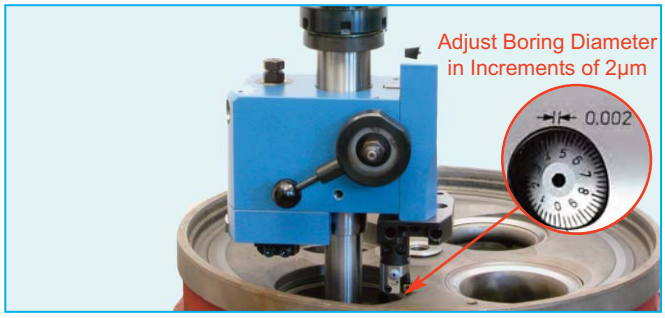
UDM4E

UDM4E-VK Valve Refacing Machine

UDM4E-VD Valve Seat Refacing Machine



UDM4E-ADM Counterboring Machine

UDM4E-RC Face Turning Machine

APPLICATION

The HUNGER UDM4E is a versatile machine offering a choice of modular components for

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

KEY FEATURES

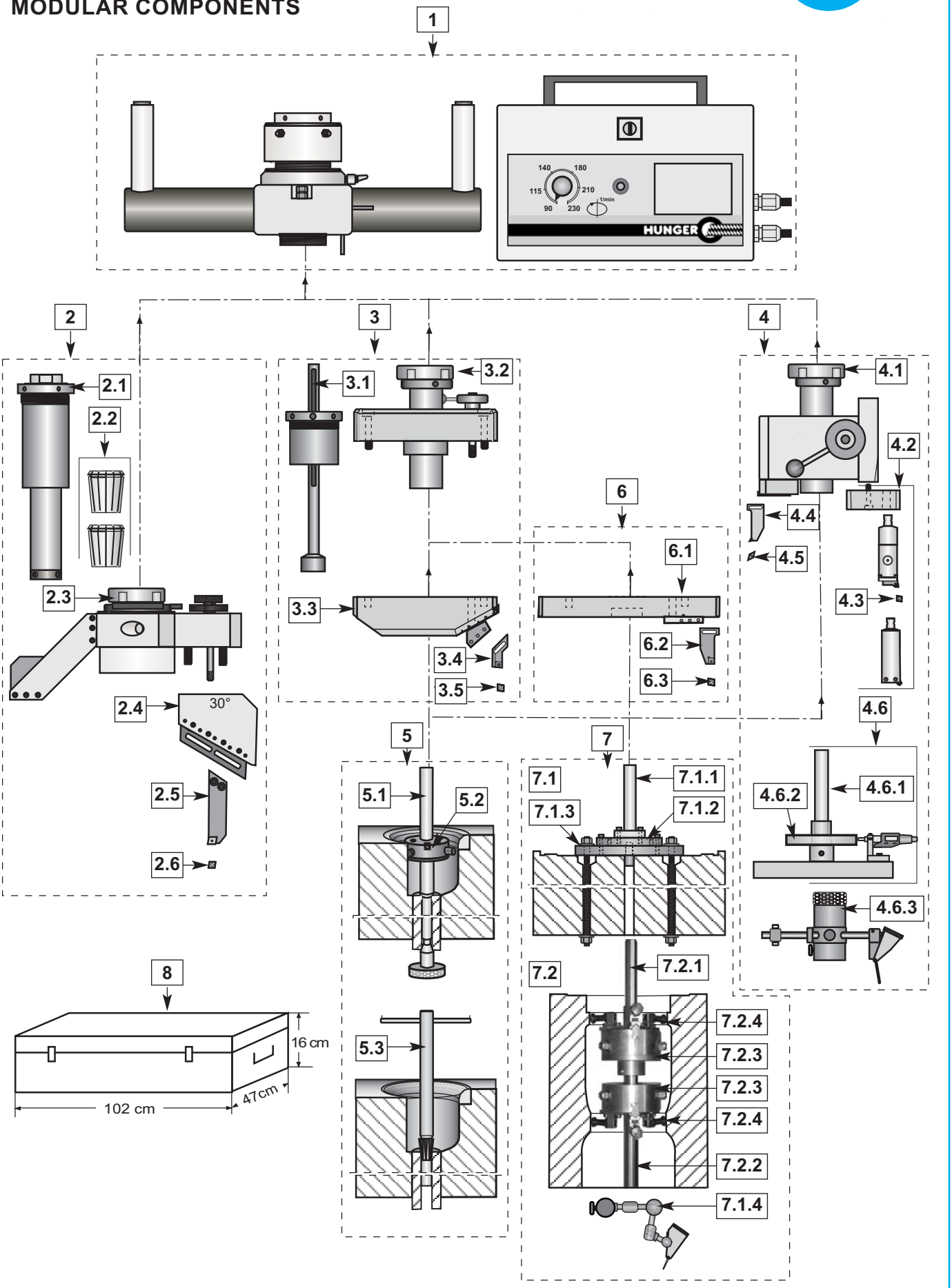
- No abrasive dust. A fast clean cut.
- Compact and handy design.
- Modular add-on components provide a flexible solution for multiple projects.
- Powered by SELV (Safety Extra Low Voltage) to avoid risk of electrical shock.
- Power supply with universal AC input.
- Fast set-up time.
- Easy to use
-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

SPECIFICATIONS

Valve Refacing Capacity	
Valve stem diameter range	16 - 36 mm
Valve face diameter range	60 - 230 mm
Valve angle range	45°- 20°
Minimum Valve Length	400 mm
Valve seat refacing capacity:	
Valve seat diameter range	60 - 230 mm
Valve seat angle range	45°-19,5°
Counterboring Diameter Range	66 - 225 mm
Face Turning Diameter Range	75 - 500 mm
Rotational Speed Range	100 - 230 rpm
Feed per Revolution	0,05 mm
Electrics	
Universal Input Voltage Range	100 - 300 VAC
Power Requirement	0,5 kW
Operating Voltage of Drive Unit	max. 58 VDC
Dimensions	
Motor Drive Unit	
Lenght/Width/Height	485/175/210 mm
Universal Power Supply Unit	
Lenght/Width/Height	380/180/210 mm
Net Weights	
Machine Drive Unit	7,5 kg
Collet Chuck for clamping the valves	2,6 kg
Valve Refacing Gear Unit	6,3 kg
Valve Refacing Head	1,6 kg
Universal Power Supply Unit	7,7 kg
Seat Refacing Gear Unit	6,5 kg
Seat Refacing Head	5,1 kg

Alterations subject to change without prior notice

MODULAR COMPONENTS



MODULAR COMPONENTS

Item	Description	P/N
1.	**UDM4E Motor Drive Unit** including Universal Power Supply Unit wired for input voltage range 100 - 300 VAC	280 01 001
2.	**VK Accessories for Refacing Valves**	
2.1	**Collet Chuck**	280 31 000
2.2	Collets for Chucking the Valves	
2.2.1	**V18 Collet Set** for valve stem diam. 18-16 mm	279 50 018
2.2.1	**V20 Collet Set** for valve stem diam. 20-18 mm	279 50 020
2.2.2	**V22 Collet Set** for valve stem diam. 22-20 mm	279 50 022
2.2.3	**V24 Collet Set** for valve stem diam. 24-22 mm	279 50 024
2.2.4	**V26 Collet Set** for valve stem diam. 26-24 mm	279 50 026
2.2.5	**V28 Collet Set** for valve stem diam. 28-26 mm	279 50 028
2.2.6	**V30 Collet Set** for valve stem diam. 30-28 mm	279 50 030
2.2.7	**V32 Collet Set** for valve stem diam. 32-30 mm	279 50 032
2.2.8	**V34 Collet Set** for valve stem diam. 34-32 mm	279 50 034
2.2.9	**V36 Collet Set** for valve stem diam. 36-34 mm	279 50 036
2.3.	**VK Valve Refacing Gear Unit**	280 11 000
2.4	Valve Refacing Heads	
2.4.1	**V4/45° Valve Refacing Head** for 45° valves	280 25 000
2.4.2	**V4/40° Valve Refacing Head** for 40° valves	280 24 000
2.4.3	**V4/30° Valve Refacing Head** for 30° valves	280 23 000
2.4.4	**V4/20° Valve Refacing Head** for 20° valves	280 22 000
2.5	Insert Holder for Valve Refacing	
2.5.1	**VK01 Insert Holder** short version	280 65 103
2.5.2	**VK02 Insert Holder** long version	280 65 104
2.6	Cutting Inserts	
2.6.1	**Insert Type C0904CB** (General purpose)	862 20 010
2.6.2	**Insert Type C0904HB** (Cr & Ni alloys)	862 20 013
2.6.3	**Insert Type C0904HU** (Hard materials)	862 20 015
2.6.4	**Insert Type C0904CBN** (Very hard materials)	862 20 022
3.	**VD Accessories for Refacing Valve Seats**	
3.1	**Depth Stop Assembly**	280 32 000
3.2	**VD Seat Refacing Gear Unit**	249 10 310
3.3	Valve Seat Refacing Heads	
3.3.1	**D4/45° Seat Refacing Head** for 45° seats	249 11 345
3.3.2	**D4/40° Seat Refacing Head** for 40° seats	249 11 340
3.3.3	**D4/30° Seat Refacing Head** for 30° seats	249 12 330
3.3.4	**D4/20° Seat Refacing Head** for 20° seats	249 17 320
3.3.5	**D4/19,5° Seat Refacing Head** for 19,5° seats	249 18 319
3.4	Insert Holders for Refacing Valve Seats	
3.4.1	**SD00 Insert Holder** for seat diam. 60-100 mm	247 65 108
3.4.2	**SC01 Insert Holder** for seat diam. 90-140 mm	247 65 103
3.4.3	**SC02 Insert Holder** for seat diam. 130-250 mm	247 65 104
3.5	Cutting Inserts for Refacing Valve Seats Type — Suitable for Holder — Application	
3.5.1	**Insert C0604CB** SD00 General purpose	862 20 021
3.5.2	**Insert C0602HB** SD00 Very hard seats	862 20 016
3.5.3	**Insert C0908CU** SC01/02 General purpose	862 20 007
3.5.4	**Insert C0908HU** SC01/02 Super alloys	862 20 009
3.5.5	**Insert C0904CB** SC01/02 Hard seats	862 20 010
3.5.6	**Insert C0904HB** SC01/02 Cr & Ni alloys	862 20 013
3.5.7	**Insert C0904HU** SC01/02 Very hard seats	862 20 015
3.5.8	**Insert C0904CBN** SC01/02 Extremely hard seats	862 20 022
4.	**ADM Accessories for Counterboring**	
4.1	Boring Heads	
4.1.1	**AV Boring Head** including vertical tool slide	259 10 500
4.1.2	**AVH Boring & Facing Head** including vertical and horizontal tool slide	259 10 570

Item	Description	P/N
4.2	Tooling for counterboring Type — Diameter Range	
4.2.1	**Boring Tool Base Type B1** 90-225 mm	259 12 060
4.2.2	**Precision Boring Tool Type B1** 90-225 mm	259 12 120
4.2.3	**Form Boring Tool Type B1** 90-225 mm	259 20 150
4.2.4	**Boring Tool Base Type D1** 72-100 mm	259 14 061
4.2.5	**Boring Tool Base Type D1.1** 66-100 mm	259 14 062
4.2.6	**Precision Boring Tool Type D1** 66-100 mm	259 14 110
4.2.7	**Form Boring Tool Type D1** 66-100 mm	259 20 821
4.3	Insert for Precision Boring Tools B1 an D1	
4.3.1	**Insert Type C0604HC**	862 20 050
4.4	Tooling for Facing Bottom of Counterbore	
4.4.1	**H01 Insert holder** for diam. 60-160 mm	259 65 110
4.4.2	**H02 Insert holder** for diam. 100-220 mm	259 65 120
4.5	Insert for Facing Bottom of Counterbore	
4.5.1	**Insert Type W1104CU** for H01/02 Holder	862 20 030
4.6	Optional Accessories for Setting Boring Diam.	
4.6.1	**Boring Tool Setting Stand** Includes digitat micrometer scew for precise setting of the boring diameter	259 50 100
4.6.2	**Reference Disks** for setting micrometer screw to a reference diamter near to the desired oversize diameter	259 50 xxx
4.6.3	**DP4 Bore Gauge** for checking diameter of seat ring bore	249 93 701
5.	**Alignment for Seat Refacing & Counterboring**	
5.1.1	**Customized Pilots** tailored to particelat engine model	on request
5.1.2	**UP4.1 Universal Pilot Kit** for valve guide bore range 16-27mm	249 70 410
5.1.3	**UP4.2 Universal Pilot Kit** for valve guide bore range 27-40mm	249 70 420
5.2	**Supporting Spiders** for supporting pilot shaft just below the seat	on request
5.3	**Chamfering Tools** for cleaning the valve guide	on request
6.	**RC Accessories for Face Turning**	
6.1	Facing Heads	
6.1.1	**D4.1/0° Facing Head** 70 - 330 mm	249 20 200
6.1.2	**D4.2/0° Facing Head** 75 - 370 mm	249 20 300
6.1.3	**D4.5/0° Facing Head** 95 - 500 mm	249 20 450
6.2	Insert Holder for Face Turning	
6.2.1	**HC02.1 Insert Holder** for engine block	247 65 121
6.2.1	**HC02.2 Insert Holder** for cylinder head	247 65 126
6.3	Cutting Insert for Face Turning	
6.3.1	**Insert Type C0904CB**	862 20 010
7.	**Alignment Accessories for Face Turning**	
7.1	Alignment for resurfacing cylinder head	
7.1.1	**Guide Pin**	249 71 005
7.1.2	**Aligning Disk**	258 79 700
7.1.3	**Mounting Assembly** tailored to the respective engine model(s).	on request
7.1.4	**Concentricity Gauge**	258 93 350
7.2	Alingment for resurfacing engine blocks	
7.2.1	**Guide Pin** (Same as 7.1.1)	249 71 005
7.2.2	**Pilot Spindle**	258 71 010
7.2.3	**Set (2 pcs) of Centering Chucks**	258 71 200
7.2.4	**Sets (6pcs) of Top Jaws** for ID 190-300 mm	258 71 220
7.2.5	**Sets (6pcs) of Top Jaws** for ID 290-430 mm	258 71 240
8.1	**Storage Box**	280 90 100

REFACING VALVES

The **UDM4E-VK Valve Refacing Machine** consists of

- UDM4E motor drive unit,
- VK valve refacing gear unit screwed to shaft of the motor drive unit by an union nut
- V4/xx° valve refacing head bolted bolted to the VK valve refacing gear unit.

The UDM4E motor drive unit is fitted with two motors providing a smooth cutting action.

The operating voltage supplied to the motors by a separate 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.

V4/xx° valve refacing heads are available for the popular valve face angles and also for customized angles.

Each V4/xx° valve refacing head features a built-in slideway for cutting tool travel to eliminate faulty angle setting operations and to ensure the same precise angle time and again.

The stem of the valve is placed into a collet chuck which is inserted into the holllow drive drive shaft of UDM4E drive unit. Two collets are arranged in tandem for precise alignment of the valves.

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

While the cutting tool rotates in a circle around the surface, a feed gear mechanism ensures a continuous transverse feed motion under the appropriate angle.

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

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

REFACING VALVE SEATS

The **UDM4E-VD Valve Seat Refacing Machine** consists of

- UDM4E motor drive unit, ,
- VD seat refacing gear unit screwed to shaft of the UDM4E motor drive unit by means of a union nut and
- D4/xx° seat refacing head bolted to the VD valve refacing gear unit.

The UDM4E-VD 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 feed motion to the cutting tool fitted with an indexable cutting insert.

Pilots and supporting spiders supplied for a VD4HD or an old VD4E valve seat refacing machine can be also used for the UDM4E-VD valve seat refacing machine.

COUNTERBORING

The **UDM4E-ADM Counterboring Machine** consists of

- UDM4E motor drive unit and
- AV or AVH boring head screwed to the drive shaft of the UDM4E motor drive unit by means of a union nut.

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 pilots and supporting spiders supplied for valve seat refacing can be also used for aligning the UDM4E-ADM counterboring machine in centerline with the valve guide.

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

Form boring tools are available for machining the shoulders within the counterbores under special angles to facilitate O-ring installation.

To preset the precision boring tool to the desired boring diameter, the VD4HD-ADM is placed on the boring tool setting stand and then the setting of the micrometer screw is used as reference value for adjusting the precision boring tool to the desired boring diameter by means of the vernier dial.

An optional bore gauge is available as an accessory to the boring tool setting stand for checking the diameter of the seat ring bore while the pilot is inserted in the valve guide. The dial test incicator of the bore gauge is set to a value correponding to the desired bore diameter at the tool setting stand and then the bore gauge is placed on the pilot to check the diameter of the seat ring bore

RESURFACING SEALING SURFACES

The **UDM4E-RC Face Turning Machine** consists of

- VD4HD motor drive unit,
- DG4 seat refacing gear unit attached to the motor drive unit by means of a union nut and a
- D4.x/0° face turning head bolted the VD seat refacing gear unit.

Face turning heads is available for resurfacing seating surfaces of various diameters on cylinder heads and engine blocks.

The VD4HD-RC face turning machine is aligned square to the sealing surface by alignment accessories being mounted to the cylinder head or engine block.

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

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