



Service and Repair Manual

AS/NZS 1418.10+A1

AR11J

**Mobile Elevating
Work Platforms**

PART NO. SM-2537110076

Original Instructions

Instruction

Thank you for choosing to use the product from LGMG.

This manual introduces technical parameters and service debugging data of Mobile Elevating Work Platform, and provides troubleshooting and repair procedures for qualified service professionals. Please read, understand and obey these safety rules and operating instructions in this manual on your machine before attempting any procedures.

Basic mechanical, hydraulic and electrical skills are required to perform most procedures. Besides, several procedures require specialized skills, tools, lifting equipment and a suitable workshop. Therefore, in these instances, we strongly recommend that maintenance and repair be performed at an authorized LGMG dealer service center.

The information contained in this manual is correct at the time of publication. However, LGMG has endeavored to deliver the highest degree of accuracy possible. And continuous improvement of our product is a LGMG policy. Therefore, product specifications are subject to change without notice.

If there is any updated information uncontained herein, or any questions about this manual, please call LGMG industries, and we are welcome your kindly enquiry.

Readers are encouraged to notify LGMG of errors and send in suggestions for improvement. All communications will be carefully considered for future printings of this and all other manuals.

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Revision History

[illegible]

Safety Rules



Danger

Nonobservance with instructions and safety rules in this manual and the operator's manual will lead to death or serious injuries.

During maintenance and repair operations, risks specified in the operator's manual form hidden safety hazards.

Before the machine is maintained, the following conditions must be met.

- ☑ Relevant personnel have been trained on machine maintenance and meet relevant maintenance qualifications.
- ☑ Relevant personnel shall read, understand, and comply with:
 - Manufacture instructions and safety rules;
 - Employer safety rules and workplace regulations;
 - Applicable government regulations;
- ☑ Equipped with proper tools, lifting equipment, and proper workshop;

Safety Rules

Personal safety

Anyone who works on the machine or around it shall be careful of potential safety hazards of known dangerous operations. Personal safety and continuous & safe machine operations shall be considered as the first element.



Read each procedure carefully. Meanings of warning signs and symbol language are as follows:



Safety warning signs are used to indicate potential personal injuries. Comply with all prompt messages indicated by this sign to prevent possible personal injuries or death.

DANGER

This sign is used to indicate emergent dangers. If this kind of danger cannot be prevented, serious personal injuries or death will be caused.

WARNING

This sign is used to indicate potential dangers. If this kind of danger cannot be prevented, serious personal injuries or death may be caused.

CAUTION

This caution sign with a safety warning mark is used to indicate potential dangers. If this kind of danger cannot be prevented, minor or moderate personal injuries may be caused.

NOTICE

This sign is used to indicate potential dangers. If this kind of danger cannot be prevented, property loss may be caused.

Notice: Signs above are used to indicate operation or maintenance information.



If the condition requires, please wear safety goggles and protective clothing.



When an object is lifted or loaded, watch out moving parts, swing parts, unfixed parts, or other parts that may cause crushing risks. During work, always wear qualified protective shoes.

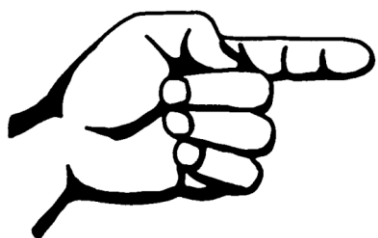
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Chapter 1 Safety

1.1 Observation

1. The repair shall be operated by qualified personnel who have accepted machine repair training.
2. Mark damaged or faulty machine in time and remove it from service equipment.
3. Before the machine is operated, repair all machine damage or faults.

1.2 Before Machine Repair

1. Read, understand, and comply with safety rules and repair instructions in related manuals of the machine.
2. Check the tools and ensure that all necessary tools and parts are well prepared.
3. Please read each procedure carefully and comply with the instructions. Attempt to use easier ways may lead to dangers.
4. Please use safety goggles and other protective devices when necessary.
5. Wear insulating gloves and insulating steel protective shoes for good protection.
6. Please place a qualified fire extinguisher to an accessible place.
7. Keep the working place tidy and clean to prevent damage to parts caused by dirt entering the machine.
8. If possible, lower the platform to the lowest position. Otherwise, ensure that it is not lowered.
9. Place the safe supports as required.

1.3 Maintenance and Repair

Safety Specifications

1. Unless otherwise specified, the following measures shall be taken before the machine is adjusted and repaired:
 - Park the machine on a solid and flat ground.
 - Block the front and rear wheels and ensure that the wheels will not rotate or move;
 - Disconnect the power supply, so the machine cannot be started.
 - All control devices shall be in the OFF status, preventing accidental starting of the operating system.
 - Before hydraulic elements are unscrewed or removed, ensure that the oil has been cooled to prevent scalding. Pressure of hydraulic oil in the hydraulic pipes shall be released.
 - Please ensure that the forklift, crane, or other lifting or supporting equipment can support and stabilize weight to the lifted.
 - During repair, do not reuse disposable fasteners (like cotter pins and self-locking nuts) to prevent failures caused by reuse.
 - When an object is lifted or placed, pay attention to potential clamping risks from moving parts, swing parts, or unstable parts.
2. Maintenance personnel training:
Maintenance personnel must check

Safety

and maintain the machine according to requirements in this manual after being trained by qualified people. Attempt to use easier ways may lead to dangers.

3. Part replacement

This manual only applies to machines and components manufactured and sold by LGMG.

4. Service announcement

Users shall maintain and repair the machine according to service announcements released by LGMG.

5. Vehicle welding repair

- 1) Stop the engine and disconnect the low-voltage power supply.
- 2) Staff shall be with work permits for special & dangerous operations.
- 3) Clean flammable materials around the machine and apply for a hot work permit.
- 4) Protect the vehicle body well and prevent splashing and fire.
- 5) Operate the machine according to the welding process.

6. Cautions for battery maintenance

- 1) Power loss is prohibited when the battery is stored. The battery shall be charged in time when power loss occurs.
- 2) Know the charging time correctly. When the battery is used, control the charging time according to actual conditions and control the charging frequency according to the using frequency traveled

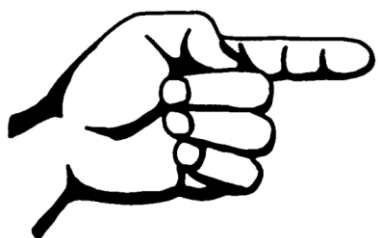
distance.

- 3) Prevent outdoor exposure. High temperature will increase pressure of system battery. Then, battery dehydration, battery activity declines, and polar plate ages. Therefore, the machine shall be parked in a shade place.
- 4) Check the battery regularly. When the battery has a fault, it shall be delivered to the sales center or maintenance department of the agent for check and repair.

In this way, the battery service life can be lengthened and the maintenance cost can be reduced maximally.

1.4 After Maintenance

1. Check the machine for part missing.
2. Check tightening of the fastener.
3. Check whether the oil is added to the corresponding position after the maintenance is completed.
4. Place the safety support to the original position.
5. Check whether the corresponding part is well repaired. Refer to the operator's manual for operating procedures of the machine.
6. Operate the machine to simulate the working condition and observe whether there is any oil leakage. Refer to the operator's manual for operating procedures of the machine.
7. Dispose waste oil correctly and take environmental protection measures on it.



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Chapter 2 Specifications

2.1 About This Chapter

This section includes technical parameters and functional parameters of the machine and provides repair technical parameters and debugging functional parameters after the machine is repaired.

This manual applies to:

AR11J (A1107J0W NK4NH2000)。

Specifications

2.2 Machine Parameters

2.2.1 Performance Parameters

A1107J0WNL4NH2000

Rated load	270 kg 596.7 lbs
Machine weight	5400 kg 11934 lbs
Maximum working height	12.75 m 41.82 ft
Maximum platform height	10.75 m 35.26 ft
Maximum horizontal extension	6.78 m 22.24 ft
Maximum crossing height	5.32 m 17.45 ft
Minimum turning radius (inner wheel)	2.6 m 8.53 ft
Minimum turning radius (outer wheel)	4.7 m 15.42 ft
Maximum braking distance (stowed and non-loaded)	$1\text{ m} \leq S \leq 1.5\text{ m}$ $3.28\text{ ft} \leq S \leq 4.92\text{ ft}$
Maximum travel speed (stowed)	$5 \pm 0.25\text{ km/h}$ $3.1 \pm 0.16\text{ mph}$
Maximum travel speed (extended)	$0.8 \pm 0.05\text{ km/h}$ $0.5 \pm 0.03\text{ mph}$
Incline mode speed (stowed)	$1.2\text{ m/s} \leq v \leq 1.5\text{ m/s}$ $3.94\text{ ft/s} \leq v \leq 4.92\text{ ft/s}$

Theoretic maximum gradeability (stowed and non-loaded)	45%
Time for turntable slewing one-turn (stowed)	86-116 s
Time for turntable slewing one-turn (extended)	$86 \pm 116\text{ s}$
Primary boom raising time	27-35 s
Primary boom lowering time	22-26 s
Secondary boom raising time	25-37 s
Secondary boom lowering time	24-32 s
Boom extension time	25-31 s
Boom retraction time	28-31 s
Jib raising time	22-30 s
Jib lowering time	17-25 s
Platform slewing time	13-26 s
Maximum manual force	400 N
Maximum allowable wind speed	12.5 m/s 28 mph
Maximum allowable chassis inclination	
Along the boom	3°
Boom orthogonal	4.5°
Drive type	Four-wheel drive/front-wheel steering

Specifications

2.2.2 Main Dimensions

A1107J0WNBK4NH2000

Overall length	5770 mm 230.8 in
Overall width	1850 mm 74 in
Overall height	2055 mm 82.2 in
Working platform dimensions (LxW)	1420 mm*760 mm 76.8 in*30.4 in
Wheel base	1880 mm 75.2 in
Wheel track	1578 mm 63.12 in
Minimum ground clearance (middle)	190 mm 7.6 in
Tire specifications	10-16.5

2.2.3 Engine System

A1107J0WNBK4NH2000

Model	D1105
Displacement	1123 ml
Rated power	18.2 kW
Rated speed	3000 r/min
Maximum torque	71.5/2200 rpm
Emission standard	EPA Tier 4f

Specifications

2.2.4 Drivetrain

A1107J0WNBK4NH2000

Transfer box	
gear ratio	3:1
Front axle	
Total gear ratio	16.02:1
Braking mode	Multiple-disc wet brake
Rear axle	
Total gear ratio	16.02:1
Braking mode	Multiple-disc wet brake

2.2.5 Hydraulic System

A1107J0WNBK4NH2000

Function system	
Type	Open-loop system
Pump displacement	6 ml/r
Maximum working pressure of the raising system	22 MPa 3190 psi
Maximum working pressure of the steering system	15 MPa 2175 psi
Maximum working pressure of the slewing system	12 MPa 1740 psi
Motor displacement	198 ml/r
Travel system	
Type	Closed-type system
Pump displacement	45.9 ml/r
Maximum working pressure	30 MPa 4350 psi
Motor displacement	56 ml/r

2.2.6 Electrical System

A1107J0WNL4NH2000

Battery

Output voltage	12 V
Capacity	80 Ah (20-h discharge rate)

Control system

Voltage	12 V
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2.2.7 Valve Coil Resistance

Specifications

A properly functioning coil provides an electromotive force to operate the solenoid valve. And the continuity within the coil is also critical to the normal operation of the machine. If the valve coil resistance is zero or infinite, the coil has failed.

Since coil resistance is sensitive to temperature, resistance values outside specification can produce erratic operation. When coil resistance is decreased to a value below the specified range, the amperage increases. As resistance rises above specification, voltage increases.

While valves may operate when coil resistance is outside specification, maintaining coils within specification will help ensure proper valve function over a wide range of operating temperatures.

The following coil resistor specifications are the ones under the environment temperature of 20°C.

Brake valve	
solenoid Tee valve	19 Ω
Platform control valve	
Proportional solenoid-valve	9.8 Ω
Multi-way valve	
Enabling solenoid valve	7 Ω
Solenoid proportional valve	5.1 Ω

Specifications

2.2.8 Oil Filling Capacity

A1107J0W NK4NH2000

Hydraulic oil	58 L
	12.76 gallons
Front-axle gear oil	6.1 L
	1.34 gallons
Rear-axle gear oil	6.1 L
	1.34 gallons
Transfer box gear oil	0.4 L
	0.09 gallons

2.3 Torque Specifications

- Torque specifications shall meet the requirements when connectors and hose ends are removed or installed, or when new hoses or connectors are installed.
- For all hydraulic seals, important drive connectors, key procedures, etc. with definite torque tightening requirements, the torque tolerance range shall be 10%. For other parts, the reference torque range is 20%. If the tolerance range value is not an integer, record it through rounding off.
- When the seal leaks, the O-ring must be replaced. If the connector or the hose end tightening torque exceeds the specification range, the O-ring cannot be reused.
- Lubricate the O-ring before it is installed.
- Tighten the nut and connector to the corresponding torques according to requirements listed in the table.
- Enable all machine functions and check the hose, connector, and related parts for leakage.

Specifications

Table 1: Tightening torque table of Metric fitting bodies and plugs (unit: N•m)

Pipe Diameter	Thread Specification (mm)	Connector		Plug
		E-type (N•m)	F-type (N•m)	VSTI-E (N•m)
6L	M10*1.0	27	22	16
8L	M12*1.5	37	32	27
10L	M14*1.5	58	48	37
12L	M16*1.5	75	58	58
15L	M18*1.5	95	75	70
18L	M22*1.5	140	115	95
22L	M27*2.0	190	160	140
28L	M33*2.0	325	220	235
35L	M42*2.0	470	295	380
42L	M48*2.0	565	380	/
6S	M12*1.5	42	37	/
8S	M14*1.5	53	48	/
10S	M16*1.5	75	58	/
12S	M18*1.5	95	75	/
14S	M20*1.5	130	85	/
16S	M22*1.5	140	105	/
20S	M27*2.0	190	180	/
25S	M33*2.0	325	325	/
30S	M42*2.0	470	345	/
38S	M48*2.0	565	440	/

Table 2 Tightening torque table of British fitting bodies and plugs (unit: N•m)

Pipe Diameter	Thread Specification (Inch)	Connector Model		Plug
		E-type (N•m)	F-type (N•m)	VSTI-ED (N•m)
6L	G1/8A	22	16	16
8L	G1/4A	37	32	32
10L	G1/4A	37	32	/
12L	G3/8A	75	58	63
15L	G1/2A	120	95	85
18L	G1/2A	120	95	/
22L	G3/4A	190	160	140
28L	G1A	325	220	210
35L	G1 1/4A	470	315	470
42L	G1 1/4A	565	380	470
6S	G1/4A	42	37	/
8S	G1/4A	42	37	/
10S	G3/8A	85	63	/
12S	G3/8A	85	63	/
14S	G1/2A	120	95	/
16S	G1/2A	120	95	/
20S	G3/4A	190	160	/
25S	G1A	325	220	/
30S	G1 1/4A	470	315	/
38S	G1 1/2A	565	380	/

Table 3 Tightening torque table of American fitting bodies and plugs (unit: N•m)

Product Series	Thread UN/UNF	Direction-unaadjustable Installation Torque (N•m)	Direction-adjustable Installation Torque (N•m)	Product Series	Thread UN/UNF	Direction-unaadjustable Installation Torque (N•m)	Direction-adjustable Installation Torque (N•m)
EO-L	7/16-20 UN(F)	23	18	EO-S	7/16-20 UN(F)	20	20
	1/2-20 UN(F)	28	28		1/2-20 UN(F)	40	40
	9/16-18 UN(F)	34	34		9/16-18 UN(F)	46	46
	3/4-16 UN(F)	60	55		3/4-16 UN(F)	80	80
	7/8-14 UN(F)	115	80		7/8-14 UN(F)	135	135
	1-1/16-12 UN(F)	140	100		1-1/16-12 UN(F)	185	185
	1-5/16-12 UN(F)	210	150		1-5/16-12 UN(F)	270	270
	1-5/8-12 UN(F)	290	290		1-5/8-12 UN(F)	340	340
	1-7/8-12 UN(F)	325	325		1-7/8-12 UN(F)	415	415

Description:

- Table 1 lists metric thread connectors, table 2 lists British thread connectors, and table 3 lists American thread connectors. Torques allow +10% of errors.
- Torques listed in tables 1, 2, and 3 are determined according to steel connecting materials. Torques for aluminum connecting materials shall be 60% of values listed in tables 1, 2, and 3. non-integral values shall be recorded through rounding off.
- Select torques for Parker connectors according to names and specifications. Select torques for common connectors according to thread specifications.

Examples are as follows:

- GE 28 L M ED OMD A3C: GE refers to straight connectors. 28 refers to the pipe diameter. L refers to common pressure. M refers to metric thread. ED refers to E-type elastic sealing. OMD indicates nut cutting ferrule is not equipped. A3C refers to surface galvanization. According to 28, L, M, and ED, torque value 325 N•m can be selected from table 1.
- GE O 22 L R 3/4 OMD A3C: O refers to F-type O-seal. R refers to British thread. 3/4 indicates thread specification of G3/4. According to O, 22, L, and R3/4, torque value 160 N•m can be selected from table 2.

GE O 22 S R OMD CF: S refers to heavy-type pressure. According to O, 22, S, and R, torque value 160 N•m can be selected.

Specifications

Table 4 Torque table of Metric thread swivel nut (unit: N•m)

Pipe Diameter	Thread Specification	Tightening Torque (N.m)	Pipe Diameter	Thread Specification	Tightening Torque (N.m)
06L	M12*1.5	16	06S	M14*1.5	27
08L	M14*1.5	22	08S	M16*1.5	42
10L	M16*1.5	32	10S	M18*1.5	53
12L	M18*1.5	42	12S	M20*1.5	63
15L	M22*1.5	58	14S	M22*1.5	80
18L	M26*1.5	90	16S	M24*1.5	85
22L	M30*2	115	20S	M30*2	125
28L	M36*2	135	25S	M36*2	180
35L	M45*2	220	30S	M45*2	260
42L	M52*2	345	38S	M52*2	370

Description:

1. Torque values listed in the table allow +10% of errors.
2. Torque values listed in the table are determined according to steel connecting materials.
Torques for aluminum connecting materials shall be 60% of values listed in table 1.
Non-integral values shall be recorded through rounding off.
3. Select torques for Parker rubber hoses, Right-angle connectors, and T-connectors according to names and specifications. Select torques for common rubber hoses, Right-angle connectors, and T-connectors according to thread specifications.

Examples are as follows:

- 1) F481 CACF 2815 16: F481 refers to withhold type and rubber hose type; CACF indicates connectors at both ends; CA indicates 24° cone O-ring swivel nut; CF indicates 24° cone O-ring swivel nut 90 ° elbow; 2815 indicates the pipe diameter of the connectors at both ends of the hose. Select torques according to information above; 28 refers to end torque of 135 N•m and 15 refers to end torque of 58 N•m.
- 2) F412 SN CACF 1210 06: SN refers to heavy-type pressure hose; 12 refers to end torque of 63 N•m and 10 refers to end torque of 53 N•m.
- 3) EW 15 L OMD A3C: EW refers to right-angle combination connectors; select the torque of 58 N•m from table 1 according to 15 and L.
- 4) EL 10 L OMD A3C: EW refers to straight Tee combination connectors; select the torque of 32 N•m from table 2 according to 10 and L.

Table 5 Tightening torque table for common bolts (unit: N•m)

Bolt Strength Grade	Yield Strength (N/mm ²)	Nominal Bolt Diameter (mm)				
		6	8	10	12	14
		Tightening Torque (N.m)				
4.6	240	4~5	10~12	20~25	36~45	55~70
5.6	300	5~7	12~15	25~32	45~55	70~90
6.8	480	7~9	17~23	33~45	58~78	93~124
8.8	640	9~12	22~30	45~59	78~104	124~165
10.9	900	13~16	30~36	65~78	110~130	180~210
12.9	1080	16~21	38~51	75~100	131~175	209~278
Bolt Strength Grade	Yield Strength (N/mm ²)	Nominal Bolt Diameter (mm)				
		16	18	20	22	24
		Tightening Torque (N.m)				
4.6	240	90~110	120~150	170~210	230~290	300~377
5.6	300	110~140	150~190	210~270	290~350	370~450
6.8	480	145~193	199~264	282~376	384~512	488~650
8.8	640	193~257	264~354	376~502	521~683	651~868
10.9	900	280~330	380~450	540~650	740~880	940~1120
12.9	1080	326~434	448~597	635~847	864~1152	1098~1464
Bolt Strength Grade	Yield Strength (N/mm ²)	Nominal Bolt Diameter (mm)				
		27	30	33	36	39
		Tightening Torque (N.m)				
4.6	240	450~530	540~680	670~880	900~1100	928~1237
5.6	300	550~700	680~850	825~1100	1120~1400	1160~1546
6.8	480	714~952	969~1293	1319~1759	1694~2259	1559~2079
8.8	640	952~1269	1293~1723	1759~2345	2259~3012	2923~3898
10.9	900	1400~1650	1700~2000	2473~3298	2800~3350	4111~5481
12.9	1080	1606~2142	2181~2908	2968~3958	3812~5082	4933~6577

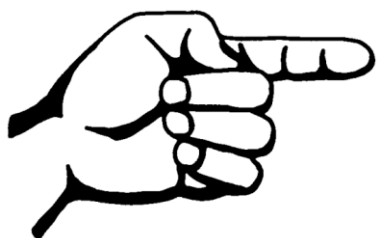
Specifications

2.4 Key Procedure Table

No.	Process Name	Characteristic Name	Characteristic Value
1	Slewing drive installation	The slewing drive joint faces the front axle.	The joint faces the front axle.
2		Apply sealant on fastening bolts: thread locker 262.	Apply thread locker 262 on fastening bolts.
3		Fasteners tightening diagonally	$M=305\pm 25\text{N.m}$
4	Rear-axle clearance adjustment	Rear axle and chassis parallelism	$\pm 0.2^\circ$
5		Clearance requirement	2.8mm~3.5mm
6	Propeller shaft installation	Position: Connection between the male spline end and transfer box	Connection between the male spline end and transfer box
7		Apply sealant on fastening bolts: thread locker 262.	Apply thread locker 262 on fastening bolts.
8		Fasteners tightening diagonally	Reference torque $M=32\pm 3\text{ N.m}$
9	Tire assembly	Fasteners tightening diagonally	$M=450\pm 45\text{N.m}$
10	High pressure filter installation	Arrow direction: Two high-pressure filter arrows point the turntable.	Two high-pressure filter arrows point the turntable.
11	Turntable installation	Apply sealant on fastening bolts: thread locker 262.	Apply thread locker 262 on fastening bolts.
12		Fasteners tightening diagonally	$M=305\pm 25\text{N.m}$
13	Boom shrinking on	Clearance 0-1 mm	0-1mm
14		Apply molybdenum disulfide on the slider moving trail.	Apply molybdenum disulfide on the slider moving trail.
15		Apply sealant on tightening bolts.	Apply sealant on tightening bolts.
16	Boom installation	Slings for check; with no operating personnel during raising operations	With no operating personnel during raising operations
17		Apply sealant on fastening bolts: thread locker 262.	Thread locker 262
18		Fasteners tightening diagonally	$M=90\pm 9\text{N.m}$
19	Jib installation	Fasteners tightening diagonally	$M=52\pm 5\text{N.m}$
20	Platform installation	Apply sealant on fastening bolts: thread locker 262.	Thread locker 262

Specifications

21		Fasteners tightening	M=595±55N.m M=71±7N.m
22	Load sensor assembly	Distance from the universal joint to the sensor end face (61-63mm)	61-63mm
23	Counterweight assembly	A "chugging" sound rings from the air wrench SATA01132 once every 2-3s until the bolts will not rotate any more.	Bolts will not rotate any more.
24	Platform deviation	Deviation 1°	Deviation 1°
25	Machine starting	Fill hydraulic oil until it reaches a value between the min. level and max. level.	Oil level between the min. level and max. level.
26		Check and ensure that the machine is not working.	Check and ensure that the machine is not working.



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Chapter 3 Repair

3.1 About This Chapter

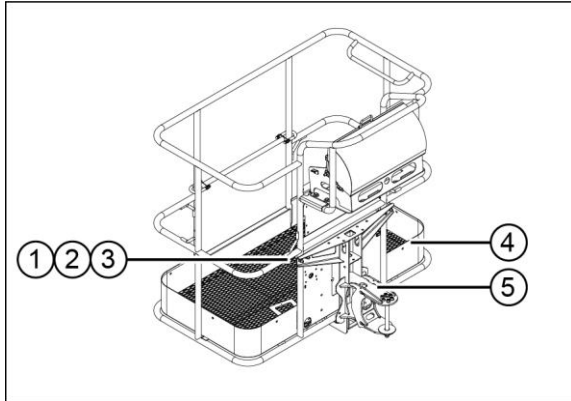
In this section, most procedures can only be performed by well-trained professional persons in proper workshops. Select proper repair procedures after faults are removed. Perform the dismantling procedure until the repair operation is completed. Then, reassemble the machine according to procedures reverse to the dismantling ones.

Please read and understand “safety rules” and “safety and environment” carefully before the machine is repaired. Repair the machine as required. Attempt to use easier ways may lead to dangers.

Repair

3.2 Platform Assembly

3.2.1 How to Dismantle the Platform Assembly



- 1. U-type bolt
- 2. Washer
- 3. Nut
- 4. Platform frame assembly
- 5. Platform support

- 1) Place support cushion blocks under the working platform.
- 2) Lower the boom until the working platform is placed on cushion blocks that can bear the boom.
- 3) The machine shall stop working. All electric wires and pipes shall be disconnected.

⚠ WARNING

Danger of personal injury!

Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic connector slowly to release oil pressure.

- 4) Remove fasteners from the platform frame assembly, which shall be lifted down from the platform support and placed to a designated area.
- 5) Install the platform assembly according to

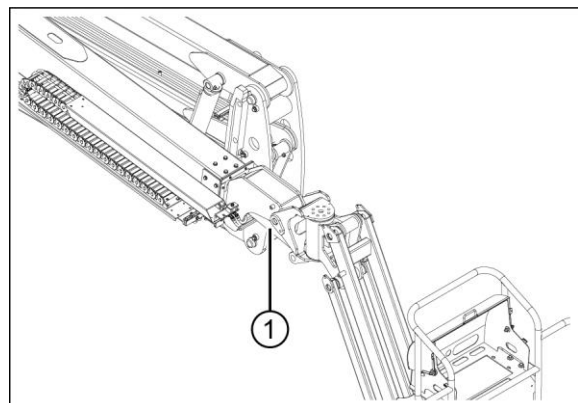
procedures reverse to the dismantling ones.

⚠ WARNING

Danger of smashing!
If it is not correctly raised, the platform assy will fall off and lose balance.

3.2.2 How to Disassemble the Upper Leveling Cylinder

Notice: O-rings on the joints/hoses must be replaced (if equipped) when the hose assy or joint is replaced. During installation, all connections shall be tightened to the specified torque. Refer to "Torque Specifications".



- 1. Upper leveling cylinder

- 1) Extend the primary boom until it touches the pin shaft at the leveling cylinder barrel end.
- 2) Place the cushion block on the platform lower support and lower the primary boom until the platform leans against the supporting platform cushion block.

Notice: Do not lower the boom on the cushion block completely.

- 3) Mark, disconnect, and block the hydraulic hose and joint on the upper leveling cylinder.

⚠ WARNING

Danger of personal injury!

Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic joint slowly to release oil pressure.

- 4) Remove pin shaft fasteners at both ends of the upper leveling cylinder and do not remove the cylinder pin shaft.
- 5) Connect the raising lanyard from the overhead crane to the upper leveling cylinder and protecting the oil rod from being damaged.

⚠ WARNING

Danger of smashing!

If the support is improper, the platform may fall off when the upper leveling cylinder is removed.

NOTICE

Danger of part damage!

If the raising equipment support is improper, the upper leveling cylinder may fall off and be damaged.

- 6) Knock pin shafts at both ends of the cylinder out using a copper hammer.
- 7) Pull the oil cylinder to the primary boom carefully.

3.2.3 How to Dismantle the Saddle-type Swing Cylinder

Notice: Perform this procedure when the boom is at the retracted position.

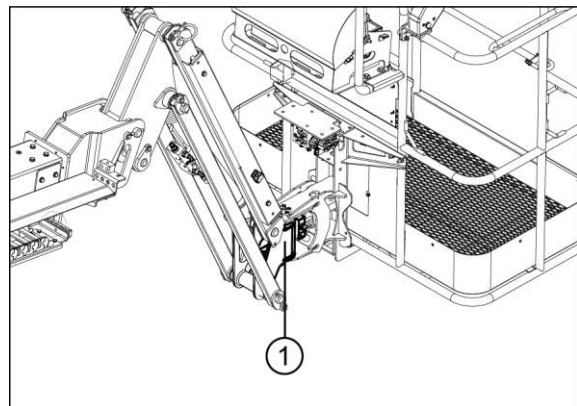
- 1) Remove the platform assembly by referring to “How to Dismantle the Platform Assembly”.
- 2) Lower the boom until the working platform is placed stably.
- 3) Mark, disconnect, and block the swing cylinder hose.

⚠ WARNING

Danger of personal injury!

Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic joint slowly to release oil pressure.



1. Saddle-type swing cylinder

- 4) Remove fasteners between the swing cylinder and the platform support.
- 5) Remove fasteners between the swing cylinder and the jib
- 6) Remove the saddle-type swing cylinder.
- 7) Install the saddle-type swing cylinder according to procedures reverse to the

Repair

dismantling ones.

Notice: Keep the oil cylinder clean and prevent pollutant & impurities from entering the cylinder in the process of cylinder installation. The oil cylinder shall be fixed firmly. Looseness and shaking shall be prevented.

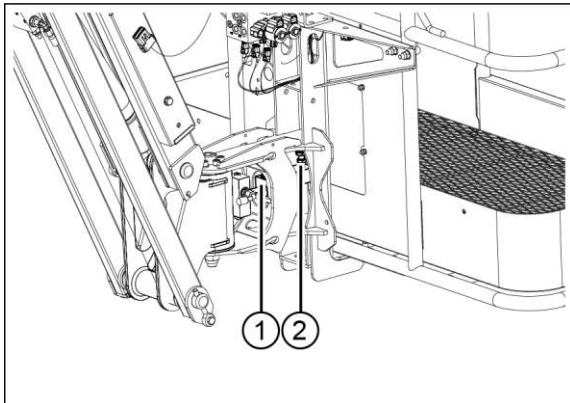
⚠ WARNING

Danger of smashing!
If the saddle-type swing cylinder is not properly supported, the pin shaft may fall off when being knocked out due to imbalance.

Notice: The load sensor shall be installed in the middle with no offset using the limit tool.

3.2.4 How to Disassemble the Load Sensor

- 1) Remove the platform assy by referring to “How to Disassemble the Platform Assy”.
- 2) The machine shall stop working. All electric wires shall be disconnected.



1. Load sensor
2. Tumbler-toy adjustment foot

- 3) Remove the tumbler-toy adjustment foot;
- 4) Remove load sensor fasteners.
- 5) Remove the load sensor.
- 6) Assemble the load sensor according to procedures reverse to the dismantling ones.

3.3 Jib Boom Assembly

3.3.1 How to Dismantle the Jib Boom Assembly

- 1) Remove fasteners connecting the saddle-type swing cylinder with the jib boom end and knock the pin shaft out.
- 2) Remove the connecting rod left guard-plates and pipe clips and remove hoses and harness fixed to the arm.
- 3) Remove the jib-boom cylinder hoses.

NOTICE

O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to "Torque Specifications".

⚠ WARNING

Danger of personal injury!

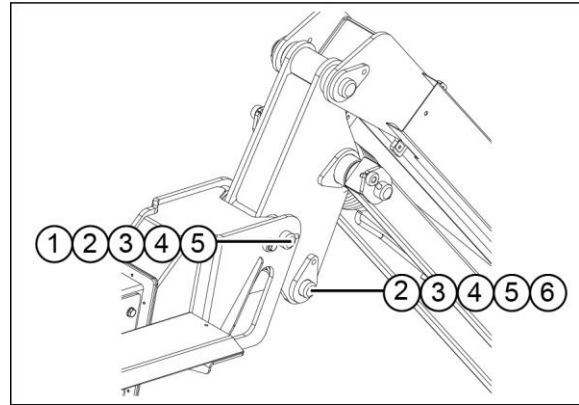
Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic connector slowly to release oil pressure. Oil injection or spraying is prohibited.

NOTICE

If the cable harness or hose is twisted or squeezed, damage will be caused.

- 4) Connect the lifting strap from the overhead crane to the jib boom assembly for support.



1. Pin shaft
2. Plug
3. Bolt
4. Washer
5. Nut
6. Pin shaft

- 5) Remove the pin shaft fasteners, knock the pin shaft out, and remove the jib boom assembly.

⚠ WARNING

Danger of smashing!

If the jib boom is not properly supported, the pin shaft may fall off when being knocked out due to imbalance.

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3.3.2 How to Dismantle the Jib Boom Cylinder

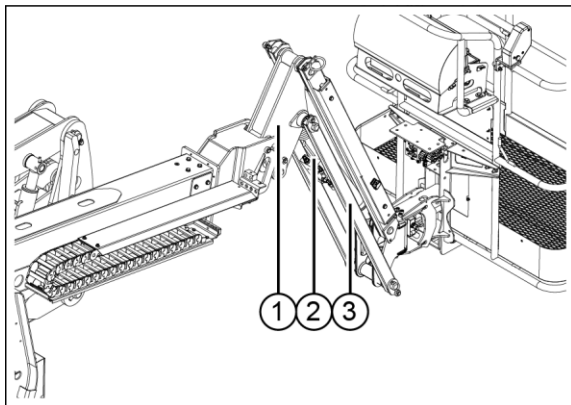
- 1) Mark, disconnect, and block the jib boom cylinder hose.

⚠ WARNING

Danger of personal injury!

Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic connector slowly to release oil pressure. Oil injection or spraying is prohibited.



- 1.fasteners connecting the lower connecting frame assembly
- 2. jib boom cylinder
- 3.lower connecting-rod

- 2) Remove fasteners connecting the lower connecting frame assembly with the lower connecting rod pin shaft.
- 3) Knock half of the lower connecting-rod pin shaft out to make the rod face downward and remove the connecting rod on the other side using the same way.
- 4) Connect the lifting strap from the overhead crane to the jib boom cylinder for support.
- 5) Remove fasteners fixing the jib boom

cylinder with the upper connecting rod pin shaft, knock pin shafts at both ends of the jib boom cylinder, and remove the jib boom cylinder.

- 6) Assemble the jib boom cylinder in reverse order.

⚠ WARNING

Danger of smashing!

If the jib boom cylinder is not properly supported, the pin shaft may fall off when being knocked out due to imbalance.

3.4 Boom Assembly

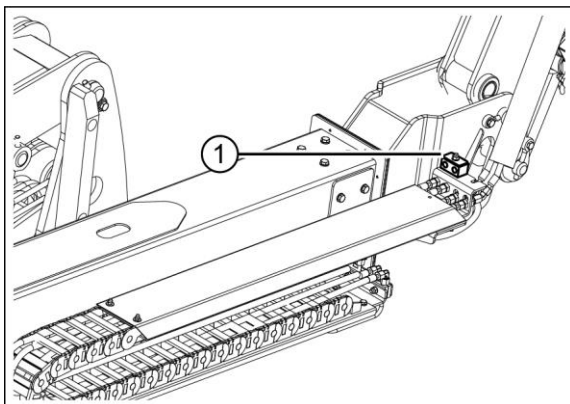
3.4.1 How to Dismantle the Drag Chain Assembly

NOTICE

O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to "Torque Specifications".

⚠ WARNING

Danger of personal injury!
Hydraulic oil injected will penetrate into or burn your skins. Release the hydraulic connector slowly to release oil pressure. Oil injection or spraying is prohibited.

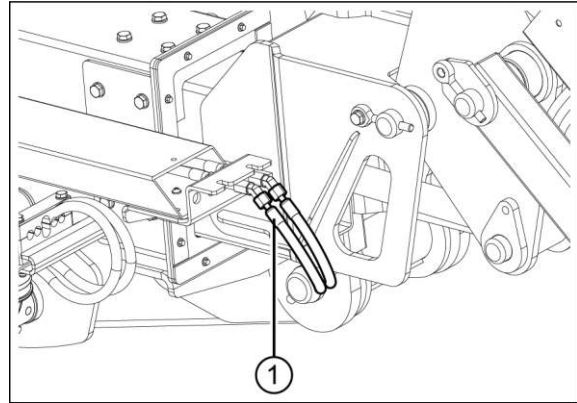


1. Tube clamp

- 1) Remove tube clamp fasteners at the

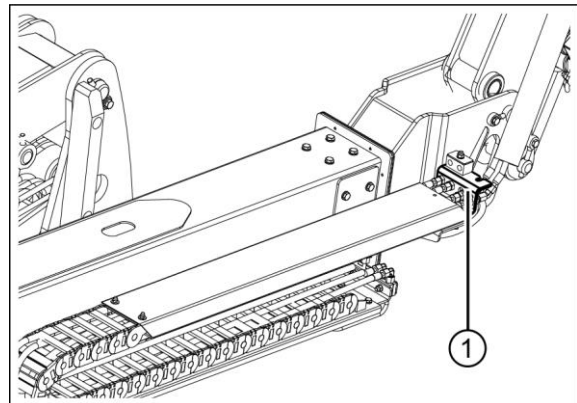
aluminum tube inlet and then the tube clamp.

- 2) The machine shall stop working. All harness entered the aluminum tube shall be disconnected.



1. Hose

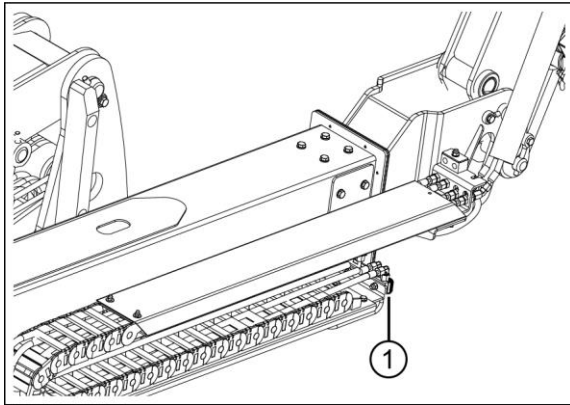
- 3) Mark, disconnect, and block the hose entered the aluminum tube.



1. Partition joint mounting plate 5

- 4) Remove fasteners connecting the partition joint mounting plate 5 with the aluminum tube. Then, remove the partition joint mounting plate 5.

Repair



1. Tube clamp

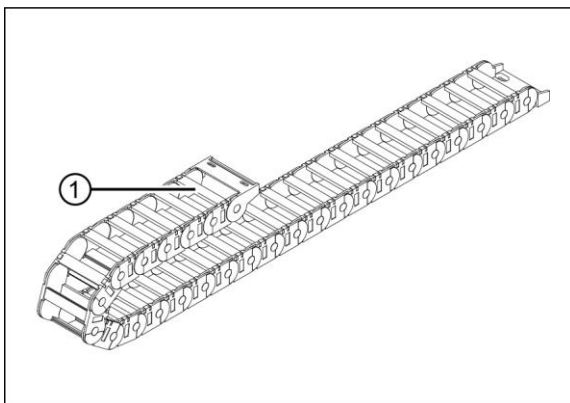
- 5) Remove tube clamp fasteners and then the tube clamp.
- 6) Mark, disconnect, and block the hose.
- 7) Remove fasteners for connecting the aluminum tube with the drag chain and fasteners for connecting the drag chain pallet and drag chain.
- 8) Pull the hoses and harnesses out from the drag chain and remove the drag chain from the machine.

NOTICE

Danger of part damage!

1. If the cable harness and hose are twisted or squeezed, damage will be caused.

3.4.2 How to Replace the Single-section Drag Chain



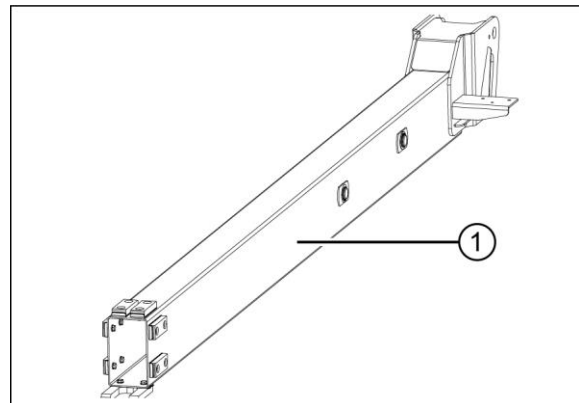
1. Drag chain

- 1) Insert the flat head screwdriver into the clearance and remove the upper plate of the single-section drag chain.
- 2) Insert the flat head screwdriver into the clearance between two sections of drag chains and pry the clearance up forcibly. Remove the single-section drag chain.

3.4.3 How to Replace the Boom

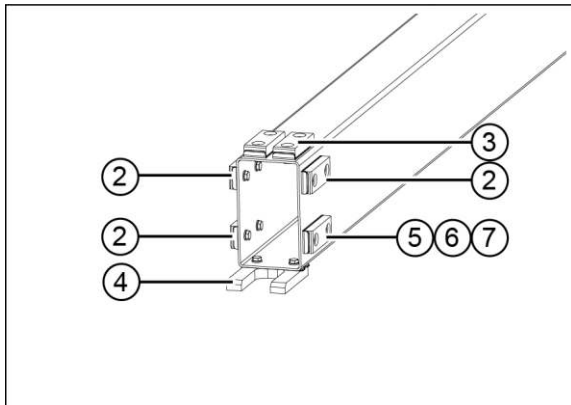
Sliding Block

- 1) Remove the boom assembly by referring to “How to Dismantle the Boom Assembly”.
- 2) Remove the boom telescopic cylinder by referring to “How to Dismantle the Boom Telescopic Cylinder”.



1. 2nd boom section assembly

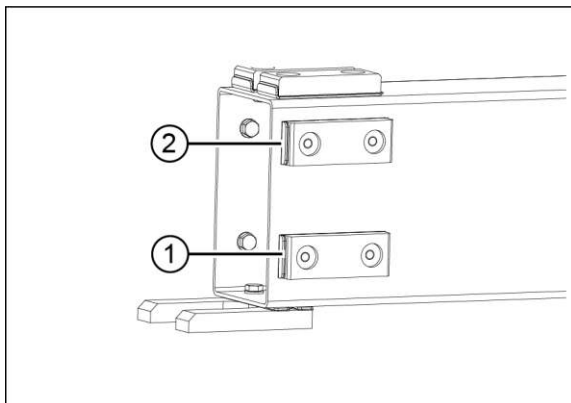
- 3) Remove the boom fixed parts, separate the basic aim from the 2nd boom and place it on the fixture table.



- 2. Sliding block
- 3. Sliding block
- 4. Sliding block
- 5. Bolt
- 6. Bolt
- 7. Washer

- 4) Remove the sliding block fixed parts;
- 5) Install sliding blocks to the rear ends of the extension boom, respectively.

Notice: 1) Install part 4 to the bottom of the extension boom. Fasteners used for the contact plate are long.



- 1. Sliding block base plate
- 2. Sliding block base plate

2) Measure external dimensions of the left, right, upper, and lower sliding blocks after they are installed and then measure dimensions at the corresponding position in the front of the boom. Determine the quantity of sliding block gaskets to be used according to the dimension differences.

Notice: The sum of the clearance between sliding blocks and the boom at both sides shall be less than or equal to 1 mm.

3) Apply AT262 sealant on the sliding block bolt and then fix the sliding block.

3.4.4 How to Dismantle the Boom

Assembly

⚠ WARNING

Danger of personal injury!
Special repair skills, lifting equipment, and proper workshops are required for this procedure. Death, serious injuries, or serious part damage may be caused when these skills and tools are unavailable. We strongly suggest the dealer to provide this service.

Notice: 1. Perform this procedure when the boom is stored.

2. O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

- 1) Remove the platform by referring to “How to Dismantle the Platform Assembly”.
- 2) Remove the jib boom assembly by referring to “How to Dismantle the Jib Boom Assembly”.
- 3) Remove the drag chain by referring to

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“How to Dismantle the Drag Chain”.

- 4) Remove the upper leveling cylinders by refers to “How to Dismantle the Upper Leveling Cylinder”.
- 5) Remove the lower leveling cylinders by refers to “How to Dismantle the Lower Leveling Cylinder”.
- 6) Connect overhead crane to both ends of the boom for supporting.
- 7) Remove the boom luffing cylinder by referring to “How to Dismantle the Boom Luffing Cylinder”.
- 8) Mark and disconnect the travel switch harness and remove the travel switch.
- 9) Mark, disconnect, and block the hydraulic hose of the boom telescopic cylinder. Cover the connector on the cylinder.

⚠ WARNING

Danger of personal injury!
Hydraulic oil injected will penetrate into or burn your skins.
Release the hydraulic connector slowly to release oil pressure.

- 10) Remove fasteners on the right of the boom upper pivot pin.
- 11) Knock out half of the upper pivot pin with a copper hammer, remove the boom from the machine carefully, and place it on a structure that can support the boom.

⚠ WARNING

Danger of smashing!
If it is not correctly connected to the overhead crane, the boom assembly may

lose balance and fall off when being removed from the machine.

3.4.5 How to Dismantle the Boom Luffing Cylinder

⚠ WARNING

Danger of personal injury!
Special repair skills, lifting equipment, and proper workshops are required for this procedure. Death, serious injuries, or serious part damage may be caused when these skills and tools are unavailable. We strongly suggest the dealer to provide this service.

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

- 1) Lift the telescopic boom to the horizontal position.
- 2) Lift the crank arm until the axle pin at the boom luffing cylinder barrel end is higher than the housing.
- 3) Connect the raising equipment to the telescopic boom for supporting.
- 4) Raise the boom with a piece of raising equipment to release pressure from pin shaft installed on the boom luffing

cylinder.

- 5) Support the boom luffing cylinder rod end and barrel end with the overhead crane or similar lifting equipment.
- 6) Mark, disconnect, and block the hydraulic hose of the boom luffing cylinder. Cover the connector on the cylinder.

⚠ WARNING

Danger of personal injury!

Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic connector slowly to release oil pressure.

- 7) Remove fixed parts from the pin shaft on the rod end of the boom luffing cylinder and knock the luffing cylinder pin shaft out with a copper hammer.

⚠ WARNING

Danger of smashing! During boom luffing cylinder removal, the boom may fall down if the boom support is not proper.

- 8) Retract the boom luffing cylinder rod-end into the cylinder. Protect the oil cylinder from damage.
- 9) Place the supporting shoe across two housings and under the boom luffing cylinder for support.

⚠ WARNING

Danger of smashing! If there is no proper support from the lifting equipment, the boom luffing cylinder may lose balance and fall

off.

- 10) Remove fixed parts at the barrel end of the boom luffing cylinder.
- 11) Knock the pin shaft at the barrel end out with a copper hammer. Remove the boom luffing cylinder from the machine carefully.

⚠ WARNING

Danger of smashing! The lifting cylinder may lose balance and fall off if it is not correctly supported and fixed to the lifting equipment.

3.4.6 How to Dismantle the Crank Arm Luffing Cylinder

Two crank arm luffing cylinders are equipped in the crank arm assembly. Two cylinders are connected in a parallel way and are extended or retracted through hydraulic pressure. Each crank arm luffing cylinder is equipped with a balance valve to prevent cylinder movement when any hydraulic pipe has a fault.

⚠ WARNING

Danger of personal injury! Special repair skills, lifting equipment, and proper workshops are required for this procedure. Death, serious injuries, or serious part damage may be caused when these skills and tools are unavailable. We strongly suggest the dealer to provide this

Repair

service.

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

- 1) Lower the crank arm to the retraction position.
- 2) Lift the boom and make it be higher than the pin shaft at the lifting cylinder connecting rod end.
- 3) Mark, disconnect, and block the hydraulic hose on the crank arm lifting cylinder.

⚠ WARNING

Danger of personal injury!

Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic connector slowly to release oil pressure.

- 4) Connect the lifting strap from the overhead crane to the crank arm lifting cylinder and do not apply any lifting power.
- 5) Remove shaft pin fasteners at both ends of the crank arm cylinder and knock half of the pivot pin at the cylinder barrel end out with a copper hammer. Lower the crank arm lifting cylinder barrel end.
- 6) Knock the pivot pin at the cylinder rod end out with a copper hammer.
- 7) Remove the crank arm lifting cylinder from the machine.

- 8) Remove the cylinder on the other side using the same method.

⚠ WARNING

Danger of smashing!

Remove fixed parts.

The crank arm lifting cylinder may fall off due to imbalance.

NOTICE

Danger of part damage!

When the crank arm lifting cylinder is removed from the machine, do not damage the balance valve at the cylinder barrel end.

3.4.7 How to Dismantle the Boom Telescopic Cylinder

The boom telescopic cylinder helps extend and retract the boom. The boom telescopic cylinder is equipped with a balance valve to prevent boom lowering when the hydraulic pipe has a fault.

⚠ WARNING

Danger of personal injury!

Professional repair skills, lifting equipment, and proper workshops are required for this procedure. Death, serious injuries, or serious part damage may be caused when professional skills and tools are unavailable. We strongly suggest the dealer to provide

this service.

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

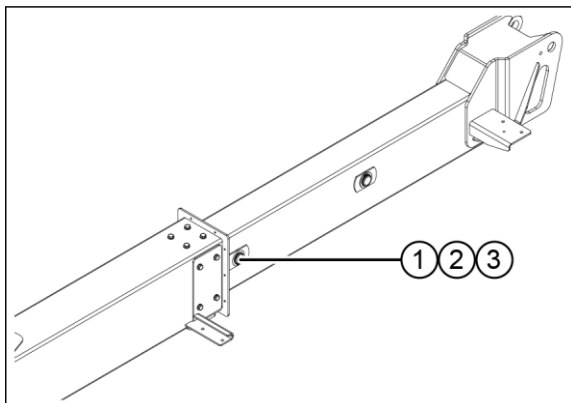
- 1) Lift the boom to the horizontal position.
- 2) Extend the boom until the pin shaft at the boom telescopic-cylinder connecting rod end can be dismantled.
- 3) Disconnect the cable harness from the upper pivot end.
- 4) Mark, disconnect, and block the hydraulic hose of the boom telescopic cylinder. Cover the connector on the cylinder.

⚠ WARNING

Danger of personal injury!

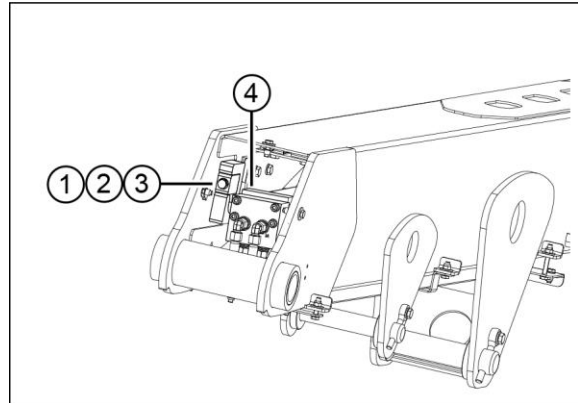
Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic connector slowly to release oil pressure.



1. Washer
2. Shaft
3. Retaining ring

- 5) On the boom platform end, remove fixed parts from the pin shaft at the telescopic-cylinder connecting rod end and knock the shaft out.



1. Bolt
2. Washer
3. Oil cylinder pressure plate
4. Telescopic cylinder

- 6) Remove fixed parts at the cylinder barrel end.
- 7) Support the telescopic cylinder and take it out from the boom.

⚠ WARNING

Danger of smashing!

If the support is improper, the telescopic cylinder may fall off when being removed from the telescopic boom.

NOTICE

Danger of part damage!

When the cylinder is removed from the boom, be careful and do not damage balance valve on the boom extension cylinder.

Notice: 1. Pay attention to the cylinder length after it is removed. The cylinder installation distances must be consistent.

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2. Install the telescopic cylinder according to procedures reverse to the dismantling ones.

3.4.8 How to Dismantle the Lower Leveling Cylinder

The lower leveling cylinder and the upper leveling cylinder are arranged in the same hydraulic circuit for work field leveling. The lower leveling cylinder is a part of the closed hydraulic circuit. Keep the platform level in the whole boom moving range. The lower leveling cylinder is on the boom base.

⚠ WARNING

Special repair skills, lifting equipment, and proper workshops are required for procedures in this section. Death, serious injuries, or serious part damage may be caused when these skills and tools are unavailable.

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

- 1) Lift the crank arm until it can touch the pivot at the lower leveling cylinder rod end and barrel end.
- 2) Mark, disconnect, and block the hydraulic hose of the lower leveling cylinder. Block the connector on the cylinder.

⚠ WARNING

Danger of personal

injury!

Hydraulic oil injected will penetrate into or burn your skins. Release the hydraulic connector slowly to release oil pressure.

- 3) Connect the overhead crane or similar lifting equipment to the lower leveling cylinder.
- 4) Remove fasteners at both ends of the lower leveling cylinder and knock the pin shaft out with a tool.
- 5) Remove the lower leveling cylinder from the machine.

⚠ WARNING

Danger of smashing! The lower leveling cylinder may fall off due to imbalance if not being correctly connected to the overhead crane.

3.5 Pump

3.5.1 How to Dismantle the Gear Pump

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

⚠ WARNING

Danger of part damage!
When the stop valve of the hydraulic oil tank is at the CLOSED position, do not start the machine. Otherwise, parts will be damaged. If the valve is closed, take the key down from the key switch and paste a sign on the machine to inform the machine condition.

- 1) Remove the left engine hood.
- 2) Mark, disconnect, and block the hydraulic hose of the gear oil pump. Cover the joint on the pump.

⚠ WARNING

Danger of personal injury!
Hydraulic oil injected will penetrate into or burn your skins.
Release the hydraulic joint slowly to release oil pressure.

- 3) Remove screws for installing the gear oil

pump to the closed variable pump.

Remove the gear oil pump carefully.

3.5.2 How to Dismantle to Closed the Variable Pump

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

⚠ WARNING

Danger of part damage!
When the stop valve of the hydraulic oil tank is at the CLOSED position, do not start the machine. Otherwise, parts will be damaged. If the valve is closed, take the key down from the key switch and paste a sign on the machine to inform the machine condition.

- 1) Refer to “How to Disassemble the Gear Oil Pump” for details about gear oil pump disassembly.
- 2) Disconnect the harness.
- 3) Mark, disconnect, and block the hydraulic hose of the closed variable pump. Cover the joint on the pump.

⚠ WARNING

Danger of personal injury!
Hydraulic oil injected will penetrate into or burn your skins.

Repair

Release the hydraulic joint slowly to release oil pressure.

- 4) Support the closed variable pump and fix it to proper raising equipment.
- 5) Remove screws for installing the closed variable pump to the engine pump cover plate. Then, remove the closed variable pump carefully.

⚠ WARNING

**Danger of smashing!
The closed variable pump may fall off due to imbalance if not being correctly connected to the overhead crane.**

3.6 Hydraulic Oil Tank and Fuel Tank

3.6.1 How to Dismantle the Hydraulic Oil Tank

NOTICE

Danger of part damage!
Working area and device surface for this procedure must be clean. If any impurity enters the hydraulic system, serious part damage will be caused. We suggest that the dealer provides services.

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to "Torque Specifications".

- 1) Remove the right hood.
- 2) Drain hydraulic oil in the hydraulic oil tank to a clean container.

Notice: Hydraulic oil of a machine just stopped can lead to scald easily.

- 3) Support the hydraulic oil tank and fix it to proper lifting equipment.
- 4) Remove fasteners fixing the hydraulic oil tank.

NOTICE

Danger of part damage!
The machine cannot be started when the hydraulic oil tank valve is closed. Otherwise,

parts will be damaged. If the hydraulic oil tank valve is closed, take down the key from the switch and make a mark on the machine for prompting.

- 5) Mark, disconnect, and block the suction hose.

⚠ WARNING

Danger of personal injury!
Hydraulic oil injected will penetrate into or burn your skins. Release the hydraulic connector slowly to release oil pressure.

- 6) Remove the hydraulic oil tank from the machine.
- 7) Install it according to procedures reverse to the dismantling ones. Fill hydraulic oil of matched models after the installation is finished.
- 8) Simulate operations on the machine to check for oil leakage after the tank is installed.

⚠ WARNING

Danger of smashing!
When the hydraulic oil tank is removed from the machine, the hydraulic oil tank may lose balance and fall off if it is not properly supported and fixed to the lifting equipment.

Repair

3.6.2 How to Dismantle the Fuel Tank

⚠ WARNING

Dangers of explosion and fire!

The engine oil is flammable. Take this procedure in an open and well-ventilated place away from the heater, spark, flame, and fireworks. Qualified fire extinguishers shall be equipped in accessible places.

⚠ WARNING

Dangers of explosion and fire!

When fuel is delivered, arrange grounding wires between the machine and the pump or the container.

⚠ WARNING

Dangers of explosion and fire!

Do not drain or store fuel into an open container due to a possibility of fire.

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

- 1) Remove the right engine cover.
- 2) Mark, disconnect, and block the fuel supply and return hoses.

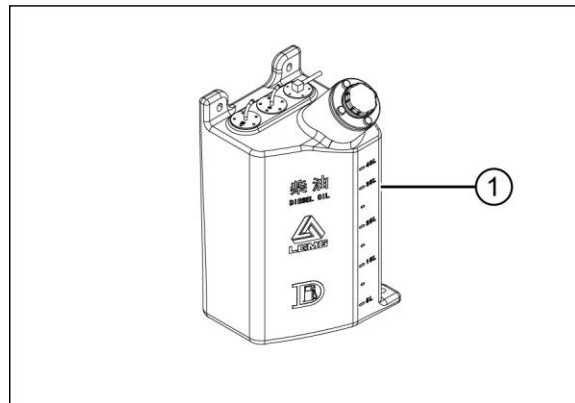
⚠ WARNING

Danger of personal injury!

Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic joint slowly to release oil pressure.

- 3) Remove the cover at the fuel filling port at the fuel tank bottom and install the fuel tank to a proper container.



1. Fuel tank

- 4) Remove fasteners fixing the fuel tank. Then, remove the fuel tank from the machine.

NOTICE

Danger of part damage!

If the fuel tank is plastic, it may be damaged when being lowered.

Notice: Clean and check the fuel tank for cracks and other damage before it is installed

3.7 Axle Components

3.7.1 How to Dismantle the Front Axle Assembly

- 1) Fix the front steering wheels and place the jack in the middle of the machine chassis front axle.
- 2) Unscrew wheel nuts and do not remove nuts.
- 3) Lift the machine by 5cm. Place the support under the chassis for supporting.
- 4) Fix the lifting strap connected with the crane to the front axle and ensure that the connection is solid and reliable.

⚠ WARNING

Danger of smashing!
The front axle may lose balance and fall off after the wheels are removed.

- 5) Remove nuts from the wheels and remove the tires.
- 6) Mark and disconnect hoses connected with the front axle. Block the fuel tubes.

⚠ WARNING

Danger of personal injury!
Hydraulic oil injected will penetrate into or burn your skins.
Release the hydraulic joint slowly to release oil pressure.

- 7) Support the propeller shaft.
- 8) Remove fasteners connecting the front axle with the propeller shaft and disconnect them from each other.
- 9) Remove the fasteners fixing the front axle with the chassis.

- 10) Remove the front axle slowly with a crane.

⚠ WARNING

Danger of smashing!
If the front axle is not correctly lifted with the lifting strap, it may lose balance and fall off.

3.7.2 How to Dismantle the Rear Axle Assembly

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

- 1) Fix the rear steering wheels and place the jack in the middle of the machine chassis rear axle.
- 2) Unscrew wheel nuts and do not remove nuts.
- 3) Raise the machine by 5cm. Place the support under the chassis for supporting.
- 4) Fix the raising strap connected with the crane to the rear axle and ensure that the connection is solid and reliable.
- 5) Remove nuts from the wheels and remove the tires.
- 6) Mark and disconnect fuel tubes connected with the front axle. Block the fuel tubes.

⚠ WARNING

Danger of personal injury!
Hydraulic oil injected will penetrate into or burn your skins.
Release the hydraulic

Repair

**joint slowly to release
oil pressure.**

- 7) Remove fasteners connecting the left mount weldment of the floating cylinder with the floating cylinder and knock the lower pin shaft of the floating cylinder down with a copper rod.
- 8) Remove fasteners connecting the right mount weldment of the floating cylinder with the floating cylinder and knock the lower pin shaft of the floating cylinder down with a copper rod.
- 9) Support the propeller shaft.
- 10) Remove fasteners connecting the front axle with the propeller shaft and disconnect them from each other.
- 11) Remove the fasteners fixing the rear axle with the chassis.
- 12) Remove the rear axle slowly with a crane.

⚠ WARNING

**Danger of smashing!
If the rear axle is not
correctly lifted with the
lifting strap, it may lose
balance and fall off.**

3.7.3 How to Dismantle Tires

- 1) Unscrew wheel nuts and do not remove nuts.
- 2) Block the steering wheels and place a jack with sufficient bearing under the steering shaft.
- 3) Lift the machine by 15 cm and place cushion blocks under the chassis for supporting.

NOTICE

**Danger of smashing!
The machine may fall
off if the support is**

improper.

- 4) Remove nuts from the wheels and remove the wheels.

3.7.4 How to Dismantle the Propeller Shaft

⚠ WARNING

**Danger of smashing!
If the transfer box is not
correctly supported, the
propeller shaft may lose
balance and fall off.**

- 1) Place the support under the chassis for supporting.
- 2) Support the transfer box and travel motor with the support.
- 3) Remove the fasteners connecting the rear axle with the rear propeller shaft.
- 4) Remove the fasteners connecting the transfer box with the rear propeller shaft.
- 5) Remove the rear propeller shaft.
- 6) Remove the fasteners connecting the front axle with the front propeller shaft.
- 7) Remove the fasteners connecting the transfer box with the front propeller shaft.
- 8) Remove the front propeller shaft.

3.7.5 How to Dismantle the Travel

Motor

- 1) Place the support under the chassis for supporting.
- 2) Mark, disconnect, and block hoses of the travel motor. Install connector caps on the travel motor.

⚠ WARNING

Danger of personal injury!

Hydraulic oil injected will penetrate into or burn your skins.

Release the hydraulic connector slowly to release oil pressure.

- 3) Fix the lifting strap connected with the crane to the motor and ensure that the connection is solid and reliable.
- 4) Remove the fasteners connecting the transfer motor with the transfer box.

⚠ WARNING

Danger of smashing!

If the motor is not correctly lifted with the lifting strap, it may lose balance and fall off.

- 5) Remove the travel motor slowly with a crane.

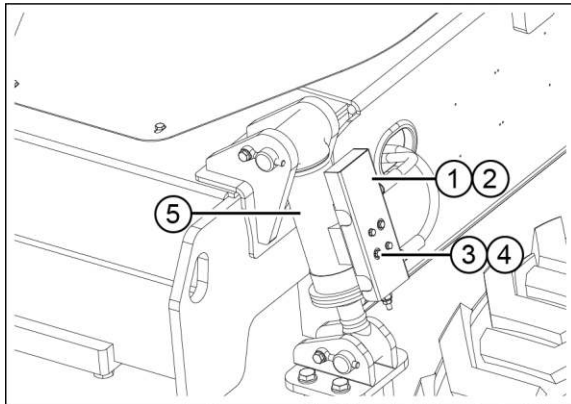
3.7.6 How to Dismantle the Transfer

Box

- 1) Place the support under the chassis for supporting.
- 2) Remove the travel motor by referring to “How to Dismantle the Travel Motor” for detailed procedures.
- 3) Remove the propeller shaft by referring to “How to Dismantle the Propeller Shaft”.
- 4) Fix the lifting strap connected with the crane to the transfer box and ensure that the connection is solid and reliable.
- 5) Remove the fasteners connecting the transfer box with the propeller shaft.
- 6) Remove the transfer box slowly with a crane.

Repair

3.7.7 How to Dismantle the Floating Cylinder



- 1. Axle floating balance valve
- 2. Floating balance valve guard-plate
- 3. Bolt
- 4. Washer
- 5. Floating cylinder

⚠ WARNING

Special repair skills, lifting equipment, and proper workshops are required for procedures in this section. Death, serious injuries, or serious part damage may be caused when these skills and tools are unavailable.

Notice: O-rings on the connectors/hoses must be replaced (if O-rings are equipped) when the hose assembly or connector is replaced. During installation, all connections shall be tightened to the specified torque. Refer to “Torque Specifications”.

- 6) Mark, disconnect, and block the hydraulic hose of the floating cylinder. Block the connector on the cylinder.

⚠ WARNING

Danger of personal injury!

Hydraulic oil injected will penetrate into or burn your skins. Release the hydraulic connector slowly to release oil pressure.

- 7) Remove fasteners for installing the axle floating balance valve and the axle floating balance valve guard plate.
- 8) Remove pin shaft fasteners at both ends of the floating cylinder and knock the pin shaft out with a tool.
- 9) Remove the floating cylinder from the machine.
- 10) Install the floating cylinder according to procedures reverse to the dismantling ones.

Chapter 4

Commissioning

4.1 About this Chapter

Before this machine is tested, please read and understand the operator's manual of this machine carefully to prevent mis-operations during the test. Store the fork and place it to a specified position after the test is finished.

Please read and understand sections "Safety Rules" and "Safety " carefully before the machine is debugged. Debug the machine as required. Attempt to use easier ways may lead to dangers.

Dedicated tool kit of LGMG is required: voltmeter, ohmmeter, pressure gauge, pressure measuring connector. Refer to the Dedicated Test Tool Manual of Elevating Work Platforms.

Commissioning

4.2 How to Conduct No-load

Calibration

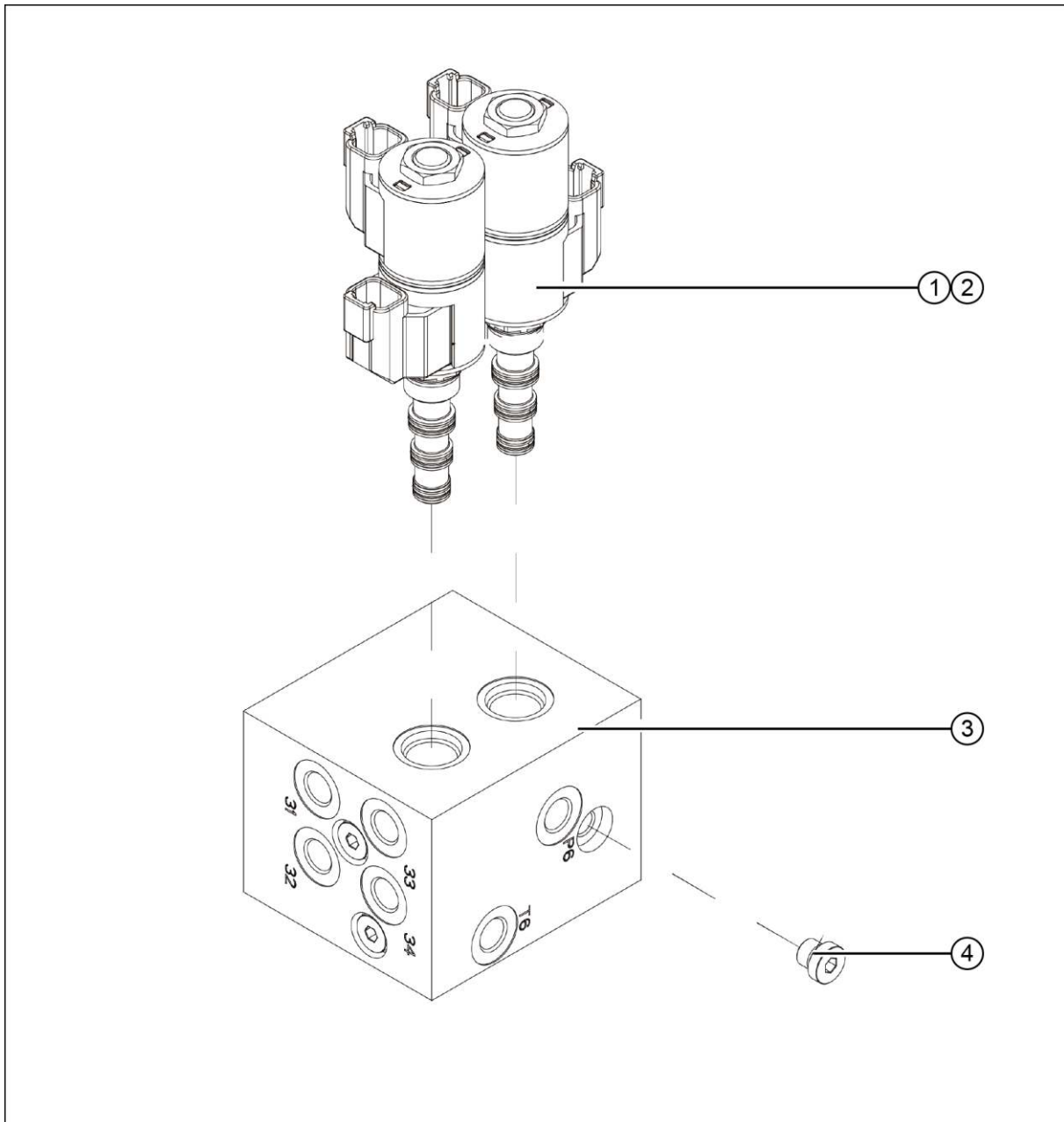
- 1) Drive the machine to a solid and level area after each test is conducted.
- 2) Insert the key, pull up the emergency stop switch button on the lower control panel, and turn the key switch on the lower control panel to the lower control box controller, and keep the machine to the retracted status.
- 3) Click the "Next page" key for two times and move the cursor to the "Weighing sensor correction" instruction through the "Up" and "Down" keys on the displayed "Select" interface.
- 4) Press the "Confirm" key to enter the interface for password entering. Enter the password "*****" through the "Up" and "Down" keys.
- 5) Press the "Confirm" key to enter the interface and move the cursor to the "No-load correction" instruction through the "Select" key. Press the "Set" key to finish the setting.
- 5) Hang a counterweight of 270 kg to the platform frame, bundle the safe strap to the platform frame, and lift the counterweight through jib boom operations, and press the "Confirm" key.
- 6) Press the "Return" key to enter the interface, move the cursor to the instruction of "Parameter saving" through the "Select" key, and press the "Confirm" key to finish the calibration.
- 7) When the machine stays in the stored status, hang a dolly with the counterweight of 1.1 times of rated load (297 Kg) to the working platform.
- 8) After the load is calibrated, turn the lower-control key to the "STOP", press the emergency stop switch, and unplug the key. Then, the machine is de-energized.

4.3 How to Load the Calibration

- 1) Drive the machine to a solid and level area after each test is conducted.
- 2) After the machine is ignited, move the cursor to the instruction of "Enter the loaded weight" through the "Select" key.
- 3) Press the "Confirm" key to enter the interface for weight entering. Enter "270" through the "Left" and "Right" keys.
- 4) Press the "Confirm" key to enter the interface and move the cursor to the instruction of "Loading correction" through

4.4 Valves

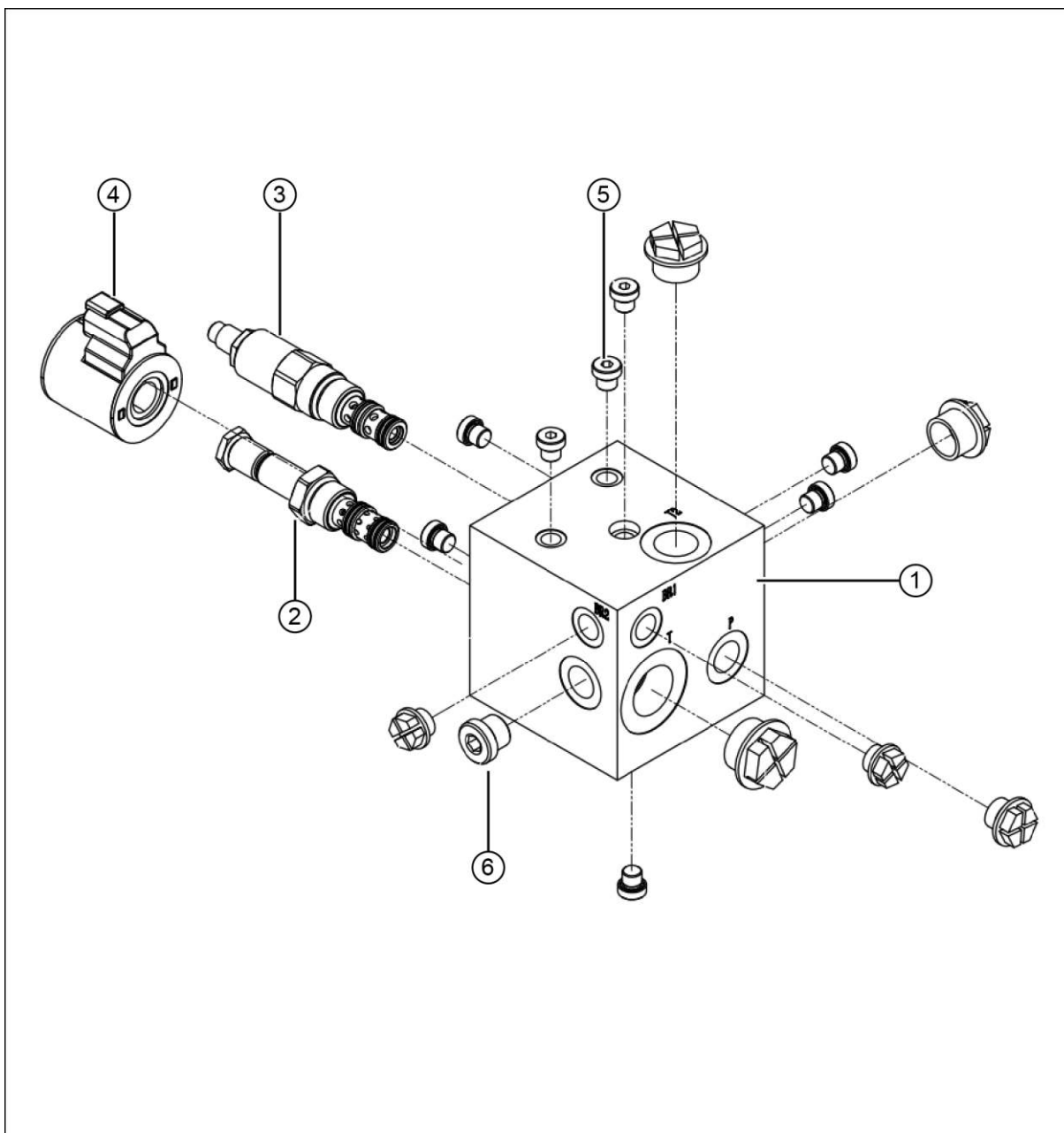
4.4.1 Platform Control Valves



No.	Name	Function	Torque (N.m)
1	Coil	-	4
2	Solenoid valve	Reversing solenoid valve	25.8-28.5
3	Valve block	-	-
4	Plug	-	11-12

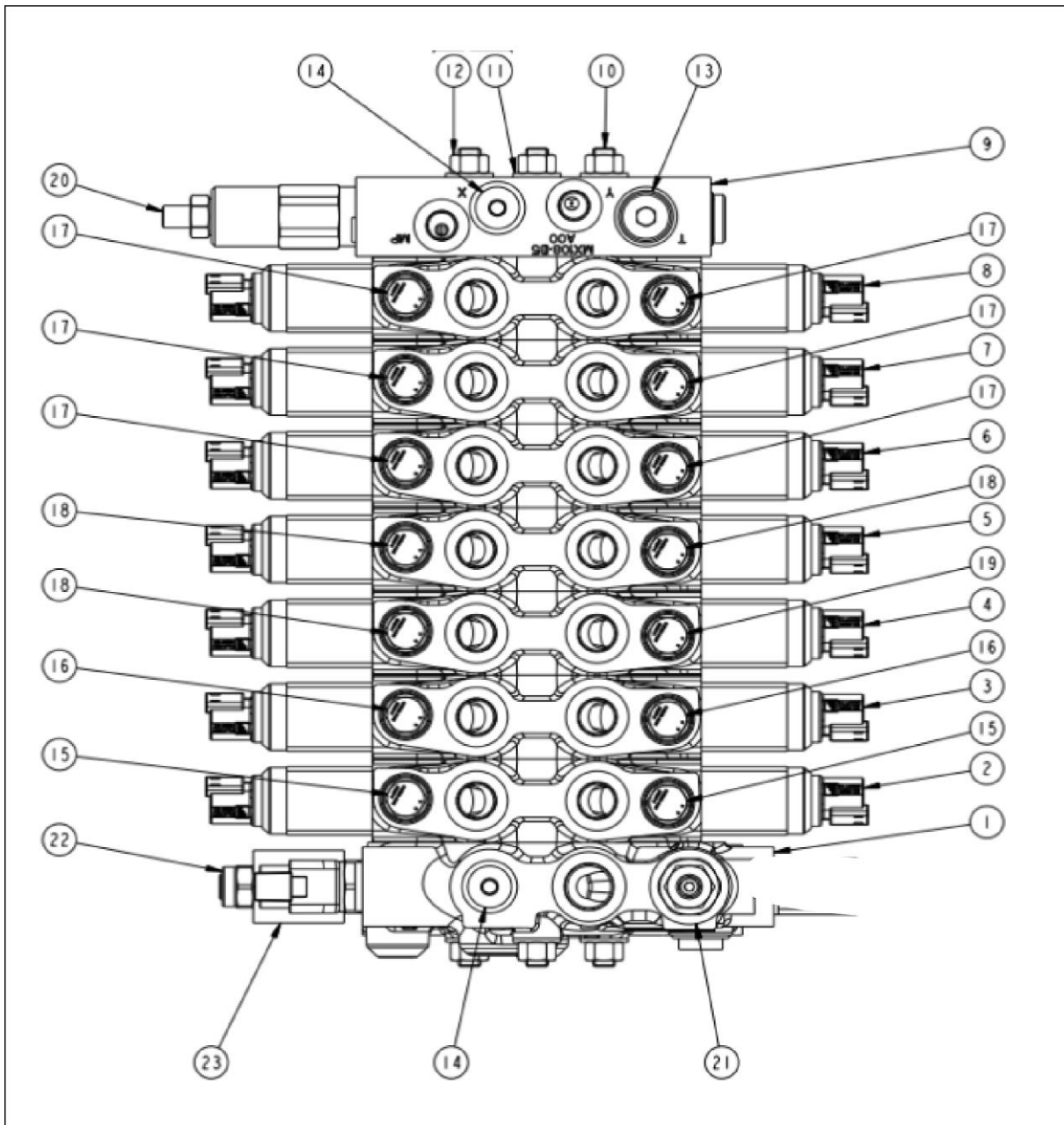
Commissioning

4.4.2 Brake Valve



No.	Name	Function	Torque (N.m)
1	Valve block	-	-
2	Solenoid three-way valve	-	Maximum value of 33.9
3	Pressure reducing overflow valve	-	Maximum value of 33.9
4	Coil	-	4
5	Inner hexagon plug for British external tube thread rubber-gasket seal	-	10-12
6	Inner hexagon plug for British external tube thread rubber-gasket seal	-	41-48

4.4.3 Multi-way Valve



No.	Name	Function	Torque (N.m)
1	Valve section for oil inlet	Oil inlet	-
2	Valve section for slewing	Turntable steering	-
3	Valve section for steering	Travel steering	-
4	Valve section for boom	Primary boom raising/lowering	-
5	Valve section for secondary boom luffing	Secondary boom raising/lowering	-
6	Valve section for telescoping	Primary-boom extension/retraction	-
7	Valve section for leveling	Leveling up/down	-
8	Valve section for the platform	Hydraulic generator valve, platform enabling valve	-
9	Valve section for oil outlet	Oil outlet	-
10	Screw	-	-
11	Shim	-	-
12	Nut	-	33±3.5

Commissioning

No.	Name	Function	Torque (N.m)
13	Plug-metric	-	25±2.5
14	Plug-British	-	14.0±1.5
15	Overflow valve component	-	28.0±2.0
16	Overflow valve component	-	28.0±2.0
17	Overflow valve component	-	28.0±2.0
18	Overflow valve component	-	28.0±2.0
19	Overflow valve component	-	28.0±2.0
20	Pressure relief valve component	-	33±3.5
21	Unloading valve component	-	33±3.5
22	Solenoid plug-in valve	Enabling valve	20±2
23	Solenoid plug-in valve coil	-	-

4.5 Test

4.5.1 How to Test Coils

Coils working normally can provide electromagnetic force for solenoid valve operations. Coil accesses are important for normal operations. If the coil resistance is 0 or infinitely great, the coil has a fault.

Coil resistors have thermo-responsive characteristics. Therefore, once the resistance exceeds the regulated value, unstable operations can be caused. When the coil resistance is below the specified range, the current will increase. When it exceeds the specified range, the voltage will also increase.

When the coil resistance is beyond the specified range, the valve may work. Therefore, if the coil resistance is kept within the specified range, the valve can work normally within a wide working temperature range.

⚠ WARNING

Danger of electric shock/burning!
Contact with charged circuits will lead to personal injuries or serious harm. Take off all rings, watches, and other ornaments.

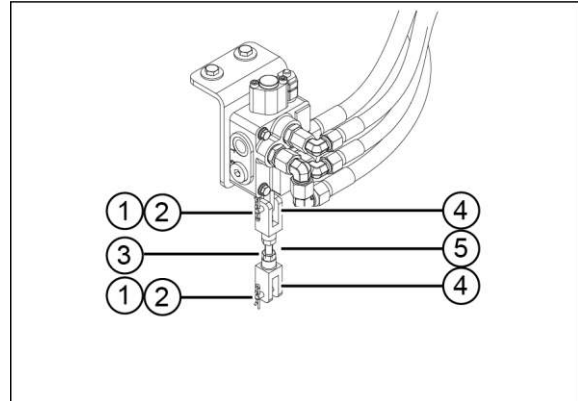
Notice: If the machine is working, this test can be conducted after the coil is cooled for at least 3 hours.

- 1) Mark and disconnect wires on the coils to be tested.
- 2) Test the resistance of the coil using a universal meter with resistance set. Refer to the "valve coil resistance" for the coil

resistance.

Result: If the resistance is not within the adjusted range ($\pm 10\%$), please replace the coil.

4.5.2 How to Debug the Floating Valve



1. Pin shaft
2. Pin
3. Nut
4. Linkage chain connector
5. Pull rod

- 1) Drive the machine to a piece of solid and level ground and check whether it is horizontal using a gradienter.

Notice: Ensure that the machine is horizontal.

- 2) Screw on nuts on both ends of the pull rod and the screw rod. Tighten the nuts.
- 3) Connect both ends of the screw rod with the linkage chain connectors. Connect linkage chain connector at one end of the installed screw rod to the floating valve rod and fix them using pin shafts and pins.
- 4) Rotate the floating valve rod by 90° and ensure that the pin shafts are installed separately.
- 5) When the operator pulls or pushes the floating valve rod, the floating valve rod works immediately. Then, the floating cylinder exhaust is finished.

Commissioning

- 6) Adjust the body and make it horizontal.
Check whether it is horizontal using a
gradienter.

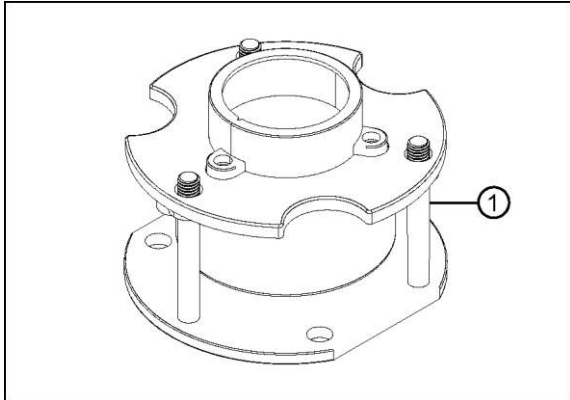
**Notice: Ensure that the machine is
horizontal.**

- 7) Connect the other end of the screw rod to
the bending plate, fix them using pin
shafts and pins, and tighten the nuts.

**Notice: 1. The split cotter shall be bent by
at least 90°;**

**2. Both the floating valve pin shaft hole and
the adjusting plate pin shaft hole are in the
middle of the chain connectors.**

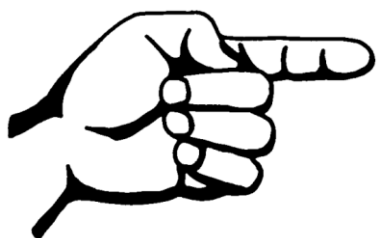
4.5.3 Inclination Sensor Calibration



1. Inclination sensor

- 1) Drive the machine to a piece of solid and level ground and check whether it is horizontal using a gradienter.
- 2) Three adjustment nuts for gradienter adjustment are used. When the bubble is at the zero point (cross point), the inclination sensor adjustment is finished.
- 3) Poke the "ZERO" button with a needle and observe the indicator lamp until it changes from flashing to long-term on. Mark adjustment nuts with a Mark pen and write "OK" to finish the calibration.

Notice: Please test the inclination of the plane where the bracket is installed using a gradienter and record the inclination. The inclination is of $\pm 0.2^\circ$ is recommended. Please feed the information back if the inclination is too large.



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Chapter 5

Appendix

5.1 About This Chapter

When a fault occurs, the fault code table in this section can help the service personal to check the fault cause.

Dedicated tool kit of LGMG is required: voltmeter, ohmmeter, pressure gauge, pressure measuring connector. Refer to the Dedicated Test Tool Manual of Elevating Work Platforms.

Appendix

5.2 Fault Code

Code	Description	
1	Open circuit to controller output power supply 1	
2	Open circuit to controller output power supply 2	
3	Open circuit to controller output power supply 34	
4	Platform electric-box extension-module bus off	
5	Lower-structure electric-box display bus off	
6	Load sensing fault	
7	Load sensor 1 fault	
8	Load sensor 2 fault	
9	Load sensor check fault	
10	Inclination sensor fault	
11	Left handle fault	
12	Right handle fault	
13	Middle handle fault	
14	Primary-boom luffing travel-switch fault	
15	Secondary-boom luffing travel switch fault	
16	Primary-boom extension/retraction travel switch fault	
17	Rear check travel-switch fault	
18	Extension & retraction travel switch fault	
19	Anti-extrusion device fault	
20	Engine bus communication overtime	
101	Chassis inclination	
102	The driving function is not enabled and the traveling is prohibited.	
103	Working bucket overweight	
104	Low oil level alarm	
105	Engine oil pressure alarm	
106	Oil temperature alarm	
114	Radius limit	
115	Manual machine lock prompt	
116	Manual machine lock	
117	Mismatching of the GPS and ECU	
118	The GPS is removed.	
119	The load is lighter than -100Kg.	
120	Operation sequence error	
121	Enabling timeout	

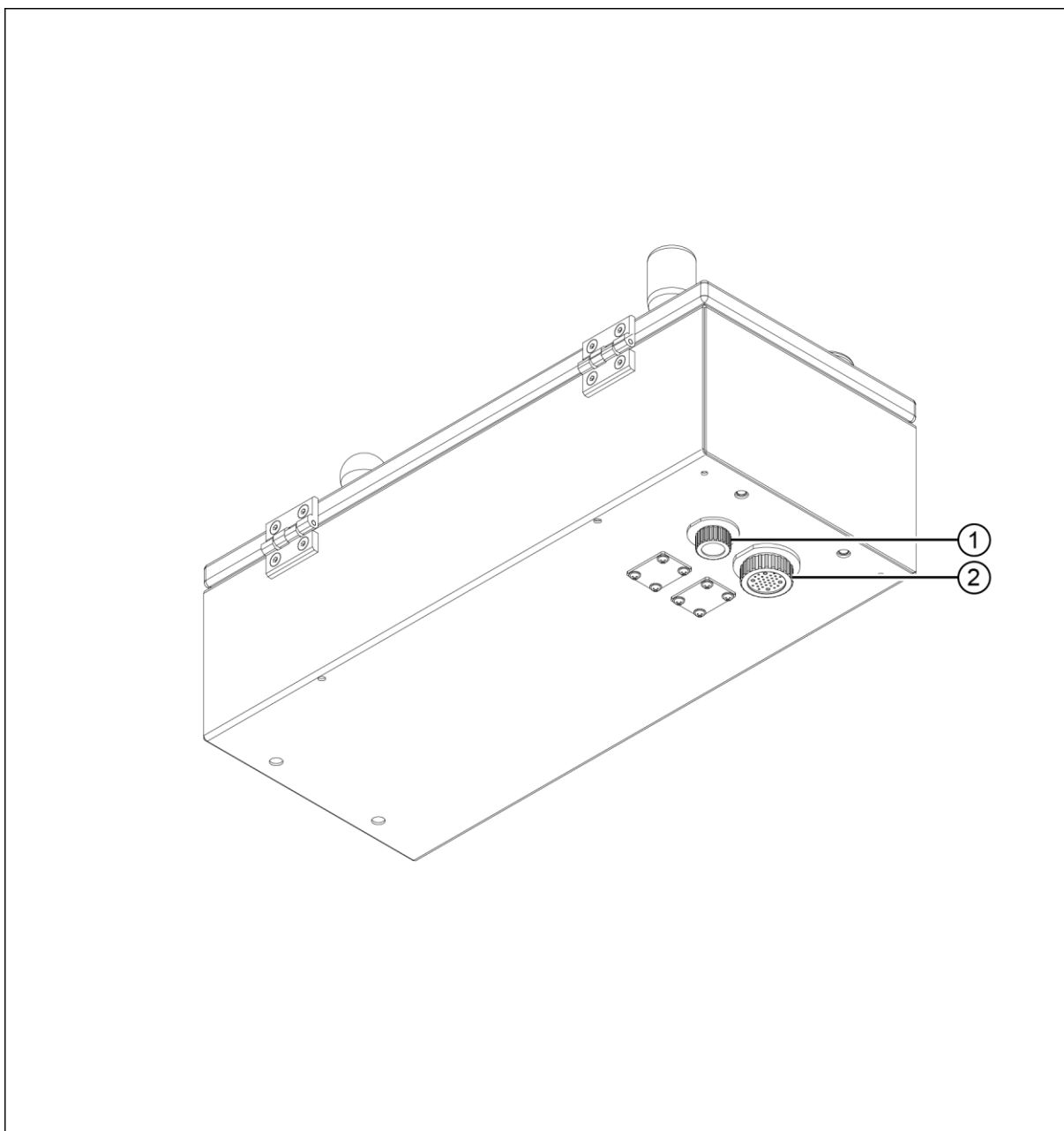
5.3 Engine Fault Code

Diagnose Fault Code	J1939-73		Fault Identification	DTC Parameter Setting
	SPN	FMI		
Oil pressure error	100	1	Oil pressure switch	The oil pressure switch works.
Engine overheat	110	0	High engine coolant temperature	Engine coolant temperature $\geq 110\text{ }^{\circ}\text{C}$
Coolant temperature sensor: high	110	3	Sensor/harness open circuit ; +B short circuit	The voltage of coolant temperature sensor is 4.9 V or above;
Coolant temperature sensor: low	110	4	Sensor/harness grounded short circuit	The voltage of coolant temperature sensor is 0.1 V or below;
High battery voltage: high	158	3	Harness open circuit, short circuit Battery fault	The ECU identifies that the battery voltage is above 18 V.
Engine overspeed	190	0	The engine speed is higher than the threshold value.	Engine speed > 2990 min ⁻¹ (rpm)
Sensor power supply voltage 1: low	3509	4	Sensor power supply voltage 1	The sensor voltage is below 4.00 V.
Actuator exception	523771	2	Harness open circuit, short circuit or damage	80mA > Actuator current >3.0 A
Engine speed sensor exception	523772	2	Harness open circuit, short circuit or damage	After the engine is started, the engine speed equals to 0 min ⁻¹ (rpm) and the engine has voltage at the L end.
Starter fault	523736	2	Running time of the starter is higher than the threshold value.	Running time of the starter exceeds 12s.
End L of the AC generator is abnormal.	523737	2	Harness open circuit, short circuit or damage	The alternator end L is with voltage when the alternator works at a speed of 0 rpm (switch connected).
Charging failure	523738	2	Harness open circuit, short circuit or damage	When the engine works, voltage at the alternator end L is 0 v.
Speed sensor impulse exception	523740	2	Engine speed-sensor impulse exception	Quantity of the gear teeth is lower than the correct value.
CAN communication exception	523774	2	CAN Bus	CAN Bus closed
Engine stopping			Emergency stop button	Send emergency stop CAN signals to the ECU.
+B off	523749	2	+B off	+B is off before the switch is turned off.

Appendix

5.4 Controller Pin Description

5.4.1 PCU Pin No. Definition



1. 19-core plug pin No.

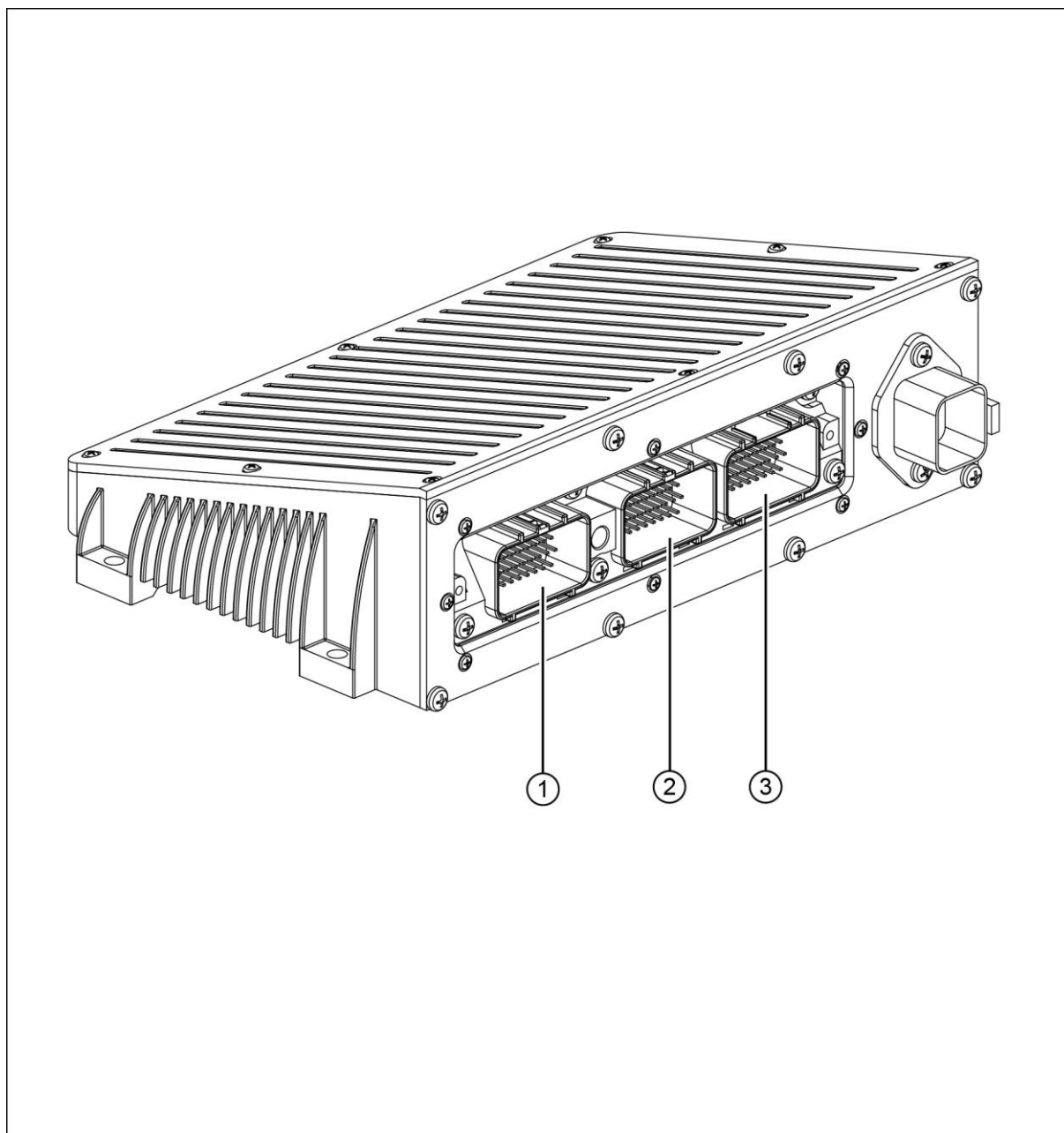
Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
A	B-	Cathode	G	01	Standby harness
B	701	Power supply	H	B-	Cathode
C	65	Bus H	J	E11a	Lighting power supply
D	66	Bus L	K	E11b	Lighting power supply
E	T01	Emergency stop switch	L		
F	E204	Emergency stop switch	M		

2. 32-core Plug Pin No.

Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
A			dd	J1-22	Proximity switch signal line
B			ee	J1-15	Anti-collision lamp output
C			ff	V4	Jib boom down
D			gg	V5	Platform left-turn
E	701	PCU power supply	hh	V6	Platform right-turn
F			K	E11a	Lighting power supply
G	V3	Jib boom raising	L	E11b	Lighting power supply
H	B-	Cathode	M	J2-6	Proximity switch 1 NO
J			N	J2-16	Proximity switch 2 NO

Appendix

5.4.2 GCU Pin No. Definition



1. U-shaped plug pin No.

Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
1	U1	Chassis inclination sensor shaft X input	23	U23	Primary-boom extension input
2	U2	Chassis inclination sensor shaft Y input	24	U24	Enabling switch
			25	U25	Reserved
4	U4	Fuel sensor	26	U26	Engine start switch
10	U10	Jib lowering input	27	U27	Auxiliary pump motor switch
11	U11	Jib raising input	28	U28	Upper structure selection switch
12	U12	Secondary-boom raising input	29	U29	Lower-structure selection switch
13	U13	Secondary-boom lowering	30	U30	Idling speed switch

Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
		input			
14	U14	Work field leveling-up input	31	U31	Rear check switch 1 (normally-closed)
15	U15	Work field leveling-down input	32	U32	Rear check switch 2 (normally-open)
16	U16	Turntable right slewing switch	33	U33	Secondary-boom raising check switch 1 (normally-closed)
17	U17	Turntable left-slewing switch	34	U34	Secondary-boom raising check switch 2 (normally-open)
18	U18	Platform left-turn switch	35	U35	Primary-boom raising check switch 1 (normally-open)
19	U19	Platform right-turn switch	36	U36	Primary-boom raising check switch 2 (normally-closed)
20	U20	Primary-boom raising input	37	U37	Primary-boom extension check switch 1 (normally-closed)
21	U21	Primary-boom lowering input	38	U38	Primary-boom extension check switch 2 (normally-open)
22	U22	Primary-boom retraction input			

2. T-shaped plug pin No.

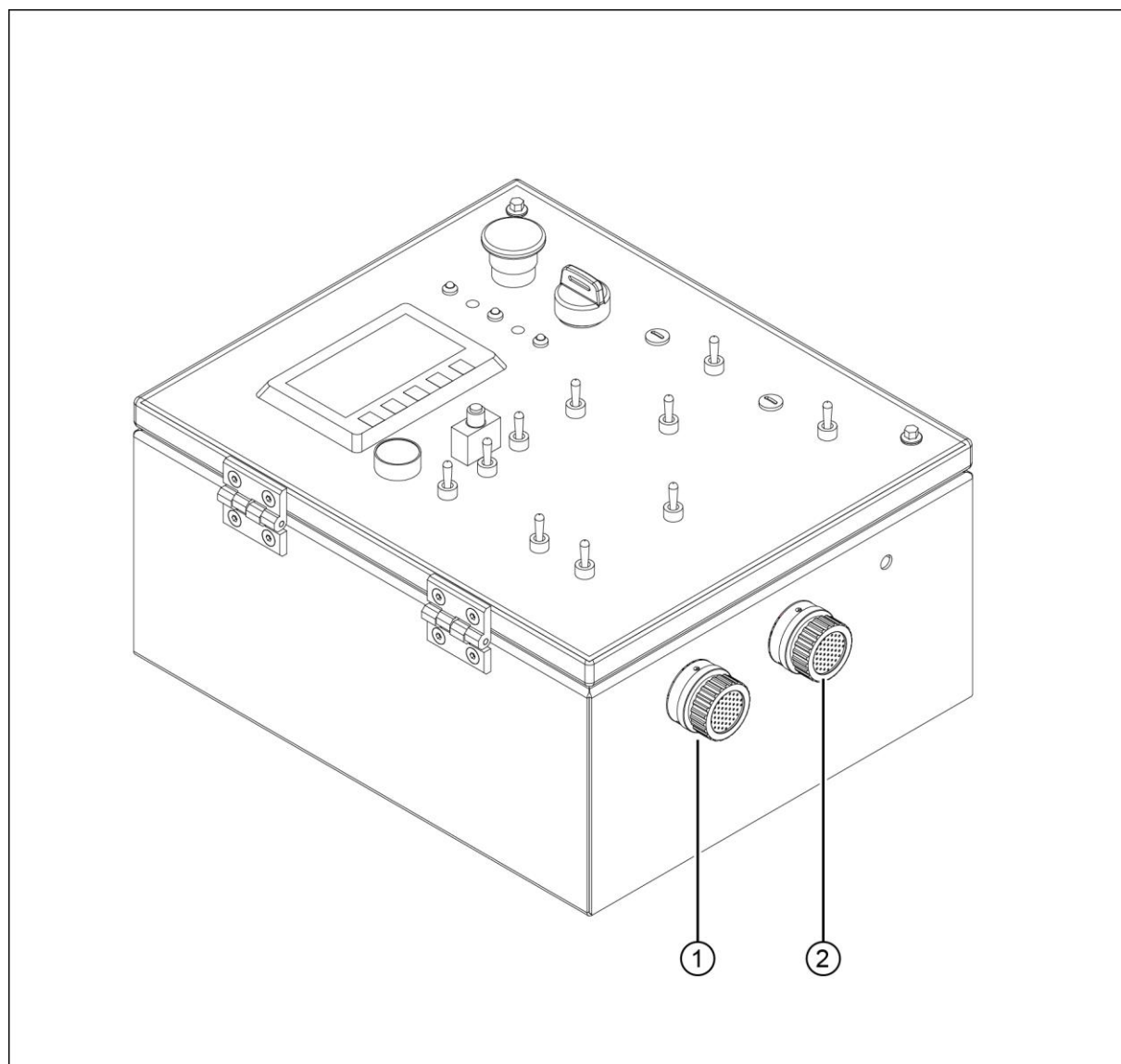
Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
1			12		
2			13	T13	Boom enabling valve
3	T3	Jib enabling switch valve	14	T14	Hydraulic generator
4	T4	Primary-boom raising proportional valve	15	T15	Engine starter relay
5	T5	Primary-boom lowering proportional valve	16		
6	T6	Traveling forward proportional valve	17	T17	Overload indicator lamp
7	T7	Traveling backward proportional valve	18	T18	Brake switch valve
8	T8	Turntable left-turn proportional valve			
9	T9	Turntable right-turn proportional valve	20	T20	Engine fault indicator lamp
10	T10	Emergency pump contactor output	21		
11			22-40		

3. S-shaped plug pin No.

Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
1	X402	MC2M +VB	17	S17	Buzzer output
2	S2	Traveling right-turn proportional valve	18	S18	Hour meter output
3			19		
4	S4	Horn relay output	20		
5			21	S21	MC2M GND
6	S6	White noise buzzer	22		
7	CAN1H	CAN1 bus - high	23	CAN0L	CAN0 bus - low
8	S8	Primary-boom extension proportional valve	24		
9	S9	Platform leveling-down switch valve	25	CAN0H	CAN0 bus - high
10	S10	Platform leveling-up switch valve	26	CAN1L	CAN1 bus - low
11			27		
12			28	CAN2H	CAN2 bus - high

Appendix

Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
13	S13	Secondary-boom lowering proportional valve	29		
14	S14	Secondary-boom raising proportional valve	30	CAN2L	CAN2 bus - low
15	S15	Primary-boom retraction proportional valve	31-40		
16	S16	Traveling - left-turn proportional valve			



1. 32-core plug pin No.

Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
A	T3	Jib enabling switch valve	P	S16	Traveling left-turn switch valve
B	T4	Primary-boom lowering proportional valve	R	E205	Horn
C	T5	Primary-boom raising proportional valve	S	T10	Emergency pump contactor output
D	T8	Turntable right-turn proportional valve	T	U1	Chassis inclination sensor shaft X input
E	T9	Turntable left-turn	U	U2	Chassis inclination sensor

Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
		proportional valve			shaft Y input
F	S8	Primary-boom extension proportional valve	V	B1-	Ground wire
G	S15	Primary-boom retraction proportional valve	W	701	Power supply
H	S14	Secondary-boom raising proportional valve	1	B-	Ground wire
J	S10	Platform leveling-up switch valve	2	B-	Ground wire
K	S2	Traveling right-turn switch valve	3	B+	Power supply
L	S9	Platform leveling-down switch valve	4	B+	Power supply
M	S13	Secondary-boom raising proportional valve	hh	T14	Hydraulic generator
N	T13	Boom enabling valve	gg	U4	Fuel level sensor

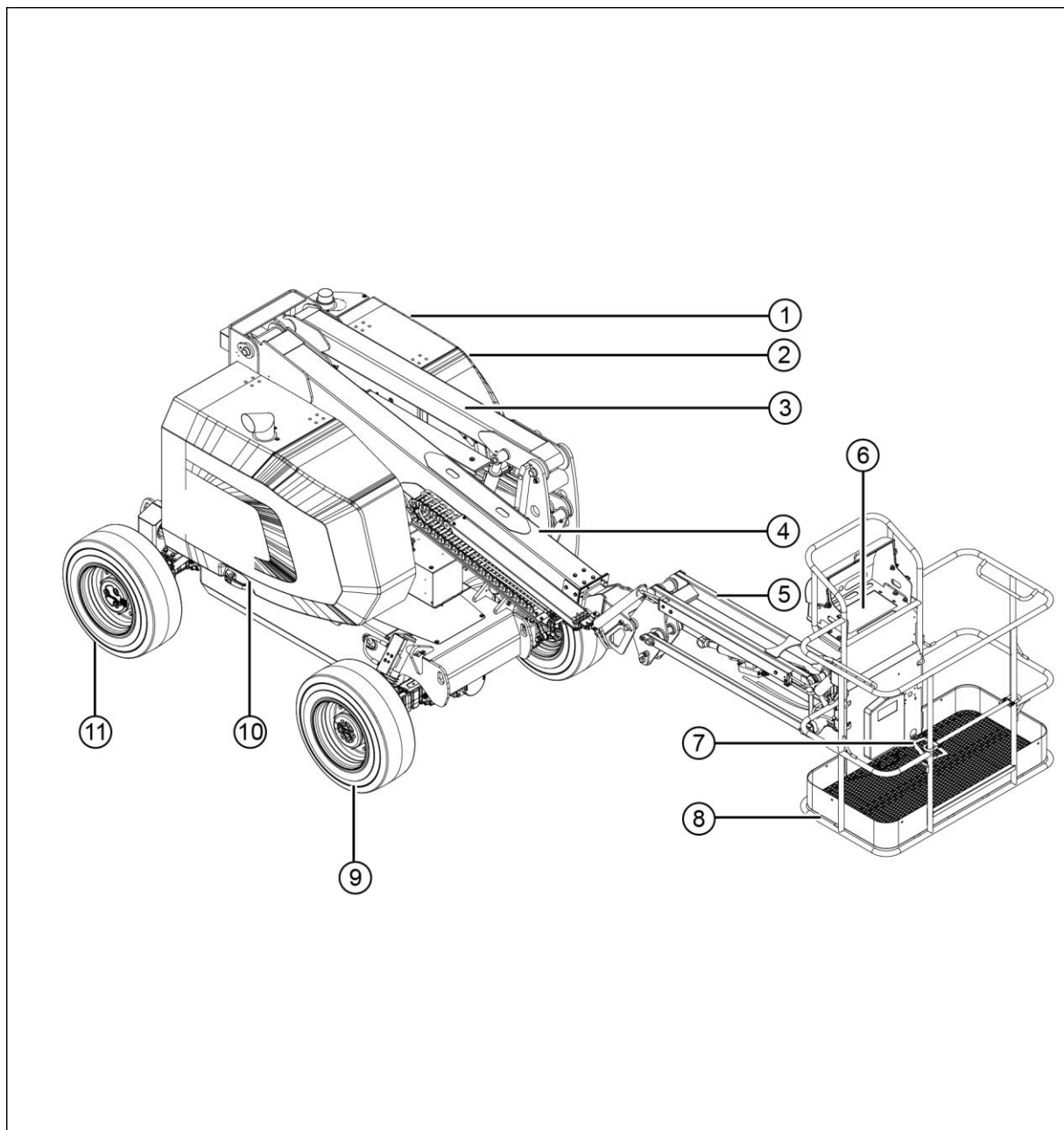
2. 48-core plug pin No.

Pin	Wire No.	Function Remarks	Pin	Wire No.	Function Remarks
1			27	U31	Rear check switch 1 (normally-closed)
2			28	504	Engine starter relay
3			29	S7	CAN1 bus - high
4	E22	ECU power supply	30	S26	CAN1 bus - low
5	E44	ECU energization signals	31	S6	White noise buzzer
6	S28	CAN2 bus - high	32	T6	Traveling forward proportional valve
7	S30	CAN2 bus - low	33	B-a	Ground wire
8			34	1W+	GPS signal line
9	ACC	Locking relay power supply	35	B-GND	GPS vehicle-lock relay ground wire
10			36		
11			37		
12	701b	Power supply	38	S18	Hour meter output
13	701b	Power supply	39		
14	GPS+	GPS power supply	40		
15	RL2-	Signals for machine locking	41	E39	Preheat relay coil/indicator lamp
16	S25	CAN0 bus - high	42		
17	S23	CAN0 bus - low	43	T7	Traveling backward proportional valve
18	E204	PCU power supply	44	B-c	Ground wire
19	T01	PCU emergency stop	45	U36	Primary-boom raising check switch 2 (normally-closed)
20			46	U34	Secondary-boom raising check switch 2 (normally-open)
21	U35	Primary-boom raising check switch 1 (normally-open)	47	U38	Primary-boom extension check switch 2 (normally-open)
22	U37	Primary-boom extension check switch 1 (normally-closed)	48	U32	Rear check switch 2 (normally-open)
23	U33	Secondary-boom raising check switch 1 (normally-closed)			
24	BAT-	Battery power supply cathode			
25	T18	Brake switch valve			
26	RL1-	Signals for machine locking			

Appendix

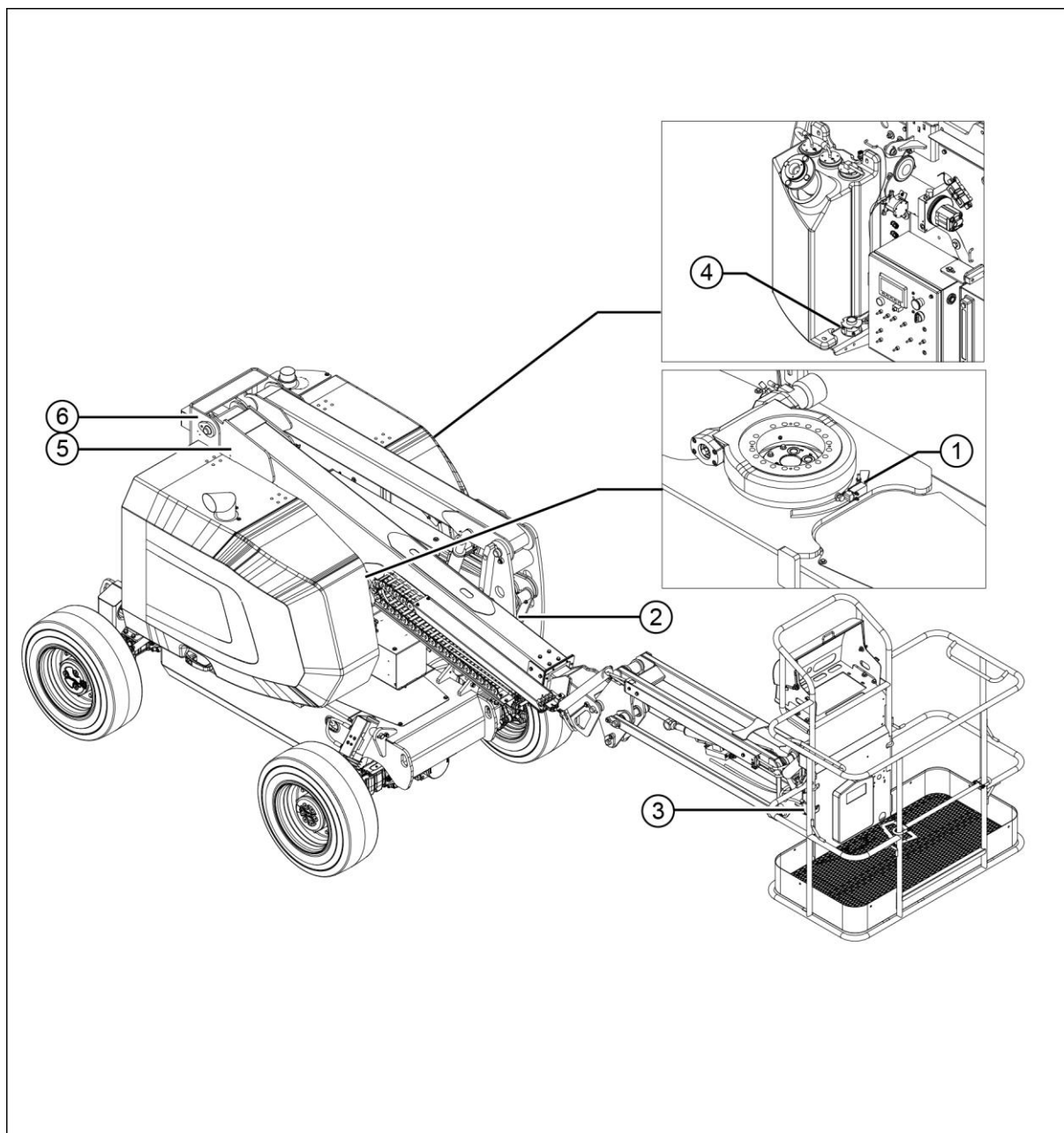
5.5 Schematic Diagrams

5.5.1 Machine Structure Diagram



No.	Name	No.	Name
1	Lower-control box assembly (inside the hood)	7	Foot switch
2	Hydraulic oil tank (inside the hood)	8	Platform Assembly
3	Secondary boom	9	Rear axle
4	Telescopic boom	10	Engine
5	Arm	11	Front axle
6	Upper-control box assembly		

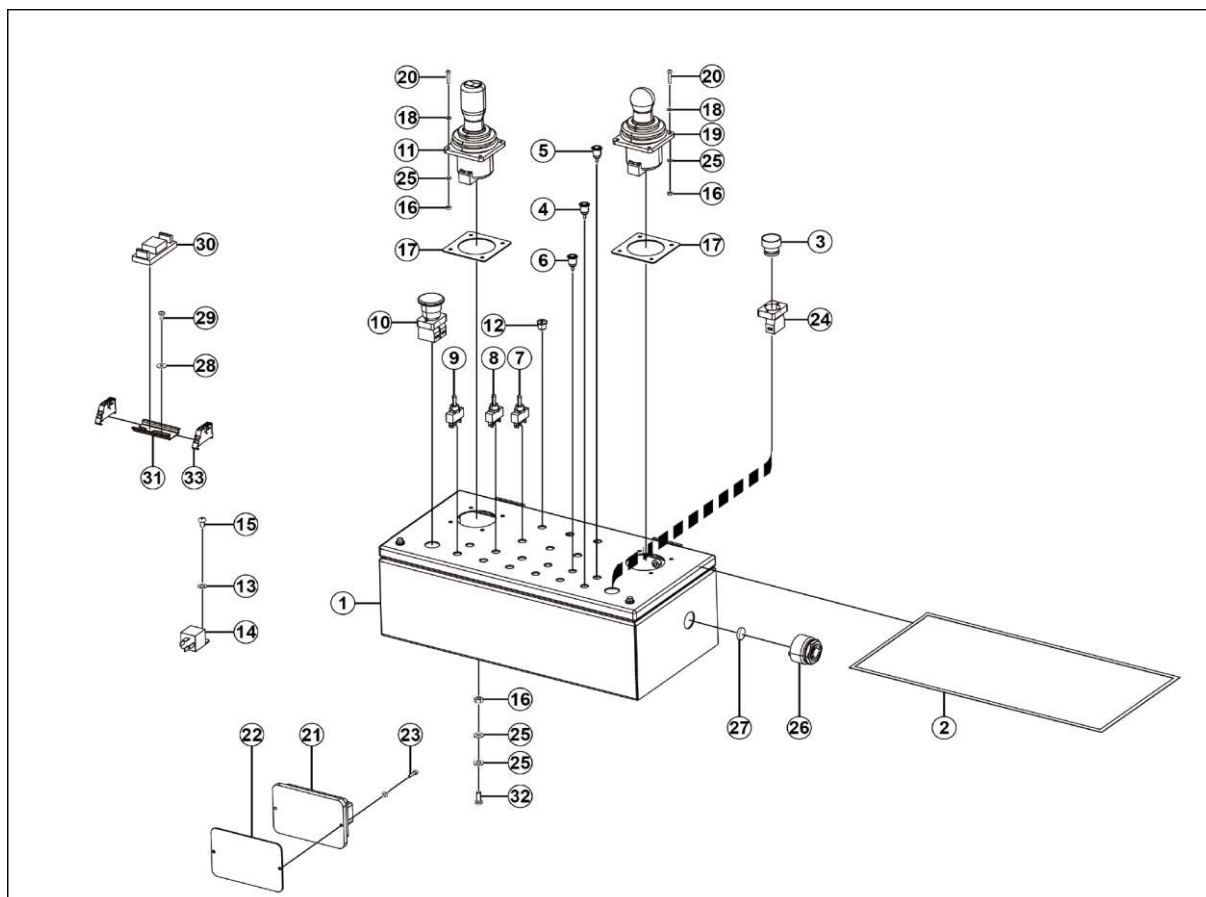
5.5.2 Schematic Diagram of Electric System Positions



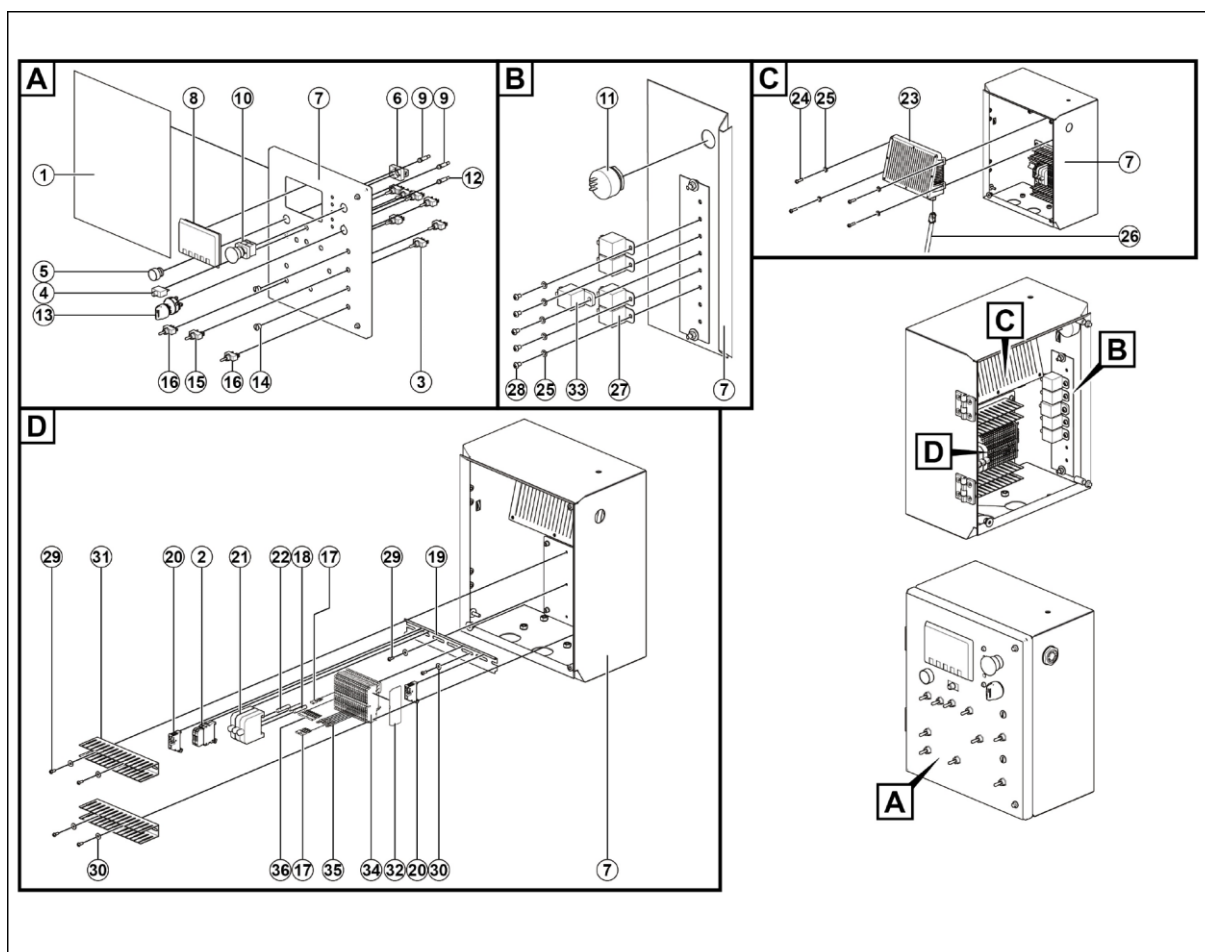
No.	Name	No.	Name
1	Turntable slewing travel switch	4	Inclination sensor
2	Secondary-boom up travel switch	5	Boom extension & retraction travel switch
3	Weighing sensor	6	Boom luffing travel switch

Appendix

5.6 PCU/GCU Structure Diagrams



No.	Name	No.	Name
1	PCU distribution assy	18	Gasket 0050150001VR (Essentra)
2	PCU film	19	Dual-shaft proportional handle JS1000-XY-A-SNNN-TK01
3	Green flat-head button ZB2BA3C	20	Screw GB818-M4*20flZnyc-4.8-480
4	Green indicator lamp AD11-12/20-AGE G DC12V	21	Input/output module IO-CORE
5	Red indicator lamp AD11-12/20-AGE R DC12V	22	IOCORE baseplate
6	Yellow indicator lamp AD11-12/20-AGE Y DC12V	23	Screw GB70.1-M4*16flZnyc-8.8-480
7	Switch 637H-K-U282	24	Contact module with base ZB2BZ101C
8	Switch 631H-K-U282	25	Washer GB97.1-4flZnyc-300HV-480
9	Switch 635H-K-U282	26	Buzzer
10	Emergency stop switch ZB2BS54C+ZB2B104C	27	PCU harness
11	Single-shaft proportional handle with key JS1000-NY-A-SNNN-TLSW	28	Washer GB96.1-5flZnyc-300HV-480
12	Hole plug M12*1.5 (including plug nut sealing gasket)	29	Screw GB818-M5*10flZnyc-4.8-480
13	Washer GB97.1-5flZnyc-300HV-480	30	Voltage stabilizer module URB2405YMD-6WR3A4S
14	Automotive relay 896H-1AH-C1S 12VDC	31	Guide track
15	Screw GB818-M5*8flZnyc-4.8-480	32	Screw GB818-M4*10flZnyc-4.8-480
16	Nut GB6170-M4flZnyc-8-480	33	Terminal fixing part EW35
17	Rubber gasket		

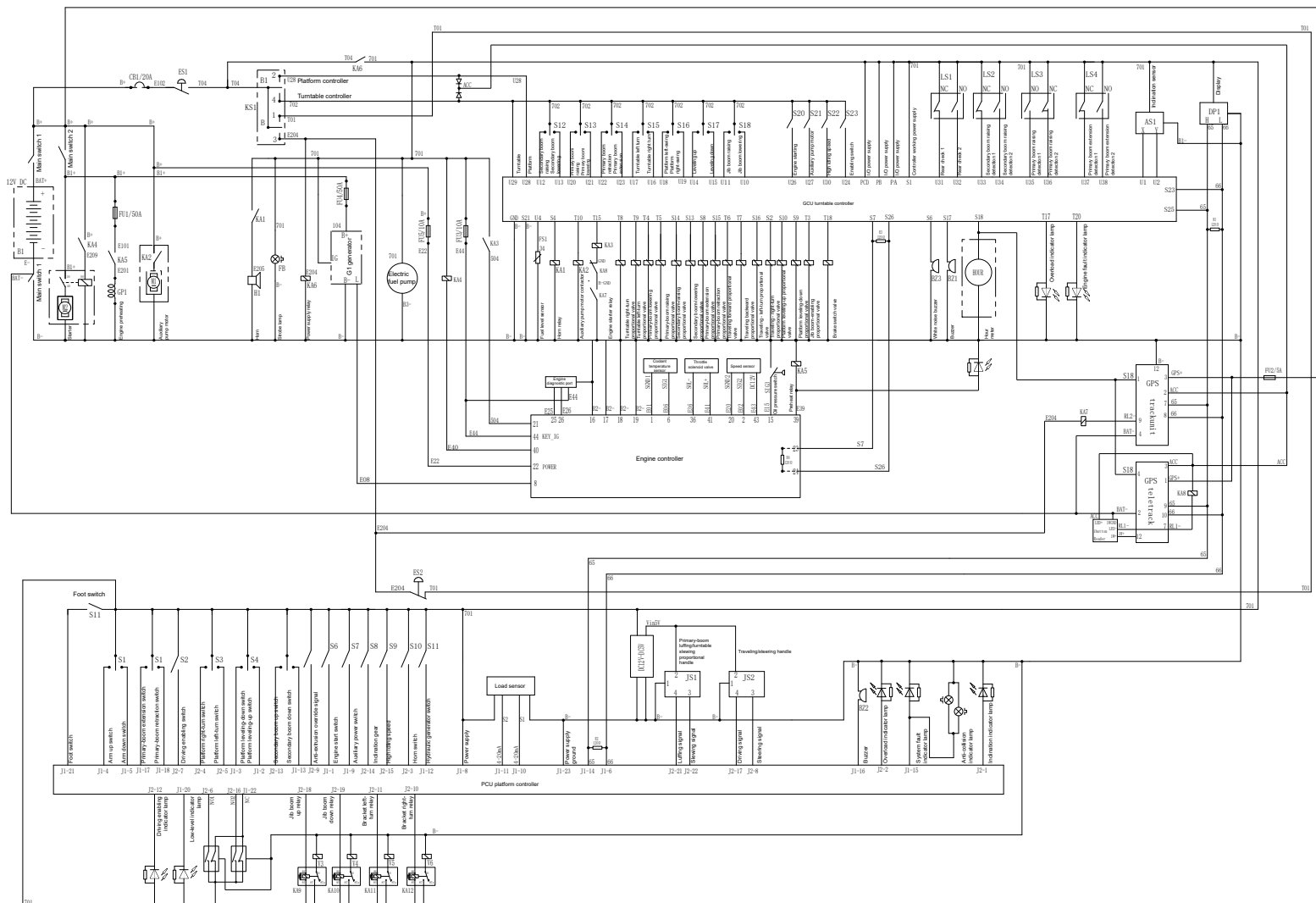


No.	Name	No.	Name
1	GCU film	19	DIN Rail TS3575-250mm
2	Diode terminal SAKRD-35-DS-4007	20	Terminal fixing part EW35
3	Switch 637H-K-U282	21	Fuse terminal SAKS 3
4	Overcurrent protector 88-20A (with waterproof cap)	22	Fuse 5A-1/4*1-1/4
5	Green flat-head button ZB2BA3C	23	Boom controller MC2M
6	Contact module with base ZB2BZ101C	24	Screw GB818-M5*20flZnyc-4.8-480
7	GCU distribution assy	25	Washer GB97.1-5flZnyc-300HV-480
8	Display CANVIEW4	26	GCU harness
9	LED indicator lamp GQ8G-D/-/R/DC12V/S	27	Automotive relay 896H-1AH-C1S 12VDC
10	Emergency stop switch ZB2BS54C+ZB2B104C	28	Screw GB818-M5*8flZnyc-4.8-480
11	Buzzer	29	Screw GB818-M4*10flZnyc-4.8-480
12	LED indicator lamp GQ8G-D/-/Y/DC12V/S	30	Washer GB96.1-4flZnyc-300HV-480
13	Key switch	31	Trunking 50*25*170
14	Hole plug M12*1.5 (including plug nut sealing gasket)	32	Spacer ZAP/TW 3
15	Switch 631H-K-U282	33	Relay
16	Switch 635H-K-U282	34	Connection terminal ZDU2.5/4AN
17	Short-circuit connector ZQV 2.5/2	35	120 Ω resistance
18	Fuse 10A-1/4*1-1/4	36	Short-circuit connector ZQV 2.5/4

5.7 Wiring Diagram

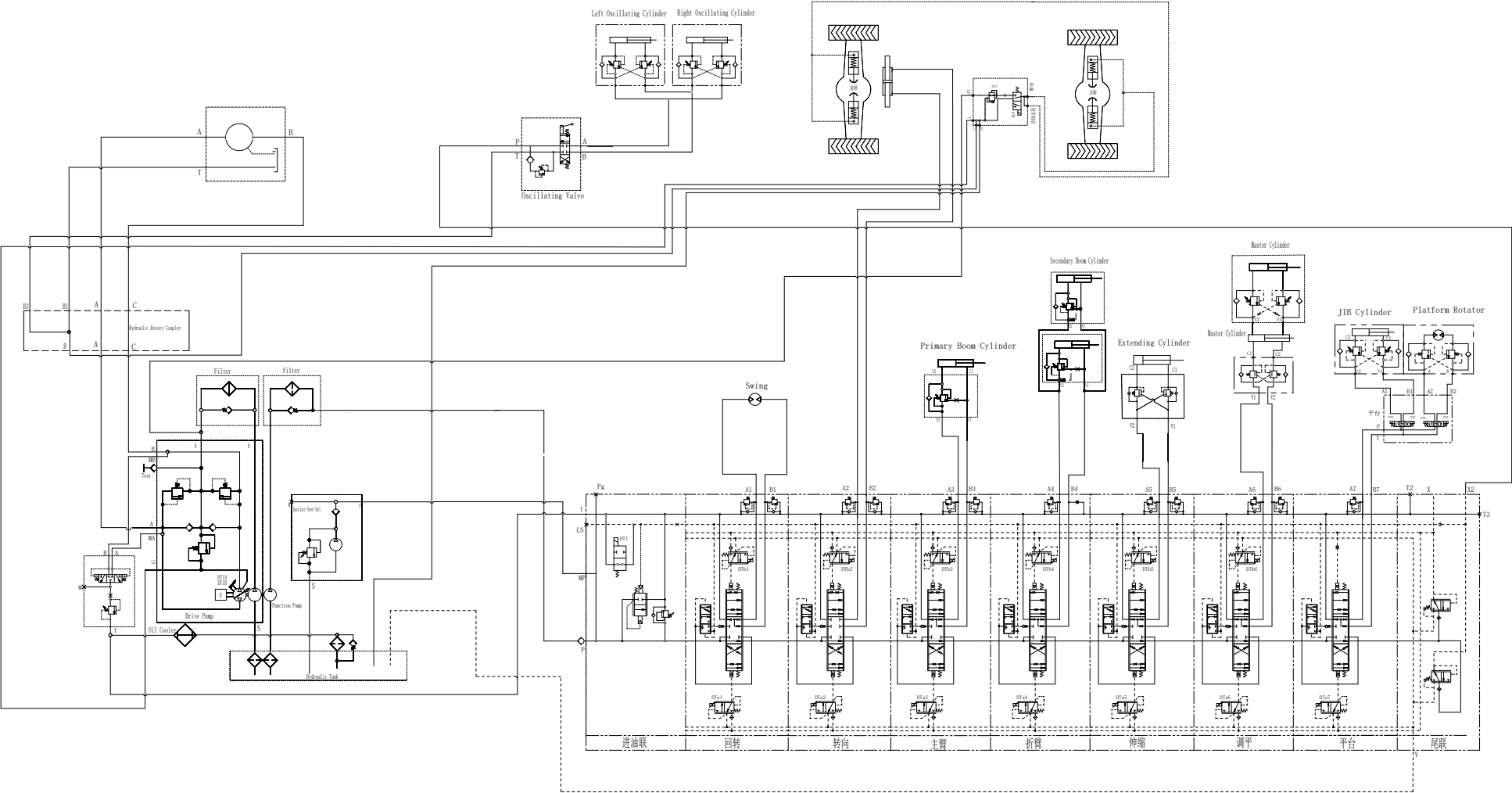


5.8 Electrical Schematic Diagram



Appendix

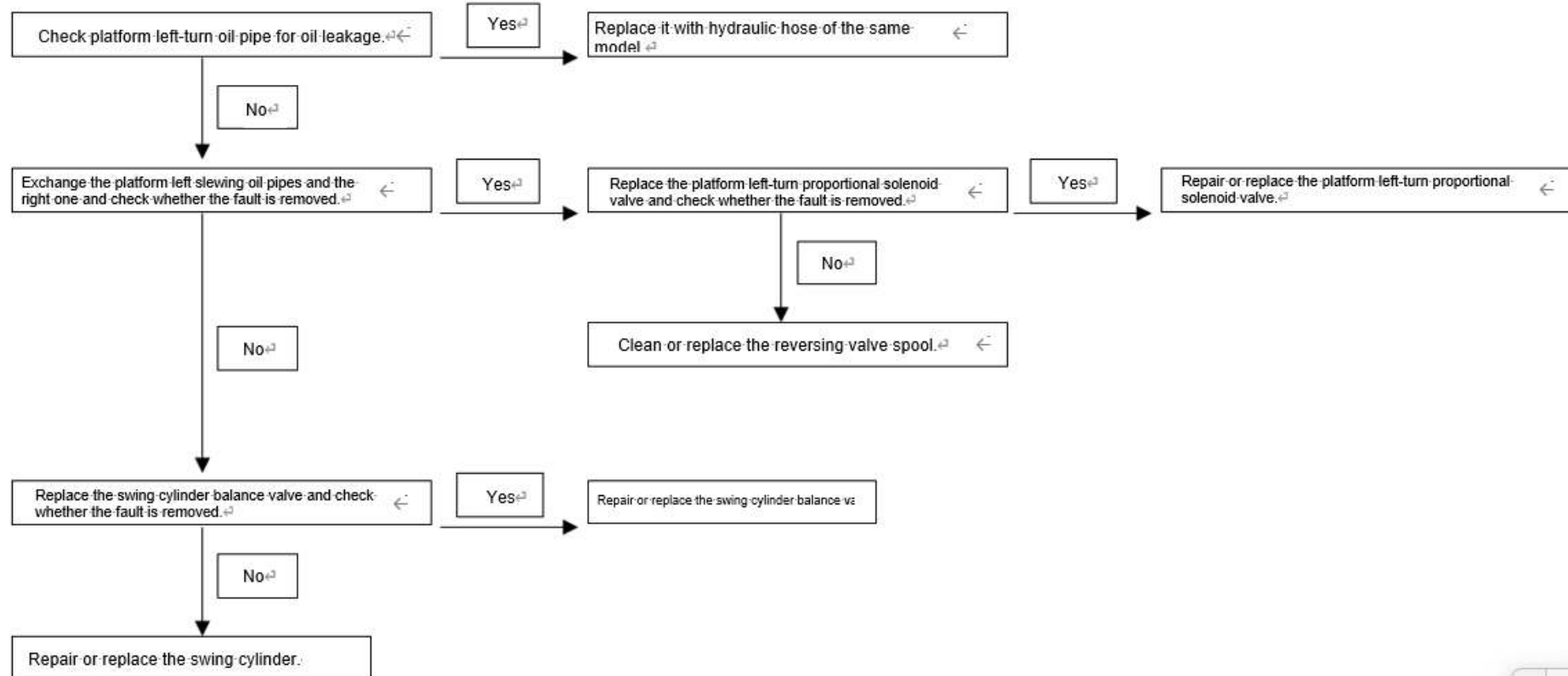
5.9 Hydraulic System Schematics



5.10 Machine Fault Diagnosis

Slow and powerless platform left-slewing

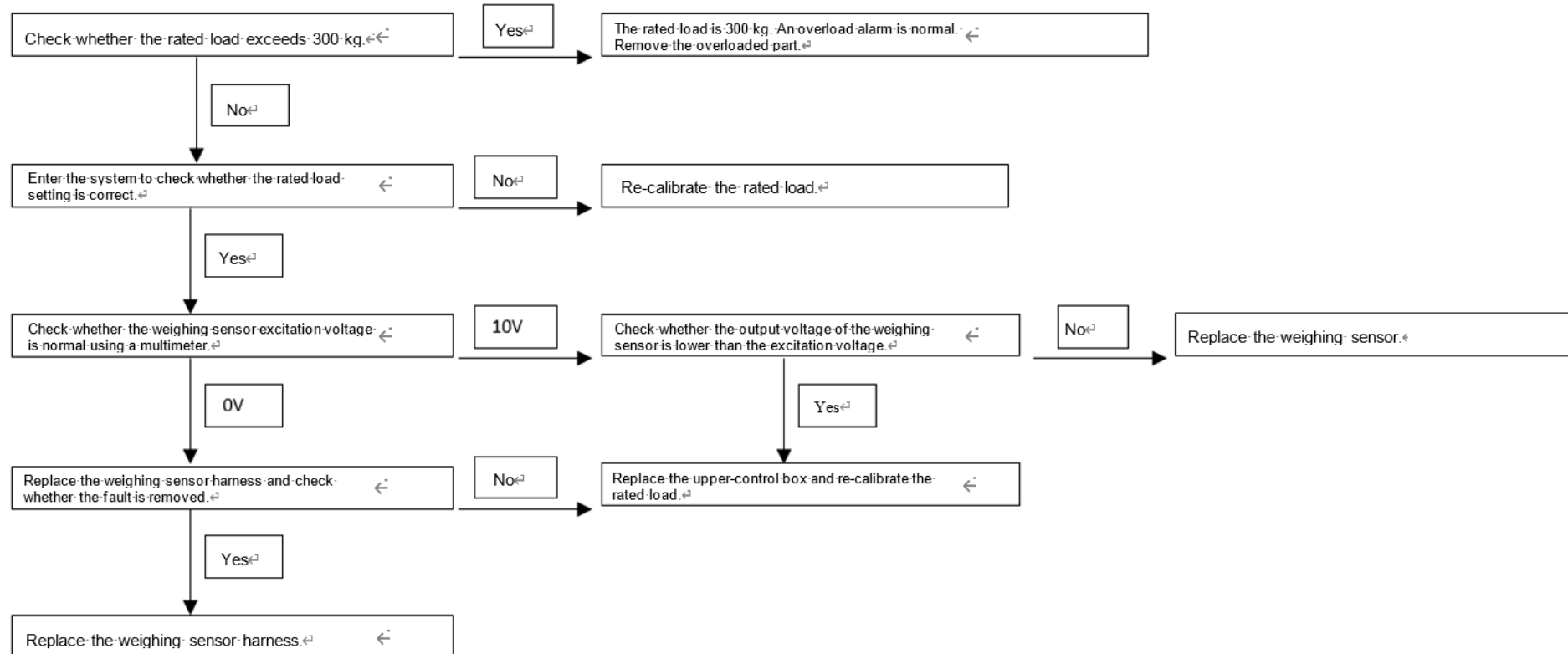
1. The machine system has no alarm and other functions work normally.
2. The upper/lower control operations are consistent.
3. Ensure that the slewing mechanism is not affected by foreign matters. Eliminate external force and mechanical causes.
4. If the slewing function works, faults of the coils and toggle switch are eliminated.



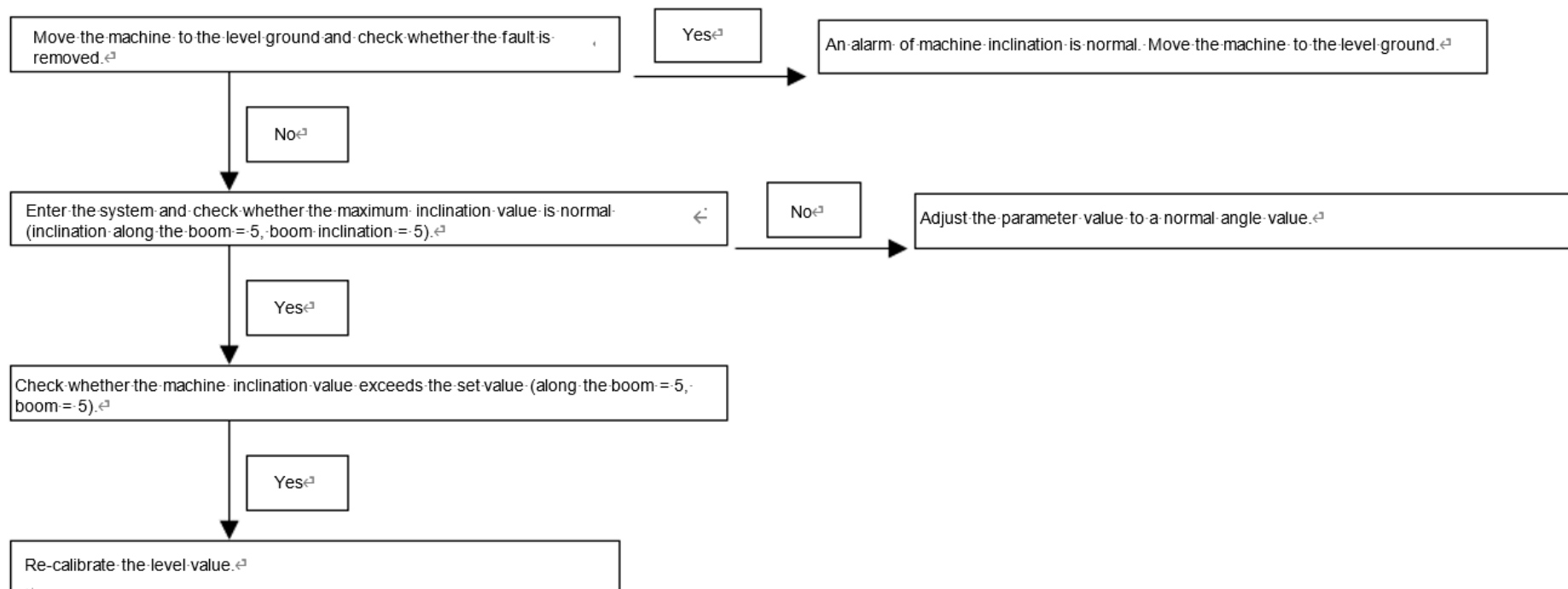
Appendix

If the overload indicator lamp turns on, the upper/lower control parts do not act.

1. Ensure that the platform is not affected by foreign matters. Eliminate the external force cause.



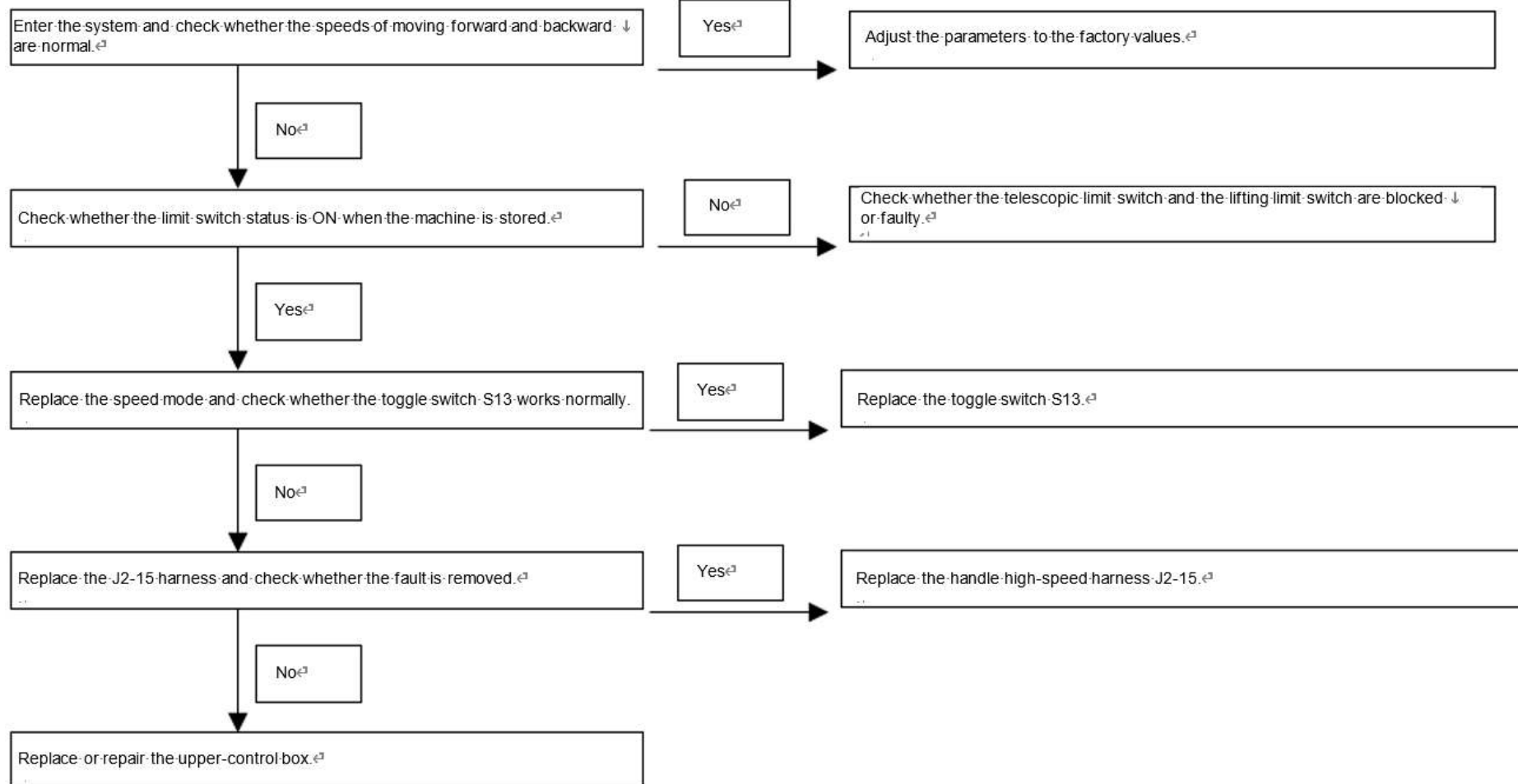
The inclination indicator lamp keeps on.



Appendix

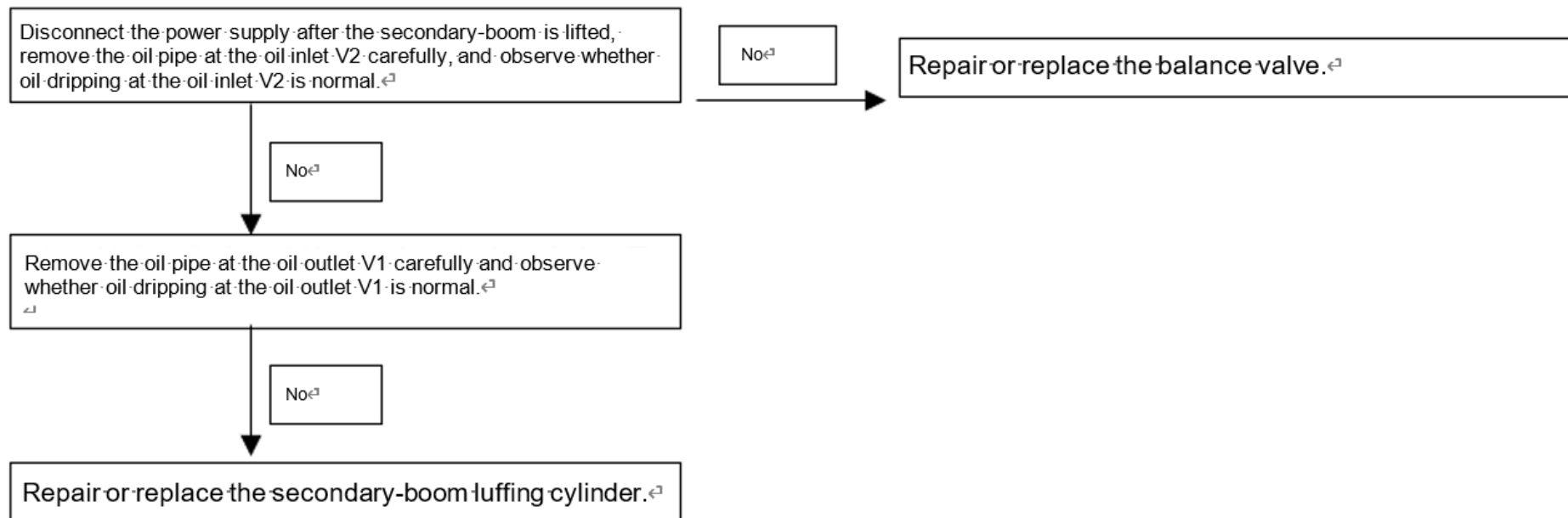
The machine in stored status does not travel at a high speed.

1. If the forward and backward actions are normal, remove the handle fault.



After the power supply is disconnected, the secondary boom is lowered automatically.

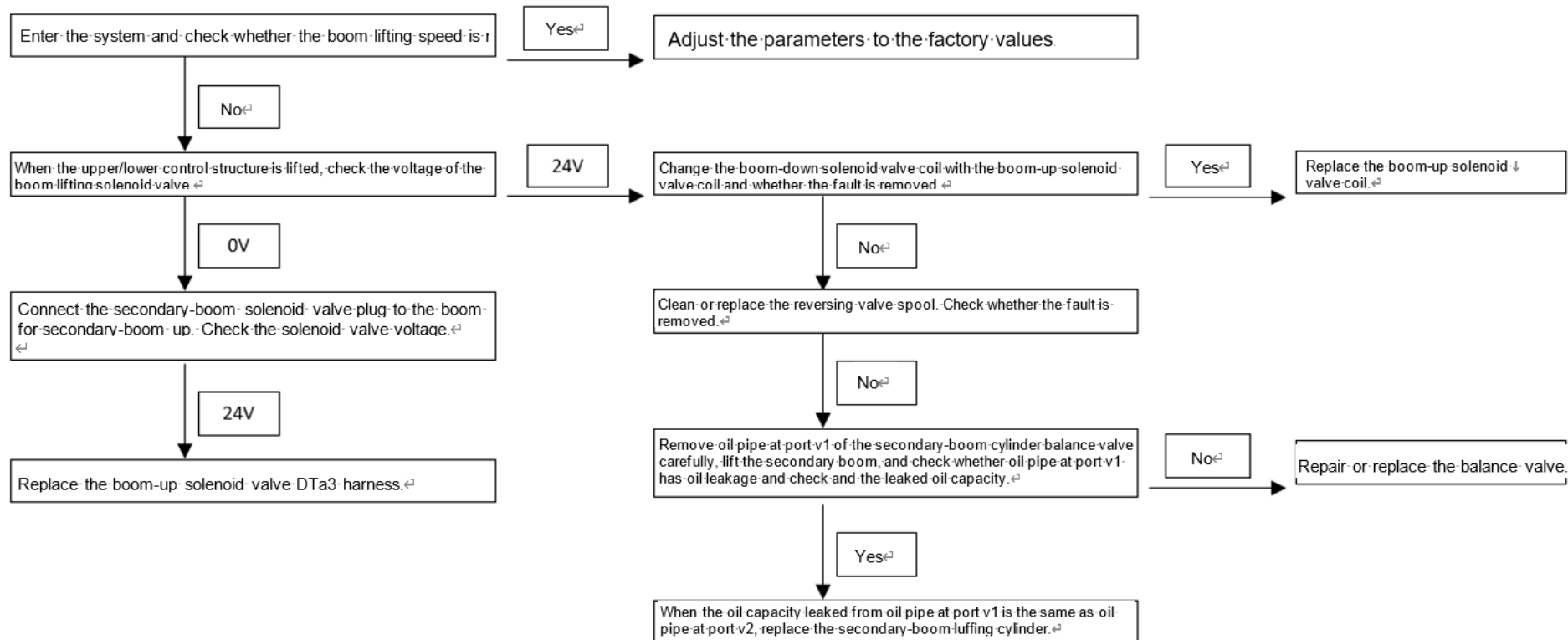
1. If there is no any alarm, the machine can work normally after being energized.
2. No one is allowed on the platform during the check.
3. Drive the machine to a safe area before the check.



Appendix

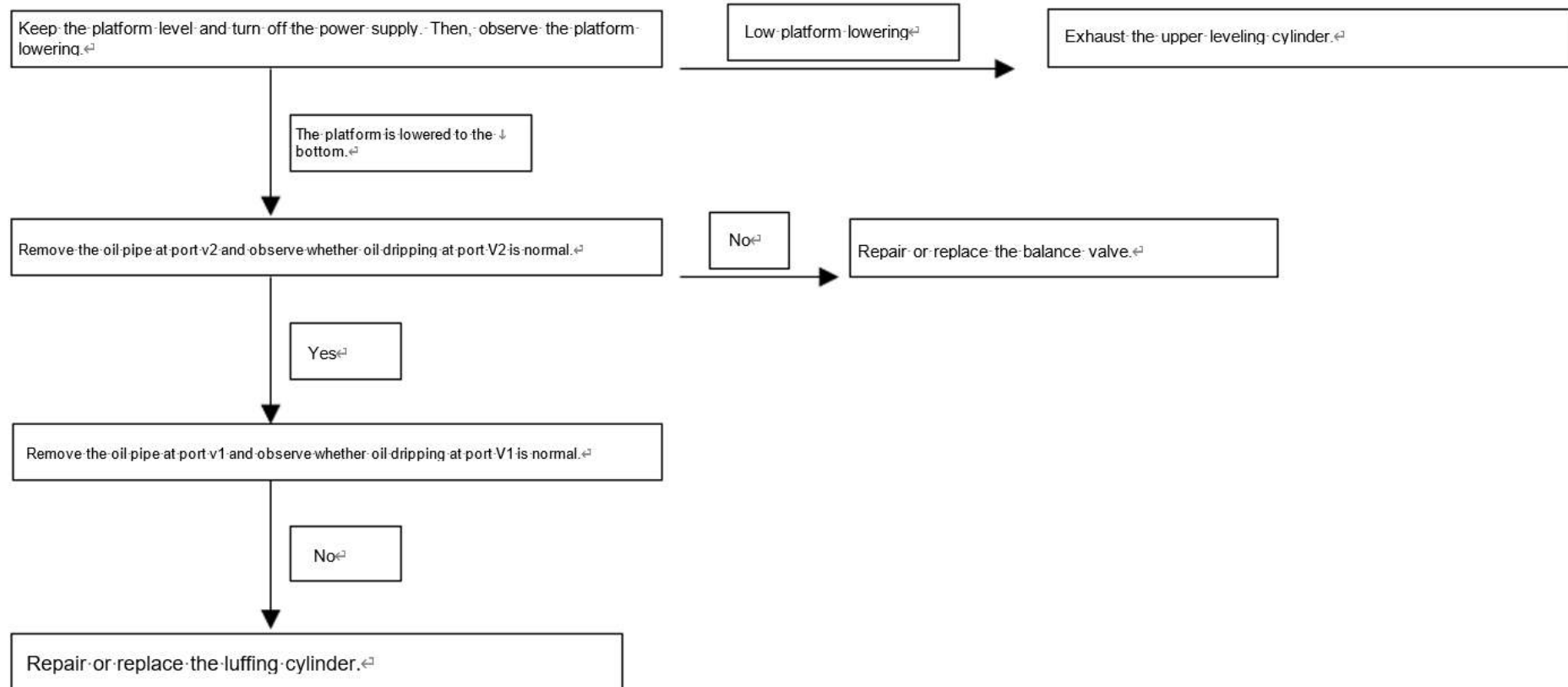
The upper/lower control boom does not work and other functions are normal.

1. The upper/lower control systems are normal with no any alarm.
2. Check whether the boom is under the mechanical limit.



After the power supply is disconnected, the platform is lowered automatically.

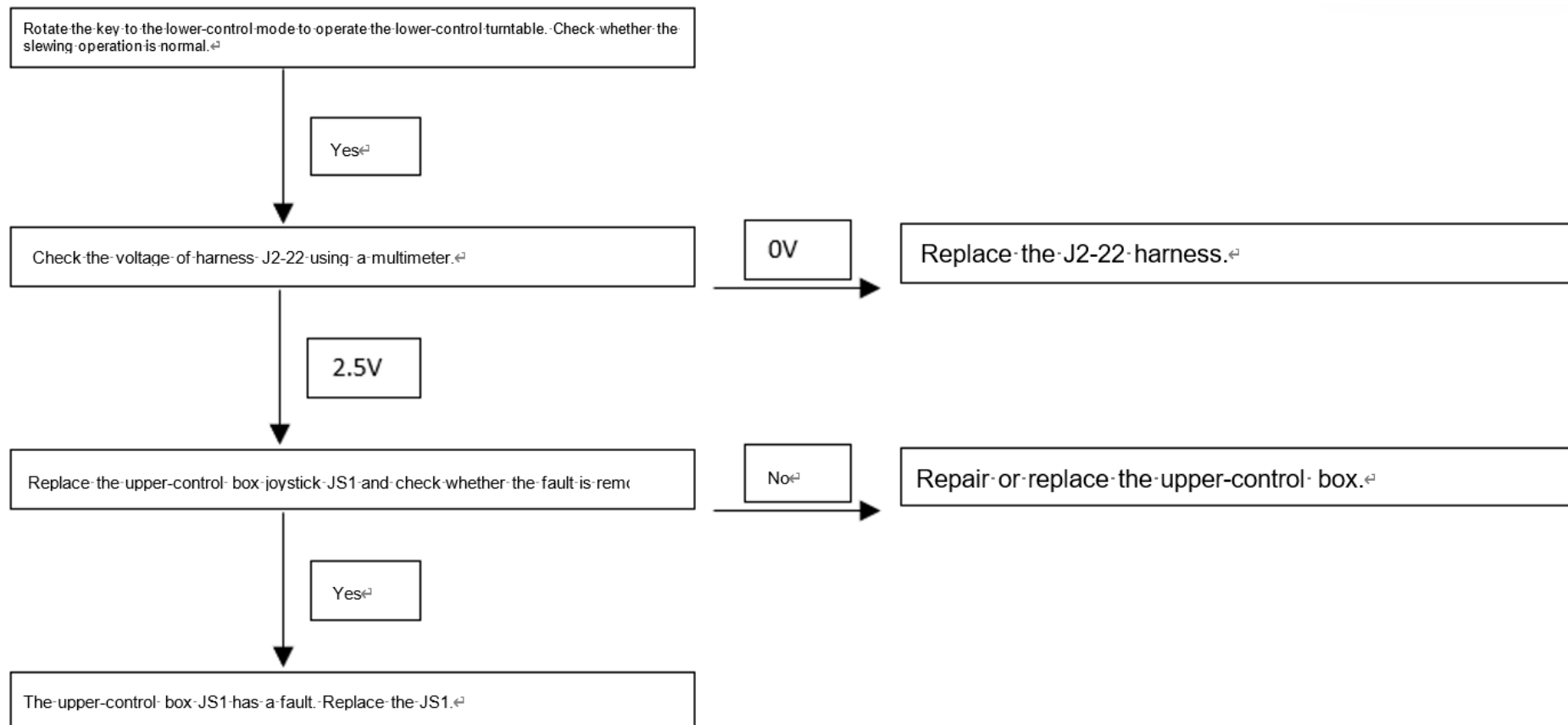
1. If there is no any alarm, the machine can work normally after being energized.
2. No one is allowed on the platform during the check.
3. Drive the machine to a safe area before the check.



Appendix

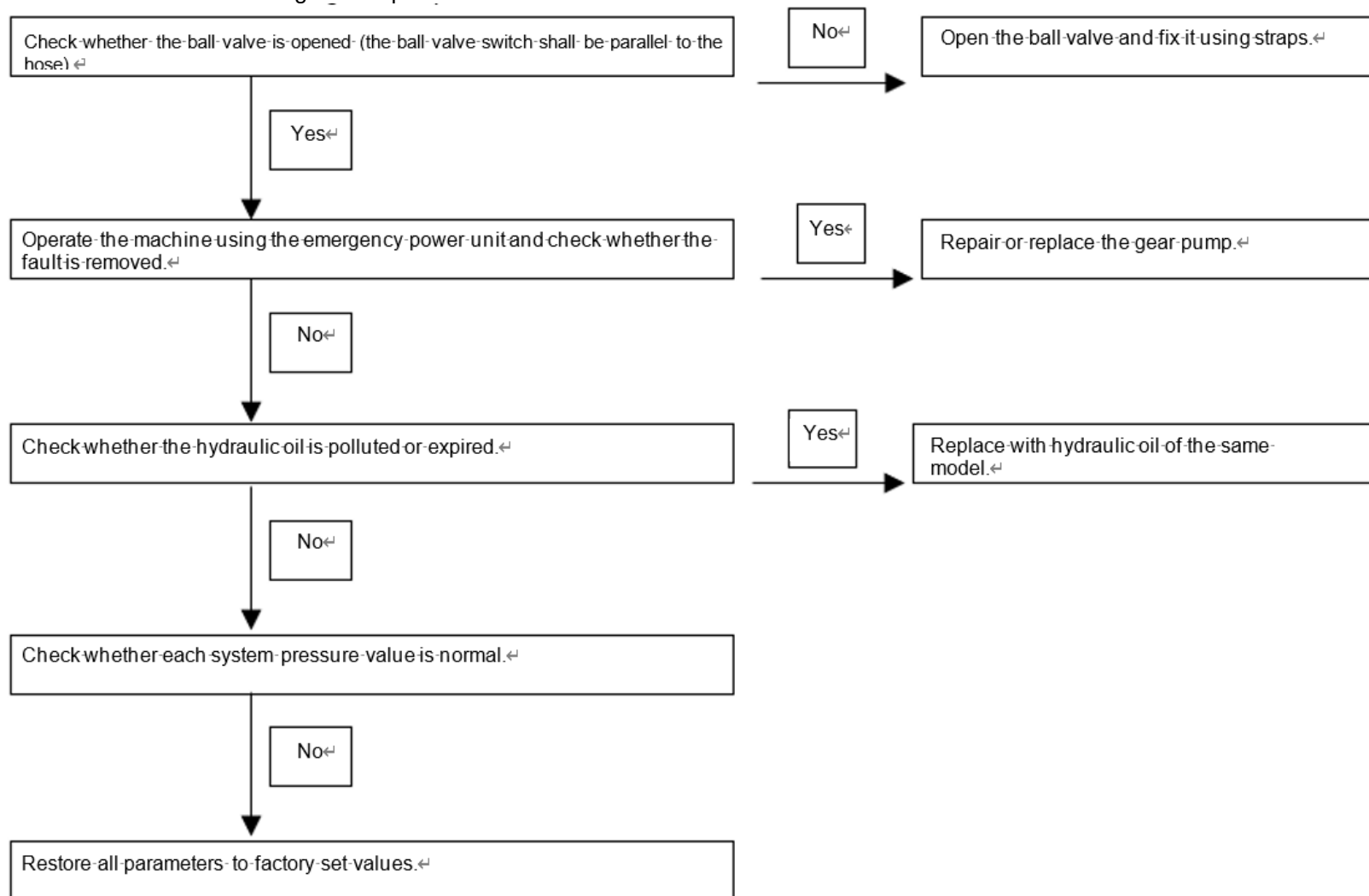
The upper-control slewing function has a fault and other functions are normal.

1. The machine has no fault code.



All operations shall be slow.

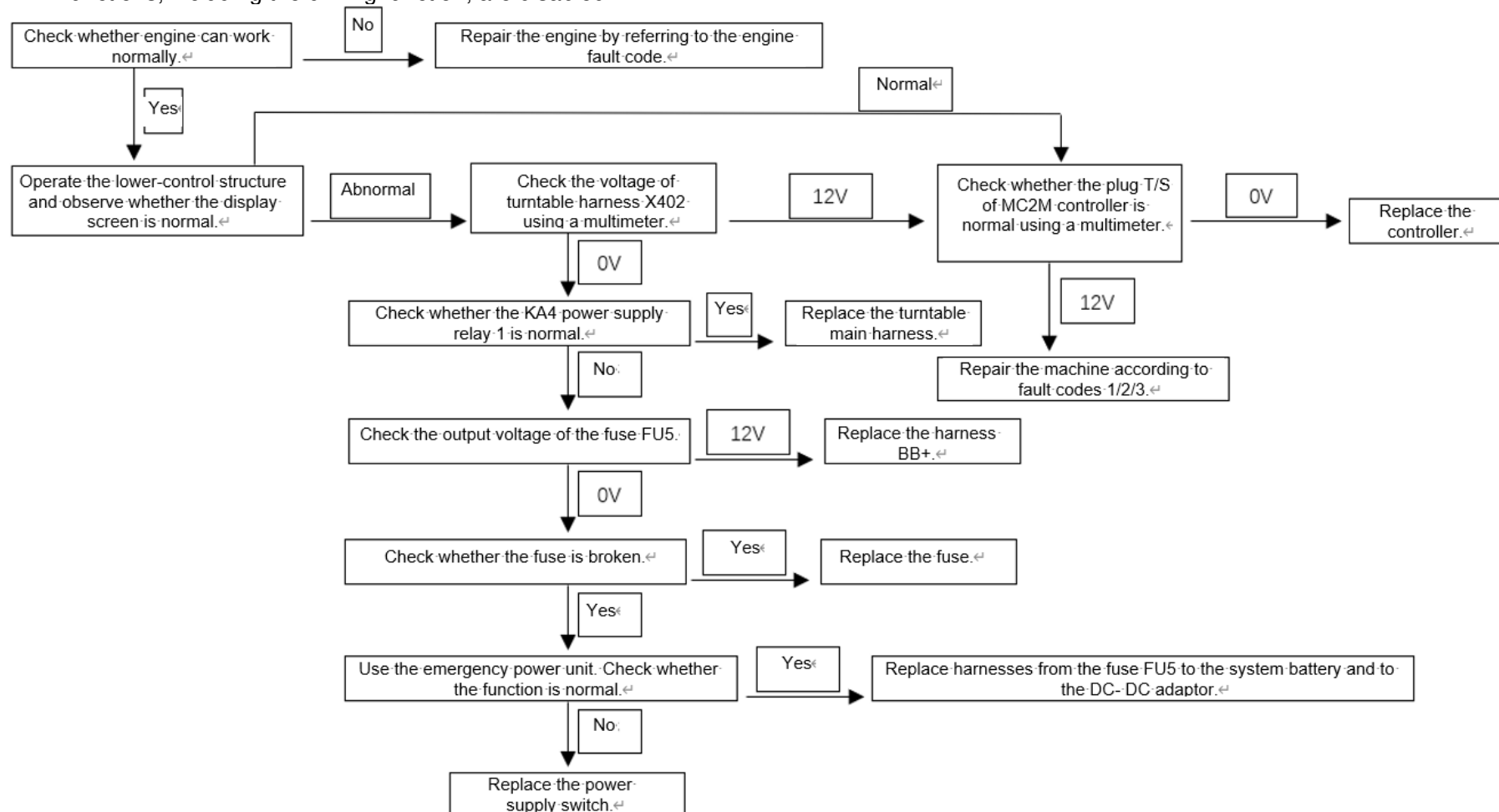
1. No fault code from the engine is reported.



Appendix

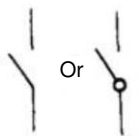
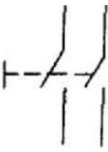
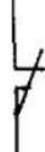
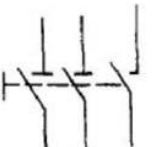
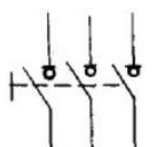
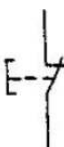
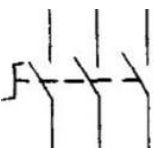
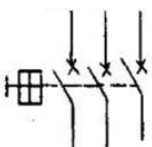
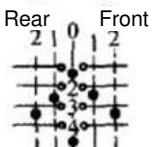
All functions are disabled.

1. When the weighing sensor has an alarm, repair the bus of the platform extension module.
2. All functions, including the driving function, are disabled.

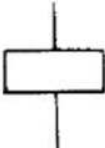
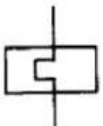
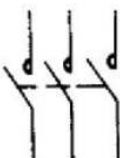
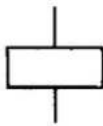
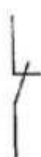
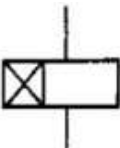
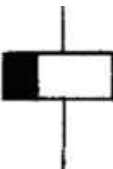
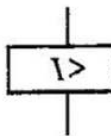
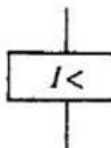
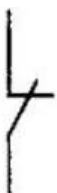


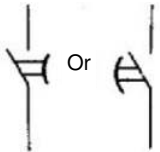
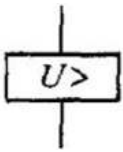
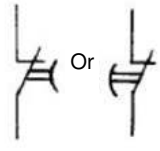
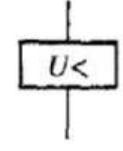
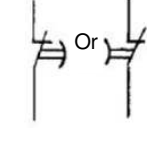
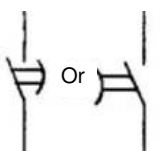
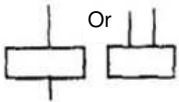
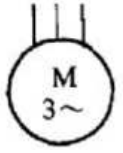
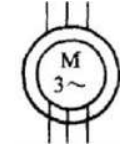
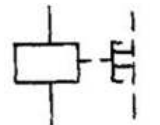
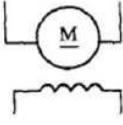
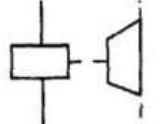
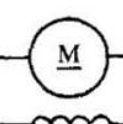
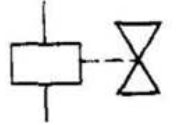
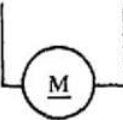
5.11 Schematic Diagrams of Common Symbols

5.11.1 Schematic Diagrams of Common Electronic Symbols

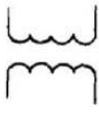
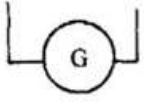
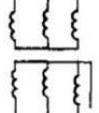
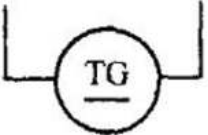
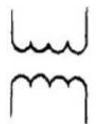
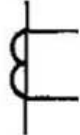
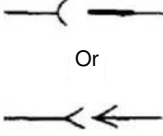
Socket	Name	Graphic Symbol	Letter Symbol	Type	Name	Graphic Symbol	Letter Symbol
Switch	Single-pole control switch		SA	Position switch	Normally-open contact		SQ
	Common symbol of hand switch		SA		Normally-closed contact		SQ
	Level-3 control switch		QS		Composite contact		SQ
	Level-3 isolation switch		QS	Button	Normally-on button		SB
	Level-3 load switch		QS		Normally-off button		SB
	Combination rotary switch		QS		Composite button		SB
	Low-voltage circuit breaker		QF		Emergency stop button		SB
	Controller or operating switch		SA		Key operating button		SB

Appendix

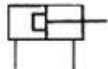
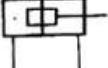
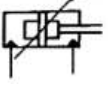
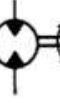
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	Main normally-open contact		KM		Normally-closed contact		FR
	Auxiliary normally-open contact		KM	Intermediate relay	Coil		KA
	Auxiliary normally-closed contact		KM		Normally-open contact		KA
Time relay	On-delay (slow-operate) coil		KT		Normally-closed contact		KA
	Off-delay (slow-release) coil		KT		Overcurrent coil		KA
	Instantaneous-closed normally-open contact		KT		Undercurrent coil		KA
	Instantaneous-open normally-closed contact		KT		Normally-open contact		KA
				Current relay	Normally-closed contact		KA

	Delayed -closed normally -open contact		KT	Voltage relay	Overvolt age coil		KV
	Delayed -open normally -closed contact		KT		Undervoltage coil		KV
	Delayed -closed normally -closed contact		KT		Normal y-open contact		KV
	Delayed -open normally -open contact		KT		Normal y-closed contact		KV
Electro magne tic manipu lator	Commo n symbol of electrom agnet		YA	Electric motor	Three-p hase squirrel- cage asynchr onous motor		M
	Electro magne tic chuck		YH		Three-p hase wound-r otor asynchr onous motor		M
	Electro magne tic clutch		YC		Separat ely excited DC motor		M
	Electro magne tic brake		YB		Shuntin g excited DC motor		M
	Solenoi d valve		YV		Series excited DC machine		M

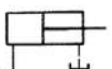
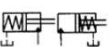
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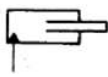
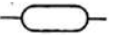
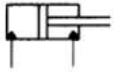
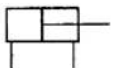
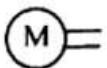
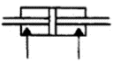
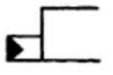
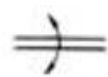
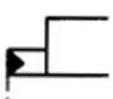
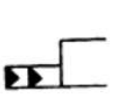
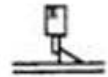
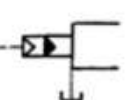
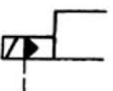
Relay not controlled by electric quantity	Speed relay normally-open contact		KS	Fuse protector	Fuse protector		FU
	Pressure relay normally-open contact		KP	Transformer	Single-phase transformer		TC
Generator	Generator		G		Three-phase transformer		TM
	DC tachometer generator		TG	Transducer	Voltage transformer		TV
Lamp	Signal lamp (indicator lamp)		HL		Current transformer		TA
	Lighting lamp		EL	Plug-in connector	Plug and socket		X Plug XP Socket XS

5.11.2 Schematic Diagrams for Symbols of Common Hydraulic Parts

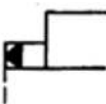
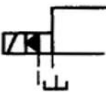
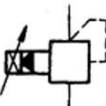
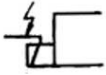
(1) Hydraulic pump, hydraulic motor, and hydraulic cylinder					
Name	Symbol	Description	Name	Symbol	Description
Hydraulic pump		Common symbol	Double-acting cylinder		Detailed symbol
		One-way rotation, one-way flowing, and fixed displacement			Simplified symbol
		Two-way rotation, two-way flowing, and fixed displacement			Detailed symbol
		One-way rotation, two-way flowing, and variable displacement			Simplified symbol
		Two-way rotation, two-way flowing, and variable displacement			Detailed symbol
Hydraulic motor		Common symbol			Simplified symbol
		One-way flowing, one-way rotation			Detailed symbol
		Two-way rotation, two-way flowing, and fixed displacement			Simplified symbol

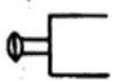
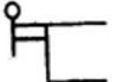
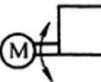
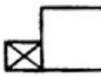
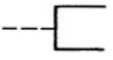
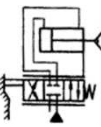
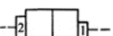
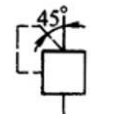
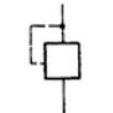
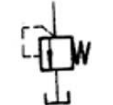
Appendix

	One-way variable hydraulic motor		One-way flowing, one-way rotation, and variable displacement		Telescopic cylinder		
	One-way variable hydraulic motor		Two-way rotation, two-way flowing, and variable displacement		Gas-liquid converter		One-stroke works.
	Swing motor		Two-way swinging, fixed angle				Continuous working
Pump-motor	Quantified hydraulic pump - motor		One-way flowing, one-way rotation, and fixed displacement	Pressure converter	Turbocharger		One-stroke works.
	Variable hydraulic pump - motor		Two-way rotation, two-way flowing, variable displacement, and external oil leakage				Continuous working
	Integral hydraulic transmission device		One-way rotation, variable displacement, and fixed displacement motor	Reservoir	Reservoir		Common symbol
Single-acting cylinder	Single-piston rod cylinder		Detailed symbol		Gas isolation		
			Simplified symbol		Heavy hammer type		
	Single-piston rod cylinder (with reset)		Detailed symbol		Spring type		

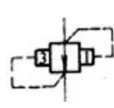
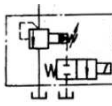
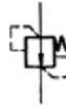
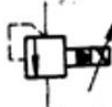
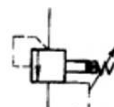
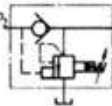
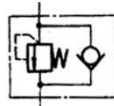
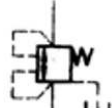
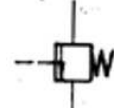
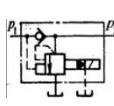
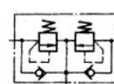
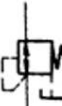
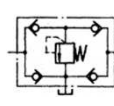
	spring)		Simplified symbol	Auxiliary gas cylinder			
	Plunger cylinder			Gas cylinder			
	Telescopic cylinder			Energy source	Hydraulic source		Common symbol
Double-acting cylinder	Single-pist on rod cylinder		Detailed symbol		Air pressure source		Common symbol
			Simplified symbol		Electric motor		
	Double-pist on rod cylinder		Detailed symbol		Original motor		Except motor
			Simplified symbol				
(2) Machine control unit and control method							
Mechanical control part	Rectilinear rod		Arrows can be omitted.	Pilot pressure control method	Hydraulic pilot pressurization control		Internal pressure control
	Rotationally moving shaft		Arrows can be omitted.		Hydraulic pilot pressurization control		External pressure control
	Fixing device				Hydraulic level-2 pilot pressurization control		Internal pressure control, internal oil leakage
	Locking device		* refers to control method of unlocking		Gas-liquid pilot pressurization control		Air pressure external control, hydraulic internal control, external oil leakage
	Jumping machine				Electric-liquid pilot pressurization control		Hydraulic external control, internal oil leakage

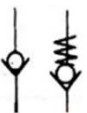
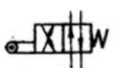
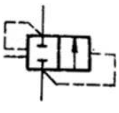
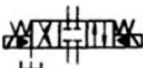
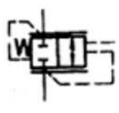
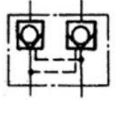
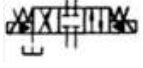
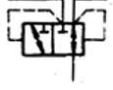
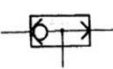
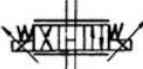
Appendix

Mechanical control method	Post rod-type						Internal pressure control, internal oil leakage
	Variable travel control mode				Hydraulic pilot depressurization control		External pressure control (release port with remote control)
	Spring control mode				Electric-liquid pilot control		Electromagnet control, external pressure control, external oil leakage
	Roller mode		Operations in both directions		Pilot pressure control valve		Adjusting spring with pressure, external oil leakage, and release port with remote control
	One-way roller mode		Operation in one direction. Arrows can be omitted.		Pilot proportional-electromagnetic type pressure control valve		The pilot level is controlled by proportional electromagnetic. Internal oil leakage;
Manual control method	Manual control		Common symbol	Electric control method	Single-acting electromagnet		Electric leads can be omitted. The oblique lines can also be in the low right.
	Button type				Double-acting electromagnet		
	Button type				Single-acting adjustable electromagnetic		

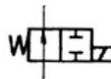
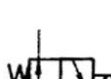
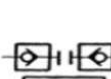
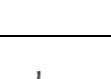
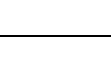
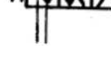
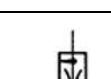
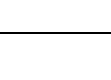
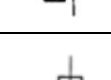
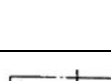
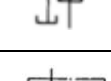
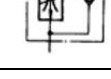
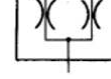
					operation (proportional electromagn et)		
	Push-pull type				Double-actin g adjustable electromagn etic operation (proportional electromagn et)		
	Handle-type				Rotationally- moving electrical control device		
	One-way pedal type			Feedbac k control method	Feedback control		Common symbol
	Two-way pedal type				Electrical feedback		Performed by a potentiome ter, transforme r, etc.
Direction pressure control method	Pressurizat ion or depressuri zation control				Internal mechanical feedback		Like follow-up valve square control circuit, etc.
	Differential control						
	Internal pressure control		Control path inside the part				
	External pressure control		Control path outside the part				
(3) Pressure controller							
Overflow valve	Overflow valve		General symbols or direct-acting overflow valve	Pressure reducing valve	Pilot proportional- electromagn etic overflow pressure reducing valve		

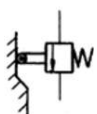
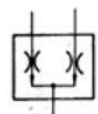
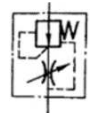
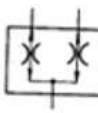
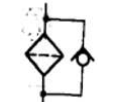
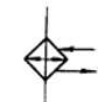
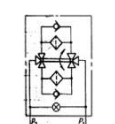
Appendix

	Pilot overflow valve				Definite-proportion pressure reducing valve		Pressure reducing ratio 1/3
	Pilot electromagnetic overflow valve		(Normally-closed)		Uniform-pressure-drop valve		
	Direct-acting proportional overflow valve			Sequence valve	Sequence valve		General symbols or sequence valve
	Pilot proportional overflow valve				Pilot sequence valve		
	Unloading overflow valve		When $p_2 > p_1$, unloading is performed.		One-way sequence valve (balance valve)		
	Two-way overflow valve		Direct-acting, external oil leakage	Unloading valve	Unloading valve		General symbols or direct-acting unloading valve
Pressure reducing valve	Pressure reducing valve		General symbols or direct-acting pressure reducing valve		Pilot electromagnetic unloading valve		$p_1 > p_2$
	Pilot pressure reducing valve			Brake valve	Double relief brake valve		
	Overflow pressure reducing valve				Overflow oil-axle brake valve		
(4) Direction control valve							

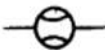
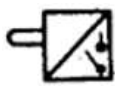
One-way valve	One-way valve		Detailed symbol	Reversing valve	Two-position five-way hydraulic valve		
			Simplified symbol (springs can be omitted)		Two-position four-way mechanical valve		
Hydraulic one-way valve	Hydraulic control one-way valve		Detailed symbol (control pressure shutoff valve)		Three-position four-way electromagnetic valve		
			Simplified symbol		Three-position four-way electro-hydraulic valve		Simplified symbol (internal leakage and external control)
			Detailed symbol (control pressure open valve)		Three-position six-way hand valve		
			Simplified symbol (springs can be omitted)		Three-position five-way solenoid valve		
	Double hydraulic-control one-way valve				Three-position four-way electro-hydraulic valve		External control and internal leakage (with hand emergency control device)
Shuttle valve or	Door type		Detailed symbol		Three-position four-way proportional valve		Throttle-type, mid-position positive cover
			Simplified symbol		Three-position four-way proportional valve		Mid-position negative cover

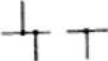
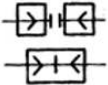
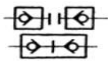
Appendix

Reversing valve	Two-position two-way solenoid valve		Normally-off		Two-position four-way proportional valve		
			Normally-on		Four-way servo		
	Two-position three-way solenoid valve				Four-way electro-hydraulic servo valve		2nd-class
	Two-position three-way solenoid ball valve						Level-3 feedback with electricity
	Two-position four-way solenoid valve						
(5) Flow control valve							
Throttle valve	Adjustable throttle valve		Detailed symbol	Speed control valve	Speed control valve		Simplified symbol
			Simplified symbol		By-pass speed control valve		Simplified symbol
	Nonadjustable throttle valve		Common symbol		Temperature compensation speed control valve		Simplified symbol
	One-way throttle valve				One-way speed control valve		Simplified symbol
	Double one-way throttle valve			Synchronous valve	Diverter valve		
	Shutoff valve				One-way diverter valve		

	Roller control throttle valve (deceleration valve)				Flow-collecting valve		
Speed control valve	Speed control valve		Detailed symbol		Flow distributing and collecting valve		
(6) Oil tank							
Ventilated	Pipe end on the page			Oil tank	Pipe end at the oil tank bottle		
	Pipe end on the liquid level		With air filter		Partial oil leakage or return		
				Pressurized oil tank or closed oil tank			Two oil circuits
(7) Fluid regulator							
Filter	Filter		Common symbol	Air filter			
	Filter with pollution indicator			Temperature regulator			
	Magnetic filter			Cooler	Cooler		Common symbol
	Filter with bypass-valve				Cooler with coolant pipe		
	Double filter		p1: Oil inlet p2: Oil return	Heater			Common symbol

Appendix

Pressure detector	Pressure indicator			Flow detector	Galvanometer (liquid flow indicator)		
	Pressure gauge				Flow gauge		
	Electric-contact pressure gauge (pressure display controller)				Flow quantity recorder		
	Pressure difference controller			Temperature gauge			
Liquidometer			Tachometer				
			Torque meter				
(8) Other auxiliary components							
Pressure relay (pressure switch)		Detailed symbol	Differential pressure switch				
		Common symbol	Sensor	Sensor		Common symbol	
Travel switch		Detailed symbol		Pressure sensor			
		Common symbol		Temperature sensor			
Coupler	Coupler		Common symbol	Amplifier			
	Elastic coupler						
(9) Pipe, pipe interface, connector							

Pipe	Pipe		Pressure pipe and oil return pipe	Pipe	Crossed pipe		Two pipes are crossed and are not connected.
	Control pipe		Two pipes are crossed and connected.		Flexible pipe		
	Control pipe		It indicates pipes with oil leakage.		One-way exhaust device		
Quick coupler connector	Quick coupler with no one-way valve			Rotary connector	One-way rotary connector		
	Quick coupler with one-way valve				Three-way rotary connector		