Mazak

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TUBE GEAR 150 14.07.3000 G 99J436214E0

TUBE GEAR 150

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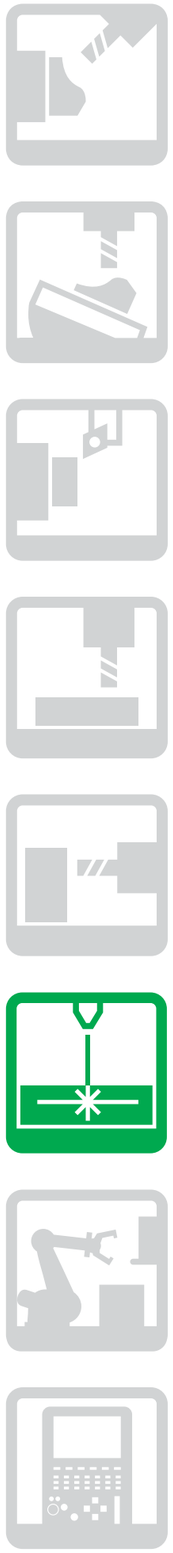


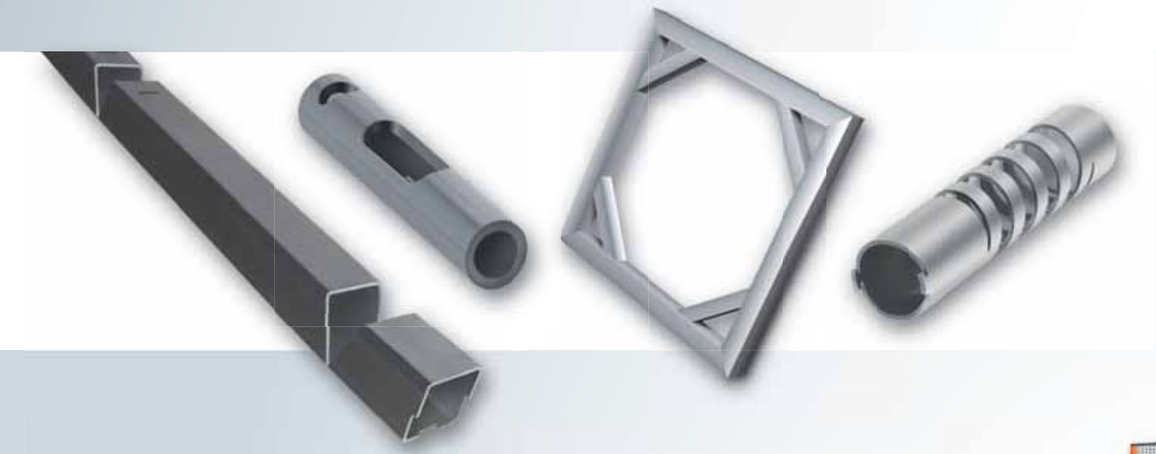
TUBE GEAR 150

Mazak

High speed laser-cutting system

TUBE GEAR 150

The TUBE GEAR has been designed to optimize the cutting of thin-walled square and round tubes and pipes up to 152.4mm(6") in diameter. It is designed to efficiently produce components found in the business furniture and fixtures, home and garden equipment, sports and fitness equipment, industrial applications, medical, architectural details and other precision applications.



- The TUBE GEAR was built for speed, utilizing state-of-the-art drives, software and design features to reduce cutting times.
- Compared to 2 chuck systems, the TUBE GEAR's unique 3 chuck design delivers superior precision, higher accuracy and significantly reduced vibration, especially when cutting long tubes at high speeds.
- The TUBE GEAR features a bundle loading system with a 4.2 ton capacity for greater throughput and productivity.
- An ergonomic design was utilized that positions loading, operation and unloading functions on the same side of the machine to improve efficiency and minimize required floor space.

TUBE GEAR 150

Max.number of tubes in the bundle loader : 140 [□50 mm (□1.97") square tube]

Max.workpiece size : ø12 ~ 152.4 mm (0.47" ~ 6") [Round tube]

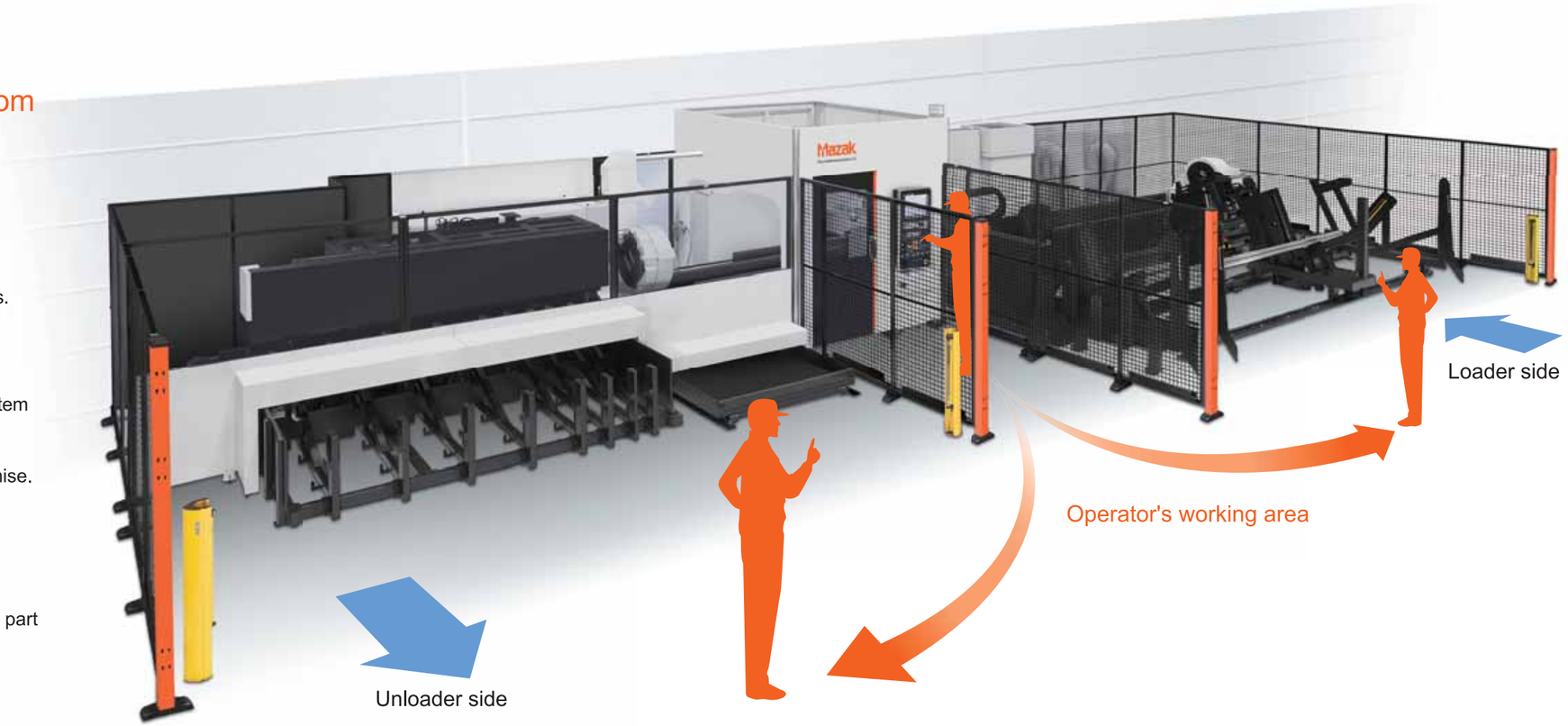
□12 ~ 152.4 mm (0.47" ~ 6") [Square tube]

Max.workpiece length : 2000 mm ~ 6500 mm (78.7" ~ 255")

Speed and Precision

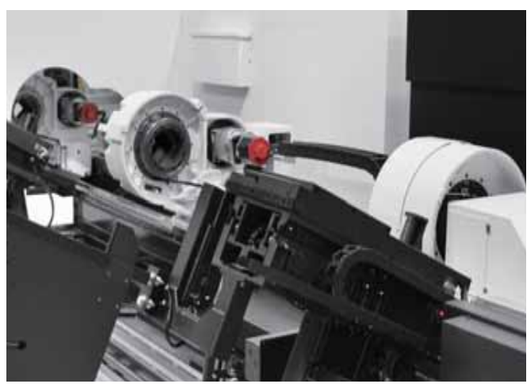
Operation + loading + unloading from the same side of the machine

High speed part processing is achieved through the combination of many new innovations incorporated into the new TUBE GEAR. First is the introduction of the advanced Fanuc 31i control and drive technologies. These technologies provide significant speed and acceleration performance exclusive to TUBE GEAR. Further, the TUBE GEAR has a unique three chuck system which provides accurate positioning of the workpiece resulting in high part accuracy without speed compromise. In addition, is the utilization of a newly designed time efficient automatic tube loading and unloading system. All processing can be realized with simultaneous axis movement, whereby next tube preparation and finished part sorting is all done while the laser cutting is in motion.

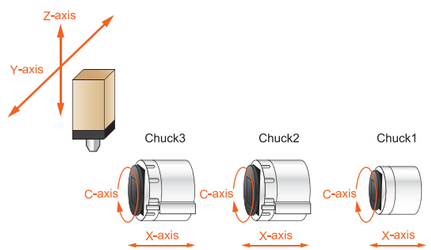


Three chucks for higher speed and accuracy

Minimize material sagging from own weight to ensure high accuracy cutting.

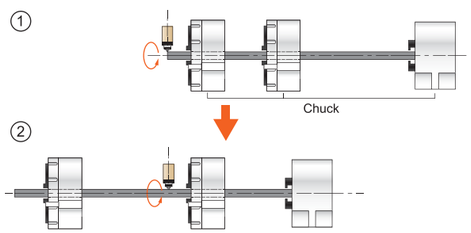


TUBE GEAR 150 Axis construction



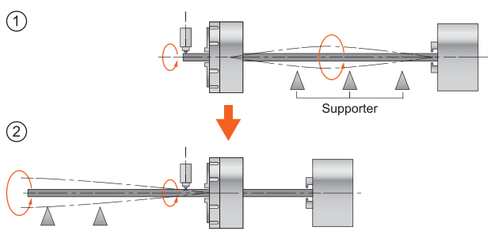
TUBE GEAR 150 with three chucks

Thanks to rigid chuck clamping, even long pipe can be cut safely and with high accuracy. Chucks can be independently positioned to best fit application requirements.



Machines with two chucks

Slower rotational speeds must be used when cutting to prevent unwanted material motion.



Higher Productivity

TUBE GEAR 150 standard equipment for enhanced productivity.

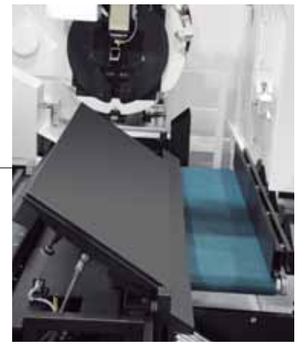
1 Bundle loader

The bundle system can load multiple pieces of material that make it possible to perform continuous operation over extended periods.

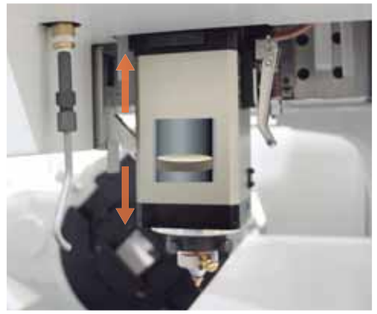
2 Long parts unloader [Length 1m~3m (39.37"-118.11")]

Long parts are automatically unloaded from the machine.

3 Short parts unloader [Length less than 1m (39.37")]



Parts first go into parts chute, carried by the conveyor and output from the machine.

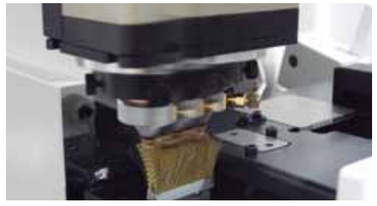


Servo focus system

The servo system automatically sets the optimum focal point by program command. Thanks to the servo positioning system, piercing time is reduced to provide higher productivity.

Intelligent auto focal distance measurement & adjustment

Traditionally focal distance measurement and adjustment requires considerable setup time as well as a skilled and experienced operator. Even unskilled or inexperienced operators can now easily perform these operations by using the intelligent Auto Focal distance measurement and adjustment system by program commands. Additionally, this system automatically compensates for focal distance changes which occur due to lens contamination.



Automatic nozzle cleaner

The torch head can be moved to the nozzle cleaning brush by program command which removes spatter that has adhered to the nozzle.

Auto profiler calibration

Cutting distance position must be maintained for dross free cutting. When installing a new nozzle, gap distance is properly maintained with the use of auto profiler calibration. This automatic calibration maximizes the time between necessary operator intervention.

Ease of Programming

Quick transition from initial part design to finished product utilizing TUBE GEAR

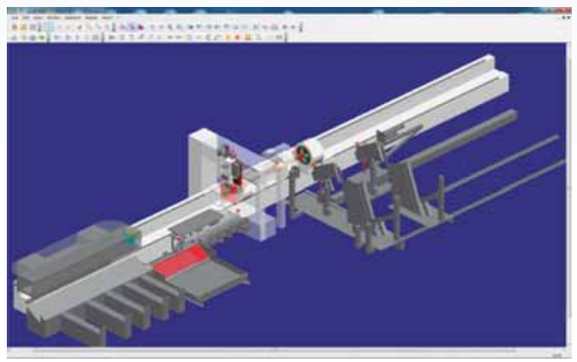
CADCAM → NC Program → Schedule → Bundle loader → Finished part → Product

FX TUBE Option

The FX TUBE software, developed by Mazak, generates cutting programs for pipe and structural material.

Parts are efficiently setup with improved yield thanks to the pipe nesting function. Also, common line cutting can be performed for reduced cycle time.

A 3D graphic operation check can be performed before actual cutting by using the simulation function.



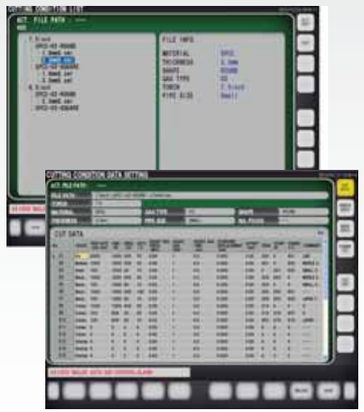
Scheduler

Standard scheduler functions allow a variety of parts to be cut continuously from multiple pieces of materials.

A new scheduling function has been developed for the TUBE GEAR with bundle loader for easy programming of set production.

Cutting conditions data base

By inputting the type of workpiece material and thickness, the cutting speed, laser output and assist gas pressure will be selected from the cutting conditions database. These settings can be edited so that the same setup will be used the next time the same type of material is processed.



The MAZAK FX CNC- simplified operation

Mazak FX

ALL IN ONE

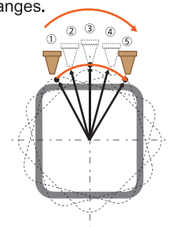
The Mazak FX CNC controls the laser processing machine and the loader/unloader equipment.

ERGONOMICS ergonomics

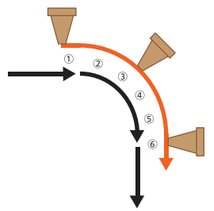
The keys on the operation panel are arranged in an operator-friendly layout. The large, easy-to-read 15 inch color monitor is standard equipment.

HIGH-PERFORMANCE

Real-time laser power control is realized thank to the most advanced laser control technology available. The optimum cutting conditions are automatically determined at high speed as the feed rate changes.



Thanks to the high-speed beam center point control system of the simultaneous 4-axis control, smooth, high-speed cutting at corners is realized.



Specifications of machine

Material Shape		Round,Rectangular,Square
Material		Mild steel,Stainless steel
Material length range		2000~6500 mm (78.74"~255.91")
Unloader Max.workpiece length		3000 mm (118.11")
Max. material diameter		Round pipe ø12~152.4 mm (ø0.47"~6"),Thickness 6 mm (0.24") Square pipe □12~152.4 mm (□0.47"~6"),Thickness 6 mm (0.24")
Max. workpiece weight/pipe		27 kg/m (max.175.5 kg/6.5 m) [18.09 lbs/ft (max.387.0 lbs/21.3 ft)]
Height of chuck center		1100 mm (43.31")
Strokes	X axis (chuck left/right)	8080 mm (318.11")
	U axis (chuck left/right)	5280 mm (207.87")
	V axis (chuck left/right)	3075 mm (121.06")
	Y axis (head back/forth)	670 mm (26.38")
	Z axis (head up/down)	220 mm (8.66")
	C axis (chuck rotation)	±99999.999°
Max. traverse rate	X axis	160 m/min (6299 IPM)
	U,V axis	100 m/min (3937 IPM)
	Y axis	60 m/min (2362 IPM)
	Z axis	60 m/min (2362 IPM)
Machine weight		18800 kg (41454 lbs)
Electrical requirement		63 KVA
Sound		Less than 80 db

Specifications of loader/unloader

Specifications of loader

Material length range		2000~6500 mm (78.74"~255.91")
Material shape		Round,Rectangular,Square
Max. transfer material weight		27 kg/m (max.175.5 kg/6.5 m)
Container	Max. material loading capacity	620×620 mm (24.41" ×24.41")
	Max. material loading weight	4200 kg (9261 lbs)
Strokes	XL axis (run axis)	4737 mm (186.50")
	YL axis (elastic axis)	1700 mm (66.93")
	ZL axis (up and down axis)	280 mm (11.02")
	WL axis (container lift axis)	920 mm (36.22")
Max. traverse rate	XL axis (run axis)	13 m/min (512 IPM)
	YL axis (elastic axis)	30 m/min (1181 IPM)
	ZL axis (up and down axis)	5.7 m/min (224 IPM)
	WL axis (container lift axis)	3.3 m/min (130 IPM)

Specifications of unloader

Max. transfer material number		1
Parts length	Short length	Parts < 1 m (39.37")
	Long length	1 m (39.37") ≦ Parts ≦ 3 m (118.11")
Max. parts weight	Short length	42 kg (93 lbs)
	Long length	83 kg (183 lbs)
Max. loading weight of short length bucket		100 kg (220 lbs)

Specifications of laser resonator

Laser resonator output	2.5 kW
Laser gas	He,N_2,CO_2
Laser gas consumption*	10 L/H

*Continuous operation

Specifications of CNC

Model	MAZAK FX (FANUC 31 i-L4)
CPU	64 bit
Controlled axes	17
Minimum program increment	0.001 mm (0.0001")
Programming method	EIA/ISO
Monitor	15.0" color LCD

Standard equipment

• 5" servo focus torch for pipe	• Long parts unloader
• Bundle loader	• Chiller unit
• Safety fence and area sensor	• Lighting unit
• Signal light	• Assist gas NC control
• Assist gas selector (3 types/stepless)	• Side air blast
• 3rd assist gas piping (Supply 3.0 MPa)	• Automatic calibration function
• Spare nozzle (ø1.5 mm [3],ø2.0 mm [3])	• Dust collector attachment preparation
• Intelligent lens focal distance automatic measuring and correcting system	• Auto power off
• Profiling retry function	• Parts length measurement
• Mazak high accuracy Lens 5" (2.5 MPa)	• Cutting conditions database
• Short parts unloader	• Scheduler

Optional equipment

• 7.5" servo focus torch for pipe	• Mazak high accuracy Lens 7.5" (2.5 MPa)
• Touch sensor	• Seam detector
• Nozzle pointer	• 4th assist gas piping (Supply 3.0 MPa)
• Dust collector (2 sets)	• Manual loading system
• Auto power off (Compressor linkage)	

Machine dimensions

Unit : mm (inch)