD	Evolved	597cc	Piston Port	3 into 1	34mm roundslide	90	Xtra-12/Xtra-12
1997	XLT-LTD-SP	Evolved	597cc	Piston Port	3 into 1	38mm roundslide	97	Xtra-12/Xtra-12
1997	XC-600	Wedge	597cc	Piston Port	3 into 1	38mm roundslide	97	Xtra-10/Xtra-10
1997	XCR-600	Aggressive	600cc	Case Reed	3 into 3	38mm	116	Xtra-10/Xtra-

	& SE					roundslide		10
1998	XLT-LTD	Evolved	597cc	Piston Port	3 into 1	34mm roundslide	90	Xtra-12/Xtra-12
1998	XLT-SP	Aggressive	597cc	Piston Port	3 into 1	38mm roundslide	97	Xtra-10/Xtra-10
1998	XCR-600	Aggressive	600cc	Case Reed	3 into 3	38mm roundslide	116	Xtra-10/Xtra-10
1999	XLT-SP	Aggressive	597cc	Piston Port	3 into 1	38mm flatslide	100	Xtra-10/Xtra-10
2000	Triumph	Gen II	597cc	Piston Port	3 into 1	38mm flatslide	100	Xtra-10/Xtra-10

Which year XCR/XLT had bad cranks?

There is much confusion about which model monoblock had problems and which ones to stay away from. In my extensive experience with these engines and having replaced or help replace over 100 of these cranks, I believe that my analysis of the problem engines is very accurate. However, this does not mean that any particular crank cannot fail, it merely highlights the ones that are most likely to fail.

1995 XCR-600*
Problem engines were mostly late build units and most had been running aftermarket triple pipes as well.

1996 XCR-600*
Almost every single ’96 XCR-600 I encountered spit its crank before 1500 miles, often around 900 miles. There was also a secondary issue with these sleds as well, many suffered piston failures when the casting around the piston pin area would crack away and allow the pin to work out. On almost every crank job I did I also replaced the pistons as well and made sure the PTO oiling hole was enlarged to match the center hole. Once the updated cranks were available through Polaris, I don’t recall having any second time failures when properly repaired.

1996 XLT-SP*
Same as the above XCR-600, 90% of the XLT-SPs I ever saw had a crank failure. The piston problem was not usually associated with these sleds.

1997 XC-600*
Most early build ’97 High Output monoblocks used the same engine as the ‘96s and suffered the same crank failures. However by mid production run, Polaris had released the new –04 block with a beefed up crank, revised cases, 4 line oil pump with direct PTO bearing feed, and double row PTO bearing. These new units proved to be quite durable and problem free. The -04 engine also included high compression heads that were a cast version of the SLP billet heads from the previous season.

1997 XLT-SP*
Nearly all '97s I worked on had the older –03 engine in them and suffered the same crank failures. Late production units got the new –04 engine which fixed the problem.

The 1993/94 580cc monoblocks were extremely reliable and had very few crank failures. Most other Xtra Lite Triples were quite durable as well, unless noted above. Once properly fixed, there was no reason to worry about a repeat failure and those units I have heard of that had many repeat failures I suspect were not ever fixed properly and didn't address the PTO oiling situation properly.

*Please refer to the above table to properly identify each model noted here.

How do I properly fix a XLT crank?

As with any 2 stroke crank, high quality bearings and proper assembly are critical to long crank life. Taking the cheap route is not a good idea when repairing a crank and it is well worth the money to have a reputable machinist repair the crank for you or simply buy a new one if you can.

Once you have a good crank to put back in, make sure the cases are good and cleaned. Debur any damage inside the cases, make sure the mating surfaces are flat and clean, and use Loctite® 515/518 to seal the halves back together. Most importantly drill out the PTO oiling hole and slightly chamfer the edges to allow more oil down to the PTO bearing. It is quite obvious that the oiling hole is restricted from the factory casting process and this is usually the main factor in bearing failure. You may want to slightly increase the oil pump setting as well and make sure to run a high quality oil like Injex®. Follow the Polaris shop manual for proper torque specs and take your time. When properly done, your newly refurbed lower end should last a long time with 7 or 8 thousand miles being well within reason.

Another option is to have the crank and cases updated to the –04 spec. Pete Nydahl [262-857-7078] not only does an excellent job of refurbing XLT cranks he also offers a case mod which allows you to use the double row PTO bearing and external oiler as well. This would be a very good and cost effective modification for those that run their sleds in extreme situations or do a lot of drag racing.

Can I run pipes reliably on my XLT engine?

Simply put, yes. But as with any performance modification, the chances of having an engine failure do increase and the outright life span on the engine will likely be shortened. Exactly how much is the real question and only time will tell, it may be a 10% reduction and it might be worse. There are hundreds of XLTs running around today with aftermarket triple pipes on them with thousands of miles on them as well. Having pipes does require a fair amount of hands on work by the rider and is not recommended for those that simply like to pull and go.

The key to long life with pipes on any XLT includes the following: use a high quality set of pipes, follow the pipe manufacturers setup recommendations, make sure your sled has a good crank in it [see above topic], install high quality EGT gauges and monitor them closely, use high quality fuel and oil, limit your mods to bolt-ons as major porting severely shortens the life of the XLT, and keep it tuned a bit on the conservative side. I currently ride with a friend and his 1995 XLT-SP has been running SLP pipes since it was brand new and now has over 6000 trouble free miles on it, the last couple thousand also included SLP billet heads as well.

The Xtra Lite Triple was never designed to turn 9200 rpms and push out over 110 horsepower, which is why bolt on mods are all it can handle. A big factor in many piped and built up XLT failures is excessive heat. Removing the hood screens or adding a nosecone radiator is a good idea if you plan to really try and push the XLT to its limits. But adding simple bolt on mods is an easy and basically reliable way to get more power from this old faithful lump.

Which pipes should your run? Having had experience with several brands on XLTs, XCRs, and other Polaris sleds, I can honestly say that SLP is about the best there is. They have always produced a high quality product, have competitive prices, their tech support has never let me down, and the horsepower is always right there with broad and tractable power bands. Their current low noise pipes are among the quietest around and this proactive approach helps the sport continue to improve its image among the non sledding public. You may find another brand that has worked out for others, but none of them have given me the long term satisfaction of SLP.

Should I weld my XLT crank?

First off, what is welding a crank? This process refers to the actual welding of the pins that hold the pieces of the crank together. As with most 2 stroke cranks, the XLT crank is pressed together with large pins. If any of the pins slip, the crank will then be out of index and can cause a simple poor running condition if the slip is minor to a major piston to head contact if the slip is major. By welding the pin [most shops only weld the PTO pin as this is the point of most stress] in place, any chance of slipping is mostly eliminated.

However, when the crank is welded solid like this, any excessive force or twisting is transferred up to the rods, pistons,etc. and when a welded crank fails, the resulting damage is unbelievable. Instead of the usual slight out of index or even PTO side damage, welded cranks that fail take out the cranks, rods, case, cylinders, and usually just make the complete engine scrap. Unless you are drag racing your sled every weekend or run deep powder and jump it off cliffs all the time, I would not weld up an XLT crank. Most trail-run sleds that twist the crank because of pipes will usually only slightly un-index the PTO end and will not cause major damage. It's a chance that I would take as there is no clear reason to weld it up for the average rider.

How can I get my 1996-1998 XCR-600 triple triple (Aggressive chassis) to run right?

I spent 3 years with these sleds and it was definitely a love/hate relationship. I loved it when it ran right, but hated it most of the time. From the beginning this sled was one big compromise after another. Built as a parts bin special to compete against the Formula III-600 Skidoo and ZRT-600 Cat, the XCR-600 was never quite right and required a lot of constant attention to run properly on the trail. Based on the case reed Ultra 680 lower end with smaller cylinders, triple pipes from the Storm, and dropped in the good looking but extremely heavy Aggressive chassis, low end or trail power was never this sleds cup of tea- at least it didn't lack too much in the top end department.

The 1996 XCR-600 SP was the worst of the bunch. Poor carb calibration, lousy clutching, and cdi/timing issues plagued this sled from the get-go. Jetted way fat and with very conservative clutching, out of the box setup left the new XCR staring at the taillights of any ZRT or Formula III it ran up against. The problems only got worse when the sled was ridden on the trail in the 5000-6300 rpm range, or about normal trail speeds. When fully broken in and warmed up, it would pull hard at WFO, but fell on its face anywhere else, peaky powerband was an understatement to say the least. 1997 brought revised jetting, clutching, and a new CDI which helped the out of box setup, but it was still far from perfect. 1998 was the final year of production and

saw only decal changes from the year before. While it was the best of the bunch, Polaris left far too much on the table with this sled and they never could match the all around performance of the Skidoo or Cat. The new domestic twins, specifically the XC-700, easily surpassed the XCR-600 in every performance category and required far less tuning as well.

I ran a '96, '97 SE, and '98 model XCR-600 and helped tune dozens of others. The following specs [based on Midwest riding under 2000' with temps above 0 F] work well for the average trail rider, can be purchased at any Polaris dealer and make this sled an almost enjoyable snowmobile. It won't be perfect, but at least Indy 500s won't leave you down a trail!

Main jet: 340P-360C-360M
Pilot jet: #45 with the air bypass drilled out on '96 models*
Slide: 2.5 or 3.0
Timing: Full retard or run the 1997/1998 cdi module
Airbox: can be gutted in warmer weather
Drive clutch: Polaris almond/gold or Goodwin's black spring [keep engagement at least 4800 or more] 10-58 weights lightened to ~57g and heeled. This works well for riders around 180 lbs and should be changed accordingly to get rpm to 8300.
Driven clutch: Polaris silver secondary with a R-3 helix in the #2 hole.
Rear suspension: Move RRSS block to back hole ['96 models will need to be drilled out] and adjust limiters to at least ½" thread showing. 1996 models came with the lightest torsion springs and most people will need to upgrade to heavier springs.
Exhaust: Dynoport silencer
Gearing: -1 on top gear
Intake: Carbon Tech reeds with Fett Brothers reed spacers.

Misc: Hot Seat billet heads, HTG pipes, and big bore piston kits also work extremely well.

Also, there were about 15 factory updates that needed to be done to the '96s, make sure all of them have been done as well.

What makes Polaris the best and why do I stick with them?

An endlessly debatable question for sure, but one that can be answered when approached logically, in my opinion. Although all 4 current manufacturers are now making very good snowmobiles, this was not always the case and as recently as the late 1990s, Polaris still had about the only complete lineup with high technology and design on every sled from 340cc fan cooled entry sleds to 800cc lake runners. The increased competition has been good for the industry though, and fit, finish, quality, and durability have taken great strides for all makers. But over the past 20+ years, Polaris has consistently produced good looking, reliable, highly capable, and cost effective sleds. You can hardly run down a trail without seeing such classic sleds as the Indy Trail, Indy 500, or Indy XLT.

More than any other manufacturer, Polaris has perfected the modular platform, beginning with the very first Indy in 1980. Not only did these first Indy's use state of the art assembly techniques, but also lightweight all aluminum tunnels, aluminum bulkheads, all rubber tracks, reliable liquid cooled engines, consistant clutching, and easy to work on suspensions. What's more, platform changes were stable over the years with parts interchangeability second to none. You could take a trailing arm from a 1992 Indy 440 and retrofit it to a 1984

Indy 400 or easily take the hood from a 1993 XLT and use it on your 1988 Indy 650. Need a new clutch, no problem as most interchanged as well. Parts are always available and you can find a Polaris dealer almost anywhere you travel in the USA as well. Consistent performance was also a Polaris trademark. Super reliable engines like the 488cc Indy Trail still are running around today and mated to the super efficient P-85 clutch system would take its average power output and propel it to the front of the pack every time. Rear suspension design was simple yet effective and stone reliable as well, not to mention easy to pull in/out. Add to this the classic look of the Wedge chassis and it's not hard to see why Polaris jumped on top and has stayed there for over 10 years. Rotax may have had the more powerful engines, Yamaha liked to sell fit/finish/quality, and Cat was just trying to regroup and changed their platform almost every year until the mid 1990s. Unless you are buying a new or almost new sled, Polaris is the clear choice in the used market with many good choices even as old as the mid 1980s.

Some people are brand loyal for no real reason other than tradition, some ride the brand that happens to be close to them. I ride Polaris because their products are always built well [on the whole], look great [gotta LOVE that Edge], make very good power, have easily tunable clutches, are easy to service, are easy to find parts for, often cost less than competing products, and just plain make sense.

SLP's toughboy bearing kit fixes this problem.

I think alot of people buy the newer xlt oil pumps with the 4th oil line coming off of it and tap it into the pto bearing side. Basically the same thing as newer XLT engines. Basically to fix it you need to run a oil line to it.

Also pre 97' motors had a smaller PTO oiling hole, so you can drill it out and get more oil flow through there. Many will say it's a casting flaw, but I'm pretty convinced that Polaris designed the cases like that. Use a synthetic oil, this will help the bearings longevity. Also the size of the bearing compared to other Polaris triples is staggering. The XLT/XCR didn't have a double row bearing until the Triumph motors.