HTG XCR1640cc four cylinder

Here is NJer Woody's lake racer, full body Polaris XCR, with four cylinders and four pipes amazingly fit under the stock hood by HTG in Grand Island, NY. Woody was here just a week ago for tuning, and we discovered the pto cylinder out of phase which cut the tuning session short.

With help from Woody's pals the Bennetts in Avon, NY the crank was pulled out an hour after the first dyno session and hand delivered to crankmeister Clark Spriegel for reindexing. This time Clark put keyways of some sort in the press fit journals to prevent twisting from torsional vibes. This crankshaft is set up at 90 degree firing (not sure of the order), with an MSD ignition to fire the plugs.

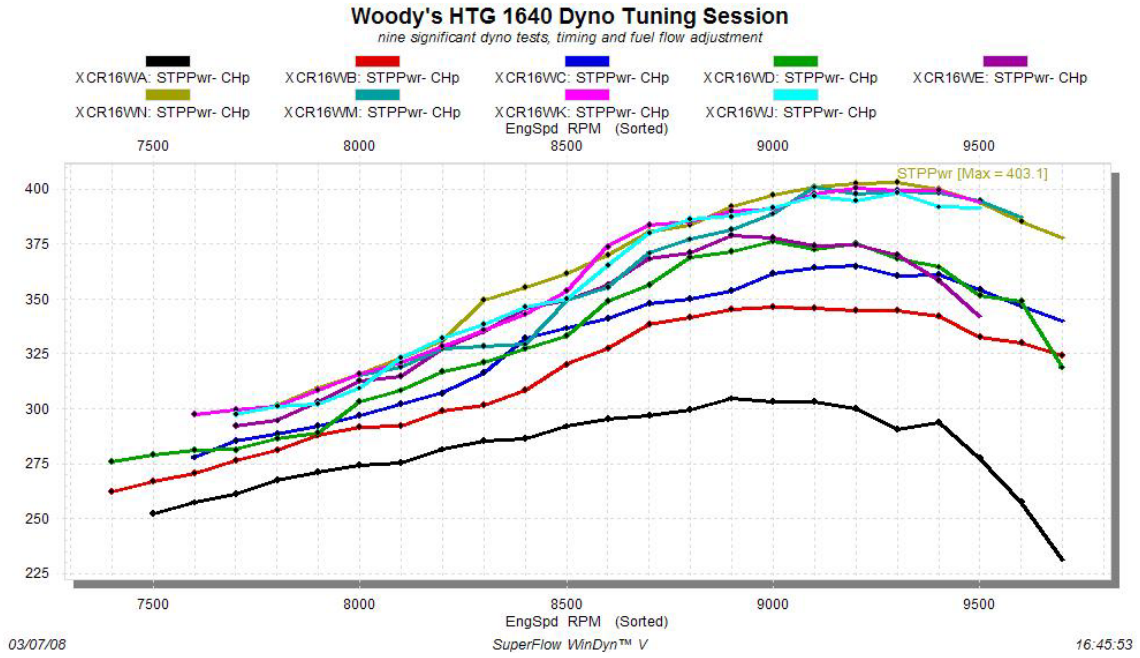
With Rob Schooping doing the tweaking on MSD timing (simple dip switch settings) and tuning the Megatron carbs, initial testing was done with soft timing and ultra-safe jetting. Our first tests were done at a very rapid 600 RPM/ second acceleration rate of the dyno absorber. During rapid acceleration testing the fuel flowmeters lag behind a bit, showing lower than actual BSFC. Not knowing for sure what carb and timing settings were going to be optimum for this new for HTG concept, Rob crept up on timing, maxed that out then began dropping fuel flow to optimum for six seconds at WOT. The last group of tests were done at 300 rpm/ sec absorber acceleration rate to put just a bit more heat in the quad pipes. This would turn out to be what probably is the best DTR "tuneup" beginning with a soft 304 CHP and winding up, after a dozen dyno runs 403 CHP. *Since most modern HTG XCR1200 strokers make 300 CHP or 100 CHP per hole when tuned perfectly (+ - a few HP) we were just hoping to hit 400. 390 CHP came fairly quickly, and the last eight HP took a half dozen more tweaks. Overall, once tuning was spot on we made at least four runs at 400 plus HP.*

Here is the data of the initial baseline test, along with eight other dyno tests in graph form showing gradual improvement as max HP tuning was achieved. There are four or five dyno tests not shown in the graph, which were either mini-steps in the wrong direction or repeats. The final test is at 300 rpm/sec, and note the flatness of the HP curve on top.

Baseline dyno test, soft timing and too-safe jetting

EngSpd RPM	STPTrq Clb-ft	STPPwr CHp	BSFC B lb/hph	Fuel B lb/hr	TsTim2 second	AirTmp degF	STPCor Factor	BaroP in/Hg
7500	176.5	252.1	0.683	171.4	0	42	1.004	29.28
7600	177.7	257.2	0.664	169.7	0.1	43	1.005	29.28
7700	178.1	261.2	0.649	168.4	0.2	44	1.006	29.28
7800	180.1	267.5	0.653	173.5	0.5	44	1.006	29.28
7900	180.1	271.0	0.659	177.2	0.6	44	1.006	29.28
8000	179.9	274.1	0.633	172.7	0.8	42	1.004	29.28
8100	178.6	275.5	0.637	174.6	0.9	42	1.004	29.28
8200	180.2	281.4	0.627	175.5	1.1	42	1.004	29.28
8300	180.5	285.3	0.608	172.6	1.1	42	1.004	29.28
8400	178.9	286.2	0.614	174.8	1.2	42	1.004	29.28
8500	180.3	291.9	0.597	173.7	1.3	41	1.003	29.28
8600	180.2	295.1	0.594	174.6	1.4	42	1.004	29.28

8700	179.2	296.9	0.595	175.9	1.6	42	1.004	29.28
8800	178.7	299.3	0.609	181.1	1.8	43	1.005	29.28
8900	179.7	304.5	0.588	178.0	1.9	43	1.005	29.28
9000	176.8	303.0	0.610	184.0	2.1	42	1.004	29.28
9100	174.9	303.1	0.614	185.3	2.1	42	1.004	29.28
9200	171.3	300.1	0.624	186.4	2.3	42	1.004	29.28
9300	164.1	290.6	0.671	193.9	2.4	42	1.004	29.28
9400	164.1	293.7	0.663	193.9	2.4	42	1.004	29.28
9500	153.5	277.6	0.707	195.4	2.4	42	1.004	29.28
9600	140.7	257.2	0.752	192.4	2.6	42	1.004	29.28
9700	125.1	231.0	0.853	195.5	2.7	44	1.006	29.28



Final tuneup, max HP timing and fuel flow

EngSpd RPM	STPTrq Clb-ft	STPPwr CHp	BSFC B lb/hph	Fuel B lb/hr	TsTim2 second	AirTmp degF	STPCor Factor	BaroP in/Hg	BMEP psi
7800	203.2	301.8	0.435	128.9	0	45	1.017	29.25	153.5
7900	205.5	309.2	0.437	132.6	0.2	45	1.017	29.25	155.3
8000	207.2	315.6	0.437	135.3	0.3	45	1.017	29.25	156.5
8100	209.4	323.0	0.432	136.8	0.4	45	1.017	29.25	158.2
8200	212.1	331.1	0.414	134.5	0.5	45	1.017	29.25	160.2
8300	221.0	349.3	0.404	138.5	0.9	45	1.017	29.25	167.0
8400	222.0	355.0	0.405	141.1	1.2	45	1.017	29.25	167.7
8500	223.5	361.7	0.402	142.8	1.4	45	1.017	29.25	168.8
8600	225.9	370.0	0.406	147.3	1.5	45	1.017	29.25	170.7
8700	229.6	380.4	0.400	149.0	1.8	47	1.019	29.25	173.1
8800	228.9	383.5	0.419	157.4	2.0	46	1.018	29.25	172.7
8900	231.2	391.8	0.410	157.4	2.2	46	1.018	29.25	174.4
9000	231.8	397.2	0.420	163.8	2.5	45	1.017	29.25	175.1
9100	231.5	401.1	0.429	168.9	2.8	45	1.017	29.25	174.8
9200	229.9	402.6	0.437	172.8	3.0	45	1.017	29.25	173.6
9300	227.6	403.1	0.441	174.3	3.2	45	1.017	29.25	171.9

9400	223.4	399.8	0.450	176.5	3.6	45	1.017	29.25	168.7
9500	217.8	393.9	0.474	183.2	3.9	45	1.017	29.25	164.4
9600	210.7	385.1	0.500	189.3	4.1	43	1.015	29.25	159.4
9700	204.7	378.0	0.500	185.4	4.4	44	1.016	29.25	154.7

SEE PHOTO ON NEXT PAGE:

Rob Schooping and Woody—and the stock hood actually closes!