

# MANFORD

## A Simple Entry to CNC Machining

- Tool Room Work Shops
- Training / Maintenance
- Metal Parts Milling, Drilling, Boring, Tapping
- Mold Making
- R&D

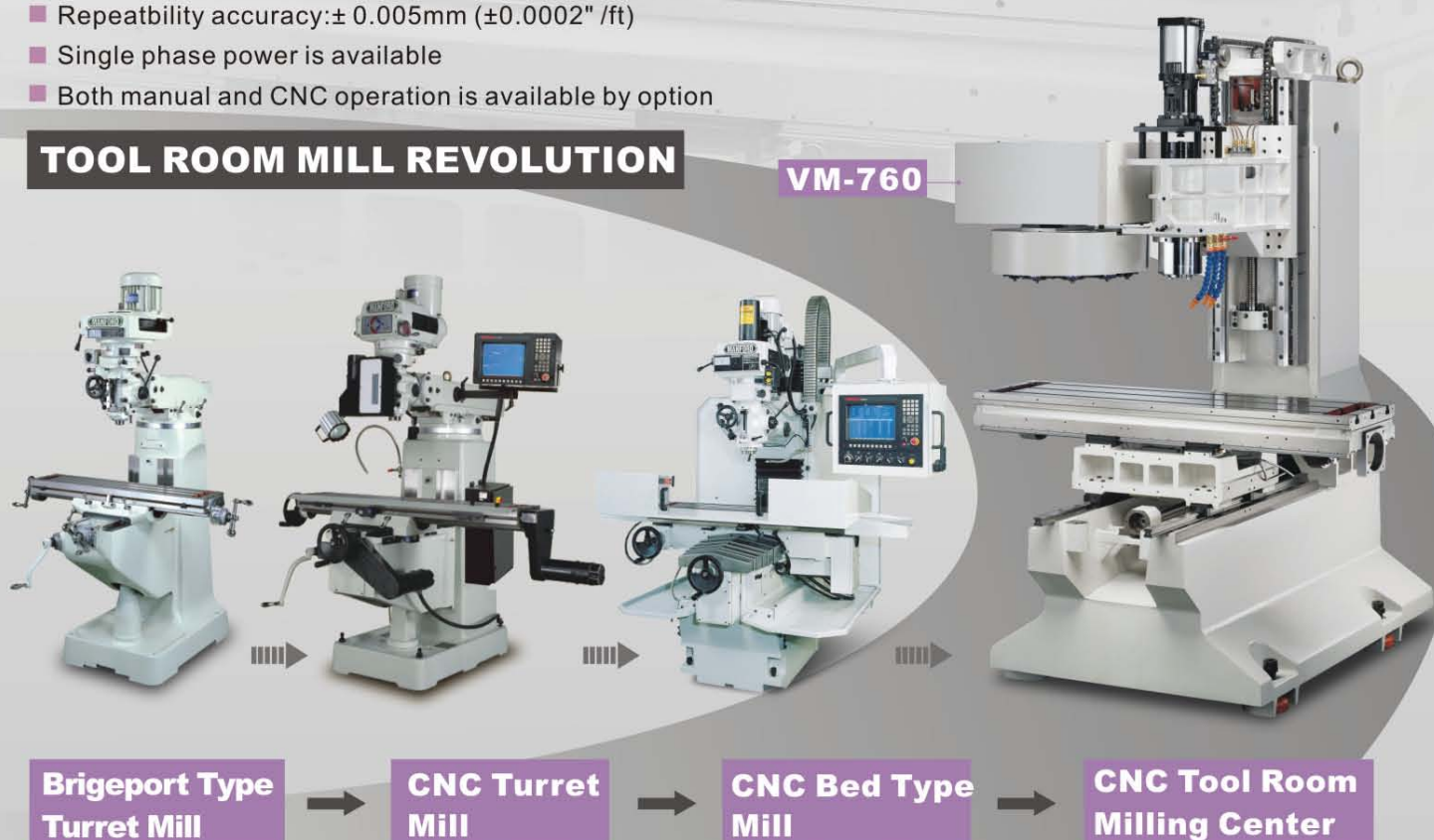
## VM-760 CNC Tool Room Milling Center



## FEATURES

- 7.5 HP high torque spindle motor & spindle directly driven by timing belt, ensures no slip, low noise and low vibration.
- BT40(CAT / DIN) 6000 rpm(Opt. 8000,10000,12000,15000 rpm)
- P4 angular contact spindle bearings limit temperature variation.
- High grade casting main frame is annealed & stress relieved.
- Ø32mm / C5 precise ground ballscrews on XYZ.
- Precision Linear guide ways on all axes provide high speed and high accuracy performance.
- Direct-drive transmission between motor and ball screw by coupling provides zero backlash, enhances rigidity, stability and precision of the machines.
- Genoa type 10 tools ATC (Only for VM-760)
- Y & Z steel way covers protect ways & ballscrews from dust & coolant.
- Full enclosed guarding (Semi guarding for VM-760E)
- Positioning accuracy:±0.008mm / 300mm (±0.0004" / ft)
- Repeatability accuracy:± 0.005mm (±0.0002" /ft)
- Single phase power is available
- Both manual and CNC operation is available by option

## TOOL ROOM MILL REVOLUTION



## COMPARISON

| Specification                      | CNC Turret Mill      | CNC Bed Type Mill      | VM-760 Tool Room Milling Center      |
|------------------------------------|----------------------|------------------------|--------------------------------------|
| Head type                          | Manual head          | Manual head            | VMC head                             |
| Spindle                            | NST#40               | NST#40                 | BT40                                 |
| Spindle speed                      | 4200 rpm or 5000 rpm | 4200 rpm or 5000 rpm   | 6000 rpm (opt: / 8000 rpm.12000 rpm) |
| Quill diameter                     | 85.7                 | 100 / 105              | 120                                  |
| Spindle bearing                    | 7207 P5              | 7210 P4                | 7012 P4                              |
| Spindle motor                      | Induction            | Induction or inverter  | AC spindle motor                     |
| ATC                                | N / A                | N / A                  | 10 tool ATC                          |
| Guarding                           | Semi guarding        | Semi guarding          | Full guarding                        |
| XYZ ways                           | Dovetail             | X Dovetail / Y & Z Box | Linear guide                         |
| Way cover                          | Rubber               | Rubber                 | Steel                                |
| Ballscrew                          | C7                   | C5                     | C5 ground                            |
| Ballscrew / servo motor connection | 1 : 2 ratio belt     | 1 : 2 ratio belt       | 1 : 1 Direct coupling                |
| Rapid travel feed                  | 5M / min             | 5M / min               | 12M / min                            |
| Price                              | A                    | A + 25%                | A + 15%                              |

# A NEW CONCEPT CNC CONTROL SYSTEM WITH USER-FRIENDLY INTERFACE ,COVERING A WIDE RANGE OF CRITICAL FUNCTIONS

# MANFORD

## Control axes:

Number of basic control axes (3 axes)

## Input command:

Least command increment 1 $\mu$ m

## Unit system:

Inch/Metric changover

## Program memory/editing:

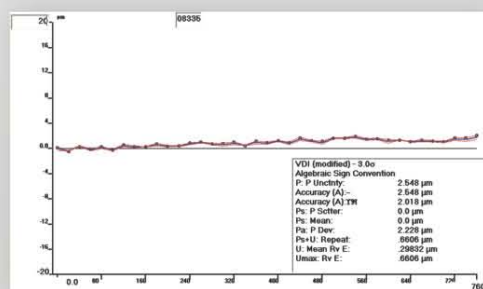
1. Memory capacity ( number of programs stored 600m/ 400programs)
  2. Program editing/ Background editing/ Buffer correction/ Word editing
- RS-232C I/ F

## Coordinate system type and setting:

Machine coordinate system/Coordinate system setting/Automatic coordinate system setting/Workpiece coordinate system selection (6 sets)/  
Extend workpiece coordinate system selection (48 sets) G54.1P1 to P48

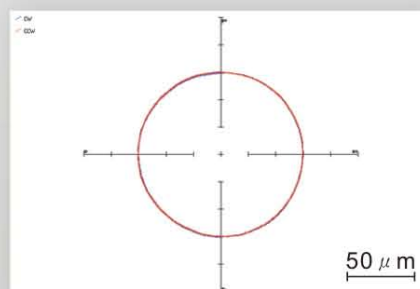


## LASER TEST



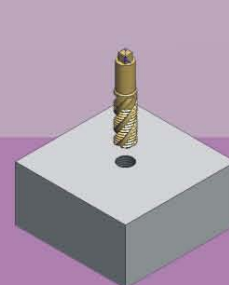
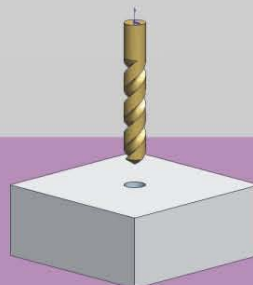
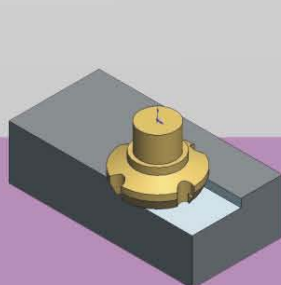
Test Model: VM-760  
Test date: September, 17th, 2009  
Feed rate: 12M/min  
Pitch range: 20mm  
Positioning accuracy: 2.5  $\mu$ m  
Repeatability accuracy: 0.7  $\mu$ m

## BALLBAR TEST



Test Model: VM-760  
Test date: September, 17th, 2009  
Plane: X,Y  
Feed rate: 1000mm/min  
Ballbar length: 150.00mm  
Circularity LSC: 5.5  $\mu$ m  
Scale error(X-Y): 0.7  $\mu$ m / 300mm  
Squareness error: 0.8  $\mu$ m / 300mm

## CUTTING TEST



| Test item        | Face milling cutter | Drilling    | Tapping     |
|------------------|---------------------|-------------|-------------|
| Tool             | Ø80mm / (4 inserts) | Ø22         | M18 × P2.5  |
| Material         | S45C                | S45C        | S45C        |
| Spindle speed    | 1500rpm/min         | 350 rpm/min | 300 rpm/min |
| Cutting width    | 70mm                | —           | —           |
| Cutting depth    | 3mm                 | —           | —           |
| Cutting feed     | 510mm/min           | 60 mm/min   | 750 mm/min  |
| Cutting capacity | 107mL/min           | 23 mL/min   | —           |

| Specification                          | VM-760                                            |
|----------------------------------------|---------------------------------------------------|
| <b>TABLE</b>                           |                                                   |
| Table size                             | 1270 × 305 (50" × 12")                            |
| T-slot (Size × Q'ty × Distance)        | 16 × 3 × 102 (0.63" × 3" × 4")                    |
| Max. load capacity                     | 200 Kgs (450 lbs) evenly dist                     |
| <b>TRAVEL</b>                          |                                                   |
| X axis                                 | 760 (30")                                         |
| Y axis                                 | 400 (16")                                         |
| Z axis                                 | 400 (16")                                         |
| Spindle nose to table surface          | 102 - 508 (4" - 20")                              |
| Spindle center to column front surface | 432 (17")                                         |
| <b>SPINDLE</b>                         |                                                   |
| Spindle taper                          | BT 40 (CAT#40 / DIN#40)                           |
| Spindle speed                          | 6000 rpm (☆8000 / 10000 / 12000 rpm)              |
| Transmission of spindle & motor        | Belt Drive (☆Direct Coupling or Built-In Spindle) |
| <b>FEED RATE</b>                       |                                                   |
| Rapid feed rate of X,Y & Z             | 12m / min (472 ipm / min)                         |
| Cutting feed rate                      | 1-10 mm / min (0.04-393 ipm / min)                |
| <b>MOTOR</b>                           |                                                   |
| Spindle motor                          | 3.5 / 5.5Kw (7.5HP)                               |
| XYZ feed motors                        | 1Kw                                               |
| <b>AUTOMATIC TOOL CHANGER</b>          |                                                   |
| No. of tools                           | Armless 10 tools                                  |
| Max. tool diameter                     | 130 (5")                                          |
| Max. tool length                       | 200 (7.87") Full guarding                         |
| Max. tool weight                       | 6Kgs (13.4 lbs")                                  |
| <b>ACCURACY</b>                        |                                                   |
| Positioning                            | +/-0.008 (+/-0.0004")                             |
| Repeatability                          | +/-0.005 (+/-0.0002")                             |
| <b>MISCELLANEOUS</b>                   |                                                   |
| Coolant pump                           | 1/6HP                                             |
| Lubrication pump                       | 80W                                               |
| Air source Kg / cm <sup>2</sup>        | 6Kg / c m <sup>2</sup> (70 psi)                   |
| Power requirement                      | 12 KVA                                            |
| Machine dimension (L × W × H)          | 2410 × 2163 × 2386                                |
| Machine weight (Approx.)               | 2400 / 2500KGS (5280 lbs)                         |
| CNC control system                     | Manford E60 (☆Heidenhain TNC320)                  |

We reserve the right to modify and improve our products

(O) Standard (☆) Optional (N/A):Not available

| Accessories                                                            | VM-760 |
|------------------------------------------------------------------------|--------|
| Tool box & tools, Leveling screws & bolts                              | O      |
| Quartz work light, Auto lubrication, Coolant system, Spindle air blast | O      |
| Semi guarding                                                          | ☆      |
| Full guarding                                                          | O      |
| Rigid tapping                                                          | ☆      |
| Spindle speed 8000, 10000, 12000 rpm                                   | ☆      |
| Screw type chip conveyor                                               | ☆      |
| Spindle oil cooler                                                     | ☆      |
| Heat exchanger for electrical cabinet                                  | ☆      |
| High pressure water scour for chip removal                             | ☆      |
| Portable MPG                                                           | ☆      |
| Coolant through spindle                                                | ☆      |
| Auto power off                                                         | ☆      |
| Transformer                                                            | ☆      |
| Manual handwheel (pulse type 2 sets, X, Y&Z) with panel                | ☆      |
| CE electricity with interlock ready for front door                     | ☆      |

