

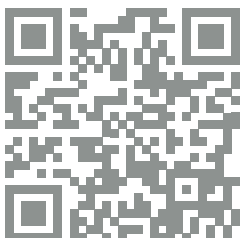
QUALITY **MADE IN GERMANY** by *unigrind* GmbH & Co. KG



# VALVE MACHINING AND TESTING TECHNOLOGY

THE HIGHEST STANDARD IN PRECISION





Please use your smartphone with the relevant software, scan the QR code and you will be connected to the *unigrind* homepage.



Here you will get further information about our Company and Products.

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Factory I, Frackersberg

## THE HIGHEST STANDARD IN PRECISION



Since 1984 **unigrind** has been offering high-quality machining and testing products for industrial valves. This includes products for the machining of sealing surfaces on industrial valves, pumps, pipelines, turbine housings, compressors, etc.

**unigrind** develops and produces industrial valve test stands for pressure, leak, and flow testing on gates, butterfly valves, valves, ball valves, safety valves, etc. Our company has been certified according to DIN EN ISO 9001 since 1999. Our products are developed and produced in-house. At **unigrind** 'Made in Germany' means 'Made in Stolberg'. Only in this way is it possible to always provide our customers with products in the highest quality.

### The **unigrind** product range includes:

- Portable grinding and lapping machines
- Technology and processes for grinding safety valves
- Portable turning and milling machines
- High-speed grinding technology
- Stationary grinding and turning technology
- Flat lapping machines
- Portable devices for pressure testing
- Stationary and mobile valve test stands
- Project planning of workshops for repair of valves
- Project planning and construction of special workshop containers

The introduction of a patented high-speed valve grinding machine in 1999 was a milestone for valve service. **unigrind** is a technological leader in high-speed grinding and safety valve grinding technology. **unigrind** currently sells products in more than 80 countries around the world. The industrial valves sector can rely on **unigrind**'s comprehensive know-how now and in the future.

## APPLICATIONS

- Plant construction
- Apparatus construction
- Valve trade
- Manufacturers of valves
- Valve service companies
- Mining
- Chemical industry
- Fertilizer plants
- Gas manufacturers
- Rubber manufacturers
- Combined heat and power stations
- Heating plant
- Nuclear power stations
- Boiler manufacturers
- Steel works
- Food industry
- Refuse incinerators
- Pharmaceutical industry
- Pipelines
- Steel industry



Factory II, Jägerhausstraße

## ■ unigrind **VENTA**

### Portable grinding and lapping machines for working on valves with flat seating faces:

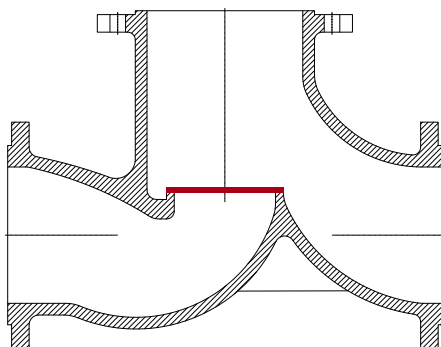
- Globe valves
- Safety relief valves
- Check valves

### Drives:

- Electric 230 V/110 V AC, 50/60 Hz,
- Battery drive for VENTA 50, 50 SV VENTA 150, 150 SV
- Pneumatic drive 5–7 bar (72–90 psi)

### Comment:

VENTA 50 SV and VENTA 150 SV are supplied with special micro finishing film in the grits P150, 280, 500, 1000 and 1800 for grinding and polishing safety relief valve seat surfaces. Hand guided grinding machines up to working range DN 150 (6"). For the machines type VENTA 300, 600 and 1600 a mounting device is used to fix the machine on the valves.



VENTA 300

Type:	Working ranges:	Inches:
<b>VENTA 50</b>	DN 8–50 mm	1/4"–2"
<b>VENTA 50 SV</b>	DN 8–50 mm	1/4"–2"
<b>VENTA 150</b>	DN 8–150 mm	1/4"–6"
<b>VENTA 150 SV</b>	DN 15–150 mm	1/2"–6"
<b>VENTA 300</b>	DN 80–350 mm	3"–14"
<b>VENTA 300 S</b>	DN 80–450 mm	3"–18"
<b>VENTA 600</b>	DN 200–700 mm	8"–28"
<b>VENTA 1600</b>	DN 500–1600 mm	20"–64"



VENTA 150 transport box with grinding tools



VENTA 150 transport box with abrasive set

### Options:

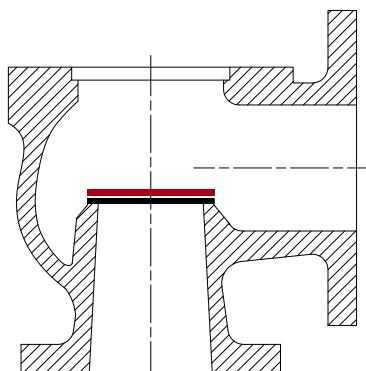
- Lapping equipment (lapping paste and lapping disks)
- Micro finishing film abrasives grit P80–1800 and 4000
- Working depth extensions
- Slight changes in working range
- Customized grinding tools
- Additional tools for grinding gate valve seats with VENTA 150 in work shop
- Grinding tools for tapered valve sealing surfaces with various angles (KVS tools)
- Stainless steel transport boxes for VENTA 300–600
- HDPE transport boxes for VENTA 50, 50 SV, 150, 150 SV

### Standard:

- VENTA machines are supplied complete with all tools, accessories and abrasives in metal boxes
- Spring loaded drive spindle to control working pressure



VENTA 150



### Advantage:

**VENTA tools are compatible with other unigrind machines:**

Spring loaded grinding adapters size 1–4 for stationary drill press, stationary grinding machines STM 500 and STM 800E.

### Comment:

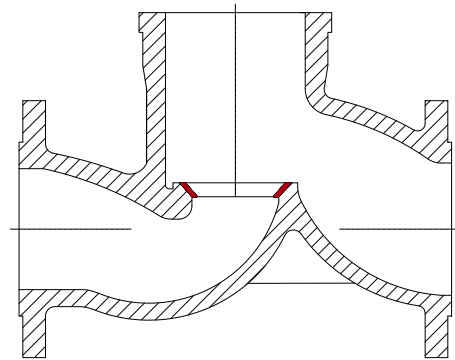
A large range of self-adhesive rings, disks and segments in quality aluminium oxide, silicon carbide and zirconium oxide available in various grits and DIAPLAN - CBN (= Cubic Boron Nitride) galvanic bonded high performance grinding heads are also available for the planet grinding disks.



VENTA 150 drive with grinding tools



VENTA 300 transport box with accessories



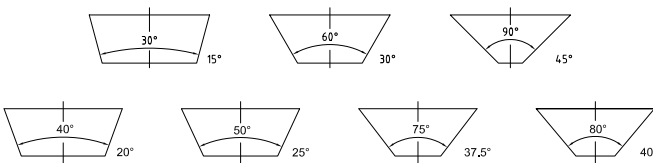
KVS

### Portable grinding machine for working on valves with tapered seats:

- Globe valves
- Control valves

### Standard:

- Angles: 30°, 60°, 90°
- Other available angles: 40°, 50°, 75°, 80°



### Drives:

- Electric 230 V/110 V AC, 50/60 Hz,
- Battery drive for KVS up to DN 150
- Pneumatic drive 5–7 bar (72–90 psi)

Type:	Working ranges:	Inches:
KVS 369/50	DN 8–50 mm	1/4"–2"
KVS 369/65	DN 8–65 mm	1/4"–2 1/2"
KVS 369/100	DN 8–100 mm	1/4"–4"
KVS 369/150K	DN 8–150 mm	1/4"–6"
KVS 369/80–300K	DN 80–300 mm	3"–12"
KVS 369/8–300K	DN 8–300 mm	1/4"–12"

**KVS 369 = for 30°, 60° and 90° seat angle grinding tools.**

### Comment:

The grinding tools for the corresponding angles and nominal width can also be combined according to the customer's individual wishes. The machine's working range can be extended with additional tools at any time.

### Options:

Other combination of angles or additional angles are available on customer request. Also slight changes in the working range are possible. Tool holders for working depth extension.



KVS 369/65 Transport box with grinding tools and with abrasive set



KVS Grinding tools, range DN 80–150 (3"–6" )

# PORTABLE GRINDING & LAPPING MACHINES

## ■ unigrind **KVS**



KVS 369/300K



KVS grinding on-site

### unigrind **KVS 369/150K** grinding machine with 3-jaw-chuck

#### unigrind **KVS 369/300K** grinding machine with 3-jaw-chuck

For the big sizes DN 6"–12" and the very deep valves we recommend to use the machine arm with upper gear housing and internal spring loaded grinding spindle.



KVS 369/150K Transport box with grinding tools and abrasive set

#### HAND GUIDED AIR MOTOR

#### 3-JAW-CHUCK

#### GUIDING TUBE FOR TOOL HOLDER

#### TOOL HOLDER

#### GRINDING CONE WITH ABRASIVE

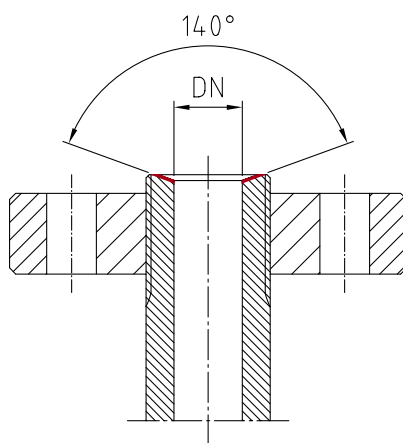


KVS 369/150 with 3-jaw-chuck

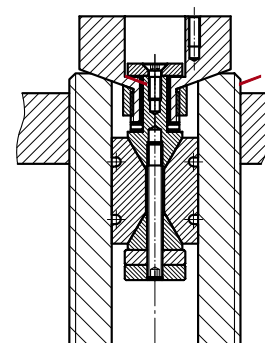
## ■ unigrind **KVS-LENS**



KVS-Lens Grinding sealing surface



Lensseat



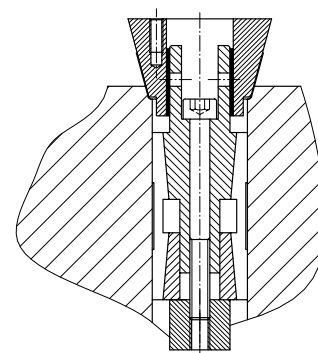
Lensseat 140°

### Grinding tools for working on tapered sealing surfaces for metallic lens sealing rings on:

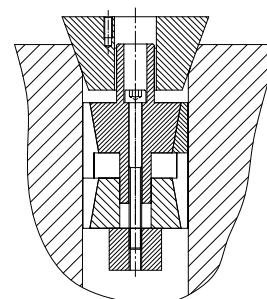
- High pressure pipes
- Flanges
- Valves
  
- Sealing Surface angle 140°
- Special design for TechLok and GrayLoc
- Working range: DN 10 – 300 (3/8"–12")
- Grinding tools according to DIN and other manufacturer standards
- Working ranges as per your request

### Comment:

Ranges of grinding tools are combined according to the customer's individual wishes.



Techlok



Grayloc



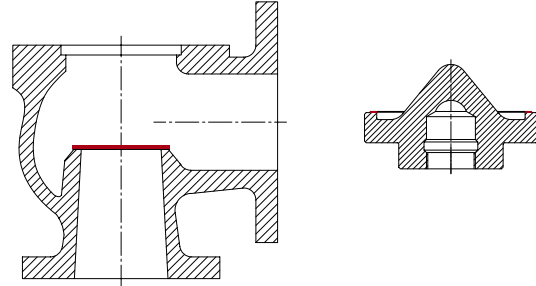
KVS-Lens Grinding tool



KVS-Lens Grinding tool



KVS-Lens Transportbox with Grinding tools



SVS 1 mounted on safety relief valve

### Portable grinding and lapping machine for working on sealing surfaces of safety (relief) valves and disks:

For grinding/lapping big valves and butt-welded valves the machine is mounted with 3-jaw chuck on the valve-housing.

Small valves and globes are done on the machine stand with centring device and pneumatic lifting device for the machine.

#### Working ranges:

DN 15–300 mm (1/2"–12")

#### Optional:

DN 10–400 mm (3/8"–16")

#### Advantages of SVS 1:

- Crosshatched grinding/lapping to achieve absolute seat flatness
- Accurate centring of the machine with the 3-jaw chuck
- Accurate and fast centring of small valves and disks on the machine stand
- Reproducible grinding/lapping results within minutes
- Easy and safe operation
- Pneumatic control unit with timer for setting grinding time
- Eccentricity adjustable 0–3 mm
- Machine stand with pneumatic cylinder

#### Drives:

- Electric 230 V/110 V AC, 50/60 Hz,
- Pneumatic drive 5–7 bar (72–90 psi)



SVS 1 grinding a valve on machine stand



SVS 1 Scope of delivery

## ■ unigrind **SLIM**



SLIM 600

### Portable grinding and lapping machine for working on sealing surfaces of:

- Gate valves
- Swing check valves
- Gate valve wedges and disks
- Valve flanges

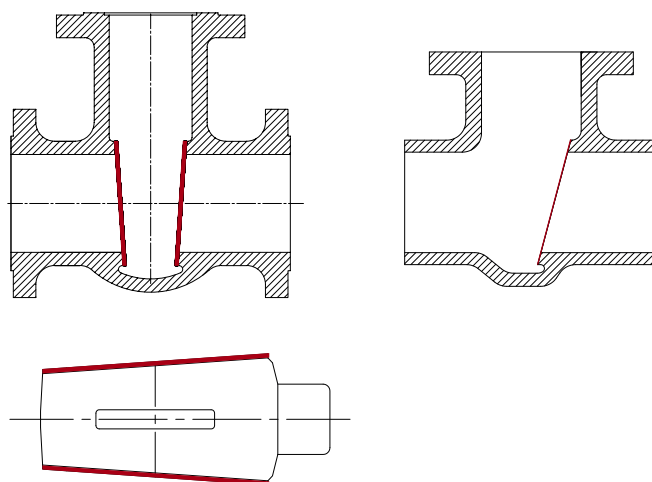
Both for on site or in workshop use.

### Drives:

- Electric 230 V/110 V AC, 50/60 Hz
- Pneumatic 90 psi (5–7 bar)
- Battery drive for SLIM 75

### Comment:

The type SLIM 300 and SLIM 600 are also available in combined versions for gate- and globe valves.



Type:	Working ranges:	Inches:
SLIM 32	DN 15–50 mm	1/2"–2"
SLIM 75	DN 20–80 mm	3/4"–3"
SLIM 150	DN 40–200 mm	1 1/2"–8"
SLIM 300	DN 50–350 mm	2"–14"
SLIM 300S	DN 65–450 mm	2 1/2"–18"
SLIM 600	DN 200–700 mm	8"–28"
SLIM 600S	DN 200–900 mm	8"–36"
SLIM 1000	DN 400–1600 mm	16"–64"

### Combined machines for gate and globe valves

SLIM 300-COMBI	DN 50–350 mm	2"–14"
SLIM 300S-COMBI	DN 65–450 mm	2 1/2"–18"
SLIM 600-COMBI	DN 200–700 mm	8"–28"
SLIM 600S-COMBI	DN 200–900 mm	8"–36"



SLIM 300 grinding of gate valve wedge



SLIM 600 Scope of delivery



SLIM 300



SLIM 150



SLIM 32

**Options:**

- Lapping equipment (lapping paste and lapping disks)
- Transport boxes stainless steel
- Swing check valve adapter-set
- Portable grinding table for gate valve wedges

**DIAPLAN BOR:**

High performance CBN (Cubic Boron Nitride) grinding heads.



SLIM 300 transport box with accessories



SLIM 1000 transport box with accessories

# PORTABLE GRINDING & LAPPING MACHINES



## ■ unigrind SHS 600

**unigrind PATENT**



SHS 600

**Portable high-speed gate valve grinding machine for on site or in shop use, for working on sealing surfaces of:**

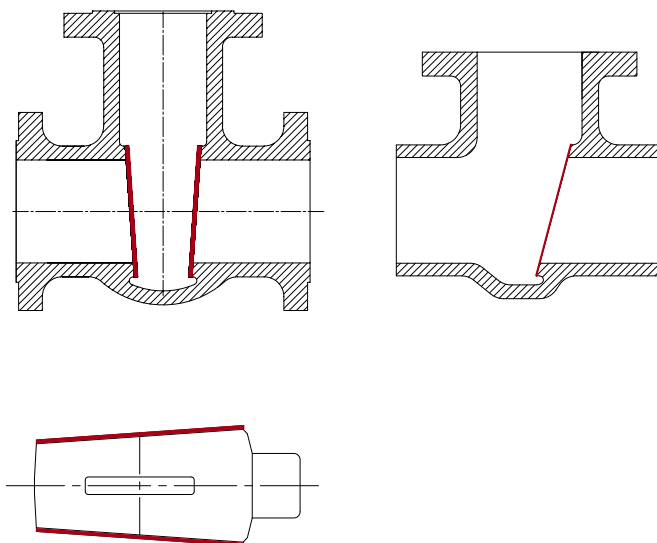
- Gate valves
- Swing check valves
- Gate valve wedges and disks

**Advantages:**

- Excellent removal rates thanks to high cutting speeds: 6–8 times above standard
- Absolutely flat surfaces
- Grinding heads rotate with 2000 rpm
- Free tilting SHS planet grinding disks
- Particularly applicable where clearance between seats and casing is very limited

**Drives:**

- Electric 230/110 V AC, 50/60 Hz
- Pneumatic 90 psi (5–7 bar)



Type:	Working ranges:	Inches:
SHS 600-1	DN 125–350 mm	5"–14"
SHS 600-2	DN 125–600 mm	5"–24"
SHS 600-3	DN 200–600 mm	8"–24"
SHS 600-4	DN 200–800 mm	8"–32"



SHS 600 grinding on-site



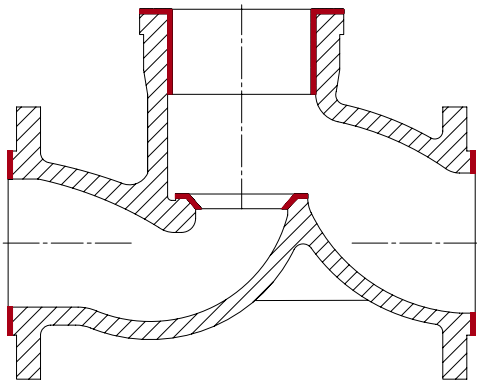
SHS 600 grinding of gate valve wedge



SHS 600 planet disk



SHS 600 planet disk



HTS 150

Type:	Working ranges:	Inches:
HTS 150	DN 50–250 mm	2" - 10"
HTS 400	DN 80–600 mm	3" - 24"
HTS 800	DN 200–1000 mm	8" - 40"

The max. working range of HTS 400 diameter 700 mm

### Portable High Speed grinding machine for flat and tapered sealing surfaces in:

Control valves, globe valves, check valves, safety relief valves

#### Advantages:

- Accurate centring and adjusting the machine
- Precise grinding of flat and tapered surfaces
- Control and correction of existing seat surfaces
- Automatic and manual feed

#### Drives:

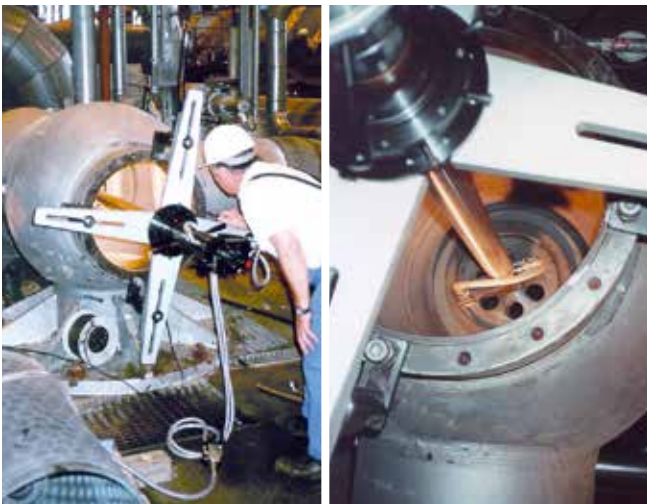
- Pneumatic 90 psi (5–7 bar)

#### Options:

- Grinding of cylindrical surfaces with bore grinding device
- Dressing device for grinding stones
- Cubic Boron Nitride grinding tools

#### Comment:

The working range of the HTS machine can be increased with additional tools. Slight changes in the working range are possible.



HTS 800 grinding on-site



HTS transport container with accessories



HTS 400 grinding on-site



## ■ unigrind **STM**



STM 500 SV-Combi with workbench

**Stationary valve grinding and lapping machine for sealing surfaces in gate, globe, check valves, gate valve wedges and safety relief valves.**

### STM 500 SV-Combi:

- Working range DN 10–300/350 (3/8"–12"/14")
- Max. flange diameter 600 mm (23,6")
- Max. valve height 700 mm (27,5")
- Tilt table size 500 x 500 mm (19,7")
- Tilting range +/- 13°
- Rotary table diameter Ø 500 mm (19,7")
- Eccentric adjustment 0–20 mm (0,8")

### STM 500 SV-1 (special for safety relief valves):

- Working range DN 10–300 (3/8"–12")
- Max. valve height 700 mm (27,5")
- With one rotary table diameter Ø 500 mm (19,7")
- Eccentric adjustment 0–20 mm (0,8")

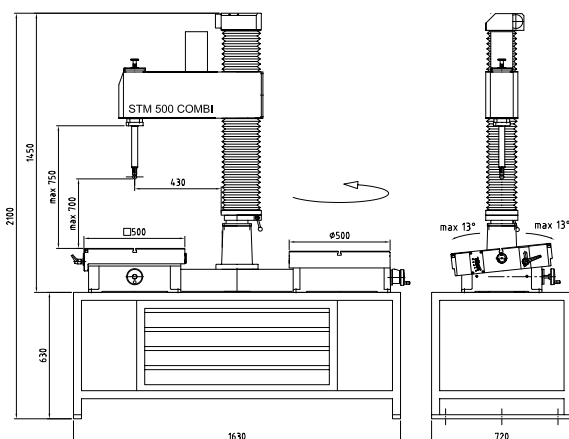
### STM 500 SV-2 (special for safety relief valves):

- Working range DN 10–300 (3/8"–12")
- Max. valve height 700 mm (27,5")
- With two rotary table diameter Ø 500 mm (19,7")
- Eccentric adjustment 0–20 mm (0,8")

### STM 500:

Also available only with one or two tilting tables.

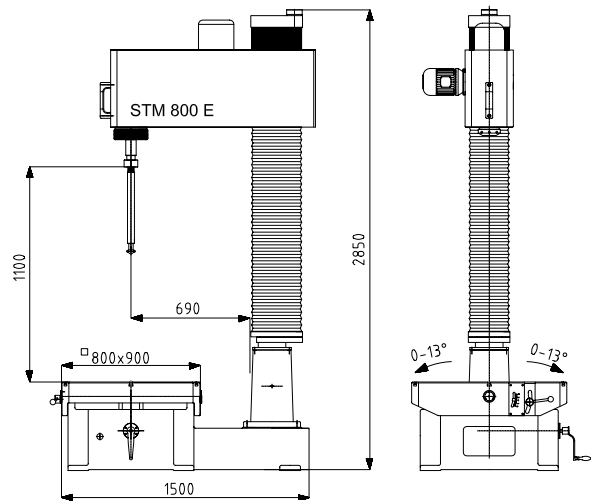
- Working range DN 10–350 (3/8"–14")
- Max. flange diameter 600 mm (23,6")
- Tilt table size 500 x 500 mm (19,7")
- Tilting range +/- 13°



Grinding gate valve on tilting table



Grinding safety relief valve on rotary table



### STM 800 E:

- Working range DN 15 – 1000 (1/2" – 40")
- Eccentric spindle drive adjustable 0 – 10 mm
- Max. flange diameter 1370 mm (56")
- Max. valve height on the table 1100 mm (43,3")
- Tilting table dimension 800 x 900 mm (31,5" x 35,4")
- Tilting range +/- 13°

### Comment:

The Model STM 800 E is available with 1 or 2 tilting tables as well as in combination with tilting- and rotary table.

STM 800 E, grinding gate valve



Eccentric spindle drive



STM 800 E Grinding of gate valve wedge



Grinding of gate valve



Tool cabinet with accessories

## ■ unigrind **KSM**



KSM 600-2

### Stationary grinding tables for surface grinding of:

- Gate valve wedges
- Wedge disks
- Valve disks
- Other valve parts

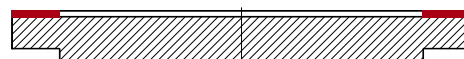
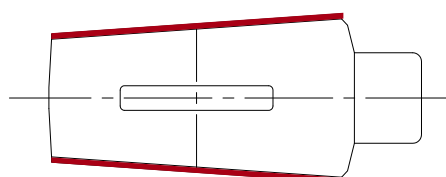
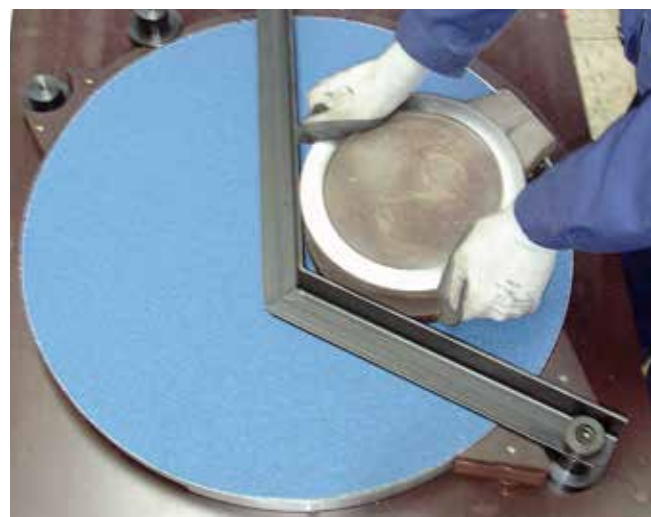
### Drives:

- Electric 400 V AC, 50/60 Hz, 3 kW
- Speed of table plate infinitely adjustable

### Comment:

Self-adhesive abrasive disks in different grits and quality are used on the grinding table.

Type:	Table plate:	Inches:
KSM 600	Ø 600 mm	23,6"
KSM 600-2	Ø 600 mm	23,6"
KSM 750	Ø 750 mm	29,5"
KSM 750-2	Ø 750 mm	29,5"
KSM 600-2, 750-2 with changeable grindingplate		



Grinding applications



UNT 2 + Adapter, Grinding gate valve wedge



UNT 2 + Adapter, Grinding gate valve seat

Spring loaded grinding adapter:	Working ranges:	Inches:
<b>SIZE 1 (MT 2)</b>	DN 15–400 mm	1/2"–16"
<b>SIZE 2 (MT 3)</b>	DN 80–700 mm	3"–28"
<b>SIZE 3 (MT 4)</b>	DN 80–900 mm	3"–36"
<b>SIZE 4 (MT 5)</b>	DN 400–1600 mm	16"–64"

### Grinding Adapters and Tilt Tables:

Grinding adapters as well as grinding, lapping and planet grinding disks are used for working of valve sealing surfaces on stationary drill press.

Tilt tables are recommended for accurate alignment of gate valves and wedges (continuous adjustable 0°–13°).

Tilt Table:	Table size:	Inches:
<b>UNT 1</b>	350 x 350 mm	13,8"
<b>UNT 2</b>	500 x 500 mm	19,7"
<b>UNT 3</b>	1000 x 1000 mm	39,4"
<b>UNT 4</b>	1500 x 1500 mm	59"



UNT 1



Adapter size 3



UNT 3



Planet disk



Planet disk

### Description:

For grinding/lapping of sealing surfaces in gate-, globe-, check valves and gate valve wedges on stationary drill press and radial drill machine.

The grinding heads of the planet disks are infinitely adjustable according to the required working diameter.

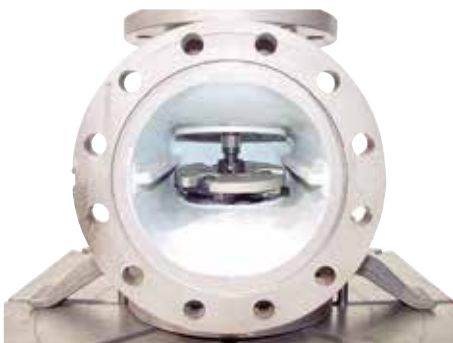
### Working ranges:

Planet grinding disks DN 65–1600 mm (2 1/2"–64")

Solid flat grinding disks DN 10–400 mm (3/8"–16")



Grinding of gate valve wedge



Grinding of gate valve seat



Planet disk



Planet disk

# TILTING TABLE FOR LATHE MACHINE

## ■ unigrind **SKD 500**



Tableplate with 4 T-Groves

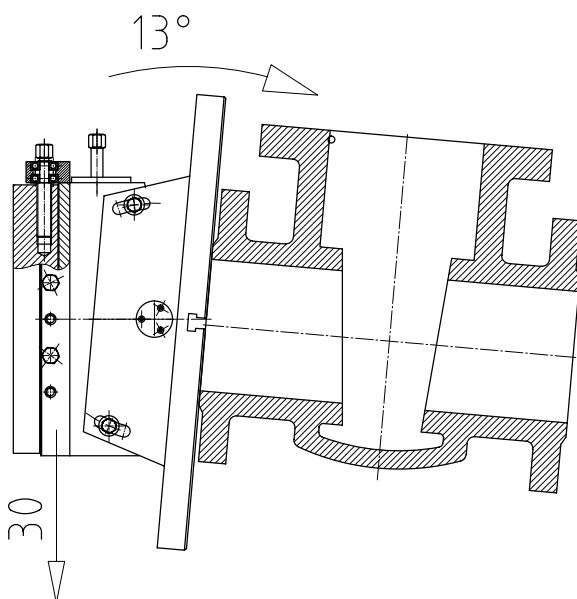
### SKD 500:

Tilting table for precise alignment and machining of gate valve wedges and seat in gate valve bodies.

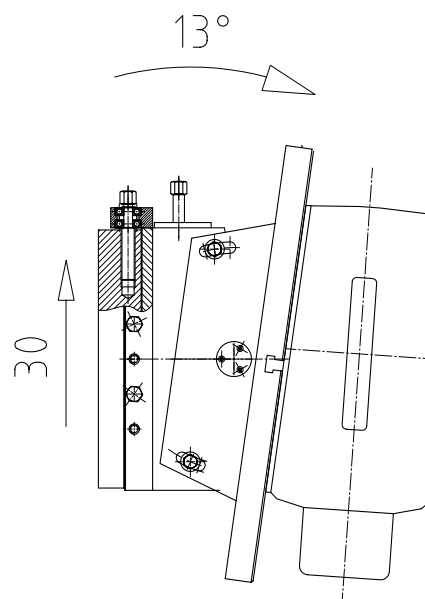
- Mounting flange for fixing on the lathe machine
- Table plate Ø 500 mm with 8 T-Groves,
- Angle infinitely adjustable 0–13°.
- Radial adjustment of seat surface to the machine centre max. 30 mm



Adjusting the tilting angle with digital measuring device



SKD 500 tilting table with gate valve body

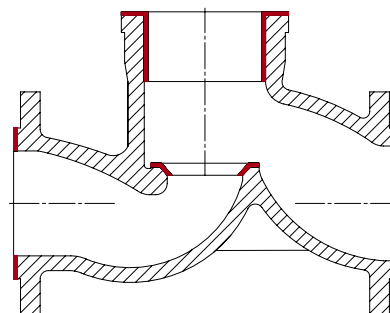


SKD 500 tilting table with gate valve wedge

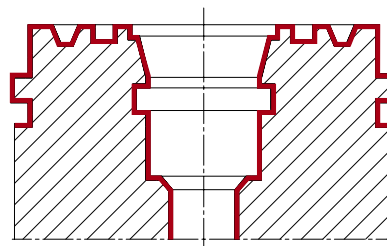
## ■ unigrind MD



MD 1 Machining of globe valve seat



Machining applications for MD machines



**Portable on-site boring and facing machine for precision machining of valve seats, pressure seal areas, bores and flanges, also for:**

- Compressor casings
- Turbine casings
- Pump casings

**Drives:**

- Electric 230 V AC, 50/60 Hz
- Pneumatic 90 psi (5–7 bar)
- Hydraulic

**For MD 1 to MD 3:**

- Automatic and manual axial feed: infinitely adjustable

**For MD 250 to MD 3:**

- Automatic radial feed

**Optional available:**

- High speed grinding device
- Taper boring heads
- Spindle extensions
- Extended spindle length
- Custom made cutting and grinding tools



MD with grinding device

Type:	Working ranges:	Inches:	Workingdepth:	Inches:
MD 250	to Ø 400 mm	15,7"	200 mm	7,9"
MD 1	to Ø 400 mm	15,7"	430 mm	16,9"
MD 2	to Ø 600 mm	23"	600 mm	23"
MD 3	to Ø 1000 mm	39,4"	600–1000 mm	23"–40"



MD 250 with boring and facing head



MD 250 with taper boring head



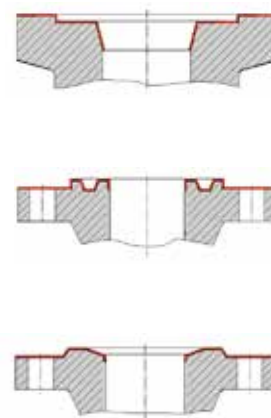
MD Application on site on a safety relief valve



MD Application on site, overhead machining

# PORTABLE FLANGE FACING MACHINES

■ **unigrind FD**



FD 1500



**Internal mounted flange facing machine for working on:**

- Flanges
- RTJ "V" grooves
- Tapered surfaces (e.g. for lens sealing rings)
- Weld prep
- Heat exchangers

**Features:**

- Facing and boring with continuous feed
- Toolpost 360° swivel
- Linear guide and ball screw for tool post

**Drives:**

- Electric 230 V AC, 50/60 Hz
- Pneumatic 90 psi (5–7 bar)
- Hydraulic

FD 1000

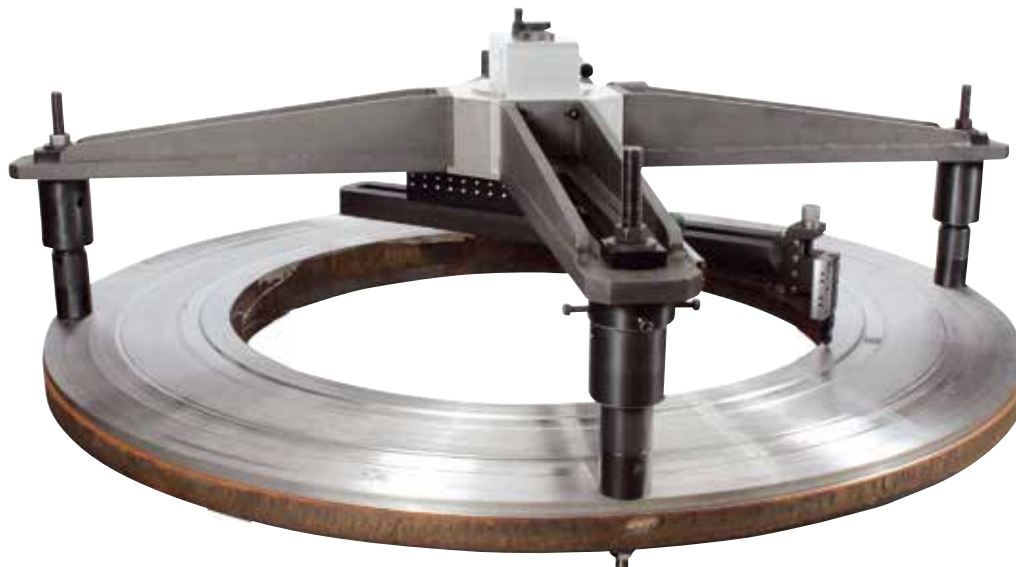


FD transport container with accessories

Type:	Working ranges:	Inches:
FD 600	∅ 50–600 mm	24"
FD 1000	∅ 150–1000 mm	40"
FD 1500	∅ 300–1500 mm	59"



Sample of application



FDA 1200



FDA 500

### External mounted flange facing machine for working on:

- Flanges
- RTJ "V" grooves
- Tapered surfaces (e.g. for lens sealing rings)

### Features:

- Facing with continuous feed
- Boring feed with striker
- Toolpost max. 120° swivel

### Drives:

- Electric 230 V AC, 50/60 Hz
- Pneumatic 90 psi (5–7 bar)
- Hydraulic

Type:	Working ranges:	Inches:
FDA 500	∅ 0–500 mm	0"–20"
FDA 1000	∅ 200–1000 mm	8"–40"
FDA 1200	∅ 300–1200 mm	12"–48"



facing machining



detail facing head



tapered machining

# SINGLE-PLATE SURFACE LAPPING MACHINES

## ■ unigrind ULM



ULM 1500 Machine view into the machine

**Single-plate surface lapping machine for precision lapping and polishing of surfaces from components such as:**

- Valve parts (valve disks and wedges)
- Compressor parts
- Mechanical seals of pumps

### Design:

- Grooved lapping plate made of high density cast iron (Optional other materials)
- Conditioning rings made of cast iron
- Tubular steel construction of machine base
- Three adjustable roller guide arms with guide rolls
- Work table vertically adjustable
- Timer (0–60 min) included
- Drive with infinite Speed setting via Frequency Converter
- Lapping compound mixing facility with adjustable feeding system. The lapping plate is continuously fed with lapping mixture via a pump system. The Volume of the lapping mixture fed is precisely adjustable by the pump speed.



Lapping with ULM, view from top



Conditioning rings with work pieces

# SINGLE-PLATE SURFACE LAPPING MACHINES

■ **unigrind ULM**



ULM 400 Stand machine

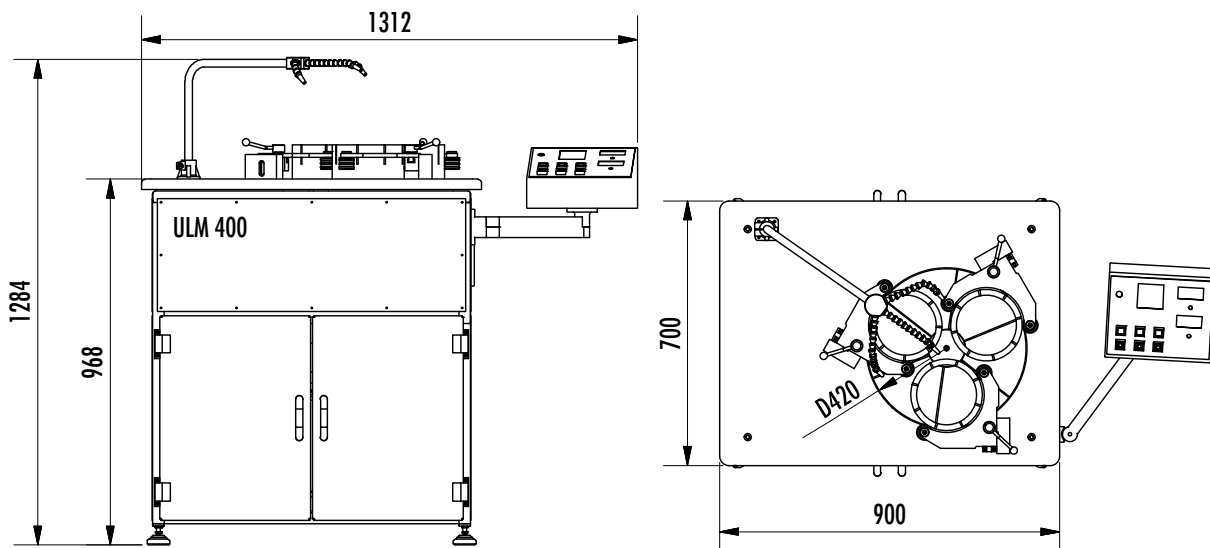


View into the machine



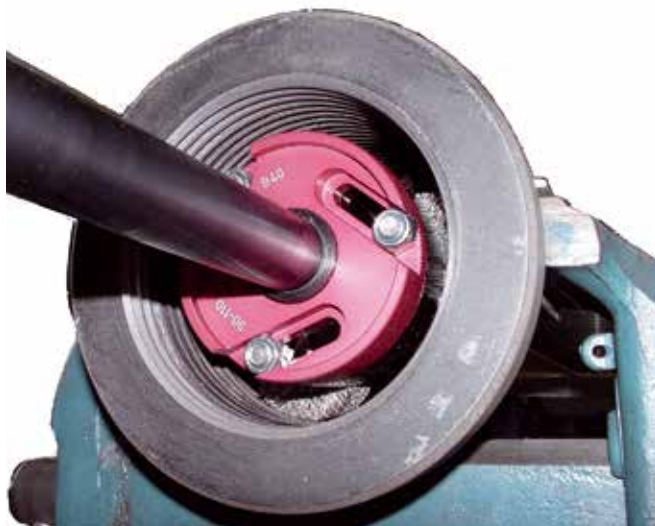
Control desktop

Type:	Lapping wheel: mm/Inch	Max. work piece: mm/Inch	Lapping wheel speed:	Drive:
<b>ULM 400</b>	Ø 420 mm / 16,50"	Ø 160 mm / 6,30"	15–100 rpm	0,55 kW
<b>ULM 600</b>	Ø 620 mm / 24,40"	Ø 250 mm / 9,85"	8–70 rpm	3 kW
<b>ULM 900</b>	Ø 920 mm / 36,20"	Ø 380 mm / 14,96"	7–50 rpm	7,5 kW
<b>ULM 1200</b>	Ø 1220 mm / 48,00"	Ø 510 mm / 20,00"	7–40 rpm	11 kW
<b>ULM 1500</b>	Ø 1510 mm / 59,45"	Ø 625 mm / 24,60"	7–40 rpm	11 kW



# THREAD CLEANING EQUIPMENT

## ■ unigrind IR/AR



IR female thread cleaning head

### Portable Female Thread Cleaning Equipment: Type IR

Mechanical cleaning of female threads in housing, nuts and blind holes by using adjustable cleaning heads with stainless steel brushes.

#### Working ranges:

8–180 mm thread diameter

#### Drives:

- Electric 230 V AC, 50/60 Hz
- Pneumatic 90 psi (5–7 bar)

#### Comment:

For sizes below diameter 60 mm single cleaning brushes, infinitely adjustable female thread cleaning heads for thread diameter 60–180 mm.

Type:	Working Range:	Type:	Working Range:
IR	Ø 8–72 mm	IR	Ø 90–110 mm
IR	Ø 60–72 mm	IR	Ø 110–130 mm
IR	Ø 70–80 mm	IR	Ø 130–150 mm
IR	Ø 80–90 mm	IR	Ø 150–180 mm



AR male thread cleaning head

### Portable Male Thread Cleaning Equipment: Type AR

Mechanical cleaning of male threads and bolts with infinitely adjustable cleaning heads with stainless steel brushes.

#### Working ranges:

M 10–110, 6–106 mm diameter

#### Drives:

- Electric 230 V AC, 50/60 Hz
- Pneumatic 90 psi (5–7 bar)

Vacuum device and extensions are available for the complete AR & IR tools. The thread cleaning equipment is supplied in a steel case with all accessories.

Type:	Working Range:	Working Range:
AR 124	M 10–M 24	Ø 6–22 mm
AR 2748	M 27–M 48	Ø 23–42 mm
AR 4868	M 48–M 68	Ø 43–64 mm
AR 6890	M 68–M 90	Ø 64–88 mm
AR 90110	M 90–M 110	Ø 86–106 mm



IR Cleaning brushes



IR transport box with accessories



AR Adjustable cleaning head

# THREAD CLEANING EQUIPMENT

## ■ unigrind ARG/SAM



ARG Male thread cleaning head

### Portable Male Thread Cleaning Equipment: Type ARG

Mechanical cleaning of male threads and bolts with infinitely adjustable cleaning heads with stainless steel brushes.

#### Working ranges:

M 10–120

#### Drives:

- Electric 230 V AC, 50/60 Hz
- Pneumatic 90 psi (5–7 bar)

Vacuum device and extensions are available for the complete ARG tools. The thread cleaning equipment is supplied in a steel case with all accessories.

Type:	Working Range:
ARG 10-27	M 10–M 27
ARG 22-54	M 22–M 54
ARG 36-68	M 36–M 68
ARG 52-88	M 52–M 88
ARG 86-120	M 86–M 120



SAM

### Stationary Male Thread Cleaning Equipment: Type SAM 80

Mechanical cleaning of male threads and bolts with infinitely adjustable cleaning heads with stainless steel brushes.

#### Drives:

- Electric 230 V AC, 50/60 Hz
- Pneumatic 90 psi (5–7 bar)

Vacuum device and extensions are available.

#### Working ranges:

Outer diameter of thread 10–80 mm (1/2"–3")  
Cleaning length 450 mm (18")

#### Optional extras:

Cleaning equipment for female threads to also clean nuts.



ARG Front view of the cleaning head



SAM Detail view



SAM Detail view

## ■ GENERAL DESCRIPTION

unigrind designs, manufactures and delivers test units for pressure and leak testing of any type of:

gate, globe, plug, ball, check, butterfly and safety relief valves according to the international standards.

**The selection of the test unit and clamping system is made according to:**

- Test types
- Valve sizes
- Valve types
- Test pressure according to valve size

**Test types:**

- Body Test
- Leakage test of spindle glands
- Leak test of valve seat
- Set pressure of safety relief valves

**Valve size:**

1/4"–40" (DN 10–1000 mm)

**Test pressures:**

- Water: 0–690 bar/0–10000 psi
- Compressed Air: 0–400 bar/ 0–5800 psi
- Nitrogen: 0–680 bar/0–9860 psi
- Other pressure ranges on request
- Vacuum 0 to -0,8 bar/0 to -11,6 psi

**Test Media:**

- Water
- Compressed air
- Nitrogen

**Design:**

- Stationary test units for work shop
- Portable test units for on-site use or installation in containers etc.
- Data Acquisition System for valve data, test results and test report
- Hydraulic clamping system with manual clamping force control according to test pressure
- Hydraulic clamping system with automatic proportional clamping force control
- Vertical hydraulic quick clamping system – the valves are clamped only by the flange
- Vertical hydraulic quick clamping system – the valves are clamped only by the valve flange or between the test table plates
- Automatic centring system for clamping brackets
- Horizontal clamping system
- Horizontal and tilting clamping system for testing in horizontal and vertical position
- Portable power packs for testing pipes and pressure vessel etc.

**Optional features:**

- Data Acquisition System for valve data, test results and test report
- Set pressure detection system for Safety Relief valves
- Analogue and digital indication of test pressures
- Hydraulic clamping system with automatic clamping force control
- Electric or pneumatic driven high pressure compressor and storage system
- Adapters for male and female thread connections
- Quick clamp tools for clamping and sealing of flanges
- Flow meters for leak detection
- 0–30 psi and 0–50 psi air actuator and positioner circuit, 1–26 V DC Power supply
- 4–20 mA controller, Data Acquisition system
- Digital bubble counter



TS 50-S



TS 30

**Test unit for testing of Safety Relief Valves, Control valves and Shut-Off valves:**

- Test unit with Vertical hydraulic quick clamping system
- The valves are clamped by the flange only
- Valves with thread connection are clamped with adapter flange
- For body testing of the valves it is required to close the outlet flange with a blind flange or special quick clamp and sealing tool
- Test units are also available in a combined version with two clamping devices of different design, working range or clamping force

**Hydraulic clamping systems are available with:**

18, 30, 55, 85 and 105 tons clamping force

**Optional features:**

- flow meters for leak detection
- 0–30 psi + 0–50 psi air actuator and positioner circuit
- 1–26 V DC Power supply, 4–20 mA controller
- Data acquisition system
- Hydraulic clamping system with automatic clamping force control
- Digital bubble counter
- Combined Test Units



TS 18 with 3 brackets

Type:	Working ranges:	Inches:
TS 18	DN 10 - 250 mm	3/8"–10"
TS 30	DN 10–250, 300, 400 mm	3/8"–16"
TS 50	DN 10–250, 400, 500, 600 mm	3/8"–24"
TS 80	DN 25–250, 400, 500, 600 mm	1"–24"
TS 100	DN 50–400, 600 mm	2"–24"

**Standard features:**

- Hydraulic clamping system
- Hydrostatic test circuit
- Air test circuit
- Nitrogen test circuit
- Bubble counter for leak test
- Safety interlock system
- Gauge calibration ports
- Pre-filling and filter system for test medium water



TS 100 and TS 30



TS 10-S



TS 50-S

**Test unit for testing Shut-Off valves, Control valves and Safety relief Valves:**

- Test unit with vertical hydraulic quick clamping system
- The valves will be clamped by the flange or between lower and upper test table
- Swing out top plate for clamping and testing valves from both sides
- Valves with welding ends are clamped between bottom and top plate by using special seal adapters
- For body testing the valves are clamped and sealed between bottom and top plate
- Test units are also available in a combined version with two clamping devices of different design, working range or clamping force

**Hydraulic clamping systems are available with:**

18, 30, 55, 85, 105 and 150 tons clamping force

**Optional features:**

- flow meters for leak detection
- 0–30 psi + 0–50 psi air actuator and positioner circuit
- 1–26 V DC Power supply, 4–20 mA controller
- Data acquisition system
- Hydraulic clamping system with automatic clamping force control
- Digital bubble counter

Type:	Working ranges:	Inches:
TS 18-S	DN 10–250 mm	3/8"–10"
TS 30-S	DN 10–250, 300, 400 mm	3/8"–16"
TS 50-S	DN 10–250, 400, 500, 600 mm	3/8"–24"
TS 80-S	DN 25–250, 400, 500, 600 mm	1"–24"
TS 100-S	DN 50–400, 600 mm	2"–24"
TS 150-S	DN 100–400, 600, 800 mm	4"–32"

**Standard features:**

- Hydraulic clamping system
- Hydrostatic test circuit
- Air test circuit
- Nitrogen test circuit
- Bubble counter for leak test
- Safety Interlock System
- Gauge calibration ports
- Pre-filling and filter system for test medium water



TS 80-S and TS 18-S



TSH 30-S

Type:	Working ranges:	Inches:
TSH 18-S	DN 10–250 mm	3/8"–10"
TSH 30-S	DN 10–250, 400 mm	3/8"–16"
TSH 50-S	DN 10–250, 500 mm	3/8"–20"
TSH 80-S	DN 25–250, 500 mm	1"–20"
TSH 150-S	DN 100–400, 600 mm	4"–24"

**Standard features:**

- Hydraulic clamping system
- Hydrostatic test circuit
- Air test circuit
- Nitrogen test circuit
- Bubble counter for leak test
- Safety Interlock System
- Gauge calibration ports
- Pre-filling and filter system for test medium water

**Hydraulic clamping systems are available with:**

18, 30, 55, 85, 105 and 150 tons clamping force

**Test unit for testing shut-off valves and control valves:**

- Test unit with horizontal hydraulic clamping system for clamping the valve at both flanges between the test tables
- For testing valves with butt-weld or socket-weld connections, special seal adapters are required
- In horizontal position it is easier to load the valve with actuators inside the clamping system
- Test units are also available in a combined version with two clamping devices of different design, working range or clamping force

**Optional features:**

- flow meters for leak detection
- 0–30 psi + 0–50 psi air actuator and positioner circuit
- 1–26 V DC power supply, 4–20 mA controller
- Data Acquisition system
- Hydraulic clamping system with automatic clamping force control
- Digital bubble counter



TSH 30-S



TSH 30-S with control valve



TS 30-S/TS 50

**Test unit for testing shut-off valves and control valves:**

- Test unit with horizontal hydraulic clamping system and 90 degree rotation for clamping the valve at both flanges between the test tables.
- The Clamping system is able to test valves in a horizontal, vertical or inclined position.
- Advantages of the rotating clamping system are: it is easier to load the valve with actuators inside the clamping system in the horizontal position. In a vertical position the evacuation of the air out of the valve is assured during filling with water.
- For testing valves with butt-weld or socket-weld connections, special seal adapters are required
- Test units are also available in combined version with two clamping devices of different design, working range or clamping force



TSHV 80-S

Type:	Working ranges:	Inches:
TSHV 30-S	DN 10–250 mm	3/8"–10"
TSHV 50-S	DN 10–250, 500 mm	3/8"–20"
TSHV 80-S	DN 25–250, 400, 500 mm	1"–20"

**Hydraulic clamping systems are available with clamping force of:**  
30, 55 and 85 tons

**Standard features:**

- Hydraulic clamping system
- Hydrostatic test circuit
- Air test circuit
- Nitrogen test circuit
- Bubble counter for leak test
- Safety Interlock System
- Gauge calibration ports
- Pre-filling and filter system for test medium water

**Optional features:**

- flow meters for leak detection
- 0–30 psi + 0–50 psi air actuator and positioner circuit
- 1–26 V DC Power supply, 4–20 mA controller
- Data Acquisition system
- Hydraulic clamping system with automatic clamping force control
- Digital bubble counter

TSHV 80-S



TSC 30



TSC 50

Type:	Working ranges:	Inches:
TSC 18	DN 10–250 mm	3/8"–10"
TSC 30	DN 10–250, 400 mm	3/8"–16"
TSC 50	DN 10–250, 400, 500, 600 mm	3/8"–24"

**Portable Test unit for testing of safety relief valves and shut-off valves:**

- Test unit with vertical hydraulic quick clamping system – the valves are clamped only by the flange
- Valves with thread connection are clamped with adapter flange
- For body testing of the valve it is required to close the outlet flange with blind flange or special quick clamp and sealing tools (hydraulic and manual)

**Hydraulic clamping systems are available with:**

18, 30, 55 tons clamping force



TSC 30

**Standard features:**

- Hydraulic clamping system
- Hydrostatic test circuit
- Air test circuit
- Nitrogen test circuit
- Bubble counter for leak test
- Safety interlock system
- Gauge calibration ports
- Pre-filling and filter system for test medium water

**Optional features:**

- Data acquisition system
- Digital bubble counter



TSC 18-S

**Portable Test unit for testing of shut-off, safety relief and control valves:**

- Test unit with vertical hydraulic quick clamping system
- The valves are clamped by the flange or between lower and upper test table
- Swing out top plate for clamping and testing valves from both sides
- Valves with thread connection are clamped with adapter flange
- Valves with welding ends are clamped between bottom and top plate by using special seal adapters
- For body testing the valves are clamped and sealed between bottom and top plate

**Hydraulic clamping systems are available with clamping force of:**  
18, 30, 55 tons

Type:	Working ranges:	Inches:
TSC 18 S	DN 10–250 mm	3/8"–10"
TSC 30 S	DN 10–250, 400 mm	3/8"–16"
TSC 50 S	DN 10–250, 400, 500, 600 mm	3/8"–24"



TSC 50-S

**Standard features:**

- Hydraulic clamping system
- Hydrostatic test circuit
- Air test circuit
- Nitrogen test circuit
- Bubble counter for leak test
- Safety interlock system
- Gauge calibration ports
- Pre-filling and filter system for test medium water

**Optional features:**

- flow meters for leak detection
- 0–30 psi + 0–50 psi air actuator and positioner circuit
- 1–26 V DC Power supply, 4–20 mA controller
- Data Acquisition system
- Digital bubble counter



TSC 50-S



TSC 50-S



TS 10 M



TS 10 M-H with air- and water test

**Portable Test unit for testing of shut-off valves and safety relief valves:**

- Portable valve test unit with manual vertical clamping system
- The valves are clamped by the flange with 2, 3 or 4 pc. clamping brackets only
- Valves with thread connection are clamped with adapter flange
- For body testing of the valve it is required to close the outlet flange with blind flange or special quick clamp and sealing tools (hydraulic and manual)

**Mechanical clamping system with clamping force of:**

10 tons

**Working range:**

1/4"–10"

**Pressure range:**

0–240 bar (0–3480 psi)

**Test systems TS 10 M:**

- Compressed Air and Nitrogen test circuit 0–240 bar (0–3480 psi)
- Bubble counter for leak test

**Test systems TS 10 M-H:**

- Compressed air and nitrogen test circuit 0–240 bar (0–3480 psi)
- Bubble counter for leak test
- Hydrostatic test circuit 0–240 bar (0–3480 psi)
- Water tank

**Standard features:**

- Stainless steel frame and control panel
- Galvanized: test table
- O-Ring plates
- Clamping brackets and screws
- Safety screen
- Tool cabinet with accessories

**For existing valve test units we supply hydraulic clamping systems for Safety Relief valves, shut-off valves and control valves.**

**Standard features:**

- Hydraulic clamping system, clamping force adjustable according to test pressure
- Requires only air supply 70–90 psi, and 230 V, 50-60Hz.
- Clamping brackets with adapter clamps
- Safety interlock system
- Interchangeable test table plates
- O-Ring seal plates

**Hydraulic clamping systems build with clamping force of:**

18, 30, 55, 85 tons

**Design of clamping systems:**

- Model TS clamping by the flange alone
- TS-S clamping by the flange and with swing out top plate and stem screw for clamping between bottom and top plate

**Comment:**

The Clamping system can also be supplied with stainless steel water reservoir for test medium.

Type:	Working ranges:	Inches:
TS 18	DN 10–250 mm	3/8"–10"
TS 18-S	DN 10–250 mm	3/8"–10"
TS 30	DN 10–250, 300, 400 mm	3/8"–16"
TS 30-S	DN 10–250, 300, 400 mm	3/8"–16"
TS 50	DN 10–250, 400, 500, 600 mm	3/8"–24"
TS 50-S	DN 10–250, 400, 500, 600 mm	3/8"–24"
TS 80	DN 10–250, 400, 500, 600 mm	1"–24"
TS 80-S	DN 10–250, 400, 500, 600 mm	1"–24"



TS 100-S



TM 900



TS clamping systems



TSP 20-250-G60 with water tank



TSP 20-340

**Pressure ranges:**

0-100	bar	1450	psi
0-240	bar	3480	psi
0-400	bar	5800	psi
0-630	bar	9135	psi
0-1000	bar	14500	psi

**Required air supply:**

5-6 bar/70-85 psi

**Comment:**

other portable test systems on request

- Vacuum test 0 to -0,8 bar
- Leakage test 0 to 1000 l/min.

**Portable test unit is a fully-assembled unit, ready for installation. The test unit can be used in all applications where high pressure and low flow rates are required.**

**For example for testing of:**

pipes, vessels, valves etc.

**Standard features:**

- Water tank
- Available with 2 or 4 wheels
- Air driven water pump with wide adjustable pressure ranges
- Test circuit with pressure regulator, pressure gauge, shut-off and pressure release valve
- Air filter, water separator and pressure regulator
- Frame stainless steel



TSP 20-250 portable pressure test system without water tank



TSL 40 portable leakage test system

## TEST UNIT

# ■ unigrind DATA ACQUISITION SYSTEM



TS 100-S



TS 30/TS 30/TM 900

### Digital data acquisition system:

For data acquisition and test report generation a pre-installed, ready-to-use software package is used. A network version is also available. The communication in several languages is supported.

### System Characteristics:

The system comprises the data base for storing the results and the graphs obtained by testing.

Contains relevant general and technical data, results and graph if pressure values obtained during the test.

The test report which can be printed immediately after test, contains all required data and results, diagrams, data related to certainty of measurement and accuracy of measuring chain/equipment, identification, safety and protections are also provided.

### Standard Characteristic parameters for safety relief valves:

- Opening pressure (bar/psi)
- Maximum opening pressure (bar/psi)
- Closing pressure - point (bar/psi)
- Repeatability of results
- Seat leakage after closing
- Set pressure detection by lift and acoustic sensor (option)


### For shut-off and control valves:

- Test pressure
- Time
- Temperature
- Seat leakage



TS 30 with digital data system

unigrind GmbH & Co. KG  
Friedenstraße 97 • D-52224 Stolberg  
Phone: +49 2403 95050-0  
Fax: +49 2403 72113  
E-mail: info@unigrind.de  
Web: www.unigrind.de



### VALVE PRESSURE TEST REPORT

Place of testing: **Zweifall** Report Number: **7-PVT/16**  
Customer: **XXXX** Date of testing: **14.10.2016**  
Work order: **1912**

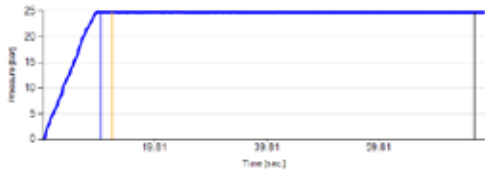
#### VALVE DATA

Manufacturer: **KSB** Valve No.: **6050-16-0049**  
Type of valve: **Knife Gate Valve** SV No.: **585F**  
DN: **100** Location: **Stolberg**  
PN: **25** System: **Werk II**

Material:  
Seat: **Stellite6** Disc / cone / wedge: **Stellite6** Body: **1.0619**

#### TEST DATA AND TEST RESULTS

Type of test: **Body test** TEST RESULTS  
Pressure at START: **24.75** bar  
Test pressure: **25.00** bar Pressure at END: **24.74** bar  
Test medium: **Water** Pressure diff.: **-0.01** bar  
Standard: **EN 12266-1**




Seat leakage test  
Test pressure: **5.00** bar  
Test medium: **Air**  
SEAT A: **3** Bubb./min  
Acceptance criteria: **Bubb./min**  
Test standard:

Remarks:

Tested by: \_\_\_\_\_ Inspector / witness: \_\_\_\_\_

unigrind GmbH & Co. KG  
Friedenstraße 97 • D-52224 Stolberg  
Phone: +49 2403 95050-0  
Fax: +49 2403 72113  
E-mail: info@unigrind.de  
Web: www.unigrind.de



### SAFETY VALVE TEST REPORT

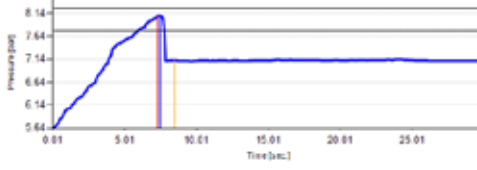
Place of testing: **Zweifall** Report Number: **15-SVT/16**  
Customer: **XXXX** Date of testing: **14.10.2016**  
Work order: **20160105**

#### VALVE DATA

Manufacturer: **Leser** Valve No.: **6050-16-0049**  
Type of valve: **Safety Valve** TAG No.: **585F**  
DN: **100** Location: **Stolberg**  
PN: **40** Device / System: **Werk II**  
Min. to Diam d0: **80** Material housing/body: **0.6025**  
Material seat: **1.4404** Screw height: **58**  
Material disc: **1.4122**

Spring data:  
Spring No.: \_\_\_\_\_ Length of loose spring L0:  
Outside diameter do: \_\_\_\_\_ Number of windings:  
Wire diameter dw: \_\_\_\_\_

#### TEST RESULTS

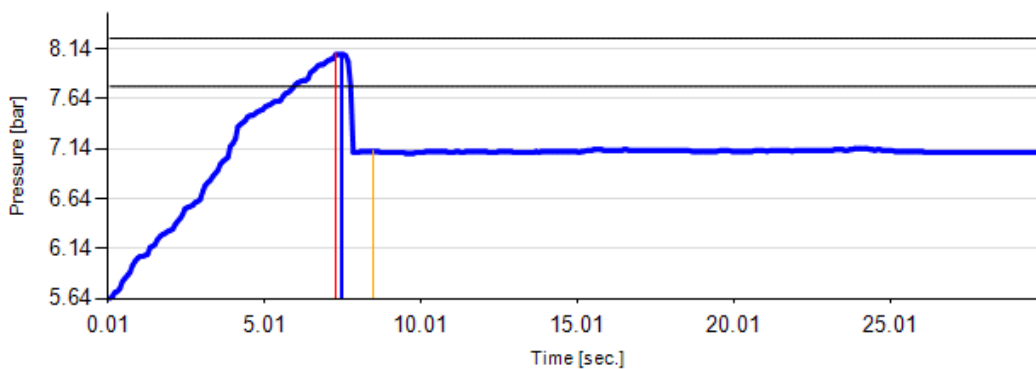


Nominal Set Press.: **8.00** bar Seat leakage test:  
Set pressure: **8.08** bar Seat leakage test: **0** bubb./min  
Allow. upper limit: **8.24** bar Test pressure: **3.47** bar  
Allow. lower limit: **7.76** bar Temp. at START: **/**  
Closing pressure: **7.11** bar Temp. at END: **/**  
Maximal pressure: **8.08** bar Test medium: **Air**  
Test medium: **Water** Acceptance criteria: **20** bubb./min  
Standard: **ASME C.S. VIII** Standard: **API527**

Remarks:

Tested by: \_\_\_\_\_ Inspector / Witness: \_\_\_\_\_

## TEST RESULTS



Nominal Set Press.:	<b>8.00</b>	<b>bar</b>	Seat leakage test:		
Set pressure:	<b>8.08</b>	<b>bar</b>	Seat leakage test:	<b>0</b>	<b>bubb./min</b>
Allow. upper limit:	<b>8.24</b>	<b>bar</b>	Test pressure:	<b>3.47</b>	<b>bar</b>
Allow. lower limit:	<b>7.76</b>	<b>bar</b>	Temp. at START:	<b>/</b>	
Closing pressure:	<b>7.11</b>	<b>bar</b>	Temp. at END:	<b>/</b>	
Maximal pressure:	<b>8.08</b>	<b>bar</b>	Test medium:	<b>Air</b>	
Test medium:	<b>Water</b>		Acceptance criteria:	<b>20</b>	<b>bubb./min</b>
Standard:	<b>ASME C.S. VIII</b>		Standard:	<b>API527</b>	
Remarks:					

# ■ unigrind MFM-2 AXIS MILLING MACHINE



Portable milling machine. Used on heat exchangers, pump and motor pads, ship, building and many more applications.

**Drive:**

- Pneumatic drive, electric drive, hydraulic drive

**Feed Stroke:**

- 1000/1500/2000 mm

**Feed:**

- 20–210 mm/Min.

**Millingspindle Revolution:**

- 550 R.P.M

**Axial stroke:**

- 100 mm

# unigrind PORTABLE DRILLING, BORING AND FACING MACHINE



Mobile boring and turning machine for all boring and turning operations during steel work.

**Maximum drill capacity:**

- Ø 65 mm

**with Boring/Facing head  
Facing and Boring capacity:**

- Ø 20–250 mm

**Axial stroke, manual  
(optional automatic feed):**

- 200 mm (other lengths are available)

**Machine spindle:**

- ISO 40 taper for mounting all kinds of standard tools

**Drives:**

- Electric 230 V, 50-60 Hz,  
Pneumatic 5–7 bar, Hydraulic

unigrind PB 250



MFM-2



MFM-2 Transport box with accessories

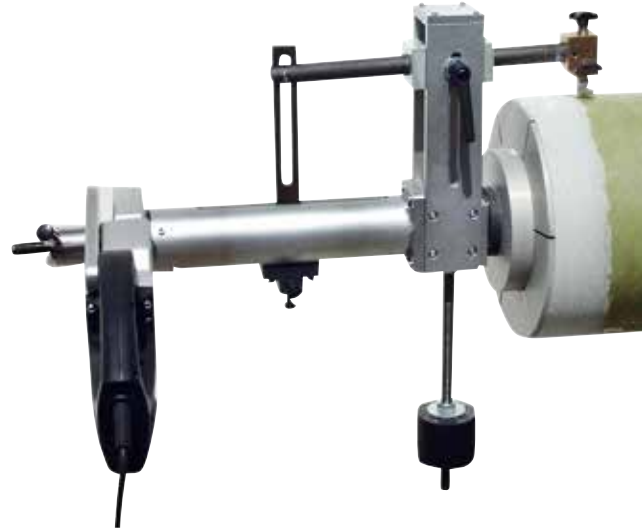


PB 250

■ unigrind PIPE SHAVER



RDS 300



RDS 300

Type:	Working ranges:	Inches:
RDS 300	DN 50–300 mm	2"–12"
RDS 400	DN 100–400 mm	4"–16"
RDS 600	DN 300–600 mm	12"–24"
RDS 800	DN 300–800 mm	12"–32"
RDS 900	DN 300–900 mm	12"–36"

**Portable pipe shaving machine for preparation for FRP pipes:**  
to produce taper and cylindrical pipe ends for adhesive joints

**Standard angles:**

- 0°, 1,5°, 1,75°, 2° and 2,5° (other or additional angles on request)

**Drives:**

- Electric 230 V AC, 50/60 Hz
- Automatic axial feed



RDS 800



RDS 800



VENTA Transport box with abrasive set



KVS Transport box with abrasive set

**High quality abrasives with various backings**

We supply a wide range of high quality abrasives with various backings for all applications in all required forms and dimensions.

**Abrasive:**

- Grits P 40–P 4000
- Rough grinding
- Finish grinding
- Polishing (lapping)

**Product range Form:**

- Grinding rings in all dimensions
- Grinding disks
- Grinding segments
- Sheets

**Backing:**

- paper, cloth, polyester and plastic film

**Abrasive:**

- Silicon carbide (SiC)
- Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>)
- Zirconium oxide (ZrO<sub>2</sub>)



Abrasive set



Planet disk with grinding rings



Grinding cone with abrasive



Grinding rings



Planet disk



Grinding gate valve wedge with planet grinding disk

**DIAPLAN BOR**

High performance CBN (Cubic Boron Nitride) grinding heads, cup wheels and grinding cones for the portable and stationary unigrind machines stand for:

- Grinding surfaces made of wear-resistant and corrosion-proof Cr-steel or CrNi-steel, Stellite, Inconel, Hastelloy, High alloy steel
- High and constant material removal
- Aggressive grinding
- High temperature and chemical resistant



CBN Grinding stone for facegrinding or circumference grinding



unigrind DIAPLAN BOR, grinding disk



CBN Grinding cones



### 40 ft or 20 ft High Cube overseas Containers equipped with:

- Electric installation with tube light and power outlets 230 V and 400 V
- Air Conditioning system for cooling and heating
- Compressed air installation 7 bar/100 psi, with quick coupler outlets
- Container thermal insulation of walls, back door and roof
- on request additional doors and windows
- Separate compartment with Ventilation system for Compressors, dryer and storage tanks for compressed air

### Specifications of valve test and machining equipment in the Containers:

- Universal pressure test unit for Safety Relief valves and Shut off valves, unigrind type TS and TS – S with 30 t and 55 t clamping force Range ½"–10" or ½"–16"
- Gas test system up to 300 bar/4350 psi
- Hydrostatic pressure test system up to 400 bar/5800 psi
- Seat leakage test of PSV's according to API 527
- Test unit for Control valves for testing according to ANSI FCI 70-2, unigrind TSH-S with 18 or 30 t clamping force
- Test units for Vacuum valves unigrind TM 600 and TM 900
- Combined Pressure test units for valves on Customer request
- Air compressor 7 bar/100 psi with air dryer and 200 litre storage tank
- High pressure Air Compressor 300 bar with 80 liter storage tank, to supply the test medium GAS/Air
- Pre-filling and filtering system with water reservoir for the test medium
- Lifting equipment to lift the valves with chain block 500 kg, 1000 kg, on request electric or pneumatic operated chain hoist
- Crane bridge with electric chain hoist max. capacity 2000 kg (optional)
- Work bench with vice and drawers, additional storage cabinets and shelf
- Portable Valve grinding and Lapping machines for Safety Relief valves, Globe valves, Control valves, Gate valves and Gate valve wedges, unigrind VENTA, KVS, SVS 1, SLIM and HTS
- On request Stationary Grinding and Lapping machines Type STM 500 SV, ULM 400 or KSM 600
- On request Portable Boring and Facing machines for Valves: unigrind MD 250, MD 1, FD 600, FD 1000



Separate compartment with Compressors





**WORKSHOP CONTAINER FOR VALVES**



unigrind GmbH & Co. KG • Frackersberg 16 • 52224 Stolberg • Germany  
Tel.: 02 402. 98 00 80 • Fax: 02 402. 72 11 2 • Mail: [info@unigrind.de](mailto:info@unigrind.de) • [www.unigrind.de](http://www.unigrind.de)