

A New Generation of Centre Lathe Technology



Colchester

The Colchester Lathe Company Ltd

TRIUMPH VS 2500

High Performance Variable Speed Centre Lathe

THE 600 GROUP

ADVANCING TURNING TECHNOLOGY

A New Generation of Variable Speed Centre Lathes

When Colchester introduced the "Triumph 2000" Lathe twenty years ago, it set new standards of centre lathe specification and performance. Now Colchester sets the standards again with the introduction of its all new

Triumph VS 2500 High Performance Centre Lathe.

An electronically variable speed spindle drive gives a better cutting performance than many CNC lathes let alone other centre lathes. Precision, power and durability, together with a host of innovative features are built in to give years of lasting performance from this rugged machine.



Key Features:-

- Heavy duty construction – over 20% heavier than previous models.
- Wide bed giving high rigidity. Spindle speeds 25% faster than the previous model.
- Anti-friction linings on the carriage ways – minimal bedwear – longer machine life. Field tested for over 10 years without failure.
- Electronic, infinitely variable speed spindle drive – enables optimum cutting speeds – faster cycle times – allows the full use of modern cutting tool technology.
- Wide spread of power – over 30 to 1 Constant Power Range. High power at low speeds and high power at high speeds.
- Built to Metric Standards throughout.
- Low noise levels – less than 80dBA at 1 metre envelope around machine.

Numerous Safety Features Including:-

- Interlocked End Guard Door.
- Rapid and controlled deceleration of the spindle drive during mains disconnection and Emergency Stop Conditions.
- Interlocked Spindle Drive Reset and Apron Control Lever.

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DESIGN FOR MAXIMUM PRODUCTIVITY

AC Inverter Variable Speed Spindle Drive

State of the art AC Spindle Drive featuring surface mount technology to give compact size and high reliability – 4 year parts warranty.



Three Headstock Gear Ranges

A wide spread of constant power – 33 to 1 – better than most CNC Lathes.



Infinitely Variable

The right spindle speed response like a



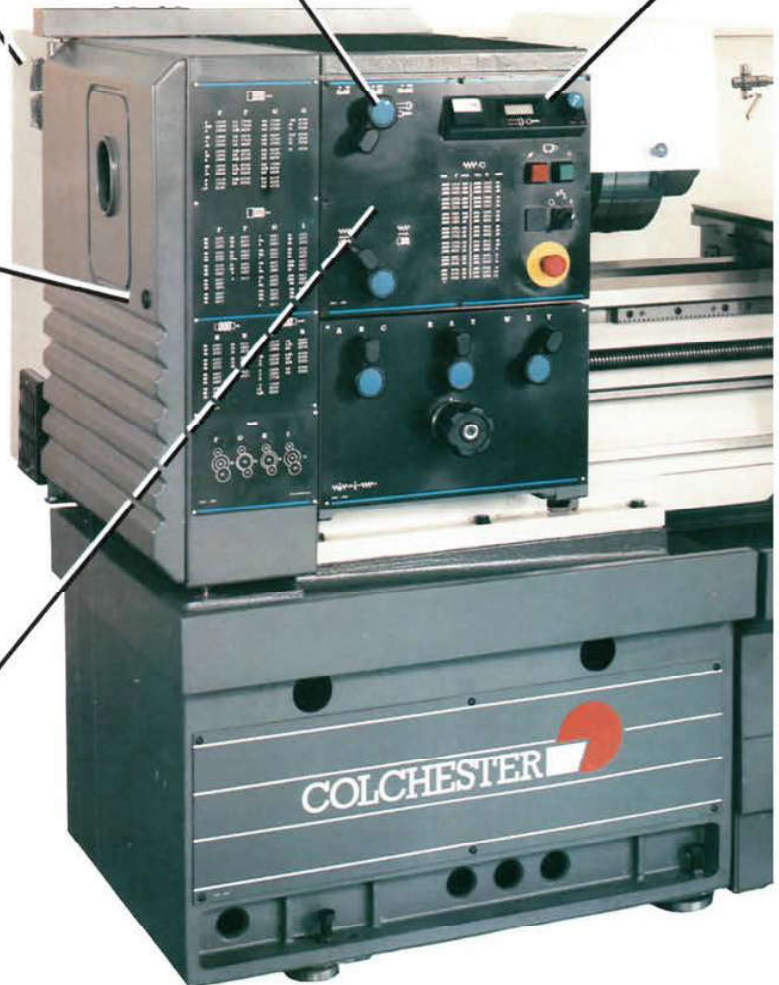
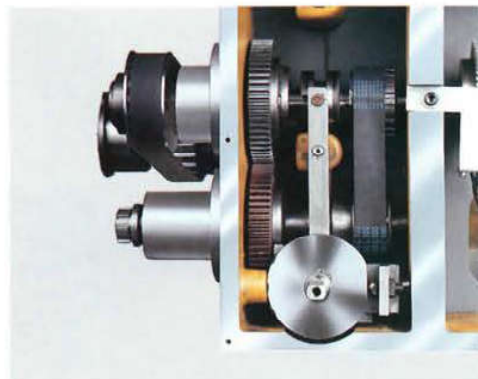
Interlocked End Guard Door

Easy access for maintenance and changing the end train gears.



Leadscrew Reversing Box

Faster Thread Cutting – Reversal of the Leadscrew with the spindle running.



TRIUMPH VS 2500

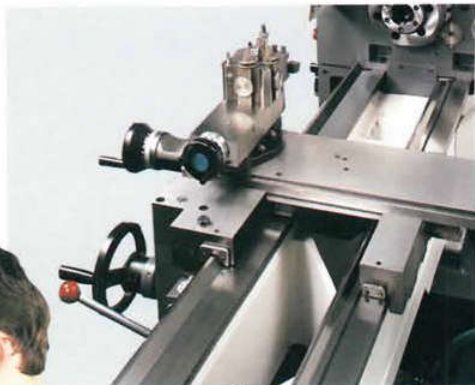
Spindle Speeds

Changed very quickly with a CNC Lathe.



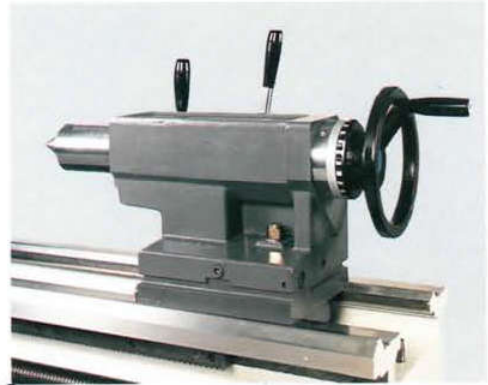
Anti-Friction Carriage Ways

Low Friction "Moglice" PTFE material – minimal bedwear – longer machine life.



Heavy Duty Tailstock

Excellent rigidity – 73mm Diameter Barrel – No. 5 Morse Taper.



Wide Bed

Very rigid 318mm wide bed with triangular webs for excellent swarf clearance.



Wheeled Swarf Bin

Large capacity swarf clearance and easy disposal.



CUTTING EFFICIENCY

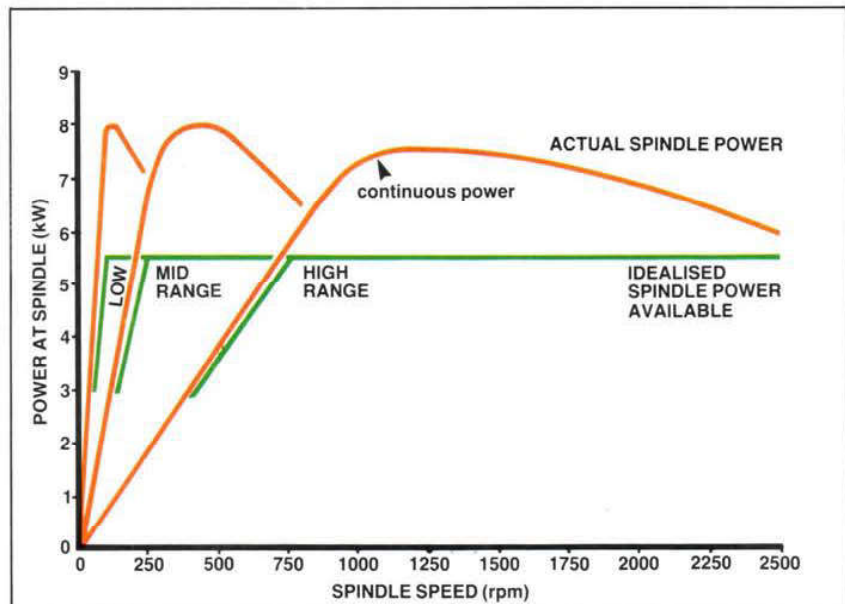
When you compare the new high performance Triumph 2500 variable speed lathe with a conventional all geared headstock machine of the same power, the difference immediately shows in the cutting performance.

The prime reason for this is the mechanical efficiency of the headstock transmission. An all geared headstock with 16 fixed speeds will typically contain up to 30 gears which gives a low mechanical efficiency, particularly at high spindle speeds.

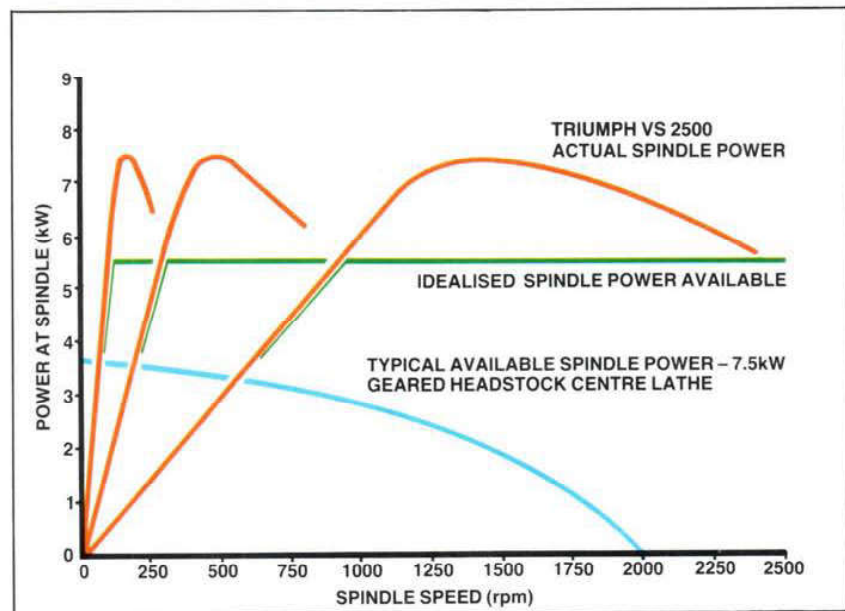
The Triumph 2500 headstock contains only seven gears so the overall mechanical efficiency is much higher in comparison. This means that for the same motor size much more power is available at the tool for removing chips, this can be easily illustrated by comparing the two diagrams.

The conventional geared speed lathe loses more power the faster you run the spindle and must be run in an overload situation to keep up with the Triumph 2500 running on a continuous basis.

For applications such as shaft turning which have longer cycle times than average the benefits are considerable, bigger cuts can be maintained on a continuous rating basis. This cuts both the production time and the piece part cost compared with an all geared headstock centre lathe.



Triumph VS 2500 – Variable Speed Drive

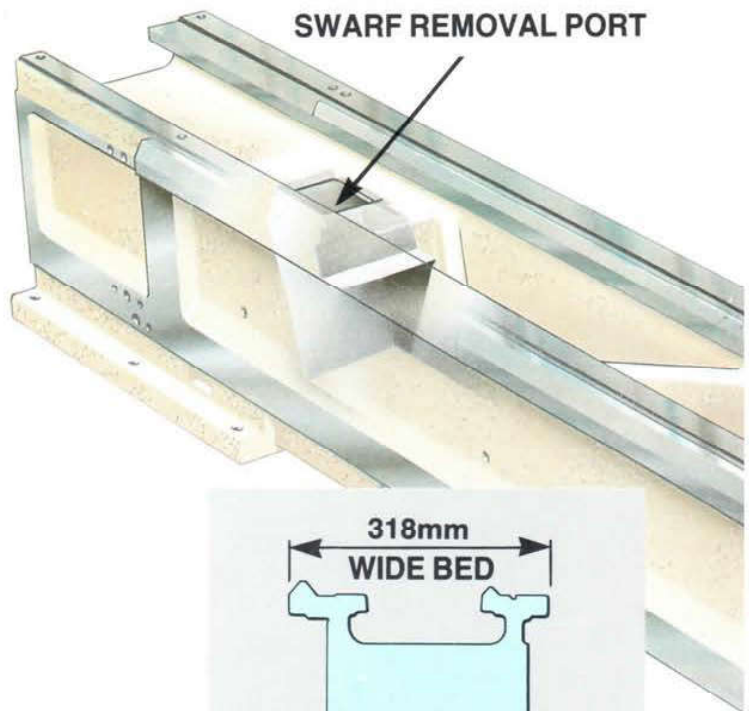


Comparison between – 16 Speed All Geared Headstock and Triumph VS 2500

Heavy Duty Bed and Plinths

The heavy duty construction of the new Triumph VS 2500 approaches that normally expected on bigger capacity machines. This gives a machine capable of withstanding heavy use and giving excellent durability with the minimum of maintenance over many years.

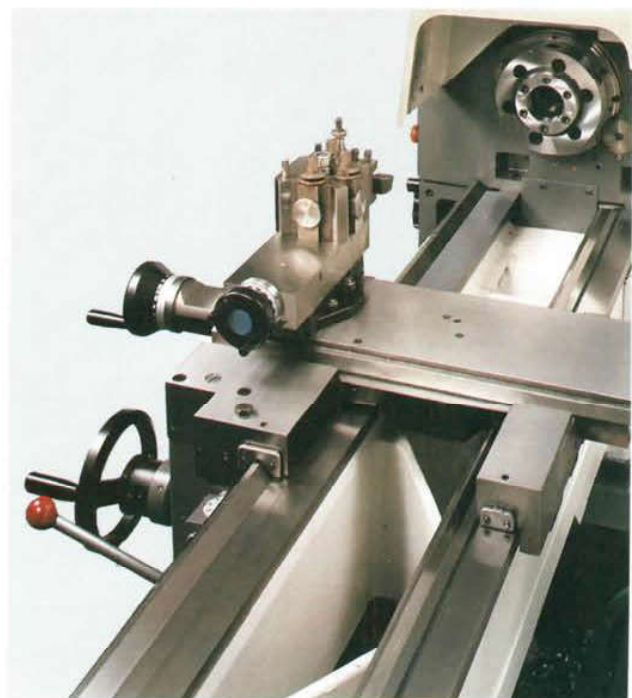
- Triangulated bed webs give very high torsional stiffness providing minimal deflection during heavy roughing cuts.
- The bedways are induction hardened and precision ground.
- Excellent swarf clearance – no swarf traps between the bedway guides. Minimal thermal distortion from hot chips.
- Heavyweight cast iron plinths provide the maximum support for the bed combined with sloping top surfaces to prevent the accumulation of coolant.
- Epoxy based compound at the bed/plinth interface provides excellent structural damping and resistance to chatter.



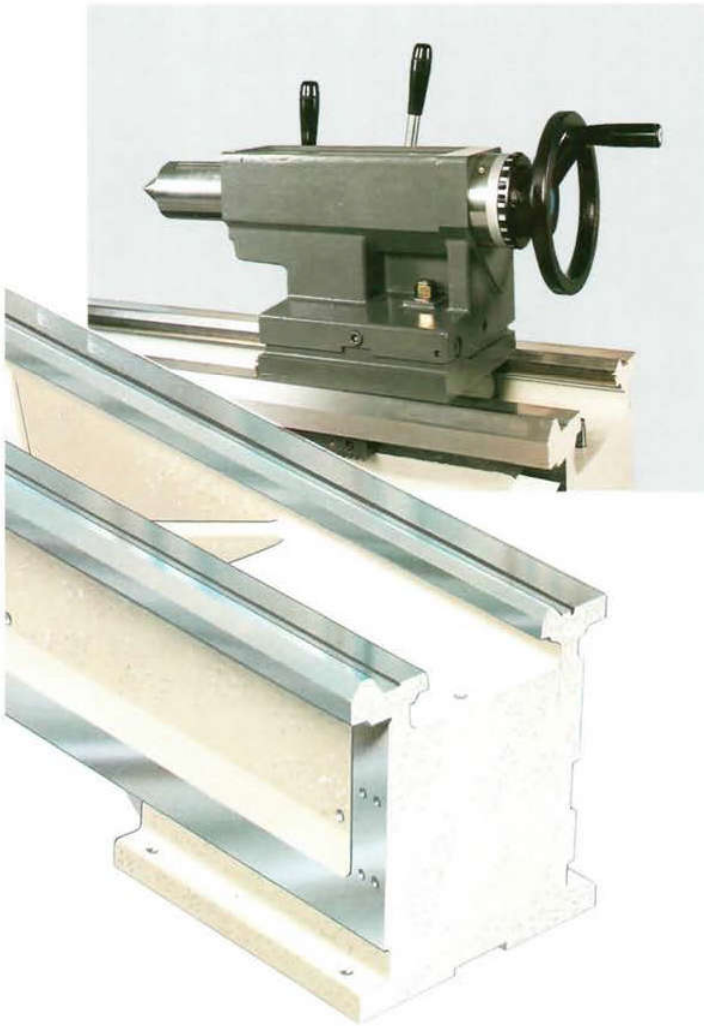
Carriage and Slideways

The saddle runs on the bed on a "Moglice" composite PTFE based material injected between the bed and the saddle. This improved feature gives several benefits:-

- Low friction – minimal bedwear – longer machine life.
- The accuracy of the machine is retained over a long period of time.
- The material has a low "stick-slip" threshold making it easy to get smaller incremental positioning movement which is particularly useful when using DRO systems.
- Fully adjustable gib strips are provided on both the carriage and the cross slide to provide for wear compensation.
- Antibacklash cross slide nut, bedway wipers and centralised one shot slideways lubrication are all standard features.
- Provision is also made for a built-in DRO scale in the cross slideways (Colchester DRO only).



GENER MACHINE LIFE



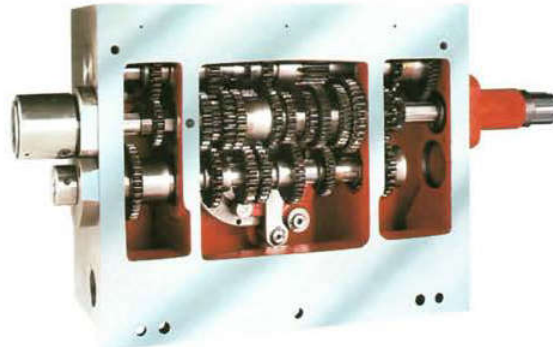
Heavy Duty Tailstock

The tailstock is of robust construction with the following features:-

- Heavy duty casting with nose extension to provide the minimum barrel overhang and maximum rigidity when turning shafts.
- Larger diameter, 73mm tailstock barrel with No. 5 Morse Taper to give more support for between centre applications.
- Graduated scale mounted in the tailstock barrel for maximum convenience when drilling holes.
- Graduated handwheel index ring for precise barrel positioning.

Universal Gearbox

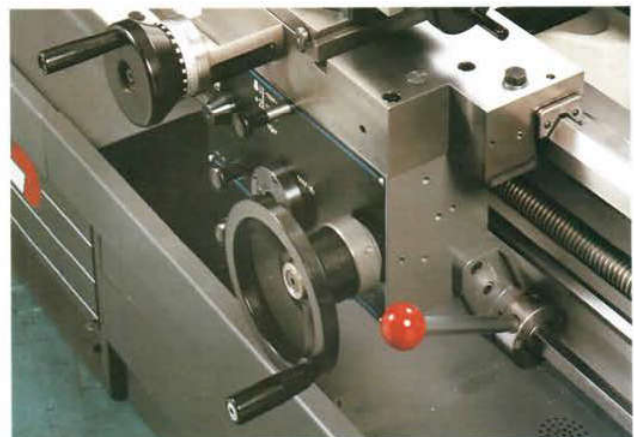
A totally enclosed Universal Gearbox provides a comprehensive range of both Imperial and Metric threads, and a further extended range of feeds and pitches by the use of alternative end train set ups. Inch or Metric leadscrews are available for differing market requirements, and the gearbox is doubly protected by means of a torque limiting device on the output side and a shear pin in the input side.



Apron and Controls

The apron is of a totally enclosed oil bath lubricated design with the following key features:-

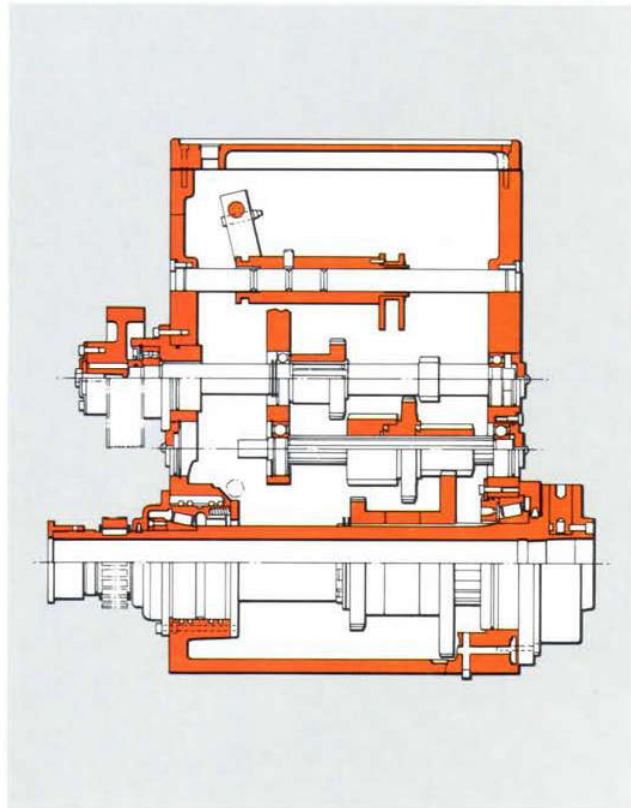
- Adjustable automatic feed trip for accurate shoulder lengths when feeding to a bedstop.
- Interlocked leadscrew and feed engagement levers.
- Floating leadscrew double nut giving greater accuracy and minimal wear.
- Spindle stop/start/forward/reverse control is mounted on the apron for ease of operation and is "gated" to prevent accidental engagement.



3 Range Headstock

The manually selected 3 range headstock comprises a rugged box type casting with heavy front and rear walls to give a very rigid spindle mounting arrangement. The following features ensure high accuracy under the most arduous applications.

- Heavy duty taper roller bearings with a high radial load capability of 1456kg at 500 rpm and a 10,000 hour life rating.
- High thermal stability. The small number of gears used and the absence of clutches means minimal heat generation.
- High Spindle Stiffness – the spindle bearings are pre-loaded by means of a spring loaded rear bearing arrangement. This means that a constant pre-load is maintained regardless of speed or temperature, thus ensuring a stable spindle essential for high accuracy and heavy stock removal.
- 3 manually selected sliding gear ranges give a wide spread of power making the machine suitable for all types of applications.
- Low power losses gives high power at high speed compared with conventional all geared headstock designs.



AC Variable Speed Spindle Drive

The use of variable speed drives on centre lathes is not new, Colchester pioneered it over 30 years ago on its Chipmaster Lathe, a breakthrough at the time. Today's modern high speed transistor switching techniques enables Colchester to offer electronically variable spindle drives, at a price consistent with centre lathe economics. Colchester have developed a package especially for centre lathes designed to give high reliability and high

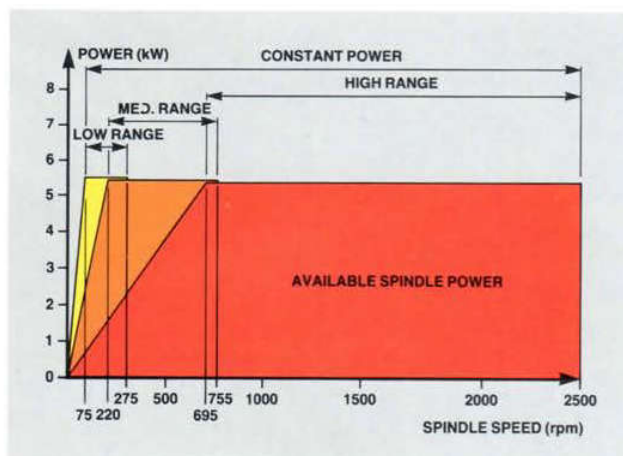
performance with the duty cycle capability essential to machine tool requirements.

Excellent productivity benefits are derived from the following key features:-

- Totally enclosed independently Fan Cooled AC Spindle Drive motor allows the machine to be used in the harshest of environments with no maintenance whatsoever.
- Highly reliable maintenance free AC Inverter Drive, gives maximum up time for production and is backed by a 4 year parts warranty.

Infinitely Variable Spindle Speeds give the following key benefits:-

- Optimum cutting speeds can be used at all times.
- Faster cycle times than with conventional fixed speed machines.
- Improved tool life.
- Improved surface finishes.
- Maximum use of available spindle power during roughing cuts for faster cycle times.
- Rapid selection of optimum spindle speeds for finishing operations minimise the cycle time by eliminating time consuming gear changing.



TRIUMPH VS 2500

Ergonomically Designed Controls

All the controls and information for selecting feeds, speeds and threads are centrally grouped for maximum ease of operation.

- Spindle speeds are easily selected by the 3 range headstock shift and spindle speed potentiometer control.
- A LCD direct spindle speed display and a spindle load meter allows the full power of the machine to be utilised during cutting.
- Gearbox and End Train selection plates are mounted on the headstock and end guard cover for ease of viewing.



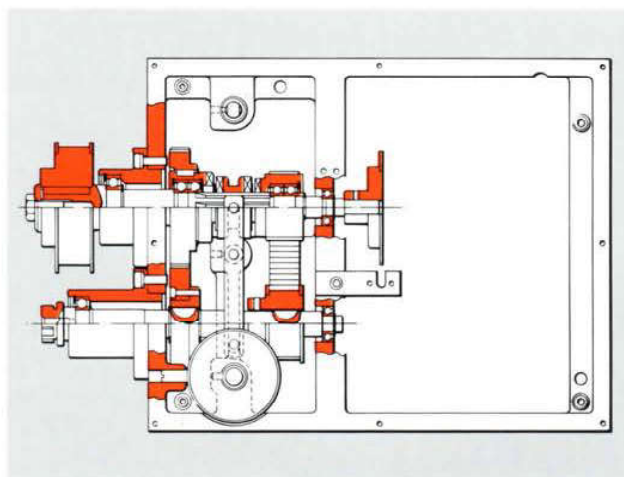
Leadscrew Reversing Box

This feature greatly improves the productivity of the machine by eliminating the need to stop the machine to reverse the feed or leadscrew direction.

All that is required is to reduce speed and the leadscrew or spline shaft direction can then be reversed whilst in motion.

This feature also has other advantages as follows:-

- Timed reversing engagement by use of a single tooth clutch.
- Quiet operation. No noisy pick off gears in the headstock.
- No lubrication – no maintenance.



Integrated Digital Readout

A specially designed Colchester Digital Readout System is optionally available to greatly improve productivity of the machine.

The design has several benefits:-

- All Steel Scales for maximum shock resistance and durability.
- The cross slide scale and reading head are inbuilt into the cross-slideway for maximum accuracy and protection from coolant and swarf.
- A single point connection is provided for both cross slide and longitudinal carriage scales to the readout unit. This gives an inherently more reliable solution as there are less connections and wiring.
- The fully integrated design means that field fitting can be undertaken very quickly compared with conventional digital readout systems.



SPECIFICATION

Centres

Height of Centres	195mm
Bed Length, Between Centres	650/1250mm

Swing

Over Bed	400mm
Over Cross Slide	246mm
In Gap (Gap bed only)	585mm
Width in front of Faceplate (Gap bed only)	165mm

Spindle

Bored to Pass	54mm
Nose Mounting	D1-6 Camlock
Morse Taper in Nose Bush	No. 4 MT

Speeds

Number of Spindle Ranges	3 (14-275) (40-795) (125-2500rpm)
Variable Spindle Speed Max.	2500rpm

Motor

Nominal Power	7.5kW (10HP)
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Feeds

Range of Sliding Feeds per Spindle Rev.	0.018-1.2mm/rev 0.0007-0.048ins/rev
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Threads

Number of English Pitches	56
Range of English Pitches	2-56 TPI
Number of Diametral Pitches	20
Range of Diametral Pitches	8-56
Number of Metric Pitches	51
Range of Metric Pitches	0.2-14mm
Number of Module Pitches	20
Range of Module Pitches	0.2-3.5

Bed

Width Over Ways	318mm
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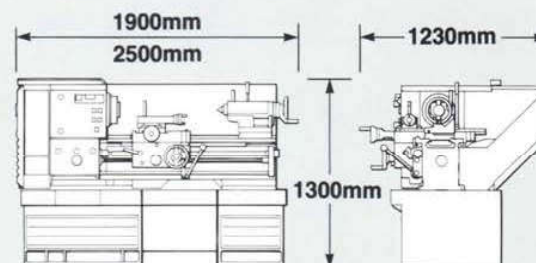
Slideways

Travel of Cross Slide	250mm
Travel of Top Slide	130mm

Tailstock

Total Travel of Tailstock Barrel	140mm
Taper in Tailstock Barrel	No.5 MT

Overall Dimensions



Machine Weight

Approx. 1400/1500 kg

Standard Equipment

Centre Bush – Two Morse Taper Centres – Thread Indicator – Electrical Equipment for Standard 3 Phase 50 Cycle a.c. Supply – End Guard Limit Switch – Set of Spanners and Keys – Instruction and Spare Parts Manual – Accuracy Chart – Emergency Stop Button – Lockable Isolator Switch – One-Shot Saddle Lubrication – Apron Adjustable Knock-off – Electric Coolant Pump, Tank and Fittings – Splash Guard – Chuck Guard – Quick Change Toolpost – 3 Jaw Chuck (250mm).

Accessories

Collet Chuck (Lever Operated) – 1 Set 'E' Type Collets – Chip Guard – Chuck Guard – 4 Jaw Chuck (315mm) – Rotating Centre No. 5MT – Drive Plate – Large Face Plate (21") – Lo Vo Lite Unit – Taper Turner – DRO Unit 650mm Between Centres – DRO Unit 1250mm Between Centres – High Speed Threading Unit 650mm Metric Between Centres – High Speed Threading Unit 1250mm Metric – High Speed Threading Unit 650mm Inch – High Speed Threading Unit 1250mm Inch – Travelling Steady Plain Fingers – Travelling Steady Roller Fingers – Stationary Steady Plain Fingers – Stationary Steady Roller Fingers – Single Bedstop – Hydraulic Profiling Unit – Apron Dial (English or Metric).

Illustrations and Specifications are not binding in detail. The designs are subject to modifications and improvements without notice.
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