

# ZR-1 Performance Performance and Handling

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## ZR-1 Performance and Handling

The availability of bolt on performance parts for the LT5 is quite limited:

- About four types of exhaust systems.
  - Currently available: B&B, Corsa.
  - Discontinued but good: Borla, Flowmaster.
- Engine calibration chip.
- Headers.
- Rear axle gears.

## ZR-1 Performance and Handling

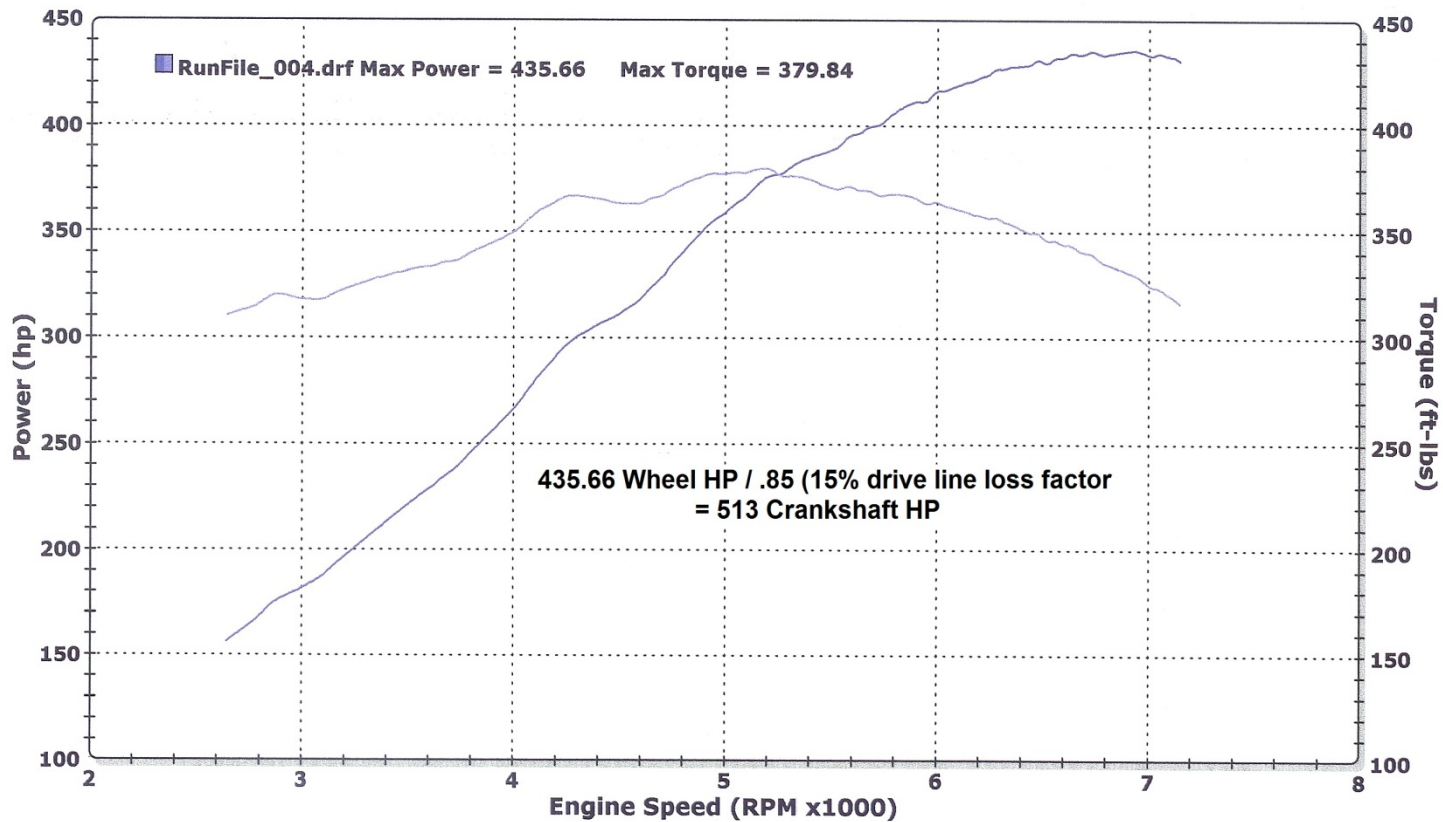
Logical upgrade path for a 350 ci engine. 510/530 hp:

1. Low back pressure exhaust system. About +10 hp '90-'92. About 5 hp '93-'95.
2. Performance calibration chip. About +10 hp.
3. Gearing change. With a 4.10 ratio. 16% more torque to the wheels.
4. Headers. +25 hp.
5. Top end porting. About +35 hp '90-'92. About +20 hp '93-'95.
6. Cylinder head porting. About +40 hp '90-'92. About +30 hp '93-'95.
7. Lightweight flywheel. About +15 dynamic hp.  
*510 hp at this point.*
8. Regrind the camshafts. About +20 hp.



# DYNOJET Performance Evaluation Program

Haibek Automotive Technology



Scott Colliers's '91. 510 HP Engine Package. Aluminum Flywheel, B&B X-pipe and Fusion Exhaust.

RunFile\_004.drf - 3/20/2014 12:50:30 PM Run Type: RO Run Conditions: 78.67 °F, 29.51 in-Hg, Humidity: 22%, SAE: 1.00  
Max Power = 435.66 Max Torque = 379.84

## ZR-1 Performance and Handling

### Upgrade to a 368 ci engine

- If the starting point is a maxed out 350 with 510 hp, the added displacement will take the engine to 540 hp.

## ZR-1 Performance and Handling

### The 378 ci 550 hp engine

- Offset grind the OE crankshaft to go from 3.66” to 3.76” stroke.
- The performance increase comes from the increased displacement and lighter connecting rods.

## ZR-1 Performance and Handling

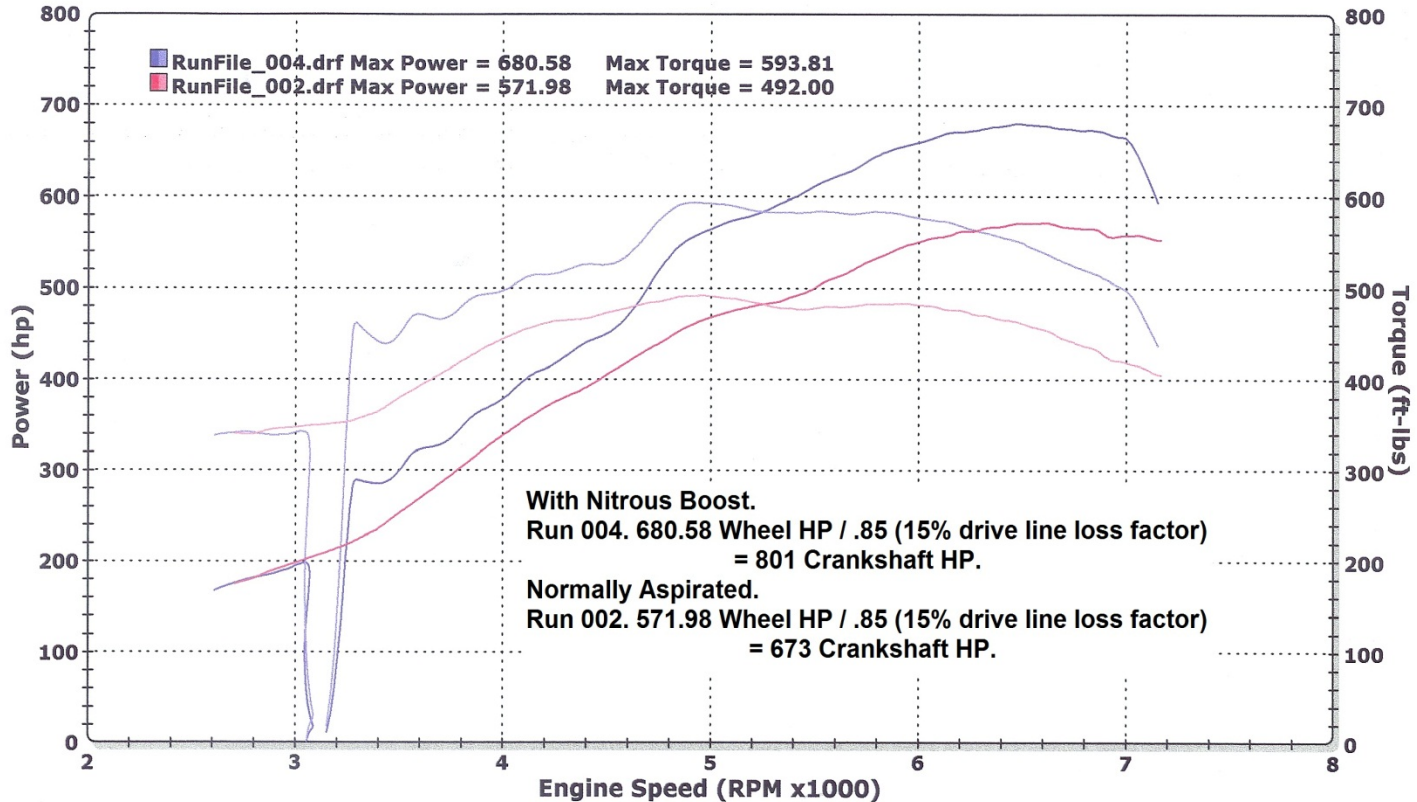
### Upgrade to a 415 ci engine

- Stock cams will provide 600 hp.
- Stage I cams will add 25 hp for 625 hp.
- Stage II cams will add 40 hp for 640 hp.
- Stage III cams will add 50 hp for 650 hp.  
The SGC and LPE camshafts are dependant on availability.
- The OE cams can be reground to add 30 hp.



# DYNOJET Performance Evaluation Program

Haibeck Automotive Technology



Lodell Park's '95 415 CI 650 HP Engine Package. Plus, 125 HP Wet Nitrous Oxide Injection.

- RunFile\_004.drf - 11/13/2012 12:54:30 PM Run Type: RO Run Conditions: 77.63 °F, 29.94 in-Hg, Humidity: 11%, SAE: 0.98  
Max Power = 680.58 Max Torque = 593.81
- RunFile\_002.drf - 11/13/2012 12:16:20 PM Run Type: RO Run Conditions: 76.46 °F, 29.93 in-Hg, Humidity: 12%, SAE: 0.98  
Max Power = 571.98 Max Torque = 492.00



# ZR-1 Performance and Handling

## Handling

- Tires are the most important part of the chassis.
  - Nitto NT555, NT05 NT01, Goodyear F1 GSD3.
- Lower the car to reduce the center of gravity.

## ZR-1 Performance and Handling

Lowering the rear.

**Lower the rear 19 mm /  
.75" to make the car  
level.**



# ZR-1 Performance and Handling

## Lowering the front.

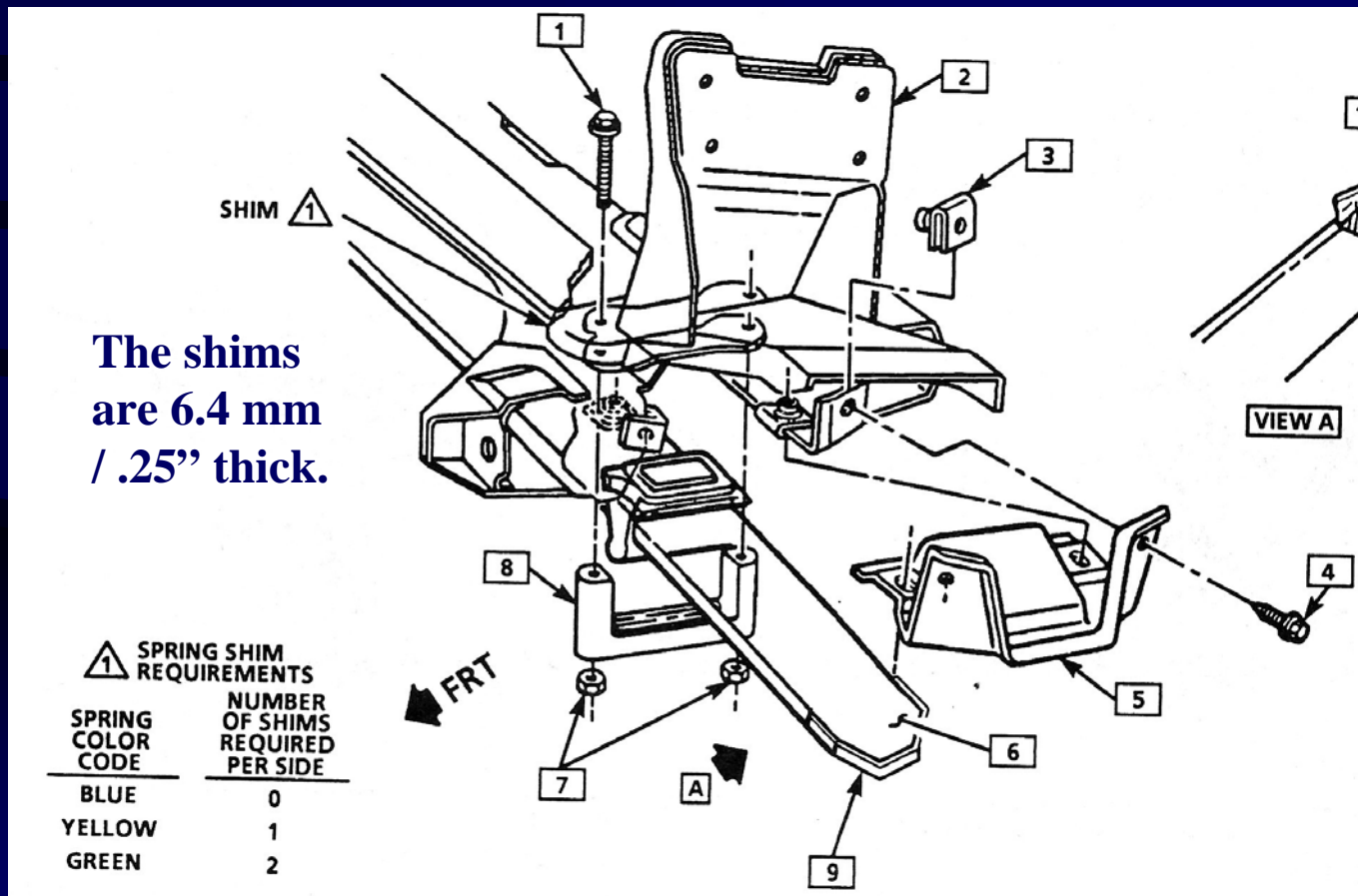
22 mm / .87" tall. They can be cut as low as 3 mm / .125".



$$.87 - .125 = .745''$$

# ZR-1 Performance and Handling

## Lowering the front.



## ZR-1 Performance and Handling

### Shock absorbers

- FX3 shocks are not available from Bilstein at this time.
- Bilstein will not rebuild the OE shocks.
- Manual double adjustable shocks are available from QA1. Front pn TD511. Rear pn TD512.

# ZR-1 Performance and Handling

## Spring rates

	L98/LT1		ZR-1		Z51/Z07	
'90 – '91	F 531	R 228	F 548	R 228	F 657	R 325
'92 – '95	F 416	R 228	F 428	R 188	F 513	R 325
	-22%	0	-22%	-18%	-22%	0

Pounds/inch.

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- With coilover suspension any rate and any ride height is possible.

## ZR-1 Performance and Handling

### Chassis bushings

- They are all available from Energy Suspension.
- '90 ZR-1's have the Z51 option so the front lower A-frame bushings are already very firm.

## ZR-1 Performance and Handling

### DRM rear link lowering brackets

- Improves the rear camber control.





## ZR-1 Performance and Handling

### DRM link rod brackets

- Increases weight transfer to the rear of the car.



123 mm /  
4.84"

OE 106 mm /  
4.17"

## ZR-1 Performance and Handling

### Weight reduction

- Remove the spare tire, the carrier, the tire bag, the jack and handle to remove 58 pounds from the car.
- At the 500 hp level  $3500 \text{ lbs.} / 500 = 7 \text{ hp/lb.}$
- $- 58 \text{ lbs.} / 7 \text{ hp/lb.} = + 8.3 \text{ hp.}$
- Headers are 18 pounds lighter than the OE manifolds.  $+25 \text{ hp} + (18/7 = 2.6) \text{ hp} = +27.8 \text{ hp.}$

# ZR-1 Performance and Handling

## Wheel alignment.

- For stiff structure high speed rated tires.
- Front:
  - Camber. Go from OE 0 to  $-1$  degree.
  - Caster. Stay at OE 6 degrees.
- Rear:
  - Camber: Go from OE 0 to  $-.5$  degree.

# Haibeck Automotive Technology

[www.ZR1Specialist.com](http://www.ZR1Specialist.com)

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