

# XT670D TRACTOR

## OPERATION, MAINTENANCE AND PARTS MANUAL



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## APPLICABILITY OF THIS MANUAL

XT670D Tractors with a Manufacture Year of 2021 - 2022 (MY2021 - 2022) Serial Numbers from 221085374 - 222081718.

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

Manual Part Number: PRPW02733

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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 <sup>2</sup> = 145 lbs/in <sup>2</sup> )
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 Tractor is designed to tow airport ground support equipment only. Do not exceed the Tractors' towing capacity. It is dangerous to do so and an accident or damage to the Tractor may result.

DO NOT allow people to ride on the ground support equipment while it is being towed. It is unsafe to do so, and lethal injury may result.

### LETHAL DANGER – DO NOT USE ON PUBLIC ROADS



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

DO NOT use the Tractor for purposes for which it was not designed, or operate the Tractor in a reckless manner. Lethal injury may result.

### LETHAL DANGER – DO NOT ALTER FACTORY SETTINGS



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

Altering the factory settings invalidates the Warranty on the Tractor.

### 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 Tractor. 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 Tractor is limited to 24 kph (14 mph). It is unsafe to exceed that speed.

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

## WARNING – ALCOHOL AND DRUG USE



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

## WARNING – SIZE AND WEIGHT OF TRACTOR



The Tractor weighs 4500 kg (9921 lbs). When lifting the Tractor, always use a forklift truck with a Safe Working Load (SWL) of at least 5000 kg (5 Tons). DO NOT use a crane with lifting slings or chains, there are no lifting points on the Tractor.

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

## 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.

## PRECAUTION – PERSONAL PROTECTIVE EQUIPMENT



When operating, moving, lifting, servicing, repairing, or transporting the Tractor, 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 Tractor for transport by air, road, or rail, make sure it is securely packed. Safeguard the Tractor against movement or break-away during transport by applying the brake, and securely strapping the Tractor in place.

## PRECAUTION - READ THIS MANUAL



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

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

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

## PRECAUTION – OPERATOR TRAINING



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

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

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

## PRECAUTION – SAFE WORKING PRACTICES



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

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

Only operate the Tractor 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 Tractor 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.**



## INTRODUCTION

The function of the XT670D Tractor is to act as a baggage tractor, towing aircraft ground support equipment (GSE) within the confines of airports. The Tractor is NOT suitable for use on public roads. Multiple GSE can be linked together for towing, up to the towing limit of the Tractor and the regulation limits of the relevant airport/transport authorities.



**Figure 1 – XT670D Tractor**

The Tractor can tow the following types of GSE:

- Cargo Dolly's.
- Baggage Carts.
- Trash Carts.
- Water Service Carts.
- Fuel Carts.
- Lavatory Service carts.
- Gas Bottle Service Carts.

A hitch at the rear allows multiple carts to be linked together. A hitch at the front allows the Tractor to tow carts while reversing.

## SPECIFICATION

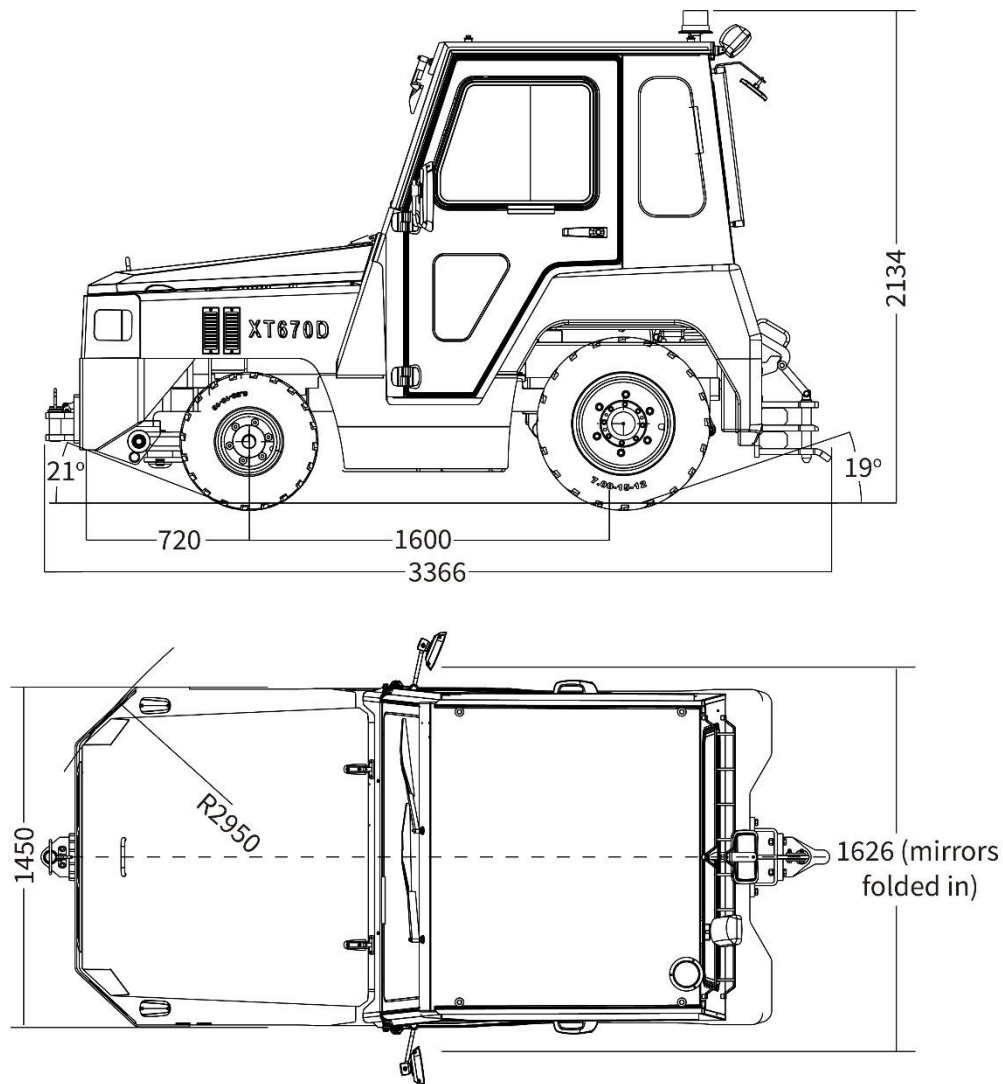
The specification of the XT670D Tractor is given in the following Table.

**Table 1 XT670DG Tractor specification**

XT670D Tractor	Value	Units	Notes
Dimensions			
Length (overall)	3366 132.5	mm in.	Includes towing couplers (Front and Rear Hitches)
Width (mirrors folded in)	1626 64.02	mm in.	
Height (including cab and beacon)	2134 84.0	mm in.	
Wheelbase	1600 63.0	mm in.	
Minimum Ground Clearance	108 4.25	mm in.	
Front overhang	720 28.35	mm in.	Does not include Front Hitch
Rear overhang	880 34.65	mm in.	Includes Rear Hitch
Towing Coupler height	305 12.0	mm in.	
Service Weight	4500 9921	kg lbs	
Unloaded axle weight – Front axle	1250 2756	kg lbs	
Unloaded axle weight – Front axle	3250 7165	kg lbs	
Max Speed (unloaded)	23 37	mph kph	Forward speed. Max speed is governed.
Max Speed (loaded)	6 10	mph kph	
Draw Bar Pull (DBP)	30 6700	KN lbs	Max value
Minimum Turning Radius	2950 116	mm in.	XT670D has hydraulic power steering.
Maximum gradient (unloaded)	30	%	

## XT670D Tractor

XT670D Tractor		Value	Units	Notes
Engine type		Diesel		Model KDI2504TCR
Engine Total Displacement		2482	cc	4 cylinders. Includes Turbo.
Engine Rated Output		55.4/2300 74.3/2300	Kw/rpm HP/rpm	
Engine Rated Torque		300/1500 221.3/1500	Nm/rpm lbf ft/rpm	
Transmission Type		Automatic		Manufacturer: ZF
Gear ratios	Forward 1	4.841		
	Forward 2	2.405		
	Forward 3	1		
	Reverse 1	4.854		
	Reverse 2	2.406		
Differential gear ratio		8.17		
Operating temperature range (with Cab)		-30 to +50 -22 to +122	deg C deg F	Ambient temperature
Storage temperature range (with Cab)		-5 to +50 23 to +122	deg C deg F	Ambient temperature Storage indoors recommended
Humidity range		0 to 95	%	Relative humidity
Front Tires		6.50-10-10PR		
Rear Tires		7.00-15-12PR		
		75 ± 3 5.17 ± 0.21	psi Bar (gauge)	Front tires
		95 ± 3 psi 6.55 ± 0.21	psi Bar (gauge)	Rear tires



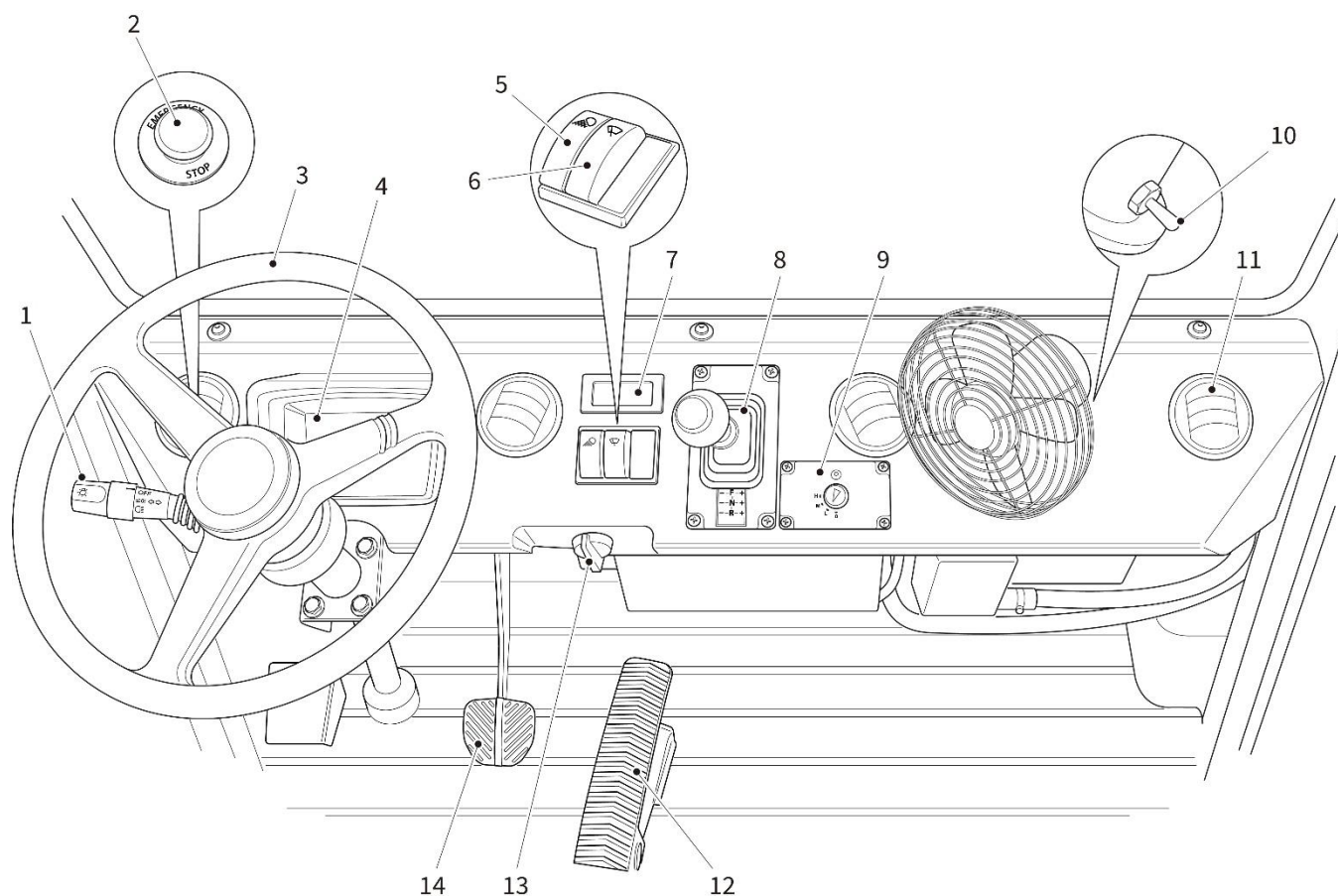
**Figure 2 – XT670LA Tractor dimensions**

## DESCRIPTION



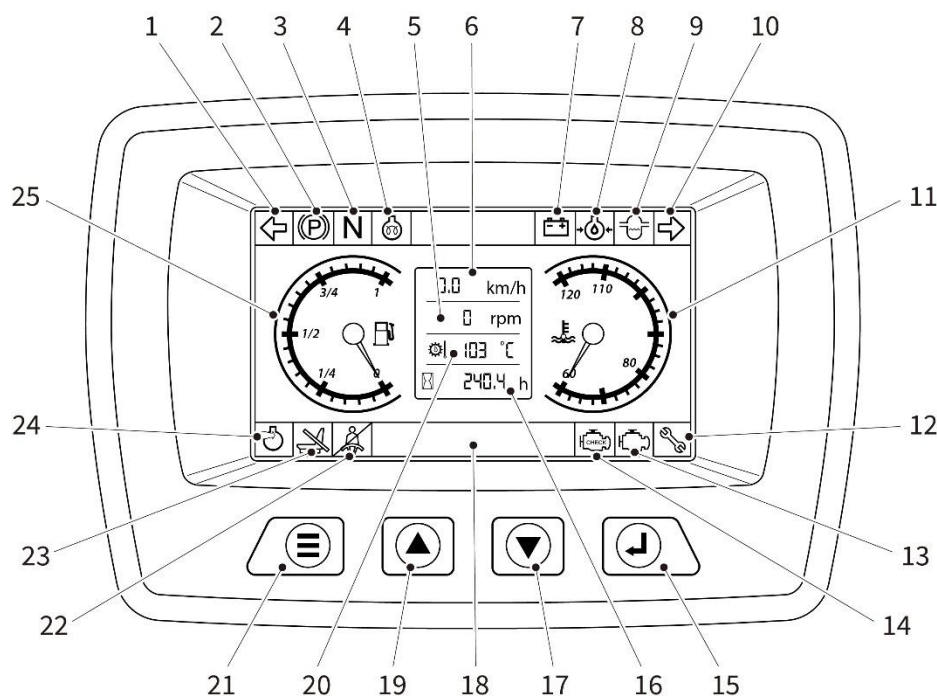
- |   |                         |   |                       |
|---|-------------------------|---|-----------------------|
| 1 | Windshield wiper        | 6 | Side Door Lower Glass |
| 2 | Warning Beacon          | 7 | Indicator Lights      |
| 3 | Side Rear Glass         | 8 | LED Headlights        |
| 4 | Wing (side View) Mirror | 9 | Front Coupler         |
| 5 | Door Handle             |   |                       |

**Figure 2 – XT670D Tractor exterior**



- |   |                              |    |                              |
|---|------------------------------|----|------------------------------|
| 1 | Turn Signal/Headlamp control | 8  | Gear shift                   |
| 2 | EMERGENCY STOP switch        | 9  | Heater rotary switch/control |
| 3 | Steering wheel               | 10 | Fan ON/OFF switch            |
| 4 | Dash Display Screen          | 11 | Heater vent                  |
| 5 | Rear Work Light switch       | 12 | Accelerator pedal            |
| 6 | Windscreen Wiper switch      | 13 | Start/Ignition switch        |
| 7 | Gear display                 | 14 | Brake pedal                  |

**Figure 3 –Driving controls**



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

**Figure 4 – Dash Display Screen (Instrument Panel)**

The Tractor control system includes a series of settings that are pre-set at the factory. These factory settings optimise the towing performance and safety of the Tractor. 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 Tractor. If the menu button is pressed, or accidentally tripped, further progress is blocked by a password. DO NOT attempt to proceed further. Press the Menu Item Select button (14) to exit the menus.

## LETHAL DANGER – DO NOT ALTER FACTORY SETTINGS

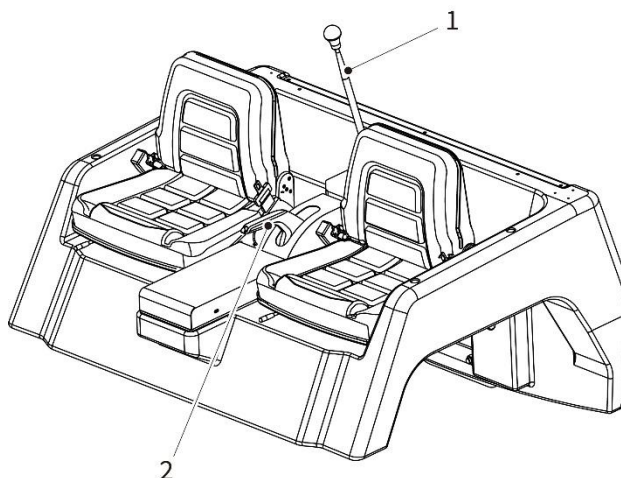


**DO NOT attempt to alter the Tractor's factory settings. Lethal injury may result. The factory settings optimise both the safety of the Tractor and the Tractor's towing performance.**

**Altering the factory settings invalidates the Warranty on the Tractor.**

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 tractor it will sometimes (but not always) display a fault code that can be used, together with a Check Engine light (14), to identify the problems. Illumination of the MIL Malfunction Indicator Lamp (13) also indicates a fault on the Tractor.

### PARKING BRAKE



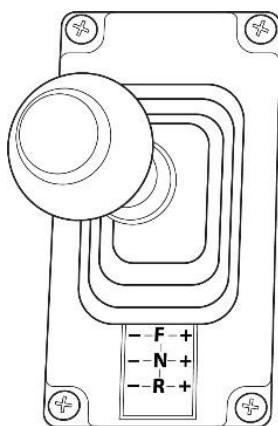
1 Rear Hitch actuator lever

2 Parking Brake

**Figure 5 – Parking Brake**



## GEAR SHIFT

**Figure 6 - Gear Shift**

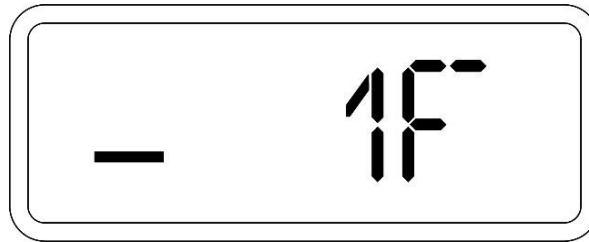
The Gear Shift has six positions, which are listed in sequence and described in the Table below:

Shift Position	Gear
<b>F3</b>	Forward driving, high-speed gear. This gear should normally be selected for forward travel on level ground when the Tractor is not being used for towing.
<b>F2</b>	Forward, Traction gear. This gear should be used when towing on level ground.
<b>F1</b>	Forward, climbing gear. Use this gear when climbing an up gradient, and when the Tractor is on a down gradient. Also use this gear when maximum towing force is required. This is a low-speed gear that provides maximum torque.
<b>N</b>	Neutral position. The Gear Shift <b>MUST</b> be in Neutral to start the engine, and when the Tractor is parked (with, or without, the engine running).
<b>R1</b>	Reverse gear 1. Slow speed reverse.
<b>R2</b>	Reverse gear 2. High speed reverse.

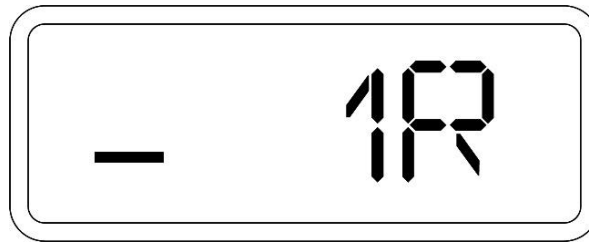
The gear selected is shown on the Gear Display located top left of the Gear Shift.

The Transmission may be operated in either Manual Mode or Automatic Mode. Operate the Gear Shift as follows:

- With the engine running, the foot brake applied, and the Gear Lever in the Neutral position, press the button on top of the Gear Lever and either push the Gear lever upwards for first gear (Forward gear F1), or downwards for Reverse gear R1. The Gear Display will show the gear selected, as shown below.



**Gear Display : 1st gear forward**



**Gear Display : 1st gear reverse**

- If Manual Transmission Mode is required, tap the Gear Lever to the left.
- Lift your foot off the Brake Pedal and drive the Tractor.
- To shift up to 2nd gear (F2) from 1st gear, tap the Gear Lever to the right. The Transmission will shift to gear F2, which will be shown on the Gear Display.



**Gear Display : 2nd gear forward**

- Tap the Gear Lever to the right again to shift to 3rd gear.



**Gear Display : 3rd gear forward**

- To shift down, tap the Gear Lever to the left until the desired gear is engaged.

- The Gear Display for 2nd reverse gear is shown below.

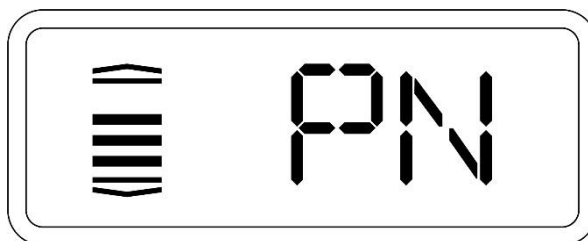


**Gear Display : 2nd gear reverse**

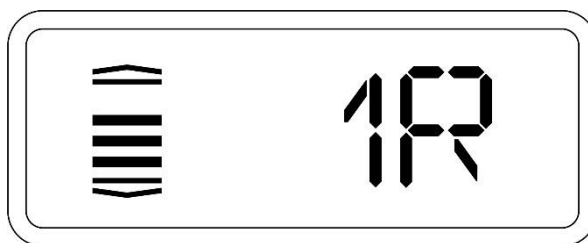
- To change between Manual Mode and Automatic Mode while in drive, press the button on top of the Gear Lever. The Transmission will change between modes. In Automatic Mode the gear status of the Transmission will be displayed on the Gear Display. Examples are shown below:



**Gear Display : Drive Gear (automatic mode)**



**Gear Display : Park/Neutral (automatic mode)**



**Gear Display : Reverse Gear (automatic mode)**

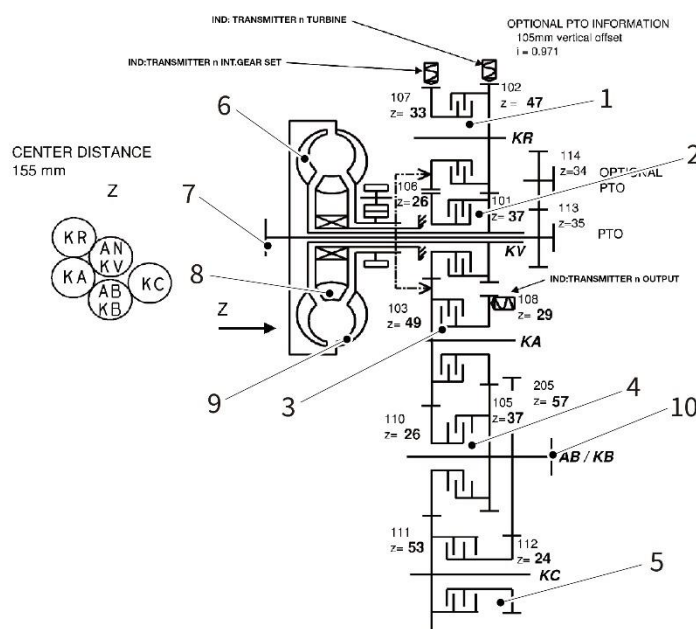
# FUNCTIONAL DESCRIPTION OF MAIN AUTOMOTIVE ASSEMBLIES

## ENGINE

The engine is a KOHLER Engines, Model KD2504TCR, diesel engine. For the description and technical details of the engine, refer to the KOHLER KDI Engine Owners Manual for the Model KD2504TCR engine.

## AUTOMATIC TRANSMISSION

The Tractor is fitted with a 3-speed Forward/ 2-speed Reverse, constant-mesh Transmission that can be operated in either Manual Mode or Automatic Mode. The Transmission is easy to operate with a good performance; it's maximum efficiency can reach 92%. The Transmission includes a symmetrical, 3-element, 1-stage, 2-phase, Torque Converter.



- |   |                |    |                  |
|---|----------------|----|------------------|
| 1 | Reverse clutch | 6  | Turbo            |
| 2 | Forward clutch | 7  | Connection plate |
| 3 | Gear clutch    | 8  | Guide wheel      |
| 4 | 3-gear clutch  | 9  | Pump wheel       |
| 5 | 1-gear clutch  | 10 | Output shaft     |

**Figure 7 - Automatic Transmission**

The Transmission clutch is of the wetted multi-disc type. The oil pump is an interior meshing involute gear pump. The Automatic Transmission is controlled by a pressure regulating valve and a magnetic valve.

## CARDAN PROPELLER SHAFT (DRIVE SHAFT)

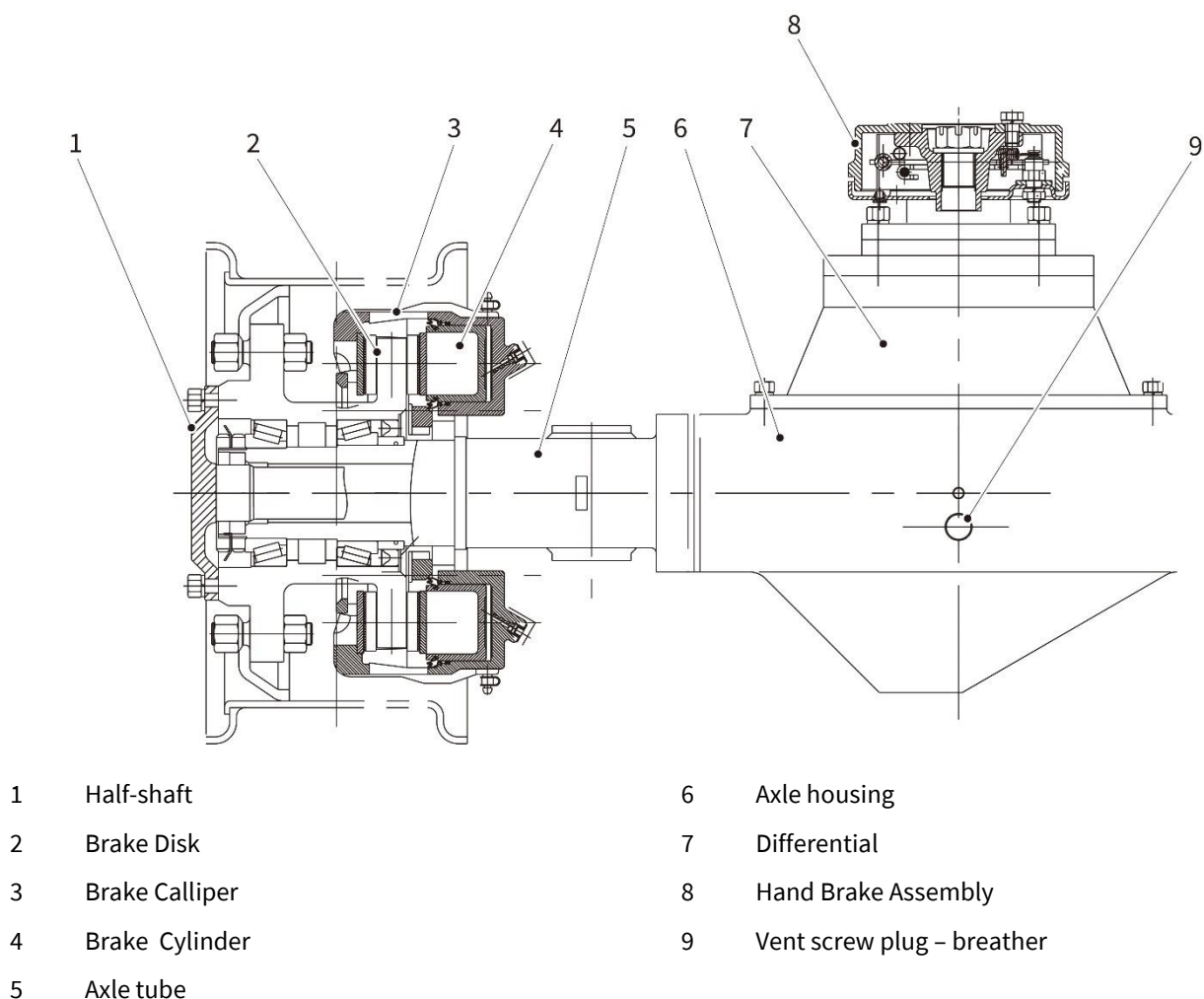
The Drive Shaft is a double cross-spindle stiff type Cardan propeller shaft. It is comprised of:

- A universal flanged fork.
- A universal joint fork.
- A universal joint cross-spindle.

When the clearance between the universal-joint shaft and the needle bearing is excessive, usually because of wear, either the universal-joint shaft or the needle bearing **MUST** be replaced. **DO NOT** lubricate the needle bearing with thick oil – always use the Lithium based grease specified in the Fuel, Lubricants and Consumables section of this manual. Apply lubrication to the Drive Shaft more frequently when the Tractor is operating in dusty/sandy environments.

## DRIVE AXLE

The Drive Axle comprises the drive unit, wheel hubs, axle tube, differential shaft, and drive wheels. The structure and main components of the Drive Axle are shown in Figure 8, below.



**Figure 8 - Drive Axle**

## BRAKE SYSTEM

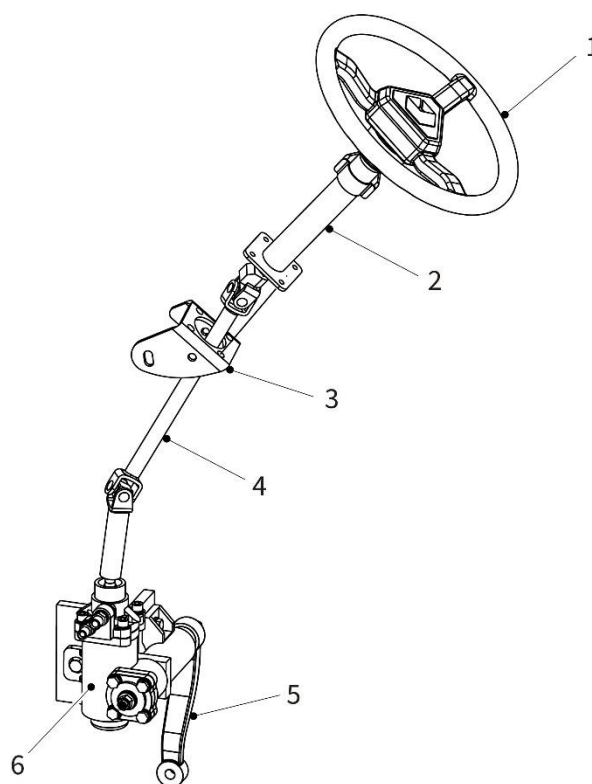
The Tractor has two braking systems: a hydraulic foot actuated Brake System (Foot Brake), and a mechanical hand lever applied Parking Brake system (Hand Brake).

The Foot Brake System is a four-wheel braking system that includes a vacuum valve. Brake fluid from the main cylinder is routed via a ratio valve to the four independent 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 Park Brake Assembly fitted to the rear (drive) axle. Inside the Park Brake Assembly, the pull force will engage the park brake shoes with the park brake drum, thus engaging the park brake.

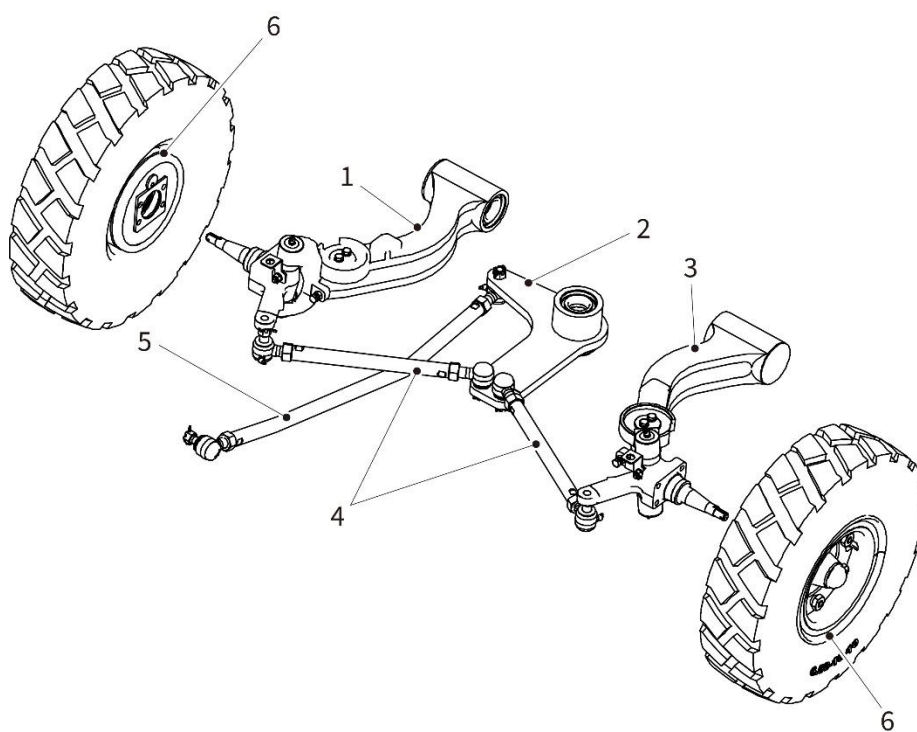
## STEERING SYSTEM

The Tractor is fitted with a power steering system whose main components are shown in Figures 9 and 10, below.



- |   |                 |   |                       |
|---|-----------------|---|-----------------------|
| 1 | Steering wheel  | 4 | Steering shaft        |
| 2 | Steering column | 5 | Steering arm (Pitman) |
| 3 | Bracket         | 6 | Power steering box    |

**Figure 9 - Steering System**

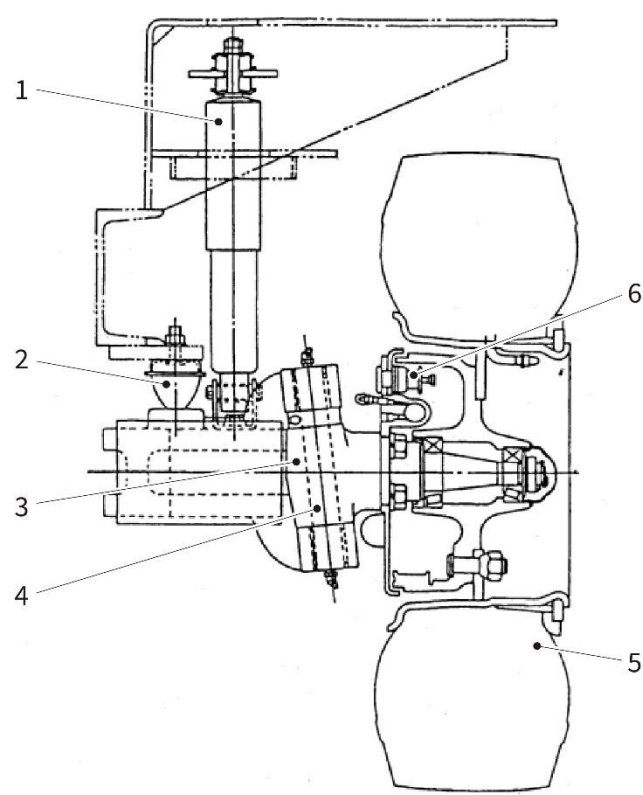


- |   |                    |   |                    |
|---|--------------------|---|--------------------|
| 1 | Left trailing arm  | 4 | Tie rod assembly   |
| 2 | Rocker arm         | 5 | Track rod assembly |
| 3 | Right trailing arm | 6 | Front wheel        |

**Figure 10 - Steering rod**

## SUSPENSION SYSTEMS

The front suspension (Figure 11) is of the longitudinal arm independent suspension type. A pair of coil springs with double-action hydraulic shock absorbers (1) mounted on the front trailing arms absorb shocks, while a pair of rubber bump stops (2) reduce shock when the suspension reaches full compression.



- |   |                      |   |                      |
|---|----------------------|---|----------------------|
| 1 | Front shock absorber | 4 | King pin             |
| 2 | Rubber bump stop     | 5 | Front tire           |
| 3 | Steering knuckle     | 6 | Front brake assembly |

**Figure 11 - Front suspension system**

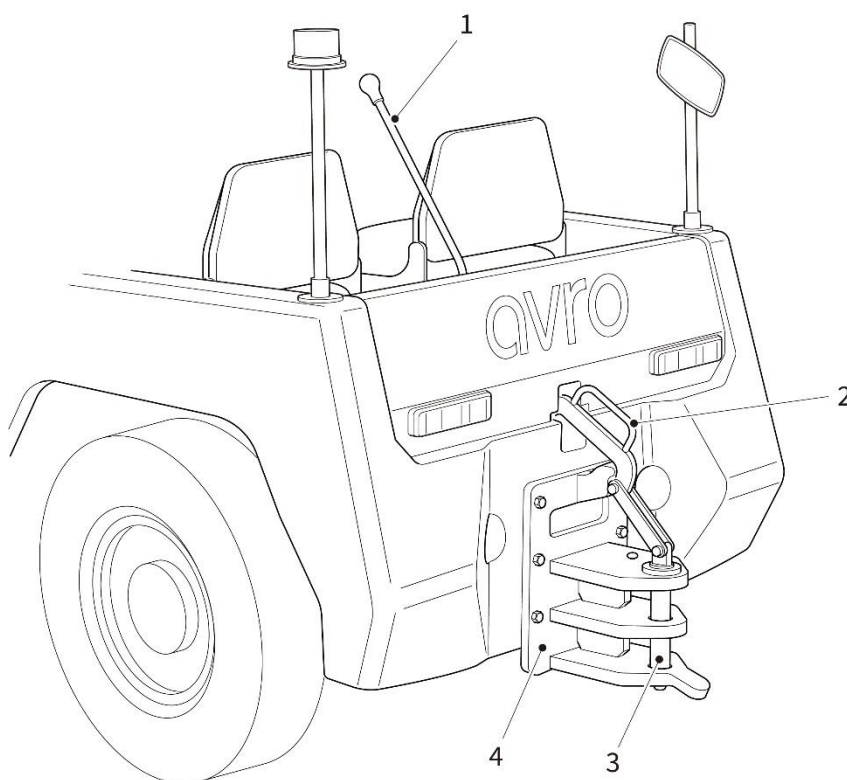
The rear suspension is comprised of a pair of leaf springs with double-action hydraulic shock absorbers to absorb shocks, while a pair of rubber bump stops (2) reduce shock transfer to the cab when the suspension reaches full compression.

## REAR TOWING DEVICE (REAR HITCH)

The Rear Hitch (Figure 12) can be operated from the drivers' or passengers seat using the lever. When the lever (1) is moved forward the towing pin (3) is raised; similarly, the towing pin is lowered under its own weight when the lever is let go.

A lifting handle on the Linkage (2) allows the Rear Hitch to be operated by a person standing beside the rear of the Tractor.





1 Lever

2 Linkage with lifting handle

3 Towing pin

4 Hitch Assembly

**Figure 12 - Rear towing device**

## REFUELLING

Refer to Figure 14 and refuel the Tractor as follows:

### WARNING – PETROLEUM – FIRE AND HEALTH HAZARD

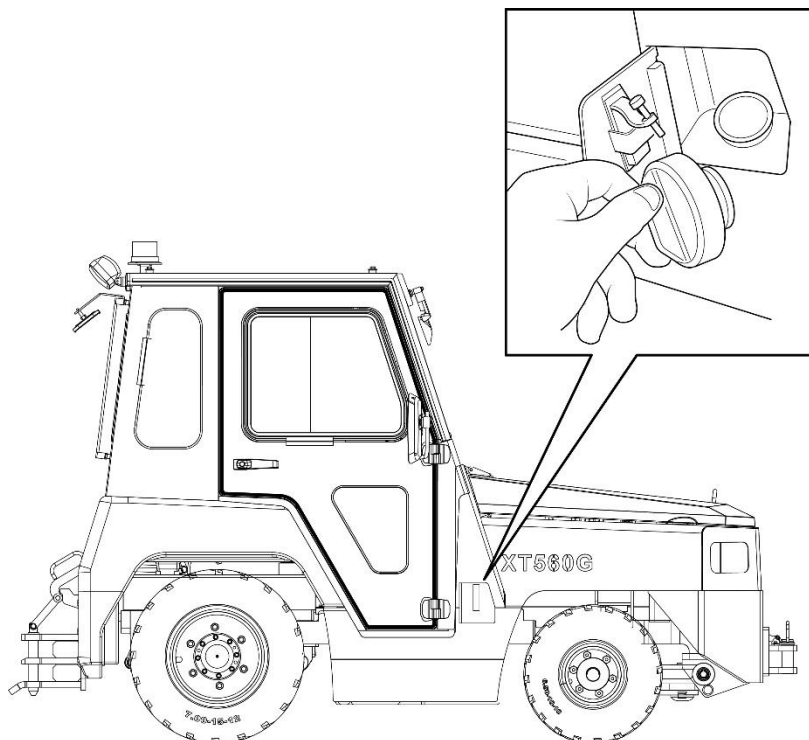


**Fuel expands when heated. Expanding fuel in an over full tank can cause spills and leaks. Do not overfill the fuel tank.**

**Do not eat, drink or smoke when refuelling the Tractor. 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 Tractor is shut down, and that there are no naked flames or combustibles nearby.
- Make sure that the Tractor is standing on level ground, and that the Tractor is level with the ground.
- Locate the fuel door.
- Open the fuel door and remove the fuel cap.
- Fill the tank with the appropriate grade of diesel. DO NOT PUT GASOLINE IN THE FUEL TANK.
- Refit the fuel cap and close the fuel door.



**Figure 13 – Refuelling**

## OPERATION

Before starting the Tractor:

- Make sure that the EMERGENCY STOP switch is in the open position, and the Gear Lever is in the Neutral position.
- Rotate the Start Switch in a clockwise direction to the On position. The instrument panel will activate, and the Tractor will self-test for approximately 2 to 3 seconds.
- If the self-test detects a fault, do not attempt to use the Tractor and REPORT the fault.
- When the self-test is completed successfully, the Instrument Panel will display vehicle performance data.
- Rotate the Start Switch clockwise to the ignition position. The engine will start.
- If the engine fails to start, wait at least 10 seconds then repeat the five steps above.

### NOTES

The Start Switch should NOT be left in the ON position for more than 10 seconds.

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

- Allow the engine to idle for at least 3 minutes before operating the Tractor.
- Apply the foot brake.
- Using the Gear Shift, select the required gear.
- Release the Parking Brake. The Parking Brake indicator on the Instrument Panel will extinguish.
- Check that it is safe to move the Tractor.
- Release the foot brake.
- Press the Accelerator Pedal, the Tractor will move.
- Test the Foot Brake and the Parking Brake before using the Tractor. The brakes MUST have a good and reliable performance. If not, do not use the Tractor and report the problem.
- The high-speed forward gear should only be used for unladen travel on level ground.
- The low-speed forward gear MUST be used when towing, when maximum towing force is required, and when the Tractor is on an up or down gradient. This gear provides maximum torque.
- DO NOT select Neutral gear, or switch OFF the engine, when going downhill.

### PARKING

When parking the tractor:

- Make sure that the Tractor is stable on level ground.
- Set the Gear Shift to Neutral.

- Engage the Parking Brake.
- Rotate the Start Switch counter-clockwise to the OFF position.

## STORAGE

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

- Perform monthly, three-monthly, six-monthly, and 12-monthly lubrication.
- Drain the radiator.
- If necessary, perform the cold weather maintenance ("winterize") described on page 39.
- Remove the battery and charge it for storage.
- Protect exposed parts against rust, for example, by applying grease.
- Store the Tractor under cover.
- Check the engine every month.

## RECEIPT AND PREPARATION FOR FIRST USE

On receipt of a new XT670D Tractor, before operating the Tractor for the first time, you **MUST** perform the following :

- Make sure that all loose packaging has been removed from the Tractor.
- Check the Tractor and its components for damage. If there is any visible damage, **DO NOT OPERATE THE TRACTOR**. 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 Tractor 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 Tractor.
- Make sure that all necessary fluids (for example fuel, engine oil, coolant) are checked and additional fluid added as needed.
- Verify that the Tractor is fully serviceable by performing the Daily Maintenance checks and Weekly Maintenance checks described in the Scheduled Maintenance section of this manual.
- Move the Tractor to its operating location.
- Complete any receipt documentation and maintenance records as required.

After 100 hours of operational use of the Tractor, replace the oil in the Transmission. This is in addition to the Transmission oil changes specified in the Scheduled Maintenance and Lubrication Diagram.

## 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 XT670D Tractor, and may be varied by  $\pm 10\%$  without adverse effects. Every Tractor 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 51. For other bolts and fasteners, refer to the guidance on torque settings given on pages 51 and 52.


### NOTE

If further details are required on how to perform the Scheduled Maintenance actions on the engine, refer to the Kohler Owners 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 Monthly (250 hrs)	6 Monthly (500 hrs)	12 Monthly (1000 hrs)
<b>1</b>	<b>Cleaning</b>						
a.	Use 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.	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
b.	Remove dirt and dust from the top surface of the battery and clean each battery terminal.				<b>X</b>	<b>X</b>	<b>X</b>
<b>WARNING – COMPRESSED AIR</b>  <b>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.).</b>							
c.	Using a clean, dry, low pressure compressed air jet, clean the radiator surfaces and intercooler surface. If the surfaces of the radiator are clogged with dirt or debris, clean the radiator surfaces with a brush soaked in a domestic detergent and water solution.				<b>X</b>	<b>X</b>	<b>X</b>

	Task	Daily	Weekly	Monthly	3 Monthly (250 hrs)	6 Monthly (500 hrs)	12 Monthly (1000 hrs)
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
<b>2</b>	<b>Visual Inspection</b>						
a.	Walk around the Tractor and examine the Tractor for the following. During the inspection tighten any fasteners that are loose.	X	X	X	X	X	X
b.	Check Tractor body and cab are undamaged. Damage to the body or cab that may impair or affect the safe operation of the Tractor must be repaired before operating the Tractor.	X	X	X	X	X	X
c.	Check wing mirrors are present and undamaged. Check rear view mirror is present and undamaged. Replace missing or damaged mirrors.	X	X	X	X	X	X
d.	Check windscreen and windows do not have cracked glass. If glass cracked, do not use Tractor until damaged glass has been replaced.	X	X	X	X	X	X
e.	Check that the headlamps, indicator lights and rear lights are 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 Tractor 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 Tractor with an unserviceable Beacon.	X	X	X	X	X	X
g.	Check that the Rear Hitch is undamaged, secure, and functions correctly. Repair if required.	X	X	X	X	X	X
h.	Check that the Front Hitch is undamaged, secure, and functions correctly. Repair if required.	X	X	X	X	X	X
i.	Check tires for leaks and damage. Check surface condition of tires. Check tires meet legal requirements for minimum tread depth. Replace if damaged or worn-out.	X	X	X	X	X	X
j.	Check tightness of wheel nuts. Front wheels :210 Nm (155 ft/lbs). Rear wheels: 420 Nm (310 ft/lbs)		X	X	X	X	X

	Task	Daily	Weekly	Monthly	3 Monthly (250 hrs)	6 Monthly (500 hrs)	12 Monthly (1000 hrs)
k.	Re-tighten if required.						
	Check pressure of front tires is $75 \pm 3$ psi ( $5.17 \pm 0.21$ Bar (gauge)). Adjust tire pressure if required.	X	X	X	X	X	X
l.	Check pressure of rear tires is $95 \pm 3$ psi ( $6.55 \pm 0.21$ Bar (gauge)). Adjust tire pressure if required.	X	X	X	X	X	X
<b>WARNING – BURN HAZARD</b>  <b>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.</b>							
m.	Check coolant level. Add coolant if required.	X	X	X	X	X	
n.	Replace coolant.						X
o.	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
p.	Check the fuel level. Refuel Tractor if necessary.	X	X	X	X	X	X
<b>3</b>	<b>Operation</b>						
a.	Start the engine. Check the operation of the steering and braking systems. If not functioning correctly, report the problem and DO NOT use the Tractor 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 Tractor until it has been repaired.	X	X	X	X	X	X
c.	Listen to the sound of the engine when it is idling, at medium speed and at high speed. If you hear anything unusual in the sound of the engine, report the problem.		X	X	X	X	X
<b>4</b>	<b>Mechanical Checks</b>						
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

	Task	Daily	Weekly	Monthly	3 Monthly (250 hrs)	6 Monthly (500 hrs)	12 Monthly (1000 hrs)
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		
i.	For engines with a standard alternator belt, replace alternator belt. If necessary, adjust tension of alternator belt.					X	X
j.	For engines with a Poly-V alternator belt, replace the Poly-V 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
l.	Replace brake fluid. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the brake fluid.						X
m.	Check condition and adjust clearance of brake shoes.						X
n.	Check, and if required, adjust the free stroke of the brake pedal and parking brake.					X	X
o.	Check parking brake cable. Replace if damaged or worn. Adjust if loose.			X	X	X	X
p.	Replace power steering oil. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the power steering oil.					X	X
q.	Check power steering system for leaks.						X
r.	Check steering column and steering shaft for damage or other problems. Repair if required. Check play clearance						X



# XT670D Tractor

	Task	Daily	Weekly	Monthly	3 Monthly (250 hrs)	6 Monthly (500 hrs)	12 Monthly (1000 hrs)
	of steering wheel and adjust if required. If necessary, tighten the steering system.						
s.	Check steering system track rod and tie rods. Replace if damaged.						X
t.	Check engine, Transmission, and Drive Axle for oil leaks. Repair any leaks found.		X	X	X	X	X
u.	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
v.	Replace Transmission oil filter.					X	X
w.	Replace Transmission oil. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the Transmission oil.						X
x.	Replace engine oil. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the engine oil.					X	X
y.	Check drive shaft for damage or wear. Replace if required.				X	X	X
z.	Replace engine oil filter cartridge.				X	X	X
aa.	Replace Drive Axle Differential Gear oil. Refer to the Fuel, Lubricants and Consumables section of this manual for details of the oil.						X
ab.	Replace engine Fuel Filter/Water Separator cartridge.					X	X
ac.	Drain dirt and debris from fuel tank.						X
ad.	Replace in-tank fuel filter.						X
ae.	Check, and if necessary tighten, the securing hardware for the connecting sections of the Drive Shaft.						X
af.	Check front and rear suspension systems are undamaged and in a satisfactory working condition. Replace unserviceable components.					X	X
<b>5</b>	<b>Electrical Checks</b>						
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
<b>6</b>	<b>Lubrication</b>						

	Task	Daily	Weekly	Monthly	3 Monthly (250 hrs)	6 Monthly (500 hrs)	12 Monthly (1000 hrs)
a.	Lubricate Tractor in accordance with the Lubrication Chart (if not already done in this maintenance sequence).		X	X	X	X	X
<b>7</b>	<b>Maintenance Records</b>						
a.	Complete all required maintenance records.	X	X	X	X	X	X

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## COLD/HOT WEATHER MAINTENANCE

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

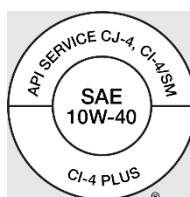
- Perform “Monthly Maintenance”.
- Clean fuel filter.
- Drain engine oil and replace with oil that is suitable for the coming cold or hot weather. Refer to the Fuel, Lubricants and Consumables section of this manual for details of an appropriate oil.
- Before cold weather arrives, drain the radiator 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.

## FUEL, LUBRICANTS AND CONSUMABLES

Fuel/Lubricant	Specification
Fuel	Ultra-low sulphur diesel
Engine oil	API CJ-4 Synthetic 5W-30/10W-40 Diesel Oil.
Transmission oil	CF-4 15W-40 HD Engine Oil
Power Steering hydraulic oil	AW-46 Hydraulic Oil
Drive Axle Differential oil	ISO 220# Gear Oil
Brake fluid	DOT4 Brake Fluid
Grease	3# (Grade 3) Lithium based grease

### NOTE

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



### FILL CAPACITIES

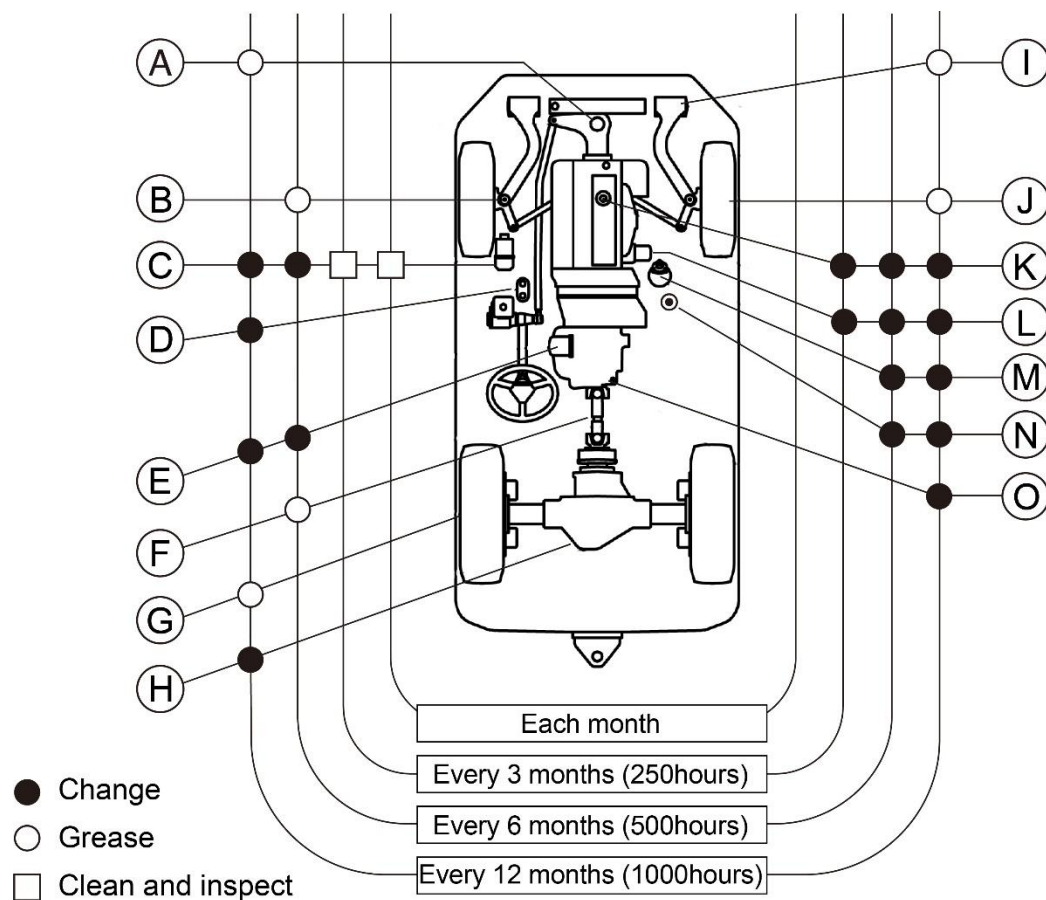
Item	Fill capacities (L)
Fuel tank	60.0
Engine oil (with oil filter)	7.2
Transmission oil	10.5
Power Steering oil	1.0
Drive Axle Differential oil	6.5
Brake fluid	0.6
Grease	As required
Coolant	11.0

## CONSUMABLES

Consumable	Type
Engine Air Filter element	Part No. PRPW00420
Engine Oil Filter cartridge	Part No. PRPW00426
Fuel Filter/Water Separator Cartridge	Part No. PRPW00092
Fuel Pre- Filter, In-Tank	Part No. PRPW00070
Fuel Filter	Part No. PRPW02243
Transmission Oil Filter	Part No. PRPW02232 (ZF Part No. 0501.333.764)

## LUBRICATION

Lubrication requirements are summarised in this Lubrication Diagram.



- A Rocker bearing grease
- B King Pin grease
- C Air Filter cartridge
- D Brake fluid
- E Transmission Oil Filter
- F Drive Shaft grease
- G Rear Wheel bearing grease
- H Drive Axle Differential gear oil

- I Cantilever bearing grease
- J Front Wheel bearing grease
- K Engine oil
- L Engine Oil Filter cartridge
- M Fuel filter
- N Power Steering hydraulic oil
- O Transmission oil

**Figure 15 – Lubrication diagram**

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## 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 Tractor is operating in dusty or extremely dirty areas, or during cold weather.

## TROUBLESHOOTING AND FAILURE DIAGNOSIS

Troubleshooting and failure diagnosis on the XT670D Tractor may be performed as follows:

- The Transmission includes a Built-In-Test (BIT) capability. If a problem occurs with the Transmission, a fault code will appear on the Transmission Gear display.
- The document “Fault Codes for EP90 Forklift EST65” Appended to the rear of this manual describes the Transmission fault codes; and provides detailed troubleshooting and failure diagnosis on the Transmission including fault isolation and identification. References in the document to the EP90 Forklift EST65 may be ignored as the document applies equally to the XT670D Tractor.
- For detailed troubleshooting and failure diagnosis on the engine, including fault isolation and identification, refer to the Kohler Diesel KDI Owner Manual appended to this manual. Refer also to the Additional MIL Message Table on page 49.
- Visually examine the tractor 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, perform the Troubleshooting Procedure given in the Troubleshooting Table below.
- For general electrical problems, a Diagnostic Trouble Code (DTC) will be displayed on the Dash Display Screen. Refer to the DTC Message Table on page 50/ for fault isolation and corrective action.

**Troubleshooting Table**

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. Pull lever or ball head loose or excessively worn.	Adjust or replace.
		c. Steering king pin or associated sleeve is worn.	Replace.
		d. Hub bearing is worn, or its clearance is incorrect.	Adjust or replace.
		e. Thrust bearing of king pin is worn.	Replace.
		f. Gear clearance of steering set is incorrect.	Adjust gear clearance.
		g. Front wheel or tire is damaged, or deformed, or has uneven wear.	Replace.
		h. The Toe-in is incorrect.	Adjust.
		i. Steering System loose, not secure.	Tighten securing hardware.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
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. Rear rod ball head requires lubrication.	Lubricate with grease.
		d. Oil in steering system contaminated with debris or foreign substance.	Replace oil and Oil Filter.
		e. Steering system oil level low.	Top-up oil level.
		f. Bent steering linkage.	Repair or replace.
		g. Incorrect steering box gear clearance	Adjust clearance.
		h. King pin bearing is worn or damaged.	Replace.
		i. Toe-in incorrect.	Adjust.
		j. Oil level low.	Top-up oil until correct oil level is achieved.
		k. Hydraulic oil leak, or blockage or restriction in a hydraulic hose.	Repair/replace hoses as required and rectify leaks.
		l. Air trapped in Steering System hydraulic hoses.	Vent air from Steering System hydraulics.
Steering System	Oil does not rise	a. Hydraulic hose leaking oil, or blockage in a hydraulic hose.	Replace or repair hoses as required.
		b. Oil leak from a Steering System seal.	Replace seal.
	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. Track rod end loose.	Adjust or replace.
		f. Steering box gear clearance incorrect.	Adjust.
		g. Steering wheel deformed.	Replace.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
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 gear does not engage correctly.	
		c. Worm gear and/or worm unserviceable.	
		d. Left and/or right wheel toe-in incorrect.	Adjust.
		e. Tire pressure incorrect.	Adjust tire pressure to bring it within specification.
Steering System	Abnormal noise coming from Steering System	a. Air trapped in Steering System hydraulic hoses.	Vent air from Steering System hydraulics.
		b. Worm gear and/or worm unserviceable.	Disassemble, clean, and replace unserviceable parts.
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.

Sub-Assembly	Trouble	Probable Cause	Corrective Action
		f. Brake shoe lining contact is abnormal.	Adjust.
		g. Brake lining is worn.	Replace.
Braking System	Brake only applies on one side	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.
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.
		f. Blocked fluid return port on brake master cylinder.	Clean oil return port.
		g. Blockage or restriction in the Brake hydraulic system.	Clean and flush hydraulic components to remove blockage or restriction.

### Additional MIL Message Table

Item	MIL Message	Probable Fault	Corrective Action
1.	N/A	If you have not already done so, check the ATM Mini Fuses in the Central Control Box.	Replace any fuses that have blown.

**DTC Message Table**

Item	DTC Message	Probable Fault	Corrective Action
1.	Low Fuel Level!	Indicates need to re-fuel.	Refuel the Tractor.
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.

## REPAIR

Repair of the XT670D Tractor is by direct replacement of the faulty or damaged component. The Exploded Parts View illustrations show all the components and how the Tractor 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 Tractor. Also, the time and effort required to strip down the Tractor, replace the chassis, and then rebuild, is such that significant damage to the Chassis renders the Tractor “Beyond Economic Repair”.

### TORQUE VALUES

The Tractor 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 on the 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			4.8	6.8	8.8	10.9
Minimum yield strength			340 MPa	480 MPa	660 MPa	940 MPa
Bolt	Indent hex	Hex Socket	Recommended Torque			
mm	mm	mm	Nm	Nm	Nm	Nm
M6	-	-	-	-	10.4	15
M8	-	-	-	-	25.4	37.6
M10	-	-	-	-	50	72
M12	-	-	-	-	88	126
M14	22	12	69	98	137	165
M16	24	14	98	137	206	247
M18	27	14	137	206	284	341
M20	30	17	176	296	402	569
M22	32	17	225	333	539	765
M24	36	19	314	470	686	981
M27	41	19	441	637	1029	1472
M30	46	22	588	882	1225	1962
M33	50	24	735	1127	1470	2060
M36	55	27	980	1470	1764	2453
M39	60	27/30	1176	1764	2156	2943
M42	65	32	1519	2352	2744	3826

## 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 XT670D Tractor, 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.

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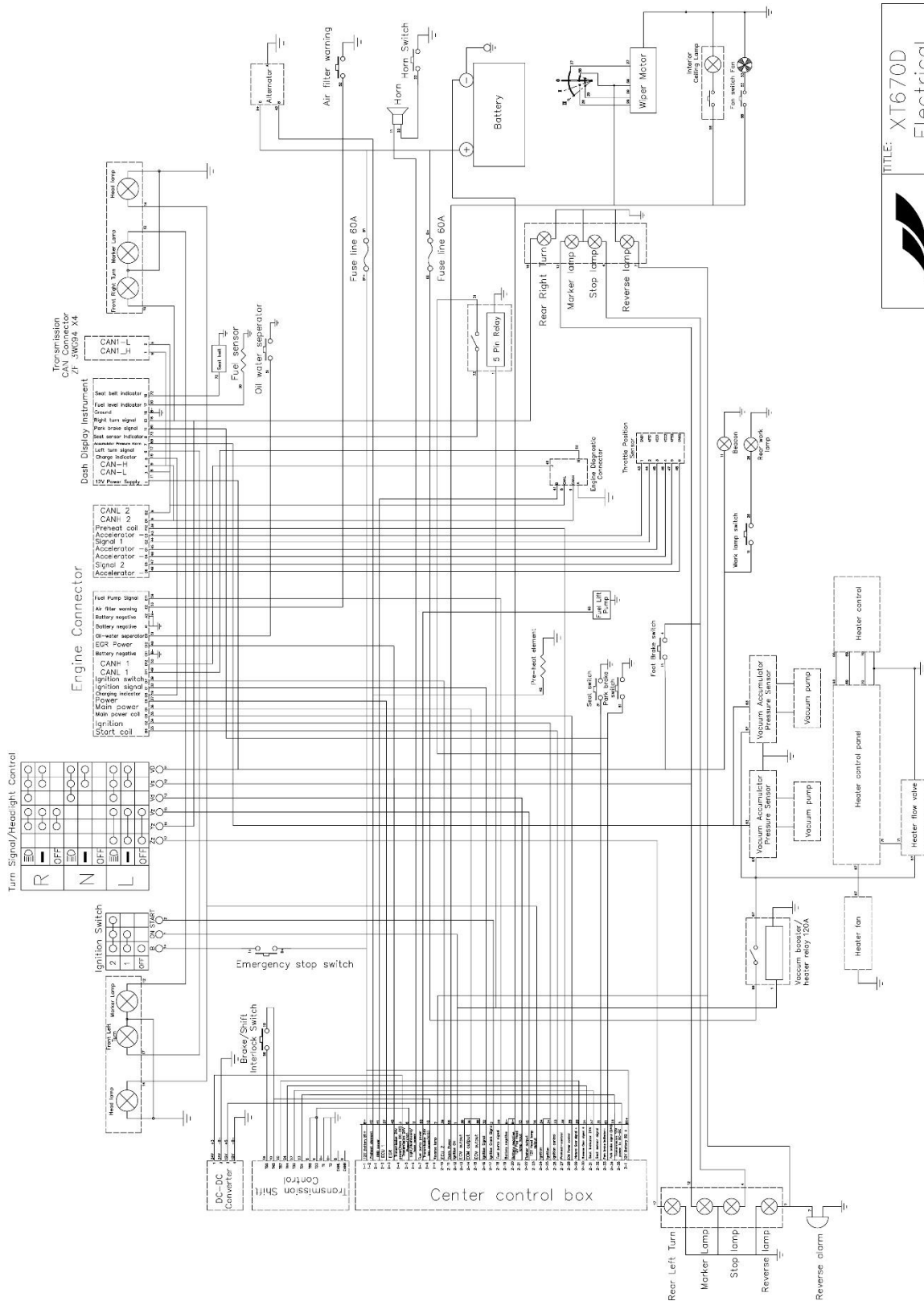
## ELECTRICAL SCHEMATICS

These Electrical Schematics are provided to assist in troubleshooting.

This manual covers the build standard of XT670D Tractors that were manufactured during 2022.

For a XT670D Tractor with a MY of 2022, the following electrical diagrams are provided (in this sequence):

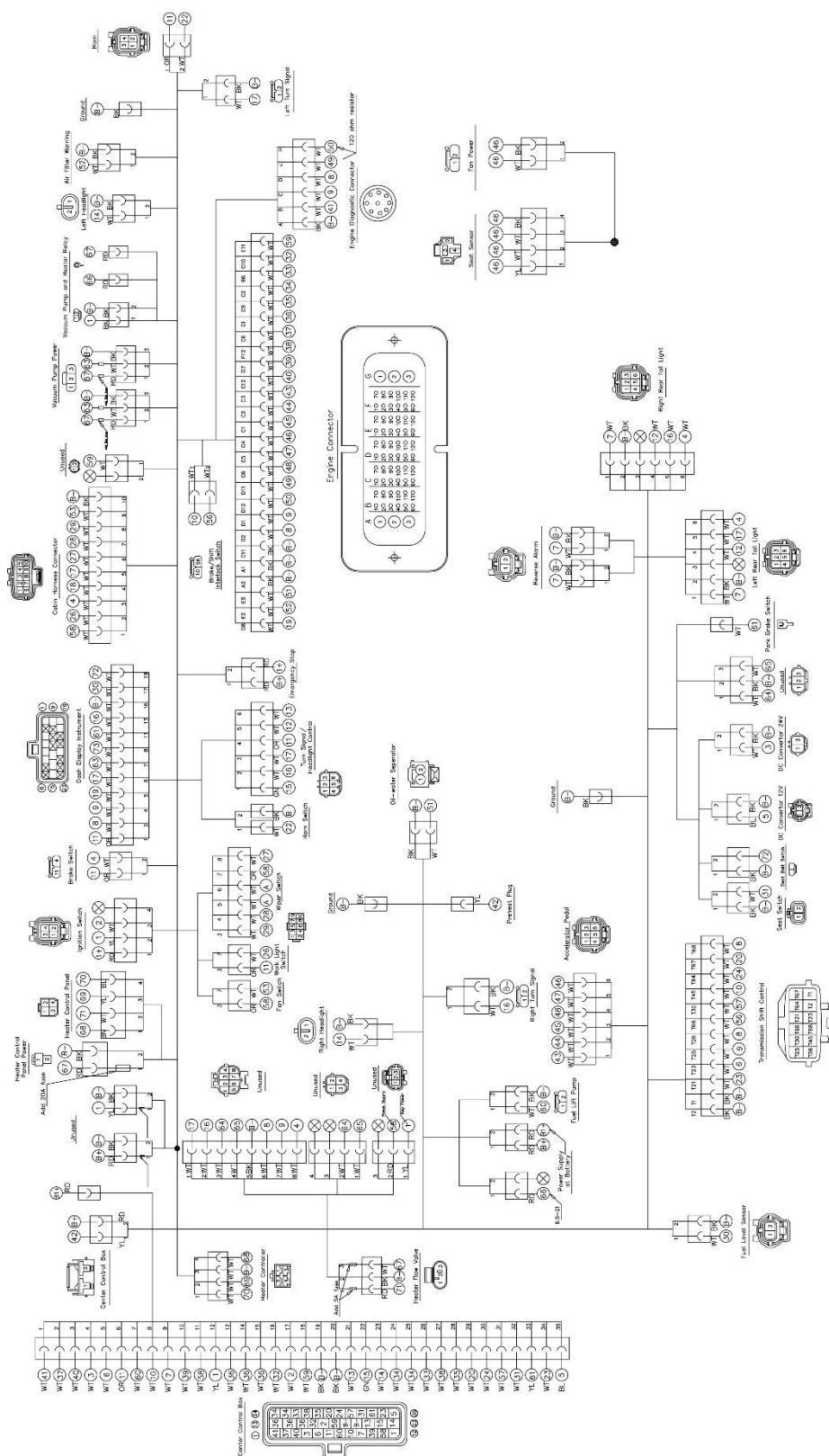
- XT670D Electrical Schematic 2022 MY
- XT670D Tractor Harness 2022 MY
- XT670D Tractor Cabin Harness 2022 MY
- XT670D Dash Display Instrument 2022 MY, Part No. PRPW00589
- XT670D Central Control Box 2022 MY, Part No. PRPW00573
- Ignition Switch Assembly, Part No. PRPW00051
- XT670D Turn Signal/Headlamp Control 2022 MY, Part No. PRPW00225



TITLE: XT670D  
Electrical  
Schematic  
2022 MY

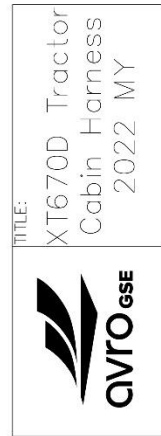


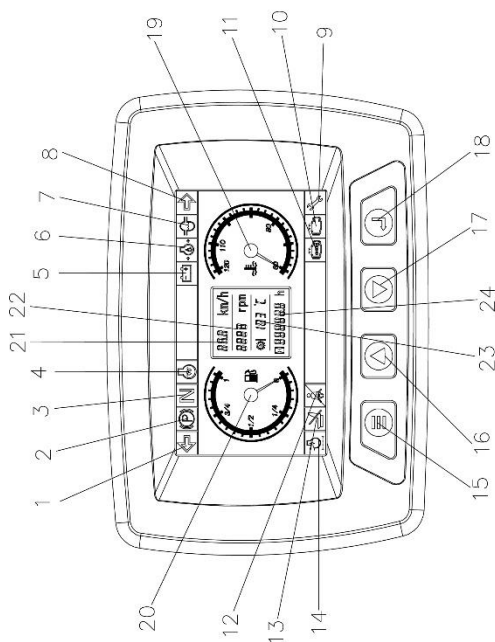
# XT670D Tractor



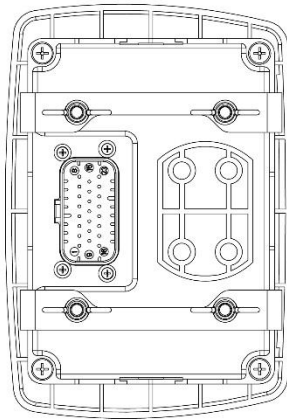
TITLE: XT670D  
Tractor  
Harness  
2022 MY



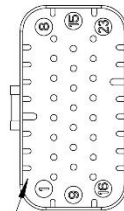




1	Left Turn Signal	13	Seat Sensor Indicator
2	Park Brake Indicator	14	Air Filter Alarm Indicator
3	Neutral Position Indicator	15	Menu
4	Preheat Indicator	16	Page Up
5	Charging Indicator	17	Page Down
6	Engine Oil Pressure Warning	18	Enter/Return
7	Oil-Water Separator Indicator	19	Coolant Temp
8	Right Turn Signal	20	Fuel Level
9	Service Indicator	21	Speedometer
10	MIL Fault Indicator	22	Engine Tachometer
11	Check Engine Indicator	23	Transmission Oil Temp
12	Seatbelt Engaged Indicator	24	Operating Hours



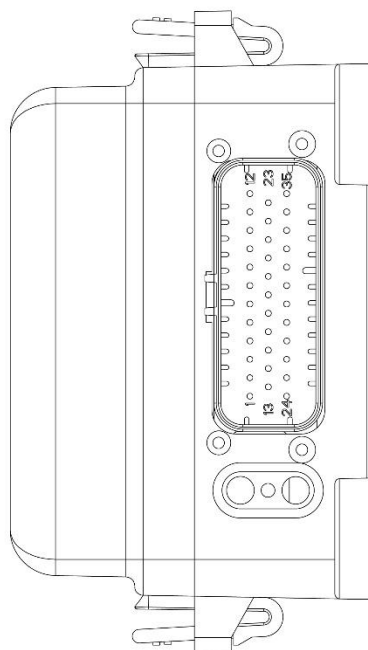
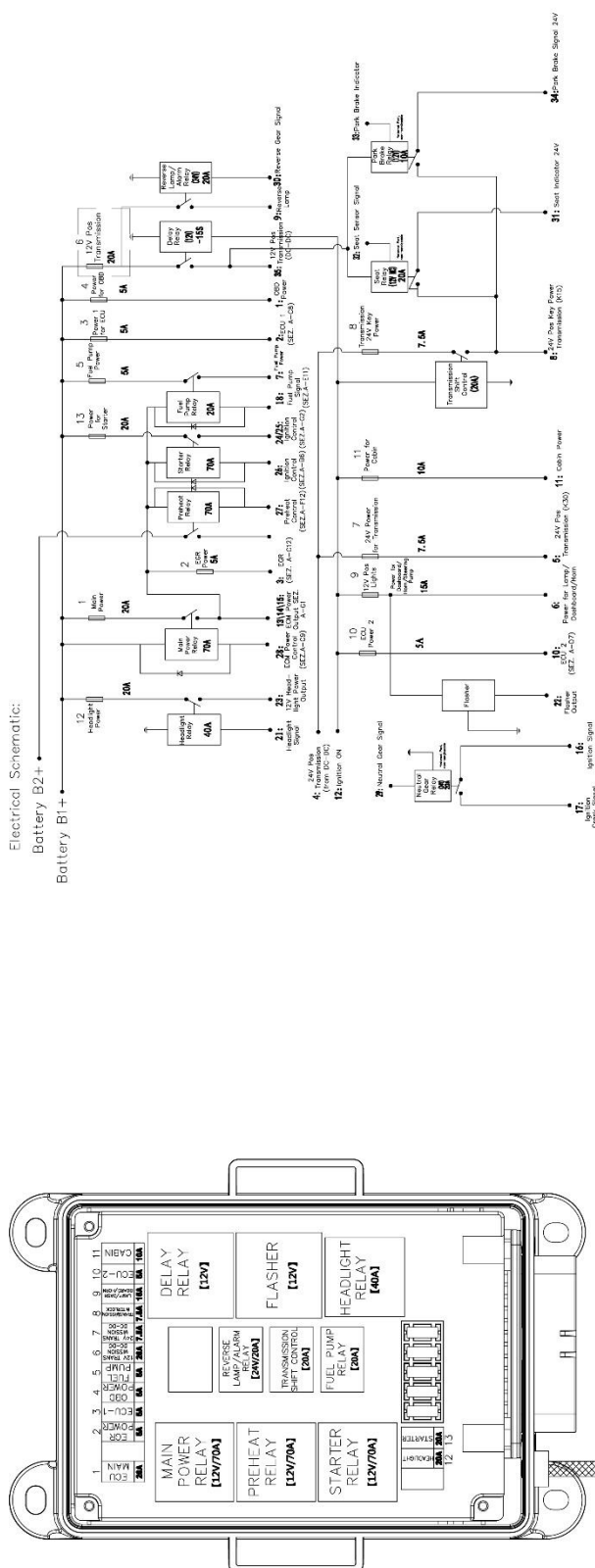
Water-proof socket /  
Junction Box  
AMP 716228-1



Socket /Junction Box Terminal:

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

	TITLE: XT670D Dash Display Instrument 2022 MY
	PRPW00589



### Single Core Connector Function Definition

Line Color	Function	Line Color	Function
6.0RD	Battery B1+	4.0YL	Preheat Element
4.0RD/YL	Battery B2+		

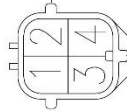
35-Core connector function definition:

Pin. No.	Function	Pin. No.	Function
1	GBD Power	19	Battery Negative
2	ECU 1 (SEZ. A-C8)	20	Battery Negative
3	ERS (SEZ. A-C12)	21	Headlight Signal
4	24V Pos. Transmission	22	Flasher Output
5	24V Pos. Transmission (N32)	23	12V Headlight Power Output
6	Power for lamp/ barbarian/ horn	24	Ignition Control (SEZ. A-32)
7	Fuel Pump Power	25	Ignition Control (SEZ. A-38)
8	24V Pos Key Power Transmission (A15)	26	Ignition Control (SEZ. A-38)
9	Reverse Lamp	27	Ignition Control (SEZ. A-32)
10	ECU 2 (SEZ. A-D7)	28	ECM Power Control (SEZ. A-C9)
11	Cabin Power	29	Neutral Gear Signal
12	Ignition ON	30	Reverse Gear Signal
13		31	Seat Indicator 24V
14	ECM Power Output SEZ. A-G1	32	Seat Sensor Signal
15		33	Park Brake Indicator
16	Ignition Signal	34	Park Brake Signal 24V
17	Ignition Crank Signal	35	12V Pos. Transmission (DC-DC)
18	Reverse Signal (SEZ. A-37)		

	<b>QVRO</b> GSE
TITLE: X1670D Central Control Box 2022 M/Y	PRPW00573

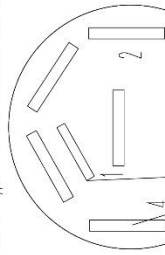
DJ6.3 1/4 Red pin

AMP 4-position	174259-2
male terminal	171661-1

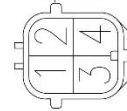



Terminal#	Function	Color/Gauge
1	BAT	RD/1.5mm <sup>2</sup>
2	ACC	WT/1.5mm <sup>2</sup>
4	START	WT/0.75mm <sup>2</sup>

Ignition switch  
part #: PRPW00051

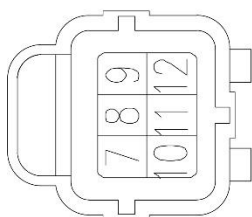


AMP 4-position	174259-2
male terminal	171661-1



	TITLE:
	Ignition Switch Assembly PRPW00051

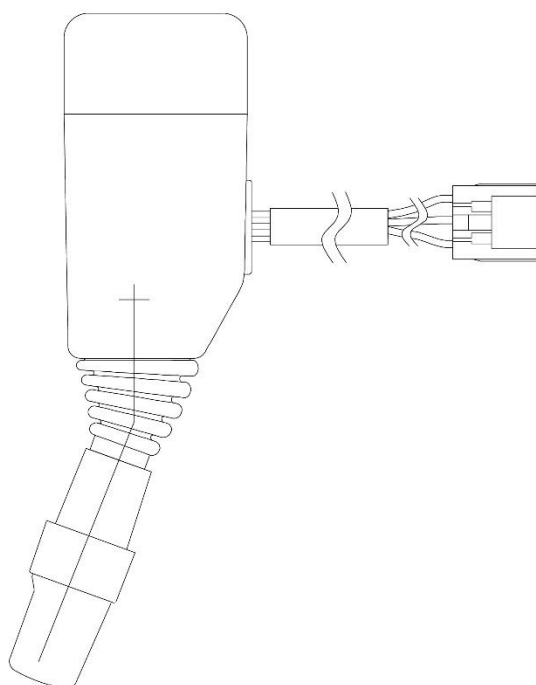




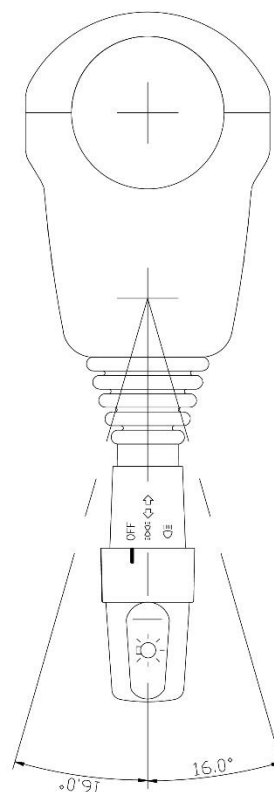
JS-6-20  
174262-2

Pin No.	7	8	9	10	11	12
Color	Black & Orange Yellow	Grey	Brown	Yellow	Red	
R	⊖	⊖	⊖	⊖	⊖	⊖
	⊖	⊖	⊖	⊖	⊖	⊖
N	⊖	⊖	⊖	⊖	⊖	⊖
	⊖	⊖	⊖	⊖	⊖	⊖
L	⊖	⊖	⊖	⊖	⊖	⊖
	⊖	⊖	⊖	⊖	⊖	⊖

	TITLE: XT670D Turn Signal/Headlamp Control - 2022 MY
	PRPW00225



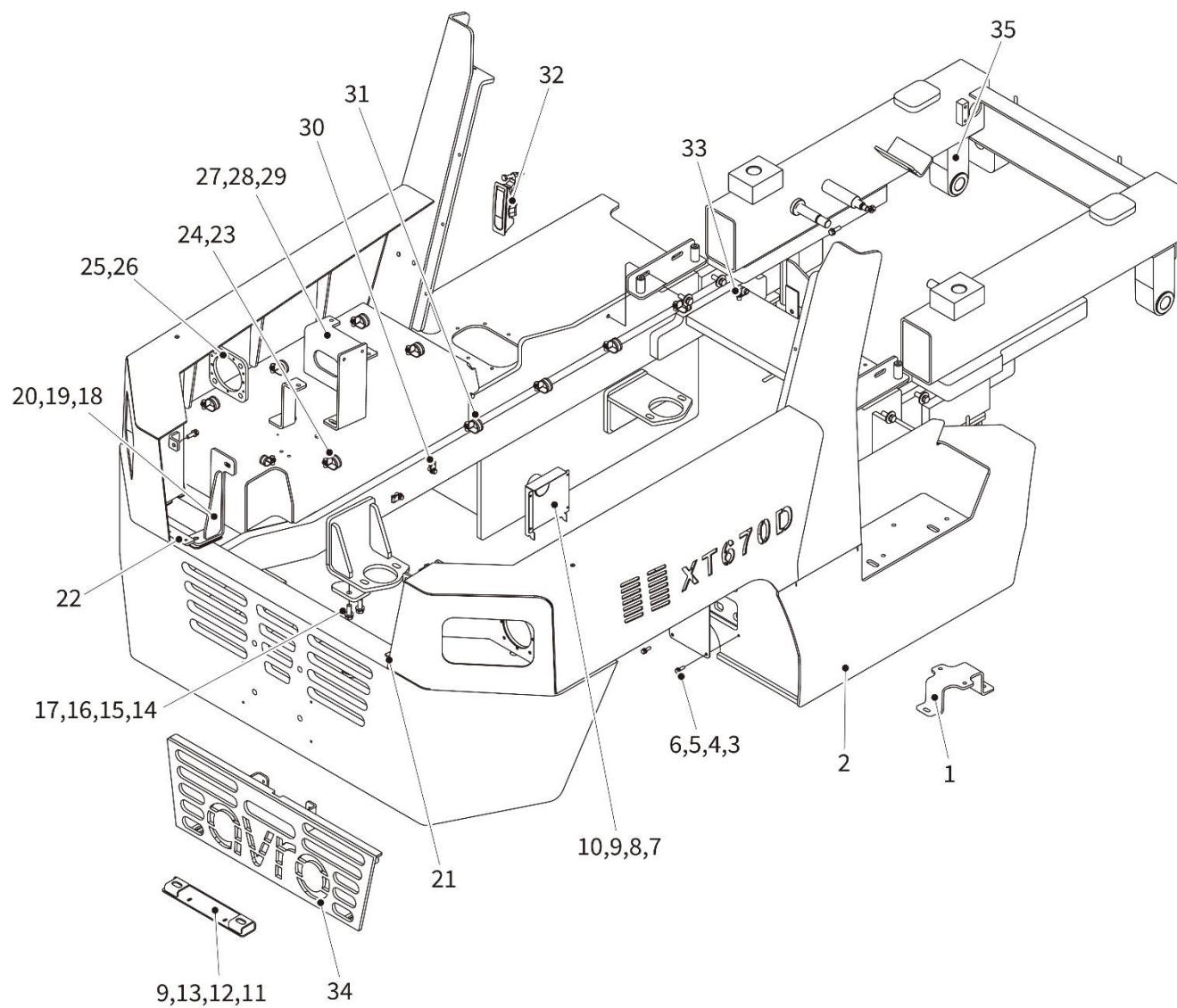
JS-6-20  
174262-2



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# EXPLODED PARTS VIEWS & PARTS LISTS

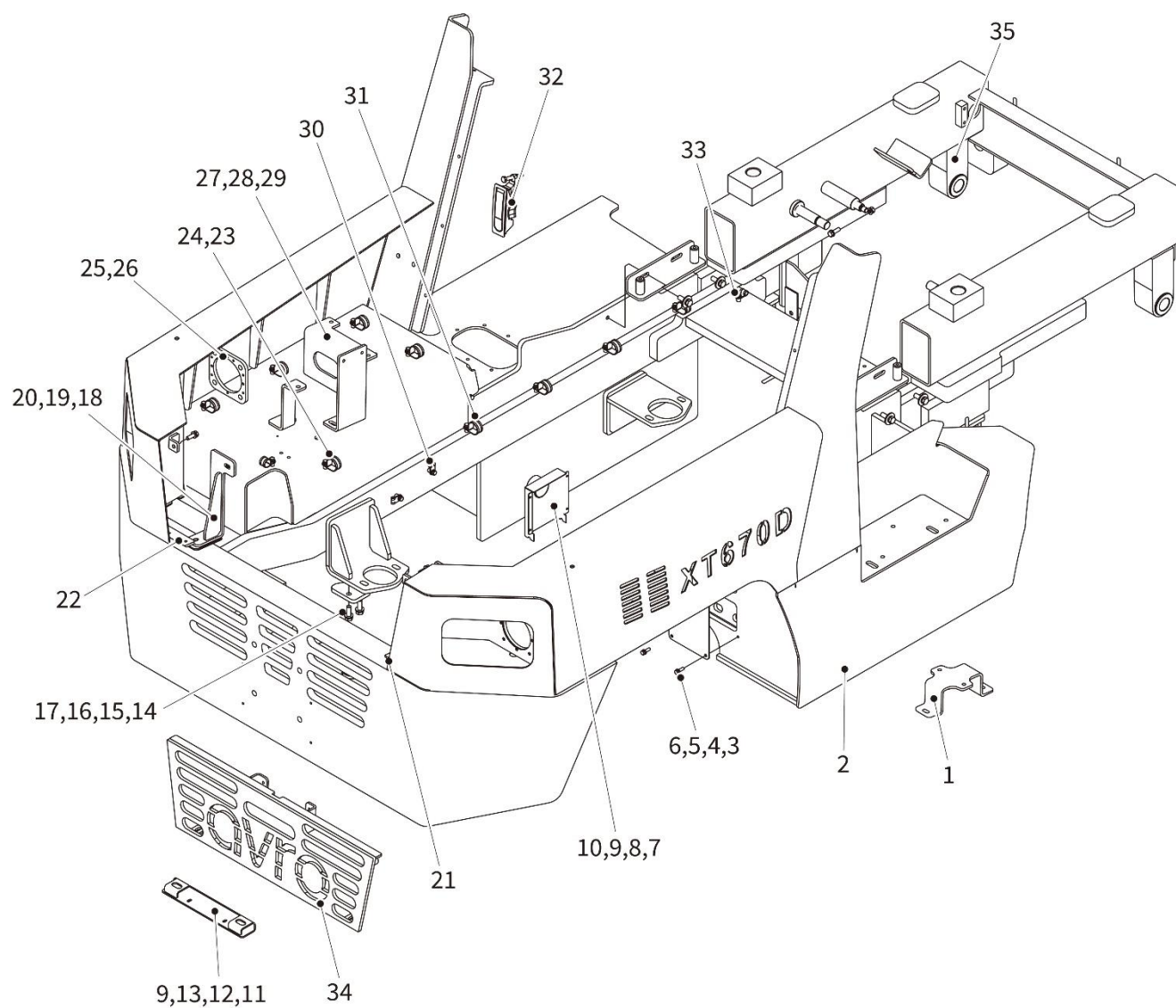
## BODY & EXTERIOR



**Chassis Assembly - Exploded Parts View**

### Chassis Assembly – Spare Parts List

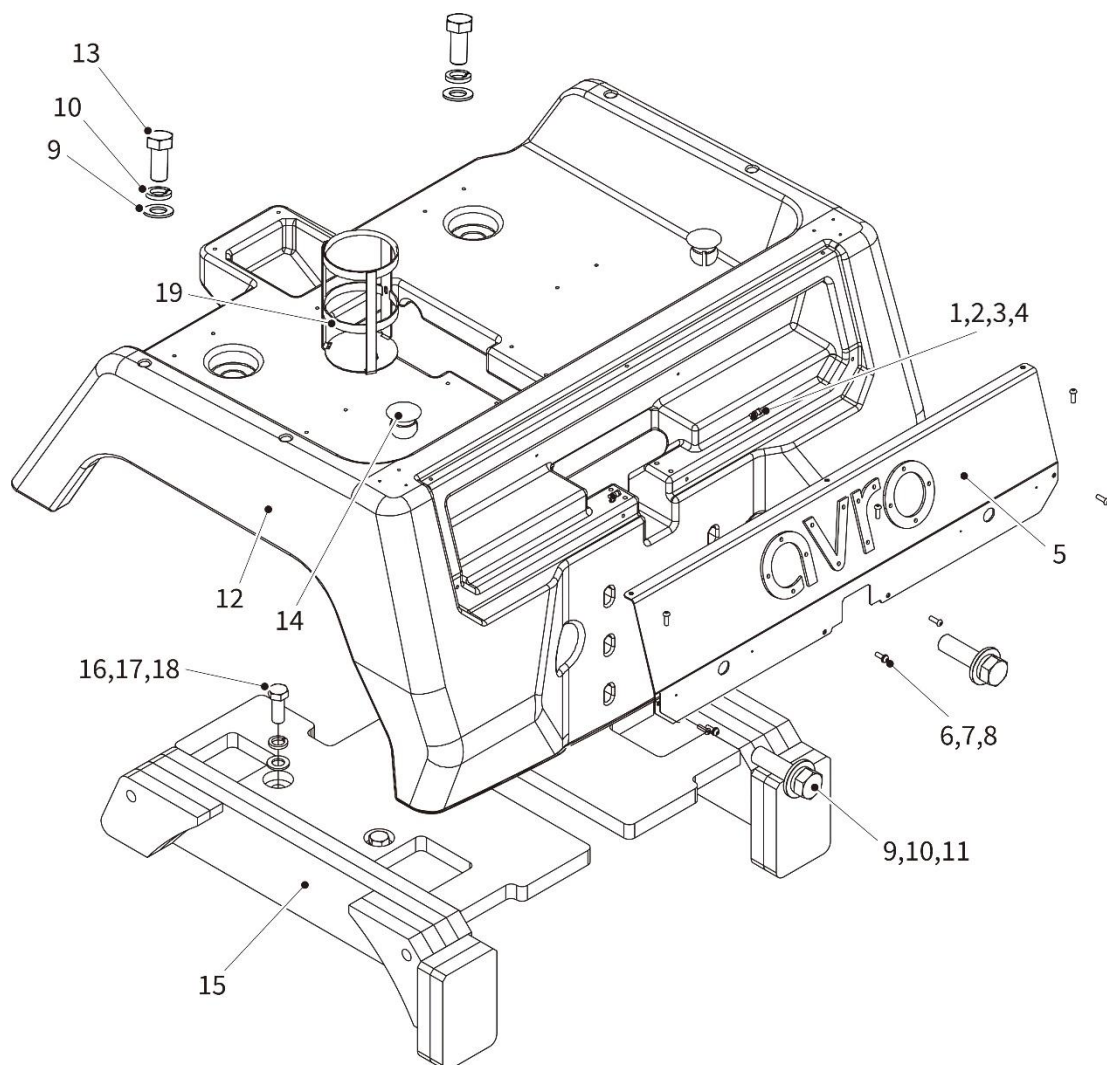
Item	Part No.	Description	Qty	Remarks
1	PRPW02345	Air Filter Bracket	1	
2	PRPW02358	Chassis Frame Assembly	1	
3	PRFA00001	Bolt, M6 x 20 mm	4	
4	PRFA00007	Washer, Lock, M6	38	
5	PRFA00006	Washer, Flat, M6	38	
6	PRPW00605	Cover Plate	1	
7	PRPW02359	Suction Hood Assembly	1	
8	PRFA00133	Bolt, M8 x 12 mm	4	
9	PRFA00010	Washer, Lock, M8	23	
10	PRFA00009	Washer, Flat, M8	11	
11	PRPW02360	Radiator Bracket	1	
12	PRFA00013	Bolt, M8 x 25 mm	8	
13	PRFA00009	Washer, Flat, M8	12	
14	PRFA00008	Bolt, M10 x 30 mm	8	
15	PRFA00012	Washer, Lock, M10	10	
16	PRFA00011	Washer, Flat, M10	6	
17	PRPW00609	Retainer	2	
18	PRPW02361	Radiator Support Assembly, Left	1	
19	PRPW02362	Radiator Support Assembly, Right	1	
20	PRPW02363	Gasket	2	
21	PRPW00608	Grille Bracket, Left	1	
22	PRPW00610	Grille Bracket, Right	1	
23	PRFA00002	Clamp, R $\phi$ 20 mm	12	
24	PRFA00014	Bolt, M6 x 10 mm	34	
25	PRPW00612	Headlight Bracket	2	
26	PRPW00613	Headlight Gasket	2	
27	PRPW02364	Tank Side Support Bracket	1	
28	PRPW02365	Support Bracket	1	
29	PRPW02366	Oil-Water Separator Support Bracket	1	
30	PRFA00003	Clamp, R $\phi$ 6	5	
31	PRFA00005	Clamp, R $\phi$ 40 mm	7	



**Chassis Assembly - Exploded Parts View**

**Chassis Assembly – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
32	PRPW00059	Access Door Latch	1	
33	PRPW00614	Cable Plate	1	
34	PRPW00558	Front Grille Assembly	1	
35	T20A1-10019	Bushing	2	

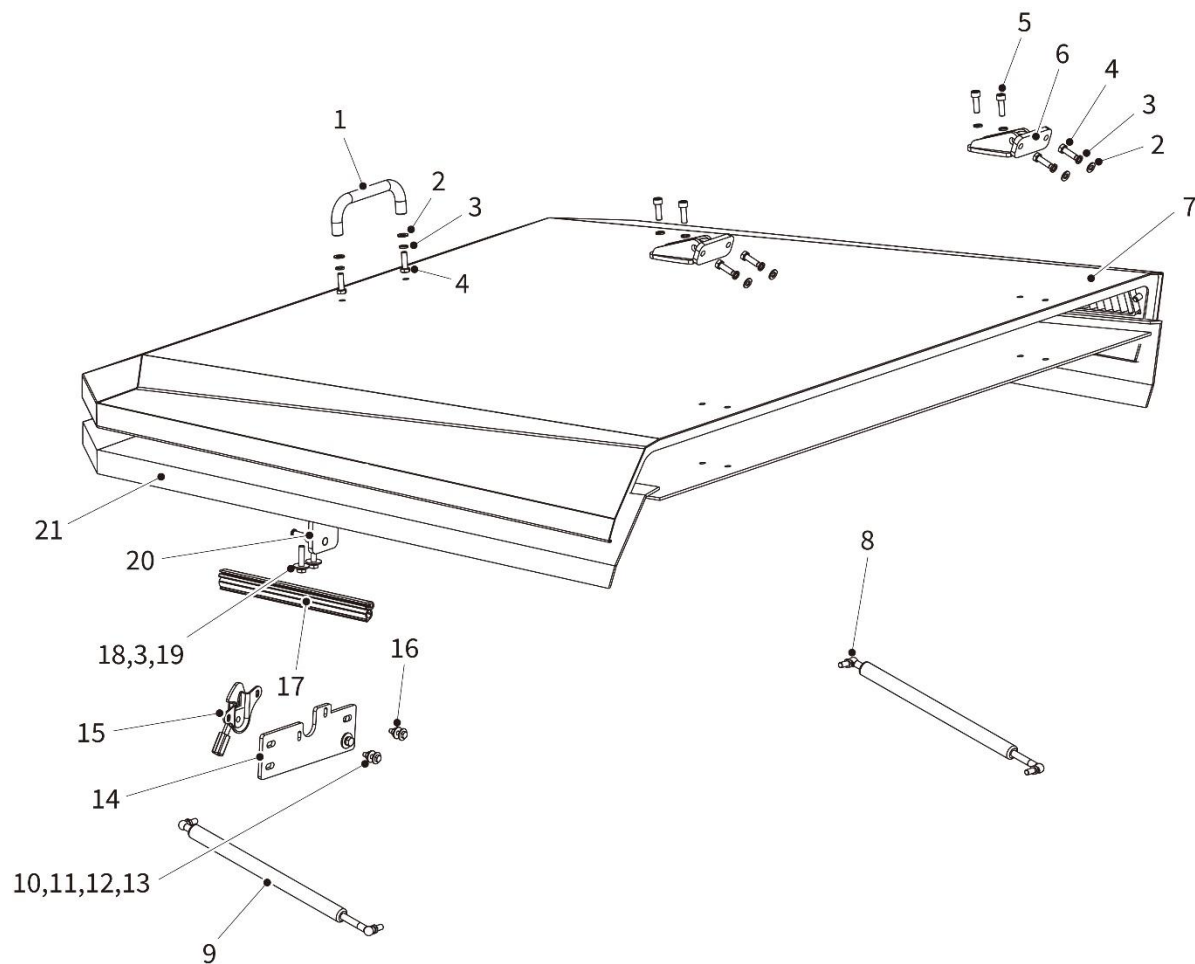


**Counterweight Mounting - Exploded Parts View**



### Counterweight Mounting – Spare Parts List

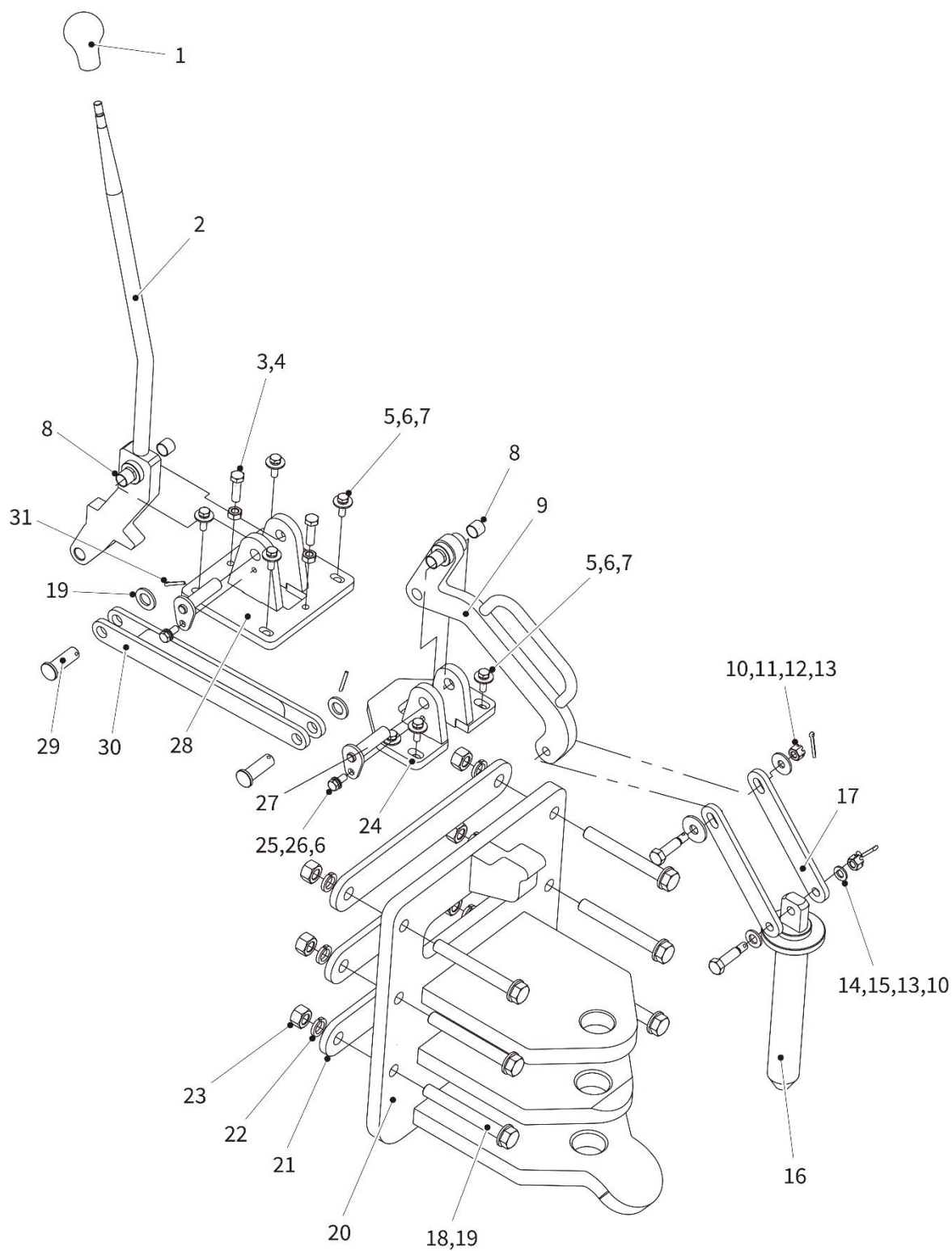
Item	Part No.	Description	Qty	Remarks
1	PRFA00007	Washer, Lock, M6	2	
2	PRFA00006	Washer, Flat, M6	2	
3	PRFA00004	Clamp, R $\phi$ 10	2	
4	PRFA00001	Bolt, M6 x 20 mm	5	
5	PRPW00619	Cover	1	
6	PRFA00009	Washer, Flat, M8	7	
7	PRFA00010	Washer, Lock, M8	7	
8	PRFA00017	Screw, M8 x 25 mm	7	
9	PRFA00015	Washer, Lock, M36	4	
10	PRFA00018	Washer, Flat, Thickened	4	
11	PRFA00019	Bolt, M36 x 130 x 70	2	
12	PRPW00621	Rear Counterweight Balance	1	
13	PRFA00048	Bolt, M36 x 80 x 70	2	
14	PRPW00620	Cover, Decorative	2	
15	PRPW02367	Side Counter-Balance Weight	1	
16	PRFA00176	Bolt, M24 x 60 mm	4	
17	PRFA00177	Washer, Lock, M24	4	
18	PRFA00178	Washer, Flat, M24	4	
19	PRPW00622	Extinguisher Stand	1	



**Body and Exterior - Exploded Parts View**

**Body and Exterior – Spare Parts List**

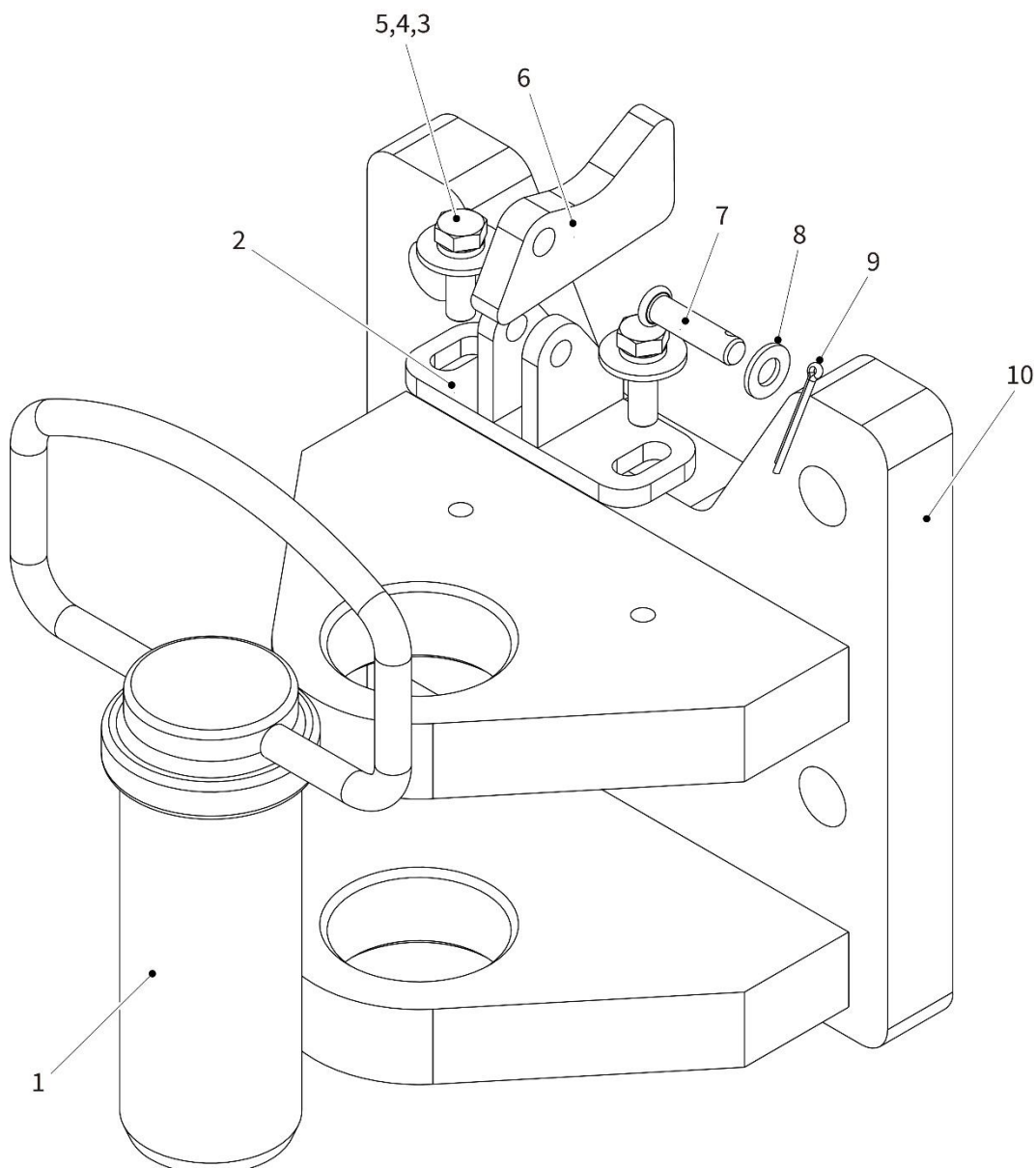
Item	Part No.	Description	Qty	Remarks
1	PRPW00626	Handle	1	
2	PRFA00009	Washer, Flat, M8	6	
3	PRFA00010	Washer, Lock, M8	27	
4	PRFA00013	Bolt, M8 x 25 mm	18	
5	PRFA00017	Screw, M8 x 25 mm	4	
6	PRPW00627	Hinge Assembly	2	
7	PRPW00457	Hood	1	
8	PRPW00631	Hood Gas Spring (right)	1	
9	PRPW00206	Hood gas spring (left)	1	
10	PRFA00108	Bolt, M6 x 16 mm	1	
11	PRFA00007	Washer, Lock, M6	1	
12	PRFA00025	Nut, M6	2	
13	PRFA00179	Bolt, M6 x 25 mm	2	
14	PRPW00625	Engine Cover Plate	1	
15	PRPW00199	Hood Latch Assy	1	
16	PRPW02368	Through Joint	1	
17	PRPW00623	Seal Strip	1	
18	PRFA00047	Bolt, M8 x 35mm	2	
19	PRFA00009	Washer, Flat, M8	17	
20	PRPW00385	Hood latch bolt assy	1	
21	PRPW00624	Heat Insulation, Wool	1	



**Rear Towing Hitch - Exploded Parts View**

### Rear Towing Hitch – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW00576	Knob, Interior Hitch Handle	1	
2	PRPW00644	Lever Assembly	1	
3	PRFA00026	Bolt, M10 x 35mm	2	
4	PRFA00036	Nut, M10	2	
5	PRFA00013	Bolt, M8 x 25mm	6	
6	PRFA00010	Washer, Lock, M8	8	
7	PRFA00009	Washer, Flat, M8	6	
8	PRPW00802	Bushing	4	
9	PRPW00559	Rear Hitch Handle, Exterior	1	
10	PRFA00087	Nut, Special, M10	2	
11	PRFA00011	Washer, Flat, M10	1	
12	PRFA00030	Washer, Flat, M12	1	
13	PRFA00031	Bolt, Special	2	
14	PRFA00011	Washer, Flat, M10	1	
15	PRFA00030	Washer, Flat, M12	1	
16	PRPW00645	Towing Pin	1	
17	PRPW00646	Plate-link	2	
18	PRFA00032	Bolt, M16 x 130mm	6	
19	PRFA00068	Washer, Flat, M16	8	
20	PRPW00804	Mounting Base	1	
21	PRPW00548	Backing Plate, Rear Hitch	3	
22	PRFA00069	Washer, Lock, M16	6	
23	PRFA00073	Nut, M16	6	
24	PRPW00805	Bracket	1	
25	PRFA00009	Washer, Flat, M8	2	
26	PRFA00033	Bolt, M8 x 20mm	2	
27	PRPW00647	Pin Assembly	2	
28	PRPW00648	Level Assembly	1	
29	PRFA00088	Pin	2	
30	PRPW00651	Plate	1	
31	PRFA00137	Pin, Split Cotter, 4 x 25mm	4	

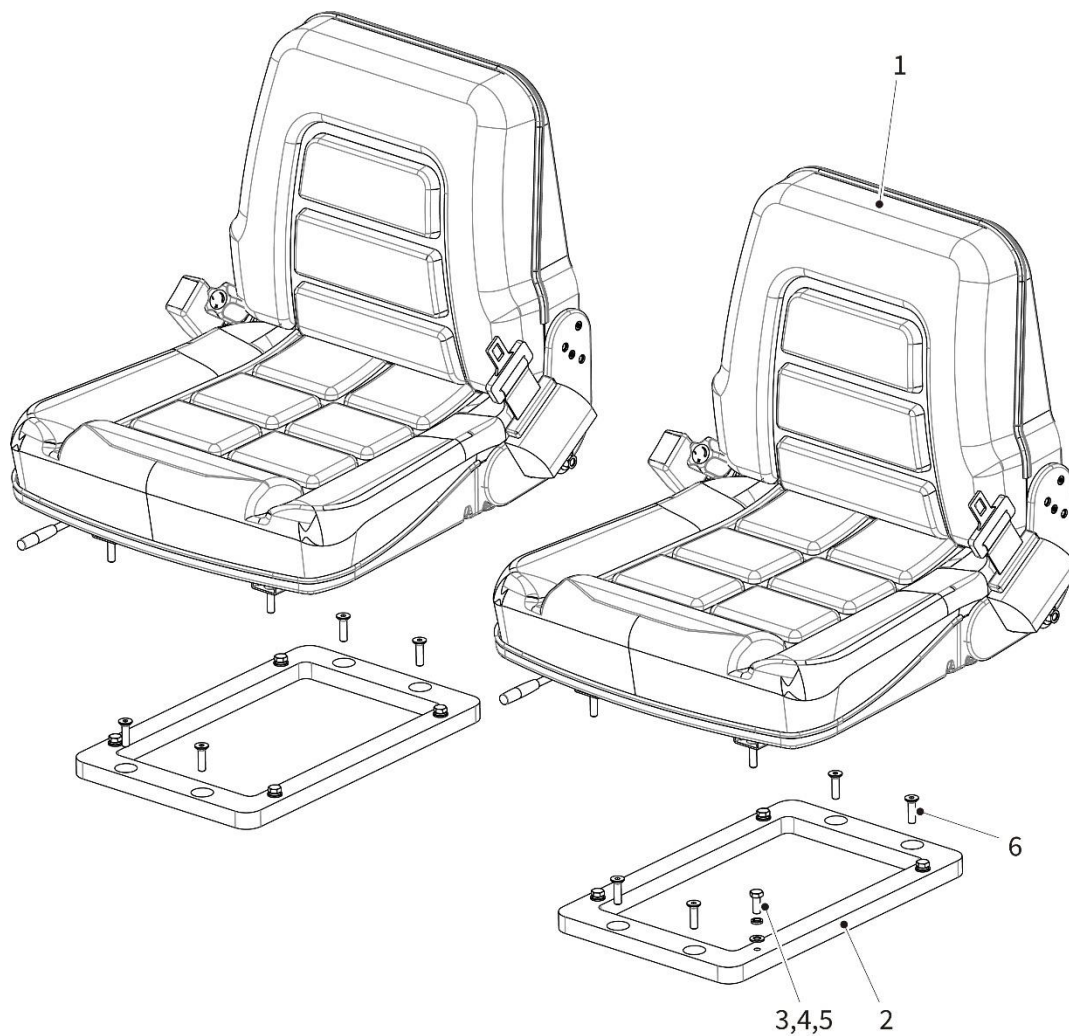


**Front Hitch - Exploded Parts View**

**Front Hitch – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1	PRPW00652	Front Towing Pin	1	
2	PRPW00653	Adjusting Base	1	
3	PRFA00013	Bolt, M8 x 25mm	2	
4	PRFA00010	Washer, Lock, M8	2	
5	PRFA00009	Washer, Flat, M8	2	
6	PRPW00649	Pin Lock	1	
7	PRFA00089	Pin, 8 x 30mm	1	
8	PRFA00009	Washer, Flat, M8	1	
9	PRFA00105	Pin, Split Cotter, 2.5 x 20mm	1	
10	PRPW00654	Front Hitch	1	

## SEATS



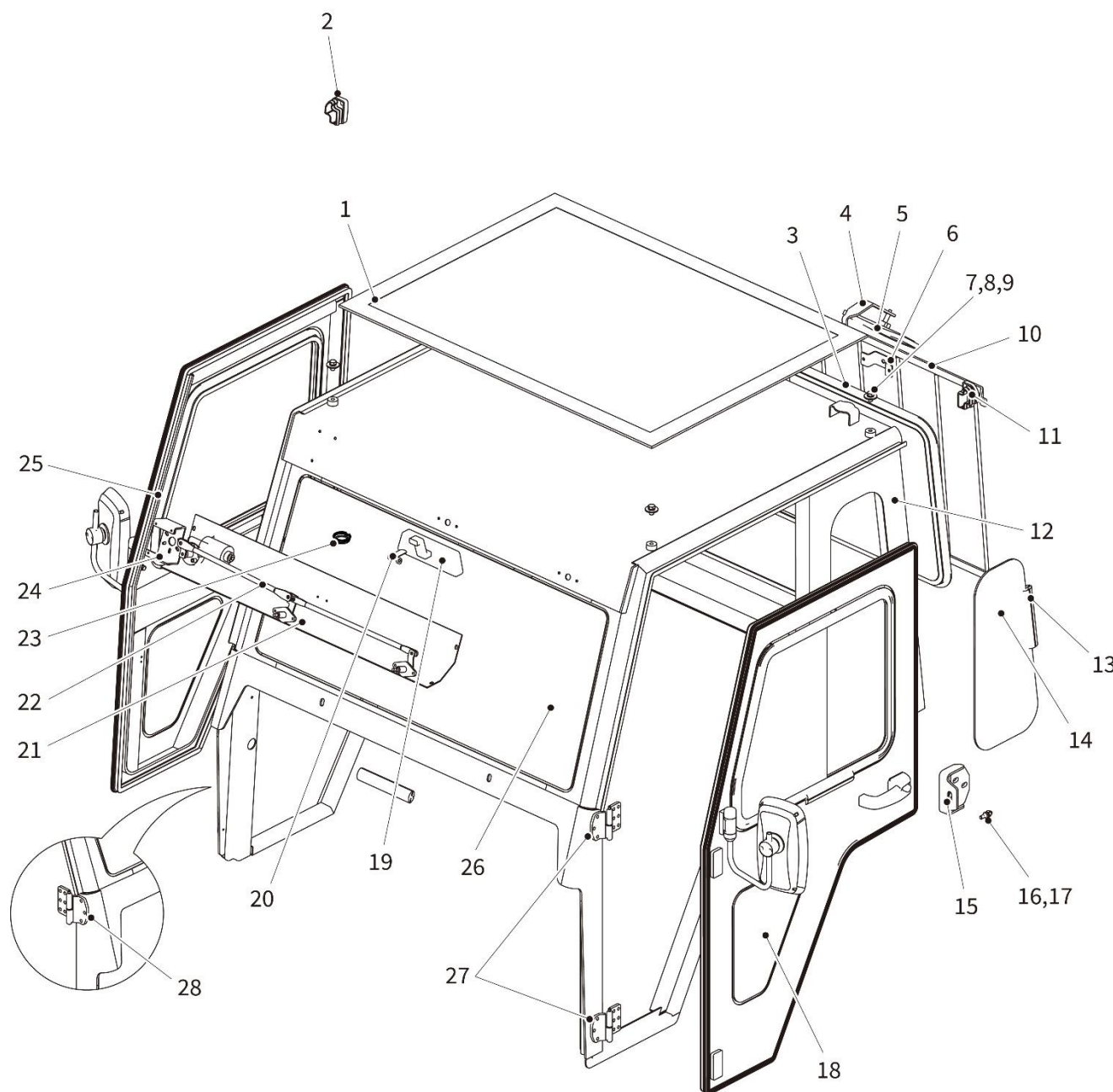
**Seats - Exploded Parts View**



**Seats – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1	PRPW00054	Seat Assembly	2	
2	PRPW00657	Bracket	2	
3	PRFA00033	Bolt, M8 x 20 mm	8	
4	PRFA00010	Washer, Lock, M8	8	
5	PRFA00009	Washer, Flat, M8	8	
6	PRFA00180	Screw, M8 x 30 mm	8	

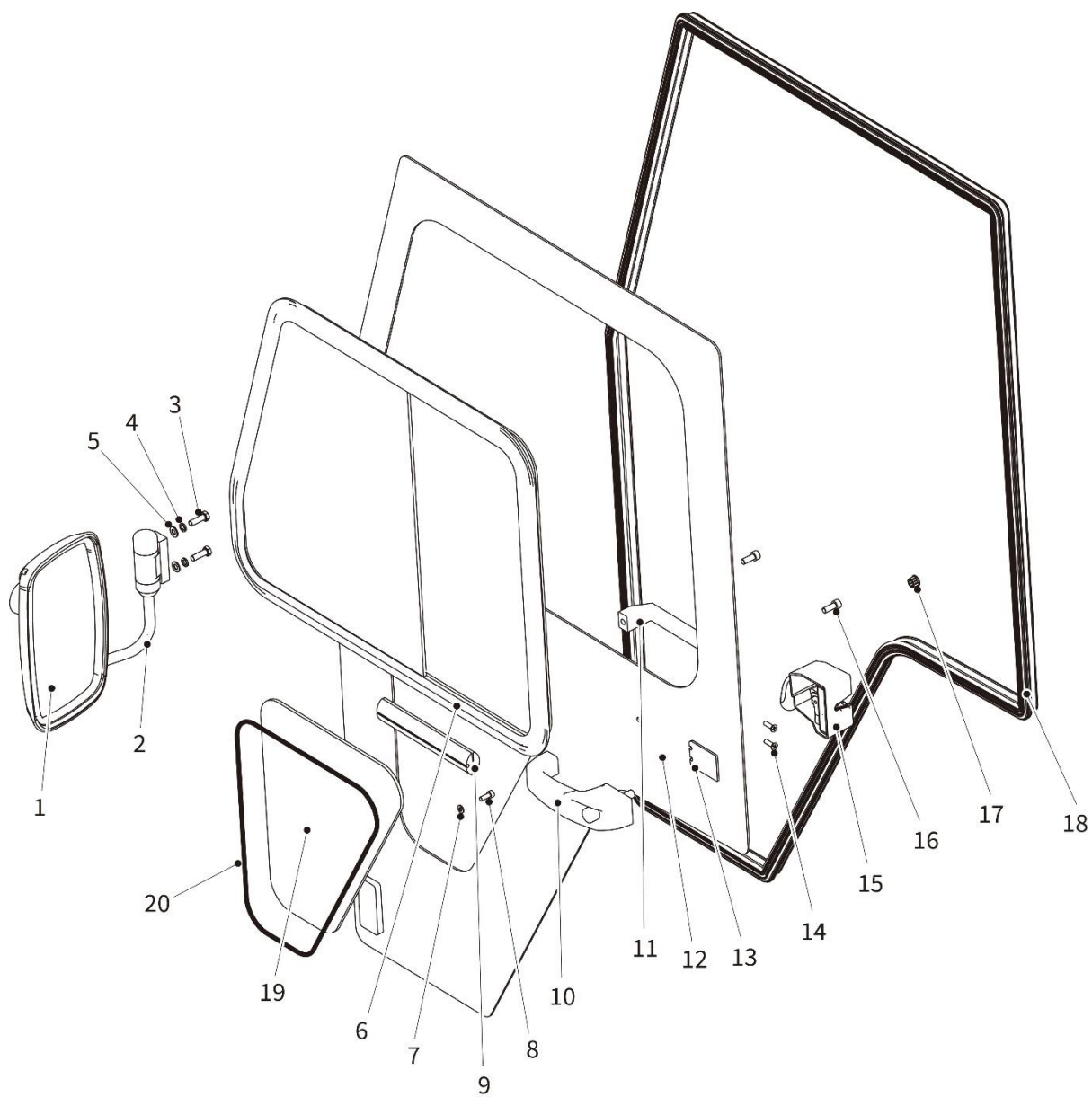
## CAB



**Cab Mounting - Exploded Parts View**

### Cab Mounting – Spare Parts List

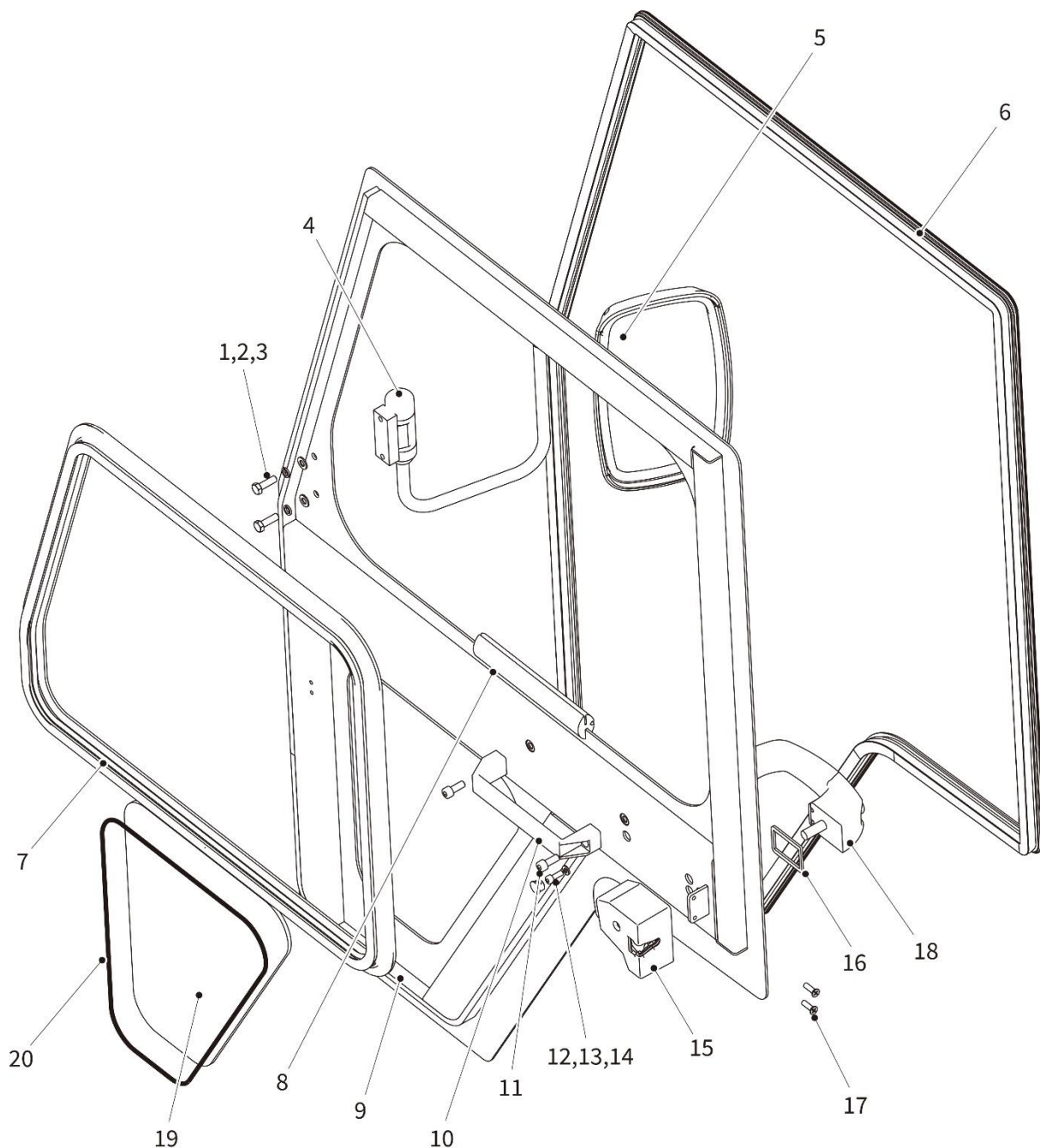
Item	Part No.	Description	Qty	Remarks
1	PRPW00658	Top Soft Package	1	
2	PRPW00659	Rear Gromet Cover, Right	1	
3	PRPW00387	Rear Window	1	
4	PRPW00587	Mounting Bracket, Rear Hitch Mirror	1	
5	PRPW00586	Rear Hitch Mirror	1	
6	PRPW00660	Work Light Bracket	1	
7	PRFA00030	Washer, Flat, M12	4	
8	PRFA00034	Washer, Lock, M12	4	
9	PRFA00035	Bolt, M12 x 20mm	4	
10	PRPW00661	Rear Guardrail Assembly	1	
11	PRPW00662	Rear Gromet Cover, Left	1	
12	PRPW00664	Cab Assembly, Welded	1	
13	PRPW00364	Seal, Rear Side Glass	3	
14	PRPW00202	Rear Side Glass	2	
15	PRPW00806	Bolt Support, Welding	2	
16	PRPW00500	Latch Striker Bolt	2	
17	PRFA00036	Nut, M10	2	
18	PRPW00665	Left Door Installation	1	
19	PRPW00050	Rear View Mirror	1	
20	PRPW00667	Rear View Mirror Mounting	1	
21	PRPW00668	Front Top Cover Plate	1	
22	PRPW00565	Dual Wiper Motor & Linkage Assembly	1	
23	PRPW00670	Cover, Decorative	4	
24	PRPW00671	Wiper Motor Bracket	1	
25	PRPW00672	Right Door Installation	1	
26	PRPW00211	Windshield, Non-hinging	1	
27	PRPW02321	Door Hinge, D/S	2	
28	PRPW02322	Door Hinge, P/S	2	



**Left Door - Exploded Parts View**

### Left Door – Spare Parts List

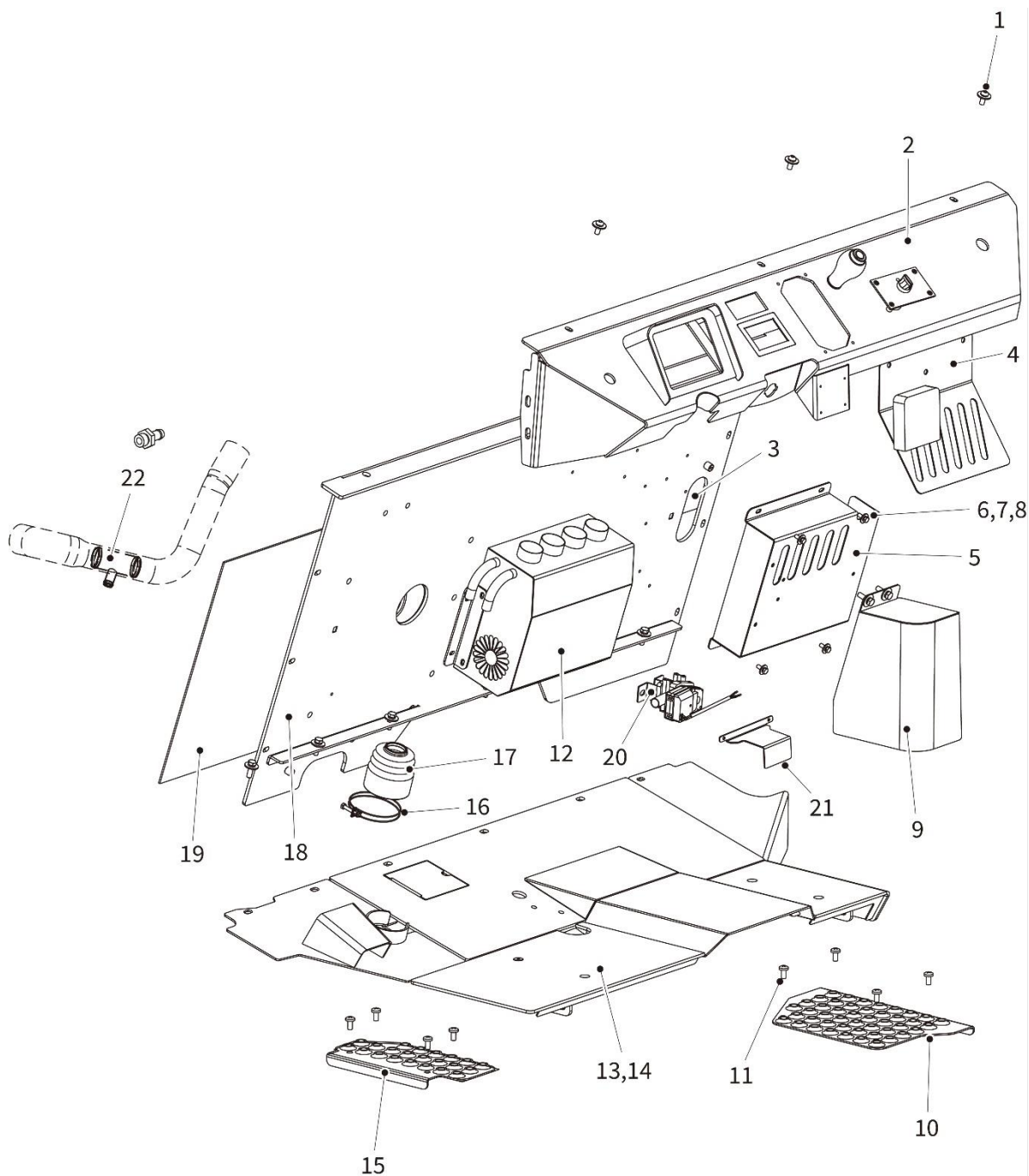
Item	Part No.	Description	Qty	Remarks
1	PRPW00043	Side Mirror - Exterior	1	
2	PRPW00045	Side Mirror Bracket	1	
3	PRFA00013	Bolt, M8 x 25mm	2	
4	PRFA00010	Washer, Lock, M8	2	
5	PRFA00009	Washer, Flat, M8	2	
6	PRPW00216	Sliding Glass Assembly, Driver Side Door	1	
7	PRFA00006	Washer, Flat, M6	2	
8	PRFA00037	Screw, M6 x 16mm	1	
9	PRPW00388	Window Seal	1	
10	PRPW00046	Exterior Door Handle	1	
11	PRPW00390	Handle, Interior	1	
12	PRPW00673	Door, Driver Side	1	
13	PRPW00824	Gasket	1	
14	PRFA00038	Screw, M6 x 20mm	2	
15	PRPW00048	Interior Door Latch, Driver Side	1	
16	PRFA00022	Screw, M8 x 20mm	2	
17	PRPW00674	Cover	1	
18	PRPW00418	Side Door Gasket Seal	1	
19	PRPW00389	Glass, Lower Door	1	
20	PRPW00591	Seal, Lower Door Glass	1	



**Right Door - Exploded Parts View**

### Right Door – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRFA00009	Washer, Flat, M8	2	
2	PRFA00010	Washer, Lock, M8	2	
3	PRFA00013	Bolt, M8 x 25mm	2	
4	PRPW00045	Wing Mirror Bracket	1	
5	PRPW00043	Wing Mirror	1	
6	PRPW00418	Side Door Gasket Seal	1	
7	PRPW00217	Sliding Glass Assembly, Passenger Side Door	1	
8	PRPW00388	Window Seal	1	
9	PRPW00675	Door, Passenger Side	1	
10	PRPW00390	Handle Interior	1	
11	PRFA00039	Screw, M8 x 20mm	2	
12	PRPW00674	Cover	1	
13	PRFA00037	Screw, M6 x 16mm	1	
14	PRFA00006	Washer, Flat, M6	1	
15	PRPW00047	Interior Door Latch, Passenger Side	1	
16	PRPW00824	Gasket	1	
17	PRFA00038	Screw, M6 x 20mm	2	
18	PRPW00046	Exterior Door Handle	1	
19	PRPW00389	Glass, Lower Door	1	
20	PRPW00591	Seal, Lower Door Glass	1	



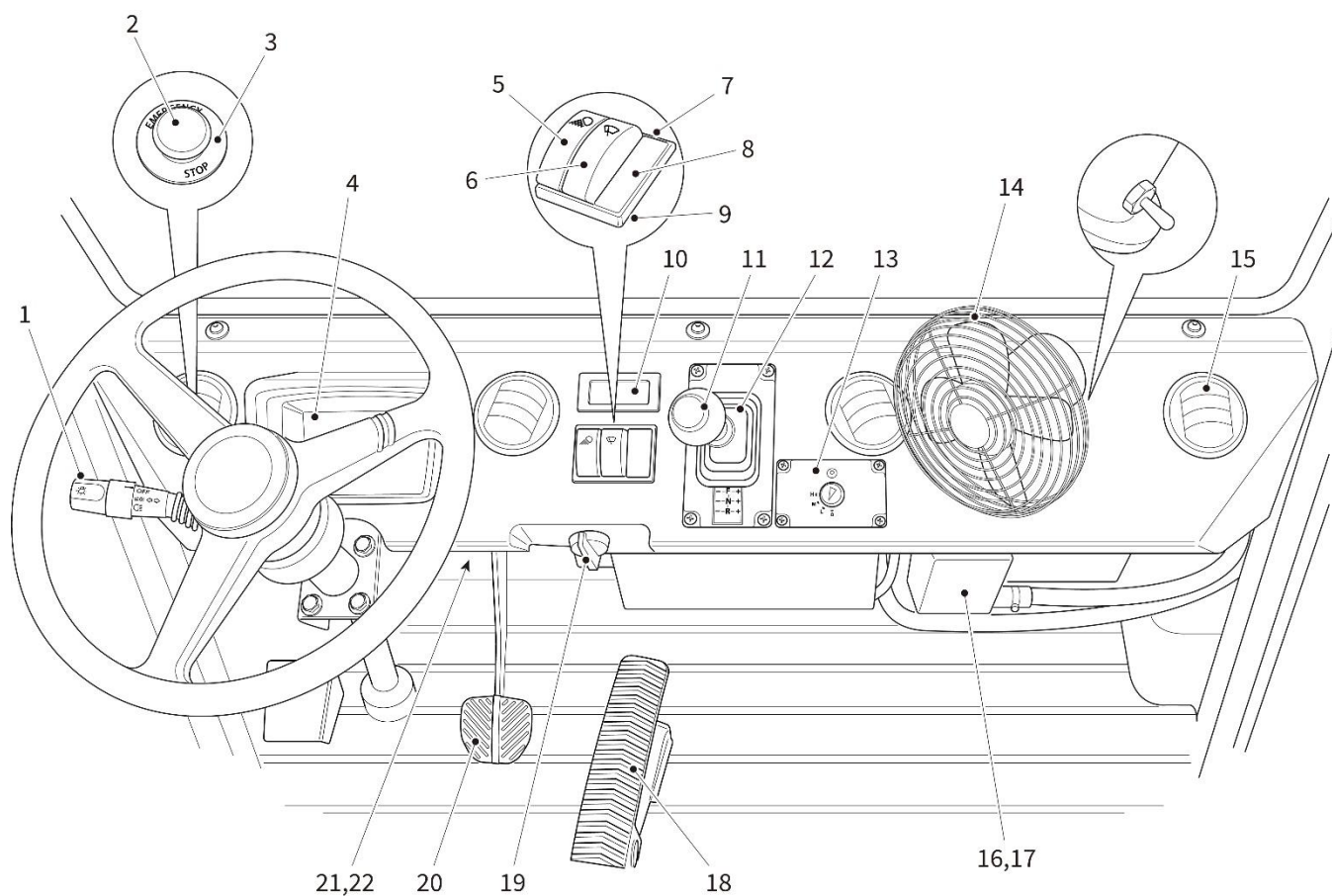
**Cab Interior - Exploded Parts View**



### Cab Interior – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRFA00039	Screw, M8 x 20 mm	3	
2	PRPW02370	Instrument Panel Assembly	1	
3	PRPW02369	Plate, Fixed	1	
4	PRPW02371	Mounting Bracket, Heater	1	
5	PRPW02372	Heater Cover	1	
6	PRFA00108	Bolt, M6 x 16 mm	4	
7	PRFA00007	Washer, Lock, M6	6	
8	PRFA00006	Washer, Flat, M6	9	
9	PRPW02373	Shell, Protective	1	
10	PRPW00634	Step, Anti-slip surface	1	
11	PRFA00024	Screw, M8 x 16	8	
12	PRPW02374	Heater	1	
13	PRPW02375	Floor Assembly	1	
14	PRPW00588	Floor Mat	1	
15	PRPW00641	Step, Anti-slip surface	1	
16	PRFA00023	90 x 80 Double-Clamp, Steel	1	
17	PRPW00639	Shaft Sleeve	1	
18	PRPW02377	Bulkhead, Cab/Engine Compartment	1	
19	PRPW00643	Insulation Pad	2	
20	PRPW02699	Valve Unit, Electrical, Heater	1	
21	PRPW02378	Guard, Valve Unit	1	
22	PRPW02379	Tee Joint	1	

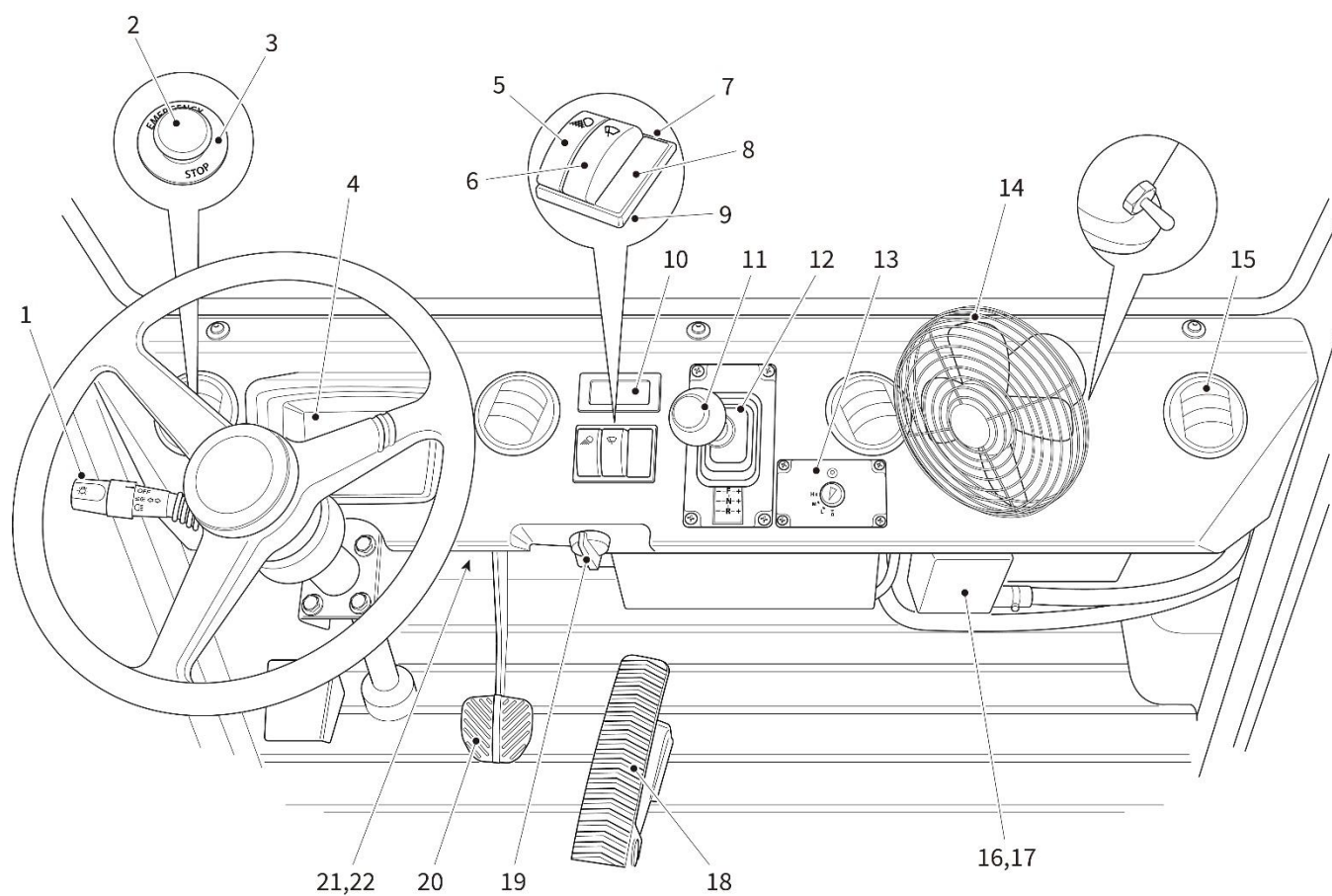
## CONTROLS AND INSTRUMENTS



**Controls and instruments - Exploded Parts View**

### Controls and instruments – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW00225	Turn Signal/Headlamp Control	1	
2	PRPW00682	EMERGENCY STOP switch	1	
3	PRPW00681	Label, Emergency Stop Switch	1	
4	PRPW00589	Dash Display Instrument, XT670D	1	
5	PRPW00677	Switch, Rear Working Light	1	
6	PRPW00678	Switch, Windscreen Wiper	1	
7	PRPW00689	Centre Frame, Switch Mount	1	
8	PRPW00507	Plastic Blank Cover	1	
9	PRPW00690	End Frame, Switch Mount	2	
10	PRPW02380	Display, Transmission Gear	1	
11	PRPW02519	Handle Sheath	1	
12	PRPW02381	Joystick Assembly	1	
13	PRPW02283	Panel Assembly, Heater Control	1	
14	PRPW02382	Fan	1	
15	PRPW02520	Air vent	4	
16	PRPW00573	Central Control Box	1	
17	PRFA00114	Screw, M5 x 12 mm	4	
18	PRPW00269	Accelerator pedal	1	
19	PRPW00051	Ignition Switch	1	
20	PRPW00679	Brake Pedal Assembly	1	
Not shown	PRPW00680	Footbrake Switch (Part of the Brake Pedal Assembly)	1	
21	PRPW02521	Relay, Five Core	1	
22	PRPW02522	Preheat Relay	1	
Not shown	PRPW02523	Shift Controller	1	
Not shown	N/A	ATM Mini-Fuse, 5 Amp (located inside Central Control Box)	5	
Not shown	N/A	ATM Mini-Fuse, 7.5 Amp (located inside Central Control Box)	2	

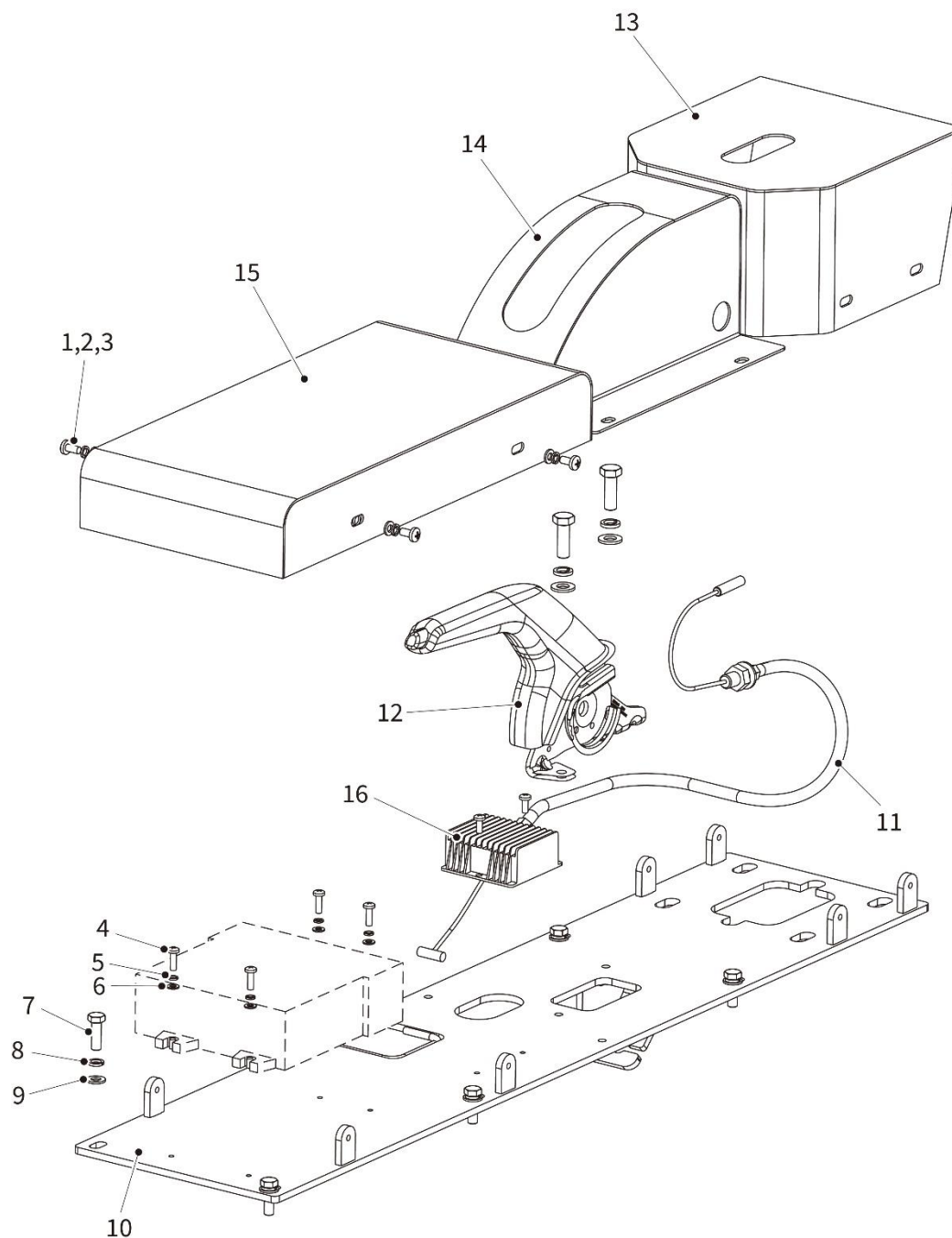


**Controls and instruments - Exploded Parts View**

**Controls and instruments – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
Not shown	N/A	ATM Mini-Fuse, 10 Amp (located inside Central Control Box)	1	
Not shown	N/A	ATM Mini-Fuse, 15 Amp (located inside Central Control Box)	1	
Not shown	N/A	ATM Mini-Fuse, 20 Amp (located inside Central Control Box)	4	

## PARKING BRAKE CONTROL

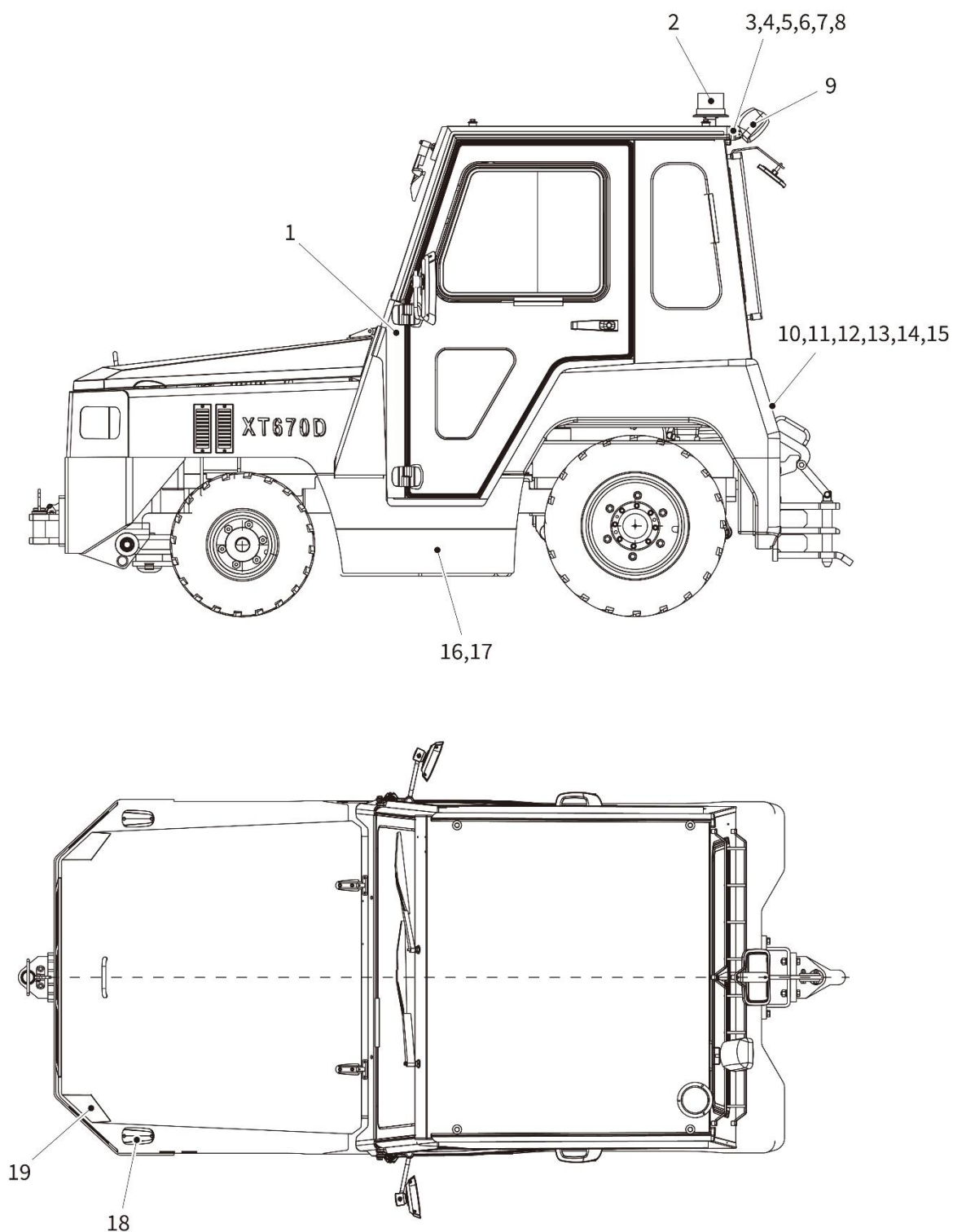


**Parking Brake Control - Exploded Parts View**

### Parking Brake Control – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRFA00006	Washer, Flat, M6	8	
2	PRFA00007	Washer, Lock, M6	8	
3	PRFA00038	Screw, M6 x 20 mm	8	
4	PRFA00117	Washer, Flat, M5	6	
5	PRFA00116	Washer, Lock, M5	6	
6	PRFA00181	Screw, M5 x 16 mm	6	
7	PRFA00033	Bolt, M8 x 20mm	10	
8	PRFA00010	Washer, Lock, M8	10	
9	PRFA00009	Washer, Flat, M8	10	
10	PRPW02383	Backplate Assembly	1	
11	PRPW00245	Park Brake Cable	1	
12	PRPW00545	Park Brake Lever	1	
13	PRPW00715	Case	1	
14	PRPW02384	Cover Piece	1	
15	PRPW02385	Cover Assembly	1	
16	PRPW002524	12V-24V DC Power Converter	1	

## ELECTRICAL SYSTEM

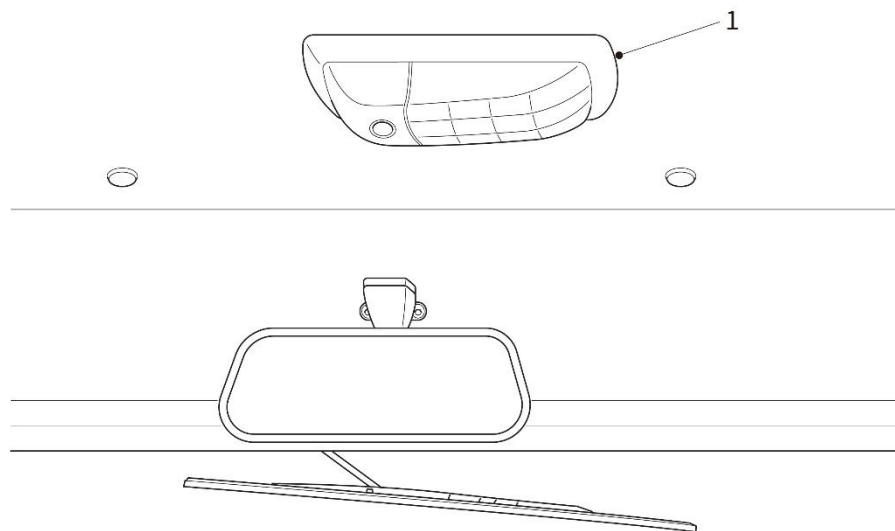


**Electrical system - Exploded Parts View**



### Electrical System – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02386	Cab Harness	1	
2	PRPW00692	Beacon	1	
3	PRPW00693	Turn Indicator	2	
4	PRPW00044	Upper Brake Light	1	
5	PRFA00182	Screw, M4 x 12 mm	5	
6	PRFA00037	Screw, M6 x 16 mm	10	
7	PRFA00108	Bolt, M6 x 16 mm	50	
8	PRFA00181	Screw, M5 x 16 mm	10	
9	PRPW00436	Rear Work Light	1	
10	PRPW00055	Tail Light	2	
11	PRPW00694	Reverse Alarm	1	
12	PRFA00001	Bolt, M6 x 20 mm	1	
13	PRFA00006	Washer, Flat, M6	2	
14	PRFA00007	Washer, Lock, M6	1	
15	PRFA00025	Nut, M6	1	
16	PRPW00375	Fuel Level Sensor (On fuel tank, under RH floor panel)	1	
17	PRFA00114	Screw, M5 x 12 mm	5	
18	PRPW00497	Front Signal Light	2	
19	PRPW00053	Headlamp Assembly	2	
Not shown		Speed Sensor	1	

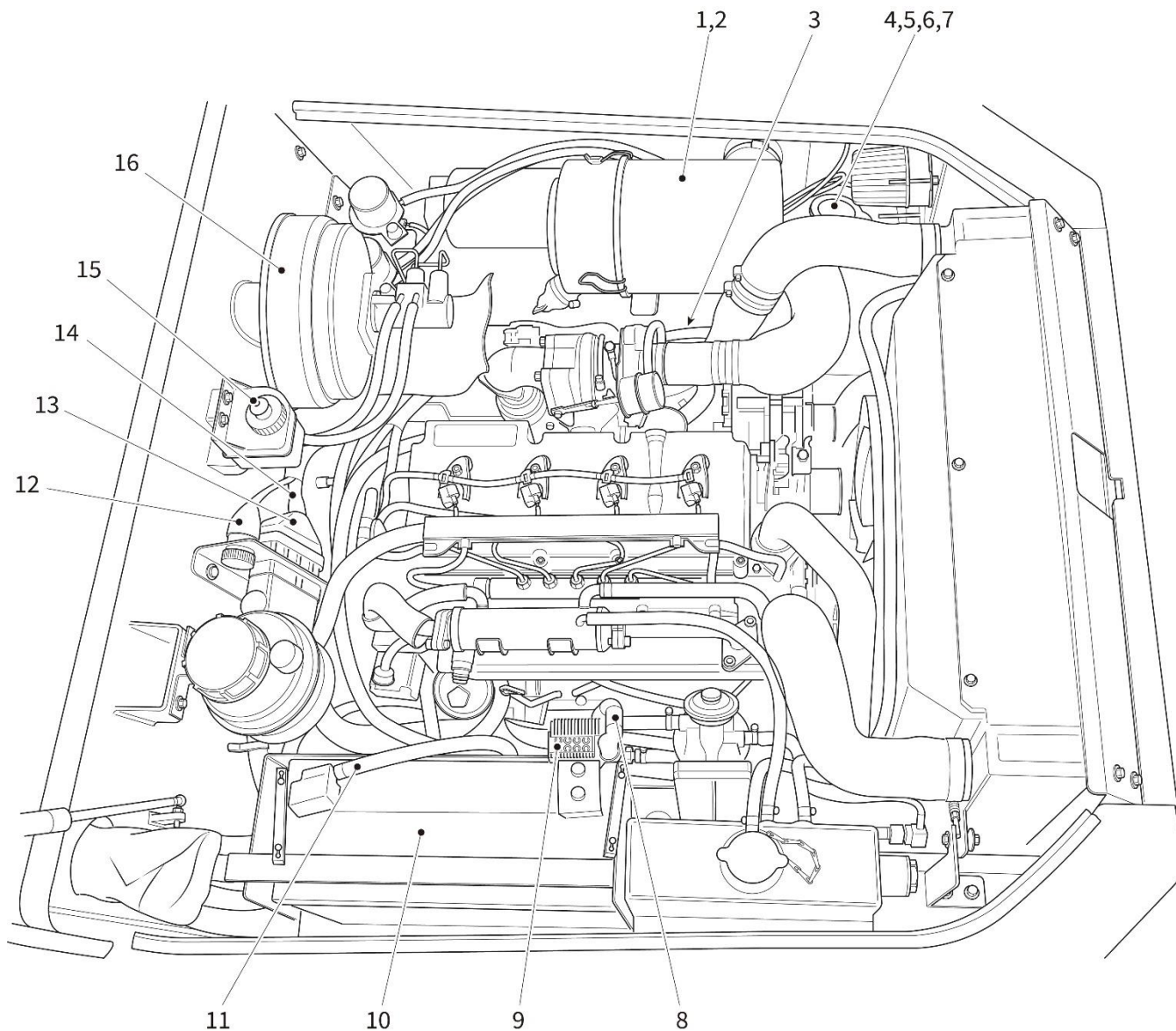


**Cab Interior Light - Exploded Parts View**

**Cab Interior Light – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1	PRPW00696	Interior Light	1	

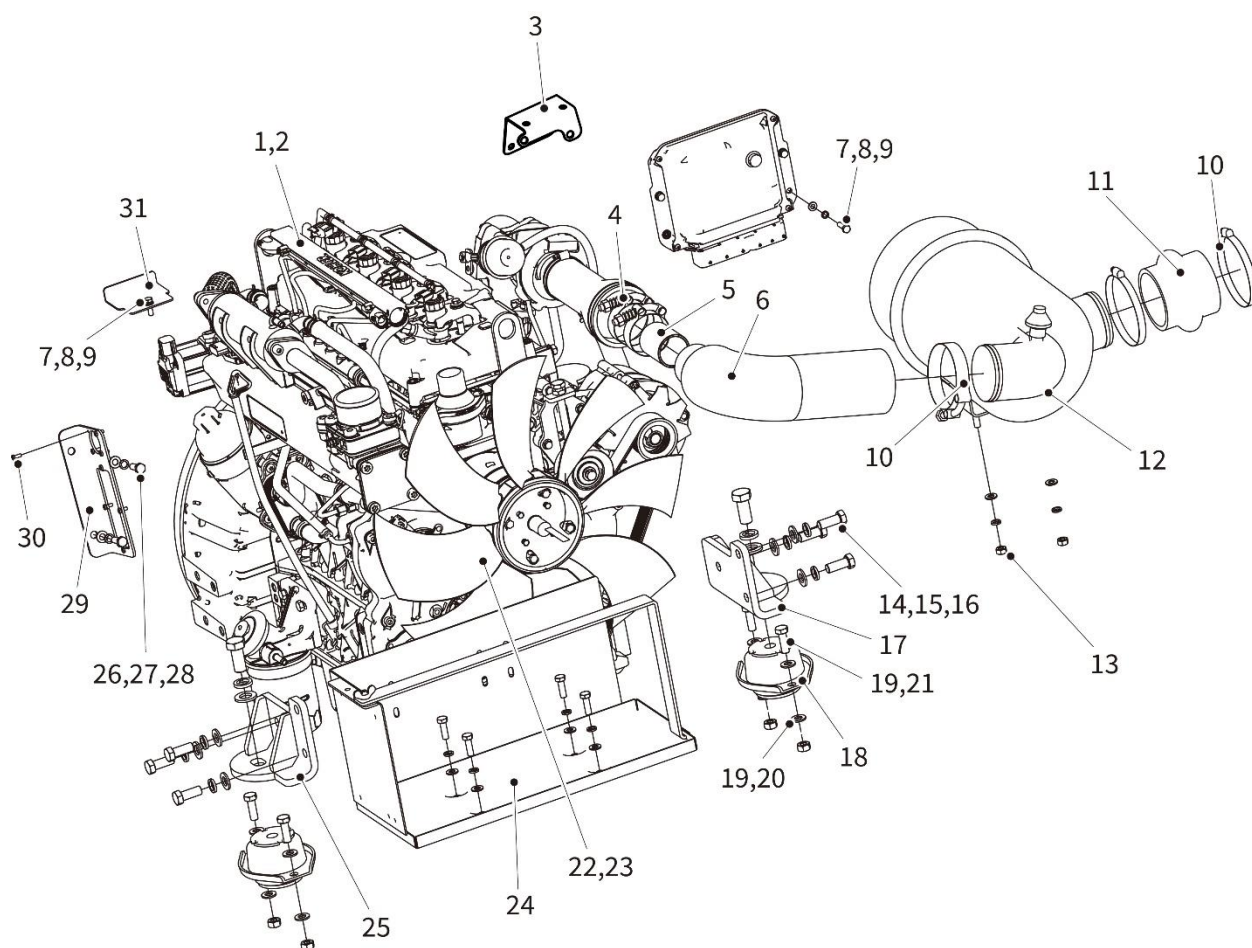
## ENGINE MOUNTING



**Engine Compartment- Exploded Parts View**

**Engine compartment – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1		Air Cleaner Housing	1	
2	PRPW00420	Air Filter Element (Expected Life 300 to 500 hrs, depending on conditions)	1	Located inside Air Cleaner
3	PRPW02387	Alternator Exciter Wire (Connects battery positive to the alternator)	1	Located low down on side of engine
4	PRPW02525	Electric Horn	1	
5	PRFA00033	Bolt, M8 x 20 mm	1	
6	PRFA00009	Washer, Flat, M8	1	
7	PRFA00010	Washer, Lock, M8	1	
8	PRPW00700	Positive Battery Cable	1	
9	PRPW00699	Battery Connector with Fusible Links	1	
10	PRPW02388	Battery	1	
11	PRPW00703	Negative Battery Cable	1	
12	PRPW02389	Connector Boot, Rubber, Type 2	1	
13	PRPW02390	Connector Boot, Rubber, Type 1	1	
14	PRPW02391	Vehicle Wiring Harness	1	
Not shown	PRFA00004	P-clip, M10	10	
Not shown	PPFA00210	P-clip, M20	20	
Not shown	PRFA00211	P-clip, M30	20	
Not shown	PRFA00212	P-clip, M40	10	
Not shown	PRPW02526	Transmission Wire Harness	1	
15	PRPW00461	Brake Fluid Reservoir	1	
16	PRPW02392	Vacuum Booster and Brake Master Cylinder Assembly	1	

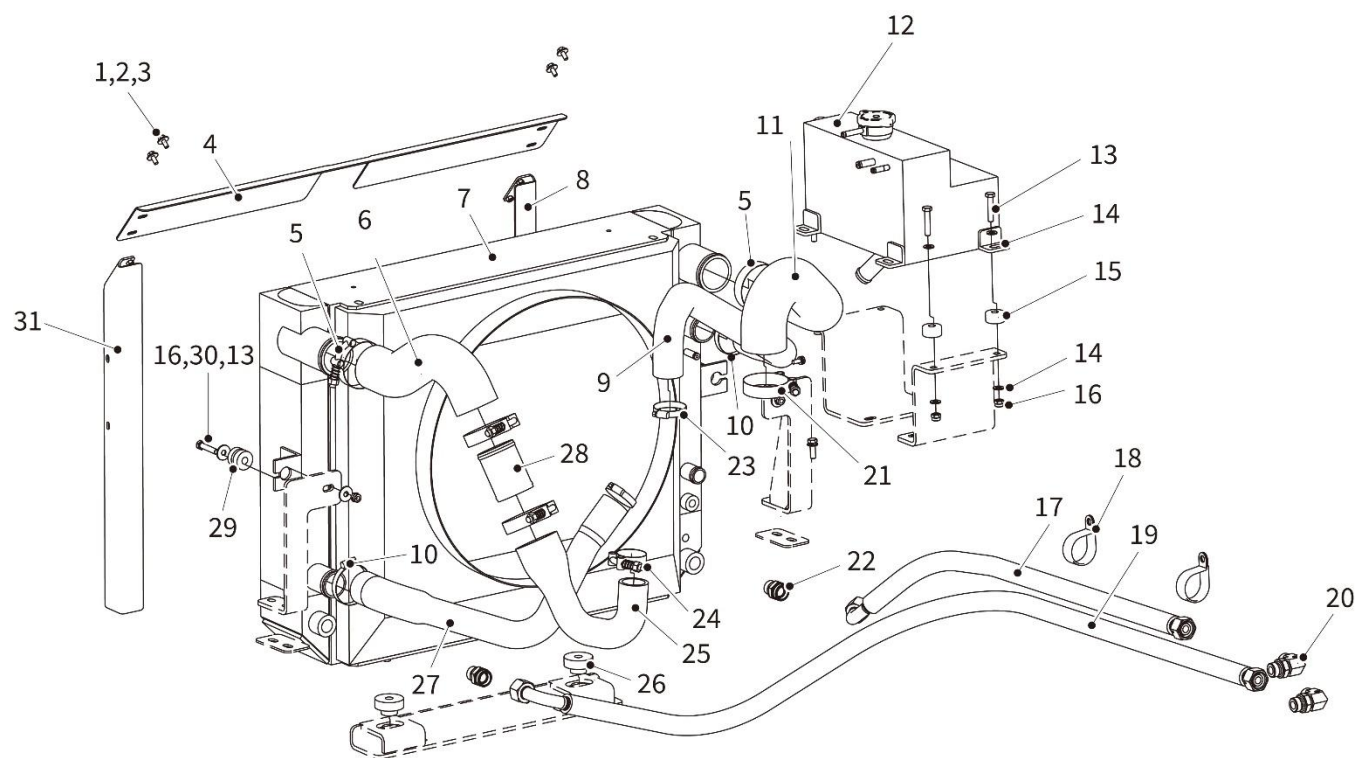


**Engine Mounting - Exploded Parts View**

### Engine Mounting – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02393	Engine	1	
2	PRPW02700	Flywheel Bell Housing	1	Included with engine
3	PRPW02394	Heat Shield	1	
4	PRPW02395	Clamp, Hose, 70 x 50 mm	2	
5	PRPW02397	Pipe	1	
6	PRPW02398	Intake Hose B	1	
7	PRFA00001	Bolt, M6 x 20 mm	5	
8	PRFA00007	Washer, Lock, M6	5	
9	PRFA00006	Washer, Flat, M6	5	
10	PRPW02399	Clamp, Hose, 100 x 80 mm	3	
11	PRPW02400	Intake Hose A	1	
12	PRPW02401	Air Filter Housing	1	
13	PRFA00021	Nut, M8	2	
14	PRFA00183	Bolt, M12 x 30 mm	8	
15	PRFA00034	Washer, Lock, M12	8	
16	PRFA00030	Washer, Flat, M12	8	
17	PRPW02402	Engine Mounting Bracket, LHS	1	
18	PRPW00723	Shock Absorber	2	
19	PRFA00011	Washer, Flat, M10	8	
20	PRFA00036	Nut, Self-locking, M10	4	
21	PRFA00026	Bolt, M10 x 35 mm	4	
22	PRPW02406	Cooling Fan	1	
23	PRPW02405	Fan Block	1	
24	PRPW02407	Battery Tray	1	
25	PRPW02408	Engine Mounting Bracket, RHS	1	
26	PRFA00009	Washer, Flat, M8	8	
27	PRFA00010	Washer, Lock, M8	8	
28	PRFA00013	Bolt, M8 x 25 mm	6	
29	PRPW02409	Connector Holder	1	
30	PRFA00184	Screw, M4 x 10 mm	8	
31	PRPW02410	Mounting Plate	1	

## COOLING SYSTEM



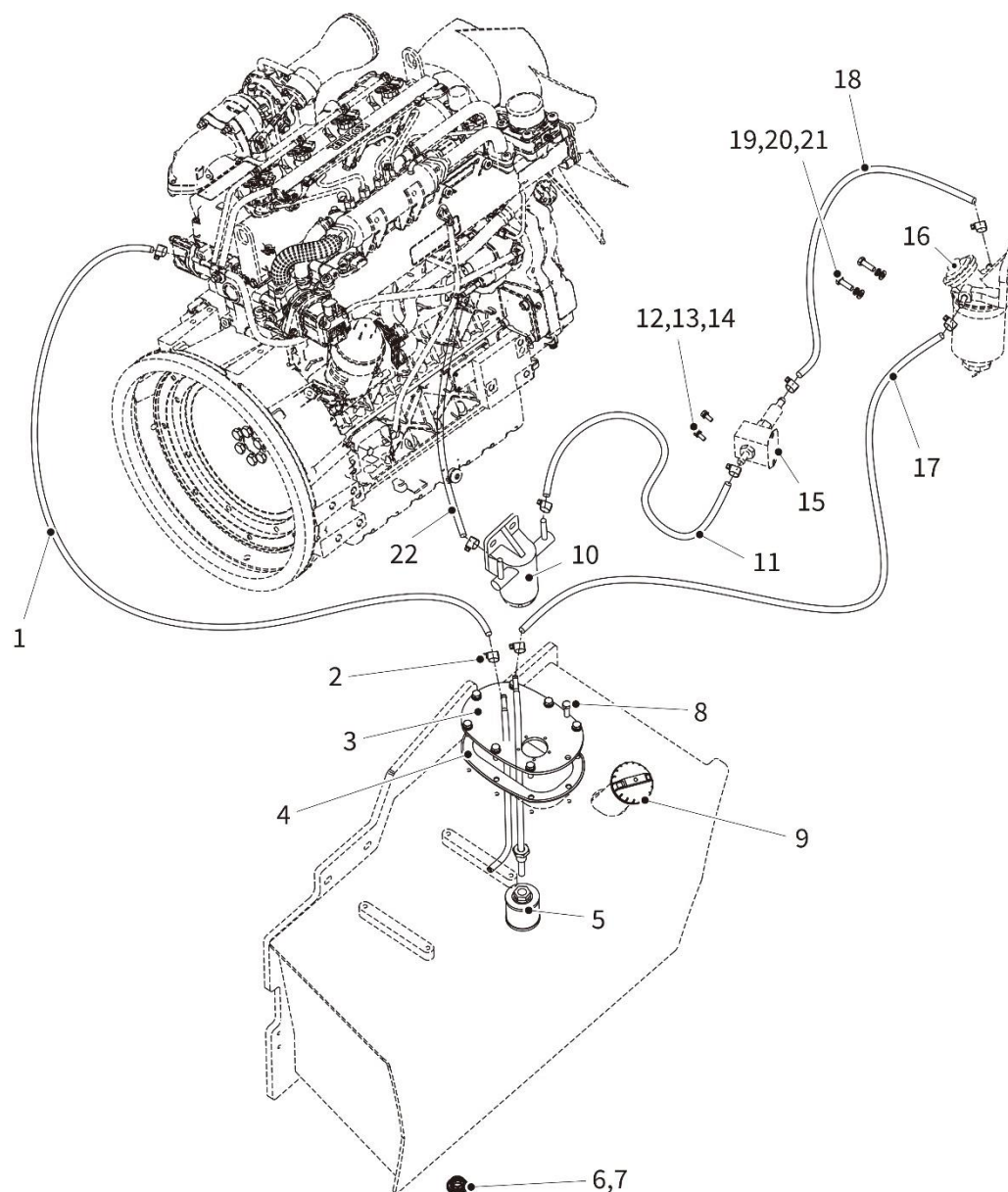
**Cooling System - Exploded Parts View**



### Cooling System – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRFA00006	Washer, Flat, M6	4	
2	PRFA00007	Washer, Lock, M6	4	
3	PRFA00108	Bolt, M6 x 16 mm	4	
4	PRPW02412	Seal Plate	1	
5	PRPW00120	Clamp, Hose, with Spring, 75 x 67 mm	4	
6	PRPW00102	Intake Pipe No. 1	1	
7	PRPW02413	Intercooler (Combination Cooler)	1	
8	PRPW02414	Seal Plate, Right	1	
9	PRPW00100	Manifold Air Intake Hose	1	
10	PRPW00126	Clamp, Hose, 64 x 44 mm	2	
11	PRPW00101	Discharge Pipe	1	
12	PRPW02411	Expansion Tank Assembly	1	
13	PRFA00185	Bolt, M8 x 40 mm	5	
14	PRFA00009	Washer, Flat, M8	6	
15	PRPW02536	Rubber Mounting	3	
16	PRFA00186	Nut, Self-locking, M8	5	
17	PRPW02416	Oil Cooler Hose No.2	1	
18	PRPW02417	Return Hose Clamp	1	
19	PRPW02415	Oil Cooler Hose No.1	1	
20	PRPW02418	Elbow Joint, 90 degrees	4	
21	PRPW02419	Clamp, Hose, with Spring, 70 x 66 mm	1	
22	PRPW02420	Straight Nipple Joint	2	
23	PRPW02421	Clamp, Hose, 51 x 35 mm	2	
24	PRPW02422	Clamp, Hose, with Spring, 51 x 45 mm	1	
25	PRPW00103	Intercooler Intake Pipe	1	
26	PRPW00736	Anti-vibration Mount, Radiator	2	
27	PRPW00099	Lower Radiator Hose	1	
28	PRPW00098	Intake Pipe No. 2	1	
29	PRPW00733	Rubber Mounting	2	
30	PRFA00009	Washer, Flat, M8	4	
31	PRPW02423	Seal Plate	1	

## FUEL SYSTEM

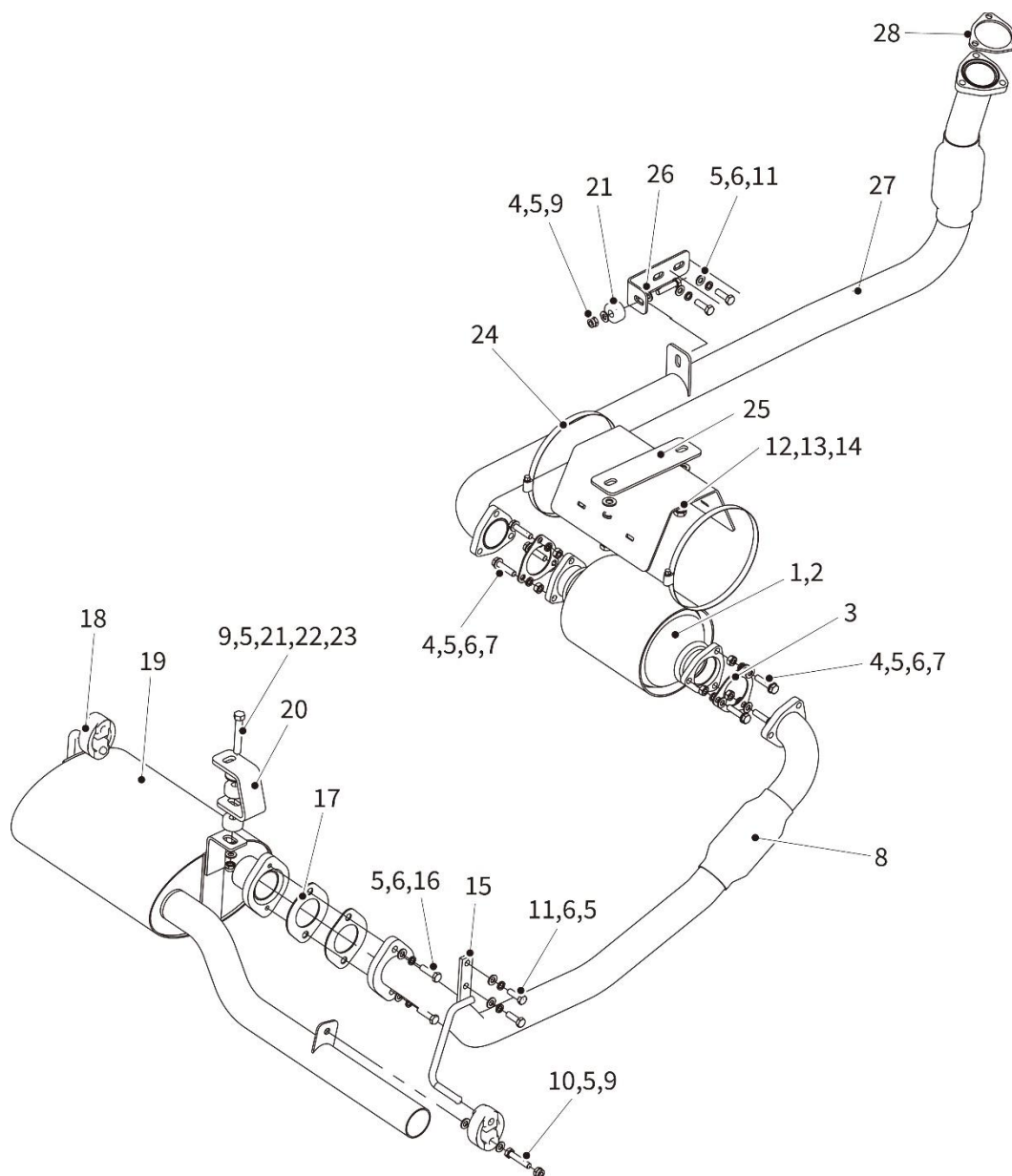


**Fuel System - Exploded Parts View**

### Fuel System – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02424	Fuel Pipe, $\phi 8 \times 1200$ mm	1	
2	PRPW00879	Clip, Hose, 16 x 10mm	10	
3	PRPW00741	Fuel Tank Cover	1	
4	PRPW00740	Sealing Gasket	1	
5	PRPW00070	Fuel Pre-Filter, In-Tank	1	
6	PRPW00751	Fuel Drain Plug	1	
7	PRPW02277	Seal, 26mm	1	
8	PRFA00024	Screw, M8 x 16mm	8	
9	PRPW00056	Fuel Cap	1	
10	PRPW02243	Fuel Filter	1	
11	PRPW02425	Fuel Pipe, $\phi 8 \times 400$ mm	1	
12	PRFA00130	Bolt, M6 x 12 mm	2	
13	PRFA00007	Washer, Lock, M6	2	
14	PRFA00006	Washer, Flat, M6	2	
15	PRPW02426	Fuel Pump	1	
16	PRPW02427	Fuel Water Separator	1	
17	PRPW02428	Fuel Pipe, $\phi 8 \times 800$ mm	1	
18	PRPW02429	Fuel Pipe, $\phi 8 \times 600$ mm	1	
19	PRFA00013	Bolt, M8 x 25mm	2	
20	PRFA00010	Washer, Lock, M8	2	
21	PRFA00009	Washer, Flat, M8	2	
22	PRPW2430	Fuel Pipe, $\phi 8 \times 500$ mm	1	

## EXHAUST SYSTEM

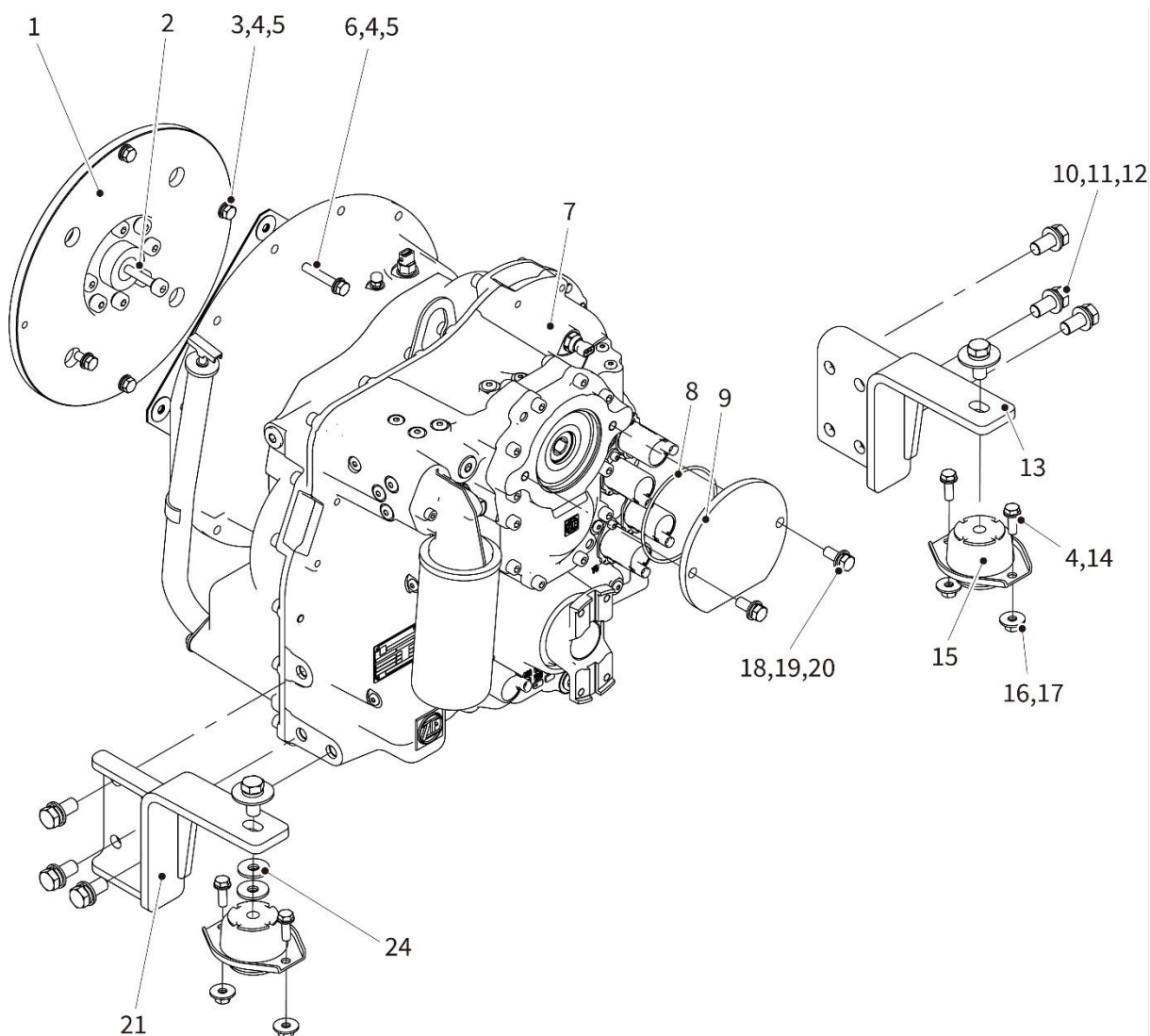


**Exhaust System - Exploded Parts View**

### Exhaust System – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW02431	Catalytic Converter	1	
2	PRPW00753	Fire Protection Casing	1	
3	PRPW02432	Exhaust Pipe Gasket	2	
4	PRFA00047	Bolt, M8 x 35mm	7	
5	PRFA00009	Washer, Flat, M8	23	
6	PRFA00010	Washer, Lock, M8	12	
7	PRFA00021	Nut, M8	6	
8	PRPW02433	Middle Exhaust Pipe Assembly	1	
9	PRFA00186	Nut, Self-locking, M8	3	
10	PRFA00046	Bolt, Special	1	
11	PRFA00013	Bolt, M8 x 25mm	4	
12	PRFA00026	Bolt, M10 x 35mm	2	
13	PRFA00012	Washer, Lock, M10	2	
14	PRFA00011	Washer, Flat, M10	2	
15	PRPW02434	Exhaust Mounting Bracket	1	
16	PRFA00187	Bolt, M8 x 30	2	
17	PRPW02251	Exhaust Pipe Gasket	2	
18	PRPW00758	Exhaust Rubber Mounting	2	
19	PRPW02250	Silencer Assembly	1	
20	PRPW02435	Silencer Mounting Bracket	1	
21	PRPW00760	Rubber Mounting	3	
22	PRFA00045	Washer, Special	1	
23	PRFA00196	Bolt, Special	1	
24	PRPW02436	Clamp, Circular, 165 x 145 mm	2	
25	PRPW02437	Catalyst Mounting Bracket	1	
26	PRPW02438	Exhaust Pipe Bracket	1	
27	PRPW02439	Front Exhaust Pipe	1	
28		Gasket	1	

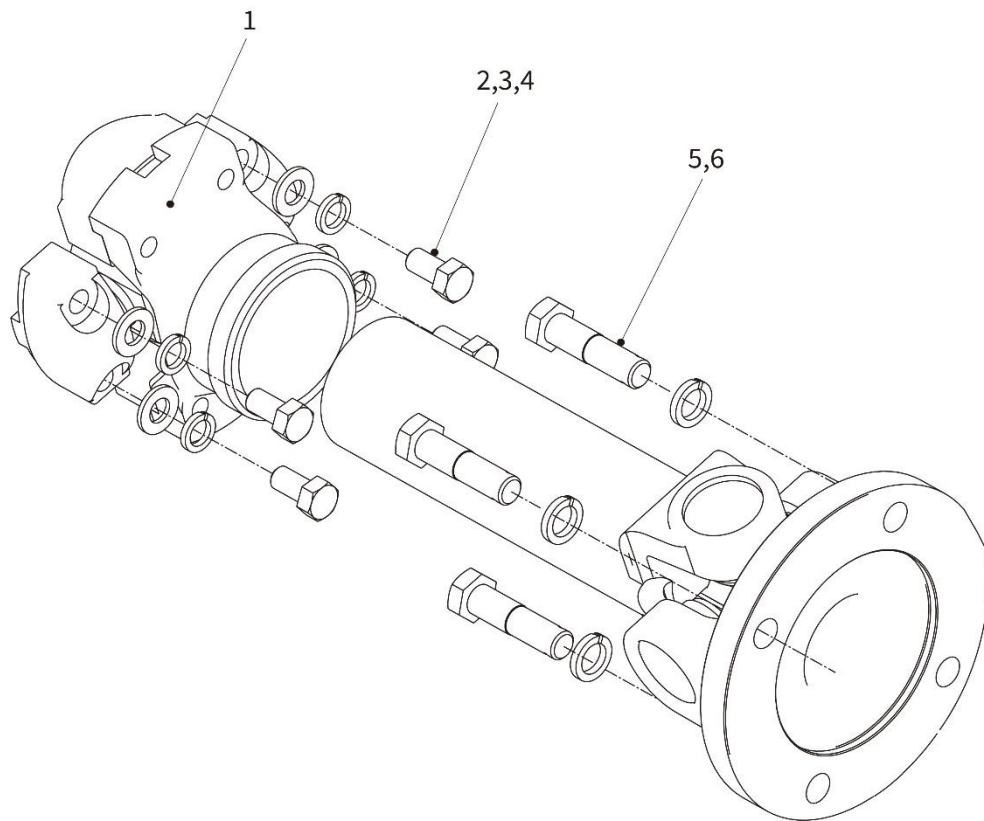
## TRANSMISSION MOUNTING



**Automatic Transmission Mounting - Exploded Parts View**

**Automatic Transmission Mounting – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1	PRPW02440	Flywheel	1	
2	PRFA00188	Screw, M10 x 50 mm	8	
3	PRFA00189	Bolt, M10 x 20 mm	4	
4	PRFA00011	Washer, Flat, M10	20	
5	PRFA00012	Washer, Lock, M10	26	
6	PRFA00190	Bolt, Special	12	
7	PRPW02441	ZF Gearbox, Type 3 WG 94	1	
8	PRPW02442	O-Ring, dia. 118 mm x 3.55 mm	1	
9	PRPW02443	Sealing Plate	1	
10	PRFA00069	Washer, Lock, M16	6	
11	PRFA00050	Bolt, M16 x 1.5 x 35	6	
12	PRFA00068	Washer, Flat, M16	6	
13	PRPW02444	Gear Box Mounting Bracket, Right-Hand Side	1	
14	PRFA00026	Bolt, M10 x 35 mm	6	
15	PRPW00767	Gearbox Mounting	2	
16	PRFA00036	Nut, Self-locking, M10	4	
17	PRFA00011	Washer, Flat, M10	6	
18	PRFA00030	Washer, Flat, M12	2	
19	PRFA00034	Washer, Lock, M12	2	
20	PRFA00183	Bolt, M12 x 30 mm	2	
21	PRPW02445	Gear Box Mounting Bracket, Left-Hand Side	1	



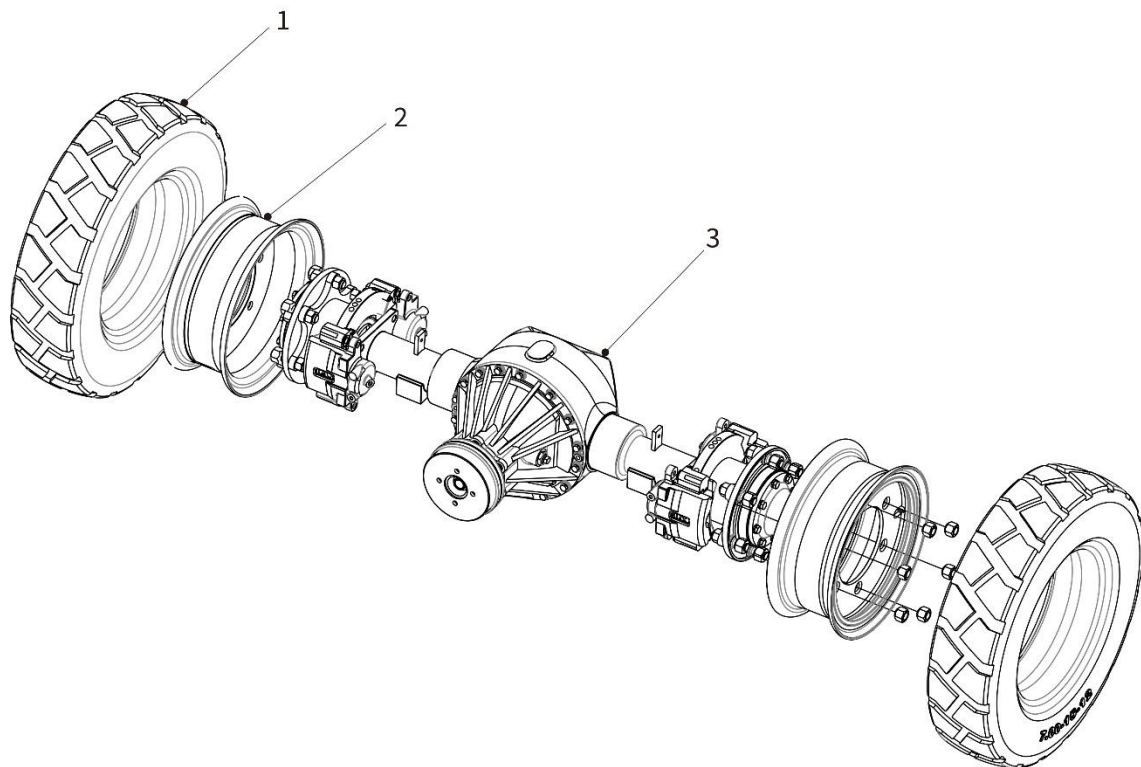
**Propeller Shaft Mounting - Exploded Parts View**



**Propeller Shaft Mounting – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1	PRPW02446	Drive Shaft Assembly	1	
2	PRFA00191	Bolt, Special	4	
3	PRFA00012	Washer, Lock, M10	4	
4	PRFA00011	Washer, Flat, M10	4	
5	PRFA00086	Transmission Shaft Bolt	4	
6	PRFA00034	Washer, Lock, M12	4	

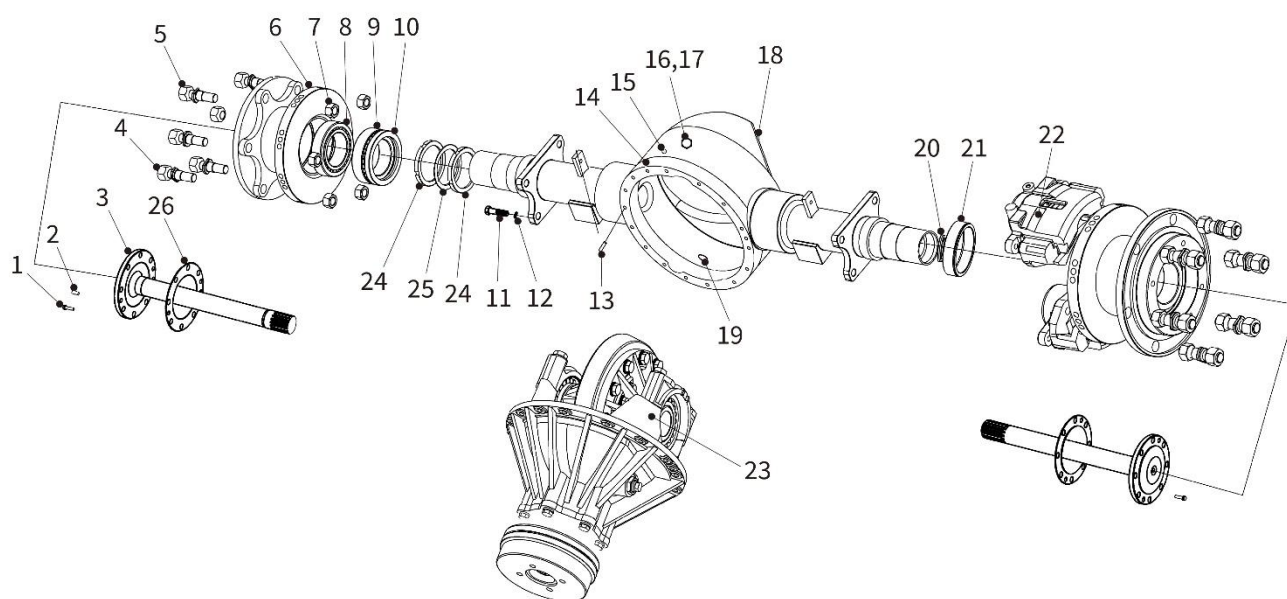
## DRIVETRAIN



**Drive Axle - Exploded Parts View 1**

**Drive Axle – Spare Parts List 1**

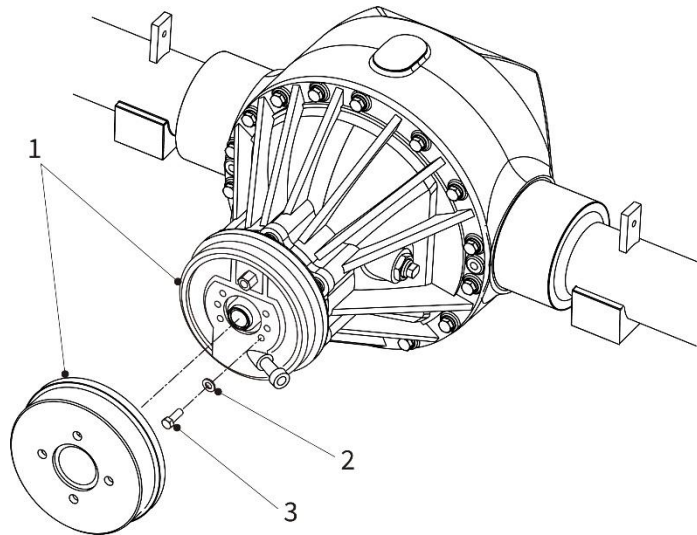
Item	Part No.	Description	Qty	Remarks
1	PRPW00768	Tire (7.00-15-12PR)	2	
2	PRPW00227	Rear Wheel Assembly	2	
3	PRPW02448	Drive Axle Assembly	1	



**Drive Axle - Exploded Parts View 2**

### Drive Axle – Spare Parts List 2

Item	Part No.	Description	Qty	Remarks
1	PRPW02447	Drive Shaft Bolt	16	
2	PRPW02449	Dowel	4	
3	PRPW02450	Drive Shaft	2	
4	PRPW02451	Wheel Nut	12	
5	PRPW02452	Wheel Stud	12	
6	PRPW02453	Brake Disc	2	
7	PRFA00102	Nut, M20	12	
8	PRPW00527	Outer Wheel Bearing, Tapered Roller Bearing, Type 33116, i.d. 80 mm, o.d. 130 mm, width 37 mm, outer chamfer 1.5 mm (min.)	2	
9	PRPW00528	Inner Wheel Bearing, Tapered Roller Bearing, Type 33017, i.d. 85 mm, o.d. 130 mm, width 36 mm outer chamfer 1.5 mm (min.)	2	
10	PRPW02454	Rear Hub Seal, 100 x 130 x 12 mm	2	
11	PRFA00192	Bolt, Special	8	
12	PRFA00193	Washer, Spring, Special	8	
13	PRPW02455	Dowel	2	
14	PRPW02456	Differential Housing	1	
15	PRPW02457	Breather	1	
16	PRPW02458	Sealing Washer	1	
17	PRPW02459	Oil Filler Plug, M24 x 2 mm	1	
18	PRPW02460	Oil Level Line Plug	1	
19	PRPW02461	Drain Plug	1	
20	PRPW02462	Shaft Seal, 50 x 72 x 12 mm	2	
21	PRPW02463	Sleeve	2	
22	PRPW00356	Brake Assembly, Left-Hand	2	
	PRPW00523	Brake Assembly, Right-Hand	2	
23	PRPW02745	Differential	1	
24		Hub Locknut	4	T20A5-85023
25		Hub Lock Washer	2	T20A5-85024
26	PRPW02466	Shaft Gasket	2	

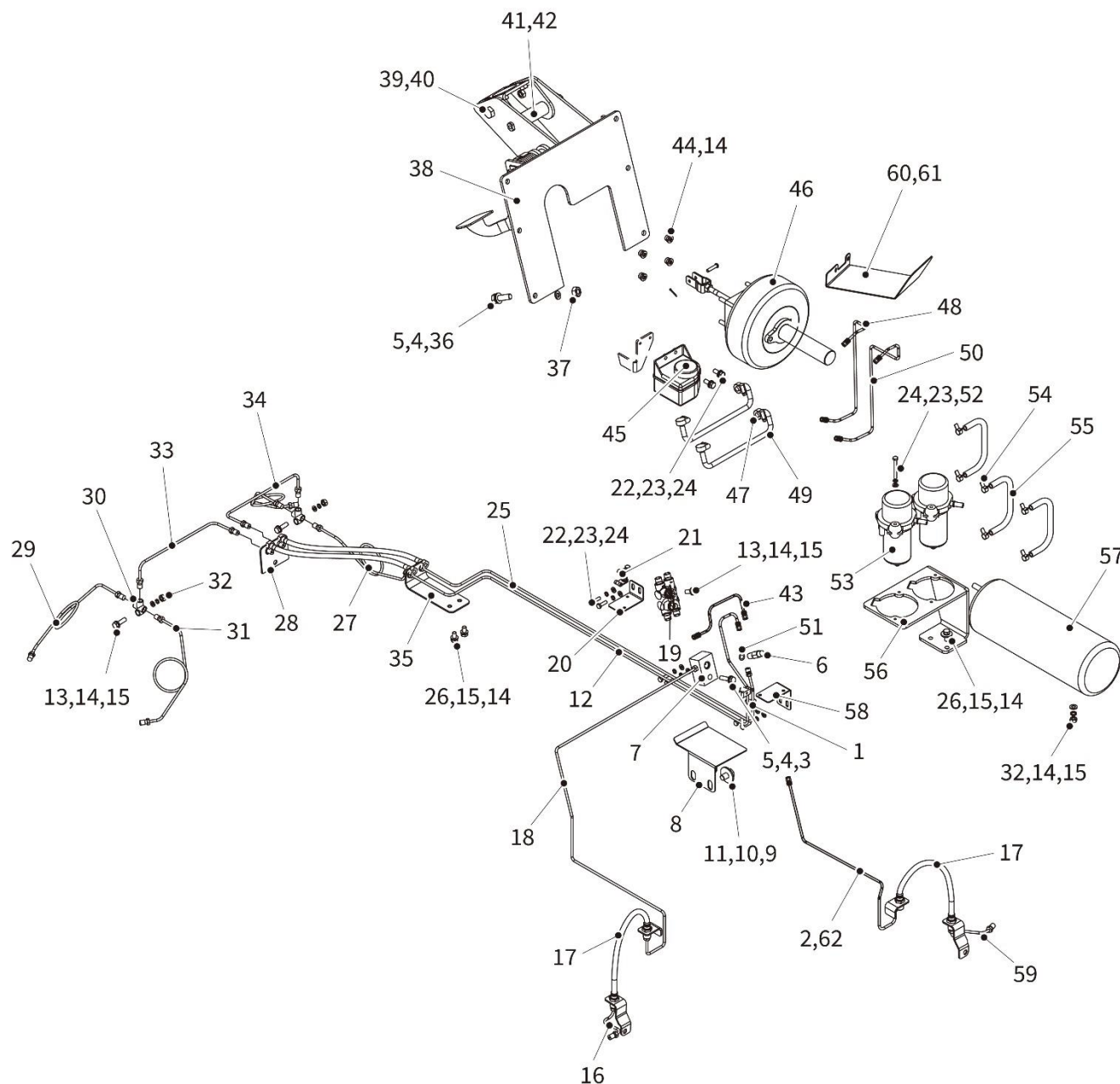


**Park Brake Assembly - Exploded Parts View**

**Park Brake Assembly – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1	PRPW02259	Park Brake Assembly	1	
2	PRFA00263	Spring Washer, Special	6	
3	PRFA00194	Bolt, Special	6	

## BRAKING SYSTEM

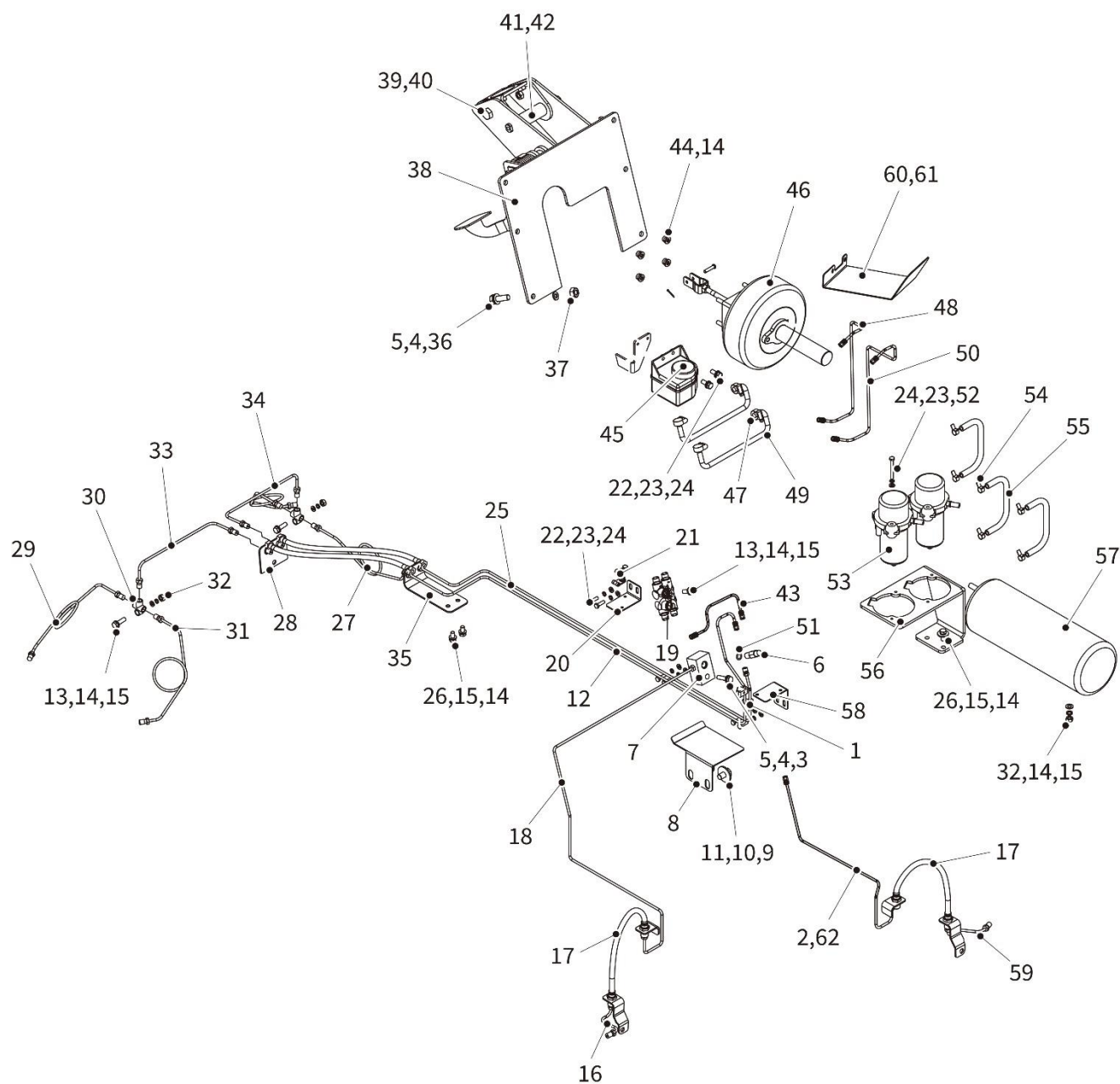


**Brake Control Mounting- Exploded Parts View**



### Brake Control Mounting – Spare Parts List

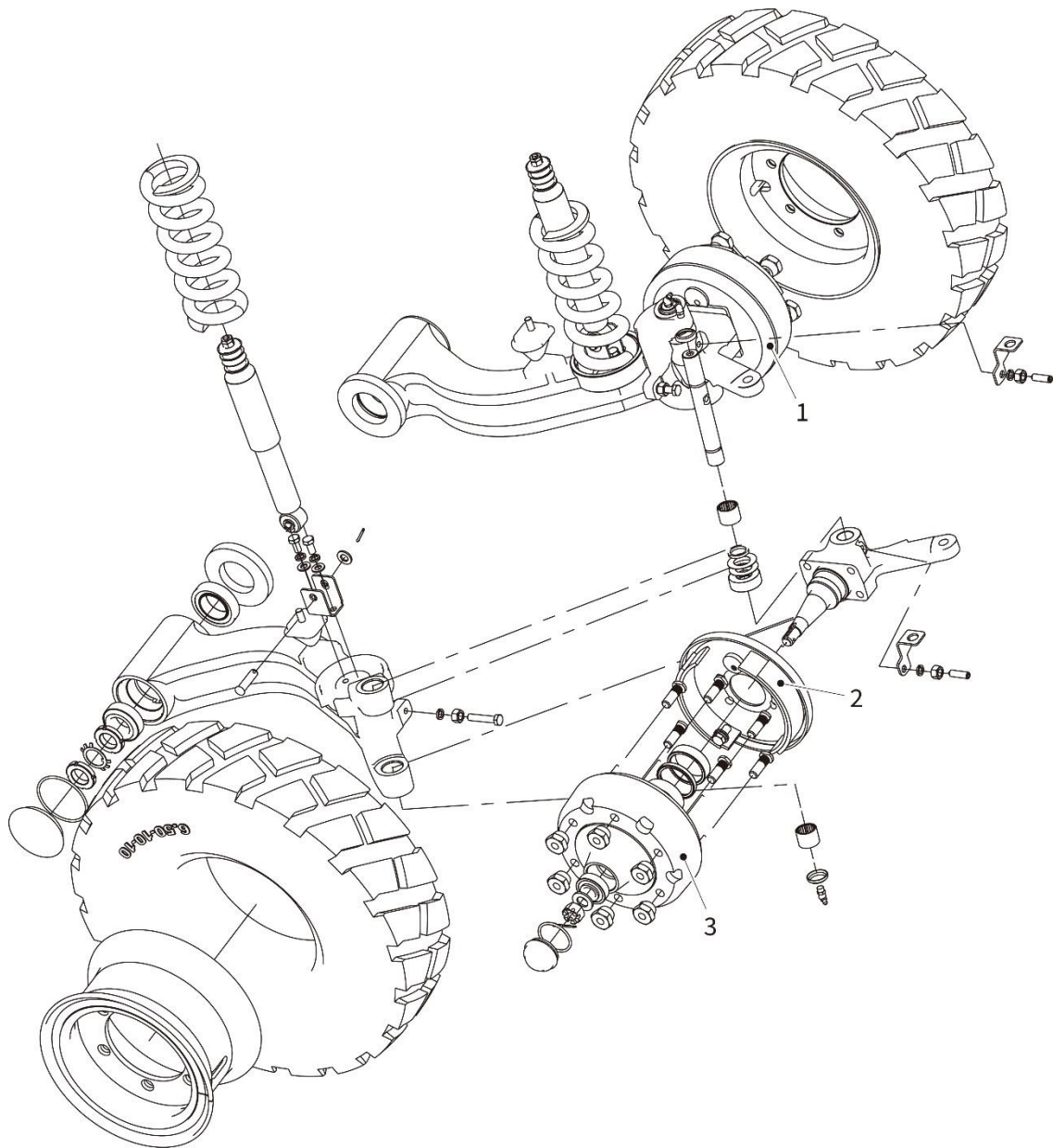
Item	Part No.	Description	Qty	Remarks
1	PRPW02467	Clamp Plate	6	
2	PRPW02468	Left Front Brake Pipe. steel	1	
3	PRFA00195	Bolt, M10 x 50 mm	1	
4	PRFA00011	Washer, Flat, M10	11	
5	PRFA00012	Washer, Lock, M10	6	
6	PRPW00267	Switch	1	
7	PRPW00369	Manifold, Four Way	1	
8	PRPW02469	Baffle	1	
9	PRFA00035	Bolt, M12 x 20mm	2	
10	PRFA00034	Washer, Lock, M12	2	
11	PRFA00030	Washer, Flat, M12	2	
12	PRPW00223	Brake Pipe No. 1	1	
13	PRFA00047	Bolt, M8 x 35mm	6	
14	PRFA00009	Washer, Flat, M8	10	
15	PRFA00010	Washer, Lock, M8	6	
16	PRPW00231	Right Front Brake Pipe	1	
17	PRPW00251	Front Brake Hose	2	
18	PRPW02470	Brake Pipe, C	1	
19	PRPW00214	Valve Assembly, Six Way Proportioning	1	
20	PRPW02471	Fixed Clamp Plate	1	
21	PRFA00003	Clamp, Brake Pipe	4	
22	PRFA00001	Bolt, M6 x 20mm	10	
23	PRFA00006	Washer, Flat, M6	14	
24	PRFA00007	Washer, Lock, M6	14	
25	PRPW00222	Brake Pipe, LH	1	
26	PRFA00061	Bolt, M8 x 16mm	6	
27	PRPW00291	Rear Brake Hose	2	
28	PRPW00815	Rear Brake Hose Support	1	
29	PRPW02472	Rear Brake Pipe No. 2	2	
30	PRPW02473	Connector, Hydraulic, Three-Way	2	
31	PRPW02474	Brake Pipe, Steel, No. 1	2	
32	PRFA00021	Nut, M8	4	



**Brake Control Mounting- Exploded Parts View**

### Brake Control Mounting – Spare Parts List

Item	Part No.	Description	Qty	Remarks
33	PRPW02475	Right Rear Brake Pipe	1	
34	PRPW02476	Left Rear Brake Pipe	1	
35	PRPW00817	Rear Brake Hose Support	1	
36	PRFA00008	Bolt, M10 x 30mm	5	
37	PRFA00036	Nut, M10	5	
38	PRPW02477	Foot Brake Assembly	1	
39	PRFA00095	Washer, Special	2	
40	PRFA00059	Bolt, Special	2	
41	PRFA00096	Washer, Special	1	
42	PRFA00062	Bolt, Special	1	
43	PRPW02483	Brake Pipe, B	1	
44	PRFA00186	Nut, Self-locking, M8	4	
45	PRPW00461	Brake Fluid Reservoir	1	
46	PRPW02392	Vacuum Booster and Brake Master Cylinder Assembly	1	
47	PRPW02484	P-Clamp, Hose, 20 x 12 mm	4	
48	PRPW02485	Left Brake Master Cylinder Pipe	1	
49	PRPW02486	Hose, dia.10 mm, length 400 mm	2	
50	PRPW02487	Right Brake Master Cylinder Pipe	1	
51	PRPW02488	O-Ring, dia. 10.77 mm x 2.62 mm	1	
52	PRFA00064	Bolt, M6 x 45mm	4	
53	PRPW00057	Vacuum Pump	2	
54	PRPW03194	Clamp, Hose, dia. 11 mm	6	
55	PRPW00819	Tube, dia. 7mm	3	
56	PRPW00821	Vacuum Pump Mounting Bracket	1	
57	PRPW00822	Vacuum Accumulator Tank	1	
58	PRPW02489	Bracket, Right-Angled	1	
59	PRPW00232	Left Front Brake Pipe	1	
60	PRPW02490	Baffle	1	
61	PRPW02491	Heat Shield	1	
62	PRPW02492	Heat Shield, Length 0.3 m	1	

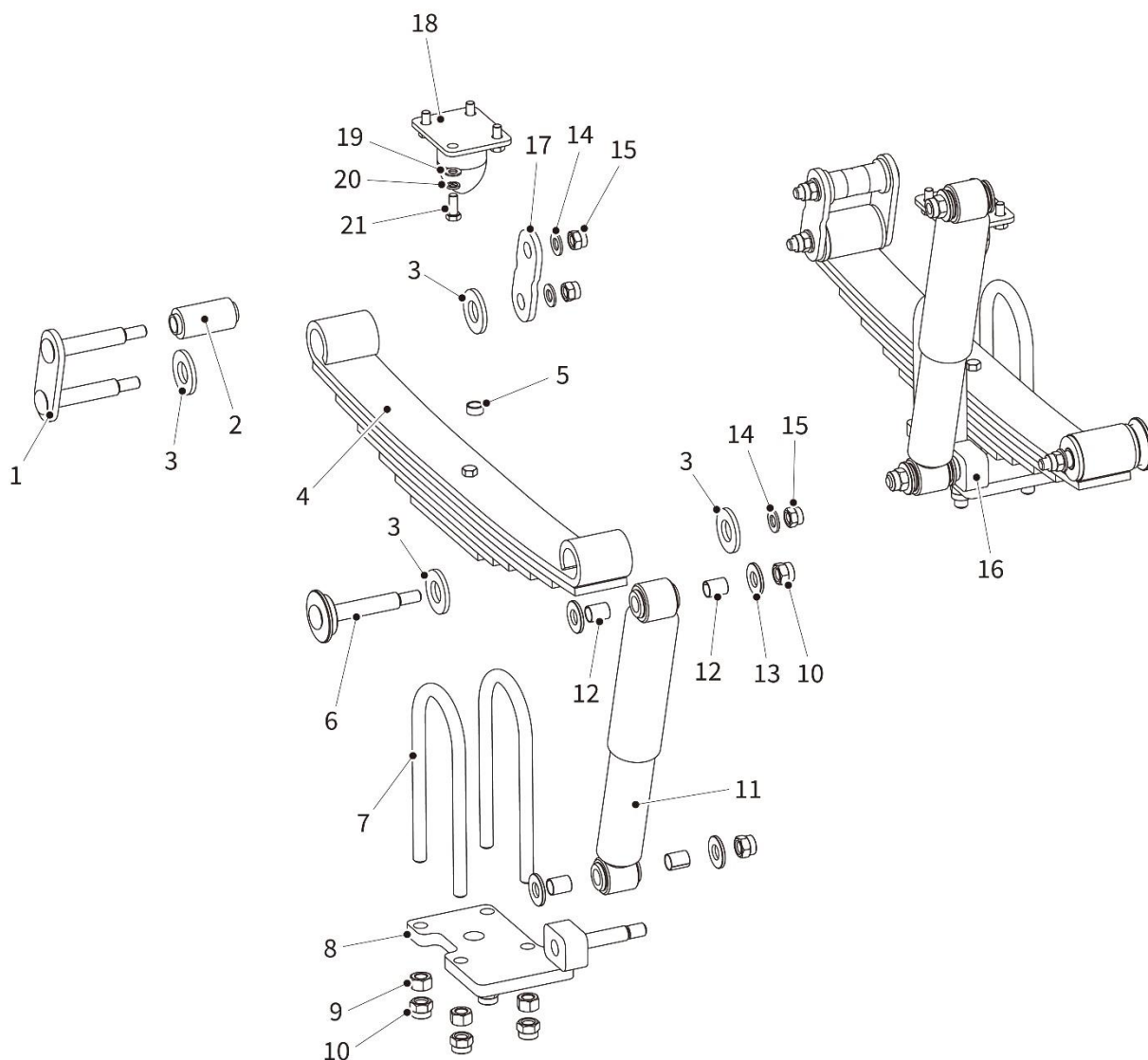


**Front Brakes - Exploded Parts View**

**Front Brakes – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1	PRPW00188	Front Brake Assembly	1	
2	PRPW00188	Front Brake Assembly	1	
3	PRPW00300	Front Hub	2	

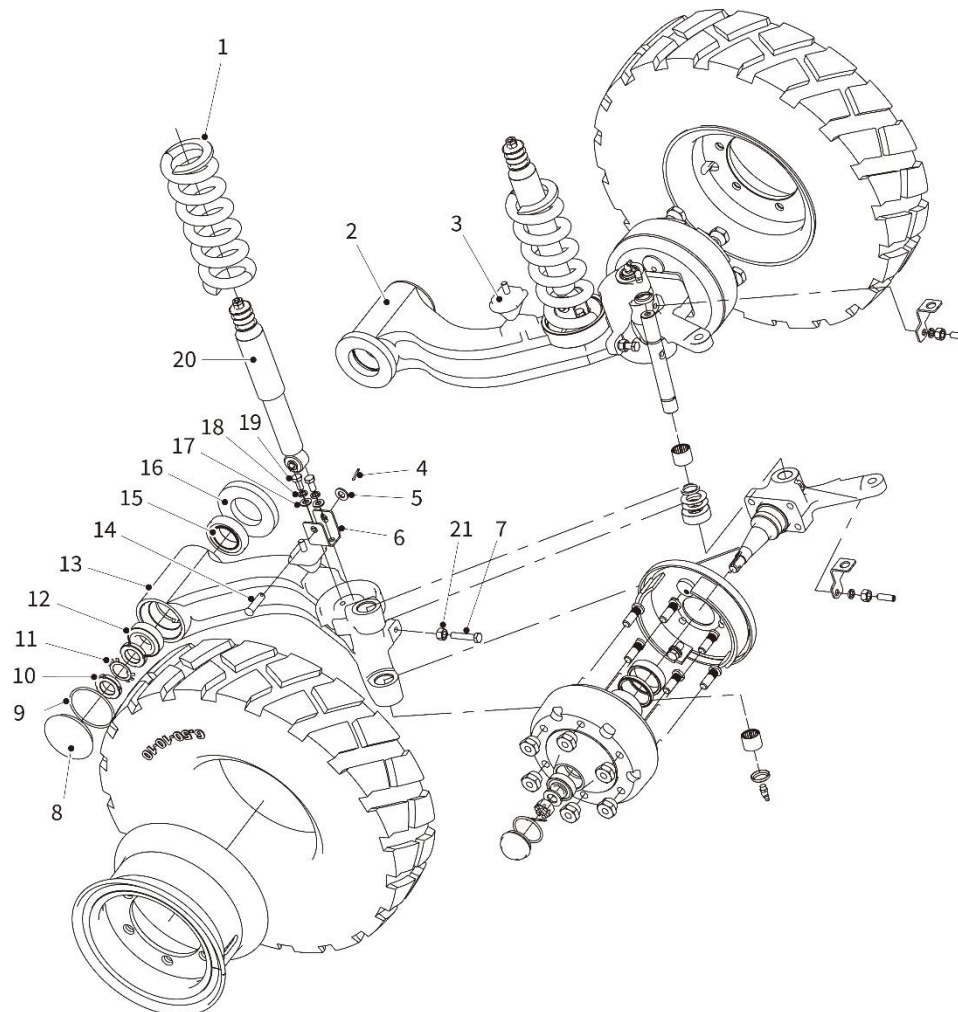
## SUSPENSION



**Rear Suspension - Exploded Parts View**

### Rear Suspension – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW00823	Spring Hanger/ Rear Shackle Pin	2	
2	PRPW00414	Bushing, Rubber	2	
3	PRPW02493	Nylon Spacer	8	
4	PRPW02010	Rear Leaf Spring Assembly	2	
5	PRPW02494	Cushion Pad	2	
6	PRFA00097	Spring Bolt/ Front Shackle Pin	2	
7	PRFA00098	U Bolt	4	
8	PRPW00825	Spring Seat, Right-hand	1	
9	PRFA00073	Nut, M16	8	
10	PRFA00209	Nut, Self-locking, M16	12	
11	PRPW00201	Rear Shock Absorber	2	
12	PRPW00830	Bushing, Type SF-1-1825, self lubricating, composite, i.d. 18mm, o.d. 20mm, length 25mm, wall thickness 1.01mm	8	
13	PRPW02556	Spacer	8	
14	PRFA00072	Washer, Flat, M14	6	
15	PRFA00080	Nut, Self-locking, M14	6	
16	PRPW00827	Spring Seat, Left-hand	1	
17	PRPW00828	Hanger Plate	2	
18	PRPW00829	Bump Stop	2	
19	PRFA00011	Washer, Flat, M10	8	
21	PRFA00012	Washer, Lock, M10	8	
22	PRFA00063	Bolt, M10 x 25mm	8	



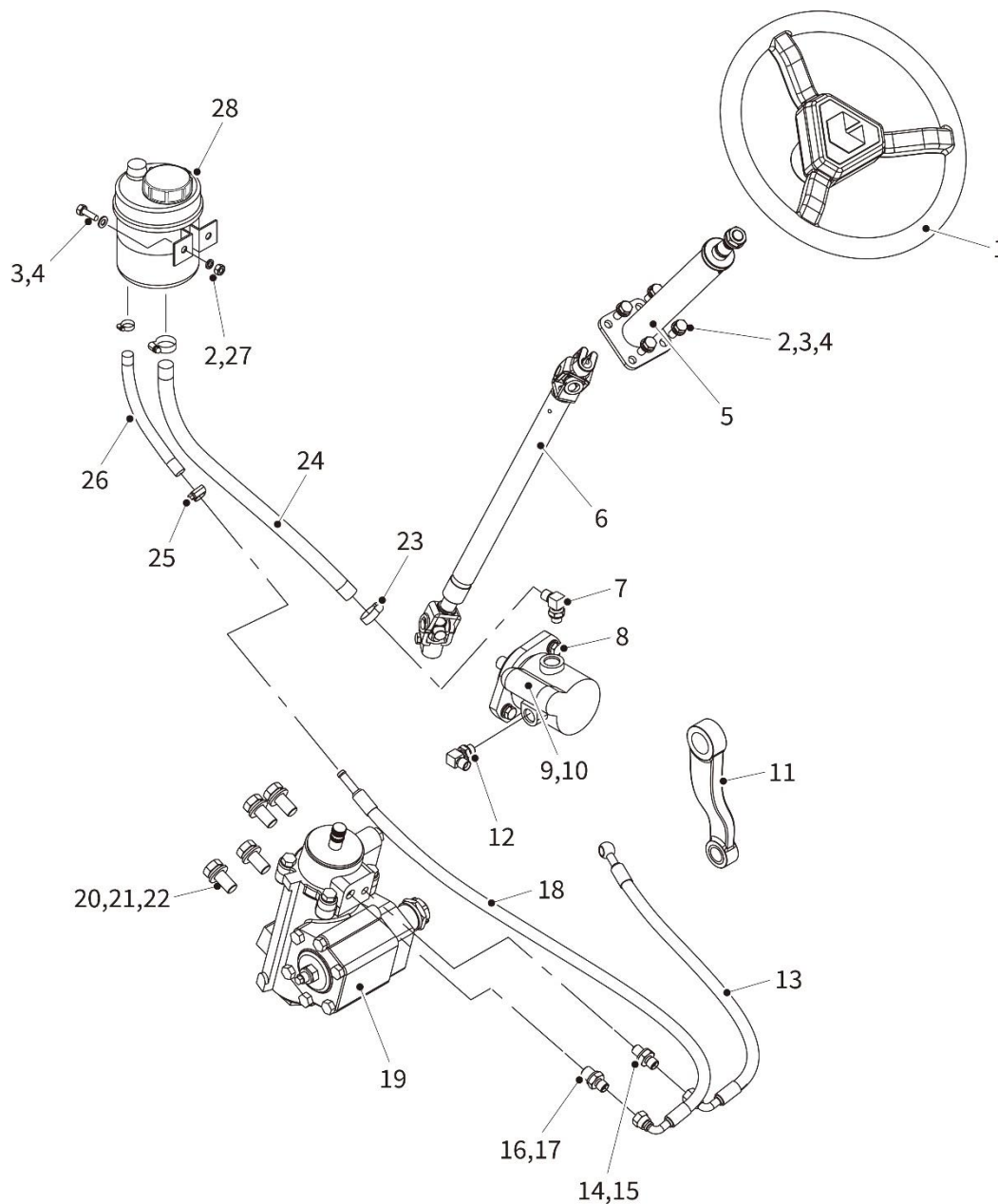
**Front Suspension - Exploded Parts View**



### Front Suspension – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	T20A6-10091	Spring	2	
2	PRPW00412	Right Cantilever	1	
3	PRPW00831	Bump Stop	2	
4	PRFA00162	Pin, Split Cotter, 3.2 x 22 mm	2	
5	PRFA00030	Washer, Flat, M12	10	
6	PRPW00832	Support	2	
7	PRFA00091	Steering Limit Bolt, M10 x 1.25 x 50 x 26 mm	2	
8	PRPW00833	Cantilever Dust Cover	2	
9	PRPW00834	O-ring, 80 x 1.8 mm	2	
10	PRFA00081	Nut, M30 x 1.5	4	
11	PRFA00100	Washer, Flanged, M30	2	
12	PRPW00835	Tapered Roller Bearing, Type HR33007J, single row, i.d. 40 mm, o.d. 80 mm, width 24.75 mm	2	
13	PRPW00411	Left Cantilever	1	
14	PRFA00101	Pin, 12 x 45mm	2	
15	PRPW00434	Tapered Roller Bearing, Type HR32009XJ, single row, i.d. 35 mm, o.d. 62mm, width 21mm	2	
16	PRPW00837	Gasket, Felt	2	
17	PRFA00011	Washer, Flat, M10	4	
18	PRFA00012	Washer, Lock, M10	8	
19	PRFA00065	Bolt, M10 x 1.25 x 20mm	4	
20	PRPW00200	Front Shock Absorber	2	
21	PRFA00092	Nut, Steering limit bolt	2	

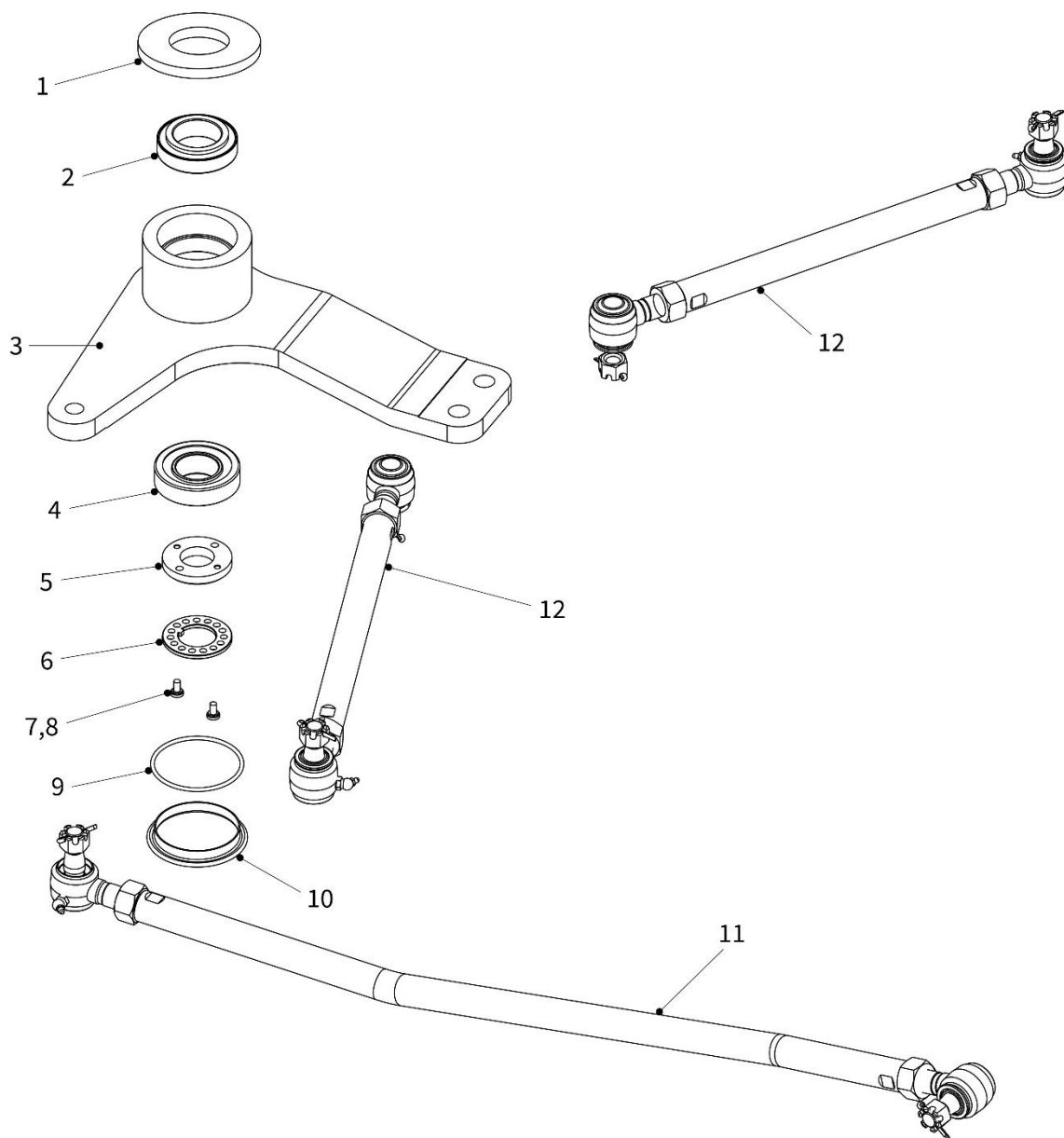
## STEERING SYSTEM



**Steering System - Exploded Parts View**

## Steering System – Spare Parts List

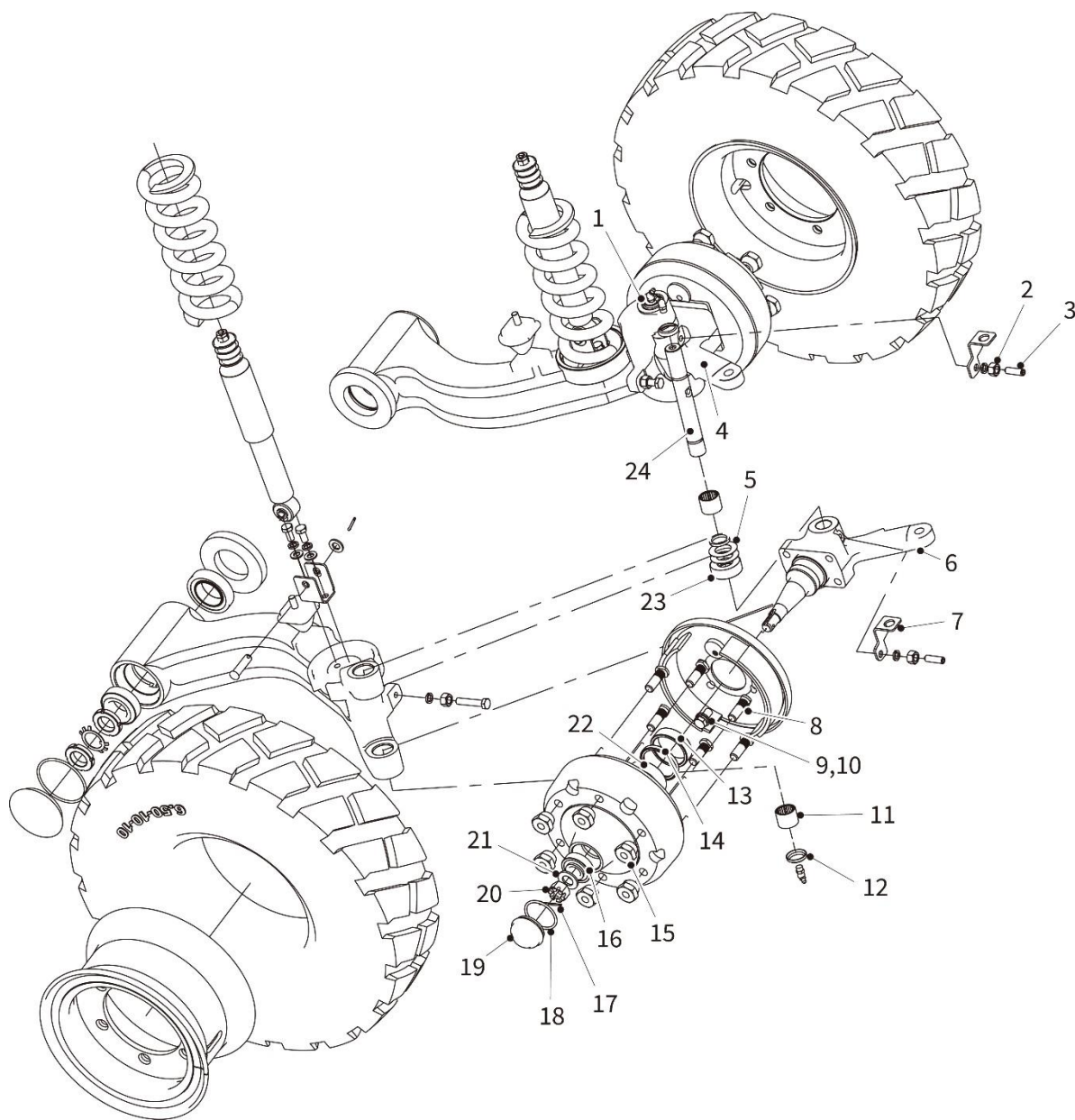
Item	Part No.	Description	Qty	Remarks
1	PRPW00192	Steering Wheel Assembly	1	
2	PRFA00012	Washer, Lock, M10	6	
3	PRFA00008	Bolt, M10 x 30mm	8	
4	PRFA00011	Washer, Flat, M10	6	
5	PRPW00393	Steering Column Assembly	1	
6	PRPW00354	Steering Shaft Assembly	1	
7	PRPW02589	Right-Angle Connector	1	
8	PRFA00017	Screw, M8 x 25mm	4	
9	PRPW00258	Power Steering Pump	1	
10	PRFA00148	Nut, M12 x 1.5 LH	1	
11	PRPW00213	Steering Arm (Pittman)	1	
12	PRPW00884	Right-Angle Connector	1	
13	PRPW02590	High Pressure Hose	1	
14	PRPW00836	O-ring	1	
15	PRPW00885	Straight Connector	1	
16	PRPW00840	O-ring	1	
17	PRPW00886	Right-Angle Connector	1	
18	PRPW02591	Outlet Hose	1	
19	PRPW00841	Power Steering Box, GY85U2	1	
20	PRFA00068	Washer, Flat, M16	4	
21	PRFA00069	Washer, Lock, M16	4	
22	PRFA00066	Bolt, M16 x 1.5 x 40mm	4	
23	PRPW02592	P-Clamp, Hose, 40 x 25 mm	2	
24	PRPW02593	Hose, dia.22 mm, length 1500 mm	1	
25	PRPW02200	P-Clamp, Hose, 25 x 16 mm	2	
26	PRPW02594	Hose, dia.16 mm, length 200 mm	1	
27	PRFA00036	Nut, M10	2	
28	PRPW00593	Power Steering Fluid Bottle	1	



**Steering Linkage - Exploded Parts View**

### Steering Linkage – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW00845	Felt Gasket	1	
2	PRPW00434	Tapered Roller Bearing, Type HR32009XJ, single row, i.d. 40 mm, o.d. 80mm, width 24.75mm	1	
3	PRPW00198	Rocker	1	
4	PRPW00197	Tapered Roller Bearing, Type HR32208J, single row, i.d. 45 mm, o.d. 75mm, width 20mm	1	
5	PRFA00082	Nut, Locking, Special	1	
6	PRPW00846	Gasket, Locking, Special	1	
7	PRFA00016	Screw, M6 x 12mm	2	
8	PRFA00007	Washer, Lock, M6	2	
9	PRPW00847	O-Ring, 80 x 3.55 mm	1	
10	PRPW00848	Cap-hub	1	
11	PRPW00409	Track Rod Assembly	1	
12	PRPW00190	Tie Rod Assembly	2	

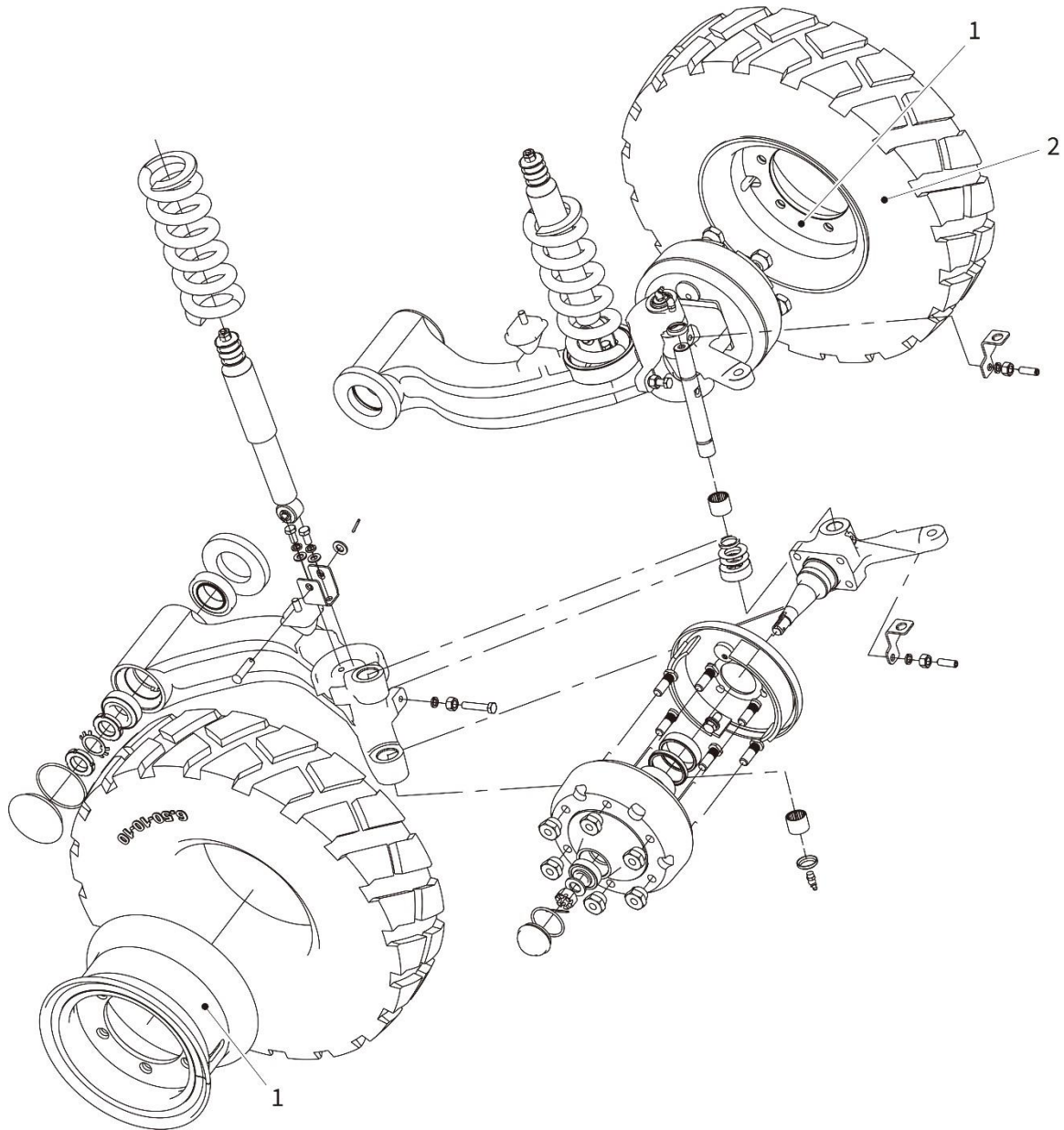


**Front Axle Steering - Exploded Parts View**

### Front Axle Steering – Spare Parts List

Item	Part No.	Description	Qty	Remarks
1	PRPW00849	Grease Nipple, M10 x 1	4	
2	PRFA00082	Nut, M12 x 1.25	4	
3	PRFA00084	Screw, Special	2	
4	PRPW00203	Knuckle, Right-Hand	1	
5	PRPW00509	Washer, Special	4	
6	PRPW00204	Knuckle, Left-Hand	1	
7	PRPW00850	Support	2	
8	PRFA00090	Front wheel stud	12	
9	PRFA00067	Bolt, M12 x 1.25 x 25mm	8	
10	PRFA00034	Washer, Lock, M12	8	
11	PRPW00510	Bearing, Type F-2526, drawn cup needle roller bearing, i.d. 25mm, o.d. 32mm, width 26mm	4	
12	PRPW00501	Dust Ring	4	
13	PRPW00442	Front Hub Bearing Spacer	2	
14	PRPW00438	Oil Seal, Nitrile Butadiene Rubber, o.d. 65mm, i.d. 55mm, width 8mm	2	
15	PRPW00296	Wheel Nut, Front	12	
16	PRPW00194	Tapered Roller Bearing, Type 33205, 25mm, o.d. 52mm, width 22mm	2	
17	PRPW03238	Pin, Split Cotter, 4 x 30mm	2	
18	PRPW00876	O-ring, 47.5 x 1.8mm	2	
19	PRPW00440	Hub Cover	2	
20	PRPW00439	Castle Nut, M18 x 1	2	
21	PRFA00112	Washer, Flat, M18	2	
22	PRPW00195	Tapered Roller Bearing, Type LM48510, i.d. 1.375 in., o.d. 2.5625 in., width 0.71 in.	2	
23	PRPW00410	Bearing, Type 25TAG12C, axial deep groove ball bearing, i.d. 25.3 mm, o.d. 48.6mm, width 15.8mm	2	
24	PRPW00193	Knuckle King Pin	2	

## WHEELS & TIRES



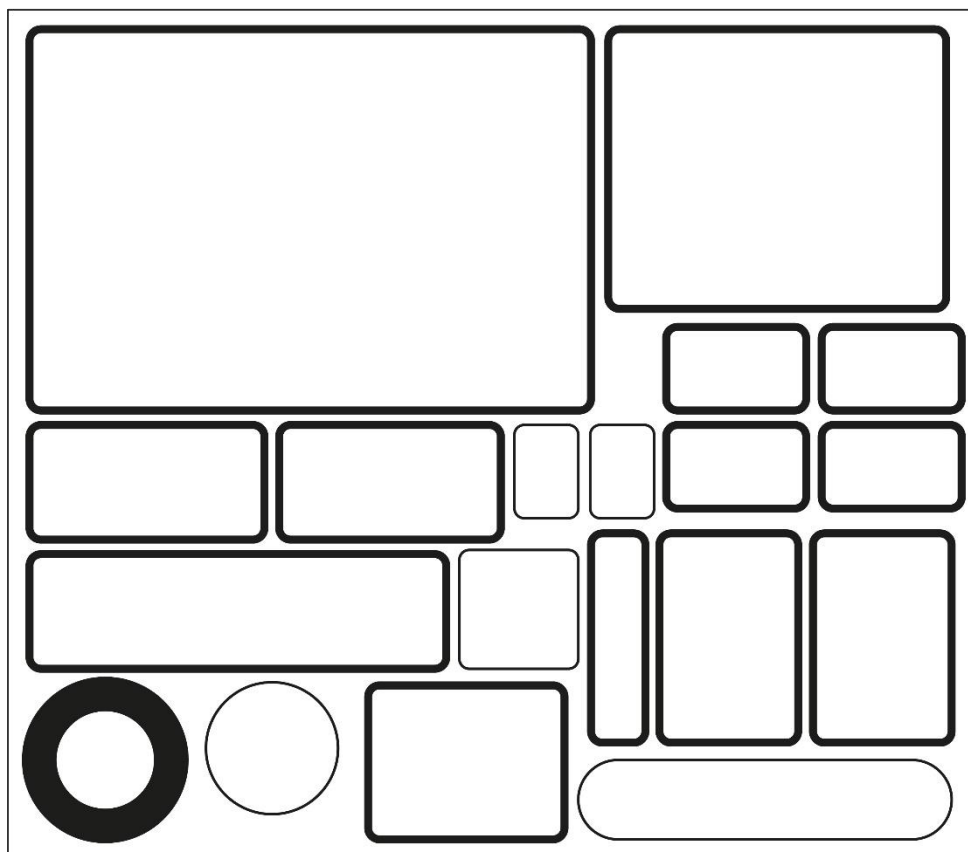
**Wheels and Tires - Exploded Parts View**



**Wheels and Tires – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1	PRPW00212	Front Rim Assembly, 5.00F-10	2	
2	PRPW00049	Tire, 6.50-10-10PR	2	

## LABELS



Sheet of Labels

**Labels – Spare Parts List**

Item	Part No.	Description	Qty	Remarks
1	PRPW03239	Set of Labels for XT670D Tractor (complete set of labels for Tractor)	1	

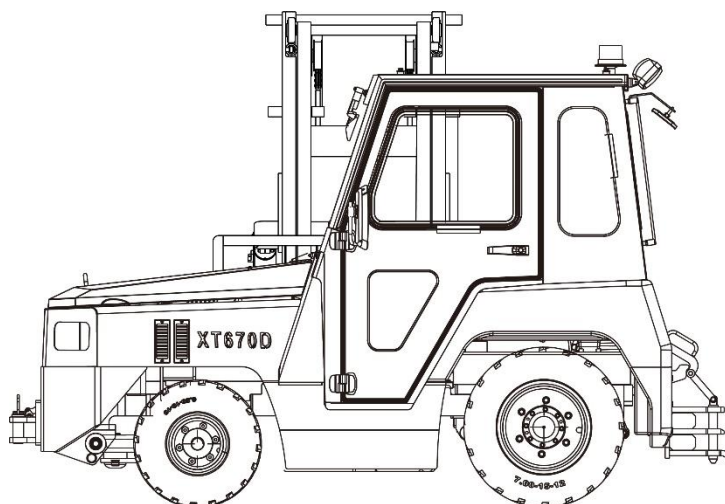
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# SUPPLEMENTARY INFORMATION

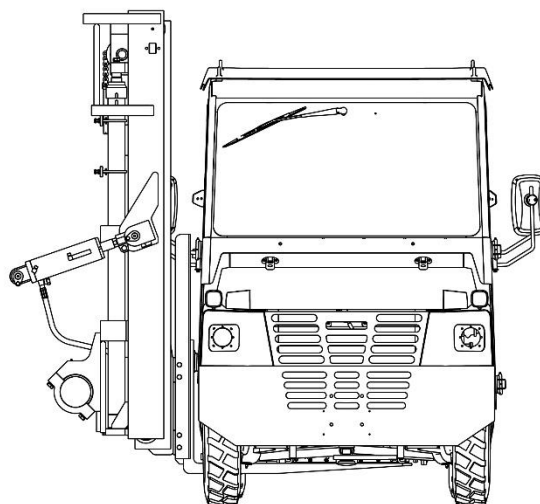
## LIFTING/SHIPPING THE TRACTOR

ALWAYS lift the Tractor using a forklift. There are NO lifting points on the Tractor to which lifting slings or chains can be safely attached.

The Safe Working Load (SWL), also known as Rated Capacity, of the forklift MUST be at least 5000 kg (5 Tons). The length of the forks MUST be at least 1500 mm (5 feet).



Side view



Front view

**Figure 16 - Lifting diagram**

## WARNING – SIZE AND WEIGHT OF TRACTOR



**The Tractor weighs 4500 kg (9921 lbs). When lifting the Tractor, always use a forklift truck with a Safe Working Load (SWL) of at least 5000 kg (5 Tons). DO NOT use a crane with lifting slings or chains, there are no lifting points on the Tractor.**

**The Tractor must always be towed or moved using a suitable vehicle.**

There are two rows of fork bearing plates on the underside of the Tractor. Adjust the width of the forks to 650 mm (26 in.) and lift the Tractor from the side as shown in the Lifting Diagram below.

## WARRANTY

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 XT670D Tractor contains electrical components, including a vehicle battery. A tractor that is damaged beyond economic repair, or worn out, should be recycled at a metal recycling facility.

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# APPENDICES

**KOHLER DIESEL KDI ENGINE - OWNER/SERVICE MANUAL**

**KOHLER – SPARE PARTS CATALOG  
KDI2504TCR/23(#3P52K21) - MY20**

**ZF TRANSMISSION – REPAIR INSTRUCTIONS 3 WG 94 2WD**

**ZF TRANSMISSION – DESCRIPTION OF THE FAULT CODES  
FOR EP90 FORKLIFT EST65**

## NOTE

The Fault Codes for the EP90 Forklift EST65 apply equally to the XT670D Tractor.

**ZF TRANSMISSION – SPARE PARTS CATALOG 3 WG 94**

