

SkiDoo Etec 800 Y pipe testing, phase 3

Here are two more Y pipes—another Crankshop Y pipe made to accommodate the stock donut gasket, and D&D's "large donut" Y pipe. The large donut accommodates a slightly larger Y pipe outlet tube.

On this day we would use DTR member/ trail rider/ asphalt racer Chad Andolina's broken in 2016 Etec 800, with 600+ miles on it. And once again Jim Cooper of Cooper's Sales and SERVICE in Waterport, NY assisted us with his BUDS computer, to monitor engine temperatures and functions. Jim had set this ECU at +2 degrees when he sold it to Chad this year. As we did in Phase 2, this Chad recorded coolant/ exhaust temperatures for each of the three back to back dyno tests (unlike Polaris and Arctic Cat—both of whom monitor pipe center section temperature—SkiDoo measures their exhaust temperature in the muffler) as well as noting any time Jim noticed valves drop slightly from fully open. The one piece of info notably absent from the BUDS monitor is ignition timing. Polaris and Arctic Cat computer monitoring systems allow you to see degrees of timing as engine runs on the dyno, and any reduction in timing in response to light or severe deto which is useful when dyno tuning for maximum horsepower.

This broken in 2016 Etec 800 was more powerful than the broken in 2015 Etec 800 we used in Phase 2, but nearly identical to the broken in 2015 Etec 800, results posted in a DTR article on 2/17/2015. This 2016 made 164.5 hp with 108.4 lb/ft, and the broken in 2015 we tested last February made 164.2 hp with 108.2 lb/ft. Can't get much closer than that! Some whine that the DTR SuperFlow dyno is too stingy, and others whine that it's too optimistic. But one thing that I guarantee is that it's calibrated accurately within a few tenths of a pound-foot, in 10 lb increments of from 10 lb/ft to 500 lb/ft, and has been the same for *every* engine tested here for nearly 30 years—just testing, tuning, and doing accurate third party dyno evaluations for consumers, the aftermarket, AmSnow magazine, and for OEMs. As a result, few will dispute the fact that DTR is the snowmobile industry standard for measuring engine output. If you bring an engine here, then retest the same engine five years later the results will be identical. It is what it is!

But what about Chad Giesler's 2015 broken in Etec 800 used in Phase 2? Since it's said that the 2015 and 2016 Etec 800s have identical engine and ECU tuning, we would think that HP would be more similar than it was. Could it be the fact that the 2015 was run with non-Bombardier oil all its life, and the 2016 was run with Bombardier oil since day one? Remember, of the nine 2015 Polaris Axys' tested here, the five highest HP sleds used Polaris oil, and the four lowest HP used non-Polaris oil. It's just something to think about!

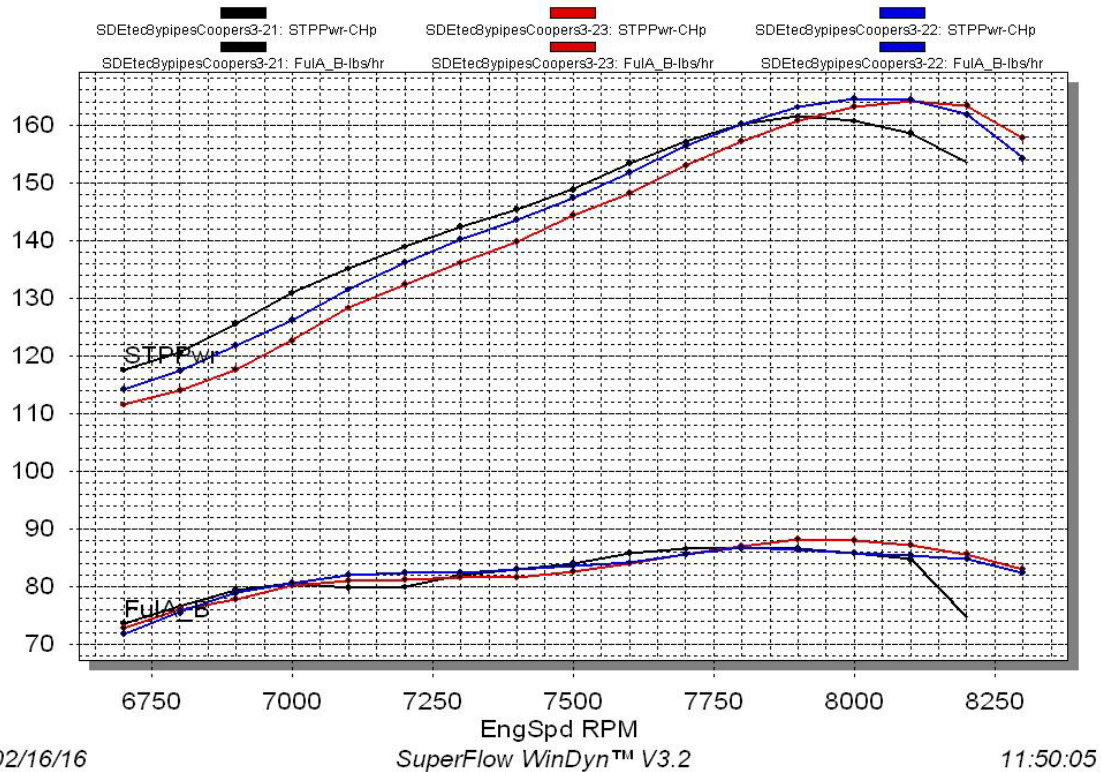
On this day, we had sporadic issues with the SuperFlow airflow turbine cable, and we had no mechanical airflow readings with the stock baseline. But we have computed airflow LM1air (based upon measured fuel flow and wideband A/F ratio) which is not perfect on direct injected engines, but consistent. And since we notice that the pesky exhaust valves were partly closed on Crankshop stock donut Y pipe's third run, we will show each Y pipe's best test. These Etecs work in mysterious ways.

2016 Etec 800 stock Y pipe, test two

EngSpd RPM	STPPwr CHp	STPTRq Clb-ft	BSFA_B lb/hph	FulA_B lbs/hr	LamAF1 Ratio	LM1Air SCFM	AirInT degF	FulPrA psig
6700	114.3	89.6	0.624	71.9	14.37	216	25.3	46.6
6800	117.4	90.6	0.639	75.6	14.05	222	25.4	46.6
6900	121.8	92.7	0.643	79.0	13.77	228	25.4	46.6
7000	126.1	94.6	0.634	80.6	13.59	230	25.5	46.5
7100	131.5	97.3	0.620	82.1	13.52	233	25.6	46.5
7200	136.2	99.4	0.601	82.5	13.54	234	25.7	46.4
7300	140.1	100.8	0.584	82.5	13.67	236	25.8	46.4
7400	143.6	101.9	0.574	83.0	13.80	240	25.7	46.5
7500	147.3	103.1	0.564	83.7	13.86	243	25.6	46.6
7600	151.8	104.9	0.550	84.2	13.81	244	25.5	46.7
7700	156.3	106.6	0.544	85.7	13.72	246	25.4	46.7
7800	160.2	107.9	0.537	86.8	13.66	248	25.4	46.8
7900	163.0	108.4	0.525	86.4	13.73	248	25.3	46.9
8000	164.5	108.0	0.517	85.8	13.92	250	25.2	47.0
8100	164.3	106.5	0.516	85.5	13.98	250	25.2	46.9
8200	161.8	103.7	0.520	84.9	13.97	248	25.2	46.8
8300	154.2	97.6	0.530	82.4	14.07	243	25.1	46.7

Three back to back dyno tests, Stock Ypipe

Coolant 101-137, Exhaust 590-1050

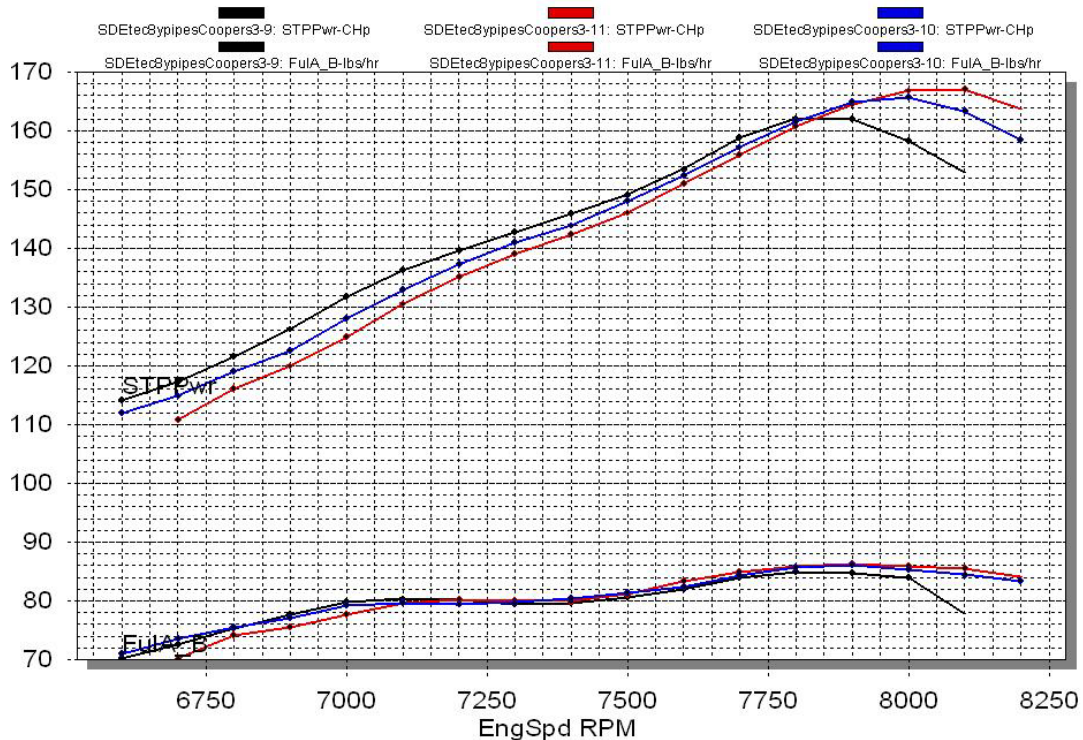


D&D large donut Y pipe, test three

EngSpd RPM	STPPwr CHp	STPTRq Clb-ft	BSFA_B lb/hph	FulA_B lbs/hr	LamAF1 Ratio	LM1Air SCFM	FuelA lbs/hr	FuelB lbs/hr
6700	110.9	86.9	0.631	70.1	14.49	215	168.1	98.0
6800	116.1	89.6	0.637	74.1	14.13	222	171.7	97.6
6900	119.9	91.3	0.629	75.5	14.00	224	172.6	97.0
7000	125.0	93.8	0.621	77.7	13.81	227	174.3	96.6
7100	130.5	96.5	0.608	79.5	13.66	230	175.5	96.0
7200	135.0	98.5	0.593	80.3	13.70	233	176.0	95.7
7300	139.1	100.1	0.574	80.0	13.84	234	176.2	96.2
7400	142.4	101.1	0.560	79.9	13.98	236	176.1	96.2
7500	146.0	102.2	0.554	81.1	14.08	241	176.1	95.1
7600	150.9	104.3	0.551	83.3	14.13	249	177.9	94.6
7700	155.9	106.3	0.543	84.8	14.10	253	180.6	95.8
7800	160.8	108.2	0.532	85.8	14.08	255	182.1	96.3
7900	164.6	109.4	0.523	86.3	14.08	257	183.3	97.0
8000	166.8	109.5	0.514	85.9	14.15	259	184.6	98.7
8100	167.0	108.3	0.510	85.5	14.29	260	184.5	99.0
8200	163.7	104.8	0.512	84.0	14.39	256	183.9	99.9

D&D Big Donut Y Pipe

coolant 94-130F, exhaust 600-1030F



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SuperFlow WinDyn™ V3.2

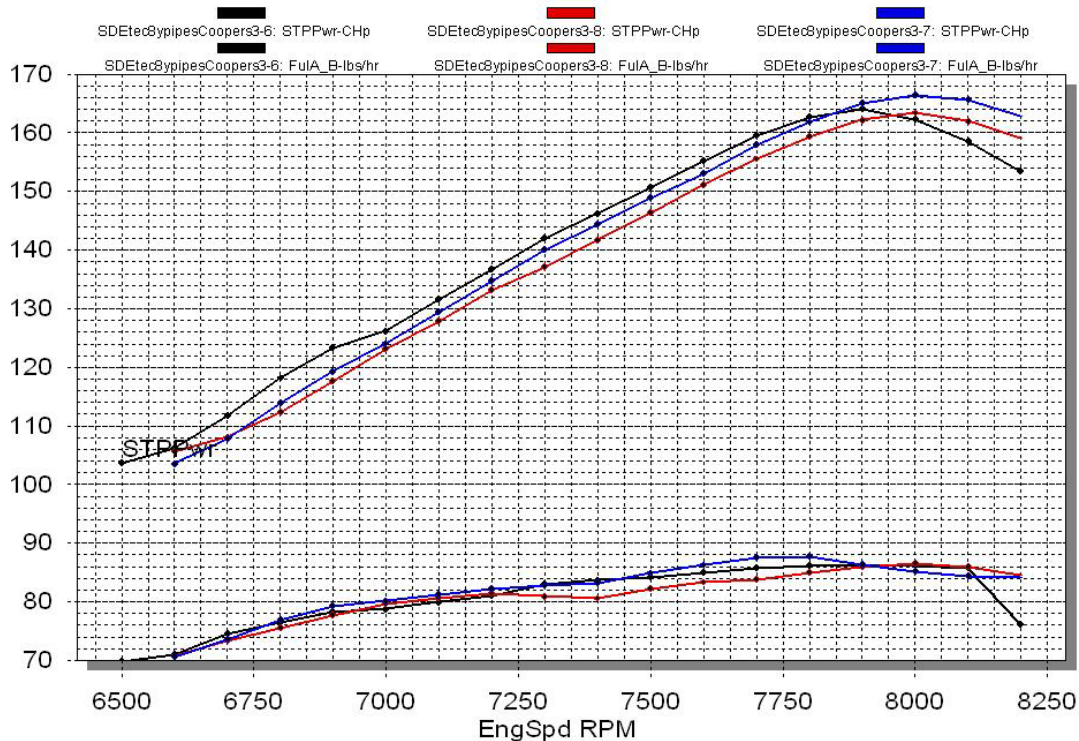
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Crankshop stock donut Y pipe, test two

EngSpd RPM	STPPwr CHp	STPTrq Clb-ft	BSFA_B lb/hph	FulA_B lbs/hr	LamAF1 Ratio	LM1Air SCFM	DenAlt Feet	STPCor Factor
6600	103.5	82.4	0.672	70.6	14.68	214	-2019	0.987
6700	107.8	84.5	0.672	73.5	14.52	221	-2016	0.987
6800	113.9	88.0	0.665	76.8	14.13	225	-2012	0.987
6900	119.3	90.8	0.655	79.2	13.86	227	-2010	0.987
7000	124.0	93.1	0.637	80.1	13.70	227	-2007	0.988
7100	129.5	95.8	0.618	81.2	13.62	229	-2002	0.988
7200	134.8	98.3	0.602	82.3	13.62	232	-1999	0.988
7300	140.1	100.8	0.582	82.7	13.73	235	-1999	0.988
7400	144.4	102.5	0.568	83.1	13.82	238	-2001	0.988
7500	148.9	104.3	0.562	84.9	13.84	243	-2000	0.988
7600	153.0	105.7	0.556	86.3	13.78	246	-2000	0.988
7700	157.9	107.7	0.546	87.4	13.70	250	-1998	0.988
7800	161.8	109.0	0.534	87.6	13.71	251	-1997	0.988
7900	165.0	109.7	0.516	86.3	13.85	252	-1995	0.988
8000	166.4	109.2	0.505	85.2	13.98	257	-1995	0.988
8100	165.7	107.4	0.502	84.4	14.05	256	-1993	0.988
8200	162.8	104.3	0.509	84.1	14.08	255	-1988	0.988

Crankshop Stock Donut Y Pipe (run 3 ex valves not 100%)

coolant 98-140F, exhaust 650-990F



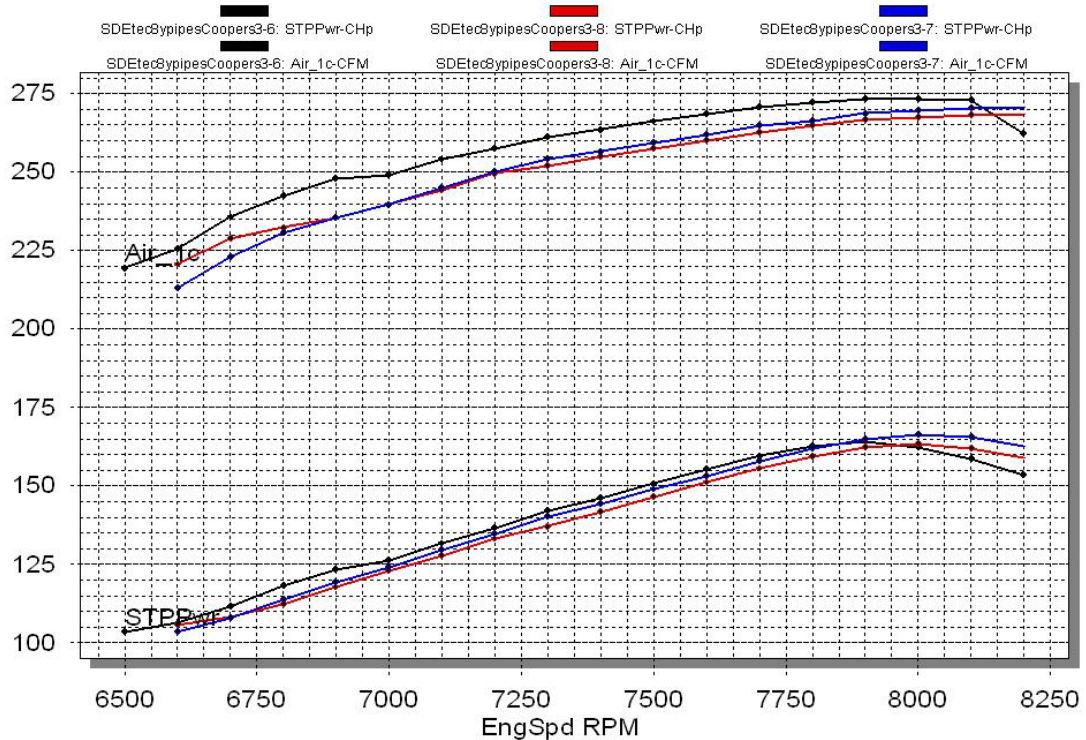
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SuperFlow WinDyn™ V3.2

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Crankshop Y pipe, effect of ex valves controlling airflow

note the airflow drop at 7200 on the 3rd (red) test



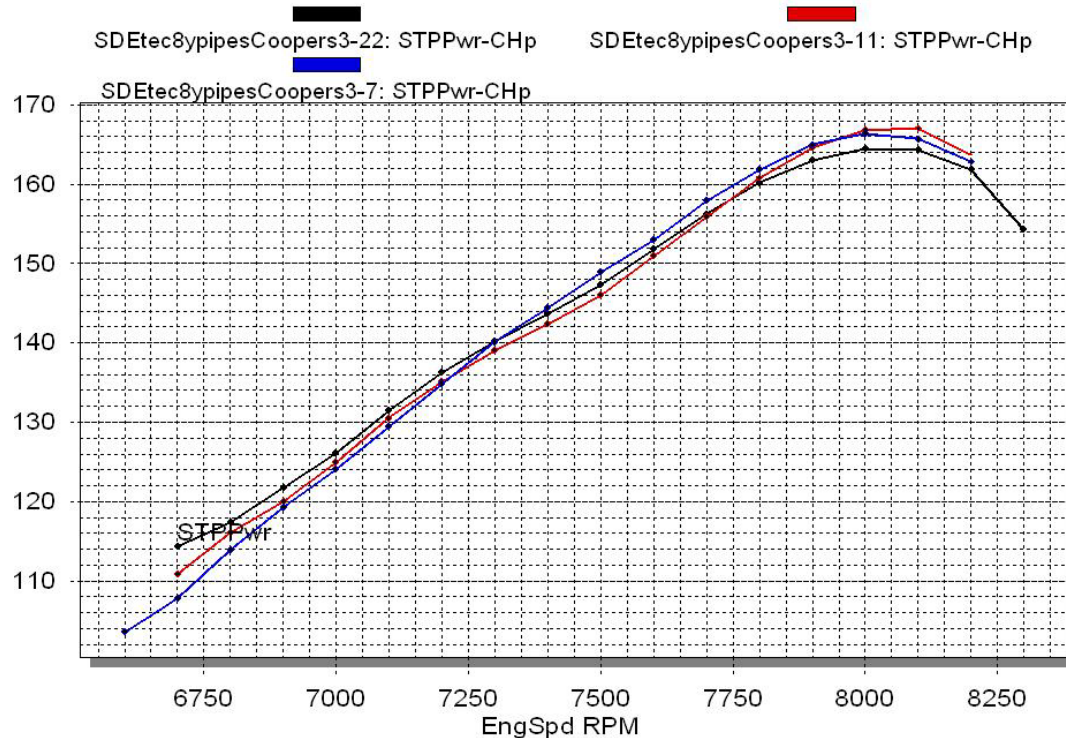
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SuperFlow WinDyn™ V3.2

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compare Y pipes, best run

black stock, blue Crankshop stock donut, red D&D large donut



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SuperFlow WinDyn™ V3.2

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