

PERFORMANCE CORNER

BOSS 302...

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Be sure and file this and future bulletins for ready reference. If you have any suggestions for additional information that you would like to see included in this publication, please write to: Autolite-Ford Parts Division of Ford Motor Company, Merchandising Services Dept., P.O. Box 3000, Livonia, Michigan 48151.

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The "Boss 302" Mustang is on the road and ready to drop in on you for service. Based on the Trans-Am racing version of the Mustang Sports Roof model, the Boss 302 was designed as an integral street/track racing package.

ENGINE

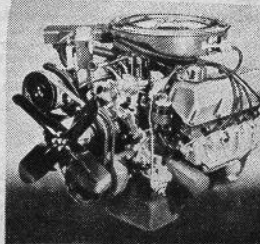


Figure 1—Boss 302 Engine

The special version of the production 302 engine used in the Boss 302 is the same engine that is classed as a 5-litre F.I.A. "formula" engine. The major difference between this engine and a stock 302 is the addition of specially-designed cylinder heads featuring canted valves and high-turbulence combustion chambers. The chambers are called "advanced-wedge" design, because of their resemblance to the famous "wedge" design used in the racing "427" engine. The canted valves allow larger valve heads, larger cylinder head ports, and give a more straight-line flow of gases in and out of the cylinder.

NEW "MUSCLE MUSTANG" FROM FORD

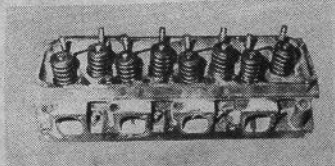


Figure 2—New Cylinder Head with "Canted" Valves

THE CAMSHAFT is a mechanical type having a duration of 290° for both intake and exhaust, with an overlap of 58°. Lobe lift of the stock camshaft is .290", which—with a valve lash of 0.025"—gives an actual valve lift of .477".

THE CRANKSHAFT is of forged steel, for extra rigidity and strength. It is balanced both statically and dynamically, with all the rods and pistons in place. To withstand severe high speed stress, the oversize forged bearing caps use four bolts instead of the customary two, on the intermediate caps.

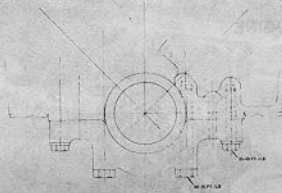


Figure 3—New Four-Bolt Main Bearing Caps

Because the four bolts used on the bearing caps are two sizes ($\frac{7}{16}$ " inboard bolts, and $\frac{3}{8}$ " outboard bolts) they have different torque specs. The $\frac{7}{16}$ " bolts should be torqued to 60-70#, and the $\frac{3}{8}$ " bolts should be torqued to 35-40#. See Figure 3.

CONNECTING RODS are the same type used in the High Performance 289—forged steel for high load-carrying characteristics.

Connecting rod bolts are larger than the stock 302 ($\frac{3}{8}$ " as compared to $\frac{7}{16}$ ") and the rods are spot-faced for the bolts instead of being broached.

PISTONS are the extruded, pop-up type that give a maximum compression ratio of 11:1 (nominal 10.5:1). Super premium fuel is recommended with this engine.

THE IGNITION SYSTEM uses an entirely new dual-point distributor. This distributor features dual-diaphragm vacuum/centrifugal advance, and has a concentric-pivot breaker plate.

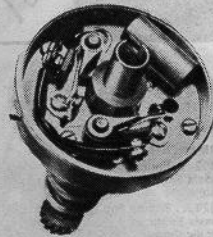


Figure 4—New Dual-Point, Dual-Advance Distributor

SPARK PLUGS are Autolite AF-32s, gapped at 0.028"-0.032". This set-up is good for all-around street and light strip use. For hotter strip use, go to a colder plug such as the AF-12 or AF-22. This will keep you in the Autolite Power Tip plugs, but will allow some strip running. For all-out strip use, use AF-1 or AF-2—a non-power-tip type plug that will give you all-out capabilities.

CARBURETION is furnished through a monster 780 cfm Holley carburetor and a cast aluminum high-rise manifold. This gives good fuel/air distribution to the new cylinder heads, and provides ample breathing for both high and low rpm.

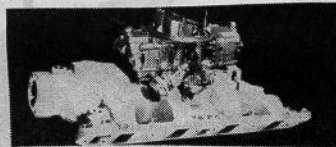


Figure 5—Holley Carburetor and High Rise Manifold

LUBRICATION is based on a high-pressure oil pump delivering over 75 pounds pressure at the pump. The oil pan features a "windage baffle"—a shroud that shields the oil in the sump from the crankshaft windage blast—and an anti-surge baffle that assures oil pick-up under all acceleration conditions.

AND TO PROTECT THE ENGINE . . . Ford has introduced an Electronic RPM Limiter. This device is connected into the ignition system at the distributor, and is designed to short out cylinders at random as the engine reaches 6150 rpm. This shorting out of cylinders limits engine rpm smoothly, and without throwing undue strain on the engine. This prevents an inadvertent overspeed condition that could cause damage to the engine.

EDITOR'S NOTE: Many thanks to Denny Amigron for the provision of his story and the many fine photographs he submitted and allowing us to feature his 302 here as our car of the month.

TECHNICAL ADVISORS

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PERFORMANCE CORNER  **BOSS 302...**

DRIVE LINE

THE HIGH PERFORMANCE CLUTCH is a centrifugal type, employing a woven asbestos facing .125" thick. The disc is damped with torsionally-mounted springs, in the conventional manner. Pressure plate springs exert an 1162-pound force when engaged, thus allowing positive drive of the clutch disc.

THE 4-SPEED TRANSMISSION is Ford's close-ratio box with fairly "long" ratios (1st-2.78:1, 2nd-1.93:1, 3rd-1.36:1, 4th-direct). Optional ratios are a bit shorter. (1st-2.32:1, 2nd-1.69:1, 3rd-1.29:1, 4th-direct) for the man who wants to wind up a little faster through the gears. Standard reverse ratio is 2.78:1, while the optional gearing furnishes a 2.32:1 ratio.

REAR AXLE RATIO with the standard package is 3.50:1, with a hefty 9" ring gear set-up. It features Ford's unique straddle-mounted pinion for extra duty, and has a 31-spline shaft.

Also available for the Boss 302 is the Traction-Lok rear end, offering ratios of 3.50:1, 3.91:1, and 4.30:1. This provides a wider range of final ratios and more traction for the 302, helping to get all the power down to the ground.

SUSPENSION

THE FRONT SUSPENSION is composed of high-rate (350 lb./in.) springs, direct acting Gabriel shock absorbers, and a special steel stabilizer bar which features specially calibrated rubber mounts. This stabilizer helps prevent sway and diving under cornering conditions.

THE REAR SUSPENSION is Hotchkiss type, featuring leaf springs (150 lb./in.) and staggered Gabriel shock absorbers with pistons over 1" in diameter. The staggered shock absorber arrangement (see September 1968 Shop Tips) is designed to restrain or "damp out" excessive wheel hop during full-throttle starts.

BRAKES

FRONT BRAKES are floating caliper disc-type units, with ventilated cast iron discs. The ventilated cast-iron disc provides exceptional cooling and water dissipation, in addition to increased fade resistance, even after repeated stops. Ease of servicing disc brakes make them ideal for sportsman drivers, while providing maximum braking power.

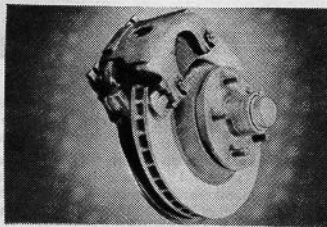


Figure 6—Front Disc Brakes

REAR BRAKES are conventional drum type, with 10-inch drums and single wheel cylinders. Effective lining area with this set-up is 146 square inches. The rear brakes—like the front disc brakes—are self-adjusting. Adjustment takes place when brakes are applied while backing up.

THE MASTER CYLINDER is powered through a dual-diaphragm booster which helps reduce system reaction time for faster braking control. Power to the front and rear brakes is split in a ratio of 65% front and 35% rear, for more straight-line braking.

WHEELS AND TIRES

WHEELS are stamped steel, deep dish, "MAGNUM 500" models, featuring a wide-base, drop-center safety design. Size of the wheels is 15" diameter, with a 7" wide rim. The finish of the standard wheels (shown) is Argent, with bright chrome trim rings. Optional wheels are the same dimensions, but are fully chrome-plated.

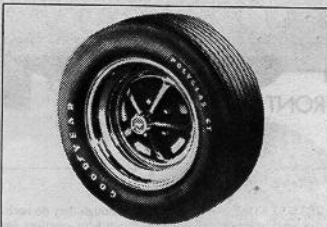


Figure 7—"Magnum 500" Wheel and Fiberglass Belted Tire

TIRES are F60 x 15 Super Wide Oval type, with a tread construction of 4 plies (2 fiberglass and 2 polyester) and a sidewall construction of 2 plies of polyester. The cords are

1. LOCK IN VEHICLE AND FULLY TIGHTEN LUG NUTS PER JACKING INSTRUCTIONS. 2. DO NOT EXCEED 20 MPH MINOR SPEEDS PER THE PLACARD AS SOON AS POSSIBLE. 3. REMOVE TRAILER AT EARLIEST OPPORTUNITY. UNPLATE TO TIGHTEN NUTS NEW CARRIER.

NEW "MUSCLE MUSTANG" FROM FORD

Continued

bias wound, giving a semi-radial configuration. The tires also feature white raised letters on the sidewall. Tires should be rotated regularly, dependent on vehicle usage and/or signs of uneven wear.

NOTE: When changing tires or wheels on the BOSS 302, use caution so not to damage the argent or chrome-plate finish on the wheels and lug-nuts that are standard equipment on these models.

EXTERIOR

SPOILERS

In recent years, it has become common to see airfoil shapes and spoilers on race cars of all descriptions, from flipped-up rear decks on road racing coupes to full-size wings on grand prix racers. The reasoning behind this aerodynamic leaning is that as speed increases, so does the effect of the surrounding air on the vehicle. Because of the speed, certain aerodynamic principles apply to fast-moving vehicles.

LIFT is created by the wing-like shape of the top of the car as the vehicle picks up speed. High wind speeds under the vehicle tend to cause *drag* by creating a partial vacuum at the back of the car as the wind exits. This tends to give the vehicle lightness on the road as speed increases. It also causes the engine to work harder to overcome drag on the tail of the vehicle.

THE BOSS 302 spoilers are designed to partially overcome these "speed stoppers," and to lend more high speed maneuverability to the car.

THE FRONT SPOILER is mounted just under the front bumper. Its job is to break up (or add turbulence to) the smooth flow of air under the car. In this way, the air pressure under the car stays low, and lift and drag are decreased.

THE REAR SPOILER has an inverted airfoil shape, which tends to apply pressure in a downward direction to the rear of the vehicle.

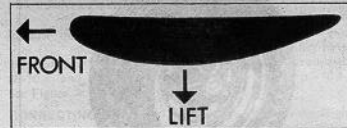


Figure 8—Cross-Section of Rear Spoiler

SPORTS SLATS are an option that—although they do nothing for performance—provide that longed-for comfort for rear seat passengers during sunny days. (Dual mirrors are a mandatory option with the Sports Slats.)

The slats are constructed in such a way that they provide maximum rear seat comfort and minimum vision obstruction for the driver. They are hinged so that the rear glass can be cleaned. The entire assembly lifts off the glass, and is secured in position by two spring clips.

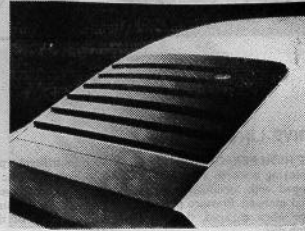


Figure 9—Sports Slats for the Boss 302

COLOR AND TRIM

EXTERIOR COLOR COMBINATIONS for the Boss 302 are based upon utility and performance image. Most prominent is the use of "racing black"—a non-glare finish—contrasting with the high-gloss finish. Racing black is used on the hood, surrounding the headlights, surrounding the tail lights, and on both front and rear spoilers. In addition, it is used on a unique "C" stripe on the sides of the Boss 302.

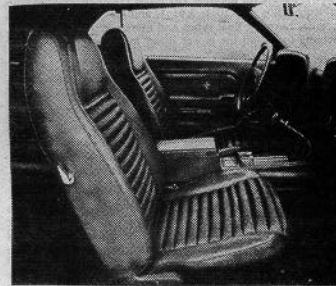


Figure 10—Boss 302 Interior with Options

INTERIOR TRIM COMBINATIONS allow a full selection of luxury appointments to go with the unique exterior styling. From the optional high-backed bucket seats trimmed in cool "Comfortweave" knitted vinyl down to the standard luxury nylon carpeting, the Boss offers a choice of interiors that's unique in the performance field. With the deluxe interior decor group, simulated teakwood applique trims the instrument panel and optional console, as well as the sports-styled "Rim-Blow" steering wheel.