

DAIHATSU
F70,F75,F77

**Service
manual**

APPENDIX

DAIHATSU MOTOR CO., LTD.

NO.9703-FE

AP

DAIHATSU

F70, F75, F77

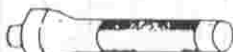
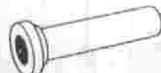
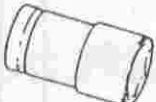
APPENDIX

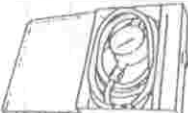
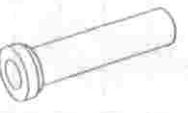
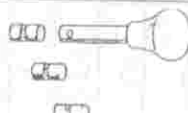
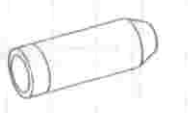
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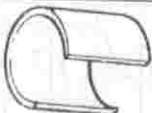
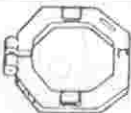
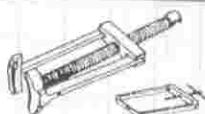
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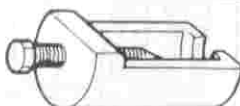
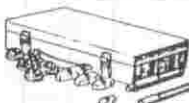
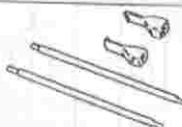
1. SSTs (Special Service Tools)

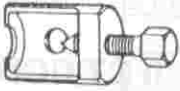
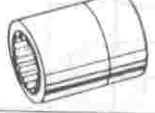
Shape	Part No. & Part Name	Section														
		P.D.I Manual	Maintenance	Engine Mechanical	Fuel System	Lubrication System	Clutch	Manual Transmission	Transfer	Propeller Shaft	Front & Rear Differential	Front Axle & Suspension	Rear Axle & Suspension	Brake System	Steering	Body
	09032-00100-000 Oil pan seal cutter			○		○										
	09201-60011-000 Valve guide bush remover & replacer			○												
	09201-87703-000 Valve stem oil seal replacer			○												
	09202-87002-000 Valve cutter remover & replacer			○												
	09210-87701-000 Flywheel holder			○												
	09213-31021-000 Crankshaft pulley puller			○												
	09214-60010-000 Crankshaft pulley gear replacer			○												
	09215-87601-000 Camshaft bearing remover & replacer			○												
	09221-87301-000 Cylinder liner remover & replacer			○												
	09221-87601-000 Piston pin remover & replacer			○												
	09222-87303-000 Connecting rod bush remover & replacer			○												
	09258-00030-000 Plug set			○	○											

Shape	Part No. & Part Name	Section														
		P.D.I Manual	Maintenance	Engine Mechanical	Fuel System	Lubrication System	Clutch	Manual Transmission	Transfer	Propeller Shaft	Front & Rear Differential	Front Axle & Suspension	Rear Axle & Suspension	Brake System	Steering	Body
	09253-87201-000 Crankshaft bearing No.1 inner race replacer			○												
	09268-87310-000 Nozzle holder wrench			○	○											
	09275-87701-000 Plunger stroke measuring tool			○	○											
	09301-20020-000 Clutch guide tool			○			○									
	09303-35011-000 Input shaft front bearing puller			○												
	09304-12012-000 Input shaft front bearing replacer			○												
	09950-20017-000 Universal puller			○	○			○			○				○	
	09217-87001-000 Piston ring compressor			○												
	09310-87302-000 Counter shaft rear bearing replacer			○				○								
	09608-87302-000 Axle hub & drive pinion bearing tool set			○					○		○					
	09308-10010-000 Oil seal puller			○							○					
	09268-87704-000 Oil cooler set bolt box wrench					○										

Shape	Part No. & Part Name	Section												
		P.D.I Manual	Maintenance	Engine Mechanical	Fuel System	Lubrication System	Clutch	Manual Transmission	Transfer	Propeller Shaft	Front & Rear Differential	Front Axle & Suspension	Rear Axle & Suspension	Brake System
	09990-87702-000 Engine oil pressure gauge					○								
	09333-00012-000 Clutch diaphragm spring aligner						○							
	09388-87702-000 Clutch diaphragm spring height gauge						○							
	09253-87202-000 (09253-87201-000) Water pump bearing anvil (Crankshaft center bearing anvil)							○	○					
	09309-87301-000 Output shaft bearing replacer							○						
	09310-87301-000 Counter shaft front bearing replacer							○						
	09312-36010-000 Input shaft remover							○						
	09339-87301-000 Shift fork shaft guide							○						
	09506-87303-000 Differential drive pinion bearing cone front replacer							○	○		○			
	09602-87301-000 Counter gear bearing puller							○	○		○			
	09956-00010-000 Tightening piece							○		○				
	09517-30010-000 Rear axle shaft oil seal replacer								○		○			

Shape	Part No. & Part Name	Section														
		P.D.I Manual	Maintenance	Engine Mechanical	Fuel System	Lubrication System	Clutch	Manual Transmission	Transfer	Propeller Shaft	Front & Rear Differential	Front Axle & Suspension	Rear Axle & Suspension	Brake System	Steering	Body
	09710-06040-000 "A" front suspension upper arm bush base								○							
	09520-87604-000 Puller universal joint								○							
	09330-00021-000 Companion flange holding tool										○					
	09401-87601-000 Differential gear case expander										○					
	09515-87601-000 Replacer oil seal										○					
	09530-87604-000 Differential drive pinion adjust gauge set										○					
	09602-87301-000 Counter gear bearing puller										○					
	09950-87701-000 Bearing remover										○		○			
	09608-20011-000 Front hub & drive pinion bearing tool set											○				
	09607-60020-000 Front hub bearing lock nut wrench											○				
	09511-87202-000 Brake drum stopper											○				
	09308-00010-000 Oil seal puller											○	○		○	

Shape	Part No. & Part Name	Section														
		P.D.I Manual	Maintenance	Engine Mechanical	Fuel System	Lubrication System	Clutch	Manual Transmission	Transfer	Propeller Shaft	Front & Rear Differential	Front Axle & Suspension	Rear Axle & Suspension	Brake System	Steering	Body
	09610-20012-000 Pitman arm puller											○				
	09521-87501-000 Rear wheel bearing puller												○			
	09515-21010-000 Rear axle shaft bearing replacer												○			
	09608-30012-000 Front hub & drive pinion bearing tool set												○			
	09608-87607-000 Leaf spring bush No. 1 remover & replacer												○			
	09608-87608-000 Leaf spring bush No. 2 remover & replacer										○	○				
	09521-87301-000 Rear wheel bearing puller												○			
	09520-00031-000 Rear axle shaft puller												○			
	09520-87601-000 Bolt with claw												○			
	09351-87601-000 Rear wheel bearing puller stopper												○			
	09921-00010-000 Spring tension tool													○		
	09611-87701-000 Tie-rod end puller														○	

Shape	Part No. & Part Name	Section												P.D.I Manual	Maintenance	Engine Mechanical	Fuel System	Lubrication System	Clutch	Manual Transmission	Transfer	Propeller Shaft	Front & Rear Differential	Front Axle & Suspension	Rear Axle & Suspension	Brake System	Steering	Body
	09610-87301-000 Pitman arm puller																											
	09617-28010-000 Worm bearing adjusting screw lock nut wrench																											
	09616-30011-000 Worm bearing adjusting screw wrench																											
	09616-00010-000 Steering pinion bearing adjusting socket																											
	09631-00030-000 No. 1 wrench																											
	09631-00040-000 No. 2 wrench																											
	09515-87201-000 Rear axle bearing outer replacer																											
	09812-00010-000 Door hinge set bolt wrench set																											

SST Number List (Numerical order)

SST	SECTION
09032-00100-000	EM, LU
09201-60011-000	EM
09201-87703-000	EM
09202-87002-000	EM
09210-87701-000	EM
09213-31021-000	EM
09214-60010-000	EM
09215-87601-000	EM
09217-87001-000	EM
09221-87301-000	EM
09221-87601-000	EM
09222-87303-000	EM
09253-87201-000	EM
09253-87202-000	MT, TR
09258-00030-000	EM, FU
09268-87310-000	EM, FU
09268-87704-000	LU
09275-87701-000	EM, FU
09301-20020-000	EM, CL
09303-35011-000	EM
09304-12012-000	EM
09308-00010-000	FS, RS, SR
09308-10010-000	EM, DF
09309-87301-000	MT
09310-87301-000	MT
09310-87302-000	EM, MT
09312-36010-000	MT
09330-00021-000	DF
09333-00012-000	CL
09339-87301-000	MT
09351-87601-000	RS
09388-87702-000	CL
09401-87601-000	DF
09506-87303-000	MT, TR, DF

SST	SECTION
09511-87202-000	FS
09515-21010-000	RS
09515-87201-000	SR
09515-87601-000	DF
09517-30010-000	TR, FS
09520-00031-000	RS
09520-87601-000	RS
09520-87604-000	PR
09521-87301-000	RS
09521-87501-000	RS
09530-87604-000	DF
09602-87301-000	MT, TR, DF
09607-60020-000	FS
09608-20011-000	FS
09608-30012-000	RS
09608-87302-000	EM, TR, DF
09608-87607-000	RS
09608-87608-000	FS, RS
09610-20012-000	FS
09610-87301-000	SR
09611-87701-000	SR
09616-00010-000	SR
09616-30011-000	SR
09617-28010-000	SR
09631-00030-000	SR
09631-00040-000	SR
09710-06040-000	TR
09812-00010-000	BO
09921-00010-000	BR
09950-20017-000	EM, FU, MT, DF, SR
09950-87701-000	DF, RS
09956-00010-000	MT, PR
09990-87702-000	LU

WRE91-A008

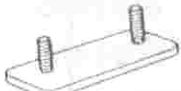
2. TIGHTENING TORQUE FOR MAIN COMPONENTS

1. When you want to find out a suitable tightening torque for a bolt, first determine the strength division of the said bolt, using the table below. Then, locate suitable tightening torque in the tightening torque table described later.
2. As for the tightening torque for nut, find out suitable tightening torque in the same way as with the paragraph 1 above, based on the mating bolt.
3. tightening torque posted in the workshop manual is a standard value for steel fasteners. it is, therefore, necessary to modify these tightening torque when you tighten fasteners made of materials other than steel. This rule also applies to such instances where bolts are undergoing heat or other stress, such as vibratory loads and so forth.

WRE91-A009

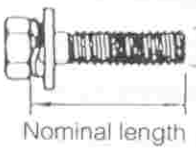
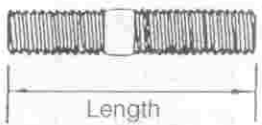
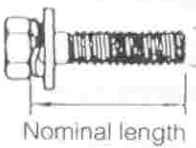
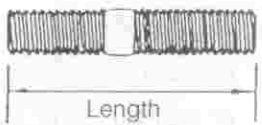
METHOD TO IDENTIFY STRENGTH DIVISION OF BOLTS

1. Identification Method by Checking Bolts Themselves

	Configuration and how to determine strength division		Strength division		Configuration and how to determine strength division		Strength division
Hexagon bolt		Bolt having an embossed or stamped figure at its head section	4 = 4T 5 = 5T 6 = 6T 7 = 7T	Welded bolt			4T
		No mark	4T	Stud bolt		No mark	4T
		Bolt having two embossed lines at its head section	5T 6T			Bolt having about 2 mm deep recess at one end or both ends	6T
		Bolt having two embossed lines at its head section	7T				6T

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2. Identification Method by Part Numbers

Hexagon Bolt Part number example 9 1 1 1 1 - 4 0 6 2 0 		Stud Bolt Part number example 9 2 1 3 2 - 4 0 6 2 0 	
			

WRE91-A011

TIGHTENING TORQUE

[Tightening Torque Table for General Standard Bolts]

Category	Nominal diameter	Pitch	Standard tightening torque kgf-m (ft-lb)	
			Standard torque	Tightening range
4T (Bolt having a mark of "4" at its head section) Example of part number (91000 - 40000)	6	1	0.47 (3.4)	0.4 - 0.7 (2.9 - 5.1)
	8	1.25	1.11 (8.0)	1.0 - 1.6 (7.2 - 11.6)
	10	1.25	2.25 (16.3)	1.9 - 3.1 (14 - 22.5)
	10	1.5	2.14 (15.5)	1.8 - 3.0 (13 - 22)
	12	1.25 (ISO)	4.40 (31.8)	3.5 - 5.5 (25 - 40)
	12	1.5	3.89 (28.1)	3.5 - 5.5 (25 - 40)
	12	1.75	3.74 (27.1)	3.0 - 5.0 (22 - 36)
	13	1.5	5.08 (36.7)	4.5 - 7.0 (33 - 51)
	14	1.5	6.33 (45.8)	5.0 - 8.0 (36 - 58)
	14	2	5.93 (42.9)	4.7 - 7.7 (34 - 56)
	16	1.5	9.57 (69.2)	7.5 - 11.0 (54 - 80)
	16	2	9.10 (65.8)	7.1 - 10.6 (51 - 77.5)
5T (Bolt having a mark of "5" at its head section) Example of part number (91000 - 50000)	6	1	0.71 (5.1)	0.6 - 0.9 (4.3 - 6.5)
	8	1.25	1.66 (12.0)	1.5 - 2.2 (11 - 16)
	10	1.25	3.37 (24.4)	3.0 - 4.5 (22 - 33)
	10	1.5	3.20 (23.1)	2.7 - 4.2 (19.5 - 30.5)
	12	1.25 (ISO)	5.84 (42.2)	5.0 - 7.0 (36 - 51)
	12	1.5	5.84 (42.2)	5.0 - 7.0 (36 - 51)
	12	1.75	5.60 (40.5)	4.8 - 6.8 (34 - 49)
	13	1.5	7.63 (55.2)	6.5 - 9.0 (47 - 65)
	14	1.5	9.50 (68.7)	7.5 - 11.0 (54 - 79.5)
	14	2	8.90 (64.4)	7.0 - 10.5 (51 - 76)
	16	1.5	14.36 (103.9)	12.0 - 17.0 (87 - 123)
	16	2	13.58 (98.2)	11.5 - 16.5 (83 - 119)
6T (Bolt having a mark of "6" at its head section) Example of part number (91000 - 60000)	6	1	0.71 (5.1)	0.6 - 0.9 (4.3 - 6.5)
	8	1.25	1.66 (12.0)	1.5 - 2.2 (11 - 16)
	10	1.25	3.37 (24.4)	3.0 - 4.5 (22 - 33)
	10	1.5	3.20 (23.1)	2.7 - 4.2 (19.5 - 30.5)
	12	1.25 (ISO)	5.84 (42.2)	5.0 - 7.0 (36 - 51)
	12	1.5	5.84 (42.2)	5.0 - 7.0 (36 - 51)
7T (Bolt having a mark of "7" at its head section) Example of part number (91000 - 70000)	12	1.75	5.61 (40.6)	4.8 - 6.8 (35 - 49)
	6	1	0.95 (6.87)	0.8 - 1.2 (5.8 - 8.7)
	8	1.25	2.20 (15.9)	2.0 - 3.0 (14.5 - 22)
	10	1.25	4.50 (32.5)	4.0 - 5.5 (29 - 40)
	10	1.5	4.30 (31.1)	3.7 - 5.2 (27 - 38)
	12	1.25 (ISO)	7.78 (56.3)	7.0 - 9.0 (51 - 65)
	12	1.5	7.78 (56.3)	7.0 - 9.0 (51 - 65)
	12	1.75	7.48 (54.1)	6.0 - 8.5 (43 - 61.5)
	13	1.5	10.17 (73.6)	8.0 - 12.0 (58 - 88)
	14	1.5	12.67 (91.6)	10.0 - 15.0 (72 - 108)
	14	2	11.86 (85.8)	9.5 - 14.0 (69 - 101)
	16	1.5	19.15 (138.5)	15.0 - 23.0 (108 - 169)
	16	2	18.11 (131.0)	14.9 - 22.0 (108 - 159)

WRE91-A012

2-1. Engine Mechanical

Tightening component		Tightening torque		
		N·m	kgf·m	ft·lb
Cylinder head	× Cylinder head cover	5.4 ± 1.5	0.55 ± 0.15	4.0 ± 1.1
	× Intake manifold	36.8 ± 7.4	3.75 ± 0.75	27.1 ± 5.4
	× Exhaust manifold	46.6 ± 7.4	4.75 ± 0.75	34.4 ± 5.4
	× Glow plug	12.8 ± 2.9	1.30 ± 0.30	9.4 ± 2.2
	× Injector pipe bracket	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
	× Water temperature sender	22.1 ± 2.5	2.25 ± 0.25	16.3 ± 1.8
Cylinder block	× Cylinder head (wet)	117.7 ± 9.8	12.00 ± 1.00	86.8 ± 7.2
	× Crankshaft bearing cap (wet)	103.0 ± 6.9	10.50 ± 0.70	75.9 ± 5.1
	× Push rod cover	9.3 ± 2.5	0.95 ± 0.25	6.9 ± 1.8
	× Oil pan	9.3 ± 2.5	0.95 ± 0.25	6.9 ± 1.8
	× Engine mounting bracket (front)	36.8 ± 7.4	3.75 ± 0.75	27.1 ± 5.4
	× Camshaft retainer × belt case	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
	× Oil hose No.1	17.2 ± 2.5	1.75 ± 0.25	12.7 ± 1.8
	× Oil hose No.2	22.1 ± 2.5	2.25 ± 0.25	16.3 ± 1.8
	× Oil pump inlet pipe	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
	× Oil pump outlet pipe	44.1 ± 7.4	4.50 ± 0.75	32.5 ± 5.4
	× Idle shaft (wet)	34.3 ± 4.9	3.50 ± 0.50	25.3 ± 3.6
	× Injection pump	18.1 ± 3.2	1.85 ± 0.35	13.4 ± 2.5
	× Timing belt cover	12.8 ± 2.9	1.30 ± 0.30	9.4 ± 2.2
	× Oil pump inlet pipe	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
	× Oil pump outlet pipe	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
	× Oil pump relief plug	39.2 ± 4.9	4.00 ± 0.50	28.9 ± 3.6
	× Oil filter bracket	36.8 ± 7.4	3.75 ± 0.75	27.1 ± 5.4
Connecting rod	× Connecting rod cap (wet)	68.6 ± 4.9	7.00 ± 0.50	50.6 ± 3.6
Crankshaft	× Flywheel (wet)	125.0 ± 12.3	12.75 ± 1.25	92.3 ± 9.0
Crankshaft	× Crankshaft pulley (wet)	215.7 ± 19.6	22.00 ± 2.00	159.1 ± 14.5
Camshaft	× Camshaft pulley	41.7 ± 7.4	4.25 ± 0.75	30.8 ± 5.4
Rocker arm	× Adjusting screw (wet)	19.6 ± 2.9	2.00 ± 0.30	14.5 ± 2.2
Valve rocker shaft	× Valve rocker support	5.9 ± 1.0	0.60 ± 0.10	4.3 ± 0.7
Oil filter bracket	× T/C oil inlet pipe	12.8 ± 2.9	1.30 ± 0.30	9.4 ± 2.2
Oil filter bracket	× Oil cooler	49.0 ± 9.8	5.00 ± 1.00	36.2 ± 7.2
Oil filter bracket	× Oil pressure valve	39.2 ± 4.9	4.00 ± 0.50	28.9 ± 3.6
T/C	× T/C oil outlet pipe	7.4 ± 1.5	0.75 ± 0.15	5.4 ± 1.1
Oil filter	× Oil filter bracket	19.6 ± 2.0	2.00 ± 0.20	14.5 ± 1.5

TIGHTENING TORQUE

Tightening component		Tightening torque		
		N-m	kgf-m	ft-lb
Injection pump	× Injection pump drive pulley	83.4 ± 4.9	8.50 ± 0.50	61.5 ± 3.6
	× Injection pipe	24.5 ± 4.9	2.50 ± 0.50	18.1 ± 3.6
	× Delivery valve holder	49.0 ± 4.9	5.00 ± 0.50	36.2 ± 3.6
	× Nozzle leakage No.2	36.8 ± 2.5	3.75 ± 0.25	27.1 ± 1.8
	× Union (fuel return)	24.5 ± 4.9	2.50 ± 0.50	18.1 ± 3.6
	× Union	24.5 ± 4.9	2.50 ± 0.50	18.1 ± 3.6
	× Distributive head bolt	17.2 ± 2.9	1.75 ± 0.30	12.7 ± 2.2
	× Screw assembly overflow	7.4 ± 1.5	0.75 ± 0.15	5.4 ± 1.1
Nozzle holder	× Cylinder head	68.6 ± 9.8	7.00 ± 1.00	50.6 ± 7.2
	× Injection pipe	24.5 ± 4.9	2.50 ± 0.50	18.1 ± 3.6
	× Nozzle leakage No.1	44.1 ± 4.9	4.50 ± 0.50	32.5 ± 3.6
Alternator	× Alternator bracket	36.8 ± 7.4	3.75 ± 0.75	27.1 ± 5.4
Vacuum pump	× Oil hose No.1	17.2 ± 2.5	1.75 ± 0.25	12.7 ± 1.8
	× Oil hose No.2	22.1 ± 2.5	2.25 ± 0.25	16.3 ± 1.8
	× Union	22.1 ± 2.5	2.25 ± 0.25	16.3 ± 1.8
Alternator	× Adjusting bar	29.4 ± 5.9	3.00 ± 0.60	21.7 ± 4.3
Oil pan	× Drain plug	34.3 ± 4.9	3.50 ± 0.50	25.3 ± 3.6
T/C	× Exhaust manifold	24.5 ± 4.9	2.50 ± 0.50	36.2 ± 3.6
	× Outlet elbow	24.5 ± 4.9	2.50 ± 0.50	36.2 ± 3.6
Glow plug	× Glow plug connector	1.5 - 2.9	0.15 - 0.30	1.1 - 2.2
Crankshaft pulley	× Crankshaft pulley No.2	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
Radiator		9.8 ± 15.7	1.0 ± 1.6	7.2 ± 11.6
Radiator	× Fan shroud	5.4 ± 1.5	0.55 ± 1.5	4.0 ± 1.1
Exhaust manifold	× Exhaust manifold cover	12.7 ± 2.9	1.3 ± 0.3	9.4 ± 2.2
Air cleaner		12.7 ± 2.9	1.3 ± 0.3	9.4 ± 2.2
Inter cooler		18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
Fuel filter flange		18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
	× Fuel filter	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
	× Union	36.8 ± 7.4	3.75 ± 0.75	27.2 ± 5.4
Glow plug connector		0.15 - 0.29	0.015 - 0.030	0.11 - 0.22
Clamp injection pipe		24.5 ± 4.9	2.50 ± 0.50	18.1 ± 3.6
Oil pressure switch		32.4 ± 10.8	3.30 ± 1.10	23.9 ± 8.0

WRE91-A013

2-2. Fuel System

Tightening component	Tightening torque		
	N·m	kgf·m	ft·lb
Cylinder head × Nozzle holder	68.6 ± 9.8	7.00 ± 1.00	50.6 ± 7.2
Cylinder head × Injection pipe bracket	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
Cylinder block × Injection pump	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
Injection pump × Injection pump drive pulley	83.4 ± 4.9	8.50 ± 0.50	61.5 ± 3.6
Injection pump × Injection pipe	24.5 ± 4.9	2.5 ± 0.50	18.1 ± 3.6
Injection pump × Delivery valve holder	49.0 ± 4.9	5.00 ± 0.50	36.2 ± 3.6
Injection pump × Nozzle leakage No. 2	36.8 ± 2.5	3.75 ± 0.25	27.1 ± 1.8
Injection pump × Union fuel return	24.5 ± 4.9	2.50 ± 0.50	18.1 ± 3.6
Injection pump × Union fuel return	24.5 ± 4.9	2.50 ± 0.50	18.1 ± 3.6
Injection pump × Distributive head bolt	17.2 ± 2.9	1.75 ± 0.3	12.7 ± 2.2
Injection pump × Screw assembly over flow	7.4 ± 1.5	0.75 ± 0.15	5.4 ± 1.1
Nozzle holder × Injection pipe	24.5 ± 4.9	2.50 ± 0.5	18.1 ± 3.6
Nozzle holder × Nozzle leakage No. 1	44.1 ± 4.9	4.50 ± 0.50	32.5 ± 3.6

WRE91-A014

2-3. Cooling System

Tightening component	Tightening torque		
	N·m	kgf·m	ft·lb
Cylinder head × Water temperature sender gauge	22.1 ± 2.5	2.25 ± 0.25	16.3 ± 1.8
Cylinder block × Water inlet	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
Cylinder block × Water pump	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5

WRE91-A015

TIGHTENING TORQUE

2-4. Lubrication System

Tightening component	Tightening torque		
	N-m	kgf-m	ft-lb
Cylinder Block × Oil pan	9.3 ± 2.5	0.95 ± 0.25	6.9 ± 1.8
Cylinder Block × Oil hose No. 1	17.2 ± 2.5	1.75 ± 0.25	12.7 ± 1.8
Cylinder Block × Oil hose No. 2	22.1 ± 2.5	2.25 ± 0.25	16.3 ± 1.8
Cylinder Block × Oil pump inlet pipe	18.1 ± 3.4	1.85 ± 0.35	13.4 ± 2.5
Cylinder Block × Oil pump outlet pipe	44.1 ± 7.4	4.50 ± 0.75	32.5 ± 5.4
Cylinder Block × Oil pump relief plug	39.2 ± 4.9	4.00 ± 0.50	28.9 ± 3.6
Oil filter bracket × Oil cooler	49.0 ± 9.8	5.00 ± 1.00	36.2 ± 7.2
Oil filter bracket × Oil pressure valve	39.2 ± 4.9	4.00 ± 0.50	28.9 ± 3.6
Oil filter bracket × Oil filter	19.6 ± 2.0	2.00 ± 0.20	14.5 ± 1.5
Oil filter bracket × T/C oil inlet pipe	12.8 ± 2.9	1.30 ± 0.30	9.4 ± 2.2
T/C × T/C oil outlet pipe	7.4 ± 1.5	0.75 ± 0.15	5.4 ± 1.1
Vacuum pump × Oil hose No. 1	17.2 ± 2.5	1.75 ± 0.25	12.7 ± 1.8
Vacuum pump × Oil hose No. 2	22.1 ± 2.5	2.25 ± 0.25	16.3 ± 1.8
Oil pan × Drain plug	34.3 ± 4.9	3.50 ± 0.50	25.3 ± 3.6

WRE91-A016

2-5. Clutch

Tightening components	Tightening torque		
	N-m	Kgf-m	ft-lb
Clutch cover × Flywheel	14.7 - 24.5	1.5 - 2.5	10.8 - 18.1
Clutch height adjusting bolt × Brake pedal bracket	17.7 - 29.4	1.8 - 3.0	13.0 - 21.7
Clutch pedal × Shaft bolt	14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Clutch housing × Support S/A release fork	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2

WRE91-A017

2-6. Manual Transmission

TRANSMISSION CASE COVER (5-Speed)

Tightening components	Tightening torque		
	N-m	kgf-m	ft-lb
Transmission case cover x Transmission	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Transmission position detect switch x Transmission case cover	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Back-up lamp switch x Transmission case cover	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
5th shift arm pivot x Transmission case cover	34.3 - 44.1	3.5 - 4.5	25.3 - 32.5
Shift lever housing dust cover x Transmission case cover	5.9 - 8.8	0.6 - 0.9	4.3 - 6.5
Reverse restrict pin holder x Transmission case cover	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Shift arm pivot (for reverse) x Transmission case cover	39.2 - 58.8	4.0 - 6.0	28.9 - 43.4
Shift arm pivot (for 5th) x Transmission case cover	34.3 - 44.1	3.5 - 4.5	25.3 - 32.5

WRE91-A018

TRANSMISSION CASE COVER (4-Speed)

Tightening components	Tightening torque		
	N-m	kgf-m	ft-lb
Transmission case cover x Transmission	29.4 - 44.0	3.0 - 5.0	21.7 - 36.2
Back-up lamp switch x Transmission case cover	29.4 - 44.0	3.0 - 5.0	21.7 - 36.2
Shift lever housing dust cover x Transmission case cover	5.9 - 8.8	0.6 - 0.9	4.3 - 6.5
Reverse restrict pin holder x Transmission case cover	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Shift arm pivot (for reverse) x Transmission case cover	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2

WRE91-A019

TRANSMISSION (5-Speed)

Tightening components	Tightening torque		
	N-m	kgf-m	ft-lb
Clutch housing x Engine	49.0 - 78.5	5.0 - 8.0	36.2 - 57.9
Clutch housing x Rear end plate	14.7 - 24.5	1.5 - 2.5	10.8 - 18.1
Clutch housing x Transmission case	49.0 - 68.6	5.0 - 7.0	36.2 - 50.6
Transmission x Exhaust support pipe bracket	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Crossmember No. 2 x Chassis frame	49.0 - 68.6	5.0 - 7.0	36.2 - 50.6
Crossmember No. 2 x Transmission	49.0 - 68.6	5.0 - 7.0	36.2 - 50.6
Shift lever boot x Front floor panel	9.8 - 15.6	1.0 - 1.6	7.2 - 11.6
Transmission case x Drain, filler plugs	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Output shaft x Lock nut	226.0 - 264.0	23.0 - 27.0	166.0 - 194.4
Counter gear shaft x Lock nut	98.0 - 137.0	10.0 - 14.0	72.0 - 101.0
Transmission case x Reverse idler stopper	17.7 - 29.4	1.8 - 3.0	13.0 - 21.7
Transmission rear mounting bracket x Chassis frame	49.0 - 68.6	5.0 - 7.0	36.2 - 50.6

WRE91-A020

TIGHTENING TORQUE

2-7. Transfer

5-SPEED

Tightening components	Tightening torque		
	N·m	kgf·m	ft·lb
Transfer shift lever retainer subassembly x Transfer case	9.8 - 15.6	1.0 - 1.6	7.2 - 11.6
Bolt (for transfer high & low shift fork shaft) x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Bolt x Vacuum switching valve No. 2	3.9 - 6.8	0.4 - 0.7	2.9 - 5.1
Transfer input shaft x Lock nut	226.0 - 264.0	23.0 - 27.0	166.0 - 194.4
Transmission position detect switch x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Transfer position detect switch x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Transmission position switch assembly x Diaphragm cylinder cover	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Diaphragm cylinder cover x Output shaft bearing front retainer	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Output shaft bearing front retainer x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Bolt (for transfer front drive shift fork shaft) x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Output shaft bearing retainer front x Output shaft bearing front retainer	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Transfer output front shaft x Lock nut	98.0 - 137.0	10.0 - 14.0	72.0 - 101.0
Transfer output rear shaft x Lock nut	98.0 - 137.0	10.0 - 14.0	72.0 - 101.0
Output shaft bearing rear retainer x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Output shaft bearing rear retainer x Speedometer sleeve lock plate	5.9 - 8.8	0.6 - 0.9	4.3 - 6.5

WRE91-A021

4-SPEED

Tightening components	Tightening torque		
	N·m	kgf·m	ft·lb
Transfer shift lever retainer subassembly x Transfer case	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Transfer position detect switch x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Filler & drain plug x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Transfer case cover No. 1 x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Bolt (for transfer front drive shift fork shaft) x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Transfer output front shaft x Lock nut	98.0 - 137.2	10.0 - 14.0	72.0 - 101.0
Output shaft bearing front retainer x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Output shaft bearing rear retainer x Transfer case	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Transfer output rear shaft x Lock nut	98.0 - 137.2	10.0 - 14.0	72.0 - 101.0
Output shaft bearing rear retainer x Speedometer sleeve lock plate	5.9 - 8.8	0.6 - 0.9	4.3 - 6.5

WRE91-A022

TIGHTENING TORQUE

2-8. Propeller Shaft

Tightening components	Tightening torque		
	N-m	kgf-m	ft-lb
Front propeller shaft x Differential companion flange	58.8 - 78.5	6.0 - 8.0	43.4 - 57.9
Rear propeller shaft x Differential companion flange	58.8 - 78.5	6.0 - 8.0	43.4 - 57.9

WRE91-A023

2-9. Front & Rear Differential

FRONT

Tightening Components	Tightening Torque		
	N-m	kgf-m	ft-lb
Front axle housing cover S/A x Filler plug	39.2 - 58.8	4.0 - 6.0	28.9 - 43.4
Front axle housing cover S/A x Front axle housing	17.7 - 23.5	1.8 - 2.4	13.0 - 17.4
Front axle housing x Drain plug	39.2 - 58.8	4.0 - 6.0	28.9 - 43.4
Front axle housing x Bearing cap	78.5 - 118.0	8.0 - 12.0	57.9 - 87.0
Differential case S/A x Ring gear (w/wet condition)	88.3 - 103.0	9.0 - 10.5	65.1 - 75.9
Differential case x Differential case cover	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Drive pinion x Lock nut	196.0 - 245.0	20.0 - 25.0	145.0 - 180.0

WRE91-A024

REAR

Tightening Components	Tightening Torque		
	N-m	kgf-m	ft-lb
Rear axle housing cover S/A x Filler plug	39.2 - 58.8	4.0 - 6.0	28.9 - 43.4
Rear axle housing cover S/A x Rear axle housing	17.7 - 23.5	1.8 - 2.4	13.0 - 17.4
Rear axle housing x Drain plug	39.2 - 58.8	4.0 - 6.0	28.9 - 43.4
Rear axle housing x Bearing cap	78.5 - 118.0	8.0 - 12.0	57.9 - 87.0
Differential case S/A x Ring gear (w/wet condition)	88.3 - 103.0	9.0 - 10.5	65.1 - 75.9
Differential case x Differential case cover	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Drive pinion x Lock nut	196.0 - 245.0	20.0 - 25.0	145.0 - 180.0

WRE91-A025

TIGHTENING TORQUE

2-10. Front Axle & Suspension

Tightening component		N-m	kgf-m	ft-lb
Tie-rod x adjusting nut	Temporarily tightening	19.6 - 29.4	2.0 - 3.0	14.5 - 21.7
	Final tightening	118 - 167	12.0 - 17.0	87 - 123
Knuckle stopper bolt lock nut		39.2 - 53.9	4.0 - 5.5	28.9 - 39.8
Front axle hub x Front disc		53.9 - 73.5	5.5 - 7.5	39.8 - 54.2
Front axle bearing lock nut, lock x Lock nut (Torx® T20)		4.9 - 8.8	0.5 - 0.9	3.6 - 6.5
Axle outer shaft flange x Front axle hub (wet)		58.8 - 68.6	6.0 - 7.0	43.4 - 50.6
Free wheel hub assembly x Front axle hub (wet)		58.8 - 68.6	6.0 - 7.0	43.4 - 50.6
Brake drum (Automatic locking hub) x Lock nut (Torx® T20)		4.9 - 8.8	0.5 - 0.9	3.6 - 6.5
Brake mounting support x Steering knuckle		68.6 - 88.3	7.0 - 9.0	50.6 - 65.1
Free wheel hub cover x Free wheel locking hub		7.8 - 11.8	0.8 - 1.2	5.8 - 8.7
Bolt with plate washer (Automatic locking hub) x Drive shaft		14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Oil seal cover plate x Steering knuckle		9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Steering knuckle bearing cap x Steering knuckle		17.7 - 29.4	1.8 - 3.0	13.0 - 21.7
Disc brake dust cover x Steering nut		39.2 - 53.9	4.0 - 5.0	28.9 - 39.8
Lateral control rod x Frame		128 - 157	13.0 - 16.0	94 - 116
Lateral control rod x Front axle		49 - 78	5.0 - 8.0	36.2 - 57.9
Stabilizer x Front axle		29.4 - 44.1	3.0 - 4.5	21.7 - 32.5
Stabilizer link sub assembly x Stabilizer bracket cover		18.6 - 30.4	1.9 - 3.1	13.7 - 22.4
Stabilizer link sub assembly x Frame		29.4 - 44.1	3.0 - 4.5	21.7 - 32.5
Front shock absorber x Frame		18.6 - 30.4	1.9 - 3.1	13.7 - 22.4
Front shock absorber x Front spring seat		34.3 - 53.9	3.5 - 5.5	25.3 - 39.8
Front shock absorber x Actuator bracket		18.6 - 30.4	1.9 - 3.1	13.7 - 22.4
Absorber control actuator bracket x Control actuator		2.0 - 2.9	0.2 - 0.3	1.4 - 2.2
Front spring bumper x Frame		14.7 - 21.6	1.5 - 2.3	10.8 - 15.9
U bolt x Spring seat		58.8 - 78.5	6.0 - 8.0	43.4 - 57.9
Front spring x Frame		177 - 216	18.0 - 22.0	130 - 159
Front spring x Shackle		177 - 216	18.0 - 22.0	130 - 159
Shackle x Frame		29.4 - 44.1	3.0 - 4.5	21.7 - 32.5

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2-11. Rear Axle & Suspension

Tightening component		N-m	kgf-m	ft-lb
Rear axle housing × Brake backing plate		39.2 - 53.9	4.0 - 5.5	28.9 - 39.8
Rear axle housing × Rear axle bearing case		39.2 - 53.9	4.0 - 5.5	28.9 - 39.8
U bolt seat × Shock absorber	F70, F75	34.3 - 53.9	3.5 - 5.5	25.3 - 39.8
	F77	18.6 - 30.4	1.9 - 3.1	13.7 - 22.4
Shock absorber × Frame	F70, F75	18.6 - 30.4	1.9 - 3.1	13.7 - 22.4
	F77	34.3 - 53.9	3.5 - 5.5	25.3 - 39.8
Shock absorber × Three-stage actuator bracket		18.6 - 30.4	1.9 - 3.1	13.7 - 22.4
Three-stage actuator × Three-stage actuator bracket		2.0 - 2.9	0.2 - 0.3	2.2 - 2.9
Spring seat × "U" bolt	F70, F75	58.8 - 78.5	6.0 - 8.0	43.4 - 57.9
	F77	108 - 137	11.0 - 14.0	80.0 - 101.0
Spring × Frame	Front side	F70, F75	118 - 137	12.0 - 14.0
		F77	118 - 157	12.0 - 16.0
	Shackle side	F70, F75	68.6 - 88.3	7.0 - 9.0
		F77	118 - 167	12.0 - 17.0

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TIGHTENING TORQUE

2-12. Brake System

Tightening component	N·m	kgf·m	ft·lb
Flare nut	12.7 - 17.7	1.3 - 1.8	9.4 - 13.0
Air bleeder plug	8.8 - 12.7	0.9 - 1.3	6.5 - 9.4
Stop lamp switch	17.7 - 29.4	1.8 - 3.0	13.0 - 21.7
Clevis lock nut (Brake pedal)	12.7 ± 2.6	1.3 ± 0.2	9.4 ± 1.9
Brake pedal attaching bolt & nut	14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Master cylinder × Master cylinder reservoir sub-assembly	5.4 - 6.9	0.55 - 0.70	4.0 - 5.1
Master cylinder set bolt	6.9 - 10.8	0.7 - 1.1	5.1 - 8.0
Brake booster × Master cylinder	10.2 - 15.3	1.04 - 1.56	7.52 - 11.3
Master cylinder × Flare nut	12.7 - 17.7	1.3 - 1.8	9.4 - 13.0
Brake booster adjust nut	20.4 - 30.6	2.08 - 3.12	15.1 - 22.5
Brake booster × Dash panel (pedal bracket)	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Brake caliper × Brake mounting support	31.4 - 41.2	3.2 - 4.2	23.1 - 30.4
Steering knuckle × Brake mounting support	68.6 - 88.3	7.0 - 9.0	50.6 - 65.1
Brake caliper × Brake house	19.6 - 26.5	2.0 - 2.7	14.5 - 19.5
Rear wheel cylinder × Brake backing plate	7.8 - 11.8	0.8 - 1.2	5.0 - 8.7
Rear wheel cylinder × Flare nut	12.7 - 17.7	1.3 - 1.8	9.4 - 13.0
Brake shoe × Automatic adjusting lever pin	2.55 - 4.9	0.26 - 0.5	1.88 - 3.62
Parking brake shoe strut × Screw	2.6 - 3.9	0.26 - 0.4	1.88 - 2.9
Wheel × Rear axle shaft	88.3 - 118	9.0 - 12.0	65.1 - 87.0
Parking brake control handle assembly × Floor panel	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Brake plunger × Lock nut	3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
P valve × Dash panel	5.9 - 9.8	0.6 - 1.0	4.3 - 7.2
P valve × Flare nut	12.7 - 17.7	1.3 - 1.8	9.4 - 13.0
P&B valve × Dash panel	5.9 - 9.8	0.6 - 1.0	4.3 - 7.2
P&B valve × Flare nut	12.7 - 17.7	1.3 - 1.8	9.4 - 13.0
L.S.P.V. × Bracket	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Load sensing spring × Bracket	14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Load sensing spring × Spring shackle No. 1	14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Spring shackle No. 1 × Spring shackle No. 2	18.6 - 30.4	1.9 - 3.1	13.7 - 22.4
Spring shackle No. 2 × Shackle bracket No. 1	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6

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2-13. Steering

Tightening component		N·m	kgf·m	ft·lb
Steering gear box × Check plug		2.9 - 4.9	0.3 - 0.5	2.2 - 3.6
Steering gear box × Hydraulic tube (flare nut)		39.2 - 49.0	4.0 - 5.0	28.9 - 36.2
Steering wheel × Steering shaft		29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Steering column tube × Brace		14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Steering column hole cover × Floor panel		3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
Steering shaft universal joint × Intermediate shaft		24.5 - 34.3	2.5 - 3.5	18.1 - 25.3
Steering column tube × Steering column hole cover		3.6 - 6.9	0.4 - 0.7	2.7 - 5.1
Flexible coupling × Flexible coupling yoke		14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Steering shaft universal joint × Steering shaft		24.5 - 34.3	2.5 - 3.5	18.1 - 25.3
Flexible coupling yoke × Steering gear box		16.7 - 21.6	1.7 - 2.2	12.3 - 15.9
Flexible coupling yoke × Intermediate shaft		16.7 - 21.6	1.7 - 2.2	12.3 - 15.9
Tie rod end subassembly × Steering knuckle		49.0 - 88.3	5.0 - 9.0	36.2 - 65.1
Tie rod end subassembly × Steering relay rod		68.6 - 137	7.0 - 14.0	50.6 - 101
Steering relay rod × Pitman arm		68.6 - 137	7.0 - 14.0	50.6 - 101
Steering relay rod × Shimmy damper		73.5 - 103	7.5 - 10.5	54.2 - 75.9
Shimmy damper × Frame		73.5 - 103	7.5 - 10.5	54.2 - 75.9
Pitman arm × Steering gear box		147 - 196	15 - 20	109 - 145
End cover × Steering gear box		44.1 - 53.9	4.5 - 5.5	32.5 - 39.8
Sector shaft adjusting screw lock nut		19.6 - 34.3	2.0 - 3.5	14.5 - 25.3
Steering guide clamp screw (Power steering gear box)		2.0 - 3.9	0.2 - 0.4	1.4 - 2.9
Valve housing attaching nuts (Power steering gear box)		39.2 - 39.8	4.0 - 5.5	28.9 - 53.9
Worm shaft adjusting screw lock nut		49.0	5.0	36.2
Steering gear box × Frame		73.5 - 103	7.5 - 10.5	54.2 - 75.9
Vane pump front housing × Rear housing		43.1 - 53.9	4.4 - 5.5	31.8 - 39.8
Vane pump pressure port union		58.8 - 78.5	6.0 - 8.0	43.4 - 57.9
Suction port union × Vane pump rear housing		9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Vane pump shaft × Vane pump pulley		34.3 - 53.0	3.5 - 5.4	25.3 - 39.1
Vane pump × Pressure tube		39.2 - 49.0	4.0 - 5.0	28.9 - 36.2
Vane pump bracket × Cylinder block	M8 M10	8.34 - 20.1 17.7 - 4.2	0.85 - 2.05 1.8 - 4.2	6.15 - 14.8 13.0 - 30.4
Vane pump × Adjusting bar				
Vane pump × Vane pump bracket		37.3 - 44.1	3.8 - 4.5	27.5 - 32.5

WRE91-A029

SERVICE SPECIFICATIONS

3. SERVICE SPECIFICATIONS

3-1. The Engine Proper

NOTE:

- The entry figures are those values at a temperature of 20°C.

Cylinder liner outer diameter × Cylinder block bore diameter

mm

Combination number	Item	Cylinder liner outer diameter	Cylinder block bore diameter	Interference
1		96.025 - 96.040	96.000 - 96.015	0.01 - 0.04
2		96.040 - 96.055	96.015 - 96.030	0.01 - 0.04
3		96.055 - 96.070	96.030 - 96.045	0.01 - 0.04

WRE91-A031

Cylinder liner inner diameter × Piston outer diameter (DL-42)

mm

Combination alphabetical letter	Item	Cylinder liner inner diameter	Piston outer diameter
A		92.02 - 92.03	91.95 - 91.96
B		92.01 - 92.02	91.94 - 91.95
C		92.00 - 92.01	91.93 - 91.94

WRE91-A032

Cylinder liner inner diameter × Piston outer diameter (DL-52)

mm

Combination alphabetical letter	Item	Cylinder liner inner diameter	Piston outer diameter
A		92.02 - 92.03	91.94 - 91.95
B		92.01 - 92.02	91.93 - 91.94
C		92.00 - 92.01	91.92 - 91.93

WRE91-A033

Cylinder block × Crankshaft × Crankshaft bearing

mm

Combination number	Item	Cylinder block main journal inner diameter	Crankshaft bearing thickness	Crankshaft main journal outer diameter
No. 1, 5 Journal	1	72.000 - 72.010	1.995 - 2.000 [Brown]	67.960 - 67.975
	2	72.010 - 72.020	2.000 - 2.005 [Black]	
No. 2, 3, 4 Journal	1	72.000 - 72.010	1.995 - 2.000 [Brown]	67.955 - 67.970
	2	72.010 - 72.020	2.000 - 2.005 [Black]	

WRE91-A034

Connecting rod large end × Crankshaft × Connecting rod bearing mm

Combination No.	Connecting rod large end inner diameter	Crankshaft crankpin diameter	Connecting rod bearing thickness
1	58.000 - 58.010	54.975 - 54.990	1.485 - 1.490 [Blown]
2	58.010 - 58.020		1.490 - 1.495 [Black]

WRE91-A035

Piston pin × Connecting rod small end × Piston pin hole mm

Piston pin outer diameter	Connecting rod small end inner diameter	Piston pin hole inner diameter
27.993 - 28.000	28.005 - 28.020	27.985 - 27.995

WRE91-A036

Valve lifter × Cylinder block mm

Valve lifter outer diameter	Cylinder block valve lifter inner diameter
23.972 - 23.985	24.000 - 24.021

WRE91-A037

Valve stem × Valve guide bush mm

	Valve stem outer diameter	Valve guide bush inner diameter
Intake valve	8.968 - 8.984	9.01 - 9.03
Exhaust valve	8.934 - 8.950	9.01 - 9.03

WRE91-A038

Valve rocker shaft × Valve rocker arm mm

Valve rocker shaft outer diameter	Valve rocker arm inner diameter
18.472 - 18.493	18.512 - 18.533

WRE91-A039

Connecting rod × Crankshaft mm

Connecting rod large end thickness	Crankshaft pin journal thickness
33.90 - 33.95	34.10 - 34.15

WRE91-A040

Pre combustion chamber × Cylinder head mm

Pre combustion chamber outer diameter	Cylinder head pre combustion chamber inner diameter	Interference
37.030 - 37.045	37.000 - 37.030	0 - 0.045

WRE91-A041

Valve guide bush × Cylinder head mm

Valve guide bush outer diameter	Cylinder head valve guide bush inner diameter	Interference
14.035 - 14.053	14.000 - 14.018	0.018 - 0.053

WRE91-A042

SERVICE SPECIFICATIONS

Camshaft bearing × Cylinder block

mm

	Camshaft bearing outer diameter	Cylinder block Camshaft bearing inner diameter	Interference
No. 1	50.675 - 50.715	50.600 - 50.625	0.050 - 0.115
No. 2	50.375 - 50.415	50.300 - 50.325	0.050 - 0.115
No. 3	50.075 - 50.115	50.000 - 50.025	0.050 - 0.115
No. 4	49.775 - 49.815	49.700 - 49.725	0.050 - 0.115
No. 5	50.075 - 50.115	50.000 - 50.025	0.050 - 0.115

WRE91-A043

Valve guide bush × Valve stem oil seal

mm

Valve guide bush outer diameter	Valve stem oil seal inner diameter	Interference
14.023 - 14.041	13.91 - 13.99	0.024 - 0.131

WRE91-A044

Valve rocker shaft × Valve rocker support

mm

Valve rocker shaft outer diameter	Valve rocker support inner diameter No. 1, 2, 3, 4
18.472 - 18.493	18.500 - 18.521

WRE91-A045

Camshaft × Camshaft bearing

mm

	Camshaft journal outer diameter	Camshaft bearing inner diameter
No. 1	46.559 - 46.575	46.600 - 46.625
No. 2	46.259 - 46.275	46.300 - 46.325
No. 3	45.969 - 45.975	46.000 - 45.025
No. 4	45.659 - 45.675	45.700 - 45.725
No. 5	45.359 - 45.375	45.400 - 45.425

WRE91-A046

Piston ring × Piston (DL-42)

mm

	Piston ring thickness	Piston ring groove thickness
Compression ring No. 1	2.47 - 2.49	2.55 - 2.57
Compression ring No. 2	1.97 - 1.99	2.03 - 2.05
Oil ring	3.97 - 3.99	4.01 - 4.03

WRE91-A047

Piston ring × Piston (DL-52)

mm

	Piston ring thickness	Piston ring groove thickness
Compression ring No. 1	7° Keystone ring	7° Keystone ring
Compression ring No. 2	1.97 - 1.99	2.06 - 2.08
Oil ring	3.97 - 3.99	4.01 - 4.03

WRE91-A048

Connecting rod × Connecting rod small end bush

Connecting rod small end inner diameter	Connecting rod small end bush outer diameter	Interference
31.070 - 31.110	31.000 - 31.025	0.045 - 0.110

WRE91-A049

Cylinder liner × Cylinder block upper gasket surface

Cylinder liner flange section thickness	Depth of cylinder block flange section	Amount of protrusion
3.01 - 3.04	2.92 - 3.00	0.01 - 0.12

WRE91-A050

Valve × Cylinder head lower gasket surface

	Valve recession amount
Intake valve	1.00 - 1.70
Exhaust valve	1.00 - 1.70

WRE91-A051

Camshaft × Camshaft timing belt pulley

Camshaft outer diameter	Camshaft timing belt pulley inner diameter	Interference
28.008 - 28.021	28.000 - 28.021	-0.013 - 0.021

WRE91-A052

Precombustion chamber × Cylinder head lower gasket surface

Precombustion chamber flange height	Depth of cylinder head section	Amount of protrusion
6.000 - 6.005	5.950 - 0	0 - 0.100

WRE91-A053

Cylinder Head

Cylinder head lower gasket surface distortion			mm	0.1
Manifold gasket surface distortion			mm	0.2
Valve seat	Seat width	mm	Intake	1.4
			Exhaust	1.4
	Correction angle	°	Intake	15, 45, 75
			Exhaust	15, 45, 75
Guide bush striking temperature			°C	Normal temperature

WRE91-A054

SERVICE SPECIFICATIONS

Valve Spring

Item		Specified value	Allowable limit
Free length	mm	46.0	43.7
Length installed	mm	40.1	—
Tension as installed	N(kgf)	264.8 (27.0)	225.6 (23.0)
Out-of-squareness	mm	—	1.6

WRE91-A055

Valve Lifter, Push Rod

Item		Specified Value	Allowable limit
Valve lifter oil clearance	mm	0.015 - 0.049	0.1
Push rod bend	mm	—	0.4

WRE91-A056

Valve Rocker Arm & Shaft

Item		Specified value	Allowable limit
Oil clearance	mm	0.019 - 0.061	0.1

WRE91-A057

Valve Guid Bush

Protrusion from cylinder head (IN & EX)	mm	16.0
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WRE91-A058

Valve

Item			Specified value	Allowable limit
Stem oil clearance	mm	Intake	0.026 - 0.062	0.10
		Exhaust	0.044 - 0.096	0.12
Head stock thickness	mm	Intake	0.90 - 1.30	0.5
		Exhaust	0.90 - 1.30	0.5

WRE91-A059

Camshaft & Bearing

Item			Specified value	Allowable limit
Run-out	mm		—	0.05
Thrust clearance	mm		0.10 - 0.19	0.30
Bearing oil clearance	mm	No. 1 to No. 5	0.025 - 0.066	0.10
Cam lobe height	mm	Intake	37.767	1.0
		Exhaust	37.767	1.0

WRE91-A060

Valve Rocker Arm & Shaft

Item		Specified value	Allowable limit
Top gasket surface distortion	mm	—	0.1
Cylinder liner	Wear	mm	0.15
	Out-of roundness, taper	mm	0.02
	Protrusion	mm	0.01 - 0.12
	Pressing force	N (kgf)	24518 (2500)

WRE91-A061

Connecting Rod

Item		Specified value	Allowable limit
Big end thrust clearance	mm	0.15 - 0.25	0.30
Bearing oil clearance	mm	0.030 - 0.065	0.15
Piston pin oil clearance	mm	0.005 - 0.027	0.05
Bend limit	mm	—	0.05
Twist limit	mm	—	0.05

WRE91-A062

Crankshaft

Item			Specified value	Allowable limit
Run-out		mm	—	0.05
Thrust clearance		mm	0.050 - 0.159	0.25
Journal uneven wear or taper		mm	—	0.015
Journal diameter [U/S finished diameter] mm	STD	No. 1, 5	67.960 - 67.975	—
		No. 2, 3, 4	67.955 - 67.970	
	U/S 0.25	No. 1, 5	68.210 - 68.225	—
		No. 2, 3, 4	68.205 - 68.220	
	U/S 0.50	No. 1, 5	68.460 - 68.475	—
		No. 2, 3, 4	68.455 - 68.470	
	U/S 0.75	No. 1, 5	68.710 - 68.725	—
		No. 2, 3, 4	68.705 - 68.720	
	U/S 1.00	No. 1, 5	68.960 - 68.975	—
		No. 2, 3, 4	68.955 - 68.970	
Stem oil clearance	mm	No. 1, 5	0.025 - 0.060	0.15
		No. 2, 3, 4	0.030 - 0.065	
Crankpin diameter [U/S finished diameter] mm	STD		54.975 - 54.990	—
	U/S 0.25		54.725 - 54.740	—
	U/S 0.50		54.475 - 54.490	—
	U/S 0.75		54.225 - 54.240	—
	U/S 1.00		53.975 - 53.990	—

WRE91-A063

SERVICE SPECIFICATIONS

Flywheel

Item	Specified value	Allowable limit
Run-out mm	—	0.2

WRE91-A064

Intake, Exhaust Manifold

Item	Specified value	Allowable limit
Gasket surface distortion mm	Intake — Exhaust —	0.4 0.4

WRE91-A065

Piston, Piston Ring

Item	Specified value	Allowable limit
Piston mm	STD 91.93 - 91.96 O/S 1.00 92.93 - 92.96	— —
Piston oil clearance mm	DL-42 0.060 - 0.080 DL-52 0.070 - 0.090	0.12 0.12
Piston ring end gap mm	No. 1 0.35 - 0.50 No. 2 0.30 - 0.45 OIL 0.30 - 0.50	— — —
Piston ring side clearance mm	No. 1 DL-42 0.06 - 0.10 DL-52 7° Keystone ring No. 2 DL-42 0.04 - 0.08 DL-52 0.07 - 0.11 OIL 0.02 - 0.06	— — — — —
Piston pin installing temperature °C	60 - 70	—

WRE91-A066

Camshaft timing pulley, Crankshaft timing pulley, Injection timing pulley

Item	Specified value	Allowable limit
Timing pulley diameter mm	Camshaft timing pulley 119.95 - 120.07 Crankshaft timing pulley 59.37 - 59.47 Injection pump timing pulley 119.904 - 120.044	119.90 59.30 119.85

WRE91-A067

Oil pump

Item	Specified value	Allowable limit
Relief valve opening pressure kPa (kgf/cm ²)	441.3 - 539.4 (4.5 - 5.5)	—
Side clearance mm	0.03 - 0.085	0.15
Body clearance mm	0.1 - 0.16	0.40

WRE91-A068

Radiator

Item		Specified value	Allowable limit
Radiator cap relief valve opening pressure	kPa (kgf/cm ²)	73.6 - 103.0 (0.75 - 1.05)	58.8 (0.60)
Radiator leak test pressure	kPa (kgf/cm ²)	117.7 (1.2)	—

WRE91-A069

Water pump

Item		Specified value	Allowable limit
Bearing installing temperature	°C	80 - 90	—
Clearance between body and rotor	mm	0.5	—

WRE91-A070

Thermostat

Item		Specified value	Allowable limit
Valve opening temperature (Start to open at)	°C	80 - 84 (Cold area spec. 86 - 90)	62
Valve full opening temperature	°C	95 (Cold area spec.: 100)	—
Valve opening travel	mm	10	6.0

WRE91-A071

Waste gate valve, Turbo indicator lamp

Item	Specified value
Checking turbo indicator lamp	When pressure exceeds 23.5 kPa (0.34 kgf/cm ²) Turbo indicator lamp goes on. When pressure is below 19.6 kPa (0.20 kgf/cm ²) Turbo indicator lamp goes off.
Checking operation of waste gate valve	Shaft stroke: About 2 mm (With a pressure of 89.2 kPa (0.91 kgf/cm ²) applied)
Checking supercharging pressure (Running test)	58.9 - 83.4 kPa (0.55 - 0.85 kgf/cm ²)/at 3400 rpm

WRE91-A072

Starter

Item	Specified value
Motor type	12V type
Nominal output	2.2 (Cold area spec.: 170)
No-load characteristics	Voltage V 11.5
	Current A 120 (Cold area spec.: 2.5)
	Revolution speed rpm Not less than 4000

WRE91-A073

SERVICE SPECIFICATIONS

Alternator

Item	Specified value
Type	12V type
Maximum output	45 A
Output revolution speed	rpm Not more than 3500

WRE91-A074

Alternator Regulator

Item	Specified value
Regulating voltage	V 13.8 - 14.8
Voltage relay actuating voltage	V 4.0 - 5.8

WRE91-A075

Injection Nozzle, Nozzle Holder

Item	Specified value	Allowable limit
Nozzle opening pressure	kPa (kgf/cm ²) 10297 - 11278 (105 - 115)	—
Adjusting shim thickness (For adjusting nozzle opening pressure)	20 sizes in 0.05 mm (0.002 inch) increment	

WRE91-A076

INJECTION PUMP

			DL-42		DL-52	
			STD	OPT	General	Austria, Switzerland
Pump specifications	Plunger diameter	mm	9	9	9	9
	Cam lift	mm	2.2	2.2	2.2	2.2
	Suction return amount	mm ³	40	40	37.5	37.5
	Injection order		A B C D	A B C D	A B C D	A B C D
	Governor specifications		All speeds	All speeds	All speeds	All speeds
Characteristics	Overflow amount	l/h/rpm	21 - 47/1900	21 - 47/1900	17 - 37/1700	17 - 37/1700
	Injection amount	Increase amount during starting period	mm ² /St./rpm	66 - 85/100	66 - 85/100	66 - 85/100
		End of increase effect	mm ³ /St./rpm	41.5 - 50.5/400	41.5 - 50.5/400	50 - 58/350
		Full load	mm ³ /St./rpm	42.15 - 43.65/1100	39.25 - 40.75/1100	65.75 - 67.75/1100
				38 - 43/500	35.1 - 40.1/500	65.75 - 67.75/1100
				44 - 49/1450	41.1 - 46.1/1450	65.75 - 67.75/1100
				40.5 - 44.5/1900	38.6 - 43.6/1900	65.75 - 67.75/1100
	Governor	High-speed side	mm ³ /St./rpm	16.5 - 24.5/2250	17.5 - 23.5/2250	*17.75 - 27.75/2250
				24.5 - 32.5/2100	35 - 43/2100	56.5 - 64.5/1800
				2 or less/2600	2 or less/2450	2 or less/2500
	Low-speed side			6.5 - 11.5/350	6.5 - 11.5/350	*26.5 - 11.5/350
				2 or less/500	2 or less/500	2 or less/500
				0 - 1.0/700	0 - 0.98/700	*10.7 - 1.7/700
	Timer	mm/rpm		2.0 - 3.0/1100	1.85 - 1.85/1100	2.2 - 3.2/1100
				3.7 - 4.7/1450	3.5 - 4.5/1450	4.1 - 5.1/1500
				5.7 - 6.5/2250	6.16 - 6.95/2250	4.1 - 4.9/1600
	Altitude compensator (N = 1100 rpm with lever positioned at full stroke position)	mm ³ /St./kPa (mmHg)		38.5 - 41/94.6 (710)	—	—
				33.8 - 37.8/82.7 (620)	—	—
				30.3 - 33.7/70.7 (530)	—	—
	Boost compensator (Np = 1100 rpm)	mm/kPa (mmHg)		—	42.7 - 49.7/0	42.7 - 49.7/0
				—	51.2 - 55.2/24.0 (180)	51.2 - 55.2/24.0 (180)
				—	55.6 - 59.6/33.3 (250)	55.6 - 59.6/33.3 (250)
				—	65.75 - 67.25/66.7 (500)	65.75 - 67.25/66.7 (500)
	Load sensing timer	mm/mm ³ /St.		—	—	1.53 - 2.53/50
				—	—	3.38 - 4.38/Full
	Automatic cold start device	mm/°C		—	—	2.05/-10
				—	—	0.6 - 0.9/25
				—	—	0/45

*1: Characteristics when diaphragm pressure = 66.7 kPa (500 mmHg)

*2: Characteristics when diaphragm pressure = 0 kPa (0 mmHg)

SERVICE SPECIFICATIONS

3-2. Fuel System

		DL-42	DL-52
Fuel tank capacity	dm ³	60	60
Injection pump	Type	Bosch VE type	←
	Injection timing	1° BTDC (High altitude compensator: 3° BTDC)	1° BTDC
	Plunger diameter	mm	9.0
	Cam lift	2.2	2.2
	Governor type	Centrifugal type	Centrifugal type
	Timer type	Hydraulic pressure type	Hydraulic pressure type
Injection Nozzle or injector	Nozzle retainer type	Screwed type	Screwed type
	Nozzle type	Throttle type	Throttle type
	Injection pressure	kPa (kgf/cm ²)	10,788 ± 980 (110 ± 10)
Fuel filter	Type	Paper filter type	Paper filter type
	Filtering area	m ²	0.4
	Rated flow rate	dm ³ /min	1.2
	Sedimentor alarm water level capacity	80	80
	Sedimentor maximum capacity	150	150

WRE91-A078

3-3. Cooling System

Coolant capacity [Excluding reserve tank]		10.5 l (with heater) 9.8 l (without heater)
Radiator cap	Relief valve opening pressure	73.5 - 103.0 kPa (0.75 - 1.05 kgf/cm ²)
Thermostat	Valve opening temperature Standard specifications Cold area specifications	82 ± 2 C° 88 ± 2 C°
	Valve lift Standard specifications Cold area specifications	10 mm or more at 95°C 10 mm or more at 100°C

WRE91-A079

3-4. Lubrication System

Engine oil capacity			
Whole amount			
When only oil is changed		Full level	5.8 dm ³
		Low level	4.8 dm ³
When oil and filter are changed			6.4 dm ³
Oil pump	Compression spring free length		57 mm
	Body clearance		0.20 - 0.28 mm
	Tip clearance		0.16 - 0.24 mm
	Side clearance		0.035 - 0.085 mm
	Oil pressure	Idling	147 - 196 kPa (1.5 - 2.0 kgf/cm ²)
		2200 rpm	294 - 392 kPa (3.0 - 4.0 kgf/cm ²)

WRE91-A080

3-5. Clutch

Unit: mm

Item		Specified value	Allowable value	Remarks
Clutch disc	Rivet depth	—	0.3	Remaining lining stock
	Runout	—	1.0	Longitudinal runout
		—	0.7	Lateral runout
Clutch cover	Variation in height diaphragm spring	—	0.8	
Clutch pedal	Height	221 ⁺⁶ 221±3	—	RHD LHD
	Free travel	18 - 27	—	RHD, LHD

WRE91-A081

SERVICE SPECIFICATIONS

3-6. Manual Transmission

Unit: mm

			Specified value	Allowable limit	Remarks
Clearance between each gears and synchronizer rings			1.3 - 1.7	0.8	Using the filler gage
Contact width	Reverse gear		$7^{+0}_{-0.058}$	7.3	Using the micro meter
	Transmission hub sleeve No. 1, No. 2		$7^{+0}_{-0.058}$	7.3	
Contact width of each synchronizer ring and synchromesh shifting key	1st gear		8.4 ± 1	8.5	Using the vernier caliper gage
	Except 1st gear		11.0 ± 1	11.1	
Height of synchromesh shifting key		1st & 2nd gear	6 ± 0.15	5.6	Using the vernier caliper gage
		3rd, 4th & 5th gear	5.8 ± 0.15	5.4	
Thickness	1st gear thrust washer		4 ± 0.1	3.85	
Backlash	1st gear		0.06 - 0.20	0.25	
	2nd gear		0.06 - 0.20	↑	
	3rd gear & 4th gear		0.06 - 0.20	↑	
	5th gear		0.06 - 0.20	↑	
Thrust clearance	1st gear		0.11 - 0.29	0.35	
	2nd gear		0.10 - 0.30	0.35	
	3rd gear		0.13 - 0.57	0.60	
	5th gear		0.12 - 0.28	0.35	

WRE91-A082

3-7. Transfer

5-SPEED

Unit: mm

			Specified value	Allowable limit	Remarks
Thickness	Transfer input gear thrust washer		4 ± 0.05	3.9	
Contact width section	Transfer high & low shift fork		$7^{+0.15}_{-0.2}$	6.3	
	Transfer high & low clutch hub		$7^{+0.058}_{+0}$	7.3	
Diameter	Outer	Transfer high & low shift fork shaft	$16^{+0.025}_{-0.040}$	15.07	
	Inner	Transfer high & low shift fork	$16^{+0.027}_{+0}$	16.0	
Diameter	Outer	Transfer output rear shaft	$72.5^{+0.10}_{-0.17}$	72.3	
	Bore	Hub sleeve	$72.5^{+0.2}_{+0}$	72.7	
Contact width section		Transfer front drive shift fork	$7^{+0.1}_{-0.2}$	6.3	
		Hub sleeve	$7^{+0.058}_{+0}$	7.3	
Diameter	Outer	Transfer front drive shift fork shaft	$16^{+0.025}_{-0.040}$	15.06	
	Inner	Transfer front drive shift fork	$16^{+0.027}_{+0}$	16.03	

WRE91-A083

4-SPEED

Unit: mm

			Specified value	Allowable limit	Remarks
Diameter	Outer	Transfer output rear shaft	$72.5^{+0.10}_{-0.17}$	72.3	
	Bore	Hub sleeve	$72.5^{+0.2}_{+0}$	72.7	
Contact width section		Transfer front drive shift fork	$7^{+0.36}_{-0.46}$	6.0	
		Hub sleeve (for high & low clutch hub)	$7^{+0.058}_{+0}$	7.3	
Diameter	Outer	Transfer front drive shift fork shaft	$16^{+0.016}_{-0.043}$	15.95	
	Inner	Transfer front drive shift fork	$16^{+0.024}_{+0.005}$	16.03	
Contact width section		Transfer high & low shift fork	$7^{+0.15}_{-0.20}$	6.3	
		Hub sleeve	$7^{+0.058}_{+0}$	7.3	
Diameter	Outer	Transfer high & low shift fork shaft	$16^{+0.025}_{-0.040}$	15.06	
	Inner	Transfer high & low shift fork	$16^{+0.024}_{+0.006}$	16.03	
		Transfer gear shift head	$16^{+0.059}_{+0.015}$	16.06	

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3-8. Propeller Shaft

Unit: mm

Item		Specified value	Allowable limit	Remarks
Propeller shaft (runout)		—	0.5	Front, rear
Yoke (Inner diameters)	Sleeve	$28.0^{+0}_{-0.021}$	—	Using an inner dial gauge
	Flange	$28.0^{+0}_{-0.021}$	—	
Universal joint spider (Starting torque)		0.05 - 1.47 N·m (0.005 - 0.15 kgf·m)	—	Using a spring scale or the like

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SERVICE SPECIFICATIONS

3-9. Front & Rear Differential

FRONT

Unit: mm

Item		Specified value	Allowable limit	Remarks
Ring gear runout		—	0.1	
Backlash	Ring gear	0.10 - 0.20	—	
	Pinion gear x Side gear	0.05 - 0.25	—	
Preload	Total	New bearing	0.89 - 2.35 N·m (9.0 - 24.0 kgf-cm)	—
		Bearing reused	0.89 - 2.35 N·m (9.0 - 24.0 kgf-cm)	—
	Drive pinion	New bearing	0.06 - 1.96 N·m (7.0 - 20.0 kgf-cm)	—
		Bearing reused	0.06 - 1.96 N·m (7.0 - 20.0 kgf-cm)	—

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REAR

Unit: mm

Item			Specified value	Allowable limit	Remarks
Ring gear runout			—	0.1	
Backlash		Ring gear	0.10 - 0.20	—	
		Side gear	0.05 - 0.25	—	
Preload	Total	New bearing	0.89 - 2.35 N·m (9.0 - 24.0 kgf-cm)	—	
		Bearing reused	0.89 - 2.35 N·m (9.0 - 24.0 kgf-cm)	—	
	Drive pinion	New bearing	0.69 - 1.96 N·m (7.0 - 20.0 kgf-cm)	—	
		Bearing reused	0.69 - 1.96 N·m (7.0 - 20.0 kgf-cm)	—	
Clutch inner & outer plate thickness (L.S.D only)			1.6	1.4	Allowable wear limit at one side is 0.1
Clearance (differential case S/A × differential cover) (L.S.D only)			0.05 - 0.2	—	See page DF-53, 54

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3-10. Front Axle & Suspension

Toe-in	Other than listed below	0 - 8 mm
	215R15, 215/80R15, 255/70R15, H78-15-4	-3 - 5 mm
Side slip		0 - 3 mm
Camber	(degree)	1°00' ±1°
Caster	(degree)	1°30' ±1°
King pin angle	(degree)	9°30' ±1°
Turning angle (degree)	H78-15-4, 215R15, 215SR-15, 225/70R-15, 215/80R-15	Inner 28, Outer 26
	Other than those listed above (F77)	Inner 30 (29), Outer 28 (27)
Disc wheel runout		Not to exceed 1.0 mm
Tire runout	Radial runout	Not to exceed 1.4 mm
	Lateral runout	Not to exceed 2.0 mm
Front axle hub grease		Lithium-based MP grease
Front axle hub	Starting torque	1.4 - 3.6 kgf
	Reference: Starting torque	0.98 - 2.45 N-m (10 - 25 kgf-cm, 8.7 - 21.7 inch-lb)
Steering knuckle starting torque		16.7 - 41.2 N-cm (1.7 - 4.2 kgf-cm, 1.5 - 3.6 inch-lb)
starting load		0.1 - 0.3 kgf

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SERVICE SPECIFICATIONS

3-11. Brake System

Item												
Brake pedal height		220 ± 5 mm (8.66 ± 0.2 inch) However, on R.H.D. vehicles, the brake pedal height should be 24 ± 6 mm (0.94 ± 0.23 inch) higher than the upper surface of the accelerator pedal. On L.H.D. vehicles, the brake pedal height should be 28 ± 6 mm (1.1 ± 0.24 inches) higher than the upper surface of the accelerator pedal.										
Brake pedal free travel		2 - 4 mm (0.079 - 0.16 inch)										
Brake pedal reserve travel		80 mm (3.15 inch) or more with a pedal applying force of 50 kgf										
Brake booster air-tight performance (Loaded condition)		When the engine is stopped by applying a negative pressure of 500 mmHg, the pressure should not rise (or the pressure should not exceed 25 mmHg).										
Brake hydraulic pressure	Without booster	<table><tr><td>Pedal applying force kgf</td><td>Hydraulic pressure kgf/cm²</td></tr><tr><td>10</td><td>0 - 6</td></tr><tr><td>20</td><td>8 - 18</td></tr><tr><td>30</td><td>19 - 29</td></tr></table>	Pedal applying force kgf	Hydraulic pressure kgf/cm ²	10	0 - 6	20	8 - 18	30	19 - 29		
	Pedal applying force kgf	Hydraulic pressure kgf/cm ²										
10	0 - 6											
20	8 - 18											
30	19 - 29											
	With booster	<table><tr><td>Pedal applying force kgf</td><td>Hydraulic pressure kgf/cm²</td></tr><tr><td>5</td><td>6 - 14</td></tr><tr><td>10</td><td>24 - 34</td></tr><tr><td>20</td><td>63 - 73</td></tr><tr><td>30</td><td>74 - 84</td></tr></table>	Pedal applying force kgf	Hydraulic pressure kgf/cm ²	5	6 - 14	10	24 - 34	20	63 - 73	30	74 - 84
Pedal applying force kgf	Hydraulic pressure kgf/cm ²											
5	6 - 14											
10	24 - 34											
20	63 - 73											
30	74 - 84											
Brake fluid		DOT3 or SAEJ-1703										
Booster push rod clearance with negative pressure of 500 mmHg		0.3 ± 0.2 mm (0.012 ± 0.008 inch)										
Brake pad thickness		New part: 9 mm (0.35 inch) Minimum Limit: 1.0 mm (0.04 inch)										
Brake disc thickness	Standard (Solid)	New part: 12.5 mm (0.49 inch) Minimum Limit: 11.5 mm (0.45 inch)										
	Ventilation	New part: 18.0 mm (0.71 inch) Minimum Limit: 17.0 mm (0.67 inch)										
Difference in disc thickness on same circumference		Not to exceed 0.015 mm (0.00059 inch)										
Brake disc runout limit		0.15 mm (0.0059 inch)										
Brake drum inner diameter		New part: 254 mm (10.0 inch) Maximum Limit: 256 mm (10.08 inch)										
Brake shoe thickness		New part: 5 mm (0.197 inch) Minimum Limit: 1 mm (0.4 inch)										
Wheel cylinder compression spring free length		57 ± 1.5 mm (2.24 ± 0.059 inch)										
LSPV wear limit		0.7 mm (0.028 inch)										

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3-12. Steering

Item														
Steering wheel free play		Not more than 30 mm (1.18 inch)												
Steering gear box fluid level		13 - 23 mm (0.51 - 0.91 inch) From upper edge of check hole center												
Steering gear box oil (except power steering)		Gear oil GL3, SAE30												
Vane pump drive belt	Specified deflection Belt tension	10 - 14 mm (0.4 - 0.55 inch) 50 - 75 kgf												
Power steering fluid		ATF DEXRON® II												
Power steering turning effort		Not to exceed 7.8 N·m (80 kgf-cm, 5.8 ft-lb)												
Vane pump hydraulic pressure	Maximum	75 - 80 kgf/cm ²												
Difference in pressure under unloaded state (at 1000 and 3000 rpm)		Not more than 5 kg/cm ²												
Steering shaft length		Approx. 659.3 mm (25.96 inch)												
Intermediate shaft	Without power steering	472.5 ± 1 mm (18.6 ± 0.4 inch)												
	With power steering	503.5 ± 1 mm (19.8 ± 0.4 inch)												
Manual steering gear box worm shaft starting torque (Worm shaft unit)		0.29 - 0.49 N·m (0.03 - 0.05 kgf-m, 0.22 - 0.36 ft-lb)												
Manual steering gear box worm shaft starting torque (Total preload)		0.69 - 1.0 N·m (0.07 - 0.1 kgf-m, 0.51 - 0.7 ft-lb)												
Power steering gear box worm shaft starting torque (Worm shaft unit)		0.39 - 0.64 N·m (0.04 - 0.065 kgf-m, 0.29 - 0.47 ft-lb)												
Power steering gear box worm shaft starting torque (Total preload)		0.59 - 0.93 N·m (0.06 - 0.095 kgf-m, 0.43 - 0.69 ft-lb)												
Vane plate		Unit: mm (inch) <table border="1"> <thead> <tr> <th>Position</th><th>Specified Value</th><th>Limit</th></tr> </thead> <tbody> <tr> <td>Length</td><td>15.00 (0.59055)</td><td>14.99 (0.59015)</td></tr> <tr> <td>Height</td><td>8.2 (0.32283)</td><td>8.1 (0.31889)</td></tr> <tr> <td>Width</td><td>1.800 (0.07086)</td><td>1.797 (0.07074)</td></tr> </tbody> </table>	Position	Specified Value	Limit	Length	15.00 (0.59055)	14.99 (0.59015)	Height	8.2 (0.32283)	8.1 (0.31889)	Width	1.800 (0.07086)	1.797 (0.07074)
Position	Specified Value	Limit												
Length	15.00 (0.59055)	14.99 (0.59015)												
Height	8.2 (0.32283)	8.1 (0.31889)												
Width	1.800 (0.07086)	1.797 (0.07074)												
Vane pump rotor and vane plate clearance	New part Maximum limit	0.01 mm (0.0003937 inch) 0.028 mm (0.0011023 inch)												
Vane pump compression spring free length	New part Minimum limit	50 mm (1.96 inch) 47 mm (1.85 inch)												
Vane pump drive belt deflection (with pushing force of 10 kg)		10 - 14 mm (0.39 - 0.55 inch)												

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