# SERVICE BOOK

# EREL05

ELECTRIC LOADER

# OVERVIEW

The loader is an articulated DC or AC battery electric wheel loader with a 500KG lift capacity, designed for light commercial use and small property landholders.

We have multiple attachments to suit various applications which are connected by an easy to use hydraulic quick hitch system. Charged by a standard 240 volt power point, we will provide approximately four hours of run time.

This manual is designed to inform the operators of the correct operating procedures. Please read it carefully so you can fully understand your systems and capabilities.

# CONTENTS



OVERVIEW

# Safe Operating Procedure

## PPE Required

## Electric Loader

## General Safety Instructions

- Complete pre-start checklist
- Read Manufacturers Operation Manual
- Do not wear loose clothing or jewellery
- Do not operate equipment near pedestrians or people
- Do not operate without the appropriate PPE as detailed
- Do not operate equipment under the influence of drugs or alcohol

## Battery

Do not allow the battery charge to drop below 55 volts.

Batteries are dangerous do not tamper with them in any way. Strong corrosive acids can cause burns.

## Top 4 Safety Rules

- Read and understand the Operation Manual.
- Ensure the load does not exceed 400Kg.
- Only Load and Unload trailer when it is connected to a vehicle
- Operating a Brumby loader on a hill is very dangerous only drive directly up and down slopes with bucket as low to ground as possible.

## Risk Assessment

- Assess the immediate work area for any hazards
- Control or eliminate all the risks associated with the hazards
- Hazards to check for that may require risk control-

❑ Overhead power lines
❑ Digging
❑ Confined space
❑ Traffic & moving machinery
❑ Stored energy – air, hydraulic, electricity, pressure
❑ Working at height
❑ Falling objects
❑ High Voltage
❑ Any stored energy

## Operating Safety Instructions

| | |
|---|---|
| Always have the heavy end of the machine uphill. With a full load the bucket end is heaviest, empty loads the rear of the machine is heaviest | When changing attachments always ensure that the locking pins are fully engaged prior to operation |
| Maintain proper tyre pressure – refer manufacturer specifications | Always carry the load as low to the ground as possible |
| Know where the ignition switch is located in case of emergency | Do not operate on or near embankments or ditches and beware of soft or damp ground that may give way |
| Do not move the hydraulic levers harshly – use very soft and steady motions | Do not operate on slopes greater than 10 degrees and only drive directly up and down slopes not across |
| Do not operate loader if you do not have vision as required by your standard Drivers Licence | Do not park on uneven ground |
| Plan work area prior to operation | Never have more than one person operating or riding on machine |
| Avoid lifting attachments manually – use the loader where possible | Never step off operating platform with load raised |
| When loading or unloading on a trailer ensure the trailer is attached to a vehicle and do not load or unload on a hill. If you can not unload or load on flat ground then the towing vehicle should be pointing downhill and not be greater than 10 degrees | Never allow children to operate machine |
| | Avoid sharp turns |
| | Always remove the key when not in use |
| | |
| | |

# TECHNICAL SPECIFICATIONS

**Performance:**

| | |
|---|---|
| Rated Load | 500KG |
| Bucket Rated Capacity | 0.2 cubic meters |
| Dumping Height @40° | 1300mm |
| Lifting Height | 2100mm |
| Dumping Reach | 550MM |
| Max. Lifting Weight | 500KG |
| Max. Excavation Force | 8KN |
| Max. Grade Ability | 15 |
| Max. Turning Angle | 25° ± 1 |

Rear Axle Swing Degree 3

**Dimensions & Weight:**

| | |
|---|---|
| Overall Length (Bucket on ground position) | 2836MM |
| Bucket Width (overall) | 900mm |
| Overall Height | 2110mm |
| Wheel Base | 1385MM |
| Min. Ground Clearance | 300mm |
| Net Weight | 900kg |

**Battery:**

| | |
|---|---|
| Battery Model No. 6-EVF-100A (OR 120 AH OR 150AH) | |
| Rated Capacity (3hr) | 100Ah |
| No. Of Batters | 5 |
| Rated Voltage | 60v |
| Working Hours | 4HRS |

**Transmission System:** DC or AC

| | |
|---|---|
| Hydraulic System | |
| Motor Type | HL-60 |
| Voltage | 60v |
| Power | 1500w |
| Displacement | 14ML/R |

**Oil Capacity:**

| | |
|---|---|
| Hydraulic Oil Tank | 11L |
| Brake Fluid | 0.8L |

**Braking System:**

| | |
|---|---|
| Service Brake | Drum Brake |
| Brake Drum | 200mm |
| Parking break | Drum Brake |
| Distribution Valve | Model DL10 |

Type - Triple valve system

| | |
|---|---|
| Dumping Cylinder Bore | Ø50 |
| Lifting Cylinder Bore | Ø50 |

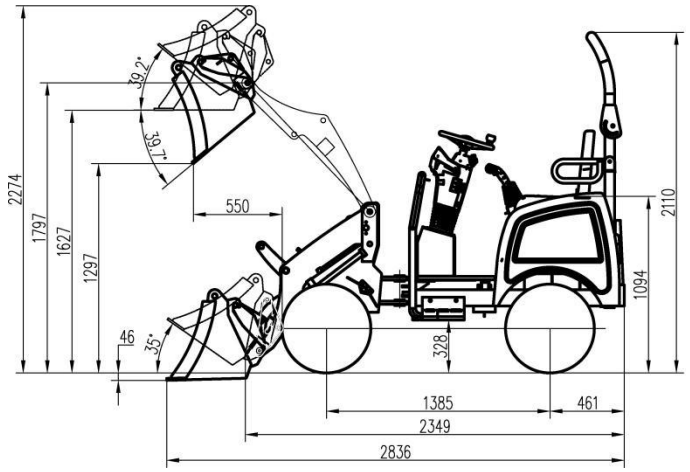
**Steering System:**

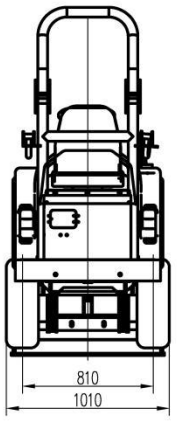
Full Hydraulic Steering System

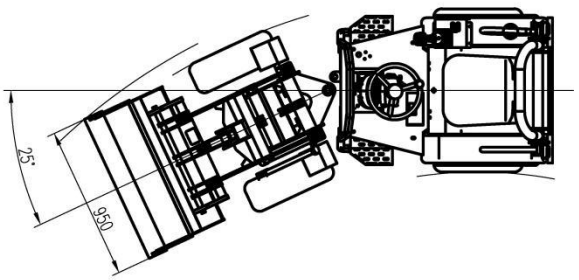
| | |
|---|---|
| External Gear Pump | 1pc |
| Steering Cylinder Bore | 50mm |
| System Pressure | 16mpa |

**Tyres:**

| | |
|---|---|
| Type | 6.00-12 |
| Working Pressure | 0.025mpa |
| Qty | 4 |




## SPECIFICATIONS

# CONTROLS

Simple by design, it is easy to operate machine with intuitive controls. Our cockpit is easy to navigate and with a little practice you will be able to complete tasks with ease.

Please take the time to familiarise yourself with each control before operating.

**Dashboard Instrument Cluster**


1. **Key Barrel**

2. **Brake fluid** – access for topping up brake fluid. (0.8L maximum capacity)

3. **Lights** – Head light and indicator switches.

4. **Hydraulic Power Control** – this switch is used to increase or decrease flow to the hydraulic system as required.


5. **Battery Voltage Indicator** - do not allow to drop below 55volts before recharging.

6. **Speedometer**

7. **Hours** - Total run time.

## Master Control Switch / Emergency Stop and Recharging Port

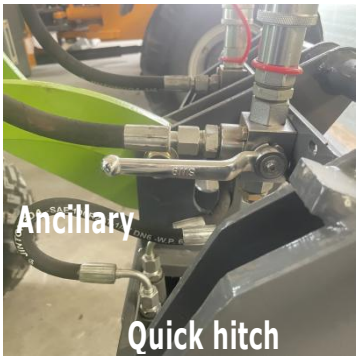
The master power control and recharging port sits on the lower seat panel. The button requires consider able force to activate.

Pull the main power switch to activate and push the button for an Emergency Stop.

The recharging port sits under the emergency stop button. **You should familiarise yourself with the Battery System.**

## Hydraulics

The hydraulic system is topped up from the cap adjacent to the accelerator pedal. The hydraulic tank capacity is 11 liters and should be inspected regularly. A site gauge sits at the rear of the tank.




Attachments requiring hydraulic power are connected via hoses into the two cam lock couplings. A valve leaver selects quick hitch or ancillary settings.

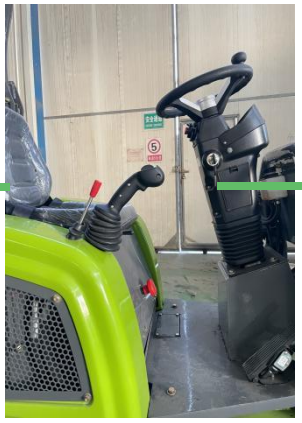
## Foot Pedals

The accelerator pedal is on the right and the brake is on the left hand side of the dash board. The brake also has a manual park brake, controlled by the red handle.

## Joystick Control

Upward arrow is selected to drive forward.
Central position is neutral.
Downward arrow is selected for reverse.

Yellow button controls the high and low speed.



Pull the joystick back to raise the lifting arm and the attachment.

Push the joystick forward to lower the lifting arm and the attachment，pushing to the end is the float position

Left hand movement tilts the attachment downwards.

Right hand movement tilts the attachment up.

## Quick Hitch Handle

we uses a Quick Hitch system to connect attachments. Attachment must be in an on-ground safe position before using the quick hitch control leaver. Forward movement on the quick hitch handle will release the locking pins to enable removal of the attachment. Always return the quick hitch leaver to its locked position. The hydraulic three way valve leaver needs to be in the Quick hitch position. CAUTION - always ensure the locking pins are correctly in place before using any attachment.

## Storage

It should be stored in a safe, dry, well ventilated, clean environment.

## Warranty Terms

The machine comes with a 12 month/1500 hour warranty, whichever is first. The warranty is return to base (transport at customer cost) or parts only, and excludes:

- All Ground Engaging Tools (GET)
- Tyres and tubes
- Damage caused by operator or other
- Operator abuse

### About the Battery System

| | |
|---|---|
| Battery Model: | 6 – EVF-100A |
| Rated Capacity (3hr) | 100Ah |
| Number of Battery Groups | 5 |
| Rated Voltage | 60V |
| Usage Time | 4HRS |

- The working time of the rated (rated capacity) is 3 hours, and the longest working time is up to 4 hours.
- The battery group contains 5 sets of battery packs, each with a battery capacity of 100Ah total capacity is 500Ah.
- The weight of each individual battery is 31.5kgs, (total weight of all 5 batteries is 157.5kgs).
- Use the voltage gauge to ensure voltage does not drop below 55 volts before recharging.
- Do not allow the battery to fully drain.
- Full charge should be attained within 10hrs. Stop charging if the charging indicator light does not turn green within a 10 hr period and refer to our after sales service team.
- Battery capacity is calculated at an ambient temperature of 25° colder temperatures will reduce battery capacity and the loader should not be used below -10°
- Like all batteries, the batteries are considered a consumable item. General use, charging and discharging the battery will gradually reduce its capacity This is normal.
- The service life of the battery is 400 charge / discharge cycles within a three year period.
- The electrolytes in the battery are strong corrosive acids. Do not tamper with the batteries.
- Special charger detection prevents over-charging, and overheating and also detects damage and liquid leakage.
- Opening the battery case while charging is strictly prohibited.
- Only qualified auto electrical engineers are allowed to open the battery case.
- The charger will stop functioning if the grid voltage is fluctuating until normal stable power is detected.
- The charger can not be used to charge other machinery.
- The charger can repair the vulcanized battery of the polar plate and will not cause damage if left connected to us for extended periods of time. However its recommended to unplug the charger when full charge is reached.
- Do not operate the loader while connected to the charger.
- Batteries should not be repaired or replaced while connected to the charger.

Battery Warranty:

- The battery comes with a 12 month warranty, from date of purchase.
- Battery warranty is made void if:
  - The loader is not used for its intended purpose.
  - Power loss because of loose terminals, excessive starting, end column pollution and excessive loads.
  - Unauthorized modification and disassembly of the battery.
  - Damage caused by collision.
  - If a damaged charger is used to recharge it.

**About the Hydraulic System**

- Do not drive through water deeper than 10cm
- Do not exceed 3 km/h while driving in shallow water less than 10cm deep.
- Keep the system clean.
- Resting the system after 1 hr of continuous use will prolong the service life of the hydraulic motor.
- Change the carbon brush regularly, inspect and change every twelve months. The specifications of the carbon brush replacement should match the original part so that the pressure of the brush spring is 39 Pa / cubic cm
- Use of hydraulic fluid, L-HM46 for ambient temperature -10-40 degrees, L-HV32 for ambient temperature -10--30 degrees.
- Items that require regular maintenance are the hydraulic oil filter, the oil filter element and the replacement of hydraulic oil.
- Normal service life of the pumps and valves is 3 – 5 years
- Warranty
  - Hydraulic system 12 months from date of purchase

**About the Motor Warranty**

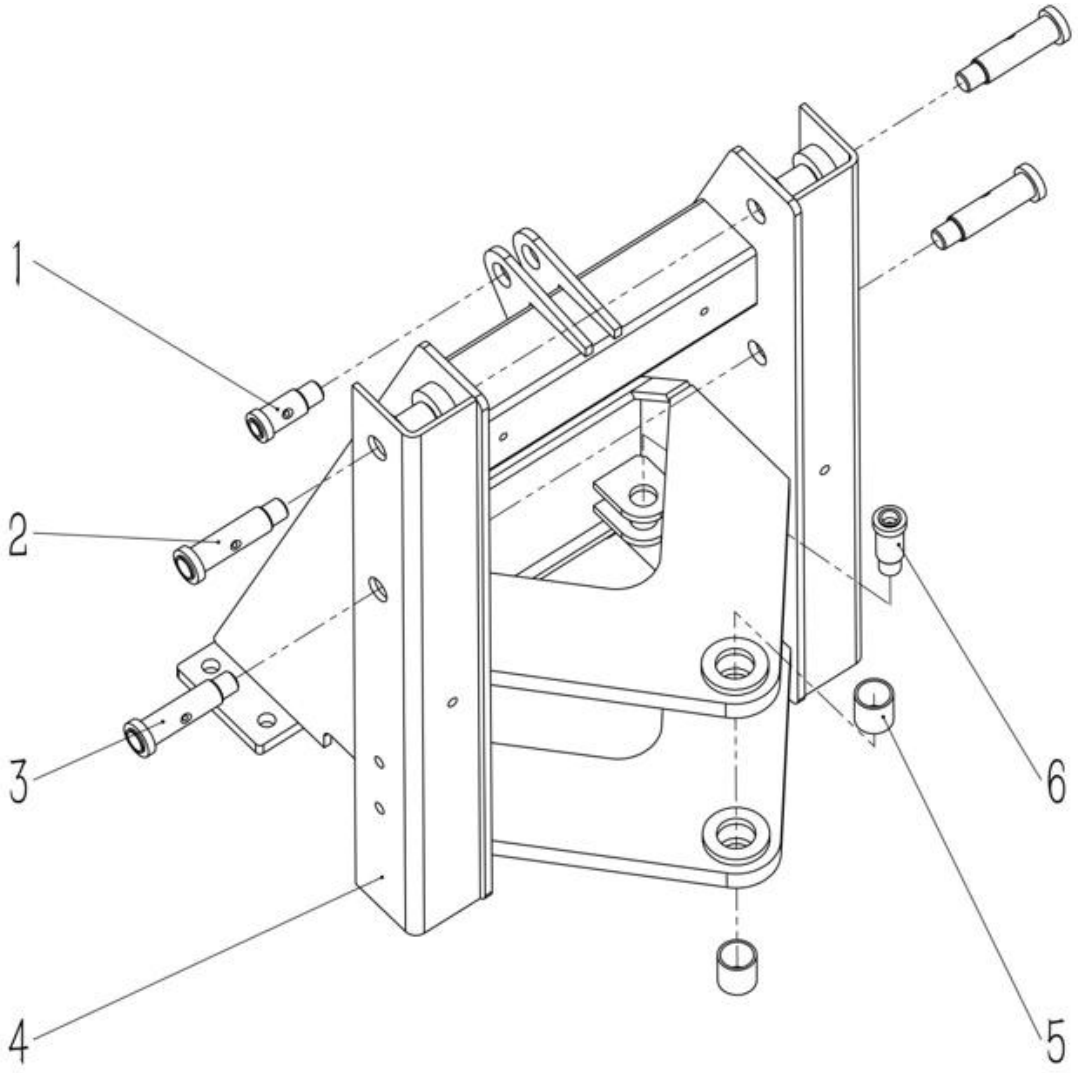
- The motor warranty is twelve months from purchase date.
- Unauthorized repair or tampering of the motor will void the warranty.
- Motor failure caused by improper use of the vehicle is not covered by the warranty.
- Damage caused by water ingress voids any warranty claim. Grease

## Grease Point Lubrication

The loader has moving parts that need grease for smooth movement and to help eliminate wear from heat and friction. Regularly inspect the lubricate the grease points.

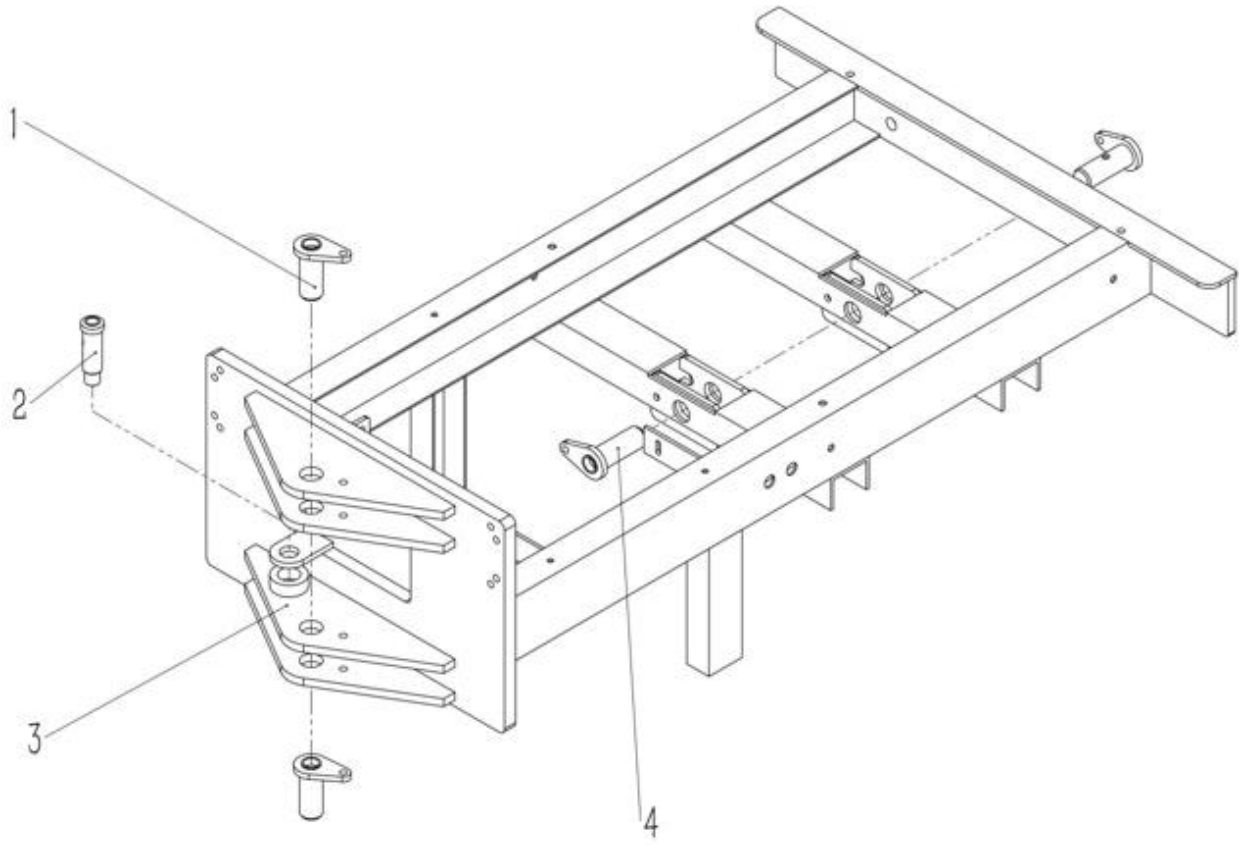
# NOTES

# FRONT FRAME ASSEMBLY



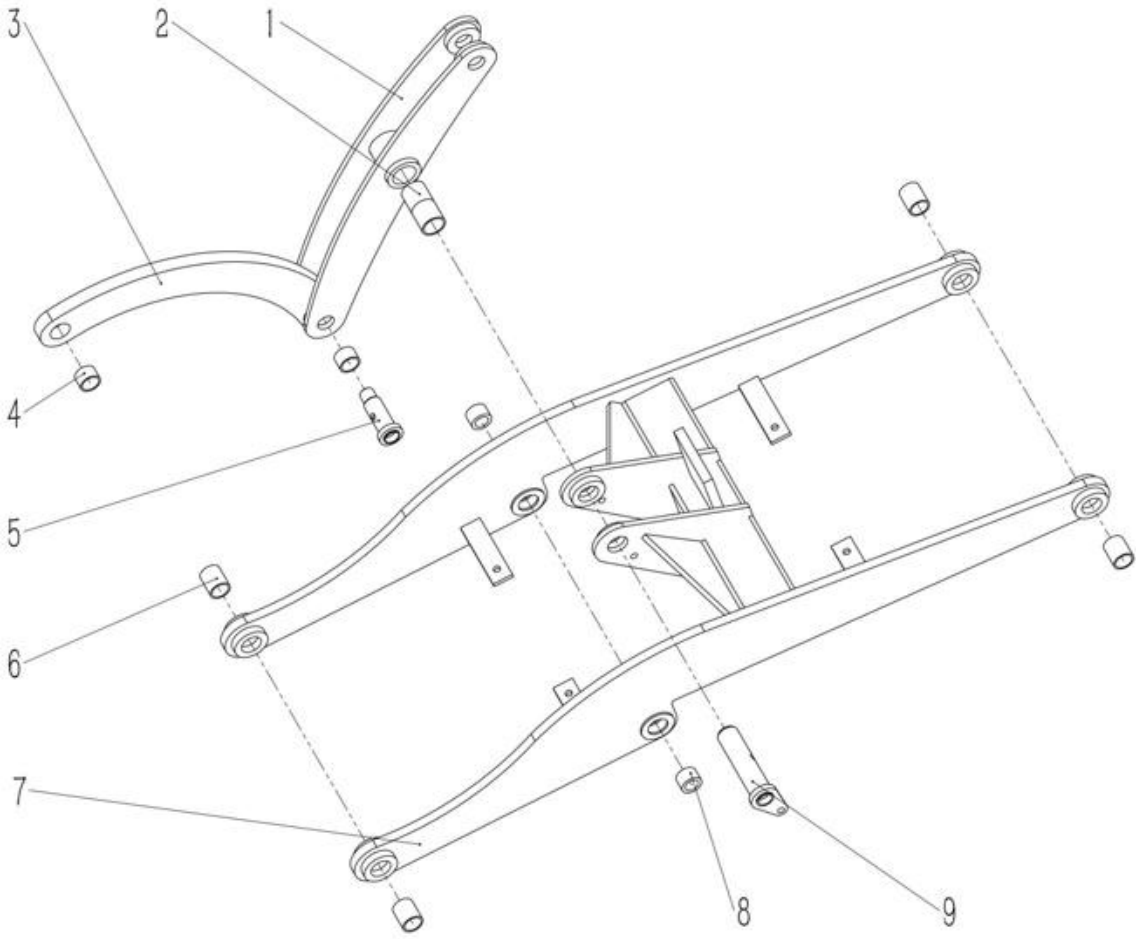

| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | TILTING CYLINDER PIN | 1 |
| 2 | | BOOM PIN | 2 |
| 3 | | LIFTING CYLINDER PIN | 2 |
| 4 | | FRONT FRAME | 1 |
| 5 | | CENTRE HINGEBUSHING | 2 |
| 6 | | STEERING CYLINDER PIN | 1 |

# REAR FRAMEASSEMBLY



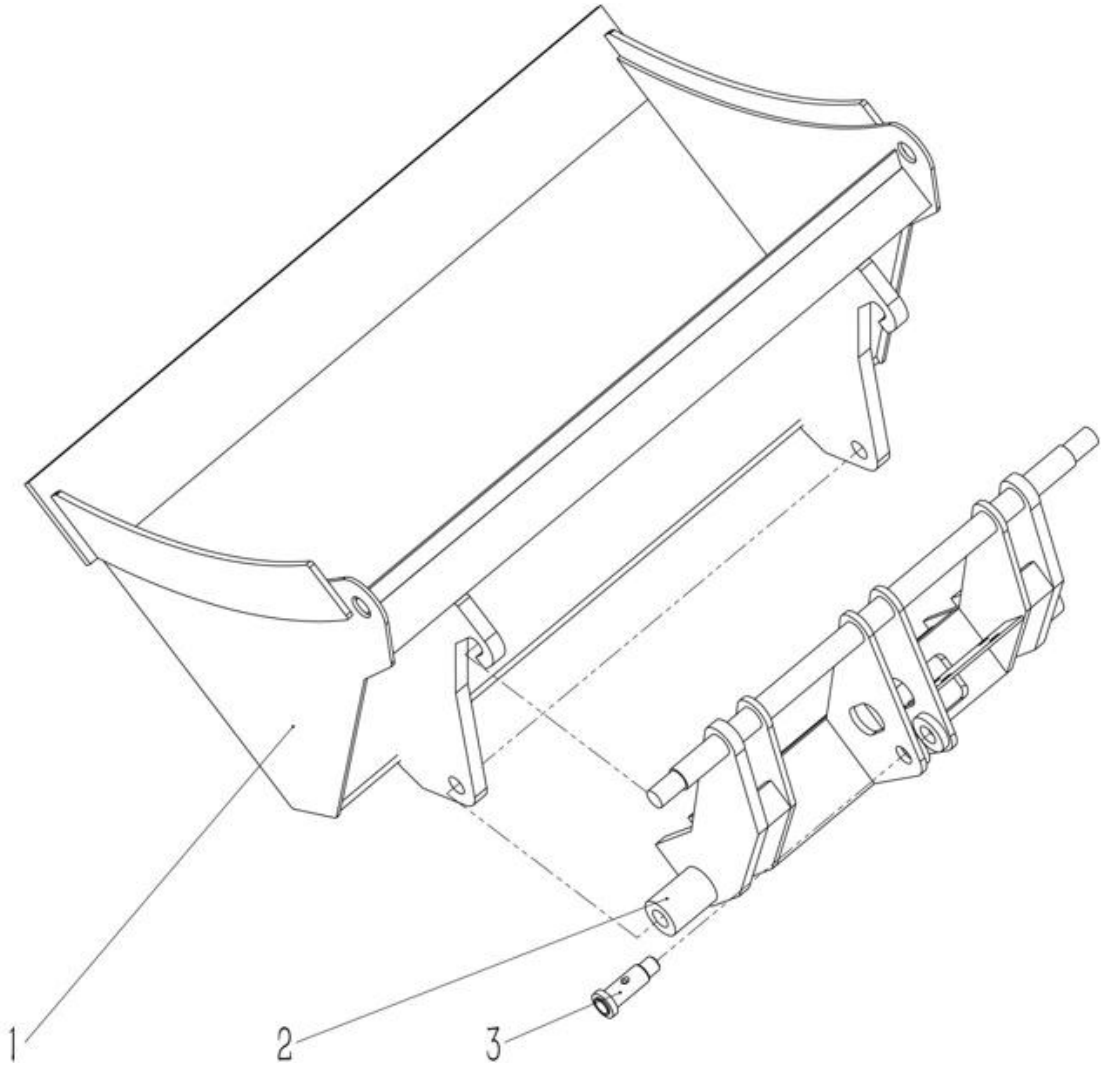

| KEY | PARTNO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | MAIN HINGE PIN | 2 |
| 2 | | STEERING PIN | 1 |
| 3 | | REAR FRAME | 1 |
| 4 | | SWING FRAME PIN | 2 |

# BOOM ASSEMBLY



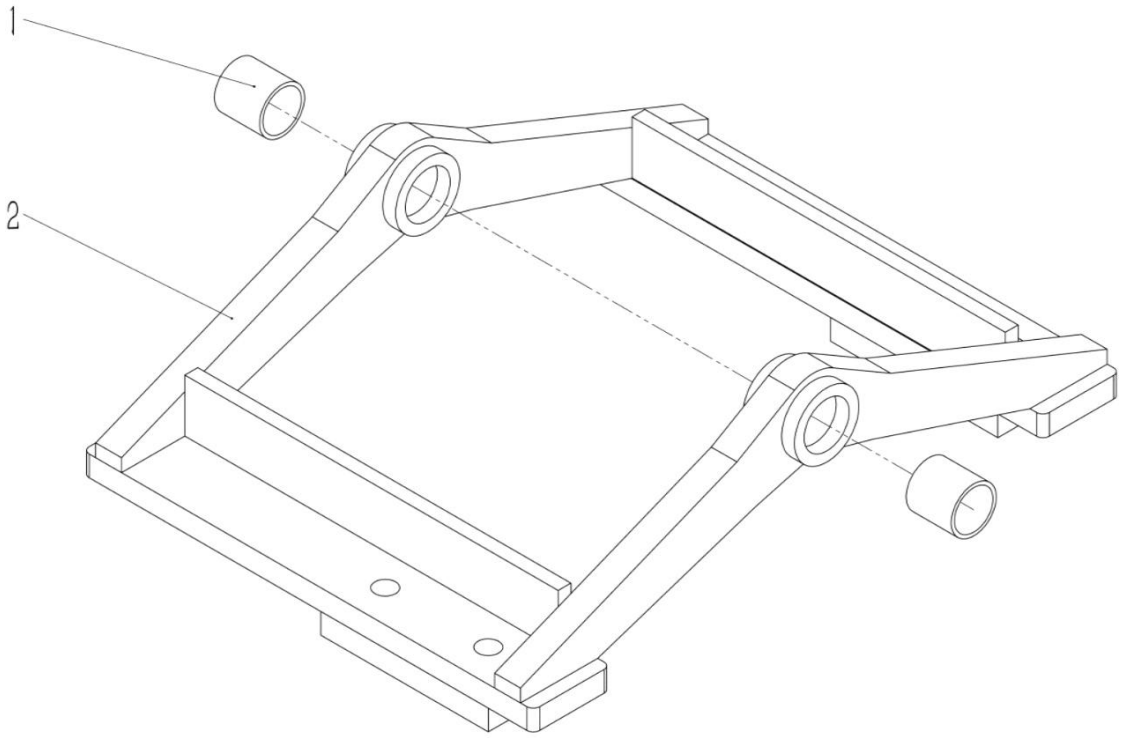

| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | SWING ARM | 1 |
| 2 | | SWING ARM SLEEVE | 2 |
| 3 | | CONNECTING ROD | 1 |
| 4 | | BUSHING FOR CONNECTING ROD | 2 |
| 5 | | SWING ARM LEVER PIN | 1 |
| 6 | | BOOM FRONT AND REAR BUSHING | 4 |
| 7 | | BOOM | 1 |
| 8 | | BOOM MIDDLE BUSHING | 2 |
| 9 | | PIN FOR SWING ARM | 1 |

# QUICK HITCH ASSEMBLY



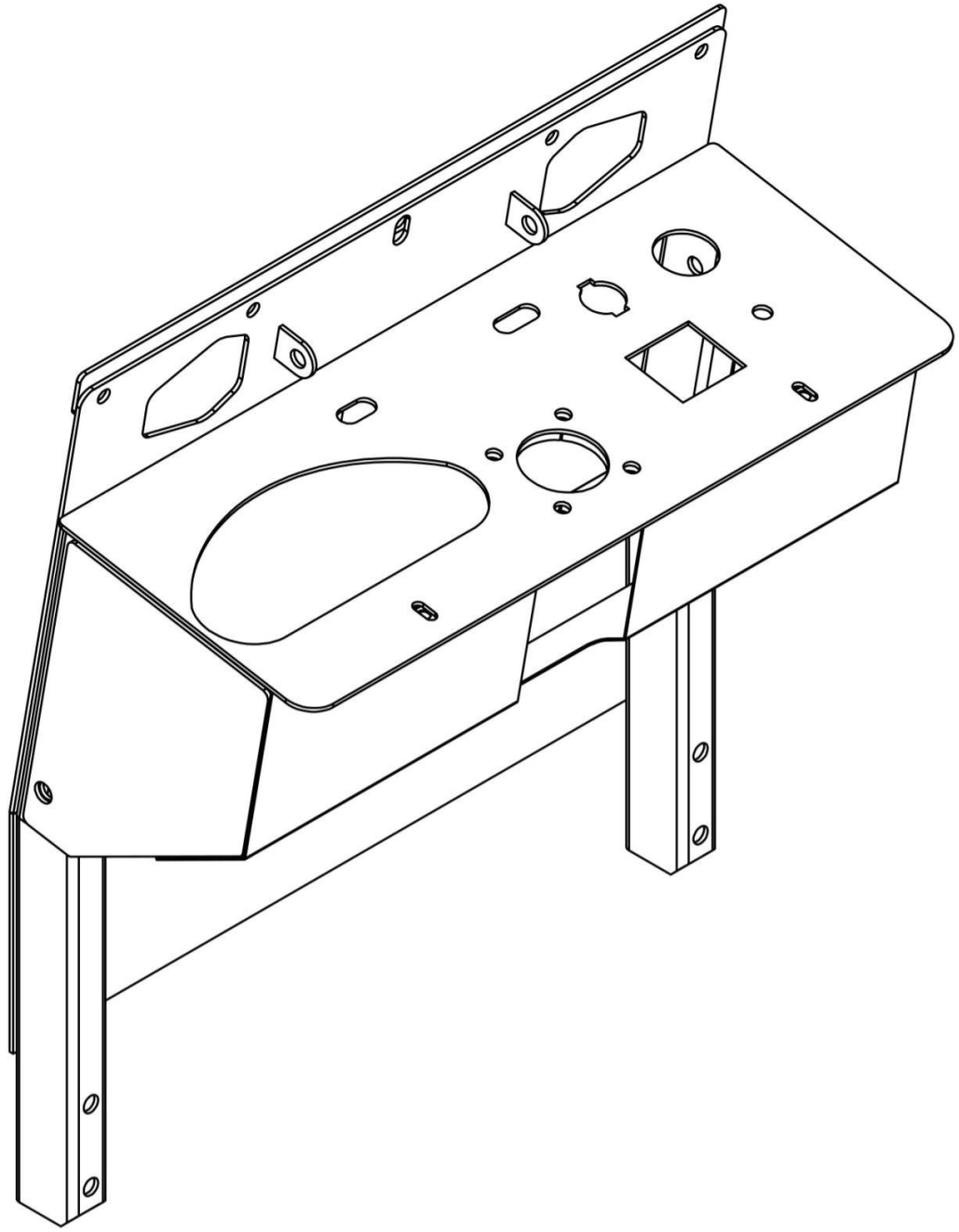

| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | QUICK HITCH BUCKET | 1 |
| 2 | | QUICK HITCH | 1 |
| 3 | | QUICK HITCH PIN SHAFT | 1 |

# SWING FRAMEASSEMBLY

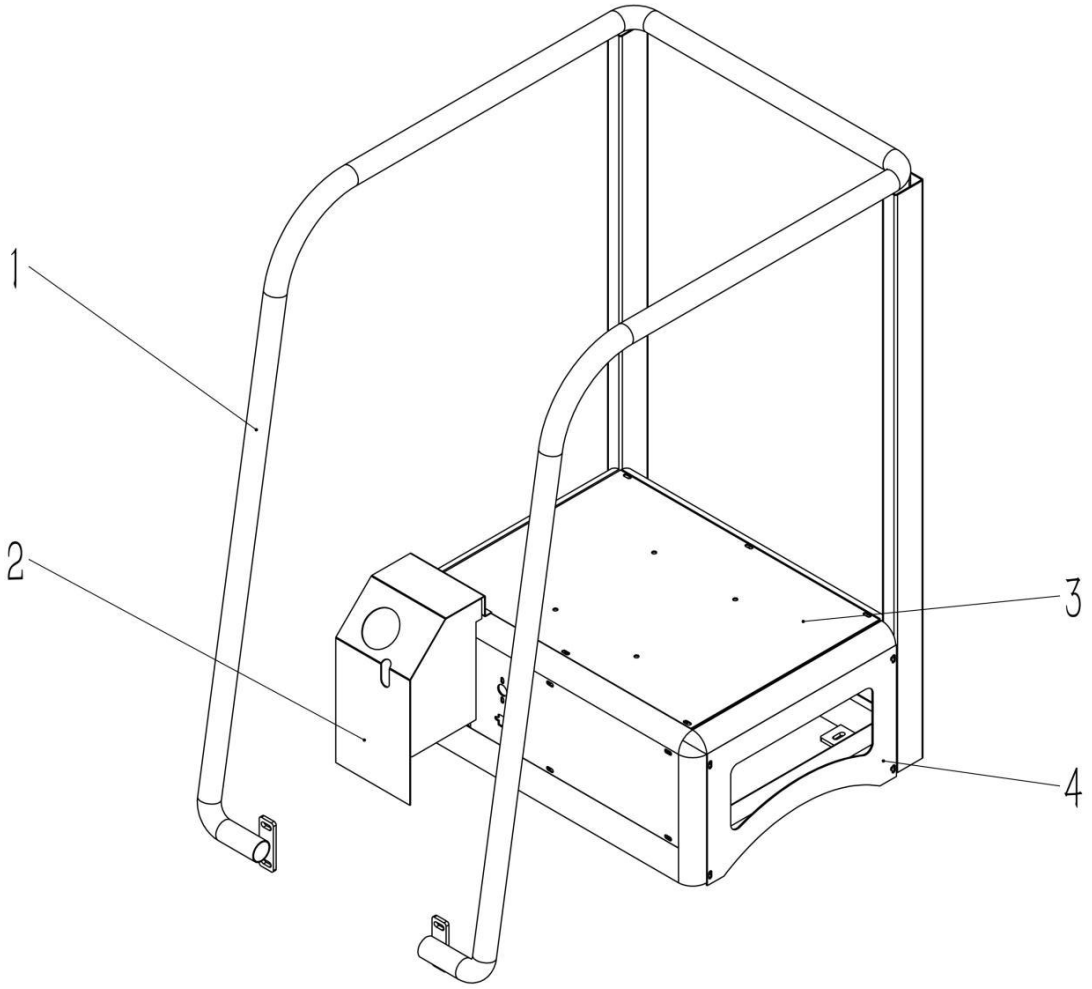



| KEY | PARTNO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | SWING FRAME | 1 |
| 2 | | BUSHING | 2 |

# DASHBOARD BRACKET

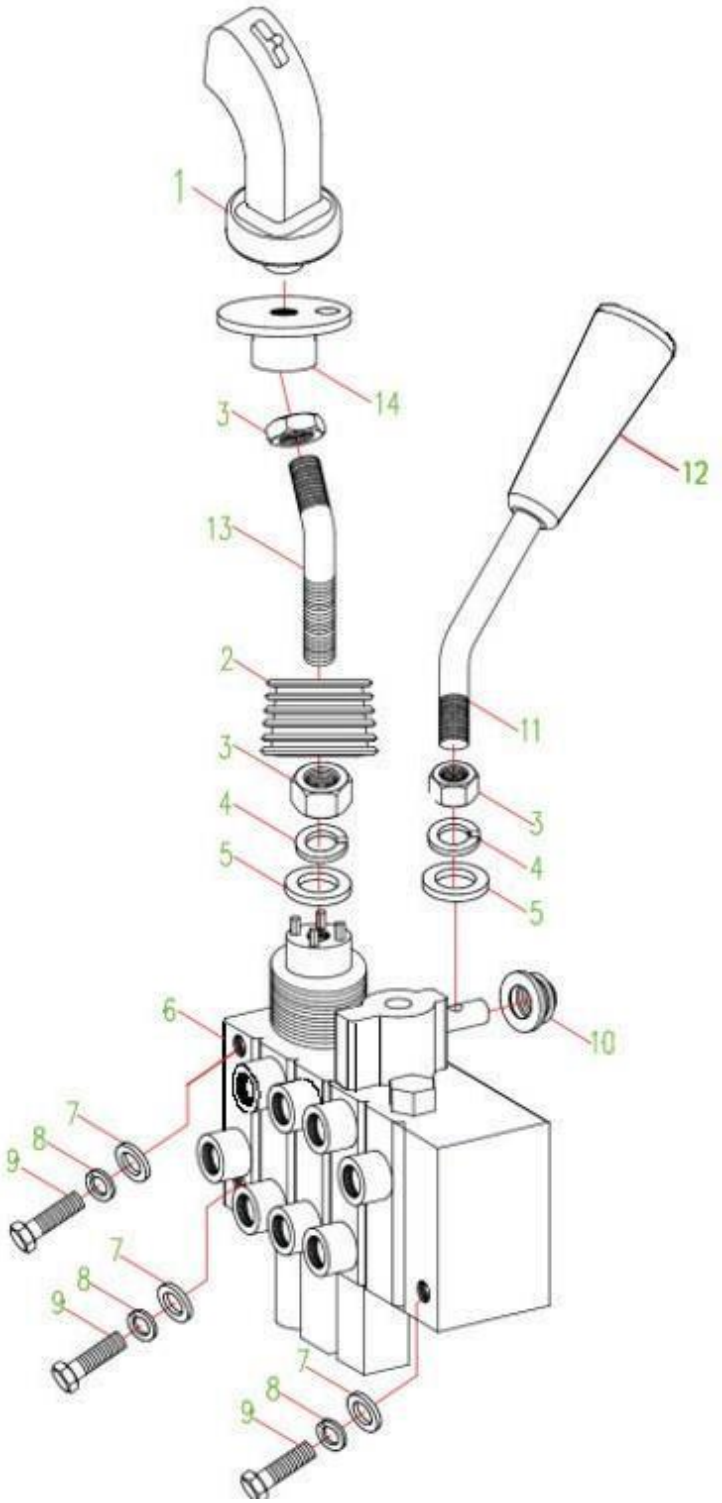


# BATTERY BOX




| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | CABIN FRAME | 1 |
| 2 | | BOOM OPERATING HANDLE BOX | 1 |
| 3 | | SEAT PLATE | 1 |
| 4 | | BATTERY BOX | 1 |

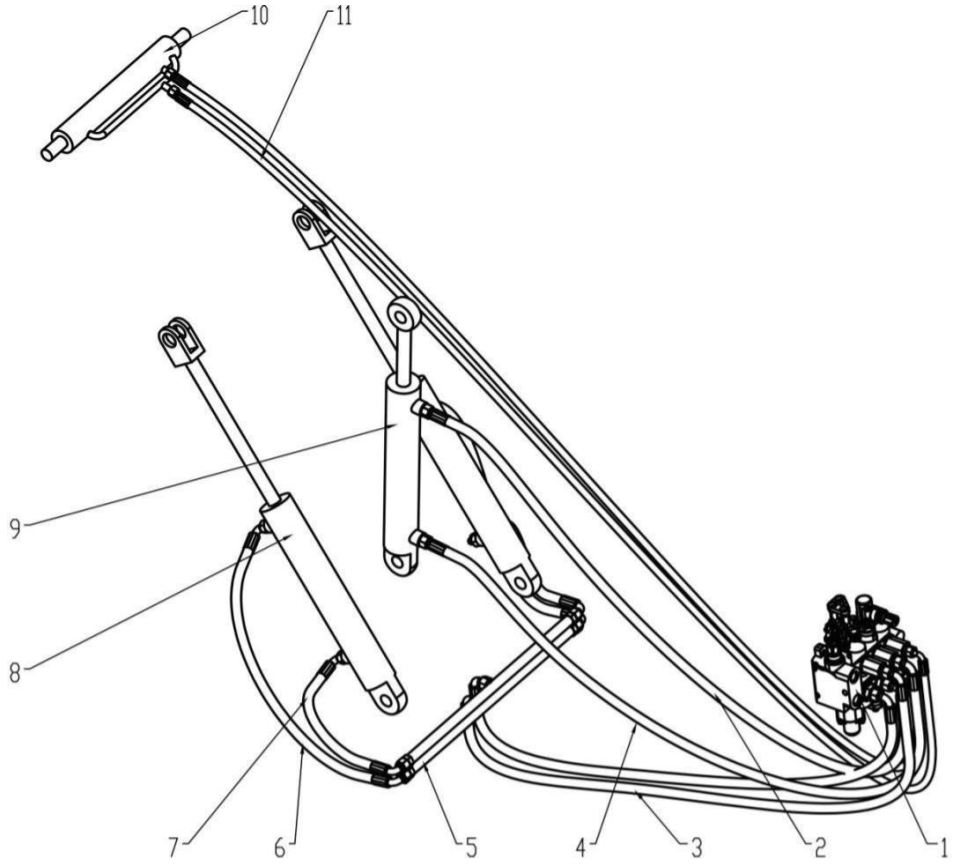
# HYDRAULIC DISTRIBUTION
# VALVE ASSEMBLY



# HYDRAULIC DISTRIBUTION
# VALVE ASSEMBLY

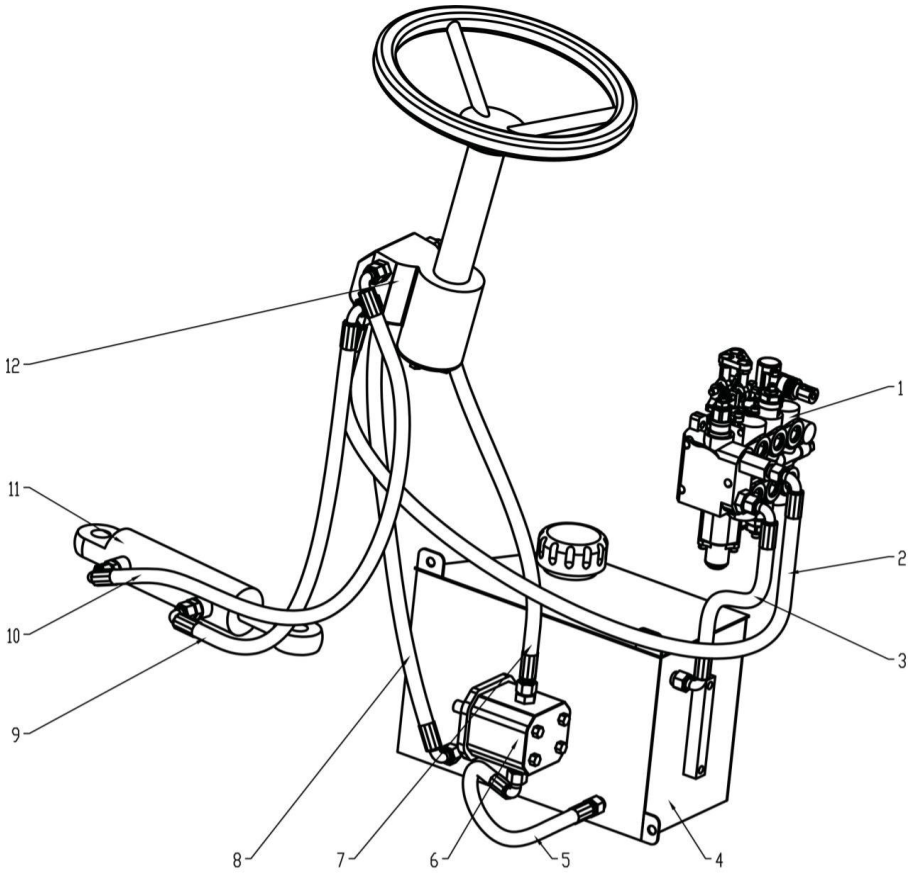
| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | JOYSTICK | 1 |
| 2 | | RUBBER SHEATH | 1 |
| 3 | | SCREWNUT M10 | 3 |
| 4 | | SPRING WASHER 10 | 2 |
| 5 | | WASHER 10 | 2 |
| 6 | | MULTI-WAY VALVE | 2 |
| 7 | | WASHER 8 | 3 |
| 8 | | SPRING WASHER 8 | 3 |
| 9 | | BOLT M8*60 | 3 |
| 10 | | RUBBER SLEEVE | 1 |
| 11 | | ATTACHMENT JOYSTICK | 1 |
| 12 | | ATTACHMENT JOYSTICK RUBBER | 1 |
| 13 | | JOYSTICK CONNECTING ROD | 1 |
| 14 | | JOYSTICK SEAT | 1 |

# HYDRAULIC WORKING SYSTEM



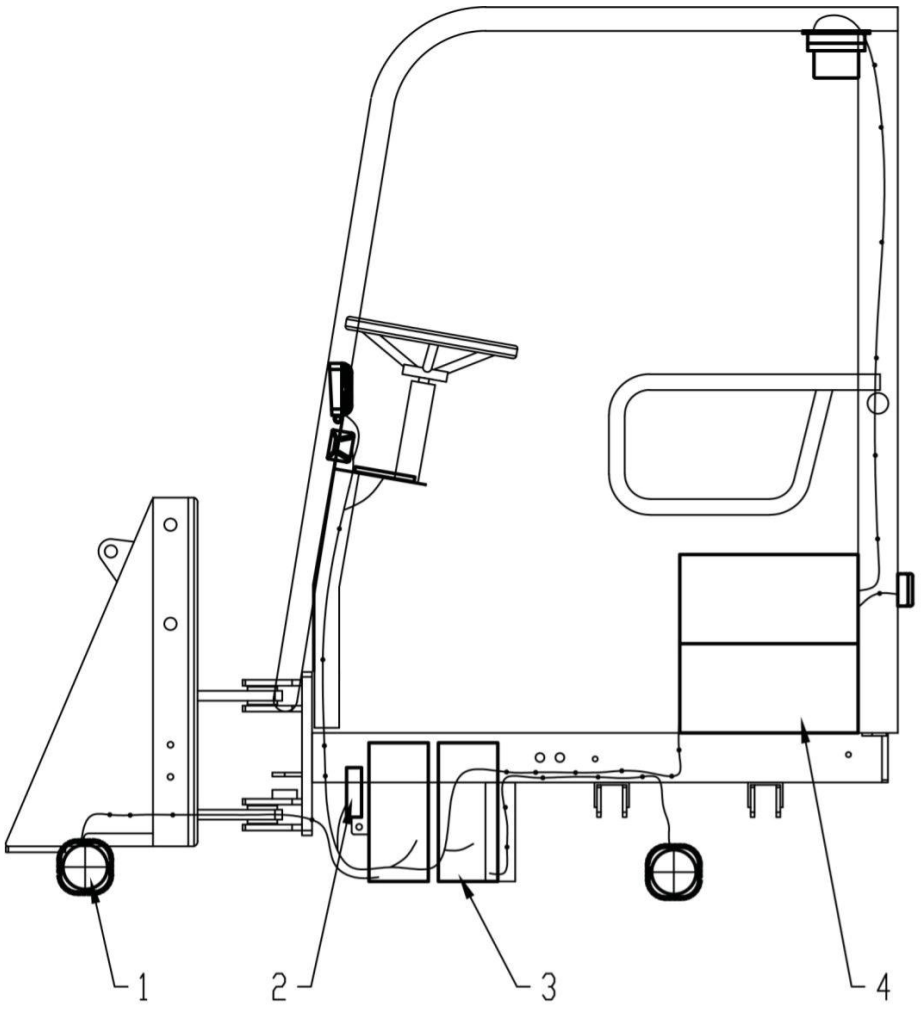

| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | MULTI-WAY VALVE | 1 |
| 2 | | SMALL CAVITY HOSE FOR TIPPING CYLINDER | 1 |
| 3 | | LIFTING CYLINDER HOSE | 2 |
| 4 | | LARGE CAVITY HOSE FOR TIPPING CYLINDER | 1 |
| 5 | | LIFTING CYLINDER IRON PIPE | 2 |
| 6 | | SMALL CAVITY HOSE FOR LIFTING CYLINDER | 2 |
| 7 | | LARGE CAVITY HOSE FOR LIFTING CYLINDER | 2 |
| 8 | | LIFTING CYLINDER | 2 |
| 9 | | TIPPING CYLINDER | 1 |
| 10 | | QUICK HITCH CYLINDER | 1 |
| 11 | | QUICK HITCH CYLINDER HOSE | 2 |

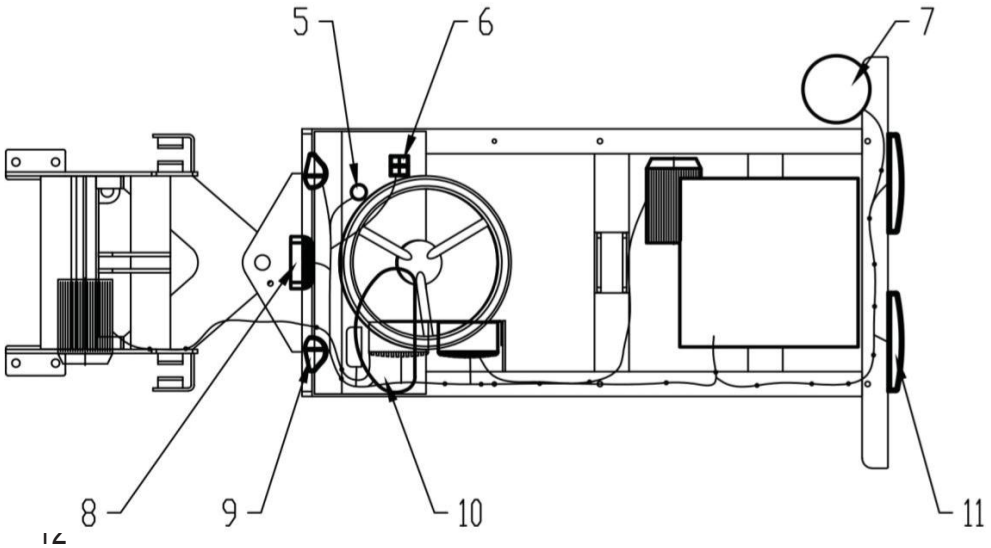
# HYDRAULIC STEERING SYSTEM




| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | MULTI-WAY VALVE | 1 |
| 2 | | STEERING GEAR OIL INLET HOSE | 1 |
| 3 | | MULTI-WAY VALVE OIL INLET HOSE | 1 |
| 4 | | HYDRAULIC TANK | 1 |
| 5 | | GEAR PUMP OIL RETURN HOSE | 1 |
| 6 | | GEAR PUMP | 1 |
| 7 | | GEAR PUMP OIL INLET HOSE | 1 |
| 8 | | STEERING GEAR OIL RETURN HOSE | 1 |
| 9 | | STEERING CYLINDER SMALL CAVITY | 1 |
| 10 | | STEERING CYLINDER LARGE CAVITY | 1 |
| 11 | | STEERING CYLINDER | 1 |
| 12 | | STEERING GEAR | 1 |

# ELECTRIC CONTROL SYSTEM

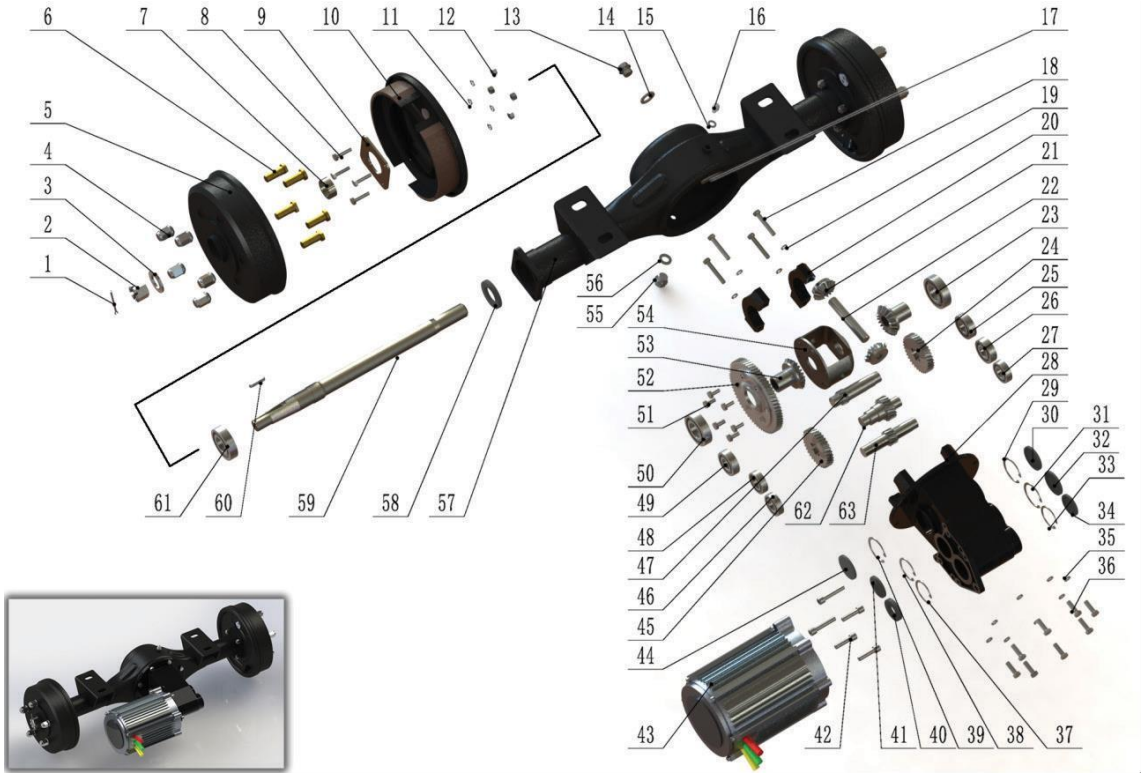


# ELECTRIC CONTROL SYSTEM

| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | MOTOR | 2 |
| 2 | | CONTROLLER | 1 |
| 3 | | WALKING CONTROLLER | 1 |
| 4 | | BATTERY | 5 |
| 5 | | ELECTRIC LOCK | 1 |
| 6 | | SWITCH | 1 |
| 7 | | WARNING LIGHT | 1 |
| 8 | | HEADLIGHT | 1 |
| 9 | | TURN SIGNAL | 2 |
| 10 | | METER | 1 |
| 11 | | REAR LIGHT | 2 |

# AXLE ASSEMBLY




| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | PIN 4X50 | 2 |
| 2 | | NUT M22 | 2 |
| 3 | | WASHER 22 | 2 |
| 4 | | TYRE NUT M14 | 8 |
| 5 | | BRAKE DRUM | 2 |
| 6 | | TYRE BOLD M14X45 | 10 |
| 7 | | BRAKE DRUM SPACER | 2 |
| 8 | | BOLT M8X30 | 8 |
| 9 | | BEARING PRESSURE PLATE | 2 |
| 10 | | BRAKE PAD | 8 |
| 11 | | WASHER 8 | 8 |
| 12 | | NUT M8 | 8 |
| 13 | | OIL FILLING HOLE PLUG | 1 |
| 14 | | OIL FILLING HOLE GASKET | 1 |
| 15 | | VENT GASKET | 1 |

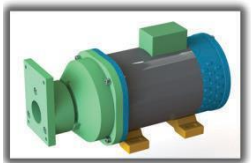
# AXLE ASSEMBLY

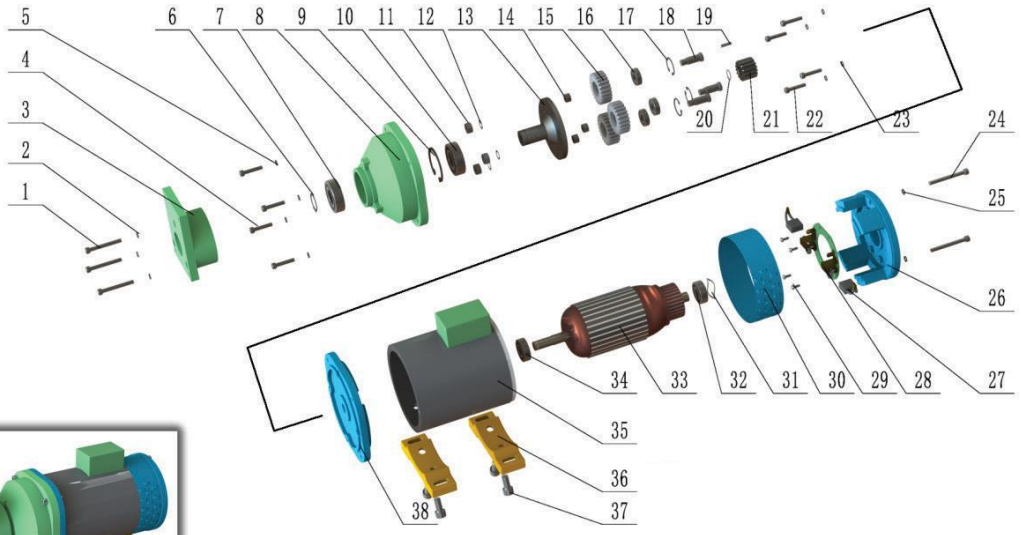
| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 16 | | EXHAUST CAP | 1 |
| 17 | | SHORT HALF SHAFT | 1 |
| 18 | | BOLT M8X50 | 4 |
| 19 | | WASHER 8 | 4 |
| 20 | | BEARING PRESSURE PAD | 2 |
| 21 | | PLANETARY WHEEL | 1 |
| 22 | | PLANETARY SHAFT | 1 |
| 23 | | DEEP GROOVE BALL BEARING 6206 | 1 |
| 24 | | THREE-AXIS BIG GEAR M2,Z34 | 1 |
| 25 | | DEEP GROOVE BALL BEARING 6204 | 1 |
| 26 | | DEEP GROOVE BALL BEARING 6204 | 1 |
| 27 | | DEEP GROOVE BALL BEARIN ɜ 6004 | 1 |
| 28 | | GEARBOX BODY | 1 |
| 29 | | CIRCLIPS FOR HOLES 47 | 1 |
| 30 | | OIL BLOCKING 47 | 1 |
| 31 | | CIRCLIPS FOR HOLES 47 | 1 |
| 32 | | OIL BLOCKING 47 | 1 |
| 33 | | CIRCLIPS FOR HOLES 42 | 1 |
| 34 | | OIL BLOCKING 42 | 1 |
| 35 | | WASHER 8 | 8 |
| 36 | | BOLT M8X25 | 8 |
| 37 | | CIRCLIPS FOR HOLES 42 | 1 |
| 38 | | CIRCLIPS FOR HOLES 42 | 1 |
| 39 | | CIRCLIPS FOR HOLES 47 | 1 |
| 40 | | OIL SEAL 20X42X10 | 1 |
| 41 | | OIL BLOCKING 42 | 1 |
| 42 | | SOCKET HEAD CAP SCREWS M8X40 | 5 |
| 43 | | TRACTION MOTOR | 1 |
| 44 | | OIL BLOCKING 47 | 1 |
| 45 | | TWO-AXIS BIG GEAR M2,Z34 | 1 |

# AXLE ASSEMBLY

| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 46 | | DEEP GROOVE BALL BEARING 6204 | 1 |
| 47 | | THREE AXIS M2,Z11 | 1 |
| 48 | | DEEP GROOVE BALL BEARING 6004 | 1 |
| 49 | | DEEP GROOVE BALL BEARING 6204 | 1 |
| 50 | | DEEP GROOVE BALL BEARING 6206 | 1 |
| 51 | | BOLT M8X25 | 6 |
| 52 | | LARGE RING GEAR M2,Z67 | 1 |
| 53 | | SUN GEAR | 2 |
| 54 | | DIFFERENTIAL CASER | 1 |
| 55 | | OIL DRAIN HOLE PLUG | 1 |
| 56 | | OIL DRAIN HOLE GASKET | 1 |
| 57 | | AXLE HOUSING | 2 |
| 58 | | HALF SHAFT OIL SEAL 32X55X8 | 1 |
| 59 | | SEMI-MAJOR AXIS | 1 |
| 60 | | ORDINARY FLAT KEY 8X8X35 | 2 |
| 62 | | DEEP GROOVE BALL BEARING 6206 | 1 |
| 63 | | ONE AXIS M2,Z12 | 1 |

# ELECTRIC MOTOR ASSEMBLY



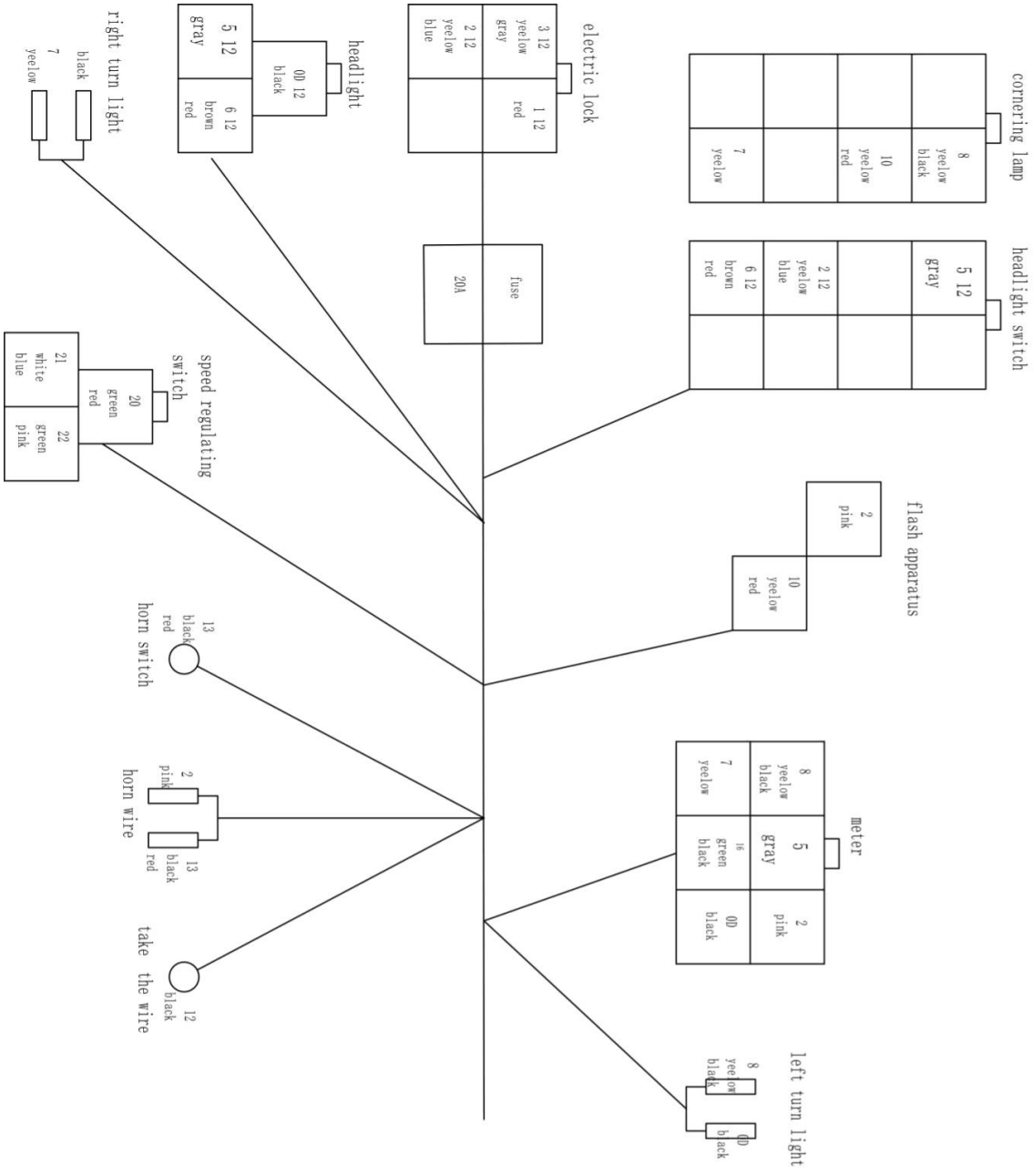



| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | | SOCKET HEAD SCREW CAPS M6X50 | 3 |
| 2 | | SPRING WASHER 6 | 3 |
| 3 | | CONNECTING FLANGE | 1 |
| 4 | | SOCKET HEAD CAP SCREWS M6X30 | 4 |
| 5 | | SPRING WASHER 6 | 4 |
| 6 | | CIRCLIP FOR SHAFT 25 | 1 |
| 7 | | DEEP GROOVE BALL BEARING 6205 | 1 |
| 8 | | GEAR RING HOUSING M2,Z63 | 1 |
| 9 | | CIRCLIPS FOR HOLES 52 | 1 |
| 10 | | DEEP GROOVE BALL BEARING 6205 | 1 |
| 11 | | HEX NUTS M10 | 3 |
| 12 | | SPRING WASHER 10 | 3 |
| 13 | | PLANET CARRIER | 3 |
| 14 | | PLANETARY GEAR SPACER | 3 |

# ELECTRIC MOTOR ASSEMBLY

| KEY | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 15 | | PLANETARY WHEEL M2,Z24 | 3 |
| 16 | | PLANETARY GEAR BEARING 6001 | 3 |
| 17 | | CIRCLIPS FOR HOLES 28 | 3 |
| 18 | | PLANETARY AXLE | 3 |
| 19 | | ORDINARY FLAT KEY 4X4X20 | 1 |
| 20 | | CIRCLIP FOR SHAFT 14 | 1 |
| 21 | | SUN GEAR M2,Z15 | 1 |
| 22 | | SOCKET HEAD CAP SCREWS M6X30 | 4 |
| 23 | | ELASTIC WASHER 6 | 4 |
| 24 | | SOCKET HEAD CAP SCREWS M6X60 | 2 |
| 25 | | ELASTIC WASHER 6 | 2 |
| 26 | | MOTOR REAR COVER | 1 |
| 27 | | CARBON BRUSH | 2 |
| 28 | | CARBON BRUSH HOLDER PLATE | 1 |
| 29 | | PHILLIPS SCREW M4X12 | 4 |
| 30 | | CARBON BRUSH COVER | 1 |
| 31 | | WAVE SPRING 35 | 1 |
| 32 | | DEEP GROOVE BALL BEARING 6202 | 1 |
| 33 | | ROTOR | 1 |
| 34 | | DEEP GROOVE BALL BEARING 6202 | 1 |
| 35 | | STATOR | 1 |
| 36 | | FOOT | 2 |
| 37 | | SOCKET HEAD CAP SCREWS M10X20 | 4 |
| 38 | | MOTOR FRONT COVER | 1 |

# CIRCUIT DIAGRAM



# CIRCUIT DIAGRAM