TOSHULIN

# POWERTURN

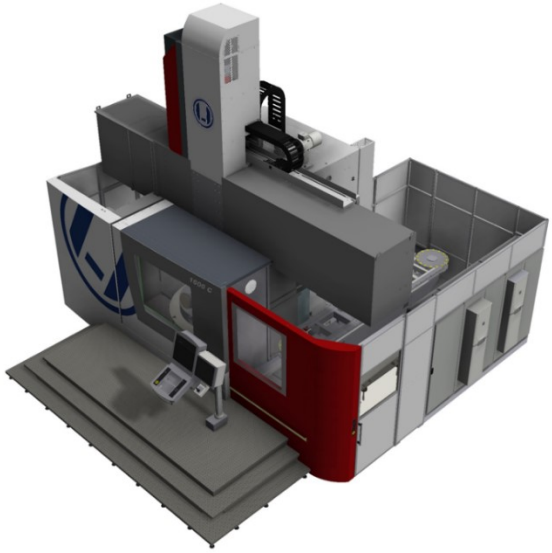
- High-performance machines
- Long-term accuracy
- Thermal stabilization of the machines
- Machine frame material cast iron GG25, GG30
- Ram cross section - 240 x 240 mm
- Maximum cutting force 50 000N
- Automatic exchange of tool heads and tool holders into the ram and of modular tools into the tool heads and tool holders
- Variability of magazine capacities according to workpiece demands
- Great variability measuring probes
- Fully enclosed machine working area - an optional air filter system can be added
- Wide scope of options: Pallet system, B-axis head, Y-axis head, HPC
- Control system SIEMENS or FANUC
- Simple concrete foundation

## 1/ Marking of Powerturn machines

Example: **PT 1250 C1 P2**

| | |
|---|---|
| PT | machine type POWERTURN |
| 1250 | table diameter 1250 mm |
| C | primary machine configuration |
| | "C" = machine equipped with live spindle and table positioning function (C-axis) |
| | "S" = turning machine |
| 1 | tool exchange type (see chapter 2/) |
| | "1" = adaptors + modular tools |
| | "2" = holders |
| P | machine equipped with automatic pallet exchange system (option) |
| 2 | number of pallets |

Any information about generation number is not included into the machine marking.



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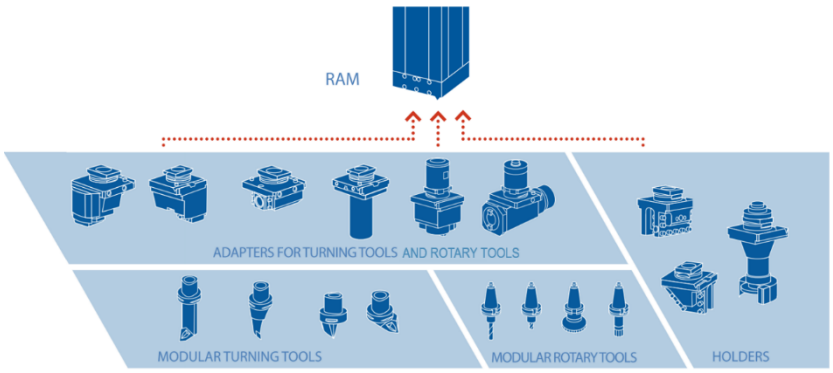
## 2/ Tool holders (adapters) and modular (cutting) tools exchange types

The type of automatic tool exchange system is specified in the machine marking by Arabic number "1 "or "2". For example PT 1600 S1.

### 2.1/ Type 1 (Ram Type 1)

Automatic exchange of adaptors (heads) into the ram together with automatic exchange of modular tools into the adaptors (heads). Clamping force (pull in force) the adapters to the ram 210.000N. Attention: live spindle heads, mechanical drive, has coupling with 8 straight-sided splines as standard. Old design heads with coupling with 6 straight-sided splines on request only.

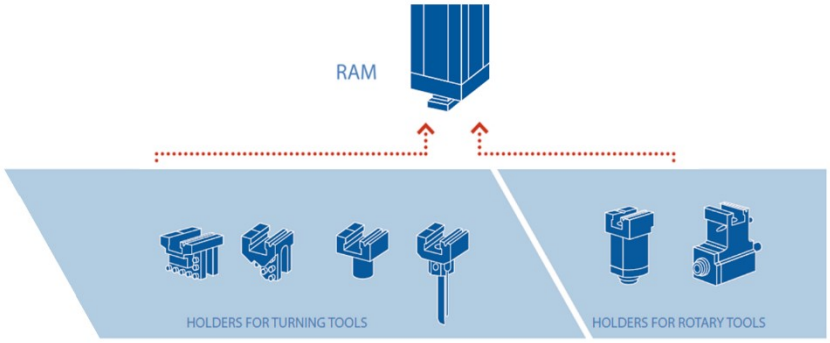



Note: Can be used for both actual generations of the Powerturn machines i.e. I. and III. Generation (see chapter 3/)

### 2.2/ Type 2 (Ram Type 2)

Automatic exchange of holders (heads), manual clamping of cutting tools.

Clamping force (pull in force) the adapters to the ram 150.000N.




Note: Currently, we do not recommend offering type "2" of automatic tool exchange for Powerturn machines.

## 3/ POWERTURN generations

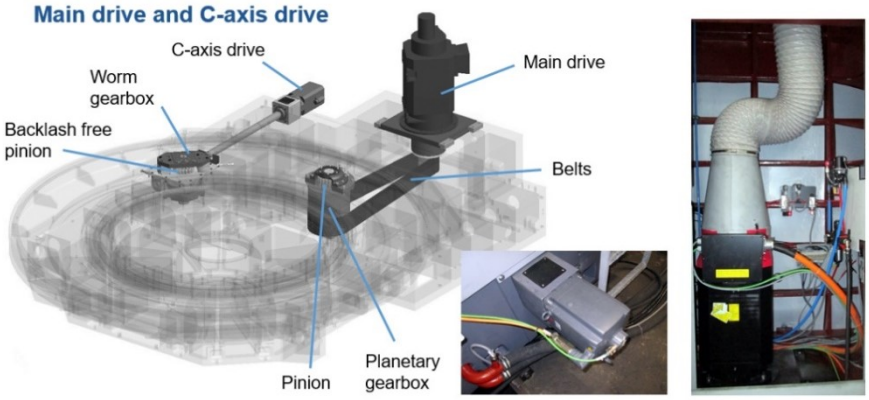
The differences between machine generations are related to technical developments in the past. Roman numerals began to be used to distinguish machine generations e.g. **I., II., III.** Currently, first and third generation machines are offered and manufactured.

TOSHULIN does not describe the generation in the machine marking. There are a few differences between the generations in the parameters, options, and construction of the machine, see below.

### 3.1/ POWERTURN I. generation

Standard machines produced from the year 1999.

| | |
|---|---|
| **Table diameter** | 1250 – 4000 mm |
| **Main drive** | motor in vertical position, planetary gearbox, belt gear<br>min. 44 kW, max. 105 kW |
| **C-axis drive** | separated motor, worm gear |
| **Live spindle** | max. torque 840 Nm and max. speed 3000 rpm |
| **Table bearing** | cross-roller type |
| **Linear axis guiding** | only roller type |
| **Tool holder clamping** | Ram type 1 (preferred) and type 2 |




### 3.2/ POWERTURN II. generation

Machine material frame is prementioned concrete.

Produced once in the year 2003.

Currently not in production, not offered, not mentioned in propagation material!

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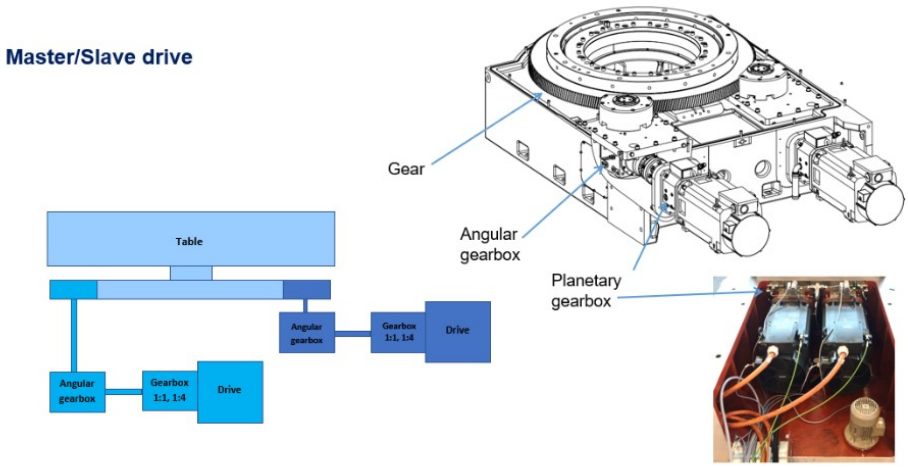
## 3.3/ POWERTURN III. generation

Machines produced from the year 2014

| | |
|---|---|
| **Machine frame** | symmetric design (compare layouts of the machines below) |
| **Table diameter** | 800 – 4000 mm |
| **Main drive** | Master-Slave type with two horizontal motors<br>planetary gearboxes and angle gearboxes<br>min. 2x22 kW, max. 2x58 kW |
| **C-axis drive** | controlled by Master-Slave drive |
| **Live spindle** | max. torque 1440 Nm and max. speed **4500 rpm** |
| **Table bearing** | cross-roller big diameter bearing |
| **Linear axis guiding** | roller type or hydrostatic type |
| **Tool holder clamping** | Ram type 1 only |




## Advantages/Options:

**Heads with additional axis** B-axis head, Y-axis head, C-axis head
(Heads to be offered only with Master-Slave drive which has better dynamics and positioning accuracy)

**Heads with integrated electrospindles (direct drive) -** Straight head, angle head, B-axis head, Y-axis head, C-axis head)

**Concrete foundation** Simple flat surface without a pit under the machine bed

Note: Machine Powerturn III. generation with a table diameter of 2000 mm has a double column frame.