

427 MAKES CAMARO "BOSS"

CAR CRAFT

CAR CRAFT



GTO TRICK STUFF

HOW-TO-DO-IT: REAR SUSPENSIONS FOR YOUR ROD

FEBRUARY 1967 • 50¢ UK 3'6 Sweden KR. 3.90 Inkl.

ACTION COLOR:

"SMOKESVILLE" HURST HAIRY OLDS



PONTIAC
Underground
Certified Builers

SNEAK PREVIEW!

FABULOUS FUNNY CARS FOR SUPER '67 SEASON

Mallory CAPACITIVE DISCHARGE Ignition

Converts your car to Capacitive Discharge Ignition. This revolutionary new ignition system discharges a high voltage spark in less than 4 millionths of a second. Produces over 50,000 volts... 50,000 at 10,000 R.P.M. Capacitive Discharge feature fires fouled plugs. Spark plugs last 50,000 to 100,000 miles. Eliminates hard starting... Improves engine performance. Converts back to conventional ignition in seconds. This system will pay for itself in a short time and can be transferred from one engine to another.



Mallory PHOTO-CELL BREAKERLESS CAPACITIVE DISCHARGE IGNITION SYSTEM



Full ignition on a "Beam-of-Light." Combining the amazing Mallory Photo-Cell Breakerless Distributor with the Mallory Capacitive Discharge Ignition results in the world's finest battery ignition system. This new concept in ignition has no points to wear out. There are no moving parts except a shutter wheel which serves to interrupt the light source from the Photo-Cell, thereby triggering the signal to fire the spark. Capacitive Discharge feature fires fouled plugs. Spark plugs last 50,000 to 100,000 miles. It is a complete ignition system including a pie-wound coil, an electronic amplifier and a complete Photo-Cell Distributor. "Beam-of-Light" will time the engine more accurately than ever before possible. Produces twice as much voltage and spark energy than the engine requires, regardless of engine R.P.M.

For over 40 years automotive enthusiasts have relied on Mallory products for quality and dependability and PERFORMANCE. You too, can rely on Mallory. See your dealer, or write today for complete information and free colorful decal.

Mallory
ELECTRIC CORPORATION
12416 Cloverdale Ave., Detroit, Mich. 48204



CAR CRAFT

DICK DAY
Publisher
DAN ROULSTON
Editor
BOB YOUNG
Art Director
MARIE DONNELL
Asst. Managing Editor
DICK SCRITCHFIELD
Associate Editor
TERRY COOK
Technical Editor
BOB SWAIM
Photo Editor



THE AUTOMOTIVE GO & SHOW MAGAZINE

FEATURES

MOTOR MAN Drag Racing's Engine Builder.	14
427 CAMARO Chevrolet's newest gets big engine.	22
SNEAK PREVIEW - 1967 match race "funny" cars	26
M/T - A CLASS BY ITSELF A gathering of asphalt thrashers.	34
GTO TRICK STUFF How to make your tiger growl	38
REAR SUSPENSIONS Rod Building Tips.	42
BEE/GASSER Super neat Anglia gasser.	52
DODGE DART Gets 383 Treatment	54
ROADSTER CLAN'S FAVORITE Show winner	58
SEATON'S SUPER SHAKER A wild match race Corvair.	60
DRAG RACING'S WORLD CHAMPIONS 1966's big winners	64
STOCK MARKET LOOKING GOOD Drag rules for 1967.	66
MONTESA SPORT 250 Motorcycle test.	68

DEPARTMENTS

POINT OF VIEW	6	YOUR CAR & THE LAW	84
STRAIGHT SCOOP	10	DIPSTICK	88
MAIL RUN	16	CC SHOPS	90
BENCH RACING	82	CC/GASSERS	92

COST OF FOREIGN SUBSCRIPTIONS

Country	One Year
Great Britain	2.9
Australia-S	5.342
New Zealand	2.2.11
Denmark-kroner	41.27
Sweden-krona	30.93
Holland-guild	21.68
Mexico-peso	74.72
Japan-yen	2,166.06
So. Africa-rand	4.268

COVER

Match racing "funny" cars are electrifying drag racing fans from coast to coast with their spectacular performances and classy showmanship. Typical of the wild, wild machines that will be running during the 1967 season is "Brutus," a supercharged, fuel-burning, fiberglass Pontiac GTO.

CAR CRAFT ACTION SHOWCASE

Pat Brollier captured the spectacular drama of the Hurst "Hairy Olds" at the NHRA World Championship Finals.



Robert E. Petersen President
F. R. Waingrow Executive Vice-President
Kenneth Hudnall Advertising Director
Herbert Metcalf Circulation Director
Jack Preston Production Manager

M. S. Rawitsch Purchasing Director
Albert Michaelian Research Librarian
Albert H. Issacs PPC Art Director
Robert D'Olivo Photo Director
Donald Maxwell Controller



PETERSEN PUBLISHING CO., ADVERTISING OFFICES: CALIFORNIA, 5959 Hollywood Blvd., Los Angeles 90028, 466-2111; MICHIGAN, 2208 Detroit Bank & Trust Bldg., Detroit 48226, 963-8040; ILLINOIS, 401 N. Michigan Ave., Suite 1444, Chicago 60611, 222-1920; OHIO, 601 Rockwell Ave., Cleveland 44114, 621-2006; NEW YORK, 770 Lexington Ave., New York 10021, 751-6260; MISSOURI, 34 N. Brentwood Blvd., Clayton 63105, 727-7220.

Car Craft Magazine, Copyright 1967 by Peterson Publishing Company. All Rights Reserved. Second class postage paid at Los Angeles, California and at additional mailing offices. Subscription rates: U.S. Possessions - 1 year \$5.00, 2 years \$9.00, 50c per copy. All others - 1 year \$6.00, 2 years \$11.00. Give six weeks notice for change of address. CONTRIBUTIONS: Should be mailed to 5959 Hollywood Blvd., Los Angeles 90028. They must be accompanied by return postage and we assume no responsibility for loss or damage thereto. Any material accepted is subject to such revision as is necessary in our sole discretion to meet the requirements of this publication. Upon acceptance, payment will be made at our current rate, which covers all author's and/or contributor's right, title, and interest in and to the material mailed including but not limited to photos, drawings, charts and designs, which shall be considered as text. The act of mailing a manuscript and/or material shall constitute an express warranty by the contributor that the material is original and in no way an infringement upon the rights of others.

MOST DRAG RACING fans are fascinated by the way stock cars can be "tuned up," with comparatively minor legal modifications, to turn times so much better than they could ever turn in original showroom form. Some mechanics can do fantastic things in this area — and, of course, these are the guys who win the trophies. But speed tuning is a *science* as well as an art. Specific modifications will usually add a predictable amount to strip performance. This is what we write magazine stories about. And this is how the amateur learns the "art."

The editors of CAR CRAFT thought it might be interesting to make some of these well-known changes on a typical stock performance model then take it out to the drag strip and see the exact effect of those changes. It was felt that this type of on-the-strip test would be more valuable than trying to pinpoint the effect of engine changes alone on a dynamometer which may not be readily available to the average readers. The strip test shows the effect of gearing, tires, chassis mods, etc. These are as vital as engine changes.

It wasn't hard getting cooperation for these tests. The people at Royal Pontiac in Royal Oak, Mich., are always ready for special comparison tests like this. They not only learn more about setting up their own sponsored cars at the drags, but the magazine publicity is great for sales. The Royal dealership is one of the biggest

Pontiac outlets in the country and they have been selling more performance models (GTO's, etc.) than anybody else. It's a mecca for Pontiac performance fans all over the midwest. They've got the parts and the answers.

Royal was right for these tests for one other reason: For years they've been selling a special "Bobcat" tune-up package, which consists of a number of relatively simple, low-cost engine mods that hop up the street and strip performance considerably — but are still strictly legal under stock rules. This made it a natural to set the deal up as a *three-stage* test. In other words, test the car in strictly original showroom trim, with no more preparation than a check of plugs and spark timing. Next, test with the Bobcat package and maybe a couple of other minor changes as run on both street and strip. Then, a final test in all-out form with the engine fully "blueprinted" and with optimum gearing, tires and chassis modifications.

So the die was cast. Royal's Performance Department, headed by Milt Schornack, and with brothers Dave and Sid Warren on the wrenches, went to work. The basic test model was the 1967 GTO coupe with the optional Ram Air engine (360 hp at 5400 rpm), and a minimum of weight-producing accessories. It was finally decided to use two cars so we could get a side-by-side comparison for the first two tests.

The "showroom" model was a blue

GTO

*A step-by-step plan for
peak performance*

Showroom Stock—14.11

e.t. 100.00 mph Bobcat

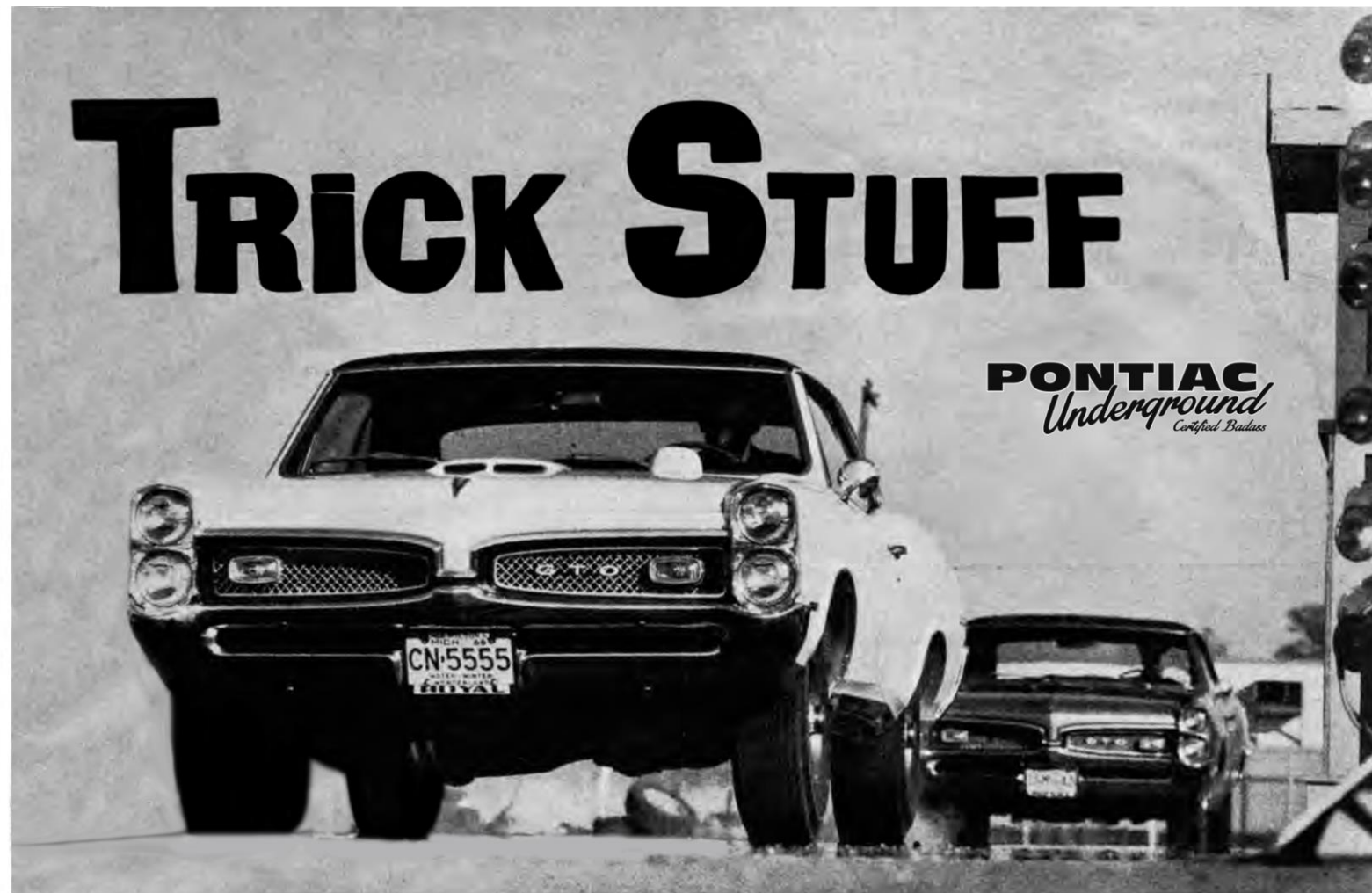
Treatment—13.08 e.t.

107.01 mph Blueprint—

12.43 e.t. 112.10 mph

(And it's all legal)

By Roger Huntington



ABOVE—With Dave Warren driving, the showroom stock "blue" GTO turned steady times of low 14's at 100 mph. When the tires were changed to M&H slicks, times dropped into the high 13-second bracket.



LEFT — Triple carbs are out for the '67 GTO's, but the big Rochester Quadrajet four-barrel produces almost as much in the horsepower department. Ram Air has been adapted to carb for even more go.

RIGHT — One of the critical points in blueprinting the GTO engine is proper cylinder head capacity. Machining will take it to specifications, but don't go too far if you are running stock class.

GTO with the standard Ram Air engine and a few convenience accessories like power steering, brakes, rally instrument pack, rally wheels, etc. The white Bobcat car was intended for competition later on, so was ordered with fewer of the heavy luxury accessories, the new easy-to-read competition tachometer on the hood, and was fitted with the beautiful Hurst lightweight forged aluminum wheels. This car was also ordered with standard Ram Air engine, and optional capacitor-discharge ignition system.

It was planned to make the Bobcat modifications on the white car first, test both cars side-by-side on the same day, then make the all-out modifications on the white car, and test it about a week later. (As it turned out, bad weather delayed the "blueprint" test a full week; but we finally make it — only in temperatures that were 20° lower than the first two tests, which had some side effects we'll discuss later.)

It should also be mentioned here that we had the use of the fine Motor City Dragway in Detroit for our week-day testing. The Motor City people have been very cooperative with us magazine testers, and I'm the first to say that this type of comparison testing would be impossible without having the strip all to ourselves on a week day.

Thanks a million, Motor City.

First, let's look at the showroom car. As you probably know, GM cars cannot use multiple carburetion in 1967, so Pontiac's famous Tri-Power system has been discarded in favor of a new big-port manifold mounting the huge Rochester Quadrajet four barrel. This has a whopping 9.4 sq. in. of venturi area with all barrels open, and gives nearly as good breathing as the three duals. Engineers tell me the difference is only five or ten horses on the dyno, other factors equal. And, of course, the '67 GTO has some other important things going for it: Cubic inches have been upped from 389 to 400 and there's a brand new set of cylinder heads with larger ports and valves. Also, Pontiac, at last, has developed a beautiful set of cast iron exhaust headers to fit the GTO chassis. Always before they've had to use standard exhaust manifolds because the streamlined headers for the 421 H.O. engine in the big cars wouldn't clear the suspension on the "A" body. The new headers keep the individual exhaust pulses separated for several inches beyond each cylinder. They look real hairy!

Apparently, all these improvements more than offset the loss of carburetion because the standard '67 GTO's are definitely quicker by several degrees

than last year's cars with Tri-Power.

The optional Ram Air system has not been significantly changed from '66, other than adapting it to the Quadrajet carb. It still takes the cold air in through the hood scoop and there is an air box around the carb that seals against the underside of the hood via a thick foam "gasket." You get a very slight ram pressure as well as cold, dense air to the carb. This deal must add a good 20 horses. At the same time, many fans don't realize that you also get a hotter hydraulic cam and stiffer valve springs with the Ram Air package. This cam (Part No. 9785774) has 301° intake duration and .420 lift. The special springs give about 250 lbs. of pressure at full lift. This is enough to hit a solid 6000 rpm when the lifter plungers are adjusted out. It's a mighty strong combination. Incidentally, when you order the Ram Air package you automatically get 4.33 rear axle gears instead of the standard 3.55 GTO gears — (since most fellows will be dragging this package). And, when ordered with a four speed, you get the strong Muncie box with the close ratios (2.20 low).

This is the basic car that we tested in showroom trim. With no more tuning than a check of timing (set at

(continued on following page)

TRICK STUFF

about 10° BTC) the car ran run after run in the low 14's e.t. at 98 to 100 mph trap speed. This is with Milt Schornack and Dave Warren driving. Both are very quick and experienced drag racing men. And don't forget, this was with *closed exhaust* and the standard Firestone Wide Oval street tires that come on all '67 GTO's. These latter have about one and one-half inches wider tread than the regular 7.75x14 red-lines that came on '66 GTO's and they definitely give much better traction both on dry and wet streets. They're not like a set of cheater slicks, but they're the best practical street tire yet available for big-inch performance machines like the GTO. The best run in this full street trim on the blue car netted a 14.11 e.t. at 100.00 mph.

You might remember that 1966 GTO's with the 360 horsepower Tri-Power H.O. engine with the old heads, 389 cubes and the old standard exhaust headers would turn e.t.'s in the mid-14's at around 95-97 in showroom trim.

Just for kicks, we threw a set of 9.00x14 M&H Super Stocks with seven inch tread width on the blue car - still with closed exhaust. These helped quite a bit off the line and Schornack pulled one run in 13.72 at 100.78 mph. The tires were worth about .3 seconds but gave no significant increase in speed.

One factor that hurt performance in showroom trim was the valve lifters pumping up at about 5100 rpm. Shifts had to be made at 5000, and now and then the engine would go sour toward the end of the quarter - turning just over 5000 in high gear with the 4.33 gears. Since the engine peaks its power about 5000 rpm, there would seem to be a little more performance available if shifts could have been made at 5500-6000 rpm. Even with the pump-up at 5100, the trap speeds might have been higher with 3.90 gears.

Anyway, that's pretty decent performance for a strictly showroom car that you can buy for around \$3000.

The white car was tested at the same time with the Royal Bobcat package. We've had CC stories on this package before so I won't go into great detail. Essentially, the changes involve carburetion, ignition and valve gear. The Quadrajets primary jets are opened up .003 (not secondaries), accelerator pump stroke is lengthened by cutting one-quarter inch off the shaft, and they wind up the coil spring on the secondary air valve, letting it open sooner. Special intake manifold gaskets block the heat risers. Special thin, .022 head gaskets also raise compression.

The spark advance curve is modified by sleeving the stop pin for the centrifugal weights and using lighter



ABOVE—Milt Schornack, Royal's top drag racing expert, gives particular attention to the valve job during the Bobcat installation, saving time on the subsequent blue-printing operation phase of the program.



LEFT—The distributor is another important item on the Bobcat check list. Lighter springs and a revamped advance curve results in a total spark advance of 42 degrees above the 2600 rpm level.

BELOW RIGHT—During hard acceleration runs, the rearend encounters terrific torque. A combination of Cure-Ride and Air-Lift products take care of the rear suspension problems for the Bobcat car.



ABOVE—Sid Warren carefully measures the block deck clearance to the minimum .0015 during blue-printing of the engine. This attention to detail is where you pick up that additional horsepower needed to win.



springs on them. They also grind off some of the weight cam so it advances faster at the low end. This gives them 15 degrees distributor advance (30 crank) at 2600 rpm crank speed instead of the stock 4500. Then the initial lead is cranked up from the stock six degrees to around 12, for a total of 42 degrees total advance above 2600 - and this seems to be the way these new big-valve heads want it. (The '66 engines generally wanted 36-40 degrees total.) Champion UJ-10-Y plugs gapped .030 for the street, were installed.

The maximum useable revs can be raised nearly 1000 rpm by merely re-adjusting the valve lash to bring the

hydraulic lifter plungers out to the absolute end of their travel. This can be readily done on engines with ball-joint rockers by turning the adjusting nuts on the rocker studs 'til the valve gear starts to click, showing the plungers are against the stops. Then turn in a quarter turn. The Royal people use special sleeved lock nuts on the Bobcat package that won't work loose. This lash adjustment stays for thousands of miles, and this quick job will permit up to 6000 rpm with Ram Air springs.

The above is pretty much what the Royal Bobcat package has included for the last four or five years. But in the last year or so Schornack has been



Bolting on a set of performance tuned headers is just like adding a few more horses. The white car came in for special attention with a set of Hurst experimental four-tube headers for maximum engine performance.



Extensive work was done to the front end on the blueprinted car, including installation of 90/10 Cure-Ride shocks for initial front end lift on hard runs.



During the Bobcat phase of the testing program, the heads on the GTO came in for extra special attention in order to gain the additional engine speed necessary for shifts in the 6000 rpm range. Special sleeved lock nuts were installed as part of the Bobcat package, guaranteeing positive lash adjustment for thousands of street miles. A big gain in engine speed was realized by careful adjustment of the ball-joint rockers as outlined in the text in step-by-step style.

pushing a more comprehensive cylinder head job for buyers who want just a little more. Milt feels the extra compression that is available—which is legal under stock rules—is important in overall street and strip performance. The job includes a careful CC'ing of the combustion chambers to bring the volume down from the usual 69-70 cc on factory heads to the minimum legal 65 cc. A mill cut of .007 will remove one CC, so most heads will take about a .028 mill to attain the 65 cc. Then, Milt goes ahead and does a good valve seating job (though not a razor-sharp job on street engines since it won't last) and the job is topped off by shim-

ming the valve springs to bring pressure up to the full factory value—or around 115 pounds on the seat.

This head job adds a few more horses, and the price for the whole Bobcat deal, parts and labor, runs right around \$225. A good dollar return.

In addition to these changes, the white car was fitted with 3.90 rearend gears, which the Royal people feel make the best all-around compromise for street and strip. They re-fit most of their Ram Air cars, which come through with 4.33's, with the 3.90's right off the bat. Also, the white was fitted with the Hurst wheels plus a set of special experimental Hurst four-tube

headers with collector pointing straight back for efficiency. (Is Hurst going into the header business??)

So what did we get on the strip? We were pleasantly surprised. With closed exhaust and street tires (Wide Ovals) Dave Warren pulled a best run of 13.86 at 105.14 mph. This is roughly .30 sec. and five mph better than the showroom car in the same trim. The Bobcat had just about the same e.t. with street tires as the showroom car had with slicks. But the special tires helped the Bobcat more than it did the lower-power car. Putting M&H Super Stock 8.50x14's on the car improved the time to 13.32 at 105.63 mph. These tires have only a 6½-in. tread width but the one inch smaller diameter worked better with the 3.90 gears, while the big 9.50x14 seven inch tires seem to work better with 4.33 gears.

It was when we disconnected the mufflers, however, that the Bobcat really turned on. Best time: 13.08 at 107.01 mph! Opening the exhaust made a new car of it. Milt could shift a 5800 rpm and still be pulling pretty good, and it was pulling like crazy in the traps at 5100. Either a strong engine good headers—or combination of both!

Then there was that wild blueprint job. The white car was taken back to the Royal garage and the engine and chassis were completely reworked. Of course, the cylinder heads had already been done for the Bobcat job, so the blueprint job was mostly in the block. Here are some of the major specs: Thompson-Toledo forged pistons with .005 skirt clearance; Perfect Circle cast iron rings for quick seating, with .025 end gap; rod bearing clearance, .0025; main bearing clearance, .003. Block deck clearance was cut to the minimum .0015—which made the thin head gaskets illegal. Stock bore was retained. The lower end balance job was done by Jim Cornell at Seco Engineering. Schornack beefed up the oil pump by using an 80-pound spring for more pressure and the pump was strengthened by using a thicker bottom plate—to prevent possible cracking of the thin stock plate at high revs. They also deepened the oil sump one inch and lengthened the pick-up tube a like amount—not so much to get a greater oil capacity but to keep the normal amount of oil away from the crankshaft on hard acceleration. (Oil-whipping by the crank can lose several hp.) Also, the heads were given a litter sharper valve job, with thinner seats, before buttoning up the engine.

Almost as much was done to the chassis as to the engine on this all-out stock setup job. For one, the stock factory clutch was replaced by a heavy-duty Schiefer clutch and flywheel. Rearend gears were changed back to 4.33's. (And may later be changed to special 4.56's from Perfection Gear Co.)

(continued on page 78)



SHOW TIME 67

THERE'S MORE IN STORE THAN EVER BEFORE FOR CAR OWNERS AND FANS

There's more in store than ever before for car owners and fans in the 1966-67 International Championship Auto Show Series. Over \$125,000 in prizes, including 1967 automobile, performance parts and accessories, and plenty more. Check the list and make your plans now. Or write for complete details to: International Show Car Association c/o Promotions, Inc., 19717 E. Nine Mile Road, St. Clair Shores, Michigan.

BUFFALO, N.Y.

January 13, 14 & 15, 8th Annual Autorama. Memorial Auditorium. Sponsored by International Show Car Association. Produced by Promotions, Inc.

DETROIT, MICH.

Jan. 20, 21 & 22, 15th Annual Autorama. Cobo Hall. Sponsored by Michigan Hot Rod Association. Produced by Promotions, Inc.

DALLAS, TEX.

March 3, 4 & 5, 7th Annual Autorama. Fairgrounds. Sponsored by the Quarter-Milers. Produced by Promotions, Inc.

TORONTO, ONT.

Jan. 27 & 28, 8th Annual Speed Sport. Queen Elizabeth Exhibit Hall. Sponsored by Corsairs Car Club. Produced by Promotions, Inc.

INDIANAPOLIS, IND.

Feb. 17, 18 & 19, 8th Annual 500 Motorama. Fairgrounds. Sponsored by Indy Idlers. Produced by Promotions, Inc.

Produced by

Promotions, inc.
19717 E. Nine Mile Rd.
St. Clair Shores, Michigan 48080



JOIN THE ISCA — Get in the show-know! Membership includes ISCA Newsletter; parts-accessory discounts; discount tickets for ISCA shows; information on all major show events; and more! Send \$3.50 for one-year membership.


GTO TRICK STUFF

(continued from page 41)

The front end of the car was raised a little over an inch by reversing the ball joints — which actually only leveled the body when using the big rear tires. Front shocks were replaced by 90/10 Cure-Rides, to let the front come up on initial take-off and to transfer more weight to the rear wheels. Rear shocks were the regular extra-heavy-duty factory shocks. A considerable amount of work was done on the rear suspension joints. With the GM four-link rear suspension on the A-body compacts you can get quite a lot of bounce and vibration in the flexible rubber joints when the clutch is engaged hard coming off the line. This can trigger wheel-hop, even though the arms are actually absorbing the axle wind-up. The Royal guys take care of this by replacing the rubber bushings in the rearend with hard *bronze* bushings, with no give at all. The ride is rough and noisy, and the car is not at all suitable for the street. But that rearend really gets down and bites on the line. This is helped further by using Air-Lift bags inside the rear coil springs.

So now we had a pretty complete stock racing machine — and yet one that would pass any NHRA or AHRA tech inspection — and I can truthfully say, that we were all pretty flabbergasted at the drag strip times. I should first point out, however, that these last tests were delayed and were run in 40 degree weather — compared with 60 degree temperatures for the earlier tests. This denser air adds considerably to the HP. I would estimate the effect to be about .10 seconds on e.t. and maybe one mph in trap speed. But this isn't taking anything away from this fabulous blueprint job that the Roy crew did. We first started running the car with the 8.50 x 14 tires having six and one-half inch treads. The car immediately started turning in the 12.70's and 12.80's at nearly 110 mph! The best time was a 12.68 at 110.02 mph.

But drivers Schornack and Dave Warren felt the gearing wasn't just right and there wasn't enough rubber working. The engine was turning 5800 rpm in the lights with the 8.50 tires and valve action seemed to be erratic. Back to the big 9.50x14's. These gave more rubber area with the seven inch tread width, and the one inch more diameter cut down peak rpm. It certainly was the formula! The crazy car immediately started running near 12.50's at 111 and 112 mph! Also, the engine was turning between 5600 and 5700 in the lights. Warren finally cut a fantastic 12.43 at 112.10!

I think we can conclude that the new '67 GTO's with the Quadrajet are some stronger than '66s with Tri-Power! 

INTRODUCING

WHEELS AFIELD!... the only recreational vehicle magazine that tells you how to enjoy, and get the most out of your "Castle on Wheels!" Every issue is packed with news, information and mechanical how-to's that will save you time and money!

Wherever you go... whatever you do... you'll need Petersen's WHEELS AFIELD!

- Travel Trailers • Pickup Campers
- Motor Homes • Tent Trailers



HIT THE ROAD TROUBLE-FREE!

PETERSEN'S WHEELS AFIELD 5916 Hollywood Blvd., Los Angeles, Calif. 90028

Send me WHEELS AFIELD for 1 year \$5 enclosed Bill me

Name _____
Street _____
City _____ State _____ Zip _____

Subscribe Today...
1 YEAR only \$5.00