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HOT ROD WHERE IT ALL BEGAN

6.0L HOP-UP,

PART II

New GM L92 Heads and a Crane Cam Raise Our 6.0L Truck Engine's Output to 510 hp... Then We Bolt on a Carb and Gain 15 More.

By Marlan Davis

Photography: Marlan Davis
and Ed Taylor



Last month HOT ROD, in conjunction with Duttweiler Engineering, began evaluating the performance potential of the widely available 6.0L LS-series truck engine. We were able to raise output from the stock observed baseline of 355 hp and 396 lb-ft of torque to about 426 hp and 442 lb-ft with basic bolt-ons—Dynatech headers and

cats, a FAST intake manifold and 90mm throttle body, and Crane's 1.8:1 adjustable rocker-arm conversion kit—plus recalibrating the stock ECU using HP Tuners' VCM Suite, unique Windows-compatible software that permits hacking any table in the stock computer. Throughout this entire first phase, the heads and cam

remained stock.

We remedied that this month. Engine tech Ed Taylor bolted on GM's new L92 cylinder heads and then shoved cam after cam into the motor. If that weren't enough, we finished off with an old-school single-plane intake and carburetor to see how a late-model engine runs with a "crude" fuel-metering

system. Phase 2 ended with 535 hp and 452 lb-ft of torque, although with the carb and larger cam the engine's mild street manners were starting to go away.

But let's not get ahead of ourselves. Follow along on our LS path to power as tried-and-true hot rod tricks yield big torque and power gains.

L92 HEAD SWAP

The new L92 6.2L VVT (variable valve-timing) '07 Cadillac Escalade and GMC Yukon Denali feature significantly upgraded cylinder heads with Rat motor-sized rectangular intake ports. Available to hot rodders at a very attractive price through GM Performance Parts' program, L92 heads bolt onto earlier LS-series engines with 4-inch (or larger) bores. But as of this writing (July '07), there was still a major downside: No L92-compatible aftermarket adjustable rocker arms or EFI-style intakes were available. FAST is said to be working on a version of its intake

that fits, and surely it won't be long before adjustable rockers appear.

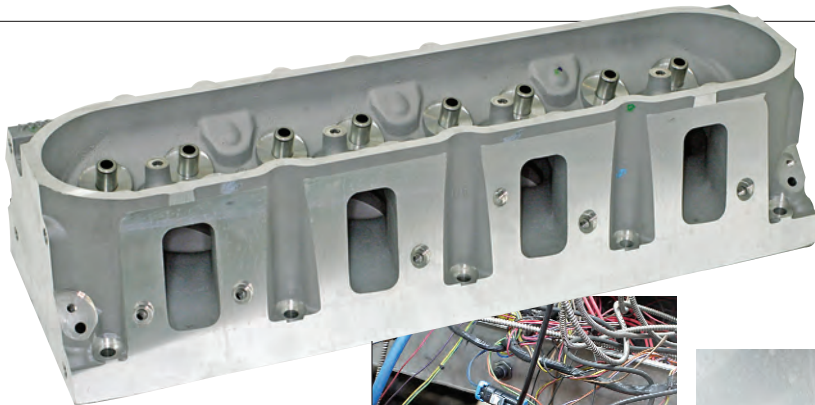
In the meantime we made do with stock nonadjustable 1.7:1-ratio rocker arms, then installed GM's Australian Holden car-style intake with a FAST 90mm throttle body. For the initial runs with the new heads, Phase 1's stock LQ9 cam, Moroso oil pan, and Dynatech headers and cats were retained. Running on 91-octane pump gas, the L92 heads needed only 23-24 degrees of lead, 2 degrees less than the LQ9 heads liked. With the new heads the engine peaked at 425 hp and 443 lb-ft, within two numbers of the previous Phase 1

output. Average output was virtually a wash, too.

But remember: In Phase 1, the engine had the advantage of the superior FAST intake plus Crane 1.8:1 arms that increased the stock cam's valve lift about 0.027 inch. Scratch these parts and the engine only makes 408 hp and 433 lb-ft with the stock long-runner truck intake, a smaller, 75mm throttle body, Dynatech headers, stock nonadjustable 1.7:1 rockers, and an ECU tune-up. So once you take the better rockers and intake off the table, the L92 heads/L76 intake/90mm throttle body combo is worth about 18 hp and 9 lb-ft at

the peak, trading off only a few numbers below 2,700 for midrange and top-end gains.

Scoggin-Dickey sells fully assembled L92 heads for around \$400 each. A pair of assembled L92 heads, the L76 intake and DBW throttle body, Fel-Pro head gaskets, new rocker stands, and stock L92 offset intake rockers can be put together for \$1,835. That's around \$290 less than what you'd have to shell out for the Crane adjustable rocker kit, FAST intake, and 90mm cable-driven throttle body needed to make about the same numbers with the LQ9 heads.



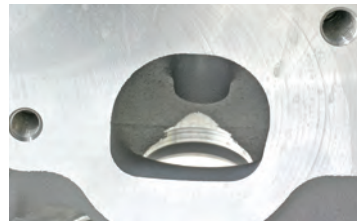
> L92 heads are available both bare and fully assembled from General Motors Performance Parts (GMPP). The new intake ports require a dedicated intake specifically designed for the L92 head. Older intakes don't match the new ports and won't seal right.



> Compared to the LQ9's heart-shaped combustion chamber (right), the L92 chamber (left) is more like a figure 8. The valve centerline spacing is increased to permit larger valves. This head must be used on 4-inch or larger bore sizes. Valve-to-bore clearance on 5.7L (LS1/LS6) engines is marginal, and it definitely can't be used on a 5.3.



> Before screwing the head bolts or studs into an LS motor, be sure to blow out any water that may have accumulated in the threaded holes. Failure to do so could crack the block when the new fasteners are tightened.



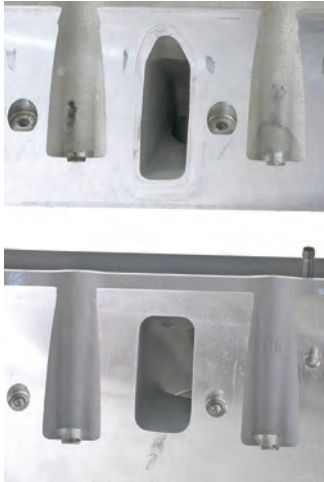
> LS1 and most early LS-style truck engines have used oval-shaped exhaust ports. LS2/LS6 car engines and LQ9 truck motors went to an improved D-shaped exhaust port. L92 heads maintain the basic D-port configuration.



> The new intakes are machined for smaller-diameter fuel injectors, which require a different electrical connector than used on early LS motors. Speartech offers this pigtail adapter for older harnesses. A set of eight adds about \$100 to the swap's cost. The L76 intake comes with 40 lb/hr injectors; the stock LQ9 setup had 29 lb/hr units. This requires retuning the ECU.

HEAD DATA

	LQ9	L92
Casting No.	317	5364
PN, Bare	12562318	12582714
PN, Assembled	12565364	12582713
Chamber volume	71.06 cc	70 cc
Intake port volume	210 cc	260 cc
Intake valve	2.00 inches	2.16 inches
Exhaust valve	1.55 inches	1.59 inches

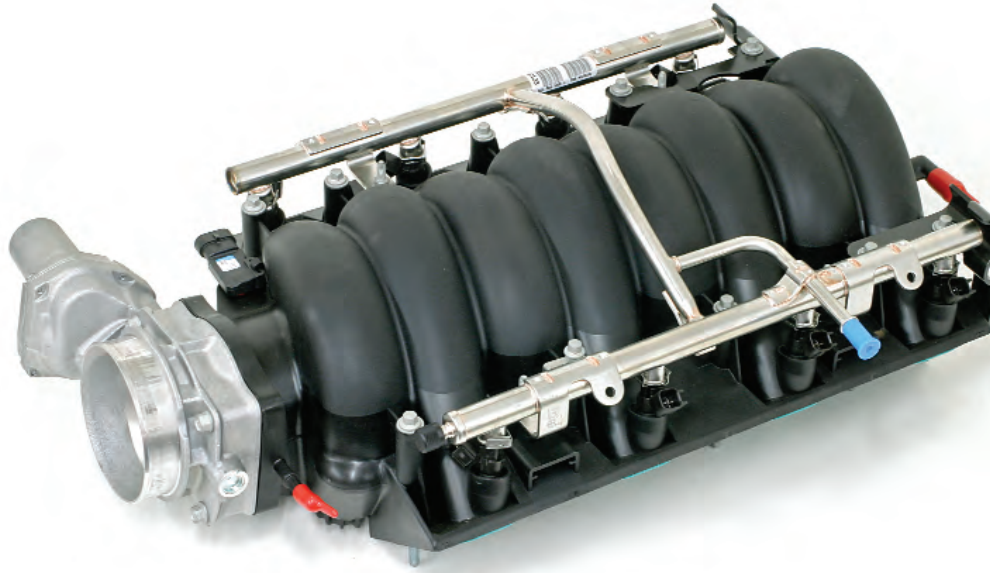


> LS-series engines have traditionally used a cathedral-style intake port (top). The L92 heads have big rectangular intake ports (bottom) that are based on the ports originally developed for the C5R and LS7 heads. However, the port spacing is unique to the L92.



> Above: The L92's new, wider intake port requires an offset rocker arm (GM PN 12569167, left). The exhaust rocker (GM PN 10214664, right) remains the same as in earlier LS engines.

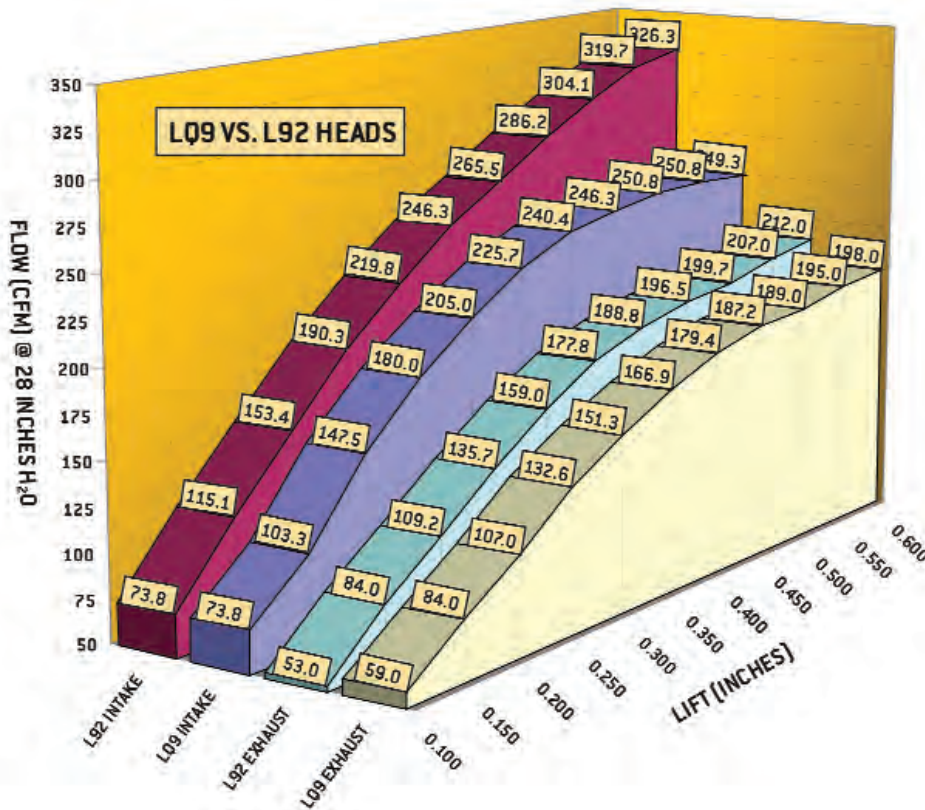
> Top right: U.S. L92 trucks use a long-runner intake that won't clear most car hoods. We tested using this short-runner intake that's stock on '07 Australian Holden L76-equipped cars; in the U.S., GMPP sells it assembled with injectors, fuel rails, a 90mm DBW throttle body, and gaskets under PN 12590123. For a bare intake, order PN 12590124.



THE PRICE SO FAR (PHASE 2)

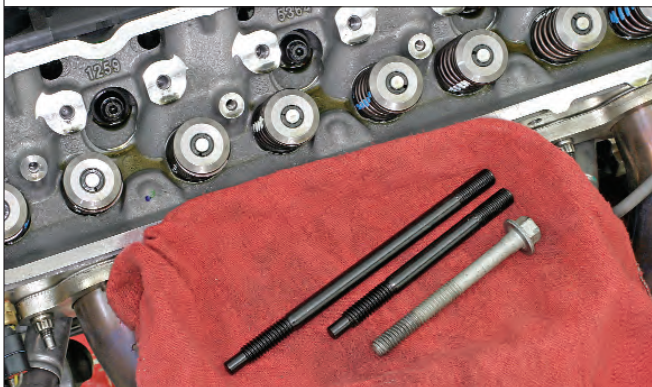
DESCRIPTION	PART NO.	PRICE SOURCE	AR	PRICE
L92 HEAD SWAP ONLY (TEST N)				
ARP head-stud kit	234-4317	Summit Racing	1	\$271.39
Fel-Pro MLS head gasket, LH	1161L	Summit Racing	1	\$84.99
Fel-Pro MLS head gasket, RH	1162R	Summit Racing	1	\$84.99
GM L76 intake, assembled w/ DBW throttle-body, injectors, and rails	12590123	Scoggin-Dickey	1	\$528.95
GM L92 heads, assembled w/ valves, springs, retainers, locks, seals	12582713	Scoggin-Dickey	2	\$798.50
GM L92 rocker stands	12600936	GM Parts Direct	2	\$9.28
GM offset intake rocker arms for L92 heads	12569167	GM Parts Direct	8	\$57.04
(A) L92 swap subtotal				\$1,835.14
(B) Phase 1 parts subtotal				\$8,035.60
(C) Minus Phase 1 Crane 1.8:1 adjustable rocker-arm kit, FAST cable-driven throttle-body, FAST intake manifold				-\$2,125.85
(D) L92 HEADS PLUS RETAINED PHASE 1 PARTS OVERALL PRICE (A+B-C)				\$7,744.89
(E) Savings, L92 heads (C-A)				\$290.71
PHASE 2 BEST TORQUE (EFI, TEST 0)				
Crane hydraulic-roller cam	1449551	Jegs	1	\$386.99
Crane titanium valvespring retainer kit	144661-16	Summit Racing	1	\$268.39
Crane valve lock kit	99108-1	Summit Racing	1	\$30.39
Crane valvespring kit	144832-16	Summit Racing	1	\$155.95
Crane valvespring seat kit	144460-16	Summit Racing	1	\$43.99
GM exhaust valves	12563064	GM Parts Direct	8	\$104.08
GM intake valves	12563063	GM Parts Direct	8	\$88.64
GM L92 heads, bare	12582714	Scoggin-Dickey	2	\$175.00
U.S. Seal valve-stem seals	VS806V	U.S. Seal	16	7.84
(F) Best torque new parts subtotal				\$1,436.27
(G) Best torque, L92 head swap, and retained Phase 1 parts (D+F)				\$9,181.16
(H) Minus assembled L92 heads				-\$798.50
(I) BEST TORQUE TOTAL PRICE (G-H)				\$8,382.66
PHASE 2 BEST POWER (CARBURETED, TEST U)				
Bill Mitchell Hardcore Racing AED performance 750-cfm carb	750-H0	Bill Mitchell	1	\$486.60
Crane hydraulic-roller cam	144HR00119	Jegs	1	\$426.99
Fel-Pro Holley 4150 carburetor gasket	1900	Summit Racing	2	\$9.90
Fel-Pro intake gasket set for L92 heads	1222-3	Summit Racing	1	\$31.99
GM single-plane intake manifold, 4150-style carb mounting flange	25534401	Scoggin-Dickey	1	\$299.50
MSD LS1/LS6 timing/rev control unit	6010	Summit Racing	1	\$312.70
Wilson tapered spacer, 15-inch-thick	004130	Summit Racing	1	\$171.95
(J) Best power new parts subtotal				\$1,739.63
(K) Minus L76 GM EFI intake (L92 head swap), HP Tuner ECU software (Phase 1), Crane cam (best torque)				-\$1414.94
(M) BEST POWER OVERALL PRICE (I+J-K)				\$8,707.35
OPTIONS (as required)				
FAST cable-driven throttle-body	54019	Summit Racing	1	\$529.95
Speartech GM E40 ECU, and manual trans/DBW throttle-body wire-harness	—	Speartech	1	\$1,695.00
Speartech LS1-LS7 EFI electrical connector adapter harness kit	—	Speartech	1	\$100.00

Prices for new parts added in this phase are as of June '07. Prices subject to change.



> McKenzie Cylinder Heads, a leading Southern California cylinder-head porter, flowed the LQ9 and L92 heads on its Super-Flow bench. Not surprisingly, the biggest jump was on the intake side, with the new port flowing over 30 percent better at 0.600-inch lift.

> The LQ9's intake port stalls at 0.500-inch lift. The L92 intake is better at all points of lift; at 28 inches of water, it flows 326.3 cfm—enough to support 670 naturally aspirated horsepower on an eight-cylinder engine. The L92 exhaust trades off a little flow below 0.200 in return for midrange and top-end improvements.



> The stock LS-series head bolts are a torque-to-yield design that can't be reused. Duttweiler replaced them with bulletproof ARP head studs. On '97-'03 blocks, two different-length 11mm head fasteners are needed (use ARP stud kit 234-4316). On '04 and up, the 11mm fasteners are the same length (ARP stud kit 234-4317).



> Fel-Pro MLS high-performance head gaskets should guarantee a bulletproof seal, even with this engine's forthcoming supercharger tests. For 4-inch-bore engines, use Fel-Pro PN 1162R (for the righthand head) and PN 1161L (for the lefthand head).

“The L92 head is better than the earlier head, especially on the intake. But it's a thin-wall casting and won't take much porting. The deck is thin for supercharging. You couldn't run more than 1,000 hp without giving up the clock.”—Todd McKenzie

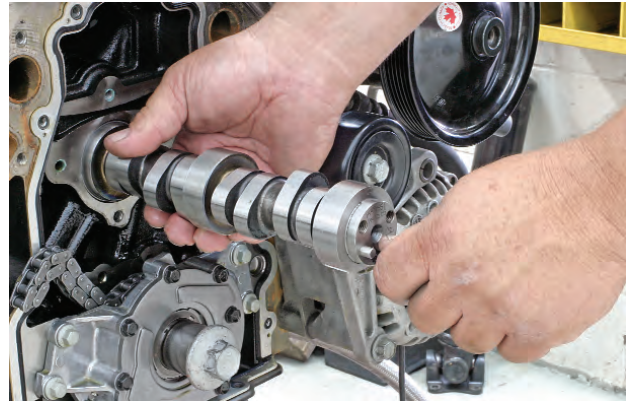
CAM FLOG

The L92 heads ran well even with the stock cam, but taking advantage of their superior top-end flow requires a cam change. Larger cams require stouter valvesprings than those installed on GM's complete head assembly. If you intend to change the springs, retainers, and valve locks, you can save over \$170 by purchasing the heads bare and piecing them together from individual parts.

Duttweiler ran five test cams through the motor. All had wider LSAs than we're used to seeing on old-school Chevy small-blocks. Fuel-injected LS engines generally like wide cam-lobe separations [also known as LSA, or lobe separation angle], which tend to generate a calm idle for good driveability, reduce overlap for lesser emissions, and generally interface well with all of today's myriad power accessories. A wide LSA also closes the intake valve later so it builds less cylinder pressure down low, which helps fight detonation tendencies on current-production LS engines that run over 10.0:1 stock compression ratios on pump gas. Yet another factor is that on cams with otherwise equal duration, a wider LSA offers more piston-to-valve clearance. That's important since the stock flat-top pistons lack valve reliefs.

The LSAs on the four Crane test cams ranged from 114 to 120 degrees [see cam specs table]. Also tested was the GM Hot cam, which had a 112-degree LSA and a lopey idle. It turned out that the first step up from stock—Crane's PN 1449551 with 210/218-degree duration at 0.050-inch tappet lift—was a real torque monster, churning out more peak and average lb-ft than any other cam tested. Compared to the stock LQ9 cam, it gained 20 lb-ft at the peak to pound out 463 lb-ft, averaging 420 lb-ft overall. Its 462 hp represents a 37hp increase over the stock cam, and it also averaged the most power of any cam tested from 3,700 to 5,900 rpm. It idled at 21 inches of vacuum and outperformed the LQ9 cam at every rpm point.

The other cams got progressively more radical, trading off low- and midrange torque production for top-end power. GM's Hot cam had one area in the midrange with a pretty good power bulge. The most radical cam—Crane's 144HR00119—made the most power, cranking out a whopping 510 hp using EFI. However, it was down in torque and power output below 4,800 rpm and 5,300 rpm respectively. It idled at 15.5 inches, about the minimum needed to keep the computer happy.



> Crane's PN 1449551 hydraulic roller cam was the torque champion and is our pick for a daily driver. If top-end power is the be-all-end-all, use the peaky Crane PN 144HR00119.

> Plastic sleeves retain the hydraulic roller lifters, allowing camshaft removal without pulling the intake manifold or valley cover. You can easily change an LS cam in 45 minutes without removing the heads, valley cover, or front cover.



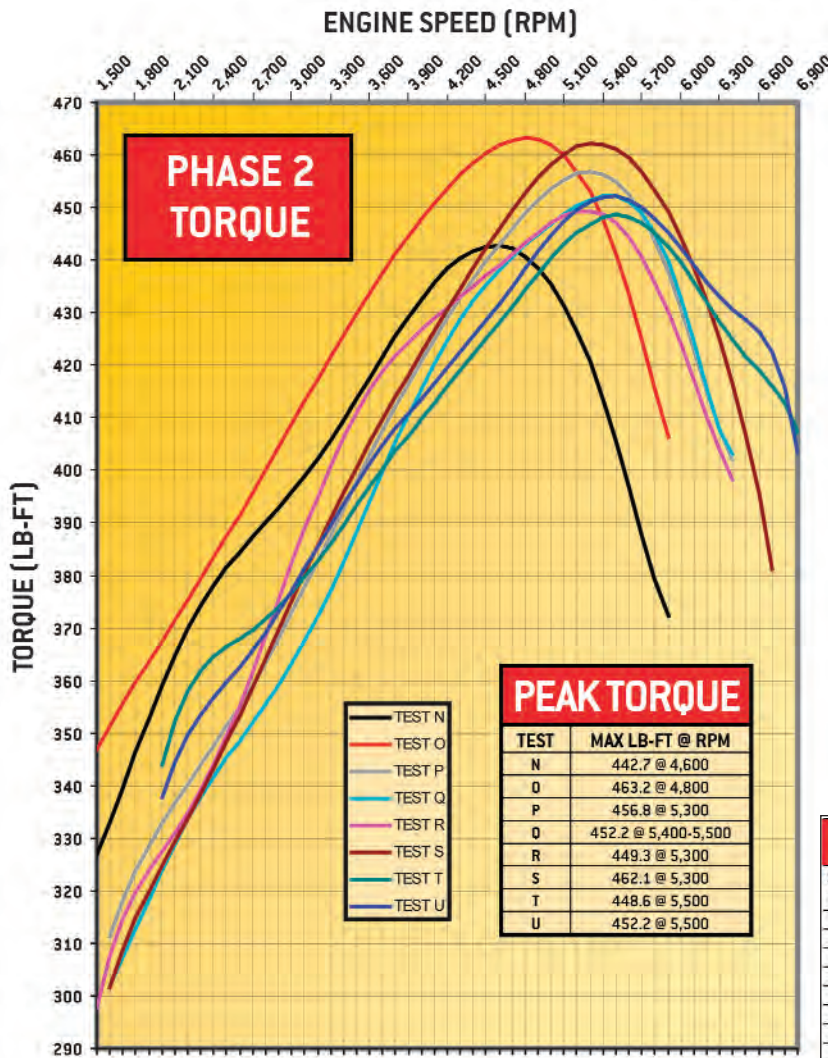
> Left: A double spring capable of supporting the most radical cam tested was used on all the cams. Crane PN 144832-16 accepts up to 0.650-inch lift (118 pounds at 1.800 inches installed, 352 pounds open). Duttweiler installed it with titanium retainers [Crane PN 144661-16]. L92 heads require unique rocker stands [GM PN 12600936, two required].

> Right: The Crane pushrods used with its 1.8:1 roller rockers and installed during the Phase 1 testing have a 7.250-inch overall length. The nonadjustable L92 rockers require stock-length pushrods [approximately 7.393 inches long] to preserve correct valvetrain geometry.

CAMSHAFT SPECIFICATIONS

All profiles were hydraulic roller grinds and were run using the stock GM lifters. All values are in crankshaft degrees unless otherwise noted. Stock LQ9 specs were obtained on a Cam Doctor machine; all others based on manufacturers' published specs. Some totals may not add up due to rounding.

TEST	MAKE	GRIND	PART NUMBER	LIFT (INCHES)					ADVERTISED DURATION			CAM TIMING AT 0.050IN TAPPET-LIFT						LOBE CENTER-LINE		LDA
				At Lobe		At Valve			Tappet Lift	Int.	Exh.	Duration		Intake		Exhaust		Int.	Exh.	
				Int.	Exh.	Rocker Ratio	Int.	Exh.				Int.	Exh.	Opens	Closes	Opens	Closes			
A-M	GM	Stock LQ9	12561721	0.273	0.280	1.70:1	0.465	0.475	0.006	264	268	196	209	18 ATDC	34 ABDC	41 BBDC	12 BTDC	116	116	116
D	Crane	HR-210/3121-2S-14 4A	1449551	0.312	0.312	1.70:1	0.531	0.531	0.004	272	280	210	218	5 ATDC	35 ABDC	47 BBDC	9 BTDC	110	118	114
P	Crane	HR-216/344-2S-18 0A	144HR00118	0.344	0.344	1.70:1	0.585	0.585	0.004	277	285	216	224	10 ATDC	46 ABDC	50 BBDC	6 BTDC	118	118	118
Q	Crane	HR-224/344-2S1-20 0A	144HR00117	0.344	0.344	1.70:1	0.585	0.585	0.004	285	289	224	228	8 ATDC	52 ABDC	54 BBDC	6 BTDC	120	120	120
R	GM	LS1 "HOT"	12480033	0.308	0.308	1.70:1	0.525	0.525	0.006	271	280	218	227	0 ATDC	38 ABDC	47 BBDC	0 ATDC	109	115	112
S-U	Crane	HR-232/367-2S1-15 2A	144HR00119	0.367	0.367	1.70:1	0.624	0.624	0.004	289	293	232	236	1.5 BTDC	50.5 ABDC	53.5 BBDC	2.5 ATDC	113	117	115



“There are two different paths to the same horsepower.” —Ken Duttweiler

TEST DESCRIPTION

Letters below correspond to the test designators in the adjacent tables and graphs. Test designation sequence continues from the Phase 1 LQ9 tests (Oct. '07).

- N L92 heads, 1.7:1 nonadjustable rockers, L76 EFI intake
- O Crane cam, PN 1449551
- P Crane cam, PN 144HR00118
- Q Crane cam, PN 144HR00117
- R GMPP Hot cam, PN 12480033
- S Crane cam, PN 144HR00119
- T GMPP carbureted single-plane intake with 750-cfm double-pumper
- U Wilson 1.5-inch tapered spacer

		POWER (HP)									
		TEST (SEE KEY FOR DESCRIPTION)									
SPEED (RPM)		N	O	P	Q	R	S	T	U		
1,500		93.6	99.2					84.7			
1,600		101.2	106.9	95.1	91.8	94.2	92.3				
1,700		109.6	114.9	103.5	99.4	102.6	101.2				
1,800		118.5	123.1	111.6	107.3	110.2	109.2				
1,900		127.7	131.5	119.4	115.5	117.5	116.8				
2,000		136.9	140.0	127.0	123.7	124.7	124.2	130.4	127.6		
2,100		146.1	148.6	134.6	131.8	132.1	131.6	141.4	138.5		
2,200		155.1	157.3	142.3	139.9	139.8	139.3	150.7	147.6		
2,300		164.0	166.2	150.2	147.9	148.0	147.4	159.0	155.7		
2,400		172.8	175.3	158.3	155.9	156.8	156.0	166.7	163.4		
2,500		181.5	184.5	166.7	164.0	166.0	164.9	174.2	171.0		
2,600		190.2	193.9	175.4	172.1	175.8	174.3	181.8	178.9		
2,700		198.9	203.5	184.4	180.5	186.1	184.0	189.6	187.2		
2,800		207.7	213.3	193.7	189.1	196.7	194.0	197.7	196.0		
2,900		216.7	223.2	203.3	198.0	207.6	204.2	206.2	205.3		
3,000		225.9	233.4	213.2	207.3	218.7	214.6	215.0	214.9		
3,100		235.4	243.7	223.3	217.0	229.8	225.1	224.1	224.9		
3,200		245.1	254.2	233.6	227.1	241.0	235.7	233.5	235.0		
3,300		255.1	264.9	244.0	237.5	252.1	246.2	243.0	245.2		
3,400		265.3	275.6	254.6	248.2	263.0	256.8	252.7	255.4		
3,500		275.7	286.4	265.4	259.3	273.8	267.4	262.5	265.5		
3,600		286.3	297.3	276.2	270.5	284.3	278.0	272.3	275.5		
3,700		297.1	308.2	287.1	281.9	294.7	288.6	282.1	285.5		
3,800		307.9	319.2	298.0	293.4	304.9	299.4	292.0	295.3		
3,900		318.7	330.1	309.1	304.8	314.9	310.2	301.9	305.1		
4,000		329.4	341.1	320.2	316.3	324.9	321.2	311.9	314.9		
4,100		340.0	351.9	331.3	327.7	334.7	332.3	322.0	324.9		
4,200		350.3	362.7	342.6	339.0	344.6	343.7	332.2	334.9		
4,300		360.3	373.4	353.9	350.2	354.5	355.2	342.6	345.3		
4,400		370.0	384.0	365.2	361.3	364.5	366.8	353.1	355.8		
4,500		379.1	394.3	376.6	372.4	374.6	378.6	363.9	366.7		
4,600		387.7	404.4	388.0	383.3	384.8	390.5	374.9	377.9		
4,700		395.7	414.1	399.3	394.1	395.1	402.3	386.0	389.2		
4,800		402.9	423.3	410.5	404.9	405.4	414.1	397.2	400.7		
4,900		409.3	431.9	421.5	415.6	415.6	425.6	408.4	412.2		
5,000		414.7	439.7	432.2	426.2	425.6	436.7	419.6	423.7		
5,100		419.0	446.6	442.5	436.5	435.3	447.3	430.5	434.8		
5,200		422.2	452.5	452.2	446.6	444.6	457.4	441.1	445.5		
5,300		424.2	457.0	461.2	456.3	453.2	466.7	451.2	455.6		
5,400		424.9	460.2	469.2	465.3	461.0	475.3	460.8	465.0		
5,500		424.4	462.0	476.2	473.5	467.9	482.9	469.6	473.6		
5,600		423.0	462.2	482.0	480.6	473.6	489.6	477.6	481.3		

PHASE 2 RESULTS: NET CHANGE												
TEST	UNIT	CHANGE AT PEAK		AVERAGE OVERALL		AVERAGE 1,600-5,900 RPM		AVERAGE 1,600-3,600	AVERAGE 3,700-5,900	AVERAGE 6,000-6,900		
		FROM TEST N	FROM PREVIOUS	VALUE	CHANGE FROM TEST N	CHANGE FROM PREVIOUS	VALUE				CHANGE FROM TEST N	CHANGE FROM PREVIOUS
N	LB-FT		0.5	401.4			403.1		380.8	423.5		
	HP		-1.4	288.2			292.6		191.2	385.2		
O	LB-FT	20.5	20.5	419.7	18.2	18.2	421.3	18.2	392.2	447.9		
	HP	37.3	37.3	302.9	14.8	14.8	307.6	15.0	197.0	408.5		
P	LB-FT	-6.4	14.1	402.0	0.6	-17.7	400.4	-2.7	356.9	440.2		
	HP	29.7	67.0	316.6	28.5	13.7	296.9	4.3	179.8	403.8		
Q	LB-FT	-4.6	9.5	396.3	-5.1	-5.7	394.0	-9.1	348.2	435.9		
	HP	1.9	68.9	313.1	25.0	-3.5	292.8	0.2	175.4	400.0		
R	LB-FT	-2.9	6.6	399.4	-2.1	3.1	400.4	-2.7	359.6	437.7		
	HP	-8.7	60.2	310.9	22.7	-2.2	296.3	3.7	181.9	400.8		
S	LB-FT	12.8	19.4	404.0	2.5	4.6	401.5	-1.6	354.4	444.5		
	HP	25.0	85.2	330.4	42.2	19.5	298.8	6.2	179.2	408.0		
T	LB-FT	-13.5	5.9	409.5	8.1	5.5	405.9	2.8	372.7	430.5	423.7	
	HP	25.3	110.5	353.8	65.6	23.4	312.3	19.7	13.5	200.0	395.3	519.8
U	LB-FT	3.6	9.5	411.2	9.8	1.8	407.1	4.0	1.2	370.4	434.2	427.7
	HP	3.4	113.9	366.1	67.9	2.3	313.9	21.3	1.6	199.3	398.7	524.7

“We ended up with 505 hp with factory-style EFI, after starting out at just 355 hp. That’s impressive!” —Ken Duttweiler

CARB VERSUS EFI

The only other intake available for the L92 heads is GMPP's 4150 flanged carburetor intake. Duttweiler bolted the single-plane high-rise configuration onto the motor, topped by the shop's 750-cfm carb. The biggest cam tested with the EFI intake (Crane's 144HR00119) was retained. Coincidentally, at this time one of the high-flow catalytic converters went south. They were removed from here on out. Previous testing showed that the cats had little effect on the engine's overall power curve.

Without a spacer, the carb setup made 449 lb-ft at 5,500 rpm and 535 hp at 6,900. Adding a Wilson spacer boosted output to 452 lb-ft and 539 hp, the latter peak occurring 200 rpm lower. The most power seen so far was 539 hp, but torque—even compared to the same cam with EFI—was down. On the dyno the engine was not happy under 2,000 rpm and, in fact, only really came into its own over 5,000 rpm. A combo like this—although not fun for a daily driver—would do well at the drags if the car were properly geared.

The short-runner intake really helps the engine breathe on the top end, but it took 10 degrees' more ignition advance to make the best numbers with the carb than it did with EFI. The engine was able to take more lead without getting into detonation because it made less torque at the low rpm, where cylinder pressure is highest and detonation is most likely to occur.

These numbers were made with wide-LSA cams basically optimized for EFI applications. Narrowing the LSA (increasing the overlap) can help pull more fuel through a carburetor. With a cam ground on, say, a 110-degree LSA, the carb should pick up a little more in the low and midrange. And what if we drilled the blank bosses on the carb intake to run port EFI? Then there are some new trick Magnuson blowers we gotta try. Sounds like a plan for next month. Stay tuned.



> GMPP offers a single-plane four-barrel intake for use on L92 heads. PN 25534401 is machined for 4150-style carbs and has a 3/8"-NPT vacuum boss. Blank bosses cast into the manifold can be machined for nitrous nozzles or EFI nozzles and fuel rails. Mounting bolts and instructions are included.



> Above: Because the carb-style intake lacks the built-in O-ring seals used on factory EFI intakes, it requires a conventional aftermarket gasket. Fel-Pro PN 1222-3 fits the new-style L92 port.

> Left: A Bill Mitchell Hardcore Racing 750-cfm double-pumper was tested both with and without a 1 1/2-inch Wilson Manifolds billet-aluminum tapered spacer.

> Lower left: Wilson four-hole spacers feature a variable radius taper that improves part-throttle performance and fuel distribution by redirecting the flow pattern created by partially open throttle blades. It gradually reduces the air/fuel mixture's velocity as it enters the plenum, providing a smoother transition into the runner. Full-throttle, top-end flow is also greatly enhanced. > Lower right: MSD's LS1/LS6 Timing/Rev Control for carbureted applications (PN 6010) fired the stock coils during the carburetor tests. MSD supplies plug-in pills with predefined advance curves, but Duttweiler plugged the unit into a standard Windows-based PC and used MSD's Pro Data software to dial in a custom curve. With a carb, the engine ran best with 35 degrees' total advance. **HRM**

SOURCES

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CRANE CAMS INC.; Daytona Beach, FL; 386/252-1151 (general) or 386/258-6174 (tech); www.cranecams.com

DUTTWEILER PERFORMANCE; 805/659-4339; Saticoy, CA

FEL-PRO (FEDERAL-MOGUL CORP.); Southfield, MI; 248/354-7700; www.federal-mogul.com

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GM PARTS DIRECT (FLOW CHEVROLET LLC); Winston-Salem, NC; 336/760-7074; www.gmpartsdirect.com

GM PERFORMANCE PARTS; Grand Blanc, MI; 800/577-6888 (nearest dealer); www.gmperformanceparts.com

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JEGS HIGH PERFORMANCE; Delaware, OH; 800/345-4545; www.jegs.com

MCKENZIE'S CYLINDER HEADS; Oxnard, CA; 805/486-1810

MSD IGNITION; El Paso, TX; 915/857-5200 (general) or 815/855-1213 (tech); www.msdisignition.com

SCOGGIN-DICKEY PARTS CENTER; Lubbock, TX; 800/456-0211 (orders) or 806/798-4108 (tech); www.sdparts.com

SPEARTECH FUEL INJECTION SYSTEMS; Anderson, IN; 765/378-4908; www.spartech.com

SUMMIT RACING EQUIPMENT; Tallmadge, OH; 800/230-3030; www.summitracing.com

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