avro GSE

BL30LA | BL30LI | *Belt Loader*

GSElectrified

USER MANUAL

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Avro GSE reserves the right to make changes without notice both to this manual and the products which it describes.

Avro GSE shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual.

Manual Coverage

This manual is intended exclusively for BL30E (BL30LA / BL30LI) with manufacture year of 2021 onwards (MY 2021+). It provides instructions, guidelines, and specifications specific to this equipment and should not be used for any other products.

Using this manual for equipment other than those listed may result in incorrect operation, improper maintenance, or potential safety hazards.

Reading This Manual

Read and understand this manual thoroughly before using the equipment to ensure safe and proper use. Failure to follow the instructions may result in damage or injury.

	WARNING Explains something that, if not obeyed, could cause death or injury to people.
	NOTICE Explains something that, if not obeyed, could cause damage to or a malfunction in the equipment.
	DO NOT Means “Do not”, “Do not do this” or “Do not let this happen”
	IMPORTANT NOTE Helpful information
	PART/S INVOLVED Contains information about the part/s.

It is not the intention of Avro GSE to teach drivers how to drive a vehicle, this manual is to provide an operator with the ability to identify and familiarize themselves with the vehicle so that they can perform their daily duties with confidence.

All people operating this vehicle require prior authorization and training from their company.

Pictures in this manual may be different to actual vehicle. They are used as a guide to identify specific components.

Safety Precautions

Cargo Use Only

The Belt Loader is designed for airport luggage and cargo handling only. Do not exceed the Belt Loader's handling capacity.

Other than the driver, DO NOT allow people to ride on the Belt Loader.

Do Not Use on Public Roads

The Belt Loader is designed for use in airports. It is NOT suitable, or legal, for use on public roads. Attempting to use the Belt Loader on a public road may result in a lethal accident.

DO NOT use the Belt Loader for purposes for which it was not designed or operate the Belt Loader in a reckless manner.

Do Not Alter Factory Settings

DO NOT attempt to alter the Belt Loader's factory settings. The factory settings optimize both the safety and performance of the Belt Loader.

Altering the factory settings invalidates the Warranty on the Belt Loader.

Crush Injury

It is strictly forbidden to stand or sit under the Belt Frame Assembly when it is in the raised position. Do not place hands, arms, legs, or feet under the Belt Frame Assembly when it is in the raised position. A hydraulic failure, or unintended movement of the Belt Frame Assembly, can cause serious or fatal injury.

Make sure that no person or object is near or under the Belt Frame when it is lowered. A crush injury from the Belt Frame will cause serious or fatal injury.

Before performing maintenance or servicing beneath the Belt Frame Assembly when it is in the raised position, lock the Belt Frame Assembly in the raised position with the Safety Prop and the Belt Frame Locking Pin. A hydraulic failure, or unintended movement of the Belt Frame Assembly, can cause serious or fatal injury.

Maximum Speed

The maximum speed of the Belt Loader is limited to 25 kph (15.5 mph). It is unsafe to exceed that speed.

Do not attempt to modify the Belt Loader to exceed that speed.

Size And Weight of Belt Loader

The Belt Loader is 8.1 m (26 ft 6.9 in.) long and weighs 4200 kg (9260 lbs). When lifting the Belt Loader, always use a crane and a four-leg lifting sling or chain with a Safe Working Load (SWL) of at least 7000 kg (7 Tons). Always attach the four - leg lifting sling or chain to the four lifting points on the Belt Loader.

The Belt Loader must always be towed or moved using a suitable vehicle.

Heavy Items

Always use correct manual handling techniques. For items positioned below mid-lower leg height, safe lifting capacity is 10 kg (5 kg if not close to your feet) for an able-bodied man and 7kg (3 kg if not close to your feet) for an able-bodied woman.

Petroleum, Oils, and Lubricants

Do not eat, drink or smoke when applying oil or lubricant. Do not allow the lubricant to come into contact with your eyes, mouth or nose. Wear Personal Protective Equipment (PPE), i.e. suitable gloves, eye shields, and overalls. If lubricant is ingested, or comes into contact with your eyes, seek medical assistance immediately.

Oil and lubricants are slipping hazard. Always clean up any spillages, or excess oil or lubricant.

Personal Protective Equipment

When operating, moving, lifting, servicing, repairing, or transporting the Belt Loader, always wear suitable Personal Protective Equipment (PPE) to prevent crushing of hands, feet, or other body parts. For example, wear protective footwear, safety glasses, hard hat, protective gloves, and high-visibility clothing.

When preparing the Belt Loader for transport by air, road, or rail, make sure it is securely packed. Safeguard the Belt Loader against movement or break-away during transport by applying the brake and securely strapping the Belt Loader in place.

Table of Contents

Introduction

The function of the BL30E Belt Loader vehicle is to transfer passenger baggage and other light cargo from baggage carts and cargo dollies to the baggage/cargo holds on aircraft.

It is powered by an 80V DC system battery, with an open-top drivers' compartment. The baggage/cargo transfer is done by a conveyor belt whose position can be hydraulically adjusted to match the height above the ground of the aircraft hold. The conveyor belt is lowered to a near horizontal position when moving the vehicle.

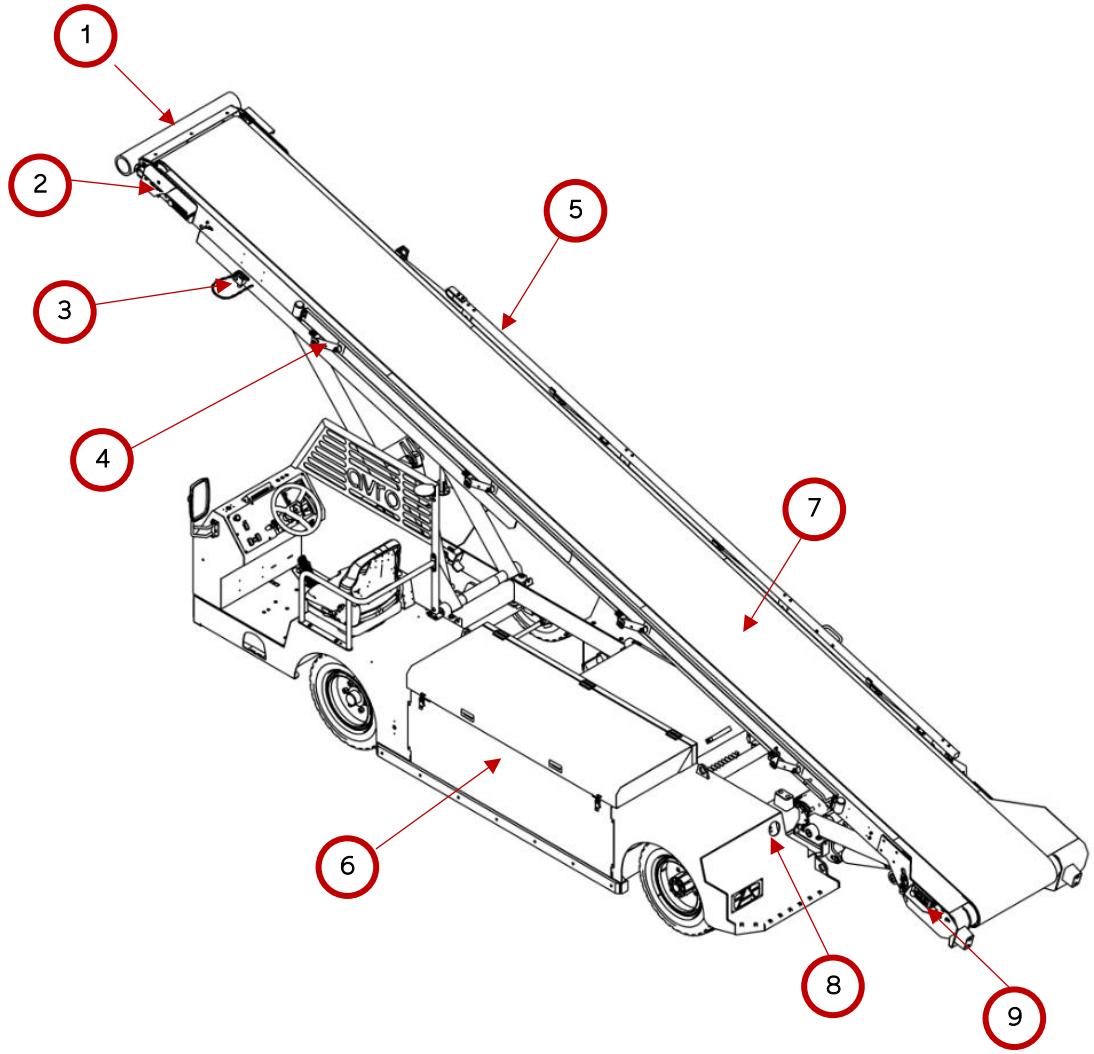
Specifications

Overall Length	8135mm (320.2 in.) With Belt Frame Assembly in Fully Lowered Position
Width	2140mm (84.3 in.) Mirrors Folded In
Maximum Height	2200mm (86.6 in.) With Belt Frame Assembly at 25deg. Angle to top of Cab
Minimum Height	1965mm (77.4 in.) To the top of warning beacon on driver's cab
Wheelbase	2990mm (117.7in.)
Minimum Ground Clearance	150mm (5.9 in.)
Front Overhang	1280mm (50.4in.)
Rear Overhang	800mm (31.5 in.)
Front Approach Angle	16 degrees Maximum
Rear Departure Angle	17 degrees Maximum
Maximum Travel Speed	25kph (15.5mph) Forward Speed
Maximum gradient (that can be climbed)	15%
Steering	Hydraulic power steering
Foot Brake	Vacuum assisted hydraulic brakes
Park Brake	Manual
Conveyor belt front height range	970 – 4570mm (38.1 – 179.9in) With Belt Frame Assembly at 25deg. Angle to top of Cab
Conveyor belt rear height range	560 – 1680mm (22 – 66.1in)
Maximum baggage loading height	4560mm (179.5in) On flat, level, ground.
Minimum baggage loading height	1100mm (43.3in) On flat, level, ground.
Maximum conveyor belt angle	29 degrees

Conveyor belt width	600mm (23.6in)
Conveyor belt speed	0.2 to 0.5m/s (0.66 to 1.64ft/s)
Maximum weight on conveyor belt	1000kg (2204lbs)
Maximum single item weight on conveyor belt	400kg (882lbs)
Operating temperature range	-30 to +50 deg C (-22 to +122 deg F) Ambient Temperature
Storage temperature range	-30 to +50 deg C (-22 to +122 deg F) Ambient Temperature
Humidity range	0 to 100% Relative Humidity
Front Tires	225/70R15
Rear Tires	225/70R15
Tire pressures (all tires)	5 ± 0.21 Bar(72.5 ± 3psi)

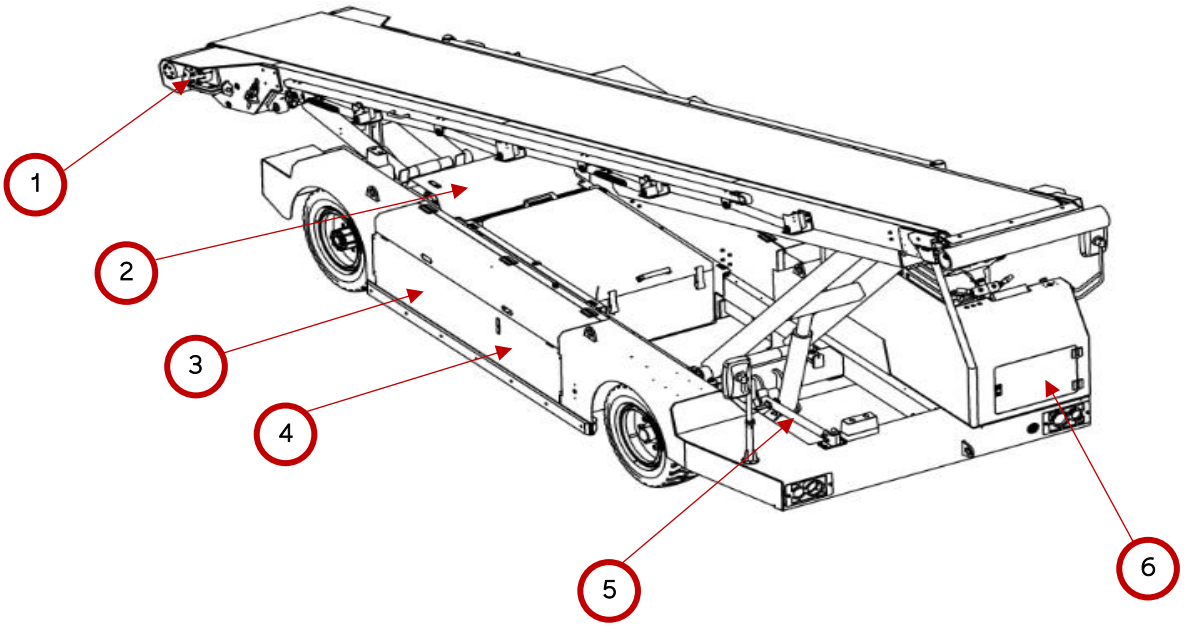
Parts Layout

Left Rear View



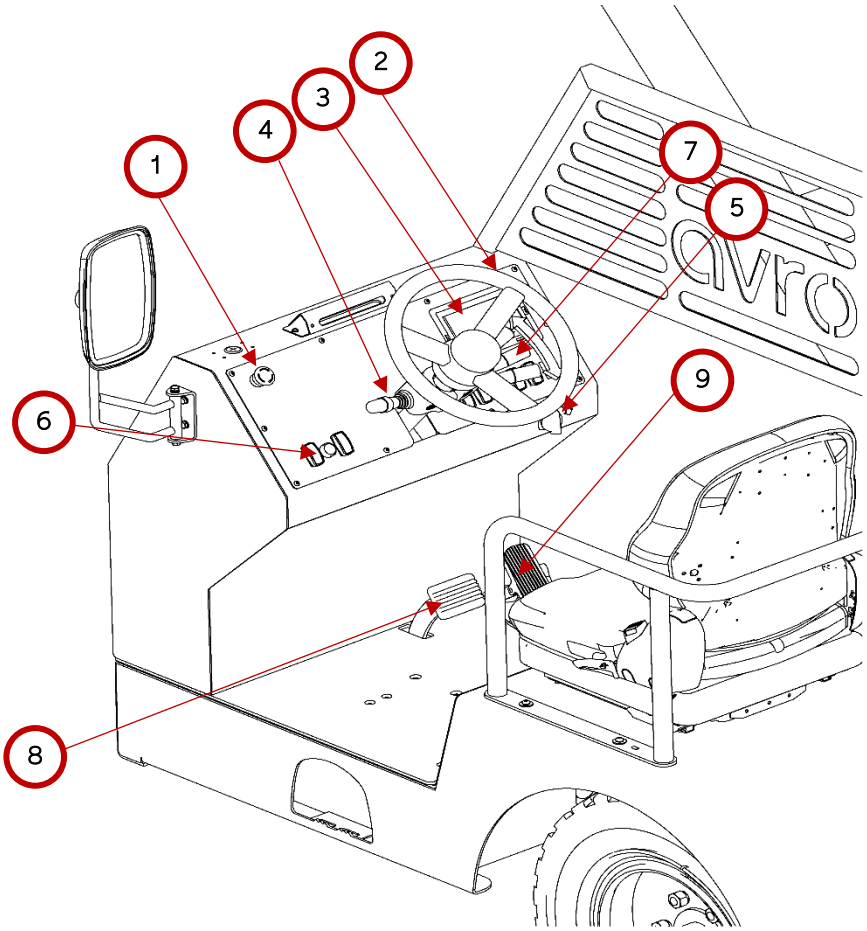
1. Anti-Collision Rubber
2. Front Control
3. Safety Pin
4. Left Luggage
5. Right Armrest
6. Battery
7. Conveyor Belt
8. Belt Speed Control
9. Rear Control

Right Rear View



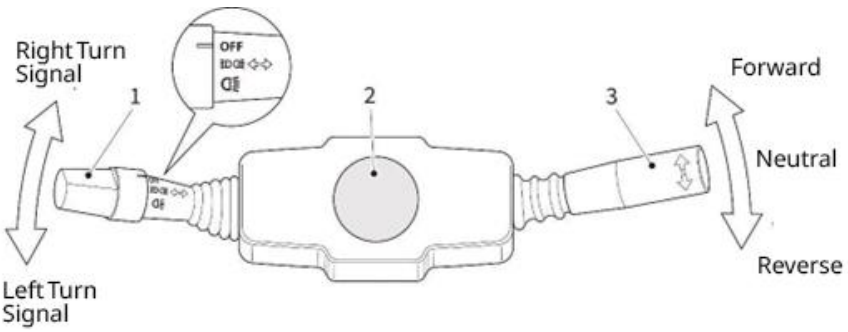
1. Hydraulic Pump
2. Drive Motor
3. Fuse Box, Control Box
4. Hydraulic Tank, Emergency Pump
5. Support Rod
6. Brake Oil Tank

Driver's Compartment Controls



1. Emergency Stop Switch
2. Alarm Warning
3. Dashboard
4. Combination Switch
5. Key Switch
6. Belt Control Button
7. Light Switch
8. Service Brake Pedal
9. Accelerator Pedal

Steering Column Combination Switch Controls



1. Turn Signal/Headlamp Control
2. Steering Column
3. Forward/Reverse Gear Switch

Turn Signal / Headlamp Control

The Turn Signal/Headlamp control has six settings: three for turn signals and three for lighting.

Turn Signals: Move the control up for a right turn, down for a left turn, and center to turn indicators off.

Lights: Rotate the end of the control to select:

- OFF: All lights off (Use when parked).
- Position: Front position lights and dash indicator lights on; brake lights activate when the brake pedal is pressed; turn signals work.
- Position: Same as the position, plus headlights are on.
- Position. The front position lights and the dash button indicator lights all illuminate.

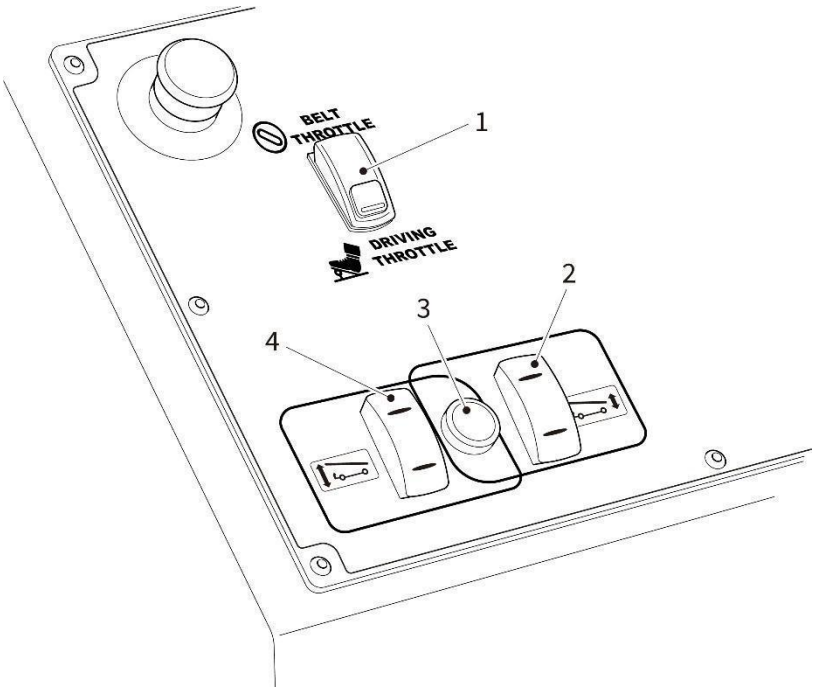
Forward / Reverse Gear Switch

The Forward/Reverse Gear Switch is a three-position switch:

- Center (Neutral): Gear shift must be in Neutral (N) to start the vehicle.
- Up (Forward): Press the Foot Brake, move the switch up, then press the Accelerator Pedal to drive forward.
- Down (Reverse): Press the Foot Brake, move the switch down, then press the Accelerator Pedal to drive in reverse.

In both forward and reverse, the transmission automatically selects the appropriate gear, and the Foot Brake must be pressed to change gears.

Driver's Compartment Belt Frame Controls



1. Drivers Throttle Select Switch
2. Rear Lift Cylinder Raise/Lower switch
3. Lift Cylinder Interlock switch
4. Front Lift Cylinder Raise/Lower switch

The Driver's Throttle Select switch is a two-position rocker switch:

- Top pressed: Activates Belt Throttle for operating and controlling the speed of the conveyor belt.
- Bottom pressed: Activates Driving Throttle for moving the vehicle.

Built-in interlocks prevent the vehicle from driving and operating the conveyor belt at the same time.

Dash Display Screen (Instrument Panel)

1. Ok Light
2. Seat Belt Light
3. Warning Light
4. Foot Brake
5. Parking Brake
6. Battery Status
7. SOC
8. Speed Level
9. Date
10. Return
11. Up
12. Down
13. Left
14. Right
15. Enter
16. Gear
17. Speed
18. Speed Unit
19. Working Hours
20. Time
21. NFC ID

The BL30E control system includes a series of settings that are pre-set at the factory. These factory settings optimize the performance and safety of the vehicle. DO NOT attempt to alter the factory settings.

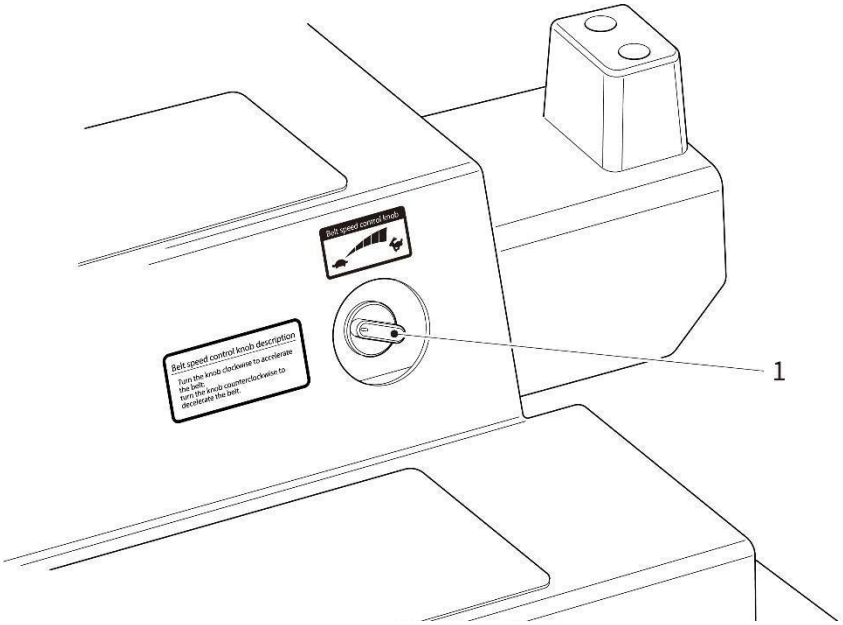
The menu allows access to a series of menus that are used to set-up the Belt Loader. If the menu button is pressed, or accidently tripped, further progress is blocked by a password. DO NOT attempt to proceed further. Theses factory settings must not be altered. Press the Menu Item Select button to exit the menus.

Parking Brake

The Parking Brake is engaged by pressing the button on the lever and pulling it up fully.

To disengage, press the button again and lower the lever completely.

Belt Speed Control Knob



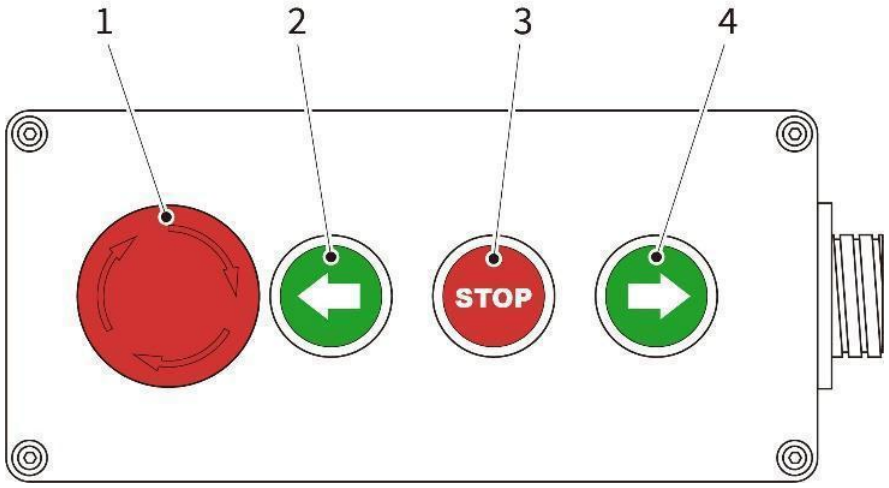
The speed of the conveyor belt may be adjusted using the Belt Speed Control Knob located on the steps at the rear of the BL30E Belt Loader.

- Turn the control knob clockwise to accelerate the belt.
- Turn the control knob counterclockwise to decelerate the belt.
- The control knob MUST be returned to minimum speed position after every loading/unloading operation.

Belt Control Box

Two Belt Control Boxes are located on the left side of the Belt Frame (one at the front and one at the rear).

These allow the operator to move the BL30E vehicle forward or backward in small increments to position it optimally for loading baggage onto the aircraft.



1. Emergency Stop Switch
2. Conveyor belt forward movement button
3. Conveyor belt STOP button
4. Conveyor belt reverse movement button

The Belt Control Box switches function as follows:

- Forward button (4): Moves the conveyor belt forward (toward the front of the Belt Frame).
- Reverse button (2): Moves the conveyor belt backward (toward the rear of the Belt Frame).
- STOP button (3): Halts the conveyor belt; must be pressed before changing belt direction.
- EMERGENCY STOP switch (1): Shuts off the entire vehicle.

The Belt Frame Assembly also has a luggage rail on the left side to prevent cargo from falling off.

Safety Interlocks

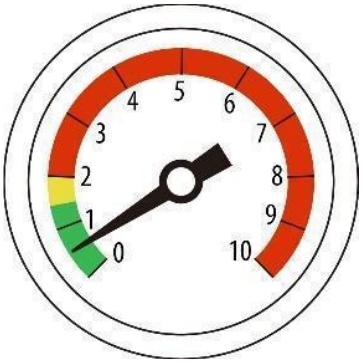
The BL30E is equipped with the safety interlocks described in the following Table.

	Interlock	Function
1.	Start-Neutral interlock	Only in Neutral, the system can start normally.
2.	Emergency Shutdown	EMERGENCY STOP buttons are located at each end of the Belt Frame Assembly and in the driver's compartment. Pressing any EMERGENCY STOP button will completely shut down the vehicle.
3.	Parking Brake – Conveyor Belt interlock	The conveyor belt can only operate when the Parking Brake is engaged.
4.	Conveyor belt operation – Belt Frame Assembly raise/lower interlock	The conveyor belt, and the Belt Frame Assembly raise/lower hydraulic cylinders. Both cannot be operated at the same time.
5.	Hand Throttle – Gear interlock	The rear hand Throttle is not reset, and the gear shift does not work.
6.	Parking Brake – Gear interlock	The work transfer switch is in the driving position and the Parking Brake is not released, the gear shift does not work, and the alarm sounds.
7.	Reverse Gear – Alarm interlock	An audible alarm sounds when the vehicle is in reverse gear.

In addition, the Belt Frame Assembly can only be raised or lowered from the cab. All exposed controls are rainproof.

Oil Return Filter Gauge

The Oil Return Filter, which is located on top of the Hydraulic Oil Tank, includes an oil pressure gauge.



The Oil Return Filter pressure gauge measures the pressure difference across the filter element to indicate if it is blocked.
It must be checked at the start of every shift before using the vehicle and is also part of the scheduled maintenance for the BL30E.

The Oil Return Filter pressure gauge readings indicate filter condition:

- Green segment: Filter is serviceable.
- Yellow segment: Filter is restricted—do not operate the vehicle until the filter is cleaned or replaced.
- Red segment: Filter is blocked—do not operate the vehicle until the filter is cleaned or replaced.

Start Up

Pre-Operational Check

- Ensure all EMERGENCY STOP switches are open.
- Set the Forward/Reverse Gear Switch to Neutral (center position).
- Rotate the Start Switch clockwise to turn on the vehicle; the system will self-test for 3-4 seconds.
- If a fault is detected, do not use the Belt Loader—report the fault.
- If the self-test passes, the Instrument Panel will display normally.
- Step on the Brake Pedal, release the Parking Brake (the Parking Brake indicator light will turn off).
- Check surroundings for safety.

To move forward, push the Forward/Reverse Gear Switch upward. If the Belt Loader fails to start after several attempts, report the problem and have a trained mechanic inspect the fuel and ignition systems and follow the troubleshooting procedures in the manual.

Allow the engine to idle for a few seconds before proceeding to the next step.

- Check the Oil Return Filter pressure gauge (on top of the Hydraulic Oil Tank) – the needle must be in the green area.
    - If not, do not use the vehicle, switch it off, and report the issue.
    - The filter must be removed, cleaned, and refitted before use.
- Rotate the Turn Signal/Headlamp control to switch on the needed lights.
- Slowly release the Brake Pedal; with the engine idling, forward gear selected, and brakes released, the vehicle should move slowly (max 2.5 mph / 4 km/h).
- Press the Accelerator Pedal to drive at normal speed.
- If the vehicle doesn't move:
    - Check if the Parking Brake is released.
    - If yes, switch the Start Switch Off, set the Forward/Reverse Gear Switch to Neutral, and re-engage the Parking Brake.
    - Check the Brake Pedal for debris or jamming.
    - Repeat the startup procedure; if still unsuccessful, report the problem.
- Test both the Foot Brake and Parking Brake for reliable performance; if not satisfactory, do not use the Belt Loader and report the problem.
- Ensure the Belt Frame Assembly is fully lowered (use Belt Frame Controls if needed).
- Park the vehicle on a flat surface.
- Check the hydraulic oil level:
    - View the Fluid Level Gauge through the observation port on the right side.
    - Oil should be at the highest red mark between the degree line and the lowest red tick mark.

    - Top up if necessary using clean, new hydraulic oil through the Oil Return Filter Assembly.
- Do not select Neutral gear or turn off the engine when driving downhill.

Parking

When parking the Belt Loader:

- Make sure that the Belt Loader is stable on level ground.
- Set the Forward/Reverse Gear Switch to the Neutral position.
- Engage the Parking Brake.
- Rotate the end of the Turn Signal/Headlamp control to switch OFF the vehicle lights.
- Rotate the Start Switch counterclockwise to the OFF position.

Operation

Baggage Loading

Perform baggage loading operations as follows:

- Drive to a suitable position near the aircraft.
- Stop the vehicle by stepping on the Brake Pedal, engage the Parking Brake, and set the Forward/Reverse Gear Switch to Neutral.
- If visibility is low (night or fog), switch ON the front working light.
- Use the Belt Frame controls (in the driver's compartment) to adjust the belt height so the conveyor belt aligns with the aircraft door.

DO NOT step on the Accelerator Pedal when approaching the aircraft.

To approach the aircraft slowly:

- Set the Gear Switch to Forward, let the engine idle, step on the Brake Pedal, release the Parking Brake, and slowly lift your foot off the brake.
- The loader will move slowly forward (max 2.5 mph / 4 km/h).
- Once in final position: Step on the Brake Pedal, engage the Parking Brake, and return the Gear Switch to Neutral.

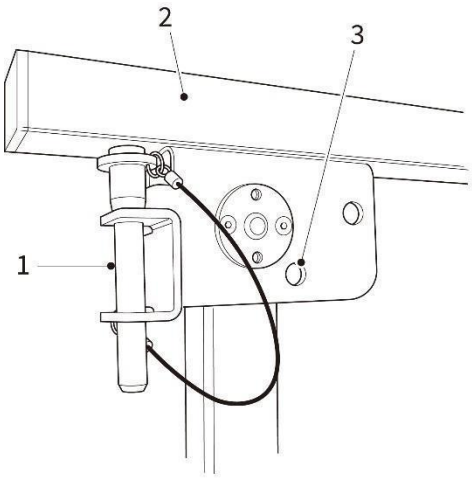
Raising and lowering the Belt Frame Assembly, and operation of the conveyor belt is only possible when the Parking Brake is engaged.

Never stand, sit, or place body parts (hands, arms, legs, feet) under the Belt Frame Assembly when it is raised.

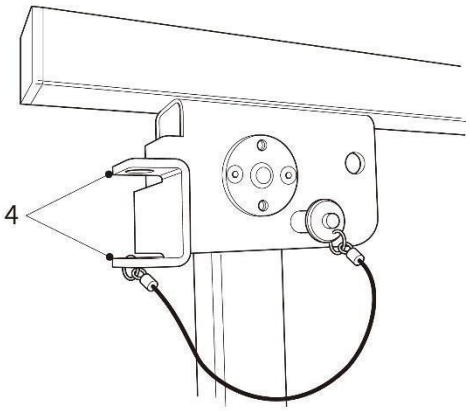
- After loading/unloading, return the handrail securing pin to its stowage location.
- Lower the Handrail to its stowed position before moving the vehicle.

Always use the handrail when stepping onto the Belt Frame Assembly or during baggage loading/unloading. Raise the handrail to its operating position and secure it using the handrail securing pin.

Handrail Securing Pin



Stowed position



Engaged position

1. Handrail Securing Pin
2. Handrail
3. Engaged Position Hole
4. Stowage Location

- The handrail securing pin is attached by a lanyard; if lost or damaged, replace it with the correct pin only.

⚠ Do not use substitutes—an incorrect pin can cause the handrail to collapse during use.

- Raise the luggage rail (left of the conveyor belt) to prevent luggage or cargo from falling off.

Conveyor Belt

Safety Precautions

- NEVER step onto the conveyor belt while it is moving.
- NEVER start the conveyor belt if someone is on it.
- The conveyor belt has pinch points—keep hands and clothing away.
- Wear protective gloves to prevent injury.
- Secure or remove loose items (e.g., clothing, straps, jewelry, long hair, lanyards) when near a moving conveyor belt.

Operation and Departure Procedures

- Use either the Forward or Reverse conveyor belt button on the Belt Control Boxes to start the belt movement.
- To stop the conveyor belt at any time, press the STOP button.
- Adjust the belt speed using the Belt Speed Control Knob (located above the left rear wheel steps):
    - Turn clockwise to increase speed.
    - Turn counterclockwise to decrease speed.
- If there is an emergency during loading/unloading, press any EMERGENCY STOP button (on the Belt Control Boxes or in the Driver's compartment).
- When loading/unloading is complete:
    - Press the STOP button to halt the belt.
    - Lower the luggage flap (left side of the belt) to its stowed position.
    - Remove the handrail securing pin from the engaged position, return it to its stowage location, and lower the Handrail.
    - With the Gear Switch set to Neutral and the engine idling, press the Brake Pedal.
    - Ensure the area around the vehicle is clear.
    - Set the Gear Switch to Reverse, release the Parking Brake, and gently release the Brake Pedal.
    - Press the Accelerator Pedal slowly to reverse away from the aircraft.
    - Once safely clear, proceed to the next destination as needed.

Working Under the Belt Frame Assembly

When maintenance or servicing must be performed beneath a raised Belt Frame Assembly, it is ESSENTIAL to lock the Belt Frame Assembly in the raised position using: The Safety Prop and The Belt Frame Locking Pin

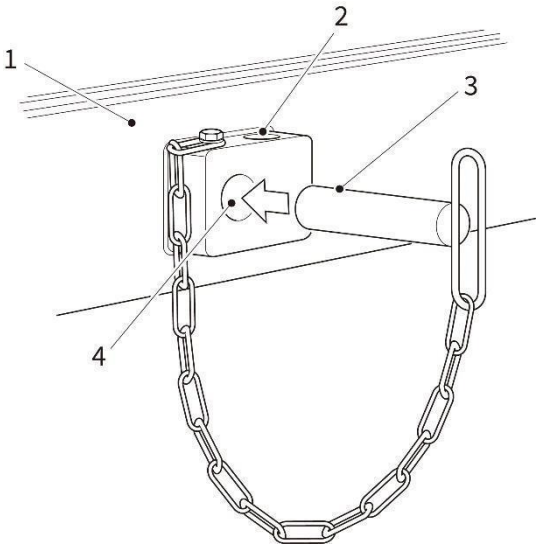
These two safety measures must both be engaged to prevent the Belt Frame Assembly from unexpectedly dropping due to hydraulic failure or unintended movement.

Before Starting Maintenance:

- Raise the Belt Frame Assembly to the required height.
- Engage the Safety Prop to mechanically hold the frame.
- Insert the Belt Frame Locking Pin securely in place.

NEVER perform maintenance under the raised frame without both safety devices properly installed.

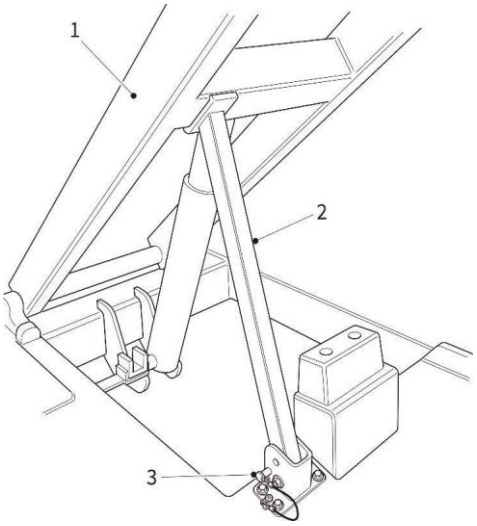
Using Belt Frame Locking Pin



1. Belt Frame Assembly
2. Stowage Position
3. Belt Frame Locking Pin
4. Safety Locking Position

- Raise the Front Lifting Cylinder until the main rollers pass the safety locking position (4)
- Remove the Belt Frame Locking Pin (3) from its stowage position (2).
- Insert the Belt Frame Locking Pin into its safety locking position (4), but do not push it fully home.
- Lower the Front Lifting Cylinder until the main roller engages with the Belt Frame Locking Pin.
- Push the Belt Frame Locking Pin fully home. This will also secure the Belt Frame Assembly (1) in the raised position.

Using Safety Prop



1. Front Lifting Frame
2. Safety Prop
3. Locking Pin

- Remove the Safety Prop locking pin (3) from its stowage position.
- Do not go underneath the raised Belt Frame Assembly, raise the Safety Prop (1) so that it engages with the Front Lifting Frame

When the maintenance or servicing activity is finished:

- Remove the Locking Pin (3) from its lock position and lower the Safety Prop (2) to its stowage position. It may be necessary to slightly raise the Front Lifting Cylinder to release the Safety prop from the Front Lifting Frame.
- Fit the Locking Pin into its stowage position.
- Raise the Front Lifting Cylinder, return the Belt Frame Locking Pin (3) to its stowage position (2), and then completely lower the Belt Frame Assembly.

FUNCTIONAL DESCRIPTION OF MAIN ASSEMBLIES

The BL30E Belt Loader is comprised of the following main assemblies:

Drive Axle

The Drive Axle is the rear axle, and is comprised of the differential, drive unit, wheel hubs, axle tube, rear brakes, and rear wheels.

Brake System

- Foot Brake (Service Brake): Four-wheel hydraulic system with vacuum valve. Activated by pressing the brake pedal.
- Parking Brake (Hand Brake): Engaged by pulling the handbrake lever upward. Applies force to rear axle brakes via cable.

Front Axle and Steering System

The BL30E uses a power steering system connected to the hydraulic system. Turning the steering wheel activates a hydraulic steering unit below the dash, which directs oil to the steering cylinder on the front axle. This turns the front axle and steers the vehicle.

Chassis and Vehicle Body

The BL30E has a welded steel body and chassis with a low center of gravity for stability. The driver's compartment, also made of welded steel, is bolted to the chassis and fits one driver with an adjustable seat and wide visibility.

There are two towing lugs: one at the front and one on the bottom rear step. These are only for recovering a broken-down BL30E, not for towing other vehicles or equipment.

Belt Frame Assembly

The Belt Frame Assembly transports luggage and cargo to the aircraft cargo door using a rubber conveyor belt supported by rollers and plates. It's built around a welded U-channel steel frame for strength.

A collapsible Handrail Assembly on the right side must be raised and locked before anyone steps on the conveyor. It also prevents luggage from falling. Left-side front and rear flaps stop items from falling off the other side.

A hydraulic motor at the rear drives the belt; power comes from the vehicle's hydraulic system. Proximity sensors and a front bumper help avoid aircraft contact.

Control and EMERGENCY STOP switches are at both ends of the frame. Belt alignment and tension are maintained by Guide Wheels, a Front Roller Adjustment Assembly, and a Tightening Support Assembly.

Front And Rear Lifting Frames and Lift Cylinders

The front and rear Lifting Frames are welded steel structures that:

- Raise/lower the front and rear of the Belt Frame Assembly.
- Support the weight of the Belt Frame Assembly.

Each frame is moved by a single-acting hydraulic Lift Cylinder, with power applied to the full-bore side. The cylinder base is fixed to the chassis; the rod is attached to the Lifting Frame. Piston movement raises or lowers the frame accordingly.

The system can be lowered without power. A hand pump on the hydraulic tank allows manual lifting during maintenance or hydraulic failure.

Hydraulic System

A hydraulic circuit diagram for the BL30E is provided in the Hydraulic Schematic section of this manual. The hydraulic system comprises:

- A Hydraulic Oil Tank.
- A Gear Pump.
- A suction filter inside the Oil Tank, on the output port to the Gear Pump.
- A cut-off valve, mounted on the outside of the Oil Tank, in the hydraulic line to the Gear Pump.
- An Oil Return Filter Assembly, located on top of the Oil Tank.
- An emergency Hand Pump, located on the side of the Oil Tank.
- A priority valve.
- A Steering Unit.
- A Steering Cylinder (described previously, above).
- An electronically controlled Integrated Hydraulic Valve Assembly.
- The Front Lift Cylinder, the Rear Lift Cylinder (both described previously, above) and the associated solenoid valves.
- The hydraulic motor.

Electrical System

The vehicle electrical system is a 24V DC system. Electrical schematics for the BL30E are provided in the Electrical Schematics section of this manual.

STORAGE

If the Belt Loader is not going to be used for a long time:

- Perform monthly, three-month, six-month, and 12-month lubrication.
- If necessary, perform the cold weather maintenance (“winterize”)
- Remove and clean the battery. Fully charge the battery and store it separately from the vehicle. During storage check the battery once a month: - if the battery voltage has dropped, charge the battery fully.

Long term storage of a battery with a reduced charge can result in damage to the battery.

- Protect exposed parts against rust, for example, by applying grease.
- Store the Belt Loader under cover.
- Check the engine every month.

PREPARATION FOR FIRST USE

Before first use:

- Remove all packaging.
- Inspect for damage. If damaged, do not operate—contact AvroGSE.
- Inventory all parts and fasteners. Report any missing items.
- Attach any loose components.
- Check and top up all fluids.
- Perform Daily and Weekly Maintenance checks.
- Move unit to its work location.
- Complete necessary documentation.

Replace transmission oil after the first 100 hours of operation. This is in addition to the Transmission oil changes specified in the Scheduled Maintenance and Lubrication Diagram.

MANUAL EMERGENCY OPERATION INSTRUCTIONS

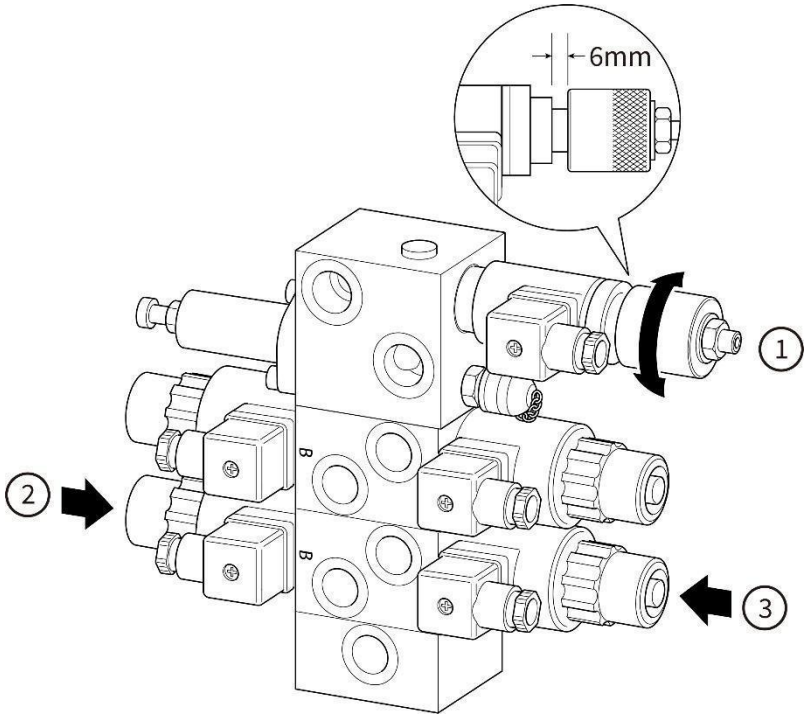
If the motor or hydraulics fail:

- Remove the Belt Loader from the ramp immediately to prevent flight delays.
- Follow emergency procedures to manually raise and reset the Belt Frame.

Manually Raise the Belt Frame

If the motor or hydraulic system fails, the Belt Frame can be raised using a manually operated Emergency Hydraulic Hand Pump.

Raising the Front End:



1. Pressure Increase Valve 2. Solenoid Valve Manual Button
3. Solenoid Valve Manual Button

- Release the Emergency Pump lever from its clip on the hydraulic tank. Rotate it counterclockwise to 90° from chassis.
- Tighten the pressure increase valve (1) by hand (turn clockwise fully).
- Press and hold the solenoid valve manual button (2).
- Pump the lever steadily up and down to raise the front Belt Frame.
- To stop, release the pump lever and solenoid button.

Raising the Rear End:

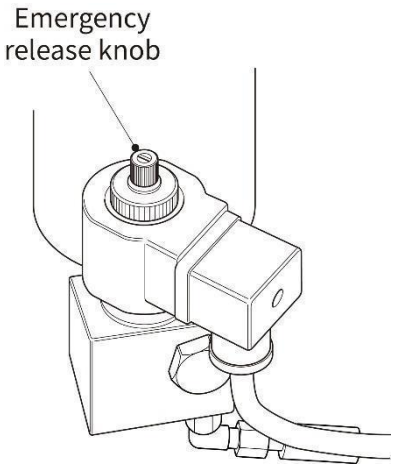
- Tighten the pressure increase valve (1) fully (clockwise by hand).
- Press and hold the solenoid valve manual button (3).
- Pump the Emergency Hand Pump lever steadily up and down to raise the rear Belt Frame.
- To stop, release the lever and solenoid button.

Completion:

- Once both front and rear ends of the Belt Frame have been raised to the required height, rotate the pressure increase valve (1) counterclockwise by hand until it stops. This returns the valve to its normal position. The gap between the valve cap and its base should be around 6 mm.
- Return the Emergency Hydraulic Hand Pump lever to its original position on top of the hydraulic oil tank and secure it with the retaining clip.

How To Manually Lower the Belt Frame

Make sure that no person or object is near or under the Belt Frame when it is lowered.



Lowering the Front End:

- Ensure no person or object is near or under the Belt Frame.
- Locate the solenoid valve at the bottom of the front hydraulic lift cylinder.
- Rotate the emergency knob counterclockwise by hand until fully open. The cylinder will begin to retract.
- Once the Belt Frame is fully lowered, rotate the knob clockwise until fully closed.

Towing Instructions

When towing the Belt Loader:

- Set transmission to Neutral and release the parking brake.
- Max towing speed: 6 mph (10 km/h); Max distance: 12 miles (20 km).
- For longer distances or higher speeds, raise rear wheels to avoid damage.
- A driver must be in the cab to steer during towing, unless rear wheels are lifted.

SCHEDULED MAINTENANCE

Scheduled maintenance is limited to the tasks listed in the Scheduled Maintenance Table. The intervals assume heavy use of the BL30E Belt Loader and may vary by ±10% without causing issues.

Each Belt Loader should be maintained based on its specific usage and operating environment.

An "X" in the Scheduled Maintenance Table indicates the required activity for that interval. When installing fasteners, do not use thread-locking adhesive, and always apply the correct torque setting to the wheel nuts.

⚠ Compressed air can cause airborne particles that may enter the eyes. Always wear appropriate PPE, including eye protection and gloves. Do not exceed 0.7 bar (10 psi) when using compressed air for cleaning.

⚠ Hot water in the radiator can cause scalding. Always allow the engine to cool before removing the radiator cap. Wear appropriate PPE, including eye protection and gloves.

	TASK	DAILY	WEEKLY	MONTHLY	3 MONTHS (250 HRS)	6 MONTHS (500 HRS)	12 MONTHS (1000 HRS)
1	Cleaning						
a.	Clean the vehicle using water and degreaser, or a domestic detergent and water solution. Do not use industrial cleaning agents, or caustic agents, or aircraft de-icing and cleaning agents. Use of a spray washer is permitted.	X	X	X	X	X	X
b.	Remove dirt and dust from the top surface of the battery and clean each battery terminal.				X	X	X
c.	Using a clean, dry, low pressure compressed air jet, clean the radiator surfaces. If the surfaces of the radiator are clogged with dirt or debris, clean the radiator surfaces with a brush soaked in a domestic detergent and water solution.				X	X	X
d.	Wipe oil, dirt and dust from wires and electrical harnesses in the engine compartment.					X	X
e.	If significant corrosion is present, grind off the corrosion, coat the affected area with corrosion protection fluid (if available), apply primer paint, and retouch paintwork.						X

	TASK	DAILY	WEEKLY	MONTHLY	3 MONTHS (250 HRS)	6 MONTHS (500 HRS)	12 MONTHS (1000 HRS)
2	Visual Inspection						
a.	Walk around the Belt Loader and examine the Belt Loader for the following. During the inspection tighten any fasteners that are loose.	X	X	X	X	X	X
b.	As you walk around the Belt Loader, check that all Warning labels are present and readable. Replace lost or unreadable Warning labels.		X	X	X	X	X
c.	Check body and driver's compartment are undamaged. Check that the Belt Frame Assembly is undamaged. Damage that may impair or affect the safe operation of the Belt Loader must be repaired before operating the Belt Loader.	X	X	X	X	X	X
d.	Check wing mirrors are present and undamaged. Replace missing or damaged mirrors.	X	X	X	X	X	X
e.	Check that the headlamps, front indicator lights, side indicator lights, rear indicator lights, and rear lights are present and undamaged. Check that the Front Work Light (located on the Belt Frame) is present and undamaged. Switch ON the ignition and check that all the lights work. Repair or replace any that are not serviceable. DO NOT use a Belt Loader with an unserviceable light.	X	X	X	X	X	X
f.	Check that the Beacon is present, secure, and undamaged. Check that the Beacon functions correctly. Replace or repair if unserviceable. DO NOT use a Belt Loader with an unserviceable Beacon.	X	X	X	X	X	X
g.	Check that the front and rear lowing lugs are undamaged. Repair if required.	X	X	X	X	X	X
h.	Check that the four lifting lugs on the vehicle body are undamaged. Repair if required.	X	X	X	X	X	X
	Check that the labels that identify each of the lifting lugs are present and undamaged.			X	X	X	X
i.	Check tires for leaks and damage. Check surface condition of tires. Check tires meet legal requirements for minimum tread depth. Replace if damaged or worn-out.	X	X	X	X	X	X

	TASK	DAILY	WEEKLY	MONTHLY	3 MONTHS (250 HRS)	6 MONTHS (500 HRS)	12 MONTHS (1000 HRS)
j.	Check tightness of wheel nuts. Front wheels :274 to 323 Nm (202 to 239 ft/lbs). Rear wheels: 274 to 323 Nm (202 to 239 ft/lbs). Re-tighten if required.		X	X			X
k.	Check pressure of front tires is 72.5 ± 3 psi (5.0 ± 0.21 Bar (gauge)) (0.5 ± 0.021 MPa). Adjust tire pressure if required.	X	X	X	X	X	X
l.	Check pressure of rear tires is 72.5 ± 3 psi (5.0 ± 0.21 Bar (gauge)) (0.5 ± 0.021 MPa). Adjust tire pressure if required.	X	X	X	X	X	X
m.	Check that a label specifying the tire pressure is in position above each wheel.	X	X	X	X	X	X
n.	Check condition of conveyor belt. A damaged conveyor belt will impair or affect the safe operation of the Belt Loader and must be repaired before operating the Belt Loader.	X	X	X	X	X	X
o.	Check rubber bumper on front of Belt Frame Assembly is present, secure, and serviceable. Replace missing or damaged rubber bumper before using the Belt Loader.	X	X	X	X	X	X
p.	Check both proximity sensors on front of the Belt Frame Assembly are present, secure, and undamaged. Check wiring harness to proximity sensor is undamaged. Replace missing or damaged components before using the Belt Loader.	X	X	X	X	X	X
q.	Check Belt Frame Locking Pin is present and secured by a chain to the Belt Frame Assembly. Do not use the Belt Loader or perform maintenance or servicing beneath the Belt Frame Assembly, if the pin is missing.	X	X	X	X	X	X
r.	Check for overheating of the rear axle. Investigate and repair any problems found.	X	X	X	X	X	X
s.	Check coolant level. Add coolant if required.	X	X	X	X	X	
t.	Replace coolant.						X
u.	Check engine oil level. Add oil as required. Refer to the Fuel, Lubricants and Consumables	X	X	X	X	X	X

	TASK	DAILY	WEEKLY	MONTHLY	3 MONTHS (250 HRS)	6 MONTHS (500 HRS)	12 MONTHS (1000 HRS)
	section of this manual for details of the engine oil.						
v.	Check the fuel level. Refuel Belt Loader if necessary.	X	X	X	X	X	X
3	Seat Belt Checks						
	The driver must check the condition and function of the seat belt each day, BEFORE using the BL30D. Only regular inspections can detect seat belt failures before a critical incident.						
a.	Pull the seat belt fully out and inspect its surface fibers for wear or fraying. If wear or fraying is found, report the problem, and DO NOT use the Belt Loader until the seat belt has been replaced.	X	X	X	X	X	X
b.	Check that the seat belt buckle functions correctly. Check that the retractor properly tightens the seat belt. If not, report the problem, and DO NOT use the Belt Loader until the seat belt has been replaced.	X	X	X	X	X	X
c.	Check the seat belt cover for damage. If damaged, report the problem, and DO NOT use the Belt Loader until the seat belt has been replaced.	X	X	X	X	X	X
d.	With the vehicle parked on flat ground, pull the seat belt out quickly. Make sure that the seat belt automatic locking device locks the seat belt. If the locking device does not lock the seat belt, report the problem, and DO NOT use the Belt Loader until the seat belt has been replaced.	X	X	X	X	X	X
4	Operation						
	Check that the driver's compartment controls and indicators are undamaged. If any are damaged, report the problem and DO NOT use the Belt Loader until it has been repaired.	X	X	X	X	X	X
a.	Start the engine. Check the operation of the steering, and both braking systems. If not functioning correctly, report the problem and	X	X	X	X	X	X

	TASK	DAILY	WEEKLY	MONTHLY	3 MONTHS (250 HRS)	6 MONTHS (500 HRS)	12 MONTHS (1000 HRS)
	DO NOT use the Belt Loader until it has been repaired.						
b.	Check the operation of the electrical system. Check that all readings on the Dash Display Screen are normal. If there is a problem, report the problem and DO NOT use the Belt Loader until it has been repaired.	X	X	X	X	X	X
c.	Listen to the sound of the engine when it is idling, at medium speed and at high speed. If you hear anything unusual in the sound of the engine, report the problem.		X	X	X	X	X
5	Mechanical Checks						
a.	Check radiator and water hoses for leaks. Check radiator cap is present and secure. Replace leaking components.		X	X	X	X	X
b.	Check water hoses Replace water hoses if they show any sign of abrasion, delamination, or damage. Max life of hoses is five years.						X
c.	Clean Air Filter Cartridge. Examine Air Filter Cartridge and replace if damaged. NOTE this action may need to be done more frequently, depending upon the operating conditions.		X	X	X	X	X
d.	Replace Air Filter Cartridge. NOTE this action may need to be done more frequently, depending upon the operating conditions.					X	X
e.	Check fuel lines for leaks. Replace leaking components.		X	X	X	X	X
f.	Carefully examine fuel line to engine. Replace fuel line if shows any sign of abrasion, delamination, or damage.					X	X
g.	Check condition and tightness of fan belt. If necessary, replace fan belt, and/or check and replace tensioner.			X	X	X	X
h.	For engines with a standard alternator belt, check tightness of alternator belt. If necessary, adjust tension of alternator belt.				X		

	TASK	DAILY	WEEKLY	MONTHLY	3 MONTHS (250 HRS)	6 MONTHS (500 HRS)	12 MONTHS (1000 HRS)
k.	Check brake fluid level. Top-up brake fluid as required. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the brake fluid.		X	X	X	X	X
i.	Replace brake fluid. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the brake fluid.						X
j.	Check service brake system for leaks and brake pipes in poor condition.				X	X	X
k.	Check condition and adjust clearance of brake shoes.						X
l.	Check, and if required, adjust the free stroke of the brake pedal and parking brake.					X	X
m.	Check parking brake cable. Replace if damaged or worn. Adjust if loose.			X	X	X	X
n.	Check power steering system for leaks.						X
o.	Check steering wheel and steering column for damage or other problems. Repair if required. Check play clearance of steering wheel and adjust if required. If necessary, tighten the steering system.						X
p.	Check Power Steering System steering cylinder. Replace if damaged or leaking hydraulic fluid.			X	X	X	X
q.	Check engine, Transmission, and Drive Axle for oil leaks. Repair any leaks found.		X	X	X	X	X
r.	Check Transmission fluid (oil) level. Top-up fluid as required. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the Transmission oil.			X	X	X	X
s.	Replace Transmission oil filter.					X	X
t.	Replace Transmission oil. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the Transmission oil.						X
u.	Replace engine oil. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the engine oil.				X	X	X

	TASK	DAILY	WEEKLY	MONTHLY	3 MONTHS (250 HRS)	6 MONTHS (500 HRS)	12 MONTHS (1000 HRS)
v.	Check drive shaft bolts are present and secure. Check drive shaft is not loose. Replace bolts, or tighten bolts as required.			X	X	X	X
w.	Check drive shaft for damage or wear. Replace if required.			X	X	X	X
x.	Replace engine oil filter cartridge.				X	X	X
y.	Replace Drive Axle Differential Gear oil. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the oil.						X
z.	Replace engine Fuel Filter/Water Separator cartridge.					X	X
aa.	Drain dirt and debris from fuel tank.						X
ab.	Replace in-tank fuel filter.						X
6	Hydraulic Checks						
a.	Check Hydraulic System oil level. Top-up oil as required. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the hydraulic oil.	X	X	X	X	X	X
b.	With the engine running, read gauge on Oil Return Filter: If the gauge needle reading is green, the filter element inside the Oil Return Filter is serviceable. If yellow or red, DO NOT operate the vehicle until the filter element has been cleaned or replaced.	X	X	X	X	X	X
c.	Check hydraulic oil tank associated hydraulic system hoses for leaks. Repair any leaks found – leaking hydraulic hoses must be replaced.	X	X	X	X	X	X
d.	Check Integrated Hydraulic Valve Assembly and associated hydraulic system hoses for leaks. Repair any leaks found – leaking hydraulic hoses must be replaced.	X	X	X	X	X	X
e.	Check hydraulic oil pump and associated hydraulic system hoses for leaks. Repair any leaks found – leaking hydraulic hoses must be replaced.	X	X	X	X	X	X
f.	Check Oil Return Filter element as described in the Fuel, Lubricants and Consumables section of this manual.					X	X

	TASK	DAILY	WEEKLY	MONTHLY	3 MONTHS (250 HRS)	6 MONTHS (500 HRS)	12 MONTHS (1000 HRS)
g.	Examine hydraulic lift cylinders, attached solenoid valves, and associated hydraulic hoses for oil leaks and damage. Report any faults and do not use the Belt Loader until they are repaired.	X	X	X	X	X	X
h.	Examine hydraulic motor (on Belt Frame Assembly) and associated hydraulic hoses for oil leaks and damage. Report any faults and do not use the Belt Loader until they are repaired.	X	X	X	X	X	X
i.	Check that the raise and lower functions for both the front and rear of the Belt Frame Assembly work correctly.	X	X	X	X	X	X
j.	Check conveyor belt operates correctly. If not, Report fault and do not use Belt Loader until it is repaired.	X	X	X	X	X	X
k.	Replace hydraulic oil. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the oil, and the procedure for replacing the hydraulic oil.						X
7	**Electrical Checks**						
a.	Examine wires and electrical harnesses for damage or abrasion to the insulation, and loose connections.					X	X
b.	Check that alternator and starter are secure and in a satisfactory working condition. Associated electrical wiring must be secure and undamaged. Replace if necessary.					X	X
8	**Batteries**						
a.	Charge the batteries after discharge.	X					
b.	Check connector status, record voltage level and battery temperature.		X				
c.	Compare the voltage and temperature levels from the previous weeks. If significant difference is observed, contact Avro GSE.			X			
9	**Lubrication**						

	TASK	DAILY	WEEKLY	MONTHLY	3 MONTHS (250 HRS)	6 MONTHS (500 HRS)	12 MONTHS (1000 HRS)
a.	Lubricate Belt Loader in accordance with the Lubrication Chart (if not already done in this maintenance sequence).		X	X	X	X	X
10	Maintenance Records						
a.	Complete all required maintenance records.	X	X	X	X	X	X

Hydraulic Hoses

High-pressure hydraulic hoses on the BL30E must be replaced every six years. If a hydraulic component is replaced, all associated high-pressure hoses should be replaced at the same time to ensure safe and reliable operation.

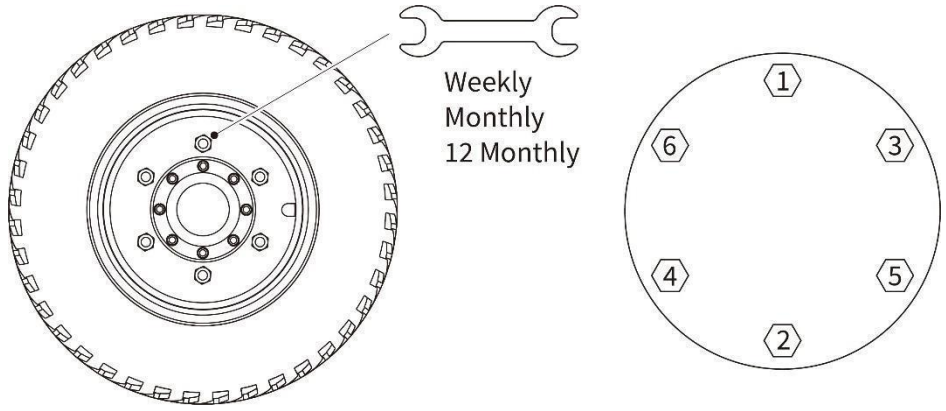
Cold/Hot Weather Maintenance

When the seasons change, perform the following cold weather/hot weather maintenance:

- Perform “Monthly Maintenance”.
- Record that this maintenance has been completed.

Wheel Nut Tightening

When replacing a tire or checking the tightness of the Wheel Nuts during Scheduled Maintenance, tighten the Wheel Nuts in the order shown in the illustration below.



LUBRICANTS AND CONSUMABLES

Lubricant	Specification	Use
Hydraulic oil	L-HM32 hydraulic oil (-20 deg C/ -4 deg F and above) L-HV22 hydraulic oil (-40 deg C/ -40 deg F and above)	Vehicle hydraulic system Power Steering System
Gear oil	GL-5 80W/90 or GL-5 Heavy Duty	Drive Axle Differential
Synthetic Brake Fluid	Mobil DOT3 Brake Fluid	Brake system
Grease	3# (Grade 3) Lithium based grease	Wheel hubs, bearings, bushings, Universal Joints, other moving mechanical parts

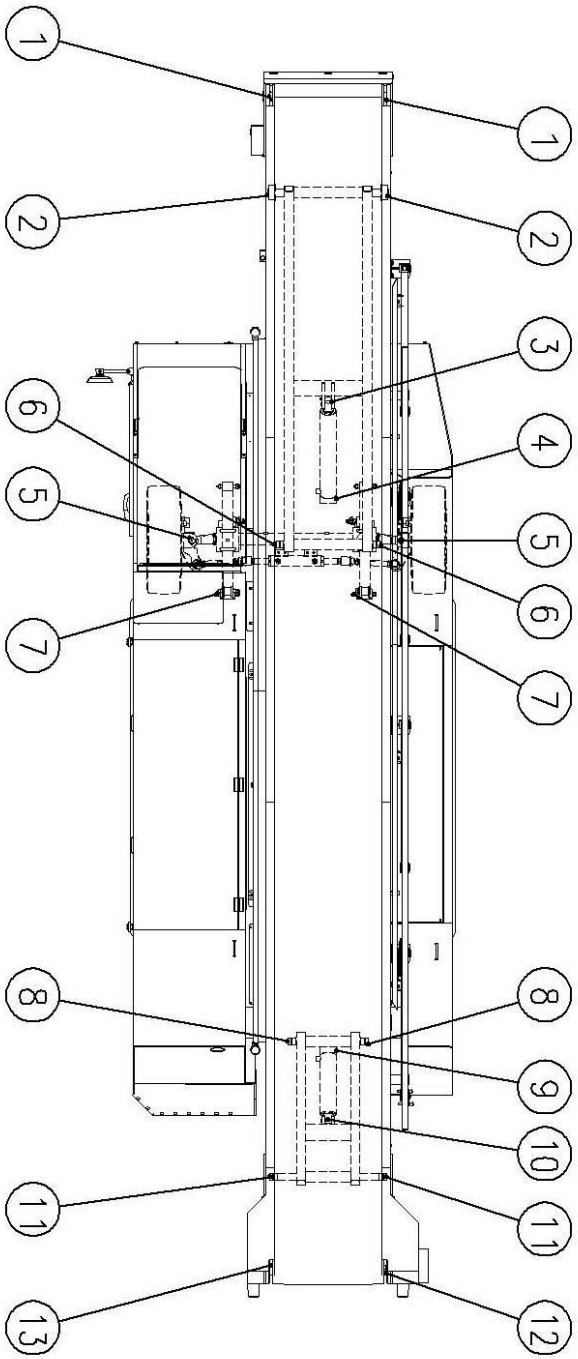
Fill Capacities

Item	Fill Capacities (Liters)
Hydraulic System oil (inc. Power Steering)	65.0
Drive Axle Differential oil	7.5
Brake fluid	1.4
Grease	As needed
Coolant	10.0

Consumables

Consumable	Type
Oil Suction Fiter (in hydraulic oil tank)	PRPW03255
Filter Element, Hydraulic (in Oil Return Filter attached to hydraulic oil tank)	PRPW02712
Access Cover Gasket, 300 x 5.3 mm	PRPW03018
Wash oil	Same type of oil as will be used to refill the hydraulic system
Thread sealant	Any type suitable for hydraulic connections (purchase locally)

Lubrication Diagram

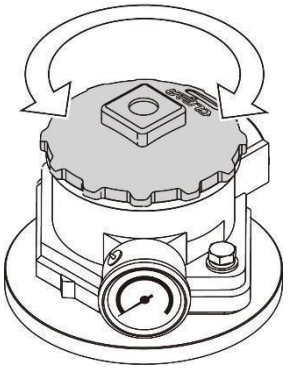


1. Front Roller Bearing Seat
2. Front Lift Frame Rollers
3. Front Lift Cylinder Upper Pin
4. Front Lift Cylinder Lower Pin
5. Front Axle Steering Knuckle
6. Bearing Seat
7. Front Leaf Spring Pin
8. Bearing Seat
9. Rear Lift Cylinder Lower Pin
10. Read Lift Cylinder Upper Pin
11. Bearing Seat
12. Rear Roller Self Aligning Bearing
13. Bearing Seat

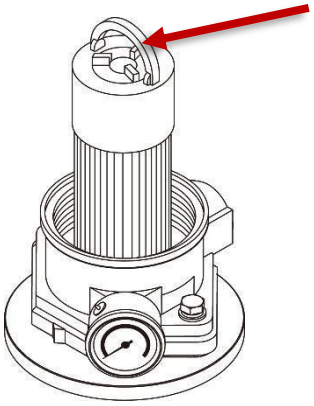
Cleaning/Replacing the Oil Return Filter Element

Clean, inspect, and if necessary, replace, the filter element in the Oil Return Filter as follows:

- On the Oil Return Filter, unlock the plastic cover by rotating the plastic cover counterclockwise. Then pull the plastic cover off the Oil Return Filter.



- A semi-circular steel lifting ring is provided on top of the filter element. Using the lifting ring, pull the filter element out of the Oil Return Filter.



- Clean and inspect the filter element. Replace the filter element if it is damaged.
- Fit the cleaned/replacement filter element into the Oil Return Filter Assembly.
- Fit the plastic cover onto the Oil Return Filter and forcefully press the plastic cover down. Then lock the plastic cover in place by rotating it clockwise.

Replacement of Hydraulic Oil

The hydraulic oil should be changed every 12 months, with a ±10% variation allowed. In colder seasons, condensation inside the oil tank occurs when warm oil meets cold air. This leads to water mixing with the oil, causing it to become acidic and corroding metal surfaces.

Corroded particles can contaminate the oil, and while larger particles (>10µm) are filtered out, smaller ones (<10µm) remain, increasing wear on the system. To prevent this, avoid leaving the vehicle outside in cold weather and ensure the filter element is cleaned or replaced as per the maintenance schedule.

When changing the type of hydraulic oil on the BL30E Belt Loader, do not mix different types of hydraulic oil. Completely remove the old oil and thoroughly clean the hydraulic system before filling it with the new oil.

Before Replacing Hydraulic Oil

Make sure that you have the following items available:

- Hydraulic oil. At least 100 L (22 gal), this being 1.5 times the capacity of the hydraulic system. Use the type of hydraulic oil specified in the Fuels, Lubricants and Consumables section of this manual.
- Replacement filter elements for each filter in the hydraulic system, as specified in the manual.
- Plugs to close the hydraulic pipes, etc.
- Thread sealant, suitable for high pressure hydraulic systems.
- An empty oil drum, or other container, with a capacity of at least 75 L (16.5 gal). A second container with a capacity of at least 10 L (2 gal).
- A new Access Cover Gasket, 300 x 5.3 mm, Part No. PRPW03018.
- Wash oil. The same type as the one used for refilling the hydraulic system. This is in addition to the oil to be used to refill the hydraulic system.
- A drain hose, with a M6-6H hydraulic connector on one end that will mate with the oil drain point on the piston (rod) end of each Hydraulic Cylinder.

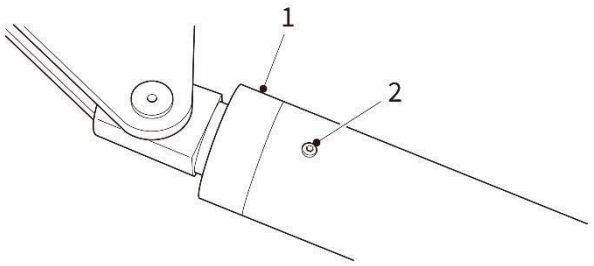
Ensure that the Belt Frame Assembly is fully lowered, and the vehicle is turned off before proceeding with any maintenance or adjustments.

Hydraulic Oil Replacement Instructions

- Park the vehicle on a flat surface and secure at least two, preferably all four, wheels with chocks. Ensure the area around the vehicle is clean.
- Place a container with a capacity of at least 75 L (16.5 gal) under the hydraulic oil tank.
- Remove the Oil Drain Plug from the Hydraulic Oil Tank and allow the hydraulic oil to drain.
- Inspect the Oil Drain Plug for any cuts or damage to the seal. Replace the Oil Drain Plug if the seal is damaged. Do not refit the Oil Drain Plug at this stage.

Approximately three-quarters of the oil in the hydraulic system is stored in the hydraulic oil tank, with the remainder in the rest of the hydraulic system.

To prevent damage to hydraulic components from contaminants always cover the oil tank access holes when not in use. Immediately plug or cap hydraulic connections after disconnection and Ensure connectors remain clean until sealed.



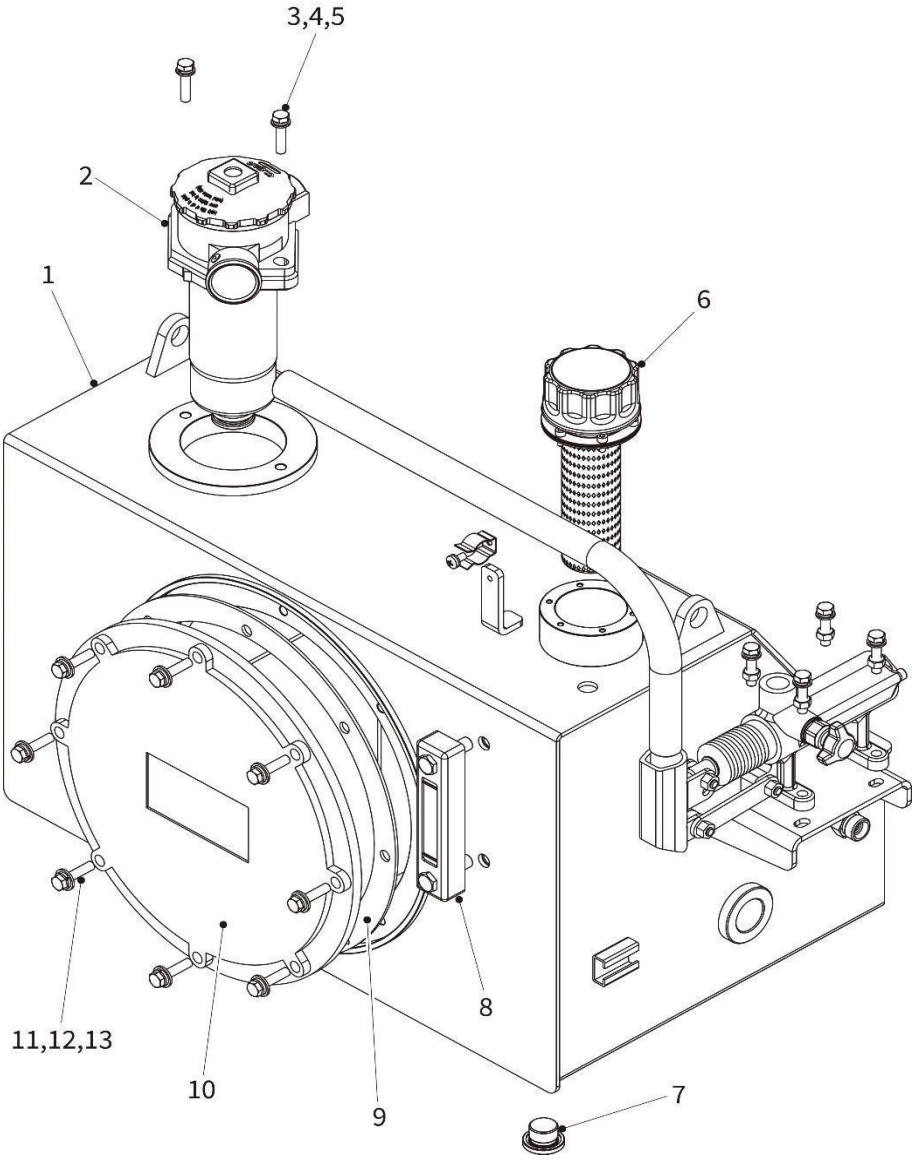
1. Hydraulic Cylinder 2. M6 Plug

- Wait until the oil stops draining from the Oil Tank.
- Drain the oil from the Hydraulic Cylinders – Applies for Fron and Rear Hydraulic Cylinders.
    - Remove and keep the M6 plug (2) from the piston (rod) end of Hydraulic Cylinder (1).
    - Connect the drain hose (M6-6H connector) to the drain point.
    - Place the other end in a 10 L container under the Hydraulic Cylinder.
    - Start the vehicle and operate the cylinder to drain the oil.
    - When draining stops, turn off the vehicle and refit the M6 plug (2).
- Dispose of waste oil according to national/local regulations and the airport's Environmental Policy.

When applying oil or lubricant, do not eat, drink, or smoke. Avoid contact with your eyes, mouth, or nose. Wear appropriate Personal Protective Equipment (PPE), such as gloves, safety glasses, and overalls. If lubricant is ingested or comes into contact with your eyes, seek medical assistance immediately.

Oil and lubricants are slip hazards, so always clean up any spills or excess material immediately.

Hydraulic Oil Tank Illustration



1. Oil Tank
2. Oil Return Filter Assembly
3. M8 x 35 mm bolt
4. M8 lock washer
5. M8 flat washer
6. Air Breather
7. Oil Drain Plug
8. Fluid Level Gauge
9. Access Cover Gasket, 300 x 5.3 mm
10. Access Cover, Oil Tank Cleaning
11. M10 x 35 mm bolt
12. M10 lock washer
13. M10 flat washer

Hydraulic Oil Replacement Instructions

- Remove and clean the air breather (6).
- Remove and retain the eight M10 x 35 mm bolts (11) along with the lock washers (12) and flat washers (13).
- Remove the access cover (10) and access cover gasket (9).
- Retain the access cover and discard the gasket.
- Inside the Oil Tank, remove and discard the oil suction filter.
- Clean or replace the oil return filter element, as needed.
- Place a 10 L (2 gal) container under the Gear Pump.
- Disconnect the hydraulic pipe/hose from the Gear Pump (at the pump end) and allow the oil to fully drain from the pump and pipe/hose.
- Dispose of the waste oil in accordance with all National and local Laws, Regulations, and Codes, and the airports Environmental Policy.
- Fit the Oil Drain Plug (7).
- Close the shut-off valve, located at the Oil Tank end of the hydraulic pipe/hose connecting the Gear Pump to the Oil Tank.
- Flush the Oil Tank and hydraulic piping with wash oil.
- While flushing:
    - Ensure wash oil flows in one direction only.
    - Gently tap hydraulic pipes to dislodge oxidation and debris from the inner walls.
    - Start with minimum operating pressure, then gradually increase to normal pressure.
    - Flush at normal operating pressure for 60–90 minutes.
- Inspect the Oil Return Filter element:
    - If no debris is present, flushing is complete.
    - If debris is found, clean the filter element and repeat flushing for another 60–90 minutes.
- Place a 75 L (16.5 gal) container under the hydraulic oil tank.
- Remove Oil Drain Plug (7) to drain the wash oil.
- Dispose of the oil per local laws and airport environmental policy.
- Open the shut-off valve at the Oil Tank end of the pipe/hose to the Gear Pump.
- Clean the Oil Tank thoroughly before refilling:
    - Wipe the inside with a clean, lint-free cloth.
    - Clean twice with a cloth soaked in diesel fuel or similar.
    - Blow dry the exterior with low-pressure compressed air.
    - Inspect and remove any sludge or residue inside the tank.
    - Flush the tank with new oil.
- Install a new oil suction filter inside the Oil Tank.
- Inspect the Gear Pump inlet O-ring seal; replace if damaged or delaminated.
- Apply thread sealant to hydraulic pipe/hose threads and reconnect the hose between the Gear Pump and Oil Tank.

- Fit:
  - Air breather (6)
  - Access cover (10) with new gasket (9), securing it with 8 × M10 x 35 mm bolts, lock washers (12), and flat washers (13). Lightly grease the gasket.
  - Oil Drain Plug (7)
- Fill the Oil Tank with clean hydraulic oil through the Oil Return Filter Assembly (2) until full (check Fluid Level Gauge).
- Secure the plastic cover on the Oil Return Filter and lock it by rotating clockwise.
- Start the vehicle; oil will fill the Gear Pump, Cylinders, and hoses—oil level will drop.
- Switch Off and top-up oil as needed.
- Restart and operate all hydraulic functions to ensure proper operation.
- Switch Off again, check oil level, and top-up if necessary.
- After 3-4 hours of use, check the Oil Return Filter element for debris and clean if needed.

TROUBLESHOOTING AND FAILURE DIAGNOSIS

- The system includes Built-In-Test (BIT) functionality.
  - If a fault occurs, a fault code will display on the Dash Display Screen (Instrument Panel) in the Driver's Compartment.
- Refer to the appended:
  - "[System BIT Section]" – for fault descriptions and detailed troubleshooting steps.
  - "[System Service Manual]" – for servicing and repair instructions.
- Perform visual inspection of the Belt Loader:
  - Look for obvious issues using the Scheduled Maintenance Table as a reference.
- Check ATM Mini Fuses in the Central Control Box.
- For non-frame and non-hydraulic mechanical issues, follow the Troubleshooting Table.
- For issues with the Belt Frame Assembly, Hydraulic System, or Electrical System, refer to the:
  - Troubleshooting Table – Hydraulic, Electrical, and Power System.
- For general electrical faults, check for Diagnostic Trouble Codes (DTCs) on the Dash Display Screen.
  - Use the DTC Message Table to isolate and correct faults.

Fault Characteristics and Troubleshooting

A. Hydraulic System

	Fault Characteristics	Cause Analysis	Troubleshooting
1	System lost pressure	1. Overflow valve failure 2. Air leakage in the oil inlet line. 3. Insufficient hydraulic oil in the oil tank 4. The oil pump is damaged	1. Change overflow valve 2. Check and tighten the pipe joints 3. Add enough hydraulic oil 4. Replace the oil pump
2	The conveyor belt frame cannot be raised or lowered	The solenoid valve is not energized, or the spool is stuck	Check the solenoid valve and troubleshoot or replace with a new valve
3	The conveyor belt does not work	Motor damage	Replace the motor
4	The hand pump does not work	Serious internal leakage of hand pump or other malfunctions	Overhaul the hand pump

5	The ferrule joint leak	1. The pipe is not inserted to the end during installation 2. Nut loosen. 3. The outside of the tube is scratched, or the tube is not round 4. The tube is too hard	Remove the tube to check whether the assembly meets the requirements. There should be even slight protrusions on the tube at the end of the ferrule. The ferrule cannot slide back and forth but can rotate slightly.

B. Electric System

	Fault Characteristics	Cause Analysis	Troubleshooting
1	The conveyor belt rack cannot be raised and lowered	1. Check whether the work transfer switch is in the work position. 2.Check whether there is an input signal from the control switch to the controller against the electrical schematic diagram. If there is no signal, there are two possibilities: (1) The wire is disconnected. (2) The switch is in poor contact. 3.When the input signal is normal, check whether there is an output signal. If there is no output signal, then troubleshoot the problem according to the interlocking relationship mentioned above. 4. If the input and output are normal, check whether the solenoid valve is energized and whether the solenoid valve coil is good or not (the resistance value is	

		about 1.3 ohms) until the problem is solved.	
2	Conveyor belt does not work	1.Check that the interlock conditions are met. 2.Check that the work transfer switch is in the work position. 3.Check whether there is an input signal from the control switch to the controller against the electrical schematic diagram. If there is no input signal, there are two possibilities: a. The wire is disconnected. b. The switch is in poor contact. 4. When the input signal is normal, check whether there is an output signal. If there is no output signal, find the problem according to the interlock condition relationship. 5. If the input and output are normal, check whether the solenoid valve is energized and whether the solenoid valve coil is good or not (the resistance value is about 1.3 ohms) until the problem is solved.	
3	Instrument display failure: Motor overtemperature	1. Check whether there is coolant in the cooling water tank. 2. Check that coolant is flowing in the radiator tank. 3. Check whether the cooling water pump and cooling fan are working. If not, check whether there is a 24V DC power supply. If the cooling water pump	

		and fan have no power supply, check whether there is a 24V voltage difference at the coil end of the cooling relay and whether there is a 24V power supply at the power supply end. 4. Under normal circumstances, the cooling system will work when the motor controller or motor reaches 40°C, and will not work when the temperature is below 40°C, and the over-temperature temperature alarm will be above 90°C.	
4	The instrument shows fault: the main contactor does not pull in, and the pre-charge is not completed	The electrical system of the whole vehicle needs to be pre-charged before it can work normally. If this fault occurs, please turn off the key first, wait for the completion of the capacitive load discharge of the body (about 10 seconds), and then turn on the key again. Check whether the battery is working normally (there will be a sound of contactor pulling in the battery box after opening the key).	
5	The instrument shows fault: the controller is severely overheated	Refer to Article 3.	
6	The meter shows failure: RAM failure	Appears after modifying motor controller parameters.	Restart.
7	Instrument display failure: Motor open circuit	The three-phase line of the motor is open.	Confirm whether the three-phase wire of the motor is connected correctly, and check

			whether it is broken, broken or loose.
8	Instrument display failure: code disc failure	The motor's internal encoder is faulty.	Replace the motor encoder.
9	Instrument display failure: Current sensor failure	The current sensor inside the motor is faulty.	Replace the motor current sensor.
10	Instrument display failure: controller overcurrent	Traction motor controller current is too high.	Use a clamp meter to measure the input current and confirm the current size.
11	Instrument display failure: CAN failure	The CAN cable of the traction motor controller is dropped and loose.	Check the 35-hole connector of the traction motor to confirm whether the CAN cables (T2, T14) are connected properly.
12	Instrument display failure: Incorrect operation of starting vehicle	When the vehicle is started, the gear is not in neutral.	After shifting the gear back to neutral, re-gear.
13	Instrument display failure: Battery failure	Battery failure, observe the battery specific failure displayed on the meter.	

C. Power System

	Fault Characteristics	Cause Analysis	Troubleshooting
1	Oil pump motor does not work	1. The gear switch is not in place 2. The handbrake has not been released to the end 3. The seat switch is not triggered	

REPAIR

Repairs are performed by direct replacement of faulty or damaged components.

Use the Exploded Parts View illustrations to:

- Understand component layout.
- Follow dismantling and re-assembly procedures.

All components are listed in the Parts Breakdown List, with numbers keyed to the illustrations.

Replacement parts must be sourced from Avro GSE to maintain warranty validity.

Use of major components not from Avro GSE will void the Warranty.

It is expected that replacement fasteners may be sourced locally. If sourcing fasteners locally, make sure that the replacement fasteners are the same type and grade of material, and have the same protective coating, as the original. The Parts Breakdown List specifies the required material and finish.

The vehicle chassis is not available as a spare, and significant chassis damage typically indicates catastrophic damage, making the Belt Loader beyond economic repair due to the extensive labor required for replacement and rebuild.

Wheel Nuts

The left and right rear wheel nuts are the same size but have different threads and are not interchangeable.

- Right-hand Rear Wheel:
  - Use six Wheel Nuts, M18 x 25 mm, Right-hand thread (Part No. TBA).
  - Loosen: counterclockwise
  - Tighten: clockwise
- Left-hand Rear Wheel:
  - Use six Wheel Nuts, M18 x 25 mm, Left-hand thread (Part No. TBA).
  - Loosen: clockwise
  - Tighten: counterclockwise

Torque Values

The wheel nuts must be torque tightened to the specified settings to prevent the wheel from coming loose.

Fastener	Torque Setting
Front wheel nuts	210 Nm (155 ft/lbs)
Rear wheel nuts	420 Nm (310 ft/lbs)

For other securing bolts, refer to the general recommended torque values table on the next page. If unsure about the bolt's strength grade, use the lowest value for that bolt size.

General Recommended Torque Values

Bolt Strength Grade	4.6	5.6	8.8	10.9	12.9
Minimum yield strength		340MPa	660MPa	940MPa	
Bolt Size	Recommended Torque				
mm	Nm	Nm	Nm	Nm	Nm
M2	0.11	-	0.29	0.41	0.43
M3	0.44	0.56	1.05	1.48	1.77
M4	1.00	1.28	2.44	3.04	3.65
M5	2.10	2.51	4.94	6.15	7.38
M6	3.51	4.30	9.00	13.00	15.00
M8	8.50	10.5	20.00	29.00	34.00
M10	17	21	40	57	68
M12	30	36	70	99	119
M14	47	56	112	116	139
M16	73	88	175	246	295
M18	101	121	241	338	406
M20	143	171	341	480	576
M22	195	230	464	652	783
M24	248	295	590	829	995
M27	362	435	863	1213	1456
M30	491	590	1171	1647	1977
M33	669	800	1594	2242	2690
M36	864	1030	2047	2879	3454
M39	1115	1340	2649	3726	4471
M42	1378	-	3274	4604	5525
M45	-	-	4072	5726	6871
M48	2064	-	4911	6906	8287
M52	-	-	6370	8958	10749

Welding Repairs, Grinding, and Cutting

If any weld repairs, grinding, cutting with power tools or cutting torches, or similar work is to be performed on a BL30D vehicle, the Safety Warnings and Precautions below MUST be complied with.

- Welding Arc: Can cause eye damage and flash burns. Always use approved welding visors/screens and cover exposed skin.
- Protective Clothing: Wear appropriate gloves and clothing for welding.
- Hot Welds: Let welds cool before removing slag. Keep combustibles at least 4 meters (13 feet) away.
- Grinding/Chipping/Cutting: Always wear eye protection. Maintain a 4-meter safety zone.
- Electrical Equipment: Disconnect all batteries and electronic systems before welding to avoid damage.
- Authorization & Training: Only certified and authorized personnel may perform welding or use power tools. Obtain required hot work permits before starting.

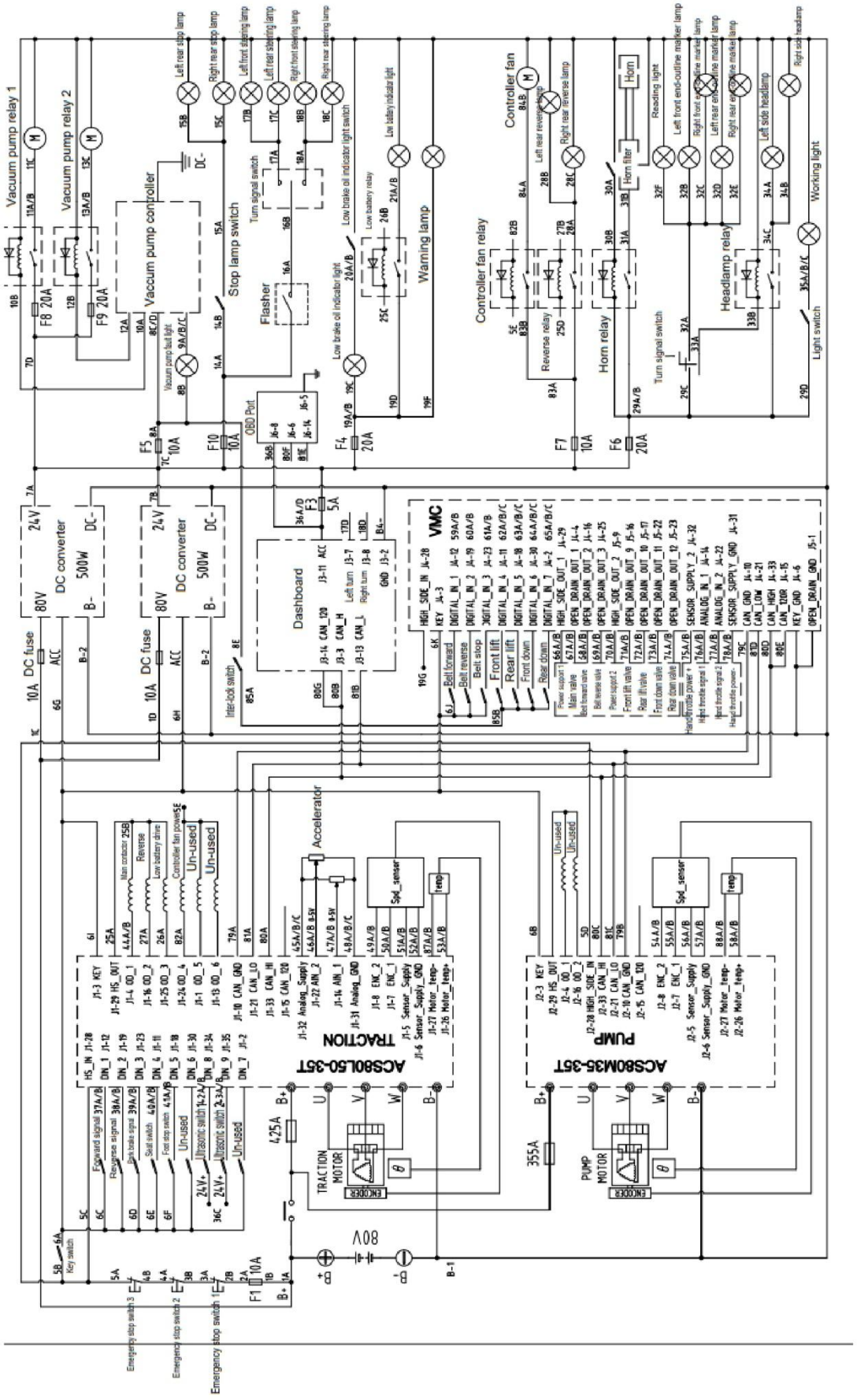
ELECTRICAL SCHEMATICS

These Electrical Schematics are provided to assist in troubleshooting.

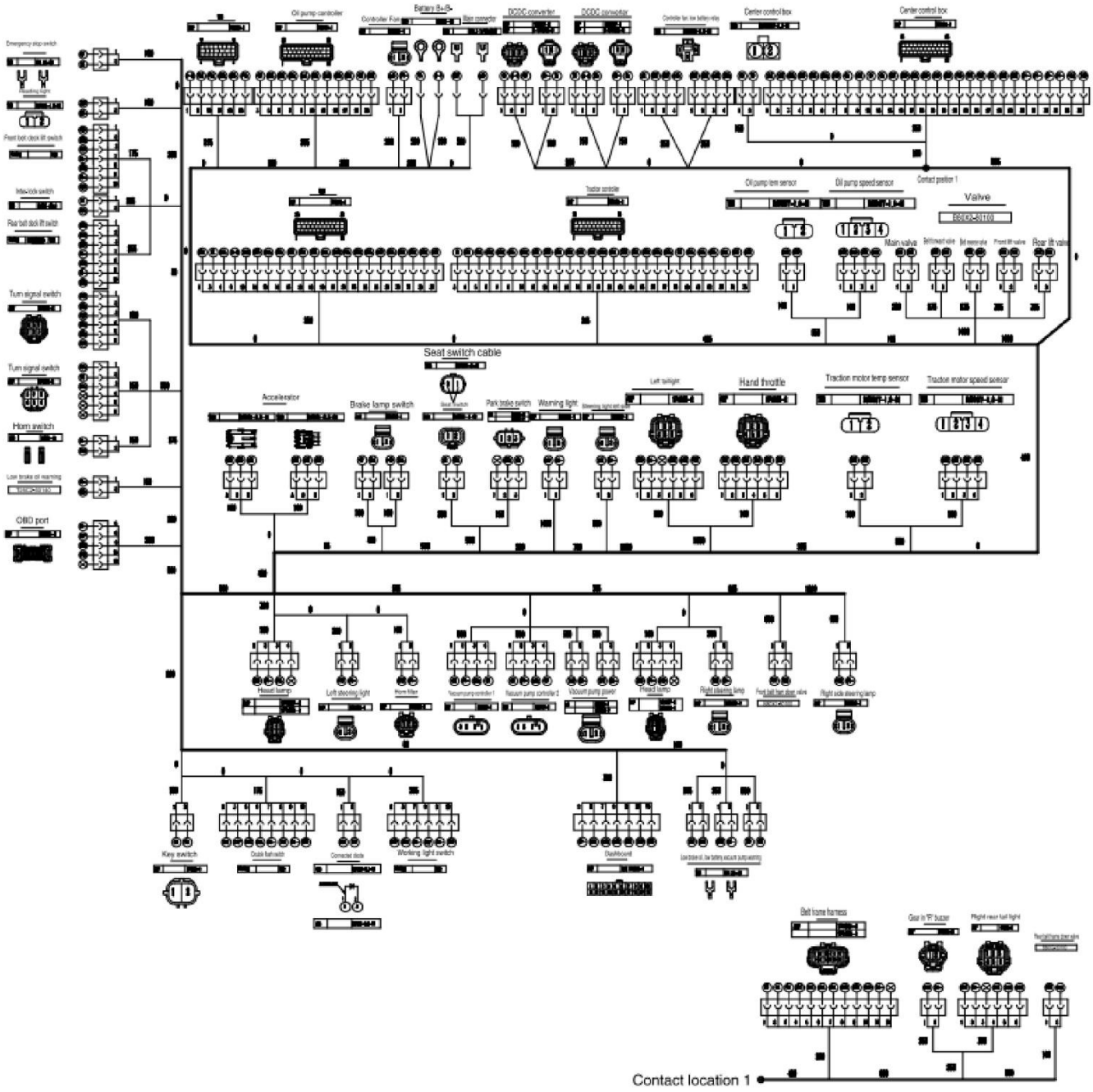
This manual covers the build standard of BL30E Belt Loader that were manufactured during 2021+.

- Electrical Schematic Diagram
- Wiring Harness, Part No. PRPW02507
- Belt Frame Harness, Part No. PRPW02404
- Dash Display Instrument, Part No. PRPW00408
- Central Control Box, Part No. PRPW0026
- Interlock Control Module, Part No. PRPW00014
- Ignition Switch Assembly, Part No. PRPW00051
- Gearshift/Turn Signal/Headlamp Control Assembly, Part No. PRPW02403

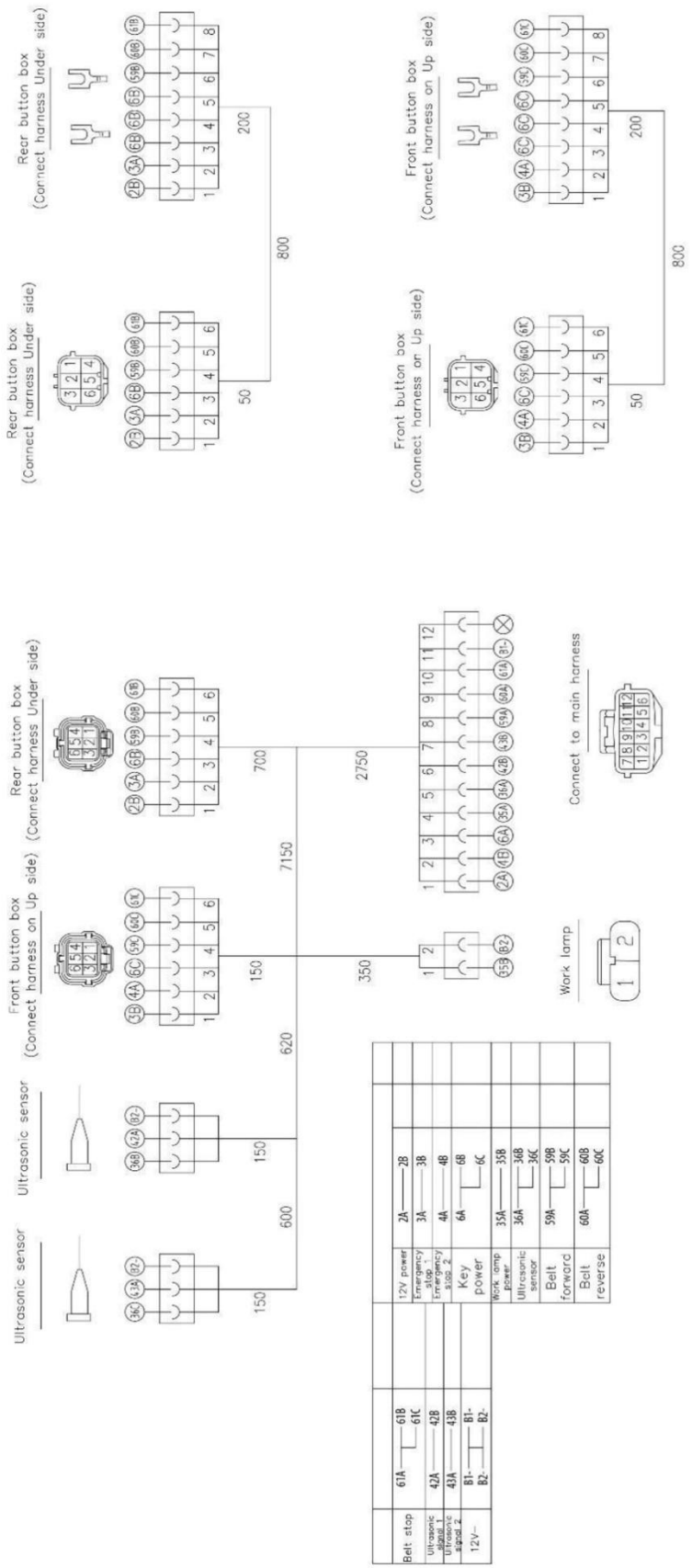
Electrical Schematic Diagram



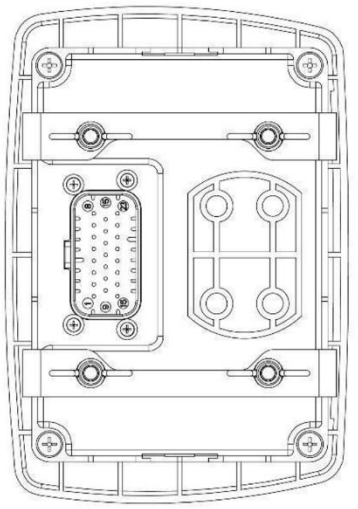
Wiring Harness Diagram

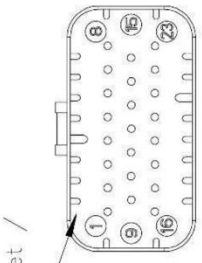


Belt Frame Harness



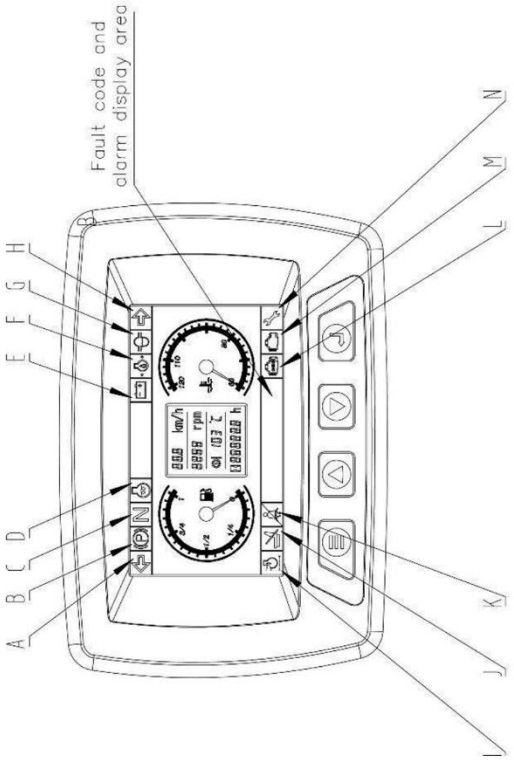
Dash Display Instrument





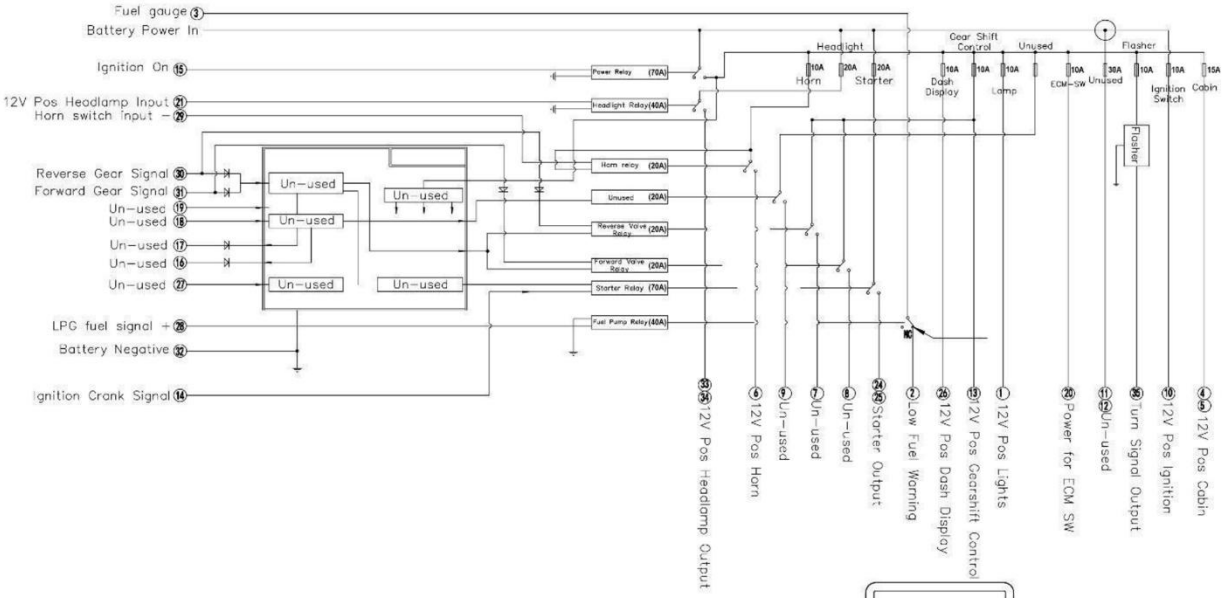
Socket /Junction Box Terminal:

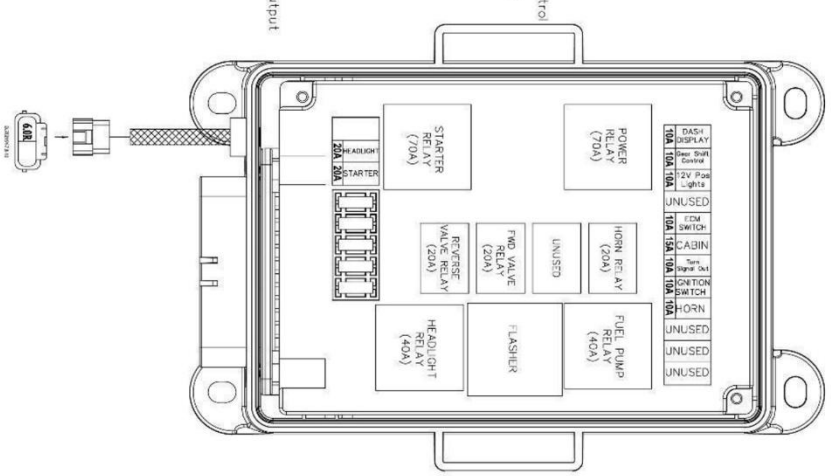
8	Seat Sensor Indicator	16	Ground		
7	Accumulator Pressure Alarm	15	Speed Sensor Signal	23	MIL Fault Indicator
6	Left Turn Signal	14	Neutral Position Signal	22	Unused
5	Charge Indicator	13	Right Turn Signal	21	Unused
4	CAN-H	12	Unused	20	Trans Oil Temp Indicator
3	CAN-L	11	Park Brake Indicator	19	Seat Belt Indicator
2	Unused	10	Unused	18	Unused
1	12V Power Supply	9	Unused	17	Fuel Level Indicator



A – Left turn signal
B – Park brake indicator
C – Neutral position indicator
D – Preheat
E – Charge indicator
F – Engine oil pressure warning
G – Coolant level indicator
H – Right turn signal
I – Trans oil temp indicator
J – Seat sensor indicator
K – Seat belt sensor indicator
L – Check engine indicator
M – MIL fault indicator
N – Service indicator

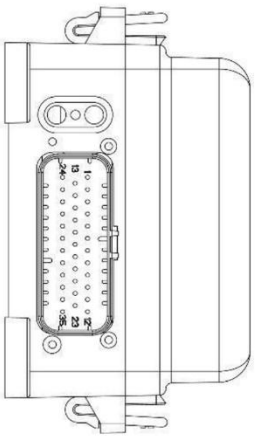
Central Control Box





Fuse and Relay Pin Location

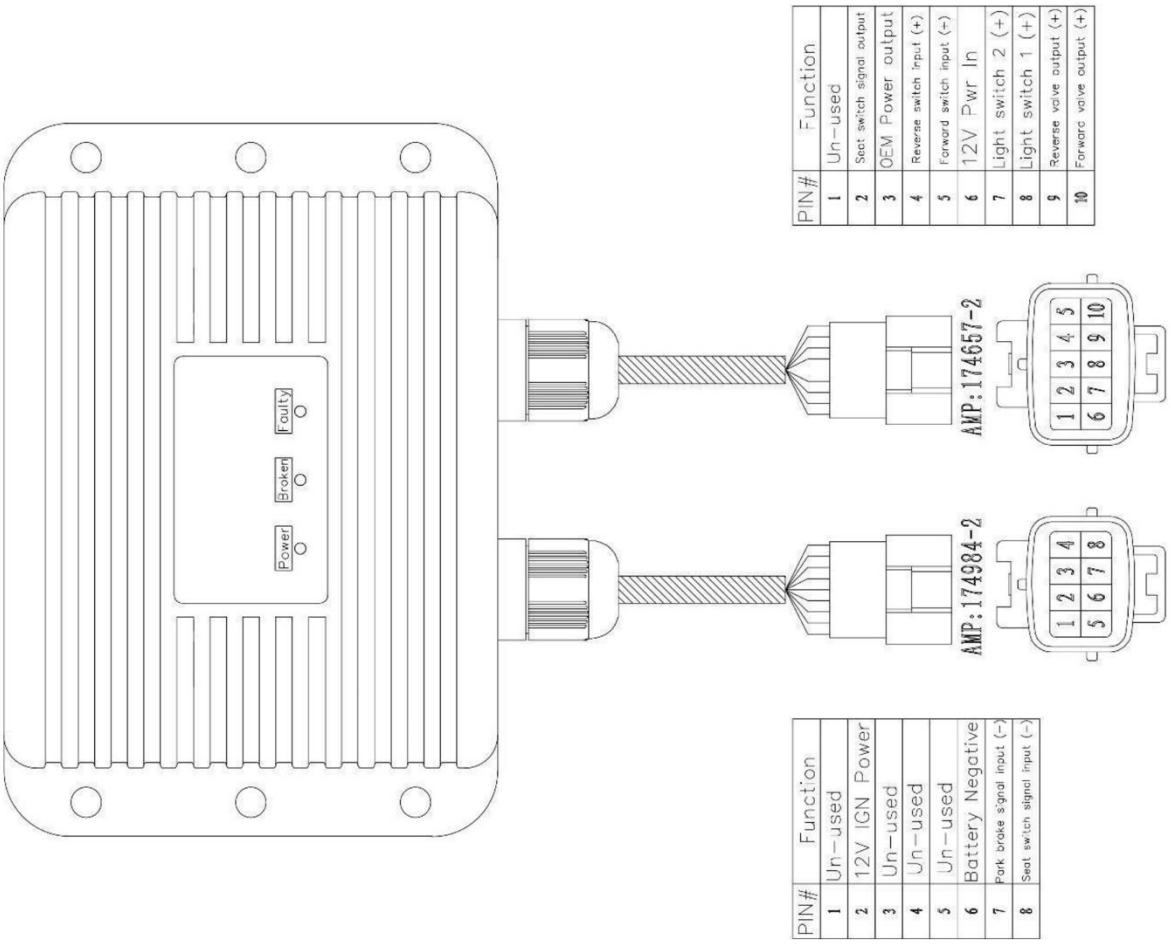
Fuse/Relay Name	Pin Number	Fuse/Relay Name	Pin Number
Dash Display	26	Turn Signal Output	35
Gear Shift Control	13	Ignition Switch	10
12V Pos Lights	1	Horn	6
ECM Switch	20	Headlight	33, 34
12V Pos Cabin	4, 5	Starter	24, 25



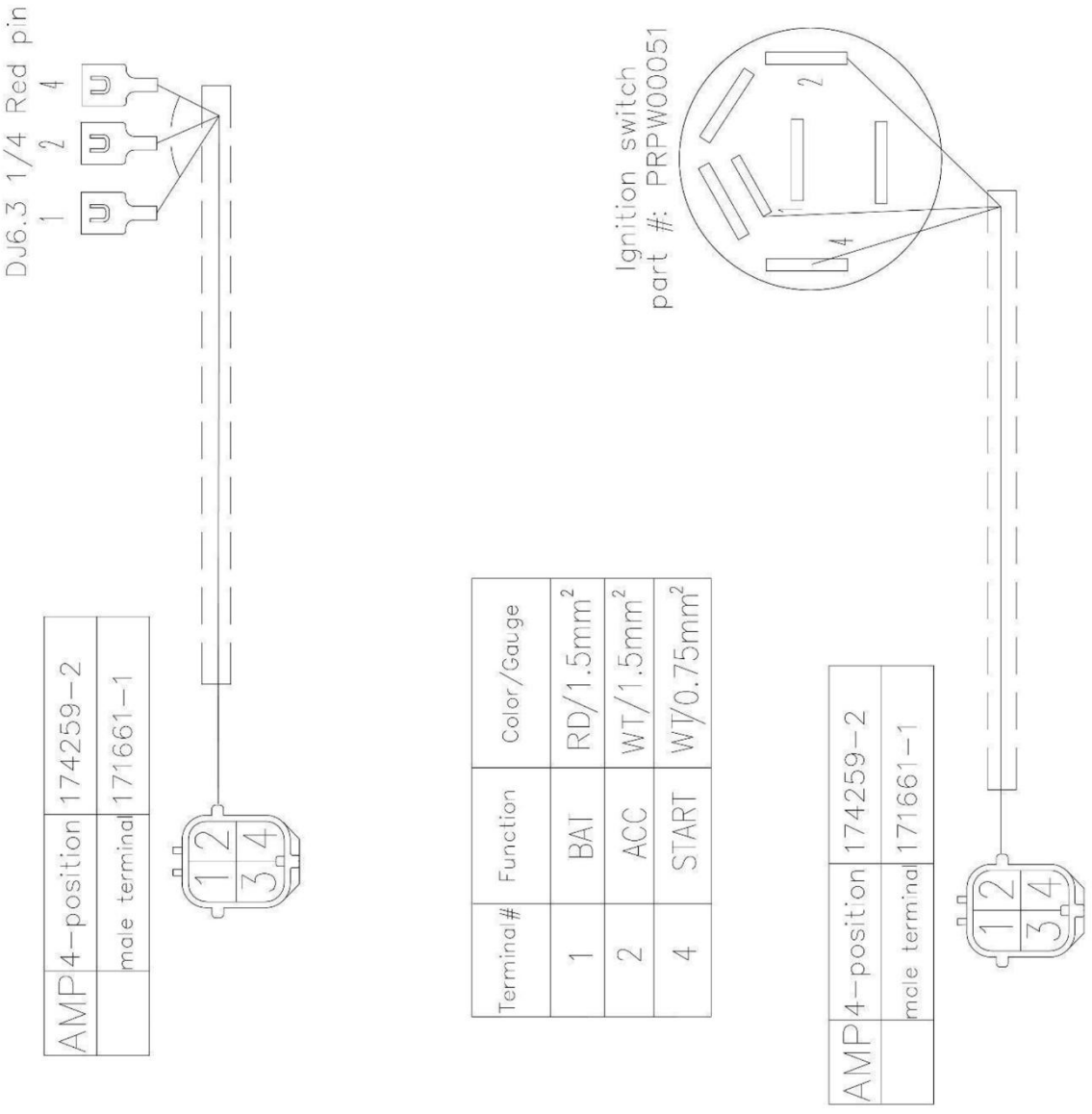
Pin. No.	Function	Pin. No.	Function
1	12V Pos Lights	19	Unused
2	Low Fuel Warning	20	Power for ECM SW
3	Fuel Gauge	21	12V Pos Headlamp Input
4	12V Pos Cabin	22	Unused
5		23	Unused
6	12V Pos Horn	24	Ignition Crank Output
7	Unused	25	
8	Unused	26	12V Pos Dash Display
9	Unused	27	Unused
10	12V Pos Ignition	28	LPG Fuel Signal (+)
11	Unused	29	Horn Switch Input (-)
12	Unused	30	Reverse Gear Signal
13	12V Pos Gearshift Control	31	Forward Gear Signal
14	Ignition Crank Signal	32	Battery Negative
15	Ignition On	33	12V Pos Headlamp Output
16	Unused	34	
17	Unused	35	Turn Signal Output
18	Unused		

Signal core connector:

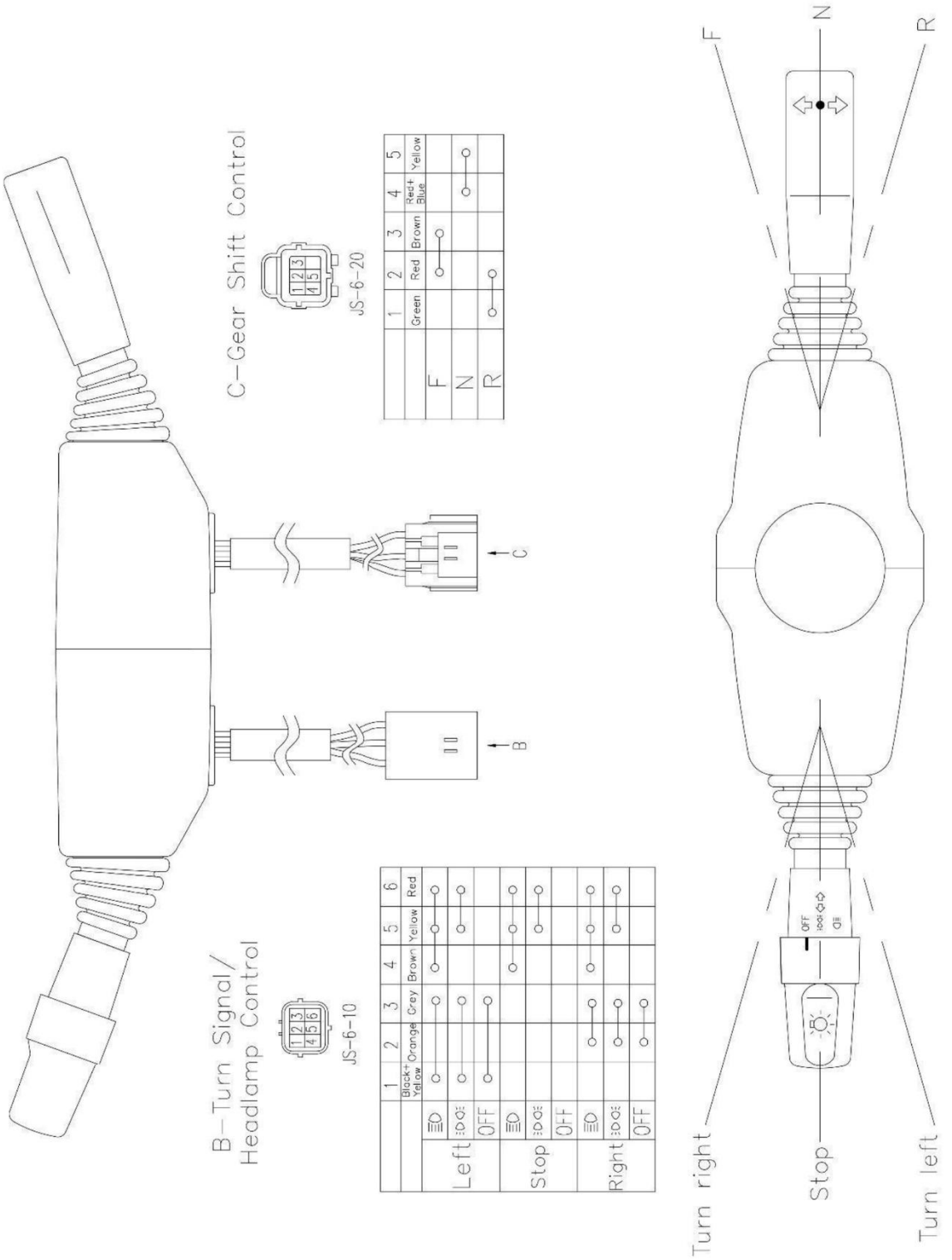
Color	Function	Color	Function
6.0 Red	Battery Power In		


Faulty
Broken
Power
AMP:174657-2
AMP:174984-2
PIN# Function
1 Un-used
2 Seat switch signal output
3 OEM Power output
4 Reverse switch input (+)
5 Forward switch input (-)
6 12V Pwr In
7 Light switch 2 (+)
8 Light switch 1 (+)
9 Reverse valve output (+)
10 Forward valve output (+)
PIN# Function
1 Un-used
2 12V IGN Power
3 Un-used
4 Un-used
5 Un-used
6 Battery Negative
7 Park brake signal input (-)
8 Seat switch signal input (-)

Ignition Switch Assembly



Gearshift/Turn Signal/Headlamp Control Assembly

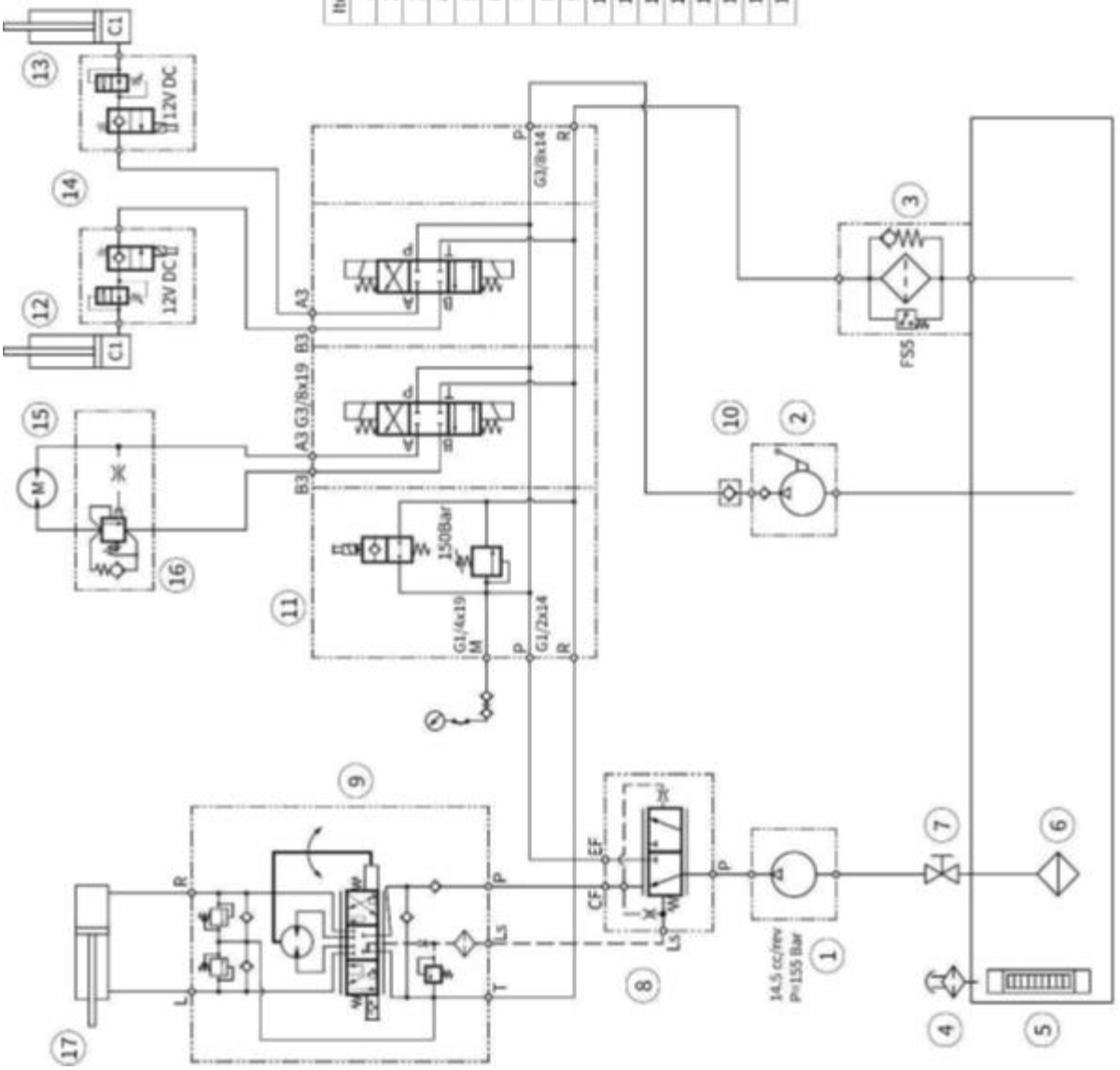


HYDRAULIC SCHEMATIC

This Hydraulic Schematic is provided to assist in troubleshooting.

This manual covers the build standard of BL30E Belt Loader that were manufactured during 2021+.

Item	Part No.	Name	Qty.	Page	Ref.
1	B80G4-20200	Gear Pump	1		10
2	HP04-50-0G-1	Emergency Hydraulic Hand Pump	1		12
3	HF02-120 x 10-1	Oil Return Filter Assembly	1		2
4	HF04-450 x 10-1	Air Breather	1		10
5	HF05-127 x M12-1	Fluid Level Gauge	1		14
6	HF01-150 x 250-1	Oil Suction Filter	1		20
7	HV13-25-2G1-1	Shut-Off Valve	1		7
8	HV04-40-G-1	Priority Valve	1		9
9	HS1-100-LS-G-1	Steering Unit	1		5
10	HV08-30-G3/8-1	Check Valve	1		33
11	HV01-40-E12-1	Integrated Hydraulic Valve Assembly	1		6
12	B80C4-10200	Front Hydraulic Lift Cylinder	1		4
13	B80C4-10100	Rear Hydraulic Lift Cylinder	1		11
14	HV02-20-E12-1	Solenoid Valve Assembly	2		12
15	B80F4-00100	Hydraulic Motor	1		15
16	HV09-60-S-1	Balance Valve	1		14
17	B80A6-10130	Steering Cylinder	1		27



PARTS VIEWS AND PARTS LISTS

Contact Avro GSE for spare parts ordering and inquiries:

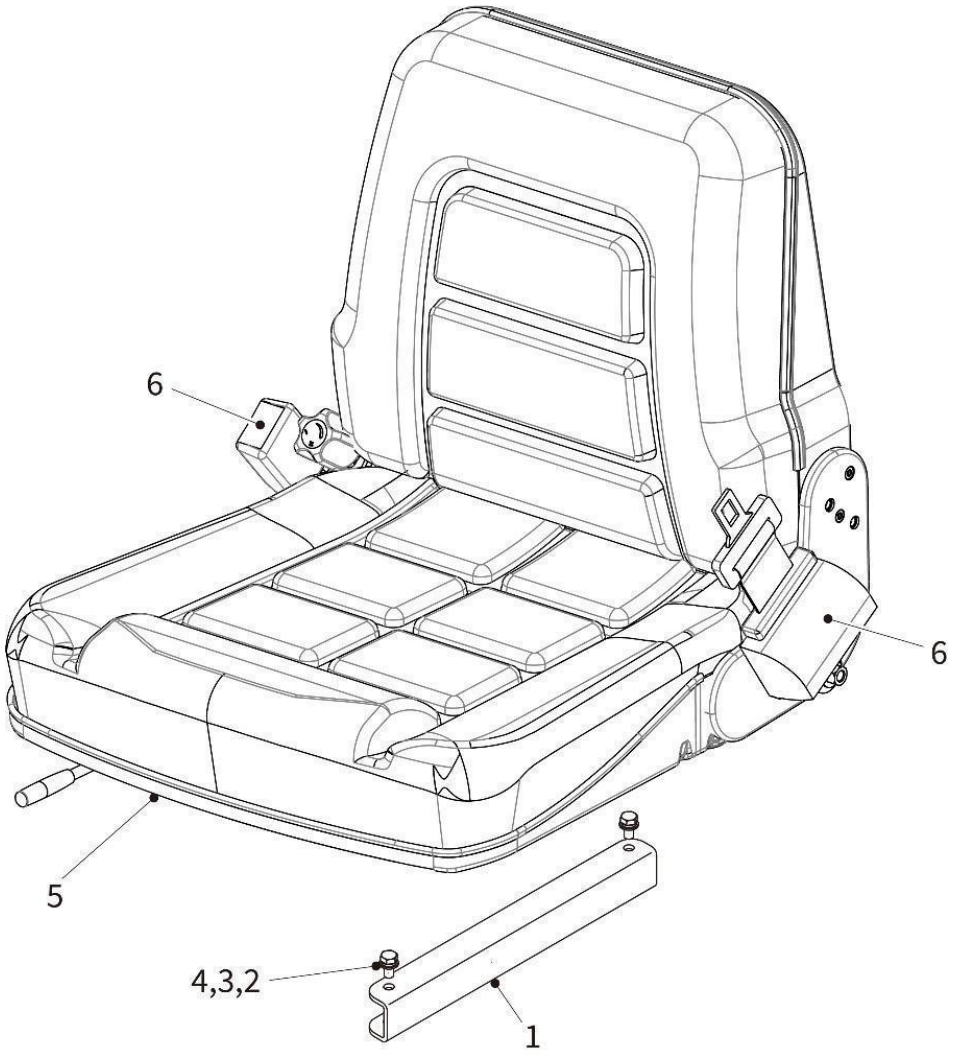
Main:
1 833 220 2810

General Inquiries:
info@avrogse.com

Parts Inquiries:
parts@avrogse.com

Seats

Seat Installation - Exploded Parts View

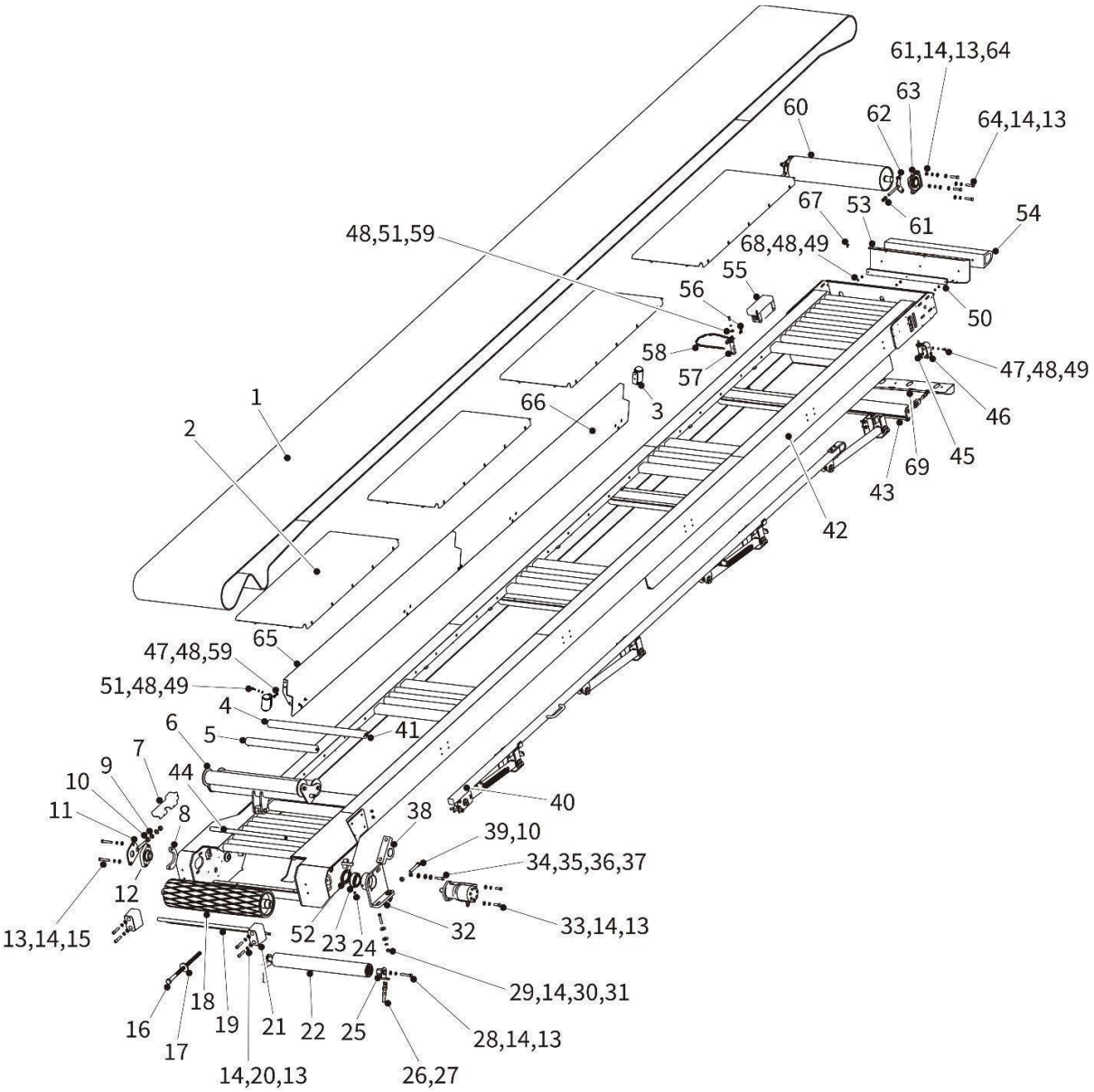


Seat Installation – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW02835	Seat Mounting	2
2	PRFA00061	Bolt, M8 x 16mm	4
3	PRFA00009	Washer, Flat, M8	4
4	PRFA00010	Washer, Lock, M8	4
5	PRPW00054	Seat Assembly	1
6	PRPW00036	Seat Belt w/switch (Orange)	1

Belt Frame Assembly

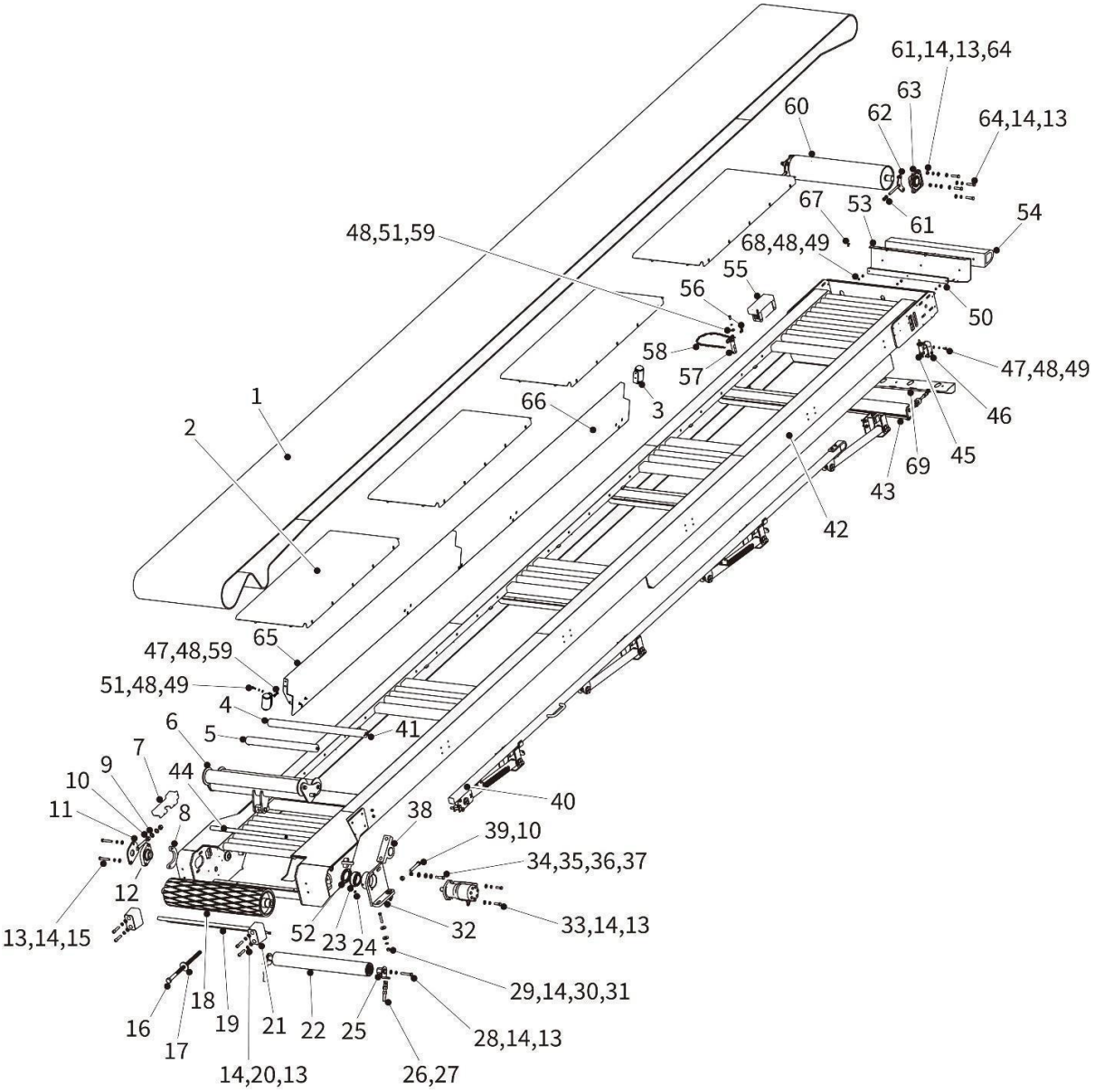
Belt Frame Assembly – Exploded Parts View



Belt Frame Assembly – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03099	Conveyor Belt	1
2	PRPW03100	Support Plate	4
3	PRPW03101	Guide Wheel Assembly	2
4	PRPW03102	Idler, Long	5
5	PRPW03103	Idler, Short	27
6	PRPW03104	Tightening Support Assembly	1
7	PRPW03105	Protective Plate	1
8	PRPW03106	Threaded Plate	1
9	PRFA00068	Washer, Flat, M16	2
10	PRFA00073	Nut, M16	3
11	PRPW03107	Adjusting Seat, Welded	1
12	PRPW3108	Bearing Seat	1
13	PRFA00030	Washer, Flat, M12	22
14	PRFA00034	Washer, Lock, M12	20
15	PRFA00288	Bolt, M12 x 70 mm	2
16	PRFA00289	Bolt, M20 x 380 mm, threaded length 300 mm	1
17	PRPW03109	Shim	1
18	PRPW03110	Rear Drive Drum	1
19	PRPW03111	Rear Baffle	1
20	PRFA00290	Screw, Hex Socket Head Cap, M12 x 55 mm	4
21	PRPW03112	Bumper Block, Black	2
22	PRPW03113	Roller	1
23	PRPW03114	Tapered Roller Bearing	1
24	PRPW03115	Grease Nipple, M10 x 1	1
25	PRPW03116	Pull Plate	2
26	PRFA00291	Nut, M16 x 1.5	6
27	PRFA00292	Bolt, M16 x 1.5 x 120 mm	2
28	PRFA00238	Bolt, M12 x 75 mm	2
29	PRFA00294	Nut, M12	2
30	PRFA00030	Washer, Flat, M12	4

Belt Frame Assembly – Exploded Parts View (cont.)

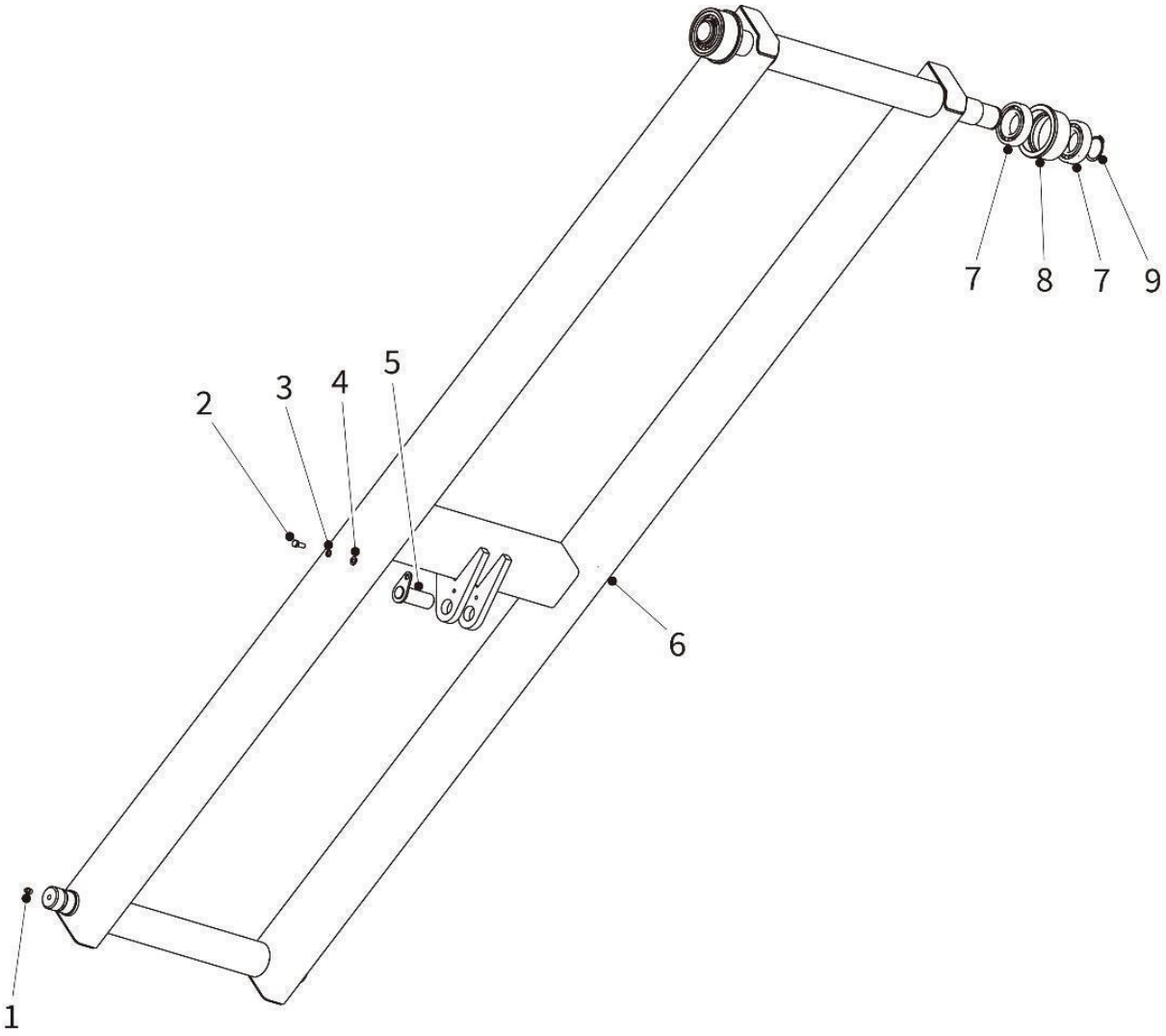


Belt Frame Assembly – Spare Parts List (cont.)

Item	Part No.	Description	Qty
31	PRFA00295	Bolt, M12 x 60 mm	2
32	PRPW03117	Motor Support Bracket	1
33	PRFA00042	Bolt, M12 x 35 mm	2
34	PRFA00296	Bolt, Special	1
35	PRFA00072	Washer, Flat, M14	1
36	PRFA00151	Washer, Nylon, Special	2
37	PRFA00297	Nut, Self-locking, M12	1
38	PRPW03118	Bearing Pedestal Assembly	2
39	PRFA00298	Bolt, M16 x 95 mm	1
40	PRPW03125	Handrail Assembly, Complete	1
41	PRFA00299	Pin, Split Cotter, 5 x 50 mm	6
42	PRPW03119	Belt Frame	1
43	PRPW03124	Front Roller Adjustment Assembly	1
44	PRPW03120	Round Bar, Steel	1
45	PRPW03121	Vertical Idler	4
46	PRPW03122	Mounting Plate, Vertical Idler	4
47	PRFA00300	Bolt, M8 x 16 mm	20
48	PRFA00010	Washer, Lock, M8	28
49	PRFA00009	Washer, Flat, M8	15
50	PRPW03123	Mounting Bracket	1
51	PRFA00033	Bolt, M8 x 20 mm	5
52	PRPW03126	Skeleton Oil Seal, Type TC, i.d. 60 mm, o.d. 90 mm, thickness 10 mm	1
53	PRPW03127	Mounting Plate	1
54	PRPW03128	Protective Bumper, Rubber	1
55	PRPW03129	Guard, Protective, Switch Box	1
56	PRFA00004	P-clip, M10	2
57	PRFA00311	Pin	1
58	PRPW03130	Left Rear Baffle ??/	1
59	PRFA00009	Washer, Flat, M8	13
60	PRPW03131	Front Drive Drum	1
61	PRFA00294	Nut, M12	8
62	PRPW03132	Support Plate, Welded	2
63	PRPW03133	Bearing Pedestal	2
64	PRFA00301	Bolt, M12 x 50 mm	8
65	PRPW03134	Left Rear Luggage Rail	1
66	PRPW03135	Left Front Luggage Rail	1
67	PRFA00312	Screw, Hex Socket Countersunk Head, M8 x 16 mm	3
68	PRFA00047	Bolt, M8 x 35 mm	3
69	PRPW03136	Sensor Bracket	1

Lifting Frame

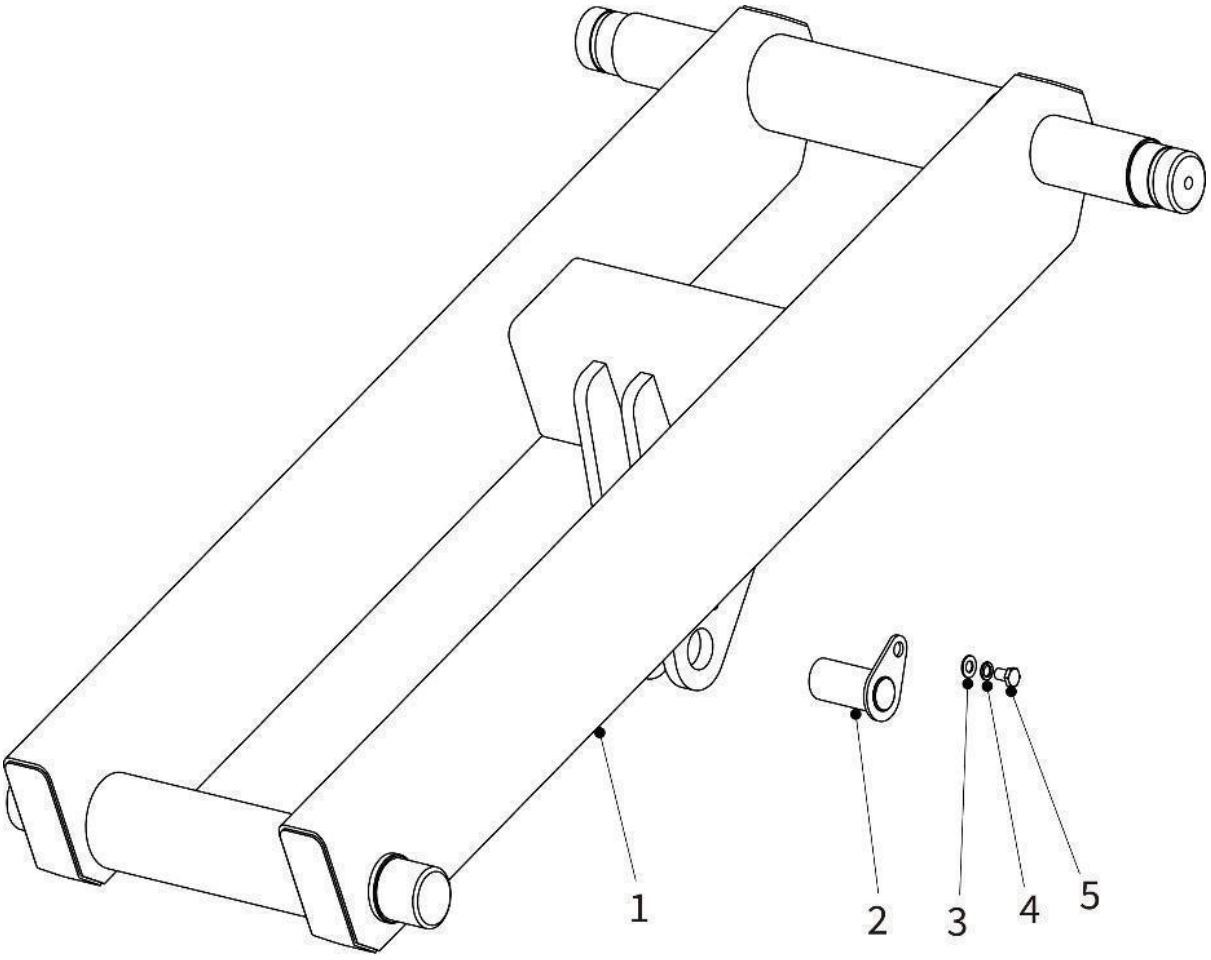
Front Lifting Frame – Exploded Parts View



Front Lifting Frame – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW02836	Grease Nipple	2
2	PRFA00033	Bolt, M8 x 20 mm	1
3	PRFA00010	Washer, Lock, M8	1
4	PRFA00009	Washer, Flat, M8	1
5	PRPW02532	Pin, Flanged Head	1
6	PRPW02531	Front Lifting Frame	1
7	PRPW02534	Single Row deep groove Bearing with integral seals, Type 6209-2Z, i.d. 45 mm, o.d. 85 mm, total width 19 mm, chamfers 1.1 mm (min.)	4
8	PRPW02533	Bearing Sheath	2
9	PRPW02837	Circlip, M5	2

Rear Lifting Frame – Exploded Parts View

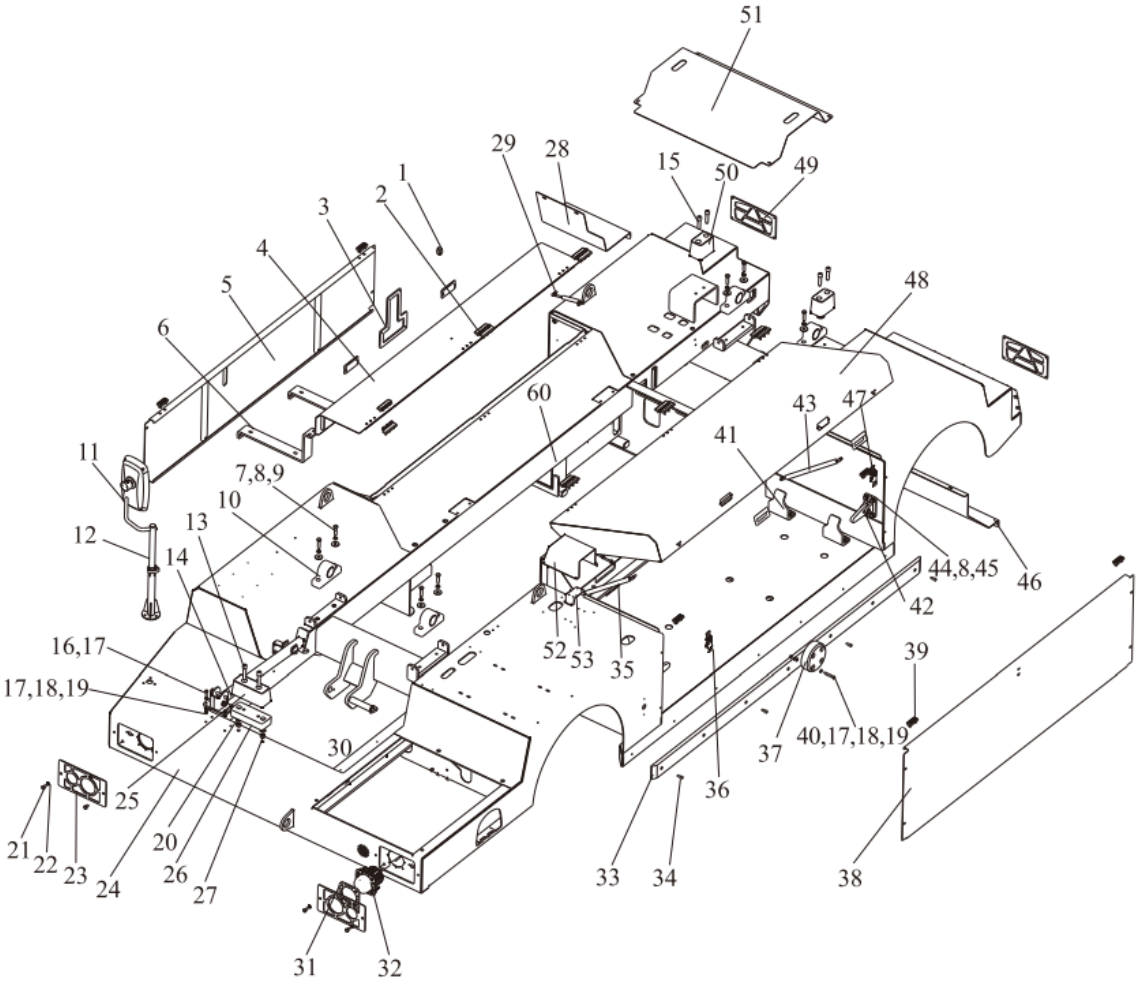


Rear Lifting Frame – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW02535	Rear Lifting Frame	1
2	PRPW02532	Pin, Flanged Head	1
3	PRFA00009	Washer, M8	1
4	PRFA00010	Washer Lock, M8	1
5	PRFA00300	Bolt, M8 x 16 mm	1

Body and Exterior

Vehicle Body – Exploded Parts View



Vehicle Body – Spare Parts List

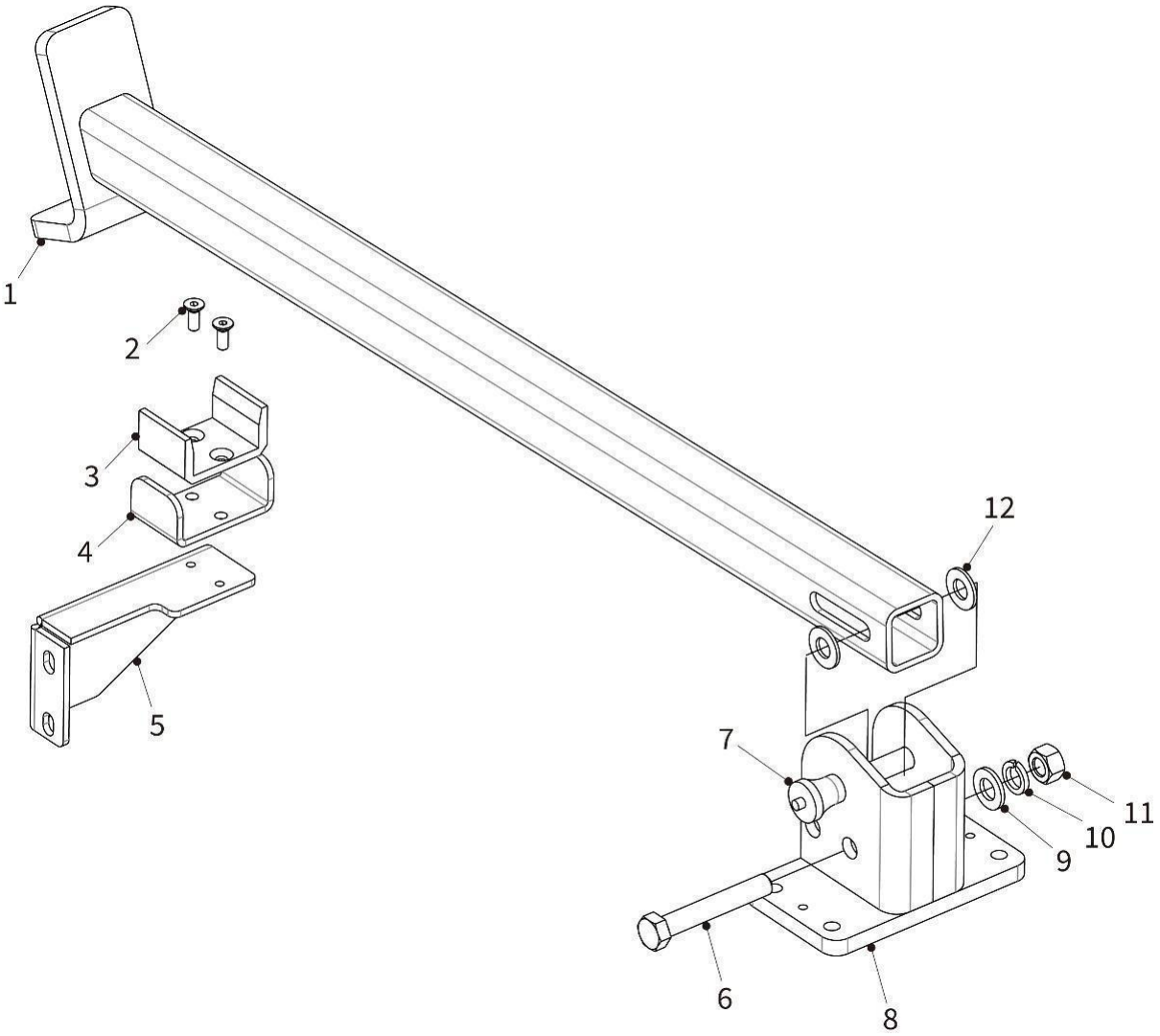
Item	Part No.	Description	Qty
1	PRPW00531	Handle Fixing Seat	1
2	PRPW02822	Hinge	6
3	PRPW02821	Control Box Mounting	1
4	PRPW02823	Upper Right Cover Assembly	1
5	PRPW03486	Side Plate Assembly	1
6	PRPW02807	Bracket	2
7	PRFA00057	Bolt, M12 x 45 mm	8
8	PRFA00034	Washer, Lock, M12	24
9	PRFA00030	Washer, M12	16
10	PRPW03118	Bearing Pedestal Assembly	4
11	PRPW00043	Rearview Mirror	1
12	PRPW02530	Bracket	1
13	PRFA00235	Screw, M14 x 70 mm	2
14	PRPW02565	Support Rod	1
15	PRFA00236	Screw, M14 x 55 mm	4
16	PRFA00253	Bolt, M8 x 30 mm	4
17	PRFA00009	Washer, M8	24
18	PRFA00010	Washer Lock, M8	12
19	PRFA00021	Nut, M8	12
20	PRFA00072	Washer, 14	2
21	PRFA00055	Bolt, M10 x 16 mm	4
22	PRFA00012	Washer, Lock, 10	4
23	PRPW02810	Front Lamp Shade	2
24	PRPW03487	Frame	1
25	PRPW00502	Stop Block	1
26	PRPW03488	Backing Plate	1
27	PRFA00234	Nut, M14	2
28	PRPW02819	Right Back Fender	1
29	PRPW02820	Air Spring	2
30	PRPW02813	Pin	2

Vehicle Body – Spare Parts List (cont.)

Item	Part No.	Description	Qty
31	PRPW02812	Headlight Holder	2
32	PRPW02811	Headlamp Transition Plate	2
33	PRPW00578	Side Collision Block	2
34	PRFA00022	Screw, M8 x 20 mm	8
35	PRPW03489	Gas Spring	1
36	PRPW03490	Padlock	2
37	PRPW03491	Bracket	2
38	PRPW03492	Side Plate Assembly	1
39	PRPW01668	Cushion	6
40	PRFA00366	Bolt, M8 x 55 mm	8
41	PRPW03493	Bracket	4
42	PRPW03494	Bracket	2
43	PRPW03495	Gas Spring	1
44	PRFA00030	Washer, M12	8
45	PRFA00042	Bolt, M12 x 35 mm	16
46	PRPW02817	Mudguard	1
47	PRPW02824	Handle Assembly	4
48	PRPW02560	Side Cover	1
49	PRPW02818	Lampshade	2
50	PRPW00378	Limit Block	2
51	PRPW03496	Motor Baffle	1
52	PRPW02292	Waterproof Connector Cover	1
53	PRPW03497	Power Connector Block	1

Safety Prop Assembly

Safety Prop Assembly – Exploded Parts View

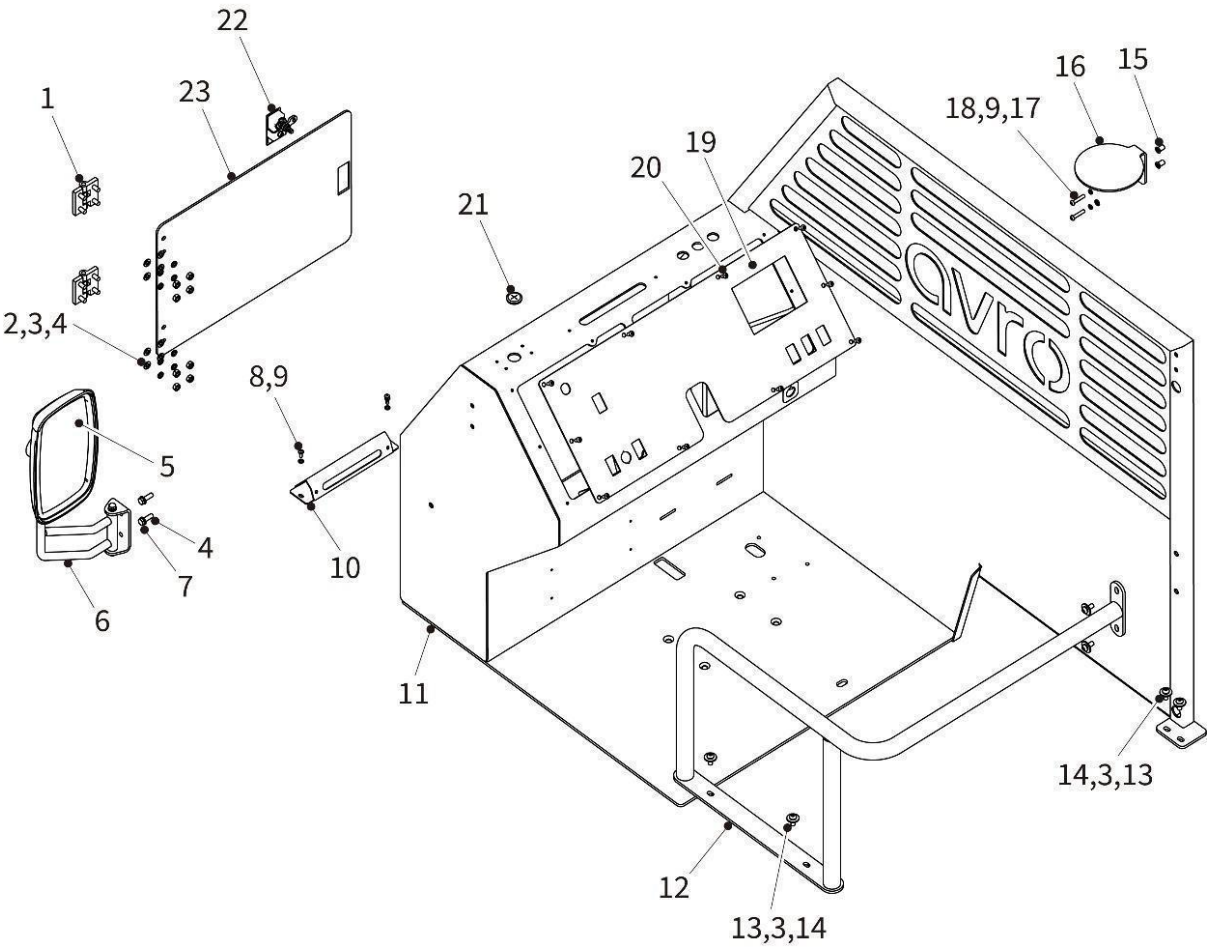


Safety Prop Assembly - Spare Parts List

Item	Part No.	Description	Qty
1	PRPW02825	Safety Prop	1
2	PRFA00237	Screw, Hex Socket Countersunk Head, M6 x16 mm	2
3	PRPW02826	Nylon Insert, for Safety Prop Stowage Clip	1
4	PRPW02829	Stowage Clip, Nylon, for Safety Prop	1
5	PRPW02830	Stowage Bracket, Support Bar	1
6	PRFA00238	Bolt, M12 x 75 mm	1
7	PRPW00518	Ball Lock Pin	1
8	PRPW2831	Safety Prop Base	1
9	PRFA00030	Washer, Flat, M12	1
10	PRFA00034	Washer, Lock, M12	1
11	PRFA00239	Nut, M12	1
12	PRFA00240	Washer, Special	2

Driver's Compartment

Driver's Compartment – Exploded Parts View

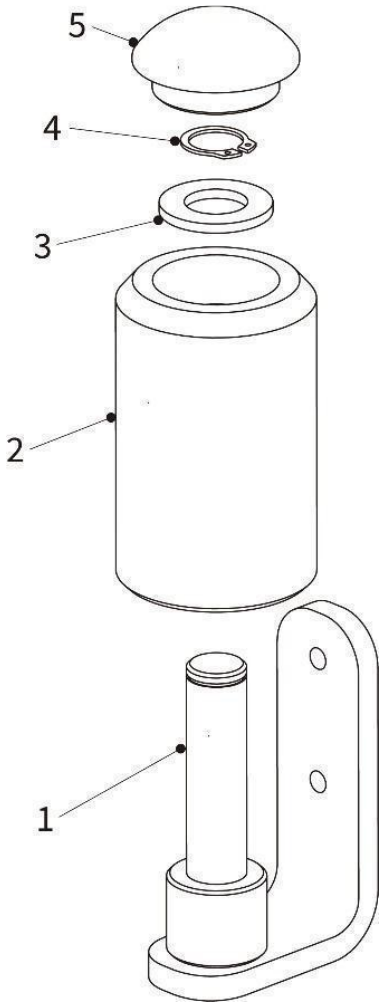


Driver's Compartment – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW01778	Hinge	2
2	PRFA00021	Nut, M8	16
3	PRFA00010	Washer, Lock, M8	22
4	PRFA00009	Washer, Flat, M8	18
5	PRPW00043	Wing Mirror	1
6	PRPW02832	Wing Mirror Bracket	1
7	PRFA00013	Bolt, M8 x 25 mm	2
8	PRFA00114	Screw, Cross Recessed Pan Head, M5 x 12 mm	3
9	PRFA00007	Washer, Lock, M6	4
10	PRPW02577	Dash Light Housing	1
11	PRPW02562	Cab Assembly	1
12	PRPW02833	Guardrail Assembly	1
13	PRFA00009	Washer, Flat, M8	6
14	PRFA00039	Screw, Flat Round Hex Socket Head, M8 x 20 mm	6
15	PRFA00241	Nut, Special, M8	2
16	PRPW02581	Warning Beacon Mount	1
17	PRFA00242	Screw, Flat Round Hex Socket Head, M6 x 30 mm	2
18	PRFA00006	Washer, Flat, M6	2
19	PRPW02834	Instrument Panel	1
20	PRFA00016	Screw, Flat Round Hex Socket Head, M6 x 12 mm	10
21	PRPW00636	Grommet	3
22	PRPW02756	Latch	1
23	PRPW02759	Access Panel	1

Guide Wheel Assembly

Guide Wheel Assembly – Exploded Parts View

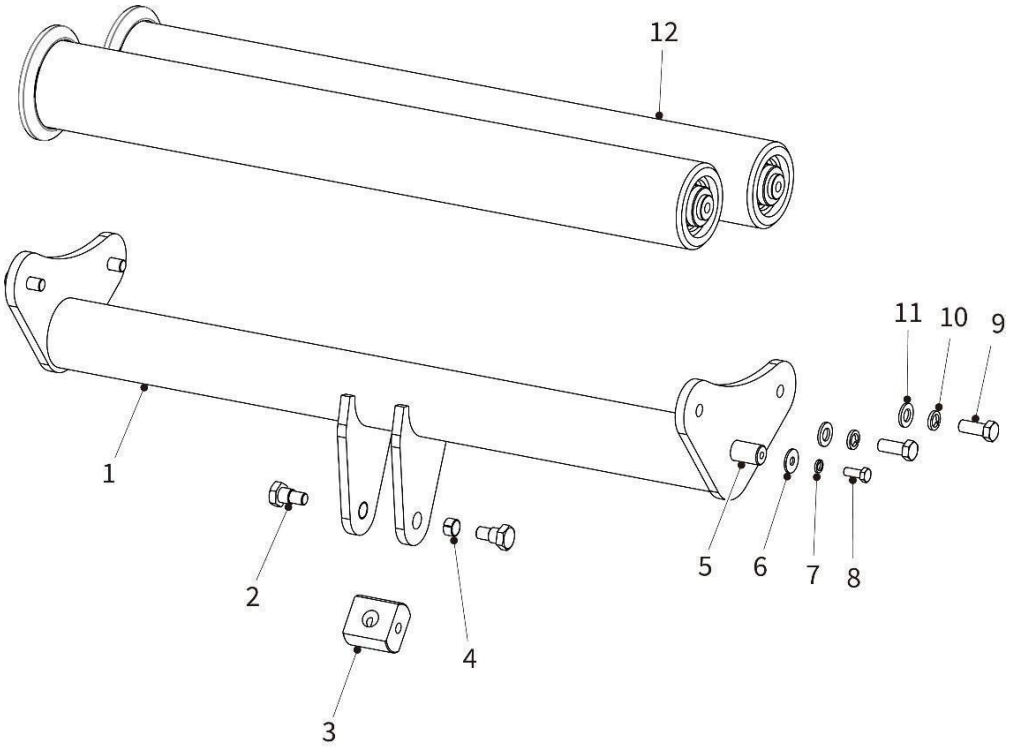


Guide Wheel Assembly – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03137	Support Assembly	1
2	PRPW03138	Guide Wheel, Nylon	1
3	PRPW00547	Washer, Flat, M18	1
4	PRPW03139	Circlip, M18	1
5	PRPW03154	Blanking Cap	1

Tightening Support Assembly

Tightening Support Assembly – Exploded Parts View

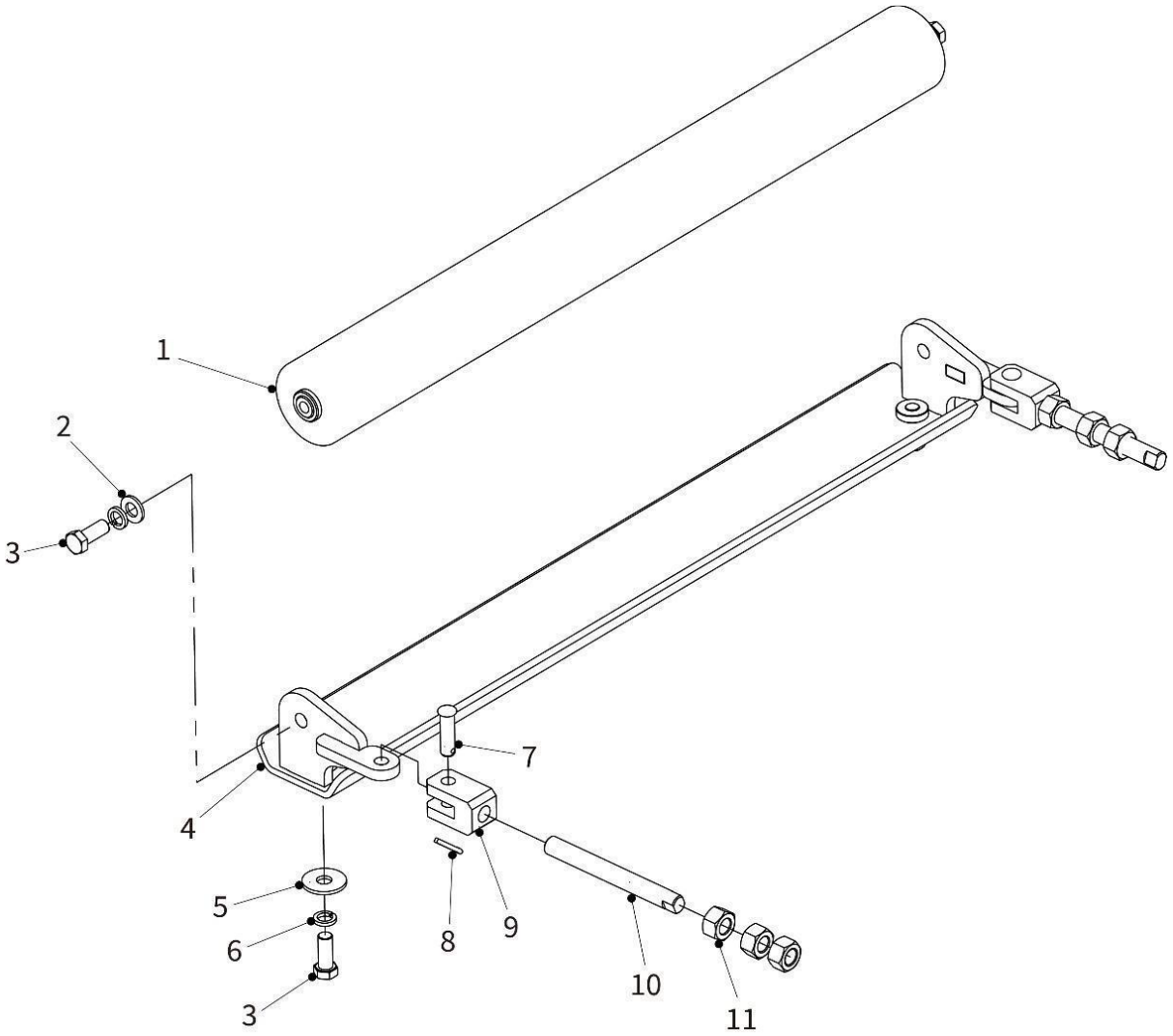


Tightening Support Assembly – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03140	Tensioner Support	1
2	PRFA00302	Bolt, Special	2
3	PRFA00303	Nut, Special	1
4	PRPW03141	Bushing, Type SF-1-1510, self-lubricating, oilless, composite, i.d. 15 mm, o.d. 17 mm, length 10 mm, wall thickness 1.01mm	2
5	PRPW03142	Tandem Shaft	1
6	PRFA00009	Washer, Flat, M8	2
7	PRFA00010	Washer, Lock, M8	2
8	PRFA00033	Bolt, M8 x 20 mm	2
9	PRFA00138	Bolt, M12 x 30 mm	4
10	PRFA00034	Washer, Lock, M12	4
11	PRFA00030	Washer, Flat, M12	4
12	PRPW03143	Adjusting Roller	2

Front Roller Adjustment Assembly

Front Roller Adjustment Assembly – Exploded Parts View

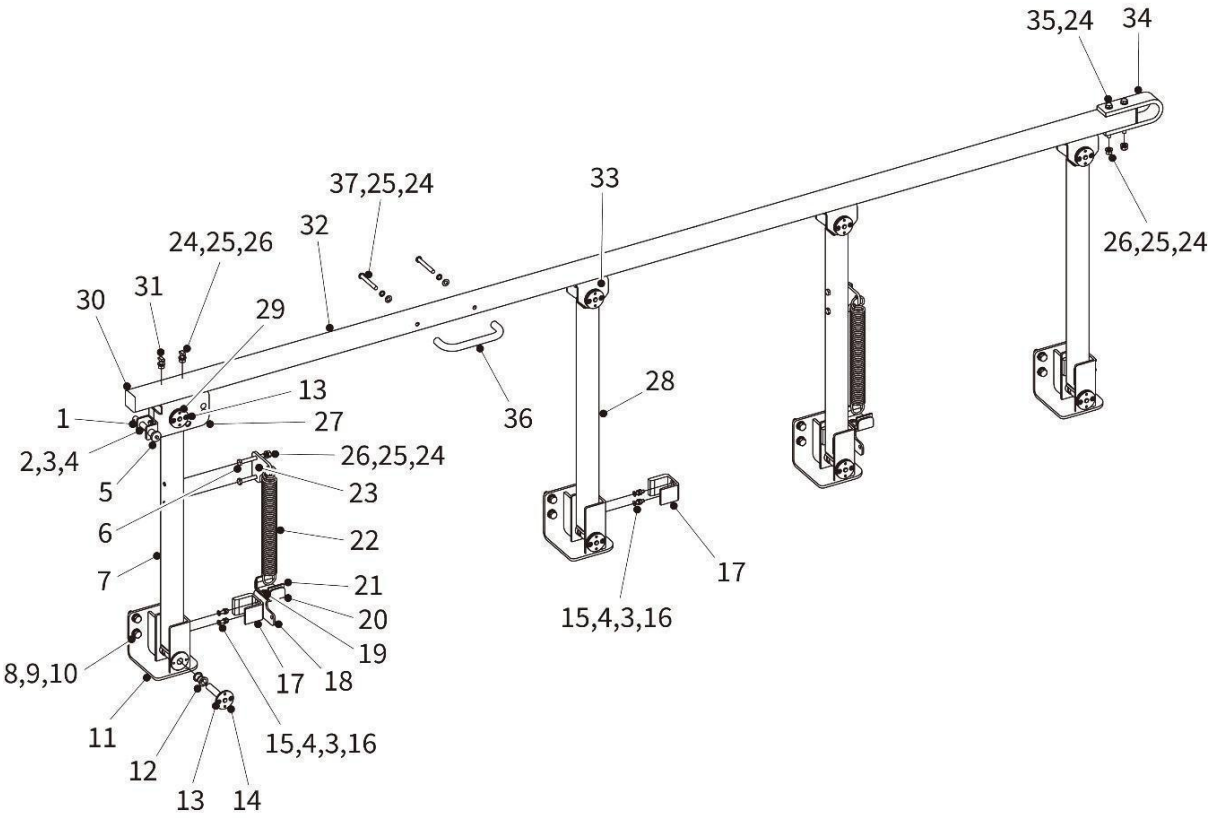


Front Roller Adjustment Assembly – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03144	Roller	1
2	PRFA00030	Washer, Flat, M12	2
3	PRFA00183	Bolt, M12 x 30 mm	4
4	PRPW03145	Adjustment Mechanism	1
5	PRFA00030	Washer, Flat, M12	2
6	PRFA00034	Washer, Lock, M12	4
7	PRFA00304	Pin, Clevis, headed, with hole, 12 x 40 mm	2
8	PRFA00306	Pin, Split Cotter, 4 x 182 mm	2
9	PRPW03146	Pull Rod Head	2
10	PRFA00305	Screw, Special, M16 x 1.5 mm	2
11	PRFA00073	Nut, M16	6

Handrail Assembly

Handrail Assembly – Exploded Parts View

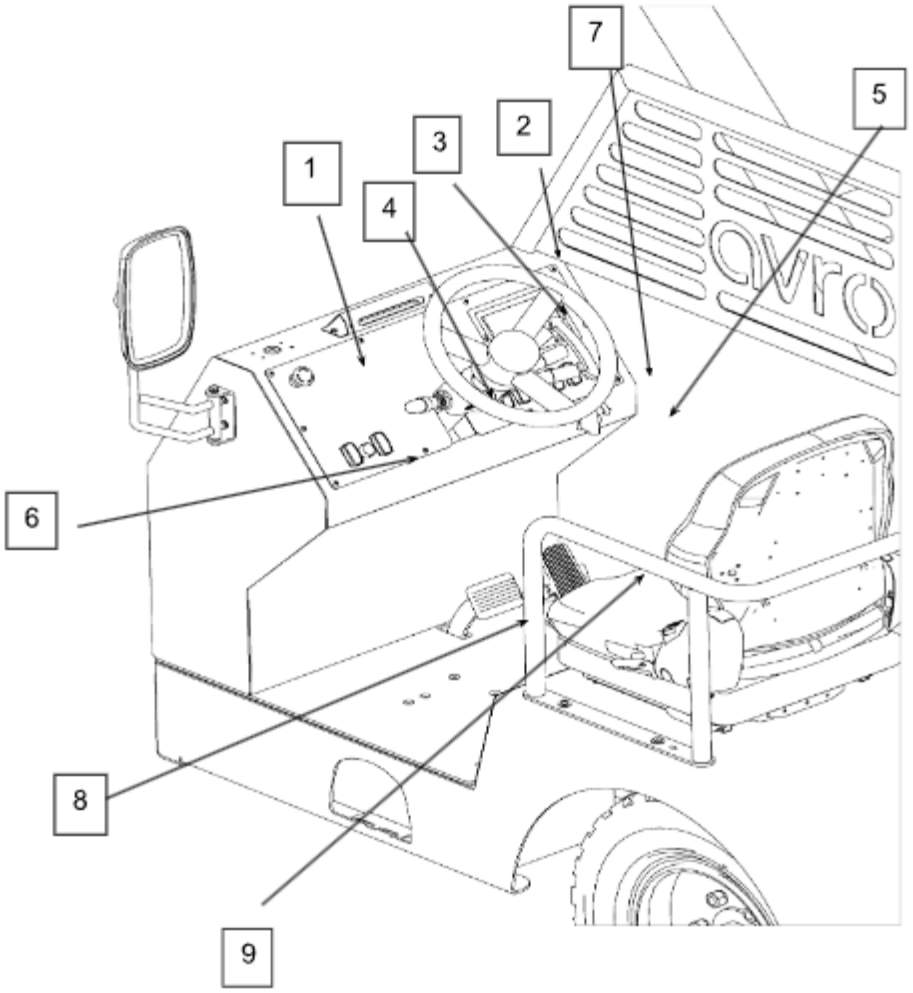


Handrail Assembly – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03147	Bracket, Pin Stowage	1
2	PRFA00108	Bolt, M6 x 16 mm	2
3	PRFA00007	Washer, Lock, M6	10
4	PRFA00006	Washer, Flat, M6	10
5	PRPW00518	Pin, Handrail, Safety Lock	1
6	PRFA00286	Bolt, M8 x 60 mm	4
7	PRPW03148	Column, Handrail, Spring Mounting	2
8	PRFA00008	Bolt, M10 x 30 mm	16
9	PRFA00012	Washer, Lock, M10	16
10	PRFA00011	Washer, Flat, M10	16
11	PRPW03149	Handrail Mounting Base	4
12	PRPW03150	Bearing, Plastic, Self-lubricating	16
13	PRFA00308	Screw, Countersunk, Flat Head, Cross Recess, Type Z, M5 x 10 mm	16
14	PRPW03151	Shaft Pin, Shouldered, Fixed, Column Base	4
15	PRFA00307	Screw, Hex Socket Countersunk Head, M6 x 25 mm	8
16	PRFA00025	Nut, M6	8
17	PRPW03152	Block, Nylon	6
18	PRPW03153	Limit Bracket	2
19	PRFA00313	Screw, Hex Socket Countersunk Head, M6 x 12 mm	4
20	PRPW03155	Holder, Nylon	2
21	PRPW03156	Block, Nylon	2
22	PRPW03157	Spring	2
23	PRPW03158	Pull Plate	2
24	PRFA00009	Washer, Flat, M8	18
25	PRFA00010	Washer, Lock, M8	16
26	PRFA00021	Nut, M8	14
27	PRPW03159	Bracket, Handrail, Locking/Safety	1
28	PRPW03160	Column, Handrail	2
29	PRPW03161	Shaft Pin, Shouldered, Fixed, Column Top	4
30	PRPW03162	End Face Cover Plate	2
31	PRFA00309	Bolt, Special, M8 x 20 mm	8
32	PRPW02498	Handrail	1
33	PRPW03163	Bracket, Handrail	3
34	PRPW03164	Collision Protection Strip	1
35	PRFA00310	Bolt, M8 x 80 mm, threaded length 25 mm	2
36	PRPW00626	Handle	1
37	PRFA00039	Screw, Flat Round Hex Socket Head, M8 x 20 mm	2

Controls and Instruments

Controls and Instruments – Exploded Parts View

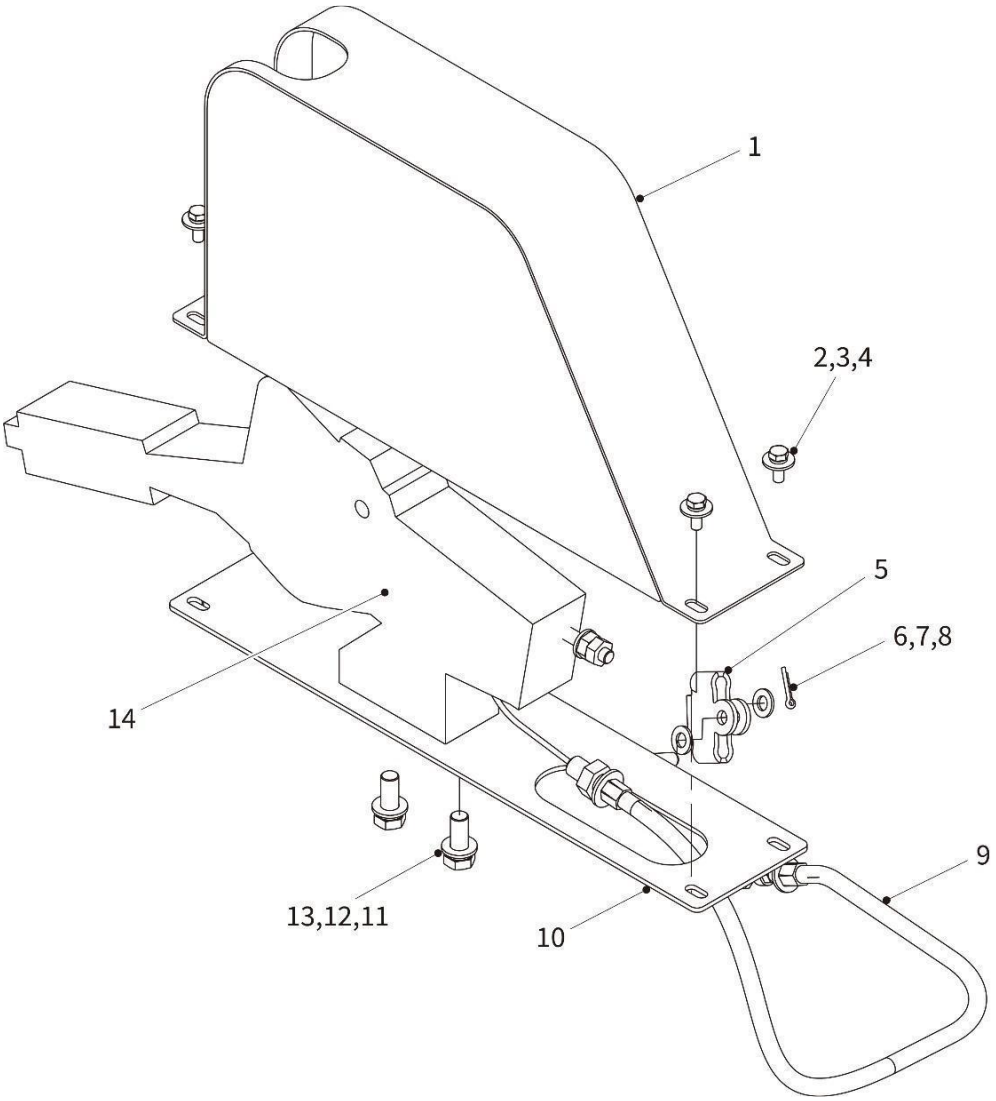


Controls and Instruments – Spare Parts List

Item	Part No.	Description	Qty
1		Emergency Stop	
2		Alarm Warning	
3		Dashboard	
4		Combination Switch	
5		Key Switch	
6		Belt Control Button	
7		Light Switch	
8		Service Brake Pedal	
9		Accelerator Pad	

Park Brake Mounting

Park Brake Mounting – Exploded Parts View

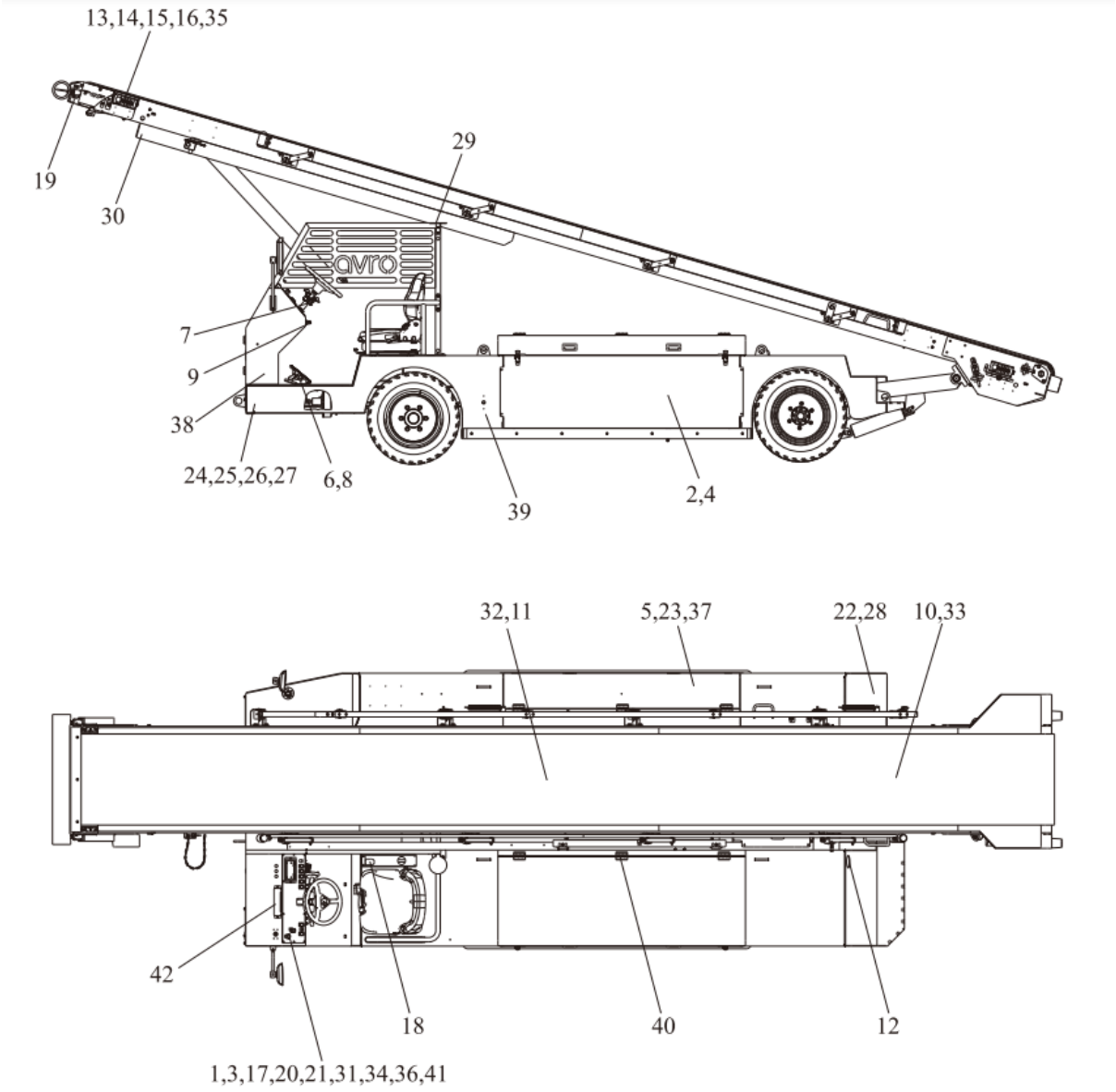


Parking Brake Mounting – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW02850	Cover Assembly	1
2	PRFA00006	Washer, Flat, M6	4
3	PRFA00007	Washer, Lock, M6	4
4	PRFA00248	Bolt, M6 x 16 mm	4
5	PRPW02584	Connection Bracket	1
6	PRFA00264	Pin, Clevis, headed, with hole, 8 x 22 mm	1
7	PRFA00009	Washer, Flat, M8	2
8	PRFA00265	Pin, Split Cotter, 3.2 x 14 mm	1
9	PRPW00011	Park Brake Cable	1
10	PRPW02851	Mounting Plate	1
11	PRFA00063	Bolt, M10 x 25mm	2
12	PRFA00012	Washer, Lock, M10	2
13	PRFA00011	Washer, Flat, M10	2
14	PRPW02852	Park Brake Handle	1

Electrical System

Electrical System – Exploded Parts View

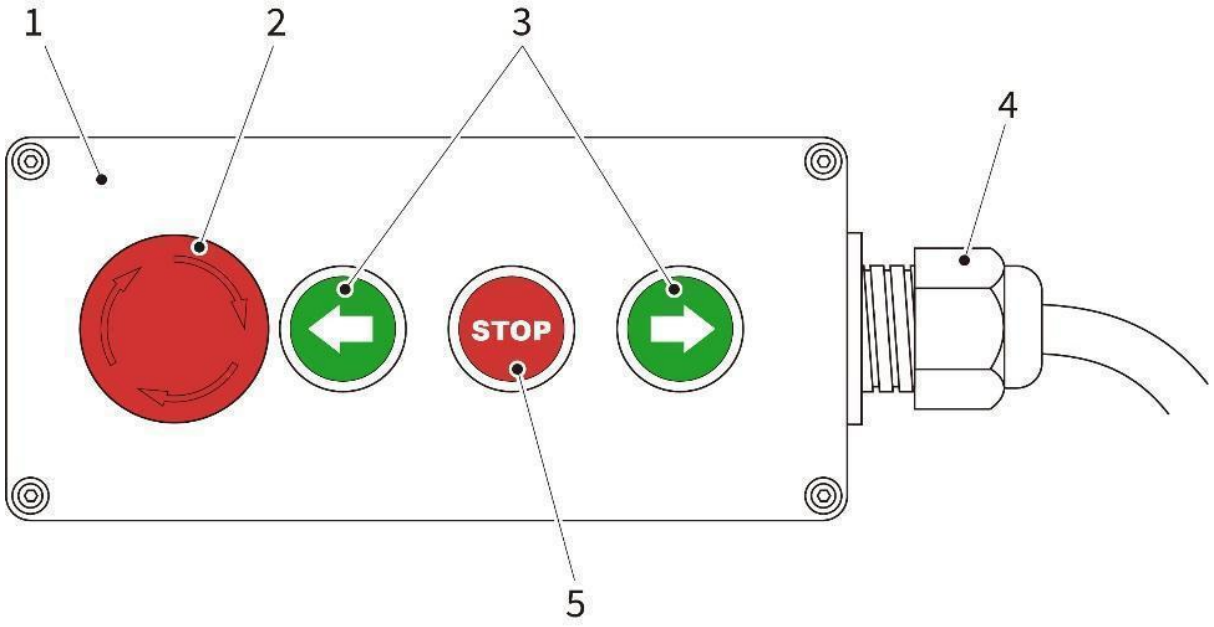


Electrical System – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03498	Emergency Stop Switch	3
2	PRPW03499	Traction Controller	1
3	PRPW02757	Combination Meter	1
4	PRPW03500	Vehicle Harness	1
5	PRPW00499	DC-DC Isolation Converter	2
6	PRPW00136	Accelerator	1
7	PRPW00177	Combination Switch	1
8	PRPW00680	Foot Brake Switch	2
9	PRPW00428	Key Switch	1
10	PRPW03501	Traction Motor	1
11	PRPW03502	Oil Pump Motot	1
12	PRPW03503	Hand Throttle	1
13	PRPW00107	Inching Switch	4
14	PRPW00042	Inching Switch	2
15	PRPW03504	Emergency Stop Sign	1
16	PRPW00021	Button Box	2
17	PRPW00959	Hydraulic Valve Control Switch	2
18	PRPW00676	Hand Brake Switch	1
19	PRPW02855	Ultrasonic Sensor	2
20	PRPW00958	Button Cap	1
21	PRPW00957	Switch Body	1
22	PRPW01092	Back Buzzer	1
23	PRPW03297	Central Control Box	1
24	PRPW01152	Horn	1
25	PRPW02856	Horn Filter	1
26	PRPW03505	Side Turn Lamp	2
27	PRPW02860	Side Turn Lamp	2
28	PRPW02862	Three Color Tail Lamp	2
29	PRPW01155	Warning Lights	1
30	PRPW00436	Working Lamp	1
31	PRPW01930	Working Lamp Switch	1
32	PRPW03506	Connecting Line	1
33	PRPW03507	Traction Motor Cables	1
34	PRPW01928	Double Flash Switch	1
35	PRPW02404	Belt Carrier Wire Harness	1
36	PRPW02299	Flash Buzzer	3
37	PRPW03508	Five Core Relay	2
38	PRPW03182	Level Sensor Plug-In	1
39	PRPW00020	High Turn Signal Lamp	2
40	PRPW03625	Battery Socket Assembly	1
41	PRPW03509	Blocking Cover	1
42	PRPW03510	24 V License Plate Lamp	1

Belt Control Box

Belt Control Box – Exploded Parts View

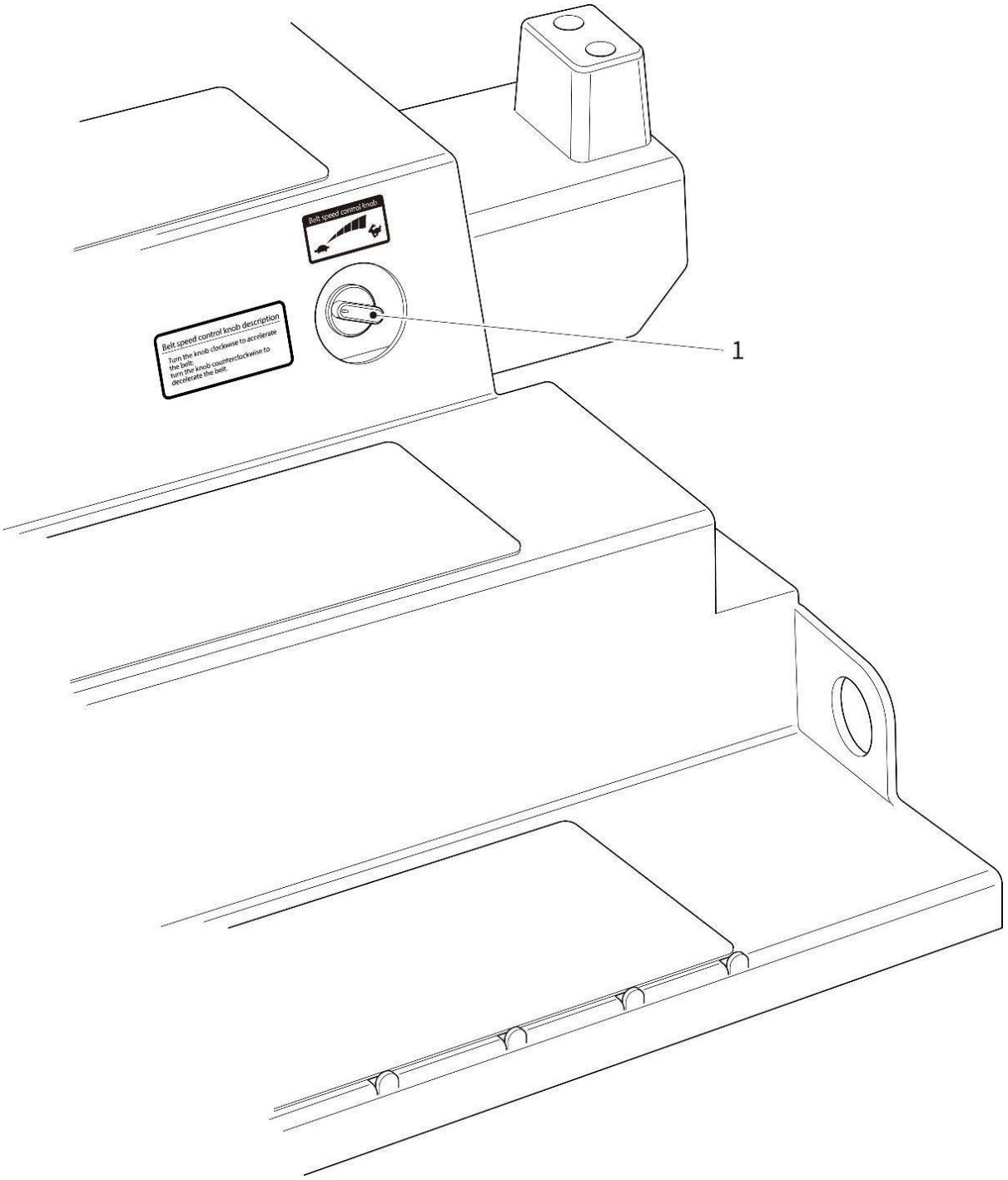


Belt Control Box – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW00021	Belt Control Box	2
2	PRPW00682	EMERGENCY STOP switch	2
3	PRPW00107	Forward/Reverse Switch, Button	4
4	PRPW02404	Belt Frame Harness	1
5	PRPW00042	Stop Switch, Conveyor Belt Movement	2

Belt Speed Control

Belt Speed Control – Exploded Parts View

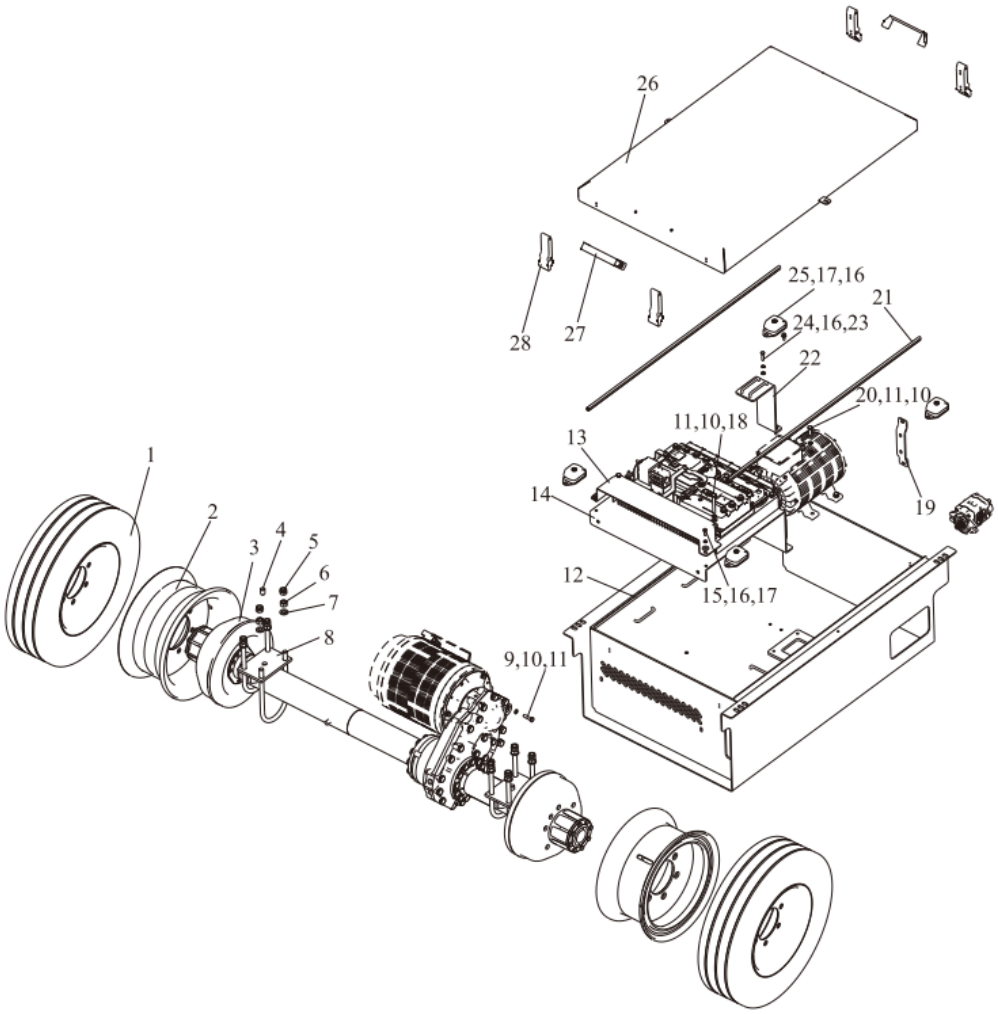


Belt Speed Control – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW00007	Throttle Control, Rear	1

Drivetrain

Drivetrain – Exploded Parts View

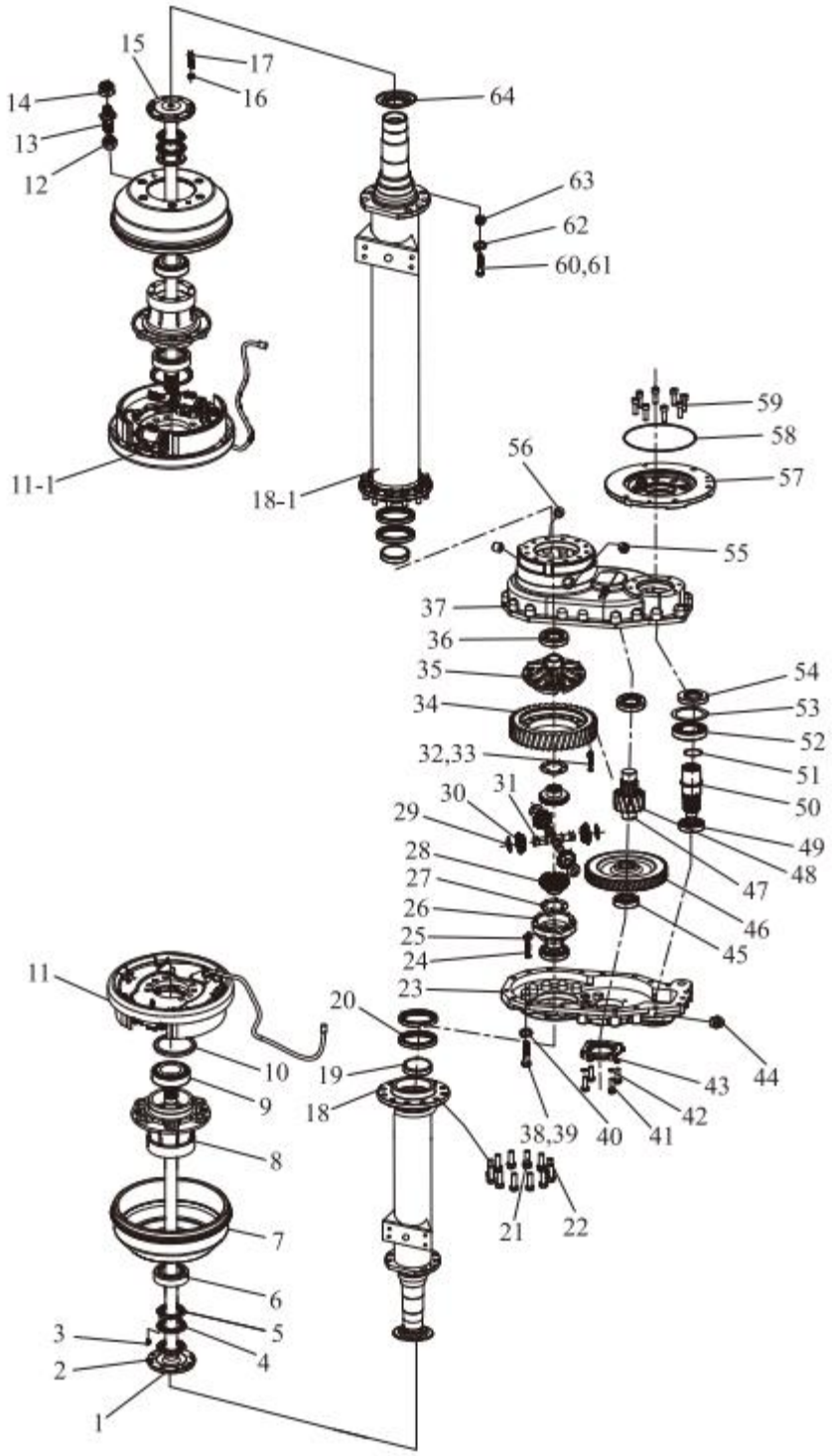


Drivetrain – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03511	Tire, 28 x 9-15-12PR	2
2	PRPW03512	Rim, 7.00-15	2
3	PRPW03513	Driver Installation Box	1
4	PRFA00273	Pin	2
5	PRFA00079	Nut, M16 x 1.5	8
6	PRFA00291	Nut, M16 x 1.5	8
7	PRFA00068	Washer, 16	8
8	PRPW02921	U-Bolt, M16	4
9	PRFA00026	Bolt, M10 x 35 mm	5
10	PRFA00010	Washer, Lock, 8	13
11	PRFA00009	Washer, 8	13
12	PRPW03514	Power Box	1
13	PRPW03515	Ventilation Hood	1
14	PRPW03627	Bracket	1
15	PRFA00009	Washer, 8	2
16	PRFA00010	Washer, Lock, 8	5
17	PRFA00033	Bolt, M8 x 20 mm	3
18	PRFA00367	Bolt, M10 x 80 mm	4
19	PRPW03628	Priority Valve Mounting Plate	1
20	PRFA00008	Bolt, M10 x 30 mm	4
21	PRPW03629	II Sealing Strip	2
22	PRPW03630	Clamp Bracket Assembly	1
23	PRFA00009	Washer, 8	3
24	PRFA00253	Bolt, M8 x 30 mm	2
25	PRPW03631	Damping Pad	4
26	PRPW03632	Power Box Cover	1
27	PRPW00390	Handle	2
28	PRPW03633	Rear Cover Lock	4

Drive Axle

Drive Axle – Exploded Parts View



Drive Axle – Spare Parts List

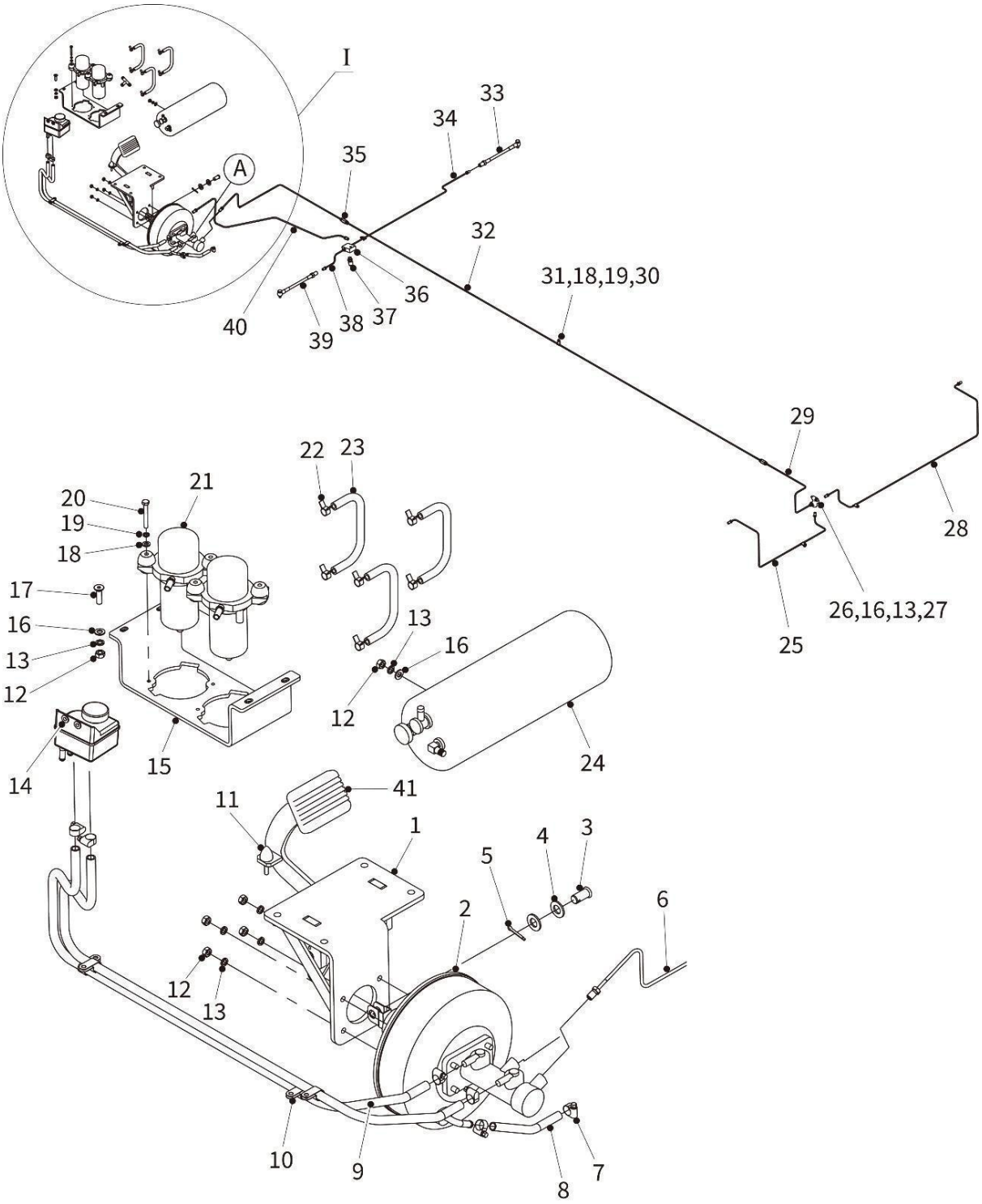
Item	Part No.	Description	Qty
1	PRPW03517	Halfshaft, Left	1
2	PRPW03518	Halfshaft Gasket	2
3	PRPW03519	Pin	2
4	PRPW03520	Lock Washer	2
5	PRPW03521	Lock Nut	4
6	PRPW03522	Tapered Roller Bearing	2
7	PRPW03523	Brake Drum	2
8	PRPW03524	Hub	2
9	PRPW03525	Tapered Roller Bearing	2
10	PRPW03526	Hub Oil Seal	2
11	PRPW03527	Left Brake Assembly	1
11.1	PRPW03528	Right Brake Assembly	1
12	PRPW03529	Hub Bolt Inner Nut	12
13	PRPW03530	Tire Bolt	12
14	PRPW03531	Hub Bolt Outer Nut	12
15	PRPW03532	Halfshaft, Right	1
16	PRPW03533	Heavy Duty Spring Washer	16
17	PRPW03534	Type 1 Hexagon Bolt	16
18	PRPW03535	Sleeve As-Left Halfshaft	1
18.1	PRPW03536	Sleeve As-Right Halfshaft	1
19	PRPW03537	Halfshaft Guide Ring	2
20	PRPW03538	Seal Ring, dia. 38 x 62 x 11	4
21	PRPW03539	Heavy Duty Spring Washer	24
22	PRPW03540	Bolt	24
23	PRPW03541	Left Minus Shell	1
24	PRPW03542	Differential Case Fastening Bolt	8
25	PRPW03543	Heavy Duty Spring Washer	8
26	PRPW03544	Differential Case, Right	1
27	PRPW03545	Thrust Washer	2
28	PRPW03546	Halfshaft Gear	2
29	PRPW03547	Planetary Gear Thrust Washer	4
30	PRPW03548	Planet Gear	4
31	PRPW03549	Planetary Shaft	1
32	PRPW03550	Bolt	16
33	PRPW03551	Type 1 Hexagon Lock Nut	16
34	PRPW03552	Secondary Driven Gear	1
35	PRPW03553	Differential Case, Left	1
36	PRPW03554	Tapered Roller Bearing	2
37	PRPW03555	Reducer Housing, Right	1
38	PRPW03556	Bolt	12
39	PRPW03557	Bolt	6
40	PRPW03558	Heavy Duty Spring Washer	18
41	PRPW03559	Bolt	4
42	PRPW03560	Heavy Duty Spring Washer	4

Drive Axle – Spare Parts List (cont.)

Item	Part No.	Description	Qty
43	PRPW03561	Two Axle End Cover	1
44	PRPW03562	Vent Plug	1
45	PRPW03563	Tapered Roller Bearing	2
46	PRPW03564	First Stage Driven Gear	1
47	PRPW03565	Secondary Spline Shaft	1
48	PRPW03566	Secondary Driving Gear	1
49	PRPW03567	Tapered Roller Bearing	1
50	PRPW03568	Primary Driving Gear Shaft	1
51	PRPW03569	O-Ring	1
52	PRPW03570	Tapered Roller Bearing	1
53	PRPW03571	Washer	1
54	PRPW03572	Seal Ring, dia. 45 x 72 x 12	1
55	PRPW03573	Filler Plug	2
56	PRPW03574	Magnetic Plug	2
57	PRPW03575	Moto Flange	1
58	PRPW03576	O-Ring	1
59	PRPW03577	Bolt	8
60	PRPW03578	Bolt	8
61	PRPW03579	Bolt	8
62	PRPW03580	Heavy Duty Spring Washer	16
63	PRPW03581	Nut	16
64	PRPW03582	Oil Baffle	2

Braking System

Braking System – Exploded Parts View

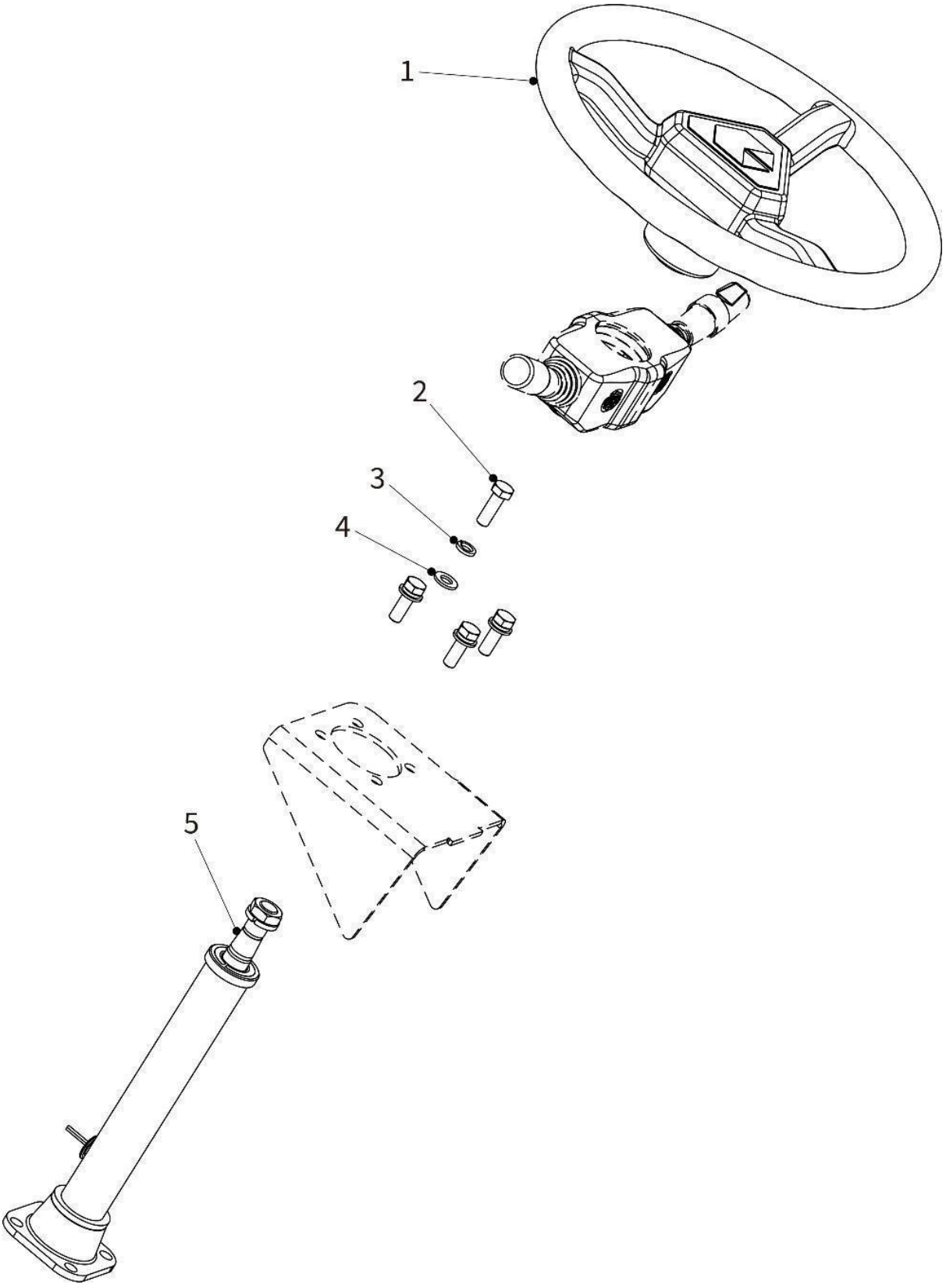


Braking System – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03184	Foot Brake Support Assembly	1
2	PRPW03185	Brake Master Cylinder Assembly	1
3	PRFA00368	Pin. Special	1
4	PRFA00072	Washer, Flat, M14	2
5	PRPW03186	Split Cotter Pin	1
6	PRPW03187	Brake Pipe D	1
7	PRPW00879	Clip, Hose, 16 x 10 mm	6
8	PRPW03188	Hose, Brake, ϕ10 x 500 mm	1
9	PRPW03189	Hose, Brake, ϕ10 x 1120 mm	2
10	PRPW03190	Hose Clamp, 16 mm	4
11	PRPW03191	Cone Pad	1
12	PRFA00021	Nut, M8	6
13	PRFA00010	Washer, Lock, M8	8
14	PRPW03192	Brake Fluid Reservoir	1
15	PRPW03193	Bracket, Fixed	1
16	PRFA00009	Washer, Flat, M8	4
17	PRFA00312	Screw, Hex Socket Countersunk Head, M8 x 20 mm	1
18	PRFA00006	Washer, Flat, M6	14
19	PRFA00007	Washer, Lock, M6	14
20	PRFA00064	Bolt, M6 x 45mm	4
21	PRPW00057	Vacuum Pump	2
22	PRPW03194	Clamp, Hose, dia. 11 mm	6
23	PRPW00819	Tube, dia. 7mm	3
24	PRPW00822	Vacuum Accumulator Tank	1
25	PRPW03195	Brake Pipe, G	1
26	PRPW03196	Connector, Hydraulic, Three-Way	2
27	PRFA00047	Bolt, M8 x 35mm	2
28	PRPW03197	Brake Pipe, H	1
29	PRPW03198	Brake Pipe, F	1
30	PRFA00130	Bolt, M6 x 12 mm	10
31	PRPW00814	Clamp, Brake Pipe, ϕ6	10
32	PRPW03199	Brake Pipe, E	1
33	PRPW03200	Brake Hose	1
34	PRPW03201	Brake Pipe, C	1
35	PRPW03202	Connector, Straight	2
36	PRPW03203	Connector, Brake	1
37	PRPW03204	Test Point, Hydraulic	1
38	PRPW03205	Brake Pipe, B	1
39	PRPW03206	Brake Hose	1
40	PRPW03207	Brake Pipe, A	1
41	PRPW03211	Brake Pedal Rubber Cover	1

Steering Column

Steering Column – Exploded Parts View

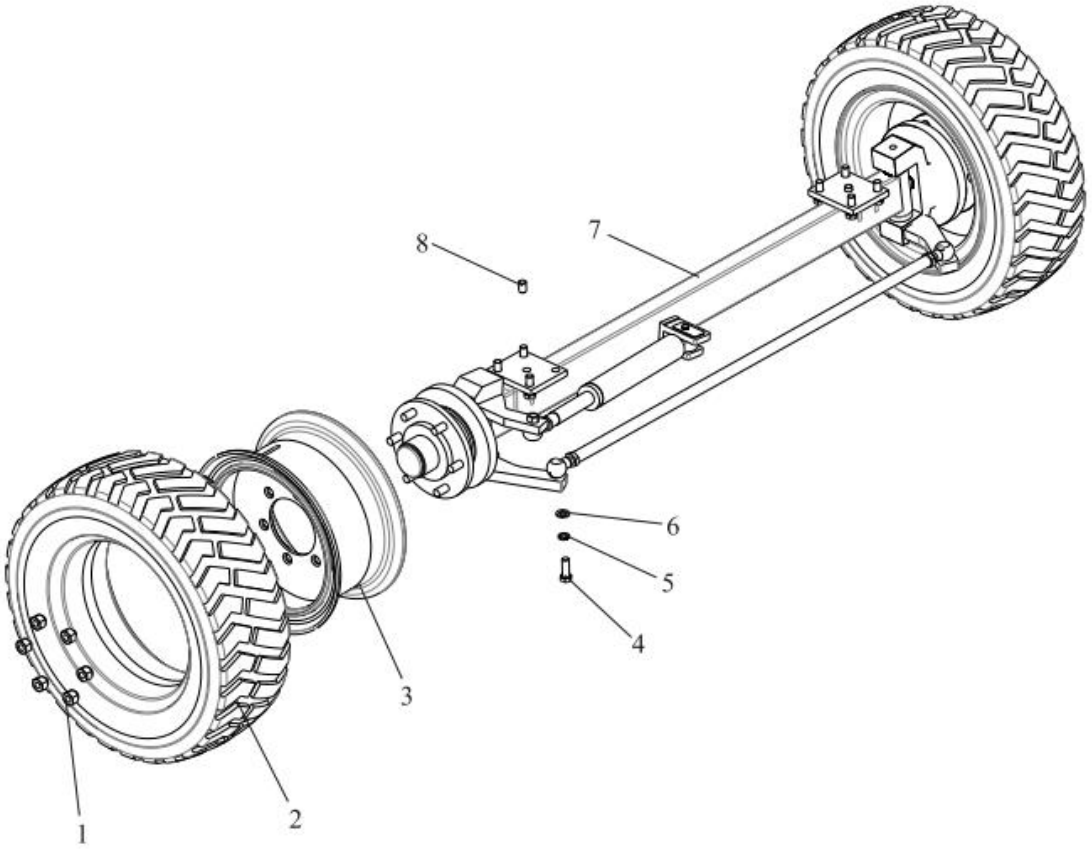


Steering Column – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW00192	Steering Wheel Assembly	1
2	PRFA00008	Bolt, M10 x 30 mm	4
3	PRFA00012	Washer, Lock, M10	4
4	PRFA00011	Washer, Flat, M10	4
5	PRPW02965	Steering Column Assembly	1

Steering Axle Assembly

Steering Axle Assembly – Exploded Parts View

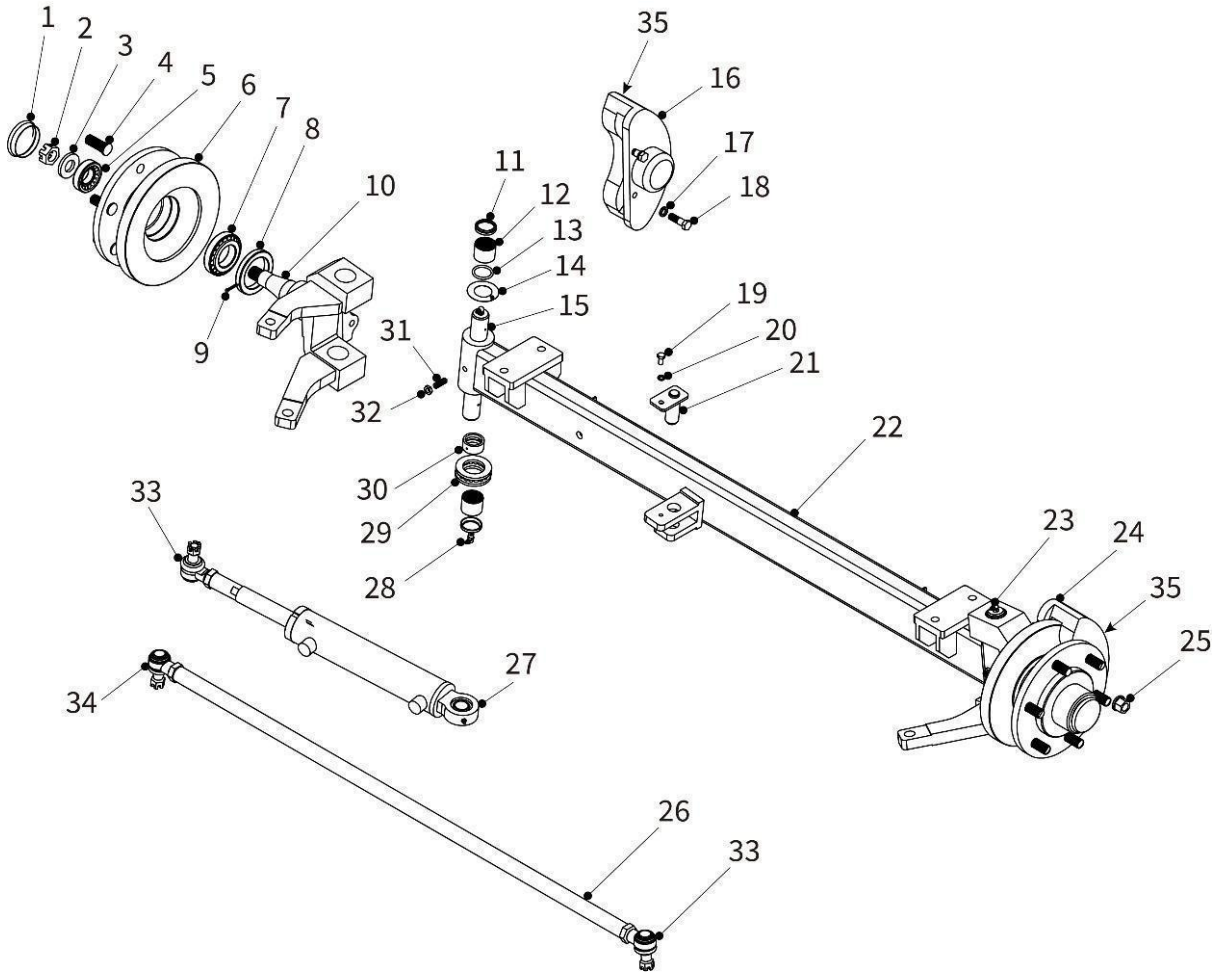


Steering Axle Assembly – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03583	Nut	12
2	PRPW03511	Tire, 28 x 9-15-12PR	2
3	PRPW03512	Rim, 7.00-15	2
4	PRFA00274	Bolt, M16 x 45 mm	8
5	PRFA00069	Washer, Lock, 16	8
6	PRFA00068	Washer, 16	8
7	PRPW02966	Steering Axle	1
8	PRPW02922	Fixed Pin	2

Steering Axle

Steering Axle – Exploded Parts View

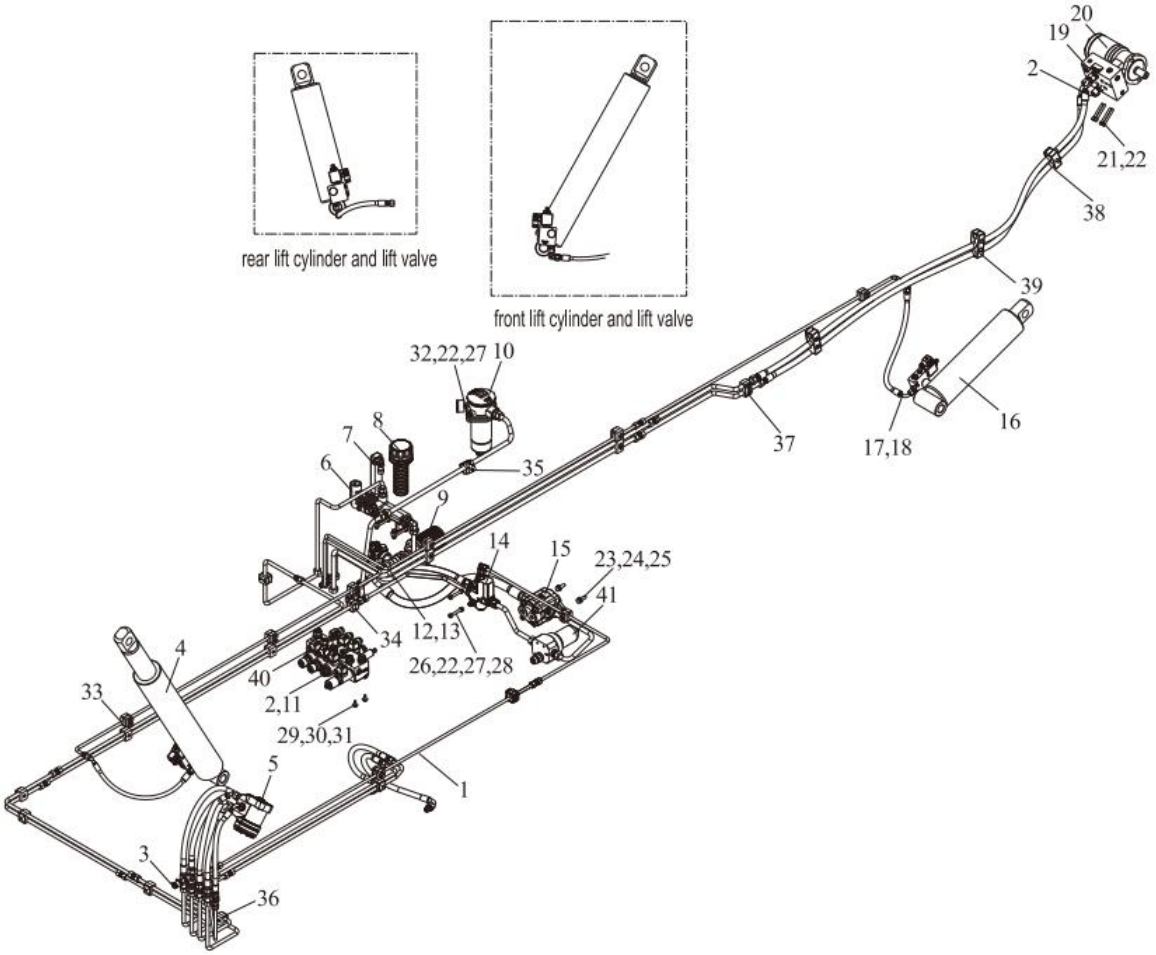


Steering Axle – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW02967	Cap	2
2	PRFA00275	Nut, M24 x 2 mm	2
3	PRFA00276	Nut, 26 x 50 x 6 mm	2
4	PRFA00277	Bolt, M18 x 50 x 1.5 mm	12
5	PRPW02968	Tapered Roller Bearing, Type 32206, single row, i.d. 30 mm, o.d. 62 mm, width 21.75 mm, chamfer 1.0 mm	2
6	PRPW02969	Front Hub	2
7	PRPW02970	Tapered Roller Bearing, Type 30209, single row, i.d. 45 mm, o.d. 85 mm, width 20.75 mm, chamfer 1.5 mm	2
8	PRPW02971	Seal, Oil, 65 x 90 x 12 mm	2
9	PRFA00278	Pin, 5 x 45 mm	2
10	PRPW02972	Knuckle, Left-Hand	1
11	PRPW02973	Seal, Oil	4
12	PRPW02974	Needle Roller Bearing, Type 943/32, i.d. 32 mm, o.d. 39 mm, width 32 mm	4
13	PRPW02975	O-Ring, dia. 31.80 mm x 4.80 mm	2
14	PRPW02976	Shim	2
15	PRFA00279	Pin, Special	2
16	PRPW02977	Wheel Brake Assembly, Left-Hand (Comes complete with set of Brake Pads)	1
17	PRFA00034	Washer, Lock, M12	4
18	PRFA00134	Bolt, M12 x 1.25 x 40 mm	4
19	PRFA00061	Bolt, M8 x 16mm	1
20	PRFA00010	Washer, Lock, M8	1
21	PRFA00281	Pin, Special	1
22	PRPW02978	Front Axle	1
23	PRPW02979	Knuckle, Right-Hand	1
24	PRPW02980	Wheel Brake Assembly, Right-Hand (Comes complete with set of Brake Pads)	1
25	PRFA00282	Rim Bolt, M18 x 25 mm	12
26	PRPW02981	Track Rod	1
27	PRPW02982	Steering Cylinder	1
28	PRPW02983	Grease Nipple, 90 deg	4
29	PRPW02984	Thrust Ball Bearing, Type 198908K, i.d. 38.5 mm, o.d. 66.7 mm, width 18 mm	2
30	PRPW02985	Bushing, Thrust Bearing, Type A21B4-12001	2
31	PRFA00283	Screw, M10 x 25 mm	2
32	PRFA00036	Nut, M10	2
33	PRPW02986	Ball Joint, Right-Hand	2
34	PRPW02987	Ball Joint, left-Hand	1
Not shown	PRPW00305	Front Brake Pad Kit	2

Hydraulic System

Hydraulic System – Exploded Parts View

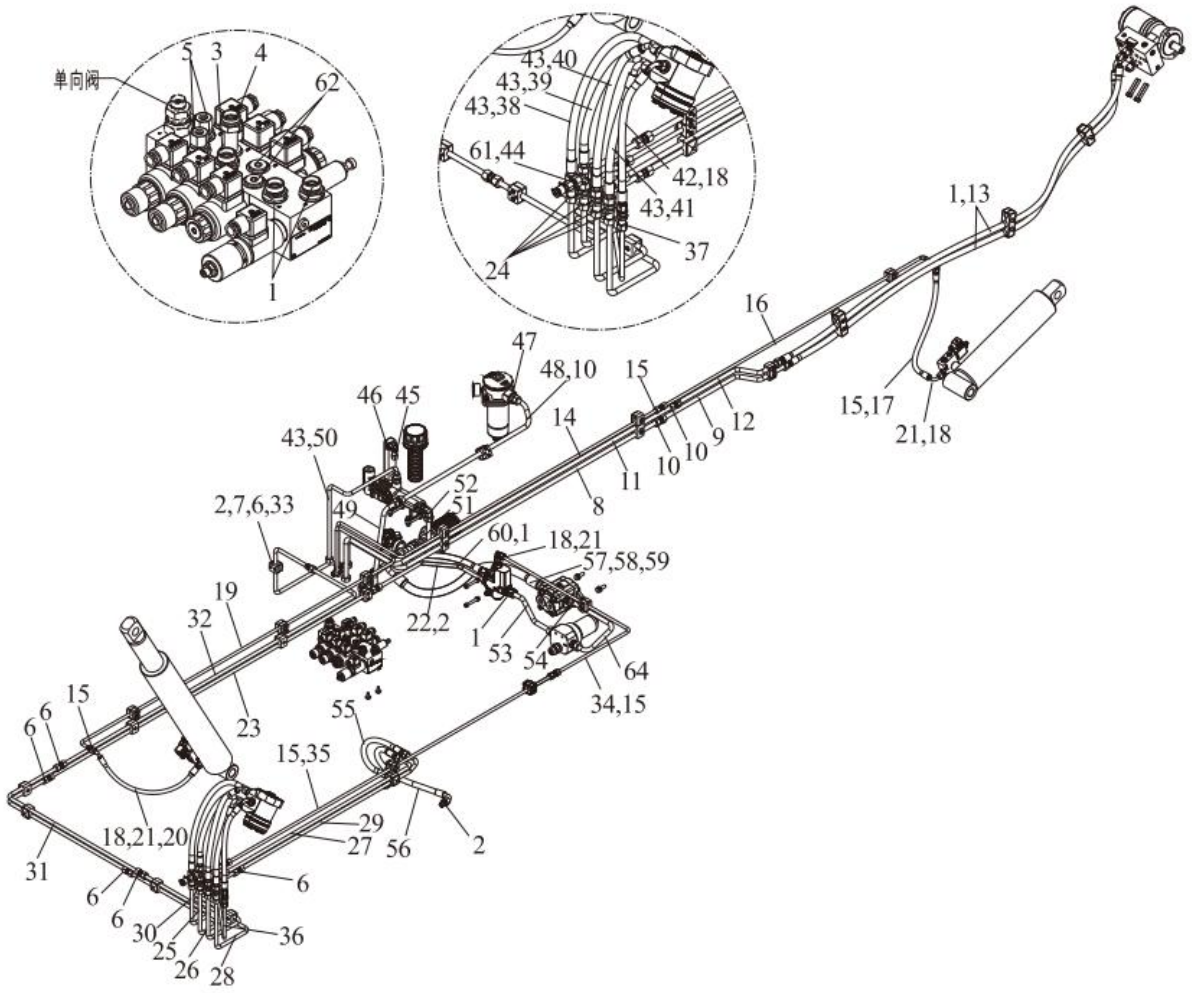


Hydraulic System – Spare Parts List

Item	Part No.	Description	Qty
1	B80X4-10000	Hydraulic System Piping, complete (NOTE: a complete set of hydraulic piping is NOT available as a replacement part)	1
2	PRPW02989	Pressure Tap, G1/4	2
3	PRPW02990	Pressure Tap	1
4	PRPW02563	Oil Cylinder	1
5	PRPW02992	Steering Unit	1
6	PRPW03016	Pump	1
7	PRPW03017	Liquid Level Thermometer	1
8	PRPW03015	Air Filter	1
9	PRPW03255	Oil Suction Filter	1
10	PRPW02711	Oil Return Filter	1
11	PRPW03343	Electronic Integration Valve	1
12	PRPW03584	Gate Valve	1
13	PRPW03585	Transition Joint	1
14	PRPW02996	Priority Valve	1
15	PRPW02955	Gear Pump	1
16	PRPW02564	Oil Cylinder	1
17	PRPW03300	Lifting solenoid Valve Group	2
18	PRFA00284	Hinged Bolt	2
19	PRPW03000	Balance Valve Group	1
20	PRPW03001	Hydraulic Motor	1
21	PRFA00285	Screw, M8 x 60 mm	4
22	PRFA00010	Washer, Lock, 8	10
23	PRFA00008	Bolt, M10 x 30 mm	2
24	PRFA00012	Washer, Lock, 10	2
25	PRFA00011	Washer, 10	2
26	PRFA00286	Bolt, M8 x 60 mm	2
27	PRFA00009	Washer, 8	6
28	PRFA00021	Nut, M8	2
29	PRFA00001	Bolt, M6 x 20 mm	4
30	PRFA00007	Washer, Lock, 6	4
31	PRFA00006	Washer, 6	4
32	PRFA00047	Bolt, M8 x 35 mm	2
33	PRPW03003	Single Pipe Clamp, 10	9
34	PRPW03004	Single Pipe Clamp, 12	3
35	PRPW03005	Single Pipe Clamp, 15	1
36	PRPW03002	Double Pipe Clamp, 12	8
37	PRPW03006	Double Pipe Clamp, 15	3
38	PRPW03007	Single Pipe Clamp, 21.3	1
39	PRPW03008	Pipe Clamp	4
40	PRPW03009	Check Valve	1
41	PRPW02715	High Pressure Filter	1

Hydraulic Piping

Hydraulic Piping – Exploded Parts View



Hydraulic Piping – Spare Parts List

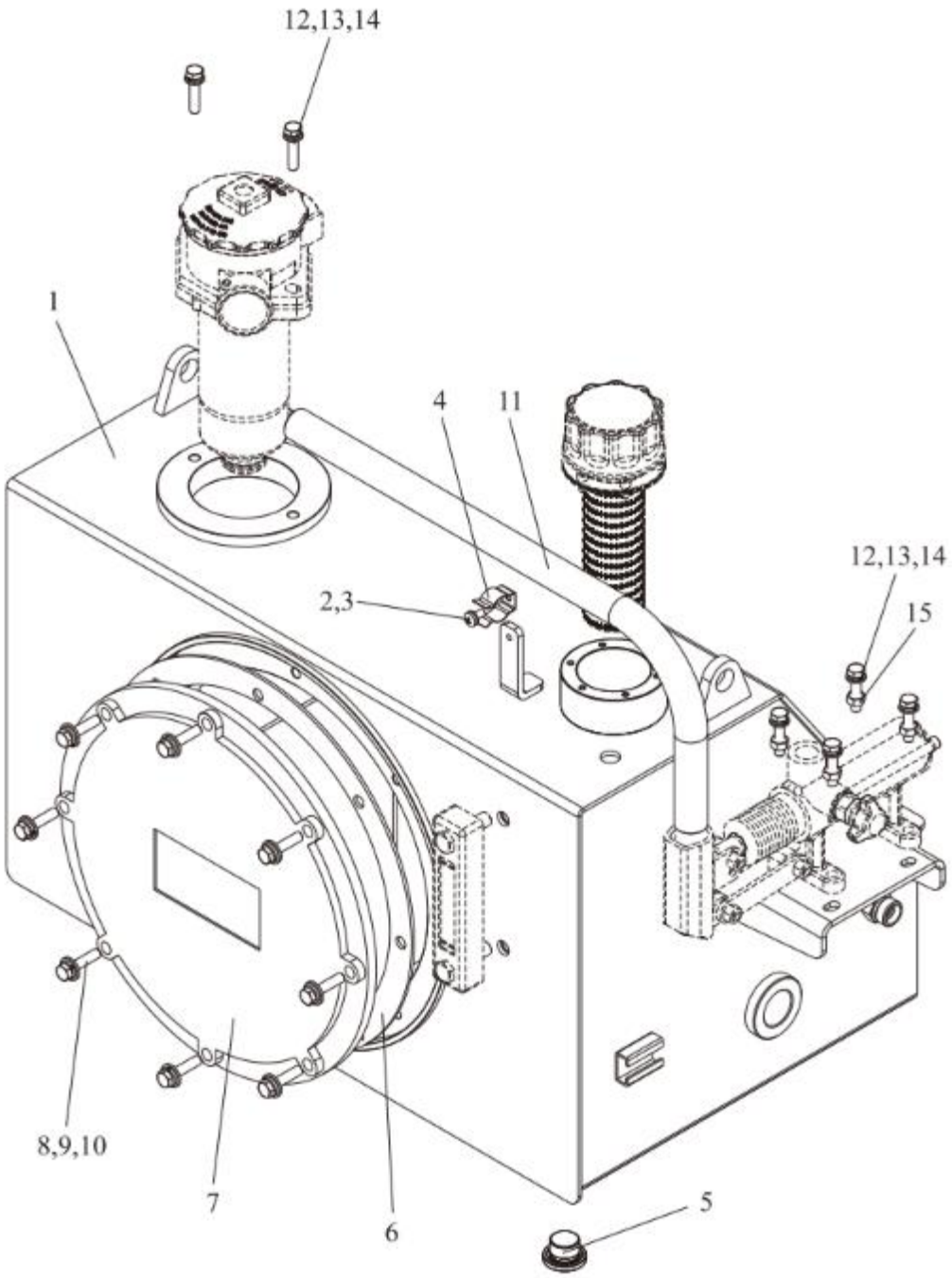
Item	Part No.	Description	Qty
1	PRPW02740	Nipple	8
2	PRPW03586	Nipple	4
3	PRPW03587	Nipple	1
4	PRPW03588	Nipple	2
5	PRPW03589	Nipple	2
6	PRPW03590	Nipple	8
7	PRPW03591	Nipple	1
8	PRPW03027	Steel Pipe Assembly	1
9	PRPW03028	Steel Pipe Assembly	1
10	PRPW03592	Nipple	3
11	PRPW03030	Steel Pipe Assembly	1
12	PRPW03031	Steel Pipe Assembly	1
13	PRPW03032	Hose	2
14	PRPW03593	Steel Pipe Assembly	1
15	PRPW03594	Nipple	5
16	PRPW03035	Steel Pipe Assembly	1
17	PRPW03036	Hose	1
18	PRPW03595	Nipple	4
19	PRPW03038	Steel Pipe Assembly	1
20	PRPW03039	Hose	1
21	PRPW03331	Elbow	2
22	PRPW03596	Steel Pipe Assembly	1
23	PRPW03597	Steel Pipe Assembly	1
24	PRPW03598	Nipple	4
25	PRPW03599	Steel Pipe Assembly	1
26	PRPW03045	Steel Pipe Assembly	1
27	PRPW03046	Steel Pipe Assembly	1
28	PRPW03047	Steel Pipe Assembly	1
29	PRPW03048	Steel Pipe Assembly	1
30	PRPW03049	Steel Pipe Assembly	1
31	PRPW03050	Steel Pipe Assembly	1
32	PRPW03051	Steel Pipe Assembly	1
33	PRPW03052	Steel Pipe Assembly	1
34	PRPW03600	Steel Pipe Assembly	1
35	PRPW03601	Steel Pipe Assembly	1
36	PRPW03055	Steel Pipe Assembly	1
37	PRPW03602	Nipple	1
38	PRPW03057	Hose	1
39	PRPW03058	Hose	1
40	PRPW03059	Hose	1
41	PRPW03060	Hose	1
42	PRPW03061	Hose	1
43	PRPW03603	Nipple	5
44	PRPW03604	Tee Joint	1

Hydraulic Piping – Spare Parts List (cont.)

Item	Part No.	Description	Qty
45	PRPW03605	Elbow	1
46	PRPW03606	Plug	1
47	PRPW03607	Nipple	1
48	PRPW03067	Steel Pipe Assembly	1
49	PRPW03608	Steel Pipe Assembly	1
50	PRPW03069	Steel Pipe Assembly	1
51	PRPW03070	Steel Pipe Assembly	2
52	PRPW02719	Elbow	1
53	PRPW02741	Steel Pipe Assembly	1
54	PRPW03610	Nipple	1
55	PRPW03611	Hose	1
56	PRPW03612	Hose	1
57	PRPW03613	Hose	1
58	PRPW03609	Nipple	1
59	PRPW03614	Nipple	1
60	PRPW03615	Hose	1
61	PRPW03616	Adapter	1
62	PRPW03622	Plug	2
63	PRPW03623	Steel Pipe Assembly	1
64	PRPW03624	Steel Pipe Assembly	1

Hydraulic Oil Tank

Hydraulic Oil Tank – Exploded Parts View

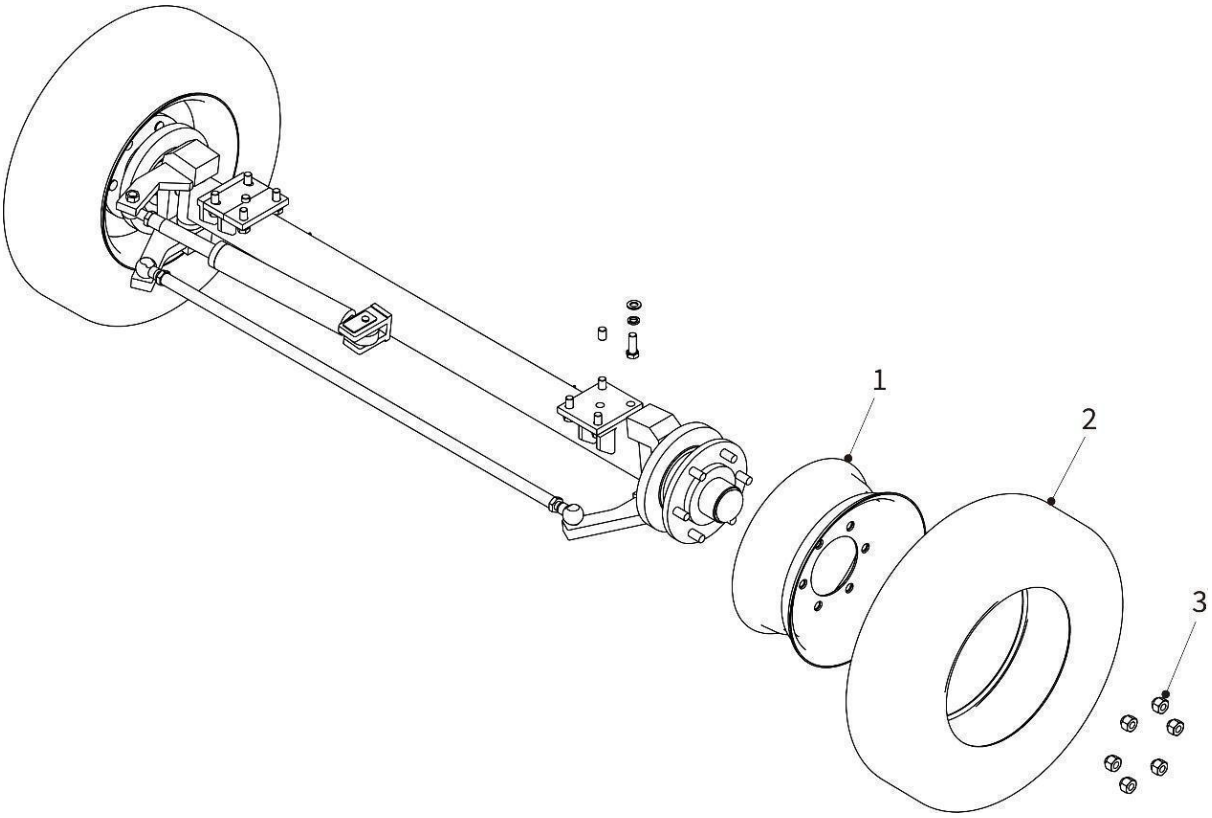


Hydraulic Oil Tank – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03010	Oil Tank Welding Assembly	1
2	PRFA00287	Screw, M6 x 12 mm	1
3	PRFA00006	Washer, 6	1
4	PRPW03013	Pipe Clamp	1
5	PRPW00751	Plug, Drain	1
6	PRPW03516	Clean The Cover Gasket	1
7	PRPW03019	Tank Cleaning Cover	1
8	PRFA00026	Bolt, M10 x 35 mm	8
9	PRFA00012	Washer, Lock, 10	8
10	PRFA00011	Washer, 10	8
11	PRPW03014	Rocker	1
12	PRFA00047	Bolt, M8 x 35 mm	6
13	PRFA00010	Washer, Lock, 8	6
14	PRFA00009	Washer, 8	6
15	PRFA00021	Nut, M8	4

Front Wheels and Tires

Front Wheels and Tires – Exploded Parts View

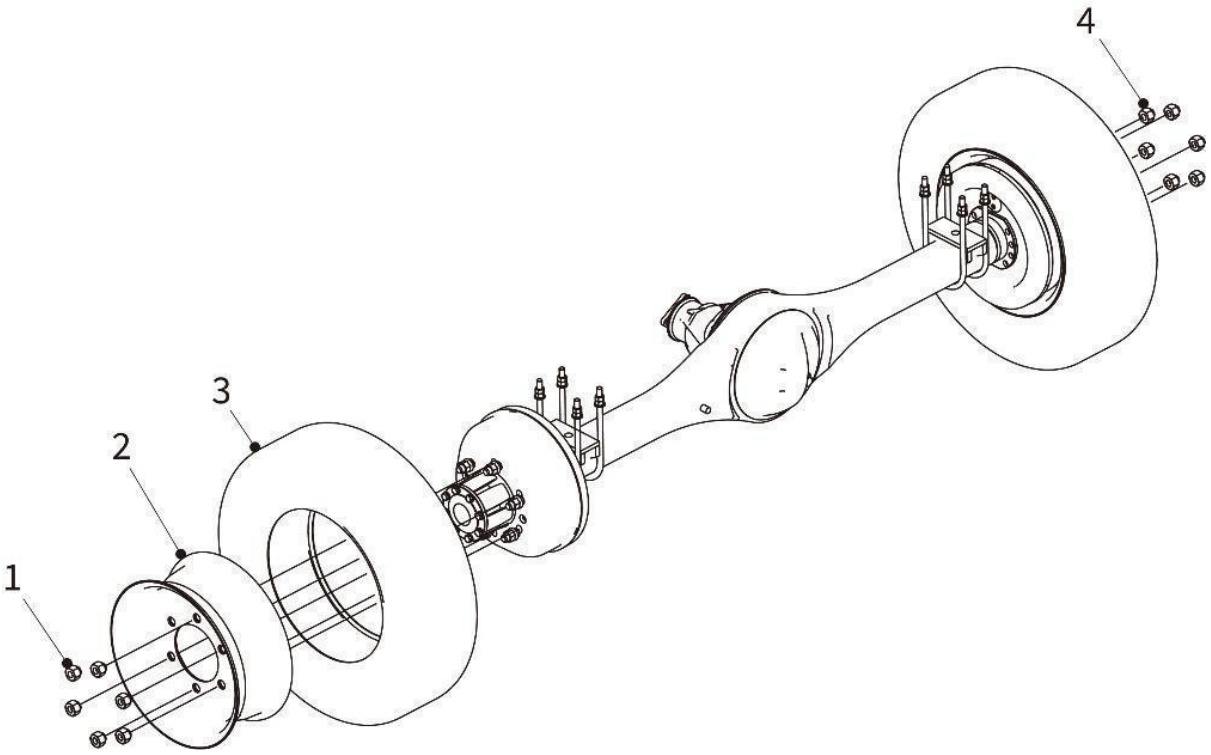


Front Wheels and Tires – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03084	Tire Rim, 6J x 15	2
2	PRPW03085	Tire, 225/70R15	2
3	PRPW03086	Wheel Nut, M18	12

Rear Wheels and Tires

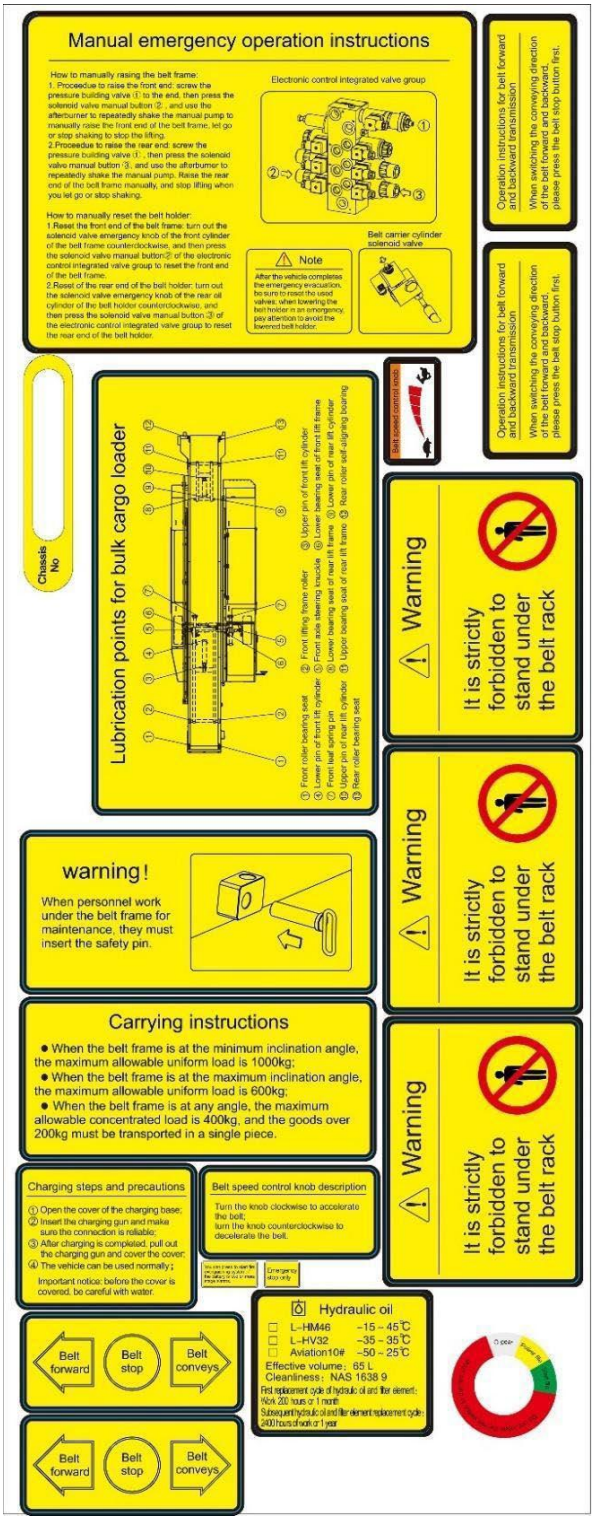
Rear Wheels and Tires – Exploded Parts View



Rear Wheels and Tires – Spare Parts List

Item	Part No.	Description	Qty
1	PRPW03087	Wheel Nut, M18 x 25 mm, Left-hand thread	6
2	PRPW03088	Tire Rim, 6J x 15	2
3	PRPW03089	Tire, 225/70R15	2
4	PRPW03090	Wheel Nut, M18 x 25 mm, Right-hand thread	6

LABELS


Manual emergency operation instructions
Electronic control integrated valve group
Belt carrier cylinder solenoid valve
Note
Operation instructions for belt forward and backward transmission
When switching the conveying direction of the belt forward and backward, please press the belt stop button first.
Chassis No
Lubrication points for bulk cargo loader
Belt speed control knob
Warning
It is strictly forbidden to stand under the belt rack
warning!
When personnel work under the belt frame for maintenance, they must insert the safety pin.
Carrying instructions
● When the belt frame is at the minimum inclination angle, the maximum allowable uniform load is 1000kg;
● When the belt frame is at the maximum inclination angle, the maximum allowable uniform load is 600kg;
● When the belt frame is at any angle, the maximum allowable concentrated load is 400kg, and the goods over 200kg must be transported in a single piece.
Charging steps and precautions
Belt speed control knob description
Turn the knob clockwise to accelerate the belt;
turn the knob counterclockwise to decelerate the belt.
Hydraulic oil
L-HM46 -15 – 45℃
L-HV32 -35 – 35℃
Aviation10# -50 – 25℃
Effective volume: 65 L
Cleanliness: NAS 1638 9
Belt forward
Belt stop
Belt conveys

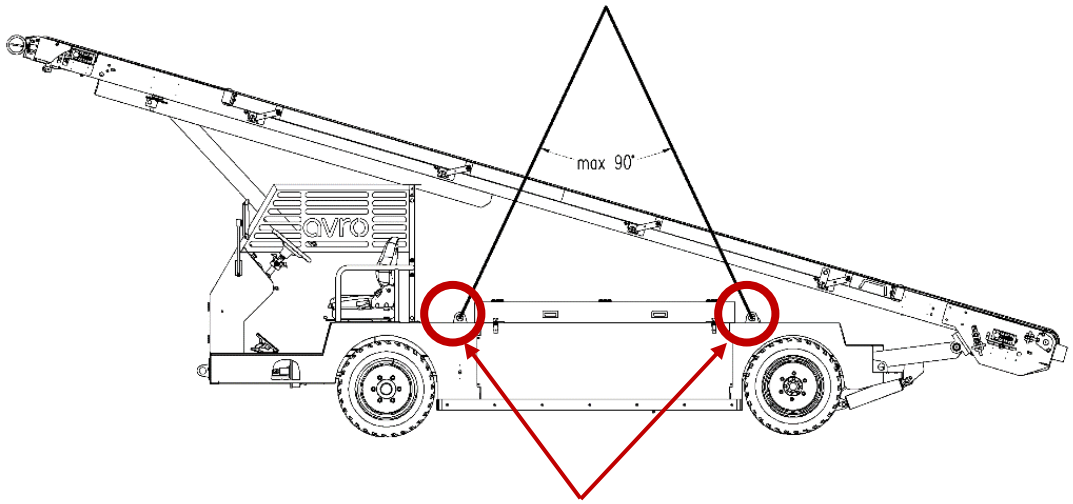

Warning Crushing
Warning Belt
Warning Hands Pinching
Note: During the maintenance process, if the belt holder is lifted by external force, air will be mixed into the cylinder. If the belt holder is operated hydraulically at this time, the front end of the belt holder will fall. Therefore, it is necessary to suspend the belt frame by external force, make it fall and reset until the air in the cylinder is exhausted, the belt frame can resume normal hydraulic operation.
Lifting position
MAX
MIN
Vacuum pump failure alarm
Low battery alarm
Brake fluid level alarm
Description of the left side bezel
① Lower the left baffle: Pull out the limit pin and rotate it 90° to lock the limit pin, then hold the handle on the left baffle and pull it back to lower the left baffle;
② Raise the left side baffle: Hold the handle to pull up the left side baffle forward, and then rotate the limit pin 90°. When the limit pin pops into the limit hole, try to pull the handle backwards to ensure that the limit pin is reliable limit.
WARNING
Caution scald
HYDRAULIC OIL
DIESEL FUEL
GASOLINE FUEL

SUPPLEMENTARY INFORMATION – LIFTING / SHIPPING

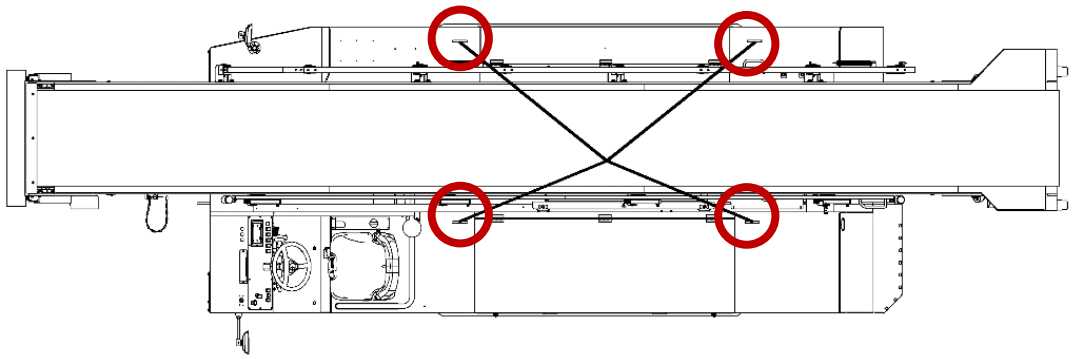
When lifting the Belt Loader, ALWAYS use a crane and a four-leg lifting sling or chain, as shown in the Lifting Diagram below. The Safe Working Load (SWL), also known as Rated Capacity, of the crane and four-leg lifting sling or chain MUST be at least 7000 kg (7 Tons).

ALWAYS attach the lifting sling or chain to the four lifting points provided on the Belt Loader, as shown in the lifting diagram, below.

NEVER attempt to lift the BL30E using a forklift. The length and design of the BL30E makes it an unstable load on a forklift. Also, there are NO bearing plates on the underside of the BL30E suitable for engaging the forks of a forklift.



Lifting Points (x4)



Warranty

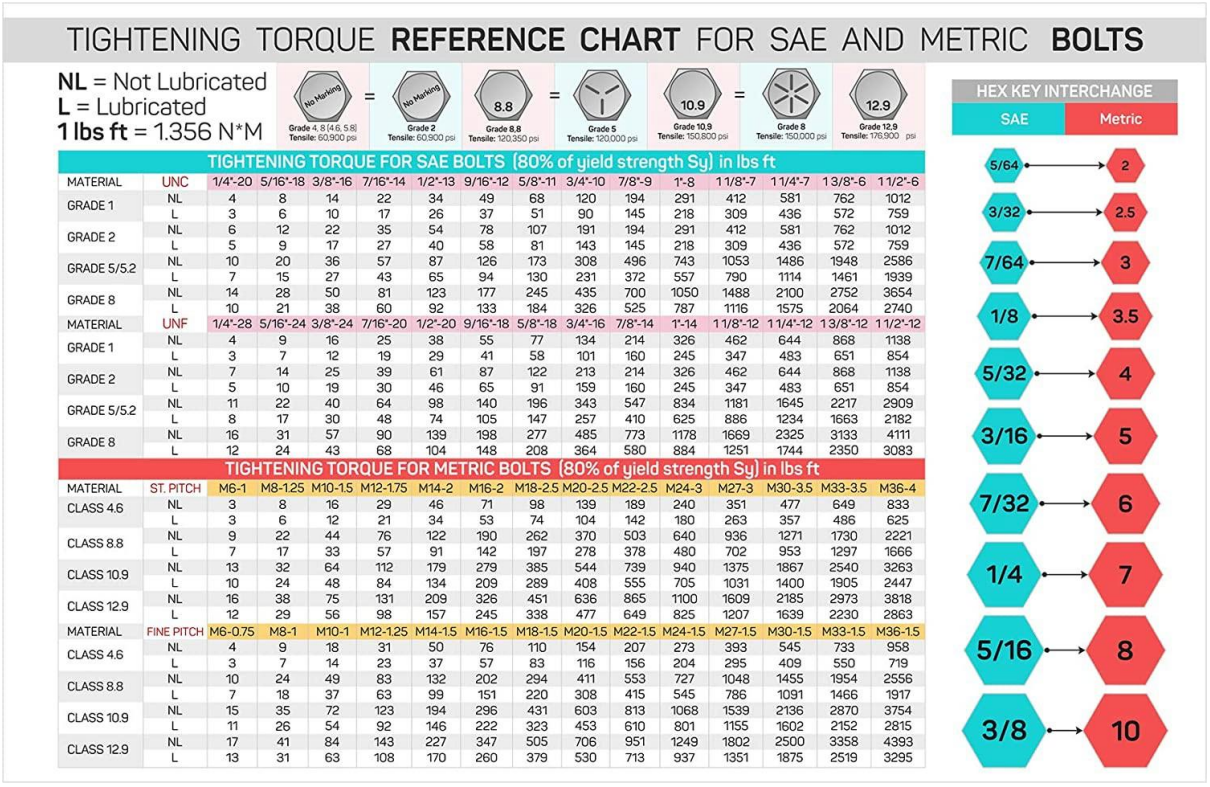
This equipment is covered by a limited warranty against defects in materials and workmanship under normal use and service. Unauthorized modifications, improper use, or failure to follow maintenance guidelines may void the warranty.

If you require a copy of Warranty Policy, please contact Avro GSE.

Torque Reference Table

This table is used only when specific torques are not available.

This table refers to both metric and imperial Lubricated (WET), Not Lubricated (DRY) and includes fastener conversion chart.



TIGHTENING TORQUE **REFERENCE CHART** FOR SAE AND METRIC **BOLTS**

NL = Not Lubricated
L = Lubricated
1 lbs ft = 1.356 N*M

Grade 4.8 (4.6, 5.8) Tensile: 60,900 psi = Grade 2 Tensile: 60,900 psi | Grade 8.8 Tensile: 120,350 psi = Grade 5 Tensile: 120,000 psi | Grade 10.9 Tensile: 150,800 psi = Grade 8 Tensile: 150,000 psi | Grade 12.9 Tensile: 176,900 psi

TIGHTENING TORQUE FOR SAE BOLTS (80% of yield strength Sy) in lbs ft

MATERIAL	UNC	1/4"-20	5/16"-18	3/8"-16	7/16"-14	1/2"-13	9/16"-12	5/8"-11	3/4"-10	7/8"-9	1"-8	1 1/8"-7	1 1/4"-7	1 3/8"-6	1 1/2"-6
GRADE 1	NL	4	8	14	22	34	49	68	120	194	291	412	581	762	1012
	L	3	6	10	17	26	37	51	90	145	218	309	436	572	759
GRADE 2	NL	6	12	22	35	54	78	107	191	194	291	412	581	762	1012
	L	5	9	17	27	40	58	81	143	145	218	309	436	572	759
GRADE 5/5.2	NL	10	20	36	57	87	126	173	308	496	743	1053	1486	1948	2586
	L	7	15	27	43	65	94	130	231	372	557	790	1114	1461	1939
GRADE 8	NL	14	28	50	81	123	177	245	435	700	1050	1488	2100	2752	3654
	L	10	21	38	60	92	133	184	326	525	787	1116	1575	2064	2740
MATERIAL	UNF	1/4"-28	5/16"-24	3/8"-24	7/16"-20	1/2"-20	9/16"-18	5/8"-18	3/4"-16	7/8"-14	1"-14	1 1/8"-12	1 1/4"-12	1 3/8"-12	1 1/2"-12
GRADE 1	NL	4	9	16	25	38	55	77	134	214	326	462	644	868	1138
	L	3	7	12	19	29	41	58	101	160	245	347	483	651	854
GRADE 2	NL	7	14	25	39	61	87	122	213	214	326	462	644	868	1138
	L	5	10	19	30	46	65	91	159	160	245	347	483	651	854
GRADE 5/5.2	NL	11	22	40	64	98	140	196	343	547	834	1181	1645	2217	2909
	L	8	17	30	48	74	105	147	257	410	625	886	1234	1663	2182
GRADE 8	NL	16	31	57	90	139	198	277	485	773	1178	1669	2325	3133	4111
	L	12	24	43	68	104	148	208	364	580	884	1251	1744	2350	3083

TIGHTENING TORQUE FOR METRIC BOLTS (80% of yield strength Sy) in lbs ft

MATERIAL	ST. PITCH	M6-1	M8-1.25	M10-1.5	M12-1.75	M14-2	M16-2	M18-2.5	M20-2.5	M22-2.5	M24-3	M27-3	M30-3.5	M33-3.5	M36-4
CLASS 4.6	NL	3	8	16	29	46	71	98	139	189	240	351	477	649	833
	L	3	6	12	21	34	53	74	104	142	180	263	357	486	625
CLASS 8.8	NL	9	22	44	76	122	190	262	370	503	640	936	1271	1730	2221
	L	7	17	33	57	91	142	197	278	378	480	702	953	1297	1666
CLASS 10.9	NL	13	32	64	112	179	279	385	544	739	940	1375	1867	2540	3263
	L	10	24	48	84	134	209	289	408	555	705	1031	1400	1905	2447
CLASS 12.9	NL	16	38	75	131	209	326	451	636	865	1100	1609	2185	2973	3818
	L	12	29	56	98	157	245	338	477	649	825	1207	1639	2230	2863
MATERIAL	FINE PITCH	M6-0.75	M8-1	M10-1	M12-1.25	M14-1.5	M16-1.5	M18-1.5	M20-1.5	M22-1.5	M24-1.5	M27-1.5	M30-1.5	M33-1.5	M36-1.5
CLASS 4.6	NL	4	9	18	31	50	76	110	154	207	273	393	545	733	958
	L	3	7	14	23	37	57	83	116	156	204	295	409	550	719
CLASS 8.8	NL	10	24	49	83	132	202	294	411	553	727	1048	1455	1954	2556
	L	7	18	37	63	99	151	220	308	415	545	786	1091	1466	1917
CLASS 10.9	NL	15	35	72	123	194	296	431	603	813	1068	1539	2136	2870	3754
	L	11	26	54	92	146	222	323	453	610	801	1155	1602	2152	2815
CLASS 12.9	NL	17	41	84	143	227	347	505	706	951	1249	1802	2500	3358	4393
	L	13	31	63	108	170	260	379	530	713	937	1351	1875	2519	3295

HEX KEY INTERCHANGE

SAE	Metric
5/64	2
3/32	2.5
7/64	3
1/8	3.5
5/32	4
3/16	5
7/32	6
1/4	7
5/16	8
3/8	10

Standard Conversion Table

Standard conversion factors and terms related to this vehicle

Length				
Kilometers (km)	x	062	=	Miles (mi)
Miles (mi)	x	1.61	=	Kilometers (km)
Kilometers (km)	x	3280.8	=	Feet (ft)
Feet (ft)	x	.0003048	=	Kilometers (km)
Meters (m)	x	3.28	=	Feet (ft)
Feet (ft)	x	0.3	=	Meters (m)
Centimeters (cm)	x	0.39	=	Inches (in)
Inches (in)	x	2.54	=	Centimeters (cm)
Millimeters (mm)	x	0.039	=	Inches (in)
Inches (in)	x	25.4	=	Millimeters (mm)
Meters (m)	x	39.37	=	Inches (in)
Inches (in)	x	0.0254	=	Meters (m)
Meters (m)	x	1.09361	=	Yards (yd)
Yards (yd)	x	0.91	=	Meters (m)
Kilometers (km)	x	1093.61	=	Yards (yd)
Yards (yd)	x	0.00091	=	Kilometers (km)
Temperature				
Fahrenheit (F)	(Temperature (F) – 32)*(5/9)			Celsius (C)
Celsius (C)	(Temperature (C)*(9/5)+32)			Fahrenheit (F)
Volume				
Liters (L)	x	1.057	=	Quarts (qt)
Quarts (qt)	x	0.95	=	Liters (L)
Liters (L)	x	0.264	=	Gallons (gal)
Gallons (gal)	x	3.785	=	Liters (L)
Milliliters (ml)	x	0.0042	=	Cups (c)
Cups (c)	x	236.6	=	Milliliters (ml)
Milliliters (ml)	x	0.0338	=	Ounces (oz)
Ounces (oz)	x	29.57	=	Milliliters (ml)
Mass				
Kilograms (kg)	x	0.0011	=	Tons (ton)
Tons (ton)	x	907.18	=	Kilograms (kg)
Kilograms (kg)	x	2.2046	=	Pounds(lb)
Pounds(lb)	x	0.454	=	Kilograms (kg)
Grams (g)	x	0.035	=	Ounces (oz)
Ounces (oz)	x	28.35	=	Grams (g)
Grams (g)	x	0.002205	=	Pounds (lb)
Pounds (lb)	x	453.592	=	Grams (g)
Milligrams (mg)	x	0.000035	=	Ounces (oz)
Ounces (oz)	x	28350	=	Milligrams (mg)

Pressure And Torque Conversion Table

CONVERSION TABLES

CONVERSION TABLES

UNITS OF PRESSURE
1 ATM=1 BAR=105 PA=14.4 PSI
UNIT OF WEIGHT

	N	daN	kN	kg	lbs
1N	1	0,1	0,001	0,102	0,225
1daN	10	1	0,01	1,02	2,25
1kN	1000	100	1	102	225
1kg	9,81	0,981	0,00981	1	2,205

UNITS OF TORQUE

	N·m	daN·m	kN·m	kg·m	lb·in
1N·m	1	0,1	0,001	0,102	8,854
1daN·m	10	1	0,01	1,02	88,54
1kN·m	1000	100	1	102	8854
1kg·m	9,81	0,981	0,00981	1	86,8
1 lb·in	0,1129	0,01129	0,0001129	0,01152	1

Notes

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