

JONES &
SHIPMAN

ULTRAMAT

Cylindrical Grinder Range

GE-Fanuc® Touchscreen or CNC Control, AC Drives & Motors
300 x 650mm or 300 x 1000mm Grinding Capacity





DESIGN & BUILD

Available with easy to use 'Self Teach' Touch Panel Technology or Operator Friendly CNC with Windows® based software. Ultramat can accommodate one off, batch or high volume production and will hold the tightest of tolerances. Robust construction and designed with the ability to incorporate the latest developments in gauging and autoloading ensure that Ultramat from Jones & Shipman will fulfil your grinding needs.

Wheelhead - Plain (straight approach)

A robust external only wheelhead featuring a belt driven angular contact rolling element bearing cartridge and wheelguards with retracting lower wheel safety visors.

- Wheels up to 500mm diameter
- 7.5 kW Motor minimum
- Programmable Constant Peripheral Wheel Speed
- Wheel Speeds 45 m/s and 63 m/s or more available



Plain (straight approach) wheelhead

Slideways

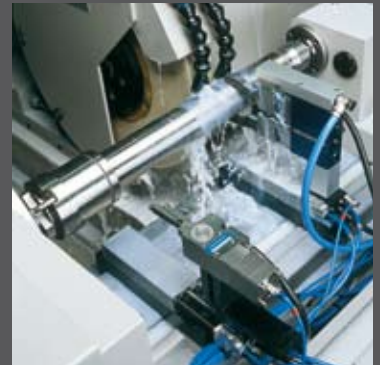
Hand scraped vee and flat slideways are provided for both cast machine table and wheelhead back slide. Turcite coated bearing surfaces, automatically lubricated, assure low friction movement. Both axes are ball screw driven and controlled by A.C. servo motors with air purged, linear scales.

Workhead and Tailstock

The live and dead single spindle workhead contains robust, high precision tapered roller bearings for superior stiffness.

A variable speed AC servo drive to the spindle with encoder ensures fast and accurate spindle orientation. The machine table slide swivels for taper correction.

A high accuracy taper correction tailstock can also be provided as an option, if required. Thermal stability in the work area is ensured by porting coolant through the structure of the workhead, tailstock and on a plain spindle machine through the wheelhead.



Wheelhead - Universal (swivelling)

This wheelhead incorporates independent external and internal wheelspindle drives. The hardened and ground external wheelspindle can accommodate a grinding wheel at either end. For normal cylindrical grinding operations a 400 x 50mm wheel is mounted the left hand side, whilst for face and some form grinding operations a 300 x 25mm wheel can be mounted on the right hand side. For ease of set-up when swivelling the wheelhead, an airlift facility is provided. Further options include Angle Head and twin 'B' or full 'B' axis wheelheads both with Holroyd high precision worm & wheel assemblies for infinitely variable rotation.



'B' Axis



Twin 'B' Axis

CONTROLS TO SUIT ALL APPLICATIONS

Ultramat Easy

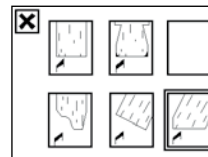
The Ultramat Easy has been specifically developed in response to industry demands for a precision grinder that offers the advantages of microprocessor control without the complexity of traditional CNC systems. The new operator interface is extremely simple and easy-to-use requiring no computer knowledge.

Easy to use GE-Fanuc® Quickpanel Jr® 'Touch Screen', Electronic Handwheels with DRO displays and membrane type touch keys enable the operator to quickly produce his first component.

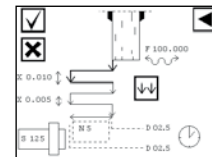
A welcome addition to the Ultramat range it allies the technical innovations of both Jones & Shipman and GE-Fanuc® with control via a 'Powermate' processor from the unique GE-Fanuc® 'Quickpanel Jr®' intelligent interface.

Ultramat Easy offers the operator three simple options, Manual Grind, Single Cycle, or Link individual dress and grind cycles into a repeatable combination.

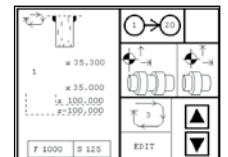
On a Universal machine full internal features, including multi-bore grinding, are also available.



Dress cycle select



Traverse Grind feed rates



Link cycles

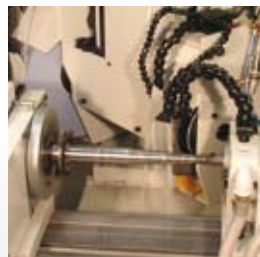
Ultramat CNC



Autoloading



Thread Grinding



Multiwheel Option



Form Grinding



Form Dressing

Jones & Shipman Developed Windows® Programming

A full suite of dressing and grinding programs is available for the Ultramat CNC operator. Easy to follow Windows® set up pages allow the operator to digitise diamond and wheel positions and by a minimum of mouse or softkey/keyboard inputs produce a finished program.

Graphical images prompt the operator and spreadsheet style programming ensures quick and simple input. The option of ISO programming is also available if required.

Ease of operation and Windows® based programming make Ultramat CNC the operator's choice.

A GE-Fanuc® CNC Intelligent Terminal, with associated GE-Fanuc® digital AC servos and a Windows® user interface provide the machine control.

All control gear is housed in an easily accessible cabinet incorporated into the machine. A temperature controlled cabinet option is available.

Remote diagnostics available by telephone or internet.



SPECIFICATIONS - ULTRAMAT RANGE

General Specifications

Maximum length between centres:	650mm
Two options available	Option 1 Option 2
Centre height	650mm 1000mm 160mm
Maximum workpiece weight between centres	100kg

Wheelslide (X Axis)

Total infeed	260mm
Maximum traverse speed	6m/min 100mm
Maximum programmable diametrical infeed rate per min.	
Minimum programmable increment Ø, CNC models	0.0001mm
Minimum programmable increment Ø, Easy Grind models	0.001mm
Electronic Handwheel increments, CNC models	0.0001, 0.001, 0.01, 0.1mm
Electronic Handwheel increments, Easy models	0.001, 0.01, 0.1mm

Tableslide (Z Axis)

Maximum stroke length	750mm
Option 1 - 650mm between centres model	1150mm
Option 2 - 1000mm between centres model	
Maximum traverse speed	12m/min
Minimum programmable increment, CNC models	0.0001mm
Minimum programmable increment, Easy models	0.001mm
Electronic Handwheel increments, CNC models	0.0001, 0.001, 0.01, 0.1mm
Electronic Handwheel increments, Easy models	0.001, 0.01, 0.1mm
Table swivel clockwise/anticlockwise, inclusive option 1	16° / 18°
Table swivel clockwise/anticlockwise, inclusive option 2	11° / 16°

Wheelheads

Plain (Straight approach)

Grinding wheel	Diameter maximum	450mm
	Width (Option)	50mm (80mm)
	Bore	203mm
Wheel speed		45m/s
Motor power		7.5 kW

Swivelling (Universal)

Grinding wheel	Diameter maximum	350mm
Left hand	Width	50mm
	Bore	127mm
Wheel speed		33m/s
Motor power		4 kW

Grinding wheel,	Diameter maximum	300mm
Right hand (option)	Width	25mm
	Bore	127mm
Wheel speed		33m/s
Motor power		4 kW

Internal grinding spindles (Option)		
10 - 20mm Ø capacity (Option),	spindle speed	29,000 rpm
25 - 40mm Ø capacity (Standard),	spindle speed	16,500 rpm
50 - 65mm Ø capacity (Option),	spindle speed	10,500 rpm
Internal spindle bracket bore		80mm
Motor power		2.2 kW

Workheads

Dead centre fixed base (Standard)	
Speed range, continuously variable, rpm	0 - 660
Spindle taper	5MT
Output torque, (continuous rating)	27 Nm
Motor power	1,1 kW
Live & dead centre, swivel base (Option)	
Speed range, continuously variable, rpm	0 - 660
Spindle taper	5MT
Output torque, (continuous rating)	27 Nm
Motor power	1,1 kW
Swivel angle	-15° - +90°

Tailstocks

Plain tailstock (Standard)	
Poppet diameter	50mm
Poppet taper	3MT
Centre travel	30mm
Poppet pressure, adjustable	60 - 410 N

Taper Control tailstock (Option)

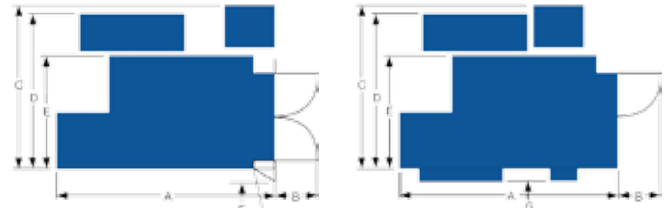
Poppet diameter	50mm
Poppet taper	3MT
Centre travel	30mm
Poppet pressure, adjustable	60 - 410 N
Maximum adjustment on diameter	0,2mm
Smallest diametrical graduation	0,0005mm

Control Systems

Ultramat Easy Grind GE-Fanuc® Powermate® motion control	2
Number of axes controlled	
Ultramat CNC - GE-Fanuc® 210i control	3
Number of axes controlled	

Shipping Dimensions

Net weight, approximate	
Ultramat Easy, 650mm between centres	4800 kg
Ultramat Easy, 1000mm between centres	5250 kg
Ultramat CNC, 650mm between centres	4900 kg
Ultramat CNC, 1000mm between centres	5350 kg
Gross weight, approximate	
Ultramat Easy, 650mm between centres	5300 kg
Ultramat Easy, 1000mm between centres	5750 kg
Ultramat CNC, 650mm between centres	5400 kg
Ultramat CNC, 1000mm between centres	5850 kg
Shipping dimensions, approximate	
Ultramat Easy, 650mm between centres	14,55m ³
Ultramat Easy, 1000mm between centres	16,70m ³
Ultramat CNC, 650mm between centres	15,60m ³
Ultramat CNC, 1000mm between centres	17,88m ³



Ultramat CNC 650 Model	1000 Model	Ultramat 'Easy Grind' 650 Model	1000 Model
A - 3080mm	A - 3835mm	A - 2785mm	A - 3540mm
B - 675mm	B - 807mm	B - 883mm	B - 883mm
C - 2637mm	C - 2480mm	C - 2445mm	C - 2445mm
D - 2185mm	D - 2400mm	D - 2185mm	D - 2185mm
E - 1840mm	E - 1840mm	E - 1840mm	E - 1840mm
F - 127mm	H - 1541mm	G - 289mm	G - 289mm

Machine Height - 1915mm

Performance

Repeatability
X and Z axis repeatability 0,002mm to 6 Sigma all models

Roundness
Dead Centres 0,00025mm LSC*
Live Spindle 0,0005mm LSC*
* Least square circle (using standard wheel and hardened test piece).

Surface Finish
0,05µm Ra (Using standard wheel and hardened test piece, improved Ra values can be obtained by using selected grades of grinding wheels applicable to the material being ground).

Parallelism Parallel to Convex
650 model - 0,005mm, using 650 x 100mm test bar
1000 model - 0,007mm, using 1000 x 100mm test bar

CUSTOMER WARRANTY

All Jones & Shipman precision grinders come with a minimum twelve months comprehensive Warranty covering both parts and service.

Further information on Customer Warranty is detailed in our Conditions of Sale, subject to amendments for particular models and the specific markets into which they are sold.

Our endeavour is to supply machines that embody the latest developments in design and therefore, whilst the illustrations, text and specifications contained within this brochure are correct at the time of printing, we reserve the right to modify the design and construction of machines and equipment at any time without notice.

In the interests of safety, customers are reminded that when purchasing any technical product for use at work (or otherwise), any additional or up-to-date information and guidance, which it has not been possible to include in the publication, should be obtained by you from your local sales office in relation to the suitability and the safe and proper use of the product. All relevant information and guidance must be passed on by you to the person engaged in, or likely to be affected by or responsible for the use of the product.

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