

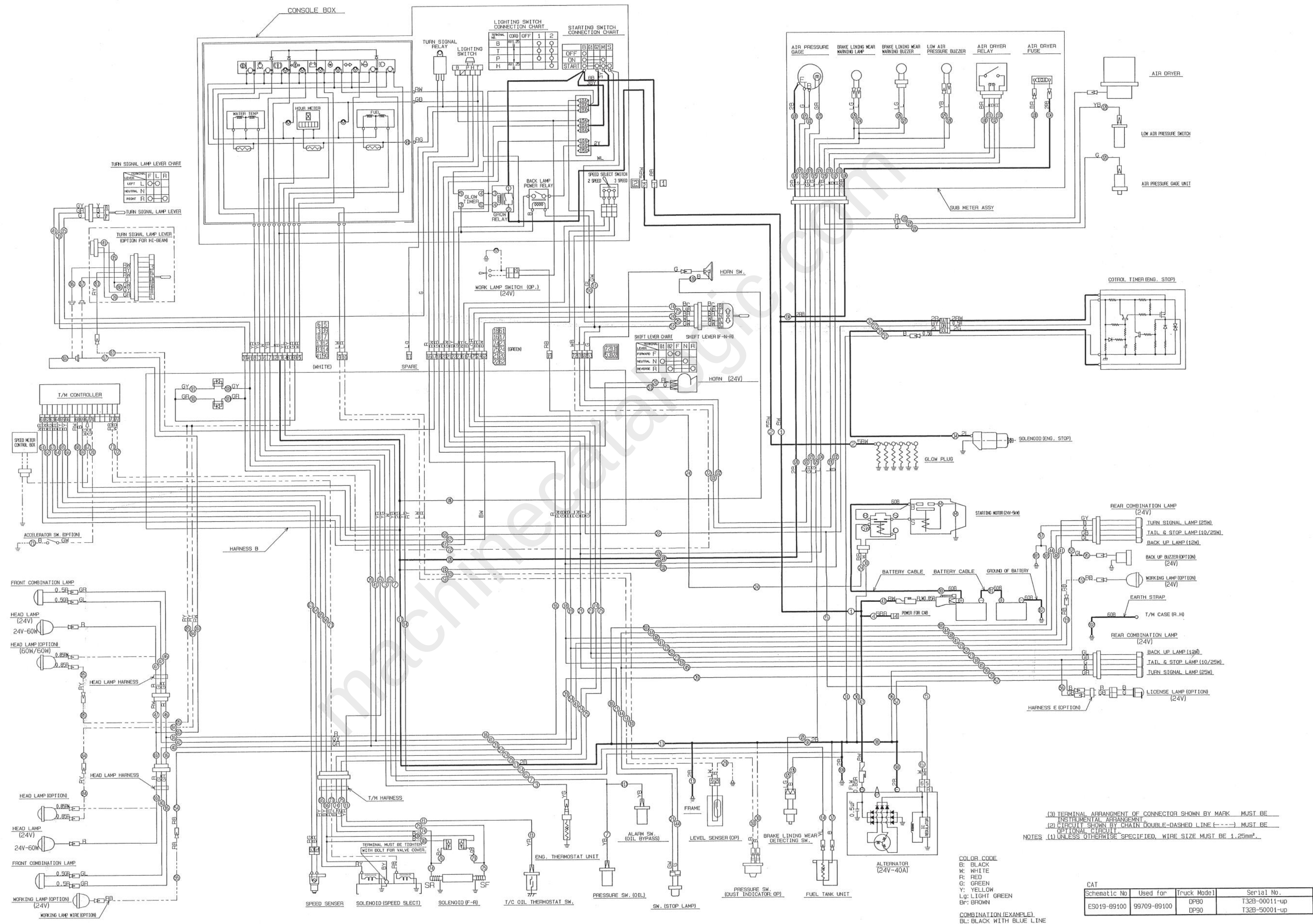


Service Manual

Chassis & Mast

DP80	T32B-00011-09999
DP90	T32B-50001-59999

Electrical System Schematic



- (b) When assembling the hub and drum assembly after replacing the parts, align the extension valve grooves in the brake drum and wheel hub.
- (c) Use liquid gasket on the mating surface of the oil deflector when installing the deflector.

Tightening torque for brake drum nuts	$359 \pm 36 \text{ N}\cdot\text{m}$ $(36.6 \pm 3.7 \text{ kgf}\cdot\text{m})$ $[265 \pm 27 \text{ lbf}\cdot\text{ft}]$
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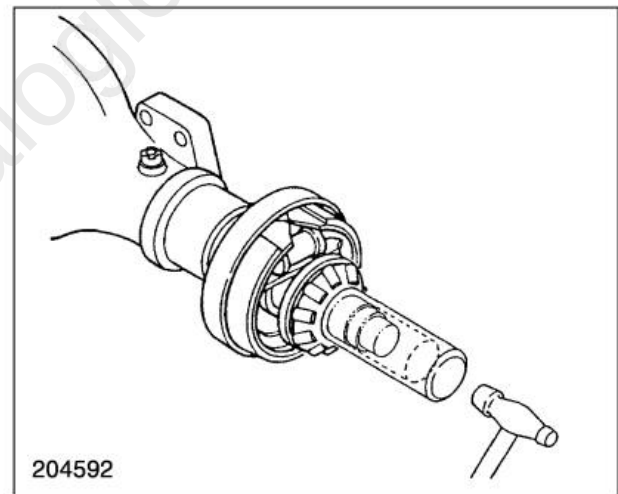
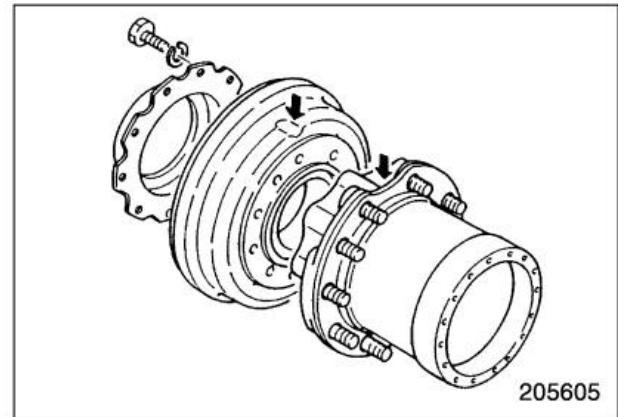
NOTE

Replace the oil seals of the front axle housing.

Suggestions for Assembly

1. Taper roller bearing (inner race) installation

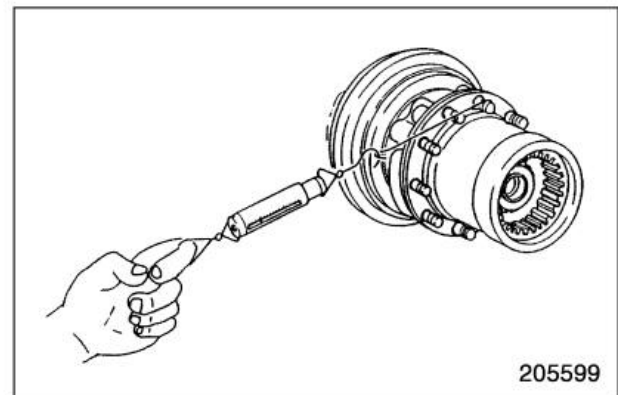
Using an installer, install the taper roller bearing inner race in position, along with the oil seal retainer.



2. Wheel hub bearing preload adjustment

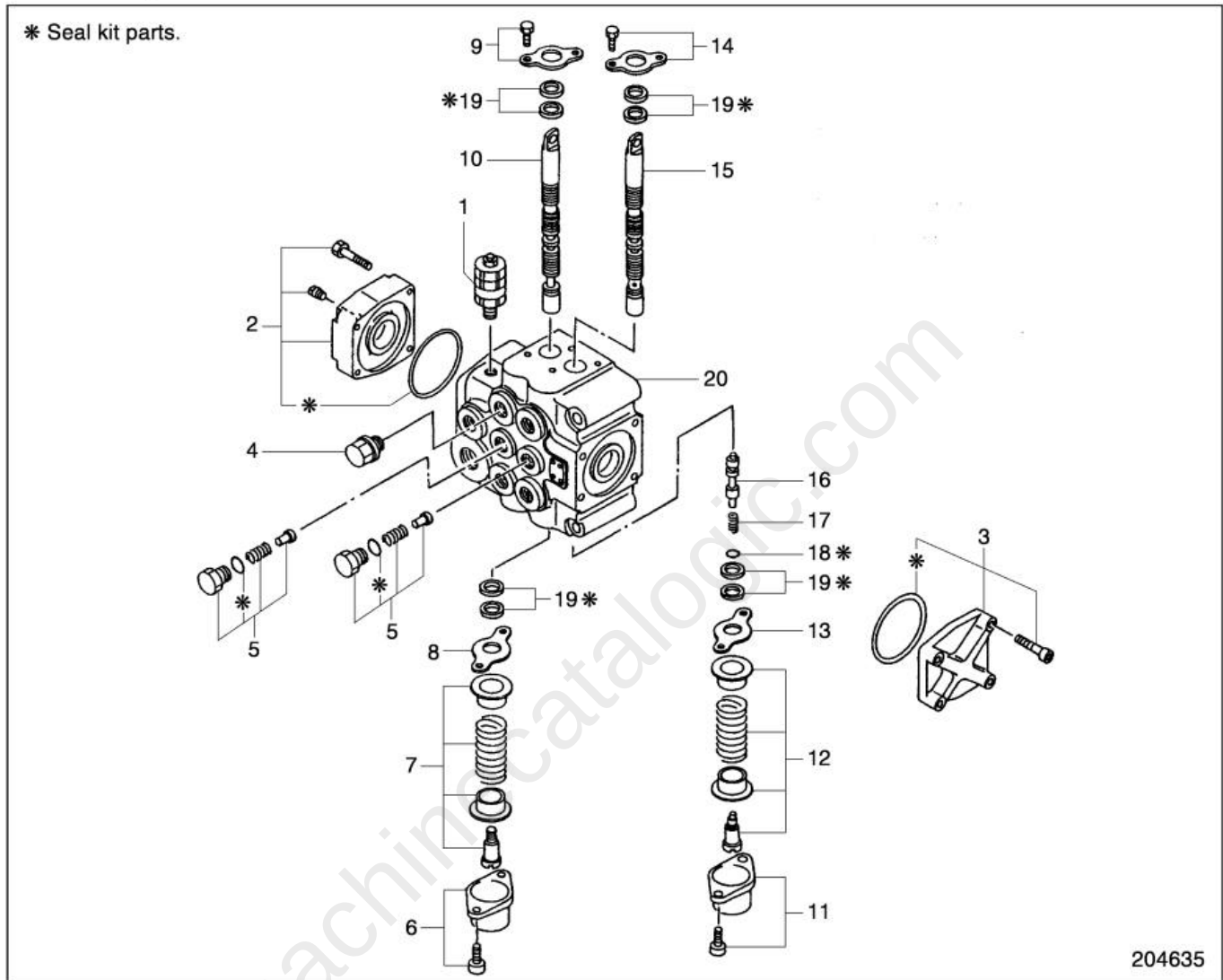
Hook a spring balancer to one of the hub bolts. Pull the scale in tangential direction and take a reading on the scale just when the hub begins to rotate. Adjust the preload by means of the nut that holds the ring gear. If the bearings have long been in service, it is advisable to aim at a value of preload in the lower half of the range.

Preload for wheel hub bearing (force applied in tangential direction)	$127 \text{ to } 167 \text{ N}$ $(13 \text{ to } 17 \text{ kgf})$ $[29 \text{ to } 38 \text{ lbf}]$
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Control Valve

Disassembly



Sequence

- | | |
|---------------------------------------|------------------------------------|
| 1. Main relief valve assembly | 11. Cap, Socket head bolts |
| 2. Cover A, Socket head bolts, O-ring | 12. Cap screw, Spring seat, Spring |
| 3. Cover B, Socket head bolts, O-ring | 13. Seal plate |
| 4. Plug assembly | 14. Wiper, Bolts |
| 5. Poppet, Spring, Plug, O-ring | 15. Tilt spool |
| 6. Cap, Socket head bolts | 16. Poppet |
| 7. Cap screw, Spring seat, Spring | 17. Spring |
| 8. Seal plate | 18. O-ring |
| 9. Wiper, Bolts | 19. Seals |
| 10. Lift spool | 20. Valve housing |

NOTE

Do not disassemble seals 19 from valve housing 20 unless they are faulty.

Inspection

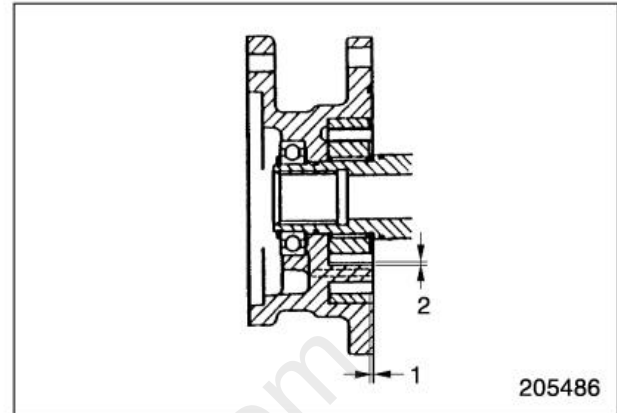
1. Oil pump

- (1) Put the internal gear and pump gear in the pump case, and measure top clearance 2.
- (2) Using a dial indicator, measure side clearance 1 between the gears and pump case.

A: Standard value B: Repair or service limit

Unit: mm (in.)

Side clearance 1	A	0.040 to 0.078 (0.00157 to 0.00307)
	B	0.09 (0.0035)
Top clearance 2	A	0.3 to 0.345 (0.0118 to 0.0136)
	B	0.35 (0.0138)



2. Stator shaft

- (1) Check the splines for wear or damage.
- (2) Check the oil passages for clogging.

3. Friction plates and mating plates

- (1) Check for sign of seizure, uneven contact, warpage or excessive wear.
- (2) Check the splines for wear or damage.

4. Clutch drums

- (1) Check the mating plate sliding surfaces for wear or damage.
- (2) Check the clutch piston sliding surfaces for wear or damage.

Suggestions for Assembly

1. Wheel cylinder installation

Apply liquid packing to the mounting face of the wheel cylinder. Put the cylinder in position on the bracket with the inlet port side face of the cylinder even with the bracket (in contact with the dust cover) and tighten the bolts to the specified torque.

Tightening torque for wheel cylinder bolts	$135 \pm 22 \text{ N}\cdot\text{m}$ ($13.75 \pm 2.25 \text{ kgf}\cdot\text{m}$) [$99 \pm 16 \text{ lbf}\cdot\text{ft}$]
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2. Initial lubrication

Apply a thin coat of the recommended grease to the following parts:

- (1) Inside surface of shoe bushings
- (2) Grooves of anchor pins
- (3) Anchor bracket surfaces in contact with adjusting cams
(Avoid over-lubrication or the linings would be soaked with grease.)

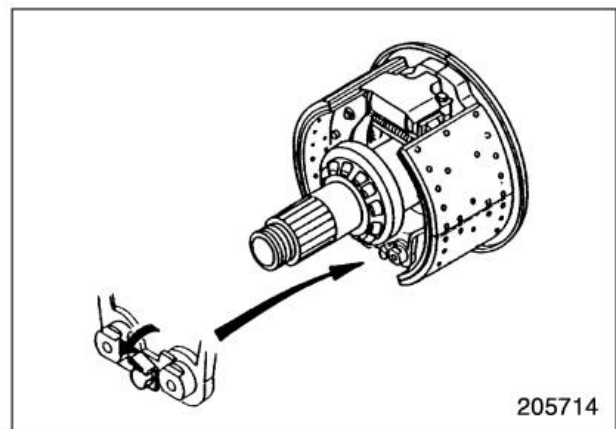
3. Shoe installation

- (1) Position the left and right adjusting cams so that the lobe lift or rise is minimum.
- (2) Install the shoes, making sure the push rods of the wheel cylinder are in the holes of the shoe webs.

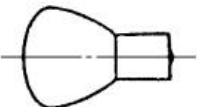
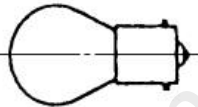
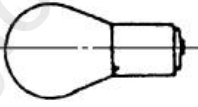
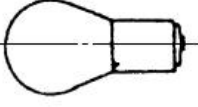
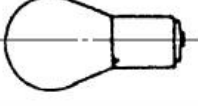
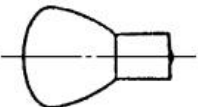
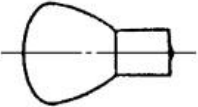
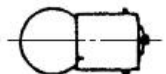
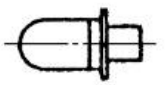
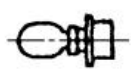
4. Lock washer installation

Tighten the bolt that holds the anchor pin lock plate to the specified torque and bend the lock washer properly.

Tightening torque for anchor pin lock plate bolt	$20 \pm 4 \text{ N}\cdot\text{m}$ ($2.0 \pm 0.4 \text{ kgf}\cdot\text{m}$) [$14.5 \pm 3 \text{ lbf}\cdot\text{ft}$]
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Lamp Bulb Specifications

Item Type of lamp		Quantity of bulbs	Color of lens	Bulb		Remarks
				For 24V system	Schematic drawing	
Headlamps		2	Frosted	60W		60/60W (option)
Combination lamps (front)	Turn signal lamps	2	Amber	25W		Standard (mounted on overhead guard)
	Clearance lamps	2	Frosted	12W		
Combination lamps (rear)	Stop and tail lamps	2	Red	10W/25W		
	Turn signal lamps	2	Amber	25W		
	Back-up lamps	2	Frosted	25W		
Working lamps (front)		2	Frosted	60W		Option
Working lamps (rear)		2	Frosted	60W		Option
License plate lamps		1	Frosted	12W		Option
Instrument panel lamps		2	Frosted	3W		For combination meter
OK monitor indicator lamps		5	Frosted	3W		

Service Data

A: Standard value B: Repair or service limit
Unit: mm (in.)

Truck Model			DP80	DP90
Item				
Forks and chains	Unevenness of two fork tips		A	5 (0.20), maximum
	Thickness of forks	A	60 (2.36)	70 (2.76)
		B	53 (2.09)	56 (2.20)
	Length of lift chain (20 links)	A	762 (30)	889 (35)
		B	785 (31)	915 (36)
	Tightening torque for nuts of lift chain anchor bolt N·m (kgf·m) [lbf·ft]		A	294 (30) [217] 392 (40) [289]
Rollers	Diameter of main roller	Size S	A	169 (6.65) 203 (7.99)
		Size M	A	170 (6.69) 205 (8.07)
		Size L	A	171 (6.73) 207 (8.15)
	Diameter of side rollers		A	58 $^{0}_{-0.1}$ (2.28 $^{0}_{-0.004}$)
Outer mast		X1	A	896 $^{+0.5}_{-1.0}$ (35.28 $^{+0.020}_{-0.039}$) 890 $^{+0.5}_{-1.0}$ (35.04 $^{+0.020}_{-0.039}$)
		X2	A	896 $^{+1.0}_{-0.5}$ (35.28 $^{+0.039}_{-0.020}$) 890 $^{+1.0}_{-0.5}$ (35.04 $^{+0.039}_{-0.020}$)
		A	A	768 ± 0.5 (30.24 ± 0.020) 754 ± 0.5 (29.69 ± 0.020)
Inner mast		Y1	A	724 $^{+1.0}_{-0.5}$ (28.50 $^{+0.039}_{-0.020}$) 704 $^{+0.5}_{-1.0}$ (27.72 $^{+0.020}_{-0.039}$)
		Y2	A	724 $^{+1.0}_{-0.5}$ (28.50 $^{+0.039}_{-0.020}$) 704 $^{+1.0}_{-0.5}$ (27.72 $^{+0.039}_{-0.020}$)
		B	A	896 ± 0.5 (35.28 ± 0.020) 890 ± 0.5 (35.04 ± 0.020)
Lift bracket and inner mast	Clearance P (over the whole lift range)		A	0.5 to 2.1 (0.020 to 0.083) 0.5 to 2.8 (0.020 to 0.110)
	Clearance K (at minimum lift height)		A	0.2 to 1.0 (0.008 to 0.039)
	Mast strip clearance L		A	0.2 to 1.0 (0.008 to 0.039)
	Lift bracket C		A	724 ± 0.5 (28.50 ± 0.020) 704 ± 0.5 (27.72 ± 0.020)
	Clearance M (over the whole lift range)		A	0.5 to 2.1 (0.020 to 0.083) 0.5 to 2.8 (0.020 to 0.110)
	Clearance N (at maximum lift height)		A	0.2 to 1.0 (0.0078 to 0.0394)
	Tightening torque for mast cap bolts N·m (kgf·m) [lbf·ft]		A	490 (50) [362]

Full Version Available

Caterpillar DP90 Forklift Service and Schematic Manual (99709-89100)

Caterpillar DP90 Forklift service manual, covers hydraulics, mast, drive unit, wiring, and engine service data. Downloadable PDF format.

VIEW THE FULL MANUAL

<https://machinecatalogic.com/caterpillar-dp90-forklift-service-and-schematic-manual-99709-89100/>