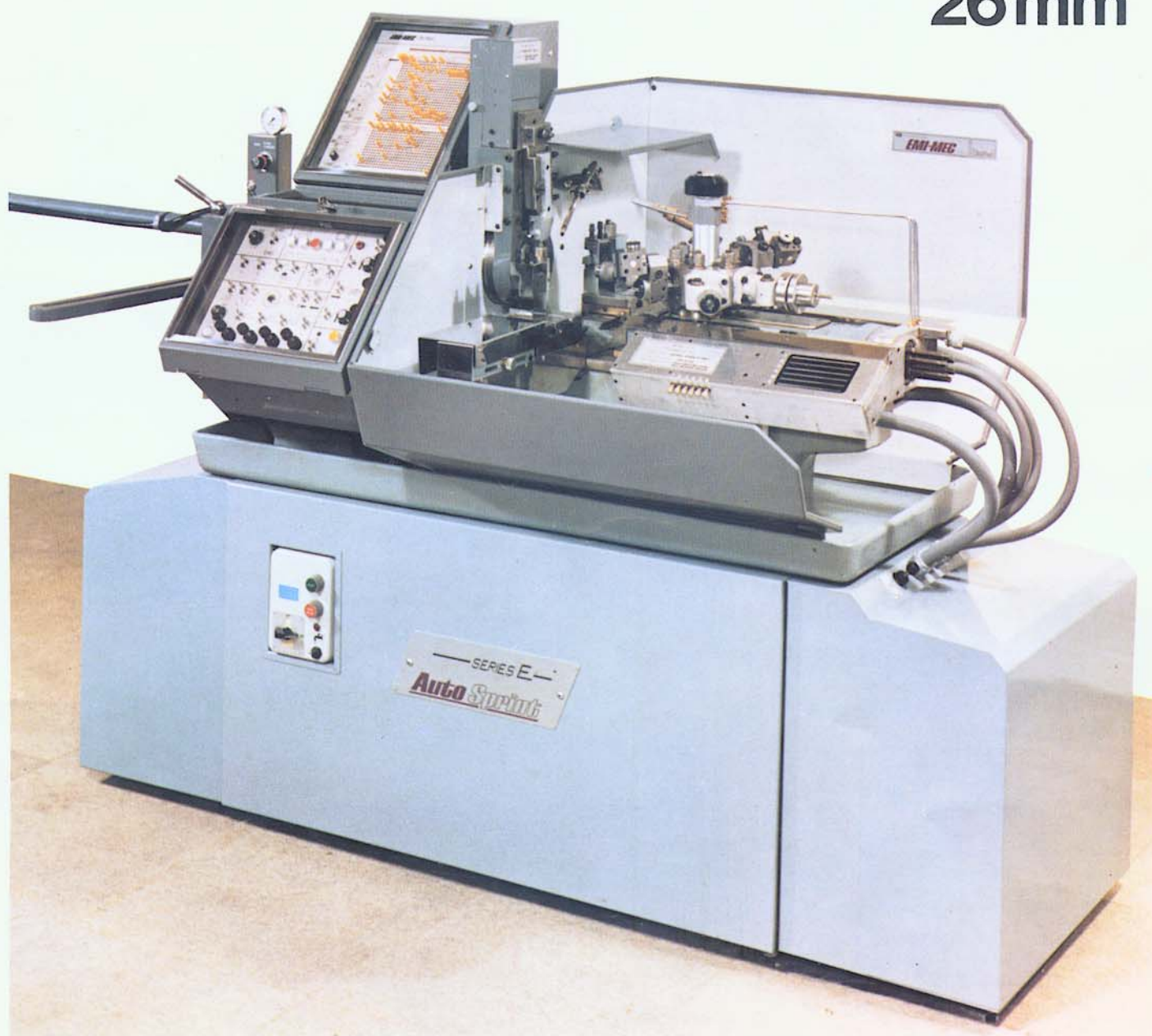


EMI-MEC *Auto Sprint* - E -

26mm



Low cost turning using simple plugboard programming for flexibility, and cost effective production

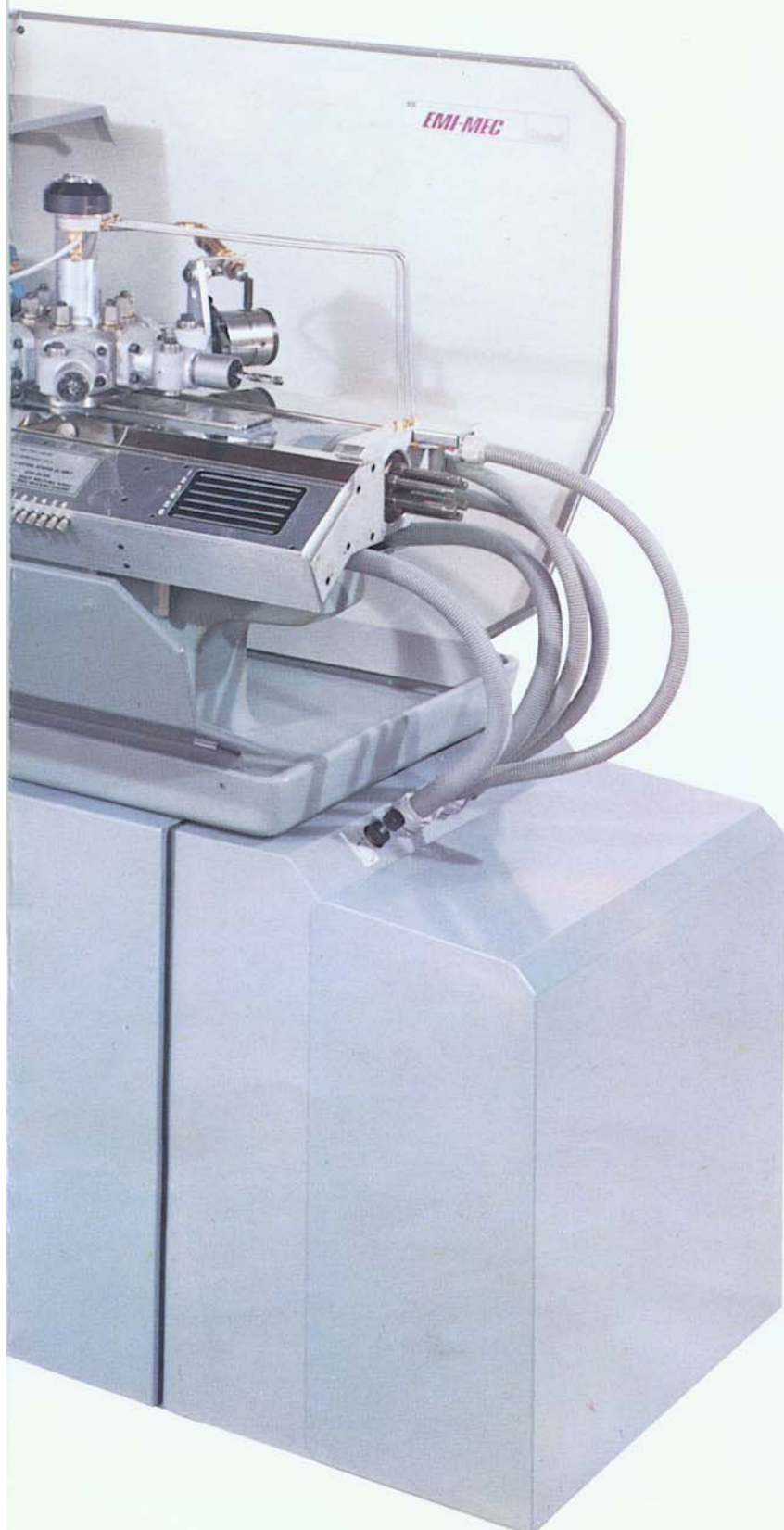


Standard bar machine with typical optional tooling.

The Auto Sprint 'E' fully automatic, plugboard controlled turret lathe is the ideal solution to slow manually operated capstans, expensive numerically controlled turning machines and cam autos.

The Auto Sprint 'E' with large scale production capability is also ideally suited to medium and small batch production.

The versatile plugboard control is quick and simple to operate and provides the small batch flexibility required by many companies.



STANDARD FEATURES

- Independent Front and Rear Slides
- Steplessly variable feeds with back feed to rear slide
- Adjustable front and rear tool posts
- Vertical slide with independent feed
- Hardened and ground slides
- Woodpecker feed to turret
- Auto-index facility for setting or indexing empty turret stations
- Two port turret air distributor
- Four steplessly variable hydro-feeds to turret
- Independent back feed to turret
- Turret Fast approach 'visual indicator' – for quick setting
- Pneumatically operated dead length collet mechanism
- Complete pneumatic bar feed equipment
- Two speed reversible 3/2 h.p. motor with thermal overload protection
- 12 Spindle speeds
- Coolant equipment and splash guards
- Advanced EMI-MEC sequence control
- Plugboard sequence indicator lights
- Lockable plugboard and switch panel covers
- Built-in electronic parts counter

OPTIONAL EXTRAS

Magazine Loading

This equipment allows a fully automatic machining cycle on 2nd operation work and enables one operator to tend several machines. Normally the equipment is specially built for each customer's particular job. A limited range of standard type front cross slide and turret mounted magazines is available, but it should be noted that special magazines are usually quoted with machines.

End of Bar Switch

When connected, the operation of a small pressure switch will energise the finish cycle circuit and the machine will stop at the end of the programme.

Pre-set Parts Counter

This allows the operator to pre-set the batch quantity. When the number is reached the machine will automatically switch to finish cycle.

Chuck Work

With the optional 2 or 3 jaw air chucks, and their special circuitry, the changeover from either mode of operation can be accomplished in five minutes. The 4" dia. 2 or 3 jaw chucks have their own built in air cylinder. In the event of air supply failure the workpiece will not be released until air pressure has been re-established and the valve position reversed.

SIX STATION TURRET

The six station turret is located accurately by a large bolt in the turret slide which is mounted on the turret saddle. This saddle may be adjusted manually for longitudinal position on the lathe bed, enabling the setter to reduce cycle times by shortening turret slide strokes to the minimum necessary for each sequence of machining operations. A new "Auto Index" facility is available for indexing empty turret stations. At the end of the fast approach the feed circuit is automatically engaged and the turret pneumatically clamped. Manual or automatic selection of any one of the steplessly variable hydrofeeds will permit the turret to feed forward to the dead-stop at the pre-set feed rate. The four turret forward feed rate regulators are grouped conveniently on the control panel. A fifth feed rate regulator at the right hand end of the machine provides for back feeding of the turret when controlled withdrawal is required for a tap or solid die or to eliminate tool trace marks on the work piece. Rapid, accurate adjustments of the turret feed engage (check) points – the position at which regulated feeds are introduced – can be made while the machine is on automatic cycle and in production. The 'wood-pecker' circuit provides for accurate drilling of deep holes and greatly assists chip removal and drill cooling, while the turret air distributor allows pneumatically assisted tooling to be used.

EMI-MEC programme control for rapid set-up

PLUGBOARD

The diode pin plugboard through which the manual set-up is converted to a sequential programme allows an amazing versatility of automatic operation. On switching to the automatic cycle the first complete left hand vertical line of sockets (column 1 of the Plugboard) is simultaneously energised. By the insertion of a diode pin in the required socket, the selected function will take place. By placing several diode pins in different motion sockets, but in the same column, many functions can take place simultaneously, such as the cross slides and turret operating together.

At the end of each main function or slide travel, providing a diode pin has been inserted in the correct signal socket, the operation of a limit switch will energise column two. As column 2 is energised, a supply from this column automatically cancels the previous column. This novel system allows continuous, un-interrupted overlapping of various slide and other functions while the programme is stepping from one column to the next. In this way, power is transferred to the next column and further slide

movements or other functions depending on what has been programmed, will take place. Not only does this allow for greater flexibility – such as changing the turret feed rate while cutting – but it overcomes the problems sometimes associated with the "step-over" on plugboard machines. Plugboard indicator lights, which can be switched off when not required, show the live column and enable the programme sequence to be followed. It is a simple exercise to build up the full programme or alter the machining cycle.

CONTROL PANEL

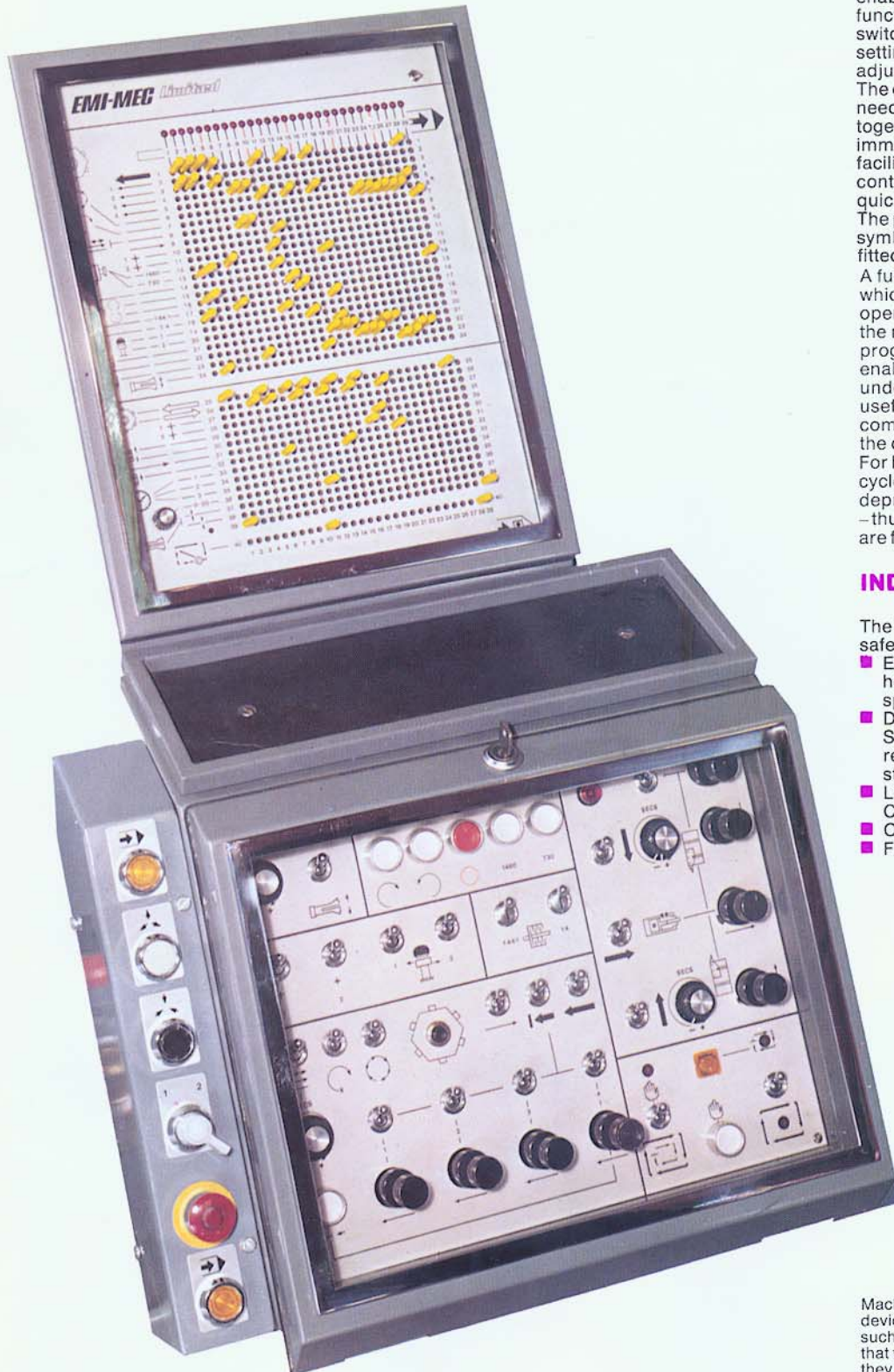
The simple layout of the modular control panel enables setters to understand the various functions with the minimum of instruction. All switches fall readily to hand and during the initial setting up of any part, feed and speed adjustments can be made quickly and easily. The conveniently grouped slides and turret needle valve controls are mounted on the panel together with the 'dial in' dwell timers which allow immediate setting of slide dwells. With the aid of facilities such as the 'turret inch' and 'not index' controls, the setting of the machine can be quickly accomplished.

The plugboard and switch panel have graphic symbols for universal identification and are fitted with lockable covers for protection. A further feature is the hand step push buttons which, when programmed, enables the operator to manually step from one column to the next on the plugboard. With the correct programme sequence, the hand step control enables the automatic cycle to be interrupted under the operator's control. This is particularly useful for 'on machine' inspection of components and the hand loading of parts to the collet or chuck as in second operation work. For hand loading work, to start the automatic cycle after loading, two buttons must be depressed simultaneously – one with each hand – thus ensuring that both the operator's hands are free from the machining area.

INDUSTRIAL SAFETY

The Series "E" Machine incorporates a range of safeguards as follows:-

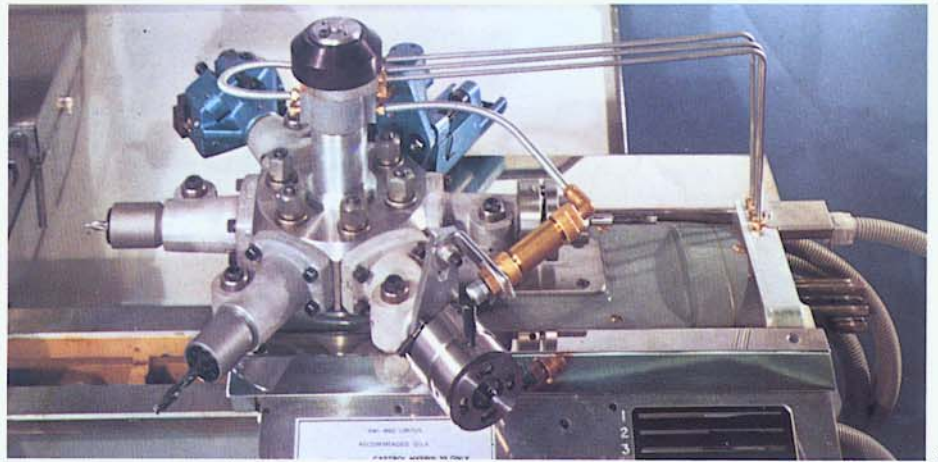
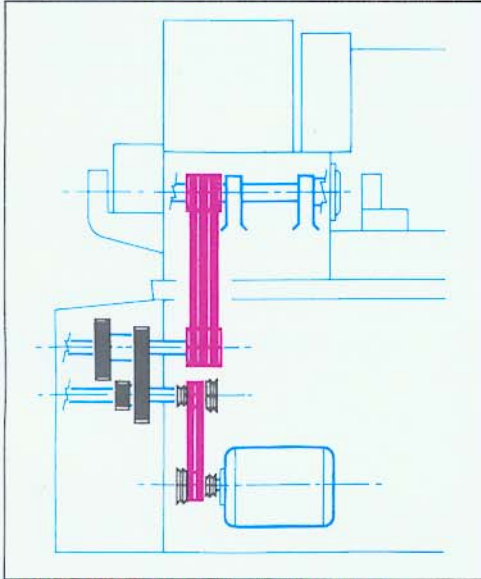
- Emergency Stop Button — homes programme, retracts slides, stops spindle.
- Dual Interconnected — Start/Step Buttons requires hand to be free from work area to start machine on second operation work.
- Lockable Plugboard and Switch Panel Covers.
- Overload Protection of Main Motor.
- Front and Back Guarding.



Machines incorporate safety design features, safety devices, guarding arrangements and are supplied with such information as to their safe operation and use, that we believe, so far as it is reasonably practicable, they are safe and in compliance with the legal requirements of the Health and Safety at Work etc. Act 1974.

HEADSTOCK & TRANSMISSION

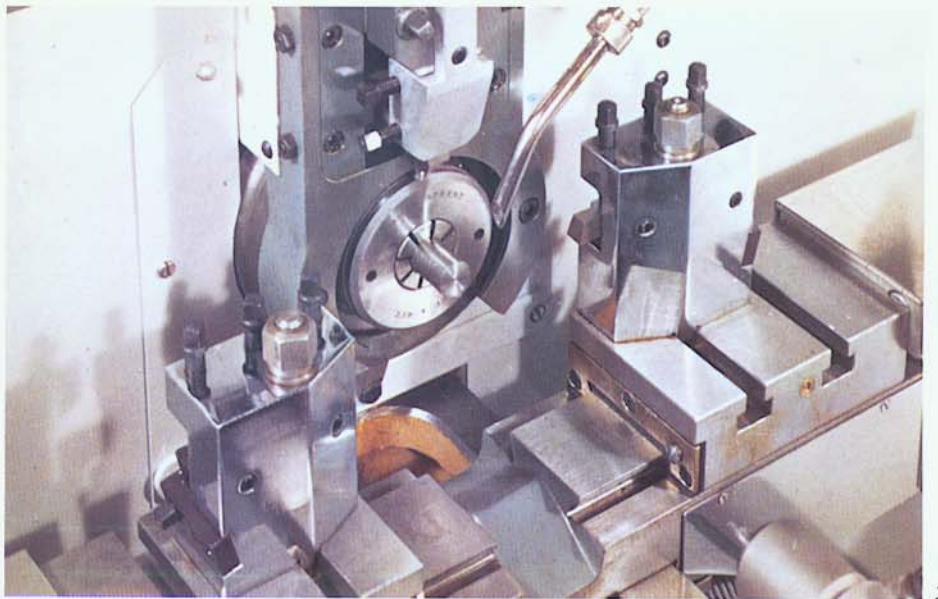
Mounted in preloaded double angular contact bearings, the headstock spindle is triple vee belt driven through a constant mesh, oil immersed, 2 ratio gear box and two speed 3/2 h.p. motor. With a three step pulley a total of 12 speeds in three ranges is available. Each range gives four speeds that can be used throughout the automatic cycle, a simple belt change being necessary to select either of the other two ranges.



1

CROSS SLIDES AND VERTICAL SLIDE

The cross slide saddle, mounted on the lathe bed, is manually adjustable for longitudinal positioning and carries independently operated front and rear dovetail slides incorporating dovetail wipers. Each slide has a two-position tool post incorporating wedge adjustment for tool centre height. A third slide, mounted on the headstock, provides for parting-off thereby leaving both cross slide tool posts available for forming or other similar operations. All three slides traverse rapidly to a pre-set, adjustable 'feed engage' (check) point and then feed at a steplessly variable controlled rate. Each slide has its own feed rate control. 'Checking' is carried out electrically using waterproof switches giving fast, reliable and accurate operation. Back feed to the rear slide is controlled by a separate feed rate control and can be selected when required. All slide ways are induction hardened and precision ground.



2

ELECTRONIC CONTROL

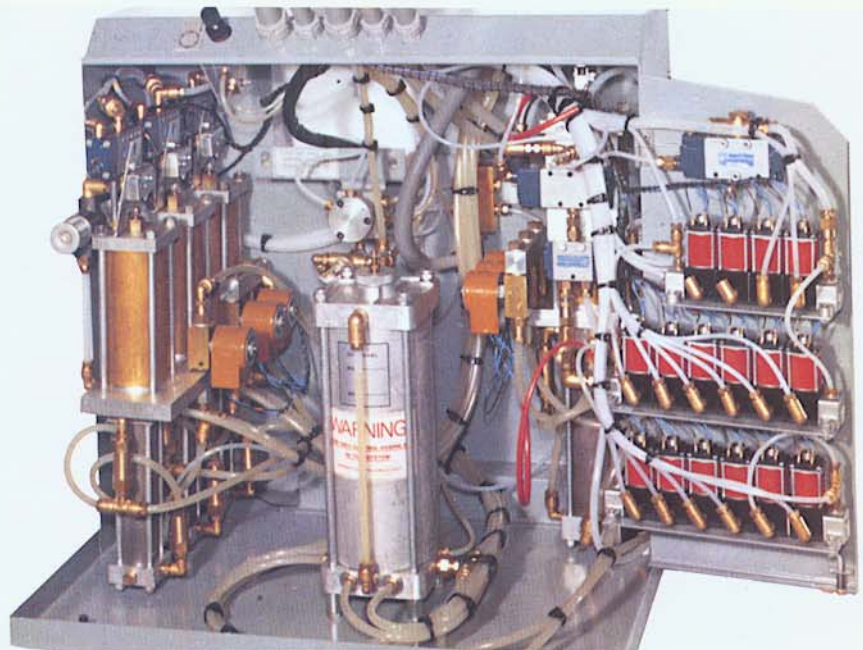
For reliability and simple maintenance, modular electronic units with unitor plugs have been used. They comprise plug in printed circuit boards and relays with international standard bases. The switch panel and programme board are also linked to the machine by unitor plugs which permit removal of the board for 'off machine' programming.

POWER PACK

The hydraulic-pneumatic power module containing four master cylinder assemblies, each comprising a pneumatic cylinder coupled vertically with a hydraulic cylinder, is supplied with a constant volume of filtered oil under pressure from a common reservoir. Compressed air at 80 to 85 lbs. in² is applied to the appropriate pneumatic cylinder via a solenoid operated pneumatic valve. This motivates via one or more slave cylinders, the machine's slides. The feed rate of the slide is controlled by a needle valve. This system is remarkable for its simplicity and its speed of operation. By utilising the differing reaction speeds of electrical and pneumatic components, it creates its own natural time delays wherever these are required to coincide with changeover situations. This allows the master pistons to overstroke thereby ensuring that there is more fluid available than required for the next slide stroke. The unique design compensates automatically for any oil volume differentials in operation and avoids the necessity for the sophisticated circuitry which would otherwise be used in hydraulic machines.

PNEUMATIC BAR FEED

The machine is normally supplied with a 10 ft (3 metre approx) pneumatic bar feed. A regulator panel incorporating pressure control valve, gauge and safety cut out switch, allows adjustments to be made to the bar feed operating pressure to compensate for different bar diameters. For ease of loading the bar feed slides forward on a bracket and a switch operated by the bar feed clamp ensures that the air supply is exhausted from the tube when it is moved.



3

- 1 Six Station Turret
- 2 Cross Slides and Vertical Slide
- 3 Power Pack

Specification

HEADSTOCK

	in.	mm.
Bar capacity	1	26
Diameter of hole through spindle	$1\frac{3}{32}$	27.8
Max. dia. swing over cross slide	7	178
Height of centre over top of bed	$5\frac{1}{2}$	140

TURRET

Number of faces	6	6
Diameter of Toolholes	1	25.4
Max. effective working stroke	3	76
Max. stroke, including indexing	$5\frac{1}{8}$	130
Height from top of Turret Slide to centre of Toolhole	$1\frac{13}{16}$	46
Forward Hydraulic feeds	4	4
Back Feed	1	1

CROSS SLIDE

Adjustment along bed	7	178
Max. distance between Tool Posts	8	203
Stroke either side of centre line	3	76
Tool size	$\frac{1}{2}$ sq.	12.7sq.

VERTICAL SLIDE

Stroke	3	76
Max. distance from Tool Post to centre line	$3\frac{1}{2}$	95
Tool size	$\frac{5}{8} \times \frac{3}{16}$	16 x 5
Tool size in cranked tool holder	$\frac{1}{2}$ sq.	12.7sq.

COLLET:

Dead length – Air operated.
Standard collet – Spring Type 2046.

ALTERNATIVES:

B & S 21
Crawford Multibore
Traub A25
Index 25

MOTOR

Power Rating. 3/2 H.P. – 2 Speed Reversible.
Electrical Rating: 400/440 Volts 3 Phase 50 cycle
Other ratings available to suit local supply.
Contact EMI-MEC or Agent.

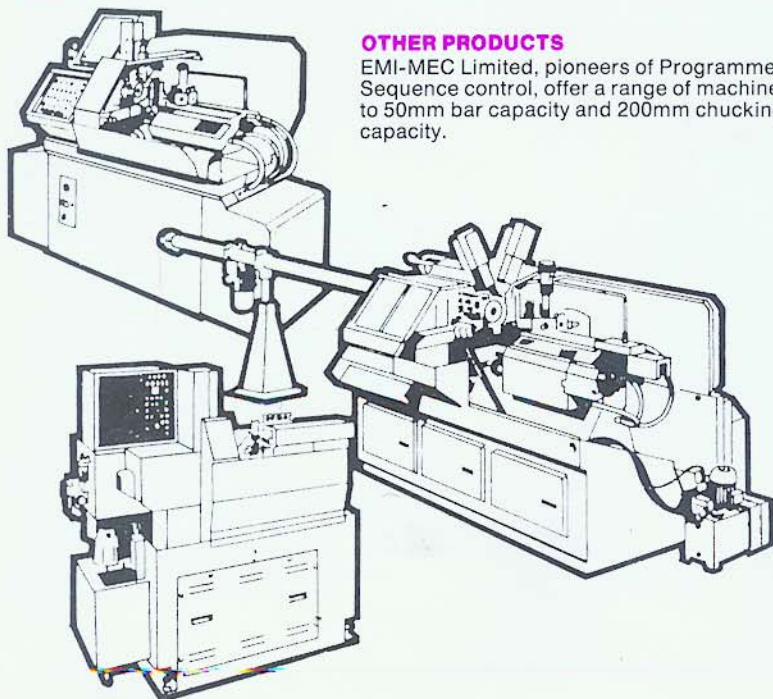
SPINDLE SPEEDS

Range 1	85	185	505	1015
Range 2	200	395	1115	2225
Range 3	305	610	1725	3500

	lb.	Kg.
Nett Weight	2515	1143
Gross Boxed (Export)	2867	1303
Bar Feed (Export)	68	31
Boxed Dimension (Export)	7'5" x 4'1" x 5'7"	
	2.26 x 1.27 x 1.70 (metres)	
Bar Feed Tube (Export)	13'4" x 7" x 7"	
	4.07 x .18 x .18 (Metres)	

OTHER PRODUCTS

EMI-MEC Limited, pioneers of Programme Sequence control, offer a range of machines up to 50mm bar capacity and 200mm chucking capacity.



EMI-MEC SERVICES

Supporting their range of machines, EMI-MEC Ltd., offer a most comprehensive back up service for customers and distributors.

Tooling:

The EMI-MEC tooling department offers a highly successful range of tooling items ideal for use with EMI-MEC Autos. Customers purchasing EMI-MEC tooling can be confident that it will be suitable for their particular EMI-MEC machine.

Training:

A variety of training courses are held at the factory for our customers. These include programming, setting, preventive maintenance and faultfinding. By special arrangement, courses can be tailored to the individual requirements of the customer.

Spares:

An efficient U.K. and export spares department (connected by Telex to overseas distributors) ensures the best possible service.

Service:

A network of engineers resident throughout the U.K. together with factory trained engineers and stocking distributors in over 21 countries ensure that an efficient after sales service is available to EMI-MEC users.

Technical Department:

Run solely for the benefit of customers, this special department allows users to contact factory technicians for advice on EMI-MEC machines, by phone or Telex.

EMI-MEC

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