



stricklandtracks

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RUBBER TRACK OPERATIONS MANUAL

ENGLISH | ORIGINAL INSTRUCTIONS

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1 GENERAL INFORMATION

1.1 MANUFACTURER'S STATEMENT

Relevant to the incorporation of track systems into host machines.

The tracked undercarriage system is designed as a modular unit for integration to a host machine. It is not intended to be cycled, driven or operated in the free-standing condition.

Strickland Tracks Ltd. will not be held responsible for the attachment method to the host machine and/or any failures of the crawler track system relating to these procedures unless approved in writing by **Strickland Tracks Ltd.**

Modification or abuse of the original design may negate the manufacturer's warranty or guarantee. Modifications could conflict with health and safety standards and should not be undertaken without prior consultation with **Strickland Tracks Ltd.**

For full warranty cover, any modification or attachment must be approved in writing by **Strickland Tracks Ltd.**

This installation, operation and maintenance manual must be issued to the machine user, **Strickland Tracks Ltd** will not be held responsible for any misuse or failure due to lack of maintenance of the track system in accordance with instructions in this manual. Failure to issue this manual to the machine user will invalidate the track system's warranty.

For further details, please refer to section 18 under the Terms and Conditions of the Sales agreement. No claims of whatever nature for work carried out to a **Strickland Tracks Ltd.** track undercarriage within the warranty period will be entertained unless we have given our prior authorisation in writing for work or replacements to be fitted.

The helpline is available Monday to Thursday, 9 am to 5 pm and Friday, 9 am to 3.30 pm for procedures relating to; attachment, safety, operating or maintenance.



1.2 INTRODUCTION

The purpose of this manual is to provide instruction on how to correctly install, operate and maintain the rubber track system undercarriage.

- Read this manual with care before conducting maintenance work on any undercarriage supplied by **Strickland Tracks Ltd.**
- Images and diagrams are for illustration purposes only, if in doubt refer to the part supplementation specific to your track system.
- It is necessary when requesting any spare parts, that all serial numbers relating to the undercarriage are quoted.
- For full technical support, contact our Head Office. **Please see footer for all contact information**

Please note: For a comprehensive parts list breakdown/hydraulic installation/technical information for your relevant track system, please refer to the separate **Parts List and Hydraulic Specifications** document.

Below are Images of typical **Parts List and Hydraulic Specifications** documents.

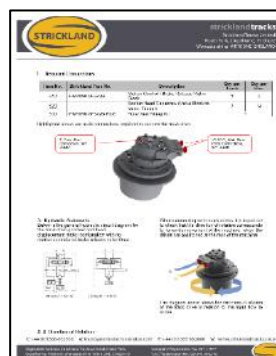


Parts List Breakdown



Part No.	Description	Qty
101	Track Link	1
102	Track Link	1
103	Track Link	1
104	Track Link	1
105	Track Link	1
106	Track Link	1
107	Track Link	1
108	Track Link	1
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198	Track Link	1
199	Track Link	1
200	Track Link	1

Parts



Hydraulic Parts
List/installation
information



Track Drive Ports,
Operating Pressure
and Flow
Information

1.3 UNDERCARRIAGE IDENTIFICATION

All track systems manufactured by **Strickland Tracks Ltd.** can be identified through a 6-digit serial number. This serial number is recorded along with other information on the identification plate. Below is a typical image of an identification plate.



This identification plate is located on the outside face of each left and right-hand track frame fabrication, forward from the drive end of the tracks.



Identification plate found here



1.4 GENERAL SAFETY AND ACCIDENT PREVENTION

Please ensure all safety precautions and instructions are adhered to when installing, operating and/or performing maintenance on the track systems.

Every job is different and a risk assessment and method statement should be conducted and adhered to for any maintenance operation.

1.4.1 Protective Equipment

Always wear protective clothing and footwear as required by job conditions when working around this product.

1.4.2 Unauthorised Modifications

It is important not to carry out modifications to the track system which could compromise proper operation and safety. **Strickland Tracks Ltd.** is not responsible for any injury or damage caused by unauthorised modifications.

1.4.3 Pressurised Items

Avoid welding near pressurised hydraulic pipelines, track tensioner, track recoils or other flammable materials. Excessive heating near to pressurised hydraulic pipelines can cause failure and possible injury

1.4.4 Lifting

Use a hoist when lifting components weighing more than 23 Kg (50lbs). Ensure all hooks, chains, slings etc., are in good working condition and tested to an adequate safe working load, ensuring hooks or slings are positioned correctly.

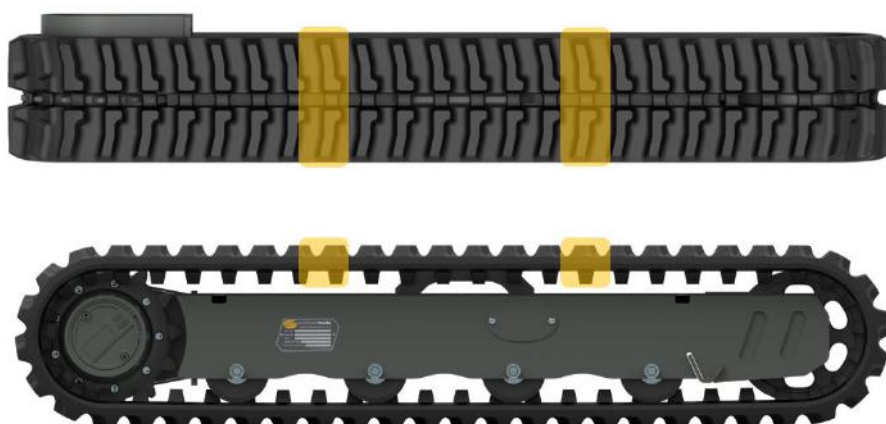


1.5 SAFE LIFTING AND HANDLING OF TRACK SYSTEMS

Always check the weight stamped on the identification plate before lifting or moving the track system.

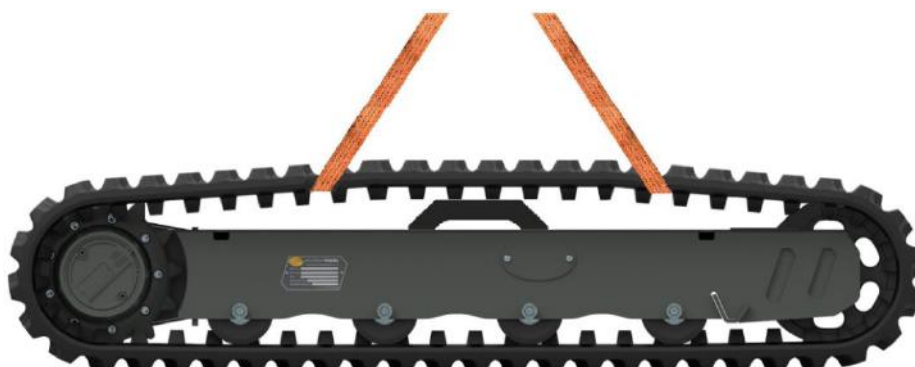


For reasons of safety and even weight distribution, always use two chains or slings in the positions shown below.



Ensure the adjoining sling which connects the chains to the crane hoist has an adequate load rating.

The below image demonstrates a track system being safely lifted with slings. The belt lugs prevent the belt from slipping, for this reason, choker chains are not necessary.



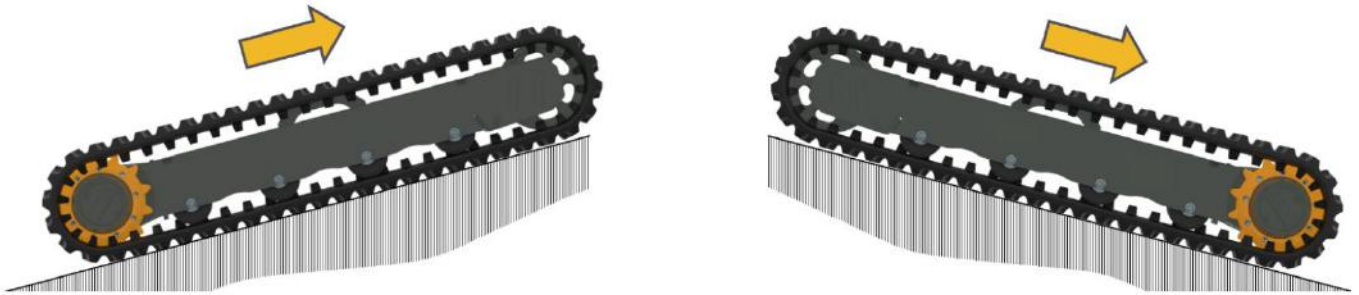
Precautions



- Chains, slings and hoists are identified by their safe-load lifting capabilities
- Do not lift loads exceeding the rated capacity of chains, sling or hoists
- Raise and lower the track system slowly and avoid quick starts or stops
- When moving the raised track system, always keep it as close to the floor as possible.

1.6 OPERATING PRECAUTIONS

When travelling up a gradient, the tracks should be driven forward (i.e. idler first, drive sprocket to the rear). When travelling down a gradient, tracks should be driven sprocket first.



Always:

- Park the machine on flat, level ground. If it is necessary to park the machine on a gradient, the tracks should be solidly blocked.
- Ensure the terrain the machine is working on is firm enough to adequately support the machine.
- Ensure the track systems are free from debris before moving the machine.
- Make certain the tracks are not frozen to the ground before moving the machine.
- Ensure no leakage of oil from gearbox, roller and idler before and during tracking.

Never:

- Attempt to track the machine if there is any build-up of material around the tracks or drive sprockets.
- Attempt to track the machine if the tracks are frozen to the ground.
- Push or tow the machine if it is unable to free itself.
- Track the machine for extended periods of time without providing adequate rest.

WARNING

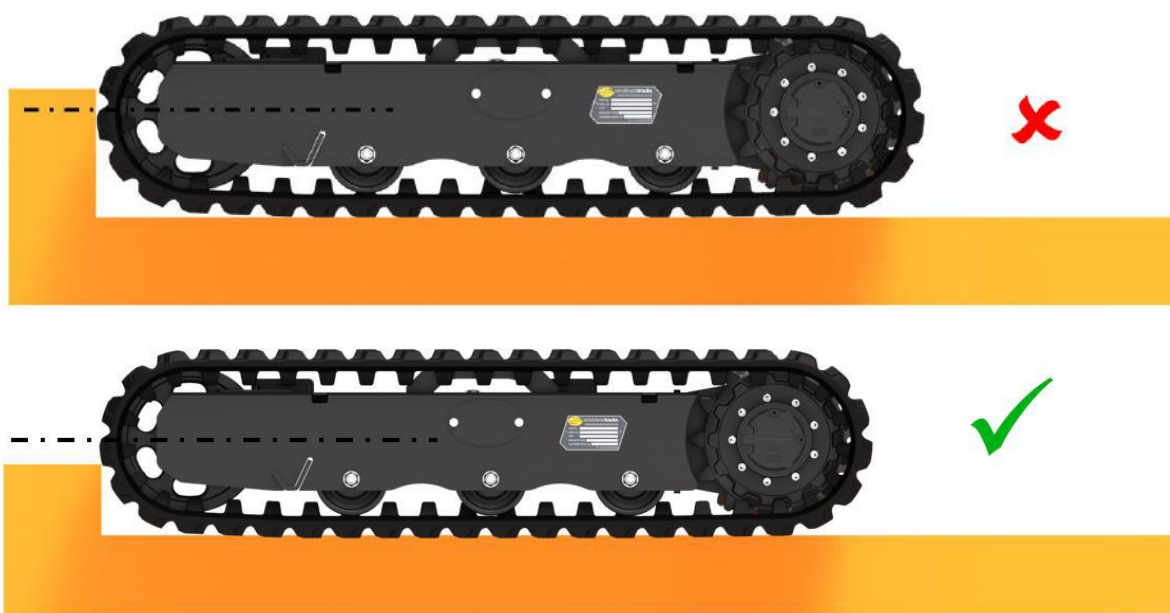
Failure to observe the above precautions could result in danger to persons and damage to the track systems and may also invalidate the warranty.

IF IN DOUBT, PLEASE CONTACT HELPLINE +44 (0)1386 862800

1.7 WORKING CONDITIONS

Avoid using the rubber tracks in the following situations:

1. Do not use in marine and seaside environments. Saline air will cause the rubber and the internal steel cords to lose adhesion.
2. Do not keep the tracks in exposed sunlight for extended periods of time as UV rays will shorten the life of the rubber track.
3. Avoid spilling fuels and synthetic oils on the rubber tracks, if this occurs, wash off immediately to prevent corrosion and unnecessary damage to the system.
4. Avoid rubber track contact with sharp edges, particularly sharp concrete edges. This point loads the track and can cause damage to the internal steel cords in the belt.
5. Rubber track systems are designed to be used on smooth soft ground.
6. Do not attempt to track over obstacles which are taller than the centreline of the idler.



1.8 OPERATING TEMPERATURE

The operating temperature range for the track systems is -10°C to $+40^{\circ}\text{C}$. Always consult **Strickland Tracks Ltd.** when temperatures fall outside this working range as alternate component specifications will be required.

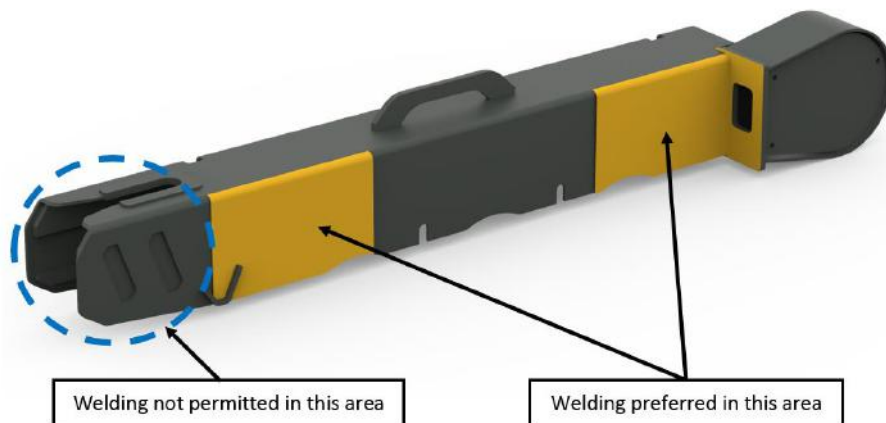
Avoid using on asphalt or concrete surfaces when the ground temperature is high. The rubber tracks will absorb the heat and become softer, which can accelerate wear when performing manoeuvres.

2 TRACK SYSTEM INSTALLATION

2.1 INSTALLATION OF WELD-ON TRACK SYSTEMS

Weld-on track systems are installed onto machines by welding the track fabrication to structural members of chassis. When welding the track system to machine chassis, the following points must be considered:

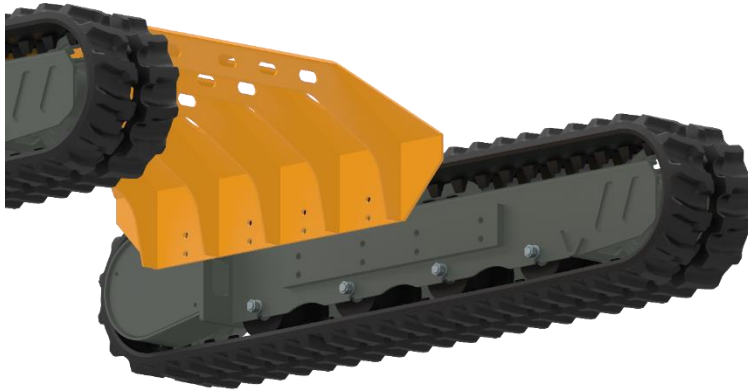
- Track systems should be welded onto the chassis within the permitted welding area highlighted in yellow below.
- It is highly recommended to weld structural members of the chassis back to the division plate of the frame. The division plate divides the drive housing from the main body of the frame.



Never weld near to pressurised hydraulic pipe-lines or other flammable materials. Excessive heating can cause splitting and hazardous conditions. If welding is required, install heat shielding where appropriate.

2.1.1 Installation of Bolt-on Track System

Strickland Tracks Ltd. offer a wide range of bolt-on track systems which assemble on to the machine via bolt-on mounting plates, mating to opposing plates on the host chassis. The image below shows a typical bolt-on track system with mounting plates. Ensure all mounting holes are used.

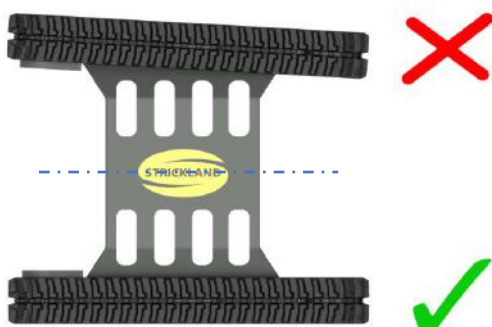


- Prior to assembling track systems, ensure all mounting faces are adequately prepared (remove grease etc.)
- Chassis mounting plates must have flatness within the size tolerance.
- $\pm 1\text{mm}$ on machining face to match with the flatness tolerance of mounting plate on the track system. Failure to maintain this tolerance could result in misalignment of the track system installation.

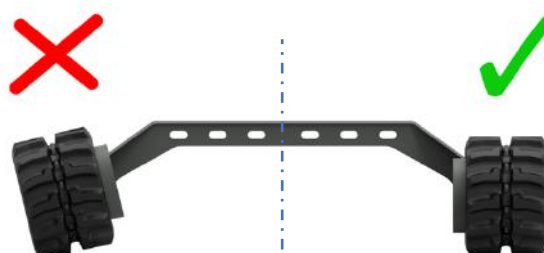
2.1.2 Undercarriage Alignment

In order for prolonged life of the undercarriage and components, it is essential that the connection to the host machine is carried out correctly. Failure to do so will result in excessive wear or in extreme cases undercarriage failure.

Tracks should be fitted parallel to each other and square to the machine.



Tracks should be fitted parallel to each other and square to the machine.



Post assembly - Level Check

On completion of the assembly to the host machine, the tracks should be checked to ensure they are parallel and perpendicular to each other and to the chassis.

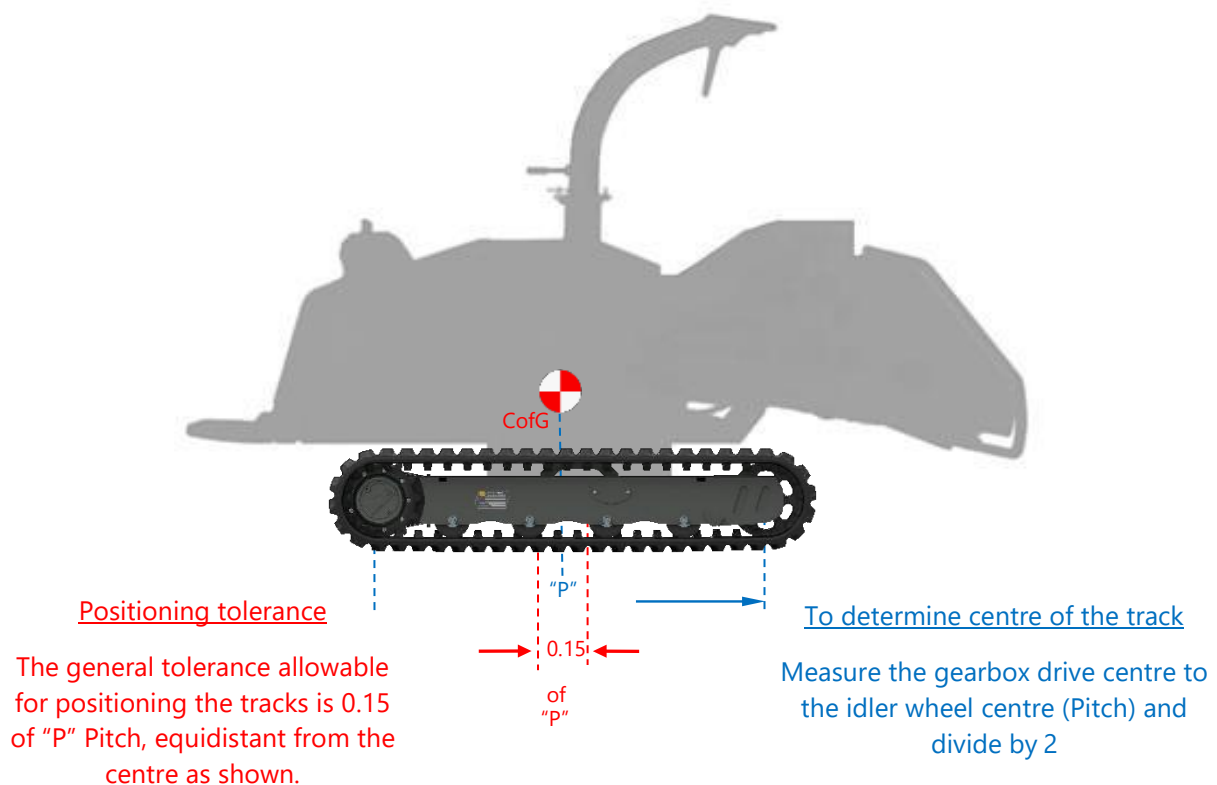


2.1.3 Machine Centre of Gravity

The position of the machine centre of gravity in relation to the tracks is very important, affecting the life and operation of the undercarriage.

It is key to position the track system central to the machine C of G, as this will avoid unnecessary and uneven wear on components; and prevents the tracks from digging down in loose ground conditions whilst turning/slewing.

Failure to correctly position the tracks central to the machine C of G can result in uneven and excessive wear or in **extreme cases undercarriage failure**.



To check the machine C of G, a physical test can be carried out by tracking the machine over an object to see at which point the machine tips, shown following. **Avoid sharp edges as this can damage the track.**



- Always consider the **machine transportation** configuration and the switch of C of G position when positioning the track system.
- Always consider the various **machine options** in conjunction with the machine transportation and the resulting C of G position when positioning the track system.

2.2 HYDRAULICS INSTALLATION

Hydraulic installation of each individual track system is fully explained in **Parts List and Hydraulic Specification** document. This document also includes following information:

- Hydraulic hose and fitting kit
- Track drive ports identification and sizes
- Required hydraulic connections
- Hydraulic schematic
- Direction of rotation of track drive
- Operating pressures and flows
- Gearbox oil type, quantity and operating temperature
- Hydraulic filtration and cleanliness

Electronic versions are available at www.stricklandtracks.co.uk by entering your password, which can be obtained by directly contacting **Strickland Tracks Ltd.**

2.2.1 Hydraulic Track Drives

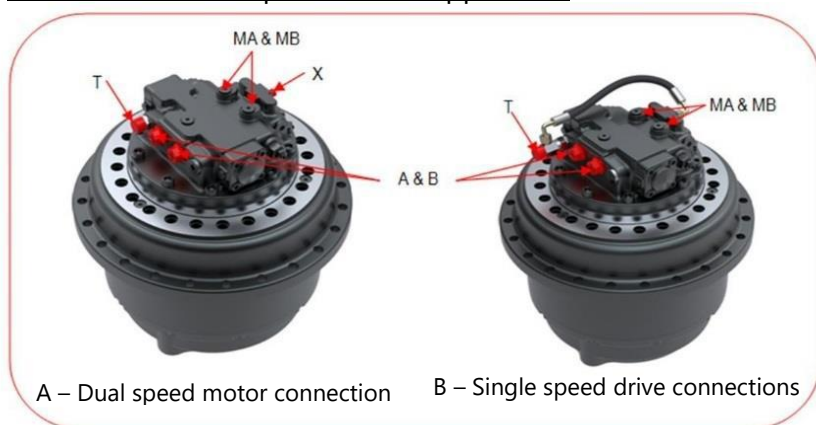
Primarily, **Strickland Tracks Ltd.** Track systems are installed with track drive gearboxes with two types of hydraulic motors.

- Dual displacement (2-speed)
- Fixed displacement (single speed)

Track Drives Fitted with Dual Displacement Motor

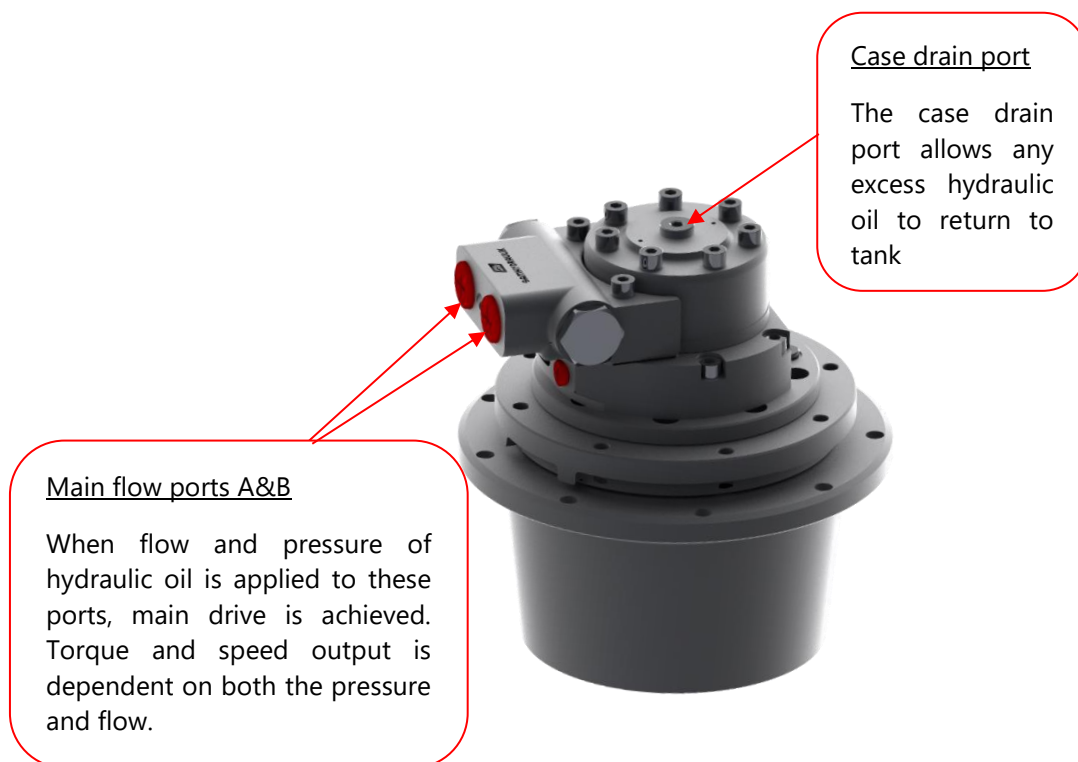
These dual displacement track drives are fitted with hydraulically controlled 2-speed motors, switchable between displacements by applying a separate pressure to the displacement change port.

They can be run as 2-speed motors or single speed, depending upon the connections made as shown below. Please refer to the specific Part Supplement



Track Drives Fitted with Fixed displacement Motors

This gearbox is for illustration purposes only and the version on your specific machine may differ slightly. Please refer to the product supplementation specific to your machine for information.



2.2.2 Motion Control / Brake Release Valves

Motion control / brake release valves are designed for use with open loop hydraulic circuits only. These valves are generally supplied fitted and hosed to the hydraulic motor flange as shown in the image in section 2.2.1.

The valve has two main functions:

1. To take a feed from the main pressure line to pressurise the brake release port of the gearbox with a controlled pressure, releasing the multi disc parking brake whenever any flow/pressure is applied to the hydraulic motors, prior to driving the gearbox.
2. To prevent overrun of the motor as the machine descends any gradient, avoiding over-speeding and therefore a run-away condition. This motion control function operates in both directions of rotation.



- Before connecting track drives to any hydraulic circuit, ensure all pipes are removed and flushed through with the hydraulic fluid prior to connection.
- To ensure proper function of the hydraulic motor, the filtration of the pressure fluid must provide a cleanliness level of at least: **20/18/18 according to ISO 4406**



3 BASIC MAINTENANCE

3.1 CORRECT MAINTENANCE PROCEDURE

In order to maintain the reliability of the track systems, regular maintenance is essential. It is imperative that the tracks are maintained as outlined within this maintenance section.

ALWAYS:

- Perform maintenance on a level and solid surface.
- Ensure the track system is solidly supported if work is necessary under the track systems.
- Remove any build-up of grease, oil or debris.
- Repair all damage and replace worn or broken parts immediately.
- Check for oil leaks and damaged hydraulic hoses.
- Use only specified lubricants. Do not mix different brands or types.
- Use great care when maintaining the hydraulic system since oil may be very hot when the machine has just been working.
- Use only **Strickland Tracks Ltd.** supplied / approved replacement parts. Use of unapproved parts will invalidate the warranty.
- Dispose of lubricants in the proper manner.
- Dispose of worn tracks in the proper manner.



3.2 MAINTENANCE CHECKS

Please note the maintenance intervals specified below are for track systems working under normal conditions. If the track system is used in severe working conditions, the maintenance and safety checks must be performed more frequently. Particularly the monthly checks; which should be performed weekly or even daily in extreme cases.

Components	Checklist	Daily Checks	Weekly Checks	Monthly Checks
Idler	Oil Leakage			
	Wear Limits			✓
Lower Roller	Loose Nuts and Bolts		✓	
	Oil Leakage	✓		
	Wear Limits			✓
Sprockets	Loose Nuts and Bolts		✓	
	Wear Limits			✓
Track Drive	Loose Nuts and Bolts		✓	
	Oil Quantity		✓	
	Oil Leakage	✓		
Track System Fabrication	Structural Damage or Failure			✓
Rubber belt	Structural Damage or Failure		✓	

After identifying any problems, take corrective action immediately; tighten bolts and nuts to correct torque as per Appendix (6.1), replace damaged or worn components, and refill the oil to recommended levels.

WARNING

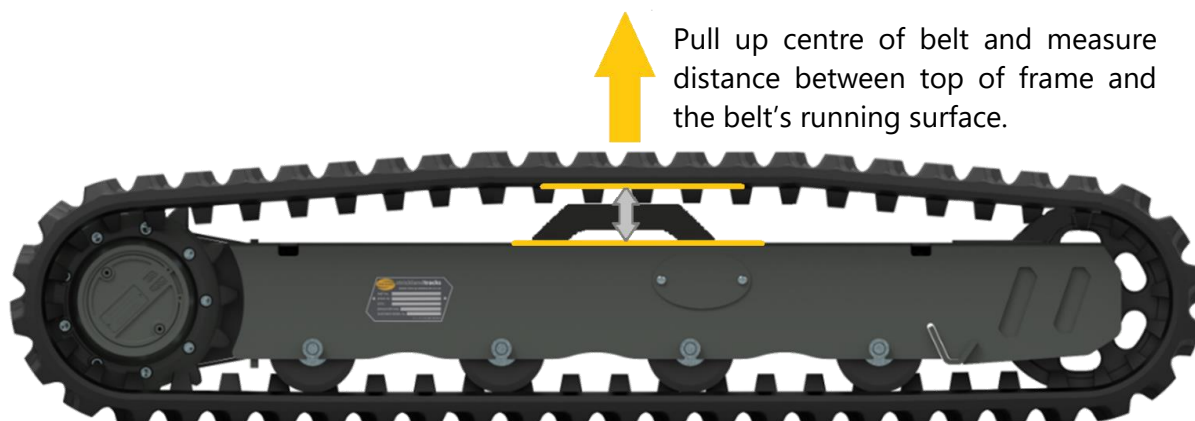
DO NOT operate the tracks with damaged or defective components. Any persistent problem should be reported to the machine manufacturer.

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3.3 CHECKING TRACK TENSION

Stop your machine on solid level ground and drive 2 metres (minimum) in a forward direction. Lift the centre of the belt up gently and measure the sag on the top part of the track in the longest section of unsupported track as shown below.



Pull up centre of belt and measure distance between top of frame and the belt's running surface.

The sag of the belt must be between the following values dependent on machine weight.

General Tension Guidelines	Guideline distance $\pm 10\text{mm}$	These values should only be used as general guidelines. Always use common sense when tensioning the belt and refer to any model specific information first.
<2.5T	60mm	
2.5T - 5.5T	70mm	
5.5T - 14T	80mm	

The above conditions must be fulfilled on any new track system. This must also be regularly checked and corrected where necessary by adding grease to the grease tensioner, as described in Section (3.4).

WARNING



DO NOT operate the tracks with the belt incorrectly tensioned. Too loose and there is a risk it could de-track. Too tight and damage could be caused to the system.



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3.4 ADJUSTMENT OF TRACK TENSION

Track systems use a grease cylinder to keep each track chain in tension. Screwed into the end of the grease cylinder is a grease fitting, enabling grease to be pumped into the grease chamber tightening the track. If this valve is loosened grease will escape causing the track to de-tension.



Shown is a typical idler and tensioner assembly used on the rubber track system. This is supplied as a whole unit. On some systems, the assembly is supplied as individual components. The grease inside the track tensioner (Lithium EP2) is pressurised so care must be taken when loosening the grease fitting.

3.4.1 Tightening the Track



- Loosen one of the two screws and swing access cover away from access aperture on the side of the track frame.
- Ensure the grease fitting and grease gun adaptor is clean; ingress of dirt into the grease fitting can result in failure. Connect a grease gun to the grease fitting and add grease until the track tension is within the specified values given in Section 3.3.
- Drive 50 metres forwards and 50 metres backwards and repeat the above procedure if the track slackens.

3.4.2 Slackening the Track

- Loosen one of the two screws and swing access cover away from access aperture on the side of the track frame.
- Loosen the grease fitting, by turning in an anti-clockwise direction, using gradual increments until the grease begins to be expelled. Care must be taken not to loosen the grease fitting too quickly.
- When the correct track tension has been obtained, tighten the grease fitting by turning in a clockwise direction and clean away all trace of extruded grease. Be sure not to over tighten the grease fitting.

If the track fails to slacken after grease fitting has been loosened; **DO NOT** attempt to remove the tracks or disassemble the track tensioner, and **DO NOT** remove the grease fitting from the tensioner. It is possible that running the tracks a short distance in both directions with the grease fitting loosened may help to expel the grease.

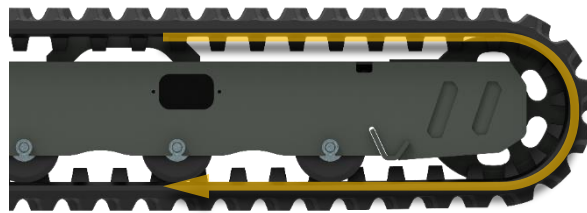
WARNING

The above procedure involves working with grease contained at high pressure and must only be carried out by qualified fitters.

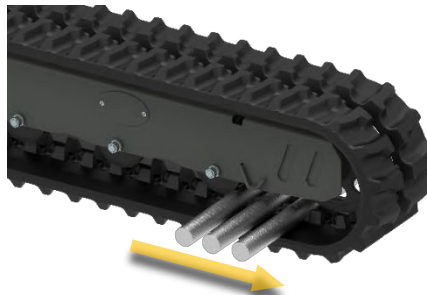
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3.4.3 Removing the Track Belt

- To remove the track belt first ensure the machine is in a safe flat working area on solid ground.
- Lift up the machine and support it with the tracks safely off the ground.
- Remove the idler tensioner cover plate and loosen the tensioner valve no more than 1 turn counter-clockwise.
- If the grease does not start to drain out then slowly rotating the track can help.



- Insert steel tubes as shown and slowly rotate the track in reverse. This draws the tubes between the idler and the belt and de-tensions the track.



- Slide the belt off at the idler end using the tubes to help if required, then remove the belt from the sprocket end.



WARNING

The above procedure involves heavy components, use appropriate lifting equipment to prevent injury to operators and bystanders.

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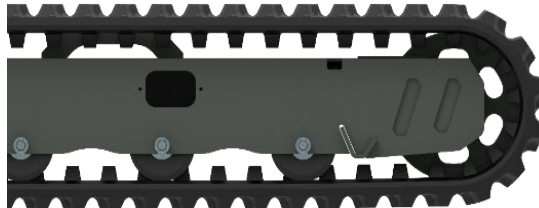
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3.4.4 Refitting the Belt

1. Support the machine safely off the ground, fit the new belt over the sprocket end first.
2. With the idler fully retracted fit the belt over the idler.



3. Ensure the sprocket is meshed properly and the belt is seated correctly on the rollers.
4. Tighten the valve and slowly apply grease. The Idler will gradually move out to its working position.
5. Set to the correct tension using the test methods mentioned in section (3.3)



6. Clean off any loose grease and refit tensioner cover plate.
7. Lower the machine back to the floor and check the machine by briefly tracking in each direction checking for belt slip/ de-tracking.
8. If not tensioned correctly, repeat step 5.

WARNING

The above procedure involves heavy components, use appropriate lifting equipment to prevent injury to operators and bystanders.

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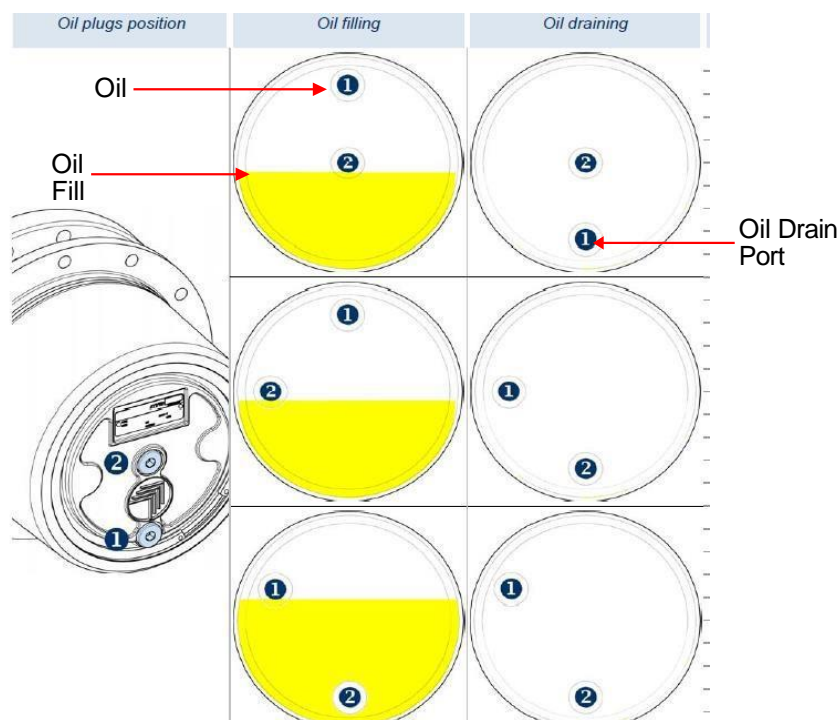
3.5 TRACK DRIVE UNITS

3.5.1 Oil Fitting & Draining

Below are the 3-common oil filling/draining configurations, if your gearbox is not shown below please contact **Strickland Tracks Ltd.** for further details.

To fill, track the machine until the gearbox casing is level with a plug positioned as shown below. Fill from the upper hole until oil reaches the level indicated.

To drain, track the machine until a plug is at 6 o'clock position as shown below. Unscrew both plugs and allow all oil to discharge into a suitable container. Dispose of waste oil in a safe and approved container. Dispose of waste oil in a safe and approved way.



WARNING

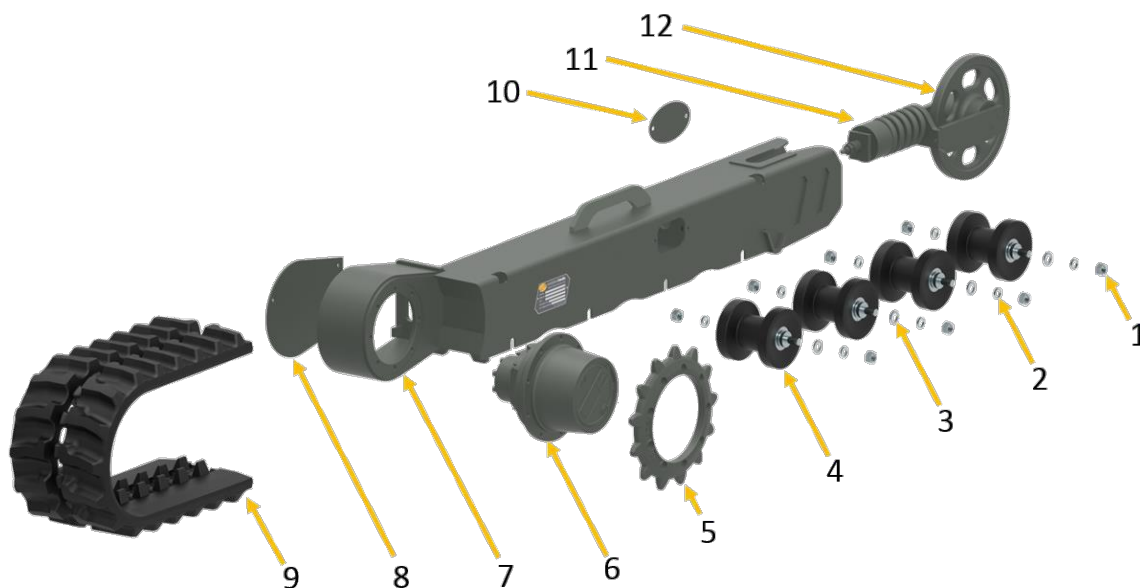
Do not fill oil in the track drive without checking oil level inside it. All track systems are supplied by Strickland Tracks Ltd. with a measured quantity of oil in the track drive.

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4 WEAR LIMITS

4.1 GENERAL COMPONENT LIST



1. ROLLER NUT
2. SPRING WASHER
3. WASHER
4. ROLLER
5. SPROCKET
6. MOTOR/GEARBOX
7. FRAME FABRICATION
8. DRIVE COVER PLATE
9. RUBBER BELT
10. TENSIONER COVER
11. TENSIONER AND SPRING
12. IDLER



4.2 LEAKS AND SEIZURES

Many components fitted to the rubber track systems, such as rollers and idlers are lubricated with oil. Regular checks should be made to ensure these components are not leaking and rotate freely when the tracks are driven. Any items such as rollers, which show signs of leaking, or fail to rotate when the tracks are driven should be replaced immediately to prevent damage to the system.

4.3 WEAR LIMITS

To ensure the most economical use of the track systems, it is important to determine the appropriate time to replace each of the worn parts.

Exact wear limits are dependent on the specific parts fitted to the track system supplied. Please refer to the Parts Supplement relative to the specification of your track system to find the required component part numbers.

Contact **Strickland Tracks Ltd.** directly for wear limits specific to your machine.



WARNING

Under no circumstances should the machine be operated if the wear of any component is in excess of 100%



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5 TROUBLESHOOTING

5.1 TRACK TENSION

Track systems use a grease cylinder to keep the track chains in tension. Loss of tension in the tracks can result in the sprocket jumping in the belt lugs, and also allows the belt to run off of the idler/sprocket. This can hinder the tracking ability of the machine and damage many of the components of the track systems if not resolved quickly.

The tension of the tracks should be checked on a regular basis according to the parameters set out in Section 3.3 of this manual; Checking Track Tension. If the tension of the track is outside these parameters, and the adjustment method given in Section 3.3 has no effect, please read below checks that can be made to identify possible causes:

Check 1:

With the tensioner access plate removed (see Section 3.4.1), make a visual inspection of the greaser, looking for any signs of leaking grease.

Possible Cause:

If grease is leaking from the base of the greaser; where it screws into the end of the tensioner; either the gasket has failed and needs replacing, or the greaser is not screwed in properly and needs tightening.

If grease is leaking from the end of the greaser where the grease gun connects to it, the greaser valve has failed and should be replaced.

Check 2:

When the machine is stationary and blocked, make a visual inspection of the belt below the adjusting end of the tensioner, looking for any signs of leaking grease.

Also, reach under the frame, feel the adjusting end of the tensioner for any grease.

Possible Cause:

If grease is leaking from the adjusting end of the cylinder, the seals may have failed. This requires the tensioner to be removed from the track frame and replacing with a new unit.

If the above checks have been carried out with no signs of any faults, please contact the helpline for further assistance.

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5.2 LOSS OF DRIVE

Strickland Tracks Ltd. rubber track systems are driven using hydraulic motors connected to planetary drive gearboxes. The hydraulic motors are driven using the hydraulics fitted to the machine.

Begin by making a visual inspection of the tracks, particularly around the sprocket, idler and bottom rollers where material / objects can sometimes lodge. Follow this by inspecting all hoses and connections, ensuring there are no leaks or blocks. If there are no physical impedances in the tracks and no faults are found with hoses and connectors, please read below checks that can be made and possible causes:

Check 1:

Using pressure / flow testing equipment, measure the values of flow and pressure being applied to the hydraulic motors.

Possible Cause:

If the values of flow and pressure passing to the hydraulic motors is less than that required to drive the tracks (see machine manufacturer's separate publication), there may be a fault in the machine hydraulic system.

Check 2:

Test the hydraulic pressure being applied to the brake release port on the gearbox. In order to release the brake, this should be fed with a pressure of between 12 and 50 bar.

Possible Cause:

If the pressure is below 12 bar, do not attempt to drive the tracks. With a pressure below 12 bar, the brake will not release when attempting to drive the tracks. This can cause the brakes to seize requiring a replacement unit to be fitted.

Check 3:

If a valve is fitted to the hydraulic motor flange, ensure there are no visible faults with the valve, and none of the connections are damaged / leaking.

Possible Cause:

If there are no visual faults with the valve, and all other checks fail to identify any faults, the valve block may need replacing.

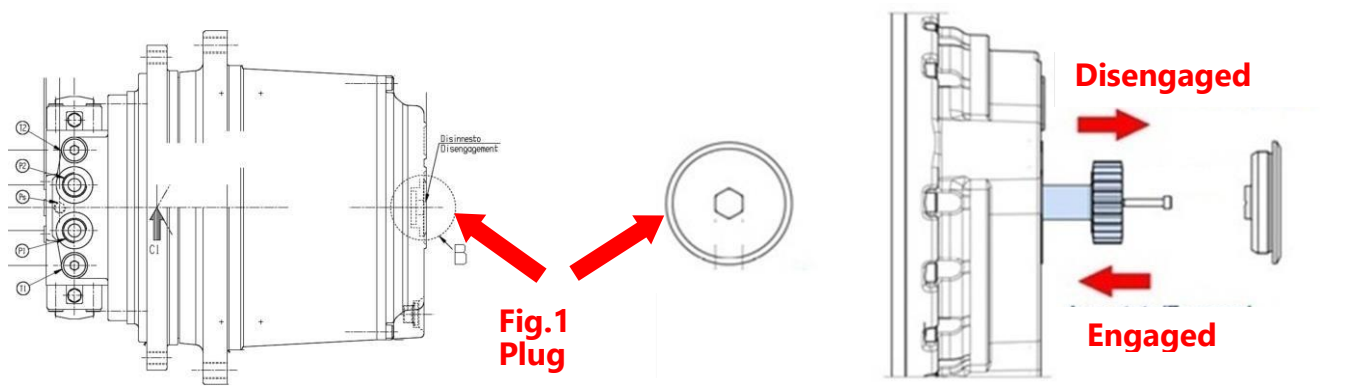
If the above checks have been carried out with no signs of any faults, please contact the helpline for further assistance.

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5.3 MANUAL BREAK DISENGAGEMENT OF TRACK DRIVE

Strickland Tracks Ltd. drives are fitted with negative parking brakes, therefore when no pressure is applied, the parking brake is locked on. Should the host machine need towing due to loss of drive power, there are two different solutions for towing the machine depending on the gearbox installed.

Gearboxes with Mechanical Disengagement Function:



If the gearbox is supplied with the mechanical disengagement function, it can be identified by a plug situated on the outer face of the gearbox end cover, shown fig.1 above.

1. Unscrew the disengagement plug from the end cover with a male hex head wrench.
2. Use an M6x50-8.8 grade bolt and screw into the threaded hole of the first reduction sun gear.
3. Pull out the first reduction sun gear from the gearbox.
4. Fit the disengagement plug back in place to the end cover, if oil is lost at stage 3, replace lost oil prior to replacing disengagement plug.
5. To re-engage the sun gear, simply repeat the above procedure, ensuring any oil lost is replaced.

Gearboxes without Mechanical disengagement function:

Please contact the helpline for further assistance.

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5.4 LOSS OF PARALLEL DRIVE

Strickland Tracks Ltd. rubber track systems are driven by hydraulic track drive units. Drives consist of a hydraulic motor connected to a planetary drive gearbox.

Power is relative to the hydraulic pressure and speed is relative to the hydraulic flow from the machine's hydraulic circuit. Please refer to the *Parts List and Hydraulic Specifications* document for maximum pressure and flow settings of each individual track system. Under recommended pressure and flow conditions, if tracked undercarriage shows loss of parallel drive and machine starts slewing, please read below checks that can be made to identify possible causes:

Check 1:

Using pressure and flow testing equipment check the values of the flow and pressure being applied to the hydraulic motors.

Possible Cause:

If hydraulic pressure and flow being supplied to the motors is different from one another, the machine hydraulic pressure and flow settings may need to be adjusted.

Check 2:

Test to ensure a pressure is being applied to the brake release function on the gearbox. To release the brakes, generally pressure ranges between 12 and 50 bar.

Possible Cause:

If the pressure being applied at the brake release port is below the required pressure, do not attempt to drive the track system. Trying to drive the tracks without releasing the brakes could result in gearbox failure and void the warranty.

Check 3:

Using pressure testing equipment, test pressure on the return drain line from motor to ensure back pressure does not exceed 2 bar. Excessive back pressure in the drain can cause automated switching of motor displacement on integrated motors.

Possible Cause:

Drain Blockage in hydraulic circuit between the motor and the hydraulic tank. If the above checks have been carried out with no signs of any faults, please contact the helpline for further assistance.

If the above checks have been carried out with no signs of any faults, please contact the helpline for further assistance

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6 APPENDIX

6.1 BOLT TORQUE TABLE

Standard Metric Coarse Thread Bolts and Nuts										
Bolt Size - Thread Diameter x Thread Pitch (mm)			Recommended Bolt Torque Value (Nm lb. ft)							
			I.S.O Grade 8.8				I.S.O. Grade 10.9			
			-		Nord-Lock		-		Nord-Lock	
			Nm	lb. ft	Nm	lb. ft	Nm	lb. ft	Nm	lb. ft
M6	x	1	15	10	15	10	15	10	15	10
M8	x	1.25	25	20	25	20	35	25	40	30
M10	x	1.5	45	35	55	40	70	50	80	60
M12	x	1.75	90	65	95	70	120	90	135	100
M14	x	2.00	140	105	155	114	195	145	215	160
M16	x	2.00	215	160	245	180	305	225	340	250
M18	x	2.50	300	220	330	245	420	310	465	345
M20	x	2.50	420	310	465	345	595	440	665	490





Standard Metric Fine Thread Bolts and Nuts										
Bolt Size - Thread Diameter x Thread Pitch (mm)			Recommended Bolt Torque Value (Nm lb. ft)							
			I.S.O Grade 8.8				I.S.O. Grade 10.9			
			-		Nord-Lock		-		Nord-Lock	
			Nm	lb. ft	Nm	lb. ft	Nm	lb. ft	Nm	lb. ft
M6	x	1	15	10	15	10	15	10	20	15
M8	x	1.25	25	20	25	20	40	30	40	30
M10	x	1.25	55	40	60	45	75	55	80	60
M12	x	1.25	95	70	110	80	135	100	150	110
M14	x	1.50	150	110	170	125	210	155	235	175
M16	x	1.50	230	170	255	190	325	240	360	265
M18	x	1.50	340	250	370	275	475	350	520	385
M20	x	1.50	465	345	520	385	655	485	730	540