

Webster & Bennett

MILLENNIUM

Webster



Bennett

Vertical
Turning
Machines

&

Vertical
Turning &
Machining
Centres

1887

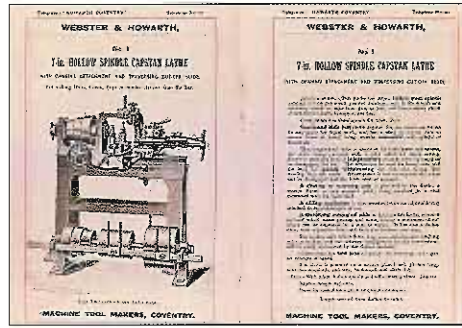
Manufactured in Coventry, England,
by Webster & Bennett Limited

The world's best known
manufacturer of Vertical
Turning Machines

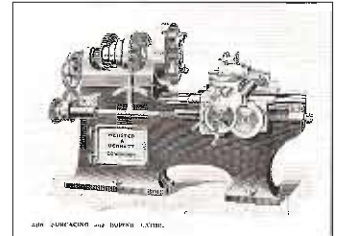
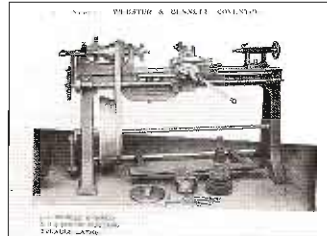
More than 10,000
installations in more than
50 countries

from the beginning

1887
Webster & Howarth



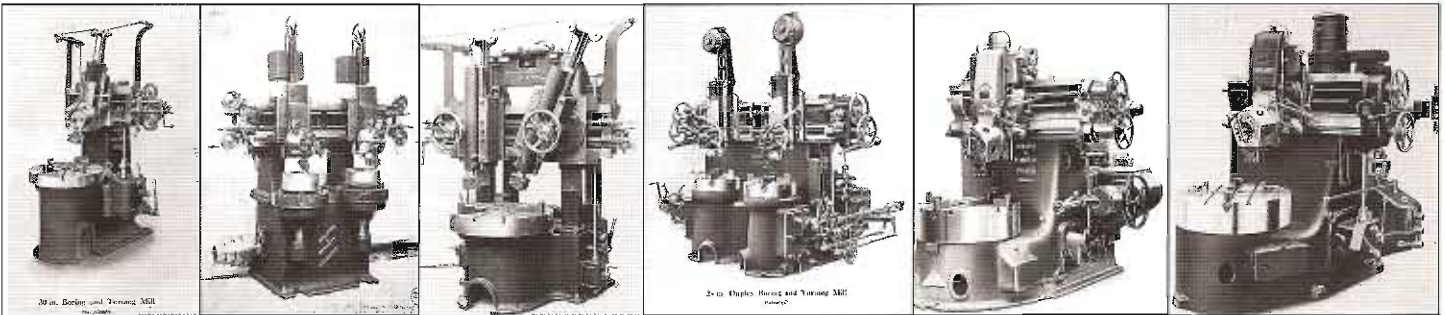
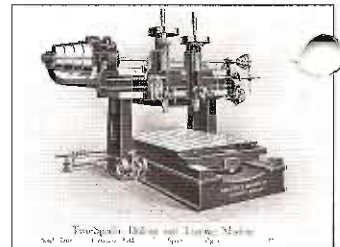
1895
Webster Howarth & Bennett



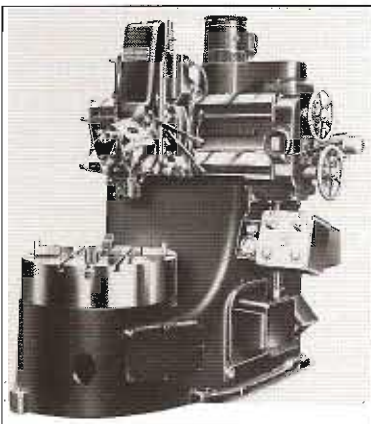
1906
Webster & Bennett Limited

For the next 17 years Webster & Bennett Ltd produced a variety of machine tools including lathes, capstan lathes, plano milling machines and the early examples of what was to become the world's best known range of Vertical Turning and Boring Lathes -

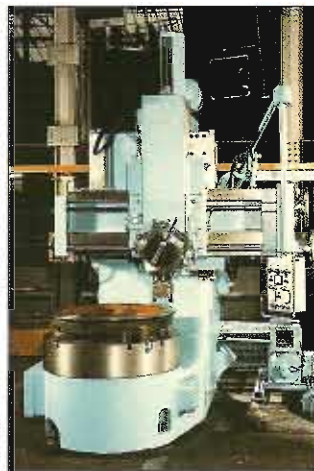
ONE AFTER THE OTHER - LEADING THE WAY



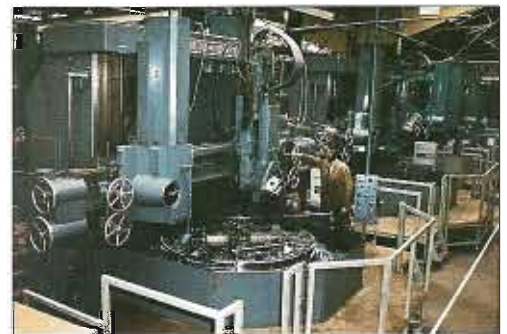
In 1923 Webster & Bennett became the first machine tool manufacturer specialising only in Vertical Turning Machines and produced the conventional machines which were to become class leaders in the world market with more than 10,000 installations - the world's largest customer base.



DH & EH Types
5981 installed between 1950 & 1966



M, EM, V & R Types
1318 installed between 1965 & 1984



DCH & DCM Types
88 installed between 1962 & 1980

from the beginning of NC & CNC

1967

Webster & Bennett introduce..

the FRNC and ERNC models, producing 168 between 1967 and 1981.

1980

Webster & Bennett introduce..



New CNC models - the medium duty 'T' Range and the heavy duty 'S' range which are quickly recognised as class leaders in the world market with more than 100 installations. Unfortunately in 1984 Webster & Bennett is merged into the Wickman factory and for 11 years production and development is virtually nothing.

In 1993 the company has new owners and despite the ongoing demand for 'T' and 'S' machines a totally new Webster & Bennett is developed culminating in the launch of the Millennium 4 Series machine at Mach 96 NEC Birmingham.



1996

Webster & Bennett introduce..the Millennium



1887

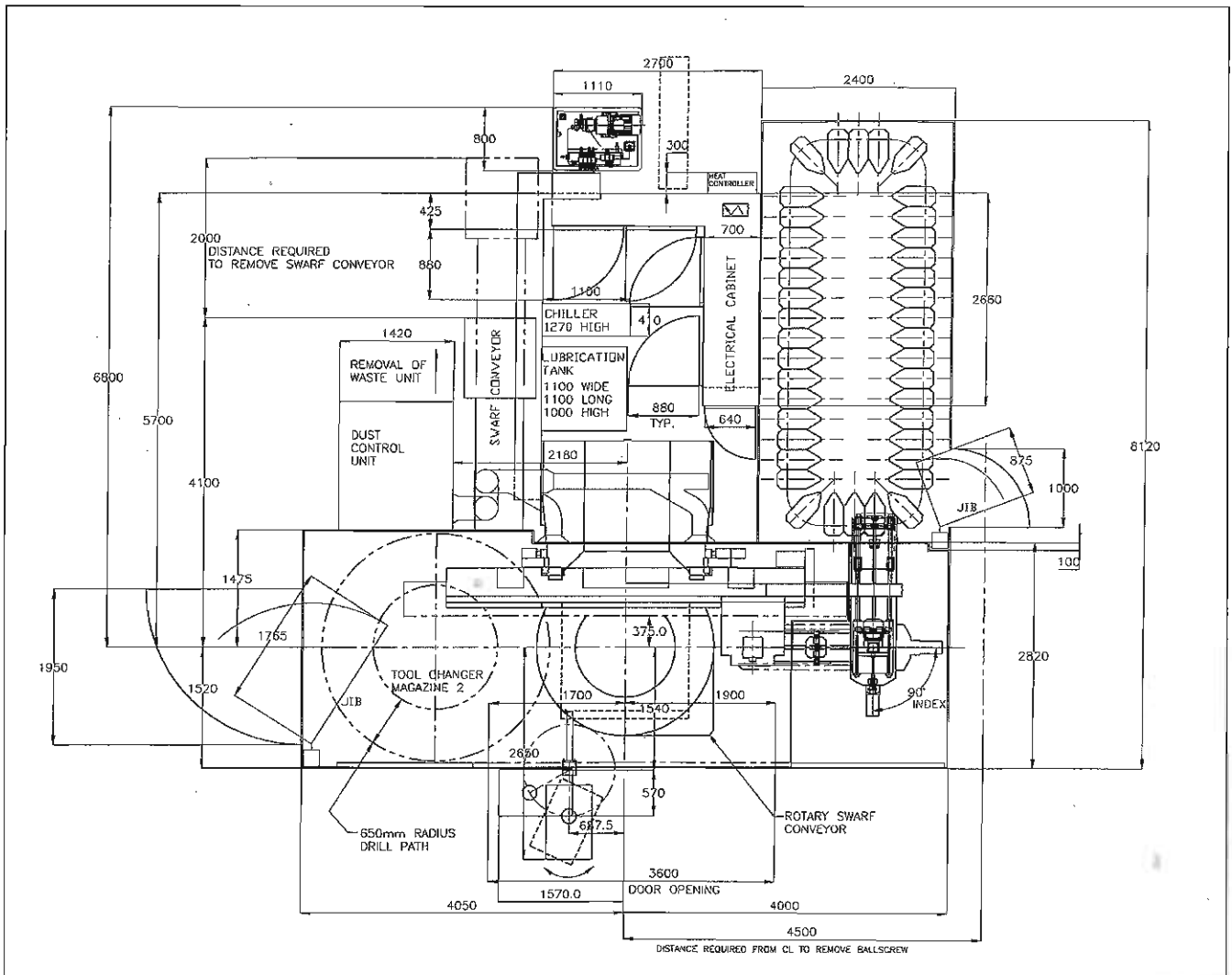
"A glorious history is only of value now if it leads us to a glorious future" - Michel Muller 1993 upon acquiring Webster & Bennett Ltd.

The Millennium 4 Series



A MILLENNIUM 4-160/220S-L with Live Spindle, C axis, 18 tool ATC, 40 tool chain magazine, hydraulic chuck, oil mist removal, totally enclosed guarding (not shown), Siemens 840D CNC.

(GEC Alsthom Gears - Rugby)



40-60 tons of high precision machine tool



A MILLENNIUM 4-200/250X boring and turning Oilfield Wellhead Valve Components with extra workpiece height capacity 2800mm. 18 tool ATC, 200mm square ram for small bores. Renishaw work and tool probes. Fanuc 18TB CNC.

(Belmar Ltd - Aberdeen).

A MILLENNIUM 4-160/220T-L with Live Spindle, C axis, 18 tool ATC, Right Angle Milling Head, Fanuc 18TB CNC, Renishaw Tool and Work Probes.

(Nordberg Pty, Johannesburg R.S.A.)

The Millennium Twin Pallet System APS11 is to be retrofitted.

Willie Heunes

Procurement & Supply Manager, Nordberg Pty

"The Millennium 160/220 has proven to set new standards in the market of V.T.L.'s. The 250x250mm square ram and large diameter ball screws are some of the excellent features of the machine tool. The floor mounted tool carousel (18 stations) handles heavy duty toolholders and boring bars, an essential part of Heavy Engineering. Combined with a Renishaw Tool offset probe accuracies in the order of 10µm per metre are obtainable. Table speeds of 440 rpm with weights in excess of 5 ton is easily obtainable. Cut sizes of 16mm per side at 1.6mm feed per revolution on AISI 4340



material placed only 50% load on the main drive. C axis position accuracy is very high and combined with the live tool, milling and drilling characteristics are good.

Since installation of the new machine tool our floor to floor lead time has reduced by 60% versus conventional machining times. The machine tool acts as a flexible manufacturing cell in conjunction with the Renishaw workpiece inspection probe, making it a highly valuable asset in any machine shop."



Tool Probing



Work Probing



Undercut Turning



Right Angle Milling

Some of the structural details which help make the **MILLENNIUM** such a superior machine tool

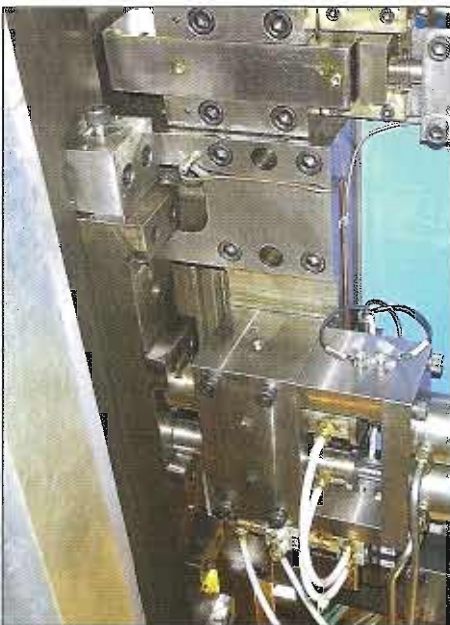


The **BASE** and **MAIN DRIVE**

- Grade 300 close grained cast iron, 20 tons tensile
- Chain drive - silent, powerful, reliable
- Timken precision cross roller bearing - a proven quality, proven performance, proven reliability
- A superbly stable drive

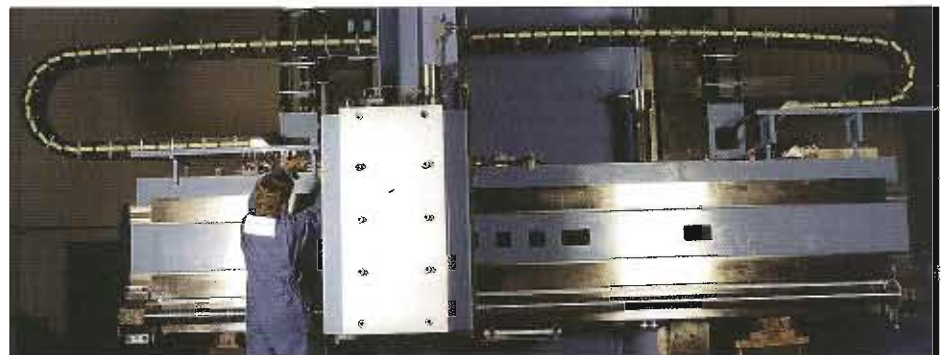
The **COLUMN**

- A 3 piece structure. The outer columns are huge structures, grade 300 close grained cast iron, 20 tons tensile, to which are bolted and dowelled precision ground guideways for the cross rail elevation.
- A centre column locks the outer columns together to produce a substantial column unit weighing 27000/35000 kgs, according to model
- This structure enables the Millennium to offer high performance on workpieces up to 2800mm high



The **CROSS SLIDE**

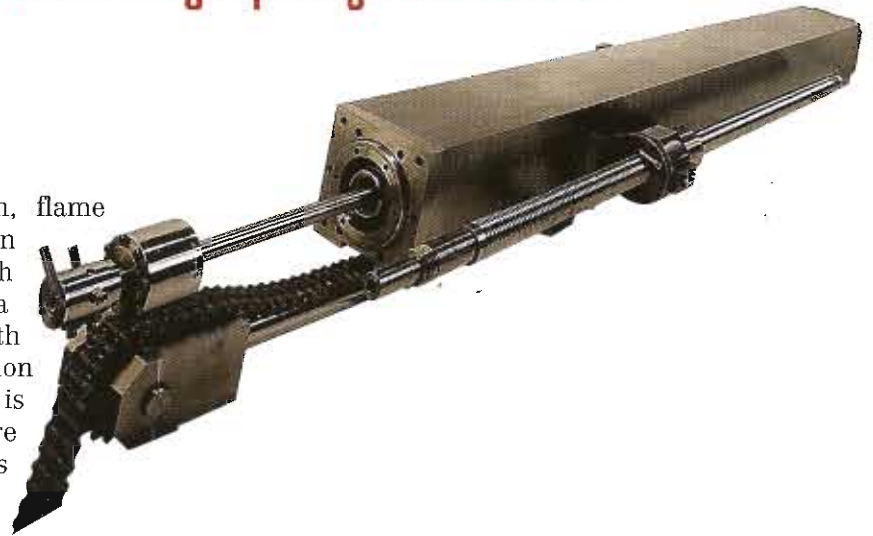
A grade 300 close grained iron casting, 20 ton tensile. Precision ground hardened guideways. Mating surfaces and gibs are lined with turcite. A powerful and heavy duty cross rail latching system ensures cross rail positional accuracy.



Some of the detail which contributes towards the production of a true high quality machine tool

The RAM & LIVE SPINDLE

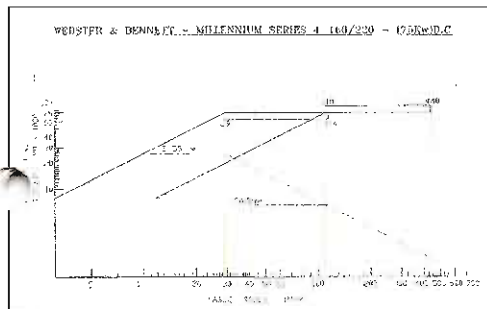
The 250mm square EN8 forged steel ram, flame hardened and precision ground, is mounted in a rigid close grained Meehanite GD275 high quality casting. The ram is supported in a housing whose guideways are lined with 1.1/4mm 'Turcite' material having low friction and anti stick-slip characteristics. The slide is fitted with 'Turcite' faced gib strips to ensure accurate and efficient operation and includes an adjustment facility to compensate for wear.



The live spindle - a 18.5/22 kW A.C. spindle drive motor is mounted on the top of the ram and connected to a hollow drive shaft through the centre of the ram. The front mounted cartridge unit is designed for speeds up to 4000 rpm. The spindle is mounted in high precision angular contact bearings grease lubricated. Driven tools are retained using DIN standard pull studs and are located by a 50 ISO taper.



Static tools are retained by 4 hydraulically actuated wedge lock clamping elements to ensure high rigidity and accuracy.



A Millennium 4-160/220 with 75 kw DC motor

FULL USE OF POWER

The Millennium uses all the power over most of its speed range. The choice of motors and gearboxes provides exceptional torque power bands.

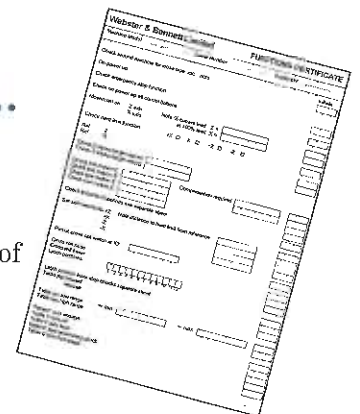
The proof is in the performance..



The Millennium is tested throughout its total range of working and is provided with a

- FUNCTIONS TEST CERTIFICATE
- OPERATING ACCURACY CERTIFICATE.

Laser checking and calibration is used extensively.



The Millennium 3 Series

*Beautiful and new.....
..... but already
PROVEN.*



The qualities of the MILLENNIUM 3 SERIES will excite major companies and quality subcontractors in these industries -

- Aerospace
- Aero Engine Repair
- Railway
- Defence
- Foundry
- Pump
- Valve and General Engineering

A 'pre launch' order book from some of the world's great engineering names is now being extended by the orders from well known subcontract engineering companies.

The MILLENNIUM 3 SERIES - 2 frame sizes

- (a) 3-120/150** 1200mm table, 1800mm swing,
1200mm height (option 1500mm)
37.5 kw DC (continuous duty)
(option 50 kw).
Steel table. 580 rpm.
Fanuc 18Ti or Siemens 840D CNC
- (b) 3-175/210.** 1750mm table, 2100mm swing,
1200mm height (option 1500mm)
37.5 kw DC (continuous duty)
(option 50 kw)
Steel table. 400 rpm.
Fanuc 18Ti or Siemens 840D CNC

- 200mm square forged steel ram to all models
- 11/15 kw live tooling option
- Very accurate 'C' axis table drive

SUPERB CHOICE OF AUTOMATIC TOOLCHANGERS
AND TWIN AND MULTI PALLET SYSTEMS

Webster & Bennett build only Vertical Turning Machines and have done since 1923.
The world's best known manufacturer of Vertical Turning Machines is also known as

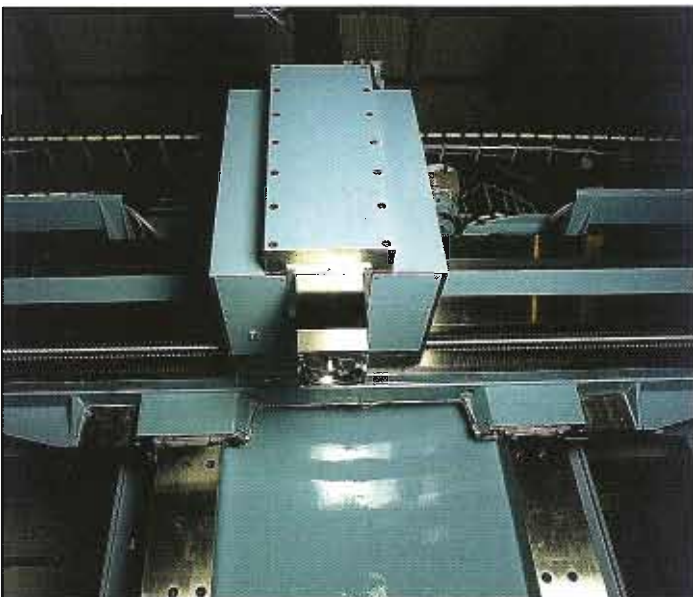
The World's specialist in Vertical Turning

High Precision, High Performance, Versatile like its big brother - the 4 series,
- the 3 series Millennium has quality stamped all over it.



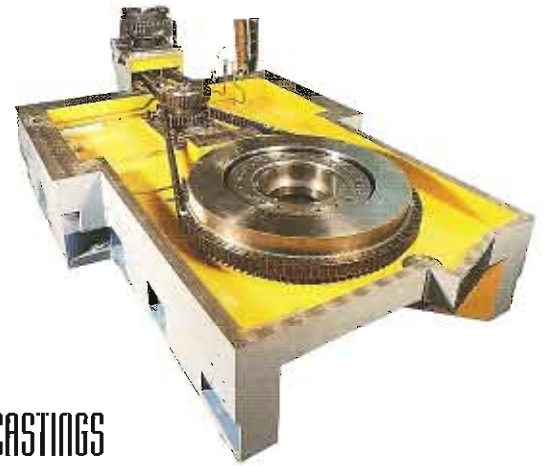
THE RAM & LIVE SPINDLE

The 200mm square hardened and ground forged steel ram is mounted in a rigid close grained high quality casting Meehanite Grade GD275. The ram is supported in a housing whose guideways are lined with 'Turcite' material having low friction and anti stick-slip characteristics. The slide is fitted with 'Turcite' faced gib strips to ensure accurate and efficient operation and includes an adjustment facility to compensate for wear. Tooling is located on a 175 dia. spigot and radial tenon locations, and clamped using DIN standard pull stud. A 60 taper ram bore is also offered as an option for machines without Live Spindles.



THE MAJOR CASTINGS

The base, column and cross slide are all close grained, grade 300, 20 tons tensile. The drive system utilises a similar chain for high reliability and low noise operation as has been used with such success in the 4 Series Millennium. A high precision Timken cross roller bearing is housed in the main drive sprocket. Precision groundways are bolted to the column face to guide the cross slide during elevation. The cross slide guideways are hardened and precision ground, mating surfaces and jibs aligned with turcite.



The Live Spindle - 11/15 kW A.C. spindle drive motor is mounted on top of the ram and connected to a hollow drive shaft through the centre of the ram driving the main spindle which is mounted in high precision angular contact bearings grease lubricated. Driven tools are retained using DIN standard pull studs and are located by a 50 ISO taper. Static tools are retained using DIN standard pull studs into a specially designed location.

Other 50 taper based standard tooling can be accommodated if specified at time of order.

Webster & Bennett offer the Millennium with the following CNC specifications

GE FANUC 18TB

Series 4 machines

1. Standard Specification

- | | | |
|-------------------------------------|----------------|--------------------------------------|
| 1) Axis control | 3-axis (X,Z,C) | 19) Variable lead thread cutting |
| 2) Simultaneous controllable axis | 2 axis | 20) Program restart |
| 3) Tape code ~ | EIA RS244 | 21) Pitch error compensation |
| 4) EIA/ISO switching | MDI setting | 22) Programmable data input G 10 |
| 5) Feedrate override | 0-120% | 23) Chamferring corner R |
| 6) Spindle speed override | 0-120% | 24) Inch/Metric conversion |
| 7) Manual feed | X,Z,C axis | 25) Multi canned cycle |
| MPG step | X1 X10 X100 | 26) Multi repetitive cycle |
| 8) Constant surface speed | | 27) External message/Alarms |
| 9) Part program memory | 40M | 28) Tool nose radius compensation |
| 10) RS232 mounted on pendant | | 29) Tool geometry wear Compensation |
| 11) 14" Colour CRT | | 30) Background editing |
| 12) Expanded stroke check | | 31) Sequence number stop |
| 13) Custom macro B | | 32) Servo motors Fanuc |
| 14) Work coordinate system G52 - 59 | | X-Axis alpha 30 |
| 15) Tool offsets | 32 | Z-Axis alpha 30 |
| 16) Graphic display | | C-Axis alpha 30 |
| 17) Thread cycle retract | | 33) Modes - Auto Edit Mdi Jog Handle |
| 18) Continuous thread cutting | | 34) Power supply 415V 3-Phase ~ 10% |
- (Please specify when different from above)

2. CNC Options

- | | | |
|--|----------|--|
| 1) G code B/C | | 12) Run hour and parts count display |
| 2) Canned cycles for drilling | | 13) Directory display of floppy cassette |
| 3) Super CAP T | | 14) Floppy disk drive |
| 4) CAP I | | 15) Simultaneous control of 4 axis |
| 5) CAP II | | 16) Tool retract and recover |
| 6) Animated simulation for vertical lathe | | 11) No of registerable programs |
| 7) C-axis Fapt | | 125 |
| 8) Tool/chuck/workpiece interference check | | 200 |
| 9) Tool offsets | 64 pairs | 400 |
| | 99 pairs | 1000 |
| 10) Part program memory options | 80m | |
| | 160m | |
| | 320m | |
| | 640m | |
| | 1280m | |

GE FANUC 18Ti

Series 3 machines

The specification for the 18Ti is the same as above other than the following:

- 1) CRT 10" Colour LCD

Please note we reserve the right to change the above specification without notice at any time in order to affect improvements.

CNC specifications continued..

Siemens 840D

Series 4 & 3 machines

1. Standard Specification

- 1) Axis control 3-axis (X,Z,C)
- 2) Simultaneous controllable axis 3 axis
- 3) Tape code EIA RS232
- 4) EIA/ISO switching MDI setting
- 5) Feedrate override 0-200%
- 6) Spindle speed override 0-200%
- 7) Manual feed X,Z,C axis
- MPG step X1 X10 X100 X1000
- 8) Constant surface speed
- 9) Part program memory 256KB
- 10) RS232 mounted on pendant
- 11) 14" Colour CRT full qwerty keyboard
- 12) Macro functions
- 13) Tool offsets up to 999 configurable (note the more offsets used the less part program memory available)
- 14) Pitch error compensation
- 15) Continuous thread cutting
- 16) Distance to go display
- 17) Chamferring corner R
- 18) Inch/Metric conversion
- 19) Multi canned cycle
- 20) External message/Alarms
- 21) Tool nose radius compensation
- 22) Tool wear Compensation
- 23) Sequence number stop
- 24) Servo motors digital
- 25) Modes - Auto Mdi Jog Handle.REF
- 26) Power supply 415V 3-Phase ~ 10%
(Please specify when different from above)

2. CNC Options

- 1) Graphics
- 2) Background editing
- 3) Floppy disk drive

The Millennium 4 Series

WEBSTER & BENNETT MILLENNIUM

Vertical Turning and Boring Machine

	4-125/175S	4-160/220S	4-200/250S	4-270/310S
CNC Control	Fanuc 18TB Siemens 840D NUM 1060T	Fanuc 18TB Siemens 840D NUM 1060T	Fanuc 18TB Siemens 840D NUM 1060T	Fanuc 18TB Siemens 840D NUM 1060T
Table and Drive				
Table is all steel, machined to choice & 'T' slotted for 4 chuck jaws	1250mm diameter	1600mm diameter	2000mm diameter	2700mm diameter
Maximum swing & maximum turning diameter	2000mm	2200mm	2500mm	3100mm
Maximum table loading	10,000 kg	15,000 kg	20,000 kg	20,000 kg
Table speeds	400 rpm (option 560rpm)	312 rpm (option 440rpm)	250 rpm (option 350rpm)	185 rpm (option 75 kw)
Main motor - DC, continuous duty, for high torque	50 kWDC (option 75 kw)	50 kWDC (option 75 kw)	50 kWDC (option 75 kw)	50 kWDC (option 75 kw)
Maximum cutting height above table	1400mm (option to 2200mm)	2000mm (option to 2800mm)	2000mm (option to 2800mm)	2000mm (option to 2800mm)
Crossrail				
Maximum height admitted under cross rail	1585mm (option to 2385mm)	2185mm (option to 2985mm)	2185mm (option to 2985mm)	2185mm (option to 2985mm)
Vertical travel of cross rail - W axis	1000mm (option 1800mm)	1400mm (option 2200mm)	1400mm (option 2200mm)	1400mm (option 2200mm)
Crossrail latching - incremental	200mm/min	200mm/min	200mm/min	200mm/min
Crossrail adjusting speed	1000mm/min	1000mm/min	1000mm/min	1000mm/min
Ram Toolslide				
Dimension of ram toolslide (square forged steel ram)	250x250mm	250x250mm	250x250mm	250x250mm
Ram toolslide stroke - Z axis	1500mm	1500mm	1500mm	1500mm
Maximum height admitted under ram	1570mm (option to 2370mm)	2170mm (option to 2970mm)	2170mm (option to 2970mm)	2170mm (option to 2970mm)
Horizontal travel of ram - X axis	<i>Total</i> 3000mm	3200mm	3500mm	4100mm
Horizontal travel of ram right of centre	1500mm	1600mm	1750mm	2050mm
Horizontal travel of ram left of centre	1500mm	1600mm	1750mm	2050mm
Rapid traverse	12000mm/min	12000mm/min	12000mm/min	12000mm/min
Feed rates - infinitely variable to	6000mm/min	6000mm/min	6000mm/min	6000mm/min
Machine weight, approx	34,000 kgs	39,000 kgs	44,000 kgs	48,000 kgs

WEBSTER & BENNETT MILLENNIUM

Vertical Turning and Machining Centre

	4-125/175S-L	4-160/220S-L	4-200/250S-L	4-270/310S
CNC Control	Fanuc 18TB Siemens 840D NUM 1060T	Fanuc 18TB Siemens 840D NUM 1060T	Fanuc 18TB Siemens 840D NUM 1060T	Fanuc 18TB Siemens 840D NUM 1060T
Table and Drive				
Table is all steel, machined to choice & 'T' slotted for 4 chuck jaws	1250mm diameter	1600mm diameter	2000mm diameter	2700mm diameter
Maximum swing & maximum turning diameter	1750mm	2200mm	2500mm	3100mm
Maximum table loading	10,000 kg	15,000 kg	20,000 kg	20,000 kg
Table speeds	400 rpm (option 560rpm)	312 rpm (option 440rpm)	250 rpm (option 350rpm)	185 rpm (option 75 kw)
Main motor - DC, continuous duty, for high torque	50 kWDC (option 75 kw)	50 kWDC (option 75 kw)	50 kWDC (option 75 kw)	50 kWDC (option 75 kw)
Maximum cutting height above table	1400mm (option to 2200mm)	2000mm (option to 2800mm)	2000mm (option to 2800mm)	2000mm (option to 2800mm)
Crossrail				
Maximum height admitted under cross rail	1585mm (option to 2385mm)	2185mm (option to 2985mm)	2185mm (option to 2985mm)	2185mm (option to 2985mm)
Vertical travel of cross rail - W axis	1000mm (option 1800mm)	1400mm (option 2200mm)	1400mm (option 2200mm)	1400mm (option 2200mm)
Crossrail latching - incremental	200mm/min	200mm/min	200mm/min	200mm/min
Crossrail adjusting speed	1000mm/min	1000mm/min	1000mm/min	1000mm/min
Ram Toolslide with Live Spindle				
with spindle orientation & through spindle coolant				
Dimension of ram toolslide (square forged steel ram)	250x250mm	250x250mm	250x250mm	250x250mm
Ram toolslide stroke - Z axis	1500mm	1500mm	1500mm	1500mm
Power of live spindle drive	18.5/22 kw AC	18.5/22 kw AC	18.5/22 kw AC	18.5/22 kw AC
Live spindle speeds up to	4000 rpm	4000 rpm	4000 rpm	4000 rpm
Toolholder taper/pull stud	ISO 50/B	ISO 50/B	ISO 50/B	ISO 50/B
Maximum height admitted under ram	1570mm (option to 2370mm)	2170mm (option to 2970mm)	2170mm (option to 2970mm)	2170mm (option to 2970mm)
Horizontal travel of ram - X axis	<i>Total</i> 3000mm	3200mm	3500mm	4100mm
Horizontal travel of ram right of centre	1500mm	1600mm	1750mm	2050mm
Horizontal travel of ram left of centre	1500mm	1600mm	1750mm	2050mm
Rapid traverse	12000mm/min	12000mm/min	12000mm/min	12000mm/min
Feed rates - infinitely variable to	6000mm/min	6000mm/min	6000mm/min	6000mm/min
'C' Axis to Table				
Torque at table	6.25 KNM	8 KNM	10 KNM	16 KNM
Table speeds for continuous milling	0.1 to 3.1 rpm	0.1 to 2.4 rpm	0.1 to 2 rpm	0.1 to 1.25 rpm
Table speeds for positioning & intermittent milling	0.1 to 6.5 rpm	0.1 to 5 rpm	0.1 to 4 rpm	0.1 to 2.5 rpm
Machine weight, approx	34,000 kgs	39,000 kgs	44,000 kgs	48,000 kgs

The Millennium 3 Series

WEBSTER & BENNETT MILLENNIUM Vertical Turning and Boring Machine

3-120/150

3-175/210

CNC Control

Fanuc 18Ti
Siemens 840D
NUM 1060T

options

Fanuc 18Ti
Siemens 840D
NUM 1060T

options

Table and Drive

Table is all steel, machined to choice & "T" slotted for 4 chuck jaws
Maximum turning diameter
Maximum swing
Maximum table loading
Table speeds
Main motor - DC for high torque
Maximum cutting height above table

1200mm dia.
1500mm
1800mm
10,000 kg
580 rpm
45 kWDC
1200mm

1400mm

60 kW
1500mm

1750mm dia.
2100mm
2150mm
15,000 kg
400 rpm
45 kWDC
1200mm

2000mm

60 kW
1500mm

Crossrail

Maximum height admitted under cross rail
Vertical travel of cross rail - W axis
Crossrail latching - incremental
Crossrail adjusting speed

1325mm
600mm
200mm/min
1000mm/min

1625mm

1325mm
600mm
200mm/min
1000mm/min

1625mm

Ram Toolslide

Dimension of ram toolslide (square forged steel ram)
Ram toolslide stroke - Z axis
Maximum height admitted under ram
Horizontal travel of ram - X axis
Horizontal travel of ram right of centre
Horizontal travel of ram left of centre

200x200mm
1000mm
1320mm
2980mm
1490mm
1490mm

250x250mm

1620mm

200x200mm
1000mm
1320mm
3530mm
1765mm
1765mm

250x250mm

1620mm

Rapid traverse
Feed rates - infinitely variable to

10000mm/min
5000mm/min

10000mm/min
5000mm/min

Machine weight, approx.

28,000 kgs

34,000 kgs

WEBSTER & BENNETT MILLENNIUM Vertical Turning and Machining Centre

3-120/150-L

3-175/210-L

CNC Control

Fanuc 18Ti
Siemens 840D
NUM 1060T

options

Fanuc 18Ti
Siemens 840D
NUM 1060T

options

Table and Drive

Table is all steel, machined to choice & "T" slotted for 4 chuck jaws
Maximum turning diameter
Maximum swing
Maximum table loading
Table speeds
Main motor - DC for high torque
Maximum cutting height above table

1200mm dia.
1500mm
1800mm
10,000 kg
580 rpm
45 kWDC
1200mm

1400mm

60 kW
1500mm

1750mm dia.
2100mm
2150mm
15,000 kg
400 rpm
45 kWDC
1200mm

2000mm

60 kW
1500mm

Crossrail

Maximum height admitted under cross rail
Vertical travel of cross rail - W axis
Crossrail latching - incremental
Crossrail adjusting speed

1325mm
600mm
200mm/min
1000mm/min

1625mm

1325mm
600mm
200mm/min
1000mm/min

1625mm

Ram Toolslide with Live Spindle

with spindle orientation & through spindle coolant
Dimension of ram toolslide (square forged steel ram)
Ram toolslide stroke - Z axis
Power of live spindle drive
Live spindle speeds up to
Toolholder taper/pull stud
Maximum height admitted under ram
Horizontal travel of ram - X axis
Horizontal travel of ram right of centre
Horizontal travel of ram left of centre
Rapid traverse
Feed rates - infinitely variable to

200x200mm
1000mm
11/15 kW AC
4000 rpm
ISO 50/B
1320mm
2980mm
1490mm
1490mm
10000mm/min
5000mm/min

250x250mm

18.5kW/22kW AC

1620mm

200x200mm
1000mm
11/15 kW AC
4000 rpm
ISO 50/B
1320mm
3530mm
1765mm
1765mm
10000mm/min
5000mm/min

250x250mm

18.5kW/22kW AC

1620mm

'C' Axis to Table

Torque at table
Table speeds for continuous milling
Table speeds for positioning & intermittent milling

6 KNM
0.1 to 2.65 rpm
0.1 to 5.3 rpm

8 KNM
0.1 to 1.8 rpm
0.1 to 3.6 rpm

Machine weight, approx

28,000 kgs

34,000 kgs

The versatility and productivity of the Millennium range of machines can be further enhanced with the use of second RAM TOOLSLIDE, AUTO TOOL SETTING PROBES, TOOLFORCE MONITORING, WORK PROBING, EXPANDED TOOLCHANGING & STORAGE SYSTEMS, MANUAL and AUTOMATIC PALLET SYSTEMS, RIGHT ANGLE & UNIVERSAL MILLING ATTACHMENTS, 'Y' AXIS MILLING & DRILLING ATTACHMENT.

FIXED RAIL, LOW HEIGHT, MACHINES AVAILABLE FOR STANDARD and HIGH PRECISION WHEEL TURNING and BORING OPERATIONS FOR THE RAILWAYS INDUSTRY.

Automatic toolchange options

STANDARD DISC TYPE AUTOMATIC TOOLCHANGERS

The standard 18 and 24 station toolchangers are floor mounted and carry static or driven tooling in any of the stations. Maximum load on the toolchanger is 656 kg, 1440 lb. Maximum individual toolholder weight 40 kg, 90lb. Maximum length of toolholder 450mm/18", maximum diameter of toolholder 250mm/9.3/4". Random tool selection. An optional second standard ATC can be fitted - Ref: ATC1-18 and ATC1-24.

HEAVY DUTY DISC TYPE TOOLCHANGER (optional extra)

An 18 position disc type ATC with capacity of 55 kg individual tool weight and 600mm tool length - Ref: ATC2. Can be used in conjunction with Crossrail Unit - Ref: CRTU.

HIGH CAPACITY MAGAZINES - available in several specifications.

CROSSRAIL MOUNTED TRANSFER UNIT (optional extra)

This unit, Ref: CRTU, is a 6 station rotary magazine fed by the Elevating Transfer Unit which can select tools from either the 18 station Disc Type Tool Magazine Ref: ATC1 and ATC2, or from the High Capacity Magazines - Ref: ATC3. The individual maximum toolholder weight allowed is 80 kgs and the total toolholder weight must not exceed 220 kgs at any one time.

NB: When used on a live spindle machine one position must be reserved for use of the tool blanking plate. This equipment is part of the standard supply with the High Capacity Magazines -Ref: ATC3.

HIGH CAPACITY MAGAZINES (optional extra)

A heavy duty base unit with 40 tool capacity magazine maximum individual toolweight 80 kgs. Total loading up to 1600 kgs. Tool length up to 650mm - Ref: ATC3-40.

Tools are transferred from the magazine to a six position transfer unit - Ref: CRTU mounted on the cross slide. Only the transfer time into the machine spindle interrupts the cutting cycle time.

A second and third tier may be added to give 80, Ref ATC3-80, or 120, Ref ATC3-120, tool capacity. The upper tiers have individual tool capacity of 20 kgs and 300mm length and increase the total tooling weight allowed to 2200 kg and 2800 kg respectively.



ATC 3 - 40 & CRTU

Automatic pallet systems

HEAVY DUTY AUTOMATIC PALLET SYSTEM - 11,000 kgs - transfer capacity Ref: APS11

Only available for 4-160 and 4-200 models

1. Pallet Holder - machine table mounted. This unit replaces the standard machine faceplate or chuck. This system has class leading workholding capacity. It is directly mounted on the main machine bearing housing and incorporates the following features.

- pallet holder,
- hydraulically actuated conical centre locator, to accurately locate the pallet on the centre of the machine table,
- centre guide with male angled wedge locators to transmit radial torque and accurately locate the pallet for 'C' axis positioning,
- two tee shaped clamping rails either side of the centre guide, each with 3 off per rail clamping cylinders. Each cylinder is disc spring clamped and hydraulically released. The total clamping force acting on the pallet is 40,000 kg. Each locating face and clamping area incorporates an air blast port to clean contact faces while clamping and each part is monitored by a pressure switch for back pressure to ensure air tight mating contact and correct clamping condition,
- services i.e. air and hydraulic system are fed to the pallet holder via rotary joint mounted on centre and below the pallet holder. Incorporated with this rotary joint is the 'C' axis encoder which is directly connected to the centre of the table ensuring accurate radial positioning.

2. Pallet transfer unit - this floor mounted unit is positioned in front of the machine base. It incorporates a primary and secondary linear slide system complete with hydraulic pallet clamp and servo driven rotary index drive. This is used to transfer the pallet between the machine table, pallet setting station and pallet static station.

3. Pallet Setting Station - the pallet setting station is a floor mounted unit and is positioned adjacent to the pallet transfer unit. This features a pallet holder table as per section 1. But also incorporates a rotary drive via an inverter controlled A.C. Motor. This is used to rotate the pallet at slow speeds for setting purposes.

4. Pallet Static Station - this unit is a floor mounted unit and incorporates a pallet guide and locking plunger, to store and hold pallets whilst being transferred through the system.

5. The maximum transferable weight - pallet table, fixture and component, is 11,000 kgs

MULTIPLE PALLET VERSIONS AVAILABLE

AUTOMATIC PALLET SYSTEMS - 7000 kgs transfer capacity.

Ref: APS7

1. Pallet Holder - machine table mounted. This unit replaces the standard machine faceplate or chuck. It is directly mounted on the main machine bearing housing and incorporates the following features.

- pallet holder,
- hydraulically actuated conical centre locator, to accurately locate the pallet on the centre of the machine table,
- centre guide with male angled wedge locators to transmit radial torque and accurately locate the pallet for 'C' axis positioning,
- two tee shaped clamping rails either side of the centre guide. Each with a series of clamp cylinders. Each cylinder is disc spring clamped and hydraulically released. Services i.e. air and hydraulic are fed to the pallet holder. Each locating face and clamping area incorporates an air blast port to clean contact faces while clamping and each part is monitored by a pressure switch for back pressure to ensure air tight mating contact and correct clamping condition.

Total clamping force acting on the pallet 30,000 kg min. 1200 diameter pallet

35,000 kg min. 1750 diameter pallet

The thickness of the standard pallet table reduces the height under cross rail by 190mm

Maximum transferable weight of pallet table, fixture and component is 7000 kgs

2. Pallet transfer unit - this floor mounted unit is positioned in front of the machine base. It incorporates a primary and secondary linear slide system and servo driven rotary index drive. - To transfer the pallet between the machine table, pallet setting station and pallet static station.

3. Pallet Setting Station - the pallet setting station is a floor mounted unit and is positioned adjacent to the pallet transfer unit. This features a pallet holder table as per section 1. But also incorporates a rotary drive via an inverter controlled A.C. Motor. This is used to rotate the pallet at slow speeds for setting purposes.

4. Pallet Static Station - this unit is a floor mounted unit and incorporates a pallet guide and locking plunger, to store and hold pallets whilst being transferred through the system.

The Millennium manual pallet system - a very efficient cost effective alternative to Automatic Systems - suitable for any VTL.



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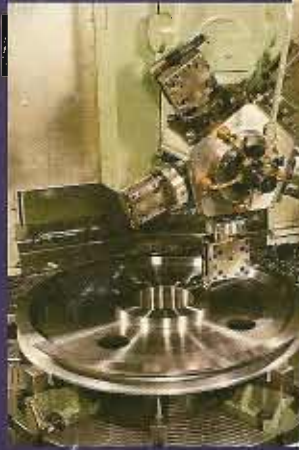
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