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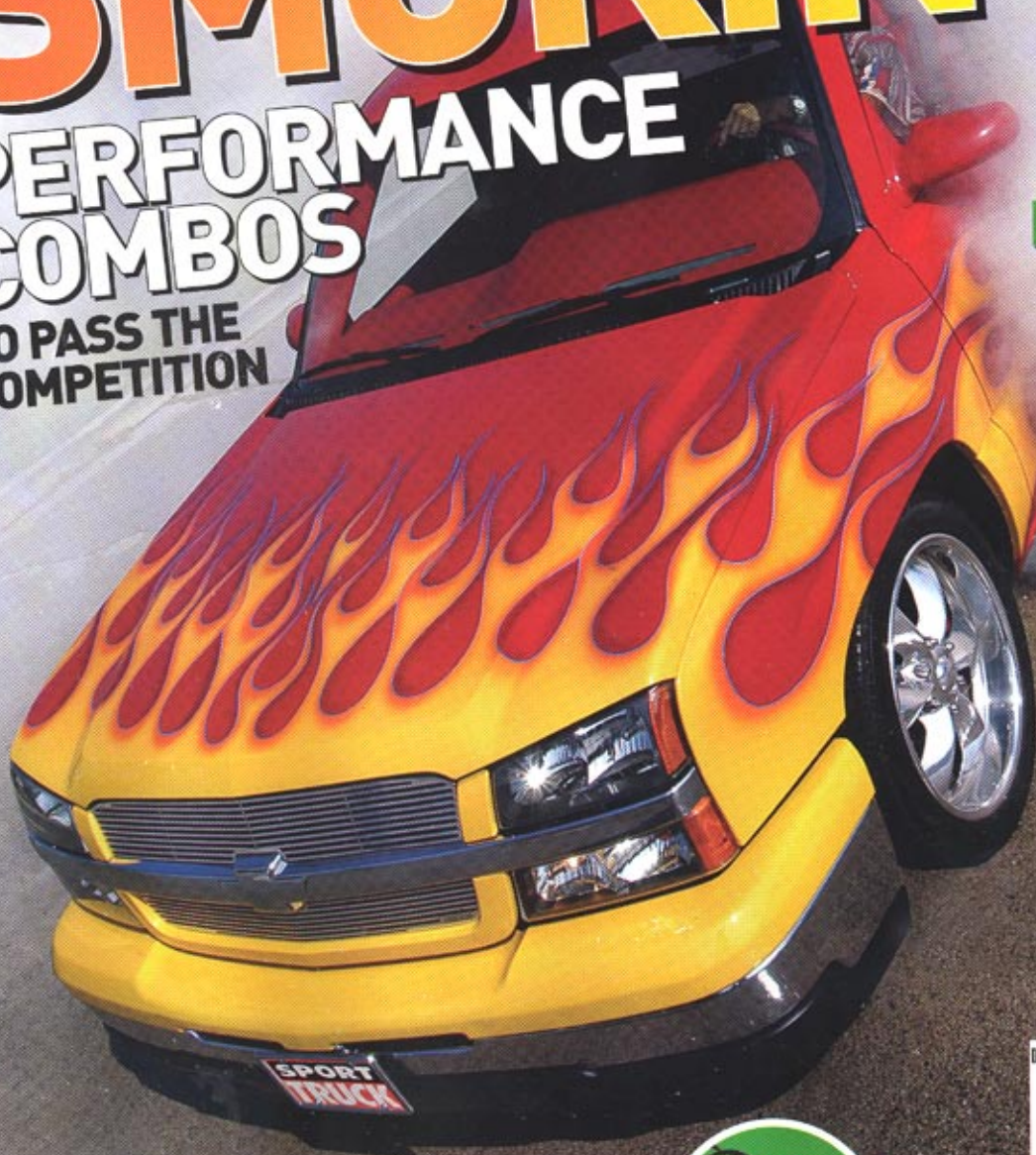
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**FIRST LOOK** AT THE NEWEST  
IN FILTER TECHNOLOGY —Page 76



# PROJECT DARK HORSE: BOLT-ON BEAUTY AND PERFORMANCE

BY DICK DELOACH  
PHOTOGRAPHY: DICK DELOACH

**T**O KICK OFF PROJECT DARK HORSE, OUR '04 FORD F-150, WE'LL SHOW YOU HOW WE SQUEEZED 30 MORE HORSEPOWER OUT OF ITS 5.4L 3V TRITON V-8 WITH A SIMPLE BOLT-

on header and exhaust installation. Since the truck is still under warranty, it had to be a street-legal system, so we decided to work with the performance pros at JBA Headers and Bassani.

First, we contacted Mark Mathews at JBA, who set us up with Ed Howard at the JBA Performance Center in San Diego. The center is a full-service retail parts and installation facility with a Dynamax chassis dyno that does everything from simple bolt-ons to race performance work.

Mark set us up with a set of stainless steel Cat4ward headers (PN 1676S) with the optional high-temp JBA titanium ceramic coating. Like all

## WE PUT 30 MORE PONIES TO THE PAVEMENT WITH JBA HEADERS AND A BASSANI EXHAUST

JBA products, the headers are smog-legal in all 50 states and are covered by JBA's limited lifetime warranty. They feature patented technology like JBA Firecone merge collectors, 1-1/2-inch mandrel-bent 409 stainless steel primary tubes, JBA sealing domes, and 3/8-inch-thick mandrel-bent flanges.

The headers are direct bolt-ons with no welding or modification required; however, for

this application, we recommend using a lift (or at least, large-base jackstands and a floor jack), and plan on spending a full day doing the swap. It took Ed six hours.

Next, we visited Bassani Xhaust in Anaheim, California, for one of its Lightning-style after-cat exhaust systems. However, after Ara Trujillo removed the giant OE muffler to install the exhaust, he found it was too long for our standard cab shortbed, so he and Darryl Bassani himself prototyped a new system on our truck. By the time you read this, they'll have a part number for that system, too.

The system includes a twin-outlet, stainless steel muffler with polished tips, aluminized stainless steel connector pipes, gasketless ball and socket connections, stainless steel band clamps, new hangers, and detailed instructions. The exhaust is extremely easy to install, and of course, it's also legal in all 50 states, will not affect factory warranty or emissions standards, and is backed by a limited lifetime warranty.

All that remained was to see what kind of performance gain we got by doing a dyno run at Superior Automotive in Anaheim. However, there was a minor glitch. The factory speed limiter prevented us from making a full powerband run; it automatically shut the engine down at about 90 mph.

The cure was simple. Shawn Ellis of SoCal Tuning & Performance came in and changed the speed limiter to 120 mph with a U7151 Predator tuning flash programmer. (See sidebar.)

With that problem fixed, Joe Jill, Jr. ran the truck again and came up with some very impressive numbers. The truck had gone from a baseline of 206.1 hp and 274.7 lb-ft of torque to 235.7 hp and 300.1 lb-ft of torque, substantially increasing power for passing and towing.

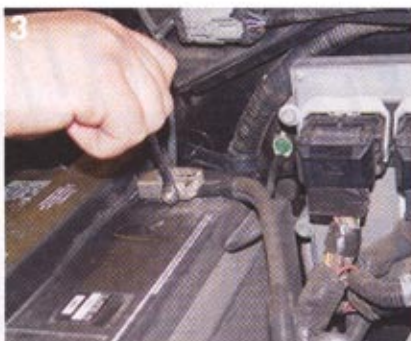
Follow the photos to see how simple it is to put 30 more ponies to the pavement with a bolt-on exhaust system. ■



Our first stop was the JBA Performance Center in San Diego, for a baseline dyno test and a set of JBA headers.



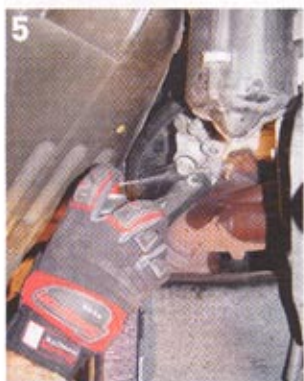
We installed a set of legal, stainless steel JBA Cat4ward headers with the optional high-temp JBA Titanium ceramic coating.



To prevent any electrical problems, the first step was to disconnect the battery.



Then, with the engine cool and the truck on a lift, Ed Howard began by removing the inner fender panels for easier access to the exhaust manifolds.



Next, he sprayed penetrating oil on all manifold fasteners (and exhaust pipe connectors) before attempting to remove them.



Then, all oxygen sensors were unplugged or unbolted from the exhaust.



Starting on the passenger side, the nuts attaching the manifold to the exhaust were removed.



The back end of the exhaust manifold pipe was then unbolted.



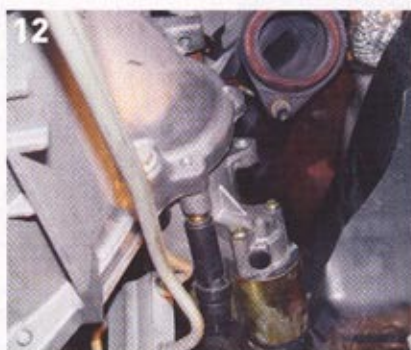
The sway bar was also unbolted and removed for extra clearance.



The driver-side front exhaust section was then unbolted from the manifold and the crossover pipe.



Then the passenger-side front exhaust section was removed.



For more clearance, the starter was also disconnected and removed.



Both exhaust manifolds were then unbolted and removed.



**14** To install the passenger-side header, the motor mount had to be removed, and the engine had to be lifted up about 1 inch.



**15** Per the included instructions, several studs had to be removed and ground down for the headers to fit.



**16** Ed likes to apply a thin coat of adhesive to the gasket and around the ports on the head to ensure leak-free operation.



**17** The gasket was then slipped over the studs and pressed against the head ports. (Note: Clean the head surface of any carbon deposits with a scraper or wire brush before installing the gasket; luckily for us, these heads were clean.)



**18** The headers were then attached using the factory hardware and tightened in an alternating sequence to prevent bending the flange.



**19** Finally, the factory exhaust was reconnected; the motor mount was bolted up; the sway bar was installed; the starter was bolted in and connected; and the fender panels were attached.



**20** The installed headers look sweet, and they'll give us more midrange power and torque. Next stop: Bassani.



**21** At Bassani, Ara Trujillo began by unbolting and removing the giant factory muffler and tailpipe.



**22** The stainless steel Bassani muffler is considerably smaller and lighter than the 18-wheeler-size factory muffler.



**23** Because our truck was a standard cab, Bassani's Lightning-style exhaust system was too long, so Ara and Darryl Bassani prototyped a system just for our truck.



**24** Then, like all Bassani products, the prototype system was hand-welded, and the tips were polished to perfection.



**25** Then fiberglass-wrapped mufflers were installed in the tips. They can be unbolted and removed for a deeper sound if desired.



The muffler was then connected to the cat pipe using Bassani's supplied stainless steel fasteners.



Then, after applying anti-seize compound to the ball and socket connector, the tips were bolted to the muffler, and the new hangers were connected.



The twin-tip, side-exiting Bassani exhaust system not only looks great it produces more performance and a super-sweet sound.



The twin exhaust tips are very macho looking. (See the sidebar for dyno results.)

#### SOURCES:

**BASSANI XHAUST**  
[866] 782-3283  
[www.bassani.com](http://www.bassani.com)

**DIABLOSPORT**  
[561] 908-0050  
[www.diablosport.com](http://www.diablosport.com)

**JBA PERFORMANCE EXHAUST**  
[800] 830-3377  
[www.jbaheaders.com](http://www.jbaheaders.com)

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### PREDATOR FIXES SPEED LIMITER PROBLEM



Shawn Ellis of SoCal Tuning & Performance used a Predator plug-in tuner from DiabloSport to set the speed limiter to 120 mph for our dyno runs.

Today's computer-controlled engines have a built-in speed limiter, which is normally a good thing. It keeps you from going too fast in any one gear and blowing your engine. In this case, it also prevented us from getting full powerband dyno runs on our F-150—necessary to determine what we gained from installing the headers and exhaust. However, it was easy for Shawn Ellis of SoCal Tuning & Performance to overcome that problem by using the Predator plug-in tuner from DiabloSport to increase the limiter speed.

The Predator is a full-featured flash programmer with adjustable parameters that allow the user to custom-tune depending on modifications done to the vehicle. Because it allows for timing and fuel adjustments, the user can optimize the tune for a specific vehicle using a dyno with proper air/fuel monitoring and the Predator's live data feature to monitor timing and other vital parameters. However, for this article, we only used it to increase the speed limit

for our Third gear dyno pulls.

We'll give you more complete information on the Predator in another issue, when we go back on the dyno and have Shawn use it to tune the Ford for an even greater power gain.



With the speed limiter reset, Joe Jill, Jr. ran the truck again and got some impressive figures. We gained an honest 30 hp at the rear wheel.