

ZEXEL Ass'y No.	104749-0830
Bosch Ass'y No.	9 460 611 039
Bosch Typecode	
Engine Type	RFX
Manufacturer	MAZDA
Edition date	24.10.01

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	0	0	0		
P	Boost pressure	kgf/cm2	0	0	0		
P	Boost pressure	mmHg	0	0	0		
S	Average injection quantity	mm3/st.	38	37.5	38.5		
S	Difference in delivery	mm3/st.	3.5		3.5		
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
		NA					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	33.3	32	34.6		

S = Setting value, C = Check value)

OT = Outside Tolerance (X is set)

P	Boost pressure	kgf/cm2	0.34	0.326	0.354		
P	Boost pressure	mmHg	250	240	260		
S	Average injection quantity	mm3/st.	46.1	45.6	46.6		
S	Difference in delivery	mm3/st.	3.5		3.5		
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
	CBS						

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
S	Average injection quantity	mm3/st.	51.2	50.7	51.7		
S	Difference in delivery	mm3/st.	4		4		
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
	Full						

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	kgf/cm2	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	38	37	39		
C	Difference in delivery	mm3/st.	4		4		
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
	NA						

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	kgf/cm2	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	42.4	39.9	44.9		
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		
P	Boost pressure	kPa	33.3	32	34.6		
P	Boost pressure	kgf/cm2	0.34	0.326	0.354		
P	Boost pressure	mmHg	250	240	260		
C	Average injection quantity	mm3/st.	46.1	45.1	47.1		
C	Difference in delivery	mm3/st.	4		4		

S = Setting value, C = Check value)

OT = Outside Tolerance (X is set)

P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
	CBS						

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	51.2	50.2	52.2		
C	Difference in delivery	mm3/st.	4.5		4.5		
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
	Full						

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2150	2150	2150		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	43.3	40.8	45.8		
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	2250	2250	2250		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
S	Average injection quantity	mm3/st.	37	35	39		
P	Basic		*				
P	Oil temperature	degC	52	50	54		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2700	2700	2700		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	3		3		
P	Oil temperature	degC	55	52	58		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2250	2250	2250		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	37	34.5	39.5		

S = Setting value, C = Check value)

OT = Outside Tolerance (X is set)

P	Basic		*				
P	Oil temperature	degC	52	50	54		
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2550	2550	2550		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	10	6.5	13.5		
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	435	435	435		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	kgf/cm2	0	0	0		
P	Boost pressure	mmHg	0	0	0		
S	Average injection quantity	mm3/st.	10	9	11		
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	435	435	435		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	kgf/cm2	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	10	8.5	11.5		
C	Difference in delivery	mm3/st.	2.5		2.5		
P	Basic		*				
P	Oil temperature	degC	48	46	50		

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	kgf/cm2	0	0	0		
P	Boost pressure	mmHg	0	0	0		
S	Average injection quantity	mm3/st.	60.3	50.3	70.3		
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		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	kgf/cm2	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	60.3	45.3	75.3		

S = Setting value, C = Check value)

OT = Outside Tolerance (X is set)

P	Oil temperature	degC	48	46	50		
	Remarks						
		Full					

2.5 Stop

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	435	435	435		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	kgf/cm2	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	0	0	0		
P	Oil temperature	degC	48	46	50		
	Remarks						
		Magnet OFF at idling position					

2.6 Overflow

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Overflow quantity with S/T ON	cm3/min	600	470	730		
P	Oil temperature	degC	50	48	52		

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	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
S	Pressure with S/T ON	kPa	432	412	452		
S	Pressure with S/T ON	kgf/cm2	4.4	4.2	4.6		
S	Pressure with S/T OFF	kPa	314	275	353		
		About					
S	Pressure with S/T OFF	kgf/cm2	3.2	2.8	3.6		
		About					
P	Basic	*					
P	Oil temperature	degC	50	48	52		
	Remarks						
		ON					
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Pressure with S/T ON	kPa	432	403	461		
C	Pressure with S/T ON	kgf/cm2	4.4	4.1	4.7		

S = Setting value, C = Check value)

OT = Outside Tolerance (X is set)

C	Pressure with S/T OFF	kPa	314	265	363		
		About					
C	Pressure with S/T OFF	kgf/cm2	3.2	2.7	3.7		
		About					
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
		ON					

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	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
S	Timer stroke with S/T ON	mm	4	3.8	4.2		
S	Timer stroke with S/T OFF	mm	2	1.5	2.5		
		About					
P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						
		ON					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	750	750	750		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Timer stroke with S/T ON	mm	2.8	2.2	3.4		
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		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Timer stroke with S/T ON	mm	4	3.6	4.4		
C	Timer stroke with S/T OFF	mm	2	1.3	2.7		
		About					
P	Basic		*				
P	Oil temperature	degC	50	48	52		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1500	1500	1500		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Timer stroke with S/T ON	mm	6.3	5.7	6.9		

S = Setting value, C = Check value)

OT = Outside Tolerance (X is set)

P	Oil temperature	degC	50	48	52		
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	2150	2150	2150		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Timer stroke with S/T ON	mm	9	8.5	9.6		
P	Oil temperature	degC	52	50	54		

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	1000	1000	1000		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
S	Average injection quantity	mm3/st.	42.6	42.1	43.1		
S	Timer stroke TA	mm	3.2	3	3.4		
S	Timer stroke variation dT	mm	0.8	0.8	0.8		

About

P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						

ON

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	42.6	41.6	43.6		
C	Timer stroke TA	mm	3.2	2.8	3.6		
C	Timer stroke variation dT	mm	0.8	0.8	0.8		

About

P	Basic		*				
P	Oil temperature	degC	50	48	52		
	Remarks						

ON

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	86.6	85.3	87.9		

S = Setting value, C = Check value)

OT = Outside Tolerance (X is set)

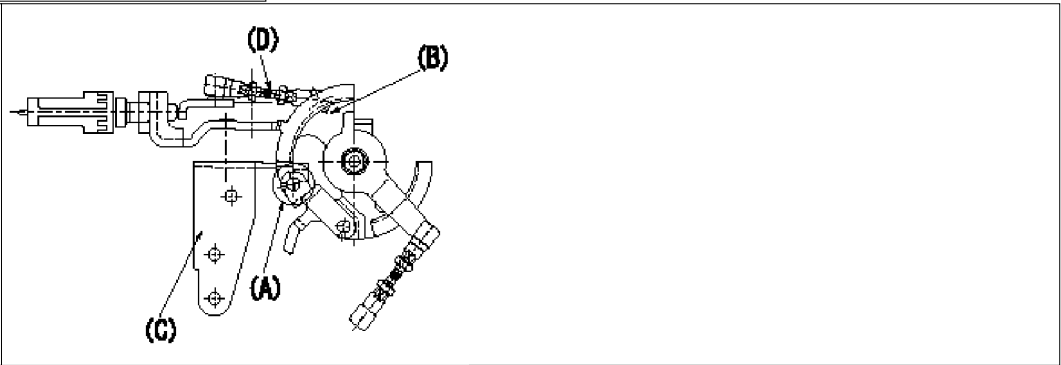
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	30	28.5	31.5		
C	Timer stroke TA	mm	2.3	1.7	2.9		
C	Timer stroke variation dT	mm	1.7	1.7	1.7		
		About					
P	Oil temperature	degC	50	48	52		
	Remarks						
		ON					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1500	1500	1500		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	30	28.5	31.5		
C	Timer stroke TA	mm	4.6	3.8	5.4		
P	Oil temperature	degC	50	48	52		
	Remarks						
		ON					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1500	1500	1500		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	kgf/cm2	0.88	0.866	0.894		
P	Boost pressure	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	30	28.5	31.5		
C	Timer stroke TA	mm	3	2.1	3.9		
P	Oil temperature	degC	50	48	52		
	Remarks						
		OFF					

2.11 Additional device adjustment

2.11.1 Additional device 1

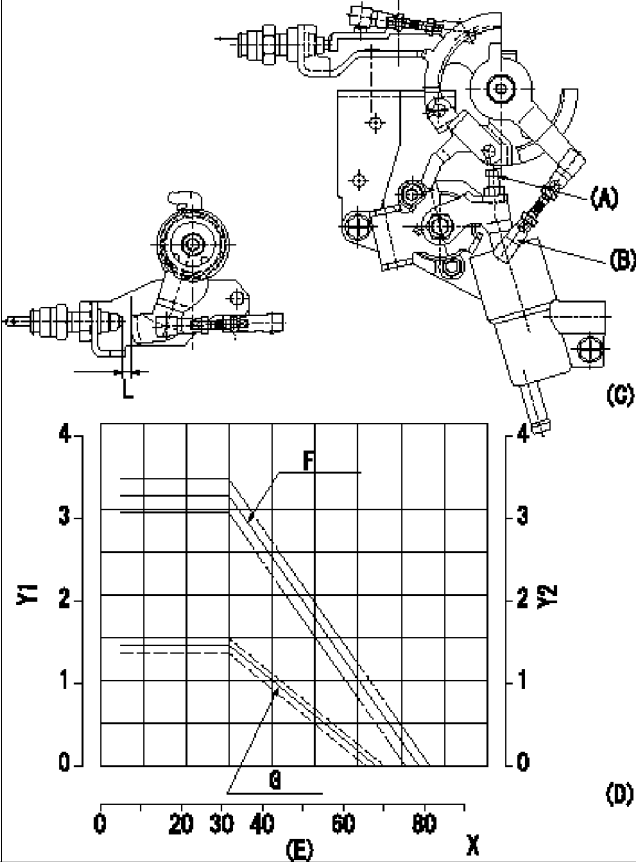
Name	SIDE LINK LEVER ADJUSTMENT
	
<p>L1=Dia.5.8-0.2mm L2=161+-3mm L3=32.5+-3mm L4=108+-3mm L5=32.5+-3mm V1=10.00V V2=2.26+-0.7V V3=9.1+-0.03V a=0deg</p>	<p>Side link lever adjustment</p> <p>1. Fixing the side link lever</p> <p>(1)Hold the control lever in the position a.</p> <p>(2)Adjust the length of the connecting rod D so that a pin L1 can pass between the side link B and the actuator bracket C at A. Then fix.</p> <p>2. Idle switch confirmation</p> <p>Confirm that the switch is ON at the idle lever position.</p> <p>3. Potentiometer confirmation (input voltage: V1)</p> <p>Control lever:</p> <p>(1)Idle position: V2 (checking point)</p> <p>(2)Full position: V3 (adjusting point)</p> <p>4. Confirming wire length</p> <p>Accelerator wire</p> <p>(1)Idle position: L2</p> <p>(2)Idle~full stroke: L3</p> <p>A/T wire:</p> <p>(1)Idle position: L4</p> <p>(2)Idle~full stroke: L5</p>

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

2.11.2 Additional device 2

Name	W-CSD ADJUSTMENT
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F=L+0.2mm
G=TA+0.1mm



TA1=-0.04t+2.6(t>=30degC)
TA2=1.4(t<30degC)
L1=-0.072t+5.3(t>=30degC)
L2=3.2(t<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. 2 (D).
(2)Adjust screw A so that the timer advance angle determined in item (1) is obtained.
2. Adjust dimension L.
Adjust using turnbuckle B so that the dimension L is as described on the figure 2 D.
(C): figure 1
(E): timer stroke: TA1, TA2
Control lever gap: L1, L2
X:Temperature t
Y1:Timer stroke TA
Y2:Control lever gap: L

3 Assembly dimension

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
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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	1.5	1.4	1.6		
S	Pre-stroke	mm	0.3	0.28	0.32		
S	Control lever angle alpha	deg.	25	21	29		
S	Control lever angle beta	deg.	41	38	44		