

2007 Arctic Cat F1000 “trail ported” by D&D, with D&D Y pipe, D&D single pipe and D&D muffler

Here is our first “trail mod” F1000 brought to DTR for evaluation by Dale Roes and Scooter from D&D.

According to Dale their best combination for pump gas is as follows:

- *stock compression ratio
- *modified ports/ port timing
- *8 petal Vforce reeds (not 6!!) with inserts that match throttle body boot I.D.
- *D&D Y pipe with spacer kit that extends pipe flange donut about .25".
- *2 degree offset key
- *Boondocker EFI controller is a must to add sufficient fuel for these combinations.

We’ve included three dyno tests for examination. All three tests utilize the D&D Y pipe with the aforementioned donut spacer kit to increase torque and HP.

The stock single pipe/ stock muffler is shown here for those who ride in areas where the police lift hoods and write tickets for anything other than stock (Dale told me they are stamping aluminum heat shields to make their single pipe look like stock). Note that the stock pipe reduces airflow compared to the D&D single—since the EFI delivers constant fuel flow, the A/F ratio with the stock pipe and muffler is richer than the A/F ratio with D&D pipe and D&D muffler. BSFC on these runs are shown lower than .60 lb/hphr, but these are all 93 octane pump gas at WOT for 15-20 seconds with hot coolant. Twin plugs per cylinder may be a deterrent to detonation; the most powerful modified air cooled Porsche 911 turbos have twin plug heads, reducing the degrees of ignition timing needed to create max torque. Less combustion time = less heat transferred into combustion chamber surfaces = less heat transferred into incoming compressed charge air = less chance of deto

The D&D single pipe raises revs to a more reasonable level, maintains torque and adds 9 HP over the stock pipe. Note that as revs climb, fuel flow drops a bit so the higher revving D&D single pipe benefits a bit from reduced fuel flow.

The D&D muffler is just that—a muffler not a “can”. This is the first time an aftermarket muffler (or can) tested here at DTR has matched the dB of a stock muffler, increased airflow and increased HP. On my dB meter in the dyno room, both the stock and D&D muffler registered a max of 90 dB. Today, quiet with good HP is fashionable and necessary to avoid tickets and eventual trail closures. Here’s additional proof that HP and dB are not necessarily directly proportional. Note that midrange HP is higher with the D&D muffler due to higher airflow and cooler tuned pipe center section temp.

The low RPM data shown here is lower than what we would see during field acceleration. In the field, whacking the throttle to WOT opens the exhaust valves instantly. On the dyno, with

gradual acceleration rate the computer causes the valves to stay closed until just over 6500 rpm, and HP jumps thus the big step-up in the HP curve there.

D&D
trailport
F1000,
D&Dypipe,
stock pipe
and stock
muffler

EngSpd RPM	STPTrq Clb-ft	STPPwr CHp	AirTmp degF	Fuel A lb/hr	A/FA-B Ratio	Air1+2 scfm	BSFC lb/hph	TsTim2 second
5500	107.4	112.5	61	59.8	13.77	180	0.573	0
5600	107.9	115.1	61	60.4	13.69	181	0.566	0.5
5700	109.3	118.7	60	61.1	13.68	182	0.553	1.2
5800	110.6	122.1	61	61.6	13.65	184	0.543	1.9
5900	111.2	125.1	59	61.4	13.85	186	0.528	2.5
6000	110.6	126.4	59	61.1	14.11	188	0.519	3.3
6100	110.7	128.6	60	61.1	14.24	190	0.511	3.9
6200	113.4	133.8	61	63.9	13.79	192	0.515	4.6
6300	114.2	137.1	61	66.4	13.38	194	0.522	4.9
6400	114.8	139.9	61	66.8	13.35	195	0.515	5.1
6500	115.7	143.1	61	67.3	13.29	195	0.507	5.2
6600	116.8	146.8	61	67.8	13.28	197	0.498	5.2
6700	120.8	154.2	60	70.8	12.99	201	0.494	5.3
6800	144.2	186.7	59	105.6	10.71	247	0.607	8.4
6900	145.6	191.3	61	108.9	10.48	249	0.613	9.1
7000	146.3	195.1	61	108.7	10.59	251	0.611	9.6
7100	146.7	198.3	61	109.6	10.61	254	0.595	10.3
7200	146.2	200.4	61	108.2	10.91	258	0.581	11.1
7300	144.1	200.3	62	108.1	11.03	260	0.582	11.9
7400	138.6	195.3	60	106.3	11.31	263	0.586	12.9
7500	132.8	189.6	60	105.1	11.42	262	0.596	13.8

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EngSpd RPM	STPTrq Clb-ft	STPPwr CHp	AirTmp degF	Fuel A lb/hr	A/FA-B Ratio	Air1+2 scfm	BSFC lb/hph	FuelIP psig
5500	103.3	108.1	59	59.1	13.62	175	0.586	41.5
5600	103.6	110.5	59	59.1	13.69	176	0.574	41.6
5700	105.4	114.4	58	60.4	13.44	177	0.567	41.5
5800	106.8	117.5	58	61.1	13.34	178	0.558	41.5
5900	108.8	122.3	58	61.6	13.42	181	0.541	41.7
6000	109.8	125.4	58	62.2	13.44	183	0.532	41.6

6100	110.1	127.9	59	63.1	13.33	184	0.531	41.5
6200	111.1	131.2	59	64.7	13.17	186	0.531	41.1
6300	111.2	133.4	59	65.3	13.21	188	0.526	41.5
6400	111.8	136.2	59	65.5	13.29	190	0.517	41.4
6500	112.2	138.9	58	65.9	13.28	191	0.511	41.4
6600	114.6	144.1	58	68.1	13.06	194	0.508	41.3
6700	130.6	166.7	58	102.8	10.41	234	0.662	40.9
6800	133.1	172.2	59	106.8	10.32	241	0.666	40.9
6900	132.4	174.1	59	107.7	10.28	242	0.665	40.8
7000	134.8	179.6	59	110.1	10.25	246	0.658	40.8
7100	135.5	183.2	59	113.7	10.07	250	0.666	40.8
7200	136.2	186.7	59	114.4	10.13	253	0.658	40.8
7300	137.8	191.5	59	113.1	10.51	259	0.634	40.8
7400	138.1	194.4	58	113.4	10.55	261	0.626	40.7
7500	140.5	200.6	58	111.2	10.89	265	0.595	40.8
7600	143.4	207.5	59	106.9	11.53	269	0.553	40.9
7700	142.6	209.1	59	108.1	11.46	270	0.555	40.9
7800	141.2	209.7	59	107.6	11.56	272	0.551	40.9
7900	138.5	208.3	59	106.1	11.74	272	0.547	40.9

D&D Trail
port
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EngSpd RPM	STPTrq Clb-ft	STPPwr CHp	BSFC lb/hph	Fuel A lb/hr	A/FA-B Ratio	Air1+2 scfm	TsTim2 second	FuelP psig	BaroP in/Hg
5500	109.1	114.2	0.637	67.8	12.03	178	0	41.5	28.72
5600	109.8	117.1	0.618	67.5	12.25	181	0.7	41.5	28.72
5700	110.7	120.1	0.608	68.1	12.21	182	1.2	41.5	28.72
5800	112.1	123.7	0.567	65.3	12.81	183	2.2	41.5	28.72
5900	112.1	125.8	0.555	65.1	12.85	182	2.5	41.5	28.72
6000	113.7	129.9	0.555	67.1	12.58	184	3.4	41.5	28.72
6100	113.5	131.8	0.545	66.9	12.74	186	3.9	41.4	28.72
6200	114.1	134.5	0.538	67.4	12.77	188	4.4	41.4	28.72
6300	114.4	137.2	0.544	69.5	12.66	192	5.3	41.4	28.72
6400	114.4	139.4	0.536	69.5	12.69	193	5.4	41.4	28.72
6500	115.3	142.7	0.531	70.4	12.61	194	5.5	41.4	28.72
6600	117.5	147.7	0.527	72.5	12.41	197	5.6	41.4	28.72
6700	133.1	169.6	0.681	107.5	10.12	238	7.7	41.1	28.72
6800	133.7	173.1	0.691	111.6	10.01	244	8.4	40.8	28.72
6900	135.8	178.4	0.684	113.8	10.02	249	9.1	40.8	28.72
7000	137.4	183.1	0.677	115.8	10.01	253	9.8	40.7	28.72
7100	137.8	186.3	0.661	114.8	10.16	255	10.4	40.8	28.72
7200	138.6	190.1	0.641	113.5	10.43	258	11.1	40.8	28.72
7300	139.1	193.2	0.628	113.2	10.56	261	11.5	40.8	28.72
7400	141.1	198.7	0.607	112.5	10.81	265	12.4	40.8	28.72
7500	143.5	204.9	0.576	110.1	11.18	269	13.1	40.9	28.72

7600	144.6	209.3	0.553	107.8	11.49	271	13.8	40.9	28.72
7700	143.6	210.5	0.552	108.2	11.53	273	14.7	40.9	28.72
7800	140.8	209.1	0.554	107.9	11.62	274	15.5	40.9	28.72
7900	136.4	205.2	0.554	106.1	11.79	273	16.4	40.9	28.72

D&D trailported F1000

Black stock pipe stock muffler, Blue D&D single stock muffler, Red D&D single and D&D muffler

