



METAL SHAPED SOLUTIONS

Capabilities Overview

Over 75 Years of Manufacturing Excellence

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Table of Contents

Introduction	Page 3
Our Markets	Page 4
Customer Diversity	Page 5
Prototyping and Design Collaboration	Page 6
Customer Service/International Sourcing	Page 7
ENGINEERING	Page 8
TOOLING	Page 9
METAL STAMPING MANUFACTURING	Page 10-11
<ul style="list-style-type: none">• Automatic Power Press• Secondary Power Press	
Secondary Manufacturing	Page 12-13
MACHINING MANUFACTURING	Page 14-15
<ul style="list-style-type: none">• CNC Machining	
FOURSLIDE MANUFACTURING	Page 16-17
<ul style="list-style-type: none">• Fourslide /Multislide / Vertislide	
SPRING MANUFACTURING	Page 18-19
<ul style="list-style-type: none">• Small Order• Small Coil• Medium Coil• Large Coil• Automatic Looping, Wire Form & Torsion• Torsion• Truing	
Assembly and Subassembly	Page 20-21
QUALITY ASSURANCE	Page 23-23
FINEBLANKING	Page 24

This brochure: (i) may contain technical data as defined in 22 CFR 120.10 of the International Traffic in Arms Regulations (ITAR) or the Export Administration Regulations (EAR) at 15 CFR 730-774.

Product Photography by Tom Malinski

Introduction

Connecticut Spring & Stamping (CSS)

CSS was founded in 1939 as a family owned and managed company. We manufacture all types of close tolerance precision metal parts.

- Springs
- Progressive tooled stampings
- Short run stampings
- Machined features added to stampings
- Fine blanked stampings
- Fourslide
- Wire Forms
- Subassemblies



Original Building—1939

We are certified to 3 different ISO standards:

- ISO 9001
- AS 9100
- ISO 13485

CSS is a small business employing over 450 employees.



South Facility—150,000 Sq. Ft.
48 Spring Lane



North Facility—51,000 Sq. Ft.
28 Spring Lane

Our Markets

CSS manufacturers components that are used in diverse industries for a wide variety of applications

Medical

Firearms

Aerospace

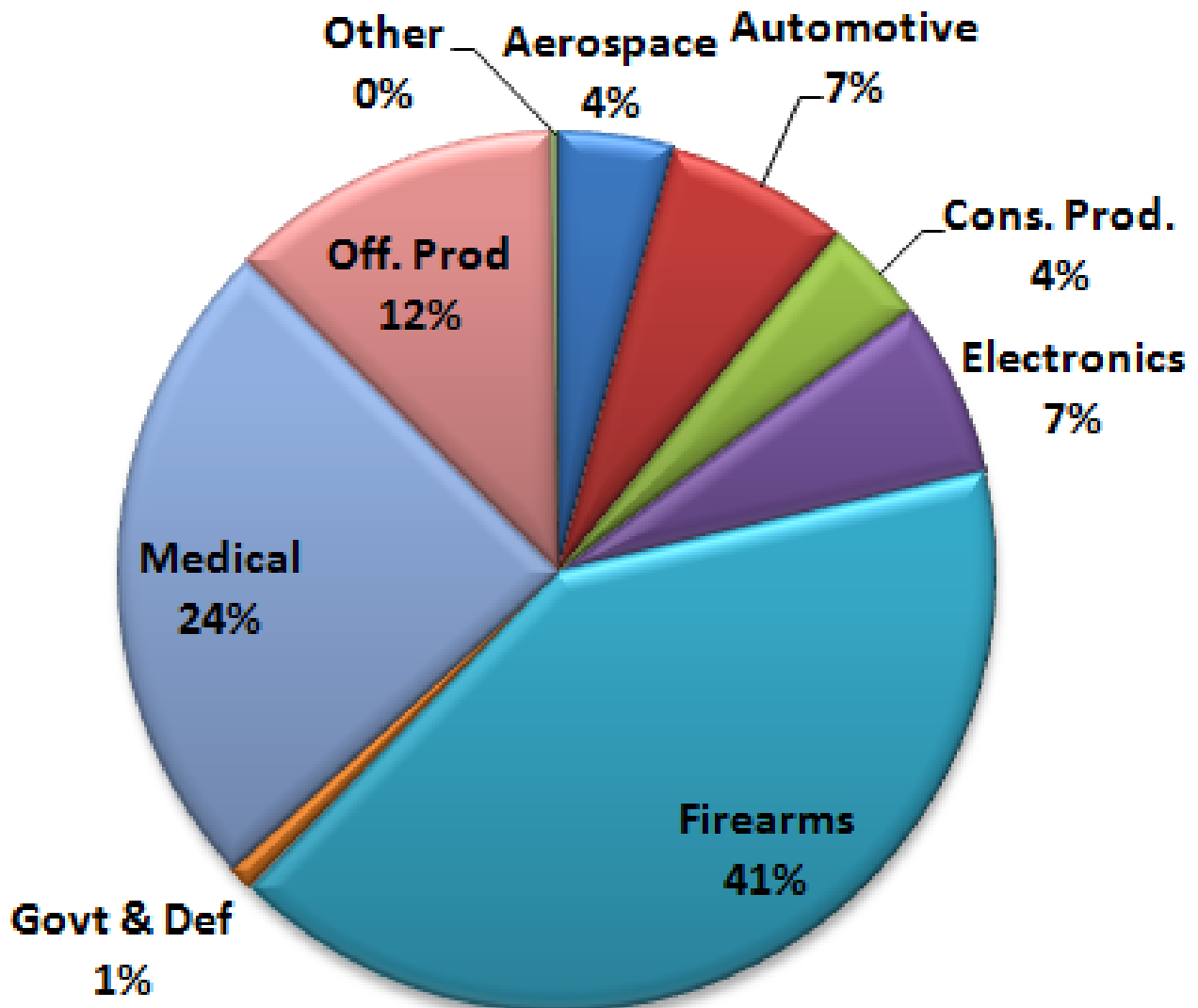
Govt' & Defense

Office Products

Consumer Products

Automotive

Technology/Electronics



Customer Diversity

Medical/Orthodontic

Medtronic, Pfizer, Conmed, Stryker, West Pharmaceutical, Philips Medical, BD, Dentsply, DJO, Teleflex Medical, Teva Medical, Tyco Healthcare, Bridgemedica and more...



Firearms

Smith & Wesson, Sturm Ruger, SIG Sauer, FN Herstal, Taurus, Kimber, Remington, Colt's Manufacturing, Browning, Daniel Defense, IWI and more...



Aerospace

Boeing, GE Aircraft, Pratt & Whitney, Goodrich, Hamilton Sundstrand, Parker Hannifin, BAE Systems, Sikorsky, M&M Aerospace, Carleton Technologies, B/E Aerospace, AAA Aircraft, Lighthouse Manufacturing and more...



Govt' & Defense

General Dynamics, Lockheed Martin, Textron Defense, Kaman, Raytheon, US Government, Space Exploration Technologies, US Ordnance and more...



Office Products

Lexmark, Sirtec, Flex, Hewlett Packard, Enplas, Pitney Bowes, Xerox and more...



Technology & Electronics

Tyco, Molex, Eaton, Cutler Hammer, General Electric, Gardner Denver, Parker Hannifin, FCI, Sensata, Jabil and more...



Consumer Products

Shure, Gillette, Assa Abloy, Procter & Gamble, Rollease, Husqvarna, Hunter Douglas, Stanley Black & Decker and more...

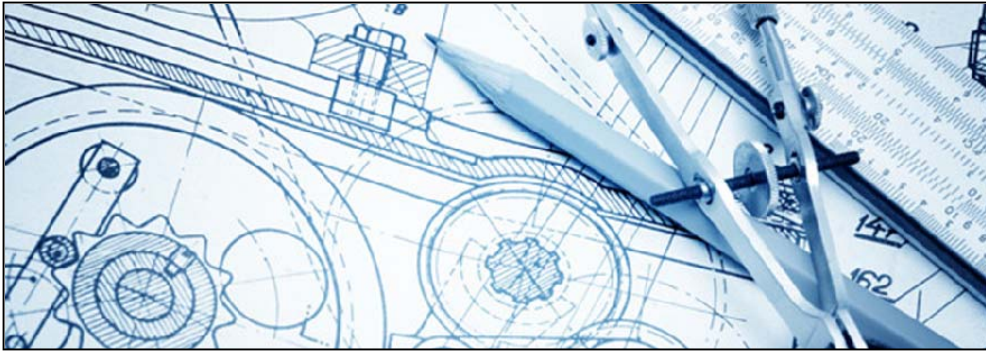


Automotive

Ti Automotive, Purolator, Danaher, GT Technologies, Parker Hannifin, Continental Automotive, Jacobs, Husco Automotive, Stanadyne, Mann+Hummel, US Tsubaki and more...

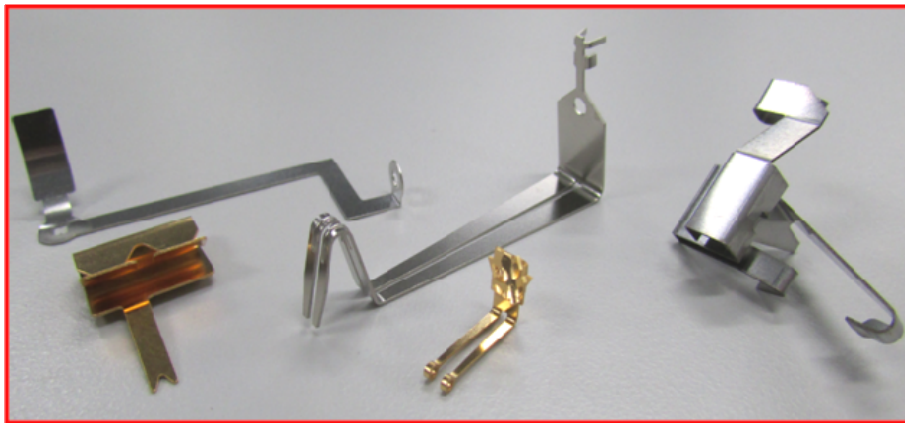


Prototyping and Design Collaboration



CSS advocates early engineering and design collaboration with our customers and prospects. Our prototyping capabilities on all types of springs, stamped components and machined parts enables our customers to verify feasibility of critical components.

We have an experienced and diverse technical team ready to work with you on the details that will help make your project a success.





Customer Service is the heart of CSS. Timely responsiveness to all of your needs is our goal.

We offer.....

- | | | |
|-----------------------------|---------------|---------------------------|
| Consignment | Dock-To-Stock | Kanban |
| Certified Source Inspection | Bar Coding | Customer Managed Websites |

International Sourcing

We are a strategic partner with a variety of companies in Asia to produce Springs, Stampings and Tooling.

CSS offers our worldwide customers the cost benefits of Asia without these obstacles:

- | | |
|-------------------|---------------------|
| • Language | • Overseas Freight |
| • Time Difference | • Customs / Duties |
| • Long Lead Times | • Currency Exchange |

We manage all logistics within Asia to our OEM customers or back to the US for distribution.



Affiliate Companies & Warehousing Facilities:

- | | | |
|---------------|-------------|------------|
| • USA | • Taiwan | • Shanghai |
| • Puerto Rico | • Singapore | • Dongguan |
| | • Xiamen | |

ENGINEERING

PC Based Workstations

- Solidworks—Basic, Premium, Simulation Premium FMEA 2010
- AutoCAD Mechanical Desktop 2008 and AutoCAD 2010 software
- AutoCAD Lite 2010 CAD software
- Autodesk Inventor Suite 2010
- Pro Engineer 2001 and Wildfire by PTC
- DP Esprit
- CNC Programming System (with direct electronic download capability to NC wire EDM)
- Master cam

Electronic File Transfer Capabilities

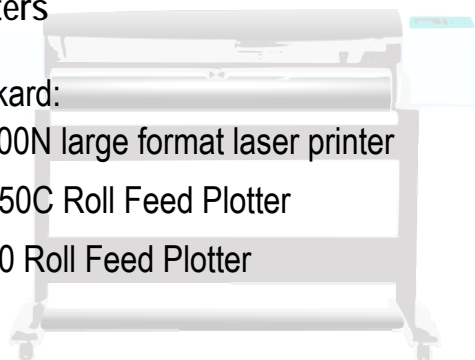
Import and Export capabilities for the following file types:

- AutoCAD DWG (R12-R14 and AutoCad 2004-2010)
- Autodesk Inventor
- DXF
- IGES
- STEP
- Cadkey
- Pro E
- Solid Works
- Parasolid
- E-Drawings



Printers & Plotters

- Hewlett-Packard:
- Laser Jet 5000N large format laser printer
- Designjet 1050C Roll Feed Plotter
- Designjet 700 Roll Feed Plotter



TOOL ROOM

Complete Tool Building Facilities for: Progressive / Fineblanking / Short Run / Fourslide

Wire EDM

- Mitsubishi Wire EDM Machines with DNC Links to CAD/CAM Systems
- Form 20 Sinkers

Grinders

- Surface
- Moore Jig
- Okamoto 12 x 24
- Okamoto 20 x 48 Wet
- Moyer CNC

Drills

- Current EDM Drills
- Radial Arm Drills
- Drill Presses

Misc Equipment

- Lathes
- Bandsaws
- Kalamazoo Cut Off Saws

Milling Machines

- CNC Vertical Machining Center with Tool Changer
- Bridgeports with Proto Track EMX-1 Systems
- HAAS VF4 CNC Vertical Machining Center
- Fadal 2016 CNC Vertical Machining Center
- Fadal 2216 CNC Vertical Machining Center
- Fadal 3016L Vertical Machining Center
- Hyundai-Kia VX400 Vertical Machining Center



*** NEW ***

176 Ton Straight Side Double Crank Press. Primarily used by our Tool Cell to support new tool build try out runs and tool debug. 176 ton capacity will handle various material thicknesses in progressive die applications that include blanking, forming and piercing.

Presses

- 176 Ton Seyi Dedicated Engineering Press
- 76 Ton Tryout Press
- 75 Ton Straight Side Tryout Press for New Tools
- 50 Ton Hydraulic Arbor Presses



Metal Stamping Components



Shield Lock



Trigger Bar



Cap-Metal Throughshaft



Receiver End Plate



Clip



Mount Lever



Contact



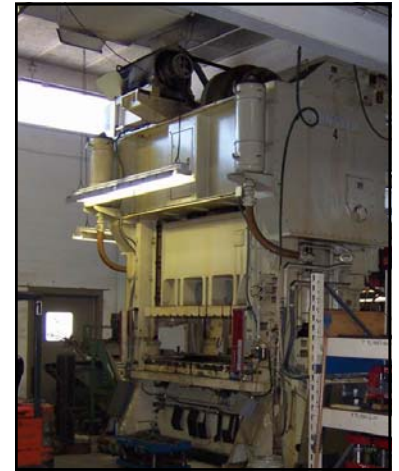
Cable Guide

METAL STAMPING MANUFACTURING

Automatic Power Press

Automatic presses from 30 ton to 330 ton provide a full range of metal stampings. High speed presses capable of 1,500 parts per minute. Large parts requiring heavy tonnage can be accommodated by 300 ton presses with die beds up to 84 inches long.

- High Speed Bruders.....30 and 60 Ton
- Straight Side Minsters.....60 to 300 Ton
- Seyi.....330 Ton



Secondary Power Press

- Presses.....3 to 50 Tons
- Minsters.....75 Tons
- Greenerd Hydraulics.....200 Tons

Miscellaneous

- Foot and Drill Presses
- Lapping Machines
- Bridgeports
- Surface and Bench Grinders
- CNC Machining Centers
- Time Savers
- Servo Roll Feeds



Material thickness of each stamping

*Ranges from:
.002" to .250 with
stock width up to 24".*

Secondary Manufacturing

Grinding

- Large OMD Downfeed
- Bennett's 9"
- Besley's 10"
- Bennett's 14"
- Besley's 18"
- Gardner's 20"
- Moyer CNC 15-30-2VCD's
- Moyer Auto Feed Capabilities



Setout Machines

- Automatic Air Cycle
- Automatic Setout Presses



Miscellaneous

- Tumbling Barrels
- Harperizers
- Pangborn Roto Blasts
- Wheelabrators
- Sweco Vibrators
- Uni Hone Dry Blasting
- Heat Set Machines
- Empire and Pangborn Shot Peen Machines
- Cob Dryers
- New Holland Dryers

Secondary Manufacturing



Heat Treating

- Complete stress relieving capabilities
- Fixture Heat Treating (Electric and Salt Set)
- Lindberg Oven #8 Type 11-HC-242424-13 is approved for stress relieving and Precipitation type treatments requiring temperatures of less than 1000 degrees F to MIL-H-6875

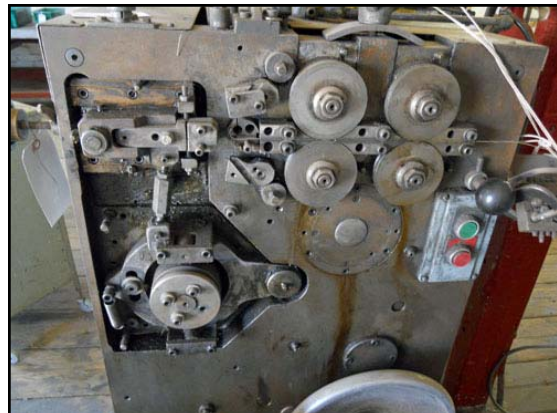
Secondary Wire Forms

- Foot Presses
- Air Presses
- Power Presses
- Hand Winders



Looping

- Foot presses for secondary extension spring operations
- Torin 10A's and Torin 11A's



Welding

- Induction Heaters (10 KW Max.)
- Spot Welders (0-25 KVA Range)
- Precision Welders

Machining



Multiple Hyundai-Kia CNC's



Fadal Machining Center



Multiple Tsugami's VA1-II



Multiple Hyundai-Kia's VX380TD

MACHINING MANUFACTURING

CNC Machining

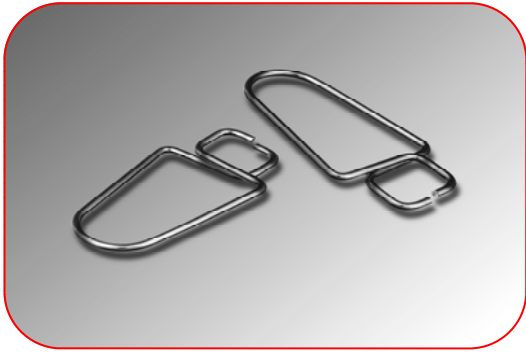
CSS has CNC machining centers that produce completely smooth edges on windows, slots and holes in parts where a smooth edge condition is critical.

We have the capability of applying CNC machining processes to stamped parts to generate finished parts with unique and difficult to produce features. Customers can achieve significant savings by having their basic components made with stampings, then incorporating more critical features by CNC machining.

Some stamped and machined parts:



Fourslide Components



Wire Formed Clamp



Battery Connector



Bipolar Clip



Retention Spring Clips



Shaft Tip UMB



Pressure Speed Spring



Clutch Springs



Pressure Spring

FOURSLIDE MANUFACTURING

Fourslide / Multislide / Vertislide

- #00 Nilson's
- 700L Nilson's
- #1 Nilson Reg S1's
- #1 Nilson S1F's
- #2 Nilson S2F's
- #752 Nilson's
- #3 Nilson Reg S3's
- #3 Nilson S3F's
- #4 Nilson
- V81 Torrington Verti-Slides
- V82 Torrington Verti-Slides
- Sleeper-Hartley
- Kick Presses
- WAFIOS BM3



Material Range: Wire diameters .005" to .188"
Flat stock .003" to .062"



Spring Components



Battery Contact



Catheter Springs



Torsion Spring



Extension Springs



Magazine Springs



Contact Spring

SPRING MANUFACTURING

Small Order	Short-run and prototype production of extension springs, compression springs and wire forms.	
Small Coil	Itaya CX 6	.004 to .023
	7900 High Production Sleeper Hartley Coilers	.004 to .026
	Itaya CX 8	.004 to .030
	720 Sleeper Hartley Coilers	.008 to .028
	Torin Coilers	.008 to .030
Medium Coil	790 High Production Sleeper Hartley Coilers	.008 to .042
	7910 High Production Sleeper Hartley Coilers	.014 to .063
	Torin Coilers	.025 to .080
Large Coil	BHS-Torin CNC 11 Coilers	.015 to .080
	BHS-Z0CNC Coilers	.026 to .080
	Torin Coilers	.048 to .350
	Simplex Rapid Coilers	.062 to .148
	In Line Ovens For All Coilers	
	Lion Precision and Moyer Merlin Gauges	

Wire diameters ranging from .004" to .350"

Automatic Looping, Wire Form & Torsion		
•	Itaya MCS 4 Spring Generators	.004 to .015
•	Itaya MCS 8 and MX 8 Generators	.008 to .031
•	MEC CLS 10 & MEC 10V Spring Loopers	.008 to .039
•	Itaya MCX 10 Spring Generators	.015 to .040
•	MEC CL 16 Spring Loopers	.015 to .055
•	Itaya MX10's	.016 to .040
•	Shinko VF 812 MFT Spring Loopers	.017 to .042
•	SX-15 Computer Controlled Spring Coilers	.025 to .059
•	Itaya MX 20 & MCX 20 Spring Generators	.025 to .079
•	Shinko VF 820 MFT Spring Loopers	.028 to .079
•	Itaya MX 20 A's	.035 to .079
•	NuCoil FX35 Coilers	.039 to .138
•	Shinko VF 8030 MFT Spring Loopers	.048 to .125
	In Line Ovens For All Generators and Loopers	

Torsion	SIMCO & MEC 10 Coilers	.007 to .040
	Torin Coilers	.025 to .090
	MEC 23 Coilers	.028 to .156

Truing Load testers for all types of loads on a wide range of wire sizes.

Assemblies



Cassette Assembly



Breaker Spring



Channel & Clip Retainer



Spring Caged Assembly



Magazine Assembly



Slide Stop Lever



Finger Sensor



Low Profile Clip Assembly

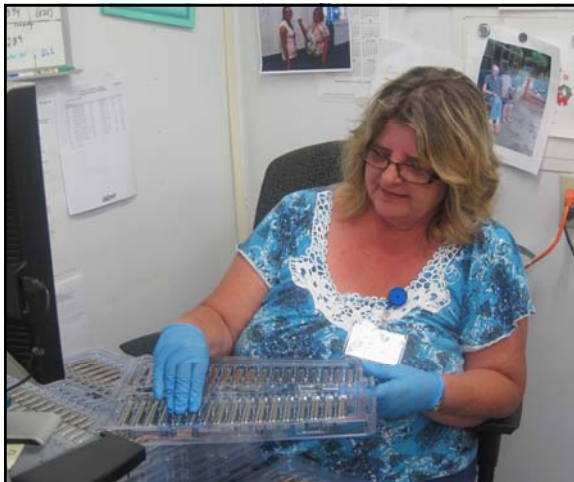
Assembly and Subassembly

Assembly

We offer....

- Expertise in project management
- Flexibility
- Reliability
- Competitive pricing

From prototype to high volume production, using innovative tech-aided single-part throughput assembly



Subassembly Solutions Incorporating:

- Welding (ultrasonic, EB, resistance laser)
- PEM and other fastener insertion
- Semi and full automation



QUALITY ASSURANCE

ISO 13485 / ISO 9001 / AS 9100

Testers

- SDHD Digital Hand Testers Capacity 11—110 pounds
- Probat SF 201 Computer Spring Testers Capacity 55 pounds
- Carlson Electronic Spring Testers Capacity 50 pounds
- Carlson Electronic Torsion Testers Capacity up to 200 inch pounds
- Carlson Precision Spring Testers Capacity 200 pounds
- Larson Flash Load Testers Capacity 200—500 pounds
- Link Spring Testers Capacity 1900 pounds
- Tinios Olsen Tensile Testers Capacity 5000 pounds
- Wilson Twin Hardness Testers
- Tukon Superficial Hardness Testers
- CT-200 Automated Spring Analyzers

Gauges

- Check Line Plating Thickness Gauges
- Brown & Sharpe Cadillac Hite Gauges

Major Inspection Equipment

- 30" Optical Comparators
- Starrett Digital Height Indicators
- Federal Profilometers
- Tool Maker Microscopes
- Buehler Specimen Mount Presses
- OGP Smart Scope 500 Vision
Measuring System with Touch Probes and
Smart Scopes
- Keyence 1M6120 Optical Measuring Systems
- MicroStudio LED 2D

Software

- Statistical Process Control
- Production Part Approval Process
- Corrective Actions
- Quality Process Management
- Calibration
- MeasureMind 3D Multisensor
- MeasureFIT for OGP Smart Scope

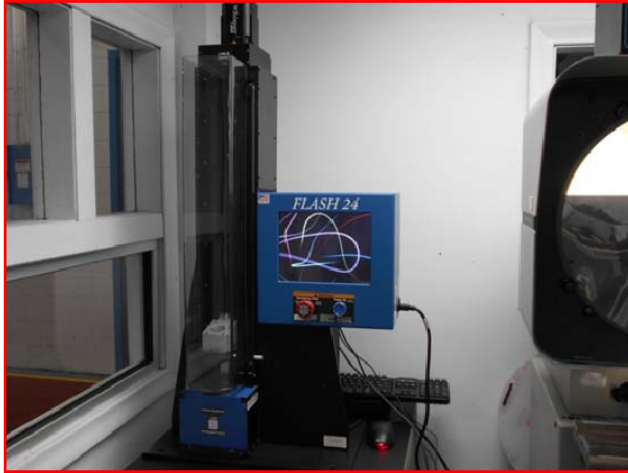


Facilities and Certification to perform Eddy Current Test for Surface Defects

QUALITY ASSURANCE

ISO 13485 / ISO 9001 / AS 9100

Inspection and Test Equipment



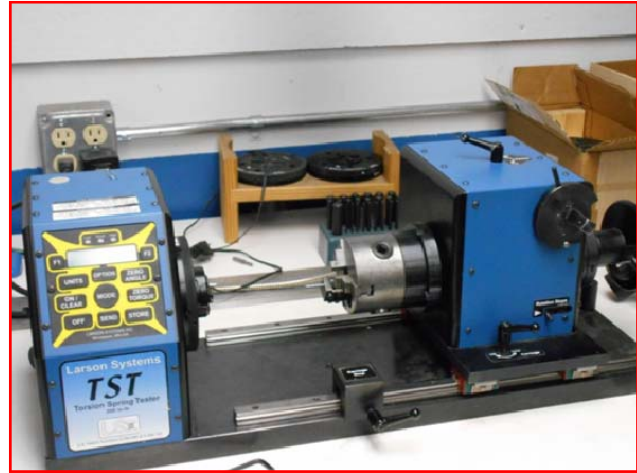
Larson Flash 24 Load Tester



Vision Dynascope Toolmaker's Microscope



Keyence IM 6500 Measuring System



Larson Torsion Spring Tester 200 in-lb



OGP Smartscope Coordinate Measuring Machine

FINEBLANKING



GKP-F 250

Fineblanking allows CSS to make parts with challenging features that would typically require secondary operations or could be beyond our baseline stamping capabilities.

Fineblanking allows us to produce complex parts in a more cost efficient manner while meeting quality and productivity goals.

