

BL30G BELT LOADER

OPERATION, MAINTENANCE AND PARTS MANUAL



For Belt Loader: BL30G19, (SN219231668-222231686)

BL30G22, (SN222231141-222233044)

Model Year 2019-2022

Manual Part number PRPW02800

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APPLICABILITY OF THIS MANUAL

This manual applies to BL30G Belt Loaders manufactured 2019 - 2022 (Model Years 2019 and 2022).

BL30G Belt Loaders with a Manufacture Year of 2019 (MY 2019) have Serial Numbers from SN219231668 to 222231686.

BL30G Belt Loaders with a Manufacture Year of 2022 (MY 2022) have Serial Numbers from SN222231141 to 222233044.

If this manual does not correspond to the Manufacture Year (MY) and Serial Number of your Belt Loader, the correct manual can be obtained from AvroGSE using the contact details given inside the Front Cover of this manual.

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LIST OF ABBREVIATIONS

A	Amp (Ampere)	LED	light emitting diode
C	Centigrade	Max	maximum
cc	cubic centimetres	MIL	Malfunction Indicator Lamp
c/w	complete with	mm	millimetres
DBP	Draw bar Pull	MPa	Megapascal (1 MPa = 1 Nmm ² = 145 lbs/in ²)
Deg	degree (temperature)	mph	miles per hour
Dia.	diameter	MY	manufacture year
D.T.C.	Diagnostic Trouble Code	N/A	Not Applicable
F	Fahrenheit	Nm	Newton Metre
ft/lbs	foot-pounds force	o.d.	outside diameter
GSE	ground support equipment	P/N	Part Number
kg	kilograms	PPE	Personal Protective Equipment
IATA	International Air Transport Association	psi	pounds per square inch (pressure)
i.d.	inside diameter	SAE	Society of Automotive Engineers (specification)
in.	Inches	SWL	Safe Working Load
kph	kilometres per hour	Temp	temperature
L	litre	Turbo	turbocharger
lbs	pounds		

SAFETY

Observe the following safety precautions.

LETHAL DANGER – CARGO USE ONLY



The Belt Loader is designed for airport luggage and cargo handling only. Do not exceed the Belt Loaders' weight handling capacity. It is dangerous to do so and an accident or damage to the Belt Loader may result.

Other than the driver, **DO NOT** allow people to ride on the Belt Loader. It is unsafe to do so, and lethal injury may result.

LETHAL DANGER – 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. **DO NOT** operate the Belt Loader in a reckless manner. Lethal injury may result.

LETHAL DANGER – DO NOT ALTER FACTORY SETTINGS



DO NOT attempt to alter the Belt Loader's factory settings. Lethal injury may result. The factory settings optimise both the safety and performance of the Belt Loader.

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

FATAL WARNING – 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.

WARNING – PETROLEUM – FIRE AND HEALTH HAZARD



Fuel expands when heated. Expanding fuel in an over full tank can cause spills and leaks. Do not overfill the fuel tank.

Do not eat, drink or smoke when refuelling the Belt loader. If fuel is ingested, or comes into contact with your eyes, nose or mouth, seek medical assistance immediately.

Fuel spillages are a fire and slip hazard. Always clean up any spillages.

WARNING – BURN HAZARD



Hot water in the radiator will scald. Make sure that the engine has cooled down before removing the radiator cap. Wear Personal Protective Equipment (PPE) including eye shields or protective goggles, and suitable protective gloves.

WARNING – MAXIMUM SPEED



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

Do not attempt to modify the Belt Loader to exceed that speed. A fatal accident may result.

WARNING – ALCOHOL AND DRUG USE



The Belt Loader must not be accessed or operated by anyone impaired by alcohol or drugs.

WARNING – 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.

WARNING – DO NOT LIFT BELT LOADER WITH A FORKLIFT



The Belt Loader is 8.1 m (26 ft 6.9 in.) long and weighs 4200 kg (9260 lbs). Due to the length of the Belt Loader, **DO NOT** use a forklift truck to lift the Belt Loader.

WARNING – 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.

WARNING – 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), for example 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 a slip hazard. Always clean up any spillages, or excess oil or lubricant.

WARNING – DAMAGE TO HYDRAULIC SYSTEM



Before using the vehicle, at the start of every shift, check the Oil Return Filter pressure gauge. Make sure that the pressure gauge needle is in the green area. If the needle is **NOT** in the green area **DO NOT** use the vehicle, **SWITCH OFF** the vehicle, and report the problem. The filter element located inside the Oil Return Filter, **MUST** be removed, cleaned, and refitted **BEFORE** using the vehicle.

PRECAUTION – 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.

PRECAUTION - READ THIS MANUAL



Read and understand this manual before operating, cleaning, repairing, or servicing the Belt Loader.

A copy of this manual will have been provided with each Belt Loader when it was delivered.

Familiarize yourself with the location and correct use of all controls, indicators, and safety devices before operating the Belt Loader.

PRECAUTION – OPERATOR TRAINING



ONLY people who have been **FULLY TRAINED AND AUTHORIZED** to operate this type of Belt Loader are permitted to start, operate, and shut down the Belt Loader.

Anyone operating or maintaining the Belt Loader must understand the potential risks and hazards associated with it **BEFORE** they operate the Belt Loader.

Anyone operating or maintaining the Belt Loader must be familiar with all the required safety devices and procedures.

PRECAUTION – SAFE WORKING PRACTICES



Be aware of the Belt Loader's working parts. Keep hands, feet, and loose clothing away from the Belt Loader's moving parts.

DO NOT operate a Belt Loader that is need of repair. Perform scheduled maintenance in accordance with the maintenance procedures given in this manual.

Only operate the Belt Loader when:

- (1) All safety devices and guards are in place and in full working order.
- (2) All controls, gauges, lights, and indicators operate correctly.
- (3) The Belt Loader is set-up correctly in accordance with this manual.

WARNINGS AND PRECAUTIONS – WELDING, GRINDING, AND CUTTING



WELDING ARC. A welding arc is bright enough to damage eyesight and cause flash burns. Never look directly at a welding arc with unprotected eyes. Always use an approved welding screen or visor. Cover all exposed skin before welding.



PROTECTIVE CLOTHING. Always wear protective clothing and gloves appropriate for welding work.



HOT WELDS. Always allow a weld to cool before removing welding slag.

Make sure that there is no combustible material within 4 Meters (13 feet) of grinding, welding, or slag chipping.



GRINDING, CHIPPING, AND CUTTING. Always wear eye protection (e.g. protective goggles) when using grinding and cutting tools, and when chipping off welding slag. Always wear eye protection when within 4 Meters (13 feet) of grinding, slag chipping, or cutting with power tools.



DAMAGE TO ELECTRICAL EQUIPMENT. To prevent damage to the vehicle electrical system, before performing any welding, remove or disconnect all vehicle batteries, and disconnect all electrical connections to the vehicle electronics.



TRAINING, AUTHORIZATION AND CERTIFICATION OF WELDERS. Welding must only be performed by people who have been **FULLY TRAINED IN WELDING AND ARE AUTHORIZED** to perform welding operations. Welders must be **CERTIFIED** by their respective national association of welders, such as CWB and/or AWS.

Grinding, chipping, and cutting with power tools must only be performed by people who have been **FULLY TRAINED IN USING THE POWER TOOLS AND ARE AUTHORIZED** to perform those operations.

Before performing any welding, grinding or chipping operations, make sure that any necessary Hot Work Permits have been obtained.



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INTRODUCTION

The function of the BL30G 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.



Figure 1 – BL30G Belt Loader

The BL30G is a rear-wheel-drive vehicle, powered by a 2.351 Litre gasoline engine, 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.

SPECIFICATION

The specification of the BL30G Belt Loader is given in the following Table.

Table 1 BL30G Belt Loader specification

B:30G Belt Loader	Value	Units	Notes
Dimensions			
Length (overall)	8100 318.9	mm in.	With Belt Frame Assembly in the fully lowered position.
Width (mirrors folded in)	2140 84.3	mm in.	
Height (maximum)	4560 179.5	mm in.	With Belt Frame Assembly at an angle of 25 deg. to top of cab.
Height (minimum, to top of warning beacon on drivers' cab)	1965 77.4	mm in.	
Wheelbase	2990 117.7	mm in.	
Minimum Ground Clearance	150 5.9	mm in.	
Front overhang	1280 50.4	mm in.	
Rear overhang	800 31.5	mm in.	
Front Approach Angle (maximum)	16	degrees	
Rear Departure Angle (maximum)	17	degrees	
Service Weight	4200 9260	kg lbs	
Maximum Travel Speed	15.5 25.0	mph kph	Forward speed.
Maximum gradient (that can be climbed)	15	%	
Engine type	Gasoline		Model PSI 2.4L
Engine Total Displacement	2.351	L	
Engine Rated Power Output and Speed	48/2700 64.4/2700	kW/rpm HP/rpm	
Engine Rated Torque and Speed	170/2400 125.4/2400	Nm/rpm lbf ft/rpm	
Throttle control			Electric throttle
Air intake			Naturally aspirated

BL30G Belt Loader

B:30G Belt Loader		Value	Units	Notes
Transmission Type		Y43280D	Model No.	Automatic Manufacturer: Okamura
Gear ratios	Forward	2.178		
	Reverse	2.235		
Steering				Hydraulic power steering
Foot Brake				Vacuum assisted hydraulic brakes
Park Brake				Manual
Conveyor belt front height range		1100 - 4560 43.1 - 179.5	mm in.	With Belt Frame Assembly at an angle of 25 deg. to top of cab.
Conveyor belt rear height range		540 - 1650 21.3 - 65.0	mm in.	
Maximum baggage loading height		4560 179.5	mm in.	On flat, level, ground.
Minimum baggage loading height		1100 43.3	mm in.	On flat, level, ground.
Maximum conveyor belt angle		30	degrees	
Conveyor belt width		600 23.6	mm in.	
Conveyor belt speed		0.2 to 0.5 0.66 to 1.64	m/sec ft/sec	
Maximum weight on conveyor belt		1000 2204	kg lbs.	This weight must not be exceeded
Maximum single item weight on conveyor belt		400 882	kg lbs.	This weight must not be exceeded
Operating temperature range		-30 to +50 -22 to +122	deg C deg F	Ambient temperature
Storage temperature range		-30 to +50 -22 to +122	deg C deg F	Ambient temperature Storage indoors recommended
Humidity range		0 to 100	%	Relative humidity
Front Tires		225/70R15		
Rear Tires		225/70R15		
Tire pressures (all tires)		5 ± 0.21 72.5 ± 3 0.5 ± 0.021	Bar (gauge) psi MPa	

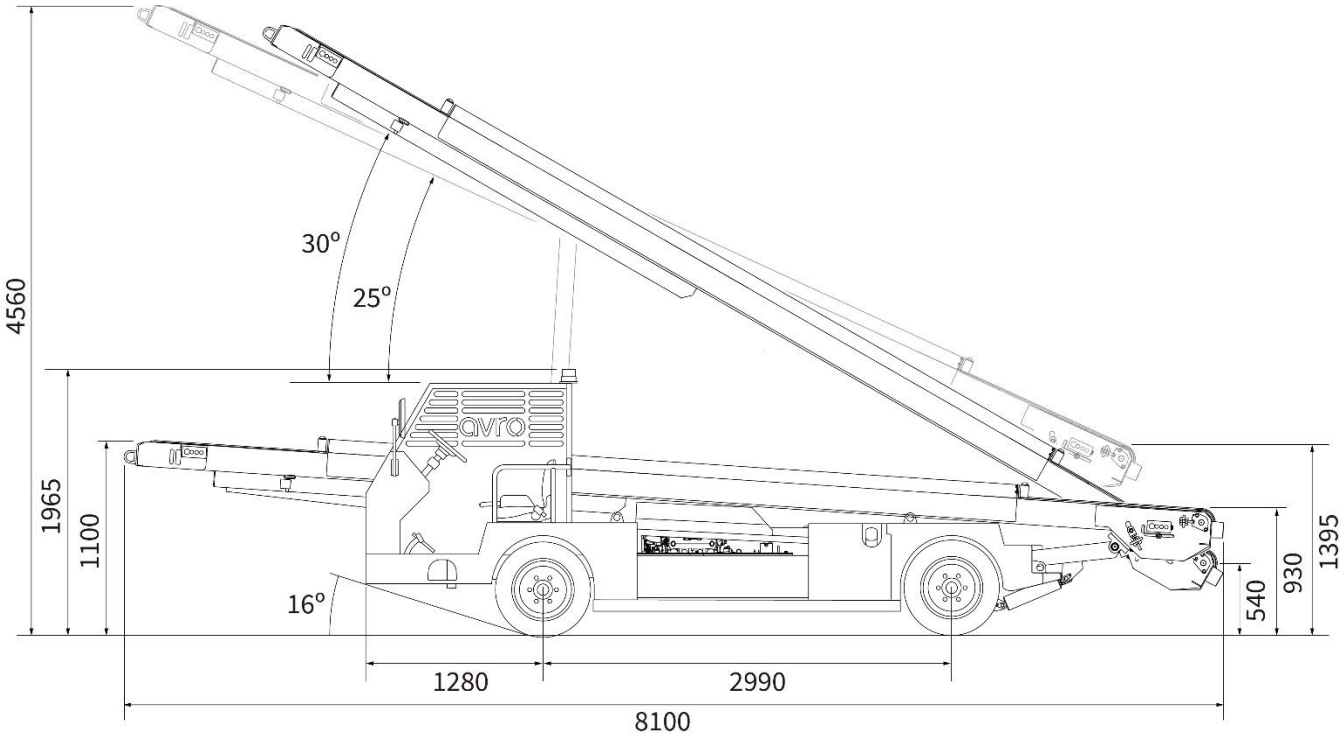
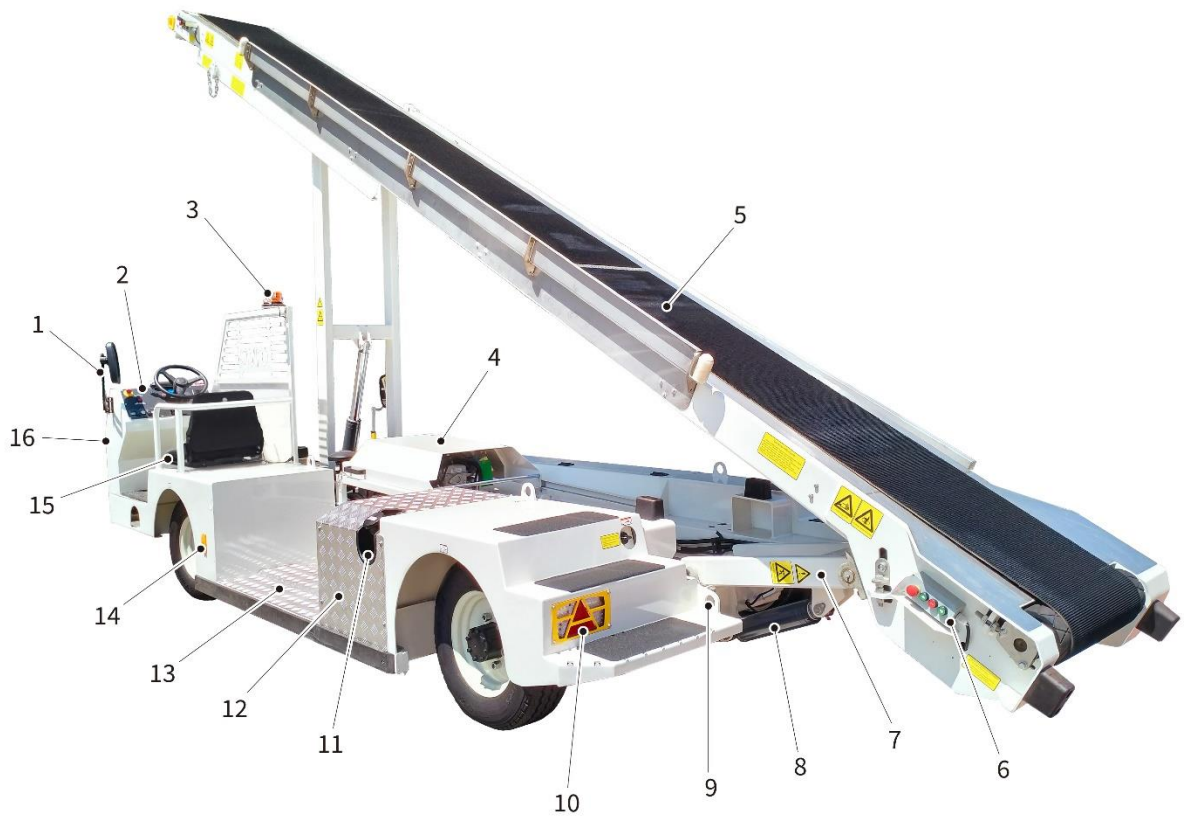


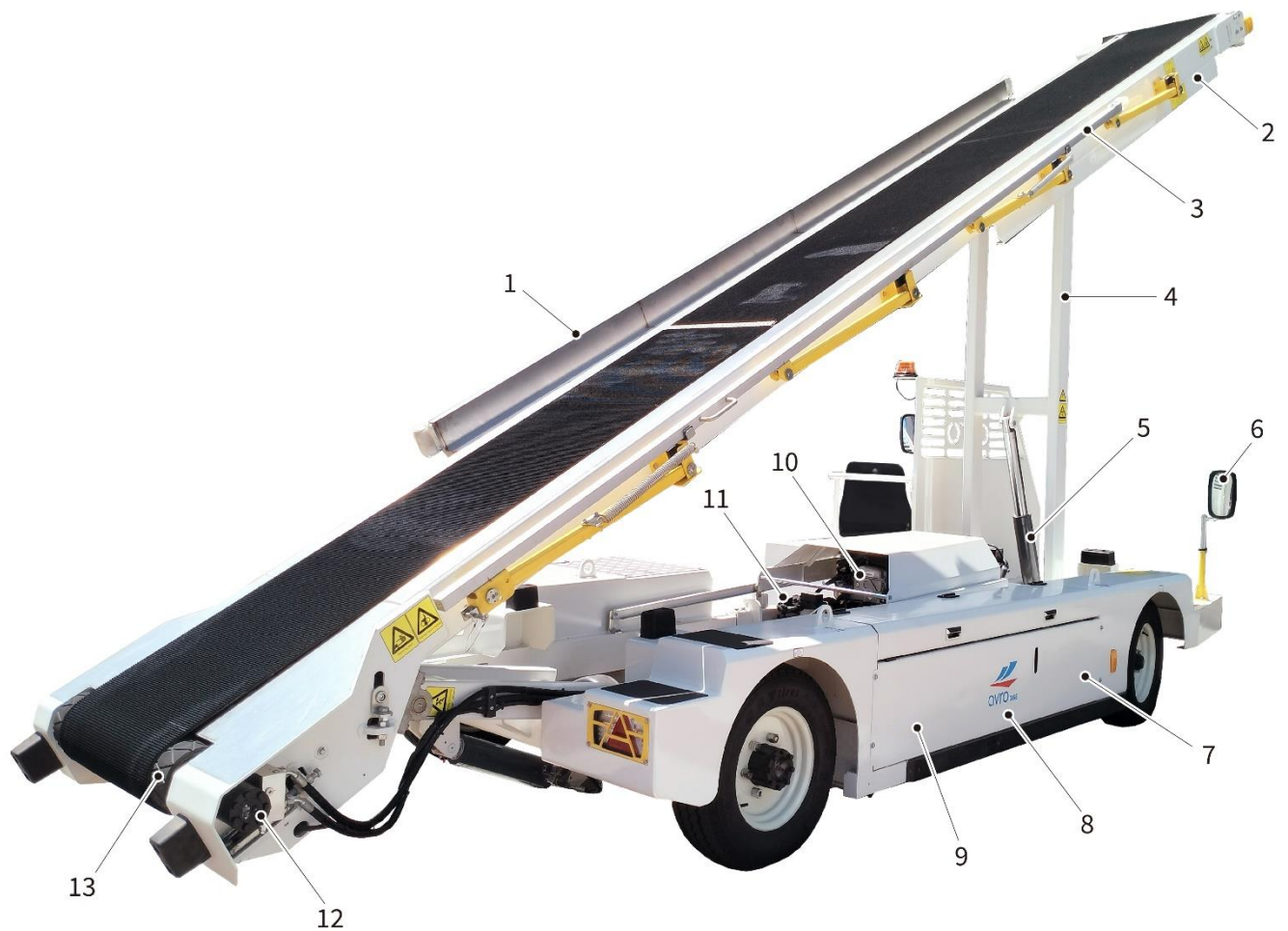
Figure 2 - BL30G Belt Loader dimensions

DESCRIPTION



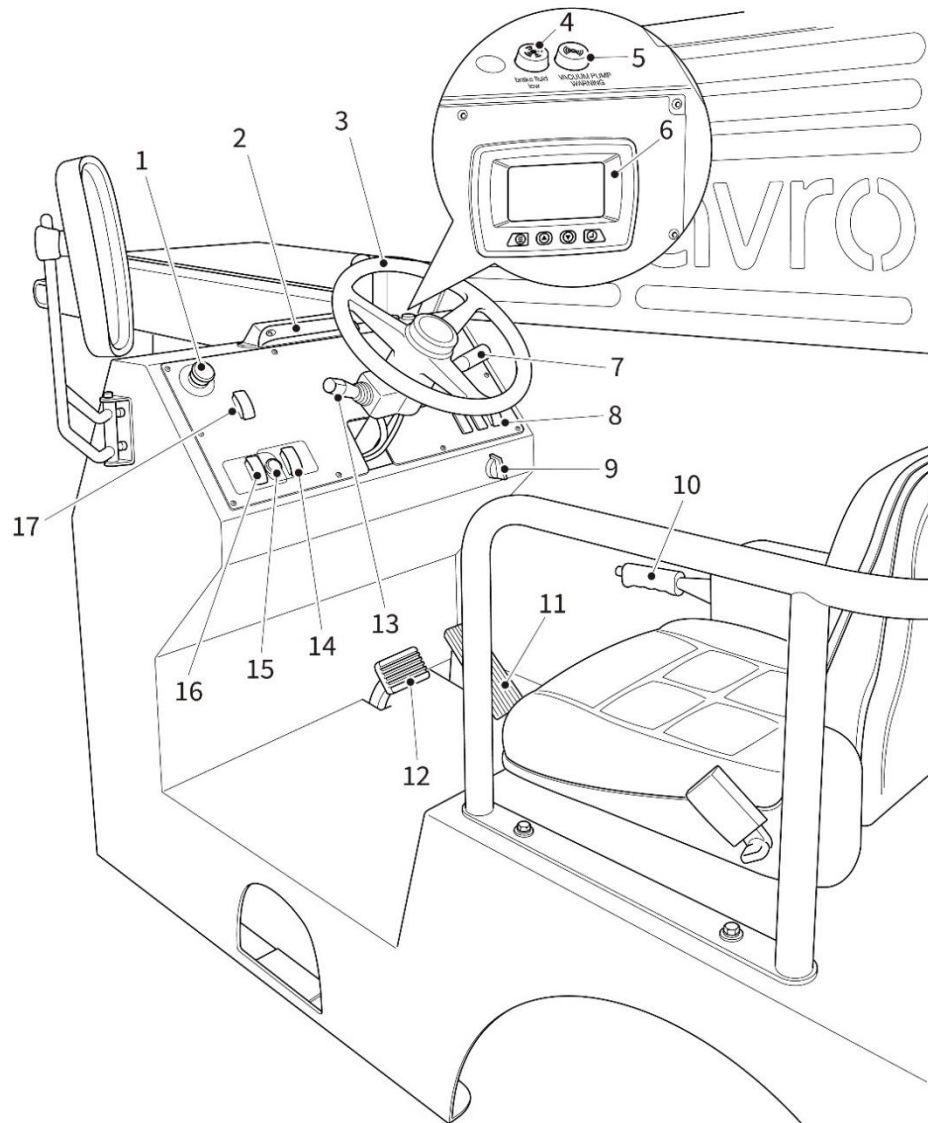
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|---|---------------------------------|----|--------------------------------------|
| 1 | Wing (side View) Mirror | 9 | Rear towing lug |
| 2 | Drivers Instrument Panel (Dash) | 10 | Rear indicator lights |
| 3 | Warning Beacon | 11 | Fuel fill point |
| 4 | Engine Cover Panel | 12 | Fuel Tank compartment |
| 5 | Belt | 13 | Storage area |
| 6 | Belt Control Box | 14 | Turn Indicator |
| 7 | Rear Lifting Frame | 15 | Drivers' compartment |
| 8 | Rear Lift Cylinder | 16 | Steering Gear/Electrical Compartment |

Figure 3 – BL30G Belt Loader (left rear view)



- | | | | |
|---|-------------------------|----|---------------------------------------|
| 1 | Luggage Rail | 8 | Hydraulic Oil tank (inside) |
| 2 | Belt Frame Assembly | 9 | Battery Compartment |
| 3 | Handrail Assembly | 10 | Engine |
| 4 | Front Lifting Frame | 11 | Transmission |
| 5 | Front Lift Cylinder | 12 | Hydraulic Motor (for Rear Drive Drum) |
| 6 | Wing (side View) Mirror | 13 | Rear Drive Drum |
| 7 | Hydraulic Compartment | | |

Figure 4 – BL30G Belt Loader (right rear view)



- | | | | |
|---|-----------------------------------|----|--|
| 1 | Emergency Stop switch | 10 | Parking Brake lever |
| 2 | Dashboard Light | 11 | Accelerator Pedal |
| 3 | Steering wheel | 12 | Brake Pedal |
| 4 | Brake Fluid Low lamp | 13 | Turn Signal/Headlamp control |
| 5 | Vacuum Pump Warning lamp | 14 | Rear Lift Cylinder Raise/Lower switch |
| 6 | Dash Display Screen | 15 | Lift Cylinder Interlock switch |
| 7 | Forward/Reverse direction control | 16 | Front Lift Cylinder Raise/Lower switch |
| 8 | Front working light switch | 17 | Drivers Throttle Select switch |
| 9 | Start/Ignition switch | | |

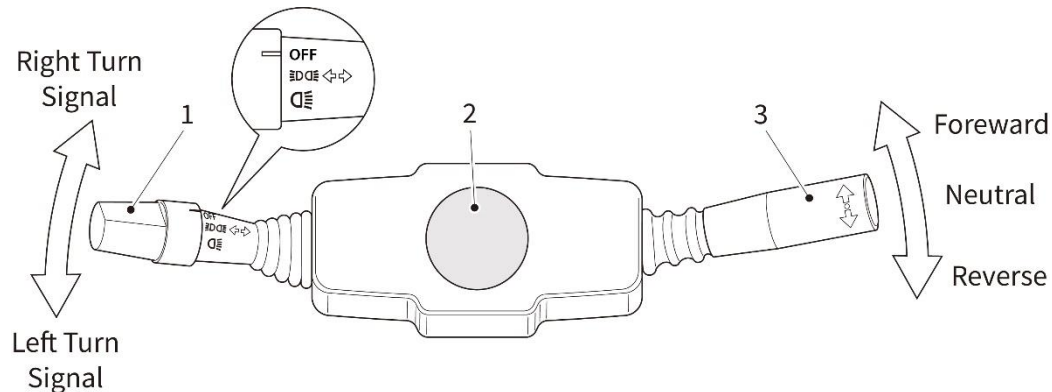
Figure 5 – Driver’s Compartment controls

The function of the Driver's Compartment controls and indicators is described in the following Table:

Number	Description	Function
1	Emergency Stop switch	Pressing this switch shuts down the vehicle.
2	Dashboard light	When the vehicle lights are switched ON, the dashboard light is also switched ON, illuminating the Dashboard.
3	Steering wheel	Controls vehicle steering.
4	Brake Fluid Low warning lamp	Illuminates when the Brake Fluid level is low. Replenish the Brake Fluid immediately.
5	Vacuum Pump Warning lamp	Power assisted brakes are not fully functional: - the vacuum level is insufficient. Report the FAULT, and do not use the vehicle until the Brake System has been repaired.
6	Dash Display Screen	Displays speed, fault information, operating time, and important warning information.
7	Forward/Reverse direction control	Used to select forward or reverse direction.
8	Front working light switch	Used to switch the front working light ON/OFF. The front working light is fitted to the underside of the front part of the Belt Frame Assembly.
9	Ignition switch	2-position ON-OFF rotary switch used to Start-Up and Switch Off the Belt Loader.
10	Parking Brake Lever	Used to apply, or release, the Parking Brake.
11	Accelerator pedal	Controls drive speed.
12	Brake pedal	Applies Service Brake.
13	Lights control	Controls headlamps, and Left/Right turn indicator lights
14	Rear Lift Cylinder Raise/Lower switch	Used to raise and lower the rear of the Belt Frame Assembly
15	Lift Cylinder Interlock switch	This switch is a safety feature to prevent inadvertent raising or lowering of the Belt frame Assembly. The Front Lift Cylinder Raise/Lower switch and the Rear Lift Cylinder Raise/Lower switch WILL NOT OPERATE until the Lift Cylinder Interlock switch has been pressed, and must be held down during operation
16	Front Lift Cylinder Raise/Lower switch	Used to raise and lower the front of the Belt Frame Assembly
17	Drivers Throttle selector switch	A two position rocker switch that is used to select either vehicle driving or operation of the conveyor belt. It is NOT possible to drive the vehicle and operate the belt at the same time.

STEERING COLUMN COMBINATION SWITCH CONTROLS

Refer to Figure 6. The left side of the steering column combination switch is the Turn Signal/Headlamp control combination switch. The right side is the Forward/Reverse Gear Switch.



- | | | | |
|---|------------------------------|---|-----------------------------|
| 1 | Turn Signal/Headlamp control | 3 | Forward/Reverse Gear Switch |
| 2 | Steering Column | | |

Figure 6 – Steering Column Combination Switch controls

The Forward/Reverse Gear Switch (3) is a three-position switch:




- The centre position is the Neutral gear position. The Gear Shift MUST be in the N position when the vehicle is started.
- The Up position selects forward driving. Note that the Foot Brake must be pressed to select gear. To move the vehicle forwards, press the Foot Brake, set the Forward/Reverse Gear Switch to the Up position, and press the Accelerator Pedal. The transmission will select the appropriate forward gear automatically. Slowly release the Foot Brake when ready.
- The Down position selects reverse. Note that the Foot Brake must be pressed to select gear. To reverse the vehicle, press the Foot Brake, set the Forward/Reverse Gear Switch to the Down position, and press the Accelerator Pedal. The transmission will select the appropriate reverse gear automatically. Slowly release the Foot Brake when ready.

The Turn Signal/Headlamp control (1) has six settings, three for turn signals and three for controlling the lights. Turn signals are selected by moving the control Up or Down:

- Set the Turn Signal/Headlamp control to the Up position for a right turn signal.
- Set the Turn Signal/Headlamp control to the Down position for a left turn signal.
- The turn indicator lights are Off when the Turn Signal/Headlamp control is in the centre position.

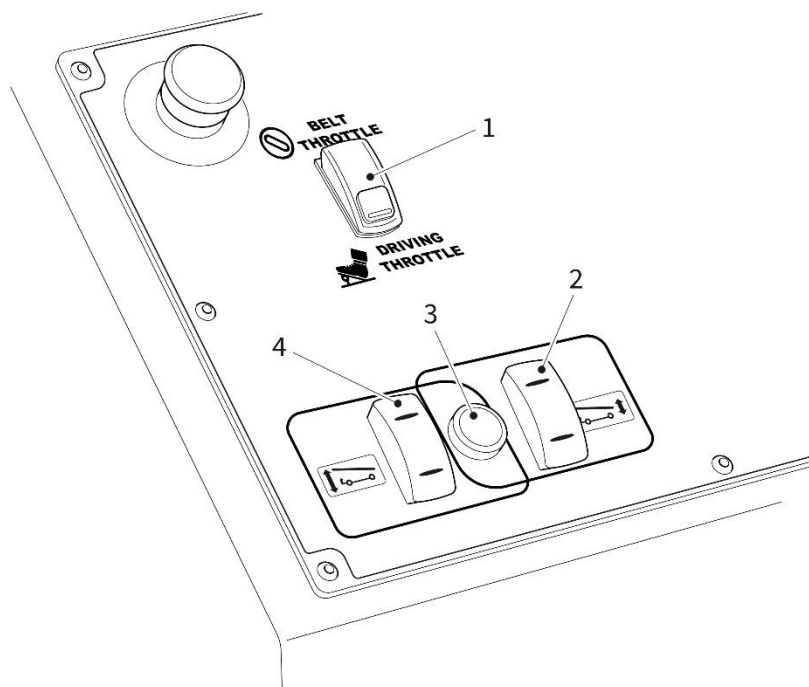
The lights are controlled by rotating the end of the Turn Signal/Headlamp control, as follows. The selected position of the control is indicated by the raised pointer:

- OFF position. All lights are Off. Only used when the vehicle is parked.

-  Position. The front position lights and the dash button indicator lights all illuminate.
- In addition, the brake lights will illuminate when the Brake Pedal is pressed sufficient to engage the service brake, and the turn indicator lights operate.
-  Position. This setting functions the same as the  position, and in addition, the headlights are On.

DRIVER'S COMPARTMENT BELT FRAME CONTROLS

Refer to Figure 7 below.



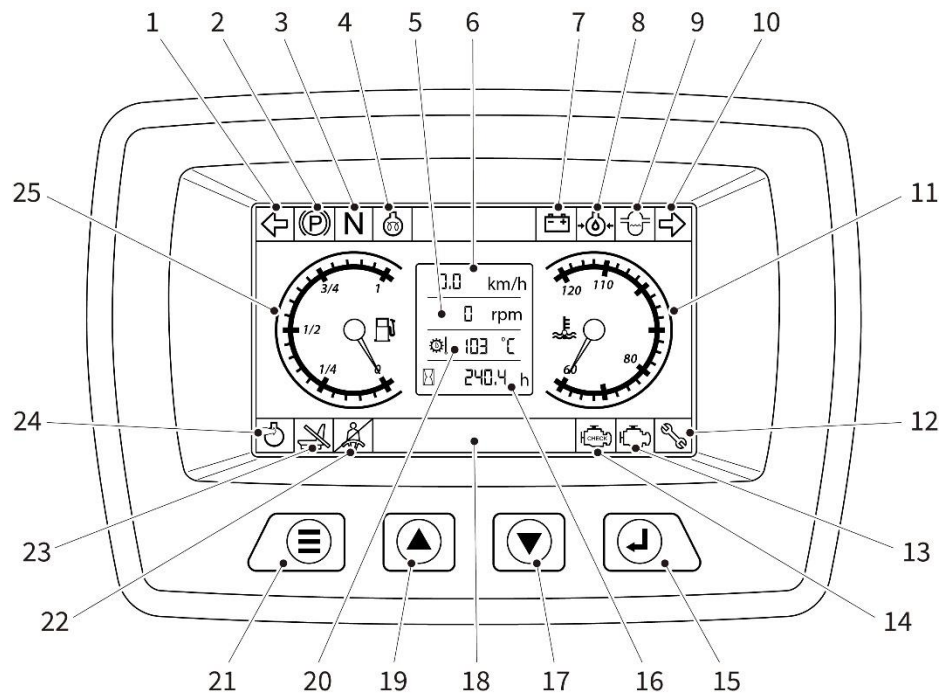
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| 1 | Drivers Throttle Select switch | 3 | Lift Cylinder Interlock switch |
| 2 | Rear Lift Cylinder Raise/Lower switch | 4 | Front Lift Cylinder Raise/Lower switch |

Figure 7 – Drivers' Compartment Belt Frame controls

The Drivers Throttle Select switch is a two-position rocker switch that is used to select either vehicle driving or operation of the conveyor belt.

- Press down on the top of this switch to activate the Belt Throttle, which allows the conveyor belt to operate, and the speed of the belt to be varied using the Belt Speed Control knob.
- Press down on the lower part of this switch to activate the Driving Throttle, which allows the vehicle to move.

Interlocks make sure that it is NOT possible to drive the vehicle and operate the conveyor belt at the same time.



- | | | | |
|----|--|----|--|
| 1 | Left turn signal | 14 | Engine malfunction indicator |
| 2 | Park brake indicator | 15 | Enter/Return button |
| 3 | Neutral (gear) position indicator | 16 | Chronograph (operational hours meter) |
| 4 | Preheat indicator | 17 | Menu/Page down button |
| 5 | Engine tachometer (in rpm) | 18 | Fault code and alarm display area |
| 6 | Speedometer (in kph) | 19 | Menu/Page up button |
| 7 | Charging indicator | 20 | Oil temperature (Transmission) |
| 8 | Engine oil pressure low warning | 21 | Menu button |
| 9 | Coolant level indicator | 22 | Seatbelt engaged indicator |
| 10 | Right turn signal | 23 | Operator present indicator |
| 11 | Coolant temperature gauge | 24 | Transmission oil temperature indicator |
| 12 | Service (maintenance required) indicator | 25 | Fuel gauge |
| 13 | MIL fault indicator | | |

Figure 8 – Dash Display Screen (Instrument Panel)

The BL30G control system includes a series of settings that are pre-set at the factory. These factory settings optimise the performance and safety of the vehicle. DO NOT attempt to alter the factory settings.

The menu button (17) allows access to a series of menus that are used to set-up the Belt Loader. If the menu button is pressed, or accidentally tripped, further progress is blocked by a password. DO NOT attempt to proceed further. These factory settings must not be altered. Press the Menu Item Select button (14) to exit the menus.

LETHAL DANGER – DO NOT ALTER FACTORY SETTINGS



DO NOT attempt to alter the factory settings. Lethal injury may result. The factory settings optimise the safety of the Belt Loader.

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

On the Dash Display Screen, the Fault Code Display area (16) is normally “Running Well”. In the event of a fault or malfunction on the Belt Loader it will sometimes (but not always) display a fault code that can be used to identify the problem. Illumination of the MIL Fault indicator (11) also indicates a fault on the Belt Loader.

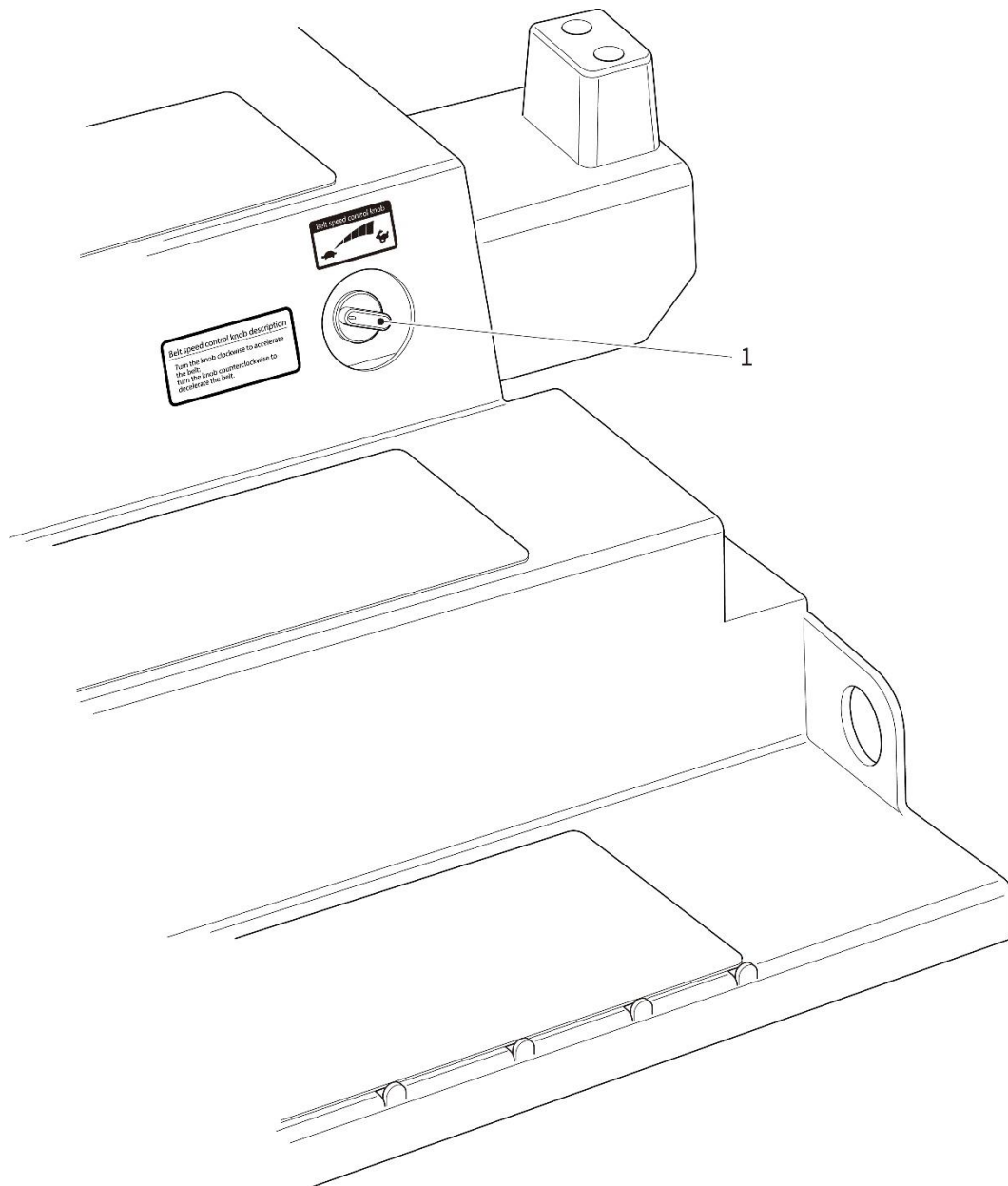
PARKING BRAKE

To engage the Parking Brake, press the button on the Parking Brake Lever and pull-up the Parking Brake Lever as far as it will go. To disengage the Parking Brake, press the button on the Parking Brake Lever and lower the Parking Brake Lever as far as it will go.

BELT SPEED CONTROL KNOB

The speed of the conveyor belt may be adjusted using the Belt Speed Control Knob (Fig 9) located on the steps at the rear of the BL30G Belt Loader.

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

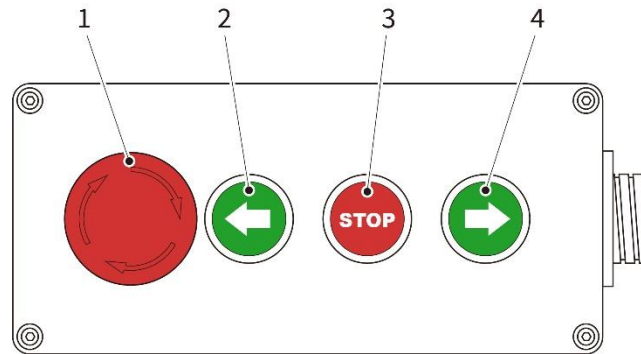


- 1 Belt Speed Control Knob

Figure 9 – Belt Speed Control Knob

BELT CONTROL BOX

Two Belt Control Boxes are fitted to the left-hand side of the Belt Frame, one at the front of the Belt Frame and one at the rear. The function of the Belt Control Boxes is to allow the operator to incrementally move the BL30G vehicle forwards or backwards in small movements, until the optimum position for loading baggage onto the aircraft is reached.



- | | | | |
|---|---------------------------------------|---|---------------------------------------|
| 1 | EMERGENCY STOP switch | 3 | Conveyor belt STOP button |
| 2 | Conveyor belt forward movement button | 4 | Conveyor belt reverse movement button |

Figure 10 – Belt Control Box

The function of the Belt Control Box switches is as follows:

- Pressing the conveyor belt forward movement button (2) starts the conveyor belt moving, in a forward direction, carrying baggage towards the front of the Belt Frame Assembly.
- Pressing the conveyor belt reverse movement button (4) starts the conveyor belt moving, in the reverse direction, carrying baggage towards the rear of the Belt Frame Assembly.
- To halt the conveyor belt, press the conveyor belt STOP button (3).
- Pressing the EMERGENCY STOP switch (1) switches OFF the whole vehicle.

When changing the direction of movement of the conveyor belt, between forward and reverse, press the conveyor belt STOP button first.

The Belt Frame Assembly includes a luggage rail to the left of the Belt to prevent luggage and cargo falling off the side of the Belt.

SAFETY INTERLOCKS

The BL30G is equipped with the safety interlocks described in the following Table.

No.	Interlock	Function
1.	Start-Neutral interlock	The engine can only be started-up when the gear shift is in the Neutral position.
2.	Transmission - conveyor belt interlock	An interlock between the Transmission and the Belt Frame Assembly conveyor belt. The conveyor belt can only be operated when the vehicle is stationary. When the conveyor belt is running the Transmission will not engage into forward or reverse gear.
3.	Emergency Shutdown.	An EMERGENCY STOP button is provided at each end of the Belt Frame Assembly. An EMERGENCY STOP button is also provided in the driver's compartment. Pressing any one of the EMERGENCY STOP buttons will shut the vehicle down completely.
4.	Parking Brake - Conveyor Belt interlock	The conveyor belt can only operate when the Parking Brake is engaged.
5.	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.
6.	Rear Hand throttle - Transmission interlock	The rear hand throttle must be reset before the vehicle can be put into gear.
7.	Parking Brake - Transmission interlock	When the gear switch is in the driving position, if the Parking Brake is not disengaged, the gear shift will not work and the audible alarm will sound.
8.	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 (Figure 11).

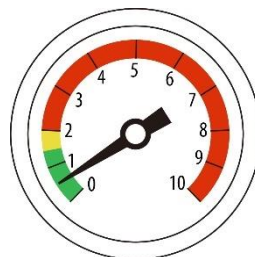


Figure 11 - Pressure gauge on Oil Return Filter

The function of this pressure gauge is to indicate the condition of the filter element located inside the Oil Return Filter. It does this by measuring the difference in oil pressure across the filter element to determine whether the filter element is blocked. This pressure gauge **MUST** be checked at the start of every shift **BEFORE** using the vehicle. Regular checking of this pressure gauge is also included in the Scheduled Maintenance for the BL30G vehicle.

- If the needle of the pressure gauge is pointing to the green segments, the filter element is serviceable.
- If the needle of the pressure gauge is pointing to the yellow segment, there is a constriction in the filter element. **DO NOT** operate the vehicle until the filter element has been cleaned or replaced, as applicable.
- If the needle of the pressure gauge is pointing to the any of the red segments, the filter element is blocked. **DO NOT** operate the vehicle until the filter element has been cleaned or replaced, as applicable.

START-UP

Before starting the BL30G Belt Loader:

- Make sure that all the EMERGENCY STOP switches are in the open position.
- Put the Forward/Reverse Gear Switch into the centre, Neutral, position.
- Rotate the Start Switch in a clockwise direction to the On position. This turns on the electrical power to the vehicle. The instrument panel will activate, and the Belt Loader will self-test for approximately 3 to 4 seconds.
- If the self-test detects a fault, do not attempt to use the Belt Loader and **REPORT** the fault.
- When the self-test is completed successfully, the Instrument Panel will display vehicle data normally.
- Turn start switch to crank position, engine will start.
- If the engine fails to start, wait at least 10 seconds then repeat the steps above.
- Step on the Brake Pedal, release the Parking Brake, and the Parking Brake indicator on the Instrument Panel will extinguish.
- Check that it is safe to move the Belt Loader.
- Push the Forward/Reverse Gear Switch upwards to the Forward position to engage the forward gears.

NOTE

If the Belt Loader fails to start after several attempts, **REPORT** the problem. Have a suitably trained and authorised vehicle mechanic check the fuel and ignition system for faults and perform the Troubleshooting Procedure given in this manual.

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

WARNING – DAMAGE TO HYDRAULIC SYSTEM



Before using the vehicle, at the start of every shift, check the Oil Return Filter pressure gauge. Make sure that the pressure gauge needle is in the green area. If the needle is NOT in the green area DO NOT use the vehicle, SWITCH OFF the vehicle, and report the problem. The filter element located inside the

Oil Return Filter, MUST be removed, cleaned, and re-fitted BEFORE using the vehicle.

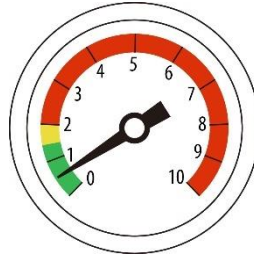


Figure 12 - Pressure gauge on Oil Return Filter

- Check the Oil Return Filter pressure gauge located on top of the Hydraulic Oil Tank (Figure 12). Make sure that the pressure gauge needle is in the green area. If the needle is NOT in the green area DO NOT use the vehicle, SWITCH OFF the vehicle, and REPORT the problem. Have a suitably trained and authorised vehicle mechanic remove and clean the filter element located inside the Oil Return Filter, BEFORE using the vehicle.
- Rotating the end of the Turn Signal/Headlamp control to select and switch On the required vehicle lights.
- Slowly release the Brake Pedal. Note that with the engine idling, Forward gear selected, and the Brake Pedal released the vehicle will move slowly forward at a speed that should not exceed 2.5 mph (4 km/hr).
- Press the Accelerator Pedal. The vehicle will move forward at the normal travel speed as selected by pressing the Accelerator Pedal.
- If the vehicle does not move forward, check that the Parking Brake has been released. If it has, rotate the Start Switch in a counter-clockwise direction to the Off position, put the Forward/Reverse Gear Switch into the Neutral position, and engage the Parking Brake. Check that the Brake Pedal is not depressed or jammed in the depressed position. Remove any debris or objects that may restrict the operation of the Brake Pedal. Then repeat this start-up procedure. If the vehicle still does not move forward, rotate the Start Switch to the Off position, put the Forward/Reverse Gear Switch into the Neutral position, engage the Parking Brake, and REPORT the problem.
- Test the Foot Brake and the Parking Brake before using the Belt Loader. The brakes MUST have a good and reliable performance. If not, do not use the Belt Loader and REPORT the problem.
- Make sure that the Belt Frame Assembly is in the fully lowered position. If necessary, use the Belt Frame Controls to lower the Belt Frame Assembly.
- Park the vehicle on a flat surface.
- Check the hydraulic oil level by viewing the Fluid Level Gauge through the observation port on the right side of the vehicle. The oil level should be at the highest red mark, between the degree line and the lowest red tick mark. If necessary, top-up the oil level in the hydraulic oil tank with clean, new, hydraulic oil through the oil port of the Oil Return Filter Assembly until the Fluid Level Gauge indicates that the hydraulic oil tank is full.
- DO NOT select Neutral gear, or switch OFF the engine, when going 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 counter-clockwise to the OFF position.

OPERATION

Perform baggage loading operations as follows:

- Drive to a suitable baggage loading position close to the aircraft, step on the Brake Pedal to stop the vehicle, engage the Parking Brake, and set the Forward/Reverse Gear Switch to Neutral.

NOTE

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

FATAL WARNING – 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.

- At night, or during poor visibility, switch ON the front working light.
- Using the Belt Frame controls in the Driver's compartment, adjust the height of the of the Belt Frame Assembly so that the front of the conveyor belt is at the same height as the aircraft door.

WARNING – DAMAGE TO AIRCRAFT



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

When approaching the aircraft, make sure that the vehicle is only moving forward at idling speed. Keep your foot on the Brake Pedal while manoeuvring close to an aircraft. When close to an aircraft, if in doubt, apply the Foot Brake.

- With the Forward/Reverse Gear Switch set to Forward and the engine idling, step on the Brake Pedal. Release the Parking Brake, and slowly lift your foot to release the Brake Pedal. The Baggage Loader will slowly move forward at a speed of 2.5 mph (4 km/hr). Drive the Baggage Loader close to the aircraft door.

- Step on the Brake Pedal to stop the vehicle, engage the Parking Brake, and set the Forward/Reverse Gear Switch to Neutral.

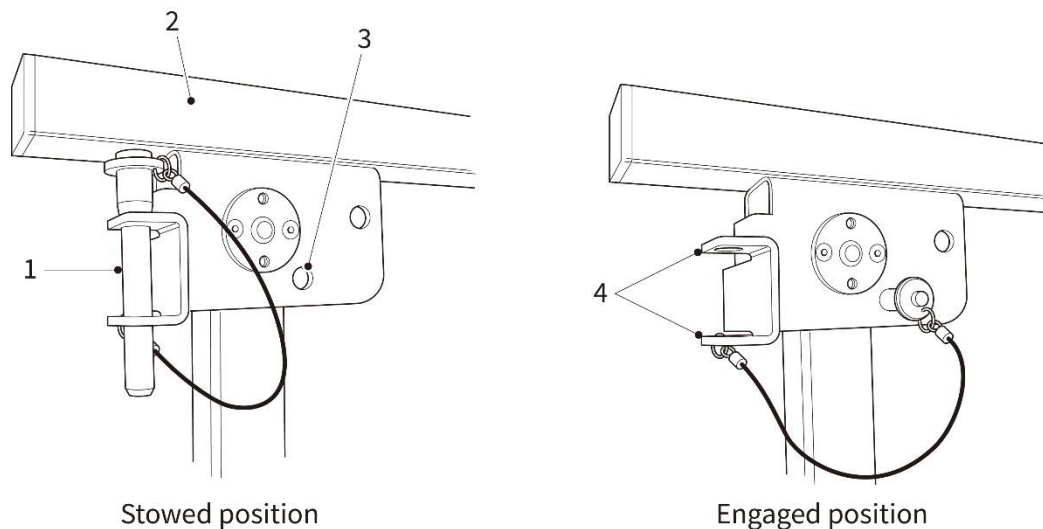
WARNING – USE HANDRAIL



Before stepping on to the Belt Frame Assembly, or loading/unloading baggage, raise the Handrail to its operating position. Make sure that the Handrail is secured in the raised position by moving the handrail securing pin from its stowage location to the engaged position, as shown in Fig 13.

When the baggage loading/unloading operation is complete, return the handrail securing pin to its stowage location. Then lower the Handrail to its stowed position before moving the vehicle.

- On the Belt Frame Assembly, raise the Handrail to its operating position. Refer to Figure 13 below. Remove the handrail securing pin from its stowage location. Then lock the Handrail in the raised position by fitting the handrail securing pin into its engaged position in the rear bracket of the Handrail. Make sure that the handrail securing pin goes through the holes in BOTH sides of the bracket.



- | | | | |
|---|-----------------------|---|-----------------------|
| 1 | Handrail securing pin | 3 | Engaged position hole |
| 2 | Handrail | 4 | Stowage location |

Figure 13 – Handrail securing pin

- The handrail securing pin is attached to its stowage location by a lanyard. However, if the handrail securing pin is lost or damaged it **MUST** be replaced with a new handrail securing pin. **DO NOT** use an incorrect substitute item as that may cause the Handrail to collapse when in use.
- On the Belt Frame Assembly, raise the luggage rail to the left of the conveyor belt to prevent luggage and cargo falling off the side of the conveyor belt.

WARNING – CONVEYOR BELT



DO NOT step onto the conveyor belt while the conveyor belt is moving.

DO NOT start the conveyor belt when someone is on the conveyor belt.

The conveyor belt has pinch points. Keep hands and clothing away from potential pinch points. Wear suitable protective gloves.



When in the vicinity of a moving conveyor belt, make sure that loose clothing, straps and belts, long hair, neckties, lanyards, necklaces, scarfs, bracelets, and wrist straps, etc., are all secured tight or removed. If any of these items are caught by the conveyor belt it can drag the person into the mechanism.

- On the Belt Control Boxes, use either the conveyor belt forward movement button, or the conveyor belt reverse movement button, as applicable, to start the conveyor belt.
- The movement of the conveyor belt may be stopped at any time by pressing the conveyor belt STOP button.
- The speed of the conveyor belt may be adjusted using the Belt Speed Control Knob located on the steps above the left rear wheel. Turn the knob clockwise to accelerate the conveyor belt. Turn the knob counter-clockwise to decelerate the conveyor belt.
- In the event of an emergency or problem while loading or unloading baggage or cargo, press the EMERGENCY STOP button on either of the Belt Control Boxes. Or press the EMERGENCY STOP button in the Driver's compartment.
- When the loading or unloading operation is complete, stop the movement of the conveyor belt by pressing the conveyor belt STOP button. On the Belt Frame Assembly, lower the luggage flap to the left of the conveyor belt to its stowed position.
- On the Belt Frame Assembly, remove the handrail securing pin from its engaged position and place the pin in its stowage location. Then lower the Handrail to its stowed position.
- With the Forward/Reverse Gear Switch set to Neutral and the engine idling, step on the Brake Pedal. CHECK THAT THE AREA AROUND THE VEHICLE IS CLEAR. Set the Forward/Reverse Gear Switch to Reverse, release the Parking Brake, and slowly lift your foot to release the Brake Pedal. Gently press on the Accelerator Pedal and slowly reverse away from the aircraft.
- Once clear of the aircraft, drive the vehicle normally to its next destination.

WORKING UNDER THE BELT FRAME ASSEMBLY

When it is necessary to perform maintenance or servicing beneath a Belt Frame Assembly that is in the raised position, it is **ESSENTIAL** that Belt Frame Assembly is locked in the raised position with the Safety Prop and the Belt Frame Locking Pin. This is to prevent the Belt Frame Assembly dropping on the person performing the maintenance or servicing, for example, because of a hydraulic fault. Locking the Belt Frame Assembly in the raised position with both the Safety Prop and the Belt Frame Locking Pin provides two levels of safety against that hazard.

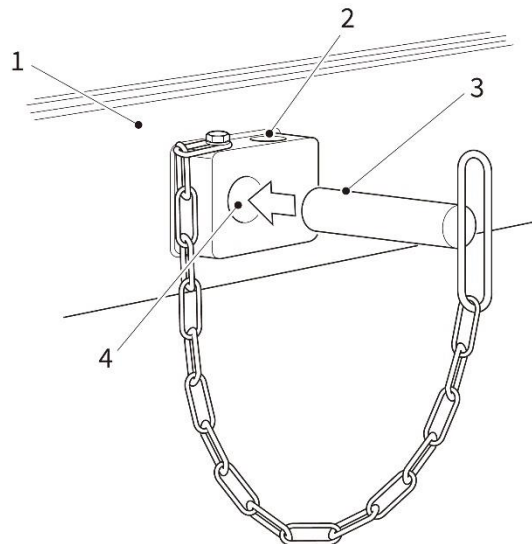
FATAL WARNING – CRUSH INJURY



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.

Lock the Belt Frame Assembly in the raised position as follows:

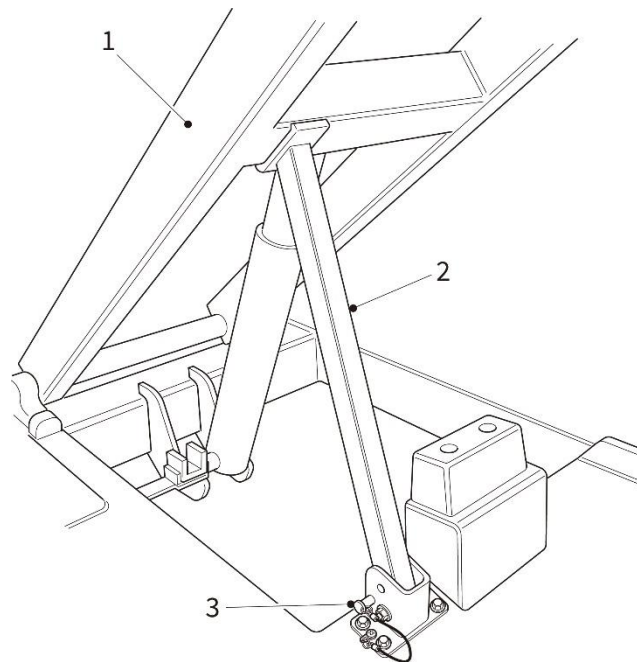
- Refer to Figure 14. Raise the Front Lifting Cylinder until the main rollers pass the safety locking position (4).



1	Belt Frame Assembly	3	Belt Frame Locking Pin
2	Stowage position	4	Safety locking position

Figure 14 - Belt Frame Locking Pin

- Refer to Figure 15. Remove the Safety Prop locking pin (3) from its stowage position.
- Taking care not to go underneath the raised Belt Frame Assembly, raise the Safety Prop (1) so that it engages with the Front Lifting Frame as show in Figure 15.
- Fit the Safety Prop locking pin (3) to its lock position. This will secure the Belt Frame Assembly in the raised position.



- | | | | |
|---|---------------------|---|-------------|
| 1 | Front Lifting Frame | 3 | Locking Pin |
| 2 | Safety Prop | | |

Figure 15 – Safety Prop

- Refer to Figure 14. 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. Then push the Belt Frame Locking Pin fully home. This will also secure the Belt Frame Assembly (1) in the raised position.

When the maintenance or servicing activity is finished:

- Refer to Figure 15. Taking care not to go underneath the raised Belt Frame Assembly, 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 the completely lower the Belt Frame Assembly.

FUNCTIONAL DESCRIPTION OF MAIN ASSEMBLIES

STRUCTURE

The BL30G Belt Loader is comprised of the following main assemblies:

- Chassis and vehicle body.
- Engine.
- Transmission.
- Drive Shaft.
- Drive Axle.
- Brake system
- Front Axle.
- Steering system.
- Belt Frame Assembly.
- Front and rear Lifting Frames.
- Two hydraulic Lifting Cylinders.
- The hydraulic system.
- The electrical system.

Note that there is no suspension system on the BL30G Belt Loader.

ENGINE

The engine is a Power Solutions International PSI 2.4L gasoline engine, Model 4G64-L-56/57. It is a single overhead camshaft, 16 valve, engine. For the description and technical details of the engine, refer to the “PSI 2.0 & 2.4L Service Manual” appended to this BL30G manual.

AUTOMATIC TRANSMISSION

The BL30G is fitted with an Okamura, Model Y43280D, Automatic Transmission. It has a 3-element, 1-stage, 2-phase, torque converter. Forward and reverse gears are automatic. For the description and technical details of the Automatic Transmission, refer to the Okamura Transmission Service Manual, No. TSM11-003, for the Model Y43280D, which is appended to this BL30G manual.

CARDAN PROPELLER SHAFT (DRIVE SHAFT)

The Drive Shaft is a stiff propeller shaft, with universal joints at the front and rear that attach the Drive Shaft to the Automatic Transmission and Drive Axle.

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

There are two braking systems on the BL30G, a Foot Brake System (Service Brake) , and a Parking Brake (Hand Brake).

The Foot Brake System is a four-wheel braking system that includes a vacuum valve. When the Foot Brake is applied, brake fluid from the brake fluid reservoir is applied to all four brakes. The system is reliable and easy to use.

To apply the Parking Brake, simply pull the Parking Brake Lever upwards. The hand brake cable attached to the Parking Brake Lever will apply the pull force to the Brake Assemblies fitted to the rear (drive) axle, thus engaging the park brake.

FRONT AXLE AND STEERING SYSTEM

The Front Axle is the steering axle. The BL30G is fitted with a power steering system that forms part of the vehicle hydraulic system. When the steering wheel is turned, a hydraulic steering unit, located below the driver's dash, applies hydraulic oil from the hydraulic system to the steering cylinder attached to the Front axle. In response the steering cylinder turns the Front Axle, causing the vehicle to turn.

CHASSIS AND VEHICLE BODY

The vehicle body and chassis are constructed from welded steel plate. The driver's compartment is also constructed from welded steel plate and is bolted to the chassis and vehicle body. The vehicle has a low centre of gravity giving the vehicle good stability. The driver's compartment has space for the driver, only, and provides the driver with a wide field of view. The position of the driver's seat can be adjusted backwards and forwards.

A single towing lug (hitch) is located on the front of the BL30G. A second towing lug (hitch) is located on the bottom step at the rear of the BL30G. These towing lugs are NOT designed to be used for towing other vehicles, trailers, baggage carts, cargo dollies, etc., and MUST NOT be used for that purpose. The sole purpose of the towing lugs is to provide attachment points for towing chains/cables when recovering a broken down BL30G.

BELT FRAME ASSEMBLY

The function of the Belt Frame Assembly is to safely transport luggage and cargo to an aircraft's cargo door. To provide the necessary strength and rigidity, the Belt Frame Assembly is constructed around a welded steel Belt Frame made from U-channel steel beams. The movement of the luggage is performed by a rubber conveyor belt. To provide safe access for baggage handlers to the aircraft hold, a collapsible Handrail Assembly is provided on the right-hand side of the Belt Frame Assembly. The Handrail Assembly MUST be raised to its' operating position, and locked in that position, BEFORE anyone sets foot on the conveyor belt. The Handrail Assembly also prevents luggage falling off the right-hand side of the conveyor belt. Front and rear luggage flaps, located on the left-hand side of the conveyor belt, prevent luggage from falling off that side.

Control and EMERGENCY STOP switches are located at the front and rear of the Belt Frame Assembly.

A hydraulic motor located at the rear of the Belt Frame Assembly drives the conveyor belt, via a rear drive drum. Hydraulic power for the motor is provided by the vehicle hydraulic system. A front belt drum at the front of the Belt Frame Assembly, acts as a return roller for the conveyor belt. The conveyor belt is supported by five short stainless steel idler rollers, 27 long stainless steel idler rollers, and four stainless steel support plates. Two Guide Wheel Assemblies keep the conveyor belt running straight. A Front Roller Adjustment Assembly and a Tightening Support Assembly maintain the correct tension in the conveyor belt.

Two proximity sensors are mounted on the front underside of the Belt Frame Assembly to warn the driver when the Belt Frame Assembly is close to an aircraft. There is also a protective bumper fitted to the front edge of the Belt Frame Assembly.

FRONT AND REAR LIFTING FRAMES AND LIFT CYLINDERS

Both the front and rear Lifting Frames are welded steel structures. The front and rear Lifting Frames perform two functions:

- The front and rear Lifting Frames are part of the mechanisms that raise and lower, respectively, the front and rear of the Belt Frame Assembly.
- The Lifting Frames support the weight of the Belt Frame Assembly.

Lifting and lowering of the Belt Frame Assembly is performed by the front and rear Hydraulic Lift Cylinders. Both Lift Cylinders are single-acting, piston, hydraulic cylinders, with hydraulic power applied to the full-bore side of the hydraulic cylinder. The full-bore side of each Lifting Cylinder is attached to the chassis of the vehicle, and the piston (rod) of each Lifting Cylinder is attached to the associated Lifting Frame. As hydraulic oil flows into, or out of, the full-bore side of the Lift Cylinder, its piston is forced in or out. The movement of the piston raises or lowers the associated Lifting Frame, thus raising or lowering the respective end of the Belt Frame Assembly. The Lifting Frames and Belt Frame Assembly can be lowered unpowered.

During maintenance and servicing, or following a failure in the hydraulic system, the front and rear Lifting Frames can be raised using a hand pump attached to the hydraulic oil tank.

HYDRAULIC SYSTEM

A hydraulic circuit diagram for the BL30G 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.

BL30G Belt Loader

- 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 12V DC system. Electrical schematics for the BL30G are provided in the Electrical Schematics section of this manual.

REFUELLING

Refer to Figure 16 and refuel the BL30G Belt Loader as follows:

WARNING – PETROLEUM – FIRE AND HEALTH HAZARD



Fuel expands when heated. Expanding fuel in an over full tank can cause spills and leaks. Do not overfill the fuel tank.

Do not eat, drink or smoke when refuelling the vehicle. If fuel is ingested, or comes into contact with your eyes, nose or mouth, seek medical assistance immediately.

Fuel spillages are a fire and slip hazard. Always clean up any spillages.

- Make sure that the vehicle is shut down, and that there are no open flames or combustibles nearby.
- Make sure that the vehicle is standing on level ground, and that the vehicle is level with the ground.
- Remove and retain the fuel cap.
- Fill the tank with the appropriate grade of gasoline.
- Refit the fuel cap.

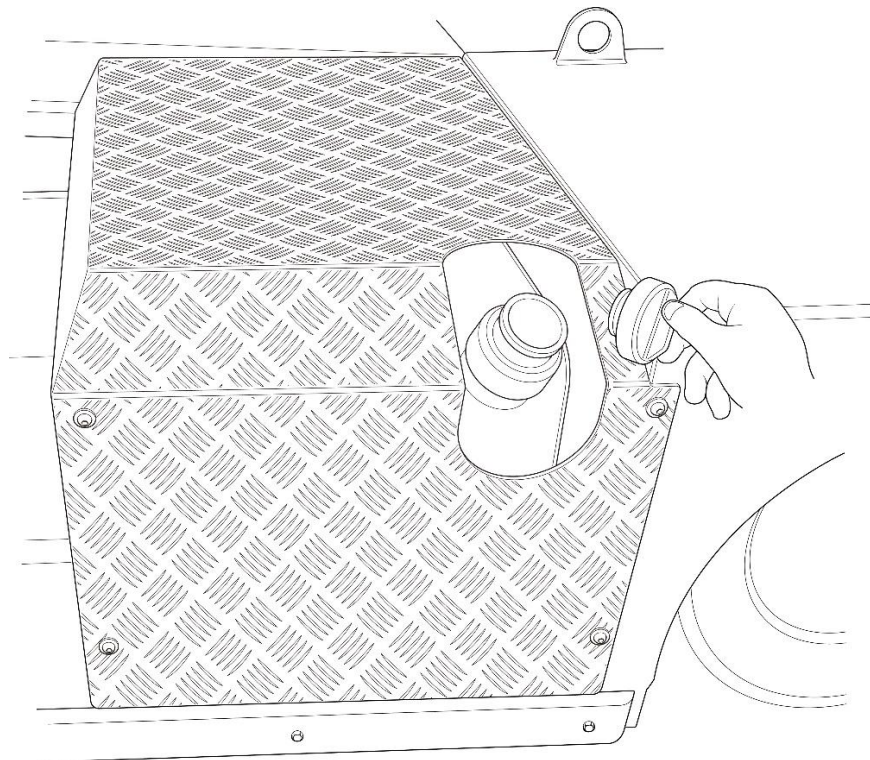


Figure 16 – Refuelling

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.
- Drain the radiator.
- If necessary, perform the cold weather maintenance (“winterize”) described on page 35.
- 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.

NOTE

Long term storage of a battery with a reduced charge in it 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.

RECEIPT AND PREPARATION FOR FIRST USE

On receipt of a new BL30G Belt Loader, before operating the Belt Loader for the first time, you **MUST** perform the following :

- Make sure that all loose packaging has been removed from the Belt Loader.
- Check the Belt Loader and its components for damage. If there is any visible damage, **DO NOT OPERATE THE BELT LOADER**. Contact AvroGSE immediately for assistance. Contact details for AvroGSE are given inside the front cover of this manual.
- Perform an inventory of all parts included with the Belt Loader and verify that all loose components and fasteners are accounted for. If any are missing, contact AvroGSE immediately for assistance.
- Attach all component parts not already attached to the Belt Loader.
- Make sure that all necessary fluids (for example fuel, engine oil, coolant) are checked and additional fluid added as needed.
- Verify that the Belt Loader is fully serviceable by performing the Daily Maintenance checks and Weekly Maintenance checks described in the Scheduled Maintenance section of this manual.
- Move the Belt Loader to its operating location.
- Complete any receipt documentation and maintenance records as required.

After 100 hours of operational use of the Belt Loader, replace the oil in the Transmission. 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 hydraulic system fails, the Belt Loader should be removed from the ramp as soon as possible to avoid flight delays. Use the following Emergency Operation Procedures to manually raise the Belt Frame and then manually reset the Belt Frame.

HOW TO 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. Raise the front end of the Belt Frame as follows:

- Refer to the Figure below showing the electronic controlled Integrated Hydraulic Valve Assembly.

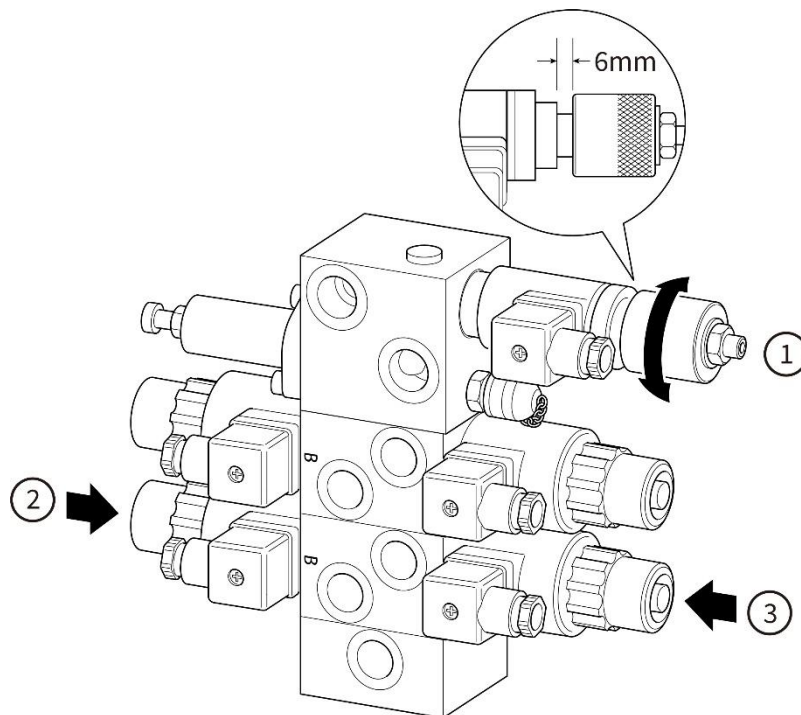


Fig 17 - Integrated Hydraulic Valve Assembly

- When not in use the lever of the Emergency Hydraulic Hand Pump is stowed on top of the hydraulic oil tank. Release the pump lever from the clip that secures it in position on top of the hydraulic oil tank. Then rotate the pump lever counter-clockwise until it is at a right-angle to the vehicle chassis.
- Rotate the pressure increase valve (1) clockwise, by hand, until the valve cannot be rotated any further.
- Then press the solenoid valve manual button (2). The button must be kept in the depressed position.
- Operate the Emergency Hydraulic Hand Pump by moving its lever up and down, as far the lever will travel. A steady pace is recommended. The front end of the Belt Frame will be raised by the action of the pump.
- To halt the raising of the front end of the Belt Frame, stop operating the Emergency Hydraulic Hand Pump lever, and stop pressing the solenoid valve manual button.

Raise the rear end of the Belt Frame as follows:

- Refer to Fig 16. Rotate the pressure increase valve (1) clockwise, by hand, until the valve cannot be rotated any further.
- Press the solenoid valve manual button (3). The button must be kept in the depressed position.
- Operate the Emergency Hydraulic Hand Pump by moving its lever up and down, as far the lever will travel. A steady pace is recommended. The rear end of the Belt Frame will be raised by the action of the pump.
- To halt the raising of the rear end of the Belt Frame, stop operating the Emergency Hydraulic Hand Pump lever, and stop pressing the solenoid valve manual button.

Completion:

- When both the front and rear ends of the Belt Frame have been raised to the desired height, on the hydraulic valve assembly, return the pressure increase valve (1) to its normal position. Rotate the pressure increase valve (1) counter-clockwise, by hand, until the valve cannot be rotated any further. When the valve is fully home, the distance between the rotatable cap and the base of the valve should be approximately 6mm as shown in the illustration.
- When both the front and rear ends of the Belt Frame have been raised to the desired height, return the lever of the Emergency Hydraulic Hand Pump to its stowed position. Make sure that the lever is secured by its retaining clip.
- Lower the Belt Frame as described below.

HOW TO MANUALLY LOWER THE BELT FRAME

Lower the front end of the Belt Frame as follows:

FATAL WARNING – CRUSH 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 manually lowering the Belt Frame, check that no person or object is near or under the Belt Frame.
- A solenoid valve is located at the bottom of the Belt Frame front hydraulic lift cylinder, as shown in Fig 18. On the solenoid valve, rotate the emergency knob counter-clockwise, by hand, until it cannot be rotated any further.
- The hydraulic lift cylinder will retract once the emergency release knob is rotated counter-clockwise.
- When the front end of the Belt Frame has been lowered, on the hydraulic cylinder solenoid valve, rotate the emergency knob clockwise, by hand, until it cannot be rotated any further.

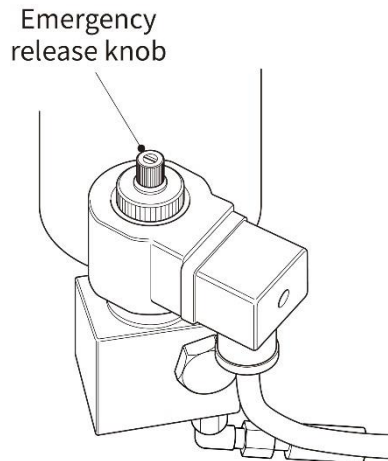


Fig 18 - Belt Frame hydraulic cylinder solenoid valve

Lower the rear end of the Belt Frame:

FATAL WARNING – CRUSH 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.

- A solenoid valve is located at the bottom of the Belt Frame rear hydraulic lift cylinder, as shown in Fig 18. On the hydraulic cylinder solenoid valve, rotate the emergency knob counter-clockwise, by hand, until it cannot be rotated any further.
- When the rear end of the Belt Frame has been lowered, on the hydraulic cylinder solenoid valve, rotate the emergency knob clockwise, by hand, until it cannot be rotated any further.

The Emergency Operation Procedures are now complete. The BL30G Belt Loader can now be towed away.

TOWING INSTRUCTIONS

When towing the BL30G:

- Put the transmission into Neutral and release the parking brake.
- The towing speed must not exceed 6 mph (10km/hr) and the towing distance must not exceed 12 miles (20 km).
- If the towing distance is going to be greater than 12 miles (20 km), or the towing speed is going to be greater than exceed 6 mph (10km/hr), then the rear wheels should be raised off the ground before the BL30G is towed. Failure to raise the rear wheels off the ground in these circumstances may result in damage to the BL30G.
- There must be a person sitting the cab to steer the BL30G during towing; unless the rear wheels have been raised off the ground.

SCHEDULED MAINTENANCE

Scheduled maintenance is limited to the activities specified in the Scheduled Maintenance Table below. The maintenance intervals given are approximate, assume heavy use of the BL30G Belt Loader, and may be varied by $\pm 10\%$ without adverse effects. Every Belt Loader should be inspected and serviced based on its own requirements, for example variation in the hours of use and the environment in which it is used.


An **X** in the Scheduled Maintenance Table indicates that the activity described should be performed at that maintenance period.

When fitting fasteners, DO NOT apply thread-locking adhesive. A specific torque setting must be applied to the wheel nuts as detailed on page 77. For other bolts and fasteners, refer to the guidance on torque settings given on page 78.


NOTE

If further details are required on how to perform the Scheduled Maintenance actions on the engine, refer to the Power Solutions International (PSI) “2.0 & 2.4L Service Manual” for the engine, which is appended to the rear of this manual.

It is not necessary to perform Daily Maintenance if a higher level of maintenance has been performed in the preceding 24 hours.

	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
<p>WARNING – COMPRESSED AIR</p> <p> Compressed air used for cleaning can create airborne particles that may enter the eyes. Wear Personal Protective Equipment (PPE) including eye shields or protective goggles, and suitable protective gloves. The pressure of the compressed air must not exceed 0.7 Bar (10 lbf sq in.).</p>							
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				X	X	X

	Task	Daily	Weekly	Monthly	3 Months (250 hrs)	6 Months (500 hrs)	12 Months (1000 hrs)
	with a brush soaked in a domestic detergent and water solution.						
	d. Wipe oil, dirt and dust from wires and electrical harnesses in 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
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 lowering 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

	Task	Daily	Weekly	Monthly	3 Months (250 hrs)	6 Months (500 hrs)	12 Months (1000 hrs)
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
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
<p>WARNING – BURN HAZARD</p> <div style="display: flex; align-items: center;">  <p>Hot water in the radiator will scald. Make sure that the engine has cooled down before removing the radiator cap. Wear Personal Protective Equipment (PPE) including eye shields or protective goggles, and suitable protective gloves.</p> </div>							
s.	Check coolant level. Add coolant if required.	X	X	X	X	X	
t.	Replace coolant.						X

	Task	Daily	Weekly	Monthly	3 Months (250 hrs)	6 Months (500 hrs)	12 Months (1000 hrs)
u.	Check engine oil level. Add oil as required. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the engine oil.	X	X	X	X	X	X
v.	Check the fuel level. Refuel Belt Loader if necessary.	X	X	X	X	X	X
3	<p>Seat Belt Checks</p> <p>The driver must check the condition and function of the seat belt each day, BEFORE using the BL30G. Only regular inspections can detect seat belt failures before a critical incident.</p>						
a.	Pull the seat belt fully out and inspect its surface fibres 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	<p>Operation</p> <p>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.</p>	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 DO NOT use the Belt Loader until it has been repaired.	X	X	X	X	X	X
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

	Task	Daily	Weekly	Monthly	3 Months (250 hrs)	6 Months (500 hrs)	12 Months (1000 hrs)
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		
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

	Task	Daily	Weekly	Monthly	3 Months (250 hrs)	6 Months (500 hrs)	12 Months (1000 hrs)
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
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,	X	X	X	X	X	X

	Task	Daily	Weekly	Monthly	3 Months (250 hrs)	6 Months (500 hrs)	12 Months (1000 hrs)
	DO NOT operate the vehicle until the filter element has been cleaned or replaced.						
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
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	Lubrication						
a.	Lubricate Belt Loader in accordance with the Lubrication Chart (if not already done in this maintenance sequence).		X	X	X	X	X

	Task	Daily	Weekly	Monthly	3 Months (250 hrs)	6 Months (500 hrs)	12 Months (1000 hrs)
9	Maintenance Records						
a.	Complete all required maintenance records.	X	X	X	X	X	X

HYDRAULIC HOSES

High-pressure hydraulic hoses have a maximum service life of six years. Replace all high-pressure hoses on the BL30G every six years.

If a hydraulic component is replaced, all high-pressure hydraulic hoses associated with that hydraulic component should be replaced at the same time.

PRECAUTION – LIFE OF HIGH-PRESSURE HYDRAULIC HOSES



Replace all high-pressure hoses on the BL30G every six years.

When replacing a hydraulic component, replaced associated high-pressure hydraulic hoses at the same time.

COLD/HOT WEATHER MAINTENANCE

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

- Perform “Monthly Maintenance”.
- Clean fuel filter.
- Drain engine oil and replace with oil that is suitable for the coming cold or hot weather. Refer to the Fuel, Lubricants and Consumables section of this manual for details of an appropriate oil.
- Before cold weather arrives, drain the radiator and cooling system. Flush the cooling system with clean water. Then refill with an appropriately rated anti-freeze solution that includes industrial ethylene glycol.
- Before hot weather arrives, drain the radiator and cooling system. Flush the cooling system with clean water. Then refill with an appropriately rated coolant.
- 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.

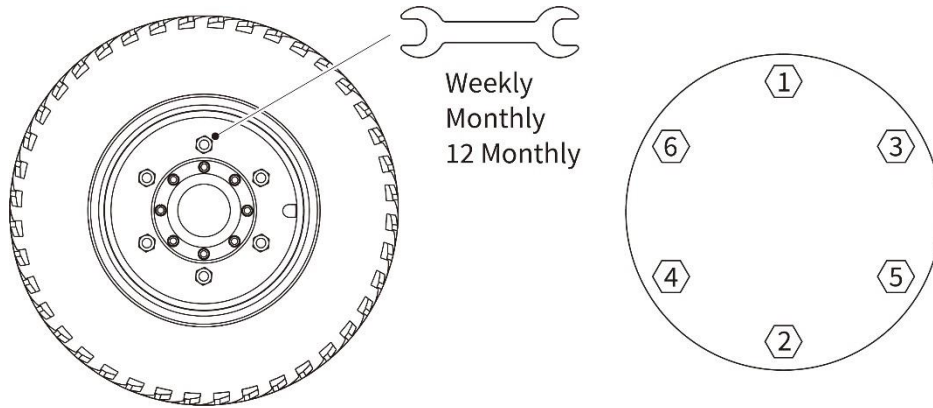


Fig 19 - Wheel Nut tightening

FUEL, LUBRICANTS AND CONSUMABLES

Fuel/Lubricant	Specification	Use
Fuel	Gasoline	Fuel
Engine oil	SM 5W-30 or GM Spec GM6094M, with an API of SM or more recent	Engine lubrication
Coolant	50/50 mix of distilled water and Coolant meeting GM Spec GM6277M (suitable for use down to -45 deg C/ - 49 deg F)	Engine cooling system
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
Transmission Fluid	ATF Dextron II or better	Transmission
Gear oil	GL-5 80W/90 or GL-5 Heavy Duty	Drive Axle Differential
Synthetic Brake Fluid	Mobil DOT4 Brake Fluid	Brake system
Grease	3# (Grade 3) Lithium based grease	Wheel hubs, bearings, bushings, Universal Joints, other moving mechanical parts

NOTE

To achieve optimum engine performance and durability, it is important that you only use engine lubricating oils displaying the American Petroleum Institute (API) “Starburst” Certification Mark “FOR GASOLINE ENGINES” on the container.



FILL CAPACITIES

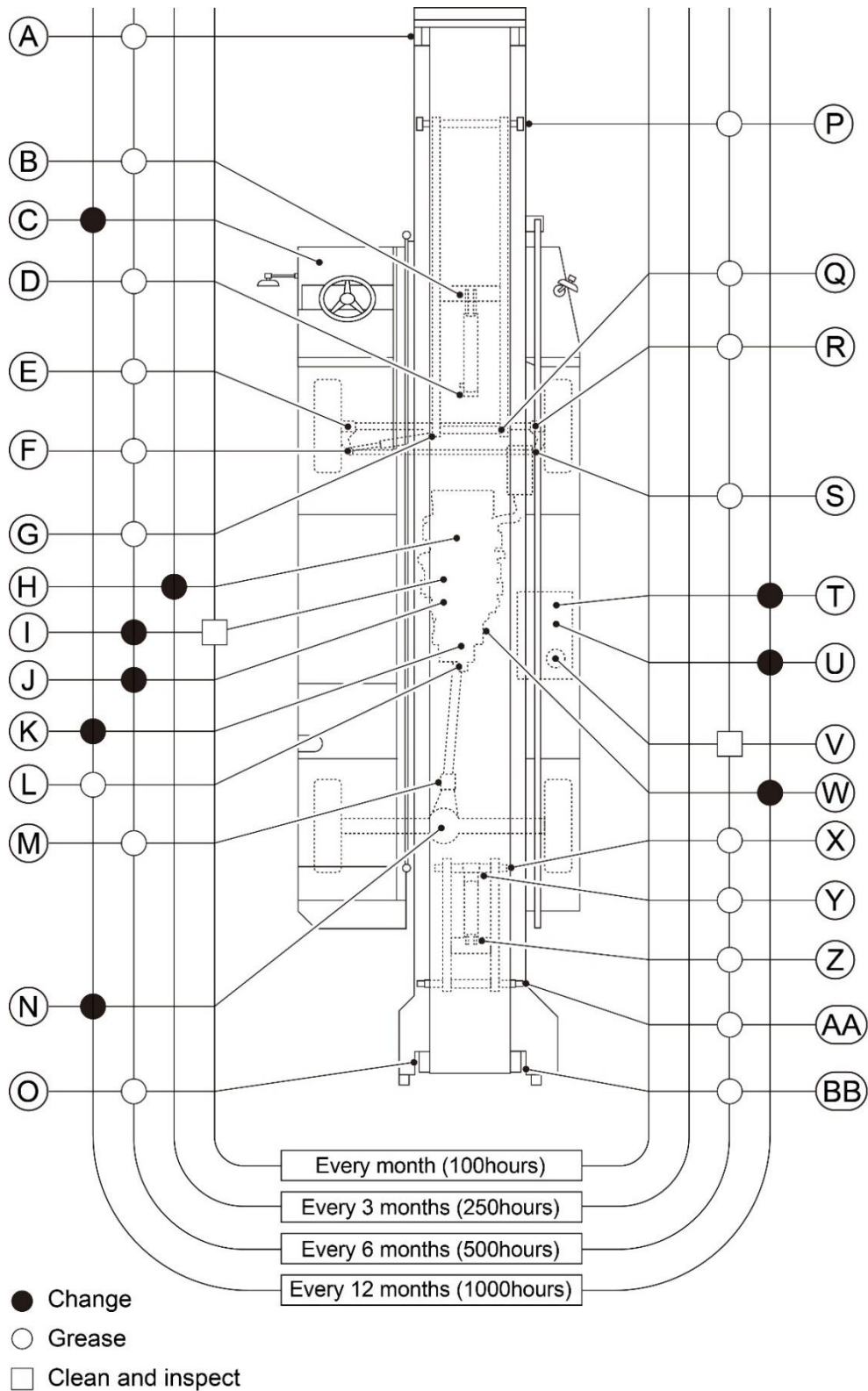
Item	Fill capacities (L)
Fuel tank	90
Engine oil (with oil filter)	5.7 Start engine and allow to warm up before topping-up engine oil
Transmission oil	8.0 fill Then start engine, allow to warm-up, and top up oil to level on dipstick)
Hydraulic System oil (inc. Power Steering)	65.0
Drive Axle Differential oil	7.5
Brake fluid	1.4
Grease	As required
Coolant	10.0

CONSUMABLES

Consumable	Type
Engine Air Filter Element	Part No. PRPW00420
Engine Oil Filter Cartridge	Part No. PRPW00060
In-tank Fuel Filter	Part No. PRPW00070
Transmission Oil Filter	ZF Part No. 0501.333.764
Fuel Filter	T20A5-30400
Oil Suction Fiter (in hydraulic oil tank)	HF01-150 x 250-1
Filter Element, Hydraulic (in Oil Return Filter attached to hydraulic oil tank)	RAE0120F010N
Access Cover Gasket, 300 x 5.3 mm	8KB00-80053
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)

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LUBRICATION DIAGRAM



A	Front Roller Bearings - both sides	O	Rear Roller Self Aligning Bearing
B	Front Lift Cylinder – Upper Pin	P	Front Lifting Frame Rollers – both sides
C	Brake fluid	Q	Front Lifting Frame - Lower Bearing Seat
D	Front Lift Cylinder – Lower Pin	R	Front Axle RH Steering Knuckle
E	Front Axle LH Steering Knuckle	S	Ball Joint RH
F	Ball Joint LH (Steering Cylinder)	T	Hydraulic System oil
G	Steering Cylinder joint	U	Oil Suction Filter – Hydraulic System
H	Engine oil and Engine Oil Filter cartridge	V	Oil Return Filter – Hydraulic System
I	Air Filter cartridge	W	Transmission Suction Strainer
J	Fuel filter	X	Rear Lifting Frame – Lower Bearings - both sides
K	Transmission Oil and Transmission Oil Filter	Y	Rear Lift Cylinder – Lower Pin
L	Drive Shaft – Front Joint	Z	Rear Lift Cylinder – Upper Pin
M	Drive Shaft – Rear Joint	AA	Rear Lifting Frame – Upper Bearings – both sides
N	Drive Axle Differential gear oil	BB	Rear Roller Bearing Seat

Key to Lubrication diagram

NOTES

Air Filter element. The Air Filter element has an expected life of 300 to 500 hours depending upon environmental conditions. However, arduous operating conditions may affect service intervals and the life of the Air Filter element may be considerably less. Clean and inspect the Air Filter element monthly and replace if necessary. Do not exceed 500 hours use.

Engine oil and filter. The engine oil and filter must be changed every 250 hours or 3 months, whichever occurs first. The engine oil and filter should be changed more frequently if the Belt Loader is operating in dusty or extremely dirty areas, or during cold weather.

Hydraulic system oil suction filter. The oil suction filter located inside the hydraulic oil tank must be changed whenever the hydraulic oil is changed.

CLEANING/REPLACING THE OIL RETURN FILTER ELEMENT

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

- Refer to Figure 20 below. On the Oil Return Filter, unlock the plastic cover by rotating the plastic cover counter-clockwise. Then pull the plastic cover off the Oil Return Filter.

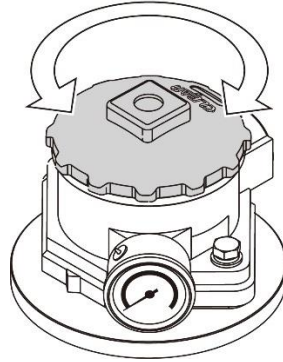


Figure 20 - Oil Return Filter cover

- Refer to Figure 21. 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.

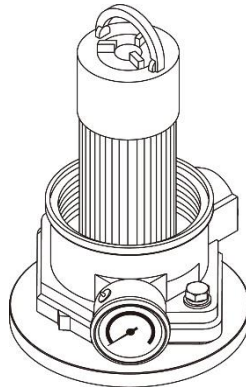


Figure 21 - Removing the oil return filter element

- 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.
- Refer to Figure 20. 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.
- The procedure for cleaning and/or replacing the oil return filter element is now complete.

REPLACEMENT OF HYDRAULIC OIL

The oil in the hydraulic system should be changed every 12 months. It is permitted to change the 12 month interval by $\pm 10\%$.

The normal service life of static hydraulic oil is approximately one year. In the spring and fall (autumn) the temperature difference between day and night is large. In those seasons, when a vehicle that has been working during the day halts for the night, the oil in the hydraulic tank is at a high temperature and the ambient air temperature is low. The hot air in the top of the oil tank meets the cold ambient temperature. Which causes the air in the oil tank to condense on the inside of the roof of the oil tank, forming water droplets that fall into the hydraulic oil. Over time the hydraulic oil will become mixed with water. Then it evolves into an acidic substance that corrodes metal surfaces. Under the dual action of mechanical operation and pipeline pressure shock, corroded metal particles will fall off metal surfaces and become mixed in the hydraulic oil. Metal particles greater in size than 10µm will be filtered out by an oil filter element, while particles smaller than 10µm will not be filtered out. The particles mixed in the hydraulic oil will increase the wear on metal surfaces. Therefore, do not leave the vehicle outside when it is not in use, especially in cold northern regions. Also, clean or replace the filter element in accordance with the maintenance schedule.

Before replacing the hydraulic oil, make sure that you have the following items available:

NOTE

When changing the type of hydraulic oil used on the BL30G Belt Loader, DO NOT mix the two types of hydraulic oil. All the previous type of hydraulic oil must be removed, and the hydraulic system thoroughly cleaned before filling with the new oil.

- 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.
- A replacement filter element for each filter in the hydraulic system. Only use the filter elements specified in the Fuels, Lubricants and Consumables section of this 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. 8KB00-80053.
- Wash oil. Use the same type of oil as will be used to refill 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.

Before replacing the hydraulic oil, make sure that the Belt Frame Assembly is in the fully lowered position, and the vehicle is switched Off.

Replace the hydraulic oil as follows:

WARNING – PETROLEUM, OILS AND LUBRICANTS



Do not eat, drink or smoke when applying oil or lubricant. Do not allow oil or lubricant to come into contact with your eyes, mouth or nose. Wear Personal Protective Equipment (PPE), for example suitable gloves, safety glasses, and

overalls. If lubricant is ingested, or comes into contact with your eyes, seek medical assistance immediately.

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

- The vehicle must be parked on a flat surface. Make sure that at least two, and preferably all four, wheels and secured with chocks. Make sure that the area around the vehicle is completely clean.
- Place a container with a capacity of at least 75 L (16.5 gal) under the hydraulic oil tank.
- Refer to Figure 22 below. On the Hydraulic Oil Tank (1), remove the Oil Drain Plug (7) and allow the hydraulic oil to drain from the Hydraulic Oil Tank. Examine the Oil Drain Plug for cuts or delamination in the seal that forms part of the Oil Drain Plug and replace the Oil Drain Plug if its seal is damaged. Do not refit the Oil Drain Plug at this stage.

NOTE

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.

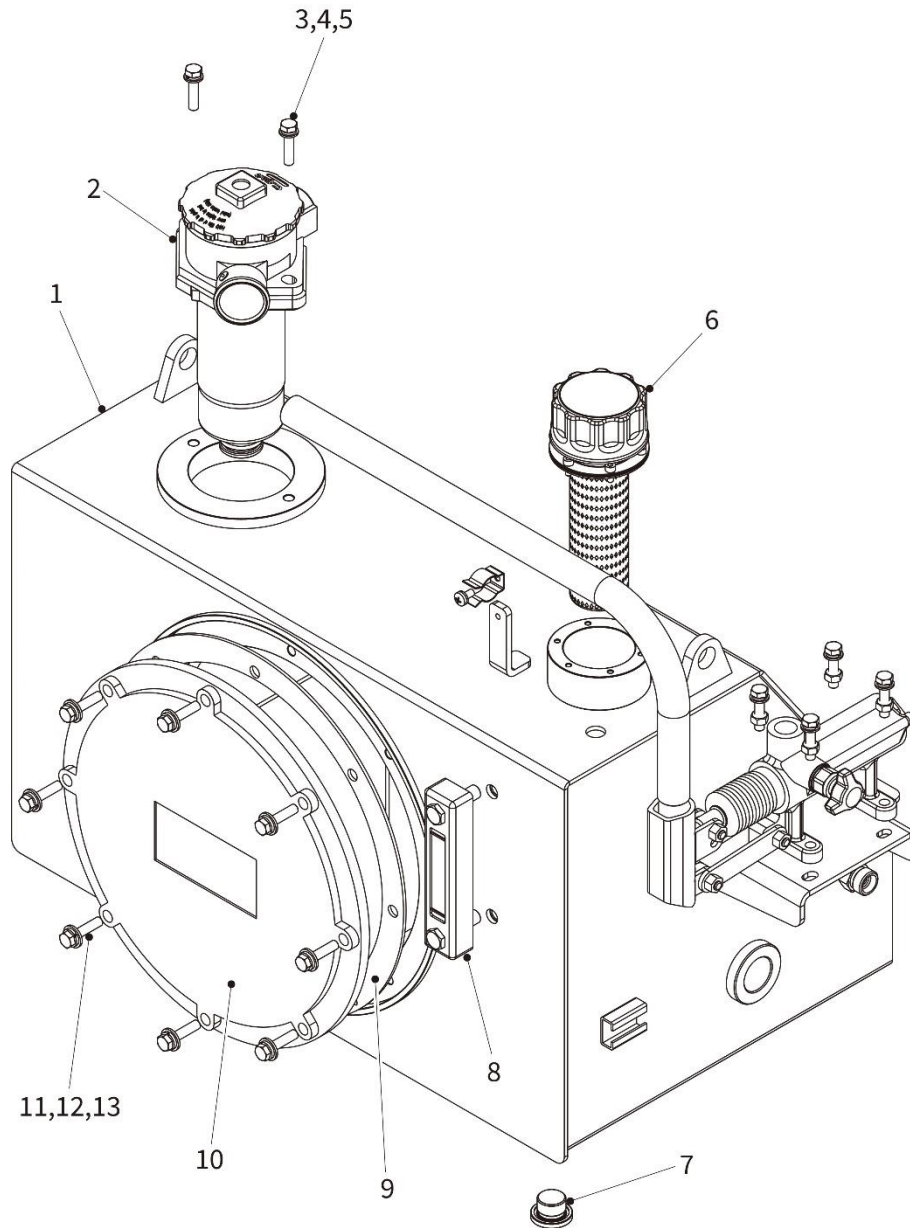
PRECAUTION – CONTAMINATION OF HYDRAULIC SYSTEM



To prevent any damage to the hydraulic components by contaminants, cover the oil tank access holes when not working in the oil tank.

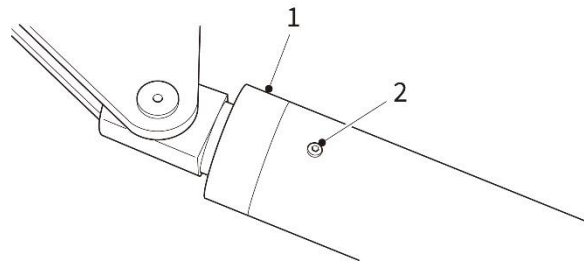
Plug or cap all hydraulic connections immediately after disconnection and make sure that the connectors remain scrupulously clean until sealed.

- When the oil stops draining from the Oil Tank, it is necessary to drain the oil from the Hydraulic Cylinders and Gear Pump. Draining the oil from the Gear Pump is described later. Drain the oil from the two Hydraulic Cylinders as follows:
 - Refer to Figure 23. Remove and retain the M6 plug (2) from the oil drain point on the piston (rod) end of the Rear Hydraulic Cylinder (1).
 - Connect the M6-6H hydraulic connector of the drain hose to the oil drain point.
 - Route the other end of the drain hose into a container with a capacity of at least 10 L (2 gal) placed under the Rear Hydraulic Cylinder.
 - Start Up the vehicle. Operate the Rear Hydraulic Cylinder to discharge the oil from the piston side of the Hydraulic Cylinder.
 - When the oil stops draining from the Rear Hydraulic Cylinder, stop operating the Hydraulic Cylinder and Switch Off the vehicle. Refit the M6 plug (2) to the oil drain point.
 - Then repeat the process for the Front Hydraulic Cylinder.
 - Dispose of the waste oil in accordance with all National and local Laws, Regulations, and Codes; and the airports Environmental Policy.



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

Fig 22 - Hydraulic Oil Tank



1 Hydraulic Cylinder

2 M6 plug

Fig 23 - Oil drain point on Rear Hydraulic Cylinder

- Refer to Figure 22. Remove and clean the air breather (6).
- Remove and retain the Qty. eight M10 x 35 mm bolts (11) and associated lock washers (12) and flat washers (13). Then remove the access cover (10) and associated access cover gasket (9). Retain the access cover. Discard the access cover gasket.
- Inside the Oil Tank, remove and discard the oil suction filter (not shown in Figure 22).
- Clean or replace the oil return filter element (as applicable) as described in the procedure above.
- Place a container with a capacity of at least 10 L (2 gal) under the Gear Pump.
- Disconnect the hydraulic pipe/hose connecting the Gear Pump to the Oil Tank, at the pump end. Allow the hydraulic oil to drain from the Gear Pump and the hydraulic 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. When flushing the hydraulic piping:
 - Make sure that the wash oil always flows in the same direction.
 - Gently tap all the hydraulic pipes to release oxidation products and debris from the inside walls of the pipes.
 - Initially apply the minimum operating pressure to the wash oil, then gradually increase to normal operating pressure. Flush the system at normal operating pressure for 60 to 90 minutes.
 - Check the condition of the filter element in the Oil Return Filter. If there is no debris in the filter element, the flushing operation is complete. If any debris is found, clean the filter element and flush the system for another for 60 to 90 minutes.
- Place a container with a capacity of at least 75 L (16.5 gal) under the hydraulic oil tank. Remove the Oil Drain Plug (7) and allow the wash oil to drain out.

- Dispose of the waste oil in accordance with all National and local Laws, Regulations, and Codes, and the airports Environmental Policy.
- Fully open the shut-off valve, located at the Oil Tank end of the hydraulic pipe/hose connecting the Oil Tank to the Gear Pump.
- The interior of the Hydraulic Oil Tank must be thoroughly cleaned before refilling the hydraulic system.
 - Wipe the inside of the Oil Tank with a clean gauze cloth, or a clean, new, lint-free cloth. DO NOT use a cloth that may shed lint, or an old rag, as these will leave behind debris that can cause a blockage in the hydraulic system.
 - Clean the inside of the Oil Tank, twice, with a clean gauze cloth (or a clean, new, lint-free cloth) that has been soaked in diesel fuel (or similar).

WARNING – COMPRESSED AIR



Compressed air and the dust and debris that it generates can cause damage to the eyes and skin punctures. When using compressed air for cleaning, DO NOT use compressed air with a pressure above 0.7 Bar (10 p.s.i.). Wear Personal Protective Equipment (PPE): - safety glasses or eye shields, suitable gloves, and overalls. DO NOT use compressed air in a reckless manner.

If debris does enter your eyes, seek medical assistance immediately.

- Blow dry the exterior of the Oil Tank with a clean low pressure compressed air jet.
- Inside the Oil Tank, examine the edges and corners for residual sludge. Make sure that any residual sludge is removed and that the interior of the Oil Tank is completely clean.
- Then flush the Oil Tank with new oil.
- Inside the Oil Tank, install a new oil suction filter.
- Examine the O-ring seal on the Gear Pump inlet for damage and delamination. If necessary, replace the O-ring seal.
- When reconnecting hydraulic pipes and hoses, apply thread sealant to the thread surface to prevent leaks.
- Reconnect the hydraulic hose between the Gear Pump and the Oil Tank.
- Fit the air breather (6).
- Fit the access cover (10) and a new access cover gasket (9), and secure with Qty. eight M10 x 35 mm bolts (11) and associated lock washers (12) and flat washers (13). Lightly grease the gasket to assist the fitting and removal of the gasket and access cover.
- Fit the Oil Drain Plug (7).
- Fill the Oil Tank with clean, new, hydraulic oil through the oil port of the Oil Return Filter Assembly (2) until the Fluid Level Gauge (8) indicates that the Oil Tank is full.
- If not already done, 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.
- Start Up the vehicle. Hydraulic oil will flow into the Gear Pump, Hydraulic Cylinders, and hydraulic pipes and hoses, causing the oil level in the Oil Tank to drop.

- Switch Off the vehicle and top-up the oil level in the Oil Tank.
- Start Up the vehicle again. Operate all the hydraulic functions and verify that they all function correctly.
- Switch Off the vehicle. Check the oil level in the Oil Tank and top-up as necessary.
- The procedure for replacing the hydraulic oil is now complete, and the vehicle may be returned to use. After operating the vehicle for three to four hours, switch OFF the vehicle and check the condition of the filter element in the Oil Return Filter. Clean the filter element if any debris is found.

TROUBLESHOOTING AND FAILURE DIAGNOSIS

Troubleshooting and failure diagnosis on the BL30G Belt Loader may be performed as follows:

- The PSI 2.4L Engine includes a Built-In-Test (BIT) capability. If a problem occurs with the Engine, a fault code will appear on the Dash Display Screen (Instrument Panel) in the Driver’s Compartment.
- The “PSI 4G Mobile Diagnostics Manual” appended to this manual describes the Engine fault codes; and provides detailed troubleshooting and failure diagnosis on the Engine including fault isolation and identification. For servicing and repair information for the Engine, refer to the “PSI 2.0 & 2.4L Service Manual” appended to this manual.
- Visually examine the Belt Loader for obvious problems, using the information given in the Scheduled Maintenance Table as a guide. Also check the ATM Mini Fuses in the Central Control Box.
- For suspected mechanical problems, other than with the Engine, Belt Frame Assembly, and hydraulic system, perform the Troubleshooting Procedure given in the Troubleshooting Table – Automotive Faults, below.
- For problems with the Belt Frame Assembly, hydraulic system, and electrical system, perform the Troubleshooting Procedure given in the Troubleshooting Table – Hydraulic, Electrical and Belt Frame Faults.
- In addition, for general electrical problems, a Diagnostic Trouble Code (DTC) may be displayed on the Dash Display Screen. Refer to the DTC Message Table on for fault isolation and corrective action.

Troubleshooting Table – Automotive Faults

Sub-Assembly	Trouble	Probable Cause	Corrective Action
Automatic Transmission	Power is not transmitted	1. No pressure build-up:	
		a. Insufficient oil.	Top-up oil level.
		b. Oil pump and/or drive oil line unserviceable.	Replace faulty parts.
		c. Control valve damaged or faulty.	Replace control valve.
		d. Seal on clutch piston unserviceable.	Visually check seal. Replace if necessary.
		2. Mechanical damage on:	
		a. Input shaft.	Examine, and repair or replace as necessary.
		b. Gear.	
		c. Clutch hub.	
		d. Driving plate or driven plate.	
Automatic Transmission	Output decrease	1. Oil pressure too low:	
		a. Insufficient oil.	Top-up oil level.
		b. Clogged oil filter.	Clean or replace.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
		c. Spring of regulating valve has weakened, or piston unserviceable.	Check and replace if necessary.
		d. Seal on clutch piston unserviceable.	Check and replace if necessary.
		2. Mechanical damage:	
		a. Damaged or deformed impeller.	Replace damaged or faulty parts.
		b. Clutch hub is deformed.	
		c. Driving plate or driven plate is deformed.	
		d. Use of incorrect oil.	Drain oil and replace with specified oil. Replace Oil Filter.
Automatic Transmission	Oil temperature abnormally high	a. Incorrect oil level.	Drain, or top-up, oil until correct oil level is achieved.
		b. Vane makes contact with adjacent parts.	Replace faulty parts.
		c. Drag due to worn driving plate and/or driven plate.	Replace faulty parts.
		d. Bearing is worn or seized.	Check and repair or replace as required.
		e. Oil cooler unserviceable.	
		f. Clutch slippage or low efficiency due to use of incorrect oil.	Drain oil and replace with specified oil. Replace Oil Filter. If necessary, replace clutch disk.
		g. Transmission oil pump is worn or damaged.	Replace faulty parts.
	Abnormal noise emitted by Transmission	a. Insufficient oil, or cavitation due to trapped air on inlet side.	Top-up oil until correct level is reached. Release trapped air.
		b. Transmission oil pump unserviceable.	Disassemble and replace faulty parts.
		c. Vane in contact with adjacent parts due to deformity.	Disassemble Transmission and replace damaged, faulty, or worn parts.
		d. Damaged input disk.	
		e. Damaged gear and splines.	
		f. Bearing is worn or damaged.	
		g. Worn contact surfaces on clutch hub and driven plate.	
h. Loose bolt.	Check bolts. Tighten or replace loose bolts.		
i. Clutch slippage due to drop in oil pressure.	Check and rectify oil level.		

Sub-Assembly	Trouble	Probable Cause	Corrective Action
	Oil leak	j. Cavitation due to clogged oil filter.	Replace oil filter and transmission oil.
		a. Oil seal faulty or perished.	Replace seal.
		b. O-ring seal is damaged or perished.	
		c. Loose bolt.	Tighten bolt.
		d. Surface of a matching part is scratched or damaged.	Repair or replace damaged part.
Automatic Transmission	Clutch engages too slowly.	a. Driving plate and/or driven plate excessively worn.	Examine, clean, and replace as required.
		b. Oil leak from unserviceable O-ring seal.	
		c. Spring and/or piston of regulating valve unserviceable.	
		d. Blocked oil line.	
		e. Selector valve is unserviceable.	
	Excessive vibration.	a. Accumulator spring is fatigued.	Examine and replace as necessary.
		b. Accumulator piston faulty.	
c. Taper driven plate is damaged.			
Propellor Shaft (Drive Shaft)	Abnormal noise	a. Flange bolt loose.	Tighten all flange bolts.
		b. Insufficient lubrication.	Apply lubricant. For details refer to Lubrication schedule.
		c. Excessive wear of universal joint.	Replace.
Steering system	Steering wheel vibration, shaking, or instability	a. Tire pressure incorrect.	Adjust tire pressure to bring it within specification.
		b. Front wheel or tire is damaged, or deformed, or has uneven wear.	Replace.
		c. Steering system loose, not secure.	Tighten securing hardware.
		d. Steering column unserviceable.	Replace.
		e. Steering cylinder and/or tie rod loose, not secure.	Tighten securing hardware.
		f. Steering cylinder damaged or unserviceable.	Replace.
		g. Steering cylinder requires lubrication.	Lubricate
		h. Hub bearing worn, or its clearance is incorrect.	Adjust or replace.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
		i. Steering Unit unserviceable.	Replace
		j. No hydraulic oil flow to Steering Unit.	Hydraulic fault. Refer to next Table.
Steering System	Steering wheel is hard to turn.	a. Tire pressure incorrect.	Adjust tire pressure to bring it within specification.
		b. Steering components require lubrication.	Lubricate with grease.
		c. Oil level low.	Top-up oil until correct oil level is achieved.
		d. Oil leak from a Steering System seal.	Replace seal.
		e. Hydraulic oil leak, or blockage or constriction in a hydraulic hose.	Repair/replace hoses as required and rectify leaks.
		f. Steering column unserviceable.	Replace.
		g. Steering cylinder damaged or unserviceable.	Replace.
		h. Steering Unit unserviceable.	Replace
		i. Hydraulic oil contaminated with debris or foreign substance.	Replace oil and Oil Filter.
		j. No hydraulic oil flow to Steering Unit.	Hydraulic fault. Refer to next Table.
Steering System	Steering pulls to one side.	a. Left and right front wheels unbalanced.	Replace.
		b. Brake clearance incorrect on left or right front wheels.	Adjust.
		c. Left and right front wheels toe-in is incorrect.	Adjust.
		d. Steering wheel loose.	Tighten bolt that secures the steering wheel.
		e. Steering wheel deformed.	Replace.
		f. Tie rod loose.	Tighten securing hardware.
		g. Steering Unit unserviceable.	Replace
		h. Steering cylinder unserviceable.	Replace.
Steering System	Steering wheel does not return to normal (centre) position.	a. Steering column unserviceable.	Disassemble, clean, and replace worn parts as necessary.
		b. Steering Unit unserviceable.	
		c. Left and/or right wheel toe-in incorrect.	Adjust.
		d. Tire pressure incorrect.	Adjust tire pressure to bring it within specification.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
Steering System	Abnormal noise coming from Steering System	a. Air trapped in Steering System hydraulic hoses.	Vent air from Steering System hydraulics.
		b. Steering Unit unserviceable.	Replace.
Braking System	Insufficient braking force	a. Brake fluid leak.	Locate and repair brake fluid leak. Top-up brake fluid to correct level.
		b. Air in Braking System hydraulic system.	Vent all air from Braking System hydraulics.
		c. Contamination on surface of brake lining.	Replace brake linings and rectify contamination source.
		d. Brake lining is deformed, or brake lining contact is abnormal.	Replace faulty brake.
		e. Brake lining is worn.	Replace brake lining.
		f. Brake master cylinder unserviceable.	Repair or replace brake master cylinder.
		g. Blockage or restriction in the brake hydraulic system.	Clean and flush hydraulic components to remove blockage or restriction.
	Brake only applies on one side	a. Tire pressure incorrect.	Adjust tire pressure to bring it within specification.
		b. Brake clearances are not equal.	Adjust brake clearances.
		c. On the side where the brake does not apply, there is contamination on surface of brake lining.	Replace brake linings and rectify contamination source.
		d. Debris on braking drum.	Clean off the debris.
		e. Brake lining is deformed, or brake lining contact is abnormal.	Repair or replace worn components.
		f. Brake shoe lining contact is abnormal.	Adjust.
		g. Brake lining is worn.	Replace.
		h. Brake drum excessively worn or damaged.	Replace brake drum.
		i. Bolt securing brake bottom plate is loose.	Tighten or replace bolt.
		j. Brake bottom plate deformed.	Replace.
k. Clearance of bearing is incorrect.	Adjust or replace bearings.		

Sub-Assembly	Trouble	Probable Cause	Corrective Action
Braking System	Brake Drags	a. Brake pedal fouling due to insufficient clearance.	Adjust/repair.
		b. Wheel cylinder is faulty.	Repair or replace
		c. Return spring unserviceable.	Replace.
		d. Brake shoe lining contact is abnormal.	Adjust or replace brake shoes.
		e. Parking brake shoe does not return, or clearance incorrect.	Repair or adjust.
Braking System	Brake Drags	a. Blocked fluid return port on brake master cylinder.	Clean oil return port.
		b. Blockage or restriction in the Brake hydraulic system.	Clean and flush hydraulic components to remove blockage or restriction.

Troubleshooting Table – Hydraulic, Electrical and Belt Frame Faults

Sub-Assembly	Trouble	Probable Cause	Corrective Action
Hydraulic System	No hydraulic pressure	a. Insufficient hydraulic oil in the Oil Tank.	Top-up oil level.
		b. Shut-Off valve in the oil inlet line between Oil Tank and Gear Pump is closed.	Check that the Shut-Off valve attached to the Oil Tank is fully Open.
		c. Major oil leak.	Visually examine hydraulic system for oil leaks, and repair or replace parts as necessary.
		d. Gear Pump and/or associated oil line unserviceable.	Replace faulty components.
		e. Pressure relief valve in the Integrated Hydraulic Valve Assembly has failed and continuously returns oil to the Oil Tank.	Replace pressure relief valve.
		f. Pressure relief valve in the Oil Return Filter Assembly has failed.	Replace Oil Return Filter Assembly.
		g. Air leakage in the oil inlet line between oil tank and Oil Gear Pump.	Check and tighten pipeline joints.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
		h. Suction Filter inside Oil Tank is blocked.	Check, clean, and if necessary replace, the Suction Filter.
Belt Frame Assembly	Belt Frame Assembly cannot be raised or lowered	a. A driver's control is in an incorrect position.	Check that all the EMERGENCY STOP buttons are released. Check vehicle is in Neutral with Parking brake engaged. Press the Lift Cylinder Interlock switch.
		b. Mechanical obstruction.	Check that the Belt Frame Locking Pin is in the stowed position. Check for debris, obstructions, or fouling that could obstruct the movement of the Belt Frame Assembly.
		c. No power to OPS Control Box.	On the OPS Control Box, check that +12VDC is present on pin 1-2 and battery 0V is present on pin 1-6. If not, locate and repair wiring fault.
		d. OPS Control Box is unserviceable.	On the OPS Control Box, check that the OEM Power Output (+12VDC) is present on pin 2-3. If not, OPS Control Box is unserviceable.
		e. Lift Cylinder Interlock switch is unserviceable (e.g. poor switch contact).	Using a multimeter, check that the Lift Cylinder Interlock switch is functioning correctly.
		f. Front Lift Cylinder Raise/Lower switch is unserviceable, and/or the Rear Lift Cylinder Raise/Lower switch is unserviceable.	Using a multimeter, check that the Front Lift Cylinder Raise/Lower switch and the Rear Lift Cylinder Raise/Lower switch are both functioning correctly.
		g. Wire fault.	Using a multimeter, check that: <ul style="list-style-type: none"> ➤ Wiring associated with the OPS Control Box is serviceable. ➤ Wiring associated with Lift Cylinder Interlock switch is serviceable. ➤ Wiring associated with Lift Cylinder Raise/Lower switches is serviceable. ➤ Wiring associated with OEM Hydraulics Controller is serviceable.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
		h. OEM Hydraulics Controller is unserviceable.	While attempting to raise and lower the Belt Frame Assembly, using a multimeter, check that the OEM Hydraulics Controller signals to the front lift valve, front down valve, rear lift valve, and rear down valve are all present. If not, the OEM Hydraulics Controller is unserviceable.
		i. A solenoid valve is not energised, or the solenoid valve is unserviceable.	Check the solenoid valves in the Integrated Hydraulic Valve Assembly. Replace if necessary. Check the solenoid valve on each Lift Cylinder. Replace if necessary. The resistance of a solenoid valve should be about 1.3 Ohm. Check electrical wiring associated with the solenoid valves.
Belt Frame Assembly	Conveyor Belt does not work	a. A driver's control is not set to the correct position.	Check that the vehicle is in Neutral, with the Parking Brake engaged.
		b. Mechanical obstruction.	Check for debris, obstructions, or fouling that could obstruct the movement of the Conveyor Belt.
		c. No power to OPS Control Box.	On the OPS Control Box, check that +12VDC is present on pin 1-2 and battery 0V is present on pin 1-6. If not, locate and repair wiring fault.
		d. OPS Control Box is unserviceable.	On the OPS Control Box, check that the OEM Power Output (+12VDC) is present on pin 2-3. If not, OPS Control Box is unserviceable.
		e. No power to OEM Power Controller, or Belt Control Boxes.	Using a multimeter, check that 12V DC OEM Power is available to the OEM Power Controller and or Belt Control Boxes. If not, locate and repair wiring fault.
		f. Wiring fault.	Using a multimeter, check that: <ul style="list-style-type: none"> ➤ Wiring associated with the OEM Power Controller is serviceable. ➤ Wiring associated with the two Belt Control Boxes is serviceable. If not, locate and repair wiring fault.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
Belt Frame Assembly	Conveyor Belt does not work	g. Belt Control Box unserviceable.	Check that the Belt Control Box is generating signals to the OEM Power Controller when the push-button switches on the Belt Control Box are pressed. If not, the Belt Control Box is unserviceable.
		h. OEM Power Controller unserviceable.	Check that the OEM Power Controller is generating “belt forward” and belt reverse” signals. If not replace the OEM Power Controller.
		i. The Hydraulic Motor that drives the Conveyor Belt is unserviceable.	Replace Hydraulic Motor.
		j. Blockage in the hydraulic pipes going to the Hydraulic Motor.	Remove and clean or replace the suspect hydraulic pipes. Replace the hydraulic oil once the blockage has been cleared.
		k. Parking Brake unserviceable.	Check that the Parking Brake switch is adjusted correctly
Hydraulic System	Hand Pump does not work	a. Hand Pump is unserviceable (probably internal leakage inside the Hand Pump).	Replace Hand Pump.
Hydraulic System	A hydraulic joint is leaking.	a. The hydraulic pipe or hose has not been inserted fully home.	Remove the hydraulic pipe or hose. Clean and examine the hydraulic pipe/hose and replace if required.
		b. The nut that secures the hydraulic pipe or hose is not tightened.	
		c. The exterior of the hydraulic hose is damaged or delaminating.	Refit hydraulic pipe/hose. Apply hydraulic thread sealant to the threads. Make sure the pipe/hose is pushed fully home and the securing nut is tight.
		d. The hydraulic hose is no longer circular in cross-section.	
		e. The hydraulic hose is perished or is on longer flexible.	
Hydraulic System	Gear Pump not working	a. A driver’s control is not set to the correct position.	Check that the vehicle is in Neutral, with the Park Brake engaged.
		b. Shut-Off valve in the oil inlet line between Oil Tank and Gear Pump is closed.	Check that the Shut-Off valve attached to the Oil Tank is fully Open.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
		c. Major oil leak.	Visually examine hydraulic system for oil leaks, and repair or replace parts as necessary.
		d. Wiring fault.	Using a multimeter, check the wiring associated with the Gear Pump.
		e. Gear Pump and/or associated oil lines unserviceable.	Replace faulty Gear Pump or unserviceable oil line.
Hydraulic System	Hydraulic Motor not working	a. A driver's control is not set to the correct position.	Check that the vehicle is in Neutral, with the Park Brake engaged.
		b. Hydraulic Motor faulty.	Replace.
		c. Blockage in the hydraulic pipes going to the Hydraulic Motor.	Remove and clean or replace the suspect hydraulic pipes. Replace the hydraulic oil once the blockage has been cleared.
Dash Display Screen (Instrument Panel)	Instrument Panel not working	a. Wiring fault.	Using a multimeter, check the wiring associated with the Instrument Panel.
		b. Instrument Panel unserviceable.	Replace.

DTC Message Table

Item	DTC Message	Probable Fault	Corrective Action
1.	Low Fuel Level!	Indicates need to re-fuel.	Refuel the Belt Loader.
2.	CAN Bus Disconnected!	Wiring fault in CAN wiring circuit.	Check CAN wiring circuit wiring and components for loose/broken wires and connections.
3.	High Oil Temp!	High Transmission oil temperature.	a. Check and rectify Transmission oil level and oil quality.
			b. Check Transmission oil temperature sensor. Replace if required.
4.	Low Accumulator Pressure!	Low vacuum in the service brake accumulator tank.	a. Check brake vacuum pumps and associated electrical circuit for faults. Rectify as required.
			b. Check vacuum system tubing and clamps for leakage. Rectify as required.

ENGINE FAULT CODES

If a fault code is displayed on the Dash Display Screen (Instrument Panel), refer to the “PSI 4G Mobile Diagnostics Manual” appended to this manual.

REPAIR

Repair of the BL30G Belt Loader is by direct replacement of the faulty or damaged component. The Exploded Parts View illustrations show all the components and how the BL30G is dismantled and re-assembled. All the components are listed in the Parts Breakdown List and the numbers on the Exploded Parts View illustrations are keyed to the Parts Breakdown List.

Replacement parts should be sourced from Avro GSE. The use of major components not obtained from Avro GSE will invalidate the Warranty.

NOTE

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. Any significant damage to the vehicle chassis will almost certainly be part of catastrophic damage to the Belt Loader. Also, the time and effort required to strip down the Belt Loader, replace the chassis, and then rebuild, is such that significant damage to the Chassis renders the Belt Loader “Beyond Economic Repair”.

WHEEL NUTS

The wheel nuts that secure the left and right Rear Wheels are the same size, but have different threads, and are not interchangeable.

- When replacing a right-hand Rear Wheel, six Wheel Nut, M18 x 25 mm, Right-hand thread (Part No. TBA) must be used to secure the wheel. Rotate the nut counter-clockwise to loosen the nut, and rotate the nut clockwise to tighten it.
- When replacing a left-hand Rear Wheel, six Wheel Nut, M18 x 25 mm, Left-hand thread (Part No. TBA) must be used to secure the wheel. Rotate the nut clockwise to loosen the nut and rotate the nut counter-clockwise to tighten it.

NOTE

It is NOT possible to fit the wheel nuts from the right-hand Rear Wheel to the wheel studs of the left-hand Rear Wheel. Similarly, it is NOT possible to fit the wheel nuts from the left-hand Rear Wheel to the wheel studs of the right-hand Rear Wheel. Therefore, on the Rear Wheels the associated wheel nuts cannot be accidentally or deliberately fitted to the wrong wheel.

TORQUE VALUES

The wheel nuts MUST be torque tightened to the correct torque settings given below. Failure to torque tighten the wheel nuts to the correct torque setting may result in a wheel coming loose.

Wheel Nut torque values

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 given below next page. If in doubt about the strength grade of the bolt, use the lowest figure given for that size of bolt.

General recommended torque values

Bolt Strength Grade	4.6	5.6	8.8	10.9	12.9
Minimum yield strength		340 MPa	660 MPa	940 MPa	
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 BL30G vehicle, the Safety Warnings and Precautions below **MUST** be complied with.

WARNINGS AND PRECAUTIONS – WELDING, GRINDING, AND CUTTING



WELDING ARC. A welding arc is bright enough to damage eyesight and cause flash burns. Never look directly at a welding arc with unprotected eyes. Always use an approved welding screen or visor. Cover all exposed skin before welding.



PROTECTIVE CLOTHING. Always wear protective clothing and gloves appropriate for welding work.



HOT WELDS. Always allow a weld to cool before removing welding slag.

Make sure that there is no combustible material within 4 Meters (13 feet) of grinding, welding, or slag chipping.



GRINDING, CHIPPING, AND CUTTING. Always wear eye protection (e.g. protective goggles) when using grinding and cutting tools, and when chipping off welding slag. Always wear eye protection when within 4 Meters (13 feet) of grinding, slag chipping, or cutting with power tools.



DAMAGE TO ELECTRICAL EQUIPMENT. To prevent damage to the vehicle electrical system, before performing any welding, remove or disconnect all vehicle batteries, and disconnect all electrical connections to the vehicle electronics.



TRAINING, AUTHORIZATION AND CERTIFICATION OF WELDERS. Welding must only be performed by people who have been **FULLY TRAINED IN WELDING AND ARE AUTHORIZED** to perform welding operations. Welders must be **CERTIFIED** by their respective national association of welders, such as CWB and/or AWS.

Grinding, chipping, and cutting with power tools must only be performed by people who have been **FULLY TRAINED IN USING THE POWER TOOLS AND ARE AUTHORIZED** to perform those operations.

Before performing any welding, grinding or chipping operations, make sure that any necessary Hot Work Permits have been obtained.

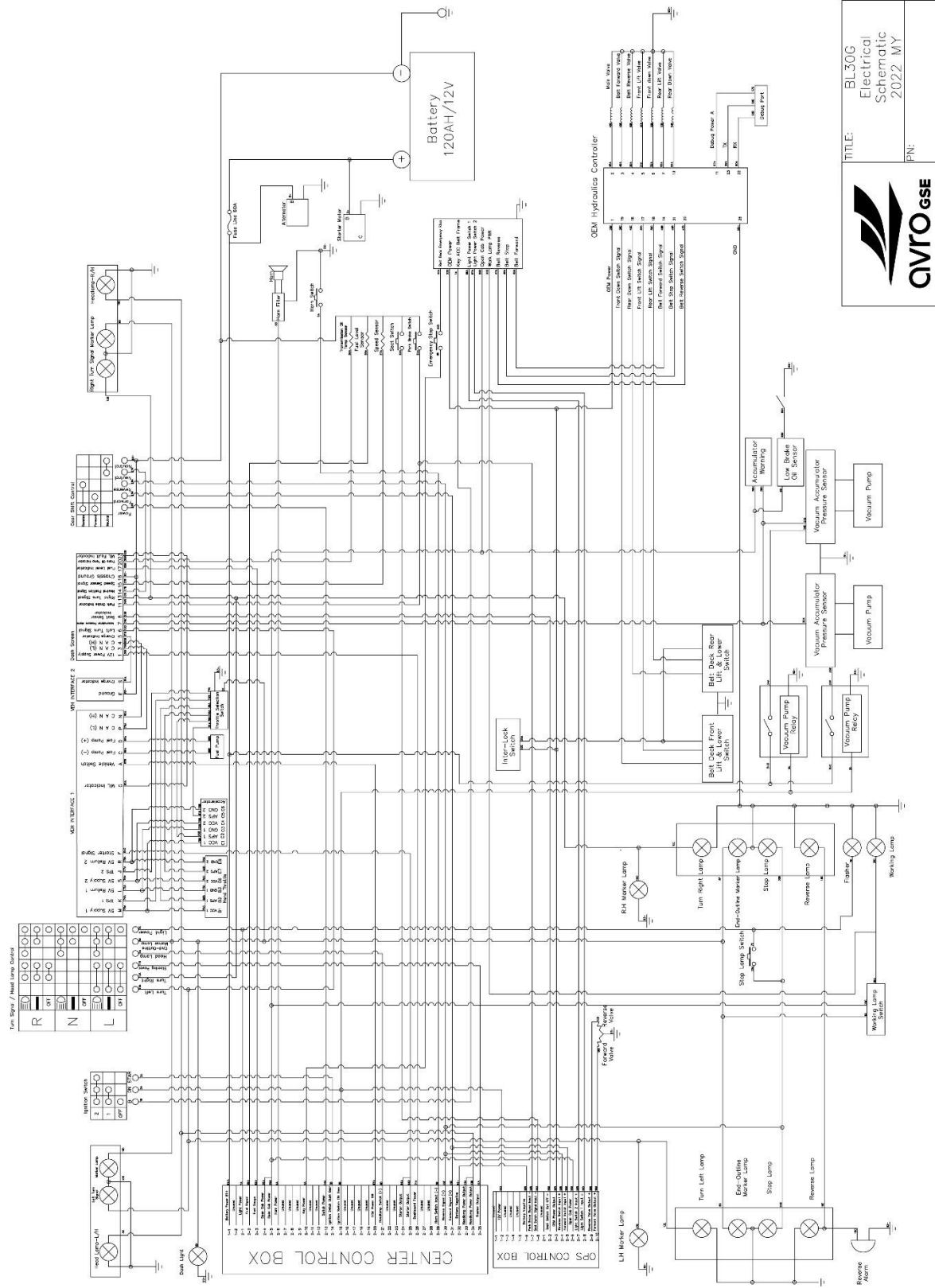
ELECTRICAL SCHEMATICS

These Electrical Schematics are provided to assist in troubleshooting.

This manual covers the build standard of BL30G Belt Loader that were manufactured during 2022.

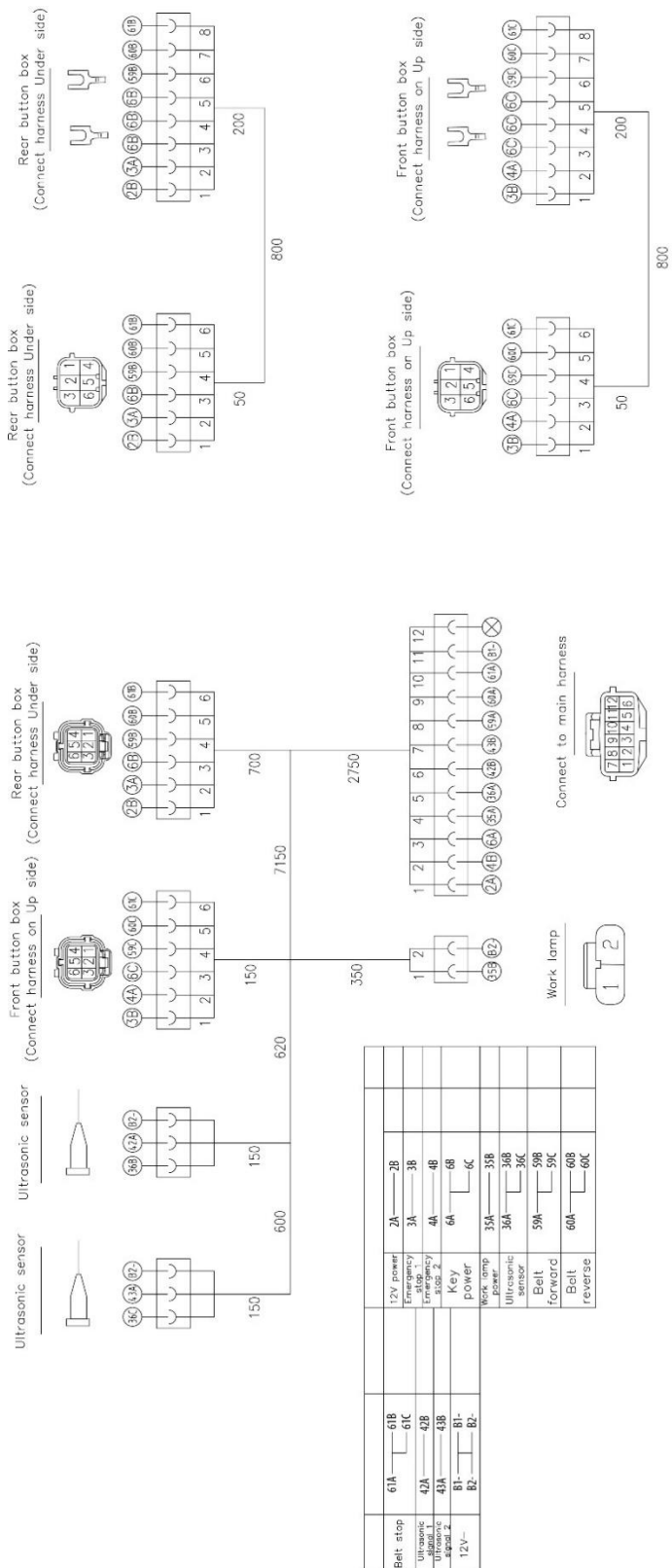
For a BL30G Belt Loader with a MY of 2022, the following electrical diagrams are provided (in this sequence):


- BL30G Electrical Schematic 2022 MY
- BL30G 2022MY Wiring Harness, Part No. PRPW02507
- BL30G 2022MY Belt Frame Harness, Part No. PRPW02404
- Dash Display Instrument, Part No. PRPW00408
- BL30G Central Control Box, Part No. PRPW0026
- BL30G Interlock Control Module, Part No. PRPW00014
- Ignition Switch Assembly, Part No. PRPW00051
- BL30G Gearshift/Turn Signal/Headlamp Control Assembly, Part No. PRPW02403

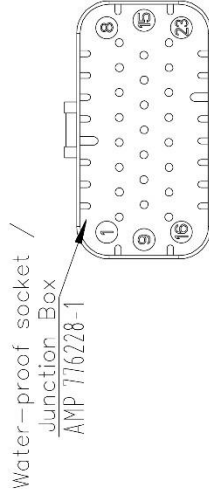
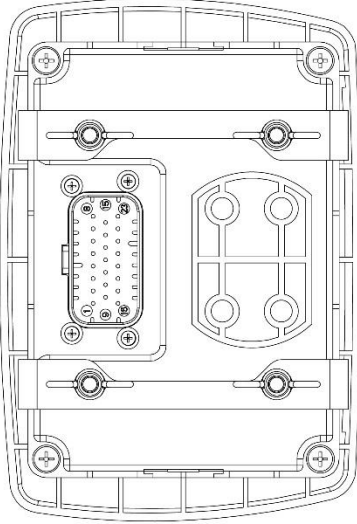
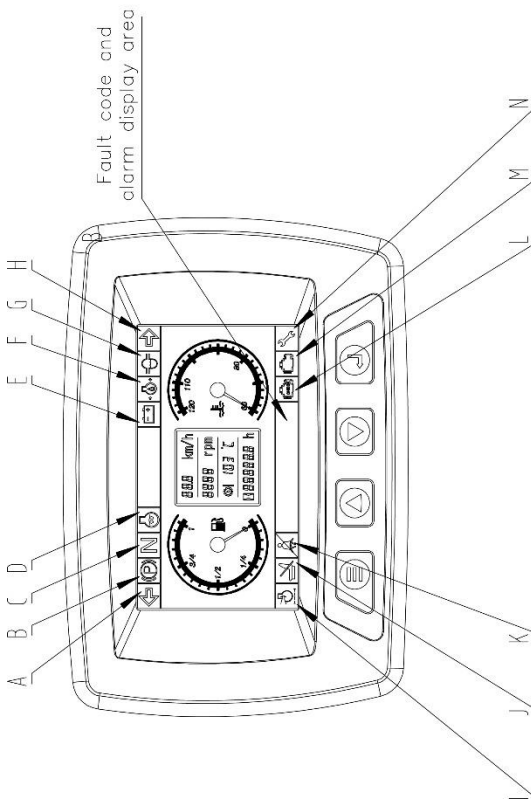


TITLE: BL30G Electrical Schematic
2022.MY

PN:



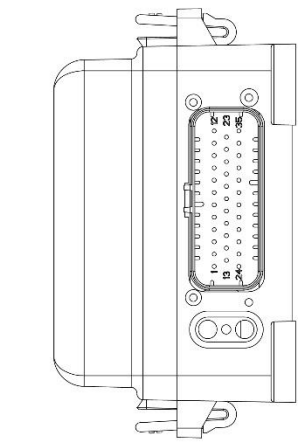
	TITLE:	BL30G 2022MY
		Beltframe Harness
	PN:	PRP-W02404



Socket / Junction Box Terminal:

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

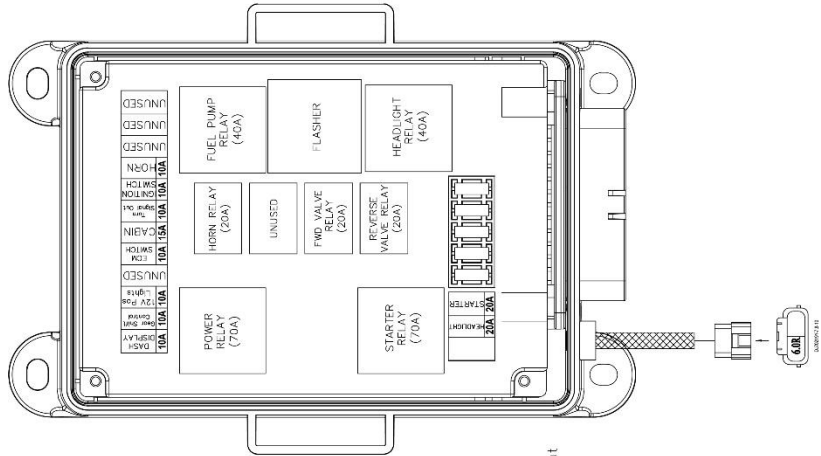
TITLE: Dash Display Instrument
 PN: PRPW00408



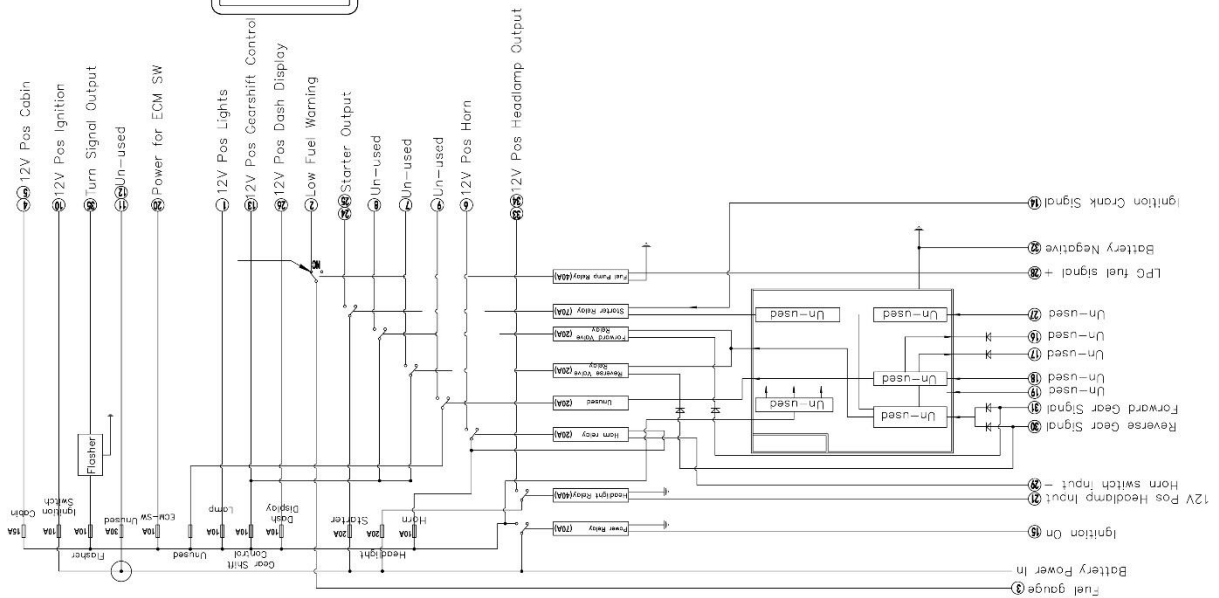
Signal core connector:

Color	Function	Color	Function
6.0 Red	Battery Power In		

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	12V Pos Horn	23	Unused
6	Unused	24	Ignition Crank Output
7	Unused	25	12V Pos Dash Display
8	Unused	26	Unused
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	Turn Signal Output
17	Unused	35	Turn Signal Output
18	Unused		

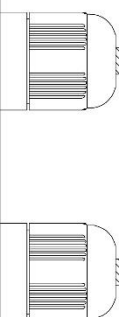
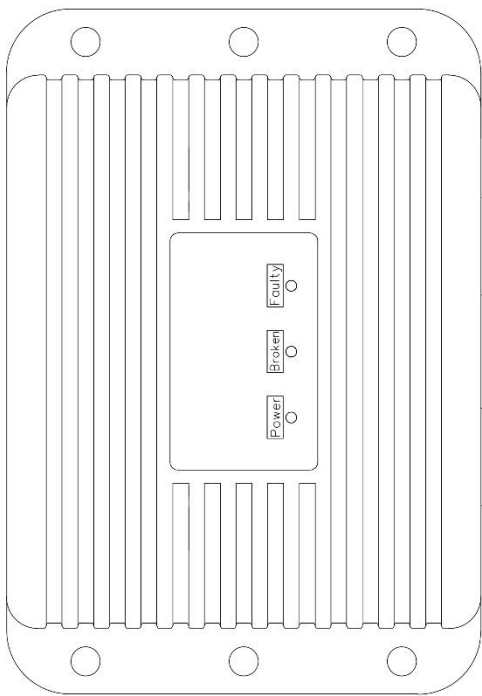


Fuse/Relay Name	Fuse/Relay Number	Pin Location	Pin Number
Dash Display	26	LPG Fuel Signal	35
Gear Shift	13	Ignition	10
12V Pos Lights	1	Switch	6
ECM Switch	20	Horn	33, 34
12V Pos Cabin	4, 5	Starter	24, 25



CONTROLLER ELECTRIC SCHEMATIC

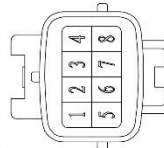
TITLE: BL30G Central Control Box
 PN: PRPW0026



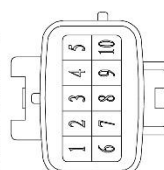
PIN#	Function
1	Un-used
2	12V IGN Power
3	Un-used
4	Un-used
5	Un-used
6	Battery Negative
7	Park brake signal input (-)
8	Seat switch signal input (-)

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 (+)

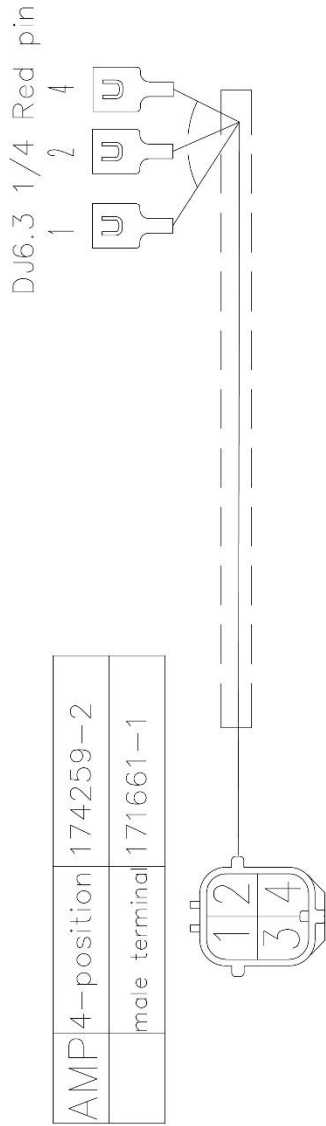
AMP: 174984-2



AMP: 174657-2

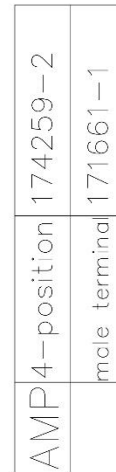
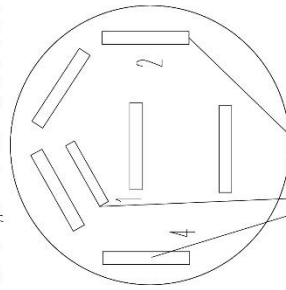


	TITLE:	BL30G Interlock Control Module
	PN:	PRPW00014

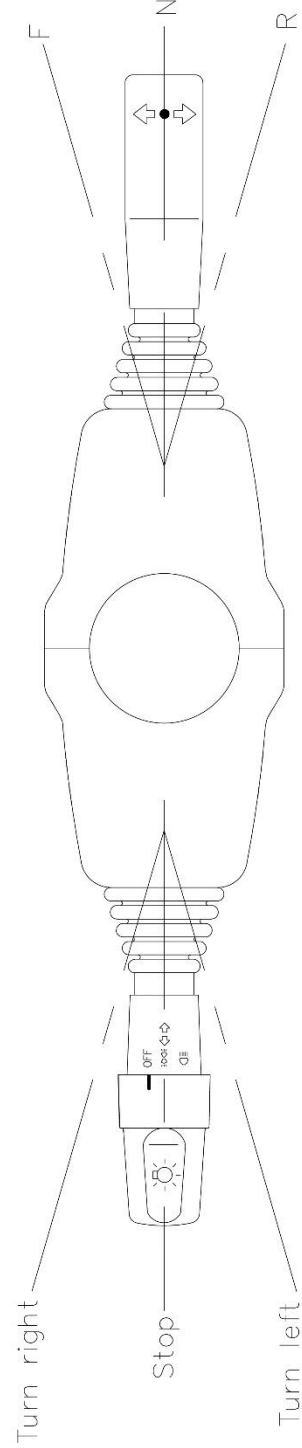
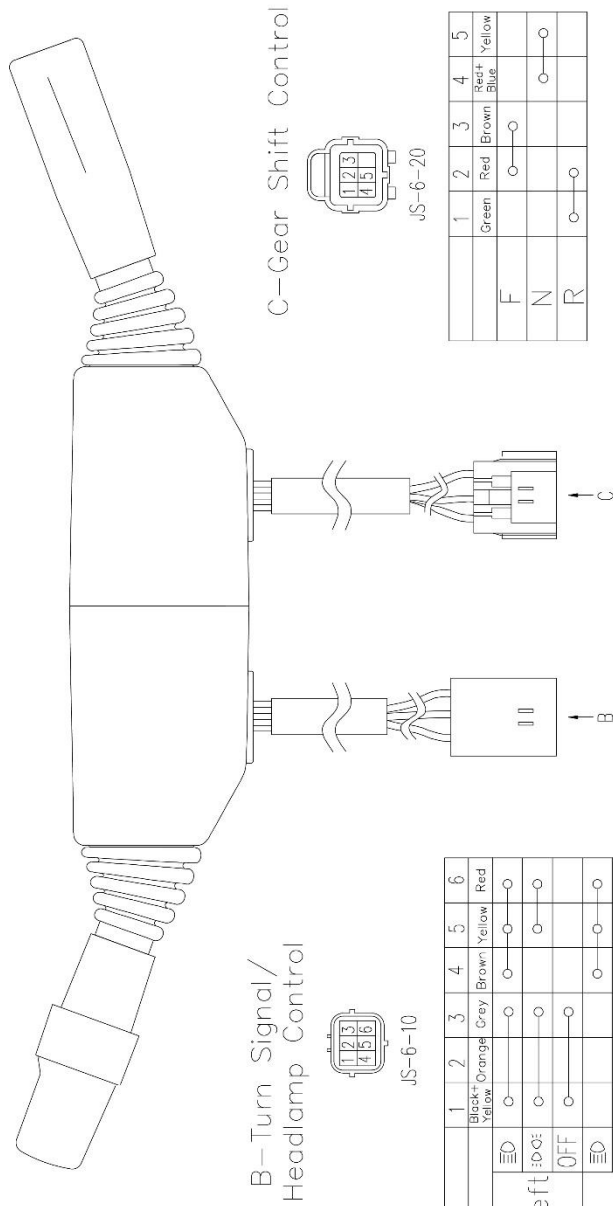


Terminal #	Function	Color/Gauge
1	BAT	RD/1.5mm ²
2	ACC	WT/1.5mm ²
4	START	WT/0.75mm ²

Ignition switch
part #: PRPW00051



	TITLE:	Ignition Switch Assembly
	P/N:	PRPW00051

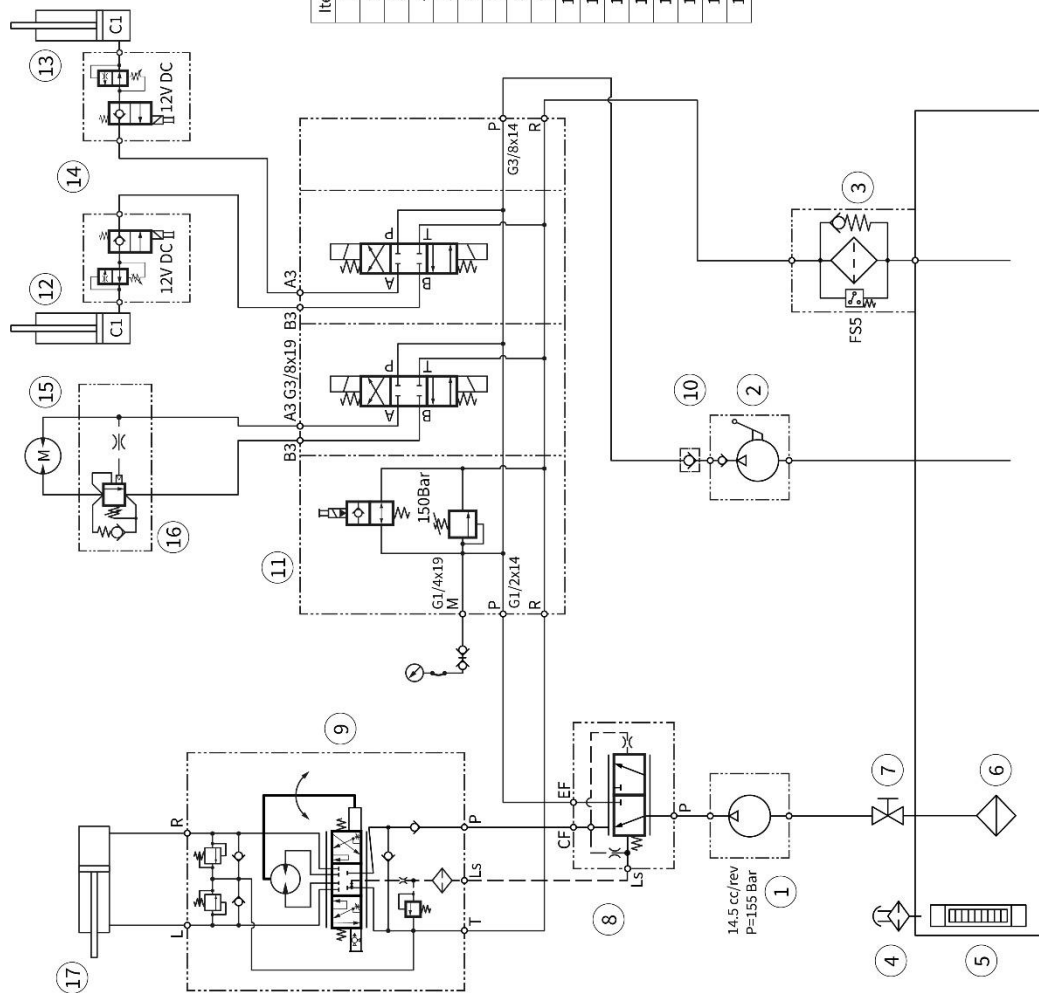


	TITLE:	BL30G Gearshift/Turn Signal/Headlamp Control Assy.
	PN:	PRPW02403

HYDRAULIC SCHEMATIC

This Hydraulic Schematic is provided to assist in troubleshooting.

This manual covers the build standard of BL30G Belt Loader that were manufactured during 2022.



Item	Part No.	Name	Qty.	Page	Ref.
1	B80G4-20200	Gear Pump	1	10	10
2	HF04-50-0G-1	Emergency Hydraulic Hand Pump	1	12	12
3	HF02-120 x 10-1	Oil Return Filter Assembly	1	2	2
4	HF04-450 x 10-1	Air Breather	1	10	10
5	HF05-127 x M12-1	Fluid Level Gauge	1	14	14
6	HF01-150 x 250-1	Oil Suction Filter	1	20	20
7	HV13-25-ZG1-1	Shut-Off Valve	1	7	7
8	HV04-40-G-1	Priority Valve	1	9	9
9	HS1-100-LS-G-1	Steering Unit	1	5	5
10	HV08-30-G3/8-1	Check Valve	1	33	33
11	HV01-40-E12-1	Integrated Hydraulic Valve Assembly	1	6	6
12	B80C4-10200	Front Hydraulic Lift Cylinder	1	4	4
13	B80C4-10100	Rear Hydraulic Lift Cylinder	1	11	11
14	HV02-20-E12-1	Solenoid Valve Assembly	2	12	12
15	B80F4-00100	Hydraulic Motor	1	15	15
16	HV09-60-S-1	Balance Valve	1	14	14
17	B80A6-10130	Steering Cylinder	1	27	27

Title: BL30G
Hydraulic
Circuit Diagram
2022 MY

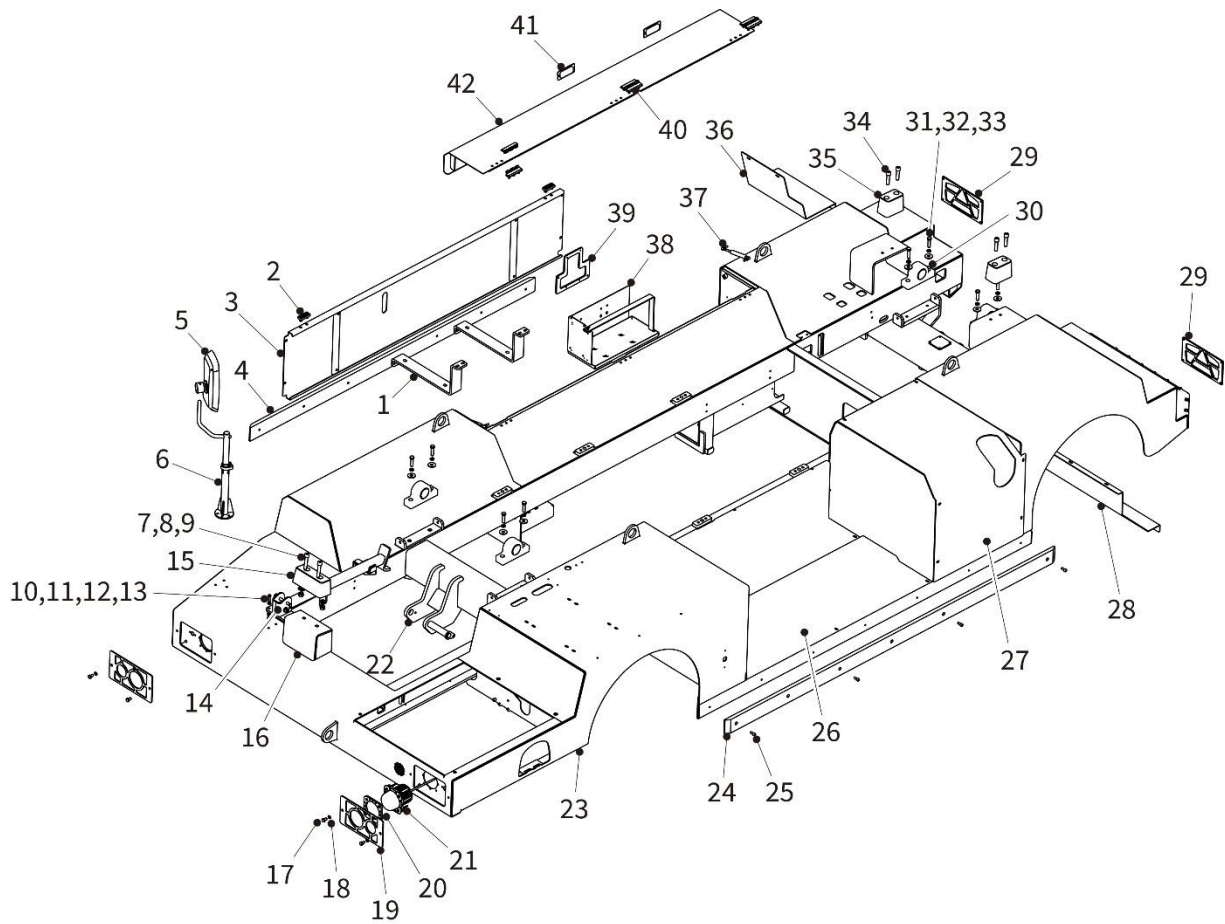
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EXPLODED PARTS VIEWS & PARTS LISTS

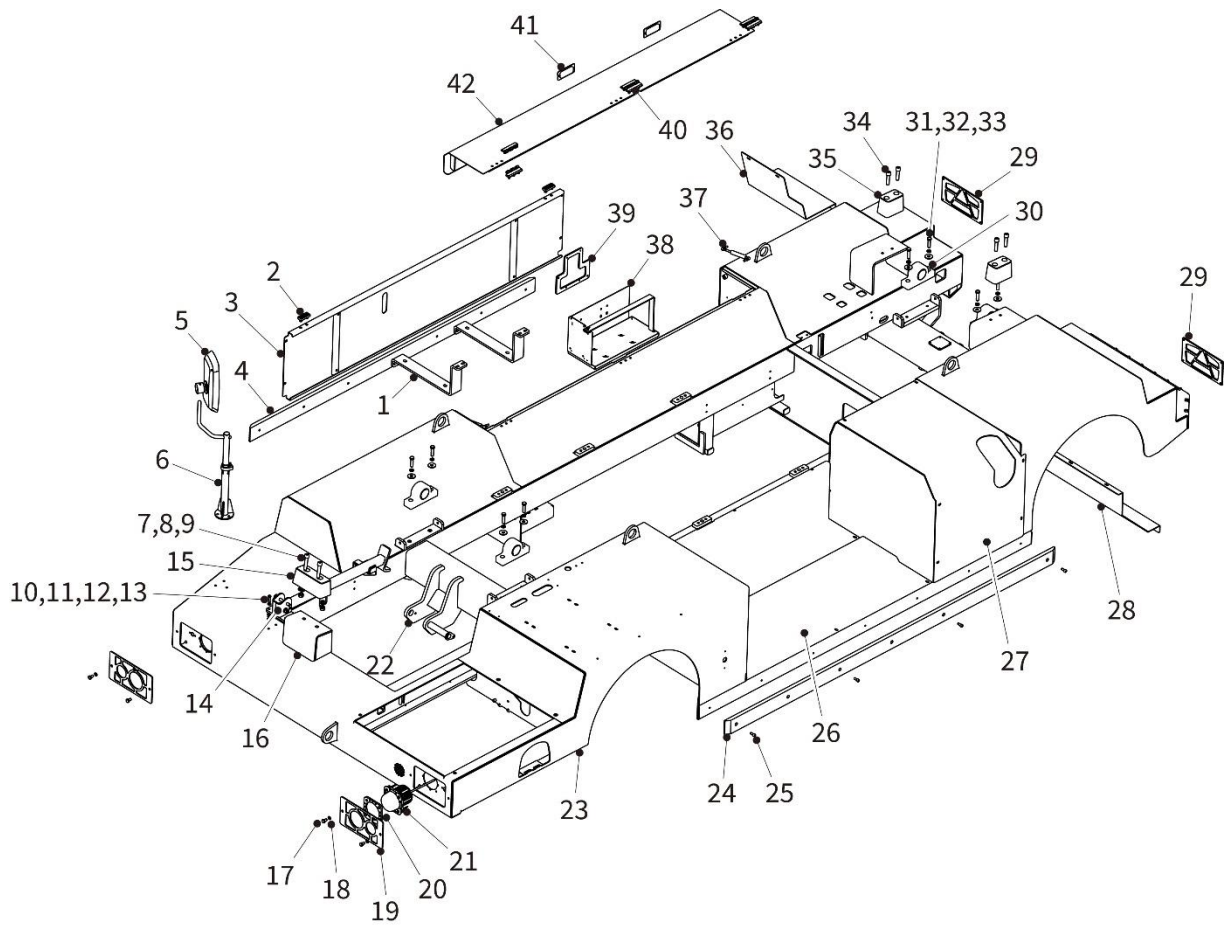
BODY & EXTERIOR



Vehicle Body - Exploded Parts View

Vehicle Body – Spare Parts List

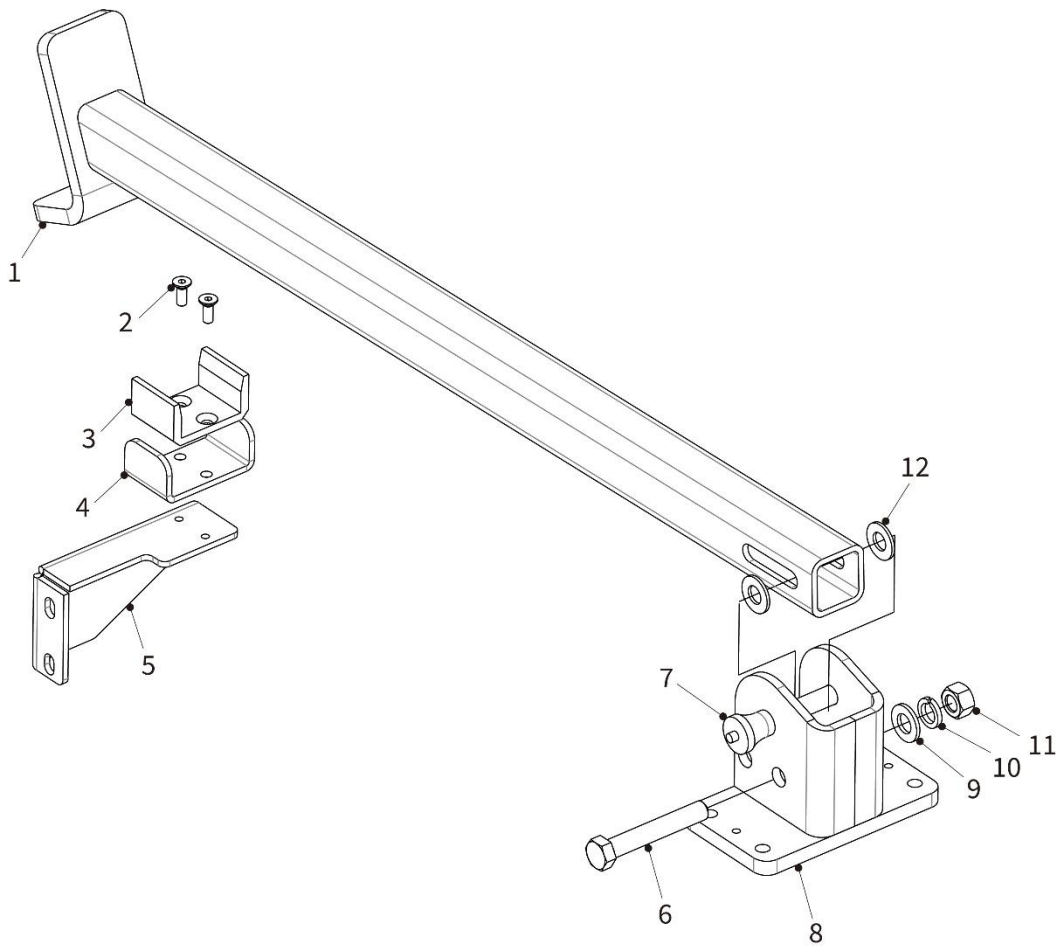
Item	Part No.	Description	Qty	Remarks
1	PRPW02807	Bracket	2	B80Y1-10019
2	PRPW01668	Rubber Cushion	2	D70S1-20006
3	PRPW02808	Side Plate Assembly	1	B80G1-10800
4	PRPW02578	Side Collision Protective Strip, Right-hand	1	B80D1-10009
5	PRPW00043	Side Mirror - Exterior	1	T20A1-40500
6	PRPW02530	Post for c/s Mirror	1	B80Z1-10200
7	PRFA00234	Nut, M14	2	GB/T 6170
8	PRFA00072	Washer, Flat, M14	2	GB/T 97.1
9	PRFA00235	Screw, Hex Socket Head Cap, M14 x 70 mm	2	GB/T 70.1
10	PRFA00021	Nut, M8	4	GB/T 6170
11	PRFA00010	Washer, Lock, M8	4	GB/T 93
12	PRFA00009	Washer, Flat, M8	8	GB/T 97.1
13	PRFA00187	Bolt, M8 x 30 mm	4	GB/T 5783
14	PRPW02565	Support Rod	1	B80G1-10900
15	PRPW00502	Stop Block	2	B80A1-20001
16	PRPW02809	Buffer Bracket	1	B80G1-10200
17	PRFA00055	Bolt, M10 x 16 mm	4	GB/T 5783
18	PRFA00012	Washer, Lock, M10	4	GB/T 93
19	PRPW02810	Protective Grill, Front Lights	2	B80C1-10009
20	PRPW02811	Headlamp Gasket	2	B80Y1-10014
21	PRPW02812	Headlamp Holder	2	B80Y1-10013
22	PRPW02813	Pin	2	B80C1-12500
23	PRPW02814	Vehicle Body	1	B80G1-11000
24	PRPW00578	Side Collision Protective Strip, Left-hand	1	B80D1-10002
25	PRFA00022	Screw, Hex Socket Head Cap, M8 x 20 mm	8	GB/T 70.1
26	PRPW02815	Crew Compartment Floor	1	B80G1-10011
27	PRPW02816	Tank Plate	1	B80G1-10001
28	PRPW02817	Mudguard, Right-hand	1	B80Z1-10006
29	PRPW02818	Protective Grill, Rear Lights	2	B80C1-10002
30	PRPW02561	Bearing Pedestal Assembly	4	B80A9-00300



Vehicle Body - Exploded Parts View

Vehicle Body – Spare Parts List

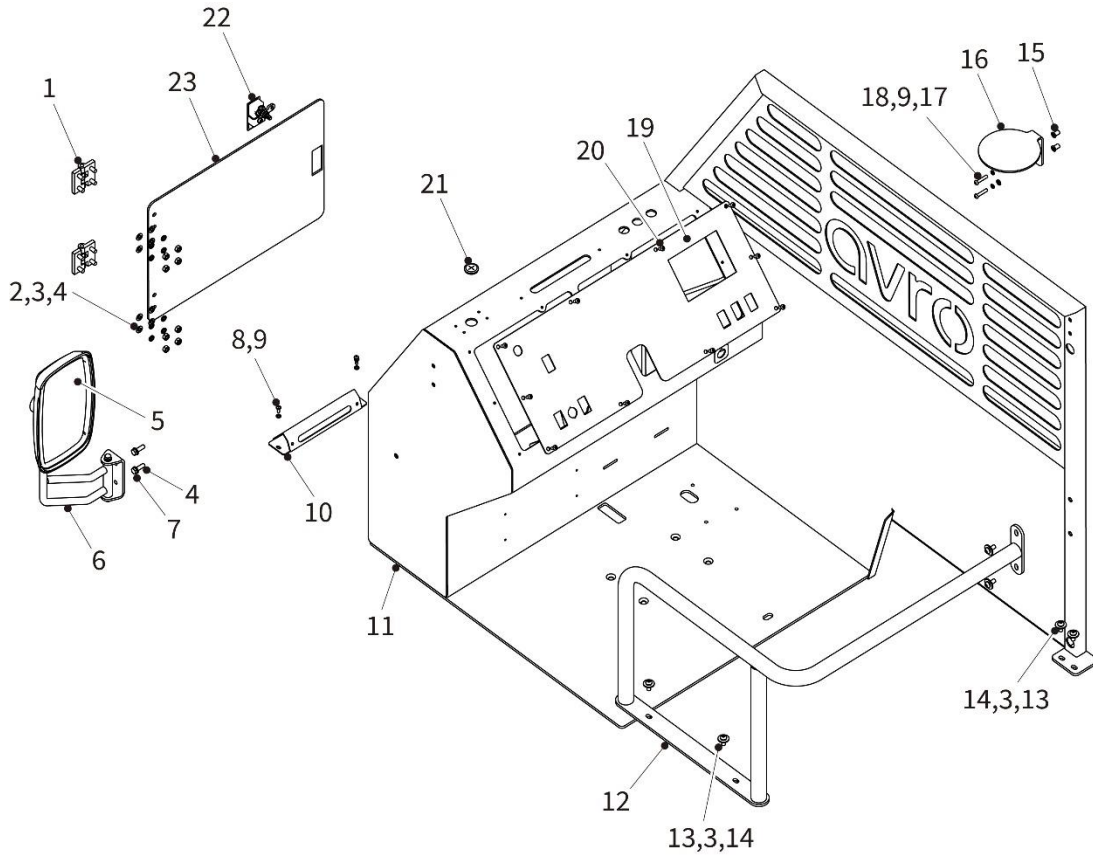
Item	Part No.	Description	Qty	Remarks
31	PRFA00030	Washer, Flat, M12	8	GB/T 96
32	PRFA00034	Washer, Lock, M12	8	GB/T 93
33	PRFA00057	Bolt, M12 x 45 mm	8	GB/T 5783
34	PRFA00236	Screw, Hex Socket Head Cap, M14 x 55 mm	4	GB/T 70.1
35	PRPW00378	Stop Block	2	T160A1-10007
36	PRPW02819	Mudguard, Right-hand	1	B80X1-10001
37	PRPW02820	Gas Spring	1	B80A1-20200
38	PRPW02407	Battery Box Assembly	1	T20G5-10400
39	PRPW02821	Bracket	1	B80X1-10005
40	PRPW02822	Hinge	3	B80B1-10013
41	PRPW02824	Handle Assembly	2	P16A1-10004
42	PRPW02823	Cover Assembly, Upper Right	1	B80Y1-10700



Safety Prop Assembly - Exploded Parts View

Safety Prop Assembly – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02825	Safety Prop	1	B80Y1-10910
2	PRFA00237	Screw, Hex Socket Countersunk Head, M6 x16 mm	2	GB/T 70.3
3	PRPW02826	Nylon Insert, for Safety Prop Stowage Clip	1	B80Y9-20004
4	PRPW02829	Stowage Clip, Nylon, for Safety Prop	1	B80Y1-10004
5	PRPW02830	Stowage Bracket, Support Bar	1	B80G1-10901
6	PRFA00238	Bolt, M12 x 75 mm	1	GB/T 5783
7	PRPW00518	Ball Lock Pin	1	B80D9-10308
8	PRPW2831	Safety Prop Base	1	B80Y1-10920
9	PRFA00030	Washer, Flat, M12	1	GB/T 96
10	PRFA00034	Washer, Lock, M12	1	GB/T 93
11	PRFA00239	Nut, M12	1	GB/T 6170
12	PRFA00240	Washer, Special	2	T25H6-10001

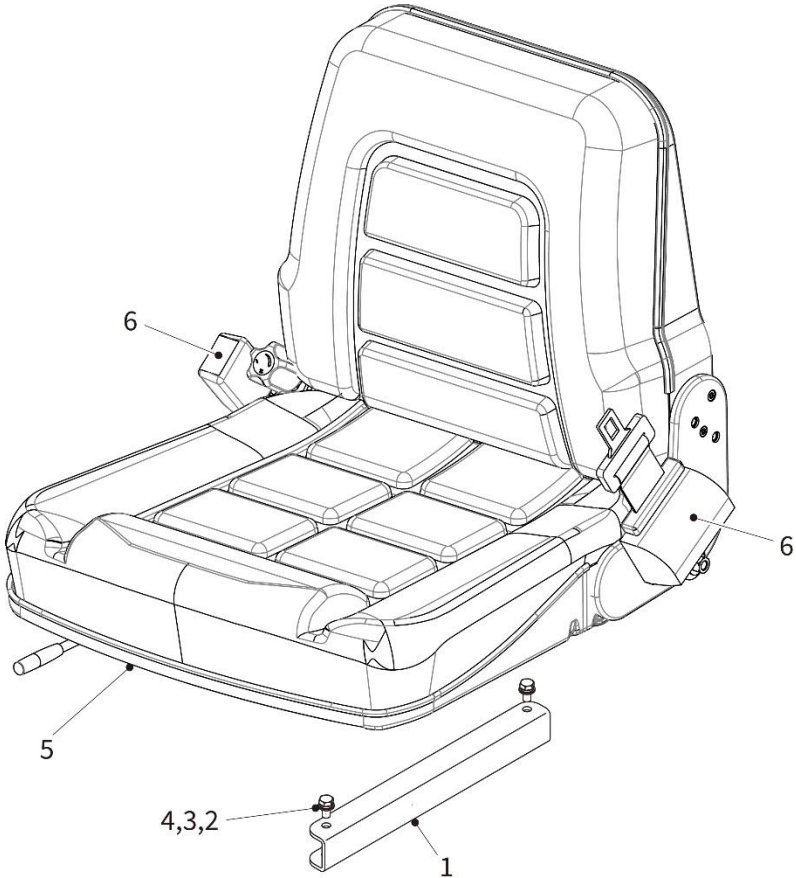


Drivers Compartment - Exploded Parts View

Drivers Compartment – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW01778	Hinge	2	D120A1-20003
2	PRFA00021	Nut, M8	16	GB/T 6170
3	PRFA00010	Washer, Lock, M8	22	GB/T 93
4	PRFA00009	Washer, Flat, M8	18	GB/T 97.1
5	PRPW00043	Wing Mirror	1	T20A1-40500
6	PRPW02832	Wing Mirror Bracket	1	T20G1-40600
7	PRFA00013	Bolt, M8 x 25 mm	2	GB/T 5783
8	PRFA00114	Screw, Cross Recessed Pan Head, M5 x 12 mm	3	GB/T 818
9	PRFA00007	Washer, Lock, M6	4	GB/T 93
10	PRPW02577	Dash Light Housing	1	B80B1-40400
11	PRPW02562	Cab Assembly	1	B80G1-30100
12	PRPW02833	Guardrail Assembly	1	B80G1-30200
13	PRFA00009	Washer, Flat, M8	6	GB/T 96
14	PRFA00039	Screw, Flat Round Hex Socket Head, M8 x 20 mm	6	GB/T 70.2
15	PRFA00241	Nut, Special, M8	2	D30C1-30001
16	PRPW02581	Warning Beacon Mount	1	B80D1-30002
17	PRFA00242	Screw, Flat Round Hex Socket Head, M6 x 30 mm	2	GB/T 70.2
18	PRFA00006	Washer, Flat, M6	2	GB/T 97.1
19	PRPW02834	Instrument Panel	1	B80G1-30001
20	PRFA00016	Screw, Flat Round Hex Socket Head, M6 x 12 mm	10	GB/T 70.2
21	PRPW00636	Grommet	3	D15G1-30001
22	PRPW02756	Latch	1	D120A1-20004
23	PRPW02759	Access Panel	1	B80D1-40006

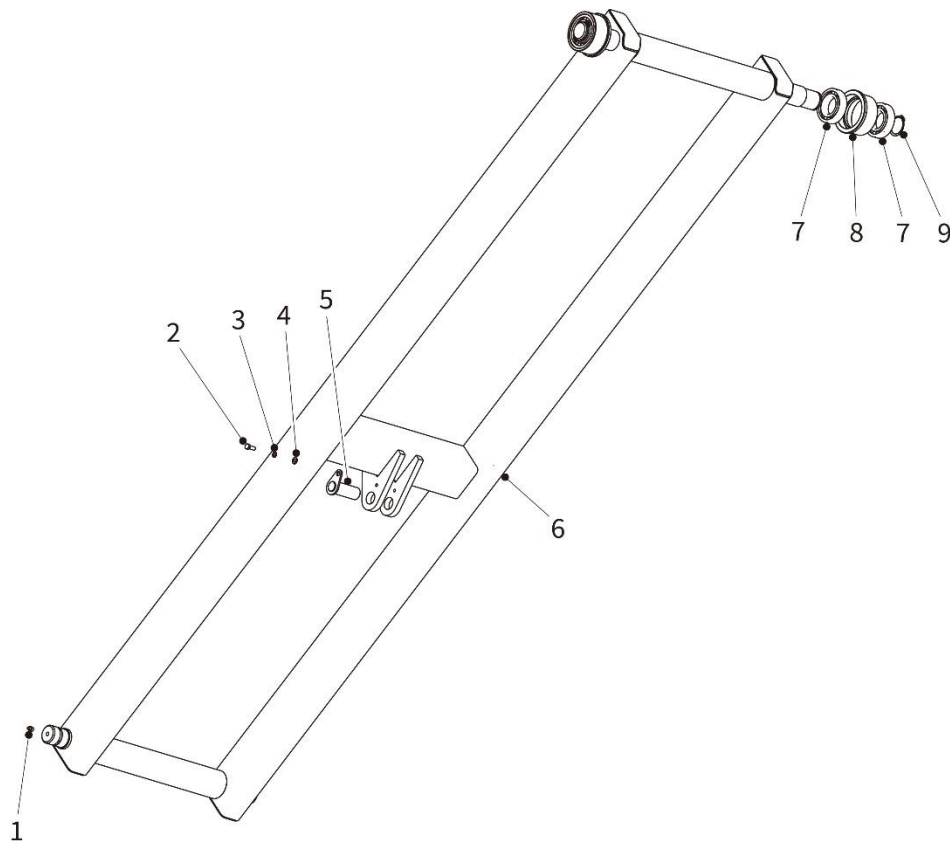
SEATS



Seat Installation - Exploded Parts View

Seat Installation – Spare Parts List

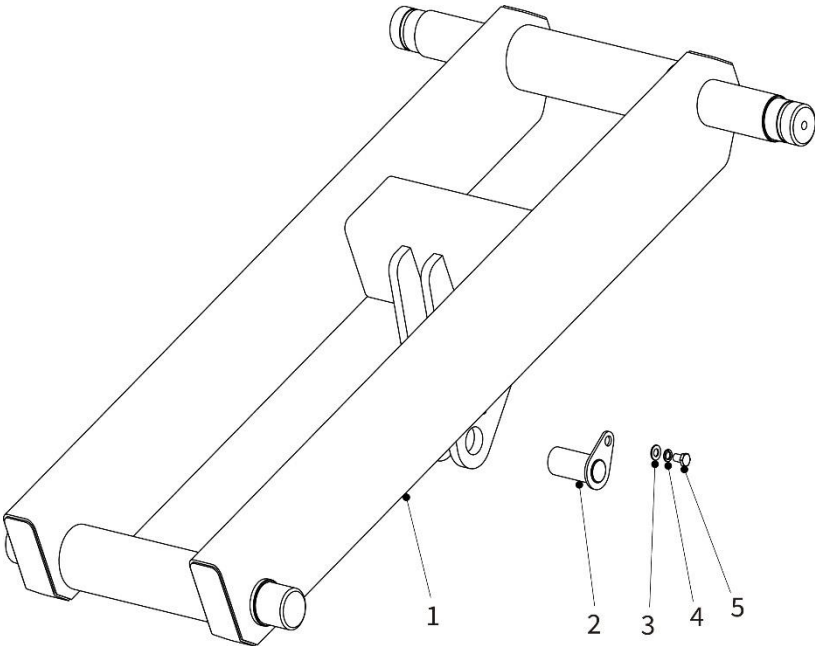
Item	Part No.	Description	Qty	Remarks
1	PRPW02835	Seat Mounting	2	B80D1-0001
2	PRFA00061	Bolt, M8 x 16mm	4	GB/T 5783
3	PRFA00009	Washer, Flat, M8	4	GB/T 97.1
4	PRFA00010	Washer, Lock, M8	4	GB/T 93
5	PRPW00054	Seat Assembly	1	A30A1-01800
6	PRPW00036	Seat Belt w/switch (Orange)	1	TSA/SY1841-3



Front Lifting Frame - Exploded Parts View

Front Lifting Frame – Spare Parts List

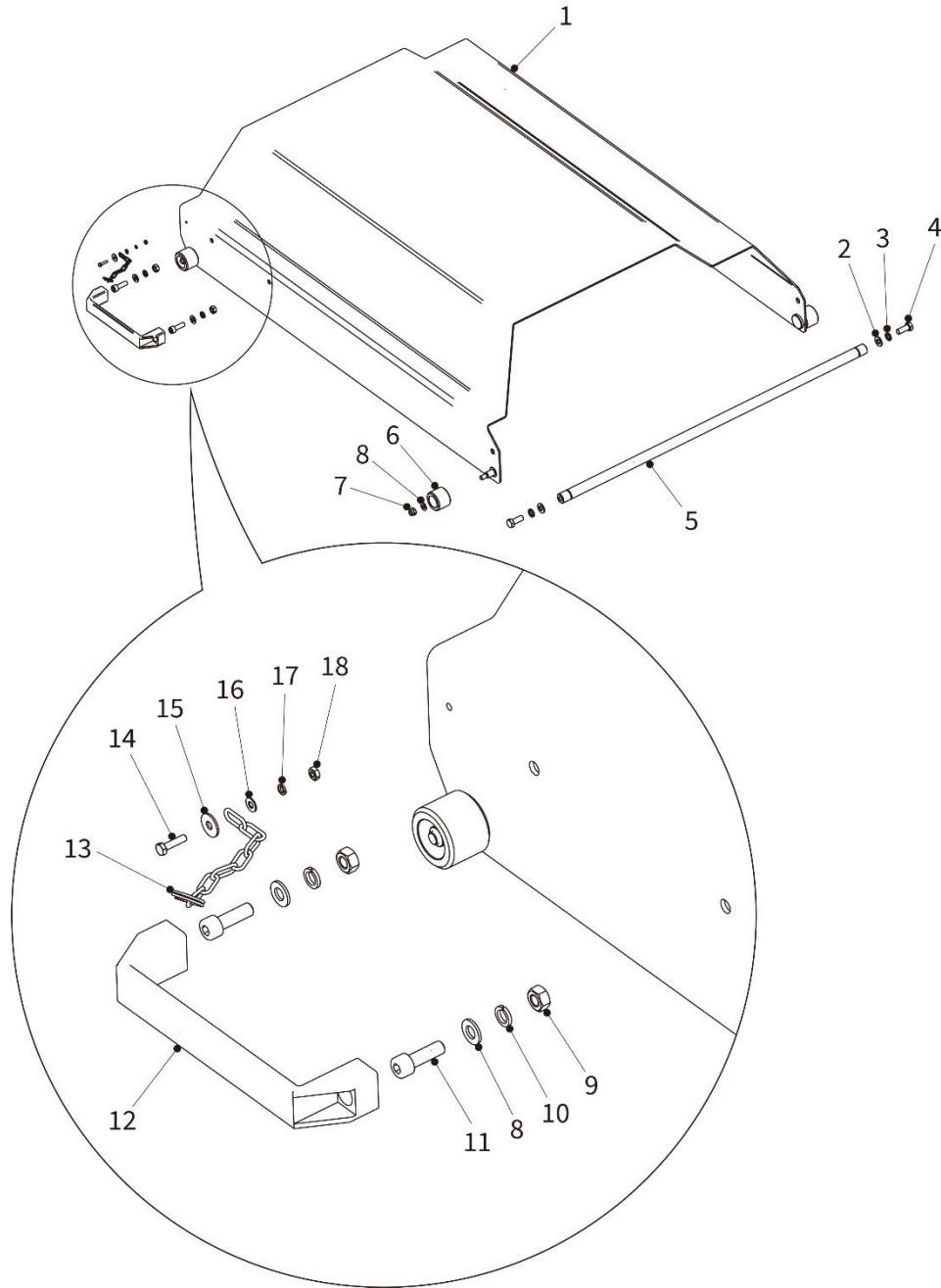
Item	Part No.	Description	Qty	Remarks
1	PRPW02836	Grease Nipple	2	JB/T 7940.1
2	PRFA00033	Bolt, M8 x 20 mm	1	GB/T 5783
3	PRFA00010	Washer, Lock, M8	1	GB/T 93
4	PRFA00009	Washer, Flat, M8	1	GB/T 97.1
5	PRPW02532	Pin, Flanged Head	1	B80C9-00220
6	PRPW02531	Rear Lifting Frame	1	B80C9-00210
7	PRPW02534	Single 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	GB/T 276-94
8	PRPW02533	Bearing Sheath	2	B80B9-00204
9	PRPW02837	Circlip, M5	2	GB/T894.1



Rear Lifting Frame - Exploded Parts View

Rear Lifting Frame – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02535	Rear Lifting Frame	1	B80C9-00410
2	PRPW02532	Pin, Flanged Head	1	B80C9-00220
3	PRFA00033	Bolt, M8 x 20 mm	1	GB/T 5783
4	PRFA00010	Washer, Lock, M8	1	GB/T 93
5	PRFA00009	Washer, Flat, M8	1	GB/T 97.1

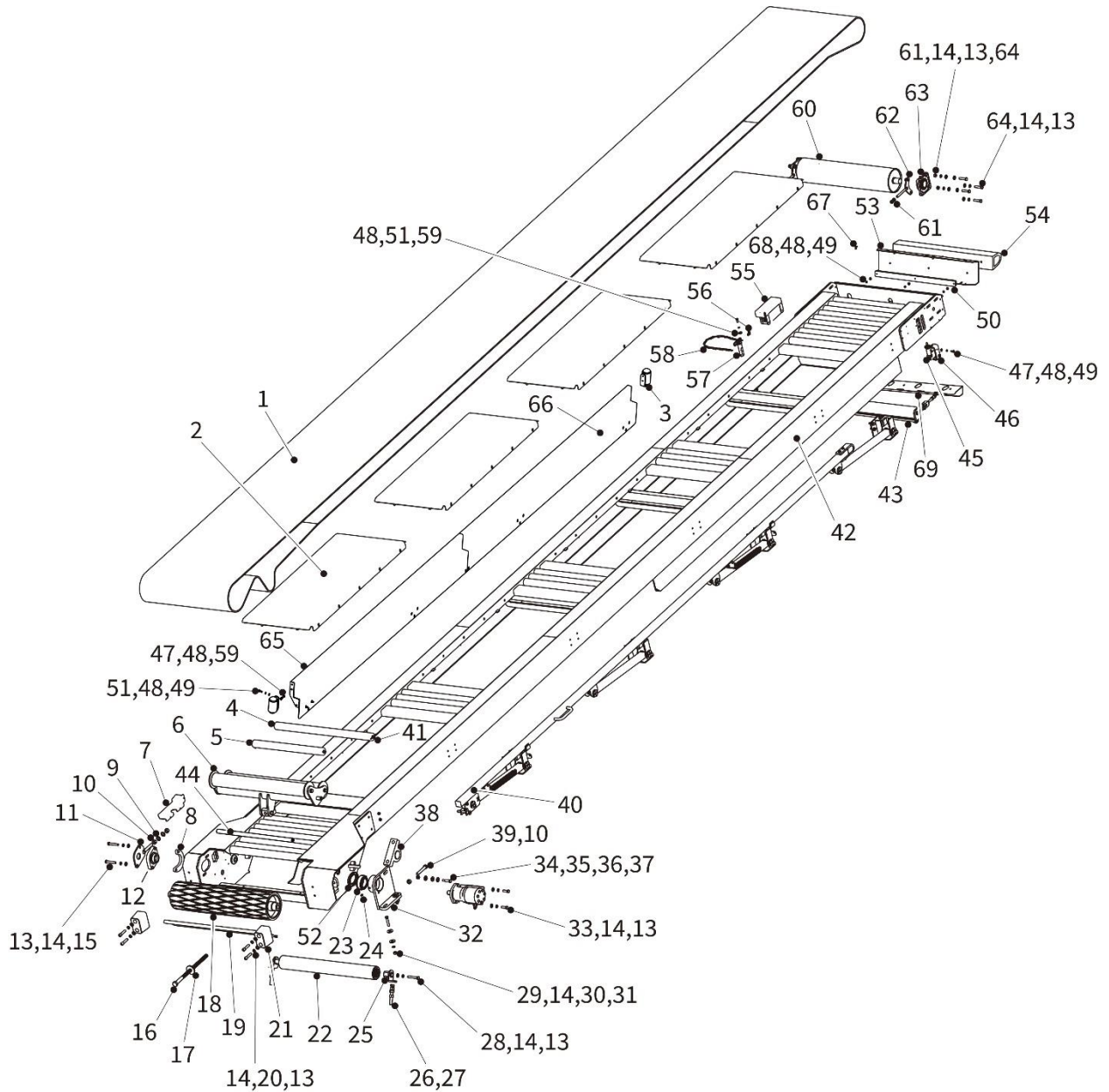


Engine Cover - Exploded Parts View

Engine Cover – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02838	Engine Cover Panel	1	B80G5-00210
2	PRFA00011	Washer, Flat, M10	2	GB/T 97.1
3	PRFA00012	Washer, Lock, M10	2	GB/T 93
4	PRFA00063	Bolt, M10 x 25 mm	2	GB/T 5783
5	PRPW02839	Strut Assembly	1	B80D5-00820
6	PRPW02840	Guidewheel	4	B80D5-00801
7	PRFA00186	Nut, Self-locking, M8	4	GB/T 889.1
8	PRFA00009	Washer, Flat, M8	6	GB/T 97.1
9	PRFA00021	Nut, M8	2	GB/T 6170
10	PRFA00010	Washer, Lock, M8	2	GB/T 93
11	PRFA00017	Screw, Hex Socket Head Cap, M8 x 25 mm	2	GB/T 70.1
12	PRPW00390	Handle, Interior	1	D30T1-40003
13	PRPW02841	Chain, $\phi 2 \times 150$ mm	1	B80D5-00804
14	PRFA00243	Bolt, M4 x 16 mm	1	GB/T 5783
15	PRFA00244	Washer, Flat, M5	1	GB/T 96
16	PRFA00245	Washer, Flat, M4	1	GB/T 97.1
17	PRFA00246	Washer, Lock, M4	1	GB/T 93
18	PRFA00247	Nut, M4	1	GB/T 6170

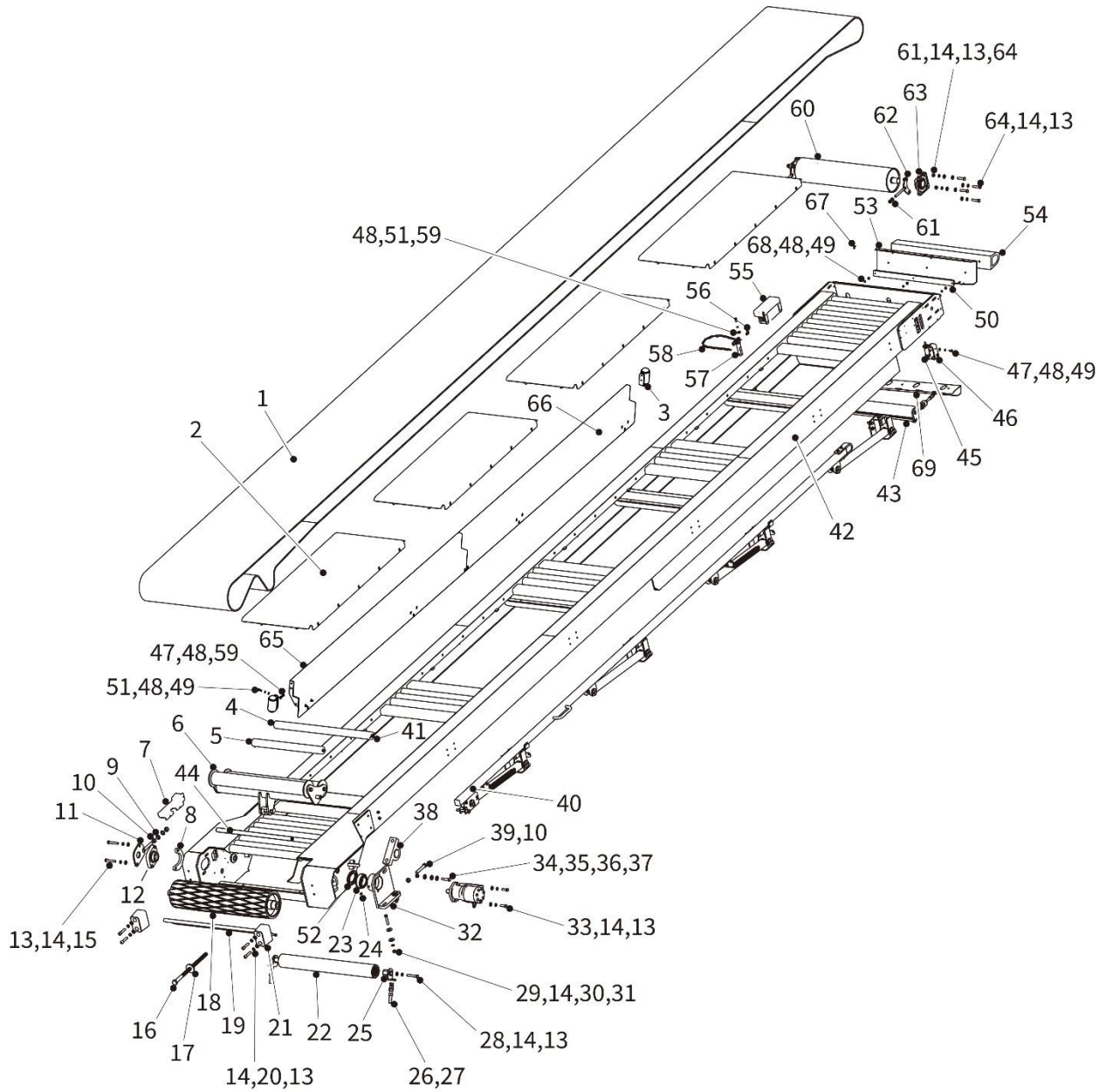
BELT FRAME ASSEMBLY



Belt Frame Assembly - Exploded Parts View

Belt Frame Assembly – Spare Parts List

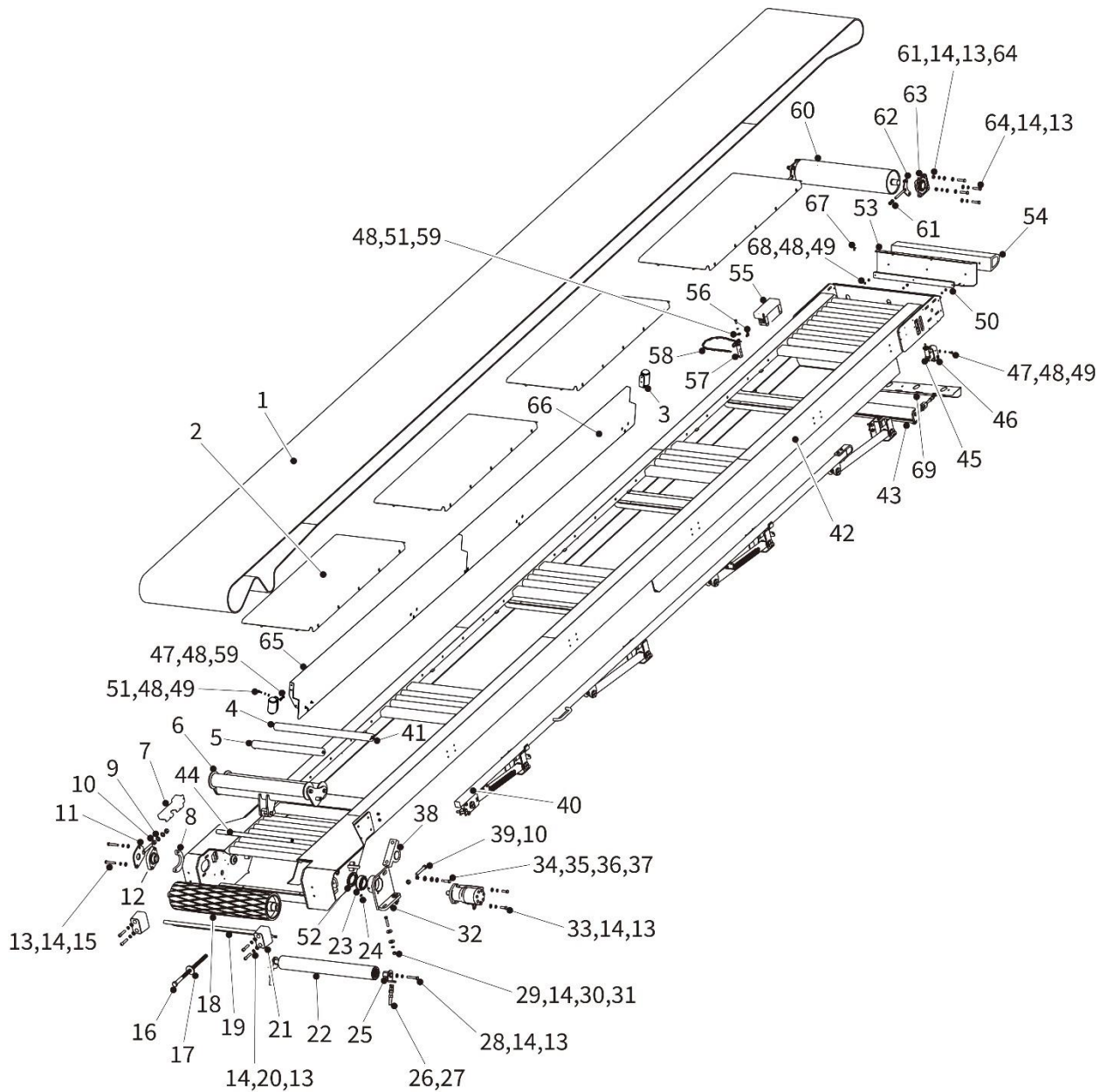
Item	Part No.	Description	Qty	Remarks
1	PRPW03099	Conveyor Belt	1	B80X9-00700
2	PRPW03100	Support Plate	4	B80G9-10110
3	PRPW03101	Guide Wheel Assembly	2	B80C9-11570 See page 116
4	PRPW03102	Idler, Long	5	B80D9-00900
5	PRPW03103	Idler, Short	27	B80A9-00800
6	PRPW03104	Tightening Support Assembly	1	B80X9-02000 See page 118
7	PRPW03105	Protective Plate	1	B80X9-00005
8	PRPW03106	Threaded Plate	1	B80X9-00001
9	PRFA00068	Washer, Flat, M16	2	GB/T 97.1
10	PRFA00073	Nut, M16	3	GB/T 6170
11	PRPW03107	Adjusting Seat, Welded	1	B80X9-00200
12	PRPW3108	Bearing Seat	1	B80A9-00700
13	PRFA00030	Washer, Flat, M12	22	GB/T 97.1
14	PRFA00034	Washer, Lock, M12	20	GB/T 93
15	PRFA00288	Bolt, M12 x 70 mm	2	GB/T 5783
16	PRFA00289	Bolt, M20 x 380 mm, threaded length 300 mm	1	GB/T 5782
17	PRPW03109	Shim	1	B80D9-10121
18	PRPW03110	Rear Drive Drum	1	B80Y9-00100
19	PRPW03111	Rear Baffle	1	B80Z9-00007
20	PRFA00290	Screw, Hex Socket Head Cap, M12 x 55 mm	4	GB/T 70.1
21	PRPW03112	Bumper Block, Black	2	T160A1-10007
22	PRPW03113	Roller	1	B80X9-00500
23	PRPW03114	Tapered Roller Bearing	1	NJ2210E
24	PRPW03115	Grease Nipple, M10 x 1	1	JB/T 7940.1
25	PRPW03116	Pull Plate	2	B80X9-00600
26	PRFA00291	Nut, M16 x 1.5	6	GB/T 6171
27	PRFA00292	Bolt, M16 x 1.5 x 120 mm	2	GB/T 5786
28	PRFA00238	Bolt, M12 x 75 mm	2	GB/T 5783
29	PRFA00294	Nut, M12	2	GB/T 6170
30	PRFA00030	Washer, Flat, M12	4	GB/T 96



Belt Frame Assembly - Exploded Parts View

Belt Frame Assembly – Spare Parts List

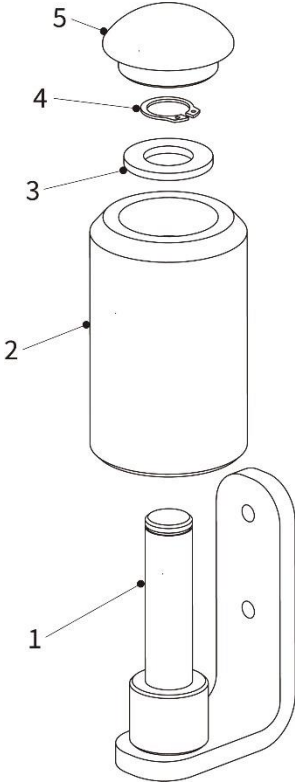
Item	Part No.	Description	Qty	Remarks
31	PRFA00295	Bolt, M12 x 60 mm	2	GB/T 5783
32	PRPW03117	Motor Support Bracket	1	B80X9-00100
33	PRFA00042	Bolt, M12 x 35 mm	2	GB/T 5783
34	PRFA00296	Bolt, Special	1	B80X9-00004
35	PRFA00072	Washer, Flat, M14	1	GB/T 97.1
36	PRFA00151	Washer, Nylon, Special	2	A30A6-00004
37	PRFA00297	Nut, Self-locking, M12	1	GB/T 889.1
38	PRPW03118	Bearing Pedestal Assembly	2	B80A9-00300
39	PRFA00298	Bolt, M16 x 95 mm	1	GB/T 5783
40	PRPW03125	Handrail Assembly, Complete	1	B80X9-20000 See page 122
41	PRFA00299	Pin, Split Cotter, 5 x 50 mm	6	GB/T 91
42	PRPW03119	Belt Frame	1	B80X9-40000
43	PRPW03124	Front Roller Adjustment Assembly	1	B80C9-11800 See page 120
44	PRPW03120	Round Bar, Steel	1	B80X9-00008
45	PRPW03121	Vertical Idler	4	B80Z9-00200
46	PRPW03122	Mounting Plate, Vertical Idler	4	B80X9-00010
47	PRFA00300	Bolt, M8 x 16 mm	20	GB/T 5783
48	PRFA00010	Washer, Lock, M8	28	GB/T 93
49	PRFA00009	Washer, Flat, M8	15	GB/T 97.1
50	PRPW03123	Mounting Bracket	1	B80D9-11001
51	PRFA00033	Bolt, M8 x 20 mm	5	GB/T 5783
52	PRPW03126	Skeleton Oil Seal, Type TC, i.d. 60 mm, o.d. 90 mm, thickness 10 mm	1	TC60 x 90 x 10
53	PRPW03127	Mounting Plate	1	B80X9-00009
54	PRPW03128	Protective Bumper, Rubber	1	B80D9-00003
55	PRPW03129	Guard, Protective, Switch Box	1	B80A9-00005
56	PRFA00004	P-clip, M10	2	8JF08-01015
57	PRFA00311	Pin	1	B80A9-10130
58	PRPW03130	Left Rear Baffle ??/	1	TO6Y1-10702
59	PRFA00009	Washer, Flat, M8	13	GB/T 96
60	PRPW03131	Front Drive Drum	1	B80Y9-00200



Belt Frame Assembly - Exploded Parts View

Belt Frame Assembly – Spare Parts List

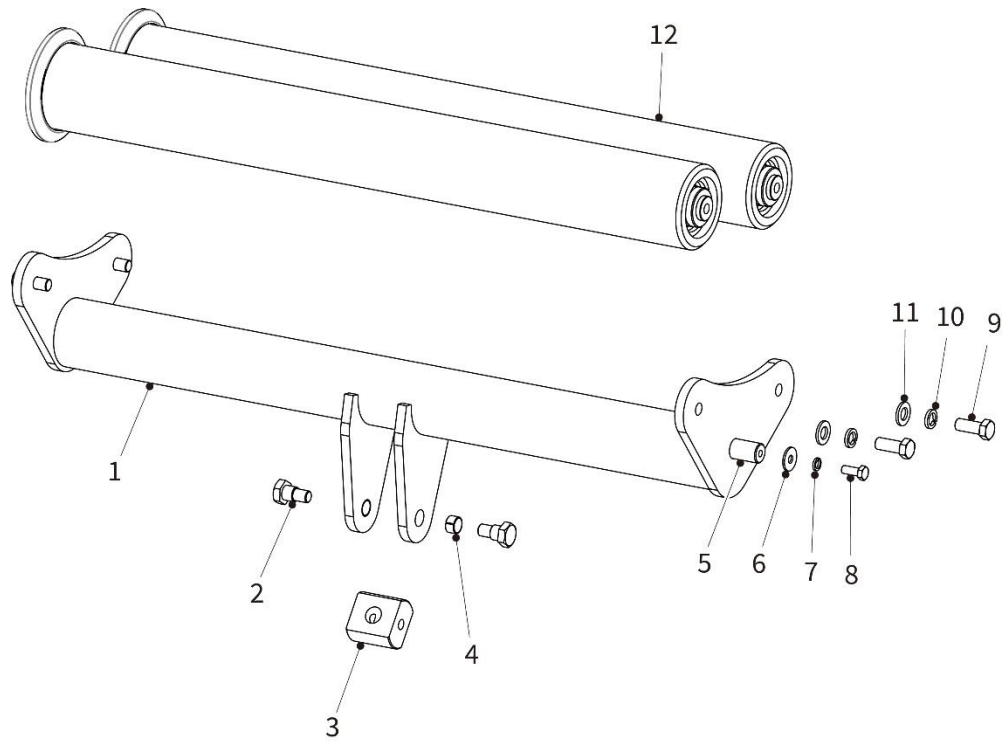
Item	Part No.	Description	Qty	Remarks
61	PRFA00294	Nut, M12	8	GB/T 6170
62	PRPW03132	Support Plate, Welded	2	B80X9-00400
63	PRPW03133	Bearing Pedestal	2	B80Y9-00300
64	PRFA00301	Bolt, M12 x 50 mm	8	GB/T 5783
65	PRPW03134	Left Rear Luggage Rail	1	B80C9-10620
66	PRPW03135	Left Front Luggage Rail	1	B80C9-10610
67	PRFA00312	Screw, Hex Socket Countersunk Head, M8 x 16 mm	3	GB/T 70.3
68	PRFA00047	Bolt, M8 x 35 mm	3	GB/T 5783
69	PRPW03136	Sensor Bracket	1	B80X9-10050



Guide Wheel Assembly - Exploded Parts View

Guide Wheel Assembly - Spare Parts List

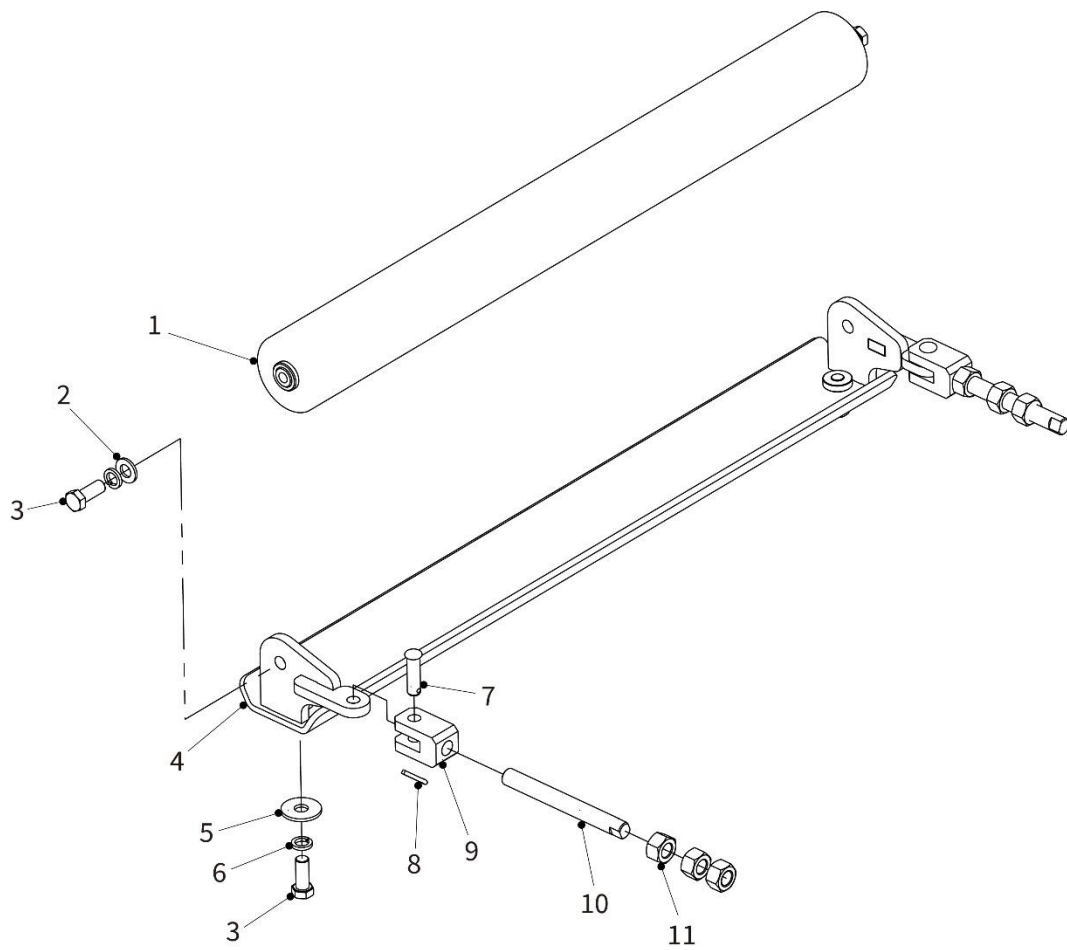
Item	Part No.	Description	Qty	Remarks
1	PRPW03137	Support Assembly	1	B80C9-11580
2	PRPW03138	Guide Wheel, Nylon	1	B80C9-11571
3	PRPW00547	Washer, Flat, M18	1	GB/T 97.1
4	PRPW03139	Circlip, M18		GB/T894.1
5	PRPW03154	Blanking Cap	1	B80C9-11572



Tightening Support Assembly - Exploded Parts View

Tightening Support Assembly – Spare Parts List

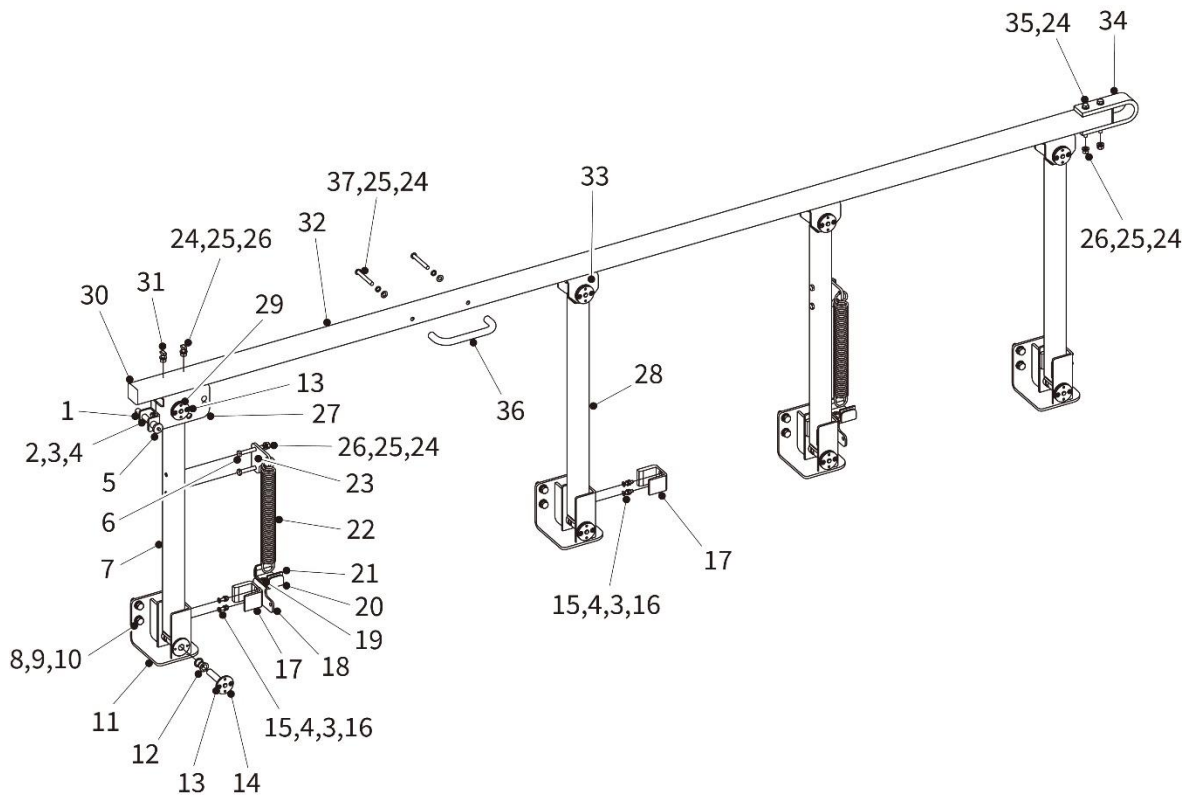
Item	Part No.	Description	Qty	Remarks
1	PRPW03140	Tensioner Support	1	B80D9-02000
2	PRFA00302	Bolt, Special	2	D15G1-20012
3	PRFA00303	Nut, Special	1	B80D9-10103
4	PRPW03141	Bushing, Type SF-1-1510, self lubricating, oilless, composite, i.d. 15 mm, o.d. 17 mm, length 10 mm, wall thickness 1.01mm	2	SF-1-1510
5	PRPW03142	Tandem Shaft	1	B80D9-10104
6	PRFA00009	Washer, Flat, M8	2	GB/T 97.1
7	PRFA00010	Washer, Lock, M8	2	GB/T 93
8	PRFA00033	Bolt, M8 x 20 mm	2	GB/T 5783
9	PRFA00138	Bolt, M12 x 30 mm	4	GB/T 5783
10	PRFA00034	Washer, Lock, M12	4	GB/T 93
11	PRFA00030	Washer, Flat, M12	4	GB/T 97.1
12	PRPW03143	Adjusting Roller	2	B80X9-00500



Front Roller Adjustment Assembly - Exploded Parts View

Front Roller Adjustment Assembly – Spare Parts List

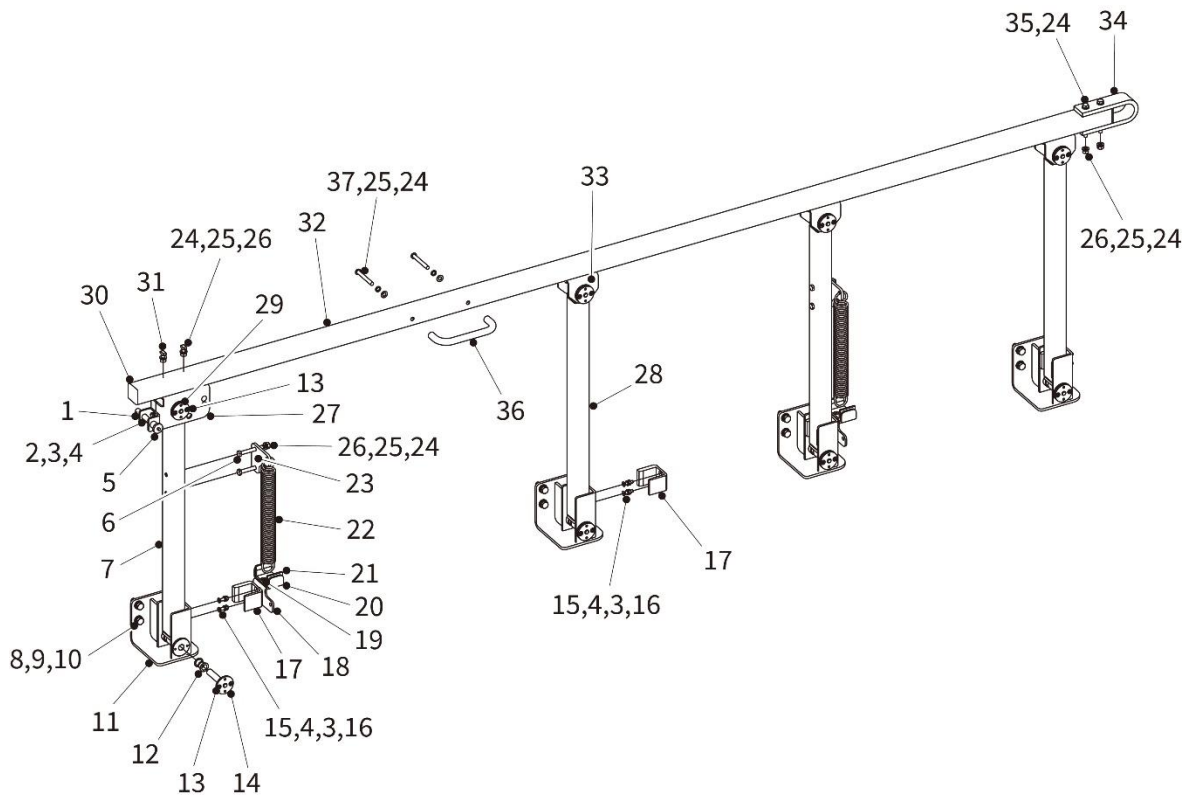
Item	Part No.	Description	Qty	Remarks
1	PRPW03144	Roller	1	B80C9-11820
2	PRFA00030	Washer, Flat, M12	2	GB/T 97.1
3	PRFA00183	Bolt, M12 x 30 mm	4	GB/T 5783
4	PRPW03145	Adjustment Mechanism	1	B80C9-11810
5	PRFA00030	Washer, Flat, M12	2	GB/T 96
6	PRFA00034	Washer, Lock, M12	4	GB/T 93
7	PRFA00304	Pin, Clevis, headed, with hole, 12 x 40 mm	2	GB/T 882
8	PRFA00306	Pin, Split Cotter, 4 x 182 mm	2	GB/T 91
9	PRPW03146	Pull Rod Head	2	B80C9-11801
10	PRFA00305	Screw, Special, M16 x 1.5 mm	2	B80C9-11802
11	PRFA00073	Nut, M16	6	GB/T 6170



Handrail Assembly - Exploded Parts View

Handrail Assembly – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW03147	Bracket, Pin Stowage	1	B80C9-11603
2	PRFA00108	Bolt, M6 x 16 mm	2	GB/T 5783
3	PRFA00007	Washer, Lock, M6	10	GB/T 93
4	PRFA00006	Washer, Flat, M6	10	GB/T 97.1
5	PRPW00518	Pin, Handrail, Safety Lock	1	B80D9-10308
6	PRFA00286	Bolt, M8 x 60 mm	4	GB/T 5783
7	PRPW03148	Column, Handrail, Spring Mounting	2	B80Y9-20100
8	PRFA00008	Bolt, M10 x 30 mm	16	GB/T 5783
9	PRFA00012	Washer, Lock, M10	16	GB/T 93
10	PRFA00011	Washer, Flat, M10	16	GB/T 97.1
11	PRPW03149	Handrail Mounting Base	4	B80Y9-20200
12	PRPW03150	Bearing, Plastic, Self-lubricating	16	EPBF-1416-12
13	PRFA00308	Screw, Countersunk, Flat Head, Cross Recess, Type Z, M5 x 10 mm	16	GB/T 819.2 Note: non-standard screw
14	PRPW03151	Shaft Pin, Shouldered, Fixed, Column Base	4	B80C9-11640
15	PRFA00307	Screw, Hex Socket Countersunk Head, M6 x 25 mm	8	GB/T 70.3
16	PRFA00025	Nut, M6	8	GB/T 6170
17	PRPW03152	Block, Nylon	6	B80B9-10301
18	PRPW03153	Limit Bracket	2	B80Y9-20005
19	PRFA00313	Screw, Hex Socket Countersunk Head, M6 x 12 mm	4	GB/T 70.3
20	PRPW03155	Holder, Nylon	2	B80Y1-10004
21	PRPW03156	Block, Nylon	2	B80Y9-20004
22	PRPW03157	Spring	2	B80C9-11601
23	PRPW03158	Pull Plate	2	B80Y9-20006
24	PRFA00009	Washer, Flat, M8	18	GB/T 97.1
25	PRFA00010	Washer, Lock, M8	16	GB/T 93
26	PRFA00021	Nut, M8	14	GB/T 6170
27	PRPW03159	Bracket, Handrail, Locking/Safety	1	B80Y9-20300
28	PRPW03160	Column, Handrail	2	B80Y9-20600
29	PRPW03161	Shaft Pin, Shouldered, Fixed, Column Top	4	B80C9-11630
30	PRPW03162	End Face Cover Plate	2	B80X9-20002

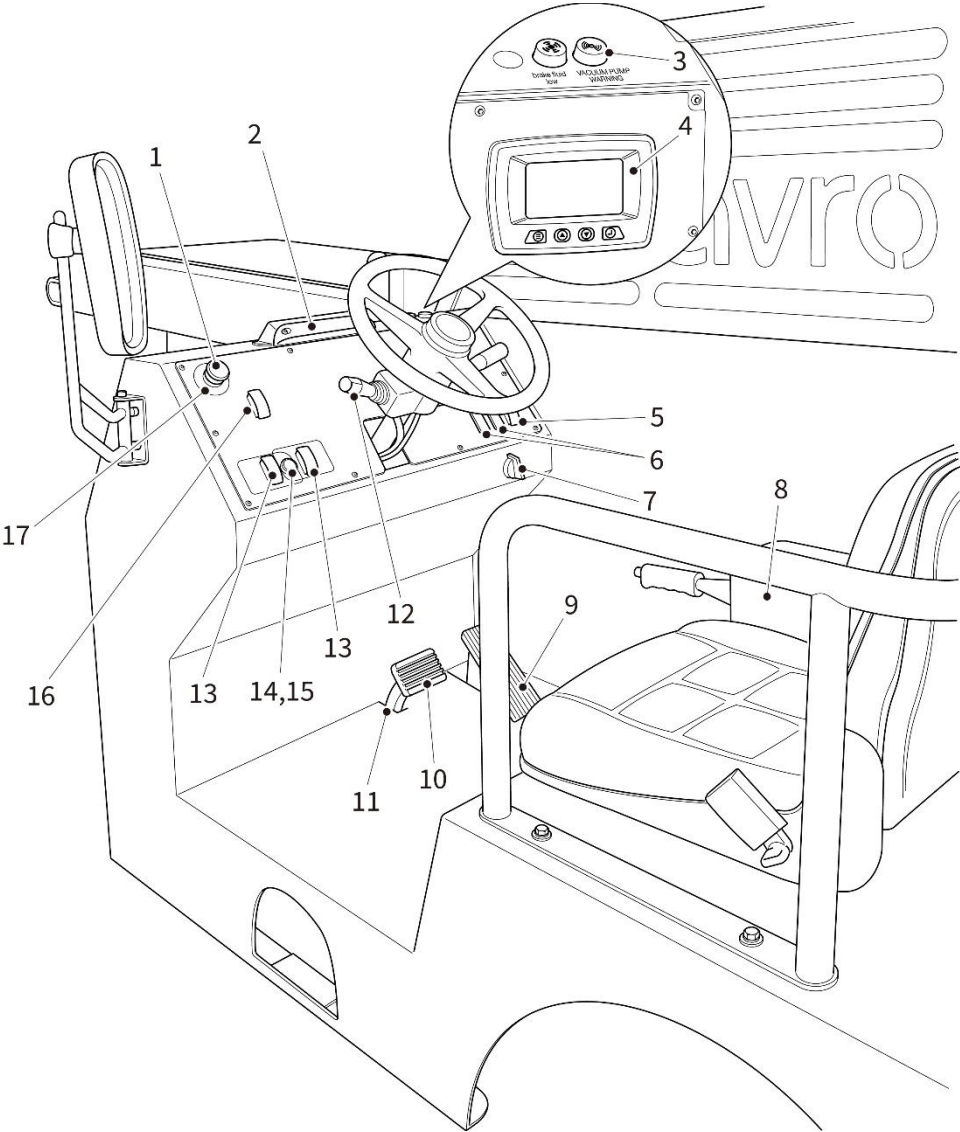


Handrail Assembly - Exploded Parts View

Handrail Assembly – Spare Parts List

Item	Part No.	Description	Qty	Remarks
31	PRFA00309	Bolt, Special, M8 x 20 mm	8	B80X9-20001
32	PRPW02498	Handrail	1	B80X9-20401
33	PRPW03163	Bracket, Handrail	3	B80Y9-20500
34	PRPW03164	Collision Protection Strip	1	B80C9-11604
35	PRFA00310	Bolt, M8 x 80 mm, threaded length 25 mm	2	GB/T 5782
36	PRPW00626	Handle	1	T20G1-20003
37	PRFA00039	Screw, Flat Round Hex Socket Head, M8 x 20 mm	2	GB/T 70.2

CONTROLS AND INSTRUMENTS

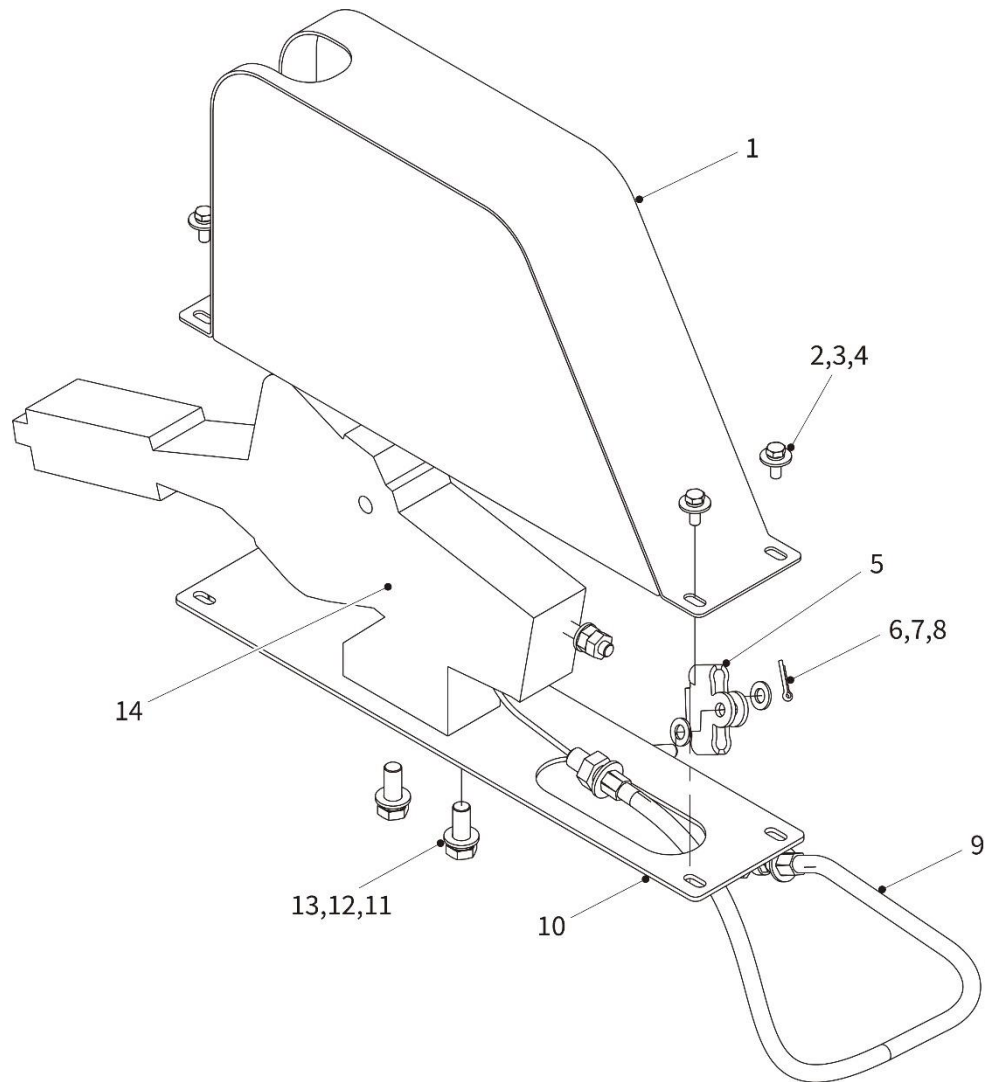


Controls and instruments - Exploded Parts View

Controls and instruments – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW00682	EMERGENCY STOP switch	1	A15R2-60500
2	PRPW02843	Dashboard Light	1	B80B2-40100
3	PRPW02844	Flash Buzzer	2	A30C2-50400
4	PRPW02845	Dash Display Instrument, BL30G	1	T20L2-70100
5	PRPW02846	Headlight Switch	1	B80C2-60300
6	PRPW02847	Blanking Cover	2	B80G2-60501
7	PRPW00051	Ignition Switch	1	T20L2-60201
8	PRPW00676	Park Brake Switch	1	A15R2-60300 Located on Park Brake Handle, under the Cover Assembly
9	PRPW00616	Accelerator Pedal	1	F90B2-60100
10	N/A	Brake Pedal (Part of the Foot Brake Support Assembly)	-	
11	PRPW00405	Footbrake Switch (Attached to Brake Pedal Assembly)	1	DT05G-JK205A
12	PRPW02403	Integrated Direction/Gear Shift/Turn Signal Control	1	B80D2-60300
13	PRPW02849	Switch, Hydraulic Cylinder Control Valve	2	B80D2-60500
14	PRPW0958	Connector, Interlock Button Switch	1	B80C2-60600
15	PRPW00957	Lift Cylinder Interlock Switch, Momentary, Green	1	B80C2-60700
16	PRPW00202	Drivers Throttle Switch	1	B80G2-60100
17	PRPW00681	Label, Emergency Stop Switch	1	A15R2-60501

PARKING BRAKE CONTROL

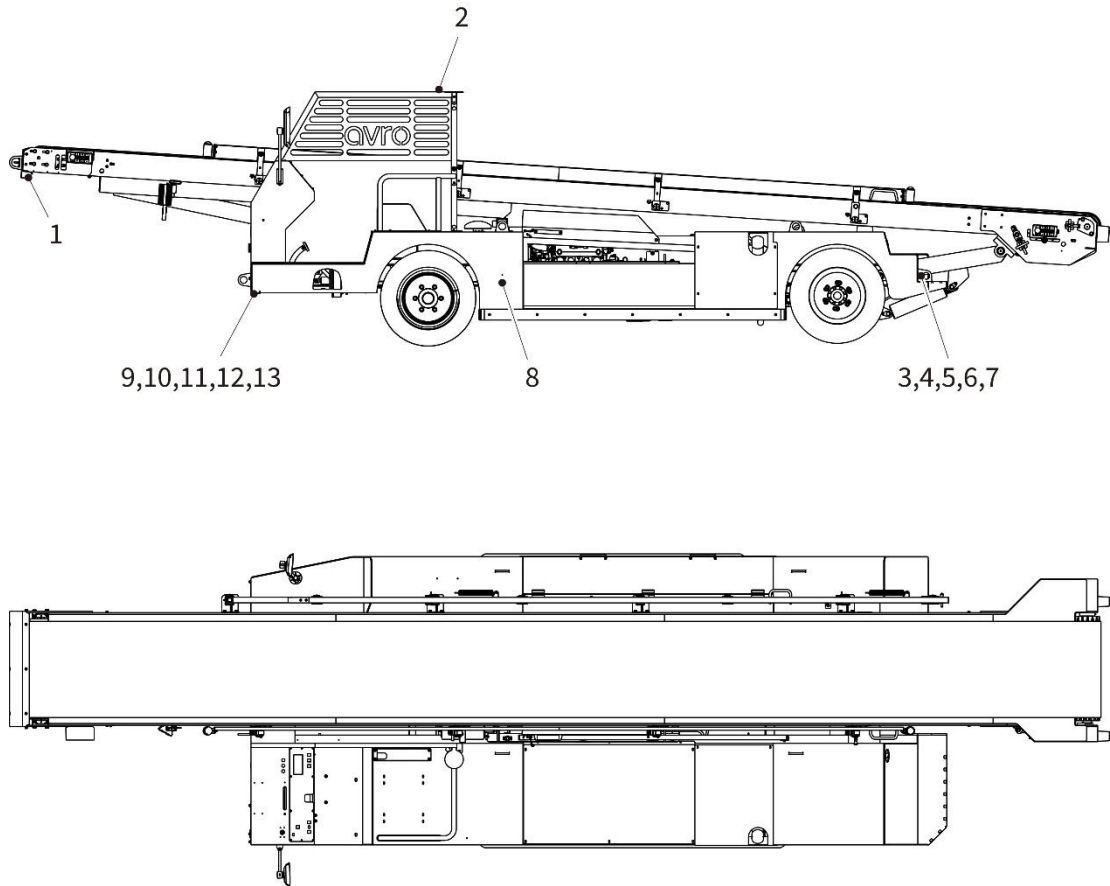


Parking Brake Mounting - Exploded Parts View

Parking Brake Mounting – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02850	Cover Assembly	1	B80D7-20100
2	PRFA00006	Washer, Flat, M6	4	GB/T 96
3	PRFA00007	Washer, Lock, M6	4	GB/T 93
4	PRFA00248	Bolt, M6 x 16 mm	4	GB/T 5783
5	PRPW02584	Connection Bracket	1	F30A7-20001
6	PRFA00264	Pin, Clevis, headed, with hole, 8 x 22 mm	1	GB/T 882
7	PRFA00009	Washer, Flat, M8	2	GB/T 97.1
8	PRFA00265	Pin, Split Cotter, 3.2 x 14 mm	1	GB/T 91
9	PRPW00011	Park Brake Cable	1	B80D7-20200
10	PRPW02851	Mounting Plate	1	B80D7-20001
11	PRFA00063	Bolt, M10 x 25mm	2	GB/T 5783
12	PRFA00012	Washer, Lock, M10	2	GB/T 93
13	PRFA00011	Washer, Flat, M10	2	GB/T 97.1
14	PRPW02852	Park Brake Handle	1	Y35A7-20300

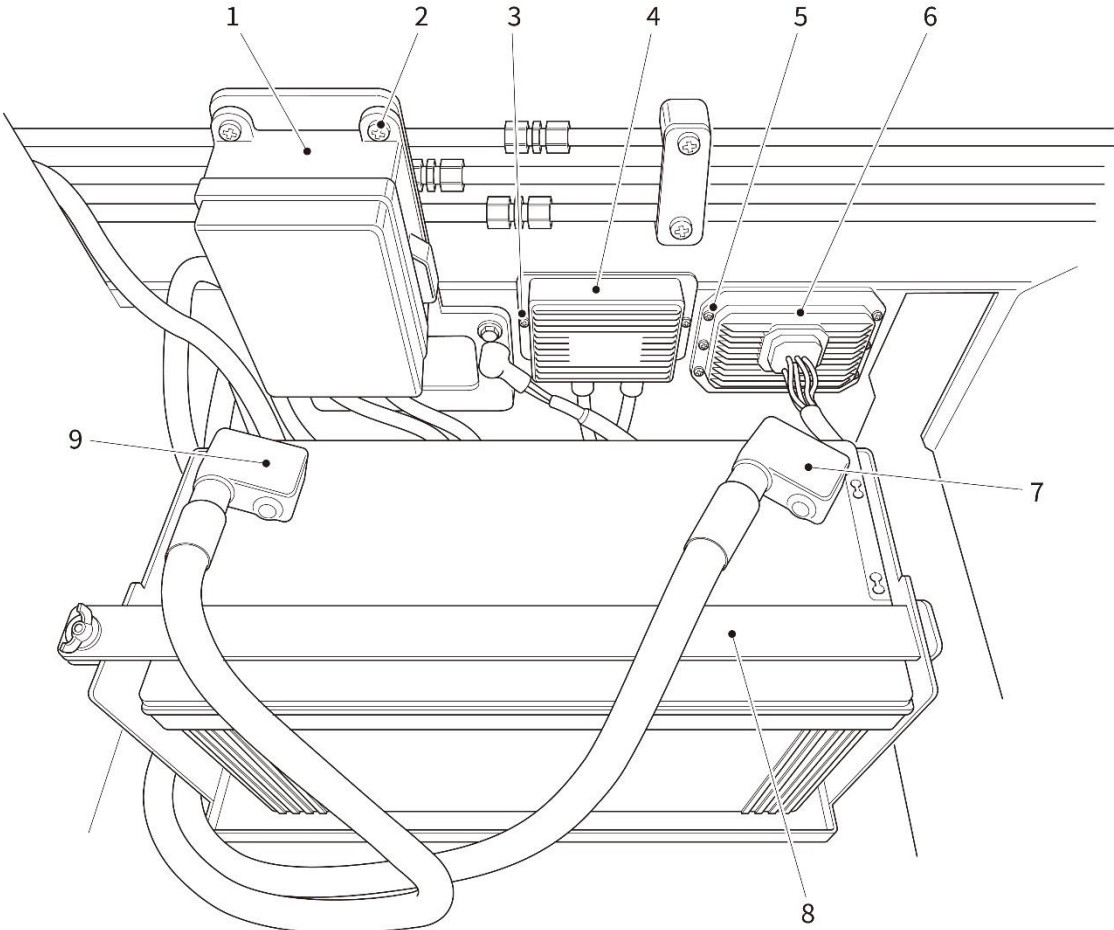
ELECTRICAL SYSTEM



Electrical system - Exploded Parts View

Electrical System – Spare Parts List

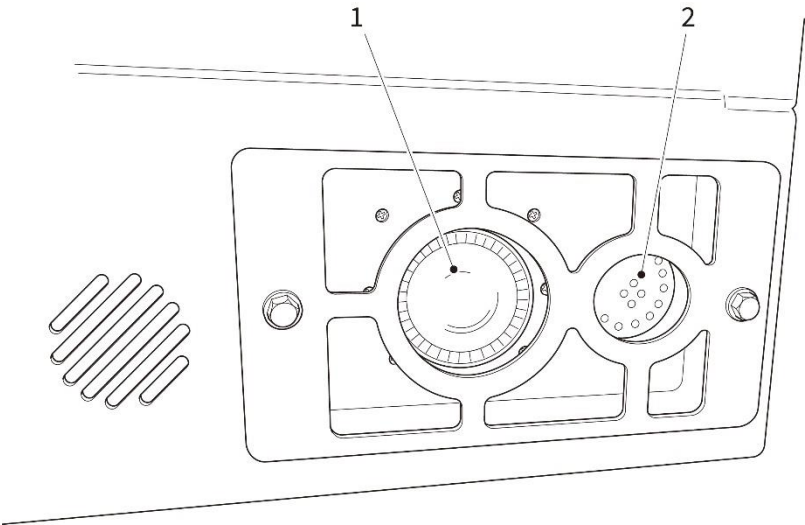
Item	Part No.	Description	Qty	Remarks
1	PRPW02855	Ultrasonic Sensor	2	B80D2-50400
2	PRPW01155	Beacon	1	T25C2-40800
3	PRPW00694	Reverse Alarm	1	A30C2-60500
4	PRFA00001	Bolt, M6 x 20 mm	1	GB/T 5783
5	PRFA00006	Washer, Flat, M6	2	GB/T 96.1
6	PRFA00007	Washer, Lock, M6	1	GB/T 93
7	PRFA00025	Nut, M6	1	GB/T 6170
8	PRPW00693	Turn Indicator	2	T20G2-40200
9	PRPW01147	Horn, Electric	1	DT09G-DL124ED
10	PRFA00033	Bolt, M8 x 20 mm	4	GB/T 5783
11	PRFA00009	Washer, Flat, M8	4	GB/T 97.1
12	PRFA00010	Washer, Lock, M8	4	GB/T 93
13	PRPW02856	Horn Filter	1	A15T2-60300



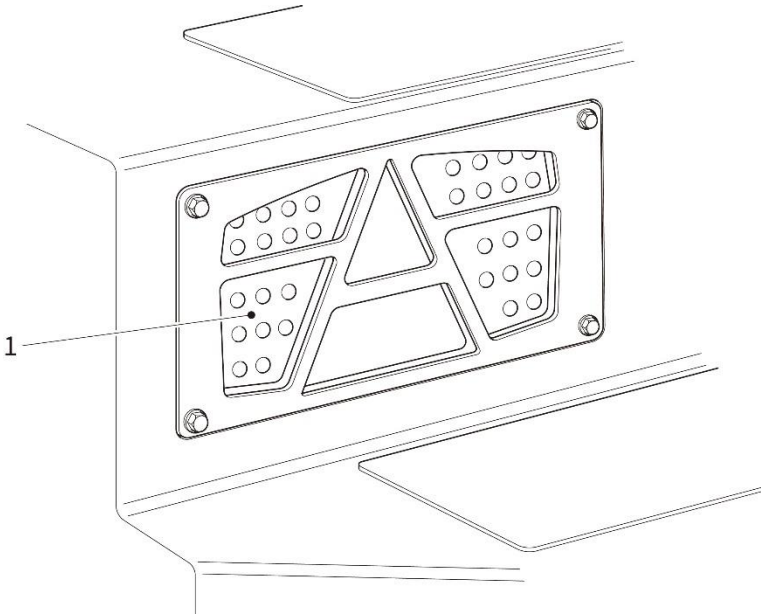
Battery compartment - Exploded Parts View

Battery compartment – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW00026	Center Control Box	1	A50M2-10100
2	PRFA00114	Screw, pan cross head, M5 x 12 mm	4	GB/T 823
3	PRFA00037	Screw, pan cross head, M6 x 16 mm	2	GB/T 823
4	PRPW00014	OPS Control Box	1	B80F2-10300
5	PRFA00037	Screw, pan cross head, M6 x 16 mm	6	GB/T 823
6	PRPW02356	Control Module, Hydraulics	1	B80G2-10100
7	PRPW02857	Battery Cable, Positive	1	B80G2-80300
8	PRPW02858	Battery	1	A30BN2-20100
9	PRPW02859	Battery Cable, Negative	1	B80G2-80500
Not shown	N/A	ATM Mini-Fuse, 10 Amp (located inside Panel, Electric)	8	Purchase locally
Not shown	N/A	ATM Mini-Fuse, 15 Amp (located inside Panel, Electric)	1	Purchase locally
Not shown	N/A	ATM Mini-Fuse, 30 Amp (located inside Panel, Electric)	1	Purchase locally



Front lights - Exploded Parts View



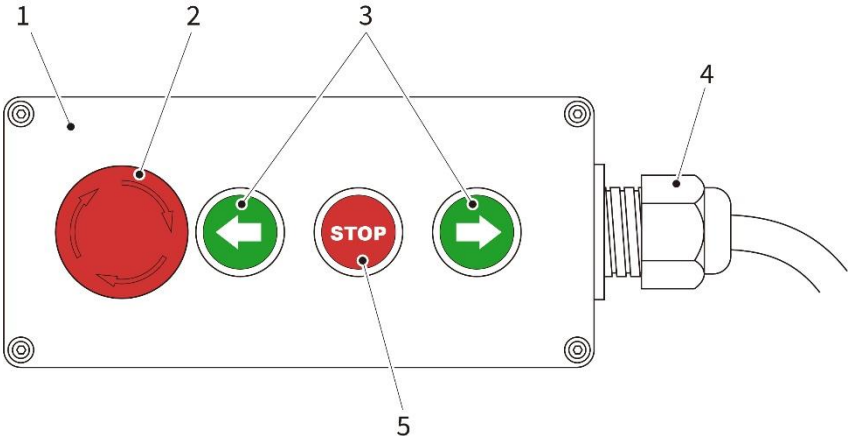
Rear lights - Exploded Parts View

Front lights – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02860	Headlamp	2	B80Y2-40100
2	PRPW02861	Front Turn Indicator	2	T25E2-40100

Rear lights – Spare Parts List

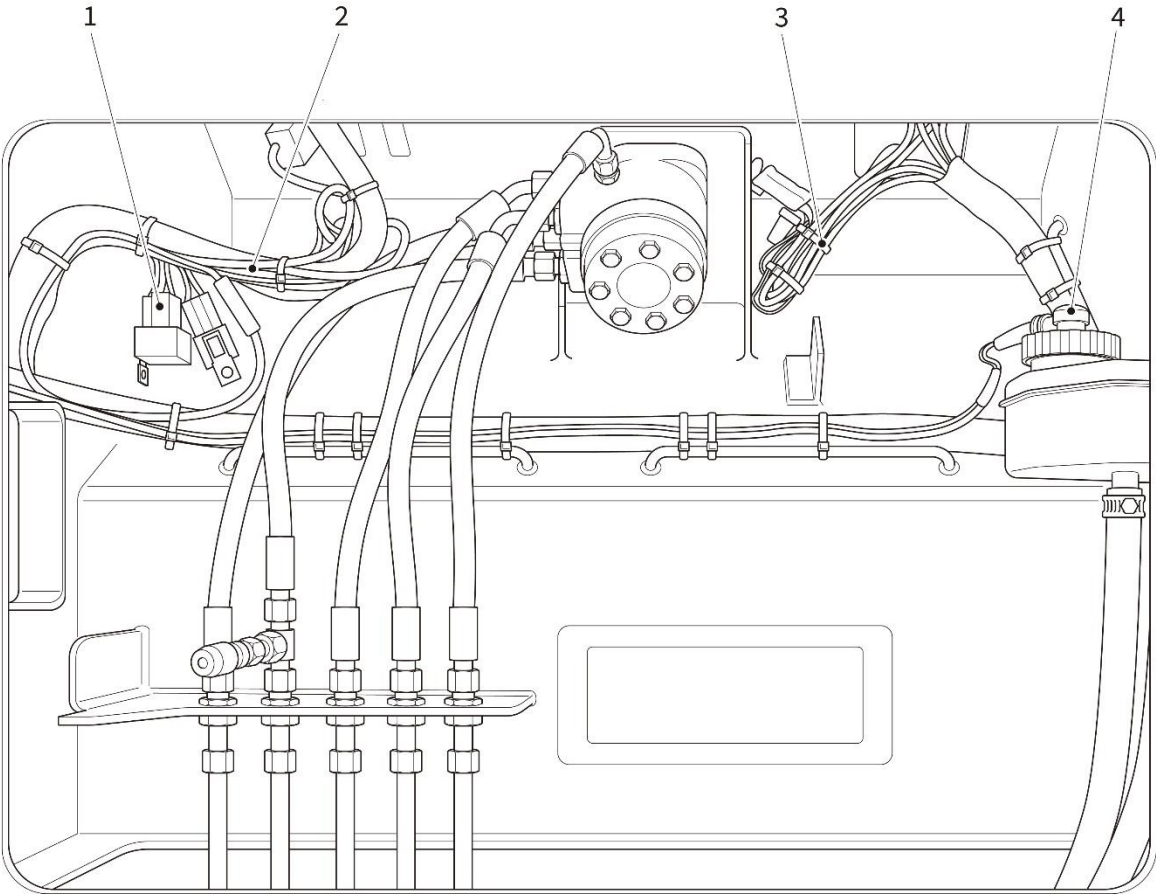
Item	Part No.	Description	Qty	Remarks
1	PRPW02862	Taillight Assembly	2	T25E2-40200



Belt Control Box - Exploded Parts View

Belt Control Box – Spare Parts List

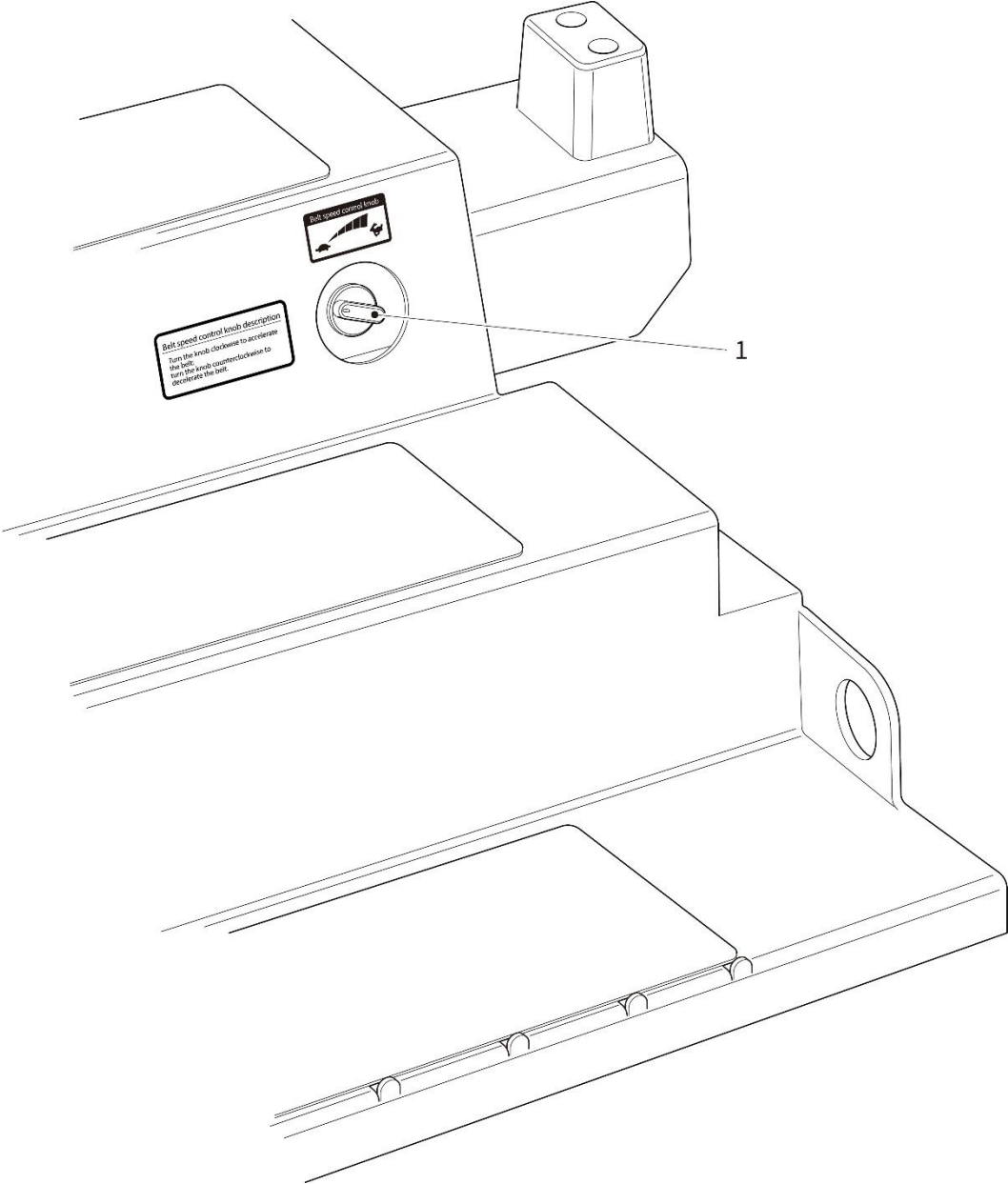
Item	Part No.	Description	Qty	Remarks
1	PRPW00021	Belt Control Box	2	B80A2-60800
2	PRPW00682	EMERGENCY STOP switch	2	A15R2-60500
3	PRPW00107	Forward/Reverse Switch, Button	4	T25M2-60100
4	PRPW02404	Belt Frame Harness	1	B80X2-80200
5	PRPW00042	Stop Switch, Conveyor Belt Movement	2	B80G2-60200



Steering Gear electrical compartment - Exploded Parts View

Steering Gear electrical compartment – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02521	Relay, Five Core	2	T20G2-80304
2	PRPW02507	Wiring Harness	1	B80G2-80400
3	Not applicable	Cable tie (purchase locally, recommended minimum length 180 mm)	20	
4	PRPW03182	Liquid Level Sensor, Plug-in	1	T25C2-60140

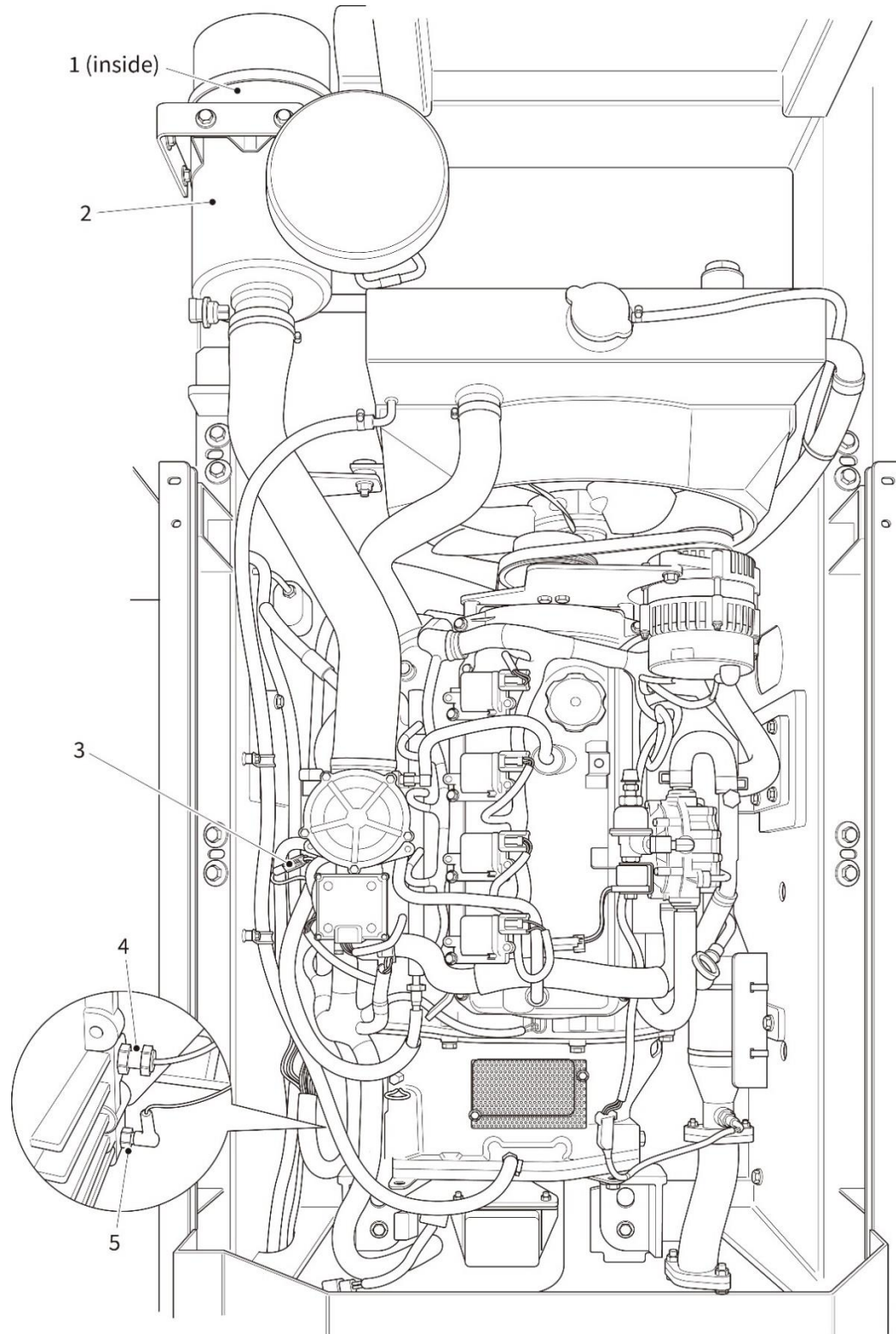


Belt Speed Control - Exploded Parts View

Belt Speed Control – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW00007	Throttle Control, Rear	1	B80F2-60200

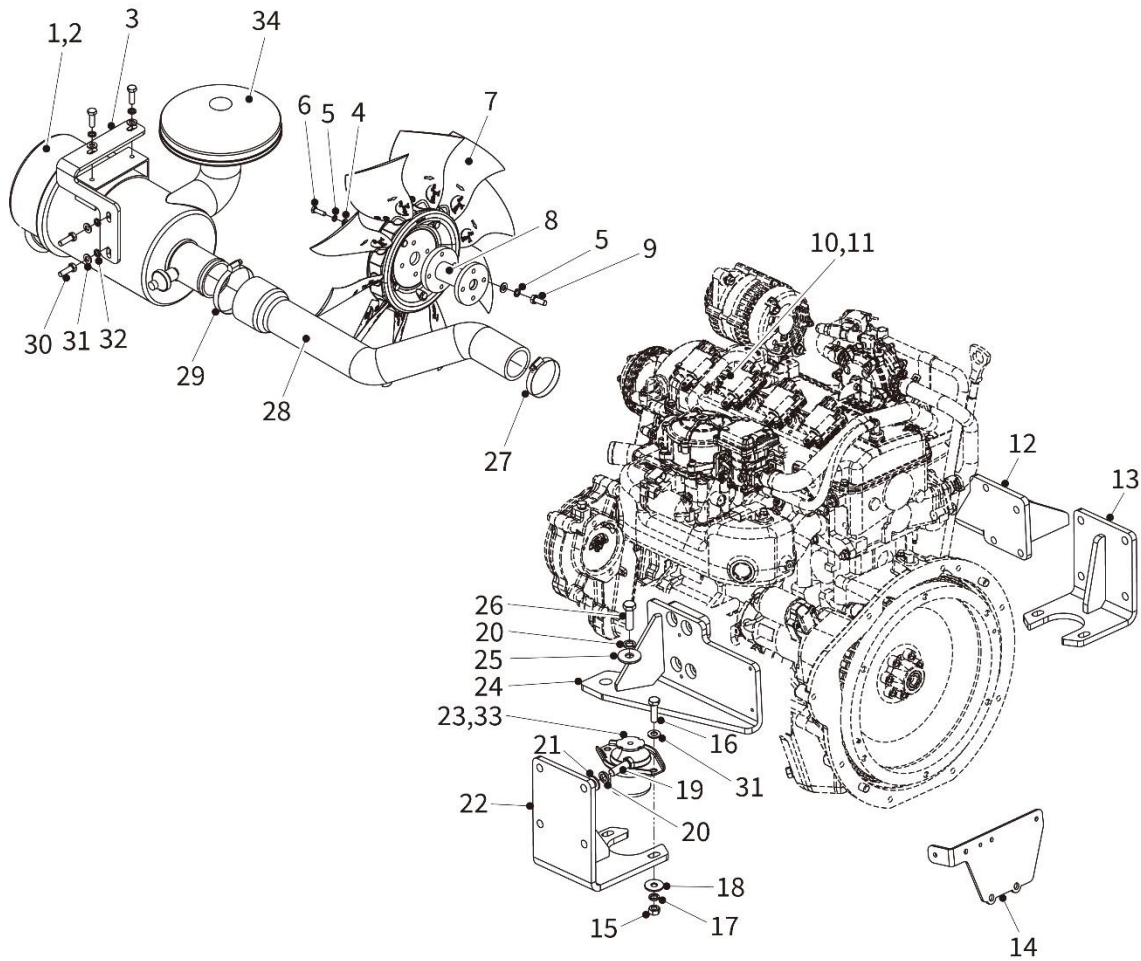
ENGINE MOUNTING



Engine Compartment- Exploded Parts View

Engine compartment – Spare Parts List

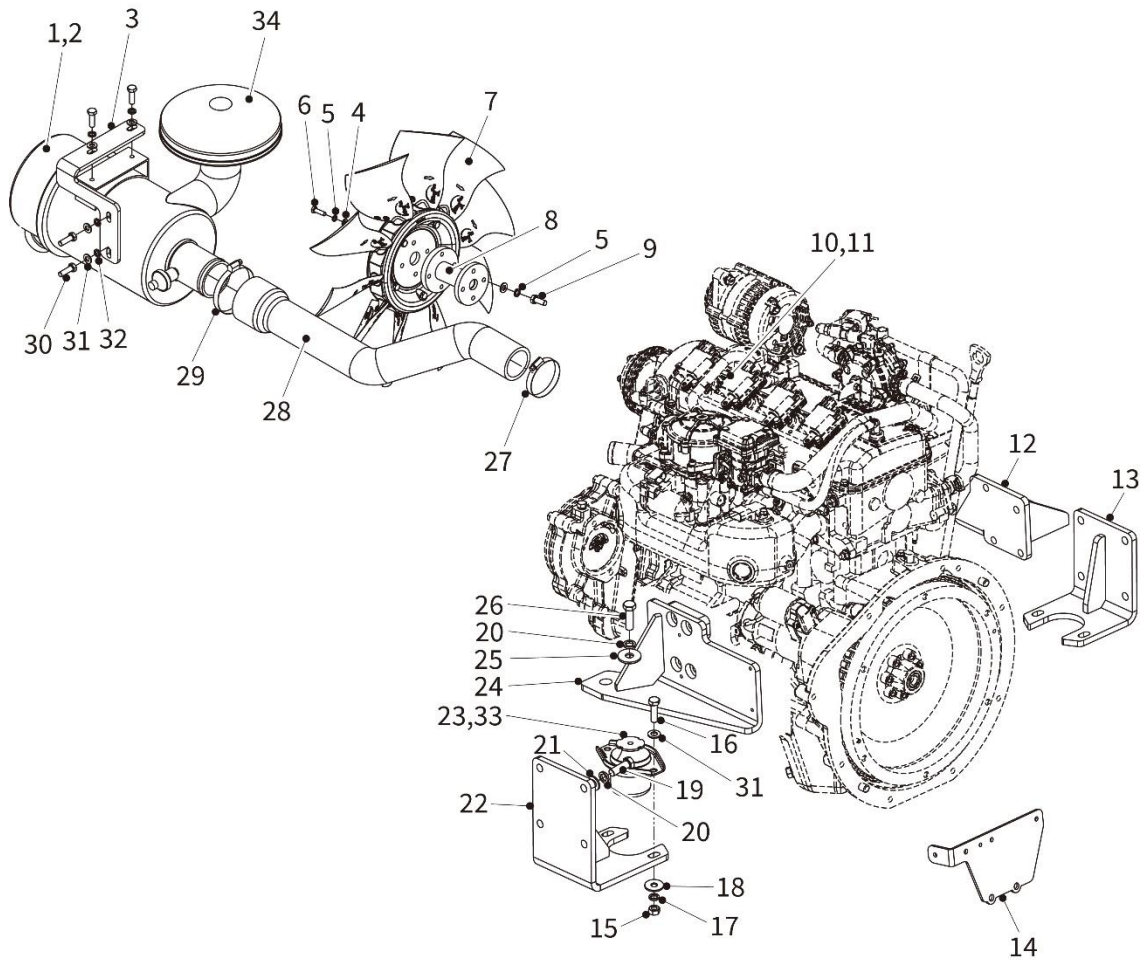
Item	Part No.	Description	Qty	Remarks
1	PRPW00420	Air Filter Element (Expected Life 300 to 500 hrs, depending on conditions)	1	Located inside Air Cleaner Housing See pages 144 - 145
2		Air Cleaner Housing	1	See pages 144 - 145
3	PRPW02869	Fuse Link Wire	1	A30C2-80900
4	PRPW02340	Speed Sensor	1	B80D2-50300 On Transmission
5	PRPW02868	Transmission Oil Temperature Sensor	1	DZ03G-RC3/8 On Transmission
Not shown	TBA	P-clip, M10	10	8JF08-01015
Not shown	TBA	P-clip, M20	20	8JF08-01015
Not shown	TBA	P-clip, M30	20	8JF08-01015
Not shown	TBA	P-clip, M40	10	8JF08-01015



Engine Mounting - Exploded Parts View

Engine Mounting – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02570	Air Filter	1	B80D5-10003
2	PRPW00470	Air Filter Housing	1	B80D5-10006
3	PRPW02870	Support, Air Filter	1	B80G5-10002
4	PRFA00006	Washer, Flat, M6	4	GB/T 97.1
5	PRFA00007	Washer, Lock, M6	8	GB/T 93
6	PRFA00001	Bolt, M6 x 20 mm	4	GB/T 5783
7	PRPW02871	Cooling Fan, Type D420	1	B80G5-10300
8	PRPW02872	Fan Block	1	B80G5-10003
9	PRFA00064	Bolt, M6 x 45 mm	4	GB/T 5783
10	PRPW02873	Engine, Type PS12.4	1	A30BJ5-13000
11	PRPW00717	Plug	1	GJT-533-00
12	PRPW02874	Engine Bracket, RHS	1	B80G5-10500
13	PRPW02876	Engine Support, RHS	1	B80G5-10200
14	PRPW02877	Engine Mounting Plate	1	B80G5-10004
15	PRFA00036	Nut, M10	4	GB/T 6170
16	PRFA00026	Bolt, M10 x 35 mm	4	GB/T 5783
17	PRFA00012	Washer, Lock, M10	4	GB/T 93
18	PRFA00011	Washer, Flat, M10	8	GB/T 97.1
19	PRFA00042	Bolt, M12 x 35 mm	8	GB/T 5783
20	PRFA00034	Washer, Lock, M12	10	GB/T 93
21	PRFA00030	Washer, Flat, M12	8	GB/T 97.1
22	PRPW02878	Engine Support, RHS	1	B80G5-10100
23	PRPW00723	Shock Absorber	2	A30EG5-10400
24	PRPW02879	Engine Bracket, RHS	1	B80G5-10400
25	PRFA00030	Washer, Flat, M12	2	GB/T 96
26	PRFA00134	Bolt, M12 x 40 mm	2	GB/T 5783
27	PRPW00126	Clamp, Hose, 64 x 44 mm	2	JB/T 8870
28	PRPW02880	Filter Intake	1	B80G5-10006
29	PRPW00877	Clamp, Hose, 80 x 60 mm	1	JB/T 8870
30	PRFA00253	Bolt, M8 x 30 mm	8	GB/T 5783

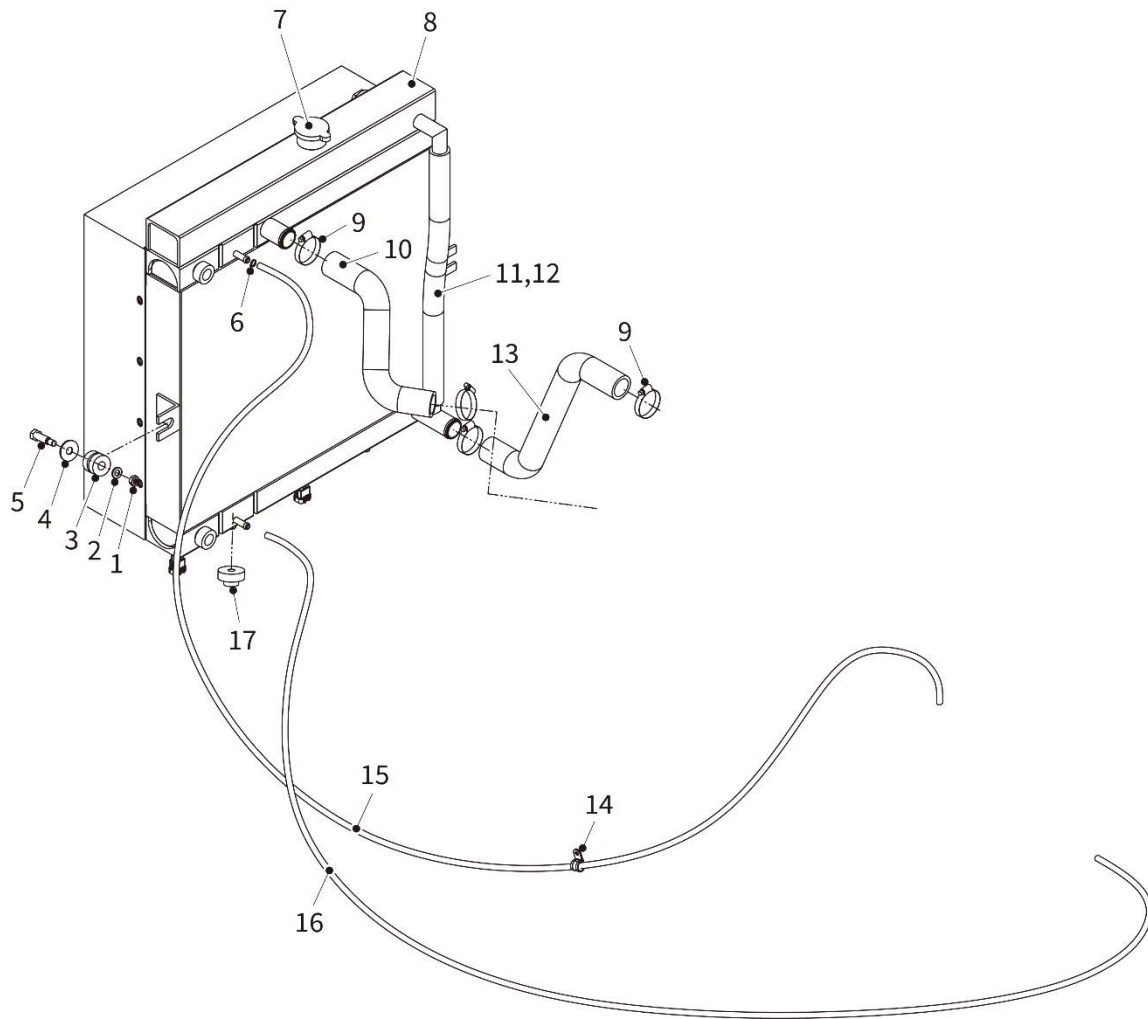


Engine Mounting - Exploded Parts View

Engine Mounting – Spare Parts List

Item	Part No.	Description	Qty	Remarks
31	PRFA00010	Washer, Lock, M8	8	GB/T 93
32	PRFA00009	Washer, Flat, M8	8	GB/T 97.1
33	PRPW02882	Protective Shell, Steel	2	A30EG5-10001
34	PRPW00470	Inlet Cover	1	

COOLING SYSTEM

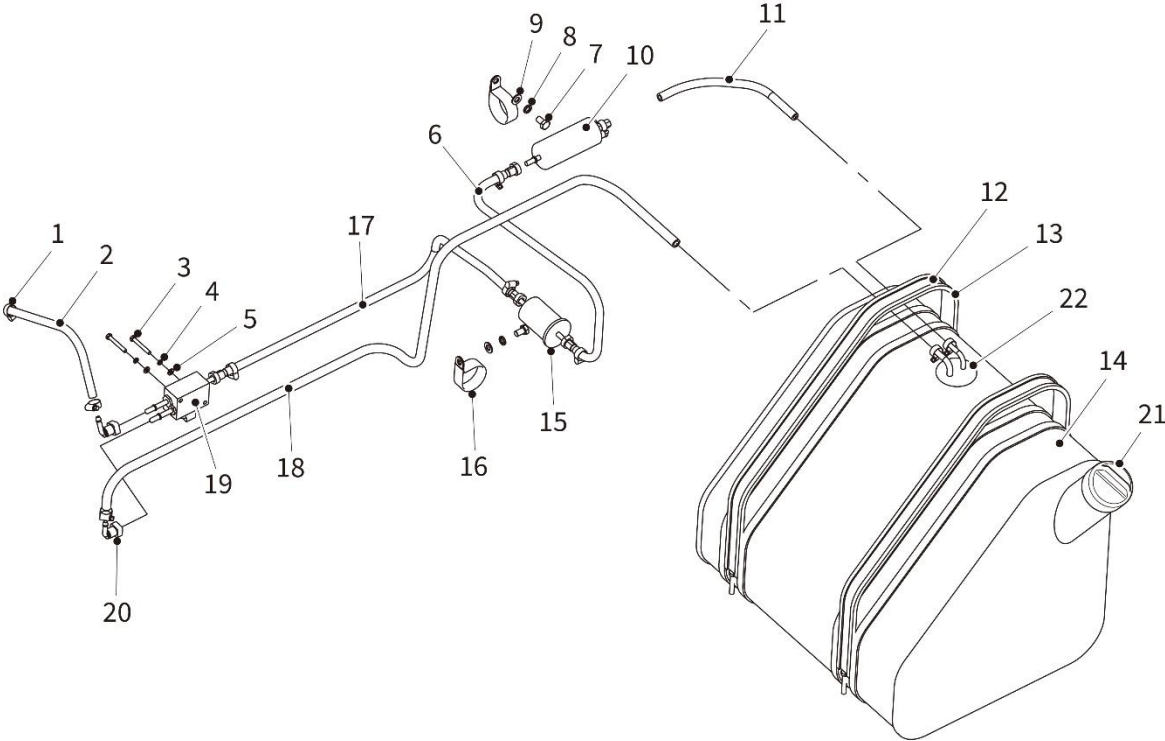


Cooling System - Exploded Parts View

Cooling System – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRFA00254	Nut, Self-locking, M8	2	GB/T 889.1
2	PRFA00009	Washer, Flat, M8	4	GB/T 97.1
3	PRPW00736	Anti-vibration Mount, Radiator	2	A30A5-40004
4	PRFA00045	Washer, Special	2	A30A5-20003
5	PRFA00255	Bolt, Special, M8	2	A30A5-20003
6	PRPW02883	Clamp, Hose, 25 x 16 mm	4	JB/T 8870
7	PRPW00357	Radiator Cap	1	Included with Radiator
8	PRPW02884	Radiator Assembly	1	B80G5-40300
9	PRPW02885	Clamp, Hose, dia. 50 to 32 mm	4	JB/T 8870
10	PRPW02886	Hose, Rubber	1	B80G5-40001
11	PRPW02887	Hose, Cooling System, dia. 25 x 500 mm	1	TG000-25050 Included with Radiator
12	PRPW02888	Clamp, Hose, 40 x 25 mm	2	JB/T 8870 Included with Radiator
13	PRPW02889	Hose, Rubber	1	B80G5-40003
14	PRPW02890	R-clip, Hose, dia. 16 mm	12	8JF08-01615
15	PRPW02891	Hose, Cooling System, dia. 12 x 1800 mm	1	TG000-12180
16	PRPW02892	Hose, Cooling System, dia. 12 x 2000 mm	1	TG000-12200
17	PRPW00733	Rubber Mounting	2	A30A5-40003

FUEL SYSTEM

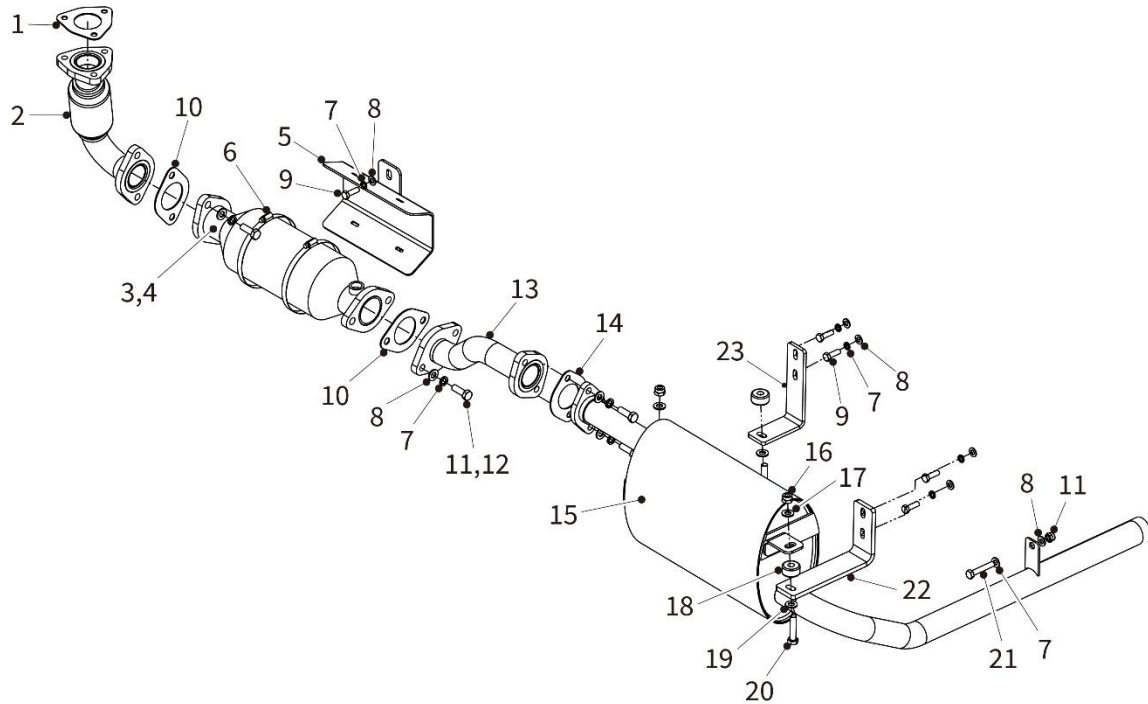


Fuel System - Exploded Parts View

Fuel System – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02893	Clamp, Hose, 20 x 12 mm	10	JB/T 8870
2	PRPW02894	Fuel Hose, $\phi 8$ x 320 mm	1	TG001-08032
3	PRFA00064	Bolt, M6 x 45 mm	2	GB/T 5783
4	PRFA00007	Washer, Lock, M6	2	GB/T 93
5	PRFA00006	Washer, Flat, M6	2	GB/T 97.1
6	PRPW02895	Fuel Hose, $\phi 8$ x 620 mm	1	TG001-08062
7	PRFA00055	Bolt, M10 x 16 mm	2	GB/T 5783
8	PRFA00012	Washer, Lock, M10	2	GB/T 93
9	PRFA00011	Washer, Flat, M10	2	GB/T 97.1
10	PRPW00066	Fuel Pump	1	A30BJ5-30003
11	PRPW02896	Fuel Hose, $\phi 8$ x 290 mm	1	TG001-08029
12	PRPW02897	Strap, Fixed	2	B80G5-30300
13	PRPW02898	Pad, Tank	2	T160A5-30002
14	PRPW02706	Fuel Tank	1	B80G5-30100
15	PRPW00743	Fuel Filter	1	A30BJ5-30001 Included with Engine
16	PRPW01325	Clamp, Hose	2	A30BJ5-30007 Included with Engine
17	PRPW02899	Fuel Hose, $\phi 8$ x 820 mm	1	TG001-08082
18	PRPW02900	Fuel Hose, $\phi 8$ x 1610 mm	1	TG001-08161
19	PRPW02901	Solenoid Valve	1	A30BJ5-30002 Included with Engine
20	PRPW02902	Connector, Quick, Right-Angle	2	B80G5-30101
21	PRPW00056	Fuel Cap	1	A30A5-30100
22	PRPW02710	Fuel Level Sensor (On fuel tank)	1	T20G2-50100

EXHAUST SYSTEM

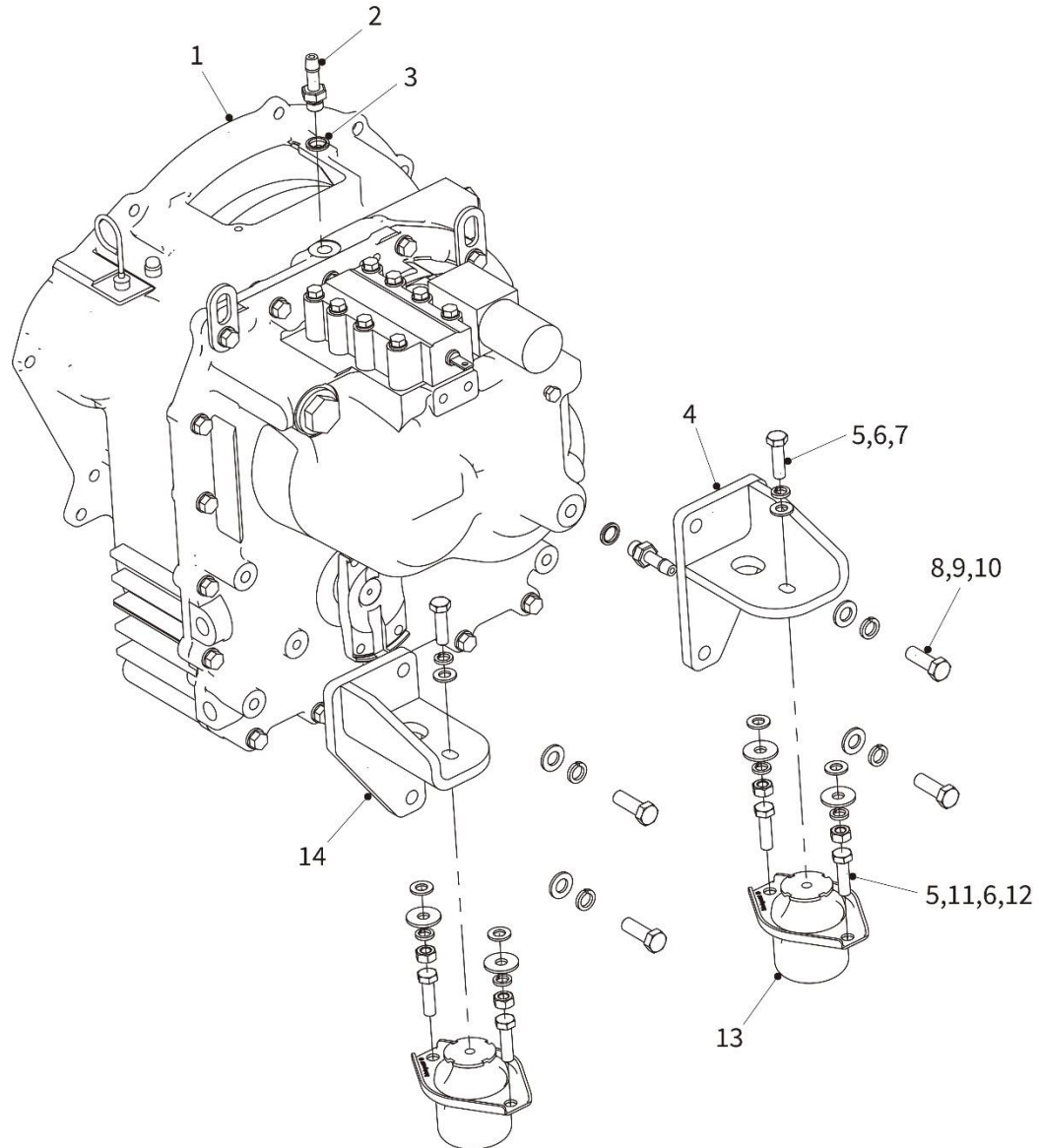


Exhaust System - Exploded Parts View

Exhaust System – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW00301	Gasket, Manifold to down pipe	1	A30BD5-20001
2	PRPW02767	Exhaust Pipe Assembly, Front	1	B80G5-20100
3	PRPW00754	Catalytic Converter	1	A30BJ5-20400 Included with Engine
4	PRPW00753	Heatshield	1	T20G5-20002
5	PRPW00755	Catalyst Support Bracket	1	T20L5-20300
6	PRPW00880	Clamp, Hose, 130 x 110 mm	2	JB/T 8870
7	PRPW00010	Washer, Lock, M8	13	GB/T 93
8	PRPW00009	Washer, Flat, M8	19	GB/T 97.1
9	PRFA00013	Bolt, M8 x 25 mm	6	GB/T 5783
10	PRPW0756	Gasket	2	A30BD5-20002
11	PRFA00021	Nut, M8	7	GB/T 6170
12	PRFA00047	Bolt, M8 x 35 mm	6	GB/T 5783
13	PRPW02768	Exhaust Pipe Assembly, Middle	1	B80G5-20200
14	PRPW02251	Exhaust Gasket	1	A30BL5-20002
15	PRPW02567	Exhaust Muffler - Diesel	1	B80D5-20200
16	PRFA00186	Nut, Self-locking, M8	2	GB/T 889.1
17	PRFA00009	Washer, Flat, M8	2	GB/T 96.1
18	PRPW00760	Rubber Mounting	4	A30A5-20001
19	PRFA00045	Washer, Special	2	A30A5-20003
20	PRFA00196	Bolt, Special	2	A30A5-20002
21	PRFA00257	Bolt, M8 x 45 mm	1	GB/T 5783
22	PRPW02905	Silencer Mounting Bracket	1	B80D5-20400
23	PRPW02906	Silencer Mounting Bracket	1	B80D5-20500

TRANSMISSION MOUNTING

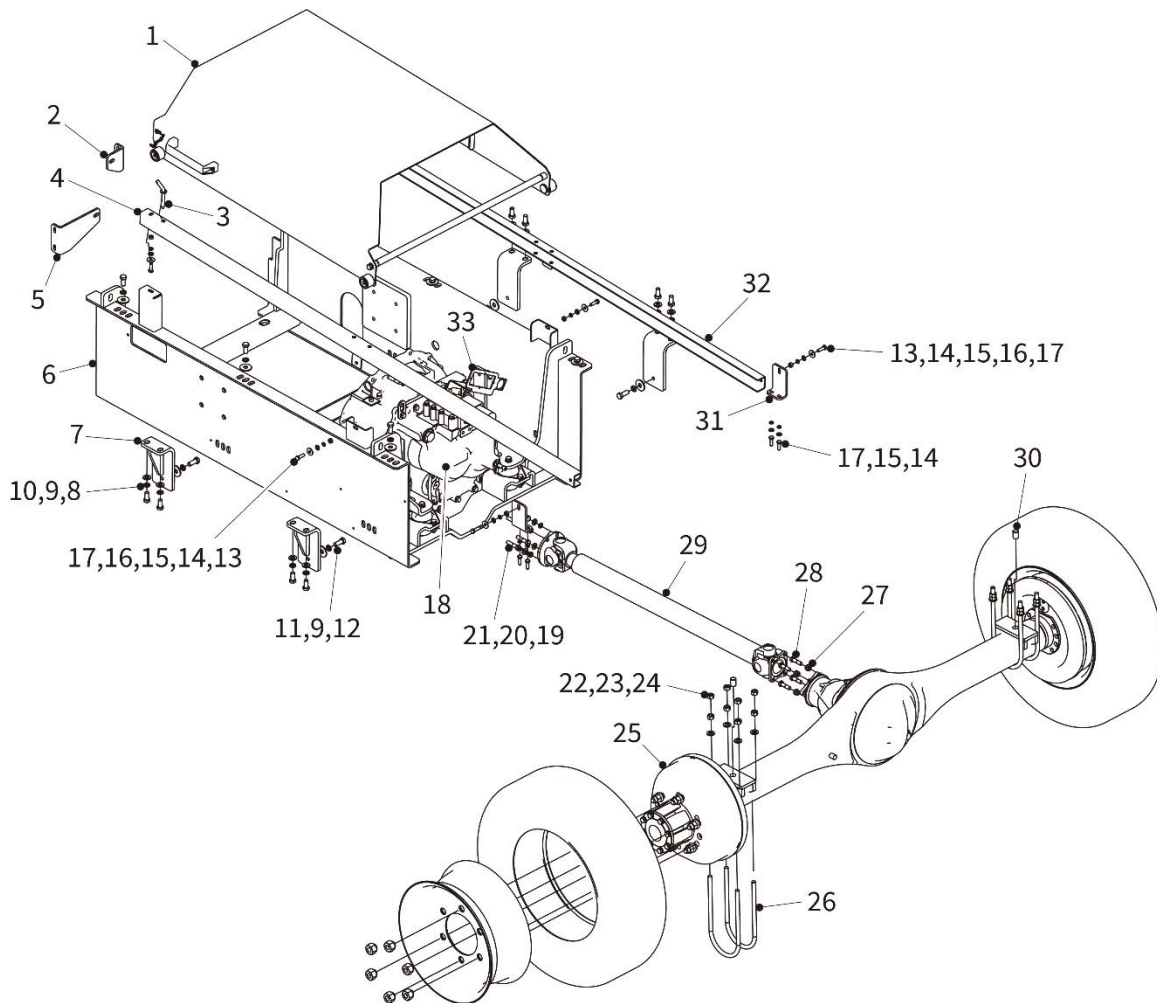


Automatic Transmission Mounting - Exploded Parts View

Automatic Transmission Mounting – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02907	Transmission Assembly	1	B80D5-00200
2	PRPW02908	Connector, Hydraulic, Straight	2	GJT-16-00
3	PRPW02909	Gasket, M14	2	JB/T 982
4	PRPW02910	Transmission Mounting Bracket, Right-Side	1	B80D5-50100R
5	PRFA00026	Bolt, M10 x 35 mm	6	GB/T 5783
6	PRFA00012	Washer, Lock, M10	6	GB/T 93
7	PRFA00011	Washer, Flat, M10	6	GB/T 97.1
8	PRFA00042	Bolt, M12 x 35 mm	4	GB/T 5783
9	PRFA00034	Washer, Lock, M12	4	GB/T 93
10	PRFA00030	Washer, Flat, M12	4	GB/T 97.1
11	PRFA00036	Nut, M10	4	GB/T 6170
12	PRFA00011	Washer, Flat, M10	4	GB/T 96
13	PRPW00767	Gearbox Mounting	2	A30EG5-10300
14	PRPW02911	Transmission Mounting Bracket, Left-Side	1	B80D5-50100L

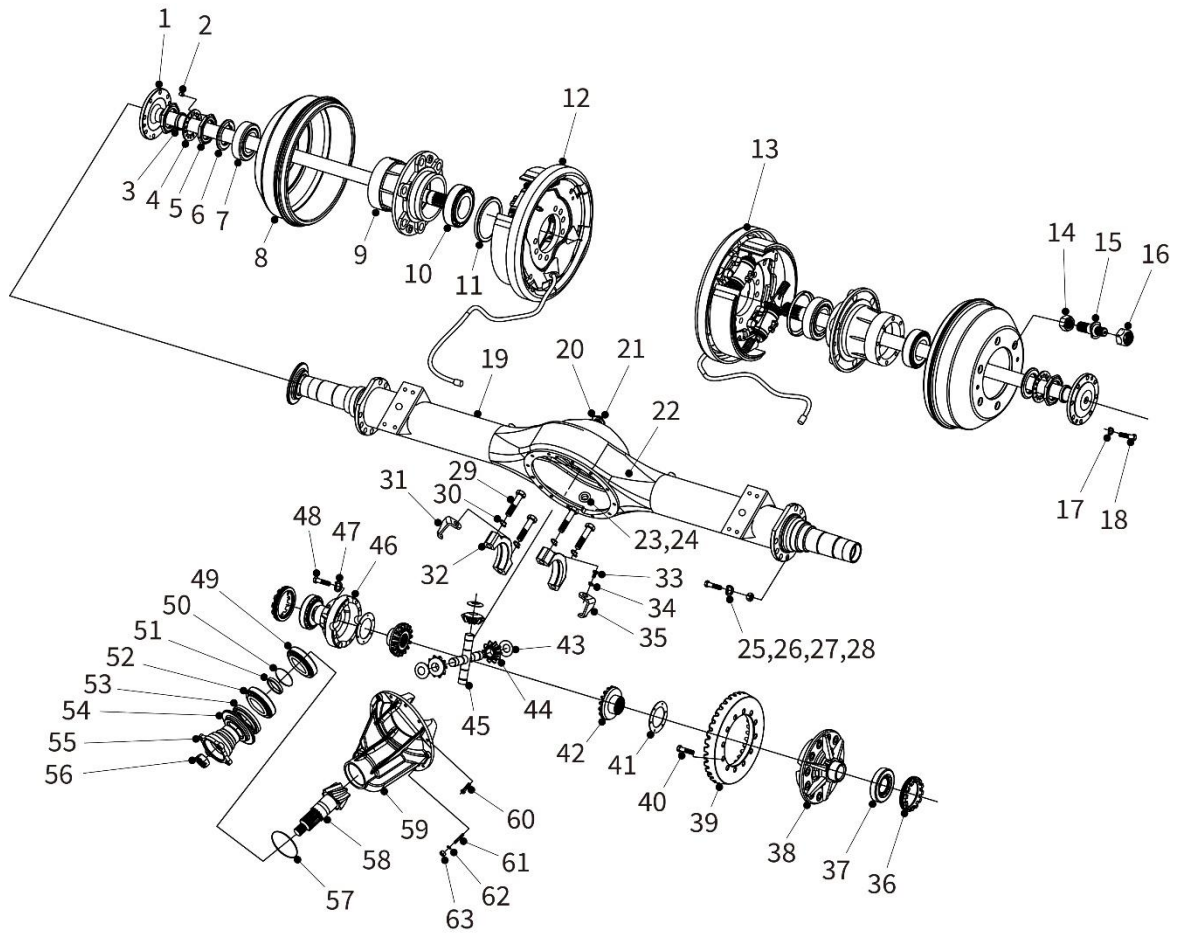
DRIVETRAIN



Drivetrain - Exploded Parts View

Drivetrain – Spare Parts List

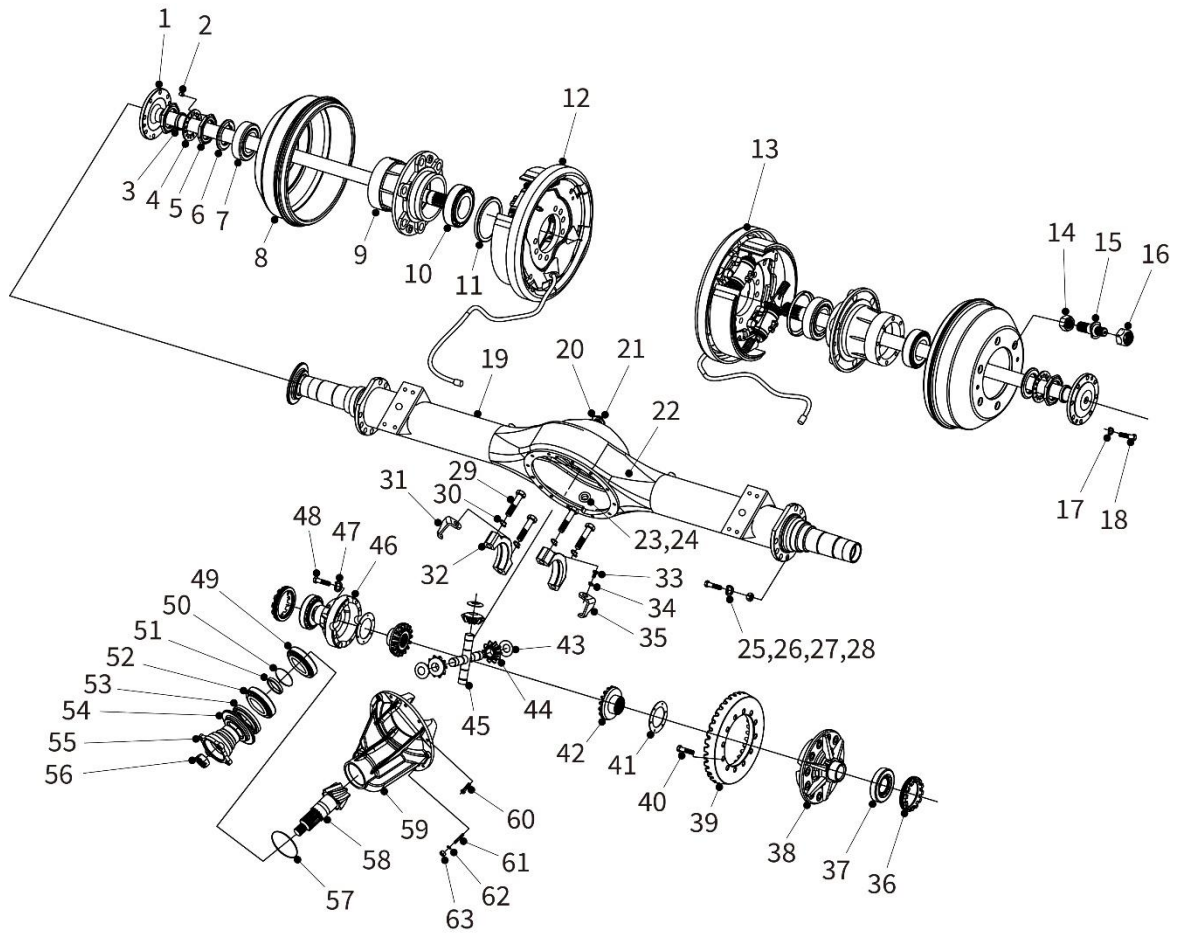
Item	Part No.	Description	Qty	Remarks
1	PRPW02912	Engine Hood	1	B80G5-00200
2	PRPW02913	Radiator Securing Plate, Right-Hand	1	B80G5-00001R
3	PRPW02914	Pin Assembly	1	B80G5-00900
4	PRPW02915	Side Rail Support, Left-Hand	1	B80G5-00700L
5	PRPW02916	Radiator Securing Plate, Left-Hand	1	B80G5-00001L
6	PRPW02917	Enclosure, Transmission and Engine	1	B80G5-00300
7	PRPW02918	Bracket, Engine Compartment	4	B80G5-00600
8	PRFA00258	Bolt, M12 x 25 mm	14	GB/T 5783
9	PRFA00034	Washer, Lock, M12	18	GB/T 93
10	PRFA00030	Washer, Flat, M12	8	GB/T 97.1
11	PRFA00030	Washer, Flat, M12	10	GB/T 96
12	PRFA00183	Bolt, M12 x 30 mm	4	GB/T 5783
13	PRFA00021	Nut, M8	6	GB/T 6170
14	PRFA00010	Washer, Lock, M8	10	GB/T 93
15	PRFA00009	Washer, Flat, M8	10	GB/T 97.1
16	PRFA00009	Washer, Flat, M8	6	GB/T 96
17	PRFA00013	Bolt, M8 x 25 mm	10	GB/T 5783
18	PRPW02919	Transmission Installation	1	B80D5-50000
19	PRFA00012	Washer, Lock, M10	4	GB/T 93
20	PRFA00011	Washer, Flat, M10	4	GB/T 97.1
21	PRFA00256	Bolt, Special	4	B80D5-00003
22	PRFA00073	Nut, Self-locking, M16	8	GB/T 889.1
23	PRFA00073	Nut, M16	8	GB/T 6170
24	PRFA00068	Washer, Flat, M16	8	GB/T 97.1
25	PRPW02920	Drive Axle, 5.83	1	B80D5-00100
26	PRPW02921	U Bolt	4	B80C5-00015
27	PRFA00036	Nut, Self-locking, M10	4	GB/T 889.1
28	PRFA00254	Bolt, Drive Shaft	4	B80A5-00003
29	PRPW00012	Drive Shaft Assembly	1	B80D5-00300
30	PRPW02922	Fixed Pin	2	B80D5-00001
31	PRPW02923	Plate	2	B80D5-00005
32	PRPW02924	Side Rail Support, Left-Hand	1	B80G5-00700R
33	PRPW02925	Support, Electrical	1	B80F5-00002



Drive Axle - Exploded Parts View

Drive Axle – Spare Parts List

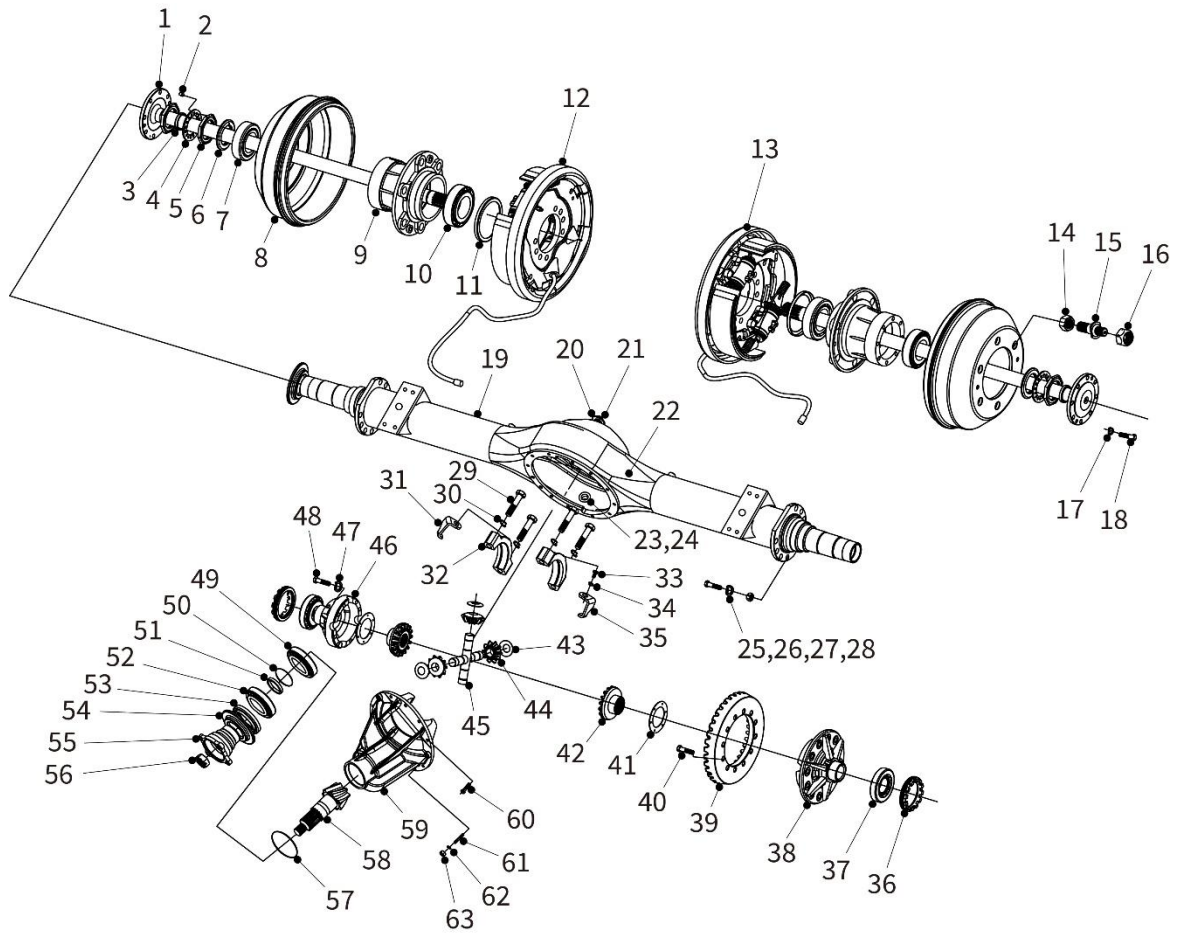
Item	Part No.	Description	Qty	Remarks
1	PRPW02926	Axle Shaft, Rear	2	B80D5-00101 2400005-HY430
2	PRPW02927	Cylindrical Pin	4	B80D5-00102 Q5210510
3	PRPW02928	Oil Seal, Inner	2	B80D5-00103 2400009-HY430
4	PRPW02929	Shaft Gasket	2	B80D5-00104 2400001-HY430
5	PRPW02930	Hub Bearing, Rear Axle	2	B80D5-00105 2400002-HY430
6	PRPW02931	Bush, Oil Seal	2	B80D5-00106 2400016-HY430
7	PRPW02933	Outer Wheel Bearing, Single Row Tapered Roller Bearing, Type 32211, i.d. 55 mm, o.d. 100 mm, total width 26.75 mm, inner ring chamfer 2.0 mm (min.), outer ring chamfer 1.5 mm (min.)	2	B80D5-00107
8	PRPW00446	Rear Brake Drum	2	B80D5-00108 3104102-HY450
9	PRPW02934	Rear Hub	2	B80D5-00109 3104101-HY450
10	PRPW02935	Inner Wheel Bearing, Single Row Tapered Roller Bearing, Type 32212, i.d. 60 mm, o.d. 110 mm, total width 29.75 mm, inner ring chamfer 2.0 mm (min.), outer ring chamfer 1.5 mm (min.)	2	B80D5-00110
11	PRPW02936	Oil Seal, Inner	2	B80D5-00111 3104104-HY430
12	PRPW00347	Rear Brake Assembly, Right-Hand	1	B80D5-00120R 3502200-HY430
13	PRPW00403	Rear Brake Assembly, Left-Hand	1	B80D5-00120L 3502100-HY430
14	PRPW02948	Wheel Nut, Inner	12	B80D5-00112 2431003-HY430
15	PRPW02904	Wheel Stud, Left-hand thread	6	B80D5-00113L
	PRPW02903	Wheel Stud, Right-hand thread	6	B80D5-00113R
16	PRPW02947	Wheel Nut, M18 x 25 mm, Left-hand thread	6	B80D5-00114L
	PRPW02949	Wheel Nut, M18 x 25 mm, Right-hand thread	6	B80D5-00114R



Drive Axle - Exploded Parts View

Drive Axle – Spare Parts List

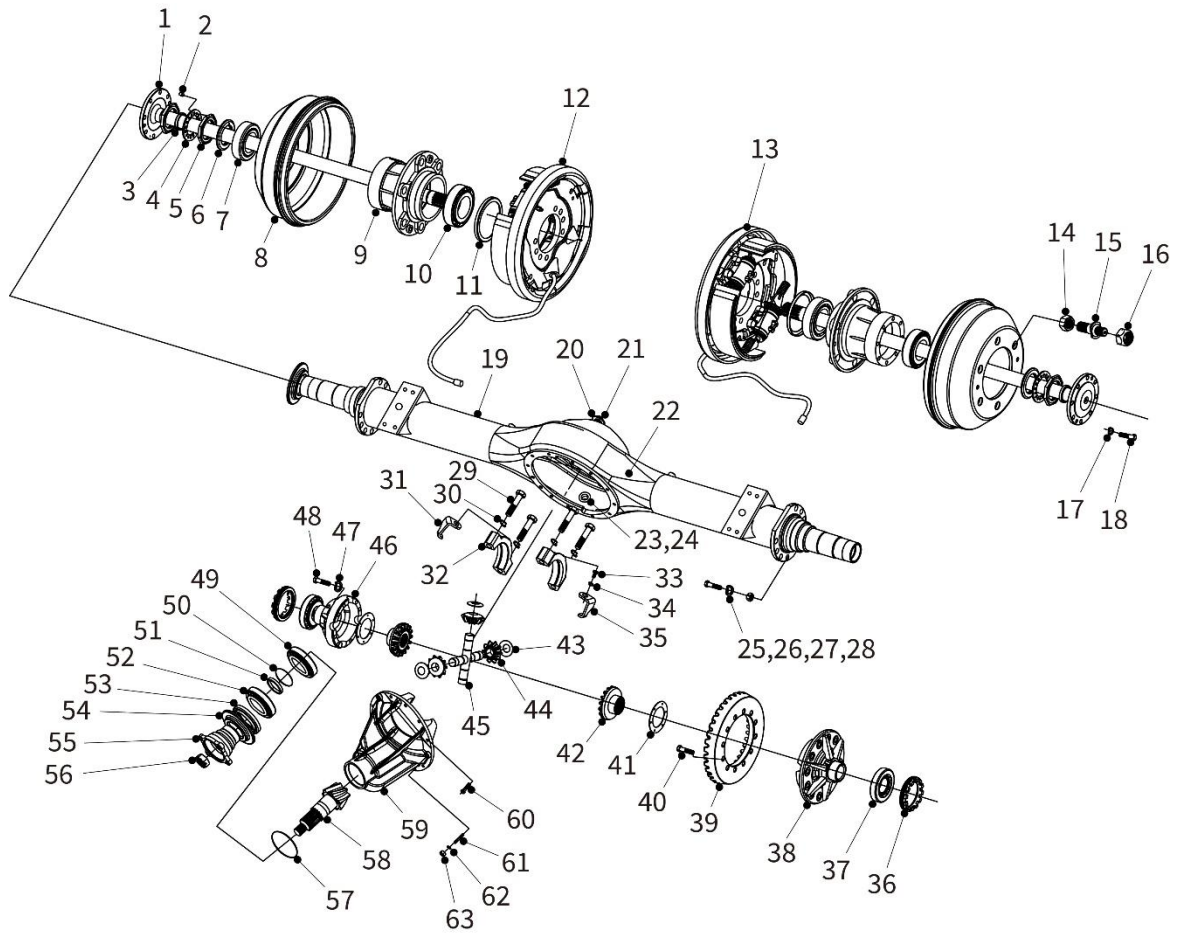
Item	Part No.	Description	Qty	Remarks
18	PRFA00259	Bolt, Shaft	16	B80D5-00116 Q150B1030
19	PRPW02937	Shell Assembly, Rear Axle	1	B80D5-00130 2401000-HY430JXX
20	PRPW02951	Sealing Washer	1	B80D5-00117 Q72320T5
21	PRPW02938	Oil Filler Plug	1	B80D5-00118 2400008-HY450
22	PRPW02939	Magnet, Metallic Debris Collection	1	B80D5-00121 Q62316
23	PRPW02953	Oil Plug, Type G1/8	1	B80D5-00119
24	PRPW02952	Sealing Washer	1	B80D5-00122 Q72316T5
25	PRFA00266	Bolt, Axle, Special, No. 1	8	B80D5-00123 2400007-HY430
26	PRFA00267	Bolt, Axle, Special, No. 2	8	B80D5-00124 2400008-HY430
27	PRFA00269	Spring Washer, Heavy duty, Special	16	Q40514
28	PRFA00270	Nut, Special	16	B80D5-00126 Q341B14
29	PRPW02954	Bolt, Bearing Cover	4	B80D5-00127 2402103-HY430
30	PRFA00269	Spring Washer, Heavy duty, Special	4	Q40514
31	PRPW02950	Shim, Right-hand, for Adjusting Nut	1	B80D5-00129 2402105R-HY450
32	PRPW02956	Cover, Bearing	2	B80D5-00131 2402102-HY430
33	PRFA00271	Bolt, Special	2	B80D5-00132 Q150B0816
34	PRFA00272	Washer, Spring	2	B80D5-00133 Q40308
35	PRPW02961	Shim, Left-hand, for Adjusting Nut	1	B80D5-00134 2402105L-HY450



Drive Axle - Exploded Parts View

Drive Axle – Spare Parts List

Item	Part No.	Description	Qty	Remarks
36	PRFA00251	Adjusting Nut	2	B80D5-00135 2402104-HY430
37	PRPW02962	Compensating Gear Bearing, Single Row Tapered Roller Bearing, Type 32210, i.d. 50 mm, o.d. 90 mm, total width 24.75 mm, inner ring chamfer 1.5 mm (min.), outer ring chamfer 1.5 mm (min.)	2	B80D5-00136
38	PRPW02964	Dispatch Gear, Left-hand	1	B80D5-00140L 2403102-HY430
39	PRPW03165	Driven Gear	1	B80D5-00137 2402252-HY430
40	PRFA00250	Bolt, Special	8	B80D5-00138 2403007-HY430
41	PRPW03166	Spacer	2	B80D5-00139 2403002-HY430
42	PRPW03167	Gear	2	B80D5-00141 2403001-HY430
43	PRPW03168	Shim	4	B80D5-00142 2403003-HY430
44	PRPW03169	Epicyclic Gear	4	B80D5-00143 2403005-HY430
45	PRPW03170	Gear Axle	2	B80D5-00144 2403004-HY430
46	PRPW03171	Dispatch Gear, Right-hand	1	B80D5-00140R 2403101-HY430
47	PRFA00314	Spring Washer, Heavy duty, Special, Type Q40510	8	B80D5-00115
48	PRFA00315	Bolt, Compensating Gear	8	B80D5-00146 2403103-HY430
49	PRPW03172	Single Row Tapered Roller Bearing, Type 30307, i.d. 35 mm, o.d. 80 mm, total width 22.75 mm, inner ring chamfer 2.0 mm (min.), outer ring chamfer 1.5 mm (min.)	1	B80D5-00147
50	PRPW03173	Shim	As reqd.	B80D5-00148 2402207-HY430

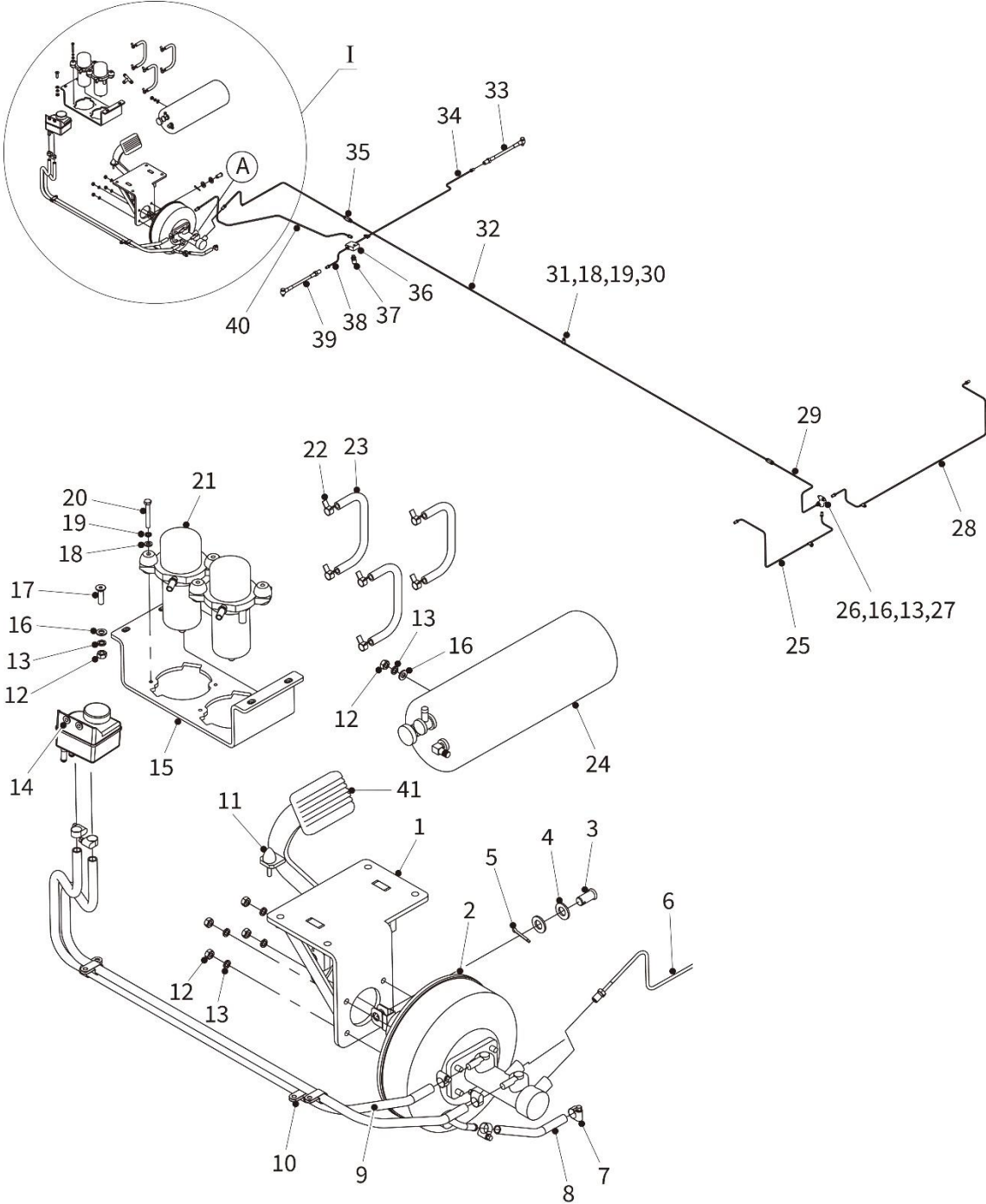


Drive Axle - Exploded Parts View

Drive Axle – Spare Parts List

Item	Part No.	Description	Qty	Remarks
51	PRPW03174	Spacer	1	B80D5-00149 2402202-HY430
52	PRPW03175	Shim	As reqd.	B80D5-00151 2402215-HY430
53	PRPW03176	Seal	1	B80D5-00152 2402204-HY430
54	PRPW03177	Dust Cover, Differential Flange	1	B80D5-00153 2402262-HY430
55	PRPW03178	Flange, Differential	1	B80D5-00154 2401201-HY430
56	PRFA00316	Nut, Special	1	B80D5-00155 2402203-HY430
57	PRPW03179	Shim	1	B80D5-00156
58	PRPW03180	Pinion Gear	1	B80D5-00157 2402251-HY430
59	PRPW03181	Housing, Differential	1	B80D5-00150 2402101-HY430
60	PRFA00293	Bolt, Special	10	B80D5-00158 Q151B0825
61	PRFA00294	Bolt, Special	2	B80D5-00159 Q129A0835
62	PRFA00260	Spring Washer, Heavy duty, Special	12	B80D5-00160 Q40510
63	PRFA00209	Nut, Special	2	B80D5-00161 Q340B08

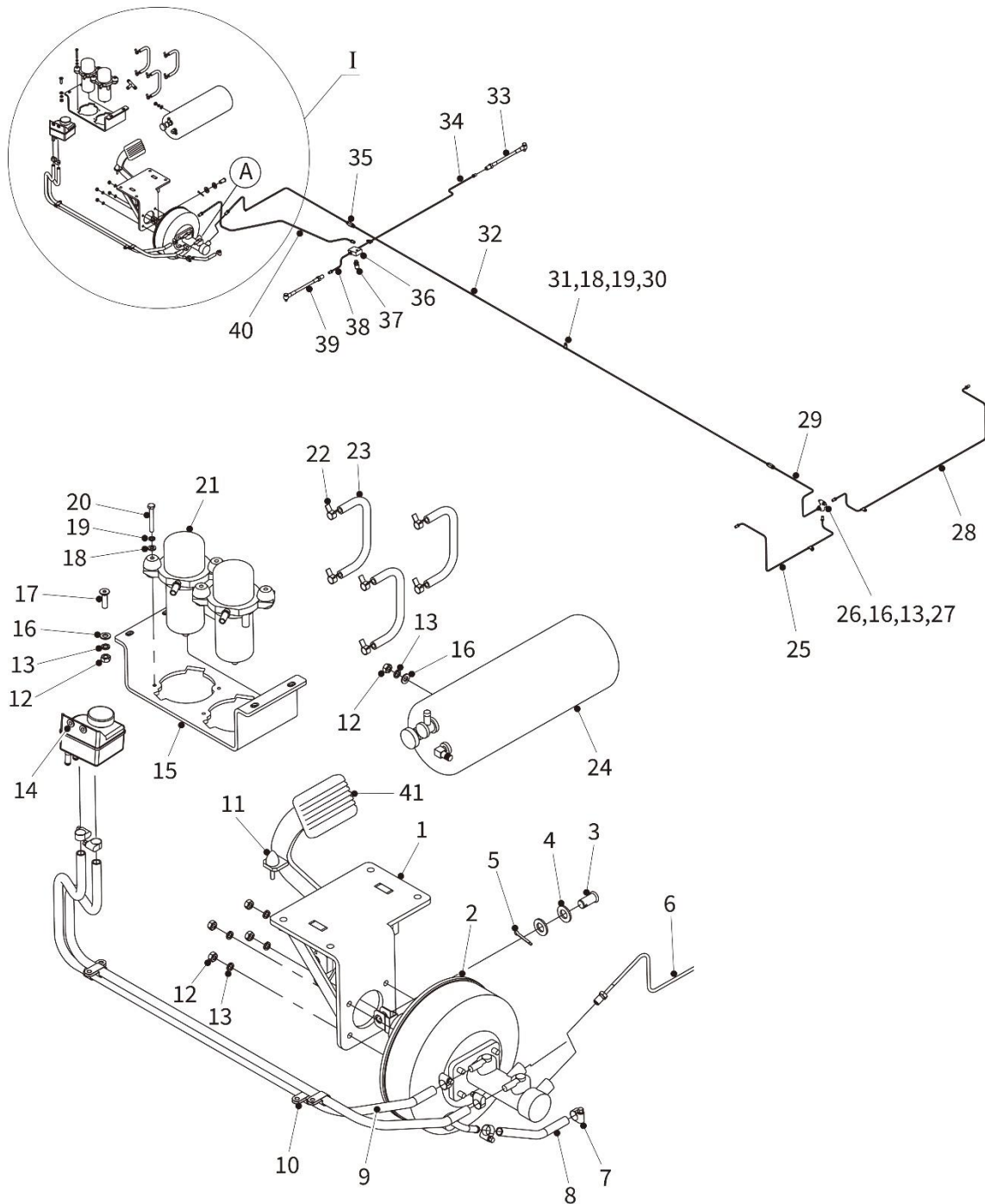
BRAKING SYSTEM



Brake System - Exploded Parts View

Brake System – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW03184	Foot Brake Support Assembly	1	B80D7-11000
2	PRPW03185	Brake Master Cylinder Assembly	1	T25G7-10100 c/w with Brake Vacuum Booster
3	T20G7-10100-3	Pin. Special	1	Supplied with P/N T20G7-10100
4	PRFA00072	Washer, Flat, M14	2	GB/T 97.1
5	PRPW03186	Split Cotter Pin	1	T20G7-10100-5 Supplied with P/N T20G7-10100
6	PRPW03187	Brake Pipe D	1	B80Z7-10500
7	PRPW00879	Clip, Hose, 16 x 10 mm	6	JB/T 8870
8	PRPW03188	Hose, Brake, $\phi 10 \times 500$ mm	1	TG000-10050
9	PRPW03189	Hose, Brake, $\phi 10 \times 1120$ mm	2	TG000-10112
10	PRPW03190	Hose Clamp, 16 mm	4	D30A1-11004
11	PRPW03191	Cone Pad	1	D15G1-20009
12	PRFA00021	Nut, M8	6	GB/T 6170
13	PRFA00010	Washer, Lock, M8	8	GB/T 93
14	PRPW03192	Brake Fluid Reservoir	1	T20G7-10200
15	PRPW03193	Bracket, Fixed	1	B80F7-10001
16	PRFA00009	Washer, Flat, M8	4	GB/T 97.1
17	PRFA00312	Screw, Hex Socket Countersunk Head, M8 x 20 mm	1	GB/T 70.3
18	PRFA00006	Washer, Flat, M6	14	GB/T 97.1
19	PRFA00007	Washer, Lock, M6	14	GB/T 93
20	PRFA00064	Bolt, M6 x 45mm	4	GB/T 5783
21	PRPW00057	Vacuum Pump	2	T20G7-10300
22	PRPW03194	Clamp, Hose, dia. 11 mm	6	QC/T 621
23	PRPW00819	Tube, dia. 7mm	3	T20G7-10011
24	PRPW00822	Vacuum Accumulator Tank	1	T20G7-10400
25	PRPW03195	Brake Pipe, G	1	B80Z7-10800
26	PRPW03196	Connector, Hydraulic, Three-Way	2	A45G7-10003
27	PRFA00047	Bolt, M8 x 35mm	2	GB/T 5783
28	PRPW03197	Brake Pipe, H	1	B80Z7-10900

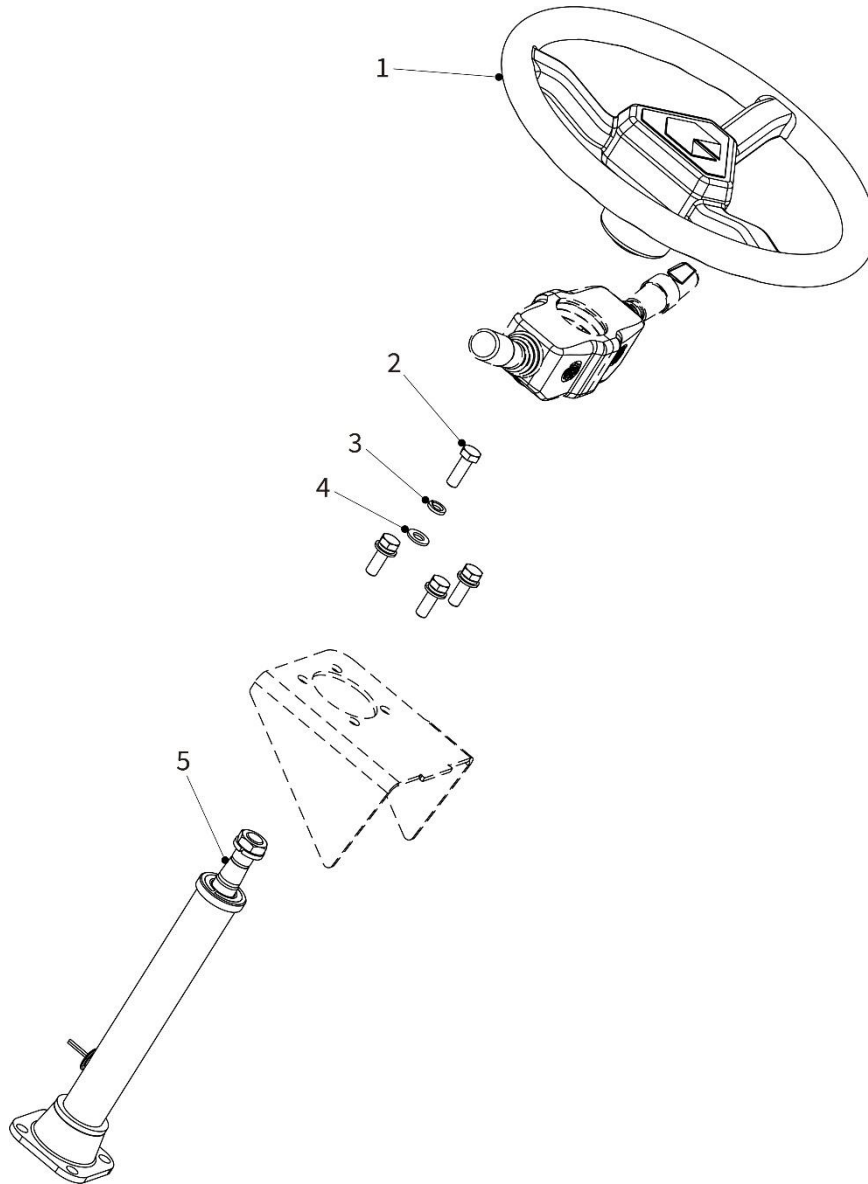


Brake System - Exploded Parts View

Brake System – Spare Parts List

Item	Part No.	Description	Qty	Remarks
29	PRPW03198	Brake Pipe, F	1	B80Z7-10700
30	PRFA00130	Bolt, M6 x 12 mm	10	GB/T 5783
31	PRPW00814	Clamp, Brake Pipe, $\phi 6$	10	8JF08-00615
32	PRPW03199	Brake Pipe, E	1	B80Z7-10600
33	PRPW03200	Brake Hose	1	B80Z7-11400
34	PRPW03201	Brake Pipe, C	1	B80X7-10300
35	PRPW03202	Connector, Straight	2	GJT-778-00
36	PRPW03203	Connector, Brake	1	GJT-306-00
37	PRPW03204	Test Point, Hydraulic	1	GJT-788-00
38	PRPW03205	Brake Pipe, B	1	B80X7-10200
39	PRPW03206	Brake Hose	1	B80Z7-11300
40	PRPW03207	Brake Pipe, A	1	B80X7-10100
41	PRPW03211	Brake Pedal Rubber Cover	1	B80D7-11000-XJT

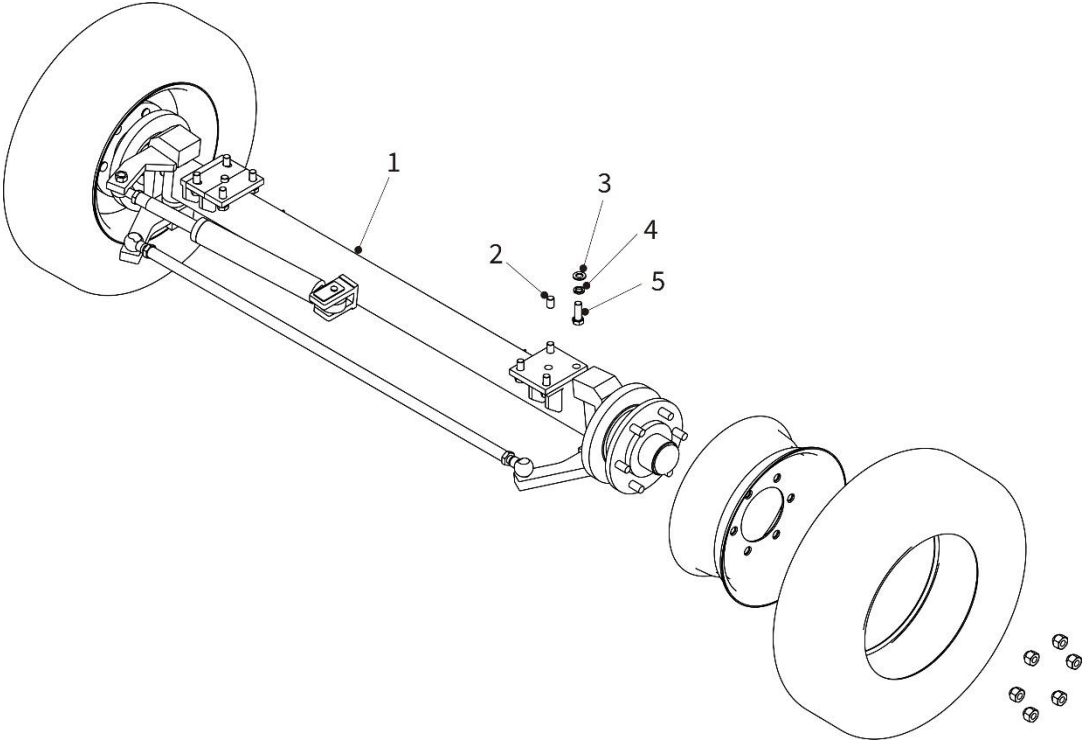
STEERING SYSTEM



Steering Column - Exploded Parts View

Steering Column – Spare Parts List

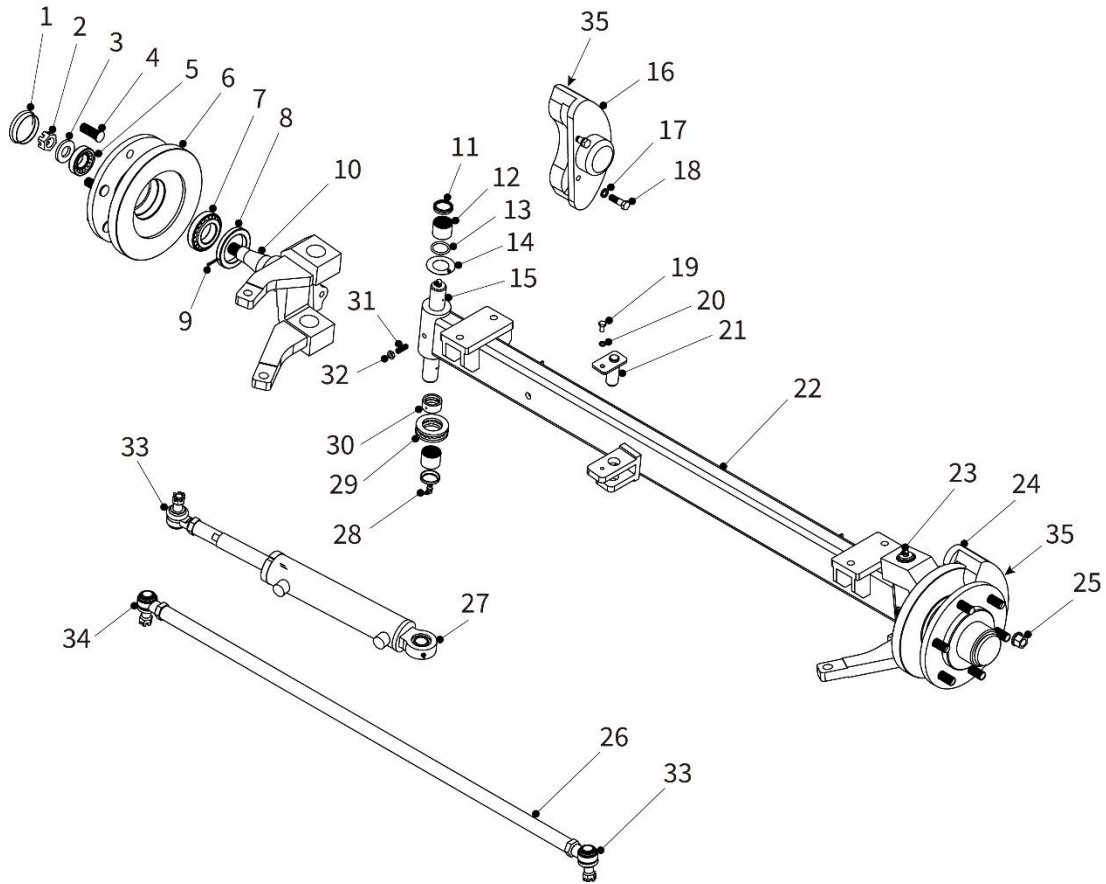
Item	Part No.	Description	Qty	Remarks
1	PRPW00192	Steering Wheel Assembly	1	T20G6-00400
2	PRFA00008	Bolt, M10 x 30 mm	4	GB/T 5783
3	PRFA00012	Washer, Lock, M10	4	GB/T 93
4	PRFA00011	Washer, Flat, M10	4	GB/T 97.1
5	PRPW02965	Steering Column Assembly	1	B80Y6-00100



Steering Axle Assembly - Exploded Parts View

Steering Axle Assembly – Spare Parts List

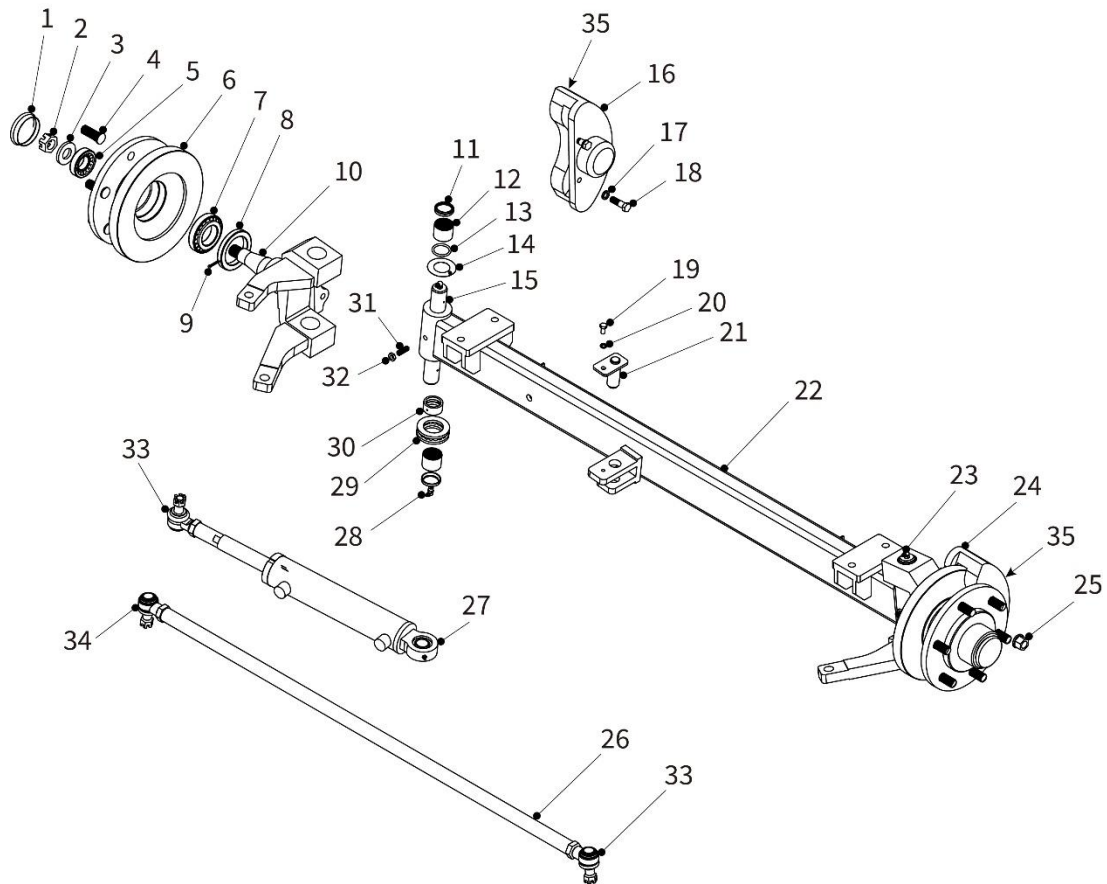
Item	Part No.	Description	Qty	Remarks
1	PRPW02966	Steering Axle	1	B80A6-10100
2	PRFA00273	Pin	2	B80D5-00001
3	PRFA00068	Washer, Flat, M16	8	GB/T 97.1
4	PRFA00069	Washer, Lock, M16	8	GB/T 93
5	PRFA00274	Bolt, M16 x 45 mm	8	GB/T 5783



Steering Axle - Exploded Parts View

Steering Axle – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02967	Cap	2	B80A6-10101 22194-32361N
2	PRFA00275	Nut, M24 x 2 mm	2	B80A6-10102 24234-32311
3	PRFA00276	Nut, 26 x 50 x 6 mm	2	B80A6-10103 300-07630
4	PRFA00277	Bolt, M18 x 50 x 1.5 mm	12	B80A6-10104 5400033-113G
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	GB/T 297 Z-32206
6	PRPW02969	Front Hub	2	B80A6-10105 5400033-120
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	GB/T 297 Z-30209
8	PRPW02971	Seal, Oil, 65 x 90 x 12 mm	2	B80A6-10106 5400033-117
9	PRFA00278	Pin, 5 x 45 mm	2	GB/T 119.1 B3010-05045
10	PRPW02972	Knuckle, Left-Hand	1	B80A6-10110(L) 5400033-200
11	PRPW02973	Seal, Oil	4	B80A6-10107 23654-32081
12	PRPW02974	Needle Roller Bearing, Type 943/32, i.d. 32 mm, o.d. 39 mm, width 32 mm	4	GB/T 290 Z-943/32
13	PRPW02975	O-Ring, dia. 31.80 mm x 4.80 mm	2	GB/T 3452.1 23654-32161
14	PRPW02976	Shim	2	B80A6-10108 22214-30321
15	PRFA00279	Pin, Special	2	B80A6-10109 5400033-121
16	PRPW02977	Wheel Brake Assembly, Left-Hand (Comes complete with set of Brake Pads)	1	B80A6-10120L 5400033-118L
17	PRFA00034	Washer, Lock, M12	4	GB/T 93
18	PRFA00134	Bolt, M12 x 1.25 x 40 mm	4	GB/T 5783 5400033-230

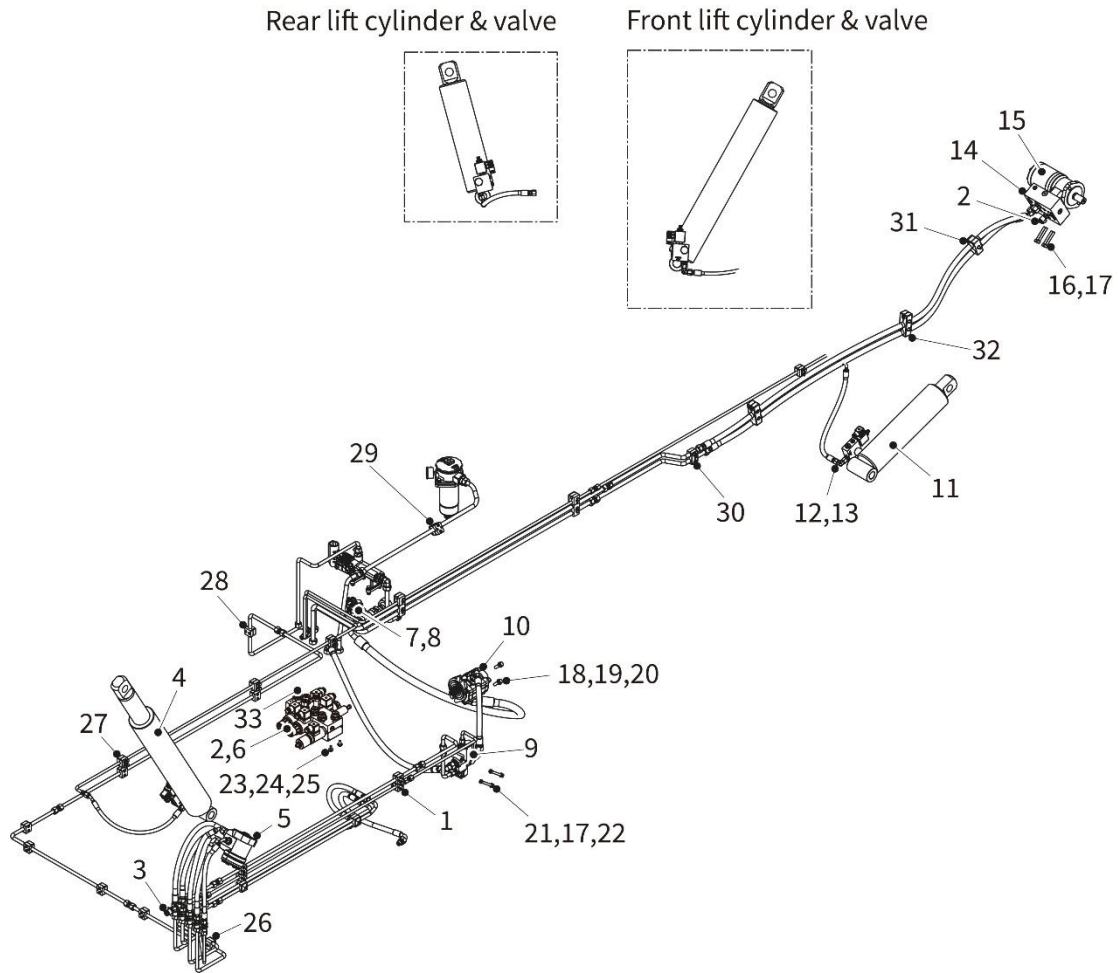


Steering Axle - Exploded Parts View

Steering Axle – Spare Parts List

Item	Part No.	Description	Qty	Remarks
19	PRFA00061	Bolt, M8 x 16mm	1	GB/T 5783
20	PRFA00010	Washer, Lock, M8	1	GB/T 93
21	PRFA00281	Pin, Special	1	B80A6-10111 5400033-115
22	PRPW02978	Front Axle	1	B80A6-10112 LH24-100
23	PRPW02979	Knuckle, Right-Hand	1	B80A6-10110(R) 5400033-210
24	PRPW02980	Wheel Brake Assembly, Right-Hand (Comes complete with set of Brake Pads)	1	B80A6-10120R 5400033-118R
25	PRFA00282	Rim Bolt, M18 x 25 mm	12	GB/T 5782 5400033-114
26	PRPW02981	Track Rod	1	B80A6-10113 5400033-220-01
27	PRPW02982	Steering Cylinder	1	B80A6-10130 6700094
28	PRPW02983	Grease Nipple, 90 deg	4	ZBT33001.2 Q701B90
29	PRPW02984	Thrust Ball Bearing, Type 198908K, i.d. 38.5 mm, o.d. 66.7 mm, width 18 mm	2	GB/T 301 Z-198908K
30	PRPW02985	Bushing, Thrust Bearing, Type A21B4-12001	2	B80A6-10114 A21B4-12001
31	PRFA00283	Screw, M10 x 25 mm	2	GB/T 778 B8050-10025
32	PRFA00036	Nut, M10	2	GB/T 6170
33	PRPW02986	Ball Joint, Right-Hand	2	B80A6-10115 24234-32381-B
34	PRPW02987	Ball Joint, left-Hand	1	B80A6-10116 24234-32381-A
Not shown	PRPW00305	Front Brake Pad Kit	2	B80A6-10120- TIPIAN Set of 2 Brake Pads

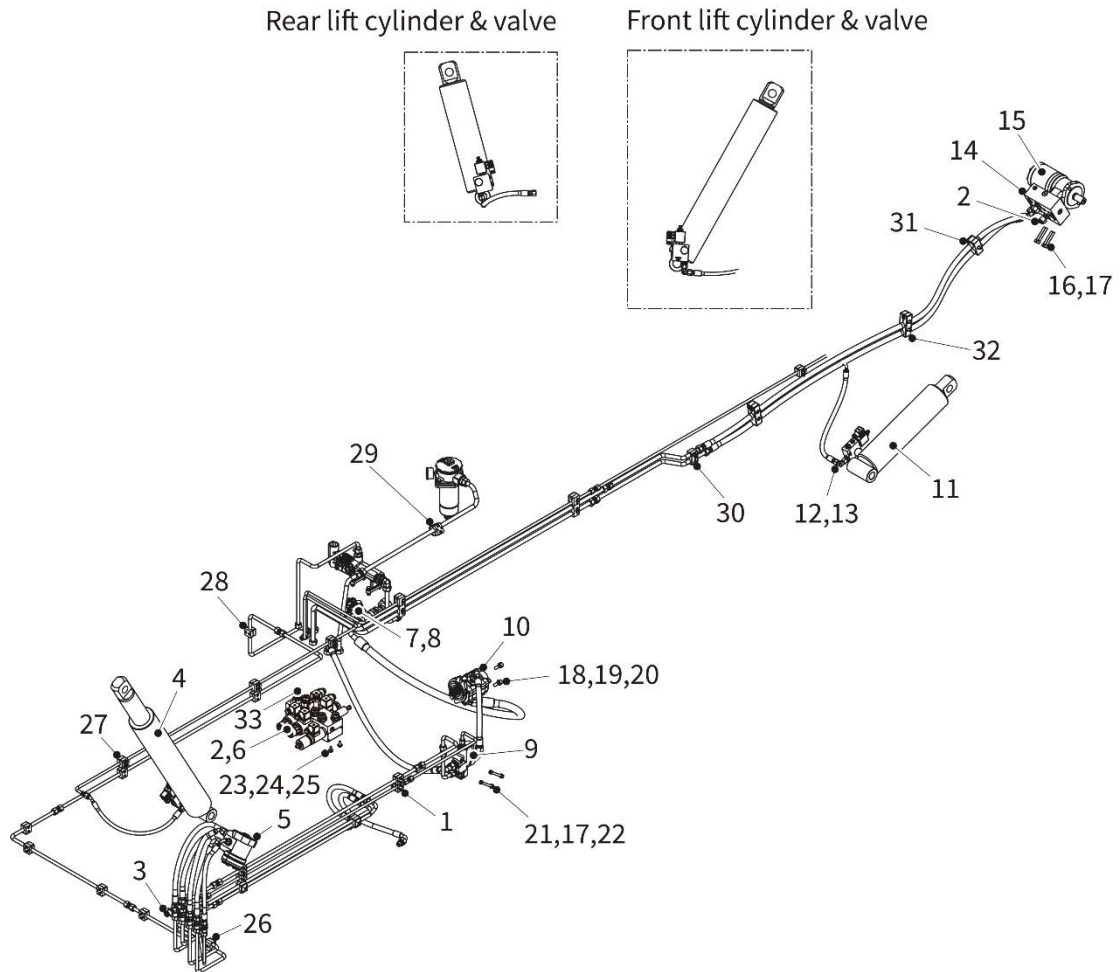
HYDRAULIC SYSTEM



Hydraulic System - Exploded Parts View

Hydraulic System – Spare Parts List

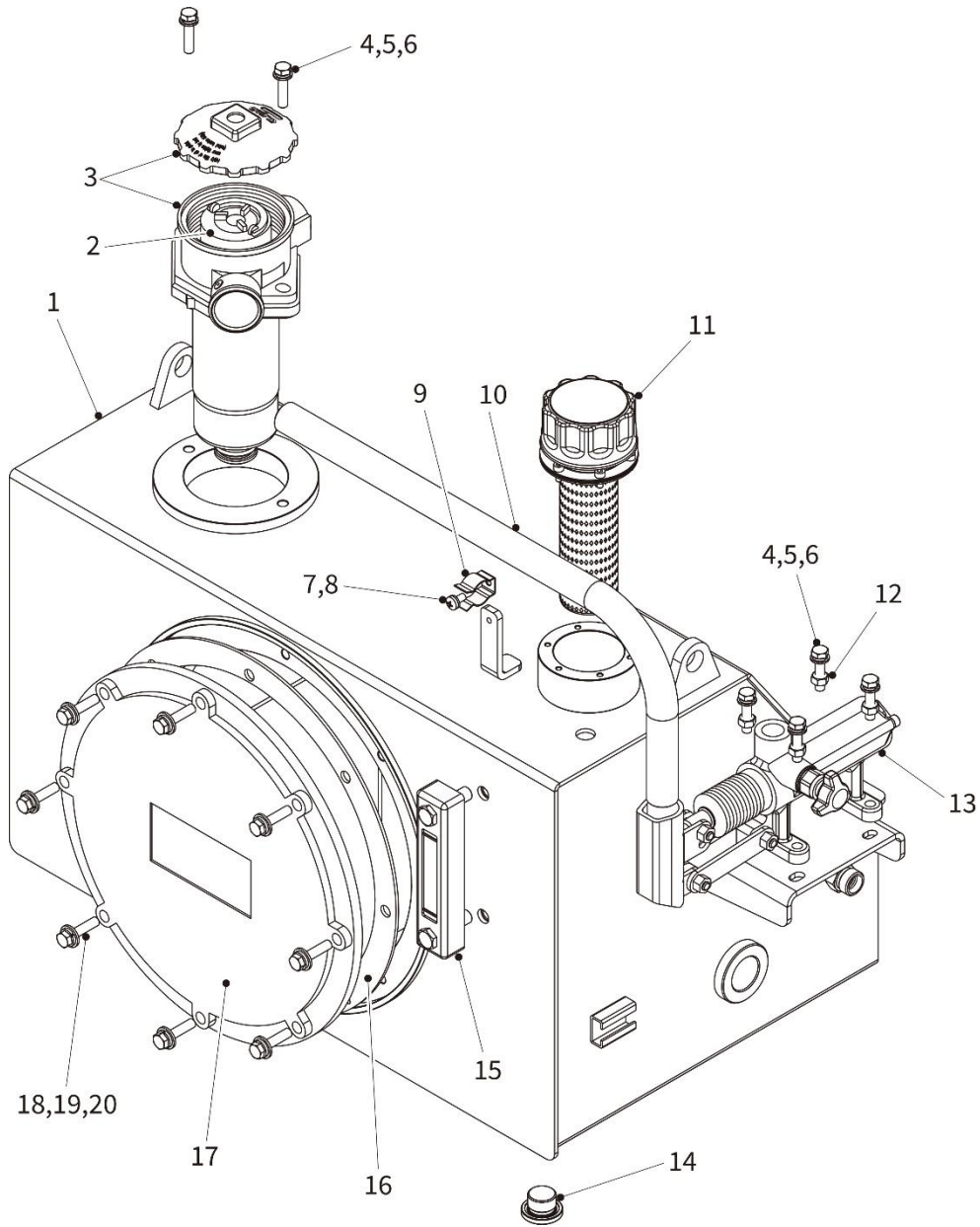
Item	Part No.	Description	Qty	Remarks
1	PRPW02988	Hydraulic System Piping, complete (NOTE: a complete set of hydraulic piping is NOT available as a replacement part)	1	B80G4-10000-A
2	PRPW02989	Test Point, Hydraulic, G1/4	2	GJT-788-02
3	PRPW02990	Test Point, Hydraulic	1	GJT-788-10
4	PRPW02991	Front Hydraulic Lift Cylinder	1	B80C4-10200
5	PRPW02992	Steering Unit	1	HS1-100-LS-G-1
6	PRPW02993	Integrated Hydraulic Valve Assembly	1	HV01-40-E12-1
7	PRPW02994	Shut-Off Valve	1	HV13-25-ZG1-1
8	PRPW02995	Hydraulic Transition Joint	1	GJT-1TH-16-330G
9	PRPW02996	Priority Valve	1	HV04-40-G-1
10	PRPW02997	Gear Pump	1	B80G4-20200
11	PRPW02998	Rear Hydraulic Lift Cylinder	1	B80C4-10100
12	PRPW02999	Solenoid Valve Assembly	2	HV02-20-E12-1
13	PRFA00284	Bolt, Hinged, for Solenoid Valve Assembly	2	GJT-720B-06-L41
14	PRPW03000	Balance Valve	1	HV09-60-S-1
15	PRPW03001	Hydraulic Motor	1	B80F4-00100
16	PRFA00285	Screw, Hex Socket Head Cap, M8 x 60 mm	4	GB/T 70.1
17	PRFA00010	Washer, Lock, M8	4	GB/T 93
18	PRFA00008	Bolt, M10 x 30 mm	2	GB/T 5783
19	PRFA00012	Washer, Lock, M10	2	GB/T 93
20	PRFA00011	Washer, Flat, M10	2	GB/T 97.1
21	PRFA00286	Bolt, M8 x 60 mm	2	GB/T 5783
22	PRFA00009	Washer, Flat, M8	2	GB/T 97.1
23	PRFA00001	Bolt, M6 x 20 mm	4	GB/T 5783
24	PRFA00007	Washer, Lock, M6	4	GB/T 93
25	PRFA00006	Washer, Flat, M6	4	GB/T 96
26	PRPW03002	Pipe Clamp, Double, M12	4	SHTPG3-112
27	PRPW03003	Pipe Clamp, Single, M10	8	SHLPG9-110
28	PRPW03004	Pipe Clamp, Single, M12	11	SHLPG9-112
29	PRPW03005	Pipe Clamp, Single, M15	1	SHLPG9-215
30	PRPW03006	Pipe Clamp, Double, M15	3	SHTPG3-215



Hydraulic System - Exploded Parts View

Hydraulic System – Spare Parts List

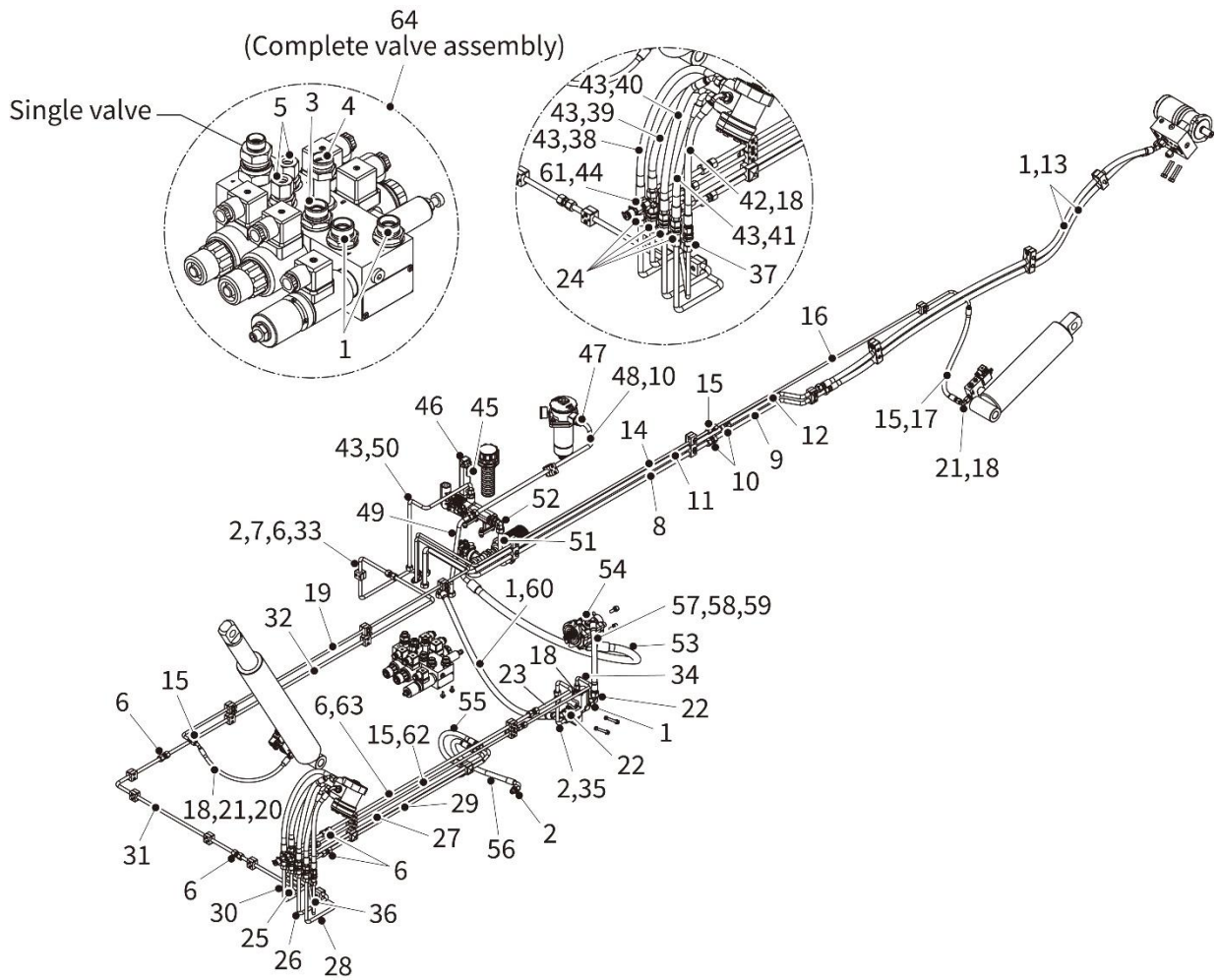
Item	Part No.	Description	Qty	Remarks
31	PRPW03007	Pipe Clamp, Triple, M21.3	1	SHTPG3-321.3
32	PRPW03008	Pipe Clamp	4	B80Y4-10101
33	PRPW03009	Check Valve	1	HV08-30-G3/8-1
34	TBA	O-ring Seal, Gear Pump, input port, size G ½ in. x 14	1	
35	TBA	O-ring Seal, Gear Pump, output port, size G 1 in. x 1	1	



Hydraulic Oil Tank - Exploded Parts View

Hydraulic Oil Tank – Spare Parts List

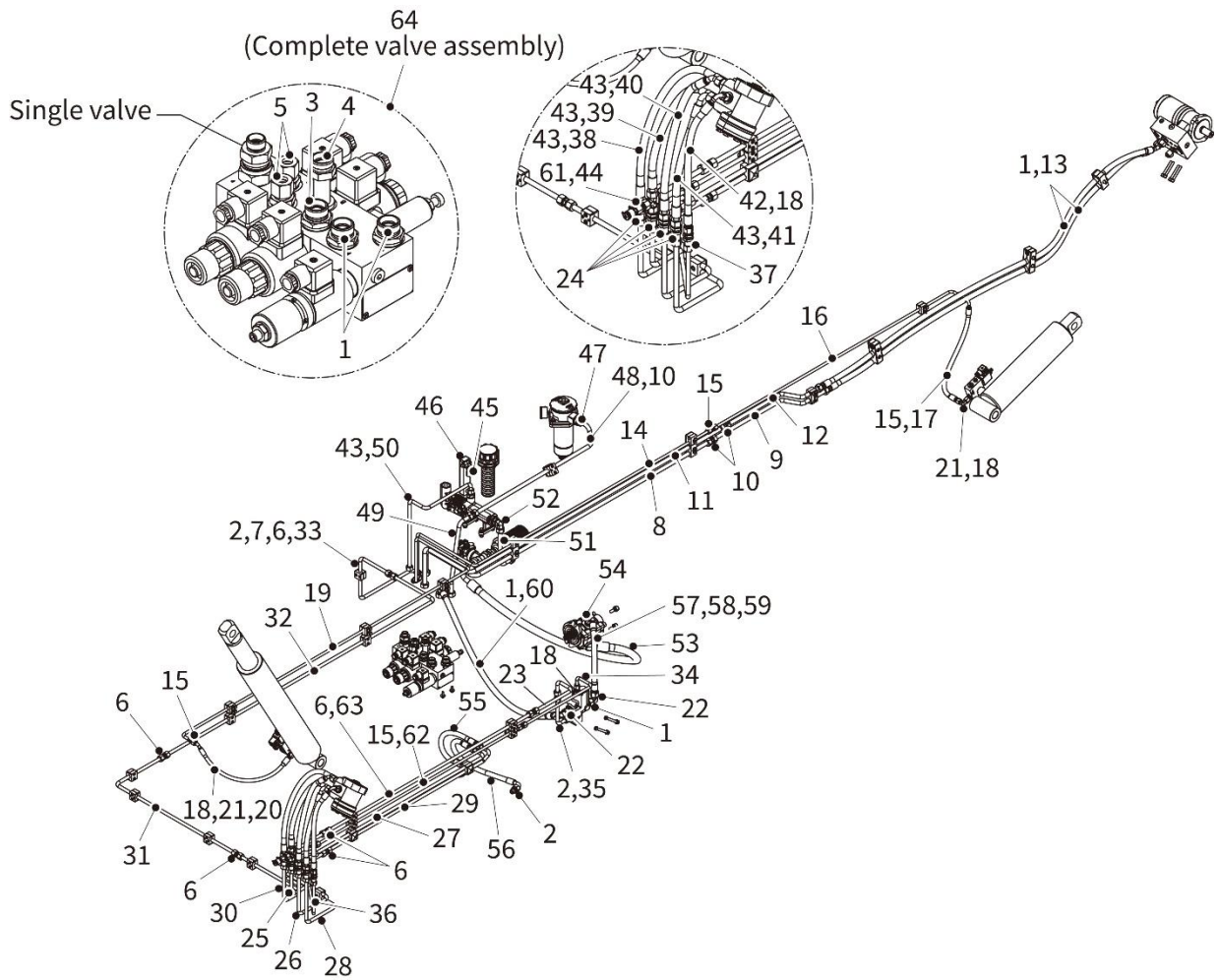
Item	Part No.	Description	Qty	Remarks
1	PRPW03010	Oil Tank, Welded	1	B80Y4-51000
2	PRPW03011	Filter Element, Hydraulic	1	RAE0120F010N US manuf P/N
3	PRPW03012	Oil Return Filter Assembly	1	HF02-120 x 10-1
4	PRFA00047	Bolt, M8 x 35 mm	6	GB/T 5783
5	PRFA00010	Washer, Lock, M8	6	GB/T 93
6	PRFA00009	Washer, Flat, M8	6	GB/T 97.1
7	PRFA00287	Screw, Cross Recessed Pan Head, M6 x 12 mm	1	GB/T 818
8	PRFA00006	Washer, Flat, M6	1	GB/T 97.1
9	PRPW03013	Pipe Clamp	1	B80D1-10007
10	PRPW03014	Lever	1	B80Y4-50100
11	PRPW03015	Air Breather	1	HF04-450 x 10-1
12	PRFA00021	Nut, M8	4	GB/T 6170
13	PRPW03016	Emergency Hydraulic Hand Pump	1	HP04-50-0G-1
14	PRPW00751	Oil Drain Plug	1	A30A4-50002
15	PRPW03017	Fluid Level Gauge	1	HF05-127 x M12-1
16	PRPW03018	Access Cover Gasket, 300 x 5.3 mm	1	8KB00-80053 GB/T 3452.1
17	PRPW3019	Access Cover	1	YG-350
18	PRFA00026	Bolt, M10 x 35 mm	8	GB/T 5783
19	PRFA00012	Washer, Lock, M10	8	GB/T 93
20	PRFA00011	Washer, Flat, M10	8	GB/T 97.1
21 (Not shown)	HF01-150 x 250-1	Oil Suction Strainer	1	Located inside hydraulic oil tank



Hydraulic Piping - Exploded Parts View

Hydraulic Piping – Spare Parts List

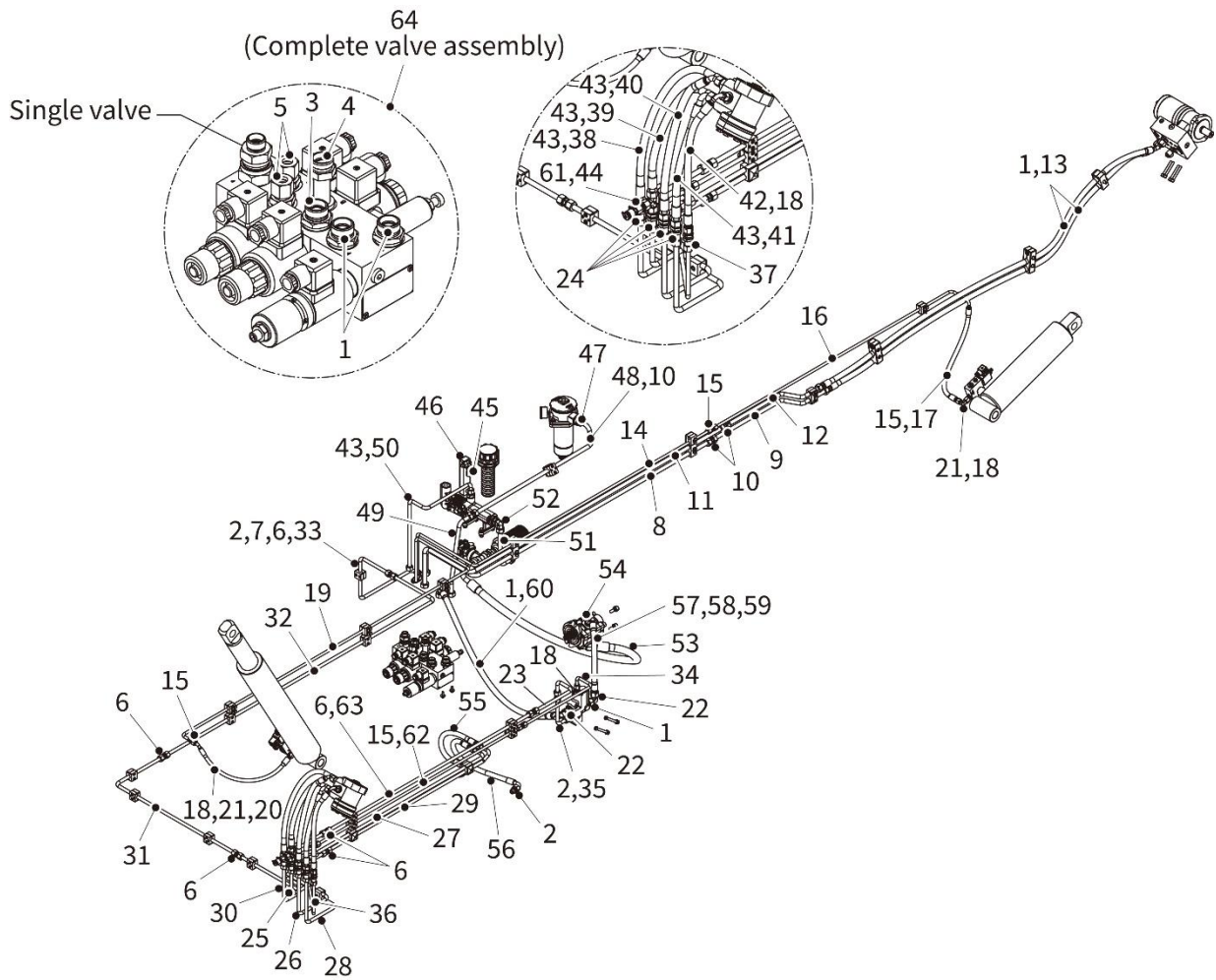
Item	Part No.	Description	Qty	Remarks
1	PRPW03020	Hydraulic Stud Fitting Adapter, Metric to BSP with captive seal, metric thread M22 x 1.5, BSP thread G1/2 in. x 14, pipe o.d. 15 mm	6	GJT-1CB-22-08WD
2	PRPW03021	Hydraulic Stud Fitting Adapter, Metric to BSP with captive seal, metric thread M18 x 1.5, BSP thread G3/8 in. x 19, pipe o.d. 12 mm	4	GJT-1CB-18-06WD
3	PRPW03022	Hydraulic Stud Fitting Adapter, Metric to BSP with captive seal, metric thread M22 x 1.5, BSP thread G3/8 in. x 19, pipe o.d. 15 mm	1	GJT-1CB-22-06WD
4	PRPW03023	C, Metric to BSP with captive seal, metric thread M22 x 1.5, BSP thread G3/8 in. x 19, pipe o.d. 15 mm, Special Length 66.5 mm	1	GJT-1CB-22-06WD L66.5
5	PRPW03024	Hydraulic Stud Fitting Adapter, Metric to BSP with captive seal, metric thread M16 x 1.5, BSP thread G3/8 in. x 19, pipe o.d. 10 mm	2	GJT-1CB-16-06WD
6	PRPW03025	Hydraulic Adapter, Straight, male M18 x 1.5 to male M18 x 1.5	8	GJT-1C-18
7	PRPW03026	Hydraulic Adapter, 90-Degree Elbow, Compression Metric Fitting, female to male, thread M18 x 1.5, for pipe o.d. 12 mm	1	GJT-2C9-18W
8	PRPW03027	Pipe Assembly, Steel	1	B80X4-10006
9	PRPW03028	Pipe Assembly, Steel	1	B80Y4-10071
10	PRPW03029	Hydraulic Adapter, Straight, male M22 x 1.5 to male M22 x 1.5	3	GJT-1C-22
11	PRPW03030	Pipe Assembly, Steel	1	B80X4-10005
12	PRPW03031	Pipe Assembly, Steel	1	B80Y4-10070
13	PRPW03032	Hose, Hydraulic	2	TGYFII-13215-H25*J
14	PRPW03033	Pipe Assembly, Steel	1	B80X4-10005
15	PRPW03034	Hydraulic Adapter, Straight, male M16 x 1.5 to male M16 x 1.5	4	GJT-1C-16
16	PRPW03035	Pipe Assembly, Steel	1	B80Y4-10067
17	PRPW03036	Hose, Hydraulic	1	TGLFII-06050*J
18	PRPW03037	Hydraulic Stud Fitting Adapter, Metric to BSP with captive seal, metric thread M16 x 1.5, BSP thread G1/4 in. x 19, pipe o.d. 10 mm	4	GJT-1CB-16-04WD



Hydraulic Piping - Exploded Parts View

Hydraulic Piping – Spare Parts List

Item	Part No.	Description	Qty	Remarks
19	PRPW03038	Pipe Assembly, Steel	1	B80X4-10003
20	PRPW03039	Hose, Hydraulic	1	TGVFII-06050*J
21	PRPW03040	Hydraulic Adapter, 90-Degree Elbow, Compression Metric Fitting, female to male, thread M16 x 1.5, for pipe o.d. 10 mm	2	GJT-2C9-16W
22	PRPW03041	Hydraulic Adapter, 90-Degree Elbow, Compression Metric Fitting, female to male, thread M22 x 1.5, for pipe o.d. 15 mm	2	GJT-2C9-22W
23	PRPW03042	Pipe Assembly, Steel	1	B80G4-10003-A
24	PRPW03043	Hydraulic Bulkhead Adapter, metric, 24-degree cone, M18 x 1.5, for pipe o.d. 12 mm	4	GJT-6C-18LN
25	PRPW03044	Pipe Assembly, Steel	1	B80G4-10001-A
26	PRPW03045	Pipe Assembly, Steel	1	B80Y4-10021
27	PRPW03046	Pipe Assembly, Steel	1	B80Z4-10023
28	PRPW03047	Pipe Assembly, Steel	1	B80Y4-10022
29	PRPW03048	Pipe Assembly, Steel	1	B80Z4-10025
30	PRPW03049	Pipe Assembly, Steel	1	B80Y4-10017
31	PRPW03050	Pipe Assembly, Steel	1	B80Y4-10018
32	PRPW03051	Pipe Assembly, Steel	1	B80Y4-10019
33	PRPW03052	Pipe Assembly, Steel	1	B80X4-10002
34	PRPW03053	Pipe Assembly, Steel	1	B80G4-10005-A
35	PRPW03054	Pipe Assembly, Steel	1	B80G4-10004-A
36	PRPW03055	Pipe Assembly, Steel	1	B80Y4-10023
37	PRPW03056	Hydraulic Bulkhead Adapter, metric, 24-degree cone, M16 x 1.5, for pipe o.d. 10 mm	1	GJT-6C-16LN
38	PRPW03057	Hose, Hydraulic	1	TGIFII-08052*J
39	PRPW03058	Hose, Hydraulic	1	TGIFII-08042*J
40	PRPW03059	Hose, Hydraulic	1	TGVFII-08042*J
41	PRPW03060	Hose, Hydraulic	1	TGLFII-08037*J
42	PRPW03061	Hose, Hydraulic	1	TGLFII-06043*J
43	PRPW03062	Hydraulic Stud Fitting Adapter, Metric to BSP with captive seal, metric thread M18 x 1.5, BSP thread G1/2 in. x 14, pipe o.d. 12 mm	5	GJT-1CB-18-08WD
44	PRPW03063	Tee Joint, Hydraulic, with swivel nut, metric, M18 x 1.5, for pipes o.d. 12 mm	1	GJT-CC-18W

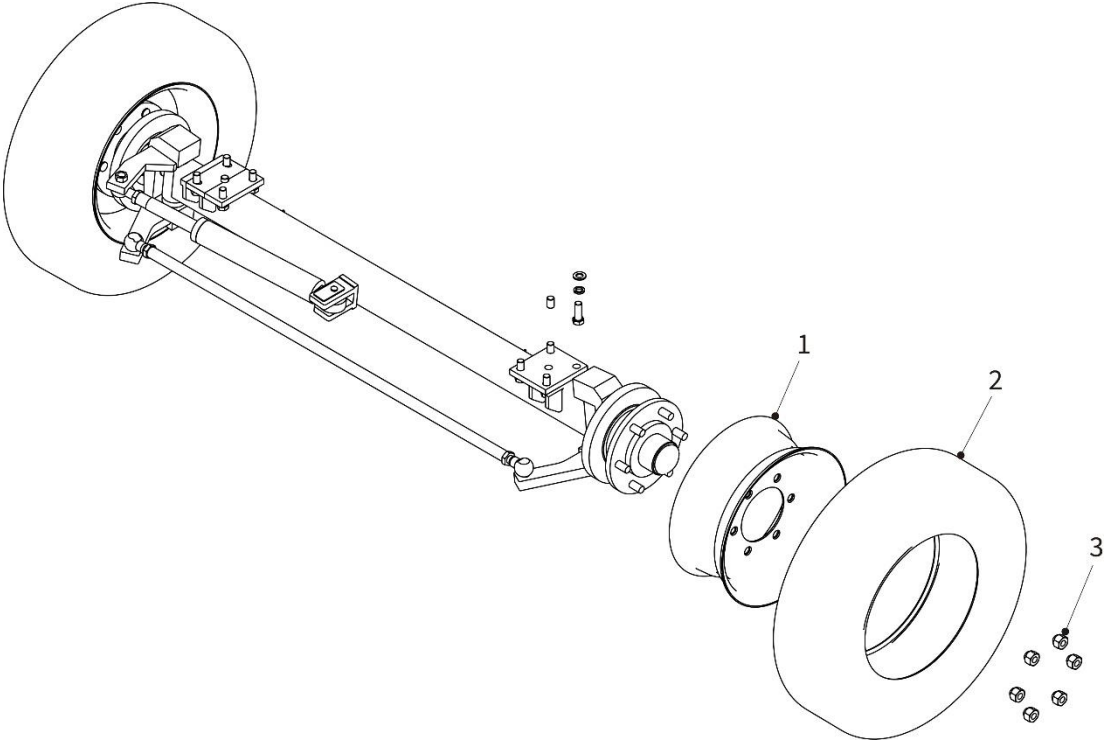


Hydraulic Piping - Exploded Parts View

Hydraulic Piping – Spare Parts List

Item	Part No.	Description	Qty	Remarks
45	PRPW03064	Hydraulic Adapter, 90-Degree Elbow, High Pressure, Metric, thread M18 x 1.5, for pipes o.d. 10 mm	1	GJT-6C9-16LN
46	PRPW03065	Plug, Hydraulic, Metric, thread M16 x 1.5 mm	1	GJT-9C-16
47	PRPW03066	Hydraulic Stud Fitting Adapter, Metric to BSP with captive seal, metric thread M22 x 1.5, BSP thread G3/4 in. x 14, pipe o.d. 15 mm	1	GJT-1CB-22-12WD
48	PRPW03067	Pipe Assembly, Steel	1	B80Y4-10002
49	PRPW03068	Pipe Assembly, Steel	1	B80G4-10007-A
50	PRPW03069	Pipe Assembly, Steel	1	B80Y4-10011
51	PRPW03070	Pipe Assembly, Steel	1	B80Y4-10012
52	PRPW03071	Hydraulic Adapter, 90-Degree Elbow, Metric to BSP with captive seal, metric thread M22 x 1.5, BSP thread G1/2 in. x 14	1	GJT-1CG9-22-080G
53	PRPW03072	Hose, Hydraulic, High-pressure	1	TGLFII-13039-H40*J
54	PRPW03073	Hydraulic Adapter, Straight, Metric to BSP with captive seal, metric thread M22 x 1.5, BSP thread G1/2 in. x 14	1	GJT-1CG-22-08
55	PRPW03074	Hose, Hydraulic	1	TGJFII-08041-H36*J
56	PRPW03075	Hose, Hydraulic	1	TGJFII-08050-H36*J
57	PRPW03076	Hose, Hydraulic	1	TGLJFI-25104-H73.5*J
58	PRPW03077	Hydraulic Pump Adapter, Metric to BSPT male, metric thread M36 x 2.0, BSPT thread 1 in. x 11	1	GJT-1CT-36-16
59	PRPW03078	Hydraulic Adapter, 45-Degree Elbow, Metric to BSP with captive seal, metric thread M36 x 2.0, BSP thread G1 in. x 11	1	GJT-1CG4-36-160G
60	PRPW03079	Hose, Hydraulic	1	TGLFII-13104-H40*J
61	PRPW03080	Hydraulic Reducer Tube Adapter with swivel nut, Metric, threads M16 x 1.5 to M18 x 1.5	1	GJT-2C-16-18
62	PRPW03081	Pipe Assembly, Steel	1	B80G4-10006-A
63	PRPW03082	Pipe Assembly, Steel	1	B80G4-10002-A
64	PRPW03083	Main Hydraulic Valve Assembly	1	HV01-40-E12-1

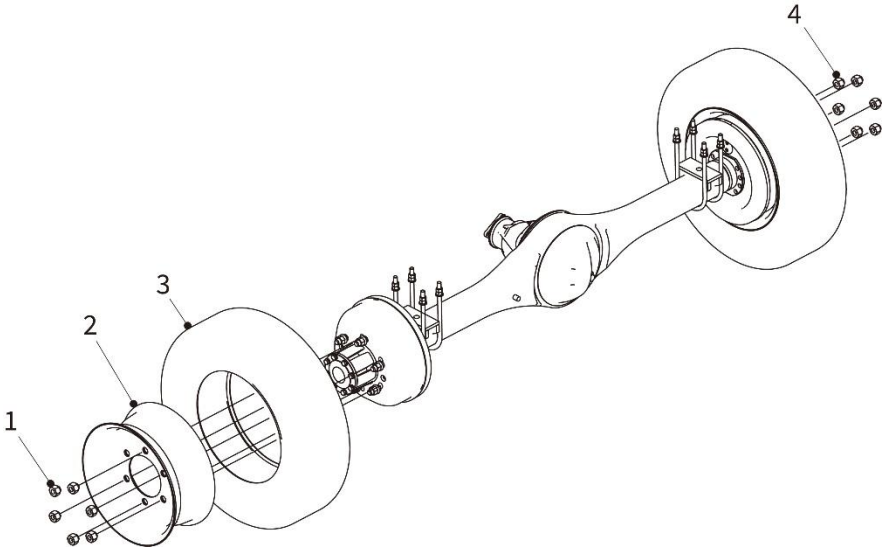
WHEELS & TIRES



Front Wheels and Tires - Exploded Parts View

Front Wheels and Tires – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW03084	Tire Rim, 6J x 15	2	B80A5-00200
2	PRPW03085	Tire, 225/70R15	2	B80A5-00002
3	PRPW03086	Wheel Nut, M18	12	5400033-114



Rear Wheels and Tires - Exploded Parts View

Rear Wheels and Tires – Spare Parts List 1

Item	Part No.	Description	Qty	Remarks
1	PRPW03087	Wheel Nut, M18 x 25 mm, Left-hand thread	6	B80D5-00114L 2431002-HY430
2	PRPW03088	Tire Rim, 6J x 15	2	B80A5-00200
3	PRPW03089	Tire, 225/70R15	2	B80A5-00002
4	PRPW03090	Wheel Nut, M18 x 25 mm, Right-hand thread	6	B80D5-00114R

LABELS

Manual emergency operation instructions

How to manually raise the belt frame:
 1. Proceed to raise the front end, and screw the pressure building valve (1) to the end, then press the solenoid valve manual button (2), and use the afterburner to repeatedly shake the manual pump to manually raise the front end of the belt frame, let go or stop shaking to stop the lifting.
 2. Proceed to raise the rear end, screw the pressure building valve (1), then press the solenoid valve manual button (3), and use the afterburner to repeatedly shake the manual pump. Raise the rear end of the belt frame manually, and stop lifting when you let go or stop shaking.

Electronic control integrated valve group

How to manually reset the belt holder:
 1. Reset the front end of the belt holder: turn out the solenoid valve emergency knob of the front cylinder of the belt frame counterclockwise, and then press the solenoid valve manual button (2) of the electronic control integrated valve group to reset the front end of the belt frame.
 2. Reset of the rear end of the belt holder: turn out the solenoid valve emergency knob of the rear all cylinder of the belt holder counterclockwise, and then press the solenoid valve manual button (3) of the electronic control integrated valve group to reset the rear end of the belt holder.

Note:
 After the vehicle completes the emergency evacuation, be sure to reset the used valves, when lowering the belt holder in an emergency, pay attention to avoid the lowered belt holder.

Belt carrier cylinder solenoid valve

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.

Lubrication points for bulk cargo loader

① Front roller bearing seat ② Front roller bearing roller ③ Front pin of front lift cylinder
 ④ Lower pin of front lift cylinder ⑤ Lower bearing seat of front lift frame ⑥ Lower pin of rear lift cylinder
 ⑦ Upper pin of rear lift frame ⑧ Upper bearing seat of rear lift frame ⑨ Rear roller self-aligning bearing
 ⑩ Rear roller bearing seat

Checks:
No

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

- Open the cover of the charging base;
- Insert the charging gun and make sure the connection is reliable;
- After charging is completed, pull out the charging gun and cover the cover;
- The vehicle can be used normally.

Important notice: before the cover is covered, be careful with water.

Hydraulic oil

- L-HM46 -15 ~ 45°C
- L-HV32 -35 ~ 35°C
- Aviation10# -50 ~ 25°C

Effective volume: 65 L
 Cleanliness: NAS 1638 0
 And replacement cycle of hydraulic oil for reference:
 1000, 2000 hours or 1 month
 Subject to hydraulic oil and filter element replacement cycle:
 2000 hours of water 1 year

Warning!
 When personnel work under the belt frame for maintenance, they must insert the safety pin.

Warning!
 It is strictly forbidden to stand under the belt rack

Warning!
 It is strictly forbidden to stand under the belt rack

Warning!
 It is strictly forbidden to stand under the belt rack

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.

Description of the left side bezel

- 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;
- 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.

Vacuum pump failure alarm **MAX** **MIN**

Low battery alarm **MAX** **MIN**

Brake fluid level alarm

DIESEL FUEL

GASOLINE FUEL

8.3 8.5 8.3 8.3 8.3

WARNING Caution scalars

WARNING CAUTION

HYDRAULIC OIL

BL30G Sheet of Labels

Labels – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02758	BL30G Warning Labels for Printing (A complete set of labels for the BL30G)	1	



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SUPPLEMENTARY INFORMATION

LIFTING/SHIPPING THE BL30G BELT LOADER

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 BL30G using a forklift. The length and design of the BL30G makes it an unstable load on a forklift. Also, there are NO bearing plates on the underside of the BL30G suitable for engaging the forks of a forklift.

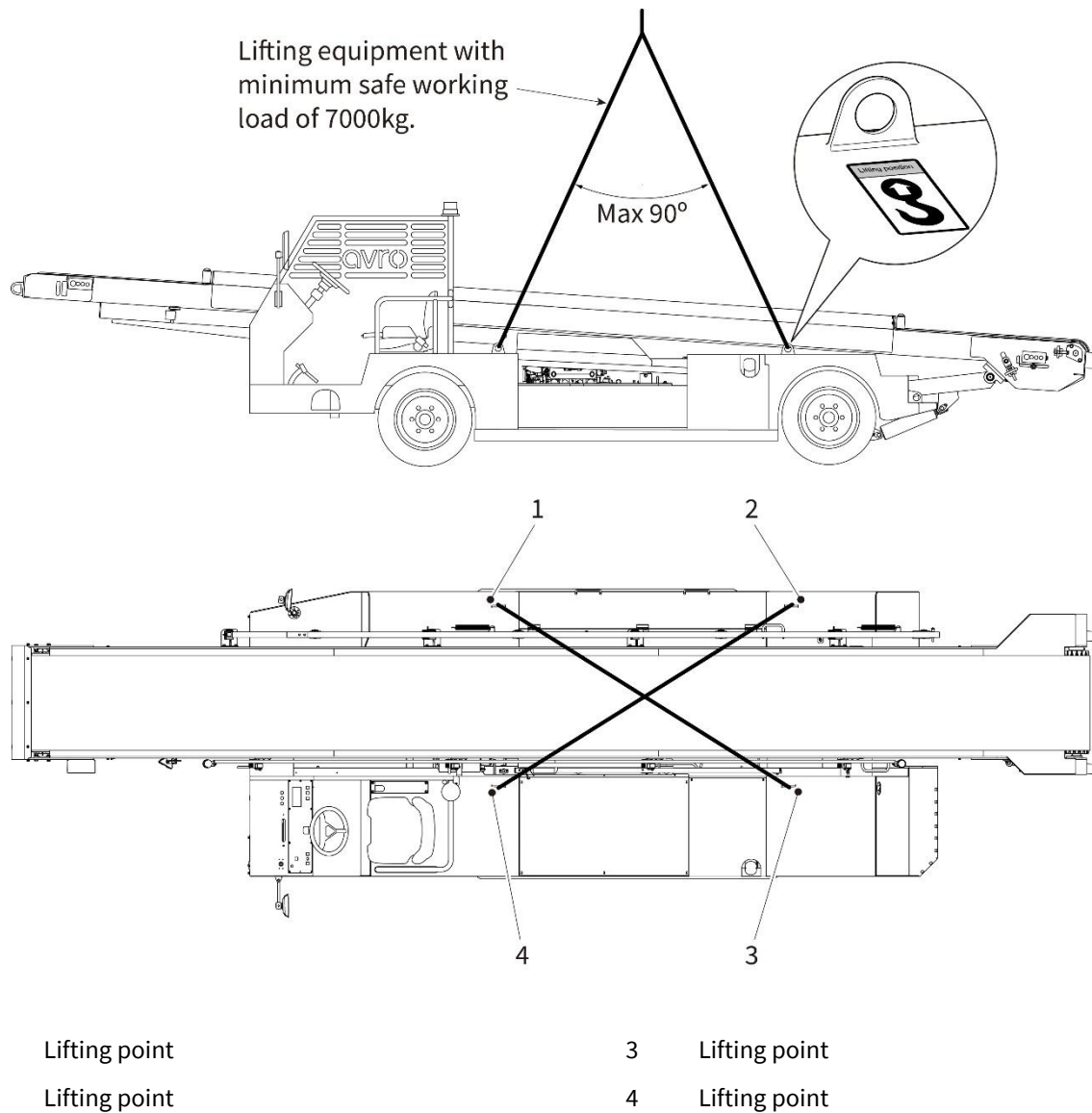


Figure 24 - Lifting diagram

WARNING – 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.

Before commencing a lifting operation, make sure that:

- (1) The lifting equipment is in good condition. Do not use lifting equipment whose condition is suspect.
- (2) The lifting equipment has been regularly inspected, maintained, and certified, in accordance with the applicable National and Local regulations and codes. Do not use lifting equipment that does not meet this requirement, or which has exceeded the mandated time between inspections.
- (3) On the Belt Loader, the Belt Frame is in the fully lowered position.

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

WARNING – LIFTING OPERATIONS



Lifting operations must **ONLY** be done by personnel who are trained and authorised to perform lifting operations.

DO NOT reach or stand beneath a Belt Loader that is suspended by a crane.

Wear a hard hat, high visibility clothing, and suitable footwear during lifting operations.

WARNING – DO NOT LIFT A BELT LOADER WITH A FORKLIFT



The Belt Loader is 8.1 m (26 ft 6.9 in.) long and weighs 4200 kg (9260 lbs). Due to the length and shape of the Belt Loader, **DO NOT** use a forklift truck to lift the Belt Loader.

The Belt Loader is not designed to be lifted with a forklift.

Before lifting the Belt Loader, make sure that the Belt Frame is in the fully lowered position. Having the Belt Frame in the fully lowered position will reduce the instability of the load. If necessary, use the emergency procedures to lower the Belt Frame.

When lifting the Belt Loader, observe ALL the safety precautions specified in this section of the manual.

WARRENTY

All Avro GSE products are covered by our Warranty Policy. If you require a copy of our Warranty Policy, please contact us using the contact details given on page 2 of this manual.

DISPOSAL

The BL30G Belt Loader contains electrical components, including a vehicle battery. A Belt Loader that is damaged beyond economic repair, or worn out, should be recycled at a metal recycling facility.

APPENDICES

PSI 2.0 & 2.4L SERVICE MANUAL

PSI 4G MOBILE DIAGNOSTICS MANUAL

**OKAMURA TRANSMISSION SERVICE MANUAL – Y43340D,
Y43290D, AND Y43370D**

