Lubricants in the Manufacturing of Gusset B L, FR Side Frame -

Introduction
The Gusset B L, Front Side Frame is a reinforcement component designed to strengthen the front structure of a vehicle. It plays a key role in crash safety, load distribution, and overall rigidity of the body-in-white (BIW). Manufacturing this part involves blanking, stamping, bending, trimming, piercing, welding, and assembly of high-strength steels. Each of these steps creates friction, heat, and potential tool wear — making the right choice of lubricants essential for consistent quality and production efficiency.

1. Why Lubricants Are Important in Gusset & Side Frame Production
Lubricants in the production process help to:
Reduce Tool & Die Wear: Extends the service life of stamping dies, punches, and cutting tools.

Enable Precise Forming: Improves metal flow during bending and stamping of high-strength steels.

Maintain Surface Finish: Prevents scratches, galling, or marks on visible surfaces.

Simplify Cleaning: Low-residue lubricants minimize degreasing before welding or coating.

Prevent Corrosion: Temporary rust preventives protect gussets and side frame parts during storage and transport.

2. Types of Lubricants Used in Gusset B L, FR Side Frame Manufacturing
Process Stage
Typical Lubricant
Key Benefits
Blanking & Stamping
Water-soluble or semi-synthetic stamping lubricants
Reduced die wear, consistent forming, easy wash-off
Forming & Bending
Heavy-duty drawing lubricants or dry-film coatings
Prevents tearing/galling, ensures accurate bends
Trimming & Piercing
Light cutting oils or water-miscible coolants
Clean edges, reduced burrs, longer tool life
Welding Preparation
Low-residue lubricants
Prevents weld contamination, improves joint quality
Assembly Fitment
Greases with anti-wear and anti-squeak properties
Smooth installation of reinforcement parts, reduced NVH
Corrosion Protection
Solvent-cutback or oil-based rust preventive coatings
Protects gussets and frames before coating or assembly
3. Benefits for Manufacturers
Extended Tool & Die Life: Less downtime and lower maintenance costs.

Improved Accuracy: Reduced springback and deformation during forming.

Better Weld & Paint Results: Residue-free surfaces improve weld strength and coating adhesion.

Lower Cleaning Costs: Less chemical and water use for degreasing.

Higher Structural Reliability: Rust protection ensures integrity of gusset and side frame components.

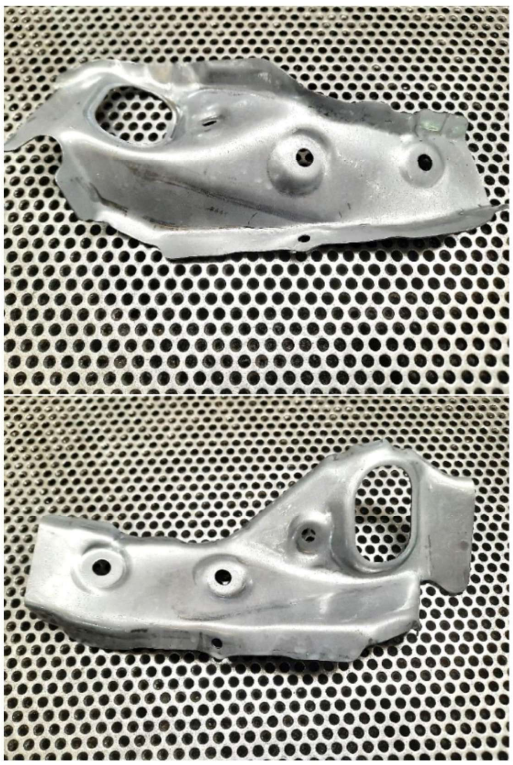
4. Current Trends in Lubrication
Dry-Film Lubricants & Pre-Coated Sheets: Reduce oil use and eliminate extra cleaning steps.

Eco-Friendly Solutions: Biodegradable, low-VOC lubricants meeting environmental standards.

Automated Application Systems: Spray and roller systems apply precise amounts, reducing waste.

Minimum Quantity Lubrication (MQL): Efficient micro-lubrication during piercing/machining for cost savings.

PRESS TYPE	: PTC CL4 1000-ton mechanical press.
PART DESCRIPTION	: GUSSET B L, FR SIDE FRAME.
MATERIAL	: JAC 590R 45/45 - 1.20mm nominal thickness.
IRMCO LUBRICANT USED	: IRMCO FLUIDS® 980 109@15% or EV1@20%
METHOD OF APPLICATION	: Spray applied heavily to top of coil entering die every stroke. Reduced later by 45% through optimization.
PROCESS	: 6-stage progressive die.
PRESS SPEED	: 12 SPM.



BENEFIT

REPLACING A SOLVENT PRODUCT
PRICE PER PART REDUCED OF 7 TIMES
PARTS NOT WASHED AND PACKED IMMEDIATELY, COMPLETELY DRY
NO TOOL BUILD UP