MDA

MECHANIC'S DAILY SERVICE AID

Compact Excavators

-5 Series

Kubota

FOREWORD:

This MDA book includes the most important data for service and repair of the Kubota compact excavators and is exclusively designed for the Kubota dealer network.

The MDA book is updated regularly. Please take care that you have the actual version to the disposal.

For information not included in the present MDA, please use the original Kubota workshop manual (WSM).

TABLE OF CONTENTS

1 Maintenance 1-1
1.1 Maintenance chart 1-1
1.2 Water and oil quantity 1-4
1.3 Position to check the hydraulic oil level 1-5
1.3.1 KX060-5, U56-5, U50-5 1-5
1.3.2 K008-5, U10-5 1-5
1.3.3 KX085-5 1-6
1.4 Periodical-check-item confirmation and operation after the periodical check execution 1-7
1.4.1 KX060-5, U56-5, U50-5, KX085-5 1-7
1.5 Recommended lubricants 1-9

2 Hydraulic 2-1
2.1 Hydraulic circuits 2-1
2.1.1 KX060-5 / U56-5, AUX2 type 2-3
2.1.2 U50-5, AUX2 type 2-4
2.1.3 K008-5 . . . . . 2-4.1
2.1.4 U10-5 . . . . . 2-4.2
2.1.5 KX085-5 - Standard boom specification 2-4.3
2.1.6 KX085-5 - 2 piece boom specification 2-4.4
2.2 Hydraulic component main settings and control valve layout 2-5
2.2.1 KX060-5, U56-5 2-5
2.2.2 U50-5 2-7
2.2.3 K008-5 . . . . . 2-7.1
2.2.4 U10-5 . . . . . 2-7.2
2.2.5 KX085-5 . . . . . 2-7.3
2.3 Internal leak and speed 2-8
2.3.1 KX060-5, U56-5, U50-5, K008-5, U10-5, KX085-5 2-8
2.4 Piston pump air bleeding procedure 2-9
2.4.1 KX060-5, U56-5, U50-5, KX085-5 2-9

3 Electrics 3-1
3.1 Electrical component layout 3-1
3.1.1 Electrical device layout KX060-5 3-1
3.1.2 Electrical device layout U56-5 3-2
3.1.3 Electrical device layout U50-5 3-3
3.1.4 Switch layout KX060-5, U56-5, U50-5 3-4
3.1.5 Electrical device layout K008-5 . . . . . 3-4.1
3.1.6 Electrical device layout U10-5 . . . . . 3-4.2
3.1.7 Switch layout K008-5, U10-5 . . . . . 3-4.3
3.1.8 Electrical device layout KX085-5 . . . . . 3-4.4
3.1.9 Switch layout KX085-5 . . . . . 3-4.6
3.2 Electrical circuits 3-5
3.2.1 KX060-5 3-5
3.2.2 U56-5 3-5
3.2.3 U50-5 3-5
3.2.4 K008-5 3-5
3.2.5 U10-5 3-5

3.2.6 KX085-5 3-5
3.3 Position of the fuses and relays 3-7
3.3.1 KX060-5, U56-5 3-7
3.3.2 U50-5 3-9
3.3.3 K008-5 3-11
3.3.4 U10-5 3-13
3.3.5 KX085-5 3-15
3.4 Battery specification table 3-18

4 Digital panel setting mode 4-1
4.1 User setting mode 4-1
4.1.1 KX060-5, U56-5, U50-5 4-1
4.1.2 K008-5, U10-5 . . . . . 4-1.1
4.1.3 KX085-5 . . . . . 4-1.2
4.2 Dealer setting mode 4-2
4.2.1 KX060-5, U56-5, U50-5 4-2
4.2.2 K008-5, U10-5 . . . . . 4-6.1
4.2.3 KX085-5 . . . . . 4-6.3
4.3 Failure codes 4-7
4.3.1 KX060-5, U56-5 4-7
4.3.2 U50-5 4-9
4.3.3 Regeneration of Diesel Particle Filter (DPF), KX060-5, U56-5, U50-5, KX085-5 4-11
4.3.4 K008-5, U10-5 4-15
4.3.5 KX085-5 4-16

5 Other informations, engine 5-1
5.1 AUX lines 5-1
5.1.1 Flow rate AUX 1 KX060-5 5-2
5.1.2 Flow rate AUX 2 KX060-5 5-2
5.1.3 Flow rate AUX 1 U56-5 5-3
5.1.4 Flow rate AUX 2 U56-5 5-3
5.1.5 Flow rate AUX 1 U50-5 5-4
5.1.6 Flow rate AUX 2 U50-5 5-4
5.1.7 Flow rate AUX 1 KX085-5 5-5
5.1.8 Flow rate AUX 2 KX085-5 5-5
5.1.9 Position of service port connection 5-6
5.2 Play at the bucket tip 5-7
5.3 Swivel bearing play 5-7
5.4 Crawler tension 5-8
5.5 Engine basic data 5-9
5.6 A/C pressure switch 5-10

6 Tightening torques 6-1
6.1 General tightening torques 6-1
6.1.1 Stud bolts 6-1
6.1.2 Torque for hydraulic hose fittings 6-2
6.1.3 Torque for tapering adaptors 6-2
6.1.4 Torques of lock-nuts for elbows with male seats and adaptors with O-rings (straight threads) 6-3
6.2 Specific tightening torques 6-4
6.3 Torque conversion chart N·m to lbf·ft 6-5

7 Annex 1 - Inspection sheets 7-1

Record of Revision				
MDA book version	Part no. of the replacement pages	Date	Main revised point and corrective measures	Person in charge
RY920-2873-0		31.12.2020		Laubscher
RY920-2873-1	RY920-3051-0	31.12.2021	Added excavator model K008-5 Added excavator model U10-5	Laubscher
RY920-2873-2	RY920-3124-0	31.12.2022	Correction of the following pages: 1-1, 1-3, 5-2, 5-3	Laubscher
RY920-2873-3	RY920-3169-0	31.12.2023	Added excavator model KX085-5, changed maintenance chart	Laubscher

1 Maintenance

1.1 Maintenance chart

General maintenance		Tasks	Model	Hours					Interval
				50	250	500	750	1000	
V-belt		Adjust	all models		❍	❍	❍	❍	250
Pilot valve linkage		Grease	all models		❍	❍	❍	❍	250
Coolant hoses and hose clamps		Check	all models		❍	❍	❍	❍	250
		Change							every 2 years
Water separator filter		Change	U50-5, U56-5, KX060-5, KX085-5					❍	500
Engine oil and oil filter [8]		Change	all models			❍		❍	500
Drive unit oil [2]	initial	Change	U50-5, U56-5, KX060-5, KX085-5	●					50
		Change	U50-5, U56-5, KX060-5, KX085-5			❍		❍	500
Fuel filter		Change	all models			❍		❍	500
Hydraulic oil tank breather filter		Change	U50-5, U56-5, KX060-5			❍		❍	500
Return filter [5]	initial	Change	KX085-5		●				250
		Change				❍		❍	500
		Change	U50-5, U56-5, KX060-5, K008-5, U10-5					❍	1000
Engine valve clearance	Conventional engines	Check	K008-5, U10-5				❍		750
	CRS engines	Check	U50-5, U56-5, KX060-5, KX085-5					❍	1000
In-line filter		Change	U50-5, U56-5, KX060-5, KX085-5					❍	1000
Hydraulic oil and suction filter [4]		Change	all models					❍	1000
Pilot circuit filter		Change	U50-5, U56-5, KX060-5, KX085-5					❍	1000
Interior air filter [1, 7] (cab version)		Change	all models			❍		❍	500
Air filter element [1]		Change	all models					❍	1000
Fuel injection nozzle (Injection pressure)		Check	K008-5, U10-5						1500
Fuel injector nozzle tip		Check	U50-5, U56-5, KX060-5, KX085-5						1500

General maintenance	Tasks	Model	Hours					Interval
			50	250	500	750	1000	
Oil separator element	Change	U50-5, U56-5, KX060-5, KX085-5						1500
EGR cooler	Check	U50-5, U56-5, KX060-5, KX085-5						1500
Fuel tank and breather filter	Change	U56-5, KX060-5, KX085-5						2000
Oil in idler and track roller	Change	all models						2000
Alternator and starter motor	Check	all models						2000
Fuel injection pump	Check	K008-5, U10-5						3000
EGR system	Check	U50-5, U56-5, KX060-5, KX085-5						3000
Turbocharger	Check	U50-5, KX085-5						3000
EGR and tubes for gas leakage	Check	U50-5, U56-5, KX060-5, KX085-5						annually
Electric lines and connections	Check	all models						annually
Safety inspection [3]	Check	all models						annually
Boost sensor and air flow sensor	Check	U50-5, KX085-5						annually
DPF (Diesel particulate filter) [6]	Check	U50-5, U56-5, KX060-5, KX085-5						annually
	Clean							6000
Pipes and hoses of the air conditioner	Check	all models with A/C						annually
	Change							every 2 years
Refrigerant content	Check	all models with A/C						annually
Oil separator rubber hoses	Change	U50-5, U56-5, KX060-5, KX085-5						every 2 years
EGR cooler hose	Change	U50-5, U56-5, KX060-5, KX085-5						every 2 years
DPF differential pressure sensor hoses (front and rear)	Change	U50-5, U56-5, KX060-5, KX085-5						every 2 years
Rubber hoses of the intake air line	Change	all models						every 2 years
Fuel lines	Change	all models						every 2 years
Hydraulic hoses	Change	all models						every 2 years

General maintenance	Tasks	Model	Hours					Interval
			50	250	500	750	1000	
Coolant	Change	all models						every 2 years

* The servicing identified with ● must be carried out once the specified hours of operation after initial operation have been reached.

1 Under very dusty conditions, the air filter and the interior air filter must be cleaned more frequently or replaced.

2 Earlier if necessary.

3 At least annually.

4 When using a breaker over 20 % to 40% every 800 h.
When using a breaker over 40 % to 60% every 400 h.
When using a breaker over 60 % to 80% every 300 h.
When using a breaker over 80 % every 200 h.

5 When using a breaker over 20 % → every 200 h.
When using a breaker over 60 % → every 100 h.

6 If the machine features a warning system for the DPF cleaning.
The diesel particle filter should be cleaned in the event of a warning or every 6000 operating hours.

7 If you feel a drop in the air-conditioner airflow, replace the interior air filter with a new one, regardless of its replacement intervals.

8 See 1.5 Recommended lubricants

■ **NOTE**

You will find the reset method for periodical check message in chapter 1.4.

1.2 Water and oil quantity

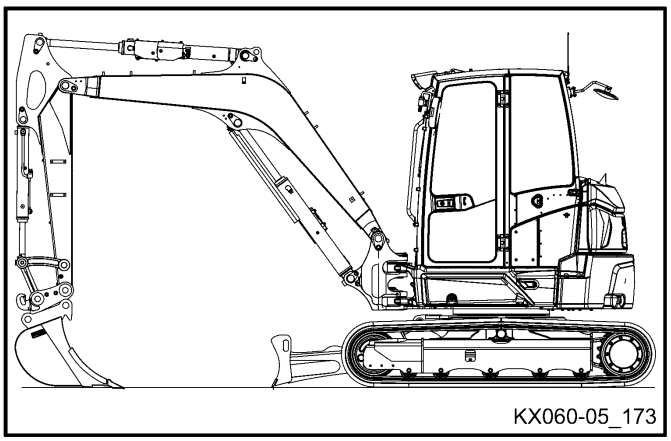
Model	Item	Engine oil (with filter changed) (l)	Cooling system + expansion tank (l)	Travel motor (each) (l)	Hydraulic system complete (l)	Hydraulic tank (l)	Fuel tank (l)	Front Idler (ml)	Carrier roller (ml)	Track rollers (ml)	A/C circuit (kg)	A/C Compressor (ml)
	Lubricant type	Engine oil	LLC and distilled water mix ratio 50% -50%	Gear oil	Hydraulic oil	Hydraulic oil	Fuel	[1]Gear Oil [2]Engine oil	[1]Gear Oil [2]Engine oil	[1]Gear Oil [3]Grease	Refrigerant	Compressor oil
KX060-5		10,2	5,9 + 1,1	0,9	77	41,9	73	[2]50	[2]50	[1]120	0,75 ± 0,05	110
U56-5		10,2	5,9 + 1,1	0,9	77	41,9	66	[2]50	[2]50	[1]120	0,75 ± 0,05	110
U50-5		7	5,9 + 1,1	0,9	76	40	66	[2]50	[2]50	[1]120	0,75 ± 0,05	110
K008-5		2,8	2,3 + 0,5	---	18	13,5	12	---	---	---	---	---
U10-5		2,8	2,3 + 0,5	---	17,1	12,6	12	---	---	---	---	---
KX080-5		9,7	10,5 + 1,3	1,35	156/174 (2-piece boom)	75	115	[2]80	[2]80	[2]80	0,98	100~120

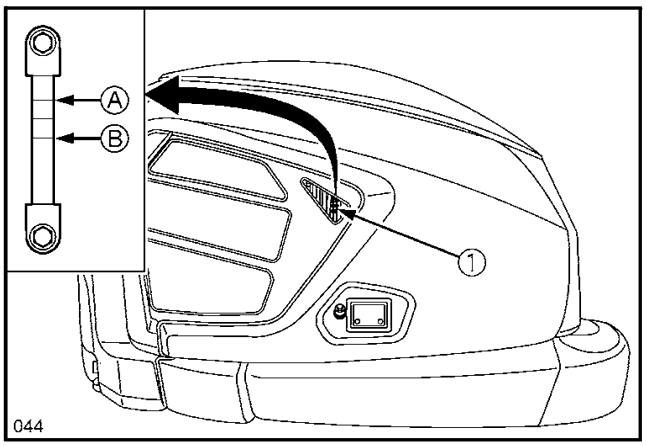
1.3 Position to check the hydraulic oil level

1.3.1 KX060-5, U56-5, U50-5

In order to determine the exact hydraulic oil level, all hydraulic cylinders must be extended as follows (see right-hand side figure):

Boom: half-extended
Arm: half-extended
Bucket: half-extended
Dozer: completely lowered
Swing mechanism: halfway towards left.

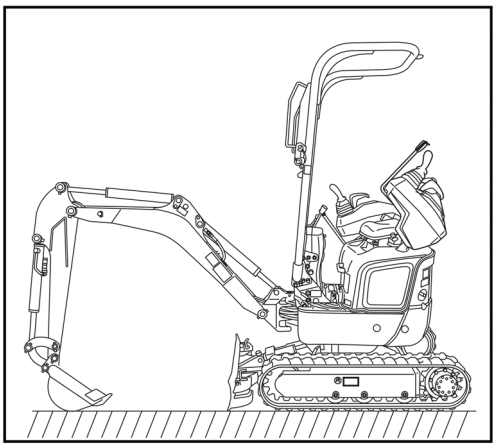




1.3.2 K008-5, U10-5

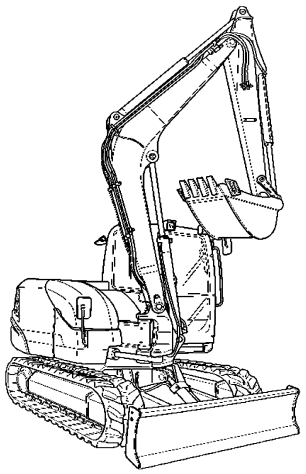
In order to determine the exact hydraulic oil level, all hydraulic cylinders must be extended as follows (see right-hand side figure):

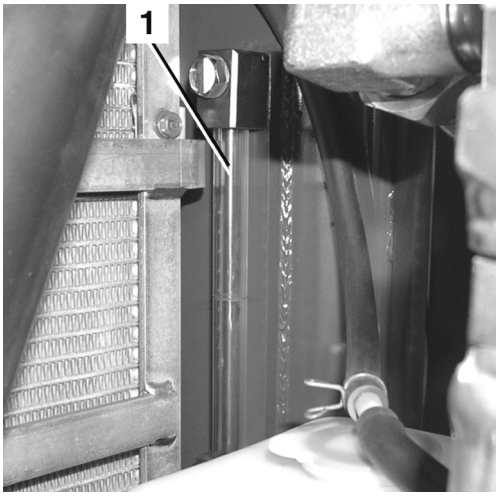
Boom: half-extended
Arm: half-extended
Bucket: half-extended
Dozer: completely lowered
Swing mechanism: halfway towards left.
Extendable track: fully extended



1.3.3 KX085-5

Operate the boom, the 2piece boom, arm, bucket and boom swing mechanism so that all hydraulic cylinders are fully extended. Lower the dozer onto the ground. Oil level should be approximately in the middle of the oil gauge.





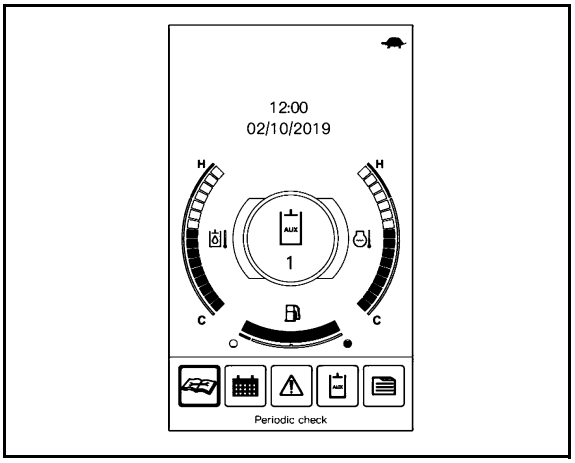
1.4 Periodical-check-item confirmation and operation after the periodical check execution

1.4.1 KX060-5, U56-5, U50-5, KX085-5

- Turn the starter key to [RUN] position
- Press menu switch on dial switch.

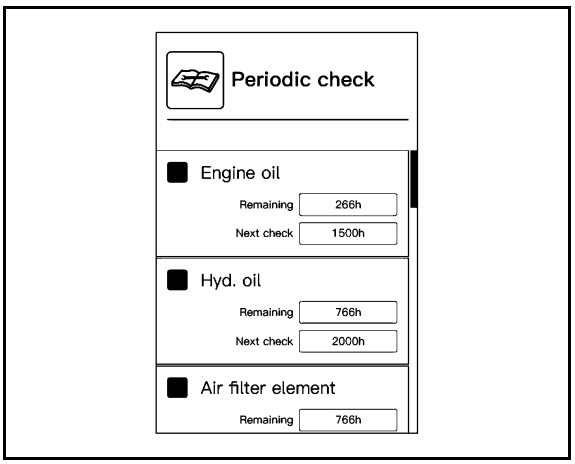
The menu bar appears in the display.

- Rotate the jog dial to the right, until “Periodic check” is selected in the display.
- Press Jog dial (enter switch).



The list of “Periodic check” check points appears in the display.

- To rotate jog dial can be used to scroll up and down through the list of maintenance points.



Periodic Check Items List (The following check items are displayed on the screen at the corresponding hour meter time)

KX060-5, U56-5, U50-5:

No.	Check Item	Task	Hour meter indication										Interval
			50	100	250	500	600	750	1000	1500	2000	3000	
1	Engine oil	Change				❍			❍	❍	❍	❍	Every 500 hrs
2	Fuel filter	Replace				❍			❍	❍	❍	❍	Every 500 hrs
3	Engine oil filter					❍			❍	❍	❍	❍	Every 500 hrs
4	Breather filter					❍			❍	❍	❍	❍	Every 500 hrs
5	Drive unit oil	Change	●			❍			❍	❍	❍	❍	Every 500 hrs
6	Hydraulic oil								❍		❍	❍	Every 1000 hrs
7	Air filter element	Replace							❍		❍	❍	Every 1000 hrs
8	Return filter								❍		❍	❍	Every 1000 hrs
9	Suction filter								❍		❍	❍	Every 1000 hrs
10	Pilot circuit filter								❍		❍	❍	Every 1000 hrs
11	Oil separator element									❍		❍	Every 1500 hrs
12	Oil in idler and track roller	Change									❍		Every 2000 hrs

The maintenance tasks denoted with 1 must be carried out once the specified hours of operation after initial commissioning have been reached.

KX085-5:

No.	Check Item		Task	Hour meter indication										Interval
				50	100	250	500	600	750	1000	1500	2000	3000	
1	Engine oil		Change				❍			❍	❍	❍	❍	Every 500 hrs
2	Fuel filter						❍			❍	❍	❍	❍	Every 500 hrs
3	Engine oil filter						❍			❍	❍	❍	❍	Every 500 hrs
4	Drive unit oil	initial		●										Every 50 hrs
							❍			❍	❍	❍	❍	Every 500 hrs
5	Return filter	initial				●								Every 250 hrs
							❍			❍		❍	❍	Every 500 hrs
6	Hydraulic oil									❍		❍	❍	Every 1000 hrs
7	Air filter element									❍		❍	❍	Every 1000 hrs
8	Suction filter									❍		❍	❍	Every 1000 hrs
9	Pilot circuit filter									❍		❍	❍	Every 1000 hrs
10	Oil separator element										❍			Every 1500 hrs
11	Oil in idler and track roller											❍		Every 2000 hrs

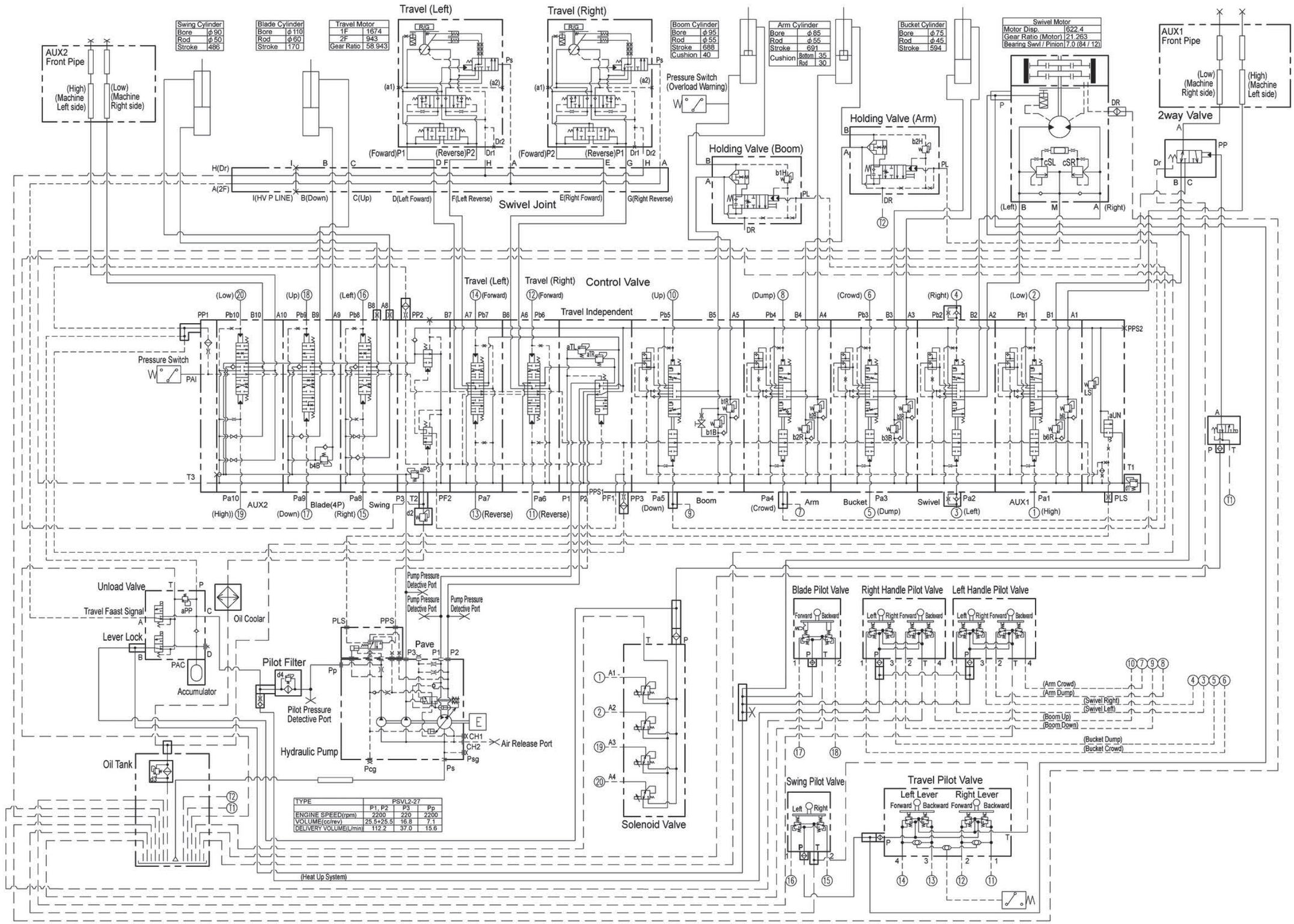
The maintenance tasks denoted with 1 must be carried out once the specified hours of operation after initial commissioning have been reached.

	Temperature Condition	K008-5, U10-5				KX060-5, U56-5, U50-5, KX085-5				Note
		Recommandation		Factory filling		Recommandation		Factory filling		
		Viscosity	Quality Standard	Brand	Type	Viscosity	Quality Standard	Brand	Type	
Engine oil	In winter, at low temperatures	SAE 10W SAE 20W	API CF API CI-4	JXTG	DH-1 API CJ-4 SAE 10W-30	SAE 10W SAE 20W	API CJ-4 API CK-4	JXTG	DH-2 API CJ-4 SAE 10W-30	
	In summer, at high ambient temperatures	SAE 30 SAE 40 SAE 50				SAE 30 SAE 40 SAE 50				
	All weather	SAE 10W-30 SAE 15W-40 SAE 15W-30				SAE 10W-30				
Coolant			SAE J1034 MB 325.0 ASTM D3306 ASTM D4985	KUBOTA	LLC-N-50F Mixture ratio 50%		SAE J1034 MB 325.0 ASTM D3306 ASTM D4985	KUBOTA	LLC-N-50F Mixture ratio 50%	For mixing with anti-freeze, always use distilled water. For the correct mixing ratio, follow the recommendations of the coolant provider. Do not mix with other coolants
Grease		NLGI-2	DIN 51825 KP2K-30	COSMO	Dynamax EP2	NLGI-2	DIN 51825 KP2K-30	COSMO	Dynamax EP2	Use on the greasing points of the front attachments for the first 50 hours
Hydraulicoil	In winter, at low temperatures	VG 32 VG 46		SHELL	Tellus S2M46 VG 46	VG 32 VG 46		SHELL	Tellus S2M46 VG 46	
	In summer, at high ambient temperatures	VG 46 VG 68				VG 46 VG 68				
Gear oil	In winter, at low temperatures									
	In summer, at high ambient temperatures									
	All weather	80W-90	API GL-4		API GL-4 SAE 90	80W-90	API GL-4		API GL-4 SAE 90	
Diesel			EN 590				EN 590			The factory filled-up fuel is no winterized diesel. To winterize the machine, fill up the fuel tank with winterized diesel, and let the engine run for a few minutes.
Refrigerant			---		---		HFC134a R134a		HFC134a	

2 Hydraulic

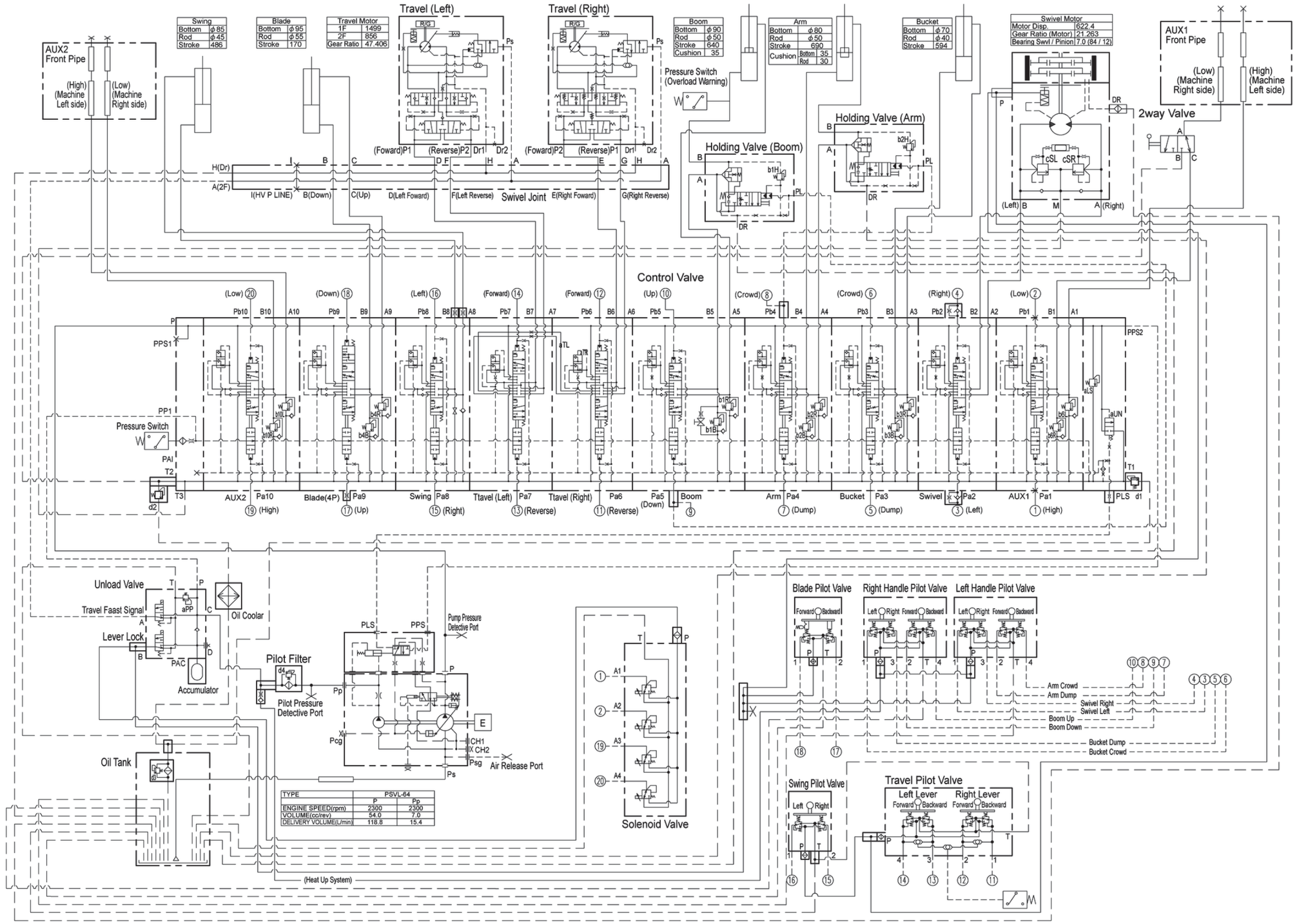
2.1 Hydraulic circuits

2.1.1 KX060-5 / U56-5, AUX2 type



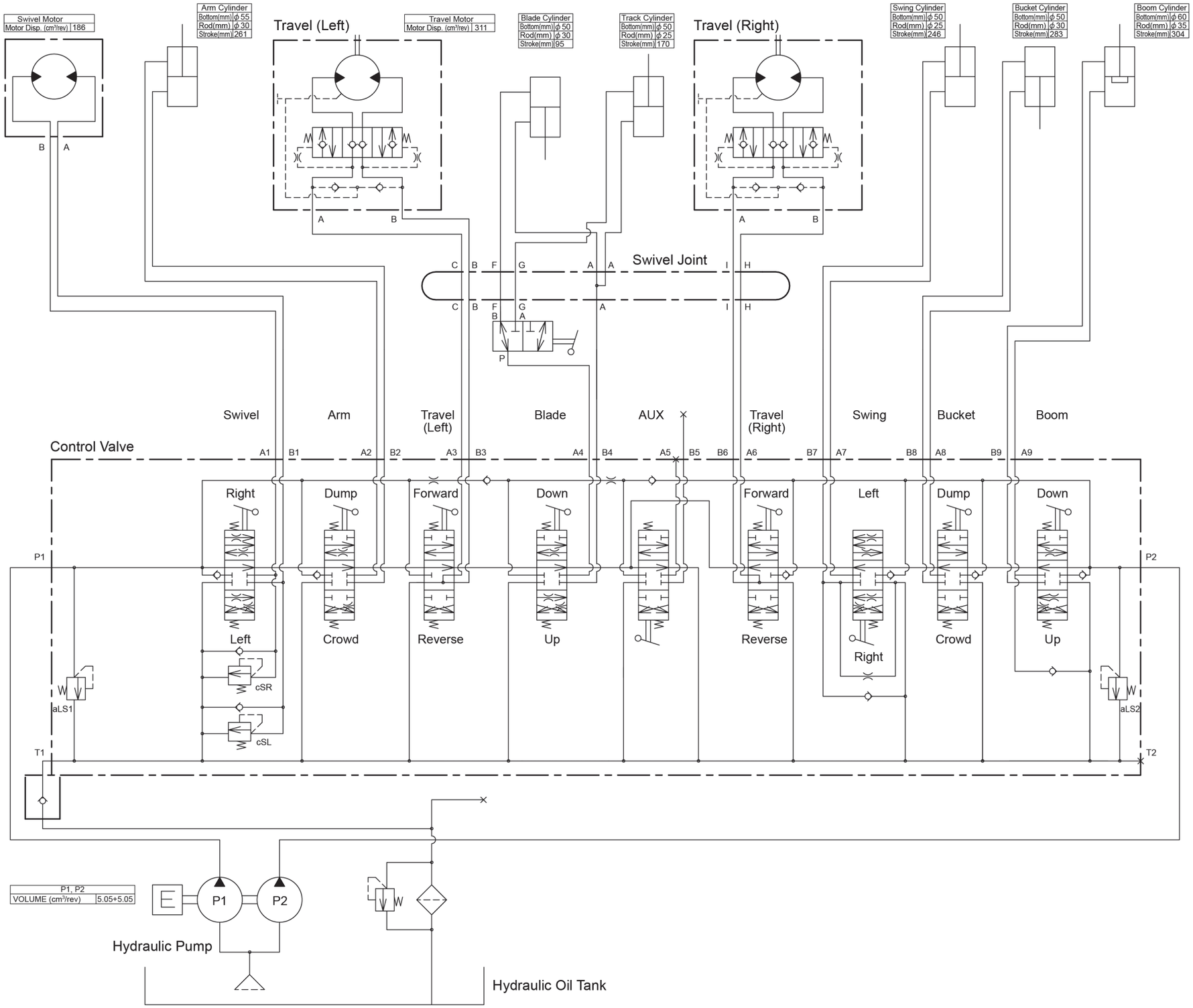
2KXZP00778A01enUS

2.1.2 U50-5, AUX2 type

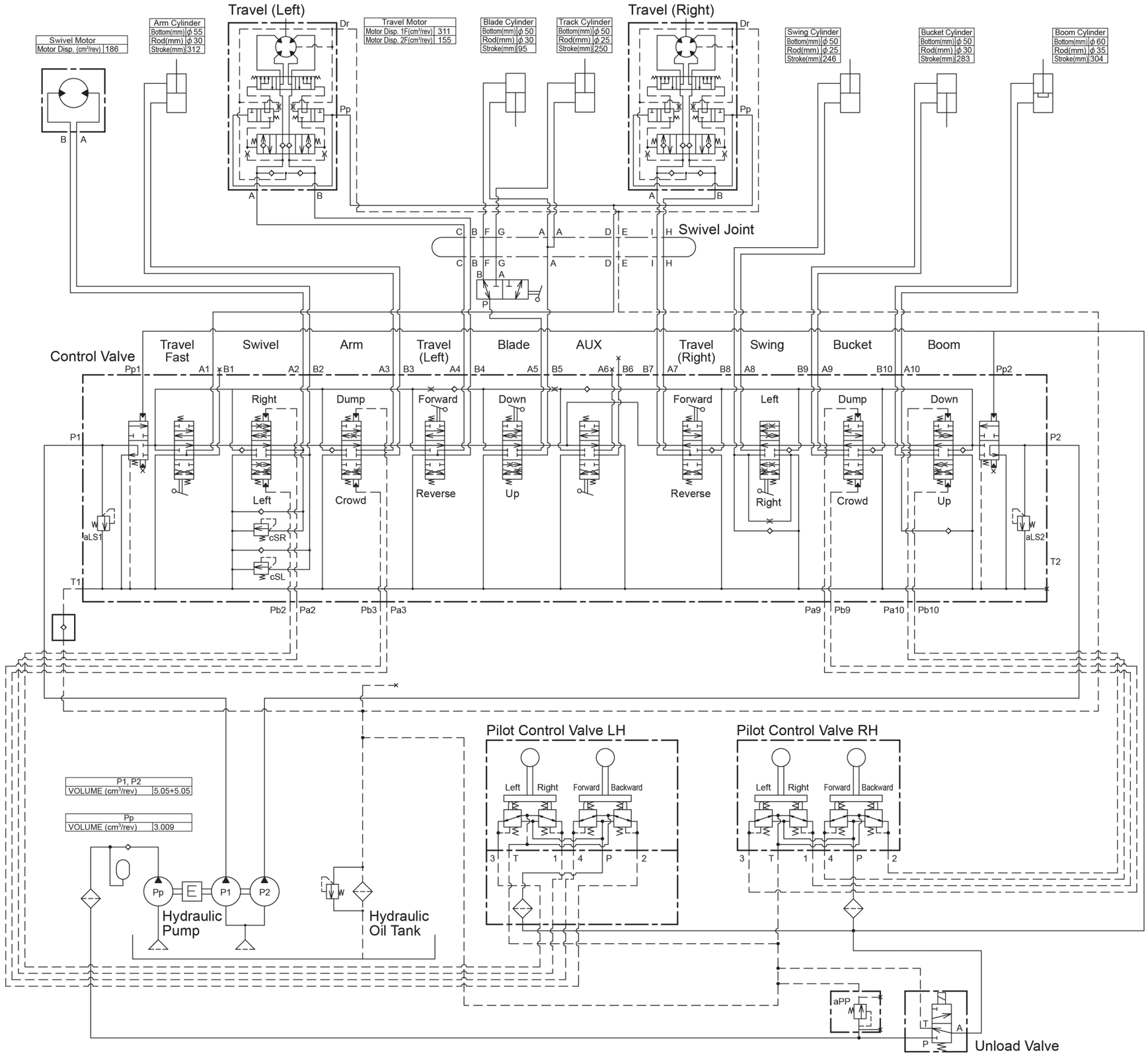


2RCBP00376A01enUS

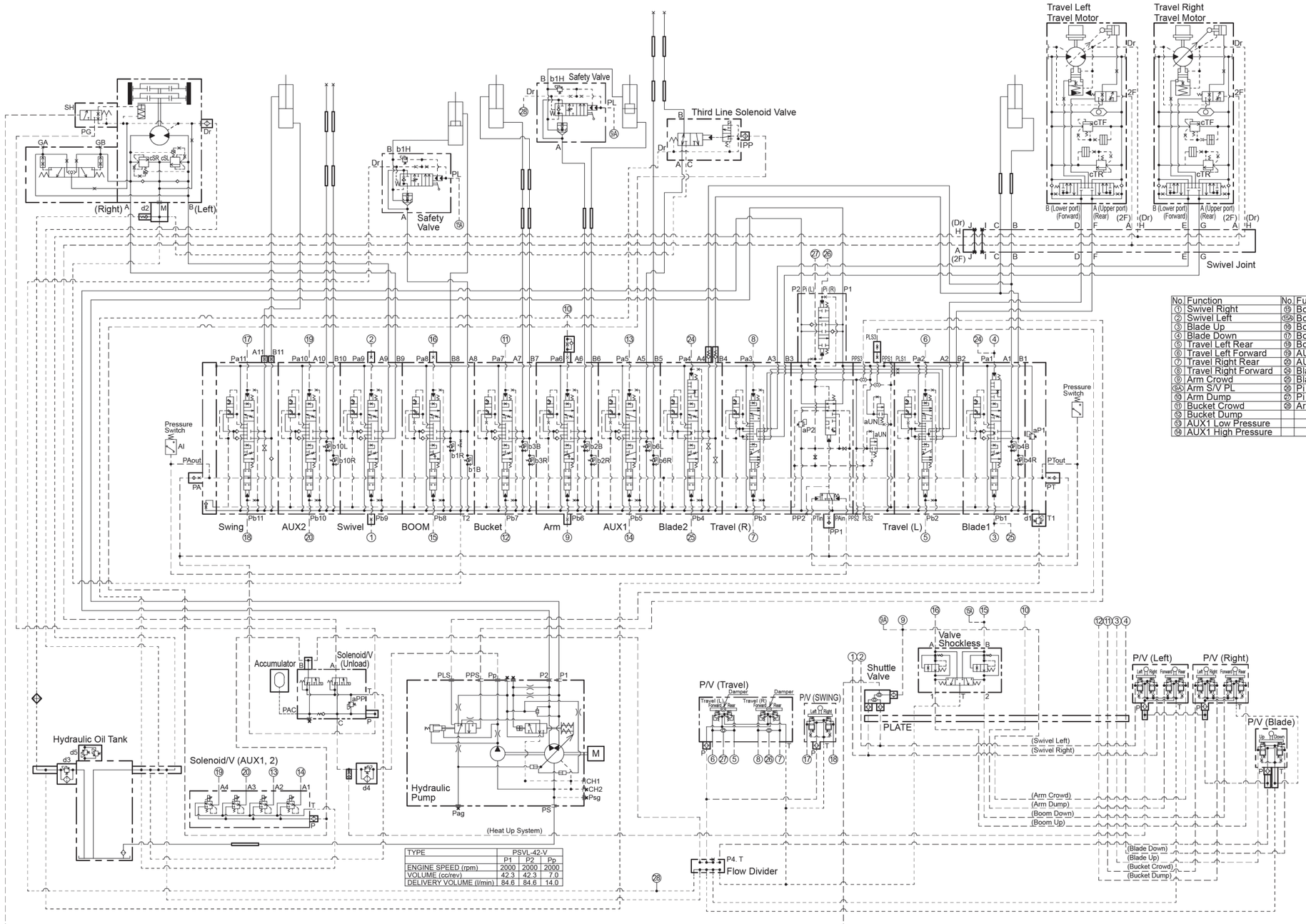
2.1.3 K008-5


Swivel Motor
Motor Disp. (cm³/rev) 186
Arm Cylinder
Bottom(mm) ϕ55
Rod(mm) ϕ30
Stroke(mm) 261
Travel (Left)
Travel Motor
Motor Disp. (cm³/rev) 311
Blade Cylinder
Bottom(mm) ϕ50
Rod(mm) ϕ30
Stroke(mm) 95
Track Cylinder
Bottom(mm) ϕ50
Rod(mm) ϕ25
Stroke(mm) 170
Travel (Right)
Swing Cylinder
Bottom(mm) ϕ50
Rod(mm) ϕ25
Stroke(mm) 246
Bucket Cylinder
Bottom(mm) ϕ50
Rod(mm) ϕ30
Stroke(mm) 283
Boom Cylinder
Bottom(mm) ϕ60
Rod(mm) ϕ35
Stroke(mm) 304
Swivel Joint
Swivel
Arm
Travel (Left)
Blade
AUX
Travel (Right)
Swing
Bucket
Boom
Control Valve
Right
Left
Dump
Crowd
Forward
Reverse
Down
Up
Forward
Reverse
Left
Right
Dump
Crowd
Down
Up
cSR
cSL
aLS1
aLS2
P1
P2
T1
T2
P1, P2
VOLUME (cm³/rev) 5.05+5.05
Hydraulic Pump
Hydraulic Oil Tank

2.1.4 U10-5


Swivel Motor
Motor Disp. (cm³/rev) 186
Arm Cylinder
Bottom(mm) ϕ55
Rod(mm) ϕ30
Stroke(mm) 312
Travel (Left)
Travel Motor
Motor Disp. 1F(cm³/rev) 311
Motor Disp. 2F(cm³/rev) 155
Blade Cylinder
Bottom(mm) ϕ50
Rod(mm) ϕ30
Stroke(mm) 95
Track Cylinder
Bottom(mm) ϕ50
Rod(mm) ϕ25
Stroke(mm) 250
Travel (Right)
Swing Cylinder
Bottom(mm) ϕ50
Rod(mm) ϕ25
Stroke(mm) 246
Bucket Cylinder
Bottom(mm) ϕ50
Rod(mm) ϕ30
Stroke(mm) 283
Boom Cylinder
Bottom(mm) ϕ60
Rod(mm) ϕ35
Stroke(mm) 304
Swivel Joint
Control Valve
Travel Fast
Swivel
Arm
Travel (Left)
Blade
AUX
Travel (Right)
Swing
Bucket
Boom
Right
Left
Dump
Crowd
Forward
Reverse
Down
Up
aLS1
aLS2
cSR
cSL
P1
P2
T1
T2
Pp1
Pp2
Pb2
Pa2
Pb3
Pa3
Pa9
Pb9
Pa10
Pb10
P1, P2
VOLUME (cm³/rev) 5.05+5.05
Pp
VOLUME (cm³/rev) 3.009
Hydraulic Pump
Hydraulic Oil Tank
Pilot Control Valve LH
Pilot Control Valve RH
Left
Right
Forward
Backward
aPP
Unload Valve

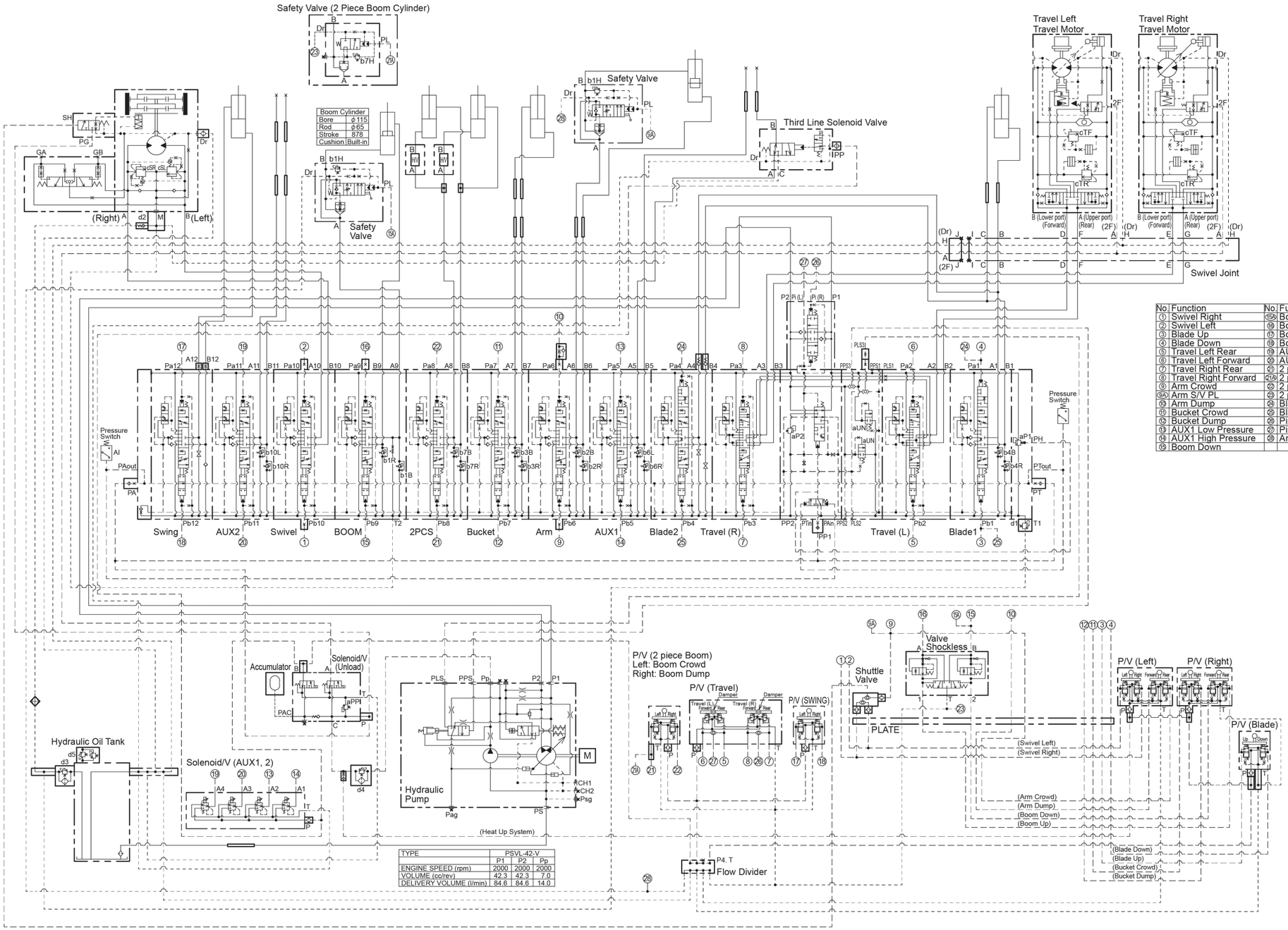
2.1.5 KX085-5 - Standard boom specification



No.	Function	No.	Function
①	Swivel Right	⑮	Boom Down
②	Swivel Left	⑮A	Boom S/V PL
③	Blade Up	⑯	BoomUp
④	Blade Down	⑰	Boom Swing Left
⑤	Travel Left Rear	⑱	Boom Swing Right
⑥	Travel Left Forward	⑲	AUX2 Low Pressure
⑦	Travel Right Rear	⑳	AUX2 High Pressure
⑧	Travel Right Forward	㉑	Blade 1-2
⑨	Arm Crowd	㉒	Blade 1-2
⑨A	Arm S/V PL	㉓	Pi (R) Signal
⑩	Arm Dump	㉗	Pi (L) Signal
⑪	Bucket Crowd	㉘	Arm S/V Dr
⑫	Bucket Dump		
⑬	AUX1 Low Pressure		
⑭	AUX1 High Pressure		

TYPE	PSVL-42-V		
	P1	P2	Pp
ENGINE SPEED (rpm)	2000	2000	2000
VOLUME (cc/rev)	42.3	42.3	7.0
DELIVERY VOLUME (l/min)	84.6	84.6	14.0

2.1.6 KX085-5 - 2 piece boom specification



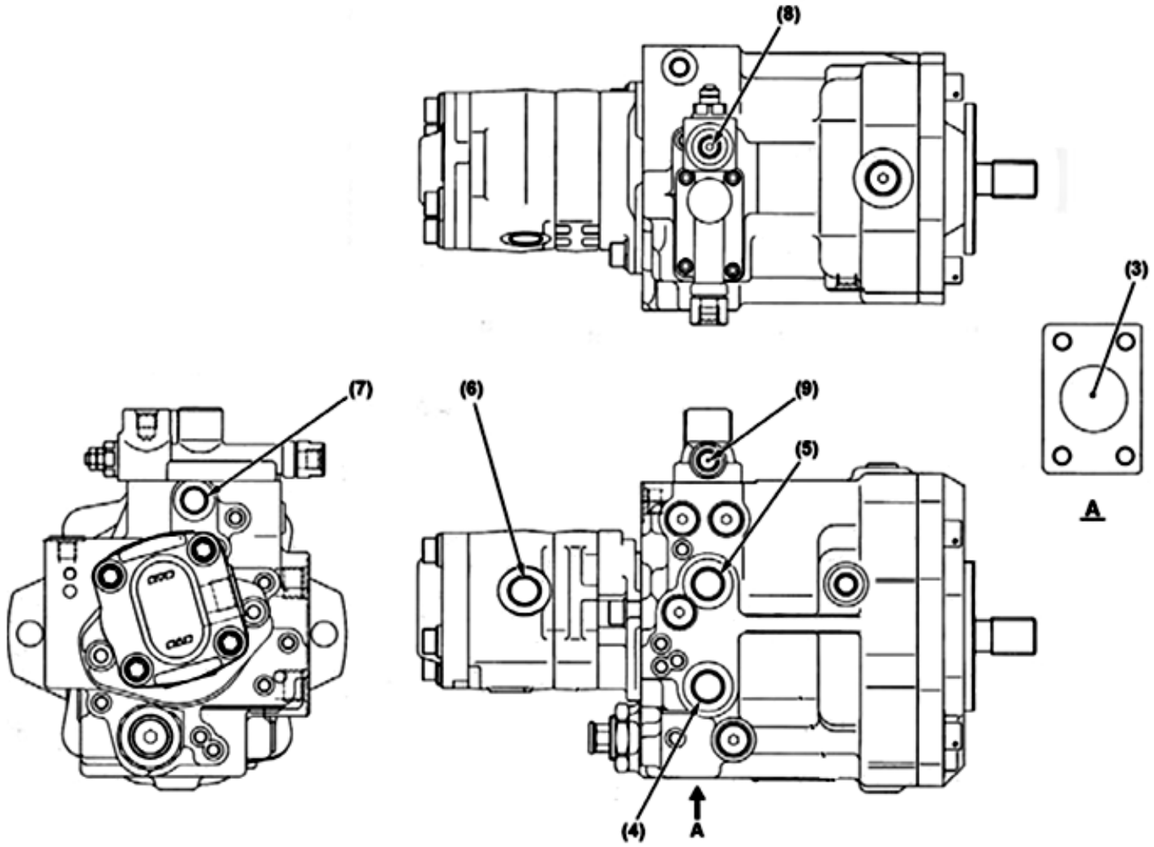
No.	Function	No.	Function
①	Swivel Right	⑮A	Boom S/V PL
②	Swivel Left	⑯	BoomUp
③	Blade Up	⑰	Boom Swing Left
④	Blade Down	⑱	Boom Swing Right
⑤	Travel Left Rear	⑲	AUX2 Low Pressure
⑥	Travel Left Forward	⑳	AUX2 High Pressure
⑦	Travel Right Rear	㉑	2 piece Boom Crowd
⑧	Travel Right Forward	㉒A	2 piece Boom S/V PL
⑨	Arm Crowd	㉒	2 piece Boom Dump
⑨A	Arm S/V PL	㉓	2 piece Boom S/V Dr
⑩	Arm Dump	㉔	Blade 1-2
⑪	Bucket Crowd	㉕	Blade 1-2
⑫	Bucket Dump	㉖	PI (R) Signal
⑬	AUX1 Low Pressure	㉗	PI (L) Signal
⑭	AUX1 High Pressure	㉘	Arm S/V Dr
⑮	Boom Down		

TYPE	PSVL-42-V		
	P1	P2	Pp
ENGINE SPEED (rpm)	2000	2000	2000
VOLUME (cc/rev)	42.3	42.3	7.0
DELIVERY VOLUME (l/min)	84.6	84.6	14.0

2.2 Hydraulic component main settings and control valve layout

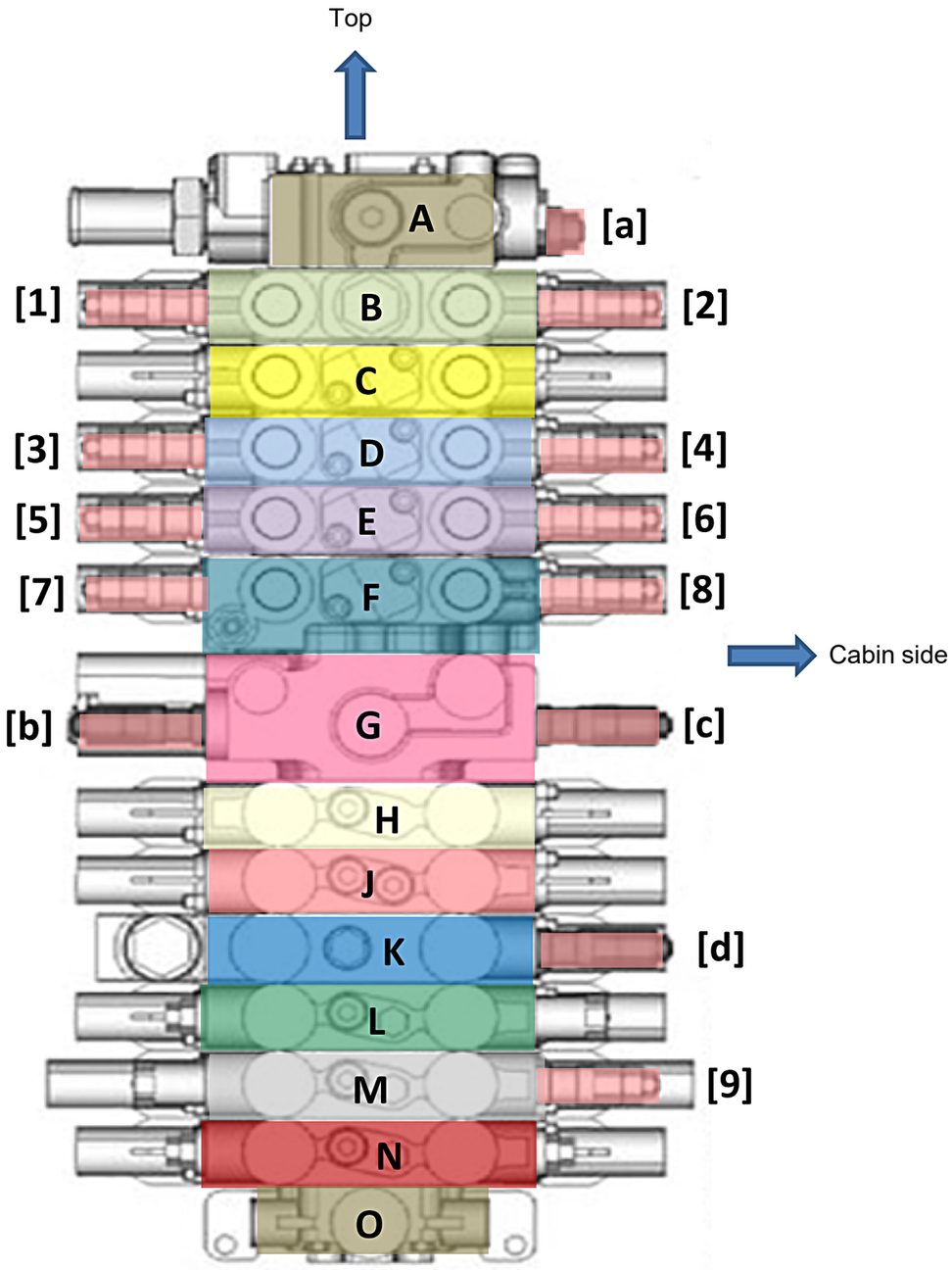
2.2.1 KX060-5, U56-5

			Unit	KX060-5, U56-5
Hydraulic pump theoretical flow (l/min) at 2200 rpm	P1		l/min	56,1
	P2		l/min	56,1
	P3		l/min	37
	Pp		l/min	15,6
	Stand-by flow P1+P2		l/min	------
Main relief valve settings (engine rpm at max.)	aLS		bar	274 ± 3
	aTR		bar	285 ± 5
	aTL		bar	285 ± 5
	AP3		bar	195 ± 5
	aPp		bar	41 ± 5
	aUN		bar	25,5 ± 2
	Differential pressure LS		bar	------
Service Port theoretical flow with no load at 2200 rpm	AUX1		l/min	75
	AUX2		l/min	37
Overload relief valve settings	Boom	bottom (b1B)	bar	314 ± 3
		rod (b1R)	bar	314 ± 3
		H/V (b1H)	bar	------
	Arm	bottom (b2B)	bar	314 ± 3
		rod (b2R)	bar	314 ± 3
	Bucket	bottom (b3B)	bar	314 ± 3
		rod (b3R)	bar	314 ± 3
	Blade	bottom (b4B)	bar	274 ± 3
		rod (b4R)	bar	------
	AUX1	LH (b6L)	bar	206 ± 3
		RH (b6R)	bar	206 ± 3
	AUX2	LH (b10L)	bar	------
		RH (b10R)	bar	------
	Swivel motor brake valves	CSR	bar	206
		CSL	bar	206



[3] Suction port
[4] P1
[5] P2
[6] P3
[7] Pp
[8] PLS
[9] PPS

Main control valve KX060-5 / U56-5



Main relief valves

[a]	Main relief valve aLS
[b]	Main relief valve aTR
[c]	Main relief valve aTL
[d]	Main relief valve aP3

Sections

A	Unload valve, T1, PPS2, PLS
B	AUX1
C	Swivel
D	Bucket
E	Arm
F	Boom, boom lowering valve
G	Travel independence, PPS, P1-, P2 inlet
H	Travel RH
J	Travel LH
K	Communication valve, T2, P3 inlet
L	Swing
M	Blade
N	AUX2
O	AI pressure switch, T3

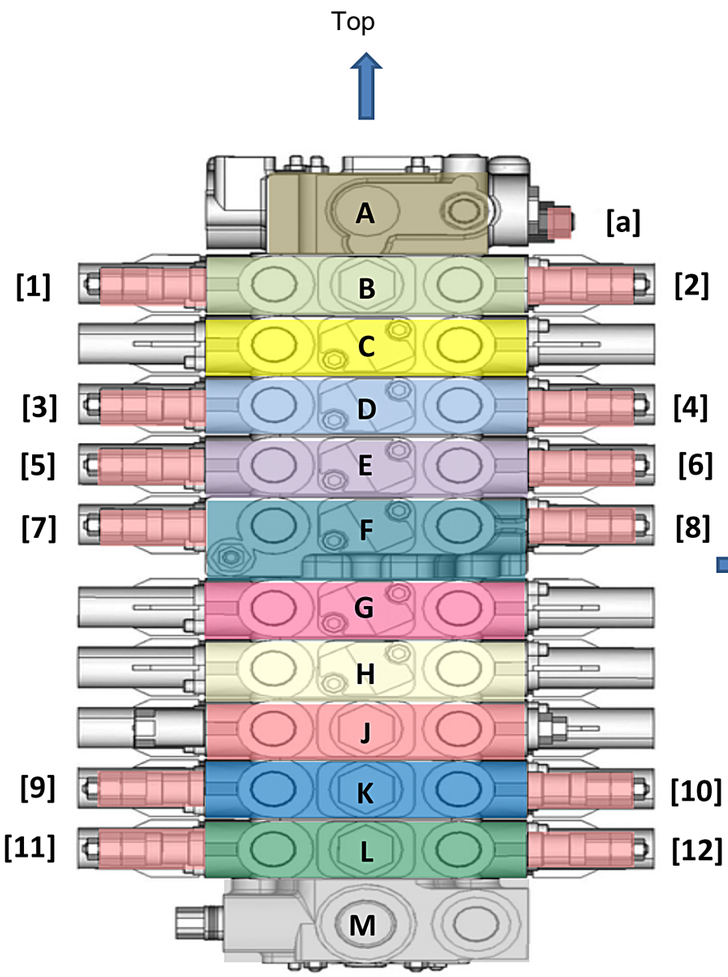
Overload relief valve position

[1]	AUX1 (b6R)
[2]	AUX1 (b6L)
[3]	Bucket (b3B)
[4]	Bucket (b3R)
[5]	Arm (b2B)
[6]	Arm (b2R)
[7]	Boom (b1B)
[8]	Boom (b1R)
[9]	Blade (b4B)

2.2.2 U50-5

			Unit	U50-5
Hydraulic pump theoretical flow (l/min) at 2200 rpm	P1		l/min	118,8
	P2		l/min	------
	P3		l/min	------
	Pp		l/min	15,4
	Stand-by flow P1+P2		l/min	------
Main relief valve settings (engine rpm at max.)	aLS		bar	251 ± 5
	aTR		bar	------
	aTL		bar	------
	AP3		bar	------
	aPp		bar	41 ± 5
	aUN		bar	25,5 ± 2
	Differential pressure LS		bar	------
Service Port theoretical flow with no load at 2200 rpm	AUX1		l/min	65
	AUX2		l/min	37
Overload relief valve settings	Boom	bottom (b1B)	bar	274 ± 5
		rod (b1R)	bar	274 ± 5
		H/V (b1H)	bar	350
	Arm	bottom (b2B)	bar	274 ± 5
		rod (b2R)	bar	274 ± 5
		H/V (b2H)	bar	350
	Bucket	bottom (b3B)	bar	274 ± 5
		rod (b3R)	bar	274 ± 5
	Blade	bottom (b4B)	bar	314 ± 5
		rod (b4R)	bar	------
	AUX1	LH (b6L)	bar	206 ± 5
		RH (b6R)	bar	206 ± 5
	AUX2	LH (b10L)	bar	206 ± 5
		RH (b10R)	bar	206 ± 5
	Swivel motor brake valves	CSR	bar	180
		CSL	bar	180

Main control valve U50-5



Main relief valves

[a] Main relief valve aLS

Sections

A	Unload valve, T1, PPS, PLS
B	AUX1
C	Swivel
D	Bucket
E	Arm
F	Boom, boom lowering valve
G	Travel RH
H	Travel LH
J	Swing
K	Blade
L	AUX 2
M	AI pressure switch, T3

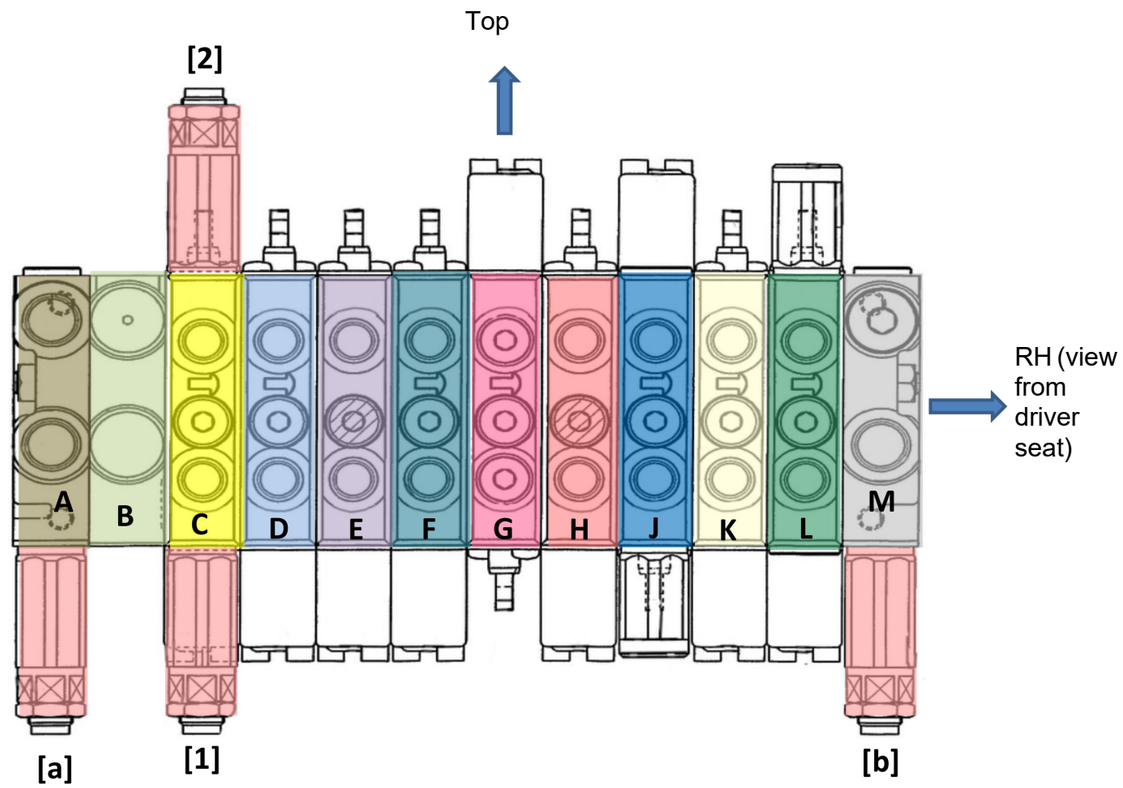
Overload relief valve position

[1]	AUX 1 (b6R)
[2]	AUX 1 (b6L)
[3]	Bucket (b3B)
[4]	Bucket (b3R)
[5]	Arm (b2B)
[6]	Arm (b2R)
[7]	Boom (b1B)
[8]	Boom (b1R)
[9]	Blade (b4B)
[10]	Blade (b4R)
[11]	AUX 2 (b10R)
[12]	AUX 2 (b10L)

2.2.3 K008-5

			Unit	K008-5
Hydraulic pump theoretical flow (l/min) at 2200 rpm	P1		l/min	11,8
	P2		l/min	11,8
	P3		l/min	------
	Pp		l/min	------
	Stand-by flow P1+P2		l/min	------
Main relief valve settings (engine rpm at max.)	aP1		bar	167 +3/-5
	aP2		bar	167 +3/-5
	aPp		bar	------
Service Port theoretical flow with no load at 2200 rpm	AUX1		l/min	22,6
	AUX2		l/min	------
Overload relief valve settings	Boom	bottom (b1B)	bar	------
		rod (b1R)	bar	------
		H/V (b1H)	bar	------
	Arm	bottom (b2B)	bar	------
		rod (b2R)	bar	------
		H/V (b2H)	bar	------
	Bucket	bottom (b3B)	bar	------
		rod (b3R)	bar	------
	Blade	bottom (b4B)	bar	------
		rod (b4R)	bar	------
	AUX1	LH (b6L)	bar	------
		RH (b6R)	bar	------
	AUX2	LH (b10L)	bar	------
		RH (b10R)	bar	------
	Swivel motor brake valves	CSR	bar	75 +5/-0
		CSL	bar	75 +5/-0

Main control valve K008-5



Main relief valves

[a] Main relief valve aLS1

[b] Main relief valve aLS2

Sections

A	Inlet P1, T1
B	Spacer
C	Swivel
D	Arm
E	Travel LH
F	Blade, Track
G	AUX
H	Travel RH
J	Swing
K	Bucket
L	Boom
M	Inlet P2, T2

Overload relief valve position

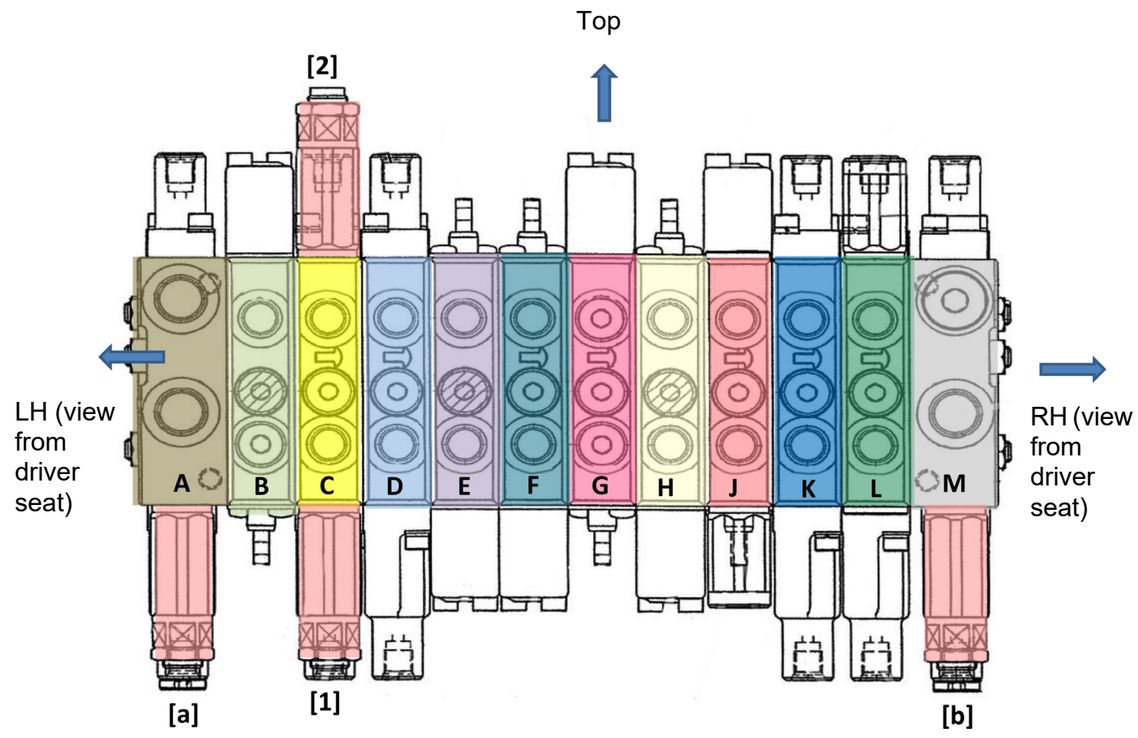
[1] cSL

[2] cSR

2.2.4 U10-5

			Unit	U10-5
Hydraulic pump theoretical flow (l/min) at 2200 rpm	P1		l/min	11,5
	P2		l/min	11,5
	P3		l/min	------
	Pp		l/min	15,4
	Stand-by flow P1+P2		l/min	------
Main relief valve settings (engine rpm at max.)	aP1		bar	177 +3/-5
	aP2		bar	177 +3/-5
	aPp		bar	3,9 +5/-0
Service Port theoretical flow with no load at 2200 rpm	AUX1		l/min	22,5
	AUX2		l/min	------
Overload relief valve settings	Boom	bottom (b1B)	bar	------
		rod (b1R)	bar	------
		H/V (b1H)	bar	------
	Arm	bottom (b2B)	bar	------
		rod (b2R)	bar	------
		H/V (b2H)	bar	------
	Bucket	bottom (b3B)	bar	------
		rod (b3R)	bar	------
	Blade	bottom (b4B)	bar	------
		rod (b4R)	bar	------
	AUX1	LH (b6L)	bar	------
		RH (b6R)	bar	------
	AUX2	LH (b10L)	bar	------
		RH (b10R)	bar	------
	Swivel motor brake valves	C1 SR	bar	75 +5/-0
		C1 SL	bar	75 +5/-0

Main control valve U10-5



Main relief valves

[a] Main relief valve aLS1

[b] Main relief valve aLS2

Sections

A	Inlet P1, T1
B	Travel speed shift
C	Swivel
D	Arm
E	Travel LH
F	Blade, Track
G	AUX
H	Travel RH
J	Swing
K	Bucket
L	Boom
M	Inlet P2, T2

Overload relief valve position

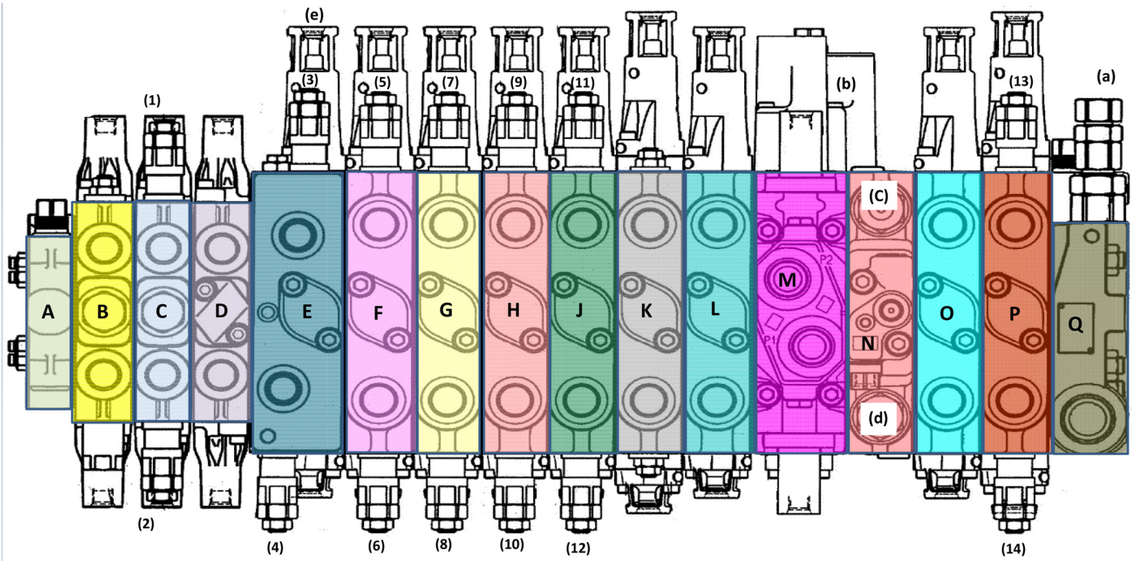
[1] cSL

[2] cSR

2.2.5 KX085-5

			Unit	KX085-5	
Hydraulic pump theoretical flow (l/min) at 2000 rpm	P1		l/min	84,6	
	P2		l/min	84,6	
	P3		l/min	------	
	Pp		l/min	14	
	Stand-by flow P1+P2		l/min	------	
Main relief valve settings (engine rpm at max.)	aP1		bar	274 ± 3	Mono-boom specs
			bar	274 ± 4	Front attachments, 2-pcs. Boom specs
			bar	294 ± 4	Travel, dozer blade, 2-pcs. Boom specs
	aP2		bar	274 ± 4	Mono-boom specs
			bar	274 ± 4	2-pcs. Boom specs
	aP3		bar	------	
	aPp		bar	39 -5 / +10	
	aUN		bar	20 ± 2,5	
	Differential pressure LS		bar	16,5	
Service Port theoretical flow with no load at 2200 rpm	AUX1		l/min	100	
	AUX2		l/min	55,8	
Overload relief valve settings	Boom	bottom (b1B)	bar	314 ± 3	
		rod (b1R)	bar	314 ± 3	
		H/V (b1H)	bar	304 ± 10	
	Arm	bottom (b2B)	bar	314 ± 3	
		rod (b2R)	bar	314 ± 3	
	Bucket	bottom (b3B)	bar	314 ± 3	
		rod (b3R)	bar	314 ± 3	
	Blade	bottom (b4B)	bar	343 ± 3	
		rod (b4R)	bar	172 ± 3	
	AUX1	LH (b6L)	bar	206 ± 3	
		RH (b6R)	bar	206 ± 3	
	AUX2	LH (b10L)	bar	206 ± 3	
		RH (b10R)	bar	206 ± 3	
	Swivel motor brake valves	C1 SR	bar	216	
		C2 SL	bar	216	
	2-piece boom	bottom (b7B)	bar	343 ± 3	
		rod (b7R)	bar	343 ± 3	
		H/V (b7H)	bar	333 ± 10	

Main control valve KX085-5



Main relief valves

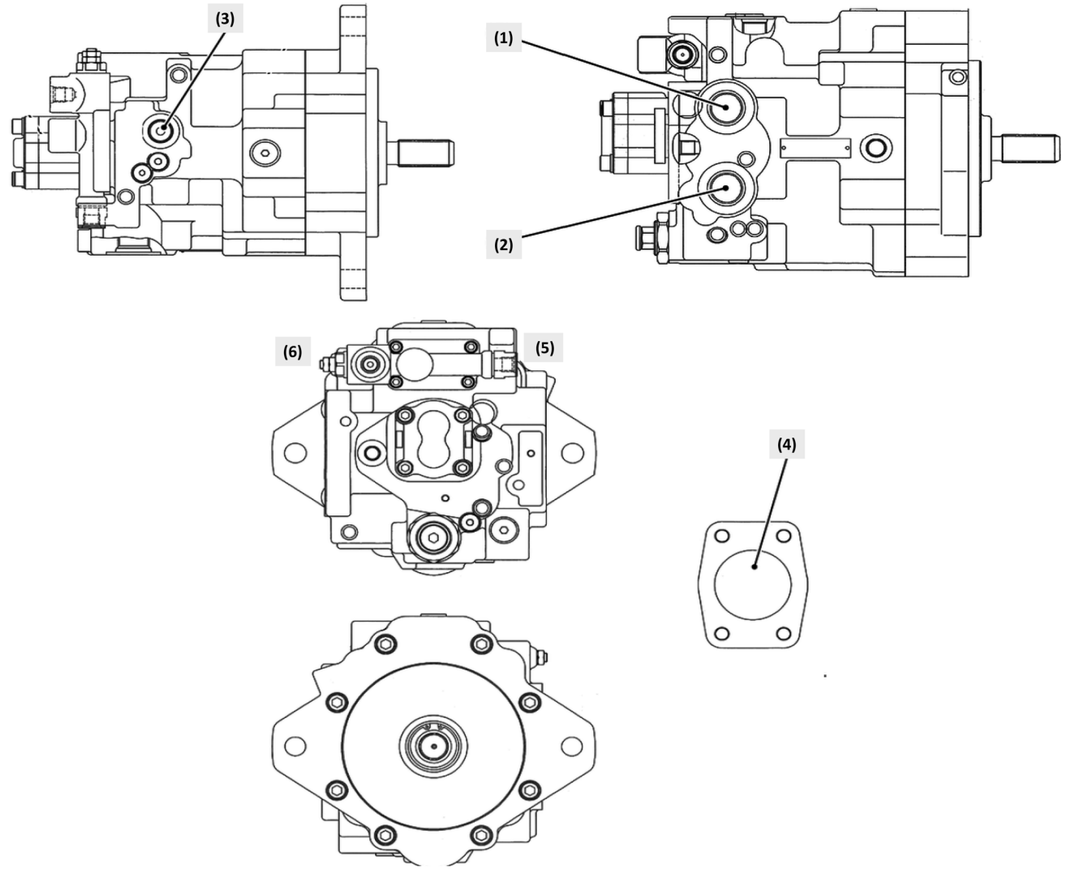
- [a] Main relief valve aP1
- [b] Main relief valve aP2
- [c] Main relief valve aUN p1
- [d] Main relief valve aUN p2
- [e] Boom emergency lowering valve

Sections

A	Housing
B	Boom swing
C	AUX2
D	Swivel
E	Boom
F	2nd boom (2pcs. Boom)
G	Bucket
H	Arm
J	AUX1
K	Blade 2
L	Travel RH
M	Inlet P1 and P2
N	Unload
O	Travel LH
P	Dozer 1
Q	Pilot pressure PT, T1 out

Overload relief valve position

- [1] AUX2 rh (b10R)
- [2] AUX2 lh (b10L)
- [3] Boom rod side (b1R)
- [4] Boom bottom side (b1B)
- [5] 2 pcs boom bottom side (b7B)
- [6] 2 pcs boom rod side (b7R)
- [7] Bucket bottom side (b3B)
- [8] Bucket rod side (b3R)
- [9] Arm rod side (b2R)
- [10] Arm bottom side (b2B)
- [11] AUX1 (b6L)
- [12] AUX1 (b6R)
- [13] Blade rod side (b4R)
- [14] Blade bottom side (b4B)



- [1] P2
- [2] P1
- [3] Pp
- [4] Inlet
- [5] PPS
- [6] PLS

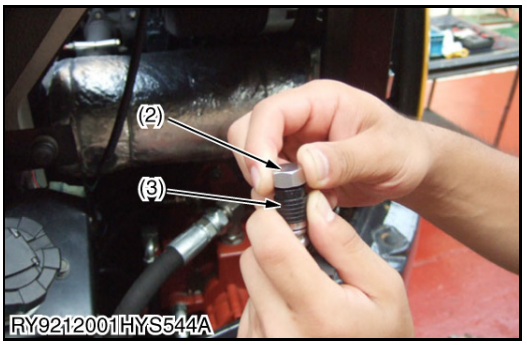
2.3 Internal leak and speed

2.3.1 KX060-5, U56-5, U50-5, K008-5, U10-5, KX085-5

					Unit	KX060-5, U56-5	U50-5	K008-5	U10-5	KX085-5
		Total weight to attach to arm end, bucket included			kg	359	341	50	53	898
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	20	20	20	20	20
			allowable limit		mm	100	100	100	100	100
		2nd boom (2-piece boom spec.)	max. new machine		mm					10
			allowable limit		mm					50
		Arm	max. new machine		mm	10	10	11	11	20
			allowable limit		mm	50	50	55	55	100
		Bucket	max. new machine		mm	10	10	10	10	10
			allowable limit		mm	50	50	50	50	50
		Blade	max. new machine		mm	20	20	20	20	20
			allowable limit		mm	40	40	40	40	40
	Travel motor	Travel block on 20° slope			mm	0	0	300	300	0
	Travel motor drain amount	During rotation	1F		l\min	≤ 0,4	≤ 0,4	———	———	≤ 0,5
			2F		l\min	———	———	———	———	≤ 1,0
		Block	1F		l\min	———	———	———	———	≤ 4,0
			2F		l\min	———	———	———	———	≤ 4,0
	Swivel motor	Swivel block on 20° slope K008-5, U10-5: Swivel block on 15° slope	drift measured on swivel bearing outer race (LH/RH)	engine stop	°	≤ 30	≤ 30	≤ 62,3	≤ 93,4	≤ 41,8
				engine running	°	≤ 180	≤ 180	———	———	≤ 41,8
		Drain amount	during rotation		l\min	≤ 1,0	≤ 1,0	———	———	≤ 0,5
			when blocked		l\min	≤ 6,0	≤ 6,0	———	———	———
	Straight travel			deviation	mm	600	600	100	100	≤ 600
Speed	Boom		up (ground to max. up) w/o cushion		s	2,8 ± 0,3	2,7 ± 0,3	2,5 ± 0,3	2,5 ± 0,3	3,0 ± 0,3
			down		s	3,2 ± 0,3	3,1 ± 0,3	2,8 ± 0,3	2,8 ± 0,3	3,2 ± 0,3
	2 piece boom 1		up (ground to max. up) w/o cushion		s					3,7 ± 0,3
			down		s					3,9 ± 0,3
	2 piece boom 2		crowd		s					4,7 ± 0,3
			dump		s					4,8 ± 0,3
	Arm		crowd		s	2,8 ± 0,3	2,8 ± 0,3	4,0 ± 0,3	4,0 ± 0,3	3,3 ± 0,3
			dump		s	2,6 ± 0,3	2,6 ± 0,3	2,8 ± 0,3	2,8 ± 0,3	3,0 ± 0,3
	Bucket		crowd		s	2,7 ± 0,3	2,9 ± 0,3	2,9 ± 0,3	2,9 ± 0,3	3,0 ± 0,3
			dump		s	1,9 ± 0,3	2,2 ± 0,3	2,0 ± 0,3	2,0 ± 0,3	2,1 ± 0,3
	Blade		up (full stroke)		s	2,0 ± 0,3	2,4 ± 0,3	1,6 ± 0,3	1,6 ± 0,3	2,3 ± 0,3
			down (full stroke)		s	2,8 ± 0,3	2,3 ± 0,3	1,2 ± 0,3	1,2 ± 0,3	3,4 ± 0,3
	Swing		to LH		s	6,5 ± 0,5	5,5 ± 0,5	3,9 ± 0,5	3,9 ± 0,5	7,3 ± 0,7
			to RH		s	7,9 ± 0,5	6,4 ± 0,5	3,6 ± 0,5	3,6 ± 0,5	7,9 ± 0,7
	Swivel motor		3 rotations		s	17,8 ~ 21,7	17,8 ~ 21,7	19,8 ~ 24,0	19,8 ~ 24,0	16,7 ~ 20,5
	Travel motor	Travel speed (distance 10m)	1F	rubber	s	12,0 ~ 15,0	11,7 ~ 14,4	16,4 ~ 20,0	16,4 ~ 20,0	12,0 ~ 15,0
			2F	rubber	s	6,8 ~ 8,4	6,6 ~ 8,1	8,2 ~ 10,0	8,2 ~ 10,0	6,8 ~ 8,4
			1F	steel	s	12,0 ~ 15,0	11,7 ~ 14,4	———	———	12,9 ~ 16,4
			2F	steel	s	6,8 ~ 8,4	6,6 ~ 8,1	———	———	7,2 ~ 9,0

2.4 Piston pump air bleeding procedure

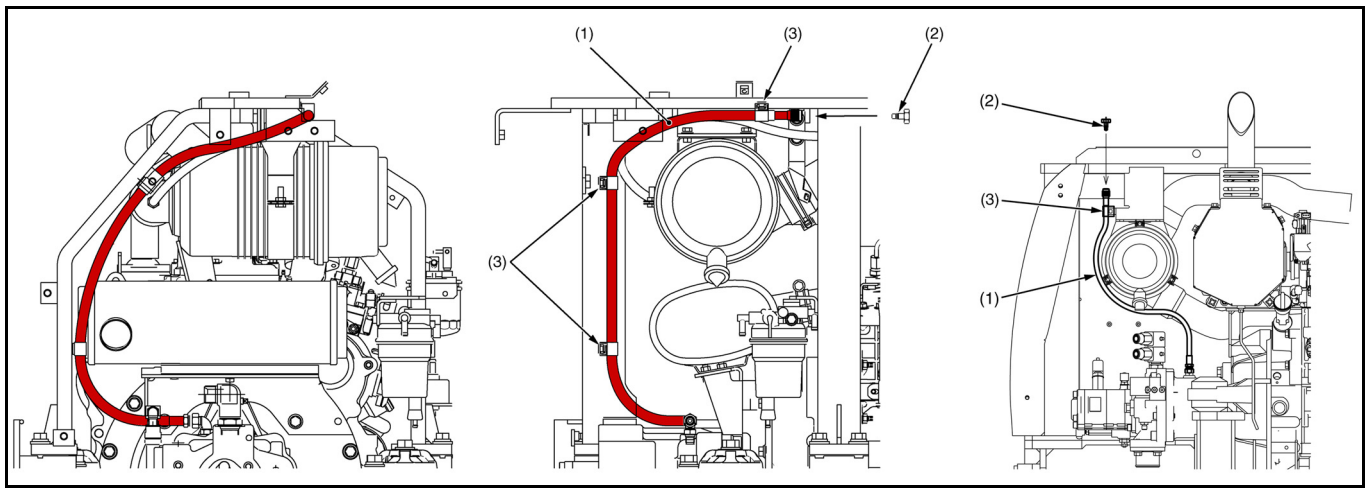
2.4.1 KX060-5, U56-5, U50-5, KX085-5



(1) Air bleed hose
(2) Hexagonal plug
(3) Lock section

When disassembling hydraulic equipment and replacing hoses, etc., or after changing the hydraulic fluid and using the vacuum pump, before operating the machine, be sure to carry out air bleeding to prevent pump scorching and cavitation.

1. After operating, with the engine stopped, remove the hose at the top of the pump from its clamp.
2. Press in the hexagonal plug and the black plastic lock section as well. Then hold the black plastic lock section and pull out the hexagonal plug.
3. Drape the hose on the front of the weight, and leave for 30 seconds.
4. Fit a hexagonal plug to the hose, start and idle the engine, and check whether there is any cavitation noise from the pump.
5. Repeat operations in 2. 3. 4 until pump cavitation noise disappears.
6. When cavitation noise disappears, raise the engine speed to 1500rpm, slowly operated the arm and check whether cavitation noise is emitted. (Make sure there is no relief when operating the arm.)
7. If there is no cavitation noise, raise the engine speed to 2000rpm, slowly operate the arm, and check again for cavitation noise. If cavitation noise is emitted, stop the engine and carry out 2. 3.
8. If there is no cavitation noise in step 7, raise the engine speed to maximum rpm, slowly operate the aim, and check again for cavitation noise. If cavitation noise is emitted, stop the engine and carry out 2. 3. (Make sure there is no relief when operating the arm.)
9. If there was no cavitation noise when performing step 8, air bleeding is finished. Clamp the air bleed hose in its original position.

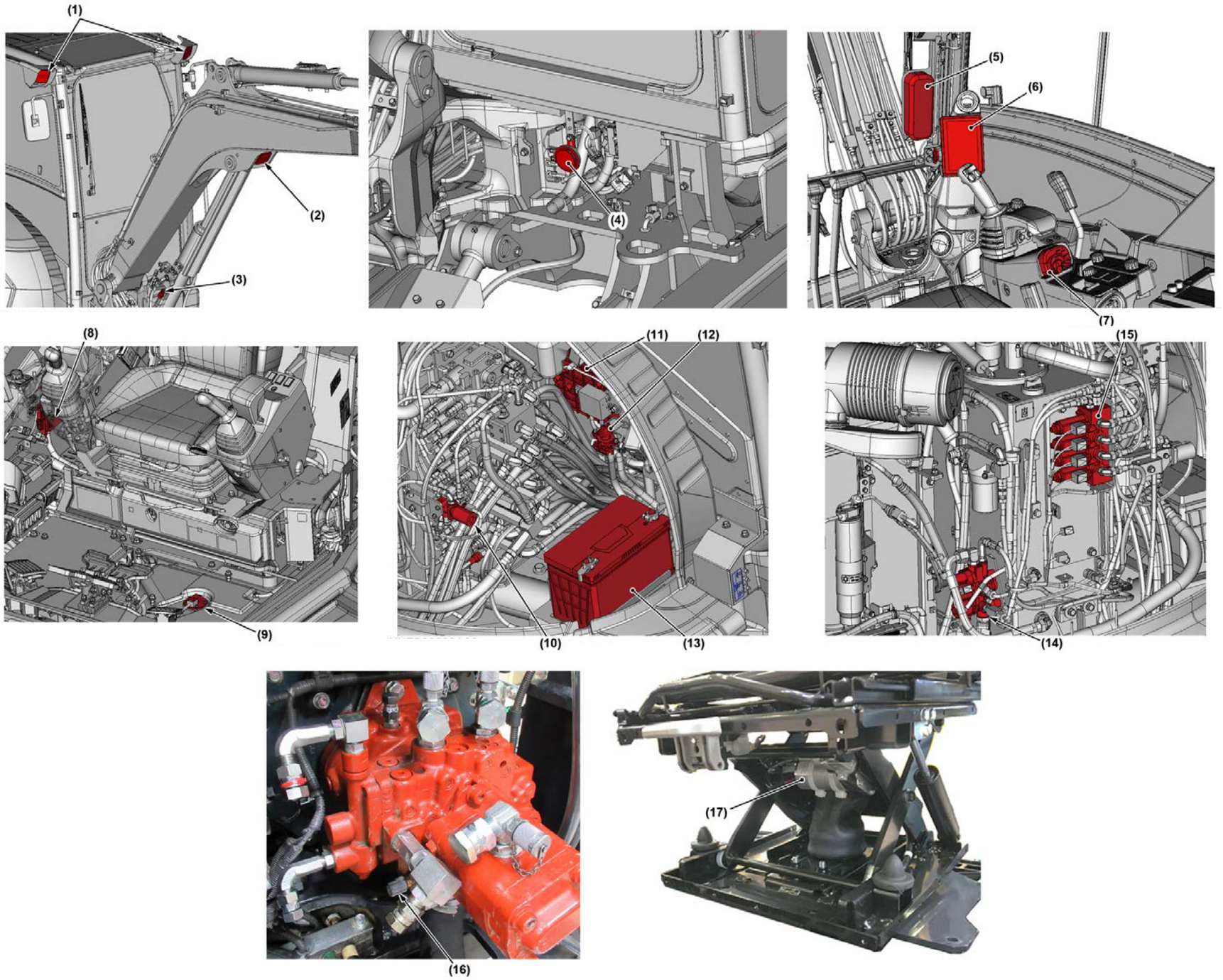


(1) Air bleed hose (2) Hexagonal plug (3) Lock section

3 Electrics

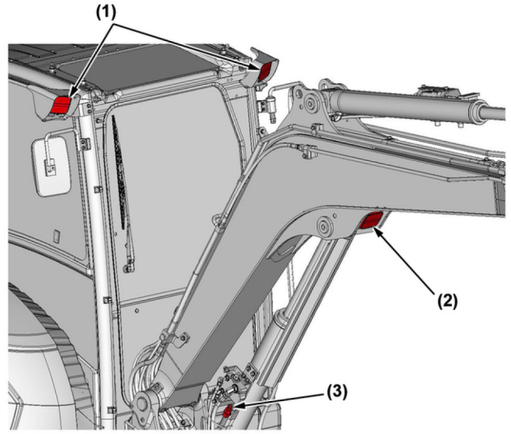
3.1 Electrical component layout

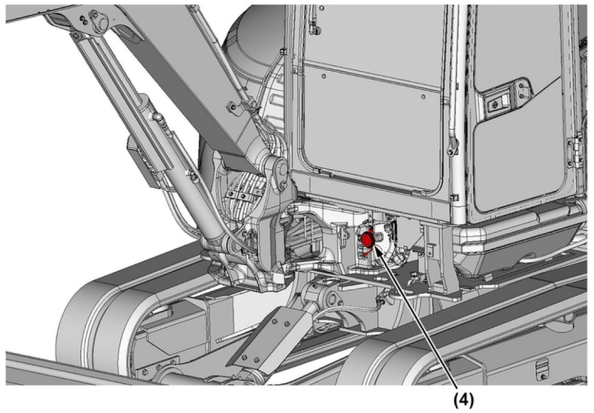
3.1.1 Electrical device layout KX060-5

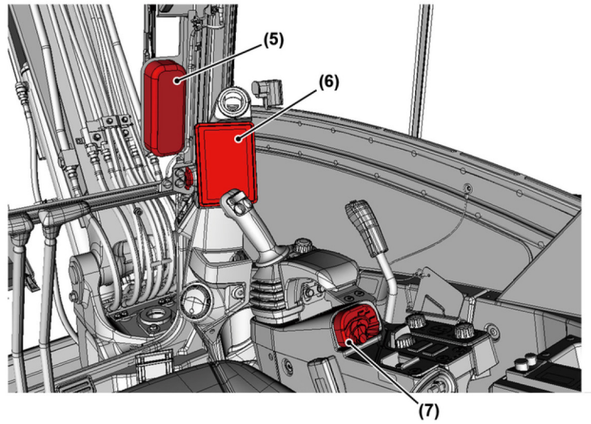


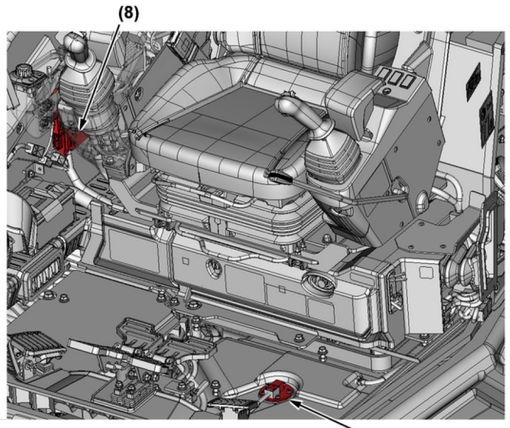
No.	Part Name
(1)	Work light (cabin)
(2)	Work light (boom)
(3)	Boom bottom pressure sensor
(4)	Horn
(5)	Wiper motor
(6)	Meter panel
(7)	Starter switch
(8)	Meter panel ECU
(9)	Fuel level sensor
(10)	Third line solenoid valve
(11)	Engine ECU
(12)	Battery isolator
(13)	Battery
(14)	Unload valve
(15)	Proportional valve
(16)	Hydraulic oil temperature sensor
(17)	Air compressor

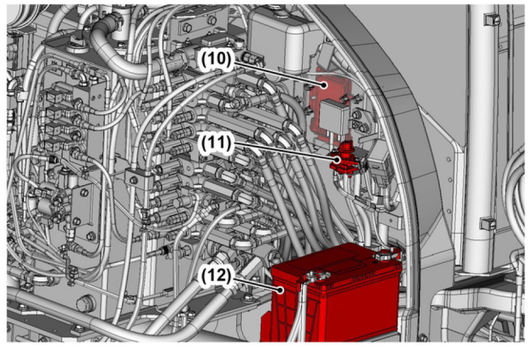
3.1.2 Electrical device layout U56-5

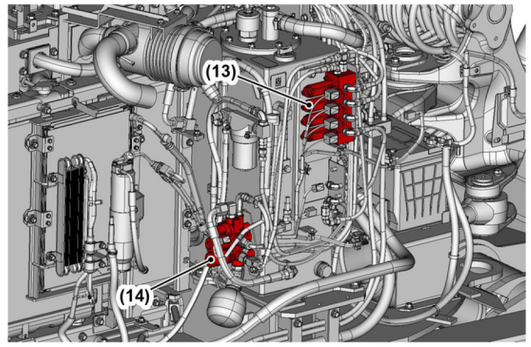


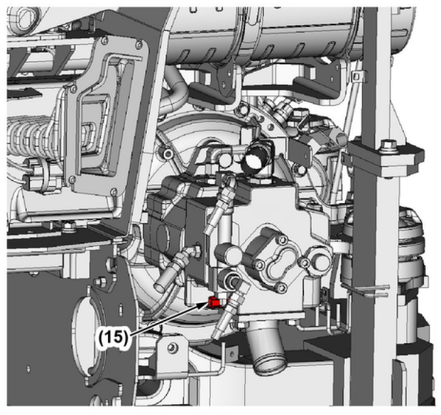


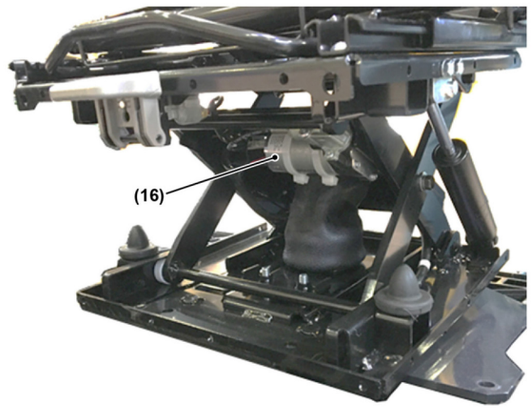






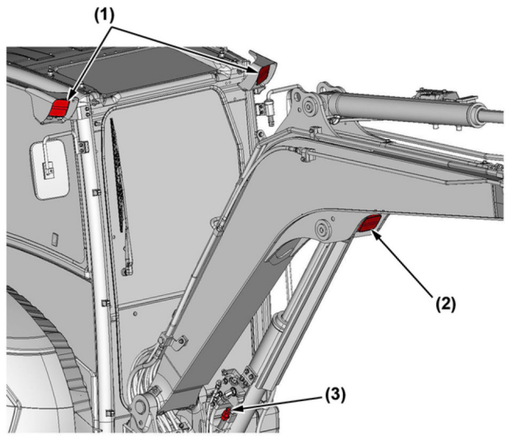


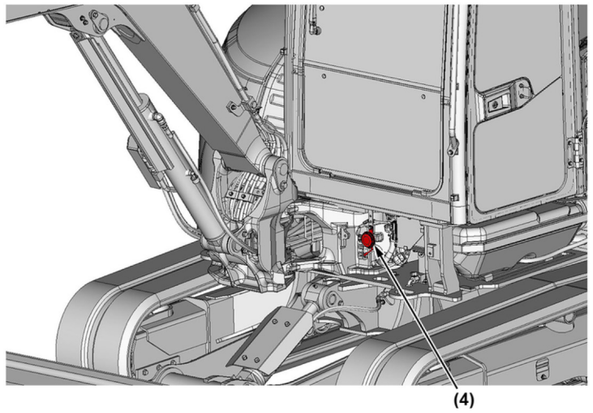


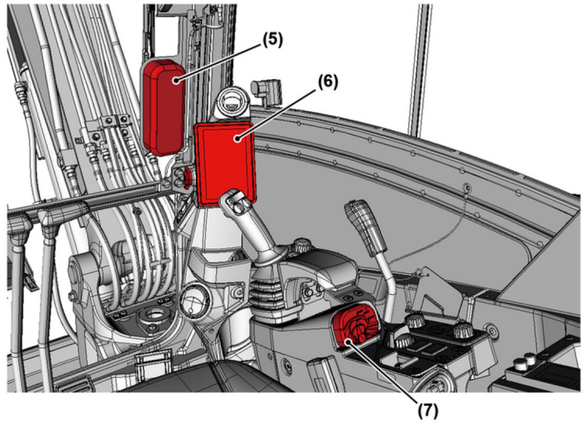


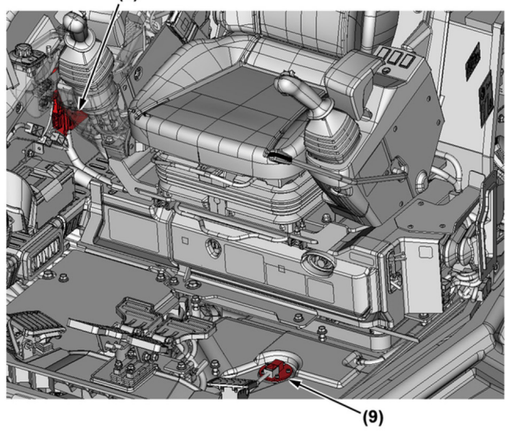
No.	Part Name
(1)	Work light (cabin)
(2)	Work light (boom)
(3)	Boom bottom pressure sensor
(4)	Horn
(5)	Wiper motor
(6)	Meter panel
(7)	Starter switch
(8)	Meter panel ECU
(9)	Fuel level sensor
(10)	Engine ECU
(11)	Battery isolator
(12)	Battery
(13)	AUX proportional valve
(14)	Unload valve
(15)	Hydraulic oil temperature sensor
(16)	Air compressor

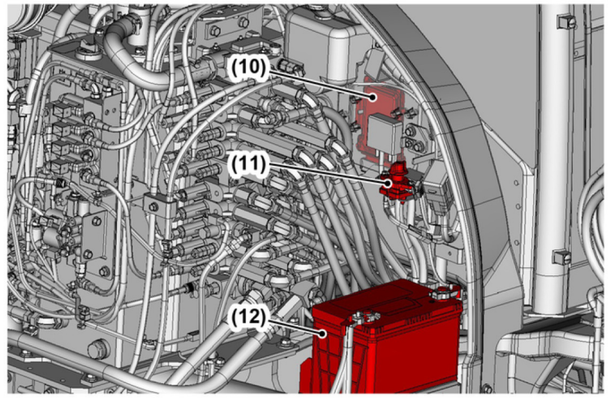
3.1.3 Electrical device layout U50-5

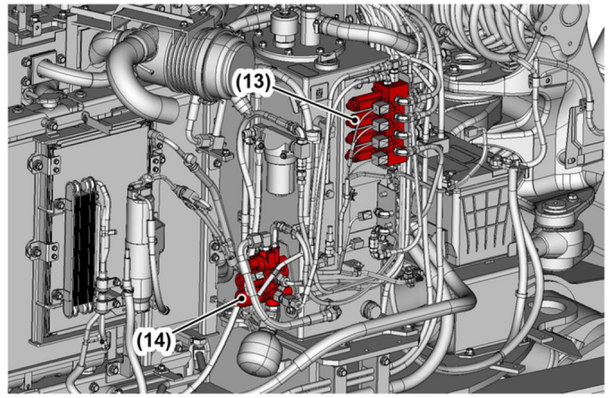


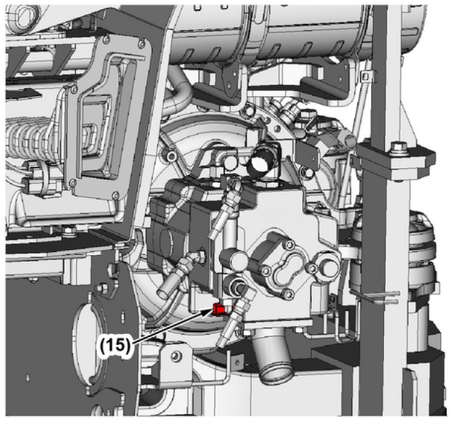


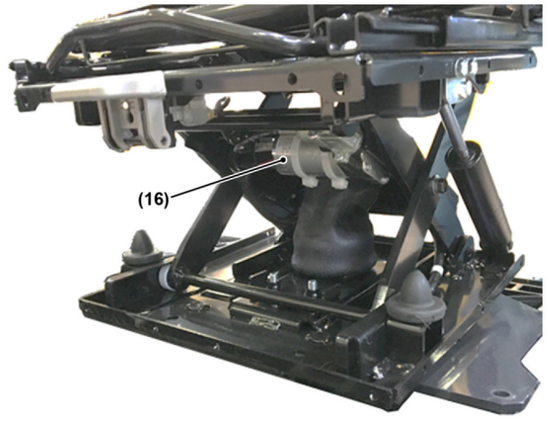






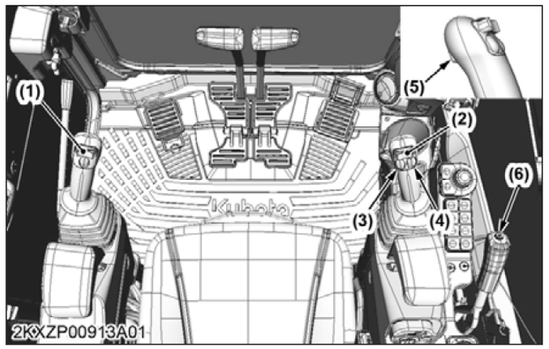


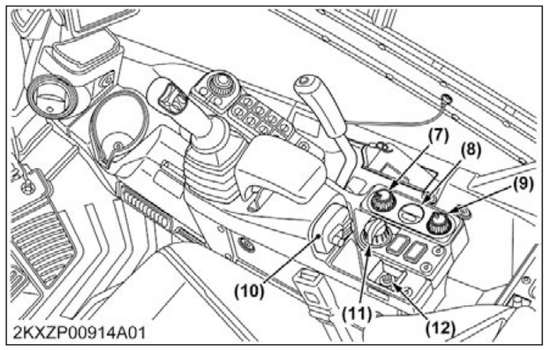


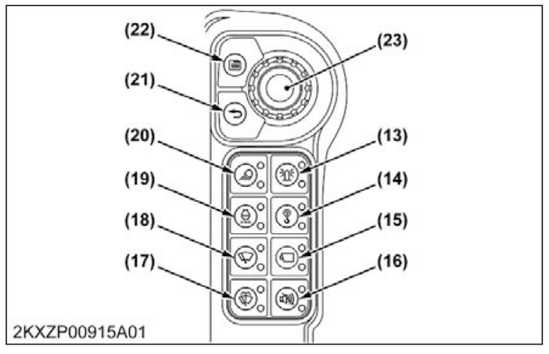


No.	Part Name
(1)	Work light (cabin)
(2)	Work light (boom)
(3)	Boom bottom pressure sensor
(4)	Horn
(5)	Wiper motor
(6)	Meter panel
(7)	Starter switch
(8)	Meter panel ECU
(9)	Fuel level sensor
(10)	Engine ECU
(11)	Battery isolator
(12)	Battery
(13)	AUX proportional valve
(14)	Unload valve
(15)	Hydraulic oil temperature sensor
(16)	Air compressor

3.1.4 Switch layout KX060-5, U56-5, U50-5



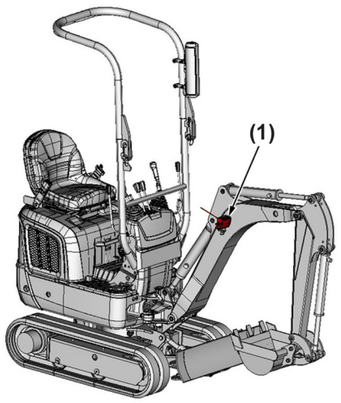


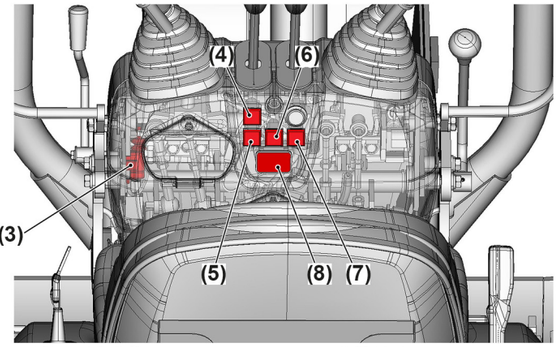


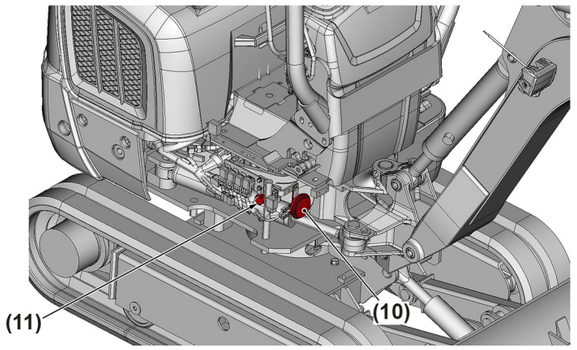
No.	Part Name
(1)	AUX2 knob switch
(2)	AUX1 knob switch
(3)	Horn switch
(4)	AUX activation switch
(5)	AUX hold switch
(6)	Travel speed shift switch
(7)	Temperature control dial
(8)	Air conditioning switch
(9)	Blower control dial
(10)	Starter switch
(11)	Accelerator dial
(12)	DPF inhibit switch
(13)	Beacon switch (option)
(14)	Overload warning switch
(15)	Rear view camera switch (option)*
(16)	Travel alarm cancel switch (option)
(17)	Washer switch
(18)	Wiper switch
(19)	AI switch
(20)	Work light switch
(21)	Return switch
(22)	Menu switch
(23)	Jog dial and enter switch

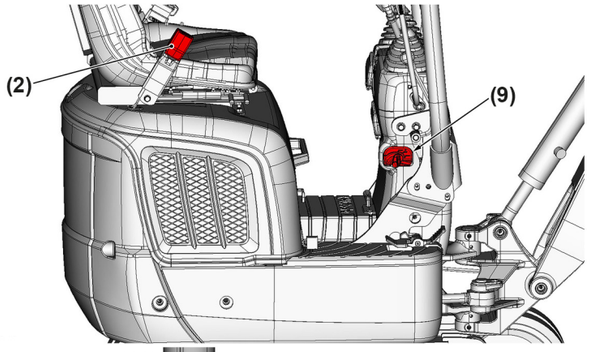
* This camera device is not ISO16001 compliant. The machine satisfies the visibility performance criteria defined in ISO5006 without using the device.

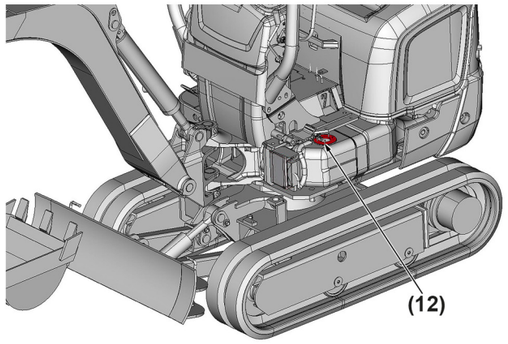
3.1.5 Electrical device layout K008-5

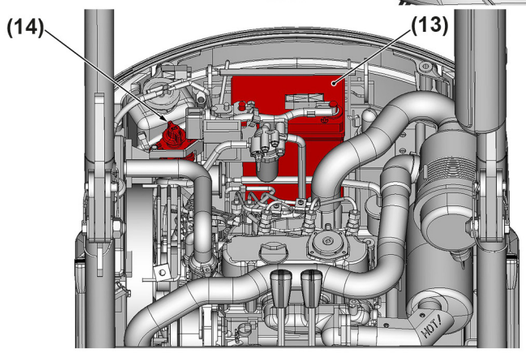


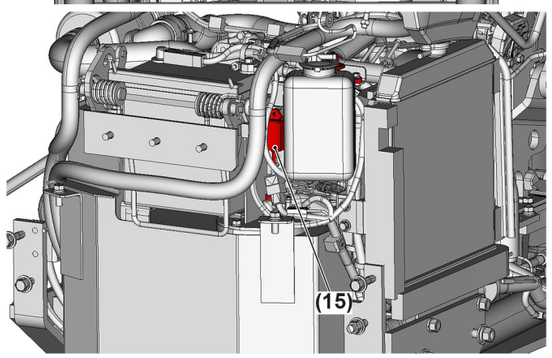


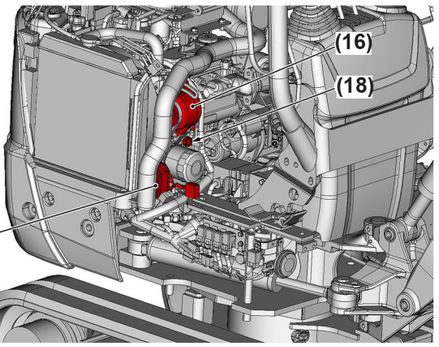


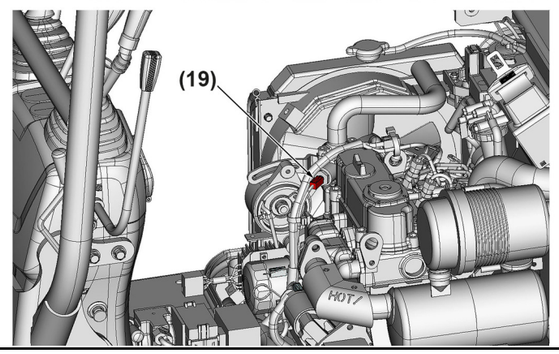






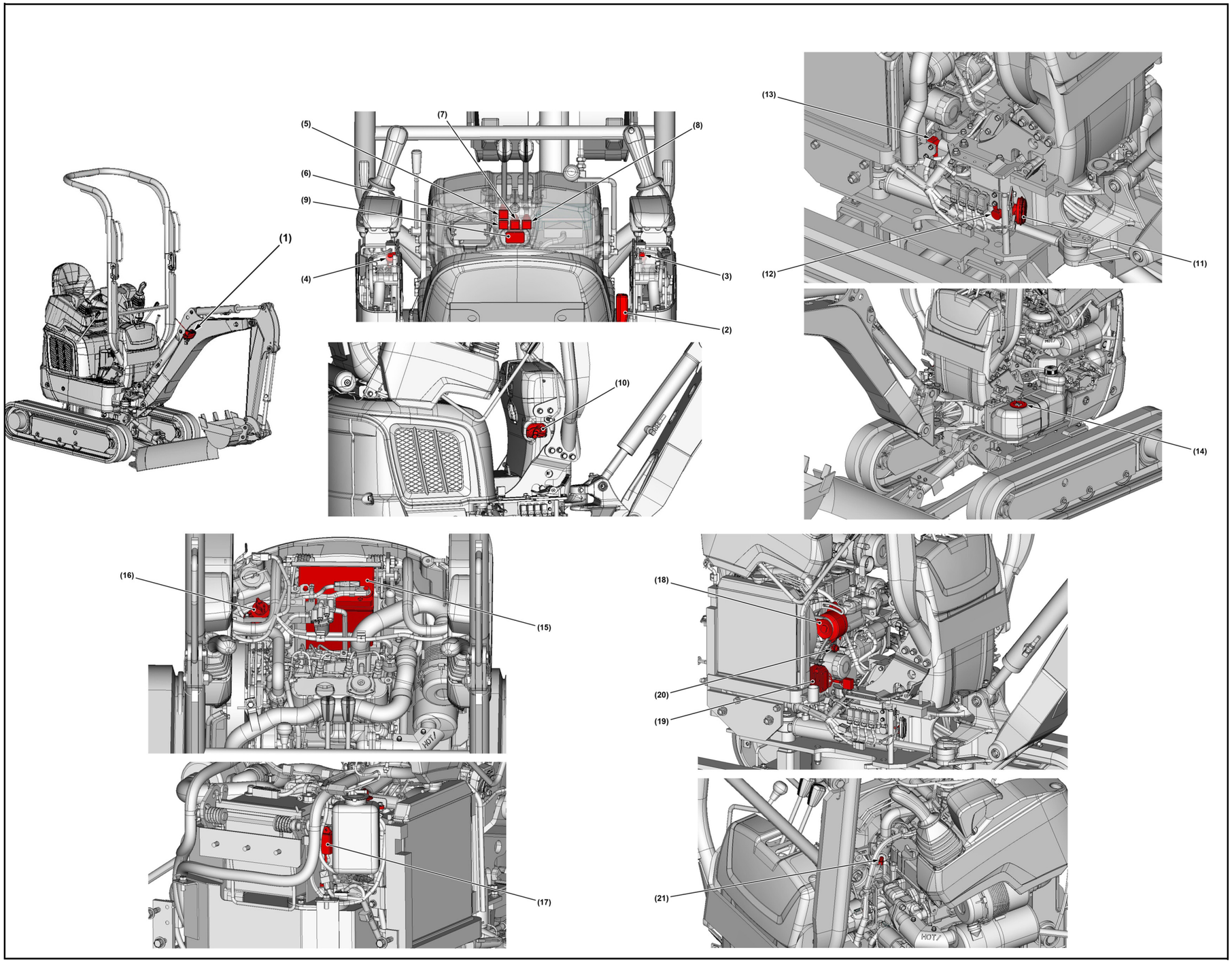






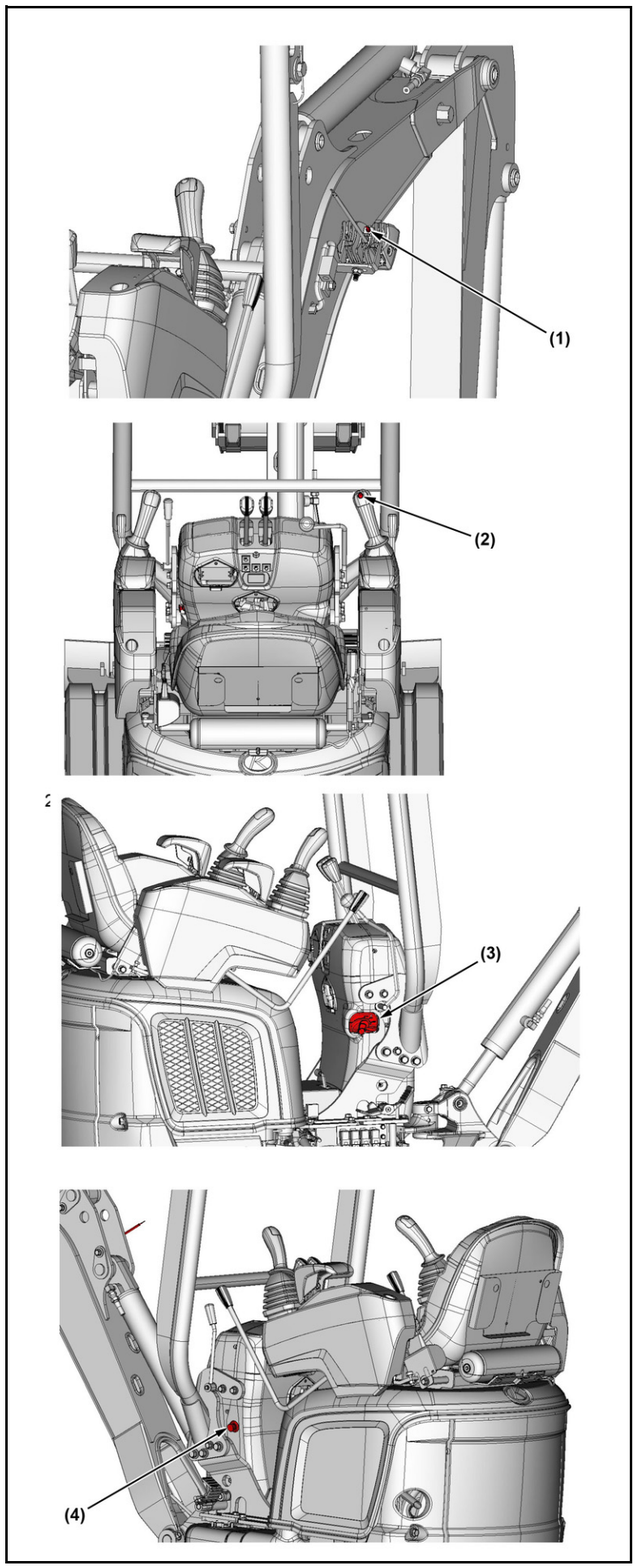
No.	Part Name
(1)	Work light (boom)
(2)	Seat belt switch
(3)	Lever lock switch
(4)	Coolant temperature lamp
(5)	Fuel level lamp
(6)	Engine oil pressure lamp
(7)	Charge lamp
(8)	Hour meter
(9)	Anti-theft antenna
(10)	Horn
(11)	Buzzer
(12)	Fuel level switch
(13)	Battery
(14)	Battery isolator
(15)	Timer
(16)	Dynamo
(17)	Regulator
(18)	Engine oil pressure switch
(19)	Coolant temperature switch

3.1.6 Electrical device layout U10-5



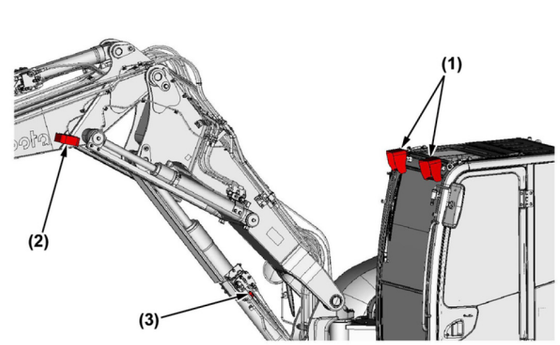
No.	Part Name
(1)	Work light (boom)
(2)	Seat belt switch
(3)	Lever lock switch RH
(4)	Lever lock switch LH
(5)	Coolant temperature lamp
(6)	Fuel level lamp
(7)	Engine oil pressure lamp
(8)	Charge lamp
(9)	Hour meter
(10)	Anti-theft antenna
(11)	Horn
(12)	Buzzer
(13)	Lever lock solenoid
(14)	Fuel level sensor
(15)	Battery
(16)	Battery isolator
(17)	Timer

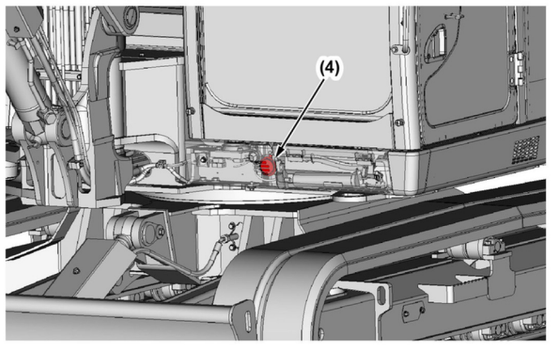
3.1.7 Switch layout K008-5, U10-5

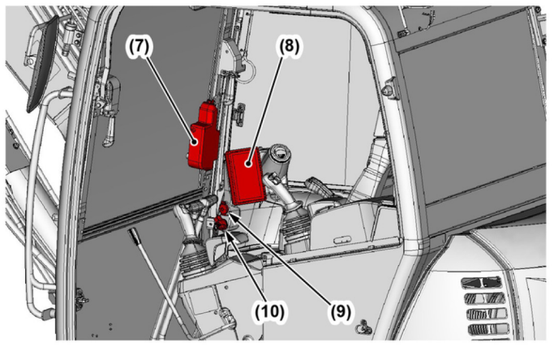


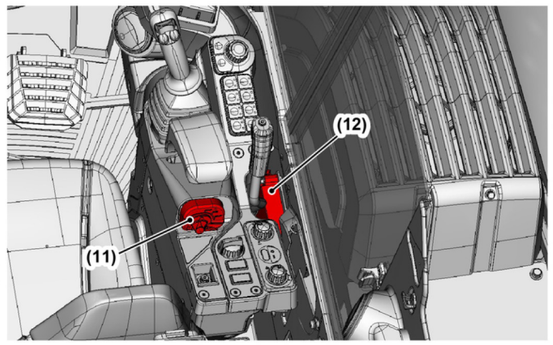
No.	Part Name
(1)	Work light switch
(2)	Horn switch
(3)	Starter switch
(4)	Engine stop switch

3.1.8 Electrical device layout KX085-5

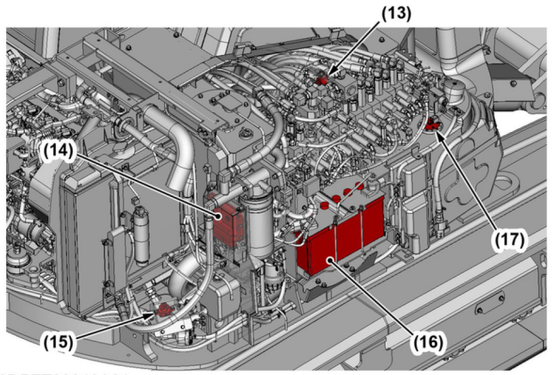


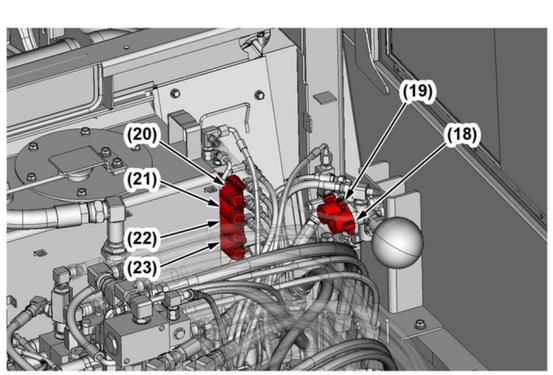




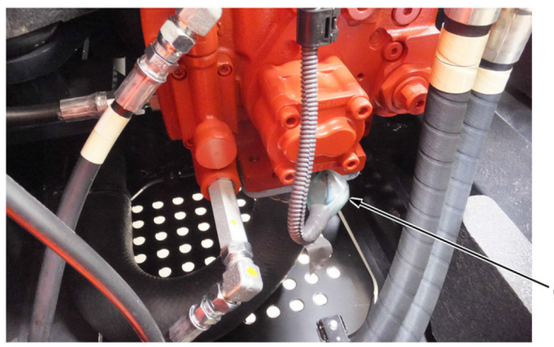


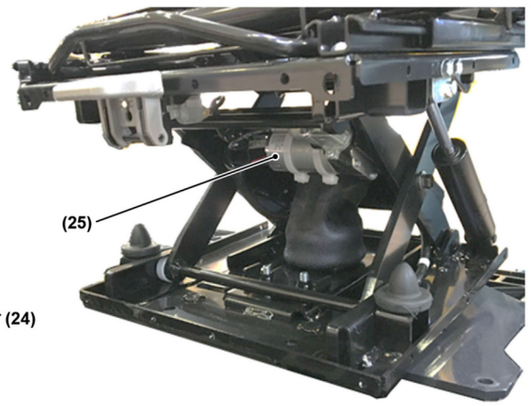
2DPFT00009A01



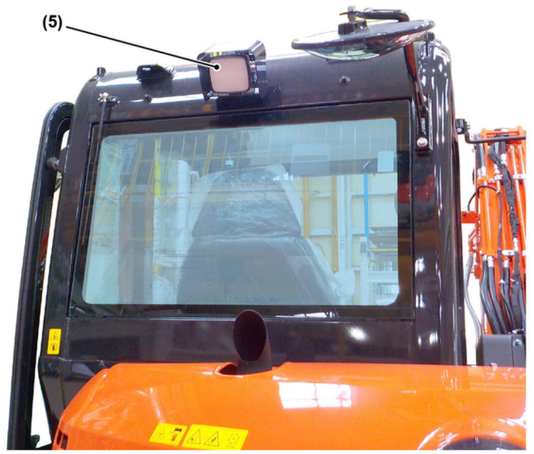


2DPFT00010A01

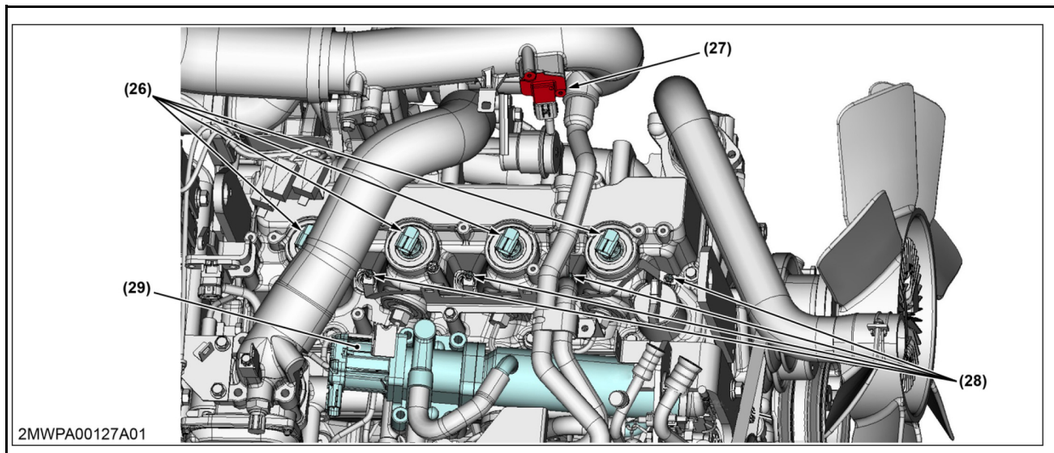


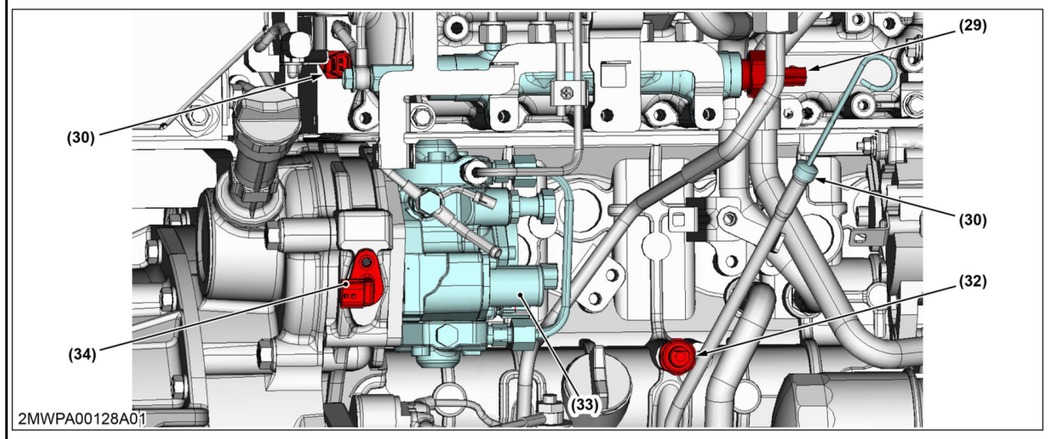


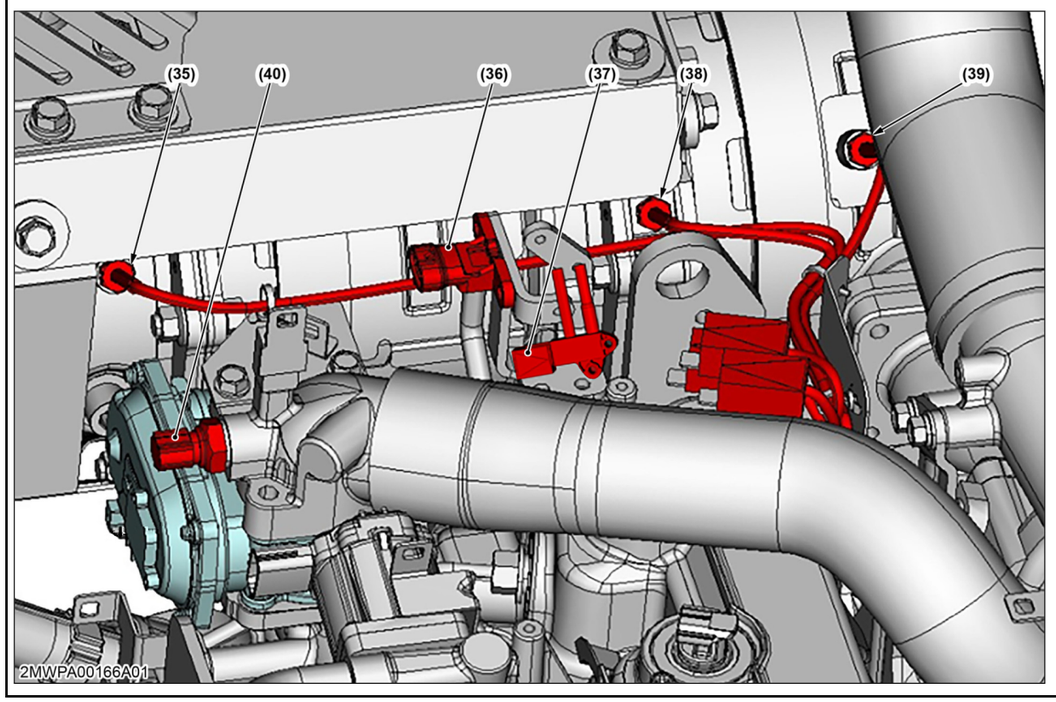
2DPFT00011A01



No.	Part Name
(1)	Work light (cabin front)
(2)	Work light (boom)
(3)	Boom bottom pressure sensor
(4)	Horn
(5)	Work light (cabin rear)
(6)	Rear view camera
(7)	Injector
(8)	Air flow sensor
(9)	Glow plug
(10)	AGR cooler
(11)	AGR valve
(12)	Meter panel ECU
(13)	Third line solenoid
(14)	Engine ECU
(15)	Battery isolator
(16)	Battery
(17)	Fuel level sensor
(18)	Travel speed shift solenoid
(19)	Lever lock solenoid
(20)	AUX1 proportional solenoid LH
(21)	AUX1 proportional solenoid RH
(22)	AUX2 proportional solenoid LH
(23)	AUX2 proportional solenoid RH
(24)	Hydraulic oil temperature sensor
(25)	Air compressor

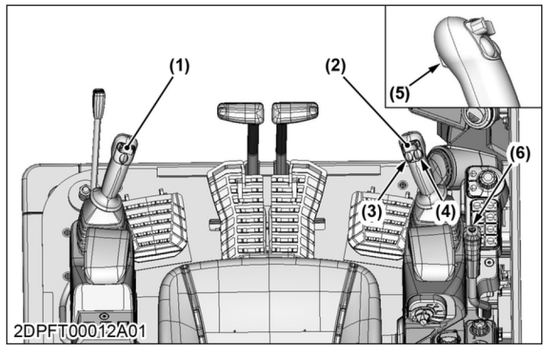


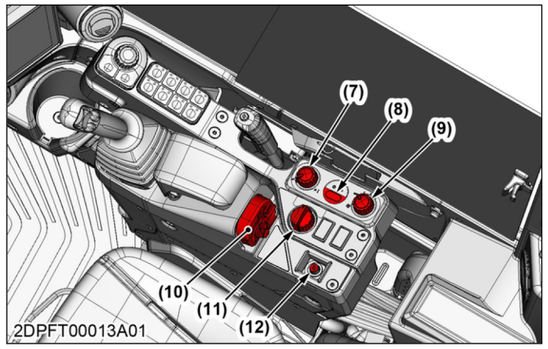


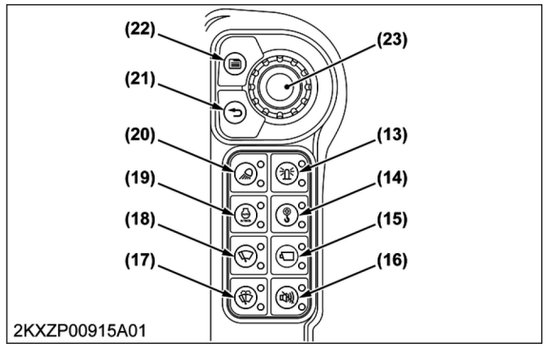


No.	Part Name
(26)	Injector
(27)	Air flow sensor
(28)	Glow plug
(29)	EGR valve
(30)	Coolant temperature sensor
(31)	Rail pressure sensor
(32)	Engine oil pressure switch
(33)	SCV
(34)	Crankshaft position sensor
(35)	DPF outlet temperature sensor (T2)
(36)	Boost sensor
(37)	Differential pressure sensor
(38)	DPF inlet temperature sensor (T1)
(39)	DOC inlet temperature sensor (T0)
(40)	Intake air temperature sensor

3.1.9 Switch layout KX085-5







No.	Part Name
(1)	AUX2 knob switch
(2)	AUX1 knob switch
(3)	Horn switch
(4)	AUX activation switch
(5)	AUX hold switch
(6)	Travel speed shift switch
(7)	Temperature control dial
(8)	Air conditioning switch
(9)	Blower control dial
(10)	Starter switch
(11)	Accelerator dial
(12)	DPF inhibit switch
(13)	Beacon switch (option)
(14)	Overload warning switch
(15)	Rear view camera switch*
(16)	Travel alarm cancel switch (option)
(17)	Washer switch
(18)	Wiper switch
(19)	AI switch
(20)	Work light switch
(21)	Return switch
(22)	Menu switch
(23)	Jog dial and enter switch

* This camera device is not ISO16001 compliant. The machine satisfies the visibility performance criteria defined in ISO5006 without using the device.

3.2 Electrical circuits

3.2.1 KX060-5

3.2.2 U56-5

3.2.3 U50-5

3.2.4 K008-5

3.2.5 U10-5

3.2.6 KX085-5

Composition Specification Code	Notes
BASE	ALL-USE
CRSD	CRS-DENSO
BI	Battery Isolator
BID	Battery Isolator & CRS-DENSO
CLCD	LCD (Color)
KPD	Keypad
CAB	CAB (8+4)
BCN	Beacon
KPCB	Keypad & CAB
KPBC	Keypad & Beacon
AT	Anti Theft
ES	Engine Stop SW
HS	Horn SW (Right Grip)
AUX2	Grip (R) (Right Hold)
AUX1	Grip (L) (Left Hold)
AUXC	Grip (L) (Left Hold) (CAP)
ATHS	Anti Theft & Horn SW (Right Grip)
ATX1	Anti Theft & Grip (L) (Left Hold)
RCV	Return Change Valve
NB	Normal Blade
AI	Auto Idle
MF	Multi
OA	Overload Alarm
TRB	Travel Alarm
OTS	Hydraulic Oil Temp Sensor
ACM	A/C-mode
HT	Heater
AC	Air Conditioner
ASS	Air Suspension Seat
SBWS	Seat Belt Warning SW
FS	Fuel Supply-pump

ELECTRICAL CIRCUIT DIAGRAM (KX060-5)

Composition Specification Code	Notes
BASE	ALL-USE
CRSD	CRS-DENSO
BI	Battery Isolator
BID	Battery Isolator & CRS-DENSO
CLCD	LCD (Color)
KPD	Keypad
CAB	CAB (8+4)
BCN	Beacon
KPCB	Keypad & CAB
KPBC	Keypad & Beacon
AT	Anti Theft
ES	Engine Stop SW
HS	Horn SW (Right Grip)
AUX2	Grip (R) (Right Hold)
AUX1	Grip (L) (Left Hold)
AUXC	Grip (L) (Left Hold) (CAP)
ATHS	Anti Theft & Horn SW (Right Grip)
ATX1	Anti Theft & Grip (L) (Left Hold)
RCV	Return Change Valve
NB	Normal Blade
AI	Auto Idle
MF	Multi
OA	Overload Alarm
TRB	Travel Alarm
OTS	Hydraulic Oil Temp Sensor
ACM	A/C-mode
HT	Heater
AC	Air Conditioner
ASS	Air Suspension Seat
SBWS	Seat Belt Warning SW
N FS	No. Fuel Supply-pump

ELECTRICAL CIRCUIT DIAGRAM (U56-5)

Composition Specification Code	Notes
BASE	All use
CRSD	DENSO
BI	Battery isolator
BID	Battery isolator & CRS-DENSO
CLCD	LCD (Color)
KPD	Keypad
CAB	CAB (8+4)
BCN	Beacon
KPCB	Keypad & CAB
KPBC	Keypad & Beacon
AT	Anti Theft
ES	Engine Stop SW
AUX2	Grip (R) (Right Hold)
AUX1	Grip (L) (Left Hold)
AUXC	Grip (L) (Left Hold) (CAP)
ATX1	Anti Theft & Grip (L) (Left Hold)
NB	Normal Blade
AI	Auto Idle
MF	Multi
OA	Overload Alarm
TRB	Travel Alarm
OTS	Hydraulic Oil Temp Sensor
HT	Heater
AC	Air Conditioner
ASS	Air Suspension Seat
SBWS	Seat Belt Warning SW
N FS	No. Fuel Supply-pump
2BCN	2nd beacon

2RCBP00020A01enUS

ELECTRICAL CIRCUIT DIAGRAM (U50-5)

Composition Specification Code	Notes
BASE	All use
BINC	Batteryisolator & NoClock
AT	Anti-theft
TRB	Travel Alarm
SBHS	SB14 Horn SW (Right Grip)
BCN	Beacon
2BCN	2nd Beacon
1LLSW	1 Lever Lock Switch

W/H00 W/H (MAIN)
W/H03 W/H (LAMP)
W/H12 W/H (FRONT)
W/H30 CABLE, BATTERY (+)
W/H33 CORD, BATTERY (1, -)
W/H34 CORD, BATTERY (2, -)
W/H35 CORD, BODY EARTH

ELECTRICAL CIRCUIT DIAGRAM (K008-5)

Composition Specification Code	Notes
BASE	All use
BINC	Battery/Isolator & NoClock
AT	Anti-theft
TRB	Travel Alarm
HS	Horn SW (Right grip)
ATHS	AntiTheft & HornSW (Right Grip)
SCHS	SC24 Horn SW (Right Grip)
BCN	Beacon
2BCN	2nd Beacon
3LLSW	3 Lever Lock Switch

W/H00 W/H (MAIN)
W/H03 W/H (LAMP)
W/H12 W/H (FRONT)
W/H30 CABLE, BATTERY (+)
W/H33 CORD, BATTERY (1, -)
W/H34 CORD, BATTERY (2, -)
W/H35 CORD, BODY EARTH

ELECTRICAL CIRCUIT DIAGRAM (U10-5)

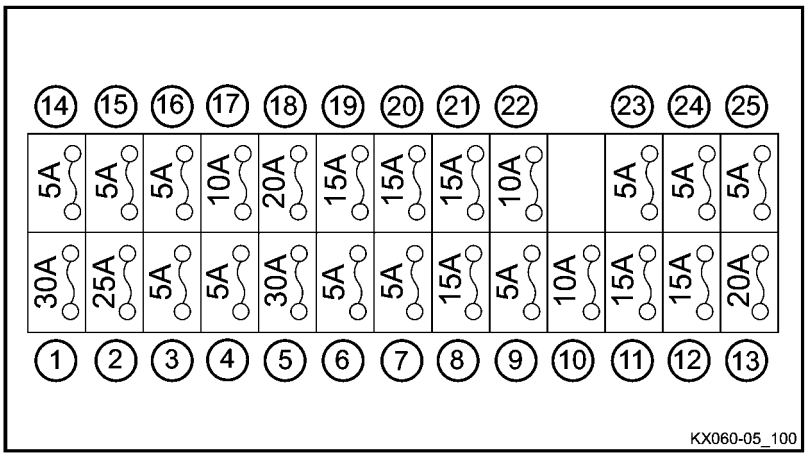
Composition Specification Code	Notes
BASE	All unit
CRSD	DENSO
BI	Battery isolator
BID	Battery isolator and DENSO
CLCD	Color meter panel (LCD)
KPD	KeyPad
CAB	Cabin specification
KPCB	KeyPad and Cabin specification
KPBC	KeyPad and Beacon
AT	Anti-theft
ES	Engine stop SW
AUX2	AUX2 SW
AUX1	AUX1 SW
RCV	Return Change Valve
NB	Normal blade
AB	Angle blade
AI	Auto idle
MF	Multi purpose
OA	Overload alarm
THB	Travel alarm
OTS	Hydraulic oil temp sensor
A/C	A/C
ASS	Air suspension seat
SBWS	Seatbelt warning SW
FS	Fuel replenishing pump
2BCN	2nd Beacon
ATKY	Anti-theft key

WIRE SKH (WHI)
WIRE SKH (METER BLK(CR))
WIRE SKH (BLU(MCR))
WIRE SKH (BLU(CR))
WIRE SKH (METER PANEL)
WIRE SKH (ENGINE)
WIRE SKH (ENGINE SPEED POSITION SENSOR)
WIRE SKH (PWM)
WIRE SKH (BLU(MCR))
WIRE SKH (WHI)
WIRE SKH (CAN WORK LIGHT 2)
WIRE SKH (CAN WORK LIGHT 1)
WIRE CORD, BATTERY (1+)
WIRE CORD, BATTERY (1-)
WIRE CORD, BATTERY (2+)
WIRE CORD, BATTERY (-)
WIRE CORD, BODY GROUND

ELECTRICAL CIRCUIT DIAGRAM (KX085-5)

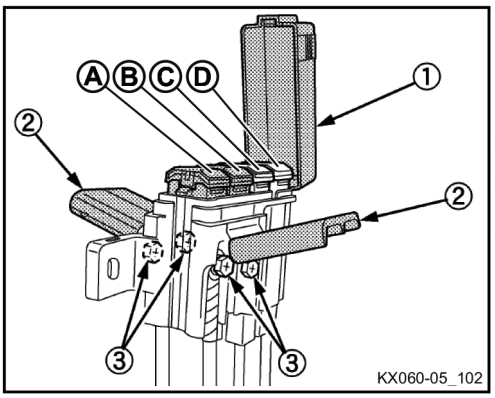
3.3 Position of the fuses and relays

3.3.1 KX060-5, U56-5

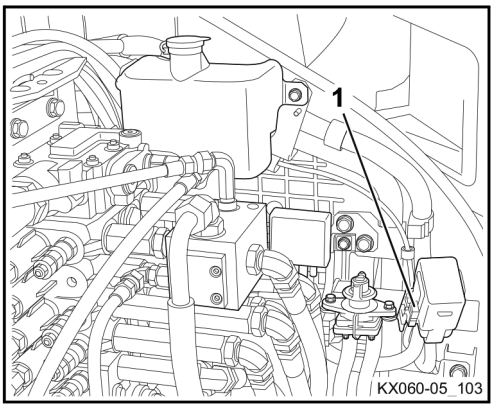


1	Fuel Supply Pump (optional, not for U56-5)		14	ECU Main (AC)
2	Blower motor		15	Fuel pump
3	A/C Controller		16	Control lever lock
4	ECU LED (+B)		17	Alternator
5	ECU Main (Power)		18	Seat
6	Horn switch		19	12-V electrical outlet
7	Room light		20	Wiper / Washer
8	Beacon		21	Radio (AC)
9	K-OBD		22	Compressor
10	Horn		23	CRS
11	Beacon 2		24	Starter
12	Front Work Light		25	Fuel Supply Pump Relay (optional, not for U56-5)
13	Cab work light			

Fuse layout

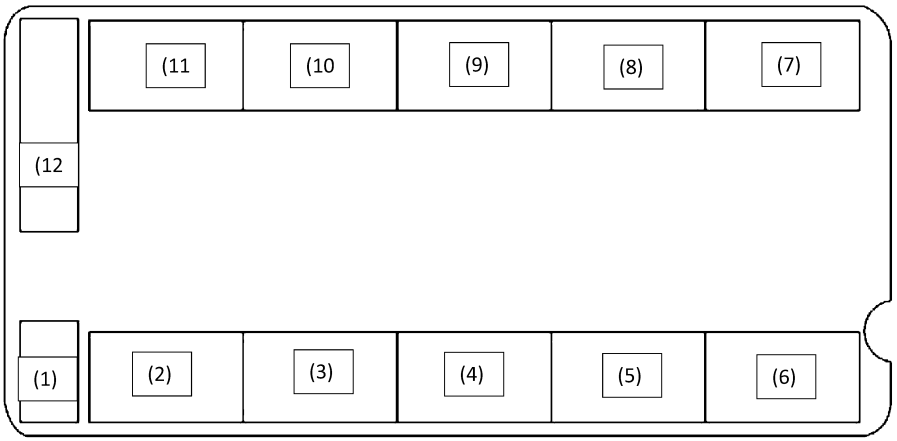


A →	Alternator (80 A)
C →	Main Power (1) (60 A)
C →	Main Power (2) (50 A)
D →	CRS (30 A)

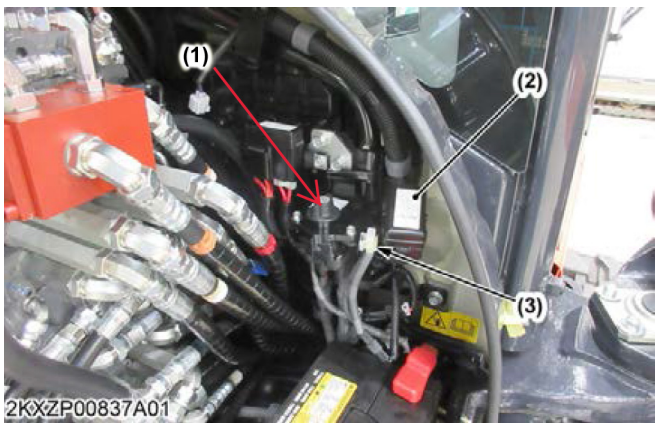


E →	ECU Main (+B) (10 A)

Relais box layout

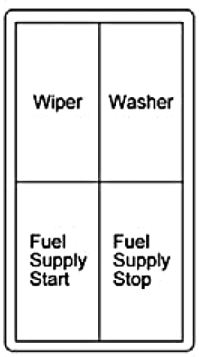


1	Power	7	Beacon
2	Front Work Light	8	Horn
3	Compressor	9	ECU Main (Power)
4	Beacon 2	10	Starter
5	CRS	11	Blower
6	Cab Work Light	12	Glow



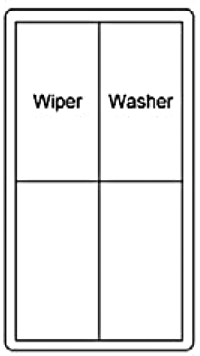
1	Battery isolator switch
2	Relay box
3	Fuse (ECU Main +B)

Electric refueling specification



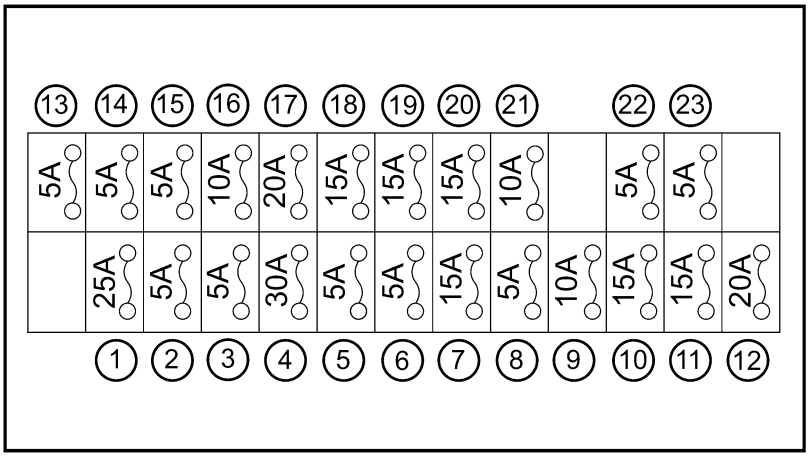
2KXZP00935A01enUS

Non-electric refueling specification



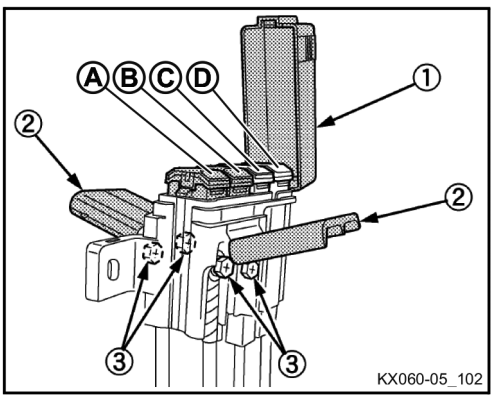
2KXZP00936A01enUS

3.3.2 U50-5

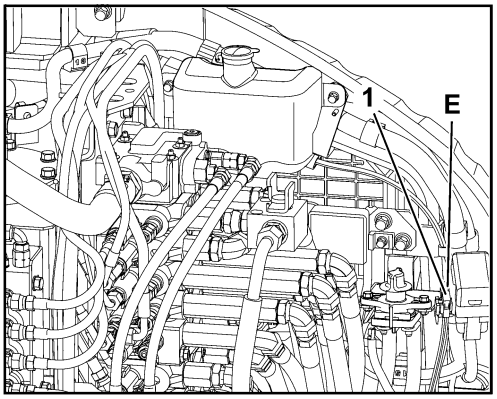


1	Blower motor		14	ECU Main (AC)
2	A/C Controller		15	Fuel pump
3	ECU LED (+B)		16	Control lever lock
4	ECU Main (Power)		17	Alternator
5	Horn switch		18	Seat
6	Room light		19	12-V electrical outlet
7	Beacon		20	Wiper / Washer
8	K-OBD		21	Radio (AC)
9	Horn		22	Compressor
10	Beacon 2		23	CRS
11	Front Work Light		24	Starter
12	Cab work light			

Fuse layout

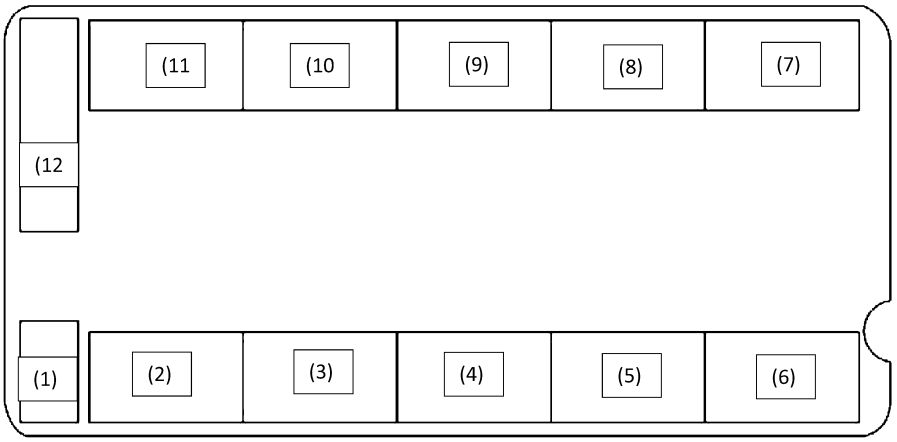


A →	Alternator (80 A)
C →	Main Power (1) (60 A)
C →	Main Power (2) (50 A)
D →	CRS (30 A)

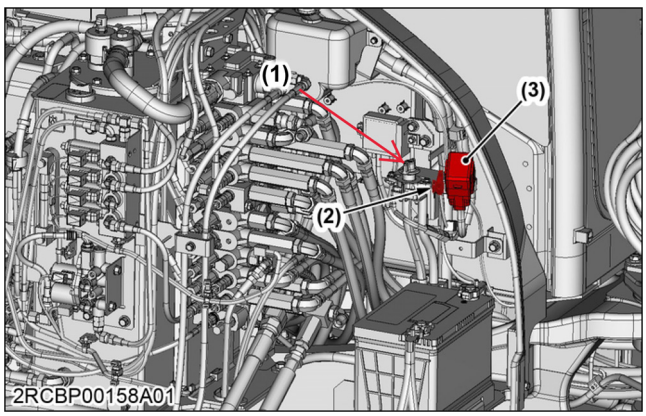


E →	ECU Main (+B) (10 A)

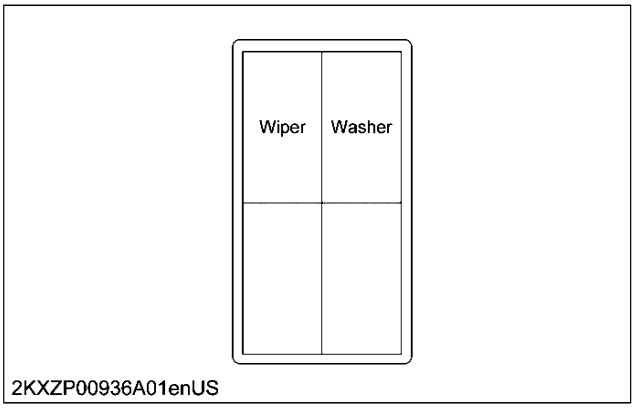
Relais box layout



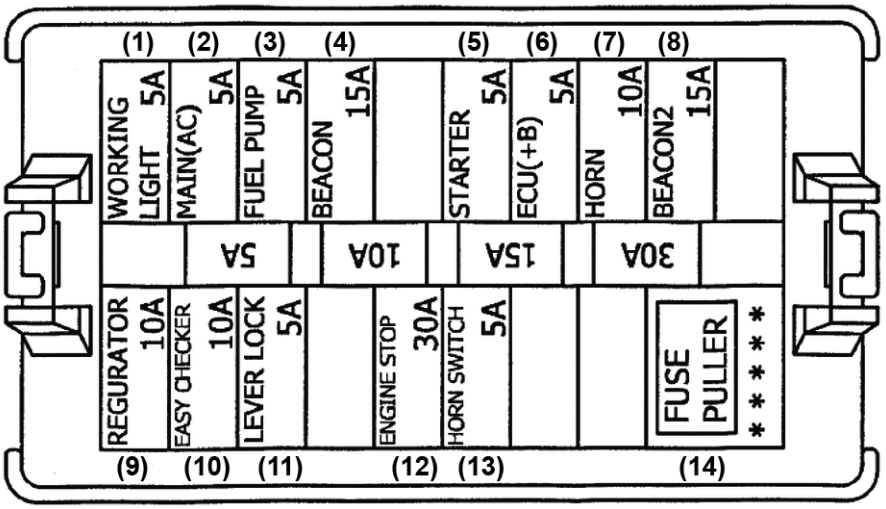
1	Power	7	Beacon
2	Front Work Light	8	Horn
3	Compressor	9	ECU Main (Power)
4	Beacon 2	10	Starter
5	CRS	11	Blower
6	Cab Work Light	12	Glow



1	Battery isolator switch
2	Relay box
3	Fuse (ECU Main +B)

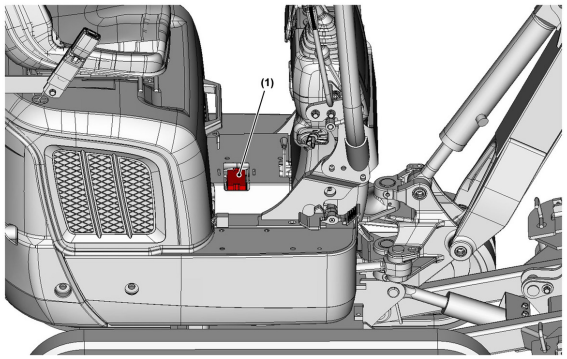


3.3.3 K008-5



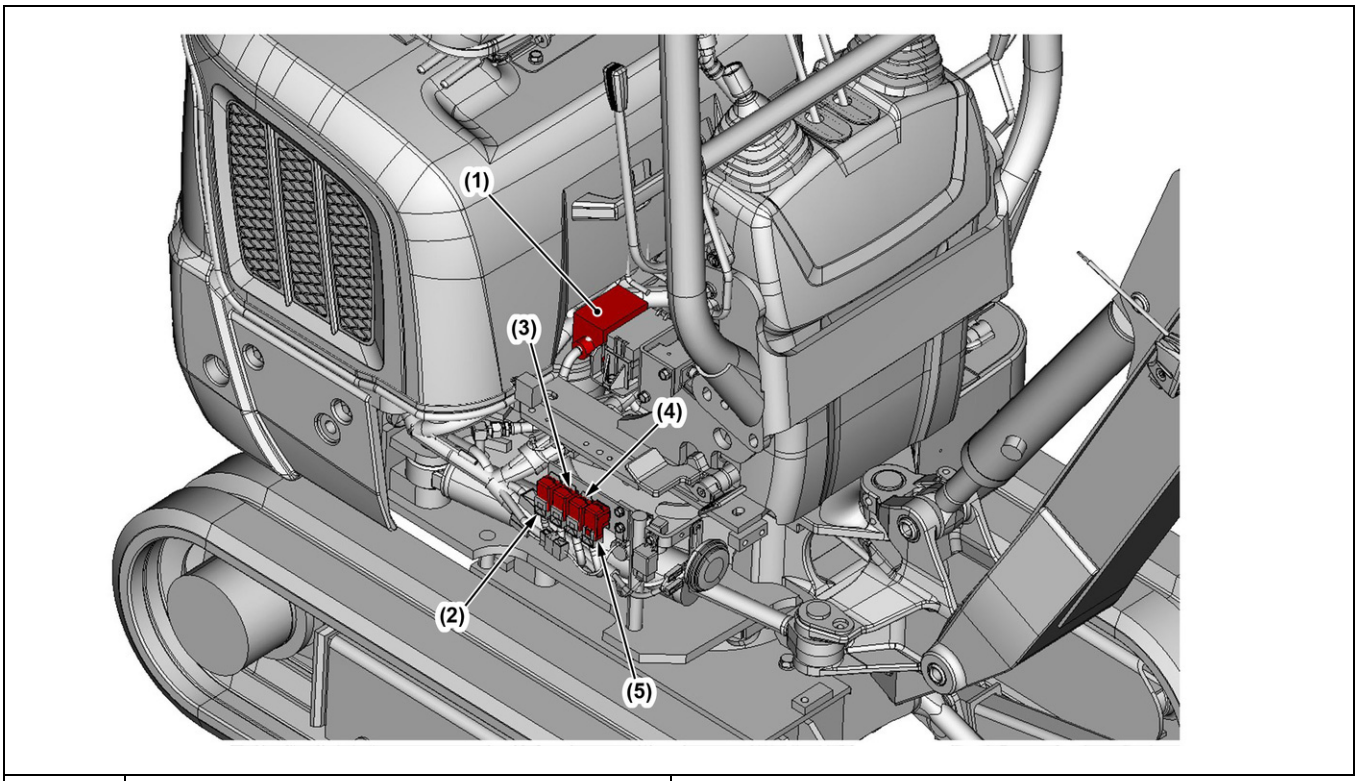
1	Working light	8	Beacon 2
2	Main (AC)	9	Regulator
3	Fuel pump	10	Easy checker
4	Beacon	11	Lever lock
5	Starter	12	Engine stop
6	ECU (+B)	13	Horn switch
7	Horn	14	Fuse Puller

Fuse layout

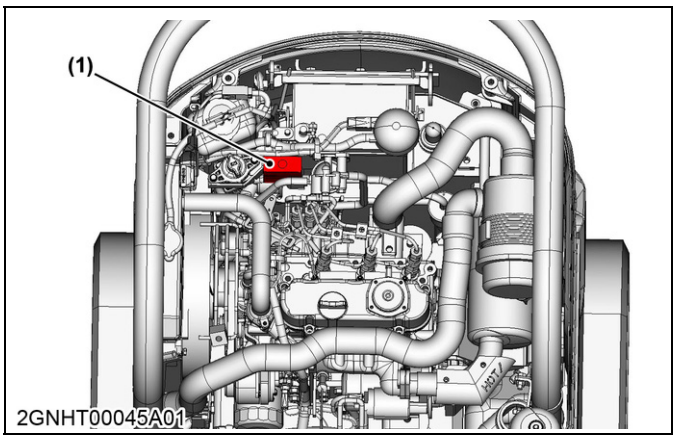


1 →	Fuse box

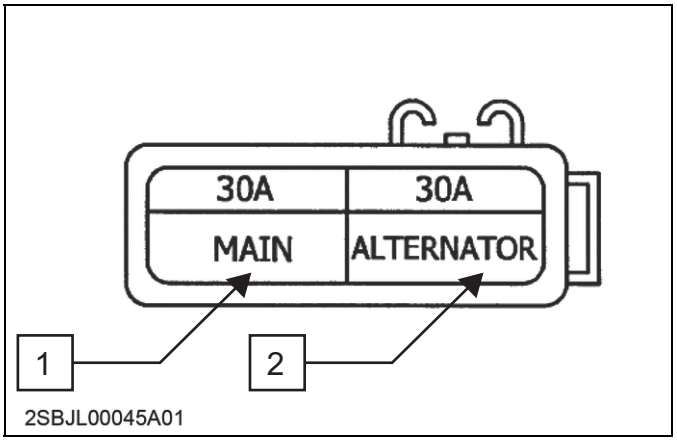
Relais box layout



1	Glow relay box
2	Seatbelt relay
3	Horn relay
4	Engine stop solenoid relay
5	Starter relay

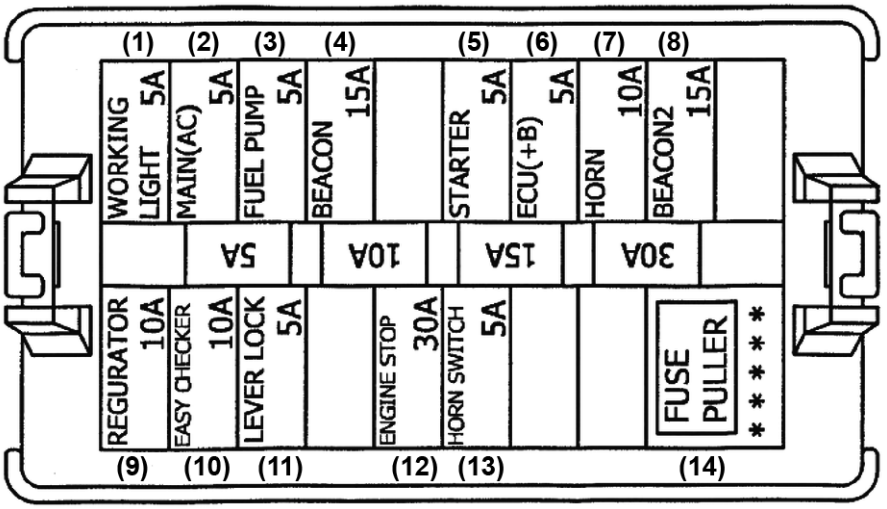


1	Slow blow fuse box



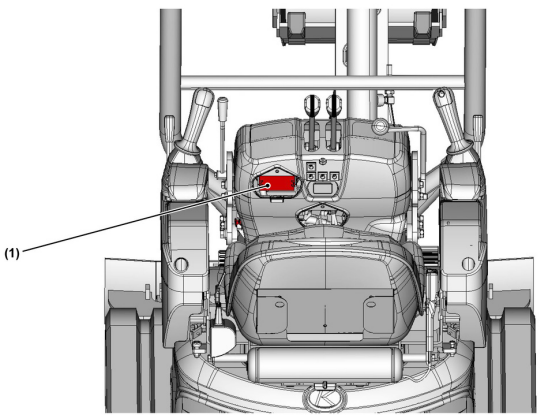
1	Main
2	Alternator

3.3.4 U10-5



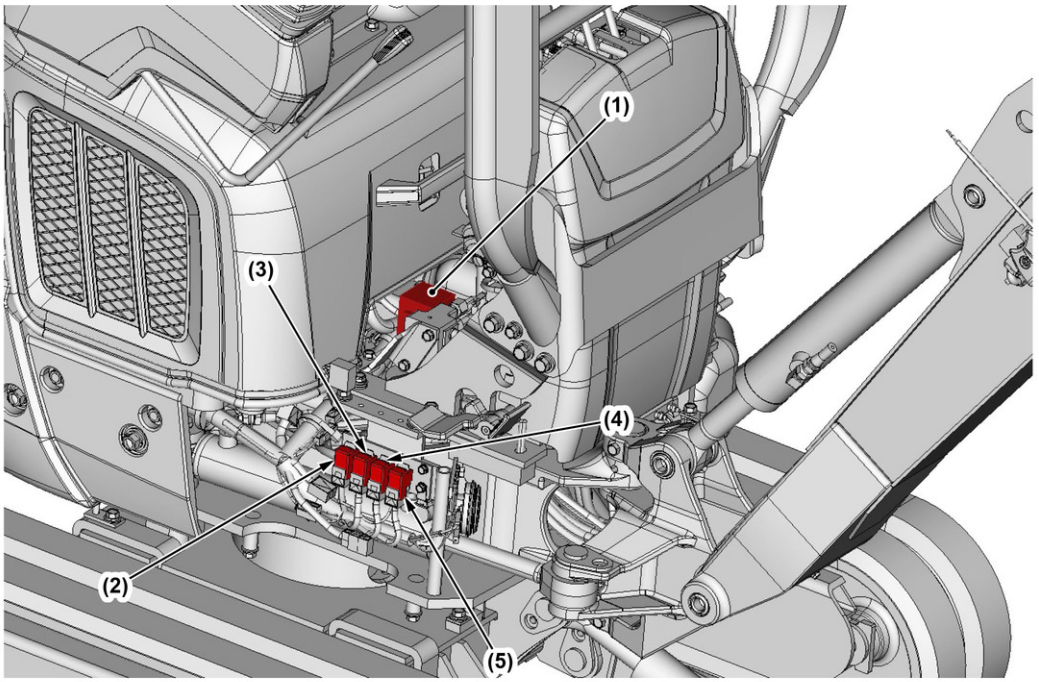
1	Working light	8	Beacon 2
2	Main (AC)	9	Regulator
3	Fuel pump	10	Easy checker
4	Beacon	11	Lever lock
5	Starter	12	Engine stop
6	ECU (+B)	13	Horn switch
7	Horn	14	Fuse Puller

Fuse layout



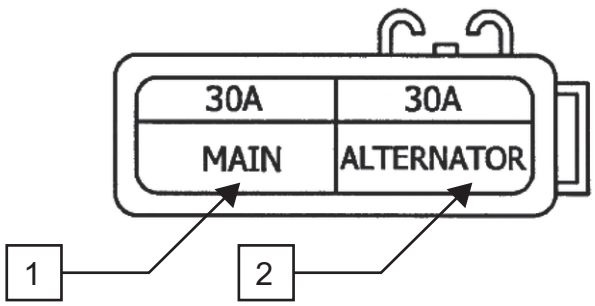
1 →	Fuse box

Relais box layout



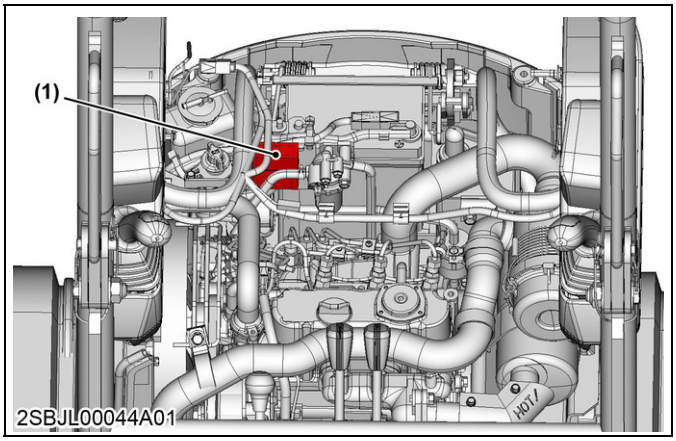
2SBJL00043A01

1	Glow relay
2	Starter relay
3	Horn relay
4	Engine stop solenoid relay
5	Starter relay



2SBJL00045A01

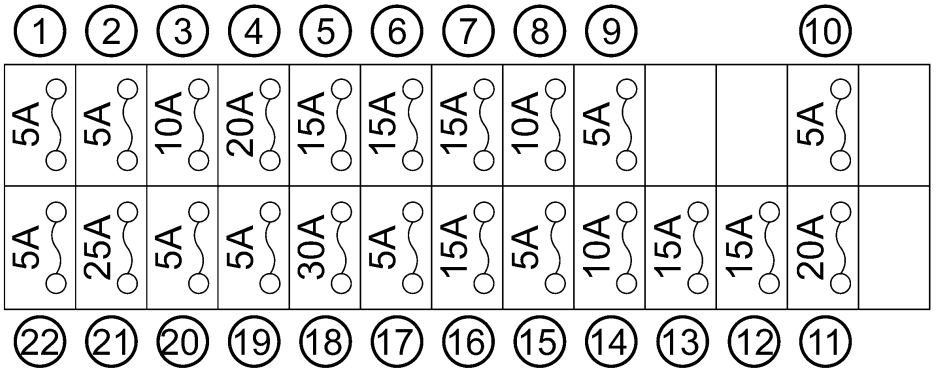
1	Main
2	Alternator



2SBJL00044A01

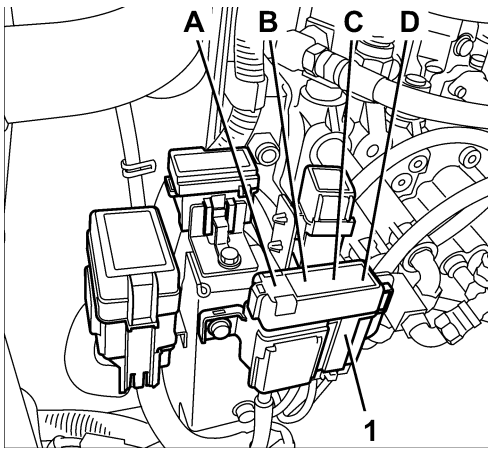
1	Slow blow fuse box

3.3.5 KX085-5

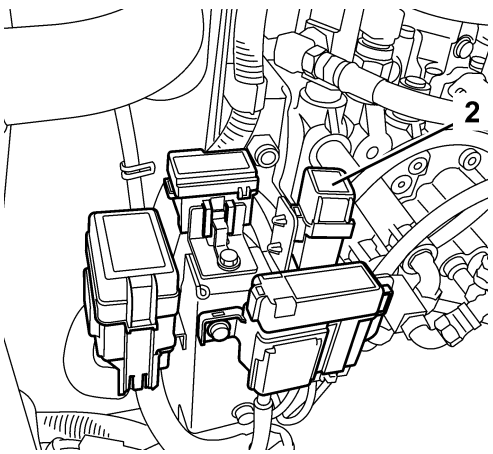


1	ECU Main (AC)		12	Front Work Light
2	Control lever lock		13	Beacon 2
3	Alternator		14	Horn
4	Seat		15	K-OBD
5	12-V electrical outlet		16	Beacon
6	Wiper/Washer system		17	Horn Switch
7	Radio (AC)		18	ECU Main (Power)
8	Compressor		19	ECU LED (+B)
9	Fuel Pump		20	A/C Controller
10	Starter		21	Blower motor
11	Cab Work Light		22	Room Light

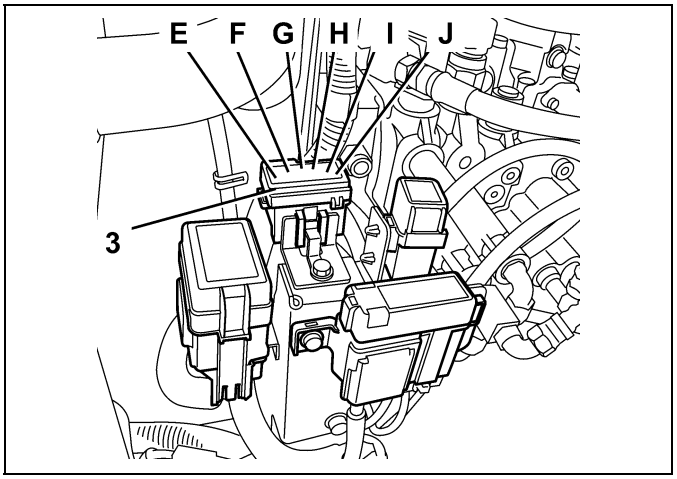
Fuse layout



(A)	Alternator (100 A)
(B)	Engine control unit (30 A)
(C)	Main fuse (60 A)
(D)	Engine cut-off switch (50 A)

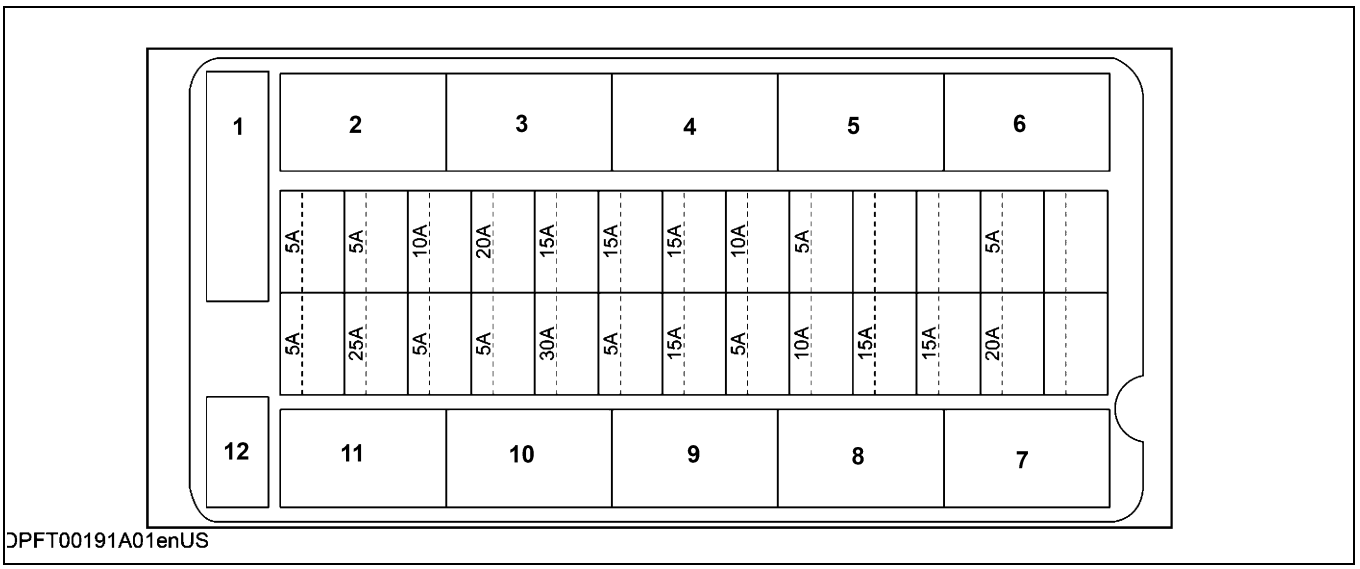


2	Electric blower (20 A)



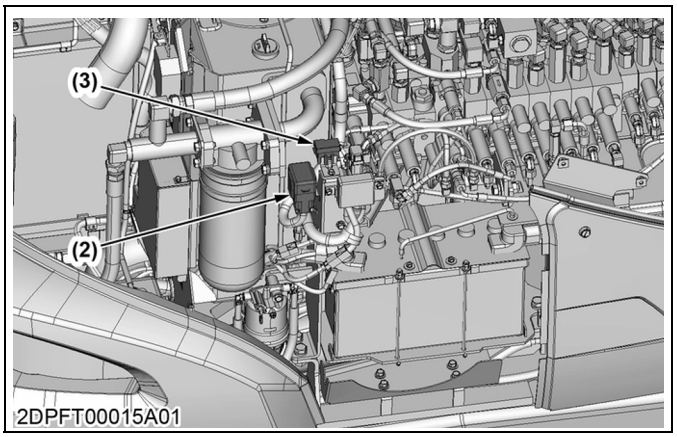
(E)	Fuel filter heater (20 A)
(F)	Suction pump switch (5 A)
(G)	Suction pump relay (30 A)
(H)	Fill level monitor (5 A)
(I)	Air mass sensor (5 A)
(J)	Control unit (+B) (10 A)

Relais box layout



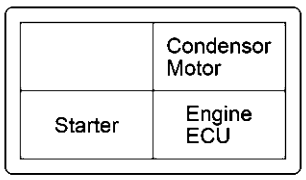
1	Glow
2	Blower
3	Wiper
4	ECU main power
5	Horn
6	Beacon

7	Cab worklight
8	Washer
9	Beacon 2
10	Compressor
11	Front worklight
12	Power



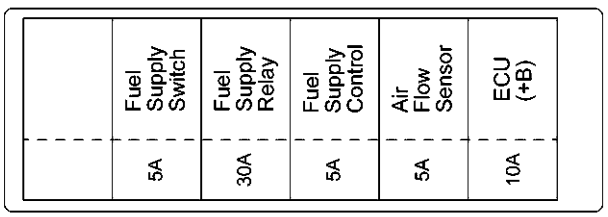
(2)	Relay box
(3)	Fuse box

Relay box



2DPFT00192A01enUS

Fuse box



2DPFT00193A01enUS

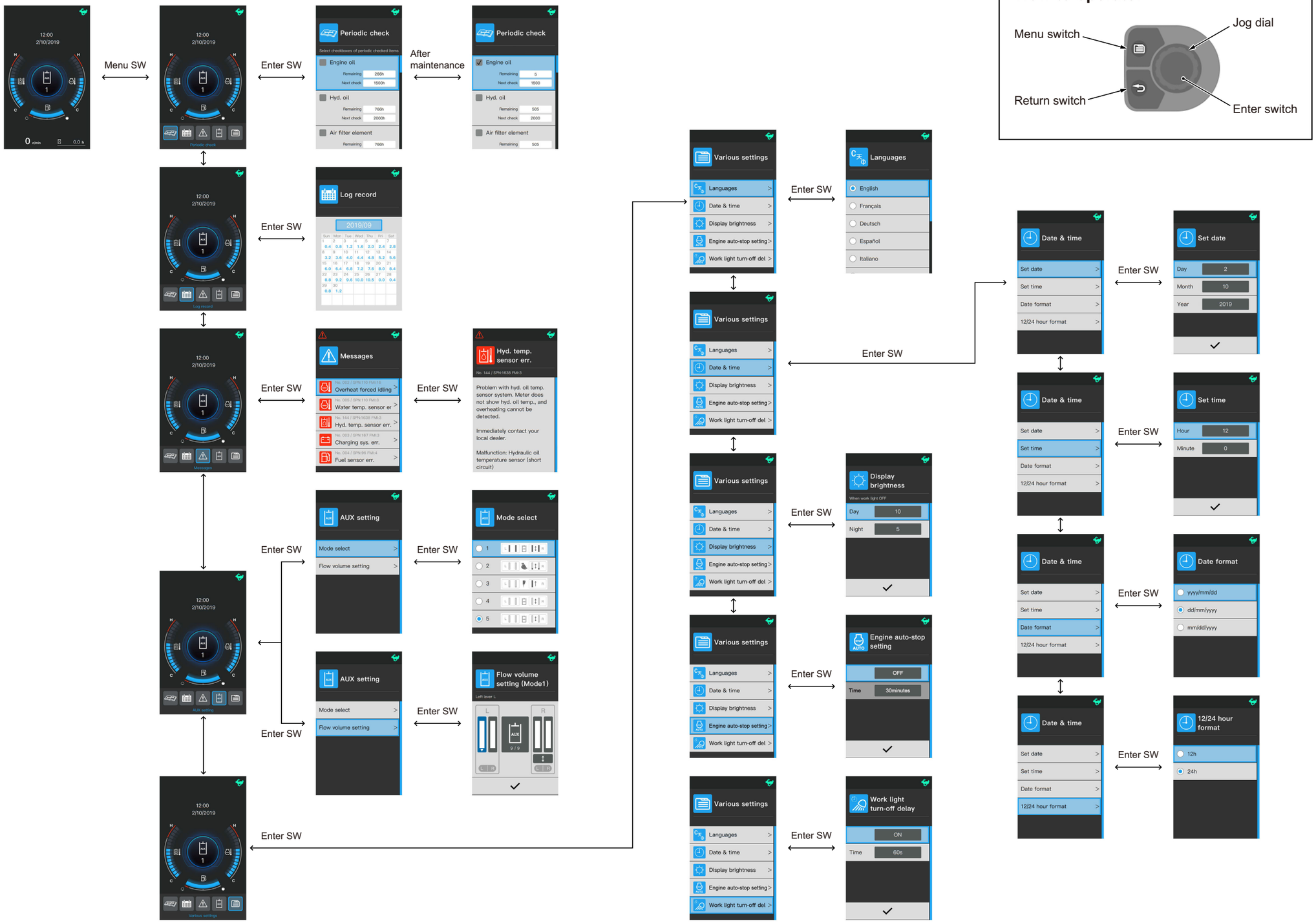
3.4 Battery specification table

Model	Battery Identification
KX060-5, U56-5	JIS 115D31L
U50-5	JIS 90D26L
K008-5, U10-5	JIS 44B1R
KX085-5	JIS 130E41R

4 Digital panel setting mode

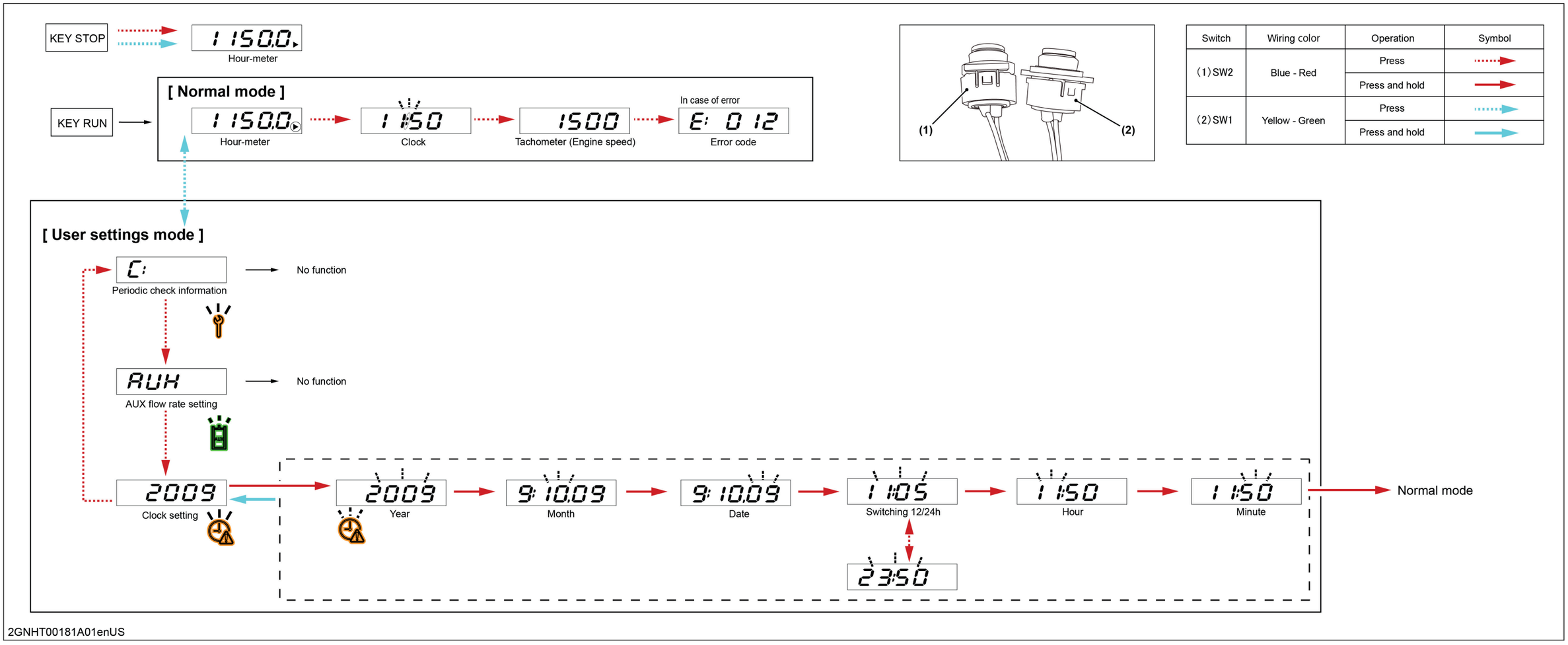
4.1 User setting mode

4.1.1 KX060-5, U56-5, U50-5



4.1.2 K008-5, U10-5

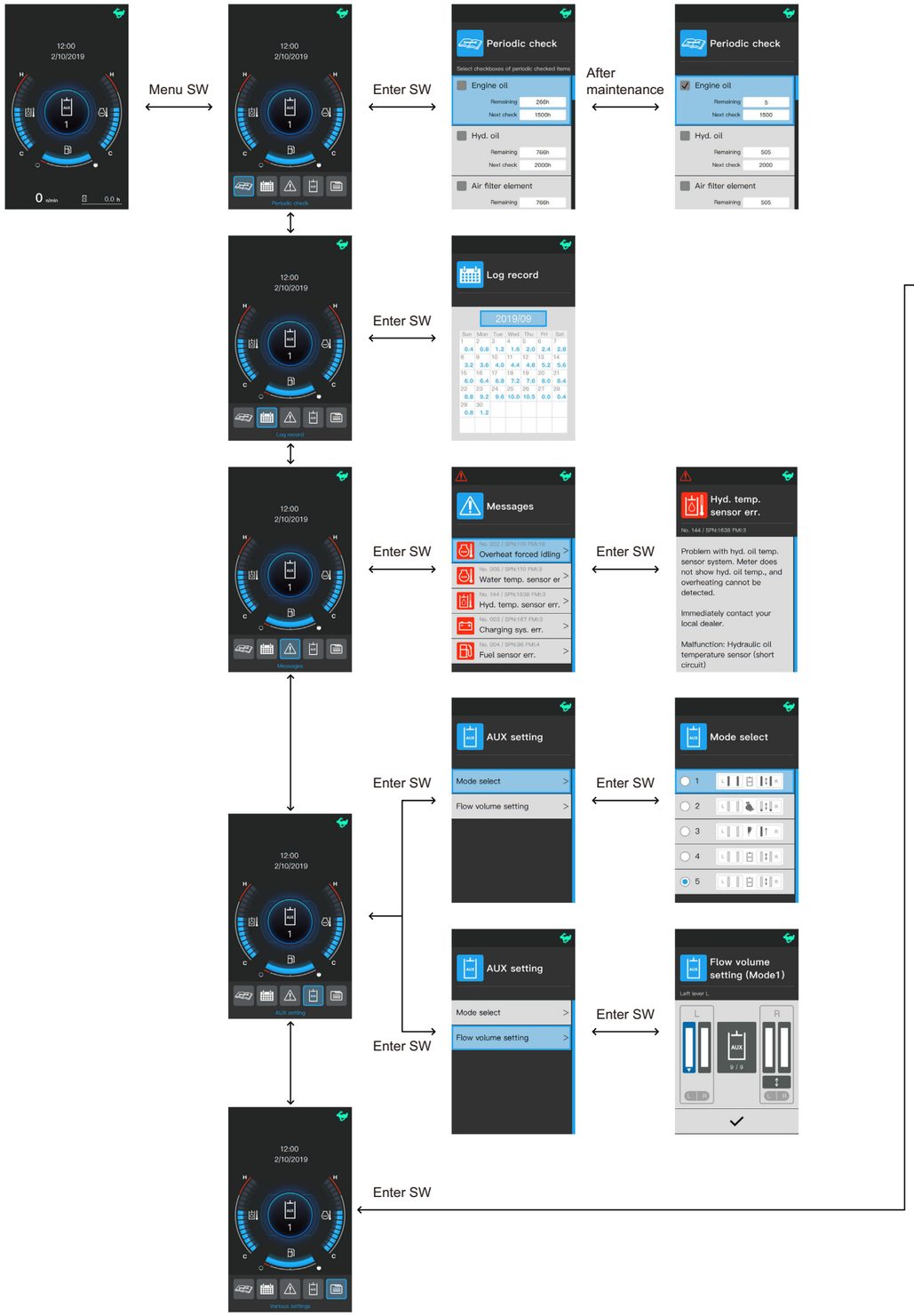
(main ECU setting kit necessary)



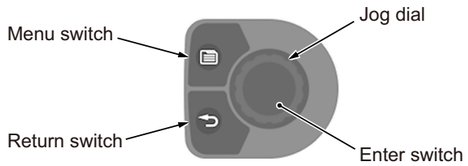
Switch	Wiring color	Operation	Symbol
(1) SW2	Blue - Red	Press	⇢
		Press and hold	→
(2) SW1	Yellow - Green	Press	⇢
		Press and hold	→

2GNHT00181A01enUS

4.1.3 KX085-5

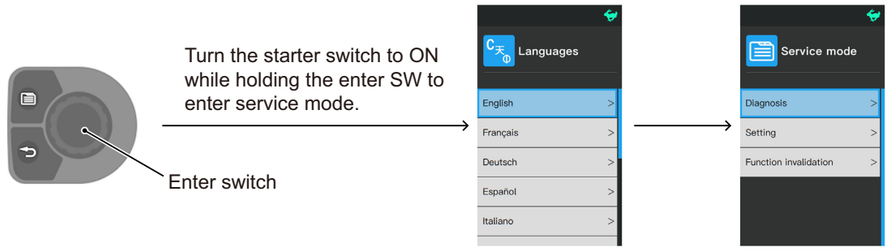


How to operate:

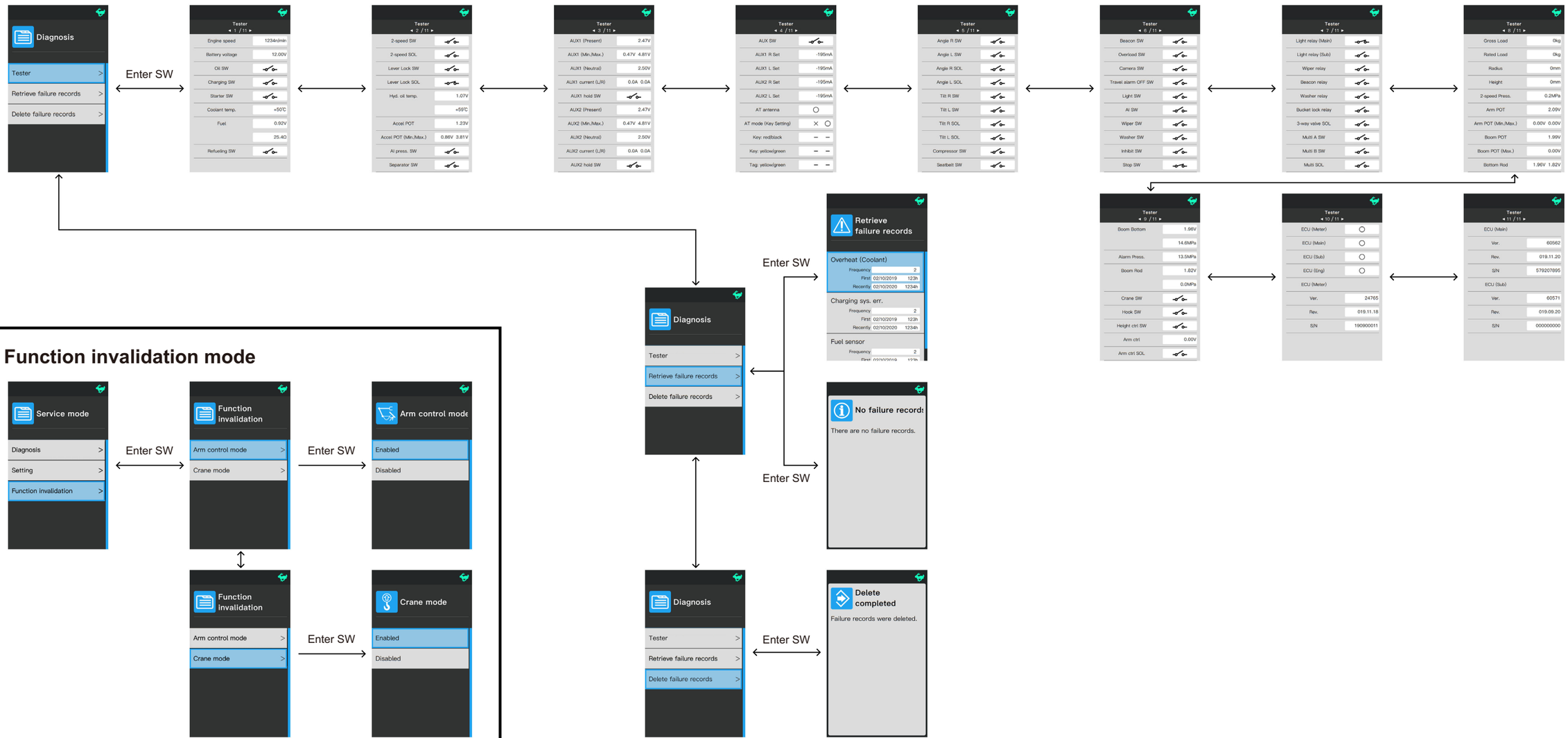


4.2 Dealer setting mode

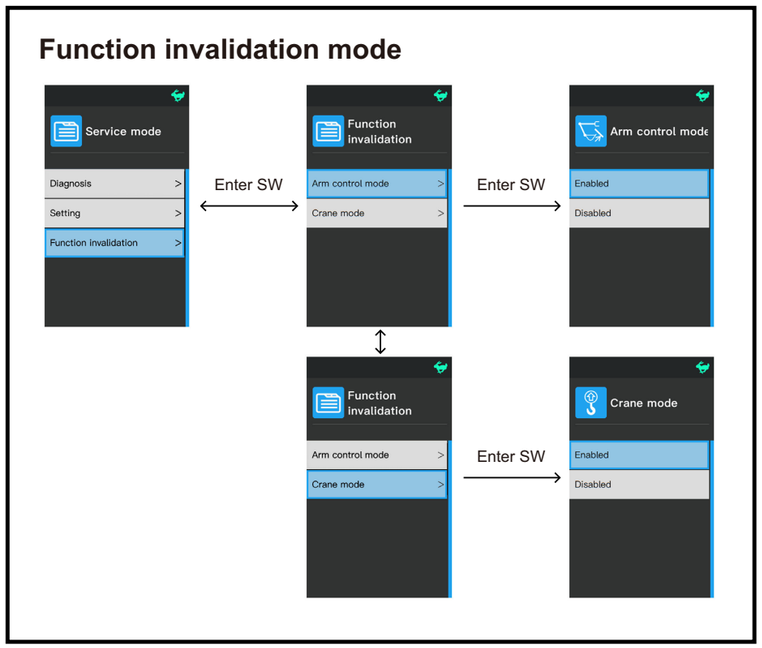
4.2.1 KX060-5, U56-5, U50-5

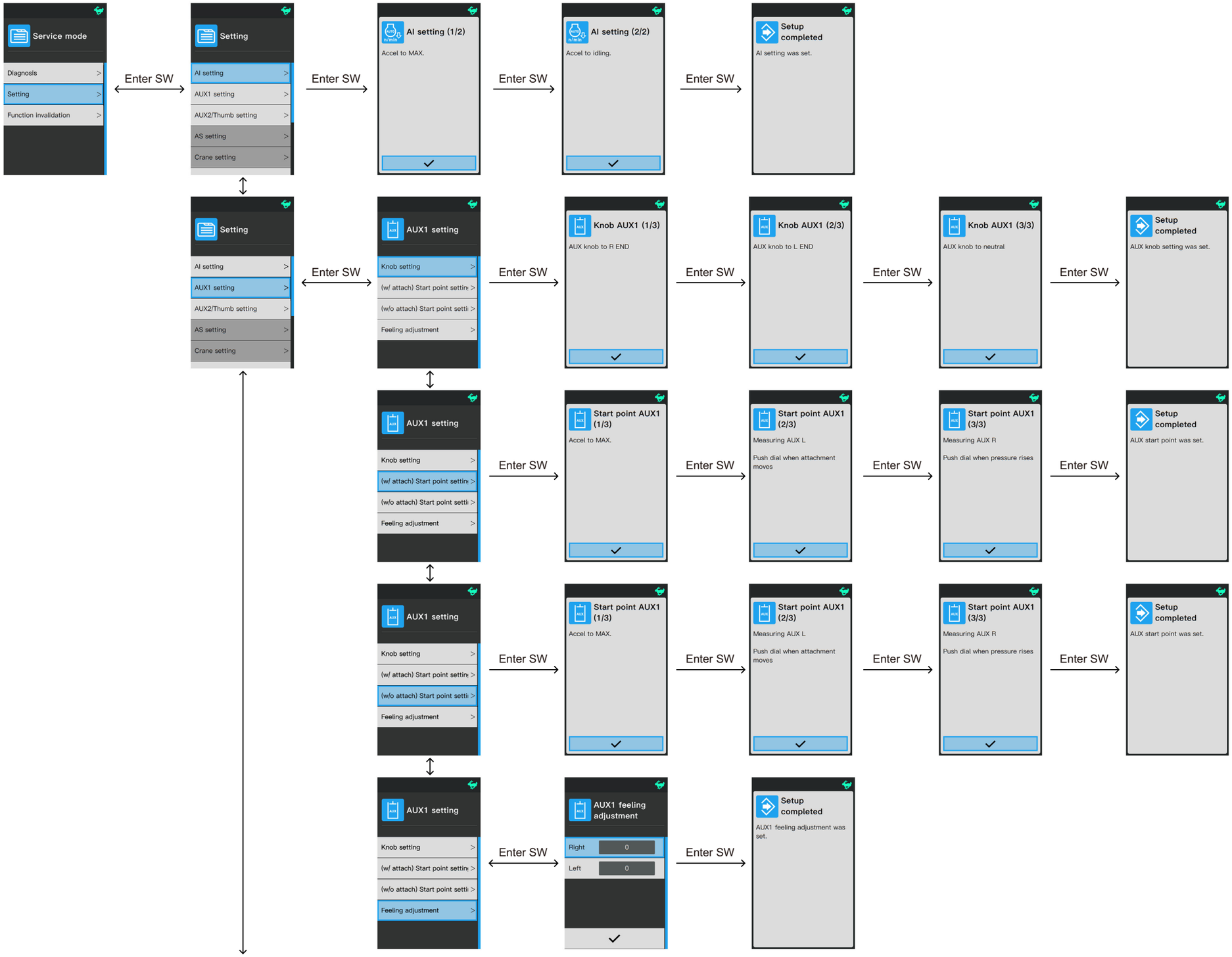


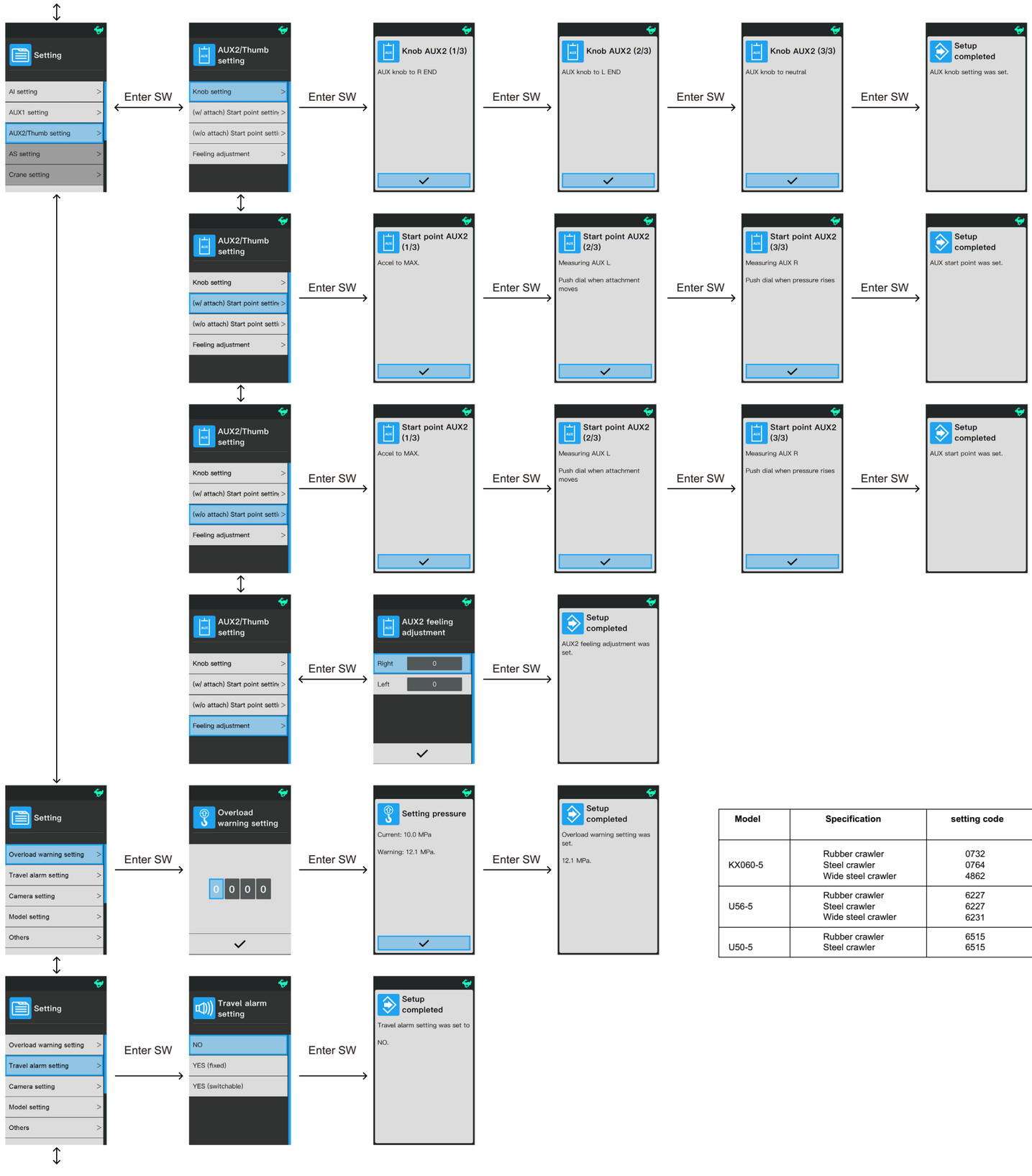
Diagnosis mode



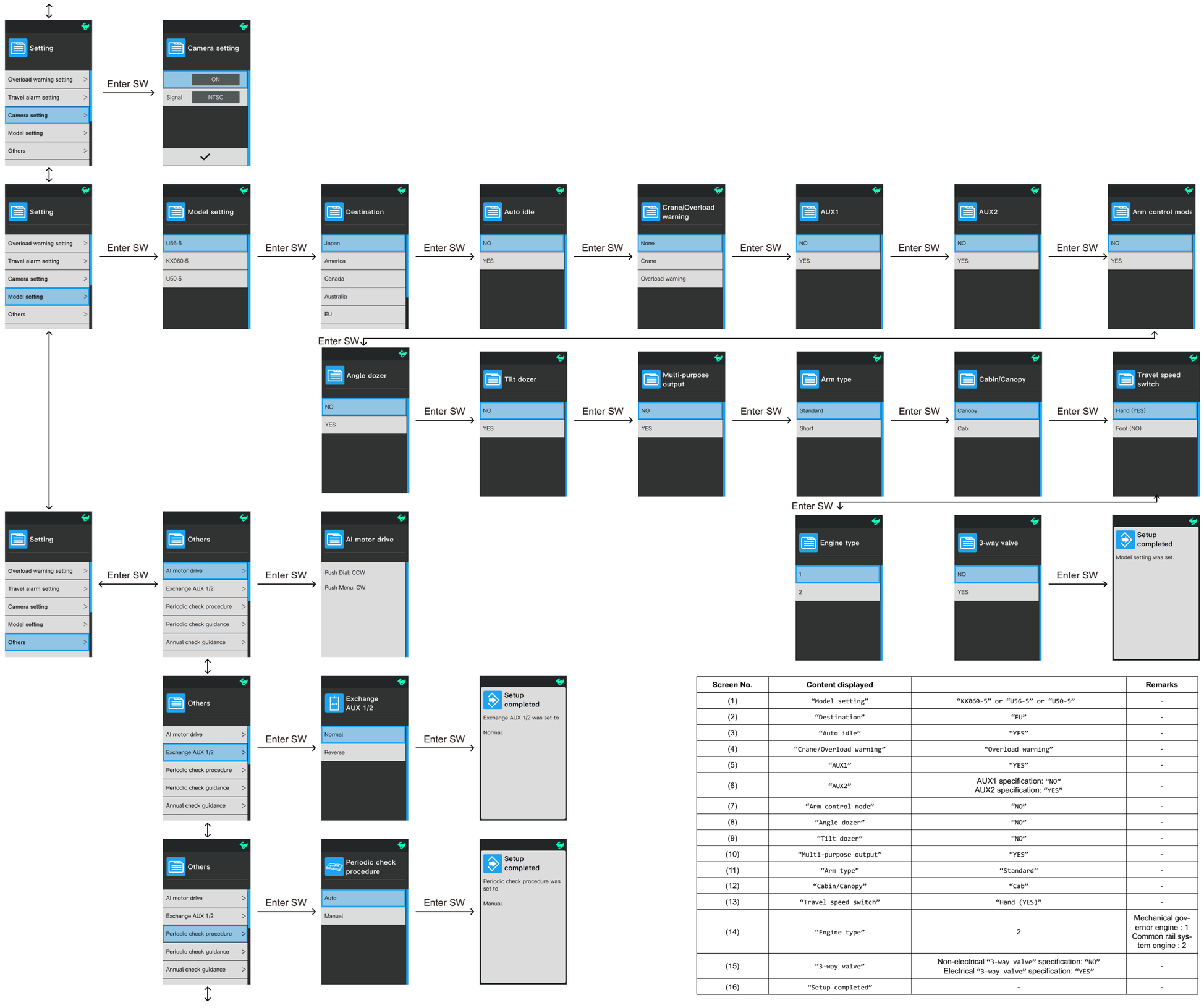
Function invalidation mode



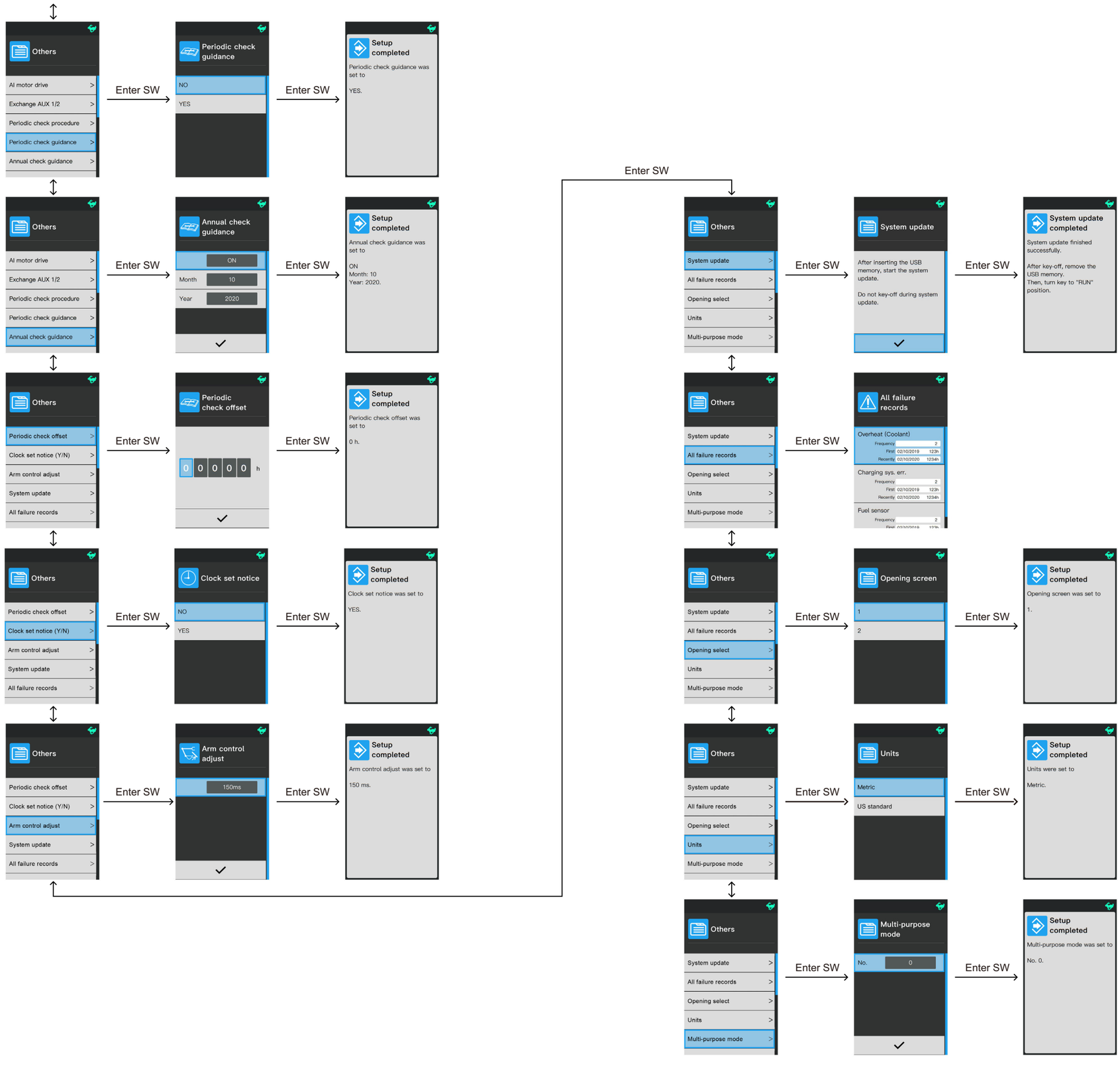

Service mode
Diagnosis
Setting
Function invalidation
Enter SW
Setting
AI setting
AUX1 setting
AUX2/Thumb setting
AS setting
Crane setting
Enter SW
AI setting (1/2)
Accel to MAX.
Enter SW
AI setting (2/2)
Accel to idling.
Enter SW
Setup completed
AI setting was set.
Setting
AI setting
AUX1 setting
AUX2/Thumb setting
AS setting
Crane setting
Enter SW
AUX1 setting
Knob setting
(w/ attach) Start point setting
(w/o attach) Start point setti
Feeling adjustment
Enter SW
Knob AUX1 (1/3)
AUX knob to R END
Enter SW
Knob AUX1 (2/3)
AUX knob to L END
Enter SW
Knob AUX1 (3/3)
AUX knob to neutral
Enter SW
Setup completed
AUX knob setting was set.
AUX1 setting
Knob setting
(w/ attach) Start point setting
(w/o attach) Start point setti
Feeling adjustment
Enter SW
Start point AUX1 (1/3)
Accel to MAX.
Enter SW
Start point AUX1 (2/3)
Measuring AUX L
Push dial when attachment moves
Enter SW
Start point AUX1 (3/3)
Measuring AUX R
Push dial when pressure rises
Enter SW
Setup completed
AUX start point was set.
AUX1 setting
Knob setting
(w/ attach) Start point setting
(w/o attach) Start point setti
Feeling adjustment
Enter SW
Start point AUX1 (1/3)
Accel to MAX.
Enter SW
Start point AUX1 (2/3)
Measuring AUX L
Push dial when attachment moves
Enter SW
Start point AUX1 (3/3)
Measuring AUX R
Push dial when pressure rises
Enter SW
Setup completed
AUX start point was set.
AUX1 setting
Knob setting
(w/ attach) Start point setting
(w/o attach) Start point setti
Feeling adjustment
Enter SW
AUX1 feeling adjustment
Right 0
Left 0
Enter SW
Setup completed
AUX1 feeling adjustment was set.



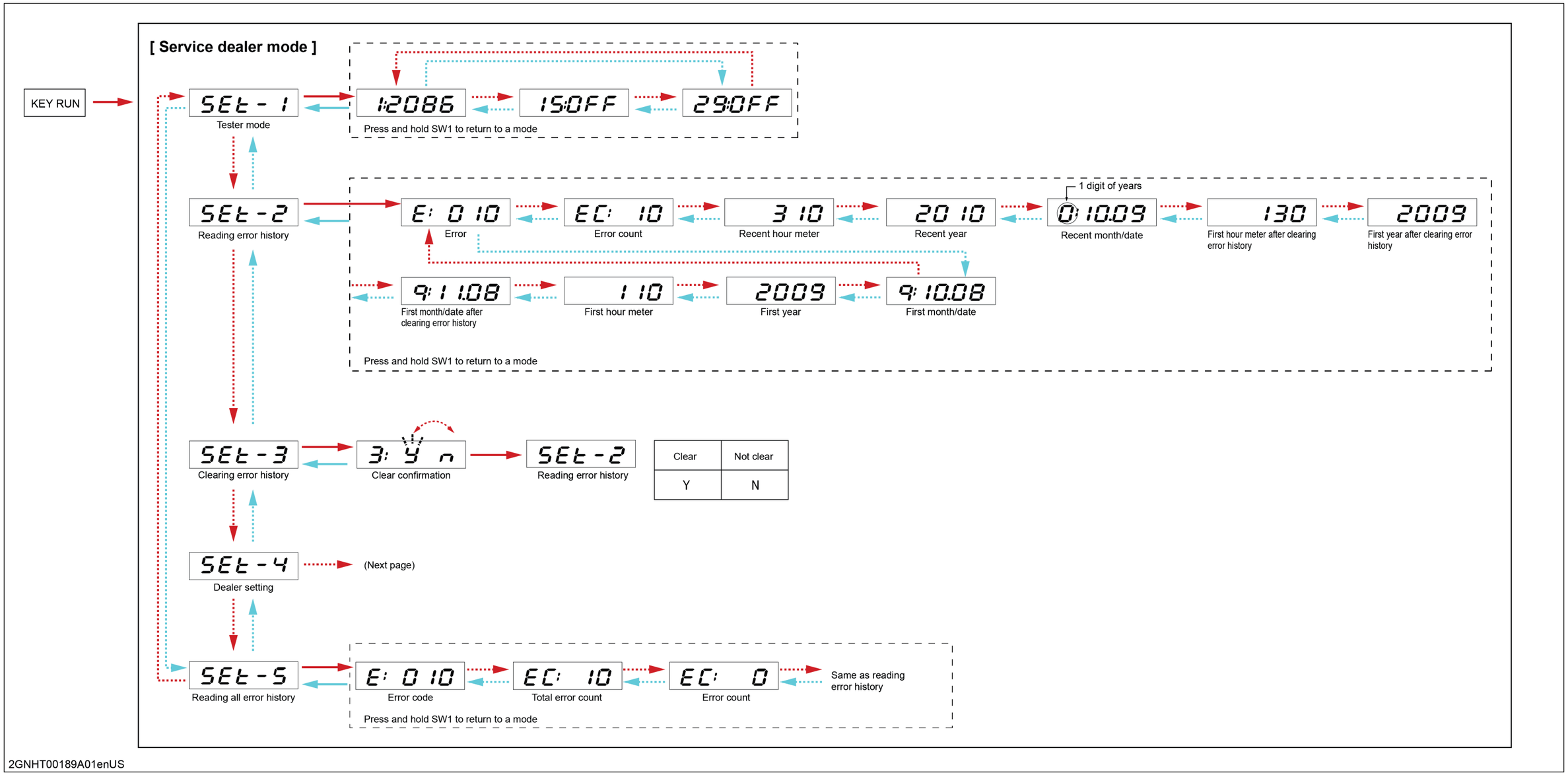
Model	Specification	setting code	Overload warning pressure (Boom bottom pressure) bar
KX060-5	Rubber crawler Steel crawler Wide steel crawler	0732 0764 4862	135 134 138
U56-5	Rubber crawler Steel crawler Wide steel crawler	6227 6227 6231	121 121 123
U50-5	Rubber crawler Steel crawler	6515 6515	120 120



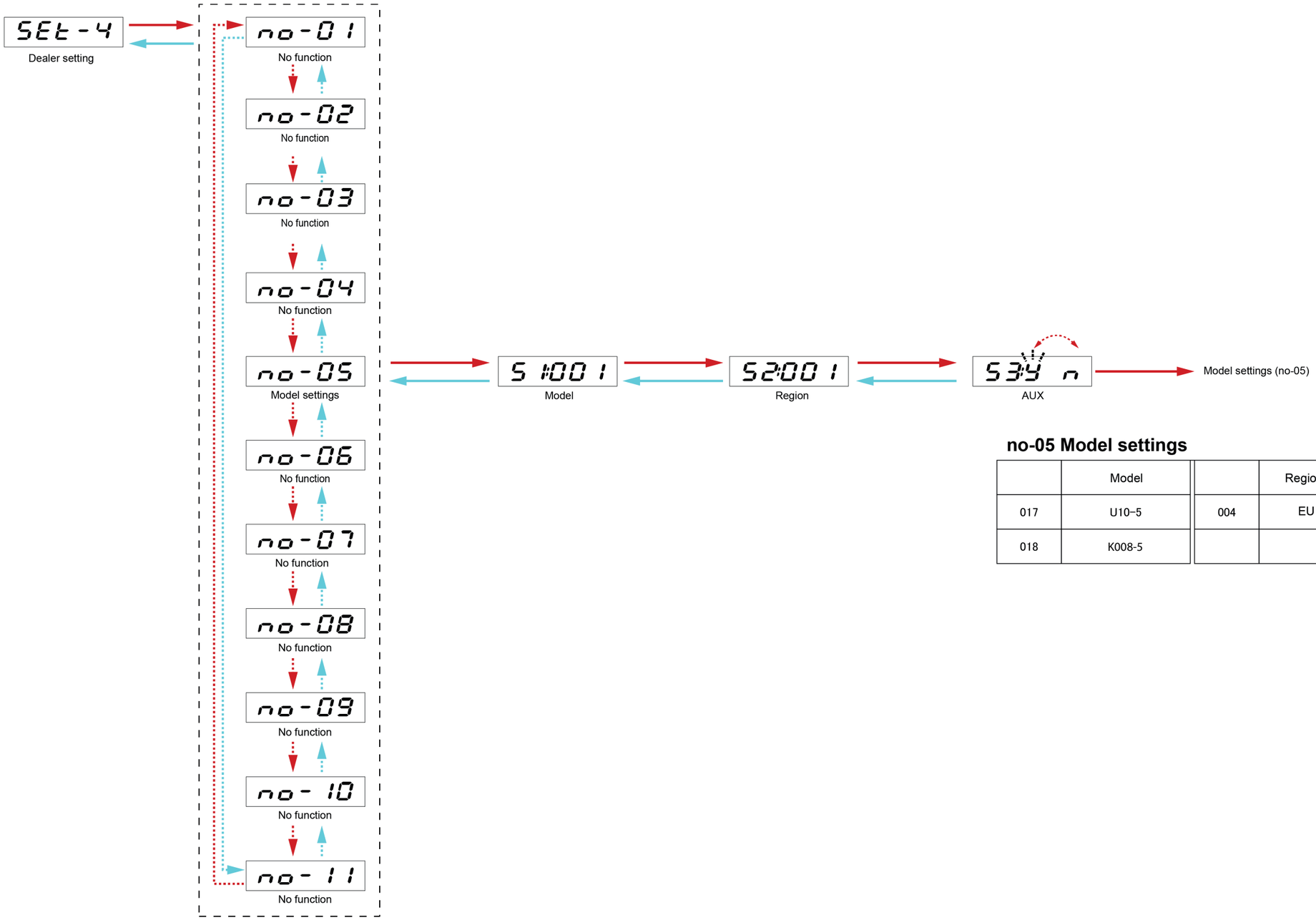
Screen No.	Content displayed		Remarks
(1)	“Model setting”	“KX060-5” or “U56-5” or “U50-5”	-
(2)	“Destination”	“EU”	-
(3)	“Auto idle”	“YES”	-
(4)	“Crane/Overload warning”	“Overload warning”	-
(5)	“AUX1”	“YES”	-
(6)	“AUX2”	AUX1 specification: “NO” AUX2 specification: “YES”	-
(7)	“Arm control mode”	“NO”	-
(8)	“Angle dozer”	“NO”	-
(9)	“Tilt dozer”	“NO”	-
(10)	“Multi-purpose output”	“YES”	-
(11)	“Arm type”	“Standard”	-
(12)	“Cabin/Canopy”	“Cab”	-
(13)	“Travel speed switch”	“Hand (YES)”	-
(14)	“Engine type”	2	Mechanical governor engine : 1 Common rail system engine : 2
(15)	“3-way valve”	Non-electrical “3-way valve” specification: “NO” Electrical “3-way valve” specification: “YES”	-
(16)	“Setup completed”	-	-


Others
AI motor drive
Exchange AUX 1/2
Periodic check procedure
Periodic check guidance
Annual check guidance
Enter SW
Periodic check guidance
NO
YES
Enter SW
Setup completed
Periodic check guidance was set to
YES.
Others
AI motor drive
Exchange AUX 1/2
Periodic check procedure
Periodic check guidance
Annual check guidance
Enter SW
Annual check guidance
ON
Month 10
Year 2020
Enter SW
Setup completed
Annual check guidance was set to
ON
Month: 10
Year: 2020.
Others
Periodic check offset
Clock set notice (Y/N)
Arm control adjust
System update
All failure records
Enter SW
Periodic check offset
0 0 0 0 h
Enter SW
Setup completed
Periodic check offset was set to
0 h.
Others
Periodic check offset
Clock set notice (Y/N)
Arm control adjust
System update
All failure records
Enter SW
Clock set notice
NO
YES
Enter SW
Setup completed
Clock set notice was set to
YES.
Others
Periodic check offset
Clock set notice (Y/N)
Arm control adjust
System update
All failure records
Enter SW
Arm control adjust
150ms
Enter SW
Setup completed
Arm control adjust was set to
150 ms.
Enter SW
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
System update
After inserting the USB memory, start the system update.
Do not key-off during system update.
Enter SW
System update completed
System update finished successfully.
After key-off, remove the USB memory.
Then, turn key to "RUN" position.
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
All failure records
Overheat (Coolant)
Frequency 2
First 02/10/2019 123h
Recently 02/10/2020 1234h
Charging sys. err.
Frequency 2
First 02/10/2019 123h
Recently 02/10/2020 1234h
Fuel sensor
Frequency 2
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
Opening screen
1
2
Enter SW
Setup completed
Opening screen was set to
1.
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
Units
Metric
US standard
Enter SW
Setup completed
Units were set to
Metric.
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
Multi-purpose mode
No. 0
Enter SW
Setup completed
Multi-purpose mode was set to
No. 0.

4.2.2 K008-5, U10-5
(main ECU setting kit necessary)



2GNHT00189A01enUS

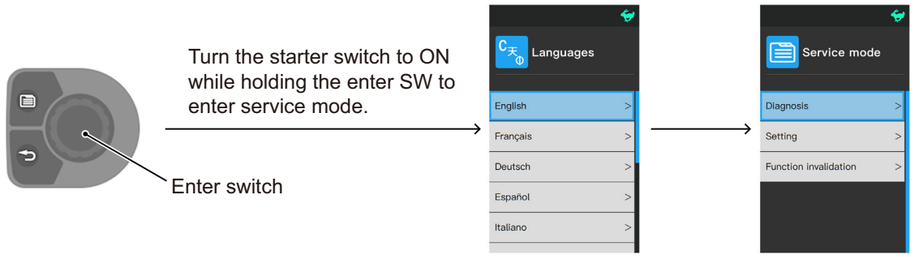


no-05 Model settings

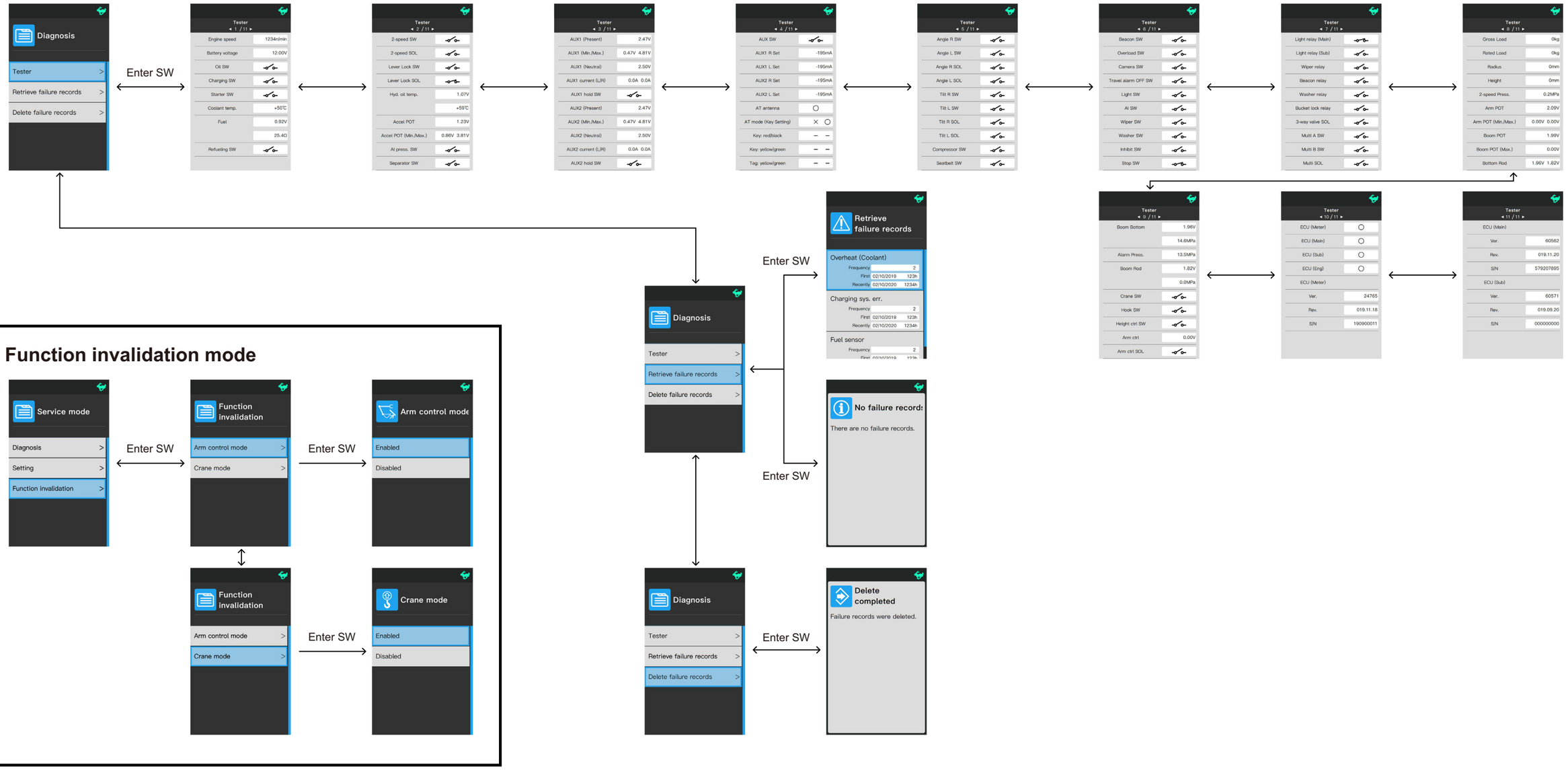
	Model		Region		AUX
017	U10-5	004	EU	N	–
018	K008-5				

2GNHT00182A01enUS

4.2.3 KX085-5

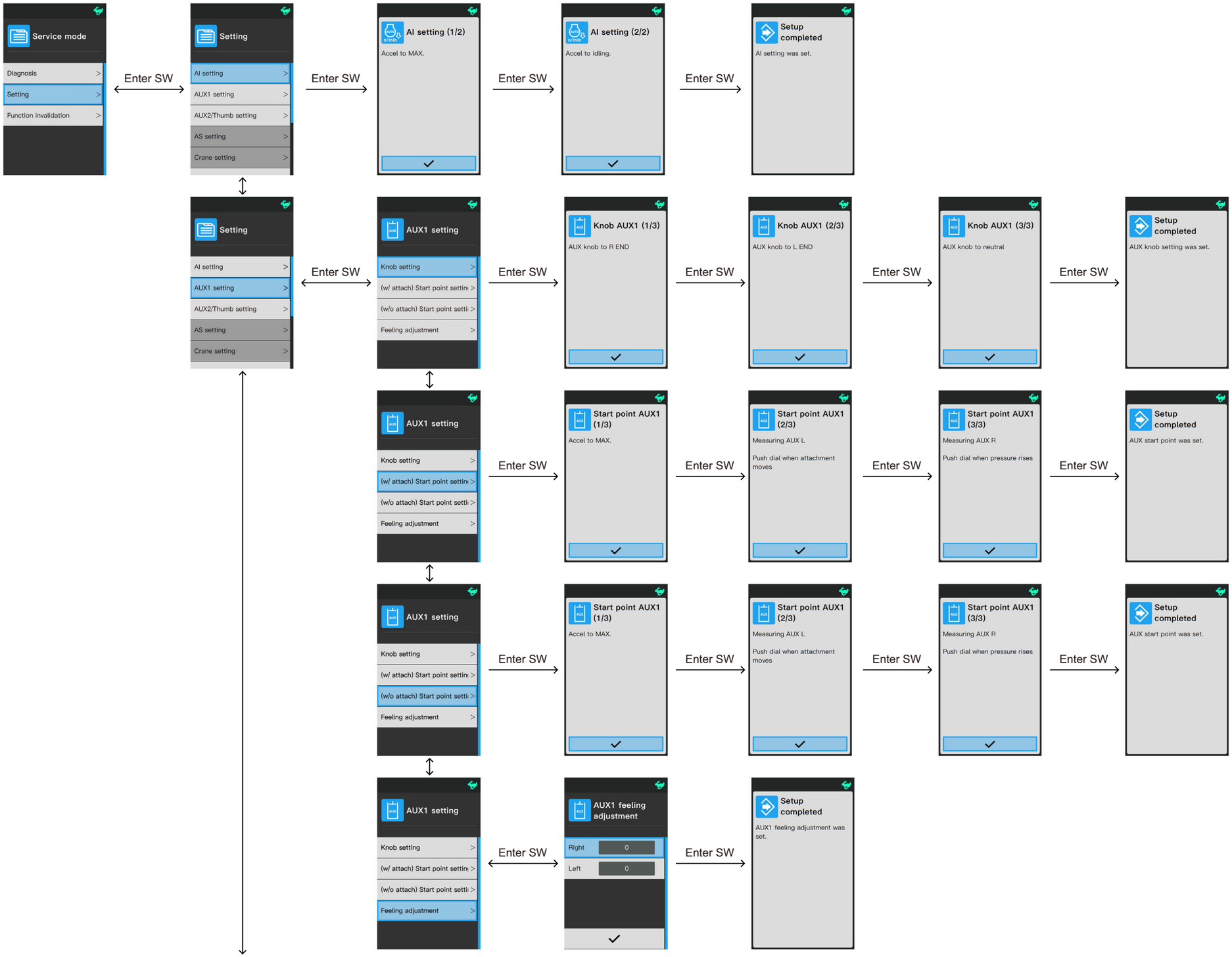


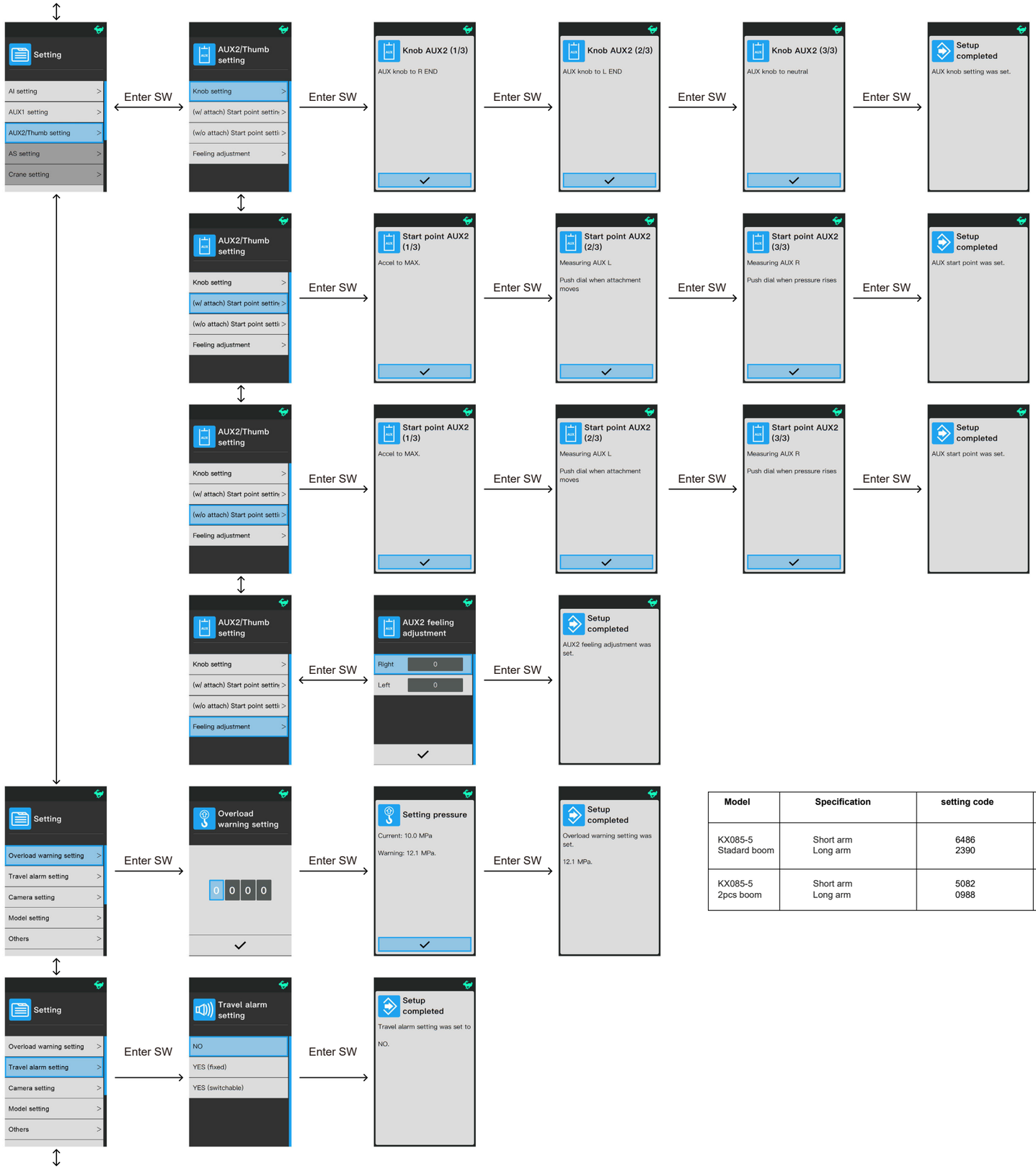
Diagnosis mode



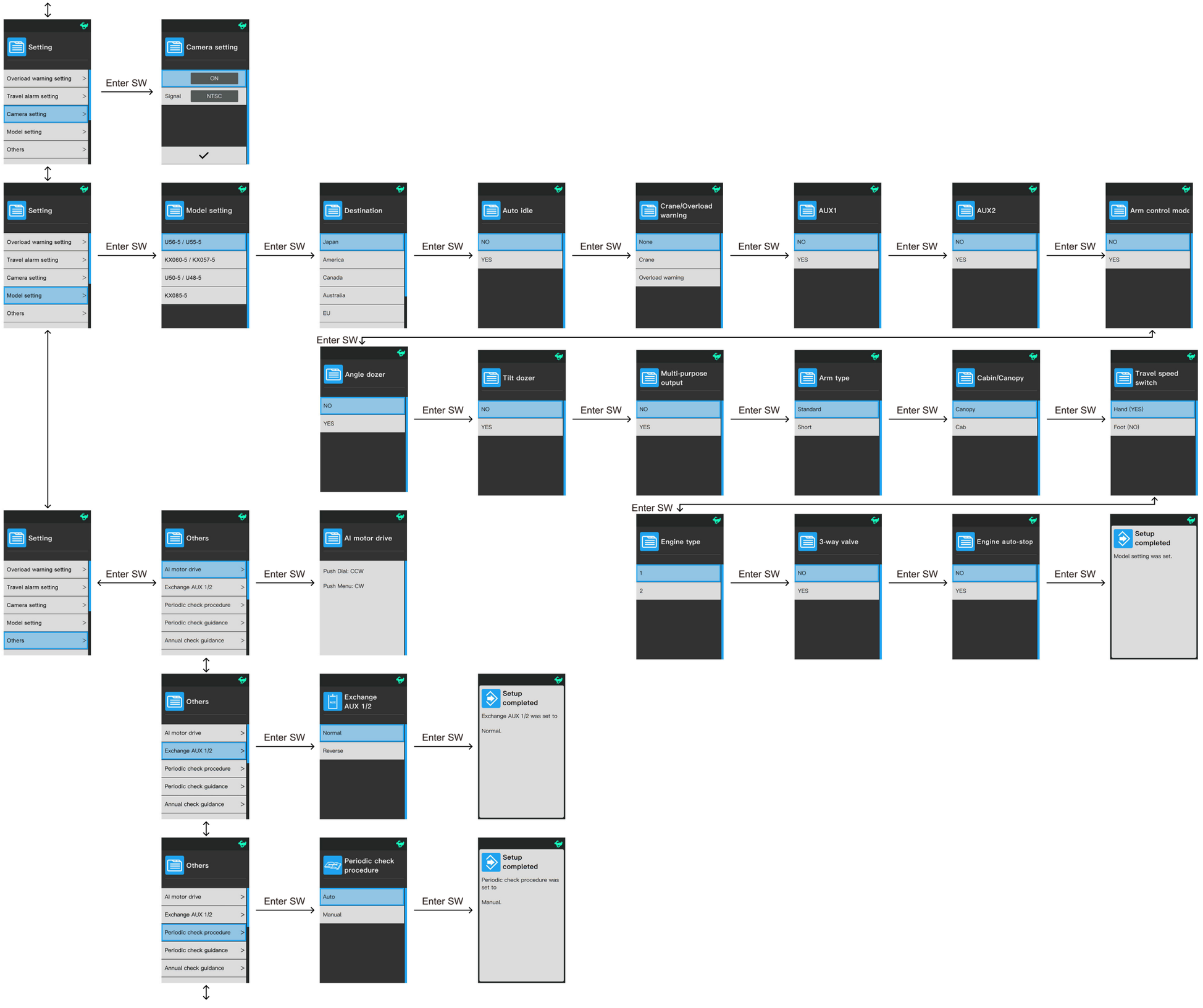
Function invalidation mode

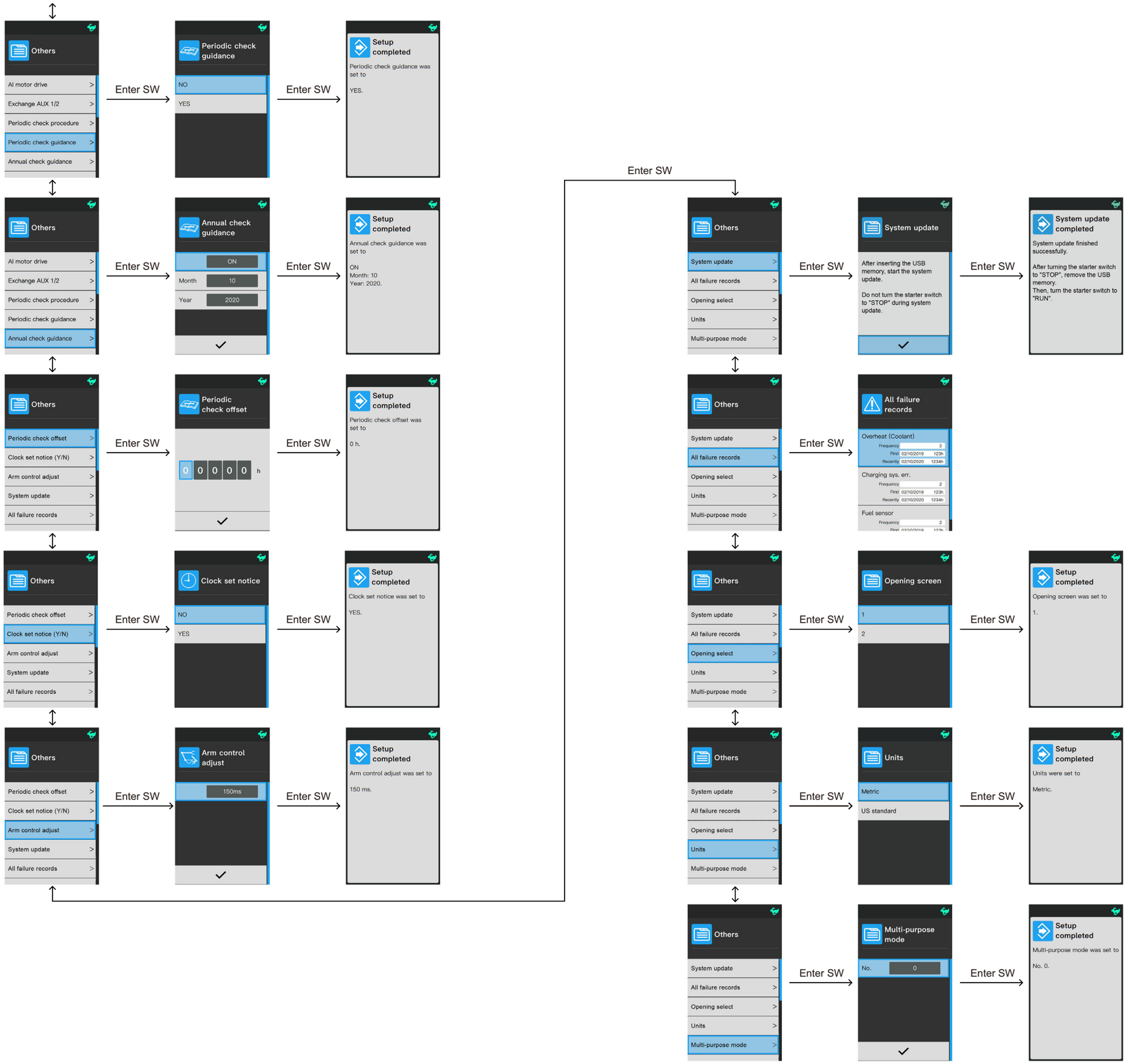
Setting mode





Model	Specification	setting code	Overload warning pressure (Boom bottom pressure) bar
KX085-5 Stadard boom	Short arm Long arm	6486 2390	123 127
KX085-5 2pcs boom	Short arm Long arm	5082 0988	137 135


Setting
Overload warning setting
Travel alarm setting
Camera setting
Model setting
Others
Enter SW
Camera setting
ON
Signal
NTSC
Model setting
U56-5 / U55-5
KX060-5 / KX057-5
U50-5 / U48-5
KX085-5
Destination
Japan
America
Canada
Australia
EU
Auto idle
NO
YES
Crane/Overload warning
None
Crane
Overload warning
AUX1
AUX2
Arm control mode
Angle dozer
Tilt dozer
Multi-purpose output
Arm type
Standard
Short
Cabin/Canopy
Canopy
Cab
Travel speed switch
Hand (YES)
Foot (NO)
Engine type
1
2
3-way valve
Engine auto-stop
Setup completed
Model setting was set.
Others
AI motor drive
Exchange AUX 1/2
Periodic check procedure
Periodic check guidance
Annual check guidance
Push Dial: CCW
Push Menu: CW
Exchange AUX 1/2
Normal
Reverse
Exchange AUX 1/2 was set to
Normal.
Auto
Manual
Periodic check procedure was set to
Manual.


Others
AI motor drive
Exchange AUX 1/2
Periodic check procedure
Periodic check guidance
Annual check guidance
Enter SW
Periodic check guidance
NO
YES
Enter SW
Setup completed
Periodic check guidance was set to
YES.
Others
AI motor drive
Exchange AUX 1/2
Periodic check procedure
Periodic check guidance
Annual check guidance
Enter SW
Annual check guidance
ON
Month 10
Year 2020
Enter SW
Setup completed
Annual check guidance was set to
ON
Month: 10
Year: 2020.
Others
Periodic check offset
Clock set notice (Y/N)
Arm control adjust
System update
All failure records
Enter SW
Periodic check offset
0 0 0 0 0 h
Enter SW
Setup completed
Periodic check offset was set to
0 h.
Others
Periodic check offset
Clock set notice (Y/N)
Arm control adjust
System update
All failure records
Enter SW
Clock set notice
NO
YES
Enter SW
Setup completed
Clock set notice was set to
YES.
Others
Periodic check offset
Clock set notice (Y/N)
Arm control adjust
System update
All failure records
Enter SW
Arm control adjust
150ms
Enter SW
Setup completed
Arm control adjust was set to
150 ms.
Enter SW
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
System update
After inserting the USB memory, start the system update.
Do not turn the starter switch to "STOP" during system update.
Enter SW
System update completed
System update finished successfully.
After turning the starter switch to "STOP", remove the USB memory.
Then, turn the starter switch to "RUN".
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
All failure records
Overheat (Coolant)
Frequency 2
First 02/10/2019 123h
Recently 02/10/2020 1234h
Charging sys. err.
Frequency 2
First 02/10/2019 123h
Recently 02/10/2020 1234h
Fuel sensor
Frequency 2
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
Opening screen
1
2
Enter SW
Setup completed
Opening screen was set to
1.
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
Units
Metric
US standard
Enter SW
Setup completed
Units were set to
Metric.
Others
System update
All failure records
Opening select
Units
Multi-purpose mode
Enter SW
Multi-purpose mode
No. 0
Enter SW
Setup completed
Multi-purpose mode was set to
No. 0.

4.3 Failure codes

4.3.1 KX060-5, U56-5

Error warning list (Red lamp)

List of failure codes				Refer to WSM chapter 7, servicing
Display	**SPN**	**FMI**	**Cause of generation and the measure**	
Engine oil pressure err.	100	3	Engine oil pressure switch is ON while the engine is running.	7.2.1
Overheat forced idling	110	16	Coolant temperature is higher than 120 °C (248 °F).	7.2.2
Charging sys. err.	167	3	The charge switch is ON (no output from the L terminal of the alternator) while the engine is running.	7.2.4
Overvoltage	168	3	Charging voltage is too high.	7.2.10
Fuel sensor err.	96	4	Fuel sensor resistance is higher than 135 Ω.	7.2.5
CAN sys. err.	521801	19	ECU (meter) cannot receive CAN signal from ECU (main).	7.2.6.1
	521802	19	ECU (main) cannot receive CAN signal from ECU (engine).	7.2.6.2
	521826	19	ECU (main) cannot receive CAN signal from ECU (sub).	7.2.6.3
	521821	19	ECU (main) cannot receive CAN signal from ECU (meter).	7.2.6.5
	521827	19	ECU (main) cannot receive CAN signal from the keypad.	7.2.6.4
2-speed sys. err.	521652	4	Short circuit has occurred in the wire harness.	7.2.7
AUX1 sys. err.	521601	3	Short circuit has occurred in the 5 V line.	7.2.8
	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.	7.2.9
	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.	7.2.14
	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.	7.2.11
	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.	7.2.12
External 5V sys. err.	3509	1	Short circuit has occurred in the sensor's 5 V power supply.	7.2.13
Overheat forced idling	1638	16	Hydraulic oil temperature is more than 103 °C.	7.2.3

List of failure codes				Refer to WSM chapter 7, servicing
Display	**SPN**	**FMI**	**Cause of generation and the measure**	
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.	
Hyd. temp. sensor err.	1638	3	Short circuit has occurred in the 5 V line.	7.2.15
	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.	7.2.16
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).	

4.3.2 U50-5

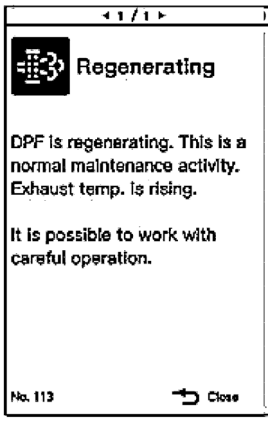
Error warning list (Red lamp)

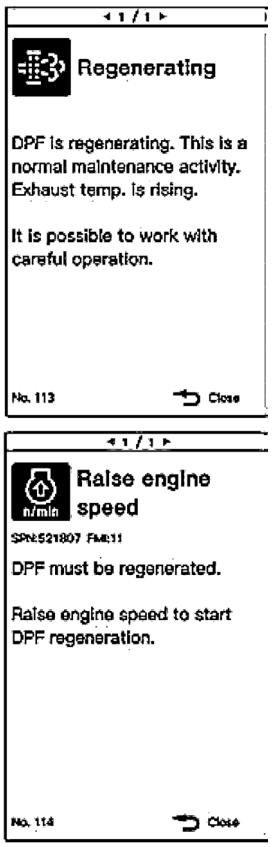
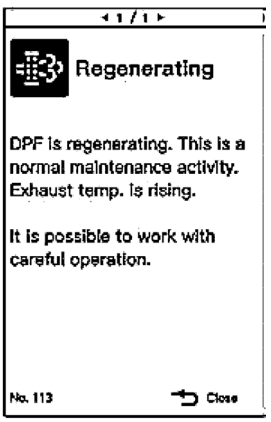
List of failure codes				Refer to WSM chapter 7, servicing
Display	**SPN**	**FMI**	**Cause of generation and the measure**	
Engine oil pressure err.	100	3	Engine oil pressure switch is ON while the engine is running.	7.2.1
Overheat forced idling	110	16	Coolant temperature is higher than 120 °C (248 °F).	7.2.2
Charging sys. err.	167	3	The charge switch is ON (no output from the L terminal of the alternator) while the engine is running.	7.2.4
Overvoltage	168	3	Charging voltage is too high.	7.2.10
Fuel sensor err.	96	4	Fuel sensor resistance is higher than 135 Ω.	7.2.5
CAN sys. err.	521801	19	ECU (meter) cannot receive CAN signal from ECU (main).	7.2.6.1
	521802	19	ECU (main) cannot receive CAN signal from ECU (engine).	7.2.6.2
	521826	19	ECU (main) cannot receive CAN signal from ECU (sub).	7.2.6.3
	521821	19	ECU (main) cannot receive CAN signal from ECU (meter).	7.2.6.5
	521827	19	ECU (main) cannot receive CAN signal from the keypad.	7.2.6.4
2-speed sys. err.	521652	4	Short circuit has occurred in the wire harness.	7.2.7
AUX1 sys. err.	521601	3	Short circuit has occurred in the 5 V line.	7.2.8.1
	521601	4	Breaking of wire has occurred in the wire harness.	7.2.8.2
	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.	7.2.9.1
	521606	4	Breaking of wire has occurred in the wire harness.	7.2.9.2
	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.	7.2.14
	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.	7.2.11
	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.	7.2.12
External 5V sys. err.	3509	1	Short circuit has occurred in the sensor's 5 V power supply.	7.2.13
Overheat forced idling	1638	16	Hydraulic oil temperature is more than 103 °C.	7.2.3
DPF needs repairs	521810	14	DPF is clogged.	

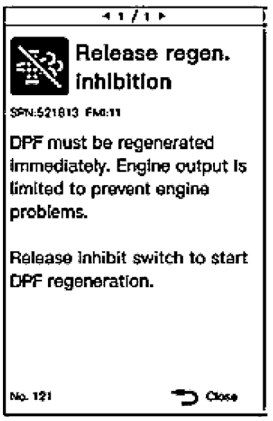
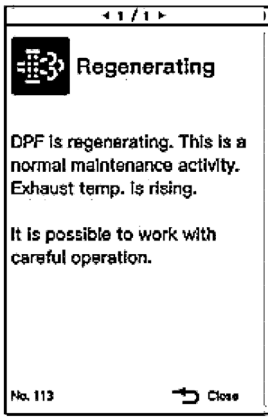
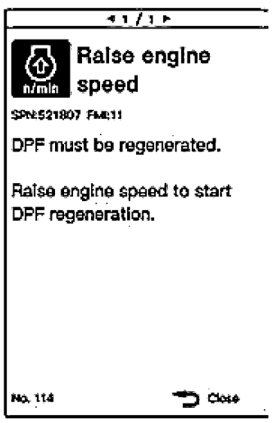
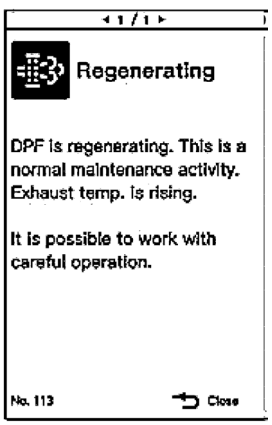
List of failure codes				Refer to WSM chapter 7, servicing
Display	**SPN**	**FMI**	**Cause of generation and the measure**	
DPF needs replacement	521811	11	DPF must be replaced.	
Engine output is limited	521808	11	DPF must be regenerated.	
Release regen inhibition	521813	11	Inhibit switch is ON while the DPF must be regenerated.	
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.	7.2.15
Engine sys. err.	523603	15	Engine coolant temperature is more than 110 °C (230 °F).	

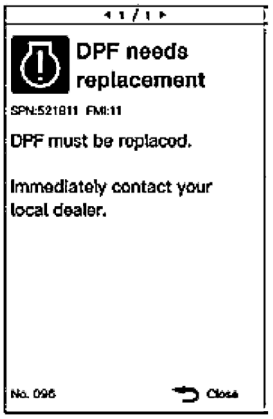
4.3.3 Regeneration of Diesel Particle Filter (DPF), KX060-5, U56-5, U50-5, KX085-5

DPF regeneration control

Deposit level	DPF regeneration inhibition switch ON: Inhibited	Engine speed	Engine output	Meter panel	Engine status and required operation
Level 0	–	–	–	–	–
Level 1	ON	–	–	–	–
	OFF	–	–		The DPF is being regenerated. Operate the machine carefully for the surroundings since the exhaust gas temperature is rising.
Level 2	ON	–	–		The engine cannot start regeneration since the DPF inhibit switch is ON. Release the DPF inhibit switch to start regeneration.

Deposit level	DPF regeneration inhibition switch ON: Inhibited	Engine speed	Engine output	Meter panel	Engine status and required operation
Level 2	OFF	Less than 1900 rpm	–		The engine cannot start regeneration since the exhaust gas temperature is low. Rev up the engine to increase the exhaust gas temperature. Operate the machine carefully for the surroundings since the exhaust gas temperature is rising.
		More than 1900 rpm			The DPF is being regenerated. Operate the machine carefully for the surroundings since the exhaust gas temperature is rising.

Deposit level	DPF regeneration inhibition switch ON: Inhibited	Engine speed	Engine output	Meter panel	Engine status and required operation
Level 3	ON	–	50 %		The engine cannot start regeneration since the inhibition switch is ON. Release the DPF inhibit switch to start regeneration. The engine output is limited to protect the engine. Rev up and restart the engine to start regeneration. The engine is stopped, 1 minute after the lever lock is raised.
	OFF	Less than 1900 rpm	50 %	 	The engine cannot start regeneration since the exhaust gas temperature is low. Rev up the engine to increase the exhaust gas temperature. Operate the machine carefully for the surroundings since the exhaust gas temperature is rising. The engine output is restricted to protect the engine. The engine is stopped, 1 minute after the lever lock is raised.
		More than 1900 rpm	50 %		The DPF is being regenerated. Operate the machine carefully for the surroundings since the exhaust gas temperature is rising. The engine output is restricted to protect the engine.

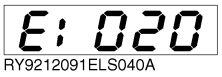
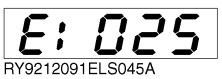
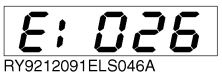
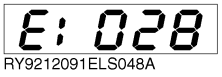
Deposit level	DPF regeneration inhibition switch ON: Inhibited	Engine speed	Engine output	Meter panel	Engine status and required operation
Level 4	ON	–	50 %		The engine can no longer start regeneration. Connect Diagmaster and regenerate the DPF manually. The engine is stopped, 1 minute after the lever lock is raised.
	OFF	–	50 %		
Level 5	ON	–	50 %		The DPF needs to be replaced due to the excessive amount of the accumulated particulate matters.
	OFF	–	50 %		

4.3.4 K008-5, U10-5

No.	Item	Possible cause	Sound
1	Anti-theft	Wrong key, unable to start.	PiPiPi
2	Anti-theft	Red registration key, unable to start.	
3	Control lever lock	Lower the lever lock to start the engine.	
4	Anti-theft	Forgot to remove the key.	
5	Control lever lock*	Lever lock solenoid shorts.	PiPiPiPiPiPi (Continuous sounds)
6	Power supply	Overvoltage	
7	Anti-theft	Antenna abnormality	
8	Power supply	External 12V short	
9	Seat belt	Engine starts and the seat belt is not fastened.	PiPiPi ... PiPiPi (Every 2 seconds continuous sounds)

*Only for U10-5

Main ECU setting kit necessary

List of failure codes				Refer to WSM chapter 4, section
Failure code	Cause of generation and the measure			
LCD display*	LED*	Problem/Error	Remarks	
Lever lock system error  RY9212091ELS040A	(red) (Blinking)	Lever lock system error	Short circuit has occurred in the lever lock solenoid circuit.	6.2.5
Overvoltage  RY9212091ELS045A	(red) (Blinking)	Battery overcharging	Power supply voltage is over 18 V.	6.2.6
Anti theft system error  RY9212091ELS046A	(red) (Blinking)	Anti-theft antenna error	There is no signal from the anti-theft antenna to main ECU.	6.2.7
External 12-V system error  RY9212091ELS048A	(red) (Blinking)	12 V error	Short circuit has occurred in the 12 V line.	6.2.8

* Display and lamp can be checked by using the main ECU setting kit.

4.3.5 KX085-5

Error warning list (Red lamp)

List of failure codes				Refer to WSM chapter 7, servicing
Display	**SPN**	**FMI**	**Cause of generation and the measure**	
Engine oil pressure err.	100	3	Engine oil pressure switch is ON while the engine is running.	7.2.1
Overheat forced idling	110	16	Coolant temperature is higher than 120 °C (248 °F).	7.2.2
Charging sys. err.	167	3	The charge switch is ON (no output from the L terminal of the alternator) while the engine is running.	7.2.4
Overvoltage	168	3	Charging voltage is too high.	7.2.10
Fuel sensor err.	96	4	Fuel sensor resistance is higher than 135 Ω.	7.2.5
CAN sys. err.	521801	19	ECU (meter) cannot receive CAN signal from ECU (main).	7.2.6.1
	521802	19	ECU (main) cannot receive CAN signal from ECU (engine).	7.2.6.2
	521826	19	ECU (main) cannot receive CAN signal from ECU (sub).	7.2.6.3
	521821	19	ECU (main) cannot receive CAN signal from ECU (meter).	7.2.6.5
	521827	19	ECU (main) cannot receive CAN signal from the keypad.	7.2.6.4
2-speed sys. err.	521652	4	Short circuit has occurred in the wire harness.	7.2.7
AUX1 sys. err.	521601	3	Short circuit has occurred in the 5 V line.	7.2.8
	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.	7.2.9
	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.	7.2.14
	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.	7.2.11
	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.	7.2.12
External 5V sys. err.	3509	1	Short circuit has occurred in the sensor's 5 V power supply.	7.2.13
Overheat forced idling	1638	16	Hydraulic oil temperature is more than 103 °C.	7.2.3
DPF needs repairs	521810	14	DPF is clogged.	

List of failure codes				Refer to WSM chapter 7, servicing
Display	**SPN**	**FMI**	**Cause of generation and the measure**	
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.	
Hyd. temp. sensor err.	1638	3	Short circuit has occurred in the 5 V line.	7.2.15
	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.	7.2.16
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).	
Dozer angle sys. err.	521654	4	Short circuit has occurred in the wire harness.	
	521654	5	Breaking of wire has occurred in the wire harness.	
	521655	4	Short circuit has occurred in the wire harness.	
	521655	5	Breaking of wire has occurred in the wire harness.	

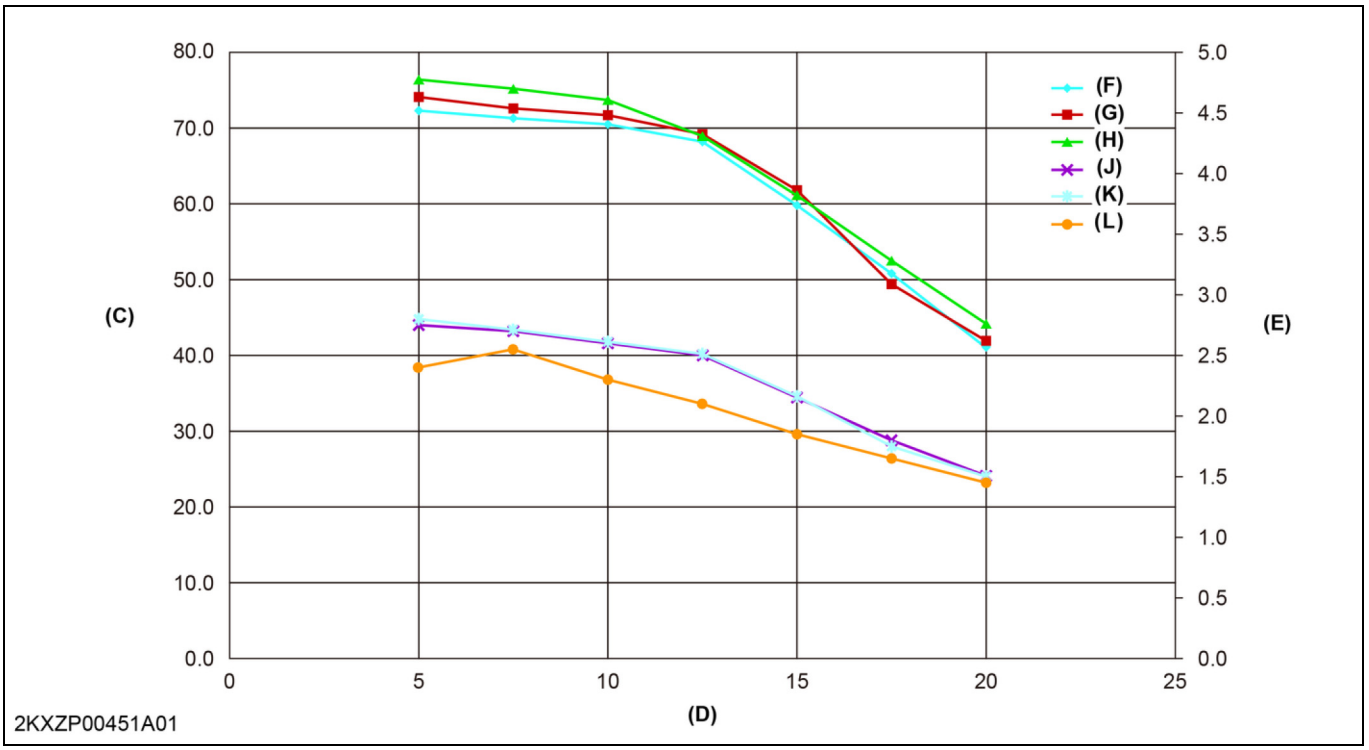
5 Other informations, engine

5.1 AUX lines

AUX Line	Thread size	
	AUX 1	AUX 2
KX060-5	PT 1/2' *	PT 1/2' *
U56-5	PT 1/2' *	PT 1/2' *
U50-5	PT 1/2' *	PT 1/2' *
K008-5	PT 1/2' *	---
U10-5	PT 1/2' *	---
KX085-5	G3/4 flat seal	G3/4 flat seal

* do not use NPT 1/2' !

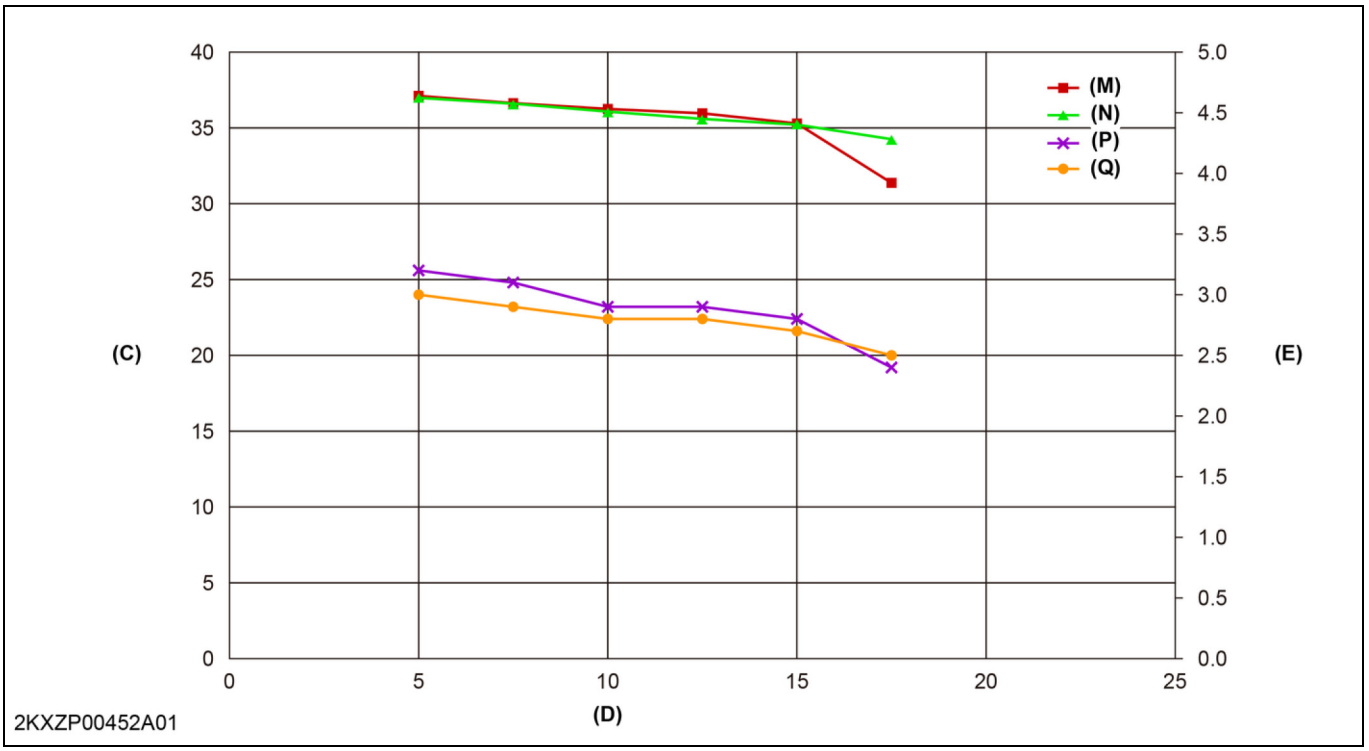
5.1.1 Flow rate AUX 1 KX060-5



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

The values in the diagram as stated above are reference values and are measured on the machine.

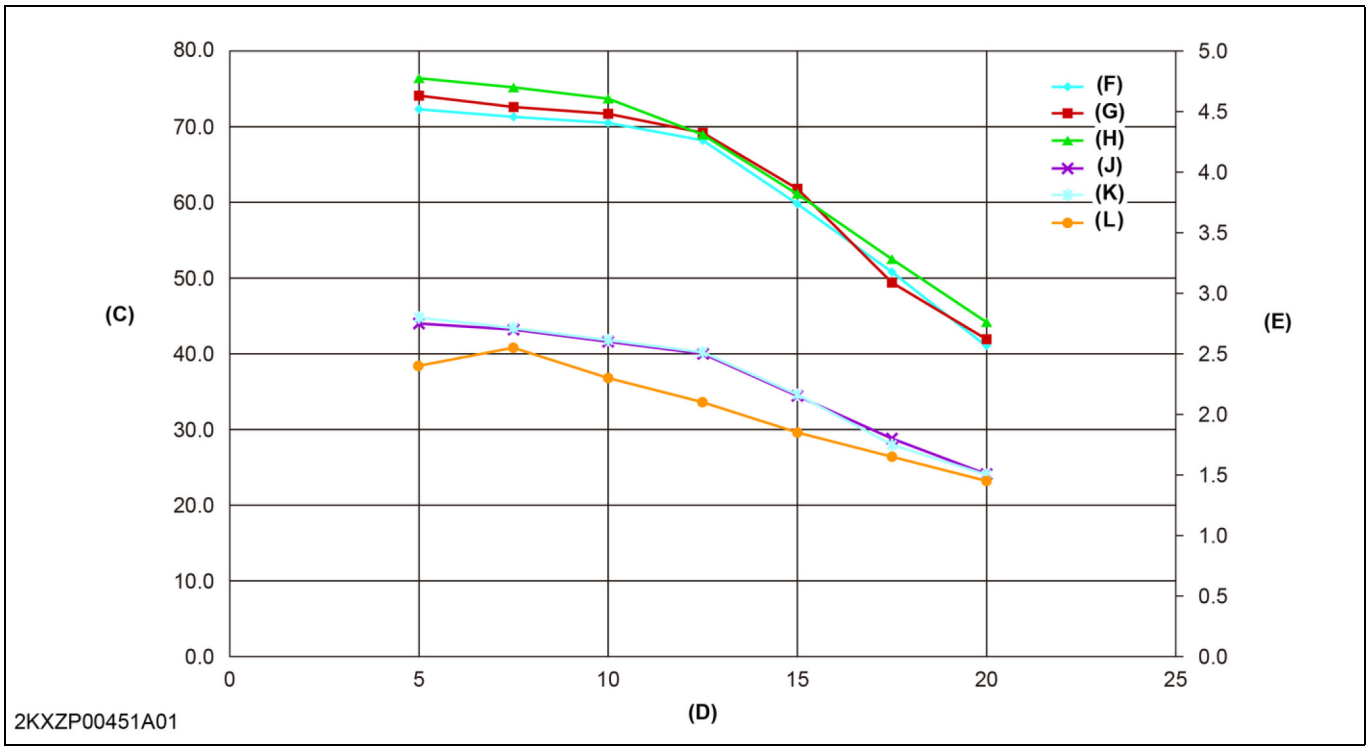
5.1.2 Flow rate AUX 2 KX060-5



(C) Flow rate (L/min)
(D) Pressure (MPa)
(E) Back pressure (MPa)
(M) AUX2 LH
(N) AUX2 RH
(P) Back pressure (AUX2 LH)
(Q) Back pressure (AUX2 RH)

The values in the diagram as stated above are reference values and are measured on the machine.

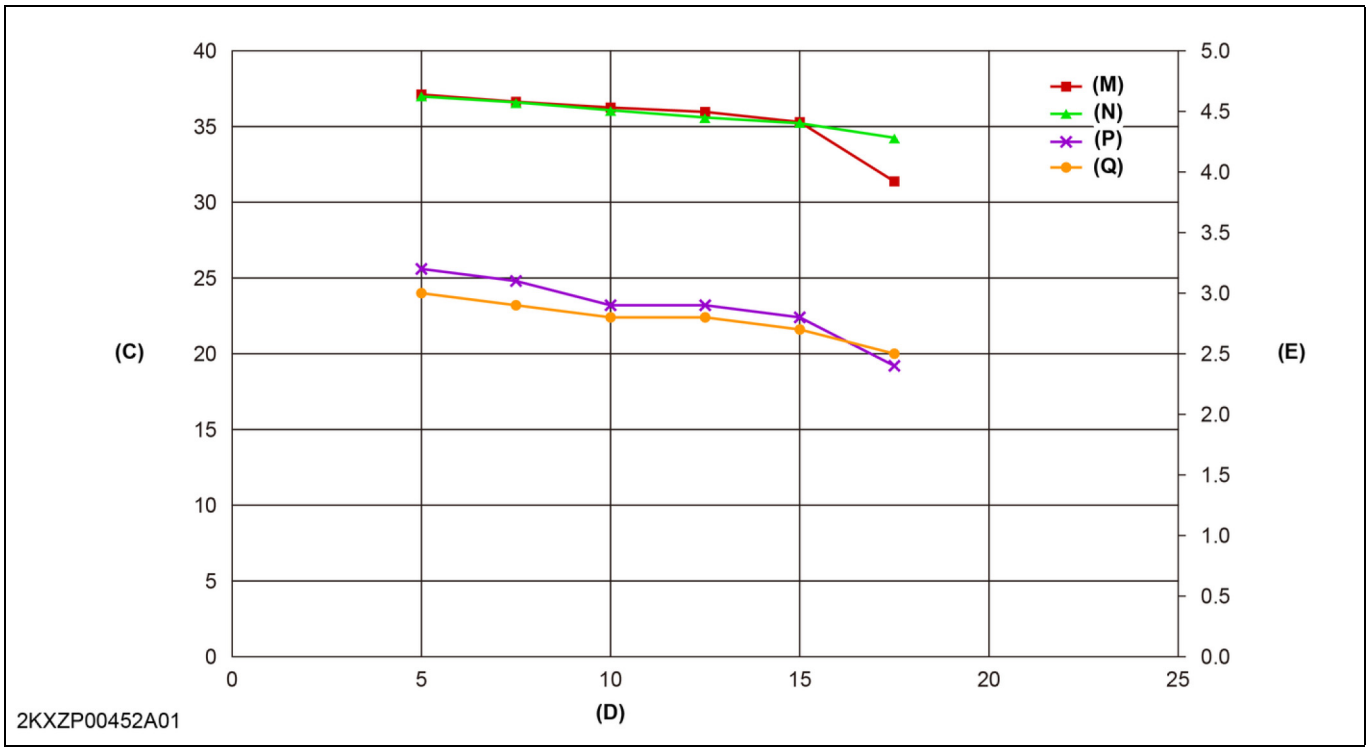
5.1.3 Flow rate AUX 1 U56-5



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

The values in the diagram as stated above are reference values and are measured on the machine.

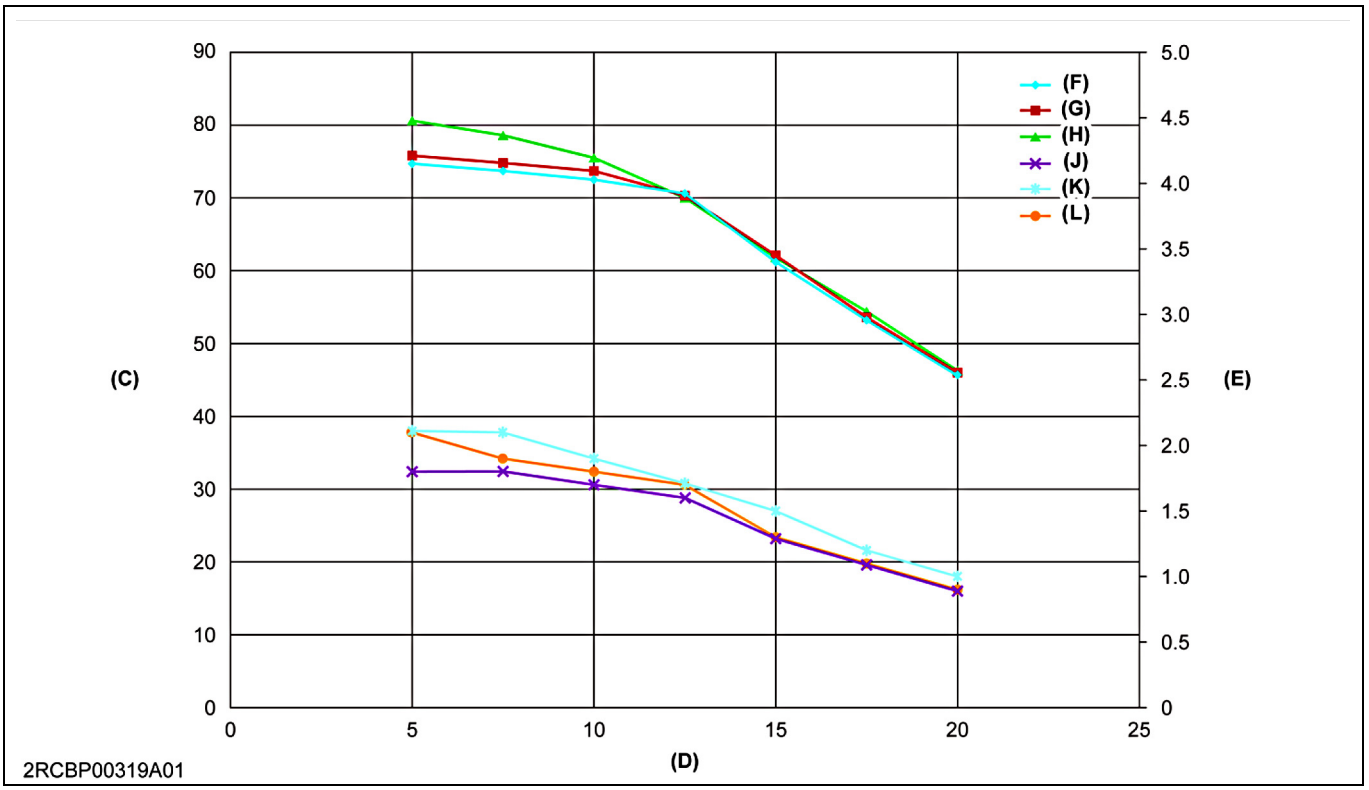
5.1.4 Flow rate AUX 2 U56-5



(C) Flow rate (L/min)
(D) Pressure (MPa)
(E) Back pressure (MPa)
(M) AUX2 LH
(N) AUX2 RH
(P) Back pressure (AUX2 LH)
(Q) Back pressure (AUX2 RH)

The values in the diagram as stated above are reference values and are measured on the machine.

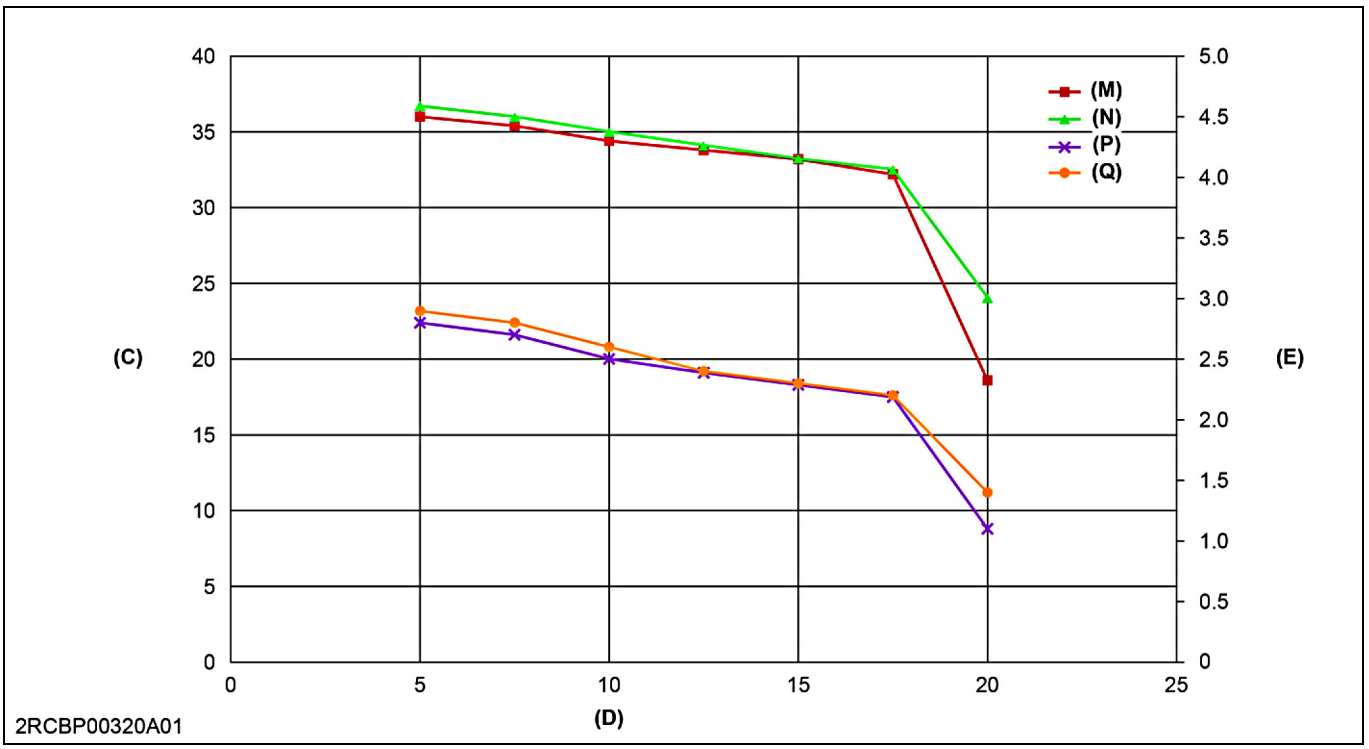
5.1.5 Flow rate AUX 1 U50-5



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

The values in the diagram as stated above are reference values and are measured on the machine.

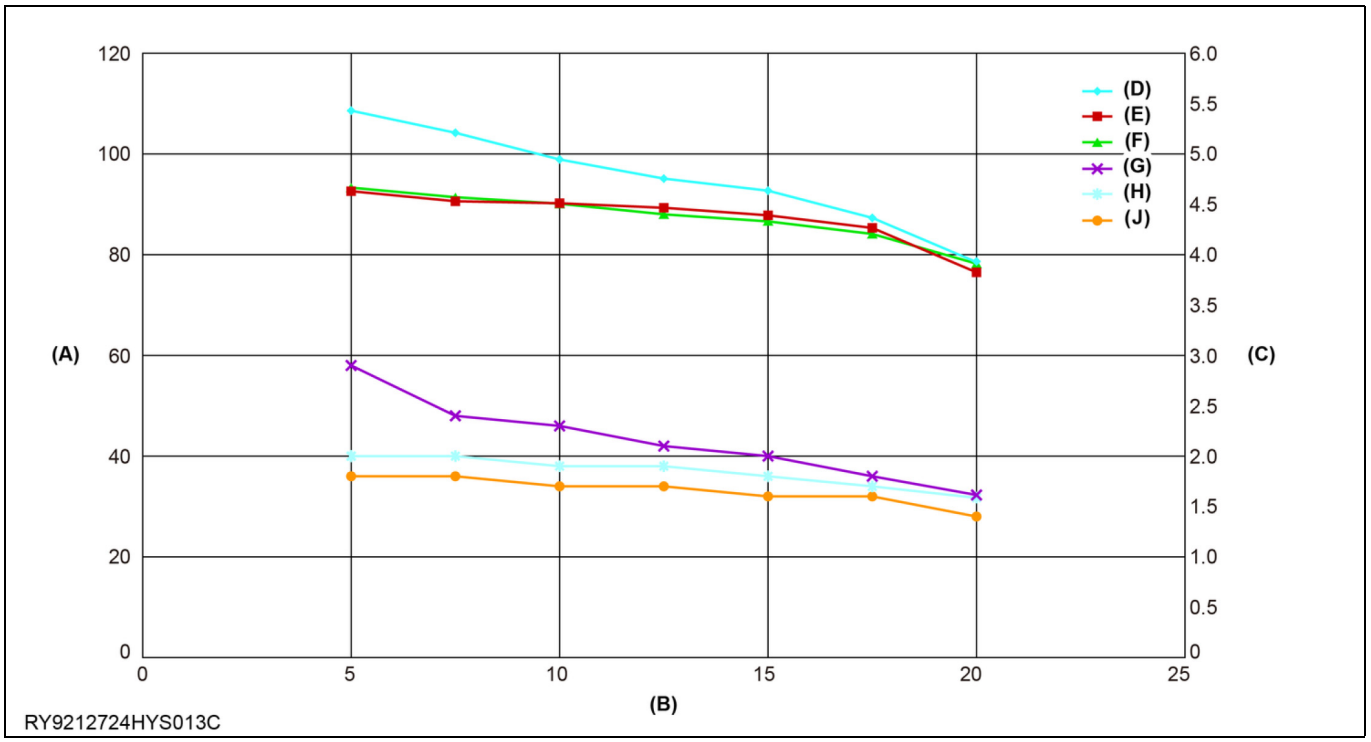
5.1.6 Flow rate AUX 2 U50-5



(C) Flow rate (L/min)
(E) Back pressure (MPa)
(N) AUX2 RH
(Q) Back pressure (AUX2 RH)
(D) Pressure (MPa)
(M) AUX2 LH
(P) Back pressure (AUX2 LH)

The values in the diagram as stated above are reference values and are measured on the machine.

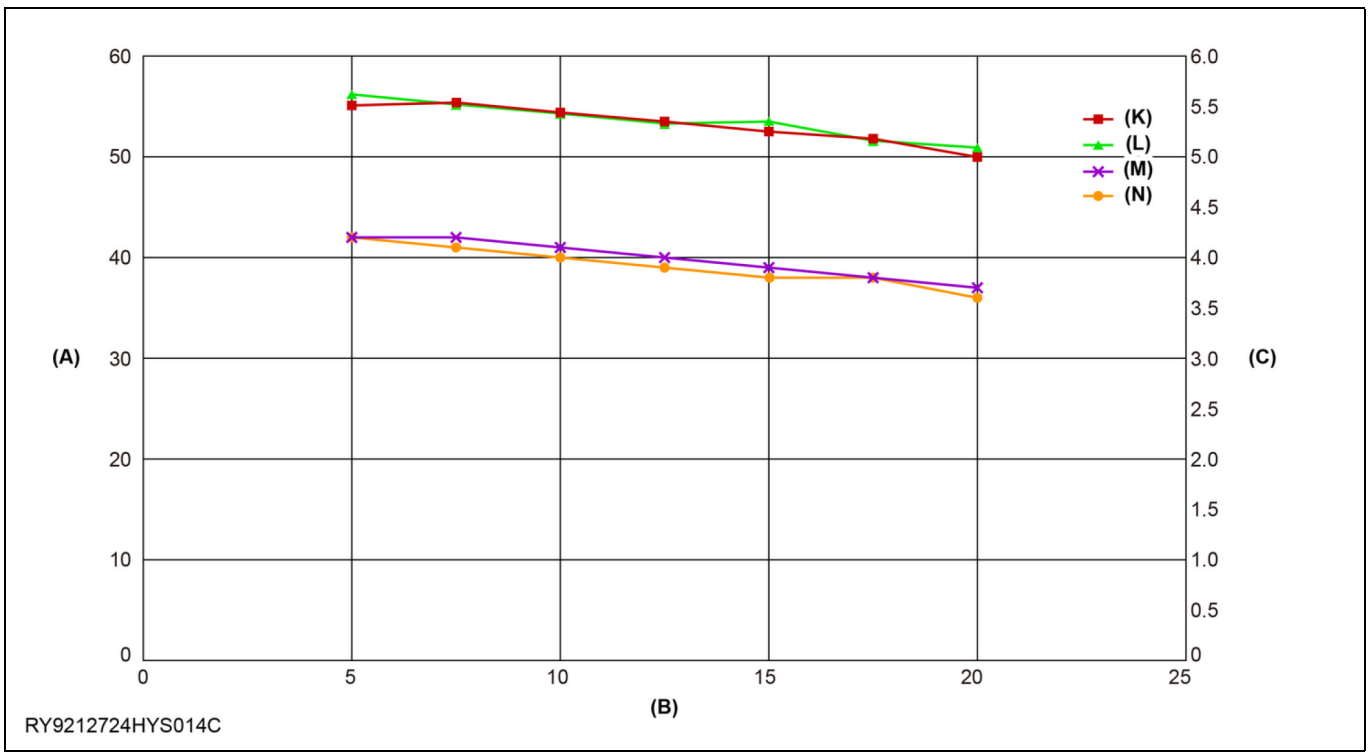
5.1.7 Flow rate AUX 1 KX085-5



(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)

The values in the diagram as stated above are reference values and are measured on the machine.

5.1.8 Flow rate AUX 2 KX085-5

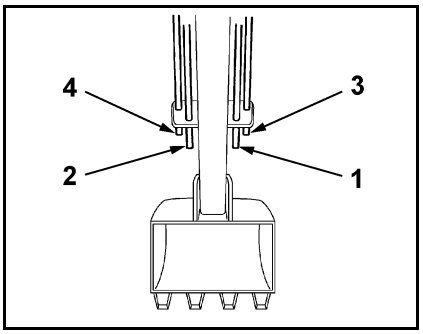


(A) Flow rate (L/min)
(B) Pressure (MPa)
(C) Back pressure (MPa)
(K) AUX2 LH
(L) AUX2 RH
(M) Back pressure (AUX2 LH)
(N) Back pressure (AUX2 RH)

The values in the diagram as stated above are reference values and are measured on the machine.

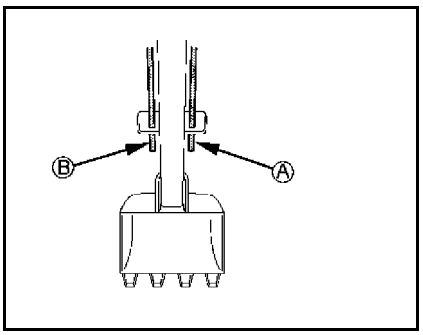
5.1.9 Position of service port connection

KX060-5, U56-5, U50-5, KX085-5



1 AUX 1 RH
2 AUX 1 LH
3 AUX 2 RH
4 AUX 2 LH

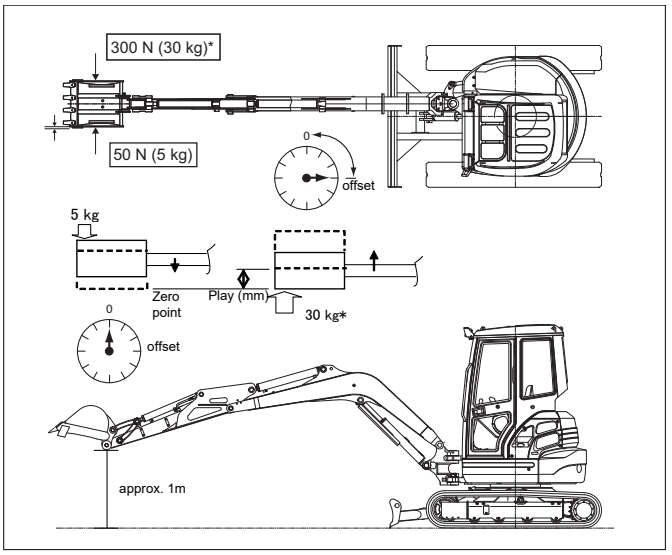
K008-5, U10-5



A AUX 1 RH
B AUX 1 LH

5.2 Play at the bucket tip

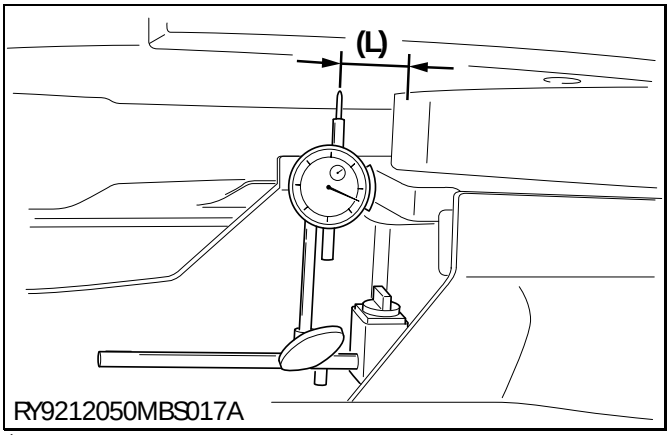
Model	Play at the bucket tip*
	max (mm)
KX060-5	73
U56-5	73
U50-5	73
K008-5	50
U10-5	50
KX085-5	70



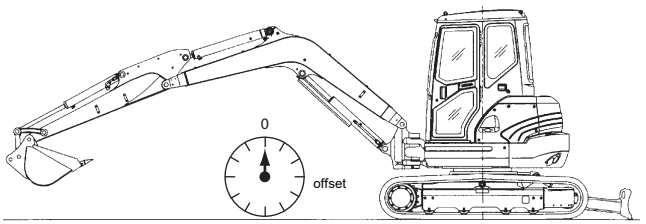
* The service limit is mentioned in the WSM of the respective model.

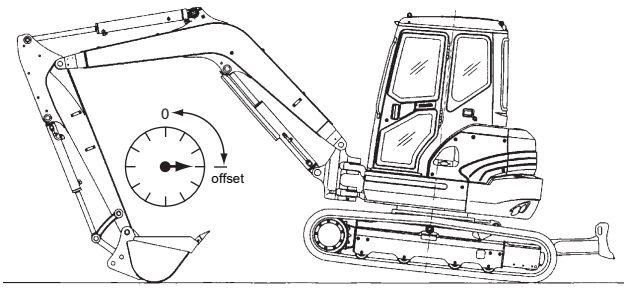
5.3 Swivel bearing play

Model	Swivel bearing play (mm)		
	Service specification	Allowable limit	Distance "L"[1] in mm
KX060-5	0,59	1,18	50
U56-5	0,58	1,16	50
U50-5	0,38	0,76	50
K008-5	1,04	2,08	170
U10-5	1,04	2,08	170
KX085-5	1,24	2,48	50



1 "L" is the distance between the swivel bearing race and the measuring point

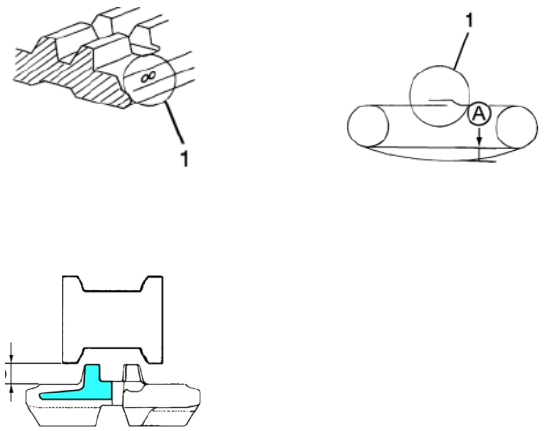




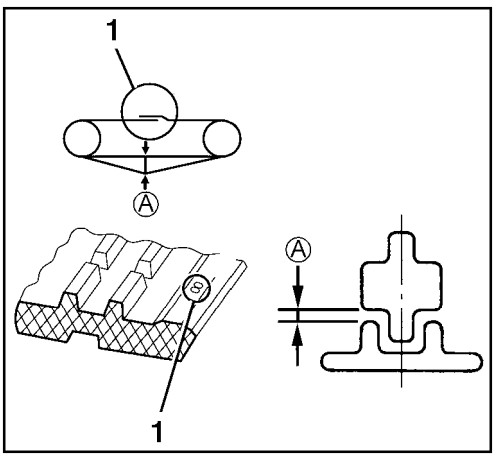
5.4 Crawler tension

Model	Crawler tension	
	Rubber (mm)	Steel (mm)
KX060-5	10 ~ 15	80 ~ 85
U56-5	10 ~ 15	80 ~ 85
U50-5	10 ~ 15	80 ~ 85
K008-5	10 ~ 15	---
U10-5	10 ~ 15	---
KX085-5	25 ~ 40	40 ~ 55

Rubber crawler

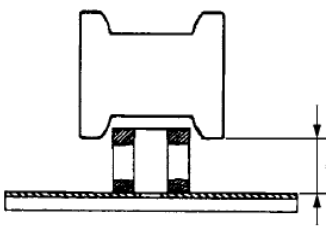


KX060-5, U56-5, U50-5

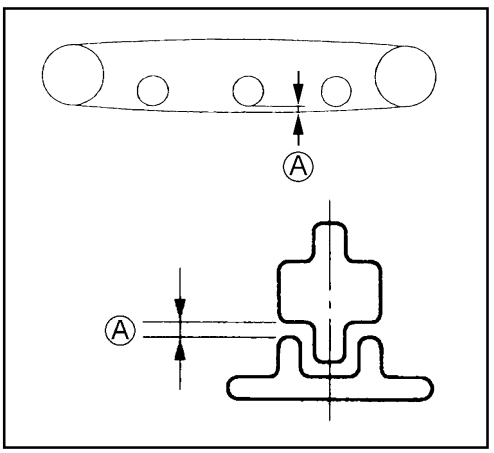


KX085-5

Steel crawler



KX060-5, U56-5, U50-5



KX085-5

Model	Engine base type	Compression pressure (bar)		Valve clearance (mm)	Engine rpm				Fan belt tension mm/98N	A/C belt tension mm/ 58,8~68,6N
		New engine	Allow-able limit		Idle	High idle*	Blade and 2 pumps in relief **	Pump in relief **		
KX060-5	V2607-CR-E5-BH	~32	~22	0,13~0,17	1075~1125	≤2300	>1980	-	7~9	12~15
				,						
U56-5	V2607-CR-E5-BH	~32	~22	0,13~0,17	1075~1125	≤2300	>1980	-	7~9	12~15
U50-5	D1803-CR-TE5-BH	~32	23,5	0,18~0,22	1125~1175	≤2300	-	>1980	7~9	12~15
K008-5	D722-E4-BH-5EU	~32	22,6	0,145~0,185	1300	≤2350	---	---	7~9	---
U10-5	D722-E4-BH-4EU	~32	22,6	0,145~0,185	1300	≤2350	---	---	7~9	---
KX085-5	V3307-CR-TE5	29~39,2	21	0,13~0,17	1075~1125	2000	---	---	10 / 98N	12~15

* High idle rpm with no load.
** Arm and bucket in relief position, hydr. oil temperature 50 °C ± 5 °C

5.6 A/C pressure switch

Model	A/C pressure switch (bar)		Refrigerant quantity (kg)
	Low	High	
KX060-5	1,96	31,4	0,75 ± 0,05
U56-5	1,96	31,4	0,75 ± 0,05
U50-5	1,96	31,4	0,75 ± 0,05
K008-5	---	---	---
U10-5	---	---	---
KX085-5	1,76~2,16	29,4~33,4	0,98

6 Tightening torques

6.1 General tightening torques

Indication on top of bolt	4 No-grade or 4T						7 7T						9 9T		
Indication on top of nut	04 No-grade or 4T												6 6T		
Material of opponent part	Ordinary			Aluminum			Ordinary			Aluminum			Ordinary		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M6	7,9 ~ 9,3	0,80 ~ 0,95	5,8 ~ 6,8	7,9 ~ 8,8	0,80 ~ 0,90	5,8 ~ 6,5	9,81 ~ 11,2	1,00 ~ 1,15	7,24 ~ 8,31	7,9 ~ 8,8	0,80 ~ 0,90	5,8 ~ 6,5	12,3 ~ 14,2	1,25 ~ 1,45	9,05 ~ 10,4
M8	18 ~ 20	1,8 ~ 2,1	13 ~ 15	17 ~ 19	1,7 ~ 2,0	13 ~ 14	24 ~ 27	2,4 ~ 2,8	18 ~ 20	18 ~ 20	1,8 ~ 2,1	13 ~ 15	30 ~ 34	3,0 ~ 3,5	22 ~ 25
M10	40 ~ 45	4,0 ~ 4,6	29 ~ 33	32 ~ 34	3,2 ~ 3,5	24 ~ 25	48 ~ 55	4,9 ~ 5,7	36 ~ 41	40 ~ 44	4,0 ~ 4,5	29 ~ 32	61 ~ 70	6,2 ~ 7,2	45 ~ 52
M12	63 ~ 72	6,4 ~ 7,4	47 ~ 53	–	–	–	78 ~ 90	7,9 ~ 9,2	58 ~ 66	63 ~ 72	6,4 ~ 7,4	47 ~ 53	103 ~ 117	10,5 ~ 12,0	76,0 ~ 86,7
M14	108 ~ 125	11,0 ~ 12,8	79,6 ~ 92,5	–	–	–	124 ~ 147	12,6 ~ 15,0	91,2 ~ 108	–	–	–	167 ~ 196	17,0 ~ 20,0	123 ~ 144
M16	167 ~ 191	17,0 ~ 19,5	123 ~ 141	–	–	–	197 ~ 225	20,0 ~ 23,0	145 ~ 166	–	–	–	260 ~ 304	26,5 ~ 31,0	192 ~ 224
M18	246 ~ 284	25,0 ~ 29,0	181 ~ 209	–	–	–	275 ~ 318	28,0 ~ 32,5	203 ~ 235	–	–	–	344 ~ 402	35,0 ~ 41,0	254 ~ 296
M20	334 ~ 392	34,0 ~ 40,0	246 ~ 289	–	–	–	368 ~ 431	37,5 ~ 44,0	272 ~ 318	–	–	–	491 ~ 568	50,0 ~ 58,0	362 ~ 419

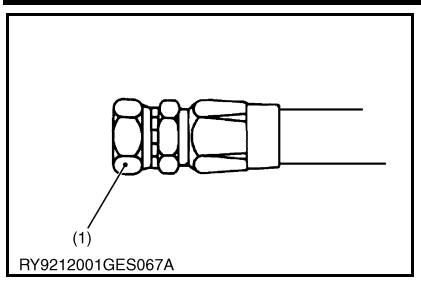
6.1.1 Stud bolts

Material of opponent part	Ordinary			Aluminum		
Unit	N·m	kgf·m	lbf·ft	N·m	kgf·m	lbf·ft
M8	12 ~ 15	1,2 ~ 1,6	8,7 ~ 11	8,9 ~ 11	0,90 ~ 1,2	6,5 ~ 8,6
M10	25 ~ 31	2,5 ~ 3,2	18 ~ 23	20 ~ 25	2,0 ~ 2,6	15 ~ 18
M12	30 ~ 49	3,0 ~ 5,0	22 ~ 36	31	3,2	23
M14	62 ~ 73	6,3 ~ 7,5	46 ~ 54	–	–	–
M16	98,1 ~ 112	10,0 ~ 11,5	72,4 ~ 83,1	–	–	–
M18	172 ~ 201	17,5 ~ 20,5	127 ~ 148	–	–	–

6.1.2 Torque for hydraulic hose fittings

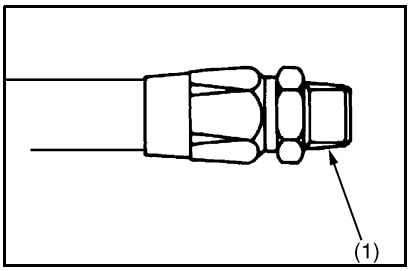
Union nuts	
1/8	7,8 ~ 11,8N·m 0,8 ~ 1,2kgf·m 5,7 ~ 8,7lbf·ft
1/4	24,5 ~ 29,2N·m 2,5 ~ 3,0kgf·m 18,1 ~ 21,7lbf·ft
3/8	37,2 ~ 42,1N·m 3,8 ~ 4,3kgf·m 27,5 ~ 31,1lbf·ft
1/2	58,8 ~ 63,7N·m 6,0 ~ 6,5kgf·m 43,4 ~ 47,0lbf·ft
3/4	117,6 ~ 127,4N·m 12,0 ~ 13,0kgf·m 86,8 ~ 94,0lbf·ft
1	181,3 ~ 191,1N·m 18,5 ~ 19,5kgf·m 133,8 ~ 141,0lbf·ft
1-1/4	220,5 ~ 230,3N·m 22,5 ~ 23,5kgf·m 162,8 ~ 170,0lbf·ft
9/16UNF (ORFS)	35,2 ~ 43,1N·m 3,6 ~ 4,4kgf·m 26,0 ~ 31,8lbf·ft
11/16UNF (ORFS)	60,0 ~ 73,5N·m 6,1 ~ 7,5kgf·m 44,3 ~ 54,2lbf·ft
13/16UNF (ORFS)	70,6 ~ 86,2N·m 7,2 ~ 8,8kgf·m 52,1 ~ 63,6lbf·ft
1-14UNS (ORFS)	105,8 ~ 129,4N·m 10,8 ~ 13,2kgf·m 78,0 ~ 98,4lbf·ft

Union nuts (metric thread)		
DN 4 - 1 / 8	M12 x 1,5	15 ~ 20N·m 1,5 ~ 2,0kgf·m 11,1 ~ 14,8lbf·ft
DN 6 - 1 / 4	M14 x 1,5	15 ~ 20N·m 1,5 ~ 2,0kgf·m 11,1 ~ 14,8lbf·ft
DN 8 - 5 / 16	M16 x 1,5	30 ~ 35N·m 3,1 ~ 3,6kgf·m 22,1 ~ 25,8lbf·ft
DN 10 - 3 / 8	M18 x 1,5	40 ~ 45N·m 4,1 ~ 4,6kgf·m 29,5 ~ 33,2lbf·ft
DN13 - 1 / 2	M22 x 1,5	50 ~ 55N·m 5,1 ~ 5,6kgf·m 36,9 ~ 40,6lbf·ft



(1) Union nuts

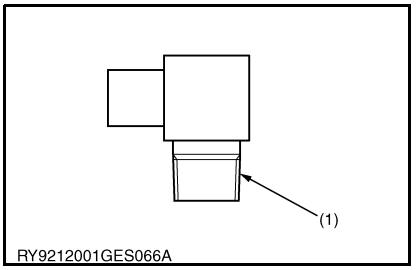
Tapered external thread	
1/8	19,6 ~ 29,4N·m 2,0 ~ 3,0kgf·m 14,5 ~ 21,7lbf·ft
1/4	36,6 ~ 44,1N·m 3,7 ~ 4,5kgf·m 26,8 ~ 32,5lbf·ft
3/8	68,6 ~ 73,5N·m 7,0 ~ 7,5kgf·m 50,6 ~ 54,2lbf·ft
1/2	83,4 ~ 88,3N·m 8,5 ~ 9,0kgf·m 61,5 ~ 65,1lbf·ft
3/4	166,6 ~ 181,3N·m 17,0 ~ 18,5kgf·m 123,0 ~ 133,8lbf·ft



(1) Taper

6.1.3 Torque for tapering adaptors

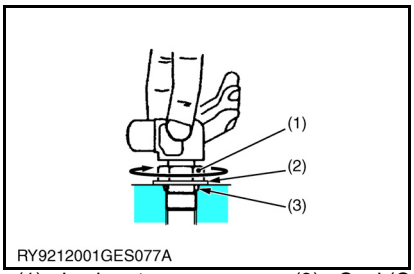
Tapered adaptors	
1/8	19,6 ~ 29,4N·m 2,0 ~ 3,0kgf·m 14,5 ~ 21,7lbf·ft
1/4	36,6 ~ 44,1N·m 3,7 ~ 4,5kgf·m 26,8 ~ 32,5lbf·ft
3/8	68,6 ~ 73,5N·m 7,0 ~ 7,5kgf·m 50,6 ~ 54,2lbf·ft
1/2	83,4 ~ 88,3N·m 8,5 ~ 9,0kgf·m 61,5 ~ 65,1lbf·ft
3/4	166,6 ~ 181,3N·m 17,0 ~ 18,5kgf·m 123,0 ~ 133,8lbf·ft



(1) Taper

6.1.4 Torques of lock-nuts for elbows with male seats and adaptors with O-rings (straight threads)

Lock nuts and adaptors with o-ring	
1/8	15,0 ~ 16,5N·m 1,5 ~ 1,7kgf·m 11,1 ~ 12,2lbf·ft
1/4	24,5 ~ 29,4N·m 2,5 ~ 3,0kgf·m 18,1 ~ 21,7lbf·ft
3/8	49,0 ~ 53,9N·m 5,0 ~ 5,5kgf·m 36,1 ~ 39,8lbf·ft
1/2	58,8 ~ 63,7N·m 6,0 ~ 6,5kgf·m 43,4 ~ 47,0lbf·ft
3/4	117,6 ~ 127,4 N·m 12,0 ~ 13,0 kgf·m 86,8 ~ 94,0 lbf·ft
1	120 ~ 140 N·m 12,2 ~ 14,3 kgf·m 88,5 ~ 103,3 lbf·ft
1-1/4	220,5 ~ 230,3N·m 22,5 ~ 23,5kgf·m 162,8 ~ 170,0lbf·ft
7/8 - 14UNF	55,9 - 60,8N·m 5,7 - 6,2kgf·m 41,2 - 44,8lbf·ft



(1) Lock-nut
(2) Washer
(3) Seal (O-ring)

Metric thread	
M10 × 1,0	15 ~ 20N·m 1,5 ~ 2,0kgf·m 11,1 ~ 14,8lbf·ft
M12 × 1,5	25 ~ 35N·m 2,6 ~ 3,6kgf·m 18,4 ~ 25,8lbf·ft
M14 × 1,5	34 ~ 45N·m 3,5 ~ 4,6kgf·m 25,1 ~ 33,2lbf·ft
M16 × 1,5	40 ~ 55N·m 4,1 ~ 5,6kgf·m 29,5 ~ 40,6lbf·ft
M18 × 1,5	45 ~ 65N·m 4,6 ~ 6,6kgf·m 33,2 ~ 47,9lbf·ft
M22 × 1,5	70 ~ 80N·m 7,1 ~ 8,2kgf·m 51,6 ~ 59,0lbf·ft
M24 × 1,5	80 ~ 90N·m 8,2 ~ 9,2kgf·m 59,0 ~ 66,4lbf·ft
M26 × 1,5	100 ~ 120N·m 10,2 ~ 12,2kgf·m 73,8 ~ 88,5lbf·ft
M30 × 2,0	120 ~ 140N·m 12,2 ~ 14,3kgf·m 88,5 ~ 103,3lbf·ft

6.2 Specific tightening torques

Model	Engine					Hydraulics			Chassis	
	Cylinder head cover (N·m)	Injection pipe retaining nut (N·m)	Cylinder head bolts (N·m)	Engine brackets (N·m)	Glow plug (N·m)	Main control valve tie rod (N·m)	Pump coupling to flywheel (N·m)	Piston pump fixation (N·m)	Sprocket (N·m)	Travel motor (N·m)
KX060-5	9,81 ~ 11,3	22,54 ~ 36,26	155 ~ 165	196,1 ~ 225,6	7,65 ~ 9,35	26,5 ~ 29,4	85 ~ 94	196,1 ~ 225,6	166,7 ~ 196,1	166,7 ~ 196,1
U56-5	9,81 ~ 11,3	22,54 ~ 36,26	155 ~ 165	196,1 ~ 225,6	7,65 ~ 9,35	26,5 ~ 29,4	85 ~ 94	196,1 ~ 225,6	166,7 ~ 196,1	166,7 ~ 196,1
U50-5	6,86 ~ 11,3	24,5 ~ 29,4	93,2 ~ 98,1	123,6 ~ 147,1	14,7 ~ 19,6	26,5 ~ 29,4	85 ~ 94	77,5 ~ 90,2	166,7 ~ 196,1	166,7 ~ 196,1
K008-5	6,86 ~ 11,3	24,5 ~ 35,3	38 ~ 42	48 ~ 56	7,84 ~ 14,7	13,7 ~ 14,7	23,5 ~ 27,5	39,2 ~ 45,1*	48 ~ 56	60,8 ~ 70,6
U10-5	6,86 ~ 11,3	24,5 ~ 35,3	38 ~ 42	48 ~ 56	7,84 ~ 14,7	13,7 ~ 14,7	23,5 ~ 27,5	39,2 ~ 45,1*	48 ~ 56	60,8 ~ 70,6
KX085-5	9,81 ~ 11,3	22,54 ~ 36,26	165 ~ 175	166 ~ 191	7,65 ~ 9,35	26,5 ~ 29,4	210 ~ 230	210 ~ 230	166,7 ~ 196,1	260 ~ 304

* on these models there is a gear pump installed

6.3 Torque conversion chart N·m to lbf·ft

Newton meter (N·m)	Pound foot (lbf·ft)	Newton meter (N·m)	Pound foot (lbf·ft)	Newton meter (N·m)	Pound foot (lbf·ft)	Newton meter (N·m)	Pound foot (lbf·ft)	Newton meter (N·m)	Pound foot (lbf·ft)
1	0,7	32	23,6	63	46,0	94	69,3	125	92,2
2	1,5	33	24,3	64	47,2	95	70,1	126	92,9
3	2,2	34	25,1	65	47,9	96	70,8	127	93,7
4	3,0	35	25,8	66	48,7	97	71,5	128	94,4
5	3,7	36	26,6	67	49,4	98	72,3	129	95,1
6	4,4	37	27,3	68	50,2	99	73,0	130	95,9
7	5,2	38	28,0	69	50,9	100	73,8	131	96,6
8	5,9	39	28,8	70	51,6	101	74,5	132	97,4
9	6,6	40	29,5	71	52,4	102	75,2	133	98,1
10	7,4	41	30,2	72	53,1	103	76,0	134	98,8
11	8,1	42	31,0	73	53,8	104	76,7	135	99,6
12	8,9	43	31,7	74	54,6	105	77,4	136	100,3
13	9,6	44	32,5	75	55,3	106	78,2	137	101,0
14	10,3	45	33,2	76	56,1	107	78,9	138	101,8
15	11,1	46	33,9	77	56,8	108	79,7	139	102,5
16	11,8	47	34,7	78	57,5	109	80,4	140	103,3
17	12,5	48	35,4	79	58,3	110	81,1	141	104,0
18	13,3	49	36,1	80	59,0	111	81,9	142	104,7
19	14,0	50	36,9	81	59,7	112	82,6	143	105,5
20	14,8	51	37,6	82	60,5	113	83,3	144	106,2
21	15,5	52	38,4	83	61,2	114	84,1	145	106,9
22	16,2	53	39,1	84	62,0	115	84,8	146	107,7
23	17,0	54	39,8	85	62,7	116	85,6	147	108,4
24	17,7	55	40,6	86	63,4	117	86,3	148	109,2
25	18,4	56	41,3	87	64,2	118	87,0	149	109,9
26	19,2	57	42,0	88	64,9	119	87,8	150	110,6
27	19,9	58	42,8	89	65,6	120	88,5	151	111,4
28	20,7	59	43,5	90	66,4	121	89,2	152	112,1
29	21,4	60	44,3	91	67,1	122	90,0	153	112,8
30	22,1	61	45,0	92	67,9	123	90,7	154	113,6
31	22,9	62	45,7	93	68,6	124	91,5	155	114,3
Conversion formula: pound foot = newton meter x 0,73756									

7 Annex 1 - Inspection sheets

Date
Inspector

Inspection sheet KX060-5

Reference: KTSE version 31.12.2020

Working hrs.: | Serial number: | Application/ Attachments:
Dealer: | Customer:

	Checked	Changed		Checked	Changed		Checked	Changed
Air filter	☐	☐	Engine oil level	☐		Fuel filter/water separator	☐	☐
Hydr. return filter		☐	Travel gear case oil		☐	V-belt tension	☐	
Hydr. suction filter		☐	Engine oil		☐			
Hydraulic oil	☐	☐	Engine oil filter		☐			

All hydraulic tests must be conducted at hydraulic oil temperature of 50 °C ± 5 °C.

Pressure settings	Unit	Actual	Spec.	Pressure settings	Unit	Actual	Spec.
aLS	bar		274 ± 3	aPp	bar		41 ± 5
aTR	bar		285 ± 5	aUN	bar		25,5 ± 2
aTL	bar		285 ± 5	Differential pressure LS	bar		-----
aP3	bar		195 ± 5				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		314 ± 3	Blade	bottom (b4B)	bar		274 ± 3
	rod (b1R)	bar		314 ± 3		rod (b4R)	bar		-----
	H/V (b1H)	bar		-----	AUX1	LH (b6L)	bar		206 ± 3
Arm	bottom (b2B)	bar		314 ± 3		RH (b6R)	bar		206 ± 3
	rod (b2R)	bar		314 ± 3	AUX2	LH (b10L)	bar		-----
Bucket	bottom (b3B)	bar		314 ± 3		RH (b10R)	bar		-----
	rod (b3R)	bar		314 ± 3	Swivel motor	cSR/cSL	bar		206

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2200rpm					
					[P1 = P2], P3 = 20 bar			[P1 = P2], P3 = 191 bar		
P3	l/min		37	29,6	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		15,6	12,5	75	110,4		75	86,8	
Stand-by P1+P2	l/min		-----	-----	100	109,1		100	71	
					150	74		150	49,8	
					175	62,6		175	35	
					200	52,6		200	17,4	
					225	43,6		225	5,3	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1125 ± 75	with P1+P2 in relief	rpm		> 1980	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2300	with blade and P1+P2 in relief	rpm		-----	
Valve clearance (cold)	mm		0,13-0,17					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 10	≤ 50
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 40

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 359 kg (incl. bucket) at the arm end. Measure the drift of the cylinders after 10 minutes

Speed	Unit	Actual		Spec.		Speed	Unit	Actual		Spec.	
		up/dump	down/crowd	up/dump	down/crowd			up/LH	down/RH	up/LH	down/RH
Boom	s			2,8 ± 0,3	3,2 ± 0,3	Dozer	s			2,0 ± 0,3	2,8 ± 0,3
Arm	s			2,6 ± 0,3	2,8 ± 0,3	Swing	s			6,5 ± 0,5	7,9 ± 0,5
Bucket	s			1,9 ± 0,3	2,7 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		17,8-21,7

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		12 ~ 15		6,8 ~ 8,4
Steel crawler	s		12 ~ 15		6,8 ~ 8,4

Straight travel (10m, max. speed)	Unit	Actual	Spec.
	mm		< 600

Comments:

Date
Inspector

Inspection sheet U56-5

Reference: KTSE version 31.12.2020

Working hrs.: | Serial number: | Application/ Attachments:
Dealer: | Customer:

	Checked	Changed		Checked	Changed		Checked	Changed
Air filter	☐	☐	Engine oil level	☐		Fuel filter/water separator	☐	☐
Hydr. return filter		☐	Travel gear case oil		☐	V-belt tension	☐	
Hydr. suction filter		☐	Engine oil		☐			
Hydraulic oil	☐	☐	Engine oil filter		☐			

All hydraulic tests must be conducted at hydraulic oil temperature of 50 °C ± 5 °C.

Pressure settings	Unit	Actual	Spec.	Pressure settings	Unit	Actual	Spec.
aLS	bar		274 ± 3	aPp	bar		41 ± 5
aTR	bar		285 ± 5	aUN	bar		25,5 ± 2
aTL	bar		285 ± 5	Differential pressure LS	bar		-----
aP3	bar		195 ± 5				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		314 ± 3	Blade	bottom (b4B)	bar		274 ± 3
	rod (b1R)	bar		314 ± 3		rod (b4R)	bar		-----
	H/V (b1H)	bar		-----	AUX1	LH (b6L)	bar		206 ± 3
Arm	bottom (b2B)	bar		314 ± 3		RH (b6R)	bar		206 ± 3
	rod (b2R)	bar		314 ± 3	AUX2	LH (b10L)	bar		-----
Bucket	bottom (b3B)	bar		314 ± 3		RH (b10R)	bar		-----
	rod (b3R)	bar		314 ± 3	Swivel motor	cSR/cSL	bar		206

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2200rpm					
					[P1 = P2], P3 = 20 bar			[P1 = P2], P3 = 191 bar		
P3	l/min		37	29,6	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		15,6	12,5	75	110,4		75	86,8	
Stand-by P1+P2	l/min		-----	-----	100	109,1		100	71	
					150	74		150	49,8	
					175	62,6		175	35	
					200	52,6		200	17,4	
					225	43,6		225	5,3	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1125 ± 75	with P1+P2 in relief	rpm		> 1980	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2300	with blade and P1+P2 in relief	rpm		-----	
Valve clearance (cold)	mm		0,13-0,17					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 10	≤ 50
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 40

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 359 kg (incl. bucket) at the arm end. Measure the drift of the cylinders after 10 minutes

Speed	Unit	Actual		Spec.		Speed	Unit	Actual		Spec.	
		up/dump	down/crowd	up/dump	down/crowd			up/LH	down/RH	up/LH	down/RH
Boom	s			2,8 ± 0,3	3,2 ± 0,3	Dozer	s			2,0 ± 0,3	2,8 ± 0,3
Arm	s			2,6 ± 0,3	2,8 ± 0,3	Swing	s			6,5 ± 0,5	7,9 ± 0,5
Bucket	s			1,9 ± 0,3	2,7 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		17,8-21,7

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		12 ~ 15		6,8 ~ 8,4
Steel crawler	s		12 ~ 15		6,8 ~ 8,4

Straight travel (10m, max. speed)	Unit	Actual	Spec.
	mm		< 600

Comments:

Date
Inspector

Inspection sheet U50-5

Reference: KTSE version 31.12.2020

Working hrs.: | Serial number: | Application/ Attachments:
Dealer: | Customer:

	Checked	Changed		Checked	Changed		Checked	Changed
Air filter	☐	☐	Engine oil level	☐		Fuel filter/water separator	☐	☐
Hydr. return filter		☐	Travel gear case oil		☐	V-belt tension	☐	
Hydr. suction filter		☐	Engine oil		☐			
Hydraulic oil	☐	☐	Engine oil filter		☐			

All hydraulic tests must be conducted at hydraulic oil temperature of 50 °C ± 5 °C.

Pressure settings	Unit	Actual	Spec.	Pressure settings	Unit	Actual	Spec.
aLS	bar		251 ± 5	aPp	bar		42 ± 5
aTR	bar		-----	aUN	bar		25,5 ± 2
aTL	bar		-----	Differential pressure LS	bar		-----
aP3	bar		-----				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		274 ± 5	Blade	bottom (b4B)	bar		314 ± 5
	rod (b1R)	bar		274 ± 5		rod (b4R)	bar		172 ± 5
	H/V (b1H)	bar		-----	AUX1	LH (b6L)	bar		206 ± 5
Arm	bottom (b2B)	bar		274 ± 5		RH (b6R)	bar		206 ± 5
	rod (b2R)	bar		274 ± 5	AUX2	LH (b10L)	bar		206 ± 5
Bucket	bottom (b3B)	bar		274 ± 5		RH (b10R)	bar		160 ± 5
	rod (b3R)	bar		274 ± 5	Swivel motor	cSR/cSL	bar		180

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2200rpm					
					P1			P1		
Pp	l/min		15,4	12,3	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Stand-by P1+P2	l/min		-----	-----	75	121,6 ± 2,5		150	79,1 ± 7,0	
					100	117,6 ± 2,5		175	63,8 ± 8,0	
					125	98,2 ± 7,0		200	53,2 ± 8,0	
								225	44,6	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1125 ± 75	with P1 in relief	rpm		> 1980	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2300					
Valve clearance (cold)	mm		0,18-0,22					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 10	≤ 50
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 40

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 341 kg (incl. bucket) at the arm end. Measure the drift of the cylinders after 10 minutes

Speed	Unit	Actual		Spec.		Speed	Unit	Actual		Spec.	
		up/dump	down/crowd	up/dump	down/crowd			up/LH	down/RH	up/LH	down/RH
Boom	s			2,7 ± 0,3	3,1 ± 0,3	Dozer	s			2,4 ± 0,3	2,3 ± 0,3
Arm	s			2,6 ± 0,3	2,8 ± 0,3	Swing	s			5,5 ± 0,5	6,4 ± 0,5
Bucket	s			2,2 ± 0,3	2,9 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		17,8-21,7

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		11,7 ~ 14,4		6,6 ~8,1
Steel crawler	s		11,7 ~ 14,4		6,6 ~8,1

Straight travel (10m, max. speed)	Unit	Actual	Spec.
	mm		< 600

Comments:

Date
Inspector

Inspection sheet K008-5

Reference: KTSE version 31.12.2021

Working hrs.: | Serial number: | Application/ Attachments:
Dealer: | Customer:

	Checked	Changed		Checked	Changed		Checked	Changed
Air filter	☐	☐	Engine oil level	☐		Fuel filter/water separator	☐	☐
Hydr. return filter		☐	Travel gear case oil		☐	V-belt tension	☐	
Hydr. suction filter		☐	Engine oil		☐			
Hydraulic oil	☐	☐	Engine oil filter		☐			

All hydraulic tests must be conducted at hydraulic oil temperature of 50 °C ± 5 °C.

Pressure settings	Unit	Actual	Spec.
aP1	bar		167 +3 / -5
aP2	bar		167 +3 / -5
aP3	bar		---
aPp	bar		---

Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		---
	rod (b1R)	bar		---
	H/V (b1H)	bar		-----
Arm	bottom (b2B)	bar		---
	rod (b2R)	bar		---
Bucket	bottom (b3B)	bar		---
	rod (b3R)	bar		-----

Overload relief valves		Unit	Actual	Spec.
Blade	bottom (b4B)	bar		-----
AUX1	LH (b6L)	bar		-----
	RH (b6R)	bar		-----
AUX2	LH (b10L)	bar		-----
	RH (b10R)	bar		-----
Swivel motor	cSR/cSL	bar		75 +5 / -0

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at maximum (bench value)					
					[P1 + P2], P3 = 5 bar			[P1 + P2], P3 = 201 bar		
					Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
P1	l/min		11,7	9,36	---	---		---	---	
P2	l/min		11,7	9,36	---	---		---	---	
					---	---		---	---	
					---	---		---	---	
					---	---		---	---	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1300 ± 50	with P1+P2 in relief	rpm		---	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2350	with blade and P1+P2 in relief	rpm		---	
Valve clearance (cold)	mm		0,145-0,185					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 11	≤ 55
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 40

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 50 kg (incl. bucket) at the arm end. Measure the drift of the cylinders after 10 minutes

Speed	Unit	Actual		Spec.		Speed	Unit	Actual		Spec.	
		up/dump	down/crowd	up/dump	down/crowd			up/LH	down/RH	up/LH	down/RH
Boom	s			2,5 ± 0,3	2,8 ± 0,3	Dozer	s			1,6 ± 0,3	1,2 ± 0,3
Arm	s			2,8 ± 0,3	3,0 -0,2 / +0,8	Swing	s			3,9 ± 0,3	3,6 ± 0,3
Bucket	s			2,0 ± 0,3	2,9 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		19,8 ~ 24,0

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		16,4 ~ 20,0		-----
Steel crawler	s		-----		-----

Straight travel (10m, max. speed)	Unit	Actual	Spec.
	mm		< 1000

Comments:

Date
Inspector

Inspection sheet U10-5

Reference: KTSE version 31.12.2021

Working hrs.: | Serial number: | Application/ Attachments:
Dealer: | Customer:

	Checked	Changed		Checked	Changed		Checked	Changed
Air filter	☐	☐	Engine oil level	☐		Fuel filter/water separator	☐	☐
Hydr. return filter		☐	Travel gear case oil		☐	V-belt tension	☐	
Hydr. suction filter		☐	Engine oil		☐			
Hydraulic oil	☐	☐	Engine oil filter		☐			

All hydraulic tests must be conducted at hydraulic oil temperature of 50 °C ± 5 °C.

Pressure settings	Unit	Actual	Spec.
aP1	bar		177 +3 / -5
aP2	bar		177 +3 / -5
aP3	bar		---
aPp	bar		39 +5 / -0

Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		---
	rod (b1R)	bar		---
	H/V (b1H)	bar		-----
Arm	bottom (b2B)	bar		---
	rod (b2R)	bar		---
Bucket	bottom (b3B)	bar		---
	rod (b3R)	bar		-----

Overload relief valves		Unit	Actual	Spec.
Blade	bottom (b4B)	bar		-----
AUX1	LH (b6L)	bar		-----
	RH (b6R)	bar		-----
AUX2	LH (b10L)	bar		-----
	RH (b10R)	bar		-----
Swivel motor	cSR/cSL	bar		75 +5 / -0

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at maximum (bench value)					
					[P1 + P2], P3 = 5 bar			[P1 + P2], P3 = 201 bar		
					Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
P1	l/min		11,5	9,2	---	---		---	---	
P2	l/min		11,5	9,2	---	---		---	---	
Pp	l/min		6,9	5,5	---	---		---	---	
					---	---		---	---	
					---	---		---	---	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1300 ± 50	with P1+P2 in relief	rpm		---	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2350	with blade and P1+P2 in relief	rpm		---	
Valve clearance (cold)	mm		0,145-0,185					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 11	≤ 55
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 40

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 53 kg (incl. bucket) at the arm end. Measure the drift of the cylinders after 10 minutes

Speed	Unit	Actual		Spec.		Speed	Unit	Actual		Spec.	
		up/dump	down/crowd	up/dump	down/crowd			up/LH	down/RH	up/LH	down/RH
Boom	s			2,5 ± 0,3	2,8 ± 0,3	Dozer	s			1,6 ± 0,3	1,2 ± 0,3
Arm	s			2,8 ± 0,3	4,0 ± 0,3	Swing	s			3,9 ± 0,3	3,6 ± 0,3
Bucket	s			2,0 ± 0,3	2,9 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		19,8 ~ 24,0

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		16,4 ~ 20,0		8,2 ~ 10,0
Steel crawler	s		-----		-----

Straight travel (10m, max. speed)	Unit	Actual	Spec.
	mm		< 1000

Comments:

Date
Inspector

Inspection sheet KX085-5

Reference: KTSE version 31.12.2023

Working hrs.: | Serial number: | Application/ Attachments:
Dealer: | Customer:

	Checked	Changed		Checked	Changed		Checked	Changed
Air filter	☐	☐	Engine oil level	☐		Fuel filter/water separator	☐	☐
Hydr. return filter		☐	Travel gear case oil		☐	V-belt tension	☐	
Hydr. suction filter		☐	Engine oil		☐			
Hydraulic oil	☐	☐	Engine oil filter		☐			

All hydraulic tests must be conducted at hydraulic oil temperature of 50 °C ± 5 °C.

Pressure settings			Unit	Actual	Spec.	Pressure settings	Unit	Actual	Spec.
aP1	Standard boom		bar		274 ± 3	aPp	bar		39 + 10 / - 5
	2P boom	Front attachment	bar		274 ± 4	aUN	bar		20 ± 2,5
		Travel, dozer blade	bar		294 ± 4	Differential pressure LS	bar		16,5
aP2	Standard boom		bar		274 ± 4				
	2P boom		bar		274 ± 4				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		314 ± 3	Bucket	bottom (b3B)	bar		314 ± 3
	rod (b1R)	bar		314 ± 3		rod (b3R)	bar		314 ± 3
	H/V (b1H)	bar		343 ± 10	Blade	bottom (b4B)	bar		343 ± 3
2nd boom (2piece boom version)	bottom (b7B)	bar		343 ± 3		rod (b4R)	bar		172 ± 3
	rod (b7R)	bar		343 ± 3	AUX1	LH (b6L)	bar		206 ± 3
	H/V (b7H)	bar		333 ± 10		RH (b6R)	bar		206 ± 3
Arm	bottom (b2B)	bar		314 ± 3	AUX2	LH (b10L)	bar		206 ± 3
	rod (b2R)	bar		314 ± 3		RH (b10R)	bar		206 ± 3
					Swivel motor	cSR/cSL	bar		-----

P-Q curve check values at 2000rpm [P1+P2]									
Pressure	**bar**	**100**	**Actual**	**150**	**Actual**	**200**	**Actual**	**250**	**Actual**
P mode	l/min	153		114,8		85,3		66,7	
Pressure	**bar**	**125**	**Actual**	**175**	**Actual**	**225**	**Actual**	**275**	**Actual**
P mode	l/min	133,4		95,7		76,5		55,9	

Pump flow	Unit	Actual	Spec.	Wear limit 80%
Pp	l/min		14,0	11,36
Stand-by P1+P2	l/min		10,2	-----

Engine	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1100	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		2000	
Valve clearance (cold)	mm		0,13-0,17	

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
2nd boom (2pcs boom version)	mm		≤ 10	≤ 50
Arm cyl.	mm		≤ 20	≤ 100
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 100

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 590,6 kg (incl. bucket) at the arm end. Measure the drift of the cylinders after 10 minutes

Speed	Unit	Actual		Spec.		Speed	Unit	Actual		Spec.	
		up/dump	down/crowd	up/dump	down/crowd			up/LH/ crowd	down/RH/ dump	up/LH/ crowd	down/RH/ dump
Boom	s			3,0 ± 0,3	3,2 ± 0,3	Dozer	s			2,3 ± 0,3	3,4 ± 0,3
Arm	s			3,0 ± 0,3	3,3 ± 0,3	Swing	s			7,3 ± 0,7	7,9 ± 0,7
Bucket	s			2,1 ± 0,3	3,0 ± 0,3	Boom (2pcs)	s			3,7 ± 0,3	3,9 ± 0,3
						2nd boom (2pcs)	s			4,7 ± 0,3	4,8 ± 0,3

Swivel (3 turns)	Unit	Actual	Spec.
	s		16,7 ~ 20,5
Straight travel (10m, max. speed)	mm		< 600

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		12,0 ~ 15,0		6,8 ~ 8,4
Steel crawler	s		12,9 ~ 16,4		7,2 ~ 9,0

Comments: