



We test a 'FACTORY ROD'

Heavy-duty torsion bars and higher rate rear leaf springs make the CHP Dodges even more roadable than stock models.

by Joe H. Wherry

DATELINE: Sacramento, California
LOCATION: Emergency Vehicle Operation
Course, California Highway
Patrol Academy
SPECIAL TO: CARS Magazine

THERE ARE three distinct elements in this story: the car, the CHP's EVOC, and the method by which the CHP chooses the make and model car for the important task of law enforcement on the highways of the state which has more privately registered cars than any other state in the nation. To get the facts I went to the State capital at Sacramento. Narcotics, crime and punishment, and how quickly the legislators could wind up the current special session were in the news; and outside of the California Highway Patrol there was precious little concern for maintaining sanity on the highways. But CHP does, and will continue to do, just that. CHP has the means, and if you question that statement, you'd better be a pretty sharp driver at the wheel of some terrifically potent machinery. CHP officer-drivers have to be a cut above the average character in a hot rod or sports car, and their mounts, the new 1960 Dodge Police Pursuit cars built especially to CHP specifications, are *ditto*.

6

Now, let's consider the car. Basically it looks like an ordinary '60 Dodge four-door sedan with a Dart grille and minus a lot of the gingerbread the usual civilian model sports. At first glance it's just another black sedan with the front doors curiously painted white. The showroom/civilian model most closely related is the Polara PD2 with the big 383-cubic inch engine rated at 325 horsepower and weighing at the curb, with 3-speed TorqueFlite, radio and heater, some 4,045 pounds. But minus the aforementioned tinsel and trinketry, the

PERFORMANCE

2-mile standing start	129.31 mph
¼-mile standing start	86.25 mph
¼-mile, 50-mph flying start	91.89 mph
1-mile standing start	120.43 mph

(See text for complete explanation)

Police Pursuit when delivered to the CHP weighs about 105 pounds more.

Where does the extra weight come from? Does this weight include siren, special radio equipment, and other

CHP Sgt. Bob Phillips is chief instructor at the EVOC course. The car looks like a cross between Dodge and Dart.



Revealed here for the first time are the inside secrets of a sensational special, how they make it perform, and what they mean to you

THE DODGE POLICE CRUISER

The Pursuit car driven and tested by CARS did not have the official state "bug"—but had plenty of go-power!





CHP uses confiscated cars to train rookies. Here a '59 Dodge Pursuit dices with one on the skid pad.



Captain Leonard Overhouse of the CHP Academy and CARS' test driver-reporter discuss driver training.

police equipment?

First, the Police Pursuit has a raft of heavy-duty components.

Secondly, the 4,150 pounds does not include, when delivered, the special police equipment; but the car does include, from the manufacturer's level, the various necessary mounting pads in the places prescribed for the installation of such special equipment.

Squatting there menacingly, the Police Pursuit is higher by $\frac{1}{2}$ inch due principally to the specified 15-inch wheels (stock Dodge Polara has 14-inches—and, in the following text, stock differences will be given parenthetically following the Police Pursuit's specs) which mount 6-ply 7.60 tires (stock 4-ply 8.00 x 14). The wheel spiders and webs are of considerably heavier material than stock and the brake drums are of Centrifuse material (cast iron) of 12 inches diameter (11 inches) giving an effective brake lining area of 251 square inches (230) for increased brake stopping power and less tendency to fade under the hard usage the CHP often gives them. The rear wheel brake cylinders are 1.225 inches diameter (1.125). There's where some of the additional 105 pounds comes from. CHP rules out power brakes, insists on at least 7.5 inches pedal travel (6.0).

The suspension system looks like that of a stock Polara but here, too, heavy-duty components are installed in order to meet CHP requirements. Beginning with the torsional front suspension, the torsion bars are of the same chrome-alloy steel but are 1.01 inches in diameter (.990 for the stockers), and to further assist control in hard cornering there is a stabilizer bar of .75 inch diameter (none on stock sedans). The spring rate of the torsion bars at each wheel is 130 pounds per inch—significantly more than that of the stock Dodge sedan whose individual wheel spring rate does not even show on official AMA specs. The rear suspension is likewise beefed up—6 leaves forming each semi-elliptic spring (5 stock) giving 165 pounds per inch spring rate at each wheel (135) with a design load of around 800 pounds (left 720, right 680 stock). The CHP Dodge has 3 plastic front spring inserts (2) and the same 3 rear inserts of wax-impregnated fabric. Like the civilian Dodge, the Pursuit uses no track bar in the rear—it's not needed.

As with the brakes, CHP has no use for power-assisted steering and uses the stock Chrysler Corporation worm-and-roller type with an overall ratio of 30.16 to 1 and 5.4 turns of the 17-inch steering wheel from lock to lock. For my money this (Continued on page 56)

SPECIFICATIONS OF 1960 DODGE POLICE PURSUIT

EXTERIOR DIMENSIONS

Wheelbase	122.0"
Length overall	212.6"
Overhang	front 33.5"; rear 57.1"
Tread	front 61.5"; rear 60.2"
Width overall	78.0"
Height overall	55.4"
Ground clearance, minimum	5.7" (at mufflers)
Turning circle diameter	43.7'
Tire size*	7.60 x 15
Curb weight	4150 lb. (approx.)

INTERIOR DIMENSIONS

Hiproom	front 63.0"; rear 62.4"
Headroom	front 34.6"; rear 34.5"
Legroom	front 46.3"; rear 44.1"
Seat height	front 12.0"; rear 13.3"
Luggage capacity	17.7 cu. ft.

ENGINE

Cylinders, block, valves	90° V8, ohv
Bore and stroke	4.25" x 3.38"
Displacement	383 cu. in.
Carburetion	single 4-barrel

Compression ratio	10.0 to 1
Brake horsepower at rpm	325 at 4600
Weight to power ratio	12.77 lb./bhp (approx.)
Maximum torque at rpm	435 at 2800
Exhaust system	dual
Choke	automatic
Fuel pump	mechanical
Fuel recommended	regular

RUNNING GEAR

Steering wheel lock-to-lock	5.4 turns manual #
Brake lining area (effective)	251.0 sq. in.; 12 in. diameter*
Weight to brake area ratio	16.14 lb./sq. in. (approx.)
Drive shaft	exposed 1-piece, 2 U-joints
Rear axle ratio (as tested)	3.31
Transmission*	3-speed automatic only

FLUID CAPACITIES

Fuel tank	20 gal.
Crankcase (with filter)	6 qt.
Cooling system (with heater)	17 qt.

*These items are of generally different specifications than those available on civilian models. Larger than stock wheels permit larger brakes, 12 inches in diam.

#Power steering not available.



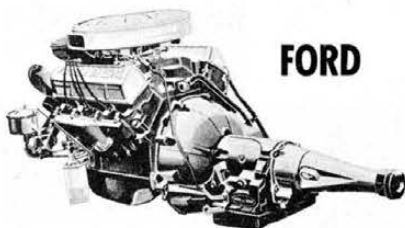
CAN YOU BUY A POLICE CAR?

■ Generally speaking, police pursuit cars, as such, are unavailable to the general public. You can buy used ones at public auctions in most states; however, by the time they go on the block, they are likely to be pretty thoroughly worn. And remember, the things that were special options on the cars of a few years ago may be stock equipment this year. Meanwhile, you can find out what heavy-duty

and power options are used on the police cars, and duplicate most of them on your own car if you don't mind paying the price. The three cars below are those most commonly used for police work.

CHEVROLET

■ Chevy offers several police options. For turnpike and highway pursuit, they recommend the 348-cubic inch special V8 of either 305 or 320 hp, with 3- or 4-speed synchromesh transmission and 3.70:1 axle ratio. Other combinations include smaller engines and 3.36 or 3.55 ratios. Top compression ratio offered is 11.25:1; biggest carb setup a triple two-barrel. Other special equipment includes heavy-duty brakes, generators, fan, shocks and suspensions.



FORD

■ Ford's Police Interceptor engine has a special camshaft, valves and solid lifters. However, it is rated at only 300 horsepower—and a much bigger 360-hp engine has been announced, although so far it proved difficult for the public to actually purchase it. The 300-horse mill uses only a single four-barrel carb, and has a compression ratio of 9.6 to 1. The other heavy-duty equipment again includes springs, suspension, brakes, etc.

PLYMOUTH

■ Plymouth offers four models, each designed for a particular type of police work. Hottest is the Pursuit Special 8, which has the Golden Commando 395 V8 engine and a complete line of heavy-duty equipment. By choosing the biggest Sonoramic engine from the standard Plymouth or Dodge line, you'll be able to buy yourself just as much power. Other special equipment is similar to that discussed in the Dodge Police Cruiser report. What you can't buy you should be able to approximately duplicate.

We Test a 'Factory Rod'—the Dodge Police Cruiser

(Continued from page 8)

is excessive but the weight of the car would make much faster steering very difficult. On this score CHP specifies a minimum weight for their emergency cars of 3950 pounds—a requirement specified by the State Vehicle Code, Section 660. I was told by an official that somewhere along the political lines the idea has crept in that *heavier cars hold the road better*. This is a fairy tale that can be exploded by employing some simple facts learned in high school physics classes; unfortunately, in this day of so-called progressive education, all high school students do not take basic physics.

The CHP Dodge Police Pursuit does handle superbly, although it's worth noting that a Porsche at less than half the weight handles even better.

With this heavy-duty undercarriage and the means of suspending it our thoughts logically turn to the drive train. Because of the tremendous torque of the more highly-tuned engine—the specs herewith admittedly give the same bhp and torque figures as those for the stock 383-cubic inch engine with 10.0 to 1 compression ratio and single 4-barrel carburetor—CHP specifies automatic transmissions, in this case the 3-speed TorqueFlite. "There isn't a stick shift that will stay together behind this engine's torque," I was told, another point that can be argued and won. But there it is.

The standard, and only, rear axle ratio on the '60 CHP Dodge jobs is 3.31 to 1 (stock standard is 2.93). The propeller shaft is a one-piece unit with two U-joints of the stock 58.96-inch length, but the outside diameter is stepped from 2.75 to 3.25 inches (stock is 2.75 straight). California's widely varying terrain, from 250 feet below sea level to a couple of miles in the opposite direction, includes some driveshaft-snapping and rear axle-popping possibilities. The rear axle of the stock variety, however, has been deemed satisfactory and the CHP car uses it.

Getting up under the hood there are differences. They are of the unseen and unspecified variety, but when you drive one of these performance-filled critters, brother, you can feel them.

The aluminum alloy slipper-type pistons are the same 27.2 ounces each; there are likewise stock rings, two compression and one oil. The pins and connecting rods are to

the same specification as the stockers, but I'll bet my bottom dollar that a lot more care has gone into matching up complete sets of these vital moving parts, although I was unable to confirm this supposition. The camshaft, too, has specs that read identical to stock cars you can buy. But, when it comes to *valve timing*, here's a different story, and one better told with a small chart:

	CHP DODGE PURSUIT	STOCK 383 POLARA
INTAKE VALVE		
opens ° BTC	20	15
closes ° ABC	68	57
duration °	268	252
EXHAUST VALVE		
opens ° BBC	60	57
closes ° ATC	28	15
duration °	268	252
VALVE OPENING		
OVERLAP	48	30

This will indicate potent reasoning behind my claim that the brake horsepower and torque ratings listed on our specs chart do not really tell the performance story of the specially-built California Highway Patrol cars. The wilder valve timing actually comes under the overall heading labelled heavy-duty. The valves, both intake and exhaust, are of the same dimensions and materials and the specs given out by Dodge indicate the same for the camshaft. However, the lobes on the latter are contoured considerably different for while the stock 383-inch engine lists both intake and exhaust valve lift as .390 inch, the Police Pursuit's camshaft opens up its valves to .430 inch, or enough more for a lot freer breathing on a long, tough chase. The valve springs, of course, are stronger, too, for on opening they exert 205 pounds pressure at 1.43 inches as compared to the stock valve springs which are rated at 195 pounds at 1.47.

The fuel system is modified, too, and in place of the stocker's Holley 1971A carburetor, the CHP Dodge sucks in its premium-grade fuel through a Carter AFB 2968S unit with four barrels and the same primary 1.44-inch and secondary 1.56-inch barrel sizes. The choke is remotely controlled and is in the manifold crossover, whereas the stock Holley carb's choke is of the more conventional separate type. A paper element-type air cleaner is used with great success by the CHP despite some rumors that desert operations

with the attendant problems of sand can raise hob with anything but an oil-bath type. (I'll buy this, for I've been caught in desert blows, too, and the lack of an oil-bath air cleaner has never bothered the four-barrel carb on my Lark nor on another car I own with a total of 91,000 miles showing—both are going strong despite numerous sandstorms.) Dual exhausts with headers are required by the CHP and so they are used (these are optional on the stock car).

The lubrication system is standard, using a full-flow replaceable-element filter. The cooling system is standard, but when you get into the electrical system *heavy-duty* again becomes the watchword. The battery is 79 ampere-hours rather than 60. The generator (an Autolite GJM-8201 H instead of the stock "A" model), turns precisely 2 revolutions to every 1° of the crankshaft, rather than the stocker's 2.12 revs, and still puts out the same 14.3 to 14.9 voltage and 35-amp current due to the heavier armature, etc. The starting system, on the other hand, specs out the same, but the *ignition system's* differences are so extensive as to again require the employment of a chart (see page 58).

For those wishing to make more time at the drags, this chart can serve as an ignition hop-up guide; but unless you are prepared to spend a lot of dough, the CHP's Dodge will still nail you. The performance addict is well advised, however, to remember that to achieve the sizzling performance of the CHP Dodge Police Pursuit cars, one must modify all the way through, beginning with the hot camshaft, stouter valve springs, and on into the ignition system.

Other than the aforementioned suspension, wheels, and engine modifications—all at the factory level by the way—the CHP cars are painted shiny black with the front doors white beneath the belt line. The interiors are generally black with the dash finished in a non-glare dull paint—something all state laws everywhere should require of all cars regardless of whether they are for official or private use—which will not reflect into the driver's eyes. The upholstery is of tough, durable material and the state allows either white, gray, or black as the colors used. Behind the front seat an extremely strong tubular roll bar is built in. In addition to the ignition

generator, CHP requires a mounting pad for an alternator which supplies auxiliary power for the electronic equipment installed when the vehicles enter active service. There are other pads, too, for mounting sirens, warning lights, flashes, etc. Otherwise it's basically a stock car insofar as one can see by eye.

How does this beast perform?

Like bloody murder! It has to for murder on the highways is exactly what it's calculated to prevent if at all possible.

And how did the Dodge grab off the lush order from the California Highway Patrol, an order not yet completely filled for the current fiscal year?

Any authorized dealer can enter a bid when such is called for by the CHP. Of course he must be handling a car that meets the requirements of wheelbase and minimum weight as mentioned above. Say he does handle such a qualifying make. He obtains the applications and deposits them as required by law and signifies that he will, upon call, make a test car available for a rigorous program of competition which the CHP dishes out to every car entered. To make a long story short, a dealer interested in such a plum orders the most potent special available from the factory, including on his order the heavy-duty items demanded by the

patrol. If his test car doesn't have these items, it simply doesn't have a chance. Then the cars entered in competition are given a workout that includes roadability sessions on cross-country jousts, on the State's flat, ugly, but tremendously tough training course at Sacramento where the accompanying photos were taken, and on the International Motor Raceway at Riverside, California.

Accurate records are kept of the competitive cars' operation and features under tests; and finally, just before the jig is up, the drag of drags takes place.

Now, the CHP isn't concerned too much with acceleration times of from zero to 30, 45, or 69 mph. They are, however, interested in sustained maximum speed, and when these stunts are pulled off to determine which rig has the dig, they have more electronic devices and electric speedometers on hand than most of us have ever seen in one place at one time.

The most recent contest was between the Dodge package we have described and other cars, but we shall give, for some rather obvious reasons, just two sets of figures—those for the Dodge and those for another hot number which shall remain nameless. This is the performance story, certified, authenticated, and paid for with an order for around 300 of the

Dodge entrants:

1960 CALIFORNIA

VEHICLE EVALUATION PROGRAM

2-Mile Standing Start

(Minimum requirements: 115 mph)

DODGE 129.31 mph

Next best 127.84 mph

1/4-Mile Standing Start

(Min. requirement: 78 mph)

DODGE 86.25 mph

Next best 85.98 mph

1/4-Mile with 50-mph Flying Start

(Min. requirement: 83 mph)

DODGE 91.89 mph

Next best 91.27 mph

1-Mile Standing Start

(Min. requirement: 105 mph)

DODGE 120.43 mph

Next best 118.73 mph

The contest of mighty Detroit iron thus run off, everything is weighed, and if the price-per-unit bid is sufficiently interesting dollar-wise, the order goes to the fortunate dealer.

We know we'll get a flock of letters asking which dealer sold the Dodges, so we might as well come out flatfooted and say that it was John Drew Motors in, of all places, Sacramento. John Drew is a mighty pleasant chap and he turned hand-springs to locate the original car that copped the cake in the State's grand prix. When located—it still belongs to the Dodge Division and looks and drives as if it had been in orbit and not snared very delicately after flight—John Drew's shop got to work and tuned it up. They did everything but rebuild the front end which some bird in the CHP or somewhere had evidently tried to use as a battering ram. It looked okay but at anything over 80 mph it was a death trap, so it seemed the better part of valor—since I have visions of going along with the family on the next vacation—to just let it go at that.

Personally I'd go for a lot faster steering—winding the 5.4 turns of this steering wheel is like cranking an old-fashioned outboard motor without a starting rope. I'd also go for a clean look toward either rear fender through the rear view mirror—those fins you know. But the CHP makes no bones about it—they know those fins do *not* supply any aerodynamic stabilizing qualities. Incidentally the CHP demands that rear view mirrors be mounted from the top of the windshield—gives a better view aft and over the hood too. And the CHP, firmly believing in seat and shoulder belts, specifies that cars entered in their annual bashes have the necessary structure to accommodate installation of the belts.

IGNITION SYSTEM

		CHP DODGE PURSUIT	STOCK 383 POLARA
COIL	Make and model	Autolite CAH-4001	Autolite CAN-4001
	Amps, engine stopped	3.1	same
	Amps, idling	2.5	same
DISTRIBUTOR	Make and model	Autolite IBS-4006E	Autolite IBP-4005D
	Centrifugal advance in crankshaft degrees at engine rpm shown	0 @ 650-950	0 @ 550-850
		0 to 8.5 @ 950	0 to 8.5 @ 850
		9 to 13 @ 1280	6.5 to 10.5 @ 1080
		18 to 22 @ 4800	20 to 24 @ 4300
	Vacuum advance in crankshaft degrees at Hg. shown	0 @ 7.2 to 8.9"	0 @ 7.4 to 9.0"
		9 to 15 @ 12"	9 to 15.5 @ 12"
		15 to 21 @ 14.5"	16.5 to 22 @ 15"
	Breaker gap, breaker arm tension, cam angle; NO change		
TIMING	Crankshaft degrees at rpm	12.5 BTC @ 500	10 BTC @ 500
SPARK PLUGS	Gap, both cars, .035	Autolite A-32	Autolite A-42

There is no doubt in my mind that there is no other production car built in America that can match the roadability and handling of the CHP Dodge. They'll outcorner stock Dodges, scamper through situations where even a 300-F will get mixed up, and negotiate just about anything or any kind of road with two exceptions. They'll spin their rear left or right wheel—as the case may be—if the opposite one is on ground or ice where there is no traction, because for some peculiar reason the CHP will not buy a limited-slip rear axle. The cost factor is presumably the reason. And, if there's a high center, the 5.7-inch minimum ground clearance will hang 'em up—this dimension just clears the State requirement by about 3/10 of one inch.

I got a charge out of driving around in an un-bugged '60 Police Pursuit. Had the easiest time I've ever had getting a parking place, and for some strange reason no other drivers going the same direction seemed to want to pass me. No one challenged me, by gunning his mill at a stop light, to a drag either. I wonder if that isn't the reason some

people like to become policemen.

If, however, you have in mind becoming a CHP patrolman, you'll find yourself doing a stretch at a fine Academy whose Commanding officer is Captain Leonard Overhouse. Jim Tillery, chief PIO for the CHP, took me out to meet the Captain and Sergeant Bob Phillips. The latter, a veteran of 18 years with the CHP, is the chief driving instructor at the Academy and so the "EVOC" where we shot the accompanying illustrations is his baby. Bob's one of the finest drivers I've ever seen. He's at home in a sports car too, but what he can't make one of these police pursuit cars do isn't worth doing. Every new patrolman gets around 30 hours driver training.

Strangely enough the skid pad, a flattened circle upon which is smeared a mixture of grease, water, and general muck, showed up the better handling qualities of a stick-shift car rather conclusively. Taking turns at the wheels of two cars, a '49 Mercury that had been confiscated from a narcotics ring and a '59 Dodge Police Pursuit, Bob Phillips and Officer Edgar Allen and I chased each other

over the flat, slippery blacktop. Regardless of who was driving the ancient manually-shifted Mercury, which was in sad shape indeed and is serving out its days as a training car, he won out over the button-actuated automatic-gearbox Dodge. It is simply a matter of better engine braking, the better suspension of the Dodge giving virtually no advantage in this skid-pad melee. When the Dodge started to go, even when locked in second cog by the appropriate button, there was still insufficient engine braking. The old Mercury, locked in second cog with the solid gearbox, was more easily controlled despite abominably poor roadability otherwise.

Out on the course it was another story. The torsion bars and heavy-duty undercarriage brought the Dodge around flat corners at speeds a coil spring car cannot equal—at least one built on this side of the pond.

As near-stock sedans go, even with heavy-duty equipment, the Dodge for '60 reigns supreme as far as the CHP is concerned. Next year? Well, John Drew and Dodge will be back again for sure. ♦ ♦

Compacts on the Drag Strip

(Continued from page 23)

their reasons, and the reasons probably didn't involve the drag strip; I imagine they just wanted to keep hp ratings comparable with the other compacts—and since they had about 30 more cubic inches, this meant derating the engine. Whatever the reason, they've done a big favor for drag strip competitors. Here we have a standard engine rated at 101 hp and a power pack version at 148 hp—and both versions will actually *exceed* these figures as they come from the showroom, with just the least tuning. You can't beat that for a deal in the stock classes, where most cars can't come within 15 or 20% of their advertised ratings.

So here's how it stacks up: standard models (101 hp), due to the higher weight of the car, will run in E/Stock under N.H.R.A. and N.A.D.S. rules—and in D/Stock under A.H.R.A. In the former case, with a low limit at 25.00 lbs/hp, they'll have a very good chance—with the toughest competition the early Olds 88's. Elapsed times in the low 18's or high 17's should cut it here, and I see no reason why a well-tuned standard Valiant shouldn't do it. The 88 automatics may have a slight edge because of that "fat" first gear in the HydraMatics. In D/Stock under

A.H.R.A. the situation isn't so good, as the low limit here is 21.00 lbs/hp and we've got those tough 185 and 230-hp Chevys again. I wouldn't hope for too much here.

But the power pack Valiant, 148 hp at 5200 rpm . . . ah, ha . . . that's another story. This very engine was said to have developed as high as 186 hp at 6500 rpm on the dyno during the Daytona development (some sources say 190-200 hp!), and they say an owner can expect 160-170 hp at the clutch as the car comes from the showroom! Even if it developed only 150 hp you'd be in great shape—because what other U. S. stock engine will actually put out its advertised hp as it comes from the factory? Secondly, the calculated weight/hp ratio of the power pack Valiant puts it right near the low limit of C/Stock—17.00 lbs/hp—in all three drag organizations. How can you beat a set-up like this—developing more than advertised hp at the clutch (with more on tap with some fine tuning) and a weight/hp ratio that puts you near the low limit of your class?

I figure the power pack Valiants should just about run away with C/Stock this summer. Look at it this way: the top cars in this class now would be Chev V8's around 180 hp

(and station wagons up to 230 hp), '55 and later Fords around 200 hp, and '55-'56 Olds. The best of these might turn e.t.'s in the low 16's and speeds near 85 mph. Assuming an honest 160 hp from the Valiant pack engine, the low weight should give e.t.'s in the 15's and speeds up to 90 mph. Fine tuning could push up the performance from there! The lack of a wide range of rear axle gears suitable for dragging will be a problem at the start (3.89:1 is the lowest ratio yet available); but I'm sure Plymouth will break out a flock of 'em if they see this Valiant catch fire on the drag strip. The publicity is worth a million bucks.

So that about covers it, men. To recap: the Corvair looks best in A.H.R.A.'s E/Stock, where it's close to the low limit and doesn't have to run the early 88's and Valiants. The Falcon doesn't look good anywhere, because of the factory's overrating of the engine. The standard 101-hp Valiant looks fairly good in N.H.R.A. and N.A.D.S. E/Stock; but it won't do too well at A.H.R.A. strips, where it will run D/Stock with a low limit of 21.00 lbs/hp. The 148-hp power pack Valiant will run C/Stock at all strips—and looks like a sure winner for this summer. ♦ ♦