

# **HURCO®**

**ENGINEERING DOCUMENT**

**757-4002-311**

**VMX42 and VMX42\_40 TOOL MACHINING CENTER  
TECHNICAL SPECIFICATIONS**

# 1.0

## Machine Capacity

Table Working Surface	50" x 24"	1270mm x 610mm
T-Slots	5 x 0.71" On 3.94" centers	5 x 18mm On 100mm centers
Maximum Load		
With Uniform Distribution	3000 lb.	1360 kg
Enclosure Door Opening	48"	1220mm
Spindle Center To Column	27.6"	700mm
Spindle Nose To Table		
Minimum/Maximum	6" / 30"	152mm / 762mm

*(For table and machine clearances, please see attachment "B")*

# 2.0

## Spindle

Type	Cartridge, #40 Taper
Speeds	0-10000 rpm
Bearings	ABEC Class 7 angular contact
Bearing Lubrication	Grease packed
Spindle Motor	AC Induction Motor, Dual winding, Fan cooled
Spindle Drive	200VAC, 3 Phase, 50/60 Hz, Regenerative Braking
Spindle Taper	#40
Spindle HP-Peak (1 min. Rating)	24 HP (18 kW)
- (15 min. Rating)	20HP (15 kW)
-Continuous	15 HP (11 kW)
Spindle Torque-Peak (1 min. Rating)	210 lb-ft (285 Nm) at 600 RPM
- (15 min. Rating)	175 lb-ft (237 Nm) at 600 RPM
-Continuous	105 lb-ft (142 Nm) at 750 RPM
Drive Belt Ratio	1-1 Standard
Belt Type	8mm pitch , Poly Chain
Maximum Speed	10000 rpm
Spindle Acceleration Time	0-10000 rpm in 6.5 seconds
Spindle Decelerate Time	10000-0 rpm in 5.5 seconds
Spindle Orientation	Electronic - Spindle motor encoder
Spindle Air Purge	Standard (top and bottom)
Spindle Air Blast	Standard
Spindle Configuration	Cartridge-type, flange mounted

*(For spindle, see attachment "C". For spindle Torque/HP, chart, see attachment "E")*

## 3.0

### Movement and Ranges

Longitudinal (X) axis	42"	1067mm
Cross (Y) axis	24"	610mm
Vertical (Z) axis	24"	610mm
Floor to Table Surface	35"	889mm

## 4.0

### Position/Feed Rates

#### Rapid Traverse Rate:

X axis	1181 inches per minute	30m/minute
Y axis	1181 inches per minute	30m/minute
Z axis	787 inches per minute	20m/minute

#### Cutting Feed Rate:

X axis	300 inches per minute	7.6m/minute
Y axis	300 inches per minute	7.6m/minute
Z axis	300 inches per minute	7.6m/minute

Programming Resolution	0.0001"	0.002mm
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## 5.0

### Automatic Tool Changer

Number of Stations	24	
<b>Number of Stations (VMX42-40 Sta)</b>	<b>40</b>	
Maximum Tool Diameter	3.2"	80mm
Maximum Tool Diameter (Adjacent Sides Empty)	4.72"	120mm
Tool Pocket Pitch	3.2"	81mm
<b>Tool Pocket Pitch (VMX42-40 Sta)</b>	<b>3.0"</b>	<b>76.2 mm</b>
Maximum Tool Length	11.8"	300mm
Maximum Tool Weight	15 lb.	7.0 kg
Maximum Tool Weight in Magazine	180 lb.	82 kg.
Tool Adapter	ANSI Standard V-Flange	
ATC Time:		
Tool to tool next station	4 seconds	
Chip-to-Chip, 2000 rpm, 12" Z travel	9 seconds	
Tool Selection System	Random pot, bi-directional, swing arm	
Retention Knob	See attachment "D"	

#### Note:

Tools to be loaded in the Automatic Tool Changer by using the spindle. Do not manually load tools directly into the Automatic Tool Changer. Tools must be loaded in correct orientation.

# 6.0

## Axis Movement

### Axis Motors Torque:

X	AC Cont/Peak	74 lb-in/207 lb-in (8.36/23.4 Nm)
Y	AC Cont/Peak	102 lb-in/254 lb-in (11.5/28.7 Nm)
Z	AC Cont/Peak	252 lb-in/629 lb-in, with brake (28.5/71.1 Nm)

### Axis Thrust: Peak

X	3159 lb.	14.05 kN
Y	3446 lb.	15.33 kN
Z	5332 lb.	23.72 kN

### Axis Trust: Continuous

X	1130 lb.	5.02 kN
Y	1384 lb.	6.15 kN
Z	2137 lb.	9.50 kN

### Ball Screw Diameter

X	1.57"	40mm
Y	1.57"	40mm
Z	1.57"	40mm

### Ball Screw Pitch

X	.63"	16mm
Y	.63"	16mm
Z	.63"	16mm

### Ball Screw Mounting

X, Y and Z Double Nut Pre-Loaded Anchored on Both Ends, Pre-Stretched

### Ball Screw Drive System

X	1.8:1 Ratio HTD belt driven
Y	1.6:1 Ratio HTD belt driven
Z	Direct drive

### Encoder

Drive motor mounted

### Guideway Systems:

X	Precision linear ball rails size 45
Y	Precision linear ball rails size 45
Z	Precision linear ball rails size 45

Bearing Trucks in X axis	4 total, 2 per rail	
Bearing Trucks in Y axis	4 total, 2 per rail	
Bearing Trucks in Z axis	4 total, 2 per rail	
Distance between X axis ways (centers)	13.4"	340mm
Distance between Y axis ways (centers)	26.8"	680mm
Distance across Z axis ways	17.8"	452mm

*(Telescoping way covers used over all exposed ways)*

## 7.0

### Accuracy (at 68° F)

Positioning Accuracy (JIS B 6338)	+/-0.0001"	+/-0.0025mm
Positioning Accuracy (10 Pass VDI - 3441 method)	+/-0.0002"	+/-0.005mm
Repeatability (10 Pass VDI - 3441 method)	+/-0.0001"	+/-0.0025mm

( At final assembly, all machines are laser mapped, contour balanced with ball bar check, and run a capacity cutting test.. Therefore, the machine is capable of producing these accuracies. If at installation, the machine cannot achieve these accuracies, Hurco will determine the reason for non-attainment. If the reason is mechanical components, these will be replaced under the warranty. If the reason is improper transportation or rigging, the customer will be charged at normal service rates. )

## 8.0

### Draw Bar Actuation

Type	Air/Oil Cylinder
Stroke	.43" ( 11mm)
Maximum Force to Unclamp	5395-5845 lb. (24-26 kN)
Air Supply	85-90 PSI (6 bar)
Maximum Clamping Force	2473-2923 lb. (11-13 kN)
Draw Bar Type	Gripper fingers, Disc springs

## 9.0

### Machine Dimensions

Shipping Dimensions		
Width	116"	2950mm
Depth	90.6"	2300mm
Height	99.8"	2535mm
Operating Dimensions		
Width	182.4"	4632mm
Depth [SSM]	133.2"	3382mm
Depth [DSM]	147.1"	3735mm
Height	105.6"	2683mm
Machine Weight (approximate)	14080 lb.	6400 kg
<b>Machine Weight (VMX42-40 Sta)</b>	<b>14980 lb.</b>	<b>6800 kg</b>
Shipping Weight (approximate)	14960 lb.	6800 kg
<b>Shipping Weight (VMX42-40 Sta)</b>	<b>15880 lb.</b>	<b>7200 kg</b>

(See attachment "A" for machine envelope dimensions)

## 10.0 Lubrication

Type	Positive displacement by electric pump
Lubrication Type	See Attachment 'F'
Lubrication Volume	2 liter reservoir with float switch to maintain liquid level. Tank should last 80 hours before refilling.
Lubrication pump	115 VAC, single phase, electric pump with maximum discharge of 3 cc/cycle - 4 cycles per hour
Maximum pump pressure	42 PSI ( 2.9 bar)

## 11.0 Coolant Facilities

Coolant Tank Capacity	90 gallons	340 liters
Flood Pump Rating	11 gallons/minute	41 liters/minute
Flood Pump Size	0.89 HP	0.66 kW
Wash Down Pump Rating	50 gallons/minute	190 liters/minute
Wash Down Pump Size	2.4 HP	1.81 kW

## 12.0 Machine Enclosure

Full Chip and Coolant Enclosure	Standard	
Enclosure Door Opening	48"	1220mm
Left Side (ATC door) Hinged Door w/Latch (L x H)	27.4" x 34.3"	697mm x 871mm
Right Side Hinged Door (L x H)	41.6" x 34.3"	1057mm x 871mm
Worklights Dual	(1) Left side	(1) Right side
Chip Pan	Front pull-out	
Washdown System	Standard	
Chip Conveyor	Optional	

*(See attachment "A" for machine enclosure information.)*

# 13.0 Service Requirements

KVA Rating	38	
Voltage Required	200-240 VAC / 60 Hz	
Air Requirements	5 CFM @ 80-100 psi	0.14 M <sub>3</sub> /min. @ 6-8 bar

## **IMPORTANT:**

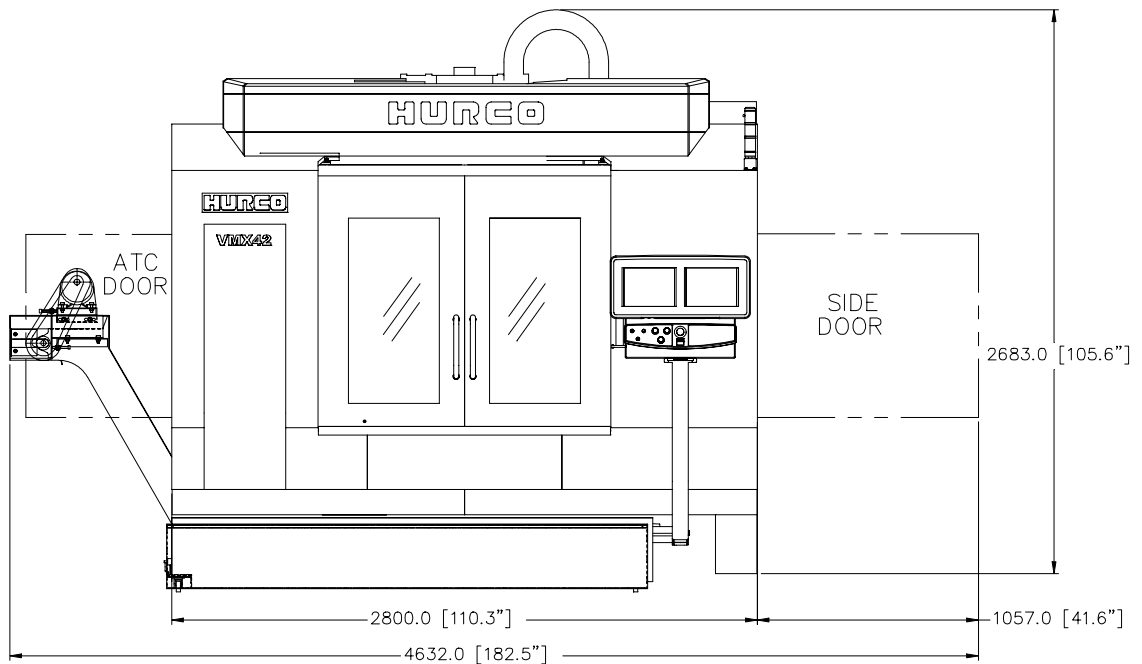
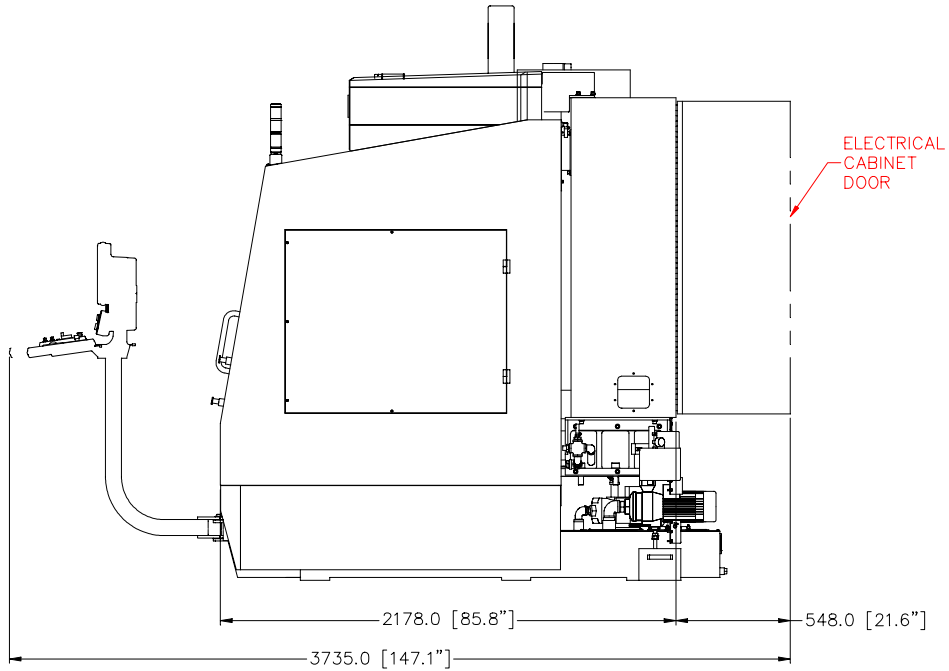
*As with all computer equipment, it is vital that the incoming power be free from high or low voltages, spikes, surges, and noise. The following are the extremes from normal constant RMS sinusoidal supply voltages the system can tolerate:*

Frequency.....	47-63 Hz
Impulse Voltage.....	200 percent peak voltage up to one msec duration. One (1) pulse per half cycle maximum.
Voltage Drop.....	Reduction of 20 percent for one cycle or reduction of 50 percent per half cycle. One (1) drop per second maximum. Deviation from constant voltage will not exceed $\pm 10\%$ of input voltage. Failure to provide required power parameters may affect warranty.

## List of Attachments

Machine Envelope _____	Attachment A
Table and Clearance _____	Attachment B
Spindle Assembly _____	Attachment C
Tool Holder and Retention Knob _____	Attachment D
Spindle Torque/HP Charts _____	Attachment E
Machine Oil Specifications _____	Attachment F

MACHINE ENVELOPE - VMX42  
- OPERATING DIMENSIONS -





*MACHINE ENVELOPE – VMX42 & VSX42  
– SHIPPING DIMENSIONS –*

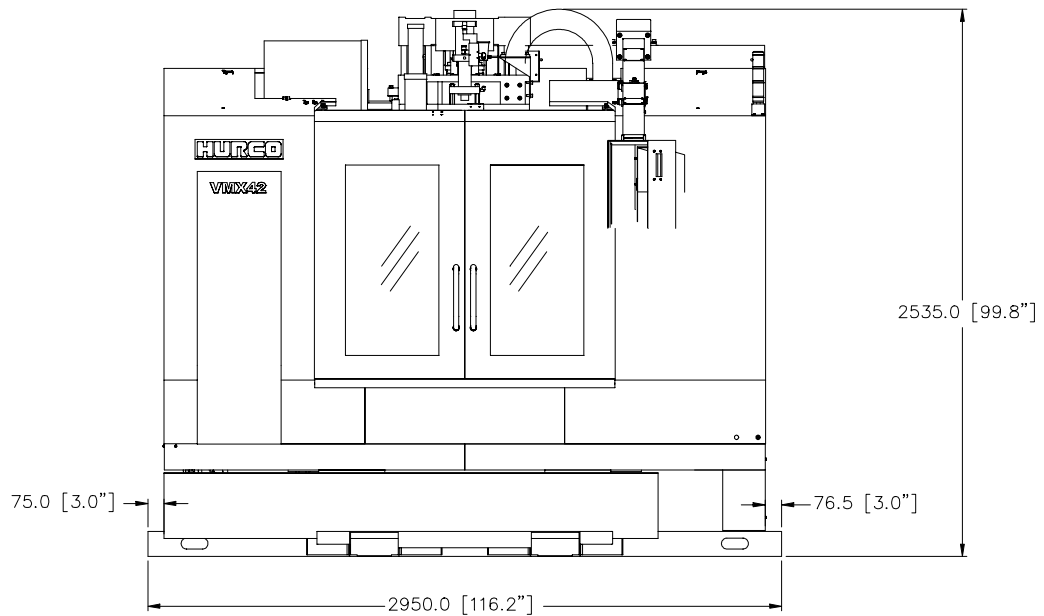
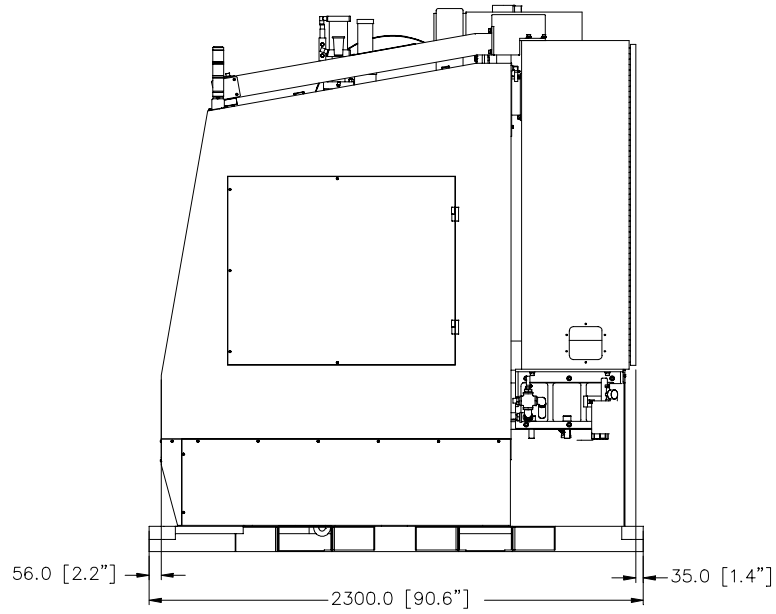
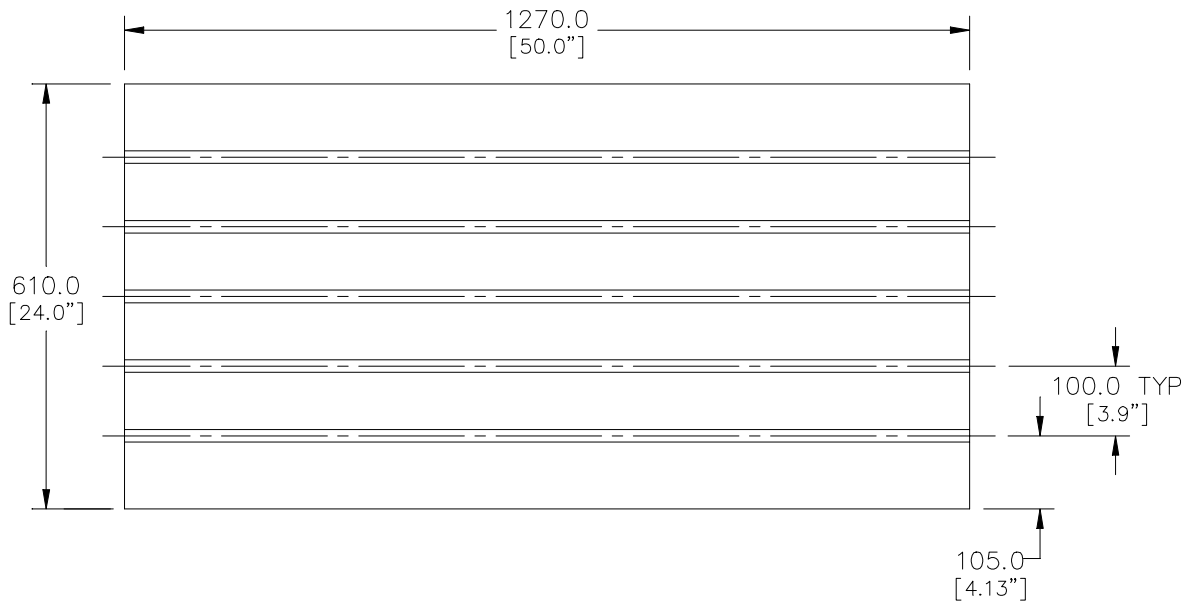
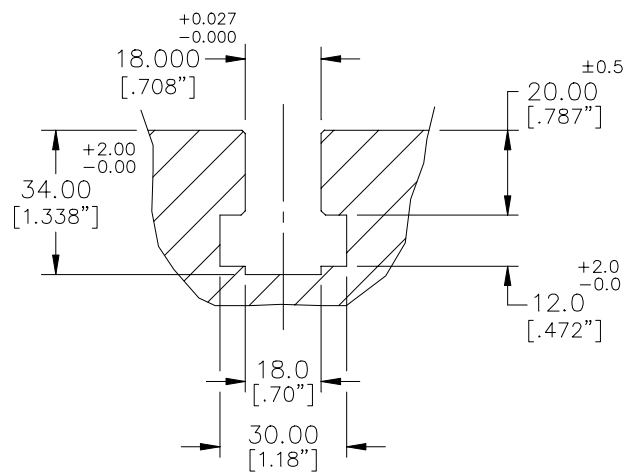


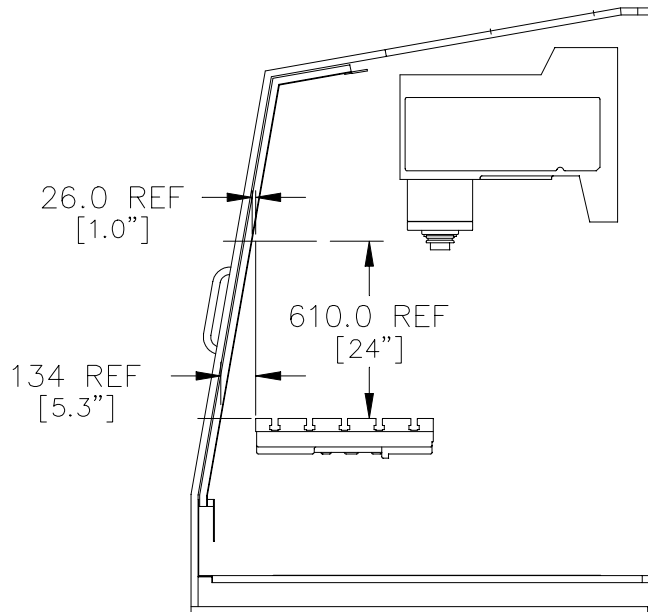
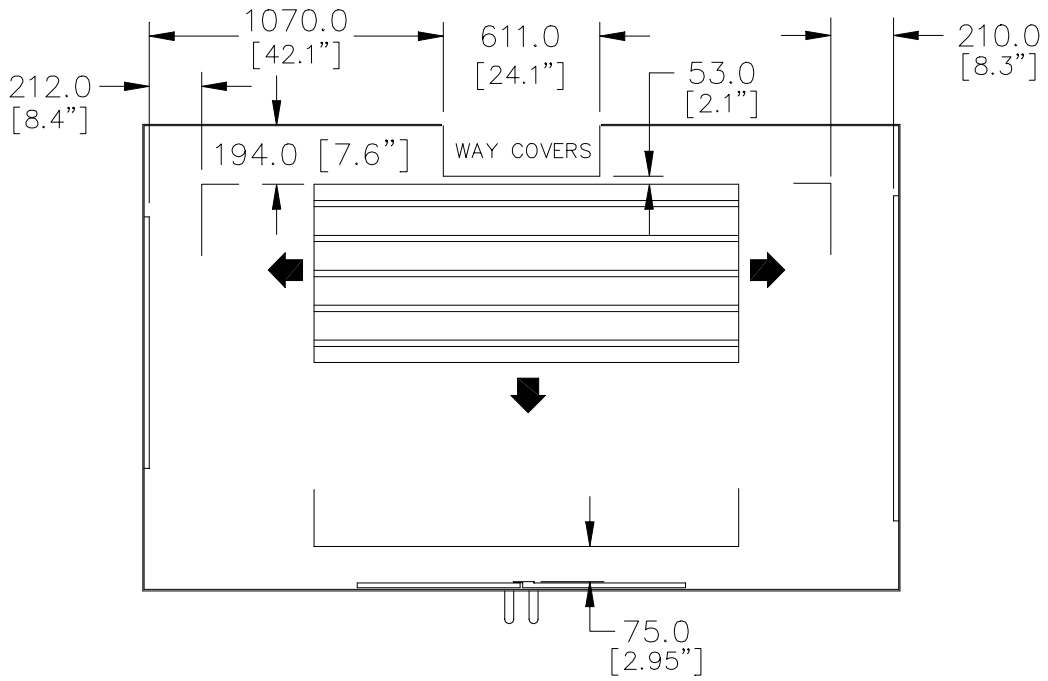
TABLE SPECIFICATIONS (VMX42)



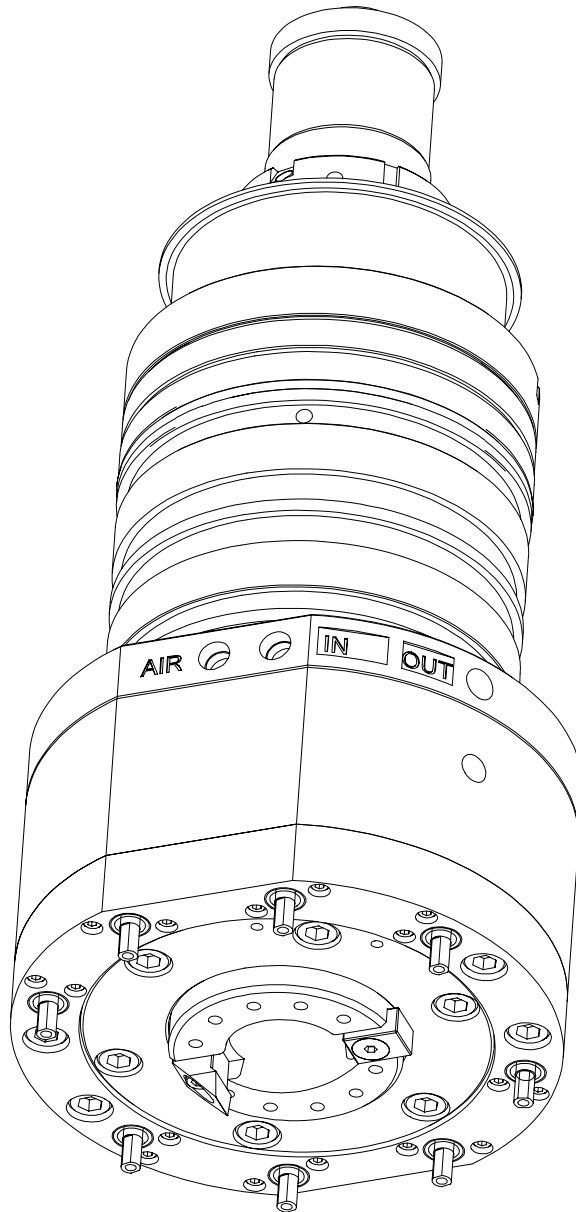
T-SLOT DIAGRAM



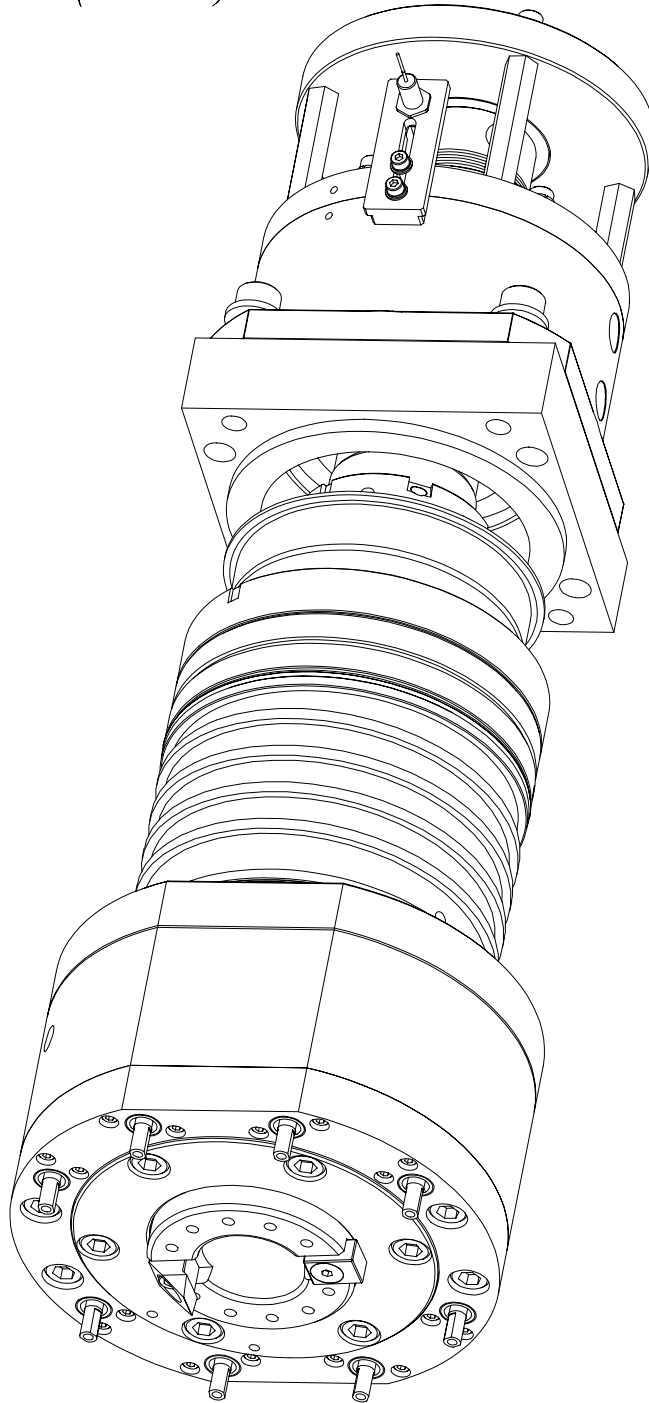
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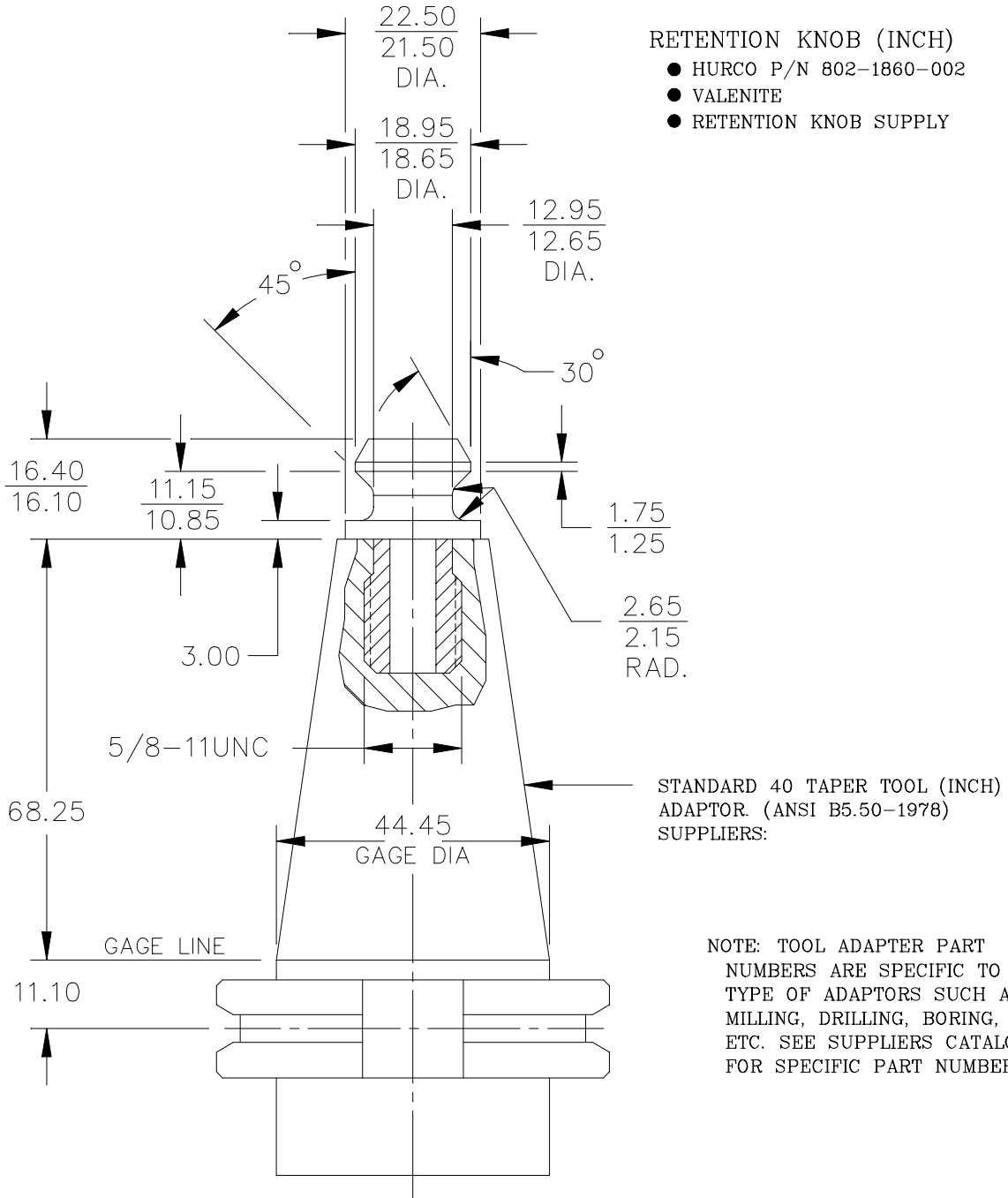
*SPINDLE STANDARD (VMX42)*



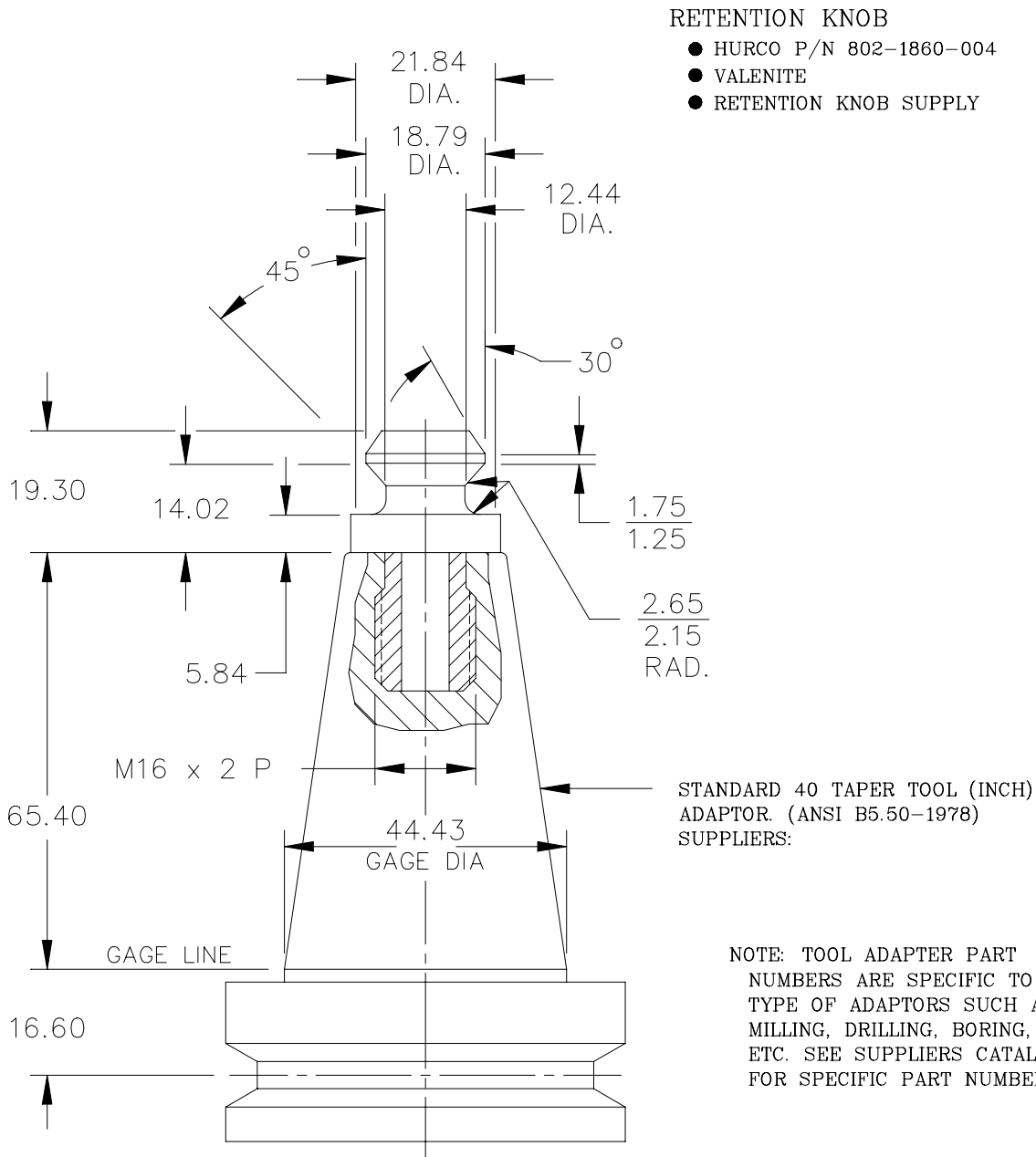
*SPINDLE CTS (VMX42)*



TOOL SHANK SPECIFICATIONS (CAT 40)  
(DIMENSIONS IN MILLIMETERS)



*TOOL SHANK SPECIFICATIONS (BT40)*  
*(DIMENSIONS IN MILLIMETERS)*



# ATTACHMENT "E"

## SPINDLE TORQUE/HORSEPOWER CHART

### VMX42/40T-10K TORQUE/HORSEPOWER CHART

