2006 Polaris Fusion 600 stage tuning and Single pipe comparison
DRAFTED ON 6/6/06

Dave Mitchell AKA Shylock 44 brought us his well- seasoned (700 mile) 06 Fusion 600 for "stage tuning". Stage tuning offers various cost modifications, and consumers can see the real cost/ HP value of each mod.

Supervising this session was Sean Ray, who has been a great help to Tim Bender the last two seasons developing engine/ chassis/ clutch combos that assured Polaris SnoX guys a good hole-shot percentage and competitive racing. Sean also built his dad's 660 Fusion, and these same pipes fitted to his sled will be posted shortly. Sean has been a great help to me as well, spending several years now as a Delphi dyno operator Sean has learned some new means to create even better repeatability from run to run.

Also helping out were Dan and Dan, who have been trading dyno time and dyno help for chassis and clutch tning on my 192HP HTG XCR 800 Edge pump gas triple and 100 HP XLT600.

Airflow numbers and A/F ratio readings are deleted here, since I suspect less than operfect fit of boots to carbs caused wide variation in airflow CFM from run to run. Every time jets or reeds were changed, airflow CFM would also be skewed enough that that info was useless.

We also tested loud aftermarket can mufflers on the stocker—their addition to HP was minimal or worse, twice or more the sound level, I have that data that I will begrudgingly post along with the Fusion 660 (the big bore was , however, happier with a few barking but higher flowing CFM cans).

Our baseline on Dave's sled was 124 HP, mid .60's BSFC. Something like 5% Ethanol blended 93 octane gas was used for all tests (could that help out HP with proper tuning?).

A

A Shylock44's bone stock 06 Fusion 600
320 main jets to compensate for 60+ degree F air temp

EngSpd RPM	STPTrq Clb-ft	STPPwr CHp	FulA+B lb/hr	Time-S Second	BSFC lb/hph	AirTmp degF	BMEP psi	WtrOut degF
6900	65.2	85.7	58.5	28.73	0.709	61	129.2	101
7000	66.1	87.9	59.7	29.02	0.705	60	130.9	100
7100	68.7	92.8	62.6	29.74	0.701	60	136.2	100

7200	69.7	95.6	65.8	30.89	0.715	60	138.3	100
7300	70.3	97.7	67.1	30.99	0.714	61	139.3	100
7400	70.6	99.5	68.1	31.14	0.709	60	140.1	99
7500	72.1	102.9	68.5	32.32	0.692	61	142.8	99
7600	74.1	107.2	70.2	33.71	0.681	60	146.9	100
7700	77.7	113.9	73.1	34.03	0.666	60	154.2	101
7800	78.9	117.2	74.6	34.22	0.661	60	156.6	101
7900	79.8	120.1	75.5	34.34	0.654	60	158.3	101
8000	80.3	122.3	77.3	34.47	0.657	60	159.3	102
8100	80.3	123.8	78.3	36.27	0.658	61	159.1	102
8200	79.6	124.2	78.9	37.28	0.661	60	157.9	103
8300	78.1	123.5	78.8	37.61	0.663	60	155.1	103
8400	72.4	115.9	78.9	38.55	0.709	61	143.4	103

First we installed easy stuff—this was DynoPort's prototype stamped Fusion pipe (stamped and very expertly TIG welded, fit perfectly (though stock stealth heatshield would not fit). This pipe created a sad 1 HP increase right at the peak, and little everwhere else. After two repeat runs within a tenth on a HP, this was typical.

Stock 06 Fusion 600, 320 main jets for warm air compensation

DynoPort stamped preproduction single pipe, stock muffler

EngSpd	STPTrq	STPPwr	FulA+B	Time-S	BSFC	BaroP	AirTmp	WtrOut
RPM	Clb-ft	CHp	lb/hr	Second	lb/hph	in/Hg	degF	degF
6000	61.1	69.7	48.4	42.15	0.722	29.15	62	94
6100	61.3	71.1	50.2	42.42	0.734	29.15	62	95
6200	62.1	73.3	52.1	43.71	0.738	29.15	62	95
6300	62.4	74.8	53.2	43.99	0.741	29.15	63	96
6400	62.3	75.9	54.6	44.62	0.749	29.15	63	97
6500	62.6	77.5	55.9	45.34	0.752	29.15	63	97
6600	62.9	79.1	57.1	45.81	0.752	29.15	63	98
6700	62.9	80.2	57.8	46.49	0.751	29.15	63	98
6800	57.3	74.2	56.1	47.71	0.788	29.15	63	99
6900	57.8	76.1	56.5	47.87	0.775	29.15	63	99
7000	58.3	77.8	56.9	47.95	0.762	29.15	63	99
7100	59.1	79.9	57.1	48.02	0.745	29.15	63	99
7200	65.5	89.8	58.4	49.35	0.677	29.15	63	99
7300	69.8	97.1	61.3	50.53	0.658	29.15	63	100
7400	70.1	98.7	63.5	51.35	0.671	29.15	63	100
7500	70.5	100.7	64.1	51.79	0.663	29.15	63	100
7600	71.9	104.1	64.5	51.98	0.645	29.15	63	100
7700	74.9	109.7	67.2	52.51	0.637	29.15	63	101
7800	76.7	113.9	69.7	53.43	0.638	29.15	64	102
7900	79.1	118.9	73.1	54.52	0.639	29.15	62	102
8000	79.3	120.8	73.8	54.95	0.636	29.15	63	103
8100	80.9	124.7	75.6	55.97	0.631	29.15	63	103

8200	80.1	125.1	76.4	56.68	0.636	29.15	64	103
8300	78.2	123.5	77.8	57.42	0.656	29.15	64	103
8400	74.2	118.7	79.1	58.38	0.694	29.15	64	104
8500	70.1	113.4	79.3	59.14	0.729	29.15	64	104

We next installed the SLP single, with polished silver Jet-Hot-like coating on pipe and can. Here, we used the stock muffler to maintain stock dB. The combo of SLP pipe/ SLP can will be posted later.

Stock 06 Fusion 600, 320 main jets

SLP silver coated single pipe, stock muffler

EngSpd	STPTrq	STPPwr	FulA+B	Time-S	BSFC	BaroP	AirTmp	BMEP
RPM	Clb-ft	CHp	lb/hr	Second	lb/hph	in/Hg	degF	psi
6000	61.1	69.8	49.1	4.09	0.732	29.14	64	120.8
6100	61.8	71.8	51.3	4.83	0.745	29.14	64	122.2
6200	61.8	73.1	52.6	5.73	0.751	29.14	64	122.2
6300	62.1	74.4	53.5	6.19	0.751	29.14	64	122.6
6400	62.3	75.9	55.1	6.69	0.755	29.14	63	123.2
6500	62.2	76.9	56.7	7.52	0.769	29.14	64	122.8
6600	62.3	78.3	57.8	7.81	0.769	29.14	63	123.2
6700	62.4	79.6	58.5	8.61	0.766	29.14	63	123.4
6800	60.5	78.4	57.3	9.37	0.762	29.15	63	119.7
6900	60.1	79.1	56.6	9.55	0.747	29.15	63	118.9
7000	61.6	82.1	56.8	9.91	0.721	29.15	63	121.8
7100	62.9	85.1	57.8	10.64	0.708	29.15	63	124.5
7200	64.7	88.7	58.2	10.81	0.684	29.15	63	128.1
7300	67.6	94.1	61.1	11.75	0.676	29.15	62	134.1
7400	70.3	99.1	63.1	13.14	0.662	29.15	63	139.1
7500	76.6	109.4	67.3	13.73	0.641	29.15	63	151.7
7600	77.2	111.8	69.1	14.33	0.643	29.15	63	152.9
7700	78.7	115.4	71.3	15.21	0.643	29.15	63	155.8
7800	79.2	117.6	73.4	15.78	0.649	29.15	63	156.8
7900	80.6	121.2	75.6	16.71	0.649	29.15	63	159.5
8000	80.6	122.7	76.5	17.23	0.649	29.15	63	159.5
8100	81.1	125.1	77.7	17.96	0.648	29.15	64	160.3
8200	81.3	126.9	77.8	18.82	0.639	29.15	64	160.7
8300	79.4	125.5	78.9	19.66	0.654	29.15	63	157.2
8400	75.9	121.4	79.4	20.54	0.681	29.15	63	150.2

Finally for our bone stocker we installed a stock pipe thast had been modified by Bikeman Performance. This was similar to the F7 BM pipe mods- a ring of steel welded into the center section, and some modification

to the internal stinger created a great combo on the Firecats, and stock heatshields nicely covered the evidence. While on the Fusion 600 peak HP was not much greater than SLPs, Bikeman's HP band was broader—as evidenced by the 500 RPM powerband at 124+

D Stock 06 Fusion 600, 320 main jets for warm air compensation

Bikeman modified stock single pipe, stock heat shield, stock muffler

EngSpd RPM	STPTrq Clb-ft	STPPwr CHp	FulA+B lb/hr	Time-S Second	BSFC lb/hph	WtrOut degF	AirTmp degF	BaroP in/Hg
6100	61.9	71.9	50.9	25.01	0.737	101	62	29.15
6200	62.5	73.8	51.9	26.09	0.732	101	62	29.15
6300	62.9	75.5	53.1	26.41	0.731	100	62	29.15
6400	63.2	77.1	54.7	27.46	0.738	100	62	29.15
6500	64.2	79.4	56.4	27.78	0.739	101	62	29.15
6600	64.8	81.4	57.6	28.67	0.736	101	62	29.15
6700	65.4	83.5	58.8	28.95	0.733	101	62	29.15
6800	63.7	82.4	57.3	29.54	0.723	102	62	29.15
6900	63.7	83.6	57.5	30.78	0.715	102	62	29.15
7000	66.6	88.7	59.8	31.22	0.701	102	62	29.15
7100	67.3	91.1	62.1	31.81	0.708	103	61	29.15
7200	67.5	92.6	62.7	32.56	0.704	103	61	29.15
7300	68.7	95.4	64.2	32.72	0.701	103	62	29.15
7400	70.5	99.4	64.9	32.89	0.679	103	62	29.15
7500	72.7	103.8	65.8	33.08	0.659	104	62	29.15
7600	74.5	107.9	67.9	33.24	0.654	104	62	29.16
7700	76.9	112.8	70.7	33.51	0.652	104	62	29.15
7800	79.1	117.5	72.5	35.17	0.641	105	62	29.15
7900	81.1	122.1	74.6	35.31	0.637	105	63	29.15
8000	82.2	125.2	76.1	37.17	0.632	106	63	29.15
8100	81.8	126.2	77.1	38.37	0.634	107	62	29.15
8200	81.6	127.5	78.1	38.88	0.636	107	61	29.15
8300	80.6	127.4	78.9	40.09	0.644	108	62	29.15
8400	77.7	124.3	78.6	40.44	0.658	108	62	29.15
8500	73.5	118.9	79.1	40.82	0.691	109	62	29.15

We left the Bikeman mod stock pipe in place, and had Dan and Dan perform the same airbox mod that Sean had used on his dad's sled. This required popping the airbox halves apart with six flatblade screwdrivers, sliding out the the shelf, then bandsawing the airbox top inlet to eliminate the restriction below the top surface of the airbox. We jetted up to 350 to compensate for the lower air pressure inside the airbox; perhaps 360s would have been more ideal. At any rate, let's say one HP for added airflow, one HP for reduced fuel flow. But it's cheap HP for sure.

E 06 Fusion 600, remove shelf and inlet restriction from airbox, 350 mj to compensate for reduced
carb inlet pressure, Bikeman modified stock pipe, stock muffler

EngSpd	STPTrq	STPPwr	FulA+B	Time-S	BSFC	BMEP	AirTmp	BaroP
RPM	Clb-ft	CHp	lb/hr	Second	lb/hph	psi	degF	in/Hg
6000	63.8	72.9	51.4	43.11	0.738	125.7	66	29.12
6100	64.3	74.7	52.6	43.85	0.736	126.7	66	29.12
6200	64.7	76.4	54.1	44.27	0.741	127.4	67	29.12
6300	65.2	78.2	55.6	44.81	0.744	128.4	67	29.12
6400	66.2	80.6	57.1	45.86	0.741	130.2	67	29.12
6500	66.5	82.3	57.8	46.36	0.735	130.9	67	29.12
6600	67.5	84.8	59.2	47.02	0.731	132.9	67	29.12
6700	67.5	86.2	60.1	47.84	0.728	133.1	66	29.12
6800	66.3	85.8	58.3	48.07	0.711	130.7	66	29.12
6900	66.8	87.8	57.8	48.94	0.689	131.7	66	29.12
7000	69.1	92.1	60.1	49.52	0.682	136.1	66	29.12
7100	69.3	93.7	61.2	49.67	0.683	136.6	66	29.12
7200	70.7	96.9	62.4	49.76	0.673	139.3	66	29.12
7300	71.4	99.3	63.8	50.93	0.672	140.8	66	29.12
7400	74.6	105.1	65.6	51.01	0.653	146.9	67	29.12
7500	76.3	109.1	67.2	52.03	0.645	150.4	66	29.12
7600	79.9	115.6	69.7	53.24	0.631	157.5	66	29.12
7700	82.6	121.1	72.1	53.89	0.622	162.8	66	29.12
7800	83.1	123.2	73.7	55.07	0.625	163.6	66	29.12
7900	83.5	125.6	74.1	55.41	0.616	164.5	67	29.12
8000	83.7	127.5	76.1	56.38	0.624	165.1	66	29.12
8100	83.4	128.6	76.1	57.12	0.618	164.5	66	29.12
8200	83.1	129.6	76.8	57.85	0.621	163.4	67	29.12
8300	80.3	126.9	77.5	58.91	0.639	158.3	66	29.12

Next we removed the stock Vforce-like reed cages and installed three-petal Vforce3 reeds/ reed cages. Note that the Vforce gave us about 2% more fuel flow *and* two percent more HP. We can surmise that airflow CFM is 2% higher as well. After this test, while not shown, we installed a set of Four petal Vforce reed cages which resulted in less HP than stock reeds. It surely takes an instrumented dyno to figure all of this stuff out.

F 06 Fusion 600, mod airbox, 350 mj, Bikeman mod stock pipe/ stock heatshields, stock muffler
remove stock reeds install Vforce3 three-petal reed cages

EngSpd	STPTrq	STPPwr	FulA+B	Time-S	BSFC	BaroP	AirTmp	WtrOut
RPM	Clb-ft	CHp	lb/hr	Second	lb/hph	in/Hg	degF	degF
6000	63.5	72.6	47.5	46.61	0.688	29.12	68	99
6100	64.1	74.5	48.8	47.33	0.691	29.12	69	98
6200	64.9	76.6	50.9	48.23	0.701	29.12	69	98

6300	65.4	78.4	53.1	48.97	0.713	29.12	69	98
6400	65.6	79.9	53.5	49.36	0.705	29.12	69	98
6500	66.9	82.8	54.6	49.76	0.694	29.12	68	99
6600	68.1	85.4	55.8	50.57	0.687	29.11	68	99
6700	68.3	87.1	56.5	51.35	0.682	29.11	68	99
6800	67.8	87.8	56.6	52.19	0.679	29.11	69	99
6900	67.6	88.9	57.1	52.34	0.677	29.11	69	99
7000	69.6	92.8	58.8	53.03	0.667	29.11	69	99
7100	70.3	95.1	59.9	53.85	0.663	29.11	68	100
7200	71.8	98.4	60.6	54.25	0.648	29.11	68	101
7300	73.2	101.8	62.9	55.08	0.651	29.11	68	101
7400	74.1	104.4	63.4	55.26	0.639	29.11	68	101
7500	77.9	111.2	65.3	56.08	0.618	29.11	68	102
7600	79.5	115.1	66.2	56.92	0.605	29.11	68	102
7700	82.5	121.1	69.1	57.98	0.601	29.12	69	102
7800	82.9	123.2	70.8	58.32	0.605	29.12	69	103
7900	83.9	126.2	71.8	58.84	0.599	29.12	69	104
8000	84.7	129.1	74.3	59.8	0.607	29.12	70	104
8100	84.5	130.3	76.1	0.82	0.614	29.12	70	104
8200	83.8	130.8	77.1	1.38	0.621	29.12	70	104
8300	82.3	130.1	77.8	2.24	0.631	29.12	69	104
8400	79.5	127.2	79.1	2.96	0.654	29.12	69	104
8500	75.6	122.4	80.2	3.79	0.692	29.11	71	105

Dan and Dan reinstalled the Vforce 3 three-petal reeds along with Sean Ray's cut head. He had taken a stock head and sliced .017" from the sealing surface. The tighter squish would very likely increase combustion chamber turbulence, and with conservative stock timing the stock 600 twin would surely benefit from increased flame speed (somewhat like adding much-needed timing lead). The higher net compression would also add HP due to higher temp rise (and pressure rise) in the combustion chambers!

I 06 Fusion 600, mod airbox, 340 mj, Bikeman mod stock pipe, stock muffler

VForce3 reeds, Sean's cut head

EngSpd	STPTrq	STPPwr	FulA+B	Time-S	BSFC	BMEP	AirTmp	BaroP
RPM	Clb-ft	CHp	lb/hr	Second	lb/hph	psi	degF	in/Hg
6000	65.7	75.1	49.3	59.11	0.689	129.1	66	29.11
6100	66.8	77.6	50.5	59.88	0.683	131.3	65	29.11
6200	67.1	79.2	51.6	0.62	0.684	131.7	66	29.11
6300	67.4	80.9	52.8	1.17	0.686	132.3	66	29.11
6400	68.7	83.7	54.5	1.86	0.684	134.8	66	29.11
6500	69.3	85.8	55.2	2.65	0.676	136.1	66	29.11
6600	69.4	87.2	55.7	3.36	0.671	136.2	66	29.11

6700	70.8	90.3	57.1	3.81	0.664	138.9	66	29.11
6800	70.3	91.1	57.2	4.45	0.659	138.1	66	29.11
6900	69.9	91.8	57.4	4.63	0.656	137.3	65	29.11
7000	72.1	96.1	59.1	5.55	0.645	141.4	66	29.11
7100	72.7	98.2	59.5	6.31	0.636	142.6	66	29.11
7200	75.2	103.1	63.1	6.75	0.642	147.8	65	29.11
7300	76.1	105.7	63.6	7.79	0.631	149.4	65	29.11
7400	77.8	109.6	64.2	7.96	0.614	152.9	65	29.11
7500	80.5	115.1	65.5	8.15	0.597	158.3	65	29.11
7600	83.7	121.1	66.9	9.71	0.579	164.5	65	29.11
7700	84.2	123.4	67.9	10.03	0.577	165.5	65	29.11
7800	86.1	127.7	70.9	10.89	0.583	168.8	66	29.11
7900	87.3	131.4	73.4	11.76	0.586	171.7	65	29.11
8000	87.4	133.2	75.1	12.34	0.592	171.7	66	29.11
8100	86.8	133.9	76.3	12.91	0.598	170.4	66	29.11
8200	86.1	134.4	78.3	13.91	0.612	169.1	66	29.11
8300	84.1	132.7	79.4	14.76	0.628	164.9	66	29.11
8400	79.6	127.3	79.2	15.51	0.653	156.2	66	29.11

Now we have a low-buck, stealthily powerful Fusion 600 trail sled (Stock-appearing pipe, stock heat shields and stock quiet muffler). No noise tickets for Shylock44. Keep in mind that in 1989 I dyno tuned Craig Brinster's and Don Lewis' Aaen Wild Wild Wild 660 Polaris triple that after two hours of dyno tuning made a disappointing 128 HP at 9600 (the Aaen catalog suggested 168??). The next day, Sunday, they blew everyone away in Open Mod Stock at the NYS Grass Drag Championships then in Marilla, NY.

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Just as we were beginning to tear down Shylock's Fusion to remove it from the dyno my cel phone rang just like Howie Mandell's "Deal or No Deal" Banker phone. It was DynoPort's Rich Daly, having seen the dyno results live on the webcam, he made a $ offer for us to leave the sled on the table and rent it to us for a day so he could come with his hacksaw and torch set and try to improve his product. Since I had nothing scheduled I said "DEAL". The next AM Rich showed up with his tools, dial calipers, and torches.

When Rich showed up in his blue Viper the next day, we spent some time dicussing his options. We had on the table an SLP single that made good HP but configured much differently than the DynoPort. Plus we had this Bikeman goober-welded stock pipe that was superb, but way different in shape than Dynoport's single (plus I promised Bikeman I wouldn't let anyone autopsy his pipe). Rich's big problem was he has 200 sets of stampings the way they are, and he wanted to pay me for a day to try to make them work.

So we re-baselined the engine with stock pipe and muffler, same as yesterday with virtually the same numbers.

06 Fusion 600, new baseline, stock single pipe and muffler, mod airbox 340 main jets VForce3 reeds, Sean's cut head

EngSpd RPM	STPTrq Clb-ft	STPPwr CHp	FulA+B lb/hr	Time-S Second	BSFC lb/hph	BaroP in/Hg	AirTmp degF	BMEP psi
5900	63.7	71.6	45.4	16.73	0.677	28.89	73	123.1
6000	63.8	72.9	46.7	17.25	0.682	28.89	72	123.4
6100	64.6	75.1	48.4	17.54	0.688	28.89	72	124.9

6200	66.1	77.9	49.7	18.43	0.679	28.89	71	127.8
6300	66.4	79.6	51.2	18.92	0.685	28.89	72	128.4
6400	66.4	80.9	52.1	19.99	0.686	28.89	72	128.4
6500	67.7	83.8	54.1	20.25	0.688	28.89	72	130.9
6600	68.9	86.5	55.9	21.12	0.689	28.89	72	133.1
6700	69.5	88.7	56.6	21.92	0.679	28.89	71	134.6
6800	69.6	90.2	57.1	22.21	0.673	28.89	71	134.8
6900	70.5	92.6	58.2	22.83	0.671	28.89	72	136.2
7000	72.1	96.1	59.9	23.66	0.665	28.89	73	139.3
7100	73.2	98.9	61.1	24.48	0.659	28.89	73	141.4
7200	73.3	100.5	62.4	24.68	0.663	28.89	73	141.6
7300	74.2	103.1	63.6	25.39	0.658	28.89	73	143.2
7400	76.8	108.2	65.1	26.12	0.641	28.89	73	148.4
7500	80.3	114.7	67.4	26.86	0.627	28.89	73	155.2
7600	81.9	118.5	68.5	27.54	0.616	28.89	73	158.3
7700	83.2	122.1	70.6	27.79	0.617	28.89	73	160.7
7800	83.9	124.7	72.4	28.72	0.619	28.89	72	162.4
7900	84.5	127.1	74.1	29.66	0.621	28.89	72	163.4
8000	83.9	127.7	75.6	30.71	0.631	28.89	72	162.2
8100	82.5	127.2	76.5	31.26	0.641	28.89	72	159.5
8200	78.3	122.2	77.5	31.96	0.676	28.89	72	151.3
8300	66.6	105.3	78.4	33.53	0.795	28.89	72	128.6
8400	62.5	99.9	77.7	34.09	0.832	28.89	73	120.4

Next we installed the PreProduction Dynoport stamped single. We left Sean's high comp pump gas head on, Vforce3 reeds, mod airbox and 340 mains. Like on the bone stocker yesterday, we picked up a lousey 1 HP at peak but lost HP below and above the HP peak.

M 06 Fusion 600, mod airbox, 340 mj, Sean cut head, VForce3 reeds
DynoPort preproduction stamped single pipe, stock muffler

EngSpd	STPTrq	STPPwr	FulA+B	Time-S	BSFC	BMEP	AirTmp	WtrOut
RPM	Clb-ft	CHp	lb/hr	Second	lb/hph	psi	degF	degF
5900	62.9	70.6	47.1	2.68	0.708	122.1	75	101
6000	62.9	71.9	48.2	3.07	0.711	122.2	75	101
6100	64.1	74.4	49.9	4.08	0.711	124.5	74	101
6200	64.5	76.1	50.8	4.38	0.709	125.1	75	101
6300	64.7	77.6	51.7	5.27	0.708	125.5	75	101
6400	65.4	79.7	53.1	5.94	0.706	126.9	75	101
6500	65.4	81.1	54.5	6.41	0.715	126.9	75	101
6600	65.4	82.1	54.7	7.06	0.707	126.9	74	101
6700	65.8	83.9	56.4	7.93	0.713	127.8	74	102
6800	65.4	84.7	57.1	8.38	0.716	126.9	75	102
6900	65.5	86.1	57.1	8.75	0.703	127.2	75	102
7000	67.6	90.1	57.2	9.41	0.671	131.3	74	102
7100	71.7	96.9	58.2	10.38	0.638	139.1	75	102
7200	72.7	99.7	60.1	11.16	0.639	141.2	75	103
7300	72.7	101.1	61.3	11.85	0.644	141.2	75	104

7400	74.3	104.7	62.1	12.26	0.631	144.1	76	104
7500	75.1	107.3	62.6	12.54	0.621	145.7	76	104
7600	79.2	114.6	63.3	13.51	0.586	153.7	75	104
7700	81.2	119.1	65.6	13.93	0.585	157.7	75	105
7800	82.7	122.8	67.3	14.64	0.582	160.5	75	105
7900	84.8	127.5	70.9	15.82	0.591	164.5	76	105
8000	84.3	128.4	73.5	16.51	0.608	163.6	75	105
8100	81.5	125.7	75.2	17.38	0.636	158.1	76	106
8200	78.2	122.1	76.5	17.96	0.666	151.7	75	106

Out came the bandsaw. Rich added .70” to the stamped DynoPort header pipe but I had to give old time acetylene welder Rich a lesson on eliminating those awful black carbon octopuses (octopi?) that fall out of the sky onto everything when someone lights an acetylene torch with no O2 turned on! Crack the O2 first, then feed lots of acetylene, crack it on with a “snap” with the sparklighter and we are rewarded with a clean shop, and clean clothes. At any rate, here is the DP single with longer header pipe.

N 06 Fusion 600, mod airbox, 340mj, Sean's cut head, VForce3 reeds

DynoPort preproduction stamped pipe, add .7" to header pipe

EngSpd	STPTrq	STPPwr	FulA+B	Time-S	BSFC	BMEP	AirTmp	BaroP
RPM	Clb-ft	CHp	lb/hr	Second	lb/hph	psi	degF	in/Hg
5900	63.7	71.5	48.7	46.3	0.723	123.7	74	29.05
6000	64.3	73.5	48.4	46.83	0.699	124.9	74	29.05
6100	65.1	75.5	50.3	47.75	0.708	126.1	75	29.05
6200	65.1	76.8	51.2	48.19	0.708	126.3	74	29.05
6300	65.4	78.4	52.8	48.66	0.715	126.9	74	29.05
6400	65.9	80.3	53.3	49.63	0.705	127.8	75	29.05
6500	65.9	81.5	54.6	49.97	0.712	127.8	75	29.05
6600	66.4	83.4	55.4	50.79	0.705	128.8	74	29.05
6700	66.8	85.3	56.7	51.57	0.707	129.6	75	29.05
6800	66.7	86.4	57.4	52.01	0.706	129.4	75	29.05
6900	67.5	88.6	57.8	52.61	0.694	130.7	76	29.05
7000	68.3	91.1	57.5	53.01	0.672	132.3	76	29.05
7100	72.1	97.5	58.1	53.66	0.633	139.9	75	29.05
7200	72.7	99.7	59.7	54.73	0.636	141.2	74	29.05
7300	73.2	101.8	60.5	55.24	0.631	142.2	74	29.05
7400	74.6	105.1	61.7	56.01	0.623	144.9	74	29.05
7500	74.7	106.7	62.1	56.24	0.617	145.1	74	29.05
7600	80.3	116.2	65.4	57.17	0.598	155.8	75	29.05
7700	81.9	120.1	66.6	57.72	0.589	158.9	75	29.05
7800	82.9	123.1	67.8	58.27	0.585	161.1	74	29.05
7900	83.7	125.9	70.5	59.41	0.594	162.6	74	29.05
8000	84.4	128.6	74.1	0.32	0.611	163.8	75	29.05
8100	82.1	126.7	75.4	0.87	0.632	159.5	74	29.05
8200	79.6	124.3	77.3	1.57	0.661	154.6	74	29.05

Rich and I have done this dozens of times before, before Rich had his own dyno to drive him nuts. Rich was always a bit leery of my suggestions (since he knew I charge by the hour). But since I had the advantage of having helped Bender, HTG, Crankshop, Hooper, Cyberdyne, D&D tweak tuned pipes here before they had their own dynos, Rich was accepting my input and it was like old times again. This time it was shorten the center section by .50”. This resulted in nearly identical peak HP but for some reason much broader HP curve. Check that out. Broad HP is way more imortant than the same HP peak in a tiny area that would require a clutching genius to locate and utilize..

06 Fusion 600, mod airbox, 340 mj, Sean's cut head, VForce3 reeds, stock muffler
DynoPort stamped preproduction pipe, .7" added to HP .5" removed from center section.

EngSpd	STPTrq	STPPwr	FulA+B	Time-S	BSFC	WtrOut	AirTmp	BaroP
RPM	Clb-ft	CHp	lb/hr	Second	lb/hph	degF	degF	in/Hg
5900	65.1	73.2	49.4	48.51	0.719	97	76	29.03
6000	64.8	74.1	49.7	48.93	0.714	97	76	29.03
6100	65.9	76.5	50.3	49.81	0.701	97	76	29.03
6200	66.5	78.5	51.6	50.39	0.699	97	76	29.03
6300	66.8	80.2	52.1	50.82	0.691	97	76	29.03
6400	68.1	83.1	53.7	51.67	0.689	98	76	29.03
6500	68.4	84.7	55.6	52.21	0.699	98	76	29.03
6600	68.9	86.5	56.6	52.67	0.696	99	76	29.03
6700	69.2	88.2	56.9	53.54	0.687	100	77	29.03
6800	68.5	88.6	57.1	53.85	0.686	100	76	29.03
6900	69.8	91.8	57.2	54.75	0.664	100	76	29.03
7000	70.3	93.7	57.3	54.96	0.651	100	76	29.03
7100	76.3	103.1	61.8	56.33	0.638	101	76	29.03
7200	76.3	104.6	63.6	56.96	0.647	102	76	29.03
7300	76.8	106.8	63.8	57.31	0.636	102	76	29.03
7400	77.9	109.8	65.2	57.43	0.632	102	76	29.03
7500	79.8	114.1	66.4	58.76	0.621	100	76	29.02
7600	82.7	119.6	69.1	58.94	0.615	100	77	29.02
7700	84.5	123.9	71.3	0.07	0.612	101	75	29.03
7800	85.9	127.5	73.3	0.62	0.611	102	75	29.03
7900	85.3	128.4	75.5	1.53	0.625	102	75	29.03
8000	83.9	127.7	76.4	2.38	0.637	102	76	29.03
8100	80.4	124.1	77.8	3.02	0.667	102	75	29.03
8200	73.5	114.8	77.7	4.21	0.721	103	76	29.03

Finally, Rich hacked off the rear cone of his stamped pipe and brazed on an extra 4 inches of large diameter internal stinger. He welded the rear cone back together and the dyno showed very magical results, losing a bit of midrange HP in exchange for a monsterous pile of HP at or about the HP peak! Fuel flow numbers don't indicate an inordinant drop in airflow. I did at least five repeat tests on this combo, as opposed to the usual two. Rich noted that, he said he never saw me back up a dyno run four times within a few tenths! This was sort of bizarre. When we were satisfied with the refigured DynoPort pipe, I refitted the stock pipe and muffler and the engine repeated within a few tenths of where we began that day.

P 06 Fusion 600, mod aqirbox, 340 mj, Sean's cut head, Vforce3 reeds, stock muffler
DynoPort preprod stamped pipe, add .7" HP, remove .5" CS add 4" to internal stinger

EngSpd	STPTrq	STPPwr	FulA+B	Time-S	BSFC	BaroP	AirTmp	WtrOut
RPM	Clb-ft	CHp	lb/hr	Second	lb/hph	in/Hg	degF	degF
5900	65.1	73.1	48.4	39.02	0.704	29.02	74	94
6000	65.1	74.2	48.5	39.51	0.694	29.02	73	95
6100	65.5	76.1	48.7	40.25	0.681	29.02	73	94
6200	66.1	78.1	50.4	40.71	0.685	29.02	73	94
6300	66.9	80.3	52.3	41.44	0.692	29.02	74	95
6400	67.7	82.5	52.9	42.09	0.682	29.02	74	95
6500	68.4	84.7	54.7	42.96	0.686	29.02	74	95
6600	69.1	86.7	55.6	43.39	0.682	29.02	74	95
6700	70.1	89.3	56.2	43.98	0.671	29.02	75	96
6800	68.7	88.9	55.5	44.95	0.664	29.02	74	97
6900	69.2	90.9	56.2	45.12	0.657	29.02	74	97
7000	70.8	94.3	56.8	45.32	0.641	29.02	74	97
7100	72.5	98.1	58.2	46.23	0.631	29.02	74	98
7200	72.7	99.7	60.4	46.34	0.644	29.02	74	98
7300	74.4	103.4	60.8	46.51	0.625	29.02	74	98
7400	75.2	106.1	61.8	47.51	0.621	29.02	74	97
7500	77.2	110.3	63.8	48.54	0.615	29.02	74	97
7600	77.8	112.5	64.9	48.65	0.613	29.02	74	97
7700	88.2	129.3	68.6	50.61	0.564	29.02	75	99
7800	88.7	131.7	70.9	51.17	0.572	29.02	74	99
7900	89.1	133.8	72.6	51.91	0.577	29.02	75	100
8000	88.2	134.4	74.6	52.62	0.591	29.02	75	100
8100	86.6	133.5	77.2	53.69	0.614	29.02	74	101
8200	83.6	130.5	77.7	54.25	0.632	29.02	74	101

Rich grabbed his newly-modified stamped pipe and headed back to his shop for re-jigging. Expect consumer versions to be come with an extra weld in the center section, and a longer-than normal header pipe. It's too bad that the

stock heat shields won't fit the DP or SLP pipe like the Bikeman Mod Stocker. It's not a huge issue for everyone, but in the growing areas patrolled by the Barney Fifes, quiet and stock-looking is your friend. Rich will surely send us a final version for testing this fall.