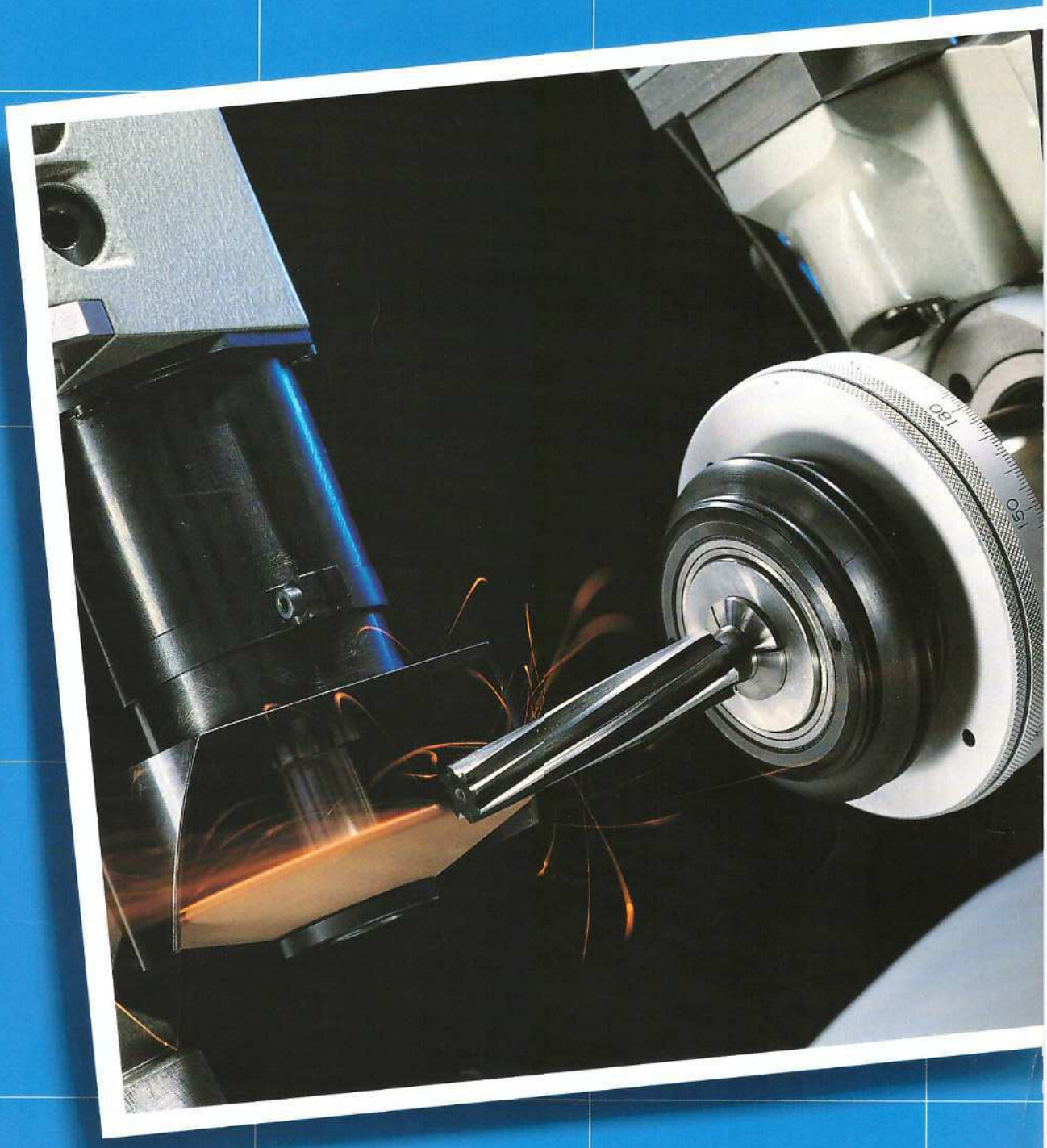
CHRISTEN

Tool
Grinding Machines

AU-150

Universal
Tool Grinding Machine



The resharpening of cutting tools

Grinding Examples

The use of modern machine tools and the application of efficient methods of production impose ever-increasing demands on cutting tools.
- Rising productivity
- Ever higher cutting speeds and feed rates
- Tighter workpiece tolerances
- Machining of more and more difficult materials

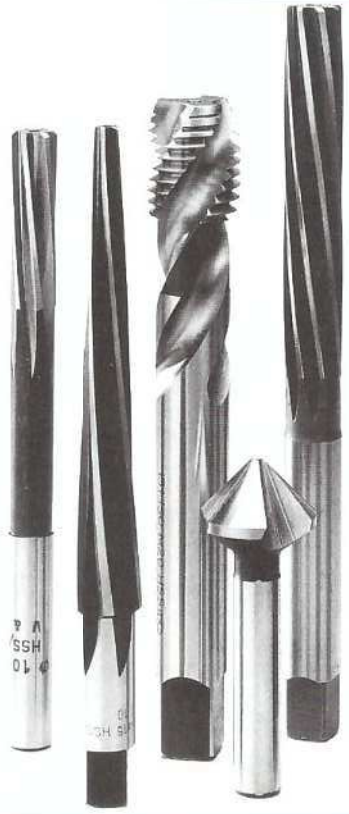
can only be achieved with perfectly ground cutting tools.

Only a cutting tool which in respect of tool geometry, concentricity, dividing accuracy and surface finish meets highest demands can achieve the required productivity. Good resharpening closely maintains and does not change the tool geometry laid down by the manufacturer or supplier.

Grinding Examples

On the shop floor it is becoming more and more important to have an efficient tool resharpening facility.
Particularly complicated and expensive special tools often only in small numbers but requiring quick and accurate resharpening may present major problems for tool service departments. The same high quality requirements equally apply for standard tools such as cutters, drills and countersirks etc.
With the AU-150 a wide range of standard and special cutters and tools can be ground efficiently and accurately

Grinding Examples



Grinding Examples

Particularly on tools which are vulnerable to breakage such as on taps or step drills the safety in machining is considerably improved by perfectly resharpened tools.
In addition to improved tool performance, the better surface finishes achieved in milling and drilling enhance the machining quality as well as the appearance of the work produced and will also motivate the operator.

Universal Tool & Cutter Grinding Machine AU-150

The Universal Tool & Cutter Grinding Machine AU-150 is setting new and highest standards of precision whilst being easy and economical in operation without requiring special skills. Whether in the toolroom, the sharpening department, or a sharpening plant, the AU-150 offers the ideal solution for producing and regrinding tools.

Important features of the AU-150 are:

- Spiral leads infinitely variable right and left hand.
- Accurate Indexing.
- Sensitive but absolutely backlash free workpiece spindle movement.
- Single hand operation for grinding and indexing
- Grinding head adjustable in 5-axes with precision balanced motor and grinding spindle.

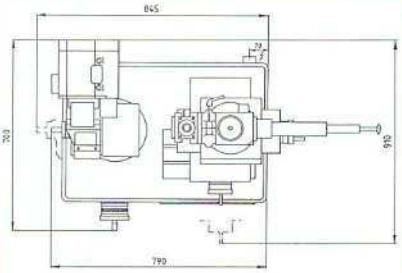
Tool grinding is an art but must not become a work of art.

Standard Equipment

1 Reduction sleeve ISO 40/W 20 with adaptor.
1 Grinding wheel 80 mm dia. shape 11
1 Grinding wheel 100 mm dia. shape 12
1 Hub locator, long
1 Grinding wheel hub 20 mm dia. location 7.5 mm long
1 Diamond dresser, single point shaft dia. 8 mm
1 Setting bar 10 mm
1 Halogen machine lamp 24 V/40 W
2 Grinding wheel guards
1 Set of grinding motor pulleys
1 Spare belt
1 Finger support and presetting arrangement
1 Indexing plate 24 divisions
1 Foot pedal switch
1 Hand control switch
1 Oil gun
1 Set of operating tools
1 Operating instruction manual

Technical Data

Tool diameter	1–160 mm
Spiral lengths with workhead spindle	155 mm
Longitudinal slide displacement	160 mm
Rapid cross move. with hand lever	35 mm
Cross slide displacement	180 mm
Height adjustment of grinding head	110 mm
Radius concave max.	25 mm
Radius convex max.	55 mm
Workhead spindle	ISO 40
Divisions	up to 38
Spiral leacs mechanical	0 to 90° left and right hand infinitely variable or with finger support
Grinding wheel dia. max.	100 mm
Grinding wheel bore	20 mm
Grinding motor	0,75 kW
Grinding spindle speeds ex works 4900 rpm	3700/4900/6075/7500 rpm
Electrical equipment	Standard Connections
3-phase power supply	220/380 V, 50 Hz, 3-phase 240/420 V, 50 Hz, 3-phase 220/440 V, 60 Hz, 3-phase
Paintwork of machine	Green RAL 6011/Grey RAL 7032



Packing, Dimensions and Weights

Packing for Machine Item 1400

1488 Open on wooden pallet for road transport
Dimensions
126 x 108 x 145 cm
Net weight approx. 300 kg
Gross weight approx. 330 kg

1490T Triwall packing
Dimensions
126 x 108 x 148 cm
Net weight approx. 300 kg
Gross weight approx. 340 kg

Packing for Additional Equipment

1370T Triwall packing for dust extraction unit, Item 1320
Dimensions
72 x 52 x 77 cm
Net weight approx. 40 kg
Gross weight approx. 50 kg

2820T Triwall packing for coolant installation, Item 1300
Dimensions
68 x 69 x 46 cm
Net weight approx. 24 kg
Gross weight approx. 32 kg

1375T Triwall packing for tool cabinet
Item 1460
Dimensions
73 x 85 x 97 cm
Net weight approx. 101 kg
Gross weight approx. 126 kg

Basic Machine

Rigid sheet metal stand housing the control panel for the spiral grinding unit.

Cast iron machine base with electrical connections (socket and plug) for coolant installation and dust extractor unit.

Grinding spindle head adjustable in 5-axes incorporating radius grinding facility. Precison balanced three phase motor and grinding spindle.

Cross slide with circular location for swivelling workhead.

Workhead equipped with electromechanically operated spiral grinding arrangement giving infinitely variable spirals right and left hand, including support finger arrangement.

Electrical installation for 3-phase power supply with connection panel to the rear, fuly wired for optional attachments and halogen machine lamp 24 V/40 W with built in transformer.

Operation

The practical machine layout is specially designed to ensure ease of operation with hand wheels and controls conveniently situated for quick and sensitive setting.

The electrical controls provide for 4 operation modes:

- Manual grinding and indexing with or without spiral control.
- Grinding with spiral control and semi-automatic indexing.
- End tooth grinding and indexing
- Grinding with free moving workhead spindle (axial and radial) for work with support finger.

Special Design Features

Grinding Head

The grinding head is adjustable in 5 axes and can be quickly set for grinding the flutes, periphery, front rakes, cutting angles, relief angles and also radii.

Adjustment range
(with grinding spindle in horizontal position)

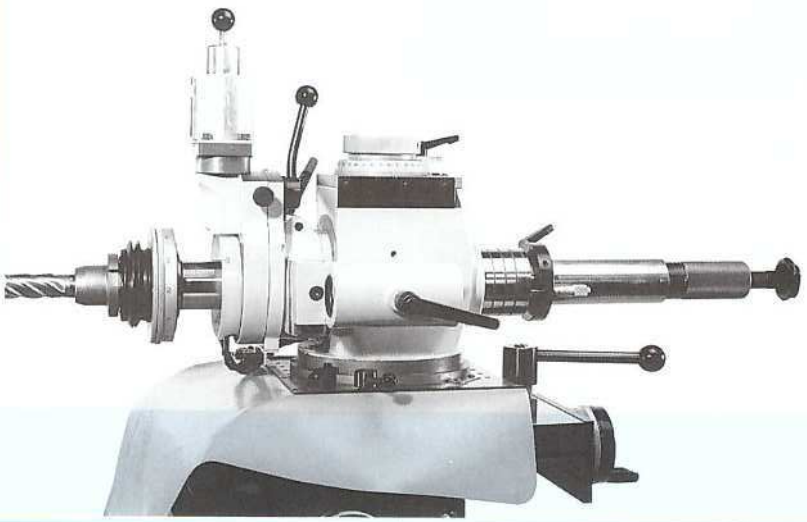
A Height adjustment 110 mm (4.330")
B Rotary movement around the vertical axis 360°
C Spindle tilt in vertical plane parallel with spindle axis +90°/–15°
D Spindle tilt in vertical plane at right angles to wheel spindle centreline +/–45°
E Cross slide displacement 80 mm (3.149")

Workhead

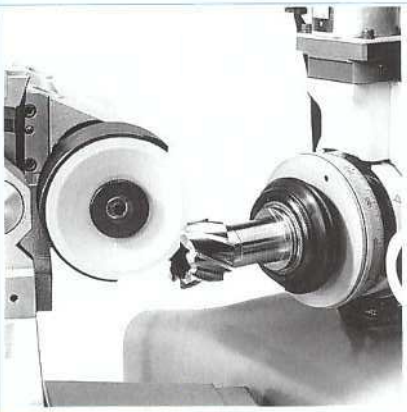
The workhead incorporates a new and totally backlash free spiral grinding system for infinitely variable spiral leads 0–90° left and right hand and for flute and periphery grinding. To cover a wide range of tools a finger support and pre-setting arrangement is also supplied. The workhead spindle runs in a precision linear bearing and the spiral movement is generated by a heavy duty roller arrangement with 360° angular adjustment pressing onto the workhead spindle. Spiral leads are quickly set in a matter of seconds and the workhead itself can be swivelled by ± 45°.

Cross Slide

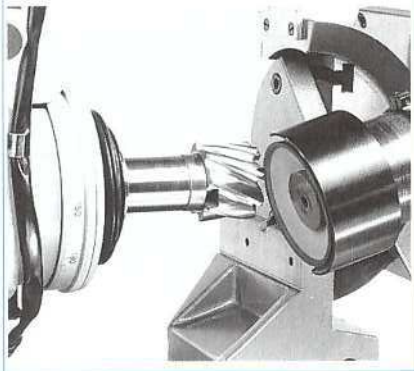
To suit different lengths and diameter of tools, the workhead can be moved quickly to the required position. In addition the cross movement can be lever operated for rapid and controlled face grinding.



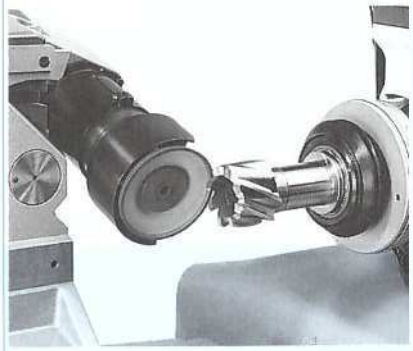
Practical Illustrations



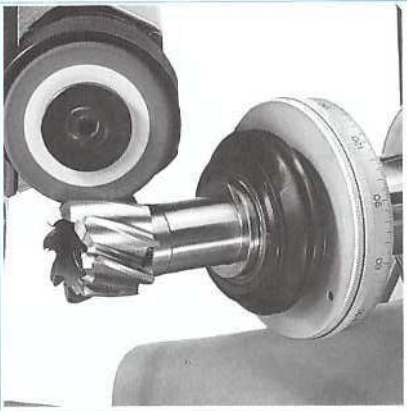
Front rake angle



Face clearance angle

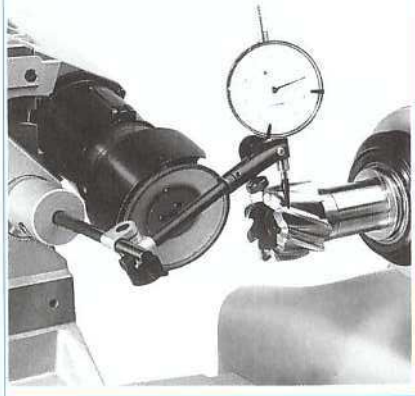


Periphery clearance angle

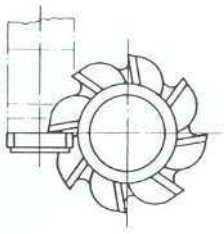


Flute rake angle

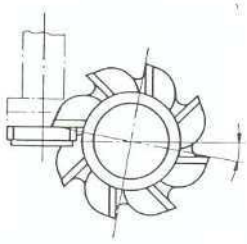
Spiral lead set in seconds with dial gauge



Even more universal with practical accessories

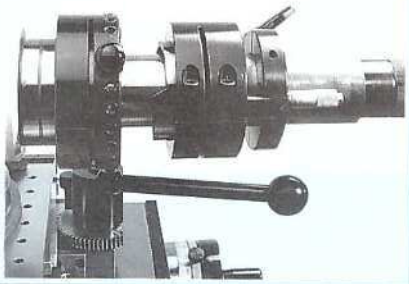


Setting of centre height

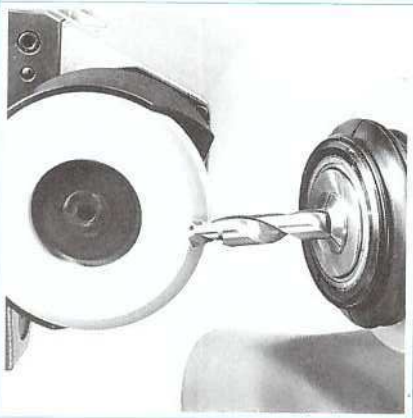


Setting cutting edge horizontal

Item 1405
Swivelling tool centring gauge (must be ordered with machine)



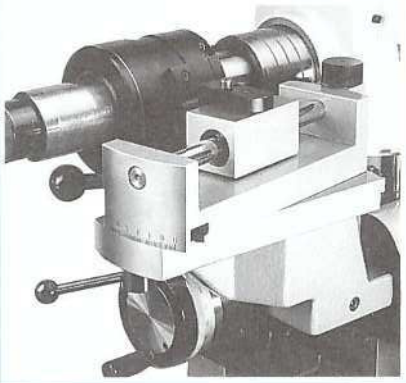
Item 1442
Indexing device (12) and Item 1441 axial relief
Grinding arrangement for:
- Taps
- Countersinks
- Counterbores



Shoulder relief grinding of a step drill using Items 1441, 1442 and 1443

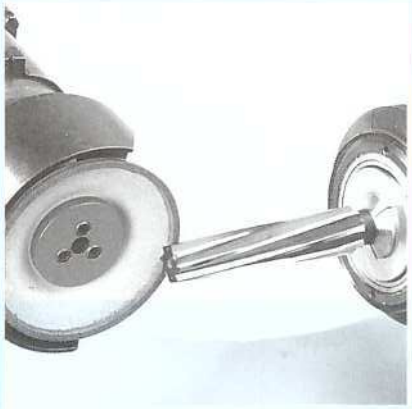
Item 1441
Ring cam holder

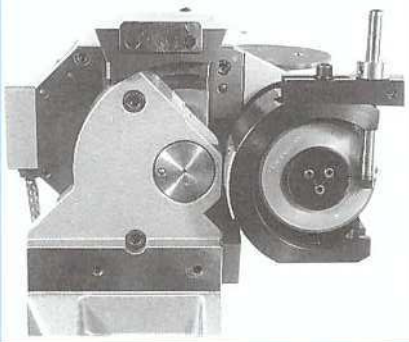
Item 1443
Ring cam (blank)
The cam rise is ground directly on the machine matching the tool to be ground



Item 1410
Taper grinding arrangement

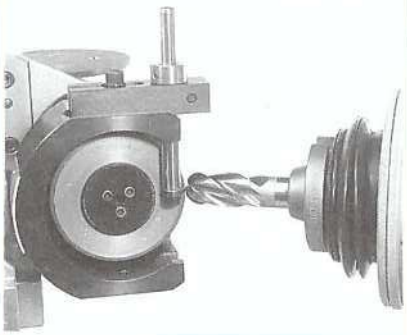
Resharpening of a MT2 reamer



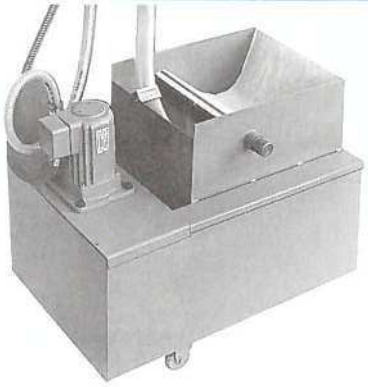


Item 1450
Device for grinding corner rads and full spiral fluted ball nose cutters without compounding the radius profile

Resharpening of a ball nose cutter, periphery and radius in one operation



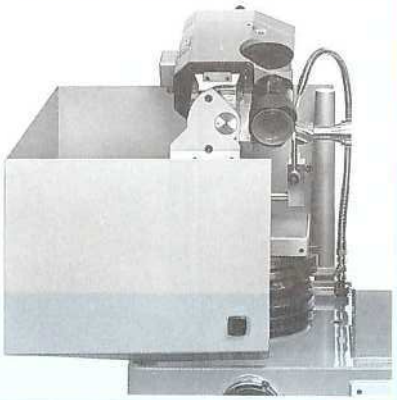
Item 1320
Dust extractor unit
output 5 m³/min. with flexible metal hose and suction nozzle



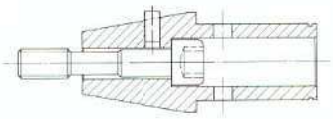
Item 1300
Coolant installation with pump, magnetic and paper filter, coolant tank 60 l

Item 1301
Filter paper 100 sheets

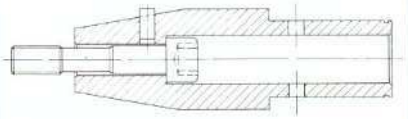
Item 1310
Swivel splash guard



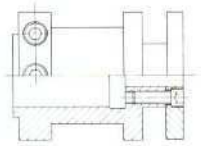
Grinding Wheel Adaptors



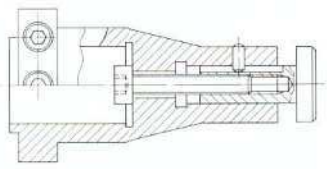
Item 1610
Hub locator short



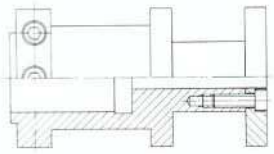
Item 1611
Hub locator long



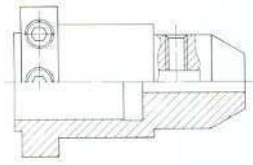
Item 1620
Grinding wheel hub short ø 20 mm with location 7,5 mm wide



Item 1622
Grinding wheel hub ø 10 mm



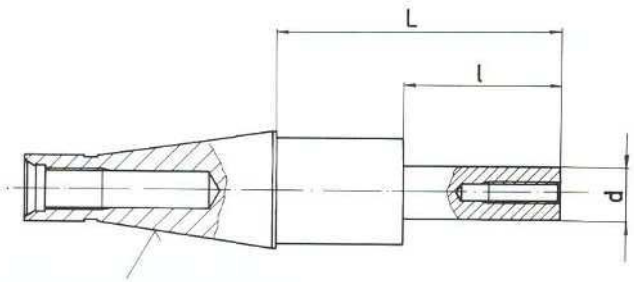
Item 1621
Grinding wheel hub long ø 20 mm with location 20 mm wide for mounting 2 wheels



Item 1623
Grinding wheel hub ø 6 mm dia. bore for grinding pins

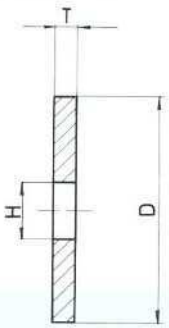
Cutter Arbors ISO 40 special

These arbors are designed to provide clearance for wheel run out when flute grinding



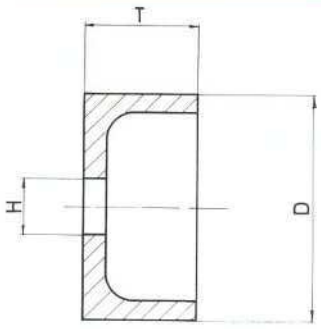
ISO 40

Grinding Wheels

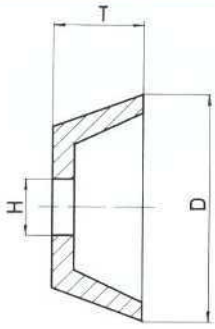


Shape 1

	Diameter	Length
1590	13 x 20 mm	62 mm
1591	16 x 25 mm	62 mm
1592	22 x 30 mm	70 mm
1593	27 x 35 mm	70 mm
1594	32 x 40 mm	70 mm



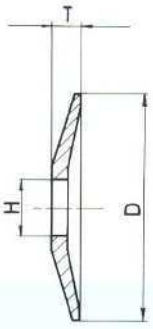
Shape 6



Shape 11

Abrasive Wheels for HSS

1640	1	67A46K7V	ø 80 x 10 x 20 mm
1641	6	67A46J7V	ø 80 x 40 x 20 mm
1642	11	67A46K7V	ø 80 x 32 x 20 mm
1644	12	67A46J7V	ø 100 x 13 x 20 mm
1645	12	53A60J7	ø 100 x 13 x 20 mm

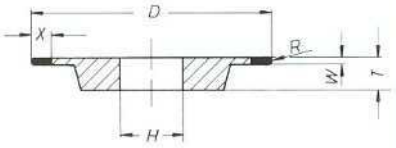


Shape 12

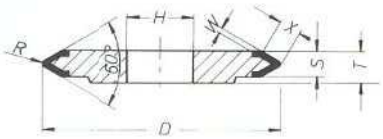
CBN and Diamond Wheels resinoid bonded

For the resharpening and manufacture of individual tools in HSS and carbide, suitable for wet and dry grinding.

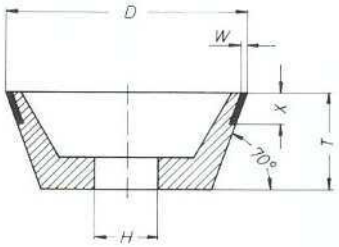
Shape		Dimension	Specification		
1710	3F1	75 x 8 x 20 Rim 75 – 6 – 4	4B91	RBW 75 x 50	R3
1711			77D91	RBW 75 / 52	R3
1715	3E1	75 x 8 x 20 Rim 75 – 6 – 4	4B91	RBW 75 x 50	RO.2
1716					R2
1717		75 x 8 x 20 Rim 75 – 6 – 4	77D91	RBW 75 / 52	RO.2
1718					R2
1720	4B9 60°	75 x 8 x 20 Rim 75 – 6 – 3	4B76	RBW 75 x 50	
1721			77D76	RBW 75 / 52	
1723	3A1	75 x 8 x 20 Rim 75 – 4 – 3	4B107	RBW 75 x 50	
1724			77D107	RBW 75 / 52	
1726	3V1 20°	75 x 8 x 20 Rim 75 – 4 – 3 V20°	4B91	RBW 75 x 50	
1727			77D91	RBW 75 / 52	
1730	3F1	75 x 8 x 20 Rim 75 – 2 – 4	4B91	RBW 75 x 50	
1731			77D91	RBW 75 / 52	
1732		75 x 8 x 20 Rim 75 – 3 – 4	4B91	RBW 75 x 50	
1733			77D91	RBW 75 / 52	
1735	11V9	75 x 30 x 20 Rim 75 – 10 – 2	4B126	RBW 75 x 50	
1736			77D126	RBW 75 / 52	
1738	17V9S	75 x 25 x 20 Rim 75 – 6 – 3	4B76	RBW 75 x 50	
1739			77D76	RBW 75 / 52	



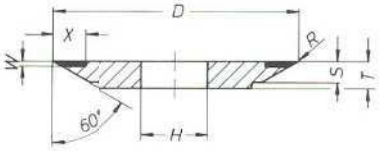
Item 1730
1731
1732
1733



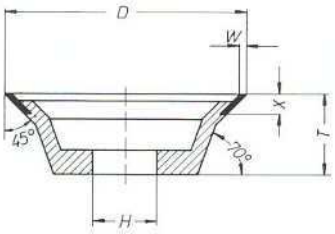
Item 1710 1716
1711 1717
1715 1718



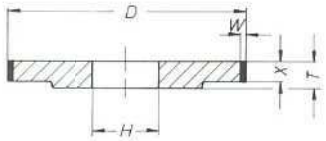
Item 1735
1736



Item 1720
1721



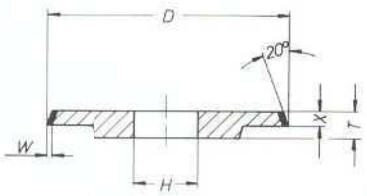
Item 1738
1739



Item 1723
1724

Other dimensions, shapes and grit sizes on request

We offer advice to select the grinding wheels most suitable for specific applications.



Item 1726
1727

CBN and Diamond Wheel ceramic bonded

For the manufacture of HSS and Carbide tools in small and medium size batches without redressing, particularely for wet grinding but also suitable for dry resharpening.

Shape		Dimension	Specification	
1750	11V2	80 x 32 x 20 E8 J57 K46 Rim 75 – 6 – 3	3B91 P3VC100	
1751			3B91 PSVC100	
1752			1D91 P3VC100	
1755	3E1	80 x 8 x 20 Rim 80 – 6 – 8	3B91 P3VC100	R3
1756				R2
1757				R0,2
1758			1D91 P3VC100	R3
1759				R2
1760				R0,2
1765	3A1	80 x 8 x 20 Rim 80 – 4 – 3	3B91 P3VC100	
1766		Rim 80 – 4 – 6	3B91 P3VC100	
1767		Rim 80 – 4 – 3	1D91 P3VP100	
1768		Rim 80 – 4 – 6	3D91 P3VC100	
1770	3V1	80 x 8 x 20 Rim 80 – 4 – 3 V20°	3B91 P3VC100	
1771			1D91 P3VC100	
1775	3F1	80 x 8 x 20 Rim 80 – 2 – 3	3B91 P3VC100	
1776		Rim 80 – 3 – 3	3B91 P3VC100	
1777		Rim 80 – 2 – 3	1D91 P3VC100	
1778		Rim 80 – 3 – 3	1D91 P3VC100	
1780	1Y1	80 x 8 x 20 Rim 80 – 8 – 10	3B91 P3VC100	
1781		Rim 80 – 8 – 10	1D91 P3VC100	
1782	1Y1	80 x 8 x 20 Rim 80 – 8 – 10	3B91 P3VC100	
1783		Rim 80 – 8 – 10	1D91 P3VC100	

Summary at a glance

Item	
	Machine
1400	Machine complete with standard equipment
1405	Swivelling tool centring gauge (must be ordered with machine)
1410	Taper grinding arrangement
1420	Indexing plate 2 to 38 divisions
1450	Device for grinding corner rads and ball nose cutters
1460	Tool cabinet with 6 drawers, drawer fittings, work top and central lock
	Relief Grinding Arrangement
1441	Ring cam holder
1442	Indexing device (12)
1443	Ring cam (blank)
	Wet Grinding Equipment
1300	Coolant installation with pump, magnetic and paper filter, coolant tank 60 l
1301	Filter paper 100 sheets
1310	Swivel splash guard
	Dust Extraction Equipment
1320	Dust extractor unit, output 5 m^3/min with flexible metal hose and suction nozzle
1321	Suction hose and nozzle but without dust extractor for connection to central dust extraction system

Item

Workholding equipment

1510 Reduction sleeve ISO 40/W 20 (additional)

1521 Acaptor W 20 (additional)

1530 Cellets W 20, dia. 3–20 mm in increments 0,1 mm

1540 Cellet chuck ISO 40/ER 50
Cellet chuck ISO 40/ER 40

1541 Cellets ER 50, dia. 10–34 mm in increments of 2 mm
Cellets ER 40

Reduction sleeves, short, for tools with drawbar thread

1550 ISO 40/MT 1
1551 ISO 40/MT 2
1552 ISO 40/MT 3
1553 ISO 40/MT 4

Reduction sleeves, short, for tools with flat tang (drills and reamers)

1560 ISO 40/MT 1
1561 ISO 40/MT 2
1562 ISO 40/MT 3
1563 ISO 40/MT 4

1570 Reduction sleeve ISO 40/ISO 30

Cutter arbors ISO 40 special

1590 diameter 13 x 20 mm, length 62 mm
1591 diameter 16 x 25 mm, length 62 mm
1592 diameter 22 x 30 mm, length 70 mm
1593 diameter 27 x 35 mm, length 70 mm
1594 diameter 32 x 40 mm, length 70 mm

Grinding wheel Adaptors

1610 Hub locator, short

1611 Hub locator, long (additional)

1620 Grinding wheel hub ø 20 mm, with location 7,5 mm wide

1621 Grinding wheel hub ø 20 mm, with location 20 mm wide

1622 Grinding wheel hub ø 10 mm

1623 Grinding wheel hub with ø 6 mm bore (for grinding pins)

1624 Grinding wheel hub with ER 16, chuck (for grinding pins)

1625 Collets ER 16, 2–10 mm dia. in increments of 1 mm

Wheel Balancing Equipment

1680 Wheel balancing device with balancing arbor ø 20 mm

1681 Baancing arbor ø 20 mm x 250 mm long (individual)