

# Transmission Clutch Plate Machining

*Kira HPC30Vb-Non APC Vertical CNC Production Center with Special Fixture and Conveyor*

## Key Features

- Automatic Part Orientation
- Unmanned
- Programmable for Family of Parts

## PRODUCTION CHALLENGE:

- To create an automated (unmanned) solution that will automatically deliver clutch plates to the machining center, orient them into position, clamp, machine, unclamp and evacuate them out of the machining center.
- Be able to change over to 10 different part numbers with (5) five minutes change over time.
- Be capable of around the clock 24/7 unattended operation.



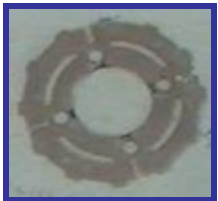
## SOLUTION:

- Kira HPC30Vb-2APC platform, remove automatic pallet changer, replace with a work holding fixture.
- The traveling column design of the Kira features all three axis movements in the column which facilitates the use of a stationary fixture, which is easily automated.

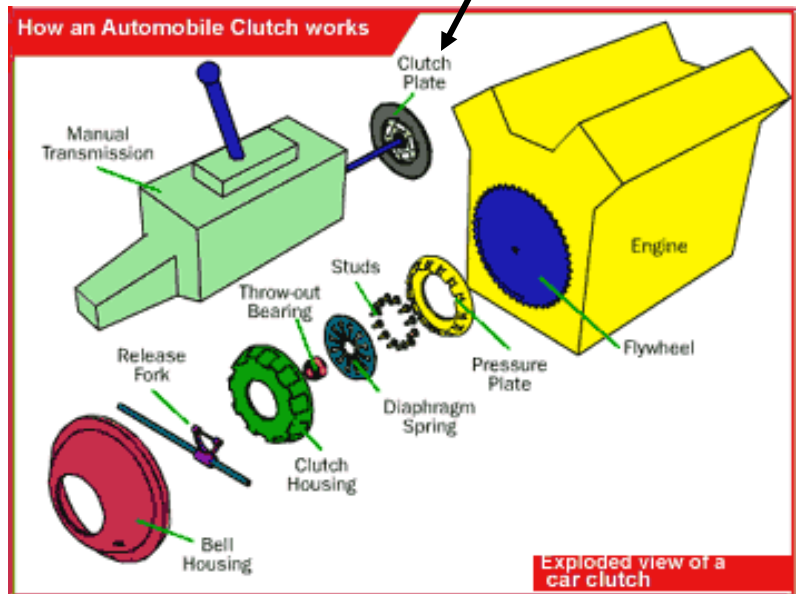
## RESULTS:

- 24/7 unattended operation
- (1) one minute changeover time
- 98% uptime
- Improved output
- Predictable - Repeatable Quality

## Transmission Clutch Plate



**Example of Clutch Plate being Machined in this Application.**



**Work piece is automatically lifted off of the conveyor and clamped up into the fixture.**



<b>MACHINE SPECIFICATIONS</b>	<b>HPC 30Vb-350S-2APC</b>
-------------------------------	---------------------------

**TRAVEL**

X axis stroke	13.8" (350mm)
Y axis stroke	11.4" (290mm)
Z axis stroke	12.6" (320mm)

**SPINDLE POWER**

Standard	15,000RPM - 5HP
----------	-----------------

**DISTANCE BETWEEN SPINDLES**

Standard	n/a
----------	-----

**AUTOMATIC PALLET CHANGER**

Pallet dimensions (each pallet)	19.7"x11.8" (500mmX300mm)
Pallet change time	2.4sec
Table load capacity (each pallet)	220lbs (100kg)
Rotation	180°

**FEED RATE**

Rapid traverse

X axis	2205 IPM (56,000mm)
Y axis	2205 IPM (56,000mm)
Z axis	2205 IPM (56,000mm)

Cutting feed rate

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

**THROAT DIMENSIONS**

Spindle nose to table top	7.1"-19.7" (180mm-500mm)
Cutting center line to column surface	14.1" (357mm)

**TOOL SHANK**

Standard	BT30
----------	------

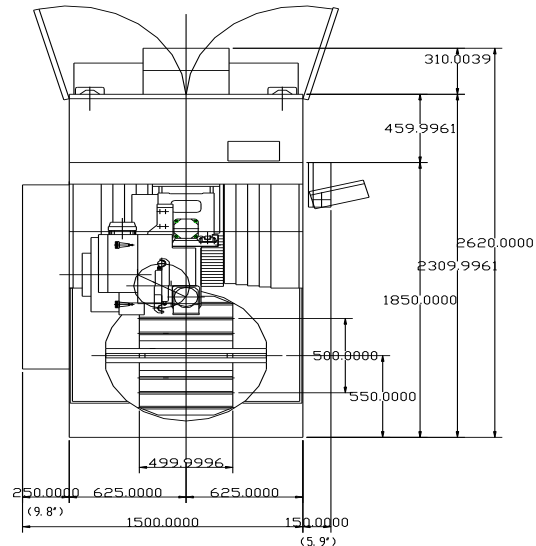
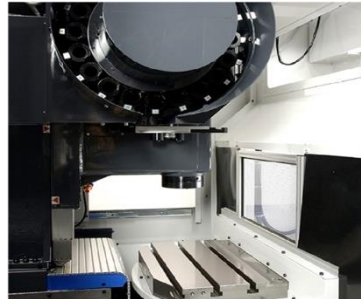
**TOOL CHANGER**

Number of tools	20
Tool selection	Random
Tool change time (T-T)	0.7sec
Tool change time (C-C)	1.7sec
Maximum tool diameter	3.1" (80mm)
Maximum tool length	7.9" (200mm)
Maximum tool weight	6.6 lbs (3kg)

**ACCURACY**

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

**"Small Footprint"**



**View of the Ki HPC30Vb-2AP converted to a NON-APC machine with conveyor system.**