ZEXEL Ass'y No.	104740-3970
Bosch Ass'y No.	9 460 610 461
Bosch Typecode	
Engine Type	4D56
Manufacturer	MITSUBISHI
Edition date	13.03.02 (1)

1 Adjustment conditions

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
	Test oil		ISO4113orSAEJ967 d				
		1404 Test oil					
P	Test oil temperature	degC	45	45	50		
	Nozzle		105000-2010				
	Bosch type code		NP-DN12SD12TT				
	Nozzle holder		105780-2080				
P	Opening pressure	MPa	14.7	14.7	15.19		
P	Opening pressure	kgf/cm2	150	150	155		
P	Injection pipe	mm	2-6-840				
		Inside diameter - outside diameter - length (mm)					
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)		R				
		Right					

2 Adjustment specification

2.1 Full load delivery

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	750	750	750		
P	Boost pressure	kPa	44	42.7	45.3		
P	Boost pressure	mmHg	330	320	340		
S	Average injection quantity	mm3/st.	60.9	60.4	61.4		
P	Basic		*				
	Remarks						
		CBS					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
S	Average injection quantity	mm3/st.	61.9	61.4	62.4		
S	Difference in delivery	mm3/st.	4.5		4.5		
P	Basic		*				
	Remarks						
		Full					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2650	2650	2650		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm3/st.	25.2	21.7	28.7		

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	2100	2100	2100		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm3/st.	55.3	52.8	57.8		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm3/st.	61.9	60.9	62.9		
	Remarks						
		Full					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	750	750	750		
P	Boost pressure	kPa	44	42.7	45.3		
P	Boost pressure	mmHg	330	320	340		
C	Average injection quantity	mm3/st.	60.9	59.9	61.9		
	Remarks						
		CBS					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	600	600	600		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	48.3	45.8	50.8		

2.2 Governing

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2650	2650	2650		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
S	Average injection quantity	mm3/st.	25.2	22.2	28.2		
S	Difference in delivery	mm3/st.	5.5		5.5		
P	Basic		*				

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	3050	3050	3050		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm3/st.	5		5		

2.3 Idle

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	375	375	375		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
S	Average injection quantity	mm3/st.	12	10.5	13.5		
S	Difference in delivery	mm3/st.	2		2		
P	Basic		*				

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	750	750	750		
P	Boost pressure	kPa	0	0	0		

P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	3		3		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	375	375	375		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	12	10	14		

2.4 Start

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	100	100	100		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
S	Average injection quantity	mm3/st.	73	63	83		
P	Basic		*				

2.5 Stop

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	375	375	375		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	0	0	0		
	Remarks						
		Magnet OFF					

2.6 Overflow

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Overflow quantity	cm3/min	420	288	552		

2.7 Pump chamber pressure

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
S	Pressure	kPa	470.5	441	500		
S	Pressure	kgf/cm2	4.8	4.5	5.1		
P	Basic		*				

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	600	600	600		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Pressure	kPa	313.5	284	343		
C	Pressure	kgf/cm2	3.2	2.9	3.5		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Pressure	kPa	470.5	441	500		
C	Pressure	kgf/cm2	4.8	4.5	5.1		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2100	2100	2100		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Pressure	kPa	666.5	637	696		
C	Pressure	kgf/cm2	6.8	6.5	7.1		

2.8 Timer

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
S	Timer stroke	mm	3.7	3.5	3.9		
P	Basic		*				

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	500	500	500		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke	mm	1.2	0.6	1.8		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	750	750	750		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke	mm	2	1.4	2.6		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke	mm	3.7	3.3	4.1		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1750	1750	1750		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke	mm	5.8	5.2	6.4		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2100	2100	2100		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke	mm	7.2	6.6	7.8		

2.9 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		

2.10 Compensator

2.10.1 Load-timer adjustment

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		

P	Boost pressure	mmHg	550	540	560		
S	Average injection quantity	mm3/st.	50.3	49.8	50.8		
S	Timer stroke variation dT	mm	0.6	0.4	0.8		
P	Basic		*				

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm3/st.	50.3	49.3	51.3		
C	Timer stroke TA	mm	3.1	3.1	3.1		
		About					
C	Timer stroke variation dT	mm	0.6	0.2	1		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm3/st.	40.2	38.7	41.7		
C	Timer stroke TA	mm	2.3	2.3	2.3		
		About					
C	Timer stroke variation dT	mm	1.4	0.8	2		

2.11 Additional device adjustment

2.11.1 Additional device 1

Name	Adjustment precautions

N1=1250r/min N2=750r/min P1=44.0kPa P2=330mmHg P3=73.3kPa P4=550mmHg	Adjustment precautions 1. After adjusting at full injection quantity and speed N1, at speed N2 set the boost pressure to P1 {P2} and adjust the injection quantity using the BCS spring setscrew. 2. Adjust the timer stroke at boost pressure P3 {P4} with the control lever in the full injection quan tity position.

2.11.2 Additional device 2

Name	POTENTIOMETER ADJUSTMENT

N1=750r/min
V1=4+-0.03V
V2=1++V
V3=(8.6)V
Q1=22.3+-1cm3/1,000st
Vi=10V
P1=0kPa
P2=0mmHg

C	N	V	Q	
	N1	V1	Q1	A
C1		V2		B
C2		V3		B

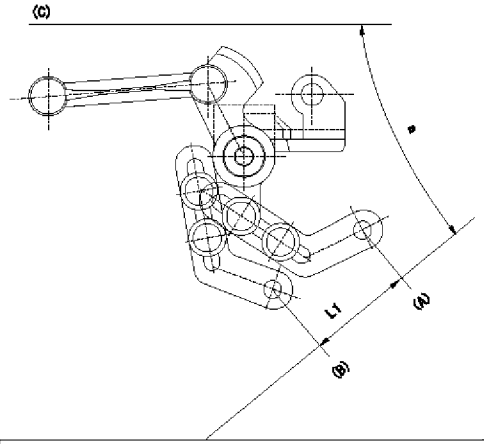
Vi : P1 (P2)

Adjustment of the potentiometer
Vi:Applied voltage
C:Position of the control lever
N:Pump speed (r/min)
V:Output voltage (V)
Q:Injection quantity (mm3/st)
A:Adjusting point
B:Checking point
C1:Idling
C2:Full speed
P1:Boost pressure
P2:Boost pressure

2.11.3 Additional device 3

Name	ACCELERATOR LINK STROKE

L1=32.9+-1mm
a=40deg



L1=32.9+-1mm

Accelerator link stroke adjustment
As shown in the figure, adjust so that the accelerator link's stroke between idle (A) and full speed (B) is L1.
(C) = Injection pump

3 Assembly dimension

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT

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

S	K dimension	mm	3.3	3.2	3.4		
S	KF dimension	mm	5.8	5.7	5.9		
S	MS dimension	mm	1	0.9	1.1		
S	BCS stroke	mm	3.7	3.6	3.8		
S	Control lever angle alpha	deg.	23	19	27		
S	Control lever angle beta	deg.	39	34	44		