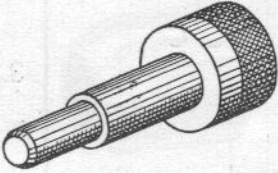
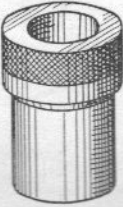
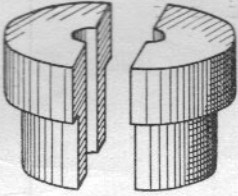
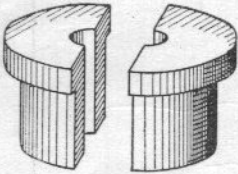
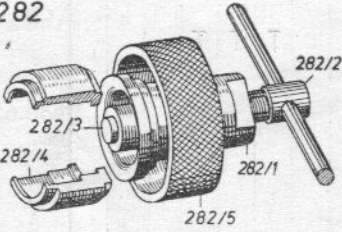




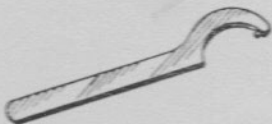
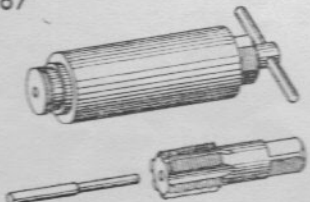
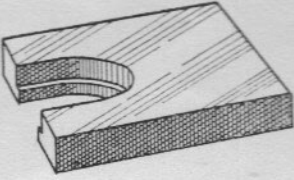
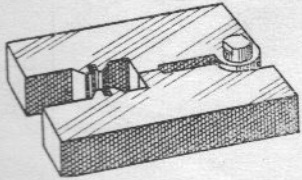
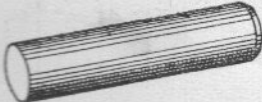
SPECIAL TOOLS
FOR
BMW MOTORCYCLES

BAYERISCHE MOTOREN WERKE A.-G., MÜNCHEN 13, LERCHENAUERSTR. 76

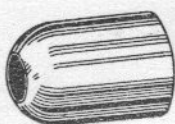
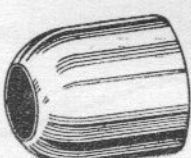
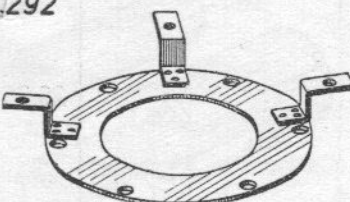
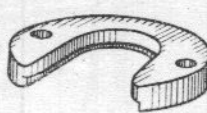
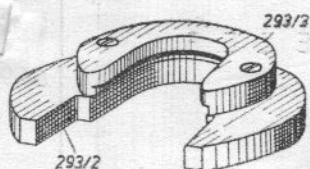
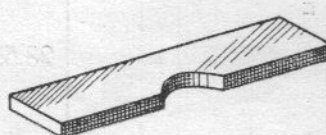
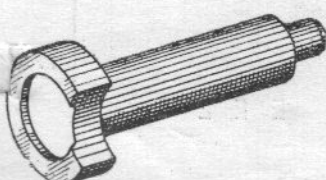
Special Tools for BMW Motorcycles

Matra Order No. and Illustration	Description	Items	Model / Group						Price DM
			R 24	R 25	R 51/2	R 51/3	R 67		
281 (see 281/1 – 281/4)	Press tools, for removing and replacing shock absorber flange on propeller shaft, consisting of 281/1, 281/2, 281/3 and 281/4.	4							50.15
281/1 	Remover, shock absorber flange on propeller shaft. Support flange hub in 331/1 using 331/7A and 331/2, insert remover 281/1 in bore of propeller shaft, press out shaft.	1	R	R	R	R	R		5.85
281/2 	Replacer, shock absorber flange on propeller shaft. Support shaft collar on 281/3 and 281/4 in 331/2 and 331/1, and press on flange using replacer and press. Observe correct flange distance: 31 ± 1 mm.	1	R	R	R	R	R		4.60
281/3 	Support Bushing, split, 15mm bore, R=5mm, for replacing shock absorber flange. Application see 281/2.	2/2			R	R	R		20.90
281/4 	Support Bushing, split, 14mm bore, R=3mm, for replacing shock absorber flange. Application see 281/2.	2/2		R					18.80
282 	Puller, rear ball bearing of crankshaft. Apply 282/1 with 282/3 on crankshaft journal, grasp ball bearing and collar of 282/1 with 282/4, slide 282/5 over 282/4 and pull off ball bearing with 282/2.	1			E	E	E		59.40
283 	Pin Spanner, 52/55 mm dia., for threaded ring on rear wheel drive housing.	1		R	R	R	R		1.75

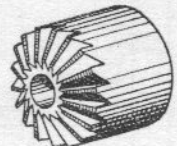
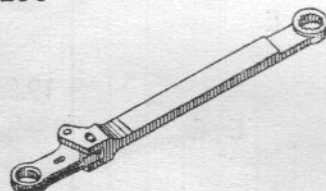
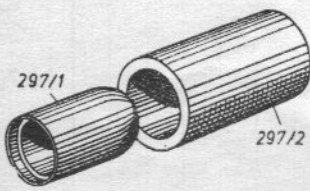
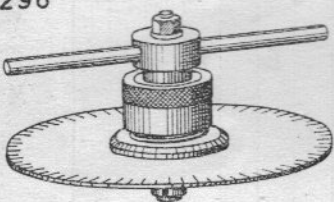
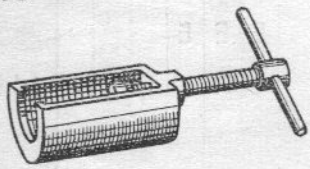
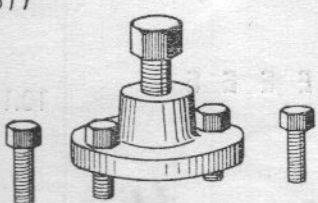
Special Tools for BMW Motorcycles

Matra Order No. and Illustration	Description	Items	Model / Group					Price D/M
			R24	R25	R51/2	R51/3	R67	
284 	Pin Spanner, 58/62 dia., round pin 5 mm for bell-shaped cover on propeller shaft.	1		R	R	R	R	4.05
285 	Pin Spanner, 54 mm dia., round pin 5 mm, for spigot nut on fork end pieces. Oppose with 286.	1			C	C	C	3.30
286 	Pin Spanner, 45 mm dia., round pin 5 mm, for spring retainer on front wheel fork. Oppose with 285.	1			C	C	C	3.30
287 	Valve Insert Extractor. Use set of taps (3 items) and guide to cut thread in valve insert. Heat cylinder head to approx. 390 deg F. Turn spindle and guide into valve insert and withdraw insert.	1	E	E	E	E	E	63.50
288/1 	Fixture for removing drive shaft ball bearing. Support drive shaft (snap ring removed) on top speed gear in 288/1 and 331/1, press out shaft, using 288/3.	1			T	T	T	15.85
288/2 	Fixture for removing drive shaft roller bearing inner race. Close 282/2 on low speed gear placed in tooth notches, support on 331/1 and press out shaft with 288/3.	1			T	T	T	35.65
288/3 	Drift Punch, for drive shaft. Application see 288/1 and 288/2.	1			E	E	E	1.00

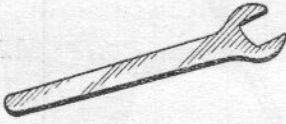
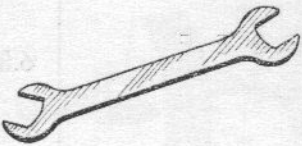
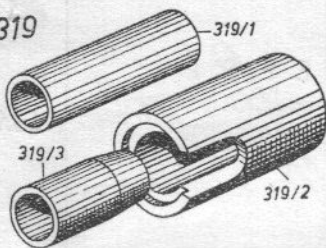
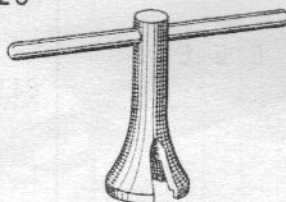
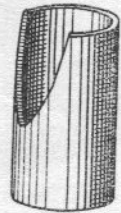
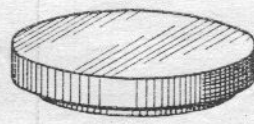
Special Tools for BMW Motorcycles

Matra Order No. and Illustration	Description	Items	Model / Group						Price DM
			R24	R25	R51/2	R51/3	R67		
289 	Replacer, for seal ring in rear wheel drive. To insert seal ring slide 289 over splined portion of final coupling flange.	1			R	R	R		3.30
290 	Replacer, for seal ring in rear wheel drive. To install ring gear slide 290 over splined portion of final coupling flange.	1		R					3.75
292 	Locking Fixture, for flywheel. To loosen and tighten crankshaft nut lock clutch bolts and casing screws with 292. Same fixture with 3 screwed-on holder bushings V 5032 (shop-made tool).	1			E			E E	19.35
293/1 	Crank Web Support for horse-shoe plate, for crankshaft disassembly. Screw 293/1 upon 293/2. Support crankshaft with 331/1 in 293/2/1, press out crankpin, together with centre web, using 293/5 and press.	1			E				20.70
293/2/3 	Horse-shoe Plate 293/2 with crank web sup- port 293/3 for crankshaft disassembly. Support crankshaft with 331/1 in 293/2/3, press out crankpin with centre web using 293/5 and press.	1			E		E		47.45
293/4 	Intermediate Plate for crankshaft assembly. Support crankpin with 331/1 on 293/4, press outer crank web on crankpin, using plate of 293/5 and press.	1			E	E	E		16.95
293/5 	Drift Punch for crankshaft. Application see 293/1/2/3 and 293/4.	1		E	E	E	E		10.10

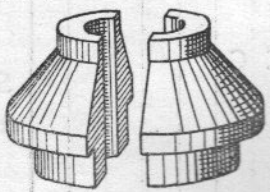
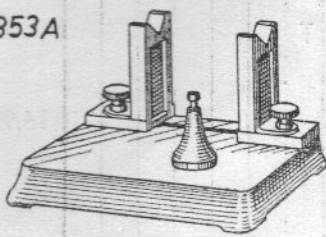
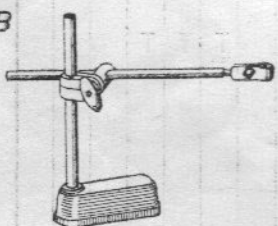
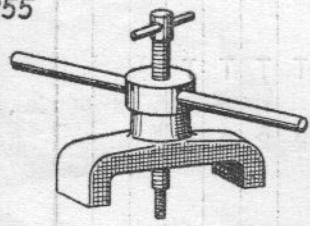
Special Tools for BMW Motorcycles

Matra Order No. and Illustration	Description	Items	Model / Group						Price D
			R24	R25	R51/2	R51/3	R67		
294 	Valve Seat Cutter, 45 deg., 36 mm dia. For cutting fit on cutter guide shank 431.	1	E	E	E	E	E		12.70
295 	Valve reseating cutter, 15 deg., 36 mm dia. For refacing seats to valve head diameter. Fit on cutter guide shank 431.	1	E	E	E	E	E		12.70
296 	Ratchet Wrench, for loosening and tightening nut on rear wheel drive pinion.	1		R					28.95
297 	Replacer Bushings for oil seal of driving shaft. Slide 297/1 over splines to install shaft with drift bushing W 5023 (shop-made tool). 297/2 serves to remove and replace the oil seal (Simmerring).	2	T	T					9.-
298 	Graduated Dial, for adjustment of ignition timing. Insert 298 in bore of centered clutch plate and clamp with upper nut. Reset dial after spigot nut has been loosened.	1	E	E	E	E	E		64.90
299 	Puller, for ball bearing 6204 and sprocket; for sprocket R51/2 with extension arbour, shop-made tool W 5001.	1	E	E					23.55
311 	Puller, for flywheel with 2 sets of screws Flange of 311 with 2 screws 24 mm long, or with 2 screws 20 mm long is screwed on flywheel. Press off flywheel.	1		E	E		E	E	19.20

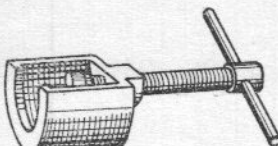
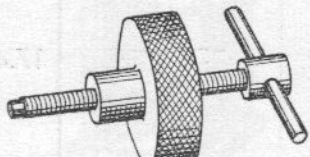
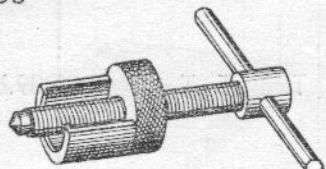
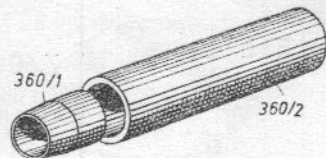
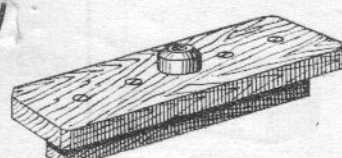
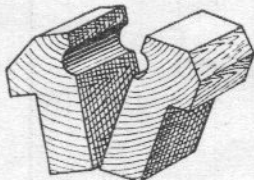
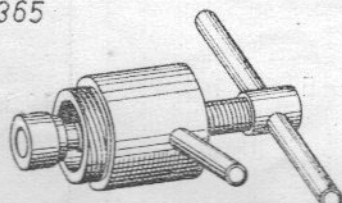
Special Tools for BMW Motorcycles

Matra Order No. and Illustration	Description	Items	Model / Group						Price DM
			R24	R25	R51/2	R51/3	R67		
316 	Spanner, open end 41 mm for adjustment of fork steering column.	1	C	C	C				5.85
316A 	Spanner, double open end 41mm for adjustment of fork steering column.	1	C	C	C	C	C		6.55
319 	Assembly Tool, transmission drive shaft. Slide 319/2 on shaft without kickstarter gear, press on in vice and remove circlip. Press circlip with 319/2 over cone 319/3 on shaft. Use 319/1 to press on ball bearing 6204.	3	T	T					16.95
326 	Tensioner, for kickstarter Spring. Grasp cover for starter shaft with 326. Give spring initial tension by turning 180° - 270° anticlockwise and insert 2 countersunk screws.	1			T	T	T		9.70
331/1 	Steel Bushing for press operations under hydraulic press; see 281/1/2/3/4, 288/1/2, 293/1/2/3/4 and 385/5.	1	E T R	E T R	E T R	E T R	E T R		40.90
331/2 	Cover for 331/1 with slit and bore. Application see 331/7 A, 385/5, 281/3, 281/4, 385/5.	1	T R	T R	T R	T R	T R		20.45
331/3 	Cover for 331/1 to be used as flat press plate.	1							22.20

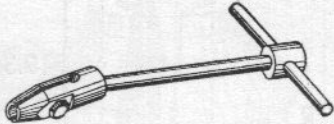
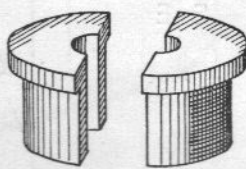
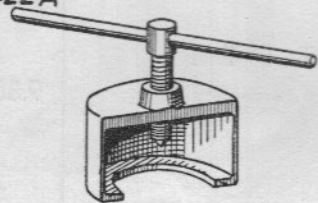
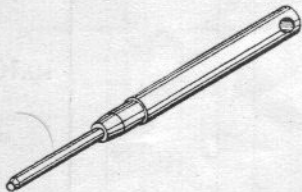
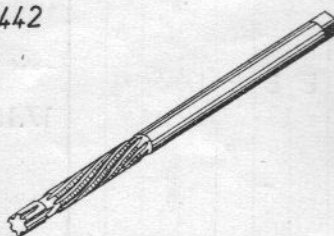
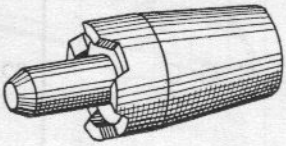
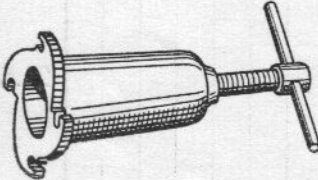
Special Tools for BMW Motorcycles

Matra Order No. and Illustration	Description	Items	Model / Group					Price DM
			R24	R25	R51/2	R51/3	R67	
331/7A 	Bushing, split, for pressing shock absorber flange off propeller shaft. Support shock absorber hub on 331/7 A and 331/2. Use arbour 281/1 to press out propeller shaft in 331/1.	2/2	R	R	R	R	R	12.85
338/1 	Hook Spanner, 49 mm dia. for exhaust nut.	1	E	E	E	E	E	6.80
353A 	Device, for centering of crankshaft, consisting of one base plate, 2 longitudinally slideable prismatic supports, and adjustable support for rotation test.	1	E	E	E	E	E	153.90
353B 	Gauge Support with stand; used with 353 A for dial gauge adjustment in all directions.	2	E	E	E	E	E	84.90
353C 	Dial Gauge with .01 mm scale for 353 B.	2	E	E	E	E	E	50.60
355 	Puller for camshaft. Loosen bearing screws behind camshaft gear, screw spindle into camshaft and withdraw shaft by means of puller clamp V 5033 (shop-made tool).	1	E	E			E E	21.05

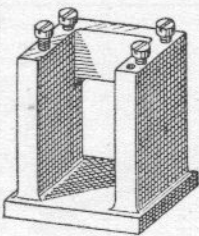
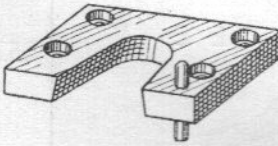
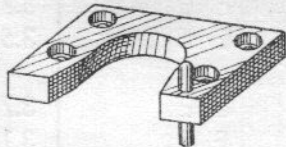
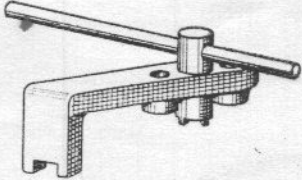
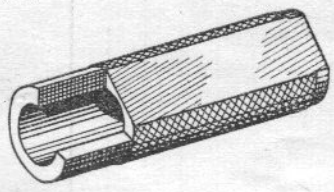
Special Tools for BMW Motorcycles

Matra Order No. and Illustration	Description	Items	Model / Group						Price DM
			R24	R25	R51/2	R51/3	R67		
356 	Puller, for ball bearing in rear wheel drive. For ball bearing 6205, with pressure plate 29 mm dia., 3 mm thick- ness (shop-made) for ball bearing 6206.	1		R R					19.35
357 	Clamping screws for clutch assembly. Compress clutch evenly with 3 items 357, then replace them progressively by clutch screws.	3	E	E	E	E			20.45
359 	Remover for Speedometer Bushing. Apply 359 on bushing collar and withdraw bushing.	1	T	T	T	T	T		9.80
360 	Replacer Bushings for lock ring on driven shaft. Slide lock ring over cone 360/1 and press it in seat on shaft by means of 360/2.	2	T	T					10.10
361 	Wooden Plate for valve removal and re- installation; used to retain valves when tensioning valve springs. Use with valve spring lifter V 5034 (shop-made tool).	1	E	E	E	E	E		17.15
362 	Wooden Clamping Blocks for front wheel fork, (one set) used to clamp fork in Vice.	1	C	C	C	C	C		32.80
365 	Puller for cover of rear wheel drive casing	1	R						21.55

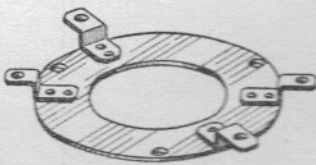
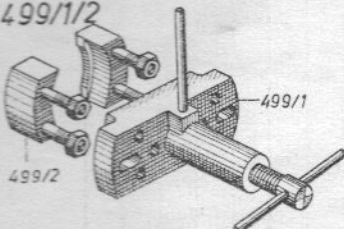
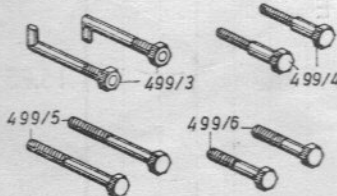
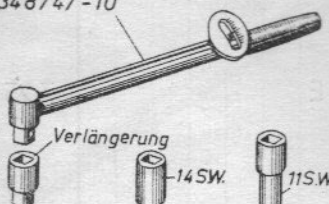
Special Tools for BMW Motorcycles

Matra Order No. and Illustration	Description	Items	Model / Group						Price DM
			R24	R25	R51/2	R51/3	R67		
368 	Holder, used for grinding-in valves with 7 mm stem dia.	1	E	E	E	E	E		13.55
385/5 	Bushing, split, for pressing on final coupling flange; to be applied on propeller shaft together with 331 / 2 and 331 / 1.	2/2	R						17.45
422A 	Puller, for coupling flange on transmission.	1	T	T	T	T	T		39.60
431 	Cutter Shank 7 mm dia. for cutters 294 and 295.	1	E	E	E	E	E		7.60
442 	Valve Guide Reamer, 7 mm dia.	1	E	E	E	E	E		9.25
451 	Replacer tool, for leather seal in rear wheel drive casing. When installing final coupling flange, place 451 upon flange.	1	R						10.95
467 	Puller, for bearing cover of crank shaft front bearing. Clamp 467 with set screws, and remove cover with bearing.	1	E	E					19.35

Special Tools for BMW Motorcycles

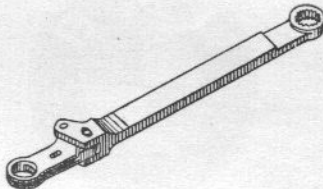
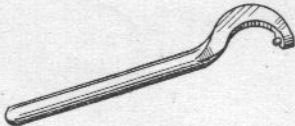
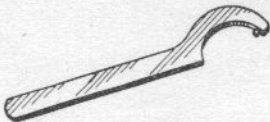
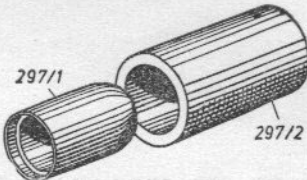
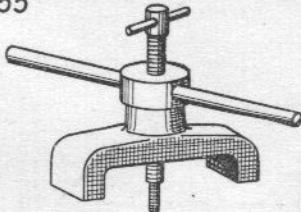
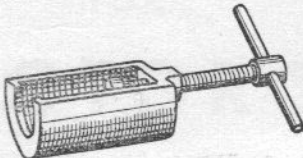
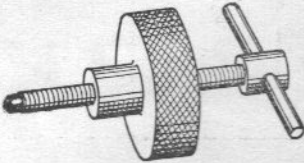
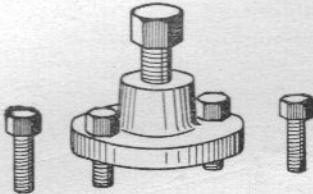
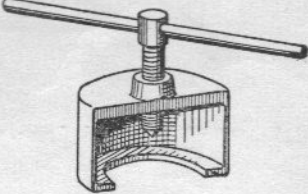
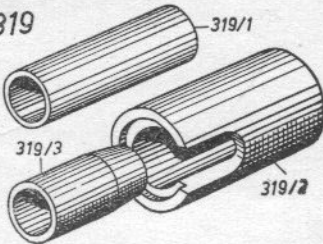
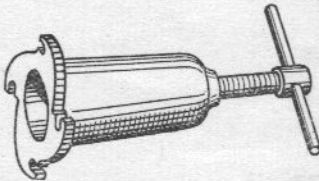
Matra Order No. and Illustration	Description	Items	Model / Group						Price DM
			R 24	R 25	R 51/2	R 51/3	R 67		
493 (see 493/1 – 493/5)	Press Tools for disassembly and assembly of crankshaft R 24 and R 25 consisting of 493/1 – 493/4.	4							76.45
493/1 	Support for press operations on crankshaft	1	E	E					31.35
493/2 	Support Plate for R 24. Support crankshaft at connecting rod with 493/1 in 493/2, secure with 493/4 and use 293/5 to press out crankpin together with rear web.	1	E						15.95
493/3 	Support Plate for R 25 Support crankshaft at connecting rod with 493/1 in 493/3, secure with 493/4 and use 293/5 to press out crankpin together with rear web.	1		E					15.95
493/4 	Locking Tool for support plates 493/2 and 493/3 used to secure crankshaft in support.	1	E	E					7.25
494 	Holding Fixture with key for nut of trans- mission driven shaft. Apply 494 in pins of shock absorber flange, resp. against nose on transmission housing.	1	T	T	T	T	T		16.70
495 	Drift Punch for crankshaft, used for assembly of crankshaft halves.	1	E	E					11.65

Special Tools for BMW Motorcycles

Matra Order No. and Illustration	Description	Items	Model / Group						Price DM
			R 24	R 25	R 51/2	R 51/3	R 67		
498 	Locking Fixture for Flywheel to loosen and tighten crankshaft nut, lock clutch bolts and casing screws with 498.	1	E	E					17.50
499 (see 499/1 - 6)	Multi-Purpose Puller Device for engines R 51 / 3 and R 67.	11							74.80
499/1/2 	Grasp gear on crankshaft with 2 puller jaws 499 / 2, bolt jaws to puller and spindle assembly 499/1 and pull gear.	2 1				E	E		55.65
499/3-6 	Use Puller 499 / 1 with screwed-in- hook screws 499 / 3 for oil pump drive gear, collar screws 499 / 4 for gearcase cover, 499 / 5 screws 8 x 72 mm for front bearing cover, 499 / 6 screws 8 x 33 mm for camshaft gear.	2 2 2 2				E E E E	E E E E		8.80 3.50 3.75 3.10
348747-10 	Torque Wrench 0 - 6 mkg with square extension for tightening cylinder head screws with a torque of 3 - 3.5 mkg using 14 mm double hexagon sockets and magneto rotor screw with torque of 2mkg using 11mm socket. (1mkg=7.22 ft. lb.)	4							43.45 1.55 1.25 1.25

This illustrated list shows the minimum number of indispensable tools that a responsible agent should have in his workshop.

Total DM 250.—

283	296	338/1
		
284	297	355
		
285	299	357
		
286	311	422A
		
289	319	467
		
290	326	494
