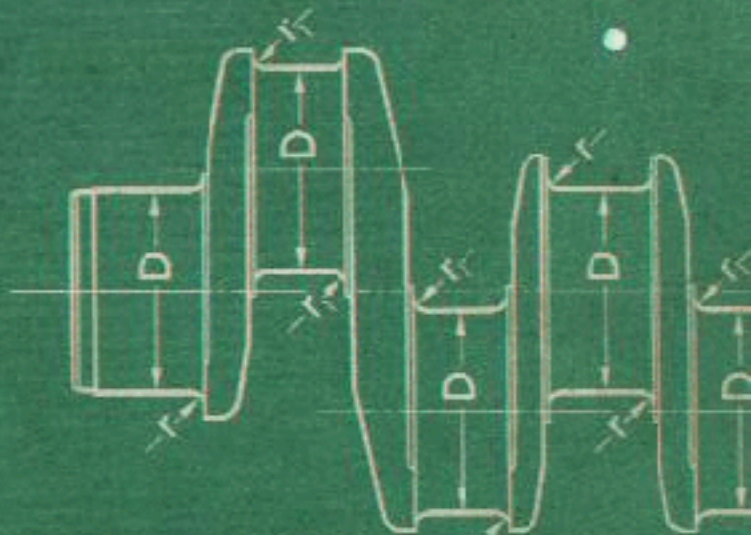


August 1968

1969



Without Guesswork

Type 1, 2 and 3

# **TECHNICAL DATA FOR WORKSHOP USE**

Type 1, 2 and 3

This booklet contains measurements, clearances and other important details from the introduction of the 30 bhp engine in December 1953. It should be carried by every VW specialist and not just put into a drawer somewhere.

The SAE equivalents of the German bhp figures in this booklet are given on page 5.

Always refer to the Workshop Bulletins as well because the values in this booklet may change.

**VOLKSWAGENWERK AG · WOLFSBURG**

# CONTENTS

The data in each section is arranged so that it runs parallel with the assembly of the unit.

**M**

Engine	Page
I. Technical data	4
II. Tolerances, wear limits <sup>1)</sup> and settings	
a - Crankshaft	8
b - Camshaft	16
c - Piston/cylinder	20
d - Valves	22
e - Cylinder head	26
f - Clutch	30
III. Industrial engine/speed limiter, governor	36
IV. Tightening torques	42

**K**

Fuel system	Page
I. Carburetor settings and jets, Type 1 and 2	44
II. Carburetor settings and jets, Type 3	46
III. Carburetor settings and jets, Industrial Engine	50
IV. Fuel pumps	52

**V**

Front axle	Page
I. Tolerances, wear limits <sup>1)</sup> and settings	
a - Settings for torsion bars, stabilizer	54
b - Torsion arm bearing in axle beam	54
c - Steering knuckle, link pins, steering ball joints	56
d - Shims, Type 1 and 2	58
e - Steering	60
f - Wheel alignment data	62
II. Tightening torques	74

<sup>1)</sup> The term "Wear limit" means that parts which are near, or have reached the dimensions given should not be fitted again when carrying out repairs.

**H**

## Rear axle and gearbox

I. Tolerances, wear limits <sup>1)</sup> and settings	80
a - Gears, drive pinion	82
b - Drive shaft	82
c - Final drive	82
d - Gearbox and gearshift housing	82
e - Data for automatic transmission	86
f - Automatic transmission test data	88
g - Marking of gear sets	90
h - Adjusting final drive	96
II. Ratios	108
III. Tightening torques	110
IV. Torsion bar adjustment	120

**B**

## Brakes and wheels

I. Tolerances, wear limits <sup>1)</sup> and settings	
a - Master cylinder	122
b - Wheel cylinders	122
c - Brake drums	122
d - Brake linings	124
II. Tightening torques	126
III. Tire data	130

**A**

## Body

I. Tightening torques	134
-----------------------	-----

**E**

## Electrical system

I. General data	136
II. Batteries	137

**T**

## General data

I. Performance data	138
II. Fuel and oil consumption and capacity figures	143
III. Dimensions	148
IV. Short designations for technical publications	150
V. Manufacturing dates for the various types	153

All measurements are in mm followed by inches in brackets

# ENGINE

## 1. Technical Data for Vehicle Engines

Type	Engine Code letter	Standard engine or M No.	Output in bhp at rpm in 1000		Maximum torque at rpm in 1000		Capacity cc (cu in)	Bore mm	Stroke mm
			DIN	SAE	DIN (mkg)	SAE (lb ft)			
1/1200	A	Standard	30/3.4	36/3.7	7.7/2.0	60/2.4	1192 (72.74)	77 (3.03)	64 (2.52)
1/1200	D	Standard	34/3.6	41.5/3.9	8.4/2.0	65/2.4	1192	77	64
1/1300	F	Standard	40/4.0	50/4.6	8.9/2.0	69/2.6	1285 (78.4)	77	69 (2.72)
	E	M 240 <sup>2)</sup>	37/4.0	47/4.6	8.5/2.0	65/2.6			
1/1500	H	Standard	44/4.0	53/4.2	10.2/2.0	78/2.6	1493 (91.1)	83 (3.27)	69
	L	M 157 <sup>3)</sup> M 240 <sup>2)</sup>	44/4.0 40/4.0	53/4.2 49/4.2	10.2/2.0 9.4/2.0	78/2.6 71/2.6			
2/1500	G	Standard	42/3.8	51/4.0	9.7/2.2	74/2.6	1493	83	69
	H	Standard	44/4.0	53/4.2	10.4/2.0	78/2.6			
	L	M 240 <sup>2)</sup>	40/4.0	49/4.2	9.4/2.0	71/2.6			
2/1600	B	Standard	47/4.0	57/4.4	10.6/2.2	82/3.0	1584 (96.6)	85.5	69
	C	M 157 <sup>3)</sup> M 240 <sup>2)</sup>	47/4.0 44/3.8	57/4.4 53/4.2	10.6/2.2 10.0/2.2	82/3.0 77/3.0			
3/1500	K	Standard	45/3.8	54/4.2	10.8/2.0	84/2.8	1493	83	69
	K	Standard	45/3.8	54/4.2	10.8/2.0	84/2.8			
	M	M 240 <sup>2)</sup>	41/3.8	52/4.4	10.1/1.8	78/2.6			
3/1500 S	R	Standard	54/4.2	66/4.8	10.8/2.4	84/3.0	1493	83	69
	N	M 249 <sup>1)</sup>	52/4.2	63.5/4.8	10.4/2.4	81/3.0			
3/1600	T	Standard	54/4.0	65/4.6	11.2/2.2	87/2.8	1584	85.5 (3.36)	69
	U	M 236 <sup>1)</sup>	54/4.0	65/4.6	11.2/2.2	87/2.8			
	P	M 240 <sup>2)</sup>	48/4.0	59/4.6	10.6/2.2	83/2.8			

<sup>1)</sup> Minimum compression (wear limit) see page 29

<sup>2)</sup> Engines with recessed pistons (3/1500 S - flat pistons) for certain countries

<sup>3)</sup> Engines with exhaust control system for certain countries, engine numbers begin with B/H:5000001

Combustion chamber in cylinder head cc	Compression ratio	Octane requirement	Ignition timing before TDC	Idling speed	Dry weight kg (lbs)	Maximum compression pressure <sup>1)</sup> kg/cm <sup>2</sup> (psi)	Installed
45.5-47.0	6.6:1	84	7.5°	700-800	90 (198)	8.5-7.0 (120-100)	up to July 1965
43.0-45.0	7.0:1	87	7.5° <sup>2)</sup>	700-800	108 (237)	9.0-7.0 (128-100)	from Aug. 1960
44.0-46.0	7.3:1 6.6:1	87 81	7.5°	700-800	111 (244)	9.5-7.5 (135-107) 8.0-6.0 (114-85)	from Aug. 1965 from Nov. 1966
48.0-50.0	7.5:1 6.6:1	91 83	7.5° <sup>3)</sup> 0° 7.5°	700-800 850-900 700-800	114 (250)	10.0-8.0 (142-114) 8.0-6.0 (114-85)	from Aug. 1966 from Aug. 1967 from Aug. 1966
48.0-50.0	7.8:1 7.5:1 6.6:1	90 91 83	10.0° 7.5°	700-800	110 (242) 112.5 (248)	10.0-8.5 (142-121) 10.0-8.0 (142-114) 8.0-6.0 (114-85)	up to July 1965 from Aug. 1965 from Nov. 1965
48.0-50.0	7.7:1 <sup>4)</sup> 6.6:1	91 83	0°	700-800 850-900 700-800	115 (253)	11.0-8.0 (156-114) 8.0-6.0	from Aug. 1967
48.0-50.0	7.8:1 7.5:1 6.6:1	90 90 80	10.0° 7.5° <sup>5)</sup>	700-800	122 (268)	10.0-8.5 10.0-8.0 8.0-6.0	up to July 1965 from Aug. 1965 from Nov. 1965
48.0-50.0	8.5:1 7.8:1	95 90	10.0°	800-900	123 (271)	11.5-9.5 (164-136) 10.0-8.5	up to July 1965 up to July 1965
48.0-50.0	7.7:1 6.6:1	90 78	7.5° <sup>6)</sup> 0° <sup>7)</sup> 7.5°	800-900 850-900 800-900	126 (277)	10.0-8.0 8.0-6.0	from Aug. 1965 from Aug. 1967 from Nov. 1965

<sup>4)</sup> Engines with fuel injection, for USA only

<sup>5)</sup> Up to August 1966, Engine No. D 0095 049: 10.0°

<sup>6)</sup> Up to August 1966, Engine No. K 0059 860: 10.0°

<sup>7)</sup> Vehicles with automatic transmission: 0°

<sup>8)</sup> From Engine No. B 0091 149: Engines with

M 157 from Engine No. B 5039 390: 7.5:1

<sup>9)</sup> Applies also to vehicles with automatic transmission

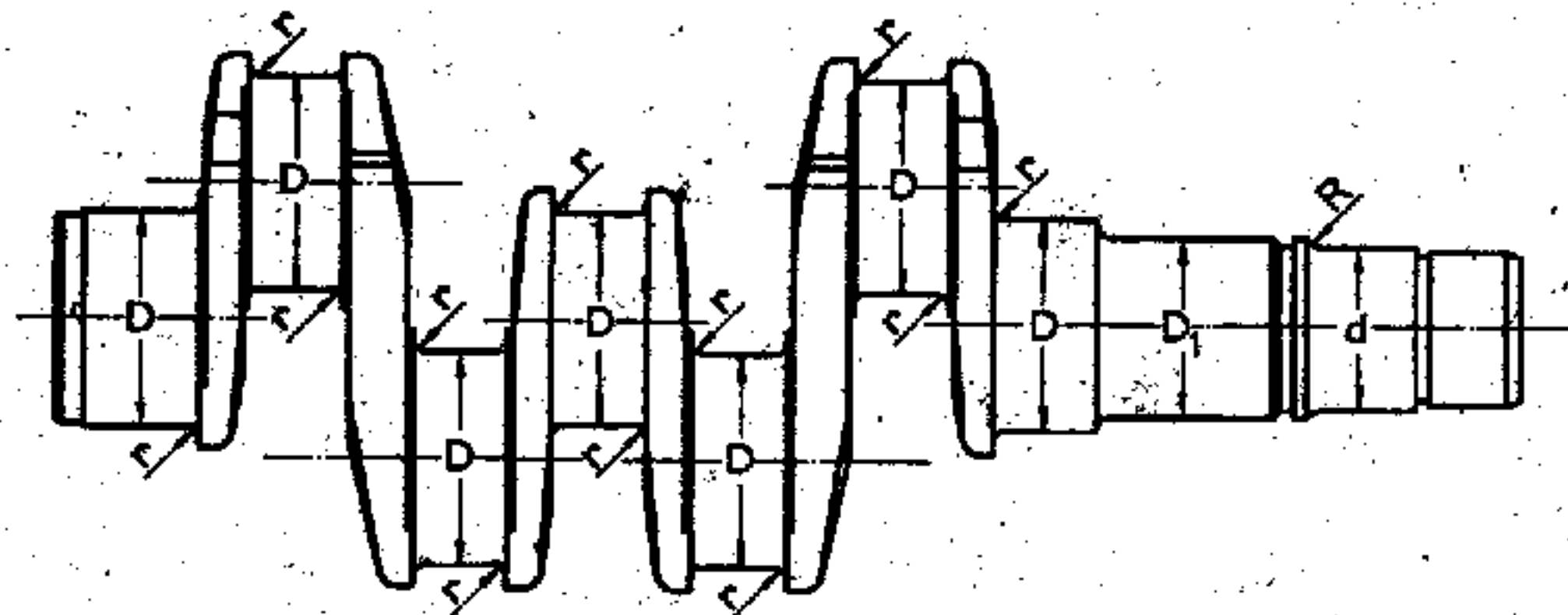
# Technical Data for Industrial Engines

Type	Capacity	Bore	Stroke	Compression ratio	Octane requirement	Ignition timing before TDC	Output in DIN bhp with a governor variation			Maximum torque at rpm (in 1000) mkg (lb. ft)	Cooling fan capacity in liters (cu. ft) per sec. at rpm (in 1000)	Dry weight kg (lbs)	Manufactured		Remarks
							of 8 %	5 % rpm in 1000	without governor				from Engine No./Date	to Engine No./Date	
122/1	1192	77	64	6.6 : 1	84	7.5°	27/3.0	25/3.0	28/3.0	7.7 (56) at 2.0	approx. 500 (18) at 3.3	85 (187)	122-001985 Dec. 1953	122-073000 July 1960	
122/2	1192	77	64	7.0 : 1	86	7.5°	29/3.0	27.5/3.0	31/3.0	8.4 (61) at 2.0	approx. 530 (19) at 3.8	94 (207)	122-073001 Aug. 1960	still in production	
126	1493	83	69	7.8 : 1	86	7.5°	38/3.0	35/3.0	40/3.0	9.7 (70) at 2.2	approx. 550 (20) at 3.8	100 (220)	126-007501 May 1962	126-012205 July 1965	
126 A	1584	85.5	69	7.7 : 1	90	7.5°	39/3.0	36.5/3.0	42/3.0	11.2 (81) at 2.2	approx. 565 (20) at 4.0	100	126-012206 Aug. 1965	still in production	
124	1493	83	69	7.8 : 1	90	10.0°	40/3.0	-	on request	10.8 (78) at 2.0	approx. 565 at 4.0	107 (235)	124-002501 Aug. 1963	124-002835 July 1965	
124 A	1584	85.5	69	7.7 : 1	90	10.0°	39/3.0	-	42.5/3.0	11.2 (81) at 2.2	approx. 565 at 4.0	107	124-002836 Aug. 1965	still in production	

## II. Tolerances, wear limits and settings

### a - Regrinding Crankshaft

1 - 30 bhp and 122/1 (Not valid for Transporter Engine from May 1959)



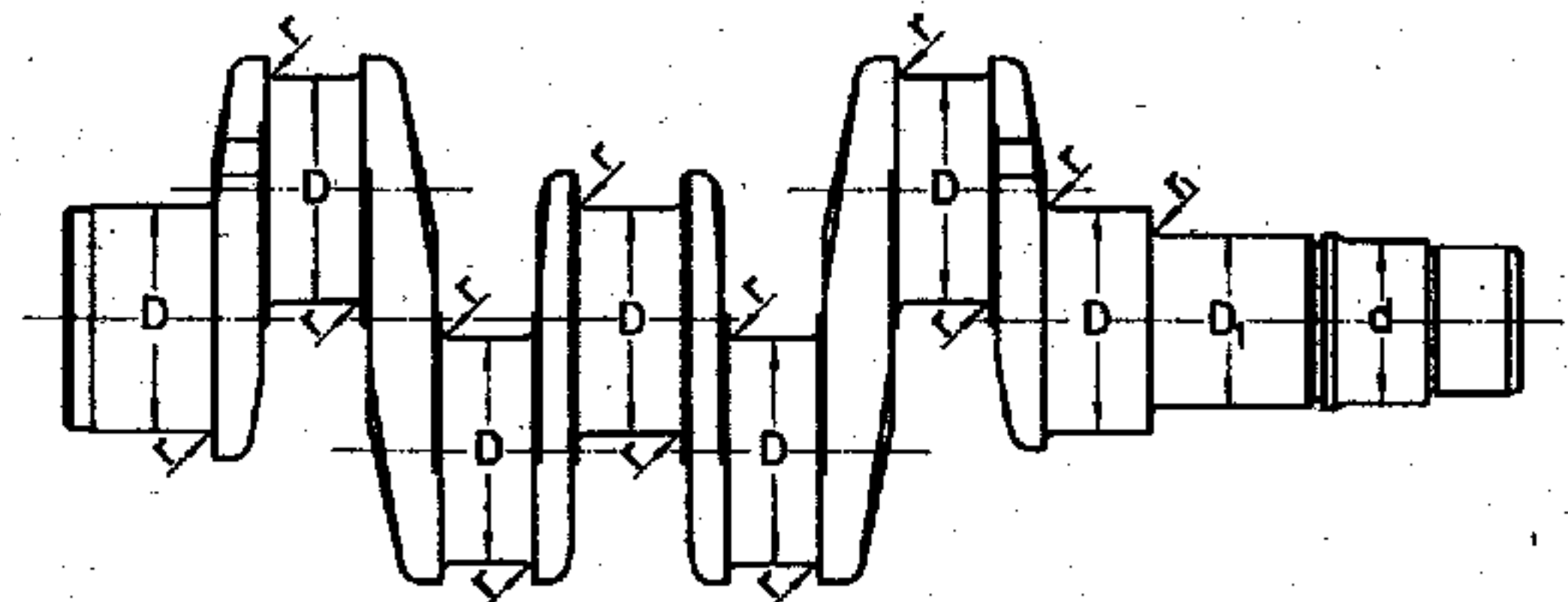
$$D_1 = \frac{42.008}{41.995} \text{ mm dia. } \frac{1.6538}{1.6533} \text{ in}$$

$$R = \frac{4.0}{3.5} \text{ mm } \frac{0.16}{0.14} \text{ in}$$

$$r = \frac{2.0}{1.5} \text{ mm } \frac{0.08}{0.06} \text{ in}$$

	Main bearing journals 1-3 and connecting rod journals (D)			Main bearing journal 4 (d)		
	Nominal dia.	Ground dia.	Lapped dia.	Nominal dia.	Ground dia.	Lapped dia.
Standard	50.00 (1.9685)	—	49.991 (1.9681) 49.975 (1.9675)	40.00 (1.5748)	—	40.000 (1.5748) 39.984 (1.5742)
1st Undersize	49.75 (1.9586)	49.750 (1.9586) 49.741 (1.9583)	49.741 (1.9583) 49.725 (1.9577)	39.75 (1.5650)	39.760 (1.5653) 39.750 (1.5650)	39.750 (1.5650) 39.734 (1.5643)
2nd Undersize	49.500 (1.9488)	49.50 (1.9488) 49.491 (1.9484)	49.491 (1.9484) 49.475 (1.9478)	39.50 (1.5551)	39.510 (1.5555) 39.500 (1.5551)	39.500 (1.5551) 39.484 (1.5545)
3rd Undersize	49.25 (1.9390)	49.250 (1.9390) 49.241 (1.9386)	49.241 (1.9386) 49.225 (1.9380)	39.25 (1.5453)	39.260 (1.5457) 39.250 (1.5453)	39.250 (1.5453) 39.234 (1.5446)
The lapped diameter is the final dimension and must be accurate						

2 - All other engines



$$D_1 = \frac{42.006}{41.995} \text{ mm dia. } \frac{1.6539}{1.6533} \text{ in}$$

$$r = \frac{2.5}{2.0} \text{ mm } \frac{0.10}{0.08} \text{ in}$$

$$r_1 = \frac{2.0}{1.5} \text{ mm } \frac{0.08}{0.06} \text{ in}$$

	Main bearing journals 1-3 and connecting rod journals (D)			Main bearing journal 4 (d)		
	Nominal dia.	Ground dia.	Lapped dia.	Nominal dia.	Ground dia.	Lapped dia.
Standard	55.00 (2.1653)	— —	54.990 (2.1648) 54.971 (2.1642)	40.00 (1.5748)	— —	40.000 (1.5748) 39.984 (1.5742)
1st Undersize	54.75 (2.1555)	54.749 (2.1555) 54.740 (2.1551)	54.740 (2.1551) 54.721 (2.1544)	39.75 (1.5650)	39.760 (1.5653) 39.750 (1.5649)	39.750 (1.5650) 39.734 (1.5643)
2nd Undersize	54.50 (2.1457)	54.499 (2.1456) 54.490 (2.1453)	54.490 (2.1453) 54.471 (2.1445)	39.50 (1.5551)	39.510 (1.5555) 39.500 (1.5551)	39.500 (1.5551) 39.484 (1.5545)
For 1.3, 1.5 and 1.6 liter engines only						
3rd Undersize	54.25 (2.1358)	54.249 (2.1358) 54.240 (2.1354)	54.240 (2.1353) 54.221 (2.1347)	39.25 (1.5453)	39.260 (1.5457) 39.250 (1.5452)	39.250 (1.5452) 39.234 (1.5446)
The lapped diameter is the final dimension and must be accurate						

Designation	30 bhp and Type 122/1		all other engines <sup>1)</sup>	
	On installation (new)	Wear limit	On installation (new)	Wear limit
1 - Crankcase bore for crankshaft bearings				
a-Bearings No. 1-3 . . . . . diameter	60.00-60.02 (2.3622-2.3630)	60.03 (2.3633)	65.00-65.02 (2.559-2.5598)	65.03 (2.5601)
up to Engine No. 3520332 <sup>1)</sup> . . . . . diameter	-	-	60.00-60.02 (2.3622-2.3630)	60.03 (2.3633)
b-Bearing No. 4 . . . . . diameter	50.00-50.03 (1.9685-1.9696)	50.04 (1.9700)	50.00-50.03	50.04
c-Seat for oil seal . . . . . diameter			90.00-90.05 3.5433-3.5452	
2 - Crankcase bore for camshaft bearings from August 1965 <sup>1)</sup> . . . . . diameter	-		27.50-27.52 (1.082-1.083)	
Crankcase bores for camshaft . . . . . diameter	24.02-24.04 (.9456-.9458)	-	25.02-25.04 (.9850-.9857)	-
3 - Cam follower bore in crankcase . . . . . diameter	15.00-15.02 (.5905-.5912)	15.06 (.5928)	19.00-19.02 (.7480-.7485)	19.05 (.7509)
4 - Crankshaft/main journal (taking into account housing preload)				
a-Bearings No. 1-4 . . . . . radial clearance	0.05-0.10 (.002-.004)	0.19 (.0075)	-	-
b-Bearings No. 1-3 (from August 1965: bearings 1 and 3) . . . . . radial clearance	-	-	0.04-0.10 (.0016-.004)	0.18 (.007)
up to Engine No. 3520332 <sup>1)</sup> . . . . . radial clearance	-	-	0.04-0.09 (.0016-.0035)	0.18 (.007)
up to Engine No. 3472699 <sup>1)</sup> . . . . . radial clearance	-	-	0.03-0.09 (.001-.0035)	0.18 (.007)
Bearing No. 4 . . . . . radial clearance	-	-	0.05-0.10 (.002-.004)	0.19 (.0075)

Remarks
<sup>1)</sup> including modified 30 bhp Transporter engine from May 1959 (Chassis No. 469477/Engine No. 3400000)
<sup>2)</sup> Valid for:
Type 1: 34 bhp from Engine No. D 0000001 40 bhp from Engine No. F 0000001 44 bhp from Engine No. H 0204001
Type 2: 44 bhp from Engine No. H 0000001
Type 3: 45 bhp from Engine No. K 0000001 54 bhp from Engine No. T 0000001





Designation	30 bhp and Type 122/1		all other engines <sup>1)</sup>	
	On installation (new)	Wear limit	On installation (new)	Wear limit
<b>b - Camshaft</b>				
12 - Camshaft/camshaft bearings (taking into account housing preload) . . . . . radial clearance	0.02-0.05 (.0008-.002)	0.12 (.0047)	0.02-0.05	0.12 (.0047)
Thrust bearing . . . . . axial clearance	0.02-0.07 (.0008-.0027)	0.10 (.004)	0.04-0.13 (.0016-.0051)	0.16 (.0062)
up to Engine No. 5067817 and 122-073129 . . . . . axial clearance	-	-	0.03-0.08 (.001-.003)	0.10 (.004)
Measured at center bearing (between centers) . . . . . run-out	0.02 (.0008)	0.04 (.0016)	0.02	0.04
13 - Camshaft gear . . . . . lateral run-out backlash	0.10 0.00-0.05 (.000-.002)	-	- 0.00-0.05	-
14 - Cam follower . . . . . diameter	14.98-14.97 (.5896-.5892)	14.96 (.5888)	18.98-18.96 (.7471-.7463)	18.93 (.7452)
15 - Cam follower/guide plate . . . . . clearance	- <sup>a)</sup>	0.02 (.0008)	-	-
16 - Spring for oil pressure relief valve: Spring (free) . . . . . length	52-53 (2.05-2.08)	-	-	-
Loaded length 24.0 mm . . . . . load	-	-	7.8 kg (17 lbs)	-
17 - Oilpump: gears/housing with gasket (measured without preload) . . . . . axial clearance	0.07-0.18 (.0027-.007)	0.20 (.008)	0.07-0.18	0.20
Gears/housing without gasket . . . . . axial clearance	-	0.10 (.004)	-	0.10

Remarks
<sup>a)</sup> Cam follower should move under own weight with minimum clearance



Designation	30 bhp and Type 122/1		all other engines <sup>1)</sup>	
	On installation (new)	Wear limit	On installation (new)	Wear limit
Gears ..... backlash	0.00-0.20 (.000-.008)		0.00-0.20	
18 - Relief valve opens at ..... pressure	0.3-0.6 kg/cm <sup>2</sup> (4.2-8.5 psi)		0.15-0.45 kg/cm <sup>2</sup> (2.1-6.4 psi)	
19 - Oil pressure (at an oil temperature of 70°C) at 3000 rpm ..... pressure	min. 2.0 kg/cm <sup>2</sup> (28 psi)		min. 2.0 kg/cm <sup>2</sup> (28 psi)	
20 - Flywheel (measured at center of friction surface) ..... lateral run-out	max. 0.30 (.012)		max. 0.30	
At shoulder below gear ring ..... radial run-out	max. 0.40 (.016)		-	
Shoulder for oil seal ..... outside dia	59.9-60.1 (2.3582-2.3661)	59.4 (2.3385)	69.9-70.1 (2.7519-2.7598)	69.4 (2.7322)
..... external depth	min. 12.5 (.491)		-	
..... internal depth	3.22-3.25 (.126-.128)		-	
Turning down tooth width .....		max. 2.0 (.078)		max. 2.0
21 - Weight difference between pistons in one engine .....	max 5 gr.	-	max 5 gr.	max. 10 gr. <sup>1)</sup>

Remarks

**c - Pistons/cylinders**  
Dimensions, weights and markings

Dimensions and markings of cylinders and pistons	Color	1.2 and 1.3 liter engines		
		Nominal size	Cylinder dia.	Matching piston dia.
Standard size	blue pink green	77.0	76.99 77.00 77.01	76.95 76.96 76.97
1st Oversize	blue pink green	77.5	77.49 77.50 77.51	77.45 77.46 77.47
2nd Oversize	blue pink green	78.0	77.99 78.00 78.01	77.95 77.96 77.97
Dimensions and markings of piston pins	Color	1.2 liter engines		
		Piston pin dia.	Piston pin bore dia.	
	no mark green	19.996-20.000 20.001-20.004	19.997-20.002 pin only	
Weight grading of pistons	Paint line	30 bhp and 122/1		34 bhp and 122/2
		recessed crown	flat crown	
Weight - Weight +	brown grey	265-270 g 270-275 g	275-280 g 280-285 g	

Nominal size	1.5 liter engines		1.6 liter engines		
	Cylinder dia.	Matching piston dia.	Nominal size	Cylinder dia.	Matching piston dia.
83.0	82.99 83.00 83.01	82.96 82.96 82.97	85.5	85.49 85.50 85.51	85.45 85.46 85.47
83.5	83.49 83.50 83.51	83.45 83.46 83.47	86.0	85.99 86.00 86.01	85.95 85.96 85.97
84.0	83.99 84.00 84.01	83.95 83.96 83.97	86.5	86.49 86.50 86.51	86.45 86.46 86.47
all other engines					
Piston pin dia.			Piston pin bore dia.		
21.996-22.000 22.001-22.004			21.997-22.002 pin only		
40 bhp	45 bhp up to Engine No. 0065745	45 bhp from Engine No. 0065746, 42 bhp, Type 126 and 124	45 bhp from Engine No. K 0000001 and 44 bhp	54 bhp + 47 bhp	
				1.5 liter	1.6 liter, Type 126A and 124A
300-308 g 308-316 g	355-360 g 360-365 g	365.0-372.5 g 372.5-380.0 g	370 -376.5 g 376.5-383 g	373.5-380.0 g 380.0-386.5 g	390-398 g 398-406 g

Designation	30 bhp and Type 122/1		all other engines <sup>1)</sup>	
	On installation (new)	Wear limit	On installation (new)	Wear limit
22 - a - Upper piston ring . . . . . side clearance	0.05-0.07 (.002-.0027)	0.10 (.004)	0.07-0.09 <sup>2)</sup> (.0027-.0035)	0.12 (.005)
b - Lower piston ring . . . . . side clearance	0.05-0.07 (.002-.0027)	0.10 (.004)	0.05-0.07 (.002-.0027)	0.10 (.004)
23 - Oil scraper ring . . . . . side clearance	0.03-0.05 (.001-.002)	0.10 (.004)	0.03-0.05 (.001-.002)	0.10 (.004)
24 - Both compression rings . . . . . gap	0.30-0.45 (.012-.018)	0.90 (0.35)	0.30-0.45	0.90
Oil scraper ring . . . . . gap	0.25-0.40 (.010-.016)	0.95 (.037)	0.25-0.40	0.95
25 - Piston/cylinder . . . . . clearance	0.04-0.05 (.0016-.002)	0.20 (.008)	0.04-0.05 <sup>3)</sup> (.0016-.002)	0.20 (.008)
26 - Cylinder . . . . . out of round	0.01 (.0004)		0.01	
<b>d - Valves</b>				
27 - Valve stem: inlet . . . . . diameter	6.96-6.95 (.2739-.2736)	6.92 (.2724)	7.95-7.94 (.3130-.3126)	7.90 (.3110)
exhaust . . . . . diameter	6.95-6.94 (.2736-.2732)	6.92 (.2724)	7.92-7.91 (.3118-.3114)	7.87 (.3098)
out-of-round	0.01 (.0004)		0.01	
28 - Valve head: inlet . . . . . diameter	30.0 (1.18)		<sup>9)</sup>	
exhaust . . . . . diameter	28.0 (1.102)		<sup>10)</sup>	

Remarks		
<p><b>General:</b> When considering the wear limits of pistons and cylinders, the oil consumption of the engine must also be taken into account.</p> <p><sup>1)</sup> all 1.5 and 1.6 liter engines: 0.07-0.10-(.0027-.0039)</p> <p><sup>2)</sup> all 1.5 and 1.6 liter engines: 0.04-0.06-(.0016-.0024)</p>		
Engine	<sup>9)</sup> inlet	<sup>10)</sup> exhaust
34 bhp and 122	31.5 (1.239)	30.0 (1.181)
40 bhp	33.0 (1.299)	30.0
42 bhp and 126	31.5	30.0
44 bhp	35.5 (1.396)	32.0 (1.259)
up to Engine No. 0065745	35.5	31.0 (1.220)
45 bhp from Engine No. 0065746 and 124	35.5	32.0
54 bhp, 124 A and 126 A	35.5	32.0



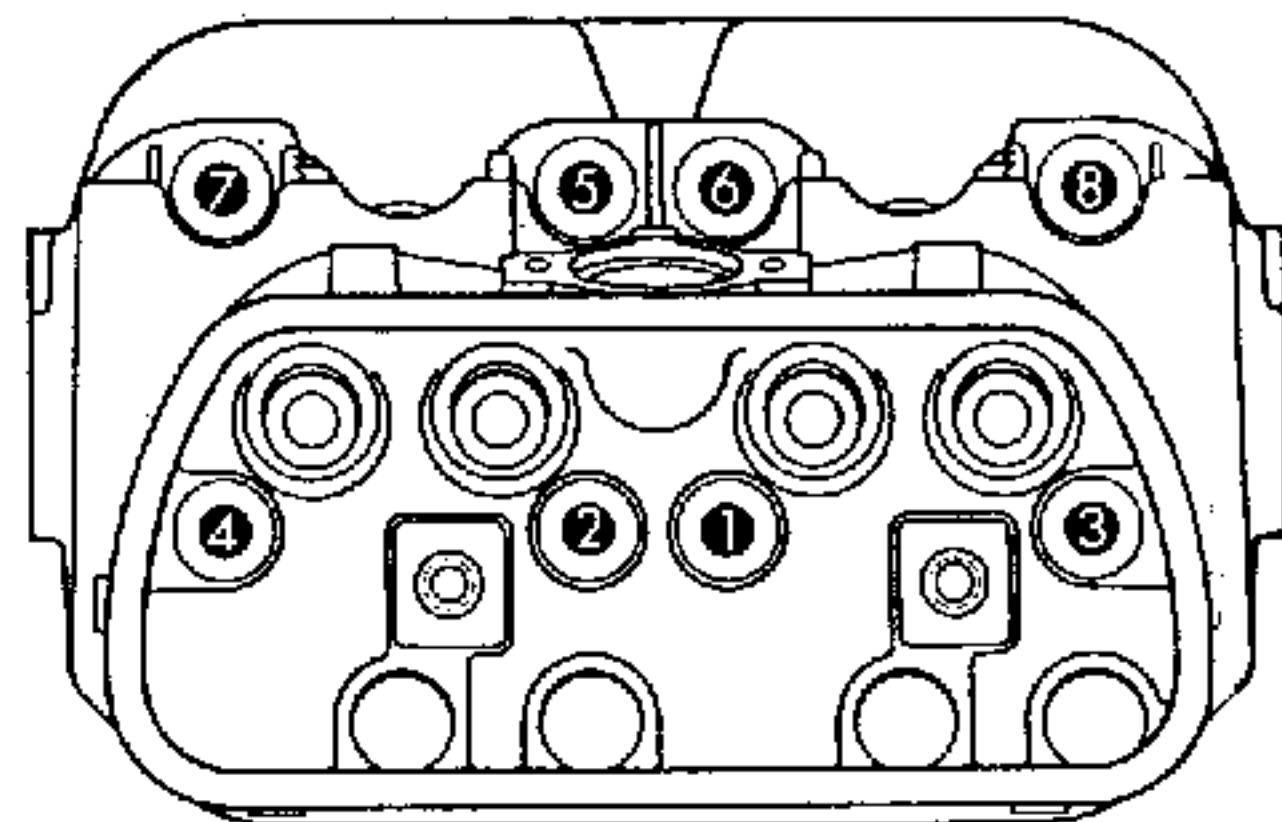
Designation	30 bhp and Type 122/1		all other engines <sup>14)</sup>	
	On installation (new)	Wear limit	On installation (new)	Wear limit
32 - Cylinder seating depth in cylinder head .....	12.9-13.0 (.507-.512)	14.5 (.570)	13.7-13.8 <sup>14)</sup> (.539-.543)	-

Remarks
<sup>14)</sup> All 1.5 and 1.6 liter engines: 13.75-13.85 (.541-.545)

**e - Cylinder head**

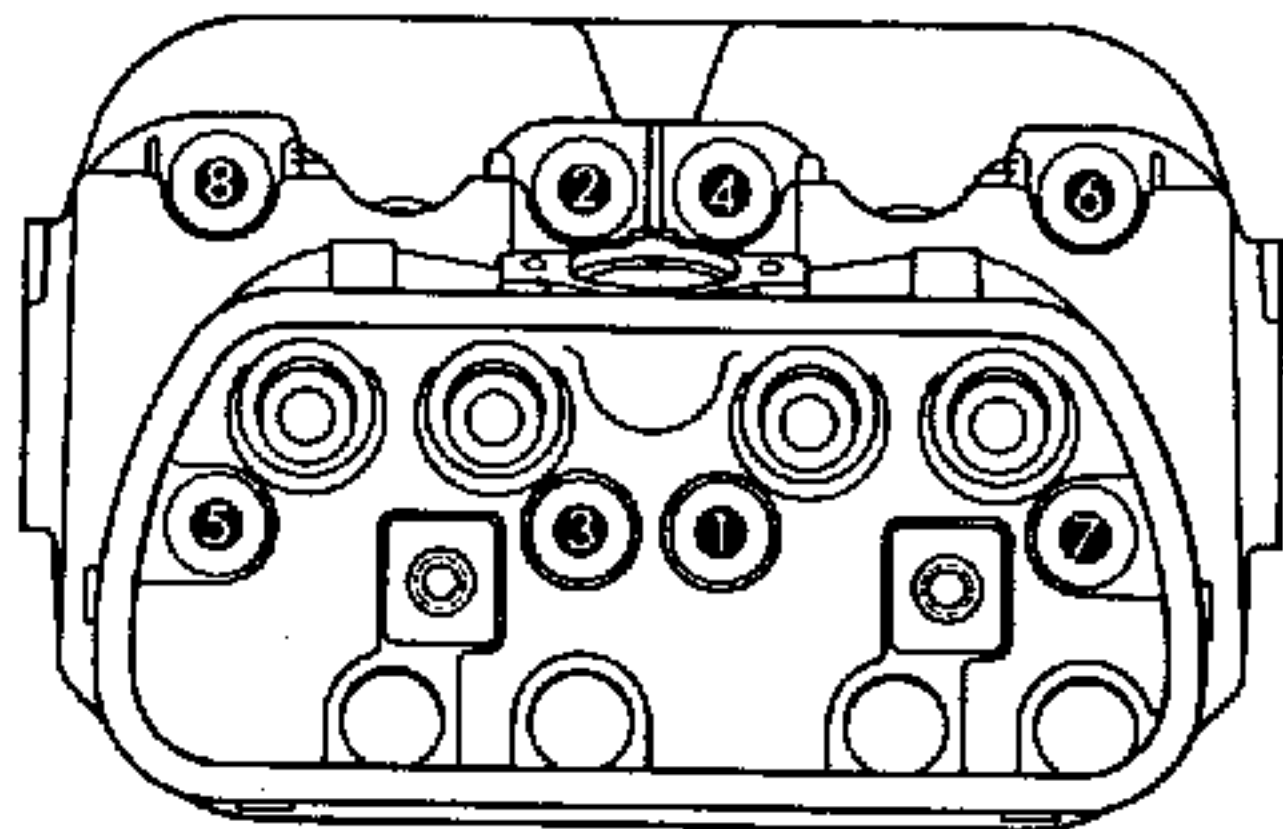
**Tightening cylinder head nuts**

- 1 - Tighten nuts lightly first
- 2 - Tighten to 1 mkg (7 lb ft) in the order shown



**3 - Fully tighten to the following torques**

- a - 30 bhp engines and Type 122/1: 3.6-3.8 mkg (26.0-27.4 lb ft)
- b - All other engines: 3.2 mkg (23 lb ft)



Designation	30 bhp and Type 122/1		all other engines <sup>1)</sup>	
	On installation (new)	Wear limit	On installation (new)	Wear limit
33 - Valve guide: inlet	7.01-7.02 (.2759-.2763)	7.07 (.2782)	8.00-8.02 (.3150-.3157)	8.06 (.3173)
exhaust	7.02-7.04 (.2763-.2771)	7.08	8.00-8.02	8.06
34 - Valve guide/valve stem:				
rock <sup>19)</sup> inlet	-	-	0.21-0.23 (.008-.009)	0.80
exhaust	0.28-0.32 (.011-.012)	0.80 (.031)	0.28-0.32	0.80
35 - Rocker arm	15.99-16.02 (.6294-.6306)	16.04 (.6316)	18.00-18.02 (.708-.709)	18.04 (.710)
Rocker shaft	15.98-15.97 (.6290-.6286)	15.96 (.6282)	17.98-17.97 (.7077-.7073)	17.95 (.7066)
36 - Compression pressure <sup>16)</sup>	8.5-7.0 kg/cm <sup>2</sup> (120-100 psi)	5.5 kg/cm <sup>2</sup> (78 psi)	- <sup>17)</sup>	- <sup>18)</sup>
Difference between cylinders	max. 1.5 kg/cm <sup>2</sup> (21 psi)		max. 1.5 kg/cm <sup>2</sup>	
37 - Thermostat: at 65-70°C <sup>19)</sup> in water	length min. 46 (1.8)		min. 46 (1.8)	
38 - Distance from fan housing/ upper edge of throttle ring				
a - with engine cold	setting 20 (.8)		20	} <sup>20)</sup>
b - with engine warm	setting 25-30 (1-1.2)		25-30	
39 - Crankshaft pulley				
radial run-out	max. 0.8 (.030)		max. 0.8 <sup>21)</sup> (.030)	
lateral run-out	max. 0.3 (.012)		max. 0.3 <sup>21)</sup> (.012)	

Remarks			
Engine	<sup>17)</sup>	<sup>18)</sup>	
34 bhp and 122	9.0-7.0 kg/cm <sup>2</sup> (128-100 psi)	6.0 kg/cm <sup>2</sup> (85 psi)	
40 bhp	9.5-7.5 kg/cm <sup>2</sup> (135-106 psi)	6.5 kg/cm <sup>2</sup> (92 psi)	
42 bhp and 126	10.0-8.5 kg/cm <sup>2</sup> (142-121 psi)	7.0 kg/cm <sup>2</sup> (100 psi)	
44 bhp	10.0-8.0 kg/cm <sup>2</sup> (142-114 psi)	7.0 kg/cm <sup>2</sup> (100 psi)	
45 bhp	up to July 1965 and 124 from Aug. 1965	10.0-8.5 kg/cm <sup>2</sup> (142-121 psi) 10.0-8.0 kg/cm <sup>2</sup> (142-114 psi)	7.0 kg/cm <sup>2</sup> (100 psi) 7.0 kg/cm <sup>2</sup> (100 psi)
47 bhp	10.0-8.0 kg/cm <sup>2</sup> (142-114 psi)	7.0 kg/cm <sup>2</sup> (100 psi)	
54 bhp/1.5 liter	11.0-9.5 kg/cm <sup>2</sup> (156-135 psi)	8.0 kg/cm <sup>2</sup> (114 psi)	
54 bhp/1.6 liter, 124 A and 126 A	10.0-8.0 kg/cm <sup>2</sup> (142-114 psi)	7.0 kg/cm <sup>2</sup> (100 psi)	

<sup>15)</sup> Measured with local manufacture tool VW 689/1

<sup>16)</sup> Test with throttle open, engine warm, all plugs out, good gauge, engine turned over with starter

<sup>19)</sup> 75-80° C up to Engine No.  
30 bhp: 3930188  
34 bhp: 6120730

<sup>20)</sup> only up to Engine No.  
34 bhp: 8785396  
42 bhp: 0627578

<sup>21)</sup> Does not apply to flat engines



Designation	30 bhp	all other vehicle engines <sup>1)</sup>	Remarks
<b>F-Clutch</b> <b>40 - Clutch springs</b>  <b>Type 1</b> Length loaded 29.4 (1.157) ..... load Length loaded 28.3 (1.113) from Chassis No. 4683160. .... load from Chassis No. 5661082. .... load from Chassis No. 115318171: a - dark brown springs ..... b - light brown springs .....  Length loaded 29.2 (1.148) from Chassis No. 116000002: a - dark blue springs ..... load b - light blue springs ..... load  Type 1/1500 from Engine No. H 0204001 Length loaded 29.2 (1.148) a - white spring ..... load b - red spring ..... load	55-61 kg (121-134 lbs)  57-63 kg (125-138 lbs) 58.5-63.5 kg (129-140 lbs) 51-56 kg (112-123 lbs)  62.5-65.5 kg (138-144 lbs) 55-58 kg (121-128 lbs) 59.5-62.5 kg (131-138 lbs) 52-55 kg (114-121 lbs)  - - - -	55-61 kg  57-63 kg 58.5-63.5 kg 51-56 kg  62.5-65.5 kg 55-58 kg 59.5-62.5 kg 52-55 kg  62-66 kg (136-145 lbs) 54.5-58.5 kg (120-129 lbs) 60-64 kg (132-141 lbs) 52.5-56.5 kg (116-124 lbs)  44.5-49.5 kg (98-109 lbs) 39.0-44.0 kg (86-97 lbs) 34.0-38.0 kg (75-80 lbs) 29.5-32.5 kg (66-72 lbs)	<sup>22)</sup> for replacements use dark and light brown springs <sup>23)</sup> for 34 bhp engine <sup>24)</sup> for replacements use dark and light blue springs <sup>25)</sup> for 40 bhp engine (from Engine No. D 0045573 also for 34 bhp engine)

Designation	30 bhp	all other vehicle engines <sup>1)</sup>	Remarks
<b>Type 2</b> <b>a - 180 mm diameter</b> Inner spring ..... diameter Length loaded 26.2 (1.030) ..... load Outer spring ..... diameter Length loaded 29.4 (1.157) ..... load <b>b - 200 mm diameter</b> Spring ..... diameter Length loaded 29.2 (1.148) ..... load	17.65 (.698) 16-18 kg (35-40 lbs) 25.5 (1.0) 49-52 kg (108-114 lbs) - - -	17.65 (.698) 18-20 kg (40-44 lbs) 25.5 (1.0) 50-54 kg (110-120 lbs) 25.5 (1.0) 44.75-49.25 kg (98.5-108.5 lbs) 40.05-44.55 kg (88.3-98 lbs)	<sup>26)</sup> for modified 30 bhp and 34 bhp up to Engine No. 6908639 <sup>27)</sup> for 34 bhp engine from Engine No. 6908640, as well as 42 and 44 bhp engines <sup>28)</sup> for 45 bhp up to Engine No. 00666739 <sup>29)</sup> Not valid for diaphragm spring clutch <sup>30)</sup> for 45 bhp from Engine No. 0066740 and 54 bhp <sup>31)</sup> Also valid for diaphragm spring clutch from Engine No. 0972001 <sup>32)</sup> 1/1500 from Engine No. H 00204001: 357.5-392.5 kg (787-864 lbs) <sup>33)</sup> Diaphragm spring clutch, settled: 340 kg (749 lbs)
<b>Type 3</b> <b>a - 180 mm diameter:</b> Length loaded 29.2 (1.148): Long spring ..... load Short spring ..... load <b>b - 200 mm diameter:<sup>29)</sup></b> Length loaded 29.2 (1.148) ..... load	- - - - -	44.5-49.5 kg (98-109 lbs) 39.2-42.8 kg (86-94 lbs) 44.75-49.25 kg (98.5-108.5 lbs) 40.05-44.55 kg (88.3-98 lbs)	
<b>41 - Total clutch pressure</b> <b>Type 1</b> ..... pressure from Chassis No. 4464037 ..... pressure from Chassis No. 5661082 ..... pressure from Chassis No. 115318171 ..... pressure from Chassis No. 116 000002 ..... pressure <b>Type 2</b> ..... pressure from Chassis No. 971532 ..... pressure <b>Type 3</b> ..... pressure from Chassis No. 0064916 ..... pressure	300-325 kg (661-716 lbs) 315-340 kg (694-749 lbs) 315-350 kg (694-772 lbs) 320-345 kg (705-760 lbs) - 390-420 kg (860-926 lbs) - - -	300-325 kg (661-716 lbs) 315-340 kg (694-749 lbs) 315-350 kg (694-772 lbs) 320-345 kg (705-760 lbs) 345-370 kg (760-815 lbs) 390-420 kg (860-926 lbs) 380-420 kg (838-926 lbs) 390-420 kg (860-926 lbs) 380-420 kg (838-926 lbs)	

Designation	30 bhp	all other vehicle engines <sup>1)</sup>	Remarks
42 - Clutch pressure plate . . . . .	run-out max. 0.10 (.004)	max. 0.10 (.004)	
43 - Release ring . . . . .	run-out 0.30 (.012)	0.30 (.012)	
44 - Flywheel/release ring . . . . .	distance 26.8-27.2 (1.054-1.070)	26.7-27.3 (1.050-1.066)	
45 - Clutch plate . . . . .	run-out 0.8 (.32)	0.8 (.32)	
46 - Free play at pedal . . . . .	play 10-20 (.4-.8)	10-20 (.4-.8)	
<b>Automatic clutch (Saxomat) for Type 1 only</b>			
47 - Linings . . . . .	outside dia.	-	} <sup>23)</sup>
	inside diameter	160 ± 1.0 (6.3 ± .040)	
	thickness	110 ± 1.0 (4.3 ± .040) 2.75 ± 1.0 (.107 ± .040)	
48 - Clutch springs:	Outer spring, length loaded 21.5 (.845) . . . . .	load	26 - 28 kg (57 - 62 lbs)
	Inner spring, length loaded 19.5 (.767) . . . . .	load	11 - 12 kg (24 - 26 lbs)
49 - Shift lever . . . . .	contact gap	-	0.25 (.010)



### III. Industrial engines

Permissible variations for the normal governor settings:

Type 122/1 (1192 cc)			Type 122/2		
Nominal speed of governor rpm.	Nominal output of engine bhp. at rpm.	Permissible rpm. with engine not loaded	Nominal speed of governor rpm.	Nominal output of engine bhp. at rpm.	Permissible rpm. with engine not loaded
Output with + 8% governor variation (26 VFIS carburetor)			Output with + 8% governor variation (26 VFIS carburetor)		
1500	13.5	1500	1500	13.5	1620
1500	13.5	1500	1800	17.5	1940
1800	16.5	1800	2000	20.0	2160
1800	16.5	1800	2100	21.0	2270
2000	18.5	2000	2200	22.0	2375
2500	22	2500	2300	23.0	2480
2650	22	2610	2500	25.0	2700
2800	23.5	2800	2800	26.5	3020
3000	25	3000	2900	28.0	3130
3428	25	3428	3000	29.0	3240
3600	25	3600	3200	29.5	3460
			3400	30.0	3670
			3600	30.0	3880
From April 1958			Output with + 5% governor variation (26 VFIS carburetor)		
1 - Engines with governor with 27 bhp at 3000 rpm.			2000	19.5	2100
2 - Engines with accurate governors (5%) only up to 25 bhp.			2500	24.0	2625
3 - Engines without governor with 28 bhp at 3000 rpm.			2800	26.5	2940
			2900	27.5	3045
			3000	27.5	3150 M 806
			3200	28.5	3360
			3400	29.0	3570
			3600	29.0	3780

Type 126				Type 126 A			
Nominal speed of governor rpm.	Nominal output of engine bhp. at rpm.		Permissible rpm. with engine not loaded	Nominal speed of governor rpm.	Nominal output of engine bhp. at rpm.		Permissible rpm. with engine not loaded
Output with + 8% governor variation (28 VFIS carburetor)				Output with + 5% governor variation (26 VFIS carburetor) M 906			
2500	32.5	2500	2700	2000	24.5	2000	2100
2800	36.0	2800	3020	2100	25.5	2100	2205
3000	38.0	3000	3240	2500	30.5	2500	2625
3200	39.0	3200	3460	3000	36.5	3000	3150
3400	41.0	3400	3670	3600	41.0	3600	3780
3600	42.0	3600	3880				
Output with + 5% governor variation (26 VFIS carburetor) M 906				Type 124 Standard version			
2000	24.5	2000	2100	Output with + 8% governor variation (28 VFIS carburetor)			
2500	29.0	2500	2625	2000	28.0	2000	2160
3000	35.0	3000	3150	2500	34.5	2500	2700
3600	39.0	3600	3780	3000	40.0	3000	3240
Type 126 A				3200	42.0	3200	3455
Output with + 8% governor variation (28 VFIS carburetor)				3400	44.0	3400	3670
2000	28.0	2000	2160	3600	46.0	3600	3860
2200	30.0	2200	2375	Type 124 A Standard version			
2300	31.5	2300	2480	Output with + 8% governor variation (28 VFIS carburetor)			
2500	34.0	2500	2700	2000	27.0	2000	2160
2800	37.5	2800	3020	2500	34.0	2500	2700
3000	39.0	3000	3240	3000	39.5	3000	3240
3200	41.0	3200	3460	3200	42.0	3200	3455
3400	43.0	3400	3670	3400	44.0	3400	3670
3600	44.0	3600	3880	3600	44.5	3600	3860

**Spring table for governor adjustment**  
(one axial spring is used for all settings)

Designation of governor (Part No.) for				Nominal engine speed	Radial springs per side	Dimension "a" <sup>1)</sup> mm	Governor speed, measured at a regulating pin stroke of		1 set of governor springs Part No.	Remarks
122/1	122/2	126 and 126 A	124 and 124 A				1 mm	5 mm		
122 135 015	—	—	—	1500	1	68.2	1500	1725	SP 250	<sup>1)</sup> Measurement "a" is taken across outer surfaces of spring nuts. (For further details see Industrial Engine Workshop Manual and special publications) <sup>2)</sup> Ratio crankshaft pulley/friction wheel. 1 : 2.33 <sup>3)</sup> Do not use the two springs with outside diameter of approx. 15 mm <sup>4)</sup> M 806
122 135 015 A <sup>2)</sup>	122 135 015 B <sup>2)</sup>	—	—	1500	2	65.0	3500	4000	SP 250A	
122 135 016	122 135 016 C	—	—	1600	1	66.5	1600	1805	SP 250	
122 135 018	122 135 018 C	—	—	1800	2	70.5	1800	2000	SP 252	
122 135 020	122 135 020 C	122 135 020 C	124 135 020	2000	1	69.0	2000	2220	SP 254 <sup>3)</sup>	
—	122 135 021 C	122 135 021 C	—	2100	2	68.5	2100	2310	—	
122 135 022	122 135 022 C	—	—	2200	2	67.5	2200	2410	—	
122 135 023	122 135 023 C	122 135 023 C	—	2300	2	69.0	2300	2505	SP 259	
122 135 024	122 135 024 C	—	—	2400	2	66.5	2400	2600	SP 254	
122 135 025	122 135 025 C	122 135 025 C	—	2500	2	65.5	2500	2690	SP 254	
122 135 041	—	—	—	2650	2	68.0	2650	2850	SP 255	
—	122 135 041 C	—	—	2650	2	64.5	2650	2810	SP 255A	
122 135 028	122 135 028 C	122 135 028 C	—	2800	2	67.0	2800	3020	SP 256	
—	122 135 029 C	—	—	2900	2	65.0	2900	3120	—	
122 135 030	122 135 030 E <sup>4)</sup>	122 135 030 E <sup>4)</sup>	—	3000	2	68.0	3000	3220	SP 257	
—	122 135 030 D	122 135 030 D	124 135 030	3000	2	70.0	3000	3220	SP 257A	
122 135 032	122 135 032 C	122 135 032 C	124 135 032	3200	2	70.5	3200	3495	SP 261	
122 135 033	122 135 033 C	—	—	3300	2	68.5	3300	3565	—	
122 135 034	122 135 034 C	122 135 034 C	—	3400	2	67.5	3400	3680	SP 258	
—	—	—	124 135 034	3400	2	70.0	3400	3645	SP 260	
122 135 036	122 135 036 C	122 135 036 C	124 135 036	3600	2	65.8	3600	3870	SP 258	
122 135 043 <sup>2)</sup>	122 135 043 B <sup>2)</sup>	—	—	1500–1800	2	68.0	3500–4150	3990–4550	—	Adjustable governor
122 135 043 A	122 135 043 D	122 135 043 D	—	3000–3600	2	68.5	3000–3550	3250–3800	SP 262	

Adjustment of Speed Limiter in Magneto (Type 122, 126 and 126 A)

M

Identification Figure	9	10	11	12	13	14	15	16	17	18	19 or 19.5	Remarks
Speed limiter cuts out ignition (rpm.)	(only Type 122) 1800	2000	2200	2400	2600	2800	3000	3200	3400	3600	3800 or 3900	

Designation	Class	Thread	mkg	lb. ft.
The following tightening torques differ from those given on page 42 for vehicle engines.				
<b>Engine 122/1, 122/2, 126 and 126 A</b>				
9 - Crank handle dog on crankshaft .....	—	—	4.0-5.0	29- 36
<b>Engine (124 and 124 A)</b>				
14 - Special screw for toothed belt pulley .....	9 S 20 K	M 20 × 1.5	6.0	43

#### IV. Tightening torques

Designation	Class	Thread	kg	lb. ft.	Remarks
<b>a - Engine (34, 40, 42 and 44 bhp)</b>					
1 - Nuts for crankcase halves	35 S 20 K (5 D)	M 12 × 1.5	2.5 <sup>1)</sup>	25	1) For cap nuts: 2.5 mkg 2) Tightening sequences are given on page 26/27 3) As under a - 11 from August 1959 4) Contact surfaces oiled
2 - Screws and nuts for crankcase halves	5 S	M 8	2.0	14	
3 - Cylinder head nuts <sup>2)</sup>	5 D	M 10	3.2	23	
4 - Rocker shaft nuts	5 S (8 G)	M 8	2.0-2.5	14-18	
5 - Flywheel gland nut	45 S 20 K	M 28 × 1.5	20.0	217	
6 - Connecting rod bolts and nuts	8 G	M 9 × 1	2.0-3.5 <sup>4)</sup>	22-25	
7 - Special nut for fan	5 S	M 12 × 1.5	4.0-6.5	40-47	
8 - Generator pulley nut	5 S	M 12 × 1.5	4.0-8.5	40-47	
9 - Crankshaft pulley bolt	9 S 20 K	-	4.0-5.0	29-36	
10 - Spark plugs	-	M 14 × 1.25	2.0-4.0	22-29	
11 - Oil drain plug	9 S 20 K (5 S)	M 14 × 1.5	2.5	25	
12 - Clutch to flywheel	8 G	M 8 × 1.5	2.5	18	
13 - Self-locking nuts for engine carrier	6 S	M 8	2.5	18	
<b>b - Engine (30 bhp)</b>					
as under "a", but with following exceptions:					
1 - Nuts for crankcase halves	5 S	M 10	3.0	22	
3 - Cylinder head nuts <sup>2)</sup>	5 D	M 10	3.0-3.8	26-27	
11 - Oil drain plug <sup>3)</sup>	5 S	M 18 × 1.5	3.0-4.0	22-29	
13 - Insert for spark plug	5 S	M 18 × 1.5	7.0-7.5	50-54	
<b>c - Engine (45 and 54 bhp)</b>					
as under "a", but with following exceptions:					
8 - Generator pulley nut	5 S	M 12 × 1.5	4.5	32	
9 - Special bolt for fan and crankshaft pulley	9 S 20 K	M 20 × 1.5	10-15.0	94-108	

# FUEL SYSTEM

## I. Carburetor settings and jets for Type 1 and 2

Vehicle .....	Type 1 and 2					Type 1				Type 2	Type 1 and 2	Type 1 and 2	
	30			34	42	40	40/44 Automatic	44		44	47	44 <sup>14)</sup> 47 <sup>15)</sup>	
Carburetor type .....	28 PCI			28 PICT and 28 PICT-1 28 PICT-2 <sup>3)</sup>		28 PICT-1	30 PICT-2			30 PICT-1		30 PICT-2	
from Engine No. ....	695 282	849 905	1 118 403 <sup>1)</sup> 991 590 <sup>2)</sup>	5 000 001	0 143 543	F 0 000 001	F 1 462 682 H 0 879 927	H 0 204 001	H 0 874 200	H 0 000 001	B 0 000 001	H 5 000 001 B 5 000 001	
Venturi ..... mm dia.	21.5	21.5	21.5	22.5	22.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	<sup>1)</sup> Type 14 <sup>2)</sup> Type 2 <sup>3)</sup> for engines with progressive accelerator linkage <sup>4)</sup> Type 2 and 14: 145 y <sup>5)</sup> from Engine No. DO 234 015: 140 z <sup>6)</sup> Type 14: 170 z <sup>7)</sup> Type 14/1500: 135 z <sup>8)</sup> with electro-magnetic cut-off valve <sup>9)</sup> from Engine No. DO 234 015: 75 <sup>10)</sup> Type 14: 75 <sup>11)</sup> up to Engine No. 7 350 400 (Type 1) and 7 777 337 (Type 2): 0.8 to 1.0 <sup>12)</sup> up to June 1963: 1.2 to 1.3 <sup>13)</sup> Cotter pin in inner position <sup>14)</sup> Exhaust control system (M 157) <sup>15)</sup> From Engine No. H 5 077 366: M 157 with automatic transmission
Main jet .....	122.5	117.5	117.5	122.5	115	125	x 120	0120	x 120	115	120	x 116	
Air correction jet .....	200	195	180	130 y <sup>4)</sup> 5)	145 y or 130	125 z <sup>6)</sup>	125 z <sup>7)</sup>	125 z <sup>7)</sup>	125 z <sup>7)</sup>	135 z	135 z	125 z	
Pilot jet .....	g 50	g 50	g 50	g 55	g 45 <sup>8)</sup>	g 55 <sup>9)</sup>	55 <sup>9)</sup>	g 55 <sup>9)</sup>	55 <sup>9)</sup>	g 60 <sup>9)</sup>	55 <sup>9)</sup>	55 <sup>9)</sup>	
Pilot jet air bleed ..... mm dia.	0.8	0.8	0.8	2.0	1.55	150	140	150	140	150	140	130	
Fuel jet for pump .....	50	50	50	0.5	0.5	50	50	50	50	50	50	50	
Air correction jet for pump .....	2.0	2.0	2.0	—	—	—	—	—	—	—	—	—	
Power fuel jet ..... mm dia.	—	—	—	1.0 <sup>9)</sup>	0.7	— <sup>10)</sup>	50	50	50	75	50	60	
Emulsion tube .....	29	29	29	—	—	—	—	—	—	—	—	—	
Emulsion tube carrier ..... mm dia.	5.0	5.0	5.0	—	—	—	—	—	—	—	—	—	
Float needle valve ..... mm dia.	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	
Float weight ..... grams	5.7	5.7	5.7	5.7	5.7	5.7	8.5	5.7	8.5	5.7	5.7	8.5	
Accelerator pump capacity ..... cc/stroke	0.4-0.6	0.4-0.6	0.4-0.6	1.1-1.4 <sup>11)</sup>	1.1-1.4 <sup>11)</sup>	1.3-1.6 <sup>12)</sup>	1.3-1.6 <sup>12)</sup>	1.3-1.6 <sup>12)</sup>	1.3-1.6 <sup>12)</sup>	1.3-1.6 <sup>12)</sup>	1.3-1.6 <sup>12)</sup>	1.3-1.6 <sup>12)</sup>	





## II. Carburetor settings and jets for Type 3

Engine Carburetor Type	3/Single-carburetor Engine 32 PHN				Remarks
	32 PHN	32 PHN-1	32 PHN-1		
Part No.	311 129 025/B <sup>1)</sup>	311 129 025 A <sup>1)</sup>	311 129 025 D <sup>2)</sup> /027 A <sup>3)</sup>		<sup>1)</sup> As replacement: 311 129 025 D (VW 1-3) <sup>2)</sup> Also for Type 124 without governor (Carburetor 32 PHN-1 for Type 124 A is on page 51, Note <sup>3)</sup> ) <sup>3)</sup> From Carburetor No. 238 255, identification marks as follows due to re-routing of vacuum drilling: VW 1-2 (6 volt) VW 2-2 (12 volt) <sup>4)</sup> With electro-magnetic cut-off valve <sup>5)</sup> Approx. from Engine No. 0013600 to 0014474: g 50 <sup>6)</sup> On 311 129 025 B: 1.2-1.5 <sup>7)</sup> Adjustable <sup>8)</sup> Introduction of 12 volt system
Identification marks for			VW 1-1	VW 1-3	
6 volt	-	-	} <sup>3)</sup>	VW 1-3	
12 volt	-	-			
from Engine No.	0000001	0084752	0220137	0319841	
Venturi mm dia.	23.5	23.5	23.5	23.5	
Main jet	137.5	132.5	127.5	130.0	
Air correction jet	125	115	115	115	
Pilot jet	g 45 <sup>4)</sup> <sup>5)</sup>	g 45 <sup>4)</sup>	g 45 <sup>4)</sup>	g 50 <sup>4)</sup>	
Injector tube for pump mm dia.	0.8	0.8	0.8	0.7	
Power fuel jet mm dia.	1.05	0.7	0.7	0.7	
Emulsion tube	48	48	48	48	
Float needle valve mm dia.	1.5	1.5	1.5	1.5	
Float weight grams	12.5	12.5	12.5	12.5	
Accelerator pump capacity cc/stroke	0.9-1.2 <sup>6)</sup>	0.9-1.2	0.9-1.2	0.8-1.0 <sup>7)</sup>	
Throttle valve gap mm	0.8-0.9	0.8-0.9	0.8-0.9	0.8-0.9	

Engine Carburetor Type	3/Twin-carburetor Engine			3/Twin-carburetor Engine			Remarks
	1.5 liter 32 PDSIT-2/-3 <sup>1)</sup>			1.8 liter		Automatic	
Drawing No.	341 129 025/026 <sup>1)</sup>	341 129 025 A/026 A <sup>1)</sup>	341 129 025 B/026 B	341 129 027 C/028 C <sup>1)</sup>	311 129 027 D/028 D	311 129 027 B/028 B	
Identification marks for	6 volt	VW 5-1 / VW 6-2 or -2 / or -3	VW 26-1 / VW 27-1	VW 40-1 / VW 41-1	?)	?)	<sup>1)</sup> Left/right (left carburetor with vacuum connection for distributor) <sup>2)</sup> Carburetor for 6 volt system not supplied as replacement part. When necessary, convert 12 volt type to 6 volt. <sup>3)</sup> With electro-magnetic cut-off valve Distance from center of tube to carburetor body <sup>4)</sup> 12.0 mm <sup>5)</sup> 15.0 mm <sup>6)</sup> 9 mm <sup>7)</sup> 9.5 mm <sup>8)</sup> 10.5 mm <sup>9)</sup> With damping ball <sup>10)</sup> Gasket 1.5 mm thick <sup>11)</sup> Gasket 0.5 mm thick <sup>12)</sup> Cotter pin in center position <sup>13)</sup> With altitude corrector
	12 volt	VW 24-1 / VW 25-1 or -2 / or -2	VW 35-1 / VW 36-1	VW 42-1 / VW 43-1	VW 98-1    VW 99-1	VW 118-1    VW 119-1	
from Engine No.	0255001	0633331	T 0 000 001	T 0244544	T 0576724	T 0463930	
				left carb.   right carb.	left carb.   right carb.	left carb.   right carb.	
Venturi mm dia.	21.5	23	23	24	24	24	
Main jet	× 125	× 135	× 130	× 132.5   × 130	× 132.5   × 130	× 130 <sup>13)</sup>   × 127.5 <sup>13)</sup>	
Air correction jet	180	180	240	150   120	150   120	155   120	
Pilot jet	g 45	g 45	g 45 <sup>3)</sup>	g 50 <sup>3)</sup>	50	50	
Injector tube for pump mm dia.	0.5 <sup>4)</sup>	0.5 <sup>5)</sup>	50 <sup>4)</sup>	0.5 <sup>6)</sup>	0.5	0.5 <sup>5)</sup>	
Power fuel jet mm dia.	0.9 <sup>7)</sup>	0.8 <sup>8)</sup>	80 <sup>8)</sup>	-	-	-	
Float needle valve mm dia.	1.2 <sup>9)</sup>	1.2 <sup>9)</sup> <sup>10)</sup>	1.2 <sup>9)</sup> <sup>10)</sup>	1.2 <sup>9)</sup> <sup>11)</sup>	1.2 <sup>11)</sup>	1.2 <sup>11)</sup>	
Float weight grams	7.3	7.3	7.3	7.3	7.0	7.0	
Accelerator pump capacity cc/stroke	0.35-0.55	0.35-0.55	0.35-0.55 <sup>12)</sup>	0.35-0.55 <sup>12)</sup>	0.35-0.55	0.25-0.40	
Throttle valve gap mm	0.60-0.65	0.60-0.65	0.60-0.65	0.60-0.65	0.60-0.65	0.60-0.65	



### III. Carburetor settings and jets for industrial engines

Engine Type	Only 122/1 (to July 1954)	122/1 and 122/2		122/1 (up to July 1954)		126 and 126 A	126	126 A	124	124 A		Remarks
	Carburetor Type	26 VFIS		28 PCI		26 VFIS	28 VFIS	32 PCI		28 VFIS		
Part.No.	- <sup>1)</sup>	- <sup>1)</sup>	122 129 021 D 122 129 021 F <sup>2)</sup>	111 129 023 <sup>3)</sup> (up to July 1954)	113 129 023 A <sup>4)</sup>	126 129 021 A 126 129 021 E <sup>5)</sup>	126 129 021 126 129 021 G <sup>6)</sup>	126 129 021 B	126 129 021 C <sup>7)</sup>	124 129 021 B	124 129 021 C 124 129 021 D <sup>8)</sup>	124 129 025 <sup>9)</sup>
Governor accuracy	-	8 %	8 % <sup>5)</sup>	without governor		8 %	8 %	without governor		8 %		without governor
Speed range in rpm	-	1500 <sup>6)</sup>	1800-3600			-	-					
Venturi . . . . . mm dia.	19.0	18.0	20.0	21.5	21.5	21.0	22.0	24.0	24.0	22.0	22.0	23.5
Main jet . . . . .	100	95	100	122.5	117.5	105	107.5	120	120	107.5	110	130
Air correction jet . . . . .	190	190	160 <sup>7)</sup>	200	195 <sup>8)</sup>	160	150	110	120	140	160	105
Pilot jet . . . . . g 45	g 45	g 45	g 45	g 50	g 50	g 45 <sup>9)</sup>	g 45 <sup>9)</sup>	g 45 <sup>9)</sup>	g 45 <sup>9)</sup>	g 45 <sup>10)</sup>	g 45 <sup>10)</sup>	g 50 <sup>10)</sup>
Pilot jet air bleed . . . . . mm dia.	1.0	1.0	1.0	0.8	0.8	1.7	1.3	1.7	1.7	0.8	0.8	1.4
Fuel jet for pump . . . . .	-	-	-	50	0.5	-	-	0.5	0.5	-	-	0.7
Air correction jet for pump . . . . .	-	-	-	2.0	2.0	-	-	2.0	2.0	-	-	-
Emulsion tube . . . . .	10	10	10	29	29	10	10	28	28	23	23	48
Emulsion tube carrier . . . . . mm dia.	5.3	5.3	5.3	5.0		5.3	5.5	5.3	5.3	5.3	5.3	-
Float needle valve . . . . . mm dia	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Float weight . . . . . grams	12.5	12.5 <sup>11)</sup>	12.5 <sup>11)</sup>	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	12.5
Accelerator pump capacity . . . . . cc/stroke	-	-	-	0.4-0.6	0.4-0.6	-	-	0.9-1.1	0.9-1.1	-	-	0.8-1.0 <sup>12)</sup>
Throttle valve gap . . . . . mm	-	-	-	-	-	-	-	-	-	-	-	0.8-0.9

- <sup>1)</sup> Only 122 129 021 D as replacement (change jets over)
- <sup>2)</sup> Carburetor with modified throttle valve lever from Engine No. 122-161 066, 126-018 068, 124-003 278
- <sup>3)</sup> Plug vacuum connection with N 130 801
- <sup>4)</sup> 311 129 025 D only as replacement. Change air correction jet.
- <sup>5)</sup> Also with 5 % after altering throttle valve setting
- <sup>6)</sup> Ratio between crankshaft pulley and friction pulley 1 : 2.33
- <sup>7)</sup> On Type 122/2 : 170
- <sup>8)</sup> With suspended air cleaner: 180
- <sup>9)</sup> With hand-operated or electro-magnetic cutoff valve
- <sup>10)</sup> With electro-magnetic cutoff valve
- <sup>11)</sup> From February 1955 (Type 122/1): Only plastic float 5.7 grams
- <sup>12)</sup> adjustable
- <sup>13)</sup> Discontinued from 1. 1. 1968: Replacement 126 129 021 H with 1.2 pilot jet air bleed.



#### IV. Fuel Pumps

Type	from Engine No.	Part No.	Identification mark	Minimum delivery capacity <sup>1)</sup>		Maximum delivery pressure in water column	Remarks
				cc/min	rpm		
1	from start of production 1976996 <sup>2)</sup>	111127025 B	-	167 267	1000-3000 3000-3400	0.9-1.3 (1.3-1.8 psi) 1.8 (2.5 psi)	<sup>1)</sup> Via 1.5 mm dia. float needle valve (1.2 mm dia. on Type 3/Twin-carburetor) <sup>2)</sup> Chassis No. <sup>3)</sup> And Type 1/1500 from Engine No. H 0204001 <sup>4)</sup> Engine without governor <sup>5)</sup> Pump is fitted with a protective cap (Part No. 311127195 A) <sup>6)</sup> 113127025 A only as replacement. Turn upper part 60° to right and fit cap as detailed at <sup>6)</sup> .
	5000001 7777338	211127025	- VW 3	300	3400	2.5 (3.5 psi)	
	D/F 0000001 <sup>3)</sup>	113128025 A	VW 7	400	3400	2.5 (3.5 psi)	
2 (1500/1600)	from start of production 394900 <sup>3)</sup>	111127025 B	-	167 267	1000-3000 3000-3400	0.9-1.3 1.8	
	3403348 7777338	211127025	- VW 3	300	3400	2.5	
	from start of production			400	3800	2.5	
3	from start of production 0277034	311127025	- VW 2	350	3800	3.5 (5.0 psi)	
	K/T 0000001	311127025 A <sup>3)</sup>	VW 6	400	3800	3.5	
122	from start of production 122-045787	111127025 B	-	167 267	1000-3000 3000-3400	0.9-1.3 1.8	
	122-073001 122-119334	211127025	- VW 3	300	3400	2.5	
	122-148421			113127025 A	VW 7	400	3400
126 (126 A)	from start of production 126-008186	211127025	- VW 3	400	3800	2.5	
	126-013846	113127025 A	VW 7				
124 (M 999) <sup>4)</sup> 124 A (M 999) <sup>4)</sup>	from start of production from start of production	124127025 311127025	VW 4 VW 2	400	3800	2.5 3.5	
	124-002864	124127025 A <sup>5)6)</sup>	VW 8			2.5	
	124-002864	311127025 A <sup>5)</sup>	VW 6			3.5	



# FRONT AXLE

## I. Tolerances, wear limits and settings

a - Front torsion bar settings						
Introduced from Chassis No.	Type	Number of leaves	Position	Diameter	Length	Fitting angle
1-0517305	1	8	top	-	941.5 mm	49° ± 1°
		8	bottom	-		53° 30' ± 1°
116000001		10	top	-	954 mm	44° ± 30'
		10	bottom	-		35° 30' ± 30'
up to Chassis No. 20-117901	21, 23 and 26	4	top	-	980 mm	17-18°
		5	bottom	-		
	22, 24 and 27	5	top	-	980 mm	23-24°
		5	bottom	-		
20-117902	2	9	top	-	980 mm	37° ± 30'
		9	bottom	-		
0000001	3	-	-	14,9 mm	859 mm	39° 10' ± 50'

Stabilizer (Type 3)			
Model	from Chassis No.	Bar diameter	Remarks
31, 34, 36 (460 kg) <sup>1)</sup> 36/375 kg 36/375 kg 36 Automatic	311000001	11.0	Introduction of equalizer spring
	319000002	13.7	
36 Automatic 31, 34, 36	317000002 up to 368149833	11.0	Replacement from Chassis No. 368000002: 13.7 mm dia. bar
	368149834	13.7	
	319000001	13.7	Introduction of double-joint axle

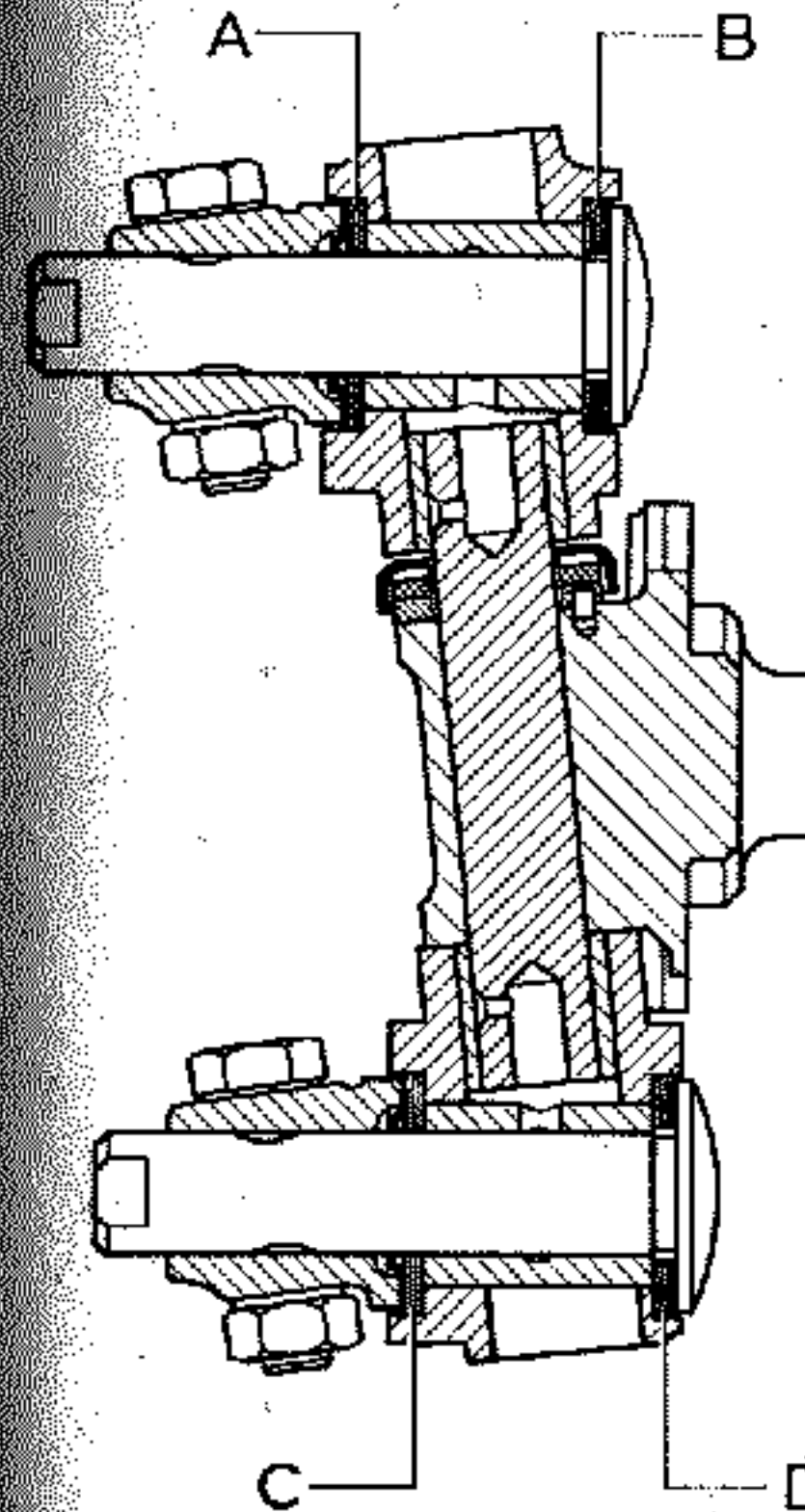
Designation	Type 1 On installation (new parts)		Wear limit	Type 2 On installation (new parts)		Wear limit	Type 3 On installation (new parts)		Wear limit	Remarks
<b>b - Axle beam</b>										
1 - Torsion arm bearings in axle beam										
a) Seat for upper needle bearing . . . . . diameter										
		45.97-45.99 (1.809-1.810)	-	56.97-56.99 (2.242-2.243) <sup>1)</sup>	-	43.97-43.99 (1.730-1.731)	-	1) Up to Chassis No. 217148459		
	Needle bearing . . . . . diameter	46.0 (1.811)	-	56.96-56.99 (2.242-2.243)	-	44.0 (1.7322)	-	54.97-54.99 (2.663-2.164)		
	Thrust rings . . . . . diameter	-	-	57.17-57.19 (2.250-2.251)	-	44.15 (1.7381)	-	55 (2.165)		
	Oversize . . . . . diameter	46.17-46.19 (1.817-1.818)	-	57.17-57.19 (2.250-2.251)	-	44.17-44.19 (1.7388-1.739)	-	2) Up to Chassis No. 0127587		
	Needle bearing . . . . . diameter	46.2 (1.819)	-	-	-	44.2-(1.7400)	-	46.97-46.99		
	Thrust rings . . . . . diameter	-	-	-	-	44.35 (1.7460)	-	(1.849-1.850)		
	b) Seat for lower needle bearing . . . . . diameter	49.97-49.99 (1.967-1.968)	-	56.97-56.99 (2.242-2.243) <sup>1)</sup>	-	49.97-49.99 (1.967-1.968)	-	47.0 (1.8504)		
	Needle bearing . . . . . diameter	50.0 (1.968)	-	56.96-56.99 (2.242-2.243)	-	50.0 (1.9685)	-	47.17-47.19		
	Oversize . . . . . diameter	50.17-50.19 (1.975-1.976)	-	57.17-57.19 (2.250-2.251)	-	50.17-50.19 (1.975-1.976)	-	(1.856-1.857)		
	Needle bearing . . . . . diameter	50.2 (1.9763)	-	57.17-57.19 (2.250-2.251)	-	50.2 (1.9663)	-	47.2 (1.8582)		

		Type 1 On installation (new parts)	Wear limit	Type 2 On installation (new parts)	Wear limit	Type 3 On installation (new parts)	Wear limit	Remarks
2 - Bearing bush for								
a) Torsion arm, upper	ream out to	37.20-37.25 (1.463-1.465)	-	43.2-43.27 (1.700-1.702)	-	35.15-35.20 (1.383-1.385)	-	1) From Chassis No. Type 1: 116 000 001 Type 2: 218 000 001 Type 3: 315 000 001 Metal bushes which must not be reamed out.
b) Torsion arm lower	ream out to	37.20-37.25	-	43.2-43.27 (1.700-1.702)	-	33.17-33.22 (1.305-1.307)	-	
3 - Torsion arm	twist	max. 0.5 (.02) <sup>2)</sup>	-	max. 0.3 (.012) <sup>2)</sup>	-	- <sup>2)</sup>	-	
<b>c - Steering knuckle, link pins, ball joints</b>								
4 - Steering knuckle/stub axle	bend	0.15 <sup>3)</sup> (.006)	-	-	-	0.3 <sup>3)</sup>	-	2) From Chassis No. Type 1: 116 000 001 Type 2: 218 000 001 Type 3: 000 000 1 when testing with VW 282 d the mandrel must contact the measuring surface.
5 - King pin/bush	clearance	0.02-0.05 (.0008-.002)	0.08 (.003)	-	-	-	-	
steering knuckle/torsion arm link	preload	0.00-0.04 (.0000-.0016)	-	-	-	-	-	
6 - King pin	diameter	-	-	23.97-23.95 (.9436-.9430)	-	-	-	3) From Chassis No. Type 1: 116 000 001 Type 3: 000 000 1 Measured with VW 258 K
King pin/bush	clearance	-	-	-	0.10 (.004)	-	-	
up to Chassis No. 999 304: King pin/brass bush	clearance	-	-	0.02-0.05 (.0008-.002)	0.10 (.004)	-	-	
7 - King pin/spacer without rubber seals	end play	-	-	max. 0.15 (.006)	-	-	-	
8 - Torsion arm link pin	diameter	17.94-17.91 (.706-.705)	17.80 (.700)	19.92-19.91 (.7843-.7839)	19.78 (.7784)	-	-	4) Ball pin free of load
from Chassis No. 1144 303	diameter	-	-	21.92-21.91 (.862-.861)	21.78 (.856)	-	-	
9 - Needle bearing (removed): inside contact diameter		-	-	19.94-19.95 (.7850-.7854)	-	-	-	5) Type 2 only After fitting new joints, peen to 6-9 tons with VW 471 three times
from Chassis No. 1144 303		-	-	21.94-21.95 (.863-.864)	-	-	-	
10 - Ball joints, upper	play	-	-	-	-	no play	0.5 <sup>4)</sup>	6) If axle is noisy, adjust to lower limit
Ball joints, upper <sup>6)</sup>	play	max. 0.5 (.02)	2.0 (.08)	max. 0.3	2.0	-	-	
Ball joints, lower <sup>6)</sup>	play	max. 0.5	1.0 (.04)	max. 0.3	2.0	max. 0.5	2.0	
11 - Wheel bearings (taper roller)	play	0.03-0.12 (.0012-.005) <sup>6)</sup>	-	0.03-0.12	-	0.3-0.12	-	

**d - Arrangement of shims (for Type 1 and 2 only)**

Type 1 without link pin dust seals (up to Chassis No. 2921551)

Offset in mm	Number of Shims for				
	Upper Torsion Arm		Lower Torsion Arm		
	Inner (A)	Outer (B)	Inner (C)	Outer (D)	
5	3	7	7	3	There must always be a total of 10 shims on each link pin.
5.5	4	6	7	3	
6	4	6	6	4	
6.5	5	5	6	4	
7	5	5	5	5	
7.5	6	4	5	5	
8	6	4	4	6	
8.5	7	3	4	6	
9	7	3	3	7	



Type 1 with link pin dust seals (from Chassis No. 2921552 to Chassis No. 115979202) and Type 2

Offset in mm	Number of Shims for				
	Upper Torsion Arm		Lower Torsion Arm		
	Inner (A)	Outer (B)	Inner (C)	Outer (D)	
5.5	2	6	5	3	Each link pin must always be fitted with 8 shims and a protective washer.
6	2	6	4	4	
6.5	3	5	4	4	
7	3	5	3	5	
7.5	4	4	3	5	
8	4	4	2	6	
8.5	5	3	2	6	

**e - Steering**

Vehicle . . . . .	1			3		2		Remarks		
	Sector		Roller		Ross					
Steering Type . . . . .	1)	2)	3)	1)	0090272	1)	20-117902			
from Chassis No. . . . .				116000001						
Steering wheel turns (from lock to lock) . . . . .	2.4	2.6	2.7	2.8	2.4	2.8		1) From start of production 2) Type 14: 1665213; Type 15: 1665425; De Luxe Sedan: 1673351 Standard Sedan: 4630938 3) Type 14 and 15: 3933185; De Luxe Sedan: 4010995 4) Type 14: 11.25 m (37 ft); Standard Sedan up to Chassis No. 4630937: 11.5 m 5) Type 34: 10.6 m (34.8 ft) 6) From Chassis No. 218000001: 12.3 m (40.3 ft)		
Smallest turning circle . . . . . approx	11.0 m <sup>4)</sup> (36 ft)			11.1 m <sup>5)</sup> (36.3 ft)		12.0 m (39 ft) <sup>6)</sup>				
		Type 1 On installation (new parts)		Wear limit	Type 2 On installation (new parts)		Wear limit	Type 3 On installation (new)	Wear limit	Remarks
12 - Steering gear (sector steering)										1) From Chassis No. 218000001 metal bushes which must not be reamed out.
a) Sector shaft . . . . .	end play clearance	0.25 (.01)		-	-		-	-	-	
b) Sector shaft spring . . . . .	loaded length	0.04-0.08 (.0016-.003)		-	-		-	-	-	
		20.3 (.8)		-	-		-	-	-	
		60-76 kg (130-165 lbs.)		-	-		-	-	-	
c) Sector shaft thrust pin . . . . .	length	19.9-20.1 (.7835-.7913)		-	-		-	-	-	
13 - Steering gear (roller steering)										
Roller shaft seat for bushes . . . . .	diameter	23.99-23.98 (.9444-.9440)		-	-		-	23.99-23.98 (.9444-.9440)	-	
Bushes for roller shaft . . . . .	inside dia	24.02-24.00 (.9456-.9448)		-	-		-	24.02-24.00 (.9456-.9448)	-	
14 - Swing lever shaft bush . . . . .	ream out to	-		-	24.00-24.03 (.9448-.9459) 1)		24.04 (.9463)	-	-	
15 - Swing lever shaft . . . . .	diameter	-		-	23.98-23.97 (.9440-.9436)		23.95 (.9429)	-	-	
16 - Steering lever shaft bush . . . . .	ream out to	-		-	25.38-25.40 (.999-.1)		-	-	-	
Steering lever shaft/bush . . . . .	clearance	-		-	0.03-0.06 (.001-.0024)		0.10 (.004)	-	-	
17 - Steering spindle, installed (measured at steering column top end) . . . . .	run-out	-		-	max. 0.35 (.014)		-	-	-	
18 - Steering column tube in steering gear case . . . . .	seating depth	-		-	45-46 (1.77-1.81)		-	-	-	





## f-Wheel alignment data

With 14" wheels, an angle of 10' equals a toe-in of .....	1.1 mm (.043)
15" .....	1.2 mm (.047)
16" .....	1.3 mm (.051)

+ in front of a track measurement means toe-in, - means toe-out

### Text conditions:

- instrument and wheel mirrors properly set.
- Vehicle unladen.
- Correct tire pressures (for permissible total weight).
- Suspension free of tension.
- Vehicle aligned correctly.

Remarks

Designation	Value
Type 1	
1 - Toe-in with wheels not pressed .....	+ 30' ± 10'
2 - Toe-in with wheels pressed .....	+ 5' ± 10'
3 - Pressure applied to wheels .....	10 ± 2 kg (22 ± 4 lb)
4 - Maximum permissible difference between toe-in with wheels pressed and not pressed .....	25'
5 - Front wheel camber in straight-ahead position	
from Chassis No. 116000001 .....	0° 30' ± 20'
from Chassis No. 115979202 .....	0° 40' ± 30'
Maximum permissible difference between sides .....	30'
6 - Toe-out at a 20° lock to left and right (wheels not pressed)	
a) from Chassis No. 116000001	
all LHD models .....	to left -1° 20' ± 30'
to right .....	-2° 10' ± 30'
all RHD models .....	to left -2° 15' ± 30'
to right .....	-1° 35' ± 30'

Designation	Value	Remarks
b) up to Chassis No. 115979202	$-2^{\circ} \pm 30'$	
c) De Luxe Sedan and Convertible (LHD only) up to Chassis No. 1430497   to left	$-1^{\circ}40' \pm 30'$	
Standard Sedan (LHD only) up to Chassis No. 4630937   to right	$-2^{\circ}30' \pm 30'$	
maximum permissible difference between sides	$1^{\circ}$	
d) De Luxe Sedan and Convertible (RHD only) up to Chassis No. 2256906	$-2^{\circ} \pm 1^{\circ}$	
Karmann Ghia models up to Chassis No. 1644421		
7 - Offset between stub axles	max. 8mm	
8 - Caster angle of a wheel	$3^{\circ}20' \pm 1^{\circ}$	
equals the camber difference of a wheel on a $20^{\circ}$ lock to left and right	$2^{\circ}15' \pm 40'$	
9 - Rear wheel camber with spring plates properly set (after at least 500 km/300 miles)		
a) Model 11 with double-joint rear axle	$-1^{\circ}20' \pm 30'$	
Model 14 and 15 with double-joint rear axle	$-1^{\circ}20' \pm 30'$	
b) Model 11 from Chassis No. 117000001	$1^{\circ} \pm 1^{\circ}$	
permissible minimum camber	$-1^{\circ}$	
Model 14 from Chassis No. 147000003	$15' \pm 1^{\circ}$	
Model 15 from Chassis No. 157000002		
permissible minimum camber	$-1^{\circ}30'$	
c) All models up to Chassis No. 1161021298	$2^{\circ}30' \pm 1^{\circ}$	
permissible minimum camber	$0^{\circ}$	
d) All models up to Chassis No. 2528668	$3^{\circ} \pm 30'$	
permissible minimum camber	$+2^{\circ}$	
Maximum permissible difference between sides	$20'$	
all models with double-joint axle	$30'$	
10 - Rear wheel toe-in/toe-out with correct camber	$-5' \pm 10'$	
all models with double-joint axle	$+10' \pm 10'$	
11 - Maximum permissible deviation in wheel alignment	$10'$	

Designation	Value	Remarks
<b>Type 2</b>		
1 - Toe-in/toe-out with wheels not pressed	from Chassis No. 218000001 ..... up to Chassis No. 217148459 .....	
	-5' + 10' -5' to +15'	
2 - Toe-in/toe-out with wheels pressed .....	-5' ± 10'	
3 - Pressure applied to wheels .....	15 ± 3kg (33 ± 6 lbs.)	
4 - Maximum permissible difference between toe-in with wheels pressed and not pressed .....	25'	
5 - Front wheel camber in straight-ahead position	from Chassis No. 218000001 ..... up to Chassis No. 217148459 .....	
	+40' ± 15' +40' ± 30'	
Maximum permissible difference between sides .....	30'	
6 - Toe-out at a 20° lock to left and right (wheels not pressed) .....	-3° ± 20'	
7 - Offset between stub axles .....	max. 8mm	
8 - Caster angle of a wheel	from Chassis No. 218000001 ..... up to Chassis No. 217148459 .....	
	3° ± 40' max. 1°	
equals the camber difference of a wheel on a 20° lock to left and right	from Chassis No. 218000001 ..... up to Chassis No. 217148459 .....	
	2° ± 25' max. 40'	



Designation	Value	Remarks
<b>Type 3</b>		
1 - Toe-in with wheels not pressed .....	+40' ± 10'	
2 - Toe-in with wheels pressed .....	+30' ± 10'	
3 - Pressure applied to wheels .....	10 ± 2kg (22 ± 4 lb)	
4 - Maximum permissible difference between toe-in with wheels pressed and not pressed .....	20'	
5 - Front wheel camber in straight-ahead position .....	1° 20' ± 20'	
Maximum permissible difference between sides .....	20'	
6 - Toe-out at a 20° lock to left and right (wheels not pressed)		
a) All LHD models : to left .....	-40' ± 30'	
to right .....	-10' ± 30'	
b) All RHD models to left .....	-30' ± 30'	
to right .....	-20' ± 30'	
7 - Offset between stub axles .....	max. 8 mm	
8 - Caster angle of a wheel .....	4° ± 40'	
equals the camber difference of a wheel on a 20° lock to left and right .....	2° 40' ± 25'	



Designation	Value	Remarks
9 - Rear wheel camber with spring plates properly set (after at least 500 km/300 miles)		
a) Model 31 and 34 with double-joint axle Model 36 with double-joint axle	-1°30' ± 30' -1°10' ± 30'	
b) Model 31 and Model 34 from Chassis No. 317000001 } from Chassis No. 347000003 } permissible minimum camber	1°45' ± 1° -30'	
Model 36 from Chassis No. 367000002 permissible minimum camber	2°30' ± 1° +30'	
c) All models up to Chassis No. 316316238 permissible minimum camber	2°30' ± 1° 0° +1° +30'	
Maximum permissible difference between sides all models with double-joint axle	20' 30'	
10 - Rear wheel toe-in/toe-out with correct camber all models with double-joint axle	-5' ± 10' +10' ± 10'	
11 - Maximum permissible deviation in wheel alignment	10'	



## II. - Tightening torques

Designation	Class	Thread	mkg	lb. ft.	Remarks
<b>a - Front axle - Type 1</b>					
Front axle to frame	8 G	M 12 × 1.5	5.0	36	1) Tighten inner nut to 4.0 mkg first, fit new lock plate and slacken nut 72° (distance from one wheel bolt hole in drum to next). Then tighten outer nut to 7.0 mkg. 2) Tighten nut to 1.5 mkg first while turning wheel. Then slacken nut off until the specified axial play of 0.03-0.12 mm (001-.005) is obtained (Bracket VW 769 with dial gauge). If front axle tends to be noisy, keep play to lower limit (0.03-0.06 mm). When play is correct, tighten socket head screw to the correct torque. 3) Turn on to cotter pin hole. 4) Tighten inner nut to 3.5 mkg first while turning wheel. Then fit new lock plate and slacken nut off until specified axial play of 0.03-0.12 mm (Bracket VW 769 with dial gauge) is obtained. If front axle tends to be noisy, keep play to lower limit (0.03-0.06 mm). When play is correct, tighten outer locknut to 7.0 mkg. 5) Always use new self-locking nuts-after removal
Shock absorber screw on side plate	10 K	M 12 × 1.5	3.0-3.5	22-25	
Shock absorber nut on side plate	6 G	M 10	2.0	14	
Shock absorber nut on lower torsion arm	6 G	M 10	3.0-3.5	22-25	
Hexagon nuts for steering ball joints <sup>5)</sup>	6 S	M 12 × 1.5 or M 10 × 1	5.0-7.0 4.0-5.0	36-50 29-36	
Inner wheel bearing nut	-	M 18 × 1.5	4.0	29	
Lock nut for wheel bearing	-	M 18 × 1.5	7.0	50	
Wheel bearing clamp nut	-	M 16 × 1.5	1.5	11	
Socket head screw in clamp nut	-	-	1.0-max. 1.3	7-max. 9	
Slotted nut on tie-rod	6 G	M 10 × 1	2.5	18	
Steering damper nut on tie-rod <sup>5)</sup>	6 G	M 10	2.5-3.0	18-22	
Steering damper screw on axle tube	8 G	M 10	4.0-4.5	29-32	
<b>b - Front axle - Type 2</b>					
Front axle/frame bolts (side member)	12 K	M 12 × 1.5	9.0-12.5	65-90	
Shock absorber nut and bolt upper (from Chassis No. 971 550)	12 K	M 12 × 1.5	5.0	36	
Shock absorber securing bolt, upper (up to Chassis No. 971 549)	10 K	M 10	4.0-4.5	29-32	
Shock absorber securing nut, lower	5 S	M 10	2.5-3.0	18-22	
Steering knuckle/torsion arm (link pin bolts)	8 G	M 10	4.0-4.5	29-32	
Ball joints to steering knuckle <sup>5)</sup>	6 S	M 18 × 1.5	1.0	72	
Inner wheel bearing nut	C 35 KV	M 18 × 1 or M 22 × 1.5	3.5	25	
Wheel bearing locknut	C 35 KV	M 18 × 1 or M 22 × 1.5	7.0	50	
Tie-rod and draglink nuts	8 G	M 10 × 1	2.5	18	
Steering damper/frame bolt and nut (up to Chassis No. 851 389)	-	M 10 × 45	4.5	32	
Steering damper/axle tube screw (from Chassis No. 851 390)	8 G	M 10 × 40	4.0-4.5	29-32	
Steering damper/swing lever screw	8 G	M 10 × 72	4.0-4.5	29-32	

Designation	Class	Thread	mkg	lb. ft.	Remarks
<b>c - Front axle - Type 3</b>					
Front axle securing bolts					
a - upper and lower	8 G	M 10	3.0	22	6) Tighten clamp screw to 4 mkg first, then tighten adjusting screw to 1 mkg and lock it
b - center	8 G	M 10	4.0	29	
Grub screw securing torsion bars	-	M 14 × 1.5	3.0	22	7) Tighten inner nut to 1.5 mkg first while turning wheel. Then fit new lock plate and slacken nut off until specified play of 0.03-0.12 mm (Bracket VW 769 with dial gauge) is obtained. If front axle tends to be noisy, keep play to lower limit. When play is correct, tighten outer locknut to 7.0 mkg.
Grub screw securing stabilizer	-	M 14 × 1.5	4.5-5.5	32-40	
Lock nut for grub screw	-	M 14 × 1.5	4.0	29	
Torsion bar to axle beam screws	8 G	M 10	4.0	29	
Clamp screw for stabilizer	10 K	M 10	4.0	29	
Adjusting screw for stabilizer	8 G	M 8	1.0	7	
Shock absorber to axle beam screws	10 K	M 12 × 1.5	3.0-3.5	22-25	
Shock absorber nut on torsion arm	6 G	M 10	3.0-3.5	22-25	
Steering arm on steering knuckle	10 K	M 10 × 1	5.5	40	
Nuts for upper and lower ball joints	8 G	M 20 × 1.5 or M 18 × 1.5	11.0	80	
Clamp screws for upper and lower ball joints	10 K	M 10 × 40	5.5	40	
up to Chassis No. 0273513 (October 1963)	10 K	M 8 × 40	3.5	25	
Wheel bearing split nut	-	M 16 × 1.5	1.5	11	
Socket head screw in split nut	-	-	max. 1.3	7 - max. 9	
Inner wheel bearing nut up to Chassis No. 315220883	-	M 16 × 1.5	1.5	11	
Wheel bearing locknut	-	M 16 × 1.5	7.0	50	
Tie rod nuts	5 S	M 10 × 1	2.5	18	
Steering damper screw on axle	8 G	M 10	4.0 - 4.5	29 - 32	
Steering damper nut on drop arm	6 G	M 10	2.5	18	



Designation	Class	Thread	mkg	lb. ft.	Remarks
<b>a - Steering gear - Type 1 and 3</b>					
Steering gear to axle - Type 1 .....	6 G	M 10	2.5-3.0	18-22	
Steering gear to axle - Type 3 .....	5 S	M 10	2.5	18	
Lock nut for roller shaft adjusting screw .....	5 S	M 10 x 1	2.5	18	
Steering gear cover screws .....	8 G	M 8 x 1.25	2.0-2.5	14-18	
Screw securing drop arm to roller shaft .....	8 G	M 12 x 1.5	7.0	50	
Steering wheel nut .....	6 G	M 18 x 1.5	5.0	36	
<b>b - Steering gear - Type 2</b>					
Bracket to frame screws .....	8 G	M 10 x 22	4.0-4.5	29-32	
Steering box to bracket .....	8 G	M 10 x 40	3.5-4.0	25-29	
Drop arm nut .....	4 D	M 20 x 1.5	8.0-11.0	58-80	
Swing lever pinch bolt (from Chassis No. 20-117902) .....	8 G	M 12 x 1.5	6.0	43	
Upper and lower steering arm bolts (up to Chassis No. 20-117901) .....	-	M 12 x 1.5	6.5-7.5	47-54	
Steering wheel nut .....	5 S	M 16 x 1.5	2.5-3.0	18-22	



Designation	Standard transmission		Partly synchronized transmission		Fully synchronized transmission		Stickshift Automatic		Remarks	
	On installation (new)	Wear limit	On installation (new)	Wear limit	On installation (new)	Wear limit	On installation (new)	Wear limit		
13 - Preload of pinion taper roller bearing Turning torque . . . . .	new used <sup>2)</sup>	—	—	—	—	—	6-21 cmkg <sup>2)</sup> 3-7 cmkg <sup>2)</sup>	—	<sup>2)</sup> For all transmissions used together with double-joint rear axle <sup>3)</sup> Bearings which have run more than 50 km (30 miles) <sup>4)</sup> Differentials with spacer sleeve: 0-0.14 (0-.005)	
<b>b - Drive shaft</b>										
14 - Main drive shaft										
a - measured at center bearing (Shaft between centers) . . . . .	run-out	0.02 (.0008)	max. 0.01 (.002)	0.02	max. 0.05	—	—	—		
b - measured at pilot (when installed) . . . . .	run-out	max. 0.20 (.008)	0.30 (.012)	max. 0.20 (.008)	0.30	—	—	—		
15 - Drive shaft, front (surface for 3rd gear needle bearing) . . . . .	run-out	—	—	—	—	max. 0.02	—	—		
<b>c - Final drive</b>										
16 - Differential gears . . . . .	back lash	0.10-0.20 (.004-.008)	—	0.10-0.20	—	—	—	—		
17 - Play at differential side gears with diff. housing bolted together . . . . .	axial	—	—	—	—	0.25-0.45 <sup>2)</sup> <sup>4)</sup> (.010-.017)	0.25-0.45 <sup>4)</sup>	—		
<b>18 - Rear axle shafts:</b>										
a - Flange/fulcrum plates/differential side gears (4 parts) . . . . .	clearance	0.10-0.30 (.004-.012)	—	0.10-0.30	—	0.04-0.24 (.0015-.009)	0.25 (.010)	—		
up to Chassis No. 1757470 and 325100 . . . . .	clearance	0.05-0.23 (.002-.009)	0.30 (.012)	0.05-0.23	0.30	—	—	—		
b - Flange/differential gears (measured across the convex faces) . . . . .	clearance	0.03-0.10 (.001-.004)	0.20 (.008)	0.03-0.10	0.20	0.03-0.10	0.020	—		
c - Between centers, measured at bearing seat . . . . .	run-out	max. 0.05 (.002)	—	max. 0.05	—	max. 0.05	—	—		
<b>d - Gearbox and gearshift housing</b>										
19 - Preload of transmission case halves or final drive covers on the differential ball bearings . . . . .		0.10-0.18 (.004-.007)	—	0.10-0.18	—	0.14	—	—		

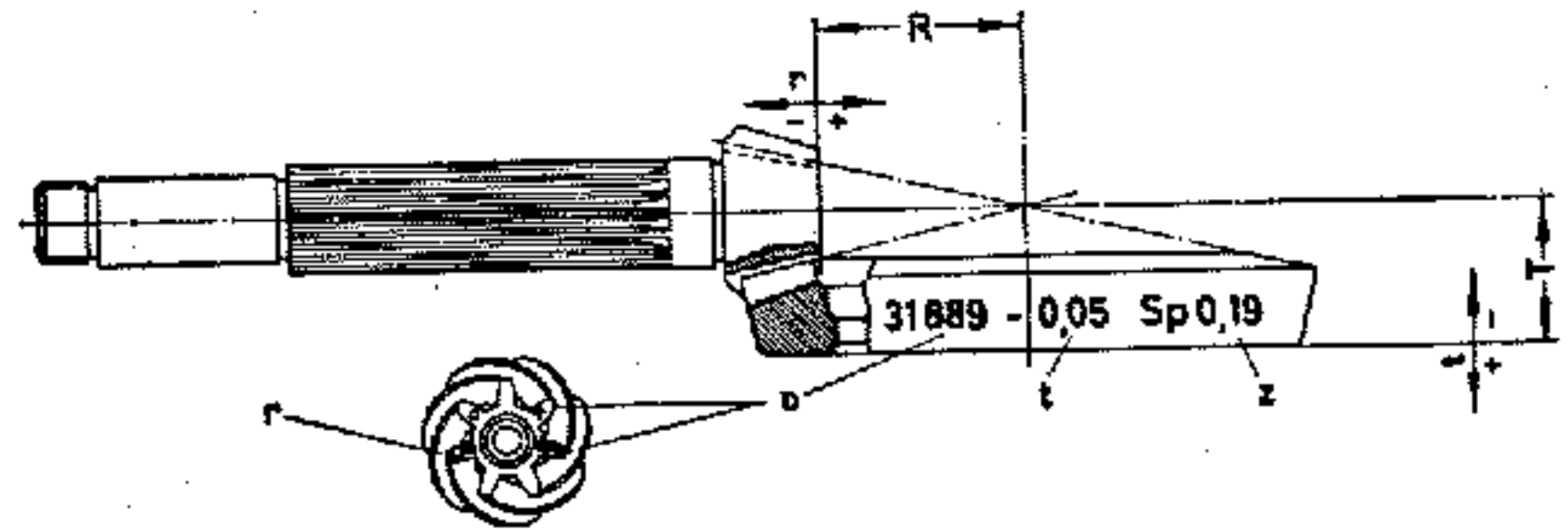
Designation	Standard transmission		Partly synchronized transmission		Fully synchronized transmission		Stickshift Automatic		Remarks
	On installation (new)	Wear limit	On installation (new)	Wear limit	On installation (new)	Wear limit	On installation (new)	Wear limit	
20 - Preload of final drive covers on taper roller bearings	—	—	—	—	18-22 cmkg <sup>2)</sup>	—	18-22 cmkg <sup>2)</sup>	—	
Turning torque	new <sup>3)</sup> used	—	—	—	3-7 cmkg <sup>2)</sup>	—	3-7 cmkg <sup>2)</sup>	—	
21 - Transmission case/rear axle tube/tube retainer	0.40-0.60 (.016-.024)	0.70 (.028)	0.40-0.60	0.70	—	—	—	—	
22 - Plastic packing/transmission case/axle tube/tube retainer	—	—	—	—	0.00-0.20	—	—	—	
from Chassis No. 2078055 and 388007	clearance	—	0.00-0.20 (.000-.008)	—	—	—	—	—	
23 - Oil seal for rear wheel bearing	clearance	—	4.7-5.0 (.18-.2)	—	—	—	—	—	
pressing depth	—	—	max. 0.01	—	max. 0.01	—	—	—	
24 - Reduction gear shaft (Type 2)	run out	—	max. 0.01 (.0004)	—	—	—	—	—	
25 - Shift rod shift pressure	—	—	15-20 kg (30-44 lbs.)	—	15-20 kg (30-44 lbs.)	—	6.5 kg (14 lbs.)	—	
26 - Gearshift housing bushes	inside dia.	15.21 (.600)	15.05-15.03 (.592-.591)	15.25	15.05-15.03	15.25	15.05-15.03	15.25	
27 - Inner shift lever	diameter	14.75 (.580)	15.00-14.96 (.590-.588)	14.75	15.00-14.96	14.75	15.00-14.96	14.75	
28 - Preload of gearshift housing	—	—	0.02-0.11 (.0008-.0043)	—	—	—	—	—	
29 - Starter bush	inside dia	12.65 (.497)	12.55-12.57 (.493-.494)	12.65	12.55-12.57	12.65	12.55-12.57	12.65	
30 - Starter shaft/bush	radial clearance	0.25 (.010)	0.09-0.14 (.0035-.005)	0.25	0.09-0.14	0.25	0.09-0.14	0.25	
31 - Drive shafts: measured between centers	run-out	—	—	—	0.5 (.020)	—	0.5	—	

Designation	On installation (new)	Wear lim	Remarks
<b>e - Data for automatic transmission</b>			
1 - Adjusting planetary gear axial play .....	0.45-1.05 (.018-.042)		1) Adjust bands with transmission horizontal and tighten adjusting screws to 1 mkg first to settle the bands.
2 - Adjusting brake bands			2) Use only lined plates with annular groove and 6.1-0.25 mm thick pressure plate. Note thickness of circlip.
a - 2nd gear			3) Use only lined plates with waffle surface and 6.3-0.15 mm thick pressure plate.
Tighten screw to 0.5 mkg then slacken off 1 3/4 to 2 turns 1) .....	-		4) Bearings which have run more than 50 km (30 miles).
b - 1st gear			
Tighten screw to 0.5 mkg then slacken off 3 1/4 - 3 1/2 turns 1) .....	-		
3 - Clutches			
a - Forward clutch 2)			
Axial play "a" .....	0.8-1.2 (.032-.048)	-	
b - Direct and reverse clutch 3)			
Circlip .....	1.7 (.067)	-	
thickness			
4 - Preload of pinion bearings (turning torque) .....	8-12 cmkg	-	
new 4)	3-7 cmkg	-	
used			
5 - Total preload (turning torque)			
Pinion and differential .....	10-16 cmkg		
new 4)	1-7 cmkg		
used			



g - Marking of gear sets

1 - Standard and partly-synchronized transmission



p = Matching number

T = Distance from drive pinion center to back of ring gear  
(constant value 40.00 mm)

t = Departure from T

R = Distance - ring gear center/  
pinion end face (see table below)

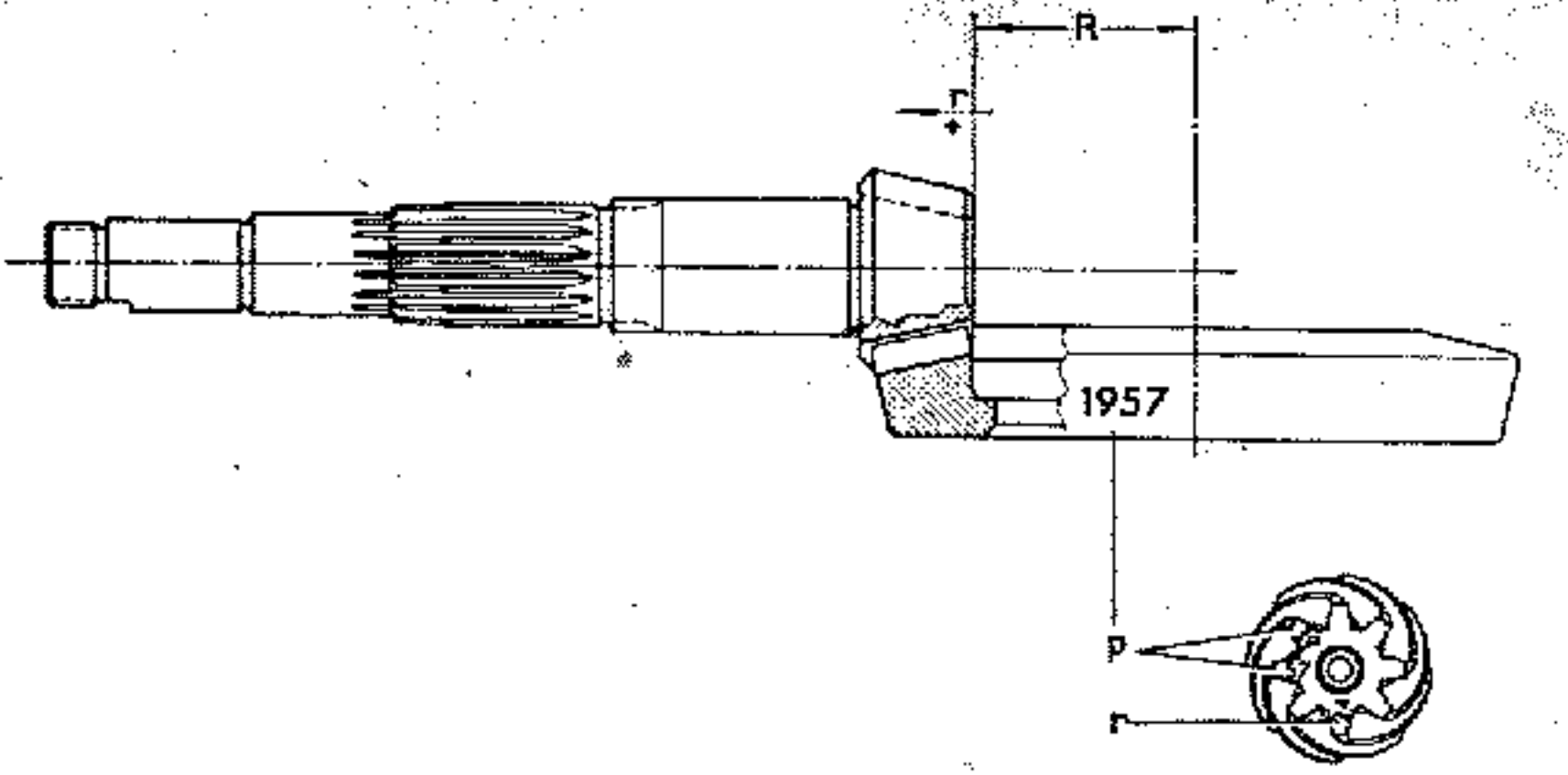
r = Departure from R

z = Backlash

	Klingelnberg 7 : 31		Gleason	
	Module = 3.00	Module = 3.25	8 : 35	7 : 31
Mark	Pinion K	Ring Gear V	-	-
R =	59.22 mm	59.22 mm	59.22 mm } <sup>1)</sup>	55.75 mm

<sup>1)</sup> Not available as replacement parts.

2 - Fully synchronized transmission  
(up to October 1964)



R - Design dimension - ring gear center/pinion end face (see table)

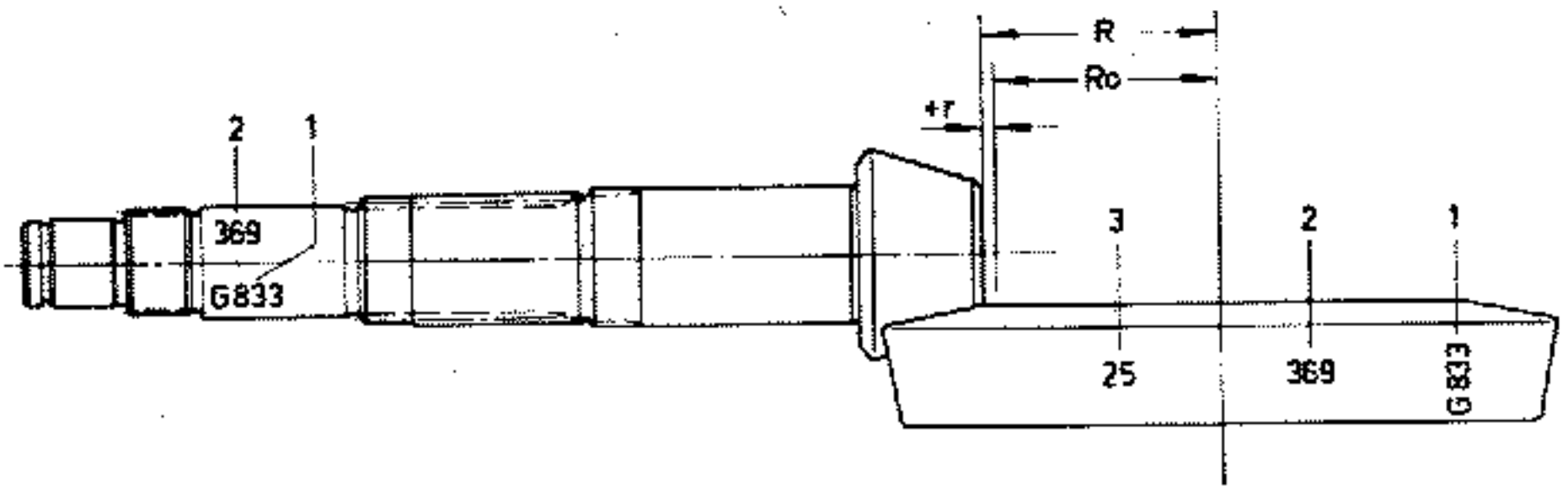
r - Deviation from R (given in hundredths of a mm)  
backlash of ring gear = 0.17-0.25 mm

p - Matching number of gear set.

	Type 1	Type 2		Type 3	
		1/4 Ton	1 Ton		
Type of teeth	8 : 35 Gleason	8 : 33 Klingelnberg	Gleason	8 : 35 Klingelnberg	8 : 33 Klingelnberg   Gleason
"R" mm	58.70	59.70	58.70 <sup>1)</sup>	58.70	
Distinguishing features	The Gleason toothing becomes deeper towards the outside of the gear.				

<sup>1)</sup> Marking: From Chassis No. 572083: "P" on left of lettering  
From Chassis No. 584927: "K" on end face of pinion

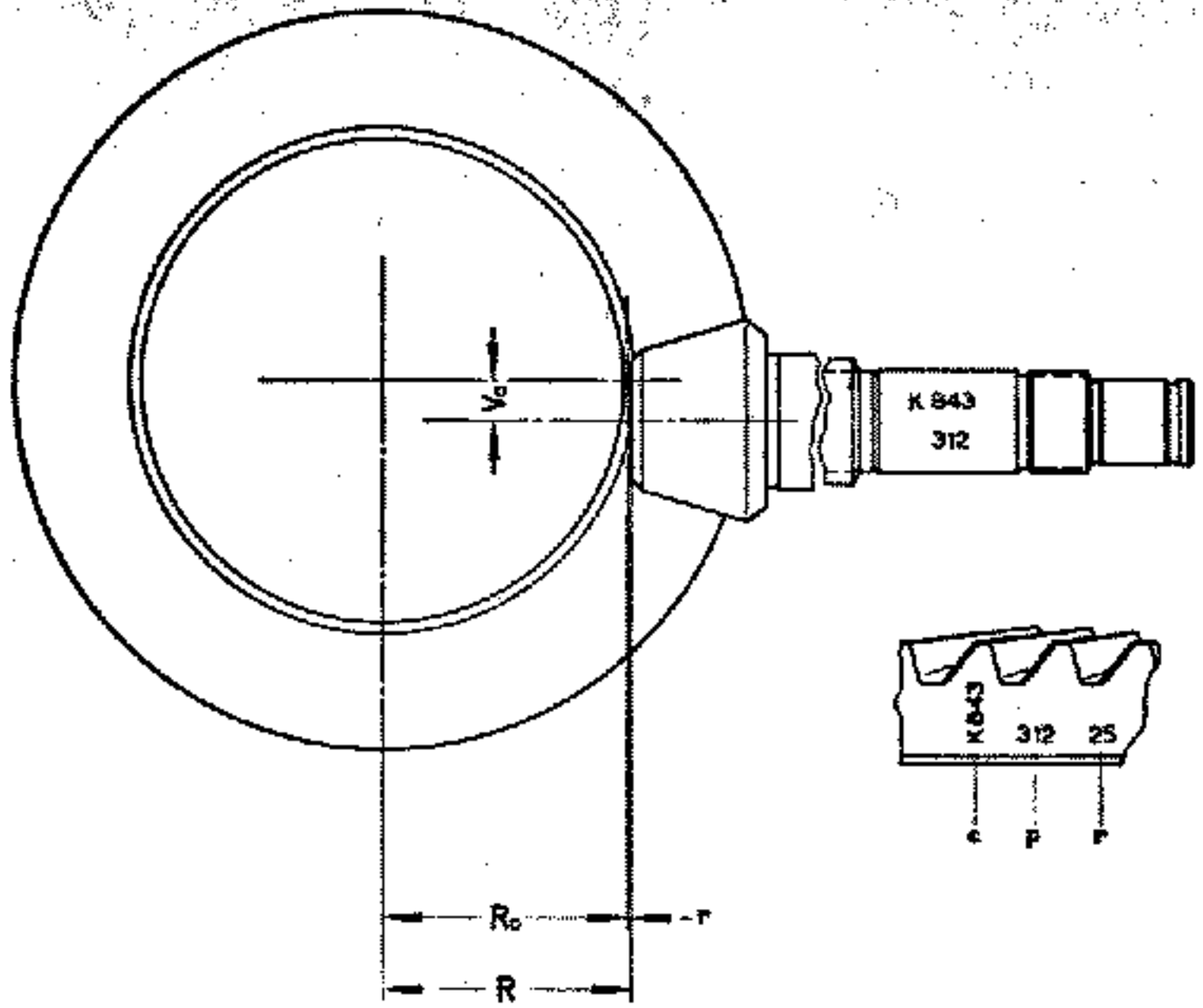
2a - Fully synchronized transmission and Stickshift Automatic  
(from October 1954)



(Example: Fully synchronized transmission with double-joint axle)

- 1 - "G 833" means Gleason gear set with a ratio of 8 : 33.
- 2 - Matching number of gear set.
- 3 - Deviation "r" based on the master gauge of the special machine used in production. The deviation is given in  $\frac{1}{100}$  mm. with the same sign. For example: "25" means that  $r = +0.25$  mm.
- Ro - Length of master gauge used in special machine, "Ro = 58.70 mm"
- R - Actual measurement between ring gear centerline and end of pinion at point of quietest running.

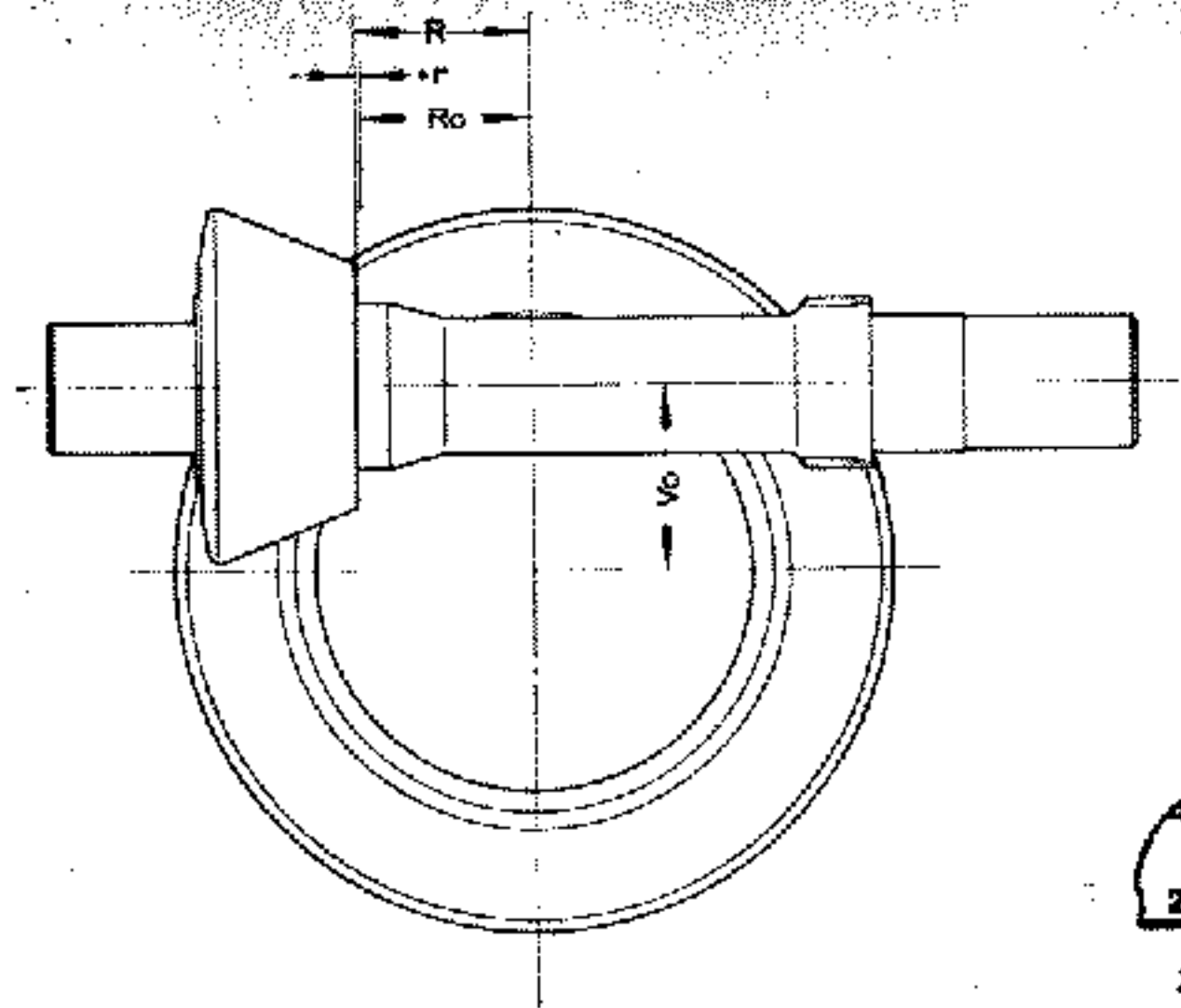
3 - Fully synchronized transmission  
(Type 2, from Chassis No. 218 000 001)



- 1 - "K 843" means Klingelberg gear set with a ratio of 8:43.
- 2 - Matching number (312) of gear set.
- 3 - Deviation "r" based on the master gauge of the special machine used in production.
- Ro - Length of master gauge used in special machine "Ro = 63 mm"
- R - Actual measurement between ring gear centerline and end of pinion at point of quietest running.
- Vo - Hypoid offset = 10 mm.



4 - Automatic transmission

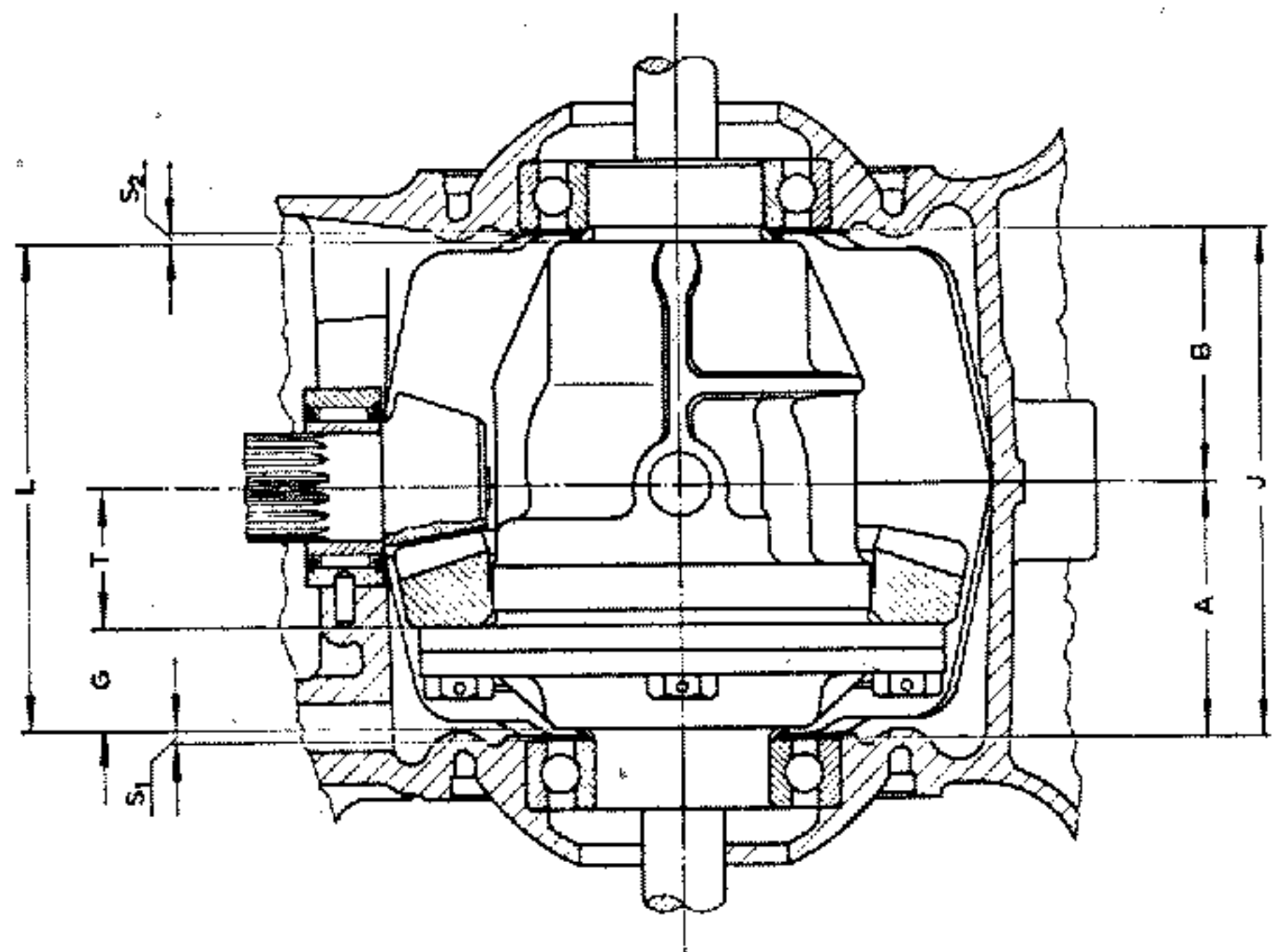


- 1 - "G 933" means Gleason gear set with a ratio of 9.33
- 2 - Matching number of gear set (369)
- 3 - Deviation "r" based on the master gauge of the special machine used in production.  
The deviation is given in  $\sqrt{100}$  mm with the same sign. For example: "26" means that  $r = + 0.26$  mm
- Ro - Length of master gauge used in special machine: "Ro" = 40.55 mm.
- R - Actual measurement between ring gear centerline and end of pinion at quietest running point.
- Vo - Hypoid offset = 42.5 mm

Remarks

## h - Adjusting final drive

### Partly-synchronized transmission



Designation	Measurements	Standard
A	Depth of left transmission case half	72.55 mm
B	Depth of right transmission case half	72.55 mm
J	Total depth of transmission case	145.10 mm
L	Length of differential housing	138.00 mm
G	Distance from back of ring gear to shim contact face	28.95 mm
V	Preload	$0.14 \pm 0.04$ mm

Formulas to determine thickness of shims  $S_1$  and  $S_2$ :

Type 1

$$S_1 = J - B - (T \pm t) - G + \frac{V}{2}$$

$$S_2 = J - L + V - S_1$$

Type 2

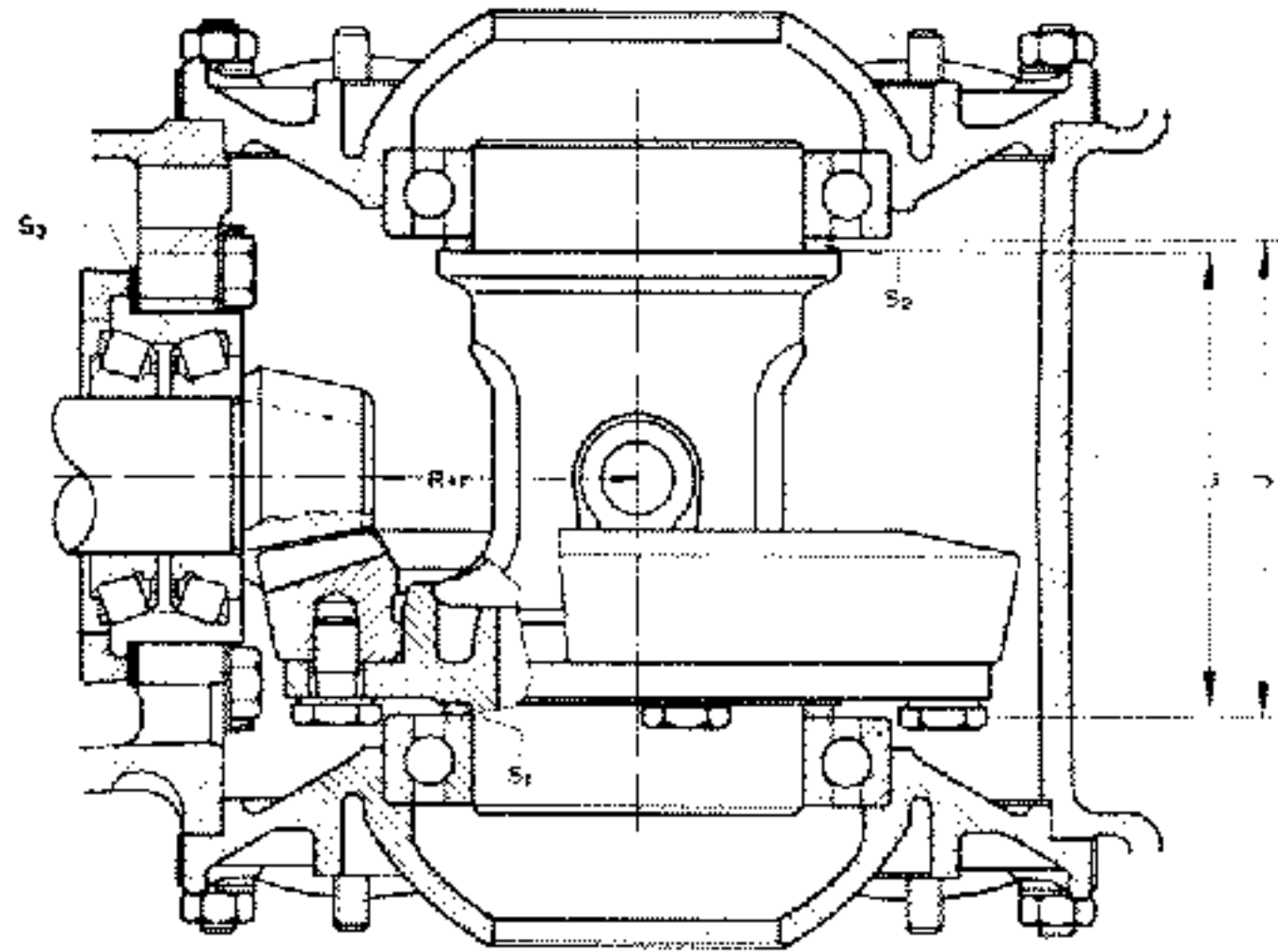
$$S_2 = J - A - (T \pm t) - G + \frac{V}{2}$$

$$S_1 = J - L + V - S_2$$

The drawing shows the differential of the Type 1.

On Type 2 vehicles the ring gear is situated in the right transmission case half.

Adjusting final drive  
Fully synchronized transmission



- 1 - "S<sub>3</sub>" shims for pinion
- 2 - "S<sub>1</sub>" shims at ring gear end
- 3 - "S<sub>2</sub>" shims at opposite end
- 4 - J depth of housing between ball bearings
- 5 - L length of differential housing

Explanation of signs:

Sign	Designation	Dimension
S <sub>vo</sub>	Mean backlash	0.20
MR	Measuring ring	-
$\Delta S_1$	Axial movement of ring gear to give specified mean backlash	1/100 mm
S <sub>1</sub>	Shim at ring gear end	find thickness
S <sub>2</sub>	Shim at opposite end	find thickness
e	Difference between zero setting of mandrel/pinion actual dimension without shims	0.10-0.50 mm
P <sub>1</sub>	Preload on bearing at ring gear end	0.07 mm
P <sub>2</sub>	Preload on bearing at opposite end	0.07 mm
r	Deviation in gear set G 358/K 358/G 338/K 338	0.05-0.65 mm
E <sub>0</sub>	Actual dimension measuring mandrel/setting pin	-

Finding shim thickness

"S<sub>3</sub>" shim

$$S_3 \text{ nominal} = e + r$$

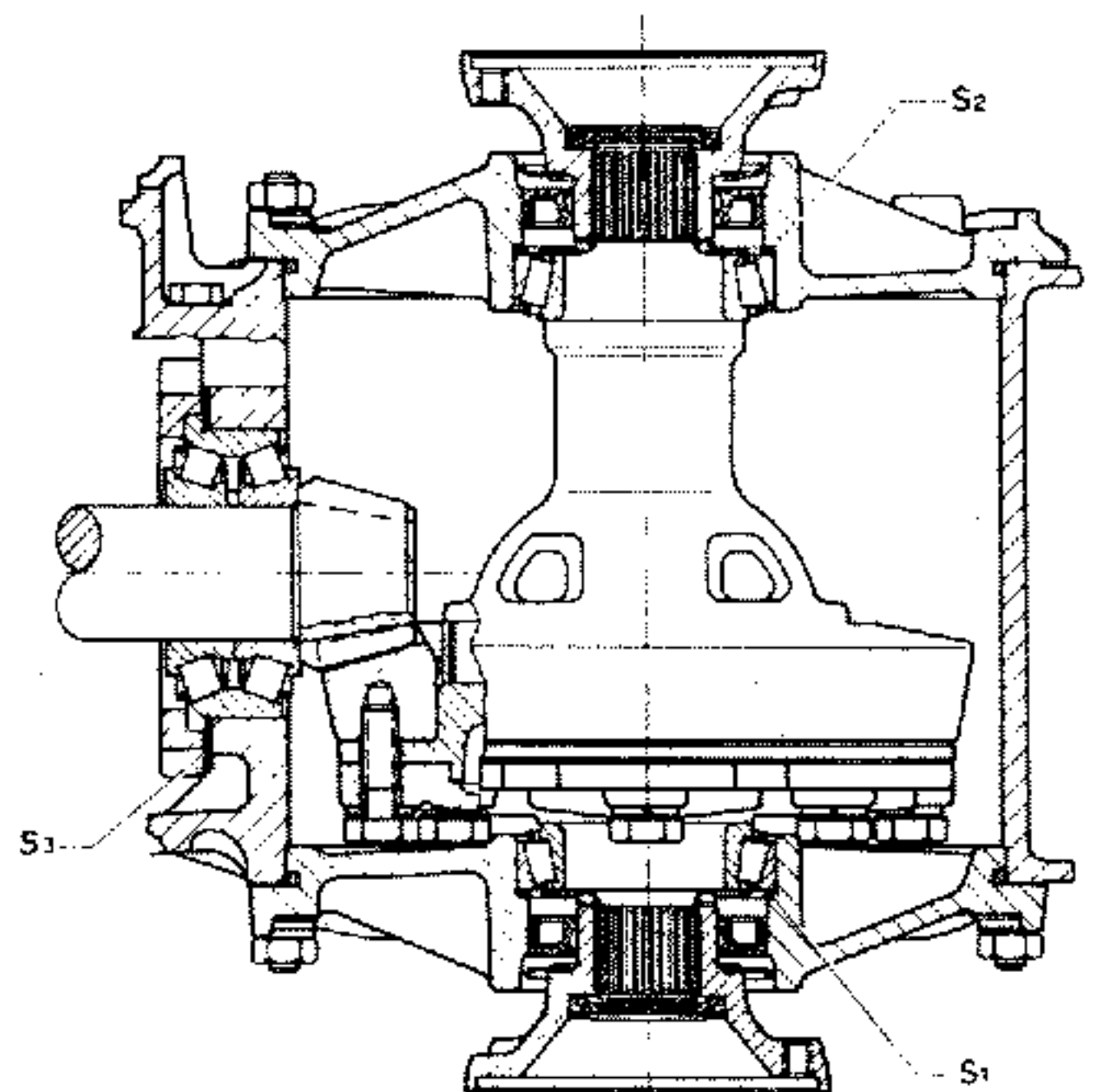
"S<sub>2</sub>" shim

$$S_2 = I - L - S_1$$

"S<sub>1</sub>" shim

$$S_1 = MR + \Delta S_1 + P_1$$

**Adjusting final drive  
Manual transmission with double joint axle**



**Explanation of signs:**

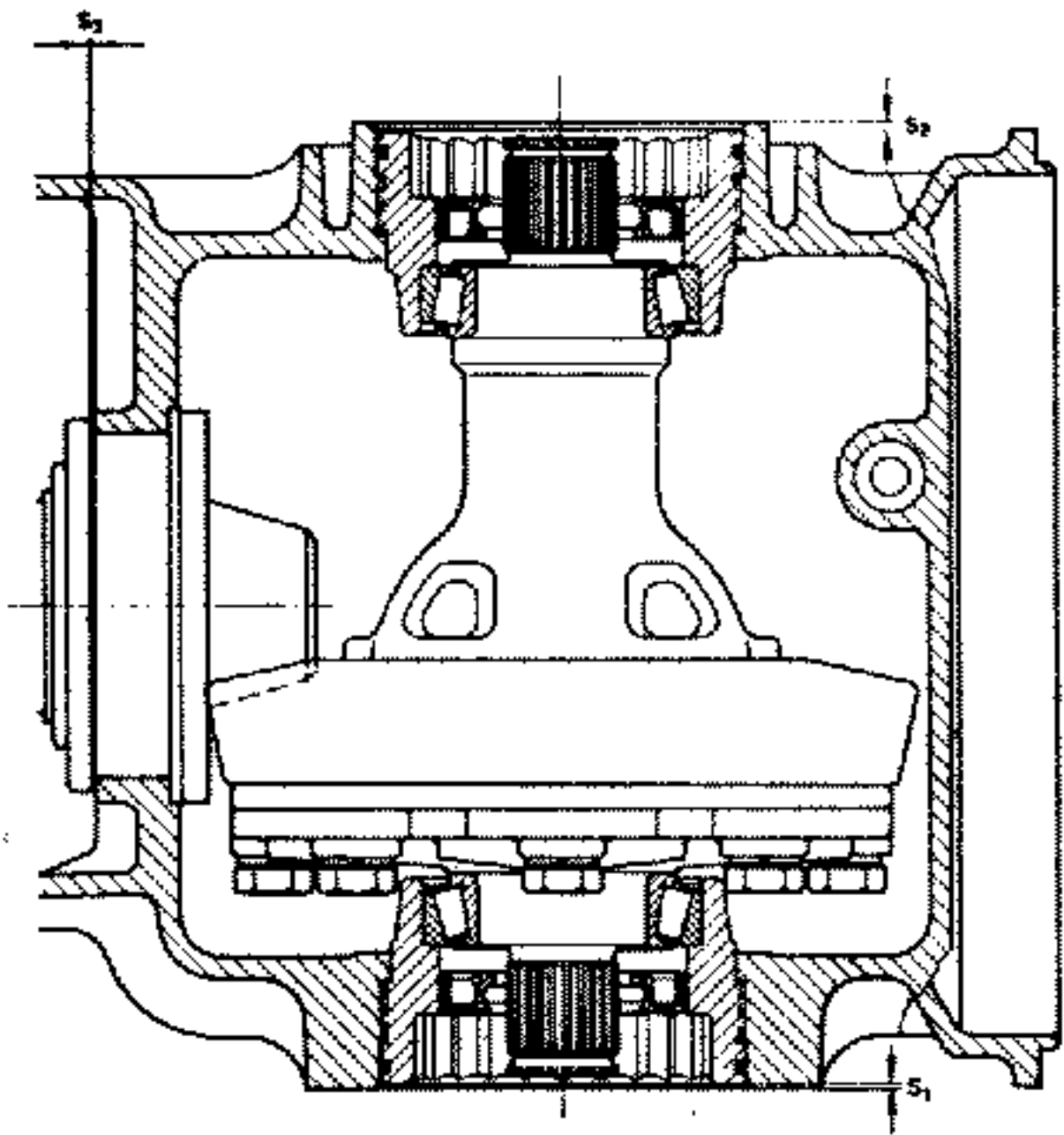
Sign	Designation	Dimension
$S_{vo \text{ mean}}$	Average of several backlash readings	1/100 mm
$\Delta S_1$	Axial movement of ring gear to give specified mean backlash	1/100 mm
$S_1$	Shim at ring gear end	find thickness
$S_2$	Shim at opposite end	find thickness
$e$	Difference between zero setting of measuring mandrel and actual pinion dimension without shims	0.10–0.50 mm
$r$	Deviation for gear set G 338 / K 338	0.05–0.65 mm
$w$	Correction factor for gear set G 338	1.00
	Correction factor for gear set K 338	1.10
$h$	Ring gear lift from full mesh position for G 338 gear set	0.20 mm
	Ring gear lift from full mesh position for K 338 gear set	0.20 mm
$E_o$	Length of setting pin	58.70 mm

**Finding shim thickness  
"S<sub>3</sub>" shim**

$$S_3 \text{ nominal} = e + r$$

**Finding " $\Delta S_1$ "**

$$\Delta S_1 = (S_{vo \text{ mean}} \times w) - h$$



Explanation of signs:

Sign	Designation	Dimension
$S_{vo \text{ mean}}$	Average of several backlash readings	1/100 mm
$\Delta S_1$	Axial movement of ring gear to give specified mean backlash	1/100 mm
$S_1$	Screw-in depth of adjusting ring at ring gear end	-
$S_2$	Screw-in depth of adjusting ring at opposite end	-
$e$	Difference between measuring mandrel and setting pin	0.10-0.50 mm
$r$	Deviation for gear set G 358/K 358	0.05-0.65 mm
$w$	Correction factor for gear set G 358	1.00
	Correction factor for gear set K 358	1.10
$h$	Ring gear lift from full mesh position for G 358 gear set	0.20 mm
	Ring gear lift from full mesh position for K 358 gear set	0.22 mm
$E_o$	Length of setting pin	58.70 mm

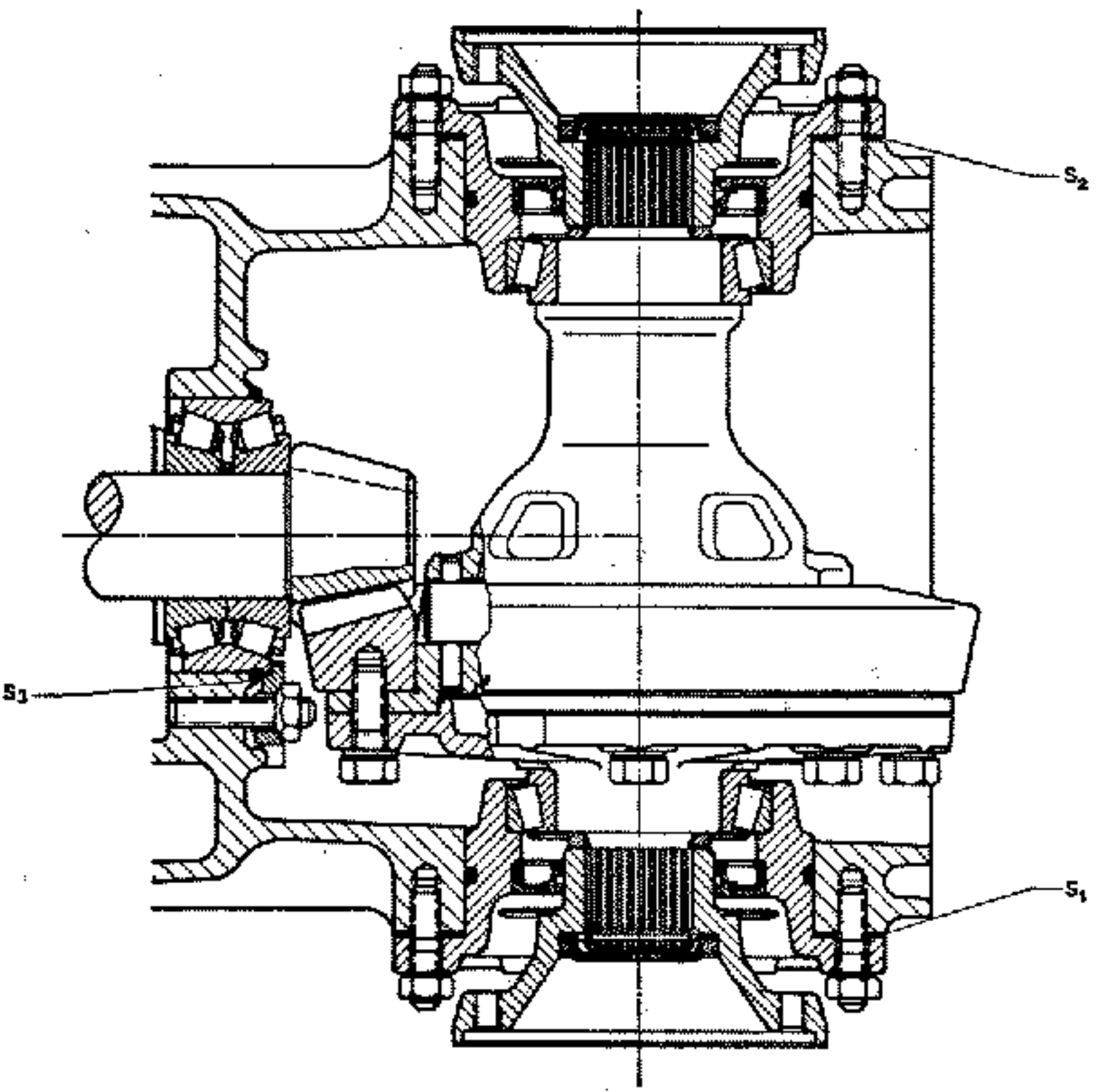
Finding shim thickness  
„S<sub>3</sub>” shim

$$S_3 \text{ nominal} = e + r$$

Finding „ $\Delta S_1$ ”

$$\Delta S_1 = (S_{vo \text{ mean}} \times w) - h$$

**Adjusting final drive**  
 (Type 2, from Chassis No. 218000001)



**Explanation of signs:**

Sign	Designation	Dimension
Svo mean	Average of several backlash measurements	1/100
$\triangle S_1$	Axial movement of ring gear to give average backlash	1/100
M. S.	Measuring shim VW 381/10 (two off)	1.30 mm
S	Movement of taper roller bearing outer ring	1/100 mm
w	Correction factor for individual gear set	-
h	Ring gear lift from no-play mesh position with pinion of individual gear set	1/100 mm
r	Deviation from "Ro", marked on gear set in hundredths of a millimeter	$r = 25$ = 0.25 mm
e	Difference between setting pin and mandrel	Measured in mm (0.85-1.30 mm possible)

**Finding shim thickness "S<sub>3</sub>" shims<sup>1)</sup>**

$$S_3 \text{ nominal} = e - r$$

$$S_3 \text{ nominal} = e + r$$

**Shim thickness S<sub>1</sub> nominal and S<sub>2</sub> nominal**

$$S_1 \text{ nominal} = \text{M. S.} - \triangle S_1$$

**Determining " $\triangle S_1$ "**

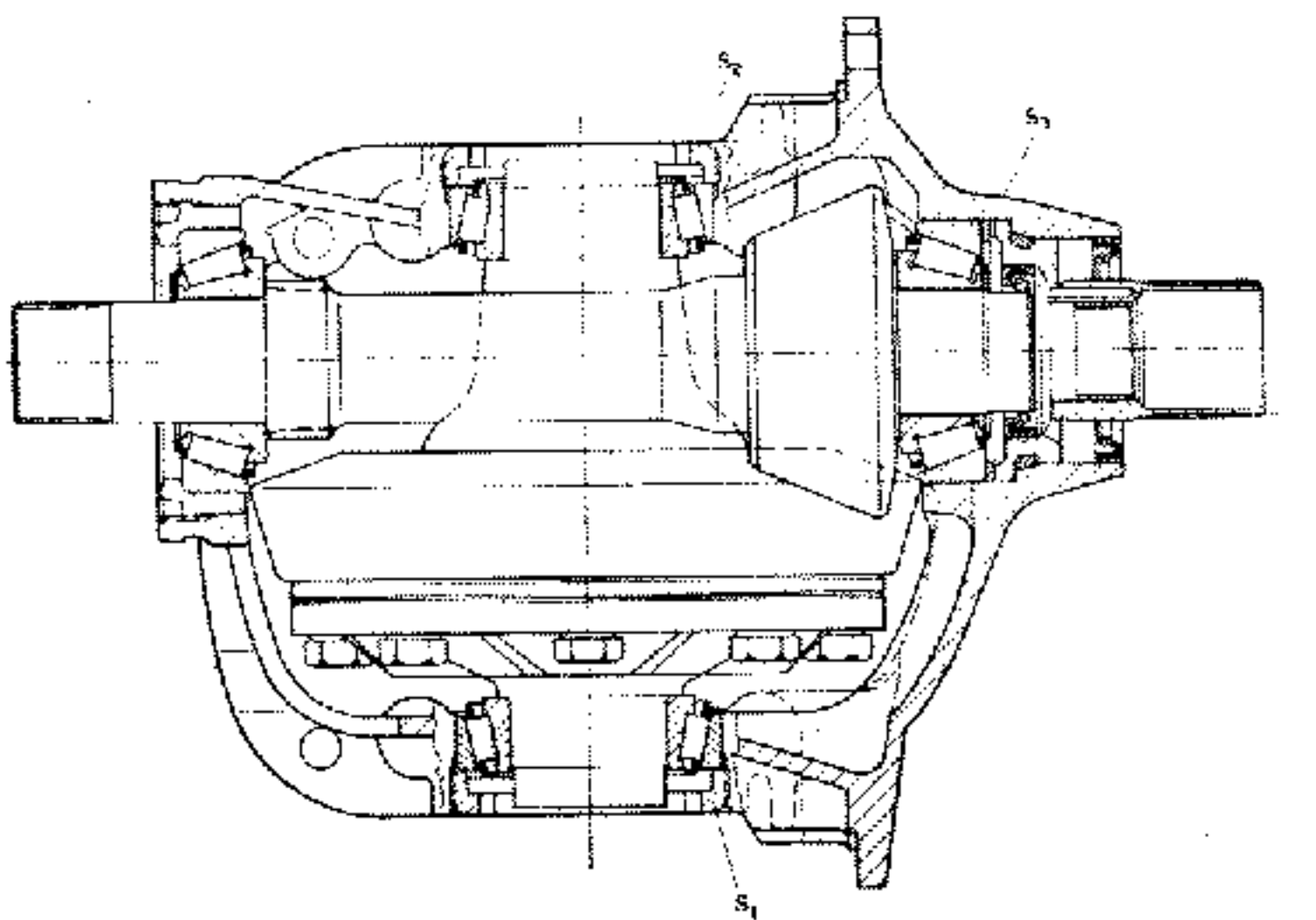
$$S_1 = (\text{Svo mean} \times w) - h$$

$$S_2 \text{ nominal} = \text{M. S.} + \triangle S_1 - S$$

<sup>1)</sup> From Chassis No. 218000001 to Chassis No. 218202251 the shim is on the ring gear side

<sup>2)</sup> From Chassis No. 219000001 the shim is on the transmission side. The final drive is adjusted with adjusting rings as on Type 1 Stickshift Automatic

Adjusting final drive  
Automatic Transmission



Explanation of signs:

Sign	Designation	Dimension
$S_1$	Screw-in depth of adjusting ring at ring gear end	
$S_2$	Screw-in depth of adjusting ring at opposite end	
$S_3$	Shim between taper roller bearing and pinion	
$R_0$	Length of master gauge used in special test machine	40.55 mm
$R$	Location of pinion in relation to centerline of ring gear at quietest running point (nominal dimension)	$R = R_0 + r$
$r$	Deviation from " $R_0$ ", marked on gearset	
$S_{vo}$	Backlash	0.15-0.25 mm
$V_0$	Hypoid offset	42.5 mm
G 933	Gear set G = Gleason: 939. No. of teeth 33/9	ratio = 3.67
$D/2$	Half diameter of mandrel	$D/2 = 10.00$ mm
$E_0$	Length of setting pin VW 380/3 $E_0 = R_0 + D/2$ mm	$E_0 = 50.55$ mm
$e$	Difference between mandrel and setting pin	measured in mm

Finding shim thickness

$$S_3 = e - r$$

## II. Ratios

	Standard transmission	Partly synchronized transmission	Fully synchronized transmission	Stickshift automatic	Automatic transmission
1st gear	3.60	3.60	3.80	2.06	2.65
2nd gear	2.07	1.88/1.94 <sup>1)</sup>	2.06	1.26	1.59
3rd gear	1.25	1.23/1.22 <sup>2)</sup>	1.26 <sup>3)</sup>	0.89	1.0
4th gear	0.80	0.82	0.89/0.82 <sup>4)</sup>	-	-
Reverse	6.60	4.63	3.88	3.07	1.8
Reverse from August 1967	-	-	3.62		
Torque increase max.	-	-	-	2.1	2.5 <sup>5)</sup>

<sup>1)</sup> With 17/33 teeth from Chassis No. 2256018 and 490695

<sup>2)</sup> With 23/28 teeth from Chassis No. 1726006 and 282900

<sup>3)</sup> Up to Chassis No.

Type 1 1161021298 | 1.32

Type 3 316316238 |

Type 2 2162179668 | 1.22

<sup>4)</sup> Type 2

Final drive	Type 1 and 2	Type 1 <sup>1)</sup> Type 2 <sup>2)</sup>	Type 2 <sup>3)</sup> Type 3 Type 1/1500	Type 1 <sup>4)</sup>	Type 2/1Ton	Stickshift automatic	Automatic transmission
Klingelberg	4.43	-	4.125	-	5.375 <sup>5)</sup>	4.375	
Gleason	4.375	4.43		4.375	-	4.375	3.67

<sup>1)</sup> From Chassis No. 1338160

<sup>2)</sup> From Chassis No. 210635

<sup>3)</sup> From Chassis No. 520000

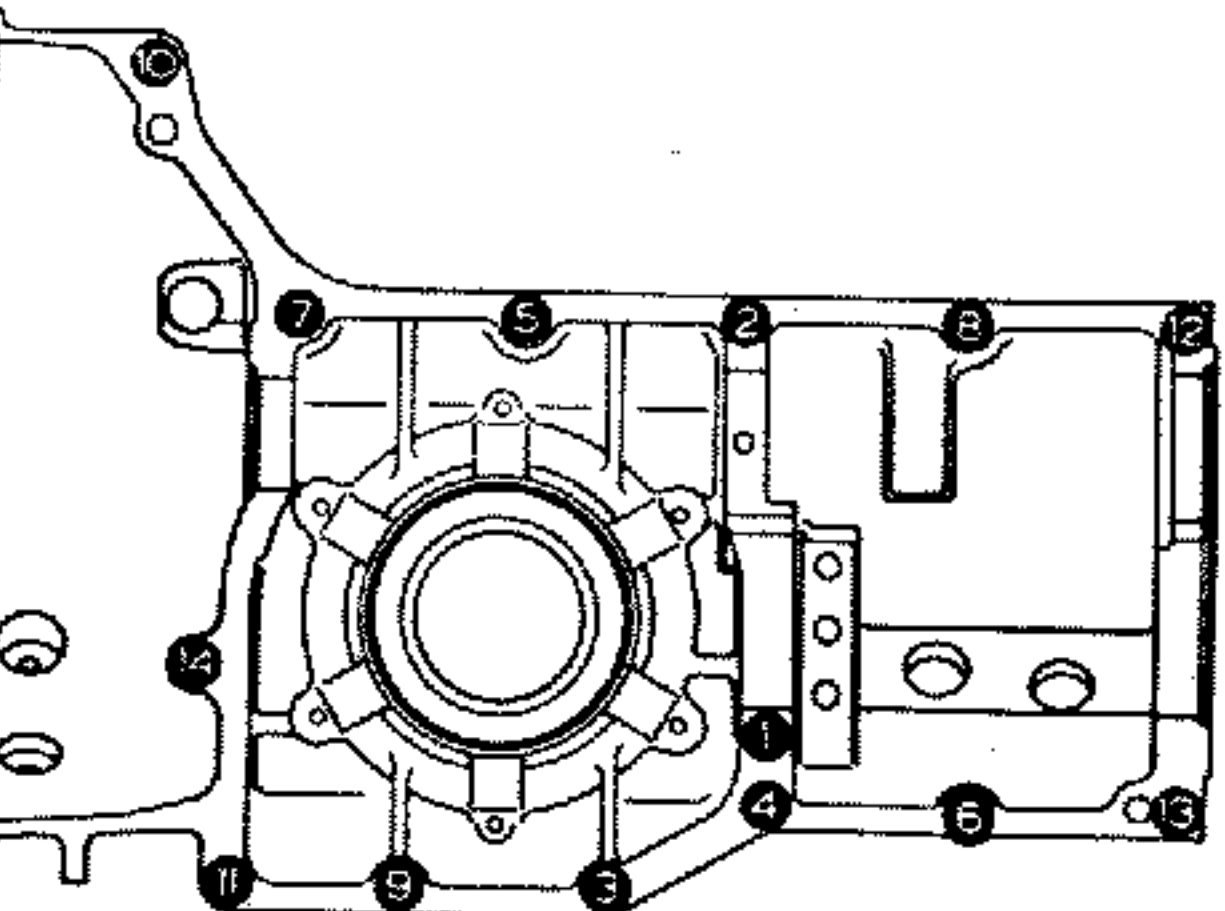
<sup>4)</sup> From Chassis No. 3192507

<sup>5)</sup> Up to Chassis No. 217148459: 4.375

Reduction gears (Type 2 only)	No. of teeth		Ratio	Remarks
	Driven gear	Axle shaft gear		
Type 2/1200	up to Chassis No. 469446	21	15	1.4
	from Chassis No. 469447	25	18	1.39
Type 2/1500	24	19		1.26



### III - Tightening torques

Designation	Class	Thread	mkg	lb ft	Remarks
<b>a - Transmission and Rear Axle (Standard and Partly-synchronized Transmission) Type 1 and 2</b>					
Drive pinion nut (Partly-synchronized transmission) up to Chassis No. 1454550/238499	-	M 22 × 1,5	10-12.0 <sup>1)</sup>	80-87	<p>1) The nut should be tightened and not backed off.                      2) First tighten to 15 mkg (108 lb ft) then back off and tighten to 5 mkg (36 lb ft).                      3) Note tightening sequence.</p> 
Drive pinion nut (Partly-synchronized transmission/new lock-washer) from Chassis No. 1454551/238500	-	M 22 × 1,5	10-9.0 <sup>1)</sup>	58-65	
Slotted nut for pinion (Standard transmission)	-	M 18 × 1,5	5.0 <sup>2)</sup>	36	
Main drive shaft nut	-	M 16 × 1,5	10-5.0	30-36	
Reverse selector fork screw	-	M 7 × 12	2.0	14	
Ring gear screws	10 K	M 10 × 1,5	6.0	43	
Selector fork clamp screw	-	M 8 × 1,25	2.5	18	
Transmission housing nuts and bolts <sup>3)</sup>	6 G	M 8 × 1,25	2.0	14	
Oil drain plug	5 S	M 18 × 1,5	10-4.0	22-29	
Oil filler plug	Muk 7	M 24 × 1,5	2.0	14	
Axle shaft nut	-	M 24 × 1,5	30.0	217	
Transmission carrier to frame	8 G	M 18 × 1,5	23.0	166	
Spring plate nuts/bolts	-	M 12 × 1,5	10.0	72	

Designation	Class	Thread	mkg	lb. ft.	Remarks
<b>b - Transmission and Rear Axle (fully synchronized) all Types</b>					
Drive pinion round nut:					
1 - for double ball bearing	C 35 N	M 35 × 1.5	12.0	87	
2 - for double taper roller bearing	C 35 N	M 35 × 1.5	20.0	144	
Pinion bearing retainer screws	10 K	M 10 × 1.5	5.0	36	
Pinion nut	CK 45 K	M 22 × 1.5	6.0 <sup>4)</sup>	43	
Drive shaft nut	CK 45 K/C 35	M 22 × 1.5	6.0 <sup>4)</sup>	43	
Reverse lever guide screw	8 G	M 7 × 1	2.0	14	
Selector fork screws	C 45 KN	M 8 × 1.25	2.5	18	
Nuts for gearshift housing	6 D	M 7 × 1	1.5	11	
Ring gear screws	10 K	M 10 × 1.5	6.0	43	
Final drive cover nuts	8 G	M 8 × 1.25	3.0	22	
Axle tube retainer nuts	6 G	M 8 × 1.25	2.0	14	
Rear wheel bearing retainer screws	10 K	M 10 × 1.5	6.5	47	
Oil drain plug	Muk 7	M 24 × 1.5	2.0	14	
Oil filler plug	C 45 KN	M 24 × 1.5	30.0	217	
Rear axle shaft nut (Type 1 and 3)	6 S	M 30 × 1.5	15.0	108	
Nut on driven shaft (Type 2 from August 1963)					
Nut on rear axle driven shaft (Type 2)					
up to Chassis No. 1144302	C 45 KN	M 24 × 1.5	30.0	217	
from Chassis No. 1144303	C 45 KN	M 30 × 1.5	30.0 <sup>5)</sup>	217	
Transmission carrier on frame	8 G	M 18 × 1.5	23.0	166	
Spring plate/reduction gear housing screw (Type 2)	10 K	M 12 × 1.5	10.0-12.0	72-87	

<sup>4)</sup> Tighten first to 12 mkg then back off and finally tighten to 6 mkg  
<sup>5)</sup> If cotter pin holes are not in line, tighten to a maximum of 35 mkg (250 lb. ft.).  
If hole is still not in line, fit a different nut.

Designation	Class	Thread	mkg	lb. ft.	Remarks
<b>c - Additional torques for transmission and rear axle (Stickshift Automatic)</b>					
Temperature switch	GD-ZUA 14	M 14 × 1.5	2.5	18	*)Use new screws
Selector switch	GD-ZUA 14	M 14 × 1.5	2.5	18	
Starter inhibitor switch	GD-ZUA 14	M 14 × 1.5	2.5	18	
Converter to drive plate screws	8 G	M 8 × 1.25	3.0	22	
Retaining nut for taper roller bearing	Cq 35	M 80 × 1	15.0	108	
Nut for converter housing	6 D	M 8 × 1.25	2.0	14	
Screw for one-way clutch support	10 K	M 6 × 1	1.5 *)	11	
Screw for clutch	10 K	M 6 × 1	1.5	11	
Lock screw	5 S	M 8 × 1.25	1	7	
Clamp screw for clutch lever	8 G	M 8 × 1.25	2.5	18	
Screw for transmission oil pan and lock plate	5 S	M 7 × 1.25	1.0	7	
Union for oil pressure line	C 45 KN	M 12 × 1.5	2.0	14	
Union for oil return line	C 45 KN	M 14 × 1.5	3.5	25	
Screw for drive shaft	10 K	M 8 × 1.25	3.5	25	
Fitted screw in diagonal arm	10 K	M 12 × 1.5	12.0	87	
<b>d - Additional torques for transmission and rear axle (VW 1600 Automatic)</b>					
Screw for oil pump	8 G	M 6 × 1	0.4	3	
Screw for valve body	8 G	M 6 × 1	0.4	3	
Screw for transfer plate	8 G	M 5 × 0.8	0.3	2	
Screw for oil strainer	8 G	M 6 × 1	0.3	2	
Screw for oil pan	8 G	M 8 × 1.25	1.0	7	

Designation	Class	Thread	mkg.	lb. ft.	Remarks
Pin for operating lever	—	M 10 × 1.5	0.6	4	7) Turn out 1 3/4 – 2 turns from this position. 8) Turn out 3 1/4 – 3 1/2 turns from this position.
Plug for pressure connections	—	M 10 × 1	1.0	7	
Vacuum unit	—	M 14 × 1.5	2.5	18	
Screw for bearing cap/diff. carrier	10 K	M 10 × 1.5	5.0	35	
Screw for ring gear	10 K	M 9 × 1	4.5	32	
Screw for converter	8 G	M 8 × 1.25	2.0	14	
Screw for drive shaft	10 K	M 8 × 1.25	3.5	25	
Screw for front band	—	M 12 × 1.75	0.5 7)	3.5	
Screw for rear band	—	M 12 × 1.75	0.5 8)	3.5	
tighten to 1 mkg first, loosen and tighten again					
Nut for differential carrier	8 G	M 6 × 1	0.8	6	
Nut for side cover	8 G	M 6 × 1	0.8	6	
Nut for transmission/final drive housing	8 G	M 8 × 1.25	2.0	14	
Lock nut for band adjusting screw	8 G	M 10 × 1.75	2.0	14	
Nut and screw for spring plate	10 K	M 12 × 1.75	11.0	80	
Screw for bearing cover	10 K	M 10 × 1.5	6.0	43	
Fitted bolt for diagonal arm	—	M 10 × 1.5	12.0	87	

Designation	Class	Thread	mkg.	lb. ft.	Remarks
<b>e - Transmission and Rear Axle (fully synchronized)</b>					
<b>Type 2 - from Chassis No. 218000001</b>					
Round nut/pinion . . . . .	C 53 N	M 35 × 1.5	20	144	*) Tighten to 4.5 mkg first, slacken off and tighten to 3.0 mkg.
Union nut/clamp sleeve . . . . .	S 20 K	M 14 × 1.5	3.0	22	
Bracket/reverse shifter shaft on gear carrier . . . . .	8 G	M 8 × 1.5	2.5	18	
Support/rocker lever on on gear carrier . . . . .	8 G	M 8 × 1.5	2.5	18	
Shift fork on shift rod . . . . .	C 45 KN	M 8 × 1.25	2.5	18	
Locking screw with dog point . . . . .	5 S	M 8 × 1.25	1.5	11	
Clamp sleeve on gear carrier . . . . .	45 S 20 K	M 14 × 1.5	3.5	25	
Shift housing on gear carrier . . . . .	6 G	M 7 × 1	1.5	11	
Nuts on gear carrier, transmission and clutch housing . . . . .	6 G	M 8 × 1.25	2.0	68	
Ring gear to differential housing . . . . .	10 K	M 9 × 1	4.5	32	
Double taper roller bearing retainer . . . . .	8 G	M 9 × 1.25	3.0 *)	22	
Final drive side covers . . . . .	8 G	M 8 × 1.25	2.0	14	
Brake back plate to housing . . . . .	8 G	M 8	2.5	18	
Brake back plate to housing . . . . .	8 G	M 10	3.5	25	
Slotted nut on rear wheel shaft . . . . .	C 45 KN	M 30 × 1.5	32-35	230-253	
Joint to flange (socket head screw) . . . . .	8 G	M 8	3.5	25	
Control arm to frame . . . . .	8 G	M 12 × 1.5	6.0	43	
Cover/spring plate mounting . . . . .	8 G	M 10	4.5	32	
Control arm to bearing housing . . . . .	10 K	M 14 × 1.5	13	94	
Shock absorber to frame and bearing housing . . . . .	8 G	M 12 × 1.5	6.0	43	

#### IV. Torsion Bar Adjustment (Spring plates unloaded)

From Chassis No.	Type/Model	Torsion Bar		Setting
		Length	Diameter	
- 1-0929746 2232161 2528668 3067625 6200001 117000001	1	627 mm 627 mm 627 mm 552 mm 552 mm 552 mm 552 mm 676 mm	24 mm 24 mm 24 mm 22 mm 22 mm 22 mm 21 mm 22 mm <sup>3)</sup>	13° ± 30' 12° ± 30' 11° ± 30' 16° 30' + 50' 16° 30' + 50' 17° 30' + 50' <sup>1)</sup> 20° + 50' 20° 30' + 50' <sup>2)</sup>
- 316000001 - -	31 and 34 31 and 34 36/375 kg (826 lbs.) 36/460 kg (1014 lbs.) <sup>2)</sup>	626 mm 626 mm 626 mm 626 mm	23 mm 23 mm 24 mm 23 mm	20° + 50' 20° 30' + 50' 18° 30' + 50' 21° 30' + 50'
Vehicles with double-joint axle and manual transmission	311-314 315-346 361-368	676 mm 676 mm 676 mm	22 mm 22 mm 23.5 mm	23° + 50' <sup>4)</sup> 22° + 50' <sup>5)</sup> 21° 30' + 50'

<sup>1)</sup> When necessary, this setting can also be used from Chassis No. 2528668, but only up to a maximum of 19°

<sup>2)</sup> From August 1964 : 465 kg (1025 lbs)

<sup>3)</sup> Only vehicles with Stickshift Automatic

<sup>4)</sup> Vehicles with Automatic Transmission 24° + 50'

<sup>5)</sup> Vehicles with Automatic Transmission 23° + 50'

From Chassis No.	Type/Model	Torsion Bar		Setting
		Length	Diameter	
- 20-117902	2	553 mm 590 mm	30 mm 29 mm	4° ± 30' 20° ± 30'
<b>except</b> 420574 736388 425461	27 27 21 F	590 mm 590 mm 590 mm	29 mm 26 mm 29 mm	18° 40' ± 20' 25° ± 20' 21° 30' ± 20'
218000001	21 22 23 24 26 27 28	590 mm	26.2 mm	23° + 50'
	21 F	590 mm	28.1 mm	20° 10' + 50'

# BRAKES AND WHEELS

## 1. Tolerances, wear limits and settings

Designation	Up to Ch. No.	From Ch. No.	Type 1		Up to Ch. No.	From Ch. No.	Type 2		Up to Ch. No.	From Ch. No.	Type 3		Remarks	
			On installation (new)	Wear limit			On installation (new)	Wear limit			On installation (new)	Wear limit		
<b>a - Master cylinder</b>														
1 - Master cylinder . . . . . stroke	—	115 000 001	33.0	—	—	1144 302	36.0	—	—	0024 846	36.0 <sup>1)</sup>	—	<sup>1)</sup> Type 36 since start of production <sup>2)</sup> Standard Sedan 111/112, 115/116 from Chassis No. 4 630 938 <sup>3)</sup> Type 36 from Chassis No. 365 000 001 up to introduction of disc brakes: 20.64 mm dia. <sup>4)</sup> Valid for drum brakes only <sup>5)</sup> Valid for disc brakes only <sup>6)</sup> Except VW 1200. On Model 11 up to Chassis No. 117 844 902 only for certain export countries. <sup>7)</sup> On Models 31 and 36 up to Chassis No. 317 233 853 only for certain countries. <sup>8)</sup> De Luxe Sedan from Chassis No. 1 673 351 Type 14 . . . . . from Chassis No. 1 665 213 Type 15 . . . . . from Chassis No. 1 665 425 <sup>9)</sup> De Luxe Sedan up to Chassis No. 1 673 350 Type 14 . . . . . up to Chassis No. 1 665 212 Type 15 . . . . . up to Chassis No. 1 665 424 <sup>10)</sup> Valid for 1/1500 only <sup>11)</sup> Type 36 up to Chassis No. 315 220 863: 23.80 mm dia., up to Chassis No. 0 221 274: 25.40 mm dia	
stroke	6502 399	—	30.0	—	1144 302	—	30.0	—	0024 845	—	33.0	—		
diameter	—	115 000 001	17.46	—	—	117 902	22.20	—	—	0221 975	19.05 <sup>3)</sup>	—		
diameter	6502 399	—	19.05 <sup>2)</sup>	—	117 901	—	19.05	—	0221 974	—	20.64	—		
<b>2 - Tandem master cylinder</b>														
Front wheel circuit stroke . . . . .		117 000 001 <sup>4)</sup>	15.5 <sup>4)</sup>	—		218 000 001	24.0	—			15.0	—		
Rear wheel circuit stroke . . . . .			12.5 <sup>4)</sup>	—			14.0	—		317 000 001 <sup>7)</sup>	15.0	—		
Front wheel circuit stroke . . . . .		117 000 001 <sup>4)</sup>	14.0 <sup>5)</sup>	—		217 019 488	19.0	—						
Rear wheel circuit stroke . . . . .			14.0 <sup>5)</sup>	—			13.0	—						
diameter		117 000 001	19.05	—		217 019 488	22.20	—		317 000 001	19.05	—		
<b>b - Wheel cylinder</b>														
<b>3 - Wheel cylinder:</b>														
front . . . . . diameter	—	<sup>2)</sup> <sup>8)</sup>	22.20	—	—	117 902	25.40	—	—	0027 850	22.20	—		
diameter	<sup>9)</sup>	—	19.05	—	117 902	—	22.20	—	0027 849	—	20.64	—		
rear . . . . . diameter	—	<sup>2)</sup> <sup>8)</sup>	19.05	—	—	117 902	22.20	—	—	—	—	—		
diameter	<sup>9)</sup>	118 000 001	17.46	—	117 902	—	19.05	—	—	—	22.20 <sup>11)</sup>	—		
<b>4 - Cylinder in caliper . . . . . diameter</b>		117 000 001 <sup>10)</sup>	40.0	—	—	—	—	—	—	316 000 001	42.0	—		

Designation	Up to Ch. No.	From Ch. No.	Type 1		Up to Ch. No.	From Ch. No.	Type 2		Up to Ch. No.	From Ch. No.	Type 3		Remarks
			On installation (new)	Wear limit			On installation (new)	Wear limit			On installation (new)	Wear limit	
<b>c - Brake drums</b>													
5 - Brake drums: <sup>12)</sup>						1144303	230.0+0.2	251.5		0221975	248.1+0.2	249.5	<sup>12)</sup> The drum turning-out dimension for 0.5 mm oversize linings is 1 mm above the given dimension for all drums. <sup>13)</sup> Up to Chassis No. 0076299: 230.1 + 0.2 <sup>14)</sup> Standard Sedan 111/112, 115/116 up to Chassis No. 4630937 <sup>15)</sup> Measured without pad carrier plate
front and rear . . . . . inside diameter	-	-	-	-	-	-	230.2+0.3	231.8	0221974	-	231.1+0.2	232.5	
front . . . . . inside diameter	-	-	230.1 + 0.2	231.5	1144302	-	230.0+0.2	231.5	0221974 <sup>13)</sup>	-	231.0+0.2	232.5	
rear . . . . . inside diameter	-	-	230.0 + 0.2	231.5	1144302	-	230.0+0.2	-	-	-	-	-	
front and rear . . . . . inside diameter	-	-	-	-	117901	-	-	-	-	-	-	-	
front and rear . . . . . wall thickness	-	-	-	4.0 (.16)	-	-	-	4.0	-	-	-	4.0	
out of round	-	-	max. 0.1 (.004)	-	-	-	max. 0.1	-	-	-	max. 0.1	-	
taper	-	-	max. 0.1 (.004)	-	-	-	max. 0.1	-	-	-	max. 0.1	-	
lateral run-out	-	-	max. 0.25 (.016)	-	-	-	max. 0.25	-	-	-	max. 0.25	-	
measured at friction surface . . . . . radial run-out	-	-	max. 0.15 (.006)	-	-	-	max. 0.10	-	-	-	max. 0.20	-	
radial run-out	-	-	-	-	1144302	-	max. 0.20	-	-	-	-	-	
6 - Brake disc	-	-	9.50-9.45	8.0	-	-	-	-	-	-	9.50-9.45	8.0	
Machining dimension thickness	-	-	8.5	8.0	-	-	-	-	-	-	8.5	8.0	
thickness tolerance	-	-	max. 0.02	-	-	-	-	-	-	-	max. 0.02	-	
disc run-out	-	-	max. 0.2	-	-	-	-	-	-	-	max. 0.2	-	
<b>d - Brake linings</b>													
7 - Brake linings:						1144303	55.0	-	-	-	50.0	-	
front . . . . . width	-	<sup>2), 6)</sup>	40.0	-	-	-	50.0	-	-	-	-	-	
width	<sup>8), 14)</sup>	-	30.0	-	1144302	-	40.0	-	-	-	-	-	
width	-	-	-	-	117901	-	-	-	-	-	-	-	
rear . . . . . width	-	118000001	40.0	-	-	1144303	45.0	-	-	0076300	45.0	-	
width	-	-	30.0	-	1144302	-	40.0	-	0076299	-	40.0	-	
front and rear . . . . . thickness	-	-	4.0-3.8	2.5	-	117902	4.0-4.8	2.5	-	0076300	4.05-3.85	2.5	
front and rear . . . . . thickness	-	-	-	-	-	-	-	-	0076299	-	4.0-3.8	2.5	
8 - Friction pad for disc brakes <sup>15)</sup> . . . . . thickness	-	-	10.0	2.0	-	-	-	-	-	-	10.0	2.0	



## II. Tightening torques

Designation	Class	Thread	mkg.	lb. ft.	Remarks
<b>Brakes (Type 1)</b>					
Master cylinder to frame .....	8 G	M 8	2.0-3.0	14-22	
Screws for bearing cover/back plate/bearing flange .....	10 K	M 10	5.5-6.5	40-47	
Back plate/steering knuckle screws .....	10 K	M 10	5.0	36	
Brake hose unions .....	9 S 20 K	M 10 × 1	1.5-2.0	11-14	
Brake pipe unions .....	9 S 20 K	M 10 × 1	1.5-2.0	11-14	
Stop light switch .....	-	M 10 × 1	1.5-2.0	11-14	
Wheel cylinder to back plate .....	8 G	M 8	2.0-3.0	14-22	
Caliper to steering knuckle .....	10 K	M 10	6.0	43	
Residual pressure valve in tandem master cylinder .....	-	M 12 × 1	2.0	14	
<b>Brakes (Type 2)</b>					
Screws for bearing cover to rear brake back plate .....	10 K	M 10	5.5-6.0	40-43	
Brake back plate/wheel cylinder front .....	10 K	M 10	5.5-6.0	40-43	
Brake hose unions .....	9 S 20 K	M 10 × 1	1.5-2.0	11-14	
Brake pipe unions .....	9 S 20 K	M 10 × 1	1.5-2.0	11-14	
Stop light switch .....	-	M 10 × 1	1.5-2.0	11-14	

Designation	Class	Thread	mkg.	lb. ft.	Remarks
<b>Brakes (Type 3)</b>					*) Only on vehicles with disc brakes. For all from Chassis No. 118000001.
Master cylinder to frame .....	8 G	M 8	2.0-3.0	14-22	
Screws for bearing cover/back plate rear .....	10 K	M 10 x 1.5	5.5-6.5	40-47	
<b>Wheel cylinders</b>					
a - rear on back plate .....	8 G	M 8	2.5	18	
b - front on back plate/steering knuckle .....	8 G	M 10 x 1	4.5	32	
Disc brake caliper housing to steering knuckle .....	10 K	M 10	6.0	43	
<b>Brake hose at</b>					
a - brake pipe .....	-	M 10 x 1	1.5-2.0	11-14	
b - wheel cylinder .....	-	M 10 x 1	1.5-2.0	11-14	
c - disc brake caliper housing .....	-	M 10 x 1	1.5	11	
Stop light switch	-	M 10 x 1	1.5-2.0	11-14	
<b>Wheels</b>					
<b>Wheel bolts</b>					
<b>Type 1</b> .....	CK 35	M 12 x 1.5	10.0	72	
from August 1965 (four hole wheel) *) .....	CK 35	M 14 x 1.5	15.0	108	
<b>Type 2</b> .....	CK 35	M 14 x 1.5	13.0	94	
<b>Type 3</b> .....	CK 35	M 12 x 1.5	10.0	72	
from August 1965 (four hole wheel) .....	CK 35	M 14 x 1.5	15.0	108	

### III. Tire Data

Note: For long, high-speed trips, the pressures should be increased by 0.2 kg/cm<sup>2</sup> (3 psi)

Type	1						3						Remarks					
	all except 147		all except 147		147		31 and 34		36/375 kg		36/465 kg <sup>1)</sup>			31 and 34		36/375 kg		36/465 kg
Tire (tubeless)	5.60-15 4PR <sup>2)</sup> 3)		155 SR 15		5.60-15 6PR		6.00-15 L4PR <sup>4)</sup>		6.00-15 L6 PR		6.00-15 L8PR		165 SR 15		165 SR 15		165 SR 15	
Rim	4 J x 15 <sup>5)</sup>						4 1/2 J x 15						4 1/2 J x 15					
Inflation pressures in kg/cm <sup>2</sup> and (psi)	front	rear	front	rear	front	rear	front	rear	front	rear	front	rear	front	rear	front	rear	front	rear
a - up to two occupants	1.1 (16)	1.7 (24)	1.3 (18)	1.9 (27)	-	-	1.1 (16)	1.7 (24)	-	-	-	-	1.3 (18)	1.9 (27)	-	-	-	-
b - fully loaded	1.2 (17)	1.8 (26)	1.3 (18)	1.9 (27)	-	-	1.3 <sup>6)</sup> (18)	1.9 <sup>6)</sup> (27)	-	-	-	-	1.3 (18)	1.9 (27)	-	-	-	-
c - with half payload	-	-	-	-	1.2 (17)	1.8 (26)	-	-	1.2 (17)	1.8 (26)	1.2 (17)	1.8 (26)	-	-	1.3 (18)	1.9 (27)	1.3 (18)	1.9 (27)
d - with full payload	-	-	-	-	1.2 (17)	2.5 (35)	-	-	1.3 <sup>6)</sup> (18)	2.5 (35)	1.3 <sup>6)</sup> (18)	3.2 <sup>6)</sup> (45)	-	-	1.3 (18)	2.5 (35)	1.3 (18)	3.2 (45)
Wheel rim Radial run-out Lateral run-out	maximum 1.5 mm (.06) for all Types																	

- <sup>1)</sup> Up to August 1964: 460 kg (1014 lbs.)
- <sup>2)</sup> Tubeless from August 1956
- <sup>3)</sup> Model 14 from Chassis No. 117 000 001: 5.60 S 15 4PR
- <sup>4)</sup> Type 34 from Aug. 1963: 6.00 S 15 L4PR
- <sup>5)</sup> Model 14 from Chassis No. 148 469 038: 4 1/2 J x 15
- <sup>6)</sup> Up to Chassis No. 317 233 853  
Sedan, fully loaded: Front 1.2, rear 1.8  
Squareback 375 kg fully loaded: Front 1.2  
Squareback 465 kg fully loaded: Front 1.2  
Front 1.2, rear 3.0 (43)

Note: For long, high-speed trips, the pressures should be increased by 0.2 kg/cm<sup>2</sup> (3 psi)

Type .....	2								2 from August 1967								Remarks
Model .....	¾ Ton up to Ch. No. 20-117901		¾ Ton up to Ch. No. 1 222 025		¾ Ton from Ch. No. 1 222 026		1 Ton		22, 28	21, 23, 26		24	27				
Tire (tubeless) .....	5.50-16 (with tube)		6.40-15 6PR (with tube)		7.00-14 6PR				7.00-14 6PR	7.00-14 8PR		185 R x 14 with tube					
Rim .....	3.50 D x 16		4 ½ K x 15		5 JK x 14				5 JK x 14								
Inflation pressures in kg/cm <sup>2</sup> and (psi)	front	rear	front	rear	front	rear	front	rear	front	rear	front	rear	front	rear			
a - up to ¾ payload Ambulance .....	2.0 (28)	2.0	1.8 (26)	1.8	1.8	1.8	-	-	-	-	-	-	2.0	2.0			
b - up to ¾ payload .....	2.0 (28)	2.0	2.0	2.3 (33)	2.0	2.1 (30)	2.0	2.3	2.0	2.5	2.0	2.5	2.0	2.0	-	-	
c - with full payload .....	2.5 (35)	2.75 (39)	2.0	2.5	2.0	2.3	2.0	2.8 (40)	2.0	2.9 (41)	2.0	2.9	2.0	2.5	-	-	
Wheel rim Radial run-out Lateral run-out	} maximum 1.5 mm (.06)																

**BODY**  
**I. Tightening torques**

Designation	Class	Thread	mkg	lb. ft.	Remarks	
<b>a - Body (Type 1 and 3)</b>						
<b>a - When installing body:</b>						
body bolts .....	8 G	M 8	1.5-2.0	11-14	<p>1) The sub-frame securing screws must be tightened in the order shown here</p>	
body bolts .....	8 G	M 10	1.5-2.0	11-14		
<b>b - When checking:</b>						
body bolts .....	8 G	M 8	1.0-1.5	7-11		
body bolts .....	8 G	M 10	1.0-1.5	7-11		
<b>b - Body (additional for Type 3 only)</b>						
Sub-frame to frame .....	8 G	M 10	4.0-4.5	30-32		
Sub-frame to frame .....	8 G	M 8	2.0	14		
Body to sub-frame (tightened from luggage compartment) .....	8 G	M 10	4.0	30		
Rear engine support .....	5 S	M 8	1.0-1.5	7-11		
Body to front axle support .....	8 G	M 10	4.0	30		

# ELECTRICAL SYSTEM

## I. General data

Generator	Technical data and test figures are given in Test Cards P 18 and 19			
Starter	Details of distributor interchangeability are given in Technical Bulletin M/1 1967 Edition. Test figures are given in Test Cards 12, 12a - b and 17			
Distributor	Battery ignition 0.4 (.016)			
Contact breaker gap	Magneto ignition 0.3-0.4 (.012-.016)			
Magneto ignition	Magneto	a - Type 122 up to July 1965	b - Type 122 from August 1965, Type 126, 126A and as replacements for "a"	
	VW Part No. (unchanged)	122 905 705 A	122 905 705 B	
	Former Order No. (Scintilla-Vertex)	OVP 4 L 402 Z 144	OVP 4 L 402 Z 247	
	New Order No. (Bosch)	0205 040 006	0205 040 010	
Firing order	1-4-3-2			
Spark plugs				
Type <sup>2)</sup>	Heat value	Thread	Electrode gap	
Bosch W 145 T 1 Beru 145/14	145 <sup>3)</sup>	14 mm	Battery 0.6-0.7 (.024-.028)	Magneto 0.4-0.5 (.016-.020)

## II. Batteries

### a - Standard equipment

Type	1	2	3
up to Chassis No.	929 745: 6V/70 Ah	117 901: 6V/84 Ah	-
from Chassis No.	929 746: 6V/86 Ah	117 902: 6 V/77 Ah	0 000 001:
from Chassis No.	118 000 001 <sup>1)</sup> 12 V/36 Ah	217 000 001 12 V/45 Ah	317 000 001 12 V/36 Ah

### b - Checking battery

Level of acid over the plates and separators 5 mm.

If acid level indicators are fitted, top acid up to level shown.

Cell voltage (measured with a cell tester):

Charged: 2.0 volts

Discharged: 1.6 volts

or total voltage measured under load:

Cell voltage × number of cells

The difference in voltage between the cells must not exceed 0.2 volts.

State of charge	° Be	Normal		Tropical	
		Specific gravity	Acid freezes at	° Be	Specific gravity
Discharged	16°	1.12	-11°C/12.2°F	11°	1.08
Half charged	24°	1.20	-27°C/-16.6°F	18°	1.16
Fully charged	32°	1.285	-68°C/-90.0°F	27°	1.23

Remarks

<sup>1)</sup> Suppressed

<sup>2)</sup> The types given or plugs with the same values from other manufacturers

<sup>3)</sup> For Industrial Engines with magneto ignition use plugs with heat value of 175.

<sup>4)</sup> Except VW 1200

# GENERAL DATA

## I. Performance data a - Maximum speeds

	Type 1										Type 2										Type 3				
	Stan- dard Sedan 30 bhp	Model A Sedan 30 bhp	11 and 15				14				2/1200			2/1500				2/1600		1500 N + A		1500 S + 1600			
			1200 30 bhp	34 bhp	40 bhp	1500 44 bhp	1200 30 bhp	34 bhp	40 bhp	1500 44 bhp	30 bhp	34 bhp	42 bhp	3/4 ton	42 bhp/1 ton and 44 bhp	47 bhp	31,36	34	31,36	34					
Maximum speed kph (mph)	110 (68)	110 (68)	110 (68)	115 (72)	120 (75)	125 <sup>1)</sup> (78)	115 (72)	120 (75)	128 (80)	132 <sup>2)</sup> (83)	80 (50)	90 (56)	85 (53)	95 (60)	90 (56)	105 (65)	95 (60)	105 (65)	95 (60)	105 (65)	95 (60)	125 (78)	132 (83)	135 <sup>4)</sup> (84)	145 <sup>5)</sup> (90)
at an engine speed of rpm	3345	3670	3400	3870	4010	3950	3600	4040	4270	4150	3000	3700		3620	3430	3630	3280	4040	3660	3900	3530	3950	4140	4250	4560

<sup>1)</sup> up to July 1958

<sup>2)</sup> all other models

<sup>3)</sup> Type 26 with cover

<sup>4)</sup> Vehicles with Stickshift Automatic 120

<sup>5)</sup> Vehicles with Automatic Transmission 130

## b - Road speeds at maximum engine speed

		Type 1						Type 2					Remarks						
rpm		3400		3600	4000		3300	3600	3800			4000							
Gear	approx. kph (mph)	Stan- dard Sedan 30 bhp	Model A Sedan 30 bhp	all Models				2/1200		2/1500			1500	1500 S	1600				
				30 bhp	34 bhp	40 bhp	44 bhp	30 bhp	34 bhp	3/4 ton	1 ton	44 bhp							
1		25 (15.5)	24 (15)	25 (15.5)	25 (15.5)	28 (17)	30 (18)	18 (11)	20 (12)	24 (15)	21 (13)	22.5 (14)	28 (17)	31 (19)	30 (18)	<sup>1)</sup> up to Chassis No. 1161021298: 81 (50) <sup>2)</sup> from Chassis No. 469447 <sup>3)</sup> up to Chassis No. 216179668: 70 (44) <sup>4)</sup> up to Chassis No. 316316238: 81 (50) <sup>5)</sup> up to Chassis No. 316316238: 86 (53)			
2		42 (26)	44 (27)	46 (28)	46 (28)	52 (32)	55 (34)	35/34 <sup>2)</sup> (21)	38 (24)	44 (27)	39 (24)	41.5 (26)	52 (32)	58 (36)	55 (34)				
3		72 (45)	68.5 (43)	73 (45)	72 (45)	84 <sup>1)</sup> (52)	90 (56)	53/52 <sup>2)</sup> (33)	64 (40)	74 (46)	67 (42)	68 <sup>3)</sup> (42)	85 <sup>4)</sup> (53)	90 (56)	90 <sup>5)</sup> (56)				
4		112 (69)	102 (63)	110 (68)	107 (66)	120 (75)	127 (79)	80 (50)	94 (58)	110 (68)	99 (61)	104 (64)	120 (75)	133 (82)	127 (78)				

**c - Hill climbing ability on good roads**

Type 1, 31 and 34 with two occupants  
 Type 36 with half maximum load  
 Type 2 fully loaded

Gear	approx.	Type 1										Type 2						Type 3							
		Stan- dard Sedan 30 bhp	Model A Sedan 30 bhp	11/1200		11/1300	11/1500	14 and 15 1200		14 and 15/1300	14 and 15/1500	2/1200		2/1500 42 bhp		2/1600		31	1500		31	1600		36	36
				30 bhp	34 bhp	40 bhp	44 bhp	30 bhp	34 bhp	40 bhp	44 bhp	30 bhp	34 bhp	% ton	1 ton	44 bhp	47 bhp		34	375 kg		465 kg	34		
1	%	37.0	40.0	37.0	41.0	44.5	46/38 <sup>2)</sup>	34.0	39.0	42.0	45/36 <sup>2)</sup>	24/25 <sup>1)</sup>	26.0	28.0	26.0	28.0	27	45.5	45.5	40.0	38.0	48.0	45.0	41.5	39.5
2	%	20.5	20.5	18.5	21.0	23.0	24/23 <sup>2)</sup>	17.0	20.5	22.0	23/22 <sup>2)</sup>	12/13 <sup>1)</sup>	13.5	14.5	13.5	14.5	14	23.5	23.5	20.0	19.0	24.0	23.0	21.5	20.5
3	%	11.0	12.0	11.0	12.0	13.5	13/16 <sup>2)</sup>	10.5	12.0	13.0	13/15 <sup>2)</sup>	7.5	7.0	7.5	7.0	8.0	7.0	13.0	14.0	11.5	11.5	13.5	13.0	12.0	11.5
4	%	6.0	6.5	6.0	7.0	8.0	8.0	5.5	6.5	7.0	8.0	4.0	4.0	4.0	4.0	4.5	4.0	7.5	8.0	6.5	6.0	8.0	8.5	7.5	7.0
Forwards <sup>3)</sup>	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40	40	36	34	
Reverse <sup>3)</sup>	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26	26	23	22	

1) from Chassis No. 469447    2) Vehicles with Stickshift Automatic    3) Vehicles with Automatic Transmission

**d - Acceleration times (through the gears)**

	Type 1										Type 3						Remarks
	Stan- dard and A Model	30 bhp		34 bhp		40 bhp		44 bhp		1500		1500 S		1600			
		11/1200	14 and 15 1200	11 and 15/1200	14/1200	11 and 15/1300	14/1300	11 and 15/1500	14/1500	31 and 36	34	31 and 36	34	31 and 36	34		
Approx. seconds from 0 to 80 kph (0 to 50 mph)	21	21	22.5	18	18	14	14	12/15 <sup>1)</sup>	13/15 <sup>1)</sup>	15	14	13	12	12.5 <sup>2)</sup>	11.5 <sup>2)</sup>	1) Vehicles with Stickshift Automatic 2) Vehicles with Automatic Transmission: Sedan 14, Karmann Ghia 13.5	
from 0 to 100 kph (0 to 62 mph)	50	-	-	37	30	26	25	23	22	25	24	21	20	20	19		
from 80 to 100 kph (50 to 62 mph)	29	-	-	19	12	12	11	10	9	10	10	8	8	7.5	7.5		



## Performance data for vehicles with engines with recessed crown pistons (M 240)

### a - Maximum speeds

Type Model	1300		1500		2/1500	2/1600	1500	1600	
	11 + 15	14	11 + 15	14	all <sup>1)</sup>	all <sup>1)</sup>	31 + 36	31 + 36	34
Maximum speed . . . kph (mph)	115 (72)	125 (78)	120 (75)	130 (81)	100 (62)	-	120 (75)	130 (81)	135 (84)
at an engine speed of . . . rpm	3800	4150	3780	4100	3800	-	3750	4100	4250

<sup>1)</sup> except Model 26 with cover

### b - Hill climbing ability on good roads

Type 1, 31 and 34 with two occupants  
Type 36 with half maximum load  
Type 2 fully loaded

Type Model	1300		1500		2/1500	2/1600	1500			1600		
	11 + 15	14	11 + 15	14			31	36/375	36/465	31 + 34	36/375	36/465
Gear												
1	41.5	39.4	43.8	42.5	25.5	-	41.7	37.4	25.8	43.8	39.3	37.7
2	21.4	20.3	22.6	22.0	13.1	-	21.6	19.2	18.4	22.7	20.3	19.4
3	12.5	12.0	12.5	12.3	7.2	-	12.8	13.3	10.8	13.3	11.8	11.2
4	6.8	6.8	7.3	7.4	3.9	-	7.3	6.3	6.0	7.5	6.5	6.2

### c - Acceleration times (through the gears) in seconds

Type Model	1300		1500		1500	1600	
	11 + 15	14	11 + 15	14	31 + 36	31 + 36	34
from 0 to 80 kph (0 to 50 mph) . . . . .	16	16	-	-	16	14	13
from 80 to 100 kph (50 to 62 mph) . . . . .	31	29	-	-	28	24	22

### Fuel consumption

According to German Industrial Norm 70030 (Measured consumption plus 10%, vehicle with half maximum load at a constant % of maximum speed on level road).

Type Model	1300 11 + 14	1500 11 + 14	2/1500	2/1600	1500 31 + 36	1600 all
Liters per 100 km . . . . .	8.8	-	10.8	-	8.6	9.1
Miles per Imp. gallon . . . . .	32	-	26	-	33	31
Miles per US. gallon . . . . .	27	-	22	-	27	29

## II. Consumption figures

### Fuel<sup>1)</sup>

Type 1 Model Engine	1200 all Models		1300 11, 14, 15	1500 11 + 15      14	
	30 bhp	34 bhp	40 bhp	44 bhp	44 bhp
	Liters per 100 km	7.3	7.5	8.5	8.8 <sup>2)</sup>
Miles per Imp. gallon	39	38	33	32	33
Miles per US. gallon	32	30	27	26	27
<b>Oil</b>					
Liters per 1000 km	0.3 to 1.0			0.5 to 1.0	
Imp. pints per 1000 miles	0.9 to 2.8			1.4 to 2.8	
US. pints per 1000 miles	1 to 3.4			1.7 to 3.4	

### Fuel

Type 2 Model Engine	21 M 222, 26 with cover, 26 M 200, 26 M 201				all other Models				
	34 bhp	42 bhp		44 bhp	34 bhp	42 bhp		44 bhp	47 bhp
		¾ ton	1 ton			¾ ton	1 ton		
Liters per 100 km	9.5	9.7	10.0	10.0	9.2	9.5	9.7	9.7	10.4
Miles per Imp. gallon	30	29	28	28	31	30	29	29	27
Miles per US. gallon	25	24	23	23	26	25	24	24	22
<b>Oil</b>									
all Models									
Liters per 1000 km	0.5 to 1.4								
Imp. pints per 1000 miles	1.4 to 4.0								
US. pints per 1000 miles	1.7 to 4.8								

### Fuel

Type 3 Model Engine	1500				1600
	31 + 36		34		31, 36, 34
	Single carb.	Dual carb.	Single carb.	Dual carb.	
Liters per 100 km	8.4	7.8	8.3	8.0	8.9 <sup>4)</sup>
Miles per Imp. gallon	33	36	34	35	31
Miles per US. gallon	28	30	28.5	29	26.5
<b>Oil</b>					
all Models					
Liters per 1000 km	0.5 to 1.0				
Imp. pints per 1000 miles	1.4 to 2.8				
US. pints per 1000 miles	1.7 to 3.4				

<sup>1)</sup> According to German Industrial Norm 70030 (Measured consumption plus 10 %, vehicle with half maximum load at a constant % of maximum speed on level road).

<sup>2)</sup> With Stickshift Automatic: 9.3/100 km; 25 miles/US. gall.; 30.3 miles/Imp. gall.

<sup>3)</sup> With Stickshift Automatic: 9.0/100 km; 26 miles/US. gall.; 31.4 miles/Imp. gall.

<sup>4)</sup> With Automatic Transmission: 9.7/100 km; 24.2 miles/US. gall.; 29 miles/Imp. gall.

## Capacities

Designation	Type 1	Type 2	Type 3
Fuel tank .....	40 liters, including 5 liters reserve <sup>1)</sup> (10.5 US gals., 8.8 Imp. gals.)		
Crankcase .....	2.5 liters (5.3 US pints, 4.4 Imp. pints) Refill quantity 2.5 liters.		
Transmission and final drive .....	3.0 liters (6.3 US pints, 5.5 Imp. pints) Refill quantity 2.5 liters <sup>1)</sup>		
Reduction gears .....	-   0.25 liter each   - (0.5 US pint, 0.4 Imp. pint)		
Transmission and final drive Type 2, from Chassis No. 218000001 .....	3.5 liters (7.4 US pints; 6.1 Imp. pints) Refill quantity 3.5		
Stickshift Automatic Converter circuit Transmission/final drive .....	3.6 liters ATF <sup>a)</sup> (7.6 US pints; 6.3 Imp. pints) 3.0 liters, refill 3.0 liters (6.3 US pints; 5.5 Imp. pints)		
Automatic Transmission Converter and planetary gears .....	6.0 liters ATF <sup>a)</sup> , refill 3.0-4.0 liters (12.6 US pints; 11.0 Imp. pints) (6.3-8.4 US pints; 5.5-7.0 Imp. pints)		
Final drive .....	1.0 liter, refill 1.0 liter (2.1 US pints; 1.75 Imp. pints)		
Steering:			
a - Sector steering .....	0.125 liter (0.26 US pint, 0.22 Imp. pint)	-	-
b - Roller steering .....	0.16 liter <sup>a)</sup> (0.4 US pint, 0.35 Imp. pint)	-	0.16 l <sup>2)</sup>
c - Ross steering .....	-	0.25 liter <sup>a)</sup> (0.5 US pint, 0.4 Imp. pint)	-

Designation	Type 1	Type 2	Type 3
Brakes .....	0.25 liter (0.5 US pint, 0.4 Imp. pint)	0.30 liter (0.6 US pint, 0.5 Imp. pint)	0.25 l
Oil bath air cleaner (fill up to mark) .....	0.25 liter <sup>a)</sup> (0.5 US pint, 0.4 Imp. pint)	0.30 liter <sup>a)</sup> (0.6 US pint, 0.5 Imp. pint)	0.40 l <sup>a)</sup> (0.8 US pint, 0.7 Imp. pint)

- <sup>1)</sup> For Standard and Partly-synchronized Transmission: capacity 2.5 l, refill 2.0 l
- <sup>2)</sup> Only up to November 1984. Since then, filled with liquid grease
- <sup>3)</sup> Type 14/1300: 0.30 liter, Type 11/1500: 0.4 liter
- <sup>4)</sup> Type 2/1200: 0.25 liter
- <sup>5)</sup> Single-carburetor engine: 0.25 liter
- <sup>6)</sup> From August 1986: 250 g liquid grease
- <sup>7)</sup> Type 2, from Chassis No. 218000001: 60 liters
- <sup>8)</sup> ATF = Automatic Transmission Fluid

### III. Dimensions

#### Type 1 and 3

Designation	11 and 15	141-144	31	34	36	Remarks
Wheelbase	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	1) De Luxe Sedan up to Chassis No. 1 873 350 Standard Sedan up to Chassis No. 4 630 937 Type 15 up to Chassis No. 1 665 424, Type 14 up to Chassis No. 1 665 212 2) From Chassis No. 1 18 000 001, vehicles with drum brakes: 1310 mm 3) Up to Chassis No. 2 526 867 at unladen weight, from then on with full load 4) Up to Chassis No. 1 15 979 202 5) From Chassis No. 117 000 001: Vehicles with drum brakes 1358 mm. From Chassis No. 118 000 001: 1350 mm 6) Up to Chassis No. 145 979 202 7) From Chassis No. 148 000 001 8) From Chassis No. 118 000 001 9) From Chassis No. 148 469 038 10) From Chassis No. 318 000 001
Track, front	1290 1)/1305/1316 2) (50.78)/(51.38)/(51.80)	1290 1)/1305/1316 1)/1304 2) (50.78)/(51.38)/(51.80)/(51.34)	1310 (51.58)	1310 (51.58)	1310 (51.58)	
rear	1250 1)/1268 1)/1300/1350 1) (49.20)/(50.70)/(51.18)/(53.14)	1250 1)/1268 1)/1300/1350 1)/1238 1) (49.20)/(50.70)/(51.18)/(53.14)/(52.67)	1346/1350 1) (52.99)/(53.14)	1346/1350 1) (52.99)/(53.14)	1346/1350 1) (52.99)/(53.14)	
Length, without bumper guards	4070/4030 1) (160.2)/(158.66)	4140 (163.0)	4225 (166.3)	4280 (168.49)	4225 (166.3)	
with bumper guards	4060 (160.62)	4140 (163.0)	-	-	-	
Width	1550 1) (61.01)	1634 (64.32)	1640 (64.56)	1620 (63.77)	1640 (64.56)	
Height, unladen	1500 (59.05)	1330 (52.36)	1470 (57.86)	1330 (52.36)	1470 (57.86)	
Ground clearance, loaded	152/150 1) (5.98/5.90)	152 (5.98)	150 (5.90)	128/150 1) (5.43)/(5.90)	144 (5.67)	
Angle of approach	27° 1)/27° 40'/25° 1)	20° 30' 1)/24° 10'/23° 1)	24°	23°	28°	
departure	13° 30' 1)/12° 30'/15° 1)	13° 30' 1)/12° 30'/12° 1)	17°	13°	15°	

#### Type 2

Designation	Up to July 1963					from August 1963				from August 1967		Remarks	
	Up to March 1955 Models		From March 1955 Models			21, 22, 23, 28 1/2 ton/1 ton	24, 25	27	26 (except 26-200 and 26-201) 3/4 ton/1 ton	26-200/26-201 1/2 ton/1 ton	21, 22, 23, 26, 27		24
	21, 22, 23	24, 25	21, 22, 23, 28	24, 25	26								
Wheelbase	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	2400 (94.48)	1) Type 2/1500, from start of production: 1375 mm 2) From 1 Sept. 1958, approx. Chassis No. 385 000
Track, front	1356 (53.4)	1356 (53.4)	1370 1) (53.90)	1370 1) (53.90)	1370 1) (53.90)	1375 (54.1)	1375 (54.1)	1375 (54.1)	1375 (54.1)	1385 (54.5)	1385 (54.5)	1385 (54.5)	
rear	1360 (53.5)	1360 (53.5)	1360 (53.5)	1360 (53.5)	1360 (53.5)	1360 (53.5)	1360 (53.5)	1360 (53.5)	1360 (53.5)	1426 (56.2)	1426 (56.2)	1426 (56.2)	
Length, without bumper guards	4100 (161.4)	4220/4140 (166.1/163.0)	4190/4280 1) (165.0/168.5)	4220/4300 1) (166.1/169.3)	4190/4290 1) (165.0/168.7)	4280 (168.5)	4280 (168.9)	4280 (168.5)	4290 (168.9)	4290/4300 (168.9)/(169.3)	4420 (174.8)	4445 (175.0)	
Width	1700 (66.9)	1750/1710 (68.9/67.3)	1725/1750 1) (67.9/68.9)	1800 (70.9)	1710/1750 1) (67.3/68.9)	1750 (68.9)	1800 (70.9)	1750 (68.9)	1750 (68.9)	2020/1990 (79.5)/(77.9)	1765 (69.5)	1815 (71.5)	
Ground clearance, loaded	-	-	-	-	-	-	-	-	-	-	185 (7.3)	185 (7.3)	

**IV. - Short designations in technical publications from August 1968**

<b>VW1200, VW 1300 and VW 1500 models</b>	<b>Type 1</b>	<b>VW 1600 all models</b>	<b>Type 3</b>
VW 1200, all models with 1.2 liter engine	1/1200	VW 1600, all models with 1.5 liter engine	3/1500
VW 1300, all models with 1.3 liter engine	1/1300	VW 1600, all models with 1.6 liter engine	3/1600
VW 1500, all models with 1.5 liter engine	1/1500	VW 1600, all models with 1.6 liter fuel injection engine (M 236)	3/1600 E
VW 1500, all models with exhaust control (M 157 for USA only)	1/M 157	VW 1600 Automatic, all models with 1.6 liter engine	3/Automatic
VW Automatic, all models	Automatic Stickshift	VW 1600 Automatic, all models with fuel injection engine	3/E-Automatic
VW Automatic, Sedan with 1.3 liter engine	1300 Automatic Stickshift	VW 1600 Fastback Sedan	31 TL
VW Automatic, all models with 1.5 liter engine	1500 Automatic Stickshift	VW 1600 T, Fastback Sedan	31 T
VW 1200, VW 1300, VW 1500 Sedan	11/1200, 11/1300	VW 1600 L, Notchback Sedan	31 L
	11/1500	VW 1600 Notchback Sedan	31
VW 1500 Karmann Ghia models	14	VW 1600 L Karmann Ghia Coupé	34
VW 1500 Convertible	15	VW 1600 L Squareback	36 L
Micro Van	147	VW 1600 Squareback	36
		VW Squareback Van	36-265
<b>Transporter</b>			
<b>a - From August 1967</b>		<b>VW Industrial Engines</b>	
<b>Transporter, all models (1.6 liter engine)</b>	<b>Type 2</b>	VW Industrial Engine 1.2 l	122
Transporter, all models with exhaust control (M 157 for USA only)	2/M 157	VW Industrial Engine 1.5 and 1.6 l, standard flat version	124 and 124 A
Individual models	Model Code No.	VW Industrial Engine 1.5 and 1.6 l, flat version (without governor/M 999)	124 and 124 A-999
Example: Delivery Van	21	VW Industrial Engine 1.5 and 1.6 l, with vertical fan housing	126 and 126 A
Double Cab	26-16		
Micro Bus	24		
<b>b - Up to July 1967</b>			
Transporter with 1.2 liter engine	2/1200		
Transporter with 1.5 liter engine (42 and 44 bhp.)	2/1500		

The model designations and the code numbers for the Type, Model and versions are given in the 'N' workshop bulletins.

### V. Manufacturing dates for the various Types and Models

Vehicle	Output	from		to	
		Chassis No.	Date	Chassis No.	Date
Standard Sedan	30 bhp	1-0575415	December 1953	6502399	July 1964
Standard Sedan, Sedan A	30 bhp	115000001	August 1964	115979202	July 1965
De Luxe Sedan Karmann Ghia Models VW Convertible	30 bhp	1-0575415	December 1953	3192506	July 1960
		3192507	August 1960	6502399	July 1964
	34 bhp	115000001	August 1964	115979202	July 1965
1200 A	34 bhp	116000001	August 1965	1161021298	July 1966
VW 1200	34 bhp	117483306	June 1967	117844900	July 1967
		118000001	August 1967	1181016095	July 1968
		119000002	August 1968	continues	
VW 1300 Sedan Karmann Ghia Models VW Convertible	40 bhp	116000001	August 1965	1161021298	July 1966
VW 1300 A	40 bhp	117000001	August 1966	117403305	Jan. 1967
VW 1300 Sedan	40 bhp	117000001	August 1966	117844901	July 1967
		118000001	August 1967	1181016096	July 1968
		119000001	August 1968	continues	

Vehicle	Output	from		to	
		Chassis No.	Date	Chassis No.	Date
VW 1500 Sedan Karmann Ghia Models VW Convertible	44 bhp	117000001	August 1966	117844902	July 1967
		118000001	August 1967	1181016097	July 1968
		119000003	August 1968	continues	
1200	30 bhp	20-069409	December 1953	614455	May 1960
	34 bhp	614456	June 1960	1328271	July 1964
		215000001	August 1964	215036378	Sept. 1964
Transporter	42 bhp	1041014	January 1963	1328271	July 1964
		215000001	August 1964	215176339	July 1965
	44 bhp	216000001	August 1965	216179668	July 1966
217000001		August 1966	217148459	July 1967	
1600	47 bhp	218000001	August 1967	218202251	July 1968
		219000001	August 1968	continues	



**Always refer to the Workshop Bulletins  
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