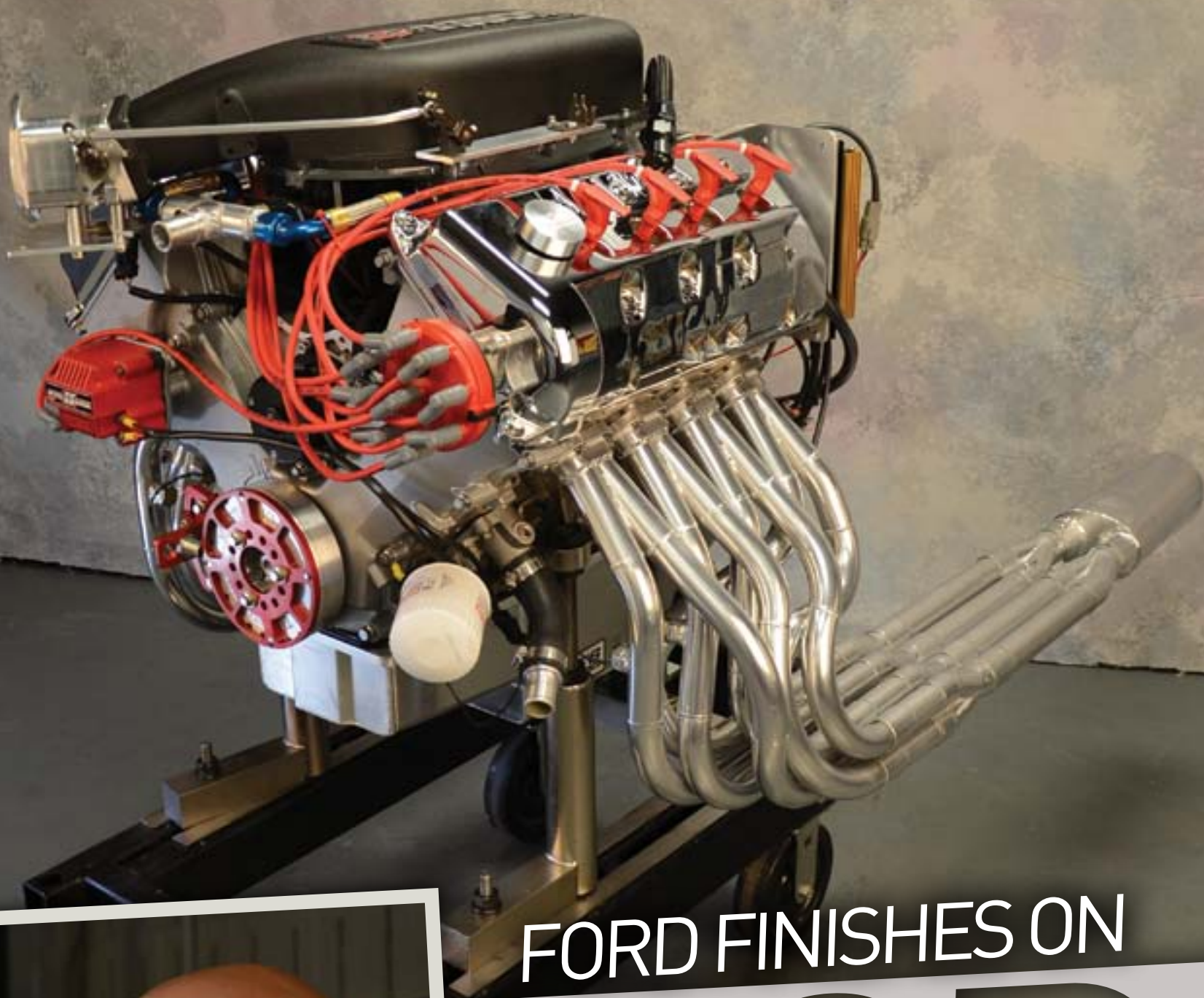


JON KAASE WINS AGAIN



FORD FINISHES ON

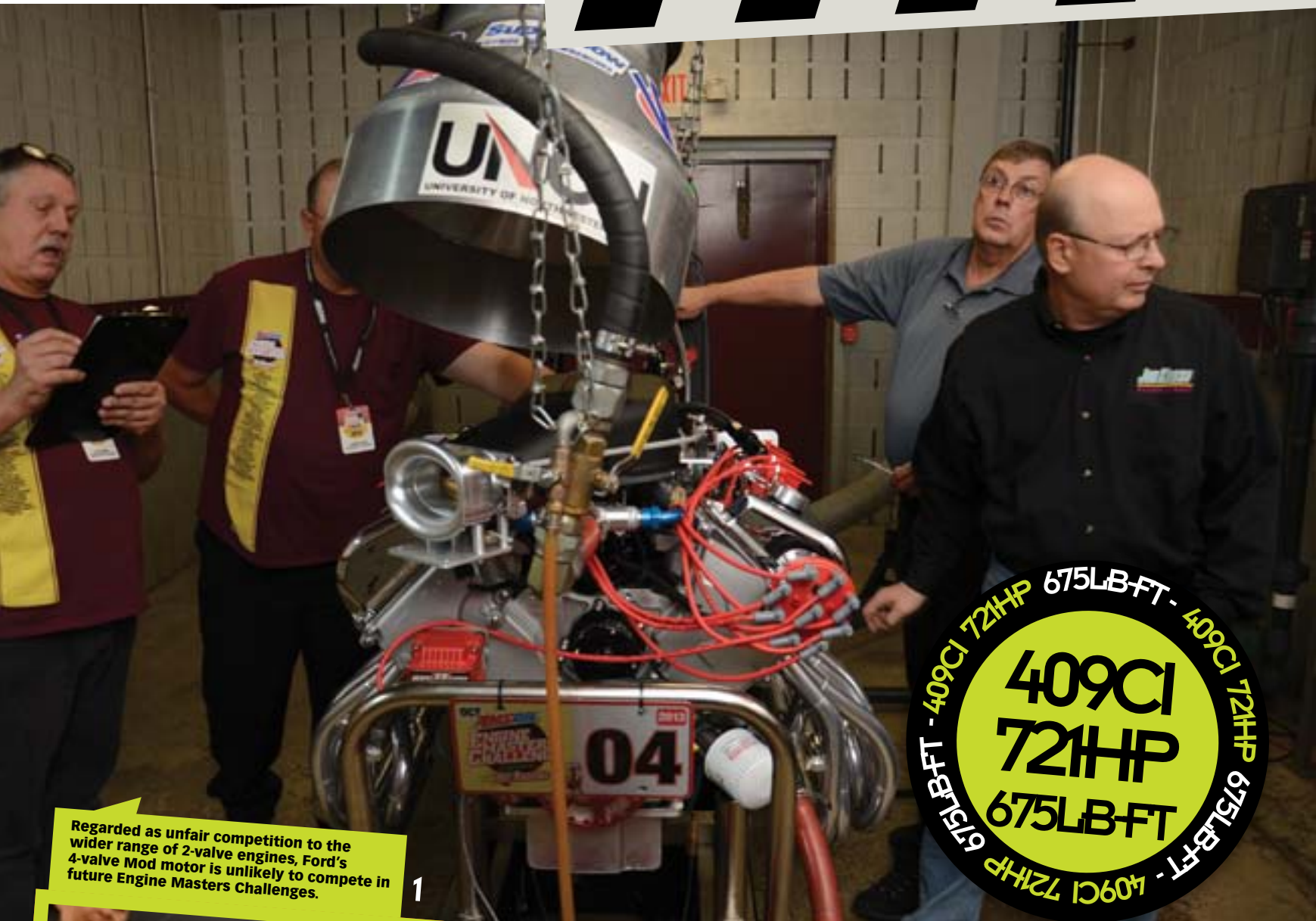
# TOP

THE 2013 ENGINE MASTERS CHALLENGE, THE ELEVENTH IN A SERIES FIRST STARTED IN 2002, WAS WON BY JON KAASE RACING ENGINES. HIS FIFTH VICTORY IN THE CHALLENGE, HE COLLECTED A PURSE JUST UNDER \$70,000.

BY BEN MOZART PHOTOGRAPHY BY MOORE GOOD INK

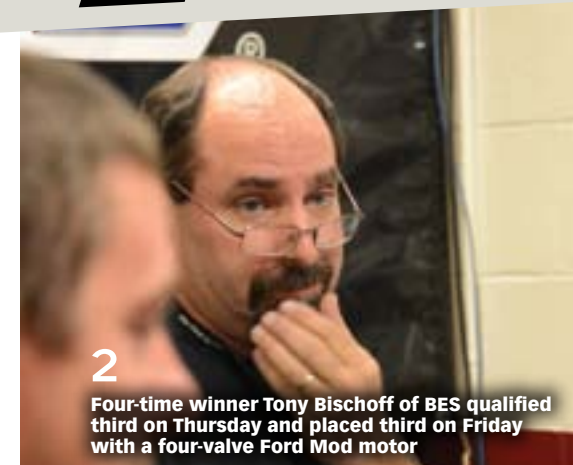






1 Regarded as unfair competition to the wider range of 2-valve engines, Ford's 4-valve Mod motor is unlikely to compete in future Engine Masters Challenges.

675LB-FT - 409CI 721HP  
409CI 721HP  
675LB-FT



2 Four-time winner Tony Bischoff of BES qualified third on Thursday and placed third on Friday with a four-valve Ford Mod motor

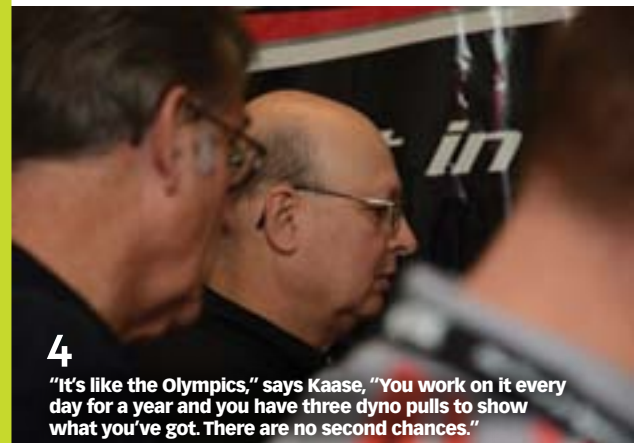


3 The most striking external refinement on Kaase's 4-valve was his sixteen-pipe headers which played an important role between 3,000 and 4,000rpm

bubble", should some errant befall any of the top five during Friday's finals.

For all qualifying sessions, two dyno rooms were used. In each a DTS dynamometer resided under the supervision of Dave Arsenault. But for Friday's finals only one of the acclaimed machines was scheduled for use. Equally significant, only one operator, Matt Bowers, had the authority to perform all the test runs during the Challenge.

On Thursday evening the teams were invited to a generous banquet sponsored by Comp Cams. Most of all, the Engine Masters is an event that brings race engine builders together not only in challenge but also in a spirit of friendship. Who could wish for better dinner companions than Ron Shaver and his ilk—gregarious and irreverent they are hilarious company. Ultimately, the



4 "It's like the Olympics," says Kaase, "You work on it every day for a year and you have three dyno pulls to show what you've got. There are no second chances."

IT TAKES AN  
EXTRAORDINARY  
ABILITY TO WIN THE  
ENGINE MASTERS  
CHALLENGE FIVE TIMES

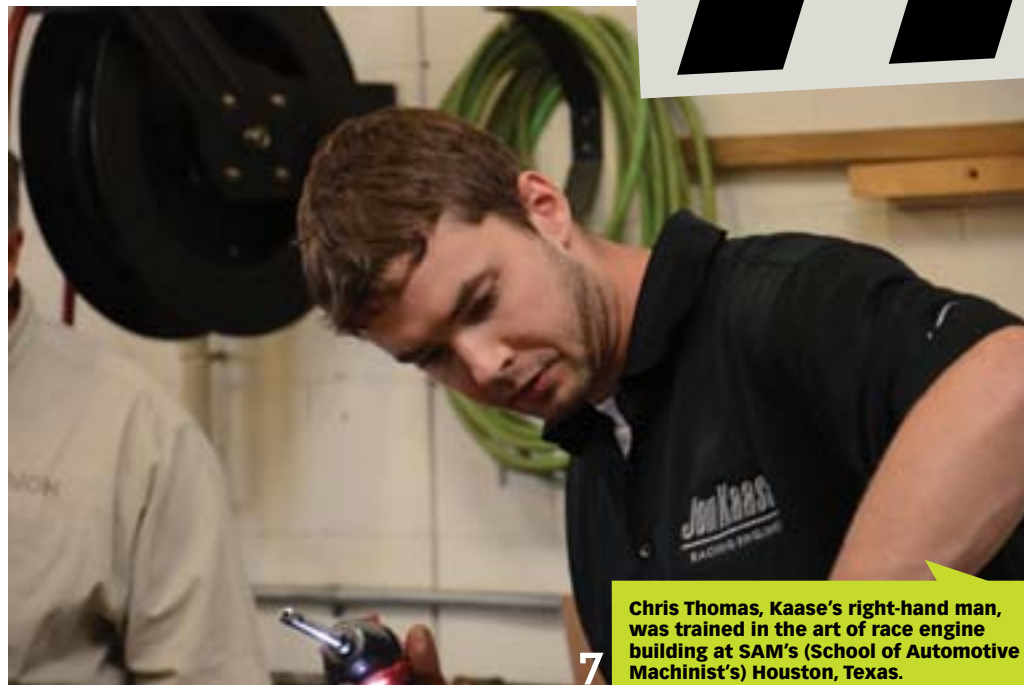


5 The Boss Nine, which finished 7th, was out of tune at low engine speeds. The dyno operator at the Lima contest applied the brake at 2,500rpm, 300 revs lower than Kaase had used. As a result it was rich on some cylinders, lean on others. But when its air-fuel mixture recovered at 3,200rpm it took off like a rocket

6 For five days competing engine builders reside in UNOH rooms adjacent to the dyno cells, observing their competitors' performances on video screens.







7 Chris Thomas, Kaase's right-hand man, was trained in the art of race engine building at SAM's (School of Automotive Machinist's) Houston, Texas.



8 "I'm not sure I would have won," admitted Kaase, "if Chris hadn't been there banging away on the keyboard. I didn't tell him anything, he did that all on his own."

## ENGINE SPECS

Compression ratio: 11.4:1  
Displacement: 409cu in  
Bore size: 3.720in  
Stroke length: 4.700in  
Connecting rod length: 6.658in (Eagle stock replacement rod for a 5.4 litre Mod motor)  
Intake valve size 1.515in  
Exhaust valve size 1.260in  
Camshaft duration @ 0.050in: 230 degrees (both intake and exhaust)  
Valve lift 0.625in  
Crankshaft and bearings: stock 5.4 litre  
Intake manifold: Cobra R from a 2000 model car with a 2-valve engine

Last minute preparations

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10 Tony Bischoff with Diamond Piston's Bob Fox

names of the five finalists were put in a hat to decide Friday's order. Kaase's number was first drawn.

So duly at seven o'clock on Friday morning Kaase's 409cu in 4-valve appeared. Though he would have preferred to have run at the end of the order he found the early autumn air quality agreeable. Given slightly lower air temperature and higher atmospheric pressure than the previous day, his team began making adjustments to the ignition curve and adding and reducing fuel requirements at various engine speeds between 3,000 and 7,000 rpm. Remarkably it scored 2961.7, which was appreciably higher than their qualifying score the previous day; in fact, higher than they had hitherto achieved in their shop back in Winder, Georgia. John Mahovitz of Accufab finished second in the final standings with 2931 and BES Racing third with 2863.7.

"In the finals we made nine runs," commented Kaase, "and, importantly, during the first four we had equaled Mahovitz' best qualifying run, so we kept tuning and tuning

and it continued to improve. So in the final few minutes we administered our "Chernobyl tune-up" and that seemed to seal the deal. It seemed we couldn't do anything wrong, it was awesome!"

It takes an extraordinary ability to win the Engine Masters Challenge five times. If you ask the 61-year old Kaase what makes these feats possible, he'll tell you, "It's like the Olympics. You work for 10 months, thinking about it every day and every night to make three dyno pulls during a 27-minute session and you hope they are all good. You only have three pulls to show what you've got; there are no second chances."

Today's race engine builders have precision machining centres, but in earlier times Kaase and his contemporaries learned the fundamentals of their trade with a lathe, a mill, hacksaws and files. "To get the arc welder to work," admits Kaase, "we'd resort to pulling mom's stove out to get access to 220volts!"



11 Thursday afternoon's top qualifier, John Mahovitz of Accufab, running a Ford Modular 4-valve



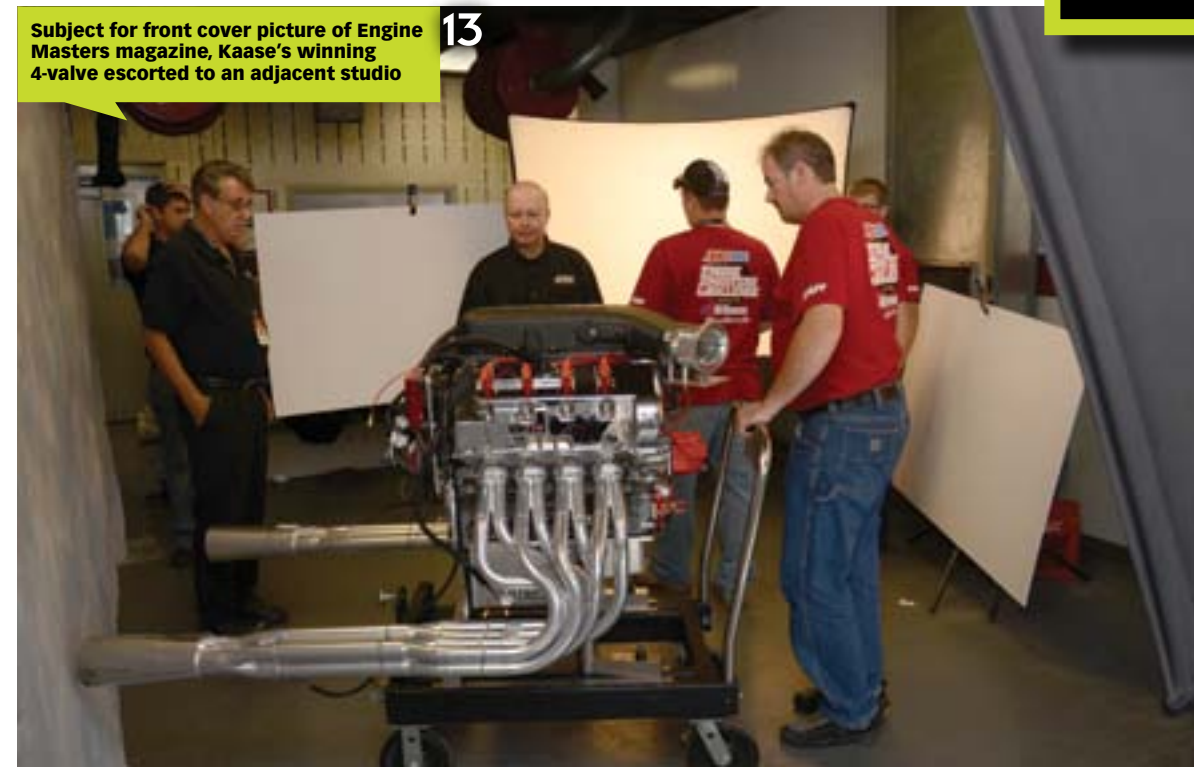
12 Steve Dulcich, Editor of Engine Masters magazine and adept tuner in his own right



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Subject for front cover picture of Engine Masters magazine, Kaase's winning 4-valve escorted to an adjacent studio



Tear down following a year's development and five hectic days of competition

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