

ZEXEL Ass'y No.	104741-3212
Bosch Ass'y No.	9 460 612 762
Bosch Typecode	
Engine Type	4M40TI
Manufacturer	mitsubishi
Edition date	28.11.01

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		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)		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	600	600	600		
P	Boost pressure	kPa	31.35	30	32.7		
P	Boost pressure	mmHg	235	225	245		
S	Average injection quantity	mm3/st.	67.3	66.8	67.8		
S	Difference in delivery	mm3/st.	5.5		5.5		
P	Basic		*				
	Remarks	CBS					

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		
S	Average injection quantity	mm3/st.	57.2	56.7	57.7		
S	Difference in delivery	mm3/st.	4.5		4.5		
P	Basic		*				
	Remarks	NA					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
S	Average injection quantity	mm3/st.	81.3	80.8	81.8		
S	Difference in delivery	mm3/st.	6.5		6.5		
P	Basic		*				
	Remarks	Full					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2300	2300	2300		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm3/st.	53.3	51.3	55.3		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2000	2000	2000		
P	Boost pressure	kPa	73.3	72	74.6		

P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm ³ /st.	75.8	72.3	79.3		
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm ³ /st.	81.3	80.3	82.3		
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	mm ³ /st.	57.2	56.2	58.2		
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	600	600	600		
P	Boost pressure	kPa	31.35	30	32.7		
P	Boost pressure	mmHg	235	225	245		
C	Average injection quantity	mm ³ /st.	67.3	66.3	68.3		

2.2 Governing

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2300	2300	2300		
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	51.8	54.8		
S	Difference in delivery	mm ³ /st.	17		17		
P	Basic		*				
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	3000	3000	3000		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Average injection quantity	mm ³ /st.	12		12		

2.3 Idle

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	400	400	400		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
S	Average injection quantity	mm ³ /st.	12.4	10.4	14.4		
S	Difference in delivery	mm ³ /st.	2		2		
P	Basic		*				
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	700	700	700		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm ³ /st.	3		3		
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	400	400	400		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm ³ /st.	12.4	9.9	14.9		

2.4 Start

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	150	150	150		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
S	Average injection quantity	mm ³ /st.	52	42	62		
P	Basic		*				

2.5 Stop

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	400	400	400		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm ³ /st.	0	0	0		
P	Basic		*				
	Remarks						
			Magnet OFF at idling position				

2.6 Overflow

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
C	Overflow quantity with S/T ON	cm3/min	741	612	870		

2.7 Pump chamber pressure

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
S	Pressure with S/T OFF	kPa	451	431	471		
S	Pressure with S/T OFF	kgf/cm2	4.6	4.4	4.8		
P	Basic		*				

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Pressure with S/T ON	kPa	500	461	539		
C	Pressure with S/T ON	kgf/cm2	5.1	4.7	5.5		
C	Pressure with S/T OFF	kPa	451	431	471		
C	Pressure with S/T OFF	kgf/cm2	4.6	4.4	4.8		

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	Pressure with S/T ON	kPa	559	520	598		
C	Pressure with S/T ON	kgf/cm2	5.7	5.3	6.1		
C	Pressure with S/T OFF	kPa	510	471	549		
C	Pressure with S/T OFF	kgf/cm2	5.2	4.8	5.6		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2000	2000	2000		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Pressure with S/T OFF	kPa	667	628	706		
C	Pressure with S/T OFF	kgf/cm2	6.8	6.4	7.2		

2.8 Timer

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
S	Timer stroke	mm	4	3.8	4.2		
P	Basic		*				

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	700	700	700		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke with S/T ON	mm	3.3	2.6	4		
C	Timer stroke with S/T OFF	mm	1.9	1.1	2.7		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke with S/T ON	mm	5.2	4.5	5.9		
C	Timer stroke with S/T OFF	mm	4	3.7	4.3		

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 with S/T ON	mm	6.7	6	7.4		
C	Timer stroke with S/T OFF	mm	5.5	4.9	6.1		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1500	1500	1500		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke with S/T OFF	mm	6.8	6	7.6		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2000	2000	2000		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke with S/T ON	mm	9.7	9.2	10.2		
C	Timer stroke with S/T OFF	mm	9.4	8.6	10.2		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2300	2300	2300		
P	Boost pressure	kPa	73.3	72	74.6		
P	Boost pressure	mmHg	550	540	560		
C	Timer stroke with S/T OFF	mm	9.7	9.2	10.2		

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 Additional device adjustment

2.10.1 Additional device 1

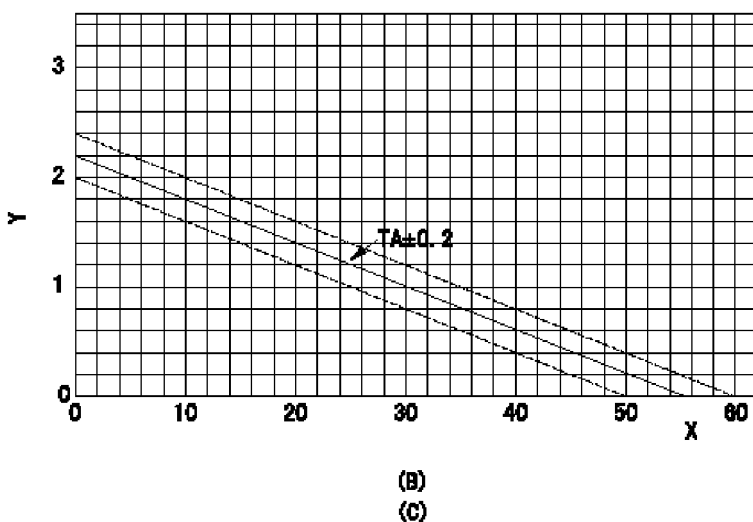
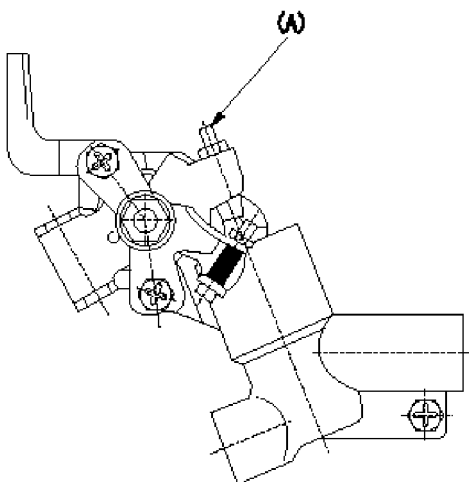
Name	POTENTIOMETER ADJUSTMENT
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N1=750r/min V1=5.24+-0.03V V2=2.16+-0.52V V3=9.02+-0.76V Q1=36.4+-1.0cm ³ /1,000st Vi=10V P1=-kPa P2=-mmHg	<table border="1"> <thead> <tr> <th>C</th> <th>N</th> <th>V</th> <th>Q</th> <th></th> </tr> </thead> <tbody> <tr> <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> </tbody> </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																	
N1=750r/min V1=5.24+-0.03V Q1=36.4+-1.0cm ³ /1,000st	Adjustment of the potentiometer Adjusting method (service voltage Vi, dummy bolt): 1. Hold the dummy bolt against the control lever when N = N1 r/min, Q = Q1 mm ³ /st. Fix using the lock nut. 2. When adjusting the potentiometer, position the control lever against the dummy bolt and adjust the potentiometer so that the output voltage is V1 (V). 3. Remove the dummy bolt after the completion of adjustment. Confirm that the potentiometer output voltage is within the standards mentioned when the control lever is idling and in full-speed position. 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																				

2.10.2 Additional device 2

Name

$(C)=TA=-0.04t+2.2(0 \leq t)$



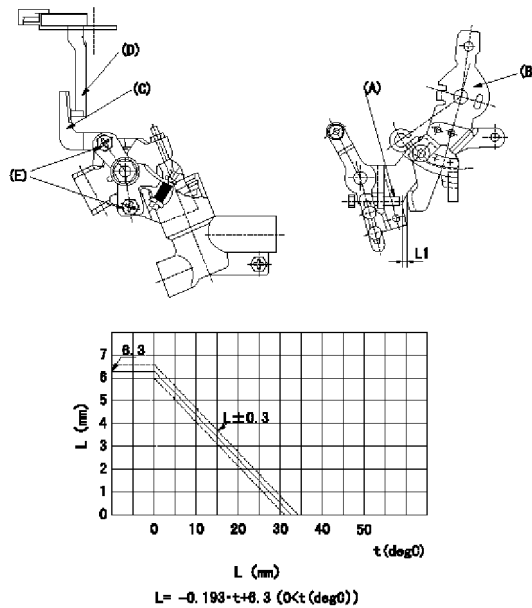
Adjustment of the W-CSD

1. Adjustment of the advance angle of the timer
 - (1) Determine the timer advance angle using the following graph.
 - (2)(1) Adjust with the screw (A) so that the timer advance angle determined in the item (1) is obtained.
- X: Temperature t (deg C)
 Y: Timer stroke TA (mm)
 (B): Timer stroke TA (mm):

2.10.3 Additional device 3

Name	W-FICD LEVER ADJUSTMENT
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L1=L±0.3mm



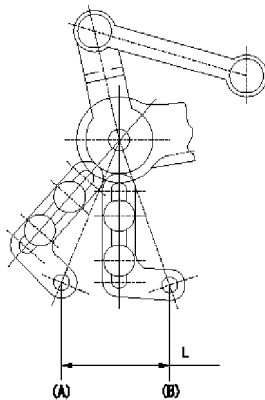
L1=L±0.3mm
 T=3.4~4.9N-m(0.35~0.5kgf-m)
 a=30degC

2. W-FICD (C) adjustment
 (1) Insert a block gauge L1 determined from the graph below between the control lever (B) and the idling stopper bolt (A).
 (2) Move the W-FICD lever (C) so that it contacts the control lever (D) and fix it using bolt (E).
 TT
 Caution: The temperature of the wax at adjustment must not exceed a.
 L = control lever
 t = temperature

2.10.4 Additional device 4

Name	ACCELERATOR LINK STROKE
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L=32.9±1mm



L=32.9±1mm

Adjustment of the accelerator link stroke
 As shown in the figure, adjust so that the accelerator link's stroke between idle (B) and full speed (A) is L1.
 (A): Full-speed
 (B): Idle

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	6.01	5.91	6.11		
S	MS dimension	mm	0.6	0.5	0.7		
S	BCS stroke	mm	5.5	5.4	5.6		
S	Control lever angle alpha	deg.	59	55	63		
S	Control lever angle beta	deg.	42	37	47		

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