

ZEXEL Ass'y No.	104749-0592
Bosch Ass'y No.	9 460 612 638
Bosch Typecode	
Engine Type	
Manufacturer	
Edition date	15.11.01

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	1000	1000	1000		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	mmHg	650	640	660		
S	Average injection quantity	mm3/st.	50.4	49.9	50.9		
S	Difference in delivery	mm3/st.	4		4		
P	Basic		*				
	Remarks						
		Full					

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	40	38.7	41.3		
P	Boost pressure	mmHg	300	290	310		
S	Average injection quantity	mm3/st.	46.5	46	47		

C = Check value)

OT = Outside Tolerance (X is set)

S	Difference in delivery	mm3/st.	3.5		3.5		
P	Basic		*				
	Remarks						
	CBS						
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	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	10	6	14		
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	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	37	34.5	39.5		
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	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	42.1	39.6	44.6		
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	mmHg	650	640	660		
C	Average injection quantity	mm3/st.	50.4	49.4	51.4		
	Remarks						
	Full						
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1000	1000	1000		
P	Boost pressure	kPa	40	38.7	41.3		
P	Boost pressure	mmHg	300	290	310		
C	Average injection quantity	mm3/st.	46.5	45.5	47.5		
	Remarks						
	CBS						
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	mmHg	0	0	0		
C	Average injection quantity	mm3/st.	39.2	36.7	41.7		
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	600	600	600		
P	Boost pressure	kPa	46.7	45.4	48		
P	Boost pressure	mmHg	350	340	360		
C	Average injection quantity	mm3/st.	42.6	40.1	45.1		

C = Check value)

OT = Outside Tolerance (X is set)

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	mmHg	650	640	660		
S	Average injection quantity	mm ³ /st.	37	35	39		
P	Basic		*				

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	mmHg	650	640	660		
C	Average injection quantity	mm ³ /st.	3		3		

2.3 Idle

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	360	360	360		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
S	Average injection quantity	mm ³ /st.	10.2	9.2	11.2		
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	450	450	450		
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	360	360	360		
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		
C	Average injection quantity	mm ³ /st.	10.2	8.7	11.7		

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	mm ³ /st.	56	56			
P	Basic		*				
	Remarks						
	Full						

2.5 Stop

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	360	360	360		
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	1000	1000	1000		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	mmHg	650	640	660		
C	Overflow quantity	cm3/min	381	252	510		

2.7 Pump chamber pressure

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	mmHg	650	640	660		
S	Pressure	kPa	539	510	568		
S	Pressure	kgf/cm2	5.5	5.2	5.8		
P	Basic		*				

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	mmHg	650	640	660		
C	Pressure	kPa	539	510	568		
C	Pressure	kgf/cm2	5.5	5.2	5.8		

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	mmHg	650	640	660		
C	Pressure	kPa	696	667	725		
C	Pressure	kgf/cm2	7.1	6.8	7.4		

2.8 Timer

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	mmHg	650	640	660		
S	Timer stroke	mm	4.6	4.4	4.8		
P	Basic		*				

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1250	1250	1250		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	mmHg	650	640	660		
C	Timer stroke	mm	3.3	2.7	3.9		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
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C = Check value)

OT = Outside Tolerance (X is set)

P	Pump speed	r/min	1500	1500	1500		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	mmHg	650	640	660		
C	Timer stroke	mm	4.6	4.3	4.9		

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	mmHg	650	640	660		
C	Timer stroke	mm	8.2	7.6	8.8		

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	mmHg	650	640	660		
C	Timer stroke	mm	0.7	0.1	1.3		

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

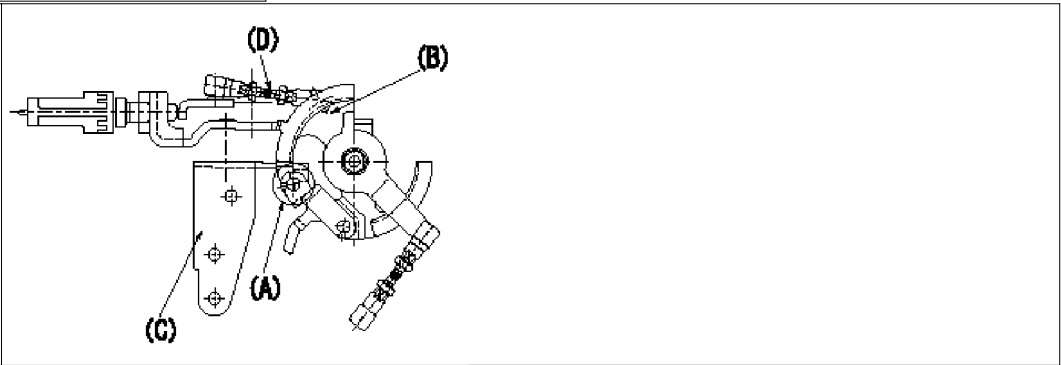
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1500	1500	1500		
P	Boost pressure	kPa	86.6	85.3	87.9		
P	Boost pressure	mmHg	650	640	660		
S	Average injection quantity	mm ³ /st.	32.3	31.8	32.8		
S	Timer stroke variation dT	mm	0.4	0.4	0.4		
P	Basic		*				

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	mmHg	650	640	660		
C	Average injection quantity	mm ³ /st.	32.3	31.3	33.3		
C	Timer stroke variation dT	mm	0.4	0.4	0.4		

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	mmHg	650	640	660		
C	Average injection quantity	mm ³ /st.	27.3	25.8	28.8		
C	Timer stroke variation dT	mm	0.8	0.8	0.8		

2.11 Additional device adjustment

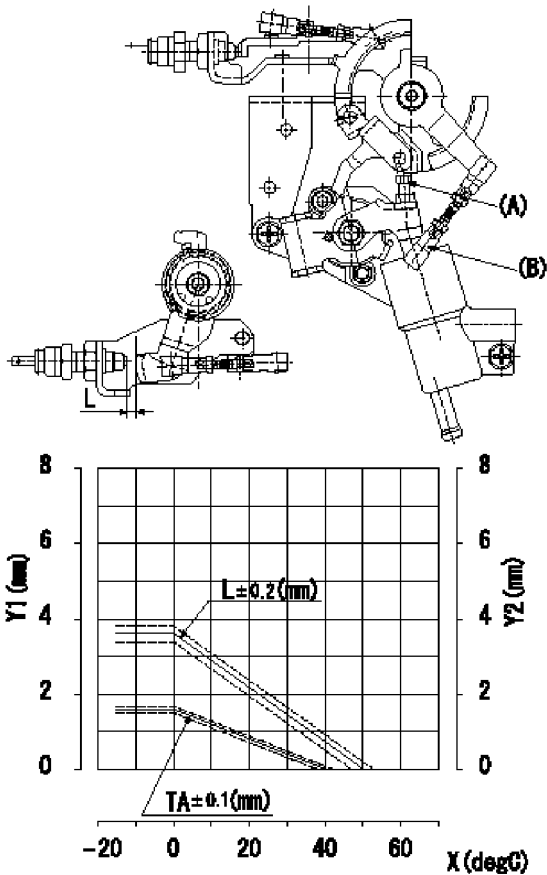
2.11.1 Additional device 1

Name	SIDE LINK LEVER ADJUSTMENT
	
<p>L1=Dia.5.8-0.2mm L2=161+-3mm L3=-32.5+-3mm L4=-mm L5=-mm 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>

2.11.2 Additional device 2

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



	<p>Adjustment of the W-CSD</p> <p>1. Adjustment of the advance angle of the timer</p> <p>(1) Determine the timer advance angle from the graph in Fig. 2 (D).</p> <p>(2) Adjust screw A so that the timer advance angle determined in item (1) is obtained.</p> <p>2. Adjust dimension L.</p> <p>Adjust using turnbuckle B so that the dimension L is as described on the figure 2 D.</p> <p>(C): figure 1</p> <p>(G) :</p> <p>Timer stroke: $TA = -0.04t + 1.6t$ ($t \geq 0$ deg C)</p> <p>Control lever gap: $L = -0.072t + 3.6$ ($t \geq 0$ deg C)</p> <p>X = temperature t</p> <p>Y1 = timer stroke TA</p> <p>Y2 = control lever gap L</p>
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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	1.7	1.6	1.8		
S	BCS stroke	mm	4	3.9	4.1		
S	Control lever angle alpha	deg.	25	21	29		
S	Control lever angle beta	deg.	41	38	44		