

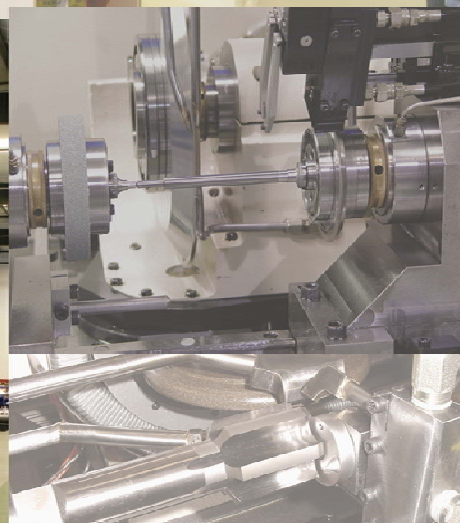


Email: grind@itmfl.com
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Precision CNC Grinding Machines



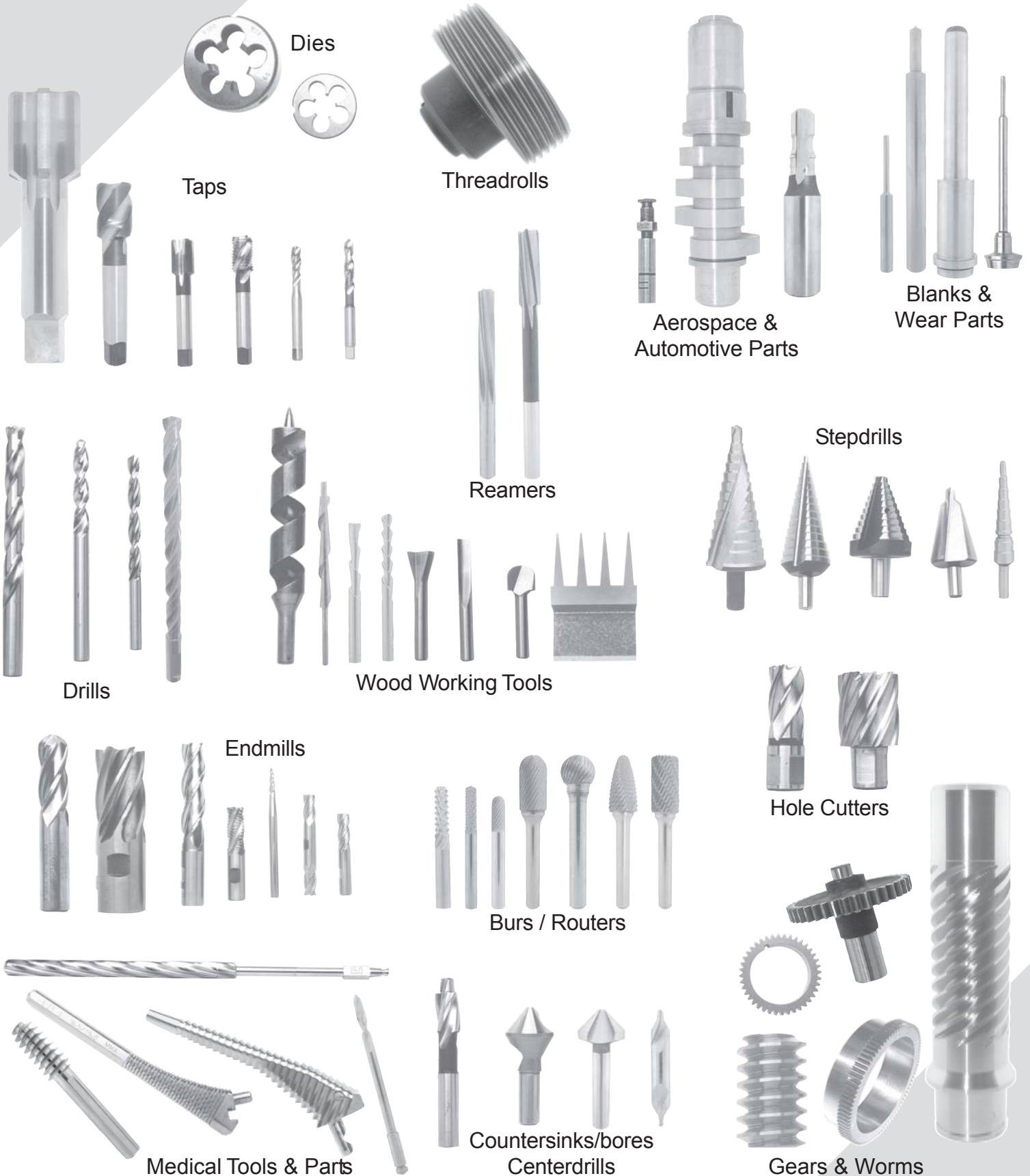
RTG 2-1



ITM FACILITY ADDRESS

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Sample Applications for ITM Machines



Lowering Your Manufacturing Cost is our Goal



ITM'S MULTI STATION GRINDERS

"MEDIUM AND HIGH VOLUME PRODUCTION"

- UP TO 6 TIMES THE PRODUCTIVITY AT TWICE THE COST OF 5-AXIS GRINDERS
- UP TO 5 GRINDERS COMBINED IN ONE MACHINE CABINET
- OPTIMUM PART PER PERSON OUTPUT RATIO
- FLOOR SPACE REQUIREMENT NOT MORE THAN ONE TRADITIONAL MACHINE

Pages 10 to 15



ITM'S TRADITIONAL PRODUCTION GRINDERS

"HIGH AND LOW VOLUME PRODUCTION"

- VERY FLEXIBLE WITH SHORT SET-UP TIMES
- ULTRA PRECISION GRINDING AT HIGH PRODUCTION RATES
- USED FOR SPECIFIC OPERATIONS OR COMPLETE PARTS
- CAN BE USED IN PRODUCTION CELLS

Pages 16 to 25



ITM'S COOLANT SOLUTION FOR GRINDERS

"TOOLS AND PARTS ARE ONLY AS GOOD AS THE COOLANT SUPPLY"

- ULTRA PRECISION GRINDING WITH CLEAN AND TEMPERATURE CONTROLLED COOLANT
- FILTRATION OF PARTICLES AS SMALL AS 3 MICRONS
- FOR FILTRATION OF STEEL, CARBIDE, CERAMICS, GLASS & OTHER MATERIALS
- FILTRATION OF OIL OR WATER SOLUBLES
- UP TO 99% COOLANT RECOVERY WITH BUILT-IN SLUDGE DRYER

Pages 28 to 29

Company History



ITM was founded in June of 1981 in Westport, Connecticut. In 1992, ITM moved its operation to Palm Coast, Florida. The new facilities have provided ITM with room to grow as its customer base increases.



ITM Headquarters, Palm Coast



Front Office

Devoted to solving the most challenging grinding operations, ITM's machine concept has been developed through constant consideration of the market's needs.

As of 2012, International Tool Machines has enjoyed a successful history in the production of precision computer controlled grinding machines. In the production of its products, the ITM Corporation develops the concept and the software, and assembles the machines as well as the required electronics. The entire development and design process of the ITM product is accomplished utilizing the latest computer technology.

A worldwide customer base and exposure to a variety of industry markets such as cutting tools, tools and parts for the medical industry, automotive industry and other special fields has provided ITM with the knowledge that can only be obtained through years of diversified experience. This knowledge and experience is utilized in our present machine design. By using a building block concept, in conjunction with the latest computer technology, our machines are easily tailored to the customer's exact needs. This results in a machine perfectly suited for the customer's desired applications.



Machine Assembly Area

Recipe for Success

The innovation of these machines is that 80 percent of their components can be applied universally to a range of tasks, while only 20 percent of the machine must be customized to suit specific tasks. ITM can also develop proprietary machine designs for customers giving them a distinct advantage over their competitors.

ITM designs the machines, develops software, assembles the components, and installs all the machine electronics at the Palm Coast facility. The machined and fabricated components are outsourced to carefully selected vendors in Florida, Connecticut, and Germany. Many of our vendors have been with ITM since the beginning of the company. By outsourcing these components, we are able to respond quickly when large multiple machine orders are placed and at other times of high demand.



EMO, Hannover- Germany



AFS-8-200 Coolant Filtration System

Another key ingredient in ITM's success is the accumulated grinding knowledge that has been gained by ITM personnel from diversified exposure to a large number of industry markets. We believe that the best grinding machine is ineffective without the correct grinding technology. ITM offers turn-key solutions with the most productive and cost effective grinding wheel technology and coolant systems. In order to overcome the limitations of existing coolant systems, ITM developed its own coolant filtration system. The correct grinding technology and a consistent coolant supply are the keys to producing high quality parts in the shortest time possible.

Success Stories

HIP BROACHES:

ITM was the first grinder manufacturer to develop a machine and automatic grinding process for producing stainless steel hip broaches used in hip joint replacement surgeries. Prior to purchasing ITM machines in 1985, the hip broaches were ground by hand using a labor-intensive process that required 11 hours to produce a complete broach. With the new ITM process, the cycle time was reduced to 20 minutes and part quality was greatly improved!



THREAD ROLLS:

ITM developed a new machine and process for producing large high quality thread rolls. Prior to the purchase of the ITM grinders, the customer averaged 20 hours to produce one thread roll. With the ITM grinders, the customer was able to produce a complete thread roll in 50 minutes!

CARBIDE DRILL BLANKS:

For a manufacturer of carbide drills, ITM built machines for preparing the carbide drill blanks that, with the use of high speed peel grinding, reduced the average cycle time to produce a complete blank from 25 minutes to 5!



One of ITM's greatest success stories has been the development of our ever-expanding line of **Multi Station Grinders**. Multi Station Grinders divide up the operations to produce a complete part over up to 5 grinding stations. The end result is a high quality part at very high rates of production.



HSS TWIST DRILLS:

The first ITM Multi Station Grinder was developed for the production of HSS drills. One customer who selected ITM to be the main supplier of its HSS drill grinding machines purchased 41 Multi Station Grinders over a 2-year period. The machines were purchased because of their small footprint, greatly reduced manpower requirements, and increased throughput. Throughput is increased by eliminating the scheduling difficulties associated with performing separate operations on multiple stand-alone machines.

Success Stories

CARBIDE TWIST DRILLS:

A customer who manufactures carbide drills on an ITM Multi Sation Grinder was able to reduce his cycle time to produce a complete high performance carbide drill from 10 minutes down to 2.5 minutes!



HSS ROUTERS:

An ITM customer who manufactures HSS routers produces a complete router every 7.5 seconds with their Multi Sation Grinders. This compares to over 60 seconds before the purchase of the ITM Multi Sation Grinders!

CARBIDE DIAMOND CUT ROUTERS:

Finally, an ITM customer purchased a Multi Sation Grinder to produce carbide, diamond cut, ball nose routers. ITM worked closely with this customer to optimize the machine and grinding technology for the production of these tools. Prior to delivery, the machine ran production for 3 months at ITM 24 hours a day 7 days a week “lights out” and unattended operation overnight and on weekends. The machine is equipped with an automatic system to notify an attendant via telephone in the event of a machine alarm. With the ITM Multi Sation Grinder, a complete part was ground every 72 seconds, and during the 3 month period a total of 85,000 parts were produced! During the same 3-month period, the customer's existing machine could produce a maximum of only 16,500 parts in a two shift five day operation!

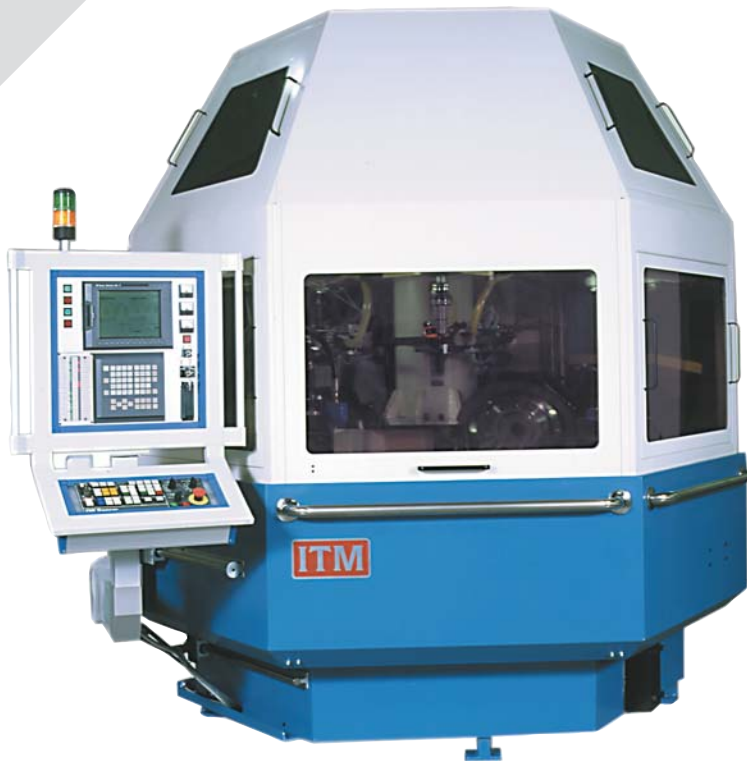


Moving Forward

ITM is an application driven company. Our grinding machines are designed to provide our customers with the best possible solution to their manufacturing challenges. We are experienced at the efficient utilization of our resources to design and manufacture very forward thinking, cost-effective, and innovative machines. We operate in an organized way that creates an environment where things get done right the first time. We strive to stay focused on our goals and achieve them in the most efficient way possible. We are not afraid to question the way things have been done in the past. By doing so, we are able to deliver high quality high value machines to our customers.

RTG - Rotary Transfer Grinder

- Up to 22 CNC Axes
- Motorspindles up to 50HP
- Up to 6 Stations,
(5 Work, 1 Load/Unload)



WORKPIECE DATA

- Max. Diameter 32mm (1 1/4")
- Min. Diameter 1.5mm (1/16")
- Max OAL 300mm (12")
- Other dimensions upon request

GRINDING WHEELS

- Fluting 200mm - 250mm (8"-10")
- OD-Relief 200mm - 250mm (8"-10")
- End Work 100mm - 150mm (4"-6")
- Diamond, CBN or conventional abrasives
- Up to 100 m/s (20,000 sfm)

MACHINE DIMENSIONS

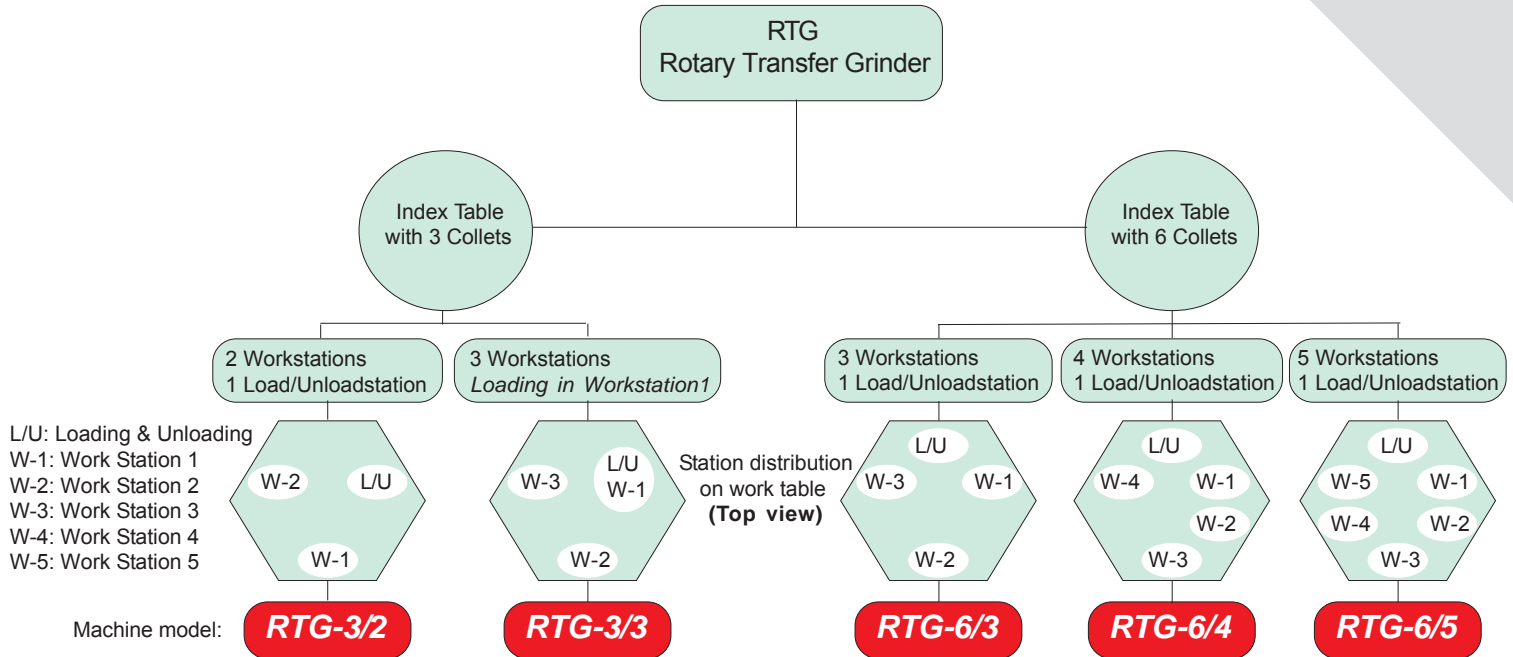
- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 9,000 kg (16,000 lbs)

APPLICATIONS / GRINDING OPERATIONS

- **Endmills Carbide & HSS:** Flutes, OD Relief, Endteeth
- **Twistdrills (Industrial/ Aircraft/ S+D/ DIY/ Medical/ PCB) Carbide, HSS & Stainless:** Flutes, Clearance, Point, Split or Thinning
- **Medical Tools & Parts Stainless & Titanium:** Drills, Reamers, Burs, Implants
- **Reamers Carbide & HSS:** Flutes, OD Relief, Chamfer
- **Countersinks Carbide & HSS:** Flutes, Cone Relief, OD & Face
- **Counterbores:** Flutes, OD Relief, Face Relief, Pilot OD
- **Taps:** Flutes, Spiral Point, Thread, Chamfer
- **Annular Hole Cutters:** Flutes, OD Relief, Endteeth
- **Burs Carbide & HSS:** Flutes, Chipbreakers, Endface
- **Routers Carbide (solid, brazed) & HSS:** Form, Flutes, Fluteface, Endteeth, Bearing diameter
- **Specialty Parts, Automotive Parts, Specialty Gears & Worms, Carbide Wear Parts, Ceramic Parts & other:** Production of parts that require multiple surfaces to be ground.

RTG - Rotary Transfer Grinder

The RTG resembles a compact grinding cell consisting of up to 5 precision grinding stations connected by a high speed rotary transfer mechanism! The modular design of the RTG allows us to tailor each machine to the customers specific needs. The following schematic describes the variety of available machine models and the distribution of work stations and load/unload station on the worktable:



MACHINE FEATURES

- Modular Design of each Workstation
- All stations work simultaneously
- Part Transfer time 3 - 4 Seconds
- CNC Wheel Head Angle Flute 0 - 90°
- Water-cooled direct drive Motorspindles, 50HP, 20HP, 10HP with HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Bushing, V-Block or Tailstock Support

MACHINE OPTIONS

- CNC diamond roll dressers at each station
- Automatic Wheel Balancing
- Integrated Blank oversize check
- Integrated quality control
- Automatic Locating Probe
- Coolant Chambers and high pressure coolant including wheel scrubbers

AUTOMATIC LOADING OPTIONS

- Cassette Loader with single or double gripper
 - Hopper Loader / Unloader
 - Robot Loader
- Please see Page 28 for details and capacities

Rotary Transfer Table with 3 or 6 Collets



ITM Machines are Designed for 24 Hour Production...7 Days a Week 11

Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

MSG - Drillbuster / Twinbuster



- Up to 8 CNC Axes
- Up to 6 Motorspindles with up to 20HP

WORKPIECE DATA

- Max. Diameter 10mm (3/8")
- Min. Diameter 1.5mm (1/16")
- Max. OAL 200mm (8")
- Other dimensions upon request

GRINDING WHEELS

- Fluting 200mm - 250mm (8" - 10")
- OD-Relief 200mm - 250mm (8" - 10")
- End Work 100mm - 150mm (4" - 6")
- Diamond, CBN or conventional abrasives
- Up to 100 m/s (20,000 sfm)

MACHINE DIMENSIONS

- Height: 2408mm (95")
- Width: 2000mm (78")
- Depth: 2757mm (109")
- Weight: 6,340 kg (14,000 lbs)

APPLICATIONS / GRINDING OPERATIONS

- **Twistdrills (DIY) HSS:** Flutes, Clearance, Facet Point, Split Point
- **Burs, Routers Carbide & HSS:** Flutes, Chipbreakers, Endface
- **Pencil Sharpener Cutters HSS:** Flutes, OD Relief

MACHINE FEATURES

- Water-cooled direct drive Motorspindles, 20HP, 10HP with HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Bushing or V-Block Support

MACHINE OPTIONS

- CNC diamond roll dressers at each station
- Integrated Blank oversize check
- Coolant Chambers and high pressure coolant including wheel scrubbers

AUTOMATIC LOADING OPTIONS

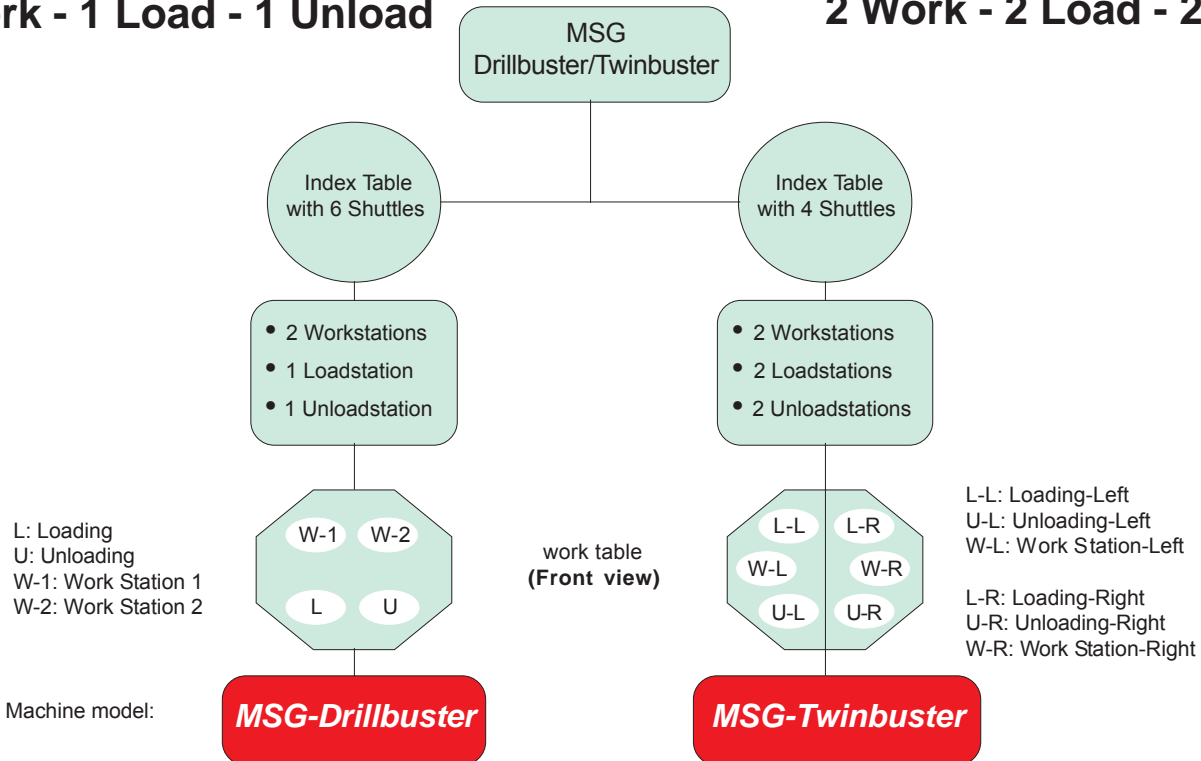
- Cassette Loader
 - 1 or 2 High Capacity Hopper Loaders / Unloaders
- Please see Page 28 for details & capacities

MSG - Drillbuster / Twinbuster

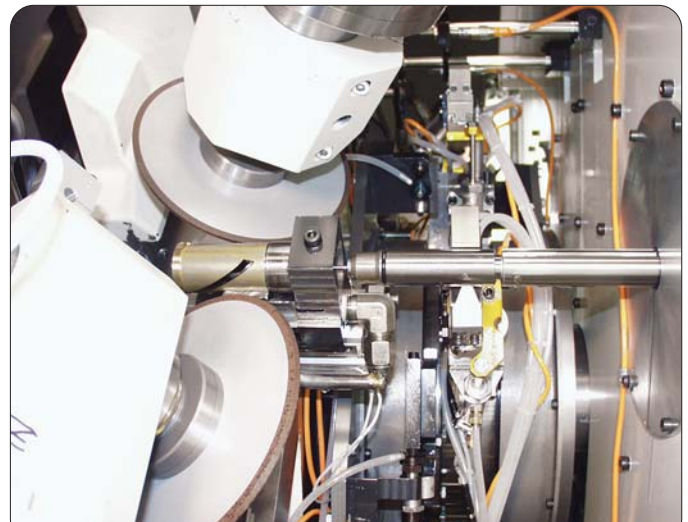
The Drillbuster and Twinbuster are typically configured to produce a specific range of parts at very high rates of production. This machine design has two grinding stations with up to three grinding spindles per station. The Drillbuster divides the operations to produce a complete tool over both stations and transfers the parts from station 1 to station 2 during each machine cycle. The Twinbuster produces two complete parts simultaneously...one at each of the two grinding stations. The compact machine design eliminates wasted movement, allowing complete parts to be produced as fast as every 7.5 seconds!

Drillbuster Up to 4 Stations 2 Work - 1 Load - 1 Unload

Twinbuster Up to 6 Stations 2 Work - 2 Load - 2 Unload



Point Grinding with bushing support



Simultaneous Grinding of two Flutes

ITM Machines are Designed for 24 Hour Production...7 Days a Week 13

Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

MSG - UNIFLEX

- Up to 15 CNC Axes
- Motorspindles up to 20HP
- Up to 3 individual 5-axis machine stations
- Up to 3 individual loaders



WORKPIECE DATA

- Max. Diameter 16mm (5/8")
- Min. Diameter 1.5mm (1/16")
- Max. OAL 200mm (8")
- Other dimensions upon request

GRINDING WHEELS

- Up to 4 wheels per station
- Diameter 75 to 150mm (3" - 6")
- Diamond, CBN or conv abrasives
- Up to 100 m/s (20,000 sfm)

MACHINE DIMENSIONS

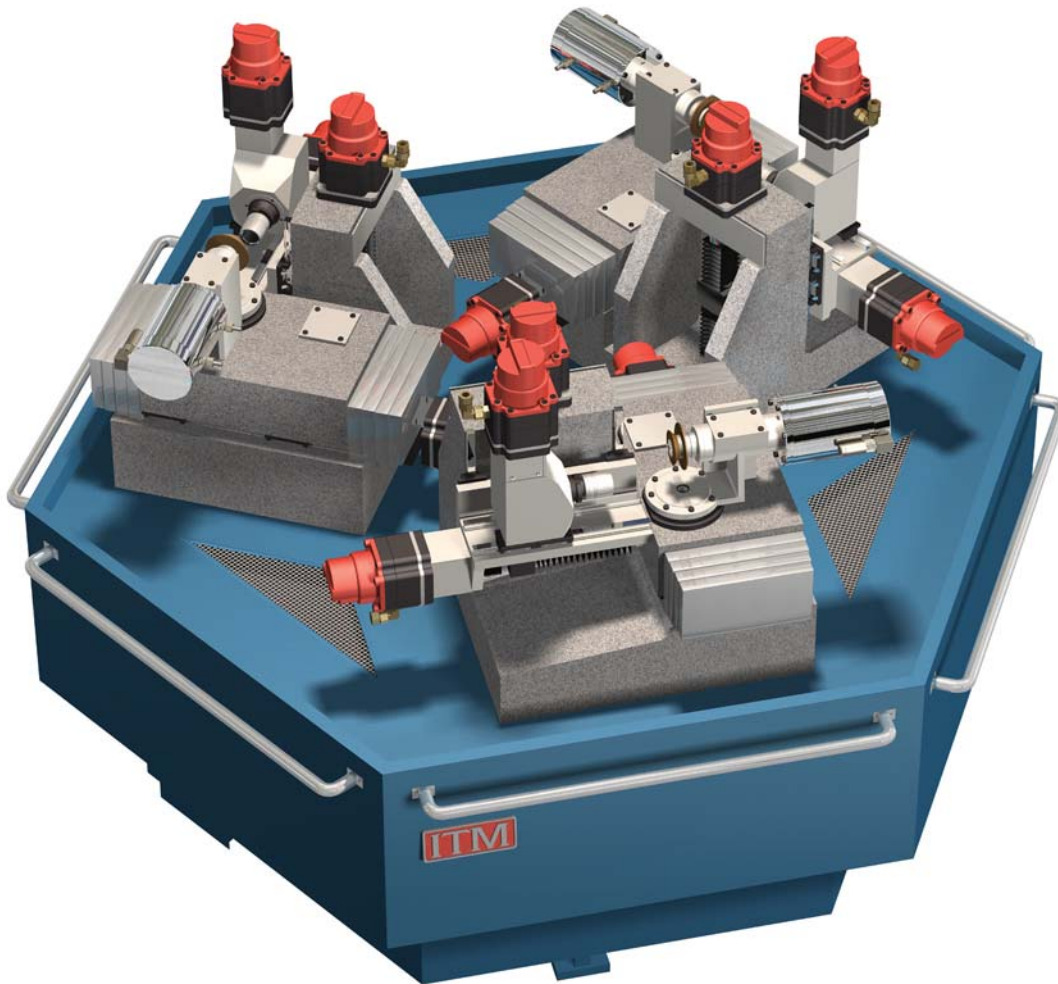
- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 10,870 kg (24,000 lbs)

APPLICATIONS / GRINDING OPERATIONS

- **Endmills Carbide & HSS:** Flutes, OD Relief, Endteeth
- **Twistdrills (Industrial/ Aircraft/ S+D/ DIY/ Medical/ PCB) Carbide, HSS & Stainless:** Flutes, Clearance, Point, Split or Thinning
- **Medical Tools & Parts Stainless & Titanium:** Drills, Reamers, Burs, Implants
- **Reamers Carbide & HSS:** Flutes, OD Relief, Chamfer
- **Countersinks Carbide & HSS:** Flutes, Cone Relief, OD & Face
- **Counterbores:** Flutes, OD Relief, Face Relief, Pilot OD
- **Taps:** Flutes, Spiral Point, Thread, Chamfer
- **Annular Hole Cutters:** Flutes, OD Relief, Endteeth
- **Burs Carbide & HSS:** Flutes, Chipbreakers, Endface
- **Routers Carbide (solid, brazed) & HSS:** Form, Flutes, Fluteface, Endteeth, Bearing diameter
- **Specialty Parts, Automotive Parts, Ceramic Parts, Carbide Wear Parts & other**

MSG - UNIFLEX

The MSG Uniflex takes the production of small tools up to 16mm in diameter to the next level. Every machine cycle produces three complete tools in the time most grinding machines take to produce one tool. And, all three grinding stations can produce the same tool simultaneously, or three completely different tools, depending on production requirements. Each grinding station is a scaled down version of the work area of our successful Series 2005 / 50-UG Universal Grinder (see page 21). The MSG Uniflex is capable of hours of unattended operation when equipped with optional automatic loading systems. The MSG Uniflex offers 3 times the productivity of standalone grinders at 2/3 the cost and it occupies ½ the floor space.



MACHINE FEATURES

- CNC Wheel HeadAngle adjustment
- Water-cooled direct drive Motorspindles, 20HP, 10HP with HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Bushing or V-Block Support

MACHINE OPTIONS

- CNC diamond roll dressers at each station
- Integrated Blank oversize check
- Coolant Chambers and high pressure coolant including wheel scrubbers

AUTOMATIC LOADING OPTIONS

- Cassette Loader
 - Hopper Loader / Unloader
 - Robot Loader
- Please see page 28 for details and capacities

ITM Machines are Designed for 24 Hour Production...7 Days a Week 15

Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

Series 2005-OD OD-Peelgrinder



GRINDING OPERATIONS

Straight OD's, Contours, Tapers, Chamfers, Shoulders, Grooves, Flats, Squares, Threads etc.

WORKPIECE EXAMPLES:

- **Endmills** Carbide & HSS: Shank and Cutting diameter
- **Twistdrills (Industrial/ Aircraft/ S+D/ DIY/ Medical/ PCB)** Carbide, HSS & Stainless: Shank & Cutting diameter
- **Medical Tools** Stainless & Titanium: Drills, Reamers
- **Reamers** Carbide & HSS: Shank
- **Countersinks** Carbide & HSS: Shank & OD
- **Counterbores:** Complete tool profile
- **Taps** Carbide & HSS: Complete tool profile and square
- **Annular Hole Cutters:** Shank & OD

MACHINE FEATURES & OPTIONS

- Grinding between centers without workpiece drivers (dogs)
- Workpiece Rotation up to 5,000 rpm
- CNC Wheel Head Angle adjustment 60°
- Water-cooled direct drive Motorspindles, 30HP, 20HP, 10HP with HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Internal dressing of diamond and CBN wheels with silicon carbide wheels and diamond roll
- Automatic Probing of Wheel diameter after dressing
- CNC Adjustment of Workhead (Center) Distance
- Built-In Measuring Gage (Pre-, In-, Postprocess)
- Multiple wheel arrangements for Peel & Plunge grinding in one set-up
- Easy to use Windows based Software with Simulation Mode for grinding a great variety of part contours
- Automatic Cassette Loader with double gripper
Please see Page 28 for details and capacities

- **4 CNC Axes**
- **Motorspindles up to 30HP**

WORKPIECE DATA

- Min. Diameter 2.5 mm (.1")
- Max. Diameter 50 mm (2")
180mm (7") with Plunge Grinding
- Max OAL 350mm (14")
- Other dimensions upon request!

GRINDING WHEELS

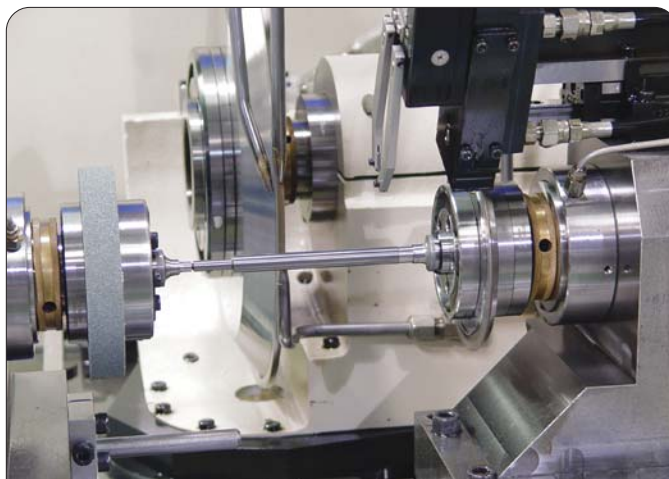
- Diameter 350mm (14")
- Width Peelgrind 3 - 6mm (1/8 - 1/4")
- Width Plungegrind up to 30mm (1 1/4")
- Diamond, CBN, Conventional
- Up to 150 m/s (30,000 sfm)

MACHINE DIMENSIONS

- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 5,000 kg (11,000 lbs)

PEEL GRINDING PROCESS

High Velocity Peel Grinding resembles turning. To generate the desired part contour, a narrow superabrasive wheel, rotating at up to 30,000sfm is moved along the part using two-axis interpolation. One wheel can be used to generate a large variety of part shapes with the highest possible material removal rates.



Part driven by center pressure

Series 2005-FM OD-Form Grinder

- 4 CNC Axes
- Motorspindles up to 30HP



WORKPIECE DATA

- Min. Diameter 2.5 mm (.1")
- Max. Diameter 50 mm (2")
optional 180mm (7")
- Max. OAL 300mm (12")
- Other dimensions upon request!

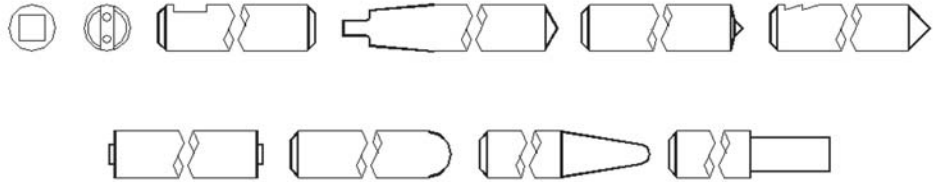
GRINDING WHEELS

- Diameter 350mm (14")
- Diamond, CBN
- Up to 150 m/s (30,000 sfm)

MACHINE DIMENSIONS

- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 5,000 kg (11,000 lbs)

Sample Configurations:



MACHINE FEATURES

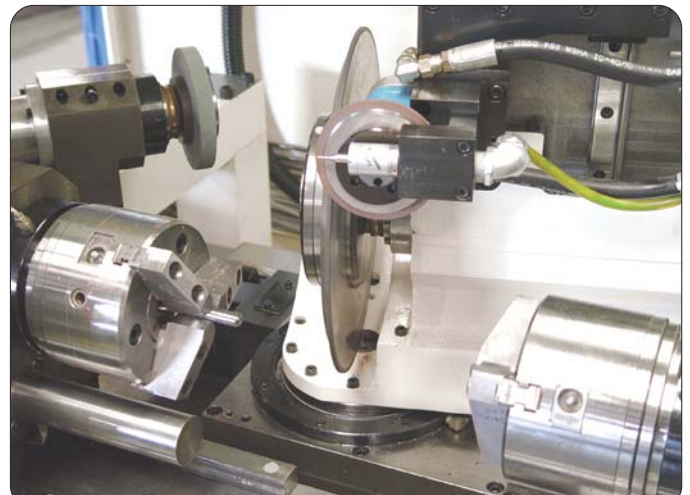
- Clamping with two individual Chucks for grinding of both part ends in one set-up, or clamping with Chuck & Center
- Workpiece Rotation up to 5,000 rpm
- CNC Wheel HeadAngle 60°
- Water-cooled direct drive Motorspindles, 30HP, 20HP, 10HP with HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Internal dressing of diamond and CBN wheels with silicon carbide wheels and diamond roll
- Automatic Probing of Wheel diameter after dressing
- CNC Adjustment of Workhead Distance

OPTIONS

- Auxiliary Spindle for additional Grinding operations, e.g. coolant hole connection, slots, squares, flats
- CNC Positioning for Workhead (A-axis rotation)
- Easy to use Windows based Software with Simulation Mode for grinding a great variety of part contours

AUTO LOAD

- Automatic Cassette Loader with double gripper
Please see Page 28 for details and capacities



2 Chucks for grinding both part ends

ITM Machines are Designed for 24 Hour Production...7 Days a Week 17

Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

Series 2005-UFG Universal Flute Grinder

- 4 CNC Axes
- Motorspindles up to 50HP



WORKPIECE DATA

- 12-UFG: Dia. 1mm to 12mm (1/32" to 1/2")
- 25-UFG: Dia. 3mm to 25mm (1/8" to 1")
- 50-UFG: Dia. 3mm to 50mm (1/8" to 2")
up to 200mm (8") with special tooling
- Max. OAL 300mm (12")
up to 400mm (16") with special tooling

GRINDING WHEELS

- Fluting 200mm - 250mm (8"-10")
- Diamond, CBN or conventional abrasives
- Up to 100 m/s (20,000 sfm)

MACHINE DIMENSIONS

- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 5,000 kg (11,000 lbs)

SAMPLE APPLICATIONS / GRINDING OPERATIONS

- **Taps:** Straight Flutes, right & left hand Flutes, Spiral Point*
- **Endmills** - Carbide & HSS: Flutes, OD Relief*
- **Twistdrills (Industrial/ Aircraft/ S+D/ DIY/ Medical/ PCB)** - Carbide, HSS & Stainless: Flutes, OD Relief*
- **Medical Tools** - Stainless & Titanium: Fluting Drills, Reamers, Burs
- **Reamers** - Carbide & HSS: Flutes, OD Relief*
- **Countersinks** - Carbide & HSS: Flutes, Cone Relief, OD*
- **Counterbores:** Flutes, OD Relief, Pilot OD*
- **Annular Hole Cutters:** Flutes
- **Cylindrical Burs** - Carbide & HSS: Flutes, Chipbreakers*
- **Cylindrical Routers** - Carbide & HSS: Right & left hand Flutes*
- **Form Relieved Cutters** - Flutes, Relief*

* 2nd and 3rd Operation may have to be performed in separate set-ups.

MACHINE FEATURES

- CNC Wheel Head Angle Flute - 90° to + 52°
- Water-cooled direct drive Motorspindles, 50HP, 20HP, 10HP with HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Bushing, V-Block or Tailstock Support

MACHINE OPTIONS

- CNC diamond roll dresser / (dressing while loading)
- Coolant Chambers and high pressure coolant incl. wheel scrubbers
- "Renishaw" Probe for locating of pre-milled flutes etc.



Shown: Fluting M56 Tap from Solid

AUTO LOAD OPTIONS

- Automatic Cassette Loader with double gripper
 - Automatic Hopper Loader
- Please see Page 28 for details and capacities

Series 2005-50-UG 5-axis Universal Grinder



Shown without auto loader

- **5 CNC Axes**
- **Motorspindles up to 30HP**

WORKPIECE DATA

- Min. Diameter 2.5 mm (.1")
- Max. Diameter 50 mm (2")
up to 180mm (7") with special tooling
- Max. OAL 350mm (14")
- Other dimensions upon request!

GRINDING WHEELS

- 75mm - 250mm (3"-10")
- Diamond, CBN or conventional abrasives
- Up to 100 m/s (20,000 sfm)

MACHINE DIMENSIONS

- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 5,000 kg (11,000 lbs)

SAMPLE APPLICATIONS / GRINDING OPERATIONS

- **Endmills** - Carbide & HSS: Flutes, OD Relief, all End Configurations
- **Twistdrills (Industrial/ Aircraft/ S+D/ DIY/ Medical/ PCB)** - Carbide, HSS & Stainless: Flutes, OD Relief, all Point Geometries
- **Medical Tools** - Stainless & Titanium: Flutes, OD Relief, Point
- **Reamers** - Carbide & HSS: Flutes, OD Relief, Chamfer
- **Countersinks** - Carbide & HSS: Flutes, Cone Relief, OD
- **Counterbores**: Flutes, OD Relief, Pilot OD
- **Taps**: Straight Flutes, Right & Left hand Flutes, Spiral Point, Thread
- **Annular Hole Cutters**: Flutes, OD-Relief, Endface
- **Burs/Routers** - Carbide & HSS: Complete production including all shapes

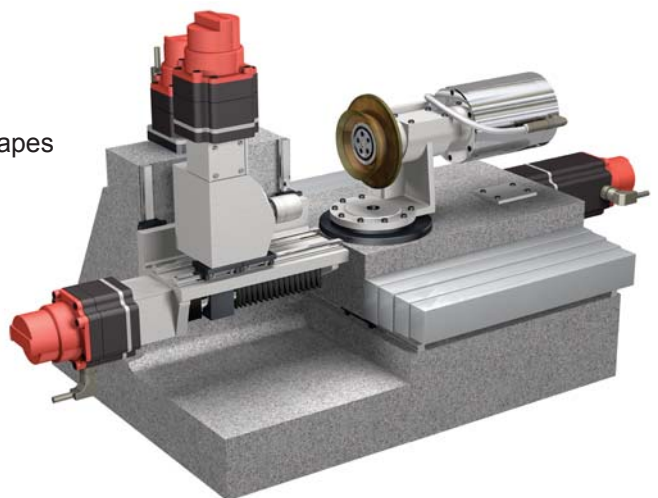
MACHINE FEATURES

- CNC Wheel Head Angle - 90° to + 52°
- Water-cooled direct drive Motorspindles, 30HP, 20HP, 10HP with HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- High Precision Chuck, Hydraulic Expansion Chuck or Collet
- Inch/Metric switchable

MACHINE OPTIONS

- CNC diamond roll dresser (dressing while loading)
- Auxiliary Spindle for additional grinding operations
- Coolant Chambers and high pressure coolant including wheel scrubbers
- Bushing, V-Block or Tailstock Support
- Easy to use Windows based Software Packages available with Simulation Mode for grinding a great variety of parts

Workarea Configuration



AUTO LOAD OPTIONS

- Automatic Cassette Loader with double gripper
 - Automatic Hopper Loader
 - Robot Loader
- Please see Page 28 for details and capacities

ITM Machines are Designed for 24 Hour Production...7 Days a Week 19

Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

Series 2005-GG Universal Gear Grinder



- 4 CNC Axes
- Motorspindles up to 50HP

WORKPIECE DATA

- Max. Part Diameter 200mm (8")
optional up to 500mm (20")
- Max. Part Length 350 mm (14")
- Max. Part Weight 90 kg (200 lbs.)
- Number of Teeth: No limit
- Helix Angle: Straight,
up to 50 degrees right & 50 degrees left
- Guaranteed Quality Level: AGMA 14
with glass scales, Quality 9 without
- Involute Gears to DIN 3960
- Worms & Splines

GRINDING WHEELS

- Diameter 19mm - 250mm (3/4"-10")
optional up to 300mm (12")
- Max Wheel Width 19mm (3/4")
- Up to 90m/s (18,000 sfm)

MACHINE DIMENSIONS

- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 5,000 kg (11,000 lbs)

SAMPLE APPLICATIONS / GRINDING OPERATIONS

- Gear Grinding "in the Green" into the solid blank
- High Precision Gear Grinding after Heat Treat
- Grinding of Worms
- Grinding of Splines

MACHINE FEATURES

- CNC Wheel Head Angle - 50° to + 50°
- Water-cooled direct drive Motorspindles with ceramic bearings,
50HP, 20HP HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Probe for locating gear teeth and tooth inspection
- CNC diamond roll dresser
- Modular designed Grinding and Dressing Software:
ESCO (Germany)
- Maximum Traverse Rate 2000mm/min

MACHINE OPTIONS

- Heidenhain Glass Scales
- Automatic Loading Systems
(Please see Page 28 for details)

Work area with built-in CNC dresser



The Series 2005 Universal Gear Grinder is designed to reduce gear production costs by eliminating the hobbing operation. Gear teeth are ground from a solid blank "in the soft" with high performance conventional wheels combined with high-pressure coolant. A multi-axis CNC dresser in the machine allows any tooth form to be dressed on to the wheels.

This new flexible approach to gear grinding eliminates the need to maintain an inventory of hobs for each tooth form. This makes the ITM Series 2005 Universal Gear Grinder an ideal solution for low and high volume gear production.

Series 2005-THG Thread Grinder



- Up to 5 CNC Axes
- Motorspindles up to 20HP

WORKPIECE DATA

- Max. Part Diameter 50mm (2")
200mm (8") for Thread Rolls
- Min. Part Diameter 3mm (1/8")
optional 1mm (0.04")
- Max. Length 330mm (13")

GRINDING WHEELS

- Max. Diameter 350mm (14")
- Min. Diameter 280mm (11")
180mm (7") for Thread Rolls
- Max. Wheel Width 19mm (3/4")
- Up to 100 m/s (20,000 sfm)
- Diamond, CBN or conventional wheels

MACHINE DIMENSIONS

- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 5,000 kg (11,000 lbs)

SAMPLE APPLICATIONS / GRINDING OPERATIONS

- **Taps:** Thread and Chamfer in the same clamping
- **Thread Gages, Form Taps**
- **Bone Screws**
- **Thread Rolls** with up to 400 starts
- General Thread Grinding with or without relief
- Multi-rib or Single-rib Grinding

MACHINE FEATURES

- CNC Pitch Angle Adjustment -15° to + 15°
- Relief Grinding controlled by CNC (up to 5 strokes per second)
- Water-cooled direct drive Motorspindles with ceramic bearings, 20HP HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Grinding Taps between Centers with floating driver
- Grinding Thread Rolls between centers with or without arbor
- Heavy duty 2-Axis CNC Dresser with inside & outside support in large bearings, for dressing of single-rib or multi-rib wheels and chamfer wheels. Chamfer angle can be generated with radius roll or it can be plunged simultaneously with the thread form with dedicated crush rolls. Usage of single point diamonds possible for Thread Rolls

MACHINE OPTIONS

- Heidenhain Glass Scales
- Second Grinding wheel for additional operations
- Automatic Balancing System
- Integrated Relief Measuring (both flank sides) with print out unit
- High speed relief Grinding with CNC driven CAM (up to 15 strokes per second)
- High Precision Chucks for NutTaps



AUTO LOAD OPTIONS

- Automatic Cassette Loader w double gripper
Please see Page 28 for details and capacities

ITM Machines are Designed for 24 Hour Production...7 Days a Week 21

Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

Series 2005-RG Relief & Chamfer Grinder

- 4 CNC Axes
- Motorspindles up to 20HP



WORKPIECE DATA

- Max. Part Diameter 50mm (2")
optional 200mm (8")
- Min. Part Diameter 3 mm (1/8")
optional 1mm (0.04")
- Max. Length 200mm (8")
optional 500mm (20")

GRINDING WHEELS

- Max. Diameter 350mm (14")
- Min. Diameter 300mm (12")
- Max. Wheel Width 80mm (3")
- Up to 100 m/s (20,000 sfm)
- Diamond, CBN or conventional wheels

MACHINE DIMENSIONS

- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 5,000 kg (11,000 lbs)

SAMPLE APPLICATIONS / GRINDING OPERATIONS

- **Taps:** Chamfer with or without relief
- **Countersinks:** Cone Relief & OD
- **Routerbits:** OD Relief

MACHINE FEATURES

- CNC Wheel Angle Adjustment - 10° to + 45°, for grinding chamfers with straight wheels
- Water-cooled direct drive Motorspindles with ceramic bearings, 20HP & HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- 2-Axis CNC Dresser for usage of diamond rolls or sticks
- Automatic Probe for locating of flutes and detecting helixangle
- Clamping with Square Drivers, Collets, High Precision Chucks and Tailstock Centers

MACHINE OPTIONS

- Automatic Balancing System
- Self contained Coolant System with 800 liters (200 gallons) of coolant in the base

AUTO LOAD OPTIONS

- Automatic Cassette Loader with double gripper
Please see Page 28 for details and capacities

Work area with CNC dresser and Probe



Series 2005-ID ID-Grinder



- Up to 5 CNC Axes
- Spindles up to 120,000 rpm

WORKPIECE DATA

- Min. Part OD 4.5mm (0.177")
- Max. Part OD 95mm (3.75")
optional 180mm (7")
- Max. Part Length 150mm (6")
optional 500mm (20")

GRINDING WHEELS

- Standard Diameter 50mm (2") and smaller
other sizes possible
- Up to 120,000 rpm spindle speed
- Diamond, CBN or conventional wheels

MACHINE DIMENSIONS

- Height: 2440mm (96")
- Width: 2530mm (100")
- Depth: 2600mm (102")
- Weight: 5,000 kg (11,000 lbs)

SAMPLE APPLICATIONS / GRINDING OPERATIONS

ID Grinding, Face Grinding & Internal Thread Grinding of

- Ball Nuts
- Spindles
- Bearing Races
- Ring Gauges etc.

MACHINE FEATURES

- Water-cooled direct drive High Frequency Motorspindles with ceramic bearings
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Automatic Probe for locating Parts
- In-process and post-process gauging with automatic size correction

MACHINE OPTIONS

- CNC Wheel Angle Adjustment - 90° to + 52°
- 2-Axis CNC Dresser
- Self contained Coolant System with 800 liters (200 gallons) of coolant in the base
- Second Grinding Spindle for rough grinding or additional operations

AUTO LOAD OPTIONS

- Automatic Cassette Loader with double gripper
 - Robot Loader
 - Custom Loading Systems
- Please see Page 28 for details and capacities



ITM Machines are Designed for 24 Hour Production...7 Days a Week 23

Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

Series 2002 UFGG & UDGG



Series 2002-UFGG Universal Flute/Gunnose Grinder

SAMPLE APPLICATIONS / GRINDING OPERATIONS

- **Taps:** Straight Flutes, right & left hand Flutes, Gunnose, Chamfer

MACHINE DIMENSIONS UFGG & UDGG

- Height: 1750mm (69")
- Width: 2500mm (98")
- Depth: 2000mm (80")
- Weight: 10,200 kg (22,440 lbs)

• 5 CNC Axes

• Motorspindles up to 120,000 rpm

WORKPIECE DATA

- Max. Part OD 100mm (4")

GRINDING WHEELS

- Standard Diameters 3 to 7mm
- Up to 120,000 rpm spindle speed
- Diamond, CBN or conventional wheels

MACHINE FEATURES

- Water-cooled direct drive High Frequency Motorspindles with oil mist lubrication 1.5HP and 120,000rpm
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Automatic Probe for locating Parts
- Table mounted CNC dresser

MACHINE OPTIONS

- CNC Wheel Angle Adjustment - 30° to + 30°
- Automatic grinding of both sides with auto loader

- Up to 7 CNC Axes
- Motorspindles up to 50HP

WORKPIECE DATA

- Min. Part OD 0.2mm (0.008")
- Max. Part OD 50mm (2")
- Max. Part Length 300mm (12")
- Max. Grind Length 250mm (10")

GRINDING WHEELS

- Max. Diameter 300mm (12")
- Min. Diameter 200mm (8")
- Up to 100 m/s (20,000 sfm)
- Diamond, CBN or conventional wheels

MACHINE FEATURES

- CNC Wheel Head Angle - 45° to + 52°
- Water-cooled direct drive Motorspindles, 50HP, 20HP with HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Table mounted CNC dresser

MACHINE OPTIONS

- 2-axis overhead CNC dresser
- Auxiliary grinding spindle

AUTO LOAD OPTIONS UFGG & UDGG

Please see Page 28 for details and capacities



Series 2002-UDGG Universal Die Grinder

SAMPLE APPLICATIONS / GRINDING OPERATIONS

- **Dies:** Chamfer, Gunnose, Internal Thread & Face Grinding

Series 2020 Heavy Duty 5-axis Grinder



- Up to 9 CNC Axes
- Spindles up to 50HP

WORKPIECE DATA

- Min. Part OD 3mm (1/8")
- Max. Part OD 100mm (4")
- Max. Part Length 500mm (20")
- Larger grinding Ranges possible with special tooling

GRINDING WHEELS

- Max. Diameter 300mm (12")
- Min. Diameter 150mm (6")
3mm for auxiliary ID grinding spindle
- Up to 100 m/s (20,000 sfm)
- Diamond, CBN or conventional wheels

MACHINE FEATURES

- CNC Work Head Angle - 95° to + 95°
- Standard Spindles and water-cooled direct drive Motorspindles, 50HP, 20HP, 10 HP with HSK quick change flanges
- Reliable GE-Fanuc Controls with built-in PC
- Inch/Metric switchable
- Table mounted CNC diamond roll dresser

MACHINE DIMENSIONS

- Height: 2020mm (80")
- Width: 2560mm (101")
- Depth: 1920mm (76")
- Weight: 6,400 kg (14,000 lbs)

MACHINE OPTIONS

- Travelling CNC diamond roll dresser
- Up to 2 Auxiliary grinding spindles
- Digital Locating Probe

AUTO LOAD OPTIONS

- Automatic Loader with double gripper
Please see Page 28 for details and capacities!

SAMPLE APPLICATIONS / GRINDING OPERATIONS

- **Endmills** - Carbide & HSS: Flutes, OD Relief, all Endconfigurations
- **Stepdrills**: Flutes, Steps with axial and radial relief, Point & Split
- **Twistdrills (Industrial/ Aircraft/ S+D/ DIY/ Medical/ PCB)** - Carbide, HSS & Stainless: Flutes, OD Relief, all Point Geometries
- **Medical Tools** - Stainless & Titanium: Flutes, OD Relief, Point
- **Reamers** - Carbide & HSS: Flutes, OD Relief, Chamfer
- **Countersinks** - Carbide & HSS: Flutes, Cone Relief, OD
- **Counterbores**: Flutes, OD Relief, Pilot OD
- **Taps**: Straight Flutes, Right & Left hand Flutes, Gunnose, Thread & Chamfer
- **Annular Hole Cutters**: Flutes, OD-Relief, Endface
- **Burs/Routers** - Carbide & HSS: Complete production including all shapes
- **Specialty Tools & Parts**: Semi or Fully Automatic Grinding with the most intricate requirements, Gear & Worm, Injection Plungers, Medical Parts such as: Reamers, Hip-Broaches, Bone Screws and Knee Joints, Thread Rolls with up to 400 starts and multiple operations in one clamping, Internal Grinding, etc.

For highest versatility and precision, up to three grinding spindles can be mounted in the machine base to guarantee that the appropriate wheel is used for each grinding operation. Each spindle can be equipped with up to three grinding wheels. Spindles are available up to 50HP and 120mm diameter for taking heavy cuts. Also available are High Frequency ID grinding spindles with up to 120,000 rpm and direct drive Motorspindles with HSK quick change flanges.



Up to three Grinding Spindles

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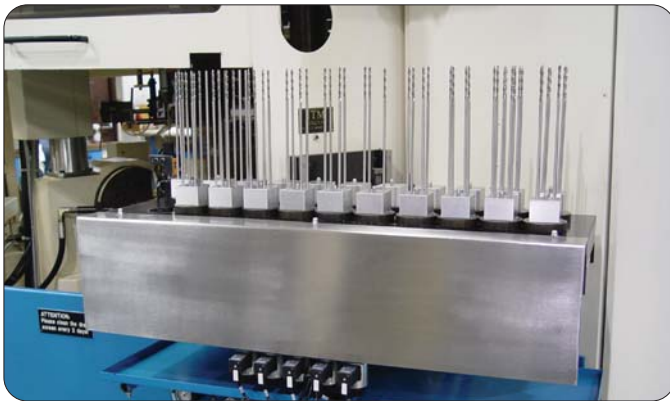
Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

Overview ITM Automatic Loading Systems



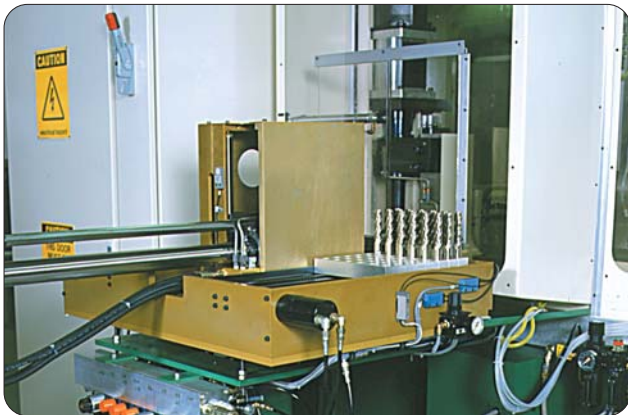
Conveyor Type Cassette Loader SERIES 2005 MACHINES

- Transfer arm with double gripper
- Max. OAL 260mm (10 1/4")
- Min. Diameter 1.5mm (1/16")
- Max. Shank Diameter 25mm (1")
- Max. Cutting Diameter 32mm (1 1/4")
- Capacity
 - Round shank: up to 16mm (5/8") - 492 pieces
 - 16 to 25mm (1") - 150 pieces
 - Square Shank: up to 10mm (3/8") - 410 pieces
 - 10 to 16mm (5/8") - 150 pieces
- Optional Capacities available!



Cassette Loader MSG & RTG MACHINES

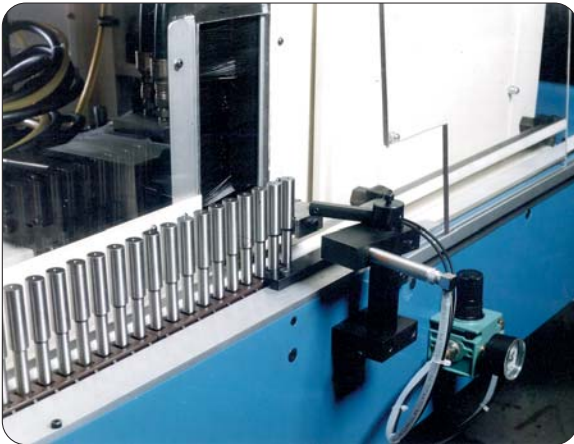
- Transfer arm with double or single gripper
- Max. OAL 300mm (12")
- Min. Diameter 1.5mm (1/16")
- Max. Shank Diameter 25mm (1")
- Max. Cutting Diameter 42mm (1 5/8")
- Capacity up to 168 pieces depending upon diameter
- Optional Capacities available!



Cassette Loader SERIES 2020 MACHINES

- Transfer arm with double gripper
- Max. OAL 180mm (8")
- Min. Diameter 1.5mm (1/16")
- Max. Shank Diameter 25mm (1")
- Max. Cutting Diameter 32mm (1 1/4")
- Capacity up to 300 pieces depending upon diameter
- Optional Capacities available!

Overview ITM Automatic Loading Systems



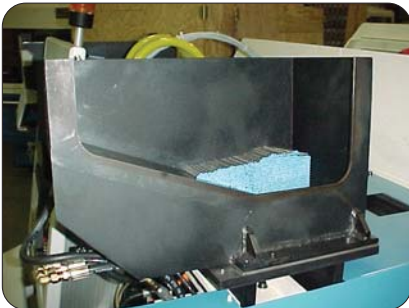
Conveyor Type Cassette Loader SERIES 2002-UFGG

- Transfer arm with double gripper
- Max. OAL 160mm (6 1/4")
- Min. Diameter 1.5mm (1/16")
- Max. Shank Diameter 25mm (1")
- Max. Cutting Diameter 32mm (1 1/4")
- Capacity
Square Shank:
up to 10mm (3/8") - 430 pieces
10 to 16mm (5/8") - 160 pieces



Robot Loader

Applicable for most ITM machines in various configurations

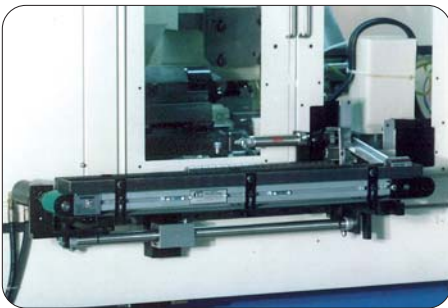


Hopper Loader MSG & RTG MACHINES

- Max. OAL 200mm (8")
- Min. Diameter 1.5mm (1/16")
- Max. Diameter 25mm (1")
- Capacity: 3mm (1/8") - 12,595 pieces
6mm (1/4") - 3,267 pieces
12mm (1/2") - 706 pieces
- Optional Capacities available!

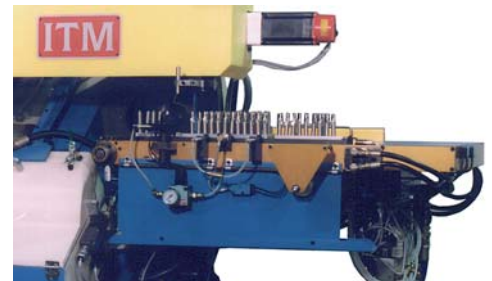


Unloader for Hopper MSG & RTG MACHINES



Conveyor Loader SERIES 2002-UDGG

Loading and 180 degree turn around of Dies for automatic grinding of both sides in one set-up



Cassette Loader "as used on 2003-FG"



Hand Load Support for heavy Parts

*"as used on 2005-UFG"
Loading of M156 Tap (6")
9kg (20 lbs)*



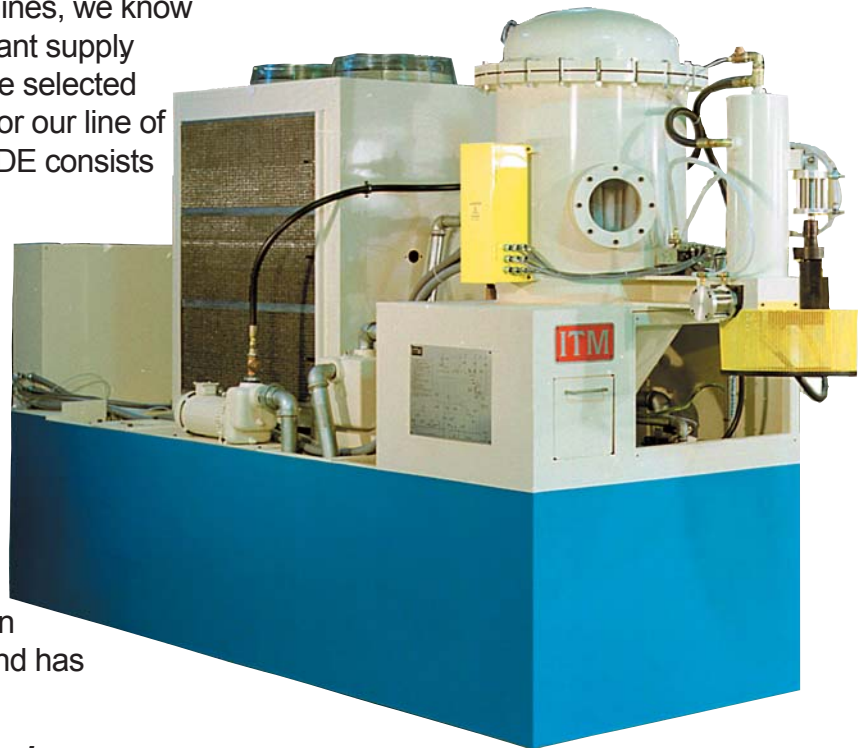
Stack Magazine Loader "as used on 2003-MFG"

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Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

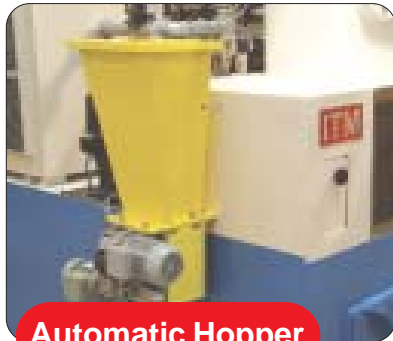
AFS 8-200 Coolant Filtration System

As a manufacturer of precision grinding machines, we know the importance of a precise, dependable coolant supply. After a long period of research and testing, we selected diatomaceous earth (DE) as the filter media for our line of automatic coolant delivery/filtration systems. DE consists of skeletal remains of microscopic aquatic organisms with sizes varying from 10 to 200 microns in diameter. Its natural structure is very intricate with sub-micron pores on the surface. Compared to conventional filter media, with plain and even surfaces, DE particles have a very large surface area in relation to their overall size. DE coated candles in ITM Filter Systems enable filtration of particles as small as 3 microns versus 20 microns with conventional systems. DE is being used as a filter media in the beverage and water cleaning industries and has proved its superiority and safety.



Cleaning Cycle:

Grinding swarf will collect on the outer surface of the coated candles as the coolant is drawn through the candles to the clean coolant reservoir. The flow rate of the filter will be reduced as the swarf collects on the outside of the candles. Using the built-in flow meter, the filter can be dumped once a pre-determined flow rate is reached. The candles in the dome will be back-flushed with clean coolant during this dumping cycle to assure that all the grinding swarf is removed from the candles. The



Automatic Hopper

swarf is prevented from settling in the holding tank with the use of an electric motor driven **agitator**. A **removable panel** allows for easy access to the sludge tank. An **automatic hopper** is used to deliver the correct amount of DE during the filter candle coating cycle.



Removable Panel

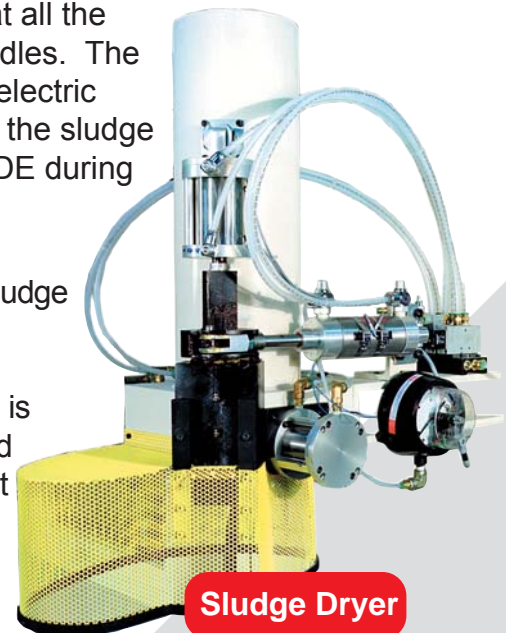
Automatic Sludge Drying Cycle:

ITM filters are equipped with a fully automatic sludge dryer in place of a standard vacuum system, to separate oil from the grinding sludge. After the filter has been dumped, the dirty oil with sludge is pumped into the dryer unit. The oil is separated and returned to the cleaning cycle by pressing it



Agitator

out of the sludge with the use of up to 6 bar (90 psi) air pressure. The cake, which is left, is then dried and automatically dumped into a disposal bin or further compressed by an automatic compactor.



Sludge Dryer

AFS-8-200 Coolant Filtration System

Automatic Sludge Compacting Cycle:

To further reduce the volume of the sludge, an optional sludge compactor is available. ITM's **Super Squeezer** presses the sludge into very dense "pucks", reducing the volume of the dried sludge and disposal costs.

High Pressure Pumps



High Pressure Coolant Pumps

A variety of quality proven high pressure coolant pumps up to 800psi are available from selected manufacturers worldwide. Multiple pumps can be attached to each AFS-8-200 filter including pumps for "wheel scrubbing".



**Also available:
Stand-alone Sludge Drying Unit**

Stand-Alone Sludge Drying Unit

The same ITM automatic sludge dryer found on our AFS-8-200 filtration systems is used on the stand-alone sludge dryer. This unit is designed to dry sludge from existing central systems. It is more effective than traditional vacuum, centrifugal, or gravity drying systems. The sludge storage tank size and sludge-processing capacity can be adjusted according to the customer's needs.



Operator Interface

Easy and safe operation by PLC or manual override with the use of simple controls and reference graphics and a LCD status panel that allows for manual adjustment of filter flush time and sludge dryer drying time.



**Available as single units
or multi-unit central system**

Benefits of ITM's Coolant Filtration Systems:

- Cleaning rate per filter dome 200 - 300 l/min (53-80 gpm)
- Filtration of particles as small as 3 Microns
- Up to 50 bar (800 psi) coolant pressure
- 8 m² (86 ft²) filter area per dome
- Chiller rating 92,000 btu/h (options available)
- Extends coolant lifecycle
- Large Oil Reservoir up to 2000 liters(530 gallons)
- Recovers more coolant than vacuum or centrifuge systems
- For filtration of steel, carbide, ceramic, glass & other materials
- Coolant temperature maintained within 0.5 °C (1°F) for ultra precision grinding



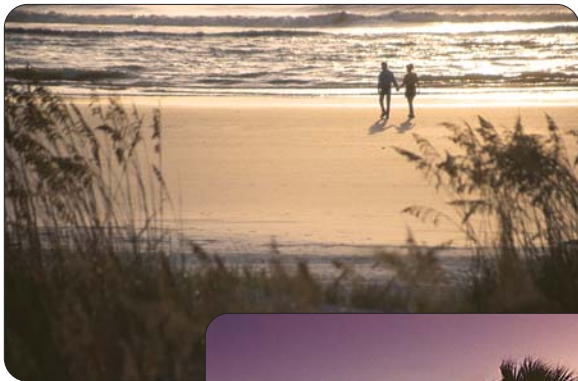
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Technical data range may vary, depending on application. Various machinery concepts by ITM are Patented or have Patent s Pending.

PALM COAST, FLORIDA USA



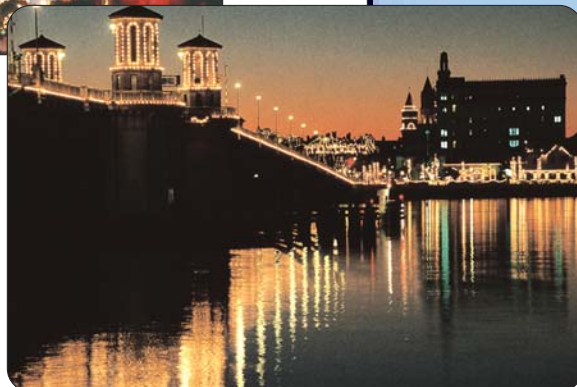
ITM's design and manufacturing facility is located in Palm Coast, Florida. The Florida location, with its year round mild climate, good schools, and low cost of living, provides the employees of ITM with a high standard of living. The attractive Florida location has also made it easier to recruit new talent from around the world. Palm Coast is located 5 minutes from the Atlantic Ocean and offers numerous recreational activities such as boating, fishing, golf, tennis, motorcycling, biking trails, hiking, equestrian sports, live shows, and many fine restaurants.



A GOOD CLIMATE FOR BUSINESS AND LIVING



Only a short drive away you will find Disney World, the Kennedy Space Center, Daytona's Race Track and "World's most famous beach", St. Augustine (the nation's oldest city), the Orlando Magic and Jacksonville Jaguars. ITM is also located less than 1.5 hours away from three international airports. Palm Coast is situated in Flagler County Florida's fastest growing county ranking No.5 in the Nation. It provides an excellent base from which to operate.





In A World of Challenge

International Tool Machines

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