

**ZEXEL
COMPONENTS**

Date: 16.05.15
Time: 19:29:48

+ INJECTION-PUMP ASSEMBLY	101401-7454	9 400 612 910		
Manufacturer No.:	8971784855			
- FUEL-INJECTION PUMP	101041-8760	9 410 612 311	NP-PES4MD105/412LS2	
- GOVERNOR	105932-2623	9 420 614 569	NP-EP/RLD275-1750A2FXL	
- SUPPLY PUMP	105230-1111	9 440 610 618	NP-FP/KD-ADS	
- AUTOM. ADVANCE MECHANISM	105676-8110	9 420 616 225	NP-EP/SCDM1100-1535Z4DL	
-				
-				
-				
-				
- NOZZLE AND HOLDER ASSY.	105118-7542	9 430 613 635	48-3832	F
Nozzle and Holder:	8-97200-570-3			
Open Pre:MPa(Kgf/cm2):	18.1{185}/21.1{215}			
- NOZZLE-HOLDER	105048-3832	9 430 616 296		
-				
- NOZZLE SET	105019-1470	9 432 612 811	NP-DLLA143PN325	

ZEXEL Ass'y No.	101401-7454
Bosch Ass'y No.	9 400 612 910
Bosch Typecode	
Engine Type	4HG1
Manufacturer	ISUZU
Edition date	10.02.03 (8)

1 Adjustment conditions

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
	Test oil		ISO4113 or (SAEJ96 7d)				
		1404 Test oil					
P	Test oil temperature	degC	40	40	45		
	Nozzle and nozzle holder		105780-8310				
	Nozzle		105780-0120				
	Bosch type code		1 688 901 990				
	Nozzle holder		105780-2240				
P	Opening pressure	MPa	18				
P	Opening pressure	kgf/cm2	184				
	Injection pipe	mm	6-2-600				
		Outer diameter - inner diameter - length (mm)					
	Overflow valve		134424-3920				
P	Overflow valve opening pressure	kPa	127	107	147		
P	Overflow valve opening pressure	kgf/cm2	1.3	1.1	1.5		
P	Tester oil delivery pressure	kPa	255	255	255		
P	Tester oil delivery pressure	kgf/cm2	2.6	2.6	2.6		
	Direction of rotation (viewed from drive side)		L				
		Left					

2 Adjustment specification**2.1 Injection timing adjustment**

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Direction of rotation (viewed from drive side)		L				
		Left					
P	Injection order		1-3-4-2				
S	Pre-stroke	mm	3.8	3.75	3.85		
S	Rack position		R=A				
		Point A					
P	Beginning of injection position		NO.1				
		Governor side					
S	Difference between angles 1	deg.	90	89.5	90.5		
		Cal 1-3					
S	Difference between angles 2	deg.	180	179.5	180.5		
		Cal 1-4					
S	Difference between angles 3	deg.	270	269.5	270.5		
		Cyl.1-2					

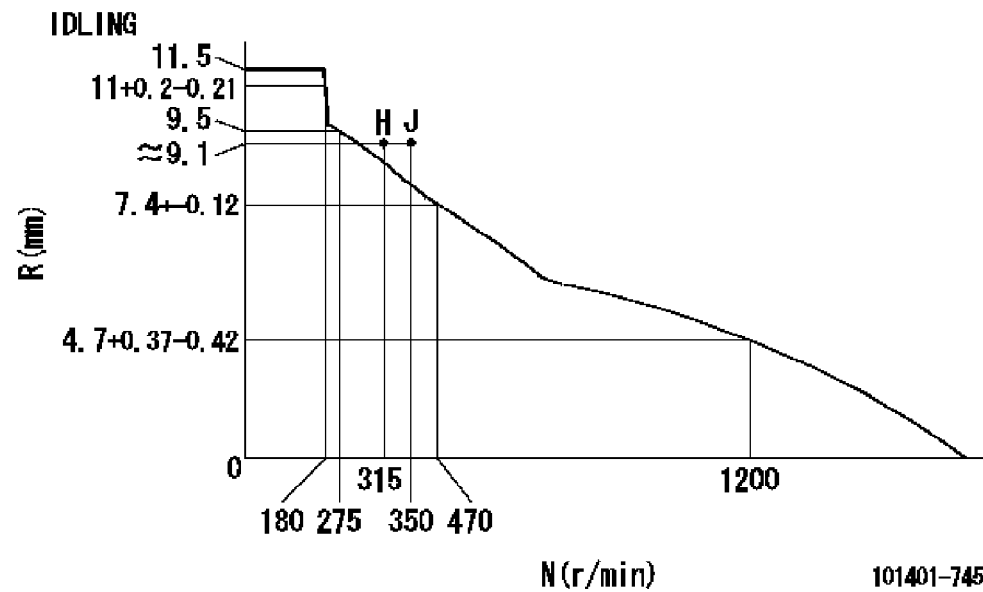
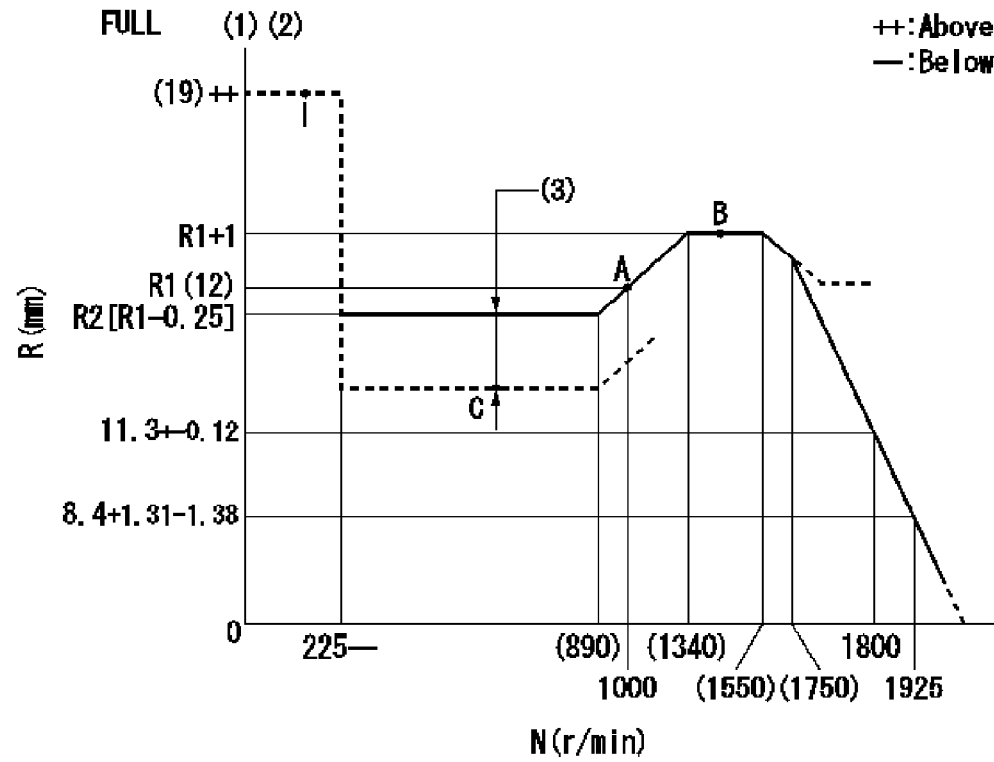
2.2 Injection quantity adjustment

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Adjusting point		-				

P	Rack position		12				
P	Pump speed	r/min	1000	1000	1000		
S	Average injection quantity	mm ³ /st.	54	53	55		
S	Max. variation between cylinders	%	0	-3	3		
P	Basic		*				
P	Fixing the rack		*				
P	Standard for adjustment of the maximum variation between cylinders		*				
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Adjusting point		A				
P	Rack position		9.1+-0.5				
P	Pump speed	r/min	315	315	315		
S	Average injection quantity	mm ³ /st.	23	21.7	24.3		
S	Max. variation between cylinders	%	0	-10	10		
P	Fixing the rack		*				
P	Standard for adjustment of the maximum variation between cylinders		*				
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Adjusting point		H				
P	Rack position		R1(12)				
P	Pump speed	r/min	1000	1000	1000		
S	Average injection quantity	mm ³ /st.	54	53	55		
P	Basic		*				
P	Fixing the lever		*				
P	Boost pressure	kPa	61.3	61.3			
P	Boost pressure	mmHg	460	460			
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Adjusting point		B				
P	Rack position		R1+1				
P	Pump speed	r/min	1500	1500	1500		
S	Average injection quantity	mm ³ /st.	57.5	53.5	61.5		
P	Fixing the lever		*				
P	Boost pressure	kPa	61.3	61.3			
P	Boost pressure	mmHg	460	460			
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Adjusting point		C				
P	Rack position		R2-0.9				
P	Pump speed	r/min	500	500	500		
S	Average injection quantity	mm ³ /st.	45.8	41.8	49.8		
P	Fixing the lever		*				
P	Boost pressure	kPa	0	0	0		
P	Boost pressure	mmHg	0	0	0		

2.3 Governor adjustment

Name	
------	--



101401-7454

T1=N40 BCL=0.9+/-0.1mm	N:Pump speed R:Rack position (mm) (1)Torque cam stamping: T1 (2)Tolerance for racks not indicated: +/-0.05mm. (3)Boost compensator stroke: BCL
---------------------------	--

2.4 Boost compensator adjustment

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	500	500	500		
P	Rack position		R2-0.9				
S	Boost pressure	kPa	13.3	12	14.6		
S	Boost pressure	mmHg	100	90	110		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	500	500	500		
P	Rack position		R2(R1-0.25)				
S	Boost pressure	kPa	48	48	48		
		About					
S	Boost pressure	mmHg	360	360	360		
		About					

2.5 Timer adjustment

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
S	Pump speed	r/min	1150--				
P	Advance angle	deg.	0	0	0		
	Remarks						
		Start					

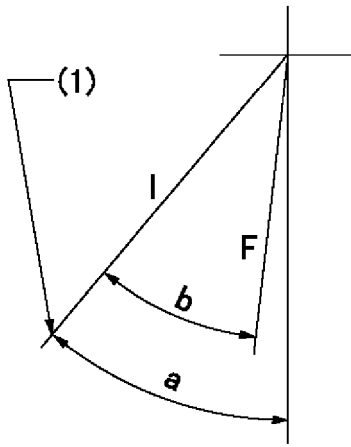
CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1100				
S	Advance angle	deg.	0.5		0.5		

CAT	Designation	Unit	Set value	min.	max.	Actual values	OT
P	Pump speed	r/min	1535				
S	Advance angle	deg.	4	3.5	4.5		
	Remarks						
		Finish					

2.6 Speed control lever angle

Name _____

a=42deg+-5deg
b=(38.5deg)+-3deg

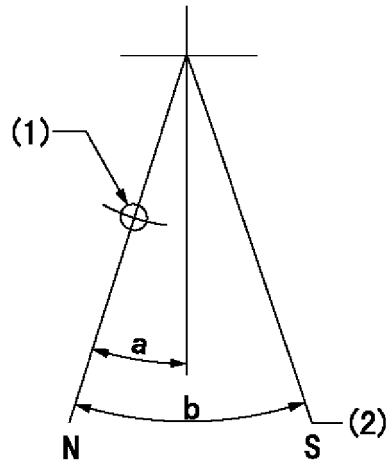


F: Full speed
I: Idle
(1) Stopper bolt setting

2.7 Stop lever angle

Name _____

a=23deg+-5deg
b=(31deg)+-5deg



aa=58mm
bb=1500r/min
cc=3.5+-0.2mm

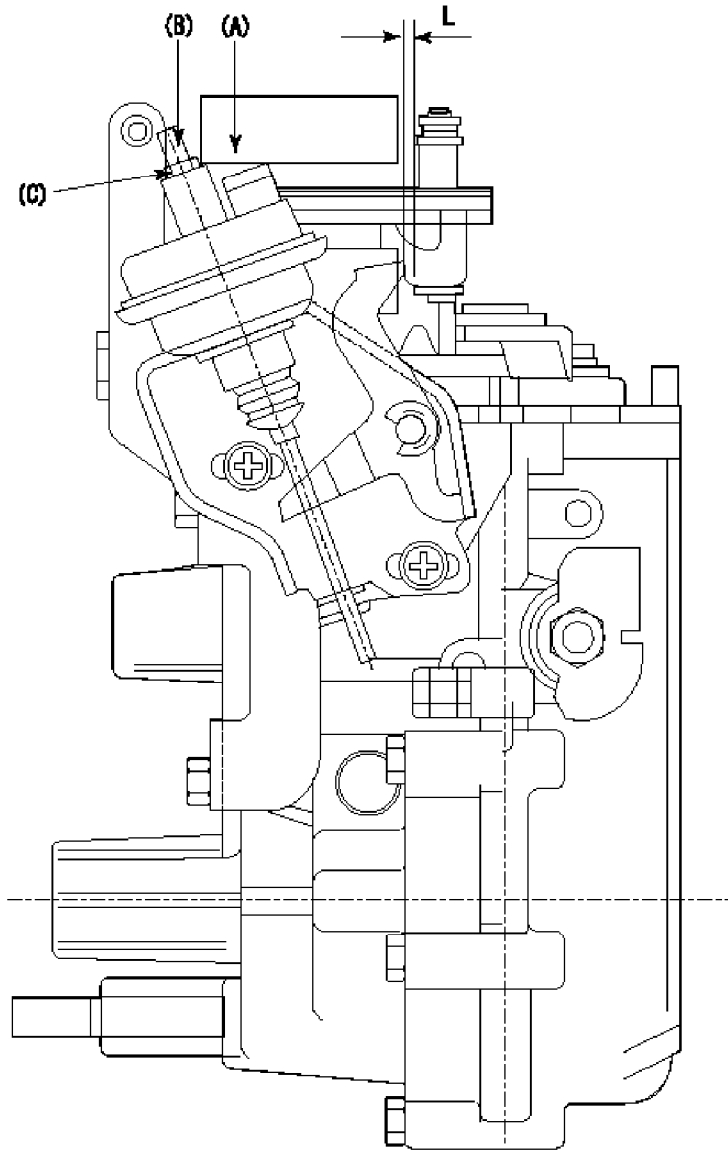
N: Pump normal
S: Stop the pump.
(1) Use the hole at R = aa
(2) At pump speed bb and rack position cc, set the stopper bolt.

2.8 Additional device adjustment

2.8.1 Additional device 1

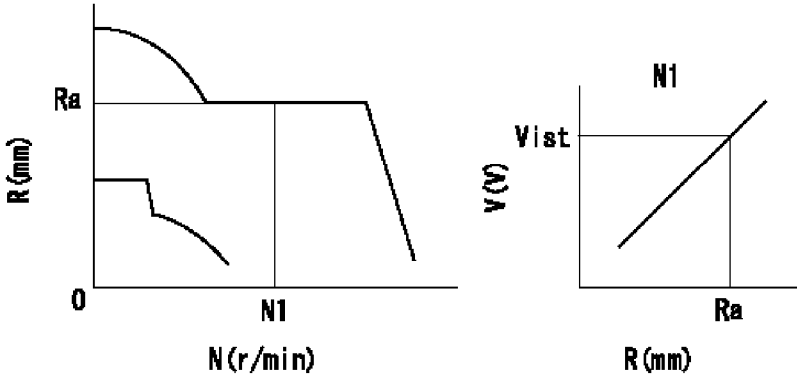
Name FICD

L=(5)mm



<p>P1=53.3kPa(400mmHg) P2=53.3kPa(400mmHg) Na=400r/min Ra=9.1+-0.1mm T1=1.2~1.6N-m(0.12~0.16kgf-m)</p>	<p>(A) applied negative pressure (B) Screw (c) Nut 1. Set the actuator as described below. (1)Confirm that there is clearance between the actuator lever and the speed lever. (2)Loosen the nut (C). (3)Push in the screw (B). (4)Apply P1 from the actuator (A) part. (5)Pull out the screw (B) slowly. (6)Tighten and fix the nut (C) when pump speed is Na and the rack position is Ra. (7)Torque the nut (C) to T1. (8)Apply P2 several times. (9)Confirm that the actuator functions normally. (10)Confirm that there is a clearance between the actuator lever and the speed lever at that time.</p>
--	---

2.8.2 Additional device 2

Name	RACK SENSOR
	<p>Rack sensor adjustment</p> <ol style="list-style-type: none"> 1. Flange type rack sensor (rack sensor adjustment -5*20) <p>(1)These types of rack sensors do not need adjustment. Confirm the performance with the following procedures. (2)Mount the rack sensor main body to the pump main body. (3)Fix the pump lever at full. (4)At supply voltage V1, pump speed N1 and rack position Ra, confirm that the amp's output voltage is Vist. (5)Move the pump lever two or three times. (6)Set again to full. (7)Confirm that the amplifier output voltage is Vist. (8)Fix the caution plate to the upper part of the rack sensor. (For those without the caution plate instructions, make sure the nameplate of the rack sensor carries the "Don't hold here" caution.) (9)Apply red paint to the rack sensor mounting bolts (2 places).</p>
<p>V1=5+-0.01V N1=1500r/min Ra=R1(12)+1mm Vist=3.07+-0.28V</p>	

2.9 Timing setting

Name <input type="text"/> a=(60deg) b=(85deg)	
aa=7deg	(1) Pump vertical direction (2) Position of gear's standard threaded hole at No 1 cylinder's beginning of injection (3) Stamping position on the A/T outer rim (4) At the No 1 cylinder's beginning of injection, align with the aligning mark seen through the bracket's check hole and mark the A/T's bevel C1. (5) B.T.D.C.: aa

**ZEXEL
COMPONENTS**

Date: 16.05.15
Time: 19:28:41

+ INJECTION-PUMP ASSEMBLY	101401-7454	9 400 612 910		
Manufacturer No.:	8971784855			
- FUEL-INJECTION PUMP	101041-8760	9 410 612 311	NP-PES4MD105/412LS2	
- GOVERNOR	105932-2623	9 420 614 569	NP-EP/RLD275-1750A2FXL	
- SUPPLY PUMP	105230-1111	9 440 610 618	NP-FP/KD-ADS	
- AUTOM. ADVANCE MECHANISM	105676-8110	9 420 616 225	NP-EP/SCDM1100-1535Z4DL	
-				
-				
-				
-				
- NOZZLE AND HOLDER ASSY.	105118-7542	9 430 613 635	48-3832	F
Nozzle and Holder:	8-97200-570-3			
Open Pre:MPa(Kgf/cm2):	18.1{185}/21.1{215}			
- NOZZLE-HOLDER	105048-3832	9 430 616 296		
-				
- NOZZLE SET	105019-1470	9 432 612 811	NP-DLLA143PN325	
