2010 Cobra Jet Owner's Guide

This is a Racing Vehicle!! This vehicle is intended for off-road use ONLY and is not legal for on-road use!

The Cobra Jet is a turn-key, or in this case a push button, racing vehicle and requires proper race preparation. Please read and understand the owner's guide and the detailed instructions for the various components supplied with your Cobra Jet. Beyond component specific maintenance we recommend that you regularly "nut and bolt" your Cobra Jet. This is a process of checking all the nuts, bolts, wiring, belts, hoses, tires, etc…on your vehicle. An example of the importance of this is your vehicles tire pressures. Drag racing tires tend to leak over time and, or change just by sitting in the sun for an extended time and will need to be checked before every run. Please be diligent with the care of your vehicle!

Vehicle Information

Start-Up Process

Attention: After start-up, prior to any runs, take the time to properly break-in your brake system. It is a simple procedure that is required and will save you time and grief. Make nine total stops to three different progressively higher speeds starting with 30 mph, then 50 mph and 75 mph. Allow the brakes to cool slightly between each run without applying pressure to the pedal between runs. After the last stop, allow the brakes to completely cool before making your initial run on your vehicle.

Automatic Equipped Vehicles, C4 and Cruise-O-Matic

Turn on the Cobra Jet's electrical system by pulling out the master cut-off switch located on the passenger rear quarter panel. Once in the driver seat, turn on the first three switches on the center console, you will notice the lights go on above the switches. The first switch is ignition, the second is intercooler fan and the third is fuel pump. You should hear the intercooler fan start as it is switched on. If not, stop and investigate before going forward. Serious damage may occur to the engine if the intercooler is not functioning.
Make certain that the transmission is in park, pushed all the way forward. If the transmission is in neutral or in gear, move the lever forward until you hit a detent, this will be neutral. To engage park, move the chrome lever on the side of the shifter up and push forward on the shift lever. The shifter is now in reverse. Grasp the chrome handle on the shifter and move the lever forward, this will be park.
Apply pressure to the brake and push the start engine button in the center of the instrument panel.

The C4 Transmission is a reverse valve body, meaning first gear is in the first position back from neutral, then second and third in order, again moving back.

The Cruise-O-Matic Transmission is standard valve body, meaning first gear is in the second position back from neutral, second gear or high gear is in the first position back from neutral.

TR6060 Equipped Vehicles

Turn on the Cobra Jet's electrical system by pulling out the master cut-off switch located on the passenger rear quarter panel. Once in the driver seat, turn on the first three switches on the center console, you will notice the lights go on above the switches. The first switch is ignition, the second is intercooler fan and the third is fuel pump. You should hear the intercooler fan start as it is switched on. If not, stop and investigate before going forward. Serious damage may occur to the engine if the intercooler is not functioning.
Make certain that the transmission is in neutral. The TR6060 has a standard six speed pattern with reverse being to right and up. Push in the clutch and push the start engine button in the center of the instrument panel.

LSC5100 Equipped Vehicles

Turn on the Cobra Jet's electrical system by pulling out the master cut-off switch located on the passenger rear quarter panel. Once in the driver seat, turn on the first three switches on the center console, you will notice the lights go on above the switches. The first switch is ignition, the second is intercooler fan and the third is fuel pump. You should hear the intercooler fan start as it is switched on. If not, stop and investigate before going forward. Serious damage may occur to the engine if the intercooler is not functioning.
You should be able to move the shift lever forward and backward with neutral being the center of travel. Make certain that it is in the neutral gate, center of travel. Push in the clutch and push the start engine button in the center of the instrument panel.
Select first gear by…
-Pull up on the perpendicular lever while in the neutral gate
-Push forward on handle
If the shifter feels like it will not go into first gear, bump the clutch pedal while applying forward pressure. For second through fifth, do not touch the perpendicular lever. Pull back and forth on the handle as you go up through the gears. CAUTION - do not down shift this transmission as you would a fully synchronized transmission. It is fully face plated and will be damaged if down shifting occurs without matching gear speeds. For reverse, push down on the perpendicular lever while in the neutral gate and pull back into the bottom position. If the shifter feels like it will not go into reverse, bump the clutch pedal while applying rearward pressure.

Electrical systems

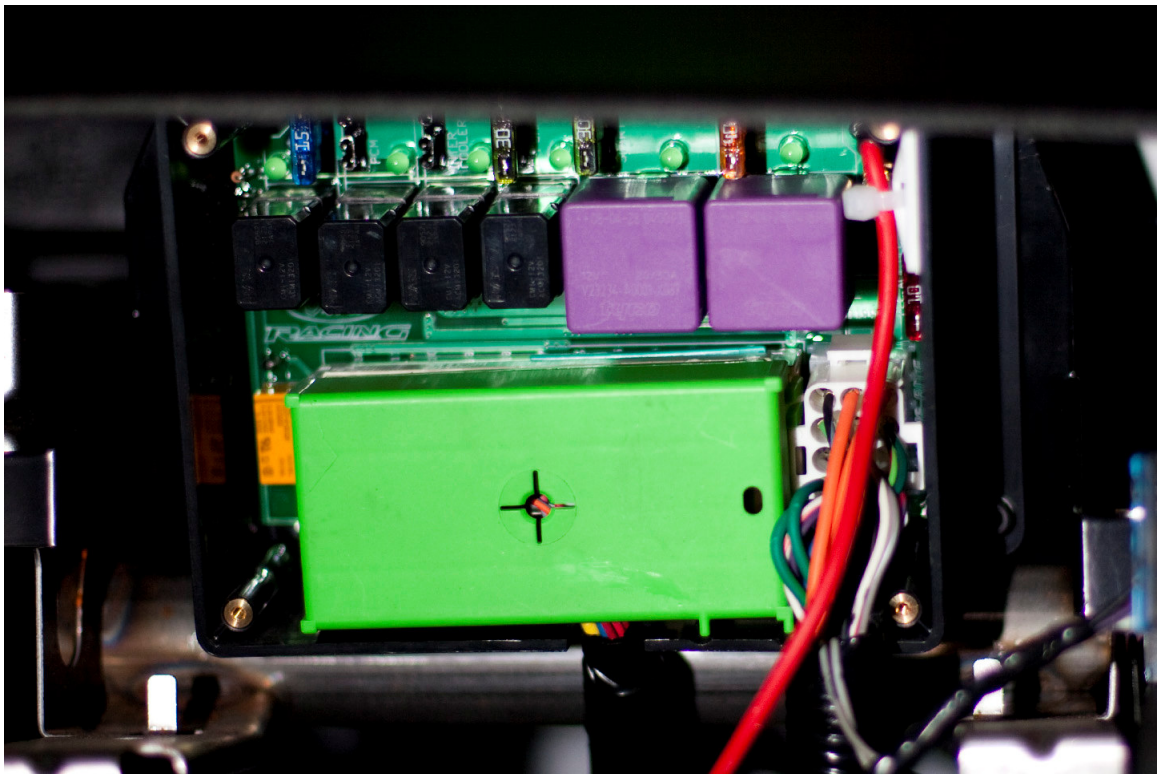
Additional information can be found at
http://www.fordracingparts.com/download/instructionsheets/FordInstShtM-6017-463V_54SC.pdf

OBDII Connector

Located under the passenger side air bag cover.

Controls Pack Power Distribution Box

The Controls Pack Power Distribution Box (PDB) is located under the passenger side air bag cover. This PDB is sold as part of the Ford Racing Controls Pack M-6017-54SC and contains fuses/relays required for base engine control. Refer to schematics at the end of this document for fuse/relay locations within this PDB.

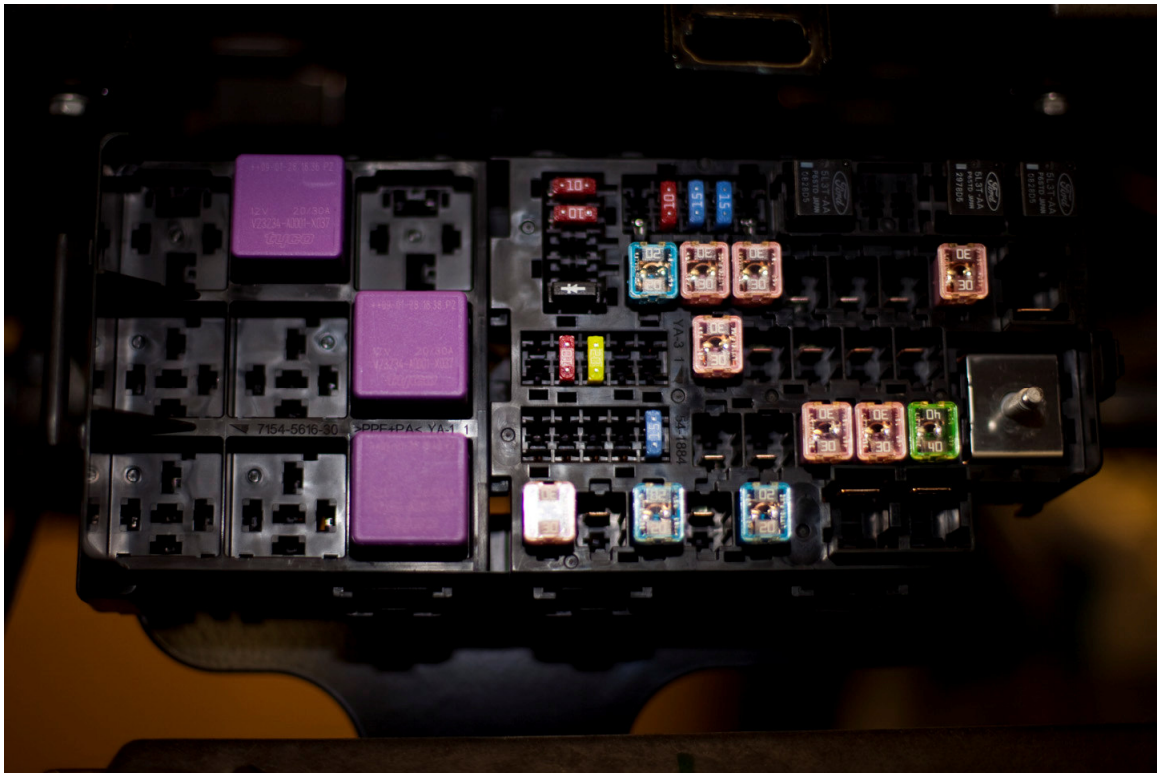


Fuel Pump In-Line Fuse and Relay

In order to minimize voltage drop between the battery and fuel pump, the fuel pump power feed is routed directly from the master power to the fuel pump relay in the trunk. Since this wire is not routed through a PDB, a separate in-line fuse and relay is used. The in-line fuse is located next to the master cutoff switch, located inside the trunk, passenger side. The relay is located next to the fuel pump, also in the trunk.

Vehicle Power Distribution Box

The Vehicle PDB shown in the following picture contains fuses/relays used for headlights, taillights and all other vehicle functions. It also contains the fuse and relay for Intercooler pump and intercooler fan control. The PDB is located in the passenger side glove box. Refer to schematics at the end of this document for fuse/relay locations within this PDB.



Center Console

The center console contains the Oil Pressure, Fuel Pressure and Engine Coolant Temperature gauges. Additional information on these gauges is available from Autometer at http://www.autometer.com/tech_instructions.aspx. Multiple switches are located below these gauges for control of ignition, fuel pump, and intercooler. In general, the lamps above each switch will illuminate when the switch is placed in the ON position. The one exception to this is the intercooler pump lamp which turns on any time the intercooler pump is activated by either the Powertrain Control Module (PCM) or by manually placing the switch in the ON position. The main function of this switch is to turn on the intercooler pump when the engine is not running.

Future Expansion

Three fused 10Amp circuits are available on the center console for addition of customer accessories such as data loggers, radios, etc. These circuits can be accessed by removing the center console and adding the circuit to the output side of the desired switch. One of the circuits uses 12V Hot At All Times (HAAT) power while the other two circuits interface to Run/Start (R/S) Power and will only provide power when the ignition switch is in the ON position.

Power Windows

The power window control includes a feature to move the window down slightly if the door is opened with the window in the fully raised position. After extended periods of time with the master switch in the off position, the window may need to be operated through one complete up/down cycle to recalibrate the

window position controller for full up/down position. After one complete cycle is accomplished the power windows will function normally until the master power is turned off again.

Wheel Speed Measurement

A variable reluctance sensor is mounted in the right front caliper adapter for measurement of vehicle speed (VS). VS is an input for launch control and disables launch control operation once VS is non-zero.

Engines

Base; 5.4L TVS 2.3L Supercharger, 4.6L, 352cid, 428cid
Upgrade; 5.4 L Whipple 4.0L Supercharger

Transmissions

C4
Joel's on Joy transmission
Reverse valve body
Pattern P-R-N-1-2-3
Line lock switch integrated into shifter Knob
Biondo switch functioned launch control

Cruise-O-Matic
Joel's on Joy transmission
Pattern P-R-N-2-1
Reverse lock out
Biondo switch functioned reverse and launch control
Line lock switch integrated into shifter Knob
Note: Do not hold down Biondo switch for more than 30 seconds at a time, failure to the transmission brake may occur.

TR6060
Production based TR6060
Integrated QuickTime bell housing
Liberty's Gears shifter handle with integrated line lock switch

LSC5100
Liberty's Gears transmission
V-Gate shifter with integrated line lock switch

Clutch Systems

TR6060
Centerforce non-adjustable, www.centerforce.com

LSC5100
Ram Clutches 10" billet, six stand, adjustable base and counterweight unit, www.ramclutches.com
Note: Vehicles are delivered with five turns of base and no counterweight. This is a very aggressive set up to ensure that premature clutch failure doesn't occur. Vehicles are also delivered with a ring height gage and a counterweight kit.

Launch Control

The 2010 Cobra Jet has an industry first, integrated launch control that will maintain a set engine speed while the accelerator pedal is depressed. This feature is built into the powertrain control module (PCM) and does not require aftermarket components. There are three aspects of the launch control:

1. Launch control indicator
2. Setting of the desired launch engine speed
3. Activating the launch control at the starting line

NOTE: All indications of RPM are only displayed on the production tachometer in the instrument cluster. The Ford Racing tachometer will not display any information for the launch control feature.

Launch Control RPM Indicator

The launch control will display the current RPM set point after a PCM power up. When the ignition switch is turned "ON", the in dash tachometer will sweep from 0 to 8000 and back to 0. Then the launch control will sweep the tachometer to the current launch control RPM setting for approximately 2 seconds as an indication to the driver the current launch control set point. The tachometer will then return to 0 indicating the current engine speed.

Launch Control RPM Setting

The launch control utilizes the production speed control buttons in the steering wheel to set the desired launch engine speed. Proper precautions have been made to ensure the launch control setting mode cannot be entered unless the vehicle is stopped, however, the engine can be running or off. To set the launch control RPM, a simple 3 step process is required:

1. Depress the brake pedal and simultaneously hold the speed control "ON" button for approximately 2 seconds. The in dash tachometer will sweep from the current engine speed (0 if the engine is off) to 8000 and back to the current launch control set point. After the tachometer sweeps and is displaying the current set point, release the "ON" button. The brake pedal can also be released and is not necessary for the rest of the procedure.

2. The launch control RPM point is increased by pressing the "SET +" or decreased by pressing the "SET –" speed control buttons. The RPM will change in 100 RPM increments. The user range for the launch control is 2000 rpm to 7000 rpm and the PCM will not allow any settings beyond these limits.

3. Once the desired launch control set point is achieved, press the "RESUME" speed control button. The in dash tachometer will again sweep to 8000 rpm, back to the desired set point, and finally back to the current engine speed (0 if the engine is off). This launch control set point is now stored in the PCM's non-volatile memory and will maintain this value until it is changed again even if the power is removed from the PCM.

Disabling Launch Control

The launch control can be completely disabled by following the following steps:

1. Depress the brake pedal and simultaneously hold the speed control "OFF" button for approximately 2 seconds. The in dash tachometer will sweep from the current engine speed (0 if the engine is off) to 8000 and back to the current engine speed (0 if the engine is off). After the in dash tachometer sweeps back to the current engine speed, release the "OFF" button. The launch control is now disabled. To enable the launch control, follow the launch control RPM setting steps again.

Launch Control Activation

Launch control activation is slightly different between the manual transmission and automatic transmission vehicles.

Manual Transmission Vehicles

Vehicles equipped with the manual transmission have a clutch switch which indicates when the clutch pedal is the top of its travel. The PCM knows when to engage the launch control based on a signal from the clutch switch indicating the clutch in engaged. There are three conditions that must be satisfied to engage the launch control RPM limiter.

1. The clutch must be depressed
2. The vehicle speed must be less than 0.5 mph
3. The launch control must be turned on by the user using the speed control switches. See "Launch Control RPM Setting" above.

Automatic Transmission Vehicles

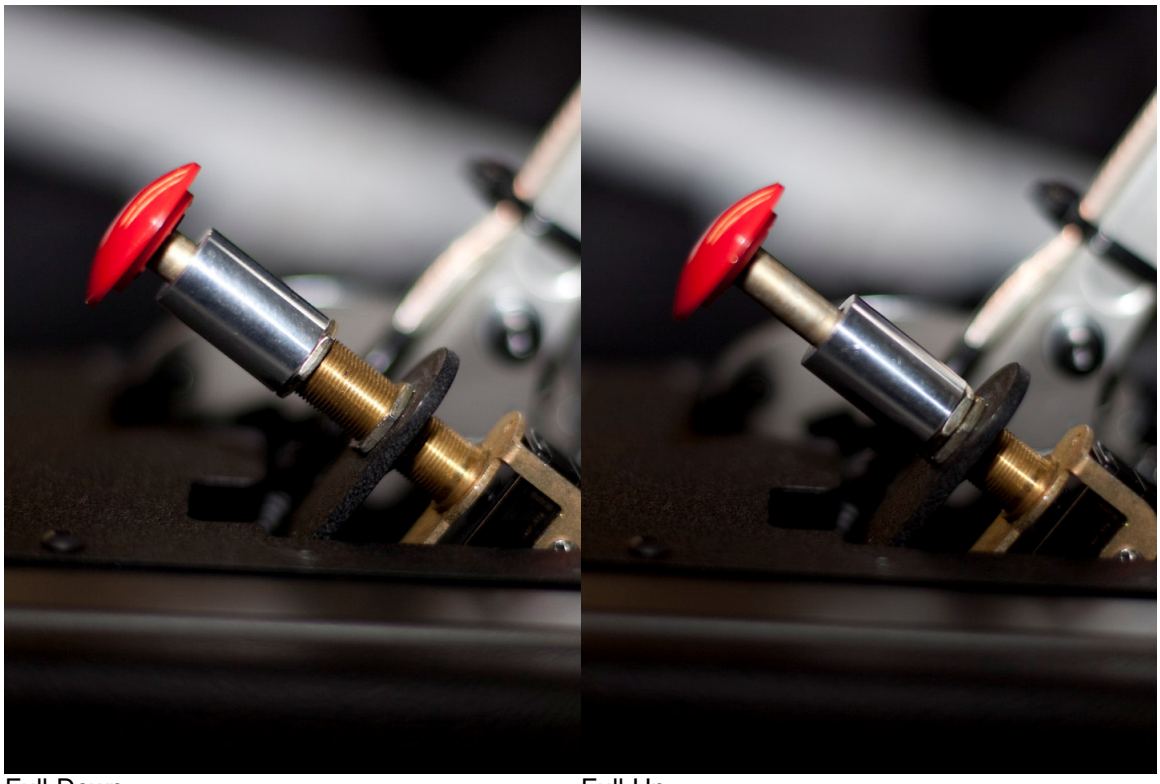
Vehicles equipped with the automatic transmissions have a Biondo push button switch next to the shifter in the console. The PCM knows when to engage the launch control based on a signal from the Biondo switch. There are three conditions that must be satisfied to engage the launch control RPM limiter.

1. The Biondo switch must be depressed
2. The vehicle speed must be less than 0.5 mph
3. The launch control must be turned on by the user using the speed control switches. See "Launch Control RPM Setting" above.

NOTE: Only the Cruise-O-Matic (2 speed) automatic transmissions are equipped with a trans brake which will be engaged with the Biondo switch. The C4 (3 speed) transmissions are not equipped with a trans brake.

Biondo Switch

The Biondo switch is used to help adjust reaction time when using launch control. With the switch adjusted to full down position, reaction times will be slowed. With it adjusted to the full up position, they will quicken.



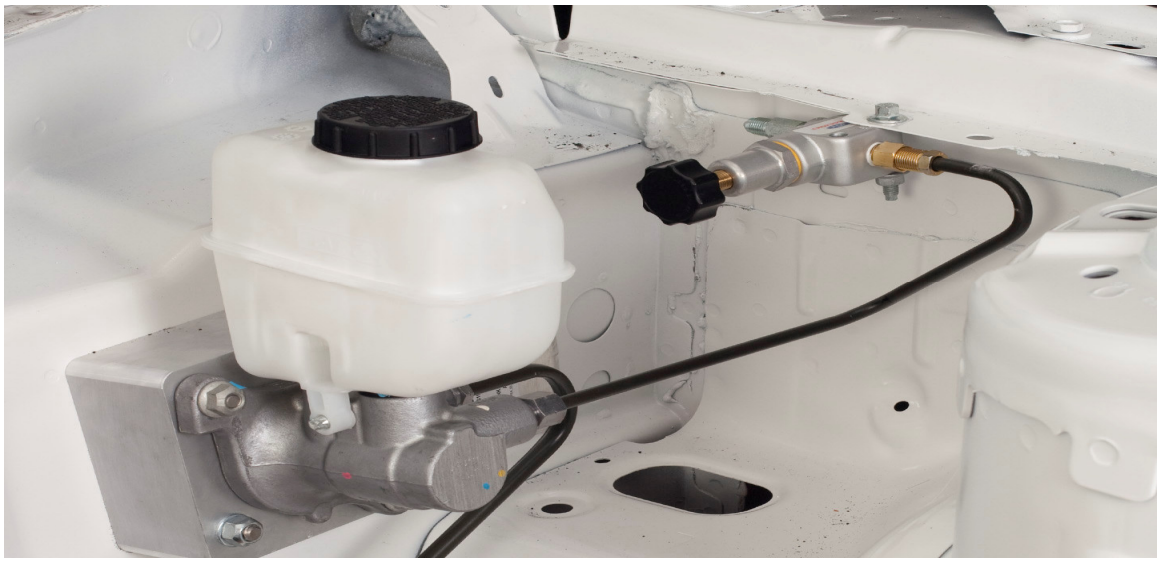
Full Down Full Up

Brakes

Attention: The Strange Engineering brake kit on the Cobra Jet is designed for Drag Racing only!
www.strangeengineering.net

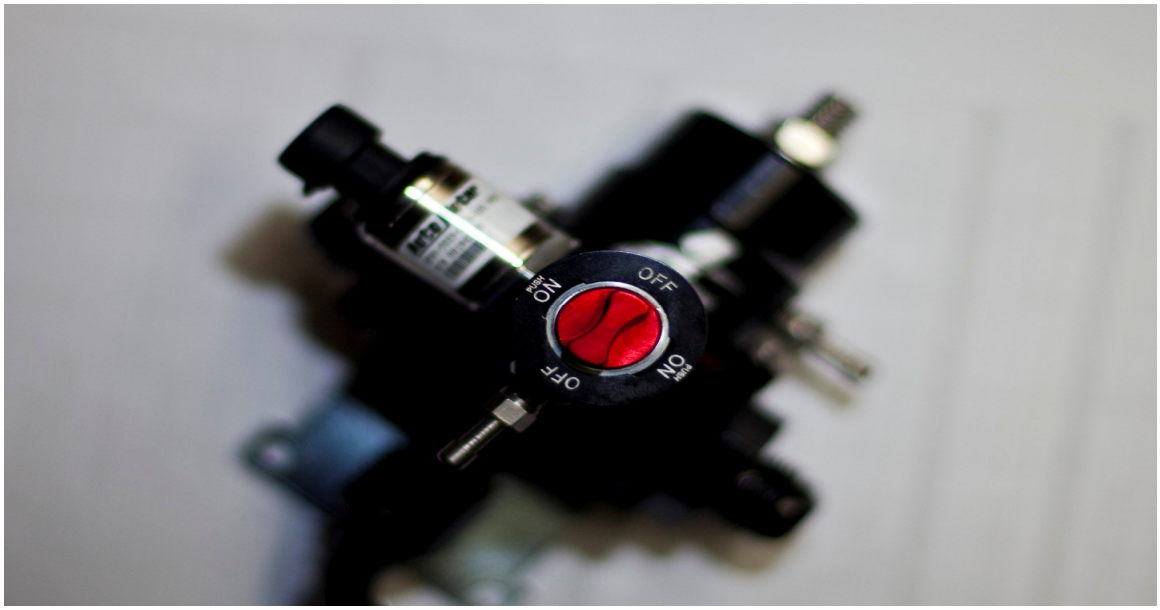
Break-In Procedure
Make nine total stops to three different progressively higher speeds starting with 30 mph, then 50 mph and finely 75 mph. Allow the brakes to cool slightly between each run without applying pressure to the pedal between runs. After the last stop, allow the brakes to completely cool before making your initial run on your vehicle. Follow the same procedure when installing new brake pads or rotors.

Proportioning Valve
With the valve rotated clockwise until seated, the rear calipers will have full pressure. With the valve rotated counterclockwise full out, the rear caliper pressure will be reduced by 57%. The vehicle is delivered with a setting of 5 rotations out from seated.



Fuel Sample Port

The fuel sample port is mounted to the fuel pressure regulator located on the passenger side, front inner wheel well.



Taking a sample will require a length of 5/32" fuel proof rubber hose to reach whatever vessel being used to hold the sample. After installing the sample hose, with the vehicle master cutoff switch on, turn on the

fuel pump, turn the valve to the on position and depress valve for flow. Once the required amount of fuel is obtained, release valve, rotate to the off position, and turn off the fuel pump and main power switches. Remove the sample hose.

Dampers

The front and rear dampers are manufactured by Tokico/Dynamic Suspensions. They are adjustable with a range from zero to eight turns out. Zero or clockwise rotation until seated is full stiff. **Do not force adjuster beyond initial contact with stop, damage to the seat will occur.** Eight turns out counter-clockwise from seated is full soft. Do not rotate beyond this point.

Seat Belts

Attention: The seat belts in the Cobra Jet are NOT PRE SET. Before driving the vehicle, set belt lengths. They will need to be adjusted for each individual that races this vehicle.

Pro Cal Tool

To receive a MMC (Multi Media Card) for the Pro Cal Tool, the vehicle registration form must be returned to Ford Racing. If you have any questions on this process, please contact the Ford Racing Techline at 800-367-3788.

Tire Care, Off Season

Tips from the Hoosier web site:

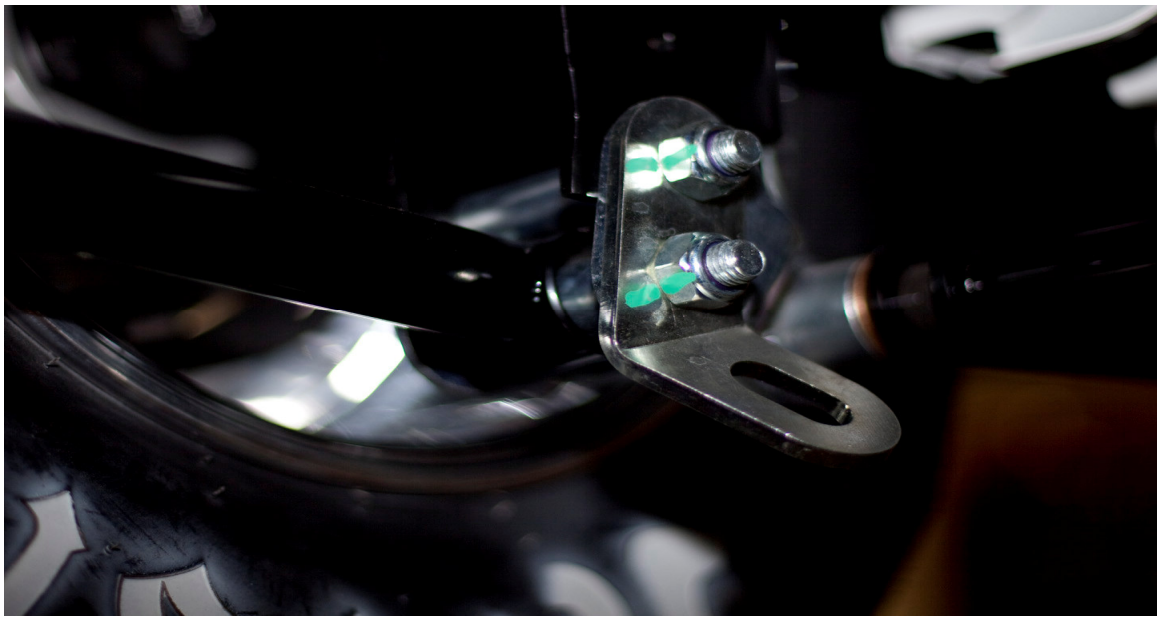
1. Remove the tires from the vehicle.
2. Remove the air from the tires and store them on their side in a cool/dark/dry environment.
3. Place tires in a black plastic bag when stored during the "off-season".
4. Make sure the temperature range in the storage location is between 40-90 degrees Fahrenheit.

For additional information visit www.hoosiertire.com

Vehicle Tie Downs

This vehicle is equipped with both front and rear tie down locations along with a tow hook location.

Front Tie Down and Tow Hook Location


Rear Tie Down Location

Maintenance and Specifications

Fuel
Rockett Brand 118 Racing Fuel, www.rockettbrand.com
Engine Oil
All engine options; Motorcraft 5W-50 Full Synthetic XO-5W50-QGT
Oil Filter
4.6L /5.4L: Ford Racing M-6731-FL820 (case of 12), 352cid/428cid: Ford Racing M-6731-FL1A (case of 12)
Engine & Intercooler Coolant
Motorcraft Premium Gold with Bittering Agent WSS-M97B51-A1
Transmission Oil
C4 & Cruise-O-Matic
XT-1QF Motorcraft Type F
LSC 5100
Liberty's Gears Synthetic SAE 80W-140 LGX-80
TTC TR6060
XT-2-QDX Mercon ATF
Supercharger Oil
Motorcraft XL4
Differential Oil
Lucas High Performance Heavy Duty SAE 85W-140 Gear Oil
Brake Fluid
High Performance DOT3 PM-1-C
Tires Sizes
Front; Hoosier 26/4.5-15
Rear; Base Engines, Manual and Automatic Vehicles, Hoosier 30/9-15
Upgraded Engine, Manual Vehicles, Hoosier 29/11-15
Upgraded Engine, Automatic Vehicles, Hoosier 30/10.5-15
Air Filter
Base Engines; 5.4L: M-9601-D, 4.6L: M-9601-B, 352cid/428cid: M-9601-CJ
Upgrade 5.4L; Whipple R0298-9

Fuel Filter
Aeromotive™ 10 micron #12601
Spark Plugs
NGK TR7 gapped to .035"
Vehicles are delivered with Motorcraft spark plugs and should be changed at the owner's earliest convenience. They have a limited life expectancy, 7-10 runs. Once NGK spark plugs are installed, upon any misfire, they should be changed.
Engine
Drag racing puts extreme loads on engine components that will require unique maintenance performed on a regular basis. Ford Racing recommends the following:

1. Change engine oil and filter after every two to three weekend events, cut open filter and inspect for foreign material.
2. Monitor engine oil pressure over time to understand engine bearing wear by picking a consistent RPM and temperature to look for deviations.
3. Check cylinder compression and leakage after every two to three weekend events to monitor engine condition.

Vehicle Set Up

Fuel Pressure, Base & Upgrade
62±2 psi gage, fuel pump on and engine off

Chassis Set Up
Damper Settings;
Front; 6 turns out
Rear; 3 turns out
Pinion Angle; -2.5°±0.5°
Caster; 7.1°±0.75°
Camber; 0.75°±0.75°
Toe; -1/16" to -1/8" per side (measured @ center line of wheel flange, 15")
Anti-Roll Bar, Rear; 200 lb more on left rear tire with driver in seat, this is adjusted by rotating the right or left drop link.

Tires
Starting Pressures
Front; Hoosier 35 psi
Rear; Manual Vehicles, Hoosier Bias 13 psi
Automatic Vehicles, Hoosier Radial 15 psi