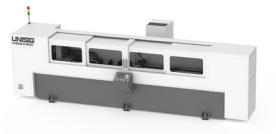
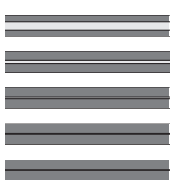
UNE Series Job Shop and Production Machines

HOLE DIAMETER: 1.4-40 mm | DRILL DEPTH: UP TO 3,000 mm | SPINDLES: 1 OR 2 | TOOLING: GUNDRILLING



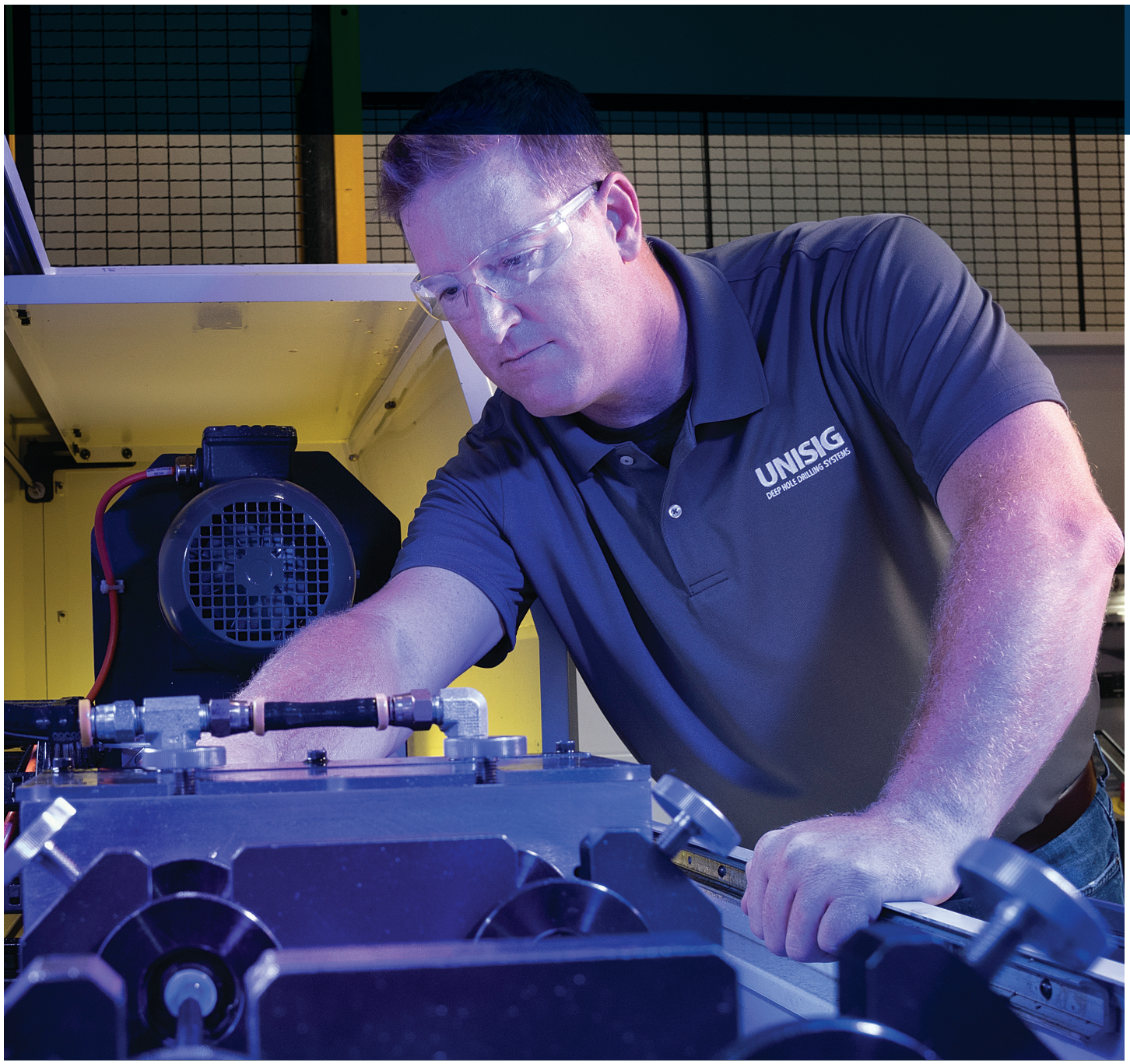
Gundrilling machines for job shop or production environments

Rated for solid carbide, brazed and indexable gundrills



Deep hole depth-to-diameter ratios

Why UNISIG



UNISIG has nearly 40 years' experience delivering precise, intuitive, deep hole drilling machines around the world.

As a company fully dedicated to deep hole drilling, we proudly offer a wide range of solutions – with machines that offer depth-to-diameter ratio capabilities from 20:1 to 400:1 – providing collaboration and support from early application discussions all the way through installation.

We have the hands-on expertise necessary to identify solutions for unique deep hole drilling challenges, from small job shops to multibillion dollar OEMs. This customer-focused approach gives us an in-depth understanding of multiple industry-specific needs, allowing us to provide solutions that exceed your expectations.

Our team understands that the key to your success is measured by aligning your existing deep hole drilling needs of today with the flexibility to grow tomorrow. Working with UNISIG ensures that you have the capability to drill a larger range of hole diameters and depths, add automation when necessary, and maximize the return on your investment.

UNE Series Advantages

GUNDRILLING SOLUTIONS FOR JOB SHOPS AND PRODUCTION OEMS

The UNE Series from UNISIG offers flexible gundrilling solutions, engineered and designed to simplify the gundrilling process for everyone involved — from the company owner, machine operator and operations manager to the product engineer and maintenance department.

IDEAL SOLUTIONS ACROSS INDUSTRIES

- AEROSPACE
- AUTOMOTIVE
- FIREARMS
- MEDICAL
- MILITARY & DEFENSE
- OIL & GAS, ENERGY

"UNISIG's knowledge of how our application would benefit through gundrilling was influential in our decision. They brought confidence to our ultimate solution."

FLEXIBILITY

UNE Series machines will let you take on more jobs and increase your capacity while you increase your business. With a design that allows for drilling deep holes across a wide range of diameters, job shops and OEMs can add capabilities like never before.

Easy set-up allows manufacturers and operators to maximize production while being able to switch applications or parts with less effort and time spent changing out tooling.

For added manufacturing flexibility, the UNE Series is small enough to fit almost anywhere, conserving valuable floor space. Its compact and stiff design eliminates the need for foundation work for effortless installation or relocation.

Automation further increases machine flexibility, with options to integrate robots and automatic doors now, or fully automate as you grow.

PERFORMANCE & PRODUCTIVITY

Rated for solid carbide, brazed and indexable carbide tools, UNE machines have the power to leverage the latest tools on the market to drill through the most challenging materials. This enables you to have the confidence in taking on jobs that were once thought impossible, while increasing your competitive advantage.

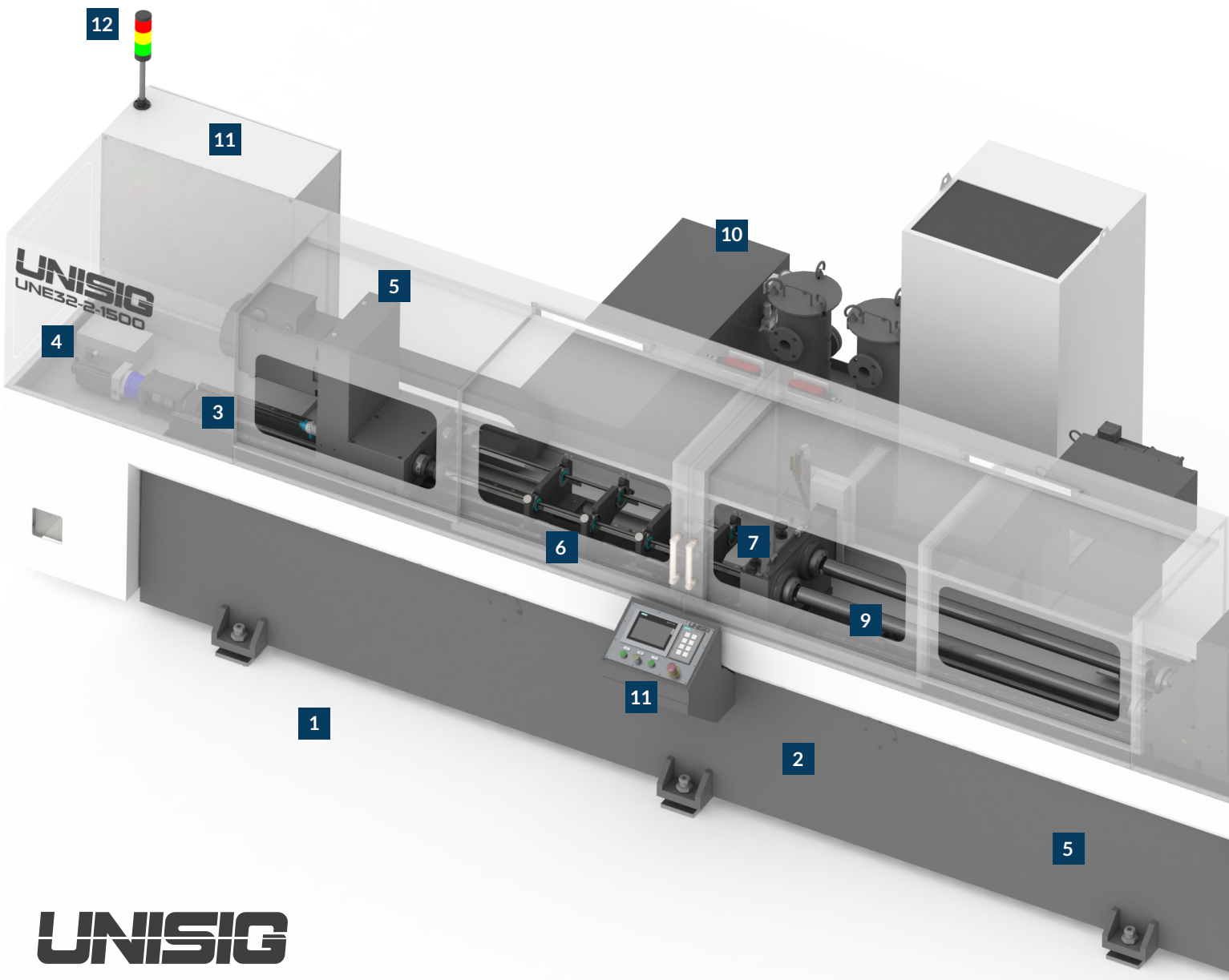
Whether you are drilling challenging, critical components that require extreme straightness and finished hole tolerances, or high-volume production parts where throughput is the key to ensuring profitability, UNE machines can deliver.

EFFORTLESS OPERATION

UNE machines are engineered to make life easier for the operator. Internal automation, an ergonomic design, and intuitive controls reduce repetitive tasks and fatigue, all within a clean and quiet working environment. This frees up time for operators to take on more value-added tasks.

With available communication packages, you can monitor the machine's performance continuously. And should the need arise for maintenance, we have readily-available parts, assuring your machine will consistently perform and produce top-quality parts for years to come.

UNE Series Features



UNISIG

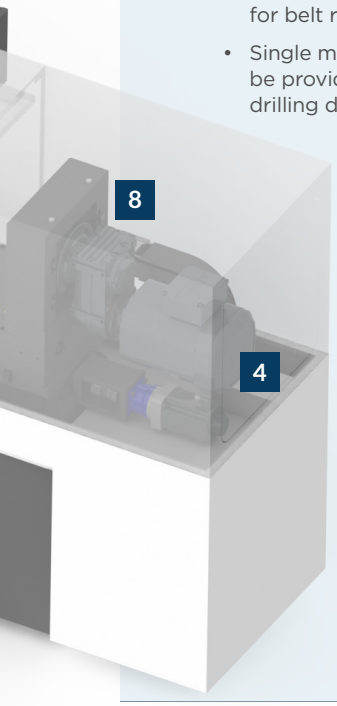
1 Design
- Compact footprint to minimize floorspace use and provide easy maintenance access
- Full enclosure - leak free, clean, contained operation with well lit interior

2 Machine Base
- FEA optimized structure - does not require special foundation to achieve accuracy
- Machined on five sides in single setup for highest overall precision
- 3-point leveling system to further simplify installation and alignment for machines rated up to 1,000 mm designated workpiece length

3 Guideways
- High accuracy class, 6-row ball guideways
- Load capacity and stiffness for high thrust from large tools
- Low friction and no stick-slip during fine feedrates for small tools

4 Feed Systems
- Precision ground ballscrew drives for accurate positioning
- Servo drive with absolute position feedback - eliminates homing on power cycle
- Planetary gear reducers for optimal motion control and high thrust

5 Tool Headstock
- Designed to take advantage of performance gains using solid carbide and indexable gundrills
- Cartridge spindle constructed for long life and quick service
- High-performance spindle motor with encoder for close speed regulation
- Wide operating range of motor eliminates need for belt ratio change
- Single motor drives two spindles - full power can be provided to single spindle for extended drilling diameter range



6 Whip Guides
- Supports the tools for drilling the deepest holes with reduced drift
- Easily removed and installed to optimize drill length

7 Chip Box
- Aligns drill bushing to workpiece and captures chips from the drilling process
- Designed to manage long chips from difficult-to-drill materials
- Optimized dimensions work equally well for small and large tools
- Counter-rotating bushing holders and fixed bushing options

8 Work Headstock
- Programmable workpiece length for quick changeover
- Allows counter-rotating workpiece for improved drilled hole concentricity
- Programmable clamp force to match tooling performance
- Twin spindle versions automatically compensate for workpiece length deviations - up to 5 mm (.20 inch)
- Programmable, variable speed to optimize drilling process

9 Workholding
- Wide variety of standard devices to hold various workpiece types and dimensions

10 Coolant System
- Self contained and integrated within the machine footprint
- High-pressure pump for each spindle for highest process reliability
- Cutting oil or water emulsion coolants can be used
- Special mode combines pump output to single spindle for extended drilling range
- Programmable flow delivery with pressure monitoring by the machine controller
- Filtration system with condition display on operator's console
- Refrigerant chillers and heat exchangers to manage coolant temperature

11 Machine Control
- UNISIG deep hole drilling control system powered by Siemens
- High-efficiency regenerative drive systems to reduce energy consumption
- Color touchscreen interface for intuitive setup, process display and diagnostics
- Separate buttons for operation while wearing gloves
- Ethernet for external communication and Industry 4.0 compliance

12 Automation
- Programmable workpiece setup
- Process monitoring with automatic interruption values stored with part program
- Automatic doors to eliminate motion with manual or automatic loading
- Robot-ready machine - compatible with manufacturing cells and robot part handling

System Highlights

CONTROLS

Manufacturers get the most out of their UNE machines through highly capable and intuitive controls. The UNISIG interface gives operators a full process picture at a glance and enables programmable parameters for optimized gundrilling production.

Powered by Siemens, UNISIG controls intelligently provide complete system information, displayed through a rich color interface with touchscreen capabilities. Durable, shop-tested buttons can also be used when wearing gloves. Operators can confidently run UNE machines, relying on full-process monitoring while maximizing their own time and effort.

Programmable functions

- Spindle speed
- Tool feed rate
- Tool positioning
- Workpiece length positioning
- Workpiece spindle speed
- Clamp force
- Coolant flow

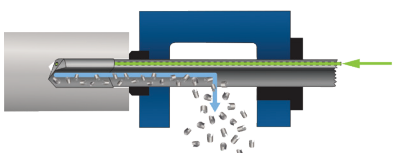
Process monitoring functions

- Tool headstock thrust
- Tool headstock torque
- Coolant pressure

"No other company offers the full service like UNISIG – from machine, to process collaboration, through support."

PROGRAMMABLE FLOW-BASED COOLANT CONTROL

Unlike pressure-based coolant systems, programmable flow-based coolant delivery is designed to provide exactly the right amount of coolant to the tool's cutting edge. This ensures the right flow of coolant is passing through the tool based on the application, while using the resulting pressure as an indicator to detect breakage.



Programmable flow-based coolant – which is standard on UNISIG machines, including the UNE Series – simplifies tool breakage detection. By stopping the cycle before damage occurs and interrupts production, customers save money due to unnecessary downtime.

Value-Added Engineering

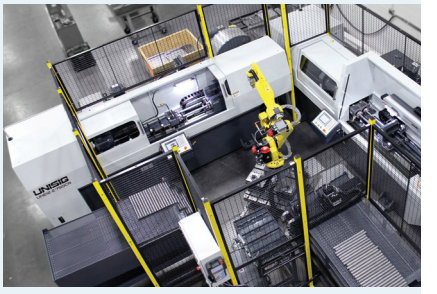
PROCESS COLLABORATION

Our technical team's depth of knowledge gives customers the confidence to let us help steer them toward the correct machine, configuration, tools and options to meet their needs. We can also simultaneously develop the process with the machine assembly. This prepares customers so they have the knowledge to use their machine to complete their current application and apply that knowledge to take on future projects and grow their business.

AUTOMATION

UNISIG has mapped out a path so manufacturers can take advantage of automation, regardless of where they are in the process. We have included standard automation features in every UNE Series machine. For those ready to integrate further, UNISIG has the experience to bring robotic automation and internal automation into your system, now or as you grow.

UNE MACHINE AUTOMATION OPTIONS



Standard Internal Automation
Process monitoring, tool life management, workpiece setup assistance are engineered into all UNE machines.

Optional Internal Automation
Automatic doors can be added to eliminate repetitive motions and reduce steps in each cycle.

Robot-Ready
Robot-ready automation can be used to integrate UNE machines into your existing workcell, or prepare you to add full automation in the future. This gives you the security in knowing your machine can keep up as your business grows.

Full Robotic Automation
UNISIG's experience implementing robotic automation gives manufacturers an efficient solution that handles parts, maximizes cycle times and drives efficiency.

Specifications and Dimensions

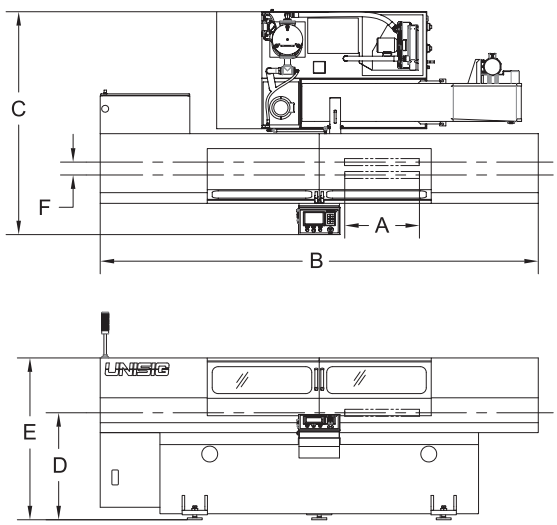
UNE12-2, UNE20-2, UNE25 MACHINES

SPECIFICATIONS

MODEL	UNE12-2	UNE20-2	UNE25
Number of spindles	2	2	1
Drill diameter - max	12 mm 0.5 in	20 mm 0.8 in	25 mm 1.0 in
Drill diameter max, single-spindle mode	19 mm 0.75 in	25 mm 1.0 in	n/a
Drill diameter min	1.4 mm 0.06 in	2.0 mm 0.08 in	2.0 mm 0.08 in
Tool max speed	12,000 RPM	8,000 RPM	8,000 RPM
Work max speed	900 RPM	600 RPM	600 RPM
Rated workpiece designation options		750 mm 29.5 in 1,000 mm 39.4 in 1,500 mm 59.1 in	

DIMENSIONS

RATED WORKPIECE DESIGNATION	750	1000	1500
[A] Workpiece length	750 mm 29.5 in	1,000 mm 39.4 in	1,500 mm 59.1 in
[B] Length	4,400 mm 173.2 in	4,900 mm 192.9 in	6,200 mm 244.1 in
[C] Width		1,925 mm 75.8 in	
[D] Spindle centerline height		1,075 mm 42.3 in	
[E] Enclosure height		1,625 mm 64 in	
[F] Center distance (swing)		130 mm 5.1 in	



UNE NAMING STANDARD

UNE 12 - 2 - 1500

MODEL NUMBER
Max hole diameter in mm

NO. OF SPINDLES
Omit for single spindle

RATED WORKPIECE DESIGNATION
Rated max part length in mm

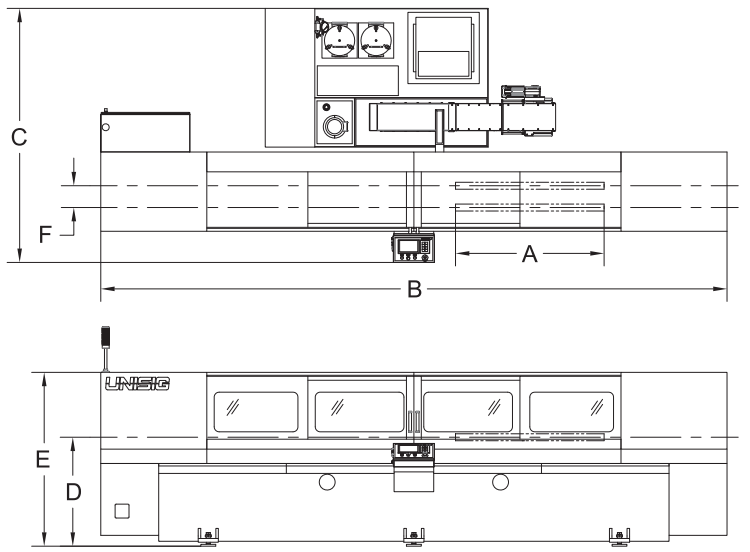
UNE32-2, UNE40 MACHINES

SPECIFICATIONS

MODEL	UNE32-2	UNE40
Number of spindles	2	1
Drill diameter - max	32 mm 1.26 in	40 mm 1.57 in
Drill diameter max, single-spindle mode	40 mm 1.57 in	n/a
Drill diameter min	3.0 mm 0.12 in	3.0 mm 0.12 in
Tool max speed	6,000 RPM	
Work max speed	400 RPM	
Rated workpiece designation options	1,000 mm 39.4 in 1,500 mm 59.1 in 2,000 mm 78.7 in 3,000 mm 118.1 in	

DIMENSIONS

RATED WORKPIECE DESIGNATION	1000	1500	2000	3000
[A] Workpiece length	1,000 mm 39.4 in	1,500 mm 59.1 in	2,000 mm 78.7 in	3,000 mm 118.1 in
[B] Length	5,320 mm 209.4 in	6,320 mm 248.8 in	7,820 mm 307.9 in	10,320 mm 406.3 in
[C] Width	2,250 mm 88.6 in			
[D] Spindle centerline height	1,100 mm 43.3 in			
[E] Enclosure height	1,755 mm 69.1 in			
[F] Center distance (swing)	220 mm 8.7 in			



Productivity Reference

UNE Series machines are rated for all gundrill types

SOLID CARBIDE GUNDRILL TOOLS

Diameter range
0.5 – 12 mm
[0.02 – 0.47 in]

BRAZED GUNDRILL TOOLS

Diameter range
2.0 – 40+ mm
[0.08 – 1.57+ in]

INDEXABLE GUNDRILL TOOLS

Diameter range
13.5 – 40+ mm
[0.53 – 1.57+ in]

PRODUCTIVITY ESTIMATES

This table displays real world estimates for the gundrilling operation. Detailed process plans consider required production steps, unique tolerances or materials and integrated automation to reach production targets, which are proved out through testing and technical training.

PRODUCTIVITY ESTIMATE		LEGACY EQUIPMENT BRAZED TIP GUNDRILL		UNISIG UNE BRAZED TIP GUNDRILL		UNISIG UNE INDEXABLE GUNDRILL	
Workpiece Material		42CrMo4 (ASTM 4140) Hardened to 29 - 32 HRC					
Drill Diameter	mm (in)	16 (0.63)					
Drill Depth	mm (in)	500 (20)					
Cutting Speed	m/min (ft/min)	60 (197)		70 (230)		90 (295)	
Spindle Speed	rev/min	1,194		1,393		1,790	
Chip Load	mm/rev (in/rev)	0.030 (0.0012)		0.040 (0.0016)		0.090 (0.0035)	
Drilling Feed Rate	mm/min (in/min)	36 (1.4)		56 (2.2)		161 (6.3)	
Drilling Cycle Time	min	14.0		9.0		3.1	
Number of Spindles	**n**	**1**	**2**	**1**	**2**	**1**	**2**
Workpiece Exchange Time	min	0.75	1.0	0.25	0.5	0.25	0.5
Total Cycle Time	min	14.7	15.0	9.2	9.5	3.4	3.6
Effective Cycle Time	min	14.7	7.5	9.2	4.7	3.4	1.8
Gross Production Rate	**parts/hour**	**4.1**	**8.0**	**6.5**	**12.7**	**17.9**	**33.3**
Hours per Year*	hours	2,000					
Gross Annual Production Per Shift	parts/year	8,156	16,040	13,007	25,327	35,791	66,615
Production Efficiency	%	70%		85%		85%	
Net Annual Production per Shift	**parts/year**	**5,709**	**11,228**	**11,056**	**21,528**	**30,422**	**56,623**
Net Monthly Production per Shift	**parts/month**	**476**	**936**	**921**	**1,794**	**2,535**	**4,719**
Productivity Improvement		**Baseline (1x)**		**1.9x**		**5.3x**	

*based on (50) 40-hour weeks

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Find full product details, videos and technical information at unisig.com.