ISUZU

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SERVICE STANDARDS

for

DIESEL ENGINES ELF · ELFIN · WASP · BELLEL BELLETT & LIGHT BUSES



ISUZU MOTORS LIMITED

TOKYO, JAPAN

- Article 1. The standards contained herein define service standards for Isuzu diesel engines (Models C 180, C 220, DL 200 and DL 201)
- Article 2. These service standards consist of items to be inspected, nominal dimensions, values requiring service, standard values as assembled, limits for use and manners of service.
 - 1. The nominal dimensions are standard values as manufactured.
 - The values requiring service are values above which service is required in performance.
 - The standard values as assembled are values to be stanards dafter the service and may be more or less different from the assembled dimensions of new vehicles.
 - The limits for use are limits above which the parts such as are worn should not be used and must be replaced.
 - 5. The manners of service are manners of general service.

Article 3. Definitions of the terms in the table :

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- The "wear" is the difference (in the dimension of the worn part) between the dimension in the position which is not worn (or the nominal dimension in case there is no such position) and the dimension in the most worn position.
- 2. The "partial wear" is the difference between the largest value and the smallest value of the wear.
- Article 4. When the service of the whole engine is requested, the parts needing any service should be first confirmed by the bench test or the like and the necessary minimum overhaul should be made. When the service of a part of the engine is requested, the corresponding items should be serviced in accordance with these service standards.

ENGINE



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	Nominal Dimensions	Walues Requiring Service		Standard Values as Assembled	Limits for Use	Manners of Service Remarks
Outside diameter of the liner	C 220			86.750 φ mm (3.4180) in 86.725 φ (3.4170)		When it is rebored using the insert- ed liner, the oversize should be under 1.0mm (0.0394).
	C 180			cidentar trava a see th	10 1 · · · · · ·	
Maximum diameter of the cylinder	C 220				86.6 φ mm (3.4120) in	Replace the cylinder body.
there have been allo there is	DL 200				82.6 φ (3.2544) 86.6 φ	08F D
Deformation of fitting surface		More than 0.2 mr (0.0079) j		Less than 0.05 mm (0.0020) in	81.6 (390) (390) (390) (390) (390) (390) (390)	Correct it by grinder Max. limit 0.4 n (0.0158)
Hydraulic pressure test (for 3 minutes) in kg/cm ²				5.0 kg/cm ² (71) PSI	inervisi Si Es	Correct or replace in case of water
exhaust valves	DL 200 DL 201 DL 201	(0.1418) More than 4.0				Replace the seat ring The valve seat angle should be 45°.
With a P	C 180 1.2 (0.0473)]				001.2
for suction and xhaust valves) VALVE SEAT ANGLE	C 220 DL 200 1.4 (0.0552) DL 201 1.4	More than 2.0 (0.0788)	00	1.2∼1.5 mm (0.0473∼0.0591)in	25 6 0 0 (0 9 0 4 1) 2 6 6 2 5 6	Correct it by valve seat cutter.
eformation of fitting surface	· .	More than 0.2 (0.0079)	00	Less than 0.05 mm (0.0020) in	,	Correct it by grinder Max. limit (0.016) ir
sorrace						

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items to be inspected		Nominal Dimensions	Values Requiring Service		Standard Values as Assembled Limits for Use	Manners of Service	Kemurks
	mod st zi fi nje	~	annic			fai 5	
Main moving parts (Piston)					Clearance between	built & broom	
Clearance between the cylinder and the piston in the skirt part		ertuar 1 0.4			cylinder bore and the longer diameter of piston is 0.07 mm (0.0028) in	DL 203	Perform measurement at normal temperature.
afterne ver	C 180 ····				0.25 mm (0.0099) in 0.50 (0.0197)		
Oversize of piston	C 220 ····	83 φ (3.2702)		00	0.75 (0.0296) 1.00 (0.0394)	il screame ring C 210	
	DL 200	·· 79 φ		6	1.25 (0.0493) 1.50 (0.0591)		
Bedraufte preserve and inter a register foreign at a	DL 201	·· 83 φ	102,079				
Main moving parts (Piston pins)					0∼0.013 mm (0.0005) in		So that pin may be strong
the state because of a line and the advector for the size	C 180				11,000,000,00,43,000,00,000,000,000,000,00	When excessive knocking are	ly forced in when piston i
pace between that piston pin and piston	DL 200				0.004 (0.0002)		warmed to too C.
Clearance between pin and the small end bush of	DL 201		More than 0.05 mm		Less than 0.02 mm (0.0008) in	Renew bush or pin	The standard valve as assembled is such that p may state lightly when
connecting rod) 0.0020) in	00		081.0	connecting rod is held.
	C 180	24∮ mm (0.9456) in			23.97 φ mr (0.9437) i 24.97 φ	n n 0. 220 0. 200	
Were of the pin	C 220	25 φ (0.985)		C C	(0.9838) 23.97 ϕ	Renew pin.	
setter solution	DL 200	24 φ			24.97 <i>\phi</i>		
	DL 201	··· 25 φ				il pressuite sing OL 209	
Main moving parts (Piston ring)	natus ed 11 tom		all 2019 April 199	0) 0.2~0.4 mm	UK 30	s sipi noise
	C 180				(0.0079~0.0158)in		
Clearance between the opposed ends of the First pressure ring	C 220			0	0.3~0.6 (0.0118~0.0236) (0.0591	mm) in	
biston ring (in the gauge)	DL 200				0.2~0.4	10. 201	
	DL 201				,		

Items to be	Inspected	Manager	Nominal Dimensions	Values Requiring Service		
		C 180				
	Second & third	C 220				ľ
	pressure ring	DL 200				
Clearance between the		DL 201				L
opposed ends of the piston						
ring (in the gauge)		C 180				ľ
a con and proving	Oil scraper ring	C 220	· · · · · · · · · · · · · · · · · · ·		۲	
		DL 200				
		DL 201				
and the second sec		C 180				
	First pressure ring	C 220				L
	and provide the	DL 200				L
		DL 201	10.00.01			
		C 180		- Andread -		
Clearance between the	Second & third	C 220				
ring (free)	pressure ring	DL 200				L
		DL 201				
		C 180				
	Oil scraper ring	C 220				L
		DL 200				
Fore of the stre		DL 201			•	
		C 180	7.45			
	First pressure ring	C 220				
		DL 200				
ension in kg		DL 201	for the second			
		C 180	6(9210.8			
	Second & third	C 220			0	
	pressure ring	DL 200				
		DL 201				

Standard Values as Assembled	Limits for Use	Manners of Service	Remarks
0.23~0.36 mm (0.0091~0.0142) in	1.5 mm (0.0591) in	C 180	
0.1~0.3 (0.0039~0.0118)	1.5	Citectoper ring	of al anterior
0.25~0.45 (0.0099~0.0177)	1.5	bL 200	meter of gauge should be:
0.1~0.3	1.5	Replace ring.	C 180 $-$ 79.00 ϕ mm (3.1126) in
(First) 0.1~0.3)	In case engine is overhauled and	C 220 — 83.00 φ (3.2702)
(Second) 0.2~0.4 (0.0079~0.0158)	10.01.0	serviced, replace rings.	DL 200 — 83.00 ϕ
0.1~0.3	1.0 (0.0394)		DL 201 $-$ 83.00 ϕ
0.2~0.4		 Influence and the second second	
0.1~0.3		. c 220	part teleses
$\begin{array}{ccc} 10.9 & (0.4) \\ 9.5 \sim 12.5 & (0.3) \\ 9.0 \sim 12.0 & (0.3) \\ 0.5 \sim 12.5 \end{array}$	295) 743~0.4925) 546~0.4728)		Reference values.
$9.5 \sim 12.5$ (First) $9.0 \sim 12.0$			0
(Second)7.5~10.5 (0. 8.0~11.0 (0	2955~0.4137) 3152~0 4334)		U
6.5~ 9.5 (0. 8.0~11.0	2561~0.3743)		
$10\sim14$ kg) `	DL 200	astreammer much as an - ano side
$(2.2 \sim 3.1)$ lb 1 1~14	0.5		
(2.4~3.1) 1.0~1.4	(1.1)	Anotop the projection and ple own to ten a	
11.14	·	Replace ring.	
$1.1 \sim 1.6$ (2.4 ~ 3.5) $1.0 \sim 1.4$	0.5	Augusta maning bad give priced by	
(2.2~2.9)		Connection replaced to the temporarily of	

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Items to be Inspected		Nominal Dimensions	Values Requiring Service
	C 180		0.131-0.034 mm -
Tension in kg Oil scraper ring	C 220		
	DL 200		
080.0	DL 201	 1.5	0.0+1.0
Clearance between ring aroove width and	C 180		
pressure ring	C 220		
8 (9 (9 - 11) 21 - 11 - 11 - 11 - 11 - 11 - 11	DL 200 DL 201		
	C 180		10-50
Clearance between ring groove width and oil	C 220		
scruper ring	DL 200 DL 201		
Prot elimination	C 180	 79∮ mm (3.1126) in	120. partiter 1.2
Oversize of the ring	C 220	 83 φ (3.2702)	
	DL 200	 79 ϕ	
A superior of the second secon	DL 201	 83 <i>ф</i>	1001 201-67
Setting position of the opposed ends of each ring	ou one	 	2.51.2.9
Main moving parts (Connecting rod)		 1950 - 12 M	0.0.0.0.0.0.0
Play in the forward and rearward direction	C 180		
between the small end and the piston boss (on	C 220		
one side)	DL 200		
	DL 201		a la series
Plating of big end bearing metal			
	in e, sign		A.L.I.I.I
Clearance between big end bearing metal and crank pin		8	More than 0.12 mm (0.0047) in
Contact between big end bearing metal and crank	an and		(22-22)
h			

as Assembled	Limits for Use	Manners of Service	Remarks
1.0∼1.4 kg (2.2∼3.1) lb]	C 180	
1.2~1.6 (2.6~3.5)	0.6 kg		
1.0~1.3 (2.2~2.9)	(1.3) lb		
1.2~1.6)		
0.36~0.074 mm	1		are forward and rea
0.0142~0.0029) in	0.3 mm	DE 200	
(0.0020)	(0.0118) in	pi, 201	
0.05	A second second		Ets with marked surfaces
0.05)	Replace ring or piston.	rit with marked surface
0.040~0.082			above.
0.0016~0.0032)			
0.04	0.15	and the set of the set design definition	
0.04	(0.0037)		
0.04)	J	
1.25 (0.0493) 1.50 (0.0591)		Converting of the rest of shares	Lar UNICAL
		Alternately 120°	
Make Camerons		Alternately 120	T TO EARDY AND TO THEIR STO
end and film		Alternately 120	• .
end'antiPaloa		Alternately 120	• .
1.0 mm		Alternately 120	0
1.0 mm (0.0394) in			
1.0 mm (0.0394) in 1.0 1.5		Alternately 120	Reference values.
1.0 mm (0.0394) in 1.0 1.5 (0.0591)		Alternately 120	Reference values.
1.0 mm (0.0394) in 1.0 1.5 (0.0591) 1.0		Alternately 120	Reference values.
1.0 mm (0.0394) in 1.0 1.5 (0.0591) 1.0		Use (the connecting rod bearing)	Reference values.
1.0 mm (0.0394) in 1.0 1.5 (0.0591) 1.0		Alternately 120 Use (the connecting rod bearing) having the projection and plating.	Reference values.
1.0 mm (0.0394) in 1.0 1.5 (0.0591) 1.0		Aiternately 120 Use (the connecting rod bearing) having the projection and plating. See that back surface is in close	Reference values.
1.0 mm (0.0394) in 1.0 1.5 (0.0591) 1.0		Alternately 120 Use (the connecting rod bearing) having the projection and plating. See that back surface is in close contact.	Reference values.
1.0 mm (0.0394) in 1.0 1.5 (0.0591) 1.0 0.06 (0.0024)		Alternately 120 Use (the connecting rod bearing) having the projection and plating. See that back surface is in close contact. Replace bearing metal.	Reference values.
1.0 mm (0.0394) in 1.0 1.5 (0.0591) 1.0 0.06 (0.0024)		Aiternately 120 Use (the connecting rod bearing) having the projection and plating. See that back surface is in close contact. Replace bearing metal. Correct or replace bearing metal	Reference values.

Items to be Inspected	Nominal Dimensions	Values Requiring Service		Standard Values as Assembled	Limits for Use	Manners of Service	Remarks
	C 180	ed all-coll		0.125 mm (0.0049) in	60 é. min		
	C 220 53 φ mm	di (Literiti)	20 C	0.25 (0.0099)			
ndersize of the big end bearing metal	(2.0882) in			0.50 (0.0197)			
	DL 200 50ϕ (1.9700)			0.75 (0.0296)			1
	DL 201 53 ¢			1.00 (0.0394)	la tr	105.30	
	C 180	1					
ay in the forward and rearward direction of	C 220	More than 0.35 mm	l, i i	0.2~0.25 mm (0.0079-	\sim 0.0099) in	Replace connecting rod.	
e big end	DL 200	(0.0138) in					
	DL 201				(2011)	041 0 	
	C 180 150 (5.9100)						
	C 220 168		6 6	1005			See the de live want
enter distance of the big end and small end	(6.6192)			(0.0020) in			Reference values.
	DL 200 (6.6980)						
	DL 201 155 (6.1070)					C 220	
	C 180	0.23			48.73 492	DL 200	
ist of the holes of big end and small end (per	C 220	More than 0.2		Less than 0.08 mm			
/0 mm) .9370 in)	DL 200	(0.0079)		(0.0032) 11		101 13	
	DL 201					Correct connecting rod or replace	
	C 180		10.0			п.	
rallelism of the holes of big end and small end	C 220	More than 0.15		Less than 0.05 (0.0020)		the loant barries much barries	
(3.9370 in)	DL 200	(0.0059)		(0.00-0)		the projection and planes	Platting of Joyo I bearing and
	DL 201))	
	C 180		11 18				Be carefull on graded
eight difference after piston assembly in gram	C 220			Less than 20 g (0.701)	oz		weight classification of
	DL 200						connecting rod.
	DL 201	1.5		10 (0.49) In	19.998	,	
astening torque in m-kg of connecting rod big nd bearing bolt				6.5∼7 m-kg (47.0249∼50.6422) in-	Ib	Wet bolt with oil and fasten it.	
election and platho	na all calvad			0.75.		100 A.	
lain morving parts (Crank shaft)	See full per			1022341 			
	$60 \phi \text{ mm}$ (2.3640) in	More than 0.05 mm					
	C 180 51 ¢	(0.0020) in				Correct it by crankshaft arinding	
ial wear of journal and pin	(2.0094)					machine.	
Server I have been been and a server and have a series	C 220 (2.5610)	More than 0.05				a for all brackey	
	53 ¢	more mun 0.00					

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Items to be Inspected		Nominal Dimensions	Values Requiring Service			Standard Values as Assembled	Limits for Use	Manners of Servise	Remarks
Presidence of investigation	DL 200 ···	60 φ mm (2.3640) in 50 φ (1.9700)	More than 0.05 mm (0.0020) in)	0	Constitute COS man. Distance Co Distance Cos Distance Cos man Distance Cos		C 180 C 220 C 220	Deflection of the conditions
ramai wear of journal and pin	DL 201 ··	$\begin{array}{c} 65 \ \phi \\ (2.5610) \\ 53 \ \phi \\ (2.0882) \end{array}$	More than 0.05	•	0			DL 203 DL 203 DL 201	
and the second succession of the second s	C 180 ···	····· 60 φ	C-response in the birth				58.93 ϕ mm (2.3218) in	when it is body done ppi, relocate	Start og tint gover
Wear of journal	C 220 ···	65 φ		Ó	0		64.00 φ (2.5216)		
	DL 200 ···	····· 60 <i>φ</i>		(de	-		58.93 ϕ	a define the instantion of the second second	
and as associated	DL 201 ···	65 <i>ф</i>	Pin \$20 s	6)	6	6-37 held ; [25-77]75	ć3.93 φ (2.5188)	- Replace crnkshaft	See that the fillet section ·· R on both crank pin and
	C 180 ···	51 φ (2.0094)					49.93 φ (1.9672)		journal to become 3.5 mm.
NALANA OF MIN	C 220 ···	····· 53 φ					52.00 φ (2.0488)	Con 081 D	
wear of pin	DL 200 ···	····· 50 φ					48.93 φ (1.9278)		
in and a second second second second parts of	DL 201 ···	····· 53 φ					51.93 φ (2.046)	James Ja	ipinuoj to tura inine i
Finishing precision of journal and pin (taper and ovality)	Contraction of the second	3				Less than 0.02 mm (0.0008) in			
unglinden of the outer of the one are president.	0.225		A A A A A A A A A A A A A A A A A A A			AUM INCO 0.12		Use journal bearing metal having	
Plating of journal bearing metal				Ø	8			the projection and plating. See that back surface is in close contact.	Vantuoj ka takwi ukaM
Clearance between journal and bearing	5 220		More than 0.12 (0.0047)	6		0.06 (0.0024)	122	Replace the bearing.	
comediate con-	C 180 ···	60 φ			~	0.125 mm (C 220 onl (0.0049) in	y)	Line C 220 Line	
	C 220 ···	65 φ			N	0.25 (0.0099)			
Undersize of journal bearing	DL 200	····· 6 0 φ				(0.0197) 0.75			
	DL 201 ···	····· 65 φ			0	(0.0296) 1.00 (0.0394)			
	C 180]	-		0.05~0.10	9)]	ndurite of con her
Play in the forward and rearward direction of	C 220		More than 0.30		1	0.10		Replace the thrust bearing	
the crankshaft	DL 200		(0.0118)			0.10		and the second, he a	
	DL 201				15	0.10		January and residents	

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Items to be Inspected			Nominal Dimensions	Values Requiring Service
	C 180			
	C 220			More than 0.10 m
Deflection of the crankshaft	DL 200			(0.0039) ir
	DL 201			
Starting ring gear	a 114	-7		
Balancing g-cm	1999 24. 200	•	(2.521k) 40.02 a.	
Fastening torque of the crank journal bearing bolt (m-kg)	ni on televeze	Area	10 09 25 (10 16 10)	
Valve system (Camshaft)	< 188		11.955.01	
and an international statements and	C 180		45φ mm (1.7730) in	
Partial wear of journal	C 220		45 <i>φ</i>	More than 0.05 mm
	DL 200		45 <i>φ</i>	(0.0020) in
	DL 201		45 φ	na 200 andt and i
Clearance between journal and bearing	l horne oj restante	ned St		More than 0.12 (0.0047)
Max. wear of journal	and there		45 φ	
es tep.	C 180		35.496 (1.3983)	(1000 (0) (0 000)
Height of the cam	C 220		36.45 (1.4361)	
	DL. 200		35.27 (1.3896)	
	DL 201		35.49 (1.3983)	
	C 180			1.00 (0.0194)
Undersize of cam bearing	C 220			
the second of the second se	DL 200			
	01 001			

Standard Values as Assembled	Limits for Use	Manners of Service	Remarks
Less than 0.05 mm		١	
(0.0020) in		C 160	
(0.0012)		Correct deflection.	by in the forward and rea
Less than 0.05			
Less than 0.05		J	
		When gear is deflected, chamfer it.	
		When it is badly damaged, relocate	
		or replace it.	
Less than 36 g-cm		See that it is statically and dyna-	areaing space of crash gr
(0.4967) oz-in		mically balanced.	
9∼10 m-kg (65∼72) ft-lb			
(many)		CIED	
m 1.0 hell andM	mar 3123	the second s	de mon albi to more laire
Less than 0.015 mm (0.0006) in		TOG JA TOG JA TOG JA TOG ROLLAND TO ROLLAND TO ROLLAND	
Less than 0.015 mm (0.0006) in	ni (UETT I)	TOG #3	ay in the forward and real
Less than 0.015 mm (0.0006) in 0.05 (0.0020)	ni (OEXX 1) (Ban 108 Alia (Ban 108 Alia al (68) (68)	Replace bearing.	
Less than 0.015 mm (0.0006) in 0.05 (0.0020)	44.6 φ mm (1.7572) in	Replace bearing. Replace camshaft.	
Less than 0.015 mm (0.0006) in 0.05 (0.0020)	44.6 φ mm (1.7572) in 35.0 φ (1.3790)	Replace bearing. Replace camshaft.	
Less than 0.015 mm (0.0006) in 0.05 (0.0020)	44.6 φ mm (1.7572) in 35.0 φ (1.3790) 36.0 φ	Replace bearing. Replace camshaft.	Correct the slightly steps
Less than 0.015 mm (0.0006) in 0.05 (0.0020)	44.6 φ mm (1.7572) in 35.0 φ (1.3790) 36.0 φ (1.4184)	Replace bearing. Replace camshaft.	Correct the slightly stepp
Less than 0.015 mm (0.0006) in 0.05 (0.0020)	44.6 φ mm (1.7572) in 35.0 φ (1.3790) 36.0 φ (1.4184) 34.8 φ	Replace bearing. Replace camshaft.	Correct the slightly stepp ed and worn part of th
Less than 0.015 mm (0.0006) in 0.05 (0.0020)	44.6 φ mm (1.7572) in 35.0 φ (1.3790) 36.0 φ (1.4184) 34.8 φ (1.3711)	Replace bearing. Replace camshaft.	Correct the slightly stepp ed and worn part of th cam.
Less than 0.015 mm (0.0006) in 0.05 (0.0020)	44.6 φ mm (1.7572) in 35.0 φ (1.3790) 36.0 φ (1.4184) 34.8 φ (1.3711) 35.0 φ (1.3790)	Replace bearing. Replace camshaft.	Correct the slightly stepp ed and worn part of th cam.
Less than 0.015 mm (0.0006) in 0.05 (0.0020)	44.6 φ mm (1.7572) in 35.0 φ (1.3790) 36.0 φ (1.4184) 34.8 φ (1.3711) 35.0 φ (1.3790)	Replace bearing. Replace camshaft.	Correct the slightly stepp ed and worn part of th cam.
Less than 0.015 mm (0.0006) in 0.05 (0.0020) 0.25 (0.0099)	44.6 φ mm (1.7572) in 35.0 φ (1.3790) 36.0 φ (1.4184) 34.8 φ (1.3711) 35.0 φ (1.3790)	Replace bearing. Replace camshaft.	Correct the slightly stepp ed and worn part of th cam.
Less than 0.015 mm (0.0006) in 0.05 (0.0020) 0.25 (0.0099)	44.6 φ mm (1.7572) in 35.0 φ (1.3790) 36.0 φ (1.4184) 34.8 φ (1.3711) 35.0 φ (1.3790)	Replace bearing.	Correct the slightly stepp ed and worn part of th cam.
Less than 0.015 mm (0.0006) in 0.05 (0.0020) 0.25 (0.0099)	44.6 φ mm (1.7572) in 35.0 φ (1.3790) 36.0 φ (1.4184) 34.8 φ (1.3711) 35.0 φ (1.3790)	Replace bearing. Replace camshaft.	Correct the slightly stepp ed and worn part of th cam.

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Items to be Inspected	stpano.M	Nominal Dimensions	Values Requiring Service
	C 180		
Play in the forward and rearward direction of	C 220		More than 0.2 mm
comsnatt	DL 200		(0.0079) in
	DL 201		
Valve system (Timing gears)	an a stand where		
Backlash of timing gear			
Fastening space of crank gear and crankshaft	te d'il todi nač		They Want and
Fastening space of cam gear and camshaft	and a loss of the set		
Clearance between idle gear bush and shaft			More than 0.2 mm (0.0079) ir
	C 180		7
	C 220		More than 0.1 mm
rarnal wear of lale gear shaft	DL 200	$45 \phi \text{ mm}$ (1.7730) in	(0.0039) in
	DL 201	(1.7750) 11	
Play in the forward and rearward direction of idle gear	06 200		0.2
Valve system (Valve)			
Wear of suction valve stem	Ropiace bearing	8ϕ mm (0.3152) in	(00000)
Wear of exhaust valve stem		8 <i>ф</i>	
Clearance between suction valve stem and valve guide	i na		More than 0.2 mm (0.0079) in
Clearance between exhaust valve stem and valve juide	1.22	11 A.B	More than 0.25 (0.0099)
	C 180		
astening space of valve guide and cylinder head	C 220		
	DL 200		
and the second	DL 201		
	10. 24		
hickness of valve		1.3	

Standard Values as Assembled	Limits for Use	Manners of Service	Remarks
0.05~0.10 mm (0.0020~0.0039) in 0.08	14 mm (0.5316) in	C 180	
(0.0031)		Replace thrust plate.	
0.08		BL 200	
0.08	NI.	OL 201	
Less than 0.10 mm (0.0039) in	0.30 mm (0.0118) in	Replace gears.	As some served in processor
Less than 0.025 (0.0010)	(ad-o)(8.0%)	Replace video ipring. Bil el esto	As compressed to a second and sec
Less than 0.021 (0.0008)	(24.5) (8.42)	64, 200 - 200	As a compression to a service
0.05 (0.0020)	17.0 (1.44)	Replace bush or shaft.	As satepressed to 29
		Relocate setting positions.	and gallege a dow nated
0.07 (0.0028)		Correct the stepped worn part o thrust collor.	of
	7.88∮ mm (0.3105) in	Replace valve.	In case valve is replace
	7.85 φ (0.3093)		replace also valve guide.
0.05 (0.0020)	1421.1	Poplace valve or valve quide	An annationada to suita a
0.08 (0.0032)			
0.026~0.061 (0.0010~0.0024)	5 (B) (5 (B))	000 m ² .	C.
0.02 (0.0079)			Paint valve guide with o and press it in
0.02			•
0.02			
		* 020 J	
	1.0 (0.0394)	Replace valve.	

ltems	to be Inspected	Messola		Nominal Values Dimensions Requiring Service	- H.	Standard Values as Assembled	Limits for Use	Manners of Service	Remarks
	i i	C 180		14 mm (0.5516) in	00		1,0,	Replace Agine springland Ideis	to europa
leight (h) of valve gu and cylinder head	id The second	C 220 DL 200	ر 	16 (0.6304)	00				Reference values.
	////	DL 201		14					
		C 180		26.0 kg (57.3) lb			22.0 kg (48.5) lb]	As compressed to 40 mr (1.5760) i
	Spring force in kg	C 220		18.5 (40.8)	(de la		15.7 (34.6)	Peoplase valve spring	As compressed to (1.5366)
•		DL 200		15.65 (34.5)			13.5 (29.8)	keplace valve spring.	As compressed to (1.4972)
	tien:	DL 201		20.0 (44.1)	00		17.0 (37.5)		As compressed to 39
		C 180		53.0 mm (2.0882) in			51.5 mm (2.0291) in)	
luter valve spring	Free height	C 220		46.0 (1.8124)			44.5 (1.7533)	C 220	
oren varve spring		DL 200		42.47 (1.6733)			41.2 (1.6233)	DU 200	
		DL 201		47.3 (1.8636)			46.0 (1.8124)	DL 201	
	(Out of perpendicule	ar)	alanter (-			- Ditto	
in training frains and a school for the shear (frains) fraining frains and a school for the school frains	Degree of right angle				Ø¢		1.0 (0.0394)	C 180 C 220 OC 200	e entre de la compañía de
	n - en antina anna a 10 a Ar anna Igrada, guid	C 180		10.8 kg (23.8) lb	00		9.20 kg (20.3) lb]	As compressed to 38 mr (1.4972) ii
	Spring force in kg	C 220		8.3 (18.3)			7.05 (15.5)		As compressed to (1.4578)
		DL 200		8.41 (18.5)			7.15 (15.8)	Replace valve spring.	As compressed to (1.3790)
ner valve spring	na a	DL 201		10.0 (22.1)	00		8.5 (18.7)		As compressed to 37
i arro spring		C 180		48.4 mm (1.9070) in	30	24/36	47.0 mm (1.8518) in		when at the tops
	Free height	C 220		42.9 (1.6903)	00		41.5 (1.6351)	Ditte	
		DL 200		40.73 (1.6048)			39.5 (1.5563)	Ditto	
		DL 201		45.3			44.7	Server of this out down	and all and an entry of the J

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Items to be Inspected	nanae M		Nominal Dimensions	Values Requiring Service
Degree of right angle	2 I.Q		1.4	
sight (h) of value out	C 180			
Valve clearance for both suction and exhaust	C 220			
valves (while cold)	DL 200			
	DL 201			
Contact surface between the valve stem and the	1		(48.57 6	
valve rocker arm				
		1.654	. Gin	
Clearance between valve rocker arm and shaft				More than 0.2 mm (0.0079) in
	C 180		19 $\phi $ mm (0.7486) in	
	C 220		19 <i>ф</i>	
Wear of velve rocker arm shatt	DL 200		17 φ (0.6698)	
	DL 201		17 <i>ф</i>	
Bending of push rod		200	(-1-1-2-1)	More than 0.3
i hanni i lanna	C 180		249	
	C 220		(7.0100)	
Length of push rod	DL 200			
	DL 201			
n R.			\$100.8	
Valve system (Tappet)				
Clealance between tappet and cylinder body	n te lare teat	liquit	(13.5) 7.15	More than 0.1 mm (0.0039) in
RE of barring alassa	C 180		22.22 φ mm (0.8755) in	
Wear of the tannet	C 220		22 φ (0.8668)	
	DL 200		22 <i>φ</i>	
	DL 201		22 φ	
Contact surface between the tappet and the cam			(Cocker)	

as Assembled	Limits for Use	Manners of Service Remarks
	1.0	Replace valve spring
0.4 mm	•	
(0.0158) in		
0.5		Adjust alemanas
0.5		Aufusi ciedrance.
0.5		
and the second second		Correct the tip of valve stem and
		the recess at the tip of valve rocker
		arm.
0.04		Replace rocker arm or shaft.
(0.0010)		
	18.85 mm (0.7427) in	(unstant of the state of the st
		01.0
	18.85	Peologe shaft
	16.85	kepiace shart
	(0.6639)	
		in mix 005, 70
and the second of the	16.85]
4.5 ('63 Model)	nd of -	Replace it.
		Reference values
		Reference values
5.00-5014 mm		Reference values
6.820.14 mm		Reference values
6.02-4.0.14 6.02-4.0.14 6100 e247 stem 6100 e247 stem 0.2 (~0.27 0.37 ~0.0104)		Reference values
0.03 mm (0.0012) in		Reference volues
0.03 mm (0.0012) in	22.17 φ mm (0.8735) in	Reference volues
0.03 mm (0.0012) in	22.17 φ mm (0.8735) in 21.05 ±	Reference values Replace tappet.
0.03 mm (0.0012) in	22.17 φ mm (0.8735) in 21.95 φ (0.8648)	Reference values Replace tappet.
0.03 mm (0.0012) in	22.17 φ mm (0.8735) in 21.95 φ (0.8648)	Reference values Replace tappet. Ditto
0.03 mm (0.0012) in	22.17 φ mm (0.8735) in 21.95 φ (0.8648) 21.95 φ	Reference values Replace tappet. Ditto
0.03 mm (0.0012) in	22.17 φ mm (0.8735) in 21.95 φ (0.8648) 21.95 φ 21.95 φ	Reference values Replace tappet. Ditto

Items to be Inspected	Manak	Nominal Dimensions	Values Requiring Service
Central	roligi metulik	01	
Suction system (Air cleaner)			min 3.0 Interiori
Air cleaner	negitte els incom		(1000)
Suction system (Throttle valve)			2.9
Clearance between valve shaft and bush	ttina sensan seki		More than 0.2 m (0.0079) i
Wear of valve body	tentres inde	•	10 Addition
Lubricating system (Oil pressure)		2831 	
	C 180		
	C 220	46.21	
Lubricafing oil pressure in (at 1,400 r.p.m.) kg/cm ²	DL 200	16.45	Less than 2 kg/cm (28) P:
	DL 201)	More than 0
Lubricating system (Oil pump and oil pressu	re regulating v	alve)	
Clearance between the rotor and the vane	01.300		
Clearance between the rotor and the vane and	· · · · · ·		More than 0.15 m (0.0059)
cover			
cover Clearance between the pump body and the vane			
cover Clearance between the pump body and the vane	C 180		
cover Clearance between the pump body and the vane Clearance between the driving shaft of pump and	C 180 C 220		More than 0.2
cover Clearance between the pump body and the vane Clearance between the driving shaft of pump and the pump body	C 180 C 220 DL 200	A State	More than 0.2 (0.0079)
cover Clearance between the pump body and the vane Clearance between the driving shaft of pump and the pump body	C 180 C 220 DL 200 DL 201	12.)/ (0.07.13) 21.75.4 (0.06.16)	More than 0.2 (0.0079)
cover Clearance between the pump body and the vane Clearance between the driving shaft of pump and the pump body	C 180 C 220 DL 200 DL 201 C 180	22.) (0.07.13) 21.75 (0.86.45) (0.86.45) 21.95 (More than 0.2 (0.0079)
cover Clearance between the pump body and the vane Clearance between the driving shaft of pump and the pump body Delivery in I/min	C 180 C 220 DL 200 DL 201 C 180 C 220	12.) (0.0 -12) 21.75 g (0.86-15) 21.95 g 21.95 g	More than 0.2 (0.0079)
Clearance between the pump body and the vane Clearance between the driving shaft of pump and the pump body Delivery in I/min Revolution number : 1,400 r.p.m.	C 180 C 220 DL 200 DL 201 C 180 C 220 DL 200	22,1/ 40.87.45) 21.95 21.95 (21.95 (21.95 (More than 0.2 (0.0079)

as Assembled Limits	for Use Manners of Service	Remarks
3 7-13 kg/on² 146-50 251	C 180	
	the action of the oil C 220	reaves of the beginning of
4.5 (01 Model and after) 3.5 (62 Model and before) 4.5 (62 Model and before)	Disassemble and clean it, or replace the element.	() anitat gintalugat multyri
0.01		
(0.0016) in	Replace valve shaft or bush	ooling system (Rediete
	When wear is severe replace valve or body.	ng the second the second s
Q A La Car Q A DI FSI		notagi tur tan galan
3∼4 kg/cm ² (43∼57) PSI 4∼4.5 (57∼64)		and partonic rate
3∼3.5 ('62 Model and before (43∼50) 4∼4.5 ('63 Model and after)) in any part.	
$3{\sim}3.5$ ('62 Model and before $4{\sim}4.5$ ('63 Model and after))	all only southing willings s
	(III)	neteW) metter pullee:
0.02∼0.14 mm (0.0008∼0.0055) in	When wear is severe replace it.	lad aneq server being both
(0:0000 -0:0000) m		0.
0.02 ~0.07 (0.0008~0.0028)	Replace vane rotor or cover.	
$\begin{array}{c} 0.02 \ \sim 0.07 \\ (0.0008 \ \sim 0.0028) \\ \hline 0.2 \ \ \sim 0.27 \\ (0.0079 \ \sim 0.0106) \end{array}$	Replace vane rotor or cover.	abe for each
(0.0000 - 0.00000) m = 0.00000 + 0.00000 + 0.000000 + 0.00000000	Replace vane rotor or cover.	
$\begin{array}{c} 0.02 \ \sim 0.0033 \) \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	Replace vane rotor or cover.	
$\begin{array}{c} 0.000 & -0.0003) \text{ m} \\ \hline 0.02 & \sim 0.07 \\ (0.0008 & \sim 0.0028) \\ \hline 0.2 & \sim 0.27 \\ (0.0079 & \sim 0.0106) \\ \hline 0.014 & \sim 0.057 \\ (0.0006 & \sim 0.0016) \\ & 0.04 \\ (0.0016) \\ & 0.04 \\ \hline 0.04 \\ \hline 0.04 \end{array}$	Replace vane rotor or cover.	nbe fini en el se
$\begin{array}{c} 0.000 & -0.0003 \\ 0.0008 & -0.0028 \\ \hline \\ 0.2 & -0.27 \\ (0.0079 & -0.0106) \\ \hline \\ 0.014 & -0.057 \\ (0.0006 & -0.0016) \\ 0.04 \\ (0.0016) \\ 0.04 \\ \hline \\ 0.04 \\ \hline \\ 0.04 \\ \hline \\ \end{array}$ More than 10.16 l/min (308)	Replace vane rotor or cover.	nba fai en-
$\begin{array}{c} 0.02 & \sim 0.0033 \\ 0.02 & \sim 0.007 \\ (0.0008 & \sim 0.0028) \\ \hline 0.2 & \sim 0.27 \\ (0.0079 & \sim 0.0106) \\ \hline 0.014 & \sim 0.057 \\ (0.0006 & \sim 0.0016) \\ 0.04 \\ (0.0016) \\ 0.04 \\ \hline 0.04 \\ \hline 0.04 \\ \hline 0.04 \\ \hline \end{array}$ $\begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	Replace vane rotor or cover. 3) US pint/min el and before) 1d after)	alte f al este alte f fa transec

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Items to be Inspected	South M.	Nominal Values Dimensions Requiring Service
	C 180	
Pressure at the beginning of the action of the oil	C 220	
pressure regulating valve (kg/cm²)	DL 200	
	DL 201	
Cooling system (Radiator)	n elize státiszteg	
Corrosion, damage or in complete conection of radiator and the water pump	a wax aqu	
Leakage test (air pressure in kg/cm²)		
Core operating rate		Less than 80 %
Pressure at the begining of the action of pressuring valve (kg/cm ²)	lie visitati	
Pressure at the begining of the action of the negative pressure valve (kg/cm²)	ā	fraile bre leben 207 53-
Cooling system (Water pump)		
Stagger of water pump ball bearing	6 TRAN NO.	nin 110-000 ni (22000-200
	C 180	100- 100
Delivery in L'min	C 220	
(Pump 3,000 r.p.m. at the atmospheric temperature)	DL 200	
	DL 201	
	C 180	191000-2000
Clearance between the water pump blade and the	C 220	
pump body	DL 200	
	DL 201	
Looseness of fan belt		More than 10.16 (208) (208) (25 gind) on that 8.25 (248) (262 Model and be's are than 10.16 (253 Model and before) on than 8.25 (262 Model and before)

as Assembled	Limits fos Use	Manners of Service	Remarks
3.2~3.5 kg/cm ² (46~50) PSI 4.5 (64)		(the action of the	nitpedair at the bagining eropatici fit the atwach
3.5 ('62 Model and bet 4.5 ('63 Model and aft	fore) er)	ing of the thermostat	Reference values.
3.5 ('62 Model and bet 4.5 ('63 Model and aft	fore) er)	senter and bearing	alating space between fi
		Correct or replace it.	to a start of a start
0.5 kg/cm ²	in a second state	Correct the radiator when bubbles	
(7.10) PSI		come out.	
	-	Correct it.	
0.44~0.50 (6.3~7.1)		Investor .	Reference valve.
0.04~0.05 (0.6~0.7)		Kara atak di salahan Kara atak di salahan	Reference value.
		Vatifica Such de restoce fuel texte	loucing and damage in f
	0.2 mm	Replace the bearing.	0
	(0.00/9) 11		
55 I/min (14.5) US gal/	/min	10	uning breed motors to
55 I/min (14.5) US gal/ 60 (15.9)	(0.0079) III /min	enag l	nai system (Food paint
55 I/min (14.5) US gal/ 60 (15.9) 60	(0.0079) III	qmaq l qmaq l a lac si	ning boot front sea and divergences
55 I/min (14.5) US gal/ 60 (15.9) 60	(0.0077) III	a) 1 m (2.26) ft 	nin versen (Fond anne
55 I/min (14.5) US gal/ 60 (15.9) 60 60 1 15~1.85 mm (0.0453~0.0729) in	/min	In case pump blade is in contact with the nump body replace the	nin a set of
55 I/min (14.5) US gal/ 60 (15.9) 60 60 1 15~1.85 mm (0.0453~0.0729) in 1.2 ~1.3 (0.0473~0.0512)	(0.0079) III	In case pump blade is in contact with the pump body, replace the impeller and the water pump body	nin
55 1/min (14.5) US gal/ 60 (15.9) 60 60 1 15~1.85 mm (0.0453~0.0729) in 1.2 ~1.3 (0.0473~0.0512) 1.2 ~1.3	(0.0079) III	In case pump blade is in contact with the pump body, replace the impeller and the water pump body bearing.	and a sector boad annu sector with hone annu sector with hone annu sector annu
55 1/min (14.5) US gal/ 60 (15.9) 60 60 1 15~1.85 mm (0.0453~0.0729) in 1.2~1.3 (0.0473~0.0512) 1.2~1.3 1,2~1.3	(0.0079) III	In case pump blade is in contact with the pump body, replace the impeller and the water pump body bearing.	eretera (Food pund eretera (Food pund eretera eretera polare produce P
55 I/min (14.5) US gal/ 60 (15.9) 60 60 1 15~1.85 mm (0.0453~0.0729) in 1.2 ~1.3 (0.0473~0.0512) 1.2 ~1.3 1,2 ~1,3	(0.0079) III	In case pump blade is in contact with the pump body, replace the impeller and the water pump body bearing.	er erstere Fred ound reserves Fred ound erstel erstere Fuep 1,200 m Section hand Delivery hand 0.0
55 1/min (14.5) US gal/ 60 (15.9) 60 60 1 15~1.85 mm (0.0453~0.0729) in 1.2 ~1.3 (0.0473~0.0512) 1.2 ~1.3 1,2 ~1.3 1,2 ~1,3	(0.0079) III	In case pump blade is in contact with the pump body, replace the impeller and the water pump body bearing.	eretere (Food pund manual y with home eretere and definence of definence from 1,000 co baction hand (Delivery head 0.)

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Items to be	e Inspected	Nominal Dimensions	Values Requiring Service
Tempeature at the beginin	ng of the action of the		3.2 - 2.5 kg (m
thermostat (at the atmospl	heric pressure)		
Temperature at the full op	pening of the thermostat	(915))	0.5 (°62 Medal and be
(at the atmospheric pressu	ire)		
Fastening space between f shaft	fan center and bearing	(0#	to time (stop (&)) c.h
Fastening space between t bearing shaft	the blade and the pump		
Fastening space between t water pump body	the ball bearing and		
and the fail the browned	an a grand and a second a second a second a s		121 01.31
Fuel system (Pining an	d others)		
			(6.3 - 7.1)
Clogging, cracking, loose	connection and faulty		
nozzle holders			
Clogging and damage in f	uelfilter		
Dirts and damage in fuel t	tank		
Stapport of States projection	Produced Beckericky	0.0 ave 2.0 av 19520.01	Constant of
Fuel system (Feed pum	p)		
Sucking capacity with han	d pump		(0.21) (0.
Head :	1 m (2 20) (1		
Speed + 100 times /min	(3.20) II		More than 120
Internal diameter of pipe	8 mm		times
Length of pipe : About	(0.3152) in 2 m (6.6) ft		
Fuel delivery in cc	and the second statement of the second se		12120.03121
[Pump 1,000 r.p.m. for 1	5 seconds		Less than 200 ce
Suction head 1 m (3.28)) ft		(0.42) US pints
Delivery head 0.3 m (0.	9843) ft		
and server of the party	Adapt		min 21 mach

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Oil leakage 2.0 kg/cm 2 (28.450) PSI

as Assembled	Limits for Use	Manners of Service	Remarks
75.0±2.5°C			
80.0±2.5°C			alen en frankrigen frankrigen fra
0.015∼0.05 mm (0.0006∼0.0020) in	×		and in the second s
0.009~0.045 (0.0036~0.0018)			
0.009~0.025 (0.0004~0.0010)		with month hardwale is write	
		-	
		Correct or replace them.	
		Clean or replace fuel filter element.	
		Clean or replace fuel tank.	
		valve in seconds the time a to drop from the initial dewn to 5 kg/cm ⁴	
Suction should begin within 60 times		Correct or replace pump.	
		When the most select provides for to the definition of the definition of the selection of t	
08-99-50 002 (0.007-9	91 m	Correct the play.	مرمام إمام
More than 300 cc (0.63) US pints		Ditto	
Slight continuous	10.0000 Be	Replace in Youd	of new feel week too
		For other leaks rectify or replace	

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Items to be Inspected Nominal Dimensions	Values Requiring Service		Standard Values as Assembled	Limits for Use	Manners of Service	Remarks
proving its the brutching of the activation the	And sales of the			he was		
el system (Fuel injection pump) nger	222.004					unger L
						Continuously operate t
						nozzle tester provid
						with pressure gauge a
						with plunger in the po
		00				tion of the idling oprati
Support Milleran its half bearing and		Ser Contraction				The pressure gauge to
ightness of plunger after 5 strokes from the al pressure of 100 kg/cm² (1422) PSI			200 kg/cm² (2844) PSI	125 kg/cm ² (1777) PSI	Replace plunger and barrel.	used should be of a size 100 mm (3.94) in and an
						ximum graduation of 3
						kg/cm² (4978) PSI accor
						ing to JIS B 7505. The co
						duct pipe to be used sho
						be of an inner diameter
						1.6 mm (0.0630) in and
			Loss that has a		-	length of 100 mm (3.94)
						The plunger should be
						Bottom Dead Center,
						The pressure gauge to
tightness of delivery value in seconds the time		100				used should be of a si
nuired for the pressure to drop from the initial			10 sec	5 sec	Ditto	of 100 mm and a maxim
essure of 100 kg/cm ² down to 5 kg/cm ²			10 300	0 100	rassure (120 kg/cm/r	graduation of 350 kg/cr
(1422) PSI (71.1) PSI						The conduct pipe to
						used should be an inn
		1.1				diameter of 1.6 ϕ and
	a store to be out a					legth of 100 mm (3.94)
re of the piston part of the delivery valve			to redeated.	dens to	When the wear is severe, replace the delivery valve.	
al play of camshaft	More than 0.2 (0.0079)	600	0.10 mm (0.0039)	in	Correct the play.	
gular interval for the begining of injection (in 90°	More than $\pm 1^\circ$		±30′	194.2 T	Adjust tappet or replace camshaft	in the state of the second
angle of rotation of pump)		- Charles			or tappet.	and all second second
arance between tappet and pump body	suctantizes Mr.	00	$0.02{\sim}0.07$ mm (0.0079 ${\sim}0.0028$) in	0.2 mm (0.0079) in	Replace it.	-
ess in the head part of the lower spring seat	dand ment man		operation of the second	0.2	Replace the lower spring seat.	

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atron It	ems to be Inspected	Nominal Dimensions	Values Requiring Service	Standard Values as Assembled	Limits for Use Manners of Service	Remarks
					Central rack	
Plunger				and the second se	pupting the second seco	
	Spring force in kg When compressed to 44 mm (1.7336) in	15.3 kg (33.7) Ib		00	13.3 kg (29.3) lb	vira of misthan 1. aorata yaha opening manuser
lunger spring	Free height	51.5 mm (2.0291) in			49.5 mm (1.9503) in Replace ring.	
	Right-angularity	i Soor wideli John politika		() C Less than 1.0 mm (0.0394) in	1.5 mm (0.0591) in	
Clearance betwe of plunger and t	en the flange of the convex part he groove of control sleeve		More than 0.12 mm (0.004728) in	0.02~0.08 mm (0.0008~0.00315) in	Replace control sleeve	normal anticition of normal matter barries pressure is
Backlash betwee	n control rack and pinion			0.06 (0.00236)	0.15 (0.0059) Replace the rack.	
Sliding resistance the operation of	e of control rack in g (just after pump)	1. 		Less than 150 g (5.29) oz	L'A lunda - 140	
an anna an an ana Castan an gana In b	nang ang Removing and	Control rack Position	Number of revolutions of the pump	Volumes of injection p cylinder	per 1 Non-uniformily Remark	overnot secondic type (Implest polition fection pamp is operated at 20
Yolume of injecti The nozzle valve 1706) PS1 nozzle	ion e opening pressure : 120 kg/cm ² ; C 180 e type : NP-DNOSP 212)	11.7 mm (0.46098) in 12.8 (0.5043)	1 500 r.p.m	45.6 cc/min 3.04 cc/ (2.7907) in ³ /min (0.1805 25.1 3.34 (1.5361) (0.2044)	$\pm 2.5 \%$ ± 4.0	0
		10.0 (0.3940)	1,800	40.5 2.25 (2.4786) (0.1377)	±4.5	
[59.5]	her diffe of	About 7.8 (0.3072)	300	2.4 0.8 (0.1469) (0.0489)	±14.0	
		Control rack Position	Number of revolutions of the pump	Volumes of injection p cylinder	per 1 Non-uniformily Remark	
olume of inject	on	12.0 mm (0.47280) in	1,500 r.p.m	59.1 cc/min 3.94 cc/ (3.6169) in ³ /min (0.2411	100st 1) in ³ /100st ±2.5 %	
	e type : NP-DNOSD 212)	12.6 (0.49644)	750	30.4 4.05 (1.8605) (0.2479)	±4.0	
700) PS1 nozzi		10.0		F/ 6 6 1 6		

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Items to be Inspected	Nominal Dimensions		Values Requiring Service	
	Control rack Position		Number of revolutions the pump	of
Volume of injection	12.0 mm (0.4728) in		1,500 r.p.m.	
(The nozzle valve opening pressure : 120 kg/cm²; DL 200 (1706) PSI nozzle type : N-DNOSD 211)	12.6 (0.4964)	2.6 750 964)	750	
	10.0 (0.3940)		1,800	
	About 7.5 (0.29530)		300	
	Control rack Position	torn (ni (b	Number of revolutions the pump	of
Volume of injection	12.0 mm		1,500 r.p.m.	
(The nozzle valve opening pressure is 120 kg/cm ² DL 201 (1706) SPI nozzle type N-DN4SD24)	12.6		750	
which between control to a new provide "	10.0		1,800	
	About 7.5		300	

Governor

Pneumatic type (Inspect position of the fuel adjusting rod of the fuel injection pump when fuel injection pump is operated at 500 r.p.m. and the negative pressure is varied by vacuum pump.

Effective start of the torque spring Performance C 180 Effective end of the torque spring N-EP/MZ60A17NP 12d type Effective start of the main spring Effective end of the main spring Effective start of the torque spring Effective end of the torque spring Performance C 220 NP-EP/MZ60A 47NP 24d Effective start of the main spring Effective end of the main spring

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No load maximum revolution

.....

spring

Standard Values Limits for Use Manners of Service Remarks as Assembled Volumes of injection per 1 Non-uniformity Remark cylinder 53.7 cc/min 3.58 cc/100stroke (3.276)in³/min (0.218) in³/100st +2.5 % 27.3 3.64 +4.0 (1.665)(0.222)48.6 2.7 ± 4.5 (2.965)(0.165)2.4 0.8 ± 14.0 (0.146) (0.049)

Volumes of injection per 1 Non-uniformity Remark cylinder 53.7 cc/min 3.58 cc/100st ±2.5 % 27.2 3.62 \pm 4.0 49.7 2.76 \pm 4.5 (3.033) (0.168) 2.4 0.8 ± 14.0

Negative pressure	Control rack position	0
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	12.8 mm (0.5043) in 11.7 (0.4610) 11.7 7.3 (0.2876)	Spring constant of gover- nor main spring : 90 gr/mm - (0.1241) oz/in
Negative pressure	Control rack position	
95∼155 mm Aq (3.743∼5.007) in Aq	12.7 (0.5004)	Free length of governor main spring 47.5 mm
About 280 (13.73)	12.0 (0.4728)	(1.8715) in
525~565 (20.685~22.281)	12.0	Spring constant of gover- nor main spring :
761∼851 (29.981∼33.5294)	6.5 (0.2561)	90 gr/mm (0.1241) oz/in
About 1,280 (50.162)	6.5	

Items to be inspected		Nominal Values Dimensions Requiring Service		Standard Values as Assembled	for Use	Manners of Service	Remarks
		Paradante Weingtotief dejection gent		Negative pressure	Control rack po	osition	
		Effective start of the torque spring		90∼130 mm Aq (3.546∼5.122) in Aq	12.6 mm (0.4964) in	and the	
Performance	DL 200	Effective end of the torque spring		225~285 (8.865~11.2290)	12.0 (0.4728)		Spring constant of gover
N-EP/MZ60 AN15d	DE 200	Effective start of the main spring		530-560 (20.882~22.064)	12.8 (0.5043)		35 gr/mi (0.0483) oz/i
		Effective end of the main spring		600-670 (23.64~26.398)	7.5 (0.2955)		(,,,,,,,,,,,,.
	4.9	No load maximum revolution	00	790-930 '31.126~36.642)	7.5		
		Notices of a partice participants		Negative pressure	Control rack po	osition	
		Effective start of the torque spring	00	85~145 mm (3.349~5.713) in A.4	12.6		Free length of governo
Performance	DI 201	Effective end of the torque spring		About 250 (9.85)	12.0		main spring : 47.5 mm (1.8715) ni
NP-EP/MZ60A47NP4d	DL 201	Effective start of the main spring		430~470 (16.942~18.518)	12.0		Spring constant of gover
		Effective end of the main spring		765~855 (30.141~33.687)	5.0 (0.0197)		90 gr/mn (0.1241) oz/ii
		No load maximum revolution number		About 1,100 (43.34)	5.0		
Government,				Negative pressure	Control rack po	sition	
		Effective start of the torque spring		85~145 mm Aq	12.6		Free length of governo
Performance	holling door	Effective end of the torque spring	OC	About 250	12.0		main spring : 48.5 mm (1.9109)
NP-EP/MZ60A47NP8d	DL 201	Effective start of the main spring		560~600 (22.064~23.64)	12.0		Spring constant of gover-
		Effective end of the main spring	00	890~985 (35.066~38.809)	5.0		90 gr/mn (0.1241) oz/ii
	23	No load maximum revolution number		About 1,210 (47.674)	5.0	ing requiring	Aller and the second to
		the college and the state of the state					
Mechanical type	12.7		600	0.508.1.9			
		Governor type		Adjusting part	Control rack position	Number of revolution of the pump	
Performance	DL 200	N ED /DSV 250- 1 200 4142015027	00	Full load stopper	12.0 mm (0.4728) in	700 r.p.m.	
	DE 201	Adjusting limit : 350~750 r.p.m.		Maximum speed stopper	10.5 (0.4137)	750	
				No load maximum revolution number	About 6.8 (0.2679)	755~785	

Items to be inspected	d to creanall	Nominal Dimensions	Requiring Service
		N-EP/RSV 350-	~1,300 AIA301NP37
		Adjusting limit :	350~900 r.p.m.
		0.51	2157788
Portormanco	DL 200		10722,11,22801
renormance	DL 201	Contraction of the second	
		N-EP/RSV 350-	~1.450 AQ 2A301NP3
		Adjusting limit :	350~1,100 r.p.m.
			31.126-26.6421
niection timing regulator (Automatic t	imer)		
aleenen ming regentier vieremane.			
		63 for and evaluate	Number of revolution of the pump
3 3	nulsies	(Number of revolutior of the pump 500 r.p.m. ····
	nakéres	(Number of revolution of the pump 500 r.p.m. ···· 600 ····
	ngléres		Number of revolution of the pump 500 r.p.m. ···· 600 ···· 700 ····
	C 180		Solution 500 r.p.m. 600 700 800
	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900
	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000
	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000
	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,200
	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,200 1,250
Operation of the injection timing regulator	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,200 1,250
Operation of the injection timing regulator	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,200 1,250 500 600
Operation of the injection timing regulator	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,200 1,250 500 700
Operation of the injection timing regulator	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,200 1,250 500 600 800
Operation of the injection timing regulator	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. ···· 600 ···· 700 ···· 800 ···· 900 ···· 1,000 ···· 1,200 ···· 500 ···· 500 ···· 1,200 ···· 500 ···· 800 ···· 900 ···· 900 ····
Operation of the injection timing regulator	C 180	NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,250 500 700 800 1,250 500 900 1,250 500 1,250 500 1,250 500 600 700 800 900 1,000
Operation of the injection timing regulator	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,250 500 700 1,250 500 900 1,250 500 1,250 500 1,250 500 1,250 500 1,000 1,000
Operation of the injection timing regulator	C 180	 NP-EP/SCD 500 ~1,250A5L NP-EP/SCD 600 ~1,400A 3.5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,250 500 700 1,250 500 1,250 500 1,250 1,250 1,250 1,250 1,250 1,200 1,200
Operation of the injection timing regulator	C 180	NP-EP/SCD 500 ~1,250A5L NP-EP/SCD 600 ~1,400A 3.5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,200 500 1,250 500 500 1,250 500 600 700 1,250 1,200 1,000 1,000 1,200 1,300
Operation of the injection timing regulator	C 180	 NP-EP/SCD 500 ~1,250A5L	Number of revolution of the pump 500 r.p.m. 600 700 800 900 1,000 1,250 500 1,250 500 1,250 500 1,200 900 1,000 1,000 1,200 1,000 1,200 1,200 1,200 1,400

Standard Values as Assembled Limits fo	or Use	Manners of Service	Remarks
Full load stopper	12.0 mm (0.4728) in	700 r.p.m.	
Maximum speed stopper	10.5 (0.4137)	900	
No load maximum revolution number	About 6.8 (0.2679)	930~940	
Full load stopper	12.0	700	A
Maximum speed stopper	10.5	1,100	
No load maximum revolution number	About 6.8	1,140~1,150	

	Advance angle direction	Advance angle
ayerêm (Funt injection norsta)	1	0,
		0.2~1.2
		0.9~1.9
		1.6~2.6
shiftees of the non-on whe shift part in	Left	2.3~3.3
		2.9~3.9
		3.6~4.6
of the standard in the pressure of from		4.3~5.3
Advance angle dire		5.0±0.5
is as when facing the	1	0
gine from the front.		0~0.5
		0~0.7
		0.2~1.0
	and the last in	0.5~1.5
	Left	1.0~2.0
	and the second second	1.5~2.5
		1.9~2.9
		2.3~3.3
		3.0~4.0
		3.5±0.5

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Items to be Inspected	Nominal Dimensions	Values Requiring Service	- L.	Standard Values as Assembled	Limits for Use	Manners of Service	Remarks
2000 2000 2000	DL 200 N-EP/SCD 400 ~1,000A 3.5R	300 400 500 600 700 800 900 1,000		$\begin{array}{c} 0\\ 0 \sim 0.6\\ 0 \sim 1.15\\ 0.6 \sim 1.75\\ 1.2 \sim 2.3\\ 1.8 \sim 2.85\\ 2.4 \sim 3.45\\ 3.0 \sim 4.0\end{array}$	Right	(nottasibut qua)	antono W) method pitter
Operation of the injection timing regulator	DL 201 N-EP/SCD 600 ~1,400A'3.5L	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	00	$\begin{array}{c} 0\\ 0{\sim}0.5\\ 0{\sim}0.7\\ 0{,}2{\sim}1.0\\ 0{,}5{\sim}1.5\\ 1{,}0{\sim}2.0\\ 1{,}5{\sim}2.5\\ 1{,}9{\sim}2.9\\ 2{,}3{\sim}3{,}3\\ 3{,}0{\sim}4.0\\ 3{,}5{\pm}0.5 \end{array}$	Left	Lingues of angles correct the boots to original bacon Clanges in 105, 15, 200, 19, 055, 3	as wheen facing the engin from the front.
Production the laboration will (Complemented and						Replace the oil with the specified lubricating oil.	
governor chamber)	h . Algeno e				G113 01, 04	ANT OTTIS-01, OF OTTS-04, 1300 WI	(002) Mooth and a commence
Fuel system (Fuel injection nozzle) Oil-tightness of the needle valve seat part at 90 kg/cm ² (1280) PSI	Rent -	Angler, sheatstead			(G1123-01, 04 - 454 pm (1.7730) (n 11 - 4579 11 - 4579	When there is leakage from the seat part, correct it or replace the part.	Carametric and an Alfred (200) Carametric (200) Carametric Alemetric Manuel
Fuel system (Fuel injection nozzle) Oil-tightness of the needle valve seat part at 90 kg/cm ² (1280) PSI Oil-tightness of the needle valve shaft part in seconds (the time required for the oil pressure added to the nozzle to fall from the initial pres- sure of 300 kg/cm ² down to the pressure of from (4266) PSI 250 kg/cm ² to 200 kg/cm ²)		229-04 229-04		More than 6.0	101133-01, 04 14 11 17 10 15 10 15 15 15 15 15 15 15 15 15 15	When there is leakage from the seat part, correct it or replace the part. Replace the needle valve or the valve seat.	The oil to be used is a light oil of a viscosity o 37 to 40 seconds by red wood at 20°C.

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				- E -				
ltems	to be inspected	Nominal Dimensions	Values Requiring Service		Standard Values as Assembled	Limits for Use	Manners of Service	Remarks
Electric system (W	(arning lamp indication)		200-0 21-0	000		200 g (7.054) ez	In case (RSS2 and) AOulis (50: (WOSE) Hawlin brush is not unit one or the shearth	dand bear da
Operation of warnir	ng lamp or ammeter					601 (60) 601	In case the warning lamp indication is abnormal in the normal operat- ing speed of engine correct the electric system.	sh spring te taj
Electric system (W	/iring)		10-0					
Loose connection, co electric wiring	ut or damaged coating of the			00	42 12		Correct it.	anotaya sinis Loring fast C
Electric system (D Armature shaft	ynamo) C 220, DL 200, DL 201		-1.81.2	00		4.17	-(m) 12V1 12V1	a sharayan Shaka
Bending of shaft	Report of the set of t		More than 0.1 mm (0.0039) in				Correct it.	
Clearance between	shaft and bearing					0.2 mm (0.0079) in	Replace bearing.) mategalahia
Commutator, Hita	chi (200 W) : GT115-01, 07 G115-08. (300 W)	GT123-01, 04					(alabam make and said a SA') (WOD) internal	<u></u>
	C220 Hitachi (300W) GT123-04 (for C220)	45φ mm (1.7730) in				43φ mm (1.6942) in	GT)15-08	tornes brebe
Wear of commutate	or Hitachi (200W) ('62 & previous year models) G115-08, GT115-01, GT115-07	37¢ (1.4579)		· 1		35 φ (1.379)	Replace it.	
alameter	Hitachi (300W) ('62 & subsent year models) GT123-04 (GT123-01)	45φ		00		43 <i>φ</i>		0
Partial wear of Co	nmutator diameter		More than 0.3 mm (0.0118) in		Less than 0.05 mm (0.0020) in		Correct it.	
Depth from commut	ator surface to mica		More than 0.2 (0.0079)		0.5~0.8 (0.0197~0.0315)		Correct depth.	E more E
Commutator surfac	e				. [4.5~15.5V		In case the surface is stained or damaged, correct is with an emery cloth or the like.	#1.
Electric system (Brush	Dynamo)	in the second part	ter rad ourses	010			aponov qu do	
10.101 01.01 01.01	C220 Hitachi (300W) GT123-04 (for C220)	16 mm (0.6304) in			1900 rapins	11 mm	In case the correct surface of	
Brush and brush	Hitachi (200W) ('62 & previous year models) G115-08, GT115-01, GT115-07	16		00		(0.4334) in	brush with commutator is not com-	
spring Length of brush	Hitachi (300W) ('62 & subsent year models) GT123-04 (GT123-01)	16				11	plete, in case the brush is badly worn or damaged or in case the manner of brush holder to support	
an a	ta a		-				brush is not proper, correct it.	

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Ite	ms to be Inspected	Nominal Dimensions	 Values Requiring Service
Brush and brush	Hitachi (300W) GT123-04 (for C220)	200 g (7.054) oz	
spring Brush spring	Hitachi (200W) ('62 & previous year models) G115-08, GT115-01, GT115-07	600 (21.16)	
Force (g)	Hitachi (300W) ('62 & subsequent year models) GT123-04 (GT123-01)	700	

Electric system (Dynamo) Motoring test C 220

Standard current Hitachi (300W) G123-04 (standard voltage : 12V)

Electric system (Dynamo) Motoring test DL200, DL201

	Hitachi (300W) ('62 & previous year models)
Standard current	GT115-08
(standard volta-	Hitachi (200W) ('62 & previous year model)
ge : 12V)	GT115-01, GT115-07
	Hitachi (300W) ('62 & subsequent year
	model) GT123-04, GT123-01

Electric system (Dynamo regulator)

Carbon pile type, (120V, 200W, Hitachi R115-03) Performance. DL200, DL201			
Adjustment of	Voltage at no load		
(at 1700 r.p.m.)	Push up voltage		

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Cut-out speed r.p.m.

Cut-out relay

Cut-out voltage

Closed circuit reversal

current

Standard Values as Assembled Limits for Use Manners of Service Remarks In case pressure of the spring of brush is not uniform or the strength of the spring is not proper, correct it. 4.0~6.0A 750~950 r.p.m. 4.0~6.0A 700~900 r.p.m. 7.0~10.0A 800~1100 r.p.m. 4.0~6.0A 750~950 r.p.m.

14.5~15.5V		-
8~10V		
less than	Defects at the contact point of cut-	Trivit type (12 V
1300 r.p.m.	out relay should be corrected : Gap at relay point … 0.7~0.9mm (0.0276~0.0355) in	
12.7~13.4V	Gap between moving piece and core	spoilor is such as 13
less than 5A	Gap between moving piece and yoke	

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Intern to be Impacted Naminal Dimension Weighting Service output of 80% load.						
output at 80% load. Isst than Beerite system (Regulator) Tirrit type (12V 200W Hitecht T1 3-01), Performance. Defects at the context point of field ring to the scatter point of chi out relay block to child the scatter point of chi out relay block to child relation to the scatter point of chi out relation (child relation field ring the scatter point of chi out relation (child relation field ring the point field ring to the scatter point of chi out relation (child relation field ring to the scatter point of chi out relation (child relation field ring the point field ring relation ring regulator ring regulator ring regulator ring regulator ring regulator ring regulator ring regulator ring regulator ring regulator field ring the point field ring regulator ring ring ring ring ring ring ring ring ring ring ring ring ring ring ring	Items to be Inspected Dimens	nal Values sions Service	н.	Standard Values as Assembled	for Use Manners of Service	Remarks
Electric system (Regeleter) Tirrit yre (12Y 200W Hinschi T113-01, 12Y 300W Hitschi T123-01), Performance. 20200, f1201 Adjustment of voltage (a1 700 r.p.m.) Cut-out speed r.p.m. Cut-out speed r.p.m. Cut-out speed r.p.m. Cut-out voltage Cut-out voltage Electric system (Regeleter) Cut-out voltage Cut-out voltage Cut-	output at 80% load.		00	less than 1700 r.p.m.	Defects of the context point of Anti- ant (Ally shall be car model beaut too h	
Histric system (Regulator) Hirrit 1yze (12V 200W Hirschi 1113-01, 12V 300W Hirschi 1123-01), Performance. 2000, 0.1201 Mightiment of voltage applorer voltage strin load (at 1700 r.p.m.) Defects at the contact point of field relay should be corrected : 14~157 Get between revity pains and U4~157 Get between revity pains and Cut-out subset Figure get revity black Get between revity pains and U4~157 Get between revity pains and Get between revity pains and Get between revity pains and U4~157 Get between revity pains Histrik system (Regulator) Tarrity pains (12Z-015), between revity pains Histrik system (Regulator) Tarrity pains Histriken 1700 r.p.m.			do			
Iteriti system (Begulator) Itril type (12Y 200W Hitschi 11 13-01, 12Y 300W Hitschi 11 23-01), Parformance.			1		Los between motion bereit	
Adjustment of voltage agulator voltage at no load Idea	ilectric system (Regulator) Tirril type (12V 200W Hitachi T115-01, 12V 300W Hitachi T123 DL200, DL201	-01), Performance.	00			hert "Sid in high
dijutment of voltage egulator voltage of no load Gop between relay point 0.4-0.3 (0.0198-0.0079) (di 1700 r.p.m.) Gop between relay point 0.4-0.3 (0.0198-0.0079) Gop between relay point 0.4-0.3 (0.0198-0.0079) Cut-out voltage Gop between relay point 0.4-0.3 (0.0198-0.0079) Gop between relay point 0.4-0.3 (0.0198-0.0079) Cut-out voltage Cut-out voltage Gop between relay point 0.4-0.3 (0.0198-0.0079) Cut-out voltage Cut-out voltage Gop between relay point 0.4-0.3 (0.0198-0.0079) Cut-out voltage Cut-out voltage Gop between relay point 0.4-0.3 (0.0198-0.0079) Cut-out voltage Cut-out voltage Gop between relay point 0.4-0.3 (0.0198-0.0079) Cut-out voltage Cut-out voltage Gop between relay point 0.4-0.3 (0.0198-0.0079) Cut-out voltage Cut-out voltage Gop between relay point 0.4-0.7 (0.0234-0.0076) Dutput at 80% load Image if the contact point 0.4-0.7 (0.038-0.0077) Image if the contact point 0.4-0.7 (0.0198-0.0077) Iterrit type (12V 300W Hitechi 11123-00), Performance. C220 Image if the contact point 0.4-0.5 (0.0198-0.0077) Image if the contact point 0.4-0.5 (0.0198-0.0077) Itaria to voltage if no load voltage if no load Image if the contact point 0.4-0.5 (0.0198-0.0077) Image if the contact point 0.4-0.5 (0.0198-0.0077) <t< td=""><td>an arrest Read Block Block Cite</td><td></td><td></td><td></td><td>Defects at the contact point of field relay should be corrected :</td><td></td></t<>	an arrest Read Block Block Cite				Defects at the contact point of field relay should be corrected :	
egulator voltage et no load egulator (et 1700 r.p.m.) Cut-out speed r.p.m. Cut-out speed r.p.m. Cut-out speed r.p.m. Cut-out voltage Cut-out voltage Sa Cut-out voltage Cut-out voltage Sa Cut-out voltage Sa Cut-out voltage Cut-out voltage Sa Cut-out voltage Cut-out voltage Sa Cut-out voltage Sa Cut-out voltage Sa Cut-out voltage Sa Cut-out voltage Sa Cut-out voltage Sa Cut-out voltage Cut-out voltage Cut-out voltage Cut-out voltage Cut-out voltag	adjustment of voltage		qo		Gap between relay point 0.4~0.5 (0.0158~0.0197)	
(university) Output speed r.p.m. unout relay Cut-out speed r.p.m. Cut-out values Cut-out values Closed circuit reversal Current Durput at 80% load East than 1200 r.p.m. Interric system (Regulator) Itess than 1200 r.p.m. Iterric system (Regulator) Itess than 1200 r.p.m. Iterric system (Regulator) Iterric system (Regulator) Iterric system (Regulator) Iterric system (Regul	egulator voltage at no load			14~150	Gap between moving piece and	
Gut-out speed r.p.m. Cut-out speed r.p.m. Gut-out relay Gut-out voltage Closed circuit reversal current Closed circuit reversal butput at 80% load Gap between moving piece and core 0.9~1.0 (0.0035~-0.0394) leetric system (Regulator) Itrril type (12V 300W Hitschi T123-09), Performance. C220 Iess than 1700 r.p.m. diustment of voltage egulator at 1700 r.p.m. Defects at the contact point of vol- tage regulator should be corrected : Gap between moving piece and core 0.9~1.0 (0.0355~-0.0394)			1		Gap between moving piece and yoke 0.6~0.7 (0.0236~0.0276)	
At-out relay Cut-out voltage Closed circuit reversal current utput at 80% load diustment of voltage rguldor r p.m. L2.7~13.7V Gap at relay point 0.6~0.7 (0.0335~0.0394) 8 A Gap at relay point 0.6~0.7 (0.0335~0.0394) less than 1700 r.p.m. Less than 1700 r.p.m. Defects at the contact point of vol- tage regulator should be corrected : Gap between moving piece and corre 0.9~1.0 (0.0355~0.0394) Less than 1700 r.p.m. Less than 1700 r.p.m.	Cut-out speed r.p.m.			less than 1300 r.p.m.	Defects at the contact point of cut- out relay should be corrected :	
Closed circuit reversal current B A Gap between moving piece and core 0.9~1.0 (0.0355~0.0394) utput at 80% load B A Gap between moving piece and core 0.9~1.0 (0.0355~0.0394) eetric system (Regulator) rril type (12V 300W Hitachi T123-09), Performance. C220 B A Defects at the contact point of vol- tage regulator should be corrected s: Gap between relay point 0.4~0.5 (0.0168~0.0197) dijustment of voltage rgulator voltage at no load 14~15V Gap between moving piece and core 0.97(0.0236-0.0276) Gap between moving piece and core 0.97(0.0276-0.0276) Gap between moving piece and core 0.97(0.0	t out solay. Cut-out voltage			12.7~13.7V	Gap at relay points 0.6~0.7	
ectric system (Regulator) rril type (12V 300W Hitachi T123-09), Performance. C220 justment of voltage gulator voltage at no load t 1700 r.p.m.) Less than 1700 r.p.m. Less than 1700 r.p.m. Less than 1700 r.p.m. Less than 1700 r.p.m. Less than 1700 r.p.m.	Closed circuit reversal current			8 A	Gap between moving piece and core 0.9~1.0 (0.0355~0.0394)	
ectric system (Regulator) rril type (12V 300W Hitachi T123-09), Performance. C220 djustment of voltage rgulator voltage at no load tt 1700 r.p.m.) Defects at the contact point of vol- tage regulator should be corrected : Gap between relay point 0.4~0.5 (0.0158~0.0197) Gap between moving piece and Gap between moving piece	utput at 80% load		00	less than 1700 r.p.m.	0L 200	0
Electric system (Regulator) Tirril type (12V 300W Hitachi T123-09), Performance. C220 Adjustment of voltage regulator voltage at no load at 1700 r.p.m.) Defects at the contact point of vol- tage regulator should be corrected : Gap between relay point 0.4~0.5 (0.0158~0.0197) Gap between moving piece and core 0.6~0.7 (0.0236~0.0276) Gap between moving piece and core 0.6~0.7 (0.0236~0.0276) Gap between moving piece and core 0.6~0.7 (0.0236~0.0276)	Internet singen Gynemics Registering Artern Pite Type, (1200) Scow, Wranti Fill Scol 3) Registeren	100. 65201	00			a general a
Idectric system (Regulator) Implementation (12V 300W Hitachi T123-09), Performance. C220 Implementation (12V 300W Hitachi T123-09), Performance. C220 Adjustment of voltage Implementation (12V 300W Hitachi T123-09), Performance. C220 Implementation (12V 300W Hitachi T123-09), Performance. C220 Adjustment of voltage voltage at no load Implementation (12V 300W Hitachi T123-09), Performance. C220 Implementation (12V 300W Hitachi T123-09), Performance. C220 Adjustment of voltage voltage at no load Implementation (12V 300W Hitachi T123-09), Performance. C220 Implementation (12V 300W Hitachi T123-09), Performance. C220 Adjustment of voltage voltage at no load Implementation (12V 300W Hitachi T123-09), Performance. C220 Implementation (12V 300W Hitachi T123-09), Performance. C220 Adjustment of voltage voltage at no load Implementation (12V 300W Hitachi T123-09), Performance. C220 Implementation (12V 300W Hitachi T123-09), Performance. C220 Adjustment of voltage voltage at no load Implementation (12V 300W Hitachi T123-09), Performance. C220 Implementation (12V 300W Hitachi T123-09), Performance. C220 Adjustment of voltage voltage at no load Implementation (12V 300W Hitachi T123-09), Performance. C220 Implementation (12V 300W Hitachi T123-09), Performance. C220 Adjustment of voltage voltage at no load Implementation (12V 300W Hitachi T123-09), Performance. C220						
division of voltage Defects at the contact point of voltage regulator should be corrected : igulator voltage at no load it 1700 r.p.m.) 14~15 V Gap between moving piece and core 0.6~0.7 (0.0236~0.0276)	ectric system (Regulator)					
djustment of voltage gulator voltage at no load t 1700 r.p.m.) tage regulator should be corrected : Gap between relay point 0.4~0.5 (0.0158~0.0197) Gap between moving piece and core 0.6~0.7 (0.0236~0.0276) Gap between moving piece and	rril type (12V 300W Hitachi T123-09), Performance. C220	and all all a	CH C		Defects at the contact point of vol-	an a
ljustment of voltage gulator voltage at no load t 1700 r.p.m.) 14~15 V Gap between moving piece and core 0.6~0.7 (0.0236~0.0276) Gap between moving piece and	0.0276-0.00351 w		00		tage regulator should be corrected : Gap between relay point $0.4 \sim 0.5$	
1700 r.p.m.) Gdp between moving piece and core 0.6~0.7 (0.0236~0.0276) Gdp between moving piece and de between moving piece and	ustment of voltage ulator voltage at no load		90	14~15 V	$(0.0158 \sim 0.0197)$	
Gap between moving piece and	t 1700 r.p.m.)				core $0.6 \sim 0.7$ (0.0236 ~ 0.0276)	
yoke 0.9~1.0 (0.0355~0.0394)					Gap between moving piece and yoke 0.9~1.0 (0.0355~0.0394)	

Items to be Inspected	Mada	Nominal Dimensions	Values Requiring Service
Cut-out speed r.p.m.			
ut-out relay Cut-out voltage			
Closed circuit reversal current			
		<u>.</u>	
output at 80% load	N COTT Read	(TAMA), Quior	o canca.
lectric system (AC Generator)			
likko 400W 12 AGY	C 180		Versel
litachi 400W LT 131-04	C 220		
litachi 400W LT 131-01	DL 200		
litachi 400W LT 131-01	DL 201		
lectric system (AC Generator) lotor	Statute galar too		127-1300 cp
na Marina (Marina) (Marina) (Marina) (Marina) Marina (Marina) (Marina) (Marina) (Marina) (Marina) (Marina) (Marina)	C 180		More than 0.07 mm (0.0028) in
land of shaft	C 220		More than 0.1 (0.0039)
	DL 200		More than 0.1
	DL 201		More than 0.1
Stagger of begring			
Stagger of shaft direction			More than 0.3 mm (0.0118) in
en e	Defects of the	1	
Electric system (AC Generator) Slip ring	Gap between 0		VERMEN
Stain of sing surface	1 - 9'0' - 10 - 5		

as Assembled	imits for Use	Manners of Service	Remarks
less than 1300 r.p.m.		Defects at the contact point of cut- out relay should be corrected :	orde system (AC 0
12.7~13.7 V		Gap between relay point 0.6 \sim 0.7 (0.0236 \sim 0.0276)	
less than 8 A		Gap between moving piece and core 0.9~1.0 (0.0355~0.0394)	
less than 1700 r.p.m.	°én -	and the second and and the	that bail 1
(7.054) oz	1 000 march	in the start of the second second	
(8,0)	(1001) Johnson	Sould to the second manufacture of the second	
		viator for AC Genetator) C 180 C 820	this vertim titum to 12V-12 Al abi 12V-11 (31-04 doi:12V-11 (31-04
		viator for AC Genetator) C 100 C 220- DL 201 DL 201	10 127 12 44 6 127 12 44 61 127 12 13 104 61 127 12 13 107 61 127 12 13 10
		Correct	1412 124114 1244 14 121 1244 14 127 TL 13144 14 127 TL 13140 14 127 TL 131400 14 127 TL 131400 14 127 TL 131400 14 127 TL 131400 14 12
	0.2 mm 0.0079) in	Correct	
(0.2 mm 0.0079) in	Correct	12 12 12 12 14 14 12 12 12 13 15 12 12 12 12 12 12 13 15 12 12 12 12 12 12 12 13 15 12 12 12 12 12 12 12 12 12 12 13 15 12 12 12 12 12 12 12 12 12 12 12 12 12
0.1 mm (0.0039) in	0.2 mm 0.0079) in	Correct	
0.1 mm (0.0039) in	0.2 mm 0.0079) in	Correct	12 12 12 AL AL 127 TL 131-04 AL 127 TL 131-04
0.1 mm (0.0039) in	0.2 mm 0.0079) in	Correct	64 12 TE 131-04 64 12 TE 131-04 75 12
(1 0.1 mm (0.0039) in	0.2 mm 0.0079) in	Correct	

		-								
ltems	to be inspected		Nominal Dimensions	Values Requiring Service		Standard Values as Assembled	Limits for Use	Manners of Serv	vice Re	emarks
Electric system (AC Brush	Generator)	ng si n an aifi le seal Sa si ng sheght in sa si		ters then 1300 r.p.m.	00				Datas - Barth	
alaput este p		C 180 ···	14.0 mm (0.5516) in	127~137 V	00		7.0 mm (0.2758) in	C 180	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	e vac al
	Length of brush	C 220 ···	14.5 (0.5713)		1		9.5 (0.3743)	In case the contact su	face of	
		DL 200	14.5				9.5	brush with slip ring is not o	omplete,	
Brush and brush		DL 201	14.5				9.5	of brush is not uniform	or the	
spring	·			und a costet	() O -			- strength of the spring is not	proper,	
		C 180 ···	····· About 200 g (7.054	1) oz				in case the brush is badly	worn or	
		C 220 ···	300 (10.6)					damaged or in cace the m	anner of	
	Spring force	DL 200 ···	300		00			brush is not proper, correc	t it.	
		DL 201 ···	300							
She LIGHT LI TALS					1 -	Sdog uniceres		Notices (129 Second on when a	iner L	
Electric system (Re	gulator for AC Ge	enerator)								
Nikko 12V 12 AR		C 180						Contract Acids and a	- China	- Q
Hitachi 12V TL 131-	04	C 220								
Hitachi 12V TL 131-	01	DL 220								
Hitachi 12V TL 131-0	01	DL 201								
and of sharts		5.733		the Pales O.S.	1 7	office of sor 1			and a second second	
Electric system (Re Performance	gulator for AC Ge	enerator)			00				•	0
	C 180 at 2500 r.p	o.m.	6		00					
Regulation of the	C 200 at 3000 r.p	o.m.						Correct the damage of	contact	
voltage regulator	DL 200 at 3000 r.	.p.m.				13.5~14.5V		point of the voltage regula	tor and	
(Non-load voltage)	DL 201 at 3000 r.	.p.m.						the field relay		
man a shirt she is a sure			et	anghan 0.3 ma	1 -	and the second second				
Regulation value		Voltage regulaton :			00		Field relay :			
Regulation value		Point gap	core gap	yoke gap			point gap	core gap	yoke gap	
C 180 Nikko 12AR		(0.0118)	(0.0276)	(0.0512)			1.0∼1.3 mm (0.0394∼0.0512	1.1 mm (0.0433)	1.2 mm (0.0473)	
C 220 Hirachi TL 131-	04	0.4~0.5 (0.0158~0.0197)	0.9~1.0 (0.0355~0.0394)	0.9~1.0	00		0.4~0.5	0.5~0.6 (00197~0.0236)	0.2~0.35 (0.0079~0.0138)	
DL 200 Hitachi TL 13	1-01	0.4~0.5	0.6~0.7	0.9~1.0						
DI 001 UN 11 101	1-01	0.4~0.5	06-07	0.0- 1.0	1					

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Items to be Inspected	Nominal Values Dimension Requiring Service		Standard Values as Assembled Limits	s for Use Manners of Servise	Remarks
lectric system (Starting motor)					
Nikko 24V 24 MWA C 180		00			nana ag
itachi 12V S 12-10 C 220					
itachi 12V S 12-03 DL 200					
itachi 12V \$ 12-03 DL 201					
oose fitting		00	ana ana ana (Correct it	a second
nction of the magnetic switch	2.0 (10.0)			Correct any fault	t
C 180			32±0.2 mm (1.2608) (0.0079) in	5 220 DE 200	
			33±0.2		
			(1.3002) (0.0079)	Measure the dimention when plunger	r
DL 200			33±0.2	gap is 0 by compressing plunger	new r
0.6~2.7~					
istance adjusting magnetic switch DL 201			33±0.2		
learance between pinion			0.6~2.7		shorte
opper and pinion			(0.0236~0.1063)		
		00			0
		00			
		00			
		00		*	

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Items to be Inspected		Nominal Value Dimension Requir Servi	ng e	Standard Values as Assembled	Limits for Us	e Manners of Service	Remarks
Electric system (Starter) Brush			- 00	e dote this 1,500 co		C 180 C 230	
	C 180	25 mm (0.9850) in	- 00	were then total		00.30	
Length of the brush	C 220 DL 200	20 (0.7880)	Part		14 mm (0.5516) in	In case contact surface of brush with commutator is not complete, in case pressure of spring of brush is	
brush and brush pring	DL 201)	010	and then the		not uniform or strength of spring is not proper, in case brush is badly	
	C 180 ···· C 220	900∼1,100 g (31.7∼38.8) oz				worn or damaged or in cace manner of brush holder to spport is not	
Spring force in gran	DL 200	900 (31.7)	90			proper, correct if	
	C 180	36.2φ mm (1.4263) in				When there is not needed to	(1
Starting pinion	C 220 DL 200					when there is any remarkable wear or damage, correct it or re- place pinion	
	DL 201						en soperator kulture des les
Clearance between starting pinion and gea			00	3∼6 mm (0.1182∼0.2364) in		server a s	0
ilectric system (Starter) Performance	C 100	a (18124)	•	129-32AH - 3 129-100AR		C 160 C 230	
	C 180	and		More than 6 000		DL 200	
to load revolution numder	DL 200		00	More than 6,000 r.p.m.			Less than 12V 50A Less than 12V 50A
interest and a concernent of	DL 201	More Black		More than 6,000 r.p.m.		and and writing a loss	Less than 12V 50A
oading torque	C 180 C 220		00	More than 1.0 m-kg (7.2334) ft-lb More than 1.1 (7.957)		· · · · · · · · · · · · · · · · · · ·	Less than 9V 30A
	DL 200			More than 1.1			Less than 9V 30A

Items to be Inspected		Nominal . Dimension	Values Requiring Service
	C 180	the state	
	C 220		
Kevolution at loading	DL 200		
	DL 201		
Tableton to	C 180	The Los Colors	
at America Tar galage	C 220		
binding forque	DL 200		
Televini State il so	DL 201	•	
Electric system (Pre-heating devise)	to the second second	12 - 25 AL 45	
Control resistance, glow plug	01. 005 +	in new second	
Electric system (Batteries)	end -	36.2 (* mig (1,436.2 v)	
Terminals of bettery			
Plates, separator, battery troughs, etc.	. 19		
Contamination of electrolyte			99.8-1
Specific gravity of electrolyte (20°C after charging)			
tor system Britery, 7	C 180		
Capacity in Ab (the rate of 20 hours)	C 220		
	DL 200		
and and and	DL 201		a. q. 1000 ,5 A.
ferminal voltage (single trough)			Less than 1.8 V
Height of the level of electrolyte above plates			
Completion test		5.55	i Faces
Lapping operation of engine			

as Assembled Limits for Use	Manners of Service	Remarks
More than 1,500 r.p.m.	C 185	a the state of the
More than 1,200		
More than 1,200		
More than 1,200		
	2013 - C. 1	
More than 2.5 m-kg (18.0835) ft-lb		Less than 5 V 750 A
More than 2.5		Less than 5 V 750 A
More than 2.5		Less than 5 V 750 A
and spinish standburg!	VER D	
A - 25 Ke and 201 American (11) Jahr 201	When there is any disconnection or shortcircuit correct it	Also Biginal south to musical t
1 - 2.5 kg car Provinces at a 1	105-20	
Mare Hon 90%	In case any of them is rusted or corroded, correct it	L. Output test
fore than 1900	In case any of them is damaged, correct it	list star noticiantans laaf
	In case the contamination is re- markable, replace electrolyte	
1.26 1.20	Adjust it	The temperature conver- sio ncoefficient is 0.007 per 10°C
12V 32AH×2		
12V 100AH		
12V 70AH		
12V 100AH		
More than 2.1V	Charging	
ectrolyte above of	When liquid surface is low, re-	
e standard level	plenish with dissilled water	

Carry it on for more than 30 minutes

Items to be Inspected		Nominal Dimensions	Values ····· Requiving Service
	C 180		ing that had east
	C 220		
Compression pressure of cylinder (at 20°C)	DL 200		
	DL 201		
	C 180		
Difference between compression pressures in the	C 220		
respective cylinders (at 20° C)	DL 200		
Lass than 5 V 2.00 A	DL 201		
	C 180		
	C 220		
Pressure of lubricating oil	DL 200		
	DL 201		
Output test	In case any at		
Output test Fuel consumption rate test	In case any an case any an in case any an correct H		
Output test Fuel consumption rate test	In case any an case any an in case any an correct it in case the cor markable, replace		
Output test Fuel consumption rate test	In case any an case any at case any at correct it in case the cor warkohle, replac		
Output test Fuel consumption rate test	In case any an terraded, correct to case any at correct it in case the cor warkable, replace Adjust X	05.1	
Output test Fuel consumption rate test	III cose any an barradad, correc in case any at correct it in core the cos warkable, replac Adjust X	05.1	
Output test Fuel consumption rate test	In case any an barradad, correc in case any at correct it in case the cor work oble, replac Adjust X	05.1	
Output test Fuel consumption rate test	In case any an terroded, correct in case any at correct it markable, replace Adjust X case 2	05.1	AGA AGA COLITAGE VC PADOL VC
Output test Fuel consumption rate test	In case any an barradad, correct correct it in case may at he case the cou warkable, replac Adjust it correct it second courses the correct it second courses the second course the second courses the second course the second courses the second course the second course the second courses the second courses the second course the se	02.1	
Output test Fuel consumption rate test	In case any an barroded, correct correct it in case any at in case the cor in correct it in case the cor in correct it in correc	05.1	AC.1
Output test Fuel consumption rate test	Mi kese any an barradad, correc in case any at correct it in case the cor merk oble, replac Adjust X Corplac Doc se Doc s	051	
Output test Fuel consumption rate test	M Lesse any an Larradad, correc correct H in case die cor mericolie, replet Adjunt X Correla 102 de 102 de 103 de 10	DE 1	

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as Assembled Limits for Use	Manners of Service	Remarks
25.2 kg/cm ² (358) PSI		About 240 r.p.m.
24.3 (346)	C	About 250
24.3	Correct it	About 250
24.3		About 250
		About 240 r.p.m.
Less than $\pm 5\%$ to		About 250
he mean value		About 250
		About 250
3∼4 kg/cm² (43∼57) PSI		
-4.5 kg/cm^2 (57 -64)		
3~3.5 kg/cm ² ('62 Model and before) (43~50)	Adjust it	About 1,400 r.p.m
I∼4.5 kg/cm² ('63 Model and after)		
$3\sim3.5$ kg/cm ² ('62 Model and before) ~4.5 kg/cm ² ('63 Model and after)		

0

More than 110%