

EMCOturn 5.5 hp CNC Lathes



Emcoturn 120/120P CNC Slant Bed Lathes

For production workpieces up to 3" x 5"

120 m \$23,000
\$600

EMCO
MAIER
CORPORATION

Technical Data—Lathe

Working Area

Chuck size 3.10" (78 mm)
 Swing over bed 7.00" (180 mm)
 Swing over cross slide 2.90" (75 mm)
 Max. length of workpiece

..... 5.219" (132 mm)
 Max. Dia. of workpiece 3.469" (88 mm)

Headstock (Emcoturn 120)

Spindle bore dia.82" (21 mm)
 Speed range 150-4000 rpm
 Speed control Infinitely variable

Headstock (Emcoturn 120P)

Spindle bore dia. blind hole draw tube
 8" from face of collet chuck 1"
 (Solid chuck body—no bore
 when using chuck)
 Speed range 150-5000 rpm
 Speed control Infinitely variable

Main Spindle Drive

Direct drive dc motor 100%/60%
 3.8/5.5 hp

Feed Motors

ac synchronous in X and Z axis with
 pre-loaded ball screws
 Max. feed force in X and Z axis ... 440 lbs.
 Rapid traverse 80 IPM
 Operating feed range04-80 IPM

Tooling Systems

8-tool disc turret, 4 O.D. and 4 I.D. tools;
 turning ½" sq., boring tools ¾" and smaller
 with bushes
 Cycle time/station 1 sec.
 Indexing accuracy—repeatability .000050"

Manual Tailstock and Pneumatic Tailstock

Quill diameter 1.38" (35 mm)
 Quill stroke 4.72" (120 mm)

Coolant System (Optional)

Tank capacity 12 gallons
 Flood coolant 1 gpm

Lubrication

Main spindle/ball screws
 permanent grease
 Slideways (120) manual via nipples
 Slideways (120P) central lubrication

Machine light 60 watt incandescent

Dimensions (Required floor space)

Machine 41" W x 33" D x 29" H
 Control 32" W x 12" D x 22" H

Weight

Machine 330 lbs.
 Control 209 lbs.

Electrical Connection

Power supply via transformer
 208/220/460 V 3-phase, 60 Hz
 Connected load 5 kVA

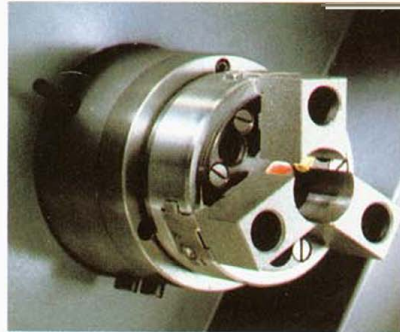
Emcoturn 120 Basic Machine

Cast machine bed, base frame, spindle drive, feed drive in 2 axes, transparent polycarbonate sliding door with safety interlock, automatic 8-station turret, (2) ¾" I.D., (1) ½" I.D., (1) ¼" I.D. reduction bushes for tool turret, headstock, manual 3.1" chuck, manual tailstock, Emcotronic T-1 control with extension of memory capacity to 32,000 characters (330' punched tape), cutter radius compensation, direct input of tool setting data, parts counter, machine lamp, transformer for power supply line voltage of 208, 220, 460 V, programming and operating manuals, tools and (4) VHS programming tapes. **Order No. 270.3AD**

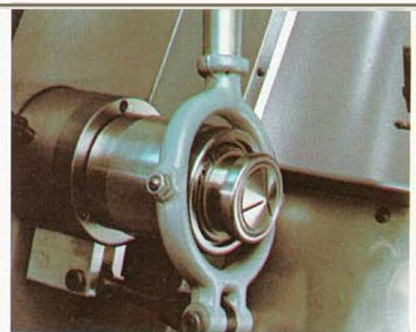
Emcoturn 120P Basic Machine

Cast machine bed, base frame, spindle drive, feed drive in 2 axes, transparent polycarbonate sliding door with safety interlock, automatic 8-station turret, (2) ¾" I.D., (1) ½" I.D., (1) ¼" I.D. reduction bushes for tool turret, headstock, tailstock, Emcotronic T-1 control with extension of memory capacity to 32,000 characters (330' punched tape), cutter radius compensation, direct input of tool setting data, parts counter, machine lamp, transformer for power supply line voltage of 208, 220, 460 V, automatic central lubrication, one (1) draw tube for 5C collet chuck, one (1) draw bar for pneumatic chuck, programming and operating manuals, tools and (4) VHS programming tapes. **Order No. 270.3AE**

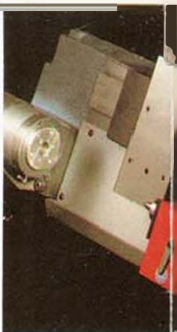
An affordable slant bed



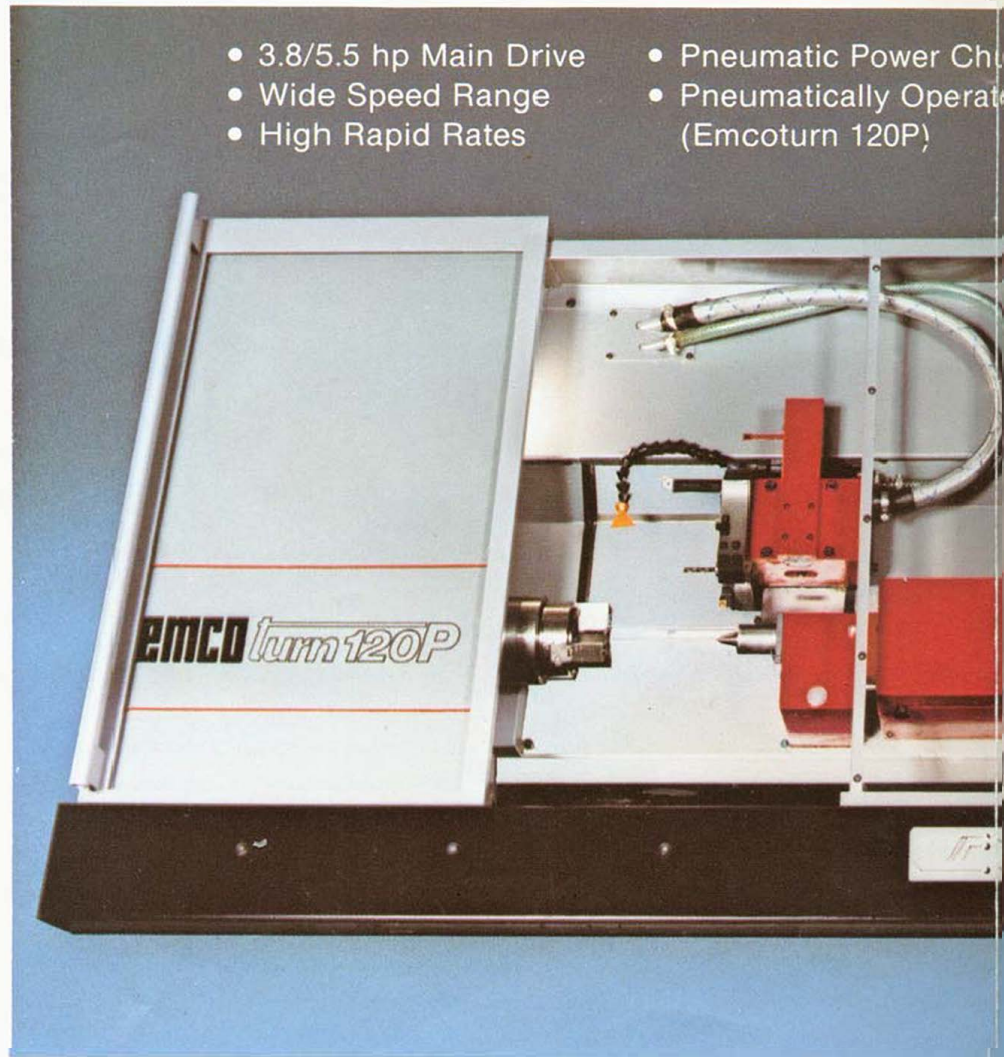
Pneumatic Power Chuck



Manual 5C Collet Attachment



Modern Slant Bed



- 3.8/5.5 hp Main Drive
- Wide Speed Range
- High Rapid Rates
- Pneumatic Power Chuck
- Pneumatically Operated (Emcoturn 120P)

High Precision

- Robust, torsion-resistant design
- Play-free, rigid work spindle
- High positioning and reproducibility accuracy
- High-precision ball-screw drives
- High thermal stability

Operation Reliability

- Automatic monitoring of important functions

Safety Features

- Completely enclosed working area
- Electrically secured chip-guard door
- Monitoring of chuck device, tailstock and automation equipment

Working Area

- Completely enclosed
- All precision parts and electric components arranged outside the chip-removal area

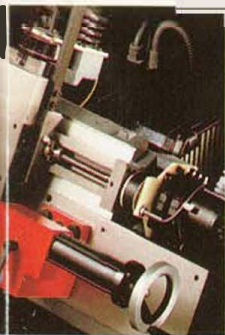
Machine Bed

- Slant bed made of vibration-dampening grey cast iron
- Torsion-resistant modular design
- Three-point fastening

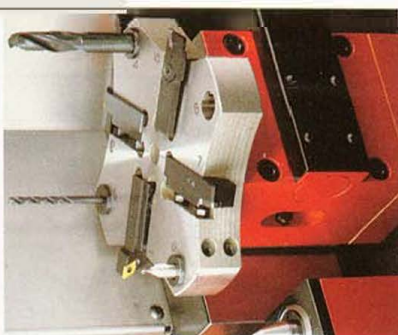
Slides

- Optimum guiding conditions
- Drive via ac synchronous motors and play-free ball screws

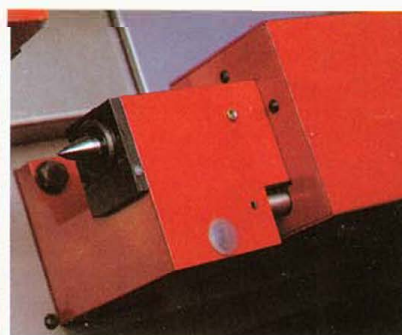
bed lathe with muscle



ed Design



8-Station Turret



Pneumatic Tailstock

uck
ed Tailstock

- Automatic 8-station Turret
- Free-Fall of Chips Due to Slant Bed
- Comprehensive Range of Accessories



Tailstock

- Manual or pneumatic operation
- Precision-adjustable centers

Chucking Devices

- Manual or power chuck
- Manual or pneumatic collet attachment for 5-C collets

Main Drive

- 3.8/5.5 hp dc motor
- Direct drive
- Thermally stable spindle bearings, play-free with permanent lubrication

Emcotronic T-1 Control

- Easy-to-use control to meet practical demands, designed to ISO 1056, EIA RS 274D
- Comprehensive G and M functions; addresses: X, Z, U, W, F, S, T and auxiliary parameters

CNC 2-Axis Contouring Control

- Modern microprocessor control for:
- Rapid, problem-free manual entry (workshop programming)
 - External data input/output with central computer program production

Technical Data, Control Emcotronic T1

Microprocessor 2-axis contouring control
Linear and circular interpolation
Memory capacity for approx. 330' of punched tape
9" CRT display and multifunction display for:

- Actual position
- Distance to go
- Spindle Speed
- Tool offset & turret station
- Feed
- Further parameters

Smallest Programmable Increment 0.0001" (0.0025 mm)
Feed Override 0-140%
Spindle Speed Override 50-120%
Tool Offsets 99 pairs

Modes of Operation

- Manual operation (manual traverse of slides)
- Execute (working off input memory)
- Edit (program input via keyboard, interfaces)
- Reference (touching reference point end switch)
- Automatic (working off NC-programs)

Sub-modes: Single block, dry run, block delete

Program Format

Structure according to EIA RS 274 D

Decimal point data entry

O Number of program (00-6999)

N Block number (0000-9999)

G Preparatory function (00-99)

- G00 = Rapid traverse
- G01 = Linear interpolation
- G02 = Circular interpolation clockwise
- G03 = Circular interpolation counterclockwise
- G04 = Dwell
- G25 = Subprogram call
- G27 = Unconditional jump
- G33 = Thread-cutting single pass
- G40 = Cutter radius compensation cancel
- G41 = Cutter radius compensation left
- G42 = Cutter radius compensation right
- G53 = Cancel position offset 1 and 2
- G54 = Position offset 1
- G55 = Position offset 2
- G56 = Cancel position offset 3, 4, and 5
- G57 = Position offset 3
- G58 = Position offset 4
- G59 = Position offset 5, set and alterable in program
- G70/71 = Inch/Metric data input
- G84 = Facing and longitudinal turning cycles with roughing passes and final cut
- G85 = Threading cycle with plunge cut/side adjustment etc.. constant chip diameter
- G86 = Grooving cycle with cutting cycles, chip breaking, dwell at base
- G87 = Drilling cycle with chip breaking
- G88 = Drilling cycle with chip breaking and draw-back to starting point
- G92 = Preset register/spindle speed limitation
- G94/95 = Feed in 0.01"/min or 0.0001"/rev. (mm/min. or 0.001 mm/rev.)
- G96 = Constant cutting speed
- G97 = Constant spindle speed

X, Z Position data, absolute (X in diameter)

U, W Coordinate values incremental

K, P0---P7 Interpolation parameter

D0---D7 Variables for cycles, etc. in 0.0001" (0.001 mm)

F Feed in 0.01"/min. or 0.0001" 1 rev. (mm/min. or 0.001 mm/rev.)

S Spindle speed in RPM or SFPM

T Tool number, tool offset

M Miscellaneous functions (00-99)

L Special parameter

- M00 = Program stop (programmable)
- M03/04 = Spindle ON clockwise/counterclockwise
- M05 = Spindle stop
- M08 = Coolant ON
- M09 = Coolant OFF
- M17 = End of subprogram
- M20 = Tailstock quill back
- M21 = Tailstock quill forward
- M25 = Chuck open
- M26 = Chuck closed
- M30 = Program end with reset
- M38 = Precise stop ON
- M39 = Precise stop OFF

Permanent program memory for machine data, tool data, and workpiece program (battery backup)

Data Input/Output

RS 232C Interface (V24/20 mA) 150-2400 bd

Cassette recorder (Philips MDCR)

Accessories and Tools

Accessories

Part No.

WORKHOLDING SYSTEMS (Emcoturn 120)	
Manual 3-jaw lathe chuck	V40.186
Set of soft jaws for V40.186 chuck	VOW.013
Quick-action front mounted collet chuck	271.000A
Stop for hollow spindle	271.015
WORKHOLDING SYSTEMS (Emcoturn 120P)	
3-jaw pneumatic chuck (solid body)	271.010
Set of soft jaws for 271.010 chuck	271.020
Pedal switch for chuck or tailstock	
Open/close (one pedal switch required for each)	
.....	579.560A
Special chuck grease for pneumatic chuck	574.660
5C pneumatic collet chuck	574.706A
17-piece 5C collet set 1/16" to 1-1/16"	
by 1/16"	586.200A
1/16"	586.211A
1/8"	586.212A
3/16"	586.213A
1/4"	586.214A
5/16"	586.215A
3/8"	586.216A
7/16"	586.217A
1/2"	586.218A
9/16"	586.219A
5/8"	586.220A
11/16"	586.221A
3/4"	586.222A
13/16"	586.223A
7/8"	586.224A
15/16"	586.225A
1"	586.226A
1-1/16"	586.227A
Machine stand and	270.220 and
swivel stand for control	270.230
Mobile tool cabinet for holding hand tools, etc. .	771.080
Flood coolant system	270.600
Optical tool presetting device	270.610

Tooling

Part No.

O.D. tool locking plate	
(4 come with machine)	ZWZ 179010
I.D. boring bar, L.H., 3/8" ϕ , min.—bore .500"	270.180A
Inserts for boring bar, 10/pkg.	574.174A
I.D. threading bar, R.H., 3/8" ϕ , min.—bore .500"	
.....	270.181A
I.D. threading inserts, 10/pkg.	270.182A
Center drill, double ended 1/4"	260.044A
1/2" twist drill #531	260.045A
O.D. roughing, L.H., 1/2" sq. shank	270.183A
80 degree diamond insert for O.D. roughing,	
10/pkg.	270.184A
O.D. copy tool, L.H., 1/2" sq. shank	270.185A
55 degree diamond insert for copying, 10/pkg. .	270.186A
O.D. copy tool, R.H., 1/2" sq. shank	
(uses Part No. 270.186A insert)	270.187A
O.D. threading, R.H., 1/2" sq. shank	270.188A
O.D. threading insert, 10/pkg.	270.189A
Parting off holder, L.H., 1/2" sq. shank	270.190A
Inserts for parting off, 10/pkg.	270.191A
Reduction bush for I.D. tooling, 1/8" I.D.	270.291A
Reduction bush for I.D. tooling, 1/4" I.D.	270.292A
Reduction bush for I.D. tooling 3/8" I.D.	270.293A
Reduction bush for I.D. tooling, 1/2" I.D.	270.294A
Reduction bush blank	270.295A
Floating tap holders for holding taps	
#3, 4, 5, 6, 8, 10, 1/4", 5/16", 3/8"	270.281A
Collet holder for ES 16 collets (for turret)	270.750
1 set of collets ES 16 dia. 1/32"-5/16"	152.200
Individual collets ES 16	
Diameter	Chucking Capacity
1/32"	0.0197"-0.0394" 152.210
3/64"	0.0394"-0.0590" 152.215
1/16", 5/64"	0.0590"-0.0787" 152.220
3/32"	0.0787"-0.0984" 152.225
7/64"	0.0984"-0.1181" 152.230
1/8", 9/64", 5/32"	0.1181"-0.1575" 152.240
11/64", 3/16"	0.1575"-0.1968" 152.250
13/64", 7/32", 15/64"	0.1968"-0.2362" 152.260
1/4", 17/64"	0.2362"-0.2756" 152.270
9/32", 19/64", 5/16"	0.2756"-0.3150" 152.280
Instruction manual for setup and maintenance	992.701
Programming manual for T-1 control	992.703
(4) VHS video tapes on programming Emcotronic	
T-1 control 8 hrs. (One (1) set comes with	
machine purchase)	999.801A
(31) Fuses for Emcotronic T-1	574.992A

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