

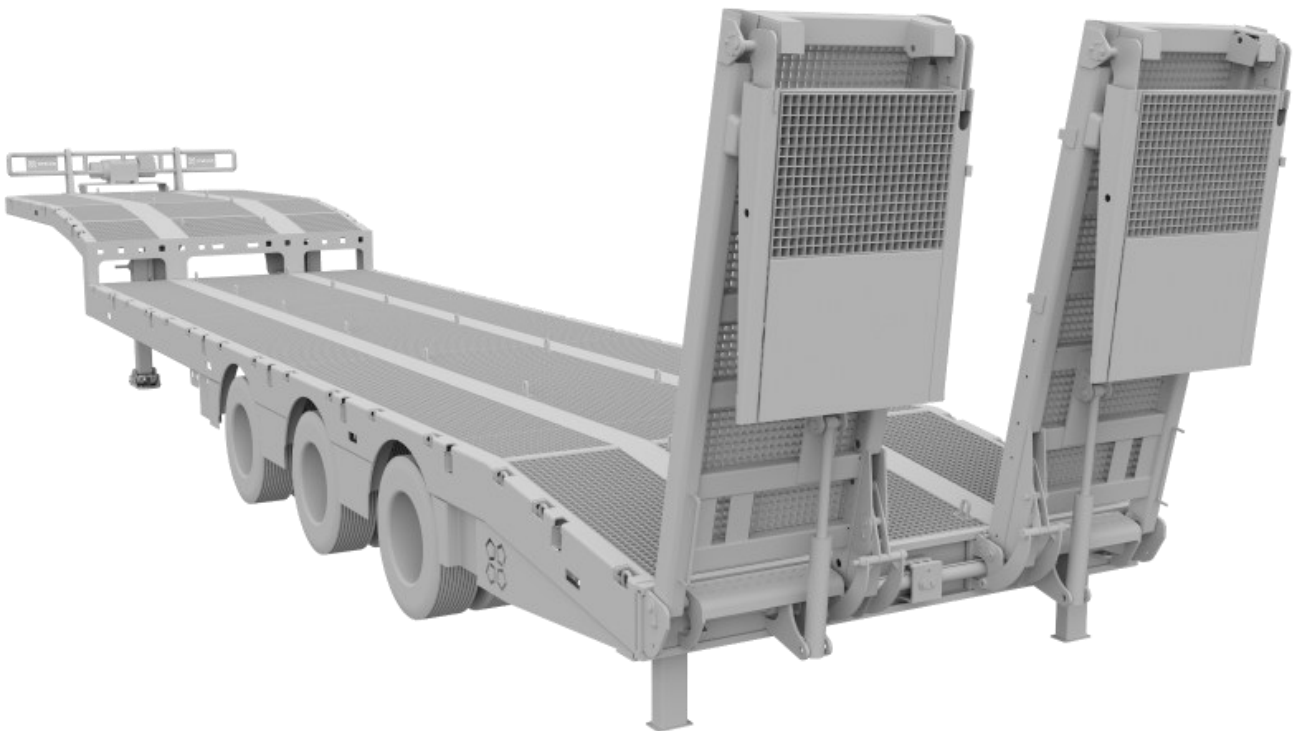


STERLING

OPERATING & MAINTENANCE MANUAL

Type: ST440

Description: Step Frame Trailer



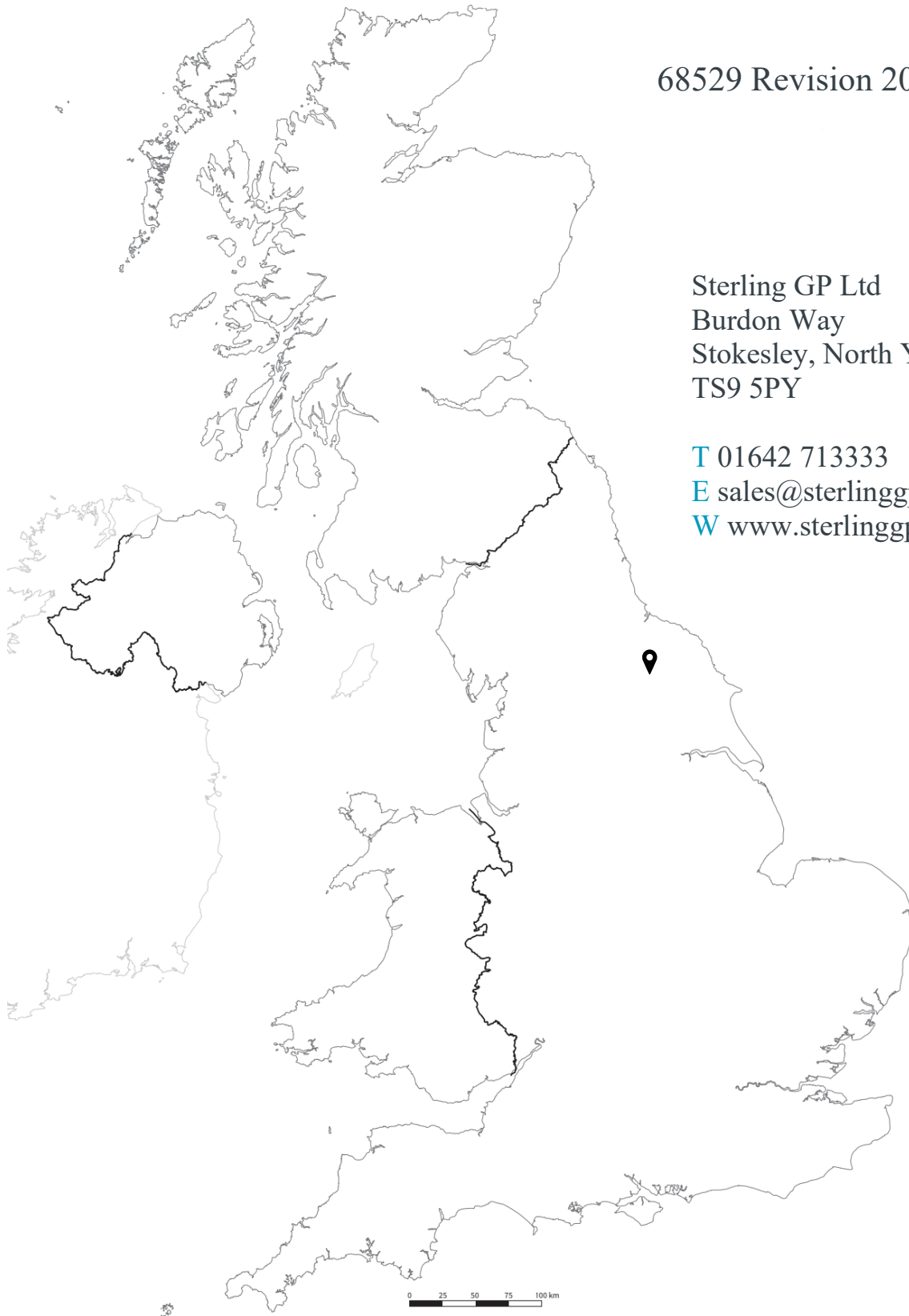


STERLING

68529 Revision 2026.0

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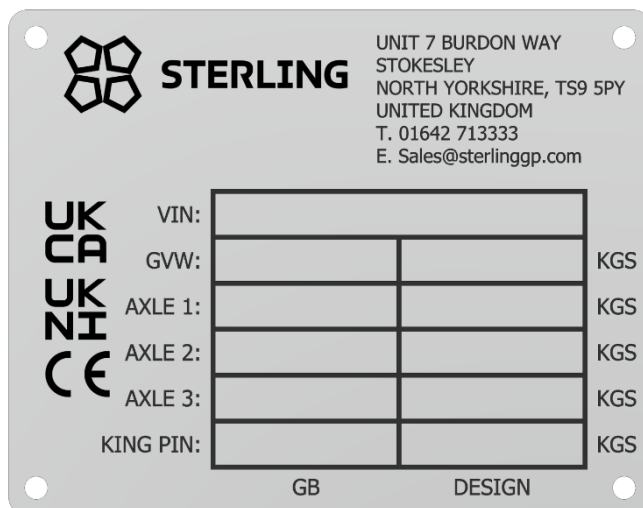
2. CONTACT DETAILS

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Sales Email:	sales@sterlinggp.com
Support Email	support@sterlinggp.com

Table 1: Contact Details

3. IDENTIFICATION

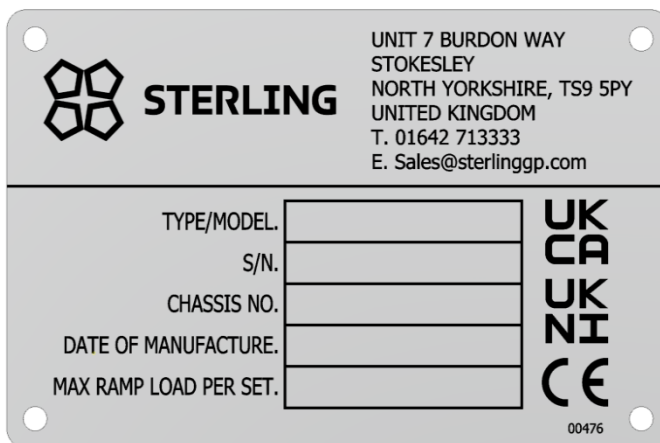
The Sterling semi-trailer is identified according to the legislation in force by an identification number on the front right side of the chassis with an identification plate of the braking system and a Sterling identification plate.



UNIT 7 BURDON WAY
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UK CA UK NI CE	VIN:		
	GVW:		KGS
	AXLE 1:		KGS
	AXLE 2:		KGS
	AXLE 3:		KGS
KING PIN:		KGS	
		GB	DESIGN

Figure 1: Sterling Identification Plate – (Please note this is an example and may not be relevant to your machinery)



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TYPE/MODEL.		UK CA UK NI CE
S/N.		
CHASSIS NO.		
DATE OF MANUFACTURE.		
MAX RAMP LOAD PER SET.		

00476

Figure 2: CE Marking Plate (Located on left off nearside ramp)

The CE marking plate found on the ramps is to show the ramps conform to European standards (**Figure 2**) This marking plate is only applicable to the ramps and not the whole trailer. The trailer is covered under Type Approval.



4. GENERAL DESCRIPTION & SAFETY

This instruction manual covers the product known as a Step Frame Low Loader Trailer. Low Loader trailers are typically used to transport large machinery. The body consists of a two-tier flat load carrying deck, and hydraulically operating loading ramps at the rear.

The product is designed to be used by trained personnel. Its use is also subject to the loading and usage restrictions that are set in place regarding Gross Vehicle weight. It is the responsibility of the operator to carry out a risk assessment before each use.

If used for other than its intended purpose, it can pose a hazard for both users and third parties or cause damage either to the trailer or another party's property.

The proper use and maintenance of the machinery is entailed in this manual and anything carried out on the machinery that isn't stated within could be deemed misuse and Sterling GP Ltd takes no liability.



It is the responsibility of the operator to carry out the necessary maintenance checks, please see **Section 8 Maintenance**.



4.1. General Symbols & Instructions

Safety information through this manual is denoted by the signs and symbols and the descriptions as per **Table 2**. Note that the signs on the trailer may differ in meaning despite having similar signs and symbols – see **Section 5.3 Warning and Danger Signs** for vehicle signs.

Signs & Symbols	Description
	Indicates a hazardous situation which, if not avoided, will result in death or serious injury
	Indicates a hazardous situation which, if not avoided, could result in death or serious injury
	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury
	Risk of Slipping
	Indicates a mandatory action, if not carried out there is a risk to people and machinery
	Wear protective footwear
	High visibility clothing must be worn

Table 2: Manual Signs & Symbols



4.2. PPE



One deciding factor on the quality of grip on the decking is the weather conditions the machinery is used in. Wet/icy weather can lead to a significant decrease in the amount of grip on the trailer surface. Therefore, footwear in good condition and of substantial grip (i.e. Safety Boots) must be worn, at all times, when walking on the deck or ramps. Walking on the edge of the trailer should always be avoided where alternative access is possible.



High visibility clothing should be worn when operating on or around the machinery

5. HEALTH & SAFETY

5.1. Residual Risks



Although every effort has been made to ensure the ramps stay safe when in use, there is always a risk when using hydraulic powered ramps. Therefore, it is the responsibility of the operator to ensure the ramps are operated as per the instructions in this manual and only used as intended. It is the responsibility of the operator to ensure nothing enters the area underneath the ramps during their operation, due to the risk of ramps failing, which could result in maiming or death.



It is the responsibility of the operator to ensure that the vehicles to be loaded on the trailer have sufficient grip whether they be tracked or wheeled. Failure to do so could result in the machinery slipping off the trailer whilst loading or unloading resulting in injury.

5.2. Warning alarm

The trailer is fitted with an alarm that indicates the ramps moving. This acts as a safety feature that is secondary to the warning stickers and the operator who has full scope of vision around the ramps. Therefore, it remains the responsibility of the operator to ensure the safety of themselves and others during the operation of the ramps.



5.3. Warning and Danger Signs

The signs in **Table 3** can all be found on the trailer and should be read and understood before attempting to operate.

Sign	Description
	Risk: Ramps falling whilst in operation Level of Risk: Severe injury or Death Description: This warning label has been put in place to emphasise the point that no-one should walk behind the ramps whilst they are functioning. Failure to abide by the sign could result in severe injury or death.
	Risk: Ramps falling whilst in transit Level of Risk: Severe injury or Death Description: This warning label has been put in place to emphasise the point that the ramp stays MUST be put on the ramps before travelling. Although supported by the hydraulic system, the stay offers a secondary safety feature. Failure to use them could result in the ramps falling whilst in transit.

Table 3: Trailer Signs & Symbols

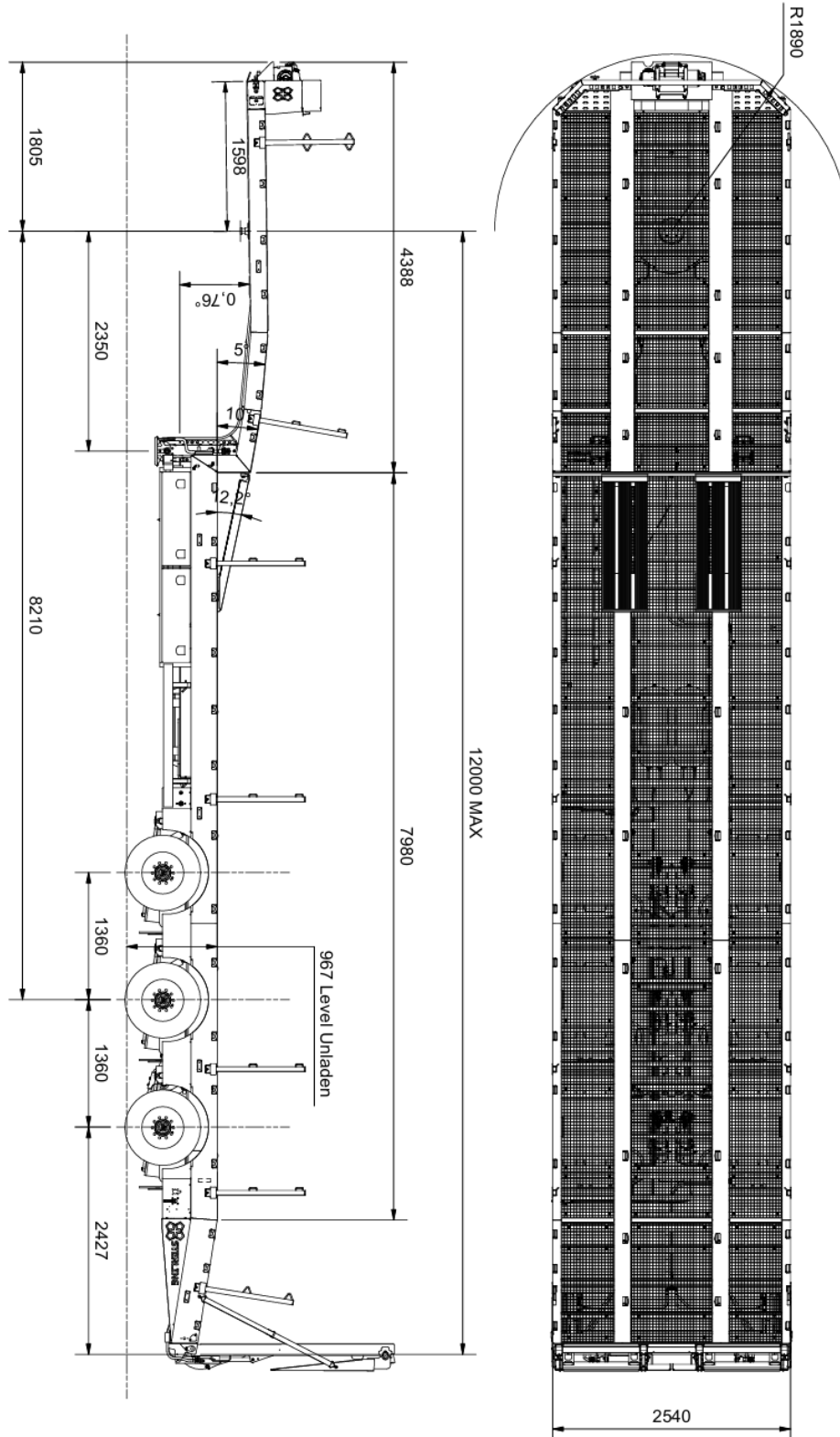


Figure 3: Twin Double Flip Ramp with Signage Example Locations



6. MACHINERY DRAWINGS

6.1. Trailer Drawing



NOT TO SCALE – This Drawing is an example and some dimensions may differ to your Machinery

Figure 4: Example Trailer Drawing



7. USE OF MACHINERY

7.1. Operating Semi trailer



The compatibility between trailer and tractor is important. The space between the tractor and trailer should be adequate to carry out normal use of the machinery without the risk of interference between the assemblies.

Maximum length of an articulated vehicle (tractor + trailer) such as this is 16.5m.
Before use of the trailer, the following should be checked:

- The trailer's coupling to the tractor unit is secure
- The electrical systems and lighting all function i.e. indicators, brake lights, etc.
- Brakes, ensuring secure connection between the feeding and guidelines of compressed air, and air is in the reservoirs
- The air suspension bellows are filled and not deflated or punctured
- The rear stability legs are correctly stowed away
- The parking brake is disengaged
- The tyres are to the correct pressures – this is load dependant
- The wheel nuts are fully tightened
- The ramps are securely fastened with the given ramp stays
- If applicable, all toolboxes are shut and correctly fastened for transportation



When driving with a load you should compensate for the type and weight of your cargo and the conditions of the roads for example weather changes or heavy traffic.

Attention: Remember that the overheating of your brakes will rapidly decrease the efficiency of your braking and will affect your stopping distance. This will vary due to cargo.

When travelling with machinery on the trailer remember:



- DO NOT exceed the maximum load of the axles or king pin.
- The positioning of the load and nature of the load whether it be uniformly distributed, or a concentrated load will affect the handling of the trailer.
- Ensure the load is securely fastened. This is the responsibility of the operator.
- When loading/unloading machinery use the rear stability legs, failure to do so could lead to damage to the carrier or the machinery being loaded/unloaded.
- Should the load exceed the trailer width use the deck expanders. When using the deck expanders drive cautiously and with the right legal permission.
- Always be aware of the maximum height of the load. This should always comply with national regulations.



7.2. Coupling and Uncoupling

Greasing of the coupling mechanism should be applied when deemed necessary.
Before coupling or uncoupling always ensure the spring-loaded parking brake is engaged



Coupling

- Withdraw the safety pin.
- Push the handle forward on the tractor unit to release the coupling mechanism.
- Pull the handle, then the mechanisms are ready for coupling.
- Apply the parking brake or use the chocks to stop the trailer from moving.
- Align the pressure plates of the tractor unit. Use the legs to ensure the trailer coupling device is at the right height.
- Reverse the tractor unit, keeping it aligned with the coupling mechanism until coupled.
- Ensure the tractor pressure plate is directly under the trailer plate.
- To check if the coupling is successful, slowly move the tractor unit whilst the brakes are still on the trailer.
- Place the safety pin in.
- Couple the pneumatic, hydraulic and electric plugs.
- Lift all the legs.
- Disengage parking brake /remove chocks.



Uncoupling

- Engage the parking brake.
- Lower the landing legs.
- Disengage the hydraulic, pneumatic and electric plugs.
- Remove the safety pin.
- Push the handle forward to release the mechanism.
- Pull the handle to free the kingpin.

1.1.1 Checks before departing and when parking

Checks before departure	Checks when Parking
✓ Check the coupling and ensure the trailer is properly coupled ✓ Ensure brake lines, supply line and electrical lines are securely connected ✓ Landing legs are up and secured ✓ Parking brake is OFF ✓ Lift axle is up/down depending on the nature of the journey ✓ Ramps are up and in their travelling position with the straps securely fastened	✓ The parking brake is ON ✓ Landing legs are down and secured ✓ Ramps are up with the straps securely fastened ✓ Ensure the brake lines, supply lines and electrical lines are disconnected ✓ Check the trailer is fully uncoupled

Table 4: Trailer Checks



7.3. Pneumatic and Electric Plugs

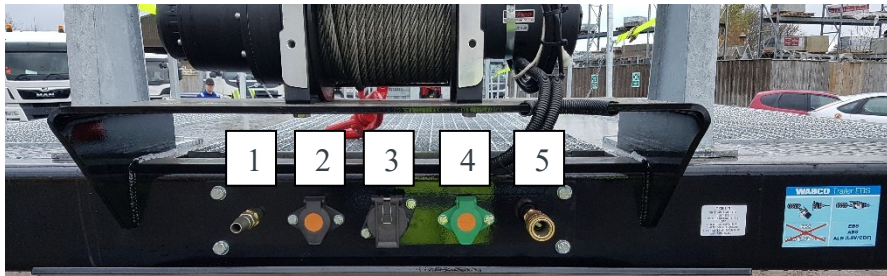


Figure 5: Trailer Pneumatic/Electric Plugs

Figure 5 Key:

1. Emergency Air Line
2. Plug Type 24N, ISO 1185, 24V, 7 pin
3. EBS Connection
4. Plug Type 24S, ISO 3731, 24V, 7 pin
5. Service Air line



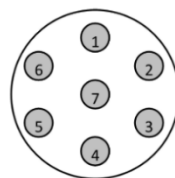
Figure 6: WABCO Trailer Brake Label

The braking system on this product complies with the Brake Directive 71/320/EEC. **It is illegal to drive without the trailer being fully connected to the towing vehicle.**

1.1.2 Brake Lining Wear Indicator

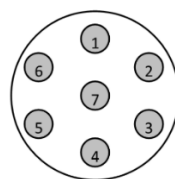
When the warning EBS light flashes on the dashboard this is displaying that the brake linings have been worn down to their limit and need replacing immediately. Do not move the trailer until the brake linings have been replaced.

Plug Type 24S, ISO 3731, 24V, 7 pin



Pin	Function	Colour of Wiring
1	Earth	White/Black
2	-	Violet
3	Reversing Light	Blue
4	Continuous Positive power	Brown/Blue
5	Control over earth	Orange
6	Power over ignition switch	Pink
7	Fog Light	Blue

Plug Type 24N, ISO 1185, 24V, 7 pin



Pin	Function	Colour of Wiring
1	Earth	White
2	Left tail light/side marker light/licence plate light	Black
3	Left indicator light	Yellow
4	Brake lights	Red
5	Right indicator light	Green
6	Right tail light/side marker light/licence plate light	Brown
7	Trailer Braking control	Blue

Figure 7: Break Line Plug Types



7.4. Brake and Axle Controls

1.1.3 Brakes

Parking: Pull Valve to engage Spring-loaded parking brake.

Driving: Middle Position for normal running.

Released: Push Valve to release Parking brake for shunting.

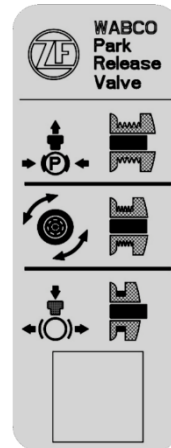


Figure 8: Trailer Brake Controls

The spring-loaded parking brake is to be used when the vehicle is parked.

The service brake release valve is used when the emergency air line is disconnected and therefore the pressure in the air system is too low to release the spring-loaded parking brake. When the service brake release valve is depressed, the trailer has no braking function. Once the emergency air line is reconnected and the pressure builds back up in the system. This automatically returns the valve to its original position and the ability to use the trailer brakes.

1.1.4 Rear Axle Lift

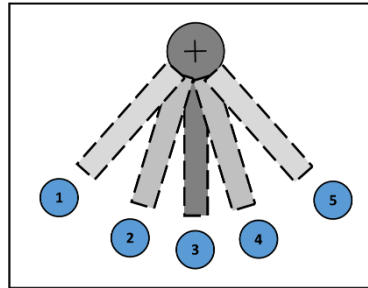
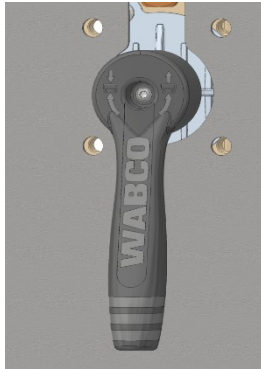
The rear axle raises and lowers automatically depending on how much weight is on the trailer.

Operation of the Lift Axle Override button will manually bring the lift axle down.





1.1.5 Raise/Lower air suspension



Raising/Lowering valve

1. Lower
2. Stop
3. Drive Position
4. Stop
5. Raise

Figure 9: Raising/Lowering Valve

The raising/lowering valve (**Figure 9**) works semi-automatically. The lever will not automatically adjust to the stop positions, so it is the responsibility of the operator to move the lever into a stop position.



7.5. Ramp Operation

1.1.6 Ramp Controls

Before operating the ramps, follow the instructions on how to dump the air from the suspension (see **Section 1.1.5**).

The trailer MUST be connected to the towing vehicle for the ramps to function.

Table 5 and **Table 6** outline instructions on how to lower and raise the ramp on the trailer, respectively.

Before and during both operations, the operator must ensure that the area around the ramp is clear of obstruction and personnel. It is the responsibility of the operator to ensure the safe use of the ramp.



To operate the ramp with the transmitter, first activate the system by pressing the 2 green buttons on the transmitter (**Figure 10**). Then adjust the ramp position using the respective buttons on the transmitter. The same buttons are fitted to a back-up receiver box (**Figure 11**) situated to the rear nearside of the trailer. The receiver can be used in place of the transmitter.

When adjusting the track width of the ramps, it must be altered whilst the ramps are in the raised position without the straps being on. To do so otherwise could result in damage to the ramps or anything else in the surrounding area.

If at any point the buttons are released, the ramps will halt in the position they are in. Caution should be exercised when releasing the buttons, as leaving the ramps suspended will increase the risk in the area around the ramps. Do not drive onto the ramps until they are in full contact with suitably firm ground.



Figure 11: Transmitter



Figure 10A: Transmitter Icons



Figure 12: Receiver

Button Functions on Transmitter (**Figure 10 & 10A**) and Receiver (**Figure 11**)

- | | |
|-----------------|---|
| 1. Ramp Up | A. System Activation / Winch out (where fitted) |
| 2. Ramp Down | B. System Activation / Winch in (where fitted) |
| 3. N/S Ramp Out | 7. Red button (Stop Button) |
| 4. N/S Ramp In | |
| 5. O/S Ramp Out | |
| 6. O/S Ramp In | |



1.1.7 Lowering

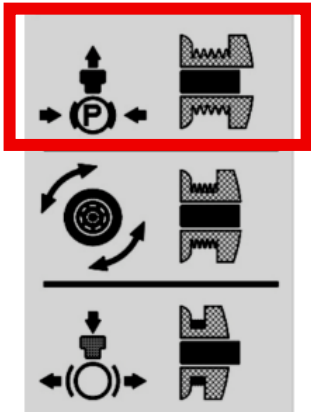
1	 	• Apply the spring-loaded park brake • Lower the landing legs (Section 7.7) • Fully dump the suspension (Section 1.1.5) • Activate the ramp controls as described in Section 1.1.6.
2		• Ensure the area behind the ramp is clear of personnel and obstruction. • Release the OFFSIDE strap from the ramp. • Then release the NEARSIDE strap from the ramp. • WHEN RELEASING STRAPS DO NOT STAND BEHIND THE RAMP, STAND TO THE SIDE CLEAR OF THE RAMP, RELEASE OFFSIDE STRAP FIRST.
3		• Press and hold the '4' function button on the transmitter until the jacklegs reach the vertical position. If on uneven ground, the suspension may need to be raised slightly to allow the jacklegs to fully engage. • Press and hold the '4' function button again to fully lower ramp, continue to do so until the ramp is firmly on the ground. The feet on the end of the upper section must be firmly on the ground. • The ramp is now ready for loading.

Table 5: Lowering Ramps



1.1.8 Raising

1		• Ensure the spring-loaded park brake is engaged. • Ensure the air is fully dumped from the suspension. • Ensure the transmitter is on.
2		• Keep all personnel and limbs away from ramp • To raise ramp, press and hold the '3' function button continuously, until the ramp is firmly against the stops and the jacklegs are raised to the horizontal position • Engage and tighten the strap on the NEAR SIDE first, then engage and tighten the OFFSIDE strap. • WHEN ENGAGING STRAPS DO NOT STAND BEHIND RAMP, STAND TO THE SIDE CLEAR OF RAMP. ENGAGE NEAR SIDE STRAP FIRST.
3		• Return the suspension to 'ride' condition. • Raise the landing legs (Section 7.7) • The trailer is now ready to be driven. • Note: DO NOT attempt to drive the trailer without the straps being fully secured to the ramps and deck slope in the designated locations.

Table 6: Raising Ramps



7.6. Transmitter/Receiver Instruction



Figure 13: Remote-Control Transmitter (Labelled)

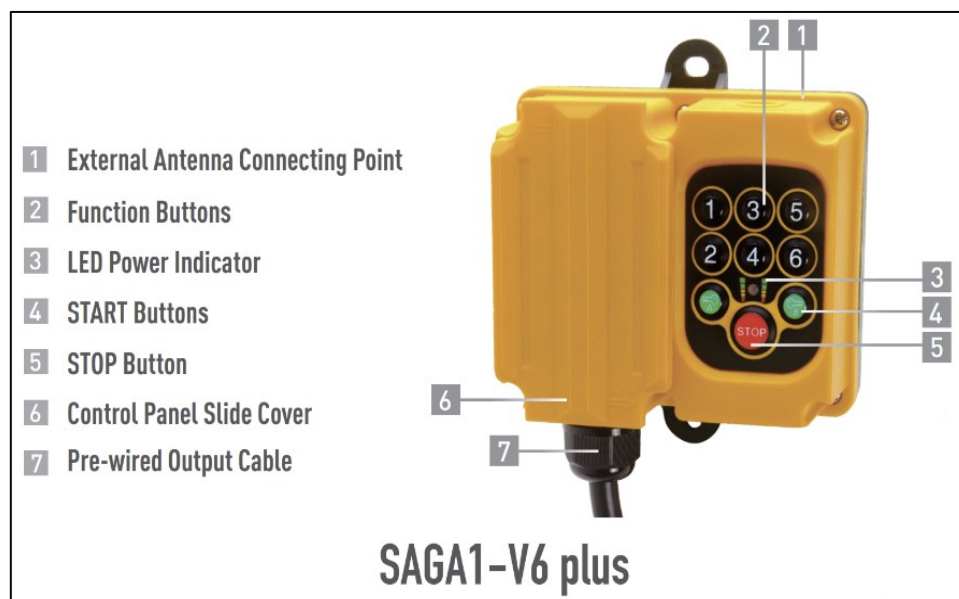
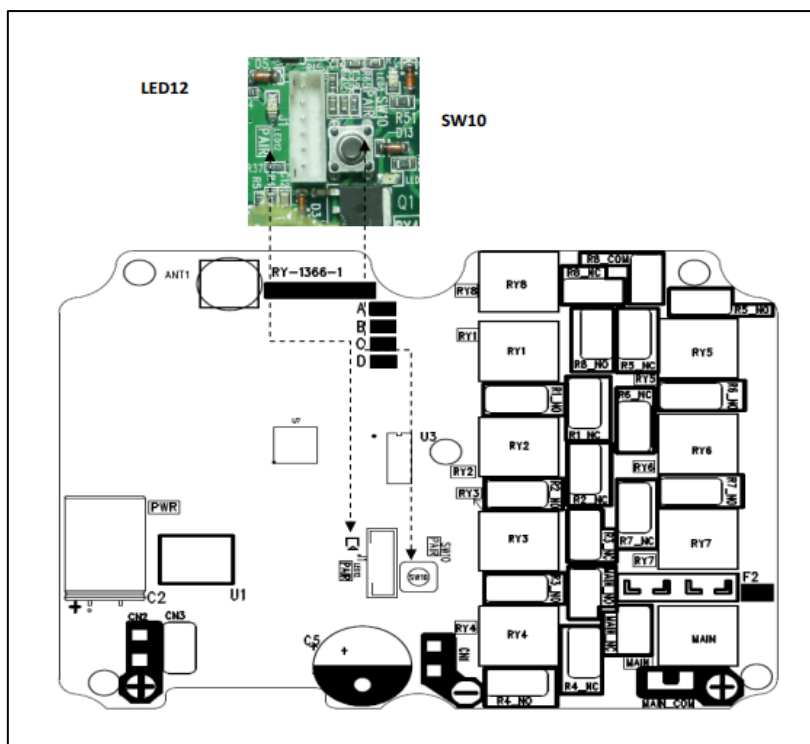


Figure 14: Receiver Unit (Labelled)



Activate Transmitter

1. Press and hold both green buttons together on transmitter simultaneously (Factory default) to activate the system.
2. Press function button '1' to spool rope out.
3. Press function button '2' to spool rope in.
4. Ramps are mapped to be operable by the remote (see **Section 1.1.6**)

Deactivate the Transmitter

SAGA1-V6 Plus Receiver Panel

Both Transmitter and Receiver pushbutton panel can control receiver simultaneously.



1.1.9 Indicator

Transmitter Status Indication

1. Red (Blinking Rapidly): Transmitter is not being activated correctly or pushbutton jammed.
2. Red (Blinking Slowly): Transmitter is activating but receiver is not able to work properly.
3. Green (Blinking Slowly): Transmitter and receiver both have been activated successfully.

Transmitter Battery Indication

1. Green (Full Power): Operate as usual.
2. Yellow (Mid Power): Stop operation until new batteries are replaced.
3. Red (Low Power): A Stop signal will be sent to receiver automatically to turn off receiver. To avoid the interruption during operation, check battery power frequently.

1.1.10 Replacing the Batteries in Transmitter

1. Unscrew the bottom casing and remove it from the transmitter.
2. Install 2 new AA Batteries into the battery compartment (ensure polarity of the batteries is correct).
3. Replace the bottom casing back on to the transmitter.
4. Press and hold the 'Start Push Button A' & 'Start Push Button B' simultaneously to power on the system
5. Press function button for operation.

1.1.11 Pairing Transmitter and Receiver

Before carrying out the pairing processes, ensure that transmitter and receiver are switched off.

Through the following pairing processes, any SAGA1-V6 transmitter and receiver can be paired as a group working together.

1. Remove the receiver upper casing, then press and hold **SW10 (Receiver)** for 3 seconds, the **LED12** will flash red constantly (see **Figure 14**)
2. Press and hold function buttons '1' & '2' on transmitter together, then press the green 'A' pushbutton.
3. When the LED Indicator on the transmitter flashes green:
 - A. Press function button '1' to confirm pairing processes (This stores receivers ID code/function setting into transmitter memory (Overwritten), then LED indicator will flash green slowly and vanish, the whole process is completed).
 - B. Press function button '2' to abandon the process.

Note: When assembling the SAGA1-V6 Receiver upper & bottom casing together, ensure the pressure balance air bag is not squeezed or being compressed by wires.

7.7. Landing Legs

The landing legs, comprising of two telescopic foot pads, are driven by a bevel gear assembly and can be vertically raised or lowered. The drive shaft is controlled by a manually operated crank attached to a two-speed gearbox (see **Figure 15**).

1. When the crank is pushed in, the gearbox is in low speed. This is ideal for raising/lowering the trailer
2. When the crank is pulled right out, the gearbox is in high speed. This is ideal to lower/retrieve the legs. This speed is only to be used when the footpad has no contact with the ground.

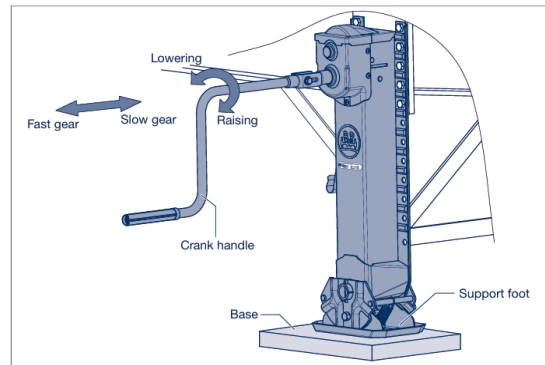


Figure 16: Landing Leg Diagram



When operating the landing legs, the following points must always be considered:

- Before operating the landing gear, the vehicle must always be secured against rolling away.
- No persons must be present beneath the vehicle during hitching and unhitching and when a vehicle is being supported.
- No persons must be present beneath the vehicle during the coupling procedure.
- Fast or slow gear must always be engaged.
- Care must be taken to avoid handle kick-back by completing the turning movement slowly.
- While the vehicle is in motion:
 - The crank handle must be installed and mounted in the holder.
 - The landing gear must be completely retracted.
 - The landing gear must be in a proper condition, with any defective support equipment having been repaired or replaced.
- When the vehicle is being supported, care must be taken that:
 - The ground underneath is sufficiently firm; a suitable base must be provided if necessary.
 - The ground must be even.
 - The support foot must be freely movable.
 - The upper and lower hoist limiters are not overwound.



Figure 17: Example Image of Landing Legs in Lowered Position



7.8. Slide Out Handrail System and/or Expanders

Depending on Configuration, the trailer may have either a slide out handrail system or extra width deck extenders.

When carrying a load that is close to the full width of the Trailer, a 'Slide Out Handrail System' consists of posts, which slide out and straps fitted along the length of the trailer, reduces the risk of the operator falling from the back of the trailer. These Slide Out Handrails are not designed to take the weight of the trailer load, they are 'Fall Arrest' only.



Figure 18: Trailer Handrail System

When carrying a load that is wider than the original deck of the trailer on a trailer with expanders, the expanders can be used to create a wider deck space. To do this, lift the latch inside the expander and pull them out until the latch falls back into its wider position, locking the expander in the outriggered position. Then place wooden boards onto the expanders.



Figure 19: Deck Expander



It is the responsibility of the towing vehicle driver to drive carefully, taking into consideration the new width and the gross weight because of a wider load. When carrying a wider load this must be done in accordance with the law and is in the best interest of the driver to do so.



7.9. Jack Legs



These legs are provided to ensure the trailer stays stable during loading/unloading. The legs **MUST** be down before loading/unloading. Ensure the trailer is situated on suitably firm ground to prevent sinking. The jack legs come down/rise automatically when the trailer ramps are lowered, as described in **Sections 1.1.7 & 1.1.8**.

7.10. Wheels

When changing a wheel, the trailer must be unloaded and out of the main flow of traffic, if applicable. Ensure the trailer is situated on suitably firm ground to prevent sinking.

7.11. Tyres

It is the responsibility of the operator to ensure the tyres are capable for the intended use and weight bearing. The information required can be obtained from the tyre manufacturers.



Driving with worn tyres significantly decreases the handling of the trailer. It increases the braking distance and significantly increases the risk of a tyre bursting. It is the operator's responsibility to ensure that there is sufficient tread left on all tyres and that they are inflated to the correct tyre pressure.



Dual tyre pairs must always have the same tread pattern.



7.12. Brakes and Suspension

Work on the brakes or suspension should only be carried out by qualified personnel. To carry out work on the brakes or suspension, refer to the operator's manual from the specific supplier. Any parts used to replace supplied parts will be done at the owner's own risk. It is the responsibility of the owner to ensure all replacement parts are suitable and safe for their intended use and no liability will be taken by Sterling GP Ltd for those parts.



Figure 20: Example Image of Compressed Air Tank

The compression air tanks located on the underside of the chassis (seen in **Figure 19**) need regular inspection to ensure the tightness of the hose fittings. If loose tighten immediately. Replace any damaged fittings or hoses.

There can be several reasons an air system may lose pressure, mainly due to a leak in the system somewhere.

When the pressure drops below approx. 6.5 bar, the trailer's brakes will automatically come on as a result of the braking valve automatically switching. To reverse the effect and release the brakes, the trailer must be reconnected to the towing vehicle, as the service airline must be connected.

To carry out maintenance on the air tanks:

- 1) Apply the spring-loaded parking brake
- 2) Raise the suspension as high as possible then put the raise/lower valve to stop
- 3) Set the rear landing legs to loading/unloading position
- 4) Access the air tanks underneath the trailer

Anyone near the trailer must be alerted whenever someone intends to go underneath the trailer. If someone is underneath the trailer, anyone entering proximity of the trailer must also be alerted. It is the responsibility of the person undertaking maintenance to take the necessary steps to ensure their own safety, and that of others', while performing maintenance tasks.

See **Figure 20** for Wabco Pneumatic Braking and Suspension Schematics.

See **Figure 21** for BPW Axle Diagrams.



Semitrailer braking system with conventional air suspension

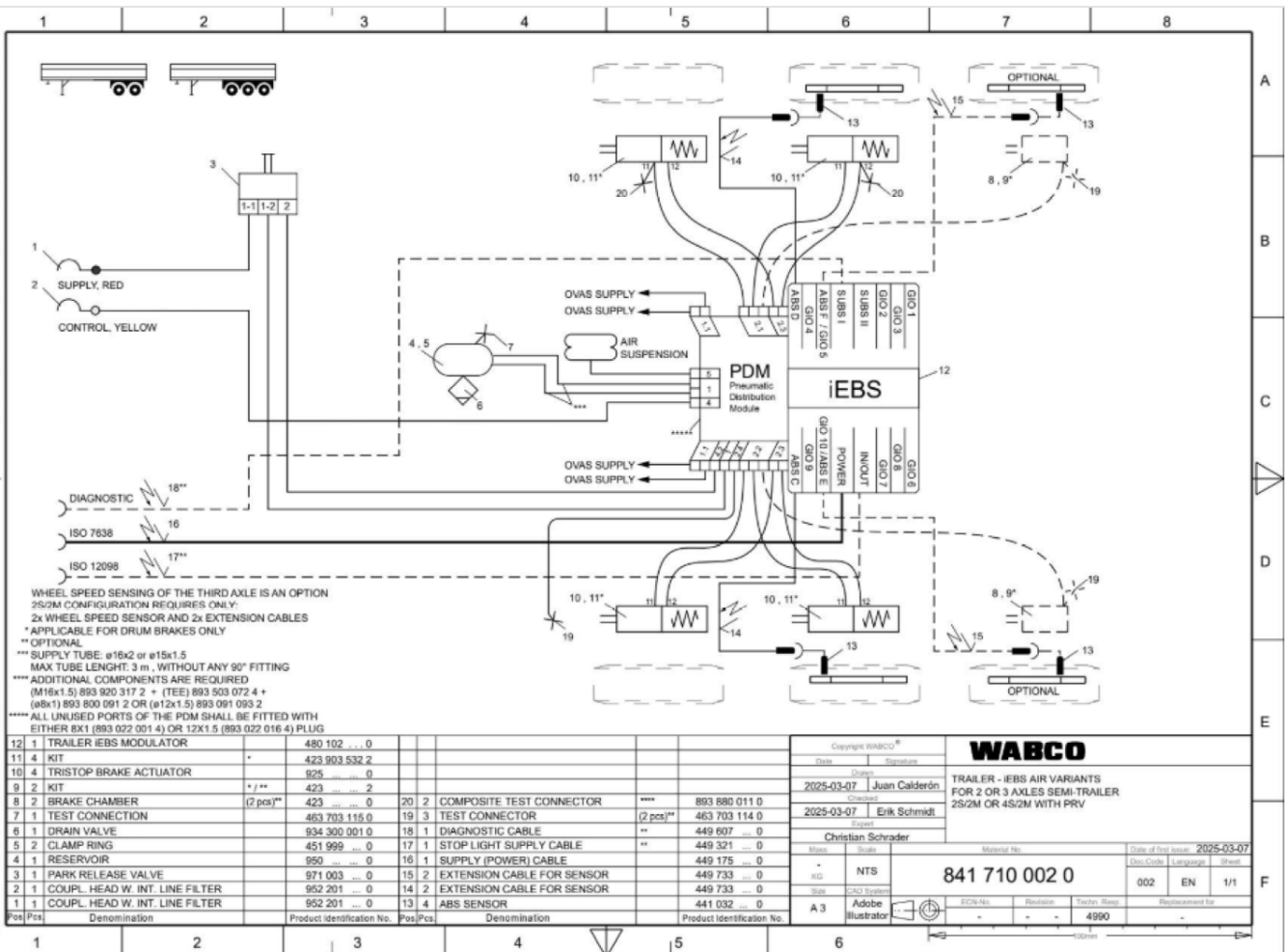
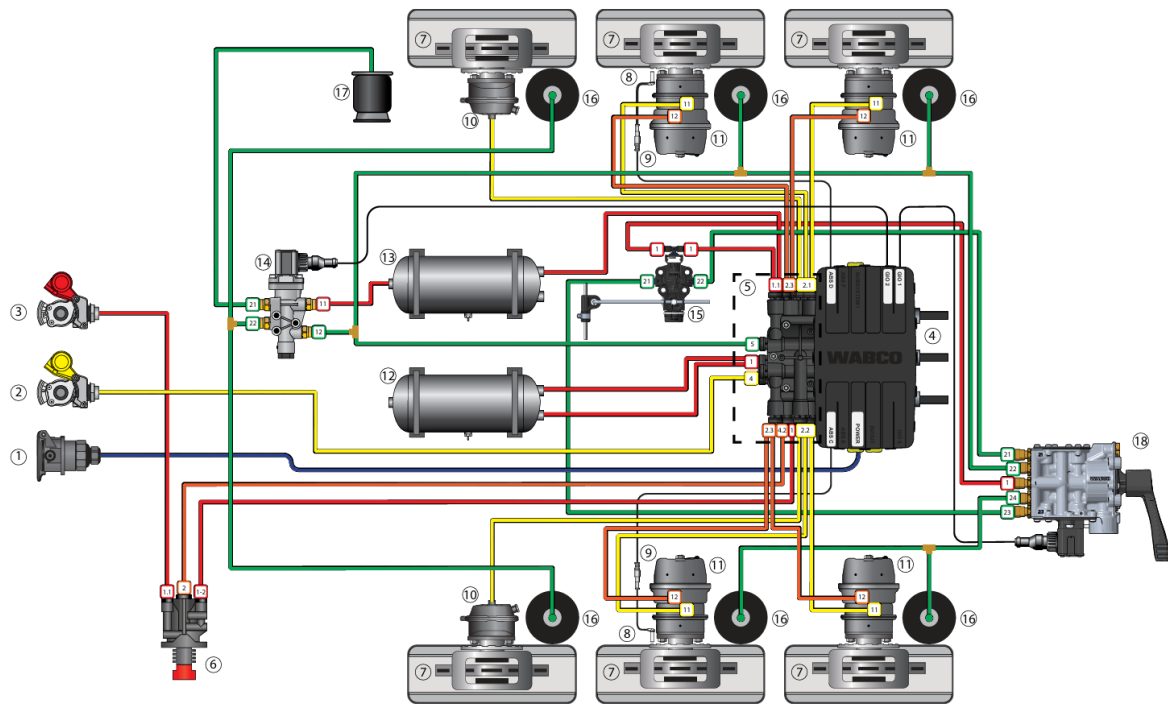


Figure 21: Wabco Pneumatic Braking and Suspension Schematics



T 01642 713333
E sales@sterlinggp.com
W www.sterlinggp.com

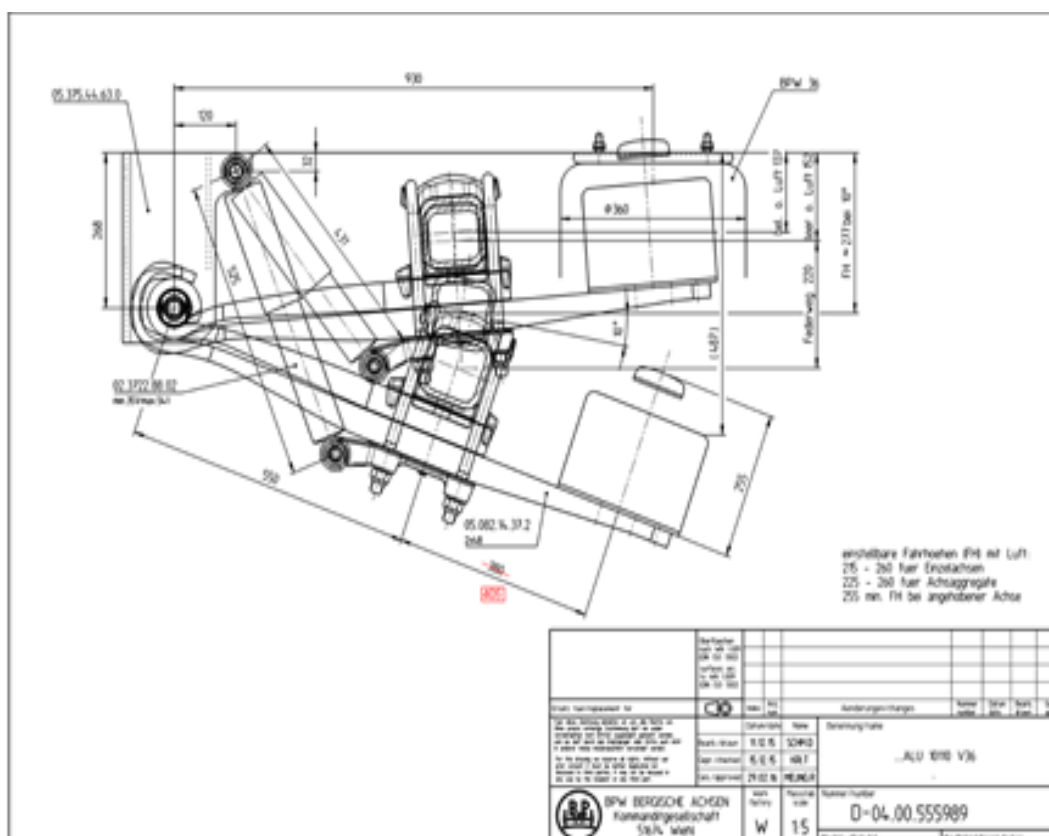


Figure 22: BPW Axle Diagrams



7.13. Loading and Unloading



Maximum gross combination weight on 6 axles is 44 tonne. DO NOT EXCEED

Maximum gross combination weight on 5 axles is 40 tonne. DO NOT EXCEED

Loading/Unloading procedure:

- Ensure the trailer is situated on suitably firm ground to prevent sinking
- Secure the trailer using the brakes and chocks if necessary
- Drop the rear landing legs
- Set the ramps to the necessary wheel track width
- Lower the ramps ensuring the danger zone is kept clear

Slip Prevention



The loading platform can become slippery due to a variety of reasons e.g. dirty, getting wet, ice etc. Extra caution should be taken when the conditions lessen the amount of grip. Should it be necessary the loading platform should be cleaned to increase the grip available.



When entering the loading platform (ramps and the decking) suitable non-slip boots need to be worn to ensure maximum grip. The boots must be kept in good condition and of a good quality. Only enter the loading platform from the rear of the trailer via the ramps.

Lighting

In poor lighting conditions it is the responsibility of the operator to conduct a risk assessment to deem safe operation of the ramps. In the event where the operator cannot see the ramps and the danger zone sufficiently for the safe operation of the ramps, they are not to be used.

7.14. Lashing Points



It is the responsibility of the operator to lash the load correctly and using enough strapping. Sterling GP Ltd takes no responsibility for an ill lashed load that comes loose during transit. The load must be lashed according to the rating on each lashing ring.



Figure 23: Example of Lashing Ring



8. MAINTENANCE

8.1. Maintenance Frequency

- Check the tightness of the coupling pivot after 5000km and then after every 6 months
- Check the pivot for wear. For a 2" ø pivot: Collar = ø50.8mm. Maximum wear allowed = ø47.8mm. If at this limit replace pin. This part does not lend itself to repair.
- DO NOT tighten the fifth wheel coupling to compensate for the wear on the king pin

Initial One-time maintenance action after purchase After:	50 Km	2000 Km	500 Km	50,000 Km
Wheel Nuts: Tightening (also after every tyre change)	X			
Brake System: Perform traction test		X		
Screw connections		X		X
King Pin Lubricating			X	
Check tightness of kingpin fixing bolts			X	
Leakages: Check for hydraulic and air leaks				X

Table 7: One-Off Maintenance Actions Post Purchase

Maintenance work	Every				
	500 Km	1500 Km	5000 Km	10,000 Km	20,000 Km
Axle and Brake: Check state and wear	X				
Brake system: Discharge any water within the system	X				
Wheel Nuts: Check tightness	X				
King pin lubrication	X				
Light system check for damages	X				
Tyres: Check air pressure and signs of wear	X				
Compressed air: Check for leaks		X			
Hydraulic Hoses: Check for leaks					X
Hydraulic cylinders: Check for leaks				X	
King pin: check for wear				X	
King pin Bolts: Check tightness				X	
Ramps: Visually inspect the ramps for irregularities					X

Table 8: Maintenance Actions to be Routinely Taken



8.2. Lubrication

Lubricating the machinery is a vital procedure to prolong the life of the machinery against wear.

The following should be covered with a long-term high-pressure lubricant:

- Fifth wheel pick-up plate
- King pin
- The wearing ring within the king pin pick-up plate

1.1.12 Greasing Points

To grease properly:

1. Take the cap off the grease nipple
2. Clean the nipple
3. Apply the grease gun and fill until grease is overflowing from nipple
4. Clean the nipple
5. Replace the cap

8.3. Hydraulic Maintenance



When maintaining the hydraulic system, the operator should always be cautious of hydraulic injection. This can lead to severing of limbs.



When the hoses are to be removed, ensure the ramps are secured in the fully upright position and the hydraulic system is depressurised. Failure to do so could lead to a ramp falling unexpectedly. When replacing hoses **never** use second-hand hoses as these can be fatigued and fail unexpectedly.



Never use the machinery if there is a fault within a part/component or if there is oil leaking from the system. Replace all broken/fault parts immediately. The hoses should be replaced every 6 years.



8.4. Landing Leg Maintenance

Lubricating work

① **Greasing the transmission**

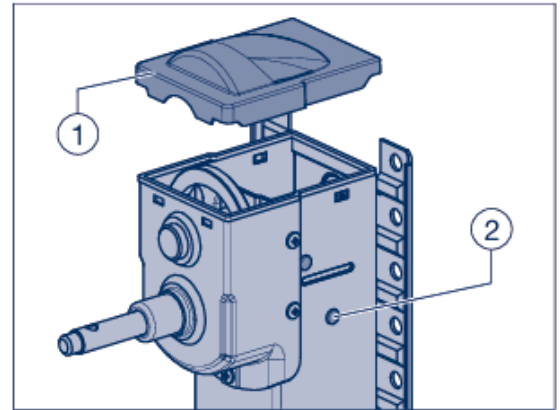
- Initially after 3 years, then annually -

Remove the upper transmission cover.
Fill the transmission housing with BPW special
longlife grease ECO-Li 91.
Fit the transmission cover.

② **Grease the spindle and spindle nut**

- Initially after 3 years, then annually -

Screw out the jack as far as it will go. Remove the



Maintenance work

① **Visual check of the landing gear for cracks and deformations**

- With every use -

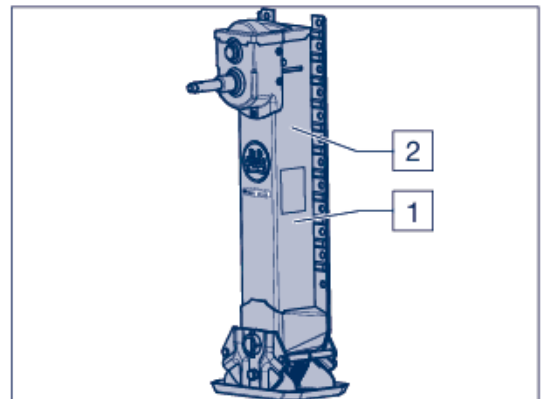
Check landing gear and braces for damage,
difficulty in movement, cracks and deformation.

Damaged landing gear must be repaired or
replaced immediately.
Operating with defective landing gear is not
permitted!

Check that support foot and support foot attach-
ment are in good condition and undamaged.

② **Check the spindle and spindle nut for wear**

- Initially after 3 years, then annually -



9. IMPROPER USE

Misuse of this machinery could result in injury or death, as such, the following is prohibited:

- Riding on the trailer whilst in use
- Using the trailer with broken or faulty parts
- Using the ramps in poor lighting conditions
- Operating the ramps when the danger zone space is occupied
- Travelling without the allocated ramp stays in the correct bracing position and the ramps not in the fully upright position
- Entering the danger zone whilst the ramp stays are not fitted
- Using the ramps to lift apparatus/equipment
- Using the trailer after any collisions without a full risk assessment being undertaken and resultant actions carried out



- Maintenance with unauthorized parts/components
- Modifications are made to components independently
- Driving without due care and attention
- Exceeding the maximum payload
- Loading/unloading the trailer when it's in an uncoupled state

Sterling GP Ltd take no liability for any damages or injuries caused through misuse of the machinery.

10. SPARE PARTS



The maximum permissible pressure within the hydraulic system is 180 bar. Do NOT use components that are not capable of functioning at or above this pressure.

Please contact Sterling GP Ltd Support Team for details of spare parts requirements.



II. TECHNICAL DATA

II.I. Hydraulic Oil MSDS – Triad 32

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Revision: 7

Supersedes date: 24/07/2017

**SAFETY DATA SHEET**
Triad 32 Hydraulic Oil**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Product name	Triad 32 Hydraulic Oil
Product number	7589
Internal identification	GHS21608
REACH registration number	n/a Mixture

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Universal hydraulic oil.
Uses advised against	No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet

Supplier	Morris Lubricants Castle Foregate Shrewsbury Shropshire SY1 2EL +44 (0) 1743 232200 +44 (0) 1743 353584 sds@morris-lubricants.co.uk
Manufacturer	MORRIS LUBRICANTS Castle Foregate Shrewsbury Shropshire SY1 2EL UK +44 (0) 1743 232200 +44 (0) 1743 353584 sds@morris-lubricants.co.uk

1.4. Emergency telephone number

Emergency telephone	+44(0)1743 232200 (08.45 - 17.00 GMT)
---------------------	---------------------------------------

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Classification (EC 1272/2008)**

Physical hazards	Not Classified
Health hazards	Not Classified
Environmental hazards	Not Classified

Classification (67/548/EEC or 1999/45/EC) Not classified



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2.2. Label elements

Hazard statements	NC Not Classified
Supplemental label information	EUH210 Safety data sheet available on request.

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/Information on Ingredients

3.2. Mixtures

Distillates,hydrotreated heavy paraffinic		60-100%
CAS number: 64742-54-7	EC number: 265-157-1	REACH registration number: 01-2119484627-25-0014
Classification Not Classified	Classification (67/548/EEC or 1999/45/EC) -	

Distillates,hydrotreated heavy paraffinic		30-60%
CAS number: 64742-54-7	EC number: 265-157-1	REACH registration number: 01-2119484627-25-0014
Classification Asp. Tox. 1 - H304	Classification (67/548/EEC or 1999/45/EC) -	

2-ethylhexyl zinc dithiophosphate		<1%
CAS number: 4259-15-8	EC number: 224-235-5	REACH registration number: 01-2119493635-27-0000
Classification Eye Dam. 1 - H318 Aquatic Chronic 2 - H411	Classification (67/548/EEC or 1999/45/EC) Xi;R41. N;R51/53.	

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Composition comments	If REACH registration numbers do not appear the substance is either exempt from registration, does not meet the minimum volume threshold for registration, the registration date has not yet come due or this information is proprietary. This product contains less than 3% DMSO measured by IP346 and shall therefore not be classified.
-----------------------------	--

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	Get medical attention if any discomfort continues.
Inhalation	If spray/mist has been inhaled, proceed as follows. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention if any discomfort continues.
Ingestion	Get medical attention if any discomfort continues. Do not induce vomiting.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water.

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Eye contact Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Continue to rinse for at least 15 minutes. Get medical attention promptly if symptoms occur after washing.

4.2. Most important symptoms and effects, both acute and delayed

General information If aspiration into the lungs is suspected, eg when vomiting, admit to hospital immediately.

Inhalation Upper respiratory irritation.

Ingestion The product contains mineral oil, which if aspirated into the lungs through vomiting after ingestion, may result in chemical pneumonia.

Skin contact Prolonged contact may cause redness, irritation and dry skin.

Eye contact Irritation of eyes and mucous membranes.

4.3. Indication of any immediate medical attention and special treatment needed

Notes for the doctor Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards Heat from fire could result in drums bursting

Hazardous combustion products Protection against nuisance dust must be used when the airborne concentration exceeds 10 mg/m³. Oxides of carbon. Oxides of nitrogen.

5.3. Advice for firefighters

Protective actions during firefighting Control run-off water by containing and keeping it out of sewers and watercourses.

Special protective equipment for firefighters Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions For personal protection, see Section 8. Take care as floors and other surfaces may become slippery. Keep unnecessary and unprotected personnel away from the spillage.

6.2. Environmental precautions

Environmental precautions The product is insoluble in water and will spread on the water surface. Avoid the spillage or runoff entering drains, sewers or watercourses. Contain spillage with sand, earth or other suitable non-combustible material.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up In case of spillage on water prevent the spread by use of suitable barrier equipment. Contain and absorb spillage with sand, earth or other non-combustible material. Collect and place in suitable waste disposal containers and seal securely. Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

6.4. Reference to other sections

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Reference to other sections For personal protection, see Section 8. See Section 11 for additional information on health hazards. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid spilling. Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in tightly-closed, original container in a dry, cool and well-ventilated place.

Storage class Miscellaneous hazardous material storage.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Occupational exposure limits

Distillates,hydrotreated heavy paraffinic

Long-term exposure limit (8-hour TWA): ACGIH 5 mg/m³

Short-term exposure limit (15-minute): ACGIH 10 mg/m³

Distillates,hydrotreated heavy paraffinic

Long-term exposure limit (8-hour TWA): ACGIH 5

Short-term exposure limit (15-minute): ACGIH 10 mg/m³

Mineral Oil

Long-term exposure limit (8-hour TWA): OES 5 mg/m³(c)

ACGIH = American Conference of Governmental Industrial Hygienists.

2-ethylhexyl zinc dithiophosphate (CAS: 4259-15-8)

DNEL

Workers - Dermal; systemic effects: 0.14 mg/kg/day
Workers - Inhalation; systemic effects: 0.422 ppm
Workers - Inhalation; Long term systemic effects: 0.07 ppm
Workers - Dermal; local effects: 0.09 mg/cm²
Workers - Inhalation; local effects: 0.42 ppm
Workers - Inhalation; Long term systemic effects: 0.21 ppm
Workers - Dermal; Long term systemic effects: 0.09 mg/cm²
Workers - Dermal; Long term systemic effects:

PNEC

- Fresh water; 0.004 mg/l
- Soil; 0.0548 mg/kg
- Sediment (Freshwater); 0.0701 mg/kg
- Marine water; 0.0046 mg/l
- Sediment (Marinewater); 0.00701 mg/kg
- STP; 3.8 mg/l
- Air; 7.1 mg/m³

8.2. Exposure controls



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Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection

Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. The following protection should be worn: Chemical splash goggles or face shield.

Hand protection

The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material.

Other skin and body protection

Use of suitable barrier/afterwork creams to protect skin may be beneficial.

Hygiene measures

Use engineering controls to reduce air contamination to permissible exposure level. Wash promptly with soap and water if skin becomes contaminated.

Respiratory protection

No specific recommendations. Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit.

Thermal hazards

Not anticipated under normal conditions of use. The product is combustible if heated excessively and an ignition source is applied.

Environmental exposure controls

Do not allow the product to contaminate land or water.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Amber.
Odour	Characteristic. Oil-like.
Odour threshold	Not known.
pH	Not applicable.
Melting point	-34°C Pour point
Initial boiling point and range	>320°C @ 101.3 kPa
Flash point	213°C PMCC (Pensky-Martens closed cup).
Evaporation rate	Not relevant.
Upper/lower flammability or explosive limits	Not known.
Other flammability	Product is not flammable but on excessive heating may become combustible.
Vapour pressure	<0.1 kPa @ 20°C
Vapour density	Not determined.
Relative density	0.871 @ 15.6°C
Solubility(ies)	Insoluble in water. Soluble in the following materials: Organic solvents.

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Partition coefficient	Not determined. log Kow: >7 Typical of mineral oil.
Auto-ignition temperature	No specific test data are available.
Decomposition Temperature	Not determined.
Viscosity	32.9 cSt @ 40°C
Explosive properties	Not considered to be explosive.
Explosive under the influence of a flame	Not considered to be explosive.
Oxidising properties	The mixture itself has not been tested but none of the ingredient substances meet the criteria for classification as oxidising.

9.2. Other information

Volatile organic compound	The product is a complex mixture, the majority of which would not be classed as a VOC. However it cannot be discounted that trace or low levels of VOC's may be present.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	There are no known reactivity hazards associated with this product.
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10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Under normal conditions of storage and use, no hazardous reactions will occur.
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10.4. Conditions to avoid

Conditions to avoid	Avoid heat, flames and other sources of ignition.
---------------------	---

10.5. Incompatible materials

Materials to avoid	Strong oxidising agents.
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10.6. Hazardous decomposition products

Hazardous decomposition products	Oxides of carbon. Oxides of nitrogen.
----------------------------------	---------------------------------------

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Notes (oral LD ₅₀)	Based on available data the classification criteria are not met.
--------------------------------	--

Acute toxicity - dermal

Notes (dermal LD ₅₀)	Based on available data the classification criteria are not met.
----------------------------------	--

Acute toxicity - inhalation

Notes (inhalation LC ₅₀)	The product is unlikely to present any significant inhalation hazard at ambient temperatures and under normal conditions of use.
--------------------------------------	--

Serious eye damage/irritation

Serious eye damage/irritation	May cause mild, short lasting discomfort to eyes.
-------------------------------	---

Respiratory sensitisation

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Respiratory sensitisation	Repeated exposure to oil mists may cause respiratory damage. There is no evidence that the product can cause respiratory hypersensitivity.
<u>Skin sensitisation</u>	
Skin sensitisation	Based on available data the classification criteria are not met.
<u>Carcinogenicity</u>	
Carcinogenicity	This product contains mineral oils which are considered to be severely refined and not considered to be carcinogenic under IARC. All of the oils in this product have been demonstrated to contain less than 3% extractables by the IP346 test
<u>Reproductive toxicity</u>	
Reproductive toxicity - fertility	No data available to suggest the product will cause reproductive toxicity.
<u>Specific target organ toxicity - single exposure</u>	
STOT - single exposure	Based on available data the classification criteria are not met.
<u>Specific target organ toxicity - repeated exposure</u>	
STOT - repeated exposure	Based on available data the classification criteria are not met.
<u>Aspiration hazard</u>	
Aspiration hazard	No data available to suggest the product will cause reproductive toxicity.
General information	This product has low toxicity. Only large quantities are likely to have adverse effects on human health.
Inhalation	Unlikely to be hazardous by inhalation because of the low vapour pressure of the product at ambient temperature.
Ingestion	No harmful effects expected from quantities likely to be ingested by accident.
Skin contact	Skin irritation should not occur when used as recommended. Repeated exposure may cause skin dryness or cracking.
Eye contact	May cause temporary eye irritation.
Acute and chronic health hazards	Prolonged or repeated contact with used oil may cause serious skin diseases, such as dermatitis and skin cancer.



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SECTION 12: Ecological Information

Ecotoxicity Based on available data the classification criteria are not met. Not regarded as dangerous for the environment.

12.1. Toxicity

Toxicity Based on available data the classification criteria are not met. Not considered toxic to fish.

Acute toxicity - aquatic invertebrates Based on available data the classification criteria are not met.

12.2. Persistence and degradability

Persistence and degradability The product contains mineral oil which has limited biodegradability in CEC test methods but will biodegrade slowly in aerobic water and sediments and is considered ultimately biodegradable.

Stability (hydrolysis) The product is based on highly refined mineral oils that are considered stable to hydrolysis.

Biodegradation The product is not considered readily biodegradeable, albeit the major constituents are expected to ultimately biodegrade.

Biological oxygen demand Not determined.

Chemical oxygen demand Not determined.

12.3. Bioaccumulative potential

Bioaccumulative potential Bioaccumulation is unlikely to be significant because of the low water-solubility of this product.

Partition coefficient Not determined. log Kow:>7 Typical of mineral oil.

12.4. Mobility in soil

Mobility The product is non-volatile. The product is insoluble in water and will spread on the water surface.

Henry's law constant Not determined.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information This material and its container must be disposed of as hazardous waste. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

Disposal methods Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labelled with their contents. Dispose of waste via a licensed waste disposal contractor.

Waste class European Waste Catalogue (EWC) = 13 01 13* (other hydraulic oils)

SECTION 14: Transport information



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General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations Health and Safety at Work etc. Act 1974 (as amended).
The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (SI 2009 No. 716).
Control of Substances Hazardous to Health Regulations 2002 (as amended).
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].

EU legislation Dangerous Preparations Directive 1999/45/EC.
Dangerous Substances Directive 67/548/EEC.
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).

Guidance Workplace Exposure Limits EH40.
Safety Data Sheets for Substances and Preparations.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

Inventories

Canada - DSL/NDSL

All the ingredients are listed or exempt.



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US - TSCA

All the ingredients are listed or exempt.

Australia - AICS

All the ingredients are listed or exempt.

Korea - KECI

All the ingredients are listed or exempt.

China - IECSC

All the ingredients are listed or exempt.

Philippines - PICCS

All the ingredients are listed or exempt.

New Zealand - NZIOC

All the ingredients are listed or exempt.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
CAS: Chemical Abstracts Service.
DNEL: Derived No Effect Level.
GHS: Globally Harmonized System.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
vPvB: Very Persistent and Very Bioaccumulative.

Revision comments

NOTE: Lines within the margin indicate significant changes from the previous revision.

Issued by

Regulatory Affairs

Revision date

12/12/2018

Revision

7

Supersedes date

24/07/2017

SDS number

21608

Hazard statements in full

H304 May be fatal if swallowed and enters airways.
H318 Causes serious eye damage.
H411 Toxic to aquatic life with long lasting effects.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

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