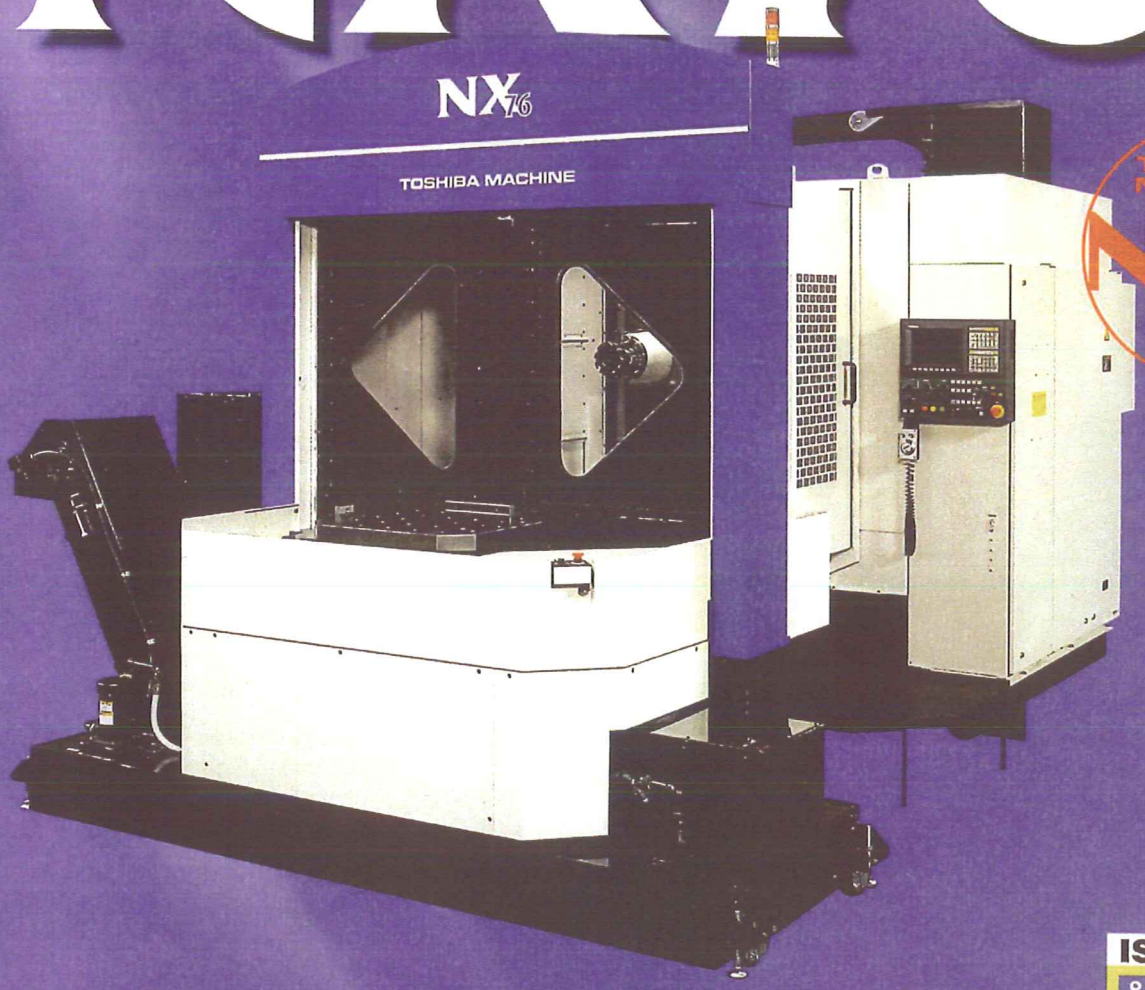
TOSHIBA
MACHINE

SPEED & POWER

HORIZONTAL MACHINING CENTER

NX76



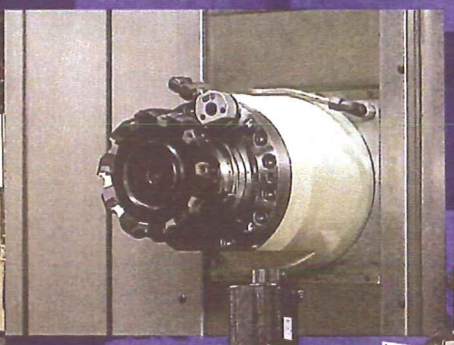
TOSHIBA MACHINE
NEW
model

ISO 9001
DNV
Accredited by the RvA
ISO 9001 REGISTERED FIRM
DNV Certification B.V. THE NETHERLANDS

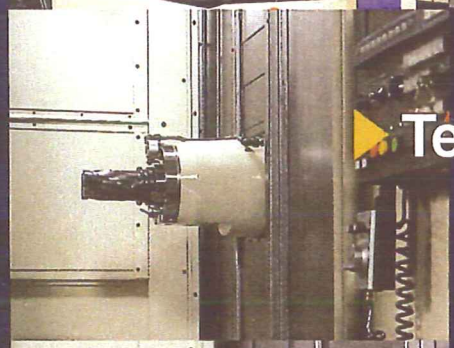
Catalog NX76137-CEC-03

Meet
THE NX76 MACHINING CENTER

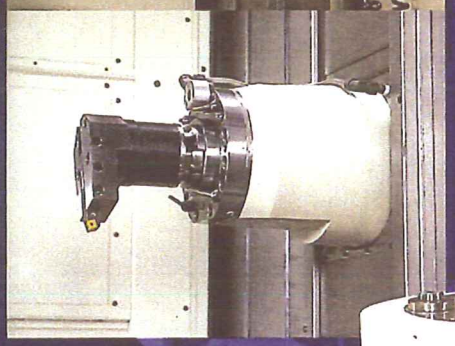
User-Oriented



Technology-Oriented



Productivity-Oriented



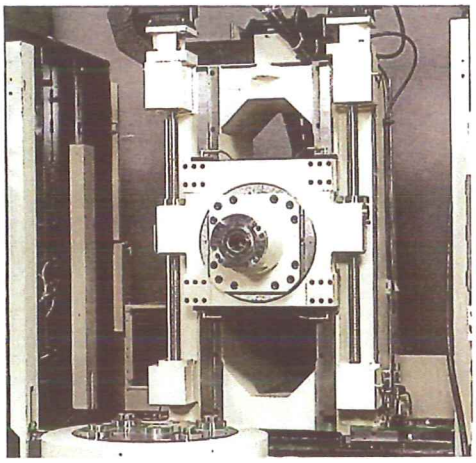
NX76

What is New ?

HIGH RIGIDITY

●Y-axis Twin Ball Screw drive (Standard) [Patent No. 1619854]

- High stability, Fast response, Lowest mass



●Spindle with high power built-in motor (50/40HP)

- SPIN-SHOT bearing with low heat generation
- Spindle bearing inner diameter: 100 mm
- Spindle speed range : 50~8,000 rpm (10,000 or 20,000rpm is Option)
- Spindle torque : 500 N·m (51kgf·m)

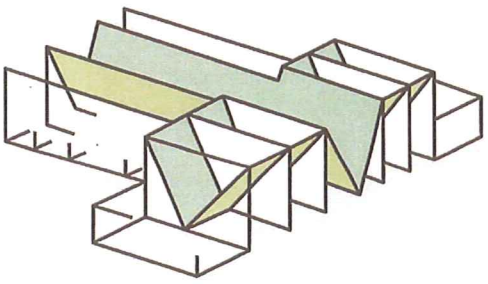
●Rigid linear roller guide

● ϕ600mm Curvic coupling for 750×630mm pallet

- Clamping force: Approx 68kN (7,000kgf)

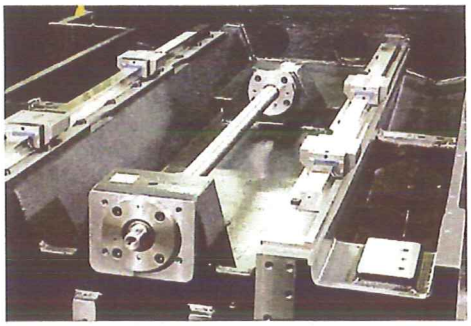
●Triangular rib structure (Bed and Column)

- V-shaped rib structure through to both ends



●Integral double anchors on machine elements for ball screws

●Wide span guide-ways



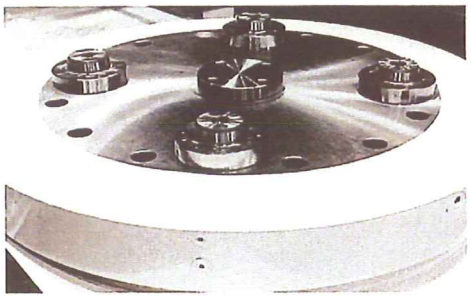
HIGH ACCURACY

●Various thermal displacement counter-measures

- Thermal controlled Spindle nose (Standard)
- Thermal controlled Ball screw nut (Standard)
- Thermal displacement compensation (Option)

UIT function compensates thermal displacement on the three axes (X, Y, Z) based on the duty cycle of the spindle.

●The pallet clamping mechanism through the center of each tapered locator increases pallet location accuracy



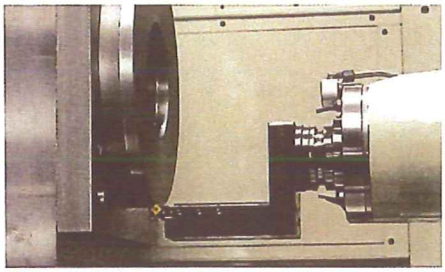
HIGH PERFORMANCE

●High speed and Rapid acceleration/deceleration

- Feed rate = 30,000 mm/min.
- Rapid traverse rate = 30 m/min
- Acceleration = 0.35 G (Option)
- ATC time: C-C 5.5sec
  T-T 2.5sec
- APC time: 10sec

●Orbit boring (Option)

- Revolution in machining field
- Patent pending (Japan, USA, Germany, the Republic of Korea and Taiwan)



COMPACT DESIGN

●Minimum floor space

●3-point support system

●Simple foundation requirement

ENVIRONMENTALLY-FRIENDL

●Grease lubrication for each axis

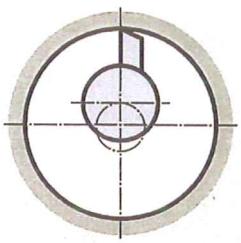
●Slant bed for easy chip disposal and clean-up

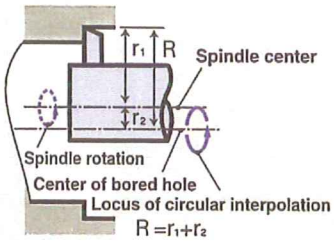
●Full-enclosure Splash cover

What is ORBIT BORING (Option) ?

Principle

Boring of radius r1 + r2 can be performed by synchronization of Spindle rotation and Circular interpolation.
Facing or Taper cutting can be also performed by Spiral movement (Archimedes interpolation) instead of circular interpolation.





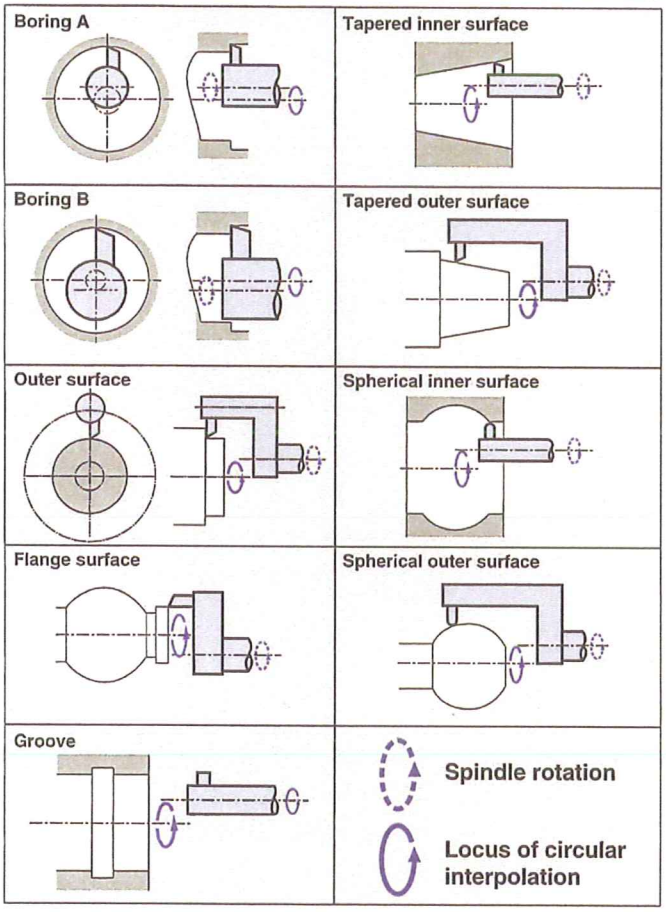
Application of ORBIT BORING

①Various diameter and features can be machined with one tool.
Roughing, finishing, spot-facing and chamfering with one tool.
⇨Reduction of number of tools and frequency of tool change.

②Easy compensation of machining diameter.
⇨Achieving the specified machining diameter with Automatic measurement in unmanned operation.

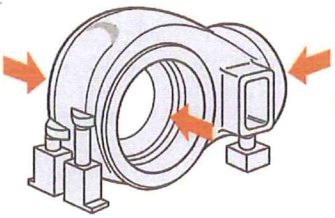
③Facing without Facing head.

Examples of using orbit boring



ORBIT BORING offers

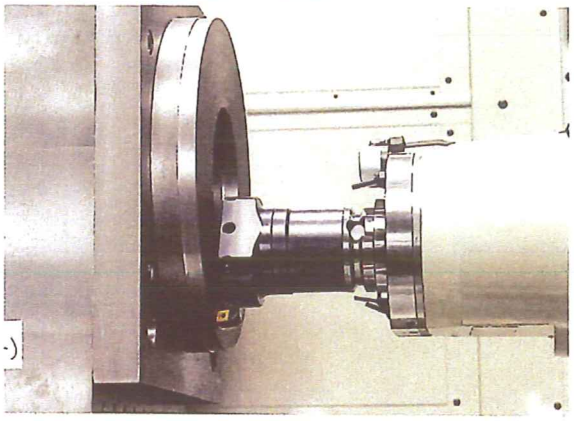
1 Cost reduction and shortening of lead time



❶Reduction of lead time.
❷Lowest machining and tooling cost.
❸Increased machine utilization.

2 Example of orbit boring operation

- Facing
- Workpiece material: FC250



NX76 machining ability

	Workpiece material	Cutting speed m/min (fpm)	Spindle speed min^{-1}	Feedrate mm/min (ipm)	Cutting depth mm (in)	Cutting volume cm^3/min (cipm)
Face milling, Face mill: ϕ125 (ϕ4.9"), 6 blades	S55C	200 (656)	510	1,100 (43.3)	8 (0.3)	792 (48.3)
Face milling, Face mill: ϕ80 (ϕ3.1"), 6 blades	A5052P(Aluminum)	1,500 (4,920)	6,000	12,000 (472.4)	4 (0.16)	3,360 (205)
End milling, Herical mil: ϕ63 (ϕ2.5"), 4 grooves	S55C	130 (426.4)	660	500 (19.7)	50(2)dep.×20(0.8)w	500 (30.5)
Boring, Boring tool: ϕ116 (ϕ4.6")	S55C	160 (524.8)	439	150 (5.9)	8 (0.3)	407 (24.8)
Drilling, Twist drill: ϕ69.5 (ϕ2.7") HSS	S55C	22 (72.2)	100	30 (1.2)	–	–
Tapping, Tap M60×5.5 (W2·3/8)	S55C	10 (32.8)	53	292 (11.5)	–	–
Synchronous tapping, Tap: M3×0.5 (W 1/8)	A5052P	28 (91.8)	3,000※	1,500 (59.1)	–	–

※The spindle speed may vary according to the depth of cut.

Machine specifications

Machine specifications				NX76
Travel	X-axis travel (Column cross)		mm (in)	850 (33.4)
	Y-axis travel (Spindle head vertical)		mm (in)	760 (29.9)
	Z-axis travel (Pallet longitudinal)		mm (in)	780 (30.7)
	Dist. from pallet surface to spindle center		mm (in)	100~860 (3.9~33.8)
	Dist. from pallet center to spindle guage plane		mm (in)	180~960 (7.1~37.8)
Pallet	Pallet size		mm (in)	630×750 [500×630](24.8×29.5[19.7×24.8])
	Pallet loading capacity		kg (lbs)	1,300 (2,860)
	Pallet surface configuration			30-M16 Tap [5-22 mm (0.9 in) T-slot]
	Minimum pallet indexing angle			1° [0.001° cont.]
Spindle	Spindle speed range		min^{-1}	50~8,000[10,000][20,000]
	Type of spindle taper hole			7/24 taper No.50 [No.40]
	Spindle bearing diameter Inner/Outer		mm (in)	100/160 (3.9/6.3)
Feedrate	Rapid traverse rate		m/min (ipm)	30 (1,181.1)
	Feedrate		mm/min (ipm)	1~30,000 (0.04~1,181.1)
	Jog feedrate		mm/min (ipm)	0~2,000 (0~78.7)
Automatic tool changer	Type of tool shank			MAS BT50 [MAS BT40]
	Type of retention knob			MAS P50T-1(45°) [MAS P40T-1]
	Tool storage capacity			38 [60,90,120,180]
	Maximum tool diameter	(When adjacent pots are filled)	mm (in)	125 (4.9)
		(When adjacent pots are empty)	mm (in)	250 (9.8)
	Maximum tool length		mm (in)	450 (17.7)
	Maximum tool mass		kg (lbs)	20 (44)
	Maximum tool moment		N·m	24.5 {250kgf·cm}
	Tool selection method			Pot-address random nearest
Automatic pallet changer	No. of pallets			2
	Changing method			Direct turn
Motors	Spindle drive motor (30 min./cont.)		kW (HP)	VAC37/30 (VAC 50/40) [VAC 15/11 (VAC 20/15)]
	Feed motor	X-axis	kW (HP)	VAC4.0 (VAC 5.4)
		Y-axis (with brake)	kW (HP)	VAC4.0 (VAC 5.4)
		Z-axis	kW (HP)	VAC4.0 (VAC 5.4)
Power sources	Electrical power supply			AC 200/220V ±10%, 50/60Hz ±1Hz
	Power capacity		kVA	appr. 69kVA
	Compressed air to be supplied			0.5~0.8MPa (71~114 psi), 600N ℓ/min (144 Ngal/min)
Tank capacity	for hydraulic unit		ℓ (gal)	100 (26.4)
	for lubrication cooling unit		ℓ (gal)	50 (13.2)
	for oil air unit		ℓ (gal)	1 (0.3)
Machine size	Machine height		mm (in)	appr. 3,100 (122)
	Floor space		mm (in)	3,700×4,915 (145.7×193.5)
	Mass of machine		kg (lbs)	20,500 (45,100)
Accuracy	Positioning accuracy (X,Y,Z)			
	Encoder		mm (in)	±0.003 (±0.00012)/Full stroke
	Linear scale		mm (in)	±0.002 (±0.00008)/Full stroke
	Repeatability			
	Encoder		mm (in)	±0.0015 (±0.00006)
	Linear scale		mm (in)	±0.0010 (±0.00004)
Painting color	Standard point color (Urethane painting)			R4-383<Munsell 5Y 8.4/0.5> (ivory white) R40-837<Munsell 2.5PB 3.5/10> (Blue) <Munsell N2.5> (dark gray)

Values in brackets [ ] are optional.

The most advanced CNC system available TOSNUC 888 (Triple Eight)

TOSNUC 888 (Triple Eight), the most advanced CNC of its kind yet devised, comes equipped with a variety of new functions and devices for enhanced operability.

Features of TOSNUC 888

●Triple display of multi window

Simultaneous display and editing of two programs and offset data, etc. are possible.

●Customized keys

Key operation and screen display the user uses very often can be memorized by the key operation procedure memory operation (6 kinds) and screen display memory operation (4 kinds). Thus, the operation becomes easier.

●A combination of main display and sub display

The user can select any desired combination of displays.

●Change of display color

Display colors of the frame, background and characters can be changed.
(In all, eight colors are available; white, black, red, yellow, green, blue, light blue and purple.)

●Undo of just deleted program (conditional)

A program just deleted by mistake can be restored.

●Efficient character editing.

Data can be edited character by character rather than word by word.

●MDI function

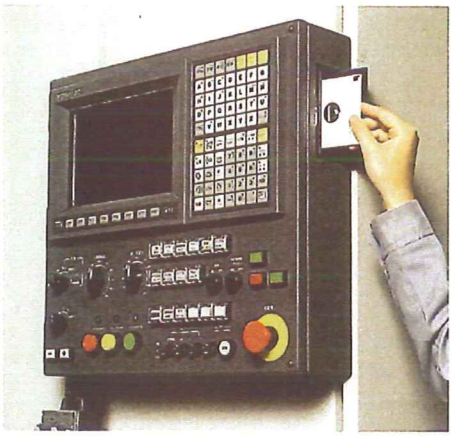
①Entry of two or more blocks (or lines) is possible in the MDI mode. A program requiring the pre-reading function such as cutter compensation can also be executed.

②After entry of a program and execution of multiple blocks in the MDI mode, the program can be executed again, starting from any block already executed.

③An MDI program will not be cleared even after the power is turned off. It can be executed again.

④A program created in the MDI mode is automatically registered in the NC internal memory under the name of "MDI". The MDI program can be executed in the AUTO mode.

(When this happens, copy the program named "MDI" to another name, using the program editing function.)



Floppy disk drive unit (option)

●Teaching function (option; Set B)

Automatic program creation is possible by MDI and manual operations.

●Manual alignment function (option; Set B)

Including the manual tool length/tool diameter measuring function.

●Floppy disk drive unit (option; Set B)

●Remote buffer operation, full array of communication software (option)

●Aux. mass-storage (PCMCIA-ATA) (option)

Flash disk 40 MB

Hard disk 520 MB

*We reserve the right to change any of the specifications in this catalog without notice in order to effect improvements.

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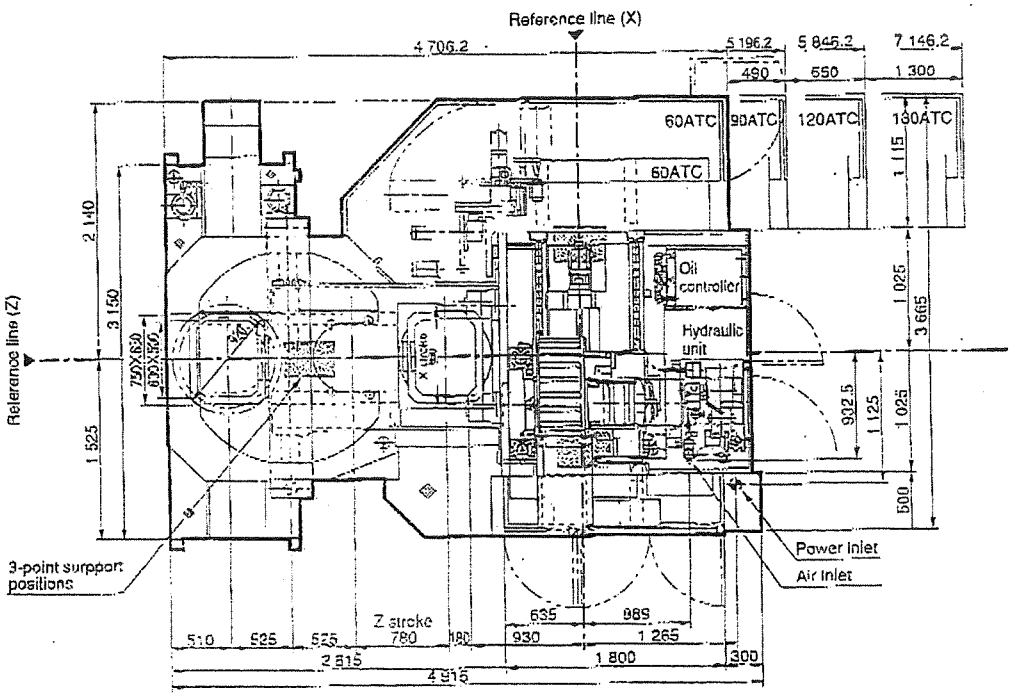
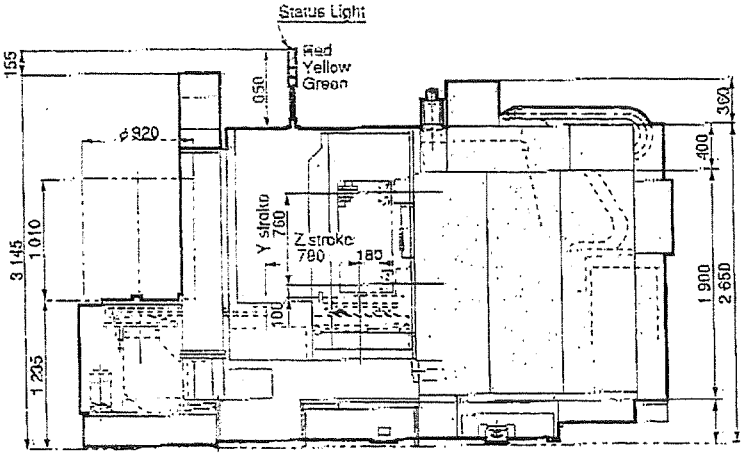
11. Machine Layout and Foundation

NX76

■Machine Floor plan

[Two (2) pallets]

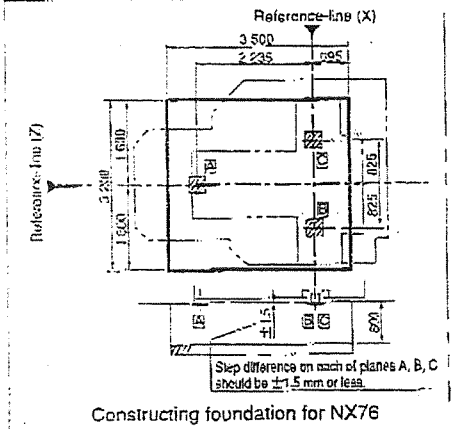




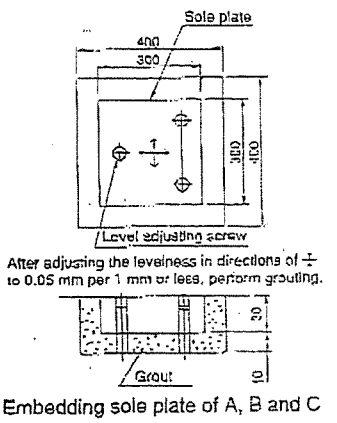
■Machine Foundation Drawing and Constructing Foundation for Installing the Machine

- As the NX76 is installed, supported at three (3) points, accuracies of the floor surface including these three (3) points are very important.
- To install the machine, construct a foundation as per the following example.
- For details, see the foundation drawings submitted from Toshiba Machine.
- Constructing a foundation for installing the machine by three (3)-point supporting method.

  Foundation area: 3200×3500mm (126×137.8 in)
  Foundation depth: 800mm (31.5 in)
  Foundation accuracies:
  Step difference on each of planes A, B, C
  ±1.5mm or less (0.06 in)
  Levelness of each of planes A, B, C
  0.05mm per 1m or less (0.002/39.4 in)



Constructing foundation for NX76



Embedding sole plate of A, B and C