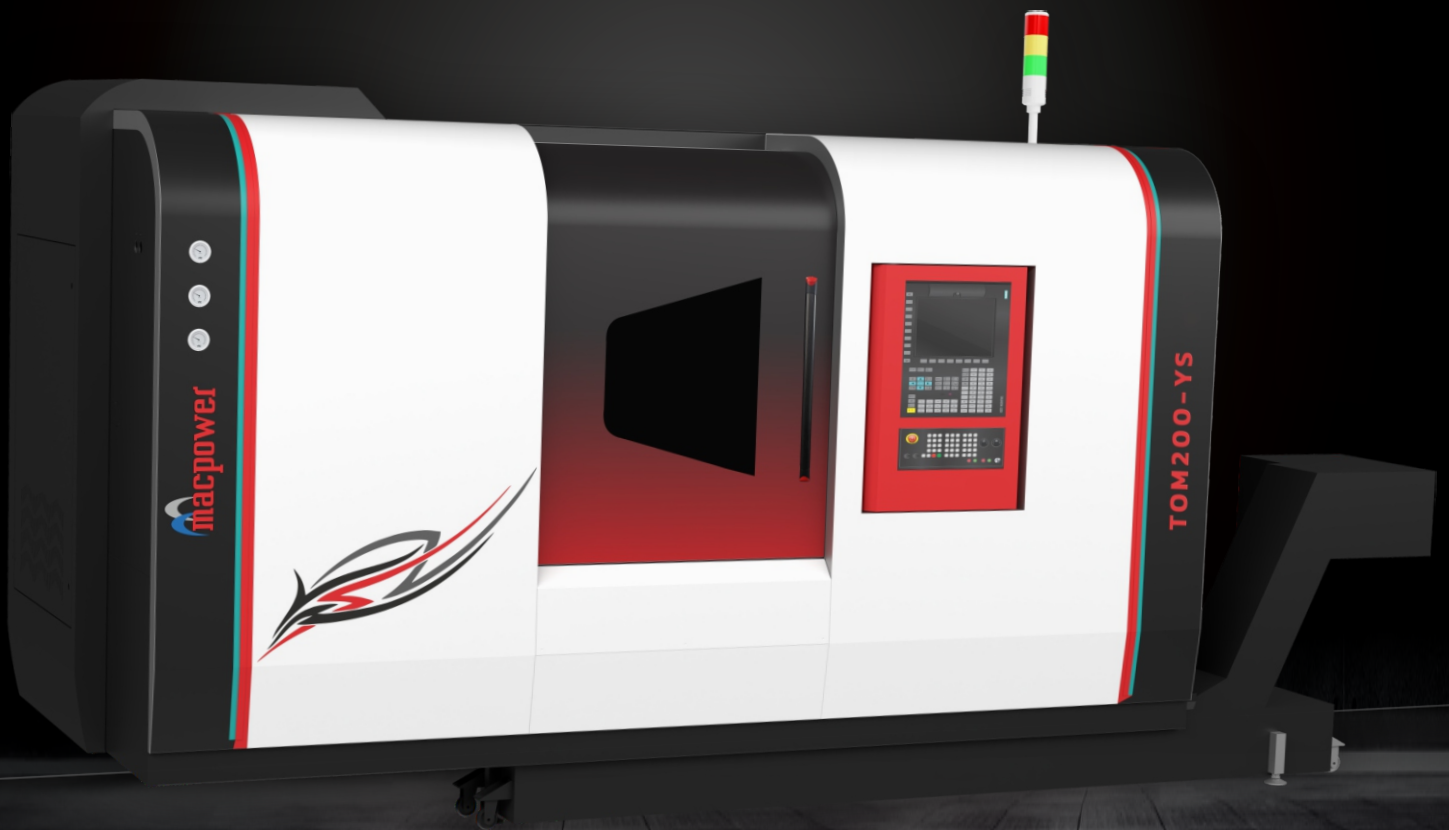


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TOOL INTERFERENCE DIA

Technical drawing of a 12-spindle turret lathe. The drawing includes a front view (left) and a side view (right).

Front View Dimensions:

- Overall diameter: $\phi 620$
- Spindle diameter: $\phi 40$
- Spindle center to tool center distance: 25
- Tool size: 25X25
- Spindle center to tool center distance (alternative): 18.5
- Spindle center to tool center distance (alternative): 30
- Overall width: 450
- Label: A/F TOOL DISC

Side View Dimensions:

- Maximum turning diameter: $\phi 350$
- Spindle center to tool center distance: 10 O.T.
- Spindle center to tool center distance: 180 X-AXIS STROKE
- Spindle center to tool center distance: 200
- Spindle center to tool center distance: 250 Y-AXIS TRAVEL
- Spindle center to tool center distance: $\phi 550$ SWING OVER BED
- Label: SLIDING Z-TELESCOPIC

MACHINING RANGE

Technical drawing of the SUB-SPINDLE FRAME, showing front and side views with dimensions.

Front View Dimensions:

- Overall width: 510
- Distance between spindle faces: 103
- Distance from spindle face to chuck: 150
- Distance between sub-spindle faces: 150
- Distance from sub-spindle face to chuck: 650
- Distance from sub-spindle face to spindle face: 10
- Distance from spindle face to chuck: 180
- Distance from spindle face to sub-spindle face: 10
- Distance from sub-spindle face to chuck: 200
- Distance from sub-spindle face to spindle face: 91

Side View Dimensions:

- Overall width: 100
- Distance between spindle faces: 103
- Distance from spindle face to chuck: 150
- Distance between sub-spindle faces: 150
- Distance from sub-spindle face to chuck: 650
- Distance from sub-spindle face to spindle face: 10
- Distance from spindle face to chuck: 180
- Distance from spindle face to sub-spindle face: 10
- Distance from sub-spindle face to chuck: 200
- Distance from sub-spindle face to spindle face: 91

Labels:

- CHUCK Ø 200
- SPINDLE FACE
- SPINDLE CENTRE LINE
- SPINDLE
- SUB-SPINDLE
- CHUCK Ø 165
- SPINDLE FACE
- SUB-SPINDLE

Dimensions:

- 510
- 103
- 150
- 650
- 10
- 180
- 200
- 91
- 100

Text:

- Z-AXIS STROKE
- X-AXIS STROKE
- SUB-SPINDLE FRAME

POWER DIAGRAM

Figure 10: Spindle Performance Curves

The figure displays four graphs illustrating the performance characteristics of the spindle across different operating zones.

Top Left Graph: Output Torque (N.m) vs. Spindle Speed (RPM)

- Y-axis:** Output Torque (N.m), ranging from 0 to 300.
- X-axis:** Spindle Speed (RPM), ranging from 0 to 4000.
- Operating Zones:**
 - 15% Operating Zone (Red line):** Maximum torque of 286 N.m at 600 RPM.
 - 40% Operating Zone (Green line):** Maximum torque of 170 N.m at 600 RPM.
 - S1 Continuous Operating Zone (Blue line):** Maximum torque of 150 N.m at 600 RPM.
- Other Labels:** 162 N.m, 144 N.m, and Volt Limit.

Top Right Graph: Output Power (kW) vs. Spindle Speed (RPM)

- Y-axis:** Output Power (kW), ranging from 0 to 30.
- X-axis:** Spindle Speed (RPM), ranging from 0 to 4000.
- Operating Zones:**
 - 15% Operating Zone (Red line):** Peak power of 18 kW at 600 RPM.
 - 40% Operating Zone (Green line):** Peak power of 13.5 kW at 600 RPM.
 - S1 - Continuous Operating Zone (Blue line):** Peak power of 11.3 kW at 600 RPM.
- Other Labels:** Continuous Power (kW), Volt Limit.

Bottom Left Graph: Power (kW) vs. speed (mm/min)

- Y-axis:** Power (kW), ranging from 0 to 20.
- X-axis:** speed (mm/min), ranging from 0 to 5000.
- Operating Zones:**
 - 15% Operating Zone (Dashed Orange line):** Peak power of approximately 16 kW at 2000 mm/min.
 - 40% Operating Zone (Solid Blue line):** Peak power of approximately 10 kW at 2000 mm/min.

Bottom Right Graph: Torque (Nm) vs. speed (mm/min)

- Y-axis:** Torque (Nm), ranging from 0 to 100.
- X-axis:** speed (mm/min), ranging from 0 to 5000.
- Operating Zones:**
 - 15% Operating Zone (Dashed Orange line):** Peak torque of approximately 80 Nm at 2000 mm/min.
 - 40% Operating Zone (Solid Blue line):** Peak torque of approximately 55 Nm at 2000 mm/min.

POWER DIAGRAM

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The figure displays four graphs illustrating the performance characteristics of the spindle across different operating zones.

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- X-axis:** speed (mm/min), ranging from 0 to 5000.
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 - 15% Operating Zone (Dashed Orange line):** Peak torque of approximately 80 Nm at 2000 mm/min.
 - 40% Operating Zone (Solid Blue line):** Peak torque of approximately 55 Nm at 2000 mm/min.

POWER DIAGRAM

Figure 10: Spindle Performance Curves

The figure displays four graphs illustrating spindle performance characteristics across different operating zones and speed ranges.

Top Left Graph: Output Torque (N.m) vs Spindle Speed (RPM)

- Y-axis: Output Torque (N.m), ranging from 0 to 300.
- X-axis: Spindle Speed (RPM), ranging from 0 to 4000.
- Curves shown:
 - S1 Continuous Operating Zone (Blue line)
 - S6 40% Operating Zone (Green line)
 - S6 15% Operating Zone (Magenta line)
- Key Torque Values at 600 RPM:
 - 286 N.m (Red line)
 - 170 N.m (Yellow line)
 - 150 N.m (Magenta line)
 - 162 N.m (Green line)
 - 144 N.m (Blue line)
- Volt Limit is indicated at 4000 RPM.

Top Right Graph: Output Power (kW) vs Spindle Speed (RPM)

- Y-axis: Output Power (kW), ranging from 0 to 30.
- X-axis: Spindle Speed (RPM), ranging from 0 to 4000.
- Curves shown:
 - S1 - Continuous Operating Zone (Blue line)
 - P3 5kW (Magenta line)
 - P3 9kW (Yellow line)
- Key Power Values at 600 RPM:
 - 9 kW (Blue line)
 - 11.5 kW (Magenta line)
 - 18 kW (Yellow line)
- Peak Power (kW) and Continuous Power (kW) are indicated for the P3 curves.
- Volt Limit is indicated at 4000 RPM.

Bottom Left Graph: Power (kW) vs speed (mm/min)

- Y-axis: Power (kW), ranging from 0 to 20.
- X-axis: speed (mm/min), ranging from 0 to 5000.
- Curves shown:
 - S1 (Solid Blue line)
 - P3 (Dashed Orange line)

Bottom Right Graph: Torque (Nm) vs speed (mm/min)

- Y-axis: Torque (Nm), ranging from 0 to 100.
- X-axis: speed (mm/min), ranging from 0 to 5000.
- Curves shown:
 - S1 (Solid Blue line)
 - P3 (Dashed Orange line)

POWER DIAGRAM

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The figure displays four graphs illustrating spindle performance characteristics across different operating zones and speed ranges.

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- Curves shown:
 - S1 Continuous Operating Zone (Blue line)
 - S6 40% Operating Zone (Green line)
 - S6 15% Operating Zone (Magenta line)
- Key Torque Values at 600 RPM:
 - 286 N.m (Red line)
 - 170 N.m (Yellow line)
 - 150 N.m (Magenta line)
 - 162 N.m (Green line)
 - 144 N.m (Blue line)
- Volt Limit is indicated at 4000 RPM.

Top Right Graph: Output Power (kW) vs Spindle Speed (RPM)

- Y-axis: Output Power (kW), ranging from 0 to 30.
- X-axis: Spindle Speed (RPM), ranging from 0 to 4000.
- Curves shown:
 - S1 - Continuous Operating Zone (Blue line)
 - P3 5kW (Magenta line)
 - P3 9kW (Yellow line)
- Key Power Values at 600 RPM:
 - 9 kW (Blue line)
 - 11.5 kW (Magenta line)
 - 18 kW (Yellow line)
- Peak Power (kW) and Continuous Power (kW) are indicated for the P3 curves.
- Volt Limit is indicated at 4000 RPM.

Bottom Left Graph: Power (kW) vs speed (mm/min)

- Y-axis: Power (kW), ranging from 0 to 20.
- X-axis: speed (mm/min), ranging from 0 to 5000.
- Curves shown:
 - S1 (Solid Blue line)
 - P3 (Dashed Orange line)

Bottom Right Graph: Torque (Nm) vs speed (mm/min)

- Y-axis: Torque (Nm), ranging from 0 to 100.
- X-axis: speed (mm/min), ranging from 0 to 5000.
- Curves shown:
 - S1 (Solid Blue line)
 - P3 (Dashed Orange line)

POWER DIAGRAM

Figure 10: Spindle Performance Curves

The figure displays four graphs illustrating spindle performance characteristics across different operating zones and speed ranges.

Top Left Graph: Output Torque (N.m) vs Spindle Speed (RPM)

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- X-axis: Spindle Speed (RPM), ranging from 0 to 4000.
- Curves shown:
 - S1 Continuous Operating Zone (Blue line)
 - S6 40% Operating Zone (Green line)
 - S6 15% Operating Zone (Magenta line)
- Key Torque Values at 600 RPM:
 - 286 N.m (Red line)
 - 170 N.m (Yellow line)
 - 150 N.m (Magenta line)
 - 162 N.m (Green line)
 - 144 N.m (Blue line)
- Volt Limit is indicated at 4000 RPM.

Top Right Graph: Output Power (kW) vs Spindle Speed (RPM)

- Y-axis: Output Power (kW), ranging from 0 to 30.
- X-axis: Spindle Speed (RPM), ranging from 0 to 4000.
- Curves shown:
 - S1 - Continuous Operating Zone (Blue line)
 - P3 5kW (Magenta line)
 - P3 9kW (Yellow line)
- Key Power Values at 600 RPM:
 - 9 kW (Blue line)
 - 11.5 kW (Magenta line)
 - 18 kW (Yellow line)
- Peak Power (kW) and Continuous Power (kW) are indicated for the P3 curves.
- Volt Limit is indicated at 4000 RPM.

Bottom Left Graph: Power (kW) vs speed (mm/min)

- Y-axis: Power (kW), ranging from 0 to 20.
- X-axis: speed (mm/min), ranging from 0 to 5000.
- Curves shown:
 - S1 (Solid Blue line)
 - P3 (Dashed Orange line)

Bottom Right Graph: Torque (Nm) vs speed (mm/min)

- Y-axis: Torque (Nm), ranging from 0 to 100.
- X-axis: speed (mm/min), ranging from 0 to 5000.
- Curves shown:
 - S1 (Solid Blue line)
 - P3 (Dashed Orange line)

POWER DIAGRAM

The figure consists of four graphs arranged in a 2x2 grid, illustrating the performance characteristics of a motor.

- Top Left Graph: Output Torque (N.m) vs Spindle Speed (RPM)**
 - The y-axis ranges from 0 to 300 N.m, and the x-axis ranges from 0 to 4000 RPM.
 - The graph shows a constant torque region from 0 to 600 RPM, with torque values of 286 N.m (red), 170 N.m (yellow), 150 N.m (magenta), 162 N.m (green), and 144 N.m (blue).
 - Operating zones are defined:
 - S1 Continuous Operating Zone (blue line, 0 to 600 RPM)
 - S1 40% Operating Zone (green line, 600 to 2500 RPM)
 - S1 15% Operating Zone (magenta line, 600 to 2500 RPM)
 - The graph ends at a "Volt Limit" at 4000 RPM.
- Top Right Graph: Output Power (kW) vs Spindle Speed (RPM)**
 - The y-axis ranges from 0 to 30 kW, and the x-axis ranges from 0 to 4000 RPM.
 - The graph shows a constant power region from 600 to 2500 RPM, with power values of 18 kW (yellow), 13.5 kW (magenta), 11 kW (green), and 9 kW (blue).
 - Operating zones are defined:
 - S1 - Continuous Operating Zone (blue line, 0 to 600 RPM)
 - Continuous Power (kW) (green line, 600 to 2500 RPM)
 - Peak Power (kW) (magenta line, 600 to 2500 RPM)
 - The graph ends at a "Volt Limit" at 4000 RPM.
- Bottom Left Graph: Power (kW) vs speed (mm/s)**
 - The y-axis ranges from 0 to 20 kW, and the x-axis ranges from 0 to 5000 mm/s.
 - The graph shows a constant power region from 0 to 2000 mm/s, with power values of 18 kW (yellow dashed line) and 13.5 kW (magenta solid line).
 - The power then decreases as speed increases, reaching approximately 20 kW at 5000 mm/s.
- Bottom Right Graph: Torque (Nm) vs speed (mm/s)**
 - The y-axis ranges from 0 to 100 Nm, and the x-axis ranges from 0 to 5000 mm/s.
 - The graph shows a constant torque region from 0 to 2000 mm/s, with torque values of 150 Nm (magenta dashed line) and 162 Nm (green solid line).
 - The torque then decreases as speed increases, reaching approximately 20 Nm at 5000 mm/s.

COMPONENTS



MACPOWER CNC MACHINES LTD.

Regd. office address : Plot No. 2234, Near Kranti Gate,
GIDC, Metoda - 360 021. Rajkot, Gujarat. (INDIA)



+91 2827 287930/31



sales@macpowercnc.com



www.macpowercnc.com

Note : Technical Specifications and Colors are subject to change as a part of continous development.