

- 4 -	Hunger Valve Seat Refacing	LUDWIG HUNGER MUNCHEN	
	Details		

The Hunger Valve Seat Refacing Method, the superior alternative to grinding and form cutting.

Working Principle:
 The Hunger VD refaces the valve seat in a lathe-type facing action.

The valve seat is refaced to the preset depth by the simultaneous application of both a rotary and a transverse feed motion to the single point carbide cutter.

While the single point carbide cutter rotates in a circle around the valve seat, a feed gear mechanism ensures a continuous outward transverse feed motion under the proper seat angle.

This angle is defined by an inclined slide-way in the exchangeable adapter head.

Hunger machining eliminates the high and low spots normal to surface grinding or form cutting.

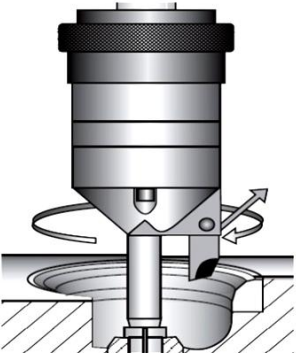
Handling:
 Operation is straightforward.

No setting gauges, no time consuming measurements or guesswork when mounting the cutter and setting up the VD on pilot.

First, lock the pilot in the valve guide.

Then lower VD over the pilot and position the cutter in front of the inner edge of the valve seat.

Turn micrometer infeed to set the desired depth of cut.



Advantages:
 The Hunger VD refaces the valve seat in flawless concentric patterns, providing the best surface texture for a complete valve seal.

The Hunger VD refaces all types of seats within a very broad diameter range. Carbide tipped cutters or cutters with indexable carbide insert handle seat materials from cast iron to stellite.

Cutters are available for both seat refacing and seat narrowing by machining an outer and/or inner correction with the primary and/or secondary cutting edge.

All carbide tipped cutters can be resharpened on standard tool sharpeners.

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	Valve Seat Refacing Tool		

The universal tool system for refacing valve seats from 14 to 60mm diam.

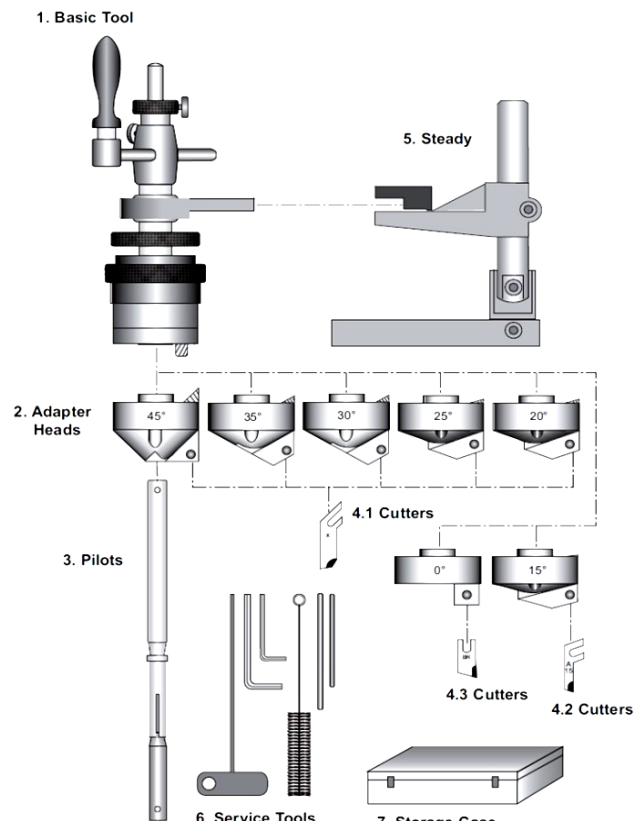


Capacity: Valve seat diameter range 14 - 60mm Valve seat angles 45°, 35°, 30°, 25°, 20°, 15° & 0°	Application: Motorcycles Cars Light commercial vehicles
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- 6 -	VDS1A	LUDWIG HUNGER MUNCHEN	
	Parts and Accessories		

Item. Description	Part No.
1. VDS1A Basic Unit The gear head of the basic unit is designed to receive an adapter head for the respective seat angle.	234 11 002
2. Adapter Heads Each adapter head includes a tool slide which is guided under an angle corresponding to the valve seat angle. D1/45 Adapter Head for 45° seat angle D1/35 Adapter Head for 35° seat angle D1/30 Adapter Head for 30° seat angle D1/25 Adapter Head for 25° seat angle D1/20 Adapter Head for 20° seat angle D1/15 Adapter Head for 15° seat angle D1/0 Adapter Head for 0° angle	234 11 120 234 14 120 234 12 120 234 15 120 234 17 120 234 13 120 234 19 120
Complete Refacing Units: consisting of basic unit and mounted adapter head VDS 1A/45 Refacing Unit for 45° seat angle VDS 1A/35 Refacing Unit for 35° seat angle VDS 1A/30 Refacing Unit for 30° seat angle VDS 1A/20 Refacing Unit for 25° seat angle VDS 1A/20 Refacing Unit for 20° seat angle VDS 1A/15 Refacing Unit for 15° seat angle VDS 1A/0 Refacing Unit for 0° angle	236 21 000 236 24 000 236 22 000 236 25 000 236 27 000 236 23 000 236 29 000
3. Pilots VD1 Pilots to be locked in the valve guide are required to align the refacing unit in centerline with the valve guide.	pages 9 - 10
4. Cutters 4.1 Cutters for 45°, 35°, 30°, 25° & 20° adapter heads 4.2 Cutters for 15° adapter head 4.3 Cutters for 0° adapter head	pages 12 - 17 page 17 page 32
5. Steady (page 26) The steady stabilizes the refacing unit just below the crank handle.	216 55 500
6. Service Tools Screwdriver hex 3mm for mounting adapter head Screwdriver hex 4mm for mounting cutter Screwdriver hex 6mm for setting up steady Brush for cleaning valve guide Tommy bars for mounting pilots	863 19 315 863 20 045 863 20 068 865 01 001 page 10
7. Storage cases Storage case type 1A including insert for one refacing unit, adapter head, pilots, cutters and service tools. Storage case type 1B including insert for two refacing units, adapter head, pilots, cutters and service tools.	236 90 001 236 90 002

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	Parts and Accessories		



1. Basic Tool

2. Adapter Heads

3. Pilots

4.1 Cutters

4.2 Cutters

4.3 Cutters

5. Steady

6. Service Tools

7. Storage Case

- 8 -		VDS1A		LUDWIG HUNGER MÜNCHEN	
		Valve Seat Refacing Kits			
<p>VDS1A Kits are available to match the various requirements. Each kit contains all the items needed in a storage case. The storage case has space for additional pilots and cutters so that the kit can be updated, if new or additional engines are to be serviced. Hunger uses information supplied by various sources to keep the contents of the kits up to date. As specifications are liable to change without prior notice Hunger cannot be held responsible for inaccuracies which may occur from time to time. In addition to the kits listed below Hunger supplies also kits as specified by the customer.</p>					
Universal VDS1A Kits					
Description	Part No.	Seat angle	Remarks		
Basic Kit I	236 03 137	45°	The low cost starting kit for 45° seats		
Basic Kit II	236 03 296	45°&30°	The low cost starting kit for 45° & 30° seats		
Standard Kit	236 03 100	45°	The complete kit for 45° seats		
Master Kit	236 03 300	45°&30°	The complete kit for 45° & 30° seats		
Motorcycle Kit	236 03 193	45°	The complete kit for motorcycles		
Tractor Kit	236 03 117	45°	The complete kit for tractors		
Special VDS1A Kits					
Description	Part No.	Seat Angle	Description	Part No.	Seat Angle
Ifa Romeo	236 03 343	45°&30°	Mercedes PKW	236 03 308	45°&30°
BMW PKW	236 03 184	45°	Mitsubishi	236 03 187	45°
BMW Motorrad	236 04 172	45°	MWM	236 03 185	45°
BMW PKW+Mot.	236 03 102	45°	Opel	236 03 112	45°
Citroen	236 03 303	45°&30°	Perkins	236 03 588	45°&30°
Daihatsu	236 03 186	45°	Peugeot	236 03 314	45°&30°
Datsun	236 03 158	45°&30°	Porsche	236 03 713	45°&30°
Fiat / Lancia	236 03 104	45°&30°	Renault PKW	236 03 315	45°&30°
Ford PKW	236 03 105	45°	Saab	236 03 181	45°
Harley Davidson	236 03 130	45°	Skoda	236 03 144	45°
Hatz	236 03 131	45°	Subaru	236 03 199	45°
Honda Motorrad	236 03 162	45°	Suzuki PKW	236 03 134	45°
IHC	236 03 133	45°	Suzuki Motorrad	236 03 129	45°
Kawasaki	236 03 194	45°	Toyota	236 03 160	45°
Lada	236 03 179	45°	VW-Audi	236 03 373	45°
Massey-Ferg.	236 03 136	45°	Volvo PKW	236 03 318	45°&30°
Mazda	236 03 161	45°	Yamaha	236 03 183	45°

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		Expanding Pilots Series VD1			
<p>Expanding pilots are available to fit valve guides from 5,9 to 12,9 mm in diameter. Two or more collets are available for each pilot size. Collets of different length L are available for pilot sizes 7/1 - 12/1 to achieve perfect centering in case of very short valve guides.</p>					
<p>Important: When selecting a pilot make sure that the length L is shorter than the length of the valve guide.</p>					
Expanding diameter Ø mm	Collet length L mm	Pilot size	Pilot incl. Collet Part No.	Spare & add. collets Part No.	
5,4 - 5,65	35	5/1	216 71 101	216 71 501	
5,65 - 5,9	35	↓		216 71 506	
5,9 - 6,2	35	6/1	216 71 102	216 71 502	
6,2 - 6,5	35	↓		216 71 503	
6,4 - 6,65	35	↓		216 71 504	
6,65 - 6,9	35	↓		216 71 505	
6,9 - 7,2	35	7/1	216 75 112	216 75 512	
↓	42	↓	216 71 112	216 71 512	
7,2 - 7,5	35	↓		216 75 513	
↓	42	↓		216 71 513	
7,4 - 7,65	35	↓		216 75 514	
↓	42	↓		216 71 514	
7,65 - 7,9	35	↓		216 75 515	
↓	42	↓		216 71 515	
7,9 - 8,4	38	8/1	216 75 122	216 75 522	
↓	52	↓	216 71 122	216 71 522	
8,4 - 8,9	38	↓		216 75 523	
↓	52	↓		216 71 523	
8,9 - 9,4	44	9/1	216 75 132	216 75 532	
↓	59	↓	216 71 132	216 71 532	
9,4 - 9,9	44	↓		216 75 533	
↓	59	↓		216 71 533	
9,9 - 10,4	48	10/1	216 75 142	216 75 542	
↓	68	↓	216 71 142	216 71 542	
10,4 - 10,9	48	↓		216 75 543	
↓	68	↓		216 71 543	
10,9 - 11,4	48	11/1	216 75 147	216 75 547	
↓	76	↓	216 71 147	216 71 547	
11,4 - 11,9	48	↓		216 75 548	
↓	76	↓		216 71 548	
11,9 - 12,4	56	12/1	216 75 152	216 75 552	
↓	84	↓	216 71 152	216 71 552	
12,4 - 12,9	56	↓		216 75 553	
↓	84	↓		216 71 553	

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		Solid Pilots			
<p>Solid pilots are available especially for small valve guide diameters. A solid pilot has a slow taper to fit exactly the respective valve guide. The following solid pilots are normally available ex stock:</p>					
Valve guide diam. mm	Solid Pilot Part No.				
4,000	216 72 516				
4,490	216 72 512				
4,500	216 72 513				
4,990	216 72 499				
5,000	216 72 511				
5,020	216 72 500				
5,470	216 72 507				
5,480	216 72 508				
5,490	216 72 006				
5,500	216 72 502				
5,510	216 72 005				
5,520	216 72 509				
5,530	216 72 003				
6,000	216 72 001				
7,000	216 72 011				
8,000	216 72 021				
Tommy Bars					
<p>Tommy bars are required for mounting and demounting expanding pilots and for withdrawing solid pilots from the valve guides.</p>					
Description	Part No.	Fitting in			
Tommy Bar Ø 3 mm	216 91 300	Pilot nut sizes 5 - 8			
Tommy Bar Ø 4,5 mm	216 91 450	Pilot shaft VD1 and pilot nut sizes 9 - 16			
Tommy Bar Ø 6 mm	217 91 600	Pilot shaft VD2 and pilot nut sizes 17 - 18			

- 28 -		VDS1A-VDS2-VD2-RDS1		LUDWIG HUNGER MÜNCHEN	
		Steady			
<p>The swivelling guide arm (2) of a refacing unit can be locked in place by means of the steady which prevents lateral displacement of the refacing unit.</p>					
<p>The older types VD1 and VD2 refacing units have ball-type guide arms. The ball-type guide arm can be replaced by the more convenient swivelling guide arm. Conversion kits are available for the VD 1 and VD 2 models. A new steady clamp (1.1) is required when replacing the ball-type guide arm. We suggest to procure the complete new steady (1) shown above which is more versatile than the old steady.</p>					
<p>A rapid clamp (3) is available to clamp the base member of the steady to the cylinder head. The rapid clamp includes an adjustable clamping lever.</p>					
Item	Description	Part No.			
1.	Steady consisting of	216 55 500			
1.1	Steady Clamp	216 55 220			
1.2	Base Member with universal joint and post	216 55 510			
2.	Conversion Kit for VD1	216 21 700			
	Conversion Kit for VD2	217 21 700			
3.	Rapid Clamp	216 55 520			