

# Lubricants in the Manufacturing of Catalytic Converter Inlet Cone

## Introduction

The **Catalytic Converter Inlet Cone** is a precision-formed exhaust component that channels exhaust gases smoothly from the inlet pipe into the catalytic converter body. Manufactured from **stainless steel or high-temperature steel alloys**, this part must meet strict requirements for **dimensional accuracy, smooth internal flow, weld quality, and thermal resistance**.

Manufacturing involves **cone forming, expansion, trimming, welding, and surface preparation**, where the correct selection of **industrial lubricants** is essential for quality and process efficiency.

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## 1. Why Lubricants Matter in Inlet Cone Manufacturing

During forming and joining operations, lubricants help to:

- **Reduce Friction During Cone Forming** → Enables smooth metal flow without tearing
  - **Prevent Galling & Tool Wear** → Protects forming dies and rollers
  - **Maintain Surface Integrity** → Ensures clean inner surfaces for optimal gas flow
  - **Support Weld Quality** → Low-residue lubricants prevent contamination in weld zones
  - **Provide Temporary Corrosion Protection** → Protects parts before coating or assembly
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## 2. Types of Lubricants Used

Manufacturing Stage	Typical Lubricant	Key Benefits
Cone Forming / Spinning	Synthetic or semi-synthetic forming lubricants	Smooth shaping, reduced thinning
Tube Expansion & Sizing	Polymer-based expansion lubricants	Accurate fitment to catalyst shell
Trimming & Edge Finishing	Water-miscible cutting fluids	Clean edges, tool protection

Welding Preparation	Low-residue, weld-safe lubricants	Strong, porosity-free welds
Flange or Pipe Assembly	High-temperature anti-seize compounds	Prevents seizing at joints
Storage & Transport	Thin-film rust preventive oils	Short-term corrosion protection

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### 3. Benefits to Manufacturers

- **Improved Dimensional Consistency** → Accurate cone geometry for proper exhaust flow
  - **Higher Tool Life** → Reduced wear on forming and trimming tools
  - **Enhanced Weld Strength** → Cleaner weld zones ensure durability
  - **Reduced Cleaning Time** → Easy-to-remove lubricants before coating
  - **Better Thermal Performance** → Reliable operation under extreme exhaust temperatures
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### 4. Industry Trends

- **Water-Based & Synthetic Lubricants** → Cleaner, eco-friendly production
- **Low-VOC & Non-Chlorinated Formulations** → Compliance with global regulations
- **Dry-Film Forming Lubricants** → Minimal residue before welding
- **Automated Lubricant Application** → Precise dosing, reduced waste

# Catalytic Converter Inlet Cone

Description: Catalytic Converter Inlet Cone Case Study 12 G O ALS To produce 439-LT stainless steel part unable to be done with previously used competitive synthetic die lubricants and to reduce costly scrap and downtime. S C E N A R I O Customer was producing parts in

Product: 536-00U Company: Walker - Elkhart, IN

Industry: Automotive Tier One Material: Stainless Steel

Thickness: 1.852 Concentration: 25

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