SERVICE MANUAL

E55Bx Tier 3

Compact Hydraulic Excavator

Part number S5HS0014E01
English
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NEW HOLLAND CONSTRUCTION

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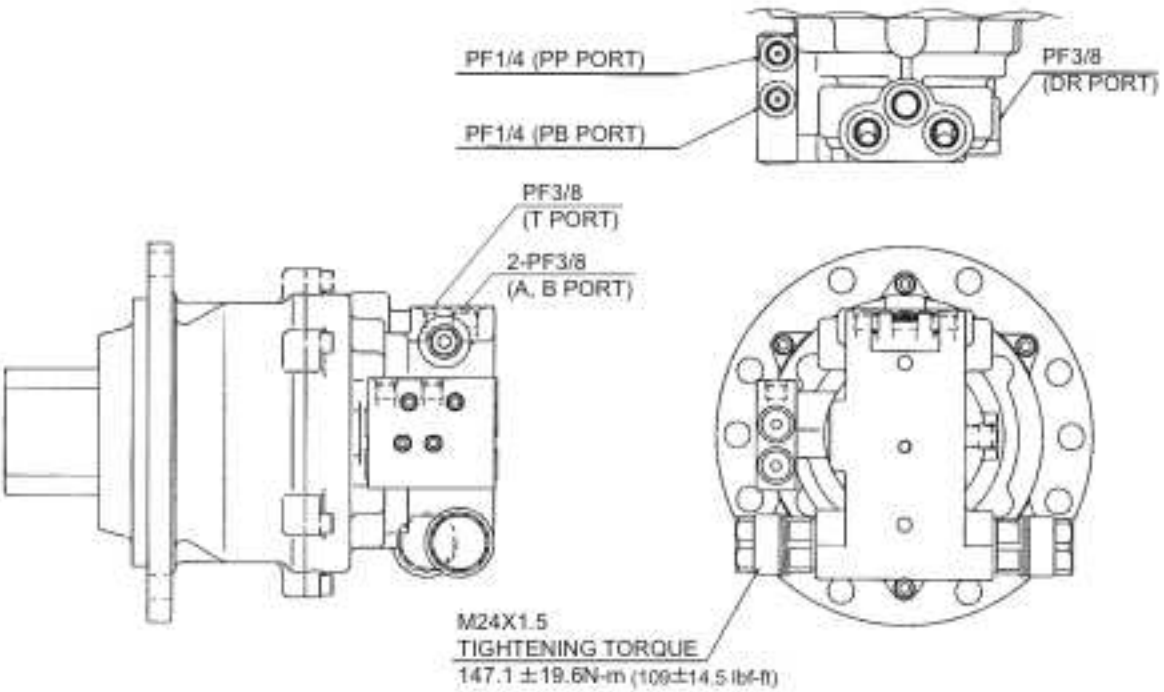
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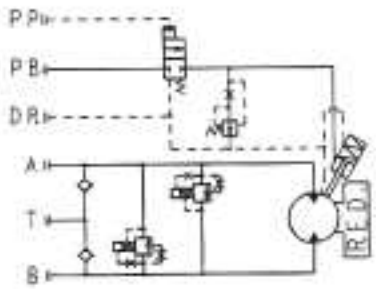
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24.1.5 SWING MOTOR

24.1.5.1 GENERAL VIEW



24.1.5.2 HYDRAULIC CIRCUIT



Port	NAME	Size
A	Main port	PF3/8
B	Main port	
T	Tank port	
DR	Drain port	PF1/4
PB	Slewing parking brake release port	
PP	Slewing parking brake pilot port	

Rotational direction (Seen from shaft side) : Inlet B port : Clockwise
: Inlet A port : Counter clockwise

24.1.5.3 SPECIFICATIONS

Items				Specifications
Part No.	Model (Type)	Swing motor unit	PS15V00004F1	PCR-3B-12A-FP-9364A
		Swing motor		PM-1B-18B-FS2-9364A
Hydraulic motor		Displacement	cm^3/rev (cu-in/rev)	18.1 (1.105)
		Rated flow	L/min (gal/min)	33.8 (8.93)
Parking brake		Static friction torque	N-m (lbf-ft)	88.3 (65.1)
		Release pressure	MPa (psi)	Min 2.5 (363), Max 4.9 (710)
Relief valve		Set pressure	MPa (psi)	21.0 (3050) at 34l/min (9.0 gal/min)
		Cracking pressure	MPa (psi)	16.2 (2350) at 1l/min (0.26 gal/min)
Reduction unit		Reducting ratio		1/21.5
Mass (with Reduction unit)			kg (lb)	Approx. 37 (82)

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Error code	H023		
Description of failure	Boom angle potentiometer, disconnection failure		
Judged by	Input voltage from the boom angle potentiometer is less than 0.1 V.		
Symptom	The rating, load and radius of the high reach crane are displayed as abnormal values.		
Control at failure	Controlled normally.		
Return in normal condition	Returned automatically when in normal condition.		
Confirmation screen for service diagnosis	Screen No.	4	Boom
	Screen No.		
	Screen No.		

	To be inspected	Inspection and action
1	-Boom angle potentiometer SE-10	Measure the resistance between the terminals of the boom angle potentiometer. 4.0 - 6.0kΩ Turn potentiometer to measure the resistance between the signal and GND. 0 - total resistance (4.0 - 6.0) kΩ
2	-Wiring between boom angle potentiometer and controller CN-426F CN-500F	Inspect and repair according to wiring check procedure.
3	-Mechatro controller	Replace the controller and check if the failure goes away.

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4TNV98 (~ EPA Tier2)

Engine Model	4TNV98						
Version	CL			VM			
Type	Vertical In-line Diesel Engine						
Combustion System	Direct Injection						
Aspiration	Natural						
No. of Cylinders	4						
Bore × Stroke	98 × 110mm						
Displacement	3.319L						
Continuous Rated Output	min⁻¹	1500	1800				
	kW	30.9	36.8				
	PS	42.0	50.0				
Max. Rated Output (Net)	min⁻¹	1500	1800	2000	2200	2400	2500
	kW	34.6	41.2	41.9	45.6	49.3	51.1
	PS	47.0	56.0	57.0	62.0	67.0	69.5
High Idling	min⁻¹	1600 ± 25	1895 ±25	2180 ± 25	2400 ± 25	2590 ± 25	2700 ± 25
Engine Weight (Dry) *with Flywheel Housing	248 kg			235 kg			
PTO Position	Flywheel End						
Direction of Rotation	Counterclockwise Viewed From Flywheel End						
Cooling System	Liquid-Cooled with Radiator						
Lubricating System	Forced Lubrication with Trochoid Pump						
Normal Oil Pressure at Rated Engine Speed	0.29 - 0.39 MPa						
Normal Oil Pressure at Low Idle Speed	0.06 MPa						
Starting System	Electric Starting (Starter Motor: DC12V (2.3 kW)) ***						
	Alternator: DC12V, 40A***						
	Recommended Battery Capacity: 12V, 64Ah*** (5h rating)						
Dimensions (L × W × H)*	719 × 498 × 742 mm						
Engine Oil Pan Capacity**	10.5/6.0L (Dipstick Upper Limit / Lower Limit)						
Engine Coolant Capacity	4.2L Engine Only						
Standard Cooling Fan	410mm O.D., 6 Blade Pusher-Type ***						
Crank V-pulley dia./ Fan V-pulley dia.	ϕ130/ ϕ130mm ***						

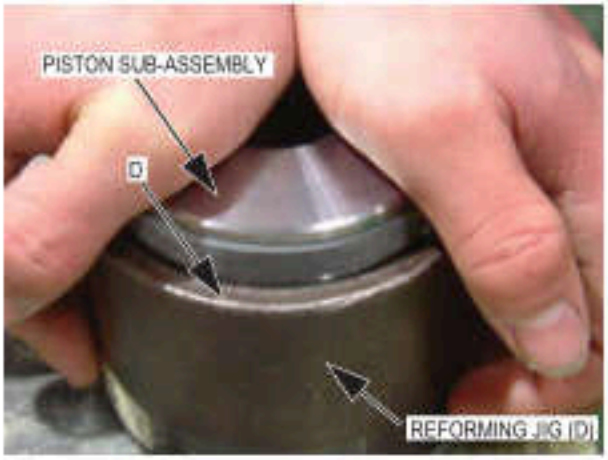
* *Engine specifications without radiator.*

** *Engine oil capacity for a "Deep Standard" oil pan. Refer to the operation manual provided by the driven machine manufacturer for the actual engine oil capacity of your machine.*

*** *May vary depending on application.*

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3. The O-ring of seal ring was extremely stretched at the installation, insert the piston subassembly from the taper side of reforming jig (D) to reform the ring.



(4) Assembly of piston rod

1. Keep clevis of piston rod (2) horizontal, and install the head sub-assembly.
   -Apply hydraulic oil to seal slightly.
   -Take care not to hit the seal against the thread of piston rod.



2. Face the slit of seal ring (12) to the thread, and install the seal ring into groove of piston rod.
   Install the cushion bearing (5) on the rod from taper side as shown in the photo.
   -Take care of the direction of seal ring and cushion bearing.
   If the direction is mistaken, the cushion effect is not obtained.





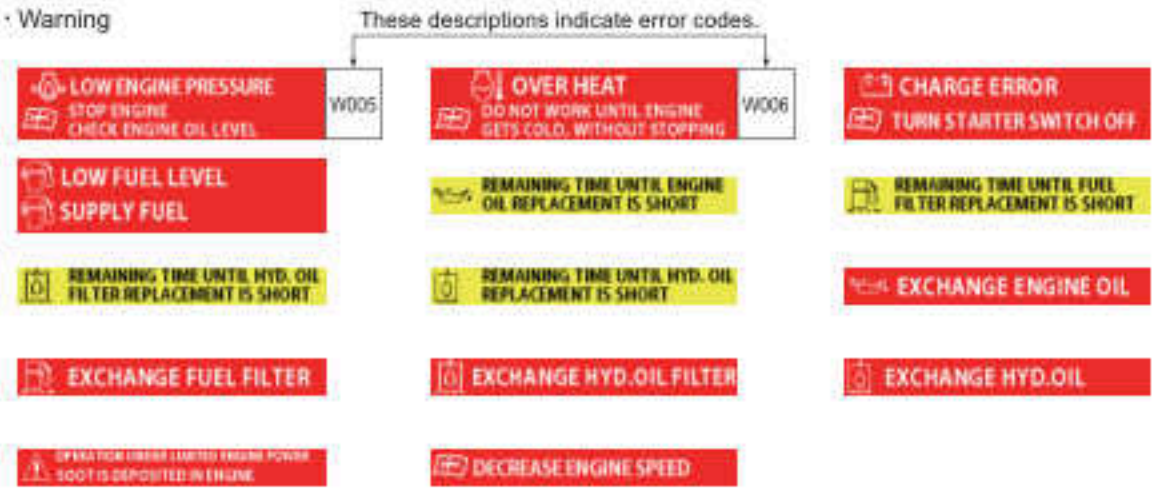
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(5) Gauge Cluster Display Details

The screen for the operator is displayed on the multi-display following the logo mark display, after the key is turned on. The multi-display has the following functions.



1. Display function for operator ----- Normally, this is displayed during operation.
 1.1 Time display ----- Displays the current time.
 1.2 Self-diagnosis display ----- If a failure is detected in the mechatronic system such as a sensor, the machine status and error code are displayed on the upper part, and the instruction is displayed on the lower part.
 1.3 Warning display ----- When the machine is in an unsafe condition or a failure occurs, the warning information is displayed with the symbol and text.



Notice

Error codes are stored as a failure history, and are displayed by the failure history display function on the multi-display.

1.4 Shovel status display ----- Displays the shovel operating status.

2. Maintenance display function ----- The remaining time to the replacement time of the following maintenance items is displayed by pressing the menu switch and selecting "MAINTENANCE" from the user menu.
(1) Engine oil (2) Fuel filter (3) Hydraulic oil filter (4) Hydraulic oil

3. Failure history display ----- Displays the stored past failures of mechatro system in the reverse chronological order by operating the starter key switch and buzzer stop switch.

4. Service diagnosis display ----- Displays information from the mechatro controller such as a value detected with the pressure sensor by operating the starter key switch and buzzer stop switch.

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Symptoms and conditions of failure / Possible causes		Starting failure: Starter does not rotates: ECU failure lamp does not go on immediately after turning on the key	Starting failure: Starter does not rotates: ECU failure lamp goes on immediately (within 2 seconds) after turning on the key	Starting failure: Starter rotates: Engine does not start up (without initial ignition)	Starting failure: Starter rotates: Engine does not start up (it stops immediately after initial ignition)	Starting failure: Starter rotates: It takes longer than before to start up engine	Engine stall after start up: Smoke: None	Engine stall after start up: Smoke: Slight	Engine stall after start up: Smoke: Remarkable	Speed control error: Revolution speed cannot be changed with accelerator (stays at a constant speed)	Speed control error: No load: Cannot be set to particular speed	Speed control error: No load: Poor acceleration	Speed control error: No load: Does not smoothly return to low speed	Speed control error: No load: Hunting occurs	Speed control error: Workload: Hunting occurs	Engine output low: Smoke color: Normal	Engine output low: Smoke color: White	Engine output low: Smoke color: Black	Noise and vibration: High knocking sound at combustion time	Noise and vibration: Uneven combustion sound	Noise and vibration: Abnormal sound (other than combustion sound) from engine	Noise and vibration: Engine vibrates heavily	Lubricating oil: Too much lubricating oil consumed	Lubricating oil: Lubricating oil diluted with fuel	Lubricating oil: Lubricating oil mixed with water	Lubricating oil: Oil pressure low (oil pressure warning lamp lit)	Cooling water: Overheat (water temperature warning lamp lit)	Cooling water: Water temperature low	Intake air: Pressure low (air cleaner warning lamp lit)	Intake air: Pressure high	Exhaust gas: Workload: White exhaust gas	Exhaust gas: Workload: Black exhaust gas	Exhaust gas: Too much blow-bye	Exhaust gas: Exhaust gas temperature high	Fuel: Too much fuel consumed	Fuel: Fuel mixed with water (oil-water separator warning lamp lit)	Fuel: Fuel filter fouled shortly	Electrical parts: Battery charge error (charge lamp lit)	Electrical parts: ECU failure lamp flashes	Electrical parts: ECU failure lamp stops flashing immediately (within 2 seconds) after turning off the key	Electrical parts: Specific ECU control functions fail	Electrical parts: Fuses get blown or broken (repeatedly)	Corrective Action	Referenced page number
Electrical system	Fuse blown or broken	○	○				○																																	●	Replace the fuse.	
	Starter faulty		○	○																																				●	Repair or replace the starter.	See "Starter" (on page 11-9).
	Alternator faulty			○																																	○					Repair or replace the alternator.	See "Removing the Alternator" (on page 12-12).
	Wires disconnected	○	○	○			○																														○	○	○	○		Repair or replace the disconnected wire(s) of the harness.	
	Wires short-circuited (sheathing broken); overloaded by the power consumption by additional devices	●																																						●	Inspect, repair, or replace the harnesses and wires as needed. Reexamine the additional devices.	
	Battery voltage low		○	○																																	–					Inspect and charge the battery.	See "Inspecting the Electrolyte Level and Charging the Battery" (on page 5-23).
	Key switch faulty or disconnected	○					○																																	○		Repair or replace the harness. Replace the key switch.	
	Key switch instantly cut off				○		○																																			Replace the key switch.	
	Starter relay faulty, disconnected, or short-circuited		○																																							Repair or replace the harness. Replace the starter relay.	
	Main relay faulty (except for sticking of the contact, which is undetectable by ECU)	○																																						○		Repair or replace the harness. Replace the main relay.	
	Actuator relay faulty (contact failure undetectable by ECU)		?	?			○																																			Replace the actuator relay.	
	Start assist relay faulty (contact failure undetectable by ECU)			○		○													●											△													Replace the start assist relay.	
	Accelerator sensor signal error (an error undetectable by ECU)									○			○	○						○																							Repair or replace the accelerator sensor.	
	Water temperature sensor signal error (an error undetectable by ECU)			○		○							●	●					●																							Replace the water temperature sensor.	
	Speed sensor signal error (an error undetectable by ECU, such as caused by noise)				○	●	○						○	○						○																							Repair or replace the fuel injection pump.	Monitor the engine speed using the diagnosis tool.
	Rack position sensor signal error (an error undetectable by ECU)					●	○					●	○	○						○																							Repair or replace the fuel injection pump.	Monitor the rack position sensor signal using the diagnosis tool.
	Rack actuator malfunctioning (an error undetectable by ECU)					●	○					●	○	○						○																							Repair or replace the fuel injection pump.	Monitor the rack actuator using the diagnosis tool.
	ECU failure lamp disconnected																																							○		Replace the lamp. Repair or replace the harness.	
	ECU faulty (ECU self diagnosis failure)	○	○							○																														○	○		Replace the ECU.	

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