

Overview of DG19

Technical Specifications

CHARACTERISTIC	DETAILS
MACHINE	
• Machine type	Manual PCD Grinding Machine
• Dimensions - main machine (w x L x h)	1500mm x 1600mm x 2,050mm
• Total machine weight	2500kg
CONTROL SYSTEM	
• Industrial PC + touch screen	Yes
• Blocks per tool program	25 maximum
• Block records	
- wheel speed	Yes
- wheel direction	Yes
- wheel position	Yes
- wheel stroke amplitude	Yes
• Internet connection	Via ethernet port / wifi
• Software upgrades, maintenance via Internet	Yes
OPTICS	
• Options available	Vision Inspection System
• Optics adjustment	X & Y slides = 30mm; Z slide (focus) = 50mm
WHEEL SPINDLE	
• Wheel spindle drive power	2.2kW
• Speed range (if no inverter supplied)	High speed - 3000rpm, Low speed - 2,000rpm
WHEEL IN-FEED	
• By Servo Motor Via Manual Pulse Generator	Yes
• In-feed travel available	65mm
• In-feed travel resolution	1µm
• Typical roughing in-feed rate on PCD	12 - 15µm/sec
• Typical finishing in-feed rate on PCD	3 - 5µm/sec
• Grinding pressure adjustment (Control By Servo Motor)	90 Newtons minimum to be 'locked'
WHEEL STROKE	
• Maximum stroke length	420mm
• Wheel stroke frequency	0 - 100 Hz (typically used at 5Hz)
WHEEL STROKE POSITION	
• By hand wheel (Manual Pulse Generator)	Yes
• Wheel stroke position adjustment	Repeatability 5µm
WORK TABLE - 'BOOM'	
• Manually adjusted via one hand wheel	Yes
• Inclination (for conical clearance)	0 - 22 degrees
CROSS SLIDE	
• Pivot motion	Manual
• Pivot movement	200 degrees
• Pivot setting	via vernier stops (4 available)
• Pivot position accuracy	+/- 1 minute of arc (readout on touch screen)
• Maximum tool radius	0 - 35mm
TOOL POST	
• Tool post hand	Right hand fitted as standard
• Tool nest format	Square fitted as standard
• Tool nest height adjustment	Yes
• Tool nest tilt (cylindrical clearance)	± 20 degrees
GRINDING WHEELS	
• Wheels bond type recommended	Vitrified bond
• Format	Usually 6A2
• Wheel grit size for roughing PCD	Typically D25 - D35
• Wheel grit size for finishing PCD	Typically D5 - D10
• Wheel arbor	Required; allows rapid wheel changes
DRESSING	
• Method	By dressing stick
• Stick recommended	Aluminium Oxide, 20mm x 20mm, 400#
LUBRICATION	
• By Auto motor pump to nipples	Yes (By Auto Via Cycle setting time)
COOLANT UNIT	
• Coolant unit dimensions (w x d x h)	880mm x 540mm x 530mm
• Coolant unit weight	118kg
• Coolant pump power	0.12kW
• Coolant tank capacity	80 litres
• Coolant ump flow rate	50 l/min
ELECTRICAL REQUIREMENTS	
• Electrical Requirements	3 phase, 415v or 220v
OPTIONAL EXTRAS - NOT A COMPLETE LISTING	
1 Inverter for wheel spindle speed control	Available
2 DG 19 Coning & Indexing Fixture	Yes - further information available
- Face plate for adapters	ISO,MK, Hydraulic chucks etc
- Maximum diameter	220mm
- Maximum tool length	150mm from face plate
3 Centralised lubrication	Available
4 Tool nests	Many types available; tilting, round, square, V etc.
5 Left hand tool post	Available
6 AD1 - Digital pivot angle read-out	Available
7 Auto tool air-blast	Available
8 Grinding wheels	Available
9 Quick- change Wheel arbors	Available



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Diamond Tool Grinding Machine
Version1.9





Ultra Rigid Grinding
Machine structure come with visual inspection system on extra large touch screen monitor display.

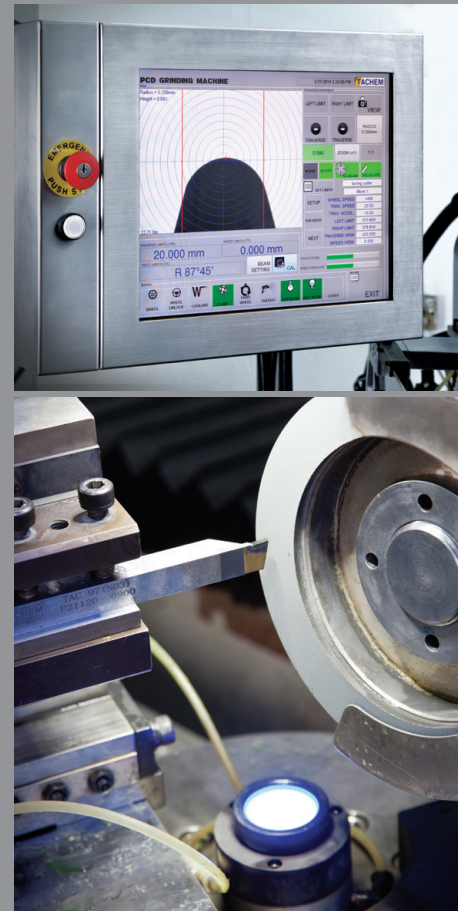
TACHEM DG19 is a specialised grinding machine designed to grind specialty cutting tools made of ultra-hard materials such as:

- Polycrystalline Diamond
- Chemical Vapour Deposited Diamond
- Cubic Boron Nitride
- Ceramic Metal Composite
- Ceramic
- Tungsten Carbide
- Single Crystal Diamond and Natural Diamond (With Special Fixture)

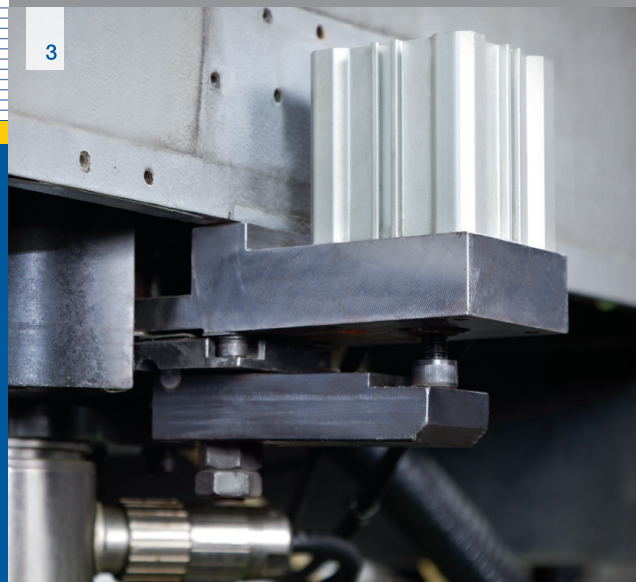
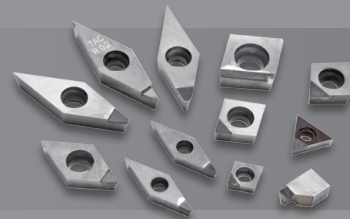
TACHEM DG19 can grind most cutting tools in various formats, for example:

- Cutting Inserts, most ISO shapes, Full radius inserts.
- Endmills, Ballnose, Bullnose and Hi-feed tools.
- Reamers, Step reamers,
- High Precision turning bites
- High Precision Grooving tools

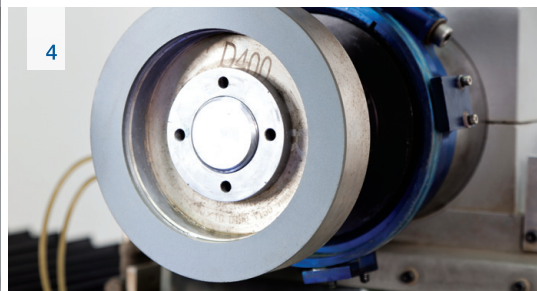
17" heavy duty industrial touch screen monitor.
In process dimensional measurement.



High Precision
Grooving tools width
to 2µm accuracy.



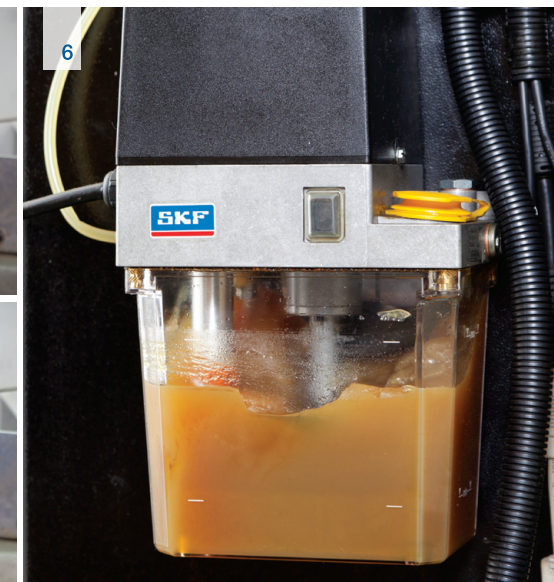
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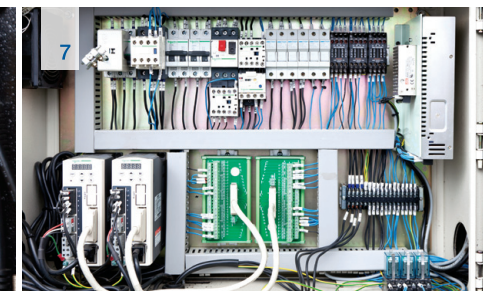
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3. High Power Pneumatic lock to hold pivot position.
4. 6A2 vitrified diamond used for various grinding process.
5. Quick change wheel spindle interface system.
6. High quality central lubrication system.
7. Proper and tidy electrical cabinet layout.

DG19

1. Perfect Radius grinding.
2. High precision diameter control via cylindrical grinding.



TACHEM DG19 is designed based on super structure concept that proven to be Ultra-rigid machine structure that is needed to minimize machine structure deflection encountered during high grinding force of PCD inserts grinding. A rigid machine structure reduces grinding wheel uneven wear that cause subsequence vibration and extreme difficulties in tool corner radius grinding process.

TACHEM DG19 has been experience based designed by a professional PCD tools maker. All difficulties and advantages of many machine makes are reconsidered during design stage. Experiences in tool holders, special jig and fixtures are added advantages of the technology package options that can be provided from TACHEM.

A specialty On-Line non-contact measurement system is included in **DG19**. Real time vision of the tool during grinding process is crucial during miniature radius grinding, ie, R 0.05 or smaller.

Machine features:

- Industrial PC control system
- User friendly and very easy programming
- Very large, 17inch industrial grade touch screen built in stainless steel casing.
- All axis can be programmed numerically
- Grinding Wheel in feed can be programmed by manual mode or auto infeed in steps of 0.001mm
- Spindle oscillation can be programmed to maximum stroke of 250 mm, in steps of 0.001mm
- High power pneumatic braking system in Pivot axis, 400 Nm
- Rigid machine structure ensures minimum deflection during flank grinding of PCD inserts and large end face of PCD Endmills or Facemills.
- Semi-Auto Wheel Changing allows easy wheel change during roughing and finishing grinding of PCD inserts ensures absolute correct PCD tip positioning.
- Special high rigidity and accuracy rotary indexer can be used to grind high precision PCD reamer diameter. Accuracy achievable in 2 microns.