



Factory Five Racing, Inc.

Part Number: 35111	Revision: A	Effective Date: 11/25/19	By: J. Schenck
Document Type (indicate):	<input type="checkbox"/> Bill of Material <input checked="" type="checkbox"/> Assembly Instructions	<input type="checkbox"/> Drawing (may be attached) <input type="checkbox"/> Operating Procedure	<input type="checkbox"/> Specification <input type="checkbox"/> Other

Hot Rod

Mopar Gen III Hemi Crate Engine Installation Instructions



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Parts Needed/Recommended



Shorty headers – BBK 4028.



Bellhousing - Trans fitment – Tremec TKO for Ford input shaft.

Quicktime RM-8076.



Pilot Bearing – Bearing and adapter OEM Chrysler Crankshaft to Ford style Pilot Bearing.

Silver Sport Transmissions PBM-00101A.



Flywheel - 130 tooth flywheel - RAM-1585



Clutch - 26 spline clutch - RAM-98390HDT.



Hydraulic clutch actuator - Mcleod 1406-30.



Transmission - 5 Speed Tremec for Ford style input shaft.

Tremec TCET5008 (heavy duty 600FT-lbs) or TCET4615 (500 ft-lbs.).



Starter – OEM 2015 Dodge Challenger - Mopar 56029274AA.



Alternator – East Coast Auto Electric Ultra-mini (50 amp) - Summit Racing ECA-2025.



6 rib pulley – Alternatorparts.com - Part# QS20614003.



Adjustment Rod – March Pulleys Universal adjustment rod - March RA-1.625.



Alternator mount bracket – Extra clearance mount for adjustment rod - March Performance 30005.



Accessory Belt – 6 Rib serpentine belt - Continental 6pk-1033 (or equivalent length 6 rib).



Mopar 392 Gen III Hemi - www.moparproshop.com – Crate engine with control pack.



Oil Pan/Pickup – Milodon road race center sump 31003 (pan) and Milodon 18336 pickup for up to 2008 engines or Milodon 18349 pickup for 2009 and newer engines



Oil Filter threaded mount – Threaded nipple to mount oil filter direct to block

Mopar part# 4892338AC (If your engine is 2006 or older and has standard threads use part #4104511AB)



Oil Filter – Oil filter for extra clearance - Mobil-1 M1-113 (or interchange equivalent).



60° 3.50" ID Silicone elbow – www.Siliconeintakes.com - SIL001133 or equivalent.



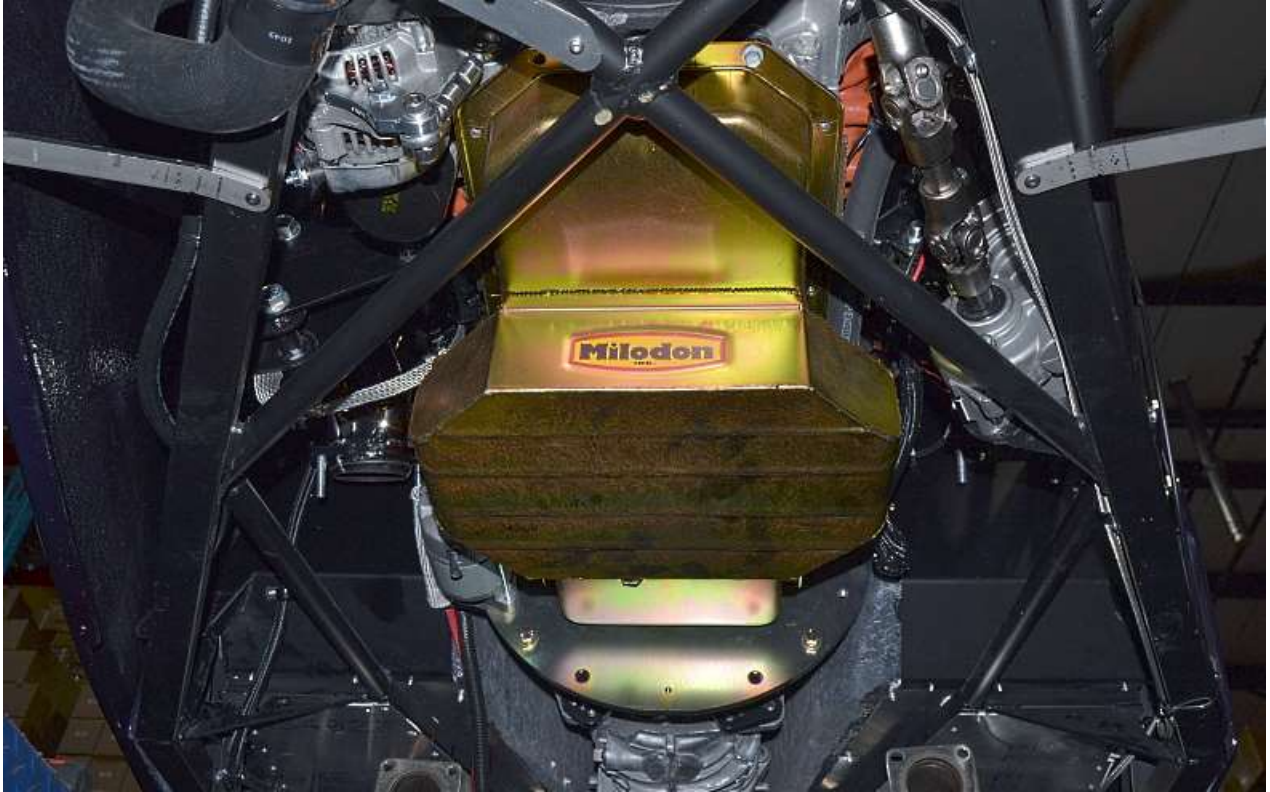
45° 3.50" OD Tube elbow - www.Siliconeintakes.com -CBN009669 or equivalent aluminum tube.

Installation

Oil Pan



Remove the stock oil pan and pickup.



Install the shorter oil pan and pickup on the engine. (pictured in the chassis but easier to do before hand).

Clutch



Install the adapter pilot bearing in the back of the crankshaft. It may be necessary to remove the old one if your engine was previously used with a manual transmission.



Position the backing plate for the scatter shield on the engine before the flywheel is installed.



Install the flywheel using red Loctite on the bolts.



Install the clutch using the alignment tool that comes in the clutch kit.



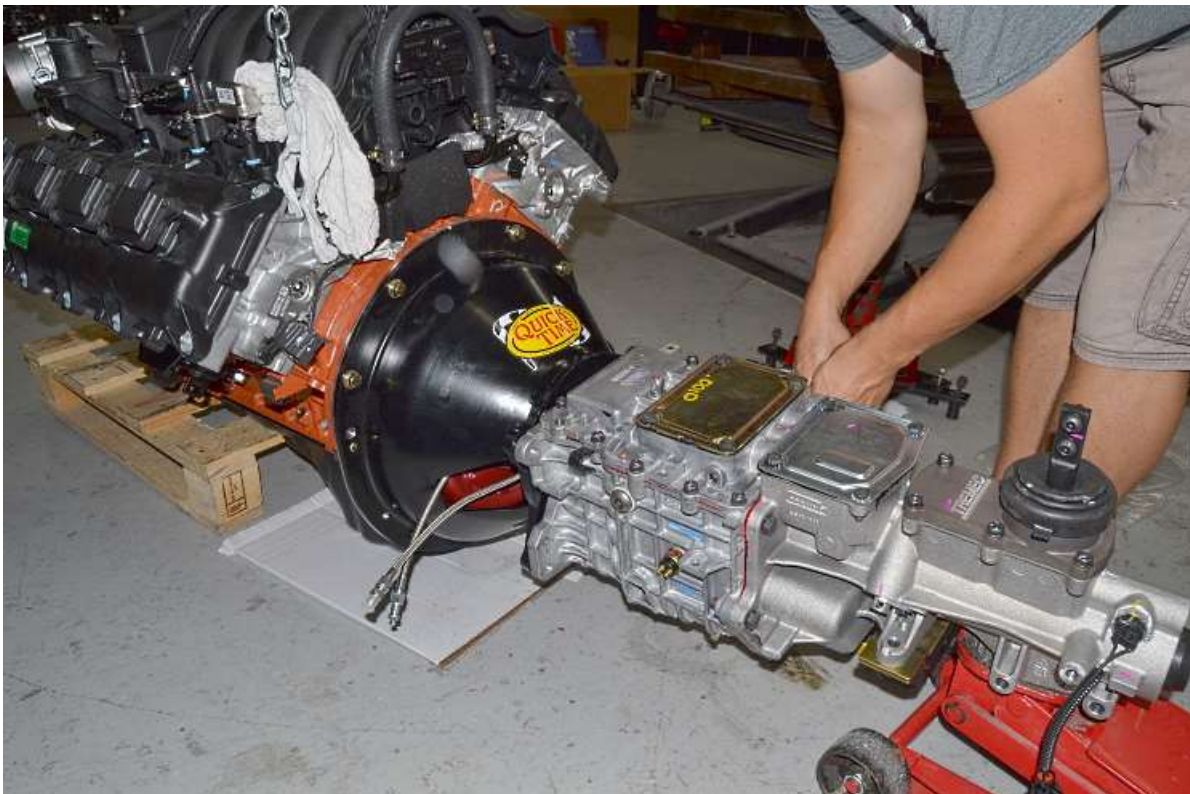
Test fit the bellhousing to the engine to get the measurement for the hydraulic throw-out bearing. Follow the instructions included with the throw-out bearing.

Remove the bellhousing.

Attach the bellhousing to the transmission.



Adjust the throw-out bearing height and slide onto the transmission input shaft.



Install the transmission and bellhousing assembly onto the back of the engine with the throw-out bearing in place.



Install the 90° elbow for the oil pressure sensor in the empty port above the oil filter, then install the gauge sensor in the elbow. Use Teflon tape or pipe dope to seal the threads.



Remove the hose barb from the front of the water pump using the internal hex and install the gauge water temperature sending unit and adapter from the gauge kit.

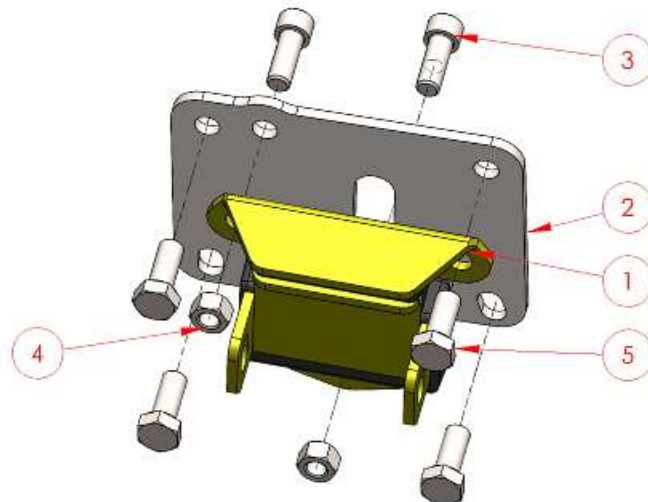
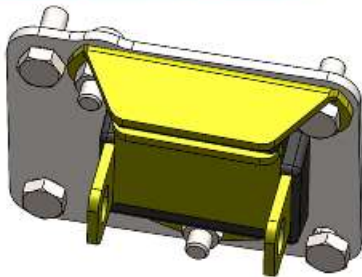


Connect the heater hose outlets behind the intake with the heater hose and clamps provided.

Engine mounts

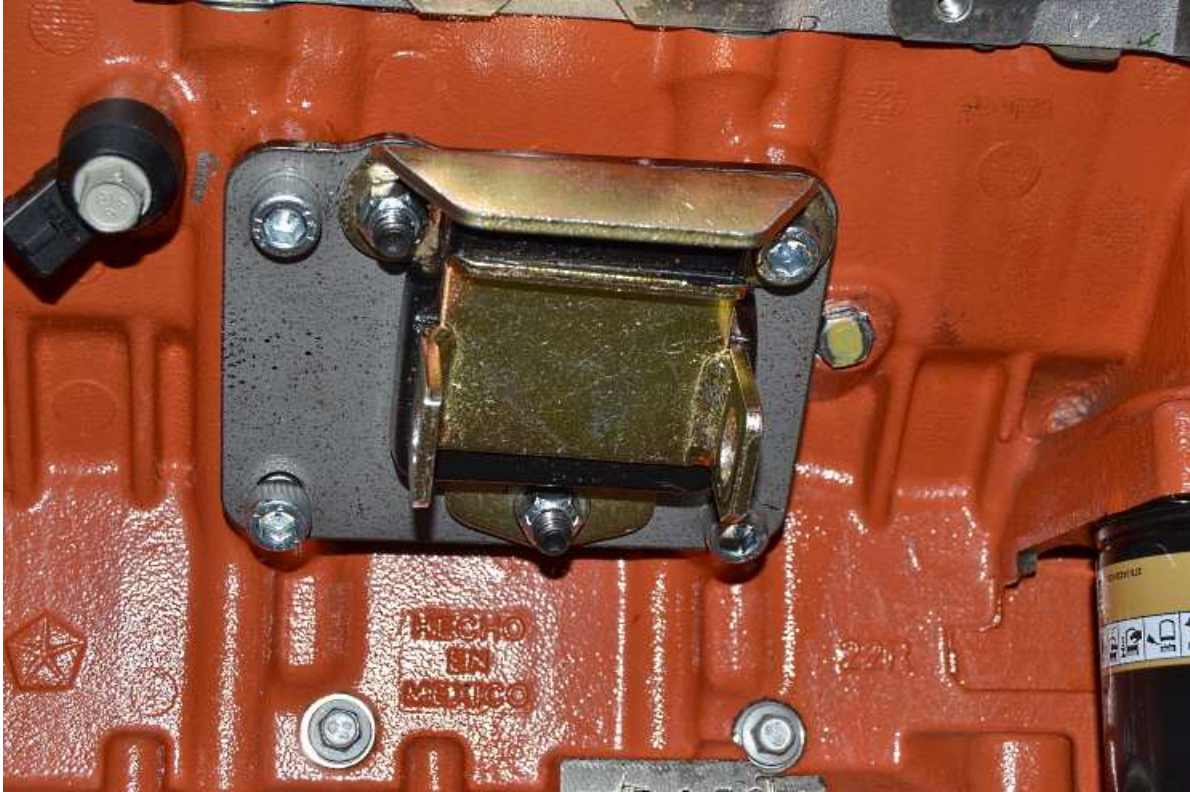
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	33771	ENGINE MOUNT	1
2	33754	ENGINE PLATE	1
3	10520	3/8"-16 x 1" SOCKET HEAD CAP SCREW	2
4	12172	3/8"-16 MECHANICAL LOCK NUT	2
5	16003	M10-1.25 x 25MM BOLT	4

REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	5/10/11	
B	33754 CHANGED TO 7ga	1/17/13	

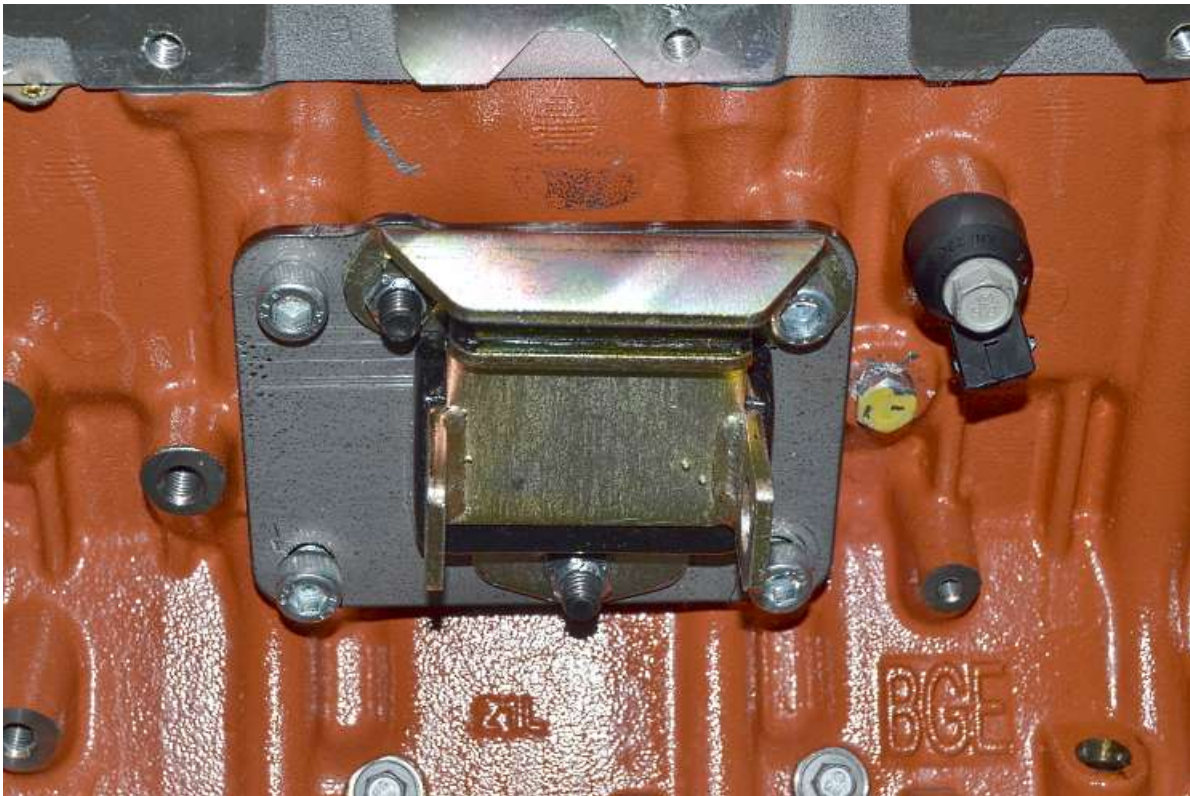


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UNLESS OTHERWISE SPECIFIED:		NAME	DATE	Factory Five Racing, Inc.	
DIMENSIONS ARE IN INCHES		DRAWN: JI	3/21/11	TITLE: RIGHT SIDE ASSEMBLY	
TOLERANCES:		COMMENTS:		SIZE: A	DWG. NO.: 33755
TWO PLACE DECIMAL: ±0.01				REV: B	
THREE PLACE DECIMAL: +0.005				SCALE: 1:2	WEIGHT:
FOUR PLACE DECIMAL: ±0.001					SHEET 5 OF 5
MATERIAL:					
USED ON:		PRINTED: 1/8/2020			
APPLICATION: LS ENGINE, HEMI					



Install right side engine mount and attach the engine ground strap to the rear upper bolt.



Install left side engine mount.

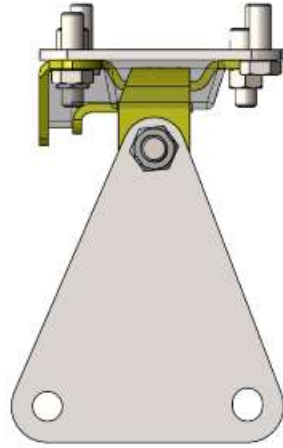
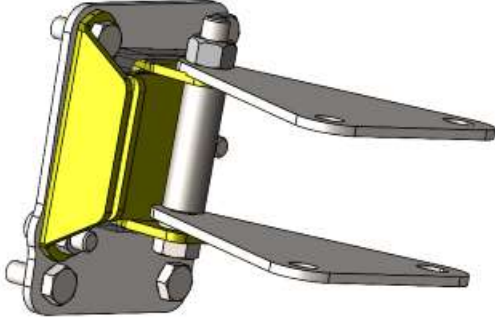
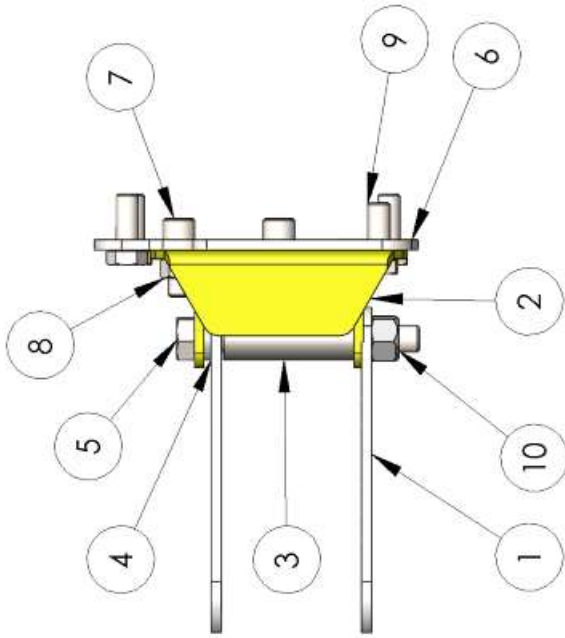


Screw the oil filter adapter fitting into the block then screw the oil filter directly onto the block



Lower the engine and transmission into position.

REV.	DESCRIPTION	DATE	APPROVED
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B	33754 CHANGED TO 7ga	1/17/13	



ITEM NO.	PART NUMBER	DESCRIPTION	RIGHT SIDE/QTY.
1	33752	LS ENGINE MOUNT SIDE PLATE	2
2	33771	ENGINE MOUNT	1
3	33753	ENGINE MOUNT SPACER	1
4	13210	1/2" ID x 0.125" THK SHIM	1
5	33772	M12-1.75 x 100MM BOLT	1
6	33754	ENGINE PLATE	1
7	10520	3/8"-16 x 1" SOCKET HEAD CAP SCREW	2
8	12172	3/8"-16 MECHANICAL LOCK NUT	2
9	16003	M10-1.25 x 25MM BOLT	4
10	33769	M12-1.75 MECHANICAL LOCKNUT	1

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES:
 TWO PLACE DECIMAL: ±0.01
 THREE PLACE DECIMAL: ±0.005
 FOUR PLACE DECIMAL: ±0.001

HOT ROD /

DO NOT USE YELLOW ZINC
 ENGINE MOUNT BACKING PLATE

DATE: 3/21/11

NAME: JI

DRAWN: JI

COMMENTS:

TITLE: **RIGHT SIDE ASSEMBLY**

SIZE DWG. NO. **A 33755**

REV **B**

SCALE: 1:3 WEIGHT: SHEET 3 OF 4

PRINTED: 1/8/2020

APPLICATION: LS ENGINE, HEMI

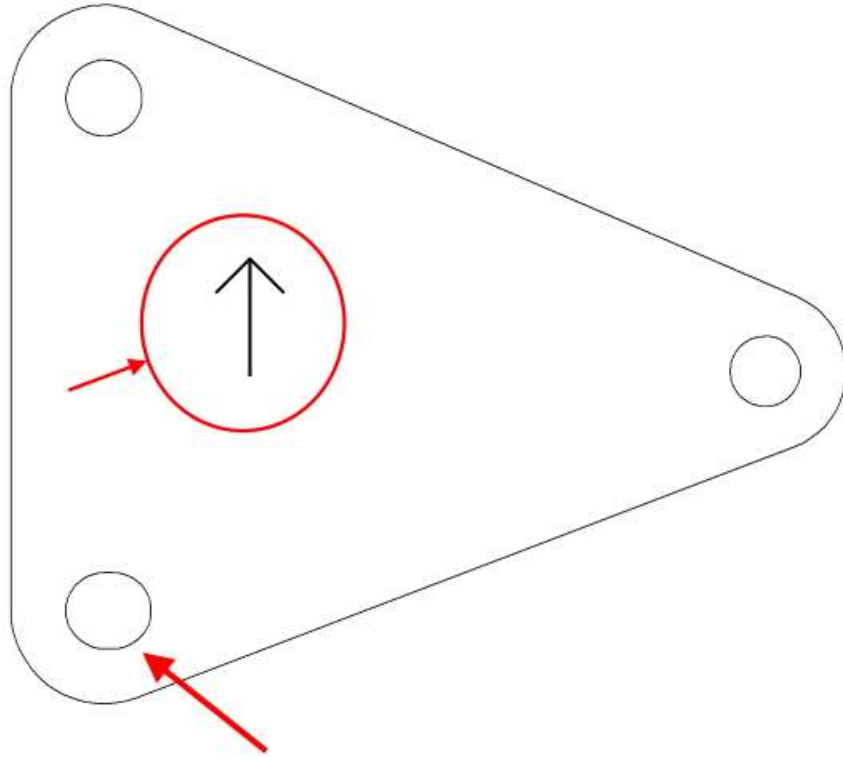
USED ON:

MATERIAL:

FINISH:

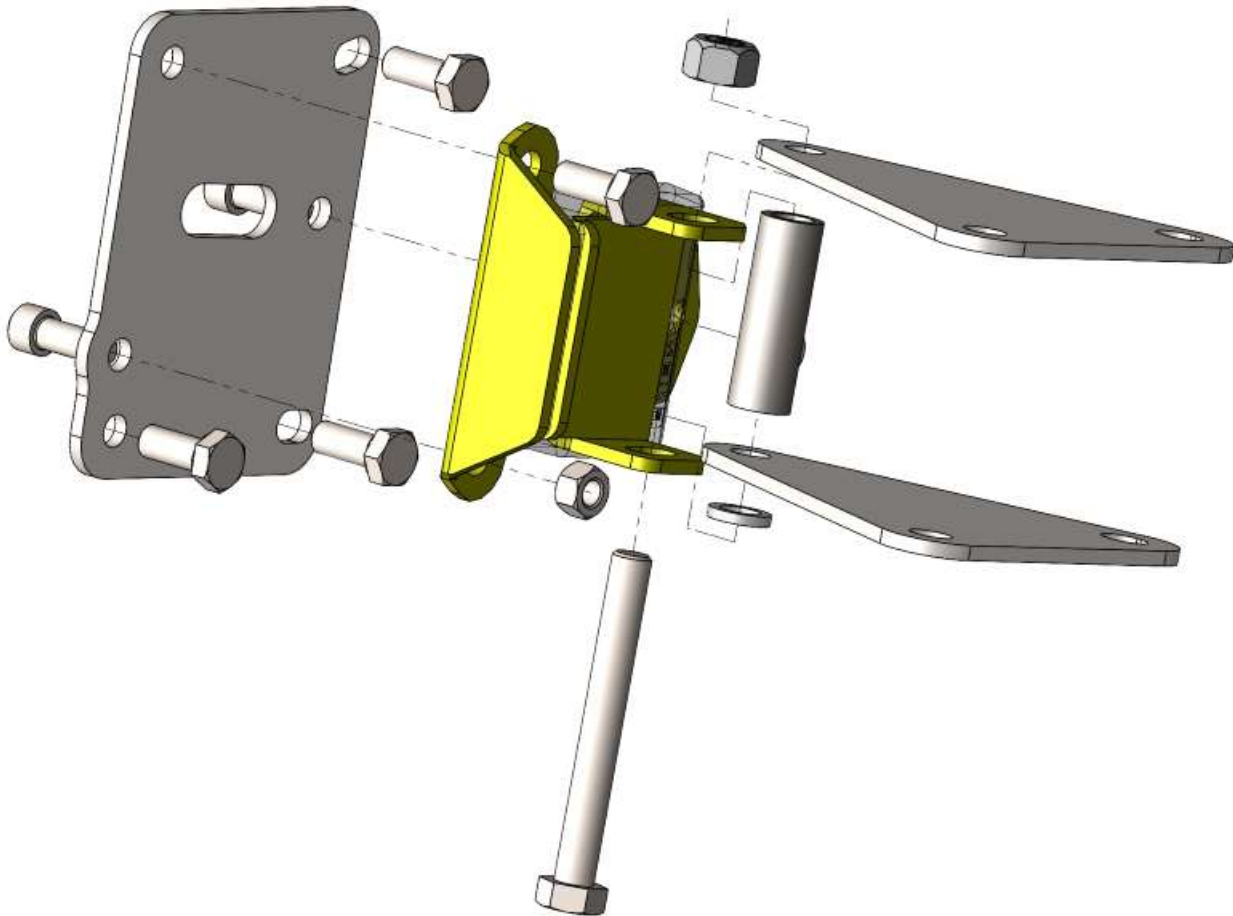
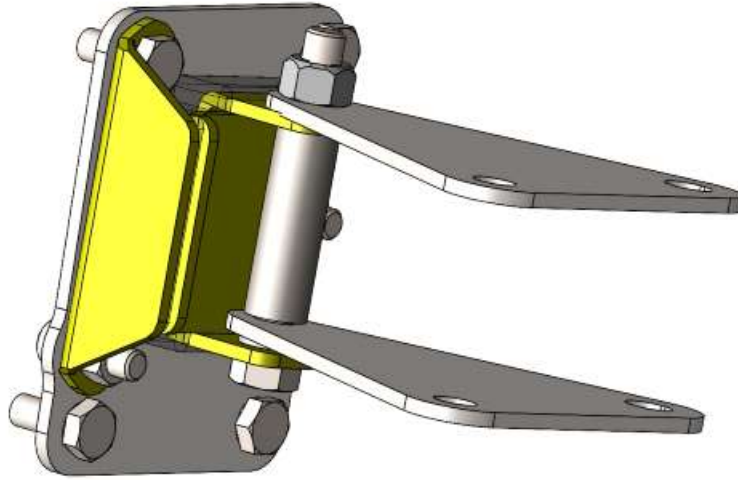
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The side plates are directional and have an arrow pointed up along with a lower slotted hole.

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Factory Five Racing, Inc.

TITLE:

RIGHT SIDE ASSEMBLY

SIZE DWG. NO.

A 33755

REV

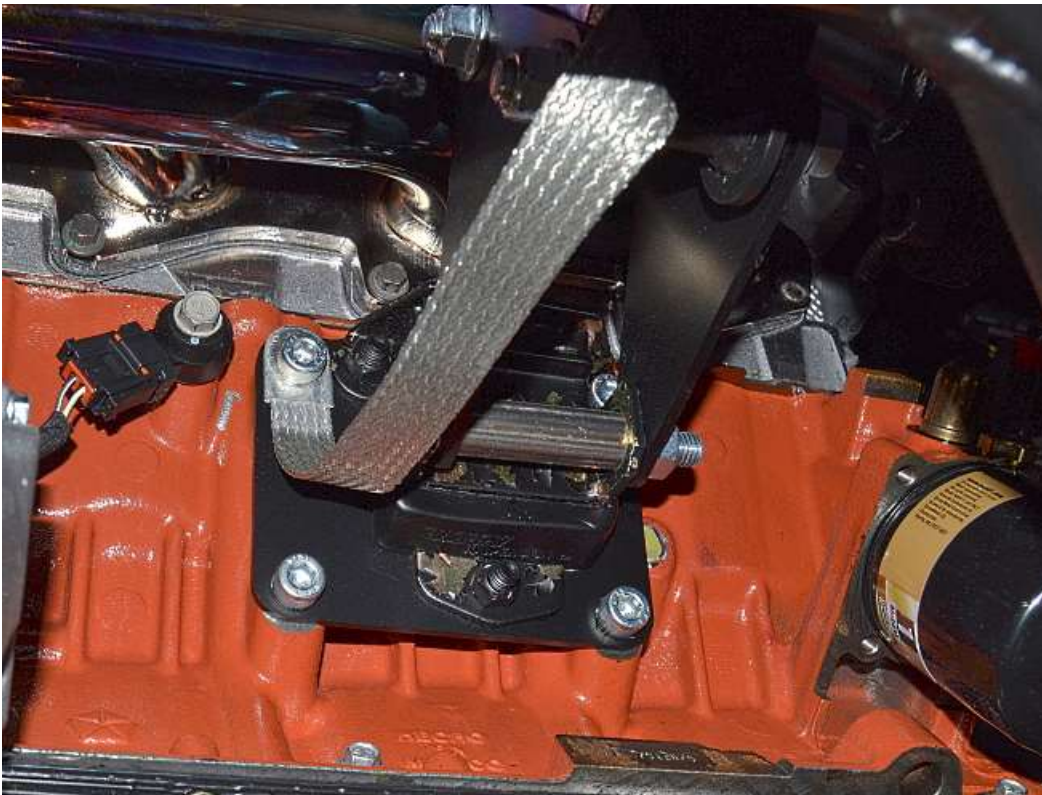
B

SCALE: 1:2 WEIGHT:

SHEET 4 OF 4



Attach the left engine mount side plates to the engine and frame, Wait until all bolts are placed on both engine mounts before tightening them all down.



Attach the right engine mount side plates to the engine and frame, note that the side plates are directional and have an arrow pointed up along with a lower slotted hole.

Tighten all engine mount bolts.
Attach the transmission mount to the frame.



Install the starter on the engine block.



Attach the shorty headers.

Alternator



Install serpentine pulley on your alternator, use the $\frac{1}{16}$ " shim provided behind the pulley to give the pulley proper alignment and clearance.



The alternator top bolt attaches directly to the boss on the lower right side of the engine block.



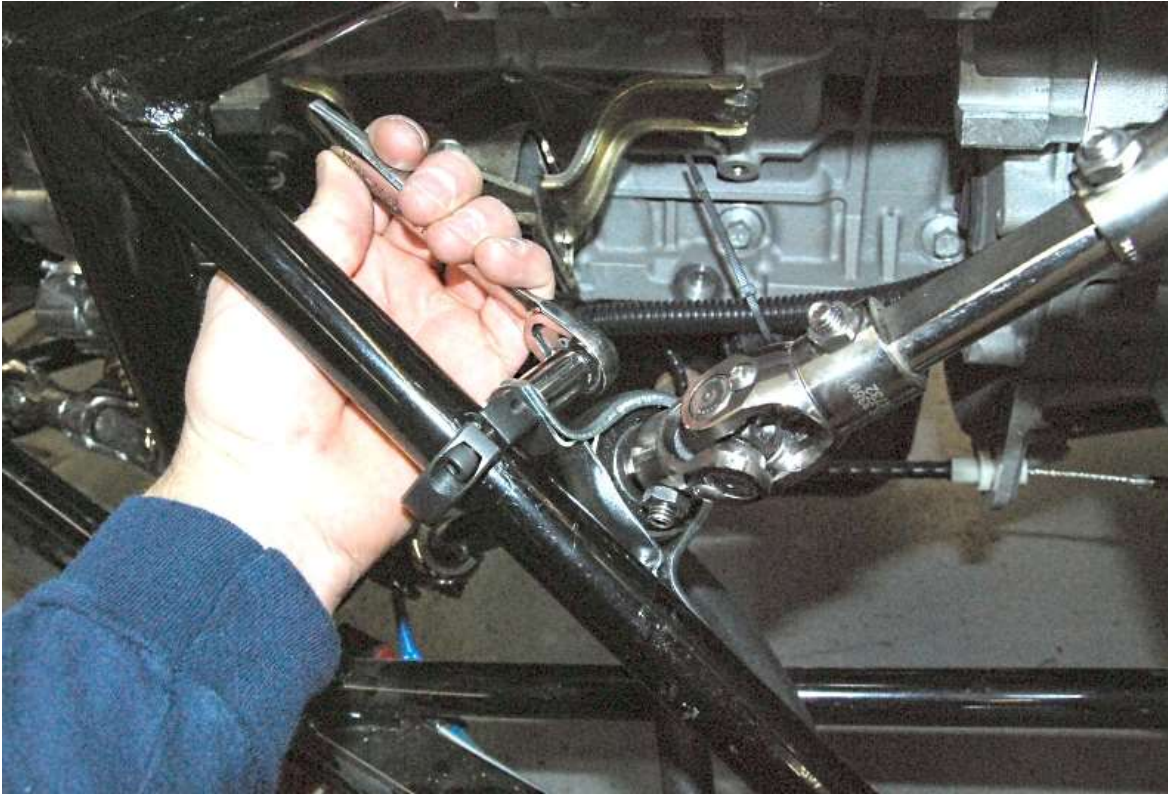
Attach the adjuster rod and bracket to the alternator as shown then connect the other end to the front of the timing cover with the longer bolt.



Install the belt and tighten. If the belt is new, you will need to re-adjust after a few hundred miles of driving.

Steering shaft

- ✂ Hack saw, $\frac{7}{16}$ " socket, ratchet, $\frac{3}{16}$ " drill bit, drill, $\frac{3}{16}$ " hex key
- 🔧 Hot Rod steering parts



The upper steering shaft should be cut into two sections with a support in the middle. Bolt the support loosely to chassis and slide the shaft assembly together. The twisted shaft attaches right at the firewall u-joint.



Locate the tube clamps on the tube so that the shaft is as straight as possible and then tighten the clamps.

Remove the pillow block screws and use a marker or small drill bit through the screw hole to mark the location on the 1" tube.

Remove the tube clamps and drill the marked locations using a 1/4" drill bit. This will allow the pillow block mounting screw to go into the tube and also prevent the tube clamps from turning.



Reassemble the steering with the pillow block bolts lined up to the holes you drilled then tighten all the set screws on the steering joints and pillow block.

Accelerator Pedal



In order to fit properly, the drive by wire throttle pedal from the engine control kit needs to be cut down and attached to the FFR provided pedal. Cut the Mopar pedal as shown in the picture.



Cut the Factory Five pedal as shown then drill and bolt together using the 1/4" fasteners provided.



Mount the throttle pedal in a position it feels most comfortable to you, trimming some of the extra plastic away will allow you to get it into a better position, just leave enough material around the mounting holes.

Air Intake



Connect the intake pieces and the included filter to the throttle body using the supplied hose clamps so that the filter is very close to the valve cover. Check clearance with the engine side cover if running them.