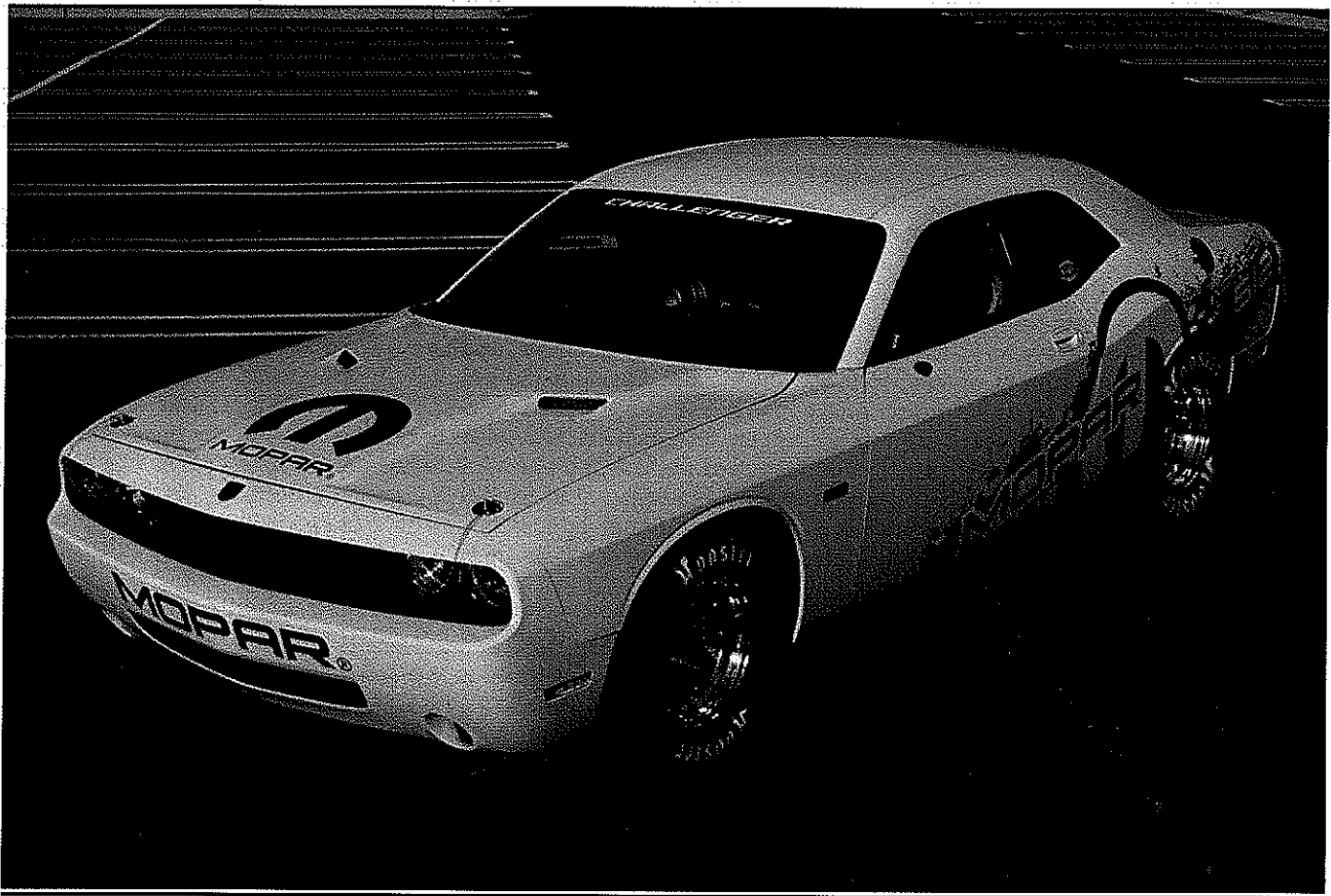




# LC22R Challenger Drag Pak

Part # P5155820

## 2011 Mopar Challenger Drag Pak Owner's Manual





## LC22R Challenger Drag Pak

Part # P5155820

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### READ ALL INSTRUCTIONS BEFORE DRIVING YOUR DRAG PAK CAR

Mopar has the right to change the design of and specifications for any part sold under this program, and have no obligation to provide notice of the same to the applicant/purchaser or make any similar change to any part previously purchased by or delivered to purchaser.

The 2009, 2010, and 2011 Mopar Challenger Drag Pak Program, is the first drag-race, factory prepped package car built in over 40 years by Mopar and builds on the heritage of the limited edition 1968 HEMI powered Dodge Darts and Plymouth Barracudas. 2011 Package cars are the first to be offered as a complete running vehicle, however Drag Pak Challenger's are not supplied with a VIN number and are not to be titled or street driven.

The 2011 Drag Pak was developed by Mopar Performance and approved by NHRA for stock and super stock drag racing. For exact details, please refer to your NHRA rulebook.

#### **NO PARTS WARRANTY- "AS IS"**

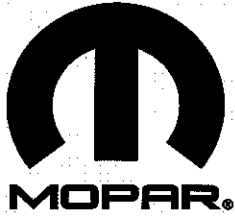
Mopar Performance parts beginning with a "P" prefix are sold "as is" unless otherwise noted. This means that parts sold by Mopar Performance carry no warranty whatsoever. **Implied warranties, such as warranties of merchantability, are excluded.** (An implied warranty of merchantability means that the part is reasonably fit for the general purpose for which it was sold). The entire risk as to quality and performance of such parts is with the buyer. Should such parts prove defective following their purchase, the buyer and not the manufacturer, distributor or retailer, assumes the entire cost of all necessary servicing or repair. Chrysler, Dodge, and Jeep vehicle and parts warranties are voided if the vehicle or parts are used for competition. The addition of performance parts does not by itself void a vehicle's warranty. However, added performance parts (parts not originally supplied on the vehicle from the factory) are not covered by the vehicle's warranty, and any failure that they may cause is also not covered by the vehicle's warranty.

#### **NOTICE: READ THIS SECTION BEFORE LOADING AND TRANSPORTING!**

If your Challenger Drag Pak was purchased without the roll cage option, then the rear axle upper control arm brackets are not reinforced by a Roll Cage! Care must be taken while driving and tying down the vehicle to insure the upper control arm brackets are not pulled from the flooring. Vehicles that are not equipped with a roll cage have the front and rear glass spot glued in 4 places for ease of glass removal when installing the roll cage. The points that are spot glued are marked with a yellow dot. Due to the glass only being spot glued, an enclosed trailer must be used when transporting the vehicle.

#### **NOTICE: Mopar Performance assumes no responsibility for transportation damage.**

For technical assistance regarding this product, please contact the Direct Connection Tech Line Monday-Friday, 9:00 A.M. – 5:00 P.M. EST at 1(888) 528-HEMI or 1(888) 528-4364



## LC22R Challenger Drag Pak

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### -Vehicle prep information

- The vehicle is delivered with the suspension set level for ground clearance and shipping. The shock compression and rebound are adjusted to the lightest settings. The customer is responsible for the final suspension settings and the ballast weight.
- The vehicle is shipped with a closed fuel system. The customer is responsible for supplying and installing the fuel sample valve.

### -Vehicle Serial Number / VSN

- The vehicle is supplied with a vehicle serial number (VSN), the first four digits are the year the vehicle was produced, and the last three are the sequence it was built in. The (VSN) tag is located on the passenger side strut tower in the engine compartment. A VIN number is not provided and the vehicle **cannot** be titled or driven on public roads.



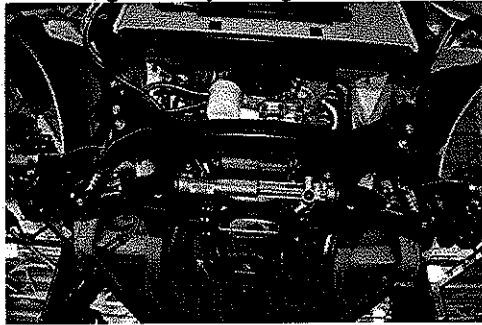


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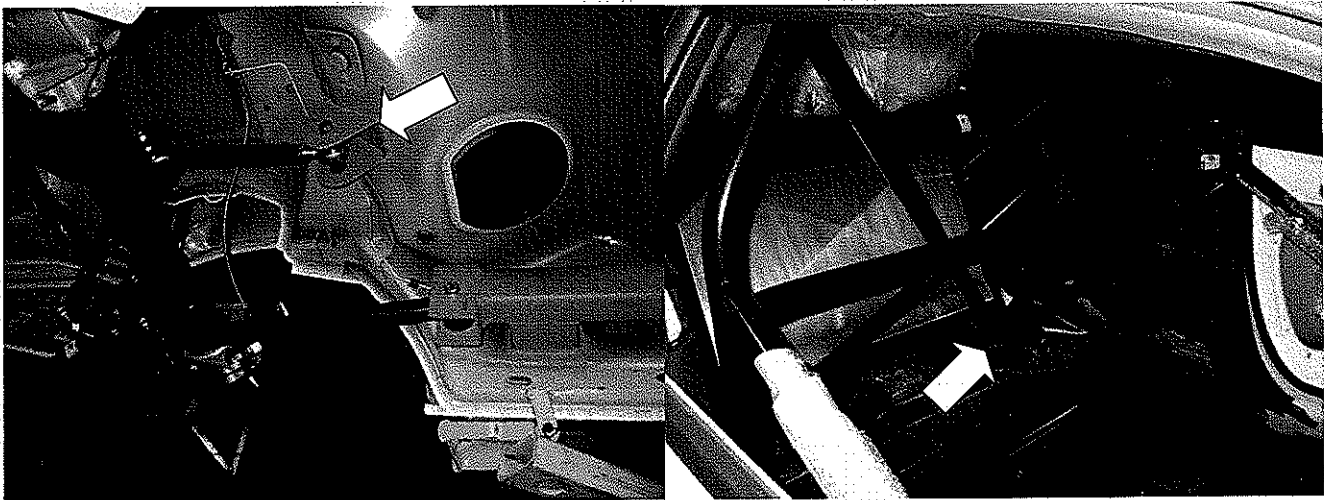
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## -Chassis

- The front suspension alignment is set to factory specifications. If the engine cradle fasteners are loosened, it's possible to shift the engine cradle and significantly change the front suspension alignment settings.



- If your Challenger Drag Pak was purchased without the roll cage option, then the rear axle upper control arm brackets are not reinforced by a Roll Cage! Care must be taken while driving and tying down the vehicle to insure the upper control arm brackets are not pulled from the flooring.

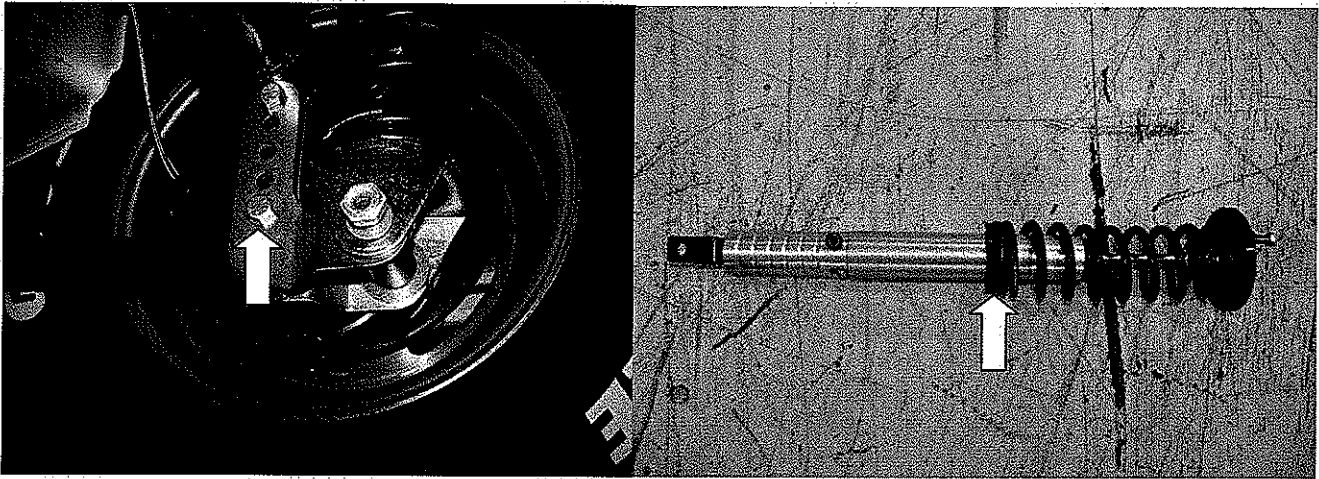




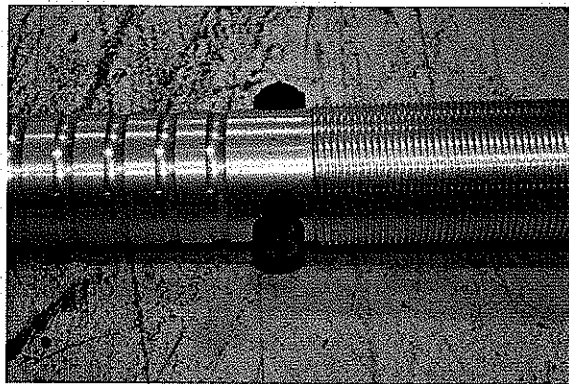
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## -Suspension



- The rear height is adjustable by moving the spring perch up or down on the axle mount. The front struts are adjustable by raising or lowering the spring stop with the use of a spanner wrench.



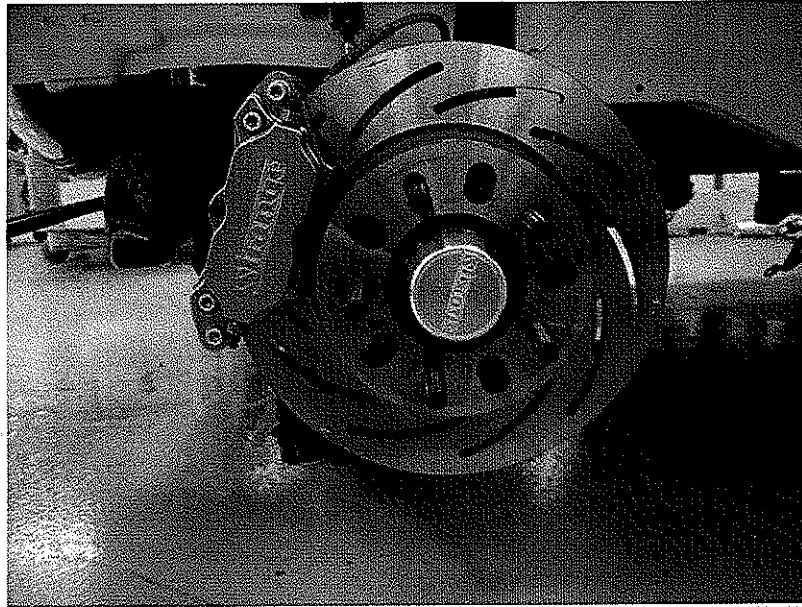
- The dampers are double adjustable and manufactured by Strange. The compression and rebound have separate adjustment valves.



## LC22R Challenger Drag Pak

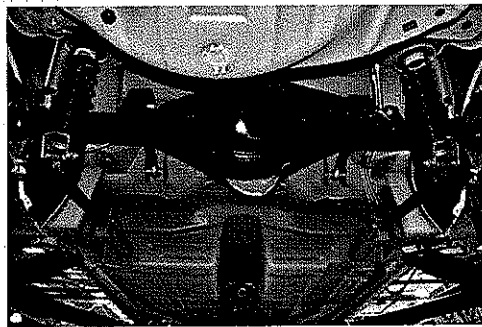
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### -Brakes



- The front and rear brakes are manufactured by Strange. The front spindle nuts are one time use; replace the nut after each use with a replacement nut from strange. An OEM spindle nut (06504007) can be used however it will have to be machined (outer diameter and back faced) in order to clear the dust cap.

### -Rear Axle



- The rear axle is manufactured by Strange. It comes equipped with 9" 4.11 ring gear, 3.250" bearing aluminum case, Pro Race 35 spline axles, bearings, and steel spool. The axle is equipped with a chrome molly pinion yoke with 1350 joints.



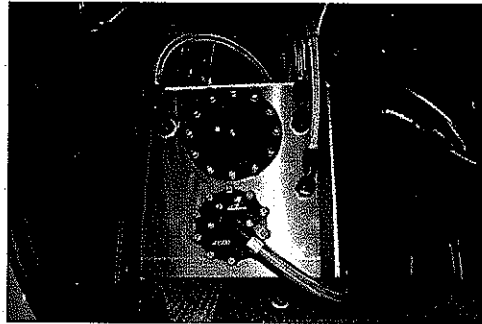
## LC22R Challenger Drag Pak

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### -Tires

- The tires are manufactured by Good Year and each tire has an eight digit serial code. Good Year racing tires are directional. On the rear tires, the serial code should face the right side of the vehicle. In other words, the code will be outboard on the passenger side and inboard on the driver side of the car. On the front tires, the serial code should face the left side of the vehicle--inboard on the passenger side and outboard on the driver side.

### -Fuel System



- The fuel system is manufactured by Aeromotive. The fuel tank contains an internal A1000 pump and pre pump filter. The fuel supply and return lines are -8AN. The adjustable bypass regulator and pressure gauge are located on the pass side front shock tower. An external 10 micron post pump fuel filter is located next to the fuel tank. The 10 micron replacement fuel filter element is Aeromotive part number 12601.
- The vehicle is delivered with NHRA approved C12 fuel. Use of C12 or higher octane is recommended. Use of non-NHRA approved fuel can contaminate the system and result in a fuel sample test failure.

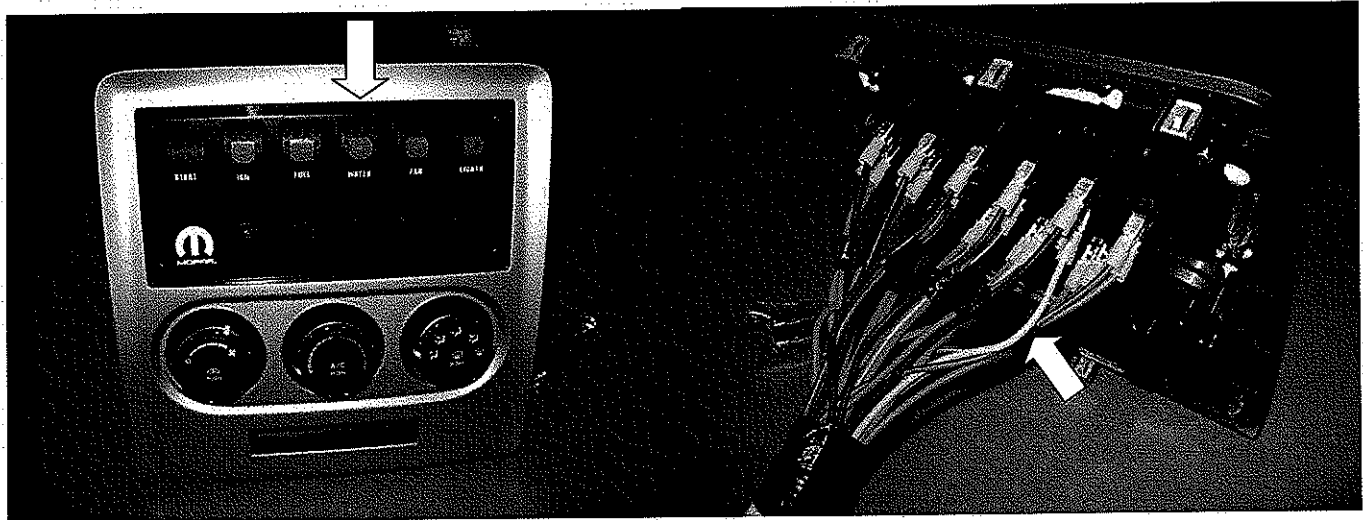
### -Wiring

- In order to prevent engine damage during shipping, the vehicle is delivered with the water pump wired to the ignition switch. A separate water pump switch is provided and is prewired. If the driver prefers to manually operate the water pump on a separate switch, then perform the following. Pry the HVAC control /switch bezel from the dash panel using a plastic trim tool. From the back side of the switch panel, remove the yellow wire from the ignition switch and connect it to the only open cavity of the water pump switch. Replace the plastic HVAC control /switch bezel.



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- With exception of the fuel pump switch, (and water pump, depending how it's wired) all switches are independent of the ignition. (Example: "start", "fan", "water", and "lights" can be turned on even if "ign" is off. "Fuel" can be turned on only if "ign" is on).
- The master cutoff switch, located in the rear bumper, will disable power to vehicle and the alternator field circuit.
- The driver's door switch has master control of both windows. The passenger door window switch will not raise or lower the passenger window. This is a result of the unique software that was required for the smart glass windows.

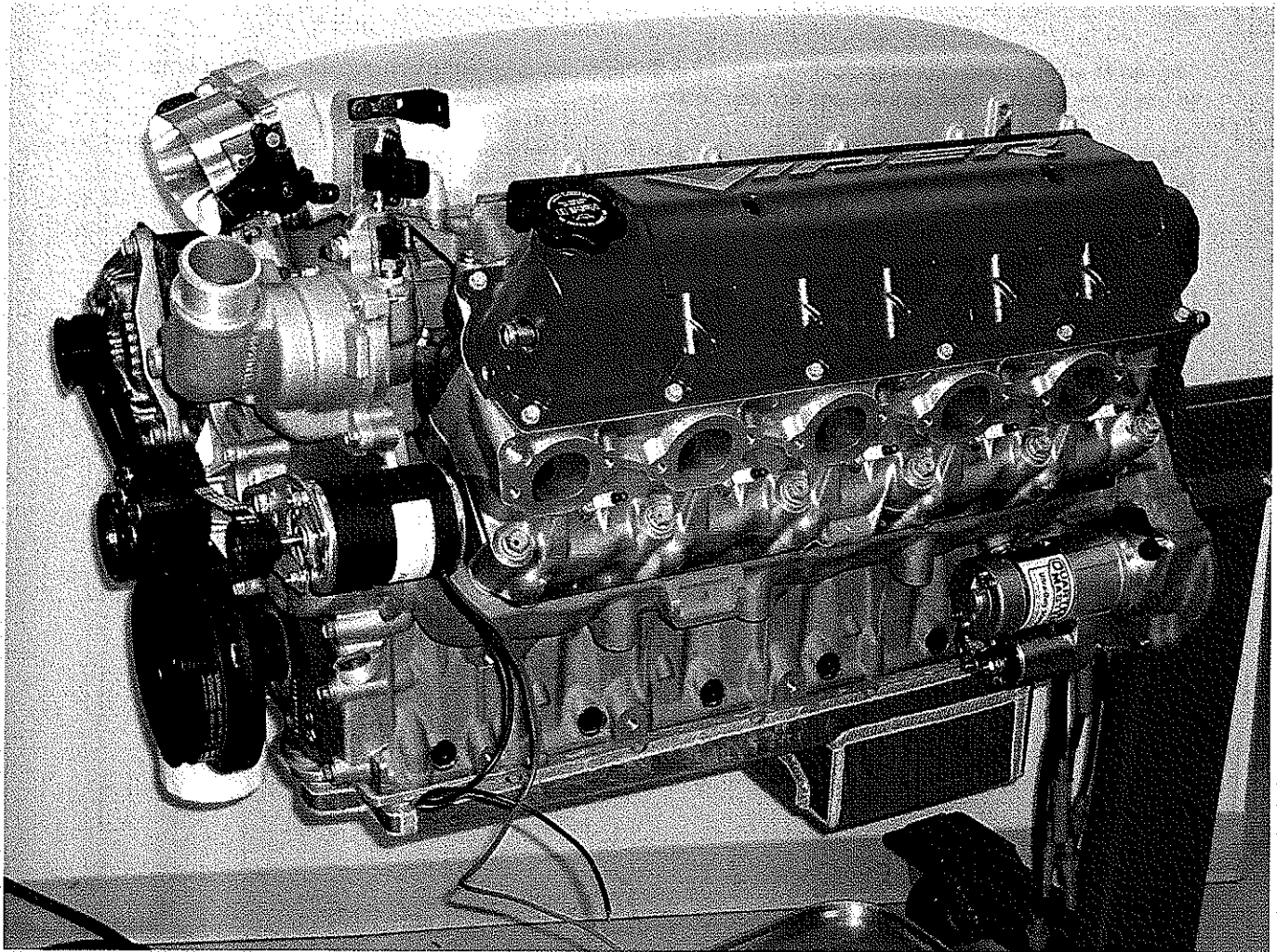




# LC22R Challenger Drag Pak

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-Engine

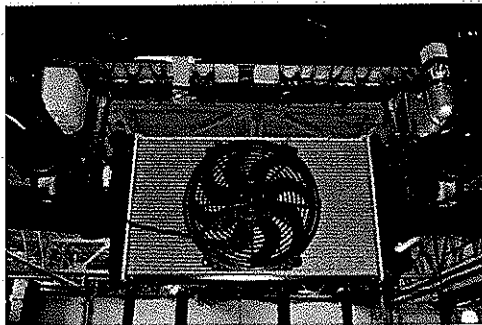




## LC22R Challenger Drag Pak

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- The customer **MUST** use the Mopar Viper oil filter (05038041AA). The SRT filter has an internal bypass which has been developed for the Viper engine. In competitive events, there is a risk of engine failure without use of this filter.
- The water pump rotates counter clockwise, and the pump motor is wired to achieve the correct rotation (The red to black, and black to red connections are correct).
- The Drag Pak Challenger is equipped with a Gen 4 V10 Viper engine. However the cam and crank tone rings are from the Gen 3 Viper V10 engine. This means the aftermarket engine controllers (already on the market) for previous generation Viper V10's will work with the Drag Pak V10 engine. AEM manufactures an EMS (PN 30-1500U) that is plug and play (plugs into the existing engine harness). The AEM EMS offers complete access to all calibrations and also offers data logging capability. Wide band oxygen sensors (if desired) will require additional wiring and installation.
- The Mopar Challenger V-10 Drag Pak was tested up to 7200 rpm. If you plan on racing your engine above 7200 rpm, then enhancements to the oiling system is required.
- The air intake utilizes the entire upper grill opening. The radiator has been relocated to accomodate the air inlet scoop.





# LC22R Challenger Drag Pak

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## -Engine Tear down Information

### TORQUE

DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
A/C Compressor Mounting Bolts	23	17	-
A/C Compressor Bracket Bolts	28	21	-
A/C Line Support to Oil Pan	9	-	80
Accessory Drive Idler Pulley	54	40	-
Accessory Drive Belt Tensioner	41	30	-
Air Cleaner Cover Bolts	8	-	70
Bell Housing Bolts	54	40	-
Camshaft Position Sensor Bolt	9	-	80
Camshaft Drive Plate Bolts			
Center Bolt - m10	65	48	-
Outer Bolts - m6	12	-	106
Camshaft Sprocket/Phaser Bolt	165	121	-
Camshaft Thrust Plate Bolts	12	-	106
Capacitor Bolt	9	-	80
Coil Cover Bolts	10	-	89
Connecting Rod Cap Bolts	See Below	-	-
Coolant Temperature Sensor	18	-	159
Crankshaft Main Bearing Cap Bolts	See Below		
Crankshaft Oil Scraper Nuts	28	13	-
Crankshaft Position Sensor	9	-	80
Crankshaft Position Sensor Heat Shield Nut	7	-	62
Crankshaft Pulley Bolts	23	17	-
Crankshaft Vibration Damper Bolt	339	250	-
Cylinder Head Bolts	See Below		
Cylinder Head Cover Bolts	11	-	95
Cylinder Head Cover Baffle Bolts	6	-	45
Engine Ground at Alternator Bolt	12	-	106



# LC22R Challenger Drag Pak

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## TORQUE

DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
Exhaust Manifold Bolts	29	21	-
Exhaust Pipe V-Band Clamp	11	-	100
Engine Mount to Block Bolts	61	45	-
Engine Mount Insulator Nut	102	75	-
Flywheel Bolts	75	55	-
Fuel Rail Bolts	10	-	89
Generator Mounting Bolts	47	35	-
Ignition Coil Bolts	5	-	44
Inspection Cover Bolts	9	-	80
Intake Manifold Bolts	13	-	95
Oil Cooler Mounting Bolts	5	-	44
Oil Control Valve Bolts	9	-	80
Oil Cooler Line Fittings	25	18	-
Oil Pan Bolts			
Oil Pan to Rear Seal Adapter - M6	12	-	106
Oil Pan to Block and Front Cover - M8	28	21	-
Oil Pan Baffle Bolts	12	-	105
Oil Pan Drain Plug	34	25	-
Oil Pressure Relief Valve Cartridge	25	18	-
Oil Pump Cover Bolts	12	-	105
Oil Pump Swinging Pick-up Assembly	28	21	-
Oil Pump Pick-up Pivot Bolt	14	-	124
Oil Pump - Up Tube Bolts	28	21	-
Oil Filter	18	13	-
Oil Pressure Sensor	9	-	80
Oil Temperature Sensor	18	-	160
Crankshaft Rear Oil Seal Retainer Bolts	11	-	97
Rocker Arm Bolts	32	24	-
Spark Plugs	19	14	-
Starter Mounting Bolts	54	40	-
Thermostat Housing Bolts	8	-	70
Throttle Body Bolts	11	-	95



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## TORQUE

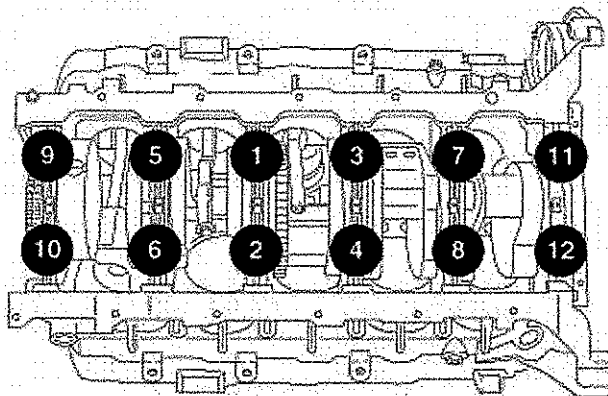
DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
Timing Chain Cover Bolts	28	21	-
Water Pump Mounting Bolts	11	-	95

## CONNECTING ROD SPECIFICATIONS

Part number	ARR-LUN413
Bolts	7/16 ARP2000
Torque Range	70 – 80 Ft. Lbs
Stretch	.0053 - .0057

## CRANKSHAFT MAIN BEARING CAP BOLTS

1. Install each main bearing cap in proper sequence and direction. Tighten all bolts finger tight.
2. Tighten main bearing cap bolts 1-12 in the sequence shown to 20 N·m (15 ft. lbs.).
3. To ensure correct thrust bearing alignment move crankshaft all the way to the rear of its travel.
4. Then, move crankshaft all the way to the front of its travel. Wedge an appropriate tool between the rear of the cylinder block and rear crankshaft counterweight to hold the crankshaft in its forward position.
5. Tighten main bearing cap bolts 1-12 to 27 N·m (20 ft. lbs.) in the sequence shown.
6. Tighten main bearing cap bolts 1-12 to 54 N·m (40 ft. lbs.) in the sequence shown.
7. Rotate main bearing cap bolts an additional 50°.



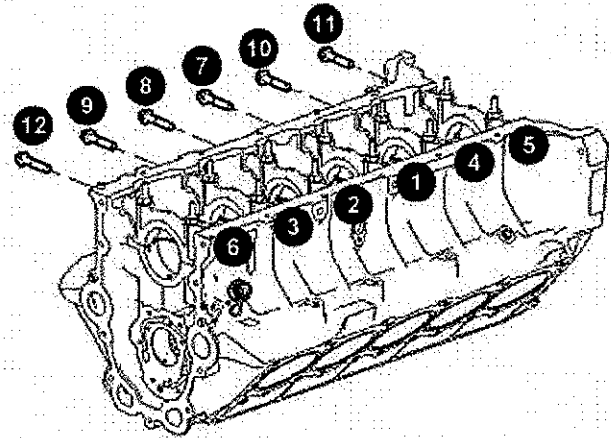
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## LC22R Challenger Drag Pak

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8. Tighten main bearing cap side bolts 1-12 to 13 N·m (115 in. lbs.) in the sequence shown.
9. Tighten main bearing cap side bolts 1-12 to 27 N·m (20 ft. lbs.) in the sequence shown.
10. Rotate main bearing cap side bolts 1-12 an additional 45°.
11. Remove the crankshaft holding tool.



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### CYLINDER HEAD BOLTS

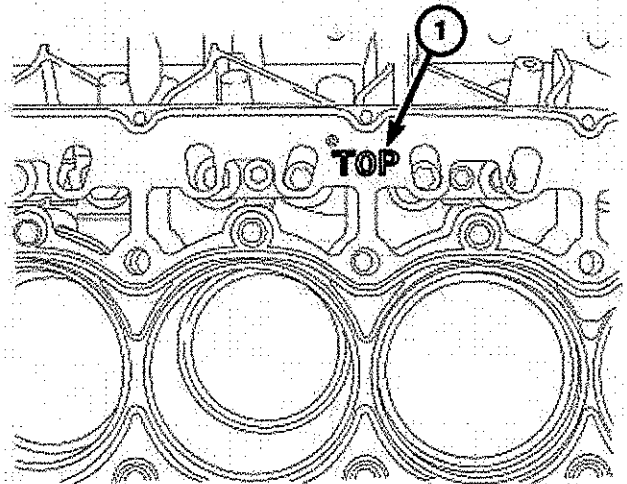
**NOTE:** This procedure covers either the left or right cylinder head.

**NOTE:** Make sure there is no oil or coolant in the cylinder head bolt holes.

1. Clean all surfaces of engine block and cylinder heads (Refer to 09 - Engine - Standard Procedure).

**CAUTION:** Remove all gasket material from cylinder head and block using a plastic scraper only. DO NOT use a metal scraper, as damage to sealing surface may occur.

2. Install new cylinder head gasket(s) on the engine block with markings (1) upward. Assure all coolant passages and bolt holes align properly.



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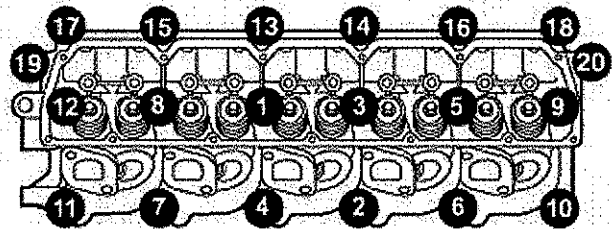


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**CAUTION: Cylinder head bolts are coated, DO NOT oil bolts.**

3. Install cylinder head(s) over dowel pins. Install new cylinder head bolts 1-12. Tighten cylinder head bolts 1-12 in the sequence shown in using a three step tightening sequence:
  - a. First to 35 N·m (26 ft. lbs.).
  - b. Second to 48 N·m (35 ft. lbs.).
  - c. Third rotate an additional 90°.
4. After cylinder head bolts 1-12 have been tightened to specifications, install and tighten cylinder head tappet gallery bolts 13 - 20 in sequence shown to 11 N·m (95 in. lbs.).



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# LC22R Challenger Drag Pak

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## LC22 Service Parts

Body Part Numbers	
Hood Pin kit	P5155853
Brake pedal assembly	P5155259
Front Brake Kit (contact Strange Engineering)	P5155703
Manual Steering Rack Assembly	P5155176
Door Module (left)	P5155319
Door Module (right)	P5155318
Door glass (left)	P5155097
Door glass (right)	P5155098
Dash Harness	P5155859
Body Harness	P5155860
Switch/Harness - Assembly	P5155250
Trans Temp Gauge	P5155890
5" Tach W/Shift Light	P5155975
Oil Pressure Gauge	P5155501
Water Temp Gauge	P5155502
Switch/Harness - Assembly	P5155250
Throttle Cable	P5155849
Owners Manual	P5155867
Body In White (contact techline)	P5155327
Rear Axle Package (contact techline)	P5155850
Powertrain Part Numbers	
Engine mounts	P5155883
Crate Engine	P5155872
Transmission	P5155851
Transmission mount	P5155854
Fuel injectors 52.3 lbs/hr	4891574AB
Oil Pan (Olson)	
Intake scoop	P5155857
Drive shaft (Raven Engineering)	
Oil Filter (Viper)	5038041AA





**LC22R Challenger Drag Pak**  
Part # P5155820



**Vehicle Technical Specifications Required for Classification**

**Vehicle Parameters: Stock**

Vehicle Manufacturer: Chrysler Group LLC Model Name: Dodge Challenger R  
Model Year(s): 2011 Annual # of Units: 50  
Wheelbase: 115.5" Track (F/R): 63.0" / 63.1"  
Shipping Weight: 3375 Windshield Slope Angle: NA  
Rear Window Slope Angle: NA Body Style ( 2 door, etc.): 2 door coupe

**Engine Parameters: Stock**

SAE Max Horsepower: 450@6800 RPM Max Torque: 450@5200 RPM  
Rev-Limit Speed: 7300 RPM Rev-Limit Method: Electronic Via ECU  
Fuel Tank/Cell Capacity: 6 US Gal. Engine Location (frt, mid, rear): Front  
Number of Cylinders: 10 Displacement (cc): 8400 / 512 ci

Compression Ratio (max): 12.5 :1  
**Cylinder Block:**

Block Material: Aluminum Casting Number: 05037723AA  
Block Deck Height (min): 9.480" Deck Clearance (min): 0.0  
Cylinder Bore (max): 4.055" Piston Stroke (max): 3.960"  
Main Bearing Housing Diameter: 3.193"



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## Cylinder Head:

Head Material: Aluminum Casting Number: 05037714AB

Combustion Chamber Volume (min) (cc): 71.8 Compressed Gasket Thickness: 0.041"

Runner Volume: Intake: 267.5 cc Exhaust: 99.8 cc

## Valve System:

Number of Valves per Cylinder: Intake: 1 Exhaust: 1

Valve Head Diameter (max): Intake: 2.08" Exhaust: 1.60"

Valve Material: Steel

Valve Actuation Type (pushrod, finger follower, etc...): Pushrod

## Engine Internals:

Piston Type: Flat Dish Depth: \_\_\_\_\_ Dome Height: 0.98" Piston Mass (min): 488g

Connecting Rod Length (Center to Center): 6.255"

Connecting Rod Material: Forged Steel

Connecting Rod Big end Diameter: 2.252" Connecting Rod Small end Diameter: 0.927"

Connecting Rod Mass: 565g Piston, Pin, Rod & Ring(s) Mass (min): 1215g

Crankshaft P/N: 05037852AB Crankshaft Mass (min): 84 Lbs

Crankshaft Rod Journal Diameter: 2.215" Crankshaft Main Journal Diameter: 3.001"

Camshaft P/N: VIP 12616/12636 Location/# of Camshafts: 1 in Block

Lift @ Lobe (max): 0.397" Intake: 0.397" Exhaust: 0.397"

Lift @ Valve (max): 0.687" Intake: 0.687" Exhaust: 0.687"

Rocker Arm Ratio: 1.73 Tappet Type: Hydraulic Roller



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## Intake Manifold:

Manifold Material: Aluminum Casting Number: 05037898AE (lower)  
Type of Induction System: MPI Location of Injectors: In Cylinder Head  
Number of Injectors per Cylinder: 1 Throttle Body Bore Dia.: Oval Sgl Blade (5.51"x 2.68")

## Drivetrain: Transmission:

Number of Forward Speeds: 2 Manufacturer: TCI  
Gear Ratios: 1<sup>st</sup>: 1.80 2<sup>nd</sup>: 1.00 3<sup>rd</sup>: \_\_\_\_\_  
4<sup>th</sup>: \_\_\_\_\_ 5<sup>th</sup>: \_\_\_\_\_ 6<sup>th</sup>: \_\_\_\_\_

## Final Drive:

Differential Type: Open Limited Slip: Spool  
Differential Manufacturer: Strange Axle Ratio: 4.11  
Ring Gear Outside Diameter: 9"

## Chassis: Suspension:

Spring Type (coil, leaf, etc.): Front: Coil Rear: Coil  
Spring Material Dia. / Thickness: Front: Steel/.454" Rear: Steel/.380"  
Overall Spring Dia. / Width: Front: 3.5" Rear: 3.5"  
Anti-roll Bar Diameter: Front: N/A Rear: N/A  
Anti-roll Bar Design (solid, tube, etc.): Front: N/A Rear: N/A  
Bushing Material: Rubber



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## Brakes:

Rotor Diameter (max):                      Front: 11.25"                      Rear: 11.25"  
Rotor Thickness (max):                      Front: .433"                      Rear: .433"  
Rotor Type (vented, solid):                      Front: Solid slotted                      Rear: Solid slotted

Rear Drum Diameter (if so equipped): \_\_\_\_\_ Rear Drum Width (if so equipped): \_\_\_\_\_

Caliper Type & Number of Pistons:                      Front: Fixed 4 piston                      Rear: Fixed 4 piston

## Stock Tires & Wheels:

Tire Size:                      Front: 28.0x4.5x15                      Rear: 30x9x15  
Wheel Diameter & Material:                      Front: 15" Alum                      Rear: 15" Alum  
Wheel Width:                      Front: 4"                      Rear: 10"