Lubricants in the Manufacturing of Motor Housings: Ensuring Precision and Durability

Introduction

Motor housings are critical components in automotive engines, electric motors, and industrial machines. They enclose and protect internal assemblies such as stators, rotors, gears, and bearings while ensuring heat dissipation, structural integrity, and alignment. Manufacturing motor housings involves processes like casting, machining, drilling, milling, honing, and assembly — each generating significant friction and heat. To achieve high-quality, durable housings, the choice of lubricants plays a decisive role.

1. Why Lubricants Matter in Motor Housing Manufacturing

During production, different stages involve cutting, forming, and assembly of aluminum, cast iron, or alloy housings. Proper lubrication helps to:

Reduce Tool Wear: Protects cutting tools, drills, and dies from premature failure.

Improve Surface Finish: Ensures smooth bores, precise tolerances, and defect-free machining.

Support Heat Management: Lubricants dissipate heat during high-speed machining.

Prevent Corrosion: Temporary rust inhibitors protect housings before coating or assembly.

Simplify Cleaning: Low-residue fluids reduce degreasing and cleaning time before surface treatment.

2. Types of Lubricants Used in Motor Housing Production

Process Stage	Typical Lubricant	Benefits
Casting & Die Release	Graphite-based or water-based die lubricants	Prevent sticking, improve mold life, ensure clean release of aluminum or alloy cast housings
Machining (Drilling, Milling, Turning, Boring)	Water-soluble coolants, synthetic cutting fluids, or neat oils	Excellent cooling, chip removal, tool life extension, smooth surface finish
Honing & Grinding	Low-viscosity honing oils or emulsions	Precise dimensional accuracy, minimized friction, fine surface quality
Assembly & Fitment	Light greases with anti-wear additives	Reduce friction during press-fitting of bearings, bushings, and seals
Rust Protection	Solvent-cutback or oil-based rust preventives	Protect unfinished housings during storage or shipment
Welding/Joining Prep (if applicable)	Low-residue lubricants	Minimize weld contamination, ensure strong joints

3. Benefits to Manufacturers

Extended Tool Life: Lubricants reduce wear on high-cost cutting tools and dies.

Higher Accuracy: Controlled lubrication ensures precise tolerances and bore roundness in housings.

Lower Cleaning Costs: Low-residue fluids reduce washing and degreasing requirements.

Improved Productivity: Smooth machining and forming minimize downtime.

Corrosion Protection: Prevents damage to semi-finished and finished housings before coating or shipping.

4. Current Industry Trends
Dry Film Lubricants: Pre-applied on casting dies or machining areas to reduce oil use and simplify cleaning.

Bio-Based Lubricants: Environmentally friendly alternatives made from vegetable oils or esters.

PRESS TYPE	: 600-ton VERSON mechanical press.
PART DESCRIPTION	: MOTOR HOUSING.
MATERIAL	: GV12GEDDS M63553000 – 2.46mm thickness.
DIES	: 13 stage progressive die.
PRESS SPEED	: 14 SPM by stopwatch.
IRMCO FLUIDS®	: IRMCO FLUIDS 980 109 or EV1@20%
METHOD OF APPLICATION	: UNIST spray applicator nozzles positioned at/near stages 1,4, 6, 8 & 9.

BENEFIT

REPLACING A VERY HEAVY CHLORINATED OIL
PRICE PER PART REDUCED OF 17 TIMES
PARTS NOT WASHED AND PACKED IMMEDIATELY, COMPLETELY DRY
FULL COMPATIBILITY ABOUT ELECTRICAL ENVIRONMENTAL
CALIBRATION BEARING LOCATION GOTTEN WITH REAPPLICATION ON SITE