

Brake Rotor Drilling Cell

Kira KN40Va Vertical CNC Production Center



Key Features

- Easy changeover for different parts
- Unmanned operation

Automotive Brake Rotor



12 Tool Changer

PRODUCTION CHALLENGE:

- Take brake rotors from a turning operation, check for balance, perform balance milling operation and provide a separate lane for parts that can not be machined to the required specifications; In addition, the parts need to be flipped in order to drill all the lug holes and chamfer then flipped back before transfer to the stud pressing operation

SOLUTION:

- Design balancing machine with all movements in the column so that the work piece will remain stationary during the balancing operation
- Utilize a Kira KN40Va 3 axis traveling column machine, which like the balancing machine allows for the work piece to remain still during machining
- The Kira's small footprint and extremely fast movements greatly reduce the non-cut time; The Kira machine's rigid construction allows for the use of combination insert tooling, which cuts the holes faster and provides greater tool life; Coolant through the spindle is also available
- The balancing machine and Kira production center are equipped with a Midstates Industrial Group electro-mechanical lift and carry system; This system provides smooth lift, rapid transfer, smooth deceleration and gentle location of the work piece; All of this is done in the same time as a 180° pallet changer; Part flipping is easily managed within the lift and carry system

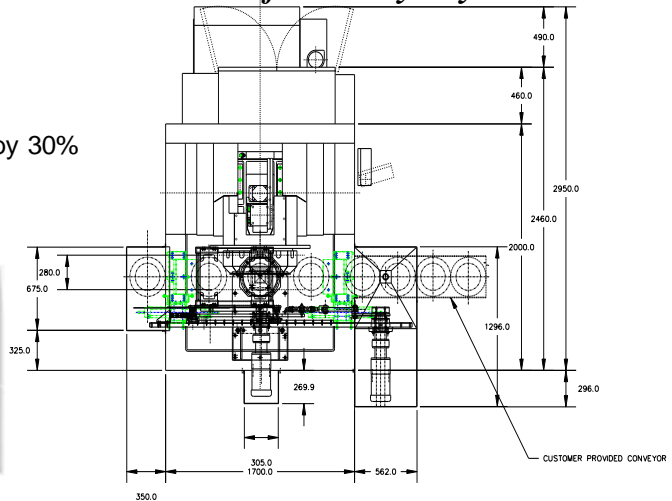


RESULTS:

- Cycle time achieved
- System complexity reduced
- Uptime improved by 40%
- Floor space requirement reduced by 30%
- Two (2) pallet changers eliminated
- Two (2) fixtures eliminated



Lift & Carry Layout



KIRA

Kira USA Headquarters

21299 Suite A Carlo Drive
Clinton Twp, Michigan 48038

Phone: 262-835-9272 Fax: 262-835-9273

www.midstatesintl.com

Midstates International Technical Center:

21299 Carlo Dr.

Clinton Township, Michigan 48038

Phone: 586-307-3414 Fax: 586-307-3719

MACHINE SPECIFICATIONS	Non-Pallet Changers		Automatic Pallet Changers	
	KN40Va-500S	KN40Vb-500S	KN40Va-500S-2APC	KN40Vb-500S-2APC

TRAVEL

X axis stroke	19.7" (500mm)	19.7" (500mm)	19.7" (500mm)	19.7" (500mm)
Y axis stroke	13.8" (350mm)	13.8" (350mm)	13.8" (350mm)	13.8" (350mm)
Z axis stroke	15.8" (400mm)	15.8" (400mm)	15.8" (400mm)	15.8" (400mm)

SPINDLE POWER

Standard	6,000RPM-10HP	8,000RPM-10HP	6,000RPM-10HP	8,000RPM-10HP
Optional	10,000RPM-10HP	12,000RPM-15HP	10,000RPM-10HP	12,000RPM-15HP

TABLE / PALLET CHANGER

	Fixed Table	Fixed Table	Each Pallet	Each Pallet
Working area	27.6"x15.8"	27.6"x15.8"	23.6"x13.8"	23.6"x13.8"
Pallet change time	n/a	n/a	3sec	3sec
Maximum table load capacity	1100 lbs.	1100 lbs.	220 lbs.	220 lbs.
Pallet Rotation	n/a	n/a	180°	180°

FEED RATE

Rapid traverse

X axis	1889 IPM (48,000mm)	1889 IPM (48,000mm)	1889 IPM (48,000mm)	1889 IPM (48,000mm)
Y axis	1889 IPM (48,000mm)	1889 IPM (48,000mm)	1889 IPM (48,000mm)	1889 IPM (48,000mm)
Z axis	1417 IPM (36,000mm)	1889 IPM (48,000mm)	1417 IPM (36,000mm)	1889 IPM (48,000mm)

Cutting feed rate

X axis	394 IPM (10,000mm)	394 IPM (10,000mm)	394 IPM (10,000mm)	394 IPM (10,000mm)
Y axis	394 IPM (10,000mm)	394 IPM (10,000mm)	394 IPM (10,000mm)	394 IPM (10,000mm)
Z axis	394 IPM (10,000mm)	394 IPM (10,000mm)	394 IPM (10,000mm)	394 IPM (10,000mm)

Machine Dimensions

Length x Height x Width	118.1x70.0x102.8	118.1x68.9x99.8	135.5x70.0x102.8	135.8x68.0x99.8
Weight	6,000 lbs.	6,000 lbs.	8,000 lbs.	8,000 lbs.

TOOL SHANK

Standard	CT40	CT40	CT40	CT40
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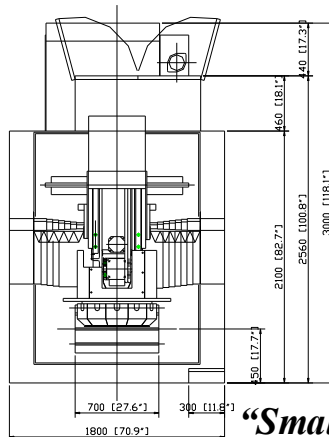
TOOL CHANGER

Number of tools	12	20	12	20
Tool selection	Random	Random	Random	Random
Tool change time (T-T)	1.6sec	1.2sec	1.6sec	1.2sec
Tool change time (C-C)	3.2sec	2.8sec	3.2sec	2.8sec
Maximum tool diameter	3.9" (100mm)	3.9" (100mm)	3.9" (100mm)	3.9" (100mm)
Maximum tool length	9.8" (250mm)	9.8" (250mm)	9.8" (250mm)	9.8" (250mm)
Maximum tool weight	8.8 lbs (4kg)	8.8 lbs (4kg)	8.8 lbs (4kg)	8.8 lbs (4kg)

ACCURACY

Positioning accuracy (X, Y & Z axis)	0.0002" (0.005mm)	0.0002" (0.005mm)	0.0002" (0.005mm)	0.0002" (0.005mm)
Positioning repeatability (X, Y & Z axis)	±0.0001" (0.003mm)	±0.0001" (0.003mm)	±0.0001" (0.003mm)	±0.0001" (0.003mm)

All specifications are subject to change without notice.



"Small Footprint"

