Lubricants in the Manufacturing of End Frame Front -

Introduction

The End Frame Front is a structural assembly located at the front of the motor house/body structure. It provides rigidity, load distribution, and crash protection, while also acting as a mounting base for suspension and engine-related components. Manufacturing this part involves blanking, stamping, forming, trimming, piercing, welding, and assembly of medium- to high-strength steels. At each step, lubricants are critical for ensuring efficiency, tool protection, and high-quality output.

1. Why Lubricants Are Important in End Frame Front Production

Protect Tooling: Minimizes wear on stamping dies, cutting blades, and welding electrodes.

Ensure Formability: Reduces friction during bending/forming of high-strength materials.

Preserve Surface Quality: Prevents scratches, galling, and distortion.

Enable Smooth Welding: Low-residue lubricants ensure clean weld zones.

Prevent Corrosion: Protects components during storage before paint/coating.

2. Types of Lubricants Used

Manufacturing Stage
Lubricant Type
Key Benefits
Blanking & Stamping
Water-based or semi-synthetic stamping oils
Die life extension, consistent forming, easy removal
Forming & Bending
Heavy-duty drawing lubricants, polymer-based films
Prevents tearing and galling, ensures precision bends
Trimming & Piercing
Light cutting oils or water-miscible coolants
Smooth edges, reduced burrs, extended tool life
Welding & Joining
Low-residue lubricants
Clean weld seams, no porosity, better strength
Assembly Fitment
Multi-purpose greases (anti-squeak/anti-wear)
Smooth installation, NVH reduction
Corrosion Protection
Rust preventive oils or solvent-based coatings
Protects surfaces before coating/painting

3. Benefits for Manufacturers

Extended Die and Tool Life → Reduced downtime and maintenance cost.

Improved Surface Quality → Fewer defects, better paint adhesion.

Enhanced Welding Performance → Cleaner joints and stronger structures.

Cost Savings → Reduced rework, cleaning, and lubrication consumption.

Durability & Safety → Corrosion protection ensures frame reliability before final assembly.

4. Emerging Trends in Lubrication
Dry-film & Pre-coated Sheets → Reduce oil usage and cleaning steps.

Eco-Friendly Lubricants → Biodegradable, low-VOC solutions for sustainability.

Automated Spray Systems → Precise application to reduce waste.

Minimum Quantity Lubrication (MQL) → Micro-lubrication for trimming/piercing operations.

PRESS #	: 300-ton MINSTER mechanical press.
PART DESCRIPTION	: End Frame-Front
MATERIAL	: Galvanized steel (60G coating wt. - 0.9mm
DIES	: 9 stage progressive die.
PRESS SPEED	: 41 SPM.
IRMCO FLUIDS®	: IRMCO FLUID 980 109 or EV1@15%
METHOD OF APPLICATION	: UNIST spray unit

BENEFIT

REPLACING A SOLVENT / EVAPORATIVE PRODUCT
PRICE PER PART REDUCED OF 6 TIMES
PARTS NOT WASHED AND PACKED IMMEDIATELY, COMPLETELY DRY
NO TOOL BUILD UP AND SPECIAL MAINTENANCE NEEDED
CALIBRATION GOTTEN WITHOUT REAPPLICATION ON SITE