



Alpha XS & XC Series

2 & 3 Axis CNC Combination Lathes

ALPHA X SERIES

The World's Finest CNC Combination Lathes

Constantly developed since its first introduction in 1996, the Alpha X Series offers the widest variety of control levels from manual through to full ISO on one machine. Tailored to optimise the skills of the machine operator, the Alpha X Series offers a large machine envelope for the efficient production of a wide variety of components in small to medium size batches. The new generation Fanuc Oi TF controls with colour touch screen and bespoke software systems gives you full CNC capability.

Now with additional 3-Axis capability for milling, drilling and tapping at the machine.

The Ultimate Turning Machine

- Superb cutting performance
- High spindle speeds with wider speed ranges
- Fast rapid traverse rates
- Excellent spindle torque at low speeds
- Latest Fanuc Beta i Series spindle and Beta i axis motors
- Top rated GAMET ABEC9 high-precision bearings
- Independent, sliding operator's console
- New state-of-the-art Fanuc controls with conversational programming software
- Fast, easy set up - quickest of any lathe on the market
- Automatic slideway and ballscrew lubrication system
- Extended range with up to 6m between centres*
- AlphaLink Windows CAD/CAM offline programming CD and communications cable
- C-Axis Capability

High Precision Turning Applications

The Alpha X Series from Colchester Machine Tool Solutions offers a wide choice of advanced technology CNC Combination Lathes to suit all types of high-precision turning applications, including secondary operations such as milling, drilling and tapping.

All Alpha X Series lathes are perfectly suited to producing detailed and intricate one-offs to the highest standard of finish and accuracy. With their advanced Fanuc control and software systems, they are ideal for turning small-to-medium sized batches with fast, high quality repeatability, excellent accuracy and surface finish and, most importantly of all, lower component production costs.

Alpha quality, plus a wide range of training options, has made Alpha lathes the favourite choice for industry, colleges and training centres around the world. Ideal training features include compatibility with industry standard ISO programs and Colchester's AlphaLink software which enables multi-desk training to be given.

Alpha Features

Machine Bed

Colchester Machine Tool Solutions' cutting-edge lathe design and construction quality begins with the machine bed. Alpha beds use high performance cast iron, with a unique 'Warren' type construction for maximum strength and optimum swarf clearance.

In addition, all Alpha lathe beds are mounted on cast-iron plinths to neutralise stress in the machine bed and slideways are hardened and specially ground to ensure high-precision, parallel operation of the lathe at all times.

Operators Console

The operator's console is located, for optimum operator convenience and efficiency, directly in line-of-sight with the cutting tool. The hand wheels are installed at the ideal ergonomic height for ease of use and have the Alpha's popular "one-click-one-micron" rotational feel sensitivity.

The complete operator's control panel moves on its own independent carriage which allows it to be moved quickly and effortlessly aside during loading and setting up.



Drive Train

Into the design and development of all Alpha lathes goes the technical expertise of specialists from Colchester Machine Tool Solutions' partner companies, Gamet Bearings and Pratt Burnerd chucking systems. Their combined research programs ensure that all new Alpha XS lathes feature the most advanced developments in spindle bearing technology and chuck design. This provides the highest possible spindle speeds and optimum chuck performance for high accuracy turning with maximum load carrying capacity.

Headstock

Crucial to turning precision and quality is the design and capability of the headstock. These lathes have top rated Fanuc spindle motors for extra power and more torque in all speed ranges. This means that 'bottom end' torque has been increased by over 75% giving excellent, extremely accurate metal-cutting performance at lower speeds.

All Alpha XS lathes are equipped with auto gearbox change - maximising efficiency and productivity.

Alpha XS and XC Range - Fanuc 0i TF Control

All Alpha XS and XC lathes are fitted with a customised Fanuc control that gives you the option of manual or automatic operation via a simple key switch. In manual mode, the control employs the latest upgraded version of Colchester Machine Tool Solutions' own "Alpha System" which is acclaimed by thousands of Alpha users to be the simplest and most shop floor friendly teach lathe control in the world.

In automatic mode, the full strength of Fanuc's latest technology is brought into play with the Manual Guide *i* programming system.

This conversational system has been completely revamped from previous generations to become an outstandingly powerful and comprehensive conversational programming system.

The combination of these two systems on one machine means that the Alpha XS is the most versatile and capable lathe ever produced.

It will do virtually anything you ask of it!



Alpha XS Range - 4 Ways of Working



Alpha System



Manual Guide *i*



Alpha Link



CNC



The Alpha System

Unique control software developed by our engineers to enable you to double, triple or even quadruple your productivity compared with other turning methods. The reason our Alpha System is so simple, practical and shop floor friendly is that our engineers are lathe specialists.

Alpha System uses easily recognisable screen graphics along with simple question and answer prompts to guide you. It is also the reason that the Alpha System uses a touch screen, so you can work directly on screen rather than hunt for the right button to press.

Manual Turning

Turn the key and you are turning manually. It's as simple as that! The manual screen display shows X and Z positions just like a DRO plus spindle speed, tool number and feed rate.

Even if you haven't used a lathe since your schooldays you could walk up to an Alpha XS now and cut metal.

The Ultimate Turning Machine



Semi-Automatic Turning

With the Colchester Alpha System, a wealth of semi automatic turning operations can be performed. These include parallel turning to stop positions, chamfers and radii, tapers, threads, grooves, box cycles and even contour shapes. These can be linked consecutively to produce even the most complex of components quickly and efficiently.

What's more, the easy to understand shop floor language coupled with touch screen simplicity means that a turner can learn to machine parts quickly.

Most turners will learn to use the Alpha System in less than half a day!

One of the beauties of the Alpha System is that you are always in control of the machine and you can manually override machining at any time to gain confidence or to hit the sweet spot for optimum performance.

Tool Setting

On many lathes tool setting can be a difficult and tedious process. With the Alpha things are different and there is no lathe control on earth that has a simpler tool setting procedure. Just follow the instructions on three screens and the job is done, with the machine automatically calculating offsets and workshifts for you. (These offsets will carry over to the Manual Guide *i* side).

Manual Guide *i* for Alpha XS and XC

Automatic Turning

Manual Guide *i* is the latest and most powerful conversational programming system from Fanuc. It offers the most comprehensive and feature laden aid that any lathe programmer could want and becomes available on the Alpha XS when the keyswitch on the control panel is turned to the automatic position.



Simulation and Animation

Manual Guide *i* has a more powerful graphics package than many commercial CAD/CAM systems. After a programme has been created, a simulated component can be viewed in any direction, or as a 3D model that can be cut or sectioned or magnified to see detail.

This simulated component can then be animated to show the cutting process, the toolpath, metal removal and the finished component to ensure that what you get is what you have programmed and exactly what you want.



Customised Pages

Despite the enormous strength of the Manual Guide *i* system, our engineers have been able to bring their turning experience into play to develop customised cycles especially for the needs of a manual/CNC type of lathe. These Colchester unique developed cycles will save you a considerable amount of time and button pushing.

This is the most user friendly and cost effective entry level combination lathe control in the world! The absolute minimum of training is needed to get these machines cutting metal and making you money.

CNC Turning

The real strength of Manual Guide *i* is that it is effectively a CNC Graphical user interface. All the time you are working in Manual Guide *i*, the Oi TF is creating a CNC programme in the background. This means that conversion from conversational mode to CNC mode is instant. It also means that you can work in either CNC or conversational mode or even both at the same time. Furthermore it means that industry standard CNC programmes can be loaded into and out of the control at any time.

The Alpha XS and XC are powerful conversational lathes that can also run CNC programmes developed elsewhere or to create CNC programmes for use on other machines.



Alpha 1760XS

The Ultimate Turning Machine

New additions to the Alpha XS Range

Newly added to the Alpha XS range are the heavyweight 1660 and 1760XS models, both available in bed lengths of up to 6 metres.

The heavyweight versions - of the best selling combination lathe in the world - are designed to exceed customer demands for turning larger diameter components efficiently and are truly class leaders in terms of overall performance.



ALPHA XC

NEW 3 Axis CNC Combination Lathes

The ultimate turning machine has stepped up to 3-axis capability by adding full c-axis operations to its market leading capabilities.

The **Alpha XC** introduces full milling, drilling and tapping functions to the Alpha range, fully harnessing the Fanuc Oi-TF control combined with the Manual Guide *i* conversational programming system to reduce the need for second machine load and operation production – specifically for one-off components and small batch production.

The **Alpha XC** 3-axis CNC combination lathe is identical in functionality to the Alpha XS range of machines, but now has the addition of a fully interpolating c-axis, while still retaining the operational simplicity that makes the Alpha range the leading choice worldwide.

The manual / CNC lathe is mounted with a newly developed headstock, allowing programmed selection of the c-axis drive, allowing milling / drilling cycles to be achieved with the use of driven tooling.

To allow for these extra lathe operations, full c-axis cycles are available through the Manual Guide *i* conversational programming system.



The Alpha XC comes with two types of tool mounting options:

- 8 tool station Duplomatic turret (8 driven tool positions on 1400XC and 4 driven tool positions on 1550XC) or
- Sandvik Capto driven toolpost allowing manual change of standard, Capto or driven toolholders (1550XC only)

Full CAD/CAM programming of the c-axis is also available with a 3-axis version of Colchester's unique **ALPHALINK** system – allowing operations including milling, pcd drilling, tapping and keyways to be generated offline.





Alpha XS Series Specifications

	1350XS	1400XS	1460XS	1550XS	1660XS	1760XS
Distance between centres	650mm	1200mm	1500mm	2000 / 3000mm	1550 / 2000 / 3000 / 4000 / 5000 / 6000mm	
Saddle stroke Z-Axis Max	556mm	1156mm	1530mm	2030 / 3050mm	1190 / 1700 / 2710 / 3730 / 4730 / 5730 mm	
Swing over bed	350mm	400mm	460mm	554mm	660mm	760mm
Swing in gap	535mm	585mm	730mm	830mm	960mm	1060mm
Gap width from faceplate	165mm	165mm	216mm	216mm	300mm	
Swing over cross-slide	196mm	246mm	270mm	370mm	460mm	560mm
Spindle bore	42mm	55mm	78mm	104mm	105mm	
Spindle nose	D1-4	D1-6	D1-8	D1-11	D1-11 (A2-11)	
Spindle speeds: Low range	1 to 366rpm	1 to 297rpm	1 to 247rpm	1 to 224rpm	26-224rpm	10-150rpm
Medium range	1 to 1088rpm	1 to 861rpm	1 to 740rpm	1 to 672rpm	225-670rpm	151-490rpm
High range	1 to 3500rpm	1 to 2700rpm	1 to 2200rpm	1 to 2000rpm	670-2000rpm	491-1400rpm
Taper in nose bush	No. 3 MT	No. 4 MT	No. 5 MT	No. 5 MT	No. 8 MT (No. 6 MT)	No. 6 MT
Main motor	7.5kW	7.5kW	11kW	15kW	18.5kW	
Tailstock quill travel	140mm	140mm	180mm	180mm	300mm	
Tailstock quill diameter	63mm	73mm	95mm	95mm	105mm	
Tailstock taper	No. 4 MT	No. 5 MT	No. 6 MT	No. 6 MT	No. 6 MT	
Electrical supply required	22kVA	22kVA	24kVA	24kVA	35kVA	
Overall length	2400mm	2900mm	3600mm	4100 / 5100mm	4200 / 4700 / 5700 / 6700 / 7700 / 8700mm	
Overall width	1700mm	1700mm	2000mm	2000mm	2250mm	
Overall height	1500mm	1500mm	1750mm	1750mm	2260mm	
Overall weight (nett)	1900kg	2370kg	3430kg	3690kg / 4600kg	4300 / 4800 / 6000 / 7200 / 8400 / 9800kg	4500 / 5000 / 6200 / 7400 / 8600 / 10000kg

Alpha XC Series - Driven Tool Drive Specifications

	1400XC	1550XC
Spindle Motor Power	9.5kW	18.5kW
No. of Tool Stations	8 (all driven)	8 (4 driven)
Tooling Type	VDI 20 / DIN 5480	VDI 40 / DIN 1809
Max. Power Driven Tool	2.2kW	2.2 kW
Max. Driven Tool Speed	6000 rpm	6000rpm

Illustrations and specifications are not binding in detail. The designs are subject to modification and improvement without notice workpiece capacity and machinable lengths and diameters will vary and may be reduced below maximum depending on workholding and tooling used.

HEAVY DUTY SINGLE GUARD INTERLOCKED TO THE SADDLE on the 1550XS x 3 metres.



Alpha 1760XS

CNC Standard Accessories

- Manual Guide *i*
- 10.4" (264mm) LCD colour touchscreen
- MDI keyboard
- G10 offset value setting
- Graphic display
- PCMCIA data interface
- USB Port
- Manual handles X & Z axis
- 32 pairs of tool offsets in Alpha Mode
- 64 pairs of tool offsets in CNC Mode
- Tool wear/geometry offsets
- 64k part program memory
- Tool nose radius compensation
- G code systems A, B, C
- Chamfering and corner radiusing
- Thread cutting retract
- Background editing
- Constant surface speed
- Canned drilling cycles
- Multi-repetitive cycles type I and II
- RS 232 interface
- Continuous thread cutting
- Tapping
- Custom Macro B
- Inch/Metric Conversion
- Spindle orientation
- Ethernet
- Variable lead threading
- Additional part program memory 128k
- Stored stroke limit
- Direct drawing program
- Hours run/part count display
- Thread cutting retract

Support & Service



Buy Spare Parts

With over £4 million of Colchester, Harrison & Clausing spares, our experts are there to help you identify the correct replacement part and ensure prompt delivery every time.



Valuable Training

Whether it's when your new machine arrives, or more intensive courses to ensure that you make the most of your machine tool, our applications specialists are there to support you.



Reliable Servicing

Our factory trained engineering team are always available to support your machine tool, either through our dedicated helpdesk or out in the field.



Delivery & Installation

Our highly trained transport and service teams are on-hand to effectively deliver, install and commission your machine tool exactly to your satisfaction.



Machine Tool Finance

Colchester Machine Tool Solutions offer a range of innovative and highly competitive finance packages to support your machine tool purchase.



Preventative Maintenance

We work closely with you on a range of preventative maintenance contracts ensuring your assets are utilised fully, whether for one machine or a workshop of our machine tools.



If you would like to arrange a demonstration or discuss your specific needs, please contact our sales team on

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Certificate No. FM12345

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