

LEADWELL
LEADWELL CNC MACHINES MFG., CORP.

T-6 Series
CNC TURNING CENTERS



T-6 Series **CNC TURNING CENTER**

**The Ultimate in Combining
High Performance with Versatility and Value**



T-6 Series



MACHINE ENCLOSURE

T-6 series machine are fully enclosed with splash guards and way covers.

- CE approved guarding is also available as an option.

MORE POWERFUL

- Powerful main spindle - spindle motor 11 KW (14.7 HP) on T-6 (Oi-MateTC)
- Spindle motor:
 - ◆ Standard on T-6(Oi-TC): spindle motor 7.5 KW (10 HP)
 - ◆ Standard on T-6M(Oi-TC): spindle motor 15 KW (20 HP)
- Rigid 30' slanted cast iron base for extra stability and rigidity

INCREASED CAPACITY

- 6 inch chuck standard
- 2 inch bar capacity standard

FASTER / MORE PRODUCTIVE

- Fast rapid rates X -axis 20 m/minute & Z -axis 24 m/minute
- Tool to tool turret indexing time 0.4 sec, 180° indexing 1.4 sec
 - ◆ Even faster on T-6M: 0.23 sec tool to tool and 0.7 sec 180° indexing
- Spindle speed 4500 RPM standard (6000 RPM optional)
- T-6M (Live tooling) - 3.7 KW (5 HP)

ERGONOMIC CONSIDERATIONS

- Easy to use membrane touch-pad control station
- Easy moving operator door
- No chip or coolant leaks



T-6 Series CNC TURNING CENTER

Rigid Construction

Superior Construction

- All major components of T-6 series turning centers are cast iron which has 10 times the dampening capacity of steel resulting in superior cutting performance.
- Castings are well ribbed based on Finite Element Analysis (FEA) for the size and location to ensure high torsional stiffness and minimum vibration
- Linear guideways on X-Z for higher rapid rates (trucks are interchangeable for easy maintenance)
- 30° slant bed combines superior machining accuracy with easy access to the workpiece.

Headstock

- Heavy duty thermally symmetrical headstock design has heat dissipating fins to minimize thermal distortion during long machining cycles. All critical components are machined in a temperature controlled environment and assembled in a clean-room.
- Cartridge style spindle provides quick and easy replacement.



Directly Coupled Servo Motors

The T-6-Series servo motors are connected directly to the ball screws with rigid shaft couplings. These couplings ensure that even under severe loading from sharp corner machining, precise interpolation is achieved. This design is superior to both belt driven and flexible shaft coupling designs.

- T-6(0i-TC) and T-6M(0i-TC) have 1,000,000 pulse encoders for high accuracy positioning of linear axes

Tailstock (Standard with T-6 and T-6M)

Heavy duty tailstock with large diameter quill and precision #4 Morse taper provides outstanding rigidity.

- Quill adjustment is hydraulic



T-6 Series



Double-nut Ball Screws

Leadwell uses only premium quality preloaded double-nut ball screws from THK, IBL, STAR and HIWIN on the machines. Each ball screw is accurately aligned parallel to the linear guide ways and anchored at both ends. They are then pre-tensioned to improve machine stiffness and reduce thermal growth. With this design they exceed customer requirements for accuracy and maximum life.

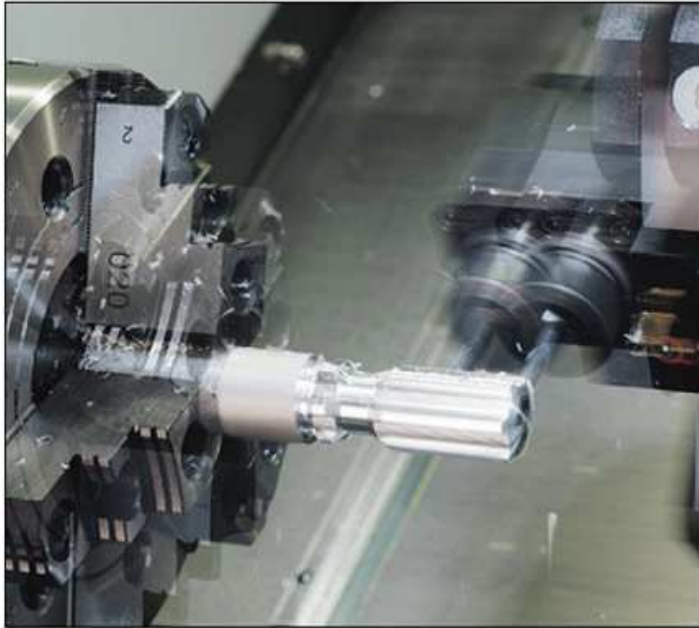
- Rotational torque variations are measured to guarantee a non-binding, highly accurate, and long running components.



Way Cover Wash

Leadwell's way cover wash option keeps chip from accumulating on the sliding covers. This helps to ensure long term reliability.

T-6 Series CNC TURNING CENTER



C-axis Servo Option

A precision position encoder is attached to the high-performance spindle motor. This provides bidirectional spindle control. Precision grooving and rigid tapping can be easily done when the spindle position is then synchronized with the Z-axis motion.

- C-axis positioning resolution is 0.001 degrees
- C-axis rapid rate is 40m/min, cutting rate is 10m/min

Live Tool Turret (Standard with T-6M)

The live tool turret replaces the standard turret on T-6M turning centers. Each tool can then become a rotating tool for both milling and drilling operations.

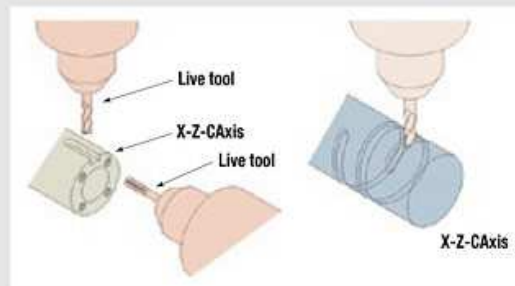
- Tools can be either radially or axially oriented.



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T-6M with C-axis servo option

By synchronizing the live tool turret and the C-axis; the T-6M can machine complex cams and slots on both the sides and end of parts. It can also drill and tap holes on both the sides and the end of parts.



The majority of all turned parts require additional machining (milling, drilling and tapping). Leadwell's T-6M provides this capability.

T-6 Series

High Quality Assurance



Laser Calibration

Lasers are used to measure the positioning accuracy of every machine over the full travel of each axis. Leadwell uses these measurements to compensate any axis error so that each machine meets the high accuracy requirements.

- Each machine is shipped with a positioning accuracy chart.
- Each machine is cycled for 48 hrs to help ensure the highest reliability.



Machine Geometric Checking

Precision indicators are used to verify that spindle run-out and headstock to tailstock alignment meet all specifications.



Cutting and Coolant Testing

Each machine must complete rigorous cutting tests to ensure machine integrity. Coolant tests guarantee that all components are working properly and that machine is 100% leak proof.

Cartridge Type Spindle

The heavy-duty spindle utilizes FAG or NSK ABEC-7 bearings to support heavy cutting.

- Heavy duty A2-5 spindle nose
 - Wide bearing spacing for high rigidity
 - Special heat treatment for critical parts
 - Highly accurate draw tube mechanism
 - Precision Labyrinth seal
 - Large diameter quill for high rigidity
 - Optimum spacing of front bearings to spindle nose for highest rigidity
- All of which produces better part finish in less time.



T-6 Series CNC TURNING CENTER

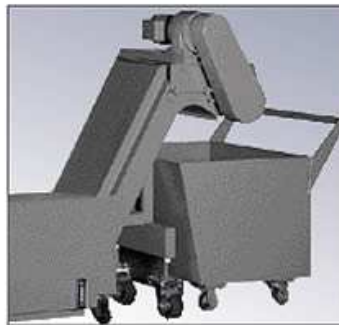
High Productivity Options



Bar Feeder Option

This option automatically loads bar stock to the T-6 machine. It is controlled by an IO interface and has a convenient LCD display. Diameter changes are made in less than one minute.

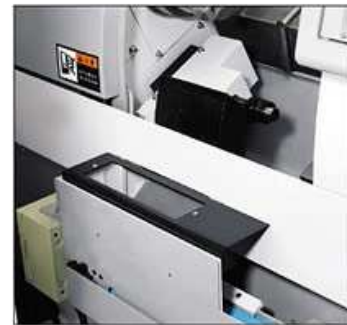
- Feeds round, hexagonal and square stock.
- This option can be easily added to any T-6 series machine.



Chip conveyor Option

This general purpose option can be added to any T-6 turning center. It is designed to remove steel, cast iron aluminum and bronze chips - thus eliminating operator intervention for periodical machine cleaning.

- Includes patented reversal feature to clear chip jams.



Parts Catcher and Conveyor Option

The unique Leadwell parts catcher design works well with the bar feeder option to improve productivity. Parts are transferred outside the operator door, which eliminates the need to stop the machine to unload finished parts.

- This option can be easily added to any T-6 series machine.
- Used with the Bar Feeder option, the T-6 becomes an unmanned machine.



Tool Setter Option

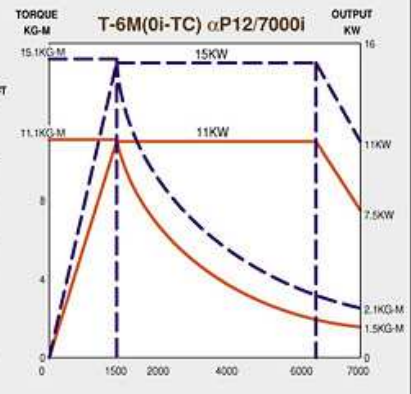
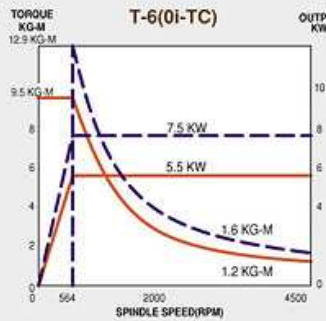
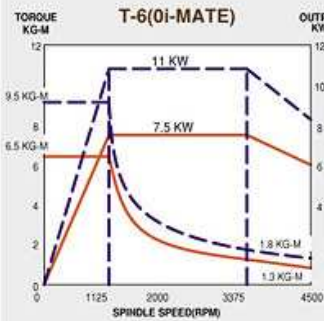
Leadwell's tool setter option measures both radial and axial tools. It uses macro programming to automatically define and update tool offsets.

- Reduces setup time.
- The tool setter option can also check for broken tools.



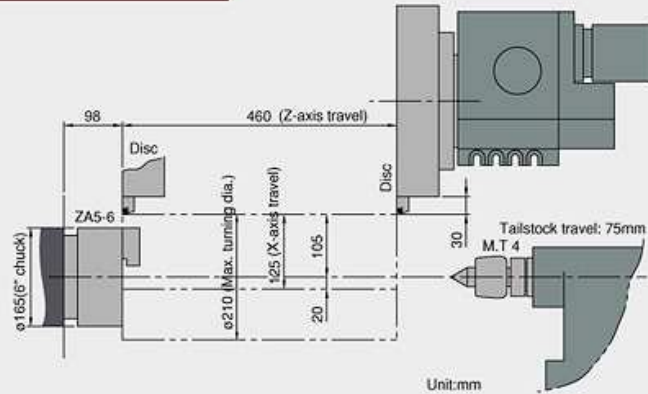
Spindle Speed / Output Diagram

— Continuous
- - - 30 min

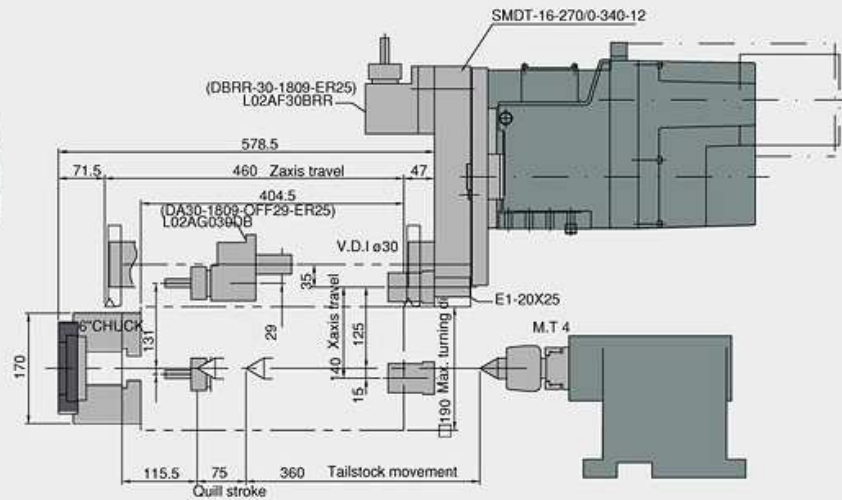


Working Capacity

T-6

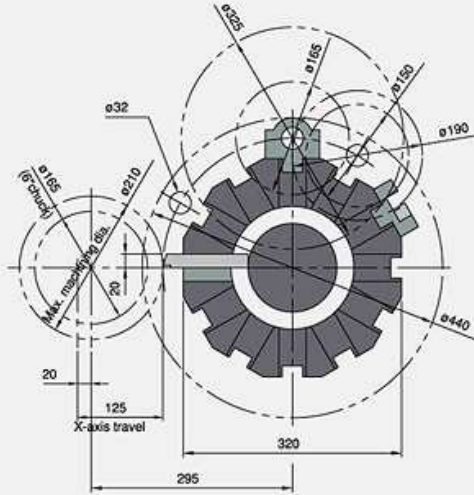


T-6M

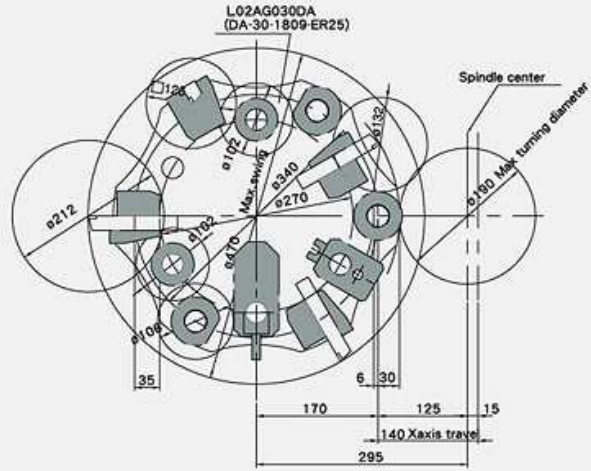


Tooling System

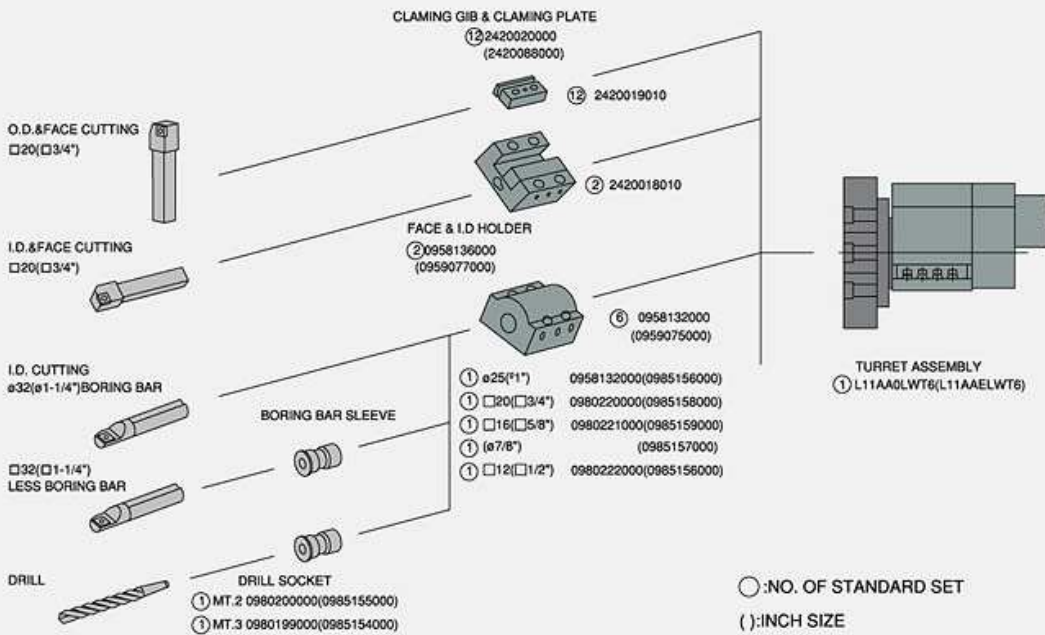
T-6



T-6M



Tooling System



Machine Specifications

ITEM	MODEL	T-6	T-6M
CAPACITY			
Max swing	mm (in)	450 (17.7)	450 (17.7)
Max turning diameter	mm (in)	210 (8.3)	190 (7.4)
Max turning length	mm (in)	420 (16.5)	404 (15.9)
Bar capacity	mm (in)	51 (2)	51 (2)
TRAVEL			
X axis	mm (in)	105+20(4.9)	125+15(5.5)
Z axis	mm (in)	460(18.1)	460(18.1)
SPINDLE			
Spindle speeds range	rpm	4500	6000
Chuck size	in	6	6
Spindle nose		A2-5	A2-5
Spindle motor power	KW (HP)	11 (14.7)/7.5 (10)	7.5 (10)
TURRET			
Number of tool stations (live tools)	pcs	12	12/6 live tools
Shank height for square tool	mm (in)	20 (0.75)	20 (0.75) VDI 30
Shank diameter for boring bar	mm (in)	32 (1.25)	32 (1.25) VDI 30
Rotary tool spindle speed range: axis units	rpm	-	6000
Rotary tool spindle speed range: rad units	rpm	-	6000
Rotary tool motor power	KW	-	3.7 (5)
FEEDRATE			
X,Z axis rapid traverse	m/min (ipm)	20/24 (788/945)	20/24 (788/945)
MOTORS			
X axis motor	kw (HP)	1.2 (1.6)	1.2 (1.6)
Z axis motor	kw (HP)	1.2 (1.6)	1.2 (1.6)
TAILSTOCK			
Quill diameter	mm (in)	75 (3)	75 (3)
Quill inside taper	M,T	4	4
MACHINE SIZE			
Total machine weight	kg	3000	4000
Machine height	mm (in)	2340 (92.1)	2385 (93.8)
Machine length	mm (in)	1580 (62.2)	1580 (62.2)
Machine width	mm (in)	1595 (62.8)	1595 (62.8)
Power requirements	KVA	25	25
Computer control	FANUC	Oi-MATE-TC/Oi-TC(opt.)	Oi-TC

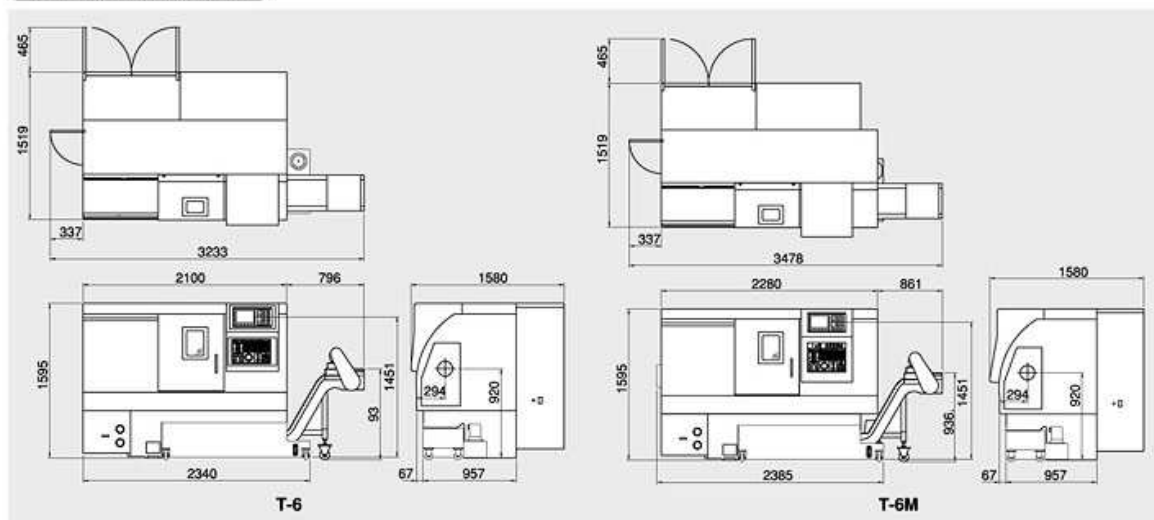
STANDARD ACCESSORIES

- RS232 interface
- Fully enclosure guardin
- Work light
- Metric disc
- Heat exchanger
- Leveling screws and pads
- Maintenance tool box
- Buzzer
- 3" jaw open center chuck
- Foot peddle switch
- Wide angle v-belt (only T-6)
- Micro V belt (only T-6M)
- VDI disc (only T-6M)
- C axis and power tooling (only T-6M)

OPTIONAL ACCESSORIES

- Spindle side coolant nozzle
- Tool setter
- Programmable tailstock
- Parts catcher
- Alarm lamp
- Bar feeder
- Auto door
- Tool tip air blow nozzles
- High pressure coolant
- Collet chuck
- Oil mist collector
- Chip conveyor outside machine
- Chip bucket
- Chuck with high / low pressure
- Transformer

MACHINE DIMENSIONS



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LEADWELL CNC MACHINES MFG., CORP.

NO.23, Gong 33th Road, Taichung Industrial Park

Taichung 407, Taiwan

TEL: 886-4-23591880

FAX: 886-4-23592555, 23593875

E-mail: sales@leadwell.com.tw

www.leadwell.com.tw

※ All performance are based on 220V/3PH/60HZ. Specification are subject to change without notice.