

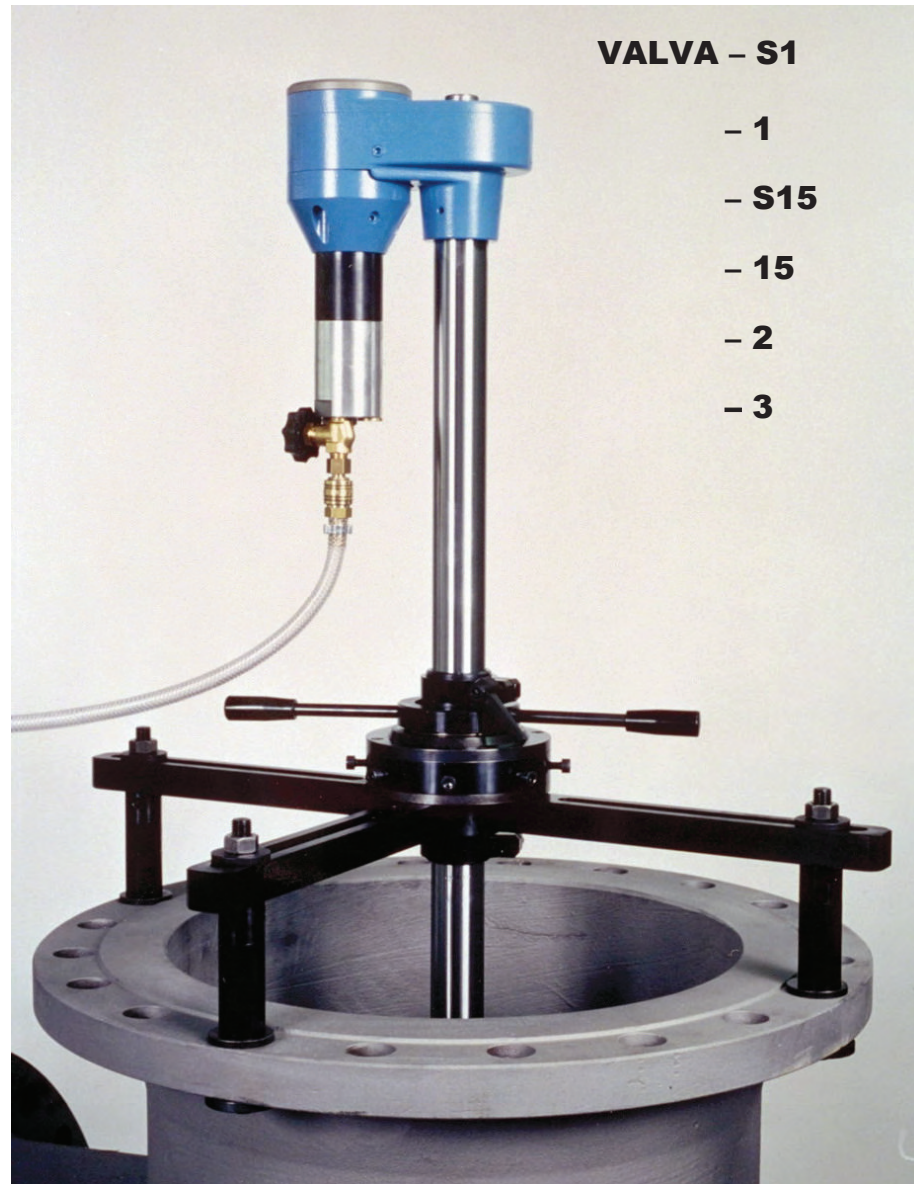
YOUR PARTNER WORLDWIDE



# VALVA series

**Portable machines for grinding and lapping of sealing faces in valves, valve disks, flanges etc.**

**DN 8 – 1600 mm  
(3/8"-64")**



**VALVA machines prove their strength everywhere where fast valve repair and economy are required.**

## Employing tomorrow's technology to machine today's valves

### EFCO – VALVA: An impressive Concept

- Wide-ranging use in conventional power stations, nuclear power stations, refurbishment companies, refineries, chemical plants, shipyards, sugar mills, paper mills, on ships, by valve manufacturers and many others.
- Long life due to the use of:
  - High-quality materials
  - Powerful drives
  - Wear-resistant tools
  - Stable light-weight design
- Good price/performance ratio
- High profitability
- Simple handling due to low weight
- Free-hand operation of the “small” machines
- One-man operation
- The live-spindle of the drives has a spring mounting. This facilitates a more controlled tool pressure to the sealing face.
- Universal installation systems enable:
  - Safe installation
  - Stable mounting
  - Fast alignment
- Drives can be supplied depending on requirements.
  - Electric drive 230/110 V, 50/60Hz
  - Rechargeable battery (Valva-S1)
  - Pneumatic drive



VALVA-S1



VALVA battery powered

## Specifications

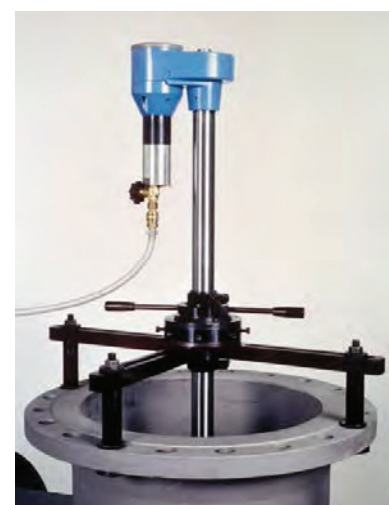
	<b>Valva</b>					
	<b>-S1*</b>	<b>-1</b>	<b>-S15</b>	<b>-15</b>	<b>-2</b>	<b>-3</b>
Nominal bore (DN - mm)	8-150 1/4"-6"	8-150 1/4"-6"	80-300 3"-12"	80-300 3"-12"	200-700 8"-28"	500-1600 20"-63"
Standard insertion depth (mm)	250 10"	250 10"	500 20"	500 20"	800 (1200) 32" (48")	1500 60"
Drive	electric 230/110 V, 50/60Hz / rechargeable battery* / pneumatic 6-7 bar					
Overall machine length (mm)	450 18"	550 22"	750 30"	750 30"	~1550 ~62"	~2600 ~104"
Grinding	●	●	●	●	●	●
Lapping		●		●	●	●
<b>Tools</b>						
Smooth grinding plates	●	●				
Smooth lapping plates		●				
Smooth grinding plates with roller guide	●	●	●			
Planetary gear				●	●	●
<b>Clamping</b>						
Machine stand		●				
Jaw chuck			●	●		
Manual	●	●	●			
3-point clamping					●	●
3-point centre clamping					●	



VALVA-1  
with machine stand



Jaw chuck



VALVA-2  
with 3-point centre clamping



## EFCO-VALVA - The Complete Solution

The VALVA machines, as do all EFCO products, provide a complete repair system.



VALVA-1 machine case



VALVA-1 accessory case



VALVA-2 with workshop trolley

Subject to technical change.

**EFCO Maschinenbau GmbH – Valve repair and testing equipment**

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries



# VSK

## Special tools for grinding conical valve seats

DN 8-300 mm (1/4-12")

VSK tools facilitate the quick repair of conical sealing faces on all shut-off and control valves with nominal diameter 8-300 mm.

VSK tools prove their strength everywhere where fast valve repair and economy are required:

- **Wide-ranging use:**  
in conventional power stations, nuclear power stations, refurbishment companies, refineries, chemical plant, shipyards, sugar mills, paper mills, on ships, by valve manufacturers and many others.
- **Long life due to the use of:**
  - high-quality materials
  - powerful drives
  - wear-resistant tools
  - stable light-weight design
- **Use independent of:**
  - width and hardness of sealing faces to be machined
  - installation position of fitting (horizontal, vertical)
  - type of fitting
- **Due to its low weight**
  - easy handling
  - hand-held operation
  - fast setting up



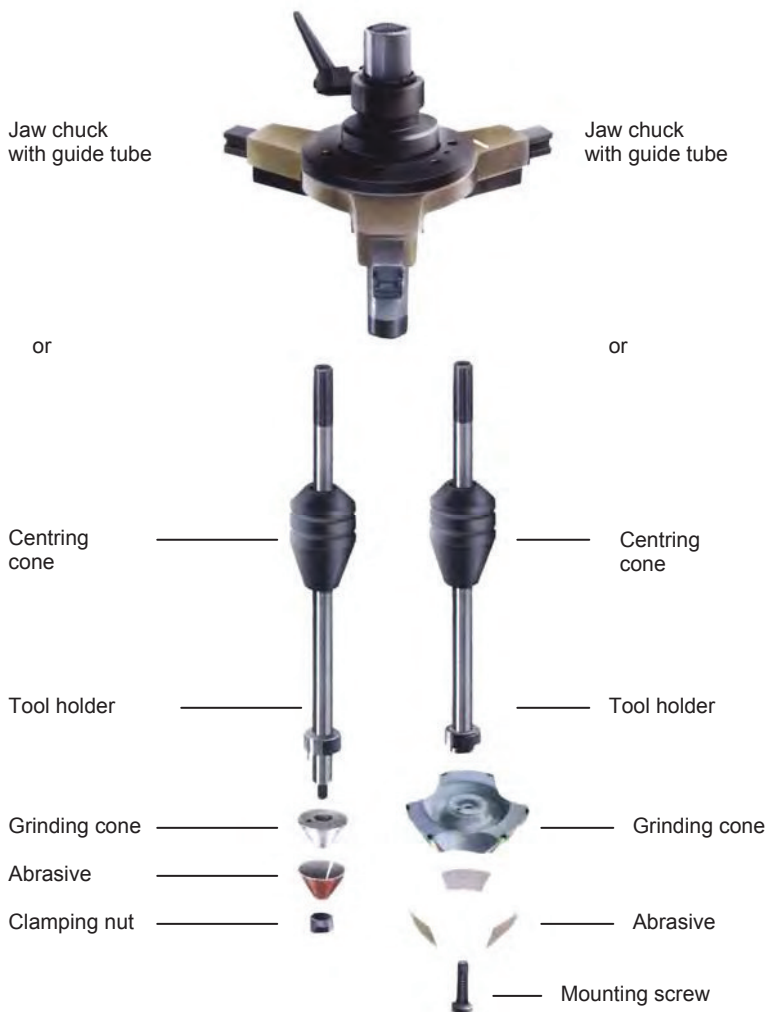
### EFCO VSK Tools An impressive Concept

- Simple handling
- Low weight
- One-man operation
- Wear-resistant tools
- Good price/performance ratio
- High profitability and efficiency
- Optimum material removal due to use of high-quality abrasives
- Simple fitting of tools
- Safe centring using centring cone or rim chuck, thus centred machining
- Hard grinding cones to which the abrasive is attached ensure precise angular geometry

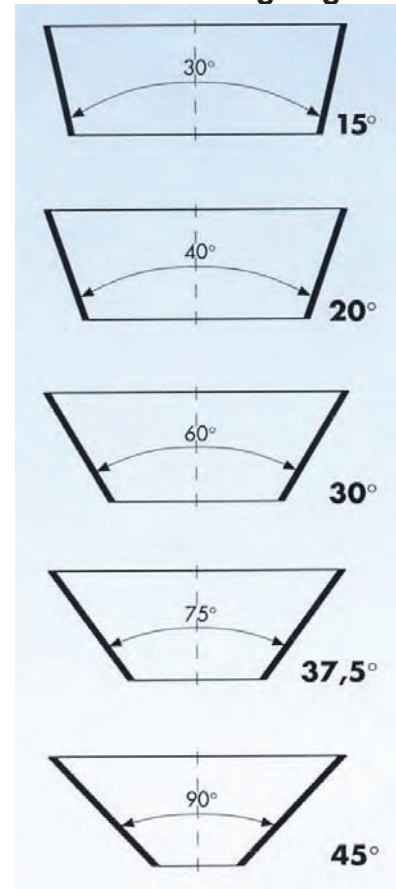


### VSK Specifications

	VSK-1	VSK-2	VSK-3	VSK-4	VSK-5
DN (mm)	8-50 (1/4"-2")	8-65 (1/4"-2.5")	8-100 (1/4"-4")	80-150 (3"-6")	80-300 (3"-12")
Drive	electric 230/110 V, 50/60Hz or pneumatic 6-7 bar				
Standard seating angle	30° (2x15°), 40° (2x20°), 60° (2x30°), 75 (2x37,5), 90° (2x45°) (other angles on request)				



### Standard seating angle



The EFCO VSK tools, as do all EFCO products, provide a complete repair system.

It is possible to combine various angles and sizes into a complete tool set as per your specification.



Subject to technical change.

### EFCO Maschinenbau GmbH – Valve repair and testing equipment

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

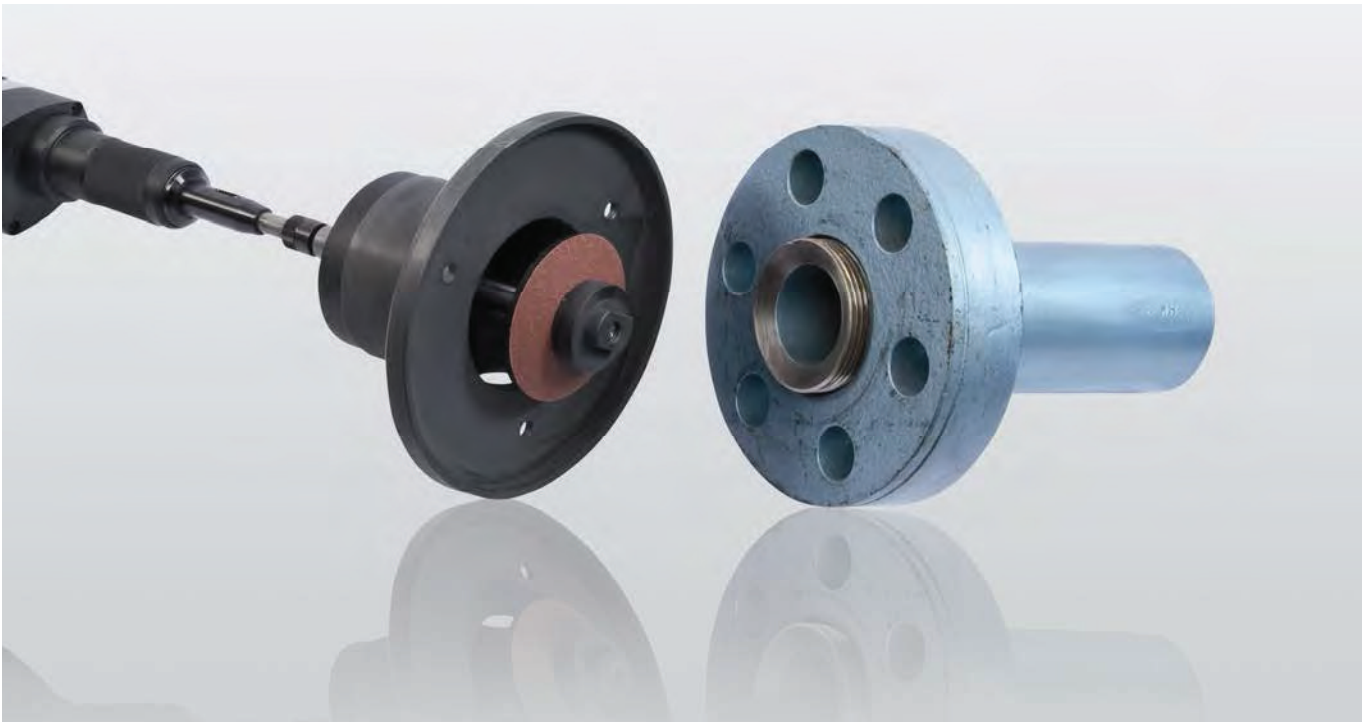
info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries

# LS

**Tools for the machining of pipe ends with 140° metallic lenticular gaskets  
(to BASF and DIN 2696)**

**DN 8 – 200 mm (3/8"-8")**



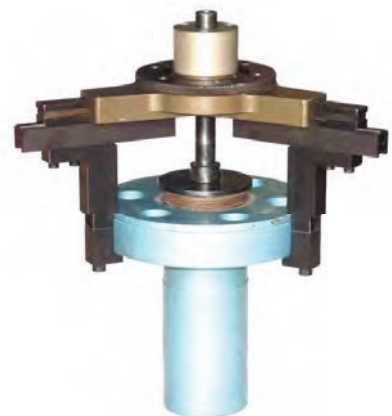
EFCO-LS with guide bush

Precise special guides provide for completely centred machining of the sealing face.

Guide bushes are used for small nominal diameters.

Even for large diameters, our special jaw chucks enable precise guiding of the grinding tool.

Our EFCO-LS tools are supplied complete with guide bush or rim chuck and an extensive assortment of various abrasive cloths in a plastic carry case.



EFCO-LS with jaw chuck

Subject to technical change.

**EFCO Maschinenbau GmbH – Valve repair and testing equipment**

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries



YOUR PARTNER WORLDWIDE

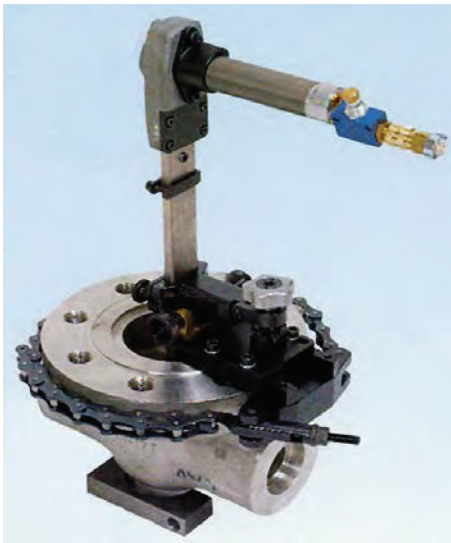


# SL Series

Portable machine for grinding and lapping of sealing faces in gate valves, gates and flanges

**DN 20 – 2000 mm**

**3/4" - 80"**



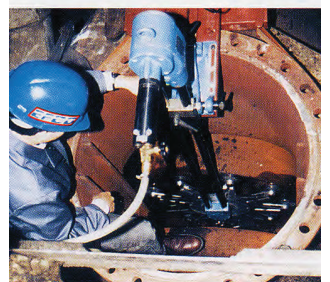
**SL – 05**

**SL – 1**

**SL – 15**

**SL – 2**

**SL – 3**

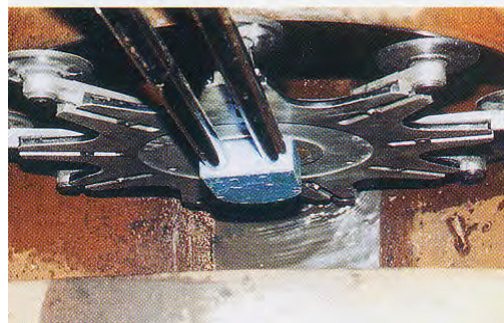
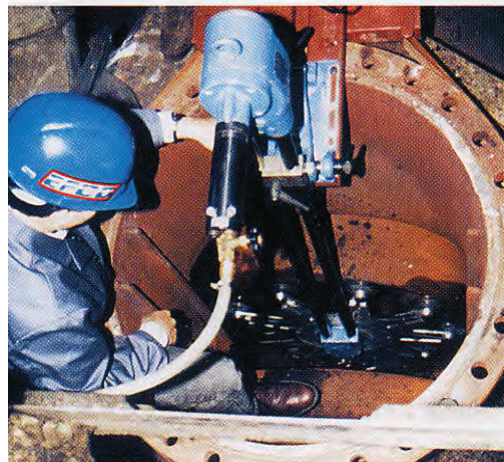


**Employing tomorrow's technology to machine today's valves**

THE PREMIUM-PRODUCTS – MADE BY EFCO – MADE IN GERMANY

## EFCO – SL - AN IMPRESSIVE CONCEPT

- **Wide-ranging** use in conventional power stations, nuclear power stations, refurbishment companies, refineries, chemical plants, shipyards, sugar mills, paper mills, on ships, by valve manufacturers and many others.
- **Long life due to the use of:**
  - High-quality materials
  - Powerful drives
  - Wear-resistant tools
  - Stable light-weight design
- **Good price/performance ratio**
- **Flexible use** of machine by means of various tool sets and accessories
- **Use independent of:**
  - Width and hardness of sealing faces to be machined
  - Installation position of fitting (horizontal, vertical)
  - Type of fitting (with or without sealing flange, oval or round)
- **Universal installation systems enable:**
  - Safe installation
  - Simple handling
  - Fast adjustment
  - Drives can be fitted on both sides and replaced quickly
  - Any insertion depth can be set.



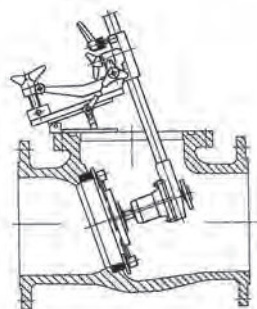
- **The rocker** - precision element to:
  - Mount the machine arm
  - Set the insertion depth
  - Easy to install
  - Fast fine adjustment at side
  - Setting of working pressure
  - Easy repeatability of optimum working pressure by fitting the digital display (optional)
  - Worldwide patent.



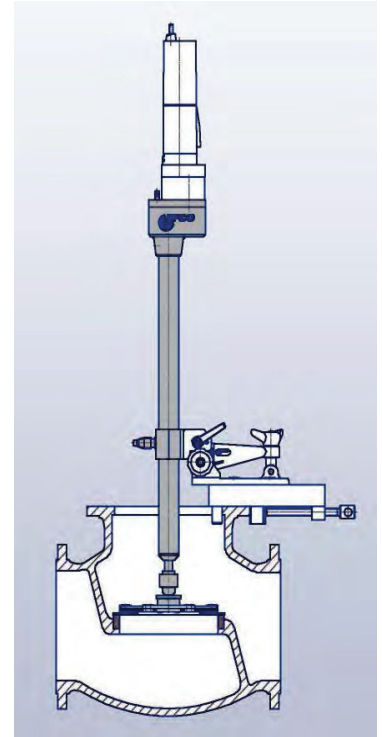
- **Swing-Check Adapter**  
Accessory for machining the sealing faces of non-return valves with large angle.
- **VB Device**  
Additional arm for grinding and lapping sealing faces in valve housings.
- **EFCO-SLA**  
Planetary gear with driven grinding spindles. Significantly increased performance - thus shorter machining times.



EFCO-SLA



Swing-Check Adapter



SL-15 with VB Device

## WELL THOUGHT-OUT MACHINING TECHNOLOGY

### Grinding (dry grinding)

- Using hardened and lapped grinding spindles and self-adhesive grinding paper or grinding film rings.
- On rotation of the planetary gear, the grinding spindles, which are guided in ball bearings, rotate around their own axis => optimum cross-hatch grinding.
- GSS - high-performance grinding disks for the removal of large-scale damage and use in hot valves.
- Optimum material removal.

### Lapping

- With grey iron lapping spindles.
- Lapping pastes in various grain sizes.



### **Optimum material removal due to:**

- High quality, self-adhesive, water-proof grinding papers and grinding films.
- Oil soluble lapping pastes based on boron carbide.



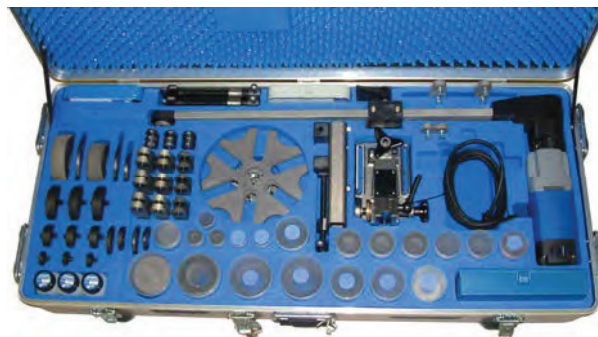
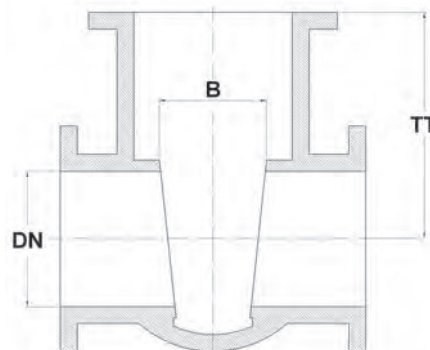
## EFCO-SL - The Complete Solution

The SL machines, as do all EFCO products, provide a complete repair system.

Specification	SL-05	SL-1	SL-15	SL-2	SL-3
Nominal bore (DN - mm)					
Standard	20-65 (3/4"-2 1/2")	32-150 (1 1/4"-6")	40-300 (1 1/2"-12")	200-700 (8"-28")	500-1600 (20"-64")
Special up to	80 (3")	200 (8")	450 (18")	900 (36")	2000 (80")
Immersion depth (mm) TT					
Standard	250 (9.8")	400 (15.7")	600 (23.6")	1000 (39.4")	1200 (47.2")
Special up to	400 (15.7")	600 (23.6")	1200 (47.2")	1600 (62.9")	2200 (86.6")
Min. spacing B	15 (0.59")	28 (1.1")	41 (1.6")	69 (2.7")	102 (4")
Drive	electric 230/110 V, 50/60Hz or pneumatic 6-7 bar				



EFCO SL-2



SL-15 machine case

Subject to technical change.

### EFCO Maschinenbau GmbH – Valve repair and testing equipment

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries

YOUR PARTNER WORLDWIDE



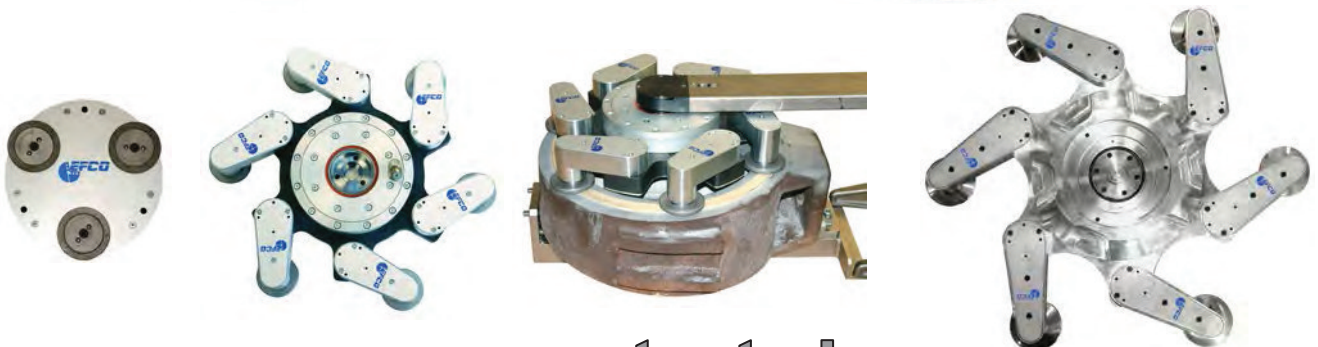
# HSL-15 / HSL-2

**Portable High-Speed Gate Valve Grinder**  
for the repair of sealing surfaces of gate valves and wedges

HSL-15 DN 175-400 mm (DN 7"-16")

HSL-2 DN 225-600 mm (DN 9"-24")

**Huge time savings  
up to 90% !**



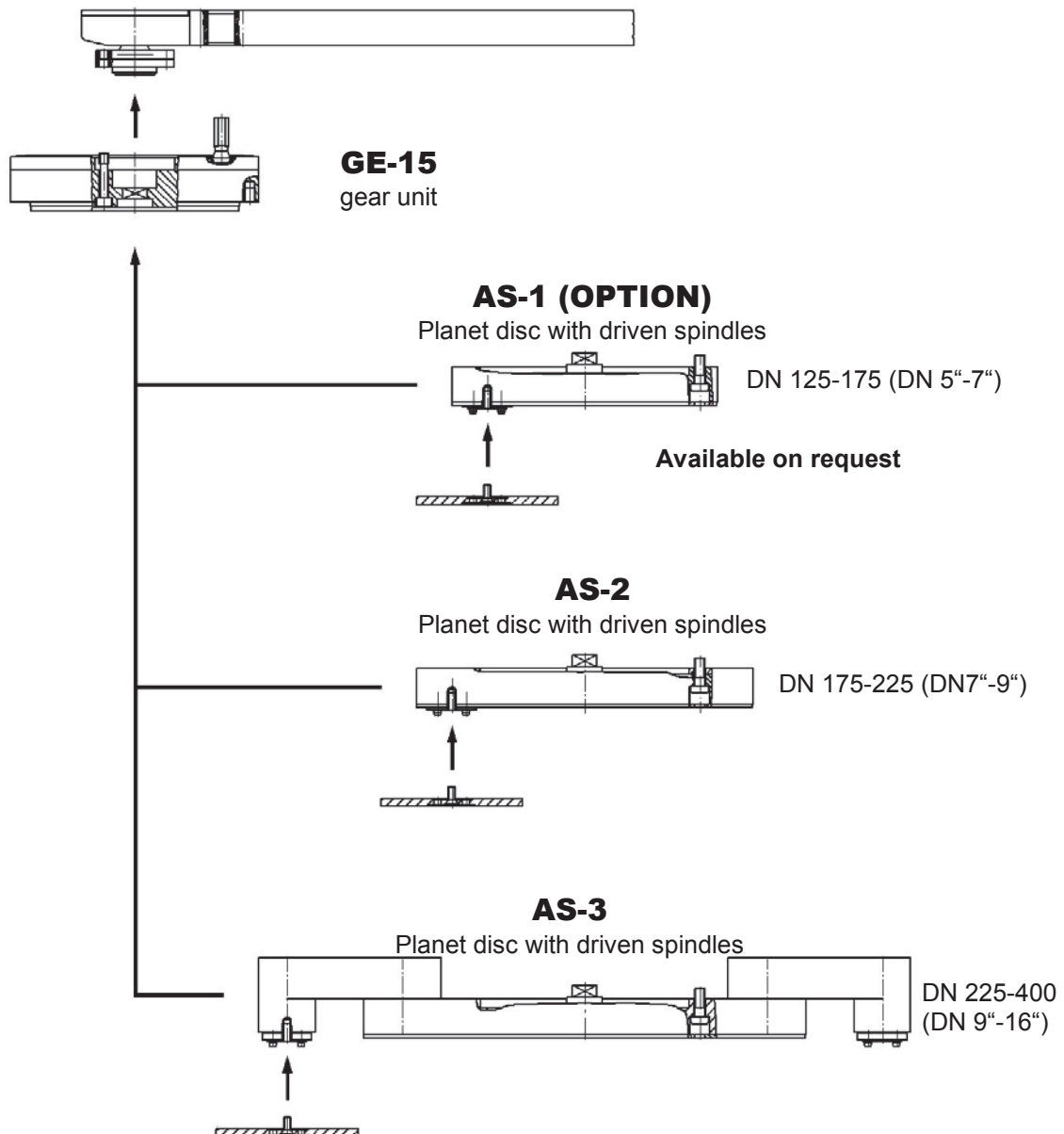
**patented**

THE PREMIUM-PRODUCTS – MADE BY EFCO – MADE IN GERMANY

## Our machines represent the latest technology in valve repair and set standards

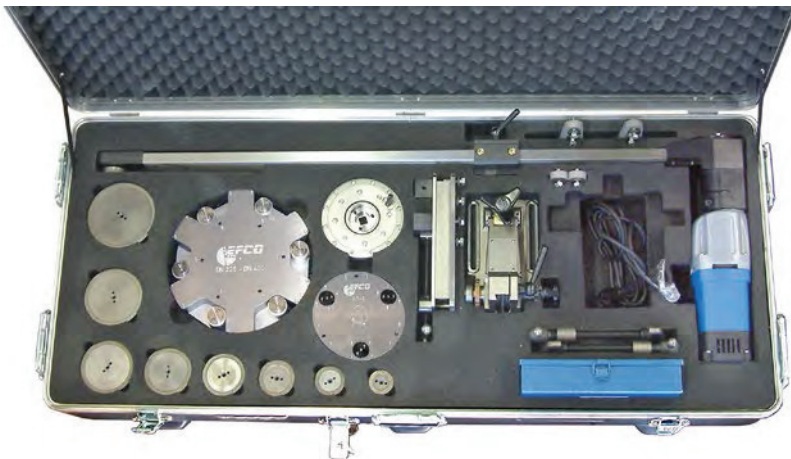
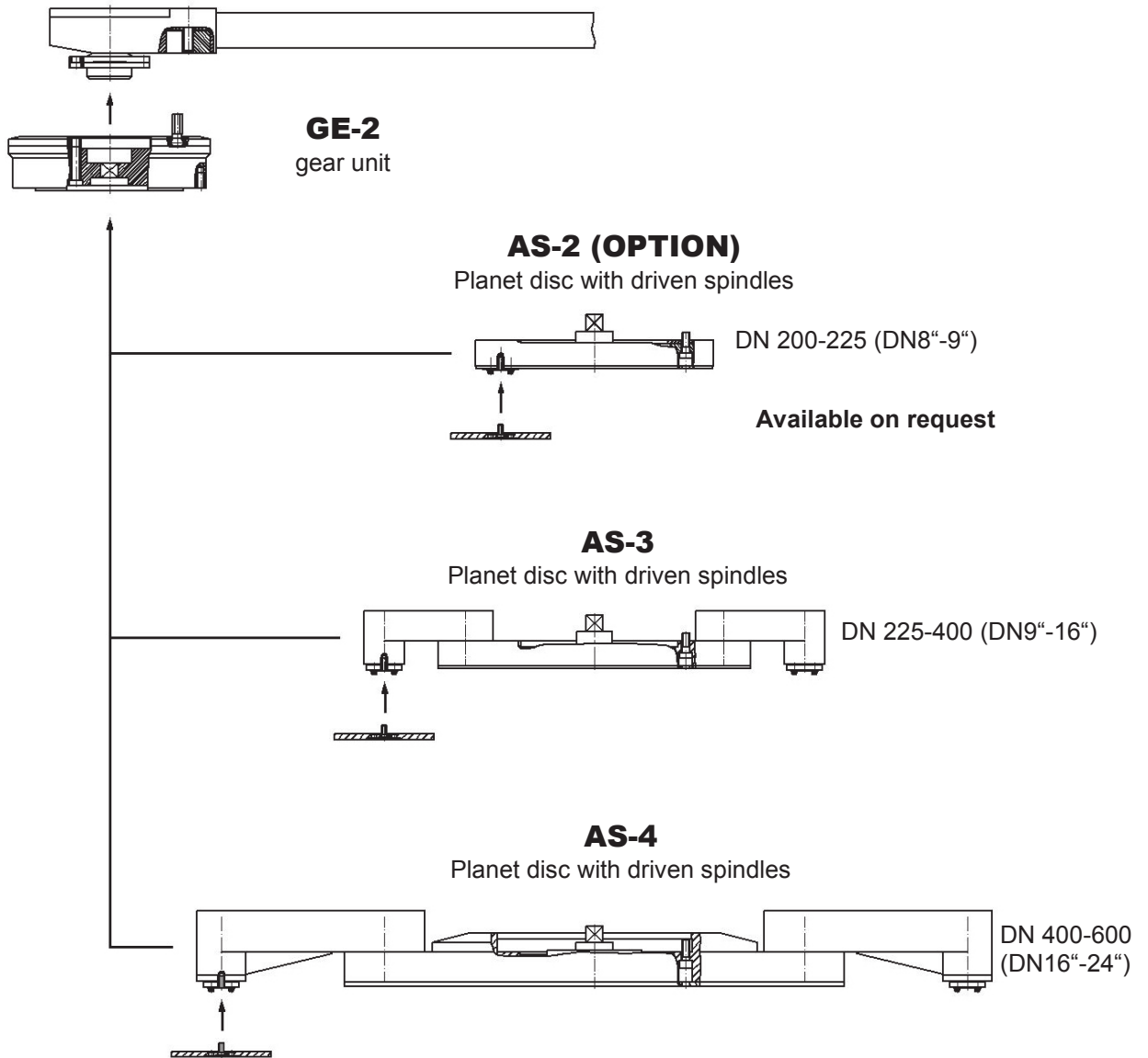
- Very high speed of the **mechanically driven grinding spindles** simultaneously to slow rotation of planet disc
- High grinding speed:..... up to 21 m/s (826.8"/s)
- Very high removal rate:..... up to 2 mm/h (0.08"/h)  
(grinding „Stellit 6 / 21“ Ø 350/325 mm (13.8"/11.8"))
- Grinding spindles with CBN-coating by standard
- Machining „Stellite 6 / 21 using driven CBN-grinding spindles, compared to removal rate with:
  - non-driven CBN-grinding spindles:..... ....8 – 10 times higher
  - non-driven grinding spindles with folio or paper abrasives:...40 – 50 times higher

### The modular design of the HSL-15





## The modular design of the HSL-2



The EFCO HSL-Machines, -like all other EFCO products-, are a complete repair system, designed for on-site or in-shop use.

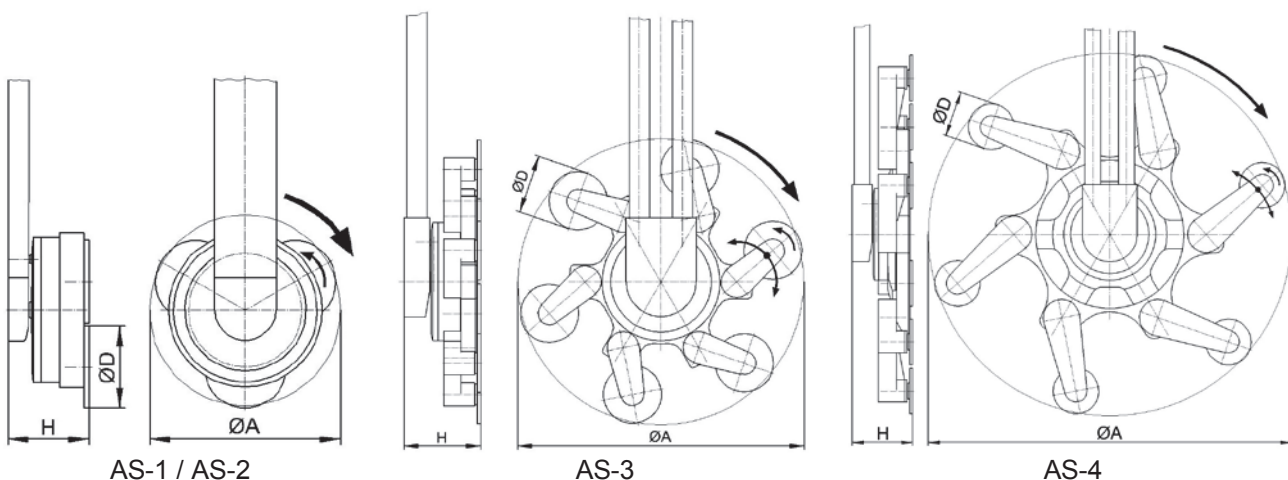
Each complete machine including all accessories is delivered in a plastic transport case.

← Example of a case

## Technical Details HSL

- Working range:
  - HSL-15** with GE-15:
    - AS-1 : DN 125-175 (DN 5"-7") (OPTION)
    - AS-2 : DN 175-225 (DN 7"-9")
    - AS-3 : DN 225-400 (DN 9"-16")
  - HSL- 2** with GE-2:
    - AS-2 : DN 200-225 (DN 8"-9") (OPTION)
    - AS-3 : DN 225-400 (DN 9"-16")
    - AS-4 : DN 400-600 (DN 16"-24")
  
- Height H:
  - Planet disc AS-1 + GE-15: 81,5 mm (3.2") (OPTION)
  - Planet disc AS-2 + GE-15: 77,5 mm (3.05")
  - Planet disc AS-3 + GE-15: 77,5 mm (3.05")
  - Planet disc AS-2 + GE-2 : 105 mm (4.13") (OPTION)
  - Planet disc AS-3 + GE-2 : 105 mm (4.13")
  - Planet disc AS-4 + GE-2 : 110 mm (4.3")

Outer grinding diameter A (mm) when using grinding spindle of diameter D (mm)														
	Ø40 (Ø1.57")		Ø50 (Ø1.97")		Ø60 (Ø2.36")		Ø80 (Ø3.15")		Ø90 (Ø3.54")		Ø100 (Ø3.94")		Ø120 (Ø4.72")	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
<b>AS-1</b>	-	153 (6")	-	163 (6.4")	-	173 (6.8")	-	193 (7.6")	-	203 (7.9")	-	-	-	-
<b>AS-2</b>	-	194 (7.6")	-	204 (7.9")	-	214 (8.4")	-	234 (9.2")	-	244 (9.6")	-	254 (10")	-	274 (10.8")
<b>AS-3</b>	250 (9.8")	376 (14.8")	252 (9.9")	386 (15.2")	262 (10.3")	396 (15.6")	282 (11.1")	416 (16.4")	292 (11.5")	426 (16.8")	302 (11.9")	436 (17.2")	322 (12.7")	456 (17.9")
<b>AS-4</b>	405 (15.9")	637 (25.1")	415 (16.3")	647 (25.5")	425 (16.7")	657 (25.9")	445 (17.5")	677 (26.7")	455 (17.9")	687 (27")	465 (18.3")	697 (27.4")	485 (19.1")	717 (28.2")



Subject to technical change.

### EFCO Maschinenbau GmbH – Valve repair and testing equipment

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries

03/2013 – 08

YOUR PARTNER WORLDWIDE



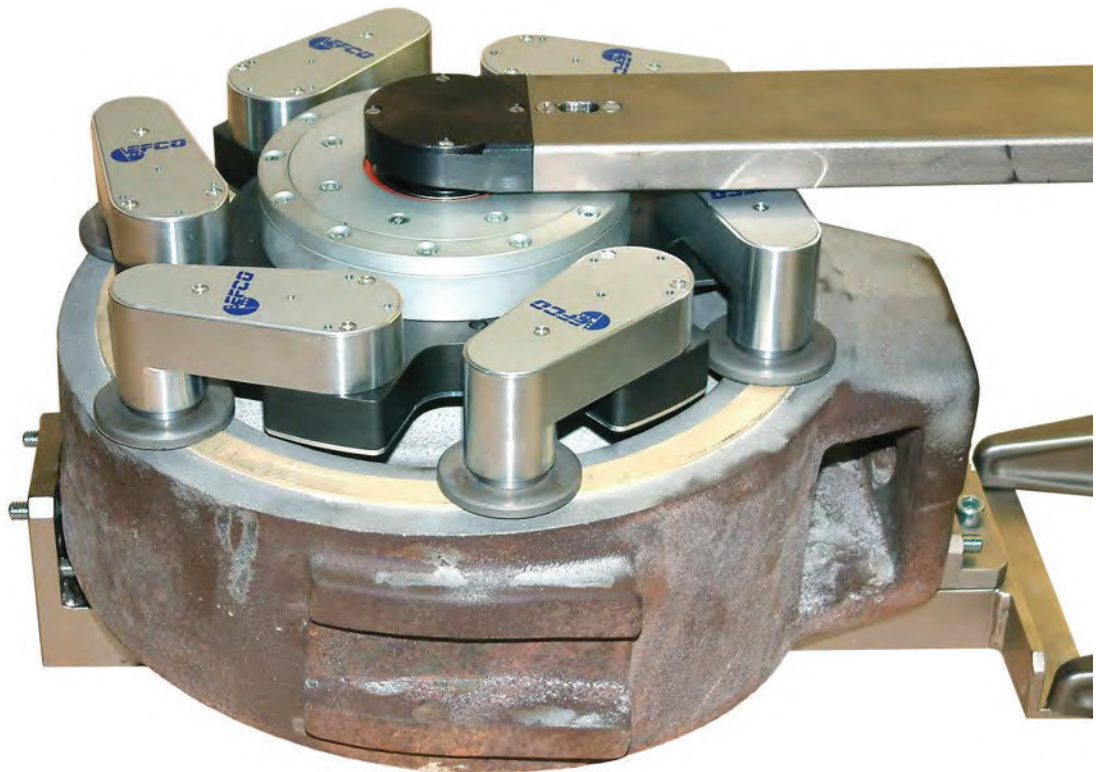
# SLA

**Planet-discs with mechanically driven grinding spindles as accessories to the EFCO- Gate Valve Grinding Machines SL-15 / SL-2**

SLA-15 DN 175-400 mm (DN 7"-16")

SLA-2 DN 225-600 mm (DN 9"-24")

**Huge time savings up to 90% !**



**patented**

---

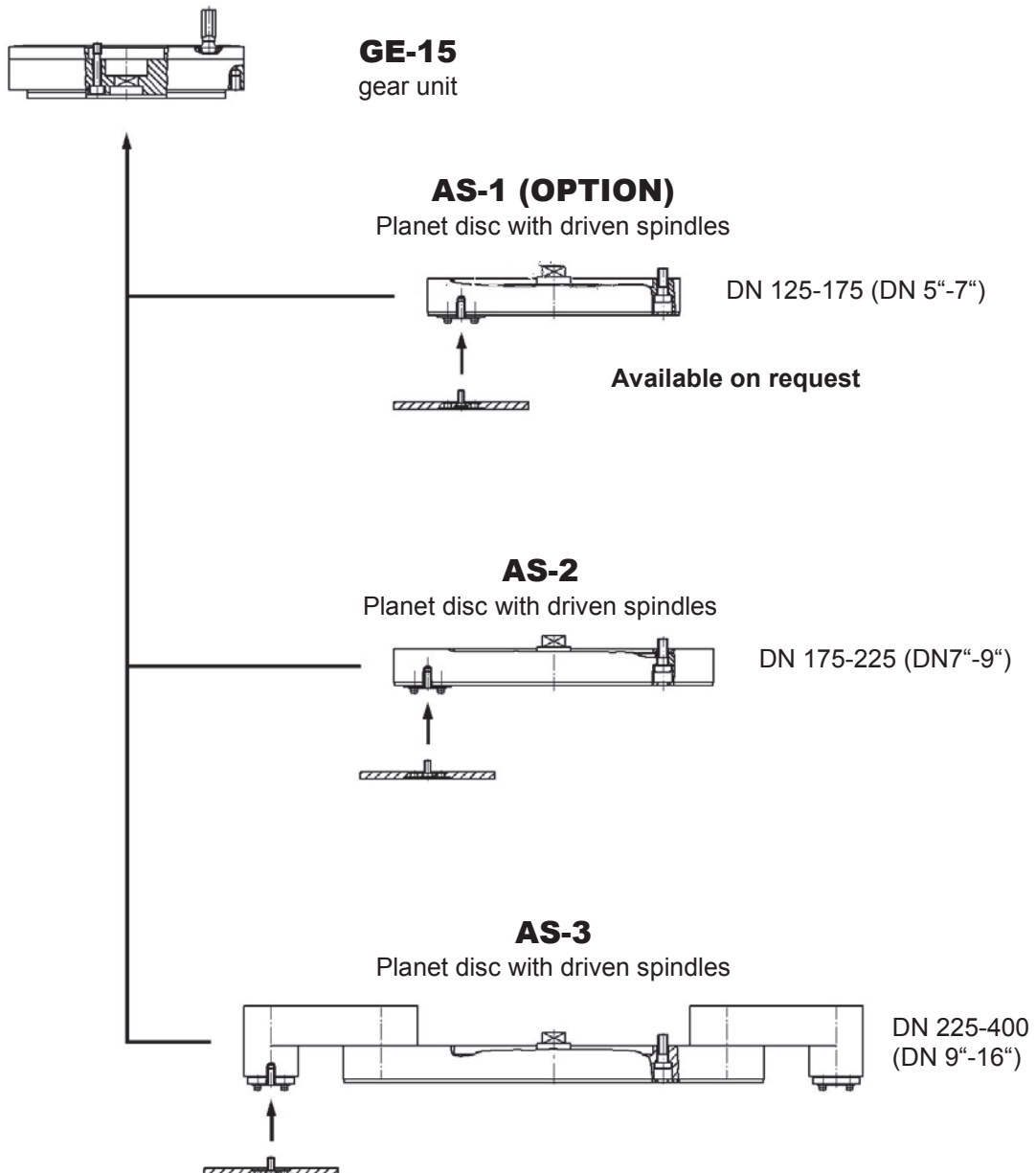
THE PREMIUM-PRODUCTS – MADE BY EFCO – MADE IN GERMANY



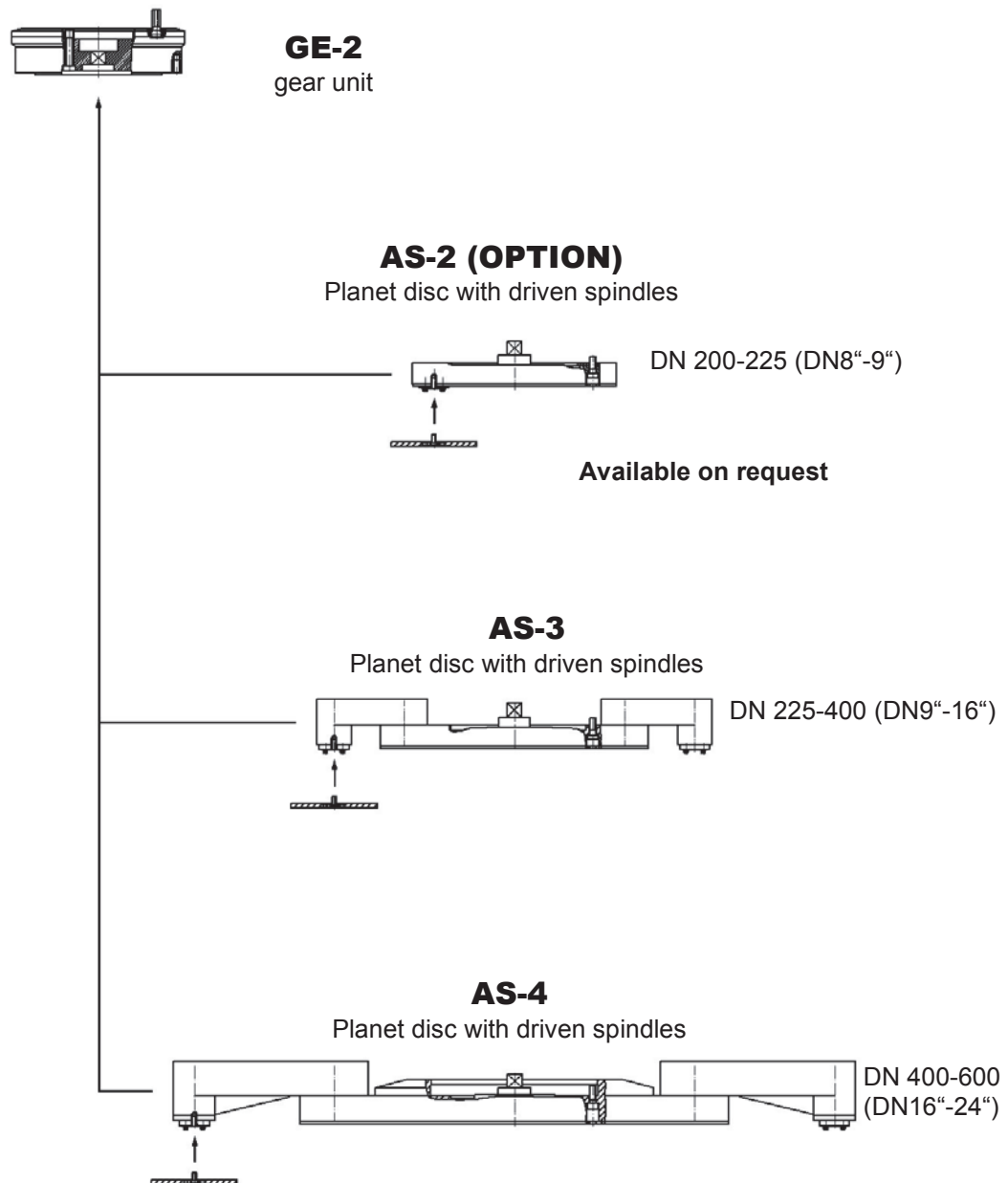
## Our machines represent the latest technology in valve repair and set standards

- Very high speed of the **mechanically driven grinding spindles** simultaneously to slow rotation of planet disc
- High grinding speed:..... up to 21 m/s
- Very high removal rate:..... up to 2 mm/h (grinding „Stellit 6 / 21“ Ø 350/325 mm)
- Grinding spindles with CBN-coating by standard
- Machining „Stellite 6 / 21“ using driven CBN-grinding spindles, compared to removal rate with:
  - non-driven CBN-grinding spindles:..... 8 – 10 times higher
  - non-driven grinding spindles with folio or paper abrasives:...40 – 50 times higher

### The modular design of the SLA-15



## The modular design of the SLA-2



The EFCO SLA-Tools, -like all other EFCO products-, are a complete repair system, designed for on-site or in-shop use.

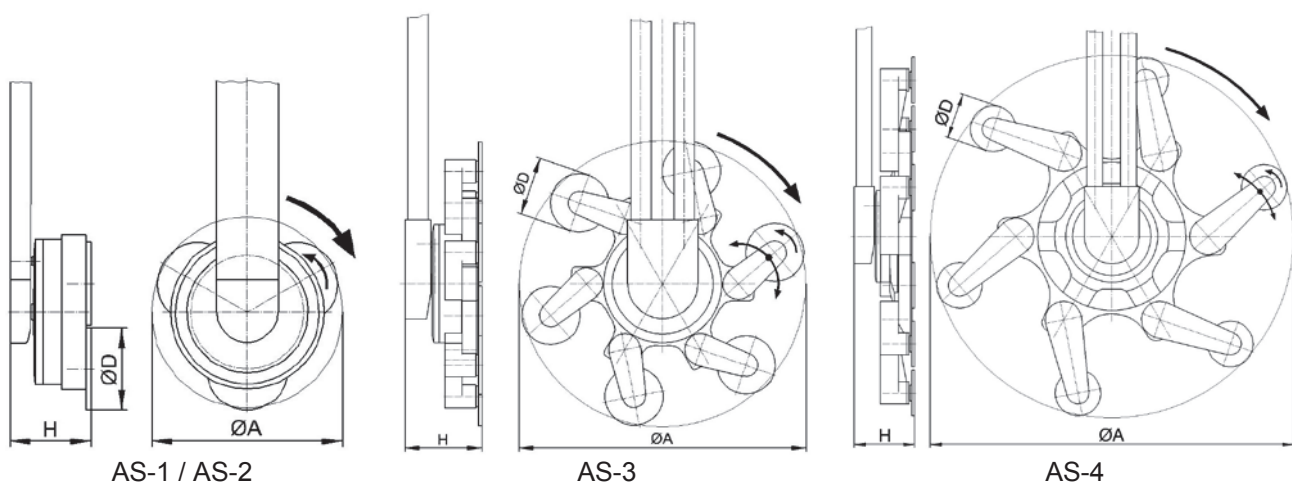
The complete discs with driven grinding spindles including all accessories are delivered in a plastic transport case.

← Example of a case

## Technical Details SLA

- Working range:**
  - SLA-15** (for SL-15 as from 01/2006):
    - AS-1 : DN 125-175 (DN 5"-7") (OPTION)
    - AS-2 : DN 175-225 (DN 7"-9")
    - AS-3 : DN 225-400 (DN 9"-16")
  - SLA-2** (for SL-2 as from 01/2005):
    - AS-2 : DN 200-225 (DN 8"-9") (OPTION)
    - AS-3 : DN 225-400 (DN 9"-16")
    - AS-4 : DN 400-600 (DN 16"-24")
- Height H:** with a EFCO SL-machine
  - Planet disc AS-1 + GE-15: 81,5 mm (3.2") (OPTION)
  - Planet disc AS-2 + GE-15: 77,5 mm (3.05")
  - Planet disc AS-3 + GE-15: 77,5 mm (3.05")
  - Planet disc AS-2 + GE-2 : 105 mm (4.13") (OPTION)
  - Planet disc AS-3 + GE-2 : 105 mm (4.13")
  - Planet disc AS-4 + GE-2 : 110 mm (4.3")

Outer grinding diameter A (mm) when using grinding spindle of diameter D (mm)														
	Ø40 (Ø1.57")		Ø50 (Ø1.97")		Ø60 (Ø2.36")		Ø80 (Ø3.15")		Ø90 (Ø3.54")		Ø100 (Ø3.94")		Ø120 (Ø4.72")	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
<b>AS-1</b>	-	153 (6")	-	163 (6.4")	-	173 (6.8")	-	193 (7.6")	-	203 (7.9")	-	-	-	-
<b>AS-2</b>	-	194 (7.6")	-	204 (7.9")	-	214 (8.4")	-	234 (9.2")	-	244 (9.6")	-	254 (10")	-	274 (10.8")
<b>AS-3</b>	250 (9.8")	376 (14.8")	252 (9.9")	386 (15.2")	262 (10.3")	396 (15.6")	282 (11.1")	416 (16.4")	292 (11.5")	426 (16.8")	302 (11.9")	436 (17.2")	322 (12.7")	456 (17.9")
<b>AS-4</b>	405 (15.9")	637 (25.1")	415 (16.3")	647 (25.5")	425 (16.7")	657 (25.9")	445 (17.5")	677 (26.7")	455 (17.9")	687 (27")	465 (18.3")	697 (27.4")	485 (19.1")	717 (28.2")



Subject to technical change.

### EFCO Maschinenbau GmbH – Valve repair and testing equipment

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries

03/2013 - 08

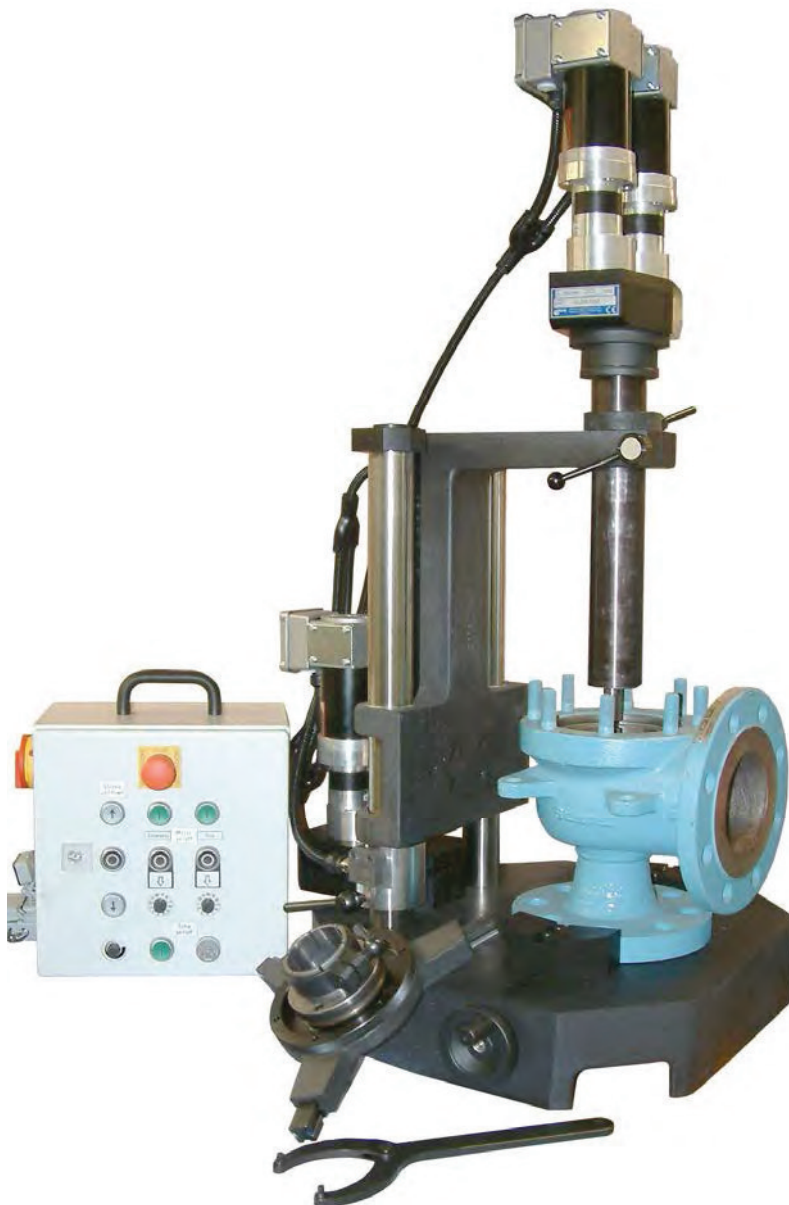


# TSV Series

## Grinding and Lapping Machines for safety valves

DN range 15-300 mm (1/2"-12")

The EFCO TSV are portable grinding and lapping machines with eccentric. They are meant for the machining of surfaces in safety valves. The TSV-300 has two separate drives. One drive operates the grinding spindle, whereas the other drive actuates an opposite motion (eccentric motion).



TSV-300 with maschine column

### Advantages:

- easy handling
- set-up at valves with or without flange is possible
- even (flat) surfaces
- good self-cleaning of the grinding tools  
=> extended durability (service life) of the grinding media
- uniform dispersion of lapping paste during lapping procedure
- cross hatch

## Technical data TSV

	TSV-150	TSV-300
DN range	Ø 15 - 150 mm (1/2" – 6")	Ø 25 - 300 mm (1" – 12")
max. submerging depth	350 mm (14")	
Clamping range of jaw chuck	Ø 80 - 400 mm (3" - 16")	
Clamping range of machine column	Ø 50 - 360 mm (2" - 14")	Ø 80 - 360 mm (3" - 14")
Rotational speed of grinding spindle	~ 0 – 330 U/min	~ 0 – 170 (245*) U/min
Rotational speed of eccentric	~ 0 – 520 U/min	~ 0 – 555 (805*) U/min
Eccentricity	3 mm	
Stationary mounting	Machine column	
Portable mounting	Jaw chuck	
Drive	pneumatic 6-7 bar	230/110 V, 50/60 Hz or pneumatic 6-7 bar

\*Rotational speed of pneumatic

Due to geometry, there are normally higher speeds of the grinding discs at the outside diameter of the seat than at the internal diameter.

The result is a different material removal.  
The sealing surface inclines downwards.

The use of an eccentric neutralizes the influence of different cutting-speeds.  
An even (flat) surface is produced.

### Abrasive- and Lapping Material:

- Self-adhesive grinding media
- EFCOBOR Lapping Paste in grits 80 to 1500



TSV-150 with jaw chuck

Subject to technical change.

### EFCO Maschinenbau GmbH – Valve repair and testing equipment

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries

11/2008 - 00

# VSA series

**High-speed grinding machines for machining flat and conical seats in valves and on flanges.**

**DN 20 – 1500 mm  
(3/4" – 60")**



**Quality, reliability and innovative technology**



## Employing tomorrow's technology to machine today's valves

### EFCO-VSA

...the new generation of precision grinding machines for machining sealing faces, conical faces and bores in valves, cylinders, pump housings, flanges and many more.

The VSA machines are suitable for use on site and in the workshop, in nuclear and conventional power stations, for valve service, for chemical and petrochemical plants, for shipyards etc.

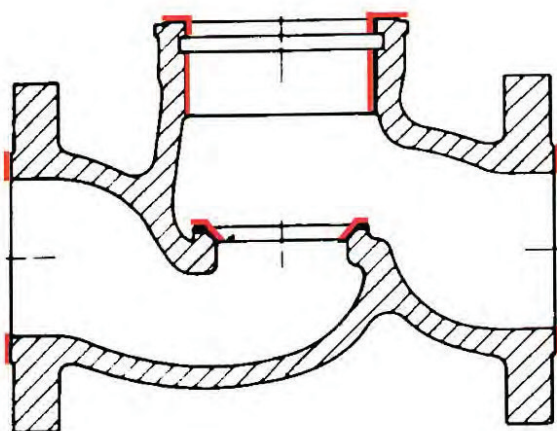
The controls for rotation and axial feed are easily accessible. Control of the machine is safe in any mounting position. Axial feed is via max. four buttons. The axial path is determined via limit switches in conjunction with the bore grinding device.

VSA machines are mounted on a flange as standard. The machine is adapted to the appropriate pitch circle diameter using interchangeable clamping arms. Horizontal adjustment is via bolts with a fine thread, and centering via adjusting screws. As an alternative, external clamping devices are available so that the flanges, too, can be machined.

The machine can thus be mounted even if there is no flange.



VSA-05



— Machinable faces

### Benefits:

- Continuous axial feed - can also be controlled manually.
- High stability.
- Can be used in any mounting position - on site or in the workshop.
- Flexible mounting systems.
- Very precise height adjustment and centering.
- Interchangeable guide tubes in various lengths can also be supplied.

## Bore grinder

This very robust accessory ensures the highest precision in any mounting position.

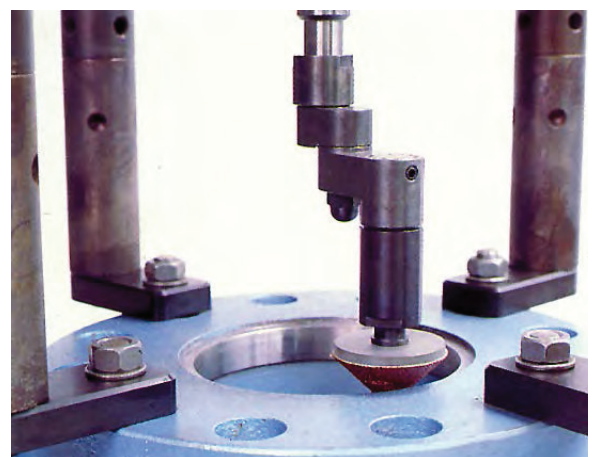
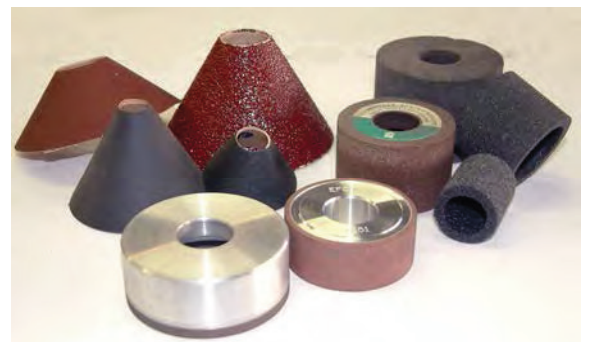
The bore grinder (special accessory) enables precise grinding of valve bores with automatic reversible stroke. It is particularly suitable for grinding cylindrical faces for radial seals (e.g. Brettschneider).



## Grinding tools

Various grinding tools are available:

- Cup wheels (silicon carbide, special fused alumina)
- Conical abrasive sleeves for the grinding of sealing faces at various angles.
- CBN abrasive wheels



## EFCO-VSA - The Complete Solution

Specification	VSA-05	VSA-1	VSA-2	VSA-3
Nominal bore (DN - mm)	20-150 (¾"-6")	50-400 (2"-16")	250-800 (10"-32")	500-1500 (20"-60")
Working range (mm)	up to 150 dia. (5.9")	up to 400 dia. (15.7")	up to 800 dia. (31.5")	up to 1500 dia. (59")
Insertion depth (mm)	250 (9.8")	650 (25.6")	1000 (39.4")	up to 1500 (59")
Clamping diameter mm	min. 200 (7.9") max. 540 (21.3")	min. 290 (11.4") max. 600 (23.6")	min. 290 (11.4") max. 1150 (45.3")	min. 500 (19.7") max. 1350 (53.2")
Drive	pneumatic 6-7 bar			

**The VSA machines, as do all EFCO products, provide a complete repair system.**

The machines are supplied with extensive accessories.  
Machine and accessories are supplied in a practical workshop trolley.



VSA in workshop trolley

Subject to technical change.

**EFCO Maschinenbau GmbH – Valve repair and testing equipment**

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries



# **Manhole Grinding Device** **250-800 mm (9.8"-31.5")** **as a supplement to our high-speed grinding** **machine EFCO VSA-2**



- For manholes in boilers, tanks, heat exchangers, etc.
- For grinding in any position
- Easy handling
- High removal rate due to use of CBN grinding discs
- For hand holes on request



Subject to technical change.

**EFCO Maschinenbau GmbH – Valve repair and testing equipment**  
Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260  
info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com  
Agencies in many countries

# HSS-1A

## Mobile high-speed valve grinding machines

### DN 200-600mm (8-24")

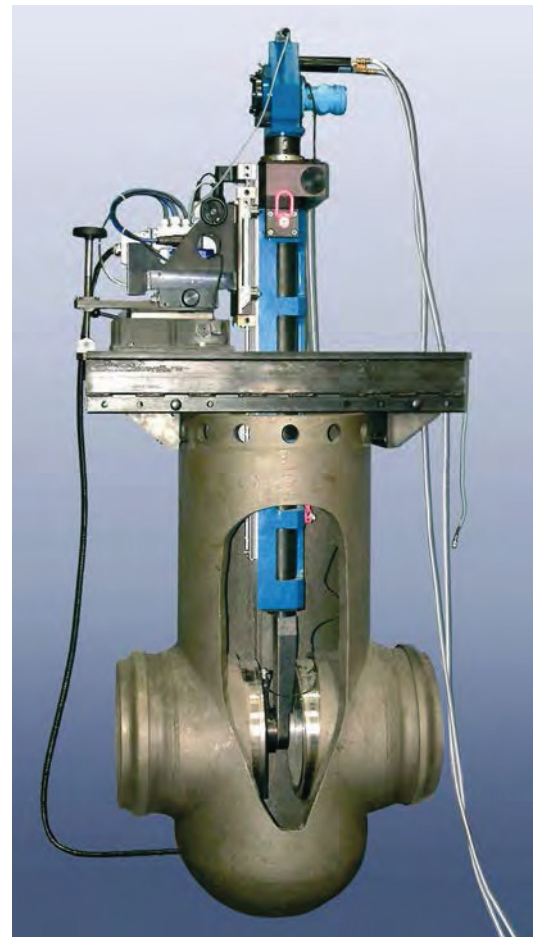
The HSS is a portable high-speed valve grinding machine for general overhaul (incl. angle correction) of the sealing faces in gate valve and non-return valve housings on site. This new generation of valve grinding machines is preferentially used where high material removal is required. This is always the case when sealing faces must be largely or completely renewed.

Depending on accessories, the HSS can be used for many tasks of valve refurbishment, including, for example:

- Grinding of conical sealing faces, mainly on non-return valve housings.
- Grinding of chamfers and radii
- Detection of sealing face geometry (angular position) with the integral measurement system.
- Defined changes to sealing face geometry.

#### Benefits of HSS machines:

- Easy installation and precise alignment.
- Adjustment of grinding arm at precise angle in the same position.
- High throughput.



Subject to technical change.

#### **EFCO Maschinenbau GmbH – Valve repair and testing equipment**

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries

# SM Series

**Stationary grinding and lapping machines for machining sealing faces in gate valves, valves, safety valves, non-return valves, wedges, etc.**

The machinery in the SM series is impressive because of its modular design, which allows customer requirements to be adapted in the best possible way.

- Main components:
- Robust pedestal with machine table
  - Swivelling column with clamping facility
  - Spindle head with motorised height adjustment
  - Swivelling control panel

Two machine tables are available for the SM-450:

The **tilt table** for machining gate valves, gate valve wedges etc.

The **eccentrically adjustable turntable** for machining safety valves.



SM-750



SM-450



The machine spindle of the SM-750 is equipped with an **adjustable eccentric**, which allows safety valves to be machined.

Eccentric and grinding movements are actuated separately.

The machine table is designed as a tilt table.



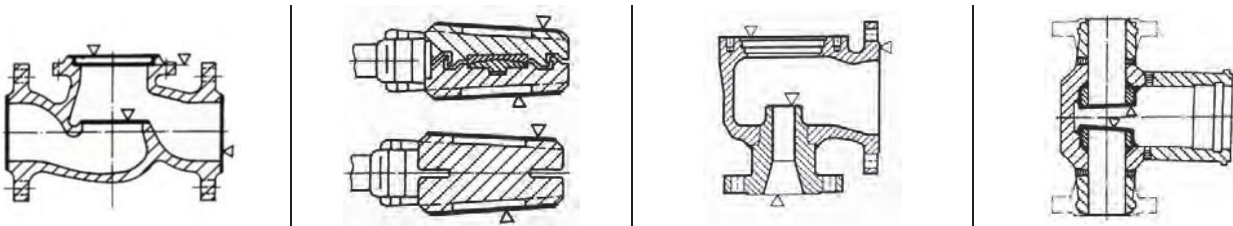
## Technical Data

	SM-450	SM-750
<b>Working range</b> max. overall height of valves max. flange Ø of valves	500 mm (20") 560 mm (22")	1000 mm (40") 950 mm (38")
<b>Spindle</b> Speed Torque	max. 260 rpm 20 Nm	max. 255 rpm 98 Nm
<b>Spindle eccentric *</b> Speed Torque Eccentric adjustment	/	max. 237 rpm 177 Nm 0 – 20 mm
<b>Spindle head</b> Stroke Stroke speed	400 mm (15.7") 700 mm/min (27.5"/min)	675 mm (26.6") 1000 mm/min (39.4"/min)
<b>Tilt table</b> Size Tilt angle Load	450x450 mm (17.7"x17.7") ± 12° max. 2000N	750x750 mm (29.5"x29.5") ± 12° max. 25000N
<b>Turntable</b> Size Eccentric adjustment Speed Torque Load	Ø 450mm (17.7") 0 – 20mm (0.79") max. 24 rpm 33 Nm max. 2000 N	/
<b>Electrical connection</b> Power consumption Voltage Frequency	max. 0.6 kW 230 V 50 / 60 Hz	max. 5.5 kW 400 V 50 / 60 Hz
<b>Dimensions **</b> (L x W x H)	900 x 700 x 1600 mm 36" x 28" x 64"	1200 x 900 x 2650 mm 48" x 36" x 106"
<b>Weight **</b>	approx. 270 kg	approx. 1100 kg

\* The SM-750 is also available without a spindle eccentric

\*\* Data for machine with 1 machine table. The machines in the SM series are also available with 2 machine tables

### Machining options on valves



Subject to technical change.

### EFCO Maschinenbau GmbH – Valve repair and testing equipment

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries

# KS-6

## Grinding bench for facing fittings and machine components



The KS grinding bench is suitable for surface grinding sliding wedges, valve disks, machine components or other workpieces.

The grinding plate is covered with self-adhesive grinding paper or grinding foil.

A limit stop bar is mounted over the grinding disk to prevent the workpieces that are being machined from sliding away.

This can be secured in different positions depending on the size of the workpieces.

To change the grinding paper rings, the limit stop bar is turned away to the side, thus exposing the grinding disk.

Technical data	KS-6
Height	920 mm (36.2")
Width	650 mm (25.6")
Length	900 mm (35.4")
Disk	600 mm (23.6")
Weight of workpieces	50 kg
Supply voltage	230V 50/60Hz
Power	1,5 kW
Rotational speed of disk	20 – 50 min <sup>-1</sup>

### Accessories

- Footswitch
- 2 Abrasives drawer
- Covering hood

The grinding desk's electric drive is equipped with an electronic soft-start system.

A version with quick-change grinding disks is available for use with frequently changing grains.

Subject to technical change.

### EFCO Maschinenbau GmbH – Valve repair and testing equipment

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries

YOUR PARTNER WORLDWIDE



# SURFACE LAPPING



**FLM-400•FLM-600•FLM-900•FLM-1200•FLM-1500**

---

THE PREMIUM-PRODUCTS – MADE BY EFCO – MADE IN GERMANY



## Surface lapping

Lapping is a finishing procedure for fine and finest finishing which achieves high surface quality, extremely high dimensional accuracy and close dimensional tolerances.

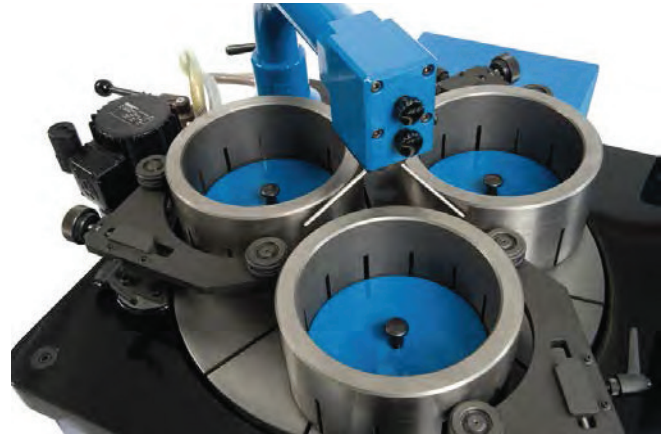
Lapping is defined by DIN 8589 and means machining with loose grains distributed in a liquid or paste (the lapping mixture).

The workpieces are normally placed into dressing rings on a lapping plate which must have a level surface so that the workpiece to be lapped also will be flat. The lapping mixture, a compound consisting of a carrier (lapping liquid), a lubricant and abrasive, sits between workpiece and lapping plate. As the workpiece is normally not heated by the lapping process, there is no deformation.

Lapping has become established as the preferred finishing process where non-leaking shutoff is required (e.g. for safety valves, face seals for boiler water feed pumps, compressor valve disk etc.)

**EFCO-FLM** single plate surface lapping machines are supplied either as table-top machines (FLM-400) or as free standing machines.

The workpieces to be lapped run freely in dressing rings or are placed in appropriate holders (cages) running in the dressing ring. Depending on weight, the workpieces are pressed against the lapping plate using appropriate load plates with a felt being placed between workpiece and weight which equalises different levels.



The lapping plate is continually fed with lapping mixture via a pump system.

The lapping mixture pump with stirrer (FLM-1200/FLM-1500) and the lapping mixture tank are designed in such a way that topping up or replacement of the lapping mixture is easy.

Depending on the lapping mixture used as well as material, shape and size of the workpiece, it is, therefore, possible to obtain a surface finish of  $R_z = 0.1 \mu\text{m}$  or better.

### **EFCO FLM Surface Lapping Machines**

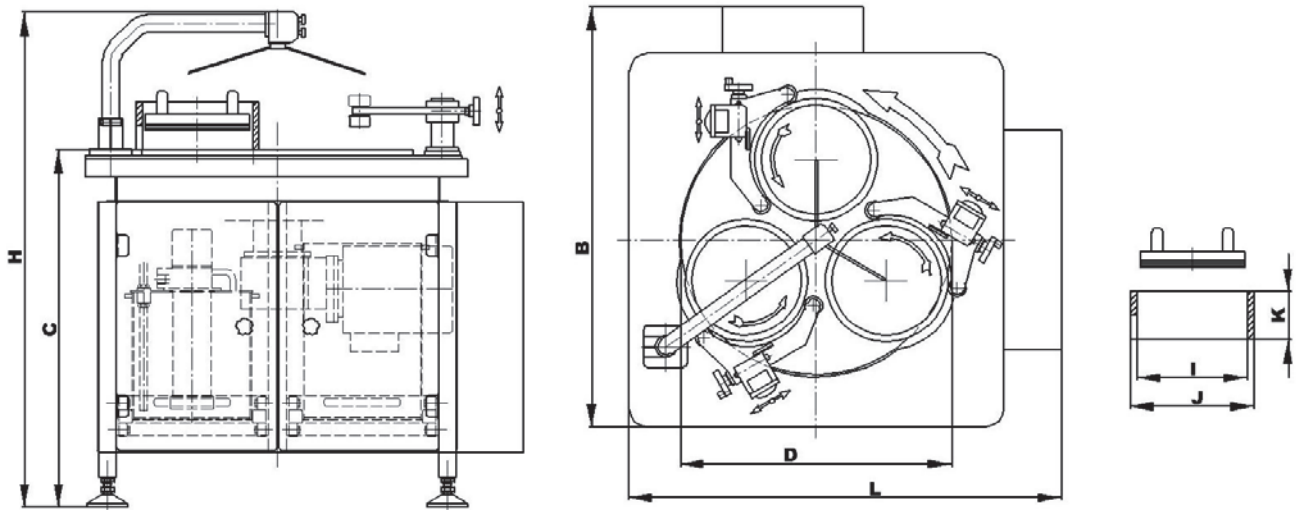
are excellent for lapping of individual or volume production components.

Worn components, such as valve seats, mechanical shaft seals, disks, vanes, gears, can be re-lapped in repair workshops and at refurbishment companies.



EFCO FLM-400





	FLM					
	400	600	900	1200	1500	
<b>Machine dimension</b>						
Machine height "H" [mm/inch]	520 (20.5")	1175 (46.3")	1330 (52.4")	1380 (54.3")	1410 (55.5")	
Width "B" [mm/inch]	780 (30.7")	1030 (40.6")	1260 (49.6")	1560 (61.4")	1900 (74.8")	
Width "L" [mm/inch]	890 (35")	1040 (40.9")	1430 (56.3")	1825 (71.9")	2145 (84.4")	
Top edge of lapping wheel "C" [mm/inch]	295 (11.6")	820 (32.3")	950(37.4")	950 (37.4")	950 (37.4")	
Ø Lapping wheel "D" [mm/inch]	405 (15.9")	615 (24.2")	915 (36")	1215 (47.8")	1515 (59.6")	
<b>Dressing ring</b>						
Number	3					
Inner-Ø "I" [mm/inch]	152 (6")	250 (9.8")	380 (15")	500 (19.7")	625 (24.6")	
Outer-Ø "J" [mm/inch]	185 (7.3")	280 (11")	420 (16.5")	550 (21.7")	690 (27.2")	
Hight "K" [mm/inch]	90 (3.5")	110 (4.3")	135 (5.3")	140 (5.5")	14 (5.5")	
max. component weight-Ø [mm/inch]	120 (4.7")	220 (8.7")	350 (13.8")	470 (18.5")	600 (23.6")	
<b>Data and Weight</b>						
Lapping wheel speed [rpm]	8 – 70	8 – 74	8 – 50	8 – 44	8 – 34	
Drive motor output [kW]	0,55	3	7,5	9,2	11	
Lapping material tank capacity [l]	4	15	33	33	33	
Power supply [V / Hz]	230 / 50	400 / 50				
Geräuschemission [db(A)]	< 80					
max. component weight [kg]	single	10	50	100	150	150
	total	30	150	300	450	450
Net weight [kg]	130	540	800	2000	3000	

## Testing of workpieces

The following are required to precisely check the flatness of workpieces:

- Interference lamp
- Polishing table with polishing paper
- Plane face lenses Ø25-300 (Ø0.9"-11.8")



Our range includes a surface roughness tester to precisely check the roughness of workpieces.

### Specifications

Measurement range: Ra,Rq: 0.01-100µm  
Rz,Ry: 0.02-350µm  
Pc: 2.5/cm-5000/cm

Measured sections: 0.25 mm, 0.8 mm, 2.5 mm

Parameters: Ra, Ry, Rz, Rq, S, Sm, Pc, r3z, mr, rt, Rp, Rk, Rvk, Mr1, Mr2, A1, A2

Probe tip: Diamond (tip radius 2 µm)

Power supply: via mains adapter or built-in rechargeable battery



## Consumables

The lapping mixture for surface lapping machines consists of abrasive mixed with lapping liquid (ratio: 150-220g abrasive to 1 litre of lapping liquid).

### Abrasive

- Silicon carbide (SiC) - for alloyed and hardened steels, stellites, glass, porcelain etc.
- Aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) – for copper, bronze, coal, cast iron, silicon etc.
- Boron carbide - for carbide, ceramics
- Diamond - for carbide, ceramics

The abrasive can be supplied in various grain sizes.

The most frequently used lapping abrasive is silicon carbide with grain size 600 (coarse) or 800 (finer).

Our EFCO HO-74 lapping liquid, a multi-purpose oil of average viscosity, is suitable for mixing with all types of lapping abrasives.

Subject to technical change.

### **EFCO Maschinenbau GmbH – Valve repair and testing equipment**

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries

01/2013 – 04



## EFCO-Consumables



### GSS SERIES

The EFCO GSS grinding tools are coated with electroplated cubic crystalline boron nitride (CBN). CBN is highly suitable for grinding hard sealing faces with a minimum hardness of 35 HRC such as, for example, steel on cobalt and nickel basis, highly alloyed steels, chromium steel, etc.

The good heat resistance of CBN in combination with its great hardness makes possible economic grinding at the higher machining temperatures of these steels (long life).

### EFCO ABRASIVES

EFCO abrasives have been matched to the EFCO technology after extensive testing. We supply abrasives on a backing in various grain sizes and formulations optimised for the application.

Abrasive backing: Paper, Fabric, Foil

Grain types: Aluminium oxide ( $Al_2O_3$ ), Silicon carbide (SiC), Zirconium corundum ( $ZrO_2 + Al_2O_3$ )

Grain size: Standard grain size: P80-P1800  
(other grain sizes on request)



### EFCOBOR LAPPING COMPOUNDS

In accordance with DIN 8589, lapping is a microfinishing process using a grain distributed loosely in a liquid or paste (lapping compound) which is held on a, usually shaped, counterpart (lapping tool).

EFCOBOR lapping compounds are oil soluble lapping pastes of boron carbide.

Using EFCO lapping compounds, it is possible to achieve

- high surface quality
- highest dimensional accuracy
- close dimensional tolerances independent of the material hardness.

They can be supplied in various grain sizes from P80-P1500 (FEPA) and pack sizes.

Subject to technical change.

### **EFCO Maschinenbau GmbH – Valve repair and testing equipment**

Otto-Brenner-Straße 5 – 7 • D - 52353 Düren • Phone: +49-(0)2421-989-0 • Fax: +49-(0)2421-86260

info@efco-dueren.de • sales@efco-dueren.de • www.efco-dueren.com

Agencies in many countries