

ZEXEL Ass'y No.	104740-8070
Bosch Ass'y No.	9 460 610 464
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.	62.4	61.9	62.9		
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.	66.9	66.4	67.4		
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		

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.	62.4	59.9	64.9		

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.	66.9	65.9	67.9		
	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.	62.4	61.4	63.4		
	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.	45.3	42.8	47.8		

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.	10	8.5	11.5		
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.	10	8	12		

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	mm ³ /st.	53.3	52.8	53.8		
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	mm ³ /st.	53.3	52.3	54.3		
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	mm ³ /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 quantity position.

2.11.2 Additional device 2

Name	POTENTIOMETER ADJUSTMENT																				
N1=750r/min V1=5+-0.03V V2=1++V V3=(8.8)V Q1=35.5+-1cm ³ /1,000st Vj=10V P1=0kPa P2=0mmHg	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>C</td> <td>N</td> <td>V</td> <td>Q</td> <td></td> </tr> <tr> <td></td> <td>N1</td> <td>V1</td> <td>Q1</td> <td>A</td> </tr> <tr> <td>C1</td> <td></td> <td>V2</td> <td></td> <td>B</td> </tr> <tr> <td>C2</td> <td></td> <td>V3</td> <td></td> <td>B</td> </tr> </table> <p style="text-align: center;">Vi: P1 (P2)</p>	C	N	V	Q			N1	V1	Q1	A	C1		V2		B	C2		V3		B
C	N	V	Q																		
	N1	V1	Q1	A																	
C1		V2		B																	
C2		V3		B																	
	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 (mm ³ /st) A:Adjusting point B:Checking point C1:Idling C2:Full speed P1:Boost pressure P2:Boost pressure																				

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	5.8	5.7	5.9		
S	MS dimension	mm	0.7	0.6	0.8		
S	BCS stroke	mm	6.1	6	6.2		
S	Control lever angle alpha	deg.	59	55	63		
S	Control lever angle beta	deg.	41	36	46		