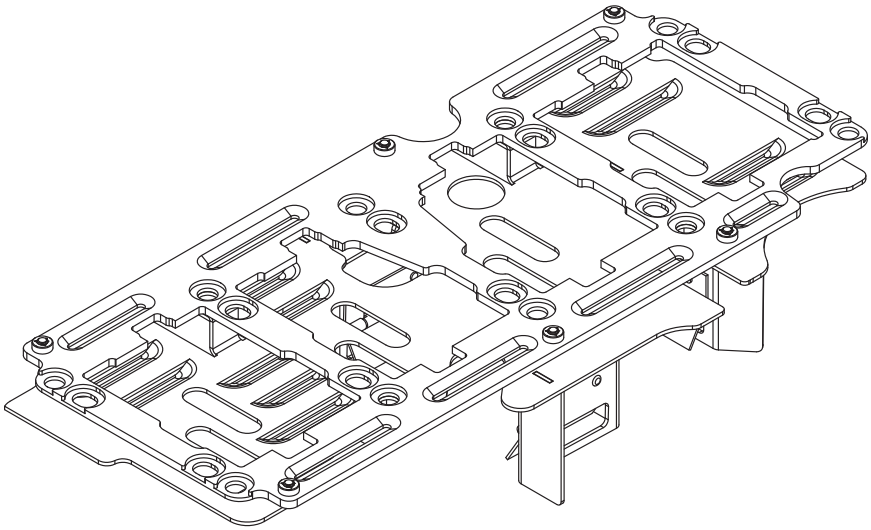
IMPROVED RACING™

2005-2013 (C6) CHEVROLET CORVETTE CRANK SCRAPER AND OIL PAN BAFFLE KIT

3.622" STROKE & 4.000" STROKE ENGINES

MADE IN USA



Important: Read these instructions in their entirety prior to installation

For contact information, visit www.improvedracing.com

Rev 201109

APPLICATIONS

- 2005-2013 (C6) Chevrolet Corvette, wet sump
- Vehicles equipped with GM oil pan part # 12624617
- Ensure you have purchased the correct crankshaft scraper kit for your application. Visit to www.improvedracing.com for a list of supported applications by specific part number.

GENERAL PARTS LIST

Item	Qty	Part Number	Description
1	1	EGM-3XX	Crankshaft Scraper (Part Number Engraved on Scraper)
2	1	EGM-214C	C6 Corvete Oil Pan Baffle
3	4	HSP-1009	M10 ARP Stud to M8 Factory Stud Reducer
4	10	HNT-1018	M8x1.25 (OEM Main Stud) Crank Scraper Locknuts
5	7	HSC-1037	M6x1.00x12 Windage Tray Screws

TECHNICAL SPECIFICATIONS

Ideal Scraper Clearance	**ALL SCRAPING SECTIONS:** 0.040 inches (1.02 mm)
Minimum Scraper Clearance	**ALL SCRAPING SECTIONS:** 0.020 inches (0.51 mm)
EGM-3XX Info	CNC-Machined 6061-T6 Billet Aluminum
EGM-214C Info	CNC-Pierced 5052-H32 Sheet Aluminum, Jig-Bend with Press
HSP-1009 Info	CNC-Machined 6061-T6 Billet Aluminum
HNT-1018 Info	IFI-100/107 M8x1.25 Class 10 Top Locknut, C10B21 Alloy Steel, CR3+ Zinc Plated, 6H Thread Fit, 13 mm Wrench Flats
HSC-1037 Info	M6x1.00x12 ISO 7380 Low-Profile Button Head Screw, 304 Stainless Steel, 6g Thread Fit, 4 mm Drive

WARNINGS & PRECAUTIONARY STATEMENTS

⚠ **WARNING: NEVER work under a vehicle supported only by a jack.**

⚠ **WARNING:** This product should only be installed by a qualified mechanic. Improper installation could result in severe engine damage.

REMOVING THE FACTORY PARTS

1. Raise and support the vehicle at the recommended lift points using a lift, jack stands or wheel ramps.
2. Remove any fascia panels required to access the vehicle's oil filter and oil pan.
3. Drain the the oil pan by following GM's approved method for your vehicle, found in the factory service manual.

Caution: Oil may be hot!

4. Place a drain pan underneath the oil filter and remove the filter.
5. Remove the oil pan from the vehicle by following GM's approved method for your vehicle, found in the factory service manual.
6. Remove the factory oil pickup tube (screen) from the oil pump and main stud(s) by using a 10 mm and 13 mm (14 mm for ARP studs) tool, as shown in Figure 1. Set the pickup tube (screen) aside until reinstallation.

NOTE: Figure 1 is a representative diagram only. Nut and screw locations vary among vehicles.

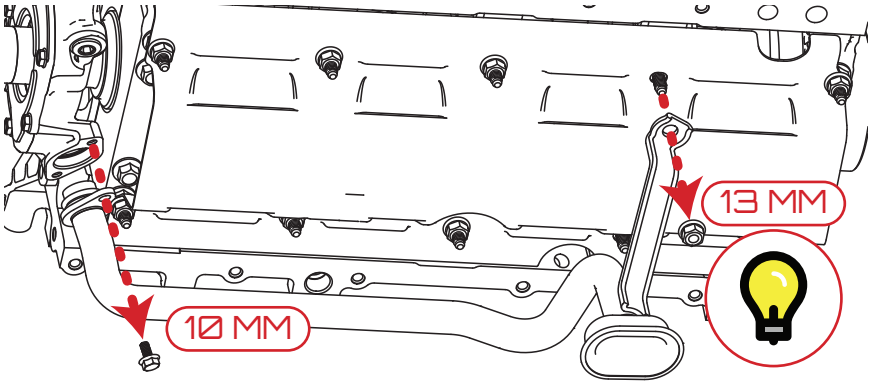


Figure 1 - Removing the Factory Oil Pickup Tube (Screen)

7. Use a 13 mm (14mm for ARP studs) tool to completely remove the windage tray as shown in Figure 2.

Tip: The factory windage tray will not be used again.

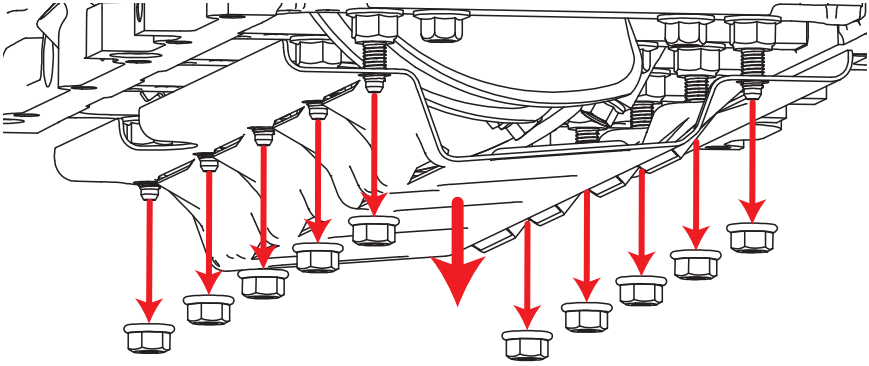


Figure 2 - Removing the Factory Windage Tray

INSTALLING THE IMPROVED RACING KIT

1. Inspect the inside of the oil pan for irregularities and casting flashing in the areas where the oil pan baffle walls meet the pan. Use course sandpaper to smooth out the bottom of the pan and remove any irregularities or uneven surfaces.

⚠ **Cast aluminum pans are subject to irregularities that can interfere with the baffle and cause damage or contact with the rotating assembly. Be sure the check the oil pan carefully.**

2. Clean the crankshaft scraper and windage tray thoroughly using a mild detergent and warm water.
3. Dry both parts with compressed air or a lint-free towel.
4. If installing an ARP stud kit, follow the instructions provided with the kit before proceeding with the crank scraper installation.
5. Install the provided M6 screws (HSC-1037) into the scraper's threaded inserts **on the windage tray side** (see crank scraper orientation in Figure 4) using a 4 mm hex-drive bit/key. Torque to a maximum of 5 lb-ft (6 N·m).
    a. These threaded inserts are used for securing the windage tray to the scraper in other kits. They are not used in the C6 Corvette kit. Installing these screws is a safety measure to ensure that these unused threaded inserts cannot become dislodged from the scraper.
6. If using the factory main cap hardware, insert the four HSP-1009 reducer bushings as shown in Figure 3 prior to securing the scraper to the engine.

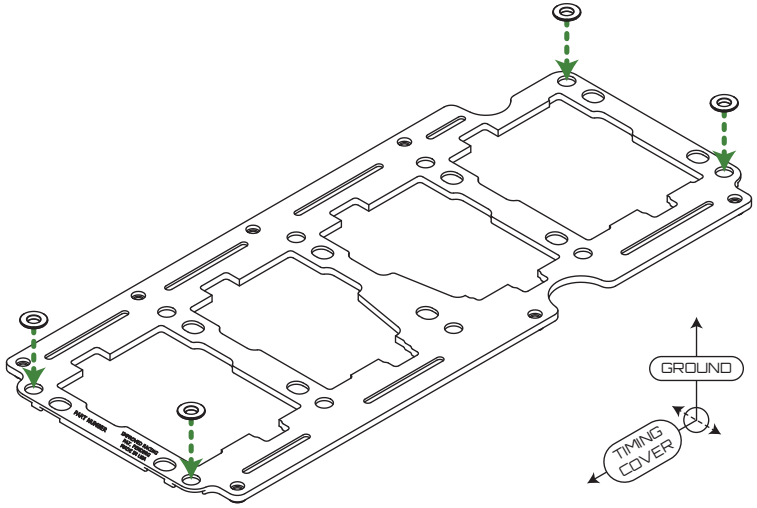


Figure 3 - Inserting the Reducer Bushings for Factory Main Studs

7. Refer to Figure 4 to ensure the scraper is oriented correctly, then loosely secure the scraper to the main caps using the **four outermost main studs only.**
   a. If using factory main studs, use a 13 mm tool to loosely secure the provided HNT-1018 nuts to the main studs.
   b. If using ARP main studs, use a 14 mm tool to loosely secure the ARP flange nuts to the ARP main studs.

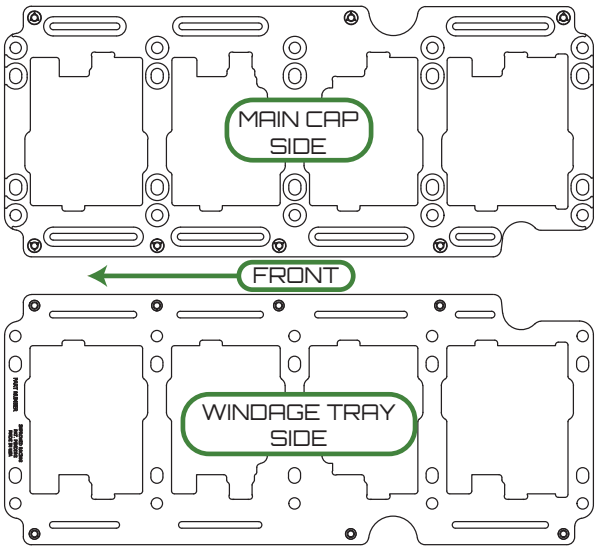


Figure 4 - Correct Crank Scraper Orientation

8. Using a 1/2 inch-drive breaker bar or ratchet with a 24 mm (15/16 inch) socket, manually turn the engine in the clockwise direction while carefully inspecting clearance / interference. This is shown in Figure 5.

Tip: To make this step easier, place the transmission into neutral and loosen the spark plugs to relieve combustion chamber pressure.

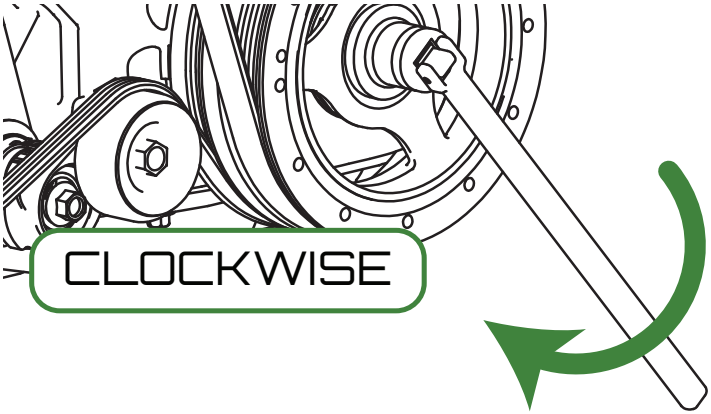


Figure 5 - Rotating the Engine Crankshaft with a Breaker Bar

9. Use a feeler gauge set, as shown in Figure 6, to carefully measure the gap between the scraper and the rotating assembly in-as-many positions as possible. Please be thorough!

Ensure the gap is AT LEAST 0.020" in every location.

If interference is detected, loosen the scraper and adjust the fit until all clearances are AT LEAST 0.020".

Tip: In rare instances, the scraper will require minimal filing to achieve the required clearances. Unsure? Contact customer service for help.

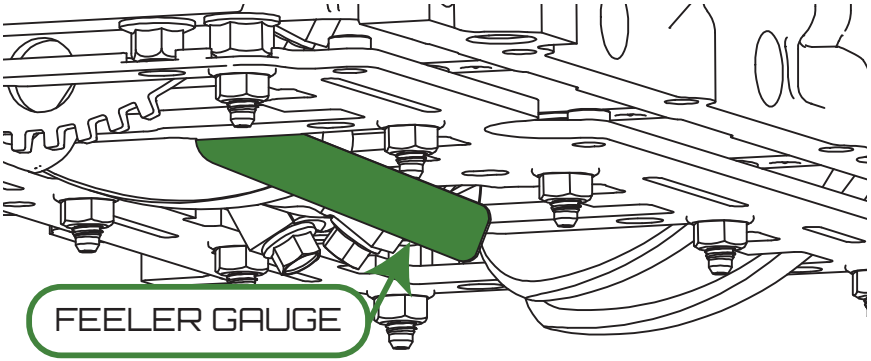


Figure 6 - Inspecting Clearance with a Feeler Gauge

10. Once the scraper is in position, torque the scraper nuts installed in Step 6 to 18 lb-ft (24 N·m) for factory main studs or 28 lb-ft (38 N·m) for ARP main studs.
11. Rotate the rotating assembly until the counterweight and rods are at their lowest point below cylinders 7 and 8. Place modeling clay between the baffle and the lowest points of the counterweights and rods. The modeling clay will be used to check clearance between the rotating assembly and the baffle with the oil pan installed. This interference can occur due to irregularities in the casting of the aluminum oil pan.
12. Temporarily install the oil pan baffle onto the engine main cap studs and secure using four lock-nuts, as shown in Figure 7 on the next page.
13. Temporarily install the oil pan and torque down completely according to GM's instructions in the factory service manual, then remove the oil pan and the baffle.
14. Check the modeling clay carefully and ensure the modeling clay is at least 1/8" thick at all points between the rotating assembly and baffle.

⚠ **If any portion of the modeling clay is thinner than 1/8", there is likely an interference issue between the oil pan and baffle. Clearance the bottom of the oil pan with course sandpaper where the baffle meets the pan and recheck for interference. Repeat until the modeling clay is at least 1/8" thick at all points and there is no longer any interference.**

15. Once it has been verified that there is no interference between the baffle and oil pan with the oil pan installed, remove the modeling clay and wipe down the baffle and rotating assembly.
16. Install the oil pan baffle onto the engine main cap studs and secure using four lock-nuts, as shown in Figure 7. Torque to 18 lb-ft (24 N·m) for factory main studs or 28 lb-ft (38 N·m) for ARP main studs.

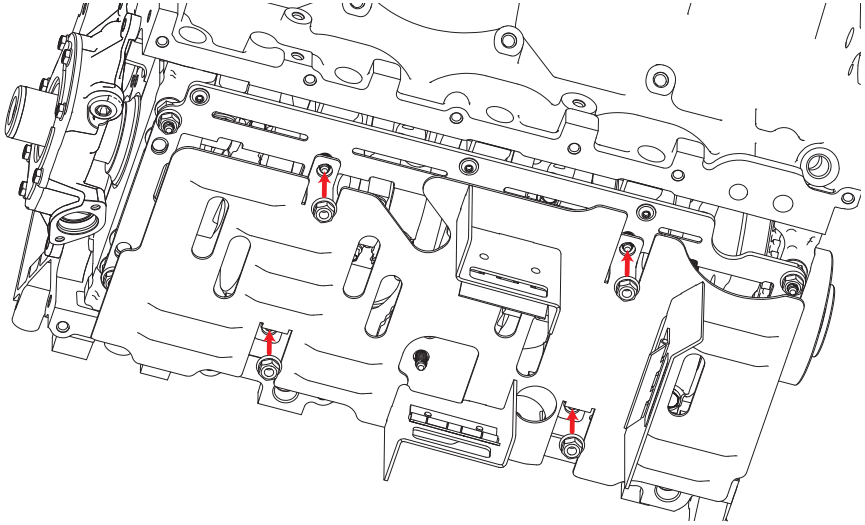


Figure 7 - Installing Oil Pan Baffle onto Main Studs

17. If using ARP main studs, enlarge the pickup tube (screen) mounting hole with a $^{7}/_{16}$ inch (11 mm) drill bit. The hole is shown in Figure 8.

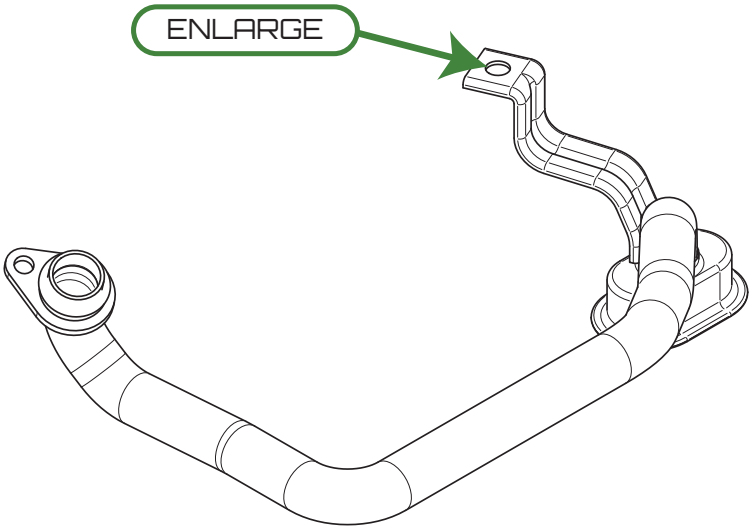


Figure 8 - Hole to Enlarge on the Pickup Tube (Screen)

18. Lubricate the pickup tube (screen) O-ring with engine oil and position the pickup tube back on the engine. Use a 10 mm tool to torque the pickup tube flange screw on the engine oil pump to 8 lb-ft (10 N·m).

Tip: It is recommended that the oil pickup tube O-ring be replaced with a new OEM O-ring.

19. **After first securing the pickup tube flange to the oil pump**, secure the oil pickup tube support bracket nut to the main stud with a 13 mm tool (factory studs) or a 14 mm tool (ARP studs). Torque to 18 lb-ft (24 N·m) for factory studs or 28 lb-ft (38 N·m) for ARP main studs.
20. Perform a final inspection of the crank scraper and windage tray. Rotate the engine manually using the breaker bar and check for interference again. Return to Step 5 and readjust if necessary.
21. Reinstall the vehicle's oil pan by following GM's approved method for your vehicle, found in the factory service manual. It is critical that the torque values and tightening sequences outlined in the GM factory service manual be followed carefully.

Tip: Replacing the oil pan gasket with a new one is recommended.

22. Rotate the engine manually once again and check carefully for any resistance indicating there is interference between the rotating assembly, crankshaft scraper, and/or oil pan baffle.

Ensure that the crankshaft scraper and oil pan baffle tray DO NOT interfere with the oil pan or rotating assembly.

23. Lubricate the oil filter O-ring and pre-fill the filter with engine oil, then reinstall.
24. Retighten the spark plugs if loosened previously.
25. Refill the engine oil to the factory specifications.

Installation is now complete. Thank you for purchasing an Improved Racing product!