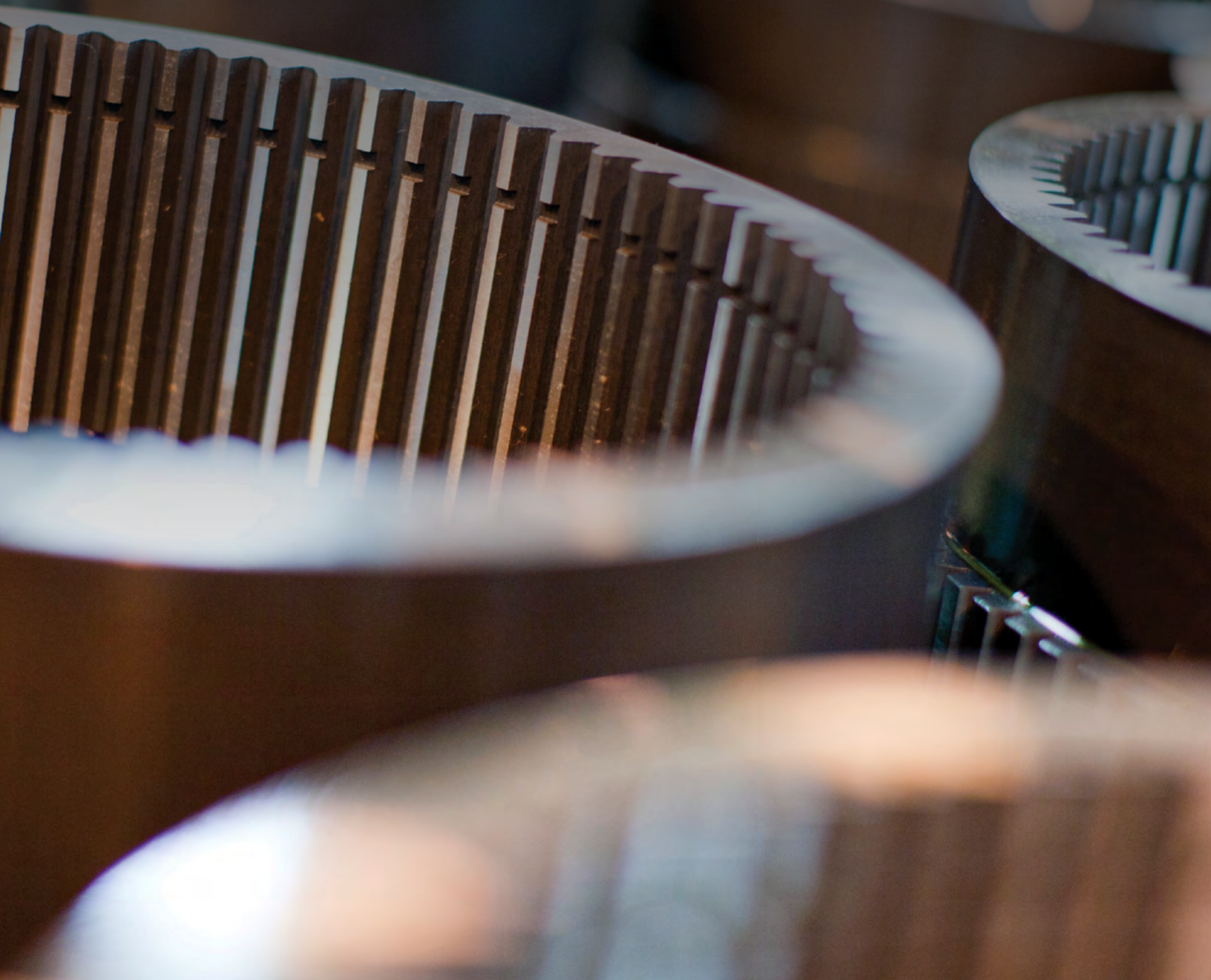




**FAIRFIELD<sup>®</sup>**

*Custom Gears and Drives*

# Custom Gear Capabilities





**FAIRFIELD®**

*Custom Gears and Drives*

## One Source. Countless Solutions.

Since 1919, original equipment manufacturers across the globe have relied on us for our fully integrated custom gear production capabilities that deliver superior value in a diverse world of applications.

Whether you need a contract manufacturer that can build precisely to your print or a motion technology expert capable of solving your most complex gear performance issues, rely on Dana.



### Custom gear capabilities include:

- External and internal, spur and helical gears and pinions
- Straight and spiral bevel gears and pinions
- Precision ground gears
- High-speed gears
- Planetary gear drives
- Hypoid and Zerol® gears and pinions
- Plain, keyed, splined, flanged, or spur shafts
- Tapered serrations

### More than 70 engineers on staff conducting:

- Finite element analysis
- CAD / Solids modeling
- Extensive metallurgical testing
- Thorough failure analysis of gears and complete gear assemblies
- Product performance testing in lab and field environments
- Application testing in the field through histogram retrieval

# Custom Gear Capabilities



## Gear Cutting and Finishing

- Hobbing and shaping
- Spiral bevel and straight bevel cutting
- Broaching and rolling
- Internal and external grinding
- Surface and gear tooth grinding
- Advanced CBN grinding
- Multiaxis machining
- Drilling, milling, tapping, and sawing



## Heat Treating

- Carburizing
- Induction hardening
- Through hardening
- Nitriding
- Shot peening
- Oil / press quenching



## Quality and Testing

- Highly advanced CNC inspection technology
- Gear quality certification to AGMA Class 14
- Comprehensive lab and field testing



## Service and Support

- Extensive sales / applications training
- Experienced customer service staff
- Industry leading delivery
- Scheduling flexibility
- Global parts and service network

# Custom Gear Specifications

## Gear Cutting



### Capabilities

Gear Cutting Type	Diametral Pitch (module)	Diameter inch (mm)	Face Width inch (mm)
External Spur	20 to 0.5 (1.3 to 50)	.5 to 60 (12 to 1,524)	.25 to 23 (6 to 584)
External Helical	20 to 0.5 (1.3 to 50)	.5 to 60 (12 to 1,524)	.25 to 23 (6 to 584)
Internal Spur	20 to 1 (1.5 to 25)	3 to 90 (75 to 2,286)	.5 to 20 (12 to 508)
Internal Helical	20 to 1 (1.3 to 25)	3 to 100 (75 to 2,540)	.5 to 18 (12 to 460)

### Capabilities

Gear Cutting Type	Diametral Pitch (module)	Diameter inch (mm)	Length inch (mm)
Splined and Spur Shaft	64 to 1.5 (.4 to 17)	.375 to 20 (10 to 500)	1 to 115 (25 to 2,921)
Internal Spline	64 to 1.5 (.4 to 17)	.375 to 50 (10 to 1,270)	.25 to 12 (6 to 305)
Tapered Serrations	–	1 to 7 (25 to 175)	–

### Capabilities

Gear Cutting Type	Diametral Pitch (module)	Diameter inch (mm)	Pinion Hd. Brg. Diameter inch (mm)
Straight Bevel	16 to 1.25 (1.6 to 20)	1 to 36 (25 to 915)	6.5 (165)
Spiral Bevel	16 to 1.10 (1.6 to 23)	1 to 36 (25 to 915)	8.5 (216)
Hypoid Bevel	12 to 1.10 (2.1 to 23)	1 to 36 (25 to 915)	8.5 (216)
Zerol® Gear	16 to 1.10 (1.6 to 23)	1 to 36 (25 to 915)	8.5 (216)

## Heat Treatment



### Capabilities

Process Type	Max. Outside Diameter inch (mm)	Max. Height inch (mm)	Max. Length inch (mm)
Carburized Free Quench	36 (915)	36 (915)	84 (2,130)
Carburized Press Quench	36 (915)	12 (305)	–
Nitride	60 (1,524)	60 (1,524)	60 (1,524)
Induction Hardening	80 (2,000)	28 (700)	100 (2,540)
Through Hardening	60 (1,524)	18 (460)	84 (2,130)
Normalize/Anneal	40 (1,016)	48 (1,220)	70 (1,780)
Cold Treat	47 (1,194)	48 (1,220)	74 (1,880)

## Machining and Finishing

### Capabilities

Type	Max. Diameter inch (mm)	Max. Length inch (mm)
Turning	92 (2,350)	115 (2,921)
O.D. Grinding	48 (1,220)	110 (2,794)
I.D. Grinding	48 (1,220)	–

### Capabilities

Type	Max. Area inch (mm)	Features
Machining Center	97 x 78 x 196 (2,478 x 2,000 x 5,000)	3 to 5 Axis
Shot Peen	40 x 24 x 84 (1,016 x 610 x 2,130)	Internal and External Gears
Painting	28 x 28 x 72 (700 x 700 x 1,020)	Solvent Based

### Capabilities

Type	Diametral Pitch (module)	Max. Diameter inch (mm)	Max. Face Width inch (mm)
Gear Shaving, Ext.	16 to 2.5 (1.5 to 10)	24 (610)	6 (150)
Gear Honing, Ext.	16 to 2.5 (1.5 to 10)	18 (457)	5 (125)
Spline Rolling	64 to 16 (.4 to 1.6)	3.625 (90)	5 (125)

### Capabilities

Type	Max. Diameter inch (mm)	Max. Length inch (mm)	Weight Pounds (kg)
Dynamic Balancing	30 (762)	96 (2,440)	20 to 2,500 (10 to 1,100)

## Gear Grinding

### Capabilities

Gear Grinding Type	Diametral Pitch (module)	Diameter inch (mm)	Face Width inch (mm)	Length inch (mm)
External Spur and Helical	20 to 0.5 (1.3 to 50)	1 to 80 (25 to 2,000)	.25 to 58 (6 to 1,473)	–
Internal Spur	20 to 0.5 (1.3 to 50)	5 to 80 (130 to 2,000)	.5 to 18 (12 to 460)	–
Splined and Spur Shaft	20 to 1 (1.3 to 25)	1 to 20 (25 to 500)	1 to 19 (25 to 480)	1 to 84 (25 to 2,133)



**NFFA**  
NATIONAL FEDERATION OF  
AUTOMOTIVE PARTS MANUFACTURERS

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