



ROYAL MASTER GRINDERS, INC.

TG 12x4 CENTERLESS GRINDER

TG-12X4 TECHNICAL SPECIFICATIONS

CAPACITY

Infeed .002" to 1.5"
dia..05MM to 38MM dia.

Thrufeed .002" to 1.5"
dia..05MM to 38MM dia.

WHEELS

TG-12x4 grinding wheel (max.)
12" dia. X 4" wide /
304MM dia. X 102MM wide

Regulating Wheel (max.)
6" dia. X 4" wide
152MM dia. X 102MM wide

SPINDLE SPEEDS

Grinding Wheel constant
speed- 2040 rpm,
6400 surface feet/min
(32.5 meters/sec)

REGULATING WHEEL

Servo Driven, infinitely variable
from 20 to 500rpm

ELECTRICAL EQUIPMENT

Main Drive 7.5hp (10hp
optional), 1725 rpm, totally
enclosed fan cooled

WEIGHT

Approximately 2300 lbs
(1272 kgs.)

MACHINE CAPABILITIES

The Royal Master Model TG 12x4 centerless grinders boast a diameter range capability of .002" (.05mm) to 1.5" (38mm). This precision machine has tolerance capabilities of .0001" (.0025mm) and grinds to low micro surface finishes. Requiring only twelve square feet of floor space this allows one operator to operate several machines with the proper part loading equipment. Hi-Accuracy Systems are available for Micron Tolerance capabilities.

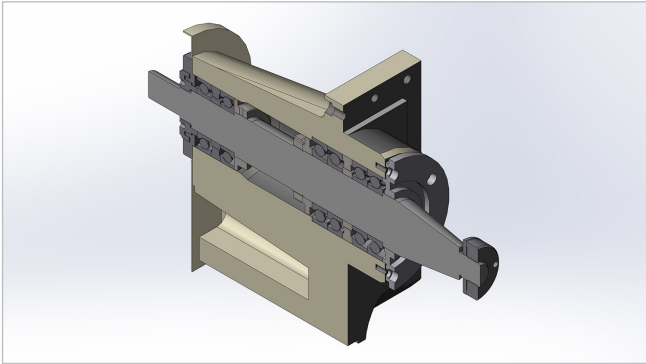
VERSATILITY

The versatility of these machines is what makes them so practical. These machines were designed for easy operation.

- Changeover time from one application to another is minimal, requiring only minutes, allowing numerous jobs to be run per shift.
- Changeover from infeed to thrufeed is expedient and cost efficient.
- Automatic and operator assist part feeders are available.
- Many types of materials can be ground.
- Five minute grinding wheel change.



TG-12x4 CENTERLESS GRINDER



WORK WHEEL SPINDLE

The precision work wheel spindle is of a cantilever design allowing the operator easy access to the work wheel for wheel change and setup. On the TG-12x4 three duplex pairs of class seven ABEC angular contact ball bearings are used in the design for extreme accuracy. This preloaded ball bearing design requires no spindle warm-up time. The bearings are lubricated for life. To ensure there is no bearing contamination, labyrinth seals are located at each end of the spindle housing. The complete unit is installed into a normalized and stress relieved cast iron headstock to assure vibration free operation.

SINGLE POINT DIAMOND WHEEL DRESSERS

To ensure accurate dressing, the versatile hydraulic single point diamond dressers are mounted over each wheel. A template follower traces the profile from a template, designed specifically for the application. The template follower is mounted to the diamond holder and quill assembly that is housed in a slide. This slide, hydraulically driven, travels over precision ground dovetail ways with an adjustable gib. A .001" (.025mm) incremented micrometer dial advances the diamond within the quill assembly, while cam action booster lever raises or lowers the template follower onto the template. The quill assembly controls the diamond position and reproduces the template form into the wheel.

The standard dresser incorporates a coil spring for downward pressure of the template follower. For more accurate template reproductions, the air-sensing dresser provides the capability to adjust the downward pressure of the template follower through the use of an air regulator and pressure gage.

Royal Master also offers an affordable auto dressing system that uses a template and our Air Sensing dresser as a base. You can program in a number of cycles and the dresser will complete the task. This is a great feature for deep forms in both grinding wheel and regulating wheel. There is no need to have a person standing by the machine dressing the wheels! Also offered is full CNC dressing on both the grinding and regulating wheels.

PRECISION REGULATING WHEEL HOUSING

The precision regulating wheel housing is a straddle bearing design incorporating two duplex pairs of class seven ABEC angular contact ball bearings, mounted in pairs on either side of the regulating wheel. A feature of this housing is that the bearings never have to be exposed during regulating wheel changes, or adjusted over the life of the bearings. To ensure that your bearings are kept free of contamination by foreign material, air is constantly pressurizing the chamber where two pairs of bearings are located. All of this contributes to longer bearing life and improved accuracy.

RAM BED AND POSITIONING

Fixed and loose rail guides manually position the ram bed on the machine. The ram (upper slide) moves on a large micrometer sizing dial graduated in .001 (.025mm) increments. Position movement is monitored with a .0001" (.0025mm) dial indicator for control sizes to .0001" (.0025mm). Use the optional thrufeed Microsize option with glass scale read out for positioning in .000,010" or .00025mm. The work rest holder is positioned on a second dovetailed section on the lower ram bed. The second dovetailed section provides the capability for the work rest holder to remain in a fixed position in relationship to the regulating wheel on either infeed or thrufeed grinding.

RAM BED POSITIONING OPTIONS

- Conventional Manual Infeed Lever – Mechanical lead screw and nut movement over dovetail and gib. Manual Infeed Lever provides open/close for infeed grind. Closed position adjustment for Infeed and Thrufeed provided by four handled sizing dial on lead screw. Dial Indicator (0.0001") or Glass Scale (0.000,01") to display position.
- Conventional Automatic Cycle Unit – Mechanical lead screw and nut with traditional Air over Hydraulic movement over dovetail and gib. Large Air Motor for rapid travel is slowed by Hydrocheck for grind speed travel resulting in repeatable open/close for infeed grind. Closed position adjustment for Infeed and Thrufeed provided by four handled sizing dial on lead screw. Dial Indicator (0.0001") or Glass Scale (0.000,01") to display position.
- CNC Lite / Thrufeed Micro Pulse – Stepping motor with Ball Screw movement over dovetail and gib. Ball Screw and Nut travel of two inches. Closed position adjustment for Thrufeed provided by Pulse Generator control on Step Motor with fine increment of 0.000,01". Dial Indicator (0.0001") or Glass Scale (0.000,01") to display position.
- CNC Lite / Servo Cycle – Servo motor with Ball Screw movement over dovetail and gib. Ball Screw and Nut travel of two inches. Programmable automatic cycle provides open/close for infeed grind. Closed position adjustment for Infeed and Thrufeed provided by on screen compensation with fine increment of 0.000,01". Pendant mounted Touch Screen operator interface. Dial Indicator (0.0001") or Glass Scale (0.000,01") to display position.
- High Accuracy CNC Ram Bed Positioning – Precision Servo motor with Ball Screw movement over Frictionless Cross Rollerways. Ball Screw and Nut travel of five inches. Larger machine bed platform with entire ram bed swiveling on the machine bed for more accurate taper adjustment. Programmable automatic cycle provides open/close for infeed grind. Closed position adjustment for Infeed and Thrufeed provided by on screen compensation with fine increment of 0.000,004". A 15 inch touch screen control, with appropriate menus for all machine and grinding functions mounted on a convenient swing arm.