

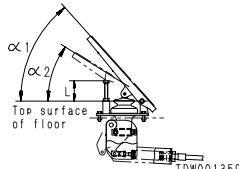
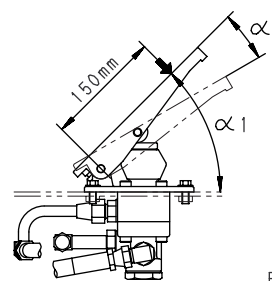
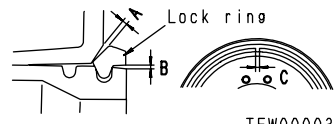
STANDARD VALUE TABLE FOR ENGINE

Machine Model			WA380-5H		
Engine			SAA6D114E-3		
Item	Measurement Conditions		Unit	Standard Value For New Machine	Service Limit Value
Revolving speed	High idling		rpm	2,250 ± 50	2,250 ± 50
	Low idling			920 ⁺⁵⁰ ₀	920 ⁺⁵⁰ ₀
	Rated revolving speed			2,000	2,000
Exhaust temperature (Turbocharger outlet temperature)	All revolution ranges (Atmospheric temperature: 20 °C)		°C	Max. 550	Max. 600
Intake air pressure (Boost pressure)	At rated output		kPa {mmHg}	113.1 ~ 126.4 {850 ~ 950}	Max. 106.4 {Max. 800} Min. 133.3 {Min. 1,000}
Exhaust gas color	At sudden acceleration At high idling		Bosch index	Max. 4.5 Max. 1.0	Min. 6.5 Max. 1.5
Valve clearance	Air intake valve Exhaust valve (Normal temperature)		mm	0.33 ± 0.05 0.56 ± 0.05	0.33 ± 0.05 0.56 ± 0.05
Compression pressure	Oil temperature: 40 ~ 60 °C (SAE30 oil)		MPa {kg/cm ² }	Min. 2.4 {24.6}	Min. 2.0 {20.5} Difference between cyl- inders: Max. 0.7 {6.9} (250 rpm)
	(Engine speed)		(rpm)	(250 rpm)	
Blow-by pressure	At rated output (Operating range of water temperature) (SAE30 oil)		kPa {mmH ₂ O}	Max. 0.98 {Max. 100}	Max. 1.96 {Max. 200}
Oil pressure	(Operating range of water temperature)		MPa {kg/cm ² }	0.36 ~ 0.61 {3.5 ~ 6.0} Min. 0.15 {1.5} 0.30 - 0.56 {3.0 - 5.5} Min. 0.10 {1.0}	0.21 {2.1} 0.07 {0.7} 0.18 {1.8} 0.07 {0.7}
	At high idling (15W-40)				
	At low idling (15W-40)				
	At high idling (SAE10W)				
	At low idling (SAE10W)				
Oil temperature	All revolution ranges (Inside oil pan)		°C	90 ~ 120	Min. 120
Fuel injection timing	Before compression top dead center		°(deg.)	8.5 ± 1	8.5 ± 1
Belt tension	Deflection made by finger pressure of about 58.8 N {about 6 kg}	Idler pulley - Crank pulley	mm	8	Above 10 or below 6
	Deflection made by finger pressure of about 98 N {about 10 kg}	Air conditioner compressor - Crank pulley		16 ~ 20	16 ~ 20

STANDARD VALUE TABLE FOR CHASSIS

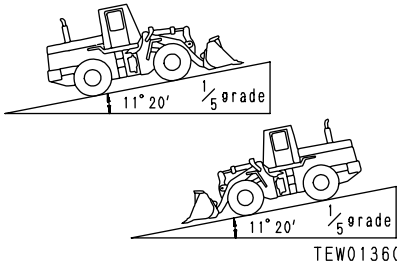
The * mark shows the value before the detent.

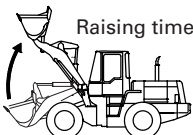
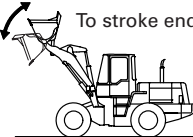
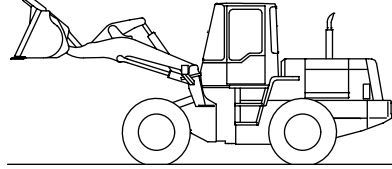
Machine Model					WA380-5H			
Category	Item		Measurement Conditions	Unit	Standard Value For New Machine		Service Limit Value	
Directional lever	Operating effort	N - FORWARD, REVERSE	• Engine Stopped • Measure at center of lever knob	N {kg}	5.9 ^{+4.9} _{-3.0}	{0.6 ^{+0.5} _{-0.3} }	Max. 16.7 {1.7}	
	Travel	N - FORWARD, REVERSE		mm	35 ± 10		35 ± 20	
Speed lever	Operating effort	1st ~ 2nd	• Engine stopped • Measure at center of lever knob	N {kg}	5.9 ^{+4.9} _{-3.0}	{0.6 ^{+0.5} _{-0.3} }	Max. 16.7 {1.7}	
		2nd ~ 3rd			5.9 ^{+4.9} _{-3.0}	{0.6 ^{+0.5} _{-0.3} }	Max. 16.7 {1.7}	
		3rd ~ 4th			5.9 ^{+4.9} _{-3.0}	{0.6 ^{+0.5} _{-0.3} }	Max. 16.7 {1.7}	
	Travel	1st ~ 2nd		mm	35 ± 10		35 ± 20	
		2nd ~ 3rd			35 ± 10		35 ± 20	
		3rd ~ 4th			35 ± 10		35 ± 20	
Working equipment control lever	Operating effort	Lift arm	HOLD → RAISE	• Engine speed: Low idling • Hydraulic oil temperature: 45 ~ 55 °C	N {kg}	Max. 12.8 {1.3} *		Max. 19.6 {2.0} *
			RAISE → HOLD			Max. 14.7 {1.5}		Max. 22.6 {2.3}
			HOLD → LOWER			Max. 12.8 {1.3} *		Max. 19.6 {2.0} *
			LOWER → HOLD			—		—
			LOWER → FLOAT			Max. 15.7 {1.6}		Max. 23.5 {2.4}
			FLOAT → HOLD			Max. 14.7 {1.5}		Max. 22.6 {2.3}
		Bucket	HOLD → DUMP			Max. 17.7 {1.8}		Max. 26.5 {2.7}
			HOLD → TILT			Max. 12.8 {1.3} *		Max. 19.6 {2.0} *
			TILT → HOLD			Max. 14.7 {1.5}		Max. 22.6 {2.3}
	Travel	Lift arm	HOLD → RAISE	• Engine speed: Low idling • Hydraulic oil temperature: 45 ~ 55 °C	mm	43 ± 9 *		43 ± 18 *
			HOLD → RAISE			43 ± 9 *		43 ± 18 *
			HOLD → RAISE			50 ± 9		50 ± 18
		Bucket	HOLD → RAISE			50 ± 9		50 ± 18
			HOLD → RAISE			43 ± 9 *		43 ± 18 *
	Steering wheel	Play		• Engine stopped • Machine facing straight to front	mm	Max. 40		Max. 100
Operating effort		• Flat, horizontal, straight, dry paved road surface • Engine speed: Low idling (Bucket empty)	N {kg}	6.9 ~ 12.6 {0.7 ~ 1.3}		Max. 19.6 {2.0}		
Turning speed (Not including play)		• Engine speed: High idling • Left lock - right lock	Turns	4.0 ± 0.4		4.0 ± 0.4		
Operating time		Low idling	• Engine speed: Low idling • Hydraulic oil temperature: 45 ~ 55 °C • Left lock - Right lock	Sec.	4.5 ± 0.4		Max. 7.0	
		High idling			3.6 ± 0.3		Max. 5.3	
						3.7 ± 0.3		Max. 5.7
Frame	Clearance between front frame and rear frame		• Engine speed: 1,200 rpm" • Hydraulic oil temperature: 45 - 55 °C • Flat, level, straight, dry, and paved road • At max. steering angle	mm	25 ± 2		—	

Machine Model				WA380-5H		
Category	Item		Measurement Condition	Unit	Standard Value For New Machine	Service Limit Value
Accelerator pedal	Pressing effort		- Measure while engine is running. - Measure at 150 mm from fulcrum of pedal.	N {kg}	60.8 ~ 80.4 {6.2 ~ 8.2}	Max. 117.6 {12.0}
	Pressing angle	Neutral ($\alpha 1$)	Measure while engine is stopped. 	deg.	48	—
		Neutral ($\alpha 2$)			33 ± 1	—
					37 ± 1	—
Height of stopper (L)			mm	60 ± 5	—	
Brake pedal	Operating effort		- Engine speed: Low idling - Hydraulic oil temperature: 45 ~ 55 °C 	N {kg}	294 ± 29.4 {30 ± 3}	Max. 421.4 {43}
	Operating angle	Neutral ($\alpha 1$)		deg.	45	—
		Neutral ($\alpha 2$)			15 ⁺¹ ₀	—
	Play			mm	5 ± 0.5	—
Tire	Fitting of wheel lock ring	A	Tire inflation pressure: Specified pressure	mm	Max. 2.5	—
		B			Max. 4.0	—
	Clearance of wheel lock ring	C			2 ~ 10	—

Machine Model					WA380-5H		
Category	Item		Measurement Conditions		Unit	Standard Value For New Machine	Service Limit Value
Engine speed	Torque converter		• Engine water temperature: Operating range	N mode	rpm	1,815 ± 50	1,815 ± 100
				P mode		2,120 ± 50	2,120 ± 100
	Hydraulic stall		• Torque converter oil temperature: 60 ~ 80 °C	N mode		1,810 ± 100	1,810 ± 200
				P mode		2,150 ± 100	2,150 ± 200
	Torque converter stall + hydraulic stall		• Hydraulic oil temperature: 45 ~ 55 °C	N mode		1,715 ± 100	1,715 ± 200
				P mode		1,715 ± 100	1,715 ± 200
Transmission, torque converter	Main relief valve	Low idling	• Torque converter oil temperature: 60 ~ 80 °C	MPa {kg/cm ² }	2.74 ± 0.2 {27.9 ± 2}	2.74 ± 0.2 {27.9 ± 2}	
		Rated speed			• Engine: Rated speed	2.86 ± 0.20 {29.2 ± 2.0}	2.86 ± 0.20 {29.2 ± 2.0}
	Torque converter relief (Inlet port) pressure				Max. 0.88 {Max. 9.0}	Max. 0.88 {Max. 9.0}	
	Torque converter outlet port oil pressure				0.44 ± 0.05 {4.5 ± 0.5}	0.44 ± 0.05 {4.5 ± 0.5}	
	ECMV output (Clutch) oil pressure	1st, 2nd, 3rd, 4th	• Torque converter oil temperature: 60 ~ 80 °C		2.11 ± 0.15 {21.5 ± 1.5}	2.11 ± 0.15 {21.5 ± 1.5}	
		F - R			• Engine: Rated speed	1.91 ± 0.15 {19.5 ± 1.5}	1.91 ± 0.15 {19.5 ± 1.5}
		Lock-up			• Manual switch ON	1.72 ± 0.15 {17.5 ± 1.5}	1.72 ± 0.15 {17.5 ± 1.5}
	Steering	Steering relief pressure			• Hydraulic oil temperature: 45 ~ 55 °C • Engine speed: High idling		MPa {kg/cm ² }
Accumulator	Charge cut-in pressure		• Engine speed: Low idling Hydraulic oil temperature: 45 ~ 55 °C	• Point where brake oil pressure warning lamp goes out	MPa {kg/cm ² }	5.9 ^{+0.5 0} {60 ^{+5 0} }	5.9 ^{+0.98 -0.5} {60 ^{+10 -5} }
	Charge cut-out pressure			• Point where oil pressure is going up and then starts to go down		9.8 ^{+0.98 0} {100 ^{+10 0} }	9.8 ^{+1.5 -0.5} {100 ^{+15 -5} }

Machine Model					WA380-5H		
Category	Item	Measurement Conditions			Unit	Standard Value For New Machine	Service Limit Value
Power train	Travel speed (Bucket empty)	FORWARD	P mode	1st	km/h	6.8 ± 0.3	6.8 ± 0.5
				2nd		12.3 ± 0.6	12.3 ± 0.9
				3rd		21.4 ± 1.1	21.4 ± 1.6
				4th		34.0 ± 1.7	34.0 ± 2.6
			N mode	1st		5.3 ± 0.3	5.3 ± 0.4
				2nd		9.3 ± 0.5	9.3 ± 0.7
				3rd		16.7 ± 0.8	16.7 ± 1.3
				4th		27.0 ± 1.4	27.0 ± 2.0
		REVERSE	P mode	1st		7.3 ± 0.4	7.3 ± 0.5
				2nd		12.8 ± 0.6	12.8 ± 1.0
				3rd		22.6 ± 1.1	22.6 ± 1.7
				4th		35.0 ± 1.8	35.0 ± 2.6
			N mode	1st		5.7 ± 0.3	5.7 ± 0.4
				2nd		9.9 ± 0.5	9.9 ± 0.7
				3rd		17.7 ± 0.9	17.7 ± 1.3
				4th		27.9 ± 1.4	27.9 ± 2.1
Wheel brake	Brake oil pressure	• Hydraulic oil temperature: 45 ~ 55 °C			MPa {kg/cm ² }	5.1 ± 0.49 {52 ± 5}	5.1 ± 0.98 {52 ± 10}
	Drop in brake pressure	• Engine stopped • Keep brake pedal depressed at 4.9 MPa {50 kg/cm ² } and measure drop in oil pressure after 5 min.				Max. 98 {1.0}	Max. 98 {1.0}
	Performance	• Tire inflation pressure: Specified pressure • Flat, horizontal, straight, dry paved road surface • Speed when applying brake: 20 km/h, braking delay: Within 0.1 sec. • Brake pedal operating effort: Specified operating effort (333 ± 33.3 N {34.0 ± 3.4kg}) • Measure braking distance			m	Max. 5	Max. 5
	Disc wear	• Oil pressure: 4.9 MPa {50 kg/cm ² } • Pedal depressed fully			mm	Shaft protrusion 0	Shaft protrusion reaches wear limit position (2.4 mm)

Machine model				WA380-5H		
Category	Item		Measurement Conditions	Unit	Standard Value For New Machine	Service Limit Value
Parking brake input pressure	Parking brake inlet pressure		- Torque converter oil temperature: 60 ~ 80 °C - Engine speed: Low idling	MPa {kg/cm ² }	Min. 2.27 {Min. 23.1}	Min. 2.27 {Min. 23.1}
	Performance		- Tire inflation pressure: Specified pressure - Flat paved road with 1/5 (11° 20') grade - Dry, paved road surface - Machine at operating condition 	—	Holds in position	Holds in position
	Disc thickness			mm	3.2 ± 0.08	2.97
PPC	PPC valve basic pressure		- Hydraulic oil temperature: 45 ~ 55 °C - Engine speed: High idling	MPa {kg/cm ² }	3.72 ^{+0.2} ₀ {38 ⁺² ₀ }	3.72 ^{+0.2} _{-0.2} {38 ⁺² ₋₂ }
	PPC valve output pressure	Lift arm RAISE, FLOAT; Bucket DUMP, TILT	- Hydraulic oil temperature: 45 ~ 55 °C - Engine speed: High idling - Control lever operated fully		3.72 ^{+0.1} _{-0.1} {38 ⁺¹ ₋₁ }	3.72 ^{+0.1} _{-0.2} {38 ⁺¹ ₋₂ }
		Lift arm LOWER			2.2 ± 0.25 {22.5 ± 2.5}	2.2 ± 0.39 {22.5 ± 4}

Machine Model				WA380-5H				
Category	Item		Measurement Conditions	Unit	Standard Value For New Machine	Service Limit Value		
Work equipment	Work equipment relief pressure		- Hydraulic oil temperature: 45 ~ 55 °C - Run engine at high idling.		MPa {kg/cm ² }	20.6 ± 0.49 {210 ± 5}	20.6 ^{+0.49} _{-1.27} 210 ⁺⁵ ₋₁₃ }	
	Work equipment speed	Lift arm RAISE	- Hydraulic oil temperature: 45 ~ 55 °C - Run engine at high idling. - Apply no load.	N mode	sec.	6.2 ± 0.5	Max. 8.0	
			 Raising time	P mode		5.3 ± 0.5	Max. 7.0	
		Lift arm LOWER	 Lowering time BDW00675	N mode		2.8 ± 0.5	Max. 4.0	
				P mode		2.7 ± 0.5	Max. 3.8	
		Bucket full stroke	Forward	- Hydraulic oil temperature: 45 ~ 55 °C - Engine speed: High idling - No load		N mode	1.6 ± 0.3	Max. 2.3
				P mode		1.4 ± 0.3	Max. 2.0	
			Backward	 To stroke end From level position		N mode	2.2 ± 0.3	Max. 3.0
						P mode	1.9 ± 0.3	Max. 2.6
	Moving bucket from level position	Backward	 BDW00676	N mode	1.4 ± 0.3	Max. 2.0		
				P mode	1.2 ± 0.3	Max. 1.8		
	Hydraulic drift	Retraction of lift cylinder rod	- Hydraulic oil temperature: 45 ~ 55 °C - Stop engine and leave for 5 minutes, then measure for 15 minutes. - Apply no load to bucket and set lift arm and bucket in level position.1  Position of work equipment BDW00677	mm	Max. 14	Max. 17		
		Retraction of bucket cylinder rod			Max. 36	Max. 43		

Machine Model				WA380-5H	
Category	Item	Measurement Conditions	Unit	Standard Value For New Machine	Service Limit Value
Oil pressure drive fan	Max. fan speed	• Engine speed: High idling • Engine water temperature: Min. 95 °C • Hydraulic oil temperature: Min. 95 °C • Torque converter oil temperature: Min. 105 °C	rpm	1,400 ± 100	1,400 ± 200
	Min. fan speed	• Engine speed: Low idling • Engine water temperature: Max. 40 °C • Hydraulic oil temperature: Max. 40 °C • Torque converter oil temperature: Max. 40 °C		240 ± 50	240 ± 100