HYT ENGINEERING CO. PVT. LTD.
Economical Rolling Stock Maintenance Goes Global

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### TECHNICAL DATA OF MACHINE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Main Drive Motor Capacity</td>
<td>2 x 55 kW</td>
</tr>
<tr>
<td>Cutting Speed while Profiling</td>
<td>25 to 80 m/min</td>
</tr>
<tr>
<td>Tool Post Feed for Wheel Profiling</td>
<td>0.1 to 3.5 mm/rev</td>
</tr>
<tr>
<td>Tool Post Rapid Speed for Both Axes</td>
<td>3000 mm/min</td>
</tr>
<tr>
<td>Max. Chip Cross Section while Profiling</td>
<td>16 mm²</td>
</tr>
<tr>
<td>Min. Productivity</td>
<td>34 wheel sets/8 hours</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>415 VAC, 50 Hz**</td>
</tr>
</tbody>
</table>

* Depends on track gauge.

** Special electrical supply can be considered, if required.

### WHEEL SET DATA FOR MACHINING

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Tread Diameter</td>
<td>1250 mm*</td>
</tr>
<tr>
<td>Min. Tread Diameter</td>
<td>540 mm*</td>
</tr>
<tr>
<td>Wheel Width</td>
<td>75 to 145 mm</td>
</tr>
<tr>
<td>Max. Axle Length</td>
<td>2750 mm*</td>
</tr>
<tr>
<td>Min. Axle Length</td>
<td>1200 mm*</td>
</tr>
<tr>
<td>Max. Weight of Wheel Set</td>
<td>50 kN</td>
</tr>
<tr>
<td>Max. Dia. for Brake Disc Machining</td>
<td>700 mm</td>
</tr>
<tr>
<td>Min. Dia. for Brake Disc Machining</td>
<td>250 mm</td>
</tr>
</tbody>
</table>

### ACCURACIES OF WHEEL SET

- Wheel profiling
  - Difference in Dia. of Both Wheels: <0.15 mm
  - Accuracy of Wheel Profile when Compared with Standard Gauge: <0.2 mm
  - Radial Run Out of Wheel: <0.2 mm
  - Axial Run Out of Wheel: <0.2 mm
  - Profile Surface Finish: <12.5µm Ra
  - Brake Disc Machining (Optional)
    - Surfacing Finish: <2.5µm Ra
    - Flatness of Surface: <0.1/100 mm
    - Lateral Wobble: <0.2 mm

### STANDARD EQUIPMENT WITH MACHINE

- Chip Conveyor with Trolley (Bin)
- Swarf Protection Unit
- Cutting Tools for Acceptance
- One Machining Program
- Centres (60° or 90°)
- Electrical Cabinet
- Hydraulic Power Pack
- Oil Cooler
- Standard Measurement Wheel Set (Calibrated)
- Software

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YSL - 08

CNC SURFACE WHEEL LATHE
CNC SURFACE WHEEL LATHE

CNC Surface Wheel lathe is an automatic machine for simultaneous re-profiling new or worn-out wheels when dis-assembled from railway vehicles like locomotives, electrical & diesel multiple units, coaches, wagons, metro & tram coaches, etc. This extremely rigid machine is capable of taking 8-10mm depth of cut simultaneously on both the wheels of a wheel set.

DURING THE AUTOMATIC CYCLE, FOLLOWING OPERATIONS ARE PERFORMED:
- Automatic wheel set loading by machine jack
- Pre-measurement
- Machining of tread & flange
- Post-measurement
- Automatic unloading of wheel set

BEST VALUE FOR MONEY
- Automatic roll-in & roll-out of wheel set through trolleys to increase productivity
- All load-bearing structures are built with high strength, close-grained cast iron giving dimensional & geometrical stability and efficient vibration damping.
- Electronic wear measurement system for economical depth of cut
- Extremely wear resistant SKC lining for all sliding surfaces
- Sandvik or Kennametal tool inserts
- Auto tool retraction during power failure and emergency
- Siemens 840D sl CNC system with operator-friendly screens

HEAD STOCKS
- Two rigid, close-grained cast iron headstocks moving on hardened & ground guide ways provide high life performance.
- They support the spindle assembly rigidly.
- Rigid face chuck installed in each head stock is mounted on the spindle assembly with the help of heavy duty thrust bearings and special type of spindle bearings.
- The headstocks are hydraulically locked during the wheel set turning process.

SPINDLE ASSEMBLY IN HEADSTOCK
- Very rigid spindle made from carbon steel having diameter of 590mm.
- It is used for mounting face chuck with large diameter thrust bearing and turn the wheels to the required accuracies.
- Spindle is supported by adjustable clearance cylindrical roller bearing.
- Helps in resisting heavy axial & radial loads of wheel clamping & cutting even during 8mm depth of cut.

CNC TOOL POST
- Surface wheel lathe is equipped with dual CNC tool post for turning any wheel profile.
- Made of close-grained cast iron, both the tool posts are mounted rigidly on the bed.
- They have two axes each and are driven by Servo Motors for accurate & consistent profile, irrespective of tool wear.
- Hardened, ground, lapped OHNS guideways and ball screws are provided for accurate, smooth & controlled movement.
SOFTWAR

- The machine is equipped with Siemens SINUMERIK 840D sl CNC controller with open architecture and WIN CC Flex software for measurement, operation, displaying parameters and data entry.
- Dedicated control software takes care of various safety measures for safe operation and displays fault messages in normal English text.
- Remote diagnostic software is used for controlling & maintaining the machine from HYT headquarters.

CONVEYER

- Considering heavy material removal during profile machining operation, a heavy-duty steel belt chip conveyor is provided.
- It is installed in a pit below the machine. Necessary chutes are provided to direct the chips on to the conveyor.
- The chips falling on the conveyor belt are carried out of the pit which is then dropped in bins placed on the ground floor for easy disposal.

BREAK DISC TURNING (Optional)

- Retractable, rigid, case hardened & ground Ram is mounted on the tool post.
- The Ram is equipped with standard tool holders and inserts for brake disc turning which removes unevenness of surface.
- Tool positioning is done by ‘Z’ axis of the tool post and machining is carried out by ‘X’ axis of the tool post.

WHEEL WEAR MEASUREMENT

- Consists of a set of contact type probe rollers which comes in contact with the wheel profile at various points to measure wear developed on the profile and also to measure wheel diameter, flange height, flange width, wheel back-to-back distance and wheel width.
- Measurement can be carried out either by taking measurements at pre-determined six positions around the periphery when the wheel is stationary or by taking measurements along the profile during wheel set rotation at a slow speed to cover entire profile.
- ECONOMICAL material removal and specified accuracies are achieved when the wear measurement program processes the wear data and the CNC Software suggests the most economical depth of cut.

Measurement & machining data is stored in the CNC system and can be retrieved whenever required.