

# Aluminum Piston Valve Pocket Machining

*Kira HPC30Vb-2AQC Vertical CNC Production Center*

## Key Features

- One setup for three surfaces
- Two (2) horizontal spindles on out-rigger brackets

## Aluminum Piston



### PRODUCTION CHALLENGE:

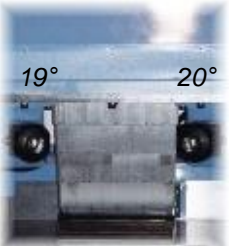
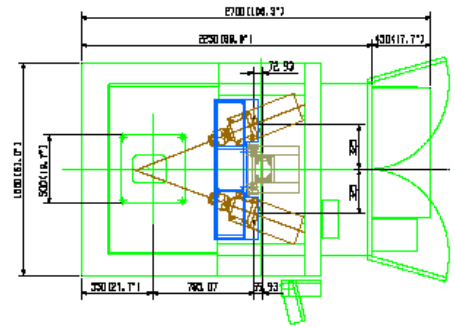
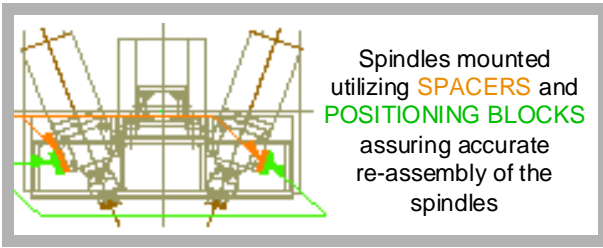
- Mill (4) valve pockets into the top of an automotive piston within a total cycle time of 12 seconds
- Low budget; Short cycle time; CPK 1.67

### SOLUTION:

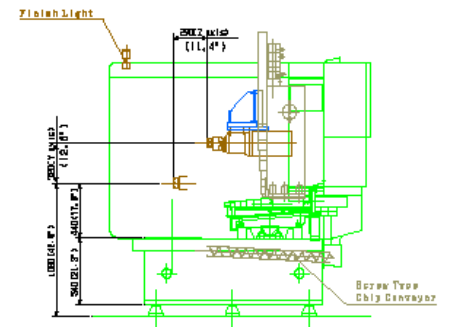
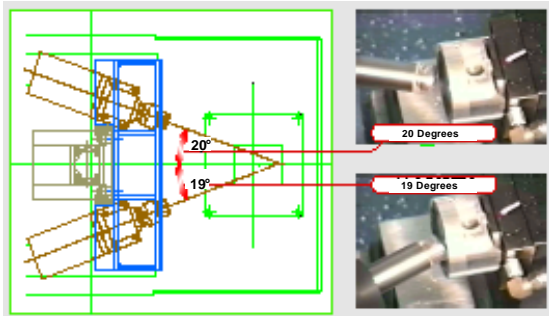
- Start with a standard HPC30Vb-2AQC 3 axis traveling column vertical spindle production center
- Remove spindle assembly and tool changer
- Replace with (2) Kira KSP-6015 motorized box spindles mounted on a bracket in a horizontal attitude
- Add Fibro index table to facilitate auto load/unload during machining operation
- Add automatic clamp and eject fixture
- Interface robot and conveyor

### RESULTS:

- Cycle time achieved; The production center can accomplish the machining operation within a cycle of 12 seconds while only running at mid-range speeds - Outstanding reliability
- CPK achieved – Consistent repeatability
- Customer has a special application machine comprised of standard modules; All parts are in stock in normal working inventory
- Service and support enhanced
- Price fits within the customers restricted budget – Improves customer competitiveness
- Quality, reliability, accuracy, flexibility and agility are all achieved affordably
- These are world class results!



Dual Spindles Mounted at fixed angles to reduce cycle time



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<b>MACHINE SPECIFICATIONS</b>	<b>HPC 30Vb-350S-2APC</b>
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### 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
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### DISTANCE BETWEEN SPINDLES

Standard	n/a
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### 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
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### 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)

All specifications are subject to change without notice.



- Fibro indexer for high speed and accurate pallet change
- Hydraulics eliminated - improving reliability, cleanliness and maintenance
- Automatic loading operation
- Air part seated for guaranteed part quality