

Continually Improving Stamping & Assembly for Over 55 Years

# Business Overview – 2020

# Background

- Founded in Milwaukee, Wisconsin in 1963 by Don Schaefer
- We serve many markets in the USA, Mexico, Europe, and Asia:
  - Medium & Heavy Duty Trucks, and Buses
  - Passenger Vehicle & Motorcycle
  - Lawn & Garden Small Engine
  - Electricity Generation & Natural Gas Valves
  - Liquid Dispensing Valves
  - Roller/Ball Bearings
- ISO 9001:2015 Certified FM514676
- Globally Diverse Supply Base & Sales Market





#### What We Offer

- High Volume Value-Added Assemblies
- High Volume Stampings 5,000,000+pcs/year
- Low Volume Stamping & Prototyping
- Secondary Value-Added Operations
  - Machining, Laser & Water Jet Cutting, Spot & MIG Welding, Tempering, Assembly
- Finishing Services
  - Deburring, Plating, E-coat & Powder Coat Paint
- Specialized & Custom Packaging Solutions
- 3D CAD Modeling, with Engineering Design & Development
- European Union RoHS 3 and REACH Compliance
- Global Supply Base Maximizes Quality while Minimizing Cost
- Unparalleled Customer Service







Example Process: Tube Assemblies

1. STAMP: 4 Stampings produced in Progressive Tools

2. DEBURR: Stampings Deburred

3. ASSEMBLE: Spring Assembly Produced

**4. MACHINING**: DOM Tube Machined on Lathe and VMMC to Produce Bearing Race and Main Slot

**5. WELDING**: Brackets, Wire Form and Spring Assemblies Welded to Tube

**6. MACHINING**: Tube ID is Bored to +/-0.002". Slots are Cut to Produce Friction Tab feature

7. PAINT: Mounting Tube Assembly is Epoxy E-Coated

**8. PACK**: Sample Size is Inspected, and Assemblies are Packed into Corrugate Dividers and Layer Packed in Returnable Totes with AIAG Barcodes





### Example Process: Lever Assemblies

1. STAMPING: Stamped with

**Progressive Tool** 

**2. PLATING**: Zinc plated and Passivated with Clear Trivalent Chromate

**3. GROMMET**: Plastic Grommet Bushing Heat-Flared into Lever

**4. ASSEMBLY**: Nut and Bolt Torqued to Specification in Automated Machine

**5. PACKAGING**: Packaged in Returnable Dunnage with AIAG Barcodes for Shipment

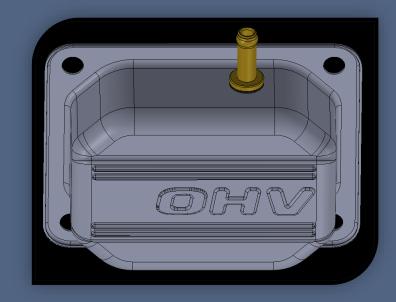




### Example Process: Valve Cover Assemblies

- 1. STAMP: Deep Draw Galvanized Stamping in Progressive Stamping Tool
- 2. ASSEMBLE: Install Gasket onto Brass Tube as a Seal
- 3. RIVET: Form Brass Flange with Gasket onto Stamping with Hydraulic Press
- 3. ASSEMBLE: Install Rubber Tube onto Brass Flange



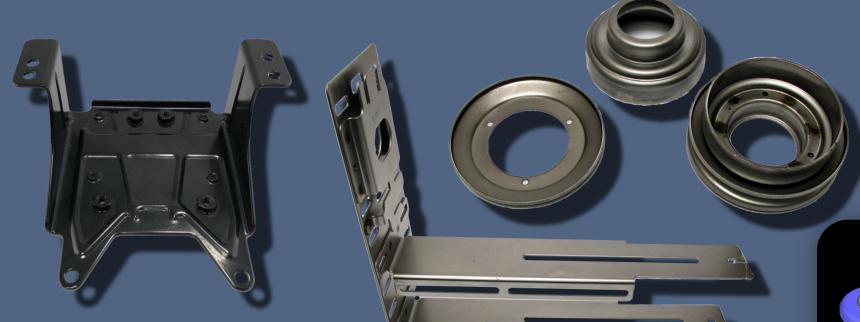




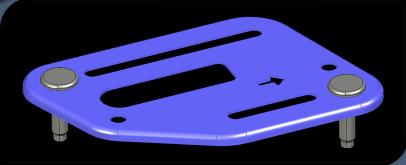


# Examples of Resistance Welded Assemblies

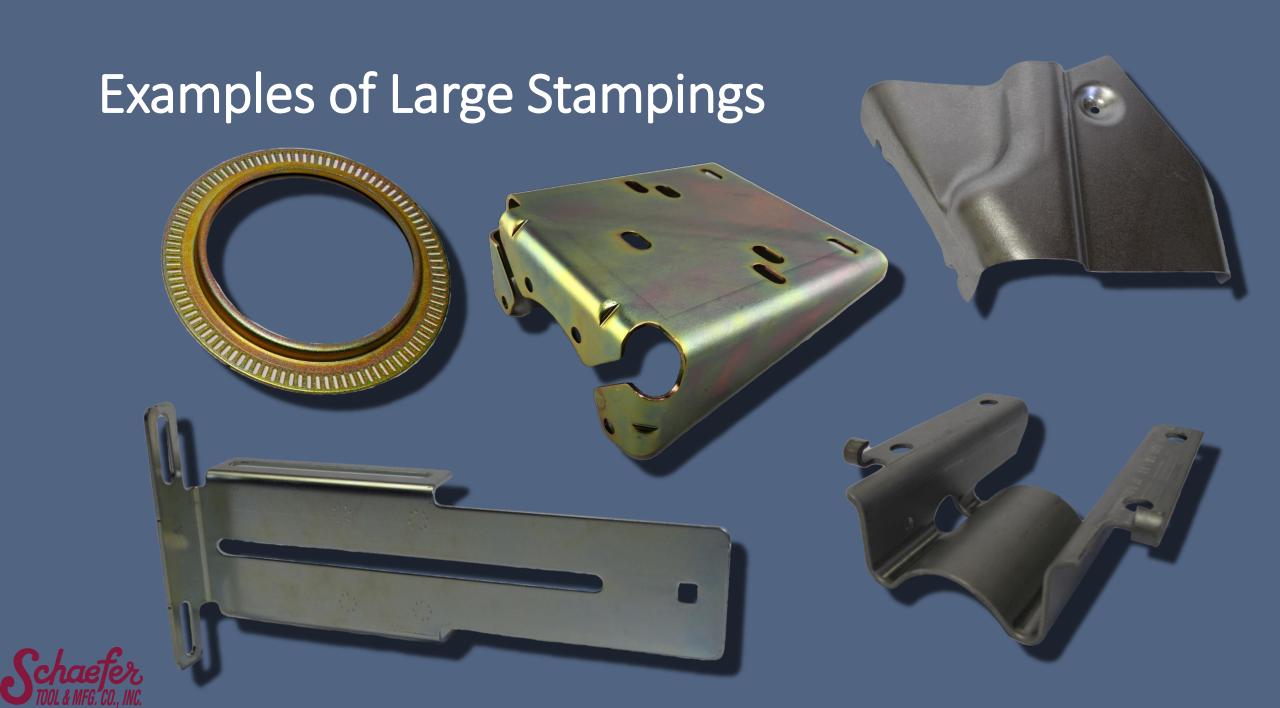
- Custom Projection Weld Nuts & Screws
- Clutch Pulley Assembly, Frame Rails
- New Welding Machine with Sensors and PLC







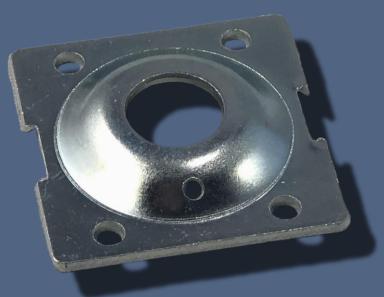




# Examples of Small and Medium Stampings









# Advanced Quality Capabilities



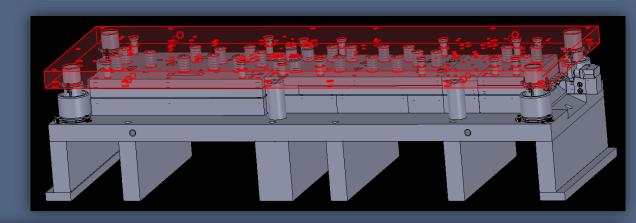
- UniPoint QMS integrated with JobBOSS ERP
- Zeiss CMM for Quality Monitoring & Reverse Engineering
- Zeiss Calypso CMM Software
- Mitutoyo Digital Hardness Tester
- Quantrol Digital Force Tester
- Deltronics CNC Auto-Sensing Comparator
- PFMEA, APQP, Full Level III+ AIAG PPAP Capabilities
- Gagetrak Gage Calibration Software
- Short- and Long-Term SPC Software





# Premier Engineering & Product Design Support

- SolidWorks 2019 with 3D QuickPress & QuickForm
- DFM & FMEA Collaboration
- GD&T Applications & Reverse Engineering
- Product & Tooling Lifecycle Management
- Prototyping & Testing Capabilities
- Robust NPI Process for Launch/ECO
- 6 Sigma & Kaizen Ideology
- Poka-yoke Mistake-proofing



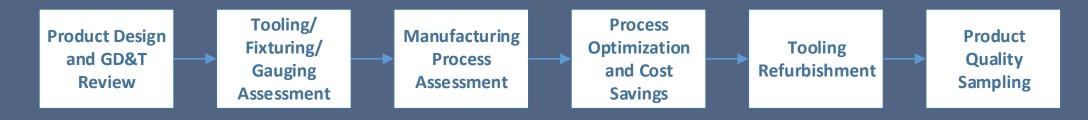




#### Robust Tool Takeover and Product Transfer

- Decades of experience managing tool takeover and product transfer
- Skilled Project Management with Customer Collaboration along the way, to ensure Critical Quality Attributes & Deadlines are met

Tool Takeover Process Flow Overview:





# Breadth & Depth of Manufacturing Knowledge

- Very Wide Range of Part Sizes across 250+ current SKUs
  - Smallest stamped component weighs only 0.2g
  - Largest stamped rails exceed 5kg per piece
- Large Variety of Materials We Currently Stamp Include:
  - Hot Rolled & Cold Rolled Steels HRPO, HSLA, CRCQ, CRDQ/DS/EDDS
  - Galvanized & Aluminized Steels G60, G90, hot-dip galv-annealed
  - Stainless & Spring Steels 301, 302, 304, 316, 430
  - Aluminum 1010, 3003, 5052, 6061
  - Copper C11000, C17200 beryllium spring copper
  - Brass Alloys C26000, C26800, C28000, and tin plated varieties
- Familiar with nearly all automotive plating and conversion coatings
  - Zn+passivation, Mn/Zn/Fe phos, Zn-Ni, Zn-Co, Cadmium, Chemlok for Overmolding

