

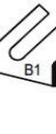


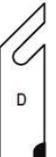
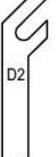
LUDWIG HUNGER MÜNCHEN		VDS1A	- 9 -
		Cutters	
<p>Cutters of different length, width and cutting geometry are available to cut valve seats of different size, shape and location.</p>			
<p>1. Cutters for seat refacing and correction</p>			
<p>In addition to single point refacing of the valve seat the primary and/or secondary cutting edges of this cutter type are designed for machining the top and/or bottom edges of the valve seat under the proper angle.</p>			
<p>2. Cutters for seat refacing only</p>			
<p>This type is designed for cutting only the valve seat surface. The cutting edge geometry of this cutter type is optimized to cut hard-to-face seat materials properly.</p>			
<p>3. Cutters for correction only</p>			
<p>This type of cutter is designed for correcting only. The angle of correction is defined by the proper inclination of the cutting edge. Cutters 24, 24M, 30, C42, C82, E, E2, F, F1, F4, F5, F10, G and H belong to this type of cutters.</p>			
<p>4. Cutters for cutting grooves</p>			
<p>This type of cutter is designed for cutting a groove into the valve seat ring so that a suitable tool can be applied to remove the valve seat ring. Cutters C6 and C6.1 belong to this type of cutters.</p>			

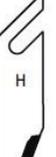
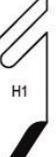
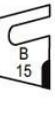
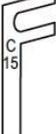
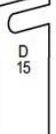
LUDWIG HUNGER MÜNCHEN		VDS1A	- 12 -			
		Cutters				
<p>Cutters for 45°, 30°, 35°, 25° and 20° adapter heads</p>						
Type	1	1M	2	3	4	5
Order-No.	216 64 110	216 64 112	216 64 130	216 64 210	216 64 230	216 64 460
for seat diam. mm	22 - 38	20 - 36	32 - 48	22 - 38	32 - 48	32 - 48
Refacing seats	yes	yes	yes	yes	yes	yes
Top correction	15°	15°	15°	15°	15°	15°
Bottom correction	75°	75°	75°	75°	75°	75°
Seat location	surface	surface	surface	recessed	recessed	recessed
Application	universal	universal Mercedes	universal	universal	universal	universal
Drawn to scale						
Type	6	7	8	9	10	11
Order-No.	216 64 610	216 64 211	216 64 212	216 64 231	216 64 620	216 64 621
for seat diam. mm	26 - 42	20 - 36	22 - 38	28 - 44	28 - 44	48 - 60
Refacing seats	yes	yes	yes	yes	yes	yes
Top correction	15°	15°	25°	30°	35°	15°
Bottom correction	75°	75°	75°	75°	75°	75°
Seat location	recessed	recessed	recessed	recessed	surface	universal
Application	Fiat Lancia	Fiat Lancia Citroen Mot.cycle	Harley Opel	universal	universal	universal
Drawn to scale						

LUDWIG HUNGER MÜNCHEN		VDS1A	- 13 -			
		Cutters				
<p>Cutters for 45°, 30°, 35°, 25° and 20° adapter heads</p>						
Type	12	13	14	15	15M	16
Order-No.	216 64 622	216 64 623	216 64 624	216 64 625	216 64 208	216 64 631
for seat diam. mm	22 - 38	32 - 48	20 - 36	20 - 36	20 - 36	22 - 38
Refacing seats	yes	yes	yes	yes	yes	yes
Top correction	30°	15°	0°	15°	15°	30°
Bottom correction	75°	60°	60°	75°	65°	65°
Seat location	recessed	recessed	recessed	recessed	recessed	recessed
Application	Mazda Opel Perkins Toyota	BMW Mercedes Peugeot		Audi VW	Mercedes	Mitsubishi Toyota
Drawn to scale						
Type	17	18	23M	24	24M	25
Order-No.	216 64 626	216 64 611	216 64 235	216 64 233	216 62 170	216 64 132
for seat diam. mm	24 - 40	26 - 42	22 - 38	30 - 60	20 - 40	15 - 31
Refacing seats	yes	yes	yes	no	no	yes
Top correction	15°	11°	35°	r=7,5mm	35°	0°
Bottom correction	80°	75°	60°			58°
Seat location	recessed	recessed	recessed	recessed	recessed	recessed
Application	Ford Renault	Saab	Mercedes		Mercedes	Mazda Suzuki
Drawn to scale						

LUDWIG HUNGER MÜNCHEN		VDS1A	- 14 -			
		Cutters				
<p>Cutters for 45°, 30°, 35°, 25° and 20° adapter heads</p>						
Type	26	27	28	29	30	31
Order-No.	216 64 627	216 64 214	216 64 234	216 64 113	216 64 133	216 64 134
for seat dia. mm	22 - 38	20 - 36	25 - 42	22 - 38	16 - 40	28 - 44
Refacing seats	yes	yes	yes	yes	no	yes
Top correction	20°	30°	30°	0°	-	35°
Bottom correction	60°	60°	60°	65°	60°	-
Seat location	recessed	recessed	recessed	surface	recessed	recessed
Application	Yamaha	Datsun Mazda Kawasaki	Daihatsu Datsun Mazda Kawasaki	BMW	BMW Kawasaki Subaru	BMW Kawasaki Subaru
Drawn to scale						
Type	32	33	34	35	36	
Order-No.	216 64 215	216 64 216	216 64 217	216 64 218	216 64 636	
for seat dia. mm	23 - 41	16 - 32	18 - 34	20 - 36	20 - 36	
Refacing seats	yes	yes	yes	yes	yes	
Top correction	15°	30°	30°	25°	15°	
Bottom correction	-	60°	60°	60°	60°	
Seat location	recessed	recessed	recessed	recessed	recessed	
Application	Mercedes Porsche	Porsche	Porsche	Porsche	BMW	
Drawn to scale						

LUDWIG HUNGER MÜNCHEN		VDS1A		- 15 -		
		Cutters				
Cutters for 45°, 30°, 35°, 25° und 20° adapter heads						
Type	A	A1	B	B1	C	C1
Order-No.	216 61 110	216 61 112	216 61 130	216 61 131	216 61 210	216 61 560
for seat dia. mm	20 - 40	25 - 42	34 - 54	48 - 60	20 - 40	17 - 37
Refacing seats	yes	yes	yes	yes	yes	yes
Top correction	-	-	-	-	-	-
Bottom corrector	-	-	-	-	-	-
Seat location	surface	surface	surface	surface	recessed	recessed
Application	universal	universal	universal	universal	universal	universal
Drawn to scale						
Type	C4	C4-1	C4-2	C6	C6-1	C7
Order-No.	216 69 310	216 69 311	216 69 312	216 69 210	216 69 215	216 69 211
for seat dia. mm	20 - 38	20 - 38	15 - 30	27 - 48	24 - 43	15 - 34
Refacing seats	yes	yes	no	no	no	yes
Top correction	15°	30°	-	-	-	-
Bottom corrector	-	-	60°	-	-	-
Seat location	recessed	recessed	recessed	universal	universal	recessed
Application	Opel Renault Volvo	universal	universal	cutting grooves	cutting grooves	Mot.cycles
Drawn to scale						

- 16 -		VDS1A		LUDWIG HUNGER MÜNCHEN		
		Cutters				
Cutters for 45°, 30°, 35°, 25° und 20° adapter heads						
Type	C8	C8-1	C8-2	C9	D	D2
Order-No.	216 69 212	216 69 213	216 69 214	216 69 413	216 61 230	216 61 431
for seat dia. mm	17 - 37	17 - 37	12 - 30	14 - 34	34 - 54	24 - 44
Refacing seats	Ja	Ja	no	Ja	Ja	Ja
Top correction	15°	30°	-	-	-	-
Bottom corrector	-	-	60°	-	-	-
Seat location	recessed	recessed	recessed	recessed	recessed	recessed
Application	Mazda Toyota Mot.cycles	universal	universal	universal	universal	universal
Drawn to scale						
Type	D7	E	E2	F	F1	F4
Order-No.	216 61 232	216 62 150	216 62 160	216 62 210	216 62 230	216 62 610
for seat dia. mm	38 - 58	20 - 52	35 - 52	20 - 37	35 - 52	20 - 37
Refacing seats	Ja	no	no	no	no	no
Top correction	-	15°	0°	15°	15°	30°
Bottom corrector	-	-	60°	-	-	-
Seat location	recessed	recessed	recessed	recessed	recessed	surface
Application	universal	universal	universal	universal Ford Lada	universal	universal
Drawn to scale						

LUDWIG HUNGER MÜNCHEN		VDS1A		- 17 -		
		Cutters				
Cutters for 45°, 30°, 35°, 25° und 20° adapter heads						
Type	F5	F10	G	G0	H	H1
Order-No.	216 62 231	216 62 235	216 62 310	216 62 310.1	216 62 330	216 62 331
for seat dia. mm	20 - 37	35 - 52	20 - 37	20 - 37	35 - 52	22 - 52
Refacing seats	no	no	no	yes	no	no
Top correction	25°	30°	-	0°	-	15°
Bottom corrector	-	-	75°	75°	75°	60°
Seat location	recessed	recessed	universal	universal	universal	universal
Application	universal	Harley Porsche	universal	universal	universal	Harley
Drawn to scale						
Cutters for 15° adapter head						
Type	A/15	B/15	C/15	D/15	D1/15	
Order-No.	216 61 120	216 61 140	216 61 220	216 69 211	216 69 212	
for seat dia. mm	20 - 40	38 - 58	20 - 40	38 - 58	28 - 48	
Seat location	surface	surface	recessed	recessed	recessed	
Application	universal	universal	universal	universal	universal	
Drawn to scale						

- 18 -		VDS1A		LUDWIG HUNGER MÜNCHEN	
		Cutters			
Cutters for 45°, 30°, 35°, 25° und 20° adapter heads					
SC Cutters with indexable inserts for hard seats					
The SC type cutters are furnished with indexable carbide inserts. The indexable inserts are coated with TIN and are specifically provided for cutting the hard seat materials as used in modern engines. If the insert is too dull or chipped, index insert or install a new insert.					
Type	SC1	SC2	SC5		
Part No.	216 65 110	216 65 100	216 65 120		
For seat dia. mm	23 - 43	28 - 48	40 - 60		
Seat refacing	yes	yes	yes		
Top correction	-	-	-		
Bottom corrector	-	-	-		
Seat location	surface & recessed	surface & recessed	surface & recessed		
Application	universal	universal	universal Harley		
Drawn to scale					
Scope of supply:	Part No.	Part No.	Part No.		
Cutter	216 65 110	216 65 100	216 65 120		
consisting of					
Toolholder	216 65 001	216 65 002	216 65 003		
Cutting insert	862 20 004	862 20 003	862 20 003		
Clamping screw	809 71 026	809 71 025	809 71 025		
Torx screwdriver	863 22 002	863 22 001	863 22 001		