

# Technical Bulletin



<b>DP02</b>	<b>TB0042-2011</b>	<b>Élan Motorsports Technologies</b>	
<b>From:</b>	<b>John Harris</b>		
<b>Subject:</b>	<b>2.0L MZR Engine Install</b>	<b>Date:</b>	<b>Nov 22<sup>nd</sup>, 2011</b>

## Attention all Élan DP02 teams

As part of the IMSA-mandated rule change requiring all competitors competing in the 2012 IMSA Lites 1 category to convert their vehicles to run Mazda's 2.0L MZR motor, Élan Motorsports Technologies is supplying a comprehensive installation kit along with the new motor. This Technical Bulletin is intended to detail the installation of the 2.0L MZR motor into a DP02 chassis. See the Table 1 for a complete listing of new parts required for install.

It is worth noting that, due to manufacturing tolerances, all DP02 chassis were originally assembled with the appropriate amount of shims between the bellhousing and engine frame bosses (see Figure 1). This is to ensure the bellhousing does not crack due to stresses induced during installation. The conversion of any DP02 chassis to accept a new motor will inevitably require this shimming process to be repeated.

### Instructions for initial engine installation:

1. Fasten engine frame to chassis. Tighten bolts.
2. Loosely secure front upper engine mount (DP02-62-012) to chassis with one thick washer (PA-0173) under each bolt. Do not tighten bolts. Loosen bolts securing front upper engine mount (DP02-62-009) to engine.
3. Fasten front lower engine mount to engine. Tighten bolts.
4. With engine supported, fasten front lower engine mount to chassis. Tighten bolts.
5. Loosely secure the two front upper engine mount components together. Ensure all nine fasteners used in the front upper engine mount are in place but not tightened.
6. Secure bellhousing to engine while carefully guiding the bellhousing onto the four engine frame bosses. Tighten only the fasteners securing the bellhousing to the engine.
7. Tighten the two vertically-oriented bolts securing the two parts of the front upper engine mount to each other.
8. Tighten the four bolts securing the front upper engine mount to the chassis.
9. Tighten the three bolts securing the front upper engine mount to the engine.
10. Using a pair of calipers, carefully measure the gap between the bellhousing and the engine frame bosses at all four mounting locations. Acquire the corresponding thickness and amount of shims required to take up the gap at these four locations.
11. Remove bellhousing and engine. Install shims in their appropriate locations.
12. Reinstall bellhousing, engine and included mounts leaving **all** fasteners loose.
13. Tighten fasteners in the following order:
  - a. Engine to bellhousing
  - b. Front lower engine mount
  - c. Bellhousing to engine frame
  - d. Front upper engine mount in the following order:
    - i. Two vertically-oriented bolts
    - ii. Four chassis side bolts
    - iii. Three engine side bolts
14. Reinstall gearbox and attendant structure.

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Slight tweaking of the oil swirl pot tube may be required on some vehicles. If a team determines the tube needs to be bent to fit, great care needs to be taken to avoid kinking the bends. A slow, deliberate and smooth movement to bend, without heating, the tube is ideal.

It is also permissible to replace the hard line with a flexible hose. If this is done, the tube is to be cut off at least 3/4" from the body of the swirl pot. The fitting on the other end of the hard line can then be cut off and welded back on to the swirl pot. Careful planning should be done before deciding to perform this modification as, on certain vehicles, a flexible line of such size may not be able to be routed effectively without kinking. Again, *do not cut the hard line directly off the swirl pot body. Doing so could affect the proper function of the oiling system.*

Swirl pot tube modifications differing from the allowable modifications listed in this bulletin shall be approved by Élan Motorsports Technologies before use in competition.

Because the intake manifold of the 2.0L and 2.3L engines are in different locations, alteration of the airbox is required. Should a customer not feel comfortable performing the modification themselves, Élan offers a complete 2.0L airbox that is a direct bolt-on replacement (DP02-40-023).

Instructions for airbox modification:

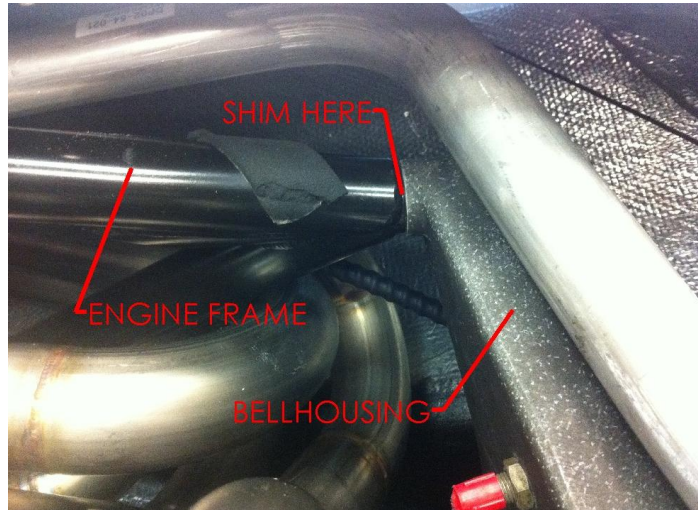
1. Remove existing airbox from engine cover.
2. Place airbox patch (DP02-62-015) onto left-hand side of the airbox, with the two components' mounting flanges coincident to one another (as seen in Figure 2), and trace around its perimeter on three sides (as seen in Figure 3).
3. Offset the lines traced in step #2 inward approx 1/2". Trace another line approx. 1/2" above the existing airbox mounting flange (as seen in Figure 4).
4. Cut hole in existing airbox along lines traced in step #3.
5. Trim entire bolt flange off airbox patch (as seen in Figure 5).
6. Abrade 1/2" 'border' on existing airbox and corresponding inside surface on airbox patch. This will be the interface where the two components are bonded together (as seen in Figure 6).
7. Bond components together with 3M DP-420 or similar epoxy using proper procedure.
8. (Optional) Blend interior and exterior surfaces by sanding and/or filling gaps between patch and original airbox to create a smooth transition. Prep for paint.
9. Affix included foam strip to mating surface between airbox and its mount.

*Table 1: Install Kit*

<b>QUANTITY</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>
ONE	DP02-52-026	MODIFIED OIL SWIRL POT
ONE	DP02-54-021	ENG TO LH RAD WATER PIPE
ONE	DP02-62-007	MODIFIED EXHAUST
ONE	DP02-80-001	MODIFIED BELLHOUSING
ONE	DP02-62-008	AIRBOX MOUNT
ONE	DP02-62-015	AIRBOX PATCH
FOUR	PA-0173	THICK WASHER
ONE	DP02-62-012	FRONT UPPER ENGINE MOUNT

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*Figure 1: Bellhousing Shims*



*Figure 2: Patch Placement*

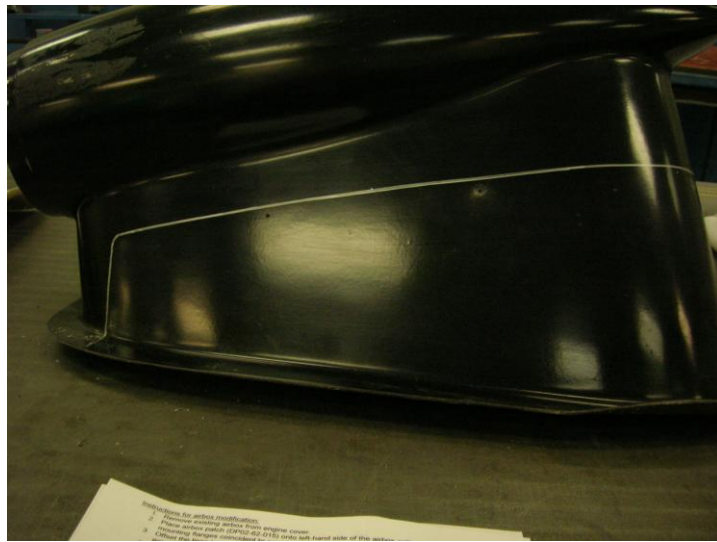


Figure 3: Traced Line



Figure 4: Offset Cut Lines



Figure 5: Bolt Flange Cut



*Figure 6: Abraded Bonding Surface*