



SPECIAL TOOLS
FOR
BMW-MOTORCYCLES

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

Special Tools for BMW Motorcycles

Our Service Department has carefully developed the BMW special tools in order to guarantee dependable repair operations on BMW motorcycles. Efforts have been made to provide a great number of multi-purpose tools ensuring wide scope of application at relatively limited costs.

Messrs.

MATRA-Werke G. m. b. H., Frankfurt/Main-Ost, Dieselstr. 30

are by arrangement responsible for the manufacture and distribution of these special tools.

Every well-organized workshop should be equipped with these special tools as they are indispensable for carrying out correct dismantling and reassembly-operations on motorcycles.

All persons of your staff working on BMW motorcycles should know how to use these tools which should be conveniently arranged on easy-to-reach tool boards, being kept in good condition.

Your efforts in observing these rules will be repaid by

good quality of work,
saving of time,
increased all-round workshop efficiency,
satisfied customers, and
further improvement of your firm's reputation.

The compulsory minimum set of special tools absolutely necessary for every BMW agent is listed on the last inner page of this booklet.

Symbols used on the following pages:

E = Engine Group
T = Transmission Group
R = Rear Wheel Drive Group
C = Chassis Group

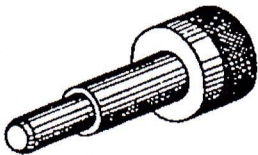
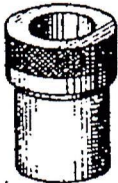
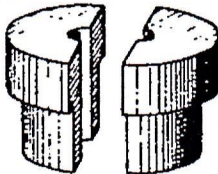
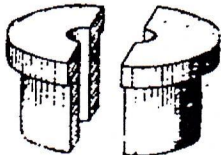
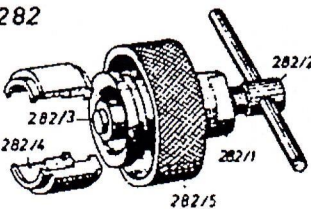
**Bayerische Motoren Werke
Aktiengesellschaft**

ADDENDUM TO
 "SPECIAL TOOLS FOR BMW MOTORCYCLES", EDITION OF 3.52

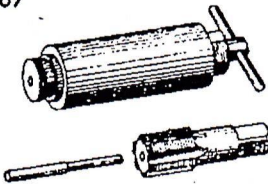
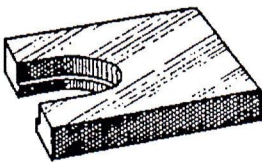
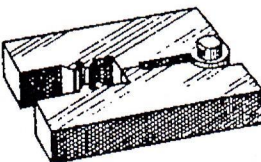
THE FOLLOWING MATRA AND SHOP-MADE TOOLS, DESIGNED FOR USE WITH THE R24, R25, R51/2, R51/3 AND R67 SERIES, CAN ALSO BE USED TO SERVICE THE BELOW LISTED MODELS OF THE R68, R26, R27, R50, R60, R69, and R69S MOTORCYCLE:

SPECIAL TOOL NO.	-----APPLICATION-----						
	R68	R26	R27	R50	R60	R69	R69S
286	X	X	X	X	X	X	X
290		X	X				
292	X	X		X	X	X	X
296		X	X				
297/1	X	X	X	X	X	X	X
297/2	X	X	X	X	X	X	X
299	X	X	X	X	X	X	X
311	X	X	X	X	X	X	X
319/1	X	X	X	X	X	X	X
319/2	X	X	X	X	X	X	X
319/3	X	X	X	X	X	X	X
338/1		X	X	X	X		
338/2	X					X	X
355	X	X	X	X	X	X	X
357		X	X				
368		X	X				
442		X	X				
467		X	X				
494		X	X				
498		X	X				
W5003	X	X	X	X	X	X	X
W5009	X						
W5013	X						
V5014	X	X	X	X	X	X	
V5017	X	X	X	X	X	X	
V5020	X	X		X	X	X	
W5021	X	X	X	X	X	X	X
W5026	X						
V5030	X	X	X	X	X	X	X
V5031	X						
V5033	X			X	X	X	
V5034	X	X	X	X	X	X	X
V5035	X	X	X	X	X	X	X
L5036	X	X	X	X	X	X	X
W5038	X	X	X	X	X	X	X
W5039	X	X	X	X	X	X	X
V5040	X			X	X	X	X
V5041	X			X	X	X	X
V5042	X	X	X				
V5043	X	X	X	X	X	X	

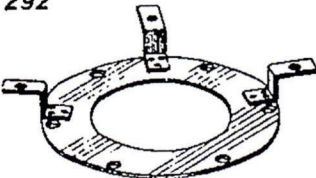
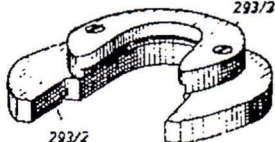
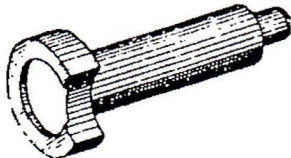
Special Tools for BMW Motorcycles

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, 15 mm bore, R=5 mm, for replacing shock absorber flange. Application see 281/2.	2/2			R	R	R	20.90
281/4 	Support Bushing, split, 14 mm bore, R=3 mm, 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

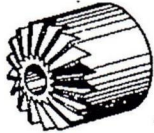
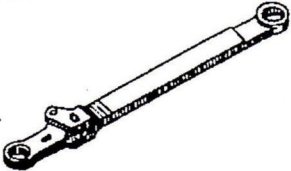
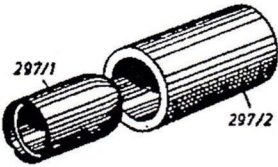
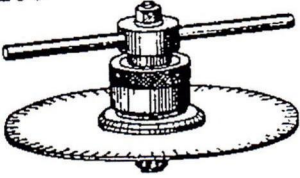
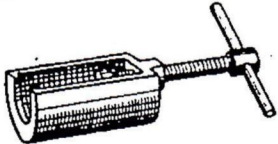
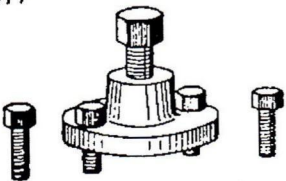
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Matra Order No. and Illustration	Description	Items	Model / Group					Price DM
			R 24	R 25	R 51/2	R 51/3	R 67	
284 	Pin Spanner, 58/62 dia., round pin 5 mm for bell-shaped cover on propeller shaft.	1		R	R	R	R	4.05
285 	Pin Spanner, 54 mm dia., round 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	1.40

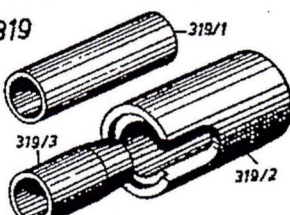
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Matra Order No. and Illustration	Description	Items	Model / Group					Price DM
			R 24	R 25	R 51/2	R 51/3	R 67	
289 	Replacer, for seal ring in rear wheel drive. To insert seal ring slide 289 over splined portion of final coupling flange.	1			R	R	R	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			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 support 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	10.10

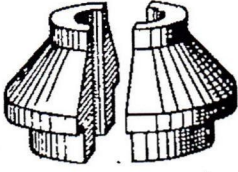
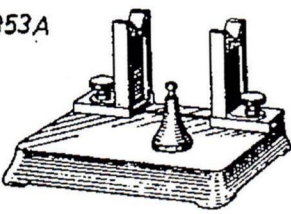
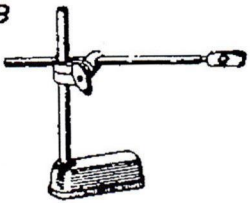
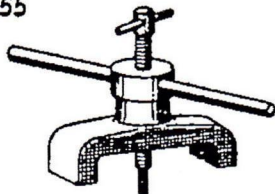
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			R24	R25	R51/2	R51/3	R67	
294 	Valve Seat Cutter, 45 deg., 36 mm dia. For cutting fit on cutter guide shank 431.	1	E	E	E	E	E	12.70
295 	Valve reseating cutter, 15 deg., 36 mm dia. For refacing seats to valve head diameter. Fit on cutter guide shank 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

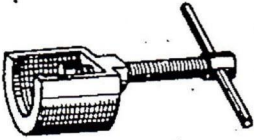
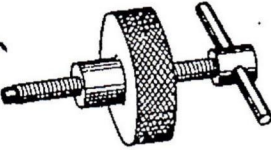
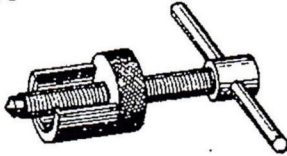
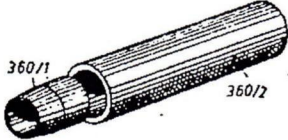
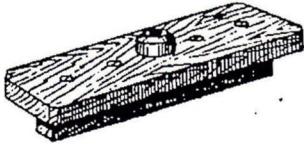
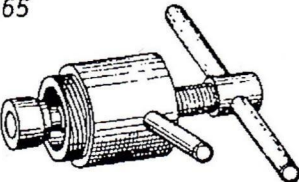
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Matra Order No. and Illustration	Description	Items	Model / Group						Price DM
			R 24	R 25	R 51/2	R 51/3	R 67		
316 	Spanner, open end 41 mm for adjustment of fork steering column.	1	C	C	C				5.85
316A 	Spanner, double open end 41mm for adjustment 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

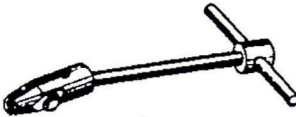
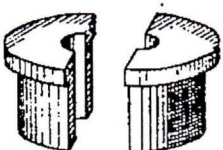
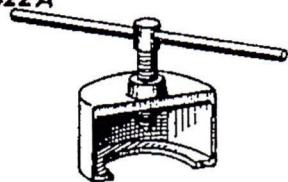
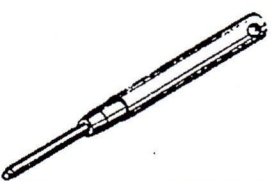
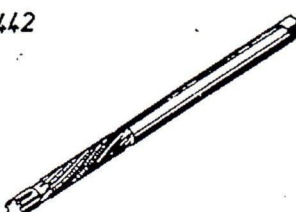
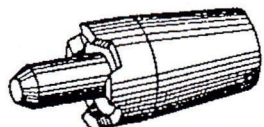
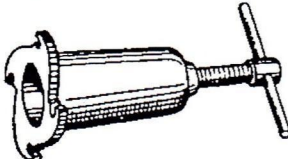
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			R24	R25	R51/2	R51/3	R67	
331/7A 	Bushing, split, for pressing shock absorber flange off propeller shaft. Support shock absorber hub on 331/7 A and 331/2. Use arbour 281/1 to press out propeller shaft in 331/1.	2/2	R	R	R	R	R	12.85
338/1 	Hook Spanner, 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

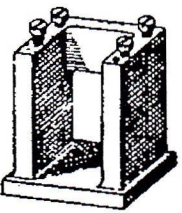
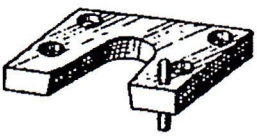
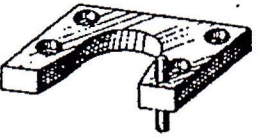
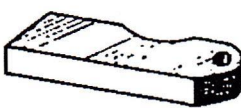
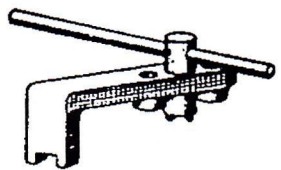
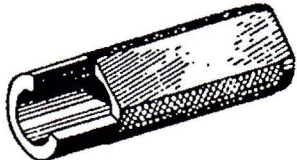
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			R 24	R 25	R 51/2	R 51/3	R 67	
356 	Puller, for ball bearing in rear wheel drive. For ball bearing 6205, . with pressure plate 29 mm dia., 3 mm thick- ness (shop-made) for ball bearing 6206.	1		R				19.35
357 	Clamping screws for clutch assembly. 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

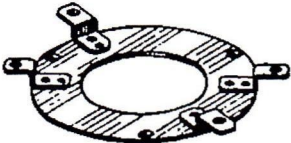
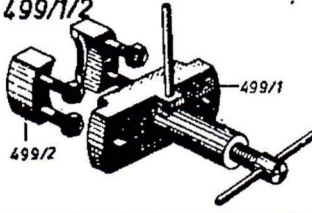
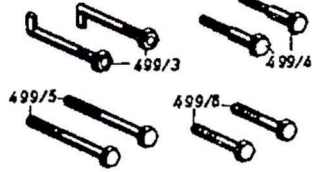
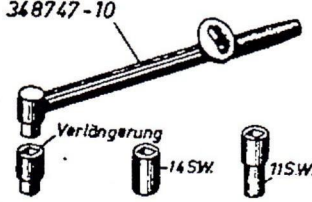
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			R24	R25	R51/2	R51/3	R67	
368 	Holder, used for grinding-in valves with 7 mm stem dia.	1	E	E	E	E	E	13.55
385/5 	Bushing, split, for pressing on final coupling flange; to be applied on propeller shaft together with 331 / 2 and 331 / 1.	2	R					17.45
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

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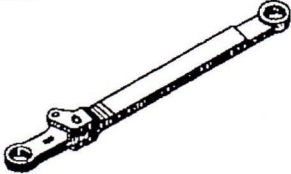
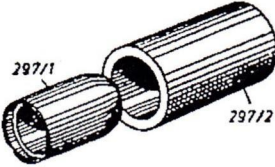
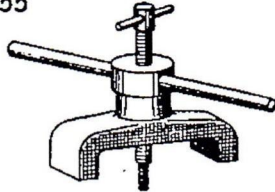
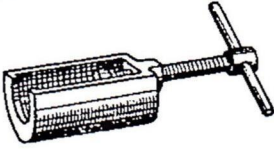
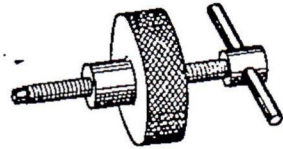
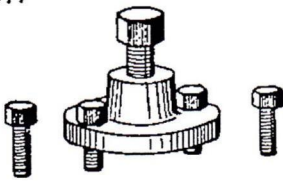
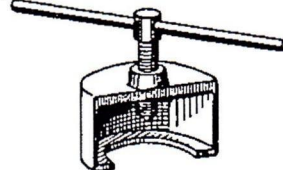
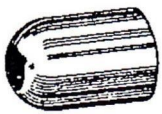
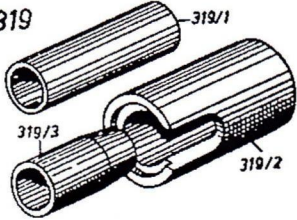
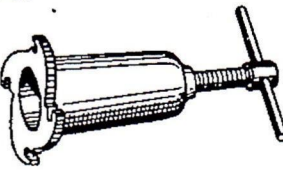
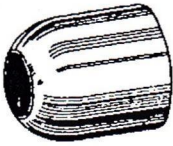
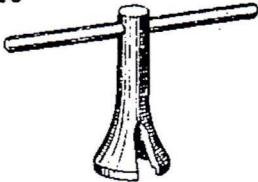
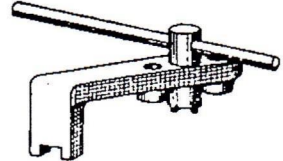
Matra Order No. and Illustration	Description	Items	Model / Group					Price DM
			R 24	R 25	R 51/2	R 51/3	R 67	
493 (see 493/1 – 493/5)	Press Tools for disassembly and assembly of crankshaft R 24 and R 25 consisting of 493/1 – 493/4.	4						76.45
493/1 	Support for press operations on crankshaft	1	E	E				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 transmission 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		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 2 mkg using 11 mm socket. (1 mkg = 7.22 ft. lb.)	4			E	E	E	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 

List of Shop-made Tools and Translation of the German Text on Drawings

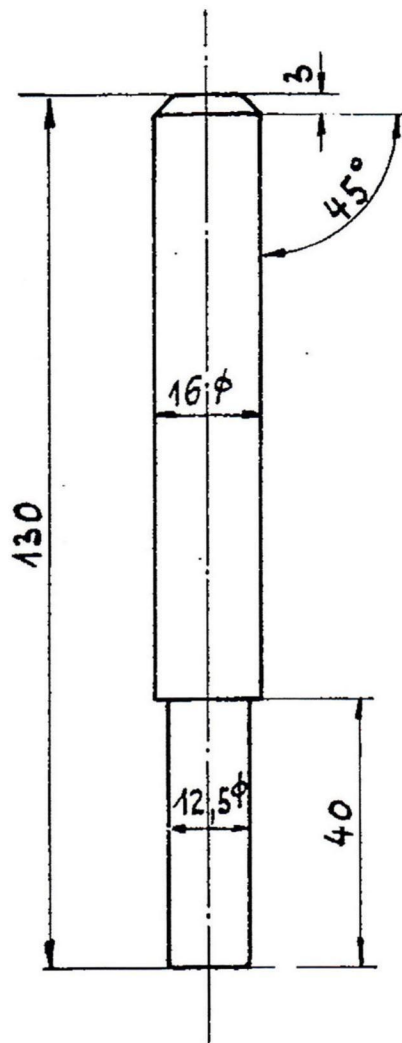
(All measures on the technical drawings are in millimeters)

No. of Drawing	Designation	Items	Part	Material
W 5002	1 ea Drift punch for gudgeon pin R 24, R 25, R 51, R 67.	1 d. p.		st. SAE 1034
W 5003	1 ea piston ring compressor (applier) R 24, R 25, R 51, R 67. Text on drawing: „gestreckte Länge“ = stretched length	8 rivets 2 reinforcements 1 applier	3 2 1	alu 3 × 5 mm alu SAE 25 alu SAE 25
L 5008	1 ea feeler gauge for checking clearance between Woodruff key and flywheel R 25/51/67	1 gauge		st. SAE 1006
W 5009	1 ea arbour for centering of clutch plate R 51, R 67 Text on drawing: „Schnitt A – B“ = Cut A – B	1 tommy bar 1 adjuster 1 arbour	3 2 1	st. SAE 1034 st. SAE 1015 st. SAE 1034
W 5013	1 ea drift punch for guiding tube R 51, R 67	1 punch		st. SAE 1034
V 5014 sheet 1	1 ea adjustable assembly cradle for engine and transmission R 24, R 25, R 51, R 67 Text on drawings: Rohr = tube Lagerung für Gabelstück = bearing for fork piece Haken zum Einhängen der Zwischenplatte = hook for installation of intermediate plate Zwischenplatte zum Aufspannen von Motor und Getriebe = intermediate plate for fixation of engine and transmission vernieten = to rivet	3 studs 1 intermediate plate 1 set screw 1 stand of welded tubes	4 3 2 1	st. SAE 1042 st. SAE 1010 st. SAE 1020 steel
V 5014 sheet 2		2 knurl nuts 2 nuts M 12 2 bolts 1 fixing ring 2 springs 2 pins 2 knurl nuts 2 bolts 1 fork piece	9 8 7 6 5 4 3 2 1	st. SAE 1020 st. SAE 1020 st. SAE 1020 st. SAE 1020 spring steel spring steel st. SAE 1020 st. SAE 1020 steel

No. of Drawing	Designation	Items	Part	Material
V 5017	1 ea fixture for transmission R 24, R 25, R 51 assembly welded assembly welded	1 plate 2 bearing plates 1 fixture ring 1 fixture for model R 24, R 25 3 studs 1 bearing plate 1 fixture plate 1 fixture for model R 51	8 7 6 5 4 3 2 1	st. SAE 1006 st. SAE 1006 st. SAE 1006 consisting of parts 6, 7, 8 st. SAE 1034 st. SAE 1006 st. SAE 1006 consisting of parts 2 and 3
W 5020	1 ea drift tool for Simmerring (oil seal) of crankcase R 51, R 67	1 drift head 1 tube	2 1	st. SAE 1034 st. SAE 1034
W 5021	2 ea praying forks for alignment of connecting rods	1 pray bar cranked 1 pray bar straight	2 1	st. SAE 1010 st. SAE 1010
W 5024	1 ea drift and replacer tool for Simmerring (oil seal) of drive shaft and front wheel fork R 51, R 67 Text on drawing: (in Teil 2 gleitend eingepaßt) = (slideably fitted in part 2) Kordel = knurl fest eingepaßt = tight fit	1 replacer bushing 1 drift bushing 1 drift head	1 2 3	st. SAE 1060 st. SAE 1060 st. SAE 1060
W 5026	1 ea drift tool for Simmerring of driven shaft R 51/3, R 67 Text on drawing: fest einpassen = fit tightly rändeln = knurl	1 drift head 1 bushing	2 1	st. SAE 1060 st. SAE 1015
V 5029	1 ea ignition timing device R 24/25/R 51/3, R 67	1 washer 4 nuts 1 indicator bolt 1 indicator for R 51/3, R 67 1 indicator for R 24, R 25 1 circlip, inner dia. 8 mm 1 head screw 1 spacer bushing 1 graduated dial	9 8 7 6 5 4 3 2 1	st. SAE 1006 st. SAE 1006 st. SAE 1040 alu sheet metal st. SAE 1040 1 mm spring wire st. SAE 1006 st. SAE 1040 alu sheet metal available from BMW
V 5030	1 ea puller screw for dynamo armature and ignition magneto rotor R 25, R 51, R 67	1 puller bolt	1	st. SAE 1045 hardened

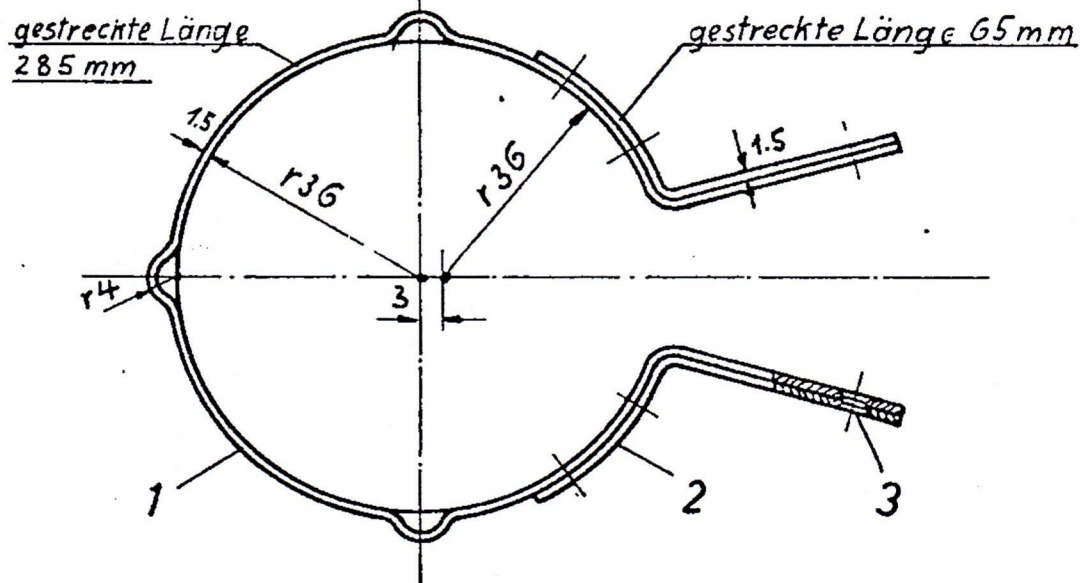
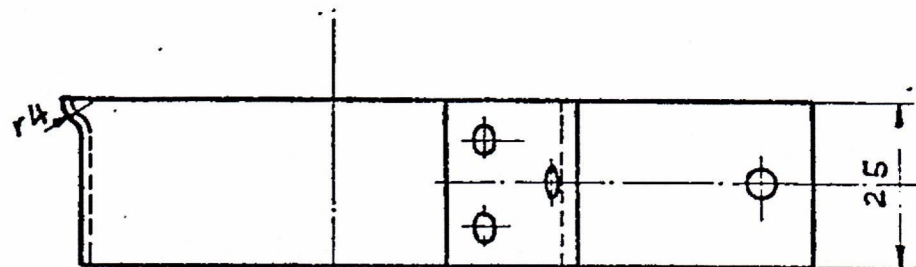
No. of Drawing	Designation	Items	Part	Material
V 5031	1 ea inspection cover (dummy) for transmission adjustment R 51, R 67. Text on drawing: Aus Deckel . . . für Schaltwelle geschnitten = cut off cover for gear selector shaft	1 inspection cover	1	alu casting
V 5032	3 ea holder bushings for flywheel fixture Matra 292 R 51, R 67 Text on drawing: 3 Loch 8.2 ϕ bohren in Haltevorrichtung Matra = drill three 8.2 dia. bores in fixture Matra (8.2 mm)	3 head screws M 8 x 11 3 holder bushings	2 1	st. SAE 1020 st. SAE 1020
V 5033	1 ea puller clamp for cam and crankshafts R 51/3, R 67 Text on drawing: Hierzu Spindel und DornmutterVorrichtung Matra 355 verwenden = to use with the help of spindle assembly Matra 355.	1 puller clamp	1	st. SAE 1020
V 5034	1 ea valve spring lifter with wooden plate Matra 361 R 25, R 51, R 67 Text on drawing: Montageholz = wooden plate	2 lock screws M 10 x 120 1 head screw M 6 x 45 1 knurl nut 1 lever bearing 1 lever	5 4 3 2 1	st. SAE 1006 st. SAE 1006 st. SAE 1020 st. SAE 1020 st. SAE 1020
V 5035	2 ea wooden guards for connecting rod R 24, 25, R 51, 67	2 wooden guards	1	beech-tree wood
L 5036	2 ea parallel bars for alignment of connecting rods R 25, R 51, R 67 Text on drawing: Stirnkanten brechen = chamfer edges Beide Prismen zusammen auf genau gleiche Maße rechtwinkelig und seitenparallel schleifen = grind both parallel bars to exactly the same values of squareness and parallelism.	2 parallel bars (square edges)	1	st. SAE 1015 to be hardened
W 5037	1 ea hexagonal plug wrench 5 mm R 51/3, R 67 Text on drawing: 5 SW Sechskant = hexagon end width 5 mm	1 hex. plug wrench	1	st. SAE 1042

No. of Drawing	Designation	Items	Part	Material
W-5038	1 ea pressure bushing for pressing front ball bearing on crankshaft R 51/3, R 67 Text on drawing: Dazu Spindel und Dornmutter Matra 355 = furthermore spindle assembly Matra 355	1 bushing	1	st. SAE 1006
W 5039	1 ea pressure bushing for pressing camshaft gear on camshaft and ball bearing 6203 on crankshaft R 51/3, R 67 Text on drawing: Dazu Spindel und Dornmutter Matra 355 = furthermore spindle assembly Matra 355	1 bushing	1	st. SAE 1006
V 5040	1 ea replacer for gear on crankshaft R 51/3, R 67 Text on drawing: gehärtet und geschliffen = hardened and ground	1 bushing	1	st. SAE 1015
V 5041	1 ea drift punch for valve tappet bushings R 51/3, R 67	1 drift punch	1	st. SAE 1034
V 5042	1 ea backlash metering device for rear wheel drive R 25, R 51, R 67	1 fixing screw 1 stand for gauge holder 1 clamp screw 1 dial gauge holder 1 bushing for R 25 1 bushing for R 51/ R 67 1 stop pin 1 arbour	8 7 6 5 4 3 2 1	st. SAE 1034 st. SAE 1034 st. SAE 1034 st. SAE 1034 st. SAE 1034 st. SAE 1034 st. SAE 1034 st. SAE 1034
V 5043	1 ea assembly stand for motorcycles Text on drawing: versenkte Holzschrauben = countersunk wood-screws Querhölzer in Füße einzapfen = fit transverse woods in legs	1 assembly stand	1	fir-tree wood
V 5045	1 ea pin wrench for wheel hub cover Text on drawing: (einpressen) = press in	4 pins 1 tool	2 1	spring steel hardened st. SAE 1034 harden



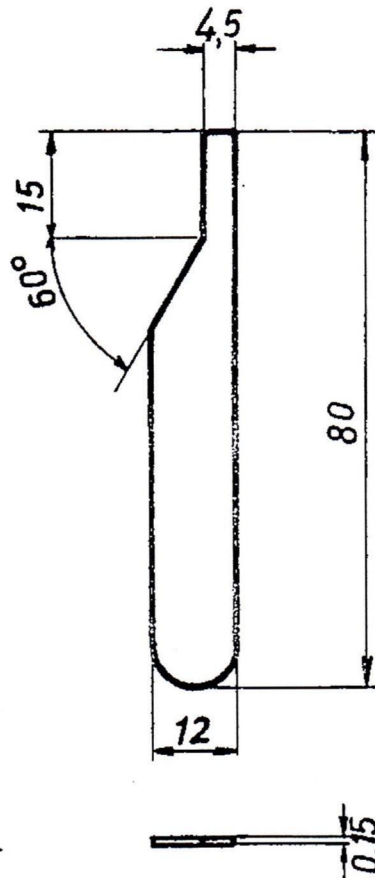
		3			
		2			
1	Treibdorn	1		St. 50.11	
Stückzahl	Benennung und Bemerkung	Teil	Zeichng.Nr.	Werkstoff	

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Gezeichnet:	4.10.51	BA		
Geprüft:				
Normenpr:				
Maßstab:	1:1			Zeichnungs Nr.: W 5002
Treibdorn für Kolbenbolzen R 24 R 25 R 51 R 67				Ersatz für Ersetzt durch



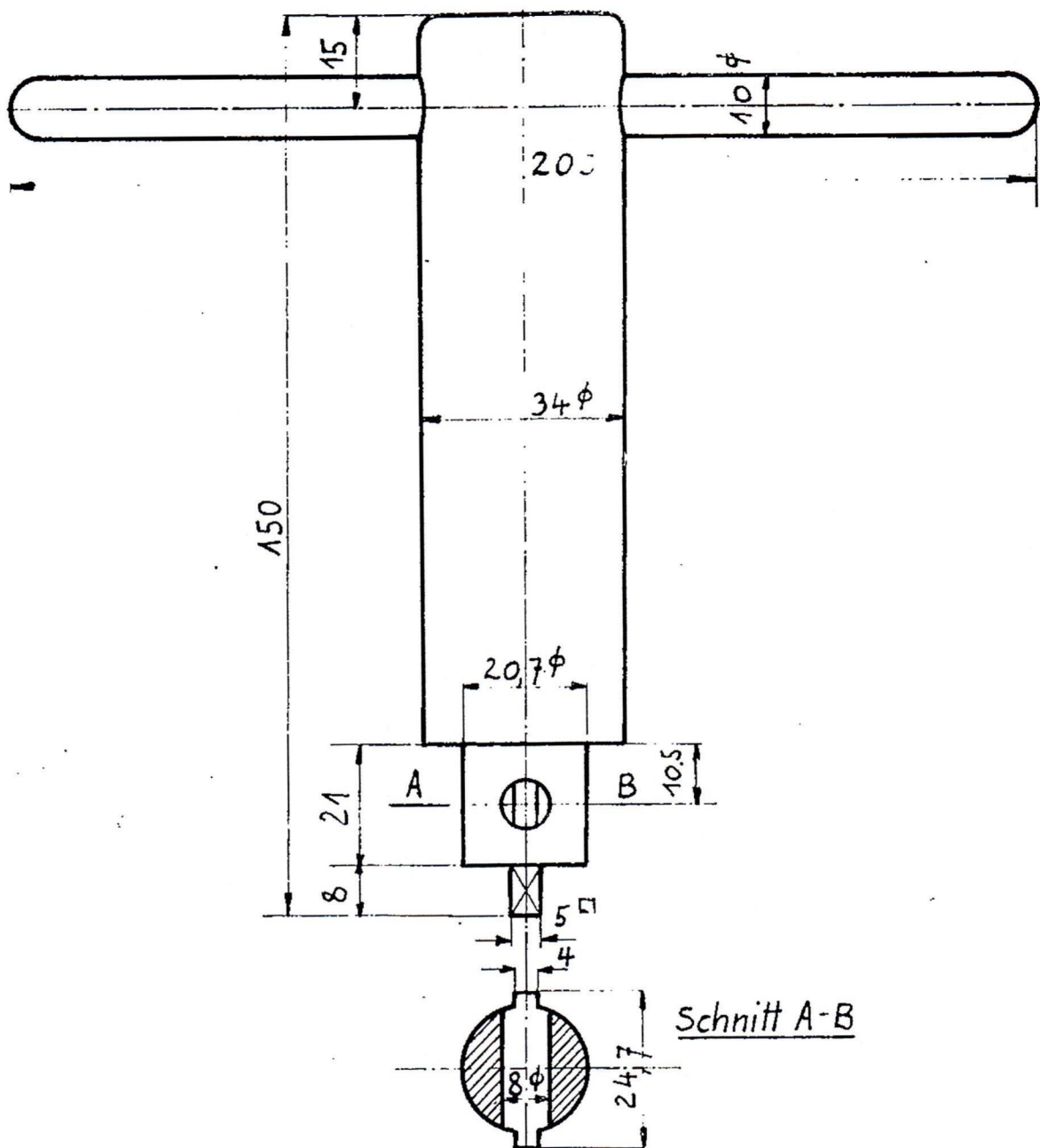
8	Niet	3	DIN 661	Al. 3x5		
2	Verstärkungslasche	2		Al. 99.5		
1	Manschette	1		Al. 99.5		
Zeichn. Nr.	Bezeichnung und Bemerkung		Teil	Zeichn. Nr.	Werkstoff	

	Datum	Name		BMW Kundendienstschule
Gezeichnet	2.10.51	V.A.		
Geprüft:				
Abgegeben				
Maßstab:	Kolbenringmanschette R25 R25 R51 R67			Zeichnungs-Nr. W 5003
1 1				Ersatz für
				Ersetzt durch

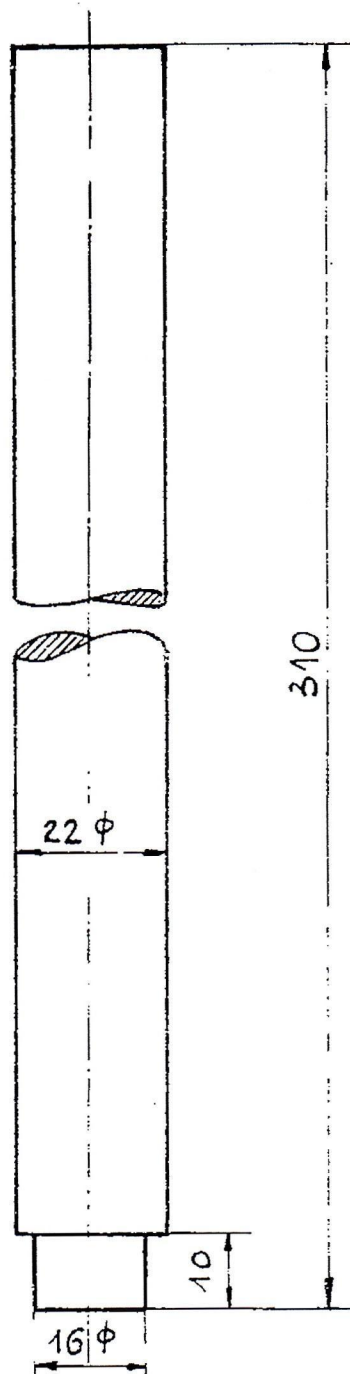


		3			
		2			
1	Lehre	1		St. V.23	
Stückzahl	Benennung und Bemerkung	Teil	Zeichng Nr	Werkstoff	

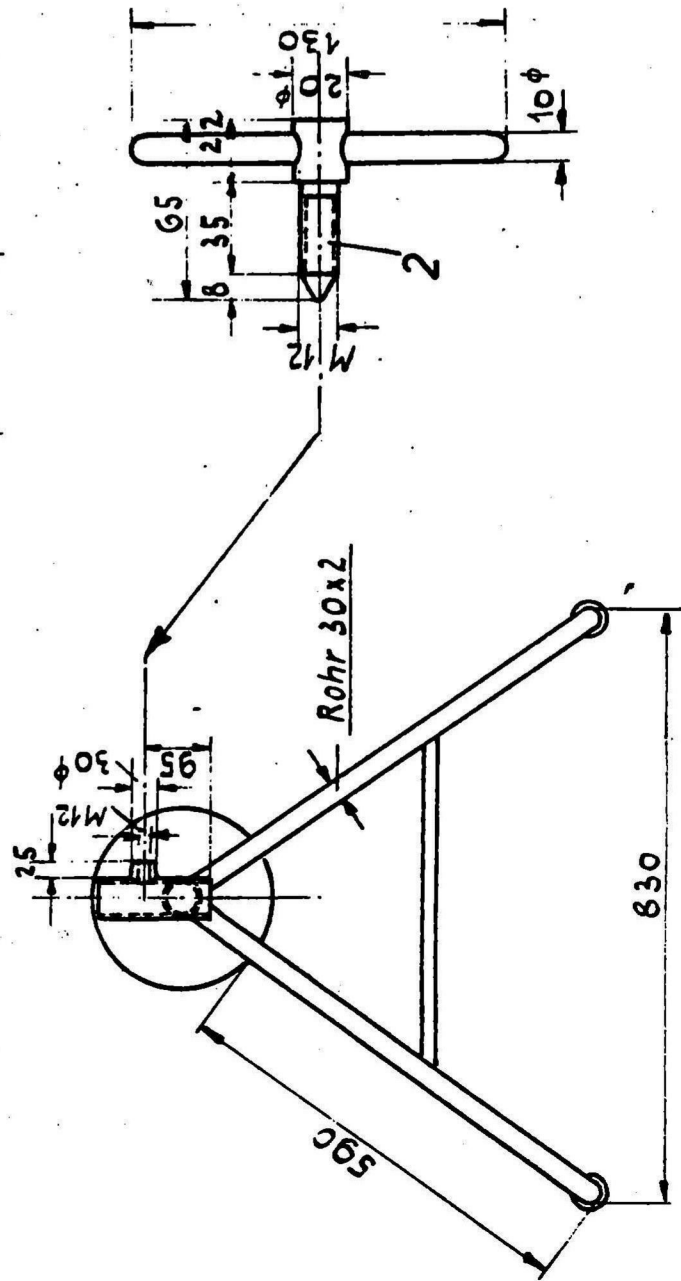
	Datum	Name		BMW Kundendienstschule
Gezeichnet:	27.9.50	Ta		
Gepprüft:	"	Ma.		
Normgepr.				
Maßstab:	Fühlerlehre zum Prüfen der Scheibenfeder f. Schwungscheibe R 25/51/67			Zeichnungs-Nr.
1:1				L 5008
				Ersatz für
				Ersetzt durch



1	Knebel	3		St. 50.11		
1	Einstellstück	2		St. C16.61		
1	Dorn	1		St. 50.11		
Stückzahl	Benennung und Bemerkung		Teil	Zeichn. Nr.	Werkstoff	
	Datum	Name	 BMW Kundendienstschule			
Gezeichnet:	2.10.51	Pa				
Geprüft:						
Normgepr.						
Maßstab:	Dorn zum Ausmitteln der Kupplungsscheibe R51 R67				W 5009	
1:1					Ersatz für Ersetzt durch	

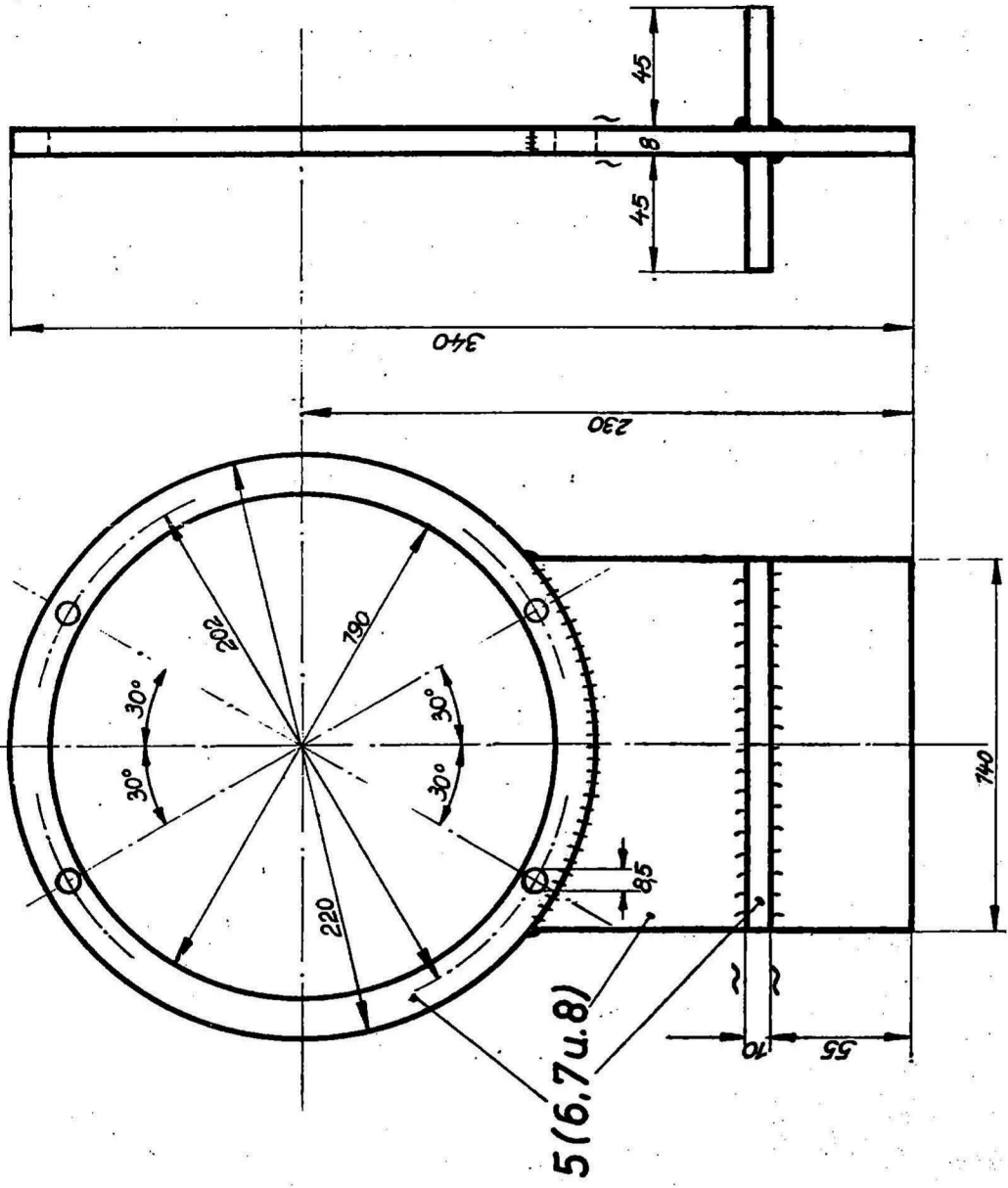


		3			
		2			
1	Dorn	1		St 50.11	
Stück- zahl	Benennung und Bemerkung	Teil	Zeichng Nr	Werkstoff	
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Gezeichnet:	2.10.51	CSA			
Geprüft:					
Normgepr:					
Maßstab:	Schlagdorn für Gleitrohr R51 R67			Zeichnungs Nr:	
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				Ersatz für	
			Ersetzt durch		



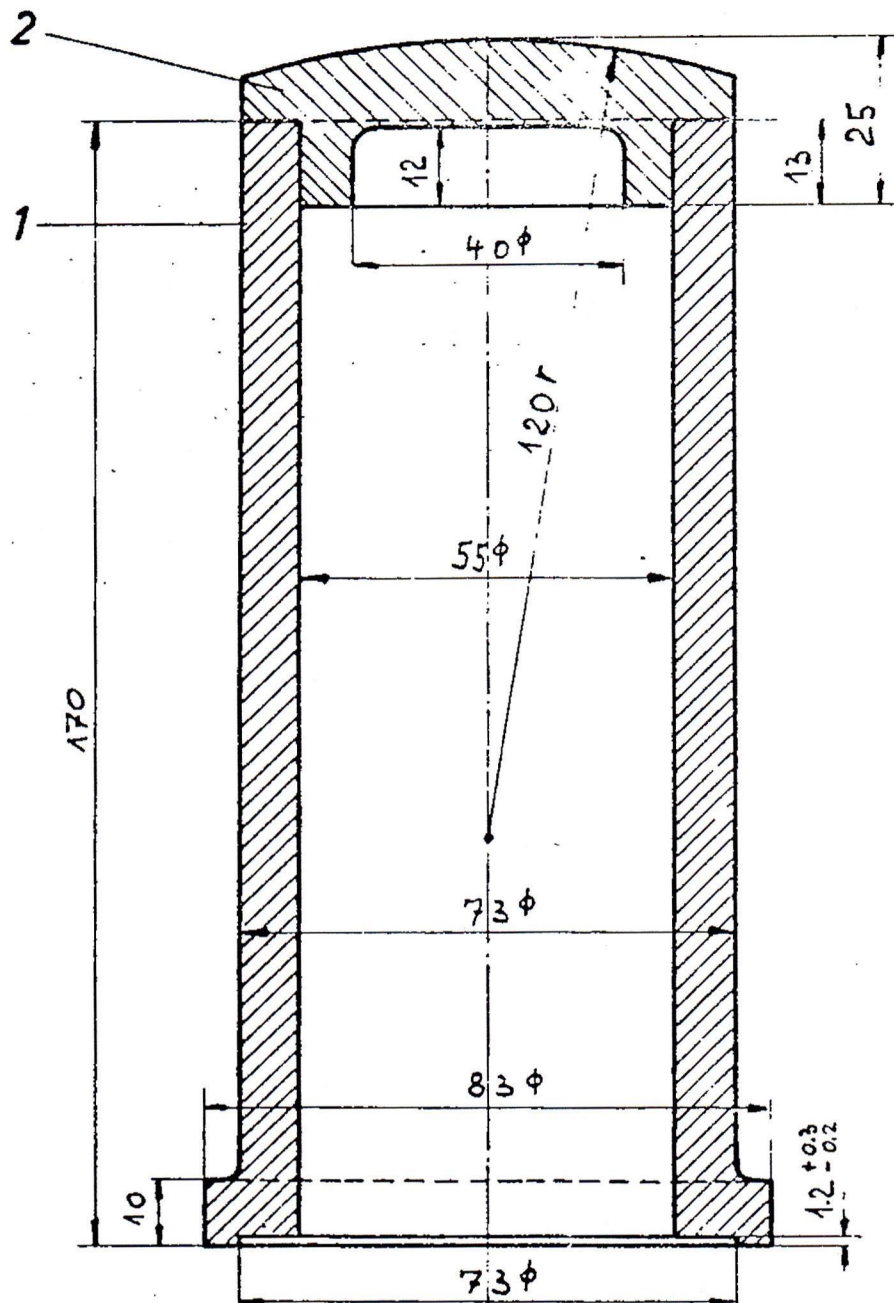
3	Stiftschrauben	4		S 304
1	Zwischenplatte	3		St. 3721
1	Feststellschraube	2		St. 42.12
1	Ständer aus Rohren geschweißt	1		Stahl
Stückzahl	Benennung und Bemerkung	Teil	Zettung Nr.	Werkstoff

	Datum	Name		BMW Kundendienstschule
Geseichnet:	28.9.51	Aa		
Bearbeitet:				
Namengepr.				
Maßstab: 1:10 1:2,5			Wende-Montagebock für Motor und Getriebe R24 R25 R51R67	
			V 5014 Blatt 1	
			Ersatz für	
			Ersetzt durch	

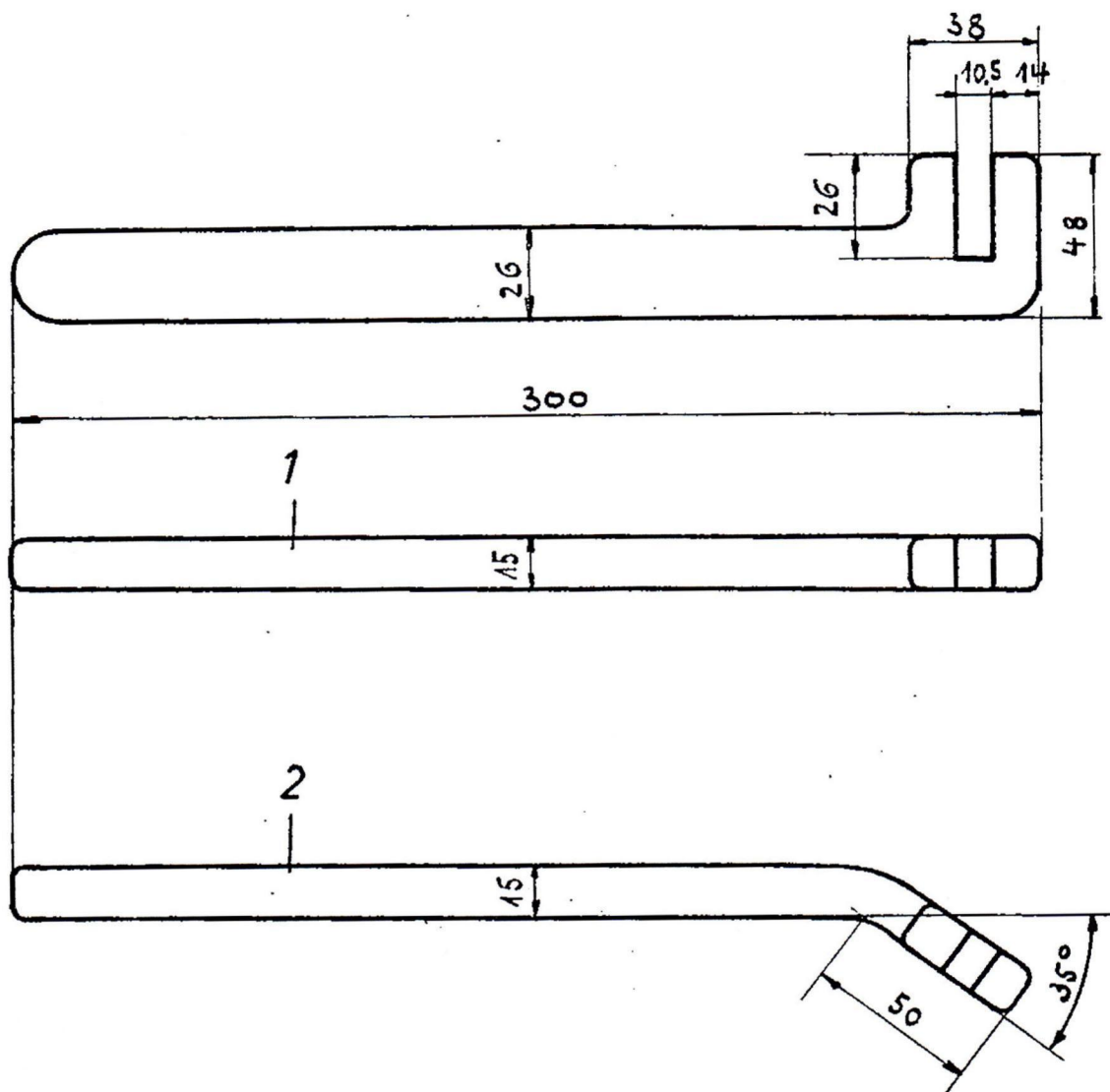


1	Platte	8		St. 00.21
2	Halteplatte	7		St. 00.21
1	Aufnahmering	6		St. 00.21
1	Aufnahme für Baumuster R24 u. R25 (Schweißteil)	5	besteht aus	TL 6, 7 u. 8
3	Stiftschraube	4		St. 50.11
1	Halteplatte	3		St. 00.21
1	Aufnahmeplatte	2		St. 00.21
1	Aufnahme für Baumuster R 51 (Schweißteil)	1	besteht aus	TL. 2 u. 3
Stück-zahl	Benennung und Bemerkung	Teil	Zeichn.Nr.	Werkstoff

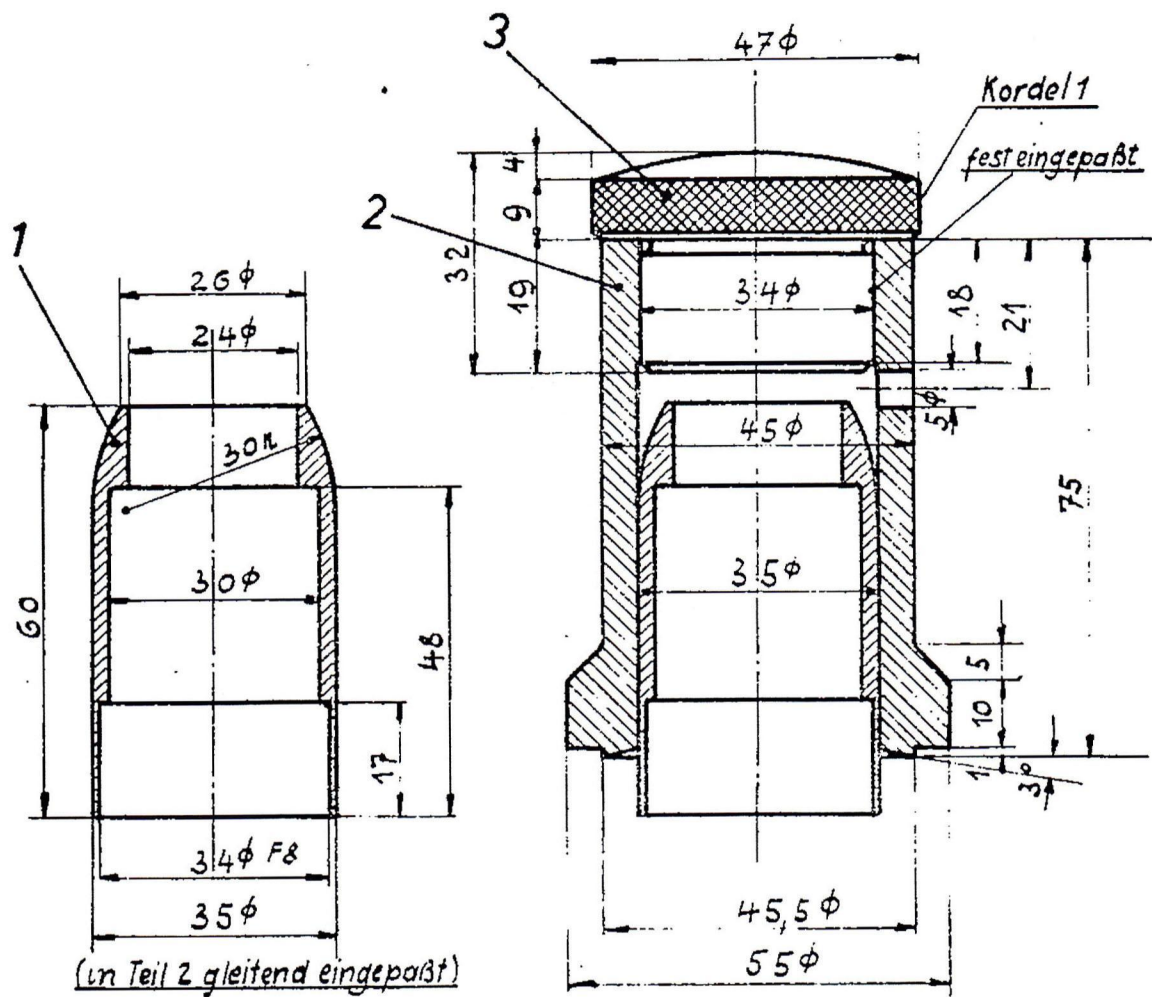
Gezeichnet Geprüft: Normgepr.	Datum	Name		BMW Kundendienstschule	V 5017		
	3. 10. 50	Ma.					
Maßstab: 1:1			Aufnahme für Getriebe R 24, R 25 u. R 51				
			Ersatz für Ersetzt durch				



1	Pilz	3			
1	Rohr	2		St. 50.11	
		1		St. 50.11	
Stückzahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	
	Datum	Name	 BMW Kundendienstschule		
Gezeichnet:	1.10.50	Pa			
Geprüft:					
Normgepr.					
Maßstab:	Schlagrohr für Simmerring des Motorgehäuses R51 R67			Zeichnungs-Nr.	
1:1				W 5020	
				Ersatz für	
				Ersetzt durch	

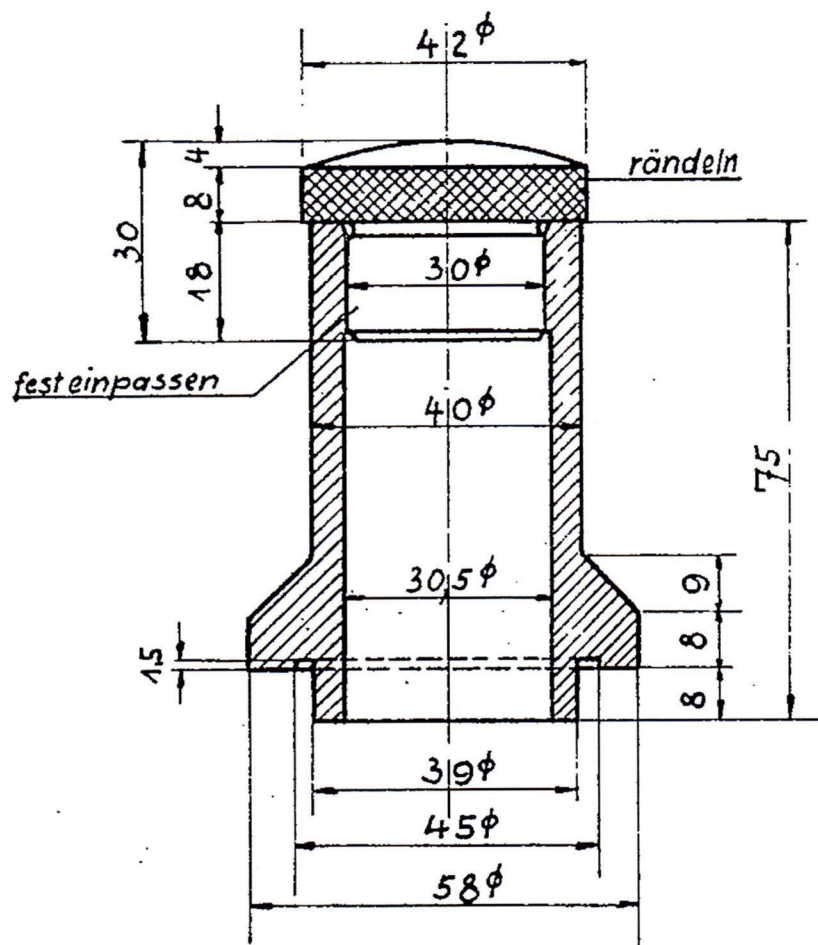


1	Sprengeweisen gekröpft	3		St. 37.21	
1	Sprengeweisen gerade	1		St. 37.21	
Stückzahl	Benennung und Bemerkung	Teil	Zeichnung Nr.	Werkstoff	
Gezeichnet:	Datum	Name	 BMW Kundendienstschule		
Geprüft:	1.10.51	Pa			
Normgepr.					
Maßstab:	Sprengeweisen zum Auswinkeln der Pleuel R24/R25/R51/R67			Zeichnungs Nr.	
1:2				W 5021	
				Ersatz für	
				Ersetzt durch	

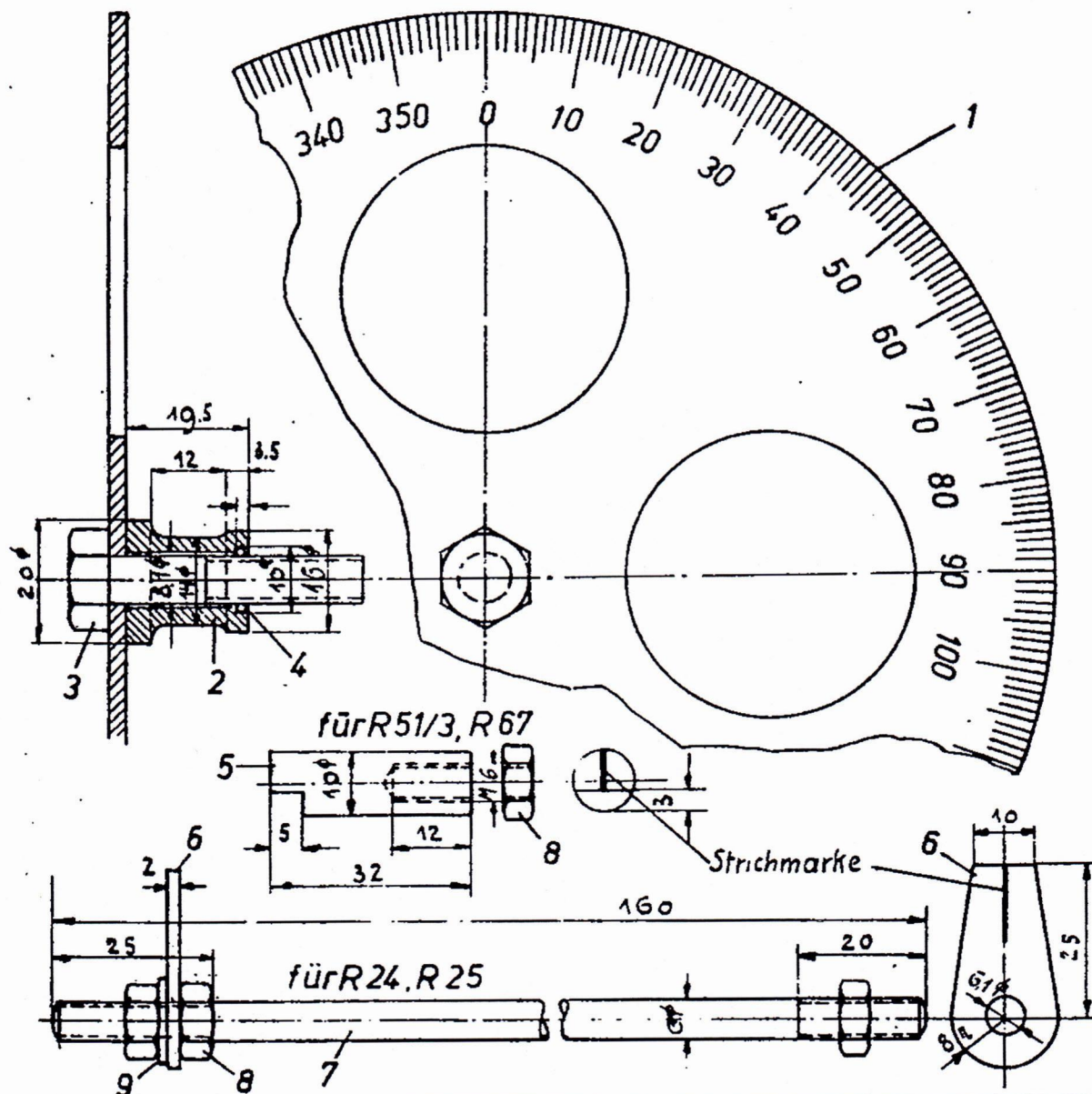


1	Pilz	3		St.C 60.61		
1	Schlagbüchse	2		St.C 60.61		
1	Einführungsbüchse	1		St.C 60.61		
Stückzahl	Benennung und Bemerkung	Teil	Zeichn.Nr.	Werkstoff		

	Datum	Name		BMW Kundendienstschule	
Gezeichnet:	25.9.51	Pa			
Geprüft:					
Normgepr.					
Maßstab:	Schlag- und Einführungsbüchse f. Simmerringd. Antriebswelle u. Vorderradgabel R 51 R 67			W 5024	
1:1					
				Ersatz für	
				Ersetzt durch	

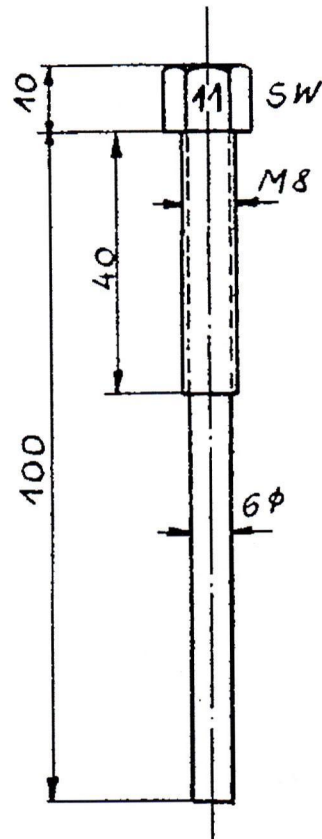


		3			
1	Pilz	2		St.C 60.61	
1	Büchse	1		St.C. 16.61	
Stück- zahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	
	Datum	Name	 BMW Kundendienstschule		
Gezeichnet:	2.10.57	Pa			
Geprüft:					
Normgepr:					
Maßstab:	Schlagbüchse für Simmerring der Abtriebswelle R51/3 R67			W5026	
1:1				Ersatz für	
				Ersetzt durch	



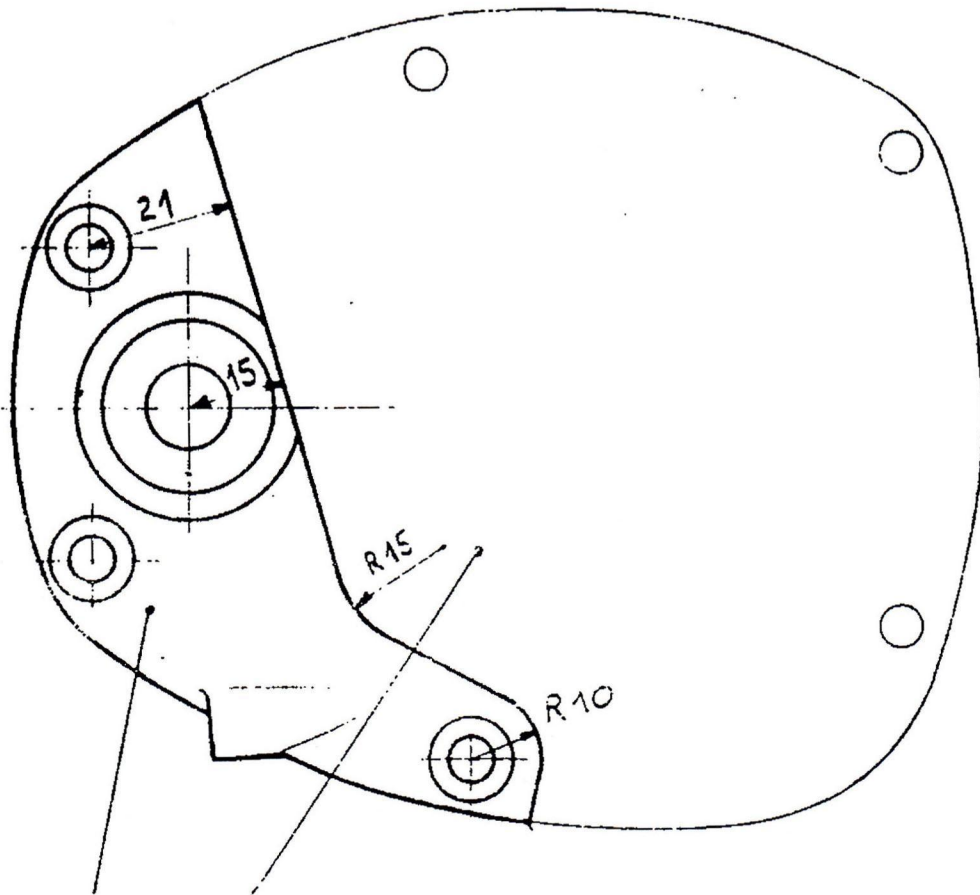
1	Unterlegscheibe	9		St. 34.13		
4	Muttern	8		St. 34.13		
1	Stehbolzen	7		St. 35.61		
1	Zeiger für R24, R25	6		Alu. Blech		
1	Zeiger für R51/3, R67	5		St. 35.61		
1	Federdraht ring innen 8φ x 1	4		1 ^m /m Federdraht		
1	Kopfschraube M 8 x 40 DIN 931	3		St. 34.13		
1	Abstandsbüchse	2		St. 35.61		
1	Gradscheibe	1		Alu. Blech	von BMW zu beziehen	
Stückzahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff		

Datum		Name			BMW Kundendienstschule
Gezeichnet: 15.8.51		Rev.			
Geprüft:					
Normgepr.					
Maßstab: 1:1		Zündzeitpunkt-Einstellvorrichtung R24/25, R51/3, R67			V 5029 Ersatz für Ersetzt durch



		3			
		2			
1	Abdruckbolzen	1		StC 45.61	gehärtet
Stückzahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	

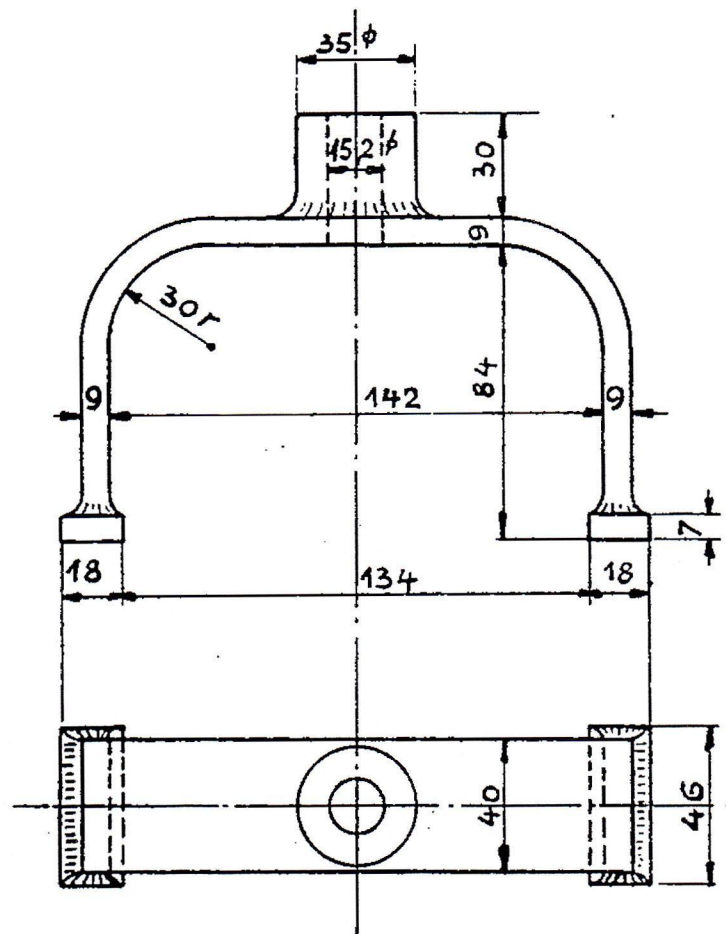
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Gezeichnet:	30.8.57	Ba		
Geprüft:				
Normgepr.				
Maßstab:	Abdruckschraube für Lichtmaschinenanker u. Magnetläufer R25 R51 R67			V 5030
1:1				Ersatz für Ersetzt durch



Aus Deckel 250 4 51 003 03 für Schaltwelle geschnitten

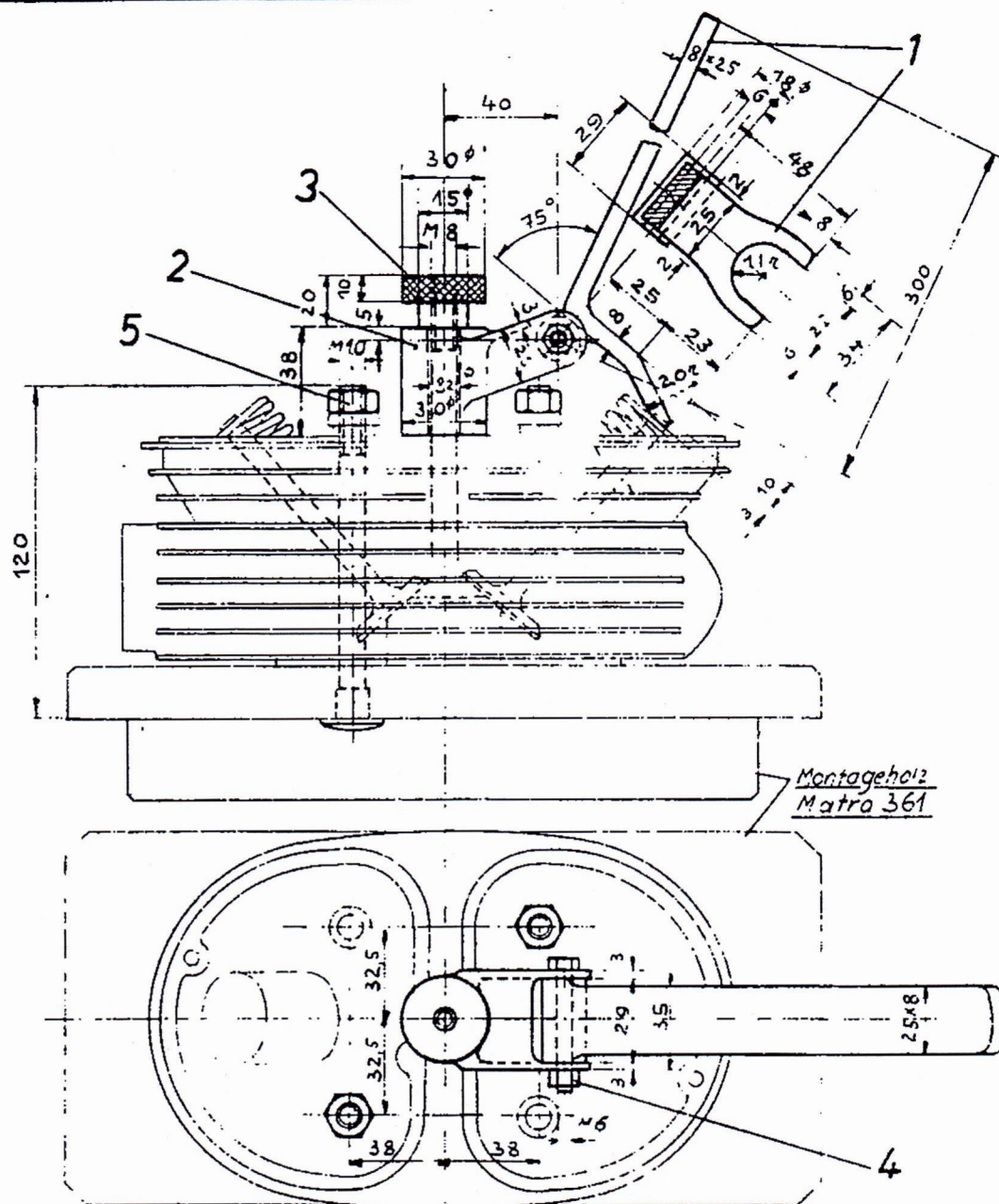
		3			
		2			
	Schaudeckel	1		1a.9.13	
Stückzahl	Benennung und Bemerkung	2	Zeichnung nr.	Werkstoff	

	Datum	Name		BMW Kundendienstschule
Gezeichnet		36		
Geprüft				
Normgezeichnet				
Maßstab	Schaudeckel für Getriebeeinstellung			V 5031
1:1	R51 R67			Ersatz für
				Ersetzt durch



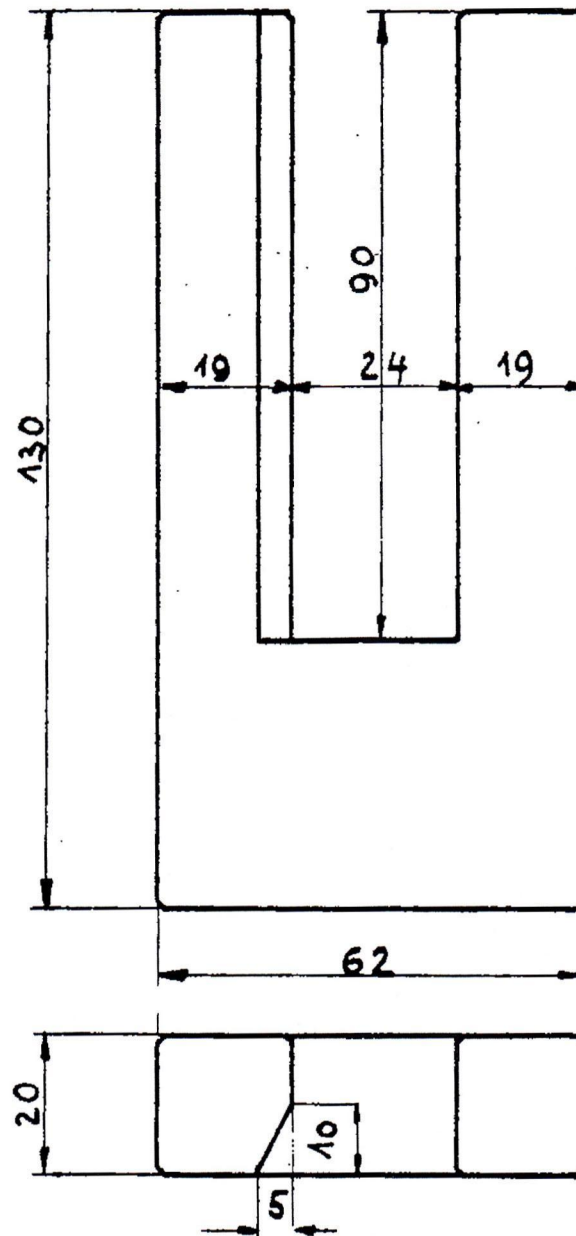
Hierzu Spindel und Dornmutter der
Vorrichtung Matra 355 verwenden.

		3				
		2				
1	Abdrückbügel	1		St. 42.12		
Stück- zahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff		
	Datum	Name	 BMW Kundendienstschule			
Gezeichnet:	24.8.51	Bau				
Geprüft:						
Normgepr.						
Maßstab: 1:2	Abdrückbügel für Steuer- und Kurbelwellen R51/3 R67			V 5033		
				Ersatz für		
				Ersetzt durch		



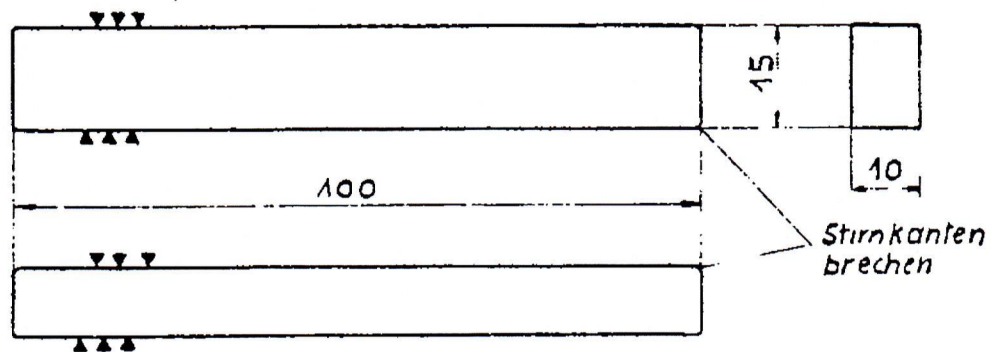
2	Schloßschraube M10x120	6			
1	Kopfschraube M6x45	5		St. 34.11	
1	Rändelmutter	4		St. 34.11	
1	Hebeliager	3		St. 42.12	
1	Hebel	2		St. 42.12	
1		1		St. 42.12	
Stückzahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	

	Datum	Name		BMW Kundendienstschule	
Gezeichnet:	7.9.51.	Ga			
Geprüft:					
Normgepr:					
Maßstab:	Ventilfederhebevorrichtung mit Montageholz Matra 361 R25 R51 R67			V 5034	
1:1				Ersatz für	
				Ersetzt durch	



		3			
		2			
2	Schutzholz	1		Buchenholz	
Stückzahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	

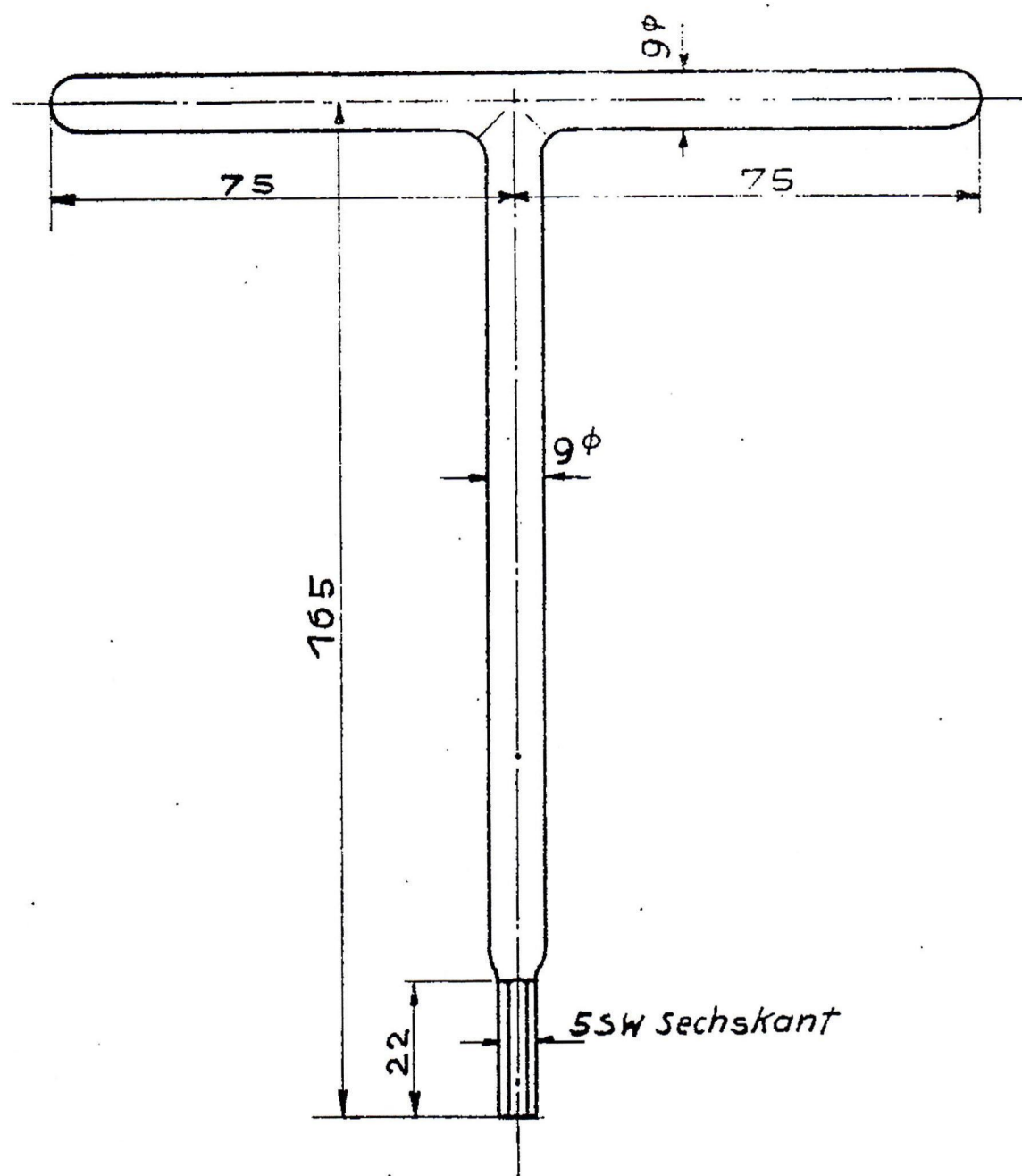
	Datum	Name		BMW Kundendienstschule
Gezeichnet:	4.9.51.	gja		
Geprüft:				
Normgepr.				
Maßstab:	Montage-Pleuelschutzholz R 24, 25, 51, 67			V 5035
				Ersatz für Ersetzt durch



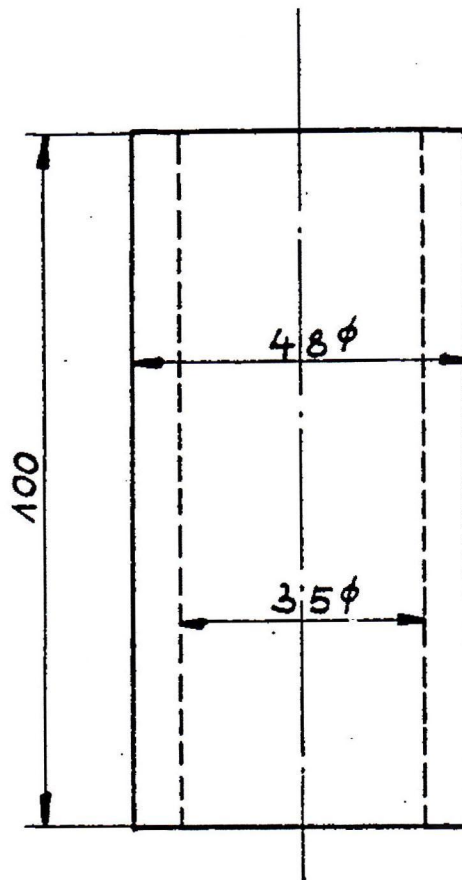
Beide Prismen zusammen auf genau gleiche Maße
rechtwinkelig und seitenparallel schleifen.

		3			
		2			
2	Prismen	1		St. 16.61	härten
Stück- zahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	

	Datum	Name		BMW Kundendienstschule
Gezeichnet:	7.9.51	V. Ja		
Geprüft:				
Normgepr.				
Maßstab:	Prismen zum Auswinkeln der Pleuel			L 5036
1:1	R25 R51 R67			Ersatz für
				Ersetzt durch



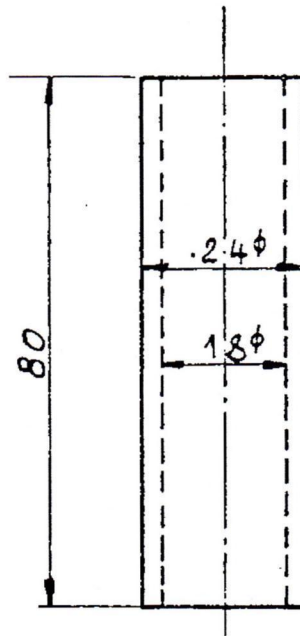
			3			
			2			
1	Inbus-Schlüssel		1		St. 60.11	
Stückzahl	Benennung und Bemerkung		Teil	Zeichn. Nr.	Werkstoff	
	Datum	Name	 BMW Kundendienstschule			
Gezeichnet:	30.8.57	Ras				
Geprüft:						
Normgepr.						
Maßstab:	Inbus-Schlüssel 5mm R51/3 R67				W 5037	
1:1						
				Ersatz für		
				Ersetzt durch		



Dazu Spindel und Dornmutter Matra 355

		3			
		2			
1	Druckbüchse	1		St. 34.11	
Stück- zahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	

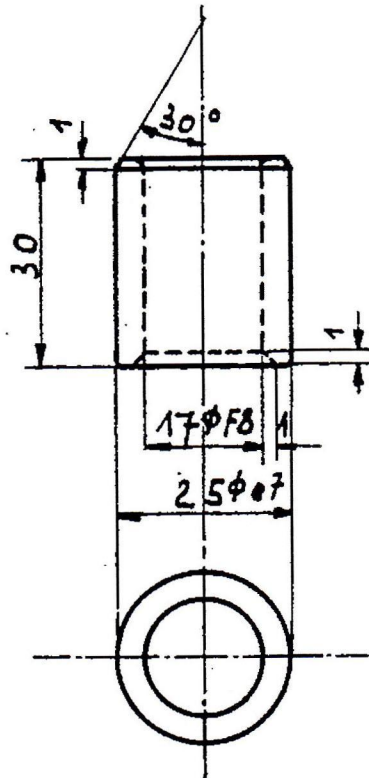
	Datum	Name		BMW Kundendienstschule
Gezeichnet:	30.8.51	J. S.		
Geprüft:				
Normgepr.				
Maßstab: 1:1	Druckbüchsez. Aufpressen des vorderen Kurbelwellen-Kugellagers R 51/3 R 67			W 5038 Ersatz für Ersetzt durch



Dazu Spindel und Dornmutter Matra 355

		3			
		2			
1	Druckbüchse	1		St. 34.12	
Stückzahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	

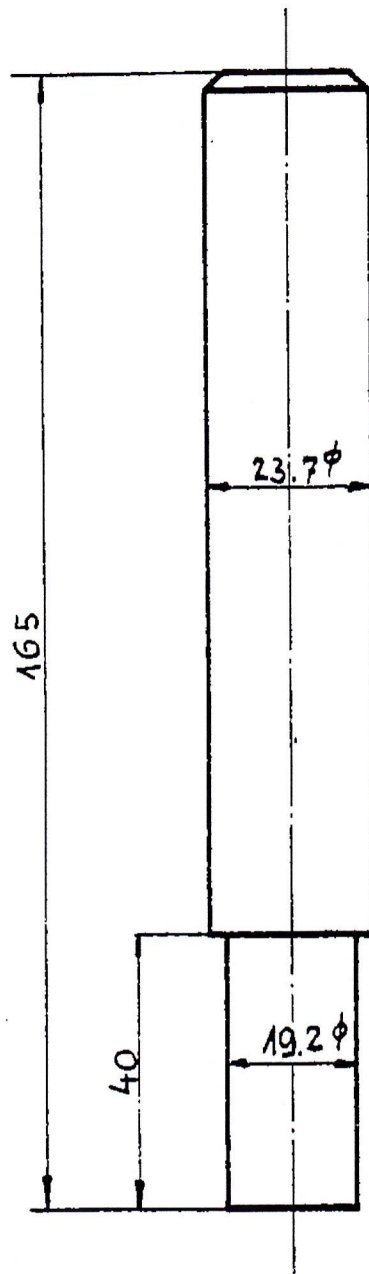
	Datum	Name		BMW Kundendienstschule
Gezeichnet	3.9.51	R. 21		
Geprüft:				
Normgepr.				
Maßstab:	Druckbüchse z. Aufpressen von Steuerrad u. Kugellager 6203 auf Kurbelwelle R 51/3 R 67			W 5039
1:1				Ersatz für
				Ersetzt durch



gehärtet u. geschliffen

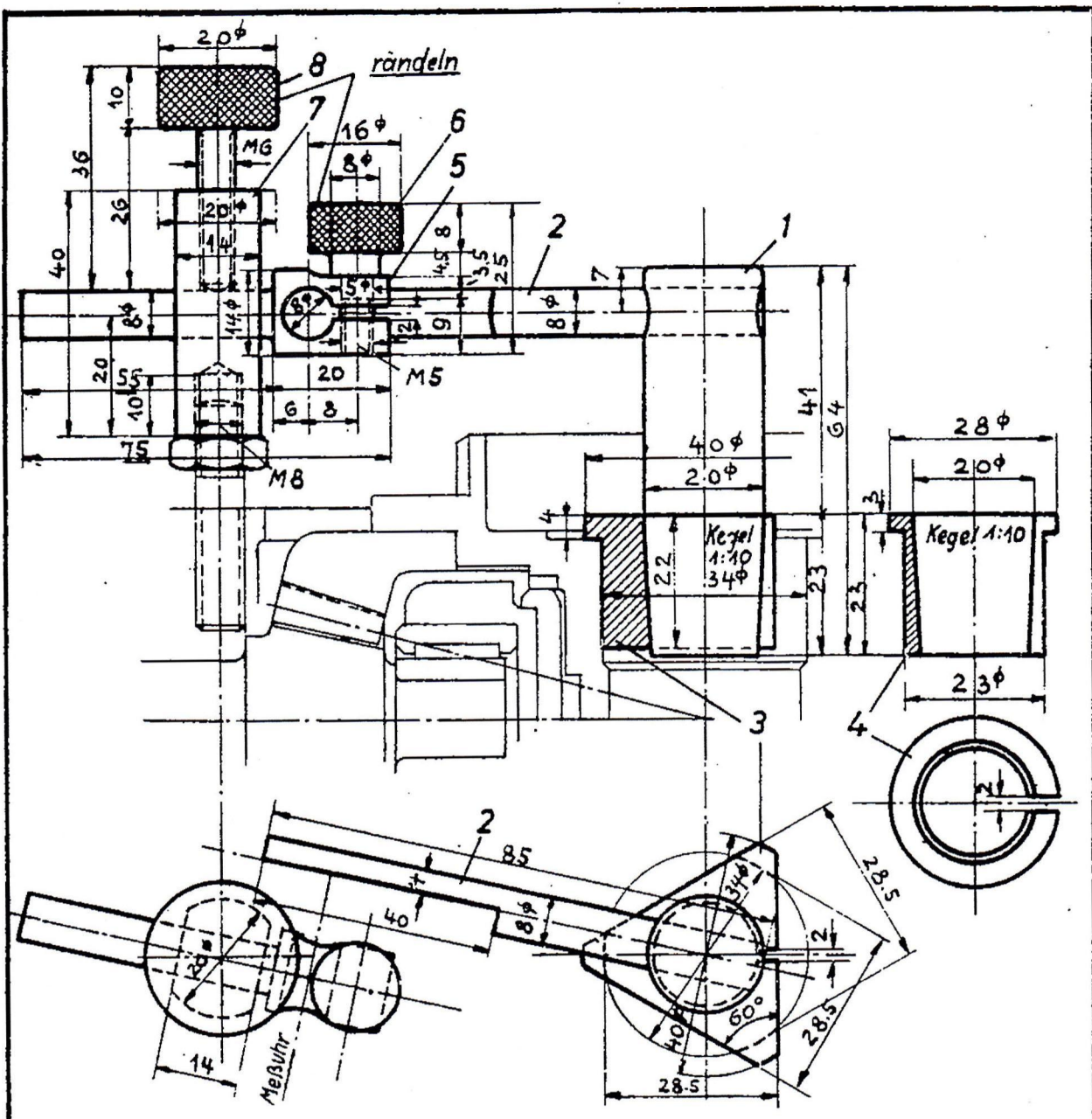
		3			
		2			
1	Büchse	1		St. C 16.61	
Stück- zahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	

	Datum	Name		BMW Kundendienstschule
Gezeichnet:	4.9.51	J. A.		
Geprüft:				
Normgeber:				
Maßstab:	Führungsbüchse z. Aufschieben d. Zahnrades auf Kurbelwelle R51/3 R67			V 5040
1:1				Ersatz für
				Ersetzt durch

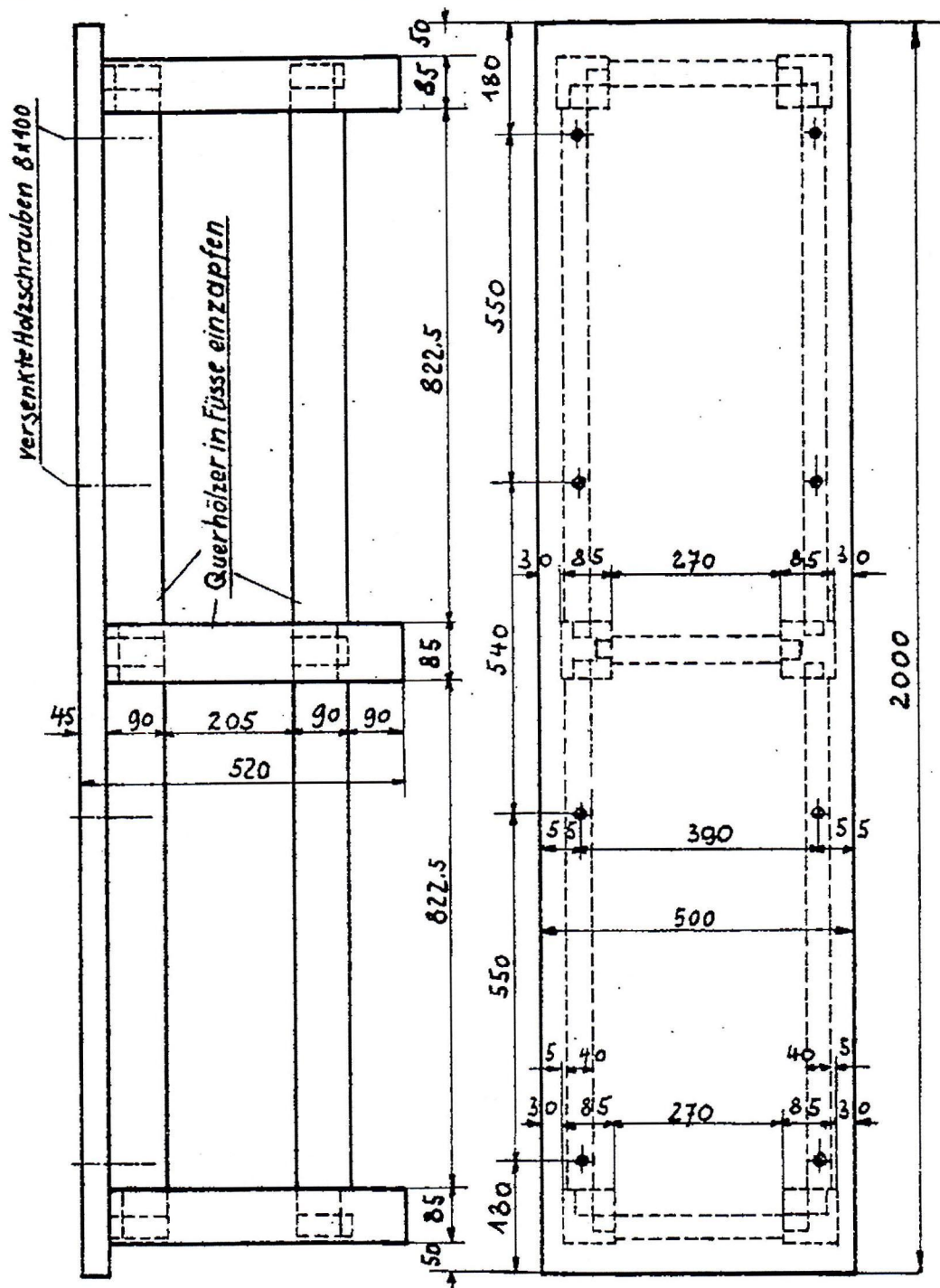


		3			
		2			
1	Treibdorn	1		St. 50.11	
Stückzahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Werkstoff	

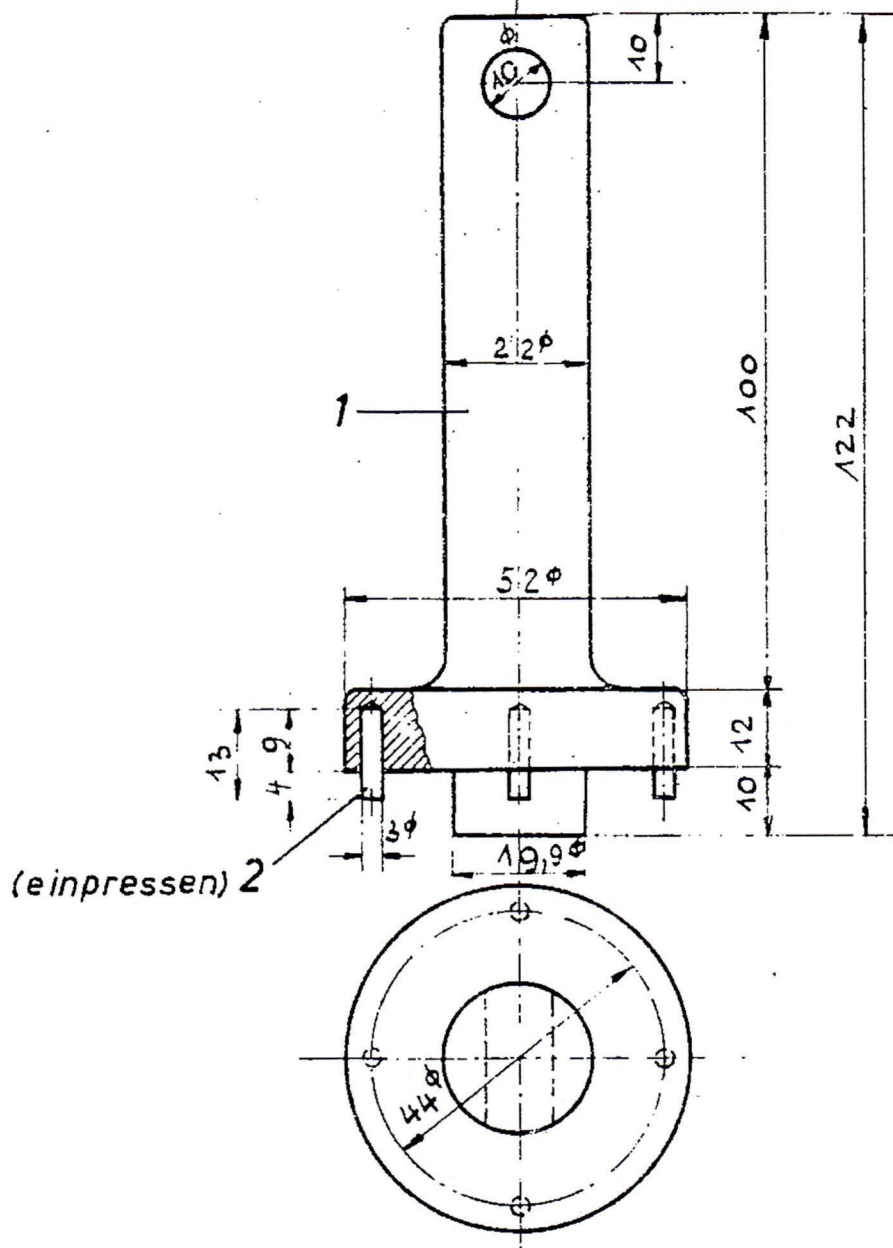
	Datum	Name		BMW Kundendienstschule	
Gezeichnet:	18.9.57	SSA			
Geprüft:					
Normgepr.					
Maßstab:	Treibdorn für Steuerstößelbüchse R51/3 R67			W 5041	
1:1				Ersatz für	
				Ersetzt durch	



	Datum	Name		BMW Kundendienstschule
Gezeichnet:	18.9.51	BA		
Gepüft:				
Normgepr.				
Maßstab:	Zahnspielmeßvorrichtung für Hinterradantrieb R25, R51, R67			V 5042
1:1				Ersatz für Ersetzt durch

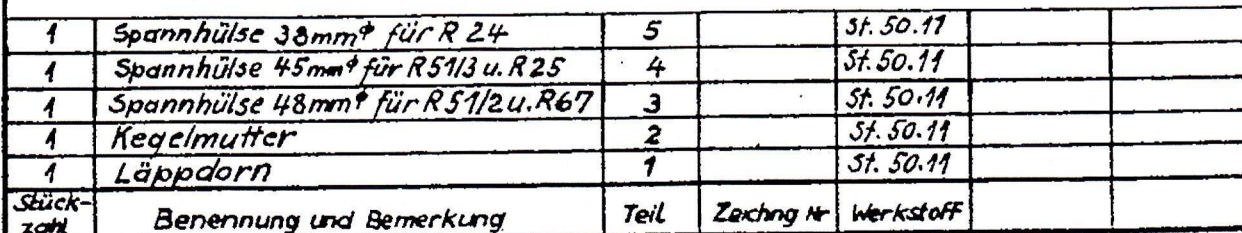


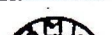
		3			
		2			
1	Montagetisch	1		Fichtenholz	
Stückzahl	Benennung und Bemerkung	Teil	Zeichn. Nr.	Material	
	Datum	Name	 BMW Kundendienstschule		
Gezeichnet:	18.9.51	Re			
Geprüft:					
Normgepr.					
Maßstab:	1:10 Montagetisch für Motorräder			V 5043	
				Ersatz für	
				Ersetzt durch	



4	Zapfen	3		Federstahl	gehärtet
	Schlüsselkörper	2		St. 50.11	härten
Stückzahl	Benennung und Bemerkung	Teil	Zeichnung Nr.	Werkstoff	

Datum	Name		BMW Kundendienstschule
Gezeichnet	Si		
Geprüft			
Normgepr.			
Maßstab:	Zapfenschlüssel für Verschlussdeckel zur Radnabe		V 5045
1:1	R51 R67		Ersatz für
			Ersetzt durch



	Datum	Name		BMW Kundendienstschule
Gezeichnet:	13.11.51	Ra		
Geprüft:				
Normgepr:				
Maßstab:	1:2			Zeichnungs Nr. V 5046
Läppvorrichtung für Pleuel R24 R25 R51 R67				Ersatz für Ersetzt durch

