Engine Analyzer Pro v3.3	Performance Trends (C) 2004	Date: 09-25-2011
Eng: 548 bbc 5:58 pm	Your name and phone # can go	Time: 12:34:09 pm
Calculated Test Results	here. Click on Preferences.	Page: 1

Report Comment: 548 Merlin

Engine Comments:
World Merlin II 548 cid, AFR 357 CNC heads, T&D 1.7 Rocker shafts, comp cams 281/300 114 l/s , 1250 cfm pro systems dominator, 2 1/8 headers 13.7 compression

Projected Performance

Engine RPM	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000
Brk Tq, ft lb	588	507	530	655	748	789	786	748	714	682
Brake HP	392	386	454	623	784	902	973	997	1020	1039
Exh Pres, PSI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Int Vac, "Hg	0.2	0.2	0.3	0.5	0.8	1.1	1.4	1.5	1.6	1.8
Vol Eff, %	76.3	66.6	69.5	84.0	96.2	103.3	106.8	104.0	101.6	99.3
Actual CFM	423	422	496	666	839	982	1101	1155	1208	1260
Fuel Flow, lb/hr	155	154	181	243	306	359	402	422	441	460
Nitrous, lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ntrs Fuel, lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BMEP, PSI	162	140	146	180	206	217	216	206	197	188
A/F Mxtr Qlty, %	97.9	98.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BSFC, lb/HP-hr	0.394	0.398	0.398	0.389	0.390	0.397	0.412	0.422	0.432	0.442
Thermal Eff, %	37.01	37.52	37.72	37.97	37.68	37.08	35.99	35.64	35.30	35.02
IMEP, PSI	178	158	166	201	229	242	243	234	226	220
Frctn Tq, ft-lbs	58.5	63.9	69.6	75.3	81.3	87.5	93.9	100	107	114
Frctn HP	38.97	48.69	59.6	71.7	85.2	100.0	116	134	153	174
FMEP, PSI	16.09	17.59	19.14	20.74	22.38	24.08	25.83	27.63	29.49	31.41
Mech Eff, %	91.0	88.8	88.4	89.7	90.2	90.0	89.4	88.2	87.0	85.7
Motoring HP	44.27	50.7	62.4	73.0	92.9	114	147	187	228	262
Pumpng Work, HP	-5.30	-2.05	-2.84	-1.22	-7.74	-14.53	-30.51	-52.9	-74.8	-88.4
Residual Exh, %	8.4	13.0	13.0	7.3	3.5	1.0	0.5	0.7	1.0	1.2
Shrt Circuit, %	0.1	0.0	0.0	0.0	0.5	2.6	3.6	2.2	1.8	1.5
Exh Temp, deg F	1304	1294	1272	1305	1335	1317	1305	1341	1371	1351
Mx Cyl Pres, PSI	1203	1075	1128	1330	1502	1577	1586	1568	1547	1516
Mx Cyl Tmp, deg F	4253	4079	4112	4330	4461	4554	4546	4542	4547	4515
In Port Tmp, deg F	83	86	78	65	56	54	53	57	55	53
Piston Spd, ft/min	2479	2833	3188	3542	3896	4250	4604	4958	5313	5667
Piston Gs @ TDC	980	1290	1630	2010	2430	2890	3400	3940	4520	5140
Coolant HP	91.2	104	117	133	149	163	179	199	218	234
Blow By, CFM	2.6	2.4	2.5	2.9	3.2	3.3	3.3	3.3	3.2	3.2
In Tun Pres, PSI	0.3	-0.1	0.0	0.6	1.6	2.2	2.7	3.0	3.9	4.7
Avg In Vel, ft/sec	145	165	186	207	227	248	269	289	310	331
Avg Ex Vel, ft/sec	196	224	252	280	308	336	364	391	419	447
Mach #	0.224	0.256	0.288	0.320	0.352	0.385	0.416	0.449	0.481	0.514
Act In FlowArea,%	94.9	94.9	94.8	94.9	94.9	94.8	94.9	94.8	94.8	94.7
Act Ex FlowArea,%	94.3	94.4	94.3	94.2	94.1	94.0	93.9	93.9	93.7	93.7
Valve Toss	None	None	None	None	None	None	None	None	None	None
Knock Index	1.2	0.9	0.9	1.3	1.5	1.6	1.5	1.6	1.5	1.3
Spark Advnc, deg	31.6	35.2	36.2	33.7	32.4	31.9	32.4	33.2	33.9	34.8
Primary Jet	.1106	.1106	.1103	.1095	.1087	.1077	.1066	.1061	.1054	.1047
Secondary Jet	.1106	.1106	.1103	.1095	.1087	.1077	.1066	.1061	.1054	.1047
Calc Error	0	0	0	0	0	0	0	0	0	0

PkTq=789@6000 Avg=675
PkHP=1039@8000 Avg=757

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Special Calculations

------ Valve Flow & Cam Calculations			------------------	--Int--	--Exh--
Overlap Area, deg*sq-in	53.0		Vlv Area, deg*sq-in	581.2	475.0
Total Exh/Int %	81.7		Total Avg Flow Coef	0.402	0.462
Lobe Separation, deg	114.0		Lobe Area, inch*deg	41.98	43.38
Overlap, deg	132		Duration, deg	348	370
Overlap @ .050, deg	63		Opening Events, deg	62	119
			Closing Events, deg	106	71
------------------	--Int--	--Exh--	Duration @.050, deg	281	300
Duration @.200, deg	201	212	Opn Evnts @.050, deg	29	86
TDC Tappet Lift, in	0.148	0.168	Cls Evnts @.050, deg	73	34
Gross Valve Lift, in	0.825	0.799	Lobe Centerlns, deg	112.0	116.0
Net Valve Lift, in	0.805	0.777	Grss Tappet Lft, in	0.485	0.470

------ General Engine Calculations		------------------	
Displacement, ccs	8981.4	Displacement, cu in	547.98
Dynamic Comp. Ratio	6.61	Compression Ratio	13.73
Theo. Crank Comprssn,PSI	157	Clearance Volume, ccs	88.2
Pk Secondary Tuning RPM	na	Idle Vacuum, ''Hg	5.6
Pk Secondary Tuning RPM	na	Idle Vacuum, ''Hg	5.6

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Engine Input Specs

Short Block, File: 548 mrk IV

Gen IV 548 CID stock short block

Block/Pistons/Rods

Bore, in	4.53
Stroke, in	4.25
# of Cylinders	8
Rings: 3 Very Low Tension	
Rod Length, in	6.385
Pstn Skrt: Smaller Skirt	
Bearing Size	.57
Pstn Top: No Coating	
Cyl Lckg: Low Leakage	

Accessories

Fan Type: Electric
Wtr Pump: Electric

Engine Inertia/Crank Design

Inertia: 2.36 Calculated
Crank Design: Low Windage

Head(s), File: CHV-RCTP.ORT

AFR 357 CNC heads

Intake Port Specs

Port Layout: 1 valve & 1 port	
Valve Diameter, in	2.3
Avg Port Diameter, in	2.45
Port Length, in	3.5
Single Flow Coef	na
Anti-Reversion, %	0

Combustion Chamber

Compression Ratio	13.73
Chamber Design: Typical Wedge	
Int Valve Primary Angle	24
Int Valve Canted Angle	4
Int Valve-Deck Distance	.01
Deck Ht Clearance	.01

---- Int Head Flow @ 28" ----

Lift	L/D	CFM	FlCf
.2	.087	167	.755
.3	.130	242	.730
.4	.174	307	.694
.5	.217	354	.641
.6	.261	393	.618
.7	.304	415	.653
.8	.348	425	.669

Exhaust Port Specs

Port Layout: 1 valve & 1 port	
Valve Diameter, in	1.88
Avg Port Diameter, in	1.5
Port Length, in	3
Single Flow Coef	na
Anti-Reversion, %	0

Miscellaneous

Mtrl/Coating: Aluminum
Burn Rating: Very Much Faster

Exh Valve Primary Angle	16
Exh Valve Canted Angle	2
Exh Valve-Deck Distance	.55
Head Gasket Thickness	.04

---- Exh Head Flow @ 28" ----

Lift	L/D	CFM	FlCf
.2	.106	142	.786
.3	.160	193	.712
.4	.213	244	.675
.5	.266	278	.655
.6	.319	310	.730
.7	.372	321	.756
.8	.426	327	.770

Intake System, File: GEN-V-BG.BLK

Edelbrock super victor CNC

Manifold Specs (1 runner /cyl)

Runner Dia @ Head, in	2.4
Runner Design: Straight Runners, mer	
Runner Length, in	5
Runner Flow Coef	3.00
Runner Taper, deg	0
Type: Single Plane-carb(s)	
Int Heat: No Heat	

Carburetor(s)

Total CFM Rating	1250
Secondary Throttles	na
Air Cleaner CFM Rating	na
Air Meter CFM Rating	na
Restrictor CFM Rating	na

Plenum

Plenum Volume, cu in	151
Secondary Runner Len, in	3.5
Secndry Runner Area, in	4.2

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Engine Input Specs

Fuel Delivery, File: GEN-V-BG.BLK

Fuel Injection

Injector Rating, lb/hr	na
Injector Rated Pres, PSI	na
Operating Fuel Pres, PSI	na
Pressure Control	na
Total # Injectors on Engine	na
Firing Method	na

Carburetor

# Primary Venturies	2
# Secondary Venturies	2
Primary Venturi Diameter, in	1.9
Secondary Venture Dia, in	1.9
Power Valve: .00 None	
Venturi Discharge Coef	.63
Air Bleed: 40%	

Exhaust System, File: GEN-V-BG.BLK

Open dyno headers ed quay

Header Primary (1 runner /cyl)

Straight Primary (no diameter change

Section 1, Inside Dia, in	2.125
Section 1, Length, in	34
Section 2, Inside Dia, in	na
Section 2, Length, in	na
Section 3, Inside Dia, in	na
Section 3, Length, in	na
Runner Flow Coef	2

Open Exhaust System

CFM Rating	na

Collector (Detailed)

Collector Length, in	12
Collector Dia, in	4
Collector Taper, deg	0

Cam/Valve Train, File: 548

comp cams 281/300 11-741-9 (14)

Intake Cam Profile

Centerline, deg ATDC	112
Duration @ .050"	281
Opening @ .050"	28.5
Closing @ .050"	72.5
Max Lobe Lift, in	.485
Actual Valve Lash, in	.020
Designed Valve Lash, in	.024
Rocker Arm Ratio	1.7
Profile Type: Aggr Solid Roller	
Gross Valve Lift, in	.825
Dwell over Nose: 0 Deg-Std Profile	
Use a Cam File	No

Exhaust Cam Profile

Cam File	cran1.c1
Centerline, deg BTDC	116
Duration @ .050"	300
Opening @ .050"	86
Closing @ .050"	34
Max Lobe Lift, in	.47
Actual Valve Lash, in	.022
Designed Valve Lash, in	.026
Rocker Arm Ratio	1.7
Profile Type: Aggr Solid Roller	
Gross Valve Lift, in	.799
Dwell over Nose: 0 Deg-Std Profile	
Use a Cam File	No

Overall Cam Specs

Total Cam Adv: 2. Advance

Valve Train Dynamics, File: 548

Intake Valve Train

Gen Type: Pushrod & Rocker Arm

Eff Valve Mass, gms	230
Eff Rckr Arm Stffnss, lb/in	40000
Eff Lifter Mass, gms	180
Eff Lifter Stiffness, lb/in	guess
Spring Rate, lb/in	900
Seated Spring Force, lbs	250

Exhaust Valve Train

Gen Type: Pushrod & Rocker Arm

Eff Valve Mass, gms	200
Eff Rckr Arm Stffnss, lb/in	40000
Eff Lifter Mass, gms	180
Eff Lifter Stiffness, lb/in	guess
Spring Rate, lb/in	900
Seated Spring Force, lbs	250

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Engine Input Specs

Calculation Conditions, File: 548 bbc 5:58 pm

Test Conditions

CorFctr: Use Conds Below	
Barometric Pressure, "Hg	29.9
Intake Air Temp, deg F	60
Dew Point, deg F	32
Elevation, feet	0
Cooling Sys: Liquid Cooled	
Coolant Temp, deg F	165
Accel Rate: 200 RPM/sec	

RPM to Run

Starting RPM	3500
Number of RPM Steps	10
RPM Step Size	500

Fuel Specs

Fuel Type: Drag Racing Gasoline
Fuel Octane (R+M)/2

Use Nitrous Oxide No

Program Sets Spark for Best Power