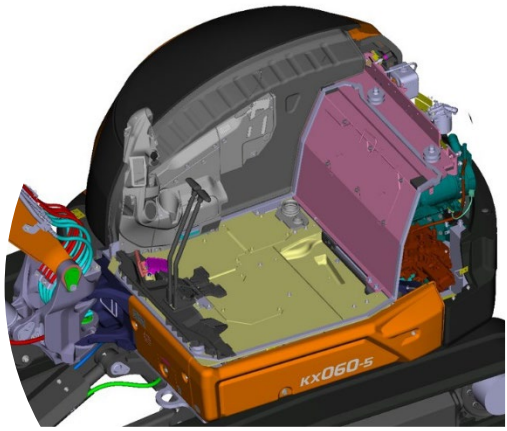
For Earth, For Life
Kubota

Kubota Europe NEW-5 SERIES training

Technical Training for Dealers and Distributors

Product Overview:

- NEW- 7” Full colour display, Jog dial and Key pad.
- Quieter cab due to new cab structure, reducing cab dB by 5dB.
- Improved A/C, by increasing the number of vents in the cab we have increased the air flow by 6.4m/s. (R134a 800g)
- Increased cabin size +20% on -4’s.
- Increased visibility, no roof sash bars, larger pained area and option of a rear camera improving all round visibility.
- Increased comfort by adding a double adjustable seat as standard. (Air set option)



Product Overview:

- LED work lights as standard which can be programmed to stay on up to 2 minutes after machine is turned off.

- Improved safety with addition to boom safety valve, a arm safety valve is installed to as standard.

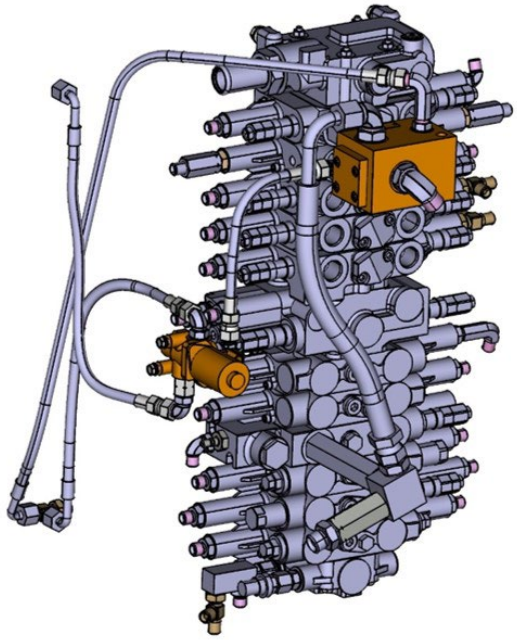
- Improved dozer with larger cylinder protector and float option for easier ground finishing.

- Orange seat belt fitted as standard with built in switch, allowing alarms pops up on dash panel if the seat belt is not fasten.

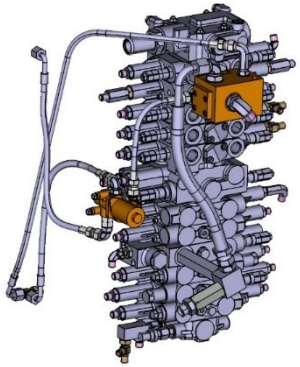
- Additional green beacon wiring is installed as standard. (rear of cab, middle grommet)

Product Overview:

- Optional electronic one or two way aux line hydraulics which can be operated from the LCD dash.
- Improved maintenance: radiator and oil cooler in a side by side lay out for easier cleaning, A/C condenser hinged to one side, larger oil receiver to prevent oil overflow and all round accessibility improved.
- New engine to compile with Stage V regulation. (extra fuel filter to protect CRS, longer DPF intervals and increased regen intervals)
- Extra tie down points on top frame.

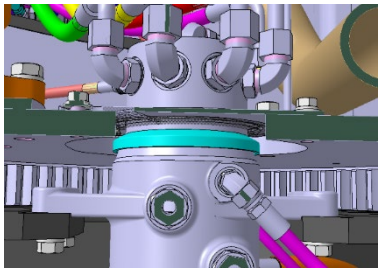


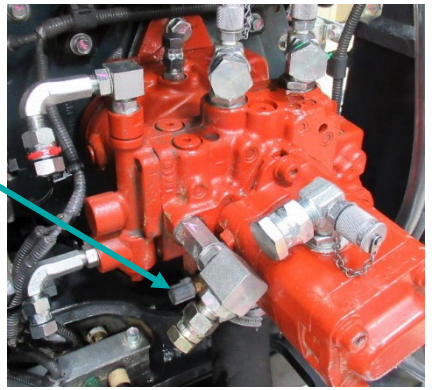
Hydraulics:



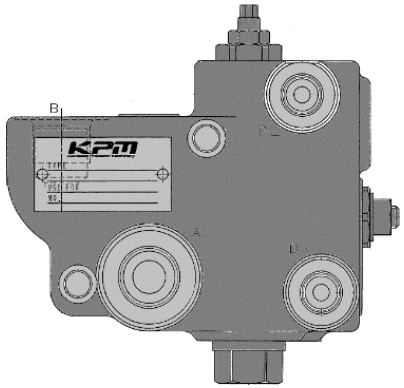
Electrical 1 - 2 way valve (option). This can be activated and deactivated by the LCD dash. The third line solenoid valve selects whether to flow or cut off the Pp pressurized oil to port PP of the third line valve.

A temperature sensor has been added to the hydraulic pump detecting oil temperature



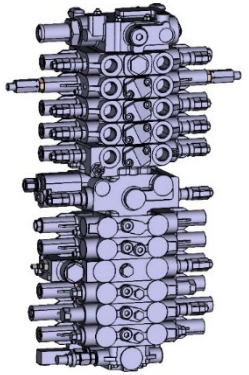


Swivel joint now has a rubber cap to prevent thrust plate

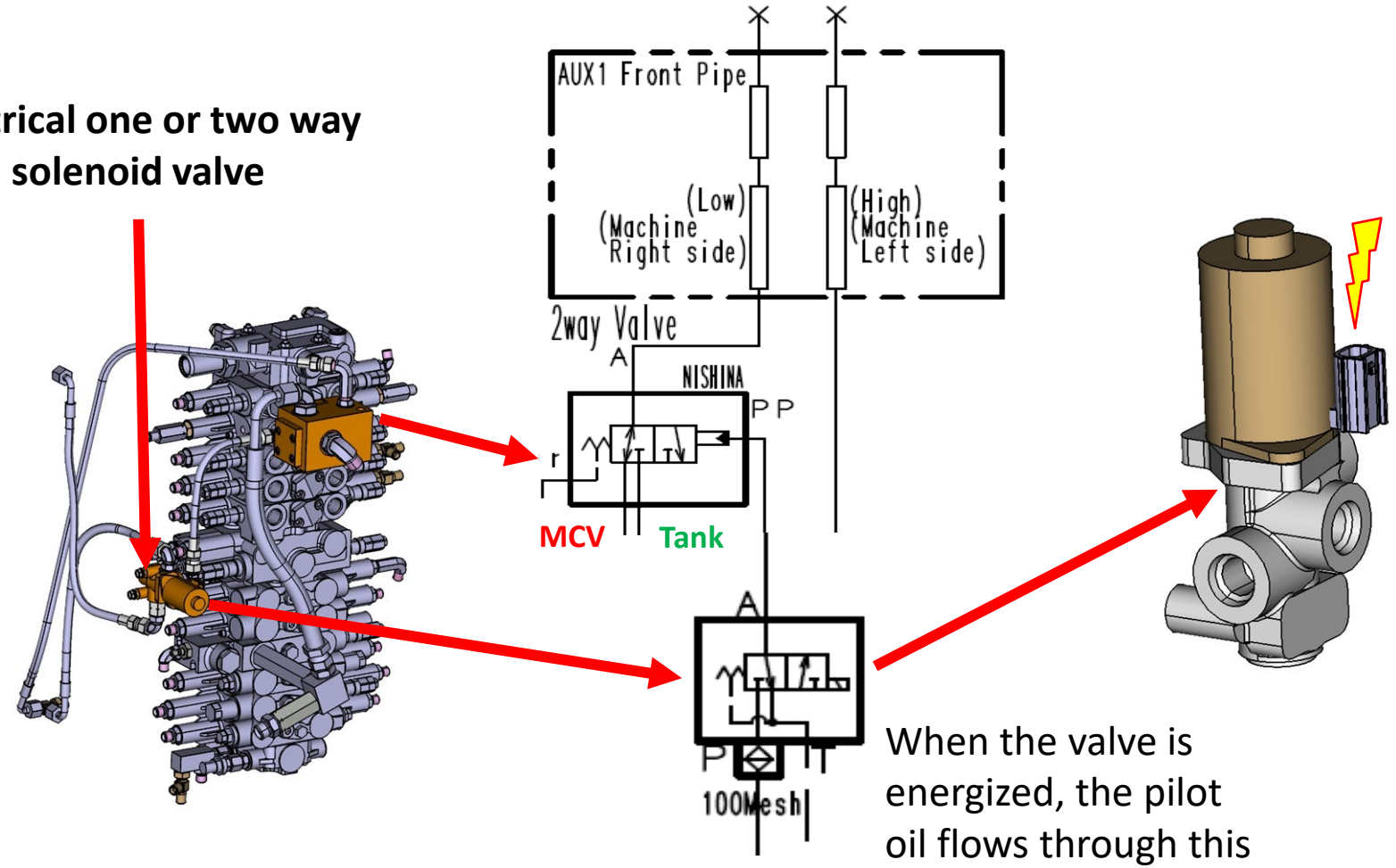


The arm safety valve carry's out the same function as the boom safety valve. However, has a pressure difference from the boom safety valve, because the flow rate is different.

Main valve changes:
Boom section (Emergency valve)
Arm section (Regeneration circuit)
Blade section (Blade float function)



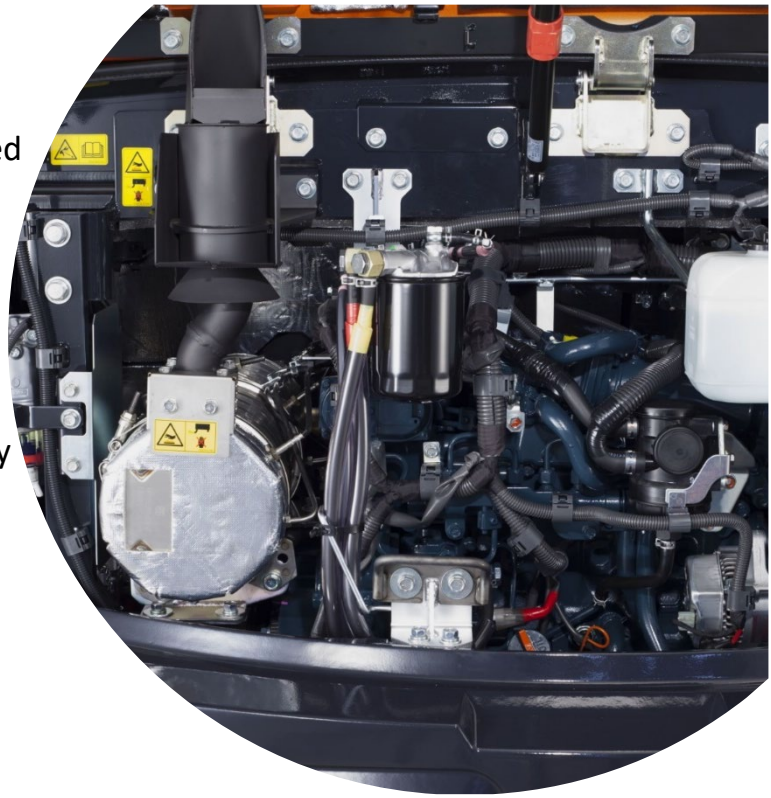
Electrical one or two way solenoid valve



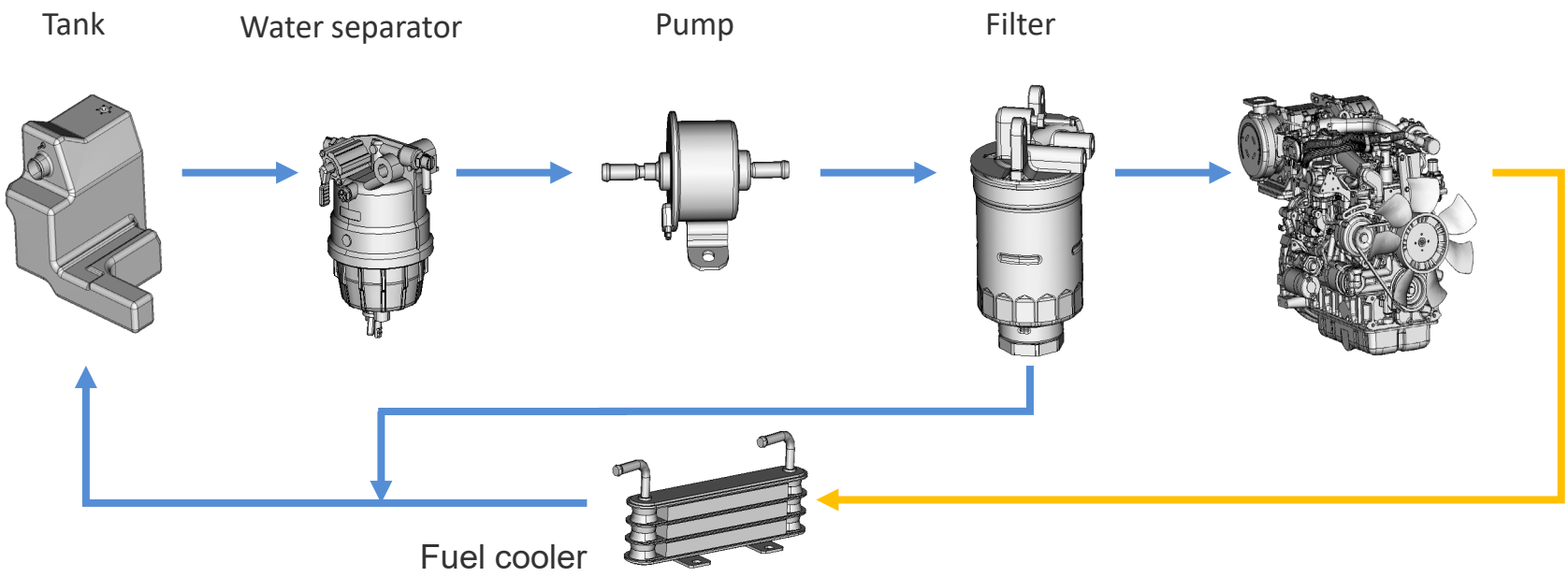
When the valve is energized, the pilot oil flows through this solenoid valve.

Engine:

- Stage V engine: V2607-CR-E5-BH.
- To compile with Stage V emissions, a common rail system (CRS) & changed diesel particulate filter (DPF) have been added along with added maintenance items to protect the system.
- Equipped with a user-friendly DPF:
  - Longer DPF cleaning interval +100% on previous (Max.6000 hours intervals can be shortened)
  - Longer DPF regeneration interval +200% on previous. (Approximately 60hours)
  - Upgraded DPF regeneration conditions
    (Lower coolant temperature and lower engine rpm)
- New models are equipped with a viscous coupled fan.
  (Controls fan speed to aid engine cooling, aid in the efficiency of the engine by engaging the fan, when necessary, reduces load on the engine)
- Further noise reduction with muffler pipe is now surrounded with a sound absorbing material.

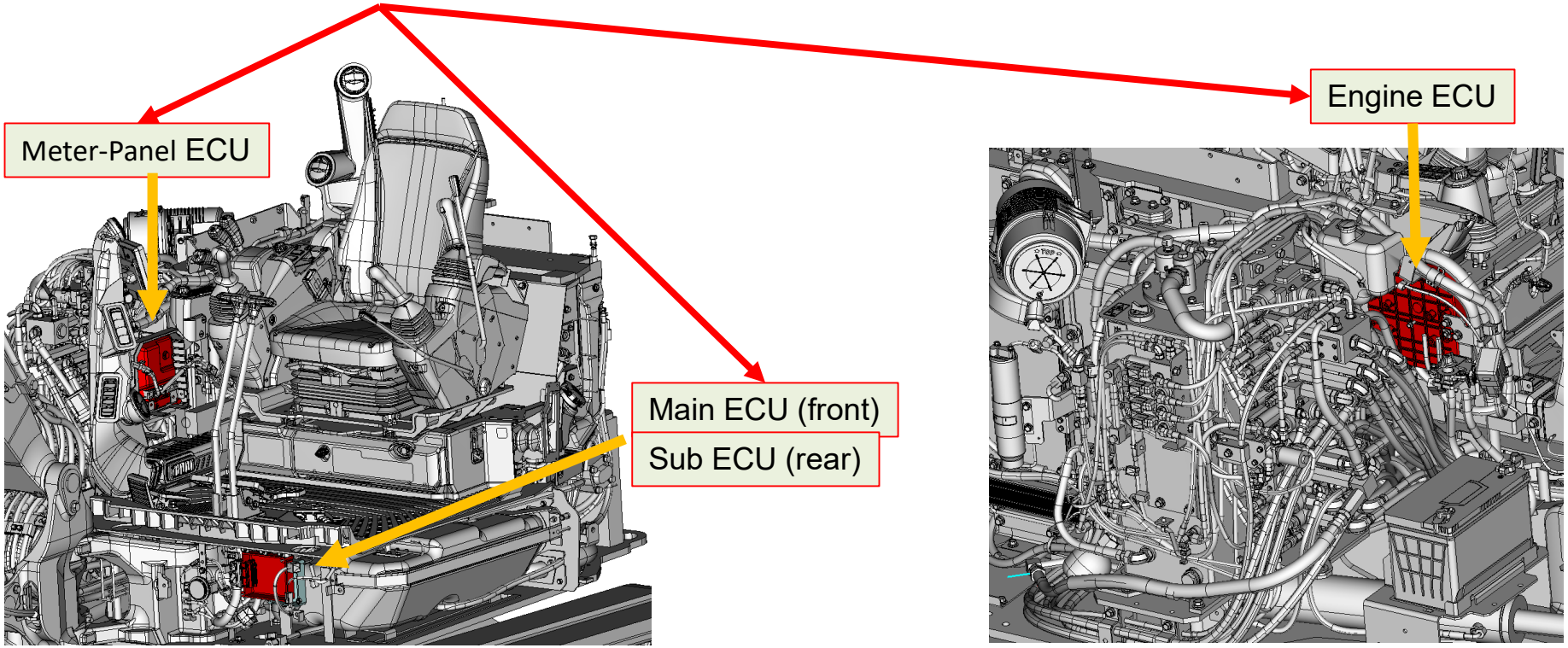


Fuel system:

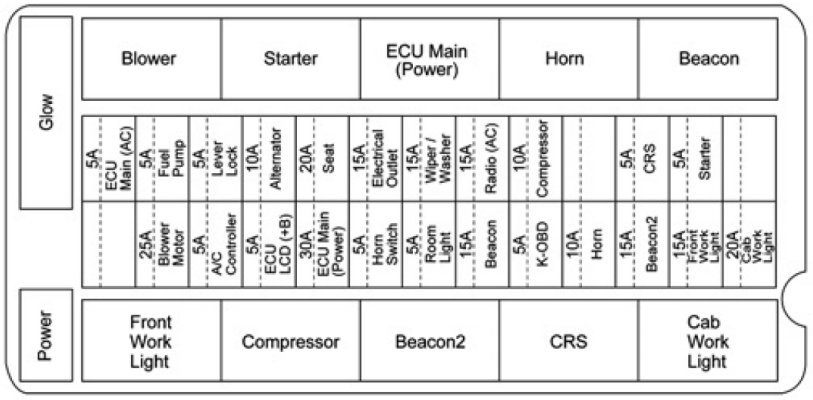


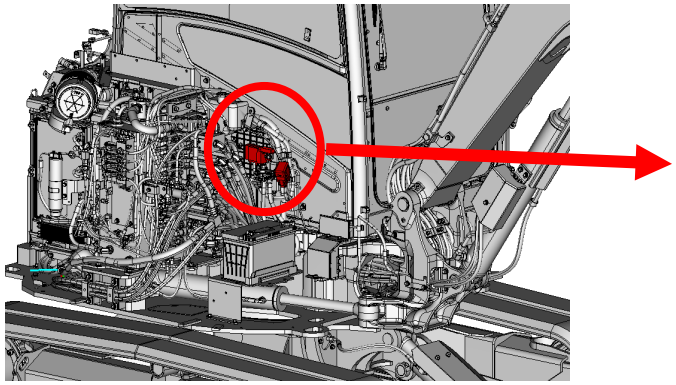
Electrical:

There are 4 ECUs, all connected via can-bus line

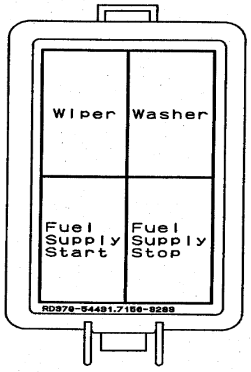


Electrical:

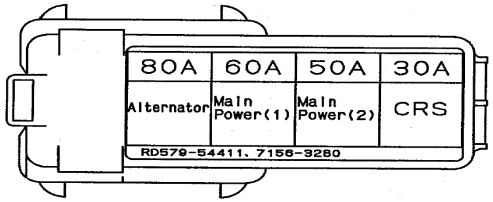




Relay box label:

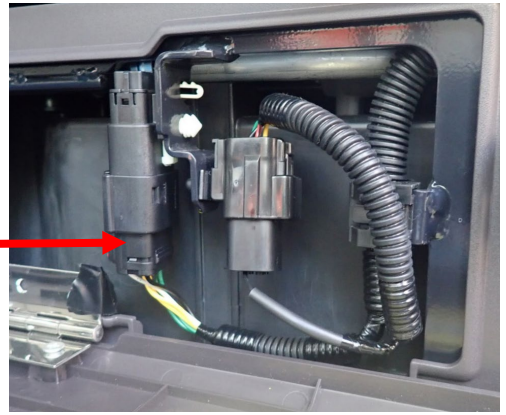


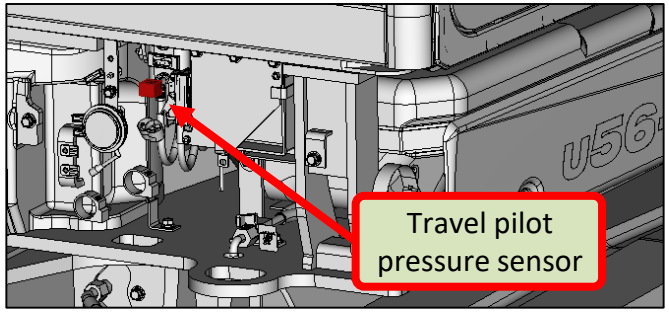
Slow blow fuse label:



Electrical:

Diagmaster connector

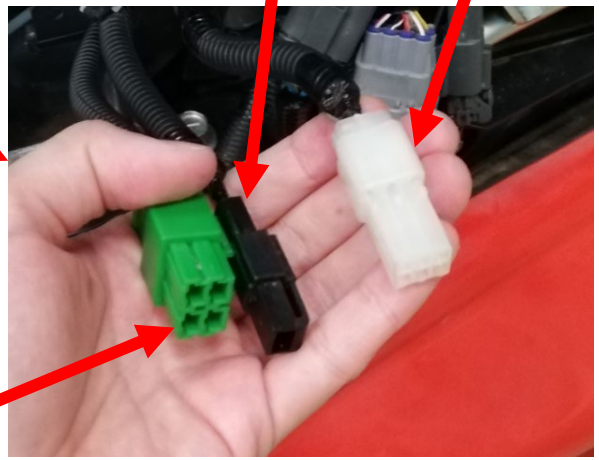


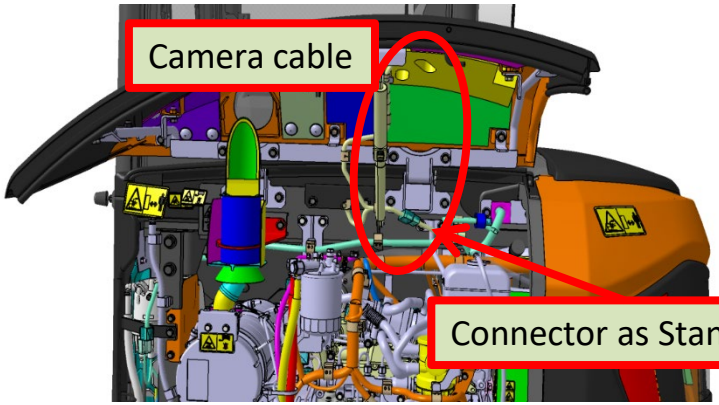


Spare power supply connector

Power outlet for optional electric device

Ground for optional electric device





Power outlet for optional electric device


Radio mounting slot
DPF Inhibit SW
Engine rpm dial
A/C control
AUX activation SW
Key Pad
Jog Dial
7” Colour LCD Dash
Electric outlet
Relay & Fuse box
Diagmaster connector
Storage place for lower front window

Display

- **New7” Full colour dash panel.**
- **There are 3 information area:**

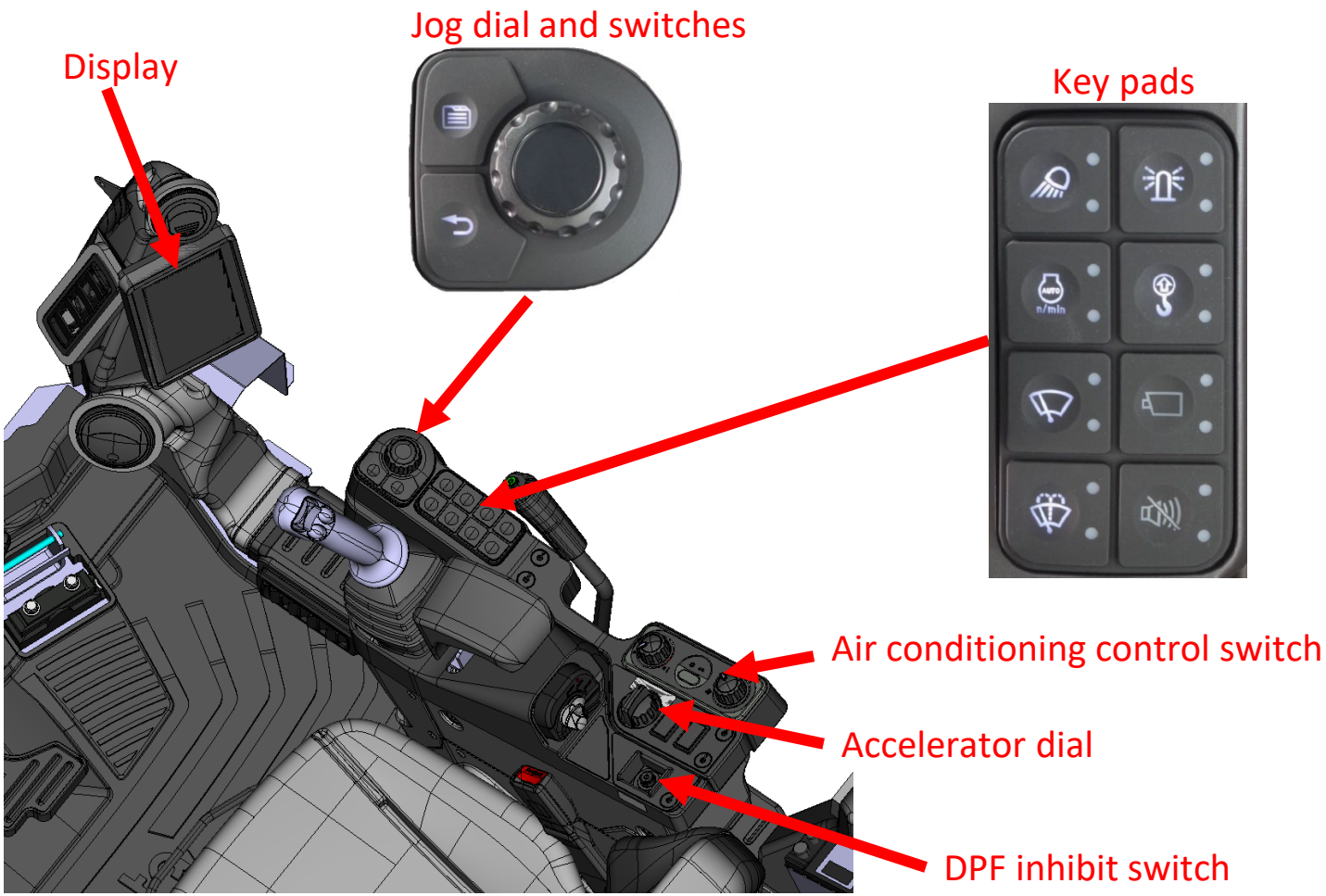
Notification area

Main information area

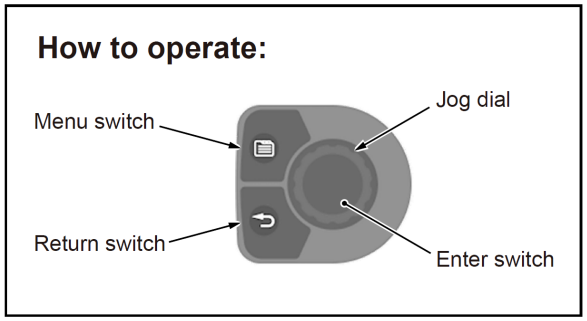
New functions/features:

- **Hydraulic oil temperature**
- **Display brightness**
- **Work light turn-off delay**
- **Detailed error message with SPN and FMI**
- **Unit change (metric / yard-pound)**
- **Rear view camera display**
- **One or two way line valve setting (only for electric third line valve specification)**

Engine speed and hour meter


Display
Jog dial and switches
Key pads
Air conditioning control switch
Accelerator dial
DPF inhibit switch

JOGDIAL & KEY PAD



Working lights

Auto Idle

Wiper

Window washer

Beacon sw opt.

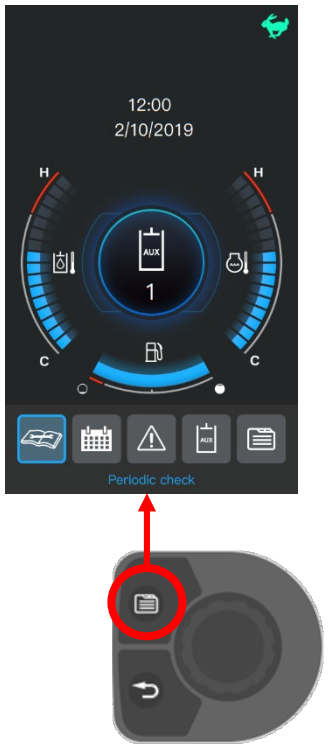
Overload sw

RetroCam sw opt.

Travel All sw opt.

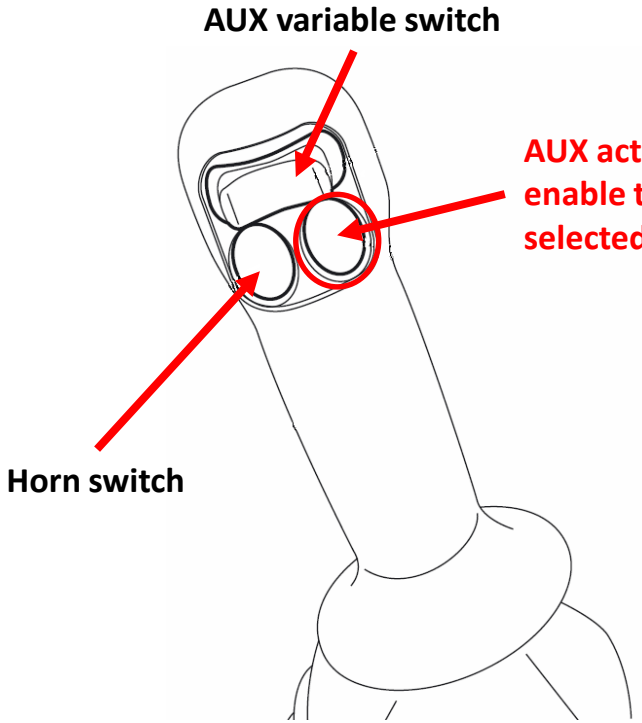
Main menu

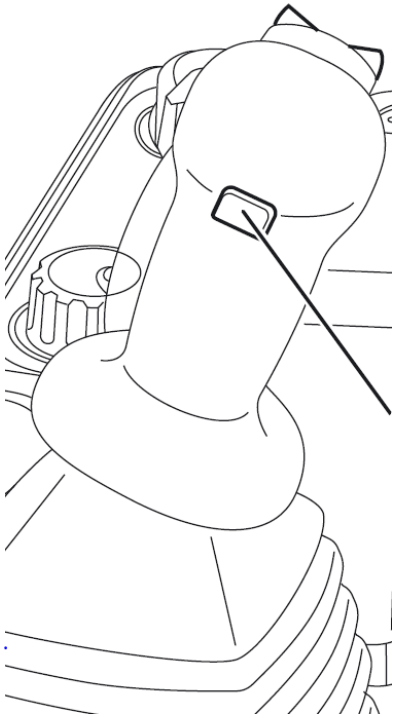
- Menu bar is displayed when the menu switch on the jog dial is pressed.
- There are 5 functions in the main menu bar.



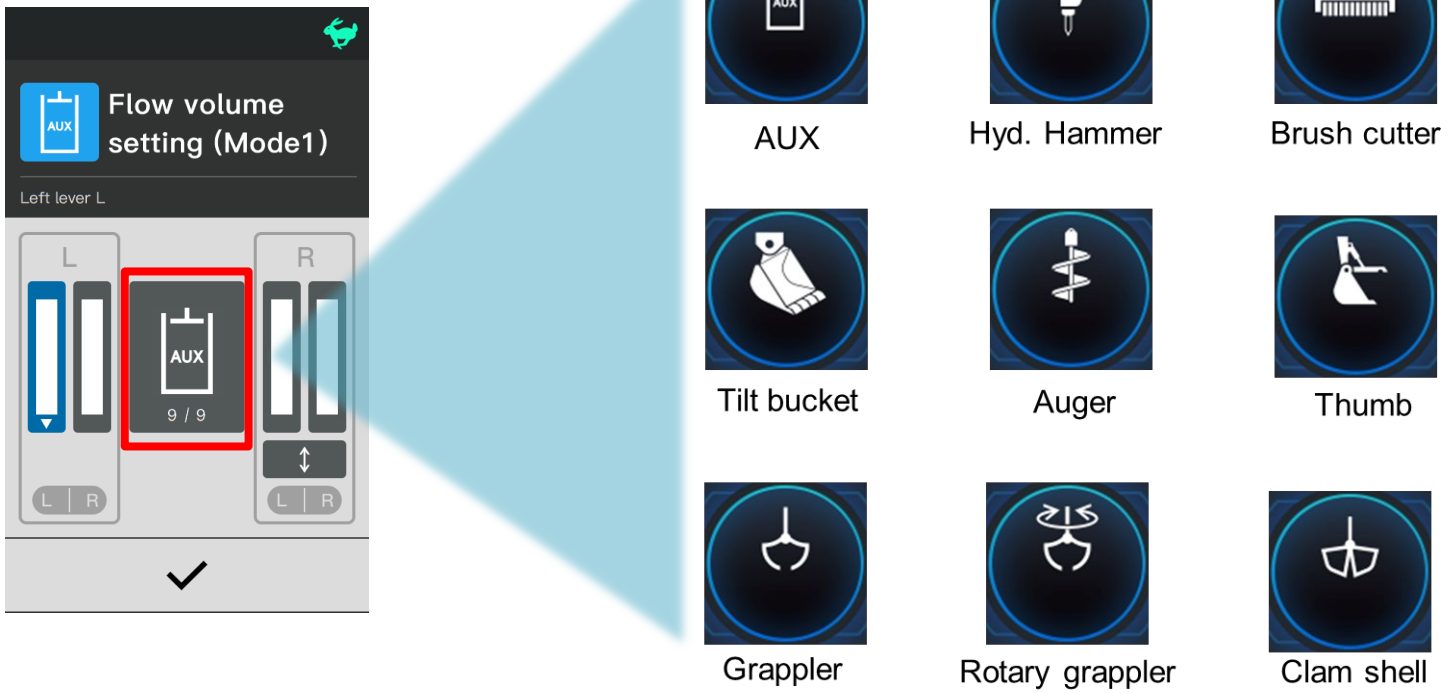
Icon	Function name	What we can do?
	Periodic check	Check the periodic maintenance items, see remaining hour for next maintenance and rest periodic maintenance.
	Log record	Displays the operation history in the last 3 months on a calendar.
	Messages	Show error information in detail.
	AUX setting	- Choose AUX mode. - Set AUX flow volume. - 5 presettings for AUX mode available - Enable and disable the third line
	Various setting	- Language setting - Date and time setting - Display brightness setting - Work light turn-off setting

Right Joystick





Auxiliary Icons



In comparison to previous -4 series, “empty” icon is not present

Detailed error information

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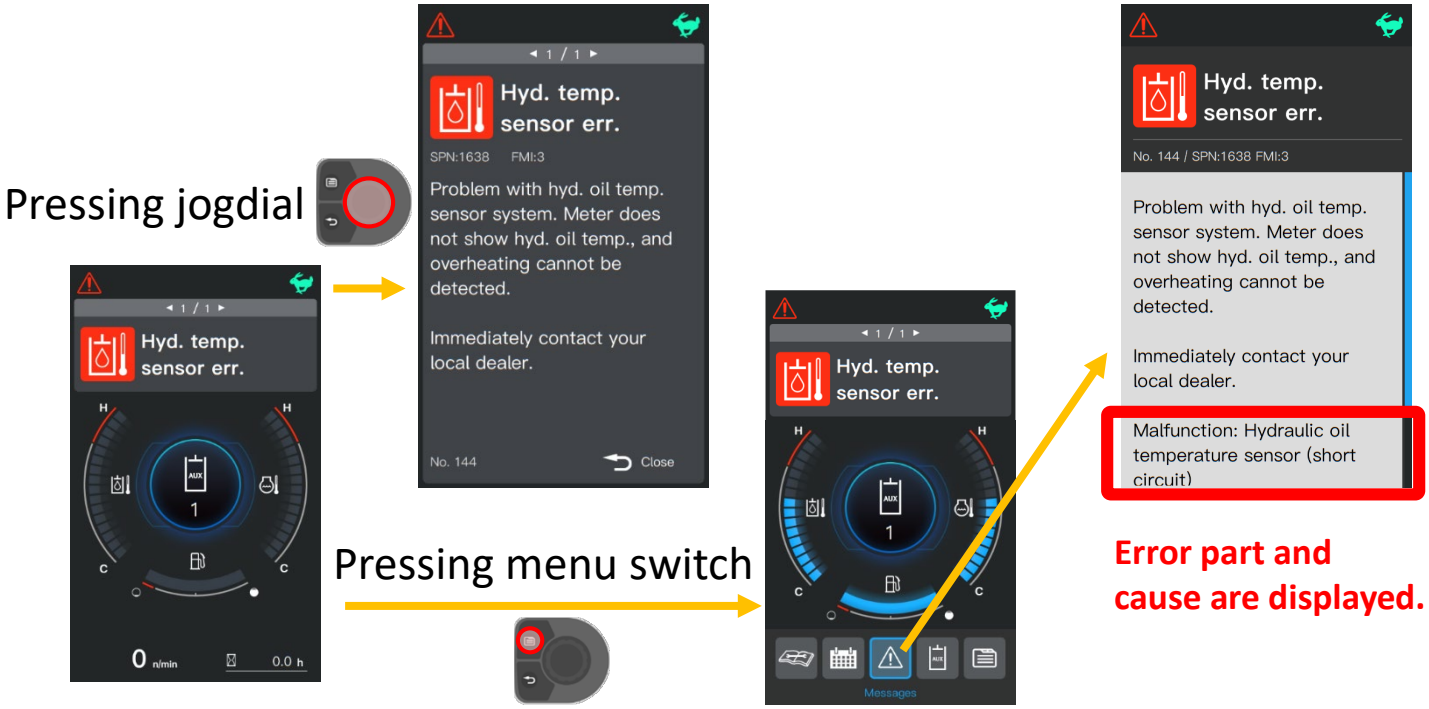
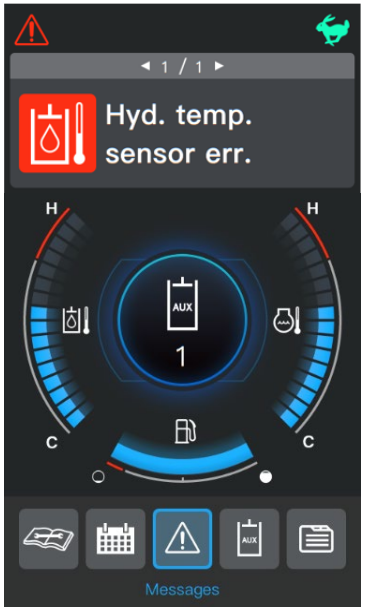
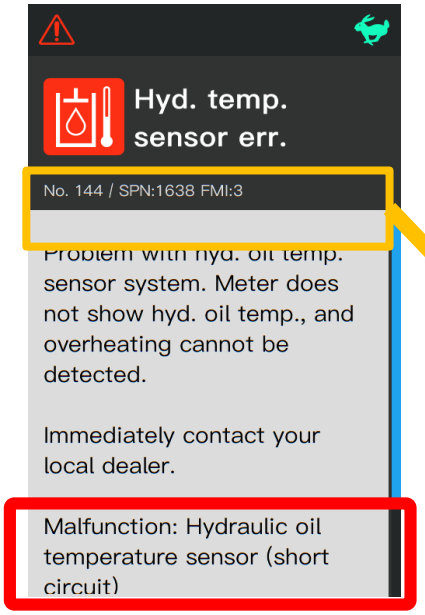
- When an error occurs, the error message appears on the top of the dash panel.
- Pressing the jog dial shows the detailed information of the error.
- Choosing “Messages” from the menu shows more detailed information.

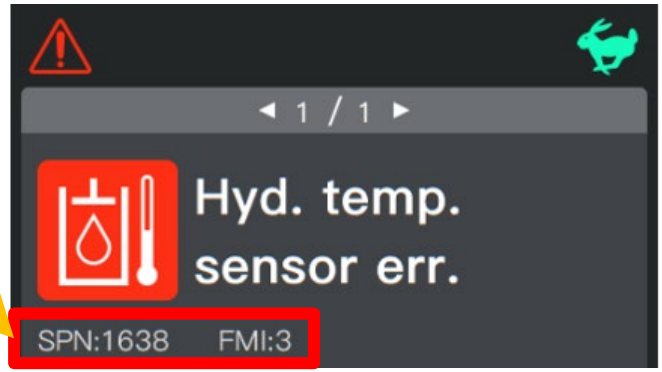


Errors as showed by enter in the message-page





Error part and cause are displayed.

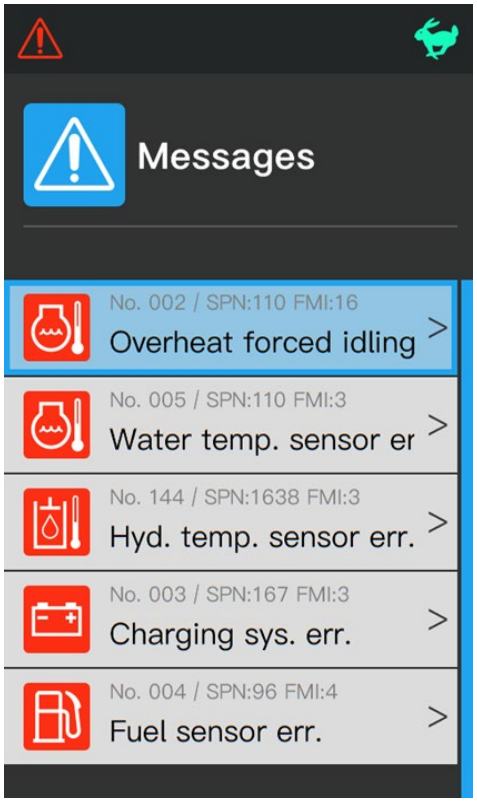


- SPN: Suspected Part Number
- FMI: Failure Mode Identifier
- DTC are not displayed

Error messages

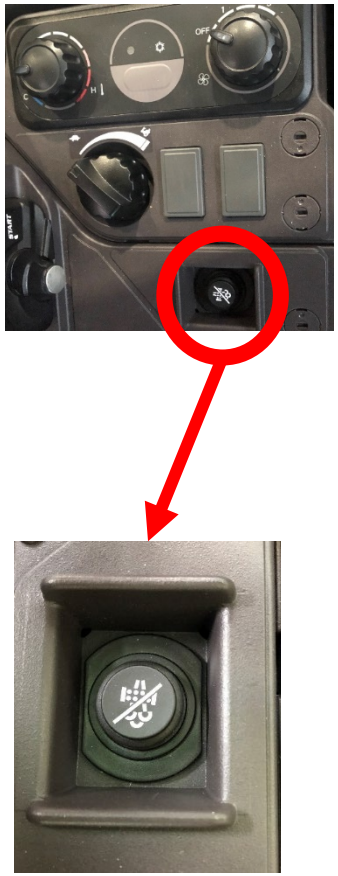
Number of the current errors

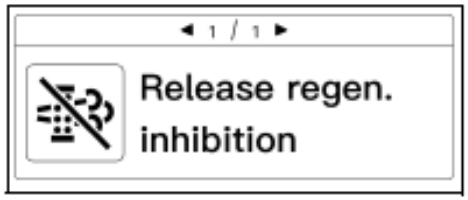
Pressing menu switch, and in «message» page pressing jogdial



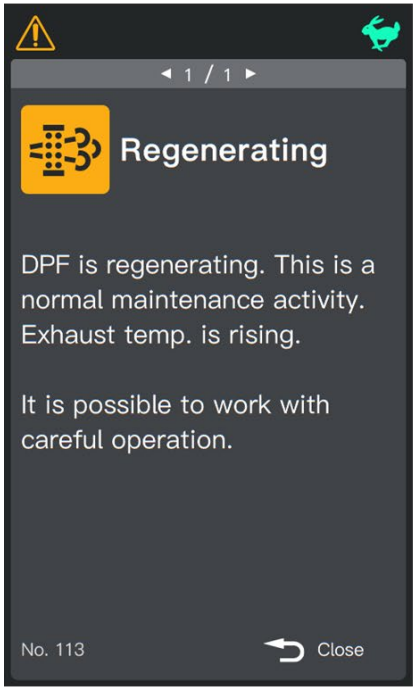
In case that multiple errors occur at the same time, the errors are listed in the message list.

DPF Regeneration Status





The particle filter regeneration may be disabled and released any time using the inhibit switch (1).
The particle filter regeneration lock will be displayed by the indicator and a related message on the display.



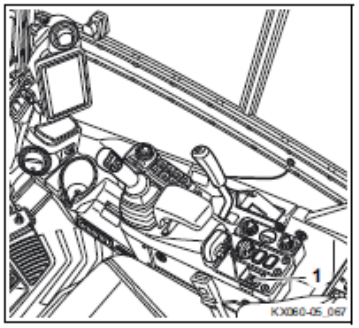
DPF regeneration control

1/4

Automatic particle filter regeneration - Procedure

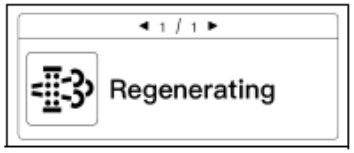
The following conditions have to be met for carrying out automatic regeneration.

1. The automatic particle filter regeneration is released (1).
2. The engine coolant should be at operating temperature.
3. The engine speed should be the speed such the “Raise engine speed” indicator and message disappear.



Various messages are shown in the display during the regeneration process. In addition, the yellow or red warning light (1) flashes depending on the relevance of the message.

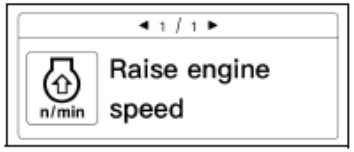
When the particle filter regeneration starts, a message appears in the display as shown in the figure on the right. In addition, the yellow warning light flashes and an audible signal is emitted every 60 seconds.



The exhaust temperature will increase significantly during particle filter regeneration. However, the machine can continue to be operated.

- Make sure that no people, animals, plants and/or flammable materials are within the immediate working area!

If the engine speed is too low, the message in the display changes every 3 seconds, as shown in the figure on the right. In addition, the yellow warning light flashes and an audible signal is emitted every 60 seconds.



- Raise the engine speed until the “Raise engine speed” indicator and message disappear.

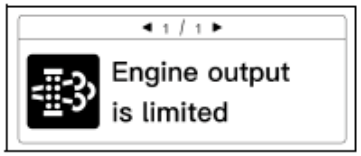
The particle filter is regenerated.

DPF regeneration control

2/4

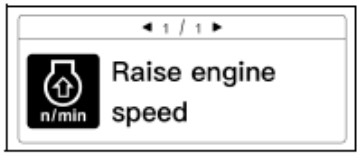
If the particle filter is regenerated frequently and incompletely, the degree of saturation increases in the particle filter. The engine power is reduced to 50 % to prevent damages to the particle filter.

If the degree of saturation increases, the message in the display changes every 3 seconds, as shown in the figure on the right. In addition, the yellow warning light flashes and an audible signal is emitted every 60 seconds.



The particle filter is regenerated. But the engine power is restricted to 50 %.

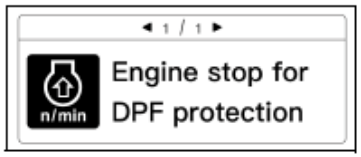
If the engine speed is too low, the message in the display changes every 3 seconds, as shown in the figure on the right. In addition, the red warning light flashes and an audible signal is emitted at brief intervals.



- Raise the engine speed until the "Raise engine speed" indicator and message disappear.

The particle filter is regenerated. But the engine power is restricted to 50 %.

The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted at intervals.



The engine switches off automatically. Restarting and raise the engine speed until the "Raise engine speed" indicator and message disappear.

- Turn the starter switch to the STOP position.
- Start engine.
- Raise the engine speed until the "Raise engine speed" indicator and message disappear.

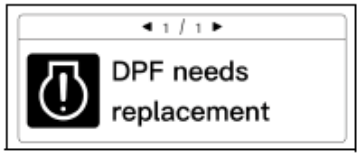
The particle filter is regenerated. But the engine power is restricted to 50 %.

If the degree of saturation is very high, the particle filter has to be reconditioned by your KUBOTA dealer.

The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted at intervals.

- Inform your KUBOTA dealer immediately.

If the particle filter is clogged and damaged, then the particle filter needs to be replaced by the KUBOTA dealer.



The display message as in the figure on the right appears. In addition, the red warning light flashes and an audible signal is emitted continuously.

- Inform your KUBOTA dealer immediately

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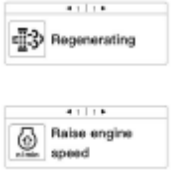
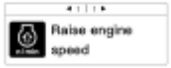
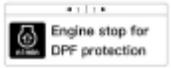
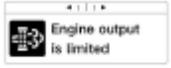
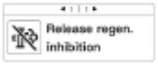
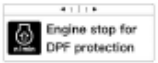
DPF regeneration control

3/4

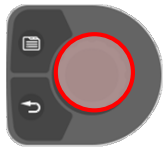
Warning light	indicator	Explanation	Measure
⚠ flashing (yellow)		Automatic regeneration process starts. If the message "Raise engine speed" is shown in the display, then the operator has to create the conditions necessary for regenerating the particle filter.	Make sure that no people, animals, plants and/or flammable materials are within the immediate working area. Raise the engine speed until the "Raise engine speed" indicator and message disappear. The automatic particle regeneration starts. All the functions and auxiliary ports 1 and 2 continue to be available during the regeneration.
⚠ flashing (red)		If the message "Raise engine speed" is shown in the display, then the operator has to create the conditions necessary for regenerating the particle filter. The particle filter is clogged if the message "Engine output is limited" is shown in the display. The engine power is reduced to protect the particle filter. When the control lever lock is lifted, the engine switches off after 60 seconds to protect the particle filter.	Make sure that no people, animals, plants and/or flammable materials are within the immediate working area. Raise the engine speed until the "Raise engine speed" indicator and message disappear. The automatic particle regeneration starts. All the functions and auxiliary ports 1 and 2 continue to be available.
⚠ flashing (red)		When the control lever lock is lifted, the engine switches off after 60 seconds to protect the particle filter. If the control lever lock is lowered, the engine speed is limited.	Raise the engine speed until the "Raise engine speed" indicator and message disappear. Inform your KUBOTA dealer if the regeneration does not start automatically.
⚠ flashing (yellow)		The particle filter is clogged if the message "Engine output is limited" is shown in the display. The engine power is reduced to protect the particle filter.	Keep raising engine speed and finish DPF regen. process. Make sure that no people, animals, plants and/or flammable materials are within the immediate working area.
⚠ flashing (red)		The particle filter is clogged with soot particles and the particle filter regeneration can no longer start. The particle filter must be repaired. The engine power is reduced to protect the particle filter.	Inform your KUBOTA dealer immediately.
⚠ flashing (red)		The particle filter has to be replaced. The engine power has to be limited to protect the particle filter.	Inform your KUBOTA dealer immediately.

DPF regeneration control

4/4

Inhibit indicator	Warning light	indicator	Explanation	Measure
lights up (yellow)	does not glow	-	Automatic regeneration process blocked. The state is before a required regeneration. If the lock switch starts flashing, then regeneration is required.	All the functions and auxiliary ports 1 and 2 continue to be available.
flashing (yellow)	flashing (yellow)		Automatic regeneration process blocked. The operator has to make the necessary preparations for regenerating the particle filter.	Make sure that no people, animals, plants and/or flammable materials are within the immediate working area. Release the particle filter regeneration using the inhibit switch. Raise the engine speed until the “Raise engine speed” indicator and message disappear. The automatic particle regeneration starts. All the functions and auxiliary ports 1 and 2 continue to be available.
flashing (yellow)	flashing (red)	 	Automatic regeneration process blocked. The operator has to make the necessary preparations for regenerating the particle filter. The particle filter is clogged if the message "Engine output is limited" is shown in the display. The engine power is reduced to protect the particle filter. When the control lever lock is lifted, the engine switches off after 60 seconds to protect the particle filter. If the control lever lock is lowered, then the engine is not switched off.	Make sure that no people, animals, plants and/or flammable materials are within the immediate working area. Release the particle filter regeneration using the inhibit switch. Raise the engine speed until the “Raise engine speed” indicator and message disappear. The automatic particle regeneration starts. All the functions and auxiliary ports 1 and 2 continue to be available.
flashing (yellow)	flashing (red)		The particle filter is clogged with soot particles and the particle filter regeneration can no longer start. The particle filter must be repaired. The engine power is reduced to protect the particle filter.	Inform your KUBOTA dealer immediately.
flashing (yellow)	flashing (red)		The particle filter has to be replaced. The engine power has to be limited to protect the particle filter.	Inform your KUBOTA dealer immediately.

THE SERVICE MODE


&


There are 3 modes in the service dealer mode

Mode	Functions
Diagnosis	• Tester (input/output) • Retrieve failure records • Delete failure records
Setting	• AI setting • AUX1 setting • AUX2/Thumb setting • Overload warning setting • Travel alarm setting • Camera setting (PAL) • Model setting • Others(Periodic check procedure, guidance, check offset. Clock set, system update, All fault codes, opening select, units, multi-purpose mode)
Function invalidation	Enable or disable the 2 functions below: • Arm control mode • Crane mode

Service dealer mode list:

- There are 3 modes in the service dealer mode.

Mode	Functions
Diagnosis	• Tester • Retrieve failure records • Delete failure records
Setting	• AI setting • AUX1 setting • AUX2/Thumb setting • Overload warning setting • Travel alarm setting • Camera setting (PAL) • Model setting • Others
Function invalidation	Enable or disable the 2 functions below: • Arm control mode • Crane mode

Model	Track	Setting code	Boom bottom pressure
U56-5	Rubber	6227	12.1 MPa
	Steel	6227	12.1 MPa
	Wide steel	6231	12.3 MPa
KX060-5	Rubber	0732	13.5 MPa
	Steel	0764	13.4 MPa
	Wide steel	4862	13.8 MPa

Black keys registration:

- Insert the red key holding the enter switch on the jog dial.

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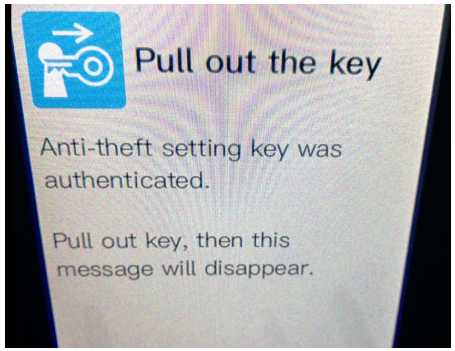
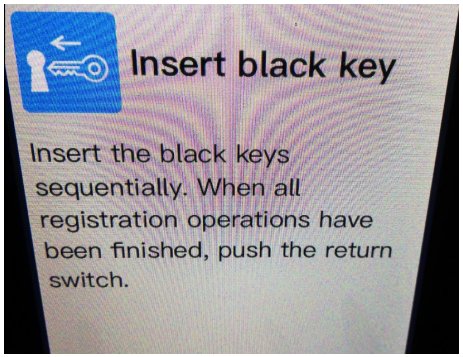
- Same as the current models, the red key is authenticated at first.
- If the red key is correct one, then black key registration starts.
- Up to 4 keys can be registered for 1 machine.

Red key authentication:



Black key registration:

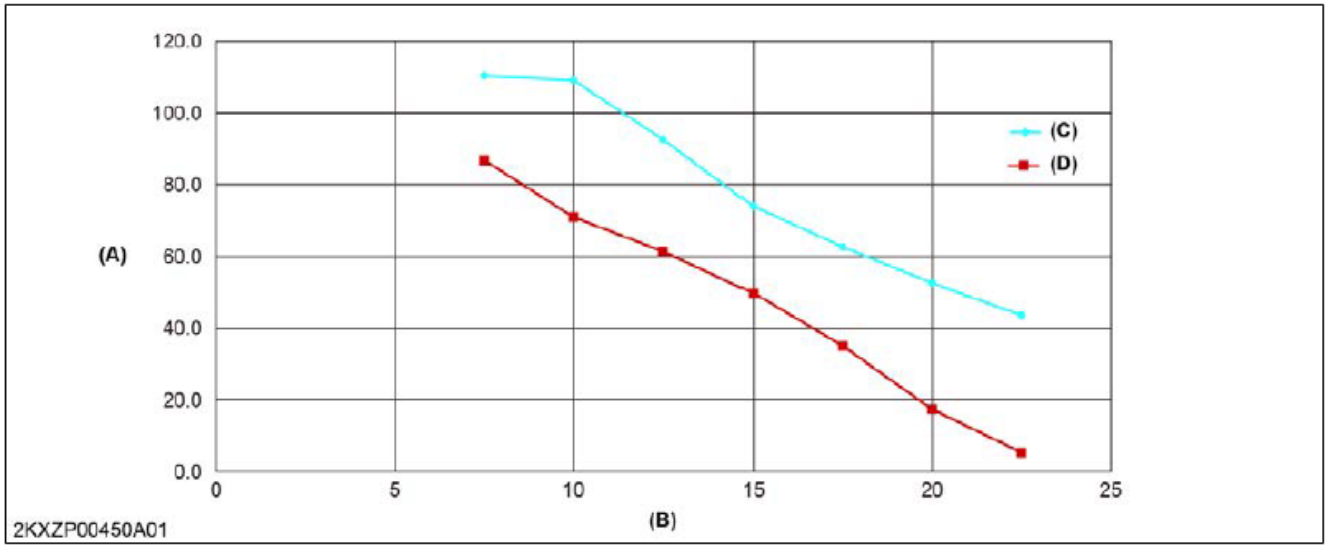


P1 and P2 P-Q curve:

Conditions

- Hydraulic oil and devices temperature: 50.0±5 ℃(122± 9 ℉)
- Engine speed: 2200 rpm

Service specification



(A) Flow rate (L/min) (B) Pressure (MPa) (C) P1 + P2 (P3 no load) (D) P1 + P2 (P3 load (relief))

Pressure			Flow rate (converted to 2200 rpm)			
			P3 no load		P3 load (relief)	
MPa	kgf/cm^2	psi	L/min	U.S.gals/min	L/min	U.S.gals/min
7.5	76.5	1087.8	110.4	29.2	86.8	22.9
10.0	102.0	1450.4	109.1	28.8	71.0	18.8
12.5	127.5	1813.0	92.7	24.5	61.4	16.2
15.0	153.0	2175.6	74.0	19.6	49.8	13.2
17.5	178.5	2538.2	62.6	16.5	35.0	9.2
20.0	203.9	2900.8	52.6	13.9	17.4	4.6
22.5	229.4	3263.3	43.6	11.5	5.3	1.7

Service limit

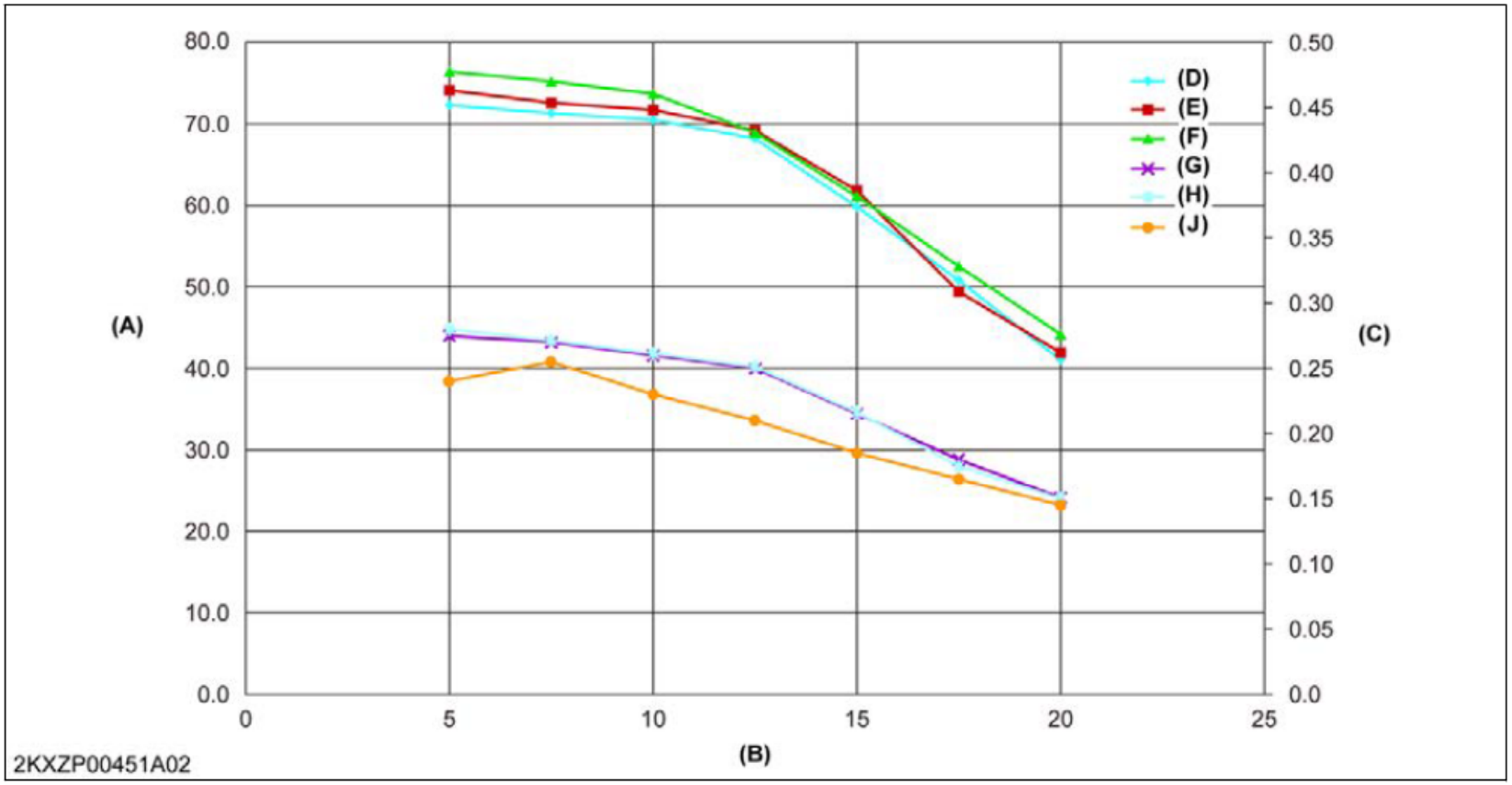
- The service limit is 80% of the service specification.

AUX1 P-Q curve:

Conditions

- Hydraulic oil and devices temperature: 50.0±5 ℃(122± 9 ℉)
- Engine speed: 2300 rpm

Service specification



(A) Flow rate (L/min)
(B) Pressure (MPa)
(C) Back pressure (MPa)
(D) AUX1 LH (third line open)
(E) AUX1 LH (third line close)
(F) AUX1 RH
(G) Back pressure (AUX1 LH (third line open))
(H) Back pressure (AUX1 LH (third line close))
(J) Back pressure (AUX1 RH)

AUX2 P-Q curve:

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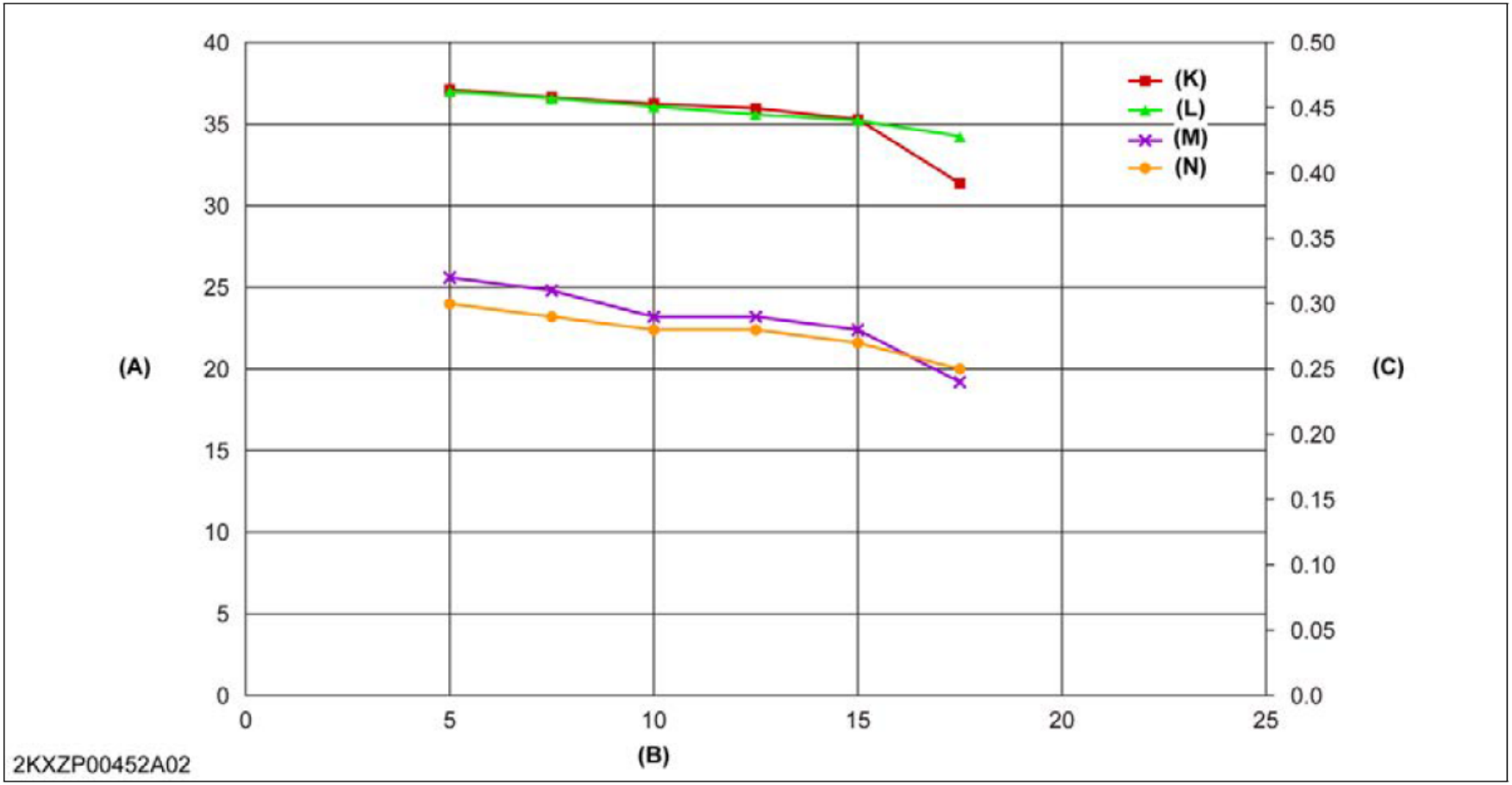
Service specification



(A) Flow rate (L/min)
(B) Pressure (MPa)
(C) Back pressure (MPa)
(K) AUX2 LH
(L) AUX2 RH
(M) Back pressure (AUX2 LH)
(N) Back pressure (AUX2 RH)

Hydraulic Pump Specs:

Because the engine has changed to CRS from mechanical governor type, some values are changed for adjustment.

	KX057-4, U55-4	KX060-5, U56-5
Manufacturer	KYB	
Model	PSVL2-27	PSVL2-27CG
Rated RPM	2200rpm	
Rotation direction	Right	
Piston pump (Max displacement)	25.5 + 25.5 cc/rev (1.56 + 1.56 cu.in./rev)	
Gear pump (Max displacement)	16.8cc/rev (1.03 cu.in./rev)	
Pilot pump (Max displacement)	7.1 cc/rev (0.43 cu.in./rev)	
Standby flow amount	5.2 + 5.2 cc/rev (0.32 + 0.32 cu.in./rev)	6.2 + 6.2 cc/rev (0.38 + 0.38 cu.in./rev)

U56-5 / KX060-5: machine's specs

The hydraulic system is adjusted from the previous model, because the engine is changed to CRS type.

	U56-5	KX060-5
Machine weight (Rubber track)	5550 kg	5590 kg
Engine output	33.8kW at 2200rpm	33.8kW at 2200rpm
Max. dumping height	3936 mm	4090 mm
Max. digging depth	3694 mm	3939 mm
Max. digging radius	6171 mm	6322 mm
Swivel speed	9.2 ± 0.9 min-1	9.2 ± 0.9min-1
Boom swing angle (LH/RH)	70.5 / 53.1 deg	70.5 / 52.9 deg
Travel speed(rubber)	High speed: 4.8±0.5 km/h Low speed: 2.8±0.3 km/h	High speed: 4.8 ± 0.5 km/h Low speed: 2.7 ± 0.3 km/h
Max. arm breakout force (arm)	25.4 kN	23.6 kN
Lifting capacity (boom)	12.7 kN	12.1 kN

U56-5 / KX060-5 HYD Performances

				U56-5	KX060-5
Hydraulic pump	Type			3PLS	3PLS
	Flow rate	P1+P2	L/min	112.2	112.2
		P3	L/min	37.0	37.0
		Pp	L/min	15.6	15.6
		AUX 1	L/min	75	75
		AUX 2	L/min	37	37
Control valve	Main relief pressure	Main LS	MPa	27.4	27.4
		P3	MPa	19.1	19.1
		Unload LS	MPa	2.55	2.55
	Overload relief pressure	Boom, arm, Bucket	MPa	31.4	31.4
		Blade (rod)	MPa	-	-
		Blade (bottom)	MPa	27.4	27.4
		AUX 1	MPa	20.6	20.6
		AUX2	MPa	-	-
Boom safety valve	Relief pressure	b1H	MPa	30.4	30.4
Arm safety valve	Relief pressure	b2H	MPa	30.4	30.4
Swivel motor	Relief pressure	RH, LH	MPa	20.6	20.6
Travel motor	Relief pressure	RH, LH	MPa	26.5	26.5

U56-5 and KX060-5 options

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Functions / Equipment		U55	U56	KX057	KX060
Comfort & Utility (CAB)	Enlarged&Closed CAB	-	std	-	std
	Air suspension seat	-	L model	-	L model
	Double adjustable console	-	std	-	std
	7" Color LCD monitor	-	std	-	std
	Key pad & Jog dial	-	std	-	std
	Air conditioning	-	L model	-	L model
	Mobile phone strage space	-	std	-	std
	Front lower window strage space	-	std	-	std
Comfort & Utility (operation)	Rear view camera	-	opt	-	opt
	AUX activate switch on right pilot lever	-	std	-	std
	Erectrical third line hydraulic return	-	M & L model	-	M & L model
	Work light turn off delay	-	std	-	std
	Dozer float	-	std	-	std
Safety equipment	High visibility seat belt with warning alert	-	std	-	std
	Arm safety valve	opt	std	opt	std
	Harness for green beacon ready	-	std	-	std
	Tie down on upper frame	-	std	-	std
Serviceability	Vertical opened rear bonnet	-	std	-	std
	Radiator, Oil cooler side by side layout	-	std	-	std
	Double fuel filter	-	std	-	std
	Bolt on handrail on CAB	-	std	-	std

Functions / Equipment		U55	U56	KX057	KX060
Safety	High visibility seat belt with warning alert	-	std	-	std
	Arm safety valve	opt	std	opt	std
	Harness for green beacon ready	-	std	-	std
	Tie down on upper frame	-	std	-	std
Serviceability	Vertical opened rear bonnet	-	std	-	std
	Radiator, Oil cooler side by side layout	-	std	-	std
	Double fuel filter	-	std	-	std
	Bolt on handrail on CAB	-	std	-	std

LUBRICANT QUANTITY

		Quantity	Remarks
Engine oil	Engine	10.2 L 2.69 U.S.gals	Including the engine oil filter
	Front idler	50 cc 3.05 cu.in.	-
	Carrier roller	50 cc 3.05 cu.in.	-
Coolant	Except reserve tank	5.9 L 1.56 U.S.gals	-
	Reserve tank	1.1 L 0.29 U.S.gals	At the **[FULL]** mark
Hydraulic oil	All hydraulic system	77.0 L 20.34 U.S.gals	-
	Hydraulic tank	41.9 L 11.07 U.S.gals	At the center of the gauge
Fuel	Fuel tank	66.0 L 17.4 U.S.gals	-
Gear oil	Travel motor	0.9 L 0.24 U.S.gals	-
	Track roller	120 cc 7.32 cu.in.	-
Refrigerant	Air conditioning system	700 to 800 g 1.54 to 1.76 lbs	-

RECOMMENDED LUBRICANTS

		Ambient temperature condition	Recommendation		Filled at factory		Note
			Viscosity	Quality standard	Brand	Type	
Engine oil	Engine	Above 25 °C (77 °F)	SAE 30 SAE 10W-30 SAE 15W-40	API CJ-4 or CK-4	JXTG	JASO DH2 SAE 10W-30	-
		0 to 25 °C (32 to 77 °F)	SAE 20 SAE 10W-30 SAE 15W-40				
		Below 0 °C (32 °F)	SAE 10W SAE 10W-30 SAE 15W-40				
	Front idler		SAE 30	API CD	-	API CD SAE 30	
Coolant			-	SAE J1034 MB 325.0 ASTM D3306 ASTM D4985	Kubota	LLC-N-50F (mixing ratio 50%)	• Always use distilled water to dilute antifreeze. • Always follow the recommendations of the coolant manufacturer for mixing ratio. Do not mix with other coolants.
Grease		Bolts, bushings, gears	NLGI-2	DIN 51825 KP2K-30	COSMO	Dynamax EP2	NLGI-2 grease verified by JCMAS GK can also be used. *1
Hydraulic oil		In winter and/or at low ambient temperature	ISO VG 32 ISO VG 46	-	SHELL	Tellus S2M 46 ISO VG 46	Oils verified by JCMAS HK can also be used. *2
		In summer and/or at high ambient temperature	ISO VG 46 ISO VG 68				
Gear oil		Travel motor	SAE 90	API GL-4	-	API GL-4 SAE 90	-
		Track roller	ISO VG 220	-	-	ISO VG 220	-
Fuel			-	EN 590	-	-	• The fuel filled at the factory is not winter diesel. • To prepare the excavator for use in winter, fill the fuel tank with winter diesel and run the engine for a few minutes.
Refrigerant			-	HFC-134a (R134a)	-	HFC-134a (R134a)	-

SPN / FMI errors codes 1/3:

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Display	SPN	FMI	Cause
"Engine oil pressure err."	100	3	Engine oil pressure switch is ON while the engine is running.
"Overheat forced idling"	110	16	Coolant temperature is higher than 120 °C (248 °F).
"Charging sys. err."	167	3	The charge switch is ON (no output from the L terminal of the alternator) while the engine is running.
"Overvoltage"	168	3	Charging voltage is too high.
"Fuel sensor err."	96	4	Fuel sensor resistance is higher than 135 Ω.
"CAN sys. err."	521801	19	ECU (meter) cannot receive CAN signal from ECU (main).
	521802	19	ECU (main) cannot receive CAN signal from ECU (engine).
	521826	19	ECU (main) cannot receive CAN signal from ECU (sub).
	521821	19	ECU (main) cannot receive CAN signal from ECU (meter).
	521827	19	ECU (main) cannot receive CAN signal from the keypad.
"2-speed sys. err."	521652	4	Short circuit has occurred in the wire harness.
"AUX1 sys. err."	521601	3	Short circuit has occurred in the 5 V line.
	521601	4	Breaking of wire has occurred in the wire harness.
	521701	5	Breaking of wire has occurred in the wire harness.
	521702	5	Breaking of wire has occurred in the wire harness.
"AUX2/Thumb sys. err."	521606	3	Short circuit has occurred in the 5 V line.
	521606	4	Breaking of wire has occurred in the wire harness.
	521703	5	Breaking of wire has occurred in the wire harness.
	521704	5	Breaking of wire has occurred in the wire harness.
"Overload warning err."	521603	3	Short circuit has occurred in the 5 V line.
	521603	4	Breaking of wire has occurred in the wire harness.
"Auto idle sys. err."	29	3	Short circuit has occurred in the 5 V line.
	29	4	Breaking of wire has occurred in the wire harness.
"Lever lock sys. err."	521668	4	Short circuit has occurred in the wire harness.
"External 5V sys. err."	3509	1	Short circuit has occurred in the sensor's 5 V power supply.
"Overheat forced idling"	1638	16	Hydraulic oil temperature is more than 103 °C.
"DPF needs repairs"	521810	14	DPF is clogged.
"DPF needs replacement"	521811	11	DPF must be replaced.
"Engine output is limited"	521808	11	DPF must be regenerated.
"Release regen inhibition"	521813	11	Inhibit switch is ON while the DPF must be regenerated.

Display	SPN	FMI	Cause
"Hyd. temp. sensor err."	1638	3	Short circuit has occurred in the 5 V line.
	1638	4	Breaking of wire has occurred in the wire harness.
"3-way valve sys. err."	521674	4	Short circuit has occurred in the wire harness.
"Travel alarm sys. err."	521605	3	Short circuit has occurred in the 5 V line.
	521605	4	Breaking of wire has occurred in the wire harness.
"Engine sys. err."	523603	15	Engine coolant temperature is more than 110 °C (230 °F).

SPN / FMI errors codes 2/3:

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SPN	FMI	Error	Remarks
636	7	NE-G phase shift NE: Crankshaft position sensor G: Camshaft position sensor	DTC: P0016
636	8	No input of NE sensor (crank position sensor) pulse	DTC: P0335
636	2	NE sensor (crank position sensor) pulse number error	DTC: P0336
723	8	No input of G sensor (camshaft position sensor) pulse	DTC: P0340
723	2	G sensor (camshaft position sensor) pulse number error	DTC: P0341
190	0	Engine overrun	DTC: P0219
157	4	Rail pressure sensor: Low	DTC: P0192
157	3	Rail pressure sensor: High	DTC: P0193
1347	4	SCV drive system error	DTC: P0628
1347	3	+B short circuit of SCV	DTC: P0629
172	4	Intake air temperature error: Low	DTC: P0112
172	3	Intake air temperature error: High	DTC: P0113
172	0	Intake air temperature: High (inter-cooler model only)	DTC: P0111
110	4	Coolant temperature sensor: Low	DTC: P0117
110	3	Coolant temperature sensor: High	DTC: P0118
174	4	Fuel temperature sensor: Low	DTC: P0182
174	3	Fuel temperature sensor: High	DTC: P0183
174	0	Fuel high temperature	DTC: P0181
523535	0	Injector charge voltage: High	DTC: P0200
651	3	Open circuit of harness / coil in 1st cylinder injector	DTC: P0201
653	3	Open circuit of harness / coil in 3rd cylinder injector	DTC: P0202
654	3	Open circuit of harness / coil in 4th cylinder injector	DTC: P0203
652	3	Open circuit of harness / coil in 2nd cylinder injector	DTC: P0204
523525	1	Injector charge voltage: Low	DTC: P0611
523523	2	Injector drive circuit open in cylinders No. 1 & 4 simultaneously	DTC: P2146

(Continued)

SPN	FMI	Error	Remarks
523523	4	Cylinder injectors No. 1 & 4 short to ground at the power supply side, or all cylinder injectors short to ground	DTC: P2147
523524	4	Cylinder injectors No. 2 & 3 short to ground at the power supply side, or all cylinder injectors short to ground	DTC: P2150
523523	3	Cylinder injectors No. 1 & 4 short to +B at the power supply side, or all cylinder injectors short to +B	DTC: P2148
523524	2	Injector drive circuit open in cylinders No.2 & 3 simultaneously	DTC: P2149
523524	3	Cylinder injectors No. 1 & 4 short to +B at the power supply side, or all cylinder injectors short to +B	DTC: P2148
102	4	Boost pressure sensor: Low	DTC: P0237
102	3	Boost pressure sensor: High	DTC: P0238
168	4	Battery voltage: Low	DTC: P0562
168	3	Battery voltage: High	DTC: P0563
3509	4	Sensor supply voltage 1: Low	DTC: P0642
3509	3	Sensor supply voltage 1: High	DTC: P0643
3510	4	Sensor supply voltage 2: Low	DTC: P0652
3510	3	Sensor supply voltage 2: High	DTC: P0653
1485	2	Main relay is locked in closed position	DTC: P0687
108	4	Barometric pressure sensor error (low side)	DTC: P2228
108	3	Barometric pressure sensor error (high side)	DTC: P2229
523572	4	EGR position sensor failure	DTC: P0409
523574	3	EGR actuator open circuit	DTC: P0403
523574	4	EGR actuator coil short	DTC: P0404
523575	7	EGR actuator valve stuck	DTC: P2413
523576	2	EGR (DC motor) overheat	DTC: P2414
523577	2	EGR (DC motor) temperature sensor failure	DTC: P2415
110	0	Engine overheat	DTC: P0217
523544	3	+B short of air heater (glow) relay driving circuit	DTC: P0380
523544	4	Ground short of air heater (glow) relay driving circuit	DTC: P0380
523538	2	QR data error	DTC: P0602
523538	7	No QR data	DTC: P0602
628	2	ECU flash ROM error	DTC: P0605
1077	2	ECU CPU (main IC) error	DTC: P0606
523527	2	ECU CPU (monitoring IC) error	DTC: P0606

(Continued)

SPN / FMI errors codes 3/3:

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SPN	FMI	Error	Remarks
523543	2	Accelerator position sensor error (CAN)	DTC: P2131
100	1	Oil pressure error	DTC: P0524
523604	2	CAN1 bus off	DTC: U0077
523547	2	CAN2 bus off	DTC: U0075
523548	2	CAN-KBT frame error	DTC: U0081
523596	2	CAN TSC1 frame error	DTC: U0087
523591	2	CAN CCVS (parking SW and vehicle speed) frame error	DTC: U0082
523592	2	CAN CM1 (regen SW) frame error	DTC: U0083
132	3	MAF sensor: High	DTC: P0103
171	3	Intake air temp. built-in MAF sensor: High	DTC: P0073
171	4	Intake air temp. built-in MAF sensor: Low	DTC: P0072
523580	2	Intake throttle feedback error	DTC: P2108
523582	3	Intake throttle lift sensor: High	DTC: P2622
523582	4	Intake throttle lift sensor: Low	DTC: P2621
3251	4	Differential pressure sensor 1: Low	DTC: P2454
4765	3	Exhaust gas temperature sensor 0: High	DTC: P0547
4765	4	Exhaust gas temperature sensor 0: Low	DTC: P0546
3242	3	Exhaust gas temperature sensor 1: High	DTC: P0544
3242	4	Exhaust gas temperature sensor 1: Low	DTC: P0543
3246	3	Exhaust gas temperature sensor 2: High	DTC: P242D
3246	4	Exhaust gas temperature sensor 2: Low	DTC: P242C
523599	0	All exhaust gas temperature sensor failure	DTC: P3018
3252	0	Emission deterioration	DTC: P3001
523590	16	Parked regeneration time out	DTC: P3013
523589	17	Low coolant temp. in parked regeneration	DTC: P3012
523602	0	High frequency of regeneration	DTC: P3024
633	7	Pressure limiter emergency open	DTC: P0087
157	0	High rail pressure	DTC: P0088
1239	1	Fuel leak (in high-pressure fuel system)	DTC: P0093
1347	7	SCV stuck	DTC: P0089
523539	2	Pump seizing 1	DTC: P1274

(Continued)

SPN	FMI	Error	Remarks
523540	2	Pump seizing 2	DTC: P1275
132	1	Intake air volume: Low	DTC: P0101
132	15	Boost pressure low	DTC: P3011
4765	0	Emergency exhaust gas temperature sensor 0: High	DTC: P3002
3242	0	Emergency exhaust gas temperature sensor 1: High	DTC: P3003
3246	0	Emergency exhaust gas temperature sensor 2: High	DTC: P3004
523601	0	High exhaust gas temp. after emergency high temp.	DTC: P3023
3936	7	Removal of DTC (PCD)	DTC: P1A28
3936	2	Loss of function of DTC (PCD)	DTC: P3015
3251	3	Differential pressure sensor 1: High (PCD)	DTC: P2454
523578	2	No communication with EGR (NCD)	DTC: U0076
132	4	Intake air volume: Low	DTC: P0101
523700	13	EEPROM check sum error	DTC: P1990
3701	15	Excessive PM3	DTC: P3006
3701	16	Excessive PM4	DTC: P3007
3701	0	Excessive PM5	DTC: P3008
523600	0	Initial pump-calibration incomplete	DTC: P3019
676	5	Open circuit of glow relay driving circuit	DTC: P0380
676	0	Glow heater relay driving circuit overheat	DTC: P0381

ありがとう	Mulţumesc	Ačiū	Paldies
Thank you	Aitäh	Kiitos	Danke
Teşekkür ederim	Takk	תודה רבה לך	Merci
Tack	Спасибо	Mulţumesc	Grazie
Dank u	Obrigado	Tänan	

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