

# COYOTE STOCK

## **CLASS OVERVIEW**

Coyote Stock is a naturally aspirated heads-up class designed for 1954 and newer Ford bodied vehicles and is one of the most cost effective classes in drag racing. Coyote Stock is designed around competitors using a production OEM Sealed Ford Coyote crate engine combined with a factory Ford Racing sealed ECM and installation kit. This helps control the ever rising expenses associated with competitive heads-up drag racing and allows racers to explore other avenues to gain a performance advantage. All entries must compete on stock suspension and at the same base weight.

## **CONTRACT**

All entries are required to read and sign a racer's contract. The purpose of this contract is to keep class participants from tampering with and/or altering the OEM Sealed Ford Coyote crate engine along with the supplied tune. Any breach in this contract will result in severe penalties being imposed by the NMRA on all related parties.

**Note:** This set of class rules is presented to all competitors under the assumption that any modifications not specifically written within these rules shall be deemed illegal, unless the competitor has the expressed written consent from the NMRA Tech Director.

## **RACING FORMAT**

This class will be an all run heads-up field, **NHRA Pro Ladder** on a .400 Pro Tree.

<u>ENGINE</u>	<u>MAX CID</u>	<u>BASE WEIGHT</u>
Sealed 5.0L Coyote (GEN 1 or 2)	302	<del>3100</del> <u>3000</u>

**Note:** All weights are with driver and rounded down to the nearest 5lb increment.

## **REQUIREMENTS & SPECIFICATIONS**

### **ENGINE: 1**

#### **ENGINE**

A comprehensive engine component part number list that is used in the building of the Ford OEM Sealed Coyote Crate Engine (Part # M-6007-M505) will be added.

OEM Sealed Coyote Crate Engine: Part # M-6007-M50S or M-6007-M50SA is mandatory for all entries. Any internal or external engine modifications (including sensors: crank, cam, O2, etc....) are strictly prohibited.

## **BLOCK**

Part # RFBR3E-6015-HD is mandatory for all entries.

## **HARMONIC BALANCER**

SFI approved harmonic balancer/crank pulley with a minimum diameter of 6.53 inches is required. Diameter will be measured from the top of the serpentine belt ribs located on the balancer.

## **ENGINE MOUNTS & LOCATION**

Solid engine mounts are permitted. Engine/Motor plates are prohibited. Engine block and cylinder heads cannot be in contact with the firewall.

## **CYLINDER HEADS**

2011-2014 engine –

RH Cylinder Head: PN # RFBR3E-6090-CD or RFBR3E-6090-CE

LH Cylinder Head: PN # RFBR3E-6C064-CD or RFBR3E-6C064-CE

2015-current engine – Ford Part# FR3Z-6049-A & FR3Z-6049-B

The cylinder heads listed above are the only approved cylinder heads for Coyote Stock.

## **INTAKE MANIFOLD**

Stock Ford OEM supplied intake manifold is the only intake permitted for all entries. 2015 and up engines (M-6007-M50SA) may use MMR part# 477191 IMRC (Intake Manifold Runner Control) deletes. Removal of IMRC actuators, sensors, and vacuum lines are permitted.

## **ENGINE DRIVE BELT SYSTEM**

Unmodified OEM 6-rib serpentine belt drive system required.

## **OILING SYSTEM**

Ford OEM supplied unmodified oiling system and oil pan required. Any external oil pumps, oil lines vacuum pump/crankcase ventilation system, or any other oil system add-on is prohibited.

## **COOLING SYSTEM**

Radiator and Ford OEM supplied water pump is required. Water pump must be unmodified and driven by Ford OEM supplied 6-rib serpentine belt drive system. Any Ford OEM or production style radiator is permitted and must mount in the stock location. Any cooling fans permitted. Stock Ford OEM core support is required.

## **EXHAUST SYSTEM**

Aftermarket long tube style headers are permitted with a maximum outside diameter primary tube size of 1.75 inches. Complete exhaust system with two mufflers is required. Maximum exhaust tubing diameter is 3 inches and must exit within 12 inches of the rear axle centerline.

### **FUEL SYSTEM**

Aftermarket fuel pumps along with one aftermarket fuel pressure regulator permitted. Maximum fuel pressure measured at the regulator is 65psi. All fuel lines must originate and return to one fuel cell. Any method of artificially cooling fuel is prohibited. A check valve mounted between pressure regulator and fuel rails for fuel removal is mandatory. All entries will be subjected to random fuel checks. Fuel cells are permitted and must be located in the trunk area.

### **EFI SYSTEM**

Ford Racing Performance Products sealed engine processor PN # CM-12A650-A5LA or PN # BR3A-12A650-AVD for 2014 and earlier combinations and PN # FR3A-12B684-DRA for 2015 and later engines are the only ECMs permitted. Processor must remain intact, unmodified and must be functional. Any computer "add-ons" is prohibited. Entries are required to run the spec tune provided by FRPP or the NMRA. All entries will be subjected to random processor recalibrations and/or exchanges to ensure a level playing field. An OEM supplied stock throttle body mounted in the stock location is required. Maximum throttle body size is 80mm. Any modifications performed to the throttle body are prohibited. The use of aftermarket throttle bodies is prohibited. All entries are required to use the eight fuel injectors Part #CM-5187 or #BR3Z-9F593-A that are supplied with the Ford Coyote Sealed Crate Engine: Part #M-6007-M50S. The use of any other fuel injector and/or injectors is prohibited. Any modifications (altering) both external and internal to the eight supplied Ford Coyote Sealed crate Engine (#M-6007-M50S) fuel injectors is prohibited. Fuel injectors must remain in the stock location. Aftermarket fuel rails are permitted.

At each event, every Coyote Stock entry's ECM will be flashed with the NMRA / FORD Coyote Stock Class Competition tune during initial Tech-In. During the event, from the time the Tune/Flash has been installed, if the competitor is found to have a different and/or modified tune (Tune Verification Failure), that run will be disqualified. More than one occurrence of a competitor's tune failing to verify can or would result in additional disciplinary action from the NMRA Competition department, up to but not limited to Suspension from NMRA Competition.

### **MASS AIR FLOW SENSOR**

Aftermarket mass air housing permitted. Stock OEM, unmodified sample tube and elements as produced by Ford required. Mass air sensor is required to be functional with and inside diameter (ID) no larger than 112mm or 4.406 inches. Mass air sensor must be no closer than 9 inches to the throttle body to the sensor and no further than 18 inches away from the throttle body to the sensor.

Approved Mass Air Flow Sensor-  
2011-2014 Engine - OEM Ford Part# BR3Z-12B579  
2015-Current Engine - OEM Ford Part# 8V2Z-12B579-A

### **RELECTOR RING**

Ford PN# BR3Z-12A227-A or Ford Racing PN# M-12A227-CJ13 are the only reluctor rings permitted. Reluctor ring must be as produced and unmodified from Ford.

### **AIR FILTER SYSTEM**

Any automotive type aftermarket air filter system required. All incoming air entering the engine must pass through an air filter system.

### **FUEL**

VP Racing Fuels C-10 gasoline is the only fuel permitted. Entries will be subjected to random checks to verify legality of fuel being used. Failure to pass fuel check will result in disallowance of a run during qualifying or being disqualified during eliminations.

## **DRIVETRAIN: 2**

### **CLUTCH**

Clutch and Flywheel meeting SFI Spec 1.1 or 1.2 is required. Diaphragm Pressure Plate assembly is required. Single Clutch Disc with a minimum of 10 inches in diameter is required. Factory style cable mechanism for clutch operation is required. 2005 and up Mustangs are allowed to retro---fit to the 79'---04' factory style cable mechanism. Clutch release must be manually operated by driver's foot. The use of electronics, pneumatics, hydraulics, or any other device is prohibited from affecting clutch system/operation. Unmodified Clutch Tamer is permitted. Steel flywheel shield meeting SFI Spec 6.1 is mandatory. Flywheel shield cannot be modified for clutch adjustment and/or cooling holes.

### **MANUAL TRANSMISSION**

Only NMRA specified Ford OEM or aftermarket manual transmissions permitted. All transmissions are required to be unmodified from the manufacturer which also includes the following: helical or straight-cut gear sets, gear ratios, and counter shafts. All gear changes must occur directly from the driver. Pneumatic, hydraulic, electric, etc. shifters are prohibited. Clutch-less transmissions are prohibited. Clutch must be used to change gears in a conventional manner. Pro-shifting is permitted on all transmissions. All manual Transmission shifters must maintain an H pattern. Aftermarket shifter with a single pivot ball shifting arm that uses Ford OEM mounting holes is required. Floor-shift conversion kits are permitted.

#### ***Permitted Manual Transmissions / Gear Sets***

- Tremec T5(a)-3.35, 1.99, 1.33, 1.00

- Tremec T5(b)-2.95, 1.94, 1.34, 1.00
- Tremec T45=3.37, 1.99, 1.33, 1.00
- Tremec T56(a)-2.66, 1.78, 1.30, 1.00
- Tremec T56 (b)-2.97, 2.07, 1.43, 1.00
- Tremec TR3550 -3.27, 1.98, 1.34, 1.00
- Tremec TR3650 -3.38, 2.00, 1.32, 1.00
- Tremec TKO/TKOII -3.27, 1.98, 1.34, 1.00
- T5 w/G-Force PN#5000 Dog Ring -2.92, 1.99, 1.34, 1.00
- T5 PN #5000 Dog Ring – 3.22, 1.99, 1.34, 1.00
- T5 w/G-Force PN#5000 Syncro -2.94, 1.94, 1.34, 1.00
- Tremec TR3550/TKO/TKOII w/Liberty Gear PN#LG3500 -2.92, 1.95, 1.34, 1.00
- Tremec TKO-500 -3.27, 1.97, 1.34, 1.00
- Tremec TKO-600 -2.87, 1.89, 1.28, 1.00
- Tremec TKO PN #LGT318 – 3.18, 2.05, 1.38, 1.00
- Tremec TKO PN #LGT297 – 2.97, 1.98, 1.34, 1.00
- Ford Getrag – 3.66, 2.43, 1.69, 1.32, 1.00, .065
- G-Force –G101A, GF4A – 2.933, 1.867, 1.333, 1.000  
3.000, 1.870, 1.340, 1.000  
3.173, 1.960, 1.346, 1.000  
3.252, 2.009, 1.380, 1.000  
3.300, 2.100, 1.406, 1.000
- Jerico –DR4 -
- Liberty -LCS 5000 4-Speed\*\*
- Andrews Transmission –A431 H-Pattern 4-speed\*\*

\*\*Contact NMRA Tech Department for permitted gear ratios

### **AUTOMATIC TRANSMISSION**

The Ford C4 is the only the only automatic transmission permitted. The C4 is allowed to use any torque convertor and trans-brakes are permitted. Pneumatic, electric, hydraulic, etc. shifters are prohibited.

### **DRIVELINE**

Any steel or aluminum driveshaft is required. Carbon fiber driveshaft is prohibited. Driveshaft safety loop is required.

### **REAR END**

Any OEM automotive type rear end permitted.

## **BRAKES, STERRING & SUSPENSION: 3**

### **BRAKES**

Front and rear hydraulic brakes are required. Carbon brakes are prohibited. Automated brakes are prohibited. The application and release of the brakes must be a function of the driver. Dual reservoir master cylinder is required. Line-lock is permitted only on the front wheels using one line-lock button and solenoid. Any other electrical, pneumatic, hydraulic, etc. switch in braking system is prohibited.

### **STEERING**

Any OEM automotive production type steering system permitted.

### **SHOCKS/STRUTS**

Stock replacement type shocks in the rear and struts in the front are required. Coil-over struts are permitted. Shock/strut must mount in stock location. Shocks/struts must be stand-alone and cannot be adjustable during a run. Rear coil over shocks are prohibited. Electronic programmable shocks/struts are prohibited. Spindle mount type struts are prohibited.

### **FRONT SUSPENSION**

*Post 1978 and Newer Vehicles:* Stock, aftermarket or tubular type K-member permitted. K-member must mount in its original location. K-member may be notched for oil pan clearance. Factory strut/shock towers are required. Bolt-on type caster/camber plates are permitted. Factory or commercially available controls arms and spindles are permitted.

*Pre-1978 and Older Vehicles:* The use of commercially available bolt-on front suspension kits for engine fitment is permitted. Factory strut/shock towers are allowed to be modified for engine fitment and must maintain an OEM appearance.

### **REAR SUSPENSION**

Stock rear type suspension is required. Racing style 4-link and ladder bar type suspensions are prohibited. Stock type suspension may utilize any commercially available direct bolt in shocks, springs, leaf springs or factory style 3-link/4-link suspension systems for the particular year/make/model of car being used. Leaf springs are allowed to be moved inboard. Torque arm style suspensions are only permitted on OEM equipped vehicles. Bolt-on traction devices, panhard bars and anti-roll bars are permitted.

### **WHEELIE BARS**

The use of wheelie bars is prohibited.

## **FRAME: 4**

### **FRAME**

Front and rear frame rails must remain unaltered and in the stock locations. Rear frame rails may be notched for tire clearance only. Notching rear frame rails for rear end clearance/ride height purposes is prohibited. Sub frame connectors are permitted.

### **WHEELBASE**

Entries must retain stock wheelbase dimensions of + or – 1 inch. Maximum wheelbase variation from left to right is 1 inch.

### **GROUND CLEARANCE**

A minimum of 4 inches from the front of the vehicle to 12 inches behind front spindle centerline is mandatory. A minimum of 3 inches for the rest of the vehicle is mandatory (except for oil pan and exhaust headers).

## **TIRES & WHEELS: 5**

### **TIRES**

The use of 28-inches tall by 10.6-inches wide or smaller bias-ply slicks is permitted. Tire tread may not extend outside of the fender.

### **WHEELS**

Aftermarket racing wheels permitted. Spindle mount type front wheels are prohibited.

## **INTERIOR: 6**

### **UPHOLSTERY**

Must have full factory type upholstery, including carpet, door panels, headliner, and factory dash. Driver's and passenger's seats are required and mounted in the stock location.

Aftermarket front seats are permitted and must be upholstered. Rear seat, heater and A/C controls may be removed.

### **STEERING COLUMN/WHEEL**

OEM or stock type steering column required. Steering column must have a factory appearance. Removable steering wheel is permitted.

### **PEDALS & PEDAL LOCATION**

Stock type pedals and linkage in the factory location are required.

## **BODY: 7**

## **BODY**

Body must retain original appearances and profiles for year, make and model being used. OEM body shell must be intact. Light weight body panels are restricted to hood, bumpers and deck-lid/truck-lid or hatch. Hood may be a lift-off style and deck-lid/trunk-lid or hatch must be hinged. Lift off style deck-lid/trunk-lid or hatch is prohibited. Alterations or aerodynamic modifications are prohibited.

## **HOOD SCOOPS**

The use of aftermarket forward facing hood scoops is prohibited. Ford OEM hood scoops are permitted and must be sealed off from fresh air. Cowl induction style hood is permitted with a maximum height of 6 inches. Cowl height will be checked from the tallest point of the hood to the fender line.

## **COWL AREA**

Complete OEM cowl is required.

## **GRILLE**

Grille must be full production for make, model and year being claimed. Covering in front of or behind the grille is prohibited.

## **BUMPERS**

No body components, bumper add-ons, sill plates, chin spoilers, body kits, license plate frames, etc. are permitted to be added to the nose of the vehicle. "Outlaw" style bumpers are prohibited.

## **FIREWALL**

Stock, unaltered firewall is required. Reasonable clearance of fire wall permitted for charge valve. Any holes in firewall must be sealed to separate the engine bay from interior.

## **FENDER SPLASH PANS**

Full, factory OEM or aftermarket inner fenders are required.

## **WINDSHIELD & WINDOWS**

ALL OEM glass is required.

[Optic Armor stock replacement Windshield and Rear Glass permitted per manufacturers recommended specs.](#) ~~Optic Armor stock replacement windshield is permitted.~~

## **FLOOR**



The driver's/passenger's floor, including transmission tunnel must be unaltered and in the stock location. Any holes in floor and/or transmission tunnel must be sealed.

### **WHEEL WELLS**

Factory wheel wells/tubs are required. Widening/sectioning for tire fitment is permitted and must maintain an OEM appearance. Wheel well modifications are restricted to 1978 and older vehicles, 1979-newer are required to have stock wheel wells. Aftermarket style mini-tubs are prohibited.

### **WING/SPOILERS**

Rear wing/spoiler is permitted with a maximum length of 26 inches. Rear wing/spoiler will be measure from the transition point of the deck-lid/trunk-lid to the rear most portion of the wing/spoiler. Any adjustments to the wing/spoiler during a run are prohibited.

### **STREET EQUIPMENT**

Headlights and operational taillights/brake lights are required.

### **APPEARANCE**

All cars in competition must be painted or wrapped. Advertising graphics are permitted on the body. In order to be eligible for the NMRA official contingency program, all contingency sponsors' decals must be easily visible and located on the outside of the vehicle. Failure to do so can result in the driver forfeiting all claimed contingencies for that particular event. The NMRA does require all entries to run the following decals:

1. NMRA Windshield Banner: Decal needs to be located on the top of the windshield or just above the windshield located on the body.
2. NMRA Drag Racing Series: Decals (2) must be located on each side of vehicle. Either on the side windows or decals can be located on the body right beside the side windows.
3. Class Sponsor: Decal must be located on the passenger's side lower portion of the windshield.
4. VP Racing Fuels: Official Fuel decals (2) required. Must be located on each side of vehicle. (In a contingency decal manner)
5. Aerospace Winners Circle: Decals (2) must be prominently displayed on each side of vehicle. Failure to do so can result in the winning driver forfeiting his/hers Winner's Trophy & Payout.
6. Class & Competition Numbers: Numbers must be easily visible/legible and located on the front, back, and both side windows

## **ELECTRICAL: 8**

### **BATTERIES/CHARGING SYSTEM**

Battery may be relocated and must be an automotive type. Charging system must be functional and use OEM 6-rib belt that is crank driven.

### **IGNITION**

Stock unmodified Ford ignition is required. Standalone two-step rev-limiter is permitted. Two-step is allowed to piggy-back with existing connector and must retain the standard functions of a two-step. 2015 engine may for the sole purpose of adding a Two-Step use engine harness Ford OEM part #FU5Z-12A581-J [or FU5Z-12A581-E](#) with the FRPP Control Pack Part# M-6017-504V. The use of any down track RPM limiting device, other than the supplied Coyote tune, High side RPM limiter is prohibited. Any modifications performed to the Ford harness or its sensors are strictly prohibited.

### **MASTER CUTOFF**

A master cutoff switch is mandatory on all vehicles with a battery located in the trunk.

### **STARTER**

Aftermarket starters, in stock location permitted.

### **WIRING HARNESS/LOOM**

Ford PN #CM-14A006-A5LB engine harness/computer loom is mandatory. Any modifications to harness/loom and any electrical sensors are strictly prohibited. A Tach Adapter is permitted to be used with Ford Racing Control Pack part# M-6017-504V. A splice is permitted to the Grey (coil positive supply) wire between Connector #146 (Item "U" in Control Pack Instructions pages 8 & 9) and FPPDB (Ford Performance Power Distribution Box, Item "C" in Control Pack Instructions pages 8 & 9) for the only purpose of connecting a Tach Adapter.

## **SUPPORT GROUPS: 9**

### **COMPUTER/DATA RECORDERS**

Only NMRA approved external data recorders, data loggers, are permitted. Any wide-band O2 device must be capable of only logging air/fuel ratio, and may not be run in closed loop with EFI or ignition system. Only a single O2 sensor is permitted to be installed in each header collector. Playback tachometers permitted including those that record driveshaft RPM. Laptops prohibited in vehicle during competition.

#### **Approved Data Loggers:**

- **Racepak: Sportsman Series/IQ3**
- **AEM: AQ-1**
- **Port-a-Tree Data: Electronic Switch Panel**
- **Computech: Data Max**

- **RPM Performance Products: DL10**
- **Performance Trends: DataMite III**
- **Altronics: DataQuest**
- **Holley Digital Dash**

### **BRACKET RACING AIDS**

The use of any bracket racing aids such as optical sensors, delay boxes, shutter boxes, throttle stops, etc. are prohibited. The use of any device (electrical or mechanical) that allows a driver to ascertain the position of their vehicle to the starting line is prohibited.

### **TOW VEHICLES**

The use of tow vehicles is permitted.

### **CREW MEMBERS**

Each crew member must have the proper starting line credentials and must wear matching attire.

**DRIVER: 10**

### **DRIVER**

The driver when in the vehicle, from the ready line until the vehicle is safely stopped on the return road, **is required to have all safety restraint systems (including the helmet) on and be securely fastened in the vehicle at all times**

### **CRENDENTIALS**

A Valid state or government issued driver's license beyond a learner/s permit level is mandatory for cars running 10.00 or slower. A valid NHRA competition license is mandatory for cars running 9.99 or quicker, at a NHRA Member Track. A valid NHRA or an IHRA competition license is mandatory at an IHRA Member Track.

**Note:** It is ultimately the competitor's responsibility to familiarize themselves with the NMRA class requirements as well as ***all NHRA safety requirements***. The competitor agrees they bear the ultimate responsibility when it comes to safety and how it complies with the NMRA and NHRA rule books. The competitor also agrees that no one else other than the competitor is in the best position to know about how their particular race car has been constructed and how to safely operate it.