Rotary At Heart: Kyle Mohan's Mazda MX-5 ND

Written by Jacob Leveton. Photography by Andrew Jennings | 09 January 2017

Kyle Mohan is a Mazda guy. From the Mazda FC3S drift car he drove to a fourth-place finish in Long Beach back in 2008, to the Mazda SE3P RX-8 drift car he piloted through the last seven seasons of Formula Drift, Mohan is one of the last rotary-powered Mazda guys in a professional drifting world that has been overrun by small-block-V8-swapped drift cars. As the main engine builder at Mazdatrix, Mohan knows the ports and passages of the rotary engine like the back of his hand, and has built several 1,000-plus-horsepower rotary motors over the past several years.

When "Mad" Mike Whiddett rocketed back onto the Formula Drift circuit with his RADBUL NC chassis Miata in 2015, Mohan knew he wanted to show off his ability to compete in a high-grip short-chassis car, and got to work sourcing and building his ND chassis. Unknown to Mohan at the time, Whiddett facelifted his NC chassis car with the ND headlights and taillights at the first event of the season, while Mohan's car is a purebred ND MX-5. Let's dive into what makes Mohan's car tick!

Mohan took delivery of the chassis in late December, with just three months to get the car prepped and ready for the first round of Formula Drift in early April. Mohan and crew chief, Matt Hill, along with some extra elbow grease from his wife and father, stripped the car down, and started fabricating the roll cage. All the creature comforts of your usual road-going car were ditched, and a business-only approach was taken with the interior.

A set of Sparco racing seats were used in conjunction with the roll cage fabrication process to find the proper seating position, while a Driven steering wheel was mounted to a custom steering column to allow Mohan to point this weapon.

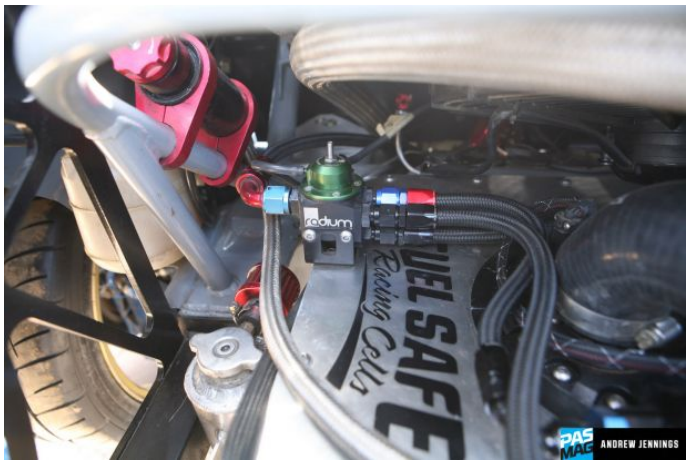
The entire dashboard was recreated in aluminium by Built2Apex, a company Mohan started to market some of his custom drifting parts, with a Racepak dash display replacing the traditional gauge cluster. All controls are handled via a custom center console, which has switches for all necessary engine functions, including "rockets."

The fun part of the car comes in with the engine bay. If you peek under the hood, notably missing is the 2.0L SkyActiv four-cylinder motor that comes from the Mazda factory, replaced by a MAZDATRIX three-rotor engine hand-built by Mohan himself. While the specifics of the motor are kept under close wraps, Mohan tells us that the porting, polishing, and WPC-treated parts are all available to customers of MAZDATRIX, and that he's hand-built several similar three-rotor engines pushing over 1,000 horsepower for his clients.

Mohan paired the triple-rotor engine with a Turbonetics C72 turbocharger, with a supporting Turbonetics blow-off valve and wastegate to handle excess pressure. Air enters the engine after passing through the CX Racing intercooler via a 90-mm single butterfly throttle body.

Mohan and his team fabricated the V-mount system for the intercooler, with a pair of Mishimoto double-pass aluminum oil coolers and a CX Racing power steering cooler taking advantage of the fresh air entering the engine bay. Notably missing from the engine bay is the radiator, which was shifted to the trunk area of the car with a 16-inch Mishimoto puller fan mounted on the bottom. Many drift cars relocate the radiator to the trunk area for the weight balance advantages, as well as to try and shelter the radiator from contact in the event of a collision between cars or with the wall.

One of the most innovative areas of the car is the fueling system, which has been converted to run on 115-octane Ignite American Ethanol racing fuel. The American-made ethanol fuel burns much cooler than leaded gasoline, and is much more consistent between batches of fuel, which makes tuning much easier.



The fuel is held in a Fuelsafe fuel cell in the trunk, which holds a Walbro 740 fuel pump and feeds the gas through a Radium Engineering triple-pump sump tank before heading towards the engine bay. A CX Racing fuel rail is controlled by a Radium Engineering fuel pressure regulator, while six Deka 2,200-cc injectors spray each rotor housing with the high-octane fuel mixture. All the fueling is controlled by a Haltech Elite ECU, with an occasional shot of Nitrous used to help spool the turbo as needed. The switch to ethanol fuel is becoming more popular on the Formula Drift grid, with the majority of drivers now utilizing ethanol in their engines.

Suspension is one of the most important areas of any drift car, and the short wheelbase of the ND Miata creates plenty of challenges to make the car competitive. Mohan turned to long time partners in Eibach and Megan Racing to put together a coil over and swaybar combination that would work for the new chassis. A set of external reservoir Eibach Pro R2 coilovers based off the NC MX-5 are mounted at each corner, and a custom sway bar setup utilizing Megan Racing end links and a Speedway Engineering sway bar control the side-to-side movement. Control arms were sourced from Wisefab Engineering, who had an off-the-shelf solution that fit the timeline of this build. The steering rack was stitched together with an FD3S rack and an MR2 electric power steering pump to make the most of the new suspension geometry. Overall, Mohan has more than 65 degrees of steering angle, which is required to keep up in the ever-evolving sport of Formula Drift.

Over the past few seasons, forward grip has been one of the most important elements of winning tandem battles, and was a huge motivating factor in Mohan switching to the MX-5 chassis. All the horsepower in the world is useless if it can't be put to the ground, and Mohan utilizes 265/35 R18 GT Radial SX2 tires to match the power to the pavement, while 245/40 R17 sizing handles the steering inputs in front. The tires are wrapped around XXR's 527 model of forged wheels, in 17x8.5-inch sizing up front and 18x10 sizing out back. Those wheels are spun by the Winters quick change rear end, which is motivated by the Jerico four-speed gear box that sits just below the driver in the center of the car. With an Exedy Racing carbon triple-disc clutch and racing flywheel making the final connection between the transmission and the engine, Mohan has full control of the power output at all times. Despite the short wheel base, Mohan says his new MX-5 chassis is noticeably grippier than his previous SE3P RX-8 chassis.

Outside the car, Mohan knew that there weren't many body kit options available for the ND Miata, so he decided to work with the OEM bumpers for this season. To make way for the wider track, Mohan trimmed the existing fenders and utilized KMR over-fenders that he developed for the RX8 chassis to provide some style, as well as a much wider track. The massive Built2Apex rear wing trims out the rear of the car, and is fully adjustable for whatever the situation. Custom GT-style carbon fiber side mirrors finish out the look of the car, with Daley Visual providing the graphics to promote Mohan's many sponsors and give the car a menacing look.

Mohan's MX-5 is one of the first ND-based racecars in the world, and is easily the most powerful, with more than 1,000 horsepower spinning the rear wheels. While Mohan continues to dial in the power and grip, fans will be treated to one of the most enjoyable sounding motors on the Formula Drift grid.

ESSENTIALS
Vehicle: 2016 Mazda MX-5
Driver: Kyle Mohan
Built By: Mazdatrix & Kyle Mohan Racing
Engine: Mazda 20B 3-rotor engine
Horsepower: 1,000+

ENGINE
Ported, polished & matched block
Side-cut WPC-treated rotors
Mazda race bearings
Mazdaspeed (2-mm ceramic apex seals, dry sump)
Turbonetics ("Mohan Drift Spec" C72/75 turbocharger, blow-off valve, wastegate)
CX Racing (intercooler, 90-mm single butterfly throttle body, fuel rail, power steering cooler)
Mishimoto (racing double-pass radiator, 16-inch puller fan, double-pass oil coolers (2))
Radium Engineering (fuel pressure regulator, fuel sump tank)
Walbro 740 fuel pump
Deka 2200cc fuel injectors
NGK Racing spark plugs
NOS 10-lb bottle
K&N air filter Haltech (Elite 2500 ECU, coils)
Ignite Red 115-octane ethanol blend race fuel
Top 1 Racing 20w-50 synthetic race oil
Dyno tuned by Nelson Siverio

EXHAUST
KMR 3-inch to 3.5-inch stainless steel exhaust system
CX Racing modified header

DRIVETRAIN
Exedy (racing carbon triple-disk clutch, racing lightweight flywheel)
Jerico 4-speed transmission w/ center shift
Driveshaft Shop/KMR axles
Mazdatrix/KMR driveshaft
Winters Performance quick change LSD

WHEELS/TIRES/BRAKES
XXR 527 wheels – 17x8.5 +28 (f), 18x10 +28 (r)
GT Radial SX2 tires – 245/40 R17 (f), 265/35 R18 (r)
Baker Precision braided stainless steel brake lines

CHASSIS/SUSPENSION
Eibach Pro R2 coilovers
Megan Racing sway bar
Speedway Racing sway bar
Wisefab suspension kit (f/r)
Mazda RX-7 FD3S steering rack
Toyota MR2 electric power steering pump

EXTERIOR
KMR (over-fenders, bodywork)
Built2Apex (GT wing, aero parts)
Daley Visual vinyl graphics

INTERIOR
Built2Apex aluminum dash
KMR custom shift knob
Driven (steering wheel, harnesses)
K-Sport e-brake
Race Pak gauges
Haltech gauges

SPONSORS
GT Radial, Mazdatrix, Mazda, Ignite American Ethanol, Universal Technical Institute, Silk Road America, Exedy Racing, Turbonetics, Mishimoto, CX Racing, Wisefab, Radium Engineering, Built2Apex, Haltech, Fuel Safe, Megan Racing, Eibach, XXR Wheels, Driven Steering Wheels, Baker Precision, Hillco Fasteners, AIT, Affliction Clothing, Music Saves Lives, Top 1 Oil, WPC Treatment, EF1 Motorsports, Daley Visual, TCS, KMR, Just Rotary