GRINDING TECHNOLOGY

Concepts - Solutions - Applications
The Main Groups of our Manufacturing Program

1. **Centerless Grinding by Steel or Carbide Steel Regulating Wheel**
   
   1.1 Static Theory
   
   1.2 Geometric Theory
   
   1.3 Results
   
   1.4 Auto-Sizing by Air-Nozzle System
   
   1.5 Integrating Dressing by the Oscillating Diamond Roller, for Particular Good Quality
   
   1.6 Generating Convex Parts by Through-feed
   
   1.7 Grinding and Lap Grinding of Cylindrical Parts by Through-feed
   
   1.8 Grinding of Short Cylindrical Parts Square to the Flat End Faces
   
   1.9 Automatic Super Precise Match Grinding according to the Bore Sizes of Bodies
   
   1.10 Grinding of Taper Rollers in Steel Worm drive Feed Wheels
   
   1.11 Taper Rollers and Cylindrical Rollers with Convex O.D.

2. **Centerless Plunge Grinding**
   
   2.1 Plunge Match Grinding
   
   2.2 Centerless Inclined Plunge with Shoulders and End Faces

3. **Centerless Shoe Grinding by our Multi-Station Index Drum**
   
   3.1 Finish Grinding of Spherical Rollers
   
   3.2 The 2 x 2 System for Combustion Chambers
4. **The 4-station Index Drum for Centerless Shoe Grinding**

4.1 Centerless Grinding of Engine Valves by Conventional Grinding Wheels

4.2 The 4 x 2 Station System

4.3 4-Cross Joint to Grind by One Pass

4.4 Finish Grinding of Valves „from solid“ by a 3-Station special Shoe Centerless Grinding

5. **The Index Drum for Grinding between Centers, on Mandrels or in Collets**

5.1 Grinding of Drive Shafts, Inclined Plunge from 2 Sides in one Chuck

5.2 The Outer Profile of Nozzle Bodies

5.3 The Nose Profile of Nozzle Bodies

5.4 The Complete Outer Profile of Nozzle Bodies

5.5 Grinding of Plungers, the Shoulders Equidistant to a Cross Hole

5.6 Face Lap Grinding by little Concavity

5.7 Special Vanes in Special Collets

6. **Grinding of Precise End Profiles Concentric to Existing Cylindrical Parts (Centerless Copy Grinding)**

6.1 Grinding the End Profiles of Bearing Needles “from solid”

6.2 Corner Radius, Chamfer and Flat Faces of Piston Pins

6.3 Nozzle Bodies Concentric to the Bore

6.4 Nozzle Needles “from solid”
7. **Grinding the End Faces of Parts by Centerless Rotation in a Cage**

7.1 Convex Ends of Taper Rollers or Spherical Rollers

7.2 Convex Ends of Valve Lifters

7.3 Cylindrical Rollers - Cylindrical Parts

7.4 Grinding of 2 Convex Ends by One Grinding Wheel

7.5 End Faces and Profiles of Tappets for High Pressure Pumps

8. **Fully Automatic Plane Grinding to Achieve Lap Quality - Without Rotation of Parts Inclusive Integrated Dressing**

8.1 End Face Grinding of Cross Journals

8.2 Rotors and Stators for Rotary Pumps

8.3 Inner Rings of Taper Roller Bearings

8.4 Connect Rods and Other Semi-Heavy Parts

8.5 Duplex End Face Grinding of Inlet or Exhaust Valves

8.6 Duplex Grinding of Compressor Valve Plates

8.7 Grinding of Spherical End Faces

8.8 FINIMAT for Low Batches but High Quality

8.9 Support Plates for High Pressure Pumps
9. **6-Axis CNC Controlled Profile and/or Worm Drive Thread Grinding**
   9.1 Grinding the Raceway of Regulating Wheels for Taper Rollers or Cylindrical Rollers
   9.2 Grinding of Convex or Concave Feed Wheels
   9.3 Grinding the Non-Round Cam Profile at Cam Shafts

10. **Internal Grinding by Two- or Multi-Station Indexing Drum**
    10.1 Internal Face Grinding of Valve Plates
    10.2 Internal Grinding of Two Tapers
    10.3 Simultaneous Internal and External Grinding
    10.4 Combined Internal and External End Face Grinding Inclusive Brushing Operation by 6 Centerless Stations

11. **Production Line for Taper Rollers**

12. **Production Lines for Inlet and Exhaust Valves**
    11.1 “Small” Production Line for Valves

13. **Extrusion Forging of Engine Valves**
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