MDA

MECHANIC'S DAILY SERVICE AID

Compact Excavators

-4 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).

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Record of Revision				
MDA book version	Part no. of the replacement pages	Date	Main revised point and corrective measures	Person in charge
RY920-2141-1	RY920-2307-0	15.09.2012	Udate of the technical data Pages: 1-2, 1-7, 2-9 ~ 2-11, 2-13, 2-15, 2-16, 3-9, 4-7, 5-6, 6-2, 6-3, Inspection sheets	Laubscher
RY920-2141-2	RY920-2311-0	23.12.2013	Excavator KX080-4 added Correction of the hydraulic circuits excavator KX015-4, KX016-4, KX018-4, KX019-4 Changing all pagination	Laubscher
RY920-2141-3	RY920-2363-0	15.10.2014	Excavator U27-4 added Inserted the fuse KX080-4 for the air conditioner condenser fan	Laubscher
RY920-2141-4	RY920-2307-0	01.12.2017	Added excavator model U27-4 Hi Added excavator model KX080-4 Alpha	Laubscher
RY920-2141-5	RY920-2617-0	31.12.2018	Added excavator model KX027-4 Added excavator model KX027-4 Hi Added excavator model KX030-4 Added excavator model KX030-4 Hi Added excavator model U36-4 Added excavator model KX042-4	Laubscher

1 Maintenance

1.1 Maintenance chart

General maintenance	Model	Hours					Interval
		50	250	500	750	1000	
Check the coolant hoses and hose clamps	all models		❍	❍	❍	❍	250
Check and adjust the V-belt	all models		❍	❍	❍	❍	250
Change the engine oil and oil filter [1]	all models			❍		❍	500
Replace the drive unit oil	all models	●		❍		❍	500
Replace the fuel filter	all models			❍		❍	500
Replace the tank breather filter	all models			❍		❍	500
Replace the return filter [3]	KX015-4, KX016-4 KX018-4, KX019-4, KX080-4, KX080-4α, U27-4, KX027-4, KX030-4, U36-4		●	❍		❍	500
	KX057-4, U48-4, U55-4					❍	1000
	KX042-4		●			❍	1000
Replace the pilot circuit filter	KX057-4, U48-4, U55-4, KX080-4, KX080-4α, U27-4, KX027-4, KX030-4, KX042-4					❍	1000
Change the hydraulic oil and change the suction filter [3]	all models					❍	1000
Replace the air filter elements [2]	all models					❍	1000
Replace the interior air filter [2]	all Models with A/C					❍	1000
Replace oil separator filter	KX080-4, KX080-4α, KX042-4						1500
Check EGR cooler	KX080-4 KX080-4α, KX042-4						1500
Change the oil of the idler and track roller	all models						2000
Check the alternator and starter motor	all models						2000
Check EGR system	KX080-4 KX080-4α, KX042-4						3000
Check turbo charger	KX080-4 KX080-4α, KX042-4						3000
Change diesel particle filter	KX080-4 KX080-4α, KX042-4						3000
Safety inspection	all models						annually
Check load pressure sensor and mass air flow sensor	KX080-4 KX080-4α, KX042-4						annually

General maintenance	Model	Hours					Interval
		50	250	500	750	1000	
Check condition of DPF catalyst	KX080-4 KX080-4α, KX042-4						annually
Check DPF differential pressure sensor and tubings for gas leakage	KX080-4 KX080-4α, KX042-4						annually
Check DPF exhaust gas temperature sensor	KX080-4 KX080-4α, KX042-4						annually
Check EGR and tubings for gas leakage	KX080-4 KX080-4α, KX042-4						annually
Replace the coolant hoses and hose clamps	all models						every 2 years
Replace the fuel lines and air intake hoses	all models						every 2 years
Replace the pipes and hoses of the air conditioner	all Models with A/C						every 2 years
Replace the coolant	all models						every 2 years
Change the hydraulic hoses	all models						every 6 years
Flush the radiator	KX080-4 KX080-4α, KX042-4						every 2 years
Replace crankcase ventilation hoses	KX080-4 KX080-4α, KX042-4						every 2 years
Replace DPF differential pressure sensor hoses (front and rear)	KX080-4 KX080-4α, KX042-4						every 2 years
Replace the mass air flow sensor downstream suction pipe	KX080-4 KX080-4α, KX042-4						every 2 years
Replace the load pressure sensor hose	KX080-4 KX080-4α, KX042-4						every 2 years
Replace the EGR cooler hose	KX080-4 KX080-4α, KX042-4						every 2 years
Change the hydraulic hoses	all models						every 6 years
Check the refrigerant gas content	all Models with A/C						maintenance on demand

1 See 1.5 Recommended lubricants
2 Under dusty conditions, the outer air filter element and interior filter (A/C) must be cleaned or replaced much more frequently
3 When using a hydraulic hammer over 20%→ every 800 h.
When using a hydraulic hammer over 40%→ every 400 h.
When using a hydraulic hammer over 60%→ every 300 h.
When using a hydraulic hammer over 80%→ every 200 h.

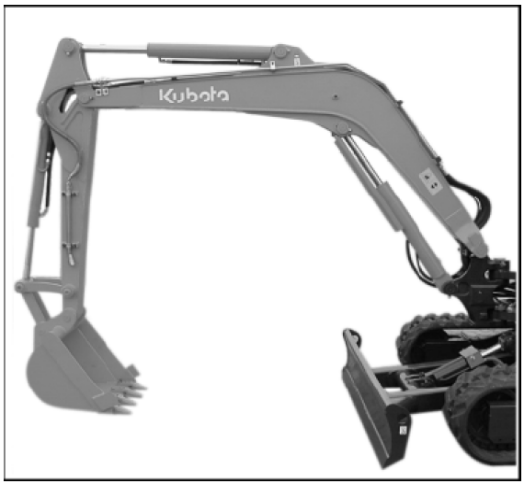
■ **NOTE**
You will find the reset method for periodical check message in chapter 1.4.

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
KX057-4		9	7 + 1,1	0,9	79	45	75	50	60	80	0,65 ~ 0,75	100 ~ 120
KX080-4 KX080-4α		9,7	10,5 + 1,3	1,3	146 / 159 (2pcs. boom)	75	115	80	80	80	0,95	110 ~ 120
U55-4		9	7 + 1,1	0,9	79	45	68	50	60	80	0,65 ~ 0,75	100 ~ 120
U48-4		9	7 + 1,1	0,9	79	45	68	50	60	80	0,65 ~ 0,75	100 ~ 120
KX015-4		2,6	2,7 + 0,6 (Canopy) 2,9 + 0,6 (Cabin)	0,33	28	15,5	21	30	---	40	---	---
KX016-4		2,6	2,7 + 0,6 (Canopy) 2,9 + 0,6 (Cabin)	0,33	28	15,5	21	[1]30	---	[1]40	---	---
KX018-4		3,6	2,7 + 0,6 (Canopy) 2,9 + 0,6 (Cabin)	0,33	28	15,5	21	[1]30	---	[1]40	---	---
KX019-4		3,6	2,7 + 0,6 (Canopy) 2,9 + 0,6 (Cabin)	0,33	28	15,5	21	[1]30	---	[1]40	---	---
U27-4		4	2,4 + 0,6 (Canopy) 2,6 + 0,6 (Cabin)	0,35	37,5	22	33	[1]75	[1]60	[1]80	---	---
KX027-4		4,4	3,3 + 1,0 (Canopy) 3,5 + 1,0 (Cabin)	0,6	52	34	48	[1]75	[1]60	[1]80	---	---
KX030-4		4,5	2,4 + 0,6 (Canopy) 2,6 + 0,6 (Cabin)	0,35	42	34	48	[1]75	[1]60	[1]80	---	---
U36-4		5,3	4,3 + 0,85 (Canopy) 4,7 + 0,85 (Cabin)	0,6	61	35,7	45,1	[2]80	[2]60	[3]40	---	---
KX042-4		5	7,0 + 1,1	0,65	67	42	65,3	[2]80	[2]50	[2]80	0,65 ~ 0,75	100 ~ 120

1.3 Position to check the hydraulic oil level

1.3.1 KX057-4, U55-4, U48-4, U36-4, KX042-4

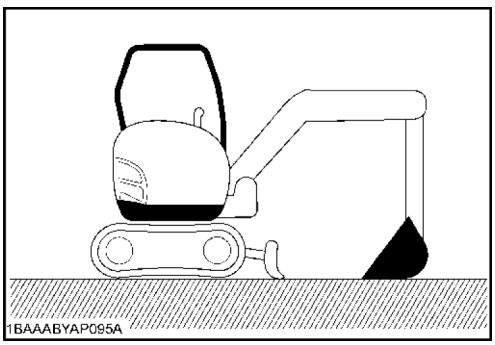
Operate the boom, arm, bucket and boom swing mechanism so that all hydraulic cylinders are extended half way. Lower the dozer onto the ground. Oil level should be approximately in the middle of the oil gauge.





1.3.2 KX015-4, KX016-4, KX018-4, KX019-4

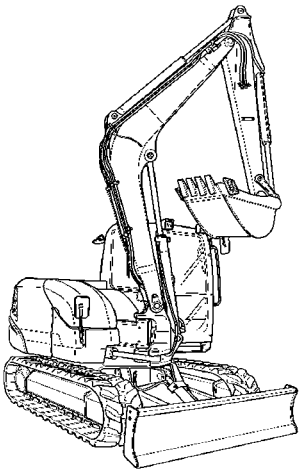
Operate the boom, the 2piece boom, arm, bucket and boom swing mechanism so that all hydraulic cylinders are fully extended. Lower the dozer onto the ground. Set variable track (KX016-4/KX018-4/KX019-4) to maximum track width. Oil level should be approximately in the middle of the oil gauge.

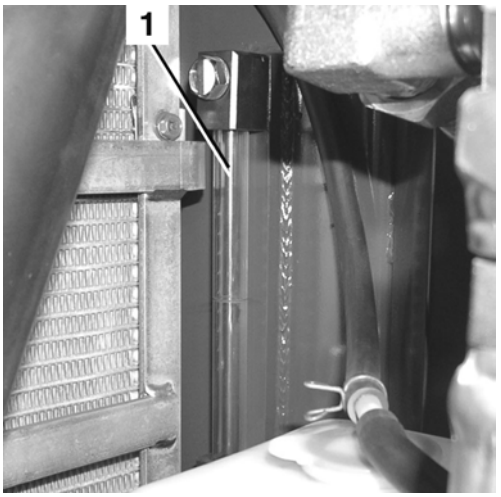




1.3.3 KX080-4, KX080-4α

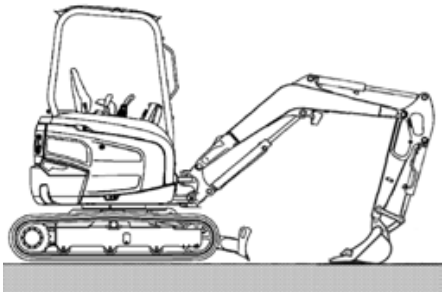
Operate the boom, the 2piece boom, arm, bucket and boom swing mechanism so that all hydraulic cylinders are fully extended. Lower the dozer onto the ground. Oil level should be approximately in the middle of the oil gauge.

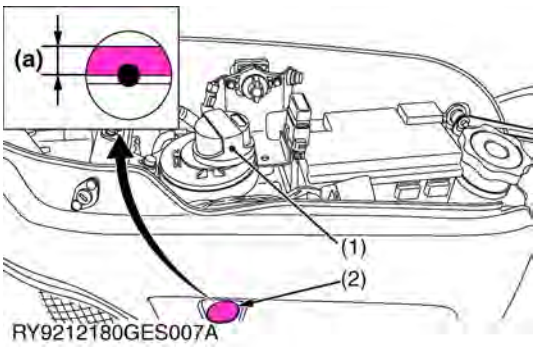




1.3.4 U27-4, KX027-4, KX030-4

Operate the boom, arm, bucket and boom swing mechanism so that all hydraulic cylinders are extended half way. Lower the dozer onto the ground. Boom swing function directed to the front. Oil level should be approximately in the middle of the oil gauge.





(1) Filler port
(2) Oil level gauge

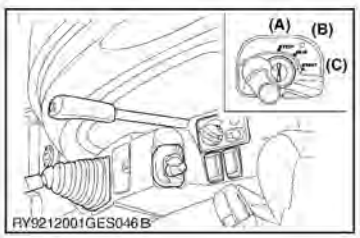
(a) Normal range of hydraulic oil

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

1.4.1 KX057-4, U55-4, U48-4

[Operation 1]

Turn the starter key to [RUN] position.



(A)STOP (B)RUN (C)START

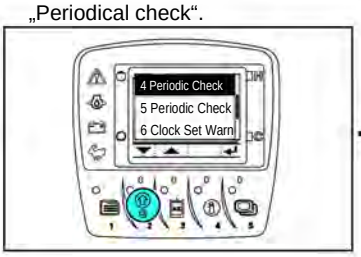
[Operation 2]

Press SW1 (user setting).



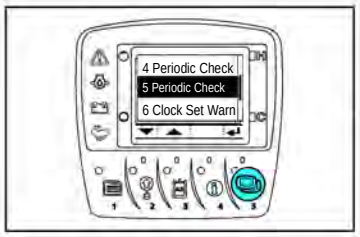
[Operation 3]

Press SW2 and select „Periodical check“.



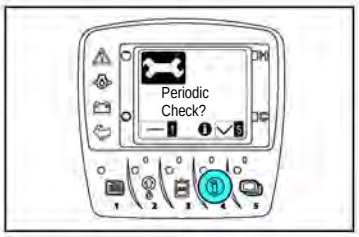
[Operation 4]

Select „Periodical check“ and press SW5.



[Operation 5]

At the time of confirming the check items, press SW4.



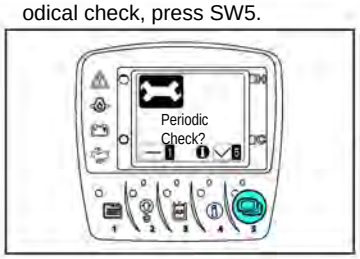
[Operation 6]

Confirm the displayed maintenance items, press SW4 again, and the screen will return to the original image.

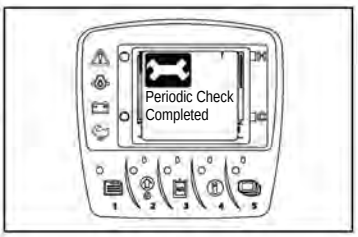


[Operation 7]

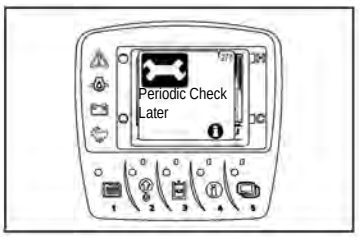
After completion of the periodical check, press SW5.



[Periodical check completed]

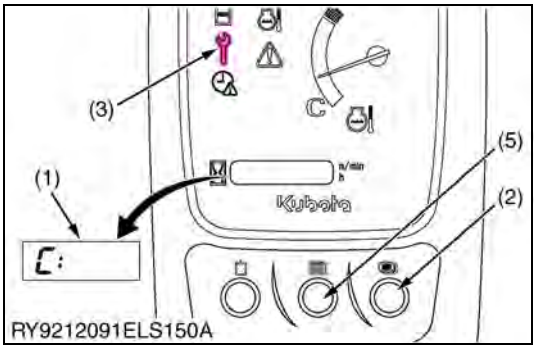


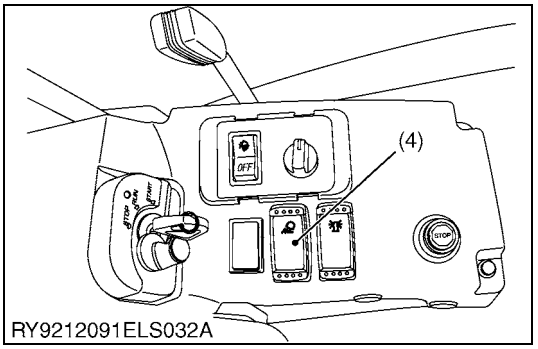
※ Pressing SW5 except during the periodical check time will display the following image.

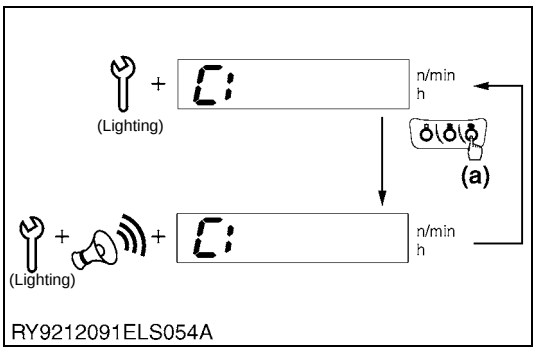


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1.4.2 KX015-4, KX016-4, KX018-4, KX019-4





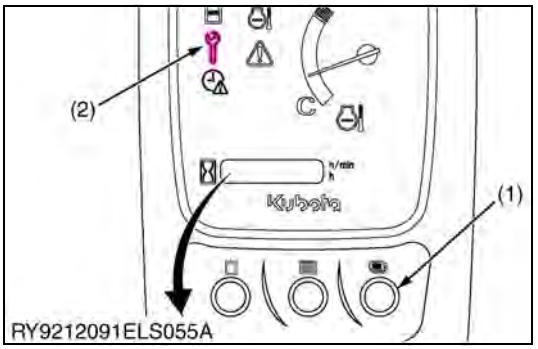


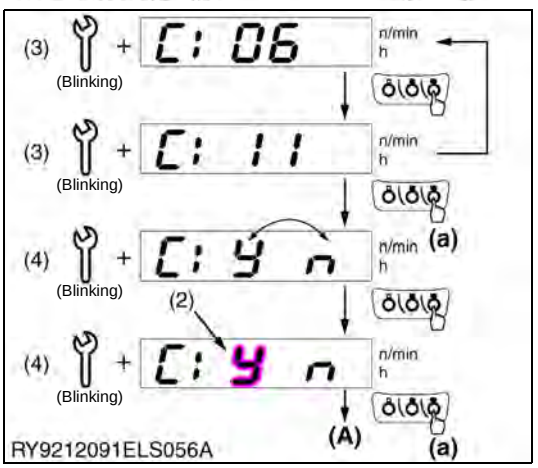
Switching to the periodic inspection item display screen

1. Turn the starter key to position RUN and press user setting switch SW1 until "C:" is shown in the display.
2. After switching to the user settings mode, press SW2 and select the periodic inspection mode.
3. After turning the work light switch ON/OFF once, pressing and holding SW2 switches the display to the periodic inspection item display screen.

- If there are no periodic inspection items, when SW2 is held down, the buzzer will beep two times and the screen display will not change.

(1) Periodic Inspection Mode **(a) Press and hold SW2**
(2) Toggle display switch (SW2)
(3) Periodic inspection light
(4) Work light switch
(5) User setting switch (SW1)





Checking periodic inspection items and operations after the inspection

1. When there are periodic inspection items, the periodic inspection lamp blinks and the code(s) of items to be inspected are displayed on the LCD screen. (For information on the codes displayed and the periodic inspection items, refer to "Table of Periodic Inspection Items."
2. If there are multiple places to be inspected, pressing SW2 toggles the code display in a loop.
3. Pressing and holding SW2 while the code of a periodic inspection item is displayed switches the screen to the part inspection check screen.
4. Pressing SW2 toggles the selection between YES and NO and the selected item blinks.
5. Once a periodic inspection is complete, select YES and then press and hold SW2 to confirm it. After the buzzer beeps several times and the inspection item disappears, return to the normal mode.
6. If you select NO and then press and hold SW2, thus confirming it, you can allow the periodic inspection item to continue to be displayed.

(1) Toggle display switch (SW2) **(a) Press and hold SW2**
(2) Blinks
(3) Periodic inspection item **(A) Normal mode**
(4) Checking inspection individually

Table of periodic inspection items

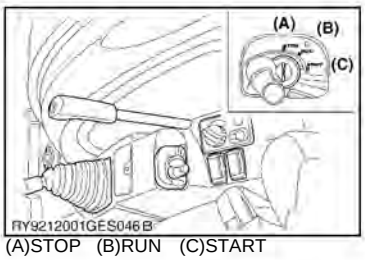
When the hour meter has counted up to the hours circled in the maintenance list below, the message appears. The message shows up as follows.

No.	Check points
C: _ _ 1	Engine oil
C: _ _ 2	Hydraulic oil
C: _ _ 3	Air filter element
C: _ _ 4	Fuel filter cartridge
C: _ _ 5	Engine oil filter
C: _ _ 6	Drive unit oil
C: _ _ 7	Hydraulic return filter element
C: _ _ 8	Hydraulic suction filter element
C: _ _ 9	–
C: _ 1 0	Front idler and track roller oil
C: _ 1 1	Breather filter

1.4.3 KX080-4, KX080-4α, U36-4, KX042-4

[Operation 1]

Turn the starter key to [RUN] position.



(A)STOP (B)RUN (C)START

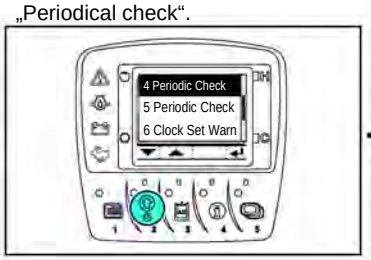
[Operation 2]

Press SW1 (user setting).



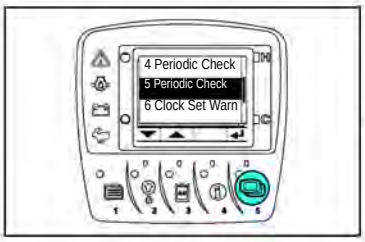
[Operation 3]

Press SW2 and select „Periodical check“.



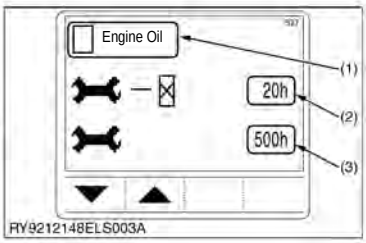
[Operation 4]

Select „Periodical check“ and press SW5.



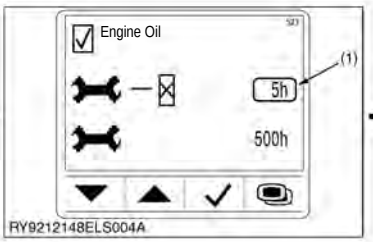
[Operation 5]

Select Periodic Check and check the periodic check items.



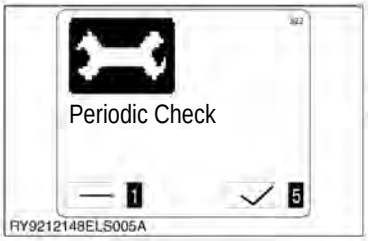
[Operation 6]

Select the periodic check item that was performed, press switch 4 and make sure the check mark is displayed in the upper left of the meter panel. Press switch 5.

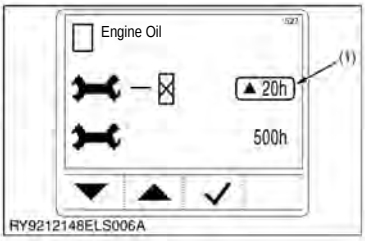


[Operation 7]

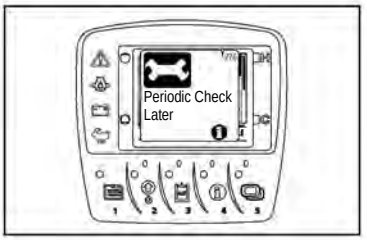
To perform the check, press switch 5.
To return, press switch 1



Ex.) 20 hours past time to change the engine oil.
Service hour meter: 520 hours



Pressing SW5 except during the periodical ※check time will display the following image.



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

KX080-4:

No.	Check Item		Interval	Hour meter indication							Subsequently
				50	100	250	500	600	750	1000	
1	Engine oil (CJ-4)		Change				❍			❍	Every 500 hrs
2	Hydraulic oil									❍	Every 1000 hrs
3	Air cleaner element	Outer element	Replace							❍	Every 1000 hrs
		Inner element								❍	Every 1000 hrs
4	Fuel filter						❍			❍	Every 500 hrs
5	Engine oil filter						❍			❍	Every 500 hrs
6	Travel motor gear oil		Change	●			❍			❍	Every 500 hrs
7	Hydraulic return filter		Replace			●	❍			❍	Every 500 hrs
8	Hydraulic suction filter									❍	Every 1000 hrs
9	Pilot filter									❍	Every 1000 hrs
10	Grease idler & track rollers		–								Every 2000 hrs
11	DPF		Clean								Every 3000 hrs

● First operation

KX080-4α:

No.	Check Item		Interval	Hour meter indication							Subsequently
				50	100	250	500	600	750	1000	
1	Engine oil (CJ-4)		Change				❍			❍	Every 500 hrs
2	Hydraulic oil									❍	Every 1000 hrs
3	Air cleaner element	Outer element	Replace							❍	Every 1000 hrs
		Inner element								❍	Every 1000 hrs
4	Fuel filter						❍			❍	Every 500 hrs
5	Engine oil filter						❍			❍	Every 500 hrs
6	Travel motor gear oil		Change	●			❍			❍	Every 500 hrs
7	Hydraulic return filter		Replace			●	❍			❍	Every 500 hrs
8	Hydraulic suction filter									❍	Every 1000 hrs
9	Pilot filter									❍	Every 1000 hrs
10	Oil separator element		Replace								Every 1500 hrs
11	Grease idler & track rollers		–								Every 2000 hrs
12	DPF		Clean								Every 3000 hrs

● First operation

KX042-4:

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

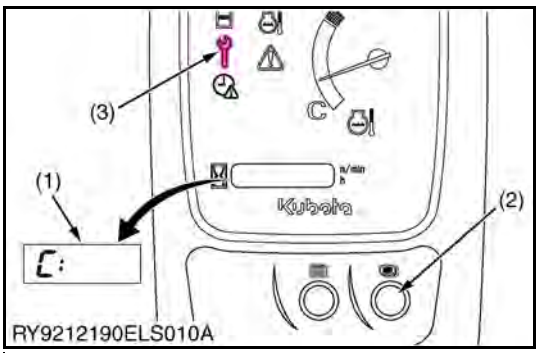
● First operation

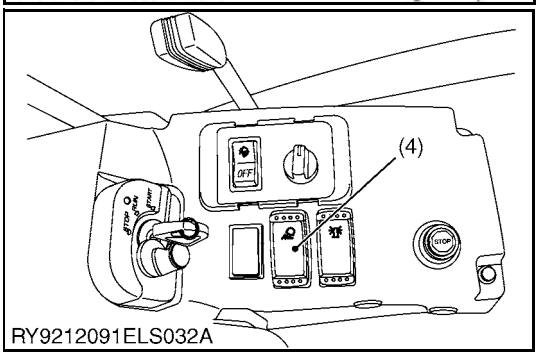
U36-4:

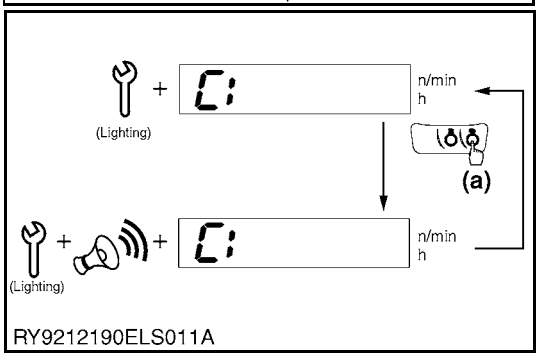
No.	Check Item	Interval	Hour meter indication						Subsequently
			50	250	500	1000	1500	2000	
1	Engine oil	Change			❍	❍	❍	❍	Every 500 hrs
2	Fuel filter	Change			❍	❍	❍	❍	Every 500 hrs
3	Engine oil filter	Change			❍	❍	❍	❍	Every 500 hrs
4	Drive unit oil	Change	●		❍	❍	❍	❍	Every 500 hrs
5	Tank breather filter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

● First operation

1.4.4 U27-4, KX027-4, KX030-4







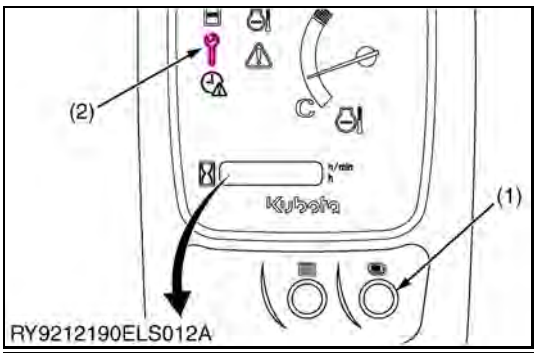
Switching to the Periodic Inspection Item Display Screen

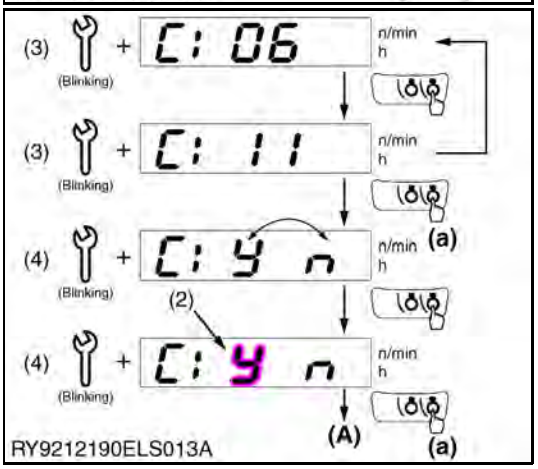
1. After switching to the user settings mode, press SW2 and select the periodic inspection mode.
2. After turning the work light switch ON/OFF once, pressing and holding SW2 switches the display to the periodic inspection item display screen.

- If there are no periodic inspection items, when SW2 is held down, the buzzer will beep two times and the screen display will not change.

(1) Periodic Inspection Mode
(2) Display Selector Switch (SW2)
(3) Periodic Inspection Light
(4) Work Light Switch

(a) Press and Hold SW2





Checking Periodic Inspection Items and Operations after the Inspection

1. When there are periodic inspection items, the periodic inspection lamp blinks and the code(s) of items to be inspected are displayed on the LCD screen. (For information on the codes displayed and the periodic inspection items, refer to "Table of Periodic Inspection Items."
2. If there are multiple places to be inspected, pressing SW2 toggles the code display in a loop.
3. Pressing and holding SW2 while the code of a periodic inspection item is displayed switches the screen to the part inspection check screen.
4. Pressing SW2 toggles the selection between YES and NO and the selected item blinks.
5. Once a periodic inspection is complete, select YES and then press and hold SW2 to confirm it. After the buzzer beeps several times and the inspection item disappears, return to the normal mode.
6. If you select NO and then press and hold SW2, thus confirming it, you can allow the periodic inspection item to continue to be displayed.

(1) Display Selector Switch (SW2)
(2) Blinks
(3) Periodic Inspection Item
(4) Checking Inspection Individually

(a) Press and Hold SW2

(A) Normal Mode

Table of Periodic Inspection Items

When the hour meter has counted up to the hours circled in the maintenance list below, the message appears. The message shows up as follows.

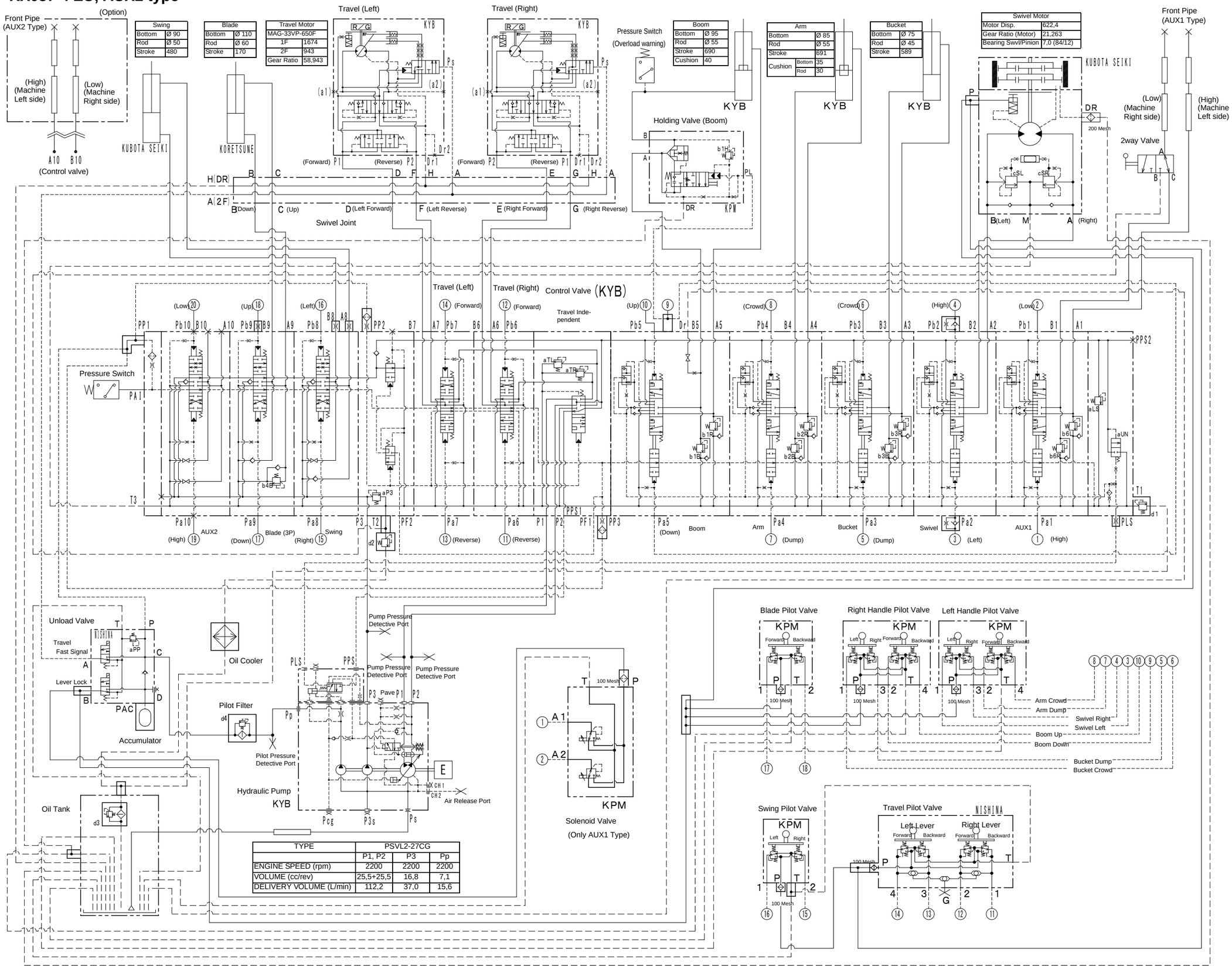
No.	Check points
C: _ _ 1	Engine oil
C: _ _ 2	Hydraulic oil
C: _ _ 3	Air filter element
C: _ _ 4	Fuel filter cartridge
C: _ _ 5	Engine oil filter
C: _ _ 6	Drive unit oil
C: _ _ 7	Hydraulic return filter cartridge
C: _ _ 8	Hydraulic suction filter element
C: _ _ 9	Pilot filter
C: _ 1 0	Front idler and track roller oil
C: _ 1 1	Breather filter

	Temperature Condition	KX015-4, KX016-4, KX018-4, KX019-4, U27-4, KX027-4, KX030-4				KX057-4, U55-4, U48-4, U36-4				KX080-4, KX080-4α, KX042-4				Note
		Recommandation		Factory filling		Recommandation		Factory filling		Recommandation		Factory filling		
		Viscosity	Quality Standard	Brand	Type	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 API CJ-4	SHELL	Rimula R4 L API CJ-4 SAE 15W-40	SAE 10W SAE 20W	API CF API CI-4 API CJ-4	JXTG	DH-1 API CF SAE 10W-30	SAE 10W SAE 20W	API CJ-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				SAE 30 SAE 40 SAE 50				
	All weather	SAE 15W-40				SAE 10W-30				SAE 10W-30				
Coolant			SAE J1034 MB 325.0 ASTM D3306 ASTM D4985	ROWE	Hightec Anti-freeze AN G48 (-37 °C)		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 5182 KP2K-30	MOBIL	Mobilux EP2	NLGI-2	DIN 5182 KP2K-30	COSMO	EP2	NLGI-2	DIN 5182 KP2K-30	COSMO	EP2	
		NLGI-1		Weicon	Antiseize Standard									Use on the greasing points of the front attachments for the first 50 hours
Hydraulic-oil	In winter, at low temperatures	VG 32 VG 46		SHELL	Tellus S2M46 VG 46	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				VG 46 VG 68				
Gear oil	In winter, at low temperatures	SAE 75 SAE 80				SAE 75 SAE 80								
	In summer, at high ambient temperatures	SAE 90 SAE 140				SAE 90 SAE 140								
	All weather	80W-90	API GL-4	SHELL	SPIRAX MA80W	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				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.
Refrige-rant			HFC134a R134a		HFC134a		HFC134a R134a		HFC134a		HFC134a R134a		HFC134a	

2 Hydraulic

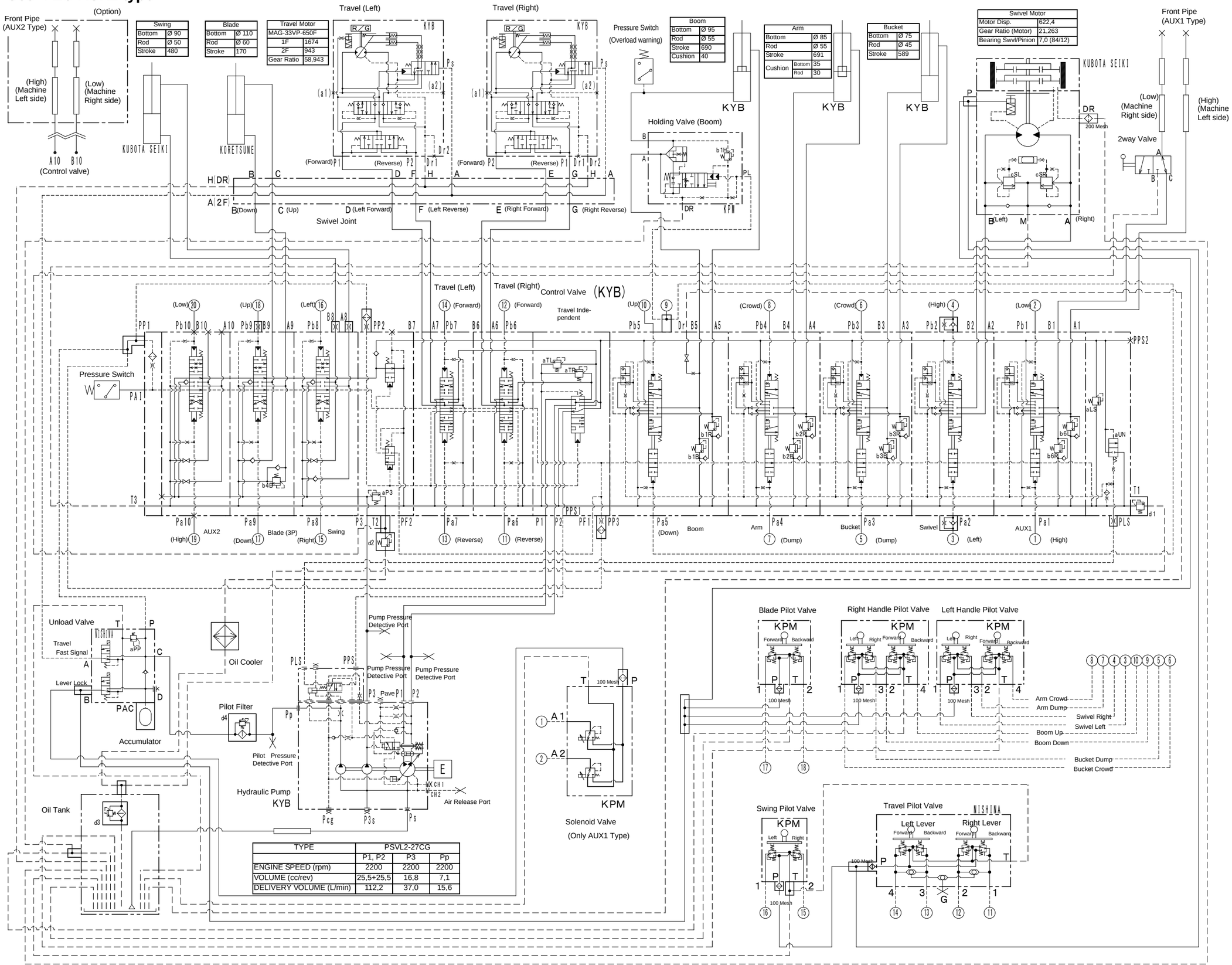
2.1 Hydraulic circuits

2.1.1 KX057-4 EU, AUX2 type



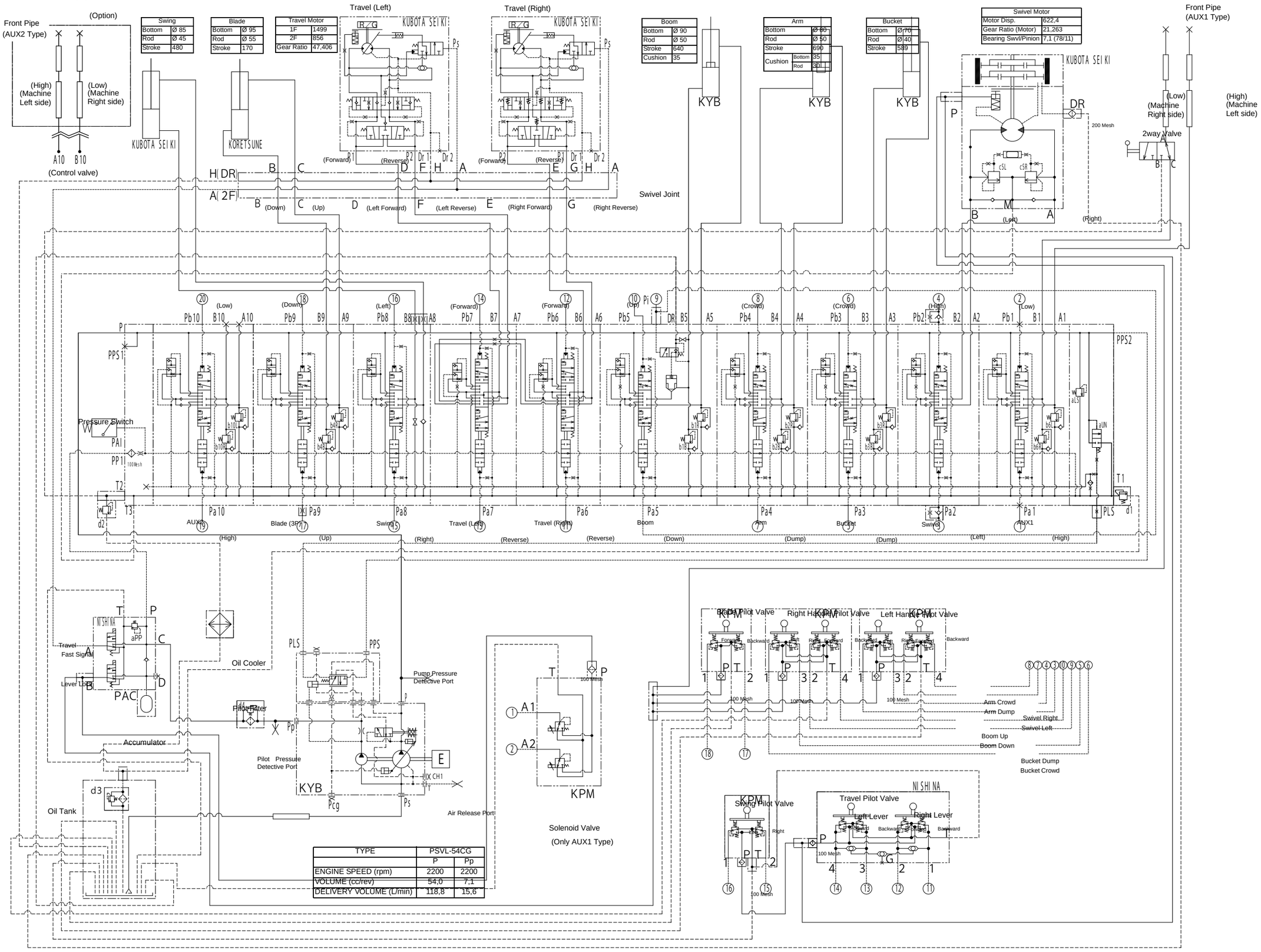
TYPE	PSVL2-27CG		
	P1, P2	P3	Pp
ENGINE SPEED (rpm)	2200	2200	2200
VOLUME (cc/rev)	25,5+25,5	16,8	7,1
DELIVERY VOLUME (L/min)	112,2	37,0	15,6

2.1.2 U55-4 EU AUX2 type

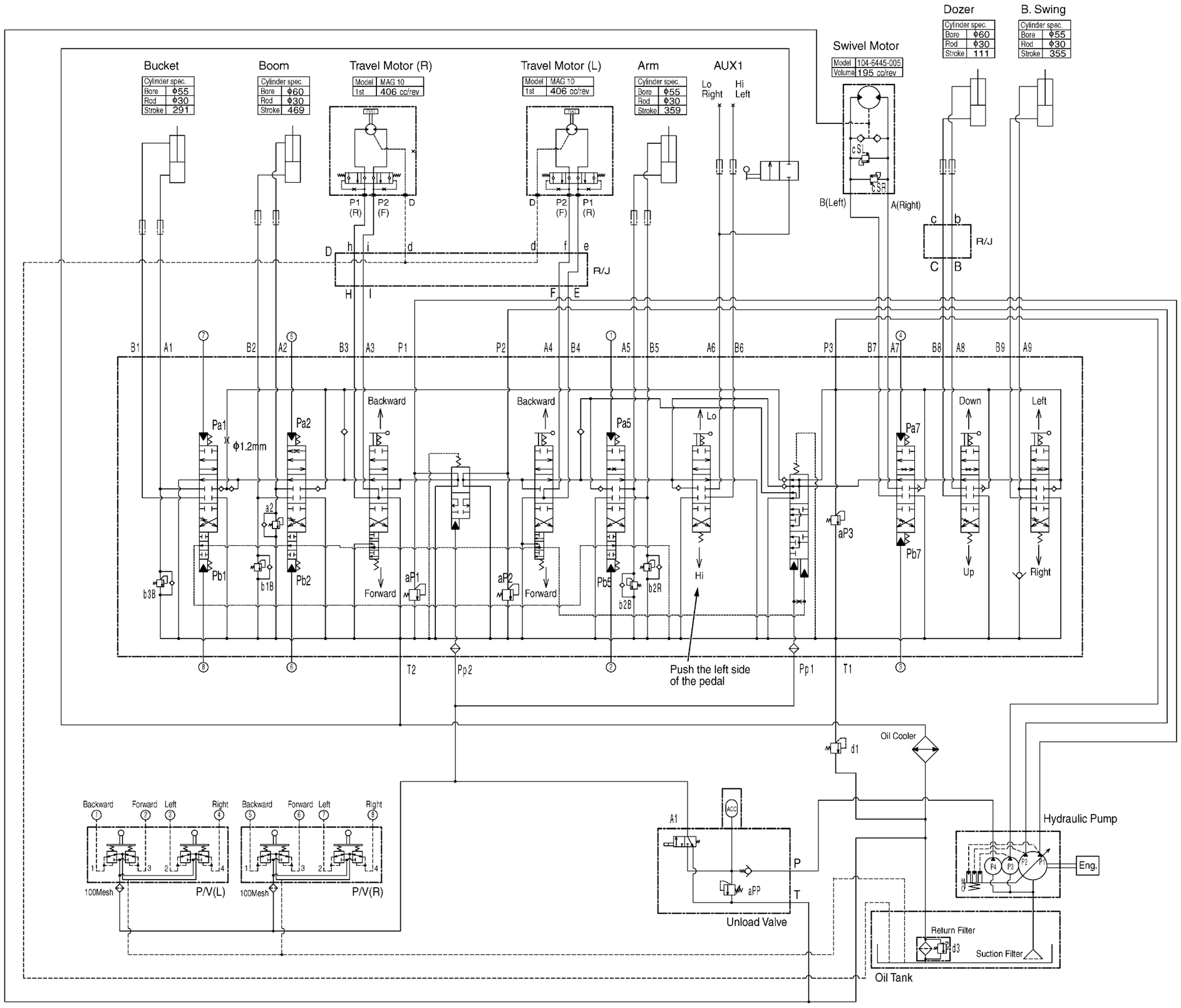


TYPE	PSVL2-27CG		
	P1, P2	P3	Pp
ENGINE SPEED (rpm)	2200	2200	2200
VOLUME (cc/rev)	25,5+25,5	16,8	7,1
DELIVERY VOLUME (L/min)	112,2	37,0	15,6

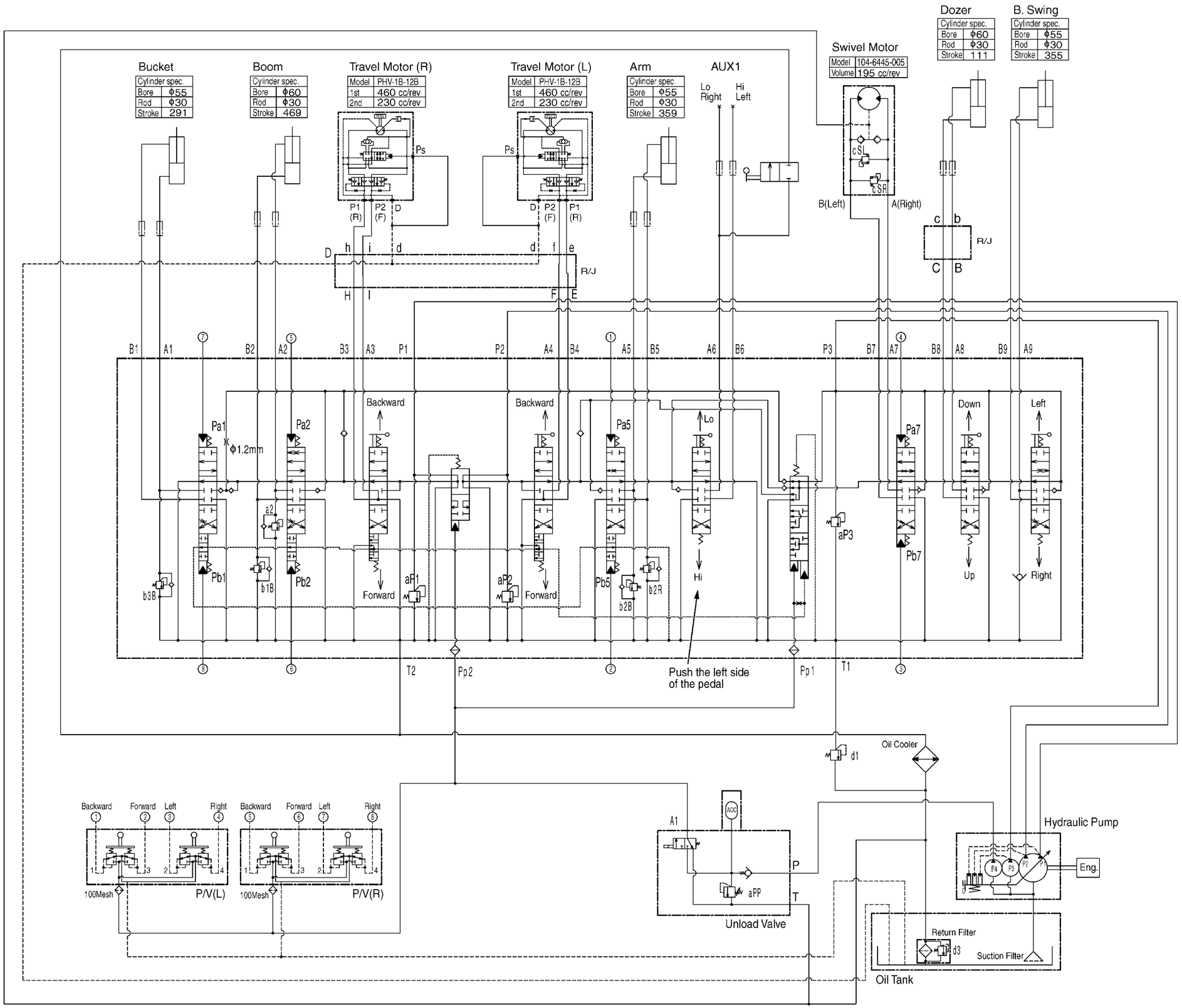
2.1.3 U48-4 EU AUX2 type



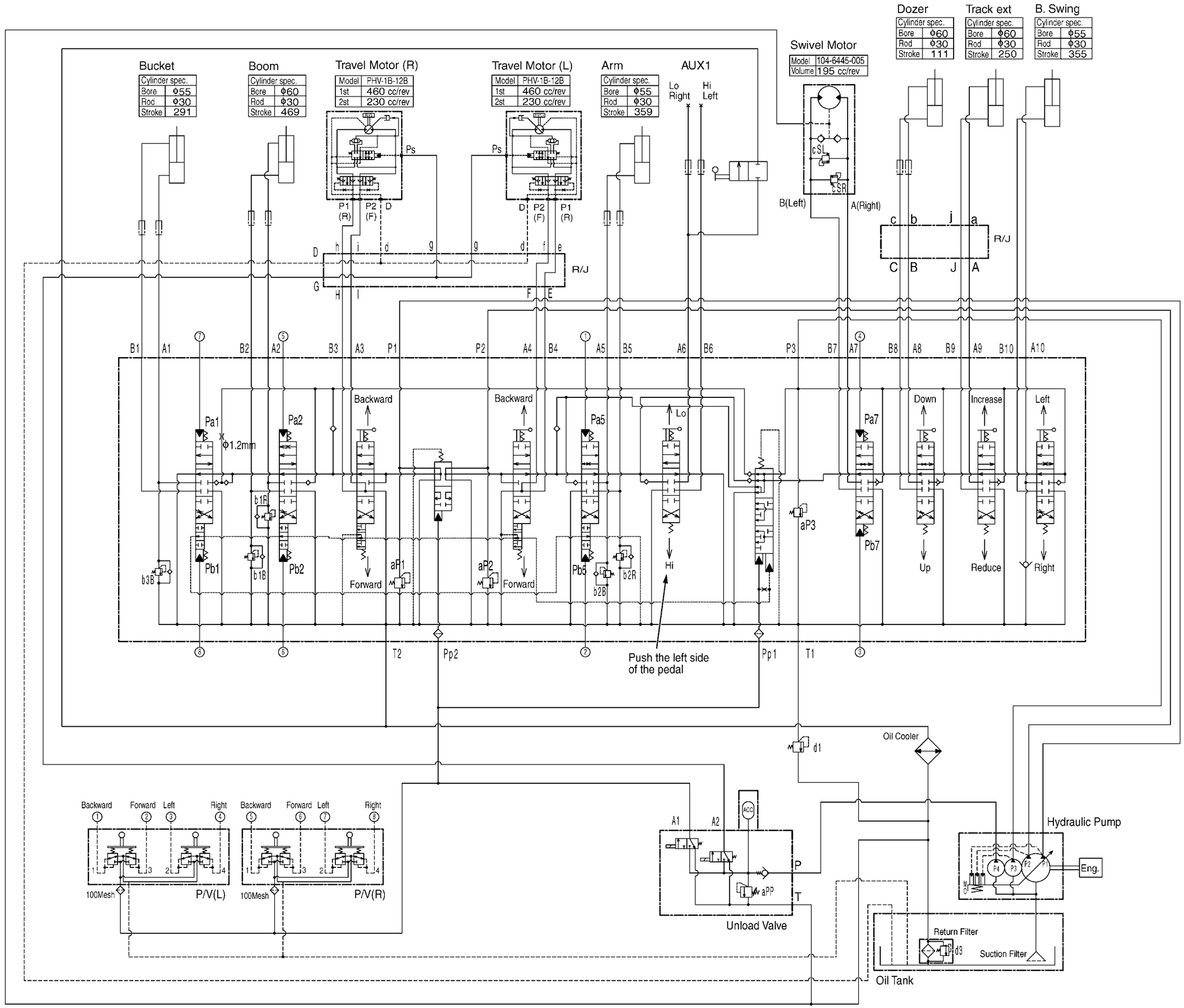
2.1.4 KX015-4, machine no. ≤ 56121



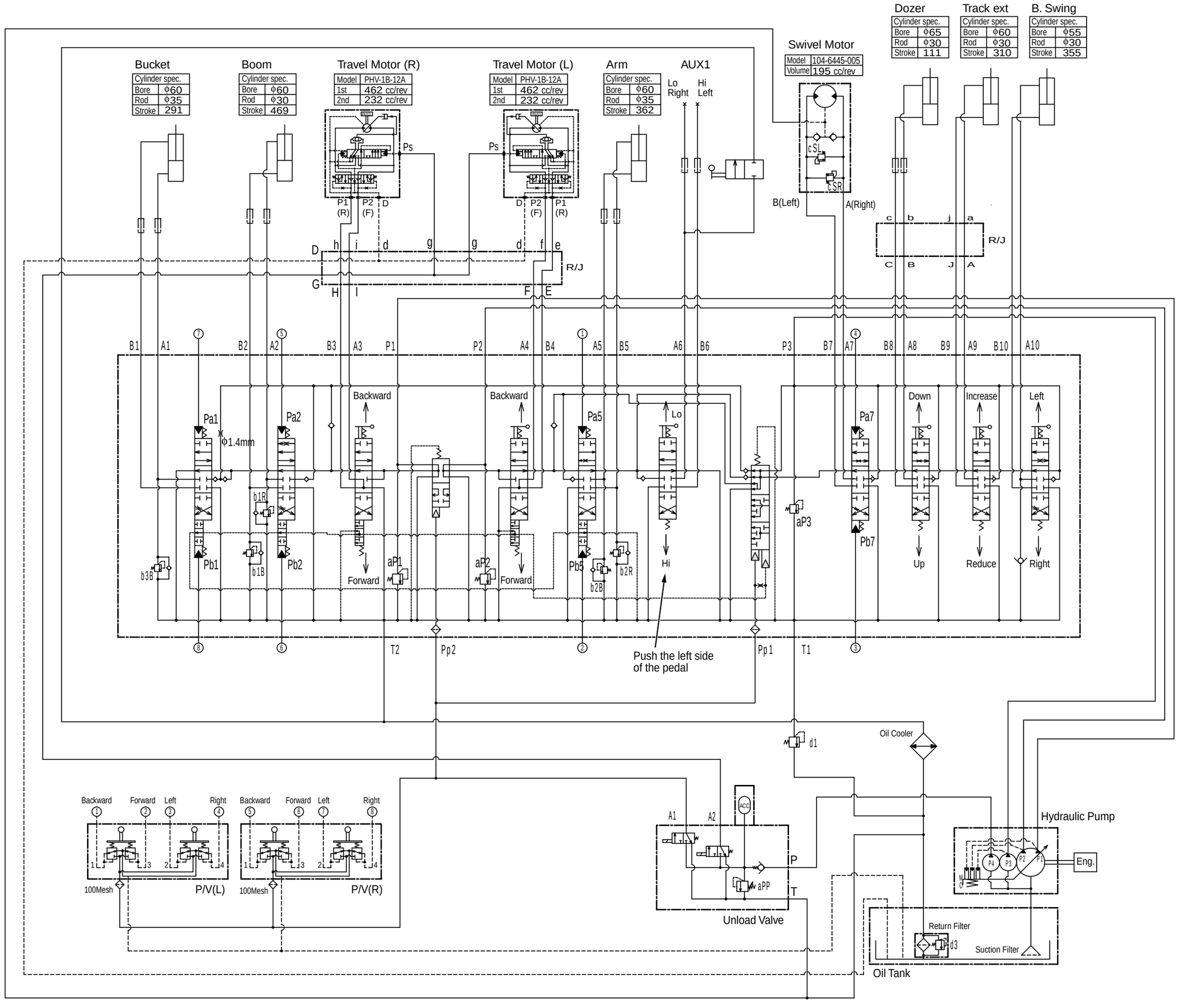
2.1.5 KX015-4, machine no. ≥ 56122



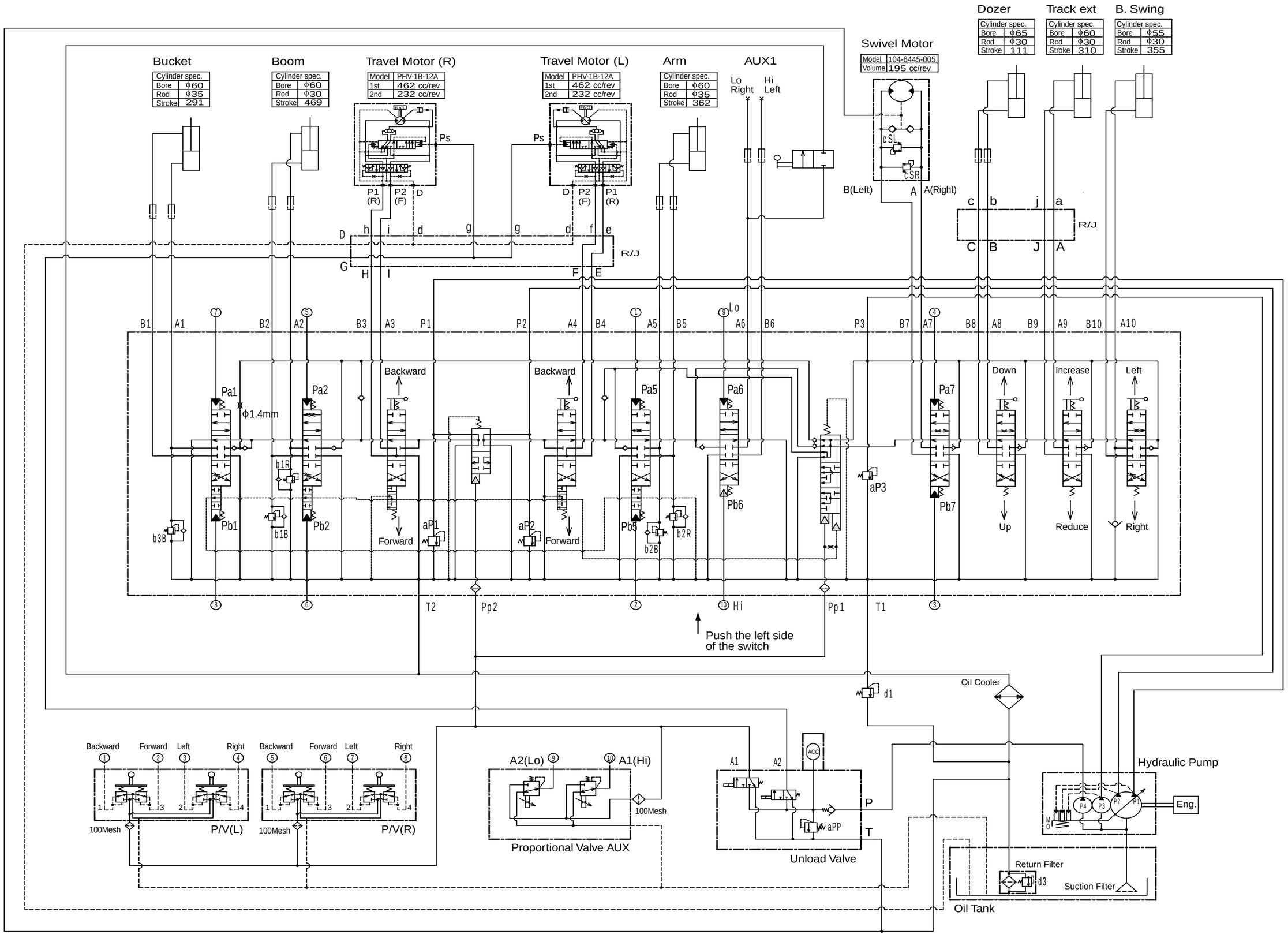
2.1.6 KX016-4


Bucket
Cylinder spec.
Bore ϕ55
Rod ϕ30
Stroke 291
Boom
Cylinder spec.
Bore ϕ60
Rod ϕ30
Stroke 469
Travel Motor (R)
Model PHV-1B-12B
1st 460 cc/rev
2st 230 cc/rev
Travel Motor (L)
Model PHV-1B-12B
1st 460 cc/rev
2st 230 cc/rev
Arm
Cylinder spec.
Bore ϕ55
Rod ϕ30
Stroke 359
AUX1
Lo Right
Hi Left
Swivel Motor
Model 104-6445-005
Volume 195 cc/rev
Dozer
Cylinder spec.
Bore ϕ60
Rod ϕ30
Stroke 111
Track ext
Cylinder spec.
Bore ϕ60
Rod ϕ30
Stroke 250
B. Swing
Cylinder spec.
Bore ϕ55
Rod ϕ30
Stroke 355
Ps
P1 (R)
P2 (F)
D
R/J
B(Left)
A(Right)
Pa1
ϕ1.2mm
Pa2
Backward
Pa5
Lo
Pa7
Down
Increase
Left
Pb1
Pb2
Forward
aP1
aP2
Pb5
Hi
aP3
Pb7
Up
Reduce
Right
b3B
b1B
b2B
b2R
T2
Pp2
Pp1
T1
Push the left side of the pedal
Oil Cooler
d1
Backward
Forward
Left
Right
100Mesh
P/V(L)
P/V(R)
Unload Valve
ACC
aPP
Hydraulic Pump
Eng.
Return Filter
d3
Suction Filter
Oil Tank

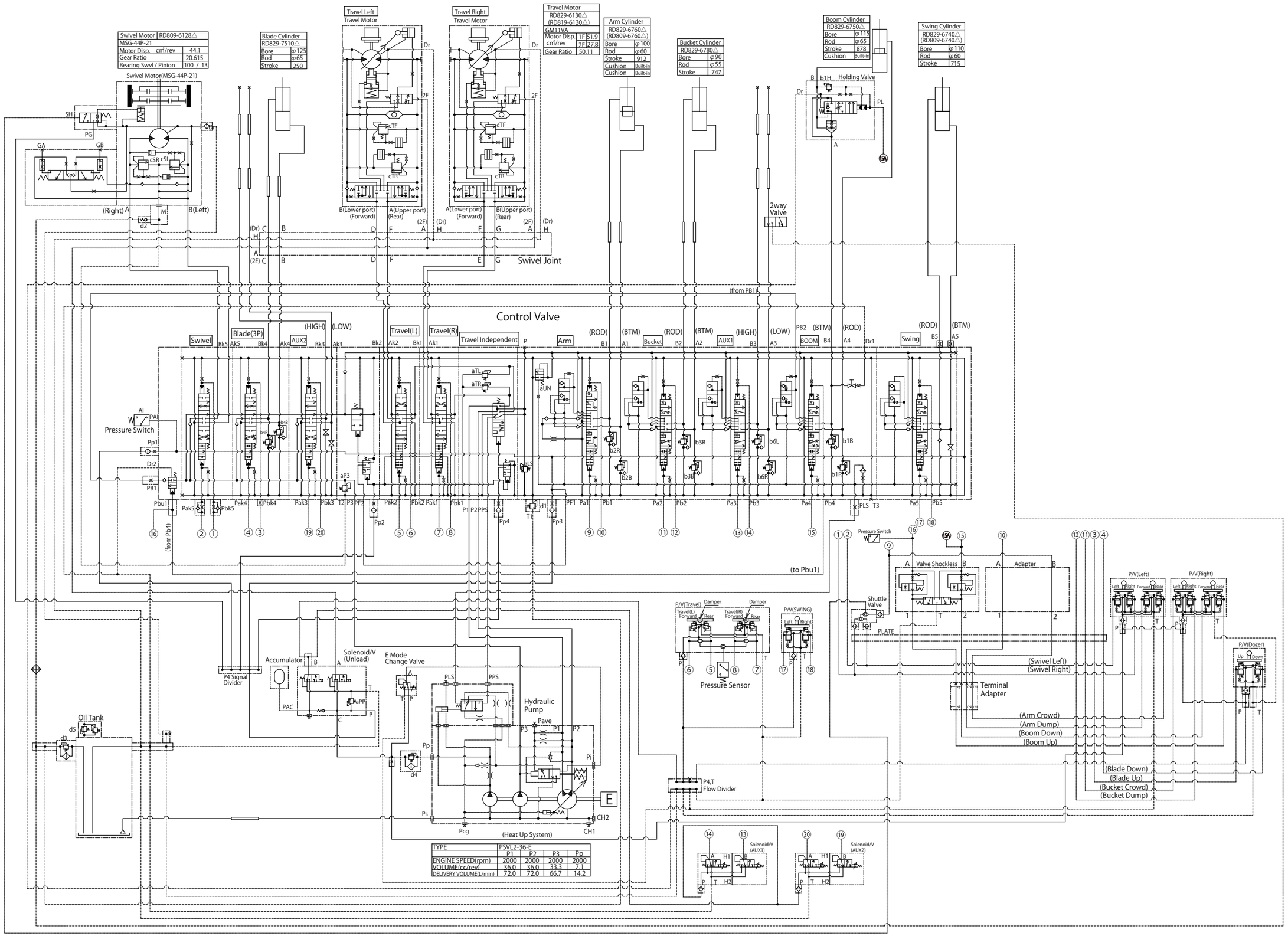
2.1.7 KX018-4


Bucket
Cylinder spec.
Bore ϕ60
Rod ϕ35
Stroke 291
Boom
Cylinder spec.
Bore ϕ60
Rod ϕ30
Stroke 469
Travel Motor (R)
Model PHV-1B-12A
1st 462 cc/rev
2nd 232 cc/rev
Travel Motor (L)
Model PHV-1B-12A
1st 462 cc/rev
2nd 232 cc/rev
Arm
Cylinder spec.
Bore ϕ60
Rod ϕ35
Stroke 362
AUX1
Lo Right
Hi Left
Swivel Motor
Model 104-6445-005
Volume 195 cc/rev
Dozer
Cylinder spec.
Bore ϕ65
Rod ϕ30
Stroke 111
Track ext
Cylinder spec.
Bore ϕ60
Rod ϕ30
Stroke 310
B. Swing
Cylinder spec.
Bore ϕ55
Rod ϕ30
Stroke 355
B(Left)
A(Right)
R/J
Ps
P1 (R)
P2 (F)
D
B1 A1 B2 A2 B3 A3 P1 P2 A4 B4 A5 B5 A6 B6 P3 B7 A7 B8 A8 B9 A9 B10 A10
Pa1
ϕ1.4mm
Pa2
Backward
Forward
Pa5
Lo
Hi
Pa7
Down
Up
Increase
Reduce
Left
Right
Pb1
Pb2
Pb5
Pb7
aP1
aP2
aP3
b1R
b1B
b2R
b2B
b3B
T2
Pp2
Pp1
T1
Push the left side of the pedal
d1
Oil Cooler
Hydraulic Pump
Eng.
Backward Forward Left Right
100Mesh
P/V(L)
P/V(R)
A1 A2
aPP
P
T
Unload Valve
Return Filter
d3
Suction Filter
Oil Tank

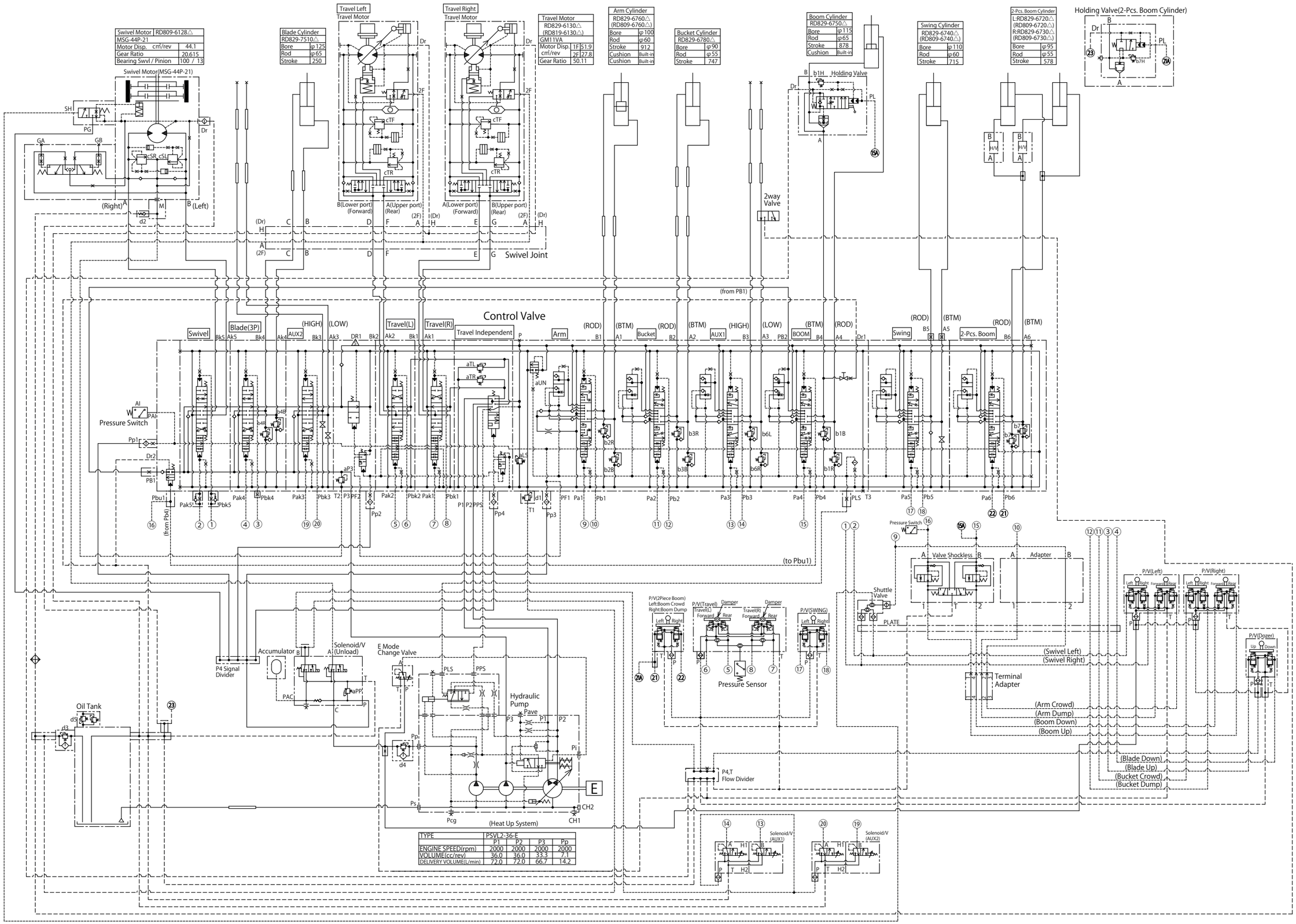
2.1.8 KX019-4


Bucket
Cylinder spec.
Bore ϕ60
Rod ϕ35
Stroke 291
Boom
Cylinder spec.
Bore ϕ60
Rod ϕ30
Stroke 469
Travel Motor (R)
Model PHV-1B-12A
1st 462 cc/rev
2nd 232 cc/rev
Travel Motor (L)
Model PHV-1B-12A
1st 462 cc/rev
2nd 232 cc/rev
Arm
Cylinder spec.
Bore ϕ60
Rod ϕ35
Stroke 362
AUX1
Lo Right
Hi Left
Swivel Motor
Model 104-6445-005
Volume 195 cc/rev
Dozer
Cylinder spec.
Bore ϕ65
Rod ϕ30
Stroke 111
Track ext
Cylinder spec.
Bore ϕ60
Rod ϕ30
Stroke 310
B. Swing
Cylinder spec.
Bore ϕ55
Rod ϕ30
Stroke 355
Ps
P1 (R)
P2 (F)
D
R/J
B(Left)
A(Right)
Backward
Forward
Down
Increase
Left
Right
Pa1
Pa2
Pa5
Pa6
Pa7
ϕ1.4mm
Pb1
Pb2
Pb5
Pb6
Pb7
aP1
aP2
aP3
b1R
b1B
b2R
b2B
b3B
Up
Reduce
T2
Pp2
Pp1
T1
Hi
Push the left side of the switch
d1
Oil Cooler
Hydraulic Pump
Eng.
Return Filter
Suction Filter
Oil Tank
d3
100Mesh
P/V(L)
P/V(R)
A2(Lo)
A1(Hi)
Proportional Valve AUX
Unload Valve
ACC
aPP
P
T

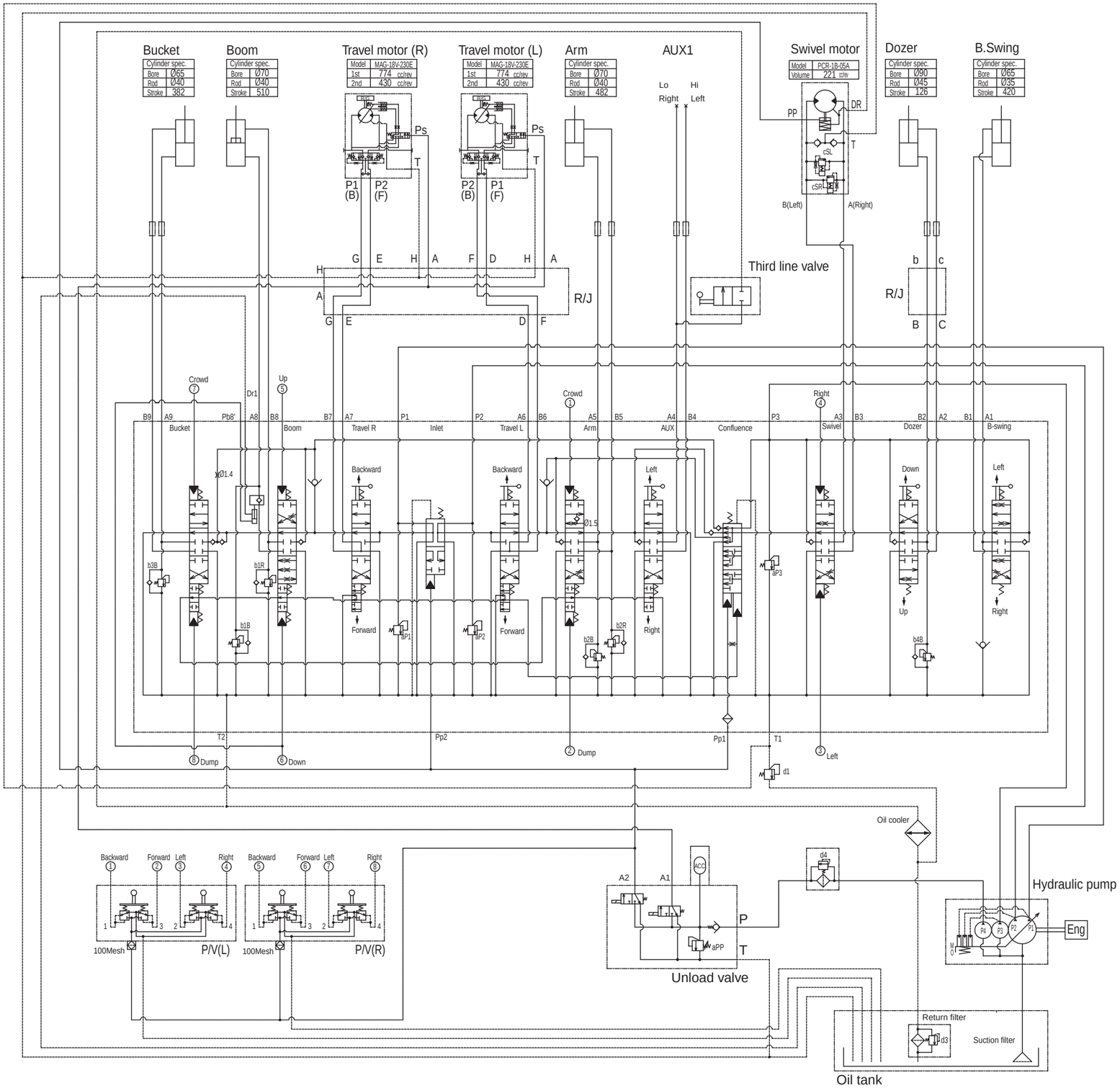
2.1.9 KX080-4


Swivel Motor | RD809-6128△
MSG-44P-21
Motor Disp. cm³/rev 44.1
Gear Ratio 20.615
Bearing Swvl / Pinion 100 / 13
Swivel Motor(MSG-44P-21)
Blade Cylinder
RD829-7510△
Bore φ125
Rod φ65
Stroke 250
Travel Left
Travel Motor
Travel Right
Travel Motor
Travel Motor
RD829-6130△
(RD819-6130△)
GM11VA
Motor Disp. 1F 51.9
cm³/rev 2F 27.8
Gear Ratio 50.11
Arm Cylinder
RD829-6760△
(RD809-6760△)
Bore φ100
Rod φ60
Stroke 912
Cushion Built-in
Cushion Built-in
Bucket Cylinder
RD829-6780△
Bore φ90
Rod φ55
Stroke 747
Boom Cylinder
RD829-6750△
Bore φ115
Rod φ65
Stroke 878
Cushion Built-in
Swing Cylinder
RD829-6740△
(RD809-6740△)
Bore φ110
Rod φ60
Stroke 715
Holding Valve
2way Valve
Swivel Joint
Control Valve
(from PB1)
Swivel
Blade(3P)
AUX2
Travel(L)
Travel(R)
Travel Independent
Arm
Bucket
AUX1
BOOM
Swing
(HIGH)
(LOW)
(ROD)
(BTM)
Pressure Switch
(from Pbu1)
(to Pbu1)
Shuttle Valve
PLATE
Valve Shockless
Adapter
P/V(Left)
P/V(Right)
P/V(Dozer)
P/V(Travel)
P/V(SWING)
Damper
Pressure Sensor
Terminal Adapter
(Swivel Left)
(Swivel Right)
(Arm Crowd)
(Arm Dump)
(Boom Down)
(Boom Up)
(Blade Down)
(Blade Up)
(Bucket Crowd)
(Bucket Dump)
Oil Tank
Accumulator
Solenoid/V (Unload)
E Mode Change Valve
P4 Signal Divider
Hydraulic Pump
P4,T Flow Divider
(Heat Up System)
Solenoid/V (AUX1)
Solenoid/V (AUX2)
TYPE PSVL2-36-E
ENGINE SPEED(rpm) P1 2000 P2 2000 P3 2000 Pp 2000
VOLUME(cc/rev) 36.0 36.0 33.3 7.1
DELIVERY VOLUME(L/min) 72.0 72.0 66.7 14.2

2.1.10KX080-4 2pcs. boom

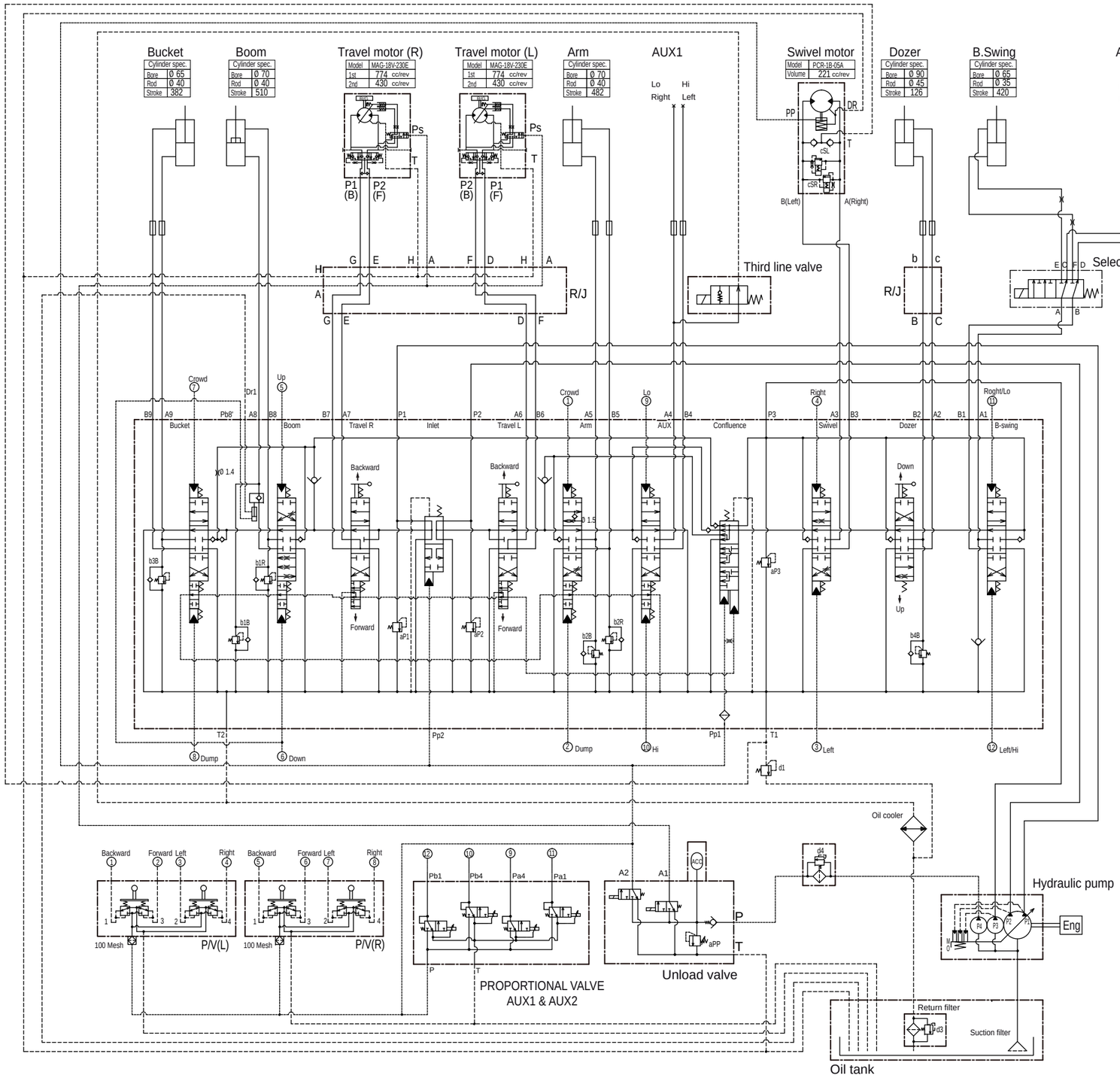


2.1.11 U27-4



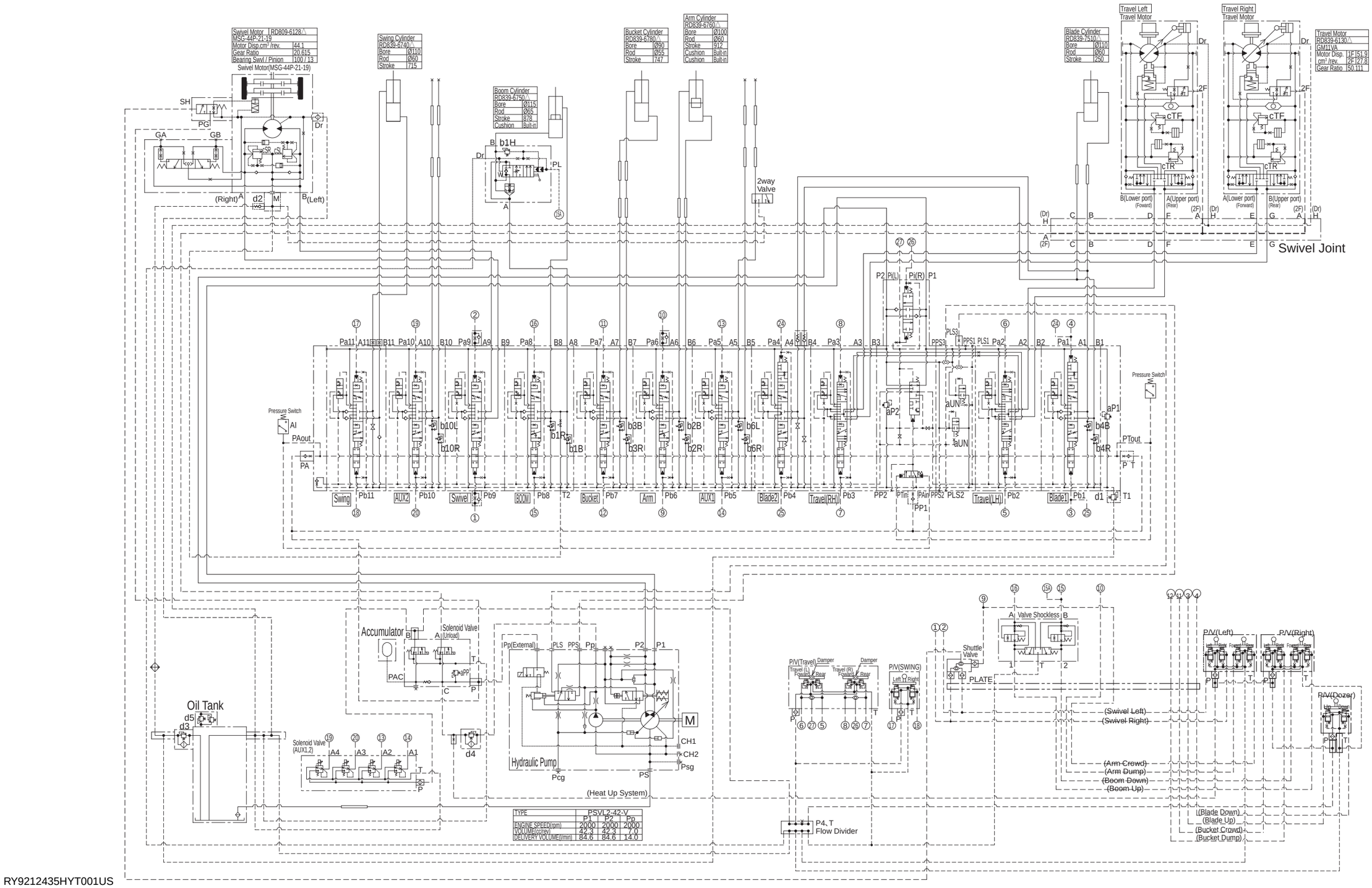
RRY9212180HYT001US

2.1.12 U27-4 Hi



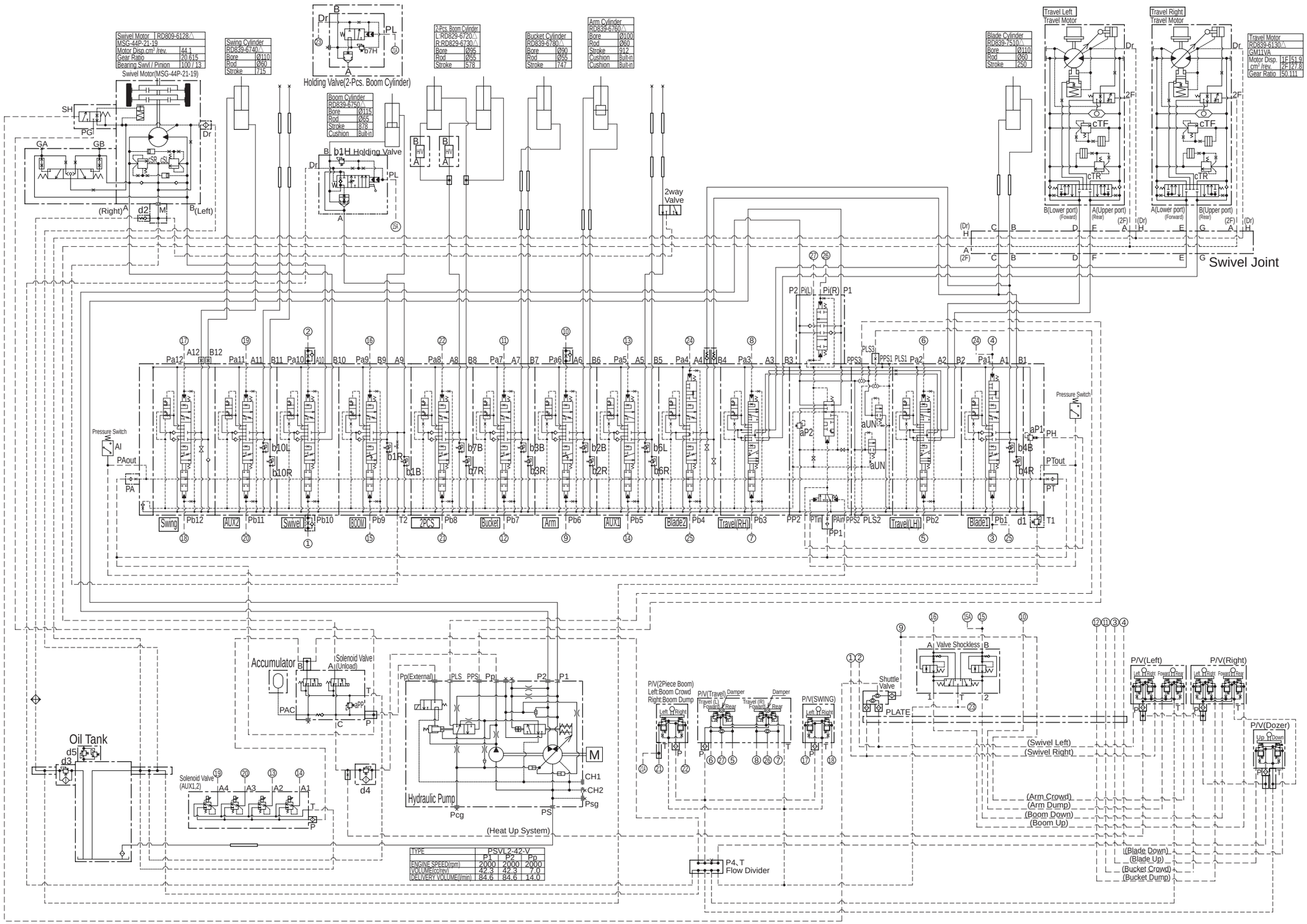
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2.1.13 KX080-4α



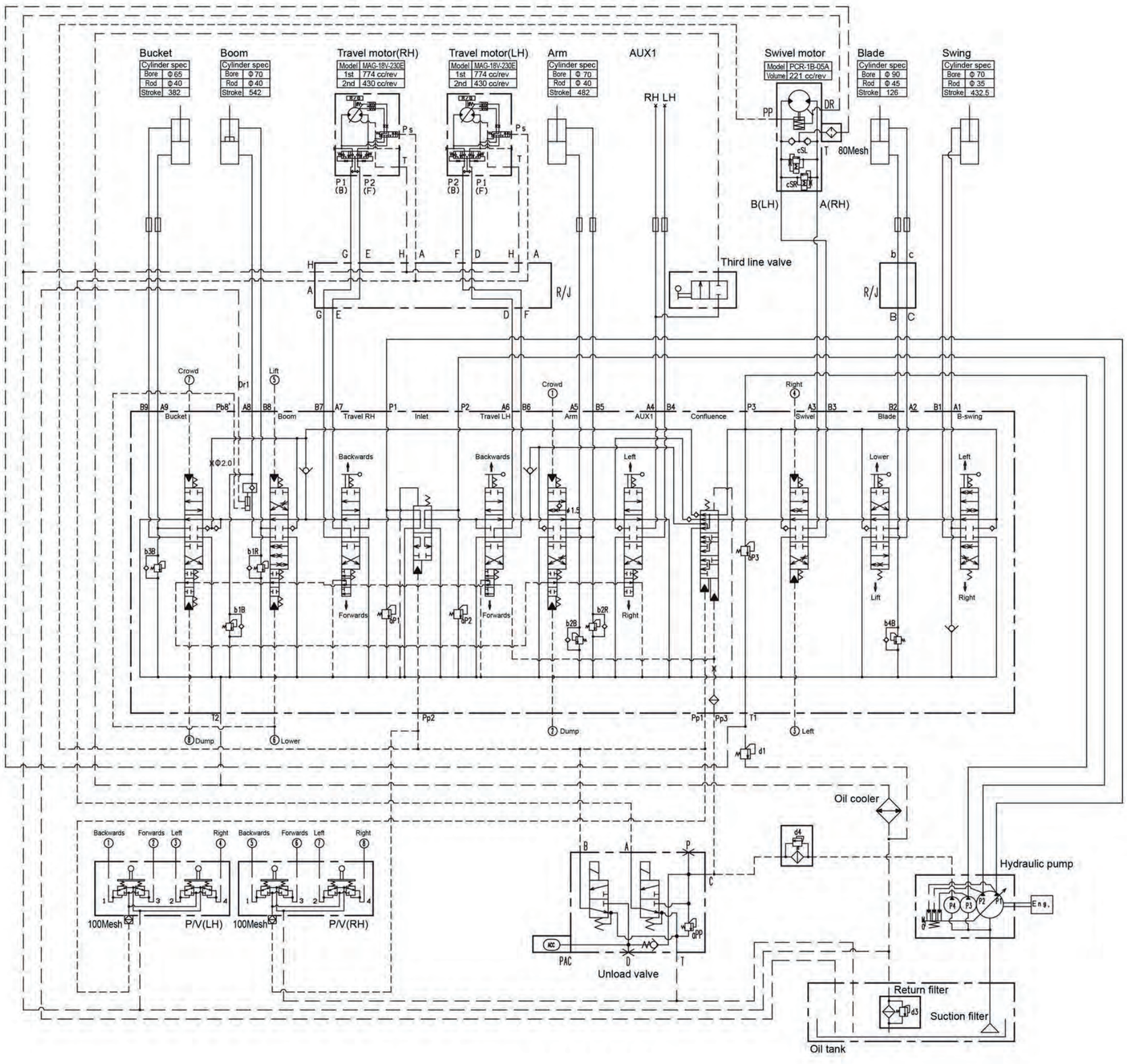
RY9212435HYT001US

2.1.14 KX080-4α 2pcs. boom



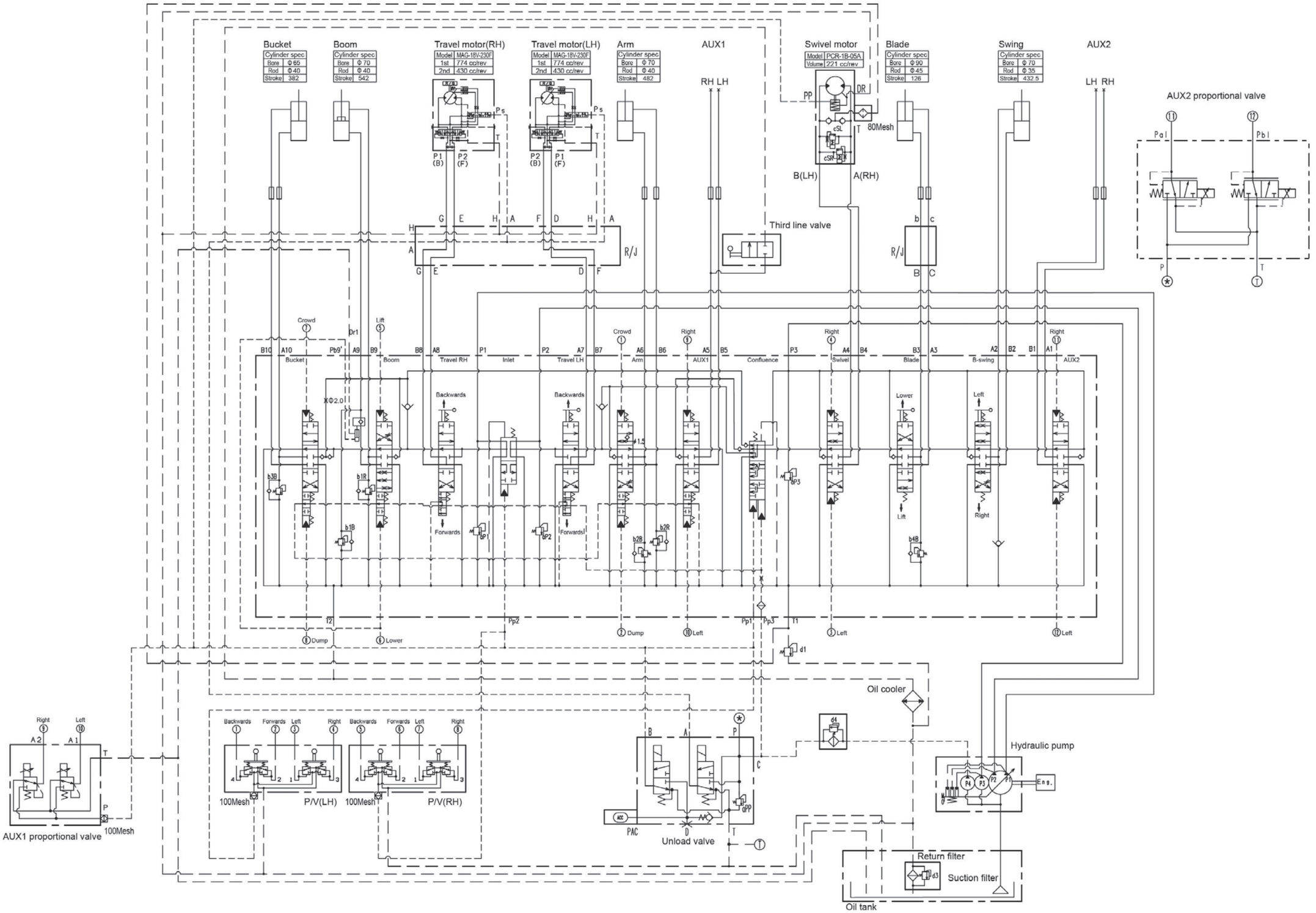
RY9212435HYT002US

2.1.15 KX027-4



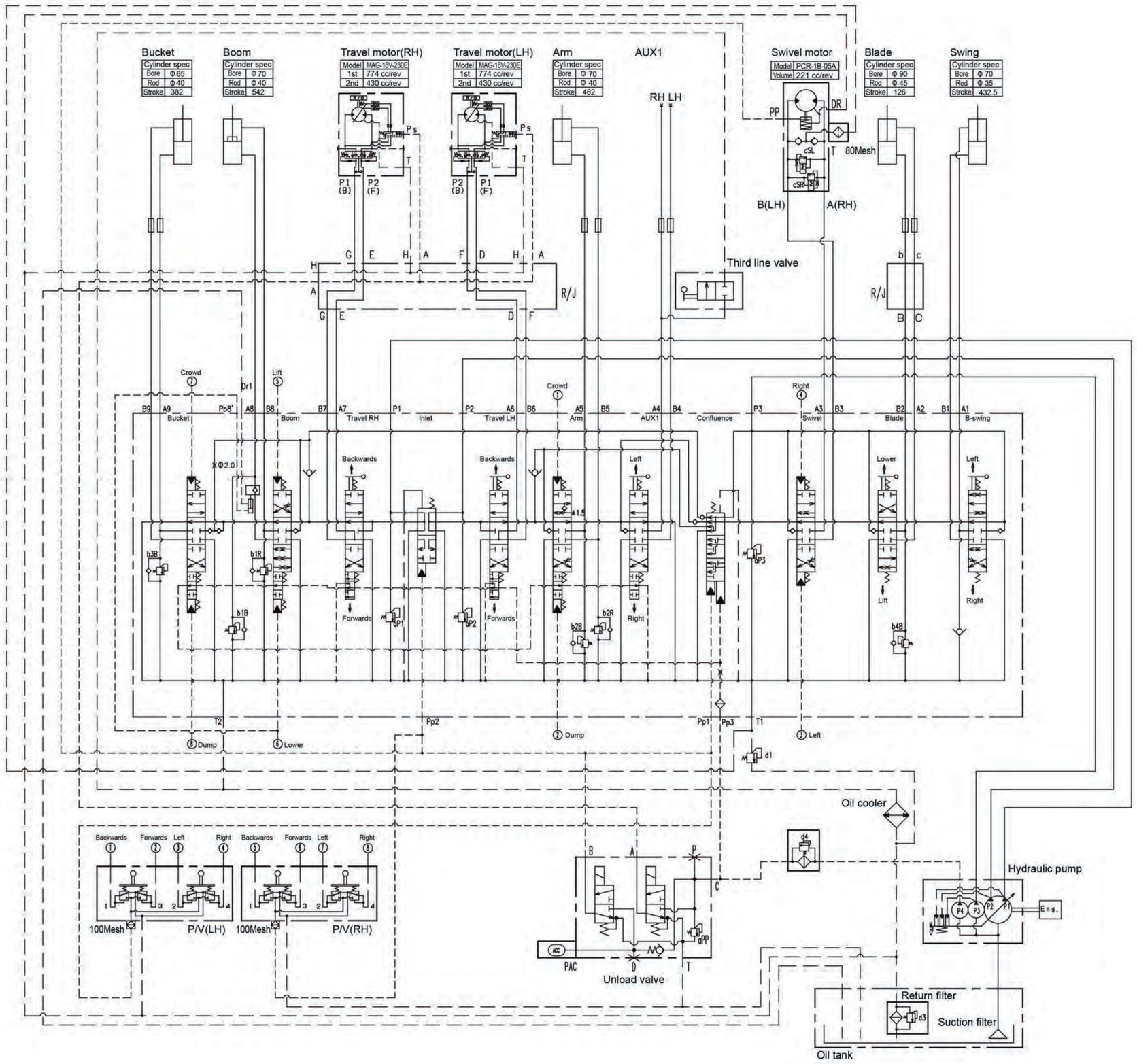
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2.1.16 KX027-4 Hi

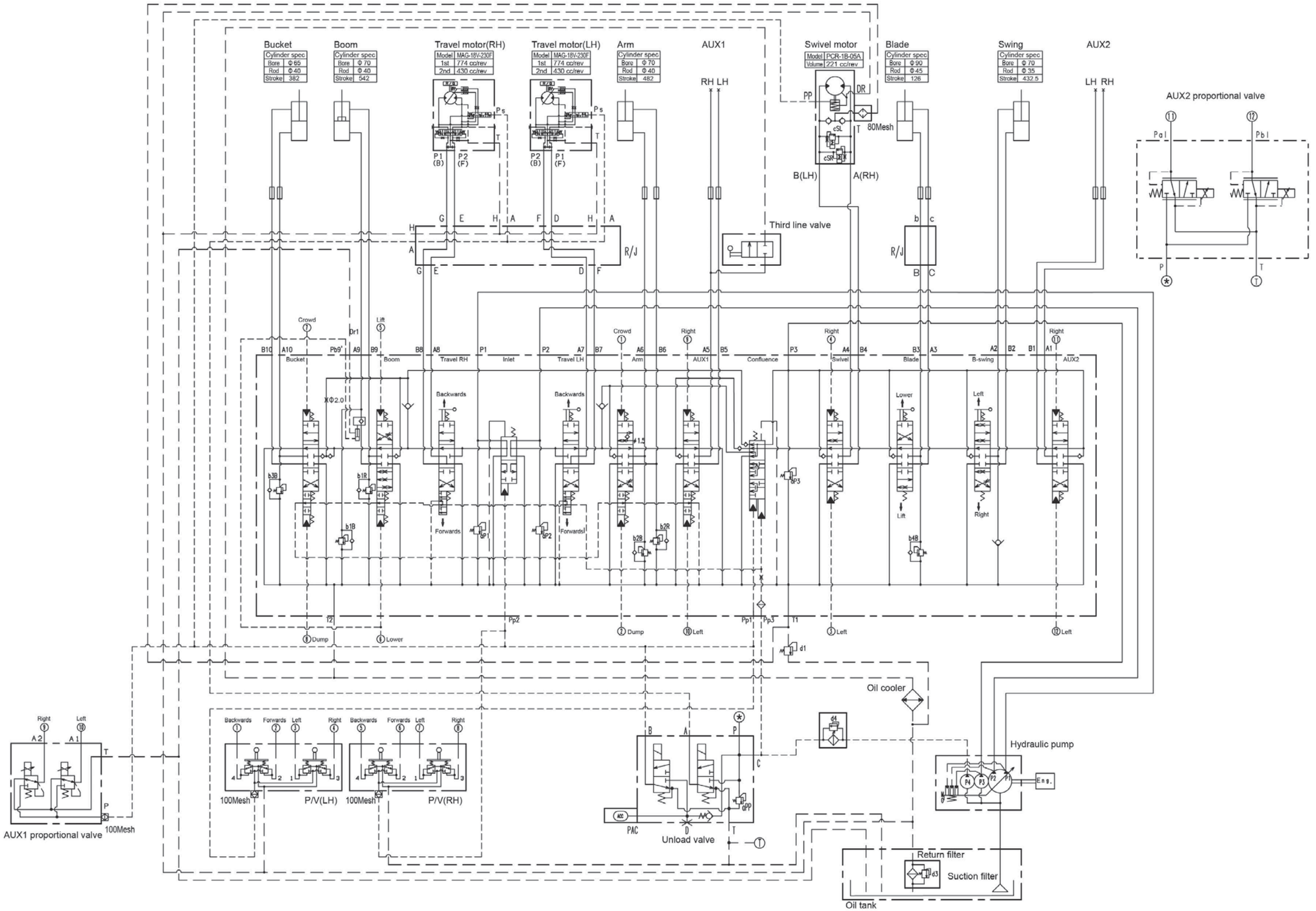


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2.1.17 KX030-4

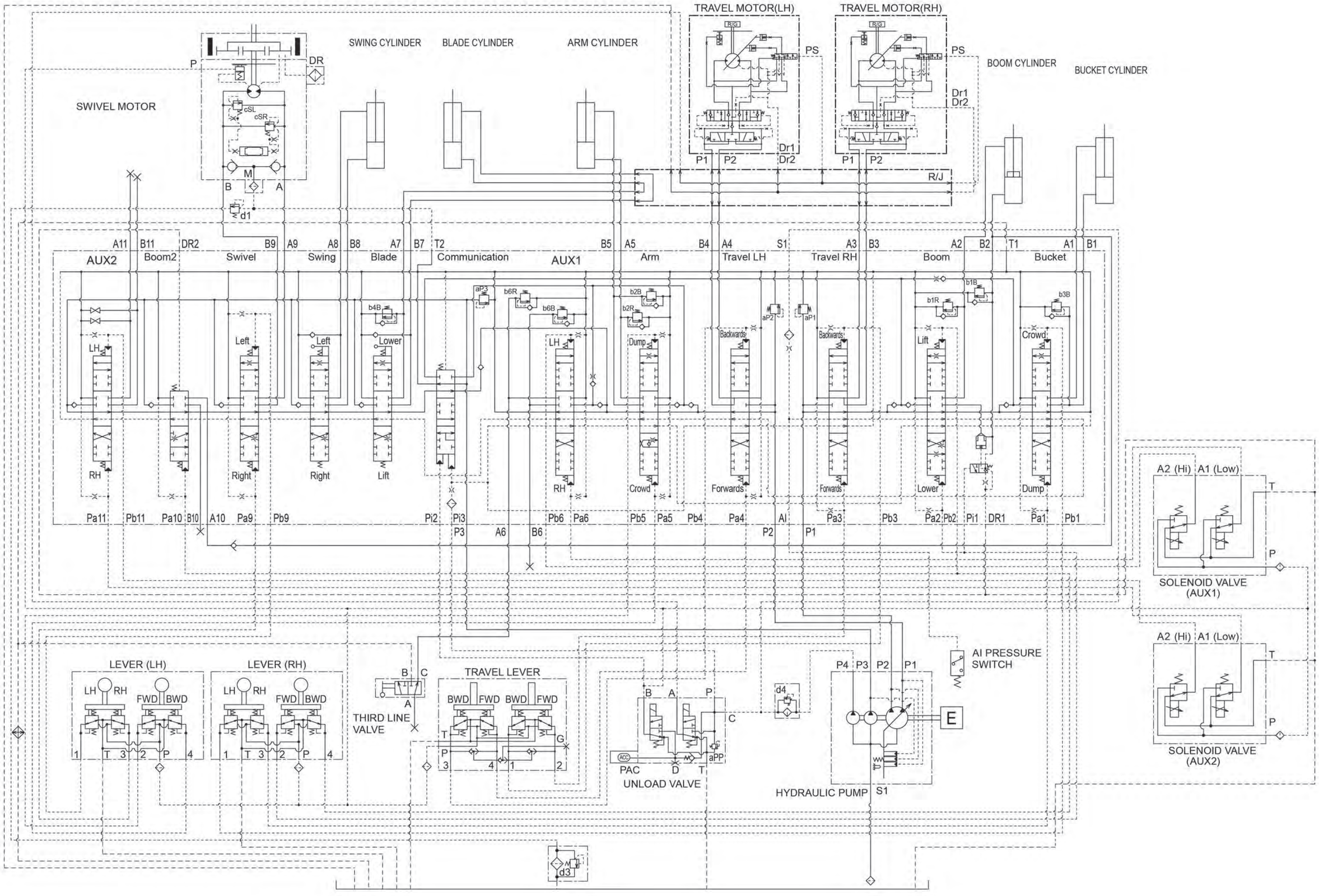

Bucket
Cylinder spec
Bore Φ65
Rod Φ40
Stroke 382
Boom
Cylinder spec
Bore Φ70
Rod Φ40
Stroke 542
Travel motor(RH)
Model MAG-18V-230E
1st 774 cc/rev
2nd 430 cc/rev
Travel motor(LH)
Model MAG-18V-230E
1st 774 cc/rev
2nd 430 cc/rev
Arm
Cylinder spec
Bore Φ70
Rod Φ40
Stroke 482
AUX1
Swivel motor
Model PCR-1B-05A
Volume 221 cc/rev
Blade
Cylinder spec
Bore Φ90
Rod Φ45
Stroke 126
Swing
Cylinder spec
Bore Φ70
Rod Φ35
Stroke 432.5
RH LH
Third line valve
R/J
B(LH)
A(RH)
80Mesh
Crowd
Lift
Bucket
Boom
Travel RH
Inlet
Travel LH
Arm
AUX1
Confluence
Swivel
Blade
B-swing
Backwards
Forwards
Left
Right
Lower
Dump
Oil cooler
Hydraulic pump
100Mesh
P/V(LH)
P/V(RH)
Unload valve
Return filter
Suction filter
Oil tank
2QHNS00004A01enUS

2.1.18 KX030-4 Hi

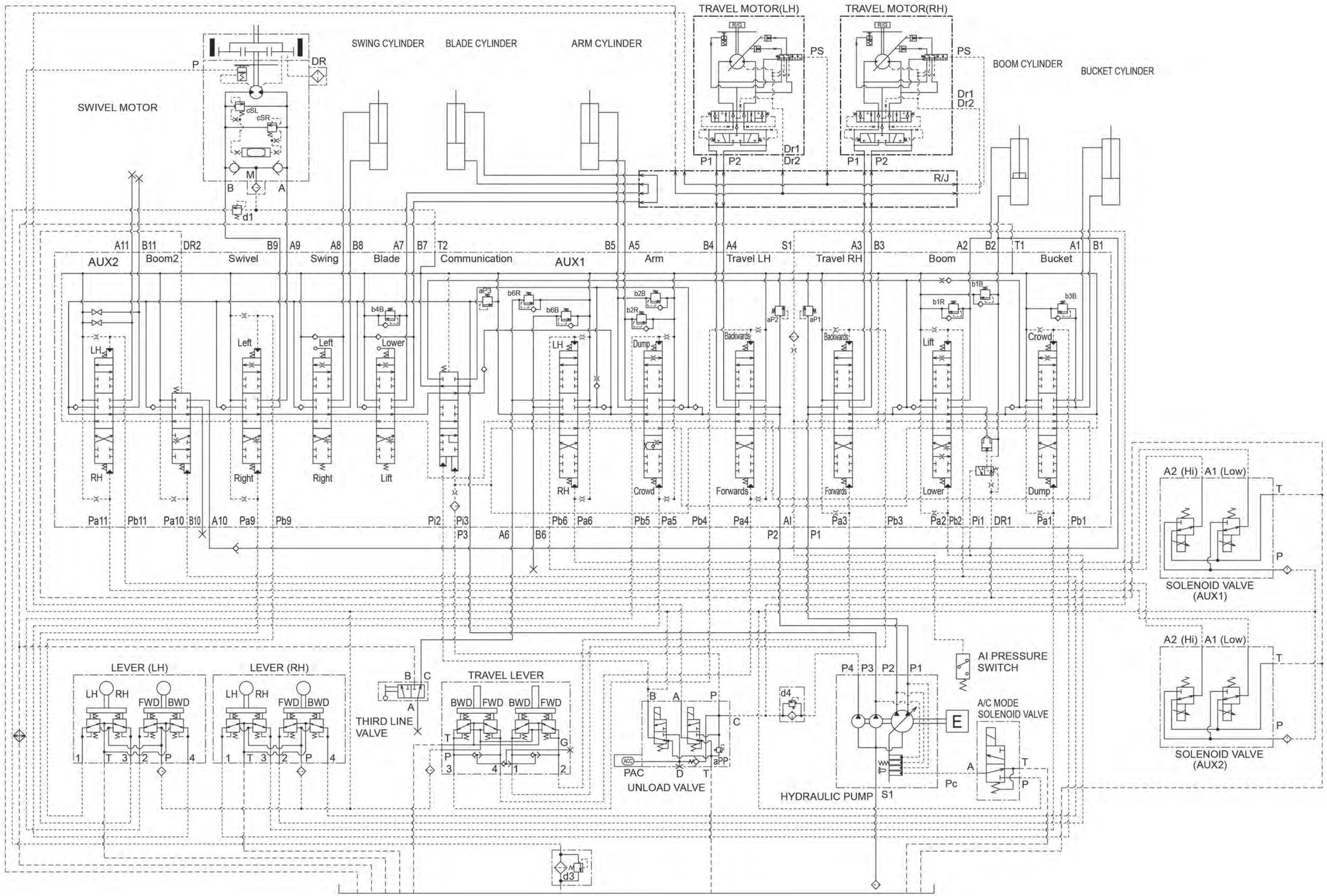


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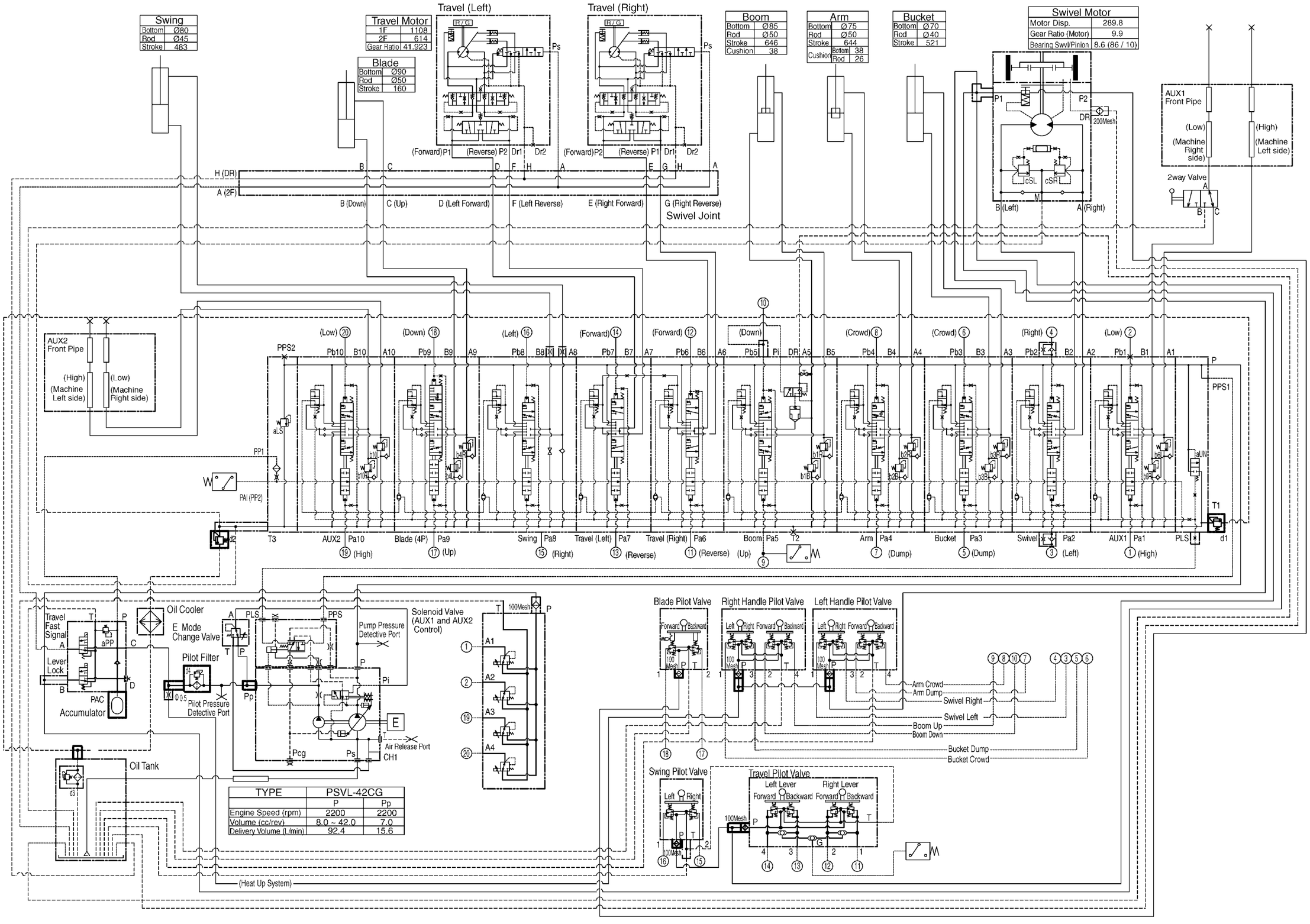
2.1.19 U36-4


TRAVEL MOTOR(LH)
TRAVEL MOTOR(RH)
SWING CYLINDER
BLADE CYLINDER
ARM CYLINDER
BOOM CYLINDER
BUCKET CYLINDER
SWIVEL MOTOR
P
DR
cSL
cSR
M
B
A
d1
PS
Dr1
Dr2
P1
P2
R/J
A11 B11 DR2 B9 A9 A8 B8 A7 B7 T2 B5 A5 B4 A4 S1 A3 B3 A2 B2 T1 A1 B1
AUX2
Boom2
Swivel
Swing
Blade
Communication
AUX1
Arm
Travel LH
Travel RH
Boom
Bucket
LH
RH
Left
Right
Lower
Lift
Backwards
Forwards
Dump
Crowd
aP1
aP2
aP3
b1B
b1R
b2B
b2R
b3B
b4B
b6B
b6R
Pa11 Pb11 Pa10 B10 A10 Pa9 Pb9 Pi2 Pi3 P3 A6 B6 Pb6 Pa6 Pb5 Pa5 Pb4 Pa4 P2 AI P1 Pa3 Pb3 Pa2 Pb2 Pi1 DR1 Pa1 Pb1
A2 (Hi) A1 (Low)
T
P
SOLENOID VALVE (AUX1)
SOLENOID VALVE (AUX2)
LEVER (LH)
LEVER (RH)
FWD BWD
1 T 3 2 P 4
THIRD LINE VALVE
TRAVEL LEVER
BWD FWD
G
PAC
UNLOAD VALVE
ACC
aPP
d4
AI PRESSURE SWITCH
P4 P3 P2 P1
E
HYDRAULIC PUMP
S1
d3

2.1.20 U36-4 AUX2 and air conditioning specification



2.1.21 KX042-4

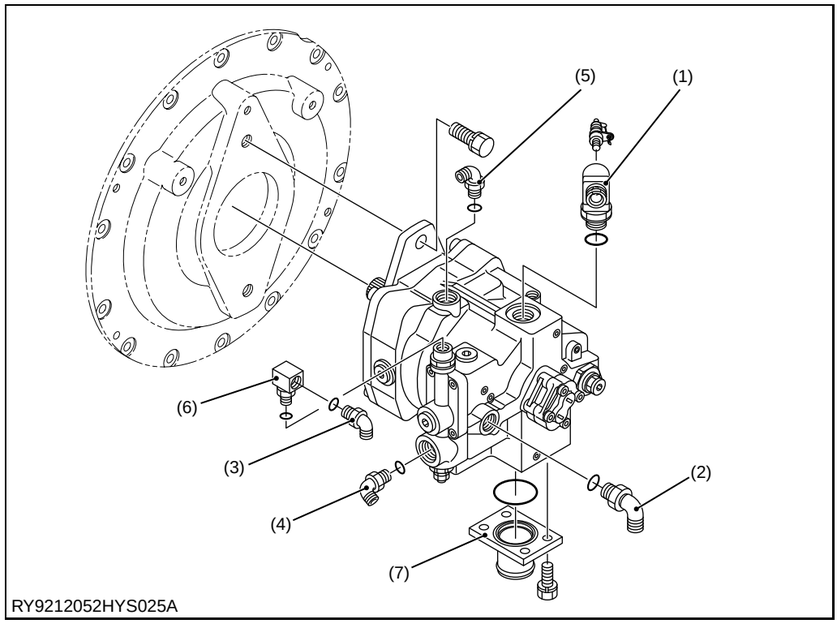

Swing
Bottom Ø80
Rod Ø45
Stroke 483
Travel Motor
1F 1108
2F 614
Gear Ratio 41.923
Blade
Bottom Ø90
Rod Ø50
Stroke 160
Travel (Left)
Travel (Right)
R7/G
Ps
(Forward) P1 (Reverse) P2 Dr1 Dr2
(Forward) P2 (Reverse) P1 Dr1 Dr2
Boom
Bottom Ø85
Rod Ø50
Stroke 646
Cushion 38
Arm
Bottom Ø75
Rod Ø50
Stroke 644
Cushion Bottom 38 Rod 26
Bucket
Bottom Ø70
Rod Ø40
Stroke 521
Swivel Motor
Motor Disp. 289.8
Gear Ratio (Motor) 9.9
Bearing Swvl/Pinion 8.6 (86 / 10)
P1
P2
DR
200Mesh
cSL
cSR
M
B (Left)
A (Right)
AUX1
Front Pipe
(Low)
(Machine Right side)
(High)
(Machine Left side)
2way Valve
H (DR)
A (2F)
B (Down)
C (Up)
D (Left Forward)
F (Left Reverse)
E (Right Forward)
G (Right Reverse)
Swivel Joint
AUX2
Front Pipe
(High)
(Machine Left side)
(Low)
(Machine Right side)
PPS2
(Low) 20
(Down) 18
(Left) 16
(Forward) 14
(Forward) 12
(Down) 10
(Crowd) 8
(Crowd) 6
(Right) 4
(Low) 2
Pb10 B10 A10 Pb9 B9 A9 Pb8 B8 DX A8 Pb7 B7 A7 Pb6 B6 A6 Pb5 Pi DR A5 B5 Pb4 B4 A4 Pb3 B3 A3 Pb2 B2 A2 Pb1 B1 A1
P
PPS1
aLS
PP1
PAI (PP2)
aUN
T1
T3
AUX2 Pa10 (19) (High)
Blade (4P) Pa9 (17) (Up)
Swing Pa8 (15) (Right)
Travel (Left) Pa7 (13) (Reverse)
Travel (Right) Pa6 (11) (Reverse)
Boom Pa5 T2 (Up) (9)
Arm Pa4 (7) (Dump)
Bucket Pa3 (5) (Dump)
Swivel Pa2 (3) (Left)
AUX1 Pa1 (1) (High)
PLS
d1
Travel Fast Signal
Lever Lock
PAC
Accumulator
Oil Cooler
E Mode Change Valve
Pilot Filter
Pilot Pressure Detective Port
Pump Pressure Detective Port
Solenoid Valve (AUX1 and AUX2 Control)
PLS
PPS
Pp
Pi
Pcg
Ps
E
Air Release Port
CH1
100Mesh
A1
A2
A3
A4
Oil Tank
(Heat Up System)
Blade Pilot Valve
Forward Backward
Right Handle Pilot Valve
Left Right Forward Backward
Left Handle Pilot Valve
Arm Crowd
Arm Dump
Swivel Right
Swivel Left
Boom Up
Boom Down
Bucket Dump
Bucket Crowd
Swing Pilot Valve
Left Right
Travel Pilot Valve
Left Lever
Right Lever
Forward Backward
TYPE PSVL-42CG
P Pp
Engine Speed (rpm) 2200 2200
Volume (cc/rev) 8.0 ~ 42.0 7.0
Delivery Volume (L/min) 92.4 15.6

2.2 Hydraulic component main settings and control valve layout

2.2.1 KX057-4, U55-4, U48-4

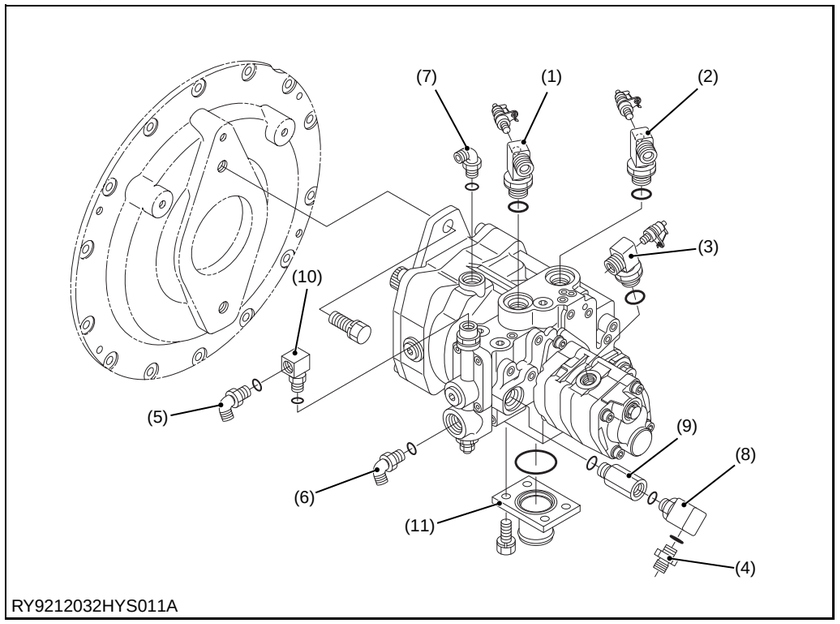
			Unit	KX057-4, U55-4	U48-4
Hydraulic pump theoretical flow (l/min) at 2200rpm	P1		l/min	56,1	118,8
	P2		l/min	56,1	-------
	P3		l/min	37	-------
	Pp		l/min	15,6	15,8
	Stand-by flow P1+P2		l/min	22,9	28,6
Main relief valve settings (engine rpm at max.)	aLS		bar	280 ± 5	250 ± 5
	aTR		bar	270 ± 5	-------
	aTL		bar	270 ± 5	-------
	AP3		bar	194 ± 5	-------
	aPp		bar	42 ± 2	42 ± 2
	aUN		bar	25,5	25,5
	Differential pressure LS		bar	16,5	16,5
Service Port theoretical flow with no load at 2200rpm	AUX1		l/min	75	70
	AUX2		l/min	37	37
Overload relief valve settings	Boom	bottom (b1B)	bar	315 ± 10	275 ± 10
		rod (b1R)	bar	315 ± 10	275 ± 10
		H/V (b1H)	bar	305 ± 10	-------
	Arm	bottom (b2B)	bar	315 ± 10	275 ± 10
		rod (b2R)	bar	315 ± 10	275 ± 10
	Bucket	bottom (b3B)	bar	315 ± 10	275 ± 10
		rod (b3R)	bar	315 ± 10	275 ± 10
	Blade	bottom (b4B)	bar	274 ± 10	315 ± 10
		rod (b4R)	bar	------	120 ± 10
	AUX1	LH (b6L)	bar	210 ± 10	210 ± 10
		RH (b6R)	bar	210 ± 10	210 ± 10
	AUX2	LH (b10L)	bar	------	210 ± 10
		RH (b10R)	bar	------	210 ± 10
	Swivel motor brake valves	CSR	bar		
		CSL	bar		

U48-4



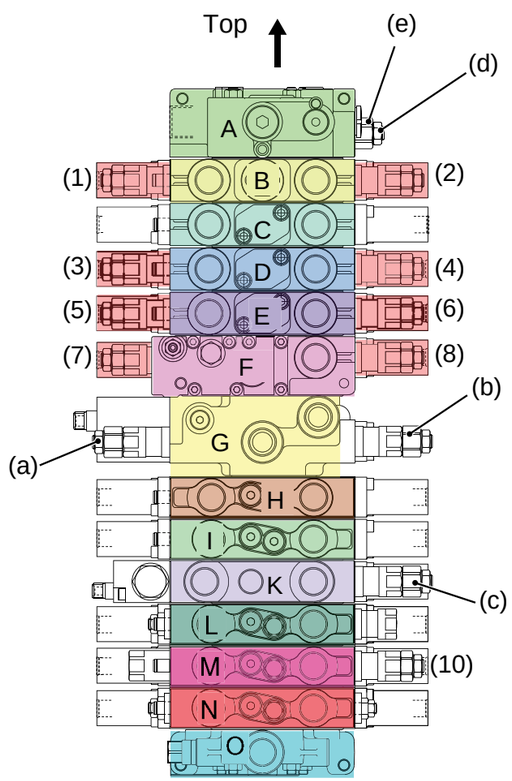
[1] P1
[2] Pp
[3] Pps
[4] Pls
[5] Air bleed
[6] Pps
[7] Suction flange

KX057-4, U55-4

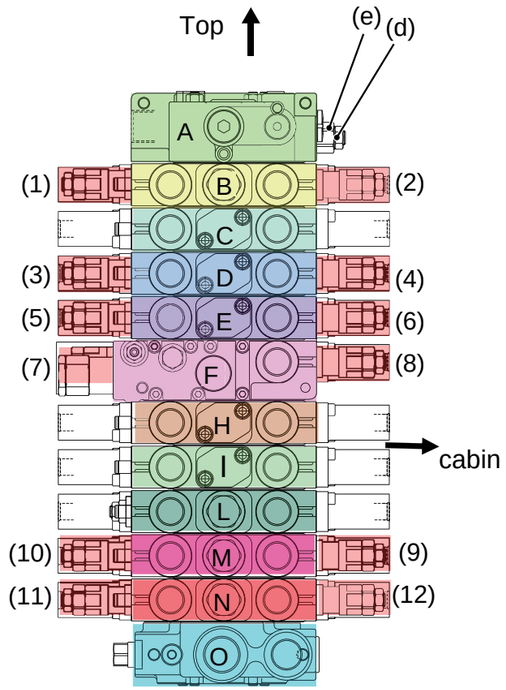


[1] P1
[2] P2
[3] P3
[4] Pp
[5] Pps
[6] Pls
[7] Air bleed
[8] Pp
[9] Pp
[10] Pps
[11] Suction flange

Main control valve KX057-4, U55-4



Main control valve U48-4



Main relief valves

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

Sections

A	Pls out, unload valve Tank T1
B	AUX1
C	Swivel
D	Bucket
E	Arm
F	Boom
G	P1, P2 inlet and travel independence, Pps out, Tank T2
H	Travel left
I	Travel right
K	P3 inlet, and straight travel
L	Swing
M	Dozer
N	AUX2
O	Tank T3 and Pp (AI-line Inlet) U48-4: P1 Inlet

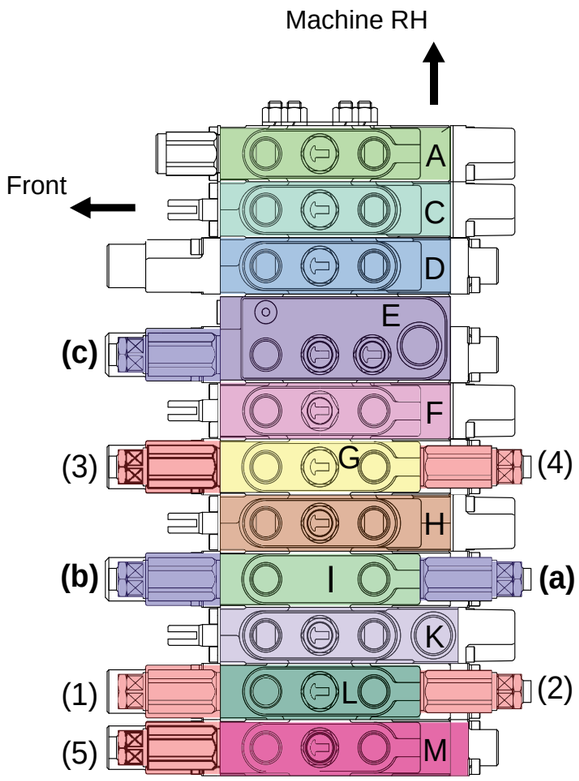
Overload relief valve position

[1]	AUX1 RH (b6R)
[2]	AUX1 LH (b6L)
[3]	Bucket, bottom side (b3B)
[4]	Bucket, rod side (b3R)
[5]	Arm, bottom side (b2B)
[6]	Arm, rod side (b2R)
[7]	Boom, bottom side (b1B)
[8]	Boom, rod side (b1R)
[9]	Blade rod side (b4R)
[10]	Blade bottom side (b4B)
[11]	AUX2 RH (b10R)
[12]	AUX2 LH (b10L)

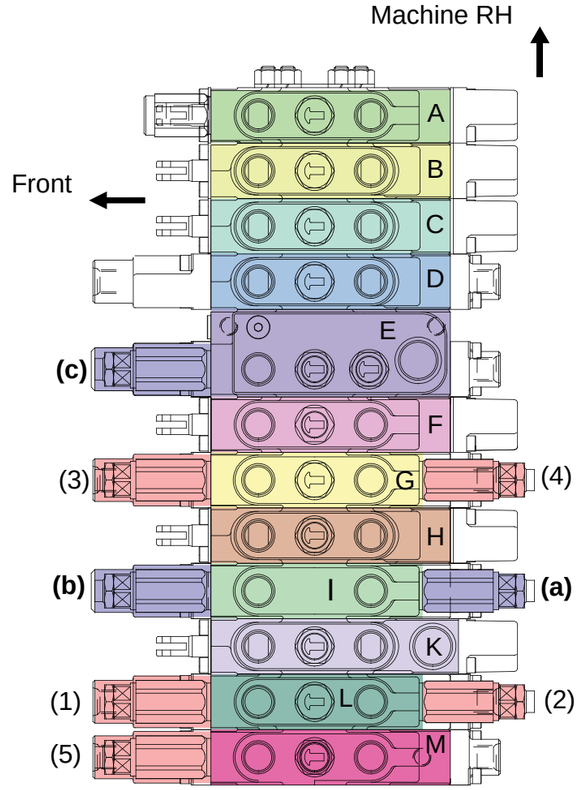
2.2.2 KX015-4, KX016-4, KX018-4, KX019-4

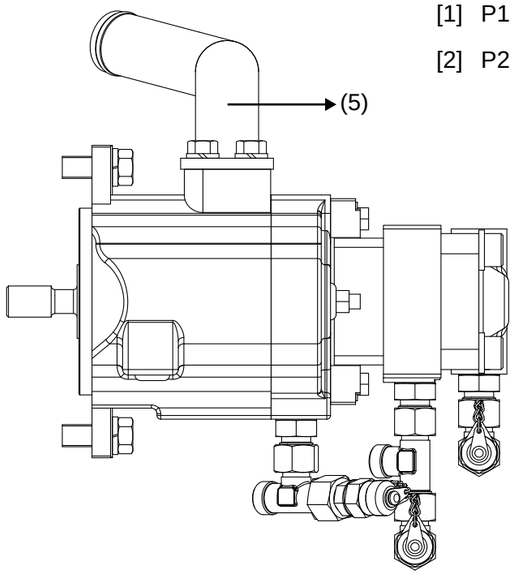
			Unit	KX015-4, KX016-4	KX018-4, KX019-4
Hydraulic pump theoretical flow (l/min) at 2200rpm	P1		l/min	16,6	17,3
	P2		l/min	16,6	17,3
	P3		l/min	10,4	10,4
	Pp		l/min	6,2	6,2
Main relief valve settings (engine rpm at max.)	aP1		bar	216 +10 / -5	226 +10 / -5
	aP2		bar	216 +10 / -5	226 +10 / -5
	aP3		bar	211 +10 / -5	216 +10 / -5
	aPp		bar	48 +2 / -3	48 +2 / -3
Service Port theoretical flow with no load at 2200rpm	AUX1		l/min	27	27,7
Overload relief valve settings	Boom	bottom (b1B)	bar	170 ± 10	170 ± 10
		rod (b1R)	bar	275 ± 10	275 ± 10
		H/V (b1H)	bar	-----	-----
	Arm	bottom (b2B)	bar	235 ± 10	235 ± 10
		rod (b2R)	bar	235 ± 10	235 ± 10
	Bucket	bottom (b3B)	bar	235 ± 10	235 ± 10
		rod (b3R)	bar	----	----
	Blade	bottom (b4B)	bar	-----	-----
	AUX1	LH (b6L)	bar	-----	-----
		RH (b6R)	bar	-----	-----
	AUX2	LH (b10L)	bar	-----	-----
		RH (b10R)	bar	-----	-----
	Swivel motor brake valves	CSR	bar	200 ± 10	200 ± 10
		CSL	bar	200 ± 10	200 ± 10

Main control valve KX015-4

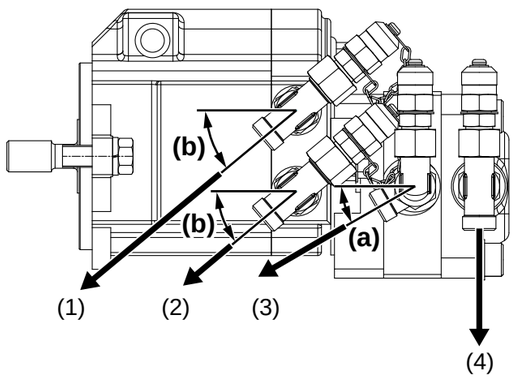


Main control valve KX016-4, KX018-4, KX019-4





[1] P1
[2] P2
[3] P3
[4] P4
[5] Suction Port



Main relief valves

[a] aP1
[b] aP2
[c] aP3

Sections

A	Swing
B	Track Extension (not KX015-4)
C	Blade
D	Swivel motor
E	Inlet P3, Travel Independance, Tank T1
F	AUX 1 (on KX019-4 with pilot caps)
G	Arm
H	Travel left
I	Inlet P1, P2
K	Travel right
L	Boom
M	Bucket

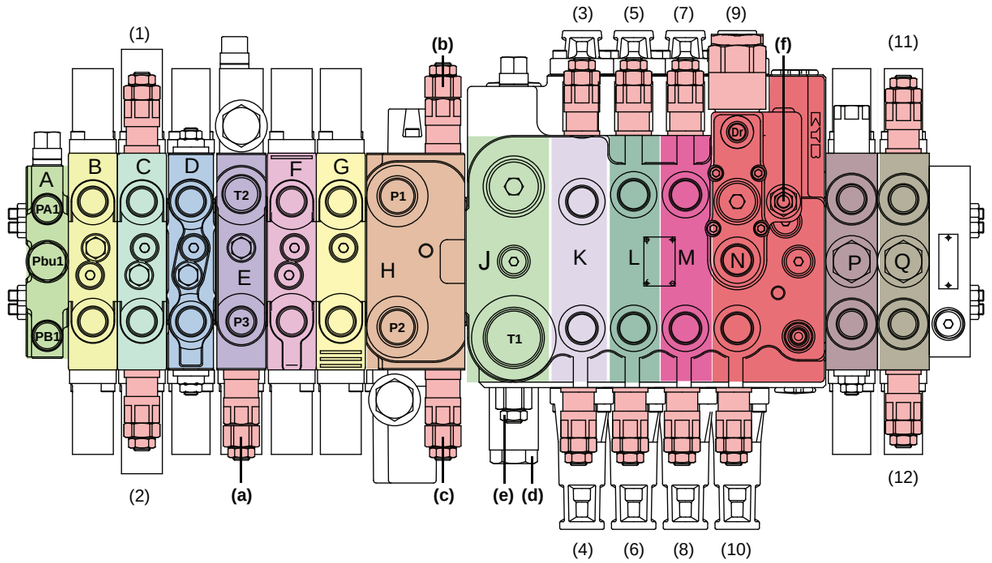
Overload relief valve position

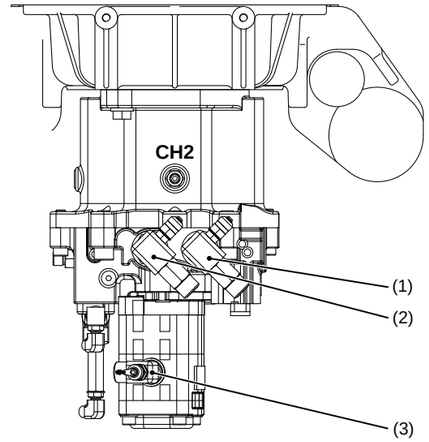
[1] Boom, rod side (b1R)
[2] Boom, bottom side (b1B)
[3] Arm, bottom side (b2B)
[4] Arm, rod side (b2R)
[5] Bucket, bottom side (b3B)

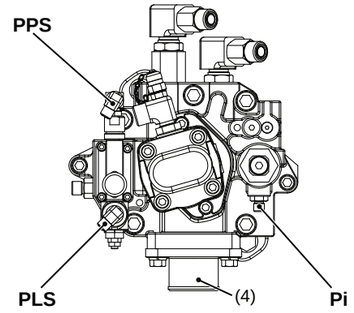
2.2.3 KX080-4

			Unit	KX080-4	
Hydraulic pump theoretical flow (l/min) at 2200rpm	P1		l/min	72	
	P2		l/min	72	
	P3		l/min	66,6	
	Pp		l/min	14,2	
	Stand-by flow P1+P2		l/min	22,0	
Main relief valve settings (engine rpm at max.)	aLS		bar	275 ± 5	
	aTR		bar	300 ± 5	
	aTL		bar	300 ± 5	
	AP3		bar	215 ± 5	
	aPp		bar	42 ± 2	
	aUN		bar	2,9 ± 2	
	Differential pressure LS		bar	16,5	
Service Port theoretical flow with no load at 2200rpm	AUX1		l/min	100,0	
	AUX2		l/min	67,0	
E/P mode proportional solenoid valve	P mode		bar	36 ± 2	
	P mode (A/C on)		bar	28 ± 2	
	E-mode		bar	0,0	
	E Mode at function boom up or travelling		bar	16 ± 2	Mono-boom specs.
			bar	22 ± 2	2-pcs. Boom specs.
Overload relief valve settings	Boom	bottom (b1B)	bar	314 ± 10	
		rod (b1R)	bar	314 ± 10	
		H/V (b1H)	bar	350 ± 10	
	Arm	bottom (b2B)	bar	304 ± 10	
		rod (b2R)	bar	314 ± 10	
	Bucket	bottom (b3B)	bar	314 ± 10	
		rod (b3R)	bar	314 ± 10	
	Blade	bottom (b4B)	bar	274 ± 10	
		rod (b4R)		195 ± 10	
	AUX1	LH (b6L)	bar	225 ± 10	
		RH (b6R)	bar	225 ± 10	
	AUX2	LH (b10L)	bar	-------	
		RH (b10R)	bar	-------	
	Swivel motor brake valves	C1 SR	bar	-------	
		C1 SL	bar	-------	
	2-piece boom	bottom (b7B)	bar	343 ± 10	
		Rod (b7R)	bar	343 ± 10	
		HV (b7H)	bar	343 ± 10	

Main control valve KX080-4







[1] P1
[2] P2
[3] P3
[4] Suction Port

Main relief valves

[a]	aP3
[b]	aTL
[c]	aTR
[d]	Unload valve aUN
[e]	Main relief valve aLS
[f]	Boom ermergency lowering valve

Sections

A	PA1, PB1, Pbu1
B	Swivel
C	Blade
D	AUX2
E	P3 inlet, T2,Pp2, straight travel
F	Travel left
G	Travel right
H	P1, P2 inlet, Travel independent, PPS
J	T1, aUN, aLS, Pp3, arm regeneration check vavle
K	Arm
L	Bucket
M	AUX1
N	Boom with Boom emergency lowering valve, PLS
P	Swing
Q	2-piece boom

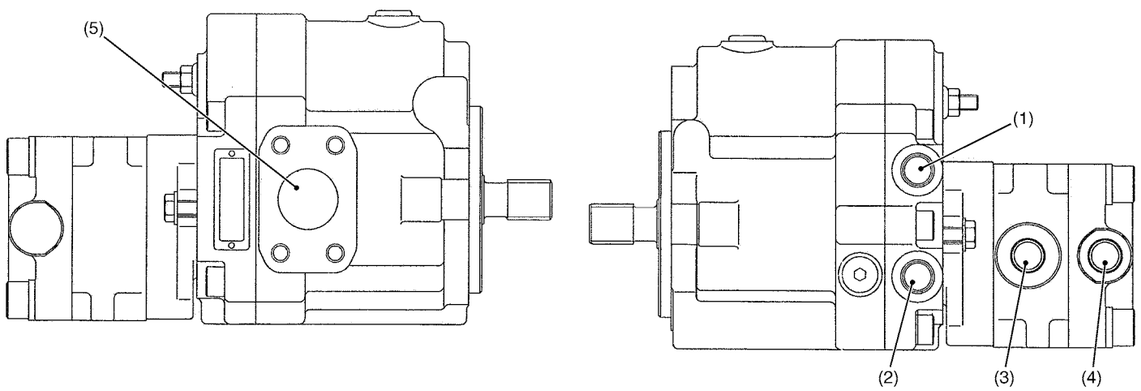
Overload relief valve position

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

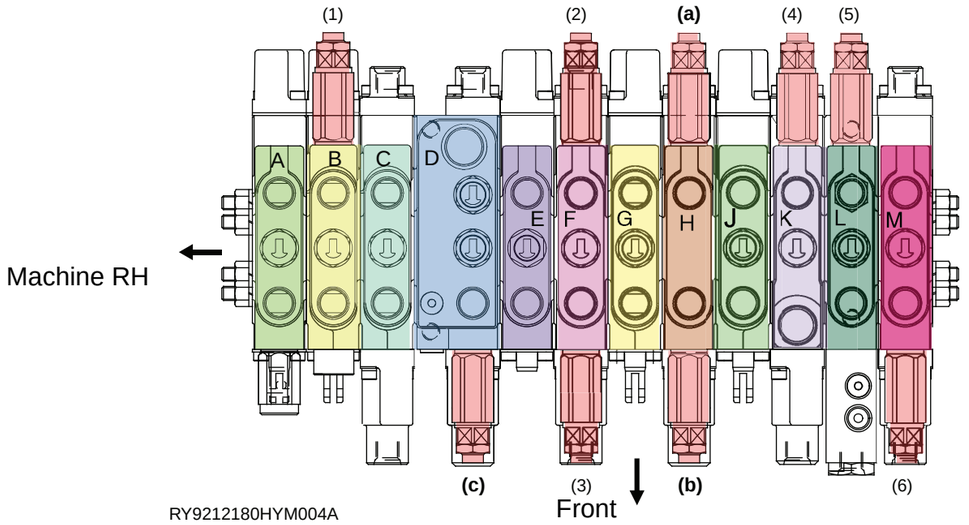
2.2.4 U27-4

			Unit	U27-4
Hydraulic pump theoretical flow (l/min) at 2200rpm	P1		l/min	28,8
	P2		l/min	28,8
	P3		l/min	19,2
	Pp		l/min	6,5
Main relief valve settings (engine rpm at max.)	aP1		bar	219 +10 / -5
	aP2		bar	219 +10 / -5
	aP3		bar	184 +10 / -5
	aPp		bar	48 +3 / -2
Service port theoretical flow with no load at 2200rpm	AUX 1		l/min	48
	AUX 2 (Hi Spec)		l/min	19
Overload relief valve settings	Boom	bottom (b1B)	bar	240 ± 10
		rod (b1R)	bar	240 ± 10
		H/V (b1H)	bar	-----
	Arm	bottom (b2B)	bar	240 ± 10
		rod (b2R)	bar	240 ± 10
	Bucket	bottom (b3B)	bar	240 ± 10
		rod (b3R)	bar	----
	Blade	bottom (b4B)	bar	240 ± 10
	AUX1	LH (b6L)	bar	-----
		RH (b6R)	bar	-----
	AUX2	LH (b10L)	bar	-----
		RH (b10R)	bar	-----
	Swivel motor brake valves	CSR	bar	177 ± 10
		CSL	bar	177 ± 10

[1] Discharge port P1
[2] Discharge port P2
[3] Discharge port P3
[4] Discharge port P4
[5] Suction port



Main control valve U27-4



Main relief valves

[a] aP1
[b] aP2
[c] aP3

Sections

A	Swing / AUX2 (Hi only)
B	Blade
C	Swivel
D	Confluence valve with T1, Inflow P3, Pp1
E	AUX
F	Arm
G	Travel left
H	P1 inlet, P2, Pp2 inlet
J	Travel right
K	Boom, section 1, T2
L	Boom, section 2, boom holding valve
M	Bucket

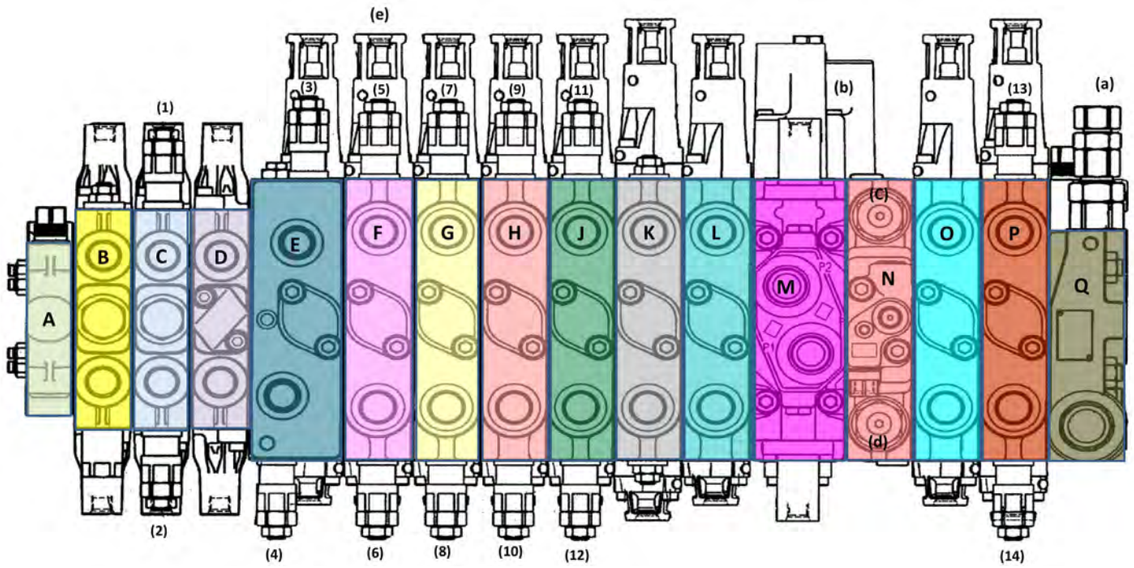
Overload relief valve position

[1] Blade, bottom side
[2] Arm, bottom side (b5B)
[3] Arm, rod side (b5R)
[4] Boom, bottom side (b2B)
[5] Boom, rod side (b2R)
[6] Bucket, bottom side (b1B)

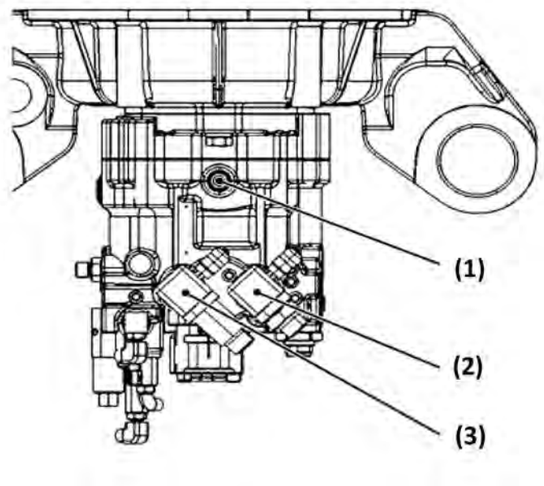
2.2.5 KX080-4α

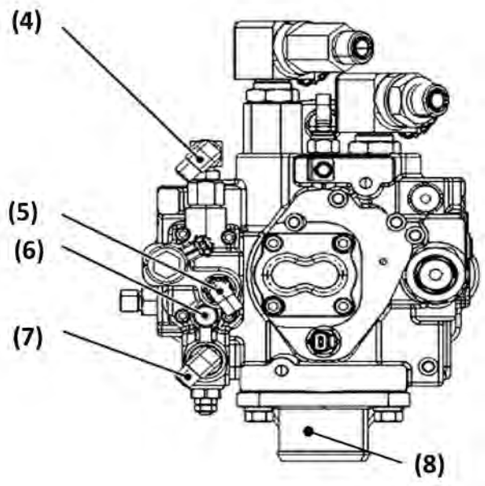
			Unit	KX080-4α	
Hydraulic pump theoretical flow (l/min) at 2200rpm	P1		l/min	84,6	
	P2		l/min	84,6	
	P3		l/min	----	
	Pp		l/min	14,0	
	Stand-by flow P1+P2		l/min	15,0	
Main relief valve settings (engine rpm at max.)	aP1		bar	280 +10 / -5	Standard boom
			bar	280 +10 / -5	Front attachments, 2P boom
			bar	300 +10 / -5	Travel, dozer blade, 2P boom
	aP2		bar	280 +10 / -5	Standard boom
			bar	300 +10 / -5	2P boom
	aP3		bar	----	
	aPp		bar	40 ± 2,5	
	aUN		bar	26 ± 2,5	
	Differential pressure LS		bar	16,5	P Mode
			bar		E Mode
Service Port theoretical flow with no load at 2200rpm	AUX1		l/min	100	
	AUX2		l/min	67	
Overload relief valve settings	Boom	bottom (b1B)	bar	314 ± 5	
		rod (b1R)	bar	314 ± 5	
		H/V (b1H)	bar	304 ± 5	
	Arm	bottom (b2B)	bar	314 ± 5	
		rod (b2R)	bar	314 ± 5	
	Bucket	bottom (b3B)	bar	314 ± 5	
		rod (b3R)	bar	314 ± 5	
	Blade	bottom (b4B)	bar	343 ± 5	
		rod (b4R)	bar	172 ± 5	
	AUX1	LH (b6L)	bar	206 ± 5	
		RH (b6R)	bar	206 ± 5	
	AUX2	LH (b10L)	bar	206 ± 5	
		RH (b10R)	bar	206 ± 5	
	Swivel motor	C1 SR	bar	----	
		C1 SL	bar	----	
	2-piece boom	bottom (b7B)	bar	333 ± 5	
		Rod (b7R)	bar	343 ± 10	
		HV (b7H)	bar	343 ± 10	

Main control valve KX080-4α



[1] Breather
[2] P1
[3] P2
[4] PPS
[5] Pp
[6] Pig solenoid valve
[7] PLS
[8] Suction port





Main pilot relief valve

[a] aP1
[b] aP2
[c] Unload valve aUN p1
[d] Unload valve aUN p2
[e] Boom emergency lowering valve (on the side of the section)

Sections

A	Pressure switch AI, pilot pressure PA
B	swing
C	AUX 2
D	Rotation
E	Boom
F	2P boom
G	Bucket
H	Arm
J	AUX 1
K	Dozer blade
L	Travel right
M	P1, P2 pressure inlet, independent travel valve, main relief valve aP2
N	Unload valve (aUN), PLS, PPS
O	Travel left
P	Dozer blade
Q	Main relief valve aP1, tank, pilot pressure outlet, 2 step main relief valve aP2 (2P boom only)

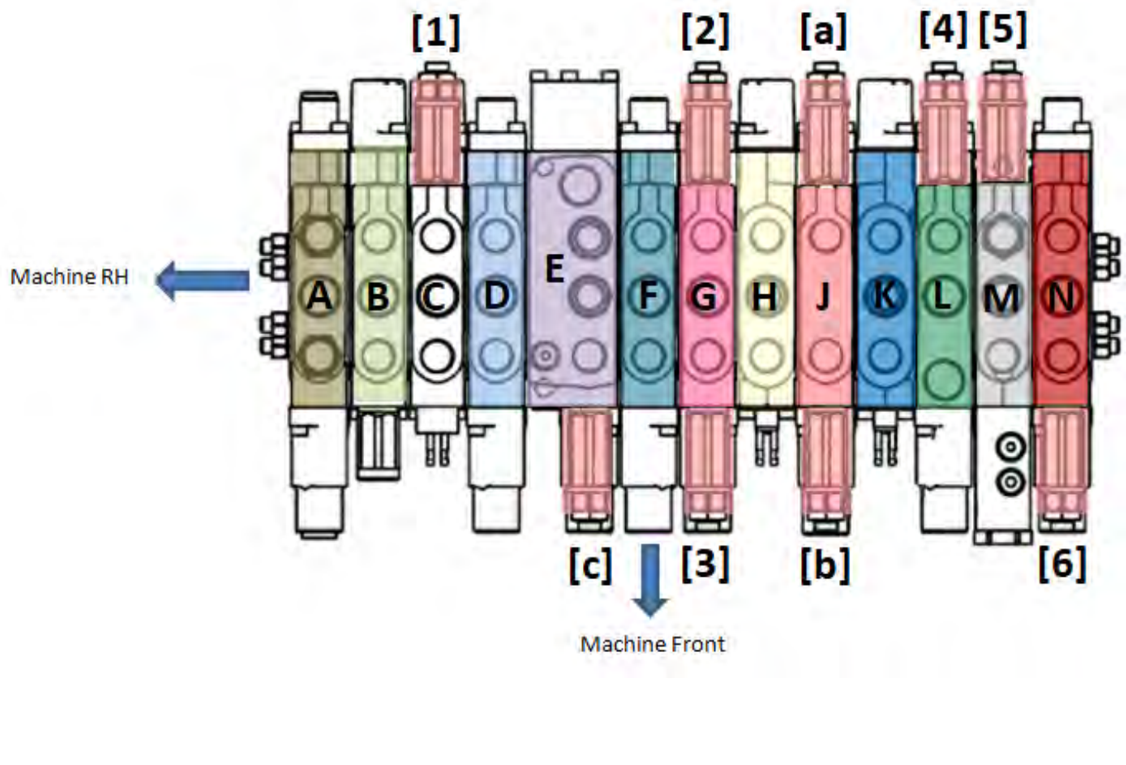
Overload relief valve positions

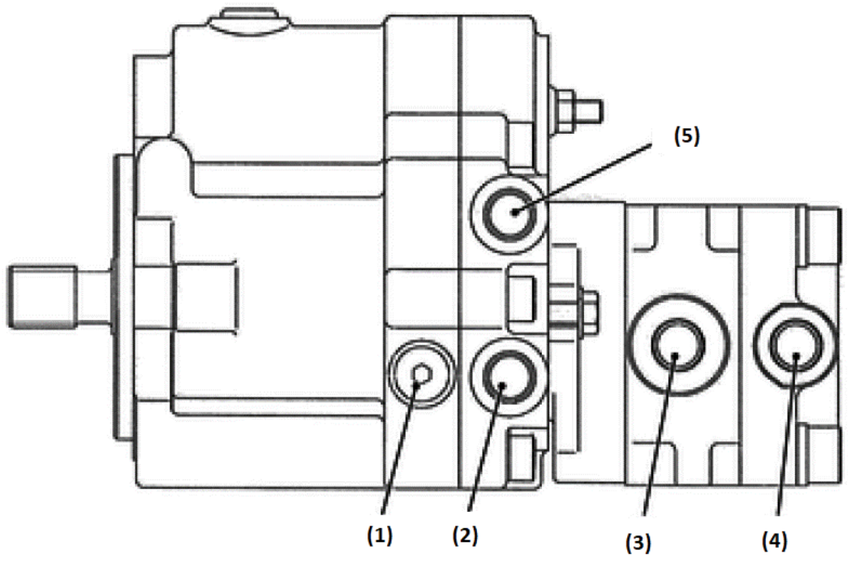
[1] AUX2 rh (b10R)
[2] AUX2 lh (b10L)
[3] Boom, rod side (b1R)
[4] Boom, bottom side (b1B)
[5] 2P boom bottom side (b7B)
[6] 2P boom rod side (b7R)
[7] Bucket (bottom side) (b3B)
[8] Bucket (rod side) (b3R)
[9] Arm (rod side) (b2R)
[10] Bottom (b2B)
[11] AUX1 rh (b6R)
[12] AUX1 lh (b6L)
[13] Dozer blade,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

2.2.6 KX027-4, KX027-4 Hi

			Unit	KX027-4
Hydraulic pump theoretical flow (l/min) at 2250 rpm	P1		l/min	31,9
	P2		l/min	31,9
	P3		l/min	19,6
	Pp		l/min	6,6
Main relief valve settings (engine rpm at max.)	aP1		bar	230 +10 / -5
	aP2		bar	230 +10 / -5
	aP3		bar	179 +10 / -5
	aPp		bar	45 +3 / -2
Service Port theoretical flow with no load at 2250 rpm	AUX1		l/min	47,3
Overload relief valve settings	Boom	bottom (b1B)	bar	265 ± 10
		rod (b1R)	bar	265 ± 10
		H/V (b1H)	bar	-----
	Arm	bottom (b2B)	bar	265 ± 10
		rod (b2R)	bar	265 ± 10
	Bucket	bottom (b3B)	bar	265 ± 10
		rod (b3R)	bar	----
	Blade	bottom (b4B)	bar	265 ± 10
	AUX1	LH (b6L)	bar	-----
		RH (b6R)	bar	-----
	AUX2	LH (b10L)	bar	-----
		RH (b10R)	bar	-----
	Swivel motor brake valves	CSR	bar	180 ± 10
		CSL	bar	180 ± 10

Main control valve KX027-4





[1] P1
[2] P2
[3] P3
[4] P4
[5] Air Bleeding Port

Main relief valves

[a] aP1
[b] aP2
[c] aP3

Sections

A	AUX2 (Hi only)
B	Swing
C	Dozer
D	Swivel
E	Inlet P3, Confluence valve, Tank T1
F	AUX1
G	Arm
H	Travel left
J	Inlet P1, P2
K	Travel right
L	Boom
M	Boom
N	Bucket

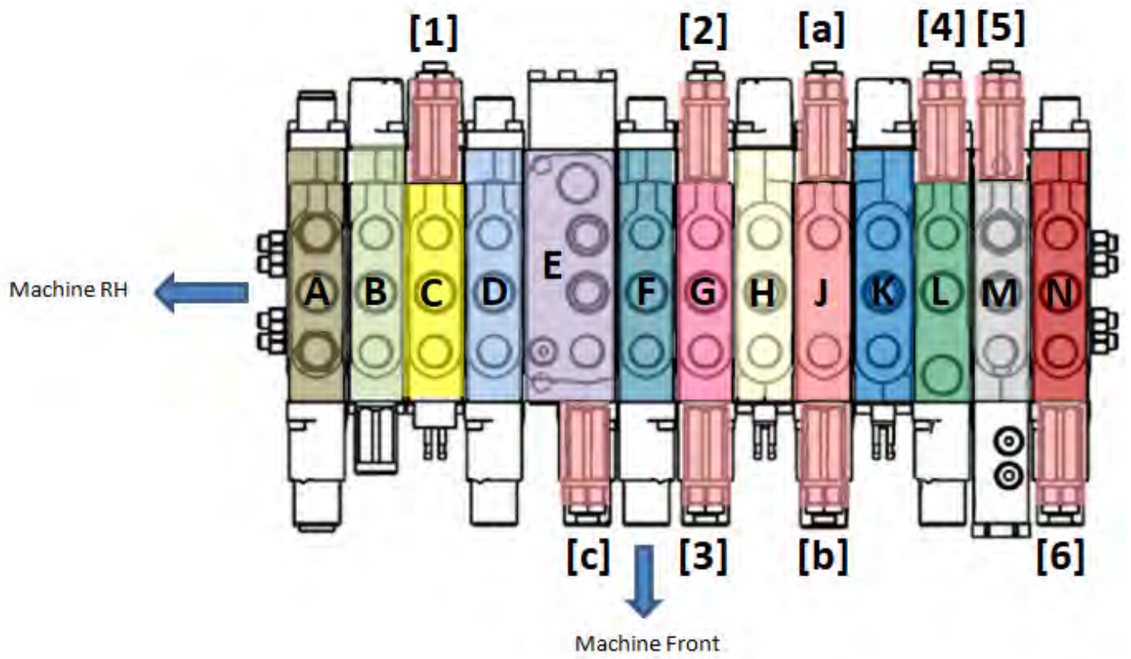
Overload relief valve position

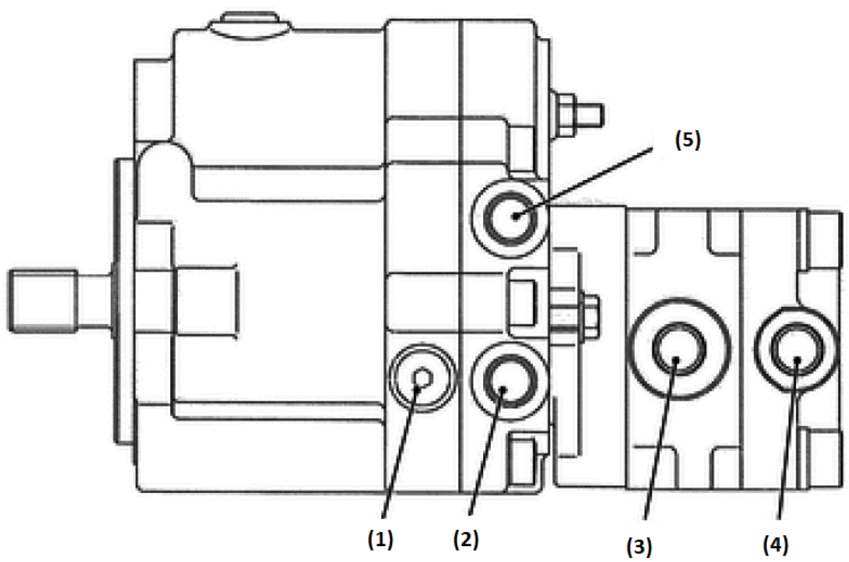
[1] Blade bottom side (b4B)
[2] Arm rod side (b2R)
[3] Arm bottom side (b2B)
[4] Boom, rod side (b1R)
[5] Boom, bottom side (b1B)
[6] Bucket, bottom side (b3B)

2.2.7 KX030-4, KX030-4 Hi

			Unit	KX030-4
Hydraulic pump theoretical flow (l/min) at 2250 rpm	P1		l/min	34,3
	P2		l/min	34,3
	P3		l/min	19,6
	Pp		l/min	6,6
Main relief valve settings (engine rpm at max.)	aP1		bar	243 +10 / -5
	aP2		bar	243 +10 / -5
	aP3		bar	205 +10 / -5
	aPp		bar	45 +3 / -2
Service Port theoretical flow with no load at 2250 rpm	AUX1		l/min	49,3
Overload relief valve settings	Boom	bottom (b1B)	bar	265 ± 10
		rod (b1R)	bar	265 ± 10
		H/V (b1H)	bar	-----
	Arm	bottom (b2B)	bar	265 ± 10
		rod (b2R)	bar	265 ± 10
	Bucket	bottom (b3B)	bar	265 ± 10
		rod (b3R)	bar	----
	Blade	bottom (b4B)	bar	265 ± 10
	AUX1	LH (b6L)	bar	-----
		RH (b6R)	bar	-----
	AUX2	LH (b10L)	bar	-----
		RH (b10R)	bar	-----
	Swivel motor brake valves	CSR	bar	170 ± 10
		CSL	bar	170 ± 10

Main control valve KX030-4





[1] P1
[2] P2
[3] P3
[4] P4
[5] Air Bleeding Port

Main relief valves

[a] aP1
[b] aP2
[c] aP3

Sections

A	AUX2 (Hi only)
B	Swing
C	Dozer
D	Swivel
E	Inlet P3, Confluence valve, Tank T1
F	AUX1
G	Arm
H	Travel left
J	Inlet P1, P2
K	Travel right
L	Boom
M	Boom
N	Bucket

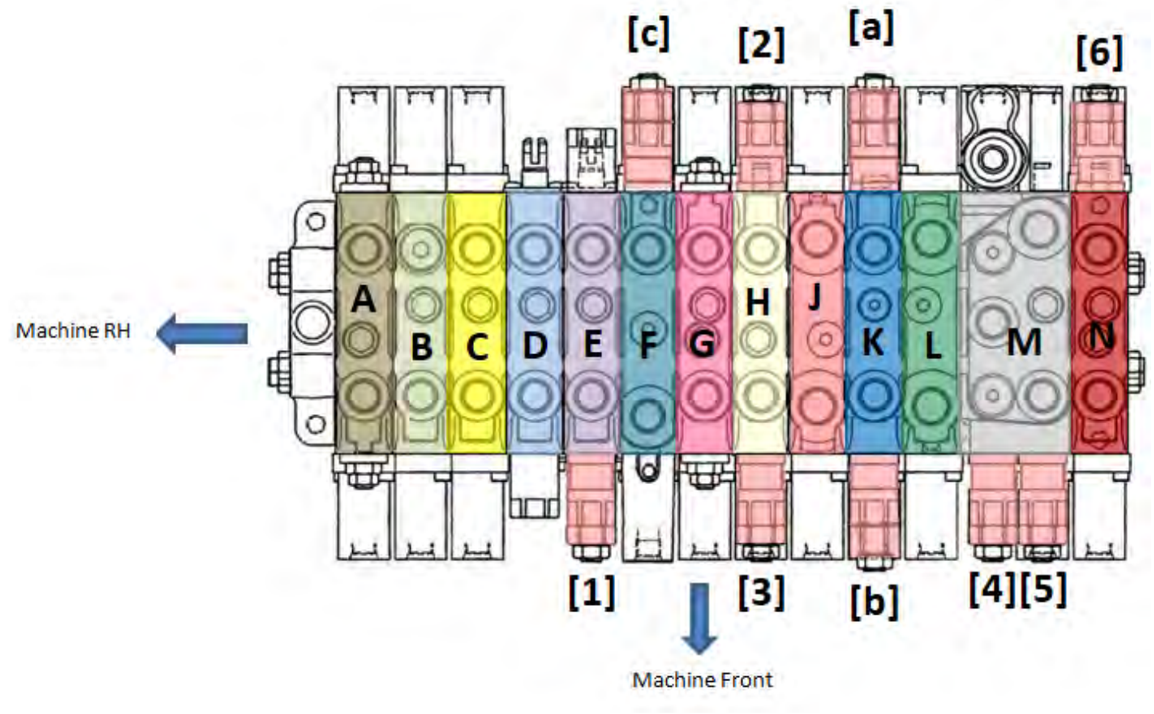
Overload relief valve position

[1] Blade bottom side (b4B)
[2] Arm rod side (b2R)
[3] Arm bottom side (b2B)
[4] Boom, rod side (b1R)
[5] Boom, bottom side (b1B)
[6] Bucket, bottom side (b3B)

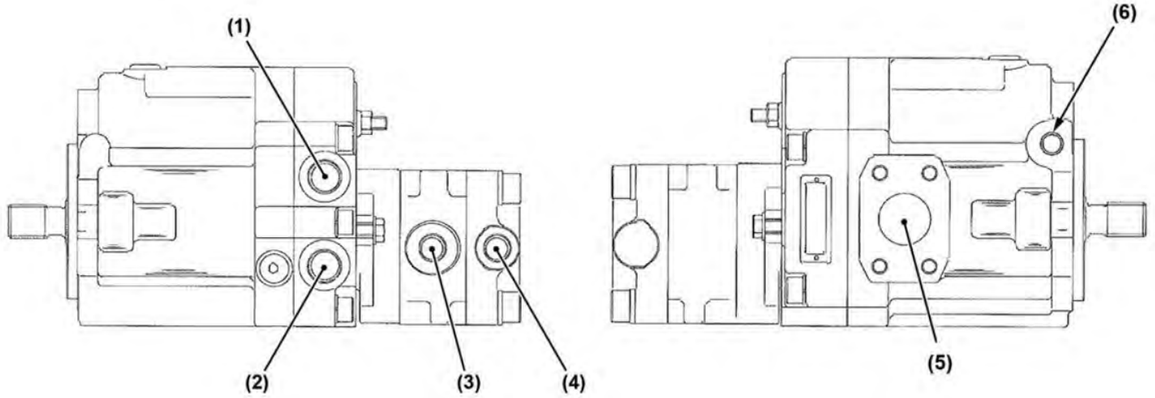
2.2.8 U36-4

			Unit	U36-4
Hydraulic pump theoretical flow (l/min) at 2200 rpm	P1		l/min	40,7
	P2		l/min	40,7
	P3		l/min	20,9
	Pp		l/min	9,9
Main relief valve settings (engine rpm at max.)	aP1		bar	253 +5 / -5
	aP2		bar	253 +5 / -5
	aP3		bar	203 +5 / -5
	aPp		bar	39 +3 / -0
Service Port theoretical flow with no load at 2200 rpm	AUX1		l/min	61,6
	AUX 2		l/min	20,9
Overload relief valve settings	Boom	bottom (b1B)	bar	274 ± 10
		rod (b1R)	bar	274 ± 10
		H/V (b1H)	bar	-----
	Arm	bottom (b2B)	bar	274 ± 10
		rod (b2R)	bar	274 ± 10
	Bucket	bottom (b3B)	bar	274 ± 10
		rod (b3R)	bar	----
	Blade	bottom (b4B)	bar	274 ± 10
	AUX1	LH (b6L)	bar	205 ± 10
		RH (b6R)	bar	205 ± 10
	AUX2	LH (b10L)	bar	-----
		RH (b10R)	bar	-----
	Swivel motor brake valves	CSR	bar	200 ± 10
		CSL	bar	200 ± 10

Main control valve U36-4



[1] P1
[2] P2
[3] P3
[4] P4
[5] Suction Port
[6] PC (only machines with air conditioner)



Main relief valves

[a] aP1
[b] aP2
[c] aP3

Sections

A	AUX2 (Hi only)
B	Boom 2
C	Swivel
D	Swing
E	Dozer
F	Inlet P3, Confluence valve, Tank T1
G	AUX1
H	Arm
J	Travel left
K	Inlet P1, P2
L	Travel right
M	Boom 1, boom lock valve
N	Bucket

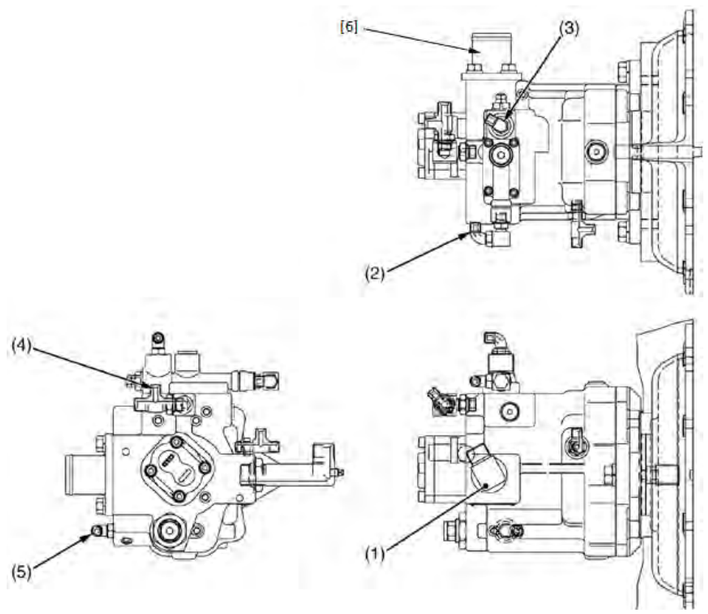
Overload relief valve position

[1] Blade bottom side (b4B)
[2] Arm rod side (b2R)
[3] Arm bottom side (b2B)
[4] Boom, bottom side (b1B)
[5] Boom, rod side (b1R)
[6] Bucket, bottom side (b3B)

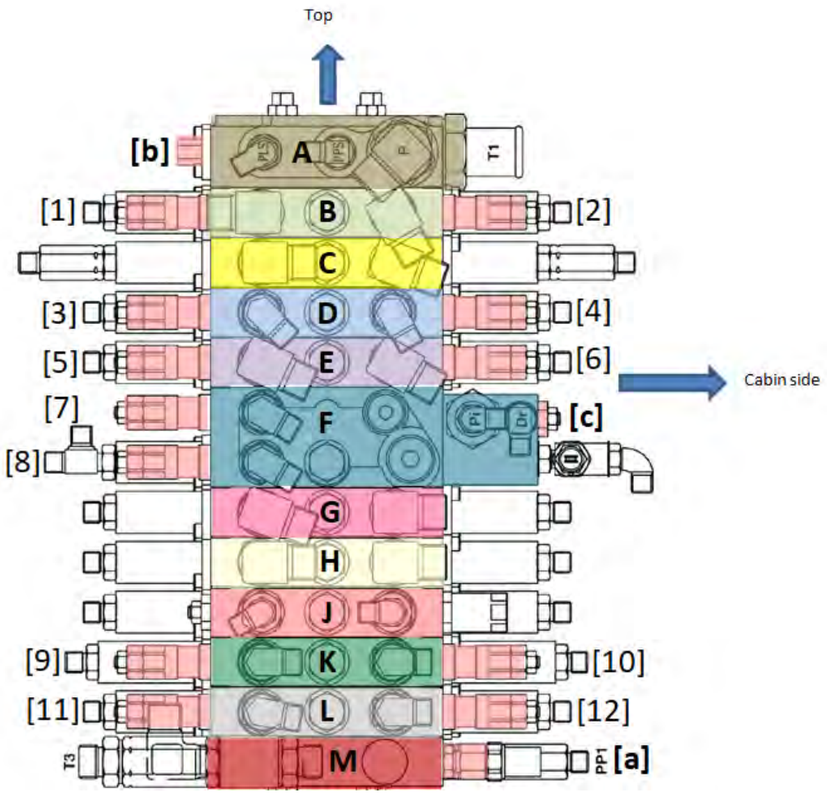
2.2.9 KX042-4

			Unit	KX042-4	
Hydraulic pump theoretical flow (l/min) at 2200rpm	P1		l/min	92,4	
	Pp		l/min	15,6	
	Stand-by flow P1 + P2		l/min	17,6	
Main relief valve settings (engine rpm at max.)	aLS		bar	250 ± 5	
	aPp		bar	43 ± 2	
	aUN		bar	30	
	Differential pressure LS		bar	-----	P-mode
			bar	-----	E-mode
Service Port theoretical flow with no load at 2200rpm	AUX1		l/min	65	
	AUX 2		l/min	37	
Overload relief valve settings	Boom	bottom (b1B)	bar	274 ± 10	
		rod (b1R)	bar	274 ± 10	
		H/V (b1H)	bar	-----	
	Arm	bottom (b2B)	bar	274 ± 10	
		rod (b2R)	bar	274 ± 10	
	Bucket	bottom (b3B)	bar	274 ± 10	
		rod (b3R)	bar	274 ± 10	
	Blade	bottom (b4B)	bar	314 ± 10	
		rod (b4R)	bar	190 ± 10	
	AUX1	LH (b6L)	bar	205 ± 10	
		RH (b6R)	bar	205 ± 10	
	AUX2	LH (b10L)	bar	200 ± 10	
		RH (b10R)	bar	200 ± 10	
	Swivel motor brake valves	CSR	bar	215 ± 10	At machine pressure test port
		CSL	bar	215 ± 10	At machine pressure test port

[1] P1
[2] Pps
[3] Pls
[4] Pp
[5] Pi
[6] Suction flange



Main control valve KX042-4



Main relief valves

[a] aLS
[b] aUN
[c] Boom emergency lowering valve

Sections

A	P in, Pps, Pls, T1
B	AUX 1
C	Swivel
D	Bucket
E	Arm
F	Boom 1, boom lock valve
G	Travel RH
H	Travel LH
J	Swing
K	Blade
L	AUX 2
M	Pp1, T3

Overload relief valve position

[1] AUX1 (b10R)
[2] AUX1 (b10L)
[3] Bucket, bottom side (b3B)
[4] Bucket, rod side (b3R)
[5] Arm bottom side (b2B)
[6] Arm rod side (b2R)
[7] Boom, bottom side (b1B)
[8] Boom rod side (b1R)
[9] Blade bottom side (b4B)
[10] Blade rod side (b4R)
[11] AUX2 (b6R)
[12] AUX2 (b6L)

2.3 Internal leak and speed

2.3.1 KX057-4, U55-4, U48-4

					Unit	KX057-4	U55-4	U48-4
		Total weight to attach to arm end, bucket included			kg	420	420	420
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	20	20	20
			allowable limit		mm	100	100	100
		Arm	max. new machine		mm	20	20	20
			allowable limit		mm	100	100	100
		Bucket	max. new machine		mm	10	10	10
			allowable limit		mm	50	50	50
		Blade	max. new machine		mm	20	20	20
			allowable limit		mm	85	85	85
	Travel motor	Travel block on 20° slope			mm	0	0	0
	Travel motor drain amount	During rotation	1F		l\min	≤ 0,5	≤ 0,5	≤ 0,5
			2F		l\min	≤ 0,75	≤ 0,75	≤ 0,75
		Block			l\min	≤ 4	≤ 4	≤ 4
	Swivel motor	Swivel block on 20° slope	drift measured on swivel bearing outer race (LH/RH)	engine stop	°	≤ 5	≤ 5	≤ 5
				engine running	°	≤ 30	≤ 30	≤ 30
		Drain amount	during rotation		l\min	≤ 0,5	≤ 0,5	≤ 0,5
			when blocked		l\min	≤ 4	≤ 4	≤ 4
	Straight travel	Travel distance 10m	1st - 2nd speed / Forward-Backward	deviation	mm	≤ 600	≤ 600	≤ 600
Speed	Boom		up (ground to max. up) w/o cushion		s	2,7 ± 0,3	2,7 ± 0,3	2,7 ± 0,3
			down		s	3,4 ± 0,3	3,4 ± 0,3	3,1 ± 0,3
	Arm		crowd		s	3,2 ± 0,3	3,2 ± 0,3	3,2 ± 0,3
			dump		s	2,8 ± 0,3	2,8 ± 0,3	2,8 ± 0,3
	Bucket		crowd		s	3 ± 0,3	3 ± 0,3	2,9 ± 0,3
			dump		s	2,1 ± 0,3	2,1 ± 0,3	2,2 ± 0,3
	Blade		up (full stroke)		s	2,2 ± 0,3	2,2 ± 0,3	2,4 ± 0,3
			down (full stroke)		s	2,9 ± 0,3	2,9 ± 0,3	2,3 ± 0,3
	Swing		to LH		s	6,5 ± 0,5	6,5 ± 0,5	5,5 ± 0,5
			to RH		s	7,9 ± 0,5	7,9 ± 0,5	6,4 ± 0,5
	Swivel motor		3 rotations		s	17,6 ~ 21,7	17,6 ~ 21,7	18,2 ~ 22,2
	Travel motor	Travel speed (distance 10m)	1F	rubber	s	14 ± 1,4	14 ± 1,4	14 ± 1,4
			2F	rubber	s	8 ± 0,8	8 ± 0,8	8 ± 0,8
			1F	steel	s	16 ± 1,6	16 ± 1,6	16 ± 1,6
			2F	steel	s	9 ± 0,9	9 ± 0,9	9 ± 0,9

2.3.2 KX015-4, KX016-4, KX018-4, KX019-4

					Unit	KX015-4	KX016-4	KX018-4	KX019-4
		Total weight to attach to arm end, bucket included			kg	90	90	100	100
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	15	15	15	15
			allowable limit		mm	75	75	75	75
		Arm	max. new machine		mm	10	10	10	10
			allowable limit		mm	50	50	50	50
		Bucket	max. new machine		mm	4	4	4	4
			allowable limit		mm	20	20	20	20
		Blade	max. new machine		mm	13	13	13	13
			allowable limit		mm	26	26	26	26
	Travel motor	Travel block on 20° slope			mm	300	300	300	300
	Travel motor drain amount	During rotation	1F		l\min	≤ 0,5	≤ 0,5	≤ 0,5	≤ 0,5
			2F		l\min	≤ 0,5	≤ 0,5	≤ 0,5	≤ 0,5
		Block			l\min	≤ 5	≤ 5	≤ 5	≤ 5
	Swivel motor	Swivel block on 20° slope	drift measured on swivel bearing outer race (LH/RH)	engine stop	mm	-	-	-	-
				engine running	mm	121	121	120	120
		Drain amount	during rotation		l\min	0,1	0,1	0,1	0,1
			when blocked		l\min	0,3	0,3	0,3	0,3
	Straight travel	Travel distance 10m	1st - 2nd speed / Forward-Backward	deviation	mm	≤ 600	≤ 600	≤ 600	≤ 600
Speed	Boom		up (ground to max. up) w/o cushion		s	2,3 ± 0,3	2,3 ± 0,3	2,0 ± 0,3	2,0 ± 0,3
			down		s	3,0 ± 0,3	3,0 ± 0,3	2,7 ± 0,3	2,7 ± 0,3
	Arm		crowd		s	3,1 ± 0,3	3,1 ± 0,3	3,4 ± 0,3	3,4 ± 0,3
			dump		s	2,2 ± 0,3	2,2 ± 0,3	2,4 ± 0,3	2,4 ± 0,3
	Bucket		crowd		s	2,5 ± 0,3	2,5 ± 0,3	2,7 ± 0,3	2,7 ± 0,3
			dump		s	1,9 ± 0,3	1,9 ± 0,3	2,0 ± 0,3	2,0 ± 0,3
	Blade		up (full stroke)		s	1,4 ± 0,3	1,4 ± 0,3	1,5 ± 0,3	1,5 ± 0,3
			down (full stroke)		s	1,7 ± 0,3	1,7 ± 0,3	2,0 ± 0,3	2,0 ± 0,3
	Swing		to LH		s	4,7 ± 0,3	4,7 ± 0,3	4,7 ± 0,3	4,7 ± 0,3
			to RH		s	4,0 ± 0,3	4,0 ± 0,3	3,9 ± 0,3	3,9 ± 0,3
	Variable track		expand		s	-----	4,1 ± 0,5	5,0 ± 0,3	5,0 ± 0,3
			retract		s	-----	3,1 ± 0,5	3,8 ± 0,3	3,8 ± 0,3
	Swivel motor		3 rotations		s	20 ± 2	20 ± 2	20 ± 2	20 ± 2
	Travel motor	Travel speed (distance 10m)	1F	rubber	s	≤ 56121: 16,5 ± 1,5 / ≥ 56122: 17,3 ± 1,6	17,3 ± 1,6	16,5 ± 1,5	16,5 ± 1,5
			2F	rubber	s	-----	9,6 ± 1,0	9,1 ± 0,9	9,1 ± 0,9
			1F	steel	s	-----	-----	-----	-----
			2F	steel	s	-----	-----	-----	-----

2.3.3 KX080-4

					Unit	KX080-4
Additional weight in the bucket		Total weight to attach to arm end, bucket included			kg	590,6
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	20
			allowable limit		mm	100
		2nd boom (2-piece boom spec.)	max. new machine		mm	10
			allowable limit		mm	50
		Arm	max. new machine		mm	20
			allowable limit		mm	100
		Bucket	max. new machine		mm	10
			allowable limit		mm	50
		Blade	max. new machine		mm	20
			allowable limit		mm	100
	Travel motor	Travel block on 20° slope			mm	0
	Travel motor drain amount	During rotation	1F		l\min	≤ 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	drift measured on swivel bearing outer race (LH/RH)	engine stop	mm	≤ 43,2
				engine running	mm	≤ 43,2
		Drain amount	during rotation		l\min	≤ 0,5
			when blocked		l\min	–––
	Straight travel	Travel distance 10m	1st - 2nd speed / Forward-Backward	devation	mm	≤ 600
Speed	Standard Boom		up (ground to max. up) w/o cushion		s	3,1 ± 0,3
			down		s	3,4 ± 0,3
	2 piece Boom 1st boom		up (ground to max. up) w/o cushion			3,7 ± 0,3
			down			4,1 ± 0,3
	2 piece Boom 2nd boom		crowd			4,7 ± 0,3
			dump			5,5 ± 0,3
	Arm		crowd		s	3,4 ± 0,3
			dump		s	3,2 ± 0,3
	Bucket		crowd		s	3,1 ± 0,3
			dump		s	2,2 ± 0,3
	Blade		up (full stroke)		s	2,3 ± 0,3
			down (full stroke)		s	3,0 ± 0,3
	Swing		to LH		s	7,5 ± 0,7
			to RH		s	7,7 ± 0,7
	Swivel motor		3 rotations		s	17,1 ~ 20,9
	Travel motor	Travel speed (distance 10 m)	1F	rubber	s	12,0 ~ 15,0
			2F	rubber	s	6,9 ~ 8,6
			1F	steel	s	12,9 ~ 16,4
			2F	steel	s	7,2 ~ 9,0

2.3.4 U27-4

					Unit	U27-4
Additional weight in the bucket		Total weight to attach to arm end, bucket included			kg	106
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	20
			allowable limit		mm	100
		Arm	max. new machine		mm	15
			allowable limit		mm	75
		Bucket	max. new machine		mm	10
			allowable limit		mm	50
		Blade	max. new machine		mm	25
			allowable limit		mm	50
	Travel motor	Travel block on 20° slope			mm	300
	Travel motor drain amount	During rotation	1F		l\min	0,2 - 0,4
			2F		l\min	–––
		Block	1F		l\min	–––
			2F		l\min	–––
	Swivel motor	Swivel block on 20° slope	drift measured on swivel bearing outer race (LH/RH)	engine stop	mm	157
				engine running	mm	157
		Drain amount	during rotation		l\min	0,5 - 1
			when blocked		l\min	3 - 6
	Straight travel	Travel distance 10m	1st - 2nd speed / Forward-Backward	devation	mm	600
Speed	Standard Boom		up (ground to max. up) w/o cushion		s	2,2 ± 0,3
			down		s	2,6 ± 0,3
	Arm		crowd		s	2,7 ± 0,3
			dump		s	2,6 ± 0,3
	Bucket		crowd		s	2,5 ± 0,3
			dump		s	1,6 ± 0,3
	Blade		up (full stroke)		s	1,9 ± 0,3
			down (full stroke)		s	2,6 ± 0,3
	Swing	U27-4	to LH		s	4,9 ± 0,3
			to RH		s	4,3 ± 0,3
	Swing	U27-4 Hi.	to LH		s	4,5 ± 0,3
			to RH		s	5,0 ± 0,3
	Swivel motor		3 rotations		s	16,5 ~ 20,2
	Travel motor	Travel speed (distance 10 m)	1F	rubber	s	12,4 ~ 15,7
			2F	rubber	s	7,1 ~ 8,8
			1F	steel	s	–––
			2F	steel	s	–––

2.3.5 KX080-4α

					Einheit	KX080-4α
Additional weight in the bucket		Total weight to attach to arm end, bucket included			kg	590,6
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	20
			allowable limit		mm	100
		2nd boom (2-piece boom spec.)	max. new machine		mm	10
			allowable limit		mm	50
		Arm	max. new machine		mm	20
			allowable limit		mm	100
		Bucket	max. new machine		mm	10
			allowable limit		mm	50
		Blade	max. new machine		mm	20
			allowable limit		mm	100
	Travel motor	Travel block on 20° slope			mm	0
	Travel motor drain amount	During rotation	1F		l\min	≤ 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	drift measured on swivel bearing outer race (LH/RH)	engine stop	mm	≤ 43,2
				engine running	mm	≤ 43,2
		Drain amount	during rotation		l\min	≤ 0,5
			when blocked		l\min	–––
	Straight travel	Travel distance 10m	1st - 2nd speed / Forward-Backward	devation	mm	≤ 600
Speed	Standard Boom		up (ground to max. up) w/o cushion		s	2,9 ± 0,3
			down		s	3,2 ± 0,3
	2 piece Boom 1st boom		up (ground to max. up) w/o cushion			3,5 ± 0,3
			down			4,0 ± 0,3
	2 piece Boom 2nd boom		crowd			4,9 ± 0,3
			dump			5,1 ± 0,3
	Arm		crowd		s	3,4 ± 0,3
			dump		s	3,0 ± 0,3
	Bucket		crowd		s	3,1 ± 0,3
			dump		s	2,2 ± 0,3
	Blade		up (full stroke)		s	2,4 ± 0,3
			down (full stroke)		s	3,1 ± 0,3
	Swing		to LH		s	7,3 ± 0,7
			to RH		s	7,2 ± 0,7
	Swivel motor		3 rotations		s	16,1 ~ 19,5
	Travel motor	Travel speed (distance 10 m)	1F	rubber	s	12,0 ~ 15,0
			2F	rubber	s	6,8 ~ 8,4
			1F	steel	s	12,9 ~ 15,7
			2F	steel	s	7,2 ~ 8,8

2.3.6 KX027-4, KX027-4Hi

					Einheit	KX027-4, KX027-4Hi
Additional weight in the bucket		Total weight to attach to arm end, bucket included			kg	163
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	20
			allowable limit		mm	100
		Arm	max. new machine		mm	15
			allowable limit		mm	75
		Bucket	max. new machine		mm	10
			allowable limit		mm	50
		Blade	max. new machine		mm	25
			allowable limit		mm	50
	Travel motor	Travel block on 20° slope			mm	300
	Travel motor drain amount	During rotation	1F		l\min	≤ 0,4
			2F		l\min	–––
		Block	1F		l\min	–––
			2F		l\min	–––
	Swivel motor	Swivel block on 20° slope	drift measured on swivel bearing outer race (LH/RH)	engine stop	mm	157
				engine running	mm	157
		Drain amount	during rotation		l\min	≤ 1,0
			when blocked		l\min	≤ 6,0
	Straight travel	Travel distance 10m	1st - 2nd speed / Forward-Backward	devation	mm	600
Speed	Standard Boom		up (ground to max. up) w/o cushion		s	2,7 ± 0,3
			down		s	2,6 ± 0,3
	Arm		crowd		s	2,4 ± 0,3
			dump		s	2,6 ± 0,3
	Bucket		crowd		s	2,6 ± 0,3
			dump		s	1,7 ± 0,3
	Blade		up (full stroke)		s	2,1 ± 0,3
			down (full stroke)		s	2,8 ± 0,3
	Swing		to LH		s	6,4 ± 0,3
			to RH		s	5,6 ± 0,3
	Swivel motor		3 rotations		s	16,4 ~ 19,6
	Travel motor	Travel speed (distance 10 m)	1F	rubber	s	12,0 ~ 15,0
			2F	rubber	s	7,1 ~ 8,8
			1F	steel	s	13,9 ~ 16,4
			2F	steel	s	7,5 ~ 9,0

2.3.7 KX030-4, KX030-4Hi

					Einheit	KX030-4, KX030-4Hi
Additional weight in the bucket		Total weight to attach to arm end, bucket included			kg	152
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	20
			allowable limit		mm	100
		Arm	max. new machine		mm	11
			allowable limit		mm	55
		Bucket	max. new machine		mm	10
			allowable limit		mm	50
		Blade	max. new machine		mm	25
			allowable limit		mm	50
	Travel motor	Travel block on 20° slope			mm	300
	Travel motor drain amount	During rotation	1F		l\min	≤ 0,4
			2F		l\min	–––
		Block	1F		l\min	–––
			2F		l\min	–––
	Swivel motor	Swivel block on 20° slope	drift measured on swivel bearing outer race (LH/RH)	engine stop	mm	26
				engine running	mm	157
		Drain amount	during rotation		l\min	≤ 1,0
			when blocked		l\min	≤ 6,0
	Straight travel	Travel distance 10m	1st - 2nd speed / Forward-Backward	devation	mm	600
Speed	Standard Boom		up (ground to max. up) w/o cushion		s	2,6 ± 0,3
			down		s	2,5 ± 0,3
	Arm		crowd		s	2,8 ± 0,3
			dump		s	3,0 ± 0,3
	Bucket		crowd		s	2,7 ± 0,3
			dump		s	1,9 ± 0,3
	Blade		up (full stroke)		s	2,0 ± 0,3
			down (full stroke)		s	2,6 ± 0,3
	Swing		to LH		s	6,6 ± 0,3
			to RH		s	5,7 ± 0,3
	Swivel motor		3 rotations		s	17,2 ~ 20,7
	Travel motor	Travel speed (distance 10 m)	1F	rubber	s	11,3 ~ 13,8
			2F	rubber	s	7,3 ~ 8,8
			1F	steel	s	12,0 ~ 15,0
			2F	steel	s	7,7 ~ 9,2

2.3.8 U36-4

					Einheit	U36-4
Additional weight in the bucket		Total weight to attach to arm end, bucket included			kg	346
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	20
			allowable limit		mm	100
		Arm	max. new machine		mm	15
			allowable limit		mm	75
		Bucket	max. new machine		mm	10
			allowable limit		mm	50
		Blade	max. new machine		mm	20
			allowable limit		mm	40
	Travel motor	Travel block on 20° slope			mm	300
	Travel motor drain amount	During rotation	1F		l\min	≤ 0,4
			2F		l\min	–––––
		Block	1F		l\min	–––––
			2F		l\min	–––––
	Swivel motor	Swivel block on 20° slope	drift measured on swivel bearing outer race (LH/RH)	engine stop	mm	26
				engine running	mm	157
		Drain amount	during rotation		l\min	≤ 1,0
			when blocked		l\min	≤ 6,0
	Straight travel	Travel distance 10m	1st - 2nd speed / Forward-Backward	devation	mm	600
Speed	Standard Boom		up (ground to max. up) w/o cushion		s	2,5 ± 0,3
			down		s	2,7 ± 0,3
	Arm		crowd		s	2,9 ± 0,3
			dump		s	2,8 ± 0,3
	Bucket		crowd		s	2,9 ± 0,3
			dump		s	1,9 ± 0,3
	Blade		up (full stroke)		s	2,4 ± 0,3
			down (full stroke)		s	3,1 ± 0,3
	Swing		to LH		s	6,2 ± 0,3
			to RH		s	4,7 ± 0,3
	Swivel motor		3 rotations		s	19,8 ~ 24,0
	Travel motor	Travel speed (distance 10 m)	1F	rubber	s	10,9 ~ 13,3
			2F	rubber	s	7,1 ~ 8,7
			1F	steel	s	11,3 ~ 13,3
			2F	steel	s	7,3 ~ 9,0

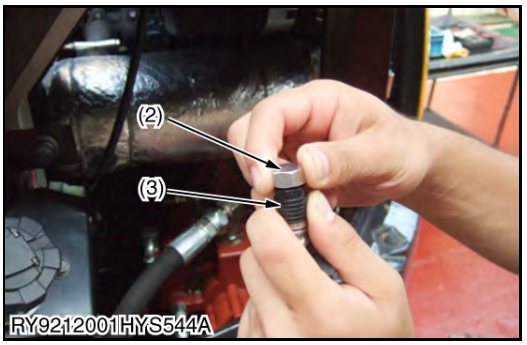
2.3.9 KX042-4

					Einheit	KX042-4
Additional weight in the bucket		Total weight to attach to arm end, bucket included			kg	303
Internal leak	Cylinder drift (in 10min, with specific weight in bucket)	Boom	max. new machine		mm	20
			allowable limit		mm	100
		Arm	max. new machine		mm	20
			allowable limit		mm	100
		Bucket	max. new machine		mm	10
			allowable limit		mm	50
		Blade	max. new machine		mm	20
			allowable limit		mm	70
	Travel motor	Travel block on 20° slope			mm	0
	Travel motor drain amount	During rotation	1F		l\min	≤ 0,5
			2F		l\min	≤ 4,0
		Block	1F		l\min	≤ 0,5
			2F		l\min	≤ 4,0
	Swivel motor	Swivel block on 20° slope	drift measured on swivel bearing outer race (LH/RH)	engine stop	mm	–––
				engine running	mm	≤ 30
		Drain amount	during rotation		l\min	≤ 0,5
			when blocked		l\min	≤ 4,0
	Straight travel	Travel distance 10m	1st - 2nd speed / Forward-Backward	devation	mm	600
Speed	Standard Boom		up (ground to max. up) w/o cushion		s	2,5 ± 0,3
			down		s	3,0 ± 0,3
	Arm		crowd		s	2,7 ± 0,3
			dump		s	2,5 ± 0,3
	Bucket		crowd		s	2,4 ± 0,3
			dump		s	2,1 ± 0,3
	Blade		up (full stroke)		s	2,2 ± 0,3
			down (full stroke)		s	2,8 ± 0,3
	Swing		to LH		s	5,2 ± 0,5
			to RH		s	6,3 ± 0,5
	Swivel motor		3 rotations		s	17,5 ~ 21,2
	Travel motor	Travel speed (distance 10 m)	1F	rubber	s	11,6 ~ 14,4
			2F	rubber	s	6,7 ~ 8,2
			1F	steel	s	12,4 ~ 15,7
			2F	steel	s	6,9 ~ 8,6

2.4 Piston pump air bleeding procedure

2.4.1 KX057-4, U55-4, U48-4, KX080-4, KX080-4α, KX042-4



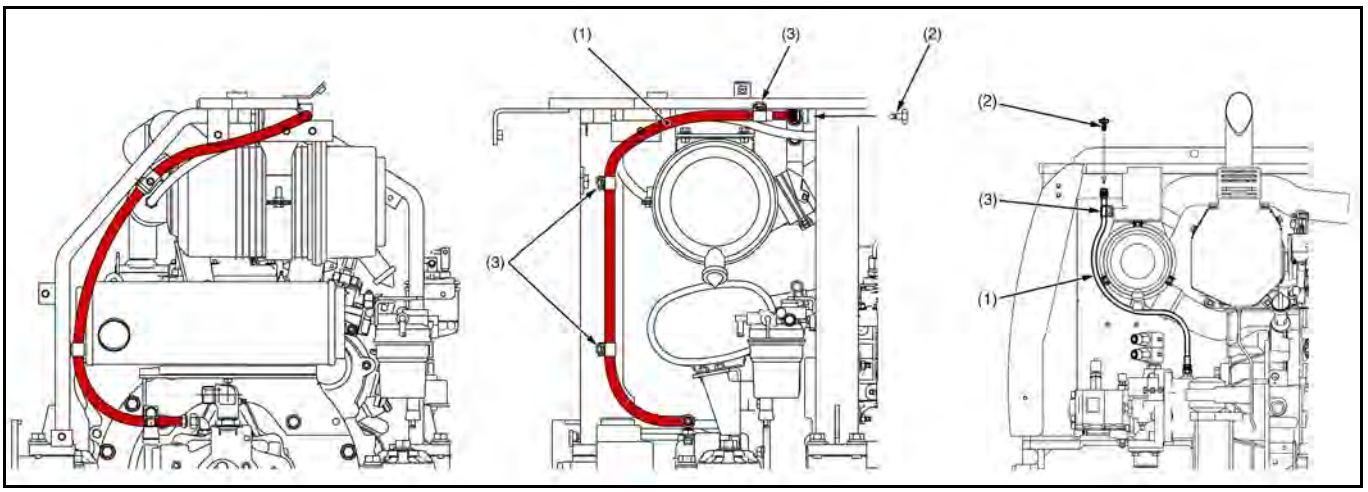




(1) Air bleed hose
(2) Hexagonal plug
(3) Lock section

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.

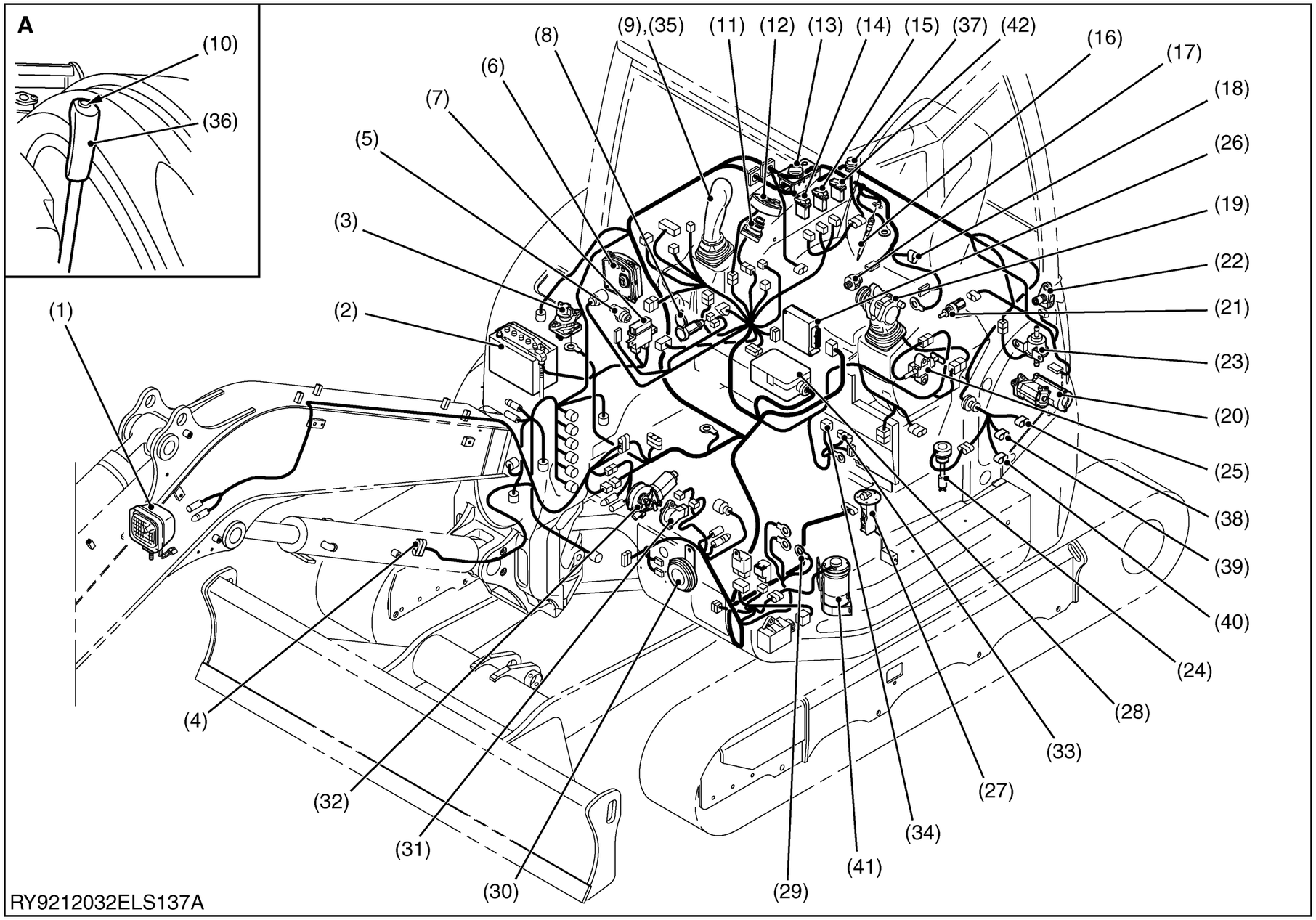


(1) Air bleed hose (2) Hexagonal plug (3) Lock section

3 Electrics

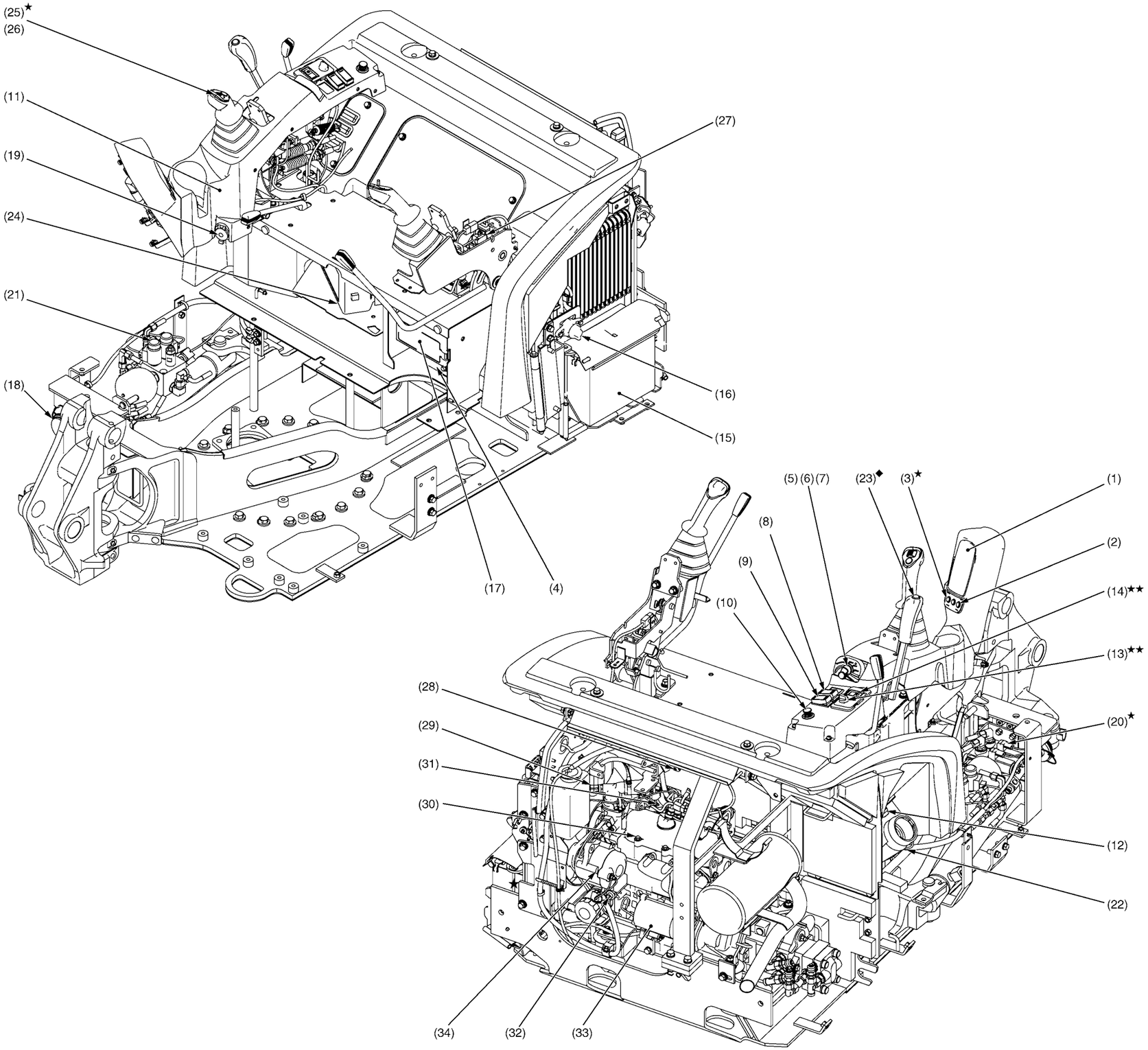
3.1 Electrical component layout

3.1.1 KX057-4, U55-4, U48-4



No.	Part Name
(1)	Worklight
(2)	Battery
(3)	Battery isolator
(4)	Boom pressure sensor
(5)	AI pressure switch
(6)	Meter panel
(7)	Slow-blow fuse
(8)	Power outlet
(9)	Horn switch
(10)	Travel 2-speed switch
(11)	Key switch
(12)	Anti-theft antenna
(13)	Accelerator dial
(14)	Worklight switch
(15)	CAB worklight switch
(16)	Glow plug
(17)	Engine oil switch
(18)	Engine stop solenoid
(19)	Alternator
(20)	Starter
(21)	Water temperature sensor
(22)	Engine rotation sensor
(23)	Fuel pump
(24)	Rotary beacon switch
(25)	Lock lever switch
(26)	Main ECU
(27)	Fuel sensor
(28)	Fuse box
(29)	GND
(30)	Horn
(31)	Governor sensor
(32)	AI motor
(33)	CAN comm connector (2P)
(34)	Function extension connector (4P)
(35)	Attachment control lever
(36)	Blade control lever
(37)	Engine stop button
(38)	Fuel lever audible indication switch
(39)	Fuel supply ON switch
(40)	Fuel supply OFF switch
(41)	Fuel supply pump
(42)	Rotary beacon switch

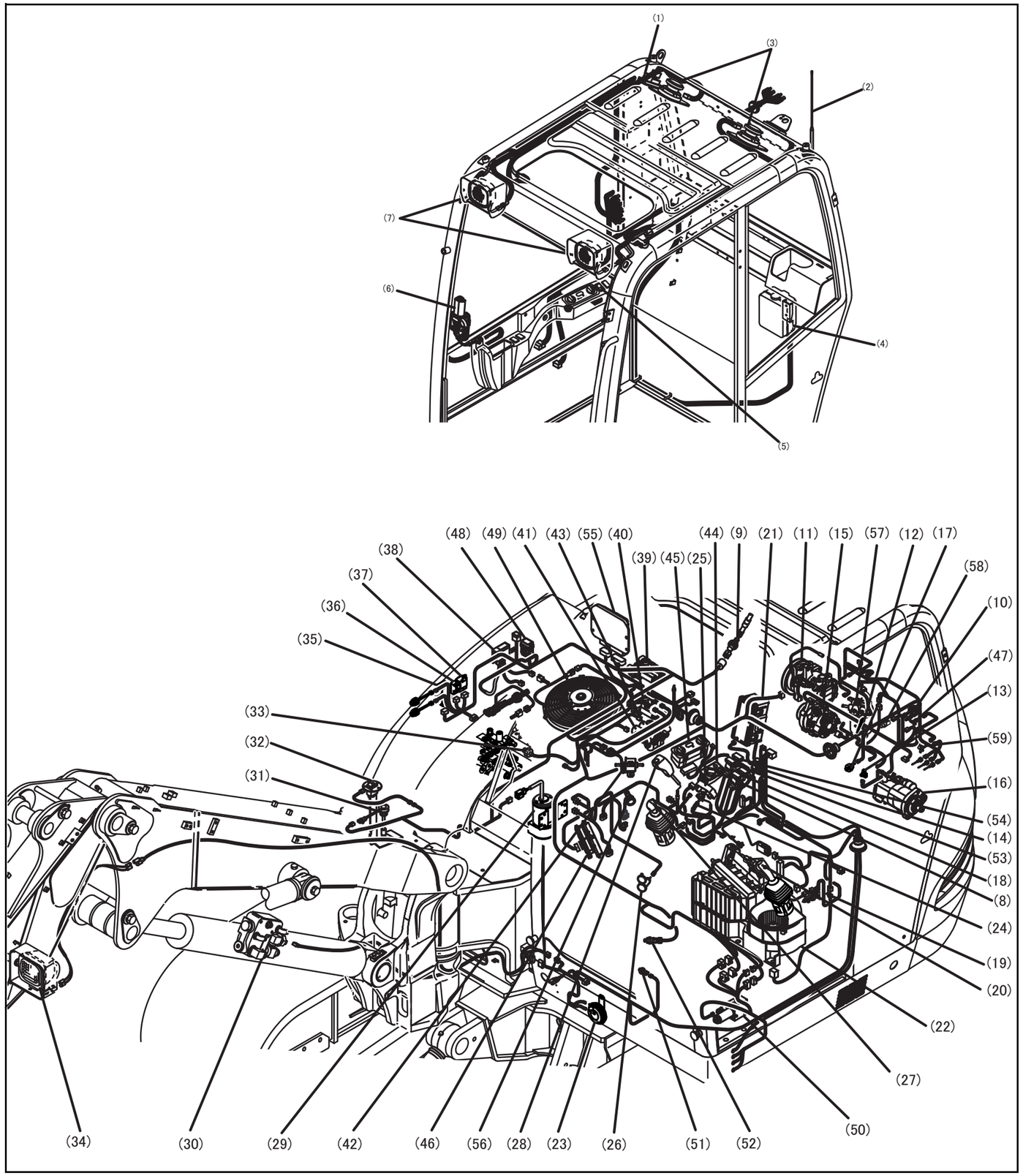
3.1.2 KX015-4, KX016-4, KX018-4, KX019-4



No.	Part Name
(1)	LCD meter panel
(2)	Switch, Panel
(3)★	Switch, AUX activation
(4)	ECU (Main)
(5)	Switch, Starter
(6)	Key, Anti theft
(7)	Antenna, Anti theft
(8)	Switch, Work light
(9)	Switch, Beacon
(10)	Switch, Engine Stop
(11)	Buzzer, LCD meter
(12)	Fuel level audible indication
(13)★★	Switch, Heater
(14)★★	Switch, Wiper
(15)	Battery
(16)	Switch, Battery Isolator
(17)	Fuse box
(18)	Horn
(19)	Power outlet
(20)★	Valve, Assy (AUX SOL)
(21)	Valve, Assy (Unload)
(22)	Sensor, Fuel
(23)◆	Switch, Travel 2-speed
(24)	Heater
(25)★	Valve, Assy (Pilot, RH, AX)
(26)	Valve, Assy (Pilot, R)
(27)	Switch, Lever lock
(28)	Pump, Fuel
(29)	Sensor, Water temperature
(30)	Sensor, Rotation
(31)	Solenoid, Engine stop
(32)	Switch, Engine oil pressure
(33)	Starter
(34)	Alternator

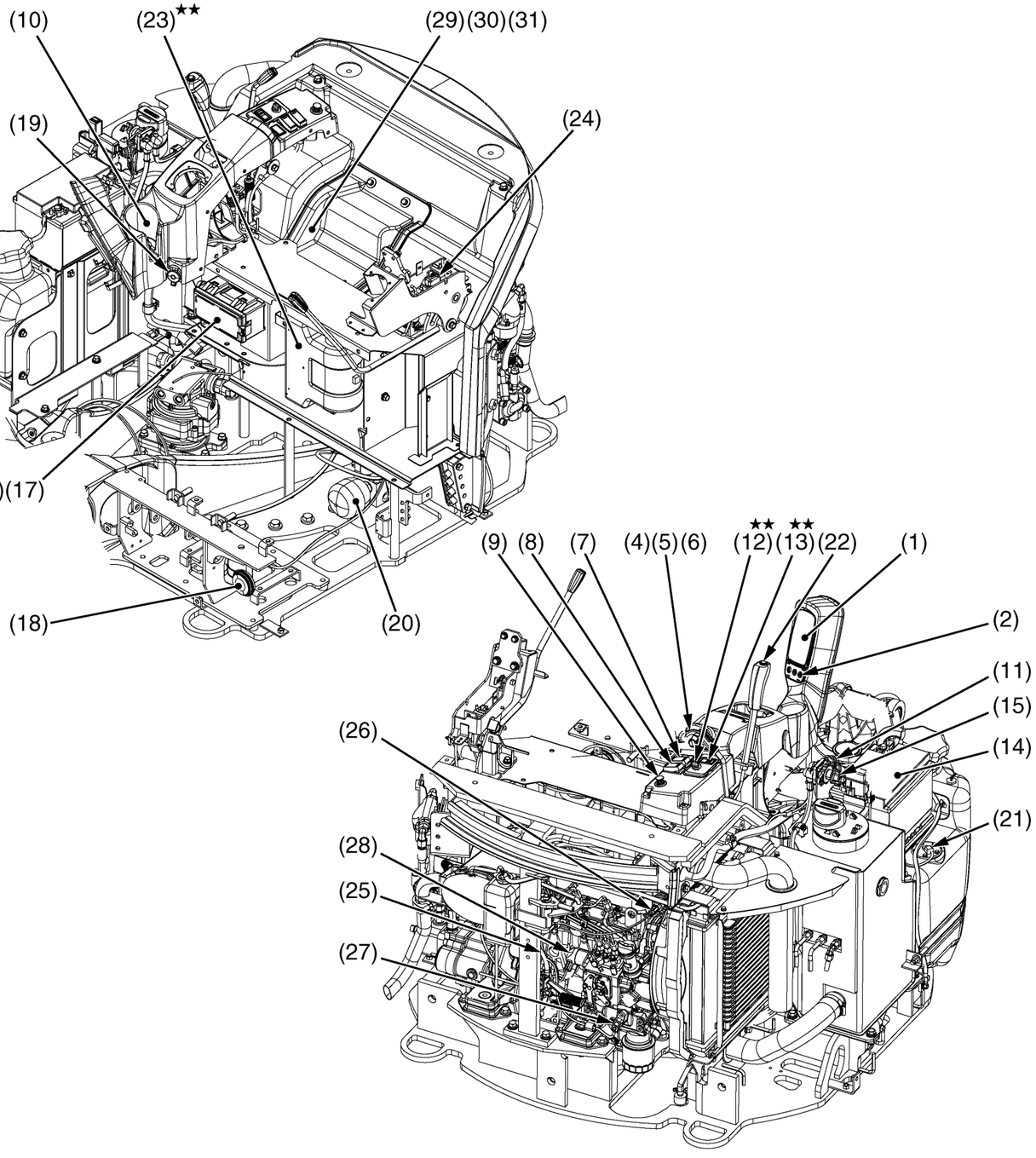
[Remarks]
★-mark: KX019-4 only
★★-mark: Cabin only
◆-mark: Except KX015-4

3.1.3 KX080-4



No.	Part Name	No.	Part Name
(1)	Room lamp	(31)	Fuel residual lead sw
(2)	Antenna,radio	(32)	Fuel sensor
(3)	Speaker	(33)	AI pressure sw
(4)	Washer motor	(34)	Working lamp
(5)	Wiper sw	(35)	ECU (4 min. timer)
(6)	Wiper motor	(36)	Fuel pump starter relay
(7)	Head lamp	(37)	Fuel pump stop relay
(8)	Work light sw	(38)	Fuse box
(9)	Dual pressure sw	(39)	Aux1 solenoid
(10)	Water temp.sensor	(40)	Aux2 solenoid
(11)	Compressor, A/C	(41)	Unload solenoid
(12)	Glow plug	(42)	Fuel pump
(13)	Engine speed sensor	(43)	Hi-Low solenoid
(14)	Engine stop sw	(44)	Accel sensor (AI switch)
(15)	Alternator	(45)	A/C switch
(16)	Starter motor	(46)	Meter panel
(17)	Engine oil sw	(47)	Boost sensor
(18)	Beacon light sw	(48)	Fuse box
(19)	Lever lock sw	(49)	Fan assy (condenser)
(20)	Aux2 control sw	(50)	Valve assy (E/P)
(21)	Fuse box	(51)	Travel pilot valve sensor
(22)	A/C unit	(52)	Boom pilot pressure switch
(23)	Horn	(53)	E/P change sw
(24)	Main key	(54)	DPF inhibit sw
(25)	Antenna (A/T)	(55)	ECU assy
(26)	Power outlet	(56)	Buzzer
(27)	Aux1 control sw	(57)	Fuel filter
(28)	Travel Hi-low sw	(58)	Thermo sensor
(29)	Fuel supply pump	(59)	Pressure sw
(30)	Overload pressure sensor		

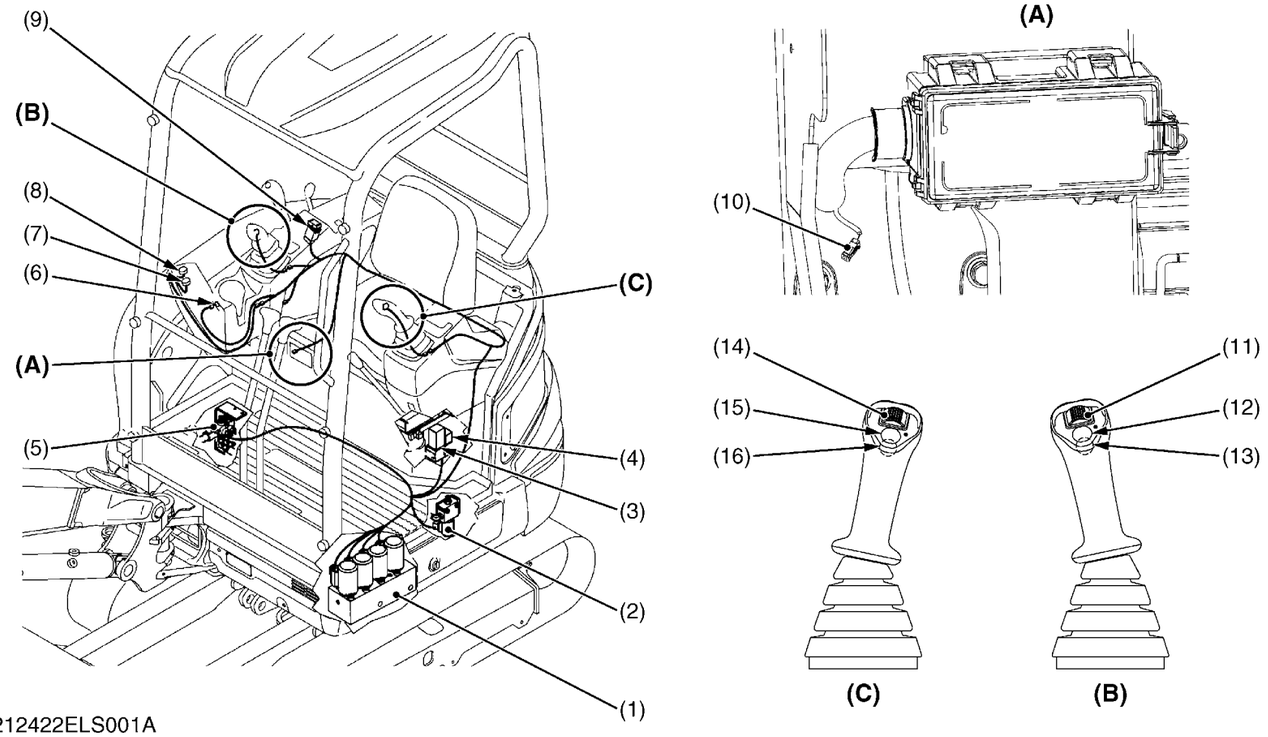
3.1.4 U27-4



No.	Part Name	No.	Part Name
(1)	LCD meter panel	(17)	Relay
(2)	User setting switch, Display selector switch	(18)	Horn
(4)	Starter switch	(19)	Electrical outlet
(5)	Key switch	(20)	Unload valve
(6)	Antenna	(21)	Fuel sensor
(7)	Worklight switch	(22)	Travel 2-speed switch
(8)	Beacon switch	(23) ★★	Heater
(9)	Engine stop switch	(24)	Lever lock switch
(10)	LCD meter buzzer	(25)	Fuel pump
(11)	Fuel supply warning switch	(26)	Water temperature sensor
(12)★★	Heater switch	(27)	Engine rotation sensor
(13)★★	Wiper switch	(28)	Engine stop solenoid
(14)	Battery	(29)	Engine oil switch
(15)	Battery isolator	(30)	Starter
(16)	Fuse box	(31)	Alternator

[Remarks]
★★-mark: Cabin only

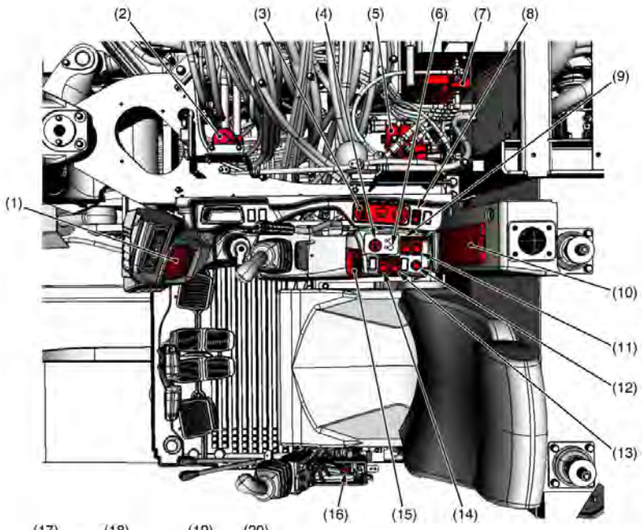
3.1.5 U27-4 Hi

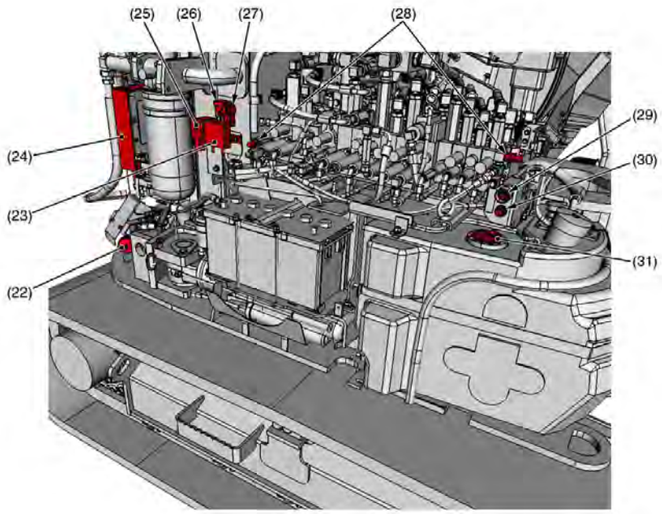


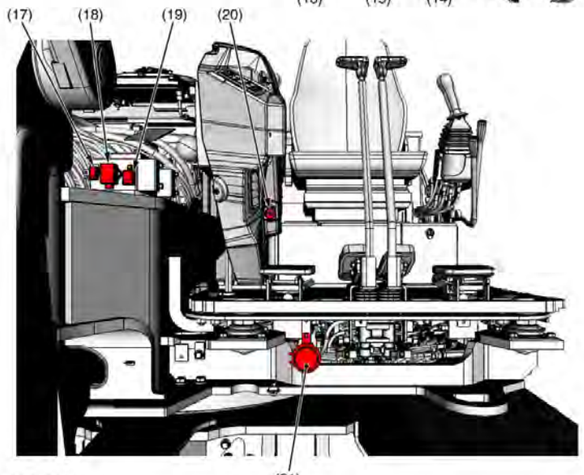
RY9212422ELS001A

No.	Part name	No.	Part name
(1)	Proportional valves	(9)	Switch (Third Line)
(2)	Third line valve	(10)	Joint Connector
(3)	Relay (Selector)	(11)	Control knob (AUX 1)
(4)	Relay (unload valve)	(12)	Horn switch
(5)	Change Valve	(13)	AUX 1 hold switch
(6)	Indicator	(14)	AUX 2 control switch
(7)	Flow control volume (AUX 2)	(15)	Selector switch
(8)	Flow control volume (AUX 1)	(16)	Not used
		(A)	Around the fuse box
		(B)	Control lever (RH)
		(C)	Control lever (LH)

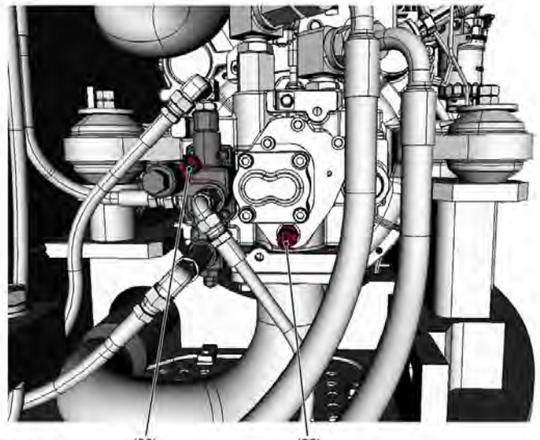
3.1.6 KX080-4α







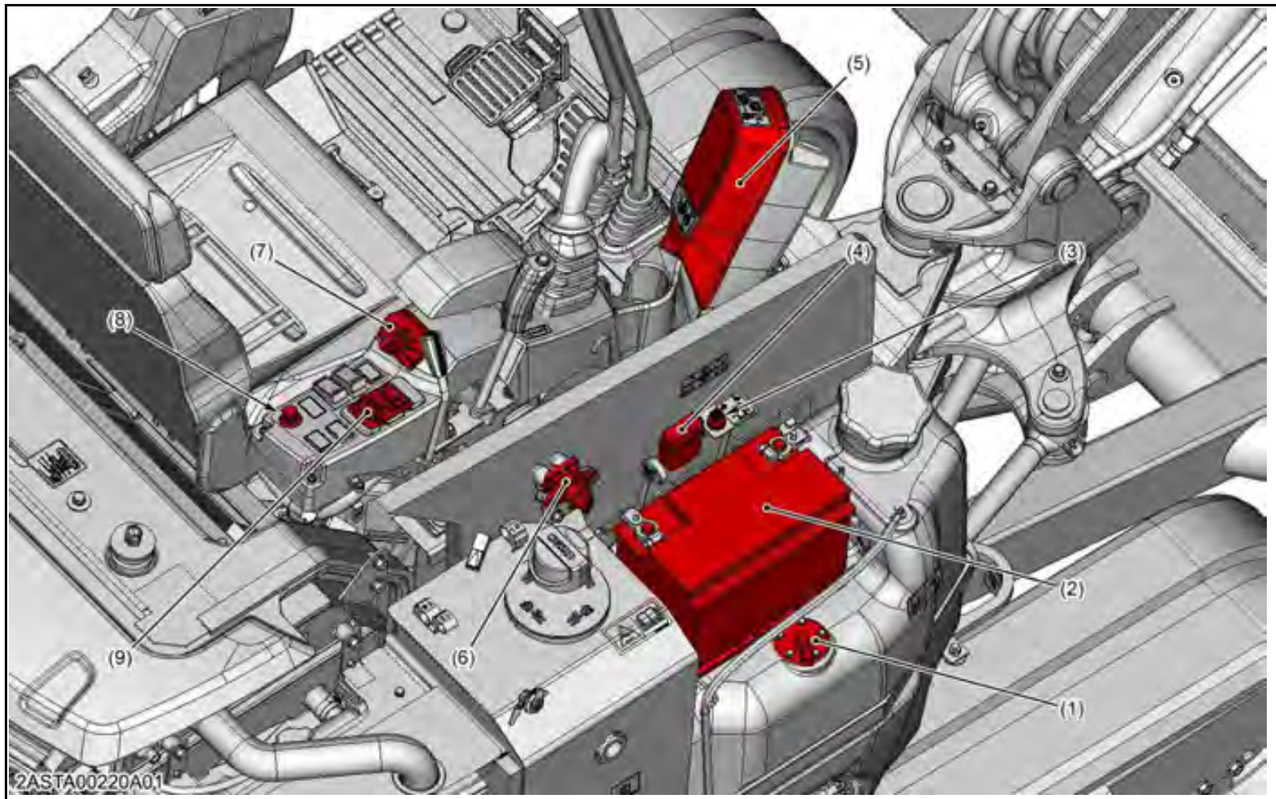
RY9212435ELS011A

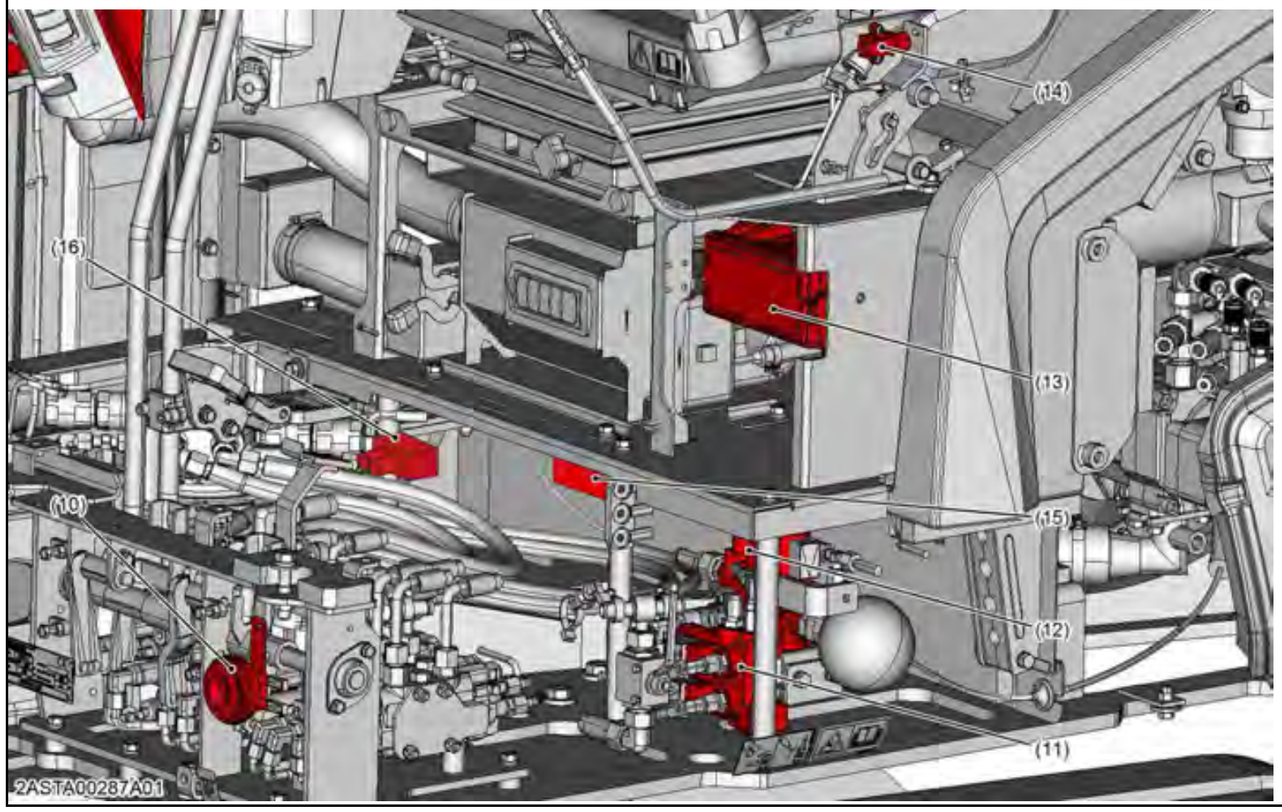


RY9212435ELS012A

No.	Part name	No.	Part name
(1)	Meter panel	(18)	ECU (Timer)
(2)	Fuel supply pump	(19)	Fuel Supply Pump Stop Relay
(3)	A/C Control Panel	(20)	Electrical outlet
(4)	Accelerator dial	(21)	Horn
(5)	Unload valve	(22)	Fuel pump
(6)	Auto idle switch	(23)	Slow blow fuse
(7)	Proportional Control Solenoid Valve	(24)	ECU (Engine)
(8)	Wiper_switch	(25)	Relay_Box
(9)	Eco mode switch	(26)	Fuse box
(10)	Fuse box	(27)	Fuse Box (Fan)
(11)	DPF inhibit switch	(28)	AI pressure switch
(12)	Engine stop switch	(29)	Fuel supply start switch
(13)	Beacon light switch	(30)	Fuel supply stop switch
(14)	Cab Light switch	(31)	Fuel gauge
(15)	Antenna, Anti theft	(32)	Gain control solenoid
(16)	Limit Switch (Lever Lock Switch)	(33)	Oil Temperature sensor
(17)	Fuel supply pump Start relay		

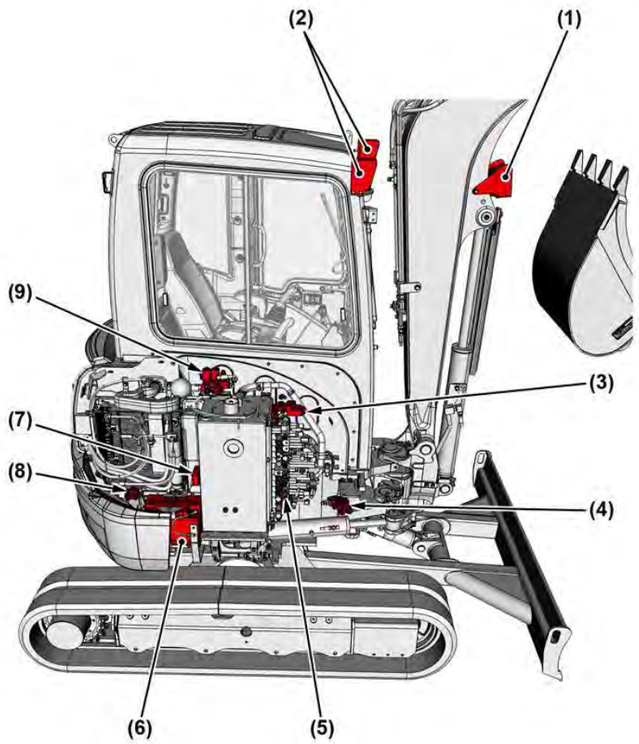
3.1.7 KX027-4, KX027-4 Hi, KX030-4 and KX030-4 Hi

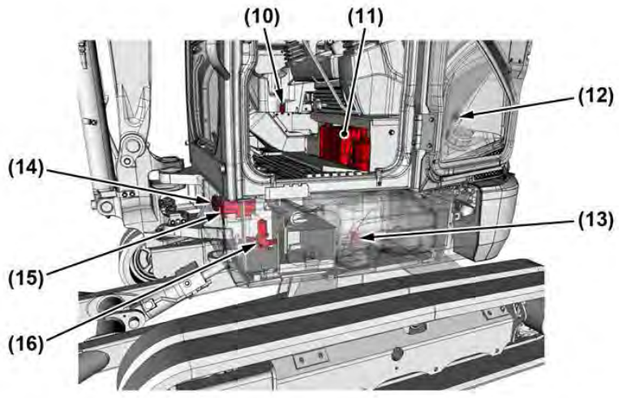


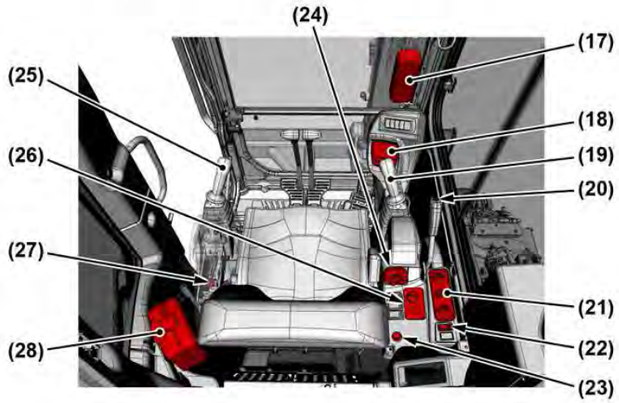


No.	Part name	No.	Part name
(1)	Fuel sensor	(9)	Engine stop switch
(2)	Battery	(10)	Horn switch
(3)	Fuel level indicator switch	(11)	AUX1 proportional valve
(4)	Slow blow fuse	(12)	Unload valve
(5)	Meter panel	(13)	Fuse box
(6)	Battery isolator	(14)	Limit switch
(7)	Starter switch	(15)	ECU (AUX2)
(8)	Accelerator dial	(16)	AUX2 proportional valve

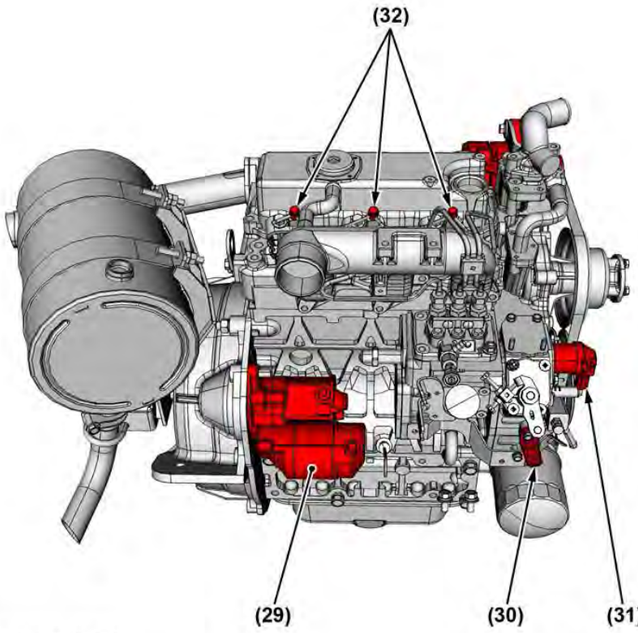
3.1.8 U36-4

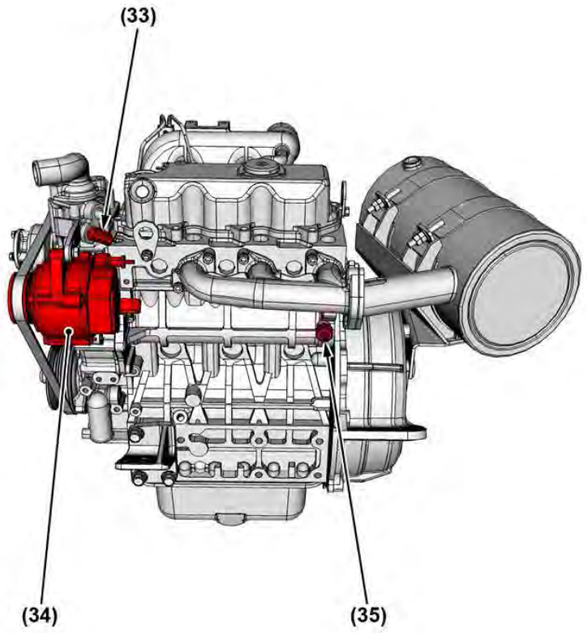






2SPET00106A01

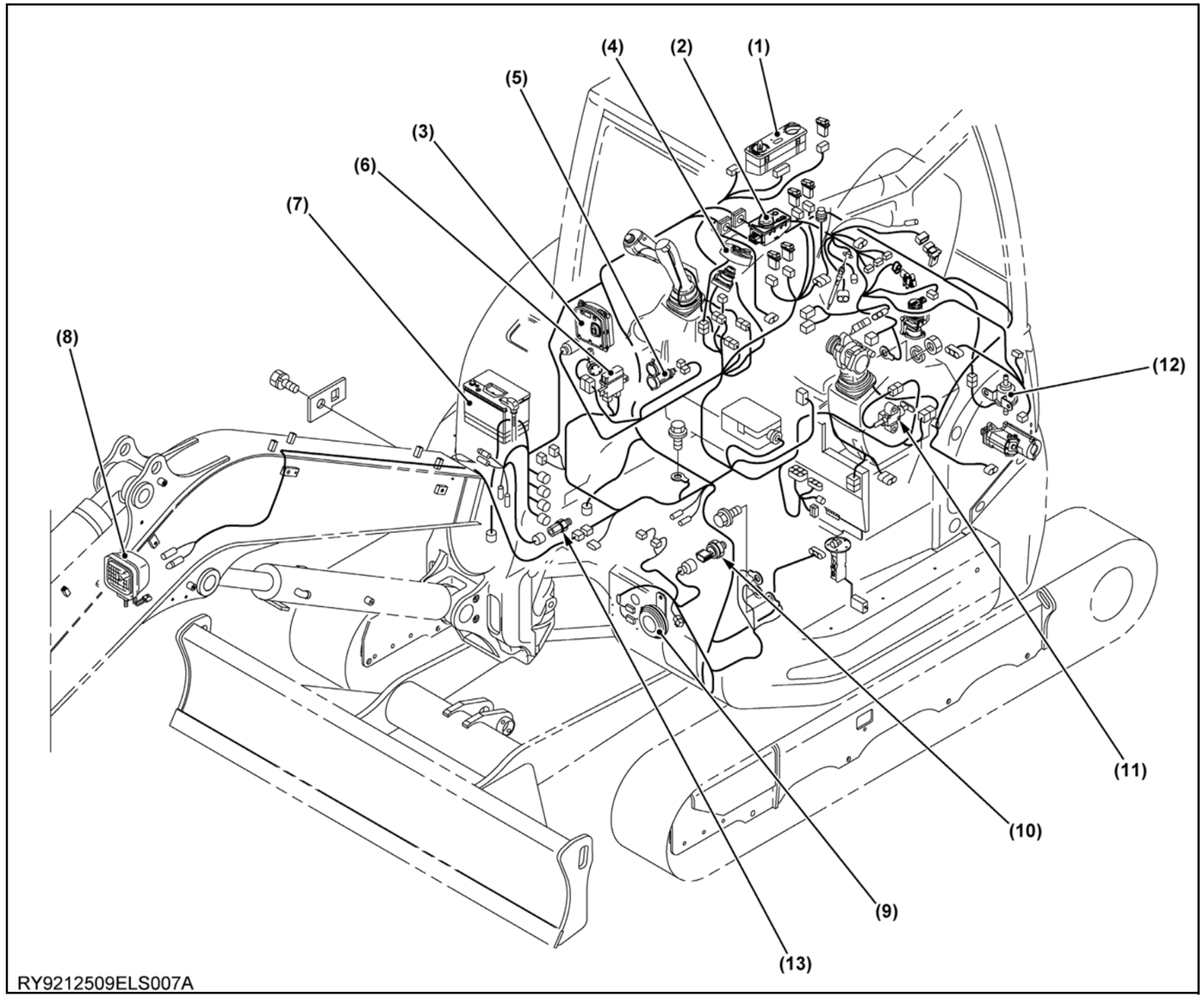




2SPET00107A01

No.	Part name	No.	Part name
(1)	Worklight	(19)	AUX1 knob switch
(2)	Worklight (cabin)	(20)	Travel speed switch
(3)	AUX1 proportional solenoid valve	(21)	Air conditioning switch
(4)	AUX2 proportional solenoid valve	(22)	Wiper switch
(5)	AI pressure switch	(23)	Engine stop switch
(6)	Battery	(24)	Starter switch
(7)	Slow blow fuse	(25)	AUX2 knob switch
(8)	Battery isolator switch	(26)	AI console
(9)	Unload valve	(27)	Lever lock switch
(10)	Cigarette socket	(28)	Washer tank and washer motor
(11)	Air conditioner unit	(29)	Starter motor
(12)	Fuel indicator switch	(30)	Engine speed sensor
(13)	Fuel sensor	(31)	Electrical governor solenoid
(14)	Horn	(32)	Glow plug
(15)	Engine ECU	(33)	Water temperature sensor
(16)	E/F solenoid	(34)	Alternator
(17)	Wiper motor	(35)	Engine oil pressure switch
(18)	Meter panel		

3.1.9 KX042-4

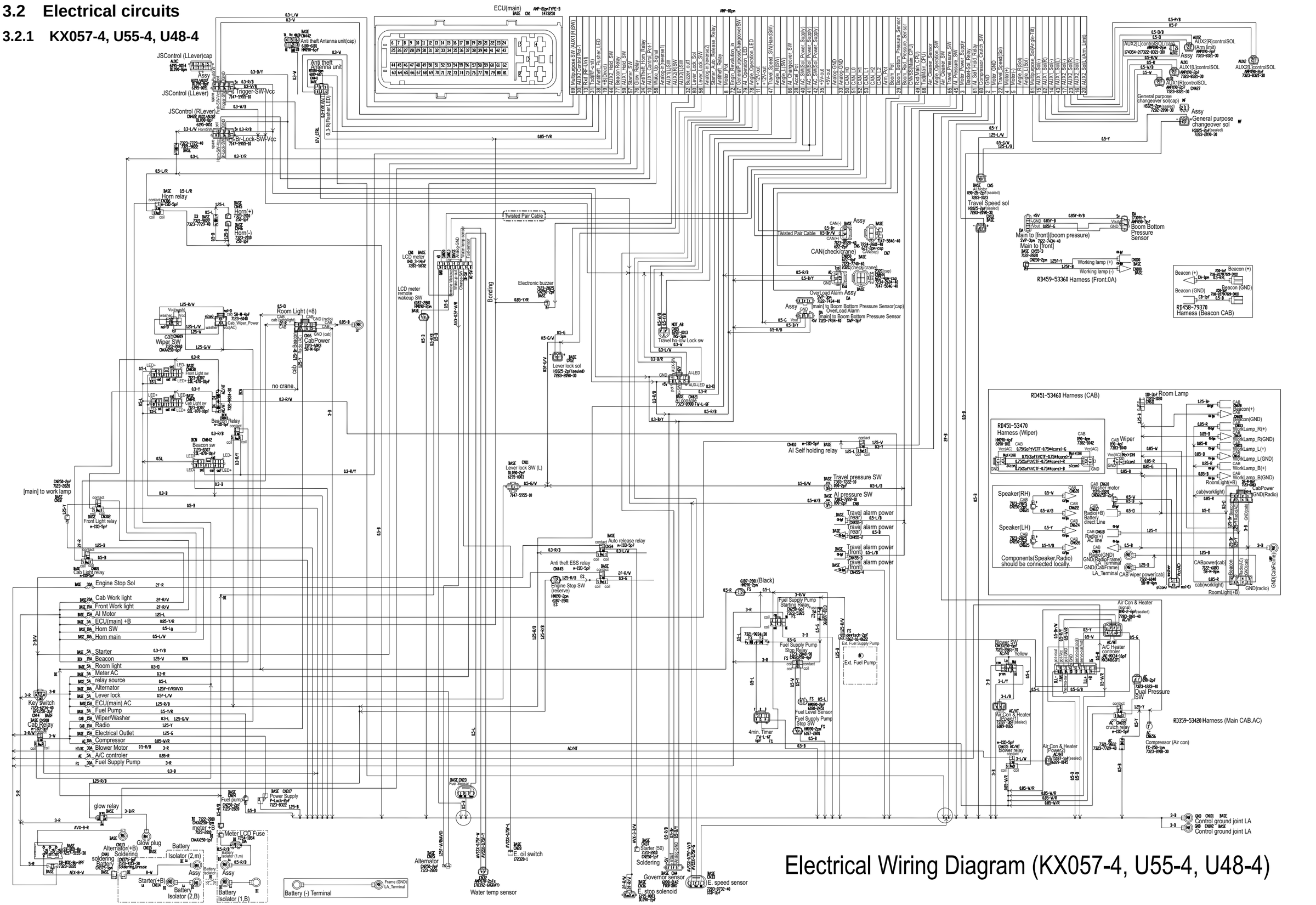


RY9212509ELS007A

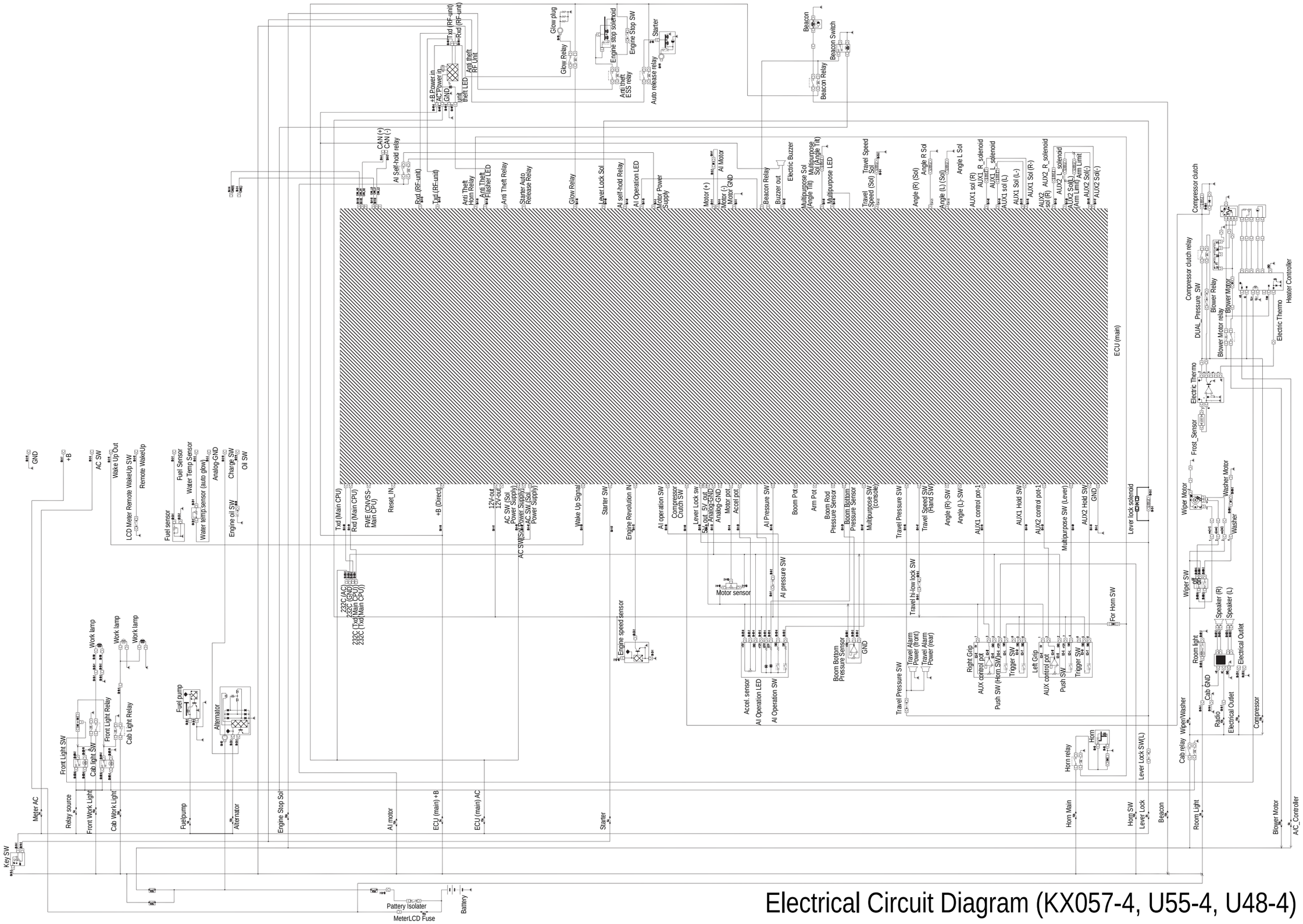
No.	Part name	No.	Part name
(1)	A/C Unit	(8)	Front Worklight
(2)	AI Console	(9)	Horn
(3)	Meter	(10)	Travel Pressure Switch
(4)	Anti-Theft Antenna	(11)	Limit Switch
(5)	Cigar Socket	(12)	Electrical Pump
(6)	Slow Blow Fuse	(13)	Boom Rising Pressure Sensor
(7)	Battery		

3.2 Electrical circuits

3.2.1 KX057-4, U55-4, U48-4

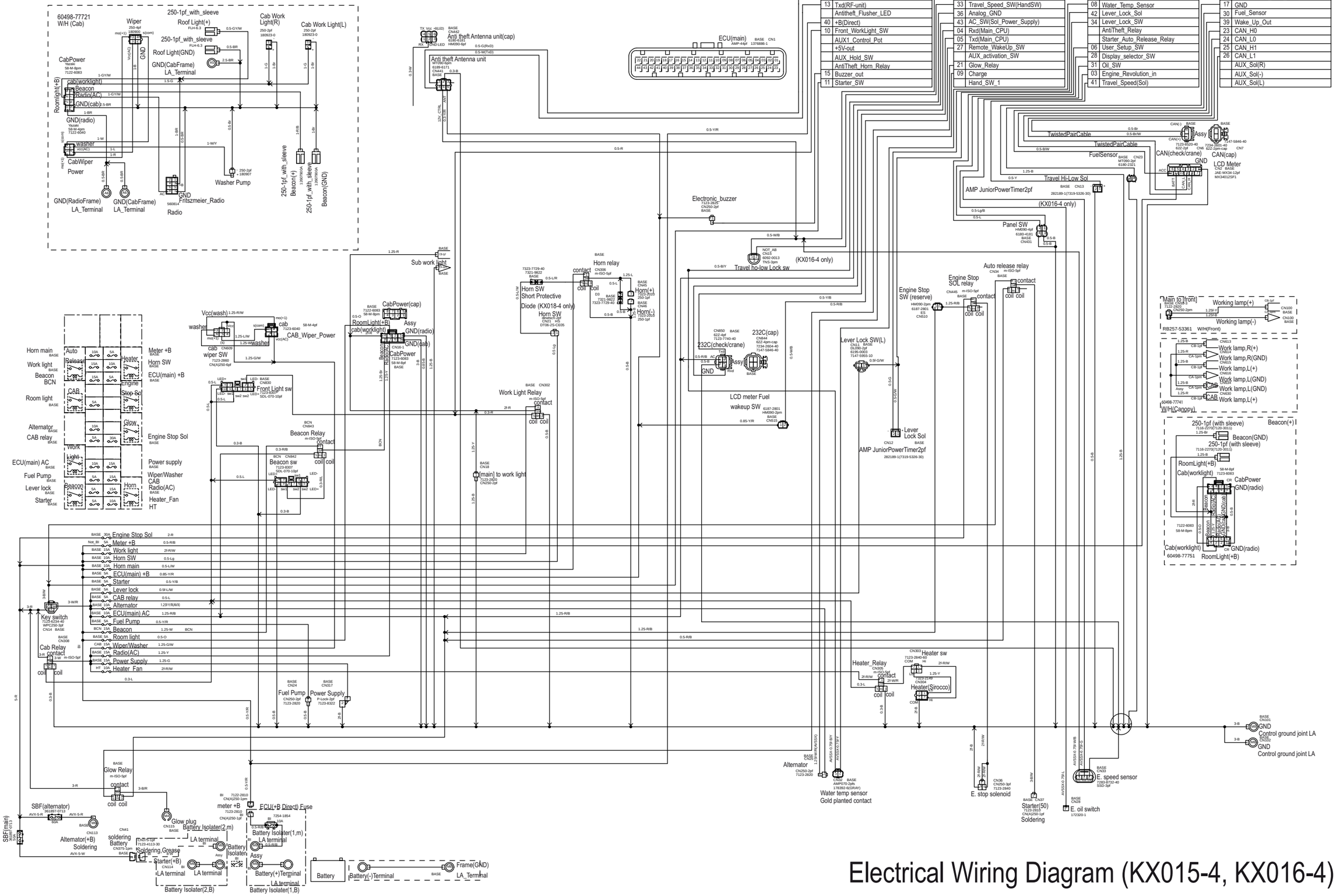


Electrical Wiring Diagram (KX057-4, U55-4, U48-4)



Electrical Circuit Diagram (KX057-4, U55-4, U48-4)

3.2.2 KX015-4, KX016-4



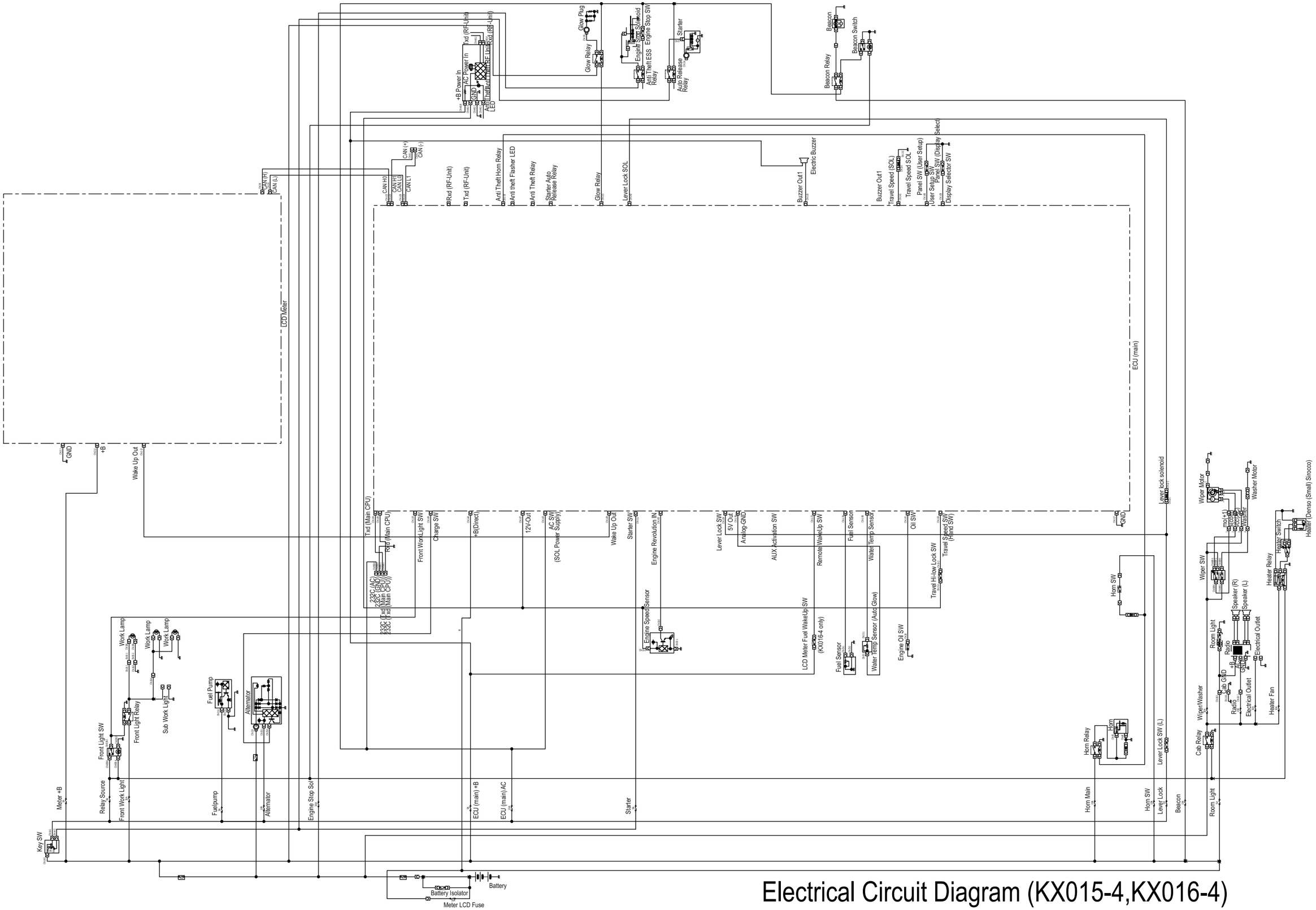
14	Rxd(RF-unit)
13	Txd(RF-unit)
	Antitheft_Flusher_LED
40	+B(Direct)
10	Front_WorkLight_SW
	AUX1_Control_Pot
	+5V-out
	AUX_Hold_SW
	AntiTheft_Horn_Relay
15	Buzzer_out
11	Starter_SW

37	+12V-out
33	Travel_Speed_SW(HandSW)
36	Analog_GND
43	AC_SW(Sol_Power_Supply)
04	Rxd(Main_CPU)
05	Txd(Main_CPU)
27	Remote_WakeUp_SW
	AUX_activation_SW
21	Glow_Relay
09	Charge
	Hand_SW_1

	Hand_SW_2
08	Water_Temp_Sensor
42	Lever_Lock_Sol
34	Lever_Lock_SW
	AntiTheft_Relay
	Starter_Auto_Release_Relay
06	User_Setup_SW
28	Display_selector_SW
31	Oil_SW
03	Engine_Revolution_in
41	Travel_Speed(Sol)

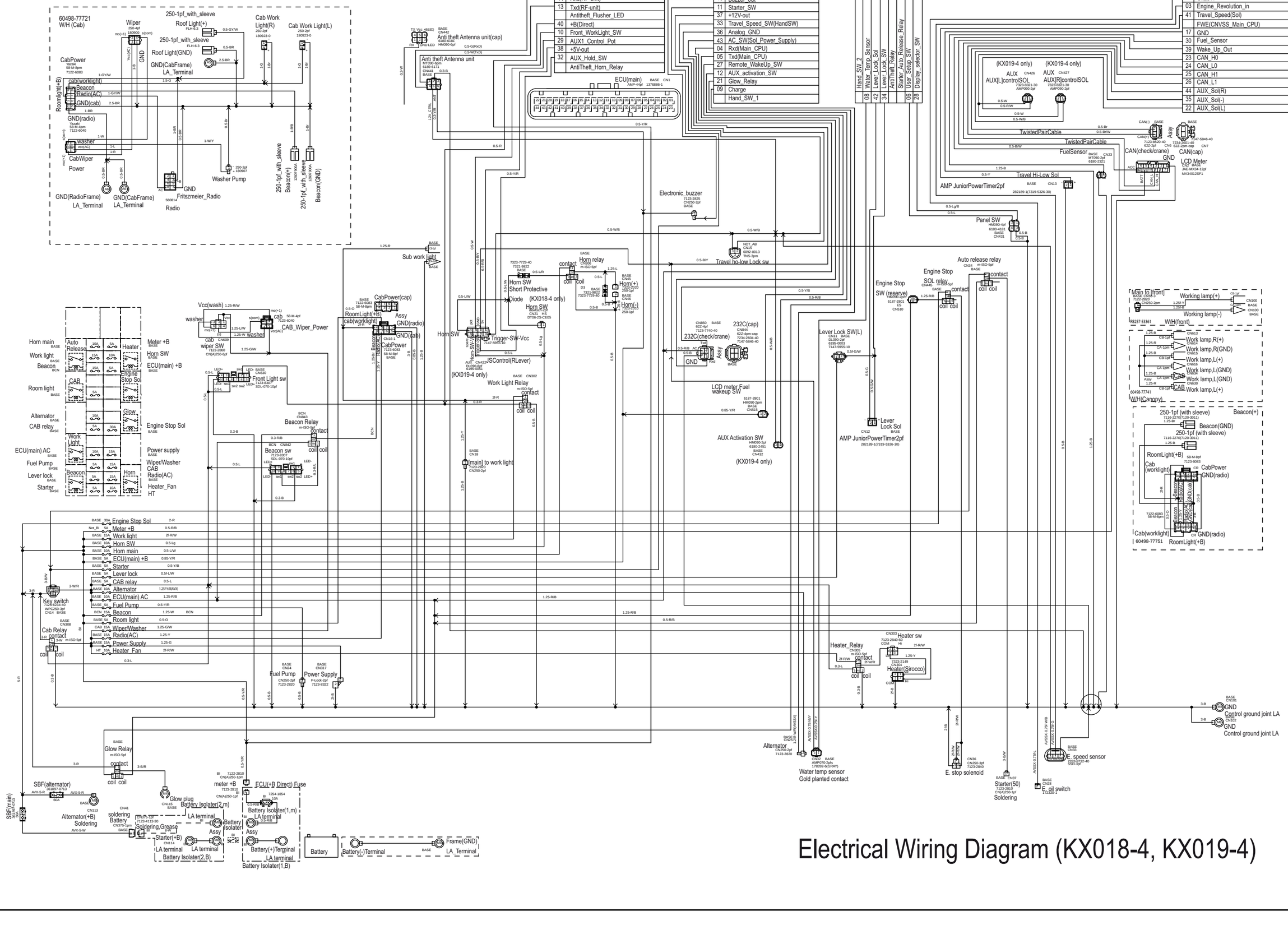
	FWE(CNVSS_Main_CPU)
17	GND
30	Fuel_Sensor
39	Wake_Up_Out
23	CAN_H0
24	CAN_L0
25	CAN_H1
26	CAN_L1
	AUX_Sol(R)
	AUX_Sol(-)
	AUX_Sol(L)

Electrical Wiring Diagram (KX015-4, KX016-4)

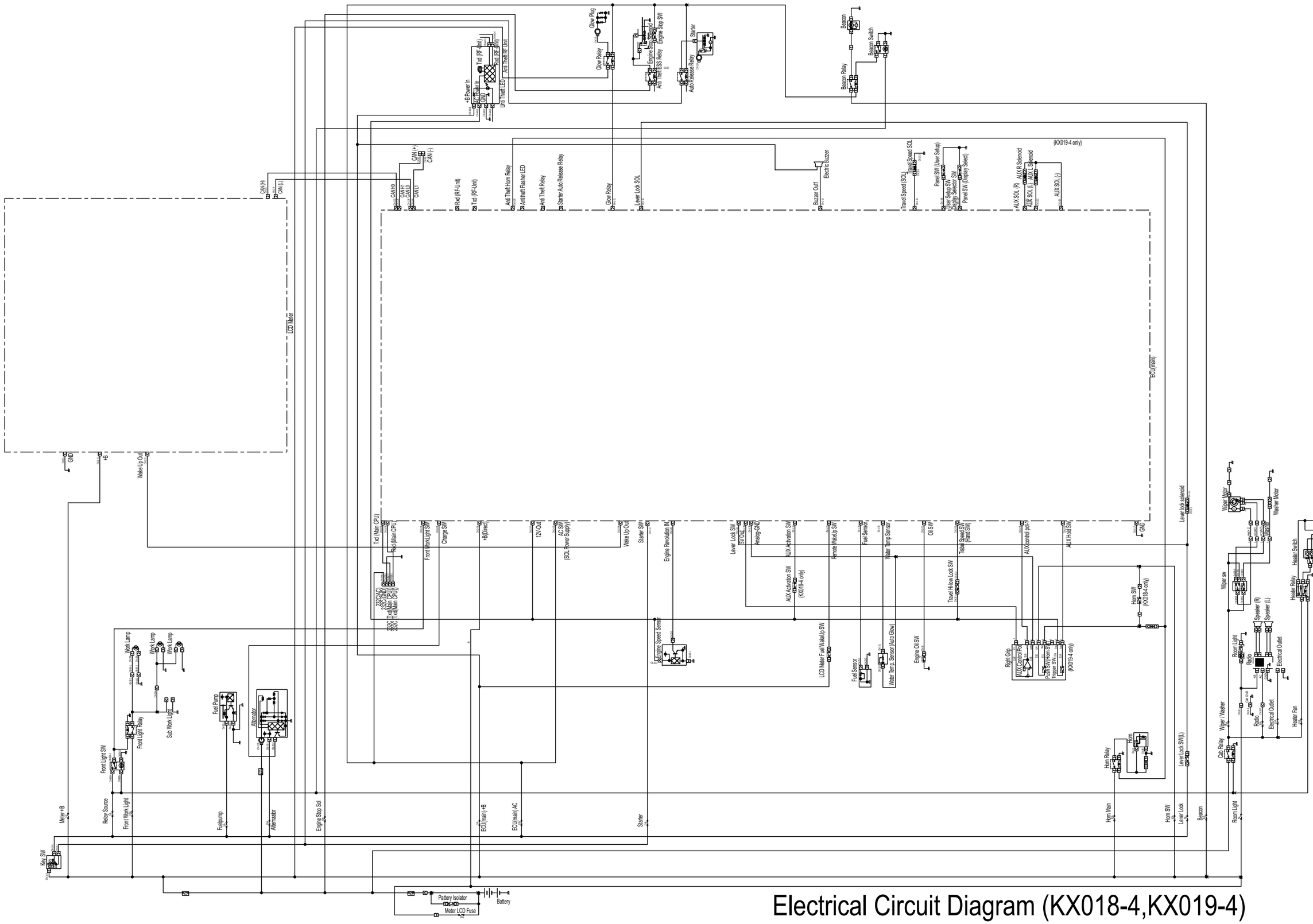


Electrical Circuit Diagram (KX015-4,KX016-4)

3.2.3 KX018-4, KX019-4

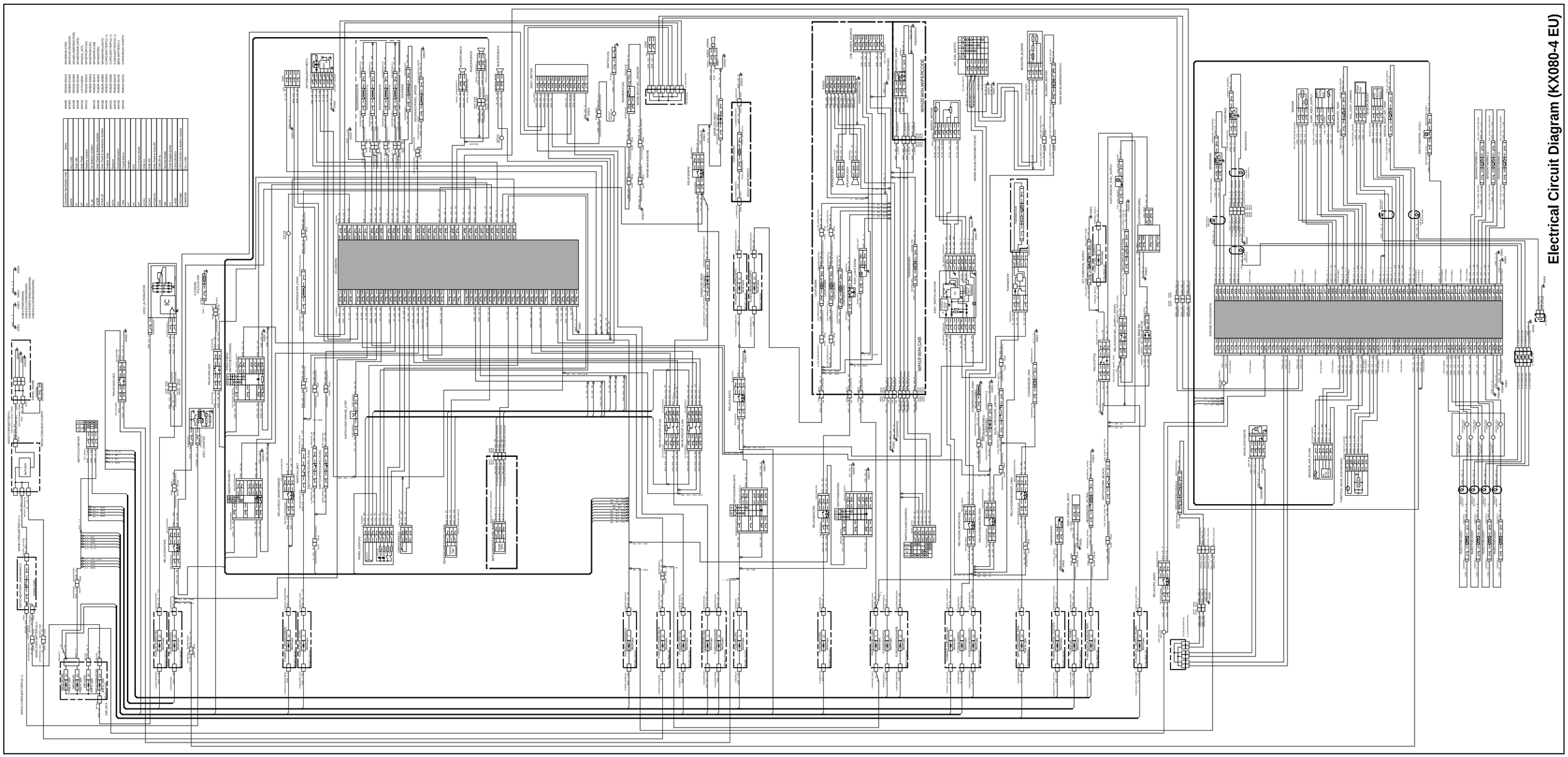


Electrical Wiring Diagram (KX018-4, KX019-4)

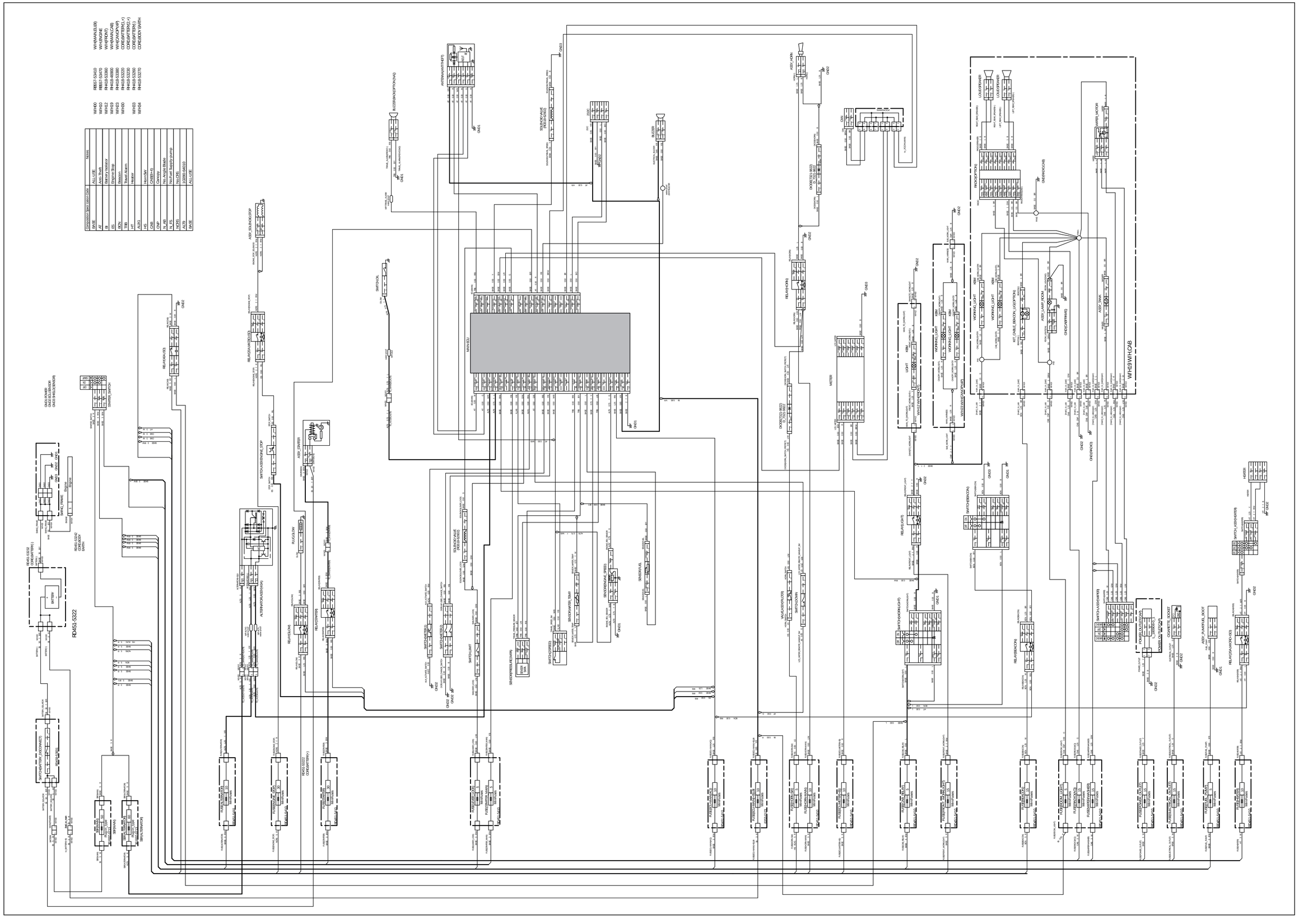


Electrical Circuit Diagram (KX018-4,KX019-4)

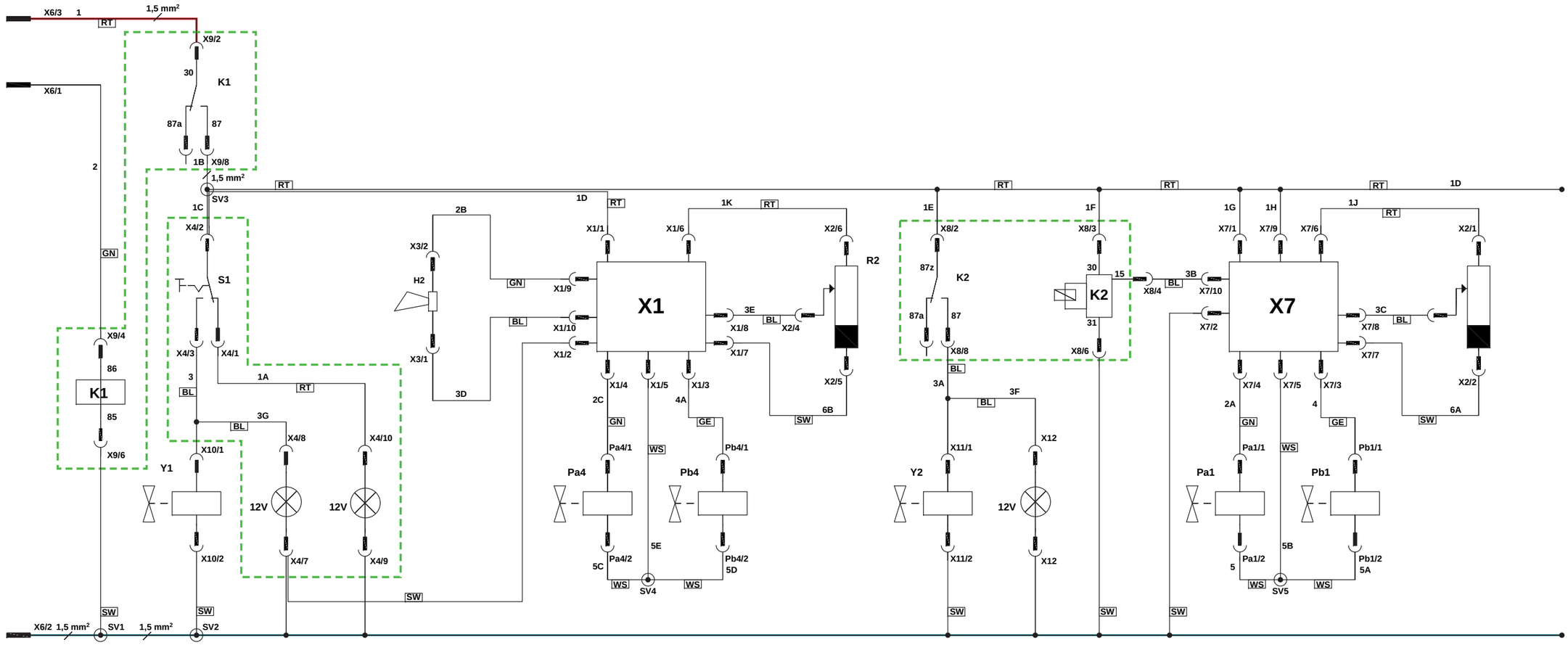
3.2.4 KX080-4


Electrical Circuit Diagram (KX080-4 EU)
WH19 WITH CAB
WH20 WITH WIPER CODE

3.2.5 U27-4


Connection Specification
Name
BASE
ALL-CORE
AF
Anti-Theft
AM
Alarm Indicator
BL
Beacon Lamp
ES
Engine Stop
EN2L
Beacon
TIB
Travel Alarm
HT
Heater
AA1
Monitor
IG
CAN-H
CAB
CAN-L
CNP
Clerion
N_AB
No Angle Blade
N_PS
No Fuel Supply pump
AA2
Monitor
EB
LOGO-KIT
BASE
ALL-CORE
W/HMAIN(LEUR)
W/HENGINE
W/HEATER
W/HMAIN(CAB)
W/HCANOPY
CORD(ANTENNA+)
CORD(ANTENNA-)
CORD(BATTERY+)
CORD(BODY EARTH
W/H0
W/H10
W/H27
W/H19
W/H23
W/H26
W/H63
W/H64
RB557-53410
RB557-53470
RB557-53560
R4169-46900
R4169-53380
R4169-53230
R4169-53250
R4169-53260
R4169-53270
ANTENNA(ANTHEFT)
BUZZER(OPTION)(NS)
SOLENOID,VALVE (FUEL COOLING)
ASSY_HORN
CAN
DIODE(152-9522) D_7221-9522
METER
MAIN ECU
RELAY(HORN)
RELAY(FLASHER)(CAN)
ASSY_SOUND(OPTION)
ASSY_STARTER
SWITCH,KEY(ENGINE_STOP
RELAY(GLOW)
RELAY(STARTER)
SWITCH,KEY(ENGINE)
SWITCH,KEY(WORK)
SWITCH,KEY(HEATER)
SWITCH,KEY(WIPER)
SWITCH,KEY(WASHER)
SWITCH,KEY(LIGHT)
SWITCH,KEY(HAZARD)
SWITCH,KEY(BEACON)
SWITCH,KEY(CAB)
SWITCH,KEY(ROOM)
SWITCH,KEY(CANOPY)
SWITCH,KEY(FUEL)
SWITCH,KEY(ROOM)
SWITCH,KEY(CANOPY)
SWITCH,KEY(FUEL)
SWITCH,KEY(WORK)
SWITCH,KEY(WIPER)
SWITCH,KEY(LIGHT)
SWITCH,KEY(HAZARD)
SWITCH,KEY(BEACON)
SWITCH,KEY(CAB

ELECTRICAL CIRCUIT DIAGRAM (HI SPEC)

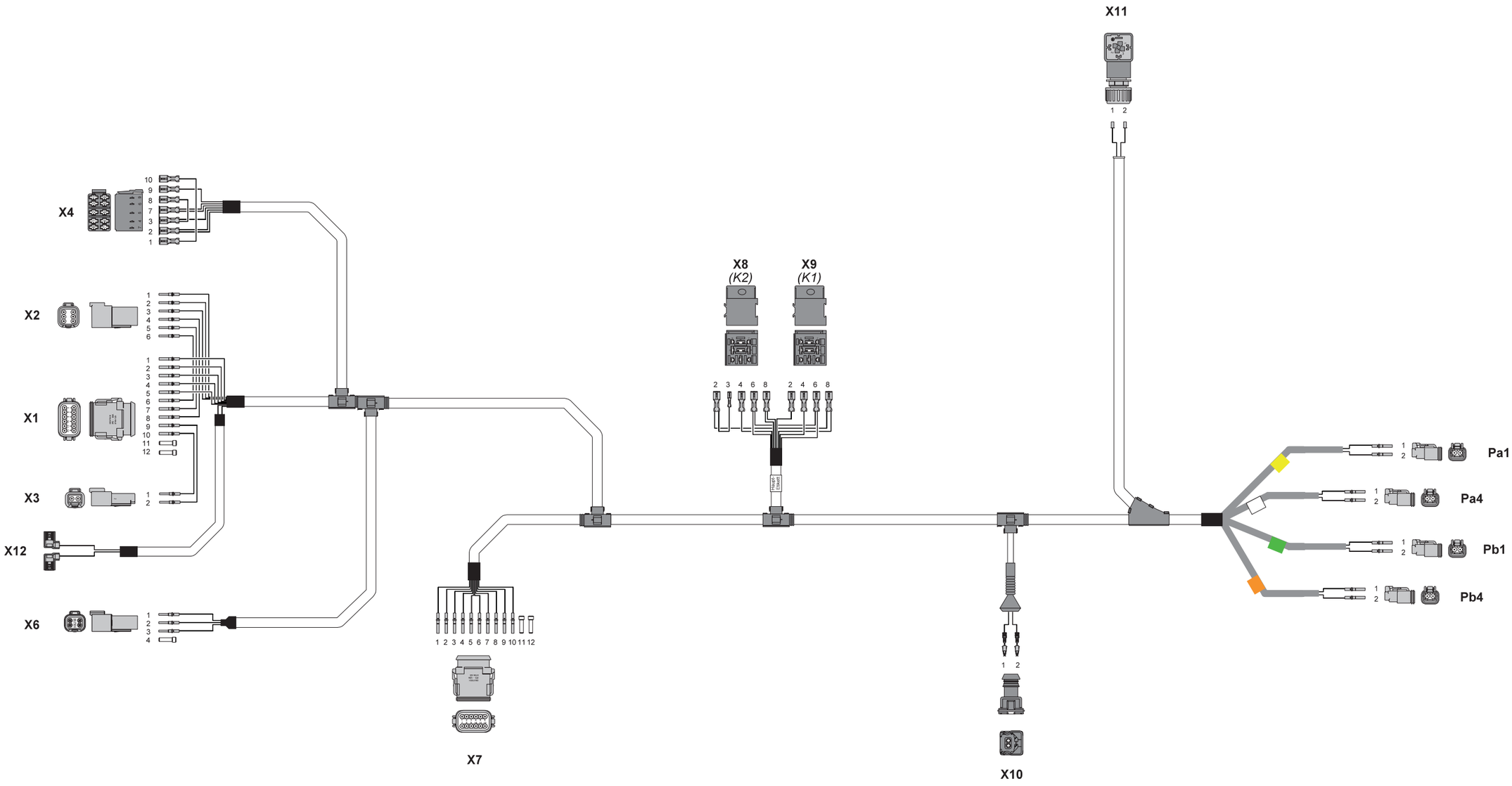


RT	RED
GN	GREEN
SW	BLACK
WS	WHITE / BLACK
BL	BLUE
GE	YELLOW

K1 : Unload relay
K2 : Selector valve relay
Pa1 : Proportional valve (AUX2_RH)
Pb1 : Proportional valve (AUX2_LH)
Pa4 : Proportional valve (AUX1_RH)
Pb4 : Proportional valve (AUX1_LH)
Y1 : Third line valve
Y2 : Selector valve
X1 : Pilot control lever (RH)
X7 : Pilot control lever (LH)
R1 : Potentiometer (LH)
R2 : Potentiometer (RH)
H2 : Horn switch
H3 : Lamp

U27-4

WIRE HARNESS (HI SPEC)



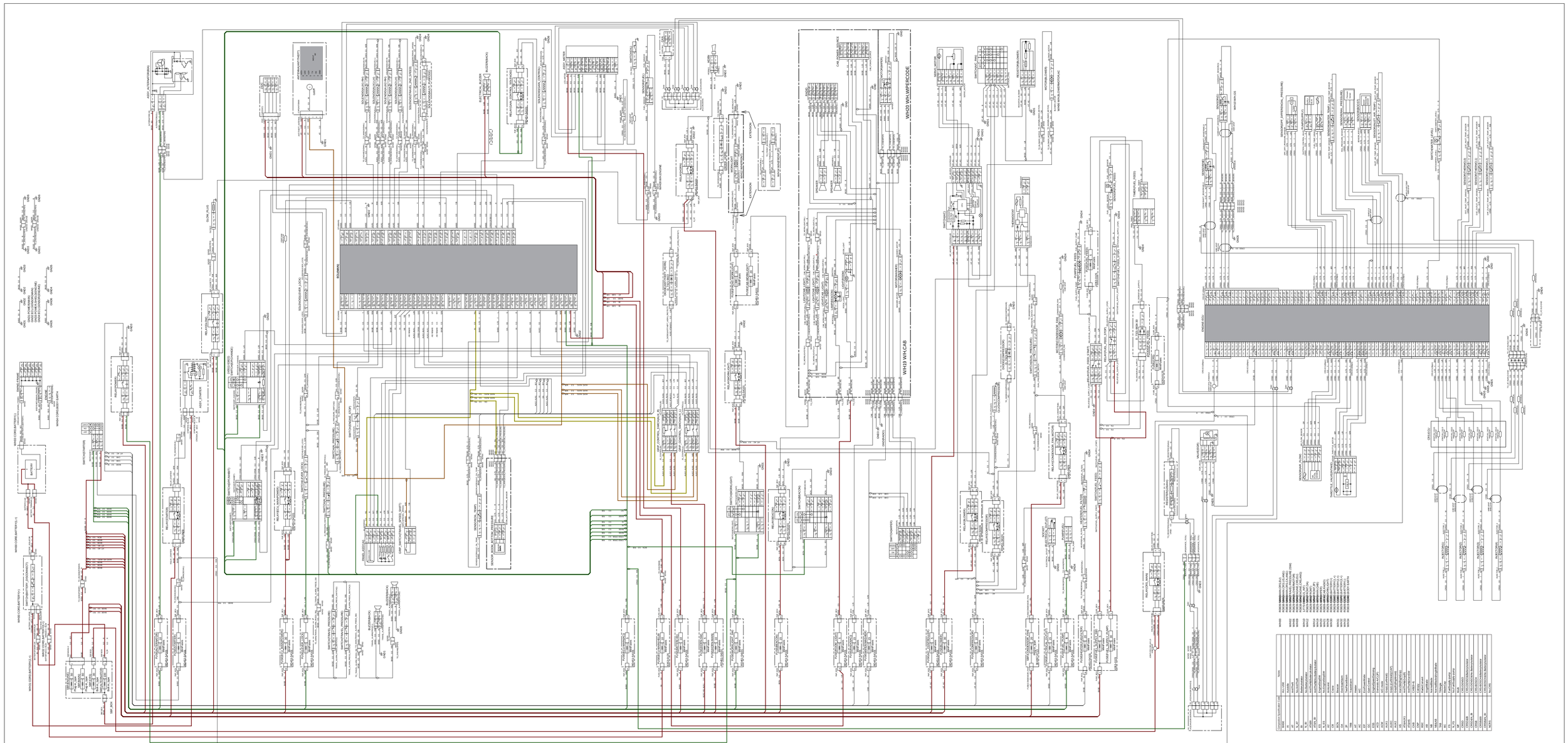
X1: Control Lever (RH)
X2: Potentiometer
X3: Horn
X4: Switch (Third Line)
X6: Joint to Main Harness
X7: Control Lever (LH)

X8: Relay (Unload)
X9: Relay (Selector)
X10: Valve (Third Line)
X11: Valve (Selector)
X12: Indicator

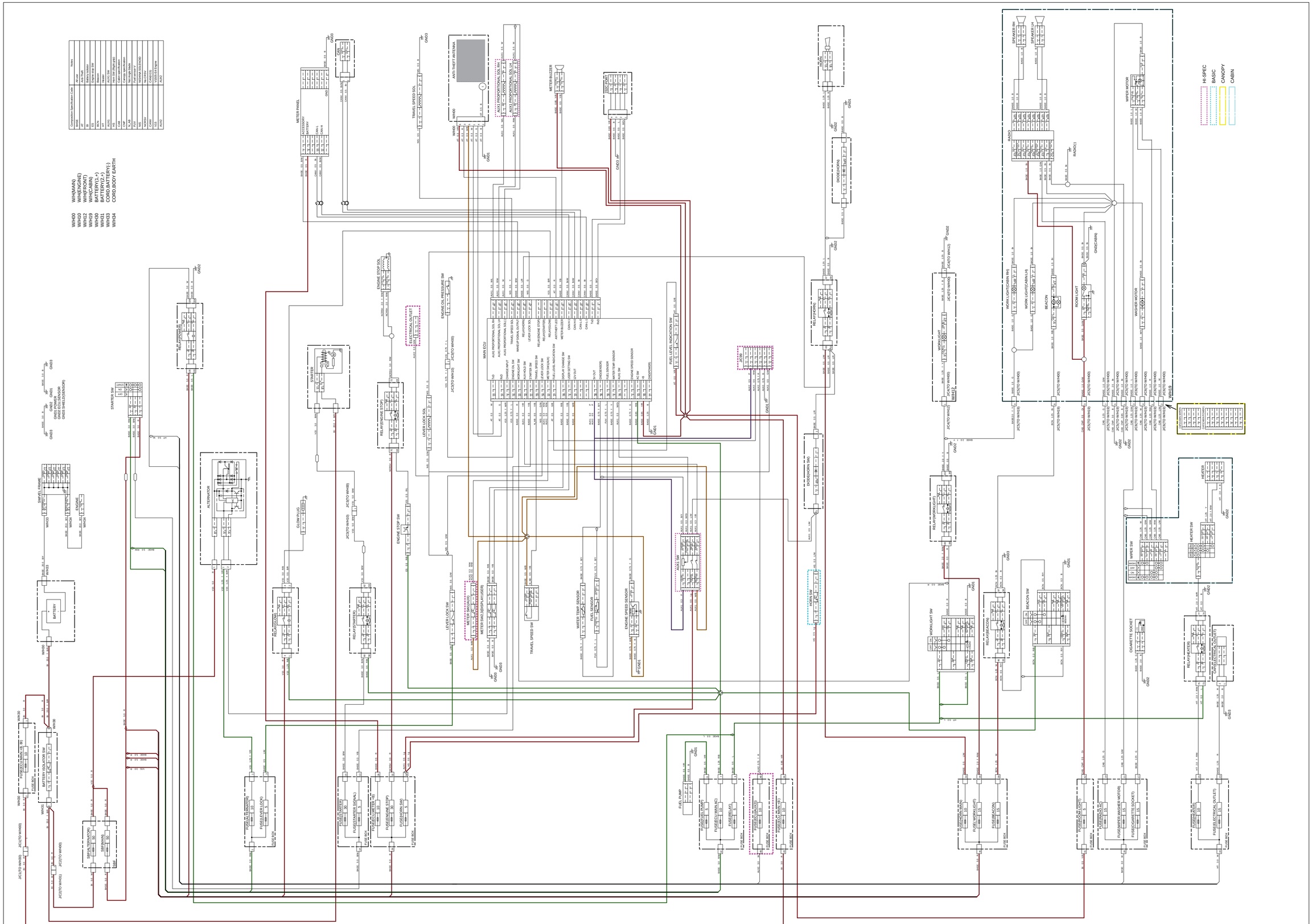
Pa1:	Proportional Valve (AUX2RH / Swing Rod)
Pa4:	Proportional Valve (AUX2LH / Swing Bot)
Pb1:	Proportional Valve (AUX1LH)
Pb4:	Proportional Valve (AUX1RH)

U27-4

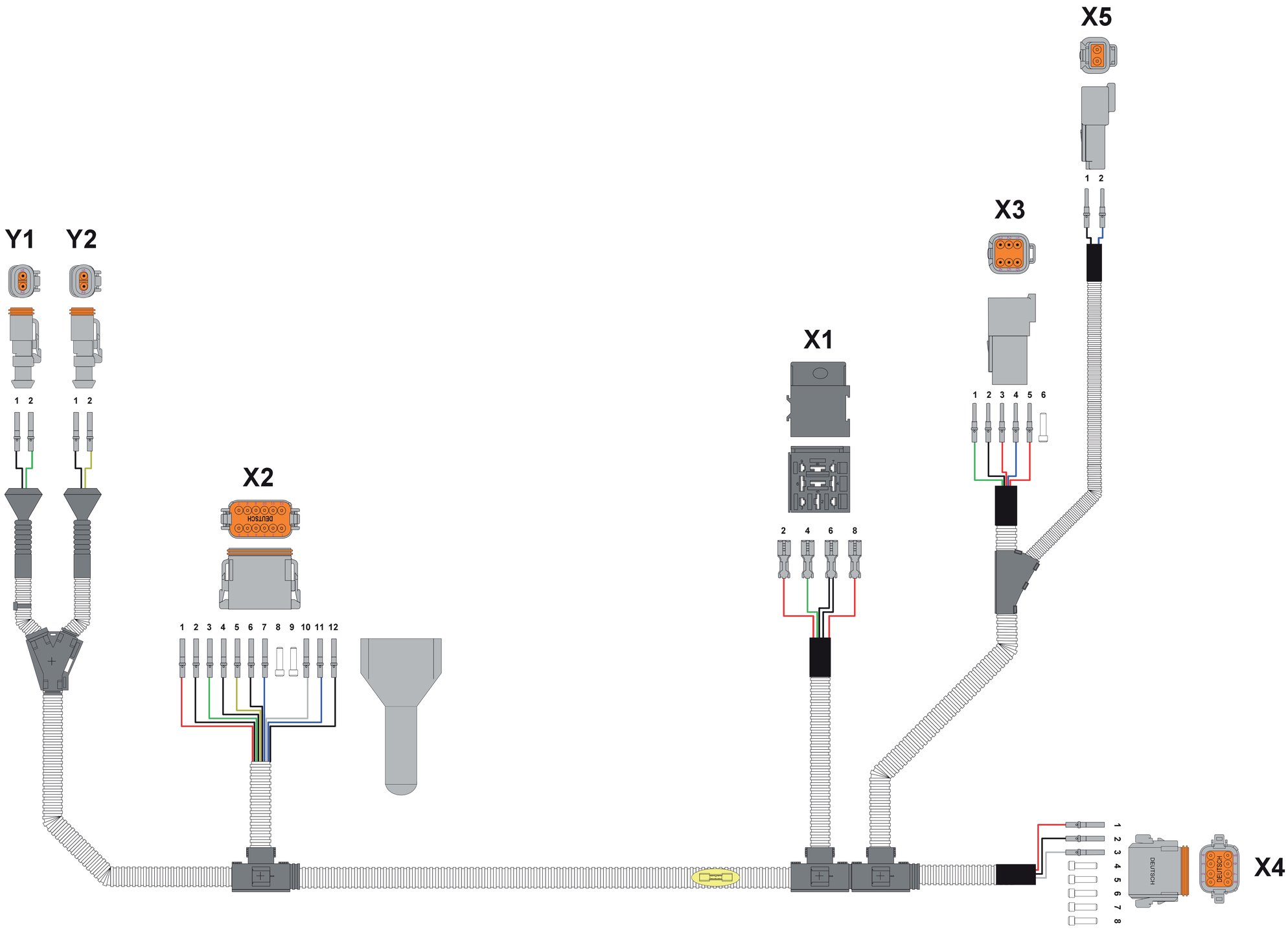
3.2.6 KX080-4α



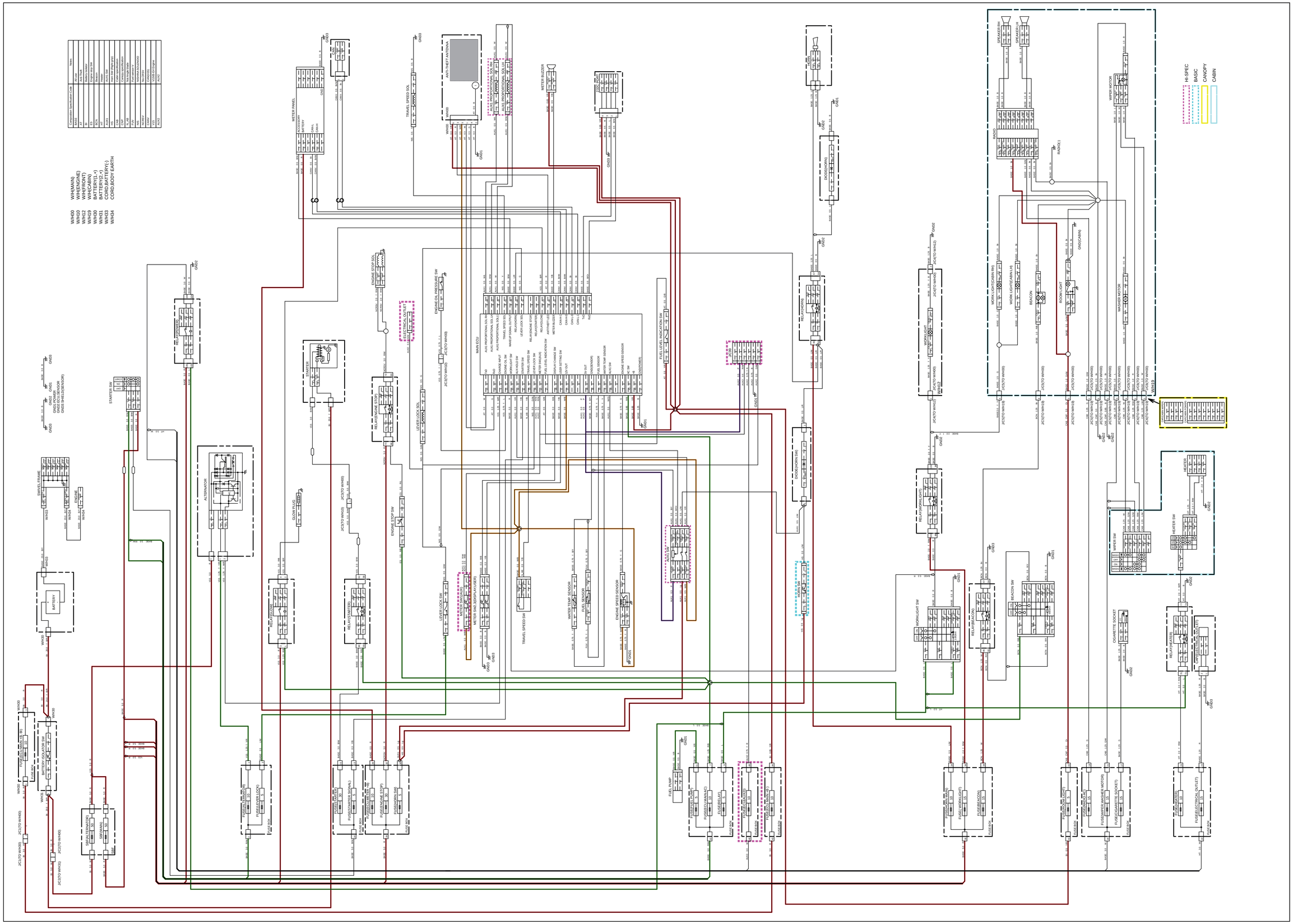
3.2.7 KX027-4


Completion Specification Code
Notes
WH00 WIHMAIN)
WH10 WIHENGINE)
WH12 WIHFRONT)
WH19 WIHFORWIN)
WH30 BATTERY(1.+)
WH31 BATTERY(2.-)
WH33 CORD.BATTERY(1)
WH34 CORD.BODY.EARTH
MAIN ECU
METER PANEL
STARTER
ALTERNATOR
BATTERY
FUSE BOX
RELAY(STARTER)
RELAY(ENGINE STOP)
RELAY(GLOW)
RELAY(HEATER)
RELAY(BEACON)
RELAY(WORKLIGHT)
RELAY(HORN)
RELAY(WIPER)
RELAY(RADIO)
ANTI-THEFT ANTENNA
SPEAKER RH
SPEAKER LH
RADIO
WORK LIGHT(CABIN RH)
WORK LIGHT(CABIN LH)
BEACON
ROOM LIGHT
WIPER MOTOR
WASHER MOTOR
WIPER SW
HEATER
HEATER SW
CIGARETTE SOCKET
HORN
HORN SW
WORKLIGHT SW
BEACON SW
TRAVEL SPEED SOL
TRAVEL SPEED SW
ENGINE STOP SOL
ENGINE STOP SW
LEVER LOCK SOL
LEVER LOCK SW
GLOW PLUG
FUEL PUMP
FUEL SENSOR
WATER TRAP SENSOR
ENGINE SPEED SENSOR
DIODE(HORN)
DIODE(ENGINE SW)
FUSE(ALTERNATOR)
FUSE(LEVER LOCK)
FUSE(METER)
FUSE(METER SOCKET)
FUSE(ENGINE STOP)
FUSE(HORN SW)
FUSE(ECU MAIN)
FUSE(ECU MAIN2)
FUSE(RELAY)
FUSE(ECU MAIN3)
FUSE(ECU MAIN4)
FUSE(WORKLIGHT)
FUSE(BEACON)
FUSE(WIPER)
FUSE(WASHER MOTOR)
FUSE(CIGARETTE SOCKET)
FUSE(HEATER)
FUSE(ELECTRICAL OUTLET)
SB(MAIN)
SB(ALTERNATOR)
HI-SPEC
BASIC
CANOPY
CABIN

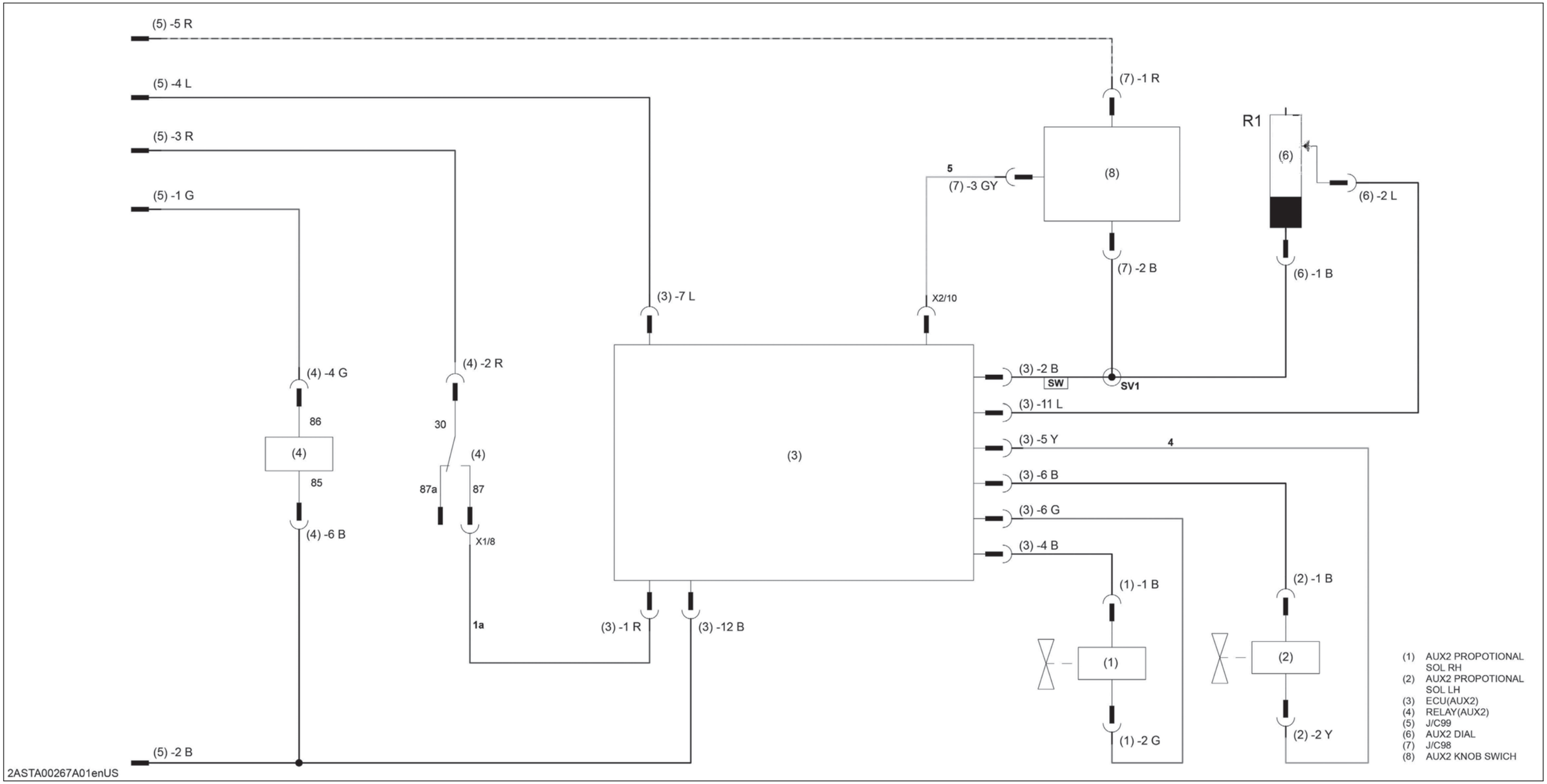
3.2.8 KX027-4Hi



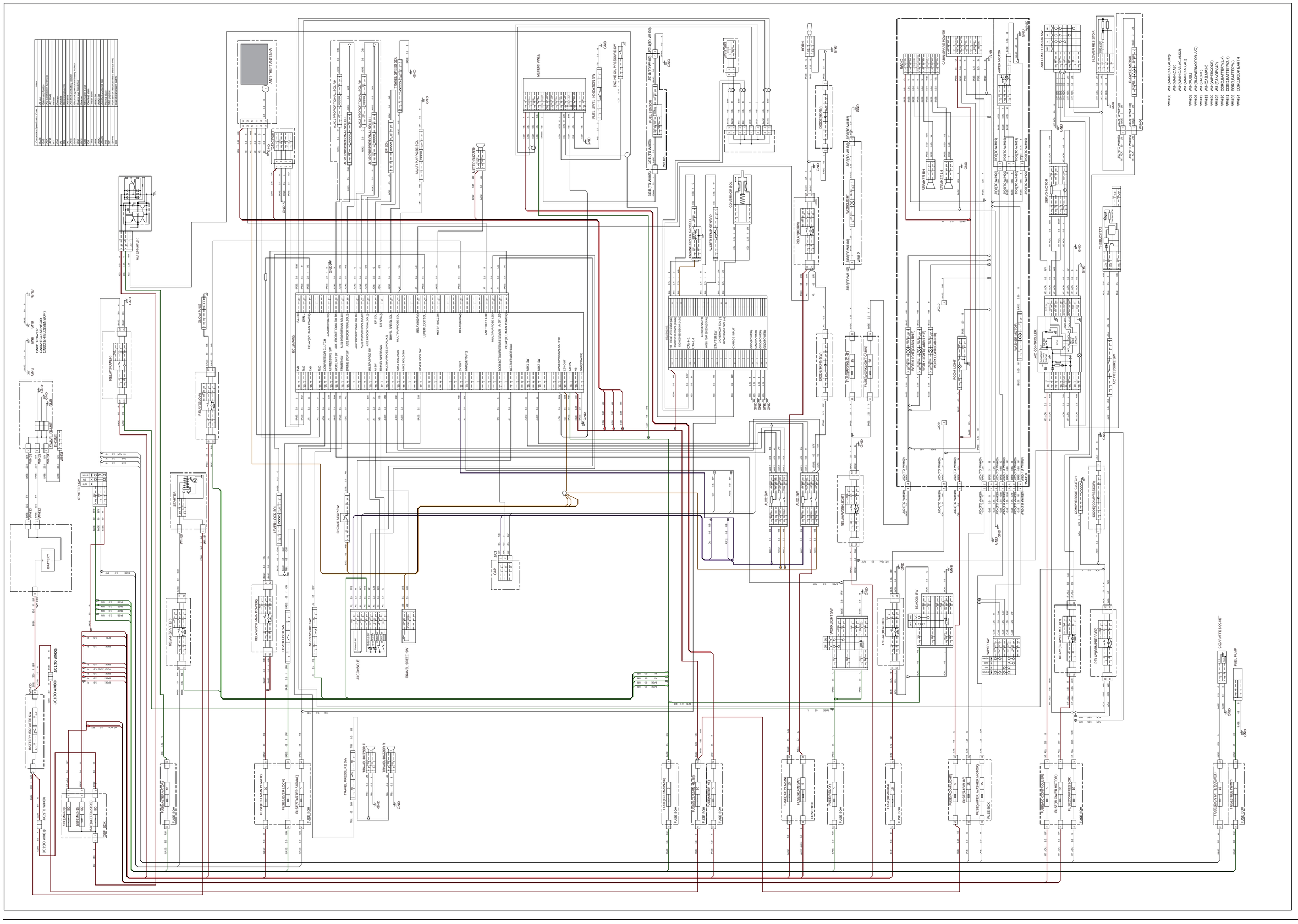
3.2.9 KX030-4


WH(MAIN)
WH(ENGINE)
WH(FRONT)
WH(CABIN)
BATTERY(1.+)
BATTERY(2.-)
CORD,BATTERY(+)
CORD,BODY EARTH
WH00
WH10
WH12
WH19
WH30
WH31
WH33
WH34
Destination Specification Code
Tests
All use
Except USA
Battery relay2
Engine stop S/W
Glow
Heater
ACC1 S/W
Cabin specification
Canopy specification
Cab specification
Fuel sensor,2
Fuel sensor,1
Not used
Not used
CAN(H)
CAN(L)
KX030-4 Engine
KX33
METER PANEL
ACCESSORY
BATTERY
CAN-L
CAN-H
ANTI-THEFT ANTENNA
AUX1 PROPORTIONAL SOL (+)
AUX1 PROPORTIONAL SOL (-)
METER BUZZER
2320 OUT
TRAVEL SPEED SOL
ENGINE STOP SOL
ENGINE OIL PRESSURE SW
FUEL LEVEL INDICATION SW
LEVER LOCK SOL
MAIN ECU
AUX PROPORTIONAL SOL (+)
AUX PROPORTIONAL SOL (-)
AUX PROPORTIONAL SOL (A)
AUX PROPORTIONAL SOL (B)
TRAVEL SPEED SOL
WAKEUP SIGNAL OUT(+)
HEADLIGHT SW
ALT-I-VOLT S/W
STARTER SW
ENGINE STOP SW
LEVER LOCK SW
METER SW(ACC)
METER SW(ON)
FUEL LEVEL INDICATION SW
DISPLAY CHANGE SW
AUX2 EXTEND SW
CAN-H
CAN-L
2320 OUT
2320 IN
WATER TEMP SENSOR
ENGINE SPEED SENSOR
AC SW
ACC
GND(SENSOR)
RELAY(ENGINE STOP)
RELAY(HORN)
RELAY(WORK)
RELAY(ACC)
RELAY(ENGINE)
RELAY(STARTER)
RELAY(GLOW)
STARTER
ALTERNATOR
GLOW PLUG
STARTER SW
SWIVEL FRAME
ENGINE
BATTERY
SB(ALTERNATOR)
SB(MAIN)
FUSE(ALT-I-VOLT)
FUSE(ACC)
FUSE(ENGINE STOP)
FUSE(HORN SW)
FUSE(MAIN)
FUSE(ECU MAIN)
FUSE(RELAY)
FUSE(HEATER)
FUSE(WORK LIGHT)
FUSE(BEACON)
FUSE(WIPER MOTOR)
FUSE(CIGARETTE SOCKET)
FUSE(WATER)
FUSE(ELECTRICAL OUTLET)
FUSE(RADIO)
FUSE(WORK LIGHT)
FUSE(CABIN)
FUSE(WORK LIGHT)
FUSE(BEACON)
FUSE(CIGARETTE SOCKET)
FUSE(WATER)
FUSE(ELECTRICAL OUTLET)
FUSE(HEATER)
FUSE BOX
FUEL PUMP
HORN SW
HORN
BUZZER(HORN)
RELAY(HORN)
RADIO
SPEAKER RH
SPEAKER LH
RADIO(+)
WORK LIGHT(CABIN RH)
WORK LIGHT(CABIN LH)
BEACON
ROOM LIGHT
GND(CABIN)
WORK LIGHT
RELAY(WORK LIGHT)
WORK LIGHT SW
RELAY(BEACON)
BEACON SW
WIPER MOTOR
WIPER SW
CIGARETTE SOCKET
HEATER
HEATER SW
RELAY(HEATER)
ELECTRICAL OUTLET
WATER
WASHER MOTOR
WASHER SW
WH(CABIN)
WH19
JC(TO WH00)
JC(TO WH12)
JC(TO WH19)
JC(TO WH30)
JC(TO WH31)
JC(TO WH33)
JC(TO WH34)
GND1
GND2
GND3
GND(CABIN)
GND(SENSOR)
GND(HORN SW)
HI-SPEC
BASIC
CANOPY
CABIN

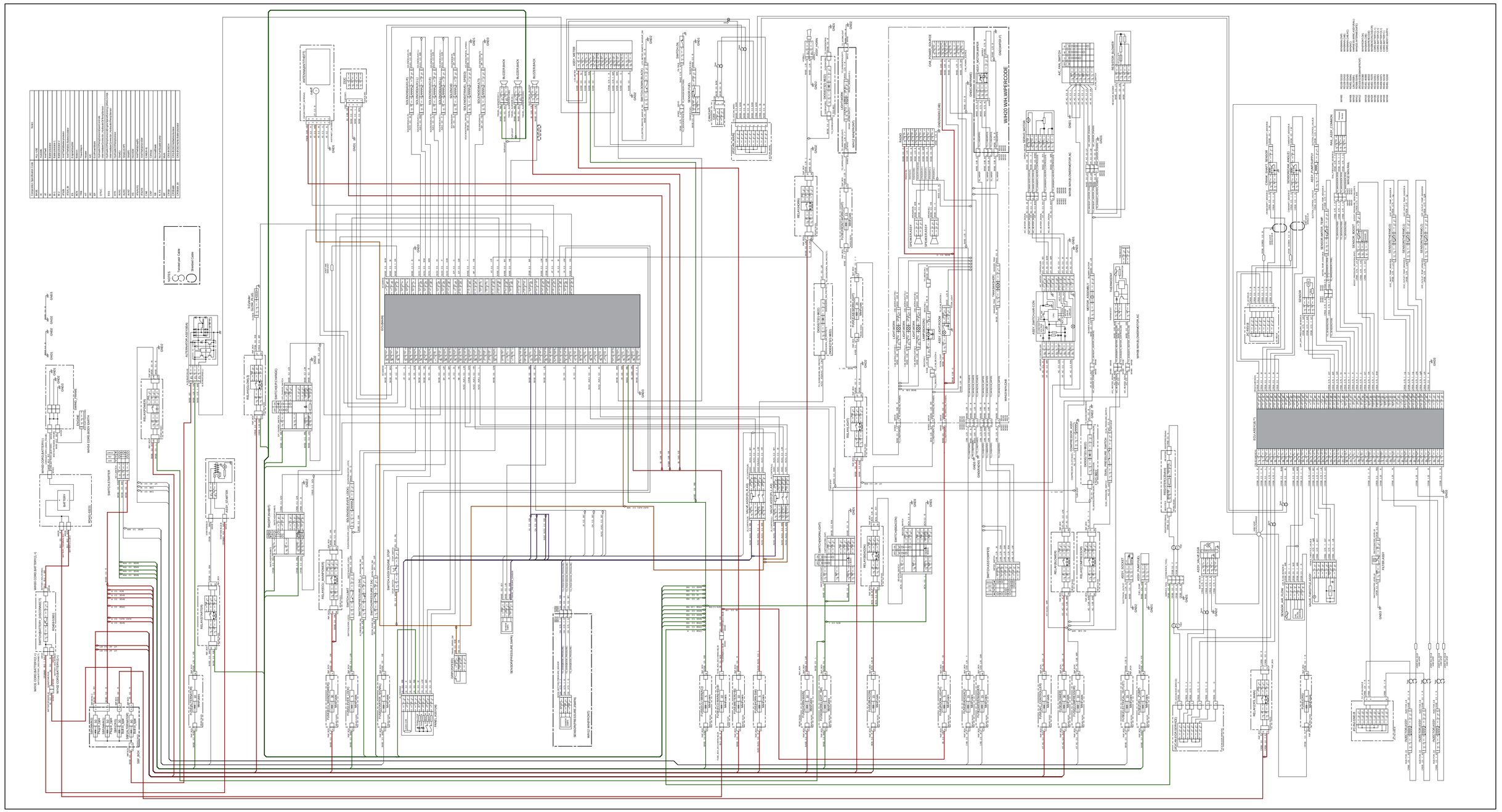
3.2.10KX030-4 Hi



3.2.11 U36-4 Cabin

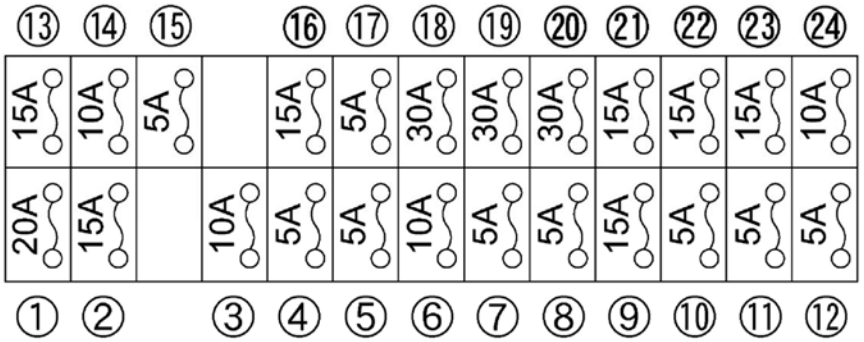

Common terminal code
Notes
ALTERNATOR
BATTERY
STARTER
ENGINE
ECM(MAIN)
METER PANEL
ANTI-THEFT ANTENNA
GLOW PLUG
RELAY(GLOW)
RELAY(ECU MAIN POWER)
RELAY(STARTER)
RELAY(ACC)
RELAY(HEATER)
RELAY(BEACON)
RELAY(WORKLIGHT)
RELAY(WIPER)
RELAY(BLOWER MOTOR)
RELAY(COMPRESSOR)
FUSE BOX
FUSE(ECU MAIN POWER) 30
FUSE(ECU EVER LOCK) 5
FUSE(STARTER SIGNAL) 5
FUSE(ANTI-THEFT) 5
FUSE(ACC) 5
FUSE(HEATER) 5
FUSE(BEACON) 5
FUSE(WORK LIGHT) 15
FUSE(WIPER, WASHER MOTOR) 15
FUSE(BLOWER MOTOR) 30
FUSE(AIR CONDITIONER) 5
FUSE(COMPRESSOR) 10
FUSE(CIGARETTE SOCKET) 15
FUSE(FUEL PUMP) 5
FUSE(HORN) 10
FUSE(HORN SW) 5
FUSE(ALT) 120
FUSE(STARTER) 60
FUSE(GLOW) 50
FUSE(MAIN) 50
FUSE(ECU MAIN) 30
FUSE(ECU ACC) 5
FUSE(ECU ENGINE) 10
FUSE(ECU ENGINE) 5
FUSE(ECU ENGINE) 5
FUSE(ECU ENGINE) 5

3.2.12 KX042-4



3.3 Position of the fuses and relays

3.3.1 KX057-4, U55-4, U48-4

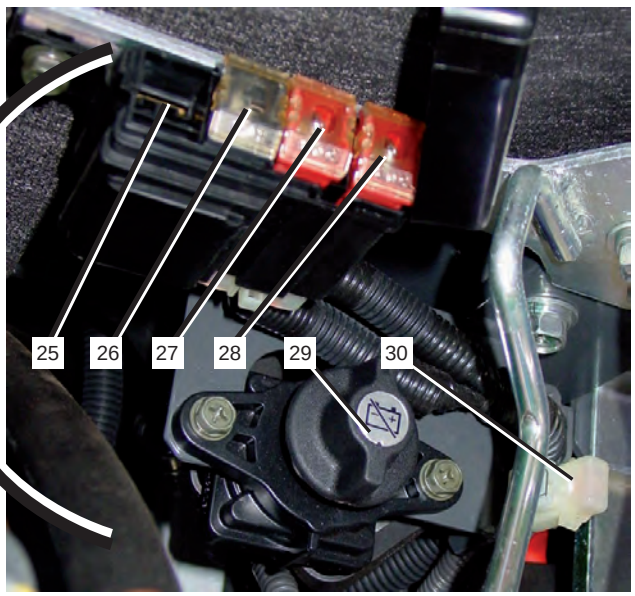


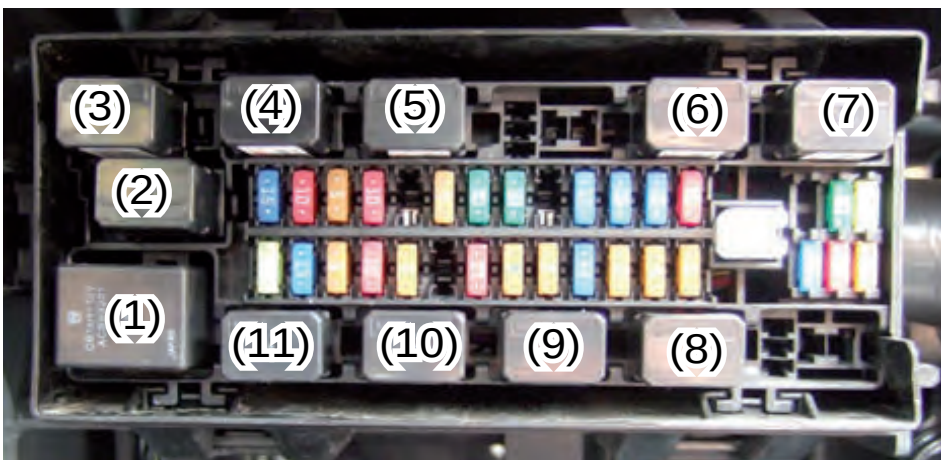
1	Cab working light
2	Boom working light
3	Horn
4	Interior lighting
5	Fuel tank fill level monitoring
6	Alternator
7	Relay cab
8	Display and control unit (AC)
9	Control unit (AC)
10	Fuel pump
11	Control lever lock

12	Starter
13	AUTO IDLE engine
14	Horn switch
15	Control unit
16	Rotary beacon
17	Heating/air-conditioner controls
18	Engine cut-off-switch
19	Fan motor
20	Fuel tank suction pump
21	12-V plug
22	Radio (AC)

23	Wiper/washer system
24	Heating controls (AC)/air-conditioner controls/dryer (AC)
25	Not assigned
26	Alternator (80A)
27	Main fuse (50A)
28	Engine cut-off switch/relay cab (fan motor) (50A)
29	Battery isolator
30	Meter / ECU fuse (10A)

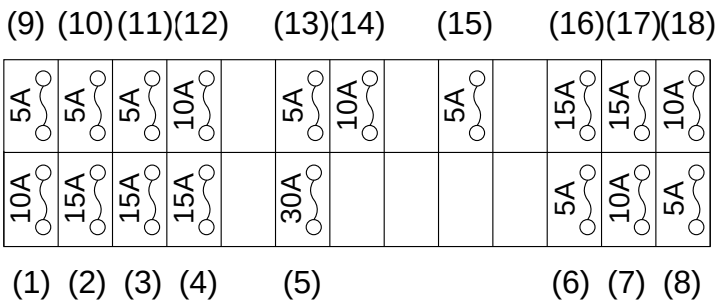




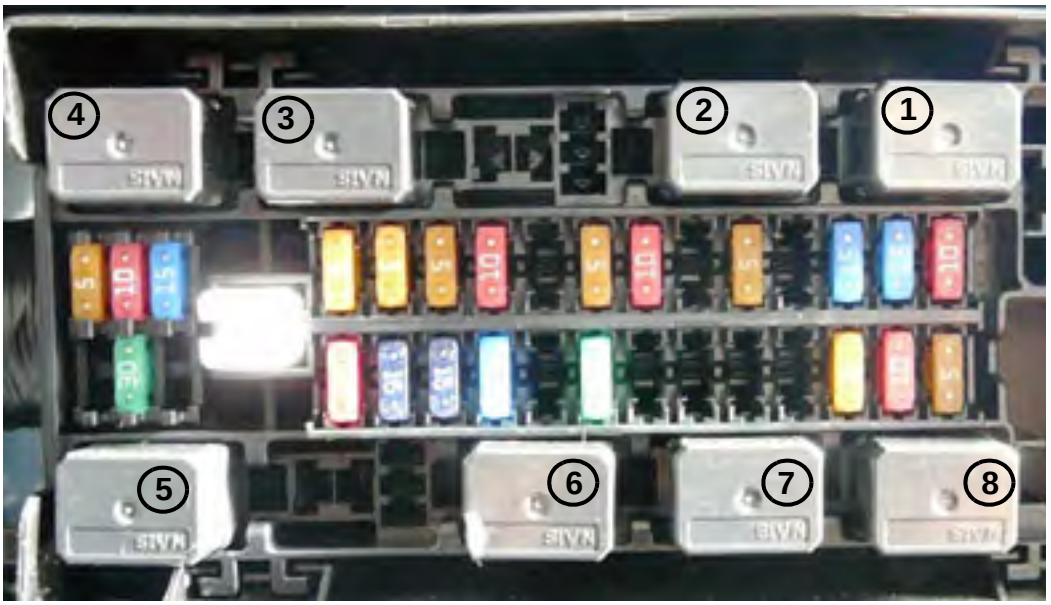


(1) Glow (40A)
(2) Compressor (20A)
(3) Crane (20A) (not in EU)
(4) Blower (20A)
(5) Engine stop (20A)
(6) Cab worklight (20A)
(7) Horn (20A)
(8) Worklight (20A)
(9) AI motor (20A)
(10) Cab (20A)
(11) Starter (20A)

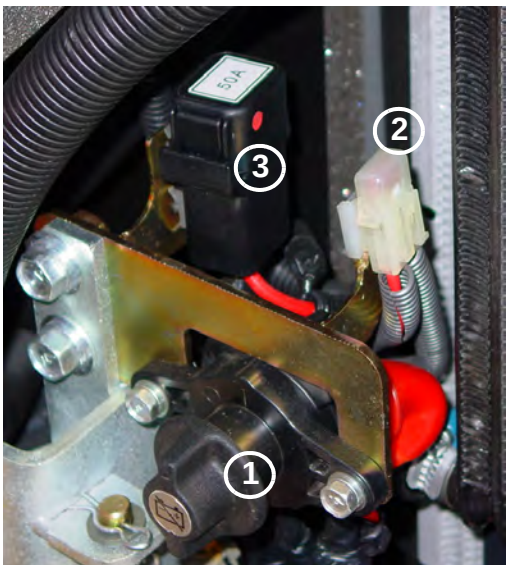
3.3.2 KX015-4, KX016-4, KX018-4, KX019-4



1	Blower motor	10	Lever lock
2	Radio (AC)	11	Fuel pump
3	Wiper, Washer	12	ECU (AC)
4	Electrical outlet	13	Relay source
5	Engine stop	14	Alternator
6	ECU (+B)	15	Room light
7	Horn switch	16	Beacon
8	Meter (+B)	17	Work light
9	Starter	18	Horn



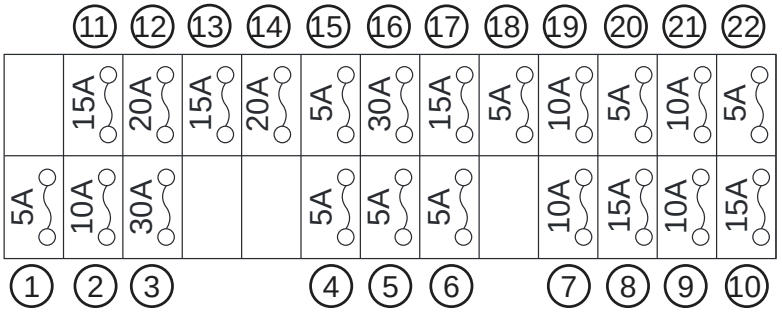
1 Beacon light (20A)
2 Work light (20A)
3 Cab (20A)
4 Auto release (20A)
5 Horn (20A)
6 Glow (20A)
7 Engine Stop (20A)
8 Heater (20A)



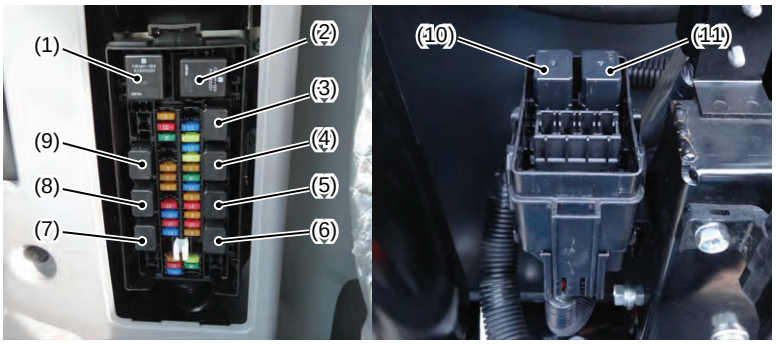


1 Battery isolator
2 Fuse Meter, +B Terminal direct, (10A)
3 Main fuse, SBF (50A)
4 Slow Blow Fuse, Alternator, (60A)

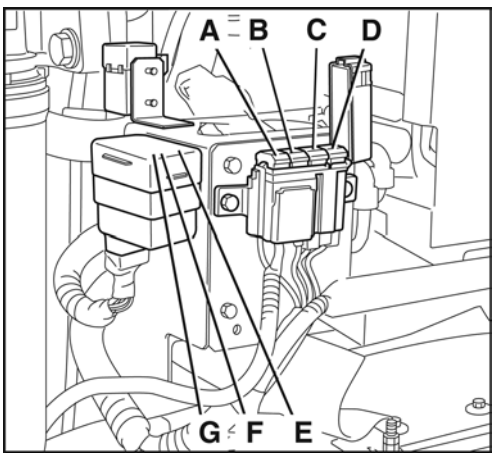
3.3.3 KX080-4, KX080-4α



1	A/C control (+B)	12	Cab working lights
2	Display and control unit (+B)	13	Radio (AC)
3	Fan motor	14	Fuel filter heater
4	Relay, cab	15	Control unit (+B)
5	Control unit (AC)	16	Control unit (POWER)
6	Interior lighting	17	Rotary beacon
7	Starter	18	Horn switch
8	Wiper/washer system	19	Horn
9	Compressor	20	Control lever lock
10	12-V socket	21	Alternator
11	Boom working light	22	Fuel pump



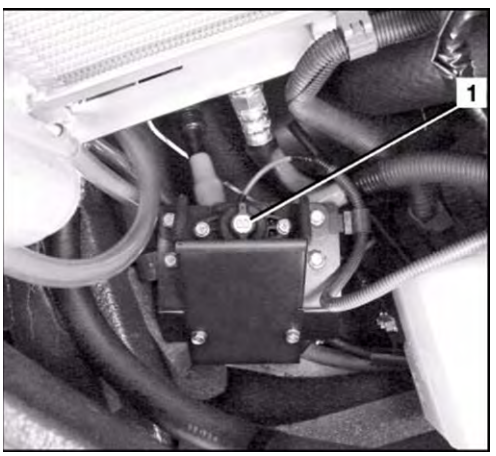
1	Power relay (40A)	5	Beacon relay (20A)	9	Compressor relay (20A)
2	Glow relay (40A)	6	Worklight relay (20A)	10	Condenser relay (20A)
3	Horn relay (20A)	7	ECU (Power) relay (20A)	11	Engine ECU relay (20A)
4	Starter relay (20A)	8	Blower relay (20A)		



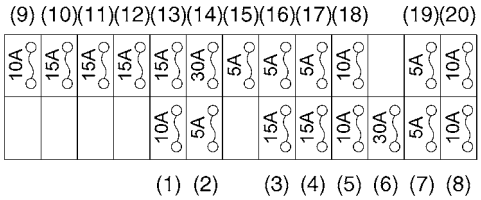
A	Alternator (100 A)
B	Engine control unit (30A)
C	Main fuse (60 A)
D	Engine cut-off switch (50A)
E	Suction pump (30A)
F	Control unit (+B, 10A)
G	Fill level monitor (5A)

Battery cut-off switch

The battery cut-off switch (1) can be used to cut off the main power circuit. The battery cut-off switch is on the right vehicle side under the radiator.

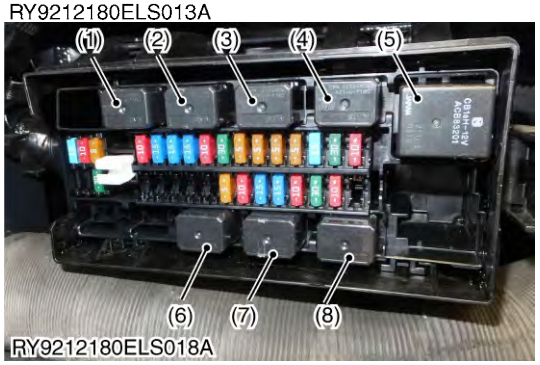


3.3.4 U27-4

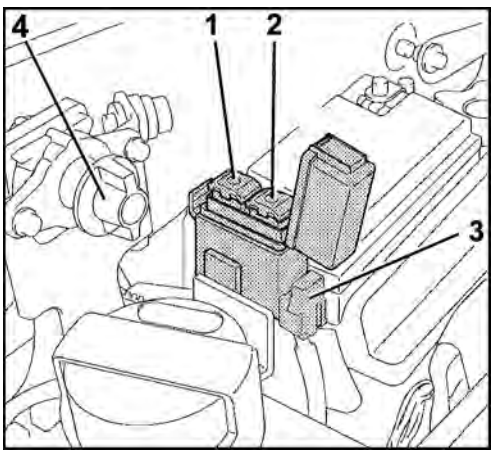


1	ECU (+B)	12	Radio (AC)
2	Room light	13	Electrical outlet
3	Beacon	14	Starter motor
4	Work lamp	15	Starter (signal)
5	Horn	16	Fuel pump
6	Engine Stop Solenoid	17	Relay source
7	Horn Switch	18	ECU (AC)
8	Meter (+B)	19	Lever lock
9	Blower motor	20	Alternator
10	Electrical outlet	21	HS harness (Hi Spec)
11	Wiper, Washer		

RY9212180ELS013A

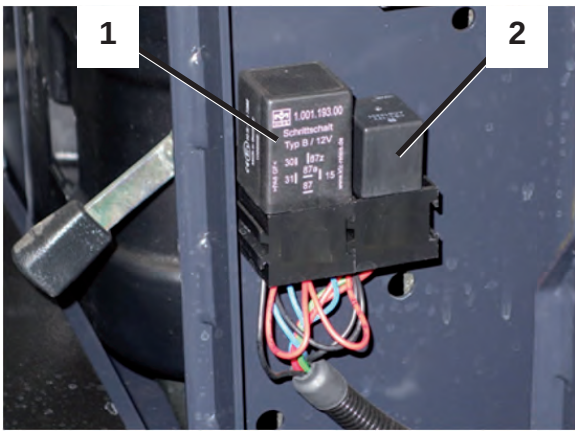


1 Starter (20 A)
2 Horn (20 A)
3 Engine Stop (20 A)
4 Heater (20 A)
5 Cabin (40 A)
6 Glow (20 A)
7 Rotary beacon (20 A)
8 Working light (20 A)



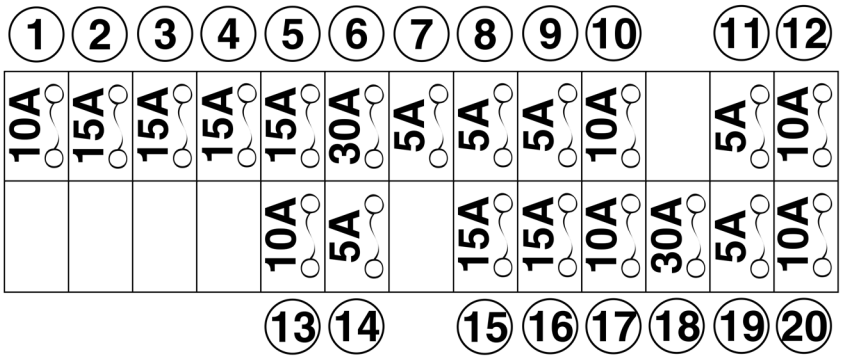
1 Main fuse (50 A)
2 Main fuse (60 A)
3 Fuse ECU/battery cut-off switch (10A)
4 Battery cut-off switch

U27-4 Hi only

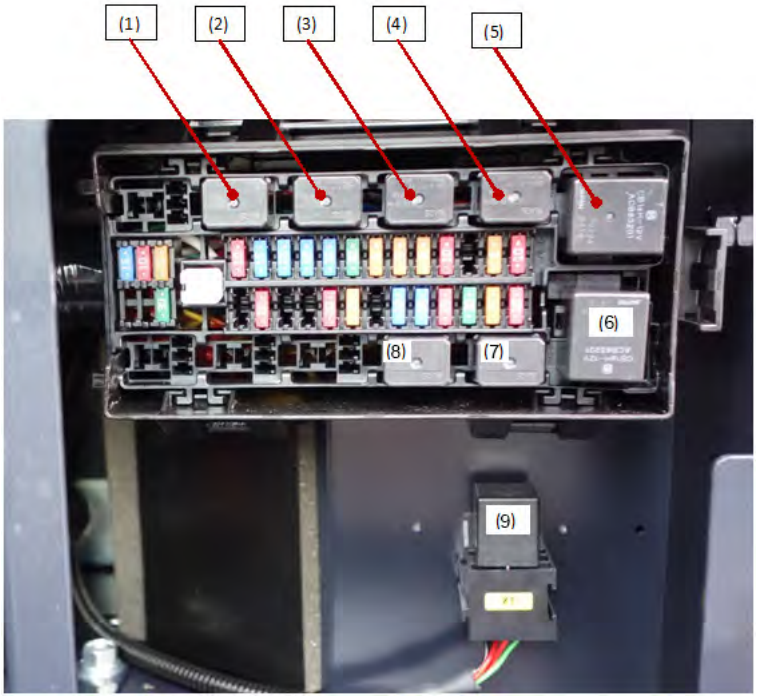


1 Relay for swing switching / AUX 2
2 Lever Lock relay

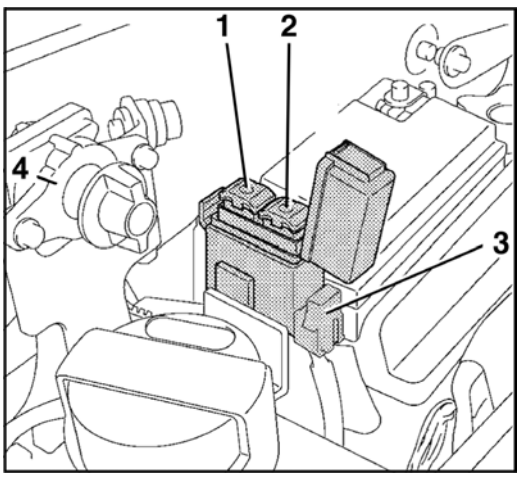
3.3.5 KX027-4



1	Fan motor
2	Electrical connection
3	Wiper/washer system
4	Radio (AC)
5	12-V socket
6	Starter
7	Starter (signal)
8	Fuel pump
9	Relay supply circuit
10	Control unit (AC)
11	Control lever lock
12	Alternator
13	Control unit (+B)
14	Interior lighting
15	Rotary beacon
16	Working lights
17	Horn
18	Engine cut-off switch
19	Horn switch
20	Display and control unit (+B)

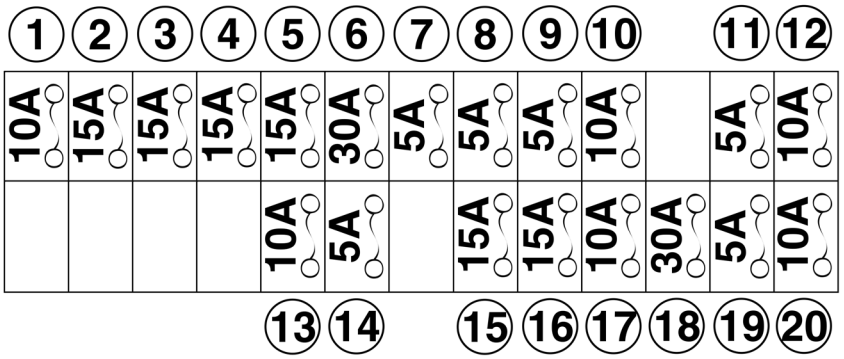


1 Starter
2 Horn
3 Engine Stop
4 Heater
5 Cabin
6 Glow
7 Work light
8 Beacon
9 AUX 2 (Hi only)

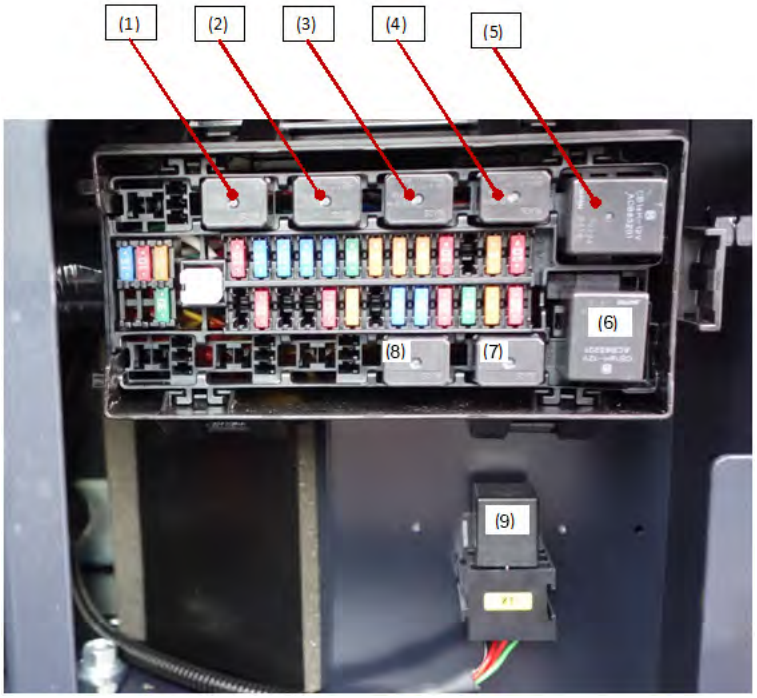


1 Main fuse (50 A)
2 Main fuse (50 A)
3 Fuse (10 A)
4 Battery isolator switch

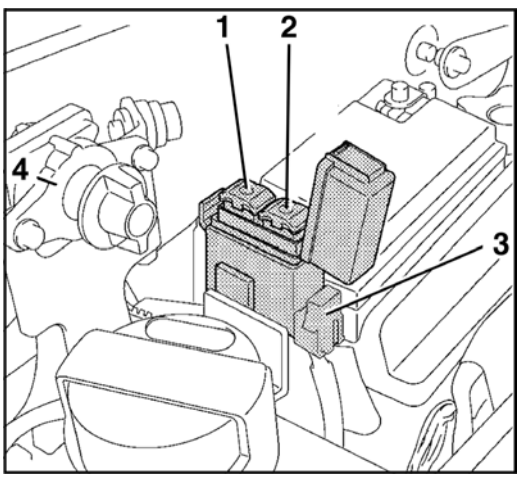
3.3.6 KX030-4



1	Fan motor
2	Electrical connection
3	Wiper/washer system
4	Radio (AC)
5	12-V socket
6	Starter
7	Starter (signal)
8	Fuel pump
9	Relay supply circuit
10	Control unit (AC)
11	Control lever lock
12	Alternator
13	Control unit (+B)
14	Interior lighting
15	Rotary beacon
16	Working lights
17	Horn
18	Engine cut-off switch
19	Horn switch
20	Display and control unit (+B)

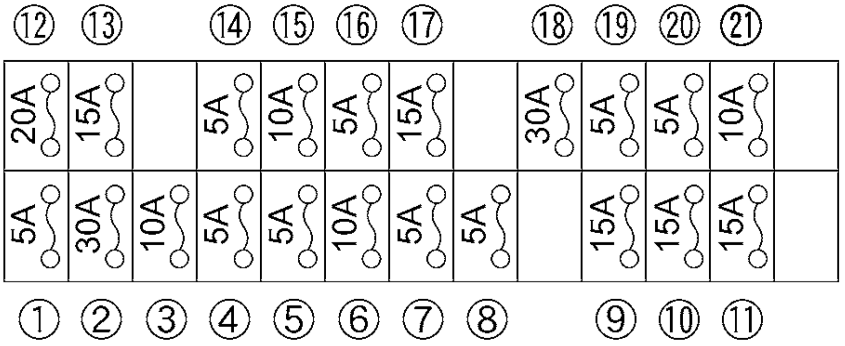


1 Starter
2 Horn
3 Engine Stop
4 Heater
5 Cabin
6 Glow
7 Work light
8 Beacon
9 AUX 2 (Hi only)

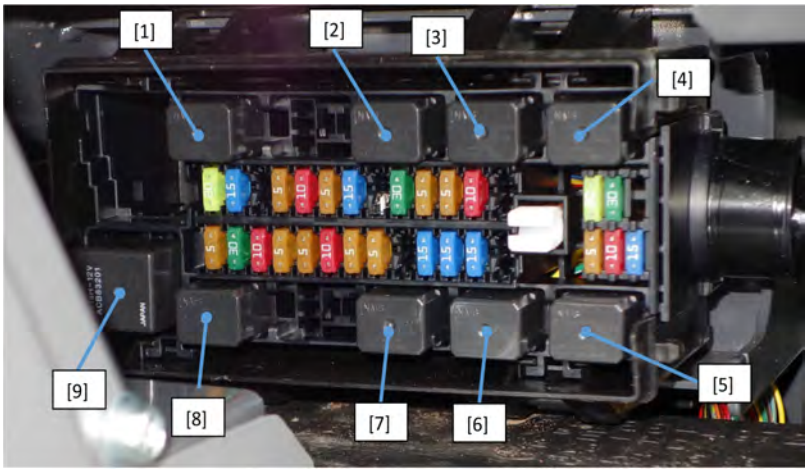


1 Main fuse (50 A)
2 Main fuse (50 A)
3 Fuse (10 A)
4 Battery isolator switch

3.3.7 U36-4

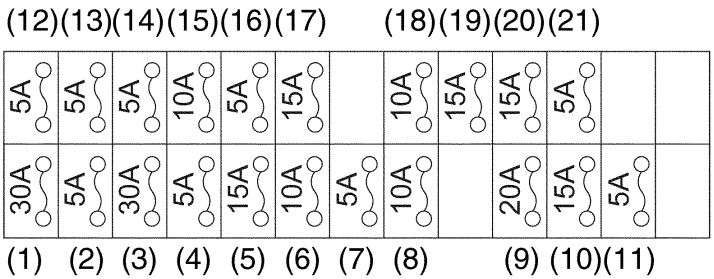


1	A/C control (+B)
2	Fan motor
3	Compressor
4	Engine control unit (AC)
5	Relays
6	Alternator
7	Control lever lock
8	Fuel pump
9	Wiper/washer system
10	Radio (AC)
11	12-V socket
12	Cab working lights
13	Boom working light
14	Horn switch
15	Horn
16	Display and control unit (+B)
17	Rotary beacon
18	Engine control unit (power supply)
19	Interior lighting
20	Starter
21	Engine control unit (+B)



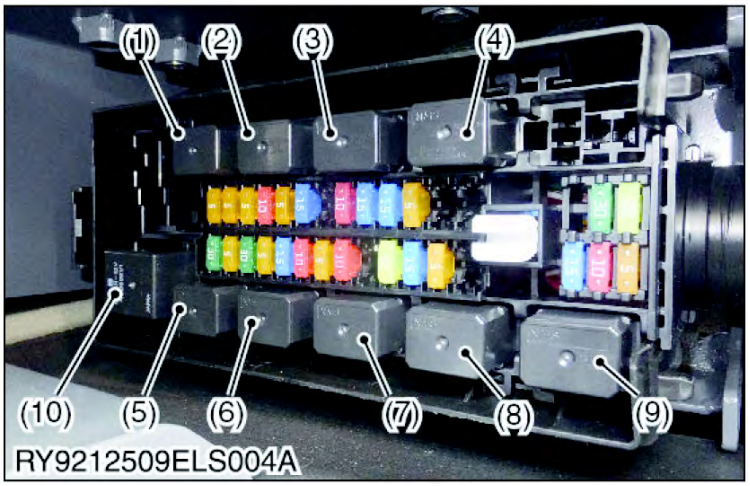
1 Blower
2 Compressor
3 Glow
4 Horn
5 Beacon
6 Work light
7 ECU main power
8 Starter
9 Power

3.3.8 KX042-4

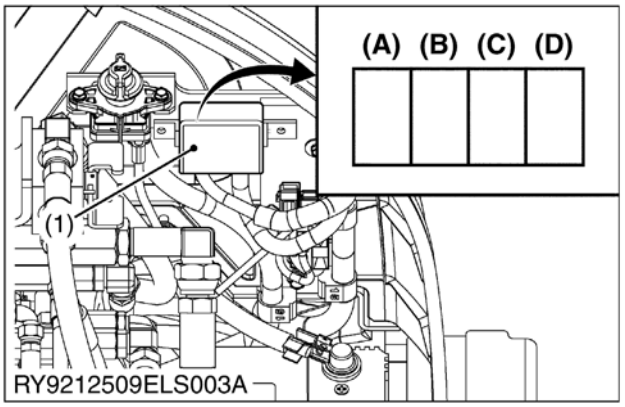


RY9212509ELS002A

1	Blower Motor
2	A/C Controller
3	ECU (POWER)
4	Room Light
5	Beacon
6	Meter (+B)
7	Horn Switch
8	Horn
9	Cab Work Light
10	Front Work Light
11	Control lever lock
12	Fuel Pump
13	Relay
14	Lever Lock
15	Alternator
16	ECU (AC)
17	Electrical Outlet
18	Compressor
19	Radio (AC)
20	Wiper / Washer
21	CRS (Common Rail System)



1 Blower relay (20 A)
2 Worklight relay (20 A)
3 Main ECU (power) relay (20 A)
4 Horn relay (20 A)
5 Engine ECU relay (20 A)
6 Compressor relay (cabin spec.) (20 A)
7 Starter relay (20 A)
8 Beacon relay (20 A)
9 Glow relay (20 A)
10 Power relay (40 A)



Aa Alternator (80 A)
B Engine ECU (30 A)
C Main Power 1 (50 A)
D Main Power 2 (50 A)

3.4 Battery specification table

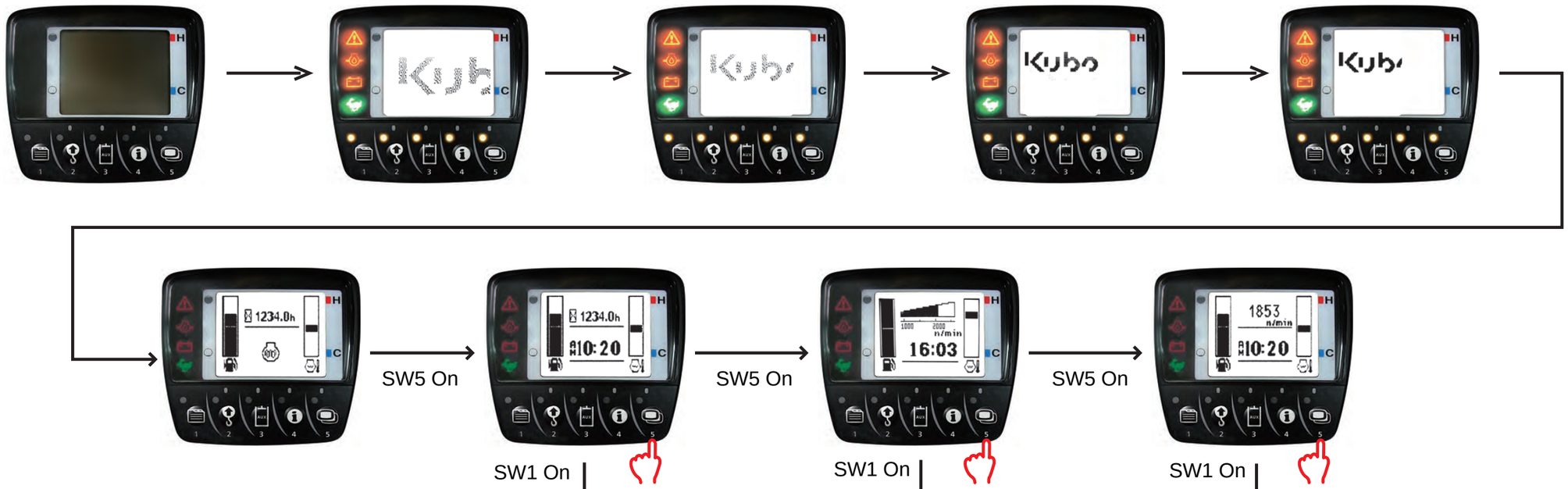
Model	Battery Identification
KX057-4	JIS 105D31L
U55-4	JIS 105D31L
U48-4	JIS 105D31L
KX015-4	ETN 545 024 030
KX016-4	ETN 545 024 030
KX018-4	ETN 545 024 030
KX019-4	ETN 545 024 030
KX080-4, KX080-4α	ETN 600 035 060
U27-4	DIN EN 50324, DIN IEC 60095-2 Banner: P6219
KX027-4, KX030-4, U36-4	JIS 80D26R
KX042-4	JIS 90D26L

4 Digital panel setting mode

4.1 User setting mode

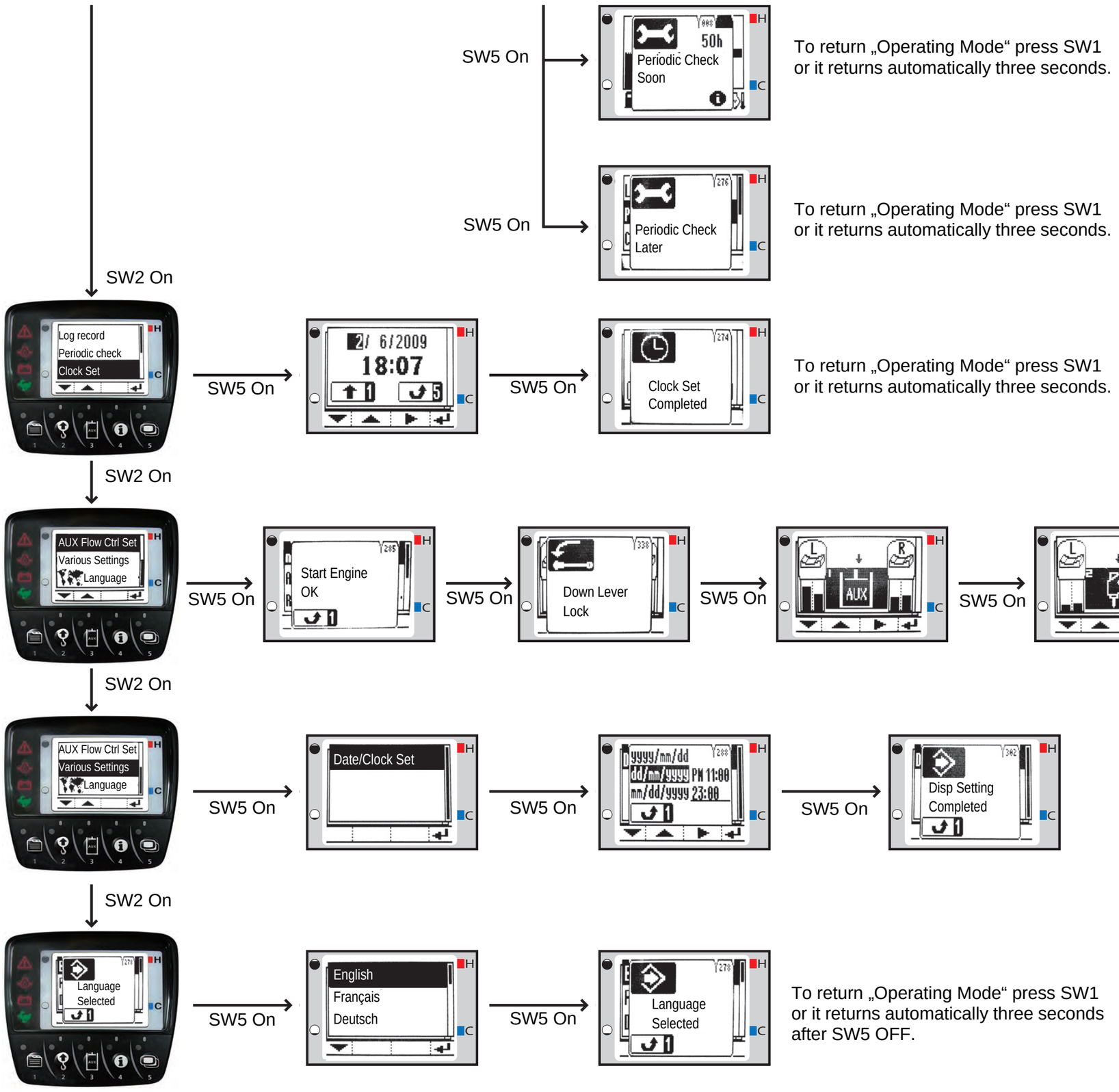
4.1.1 KX057-4, U55-4, U48-4, KX042-4

Main key SW On

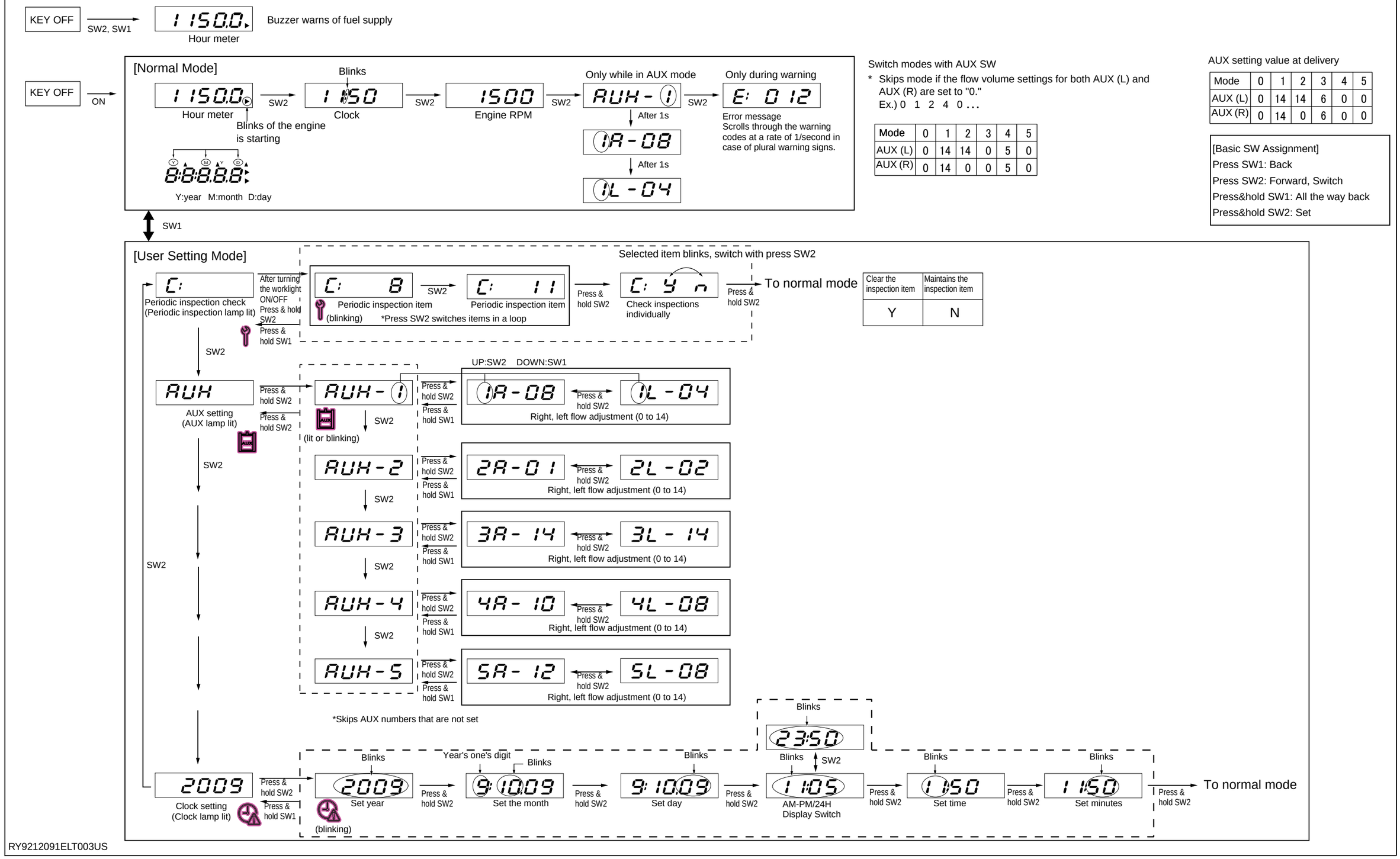


Press SW1 to „Operating Mode“.

Press SW1 to „Operating Mode“.


SW2 On
Log record
Periodic check
Clock Set
SW5 On
2/ 6/2009
18:07
SW5 On
Clock Set
Completed
SW5 On
50h
Periodic Check
Soon
SW5 On
Periodic Check
Later
To return „Operating Mode“ press SW1
or it returns automatically three seconds.
To return „Operating Mode“ press SW1
or it returns automatically three seconds.
SW2 On
AUX Flow Ctrl Set
Various Settings
Language
SW5 On
Start Engine
OK
SW5 On
Down Lever
Lock
SW5 On
AUX
SW5 On
Press SW1 to
„Operating Mode“.
SW2 On
AUX Flow Ctrl Set
Various Settings
Language
SW5 On
Date/Clock Set
SW5 On
yyyy/mm/dd
dd/mm/yyyy PM 11:00
mm/dd/yyyy 23:00
SW5 On
Disp Setting
Completed
SW2 On
Language
Selected
SW5 On
English
Français
Deutsch
SW5 On
Language
Selected
To return „Operating Mode“ press SW1
or it returns automatically three seconds
after SW5 OFF.

4.1.2 KX015-4, KX016-4, KX018-4, KX019-4



Switch modes with AUX SW

* Skips mode if the flow volume settings for both AUX (L) and AUX (R) are set to "0."
Ex.) 0 1 2 4 0 ...

Mode	0	1	2	3	4	5
AUX (L)	0	14	14	0	5	0
AUX (R)	0	14	0	0	5	0

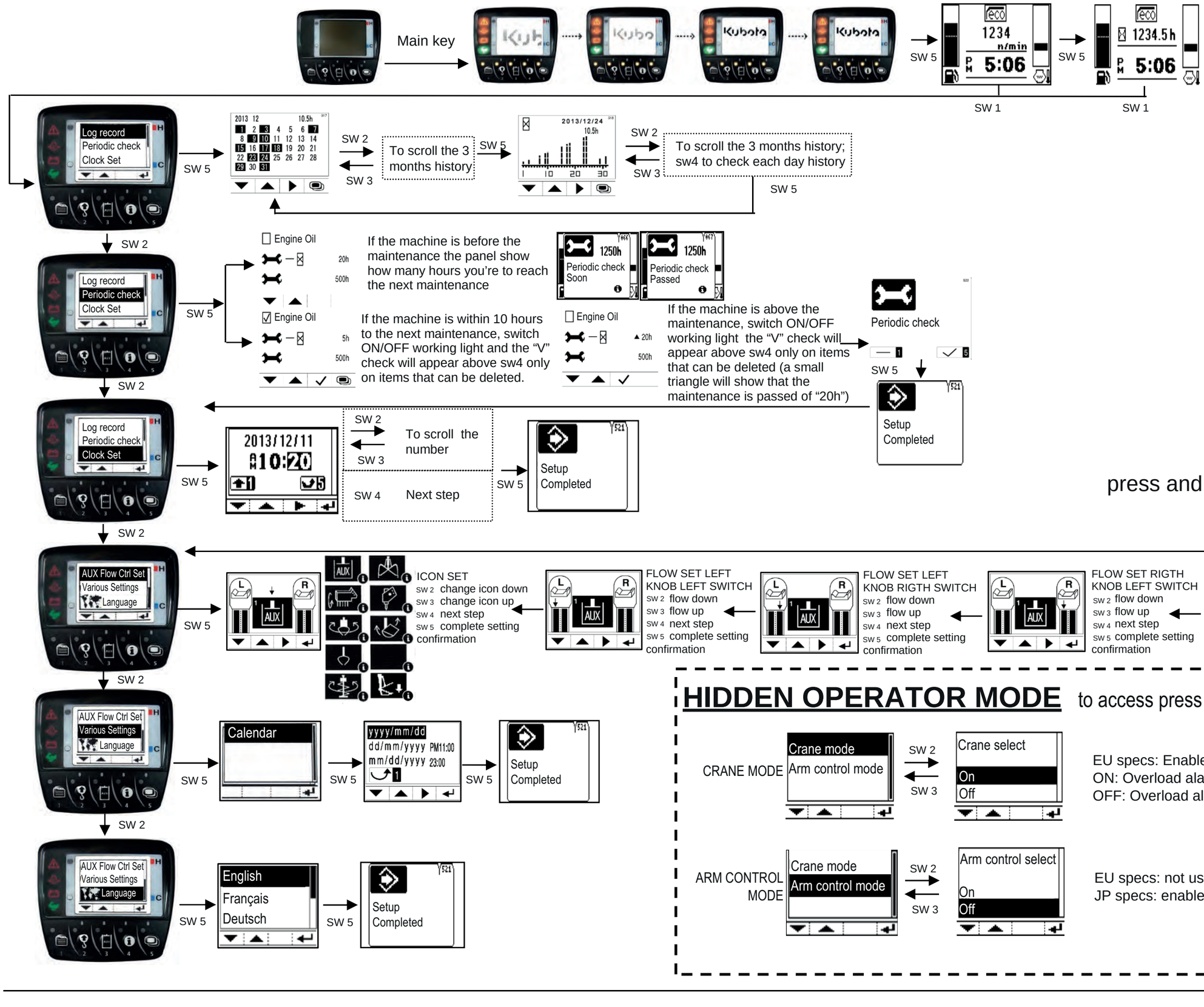
AUX setting value at delivery

Mode	0	1	2	3	4	5
AUX (L)	0	14	14	6	0	0
AUX (R)	0	14	0	6	0	0

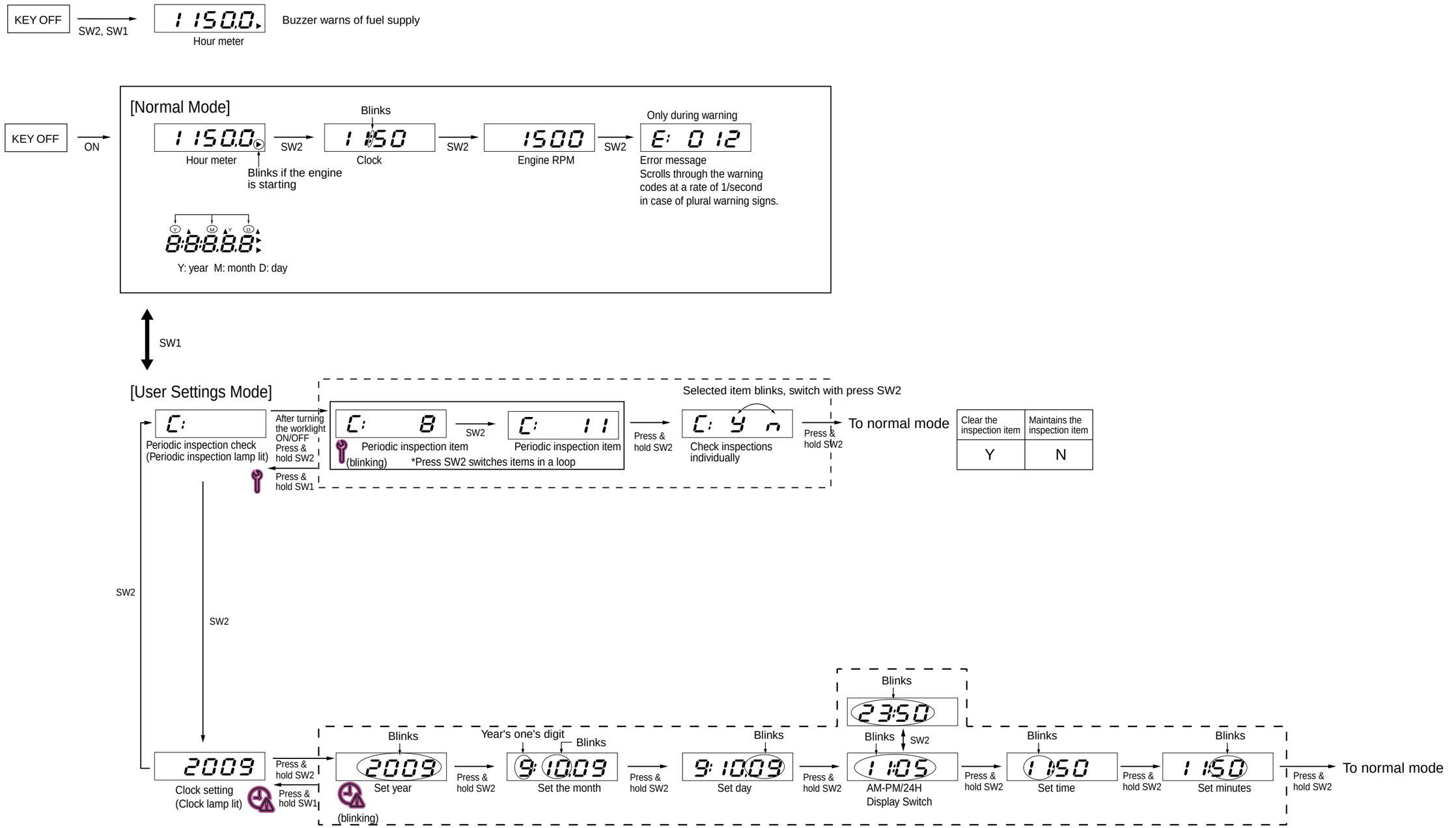
[Basic SW Assignment]
Press SW1: Back
Press SW2: Forward, Switch
Press&hold SW1: All the way back
Press&hold SW2: Set

RY9212091ELT003US

4.1.3 KX080-4, KX080-4α

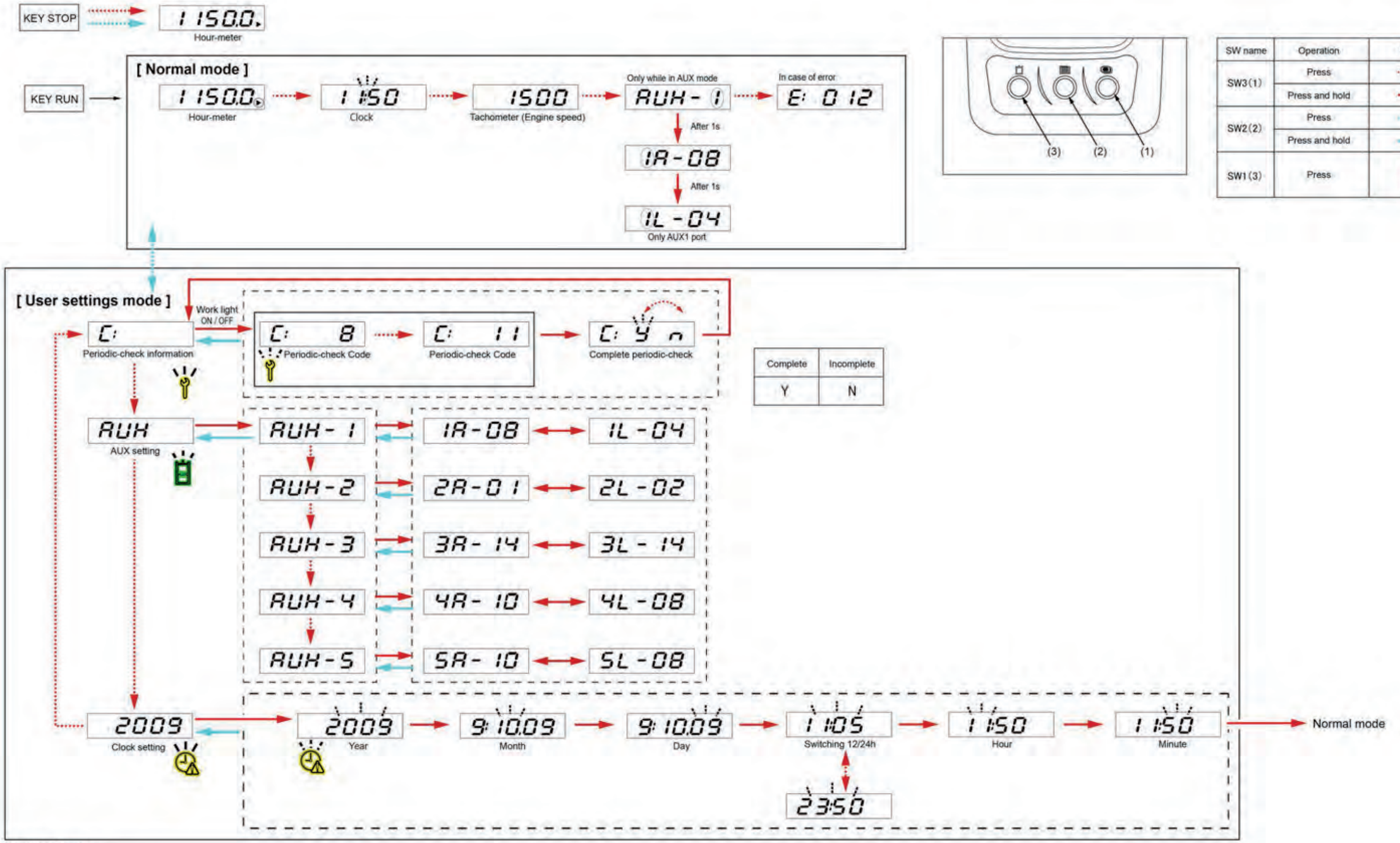


4.1.4 U27-4



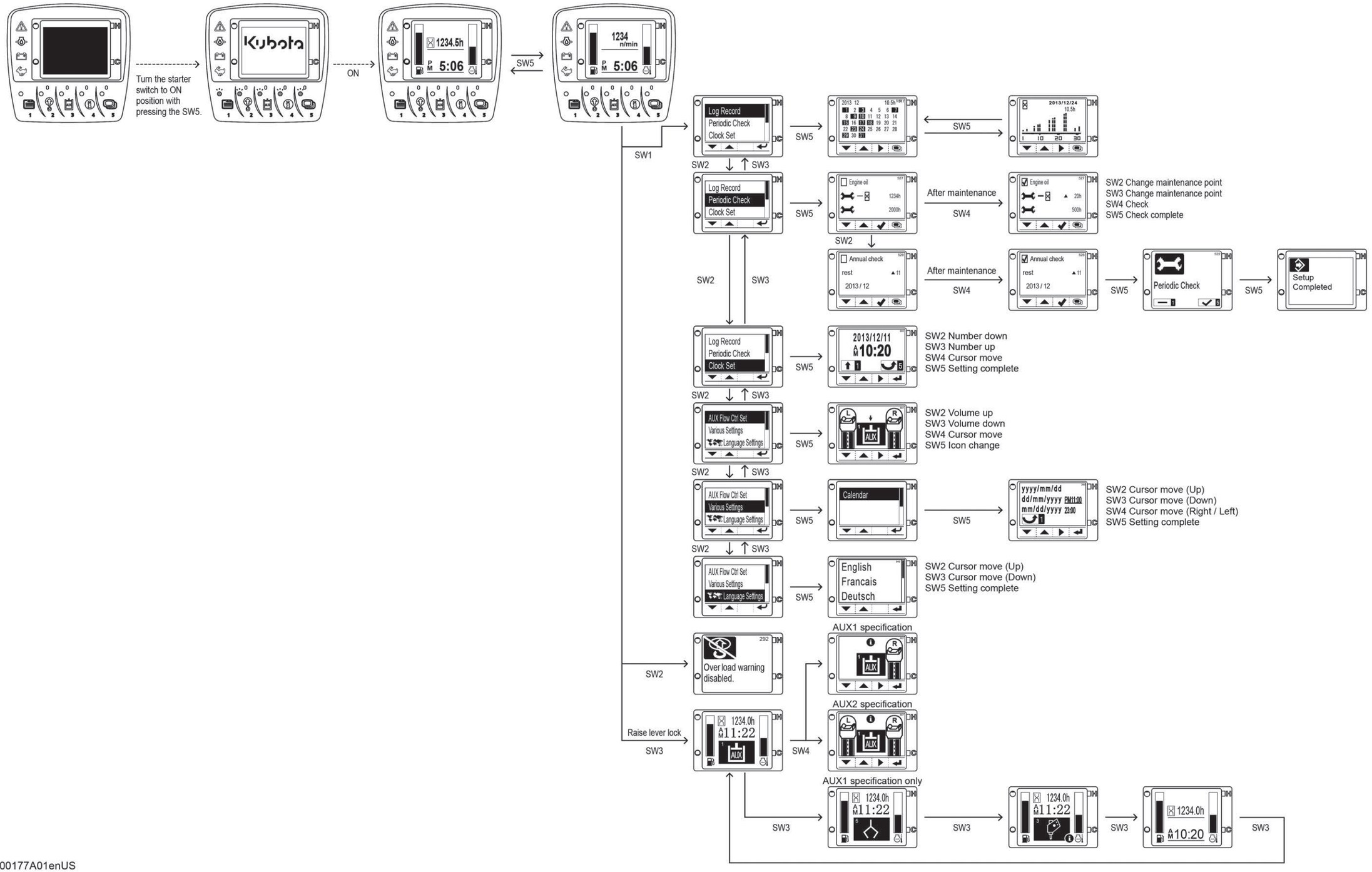
RY9212180ELT003US

4.1.5 KX027-4, KX030-4



2ASTA00271A01enUS

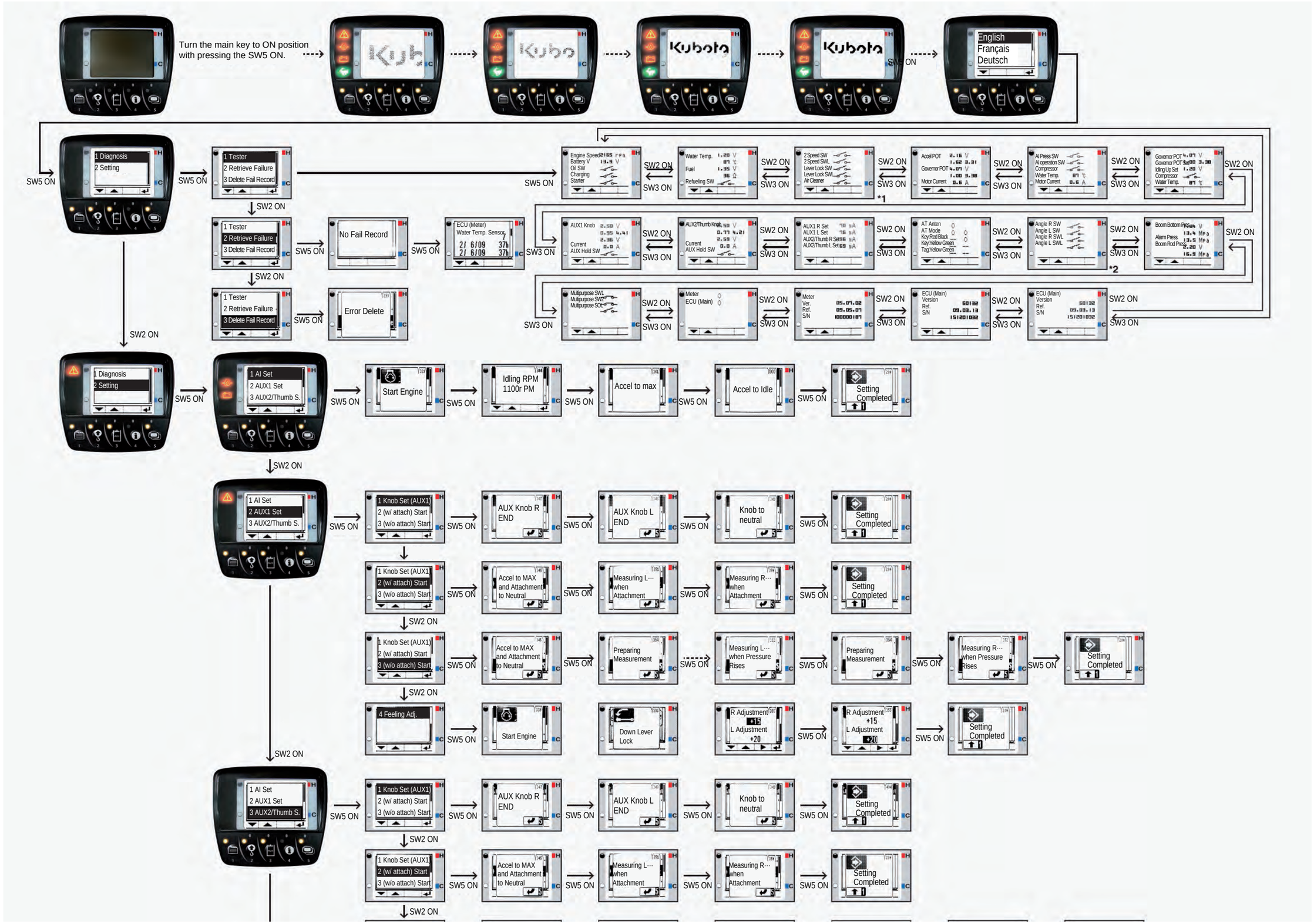
4.1.6 U36-4

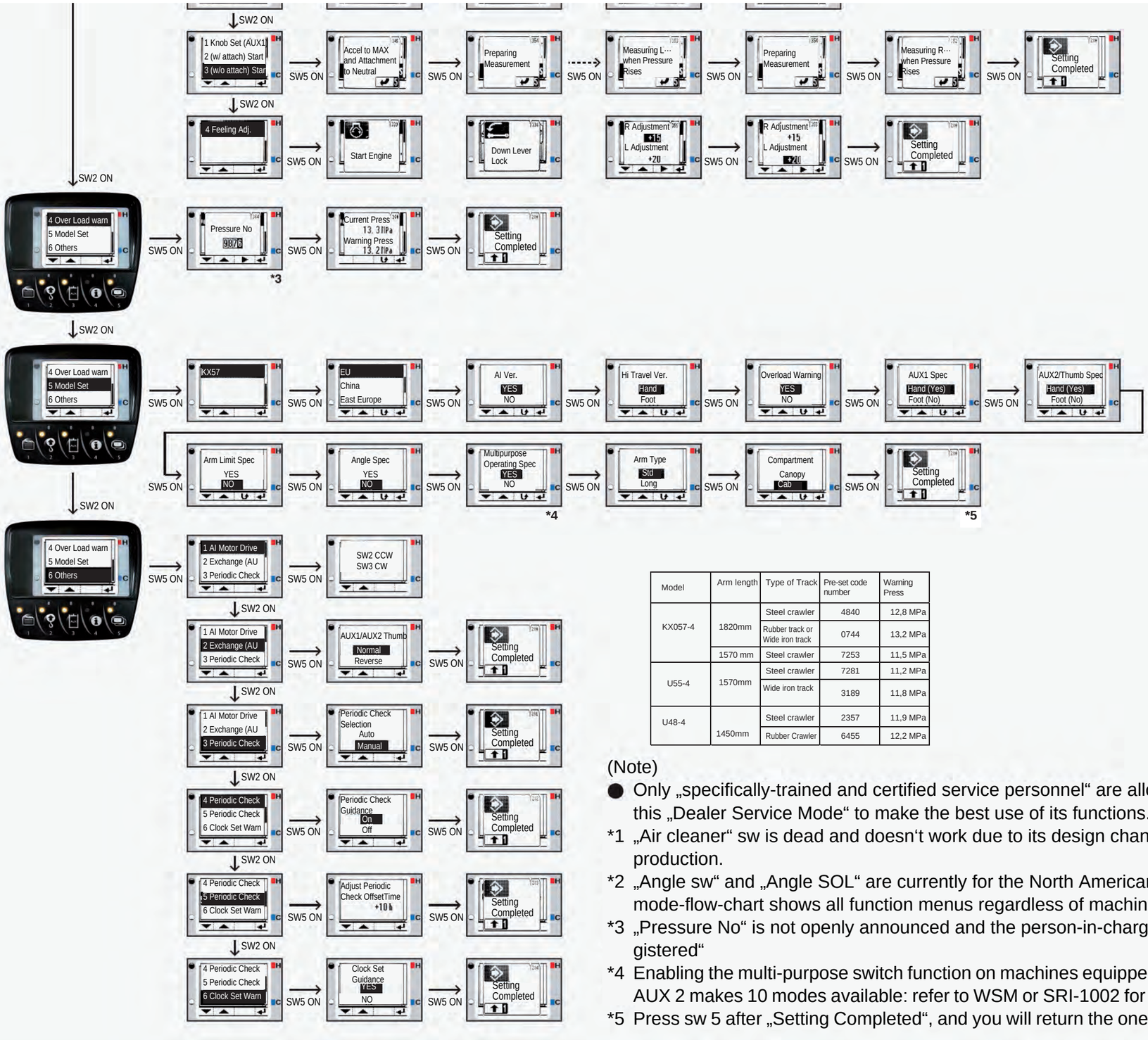


2SPET00177A01enUS

4.2 Dealer setting mode

4.2.1 KX057-4, U55-4, U48-4





Model	Arm length	Type of Track	Pre-set code number	Warning Press
KX057-4	1820mm	Steel crawler	4840	12,8 MPa
		Rubber track or Wide iron track	0744	13,2 MPa
	1570 mm	Steel crawler	7253	11,5 MPa
U55-4	1570mm	Steel crawler	7281	11,2 MPa
		Wide iron track	3189	11,8 MPa
U48-4	1450mm	Steel crawler	2357	11,9 MPa
		Rubber Crawler	6455	12,2 MPa

(Note)

- Only „specifically-trained and certified service personnel“ are allowed to access this „Dealer Service Mode“ to make the best use of its functions.

*1 „Air cleaner“ sw is dead and doesn‘t work due to its design change before mass-production.

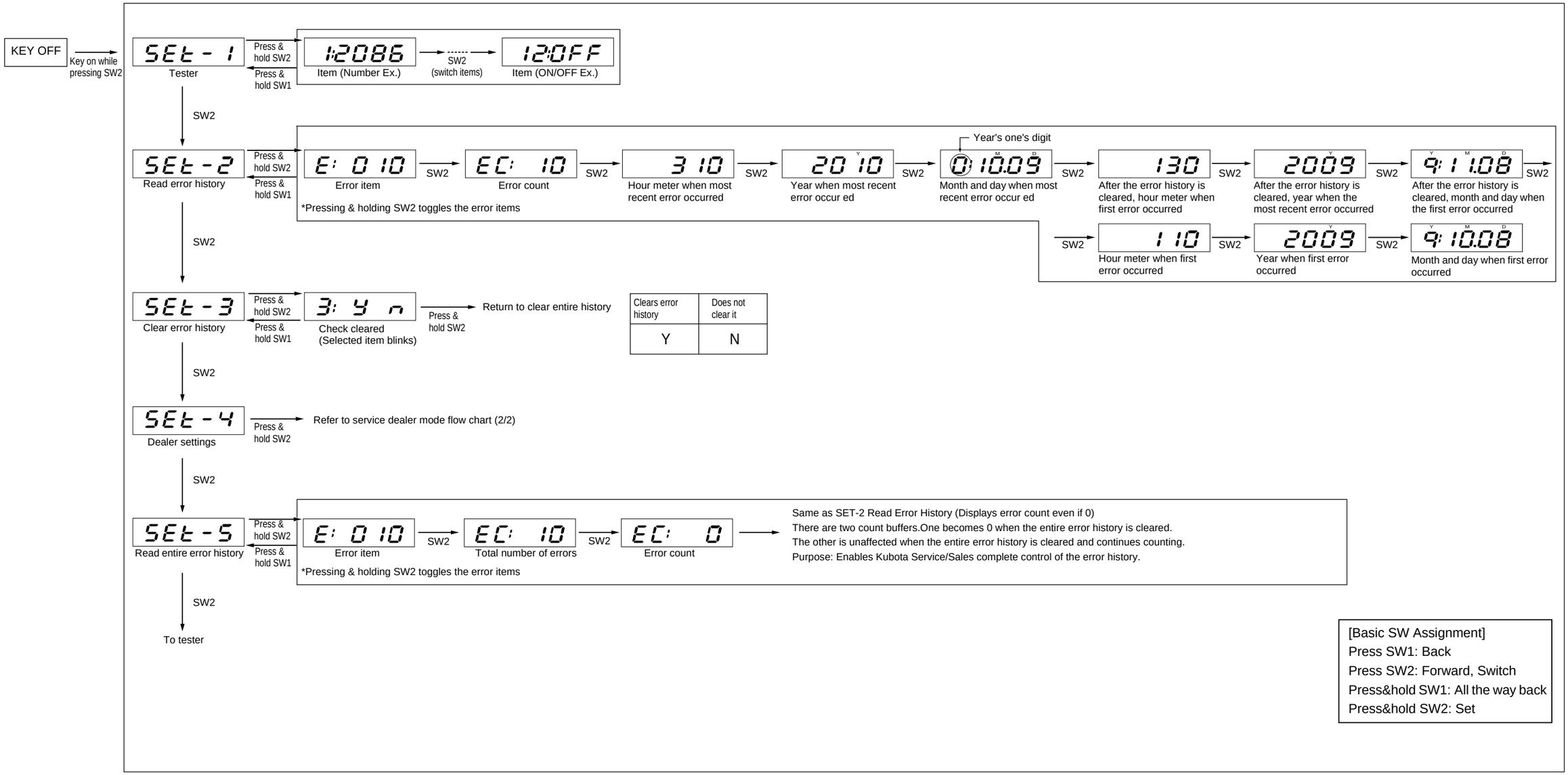
*2 „Angle sw“ and „Angle SOL“ are currently for the North American-version. This mode-flow-chart shows all function menus regardless of machine-version.

*3 „Pressure No“ is not openly announced and the person-in-charge has to be „re-gistered“

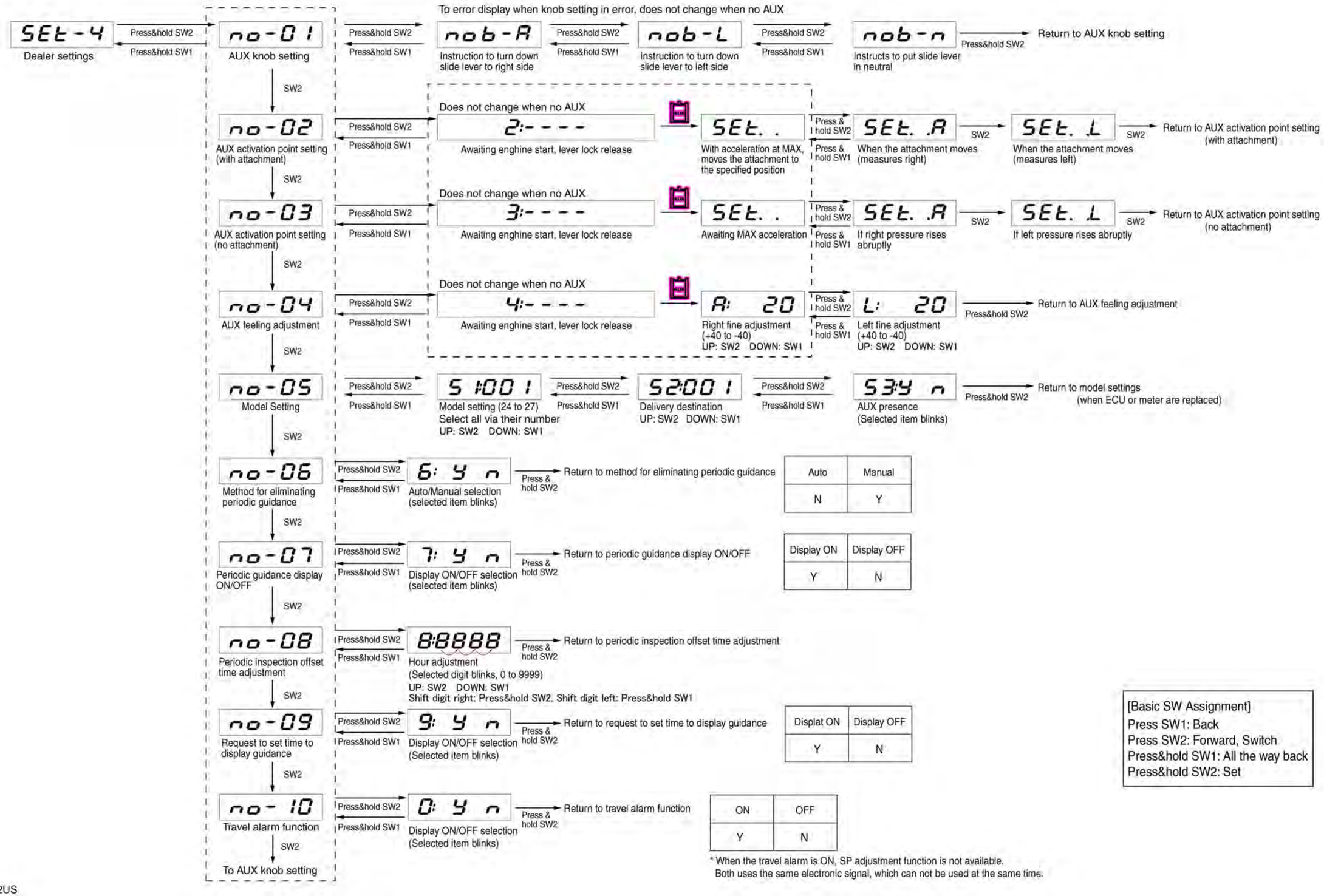
*4 Enabling the multi-purpose switch function on machines equipped with AUX 1 and AUX 2 makes 10 modes available: refer to WSM or SRI-1002 for the configuration.

*5 Press sw 5 after „Setting Completed“, and you will return the one-upper tier scene.

4.2.2 KX015-4, KX016-4, KX018-4, KX019-4



RY9212091ELT005US

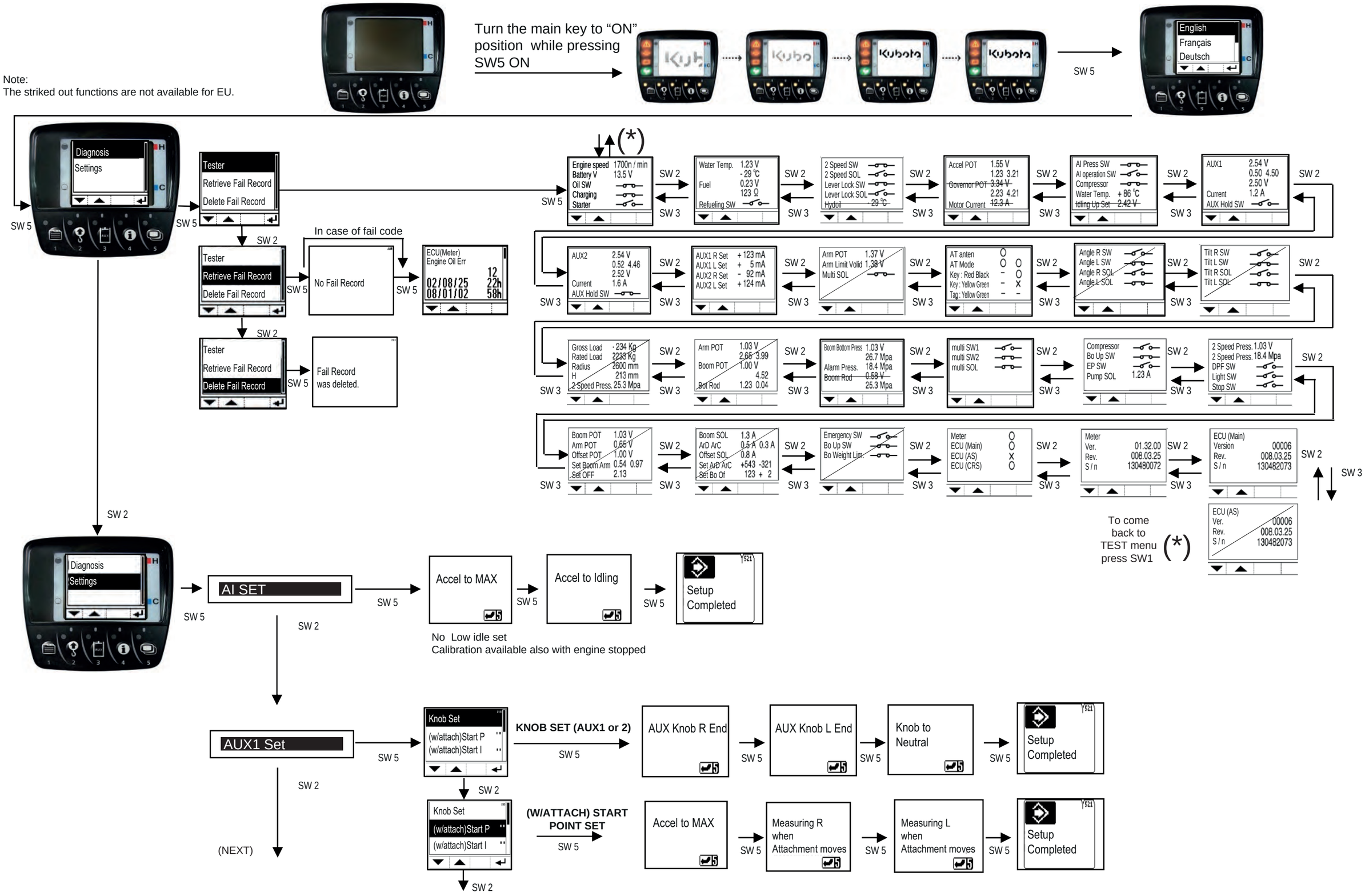


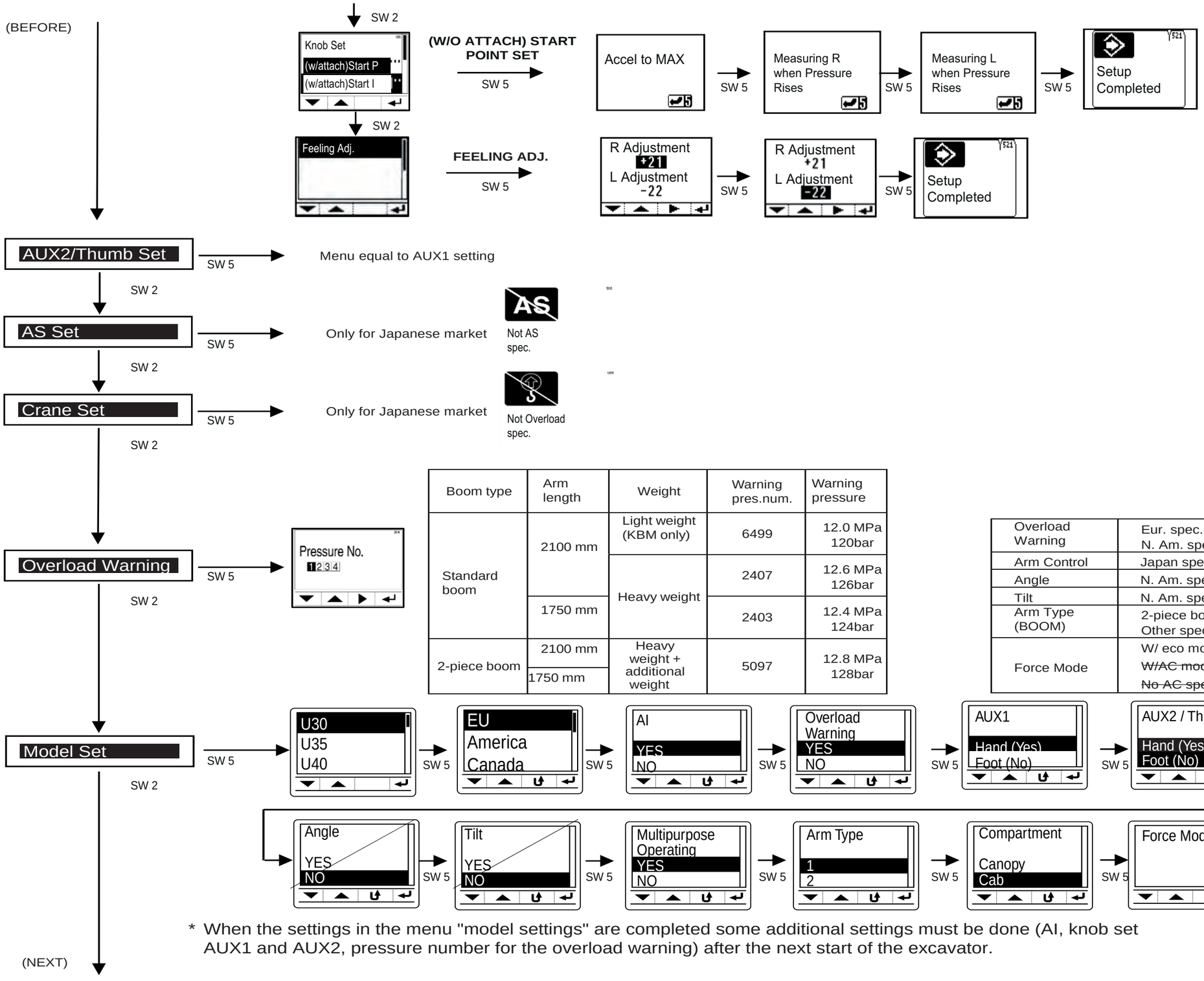
* When the travel alarm is ON, SP adjustment function is not available.
Both uses the same electronic signal, which can not be used at the same time.

RY9212190ELT002US

4.2.3 KX080-4

Note:
The striked out functions are not available for EU.

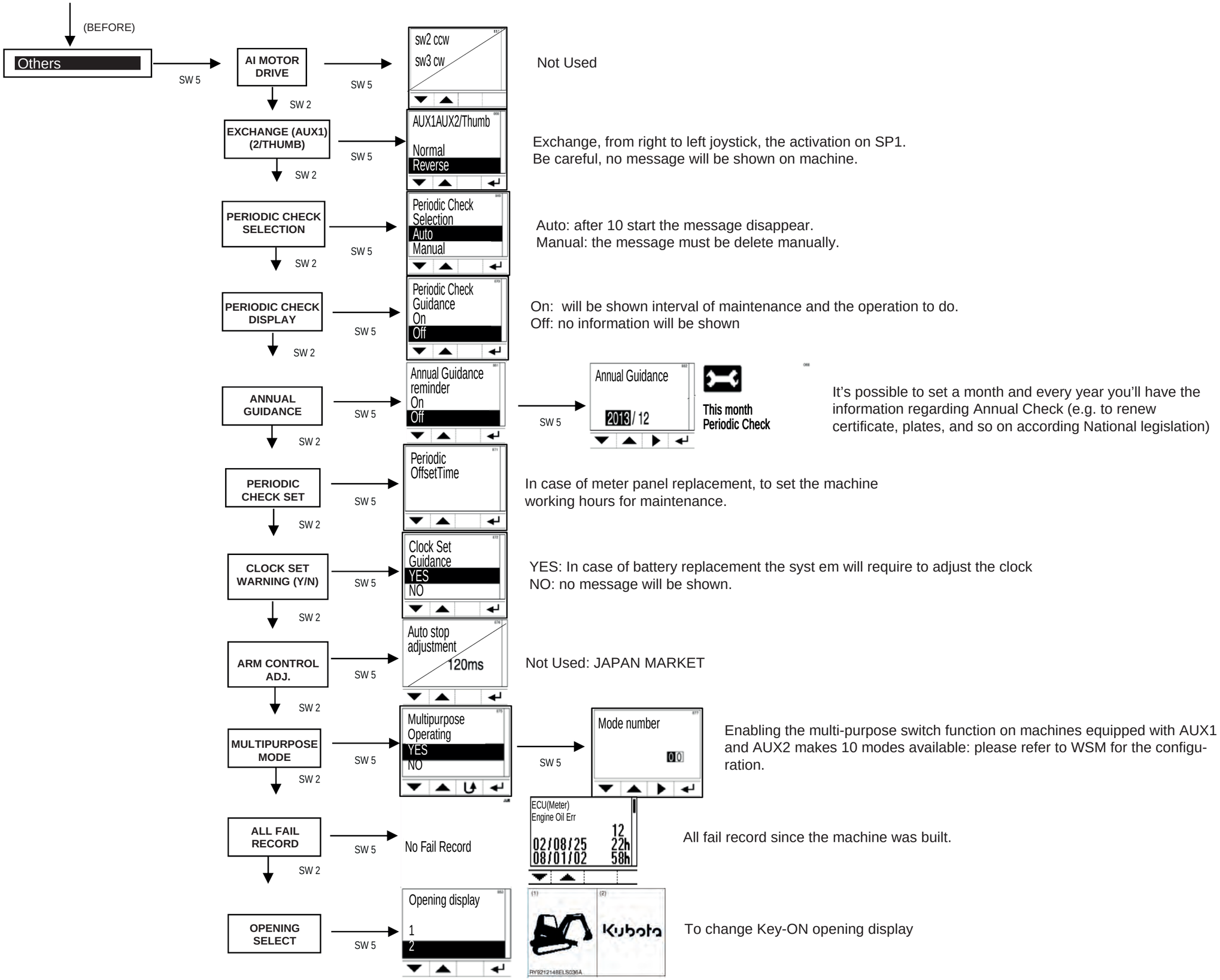




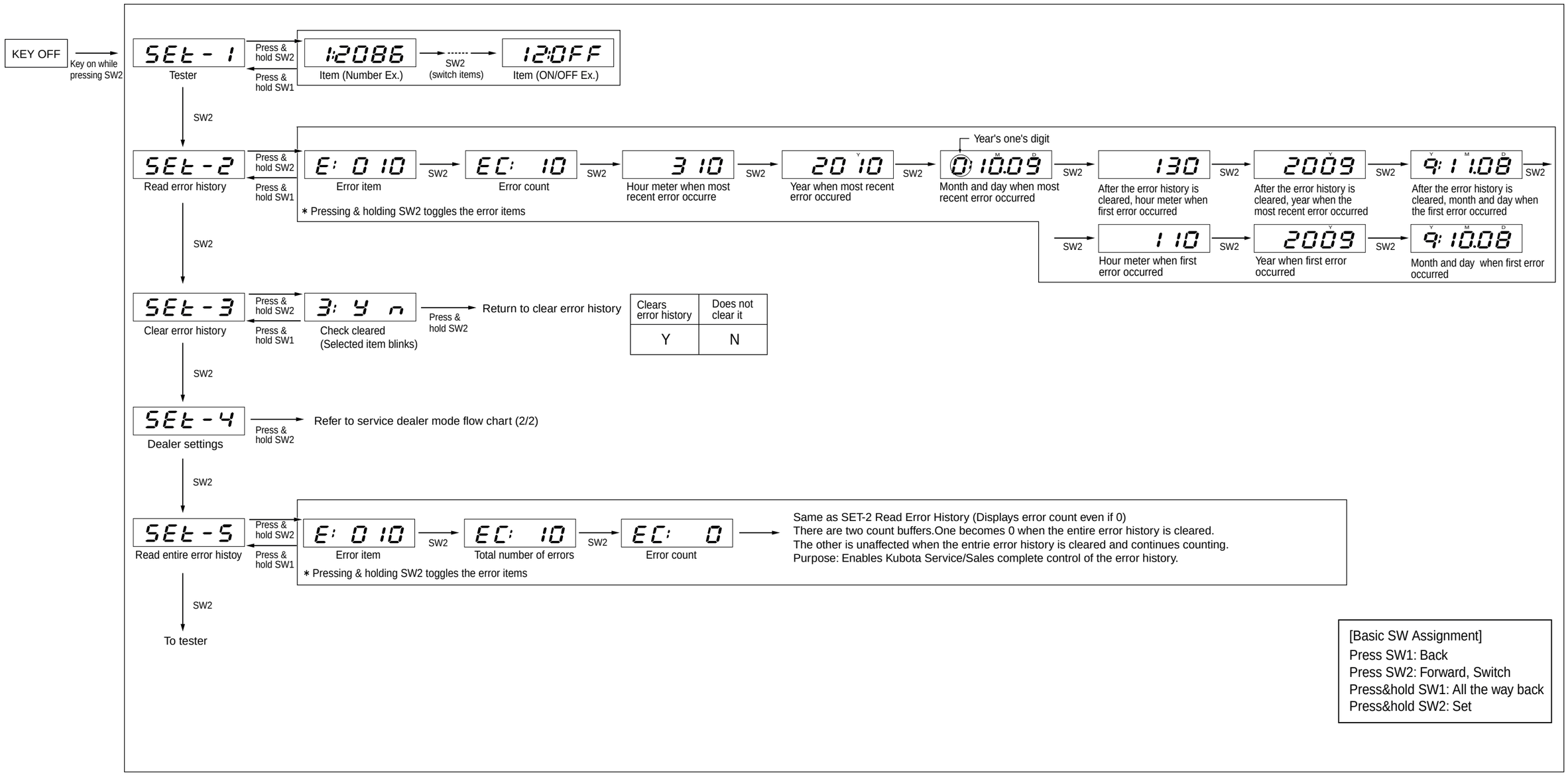
Boom type	Arm length	Weight	Warning pres.num.	Warning pressure
Standard boom	2100 mm	Light weight (KBM only)	6499	12.0 MPa 120bar
		Heavy weight	2407	12.6 MPa 126bar
	1750 mm		2403	12.4 MPa 124bar
2-piece boom	2100 mm	Heavy weight + additional weight	5097	12.8 MPa 128bar
	1750 mm			

Overload Warning	Eur. spec.: YES N. Am. spec.: NO
Arm Control	Japan spec.: YES (Arm limit spec. only)
Angle	N. Am. spec.: YES (Angle spec. only)
Tilt	N. Am. spec.: YES (Tilt spec. only)
Arm Type (BOOM)	2-piece boom spec.: 2 Other specs.: 1
Force Mode	W/ eco mode spec.:1 (KX080-4) ~~W/AC mode spec.:2~~ ~~No AC spec.: 0~~

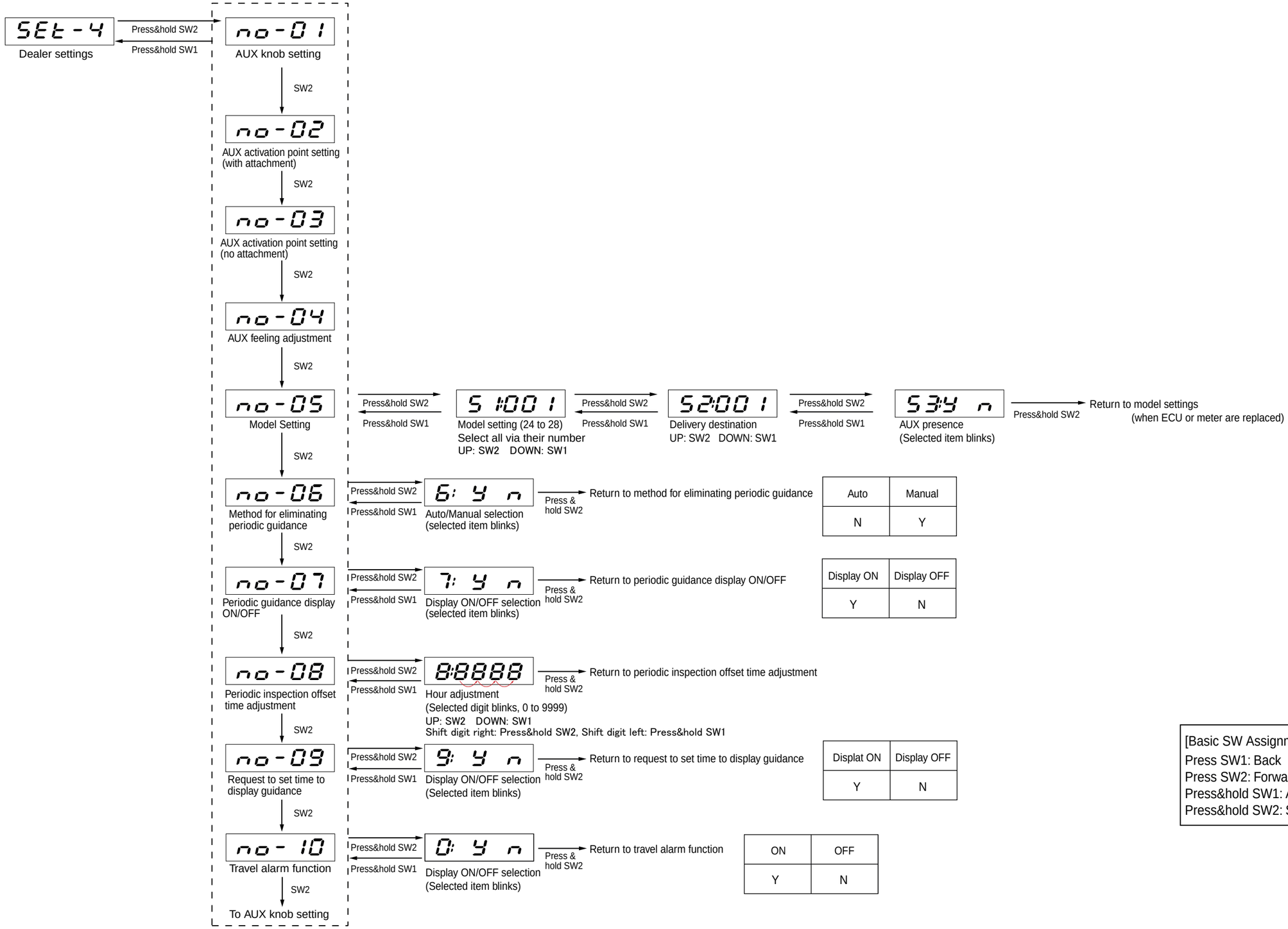
* When the settings in the menu "model settings" are completed some additional settings must be done (AI, knob set AUX1 and AUX2, pressure number for the overload warning) after the next start of the excavator.


(BEFORE)
Others
SW 5
AI MOTOR DRIVE
SW 5
sw2 ccw
sw3 cw
Not Used
SW 2
EXCHANGE (AUX1) (2/THUMB)
SW 5
AUX1AUX2/Thumb
Normal
Reverse
Exchange, from right to left joystick, the activation on SP1.
Be careful, no message will be shown on machine.
SW 2
PERIODIC CHECK SELECTION
SW 5
Periodic Check Selection
Auto
Manual
Auto: after 10 start the message disappear.
Manual: the message must be delete manually.
SW 2
PERIODIC CHECK DISPLAY
SW 5
Periodic Check Guidance
On
Off
On: will be shown interval of maintenance and the operation to do.
Off: no information will be shown
SW 2
ANNUAL GUIDANCE
SW 5
Annual Guidance reminder
On
Off
SW 5
Annual Guidance
2013/12
This month Periodic Check
It's possible to set a month and every year you'll have the information regarding Annual Check (e.g. to renew certificate, plates, and so on according National legislation)
SW 2
PERIODIC CHECK SET
SW 5
Periodic OffsetTime
In case of meter panel replacement, to set the machine working hours for maintenance.
SW 2
CLOCK SET WARNING (Y/N)
SW 5
Clock Set Guidance
YES
NO
YES: In case of battery replacement the syst em will require to adjust the clock
NO: no message will be shown.
SW 2
ARM CONTROL ADJ.
SW 5
Auto stop adjustment
120ms
Not Used: JAPAN MARKET
SW 2
MULTIPURPOSE MODE
SW 5
Multipurpose Operating
YES
NO
SW 5
Mode number
00
Enabling the multi-purpose switch function on machines equipped with AUX1 and AUX2 makes 10 modes available: please refer to WSM for the configuration.
SW 2
ALL FAIL RECORD
SW 5
No Fail Record
ECU(Meter)
Engine Oil Err
12
02/08/25 22h
08/01/02 58h
All fail record since the machine was built.
SW 2
OPENING SELECT
SW 5
Opening display
1
2
(1)
(2)
Kubota
RY921214BELS036A
To change Key-ON opening display

4.2.4 U27-4

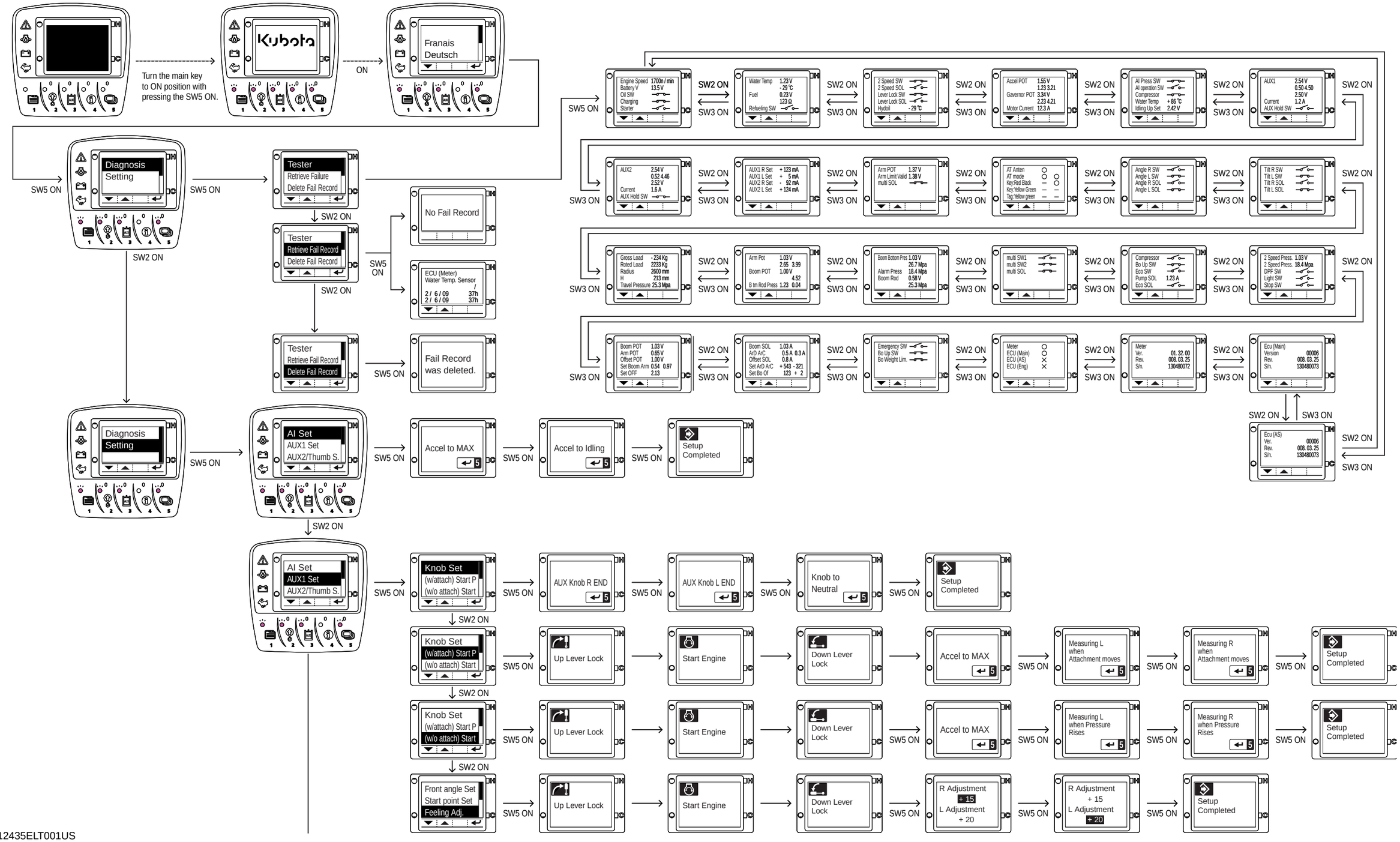


RY9212091ELT005US

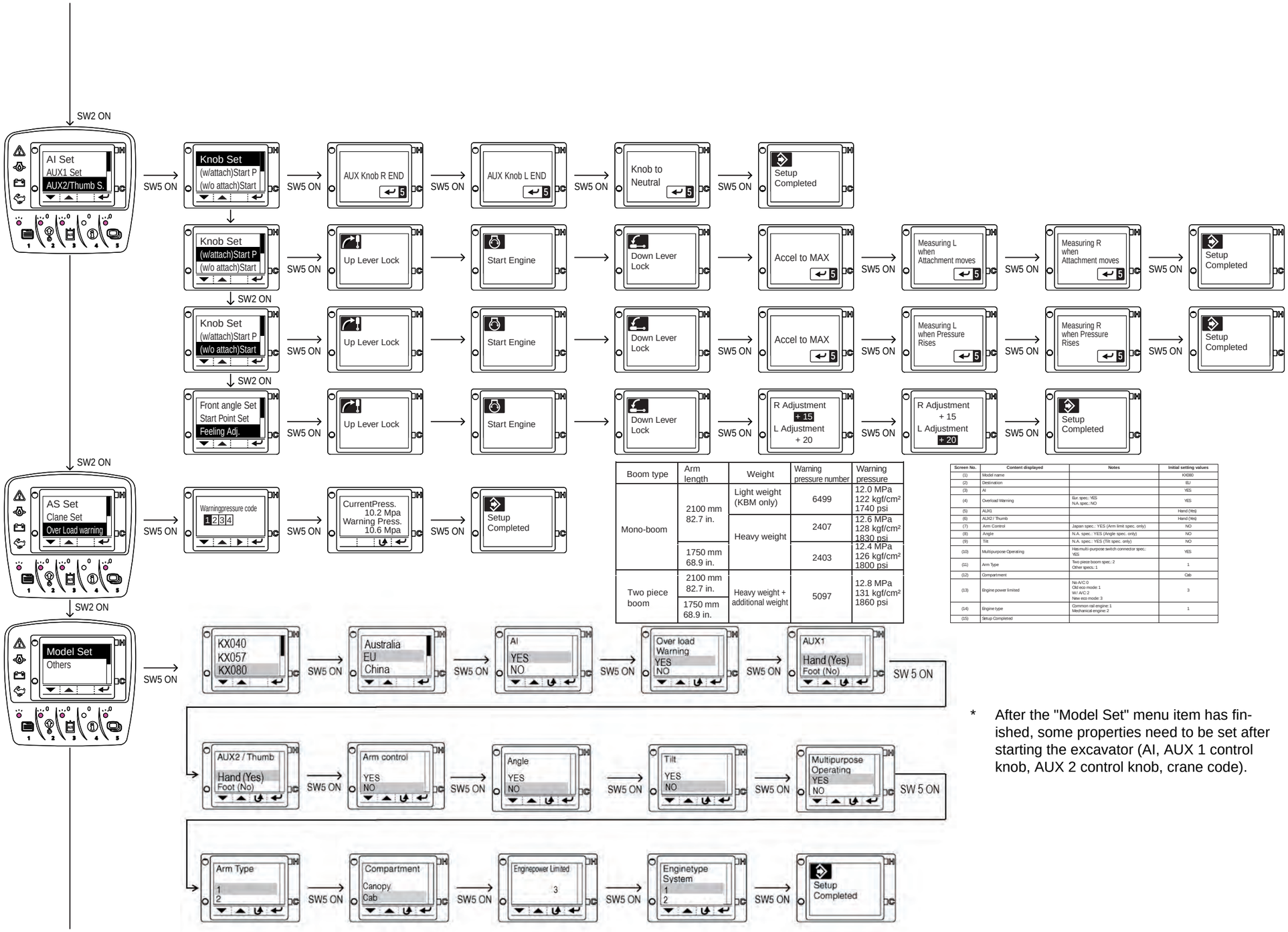


RY9212180ELT004US

4.2.5 KX080-4α



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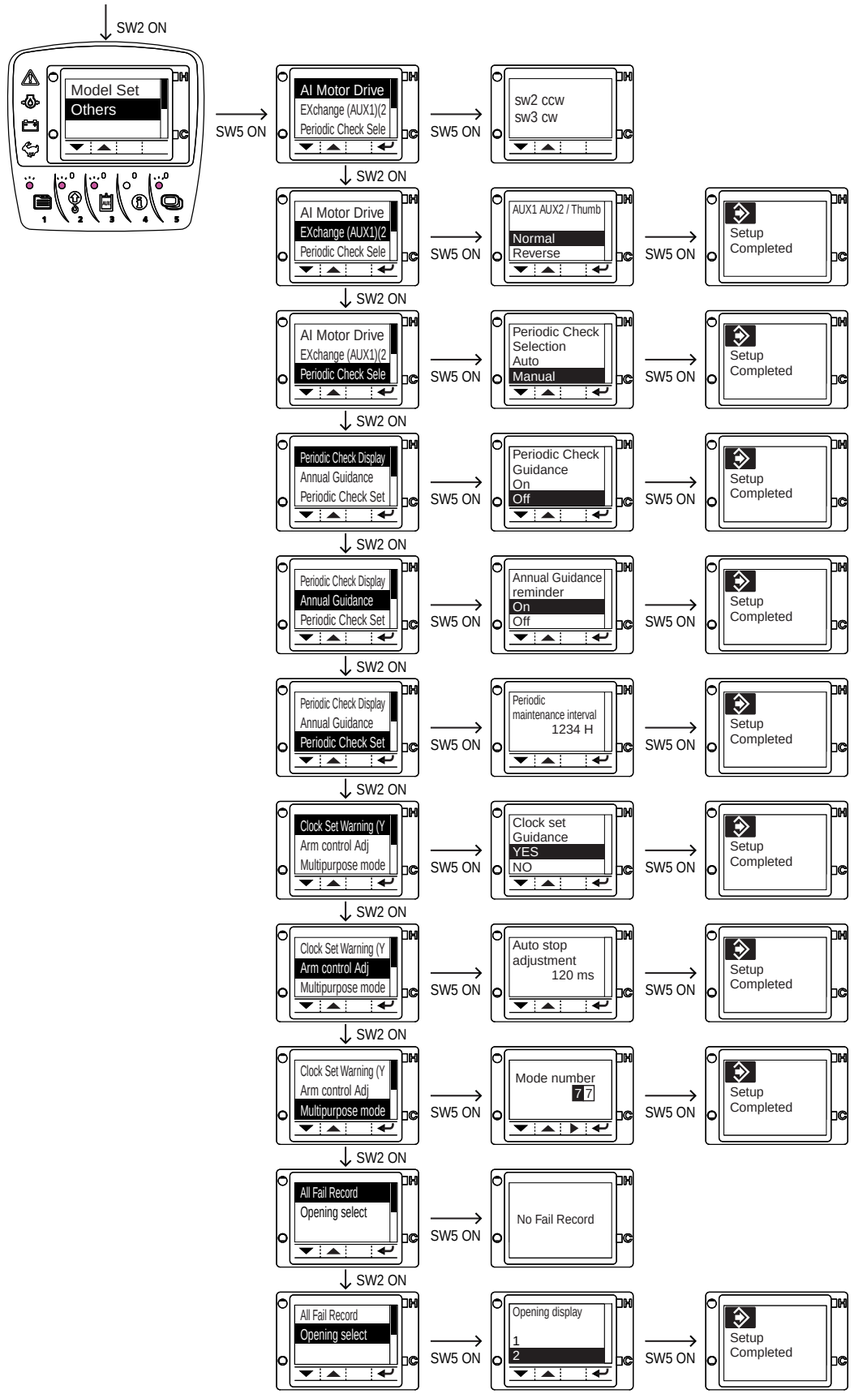


Boom type	Arm length	Weight	Warning pressure number	Warning pressure
Mono-boom	2100 mm 82.7 in.	Light weight (KBM only)	6499	12.0 MPa 122 kgf/cm² 1740 psi
		Heavy weight	2407	12.6 MPa 128 kgf/cm² 1830 psi
	1750 mm 68.9 in.		2403	12.4 MPa 126 kgf/cm² 1800 psi
Two piece boom	2100 mm 82.7 in.	Heavy weight + additional weight	5097	12.8 MPa 131 kgf/cm² 1860 psi
	1750 mm 68.9 in.			

Screen No.	Content displayed	Notes	Initial setting values
(1)	Model name		KH080
(2)	Destination		EU
(3)	AI		YES
(4)	Overload Warning	Eur. spec.: YES N.A. spec.: NO	YES
(5)	AUX1		Hand (Yes)
(6)	AUX2 / Thumb		Hand (Yes)
(7)	Arm Control	Japan spec.: YES (Arm limit spec. only)	NO
(8)	Angle	N.A. spec.: YES (Angle spec. only)	NO
(9)	Tilt	N.A. spec.: YES (Tilt spec. only)	NO
(10)	Multipurpose Operating	Has multi-purpose switch connector spec.: YES	YES
(11)	Arm Type	Two piece boom spec.: 2 Other specs.: 1	1
(12)	Compartment		Cab
(13)	Engine power limited	No A/C: 0 Old eco mode: 1 W/ A/C: 2 New eco mode: 3	3
(14)	Engine type	Common rail engine: 1 Mechanical engine: 2	1
(15)	Setup Completed		

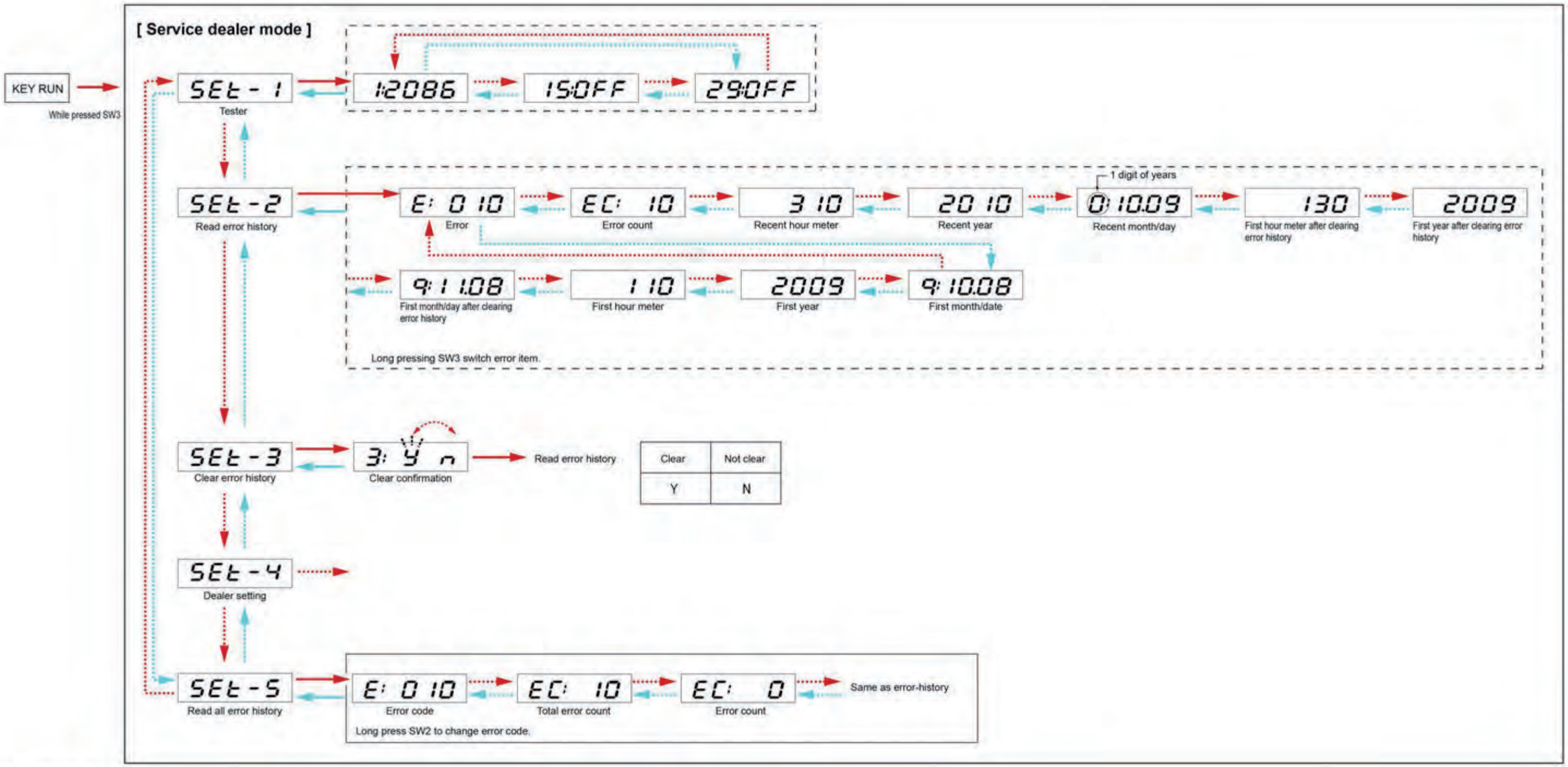
* After the "Model Set" menu item has finished, some properties need to be set after starting the excavator (AI, AUX 1 control knob, AUX 2 control knob, crane code).

RY9212435ELT002US

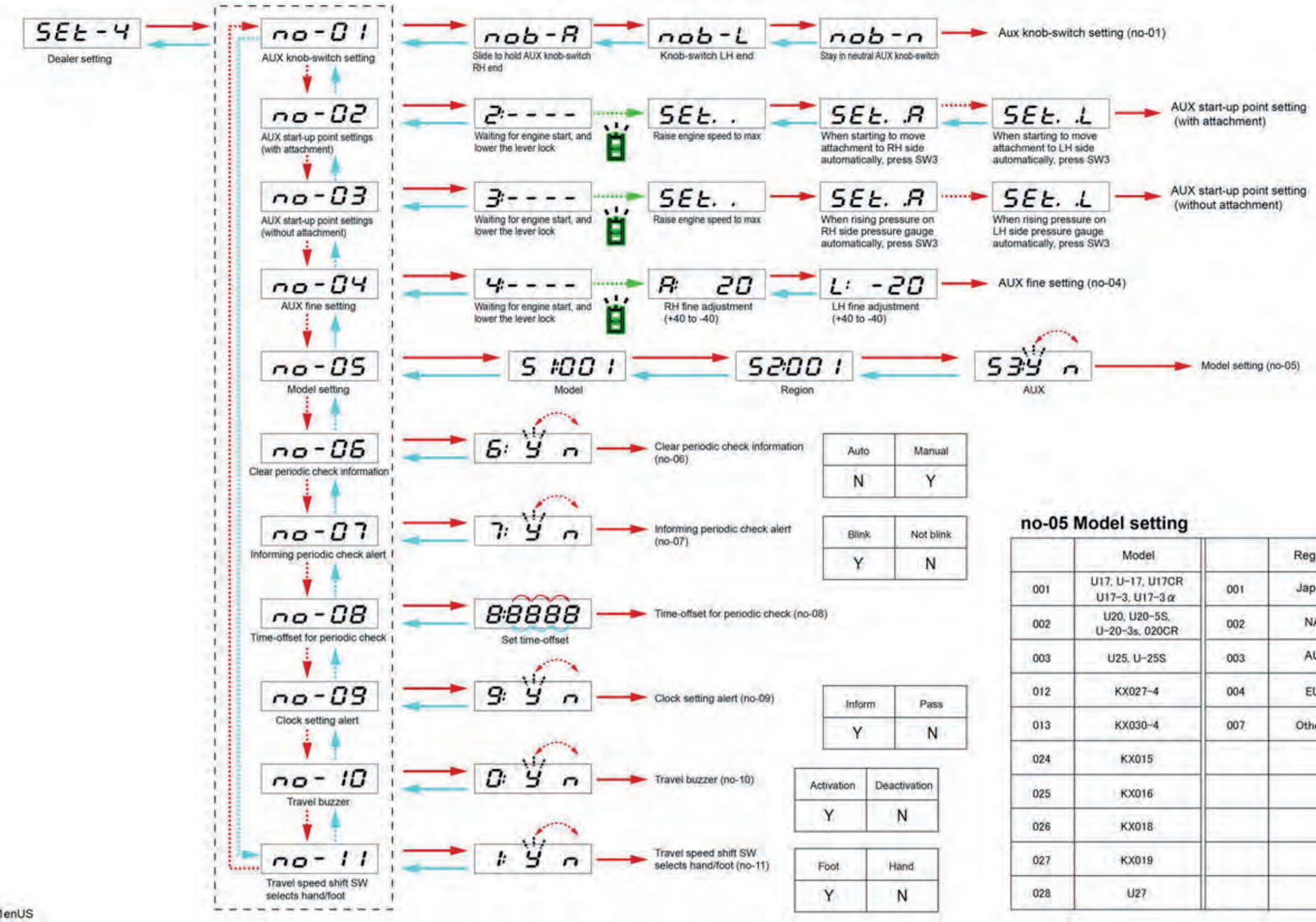


RY9212435ELT003US

4.2.6 KX027-4



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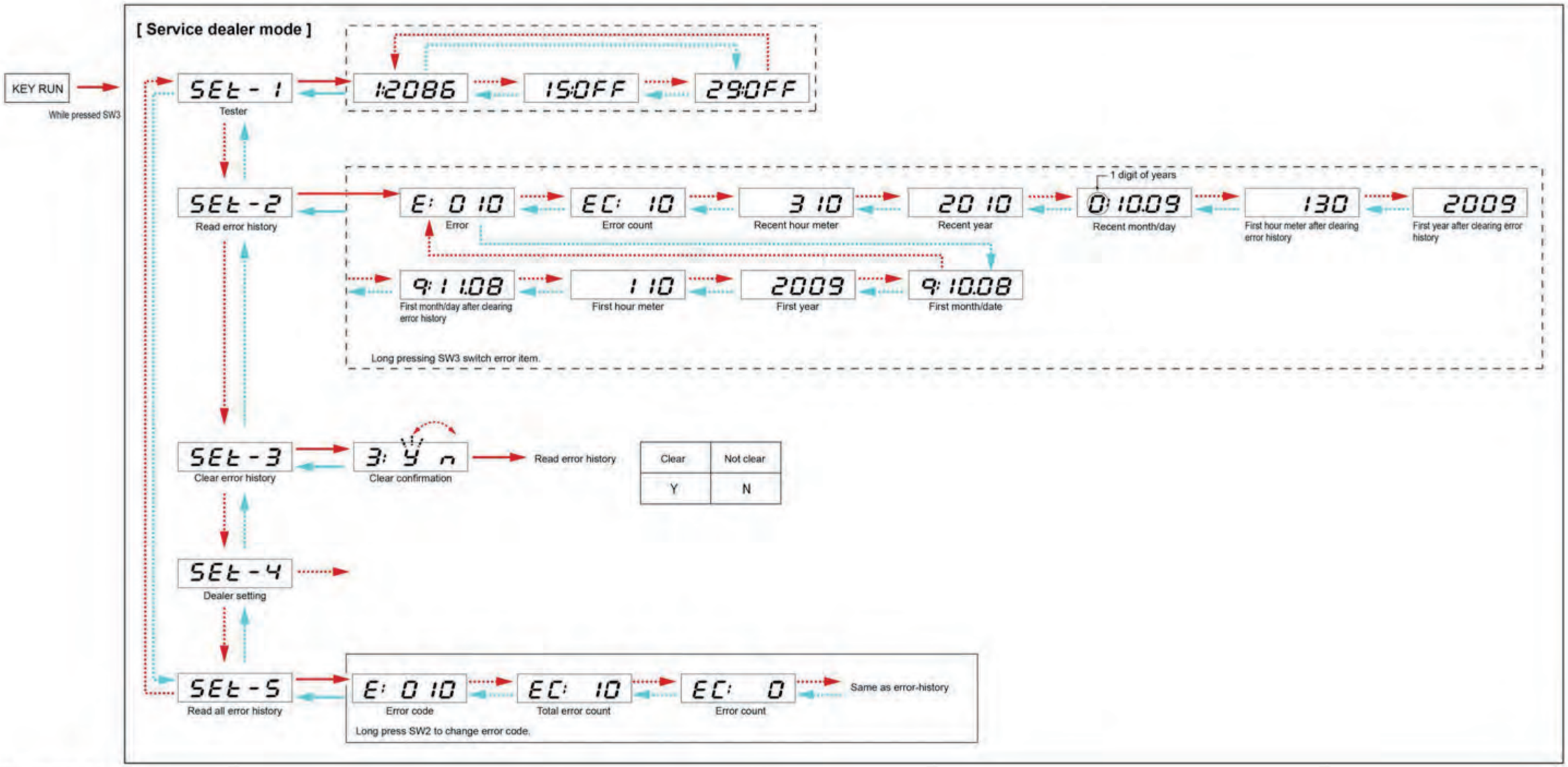


no-05 Model setting

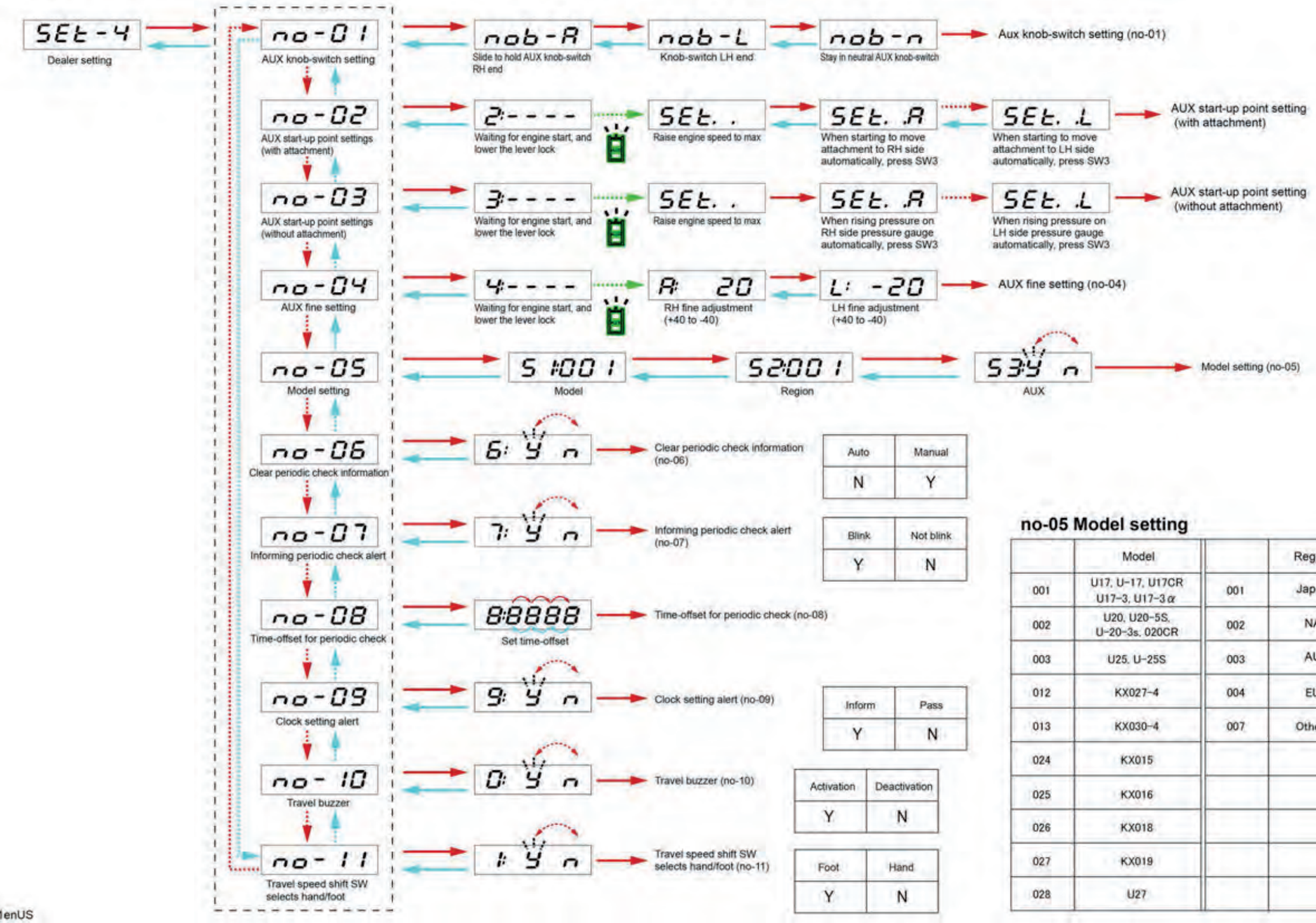
	Model		Region		AUX
001	U17, U-17, U17CR U17-3, U17-3α	001	Japan	Y	Proportional AUX (Kubota software control)
002	U20, U20-5S, U-20-3s, 020CR	002	NA	N	Other
003	U25, U-25S	003	AU		
012	KX027-4	004	EU		
013	KX030-4	007	Others		
024	KX015				
025	KX016				
026	KX018				
027	KX019				
028	U27				

2ASTA00273A01enUS

4.2.7 KX030-4



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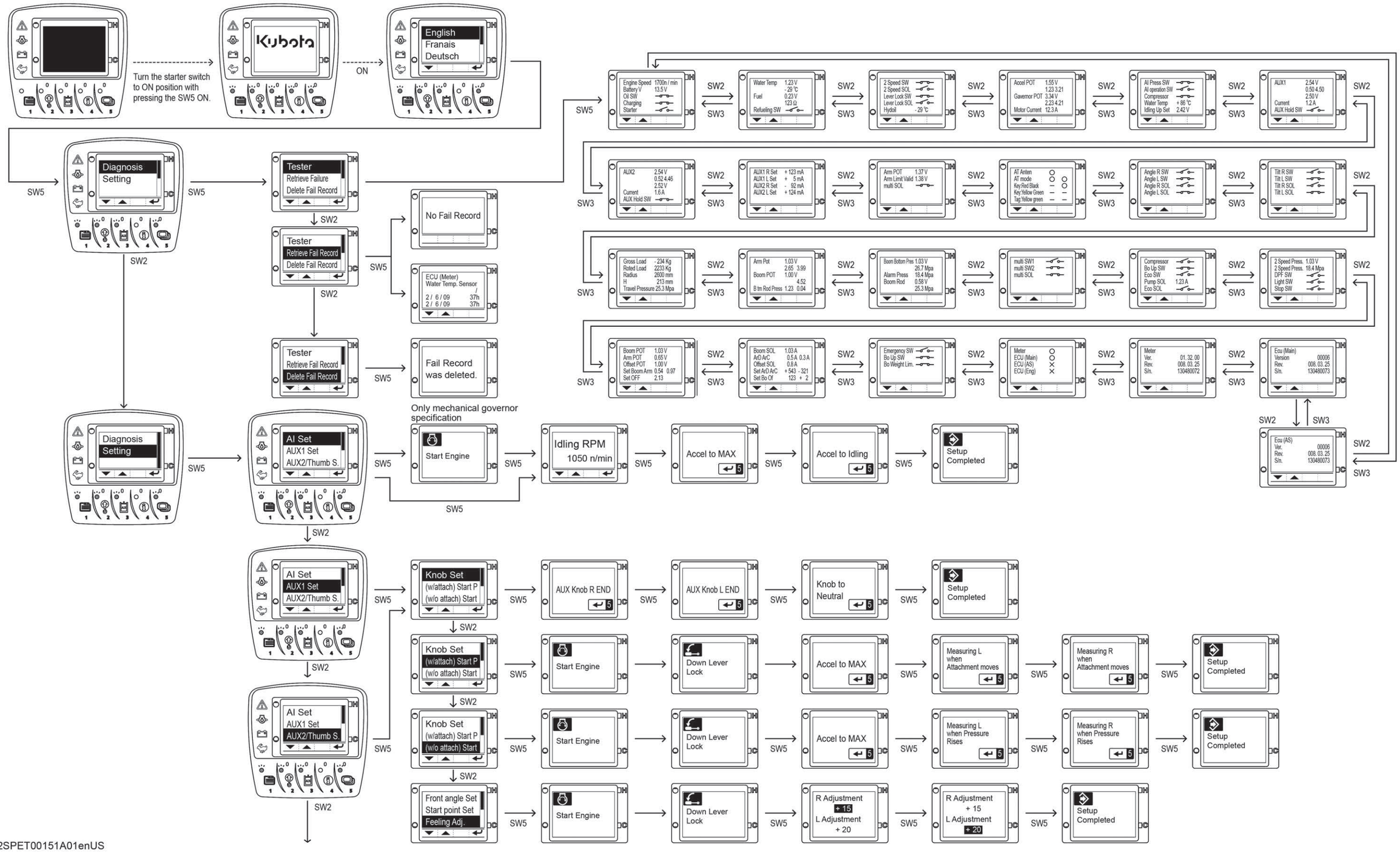


no-05 Model setting

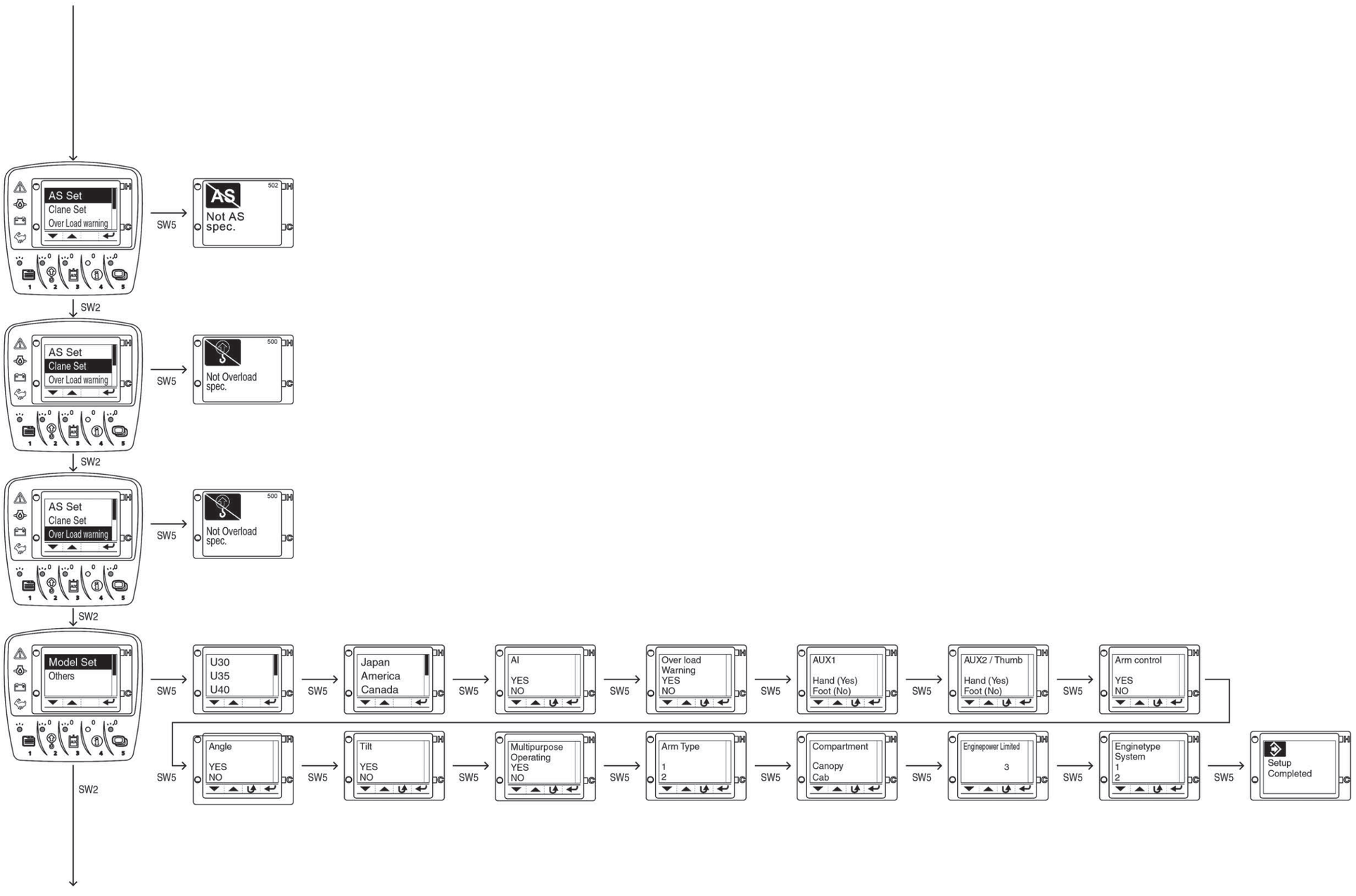
	Model		Region		AUX
001	U17, U-17, U17CR U17-3, U17-3α	001	Japan	Y	Proportional AUX (Kubota software control)
002	U20, U20-5S, U-20-3s, 020CR	002	NA	N	Other
003	U25, U-25S	003	AU		
012	KX027-4	004	EU		
013	KX030-4	007	Others		
024	KX015				
025	KX016				
026	KX018				
027	KX019				
028	U27				

2ASTA00273A01enUS

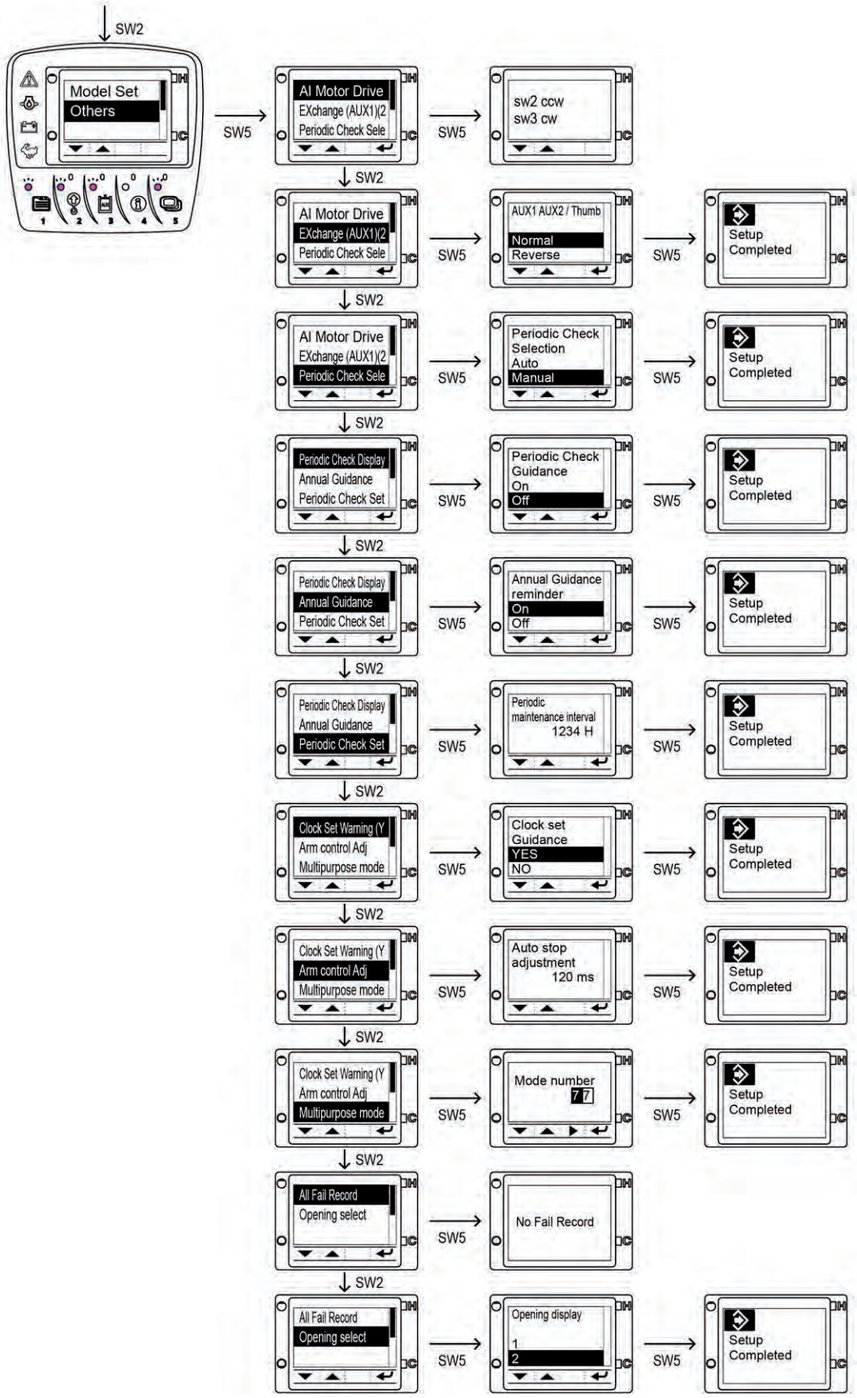
4.2.8 U36-4



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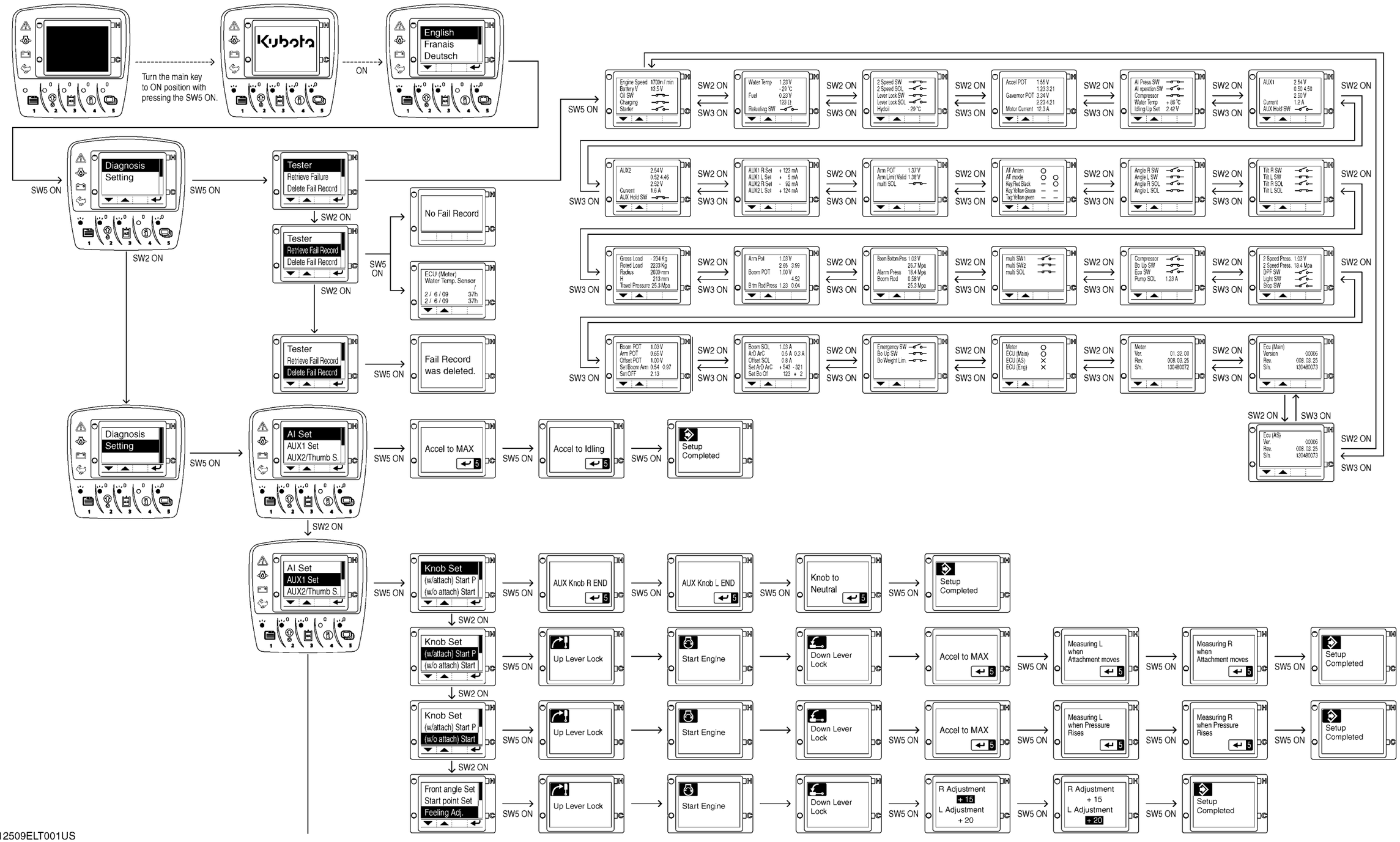


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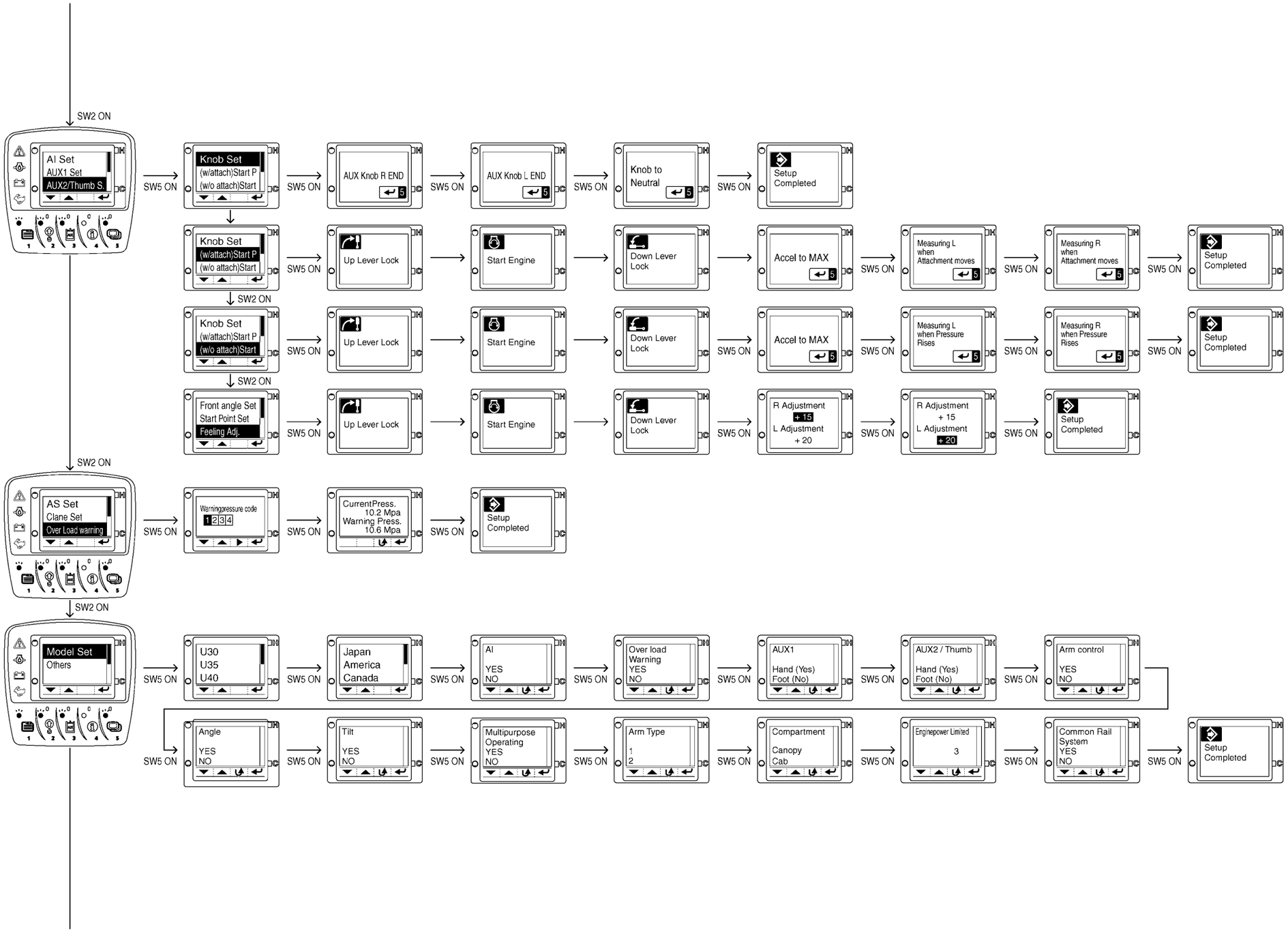


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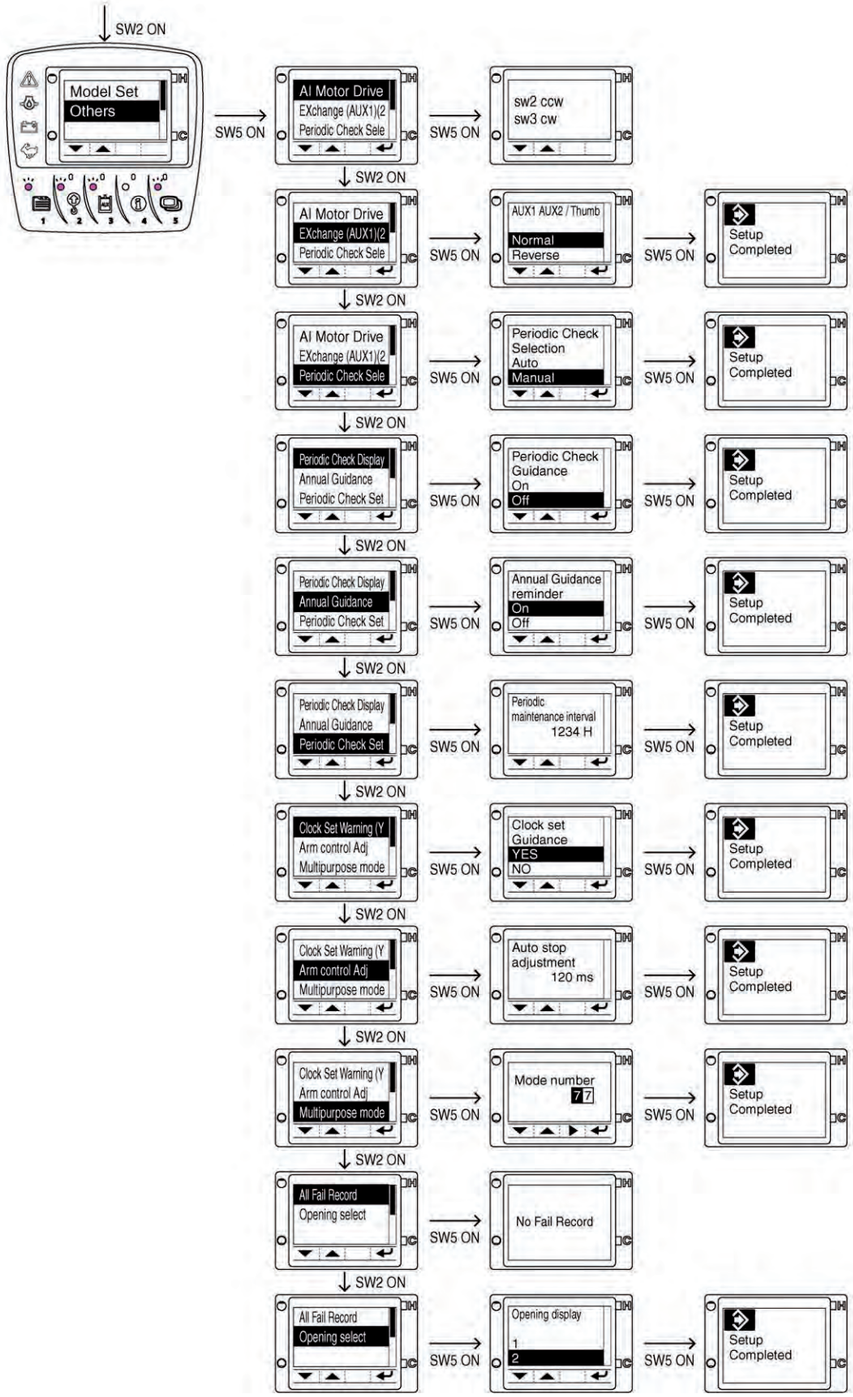
4.2.9 KX042-4



RY9212509ELT001US



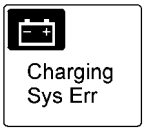
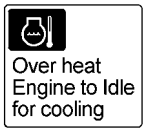
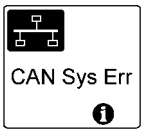
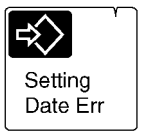
RY9212509ELT002US



RY9212435ELT003US

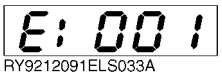
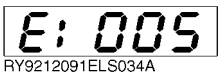
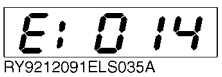
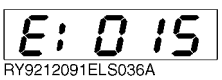
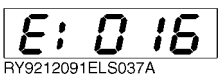
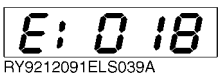
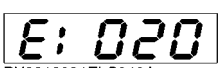
4.3 Failure codes

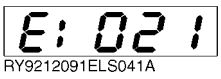
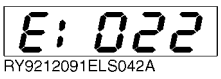
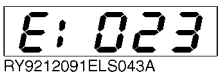
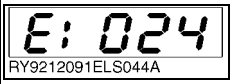
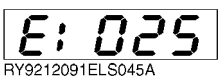
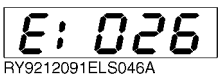
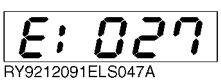
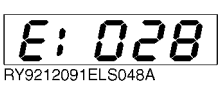
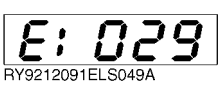
4.3.1 KX057-4, U55-4, U48-4

List of failure codes				refer to WSM chapter 4, section
	N°	Failure code	Cause of generation and the measure	
ECU (Meter)	000		Detect the decrease in the engine oil pressure. The oil switch is in trouble or defect in harness, repair or replace it.	6.1.1
	001		Detect the power generation decrease. The alternator is in trouble or the fan belt came off or defect in harness, repair or replace it.	6.1.2
	002		The machine is overheated and must cool off by idling. Refill the radiator with coolant by its boiled-over amount. Unclog the radiator and other components before use again.	
	003		The fuel sensor is in trouble or defect in harness, repair or replace it.	6.1.3
	004		The water temperature sensor is in trouble or defect in harness, repair or replace it.	6.1.4
	005		Defect in harness or defect in ECU (main), repair or replace it.	6.6.1
	007		Set the model again. It is defective in the meter when still not repaired.	
ECU (Main)	000		The lever lock Sol is in trouble or defect in harness, repair or replace it.	6.2.1
	001		The travel 2-speed Sol is in trouble or defect in harness, repair or replace it.	6.2.2
	002		The multipurpose Sol is in trouble or defect in harness, repair or replace it.	
	003		The AUX1 port knob is in trouble or defect in harness, repair or replace it.	6.7.1
	004		The AUX1 sol (right) is in trouble or defect in harness, repair or replace it.	6.7.1

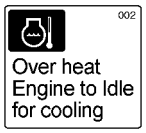
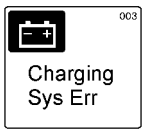
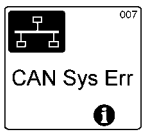
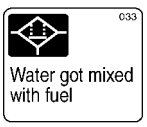
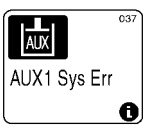
List of failure codes				refer to WSM chapter 4, section
	N°	Failure code	Cause of generation and the measure	
ECU (Main)	005	AUX1 Sys Err	The AUX1 sol (left) is in trouble or defect in harness, repair or replace it.	6.7.1
	006	AUX2 Sys Err	The AUX2 port knob is in trouble or defect in harness, repair or replace it.	6.7.1
	007	AUX2 Sys Err	The AUX2 sol (right) is in trouble or defect in harness, repair or replace it.	6.7.1
	008	AUX2 Sys Err	The AUX2 sol (left) is in trouble or defect in harness, repair or replace it.	6.7.1
	009	5V External 5V Sys Err	The sensor's 5V power supply is short-circuited, repair or replace it.	6.5.2
	010	12V External 12V Sys Err	The sensor's or switch's 12V line (travel 2-speed SW and AI pressure SW, angles SW, etc.) is short-circuited, repair or replace it.	6.5.3
	011	Over voltage Sys Err	A jumper cable is connected to a 24 V battery or improper device to get the engine started or the alternator is in trouble, repair or replace it.	6.5.1
	017	Exceed Rated Load	Press the overload warning switch and release the warning. The load being lifted is too heavy. Place it on the ground to lessen the lifting load.	6.8.1
	020	AI Sys Err	The governor sensor is in trouble or defect in harness, repair or replace it.	6.3.1
	021	AI Sys Err	The accelerator sensor is in trouble or defect in harness, repair or replace it.	6.3.2
	022	AI Sys Err	The AI motor is in trouble or defect in harness, repair or replace it.	6.3.3
	024	Anti-theft Sys Err	The antenna for anti-theft is in trouble or defect in harness, repair or replace it.	6.4.1

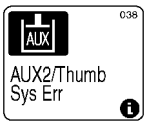
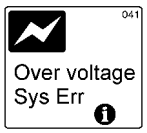
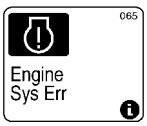
4.3.2 KX015-4, KX016-4, KX018-4, KX019-4

List of failure codes				refer to WSM KX018-4/ KX019-4 chapter 4, section
Failure code	Cause of generation and the measure			
LCD display	LED	Problem/Error	Preliminary measure	
CAN system error  RY9212091ELS033A	 (Blinking)	The Controller Area Network (CAN) has developed a fault. Measured values may be incorrect and switches may not function.	The machine can be started and driven. Do not perform any work with the machine.	6.5.1
Warning temperature rising  RY9212091ELS034A	 (Blinking)	The temperature of the coolant is higher than normal.	Operate the machine only with reduced loads until the temperature is normal again.	
Oil pressure too low  RY9212091ELS035A	 (red) (Blinking) +  (Lighting)	The engine oil pressure is too low.	Stop the engine immediately. The engine may have developed a fault.	6.1.1
Overheat  RY9212091ELS036A	 (Blinking)	The machine is overheated and must cool off by idling.	Allow the machine to cool off by idling. Do not switch the engine off as the coolant could then boil over.	
Charging system error  RY9212091ELS037A	 (red) (Blinking) +  (Lighting)	The charging system has developed a fault.	Check the V-belt. When the V-belt is OK, let the engine run until the indicator goes out.	6.1.2
Fuel sensor error  RY9212091ELS038A	 (red) (Blinking)	The fuel sensor has developed a fault.	–	6.1.3
Water temperature sensor error  RY9212091ELS039A	 (red) (Blinking)	The coolant temperature sensor has developed a fault.	The functions of the machine are stable but overheating cannot be excluded.	6.1.4
Lever lock system error  RY9212091ELS040A	 (red) (Blinking)	The electrical system in the control lever lock has developed a fault.	The engine can be started but the machine cannot be set in motion.	6.2.1

List of failure codes				refer to WSM KX018-4/ KX019-4 chapter 4, section
Failure code	Cause of generation and the measure			
LCD display	LED	Problem/Error	Preliminary measure	
Travel 2 speed system error  RY9212091ELS041A	 (red) (Blinking)	The electrical system in the travel speed has developed a fault.	The machine can only be set in motion at low speed.	6.2.2
AUX knob switch system error  RY9212091ELS042A	 (red) (Blinking)	The AUX knob switch has developed a system fault.	The machine can be operated but the AUX port will not function.	6.4.1
AUX R (Port 1) system error  RY9212091ELS043A	 (red) (Blinking)	AUX port right solenoid system has developed a fault.	The machine can be operated but AUX port right will not function.	6.4.2
AUX L (Port 2) system error  RY9212091ELS044A	 (red) (Blinking)	AUX port left solenoid system has developed a fault.	The machine can be operated but AUX port left will not function.	6.4.2
Overvoltage  RY9212091ELS045A	 (red) (Blinking)	This is a warning that a higher voltage (from a 24-V battery, for example) is being applied to the electric circuit, or that there is a problem with the alternator.	Switch the engine off immediately and check the battery and the alternator. Restart the engine.	6.3.1
Anti theft system error  RY9212091ELS046A	 (red) (Blinking)	There is no response from the anti theft antenna.	The machine cannot be started: if there is more than one key or another metal object on the keyring, remove the key from the ring. If the message does not disappear, it means that the key may be damaged. Try using a spare key.	6.6.1
External 5-V system error  RY9212091ELS047A	 (red) (Blinking)	The 5-V sensor supply line has developed a system fault. The main functions are not available.	The machine can be started and driven. Do not perform any work with the machine.	6.3.2
External 12-V system error  RY9212091ELS048A	 (red) (Blinking)	The 12-V sensor supply line has developed a system fault. The main functions are not available.	The machine can be started and driven. Do not perform any work with the machine.	6.3.3
Starting the engine  RY9212091ELS049A	 (yellow) (Blinking)	This message indicates a step in a procedure.	Start the engine; the indicator goes out.	

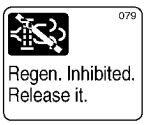
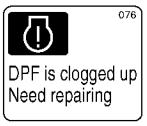
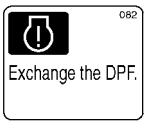
4.3.3 KX080-4

List of failure codes					refer to WSM KX080-4 chapter 4, section
N°	LCD display	Pressing SW4	Message in fail record	Possible cause	
1		–	[Meter] Engine oil pressure error	a) Engine oil pressure low b) Oil switch always ON c) Short in harness	6.1.1
2		–	[Meter] Overheated	Engine overheated [118 °C (244 °F)--automatically goes to idle]	
3		–	[Meter] Charging System Error	Low alternator voltage detected a) Alternator faulty b) Fan belt loose/off c) Break in harness d) Fuse blown (10 A)	6.1.2
4		–	[Meter] Fuel Sensor Error	a) Connector disconnected b) Break in harness	6.1.3
5		CANSys (main)	[Meter] CAN Sys (Main)	a) Connector disconnected b) ECU (+B) fuse blown (10 A) c) Break or short in harness	6.6.1
		CANSys (CRS)	[Meter] CAN Sys (CRS)	a) Connector disconnected b) Slow blow fuse (CRS) blown (30 A) c) Engine ECU relay faulty d) Break or short in harness	
6		–	[Meter] Setup Data Error	Go through the model setup again. If this doesn't fix it, it's a faulty meter.	
7		–	[Main ECU] Water mixed with fuel	a) Water mixed with fuel in the fuel filter [Reference value: 80 - 130 ml (0,07 - 0,11 lmp·qts, 0,08 - 0,14 U.S.qts)] b) Short in the fuel filter line	
8		2-speed solenoid	[Main ECU] 2-speed SOL	a) 2-speed solenoid line short	6.2.2
9		AUX1 knob	[Main ECU] AUX1 knob	a) AUX1 knob connector disconnected b) Break or short in harness	6.7.1
		AUX1 right SOL	[Main ECU] AUX1 right SOL	a) AUX1 right solenoid connector disconnected b) Break or short in harness	6.7.1
		AUX1 left SOL	[Main ECU] AUX1 left solenoid	a) AUX1 left solenoid connector disconnected b) Break or short in harness	6.7.1

List of failure codes					refer to WSM KX080-4 chapter 4, section
N°	LCD display	Pressing SW4	Message in fail record	Possible cause	
10		AUX2/thumb knob	[Main ECU] AUX2/thumb knob	a) AUX2 knob connector disconnected b) Break or short in harness	6.7.1
		AUX2/thumb right SOL	[Main ECU] AUX2/thumb right solenoid	a) AUX2 right solenoid connector disconnected b) Break or short in harness	6.7.1
		AUX2/thumb left SOL	[Main ECU] AUX2/thumb left solenoid	a) AUX2 left solenoid connector disconnected b) Break or short in harness	6.7.1
11		Over voltage	[Main ECU] Over voltage	a) Activated by 18 V+ b) Alternator faulty	6.5.1
12		Boom bottom	[Main ECU] Boom bottom	a) Connector disconnected b) Break or short in harness	6.2.3
13		Accelerator sensor	[Main ECU] Accelerator sensor	a) AI console connector disconnected b) Break or short in harness	6.3.1
14		Antenna	[Main ECU] Antenna	a) Connector disconnected b) Break in harness c) Antenna faulty	6.4.1
15		Lever lock solenoid	[Main ECU] Lever lock solenoid	a) Lever lock solenoid line short	6.2.1
16		Multipurpose SOL	[Main ECU] Multipurpose solenoid	a) Multipurpose solenoid line short	
17		External 5 V	[Main ECU] External 5 V	Short in 5 V line	6.5.2
18		1 - 64	–	Engine system error	refer to Diagnosis manual "Common Rail System"
19		Travel pressure	[Main ECU] Travel pressure	a) Pressure sensor connector disconnected b) Break or short in harness	6.8.1
		EP solenoid	[Main ECU] EP solenoid	a)EP solenoid connector disconnected b)Break or short in harness	6.8.1

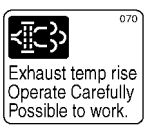
4.3.4 Regeneration of Diesel Particle Filter (DPF)

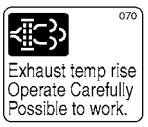
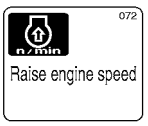
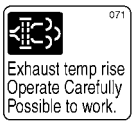
DPF inhibit switch activated (regeneration will be suppressed)

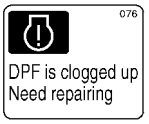
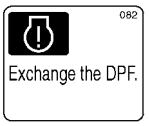
Clog Level	Warning lamp	Buzzer	Engine output	LCD display	Meaning of the display	Status and correction
Level 0	OFF	–	–	–	–	–
Level 1	OFF	–	–	–	–	–
Level 2	Blinking (Yellow)	··PiPiPi·· (Continue)	–		Regeneration of DPF is inhibited. Allow regeneration.	–
Level 3	Blinking (Red)	··PiPiPi·· (0 - 50 sec.) Pi-···Pi- (50 - 60 sec.)	50 %		Regeneration of DPF is inhibited. Allow regeneration. HP limited to low power.	*2
		Pi-···Pi- (from 60 sec.)	–		Engine forced to stop Increase RPM and restart	Turn and maximize the accelerator dial and restart *1
Level 4	Blinking (Red)	PiPiPiPi (0 - 50 sec.) Pi-···Pi- (from 50 sec.)	50 %		DPF clogged up Needs maintenance	Use the engine diagnosis tool and regenerate it manually *1 *2
Level 5	Blinking (Red)	PiPiPiPi (Continue)	50 %		Replace the DPF	DPF is clogged. Needs replacement.

The engine rpm drops up to only 1900 rpm while pressing the AI switch.
PM clog level does not change when the key is turned OFF. The level stays the same when the engine restarts.
*1: If the lever lock is up, the engine stops forcibly in 60 seconds.
*2: If the lever lock is down, the engine does not stop. The same buzzer from 0 - 50 sec. keeps sounding.

DPF inhibit switch not activated (regeneration take place)

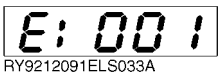
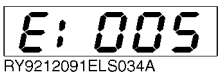
Clog Level	Warning lamp	Buzzer	Engine output	Engine RPM	LCD display	Meaning of the display	Status and correction
Level 0	OFF	–	–	–	–	–	–
Level 1	Blinking (Yellow)	··PiPiPi·· (Every 60 sec.)	–	–		Exhaust temperature rising Operate carefully Can continue working	More than 1900 engine RPM: DPF regenerates Less than 1900 engine RPM: DPF may not auto-regenerate due to open air and water temp.

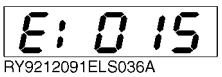
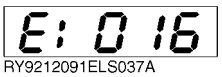
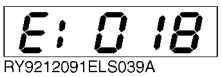
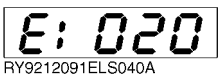
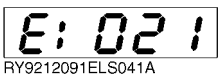
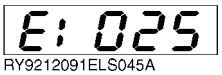
Clog Level	Warning lamp	Buzzer	Engine output	Engine RPM	LCD display	Meaning of the display	Status and correction
Level 2	Blinking (Yellow)	··PiPiPi·· (Every 60 sec.)	–	More than 1900 rpm		Exhaust temperature rising Operate carefully Can continue working	Being auto-regenerated
				Less than 1900 rpm		Exhaust temperature rising Operate carefully Can continue working	When the engine RPM is low, DPF may not auto-regenerate due to open air and water temp. The screen changes every 3 sec.
						Increase engine RPM	
Level 3	Blinking (Yellow)	PiPiPi (Every 60 sec.)	50 %	More than 1900 rpm		Exhaust temperature rising Operate carefully Can continue working	Being auto-regenerated The screen is changed every 3 sec.
						HP limited to low power	
	Blinking (Red)	··PiPiPi·· (0-50 sec.) Pi-···Pi- (50-60 sec.)	50 %	Less than 1900 rpm		Exhaust temperature rising Operate carefully Can continue working	When the engine RPM is low, DPF may not auto-regenerate due to open air and water temp. The screen changes every 3 sec. *2
						Increase engine RPM HP limited low power	
		Pi-···Pi- (from 60 sec.)	–			Engine forced to stop Increase RPM and restart	Turn and maximize the accelerator dial and restart. *1

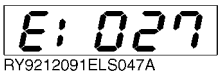
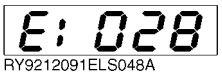
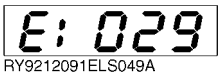
Clog Level	Warning lamp	Buzzer	Engine output	Engine RPM	LCD display	Meaning of the display	Status and correction
Level 4	Blinking (Red)	PiPiPiPi (0-50 sec.) Pi-···Pi- (from 50 sec.)	50 %	–		DPF clogged up Needs maintenance	Use the engine diagnosis tool and regenerate it manually *1 *2
Level 5	Blinking (Red)	PiPiPiPi (Continue)	50 %	–		Replace the DPF	DPF is clogged. Needs replacement.

The engine rpm drops up to only 1900 rpm while pressing the AI switch.
PM clog level does not change when the key is turned OFF. The level stays the same when the engine restarts.
*1: If the lever lock is up, the engine stops forcibly in 60 seconds.
*2: If the lever lock is down, the engine does not stop. The same buzzer from 0 - 50 sec. keeps sounding.

4.3.5 U27-4

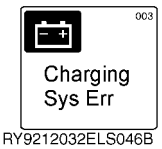
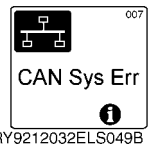
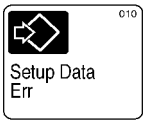
List of failure codes					refer to WSM U27-4 chapter 4, section
Failure code		Cause of generation and the measure			
	LCD display	LED	Problem/Error	Preliminary measure	
1	CAN system error  RY9212091ELS033A	 (Blinking)	The Controller Area Network (CAN) has developed a fault. Measured values may be incorrect and switches may not function.	The machine can be started and driven. Do not perform any work with the machine.	4.7.4.1
2	Feed fuel (No display item)	 (Blinking)	This message appears when the fuel level is low and prompts the operator to refuel.	–	
3	Periodic check soon (notice) (No display item)	 (Blinking)	This message means that the regular service is due shortly.	Operate the machine as usual.	
4	Periodic check passed (Warning) (No display item)	 (Blinking)	This message means that the regular service is due.	The machine can be operated but service must be carried out urgently.	
5	Warning temperature rising  RY9212091ELS034A	 (Blinking)	The temperature of the coolant is higher than normal.	Operate the machine only with reduced loads until the temperature is normal again.	
6	–	–	–	–	
7	Wrong key unable to start (No display item)	 (Blinking)	The machine cannot be started because the wrong key has been inserted.	Use correct key.	
8	Registered RED key unable to start (No display item)	 (Blinking)	Try starting the engine with the red key (for registration).	Use correct key.	
9	Clock setting request (No display item)	 (Blinking)	Power was interrupted and the clock now has to be set again.	In order to set the clock, press the user setting switch.	
10	–	–	–	–	
11	Raise the control lever lock	 (yellow) (Blinking)	This message indicates a step in a procedure.	Raise the control lever lock; the indicator turns off.	
12	Pull out the key	 (Blinking)	The key must be pulled out.	Pull out the key.	
13	Lower the control lever lock	 (yellow) (Blinking)	This message indicates a step in a procedure.	Lower the control lever lock; the indicator turns off.	

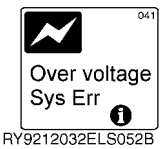
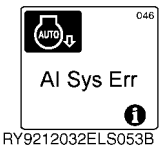
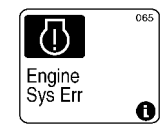
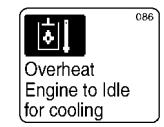
List of failure codes					refer to WSM U27-4 chapter 4, section
Failure code		Cause of generation and the measure			
	LCD display	LED	Problem/Error	Preliminary measure	
14	Oil pressure too low  RY9212091ELS035A	 (red) (Blinking) +  (Lighting)	The engine oil pressure is too low.	Stop the engine immediately. The engine may have developed a fault.	4.7.1.1
15	Overheat  RY9212091ELS036A	 (Blinking)	The machine is overheated and must cool off by idling.	Allow the machine to cool off by idling. Do not switch the engine off as the coolant could then boil over.	
16	Charging system error  RY9212091ELS037A	 (red) (Blinking) +  (Lighting)	The charging system has developed a fault.	Check the V-belt. When the V-belt is OK, let the engine run until the indicator turns off.	4.7.1.2
17	Fuel sensor error  RY9212091ELS038A	 (red) (Blinking)	The fuel sensor has developed a fault.	–	4.7.1.3
18	Water temperature sensor error  RY9212091ELS039A	 (red) (Blinking)	The coolant temperature sensor has developed a fault.	The functions of the machine are stable but overheating cannot be excluded.	4.7.1.4
19	–	–	–	–	
20	Lever lock system error  RY9212091ELS040A	 (red) (Blinking)	The electrical system in the control lever lock has developed a fault.	The engine can be started but the machine cannot be set in motion.	4.7.2.1
21	Travel 2 speed system error  RY9212091ELS041A	 (red) (Blinking)	The electrical system in the travel speed has developed a fault.	The machine can only be set in motion at low speed.	4.7.2.2
22	–	–	–	–	
23	–	–	–	–	
24	–	–	–	–	
25	Overvoltage  RY9212091ELS045A	 (red) (Blinking)	This is a warning that a higher voltage (from a 24-V battery, for example) is being applied to the electric circuit, or that there is a problem with the alternator.	Switch the engine off immediately and check the battery and the alternator. Restart the engine.	4.7.3.1
26	–	–	–	–	

List of failure codes					refer to WSM U27-4 chapter 4, section
Failure code		Cause of generation and the measure			
	LCD display	LED	Problem/Error	Preliminary measure	
27	External 5-V system error  RY9212091ELS047A	 (red) (Blinking)	The 5-V sensor supply line has developed a system fault. The main functions are not available.	The machine can be started and driven. Do not perform any work with the machine.	4.7.3.2
28	External 12-V system error  RY9212091ELS048A	 (red) (Blinking)	The 12-V sensor supply line has developed a system fault. The main functions are not available.	The machine can be started and driven. Do not perform any work with the machine.	4.7.3.3
29	Starting the engine  RY9212091ELS049A	 (yellow) (Blinking)	This message indicates a step in a procedure.	Start the engine; the indicator turns off.	

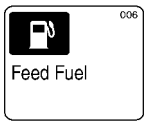
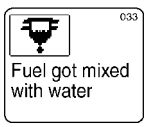
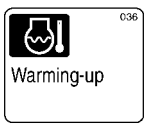
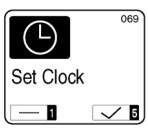
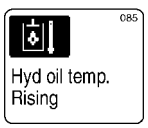
4.3.6 KX080-4α

Red Warning Lamp Lit

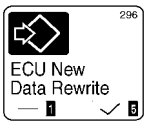
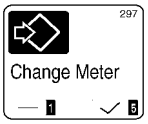
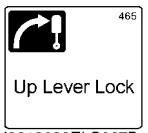
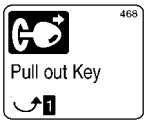
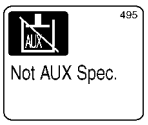
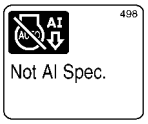
List of failure codes					refer to WSM KX080-4α chapter 4, section
N°	Screen display	Pressing SW4	Message in fail record	Reason detected	
1	 RY9212032ELS044B	–	[Meter] Engine oil pressure error	a) Engine oil pressure low b) Oil switch always ON c) Short in harness	4.6.1.1
2	 RY9212032ELS045B	–	[Meter] Overheated	Engine overheated [118°C (244°F)--automatically goes to idle]	
3	 RY9212032ELS046B	–	[Meter] Charging System Error	Low alternator voltage detected a) Alternator faulty b) Fan belt loose/off c) Break in harness d) Fuse blown (10A)	4.6.1.2
4	 RY9212032ELS047B	–	[Meter] Fuel Sensor Error	a) Connector disconnected b) Break in harness	4.6.1.3
5	 RY9212435ELS016A	–	[Meter] Water temp sensor Error	The coolant temperature sensor has developed a fault; the coolant temperature gauge does not appear in the display.	
6	 RY9212032ELS049B	CANSys (Hauptkreis)	[Meter] CAN Sys (Main)	a) Connector disconnected b) ECU (+B) fuse blown (10A) c) Break or short in harness	4.6.5.1
		CANSys (CRS)	[Meter] CAN Sys (CRS)	a) Connector disconnected b) Slow blow fuse (CRS) blown (30A) c) Engine ECU relay faulty d) Break or short in harness	
7	 RY9212148ELS043A	–	[Meter] Setup Data Error	Go through the model setup again. If this doesn't fix it, it's a faulty meter.	
8	 RY9212032ELS051B	2nd speed solenoid	[Main ECU] 2-speed SOL	a) 2nd speed solenoid line short	4.6.2.2
9	 RY9212148ELS040A	AUX1 knob	[Main ECU] AUX1 knob	a) AUX1 knob connector disconnected b) Break or short in harness	4.6.6.1
		AUX1 right SOL	[Main ECU] AUX1 right SOL	a) AUX1 right solenoid connector disconnected b) Break or short in harness	
		AUX1 left SOL	[Main ECU] AUX1 left solenoid	a) AUX1 left solenoid connector disconnected b) Break or short in harness	

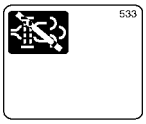
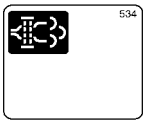
List of failure codes					refer to WSM KX080-4α chapter 4, section
N°	Screen display	Pressing SW4	Message in fail record	Reason detected	
10	 RY9212148ELS041A	AUX2/thumb knob	[Main ECU] AUX2/thumb knob	a) AUX2 knob connector disconnected b) Break or short in harness	4.6.6.1
		AUX2/thumb right SOL	[Main ECU] AUX2/thumb right solenoid	a) AUX2 right solenoid connector disconnected b) Break or short in harness	
		AUX2/thumb left SOL	[Main ECU] AUX2/thumb left solenoid	a) AUX2 left solenoid connector disconnected b) Break or short in harness	
11	 RY9212032ELS052B	Over voltage	[Main ECU] Over voltage	a) Activated by 18V+ b) Alternator faulty	4.6.4.1
12	 RY9212148ELS062A	Boom bottom	[Main ECU] Boom bottom	a) Connector disconnected b) Break or short in harness	4.6.2.3
13	 RY9212032ELS053B	Accelerator sensor	[Main ECU] Accelerator sensor	a) AI console connector disconnected b) Break or short in harness	4.6.3.1
14	 RY9212032ELS050B	Lever lock solenoid	[Main ECU] Lever lock solenoid	a) Lever lock solenoid line short	4.6.2.1
15	 RY9212148ELS042A	Multipurpose SOL	[Main ECU] Multipurpose solenoid	a) Multipurpose solenoid line short	
16	 RY9212032ELS055B	External 5 V	[Main ECU] External 5 V	Short in 5 V line	4.6.4.2
17	 RY9212148ELS069A	–	–	Suspended weight is over the rated load (Eur. overload warning spec. only)	
18	 RY9212148ELS063A	1 - 64	–	Engine system error	
19	 RY9212435ELS045A	–	[Main ECU] Hydraulic temp sensor	Hydraulic oil temperature rising. Engine speed is reduced down to Lo-idle automatically.	

Yellow Warning Lamp Lit

List of failure codes					refer to WSM KX080-4α chapter 4, section
N°	Screen display	Pressing SW4	Message in fail record	Reason detected	
1	 RY9212148ELS065A	–	–	Fuel low Displayed at 6 minute intervals.	
2	 RY9212148ELS066A	–	–	Water temperature rising. Displayed at 6 minute intervals. (110 - 117°C, 230 - 242°F)	
3	 RY9212435ELS020A	–	[Main ECU] Water mixed with fuel	a) Water mixed with fuel in the fuel filter [Reference value:80 to 130 ml (0.07 - 0.11 lmp·qts, 0.08 - 0.14 U.S.qts)] b) Short in the fuel filter line	
4	 RY9212435ELS047A	–	–	When hydraulic sensor temperature is only low the warming-up mode automatically starts.	
5	 RY9212148ELS067A	–	–	Tried to start engine with an unregistered key (Anti-theft spec. only)	
6	 RY9212148ELS068A	–	–	Tried to start engine with a red key (Anti-theft spec. only)	
7	 RY9212148ELS070A	Check location displayed	–	Displayed 10 hours before periodic check due	
8	 RY9212148ELS071A	Check location displayed	–	Past time for periodic check	
9	 RY9212148ELS072A	–	–	Annual check	
10	 RY9212148ELS048A	–	–	The clock may have the wrong time.	
11	 RY9212435ELS046A	–	–	Hydraulic oil temperature rising.	

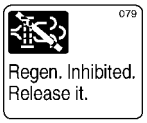
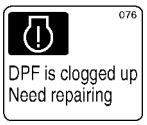
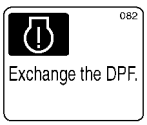
Other Screens

List of failure codes					refer to WSM KX080-4α chapter 4, section
N°	Screen display	Pressing SW4	Message in fail record	Reason detected	
1	 RY9212148ELS050A	–	–	Switch 2 (crane) pressed on machine w/o overload warning	
2	 RY9212148ELS046A	–	–	When meter or ECU replaced without doing setup	
3	 RY9212148ELS045A	–	–	During setup after changing the meter or the ECU, this screen comes up to confirm the meter has been changed.	
4	 RY9212148ELS044A	The setup item is displayed.	–	When neither the meter nor the ECU have been replaced, but some setting needs to be made.	
5	 RY9212032ELS067B	–	–	If you attempt to start the engine with the lever lock still down.	
6	 RY9212032ELS074B	–	–	If you press switch 3 (AUX) with the lever lock still up.	
7	 RY9212148ELS073A	–	–	If you turned the key OFF but fail to take it out (Anti-theft spec. only)	
8	 RY9212166ELS083A	–	–	• If you press switch 3 (AUX) on a machine w/o AUX1/AUX2/thumb spec. • If you setup the model as AUX1 (w/o) and press switch 3 (AUX).	
9	 RY9212148ELS074A	–	–	• If you press the AI switch on a machine w/o the AI spec. • If you set up the model as AI (w/o) spec. and press the AI switch.	
10	 RY9212148ELS049A	–	–	If you press the multipurpose switch before registering it.	
11	 RY9212148ELS075A	–	–	During communication with the key (Anti-theft spec. only)	

List of failure codes					refer to WSM KX080-4α chapter 4, section
N°	Screen display	Pressing SW4	Message in fail record	Reason detected	
12	 RY9212148ELS076A	–	–	Displayed for 5 seconds when put in the E mode.	
13	 RY9212148ELS077A	–	–	Displayed for 5 seconds when auto-regeneration of the DPF is inhibited.	
14	 RY9212148ELS078A	–	–	Displayed for 5 seconds when the inhibition on DPF auto-regeneration is cancelled.	

4.3.7 PM Clog Level and the State of the Machine

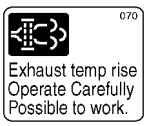
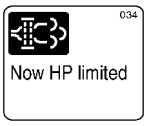
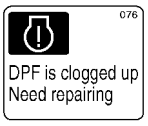
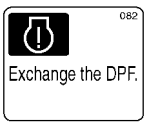
Inhibit switch ON

Clog Level	Warning Lamp	Buzzer	Engine Output	Screen	Content displayed	Status and correction
Level 0	OFF	–	–	–	–	–
Level 1	OFF	–	–	–	–	–
Level 2	Blinking (Yellow)	··PiPiPi·· (Continue)	–	 RY9212148ELS088A	Regeneration of DPF is inhibited. Allow regeneration.	–
Level 3	Blinking (Red)	··PiPiPi·· (0–50 s) Pi-···Pi- (50 - 60 sec.)	50 %	 RY9212148ELS089A	Regeneration of DPF is inhibited. Allow regeneration. HP limited to low power.	*2
		Pi-···Pi- (from 60 sec.)	–	 RY9212148ELS092A	Engine forced to stop Increase RPM and restart	Turn and maximize the accelerator dial and restart *1
Level 4	Blinking (Red)	PiPiPiPi (0 - 50 s) Pi-···Pi- (from 50 sec.)	50 %	 RY9212148ELS085A	DPF clogged up Needs maintenance	Use the engine diagnosis tool and regenerate it manually *1 *2
Level 5	Blinking (Red)	PiPiPiPi (Continue)	50 %	 RY9212148ELS091A	Replace the DPF	DPF is clogged. Needs replacement.

The engine rpm drops up to only 1650 rpm while pressing the AI switch.
PM clog level does not change when the key is turned OFF. The level stays the same when the engine restarts.
*1 : If the lever lock is up, the engine stops forcibly in 60 seconds.
*2 : If the lever lock is down, the engine does not stop. The same buzzer from 0 to 50 sec. keeps sounding.

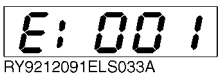
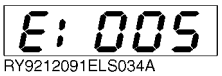
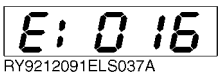
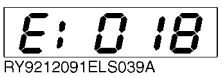
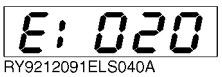
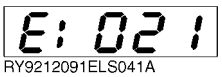
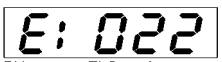
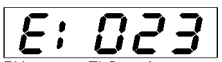
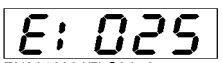
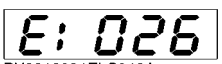
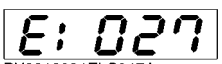
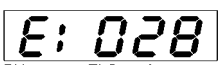
Inhibit switch OFF

Clog Level	Warning lamp	Buzzer	Engine output	Engine RPM	Screen	Contents displayed	Status and correction
Level 0	OFF	–	–	–	–	–	–
Level 1	Blinking (Yellow)	··PiPiPi·· (Every 60 sec.)	–	–	 RY9212148ELS080A	Exhaust temperature rising Operate carefully Can continue working	More than 1650 engine RPM needed: DPF regenerates Less than 1650 engine RPM: DPF may not auto-regenerate due to open air and water temp.
Level 2	Blinking (Yellow)	··PiPiPi·· (Every 60 sec.)	–	More than 1650 rpm	 RY9212148ELS080A	Exhaust temperature rising Operate carefully Can continue working	Being auto-regenerated
				Less than 1650 rpm	 RY9212148ELS080A	Exhaust temperature rising Operate carefully Can continue working	When the engine RPM is low, DPF may not auto-regenerate due to open air and water temp. The screen changes every 3 sec.
					 RY9212148ELS082A	Increase engine RPM	

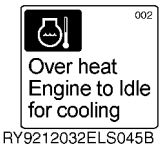
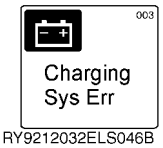
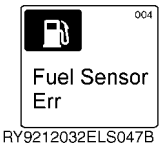
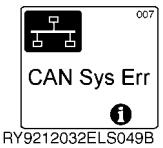
Clog Level	Warning lamp	Buzzer	Engine output	Engine RPM	Screen	Contents displayed	Status and correction
Level 3	Blinking (Yellow)	PiPiPi (Every 60 sec.)	50 %	More than 1650 rpm	 RY9212148ELS080A	Exhaust temperature rising Operate carefully Can continue working	Being auto-regenerated The screen is changed every 3 sec.
					 RY9212148ELS079A	HP limited to low power	
	Blinking (Red)	··PiPiPi·· (0-50 sec.) Pi-···Pi- (50-60 sec.)	50 %	Less than 1650 rpm	 RY9212148ELS081A	Exhaust temperature rising Operate carefully Can continue working	When the engine RPM is low, DPF may not auto-regenerate due to open air and water temp. The screen changes every 3 sec. *2
					 RY9212148ELS084A	Increase engine RPM HP limited low power	
		Pi-···Pi- (from 60 sec.)	–		 RY9212148ELS092A	Engine forced to stop Increase RPM and restart	Turn and maximize the accelerator dial and restart. *1
Level 4	Blinking (Red)	PiPiPiPi (0-50 sec.) Pi-···Pi- (from 50 sec.)	50 %	–	 RY9212148ELS085A	DPF clogged up Needs maintenance	Use the engine diagnosis tool and regenerate it manually *1 *2
Level 5	Blinking (Red)	PiPiPiPi (Continue)	50 %	–	 RY9212148ELS091A	Replace the DPF	DPF is clogged. Needs replacement.

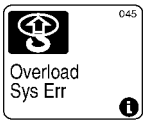
The engine rpm drops up to only 1650 rpm while pressing the AI switch.
PM clog level does not change when the key is turned OFF. The level stays the same when the engine restarts.
*1 : If the lever lock is up, the engine stops forcibly in 60 seconds.
*2 : If the lever lock is down, the engine does not stop. The same buzzer from 0 to 50 sec. keeps sounding.

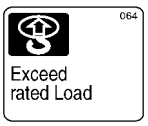
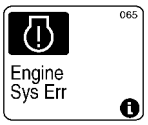
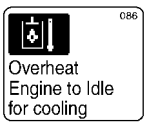
4.3.8 KX027-4, KX030-4

List of failure codes				refer to WSM KX030-4 chapter 6, section
Failure code	Cause of generation and the measure			
LCD display	Lamp	Error	Cause(s)	
 RY9212091ELS033A	-	CAN communication error	There is no communication between the main ECU and the meter.	6.3.1
 RY9212091ELS034A		High coolant temperature	Coolant temperature is higher than 117 °C and lower than 122 °C.	6.3.2
 RY9212091ELS035A		Engine oil pressure error	Oil switch is ON while the engine is running.	6.3.3
 RY9212091ELS036A		Engine overheating	Coolant temperature is higher than 122 °C.	6.3.4
 RY9212091ELS037A		Battery charging error	Charge switch is ON while the engine is running.	6.3.5
 RY9212091ELS038A	-	Fuel sensor error	Breaking in fuel sensor.	6.3.6
 RY9212091ELS039A	-	Coolant temperature sensor error	Breaking or short circuit of the coolant temperature sensor.	6.3.7
 RY9212091ELS040A	-	Lever lock system error	Short circuit of the lever lock solenoid.	6.3.8
 RY9212091ELS041A	-	Travel speed shift system error	Short circuit of the travel speed shift solenoid.	6.3.9
 RY9212091ELS042A	-	AUX nob switch system error	Breaking or short circuit of the AUX nob switch.	6.3.10
 RY9212091ELS043A	-	AUX RH solenoid error	Breaking or short circuit of the AUX RH solenoid.	6.3.11
 RY9212091ELS044A	-	AUX LH solenoid error	Breaking or short circuit of the AUX LH solenoid.	6.3.12
 RY9212091ELS045A	-	Battery overcharging	Battery overcharging.	6.3.13
 RY9212091ELS046A	-	Anti-theft antenna error	Antenna error.	6.3.14
 RY9212091ELS047A	-	5 V error	Short circuit in the 5 V line.	6.3.15
 RY9212091ELS048A	-	12 V error	Short circuit in the 12 V line.	6.3.16

4.3.9 U36-4

List of failure codes				refer to WSM U36-4, chapter 6, section
N°	Screen display	Error	Reason detected	
001	 RY9212032ELS044B	Engine oil pressure error	Oil switch is ON while the engine is rotating (700 rpm or more) . Low engine oil . Engine problem . Short-circuited wire harness . Oil switch malfunction	4.6.1.1
002	 RY9212032ELS045B	Overheating (coolant)	The coolant temperature is higher than 124 °C while the engine is running (higher than 700 rpm) . Overheated . Low coolant (Engine speed goes to idle)	
003	 RY9212032ELS046B	Battery charging error	Charging switch is ON while the engine is rotating (700 rpm) . Alternator malfunction . Breaking in wire harness	4.6.1.2
004	 RY9212032ELS047B	Fuel Sensor Error	Sensor resistance is higher than 131 Ω • Breaking in wire harness • Fuel sensor malfunction	4.6.1.3
005	 RY9212435ELS016A	Coolant temperature sensor error	Coolant temperature is lower than -50 °C or higher than 150 °C . Breaking or short-circuited wire harness . Coolant temperature sensor malfunction	
007	 RY9212032ELS049B	CAN system (main) CAN system (AS) CAN system (Eng)	Communication error with ECU • Breaking wire harness • ECU malfunction	4.6.5.1
010	 RY9212148ELS043A	Settings data error	-	
035	 RY9212032ELS051B	Travel speed shift system error	Detection port H during output of travel speed shift solenoid output • Short-circuited wire harness • Travel speed shift solenoid malfunction	4.6.2.2
037	 RY9212148ELS040A	AUX1 knob AUX1 right solenoid AUX1 left solenoid	Breaking or short-circuited AUX1 knob switch Breaking or short-circuited AUX1 right solenoid Breaking or short-circuited AUX1 left solenoid	4.6.6.1
038	 RY9212148ELS041A	AUX2 thumb knob AUX2 thumb right solenoid AUX2 thumb left solenoid	Breaking or short-circuited AUX2 knob switch Breaking or short-circuited AUX2 right solenoid Breaking or short-circuited AUX2 left solenoid	4.6.6.1
041	 RY9212032ELS052B	Over-voltage system error	Voltage is higher than 18 V	4.6.4.1

List of failure codes				refer to WSM U36-4, chapter 6, section
N°	Screen display	Error	Reason detected	
042	 (AS spec.)	Multipurpose solenoid	Short-circuited arm limit solenoid	
		Arm potentiometer	Breaking or short-circuited arm potentiometer	
043	 (Angle blade spec.)	Angle right solenoid	Short-circuited angle right solenoid	
		Angle left solenoid	Short-circuited angle left solenoid	
044	 (Crane spec.)	Arm potentiometer	Breaking or short-circuited arm potentiometer	
		Travel pressure	-	
		Boom potentiometer	Breaking or short-circuited boom potentiometer	
		Boom bottom	Breaking or short-circuited boom bottom pressure sensor	
		Boom rod	Breaking or short-circuited boom rod pressure sensor	
		Offset potentiometer	Breaking or short-circuited offset potentiometer	
		Governor potentiometer	-	
		AI motor	-	
045	 (Overload alarm spec.)	Boom bottom	Breaking or short-circuited boom bottom pressure sensor	4.6.2.3
046		Governor sensor	Breaking or short-circuited governor potentiometer	4.6.3.1
		Accelerator sensor	Breaking or short-circuited accelerator potentiometer	
		AI motor	Breaking, short-circuited, or constrained AI motor	
048		Antenna	-	
056	 (Crane spec.)	Over rated load	Rated load exceeded in the crane mode	
058		Lever lock solenoid	Short-circuited lever lock solenoid	4.6.2.1
059		Multipurpose solenoid	Short-circuited multipurpose solenoid	

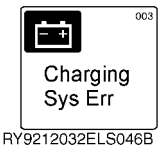
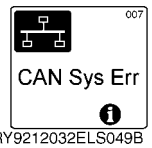
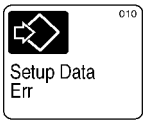
List of failure codes				refer to WSM U36-4, chapter 6, section
N°	Screen display	Error	Reason detected	
060	 RY9212032ELS055B	External 5 V	Short-circuited 5 V line	4.6.4.2
064	 RY9212148ELS069A (Overload alarm spec.)	Over rated load	Rated load exceeded	
065	 RY9212148ELS063A	Engine system error	Engine system malfunction	
075	 2MFZB00075A01enUS	Pump solenoid	-	
086	 RY9212435ELS045A	Hydraulic oil temperature sensor	The hydraulic oil temperature is higher than 104 °C	

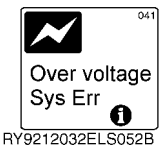
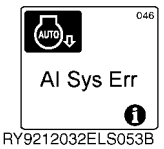
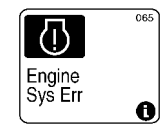
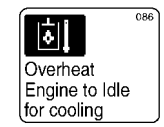
4.3.10 Engine system error (Red lamp)

Display	Error	Probable cause (s)
1	Over-voltage system	12 V power supply exceeded 18 V.
2	Alternator L terminal	No output from alternator L terminal when starting the engine (above 700 rpm). Output from alternator L terminal when stopping the engine.
3	Over engine speed	Engine speed exceeded above 125% of maximum speed.
4	Engine speed sensor	Engine speed is detected 0 rpm when starting the engine and output from alternator L terminal.
5	Governor solenoid	When turning the key switch to [ON], the current either did not flow to the solenoid or flowed too much.
6	-	-
7	5 V output voltage	5 V power supply from the ECU is below 4 V.

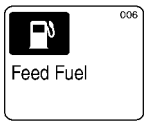
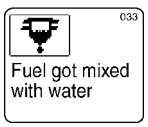
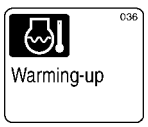
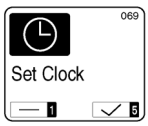
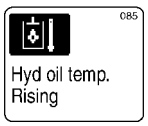
4.3.11 KX042-4

Red Warning Lamp Lit

List of failure codes					refer to WSM KX042-4 chapter 4, section
N°	Screen display	Pressing SW4	Message in fail record	Reason detected	
1	 RY9212032ELS044B	–	[Meter] Engine oil pressure error	a) Engine oil pressure low b) Oil switch always ON c) Short in harness	4.6.1.1
2	 RY9212032ELS045B	–	[Meter] Overheated	Engine overheated [118°C (244°F)--automatically goes to idle]	
3	 RY9212032ELS046B	–	[Meter] Charging System Error	Low alternator voltage detected a) Alternator faulty b) Fan belt loose/off c) Break in harness d) Fuse blown (10A)	4.6.1.2
4	 RY9212032ELS047B	–	[Meter] Fuel Sensor Error	a) Connector disconnected b) Break in harness	4.6.1.3
5	 RY9212435ELS016A	–	[Meter] Water temp sensor Error	The coolant temperature sensor has developed a fault; the coolant temperature gauge does not appear in the display.	
6	 RY9212032ELS049B	CANSys (Hauptkreis)	[Meter] CAN Sys (Main)	a) Connector disconnected b) ECU (+B) fuse blown (10A) c) Break or short in harness	4.6.5.1
		CANSys (CRS)	[Meter] CAN Sys (CRS)	a) Connector disconnected b) Slow blow fuse (CRS) blown (30A) c) Engine ECU relay faulty d) Break or short in harness	
7	 RY9212148ELS043A	–	[Meter] Setup Data Error	Go through the model setup again. If this doesn't fix it, it's a faulty meter.	
8	 RY9212032ELS051B	2nd speed solenoid	[Main ECU] 2-speed SOL	a) 2nd speed solenoid line short	4.6.2.2
9	 RY9212148ELS040A	AUX1 knob	[Main ECU] AUX1 knob	a) AUX1 knob connector disconnected b) Break or short in harness	4.6.7.1
		AUX1 right SOL	[Main ECU] AUX1 right SOL	a) AUX1 right solenoid connector disconnected b) Break or short in harness	
		AUX1 left SOL	[Main ECU] AUX1 left solenoid	a) AUX1 left solenoid connector disconnected b) Break or short in harness	

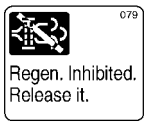
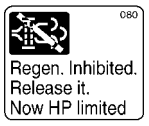
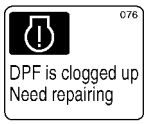
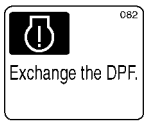
List of failure codes					refer to WSM KX042-4 chapter 4, section
N°	Screen display	Pressing SW4	Message in fail record	Reason detected	
10	 RY9212148ELS041A	AUX2/thumb knob	[Main ECU] AUX2/thumb knob	a) AUX2 knob connector disconnected b) Break or short in harness	4.6.7.1
		AUX2/thumb right SOL	[Main ECU] AUX2/thumb right solenoid	a) AUX2 right solenoid connector disconnected b) Break or short in harness	
		AUX2/thumb left SOL	[Main ECU] AUX2/thumb left solenoid	a) AUX2 left solenoid connector disconnected b) Break or short in harness	
11	 RY9212032ELS052B	Over voltage	[Main ECU] Over voltage	a) Activated by 18V+ b) Alternator faulty	
12	 RY9212148ELS062A	Boom bottom	[Main ECU] Boom bottom	a) Connector disconnected b) Break or short in harness	
13	 RY9212032ELS053B	Accelerator sensor	[Main ECU] Accelerator sensor	a) AI console connector disconnected b) Break or short in harness	
14	 RY9212032ELS050B	Lever lock solenoid	[Main ECU] Lever lock solenoid	a) Lever lock solenoid line short	
15	 RY9212148ELS042A	Multipurpose SOL	[Main ECU] Multipurpose solenoid	a) Multipurpose solenoid line short	4.6.6.1
16	 RY9212032ELS055B	External 5 V	[Main ECU] External 5 V	Short in 5 V line	
17	 RY9212148ELS069A	–	–	Suspended weight is over the rated load (Eur. overload warning spec. only)	
18	 RY9212148ELS063A	1 - 64	–	Engine system error	
19	 RY9212435ELS045A	–	[Main ECU] Hydraulic temp sensor	Hydraulic oil temperature rising. Engine speed is reduced down to Lo-idle automatically.	

Yellow Warning Lamp Lit

List of failure codes					refer to WSM KX042-4, chapter 4, section
N°	Screen display	Pressing SW4	Message in fail record	Reason detected	
1	 RY9212148ELS065A	–	–	Fuel low Displayed at 6 minute intervals.	
2	 RY9212148ELS066A	–	–	Water temperature rising. Displayed at 6 minute intervals. (110 - 117°C, 230 - 242°F)	
3	 RY9212435ELS020A	–	[Main ECU] Water mixed with fuel	a) Water mixed with fuel in the fuel filter [Reference value:80 to 130 ml (0.07 - 0.11 lmp·qts, 0.08 - 0.14 U.S.qts)] b) Short in the fuel filter line	
4	 RY9212435ELS047A	–	–	When hydraulic sensor temperature is only low the warming-up mode automatically starts.	
5	 RY9212148ELS067A	–	–	Tried to start engine with an unregistered key (Anti-theft spec. only)	
6	 RY9212148ELS068A	–	–	Tried to start engine with a red key (Anti-theft spec. only)	
7	 RY9212148ELS070A	Check location displayed	–	Displayed 10 hours before periodic check due	
8	 RY9212148ELS071A	Check location displayed	–	Past time for periodic check	
9	 RY9212148ELS072A	–	–	Annual check	
10	 RY9212148ELS048A	–	–	The clock may have the wrong time.	
11	 RY9212435ELS046A	–	–	Hydraulic oil temperature rising.	

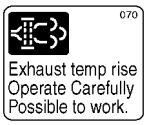
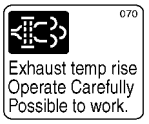
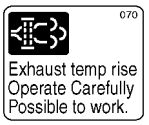
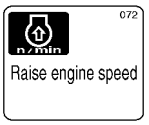
4.3.12 PM Clog Level and the State of the Machine

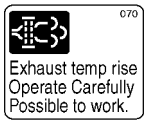
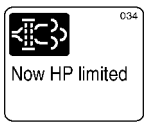
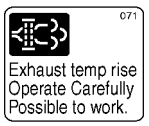
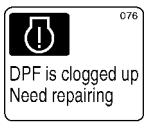
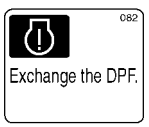
Inhibit switch ON

Clog Level	Warning Lamp	Buzzer	Engine Output	Screen	Content displayed	Status and correction
Level 0	OFF	–	–	–	–	–
Level 1	OFF	–	–	–	–	–
Level 2	Blinking (Yellow)	··PiPiPi·· (Continue)	–	 RY9212148ELS088A	Regeneration of DPF is inhibited. Allow regeneration.	–
Level 3	Blinking (Red)	··PiPiPi·· (0–50 s) Pi-···Pi- (50 - 60 sec.)	50 %	 RY9212148ELS089A	Regeneration of DPF is inhibited. Allow regeneration. HP limited to low power.	*2
		Pi-···Pi- (from 60 sec.)	–	 RY9212148ELS092A	Engine forced to stop Increase RPM and restart	Turn and maximize the accelerator dial and restart *1
Level 4	Blinking (Red)	PiPiPiPi (0 - 50 s) Pi-···Pi- (from 50 sec.)	50 %	 RY9212148ELS085A	DPF clogged up Needs maintenance	Use the engine diagnosis tool and regenerate it manually *1 *2
Level 5	Blinking (Red)	PiPiPiPi (Continue)	50 %	 RY9212148ELS091A	Replace the DPF	DPF is clogged. Needs replacement.

The engine rpm drops up to only 1650 rpm while pressing the AI switch.
PM clog level does not change when the key is turned OFF. The level stays the same when the engine restarts.
*1 : If the lever lock is up, the engine stops forcibly in 60 seconds.
*2 : If the lever lock is down, the engine does not stop. The same buzzer from 0 to 50 sec. keeps sounding.

Inhibit switch OFF

Clog Level	Warning lamp	Buzzer	Engine output	Engine RPM	Screen	Contents displayed	Status and correction
Level 0	OFF	–	–	–	–	–	–
Level 1	Blinking (Yellow)	··PiPiPi·· (Every 60 sec.)	–	–	 RY9212148ELS080A	Exhaust temperature rising Operate carefully Can continue working	More than 2200 engine RPM needed: DPF regenerates Less than 2200 engine RPM: DPF may not auto-regenerate due to open air and water temp.
Level 2	Blinking (Yellow)	··PiPiPi·· (Every 60 sec.)	–	More than 2200 rpm	 RY9212148ELS080A	Exhaust temperature rising Operate carefully Can continue working	Being auto-regenerated
				Less than 2200 rpm	 RY9212148ELS080A	Exhaust temperature rising Operate carefully Can continue working	When the engine RPM is low, DPF may not auto-regenerate due to open air and water temp. The screen changes every 3 sec.
					 RY9212148ELS082A	Increase engine RPM	

Clog Level	Warning lamp	Buzzer	Engine output	Engine RPM	Screen	Contents displayed	Status and correction
Level 3	Blinking (Yellow)	PiPiPi (Every 60 sec.)	50 %	More than 2200 rpm	 RY9212148ELS080A	Exhaust temperature rising Operate carefully Can continue working	Being auto-regenerated The screen is changed every 3 sec.
					 RY9212148ELS079A	HP limited to low power	
	Blinking (Red)	··PiPiPi·· (0-50 sec.) Pi-···Pi- (50-60 sec.)	50 %	Less than 2200 rpm	 RY9212148ELS081A	Exhaust temperature rising Operate carefully Can continue working	When the engine RPM is low, DPF may not auto-regenerate due to open air and water temp. The screen changes every 3 sec. *2
					 RY9212148ELS084A	Increase engine RPM HP limited low power	
		Pi-···Pi- (from 60 sec.)	–		 RY9212148ELS092A	Engine forced to stop Increase RPM and restart	Turn and maximize the accelerator dial and restart. *1
Level 4	Blinking (Red)	PiPiPiPi (0-50 sec.) Pi-···Pi- (from 50 sec.)	50 %	–	 RY9212148ELS085A	DPF clogged up Needs maintenance	Use the engine diagnosis tool and regenerate it manually *1 *2
Level 5	Blinking (Red)	PiPiPiPi (Continue)	50 %	–	 RY9212148ELS091A	Replace the DPF	DPF is clogged. Needs replacement.

The engine rpm drops up to only 2200 rpm while pressing the AI switch.
PM clog level does not change when the key is turned OFF. The level stays the same when the engine restarts.
*1 : If the lever lock is up, the engine stops forcibly in 60 seconds.
*2 : If the lever lock is down, the engine does not stop. The same buzzer from 0 to 50 sec. keeps sounding.

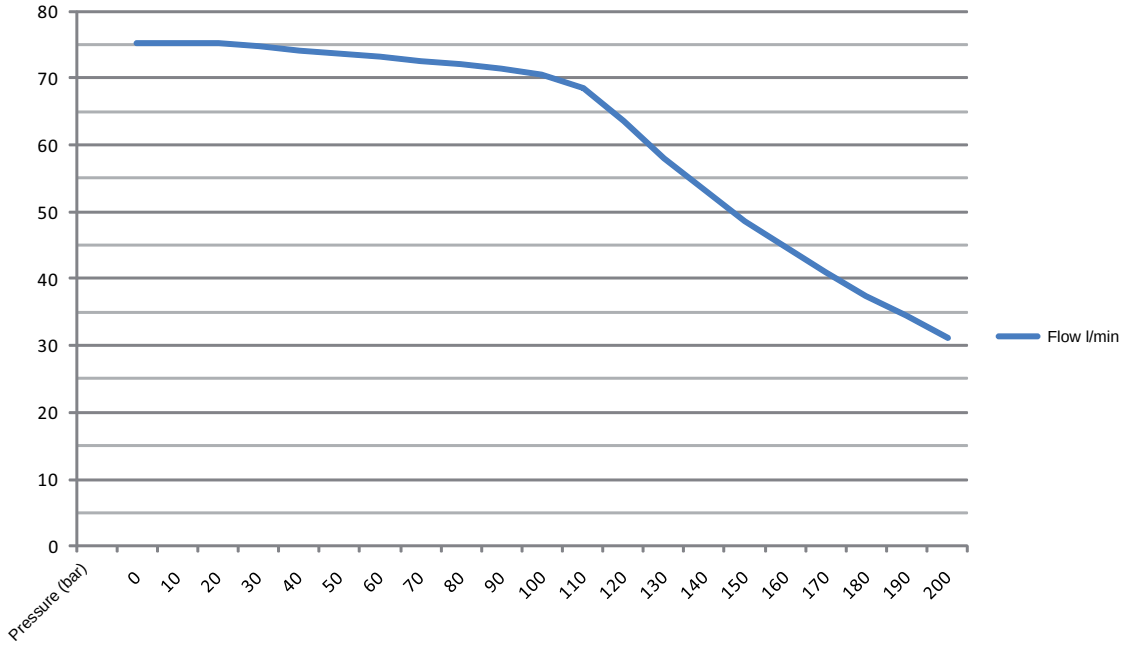
5 Other informations, engine

5.1 AUX lines

AUX Line	Thread size	
	1	2
KX057-4	PT 1/2' *	PT 1/2' *
U48-4	PT 1/2' *	PT 1/2' *
U55-4	PT 1/2' *	PT 1/2' *
KX015-4	G3/8, O-ring	-
KX016-4	G3/8, O-ring	-
KX018-4	G3/8, O-ring	-
KX019-4	G3/8, O-ring	-
KX080-4, KX080-4α	G3/4 flat seal	G3/4 flat seal
U27-4	M18 x 1,5, O-ring	-
KX027-4	PT 1/2' *	PT 1/2' *
KX030-4	PT 1/2' *	PT 1/2' *
U36-4	PT 1/2' *	PT 1/2' *
KX042-4	PT 1/2' *	PT 1/2' *

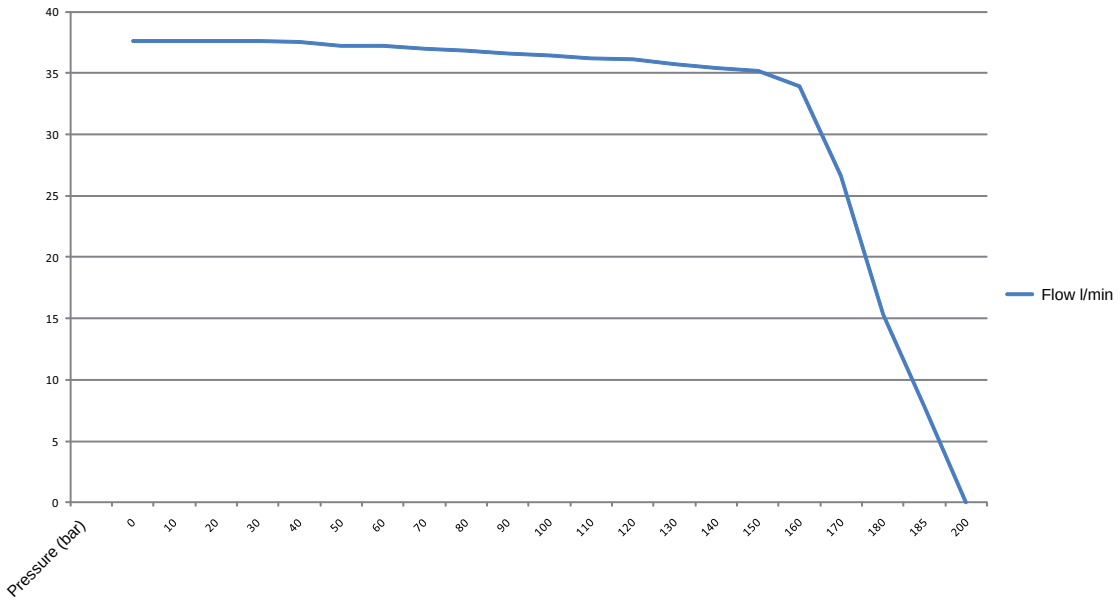
* do not use NPT 1/2' !

5.1.1 Flow rate AUX 1 KX057-4, U55-4



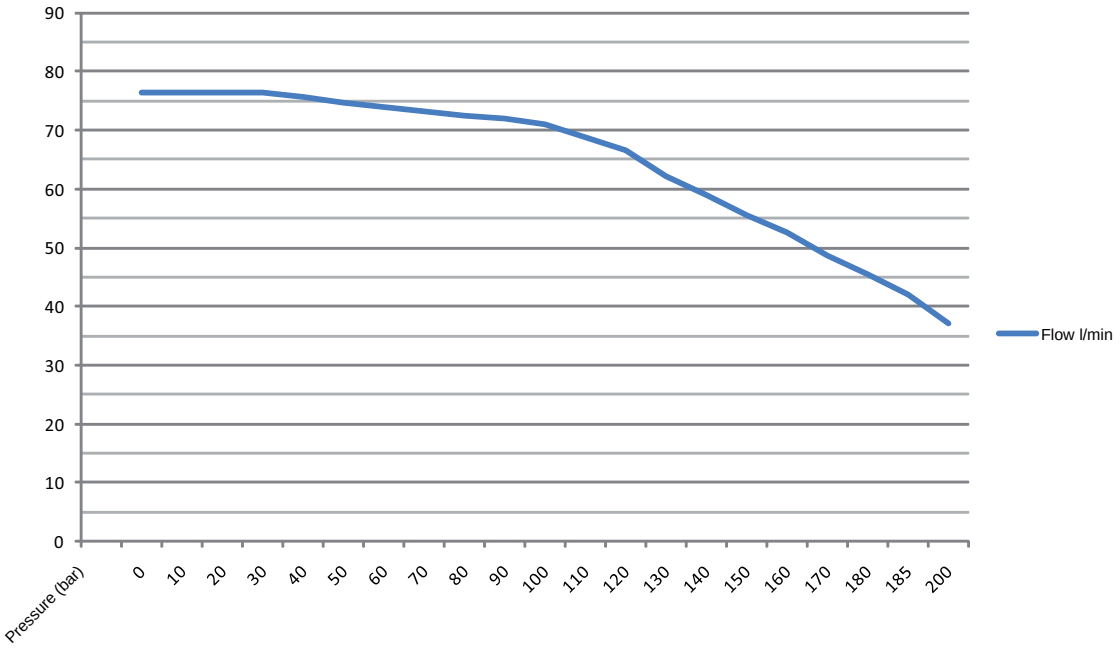
The values in the diagram as stated above are reference values and are measured on the machine.

5.1.2 Flow rate AUX 2 KX057-4, U55-4



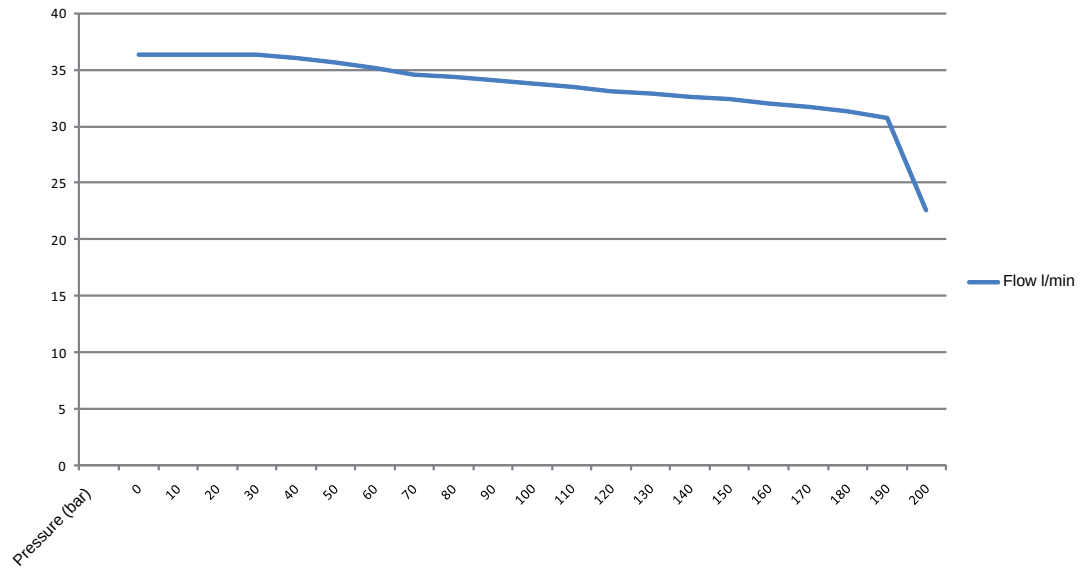
The values in the diagram as stated above are reference values and are measured on the machine.

5.1.3 Flow rate AUX 1 U48-4



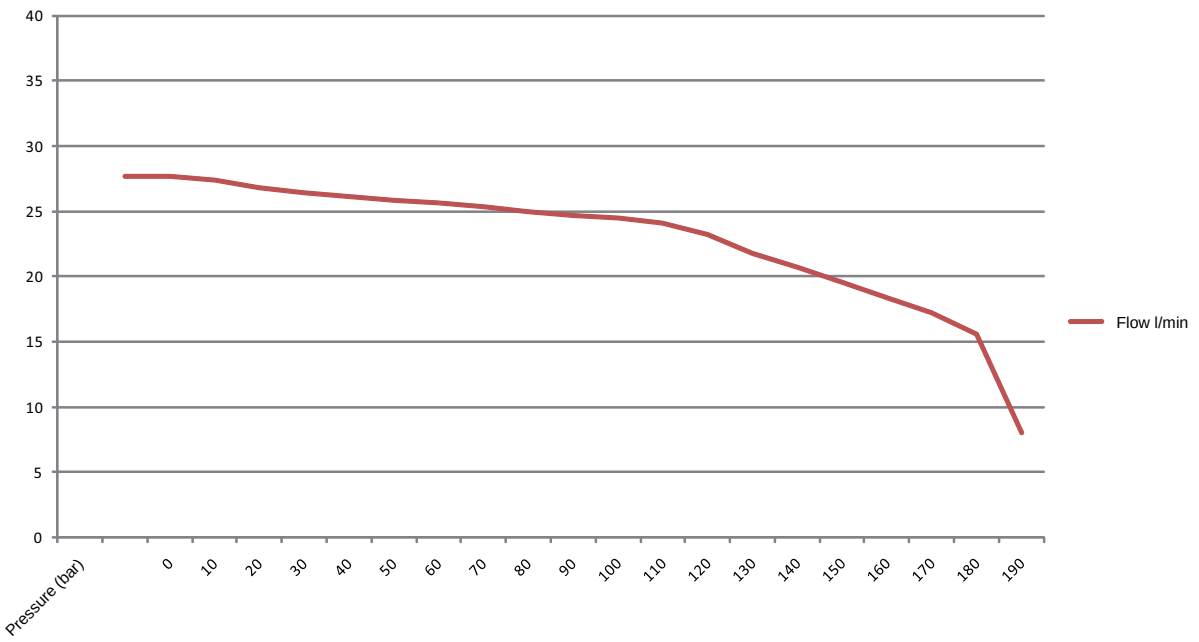
The values in the diagram as stated above are reference values and are measured on the machine.

5.1.4 Flow rate AUX 2 U48-4



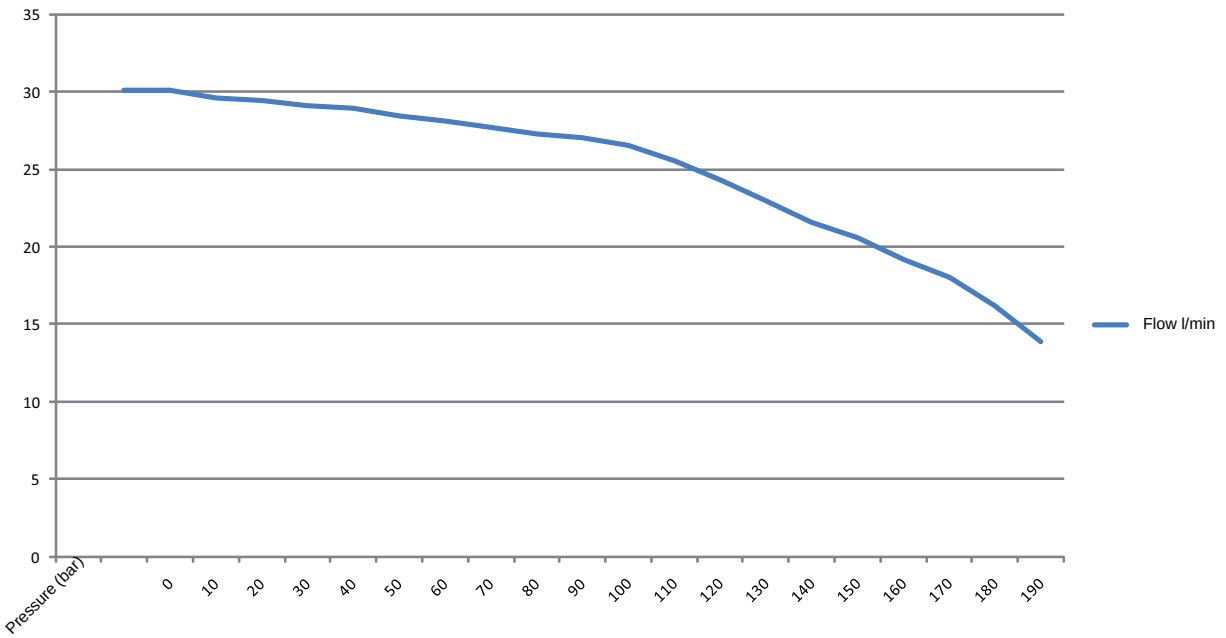
The values in the diagram as stated above are reference values and are measured on the machine.

5.1.5 Flow rate AUX 1 KX015-4, KX016-4



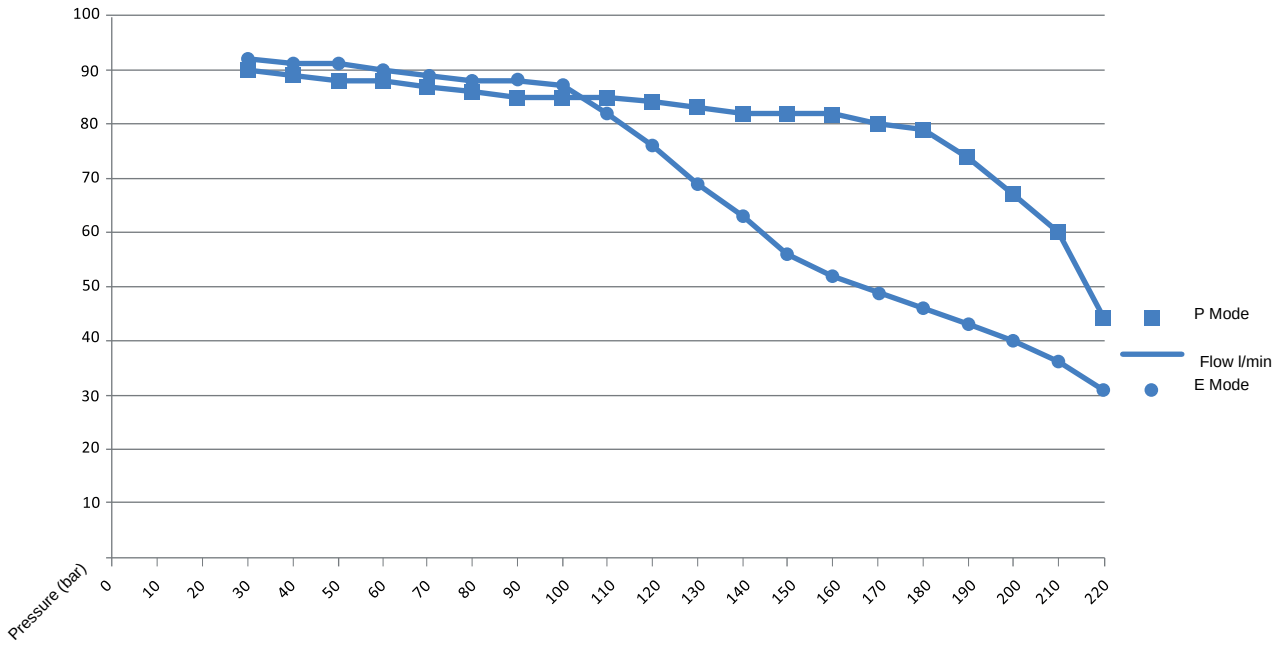
The values in the diagram as stated above are reference values and are measured on the machine.

5.1.6 Flow rate AUX 1 KX018-4, KX019-4



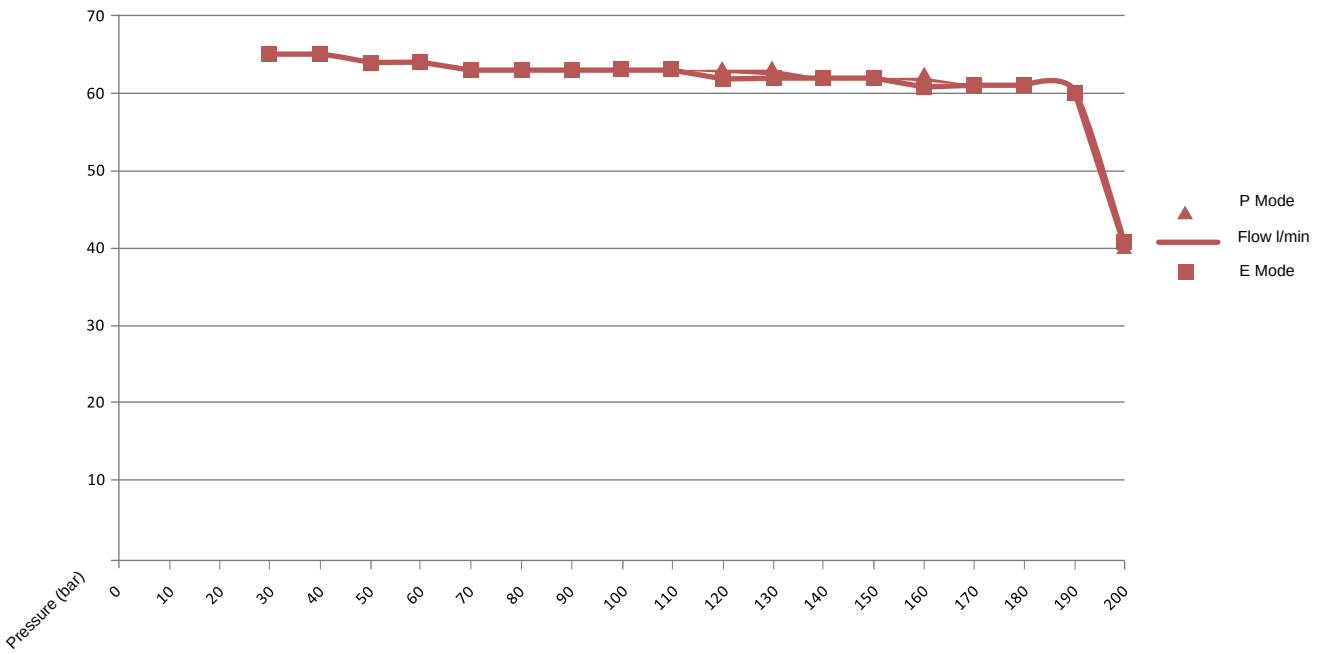
The values in the diagram as stated above are reference values and are measured on the machine.

5.1.7 Flow rate AUX 1 KX080-4



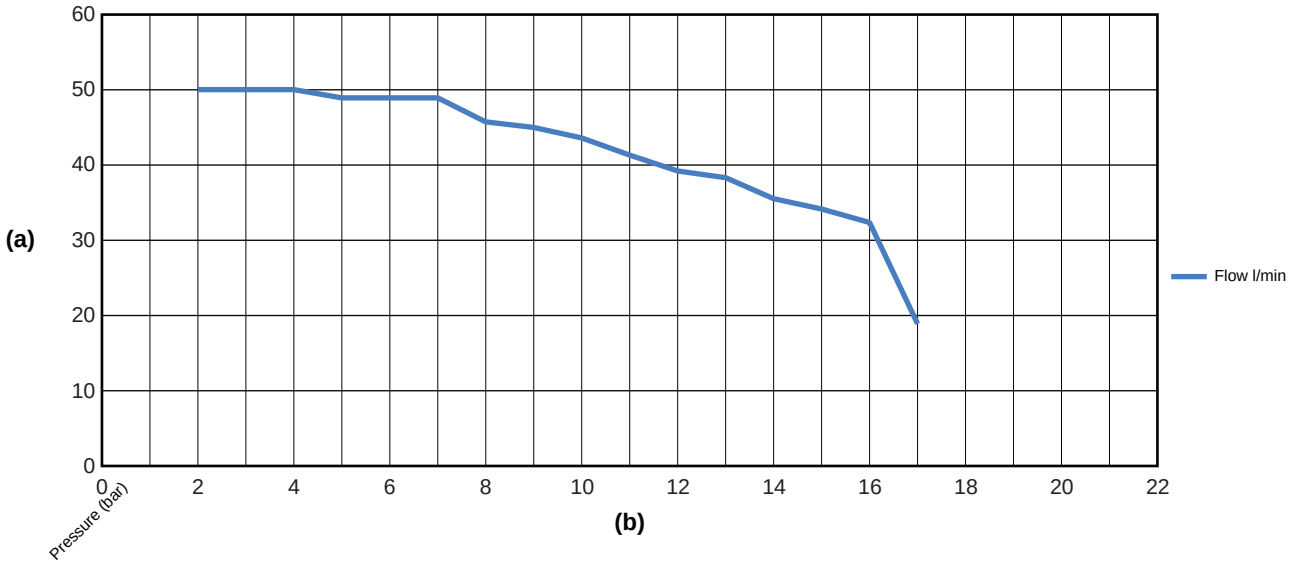
The values in the diagram as stated above are reference values and are measured on the machine.

5.1.8 Flow rate AUX 2 KX080-4



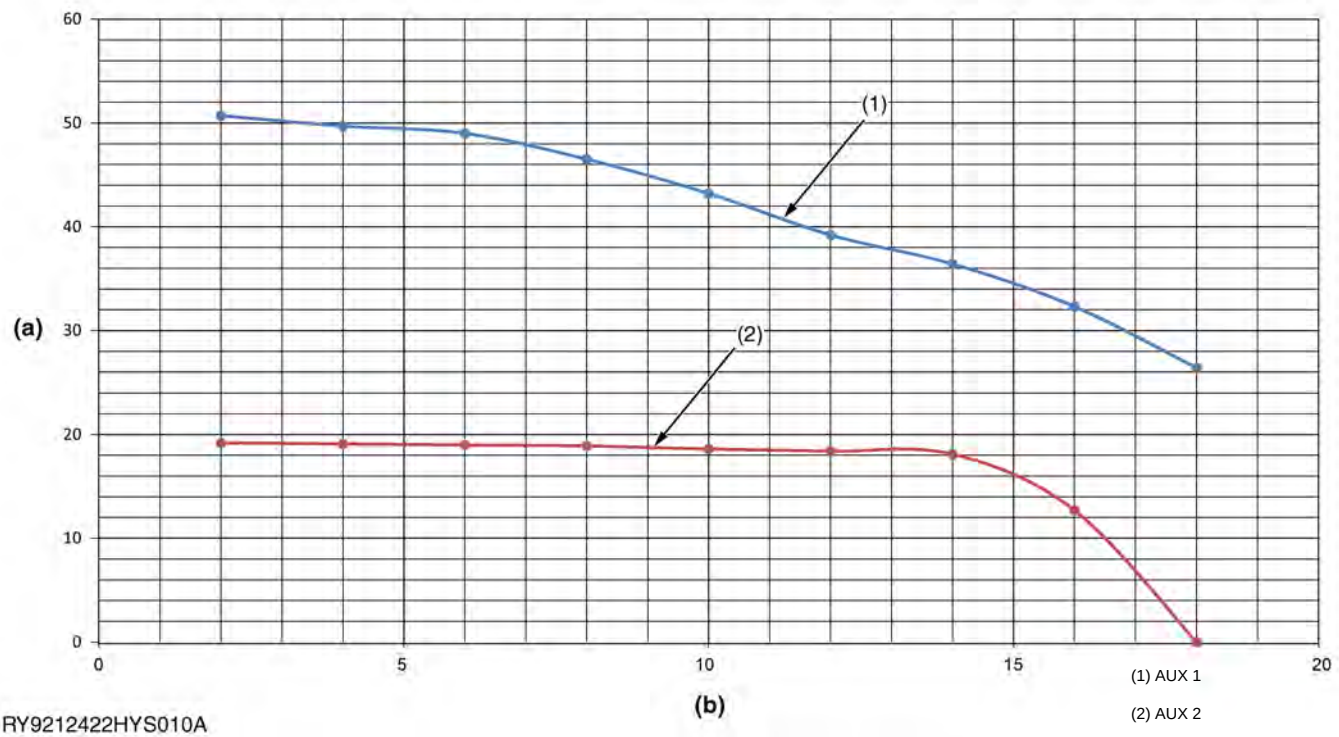
The values in the diagram as stated above are reference values and are measured on the machine.

5.1.9 Flow rate AUX 1 U27-4



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

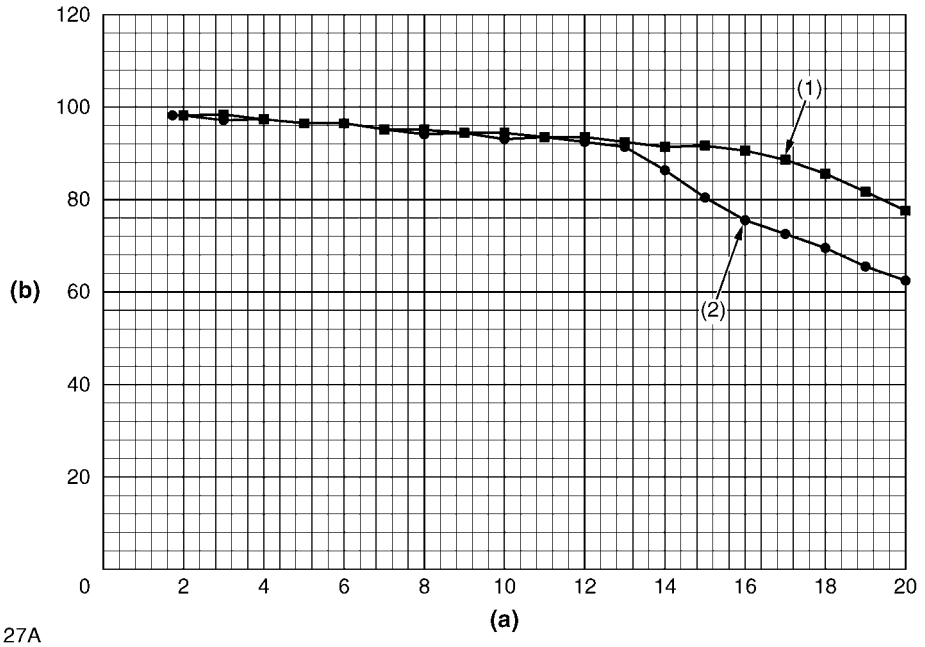
5.1.10 Flow rate AUX U27-4 Hi



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

5.1.11 Flow rate AUX KX080-4α

(A)

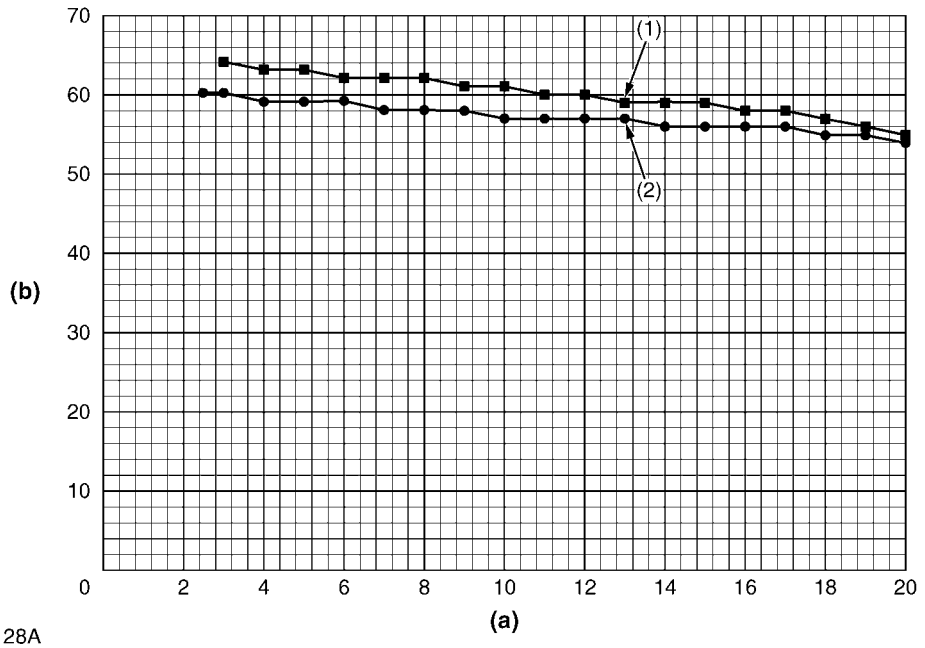


(1) P-Modus

(2) E-Modus

RY9212435HYS127A

(B)



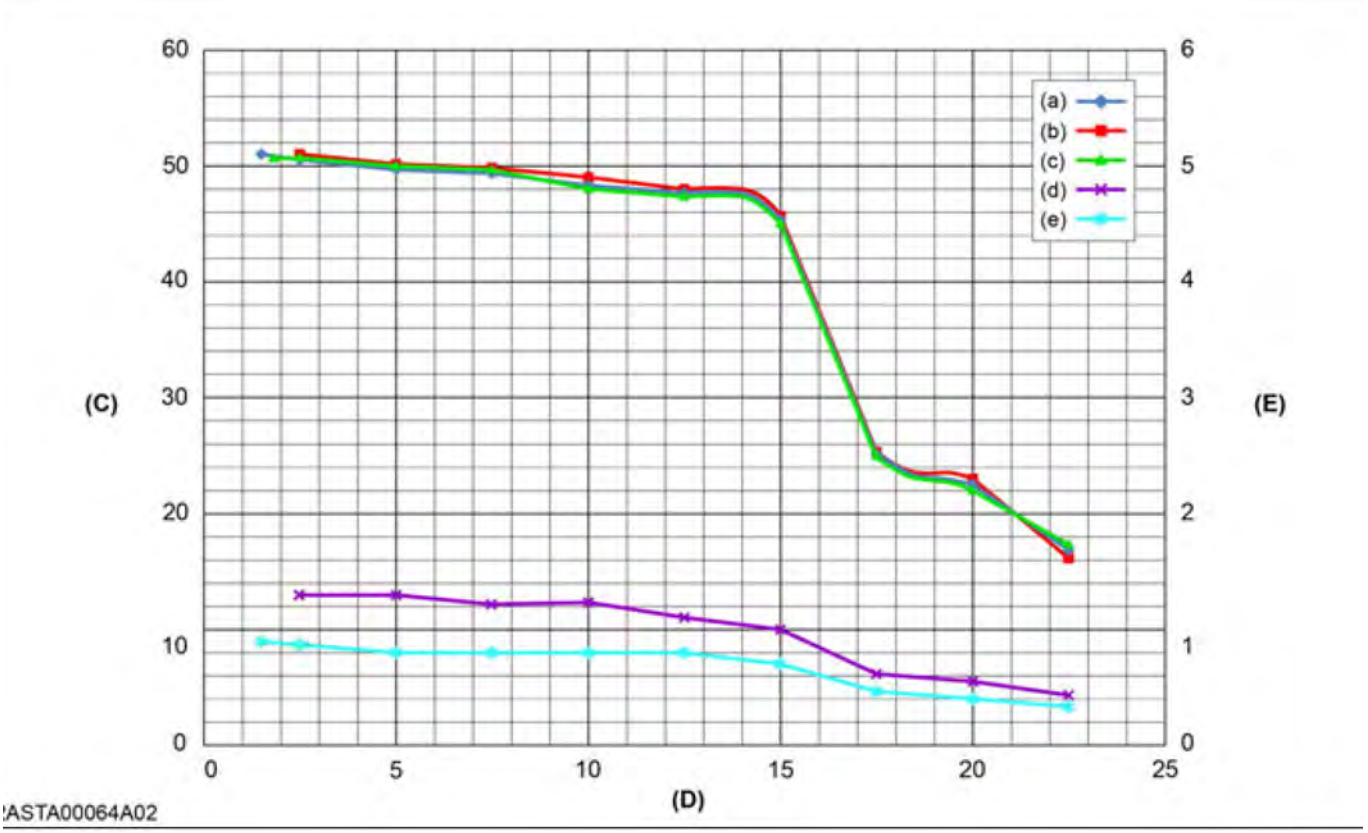
(1) P-Modus

(2) E-Modus

RY9212435HYS128A

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

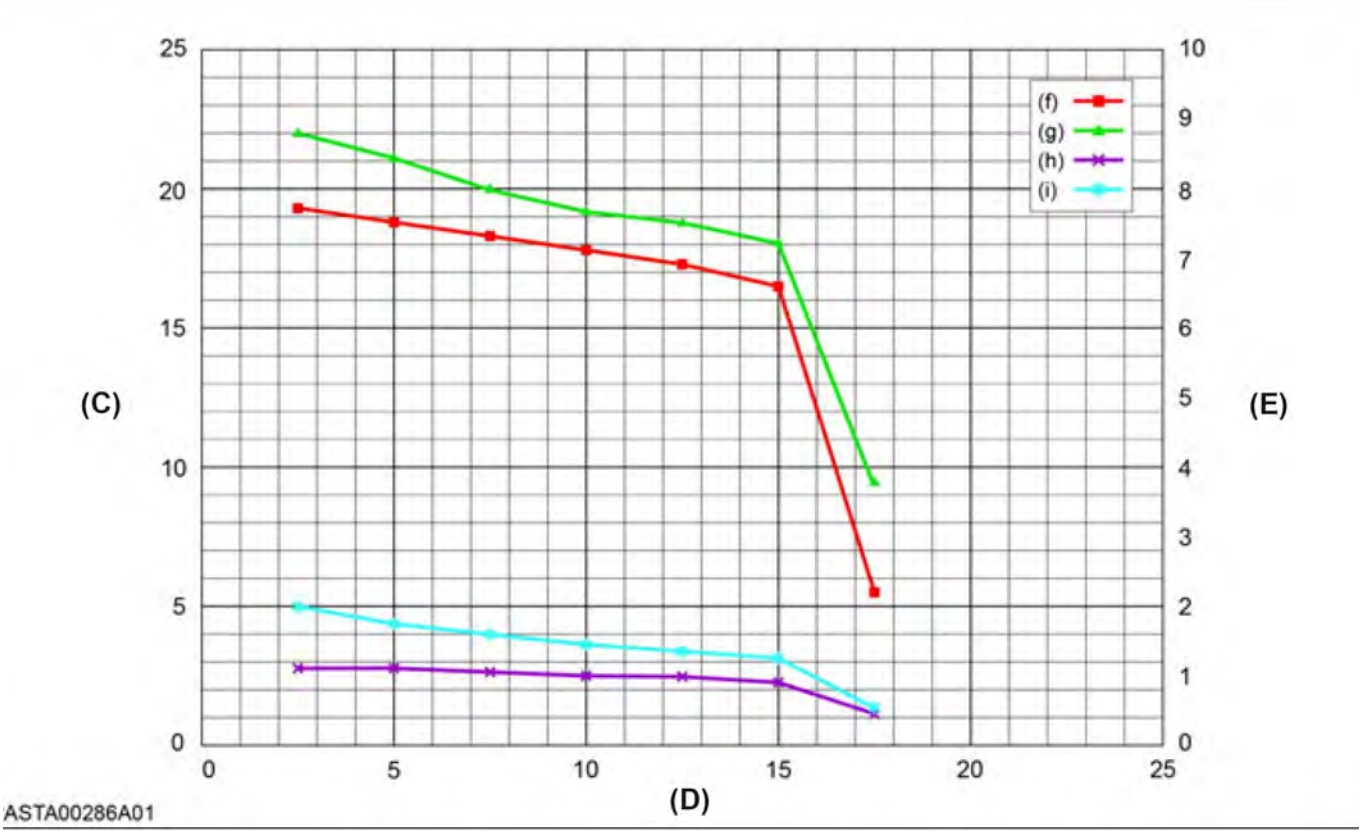
5.1.12 Flow rate AUX 1 KX027-4



(C)	Flow rate (L/min)	(a)	AUX1 LH (third line open)	(d)	Back pressure (third line close)	(e)	Back pressure (third line open)
(D)	Pressure (MPa)	(b)	AUX1 LH (third line close)				
(E)	Back pressure (MPa)	(c)	AUX1 RH (third line close)				

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

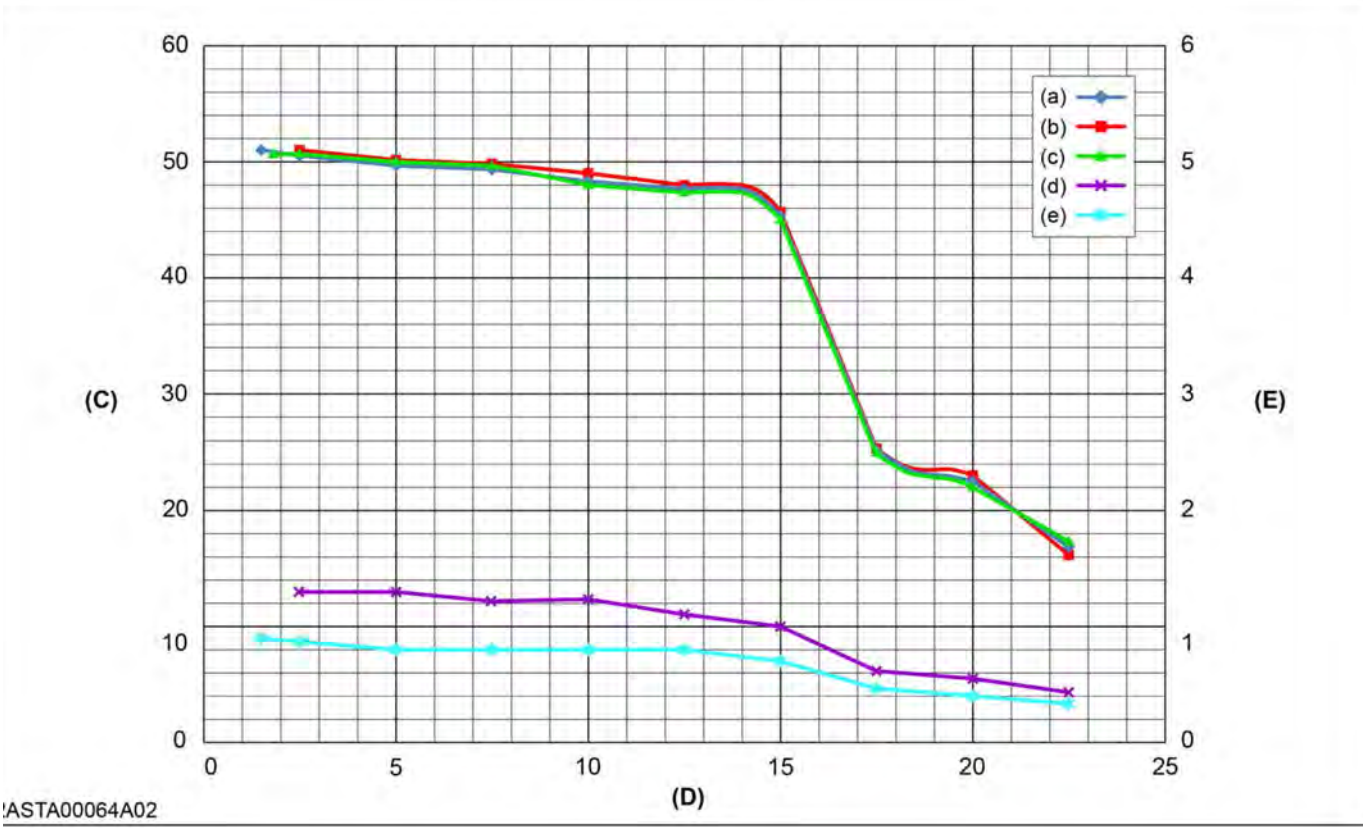
5.1.13 Flow rate AUX 2 KX027-4



(C)	Flow rate (L/min)	(E)	Back pressure (MPa)	(g)	AUX2 RH	(i)	Back pressure (AUX2 RH)
(D)	Pressure (MPa)	(f)	AUX2 LH	(h)	Back pressure (AUX2 LH)		

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

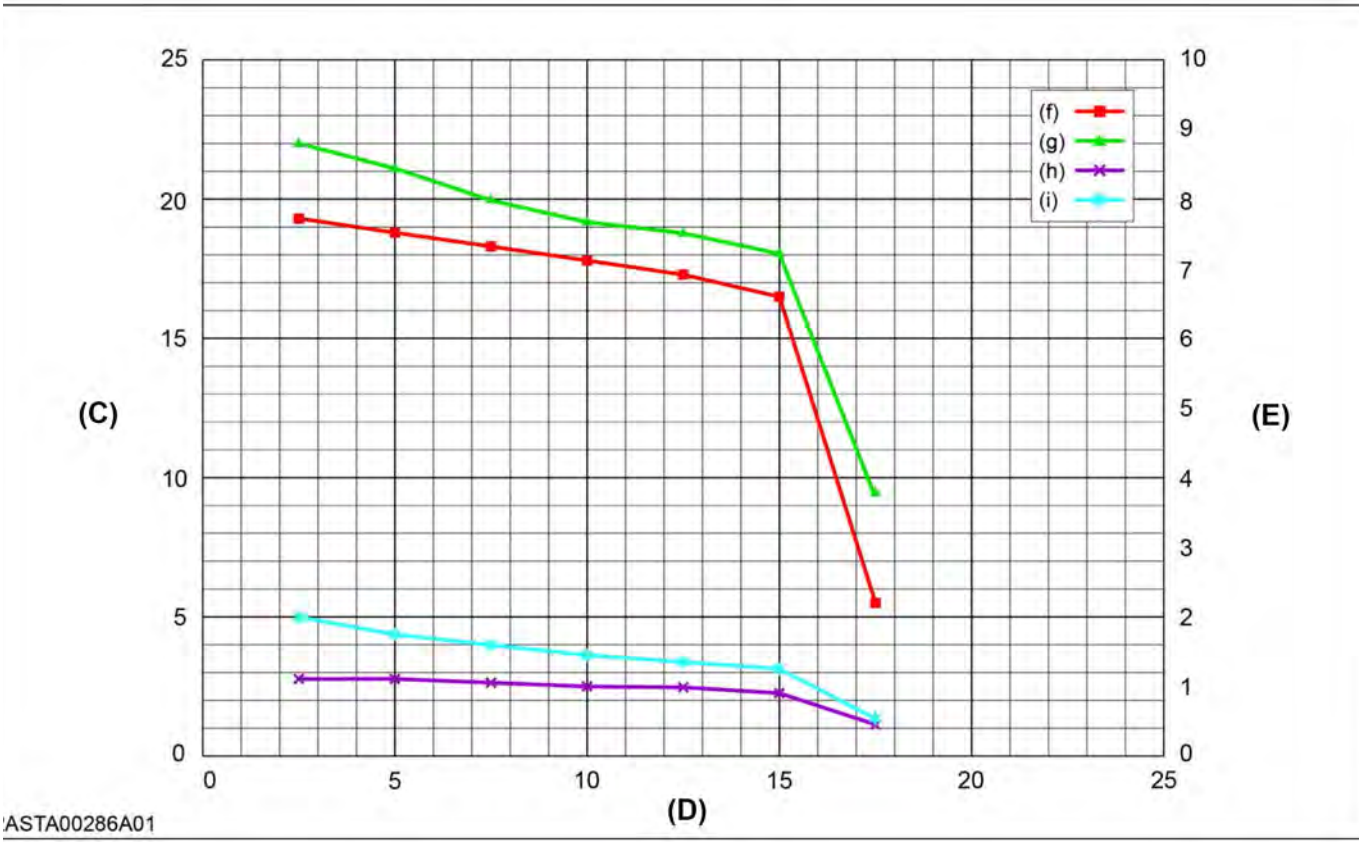
5.1.14 Flow rate AUX 1 KX030-4



(C)	Flow rate (L/min)	(a)	AUX1 LH (third line open)	(d)	Back pressure (third line close)	(e)	Back pressure (third line open)
(D)	Pressure (MPa)	(b)	AUX1 LH (third line close)				
(E)	Back pressure (MPa)	(c)	AUX1 RH (third line close)				

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

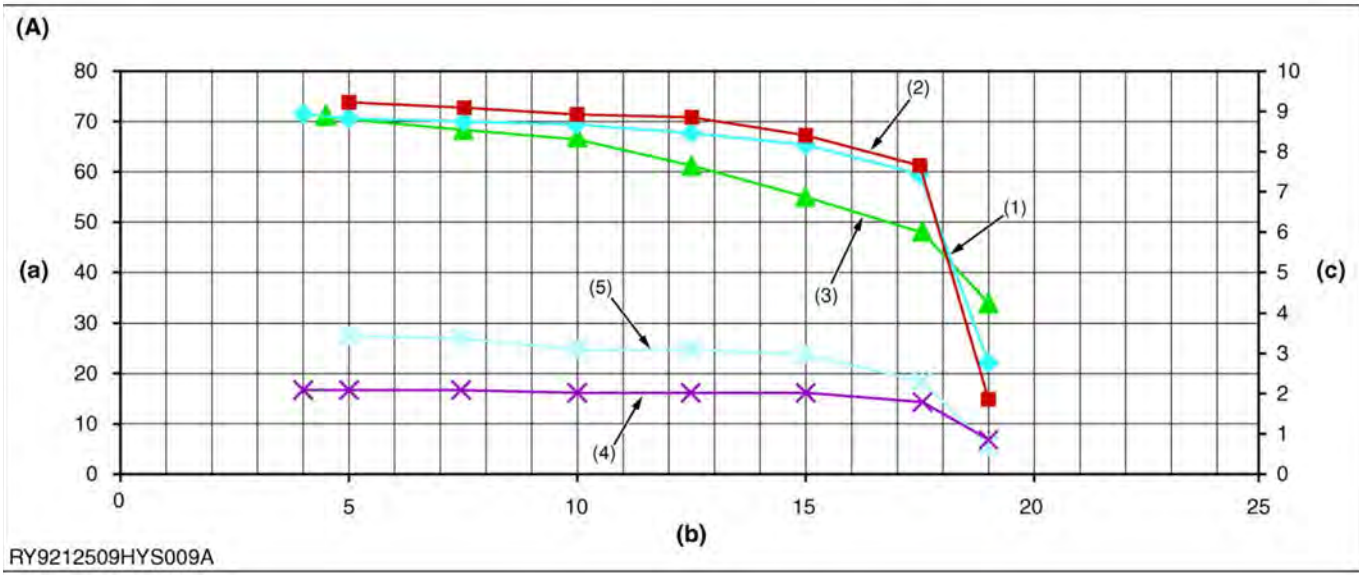
5.1.15 Flow rate AUX 2 KX030-4



(C)	Flow rate (L/min)	(E)	Back pressure (MPa)	(g)	AUX2 RH	(i)	Back pressure (AUX2 RH)
(D)	Pressure (MPa)	(f)	AUX2 LH	(h)	Back pressure (AUX2 LH)		

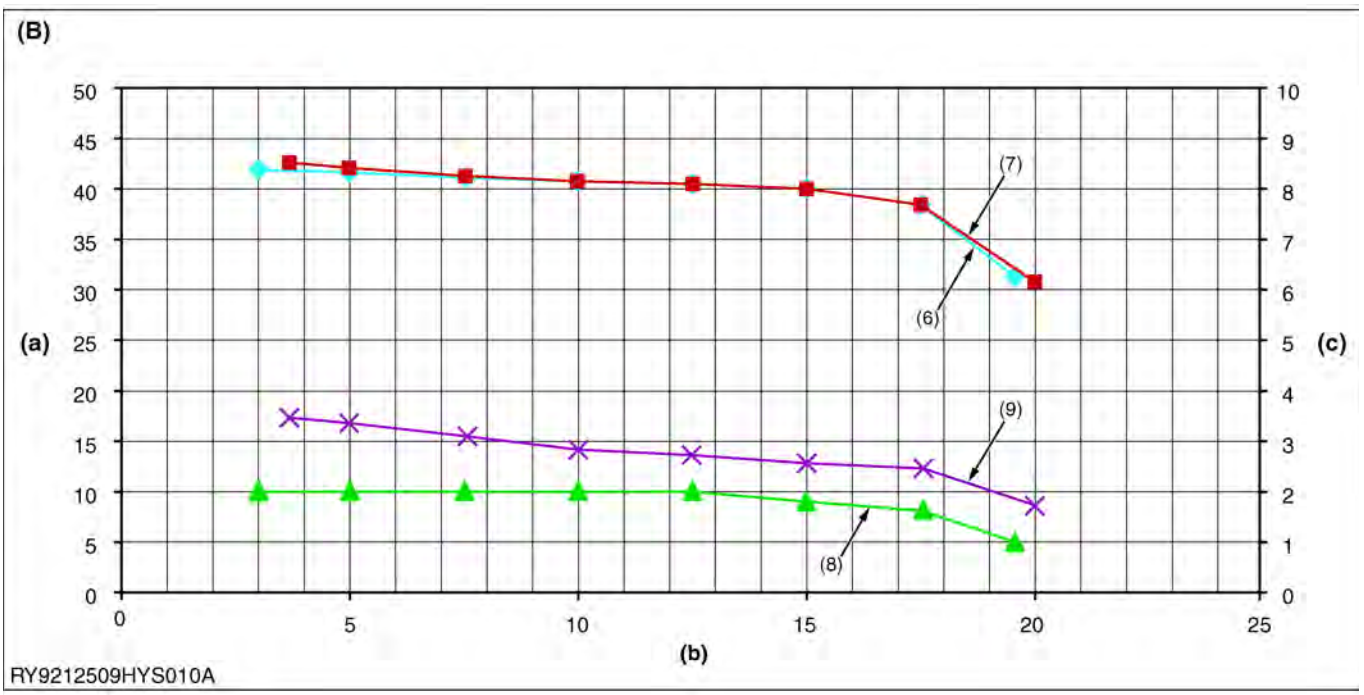
The values in the diagram as stated above are reference values and are measured on the machine.

5.1.16 Flow rate AUX KX042-4



(1)	LH (TL Open)	(4)	Back Pressure (TL Open)	**(a) Flow Rate (L/min)**	**(A) AUX1**
(2)	LH (TL Close)	(5)	Back Pressure (TL Close)	**(b) Pressure (MPa)**	
(3)	RH			**(c) Back Pressure (MPa)**	

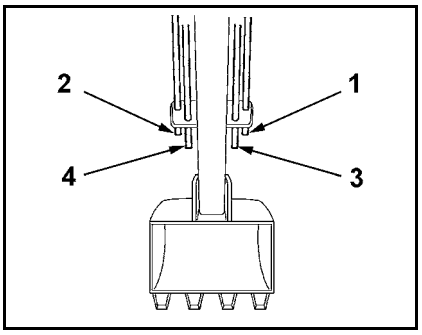
· TL: Third line



(6)	LH	(8)	Back Pressure (LH)	**(a) Flow Rate (L/min)**	**(B) AUX2**
(7)	RH	(9)	Back Pressure (RH)	**(b) Pressure (MPa)**	
				(c) Back Pressure (MPa)	

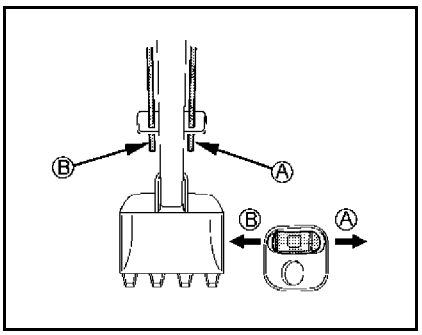
5.1.17 Position of service port connection

KX057-4, U55-4, U48-4, KX080-4, KX080-4α, U27-4 Hi, KX027-4 Hi, KX030-4 Hi, U36-4, KX042-4



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

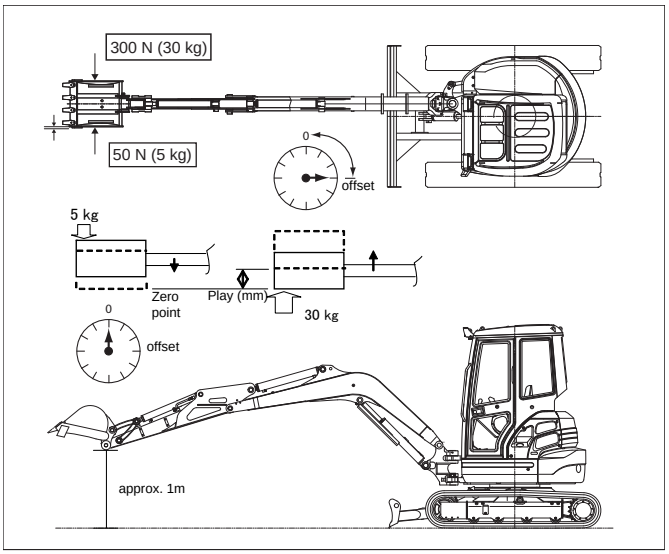
KX015-4, KX016-4, KX018-4, KX019-4, U27-4, KX030-4



A AUX 1 RH
B AUX 1 LH

5.2 Play at the bucket tip

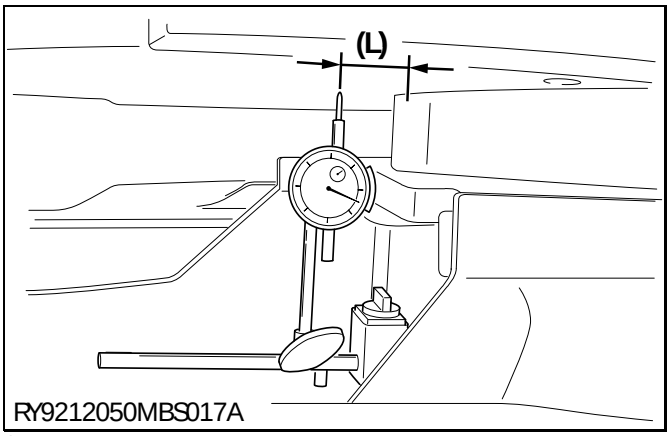
Model	Play at the bucket tip*
	max (mm)
KX057-4	73
U55-4	73
U48-4	73
KX015-4	73
KX016-4	73
KX018-4	73
KX019-4	73
KX080-4, KX080-4α	70
U27-4	73
KX027-4	73
KX030-4	73
U36-4	70
KX042-4	73



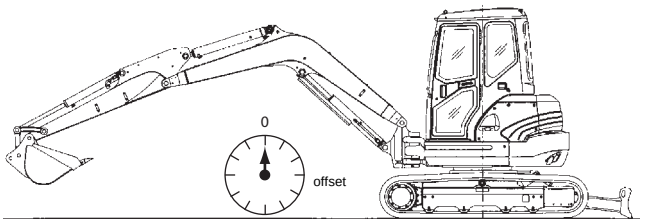
* The service limit is mentioned in the WSM of the respective model.

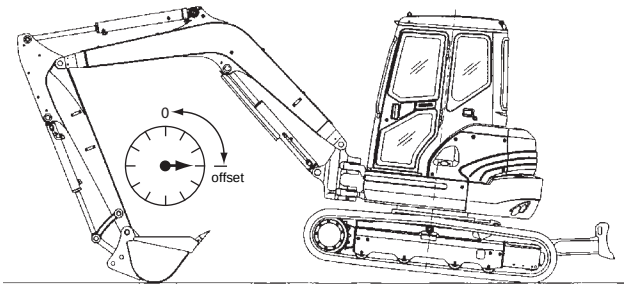
5.3 Swivel bearing play

Model	Swivel bearing play (mm)		
	Service specification	Allowable limit	Distance "L"[1] in mm
KX057-4	1,08	2,16	20
U55-4	1,28	2,56	20
U48-4	2,36	4,72	50
KX015-4	1,6	3,2	50
KX016-4	1,6	3,2	50
KX018-4	1,6	3,2	50
KX019-4	1,6	3,2	50
KX080-4, KX080-4α	1,24	2,48	50
U27-4	2,2	4,4	100
KX027-4	0,82	1,64	50
KX030-4	0,84	1,68	50
U36-4	1,4	2,8	50
KX042-4	1,36	2,71	70



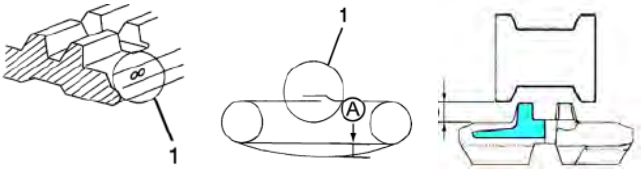
1 "L" is the distance between the swivel bearing race and the measuring point



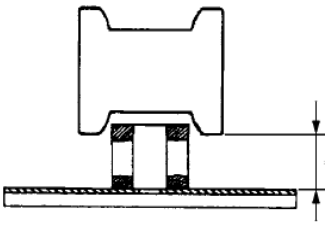


5.4 Crawler tension

Model	Crawler tension	
	Rubber (mm)	Steel (mm)
KX057-4	10~15	80~85
U55-4	10~15	80~85
U48-4	10~15	80~85
KX015-4	10 ~ 15	-----
KX016-4	10 ~ 15	-----
KX018-4	10 ~ 15	-----
KX019-4	10 ~ 15	-----
KX080-4, KX080-4α	25 ~ 40	40 ~ 55
U27-4	10 ~ 15	75 ~ 80
KX027-4	10 ~ 15	80 ~ 85
KX030-4	10 ~ 15	75 ~ 80
U36-4	10 ~ 15	75 ~ 80
KX042-4	10 ~ 15	85 ~ 90



Note:
KX080-4 with rubber crawler type SP, RD819-22320, possible to tension in each position.



Steel crawler

5.5 Engine basic data

Model	Engine base type	Compression pressure (bar)		Valve clearance (mm)	Engine rpm				Fan belt tension mm/98N
		New engine	Allow-able limit		Idle	High idle*	Blade and 2 pumps in relief **	Pump in relief **	
KX057-4	V2603-DI	~32	~22	0,13~0,17	1050~1200	< 2400	> 1980	-	10~12
U55-4	V2603-DI	~32	~22	0,13~0,17	1050~1200	< 2400	> 1980	-	10~12
U48-4	V2603-DI	~32	~22	0,13~0,17	1050~1200	< 2400	-	> 1980	10~12
KX015-4	D782-BH5	28,4~32,4	22,6	0,145~0,185	1300~1400	< 2600	> 2300	> 2300	7~9
KX016-4	D782-BH5	28,4~32,4	22,6	0,145~0,185	1300~1400	< 2600	> 2300	> 2300	7~9
KX018-4	D902-BH2	35,3~40,2	25,5	0,145~0,185	1300~1400	< 2600	> 2300	> 2300	7~9
KX019-4	D902-BH2	35,3~40,2	25,5	0,145~0,185	1300~1400	< 2600	> 2300	> 2300	7~9
KX080-4, KX080-4α	V3307-CRS-T4	~31,0	~21,0	0,13~0,17	1000	< 2220	-	-	12~15
U27-4	D1105-E4-BH-2	37~41	22,5	0,145~0,185	1300~1400	< 2600	> 2300	> 2300	7~9
KX027-4	V1505-E4-BH-2	37~41	22,5	0,145~0,185	1250~1350	< 2450	> 2025	> 2025	7~9
KX030-4	V1505-E4-BH-3	37~41	22,5	0,145~0,185	1250~1350	< 2450	> 2025	> 2025	7~9
U36-4	D1703-M-DI-E4	29,5~32,3	23,5	0,18~0,22	Canopy: 1025~1075 Cabin: 1275~1325	2200	-	-	9~11
KX042-4	D1803-CR-TE4	29,5~32,3	23,5	0,18~0,22	1150	2300	-	-	7~9

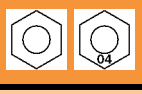
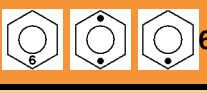
* High idle rpm with no load.
** Arm and bucket in relief position, hydr. oil temperature 50 °C ± 5 °C

5.6 A/C pressure switch

Model	A/C pressure switch (bar)		Refrigerant quantity (kg)
	Low	High	
KX057-4	1,96	31,4	0,65 ~ 0,75
U55-4	1,96	31,4	0,65 ~ 0,75
U48-4	1,96	31,4	0,65 ~ 0,75
KX015-4	------	------	------
KX016-4	------	------	------
KX018-4	------	------	------
KX019-4	------	------	------
KX080-4, KX080-4α	1,96	31,4	0,95
U27-4	------	------	------
KX027-4	------	------	------
KX030-4	------	------	------
U36-4	1,94 ~ 1,98	25,5 ~ 37,3	800
KX042-4	1,96	31,4	0,65 ~ 0,75

6 Tightening torques

6.1 General tightening torques

Indication on top of bolt	 No-grade or 4T						 7T						 9T		
Indication on top of nut	 No-grade or 4T												 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

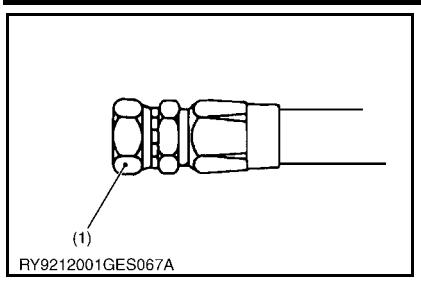
6.1.1 Stud bolts

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

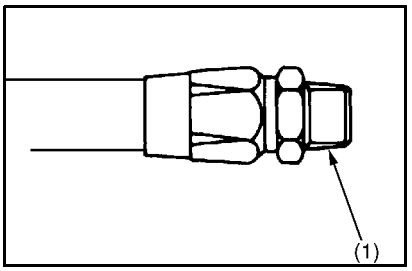
Union nuts	
1/8	7,8 ~ 11,8N·m 0,8 ~ 1,2kgf·m 5,7 ~ 8,7lbf·ft
1/4	24,5 ~ 29,2N·m 2,5 ~ 3,0kgf·m 18,1 ~ 21,7lbf·ft
3/8	37,2 ~ 42,1N·m 3,8 ~ 4,3kgf·m 27,5 ~ 31,1lbf·ft
1/2	58,8 ~ 63,7N·m 6,0 ~ 6,5kgf·m 43,4 ~ 47,0lbf·ft
3/4	117,6 ~ 127,4N·m 12,0 ~ 13,0kgf·m 86,8 ~ 94,0lbf·ft
1	181,3 ~ 191,1N·m 18,5 ~ 19,5kgf·m 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

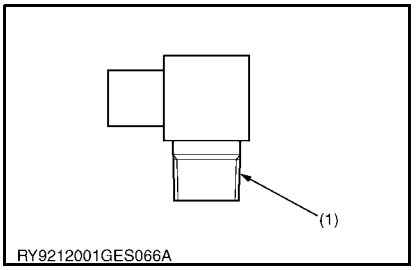
Tapered external thread	
1/8	19,6 ~ 29,4N·m 2,0 ~ 3,0kgf·m 14,5 ~ 21,7lbf·ft
1/4	36,6 ~ 44,1N·m 3,7 ~ 4,5kgf·m 26,8 ~ 32,5lbf·ft
3/8	68,6 ~ 73,5N·m 7,0 ~ 7,5kgf·m 50,6 ~ 54,2lbf·ft
1/2	83,4 ~ 88,3N·m 8,5 ~ 9,0kgf·m 61,5 ~ 65,1lbf·ft
3/4	166,6 ~ 181,3N·m 17,0 ~ 18,5kgf·m 123,0 ~ 133,8lbf·ft



(1) Taper

6.1.3 Torque for tapering adaptors

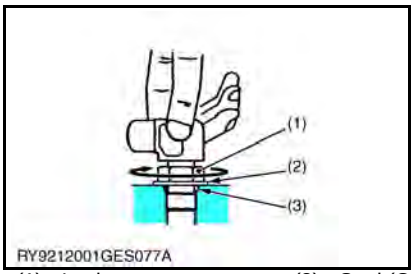
Tapered adaptors	
1/8	19,6 ~ 29,4N·m 2,0 ~ 3,0kgf·m 14,5 ~ 21,7lbf·ft
1/4	36,6 ~ 44,1N·m 3,7 ~ 4,5kgf·m 26,8 ~ 32,5lbf·ft
3/8	68,6 ~ 73,5N·m 7,0 ~ 7,5kgf·m 50,6 ~ 54,2lbf·ft
1/2	83,4 ~ 88,3N·m 8,5 ~ 9,0kgf·m 61,5 ~ 65,1lbf·ft
3/4	166,6 ~ 181,3N·m 17,0 ~ 18,5kgf·m 123,0 ~ 133,8lbf·ft



(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)
KX057-4	9,81 ~ 11,2	23 ~ 36	147 ~ 156	196,1 ~ 225,6	7,7 ~ 9,3	26,5 ~ 29,4	85 ~ 94	196,1 ~ 225,6	166,7 ~ 196,1	166,7 ~ 196,1
U55-4	9,81 ~ 11,2	23 ~ 36	147 ~ 156	196,1 ~ 225,6	7,7 ~ 9,3	26,5 ~ 29,4	85 ~ 94	196,1 ~ 225,6	166,7 ~ 196,1	166,7 ~ 196,1
U48-4	9,81 ~ 11,2	23 ~ 36	147 ~ 156	196,1 ~ 225,6	7,7 ~ 9,3	26,5 ~ 29,4	85 ~ 94	196,1 ~ 225,6	166,7 ~ 196,1	166,7 ~ 196,1
KX015-4	9,81 ~ 11,2	25 ~ 34	38 ~ 42	39,2 ~ 45,1	7,9 ~ 14	16,6 ~ 17,6	48,1 ~ 55,9	77,5 ~ 90,2	60,7 ~ 70,6	60,7 ~ 70,6
KX016-4	9,81 ~ 11,2	25 ~ 34	38 ~ 42	39,2 ~ 45,1	7,9 ~ 14	16,6 ~ 17,6	48,1 ~ 55,9	77,5 ~ 90,2	60,7 ~ 70,6	60,7 ~ 70,6
KX018-4	9,81 ~ 11,2	25 ~ 34	38 ~ 42	39,2 ~ 45,1	7,9 ~ 14	16,6 ~ 17,6	48,1 ~ 55,9	77,5 ~ 90,2	60,7 ~ 70,6	60,7 ~ 70,6
KX019-4	9,81 ~ 11,2	25 ~ 34	38 ~ 42	39,2 ~ 45,1	7,9 ~ 14	16,6 ~ 17,6	48,1 ~ 55,9	77,5 ~ 90,2	60,7 ~ 70,6	60,7 ~ 70,6
KX080-4, KX080-4α	9,81 ~ 11,2	30 ~ 40	187 ~ 196	166 ~ 191	7,7 ~ 9,3	26,5 ~ 29,4	48,1 ~ 55,9	196,1 ~ 225,6	166,7 ~ 196,1	206 ~ 304
U27-4	7 ~ 8	25 ~ 34	64 ~ 68	77,5 ~ 90,2	7,9 ~ 14	16,6 ~ 17,6	48,1 ~ 55,9	77,5 ~ 90,2	60,7 ~ 70,6	60,7 ~ 70,6
KX027-4	7 ~ 8	25 ~ 34	64 ~ 68	77,5 ~ 90,2	7,9 ~ 14	16,6 ~ 17,6	103 ~ 117,7	77,5 ~ 90,2	60,8 ~ 70,6	60,8 ~ 70,6
KX030-4	7 ~ 8	25 ~ 34	64 ~ 68	77,5 ~ 90,2	7,9 ~ 14	16,6 ~ 17,6	103 ~ 117,7	77,5 ~ 90,2	103 ~ 117,7	103 ~ 117,7
U36-4	6,78 ~ 11,2	25 ~ 34	93,2 ~ 98	78 ~ 90	15 ~ 19	26,5 ~ 29,4	85 ~ 94	77,5 ~ 90,2	103 ~ 117,7	103 ~ 117,7
KX042-4	6,86 ~ 11,3	24,5 ~ 29,4	93,2 ~ 98	78 ~ 90	15 ~ 19	26,5 ~ 29,4	85 ~ 94	77,5 ~ 90,2	103 ~ 117,7	103 ~ 117,7

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
KX057-4

Reference: KTSE version 19.08.2013

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		280 ± 5	aPp	bar		42 ± 2
aTR	bar		270 ± 5	aUN	bar		25,5 ± 3
aTL	bar		270 ± 5	Differential pressure LS	bar		16,5 ± 4
aP3	bar		194 ± 5				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		315 ± 10	Blade	bottom (b4B)	bar		274 ± 10
	rod (b1R)	bar		315 ± 10		rod (b4R)	bar		-----
	H/V (b1H)	bar		305 ± 10	AUX1	LH (b6L)	bar		210 ± 10
Arm	bottom (b2B)	bar		315 ± 10		RH (b6R)	bar		210 ± 10
	rod (b2R)	bar		315 ± 10	AUX2	LH (b10L)	bar		195 ± 10
Bucket	bottom (b3B)	bar		315 ± 10		RH (b10R)	bar		195 ± 10
	rod (b3R)	bar		315 ± 10	Swivel motor	cSR/cSL	bar		206 ± 10

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	5	109,3 ± 3,4		70	100,9 ± 11,8	
Stand-by P1+P2	l/min		22,9	-----	105	108,1 ± 4,6		95	76,3 ± 11,8	
					135	89,3 ± 10,5		135	49,8 ± 11,8	
					155	70,9 ± 10,5		218	21,8 ± 11,1	
					195	46,2 ± 10,5		258	18,4 ± 7,7	
					274	19,6 ± 8,9		274	13,2 ± 2,5	

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		< 2400	with blade and P1+P2 in relief	rpm		> 1980	
Valve clearance (cold)	mm		0,13-0,17					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 20	≤ 100
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 85

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 420 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	3,4 ± 0,3	Dozer	s			2,2 ± 0,3	2,9 ± 0,3
Arm	s			2,8 ± 0,3	3,2 ± 0,3	Swing	s			6,5 ± 0,3	7,9 ± 0,3
Bucket	s			2,1 ± 0,3	3,0 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		17,6-21,7

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		14 ± 1,4		8 ± 0,8
Steel crawler	s		16 ± 1,6		9 ± 0,9

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

Comments:

Date
Inspector

Inspection sheet
U48-4

Reference: KTSE version 19.08.2013

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		250 ± 5	aPp	bar		42 ± 2
aTR	bar		-----	aUN	bar		25,5 ± 3
aTL	bar		-----	Differential pressure LS	bar		16,5 ± 4
aP3	bar		-----				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		275 ± 10	Blade	bottom (b4B)	bar		315 ± 10
	rod (b1R)	bar		275 ± 10		rod (b4R)	bar		120 ± 10
	H/V (b1H)	bar		-----	AUX1	LH (b6L)	bar		210 ± 10
Arm	bottom (b2B)	bar		275 ± 10		RH (b6R)	bar		210 ± 10
	rod (b2R)	bar		275 ± 10	AUX2	LH (b10L)	bar		210 ± 10
Bucket	bottom (b3B)	bar		275 ± 10		RH (b10R)	bar		180 ± 10
	rod (b3R)	bar		275 ± 10	Swivel motor	cSR/cSL	bar		180 ± 10

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2200rpm					
					P1			P1		
Pp	l/min		15,8	12,6	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Stand-by P1+P2	l/min		28,6	22,9	5	117,4 ± 2,5		150	80,8 ± 7,0	
					90	116,2 ± 2,5		170	69,4 ± 8,0	
					110	111,6 ± 7,0		245	42,8 ± 8,0	

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		< 2400					
Valve clearance (cold)	mm		0,13-0,17					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 20	≤ 100
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 85

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 420 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			2,8 ± 0,3	3,2 ± 0,3	Swing	s			5,5 ± 0,3	6,4 ± 0,3
Bucket	s			2,2 ± 0,3	2,9 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		18,2-22,2

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		14 ± 1,4		8 ± 0,8
Steel crawler	s		16 ± 1,6		9 ± 0,9

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

Comments:

Date
Inspector

Inspection sheet U55-4

Reference: KTSE version 19.08.2013

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		280 ± 5	aPp	bar		42 ± 2
aTR	bar		270 ± 5	aUN	bar		25,5 ± 3
aTL	bar		270 ± 5	Differential pressure LS	bar		16,5 ± 4
aP3	bar		194 ± 5				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		315 ± 10	Blade	bottom (b4B)	bar		274 ± 10
	rod (b1R)	bar		315 ± 10		rod (b4R)	bar		-----
	H/V (b1H)	bar		305 ± 10	AUX1	LH (b6L)	bar		210 ± 10
Arm	bottom (b2B)	bar		315 ± 10		RH (b6R)	bar		210 ± 10
	rod (b2R)	bar		315 ± 10	AUX2	LH (b10L)	bar		-----
Bucket	bottom (b3B)	bar		315 ± 10		RH (b10R)	bar		-----
	rod (b3R)	bar		315 ± 10	Swivel motor	cSR/cSL	bar		206 ± 10

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	5	109,3 ± 3,4		70	100,9 ± 11,8	
Stand-by P1+P2	l/min		22,9	-----	105	108,1 ± 4,6		95	76,3 ± 11,8	
					135	89,3 ± 10,5		135	49,8 ± 11,8	
					155	70,9 ± 10,5		218	21,8 ± 11,1	
					195	46,2 ± 10,5		258	18,4 ± 7,7	
					274	19,6 ± 8,9		274	13,2 ± 2,5	

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		< 2400	with blade and P1+P2 in relief	rpm		> 1980	
Valve clearance (cold)	mm		0,13-0,17					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 20	≤ 100
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 85

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 420 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	3,4 ± 0,3	Dozer	s			2,2 ± 0,3	2,9 ± 0,3
Arm	s			2,8 ± 0,3	3,2 ± 0,3	Swing	s			6,5 ± 0,3	7,9 ± 0,3
Bucket	s			2,1 ± 0,3	3,0 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		17,6-21,7

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		14 ± 1,4		8 ± 0,8
Steel crawler	s		16 ± 1,6		9 ± 0,9

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

Comments:

Date
Inspector

Inspection sheet KX015-4

Reference: KTSE version 19.08.2013

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		216 +10 / -5
aP2	bar		216 +10 / -5
aP3	bar		211 +10 / -5
aPp	bar		48 +2 / -3

Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		170 ± 10
	rod (b1R)	bar		275 ± 10
	H/V (b1H)	bar		-----
Arm	bottom (b2B)	bar		235 ± 10
	rod (b2R)	bar		235 ± 10
Bucket	bottom (b3B)	bar		235 ± 10
	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		160

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2300rpm (bench value)					
					[P1 + P2], P3 = 5 bar			[P1 + P2], P3 = 201 bar		
P3	l/min		10,4	8,3	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		6,2	5,0	0	7,2		72	7	
					208	6,9		196	3,5	
					329	3,4		338	1,5	
					412	2,3		412	1,4	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1350 ± 50	with P1+P2 in relief	rpm		> 2300	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2600	with blade and P1+P2 in relief	rpm		> 2300	
Valve clearance (cold)	mm		0,145-0,185					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 15	≤ 75
Arm cyl.	mm		≤ 10	≤ 50
Bucket cyl.	mm		≤ 4	≤ 20
Dozer cyl.	mm		≤ 13	≤ 26

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 90 kg (incl. bucket) at the arm end. Measure the drift of the cylinders after 10 minutes

Speed	Unit	Actual		Spec.	
		up/dump	down/crowd	up/dump	down/crowd
Boom	s			2,3 ± 0,3	3,0 ± 0,3
Arm	s			2,2 ± 0,3	3,1 ± 0,3
Bucket	s			1,9 ± 0,3	2,5 ± 0,3

Speed	Unit	Actual		Spec.	
		up/LH	down/RH	up/LH	down/RH
Dozer	s			1,4 ± 0,3	1,7 ± 0,3
Swing	s			4,7 ± 0,3	4,0 ± 0,3

Swivel (3 turns)	Unit	Actual	Spec.
	s		20 ± 2

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler (≤ 56121)	s		16,5 ± 1,5		-----
Rubber crawler (≥ 56122)	s		17,3 ± 1,6		-----
Steel crawler	s		-----		-----

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

Comments:

Date
Inspector

Inspection sheet KX016-4

Reference: KTSE version 19.08.2013

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		216 +10 / -5
aP2	bar		216 +10 / -5
aP3	bar		211 +10 / -5
aPp	bar		48 +2 / -3

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		170 ± 10	Blade	bottom (b4B)	bar		-----
	rod (b1R)	bar		275 ± 10	AUX1	LH (b6L)	bar		-----
	H/V (b1H)	bar		-----		RH (b6R)	bar		-----
Arm	bottom (b2B)	bar		235 ± 10	AUX2	LH (b10L)	bar		-----
	rod (b2R)	bar		235 ± 10		RH (b10R)	bar		-----
Bucket	bottom (b3B)	bar		235 ± 10	Swivel motor	cSR/cSL	bar		160
	rod (b3R)	bar		-----					

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2300rpm (bench value)					
					[P1 + P2], P3 = 5 bar			[P1 + P2], P3 = 201 bar		
P3	l/min		10,4	8,3	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		6,2	5,0	0	7,2		72	7	
					208	6,9		196	3,5	
					329	3,4		338	1,5	
					412	2,3		412	1,4	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1350 ± 50	with P1+P2 in relief	rpm		> 2300	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2600	with blade and P1+P2 in relief	rpm		> 2300	
Valve clearance (cold)	mm		0,145-0,185					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 15	≤ 75
Arm cyl.	mm		≤ 10	≤ 50
Bucket cyl.	mm		≤ 4	≤ 20
Dozer cyl.	mm		≤ 13	≤ 26

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 90 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			2,3 ± 0,3	3,0 ± 0,3	Dozer	s			1,4 ± 0,3	1,7 ± 0,3
Arm	s			2,2 ± 0,3	3,1 ± 0,3	Swing	s			4,7 ± 0,3	4,0 ± 0,3
Bucket	s			1,9 ± 0,3	2,5 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		20 ± 2

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		17,3 ± 1,6		9,6 ± 1,0
Steel crawler	s		-----		-----

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

Comments:

Date
Inspector

Inspection sheet KX018-4

Reference: KTSE version 19.08.2013

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		226 +10 / -5
aP2	bar		226 +10 / -5
aP3	bar		216 +10 / -5
aPp	bar		48 +2 / -3

Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		170 ± 10
	rod (b1R)	bar		275 ± 10
	H/V (b1H)	bar		-----
Arm	bottom (b2B)	bar		235 ± 10
	rod (b2R)	bar		235 ± 10
Bucket	bottom (b3B)	bar		235 ± 10
	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		160

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2300rpm (bench value)					
					[P1 + P2], P3 = 5 bar			[P1 + P2], P3 = 206 bar		
P3	l/min		10,4	8,3	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		6,2	5,0	0	7,5		69	7,4	
					219	7,1		196	4,5	
					247	4,5		432	1,7	
					432	3,5				

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1250 ± 50	with P1+P2 in relief	rpm		> 1980	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2600	with blade and P1+P2 in relief	rpm		> 1980	
Valve clearance (cold)	mm		0,145-0,185					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 15	≤ 75
Arm cyl.	mm		≤ 10	≤ 50
Bucket cyl.	mm		≤ 4	≤ 20
Dozer cyl.	mm		≤ 13	≤ 26

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 100 kg (incl. bucket) at the arm end. Measure the drift of the cylinders after 10 minutes

Speed	Unit	Actual		Spec.	
		up/dump	down/crowd	up/dump	down/crowd
Boom	s			2,0 ± 0,3	2,7 ± 0,3
Arm	s			2,4 ± 0,3	3,4 ± 0,3
Bucket	s			2,0 ± 0,3	2,7 ± 0,3

Speed	Unit	Actual		Spec.	
		up/LH	down/RH	up/LH	down/RH
Dozer	s			1,5 ± 0,3	2,0 ± 0,3
Swing	s			4,7 ± 0,3	3,9 ± 0,3

Swivel (3 turns)	Unit	Actual	Spec.
	s		20 ± 2

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		16,5 ± 1,5		9,1 ± 0,9
Steel crawler	s		-----		-----

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

Comments:

Date
Inspector

Inspection sheet KX019-4

Reference: KTSE version 19.08.2013

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		226 +10 / -5
aP2	bar		226 +10 / -5
aP3	bar		216 +10 / -5
aPp	bar		48 +2 / -3

Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		170 ± 10
	rod (b1R)	bar		275 ± 10
	H/V (b1H)	bar		-----
Arm	bottom (b2B)	bar		235 ± 10
	rod (b2R)	bar		235 ± 10
Bucket	bottom (b3B)	bar		235 ± 10
	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		160

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2300rpm (bench value)					
					[P1 + P2], P3 = 5 bar			[P1 + P2], P3 = 206 bar		
P3	l/min		10,4	8,3	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		6,2	5,0	0	7,5		69	7,4	
					219	7,1		196	4,5	
					247	4,5		432	1,7	
					432	3,5				

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1250 ± 50	with P1+P2 in relief	rpm		> 1980	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2600	with blade and P1+P2 in relief	rpm		> 1980	
Valve clearance (cold)	mm		0,145-0,185					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 15	≤ 75
Arm cyl.	mm		≤ 10	≤ 50
Bucket cyl.	mm		≤ 4	≤ 20
Dozer cyl.	mm		≤ 13	≤ 26

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 100 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			2,0 ± 0,3	2,7 ± 0,3	Dozer	s			1,5 ± 0,3	2,0 ± 0,3
Arm	s			2,4 ± 0,3	3,4 ± 0,3	Swing	s			4,7 ± 0,3	3,9 ± 0,3
Bucket	s			2,0 ± 0,3	2,7 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		20 ± 2

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		16,5 ± 1,5		9,1 ± 0,9
Steel crawler	s		-----		-----

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

Comments:

Date
Inspector

Inspection sheet KX080-4

Reference: KTSE version 23.12.2013

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		275 ± 5	aPp	bar		42 ± 2
aTR	bar		300 ± 5	aUN	bar		29 ± 2
aTL	bar		300 ± 5	Differential pressure LS	bar		16,5 ± 4
aP3	bar		215 ± 5				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		314 ± 10	Bucket	bottom (b3B)	bar		314 ± 10
	rod (b1R)	bar		314 ± 10		rod (b3R)	bar		314 ± 10
	H/V (b1H)	bar		350 ± 10	Blade	bottom (b4B)	bar		274 ± 10
2nd boom (2piece boom version)	bottom (b7B)	bar		343 ± 10		rod (b4R)	bar		195 ± 10
	rod (b7R)	bar		343 ± 10	AUX1	LH (b6L)	bar		225 ± 10
	H/V (b7H)	bar		343 ± 10		RH (b6R)	bar		225 ± 10
Arm	bottom (b2B)	bar		304 ± 10	Swivel motor	cSR/cSL	bar		-----
	rod (b2R)	bar		314 ± 10					

P-Q curve check values at 2000rpm [P1+P2], P3 = 20bar

Pressure	bar	15	Actual	50	Actual	77	Actual	102	Actual	128	Actual	153	Actual
P mode	l/min	142,0		141,1		139,8		138,6		137,6		123,6	
E mode		142,0		141,0		128,6		107,2		87,1		68,6	
P mode (P3 215 bar)		142,9		112,7		90,9		71,4		55,7		48,1	
Pressure	**bar**	**179**	**Actual**	**204**	**Actual**	**229**	**Actual**	**250**	**Actual**	**275**	**Actual**	**300**	**Actual**
P mode	l/min	103,4		82,9		63,0		49,2		40,5		29,9	
E mode		53,4		44,8		37,2		28,6		-		-	
P mode (P3 215 bar)		39,3		31,4		-		-		-		-	

Pump flow	Unit	Actual	Spec.	Wear limit 80%
P3	l/min		66,6	53,28
Pp	l/min		14,2	11,36
Stand-by P1+P2	l/min		22,0	-----

Engine	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1000	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2220	
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			3,1 ± 0,3	3,4 ± 0,3	Dozer	s			2,3 ± 0,3	3,0 ± 0,3
Arm	s			3,2 ± 0,3	3,4 ± 0,3	Swing	s			7,5 ± 0,7	7,7 ± 0,7
Bucket	s			2,2 ± 0,3	3,1 ± 0,3	Boom (2pcs)	s			3,7 ± 0,3	4,1 ± 0,3
						2nd boom (2pcs)	s			4,7 ± 0,3	5,5 ± 0,3

Swivel (3 turns)	Unit	Actual	Spec.
	s		17,1-20,9
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		13,5 ± 1,5		7,8 ± 0,8
Steel crawler	s		14,7 ± 1,7		8,1 ± 0,9

Comments:

Date
Inspector

Inspection sheet
KX080-4α

Reference: KTSE version 23.12.2013

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		280 + 10 / - 5	aPp	bar		40 ± 0,25
	2P boom	Front attachment	bar		280 + 10 / - 5	aUN	bar		26 ± 2,5
		Travel, dozer blade	bar		300 + 10 / - 5	Differential pressure LS	bar		16,5 ± 4
aP2	Standard boom		bar		280 + 10 / - 5				
	2P boom		bar		300 + 10 / - 5				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		314 ± 5	Bucket	bottom (b3B)	bar		314 ± 5
	rod (b1R)	bar		314 ± 5		rod (b3R)	bar		314 ± 5
	H/V (b1H)	bar		304 ± 5	Blade	bottom (b4B)	bar		343 ± 5
2nd boom (2piece boom version)	bottom (b7B)	bar		343 ± 5		rod (b4R)	bar		172 ± 5
	rod (b7R)	bar		343 ± 5	AUX1	LH (b6L)	bar		206 ± 5
	H/V (b7H)	bar		333 ± 5		RH (b6R)	bar		206 ± 5
Arm	bottom (b2B)	bar		314 ± 5	AUX2	LH (b10L)	bar		206 ± 5
	rod (b2R)	bar		314 ± 5		RH (b10R)	bar		206 ± 5
					Swivel motor	cSR/cSL	bar		-----

P-Q curve check values at 2000rpm [P1+P2], P3 = 20bar													
Pressure	**bar**	**15**	**Actual**	**50**	**Actual**	**75**	**Actual**	**100**	**Actual**	**125**	**Actual**	**150**	**Actual**
P mode	l/min	168,3		166,4		166,2		165,0		148,2		122,9	
Pressure	**bar**	**175**	**Actual**	**200**	**Actual**	**225**	**Actual**	**250**	**Actual**	**275**	**Actual**		**Actual**
P mode	l/min	100,4		88,7		78,0		67,3		58,5			

Pump flow	Unit	Actual	Spec.	Wear limit 80%
Pp	l/min		14,0	11,36
Stand-by P1+P2	l/min		15,0	-----

Engine	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1000	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2220	
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			2,9 ± 0,3	3,2 ± 0,3	Dozer	s			2,4 ± 0,3	3,1 ± 0,3
Arm	s			3,0 ± 0,3	3,4 ± 0,3	Swing	s			7,3 ± 0,7	7,2 ± 0,7
Bucket	s			2,2 ± 0,3	3,1 ± 0,3	Boom (2pcs)	s			3,5 ± 0,3	4,0 ± 0,3
						2nd boom (2pcs)	s			5,1 ± 0,3	4,9 ± 0,3

Swivel (3 turns)	Unit	Actual	Spec.
	s		16,1-19,5
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		13,5 ± 1,5		7,6 ± 0,8
Steel crawler	s		14,3 ± 1,4		8,0 ± 0,8

Comments:

Date
Inspector

Inspection sheet
U27-4 Standard / Hi

Reference: KTSE version 15.10.2014

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		219 +10 / -5
aP2	bar		219 +10 / -5
aP3	bar		175 +10 / -5
aPp	bar		49 +2 / -3

Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		240 ± 10
	rod (b1R)	bar		240 ± 10
	H/V (b1H)	bar		-----
Arm	bottom (b2B)	bar		240 ± 10
	rod (b2R)	bar		240 ± 10
Bucket	bottom (b3B)	bar		240 ± 10
	rod (b3R)	bar		-----

Overload relief valves		Unit	Actual	Spec.
Blade	bottom (b4B)	bar		240 ± 10
AUX1	LH (b6L)	bar		-----
	RH (b6R)	bar		-----
AUX2	LH (b10L)	bar		-----
	RH (b10R)	bar		-----
Swivel motor	cSR/cSL	bar		177

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2400rpm (bench value)					
					[P1 + P2], P3 = 5 bar			[P1 + P2], P3 = 184 bar		
P3	l/min		19,2	15,36	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		6,5	5,2	0	28,8		0	27,6	
					150	28,0		150	16,1	
					300	16,5		300	6,5	
					400	11,2		400	5,75	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1350 ± 50	with P1+P2 in relief	rpm		> 2300	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2600	with blade and P1+P2 in relief	rpm		> 2300	
Valve clearance (cold)	mm		0,145-0,185					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 15	≤ 75
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 25	≤ 50

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 106 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			2,2 ± 0,3	2,6 ± 0,3	Dozer	s			1,9 ± 0,3	2,6 ± 0,3
Arm	s			2,6 ± 0,3	2,7 ± 0,3	Swing (Standard)	s			4,9 ± 0,3	4,3 ± 0,3
Bucket	s			1,6 ± 0,3	2,5 ± 0,3	Swing (Hi)	s			4,5 ± 0,3	5,0 ± 0,3

Swivel (3 turns)	Unit	Actual	Spec.
	s		15,8 ~ 19,2

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		14,1 ± 1,7		8,0 ± 0,9
Steel crawler	s		-----		-----

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

Comments:

Date
Inspector

Inspection sheet
KX027-4 Standard / Hi

Reference: KTSE version 01.12.2018

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		230 +10 / -5
aP2	bar		230 +10 / -5
aP3	bar		179 +10 / -5
aPp	bar		45 +2 / -3

Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		265 ± 10
	rod (b1R)	bar		265 ± 10
	H/V (b1H)	bar		-----
Arm	bottom (b2B)	bar		265 ± 10
	rod (b2R)	bar		265 ± 10
Bucket	bottom (b3B)	bar		265 ± 10
	rod (b3R)	bar		-----

Overload relief valves		Unit	Actual	Spec.
Blade	bottom (b4B)	bar		265 ± 10
AUX1	LH (b6L)	bar		-----
	RH (b6R)	bar		-----
AUX2	LH (b10L)	bar		-----
	RH (b10R)	bar		-----
Swivel motor	cSR/cSL	bar		180 ± 10

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2400rpm (bench value)					
					[P1 + P2], P3 = 5 bar			[P1 + P2], P3 = 179 bar		
P3	l/min		19,6	15,7	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		6,6	5,3	100	59,4		100	51,6	
					150	53,0		150	33,7	
					200	37,6		200	19,1	
					250	24,5		250	14,6	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1300 ± 50	with P1+P2 in relief	rpm		> 2025	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2450	with blade and P1+P2 in relief	rpm		> 2025	
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		≤ 25	≤ 75

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 163 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	2,6 ± 0,3	Dozer	s			2,1 ± 0,3	2,8 ± 0,3
Arm	s			2,6 ± 0,3	2,4 ± 0,3	Swing (Standard)	s			6,4 ± 0,3	5,6 ± 0,3
Bucket	s			1,7 ± 0,3	2,6 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		16,4 ~ 19,6

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		13,5 ± 1,5		7,9 ± 0,8
Steel crawler	s		15,2 ± 1,3		8,3 ± 0,8

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

Comments:

Date
Inspector

Inspection sheet
KX030-4 Standard / Hi

Reference: KTSE version 01.12.2018

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		243 +10 / -5
aP2	bar		243 +10 / -5
aP3	bar		205 +10 / -5
aPp	bar		45 +2 / -3

Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		265 ± 10
	rod (b1R)	bar		265 ± 10
	H/V (b1H)	bar		-----
Arm	bottom (b2B)	bar		265 ± 10
	rod (b2R)	bar		265 ± 10
Bucket	bottom (b3B)	bar		265 ± 10
	rod (b3R)	bar		-----

Overload relief valves		Unit	Actual	Spec.
Blade	bottom (b4B)	bar		265 ± 10
AUX1	LH (b6L)	bar		-----
	RH (b6R)	bar		-----
AUX2	LH (b10L)	bar		-----
	RH (b10R)	bar		-----
Swivel motor	cSR/cSL	bar		180 ± 10

Pump flow	Unit	Actual	Spec.	Wear limit 80%	P-Q curve check values at 2250rpm (bench value)					
					[P1 + P2], P3 = 5 bar			[P1 + P2], P3 = 179 bar		
P3	l/min		19,6	15,68	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		6,6	5,28	25	65,6		25	64,9	
					150	49,2		150	24,9	
					200	31,5		200	14,9	
					225	23,9		225	13,9	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1300 ± 50	with P1+P2 in relief	rpm		> 2025	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		< 2450	with blade and P1+P2 in relief	rpm		> 2025	
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		≤ 25	≤ 75

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 152 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			2,6 ± 0,3	2,5 ± 0,3	Dozer	s			2,0 ± 0,3	2,6 ± 0,3
Arm	s			3,0 ± 0,3	2,8 ± 0,3	Swing (Standard)	s			6,6 ± 0,3	5,7 ± 0,3
Bucket	s			1,9 ± 0,3	2,7 ± 0,3	Swing (Hi)	s			6,6 ± 0,3	5,7 ± 0,3

Swivel (3 turns)	Unit	Actual	Spec.
	s		17,2 ~ 20,7

Travel (10m, max. speed)	Unit	Actual	Spec.	Actual	Spec.
		1. speed	1. speed	2. speed	2. speed
Rubber crawler	s		12,6 ± 1,3		8,1 ± 0,8
Steel crawler	s		13,5 ± 1,5		8,5 ± 0,8

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

Comments:

Date
Inspector

Inspection sheet U36-4

Reference: KTSE version 01.12.2018

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	bar		253 ± 5				
aP2	bar		253 ± 5				
aP3	bar		203 ± 5				
aP4	bar		39 ± 3				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		274 ± 10	Blade	bottom (b4B)	bar		274 ± 10
	rod (b1R)	bar		274 ± 10		rod (b4R)	bar		-----
	H/V (b1H)	bar		-----	AUX1	LH (b6L)	bar		206 ± 10
Arm	bottom (b2B)	bar		274 ± 10		RH (b6R)	bar		206 ± 10
	rod (b2R)	bar		274 ± 10	AUX2	LH (b10L)	bar		-----
Bucket	bottom (b3B)	bar		274 ± 10		RH (b10R)	bar		-----
	rod (b3R)	bar		-----	Swivel motor	cSR/cSL	bar		200 ± 10

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		20,9	16,72	Pressure [bar]	Flow [l/min]	Actual	Pressure [bar]	Flow [l/min]	Actual
Pp	l/min		9,9	7,92	25	79		25	79	
Stand-by P1+P2	l/min		-----	-----	75	78		75	57	
					125	68		125	38	
					175	49		175	23	
					200	41		200	-----	
					250	29		250	-----	

Engine	Unit	Actual	Spec.	Engine speed	Unit	Actual	Spec.	Conditions
Idle speed	rpm		canopy: 1025~1075 cabin: 1275~1325	with P1+P2 in relief	rpm		< 2200	To check on warm engine, without cold start rising, at max. rpm.
Max. speed	rpm		2200	with blade and P1+P2 in relief	rpm		-----	
Valve clearance (cold)	mm		0,18-0,22					

Internal leak	Unit	Actual	New machine	Wear limit
Boom cyl.	mm		≤ 20	≤ 100
Arm cyl.	mm		≤ 20	≤ 100
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 70

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 346 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	2,7 ± 0,3	Dozer	s			2,4 ± 0,3	3,1 ± 0,3
Arm	s			2,8 ± 0,3	2,9 ± 0,3	Swing	s			6,2 ± 0,3	4,7 ± 0,3
Bucket	s			1,9 ± 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		10,9 - 13,3		7,1 - 8,7
Steel crawler	s		11,3 - 13,3		7,3 - 9,0

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

Comments:

Date
Inspector

Inspection sheet KX042-4

Reference: KTSE version 01.12.2018

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		250 ± 5	aPp	bar		43 ± 2
aTR	bar		-----	aUN	bar		30 ± 2
aTL	bar		-----	Differential pressure LS	bar		16,5 ± 4
aP3	bar		-----				

Overload relief valves		Unit	Actual	Spec.	Overload relief valves		Unit	Actual	Spec.
Boom	bottom (b1B)	bar		274 ± 10	Blade	bottom (b4B)	bar		314 ± 10
	rod (b1R)	bar		274 ± 10		rod (b4R)	bar		190 ± 10
	H/V (b1H)	bar		-----	AUX1	LH (b6L)	bar		205 ± 10
Arm	bottom (b2B)	bar		274 ± 10		RH (b6R)	bar		205 ± 10
	rod (b2R)	bar		274 ± 10	AUX2	LH (b10L)	bar		200 ± 10
Bucket	bottom (b3B)	bar		274 ± 10		RH (b10R)	bar		200 ± 10
	rod (b3R)	bar		274 ± 10	Swivel motor	cSR/cSL	bar		215 ± 10

P-Q curve check values at 2000rpm [P1+P2], P3 = 20bar

Pressure	bar	75	Actual	100	Actual	125	Actual	150	Actual	175	Actual	200	Actual
P mode	l/min	91,63		90,87		90,17		89,14		76,45		64,94	
E mode		88,52		75,06		68,18		60,36		54,13		47,34	
Pressure	**bar**	**225**	**Actual**	**250**	**Actual**								
P mode	l/min	58,64		51,26									
E mode		40,84		32,98									

Pump flow	Unit	Actual	Spec.	Wear limit 80%
P3	l/min		15,6	12,48
Pp	l/min		17,6	14,08
Stand-by P1+P2	l/min		17,6	-----

Engine	Unit	Actual	Spec.	Conditions
Idle speed	rpm		1150	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
2nd boom (2pcs boom version)	mm		≤ 10	≤ 50
Arm cyl.	mm		≤ 20	≤ 100
Bucket cyl.	mm		≤ 10	≤ 50
Dozer cyl.	mm		≤ 20	≤ 70

Test conditions:
Hydraulic oil temperature 50 °C ± 5 °C, test position see WSM, attached weight 303 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			2,5 ± 0,3	3,0 ± 0,3	Dozer	s			2,2 ± 0,3	2,8 ± 0,3
Arm	s			2,5 ± 0,3	2,7 ± 0,3	Swing	s			5,2 ± 0,5	6,3 ± 0,5
Bucket	s			2,1 ± 0,3	2,4 ± 0,3						

Swivel (3 turns)	Unit	Actual	Spec.
	s		17,5-21,2
Straight travel (10m, max. speed)	mm		< 600

Travel (10m, max. speed)	Unit	Actual 1. speed	Spec. 1. speed	Actual 2. speed	Spec. 2. speed
Rubber crawler	s		11,6 - 14,4		6,7 - 8,2
Steel crawler	s		12,4 - 15,7		6,9 - 8,6

Comments: