



PROCESS CAPABILITIES

complex, multi-step, and integrated manufacturing challenges

Give us your complex, multi-step, and integrated manufacturing challenges. Our engineering and processing experts will enhance your product and business performance. As many of our long-term customers say — *Value Engineering at U.S. Axle assures improved delivery, performance, reliability, and competitive costs.*

Deep Hole Drilling & Honing

Unique. Durable. Experienced.

U.S. Axle is able to drill, trepan, and precision-hone bores deep into the length of shafts and tubes. This is ideal for shafts which require oil or other passages, tight tolerance fits between components, weight reduction, or in order to fabricate tubing.

Our process creates extremely accurate circular runout and smooth surface finishes allowing high speed dynamic stability and improved wear resistance.



Drilling and Honing Capabilities

- Gun Drilling
- Deep Hole Drilling
- Honing
- Counterboring
- Skiving
- Burnishing

Our counter-rotation capabilities allow us to apply straight and concentric holes up to 100" (2.540 m) long, and 1/2" (3.2 mm) to 6" (152 mm) in diameter.

Induction Hardening

Precise. Custom. Strong.

We program our induction hardening and tempering processes to meet your precision needs. The method we prefer is more precise than typical flame hardening.

Induction hardening is more cost effective than quench and temper. It has the ability to create extreme hardnesses depending on the material used. Our broad experience with induction hardening includes a diverse range of metals.

Typically, deep case hardening dramatically improves the fatigue properties of materials in high torque applications. We often employ surface hardening to improve wear resistance in high-wear applications. Induction hardening applications we manufacture include drive, stub, and power transmission shafts.

Hardening Capabilities

- Case and Deep Case Hardening
- Static Hardening
- Scan Hardening
- Face Hardening

Local Hardening and Tempering

- Shafts
- Cylinders
- Tubes

Our case-hardening depths range from .060" (1.5 mm) to .750" (19 mm) on parts with flanges up to 20" (500 mm) in diameter, and up to 140" in length.

Splining

Specialized. High Performance. Reliable.

When high torque loading is present, and the circumference load distribution is critical to good shaft performance, U.S. Axle utilizes a specialized splining application for drive, stub, and power transmission shafts.

Splining Capabilities

Hob
CNC Hob
Skive Hob
Spline Roll Forms on shaft ODs

We hob diametrical pitches up to 4 DP (6.35 MOD) on parts with flanges up to 18" (457 mm) in diameter and up to 185" (4700 mm) in length.

We can spline roll shafts up to 130" (in length, and up to 3.75" (95 mm) in diameter.

Reduce part wear with our crown splining capabilities.

Splining Applications

Involute Splines
Spur Gears
Tapered Splines & Root Splines
Straight-sided Splines
Special Indexed Forms on shafts, cylinders, and tubes

Cylindrical Grinding

Dynamic. Powerful. Exact.

U.S. Axle's cylindrical grinding capabilities can be used wherever tight tolerances and high concentricity requirements are needed to ensure satisfactory bearing and seal life, fit integrity, and dynamic performance.

Cylindrical Grinding Capabilities

Grinding
Cylindrical Grinding
Manual Grinding
CNC Grinding
Taper Grind Shafts
Cylinders

We grind shafts from 1" (25 mm) to 20" (508 mm) in diameter, and up to 120" (3048 mm) in length.

Cylindrical Grinding Applications

Electric Motor Shafts
Power Transmission Shafts
Roller Shafts
Printing Press Shafts
Pump Shafts
Cylinder Shafts

Turning & Milling

Hi-Tech. Efficient. Innovative.

We have the ability to turn and thread deep into the inner diameter of tubes, cylinders, and threaded tubes.

U.S. Axle is competent in 8-axis machining often used in the aerospace industry. We have the ability to manufacture complex geometries and shapes on shafts up to 120" long and 20" in diameter to produce high precision components.

If you face a turning and milling challenge, we've probably engineered a similar solution. Our extensive experience with special threading applications such as tapered API, ACME, special thread forms and coarse pitch forms, will address any turning and milling need.



Milling Capabilities

Live-tooling Lathes
Horizontal Machining Centers
Vertical Machining Centers

Turning and milling applications include face milling, drilled and tapped holes, keyways, pockets, and helical interpolation in shafts up to 82" (2.082 m) long.



Challenge us

If you have big ideas for the growth of your business, start with U.S. Axle — we take pride in our ability to produce challenging precision axles, shafts, and cylinders for our industry. Focused on performance, reliability, and value, U.S. Axle creates purpose-built solutions to help your company compete in the market.

Collaboration with U.S. Axle leads to long-lasting, mutually beneficial relationships for our customers — because we offer unmatched, personalized service and technical assistance.