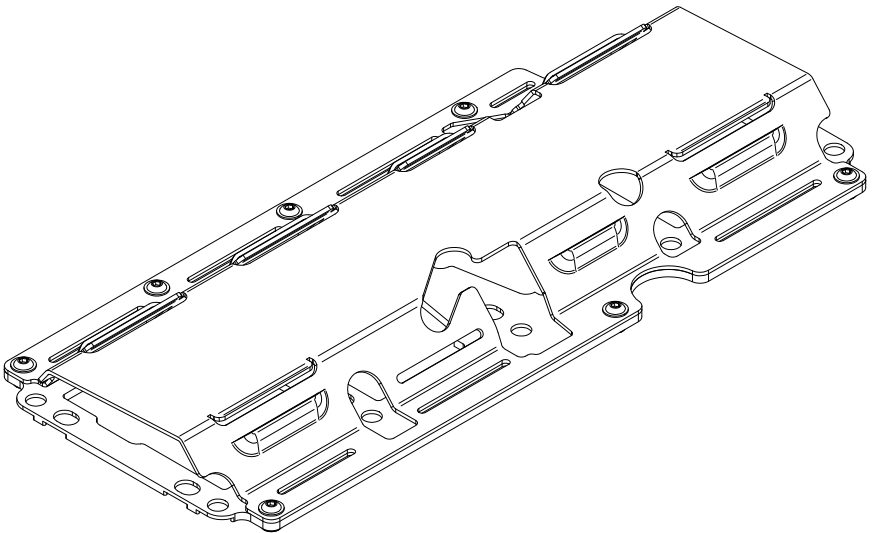




CRANK SCRAPER & WINDAGE TRAY FOR LS & VORTEC ENGINES

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
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APPLICATIONS

- Ensure you have purchased the correct crankshaft scraper kit for your application. Refer to <http://www.improvedracing.com/tech/crank-scraper-applicationlist.php> for a list of supported vehicles by specific part number.

GENERAL PARTS LIST

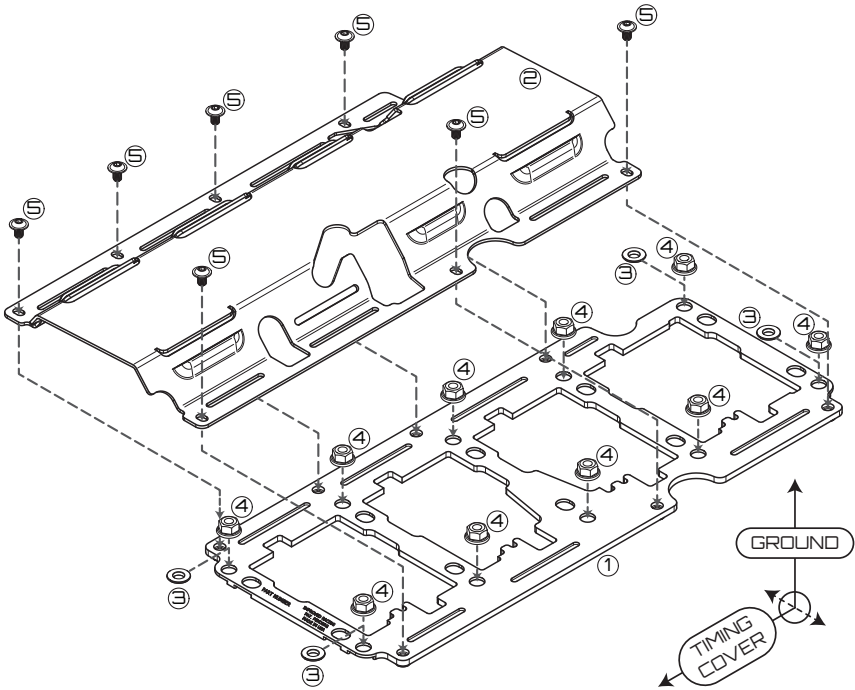




Figure 1 - EGM-7XX Schematic

Item	Qty	Part Number	Description
1	1	EGM-3XX	Crankshaft Scraper (Part Number Engraved on Scraper)
2	1	EGM-240X	Windage Tray (Long & Short Versions)
3	4	HSP-1009	M10 ARP Stud to M8 Factory Stud Reducer
4	10	HNT-1018	M8x1.25 (Factory Stud) Crank Scraper Locknuts
5	4-7	HSC-1037	M6x1.00 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-240X 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.
 -  Lift points are found in the vehicle owners manual.
2. Remove any fascia panels required to access the vehicle's oil filter and oil pan / oil reservoir.
3. Drain the oil reservoir (dry-sump) or the oil pan (wet-sump) by following GM's approved method for your vehicle, found in the 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 service manual.
6. Wet-sump vehicles must remove the factory oil pickup tube (screen) from the oil pump and main stud(s) by using a 10 mm and 13 mm tool, shown in Figure 2. Set the pickup tube (screen) aside until reinstallation.
 -  **Tip:** Nut(s) and screw locations vary among vehicles.

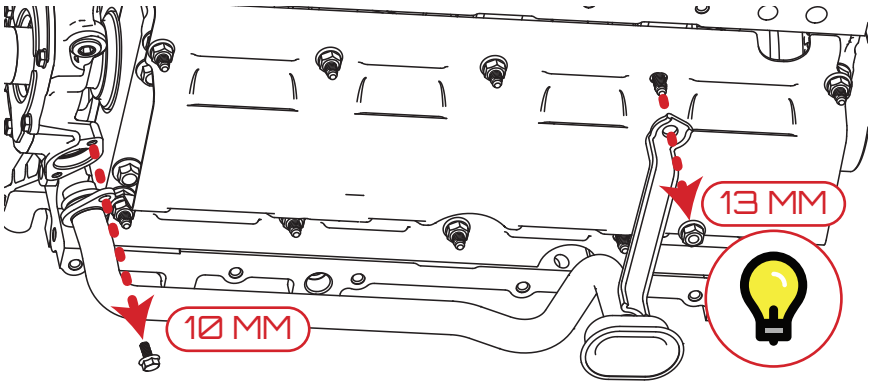




Figure 2 - Removing the Factory Oil Pickup Tube (Screen)

7. Use a 13 mm tool to completely remove the factory windage tray. This is illustrated in Figure 3.

 **Tip:** Some vehicles only have eight nuts total.

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

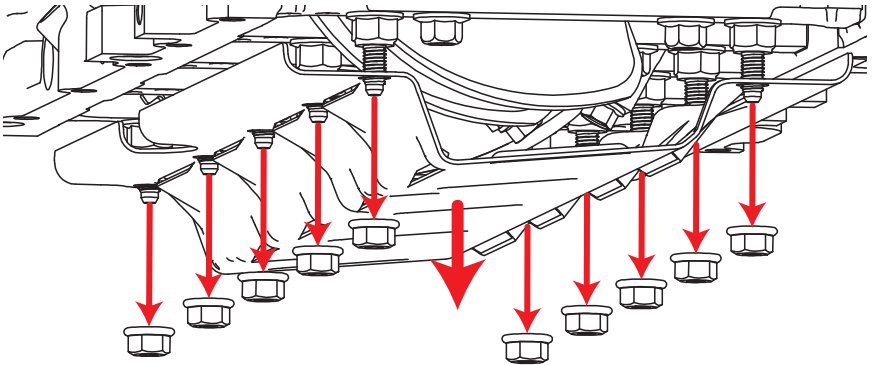


Figure 3 - Removing the Factory Windage Tray

8. If your oil pan is equipped with one, remove the shroud from the oil pan pressure relief valve, shown in Figure 4.

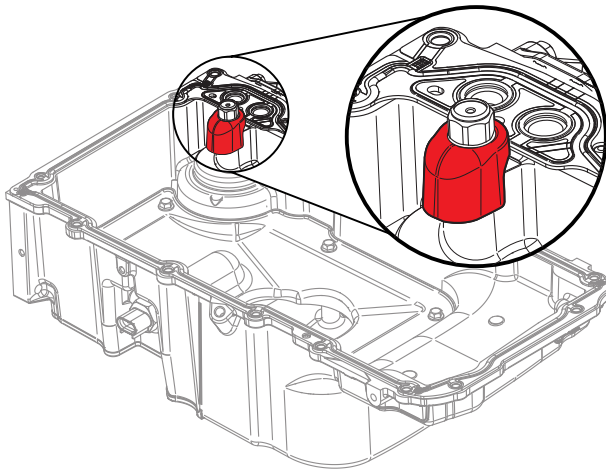


Figure 4 - Pressure Relief Valve Shroud to Remove

INSTALLING THE IMPROVED RACING KIT

1. Clean the crankshaft scraper and windage tray thoroughly using a mild detergent and warm water.
2. Dry both parts with compressed air and / or a lint-free towel.
3. If installing an ARP stud kit, follow the instructions provided with the kit before proceeding with the crank scraper installation.
4. If using the factory main cap hardware, insert the four HSP-1009 reducer bushings as shown in Figure 5 while securing the scraper to the engine.

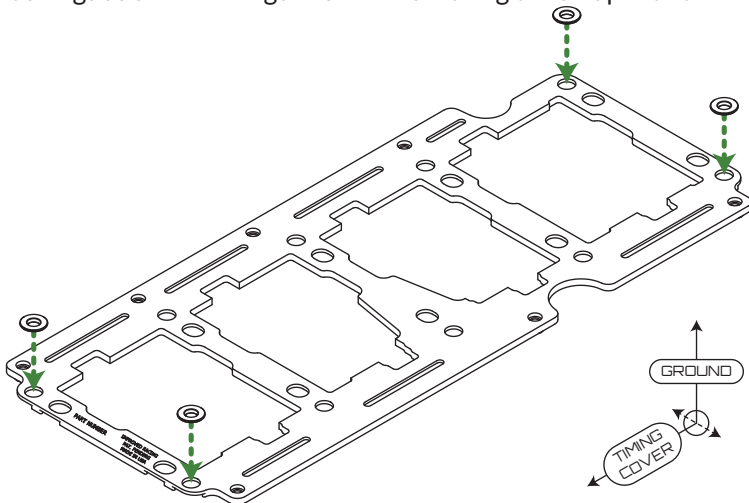


Figure 5 - Inserting the Reducer Bushings for Factory Main Studs

5. Use Figure 6 to ensure the scraper is oriented correctly, then loosely secure the scraper to the main caps.
 - a. Use a 13 mm tool for the provided HNT-1018 nuts.
 - b. Use a 14 mm tool for the ARP flange nuts provided in the stud kit.

 **Note:** Leave the oil pickup tube nut(s) detached.

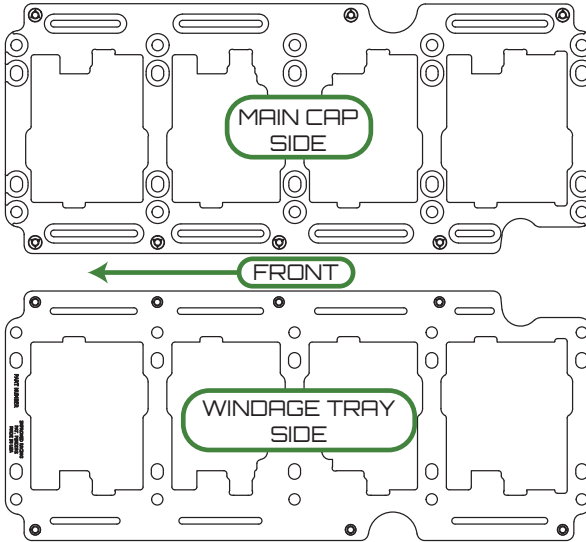



Figure 6 - Correct Crank Scraper Orientation

6. Using a $\frac{1}{2}$ inch-drive breaker bar or ratchet with a 24 mm ($\frac{15}{16}$ inch) socket, manually turn the engine in the clockwise direction while carefully inspecting clearance / interference. This is shown in Figure 7.

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

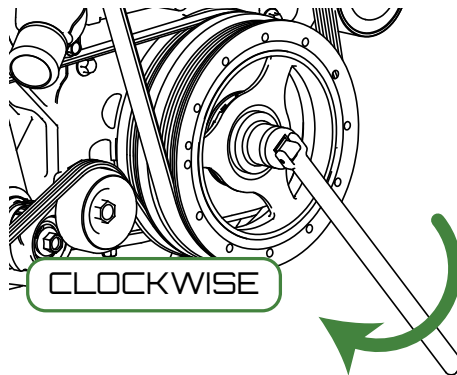


Figure 7 - Rotating the Engine Crankshaft with a Breaker Bar

7. Use a feeler gauge set, shown in Figure 8, 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](#).

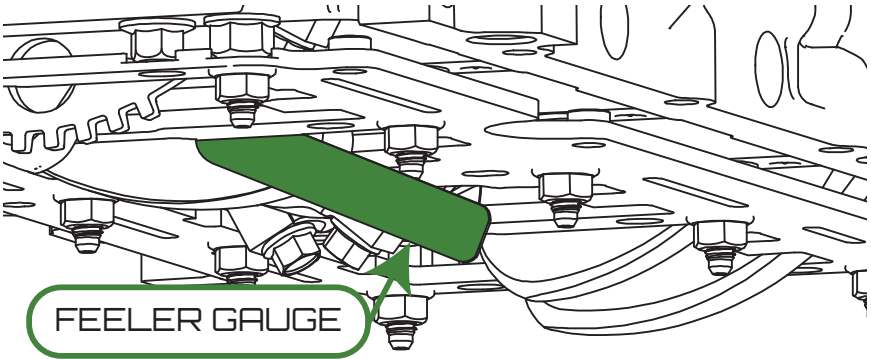


Figure 8 - Inspecting Clearance with a Feeler Gauge

8. Torque the crank scraper nuts (HNT-1018 or ARP) to 18 lb-ft (24 N·m).

💡 Tip: Do not install the nut(s) that secure the oil pickup tube (screen) yet.

9. Secure the Improved Racing windage tray to the crank scraper using all of the HSC-1037 screws provided with the kit, as shown in Figure 9. Use a 4 mm hex tool to torque the screws to 5 lb-ft (6 N·m).

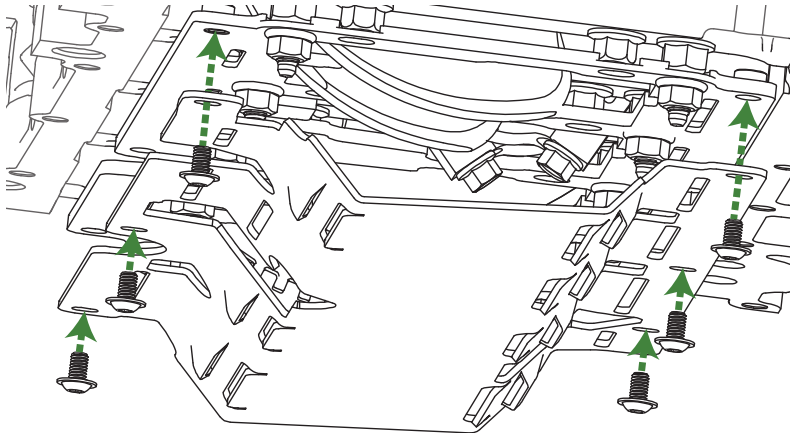


Figure 9 - Installing the Improved Racing Windage Tray

10. If using ARP main studs, enlarge the pickup tube (screen) mounting hole(s) with a $\frac{7}{16}$ inch (11 mm) drill bit. The hole(s) is shown in Figure 10.

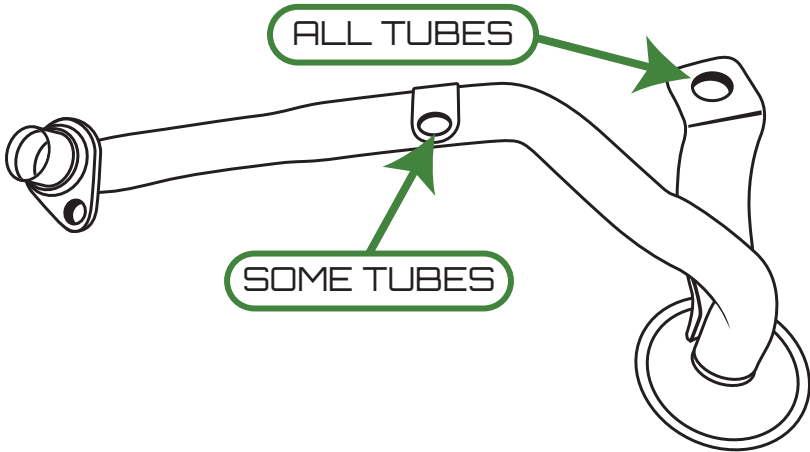


Figure 10 - Hole(s) to Enlarge on the Pickup Tube (Screen)

11. Re-install the oil pickup tube (screen).

💡 Tip: Replace the oil pickup tube (screen) O-ring with a new O-ring. This is recommended for higher mileage engines.

12. Use a 10 mm tool to torque the pickup tube flange screw on the engine oil pump to 8 lb-ft (10 N·m).

13. Use a 13 mm tool to torque the remaining oil pickup tube nut(s) to 18 lb-ft (24 N·m).

14. 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 when necessary.

15. Retighten the spark plugs.

16. Reinstall the vehicle's oil pan by following GM's approved method for your vehicle, found in the factory service manual.

⚠️ Ensure that the crank scraper and windage tray DO NOT interfere with the oil pan.

💡 Tip: Replace the oil pan gasket with a new gasket. This is recommended for higher mileage engines.

17. Pre-fill and reinstall a new engine oil filter after lubricating the seal with engine oil.

18. Refill the engine oil to the factory specifications.

Congratulations! The installation of your crank scraper and windage tray is complete. Enjoy the additional horsepower and oil control!