ZEXEL Ass'y No.	104740-2802
Bosch Ass'y No.	9 460 611 414
Bosch Typecode	
Engine Type	CD20
Manufacturer	NISSAN
Edition date	26.10.00 (1)

1 Adjustment conditions

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
	Test oil		ISO4113orSAEJ967d				
		1404 Test oil					
P	Test oil temperature	degC	45	45	50		
	Nozzle		105780-0060				
	Bosch type code		NP-DN0SD1510				
	Nozzle holder		105780-2150				
P	Opening pressure	MPa	13	13	13.3		
P	Opening pressure	kgf/cm2	133	133	136		
	Injection pipe		157805-7320				
P	Injection pipe	mm	2-6-450				
		Inside diameter - outside diameter - length (mm)					
	Joint assembly		157641-4720				
	Tube assembly		157641-4020				
P	Transfer pump pressure	kPa	20	20	20		
P	Transfer pump pressure	kgf/cm2	0.2	0.2	0.2		
	Direction of rotation (viewed from drive side)		L				
		Left					

2 Adjustment specification

2.1 Full load delivery

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1400	1400	1400		
S	Average injection quantity	mm3/st.	35.3	34.9	35.7		
S	Difference in delivery	mm3/st.	3		3		
P	Basic		*				
P	Oil temperature	degC	50	48	52		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	500	500	500		
C	Average injection quantity	mm3/st.	31.2	25.7	36.7		
		About					
P	Oil temperature	degC	48	46	50		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	600	600	600		
C	Average injection quantity	mm3/st.	31.1	28.6	33.6		
		About					
P	Oil temperature	degC	50	48	52		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
C	Average injection quantity	mm3/st.	30.6	28.6	32.6		
		About					
P	Oil temperature	degC	50	48	52		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1400	1400	1400		
C	Average injection quantity	mm3/st.	35.3	34.3	36.3		
C	Difference in delivery	mm3/st.	3.5		3.5		
P	Basic		*				
P	Oil temperature	degC	50	48	52		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1800	1800	1800		
C	Average injection quantity	mm3/st.	35.4	32.9	37.9		
		About					
P	Oil temperature	degC	50	48	52		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2400	2400	2400		
C	Average injection quantity	mm3/st.	34.5	31	38		
		About					
P	Oil temperature	degC	52	50	54		

2.2 Governing

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2700	2700	2700		
S	Average injection quantity	mm3/st.	14	12	16		
S	Difference in delivery	mm3/st.	4.5		4.5		
P	Basic		*				
P	Oil temperature	degC	55	55	58		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2700	2700	2700		
C	Average injection quantity	mm3/st.	14	10.5	17.5		
C	Difference in delivery	mm3/st.	5		5		
P	Basic		*				
P	Oil temperature	degC	55	52	58		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2800	2800	2800		
C	Average injection quantity	mm3/st.	5		5		
P	Oil temperature	degC	55	52	58		

2.3 Idle

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	350	350	350		
S	Average injection quantity	mm3/st.	10.5	8.5	12.5		
S	Difference in delivery	mm3/st.	2		2		
P	Basic		*				
P	Oil temperature	degC	48	46	50		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	350	350	350		
C	Average injection quantity	mm3/st.	10.5	8.5	12.5		
C	Difference in delivery	mm3/st.	2.5		2.5		
P	Basic		*				
P	Oil temperature	degC	48	46	50		

S = Setting value, C = Check value)
OT = Outside Tolerance (X is set)

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	700	700	700		
C	Average injection quantity	mm3/st.	5		5		
P	Oil temperature	degC	50	48	52		

2.4 Partial injection quantity

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	700	700	700		
S	Average injection quantity	mm3/st.	15.1	9.1	21.1		
		About					
P	Oil temperature	degC	50	48	52		
P	Lever angle (shim thickness)	mm	8.9	8.85	8.95		
		About					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	900	900	900		
S	Average injection quantity	mm3/st.	10.3	3.8	16.8		
		About					
P	Oil temperature	degC	50	48	52		
P	Lever angle (shim thickness)	mm	8.9	8.85	8.95		
		About					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	700	700	700		
C	Average injection quantity	mm3/st.	15.1	8.6	21.6		
		About					
P	Oil temperature	degC	50	48	52		
P	Lever angle (shim thickness)	mm	8.9	8.85	8.95		
		About					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	900	900	900		
C	Average injection quantity	mm3/st.	10.3	3.3	17.3		
		About					
P	Oil temperature	degC	50	48	52		
P	Lever angle (shim thickness)	mm	8.9	8.85	8.95		
		About					

2.5 Start

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	100	100	100		
S	Average injection quantity	mm3/st.	60	50	70		
P	Oil temperature	degC	48	46	50		
	Remarks						
		Full					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	100	100	100		
C	Average injection quantity	mm3/st.	60	50	70		
P	Oil temperature	degC	48	46	50		
	Remarks						
		Full					

2.6 Stop

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	350	350	350		
C	Average injection quantity	mm3/st.	0	0	0		
P	Oil temperature	degC	48	46	50		
	Remarks						
		Magnet OFF at idling position					

2.7 Overflow

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
C	Overflow quantity with S/T ON	cm3/min	440	310	570		
P	Oil temperature	degC	50	48	52		

2.8 Pump chamber pressure

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
S	Pressure with S/T ON	kPa	422	373	471		
		About					
S	Pressure with S/T ON	kgf/cm2	4.3	3.8	4.8		
		About					
S	Pressure with S/T OFF	kPa	373	344	402		
		About					
S	Pressure with S/T OFF	kPa	373	344	402		
S	Pressure with S/T OFF	kgf/cm2	3.8	3.5	4.1		
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
		OFF					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
C	Pressure with S/T ON	kPa	422	373	471		
		About					
C	Pressure with S/T ON	kgf/cm2	4.3	3.8	4.8		
		About					
C	Pressure with S/T OFF	kPa	343	304	382		
C	Pressure with S/T OFF	kgf/cm2	3.8	3.4	4.2		
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
		OFF					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1800	1800	1800		
C	Pressure with S/T OFF	kPa	520	471	569		
		About					
C	Pressure with S/T OFF	kgf/cm2	5.3	4.8	5.8		
		About					
P	Oil temperature	degC	50	48	52		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2400	2400	2400		
C	Pressure with S/T OFF	kPa	637	588	686		
		About					
C	Pressure with S/T OFF	kgf/cm2	6.5	6	7		
		About					
P	Oil temperature	degC	52	50	54		

2.9 Timer

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
S	Timer stroke with S/T ON	mm	3.1	2.7	3.5		
		About					
S	Timer stroke with S/T OFF	mm	1.9	1.7	2.1		
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
		OFF					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
C	Timer stroke with S/T ON	mm	3.1	2.6	3.6		
		About					
C	Timer stroke with S/T OFF	mm	1.9	1.6	2.2		
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
		OFF					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1800	1800	1800		
C	Timer stroke with S/T OFF	mm	5.6	5.1	6.1		
P	Oil temperature	degC	50	48	52		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2400	2400	2400		
C	Timer stroke with S/T OFF	mm	7.4	6.9	7.8		
P	Oil temperature	degC	52	50	54		

2.10 Magnet

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
C	Max. applied voltage	V	8	8	8		
P	Test voltage	V	13	12	14		

2.11 Additional device adjustment

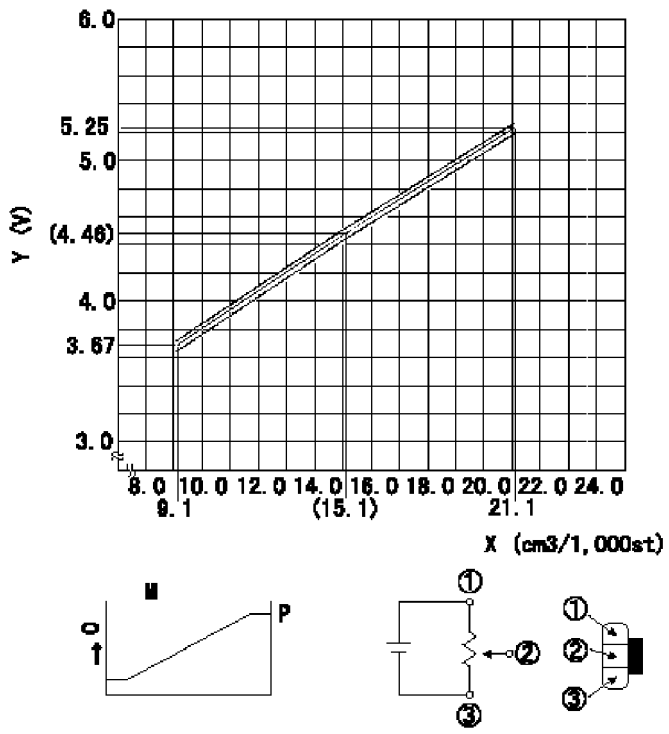
2.11.1 Additional device 1

Name	POTENTIOMETER ADJUSTMENT

N1=700r/min
Q1=15.1cm3/1.000st
V1=1.7V
V2=9.96V
V3=4.46V

A				
C	N	Q	Vo	
	N1	D	E	F
G			V1	I
H			V2	I

E : J(R) K

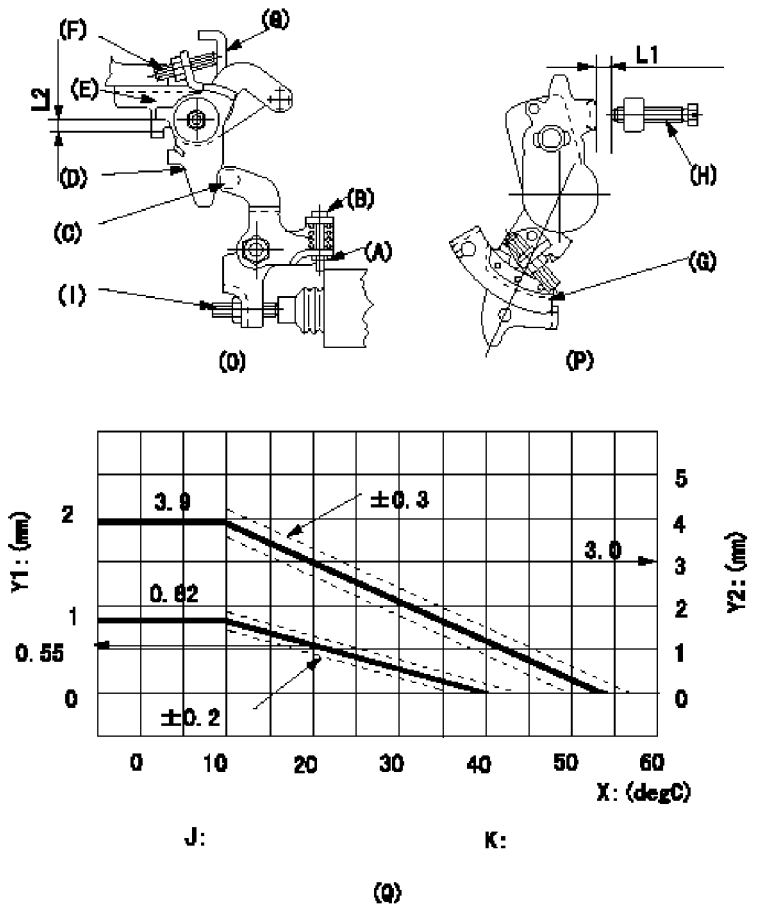


N1=700r/min a=13.9deg L=8.9+-0.05mm Q1=15.1cm3/1,000st V3=4.46V	Adjustment of the potentiometer In the following condition, change the installation position of the potentiometer to adjust the outp ut voltage to within the specified values. Measure the injection quantity at control lever position a (shim thickness = approximately L mm) at N = N1 r/min, determine the voltage using the formula, and adjust the potentiometer. A:Adjustment conditions B:Adjustment value C:Position of the control lever N:Pump speed Q:Injection quantity Vo:Output voltage D:Measured injection quantity E:Conversion formula F:Adjusting point G:Idle H:Full speed I:Checking point K:Applied voltage X:Injection quantity (cm3/1,000st) Y:Voltage (V) M:Connecting diagram for the potentiometer O:Output P:Output when (2) and (3) connected. R:At target value Q1cm3/1,000 st, set voltage at V3 (V).

2.11.2 Additional device 2

Name	W-CSD ADJUSTMENT

L1=3.0+-0.05mm
L2=5.3+-0.05mm

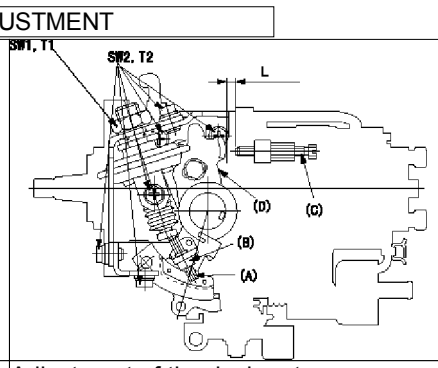


L1=3.0+-0.05mm L2=5.3+-0.05mm L3=3.0mm L4=5.3mm L5=L+-0.05mm a=30degC	Adjustment of the W-CSD 1. Adjustment of the advance angle of the timer (1)Determine the timer advance angle from the graph in Fig. 3 (Q). (2)(1) Adjust using the screw (I) so that the timer advance angle determined in item (1) is obtain ed. 2. Setting the intermediate lever position (refer to fig 1 and fig 2) (1)Insert a block gauge L1 between the idling set screw (H) and the control lever (G). (2)Insert a shim of thickness L2 mm between the intermediate lever (D) and the intermediate lev er bracket (E). Ensure the screw (F) contacts the control lever (G), then fix the nut. 3. W-CSD lever adjustment [refer to fig 1 (O) and fig 2 (P)] (1)After completing (2) above, remove the block gauge L3 and the shim with the thickness L4. (2)Insert a block gauge L5 determined from the graph (L-t) in figure 3 (Q) between the idling set screw (H) and the control lever (G). (3)Adjust the screw (B) until the screw (F) contacts the control lever (G). Then fix locknut (A). Caution: The temperature of the wax at adjustment must not exceed a. X:Temperature t (deg C) Y1:Timer lift TA (mm) Y2:Control lever L dimension (mm; control lever position) J:Graph TA-t: t (deg C) <= 10: TA = 0.82 10 <= t (deg C) <= 20: TA =-0.027t + 1.09 20 <= t (deg C) <= 40: TA = -0.0275t + 1.1 K:Graph L-t t (deg C) <= 10: L = 3.9 10 <= t (deg C) <= 30: L =-0.09t + 4.8 20 <= t (deg C) <= 54.3: L = -0.086t + 4.68

2.11.3 Additional device 3

Name	DASHPOT ADJUSTMENT

T1=15.0~20.0Nm{1.5~2.0kgfm}
T2=6.0~0.9Nm{0.6~0.9kgfm}
SW1=22mm
SW2=10mm



T3=4.9~7Nm{0.5~0.7kgfm} L=6.0+-0.05mm	Adjustment of the dash pot 1. Insert a block gauge L (thickness gauge) between the idle set screw (C) and the control lever (D). 2. In the above condition, adjust the position of the dash pot so that the dash pot adjustment scr ew (A) contacts the push rod and then fix the screw using the nut (B). T3T3 Caution: (1) The adjusting screw and pushrod contact faces must be smooth. (2)Confirm that the control lever returns to the idling position. (E): 6 locations

3 Assembly dimension

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
S	K dimension	mm	3.3	3.2	3.4		
S	KF dimension	mm	6.78	6.68	6.88		
S	MS dimension	mm	0.8	0.7	0.9		
S	Control lever angle alpha	deg.	25	23	27		
S	Control lever angle beta	deg.	44	39	49		