

# Using Electric NSK tooling on a CMS lathe

## Application problems related to NSK ASTRO "E" 400 Electric tooling :

All NSK ASTRO "E" spindles are 30mm diameter.  
This diameter size requires modification of the machine center height to 3/4".  
This requirement is not appropriate for the majority of applications.

### Solution

The RAS150E spindle is a 1/4" capacity spindle similar to the air spindles, in as much as it has a 0.905" shank diameter. But it is a 90° mounting.

This spindle has a long diameter that can be clamped in a Posi-lock holder.

The motor connection uses a standard ASTRO "E" 400 mount.

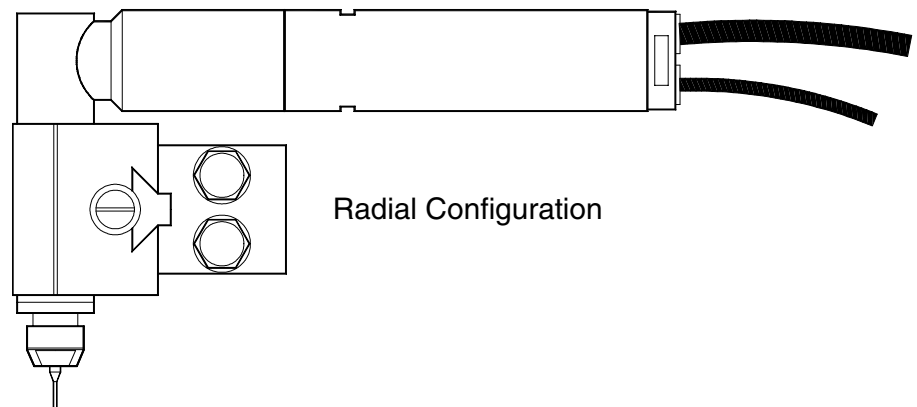
This motor & spindle combination allows full use of the ASTRO "E" power.

The only limitation is 20,000RPM input speed, and a built in reduction of 1/2.67

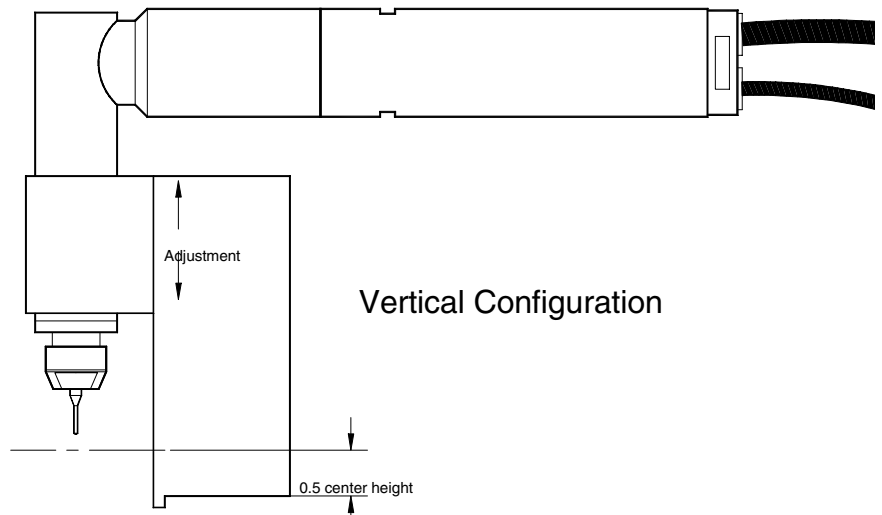
As most applications for electric spindles are for milling & drilling harder steels a reduction is required, this means a 2 to1 reducer gives full power at 20,000RPM and is further reduced to 7490RPM.

The various layouts for the NSK electric motor & spindles are outlined as follows :

This configuration allows the tool to drill or mill from the side. Using X axis motion cross holes can be drilled.  
Using ZC interpolation helical slots, bayonet fittings and engraving can be accomplished.



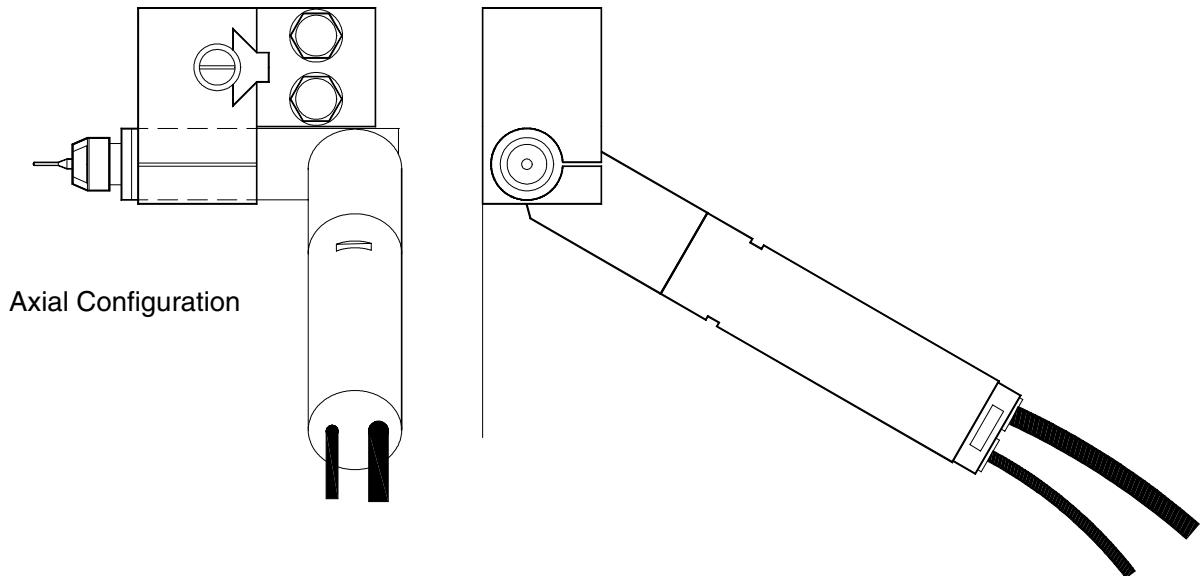
The vertical holder allows flats or slots to be milled. The tool height is adjusted manually.  
This setup is very useful for milling squares, hexes etc on Parts where the feature can be anywhere on the part length.



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In an axial configuration the motor can be turned vertically to provide clearance for tools next to the live tool. Reducers can be attached to slow the motor speed to suit machining conditions.



The use of Posi-Lock holders for these configurations allows adjustment of height and location to give you the most flexibility.

## ***Using More than one tool***

If more than one tool is required for a setup, a selector unit is required. This selector “piggy backs” onto the control unit, to provide 5 adjustable outputs for 5 individual live tools. You simply select the tool # with an M code, and activate the power unit. To turn off, power off the selector and de activate the tool # with an M code.

## ***Future Solutions***

NSK are developing a 0.900” diameter live spindle that can be mounted axially and allow 40,000RPM capability, with an ASTRO “E” electric motor drive.

## ***Collet Capacity***

RAS150E and NR402E spindles use the same collets. These collets are available in 1/16” fractional sizes up to 1/4”, or 0.1mm steps from 0.5 to 6.0mm

## Selecting the correct items

### Standard Kit

A typical standard kit for 1 ASTRO "E" tool would be :

CMS Part #	NSK Part #	Description
850-6001	NE-52	Control unit
850-7001	EM-401	Motor (40,000rpm)
850-9120	RAS-150E	90° spindle ¼" capacity
850-8001 or 850-8002	ARG-01E or 02E	Reducer 4/1 or 16/1 (If required)
850-5601 to 850-5603	CHK-?	Extra collet sizes (If required)
452-2020		Pair of M codes
<b>Select a tool holder type</b>		
801-9015+801-9306		Posi-Lock Tool Post & holder (Axial)
801-9015+801-9300		Posi-Lock Tool Post & holder (Radial)
801-9035+801-		Posi-Lock Tool Post & Holder (Vertical)

Adding an extra tool requires a selector unit and motor, spindle combination

CMS Part #	NSK Part #	Description
850-6002	NE-62	Selector unit
850-7001	EM-401	Motor (40,000rpm)
850-9120	RAS-150E	90° spindle ¼" capacity
850-8001 or 850-8002	ARG-01E or 02E	Reducer 4/1 or 16/1 (If required)
850-5601 to 850-5603	CHK-?	Extra collet sizes (If required)
See above		Tool holder

Each additional tool up to a maximum of 5 tools would require these parts

CMS Part #	NSK Part #	Description
850-7001	EM-401	Motor (40,000rpm)
850-9120	RAS-150E	90° spindle ¼" capacity
850-8001 or 850-8002	ARG-01E or 02E	Reducer 4/1 or 16/1 (If required)
850-5601 to 850-5603	CHK-?	Extra collet sizes (If required)
See above		Tool holder