



Precision par Excellence. Smart to Future.

A story of a Hundreds Year Consistent Effort
in the Advancement of Engineering Practice.



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LUREN
www.matrix-machine.com.tw

Gear Cutting Tools

Excellent Precision, Smart Future



Gear Cutting Tools

Showing Our Core Technology & R&D Strength

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About the brand of Gear Cutting Tools - Luren

The Matrix brand has gone through centuries of history. The first factory in Madeley Shropshire, UK, was established 300 years ago. It was originally known for producing high-precision measuring gauges for the global engineering industry. Up until the founding of Coventry Gauge & Tool Co., Ltd. in 1913, it was the largest factory in The UK at that time . From 1913 to 1934, Matrix was successfully involved in the design, manufacture and supply of high-precision internal thread grinders, external thread grinders and gear grinders. Since then, it has occupied a global position in the field of grinding machines and built a factory for mass-production grinders in Fletchamstead, Coventry . The British Royal Family has repeatedly commended Matrix , which allowed the world to see the British industrial technology and process quality standards.

In 1940, the British gear grinder was born . Since then, the Matrix brand has expanded to a full range of high-precision products such as precision grinders and measuring gauges and fixtures for aerospace, automobiles, trucks, and construction machinery.

Besides, Matrix Precision Co., Ltd. started the production of gear cutting tools. The close relationship with academic and research institutions equipped Matrix with the ability to develop a high quality gear cutter manufacturing system, and also its own gear design and machining software compatible with our various special purpose machines. Based on the core technology in high-precision machinery and gear production, Matrix provides hobs, carbide hobs, shaving cutters, shaper cutters, power skiving cutters, master gears and technical service. Matrix offers efficiency in designing software and production system. Matrix is also known for on time problem-solving, innovative design and technique exchange seminars according to the customers' needs, continuing to respond to the market and lead the future trends.

Coming to the 21st century, it has a new direction of inheritance. Since 2017, British Matrix has introduced high-end technology to Matrix Precision Co., Ltd. in Taiwan, paving a new life path for the only gear grinding machine industry in Taiwan. We advocate the excellence of top-notch craftsmanship and technology. It accommodates the differences of countries, races, languages and different user habits. Through the accumulation of shared experiences, the stability, reliability, high precision and service, the quality of the grinding machines have much improved. Machines with intelligent automation planning can also be offered to you to meet your needs. In addition, Matrix is also an expert in gear cutters, allowing our full range of services to create the highest added value for you.



The factory in Madeley Shropshire, UK, was established 300 years ago.



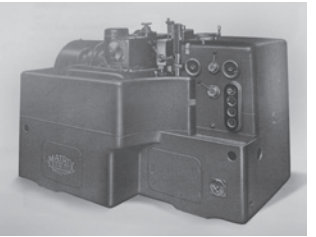
Founded in 1913, Coventry Gauge & Tool Co., Ltd. was the largest factory in The UK at that time.



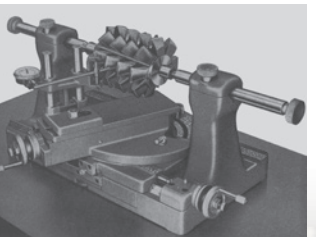
Mass-production grinder factory in Fletchamstead, Coventry.



In 1940, King George VI and Queen Elizabeth of England visited the Matrix factory to commend Matrix for bringing productivity, employment and industrial manufacturing power to the UK.



The British gear grinder was born in 1940.



The Matrix hob flank angle measuring machine.



Hobs Dry / Wet Cutting



Module 0.5 –10
(DP 50.8 – 2.54)



Types	Gear, Worm Gear, Spline, Rack, Special Form
Patterns	Finishing, Roughing, Pre-shaving, Pre-grinding
Outside Dia.	25 – 160 mm (0.984 – 6.299 inch)
Length	≤ 220 mm (8.661 inch/Bore), ≤ 400 mm (15.748 inch/Shank)
Precision	AAA, AA, A (DIN 3968)
Material	High Speed Steel (HSS): Conventional or Powder Metallurgy
Coating	TiN, TiCN, TiAlN, ALCRONA

Any special requests, contact us for more details.

Carbide Hobs Dry / Wet Cutting

Module 0.5– 3.5
(DP 50.8 – 7.258)



Types	Gear, Spline (Involute)
Patterns	Finishing, Skiving
Outside Dia.	25 – 120 mm (0.984 – 4.724 inch)
Length	≤ 155 mm (6.102 inch)
Precision	AAA, AA, A (DIN 3968)
Coating	TiAlN, ALCRONA

Any special requests, contact us for more details.

Shaper Cutters

Module 0.5 – 6
(DP 50.8 – 4.233)



Types	Disc, Bell, Helix, Shank
Patterns	Finishing, Pre-shaving, Pre-grinding
Length	20 – 200 mm (0.787 – 7.874 inch)
Precision	AAA, AA, A (DIN 1829, JIS B 4356)
Material	High Speed Steel (HSS): Conventional or Powder Metallurgy
Coating	TiN, TiCN, TiAlN, ALCRONA

Any special requests, contact us for more details.

Power Skiving

Module 0.5 – 6
(DP 50.8 – 4.233)



Types	Disc, Bell, Shank
Patterns	Finishing, Pre-shaving, Pre-grinding
Length	20 – 200 mm (0.787 – 7.874 inch)
Precision	AA, A
Helix Angle	≤ 35°
Material	High Speed Steel (HSS): Conventional or Powder Metallurgy
Coating	TiN, TiCN, TiAlN, ALCRONA

Any special requests, contact us for more details.

Shaving Cutters



Module 1– 8
(DP 25.4 – 3.175)



Types	Conventional, Diagonal, Plunge, Underpass
Outside Dia.	59 – 250 mm (2.323 – 9.842 inch)
Width	18 – 68 mm (0.709 – 2.677 inch)
Helix Angle	≤ 30°
Material	High Speed Steel (HSS): Conventional or Powder Metallurgy

Any special requests, contact us for more details.

Master Gears

Module 0.5– 8
(DP 50.8 – 3.175)



Matrix offers master gears for mesh testing, gear measuring and correction, the result corresponds to DIN 3970, JIS B 1751 or any customer's requirement. Besides, it is component to use special materials to ensure the quality and tool life.

Master gears are used in gear meshing and measuring, based on any index and graph or other instruments to confirm that master gears and gears mesh together. Master gears also apply for aeronautical and automobile industries.

Outside Dia.	30 – 250 mm (1.181 – 9.843 inch)
Helix Angle	≤ 35°
Precision	DIN 4 or M 0
Material	High Speed Steel (HSS): Conventional or Powder Metallurgy.
Coating	TiN

Take the " Hobbed Relief " method to design the master gear, it could be reground many times.

Services

Matrix is devoted to produce precise gear cutters, which includes designing, producing and measuring.
Moreover Matrix also offers the following services.

Resharpener for hobs and shaving cutters

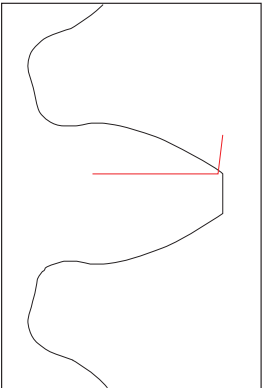
Recoating for hobs and shaper cutters

Modifying the profile of gear cutters

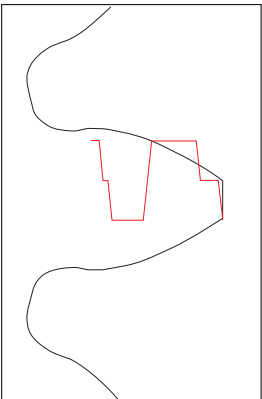
Designing the custom products

Solving any technical or processing problems

Contact Point Meshing Analysis

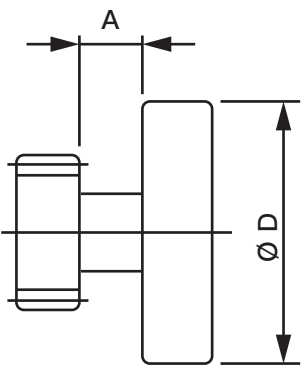


Tooth Contact Points Analysis
Max Rotation Angle=20D 16M15S
Min Rotation Angle=-(19D57M32S)
Contact Points on Left Flank
22222111111111112222222222222222
22222111111111111222222222222221
Contact Points on Right Flank

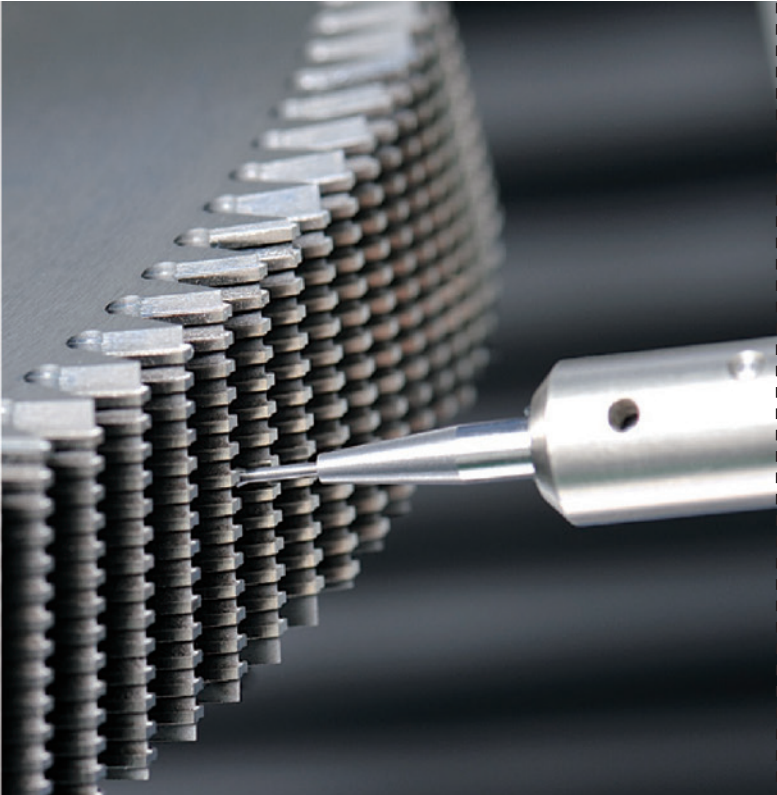
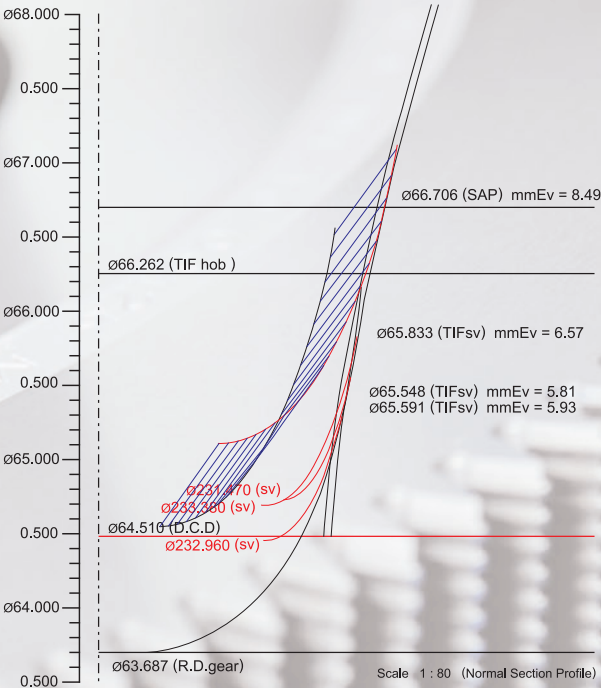


Tooth Contact Points Analysis
Max Rotation Angle=16D 4M10S
Min Rotation Angle=-(26D40M14S)
Contact Points on Left Flank
22222111111111112222222222222221
111222222222111111111111222222
Contact Points on Right Flank

Design required data sheet

Workpiece No.		
(Module) / DP / (CP)		Shoulder form details
Pressure angle		Space A : Diameter D : 
No. of teeth		
Helix angle / Direction		
Out. Dia.		
Root dia.		
D+F		
Spanned t. thickness/tooth no.		
Over pin value/pin dia.		
Shaving dia.(TIF)		
Face width		

Shaving Route of Meshing Analysis



HOB

Full depth tooth profile		Protuberance	
Semi-topping		Pre-shaving	
Topping		Pre-grinding	
Out.Dia.			
Shank Type			
No. of gashes			
Class of accuracy			
No. of threads/direction			
Material			
Coating			

Special modification requirement

Semi-topping amount	
Stock removal	
Remark :	

Shaving cutter

Conventional		Underpass	
Diagonal		Plunge	
Out. Dia.			
Face width			
Bore Dia.			
No. of teeth			
Helical angle on PCD			
Material			

Special modification requirement

Remark :	
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