



The Alpha XS Series

CNC Combination Lathes



ALPHA XS

ALPHA X SERIES

The World's Finest CNC Combination Lathes

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 TD controls with colour touch screen and bespoke software systems gives you full CNC capability.

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 iS 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

High Precision Turning Applications

The Alpha X Series from Harrison offers a wide choice of advanced technology CNC Combination Lathes to suit all types of high-precision turning applications.

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-large 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 Harrison's AlphaLink software which enables multi-desk training to be given.

* 6m between centre capacities available on 2800XS range.

Alpha Features

Machine Bed

Harrison's 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.



ALPHA XS

Drive Train

Into the design and development of all Alpha lathes goes the technical expertise of specialists from Harrison's 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 X Series lathes are equipped with auto gearbox change - maximising efficiency and productivity.

Alpha XS Range - Fanuc 0i TD Control

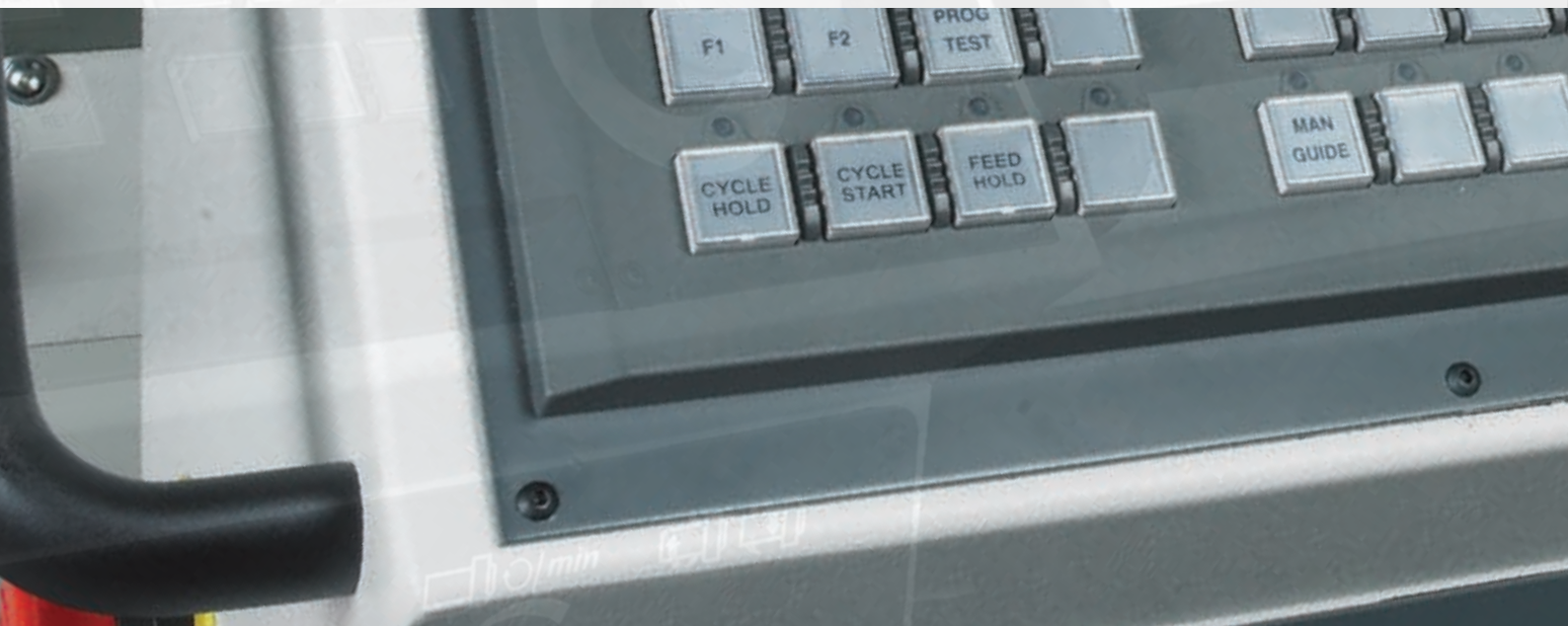
All Alpha XS lathes are fitted with a customised Fanuc control that gives you the option of manual or automatic operation via a simple key switch. In manual mode, the control employs the latest upgraded version of Harrison's own "Alpha System" which is acclaimed by thousands of Alpha users to be the 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.

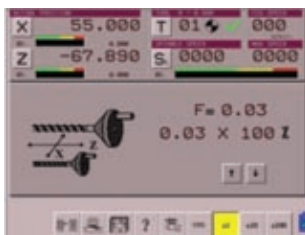
This conversational system has been completely revamped from previous generations to become an outstandingly powerful and comprehensive conversational programming system.

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!



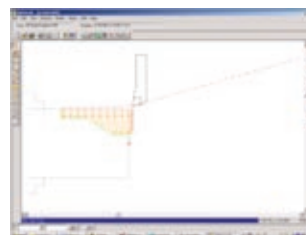
Alpha XS Range - 4 Ways of Working



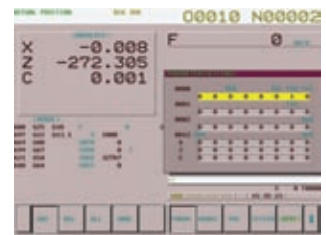
Alpha System



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 Harrison 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 together 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.

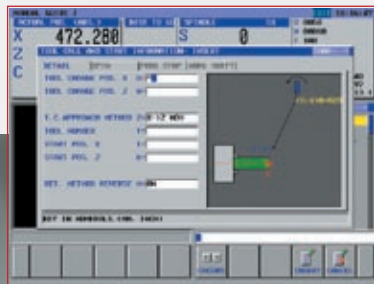
Tool Setting

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

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.



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 Harrison unique developed cycles will save you a considerable amount of time and button pushing.

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.



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 0i TD 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 is a powerful conversational lathe that can also run CNC programmes developed elsewhere or to create CNC programmes for use on other machines.

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



The Ultimate Turning Machine

Creating A Programme

1. Use the TOOL CALL AND START page
2. Call up roughing cycle
3. You will be prompted to enter roughing cutting information, speeds, feeds etc.
4. Follow the on screen instructions to draw your part
5. Store this shape as a part programme
6. Use the toolchange cycle page for finishing tool
7. Call up finishing cycle
8. Enter finish cutting information
9. Call up saved shape
(there is no need to re enter shape information for finishing cut)
10. Finally use the customised cycle to part off and/or end machining

ALPHA XS

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
- 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
- Rigid 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



Alpha XS Series Specifications

	1350XS	1400XS	1460XS	1550XS
Distance between centres	650mm/25"	1250mm/50"	1500mm/60"	2000mm/80" or 3000mm/120"*
Saddle stroke Z-Axis Max	556mm/21 ⁷ / ₈ "	1156mm/45 ¹ / ₂ "	1530mm/61"	2030mm/79 ³ / ₄ " 3050mm/120 ¹ / ₈ "
Swing over bed	350mm/13 ³ / ₄ "	400mm/15 ³ / ₄ "	460mm/18 ³ / ₈ "	554mm/21 ³ / ₄ "
Swing in gap	535mm/21"	585mm/23"	730mm/28 ³ / ₄ "	830mm/32 ⁵ / ₈ "
Gap width from faceplate	165mm/6 ¹ / ₂ "	165mm/6 ¹ / ₂ "	216mm/8 ¹ / ₂ "	216mm/8 ¹ / ₂ "
Swing over cross-slide	196mm/7 ³ / ₄ "	246mm/9 ⁵ / ₈ "	270mm/10 ⁵ / ₈ "	370mm/14 ¹ / ₂ "
Spindle bore	42mm/1 ⁵ / ₈ "	55mm/2 ¹ / ₈ "	78mm/3 ¹ / ₁₆ "	104mm/4 ¹ / ₈ "
Spindle nose	Camlock D1-4"	Camlock D1-6"	Camlock D1-8"	Camlock D1-11"
Spindle speeds: Low range	1 to 366rpm	1 to 297rpm	1 to 247rpm	1 to 224rpm
Medium range	1 to 1088rpm	1 to 861rpm	1 to 740rpm	1 to 672rpm
High range	1 to 3500rpm	1 to 2700rpm	1 to 2200rpm	1 to 2000rpm
Taper in nose bush	No. 3 MT	No. 4 MT	No. 5 MT	No. 5 MT
Main motor	7.5kW (10HP)	7.5kW (10HP)	11kW (15HP)	15kW (20HP)
Tailstock quill travel	140mm/5 ³ / ₄ "	140mm/5 ¹ / ₂ "	145mm/5 ⁵ / ₈ "	145mm/5 ⁵ / ₈ "
Tailstock quill diameter	63mm/2 ¹ / ₂ "	73mm/2 ⁷ / ₈ "	95mm/3 ³ / ₄ "	95mm/3 ³ / ₄ "
Tailstock taper	No. 4 MT	No. 5 MT	No. 6 MT	No. 6 MT
Electrical supply required	12kVA	12kVA	15kVA	15kVA
Floor to spindle centre	1061mm/41"	1086mm/42"	1145mm/44 ³ / ₄ "	1195mm/46 ³ / ₄ "
Overall length	2400mm/74 ³ / ₄ "	2900mm/101"	3600mm/142"	4100mm/166" 5100mm/206"
Overall width	1700mm/67"	1700mm/67"	2000mm/78 ³ / ₄ "	2000mm/78 ³ / ₄ "
Overall height	1500mm/59"	1500mm/59"	1750mm/69"	1750mm/69"
Overall weight (nett)	1800kg	2200kg	3200kg	3600kg/4000kg

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.

Not all the features described in the brochure are relevant to all machines in the range.

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

Other Alpha XS Range Models

Alpha 1550XM

Extremely versatile, this machine provides all the features of the Alpha XS with the additional capacity for high precision full C - axis milling as well as turning. This milling option makes it a highly versatile and cost effective machine for a wide range of advanced machining applications.

Alpha 2800XS

Designed to accept large diameter components of up to 6 metres in length, the Alpha 2800XS weighs in at over 7 tonnes, with 26kW (35hp) of power and an all cast iron construction. This machine is perfect for applications in the Oil Industry, Defence, Aerospace and other Heavy industries.



Certificate No. FM12345



The Alpha XS Series | CNC Combination Lathes

Harrison | Union Street | Heckmondwike | West Yorkshire | WF16 0HL

Telephone +44 (0) 1924 415 000 | Fax +44 (0) 1924 415 011 | mail@colchester-harrison.com