

# Special Tools

# Special Tools

Job No.

100 — 0

The following list of special tools and equipment (with BE-Nos.) is intended as a survey to facilitate selection.

All tools marked with an asterisk appear in more than one group and are used for repair procedures described under various Job Nos.

All special tools can be ordered from our works; when ordering please state Order Nos.

## Test Runs — Group 00

Designation	Order No.
Tool kit for test runs	000 589 07 23
Electrical distant-reading thermometer for measuring oil temperature	000 589 21 27
Stop watch	—
Fuel-mileage tester	—

## Engine — Groups 01 — 24

Designation	Order No.
Spark plug toggle wrench	186 581 03 36
Spark plug cleaner	or 000 581 00 67
Spark plug adjusting gage, range 0.7 — 1.0 mm	000 589 01 68
or range 0.3 — 1.1 mm	000 589 03 23
Compression recorder for gasoline engines	000 589 09 23
Revolution counter and closure angle meter	000 589 18 21
Flash stroboscope	000 589 12 21
Electrical test light 6 — 12 volts	000 589 48 21
Mechanic's tool set, 20 pieces	000 589 02 27
Ratchet set $\frac{3}{8}$ " (for mechanic's tool set 2107)	000 589 21 07
Ratchet $\frac{1}{2}$ " approx. 250 mm long	000 589 53 09
1 set socket wrench sockets SW 10, 14, 17, 19, 22, 24, 32 mm ( $\frac{1}{2}$ " square)	000 589 18 09
Socket wrench socket SW 21 mm for spark plugs	000 589 63 09
1 tool set $\frac{1}{4}$ " for carburetor, radio, electric equipment etc.	000 589 08 23
Oiler for filling carburetor oil shock absorber	—
Measuring tube 10 cc for measuring carburetor injection amount	000 589 31 21
Measuring tube 100 cc for measuring compression chamber	—
Adapter for car jack for raising and lowering the front of the car at the sub-frame	BE 10 986 a
Lifting rig for raising and lowering the front and rear part of the car	BE 10 989
Adapter for stands (proper support at chassis base panel)	BE 10 994
Tail wheel for holding and transporting the engine together with transmission and sub-frame	BE 10 990 a
Bridge for engine at the front for removal and installation of the sub-frame	BE 10 988
Holding support for transmission or engine at the rear (to be made by repair shop) (see sketch on Page 33 — 1.2)	—
Special valve-adjusting combination wrench SW 14 mm (long)	187 589 01 09
	or 000 589 11 07

Designation	Order No.
Special valve-adjusting combination wrench SW 14 (short)	000 589 64 09
Valve gage holder (double)	136 589 00 23
1 set tolerance feeler bands 15 mm wide, 1/2 meter each, in the following thicknesses: 0.04, 0.05, 0.10, 0.12, 0.15, 0.18, and 0.20 mm	000 581 00 30
Valve lifter consisting of supporting bar, valve lifter and 2 inserts	186 589 02 31
Mounting bridge for removal and installation of valves	121 589 01 63
Cylindrical brush for cleaning valve guides (16 mm $\phi$ )	000 583 04 38
Testing plug gage 9.0 — 9.015 mm $\phi$ for inlet valve guides	636 589 00 21
Testing plug gage 10.0 mm — 10.015 mm $\phi$ for exhaust valve guides	187 589 01 21
Hand honing tool with nut and setting wrench	000 589 01 67
Adapter No. 7 for hand honing tool with collet	000 589 03 31
Honing shaft 9 mm $\phi$ for hand honing tool for inlet valve guide	000 589 04 67
Honing shaft 10 mm $\phi$ for hand honing tool for exhaust valve guide	000 589 05 67
Drift for knocking out the valve guides	136 589 00 39
Forcing sleeve for valve guides	187 589 10 39
Internal micrometer for 10—18 mm $\phi$ (for measuring the base bores for the valve guides in the cylinder head)	000 589 01 19
Tester for valve seats, consisting of:	
Dial gage holder	187 589 04 21
Testing sleeve for inlet valve seats	187 589 02 21
Testing plug for inlet valve seats	187 589 05 21
Testing sleeve for exhaust valve seats	187 589 03 21
Testing plug for exhaust valve seats	187 589 06 21
Dial gage, 10 mm travel, 1/100 mm reading accuracy, (10 mm travel is required for measuring the valve timing)	000 589 14 21
Set of tools for milling the valve seats, consisting of:	
Cutting arbor 9 mm $\phi$ for milling inlet valve seats	636 589 06 31
Cutting arbor 10 mm $\phi$ for milling exhaust valve seats	187 589 02 31
Handle for cutting arbor	187 589 06 31
Valve seat milling cutter for inlet valve seats	187 589 01 51
Valve seat milling cutter for exhaust valve seats	187 589 04 51
Portable milling cutter for inlet valve seats	121 589 00 51
Portable milling cutter for exhaust valve seats	121 589 01 51
Valve seat grinder	000 589 00 67
Valve seat turning tool (Hunger)	000 589 00 69
Valve seat ring turning tool (Hunger)	000 589 01 69
	or 000 589 02 69
Internal micrometer for valve seat ring recess in cylinder head	000 589 10 21
Valve tester	136 589 02 21
Valve and clutch spring test gage	000 589 00 65
Dial gage holder for valve timing	198 589 01 21
	or 121 589 00 21
Graduated disk mounted on camshaft for valve timing	180 589 07 23
Lever for bleeding the chain tightener	187 589 02 63
Torque wrench 0 — 6 mkg (1/2" square) (for tightening the nuts of the connecting rod cap bolts and the stretch screws of the rocker arm blocks)	000 589 27 21
Torque wrench 0 — 13 mkg (1/2" square) (for tightening the cylinder head screws, the hexagon screws for the crankshaft bearing caps, etc.)	000 589 22 21
Flexible torque wrench 0 — 12 mkg (1/2" square)	000 589 24 21
Socket screw wrench for hexagon sockets SW 5 mm, 275 mm long for oil pan and cylinder cover	187 589 02 07
Socket screw wrench for hexagon sockets SW 6 mm, 425 mm long for cylinder head and oil pan	187 589 03 07
Socket screw wrench for hexagon sockets SW 8 mm, 300 mm long for oil passage plug	187 589 04 07
Socket screw wrench for hexagon sockets SW 10 mm, 375 mm long for cylinder head	187 589 05 07
Socket screw wrench socket 1/4" square for torque wrench for hexagon socket SW 10 mm, 140 mm long, for cylinder head	000 589 05 07

Designation	Order No.
Puller for chain guide pivot pin	187 589 07 33
Puller for camshaft sprocket	187 589 01 33
Gage for checking the alignment of sprockets	187 589 02 23
Puller for idling gear	187 589 02 35
Tool for the removal and installation of idling gear shaft and for the installation of the idling gear	187 589 07 61
Puller for the rear bearing bushing of the idling gear / distributor drive	186 589 09 33
Dismantling tool for opening endless chains	000 589 03 25
Fuel feed pump tester	000 589 30 21
Puller for the water pump seal retainer	136 589 33 33
Forcing sleeve and arbor for the impeller and the water pump shaft	187 589 01 35
Fitting sleeve for the water pump seal	187 589 07 39
Fitting sleeve for the water pump annular grooved bearing	187 589 04 39
Fitting sleeve for forcing on the water pump retainer ring	187 589 08 39
Fitting sleeve for the water pump seal retainer	180 589 09 39
Fitting sleeve for the water pump spacer ring and ventilator hub	187 589 09 39
Puller for the counterweight of the crankshaft and the pulley of the water pump	000 589 17 33
Bell-shaped puller for the crankshaft sprocket	187 589 00 33
Puller for the bearing cover and for the ball bearing of the crankshaft (flywheel side)	136 589 07 33
Arbor fixture for balancing the flywheel	180 589 00 27
Static balancer for balancing the flywheel	000 589 15 21
Cylinder inspection lamp	000 583 11 19
Internal micrometer for 50—100 mm $\phi$ (for cylinder bores, crankshaft and connecting rod bearings, etc.)	000 589 04 19
Internal micrometer for 35—60 mm $\phi$ (for camshaft bearing bore)	000 589 03 19
Internal micrometer for 18—35 mm $\phi$ (for piston pin bushing bore)	000 589 02 19
Micrometer for 0—25 mm $\phi$ for measuring washers etc.	000 589 06 19
Micrometer for 25—50 mm $\phi$ for camshaft bearing surfaces	000 589 07 19
Micrometer for 50—75 mm $\phi$ for crankshaft bearing surfaces	000 589 08 19
Micrometer for 75—100 mm $\phi$ for pistons etc.	000 589 09 19
Piston ring clamp 80—85 mm $\phi$	121 589 00 61
Piston ring pliers 50—100 mm $\phi$	000 589 00 37
Feeler gage 0.03—1.0 mm	000 581 01 30
Depth gage 160 mm long	—
Spring scale for measuring the spring tension of the rotor arm of the distributor (Kontactor GK size 6, 100—1000 g)	000 589 73 21
Scleroscope (harness tester)	000 589 20 21
Connecting rod alignment gage	—

### Clutch — Group 25

Designation	Order No.
Special wrench SW 17 mm, extra long, for the screws fixing the clutch housing to the engine	000 589 05 03
3 hold-down clamps with chain for removal and installation of the clutch	136 589 23 61
Centering arbor for the clutch disk	136 589 00 61
Puller with dismantling sleeve for the throw-out bearing	136 589 25 33
Tester for valve and clutch springs	000 589 00 65 *
Depth gage 160 mm long	—
Dial gage, 10 mm travel, $\frac{1}{100}$ mm reading accuracy	000 589 14 21 *
Dial gage holder	—

## Transmission — Group 26

Designation	Order No.
Special wrench SW 17 mm, extra long, for the screws fixing the clutch housing to the engine	000 589 05 03 *
Assembly fixture, two parts, for the stop plate	191 589 02 31
Fitting bolt for the needle bearing of the shifting shaft	187 589 02 39
Fitting sleeve for the sealing ring of the shifting shaft in the transmission case top cover	187 589 05 61
Fitting bolt for the sealing ring of the shifting shaft in the transmission case top cover	187 589 03 39
Fitting bolt for the end cover in the transmission case top cover	187 589 01 39
Fitting bolt for the shift rail in the transmission case top cover	136 589 09 61
Installing sleeve with installing arbor for the sealing ring of the drive shaft in the transmission case front cover	198 589 00 61
Retaining fixture for 1st and 2nd speed gear	136 589 14 61
Retaining wrench for three-way flange	or 136 589 38 61
	187 589 00 31
	or 187 589 08 07
Crowfoot wrench socket for grooved nut of main shaft (three-way flange)	186 589 11 07
Bell-shaped puller for three-way flange	136 589 03 33
Tester and dial gage holder for measuring the run-out of the three-way flange and for adjusting the wheel hub bearings	136 589 04 21
Pliers for the drive shaft snap ring	136 589 00 37
Puller for annular grooved bearing of the main shaft and the drive shaft	136 589 02 33
Fitting sleeve (31 × 36 × 62)	198 589 02 61
Fitting sleeve (31 × 36 × 80)	198 589 01 61
Puller for annular grooved bearing of the countershaft	187 589 06 33
Drift for installing and removing the countershaft and the annular grooved bearing	136 589 06 39
Retaining tool for removing the annular grooved bearing of the countershaft	136 589 11 61
2 removing levers	136 589 00 35
Puller for the reverse idling shaft	136 589 27 33
Crowfoot wrench for the grooved nut of the main shaft	120 589 04 07
Crowfoot wrench socket for the grooved nut of the main shaft	120 589 11 07
Installing arbor for the drive annular grooved bearing	136 589 07 39
Special wrench for the end cover for the shift lever	187 589 01 01
Torque wrench 0 — 13 mkg, 1/2" square	000 589 22 21 *
Flexible torque wrench 0 — 12 mkg (1/2" square)	000 589 24 21 *
Micrometer for 0 — 25 mm $\varnothing$ for measuring shims etc.	000 589 06 19 *
Feeler gage 0.03 — 1.0 mm for measuring the end play of the individual speed gears	000 581 01 30 *
Micrometer depth gage 0 — 60 mm range	000 589 13 21
Dial gage, 10 mm travel, 1/100 mm reading accuracy	000 589 14 21 *
Dial gage holder	—
Internal micrometer for 18 — 35 mm $\varnothing$ (for reverse idling gear bore)	000 589 02 19 *
Internal micrometer for 35 — 60 mm $\varnothing$ (for speed gear bore)	000 589 13 19 *
Micrometer 25 — 50 mm $\varnothing$ (for main shaft bearing surfaces)	000 589 07 19 *

## Pedals — Group 29

Designation	Order No.
Internal micrometer for 18 — 25 mm $\varnothing$ (for the bores of the bearing bushings, for clutch and brake pedal)	000 589 02 19 *
Micrometer 25 — 50 mm $\varnothing$ (for outside diameter of the mounting tube)	000 589 07 19 *
Adjustable reamer for 27 mm $\varnothing$ for reaming the bearing bushings	

### Control Adjustments — Group 30

Designation	Order No.
Hook wrench for the installation and removal of the choke control	136 589 02 05

### Springs and Shock Absorbers — Group 32

Designation	Order No.
Spring tensioner for front springs, including guides	120 589 01 31
Spring tensioner for rear springs	120 589 05 31

### Front Axle — Group 33

Designation	Order No.
Bell-shaped puller for the ball-heads of the outer tie-rods and the center tie-rod	186 589 10 33
Remover and installer for the hub cap of the front wheel hub	180 589 00 33
Bell-shaped puller for the front wheel hub	136 589 15 33
Holding device for assembling and disassembling the steering knuckles	BE 10 515
Assembly fixture for the steering knuckle supports	120 589 01 61
Assembly fixture, 4 parts, for bearing and sealing ring of the front wheel hub	120 589 03 61
Testing gage for measuring the wheel hub bearing play and for measuring the run-out of the threeway flange at the transmission	136 589 04 21 *
Forcing arbor for the king pin bushings	136 589 09 39
Adjustable Hunger reamer 19.5—22.5 mm $\phi$ , Model U, for king pin bushings	000 589 03 53
Alignment gage for the upper control arm	120 589 04 21
Alignment gage for the lower control arm	120 589 05 21
Checking gage, two parts, for the front axle support	120 589 09 23
Supplementary gage for the two-part checking gage for the front axle support	120 589 10 23
Pressure spindle for the front axle support	120 589 00 27
Torque wrench 0—6 mkg ( $\frac{1}{2}$ " square)	
(for tightening the screws fixing the front axle support to the chassis base panel)	000 589 27 21 *
Protective cover for left front fender	000 589 39 98
Protective cover for right front fender	000 589 40 98
Adapter for car jack for raising and lowering the front of the car at the sub-frame	BE 10 986 *
Lifting rig for raising and lowering the front and rear part of the car	BE 10 989 *
Adapter for stands, for ensuring proper support at chassis base panel	BE 10 994 *
Tail wheel for holding and transporting the engine together with transmission and sub-frame	BE 10 990 *
Bridge for engine at the front for removal and installation of the sub-frame	BE 10 988 *
Bracket for transmission or engine at the rear (to be made by repair shop) (see sketch on Page 33—1/2)	*
Special wrench for caster adjustment	180 589 00 05
Spring tensioner for front spring	120 589 01 31 *
Center check screw for the steering	186 589 00 23
Wheel base measuring gage	136 589 07 21
Camber and caster gage	180 589 02 21
Check gage for front axle positioning	180 589 02 23
Track measuring gage, mechanical, for passenger cars and trucks up to 3.5 tons	000 589 05 21
	or 000 589 72 21
Optical axle gage, Exacta	000 589 42 21

# Rear Axle — Group 35

Designation	Order No.
Workshop jack adapter for the removal and installation of the rear axle	BE 11 295
Stand for the assembly and disassembly of the rear axle	BE 10 494
plus assembly plate	BE 10 243
plus assembly plate	BE 10 181
Stand for the assembly and disassembly of rear axle housing	BE 98 81a
plus assembly plate	BE 11 175a
Spring tensioner for rear springs	120 589 05 31
Adjusting and checking device for the support of the rear axle suspension	180 589 04 23
	or 180 589 11 23
Check gage for the rear axle position (misalignment)	180 589 08 23
Check gage for the rear axle position (position relative to main longitudinal axis)	180 589 08 21
3 puller screws (M 8 with chain) for brake drums	191 589 00 35
Socket Wrench SW 11 for the screws fixing the brake anchor plate to the axle tube	136 589 07 09
Puller for removing the spindle	136 589 18 33
Mounting plate for spindle	136 589 05 31
Nose-type wrench for grooved nut of the spindle	136 589 09 07
Puller clamp for the annular grooved bearing of the spindle	136 589 20 33
	180 589 03 39
Installing arbor for the seal in the seal retainer	120 589 05 39
Installing sleeve 50 mm $\phi$ for forcing the retainer and seal over the spindle	120 589 00 61
Assembly screw for the right spindle (slip coupling)	121 589 02 63
Puller for removing the torque arm from the axle tube	120 589 05 33
Assembly arbor for removing and installing the connecting pin of the right axle tube at the rear axle housing	180 589 08 39
Pin wrench long, for threaded ring	180 589 02 07
	or 180 589 08 07
	180 589 00 07
	or 180 589 07 07
Pin wrench short, for threaded ring	
Assembly arbor for the outer race of the cylindrical roller bearing in the rear axle housing	120 589 00 39
Installing arbor for the outer race of the taper roller bearing in the rear axle housing	180 589 00 39
Adjusting device for the dial gage in the strap for the drive pinion and ring gear plus strap and dial gage holder	180 589 01 23
Dial gage, 10 mm travel, $\frac{1}{100}$ mm reading accuracy	180 589 00 23 } old
Adjusting device for the dial gage in the strap for the drive pinion and ring gear plus strap with dial gage holder	000 589 14 21 *
Measuring disk 108 mm $\phi$	136 589 02 23 } new
Assembly arbor for the outer race of the taper roller bearing in the differential gear housing (left)	180 589 05 23
Measuring gage for the backlash of drive pinion and ring gear	180 589 06 23
Special pin wrench for adjusting the taper roller bearing in the differential gear housing	180 589 04 39
plus torque wrench 0—160 cmkg range ( $\frac{1}{4}$ " square)	180 589 01 21
Puller for removing the taper roller bearing from the differential gear housing	180 589 14 07
Retaining wrench for loosening and tightening the grooved nut for the joint flange on the pinion shaft	000 589 67 21
Pin wrench for loosening and tightening the grooved nut for the joint flange on the pinion shaft	180 589 01 33
Puller for removing the cylindrical roller bearing from the pinion shaft (see sketch Page 35—4/20)	180 589 09 07
Assembly arbor 17 mm $\phi$ for the differential pinion gears	120 589 01 07
Assembly arbor for pressing the taper rolling bearings onto the differential gear housing	180 589 00 35
Crowfoot wrench attachment for tightening the grooved nut for the joint flange on the pinion gear shaft by means of a torque wrench	136 589 13 61
Installing plates for the cylindrical rollers in the slip coupling	180 589 01 39
Checking device for the left and right axle tubes	120 589 08 07
	180 589 03 63
	180 589 09 21

Designation	Order No.
Hunger reamer, Type U, 29—34 mm $\varnothing$ working range, for reaming the eyes of the axle tube	000 589 06 53
End milling cutter for the axle tube eyes	180 589 01 51
plus arbor for end milling cutter for the axle tube eyes	180 589 00 66
Testing plug gage with level ring for axle tube eyes	180 589 04 21
Internal micrometer 50—100 mm $\varnothing$ (for measuring the bores of the bearing seats in the rear axle housing)	000 589 04 19 *
Micrometer 0—25 mm $\varnothing$ for measuring washers etc.	000 589 06 19 *
Feeler gage 0.03—1.0 mm	000 581 01 30 *
Depth gage 160 mm long *	—
Torque wrench —0—6 mkg ( $\frac{1}{2}$ " square) (for tightening the nuts of the connecting rod cap bolts and the stretch screws of the rocker arm blocks)	000 589 27 21 *
Torque wrench 0—13 mkg ( $\frac{1}{2}$ " square) (for tightening the cylinder head screws, the hexagon screws for the crankshaft bearing caps, etc.)	000 589 22 21 *
Flexible torque wrench 0—25 mkg ( $\frac{1}{2}$ " square)	000 589 25 21 *

### Wheels and Tires, Wheel Adjustment — Group 40

Designation	Order No.
Special wrench for caster adjustment	180 589 00 05 *
Spring tensioner for front spring	120 589 01 31 *
Center check screw for the steering	186 589 00 23 *
Tester for measuring and adjusting the wheel hub bearings	136 589 04 21 *
Wheel base measuring gage	136 589 07 21 *
Checking gage for rear axle positioning (position relative to longitudinal axis)	180 589 08 21 *
Checking gage for rear axle positioning (misalignment)	180 589 08 23 *
Camber and caster gage	180 589 02 23 *
Checking gage for front axle positioning	000 589 05 21
Mechanical track measuring gage for passenger cars and trucks up to 3.5 tons	or 000 589 72 21 *
Optical axle gage, Exacta	000 589 42 21 *
Protractor for determining the size of the balancing weights	187 589 03 23 *
Tire gage 0.5—3 atm.	000 583 02 47
Adjuster for tire gage	000 589 10 27
Tire levers for mounting the tires	N 73 f
Extension for the tube valve	—
Wire brush for cleaning the rims	—
Valve puller chain or another special tool for installing the rubber valve of tubeless tires	—
Holding device for the mounting of tubeless tires	—
22 sand bags of 22 kg each for loading down the vehicle for wheel adjustment measurements	187 589 07 31
Pliers for the installation of the balancing weights	—

### Propeller Shaft — Group 41

Designation	Order No.
Fork for installing the propeller shaft	120 589 02 61
Special wrench for the grooved nut on the rear propeller shaft	187 589 06 07
Tester for measuring the run-out of the three-way flange at the transmission and the joint flange at the rear axle	136 589 04 21 *
Internal micrometer 18—35 mm $\varnothing$ (for bore in the universal joint yoke)	000 589 02 19 *
Micrometer 25—50 mm $\varnothing$ (for trunnions)	000 589 07 19 *
Micrometer 0—50 mm $\varnothing$ (crescent-shaped snap rings)	000 589 06 19 *



## Brakes — Group 42

Designation	Order No.
Decelerometer (Siemens)	000 589 21 21
Pressure tester for leak checks and for measuring the residual pressure in the brake system	000 589 12 27
Vacuum gage with a range of 0—1 kg cm <sup>2</sup> for checking the vacuum in the ATE Power Brake T 50	000 589 11 27
Flat rubber disk of 60 mm $\varnothing$ for checking the atmosphere poppet of the control valve	—
Special brake bleeder	—
Pedal jack	000 589 18 31
Glass container for brake fluid	
Brake bleeder hose	000 589 04 21
Cleaning tool for the compensating port in the brake master cylinder	136 589 25 61
3 puller screws M 8 with chain for the brake drums	191 589 00 35 *
Piston clamp for the front brake wheel cylinders	120 589 03 31
Piston clamp for the rear brake wheel cylinder	000 589 02 37
Brake spring pliers, size 2, 350 mm long	000 589 01 37
Spring clamp for installing the compression spring of the rear brake shoe anchoring	180 589 02 31
Special wrench for the tensioning screw of the automatic adjustment	180 589 10 07
Special wrench for the adjusting sleeve of the automatic adjustment	180 589 11 07
Brake lining miller for reconditioning the brake linings in the car	000 589 03 66
Cutter for brake linings (10 mm $\varnothing$ , 70 mm cutter length)	180 589 00 51
Clamp for the front brake shoes for reconditioning the brake linings	180 589 01 63
Clamp for the rear brake shoes for reconditioning the brake linings	180 589 02 63
Flaring tool (Teves) for the brake lines	AW 35 956
Flaring tool with pressure spindle (Teves) for the brake lines	AW 37 666
Internal micrometer for 10—18 mm $\varnothing$ (for bore of the brake shoe support)	000 589 01 19 *
Internal micrometer for 18—35 mm $\varnothing$ (for the bore of the brake cylinders)	000 589 02 19 *
Micrometer for 0—25 mm $\varnothing$ (for pivot pins of the brake shoe anchoring)	000 589 06 19 *
Micrometer for 25—50 mm $\varnothing$ (for pistons of the brake cylinders)	000 589 07 19 *
Feeler gage 0.03—1.0 mm (for checking the front brake shoes at the contact plate)	000 581 01 30 *
Dial gage, 10 mm travel, 1/100 mm reading accuracy for measuring the clearance of the brake shoes and for measuring the brake drums for run-out, out-of-round, etc.	000 589 14 21 *
Spring scale for measuring the adjusting force of the automatic adjustment	—

## Steering — Group 46

Designation	Order No.
Center check screw for the steering	186 589 00 23 *
Puller for the steering wheel	120 589 01 33
Bell-shaped puller for the ball-heads of the tie-rods and center tie-rod	186 589 10 33
Bell-shaped puller for the steering gear arm	186 589 04 33
Wrench for the hexagon nut for fixing the adjusting ring	180 589 00 01
Adjustable pin wrench for the adjusting ring	000 589 00 05
Internal extractor for the outer race of the lower taper roller bearing plus washer 25 × 60 × 10 mm for supporting the extractor, to be made in the repair shop	000 589 27 33
1 set forcing sleeves for the outer races of the taper roller bearings	—
Guide sleeve for installing the adjusting ring together with sealing ring	180 589 02 39
Guide pin for installing the cable guide tube in the steering gear housing	180 580 00 61
and the steering worm	120 589 07 61

Designation	Order No.
Guide sleeve for installing the sealing ring of the steering shaft in the steering gear housing	120 589 05 61
Fitting sleeve for installing the sealing ring of the steering shaft in the steering gear housing	120 589 06 61
Torque wrench 0—6 mkg (1/2" square) for tightening the hexagon nut for fixing the steering wheel	000 589 27 21 *
Tester for measuring the wheel hub bearing play (steering element play)	136 589 04 21 *
Internal micrometer for 18—35 mm $\odot$ } for bearing seat of the steering worm for	000 589 02 19 *
Micrometer for 0—25 mm $\odot$ } bore of the bearing bushings of the steering	000 589 06 19 *
	000 589 03 19 *
Internal micrometer for 35—60 mm $\odot$ } shaft and the steering relay lever	
Micrometer for 25—50 mm $\odot$ } for bearing seat in the steering housing	000 589 07 19 *

### Radiator — Group 50

Designation	Order No.
Anti-freeze areometer with thermometer	000 589 05 27
Various dummy plugs for pressure-testing the radiator	—
Radiator cap with adapter connection for air blast hose for pressure-testing the radiator	—

### Electrical System — Groups 15, 54, 82

Designation	Order No.
Headlight adjusting device	—
Cell tester 200 amps.	000 589 00 27
Hydrometer	000 589 01 27
Testing light, 6—12 v with bulb	000 589 02 27 *
Puller for battery cable terminal clamp	000 589 12 33
Battery carrying strap	000 589 02 31
Battery service container (empty)	000 589 15 27
Battery service container No. 802 complete with tools	000 589 18 27
Spring scale for measuring the contact pressure of the breaker arm in the distributor (Kontakter Size 6, 100—1000 g)	000 589 73 21 *
Wooden jaws for setting the starter armature (Group 15)	Bosch No. EF 1062
Spring scale for testing the brush spring pressure (Group 15)	Bosch No. EF 1244
Collector saw (Group 15)	Bosch No. EF AW 10
Armature tester (Group 15)	Bosch No. EF 2666
Contact setting tool for straightening the contacts (Group 15)	Bosch No. EF AW 57
Contact setting tool for straightening the contacts (Group 15)	Bosch No. EF 3647 A
Special socket wrench for the bearing of the wiper shaft (Group 82)	120 589 00 09
Condenser tester	000 589 20 27
Small-size ammeter	000 589 09 27
Small-size ammeter for starter testing	000 589 19 27
Puller for the ball bearing of the generator	000 589 20 33
Hook wrench for removing and installing the rotary light switch	136 589 01 05
Spark plug cleaning tool	000 589 01 68 *
Spark plug setting tool (gage) measuring range 0.7—1.0 mm	000 589 03 23 *
or measuring range 0.3—1.1 mm	000 589 09 23 *

# Body — Groups 61 — 97

Designation	Order No.
Chassis base panel gage with accessories (Group 61)	120 589 08 23
plus adapter	120 589 11 23
Rivet fastener for drip molding (Group 69)	180 589 00 37
Installer for the clips of the sealing strip (door window, Group 72)	180 589 06 63
Puller for the plug at the regulating valve of the heat exchanger (Group 83)	180 589 02 33
Grease gun with tapered nozzle	000 583 13 18
Grease gun with funnel nozzle	000 583 14 18
4 Philips screw drivers in case	000 589 00 11
Special wrench for Bosch switch	136 589 01 05 *
Special wrench for choke control escutcheon	136 589 02 05 *
Special socket wrench for nut to windshield wiper	120 589 00 09 *
Protective covers for front fender, left	000 589 39 98 *
Protective covers for front fender, right	000 589 40 98 *
1 set protective covers for seats, steering wheel, doors, fenders	000 589 04 98
Protective covers for front seats	000 589 16 98
Protective covers for bench seat	000 589 17 98
Protective covers for steering wheel	000 589 18 98
Protective covers front door, left, with insert	000 589 33 98
Protective covers for front door, right, with insert	000 589 34 98
Tarpaulin	000 589 10 98