Polaris Indy 650 02-03 style Stock

Engine Basic Spec

Bore	67.75mm
Stroke	60.0mm
Con-Rod	112mm
Total cc	648.9cc
Bore/Stroke Ratio	1.129
Rpm Peak HP	8200 rpm
HP,max	104hp
Rpm Peak Torque	7750 rpm
Torque,max	69.4 lb-ft
BMEP Hp Peak	125 psi
BMEP Hp peak	8.62 bar
Piston Speed	16.33 m/s
Piston Speed	3215 ft/min
Fuel Flow	63.8
Air Flow	189.3
A/F	13.6
BSFC	0.61

Head Basic Spec

Geometric CR/1	11.60
Trapped CR/1	6.37
Used Head Gasket	1.40mm
Head Gasket Bore	70.10mm
Deck Clearance	0.50mm
Head Step Cut	2.00mm
Total Squish Clea.	3.90mm
Head Bore	67.65mm
Used Cylinder gasket	0.45mm
Est. Crank Press.	140 psi
Est. Octan R+M/2	87

Head Volume

Gasket Volume	5.40
Deck Volume	1.80
Port Closed Vol.	109.6
Head cc Flat Plate	21.40
Head cc Installed	20.40

Head Design

Type	central
Bowl Width + ble. rad.	46.2mm
Bowl width - ble. rad.	41.0mm
Squish Width	11.4mm
Squish Angle	15°
SAR	0.533
Total deep	12.06mm
Head width	48mm

Head Squish Action

Squish Velocity	5.3m/s
Squish Pressure Ratio	1.020
At deg btdc	16°
Kinetic Energy	0.24 mj

Std. Piston Spec

Skirt Length	67.2mm
Pin c. to up length	38.25mm
Pin c. to down length	28.95mm
Pin c. to trans inlet	14.25mm
Wrist-Pin diameter	18.00mm
Thickness of Rings	2 * 1.2
Dome Height	3.3
Dome average Radius	171.7
Dome Ang under Sq.band	11.5°
Dome volyme,cc	8.20
Weight Pist. + Ring	253g
Weight wrist pin	55.5g

Intake Port Spec

Carb flange diam.	39.2mm
Port intake diam.	46mm
Dist. to top	66.5mm
Dist. to bottom	99.0mm
Port open mm	31.8
Number of ports	2
Width of each	25.8mm
Width total	49.8mm
Upper right radius	R 6
Lower right radius	R 6
Port area	1552.7mm²
Time-Area	16.10
Angle-Area	7.92
Duration	169.45°
A.T.D.C	84.73°
% of bore width	73.5%
Est. Carb size on area	42.2mm
Est. carb size on cc/rpm	35mm
Intake gas velocity est.	170fps
Estimated HP	129.9hp
Estimated Bmep	158.6 psi

Transfers Spec

Main port roof to top	48mm
M-port liner width	27mm
M-port chordal width	23.6mm
M-port angle up	16°
5-Port roof to top	47.5mm
5-port liner width	24.5mm
5-port chordal width	18.5mm
5-port angle up	26°
Total area	983mm²
Time-Area	7.54
S-sg mm	1.63
Good to bmep/hp	122 / 99.9hp
Opens	118.6°
Duration	122.8°
TAW T/B ratio (ch)	1.16
TAW T/B ratio liner	1.52

Dist. to top	30.9mm
Upper radius	” 8.5
Lower radius	” 10
Max width	45mm
Blowdown width	42.5mm
% of bore width	66.4%
Port type	Trapezoid
Port Opens	83°
Duration	193,9°
Blowdown deg.	35,5°
Total Area	1213mm²
Blowdown Area	723mm²
Lower Area	490mm²
Time-Area	14.48
Time-Area,blowdown	9.83
S-sg mm	3.13
Angle-Area	7.12
Estimated HP	109.5hp
Estimated BMEP	134psi
Est. Blowdown HP	116.4hp
Est. Blowdown BMEP	142psi
Length of port	42mm
I.D of port	41.9mm
Id.of port good to rpm.	107-11500
Estimated port i.d	39.3mm
Exh. gas velocity est.	140 fps

Carburator Spec

Typ	VM38
Main Jet	240
Mj based on sae Rad	99%
Mj based on air temp,c	+19
Jet Needle	6DH7-3
Needle Jet	(247) Q-2
Throttle valve cut.	2,5
Pilot Jet	45
Air Screw	1,0

Ignition Spec

Btdc at 3000 rpm,mm	3.26
Btdc at 3000 rpm,deg	24°
Btdc at 7500 rpm,mm	1.85
Btdc at 7500 rpm,deg	18°
Spark plug	BR9ES
Spark plug gap	0.7mm
Cdi box id. #	CU2178
Alternator output	180 watt

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Exhaust Spec.