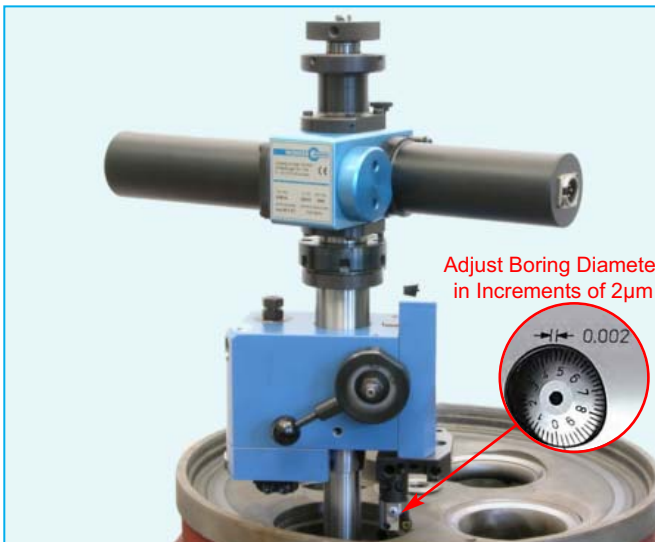


**Refacing Valve Seat**



**Face Turning Sealing Surface**



**Counterboring Seat Ring Pocket**

**APPLICATION**

The HUNGER VD4HD is a versatile machine offering a choice of modular components for

- refacing valve seats,
- resurfacing the sealing surfaces on cylinder heads, cylinder liners and engine blocks and
- counterboring seat ring pockets of large diesel and gas engines.

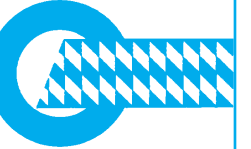
**KEY FEATURES**

- No abrasive dust. A fast clean cut.
- Compact and handy design.
- Modular add-on components provide a flexible solution for multiple projects.
- Powered by SELV (Safety Extra Low Voltage) to avoid risk of electrical shock.
- Power supply with universal AC input.
- Fast set-up time.
- Easy to use
- The economical solution for both field and workshop use.

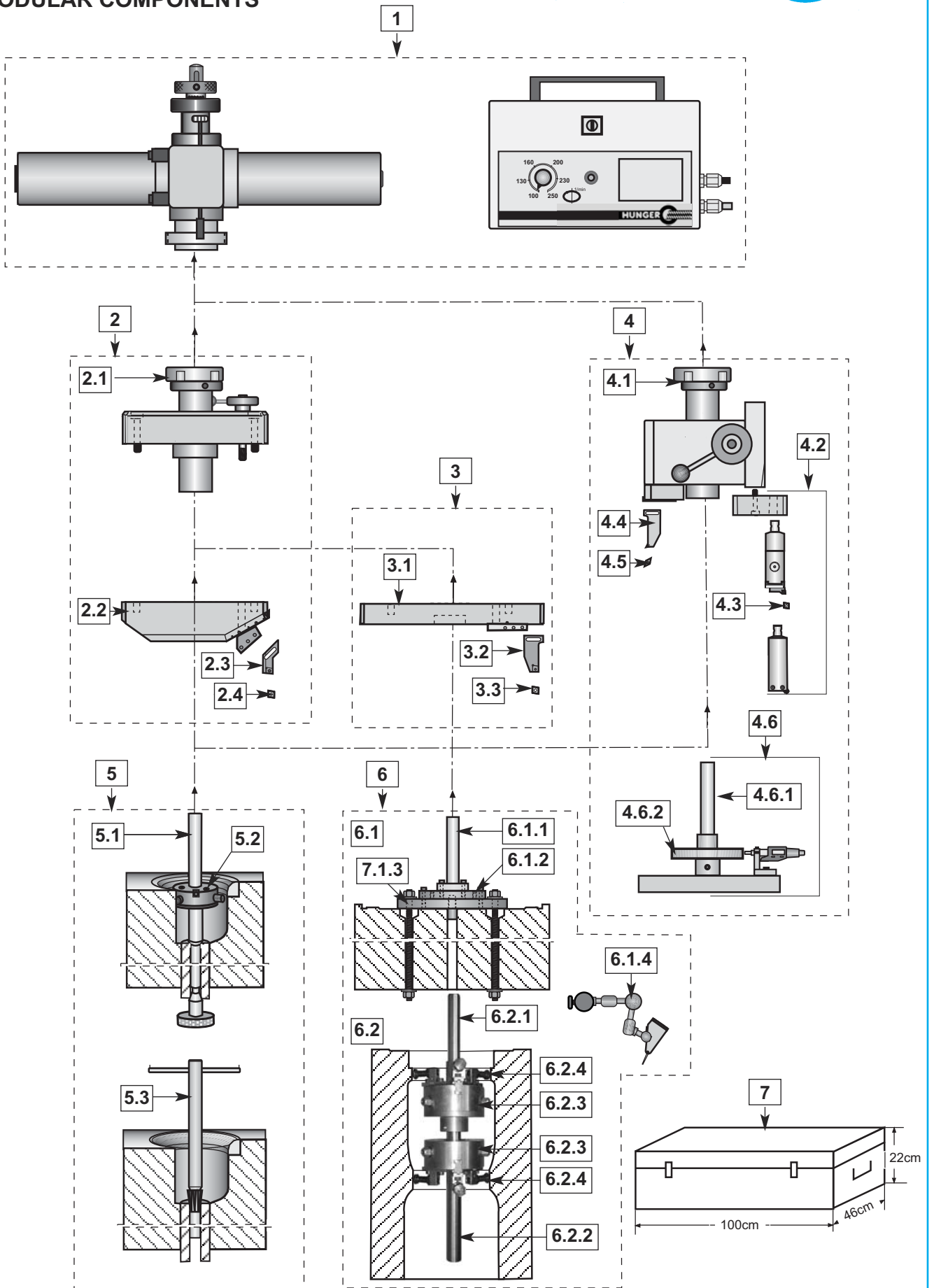
**SPECIFICATIONS**

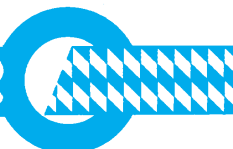
Valve Seat Refacing Capacity	
Valve seat diameter range	60 - 230 mm
Valve seat angle range	19,5° - 45°
Face Turning Diameter Range	70 - 500 mm
Counterboring Diameter Range	66 - 225 mm
Rotational Speed Range	100 - 250 rpm
Cross Feed per revolution	0,05 mm
Electrics	
Universal Input Voltage Range	100 - 300 VAC
	1 Ph 50/60 Hz
Power Requirement	0,5 kW
Operating Voltage of Drive Unit	max. 50 VDC
Dimensions	
Motor Drive Unit	
Lenght	485 mm
Width	175 mm
Height	210 mm
Universal Power Supply Unit	
Lenght	380 mm
Width	180 mm
Height	210 mm
Net Weights	
Machine Drive Unit	7,5 kg
Valve Seat Refacing Gear Unit	6,5 kg
Valve Seat Refacing Head	5,1 kg
Counterboring and Facing Head	13,6 kg
Face Turning Head	7,1 kg
Universal Power Supply Unit	7,7 kg

Alterations subject to change without prior notice



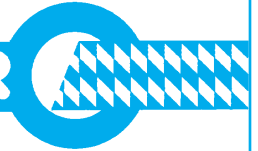
MODULAR COMPONENTS





## MODULAR COMPONENTS

Item	Description	Part Number	Item	Description	Part Number
1.	<b>VD4HD Motor Drive Unit</b> including Universal Power Supply Unit wired for input voltage range 100 - 300 VAC	249 05 350	4.2	Tooling for Counterboring	
2.	<b><u>VD Accessories for Refacing Valve Seats</u></b>		4.2.1	<b>Boring Tool Base Type B1</b> Boring diameter range 90-225mm	259 12 060
2.1	<b>VD Refacing Gear Unit</b>	249 10 310	4.2.2	<b>Precision Boring Tool Type B1</b> Boring diameter range 90-225mm Includes micrometer dial for adjusting insert.	259 20 150
2.2	Valve Seat Refacing Heads		4.2.3	<b>Form Boring Tool Type B1</b> for machining inclined shoulder for ease of O-ring installation Boring diameter range 90-225mm	259 20 150
2.2.1	<b>D4/45° Seat Refacing Head</b> for 45° seats	249 11 345	4.2.4	<b>Boring Tool Base Type D1</b> Boring diameter range 72-100mm	259 14 061
2.2.2	<b>D4/40° Seat Refacing Head</b> for 40° seats	249 11 340	4.2.5	<b>Boring Tool Base Type D1.1</b> Boring diameter range 66-100mm	259 14 062
2.2.3	<b>D4/30° Seat Refacing Head</b> for 30° seats	249 12 330	4.2.6	<b>Precision Boring Tool Type D1</b> Boring diameter range 72-100mm	259 14 110
2.2.4	<b>D4/20° Seat Refacing Head</b> for 20° seats	249 17 320	4.2.7	<b>Form Boring Tool Type D1</b> for machining inclined shoulder for ease of O-ring installation	259 20 821
2.2.5	<b>D4/19,5° Seat Refacing Head</b> for 19,5° seats	249 18 319	4.3	Insert for Precision Boring Tools B1 an D1	
2.3	Insert Holders for Refacing Valve Seats		4.3.1	<b>Insert Type C0604HC</b>	862 20 030
2.3.1	<b>SD00 Insert Holder</b> for seat diam. 60-100 mm	247 65 108	4.4	Tooling for Facing Bottom of Counterbore	
2.3.2	<b>SC01 Insert Holder</b> for seat diam. 90-140 mm	247 65 103	4.4.1	<b>H01 Insert holder</b> for diam. 60-160 mm	259 65 110
2.3.3	<b>SC02 Insert Holder</b> for seat diam. 130-250 mm	247 65 104	4.4.2	<b>H02 Insert holder</b> for diam. 100-220 mm	259 65 120
2.4	Inserts for Refacing Valve Seats		4.5	Insert for Facing Bottom of Counterbore	
2.4.1	<b>Insert Type C0604CB</b> for SD00 Holder Application: General purpose	862 20 021	4.5.1	<b>Insert Type W1104CU</b> for H01/02 Holder	862 20 050
2.4.2	<b>Insert Type C0602HB</b> for SD00 Holder Application: Very hard seats	862 20 016	4.6	Optional Accessories for Setting Boring Diam.	
2.4.3	<b>Insert Type C0908CU</b> for SC01/02 Holder Application: General purpose	862 20 007	4.6.1	<b>Boring Tool Setting Stand</b> Includes digitat micrometer sciew for precise setting of the boring diameter	259 50 100
2.4.4	<b>Insert Type C0908HU</b> for SC01/02 Holder Application: Super alloys	862 20 009	4.6.2	<b>Reference Disks</b> for setting micrometer screw to a reference diamter near to the desired oversize diameter	259 50 xxx
2.4.5	<b>Insert Type C0904CB</b> for SC01/02 Holder Application: Hard seats	862 20 010	5.	<b><u>Centering Accessories for Refacing &amp; Boring</u></b>	
2.4.6	<b>Insert Type C0904HB</b> for SC01/02 Holder Application: Cr & Ni alloys	862 20 013	5.1	Pilots for insertion into the valve guides	
2.4.7	<b>Insert Type C0904HU</b> for SC01/02 Holder Application: Very hard seats	862 20 015	5.1.1	<b>Customized Pilots</b> tailored to particelat engine model	on request
2.4.8	<b>Insert Type C0904CBN</b> for SC01/02 Holder Application: Extremely hard seats	862 20 022	5.1.2	<b>UP4.1 Universal Pilot Kit</b> for valve guide bore range 16-27mm	249 70 410
3.	<b><u>RC Accessories for Face Turning</u></b>		5.1.3	<b>UP4.1 Universal Pilot Kit</b> for valve guide bore range 16-27mm	249 70 410
3.1	Face Turning Heads		5.2	<b>Supporting Spiders</b> for supporting pilot shaft just below the seat	on request
3.1.1	<b>D4.1/0° Face Turning Head</b> for facing diameter range 70 - 330 mm	249 20 200	5.3	<b>Chamfering Tools</b> for cleaning the valve guide	on request
3.1.2	<b>D4.2/0° Face Turning Head</b> for facing diameter range 75 - 370 mm	249 20 300	6.1	<b><u>Centering Accessories for Resurfacing Cylinder Heads</u></b>	
3.1.3	<b>D4.5/0° Face Turning Head</b> for facing diameter range 95 - 500 mm	249 20 450	6.1.1	<b>Guiding Arbor</b>	249 71 005
3.2	Insert Holder for Face Turning		6.1.2	<b>Aligning Disk</b>	258 79 700
3.2.1	<b>HC02.1 Insert Holder</b>	247 65 121	6.1.3	<b>Mounting Assembly</b> tailored to the respective engine model	on request
3.3	Insert for Face Turning		6.1.4	<b>Aligning Gauge</b>	258 93 350
3.3.1	<b>Insert Type C0904CB</b>	862 20 010	6.2	<b><u>Centering Accessories for Resurfacing Engine Blocks</u></b>	
4.	<b><u>ADM Accessories for Counterboring</u></b>		6.2.1	<b>Guiding Arbor</b>	249 71 005
4.1	Boring Heads		6.2.2	<b>Pilot Spindle</b>	258 71 010
4.1.1	<b>AV Boring Head</b> including vertical tool slide for counterboring	259 10 500	6.2.3	<b>Set (2 pcs) of Centering Chucks</b>	258 71 200
4.1.2	<b>AVH Boring Head</b> including vertical tool slide for counterboring and horizontal tool slide for facing bottom	259 10 570	6.2.4	<b>Sets (6pcs) of Top Jaws</b>	on request
			7.	<b><u>Storage Boxes for machine and accessores</u></b>	
			7.1	<b>Storage Box</b> , Standard Size	249 90 046
			7.2	<b>Storage Box</b> , Oveesize	249 90 000



## VD4HD MOTOR DRIVE UNIT

The VD4HD drive unit is fitted with two motors providing a smooth cutting action.

The operating voltage supplied to the motors by a compact universal power supply unit is of the low voltage type to eliminate electric hazards.

The speed of the motors is infinitely variable so that the cutting speed can be adapted to the diameter and material to be refaced.

The universal power supply unit is wired for connection to AC line voltages within a broad range of from 100 V to 300 V.

## REFACING VALVE SEATS

The **VD4HD Valve Seat Refacing Machine** is composed of the VD4HD motor drive unit, the VD refacing gear unit which is screwed to the output shaft of the motor drive unit by means of a union nut, and the appropriate D4/xx° seat refacing head bolted the VD refacing gear unit.

The VD4 seat refacing gear unit and the seat refacing heads supplied with our VD4E valve seat refacing machine can be also used for the VD4HD

The VD4HD valve seat refacing machine is aligned in centerline with the valve guide by a pilot which is inserted into the valve guide and stabilized by a supporting spider just below the valve seat.

The valve seat is refaced to the preset depth by the simultaneous application of both a rotary and a transverse motion to the cutting tool fitted with an indexable cutting insert.

While the cutting insert rotates in a circle around the valve seat, a feed gear mechanism ensures a continuous outward transverse feed motion under the proper seat angle.

The seat angle is defined by an inclined slideway provided for the tool slide in the exchangeable seat refacing head.

The lathe-type refacing action provides a flawless concentric seating surface texture for a perfect valve seal.

Roundness, concentricity and surface finish of the refaced valve seat are within manufacturers' specifications or even better.

### Setup is fast and easy.

First, lock the pilot with mounted supporting spider in the valve guide.

Then, lower the VD4HD over the pilot and, using rapid traverse lever, position the cutting edge of the cutting tool in front of the inner edge of the valve seat.

Turn micrometer downfeed to set the desired depth of cut and then select the cutting speed.

### Refacing is automatic.

Pressing one button is enough to start the refacing pass.

## RESURFACING SEALING SURFACES

The **VD4HD-RC Face Turning Machine** is composed of the VD4HD motor drive unit, the VD refacing gear unit screwed to output shaft of the motor drive unit by means of a union nut and the appropriate D4.x/0° facing head bolted the VD refacing gear unit.

Pilot assemblies are available for aligning the VD4HD-FC Face Turning Machine square to the sealing face being resurfaced.

## COUNTERBORING

The **VD4HD-ADM Counterboring Machine** is composed of the VD4HD motor drive unit and an AV boring head screwed to the output shaft of the motor drive unit by means of a union nut.

Two types of AV boring heads are available. The standard AV boring head is provided with a vertical slide for counterboring the seat ring pockets.

The AVH boring and facing head is provided with both a vertical slide for counterboring the seat ring pockets and a horizontal slide for facing the bottom of the seat ring pockets,

The precision boring tools are equipped with a vernier dial for adjusting the boring diameter in increments of 2µm to ensure high precision machining to IT6 tolerances.

Form boring tools are available for chamfering the shoulders in the counterbores to facilitate O-ring installation.

The pilots and supporting spiders designed for seat refacing can be used for aligning the VD4HD-ADM in centerline with the valve guide bore.

## Ludwig Hunger Werkzeug- und Maschinenfabrik GmbH

Mailing Address:  
PO Box 70 09 60  
81 Muenchen  
Germany

Office Address:  
Gräfelinger Str. 146  
81375 Muenchen  
Germany

Contact and Information  
Tel.: +49 89 7091 0  
sales@ludwig-hunger.de  
www.ludwig-hunger.de