



Blown Away

PAXTON NOVI-2200 SUPERCHARGER KIT WITH AIR-AIR INTERCOOLER

text and photography by Ricardo Topete

The 2005-2007 Mustang is arguably the best mass-produced Mustang built to date. Featuring a chassis and powertrain superior to the previous generation Pony, it is easy to see why the media and public have completely embraced this living legend. Equipped with a 4.6L, 24-valve V-8 engine which produces 300 horsepower and 300 lb-ft of torque (flywheel figures), Ford has made the Mustang GT one of the best "bang-for-the-buck" cars currently available. However, there is still plenty of room for improvement.

For improvement, we turned to Paxton, an industry leader in centrifugal supercharging for decades. In the heyday of the musclecar era, some 1966-1969 Shelby GT350 Mustangs were outfitted with Paxton supercharger systems. Fast forward 40 years and Mustangs are still synonymous with Paxton superchargers. Paxton has developed an innovative, smog-legal supercharged and intercooled system for the '05-'07 GT. Utilizing the powerful NOVI 2200 centrifugal supercharger, the new GT is said to belt

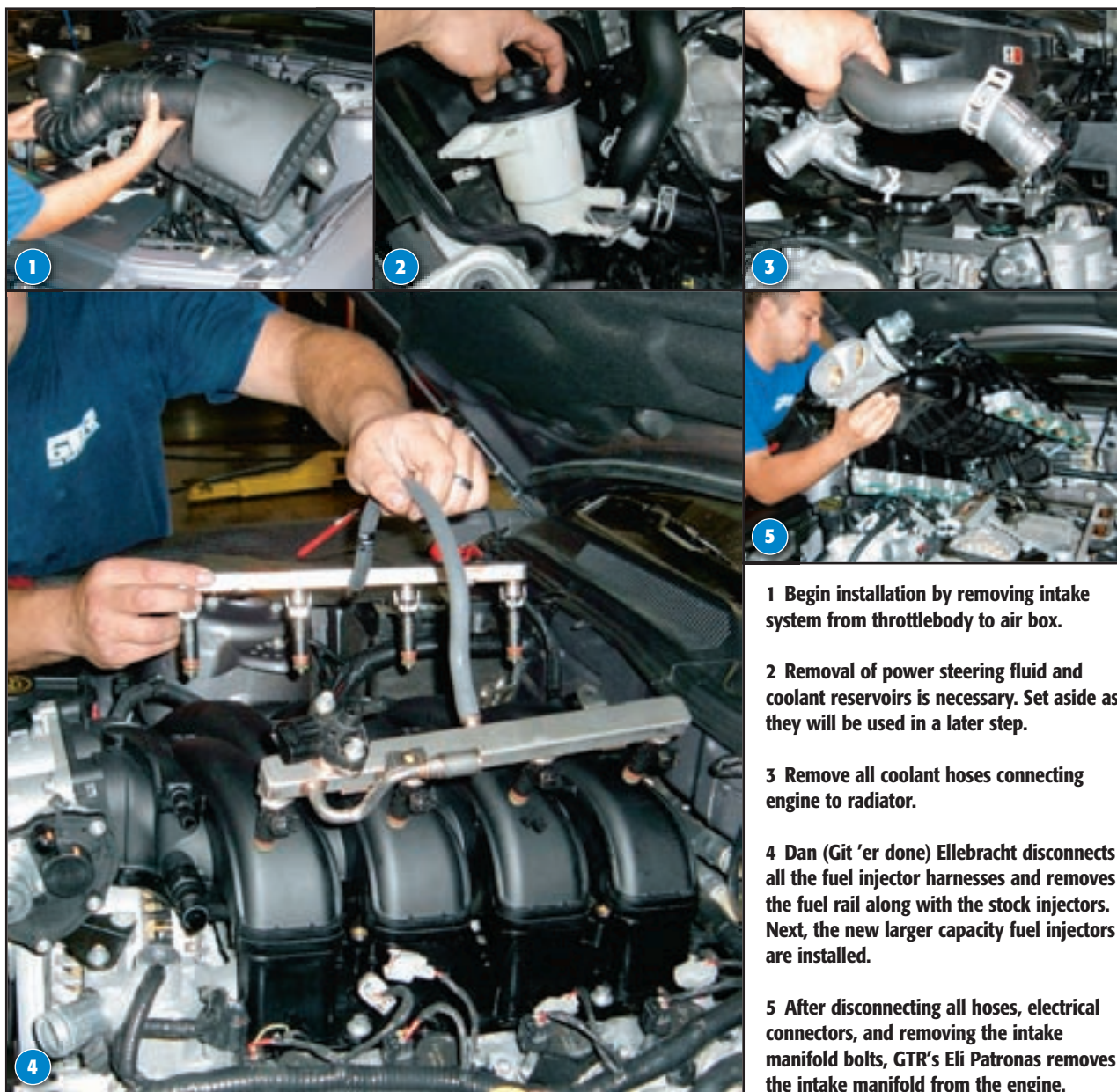
out 470 hp and 420 lb-ft of torque on an otherwise stock GT (flywheel data supplied by Paxton). To sustain this power level, Paxton assembled one of the most thorough kits we have seen in a long time. Included in the kit is the massive intercooler, 39 lb/hr fuel injectors, inlet and discharge tubing, two bypass valves, brackets, drive belt, idler pulleys, K&N air filter, Diablo Predator tuner, and many other components.

GTR High Performance, an authorized Paxton dealer/installer, volunteered to

assist us with this story. One of their loyal, long-time customers (Kelly Strain) had recently bought a 2006 Mustang GT. Kelly is no stranger to fast Mustangs, having enlisted the services of GTR to transform his 2002 GT from a mild street-cruiser to a wild street-bruiser. Naturally, Kelly wanted more power out of his new 'Stang. He called upon GTR to devise a method in which his car could retain perfect street manners, yield stock fuel mileage, be smog legal, all while adding more punch. Kelly wanted a "Dr. Jekyll and Mr. Hyde" Mustang. A car that would cruise along inconspicuously, yet when challenged, could really deliver. The clear solution was to strap on Paxton's NOVI 2200 supercharger kit with corresponding intercooler.

The NOVI 2200 kit is designed to produce 9-10 psi boost out of the box, but it is capable of cranking out over 20 lbs boost and supports up to 1000 horsepower! It is unlikely that

TECHNICAL GTR Supercharger Install



1 Begin installation by removing intake system from throttlebody to air box.

2 Removal of power steering fluid and coolant reservoirs is necessary. Set aside as they will be used in a later step.

3 Remove all coolant hoses connecting engine to radiator.

4 Dan (Git 'er done) Ellebracht disconnects all the fuel injector harnesses and removes the fuel rail along with the stock injectors. Next, the new larger capacity fuel injectors are installed.

5 After disconnecting all hoses, electrical connectors, and removing the intake manifold bolts, GTR's Eli Patronas removes the intake manifold from the engine.

any street-driven Mustang will have a need for a larger supercharger. Keeping inlet air temperatures to an absolute minimum is a highly efficient aluminum air-to-air intercooler. The intercooler allows for more boost and power to be produced while adding additional safety to the engine. Paxton offers this kit in either satin finish or, for a few bucks more, you can opt for the polished finish. Standard with any Paxton supercharger kit is a three-year/36,000 mile warranty. Maintenance on the NOVI is a non-issue, since all NOVI kits are gear-driven and lubricated by the car's engine oil. Regular oil change intervals are the only maintenance requirement. Utilizing helical cut gears,

the NOVI has a melodious supercharger gear whine that is music to any car buff's ear. It's not overly loud, yet audible enough to warn potential challengers of what lurks beneath the hood.

Paxton and GTR suggest you allow for approximately 13-16 hours for a complete installation, so plan accordingly. If you prefer spinning tires rather than spinning wrenches, any well-versed Mustang shop should be able to tackle this job.

GTR dyno-tested the '06 Mustang in stock form to establish a baseline. The 100 percent factory stock five-speed Mustang put down 272.8 hp at 5,200 rpm and 269.9 lb-ft of torque at 4,300 rpm on GTR's chassis dyno. A

couple of days later, when the installation was complete, a shakedown run on the street was done. The Mustang felt incredible: an endless supply of power to redline in every gear. Under normal, part-throttle driving, the Mustang was civilized and composed.

Once back on GTR's dyno, the Paxton-assisted Mustang churned out 410.44 hp at 5,800 rpm and 387.98 lb-ft of torque at 5,300 rpm to the rear wheels! Peak to peak gains of 138 hp and 118 lb-ft of torque were achieved! Although impressive, what yields a dramatic effect is the torque from 2,700 rpm until redline. Over 300 lb-ft of torque, which swells to nearly 400 lb-ft of torque by 5,300 rpm. Accounting

TECHNICAL GTR Supercharger Install

2006 GT 5 SPEED - STOCK			
RPM	HP	TORQUE	AIR/FUEL
2300	116.34	265.68	14.48
2400	122.71	268.50	14.23
2500	126.79	266.40	14.08
2600	132.34	267.31	13.80
2700	138.11	268.68	13.45
2800	144.73	271.48	13.22
2900	150.07	271.80	13.10
3000	155.18	271.66	13.01
3100	159.00	269.37	12.98
3200	164.00	269.18	12.89
3300	170.75	271.75	12.82
3400	177.73	274.55	12.81
3500	187.21	280.92	12.75
3600	196.78	287.09	12.68
3700	203.35	288.66	12.63
3800	207.77	287.17	12.63
3900	215.57	290.30	12.63
4000	222.82	292.57	12.57
4100	229.21	293.61	12.55
4200	235.73	294.78	12.54
4300	243.09	296.91	12.48
4400	247.31	295.20	12.39
4500	252.21	294.36	12.37
4600	255.04	291.20	12.41
4700	259.15	289.60	12.36
4800	262.78	287.53	12.32
4900	265.81	284.91	12.27
5000	268.79	282.34	12.25
5100	272.00	280.11	12.30
5200	272.81	275.55	12.33
5300	271.84	269.39	12.35
5400	271.26	263.84	12.40
5500	270.63	258.43	12.45
5600	267.91	251.27	12.42

WITH PAXTON NOVI 2200 AND INTERCOOLER KIT					
RPM	HP	TORQUE	AIR/FUEL	HP GAIN	TORQUE GAIN
2300	123.03	280.94	13.73	6.69	15.26
2400	130.60	285.80	13.14	7.90	17.3
2500	138.63	291.22	12.72	11.84	24.8
2600	144.45	291.79	12.57	12.11	24.48
2700	153.04	297.69	12.53	14.93	29.01
2800	161.56	303.04	12.53	16.83	31.56
2900	167.88	304.05	12.51	17.81	32.25
3000	172.27	301.59	12.40	17.09	29.93
3100	178.77	302.87	12.31	19.77	33.5
3200	185.66	304.71	12.09	21.66	35.53
3300	194.29	309.23	11.93	23.54	37.48
3400	206.80	319.46	11.82	29.07	44.91
3500	223.08	334.74	11.78	35.87	53.82
3600	237.62	346.66	11.83	40.84	59.57
3700	247.41	351.19	11.93	44.06	62.53
3800	258.93	357.87	12.01	51.16	70.7
3900	269.98	363.58	11.97	54.41	73.28
4000	279.11	366.48	11.94	56.29	73.91
4100	286.44	366.92	11.91	57.23	73.31
4200	300.19	375.39	11.84	64.46	80.61
4300	310.96	379.82	11.73	67.87	82.91
4400	319.15	380.95	11.63	71.84	85.75
4500	323.91	378.04	11.56	71.70	83.68
4600	326.99	373.35	11.54	71.95	82.15
4700	334.61	373.93	11.51	75.46	84.33
4800	340.16	372.18	11.48	77.38	84.65
4900	349.96	375.12	11.44	84.15	90.21
5000	358.91	377.00	11.41	90.12	94.66
5100	369.65	380.67	11.43	97.65	100.56
5200	382.29	386.12	11.50	109.48	110.57
5300	391.51	387.98	11.56	119.67	118.59
5400	394.74	383.95	11.61	123.48	120.11
5500	393.92	376.17	11.68	123.29	117.73
5600	397.80	373.10	11.82	129.89	121.83
5700	403.92	372.18	N/A	N/A	N/A
5800	410.44	371.66	N/A	N/A	N/A

for drivetrain losses, this translates into 475 hp and 430 lb-ft of torque at the flywheel (slightly above the figures projected by Paxton)!

Note the modest air/fuel ratios of the supercharged test as dictated by 91 octane fuel. For instance, from 3,300 rpm until the end of the run, the air/fuel ratio hovers from mid 11s to high 11s. This makes for quite a conservative tune. We elected to end the run at 5,800 rpm, even though the horsepower figure was climbing at a brisk pace of about 5 hp every 100 rpm. We were on track to hit 425 rwhp by 6,100 rpm had he stayed in the throttle. Add higher octane fuel, or even better: a splash of race fuel, a few more rpm, a bit of computer tuning and a legitimate 500 hp street Mustang can be yours!

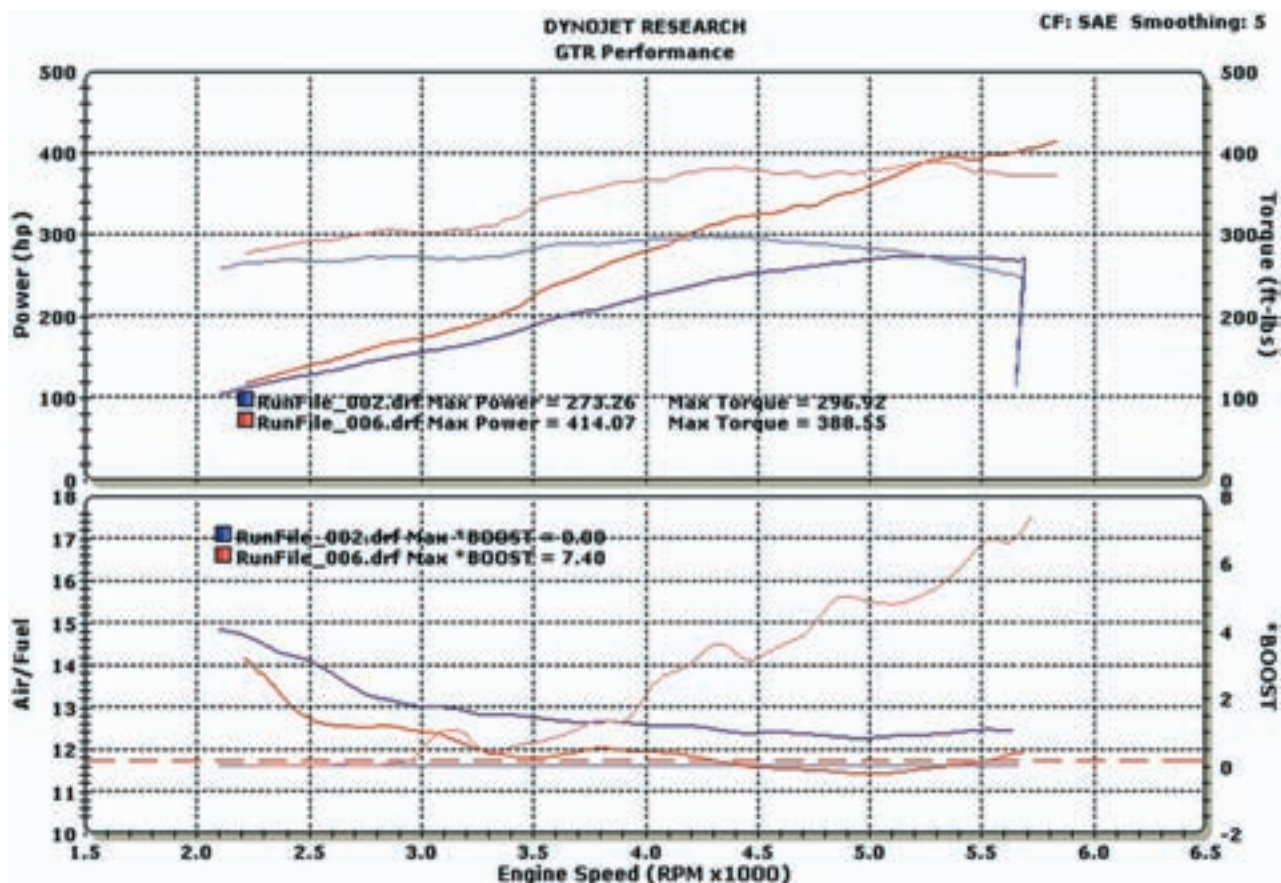
To put the above data into perspective,

a stock '03-'04 Cobra with a factory-equipped supercharger and intercooler will dyno at about 365 hp to the wheels, while a stock '07 Shelby GT500 with a stock supercharger and intercooler puts down about 430 hp/425 lb-ft of torque to the wheels, however this is achieved with a 5.4L DOHC 32-valve engine. Our tested 2006 Mustang GT uses a comparatively small 4.6L SOHC 24-valve engine. That's right: a smaller engine, two fewer camshafts and eight fewer valves! Readers: before proceeding, wipe off drool from chin. Considering the incredible power gains offered from the NOVI 2200 and the relatively affordable MSRP of \$4,895 (actual market prices are quite a bit lower), Paxton offers a proven shortcut to get to the magical 500 hp mark with an '05-'07 Mustang GT. Dr. Jekyll and Mr. Hyde, indeed.



6 Loosen the belt tensioner and remove the stock belt.

TECHNICAL GTR Supercharger Install



7 Remove the coolant passage tube underneath intake manifold. It will need to be modified.

8 Secure in a vise and remove the stock water outlet with a twisting motion. Using a propane torch to apply heat greatly aids this step. Install the new supplied water outlet.

9 Dan re-installs the modified coolant passage tube, followed by the intake manifold and fuel injector rails.

10 Remove the stock oil pressure sender and install supplied "T" fitting. Install stock oil pressure sender and oil feed line to the "T" fitting.

11 A small pilot hole must be drilled, then punched out and enlarged and tapped to accept the supplied fitting for the oil drain hose. Be sure to use silicone on the threads of the brass fitting to avoid oil leaks.



TECHNICAL GTR Supercharger Install



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12 The power steering reservoir must be relocated to the passenger side to make room for the Paxton. Use the supplied hoses and clamps to facilitate this.

13 The plastic radiator cover must be trimmed slightly to accommodate the relocated power steering reservoir.

14 The front bumper cover must be temporarily removed to install the intercooler. An assistant makes this step significantly easier.

15 Image of front bumper cover removed. Looks intimidating, but it is rather easy to re-assemble.

16 Using supplied brackets and hardware, mount the Paxton intercooler behind the front bumper support.

17 The intercooler is mounted to the bumper support.

18 Replace the original bolts on the idler pulleys with supplied spacer-studs.

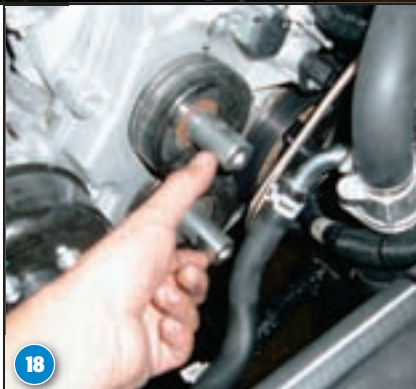
19 Route intercooler pipes into position from the top of the engine on the passenger side.

20 Continue fitting other intercooler pipes from under the car.

21 Attach supercharger brackets onto the front of the engine. Loosely route new supplied belt, followed by supercharger.

22 Mount remaining intercooler pipes with supplied silicone couplers and hose clamps.

23 Install new supplied coolant reservoir with brackets onto passenger shock tower.



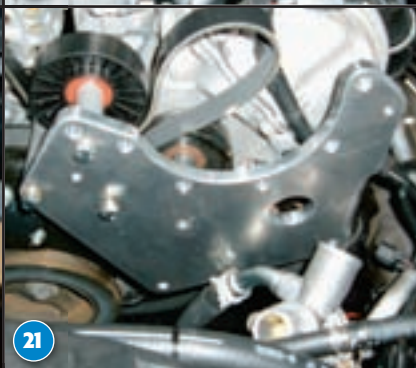
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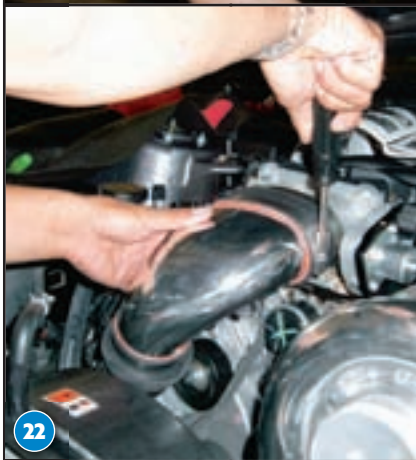
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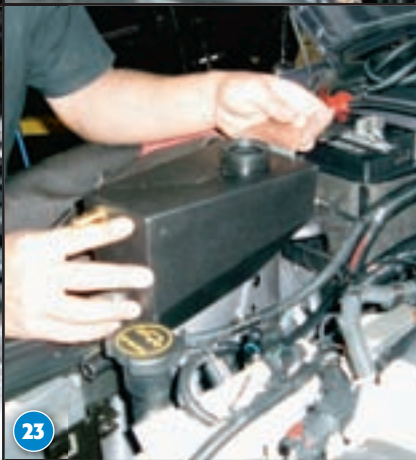
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24 Install inlet tubing leading to supercharger.

mass air sensor and its corresponding wiring harness.

25 Attach both supplied bypass valves from discharge tube to the inlet tube on the Paxton.

29 Installation is complete. 500 horsepower never looked so good!

26 Dan puts the finishing touches on the intake by fitting the larger mass air meter and K&N filter.

27 Dan and his twin brother, Mike, re-attach the front bumper cover.

28 Plug the MAFia device between the

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