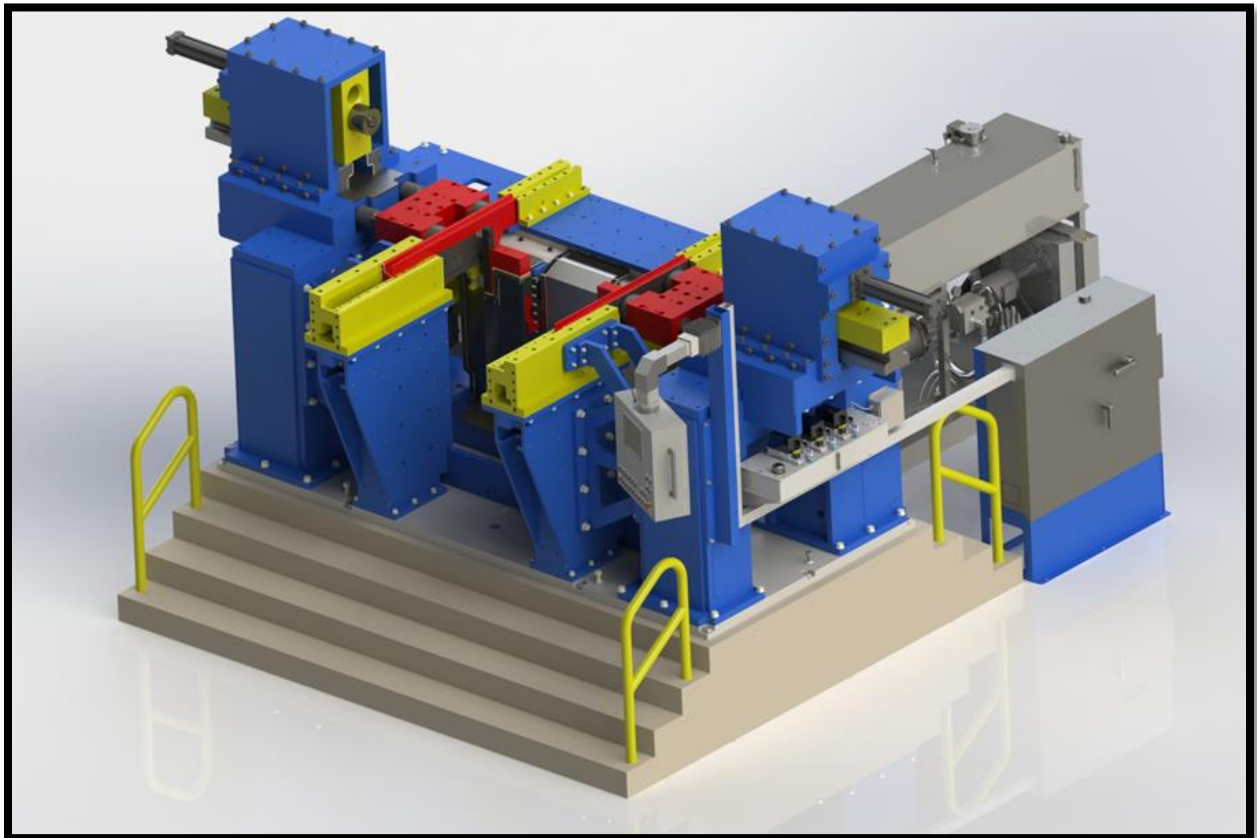


RTS1000

UNDER-FLOOR WHEEL LATHE

Machine Specifications



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MACHINE OPERATION SPECIFICATIONS:

Machine Function

- Simultaneous machining of worn wheel sets by re-profiling the wheels to required specifications and turning the profile to a nominal diameter by eliminating flat spots, high flanges, tread hollows etc.
- The RTS1000 turns the wheels of the vehicles without needing to strip the wheels sets from the bogie and the bogie itself from the vehicle.

Machine Performance

- Axle/truck held in place by using live centers or custom designed hold down arm assemblies either on the trucks frame or on the journal box.
- Lateral movement arms prevent side-to-side movement.
- Rotation of the wheel set achieved by using hydraulically driven friction drive rollers.
 - The friction drive rollers also used for auto-centering and lifting the wheel sets off the rail.
- Sliding rails are utilized once the wheels are no longer making contact with the rail via the lifting rollers.
- Once rails are retracted you can now access the lathe controls and begin the re-profiling process.

Machining Tolerances

- Maximum diameter difference of two wheels on one axle: 0.1 mm (0.004") for solid wheels in good condition
- Maximum diameter difference of four wheels on two axles: 0.3 mm (0.012") for solid wheels in good condition
- Radial run-out measured at the tapping line: 0.1 mm (0.004") for solid wheels in good condition
- Axial run-out: 0.3 mm (0.012 inch)
- Profile conformity: 0.2 mm (0.008 inch) for solid wheels in good condition
- Surface finish, profile machining: $R_a < 12 \mu m$
- Surface finish inner and outer wheel faces: $R_a < 25 \mu m$
- Axle deflection during machining operations, when restrained by hold-down forces, not to exceed 0.254 mm (0.010")
- Cutting force (if axle load is sufficient) 23kN (5,170lbs)

TECHNICAL OPERATION SPECIFICATIONS CONTINUED:**Machine Operations**

- Hold Down Arms / Live Centers:
 - The arms make contact on the top of the journal box or the truck frame, depending on the customer's truck specifications.
 - Slide moves along a horizontal box way assembly that is automatically oiled.
 - Slide moves in / out utilizing a hydraulic cylinder.
 - Live Centers moves in / out utilizing a hydraulic cylinder

- Lateral Movement Stops:
 - Rollers make contact on the back side of the wheel.
 - There are a total of 2 idle wheels which auto center.
 - Hydraulic cylinders keep constant pressure between the rollers and wheel.

- Friction Drive Rollers:
 - Rollers contact on the wheel tread.
 - 4 hydraulically driven friction drive rollers that have a taper to match wheel profile.
 - The friction drive rollers have a built in taper to match the wheel profile taper.
 - The areas in which the rollers make contact on the wheel prevent any flats from developing on the wheel.

- Lifting:
 - The lifting assembly is attached to the base of the friction drives.
 - Move along a vertical box way assembly that is automatically oiled.
 - Move up / down using a hydraulic cylinder.

- Sliding Rail:
 - Designed to support the weight of the axle/truck/locomotive/streetcar.
 - Once the wheels are lifted off the rail, a hydraulic cylinder is utilized to retract the rail.

- Lathes:
 - 2 heavy duty lathes.
 - Lathes are independent of each other but work together to re-profile both wheels at the same time.
 - Each lathe uses 1 large tool containing 2 inserts.
 - Automatic lubrication.
 - Each lathe consists of 1 x-axis slide (left/right) and 1 y-axis slide (up/down).



TECHNICAL OPERATION SPECIFICATIONS (CONTINUED):

- Controls / Software:
 - Fanuc controls are used for operating the system in conjunction with an automated measuring wheel device.
 - Control system indicates the minimum material removal needed to bring back to specification the diameters of the wheels of each single wheel set, four wheels of a single bogie as well as all the bogies of the entire vehicle.
 - Both the software and the measuring device work together in calculating all information about that wheel including measurement, operator, truck number, location, date etc. All this information can be saved and exported. The controls come preloaded with the customers profile; more can be added if requested.
 - Hydraulic Controls
 - Display with push button controls.
 - Hold Down Arms: In / Out
 - Lateral Stops: In / Out
 - Lifting: Up / Down
 - Friction Drives: On / Off
 - Friction Drive RPM: Increase / Decrease
 - CNC Lathe Controls
 - Fanuc iPendent Control
 - Handheld
 - Touch Screen
 - Full operational keyboard
 - Emergency Stop
- Automatic Tool Stopping:
 - The cutting tool automatically stops during the cutting process if power is lost to prevent damage to the system or wheel.
 - The lathe controls have a tool retract button to retract the tool from the cutting process any time it is pressed. This sends the lathe to its home position. This feature is used for rotating or replacing the insert on the tool holder during the cutting process. Once tool is replaced, push start and lathe resumes in exact position where it retracted from.

TECHNICAL OPERATION SPECIFICATIONS (CONTINUED):

- Hydraulic Unit:
 - Feeds oil to all the hydraulic cylinders and/or hydraulic motors on the system.
 - Heat exchanger keeps oil at recommended temperature.
 - Oil filtration monitoring system.
 - 300 gallon reservoir tank with low level warning and shutdown

- Lubrication:
 - All lubrication points controlled by injectors to feed the exact amount of oil needed.
 - Injectors controlled using automatic oilers set with timers.
 - Centralized automatic lubrication system provides adequate lubrication to all moving components including both lathes.

GENERAL INFORMATION:

- Rail Size: Built to customer's specifications
- Rail Gage: Narrow to broad
- Minimum of 12" of reinforced concrete at the base of the pit recommended.
- Wheel Size: Diameter 20" – 54"
- Wheel Profile: Multiple profiles available per customer specifications
- Maximum Axle Load: 140,000 Lbs. / 70 Tons
- Wheel types:
 - Monobloc wheel
 - Resilient wheel
- This machine is suitable for re-profiling the following:
 - Wheelsets installed on the bogie connected to the vehicle without the need of removal of wheel set / bogie
 - Wheelsets disassembled from the vehicle
 - Free wheel sets



INSTALLATION DATA

Machine Size (not including chip conveyor):

- Length: 160"
- Width: 102"
- Height:
 - Per customer needs/specifications
- Weight: Approximately 50,000 LBS.
- Designed for a pit measuring:
 - Approximately 240" X 240" X 66 1/4" deep – Minimal
 - (Preferred depth dimension 94" from top of rail to bottom of pit)
 - Approximately 5' around the perimeter of the pit will be available for controls, equipment and conveyor.

POWER REQUIREMENTS

Total Power Requirement:

- Main Power Disconnect with Isolation transformer 300amp, 460vac, 3 Phase, 50/60hz
- (Step up or step down transformers available)

Lathe Controls:

- CNC / Controller Console
 - Max Power Rating: 50amp, 460vac, 3 Phase, 50/60hz

Machine Controls:

- Hydraulic Pump Motor
- Hydraulic Cooling Fan Motor
- Conveyor Motor
- Control Power
- Max Power Rating: 300amp, 460vac, 3 Phase, 50/60hz

HYDRAULIC COMPONENTS:

- Hydraulic Drive Motors: (4)
- Hydraulic Cylinders:
 - Hold Down Arm Assembly: (2)
 - Sliding Rail (2)
 - Lifting: (2)
 - Laterals (2)
- 300 Gallon HPU
 - 150hp, 460vac, 3 Phase, 404/5TC TEFC, C-Face w/ Feet
- VVPC Piston Pump - 8.5 GPM
- Tandem VVPC Piston Pump - 48 GPM & 36 GPM

Sliding Rails (2):

- Ability to adjust to accommodate customer requirements

Hold Down Assemblies (2):

- Removable Adapter Plates.
 - Accommodate proper holding position for different trucks.
- Ability to adjust to accommodate customer requirements.

Lathes (2):

- Adjustable Cutting Feed: 0 – 6.00” IPM
- Rapid Travel: 30” IPM
- Average Cutting Time: Approximately 30 minutes per axle
- Max. X-Axis Travel: 11” overall
- Max. Y-Axis Travel: 8 1/2” overall
- Fanuc Motors

ASSEMBLY SPECIFICATIONS

Measuring Device

- Complete Integrated Measuring System



CHIP CONVEYOR

Model 620 - 2 1/2" Pitch Hinged Steel Belt Conveyor Specifications:

Note: Chip Conveyor ordered to fit your pit specifications.

- **Bearings:**
 - Grease Sealed-Drive End
- **Drive:**
 - 1/2 HP 230/460/3/60
- **Frame:**
 - Formed 10 Gauge
- **Paint:**
 - One Coat Industrial Enamel
- **Speed:**
 - 30 F.P.M.
- **Sprockets:**
 - 5 Tooth, 4.25" P.D.
- **Supports:**
 - Structural Channel



PAIN T SCHEME:

- Stationary Components:
 - Macropoxy Safety Blue B58T604 (Tinted to SW4086)
 - Macropoxy Black B58B600 (Package color)

- Moving Components:
 - Macropoxy Safety Yellow B58Y600 (Package Color)

- Lathe Components:
 - Macropoxy Black B28B600 (Package Color)
 - Macropoxy Gray B58W610 (Tinted to SW7664)

DUST COLLECTOR (OPTIONAL)

These portable cartridge dust and fume collectors are designed as a cost-effective, highly efficient, solution for OSHA compliant filtering of dusts, fumes, smoke, gasses, and vapors. Maintaining filters at optimum efficiency has always been a problem for traditional collectors, especially for welding fumes and dust. The collector offers a state-of-the-art system — a portable unit with long-lasting cartridges and a fully automatic compressed air cleaning system.

Extremely quiet plug-n-go operation, combined with incredible maneuverability and a powerful 1, 1.5 or 3 horsepower motor (for up to an amazing 2100 CFM airflow), an ideal solution for a wide variety of process applications, including welding, sanding, grinding and deburring.

Fumes are captured by the patented evolution no-smoke extraction arm, travelling through a separate dirty air plenum, with removable dust bin, where heavier particulate drops from the air stream. The air is then filtered through high-efficiency cartridges, returning the clean air back into the environment.

Specifications:

- 1200 CFM
- Direct Drive 1.5 HP. High Pressure Motor/Blower
- 120V 60 Hz 1 PH
- or: 230/460V 60 Hz 3 PH
- Two washable spunbond cartridge filters 99% Efficiency @ .5 Microns
- Heavy-duty swivel locking castors
- Internal spark arrestor baffle
- 6" x 7' Extraction Arm
- In-line damper to adjust airflow
- Noise Rating 78dba
- Removable dust drawer
- Hour Meter filter gauge
- Available as: 120/1/60 or 230/460/3/60
- 6" x 7' Extraction Arm

