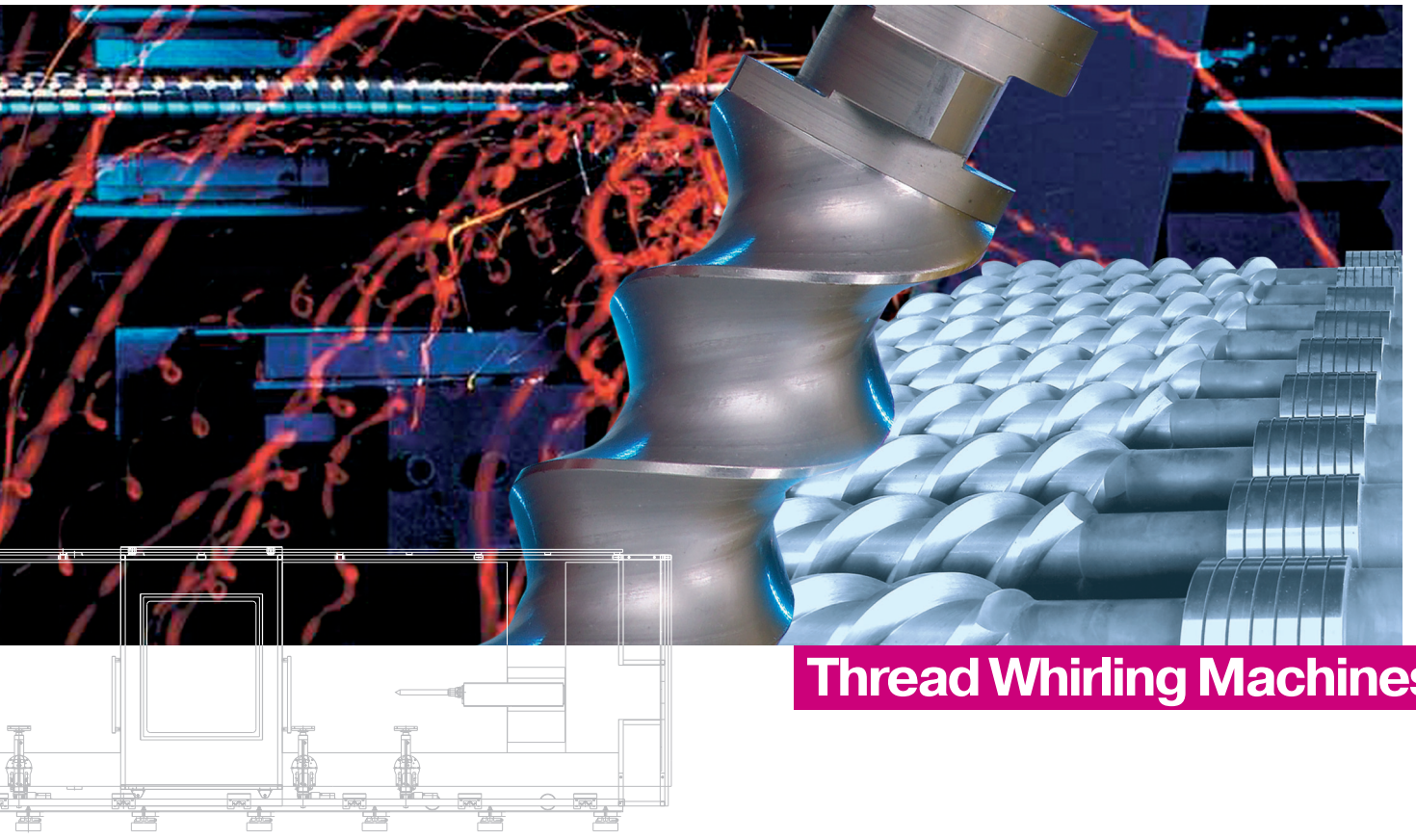
Leistritz

LEISTRITZ PRODUKTIONSTECHNIK GMBH



Thread Whirling Machines

Whirling Machine
LWN 190
LWN 300

New Dimension of Whirling Technology

- Big Workpiece Diameter
- High Pitch Thread

Customer Satisfaction remains the Highest Priority

The design for the completely new developed Leistritz LWN 190 / LWN 300 whirling machines were a result out of the requests from our customers to produce screws with even larger pitch and helix angle and market demands.
LEISTRITZ is the worldwide leading manufacturer of whirling machines providing „turn-key" packages including machine, tooling, programming and application specific know-how.

LWN 190
LWN 300

Performance Characteristics

- Increased machine capacity
- Machining of hard and soft materials
- Extremely high chip removal rates
- Minimal dwell times for shorter chip-to-chip rates
- Dry and wet machining
- Machining to finish tolerances

New Spindle Drive System

For the whirling unit drive of the LWN 190 / LWN 300 a high performance rated torque-motor will be used. This drive has the ability to provide a high torque necessary for heavy cutting and offers easy maintenance. The high spindle speed permits faster cutting speeds which improves surface roughness of the workpiece while reducing cycle time.

Whirling Unit

The new designed whirling unit AWS II / AWS III is able to machine screw profiles with helix angles up to ± 50°.

Whirling Unit AWS III with a detail of AWS II

Highest Workpiece Quality

- Thermal Stability

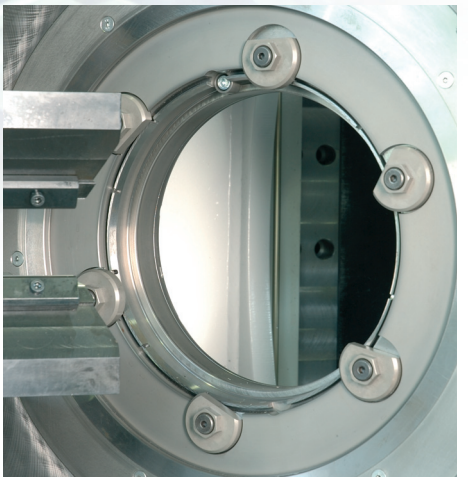
  The complete whirling unit is temperature-controlled to guarantee highest stability during heavy cutting process and to provide improved profile accuracy during finish cutting.

- Stiffness

  - Vibration damping polymer concrete filled machine bed
  - Special design of the steady rests providing very rigid and precise support of the workpiece
  - Widened X-axis guideways providing greater stiffness and accuracy

Economic Performance

- LEISTRITZ has developed a new rapid clamping system for the whirling ring which reduces the dwell time to less than 2 minutes.
- The new torque-motor drive system allows full optimization of the cutting speed and therefore increasing the efficiency of the machining operation.
- LEISTRITZ has developed new insert material and coatings to improve tool life to reduce the cost per workpiece.



Fast Clamping System

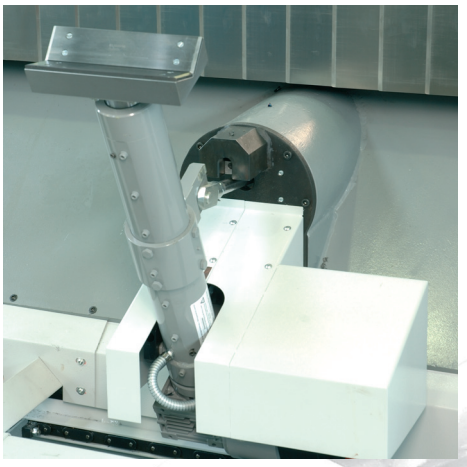
Components and Options

Headstock

The housing of the headstock is a massive welded design. The hollow main spindle is supported by high precision, preloaded spindle bearings and driven by a AC servo motor. Position feedback via a direct mounted absolute encoder for the most precise and state-of-the-art system. Loading through the spindle is possible.

Support Rests

The LWN 190 / LWN 300 are equipped with massive workpiece supports for carrying the weight of large workpieces and eliminate any deflection or bending. Each rest is driven by a AC servo motor with integrated drive mechanism and ballscrew actuation. These improved units have a positioning accuracy of ⩽ 0.01mm.



Support Rests

Clamping Chuck

Depending on the application, a wide variety of clamping solutions are available:

- A 3-jaw manual chuck for standard applications
- Adjustable 3-jaw chuck with high repeatability
- Hydraulic actuated collet chuck
- Hydraulic actuated 3-jaw chuck for applications requiring highest concentricity and runout accuracy

Nearly all possibilities are available to mount various chucks to the standard spindle nose. Special functions like clamping stroke monitoring or length end stop can be integrated.

Longitudinal Slide (Z-axis)

The very stiff and wide linear guideways of the Z-axis slide guarantee an exact and friction free guidance. The guideways are completely protected by a steel-telescopic guarding system.

Machine Enclosure

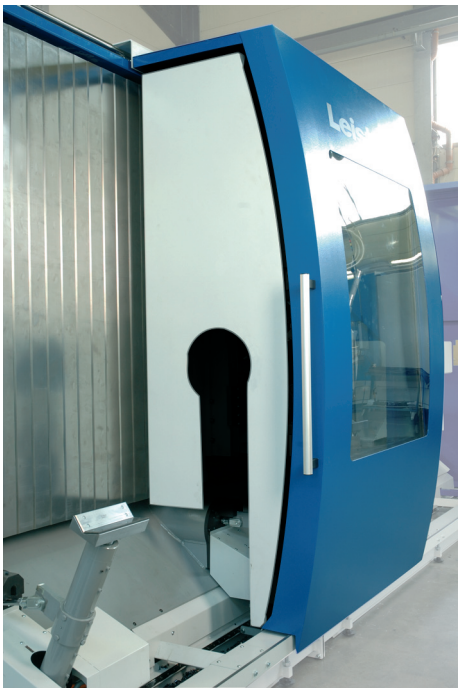
The machine is equipped with an ergonomically designed cover that permits wet and dry machining. The cover also protects the machine operator by preventing in-process opening of the sliding door. The safety glass window and worklight provide good observation of the whirling operation.

Tailstock (optional)

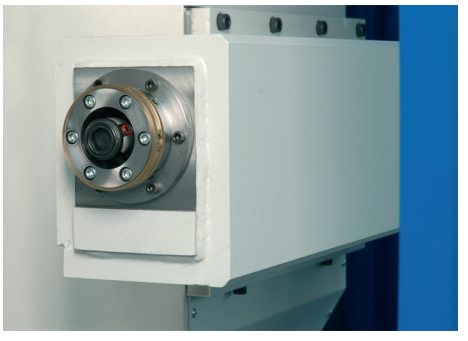
The CNC controlled tailstock is easy to maintain. It provides a highly adjustable, rigid and accurate support at the end of long workpieces using the constant torque feature of the CNC-control.

Peeling Head AWE (optional)

For producing single lobe, eccentric progressive cavity pump rotors resp. eccentric screw pump rotors, LEISTRITZ designed a high powered rigid whirling head type AWE. The AWE is ideal for high production, heavy cutting peeling operations.



Machine Enclosure



Tailstock

Tool Systems

Whirling Ring

Fast clamping system

This new development guarantees a fast and easy exchanging of the whirling ring.

Soft Material Machining

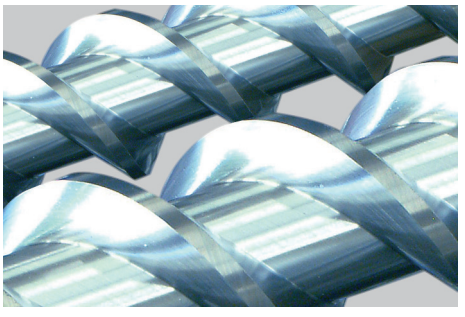
The Leistritz patented, tangential tool system which uses re-grinding carbide inserts has proven itself to be the most economic solution for soft machining operations. It totally eliminates the need for complicated and expensive setting of the tools while in the machine. Each insert has a layer of re-surfacing material.

Hard Steel Machining

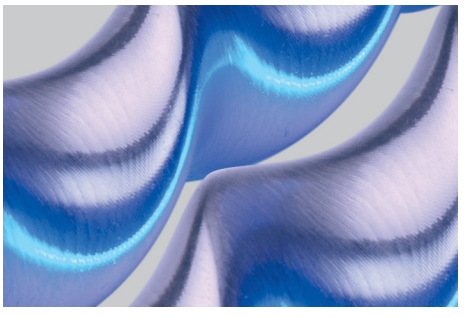
LEISTRITZ also has a solution for whirling hardened material up to 64 HRC. With the LEISTRITZ radial design whirling ring, precision screws, such as ballscrews are whirled to finish tolerances. To keep the tool costs per piece low, each insert can be re-ground by profile grinding.

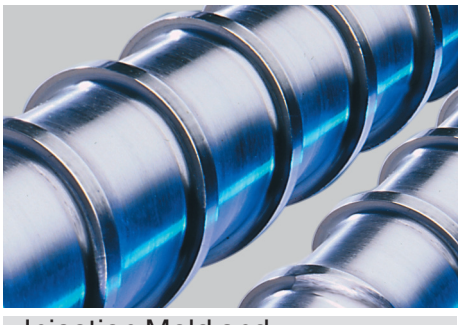
Application Area of the LWN 190 / LWN 300

Screw Pump Rotors

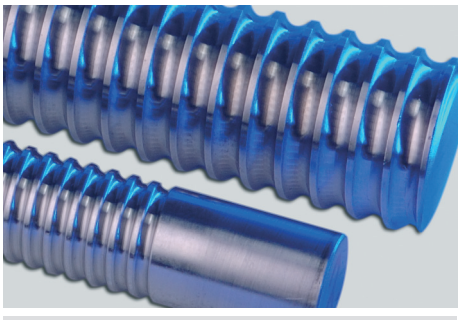


Single and Multi Lobe Progressive Cavity Pump Rotors





Injection Mold and Extruder Screws



Ball Screws

Workpiece Capacity

LWN 190

workpiece diameter: ø 10-125 mm · workpiece length: acc. to customer requirement · material up to 64 HRC

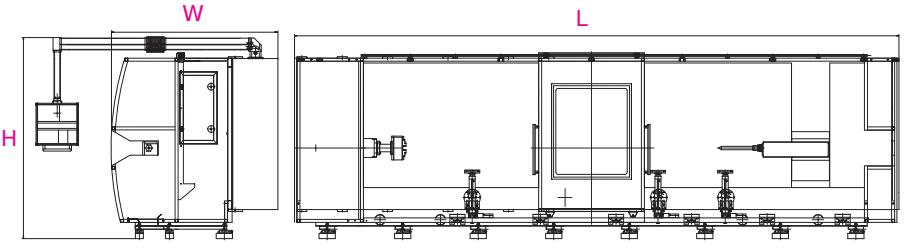
LWN 300

workpiece diameter: ø 40-200 mm · workpiece length: acc. to customer requirement · material up to 64 HRC

General Machine Specifications LWN 190/ LWN 300

Machine dimension with guarding and electrical panel Without chip conveyor (LxWxH) **approx.:**
8,000 mm x 1,900 mm x 2,240 mm

Machine weight with guarding, electrical panel and chip conveyor approx. 32,000 kg



Technical Data	LWN 190	LWN 300
Headstock (C-axis)		
Spindle through-bore (may be reduced depending on chuck type)	ø 104 mm	ø 130 mm
Spindle Nose (for chuck acc. DIN 6353)	ø 120 mm	ø 220 mm
Resolution of the C-axis	± 0.01 °	± 0.01 °
Tailstock (T-axis)		
Axial force max. (Completely adjustable via the CNC program)	5,100 N	5,100 N
Positioning Accuracy	± 0.005 mm	± 0.005 mm
Steady Rests:	**ZSL - 190**	**ZSL - 300**
Stroke max.	80 mm	150 mm
Clamping Range	ø 15 - 125 mm	ø 40 - 200 mm
steady rest jaw sizes:	2	3
Clamping Force	800 - 8,500 N	800 - 8,500 N
Longitudinal Axis (Z-axis)		
Travel	depending on machine size	depending on machine size
Axial Force max.	11,800 N	11,800 N
Positioning Accuracy	± 0.0025 mm	± 0.0025 mm
Cross Slide (X axis)		
Axial Force max.	22,000 N	22,000 N
Positioning Accuracy	± 0.001 mm	± 0.001 mm
External Whirling Unit:	**AWS II**	**AWS III**
Through-Hole (without tooling)	ø 190 mm	ø 340 mm
Speed Range	600 - 4,500 rpm	250 - 1,000 rpm
Drive Type	Torque - Motor	Torque - Motor
Power max.	16.5 KW	26 KW
Helix Angle Adjustment (A-axis)		
Travel	± 50 °	± 50 °
Positioning Accuracy	0.07 °	0.07 °
CNC Control		
Siemens 840 D / Fanuc 18 TB		
Electrical Supply		
Voltage (other voltages available)	400 VAC ± 10 %	400 VAC ± 10 %
Frequency	50 Hz ± 2 %	50 Hz ± 2 %
Main Fuse	40 A	160 A
Total Connected Load	40 kVA	110 kVA
Control Voltage	24 VDC	24 VDC

Technical alterations reserved

Leistritz Product-Range of Whirling Machines

The perfect machine solution for each application

LWN 65	Small gear worms · bone screws
LWN 90	Steering worms · gear worms
LWN 120	Gear worms · mini ball-screws · bone screws · EPS worms · small eccentric screws small pump screws · rack and pinion spindles
LWN 160	Ball screw spindles · spindles · eccenteric worms
LWN 190 **LWN 300**	Pump screws · eccenteric worms · ball screw spindles · plastification worms
LWN 300 PM	Cavity pump rotors · single and multi-lobe rotors for downhole motors
INNOVATION 200	Complete and hard machining of thread nuts

Partner for modern Technology

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