

VECTRUM 3046 α TURRET PUNCH PRESS

The Vectrum 3046 α incorporates a hydraulic driven ram system developed by Murata Machinery. This technology allows high production speeds with energy efficient operation and reduced maintenance costs. This machines high speeds and its large turret provides greater flexibility and increased productivity.



STANDARD FEATURES AND COMPONENTS

Press Frame

Heavily reinforced single piece design with triple box construction assures tool alignment under full tonnage punching. The press frame and table base design was modeled at our research center using computer-aided finite element analysis to optimize frame stiffness.

Table

The table consists of a substantial, reinforced, base weldment supporting a rigid carriage weldment. Each motion operates on anti-friction bearings, and is driven by AC servo motors, through lead screws and recirculating ball nuts. Remotely controlled air work holders are included which pass between the turrets. A retractable end locator on the table is used to initially locate sheets on the press.

Turret

The thick meehanite cast turret has burnished bores that guide the punch holders throughout the stroke. The bi-directional turret quickly positions each tool as the table positions the sheet. Harden bushings guide turret index pins for accurate positioning.

Tooling

Equipped as a Wiedemann Style Machine, currently using Wilson as tooling provider. No tooling is included in this scope of supply.

Electrical Drive and Controls

- Voltage: 200/220V, 3 Phase, 50/60Hz
- Temperature Range: 50° to 120°F (10° to 49°C)
- Maximum Humidity: 90 Percent
- Starter: Automatic reduced voltage starting of main hydraulic pump motor (Y-Delta).
- Punching mechanism is hydraulically actuated with a servo guided spool.
- Brushless AC servo drive motors (X, Y, C, T)

Automatic Lubrication

Main bearings and critical components on the press are cyclically lubricated by an automatic lubrication system.

Fanuc 18i-PA CNC Control

The CNC Control is easy to operate and utilizes “User Friendly” software that eliminates costly delays due to operator error. Easy to understand instructions guide the operator through machine and control setup and operation.

- The control features continuous, self-checking, automatic diagnostic readout.
- Programs can be registered into memory by RS232 interface, 3½” Floppy Drive, memory card, or manual keyboard entry. (Ethernet option is available)
- The control utilizes state of the art Color LCD display.
- Manual operations are available for all functions of the press, turret, and table.
- First part processing from a multiple nest saves material and inspection time. If the first part passes inspection, the remaining parts in the nest can then be produced.
- Fanuc’s Conversational MMC contains the following Murata supplied modules:
 - Interactive “Program Making”. This allows programs to be modified or developed while the machine is in operation. Programs can also be reviewed in a graphical display that displays the part and its punching operations.
 - Machine Maintenance. Records of maintenance operations can be checked and monitored. Instructions for periodic maintenance to be done on the machine are displayed and can be acknowledged to record the activity done.

Safety and Operational Interlocks

Safety and operational interlocks are used to minimize damage to the machine, hazards to personnel and material. Safety floor mats and safety switches protect the operator work area of the machine. Pressure on a safety mat will immediately interrupt the machine cycle and display an error message. The Turret Mat, located next to the Tool Change door, will also disable all Servo Amps for additional safety. Safety interlocks are on access doors to any hazardous area. X and Y axes are protected by over travel limits and a bumper stop.

Work Holder Safety

Prevents the press from punching when workholders are in a position in which they could be damaged by a punch. The safety interlock area automatically varies with the size of the punch station range. Multiple-zoned workholder protection based on station size allows efficient punching close to the workholders. The workholder positions are initially scanned at the same time the machine is zeroed. Movement of the workholders is detected by the control system and automatic scanning for current workholder position will occur before the next part is run.

Automatic Sheet Repositioning

This feature permits the relocating of sheets longer than the rated capacity of the table to allow processing of the entire sheet. The device is also useful in shifting work sheets to make hits in the area where work holders are clamping the sheet. Through the NC part program the sheet is positioned, hold down clamps grip the sheet, the workholders open, and the X axis moves the workholders to a new location on the sheet.

Training

No installation or training support is included with this machine. This service can be purchased through Muratec directly, or a number of 3rd party service providers.

GENERAL SPECIFICATIONS

HYDRAULIC RAM AXIS SPECIFICATIONS

PUNCHING CAPACITY:	33 Tons (30 Metric Ton's)
HYDRAULIC POWER UNIT:	(3) 7.5 HP (5.5 KW) Pump Motors, 3000 PSI Max., Variable 58 GPM Max., 79 Gallon (300L) Reservoir, Variable Flow Pressure, Mobil DTE 25 or equivalent
PUNCHING SYSTEM:	Digital Hydraulic Servo Controller Ram. Servo Motor Controlled, Interfaced to CNC
WORK HOLDER PROTECTION:	Automatic work holder avoidance of hydraulic ram when work holders passing through upper and lower turrets
HYDRAULIC HEIGHT CONTROL:	Variable hover height
PROGRAMMABLE RAM STROKE RANGE:	Programmable from -0.236" to +1.075" (-6mm to 27.3mm)
DIE PENETRATION CONTROL:	Variable die penetration
NOISE CONTROL:	Variable velocity breakpoint to reduce noise (fast approach, slow punch, fast return)
CNC SET-UP:	Tables in Fanuc Control for Tooling and Turret Station Set-Up

PUNCHING SPECIFICATIONS

PUNCHING ACCURACY:	± 0.0028" (0.07mm)						
AXIS REPEATABILITY:	± 0.001" (0.03mm)						
HIT RATES:	<table><thead><tr><th><u>Axis Move</u></th><th><u>Hits/Minute</u></th></tr></thead><tbody><tr><td>Nibbling (1mm)</td><td>1000</td></tr><tr><td>0.984" (25mm)</td><td>400</td></tr></tbody></table>	<u>Axis Move</u>	<u>Hits/Minute</u>	Nibbling (1mm)	1000	0.984" (25mm)	400
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Nibbling (1mm)	1000						
0.984" (25mm)	400						

MATERIAL SPECIFICATIONS

MAX. SHEET WEIGHT: At full table speed (100% feed rate)	330 Lb. (150 kg)
MAX. MATERIAL THICKNESS:	0.250" (6.35mm)
MAX. HOLE DIAMETERS: Mild Steel Hole Size vs. Material Thickness	4.75" (120.6mm) diameter hole in 0.089" 1.70" (43.1mm) diameter hole in 0.250"

X & Y-AXIS TABLE SPECIFICATIONS

THROAT DEPTH:	53.1" (1350mm)
TABLE TRAVEL:	X - 80.7" (2050mm) Y- 62.9" (1598mm)

Note: Standard Y load position is 60.039" (1525mm). Oversize sheets can be run, but are limited by throat depth. Sheets can be flipped or rotated to access entire sheet. Maximum reach using outer track is 60.039" (1525mm) and on inner track is 62.795" (1595mm).

OVER TRAVEL LIMITS:	+X: 0.984" (25mm) -X: 0.984" (25mm) +Y: 0.118" (3mm) -Y: 2.756" (70mm) Outer Track 0.0" (00mm) Inner Track
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STANDARD SHEET SIZE NO REPOSITION:	49.2" x 78.7" (1250 x 2000mm)
ONE REPOSITION:	49.2" x 157.5" (1250 x 4000mm) (Support tables recommended.)

MAX. LINEAR TABLE SPEED(X & Y Axes):	3150"/Min. (80 M/Min.)
MAX. DIAGONAL SPEED:	4454"/Min. (113M/Min.)
X & Y-AXIS DRIVE:	Fanuc Digital AC Servo Motor
AXIS GUIDE:	Pre-Loaded Ball Bearing Linear Guides

TURRET SPECIFICATIONS

TOOLING STYLE: Wiedemann Style Tooling

STANDARD TURRET CAPACITY: 44 stations including 4 auto-indexable stations

TURRET ROTATION: 40 RPM

T-AXIS BI-DIRECTIONAL DRIVE: Fanuc Digital AC Servo Motor

UPPER TURRET TO DIE CLEARANCE: 0.878" (22.3mm)

UPPER TURRET THICKNESS: 3.94" (100mm)

AUTO INDEX STATION SPECIFICATIONS

PUNCHING CAPACITY: 16.5 Tons (15 Metric Tons)

MAXIMUM ROTATIONAL SPEED: 60 RPM

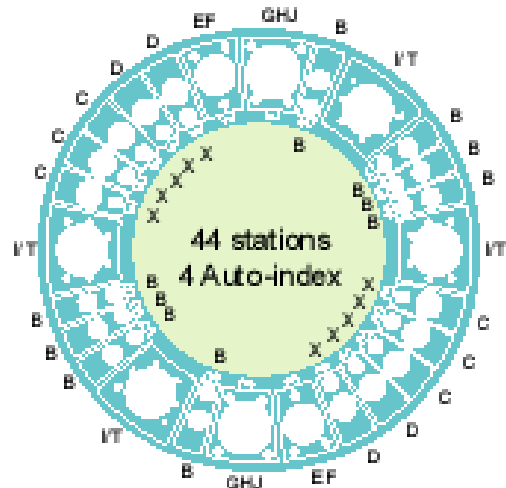
C-AXIS BI-DIRECTIONAL DRIVE: Fanuc Digital AC Servo Motor

ROTATIONAL ACCURACY: +/- 0.05 degrees

NOTE: Index stations available in any combination of Single, Varitool®, or Varimark®

Turret Configuration.

Station	Maximum Diameter	Quantity
X	0.5" (12.7mm)	10
B	1.0" (25.4mm)	16
C	1.5" (38.0mm)	6
D	2.0" (51.0mm)	4
E/F	3.0" (76.0mm)	2
G/H/J	4.75" (121.0mm)	2
F (Auto Index)	3.0" (76.0mm)	4
	Total	44



CNC CONTROL SPECIFICATIONS

CONTROL TYPE: Fanuc Model 18i-P

I/O DEVICE: RS-232 Serial Port, 3.5" Floppy Disk Drive, PCM-CIA Slot (SRAM/Flashcard)

CONVERSATIONAL MMC:	Interactive Programming, Operation Monitor	
PROGRAM STORAGE CAPACITY:	128 KB of memory	
MAX. NUMBER OF PART PROGRAMS:	200	
POSITION COMMANDS:	Absolute / Incremental (Inch/Metric)	
LEAST PROGRAMMABLE INCREMENT:	0.001" (0.01mm)	
DISPLAY:	Color LCD	
OTHER CONTROL FUNCTIONS:	Error message display	Optional block skip
override	Self-Diagnostics	Workholder
	Cycle time display	Punch hit counter
	Sheet counter	Alarm history
	Single Test Part Processing	
	Tool Condition Setting Using M-codes	

GENERAL MACHINE SPECIFICATIONS

APPROX. MACHINE WEIGHT: 33,060 Lbs. (15 Metric Tons)

TABLETOP STYLE: Steel Transfer Balls

APPROX. MACHINE DIMENSIONS:

Width	-	165.4" (4200mm)
Length	-	231.5" (5880mm)
Height	-	97.8" (2485mm)
Table Height	-	38.6" (980mm)

