SHOE GRINDING

HIGHEST PRECISION FOR
THIN-WALLED WORKPIECES

STUDER

The Art of Grinding.

A member of the UNITED GRINDING Group

Shoe grinding is a cylindrical grinding process in which highprecision, thin-walled workpieces, with high requirements on roundness and concentricity between internal and external diameter, are machined in a so-called shoe grinding fixtures. The main market is in the roller bearing industry, where extremely high precision requirements are made on bearing rings. The tolerances generally lie in the micron range, which makes exceptional demands on machine, clamping devices, operator and the associated grinding tooling. The main focus here is on clamping such workpieces. In order to be able to fulfill the high tolerance requirements, the workpiece must be clamped so that they are not deformed. In addition, in most cases the complete internal and external contour must be machined, which does not permit the use of a three-jaw chuck.

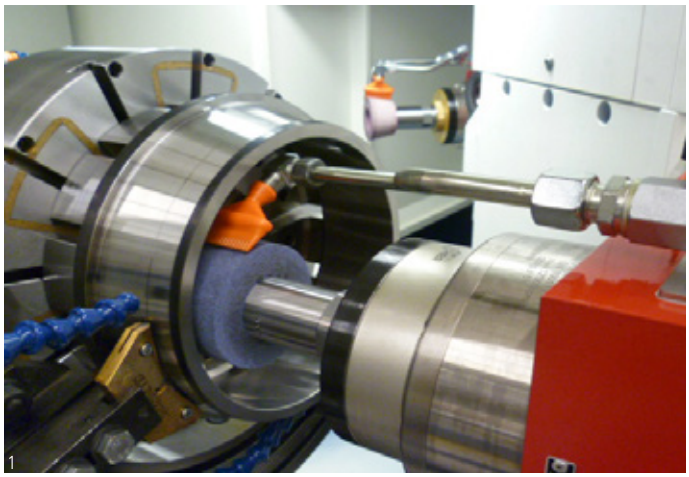
The magnetic chuck is the easiest way to clamp such workpieces. However, this means that each individual workpiece must be centrically aligned using a dial indicator, which takes an excessive amount of time on the one hand, and on the other does not permit automatic workpiece handling. Therefore this cannot be described as a superproductive solution, as is generally demanded in such applications. The use of a magnetic chuck is a convenient way of producing workpieces individually or in small series.

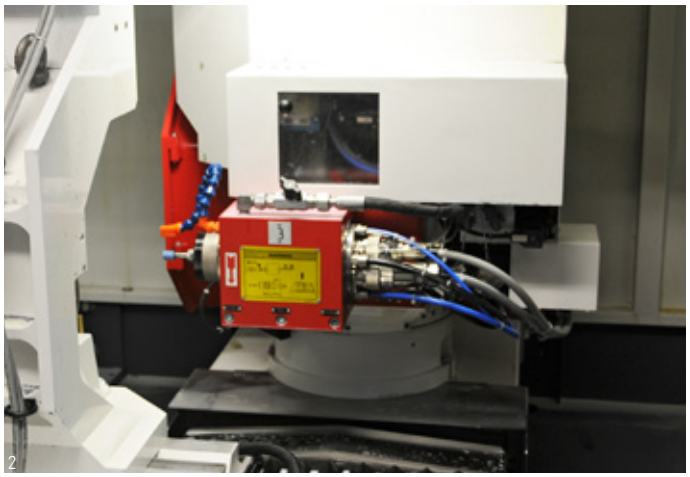
In order to eliminate laborious manual alignment using a dial indicator and achieve a grinding process more suitable for production, a device is required which enables the workpieces to be positioned on the magnetic chuck easily and with little effort - the shoe grinding fixture. The supporting shoes of the shoe grinding fixture hold the workpiece in the center. Torque transformation and holding force are ensured by the electromagnetic chuck. The holding force can be programmed in different stages. Our shoe grinding fixtures are available in six different sizes and cover a diameter range of 10–460 mm (0.4"–18.1").

The table provides an overview of which external diameter ranges are possible on which machine.

MACHINE	HEIGHT OF CENTERS	DISTANCE BETWEEN CENTERS	SHOE GRINDING FIXTURE
S31	175 mm	400 / 650 / 1000 / 1600 mm	Size 1: Ø 10–120 mm (0.4–4.7") Size 2: Ø 90–170 mm (3.5–6.7")
S33	175 mm	650 / 1000 mm	Size 1: Ø 10–120 mm (0.4–4.7") Size 2: Ø 90–170 mm (3.5–6.7")
S41	225 mm	1000 / 1600 mm	Size 1: Ø 10–120 mm (0.4–4.7") Size 2: Ø 90–170 mm (3.5–6.7") Size 3: Ø 100–200 mm (4–8")
	275 mm	1000 / 1600 mm	Size 1: Ø 10–120 mm (0.4–4.7") Size 2: Ø 90–170 mm (3.5–6.7") Size 3: Ø 100–200 mm (4–8") Size 4: Ø 170–270 mm (6.7–10.6") Size 5: Ø 260–360 mm (10.2–14.2") Size 6: Ø 350–460 mm (13.8–18.1")

* Technical details subject to change





1 Sequential external and internal cylindrical grinding on an S41
2 Radius dressing device (dual bearing) for high-precision raceways