Lubricants in the Manufacturing of BRACKET – MOUNTING – INFLATOR – for ACH2.4

Introduction

The BRACKET – MOUNTING – INFLATOR – for ACH2.4 is a precision safety component designed to secure the airbag inflator unit within the vehicle's airbag housing. Since airbag systems must deploy reliably within milliseconds during a crash, this bracket requires tight dimensional accuracy, flawless surface finish, and high weld integrity. Its production involves blanking, stamping, forming, piercing, welding, and surface finishing of high-strength steel or aluminum alloys. To meet these strict quality standards, the use of advanced lubricants is crucial.

1. Importance of Lubricants in Inflator Bracket Manufacturing

Precision & Accuracy → Ensures accurate stamping and bending for proper inflator fitment.

Die & Tool Protection → Reduces wear on stamping dies and punches.

Surface Finish Integrity → Prevents scratches, galling, or surface contamination.

Weldability → Low-residue lubricants ensure clean weld joints free from porosity.

Corrosion Prevention → Protects inflator brackets before painting, coating, or assembly.

2. Types of Lubricants Used

Process Stage
Lubricant Type
Key Benefits
Blanking & Stamping
Water-soluble emulsions or semi-synthetic stamping oils
Smooth forming, reduced die wear, easy wash-off
Forming & Bending
Polymer-based or dry-film drawing lubricants
Prevents cracks, ensures precise bracket geometry
Trimming & Piercing
Light cutting oils or water-miscible coolants
Sharp edges, burr reduction, extended punch/die life
Welding & Assembly
Low-residue lubricants / weld-friendly anti-spatter fluids
Strong, contamination-free welds
Fitment of Inflator
Anti-wear greases (applied during assembly if required)
Smooth installation, squeak/noise prevention
Storage & Corrosion Protection
Thin-film rust preventives or solvent-based inhibitors
Keeps brackets rust-free before coating or final assembly

3. Benefits for Manufacturers

Safety Assurance → Clean, defect-free parts suitable for airbag system integration.

Extended Tool Life → Less die and punch wear reduces tooling costs.

Dimensional Consistency → Accurate forming ensures proper inflator housing alignment.

Stronger Weld Joints → Lubricant compatibility ensures reliable weld strength.

Corrosion-Free Handling → Prevents oxidation before paint or e-coating.

4. Current Trends in Lubrication
Dry-Film & Pre-Coated Blanks → Eliminate oil residues, ensuring paint/weld readiness.

Eco-Friendly Formulations → Non-chlorinated, biodegradable lubricants reduce VOCs.

Automated Lubricant Application → Precise spray/roller systems optimize coverage and reduce waste.

Hybrid Lubricants → Multi-functional fluids that combine lubrication and temporary rust protection.

PRESS TYPE	**: 330-ton mechanical press.**
PART DESCRIPTION	**: Bracket, Mounting, Inflator for ACH2.4.**
MATERIAL	**: CR-420Y-480T-LA-SH-GI60/60-U**
	: .0787”-.082” x 13.386” coil.
PROCESS	**: 26-stage progressive die.**
IRMCO LUBRICANT USED	**: IRMCO FLUIDS® 980 109@ 15% or EV1@25%**
METHOD OF APPLICATION	**: LSP spray applicator utilizing 2 spray nozzles: 1 to the top of the coil entering the die & a second spray nozzle positioned roughly between stages 18 & 19. Spray frequency = every stroke.**
PRESS SPEED	**: 43 SPM (timed with stopwatch). lubricant**

BENEFIT

RESULTS	**: Decreased fluid volume applied from every stroke to every 5th stroke & changed spray nozzle tips from 8002 to 8001. Reduced fluid volume applied by over 80% & and yielded equivalent dryness of part to combustible, petroleum solvent vanishing lubricant**

PARTS NOT WASHED AND PACKED IMMEDIATELY, COMPLETELY DRY