



TCX Series

Deep-Hole Drills



THE CHALLENGE

The challenge is to satisfy the requirements of the petroleum, chemical, energy, nuclear, and other industries to drill very accurate deep holes in very large, heavy, and thick parts made of difficult to machine materials such as alloy or stainless steels, inconel, or titanium. In addition, these requirements may include a wide variety of hole diameter sizes and depths, that are machined in very limited lot sizes.

THE ANSWER

CINCINNATI MACHINES answers the challenge with the New TCX Series Travelling Column Deep Hole Drilling Machine. TCX Series Travelling Column Deep Hole Drilling Machines are designed and manufactured from the ground up with State-of-the-art deep hole drilling technologies to accurately machine this class of parts.

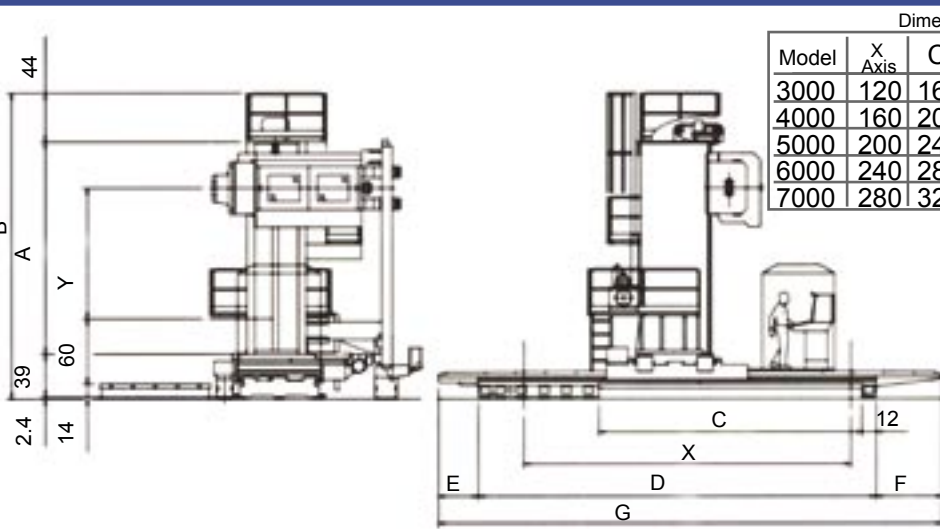
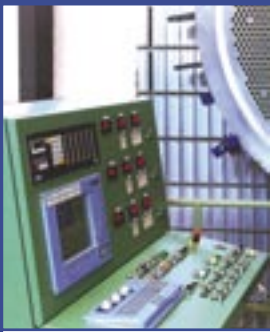
Simply put, TCX provides a very rigid and stable work holding base that can easily accommodate very heavy large and thick parts. The solid base is then combined with the very rigid, stable, and accurate positioning slides for the spindle carrier and the actual deep hole drilling slides plus the state-of-the-art dedicated CNC deep hole drilling system. All of these systems work together to provide the very best BTA drilling, STS drilling and/or Gundrilling capabilities available for this class of parts.

WORKHOLDING CAPACITY IS VIRTUALLY UNLIMITED

**NUCLEAR - ENERGY
CHEMICAL - PETROLEUM
INDUSTRIES**



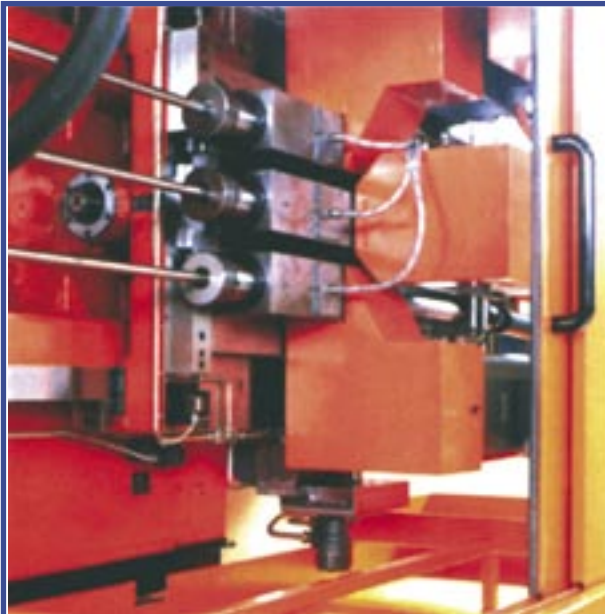
Safety and Osha guarding has been removed for illustration purposes



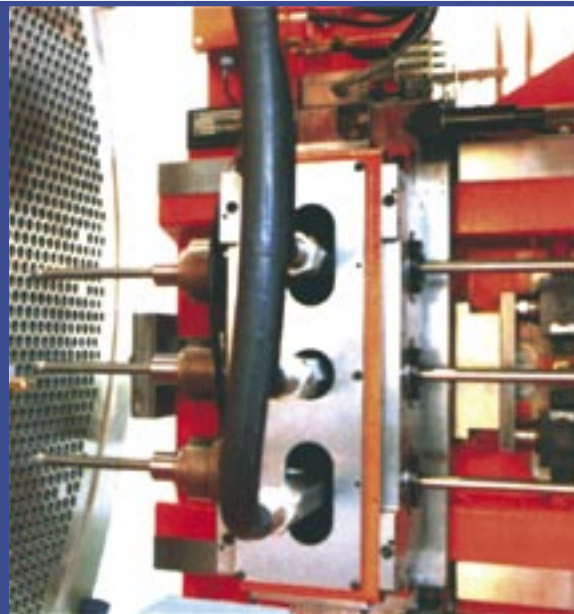
Dimensions in inches

Model	X Axis	C	D	E	F	G
3000	120	160	280	28	52	360
4000	160	200	320	32	56	408
5000	200	240	360	36	60	456
6000	240	280	400	40	64	504
7000	280	320	440	44	68	552

Y Axis Travel (inches)	A	B
100	175	261
120	195	280
140	214	300
160	234	320



Available with 2 or 3 spindle setup



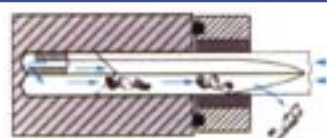
Gundrilling System with large recirculating centralized coolant system lines



BTA DRILLING SYSTEM
 BTA or STS (Single Tube System) drilling is a recent development in deep hole drilling. With this system, the coolant is directed through the pressure head, around the drill tube and chips are then ejected through the drill center.

The drill head is detachable and is designed with individual carbide inserts and guide pads. The BTA system provides higher penetration rates while still yielding the required surface finish.

With the BTA system, the TCX Series Travelling Column Deep Hole Drilling Machine can consistently produce very accurate deep holes with diameters up to 2" diameter, in very large thick parts.



GUNDRILL SYSTEM
 The gundrill process has been around for many years, and was first used in the manufacture of gun barrels over 100 years ago.

Think of modern gundrilling as BTA reversed, as high pressure coolant is pumped through the hollow tube of the gundrill, while the chips are ejected through a lengthwise groove in the OD of the drill. Gundrilling provides very close tolerance straight holes with an excellent surface finish.

Utilizing the Gundrilling process, the TCX Series Travelling Column Deep Hole Drilling Machine can consistently produce very accurate deep holes with diameters up to 1.5" in very large thick parts.

Brief Machine Specifications (inches)

AXIS TRAVELS AND CAPACITIES

Column Longitudinal (X Axis) Travel	120 - 160 - 200 - 240 - 280
Spindle Carrier Vertical (Y Axis) Travel	100 - 120 - 140 - 160
Spindle Carrier Drilling (Z Axis) travel	44
Spindle Auxillary Slide travel (optional)	24
Axis Traverse rates (XYZ)	240 ipm
Axis Feedrates	.2 - 40 ipm

DRILLING HEADS

Number of drill heads	2 or 3
Drill Head spacing	7 - 10 independant slides 5 - 7 fixed slides

Drilling Capacity in steel (BTA System)	2
Drilling Capacity in steel (Gundrill System)	1.5
Drilling Thrust	4400lbs/spindle 13200lbs max
Spindle Horsepower	50hp

WORK SURFACE

Length	160 - 200 - 240 - 280 - 300
Width	100
Load Capacity	3000lb / sq. ft.

Machine Weight

125,000 - 150,000lbs

TCX can be manufactured as a dedicated Gundrill, or BTA, or as a switchable machine that can be changed over in 4-6 hours