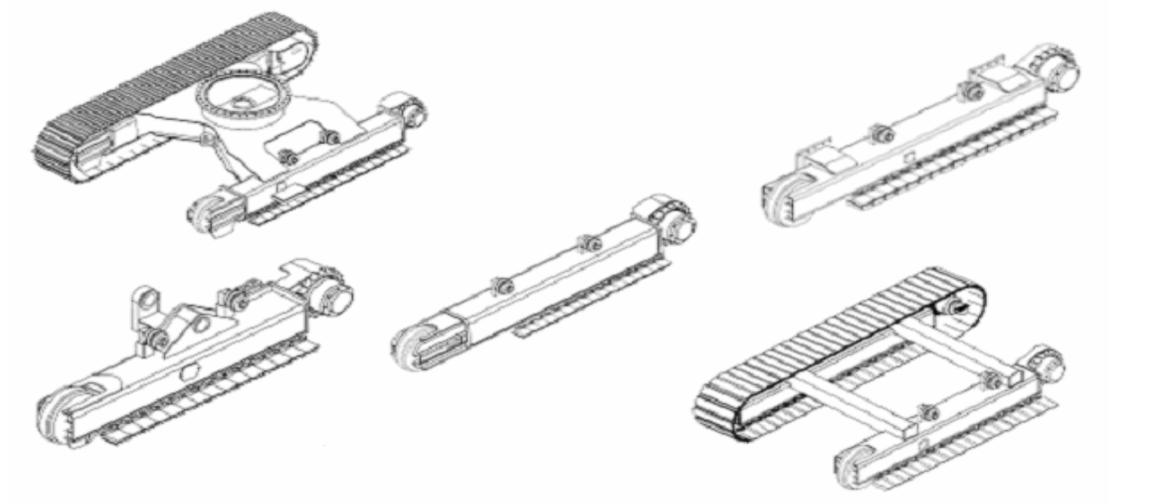




**Intertractor America Corp.**



# Operating and Maintenance Instructions for Track Vehicles and Running Gear Components



**Part #: UQ908A00N00013/14**  
**Size: B8      Rev: A**

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## 1. Safety and danger instructions

### 1.1. To be observed

#### 1.1.1 Warning signs

##### Warning:



Safety regulations and measures that protect the driver and other persons against injury and danger to life and limb.

##### Caution:



Particular instructions to prevent damage to the vehicle. Failure to observe these instructions can lead to warranty becoming void.

##### NB:



Particular instructions for better handling during operating, control and setting procedures as well as maintenance work.



### 1.1.2 Foreword

These operating instructions are a part of the scope of delivery. They are to be kept close at hand and are to remain with the machine if being sold again.

All details, data and illustration contained in these operating instructions are subject to change as result of technical developments. All rights reserved.

These operating instructions are not subject to any update service.

Information on latest developments can be obtained from:

Intertractor America  
960 Proctor Dr.  
Elkhorn, WI 53121

Tel. 262-723-6000

The illustrations in this manual are only diagrammatic and may differ from the actually installed components of the respective undercarriage. In addition, it is possible that there may also be other components on the undercarriage that are not described in this manual. Conversely, there may also be components described in this manual that are missing on the undercarriage.

All components and their functions are subject to technical change.

### 1.1.3 Warranty

Applicable conditions of warranty are stipulated in the confirmation of order.

#### **Warranty rights become void in the event of**

- Damage as a result of malfunctions caused by incorrect use or incorrect operation.
- Repairs or alterations carried out by persons who are neither trained nor authorized to do so.
- Damage being caused by accessories or spare parts being used for which no approval has been provided by **Intertractor**.
- Machine parameters modified in a manner that negatively affect the undercarriage reliability – examples: increase crawler load bearing weight or speed, change of machine center of gravity (CG), increase track shoe length, and others.

## 1.2. Safety instructions

### 1.2.1 In general



This undercarriage has been constructed to "state of the art" standards and is operationally safe.

Nevertheless, machines can be the source of danger if they continue to be operated although a fault is suspected or has already occurred or it has been repaired incorrectly.

#### **Under these circumstances there is**

- **Danger to life and limb**
- **Danger to the machine and other facilities and equipment etc.**

The machine must be shut down immediately if a fault is suspected or has already occurred which could endanger the safety of the operator, other persons on site or surrounding facilities and equipment etc.

All components have been carefully matched to each other. Fault-free operation and a long service life are only possible if original spare parts are used.



## 1.2.2 Regulations for work safety



### Personnel

Only properly trained and authorized personnel with appropriate specialist knowledge are to be appointed with maintenance and repair work.

Appropriate measures must be taken before commencing any work on the undercarriage to ensure that the equipment cannot start up unintentionally or be started up inadvertently by others (e.g. blocks). All switching on and off procedures must be observed for this.

Protective equipment and clothing is mandatory for all work. Wear protective helmets, shoes and gloves. Close fitting clothes help to avoid injuries.

If assistants are required to help in carrying out work, responsibilities must be clarified beforehand so that there is no possibility of unclear competence occurring with regard to safety aspects.



### Tools and equipment

Tools, lifting gear, fastening devices, jacks and other working equipment must be in a safe operational and working condition.

All lifting and fastening devices on the crawler undercarriage are only designed for the transportation of the undercarriage unless otherwise specified.

Metal splinters may break off and cause injuries when driving equipment bolts in or out. For this reason, always wear safety goggles when driving bolts in or out.

Equipment or components which are being fitted or removed or where their installation position is being changed must be secured against unintentional movement, slipping or falling over using suitable lifting gear or suspension/support devices.

Systems and units (i.e. tensioning units) must be depressurized in an appropriate manner before opening.

Damaged hydraulic or mechanical pre-tensioned spring elements must be exchanged as a complete unit. Further information in this respect can be found in the respective component descriptions and/or fitting and removal instructions.

## 2. Operating and Service Instructions

### 2.1. General Maintenance Instructions

#### 2.1.1 Handling hydraulic substances and lubricants

The relevant applicable safety regulations for the respective products must be observed when handling oil, grease or other chemical substances.

Suitable safety measures must be taken to avoid scalding and burning when the machine has warmed up (i.e. at operating temperature), as operating media are then at least the same temperature.

Do not smoke if handling combustible fluids.

Caution with fire and naked flames. Not only fuel but also other operating media often have a low flash point and ignite easily.

Lubricants that are not being reused must be disposed of in an environmentally friendly way.



#### 2.1.2 Conversions or changes to the undercarriage

Unauthorized conversions or changes are not permitted for safety reasons. The rated pressure of connected pressure relief valves and pressure tanks must not be altered.



Seals on units must not be removed.

#### 2.1.3 Before starting up

Before starting up:

- Lubricate all lubrication points
- Check all oil levels and adjust if necessary
- Check function of all repaired components
- Carry out visual inspection of all components

### 2.1.4 Wear limits of undercarriage parts

Wear of the undercarriage is caused by movements, loads contact between parts of the undercarriage and abrasive action of the ground.

This wear is increased by other factors including:

- Track resting on hard uneven rock bed during operation
- One-sided undercarriage load during turning
- Driving long distances in reverse
- Driving over obstructions recklessly
- A track which is not tensioned according to operating conditions
- A large degree of dirt on complete undercarriage



Undercarriage components must be replaced by new parts if they are worn to 100 %. Otherwise, sudden machine failure is possible.

Careful and regular measurements are necessary in order to establish the extent of wear and when replacements will be necessary.

The parts involved and measuring parts must be cleaned thoroughly when carrying out measurements. If possible, carry out measurements at several points. The degree of wear is determined by the maximum value, not the average value.

#### **Wear limits are shown on the wear tables.**

Specific manuals have % wear tables at the end of the manual. If wear tables are not included with the manual, they can be ordered.

## 2.2. Inspection intervals

Table (OH: = Operating Hours)

Component	Interval	Inspection	Extent of maintenance work	Description
Track undercarriage	daily	visual	Extent of undercarriage dirtiness General condition of the undercarriage components Fastening elements of frame sections and undercarriage fasteners	Chapter: Track undercarriage
	monthly	check	Fastening elements of frame sections and undercarriage fasteners torque – grouser shoe fasteners torque (spot checks)	
Final drive	daily	visual	Seal of gear-motor unit and possible hydraulic connections	Chapter: Drive
	200 – 250 OH	check	Gearbox oil level	
	300 – 1,000 OH at longest 1 year		Gearbox oil change	
	monthly	check	Condition of and wear on sprocket Exterior final drive bolts torque	
Front idler unit	daily	visual	General state of spring and tension system Seal of the front idler and the tensioning system	Chapter: Front idler unit
	monthly	check	Condition of and wear on front idler and sliding blocks	
Track rollers	daily	visual	Check for leakage	Chapter: Track roller unit
	monthly	check	Condition of and wear on track roller	
Carrier rollers and/or wearing rails	daily	visual	Check for leakage	Chapter: Track roller unit
	monthly	check	Condition of and wear on carrier roller	
Crawler track with grouser shoes	daily	visual	Check for leakage (only on oil or grease lubricated tracks) Track pre-tensioning – track sag	Chapter: Crawler track with grouser shoes
	monthly	check	Condition of and wear on track link running surfaces, bushings (outer diameter), and stretching of track (pitch extension). Condition of and wear on the grouser shoes	

Changes to intervals are possible depending on extent of use and operating conditions for the machine.

## 2.3. Tightening torque tables

These below tables do not apply for fastening the track shoes to the chain.



For standard bolts with coarse thread  
(fully threaded to near bolt head) [Ft-Lbs]

	Bolt Class			
	6.9	8.8	10.9	12.9
M4 x 0.7	1 ± 5%	1 ± 5%	2 ± 5%	2 ± 5%
M5 x 0.8	2 ± 5%	2 ± 5%	3 ± 5%	4 ± 5%
M6 x 1	3 ± 5%	4 ± 5%	6 ± 5%	7 ± 5%
M8 x 1.25	8-9	10-11	14-15	16-18
M10 x 1.5	17-19	20-22	28-32	35-39
M12 x 1.75	30-35	35-40	50-55	60-65
M14 x 2	50-55	60-65	85-90	100-110
M16 x 2	80-90	95-105	135-145	160-175
M18 x 2.5	110-120	125-140	180-195	215-235
M20 x 2.5	160-175	185-205	260-290	315-345
M22 x 2.5	215-240	255-280	365-400	435-480
M24 x 3	275-300	325-355	455-500	550-605
M27 x 3	420-465	490-540	695-765	840-930
M30 x 3.5	760-840	905-995	1285-1410	1520-1680

For expansion bolts with coarse thread  
(with shank between bolt head and threads) [Ft-Lbs]

	Bolt Class			
	6.9	8.8	10.9	12.9
M4 x 0.7	2 ± 5%	2 ± 5%	3 ± 5%	4 ± 5%
M5 x 0.8	4 ± 5%	4 ± 5%	6 ± 5%	7 ± 5%
M6 x 1	6 ± 5%	7 ± 5%	10 ± 5%	13 ± 5%
M8 x 1.25	14-16	17-19	25-27	28-32
M10 x 1.5	28-32	34-38	48-54	58-64
M12 x 1.75	50-55	60-65	85-95	100-110
M14 x 2	80-90	95-105	135-145	165-180
M16 x 2	125-140	145-165	205-230	260-275
M18 x 2.5	170-190	205-225	285-315	340-375
M20 x 2.5	240-265	285-315	405-450	485-535
M22 x 2.5	325-360	385-425	545-600	650-720
M24 x 3	420-465	500-550	700-775	840-930
M27 x 3	625-690	735-810	1050-1160	1260-1390
M30 x 3.5	840-930	1015-1120	1400-1550	1680-1855

For standard bolts with fine thread [Ft-Lbs]

	Bolt Class			
	6.9	8.8	10.9	12.9
M 8 x 1	10-11	12-13	16-18	19-22
M10 x 1.25	19-21	23-26	32-36	38-42
M12 x 1.25	37-40	43-47	60-65	75-80
M12 x 1.5	34-37	40-44	55-60	70-75
M14 x 1.5	55-60	65-75	95-105	115-125
M16 x 1.5	85-95	105-115	145-160	180-195
M18 x 1.5	135-145	160-175	220-245	265-295
M20 x 1.5	185-205	220-245	315-345	375-410
M22 x 1.5	225-280	305-330	430-470	515-565
M24 x 2	315-345	375-410	525-580	630-695
M27 x 2	470-515	555-610	770-850	850-1045
M30 x 2	665-735	805-890	1125-1235	1340-1470

For expansion bolts with fine thread [Ft-Lbs]

	Bolt Class			
	6.9	8.8	10.9	12.9
M 8 x 1	16-18	19-21	26-29	31-34
M10 x 1.25	30-34	36-40	51-57	62-68
M12 x 1.25	55-60	65-70	95-105	115-125
M12 x 1.5	55-60	65-70	85-95	105-115
M14 x 1.5	85-95	105-115	145-160	175-195
M16 x 1.5	135-145	160-175	220-245	270-295
M18 x 1.5	195-215	230-250	325-355	385-425
M20 x 1.5	270-300	320-355	450-495	540-595
M22 x 1.5	365-405	430-470	605-665	735-810
M24 x 2	455-505	545-605	770-850	910-1005
M27 x 2	680-750	805-890	1120-1240	1365-1510
M30 x 2	945-1045	1120-1240	1580-1740	1890-2090

## 2.4. General instructions

### 2.4.1 Serial number

All undercarriages or side frames have a serial number for identification.

This number looks like the following example:

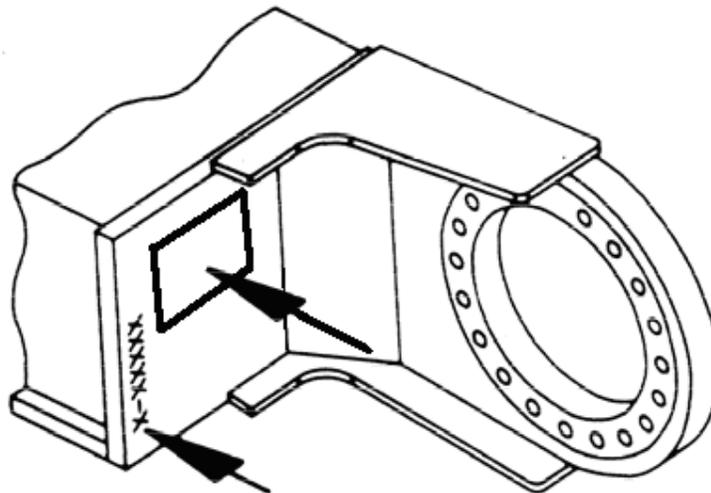
**12345-1**

The prefix (12345) is the Intertractor shop order number.

The suffix (-1) represents a sequential production number for that shop order.

The number is stamped onto the steel frame as well as an affixed to a metal tag – both as shown in below diagram. <sup>\*1)</sup>

This number is always required when calling with inquiries or complaints.



Serial Number Diagram

<sup>\*1)</sup> Design can vary according to customer specification

### 2.4.2 Structural design of a standard crawler undercarriage

The **Intertractor undercarriage** is designed to meet universal demands. It consists of a central frame and two side frames for mounting additional machine or undercarriage parts. The central frame can be welded direct onto the side frames or bolted on with flange connection.

A simplification of the complete design has been achieved through using assemblies and/or modules.

### 2.4.3 Operating temps

Standard designs	-20 °C to +40 °C
Special designs	-40 °C to +40 °C

Please contact **Intertractor** for advice if intending to use the final drive or components in other operating conditions (temperatures).

### 2.4.4 Function and operation

- The crawler undercarriages are supplied by **Intertractor** without operating the final drive / gearbox units, since the drive manufacturer performs this validation. The operating instructions of the suppliers and the manufacturers must be observed for these parts.
- Unless agreed otherwise, for any long tram (travel) distance greater than 30 minutes, the below tram procedure must be observed to prevent overheating of the track rollers and front idler wheels.
  - maximum tram time of 30 minutes, then
  - stationary park (cool down) period for 30 minutes
  - repeat above steps in sequence until long distance tram is complete.
- Machines with crawler undercarriages should be tramed at least once every 60 days for a minimum of one complete revolution of the track group in both directions (forward and reverse) to ensure all rolling components and gearbox stay properly lubricated.

### 2.4.5 General assembly and disassembly instructions

#### Assembly instructions

The crawler undercarriages are supplied by **Intertractor** as a complete unit.

All necessary assembly work on components to be exchanged is described in the respective individual chapters.

#### Disassembly instructions

Disassembling individual assemblies or components upon having reached their wear limits or in the case of any failure occurrences is described separately for each component in the individual chapters.

We recommend not carrying out any repair work on the building site, but exchanging the component instead.

We recommend getting in contact with your **Sales Representative** in the event of any major damage or repeated failure of individual components.



## 3. Drive

### 3.1. Drive – Function and operation

#### 3.1.1 General danger instructions

Danger can occur in particular under the following circumstances:

- Product is handled by insufficiently trained personnel
- Incorrect installation, operation and maintenance/repair
- The product is not being used for its designated purpose

Alterations to the product are not permitted unless approved beforehand.

The transmission is designed exclusively for use as drive transmission for an undercarriage.

#### 3.1.2 Instructions on transport and storage

- Please ensure that the crane or hoisting equipment has a sufficient load capacity when lifting/transporting the transmission
- Only use approved transport elements
- Fasten the transmission carefully onto the crane hook and use suspension devices according to the size of the transmission
- Make sure that no parts attached to the transmission can be damaged by transport elements when lifting the transmission
- The transmission may only be stored in dry, heated rooms
- Make sure that the position of the transmission cannot change (tumble over, slip, fall etc.) at point of storage

### 3.1.3 Design of the drive

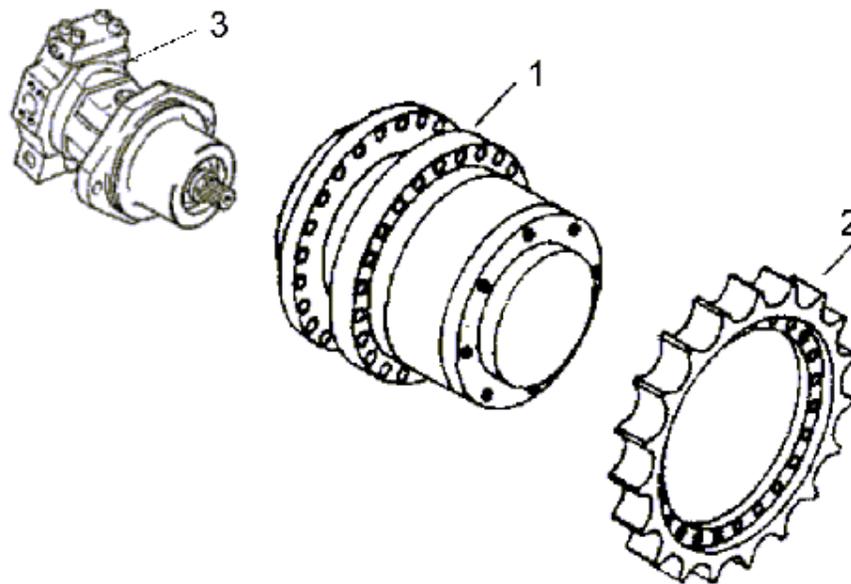
The design of the track undercarriage consists of a complete unit.

This unit consists of a fully encapsulated, multi-stage high-performance planetary gear and the sprocket. The gear is driven direct by hydraulic or electric flange-mounted motors.

The sprocket is available in standard, HD or special design with dirt pockets for packing ground conditions.

Components adjoining the track are surface hardened to minimize wear. The connection to the driving wheel and transmission is established with HF bolts. The necessary torque levels for these are shown in the attached tables.

The drive traction is transmitted to the track via the motor, transmission and sprocket.



1 Compact transmission

2 Sprocket

3 Diagram of a servo-hydraulic motor

### 3.1.4 Description of the transmission

The transmissions of the type series being used for the undercarriage have multi-stage planetary gear depending on design.

A particular feature of the gear is its very compact and therefore space-saving design.

The gear can be fitted with an integrated multi-disc brake, which acts as parking brake. This is activated by spring force and released hydraulically with oil pressure. The multi-disc brake must be released without fail before switching on the drive hydraulic.



As a special design, the transmission can be supplied with a mechanical disengaging mechanism enabling the transmission and hydraulic motor to be separated from each other, e.g. if towing the machine following failure of the machine's hydraulic system.

### 3.1.5 Commissioning



- Prevent the transmission from getting dirty
- Avoid pollution. Make sure not to spill any lubricant when filling

The transmission is supplied ready for installation **without** oil filling. Starting up or using the drive without any lubricant would lead to destruction of the transmission in next to no time. See the chapter "Filling with transmission oil" for filling, topping-up or checking oil.

The transmission has been treated internally with a preservative agent that provides around 6 months protection against corrosion if stored under dry conditions. This internal preservation does not have to be removed when starting up.

When fitting the hydraulic lines for parking brakes and hydraulic motor, make sure that no dirt or other foreign material gets into the transmission or hydraulic motor. The hydraulic break line must be bled free of air to prevent improper break releasing which will result in premature break disk wear or seizure (welding break disks together).

If break seizure occurs, the drive will be locked and machine traming will not be possible. The mechanical break disengagement can be used to disengage the break for machine towing.

The break will require replacement for either premature wear or seizure.



### 3.1.6 Lubricants

#### **Normal operating conditions (+ 10° to + 30° C)**

We recommend only using lubricants that fulfill necessary viscosity requirements for lubricating the transmission.

The viscosity rating on the rating plate on the transmission and the following requirements must be observed!

Only the necessary viscosity **ISO-VG 150 and ISO-VG 220** for normal operating conditions from 10° to 30° C is stated on the rating plate.

#### **Severe operating conditions (- 30° to + 50° C)**

Under severe operating conditions, e.g. in an ambient temperature range between - 30° and +50° C, we recommend using transmission oil with appropriate viscosity or a fully synthetic lubricant.

For lower operating temperatures, use oil with a lower viscosity (**SAE 80W - 90**) and for higher temperatures, us oil with higher viscosity (**SAE 85W - 140**).

### 3.1.7 Compact transmission with drive motor

Connecting the locating flange of the side frame as well as the sprocket is achieved using adequately dimensioned bolt connections. Transmission of torque is achieved by frictional locking.

Remove the protective caps when connecting the hydraulic hoses. Attention must be paid that no dirt gets into the supply lines during the assembly process.



All prescribed parameters such as:

- hydraulic pressure limits,
- maximum and minimum volume flow rates,
- allowance for oil leakage,
- brake line pressure monitoring

must be observed when using the undercarriage hydraulic system. Please contact the manufacturer where necessary for permitted values.

### 3.1.8 Parking brake

The multi-disc brake incorporated into the transmission is a parking brake that is kept constantly closed by pressure springs. The maintenance-free brake is designed as a separate compact unit and should only be removed from the transmission and exchanged as a complete unit. This design protects all individual components such as discs, springs, sealing elements etc. against outside influences. Any repair work should only be carried out by a specialist workshop.

Feeding hydraulic oil either direct or via the drive brake valve and a connecting line to the brake connection of the compact unit opens the brake.



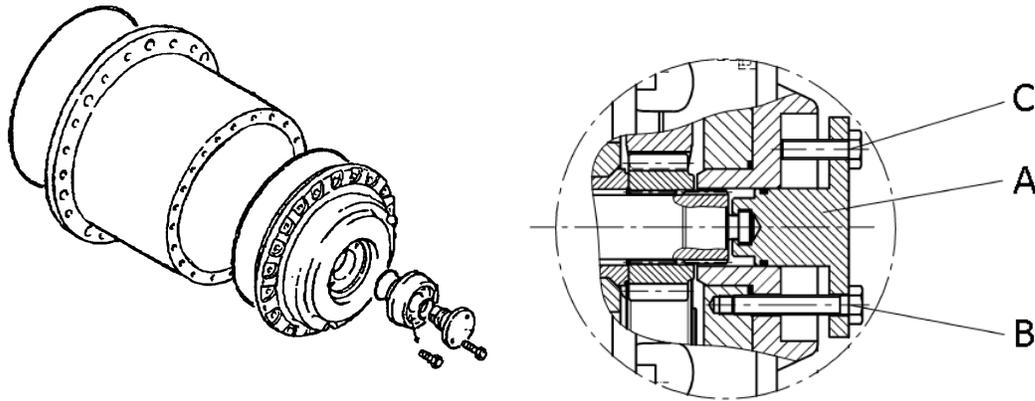
Pressure ranges within which the brakes can be released must be observed. Only completely opened brakes assure wear-free and fault free operation of the complete drive, since the parking brake is static (not dynamic). Brake release lines must be bled of air, see section 3.1.5.

Use of a separate hydraulic circuit for supplying the brakes is recommended if operating without parking brake valve.

### 3.1.9 Unlocking the parking brake

Undercarriages with drive units that are fitted with parking brakes cannot be moved when the hydraulic system is not functioning. For this reason, it is possible to fit the undercarriage with an unlocking mechanism.

With this mechanism, it is possible to tow the undercarriage even with the diesel or electric motors switched off.



#### Brake Disengaging Procedure for O&K Gearbox

Remove fixed retaining bolts (qty 2), item C from position in disengagement cap and thread into 2 vacant holes within same cap. Screw bolts until fully seated in cap. This action pushes the cap and pinion shaft to a disengaged position. Insert longer bolts (qty 2) item B into now vacant threaded holes and fully screw in, fixing cap and pinion shaft into new disengaged position. After this disengaging procedure is complete for both final drives, the track drives are ready for tow.

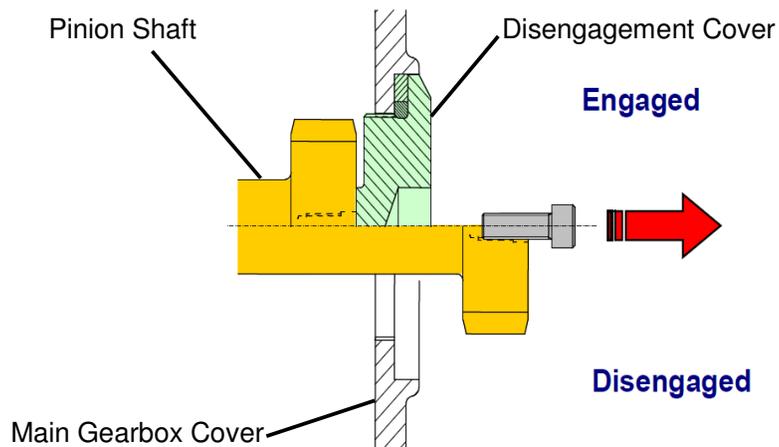
Gear size	Item A	Item B	Item C
F30	Cap, brake disengage (claw cap)	Bolt, M8 x 25	Bolt, M8 x 16
F55	Cap, brake disengage (claw cap)	Bolt, M8 x 45	Bolt, M8 x 25
F80	Cap, brake disengage (claw cap)	Bolt, M10 x 45	Bolt, M10 x 20
F100	Cap, brake disengage (claw cap)	Bolt, M10 x 50	Bolt, M10 x 25
F130	Cap, brake disengage (claw cap)	Bolt, M10 x 50	Bolt, M10 x 25
F220	Cap, brake disengage (claw cap)	Bolt, M10 x 60	Bolt, M10 x 35

The unlocking device (mechanical disengagement) is located on the outside of the transmission and is held in its' normal position with retaining bolts.

To unlock the parking brake, remove and reposition the bolts and screw out the claw clutch cap.

### Brake Disengaging Procedure for Bonfiglioli Gearbox

Remove the disengagement cover from the main gearbox cover. Thread bolt into end of pinion shaft. Remove pinion shaft by pulling on bolt bringing the shaft out with it. Reassemble the disengagement cover onto the main gearbox cover. After this disengaging procedure is complete for both final drives, the track drives are ready for tow.



The disengagement must be connected or disconnected only when the machine is stopped on flat ground.

Attention must be paid that the unlocking device is returned to its original state when returning to normal operation.

## 3.2. Drive – Fitting and removal



Whenever working on the drive, always use suitable means to secure the device against starting up by itself or being started by others.

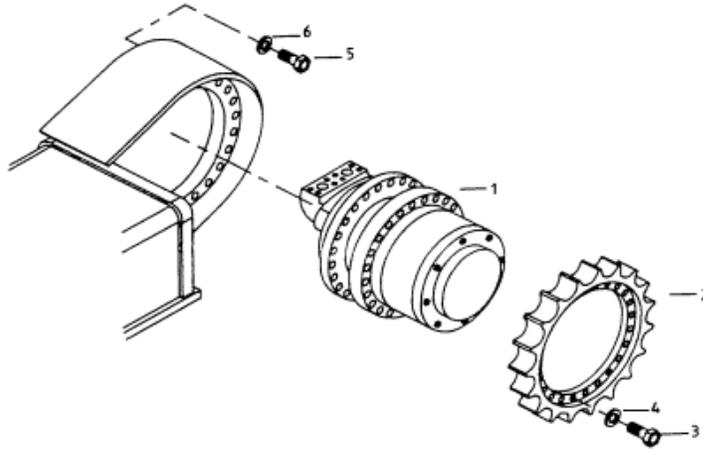
An undercarriage that is not connected with the track by the sprocket is not secured against movement by the transmission brake. This means that the undercarriage must be secured separately when removing the drive.



Opening the track first is a precondition for fitting/removing the drive (see "Track" chapter).

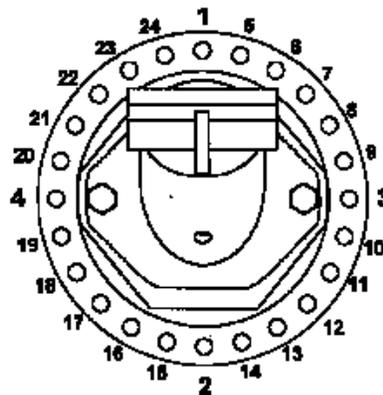
- **Notes on transmission oil must be observed**
- **All parts being fitted must be clean and free of grease**

### 3.2.1 Connecting frame-transmission sprocket



The transmission [1] must be inserted carefully into the steel frame so that there is no damage to the flange surfaces. Check transmission seating for correct installation. Fasten the transmission in place by inserting bolts [5] and washers [6] in the frame. Add Loctite Red (#262) onto bolt threads and screw into place by hand. Check again to ensure that transmission seating is correct.

Pre-tighten all bolts by hand crosswise. See illustration below (example). Tighten to torque level crosswise again according to size of bolt (torque level table). Repeat this procedure with the sprocket [2] and corresponding fastening elements [3&4].



**Further instructions:**

- Clean all locating/joining surfaces thoroughly.
- Lift the transmission carefully into the locating flange of the undercarriage using appropriate hoisting gear.
- Fasten the transmission securely onto the undercarriage frame, before removing the hoisting attachments.
- Make sure to avoid any axial forces when installing.
- Make sure to avoid any excessive force on the transmission housing.
- The transmission must not be tilted.
- Pay attention that no dirt or foreign particles get into the hydraulic system.
- The multi-disc parking brake is a transmission safety device. Make sure that no dirt or foreign material gets into the brake air connection.
- Make sure that the brake air connection is carefully sealed
- There must not be any pressure build up in the brake line.

**Connecting sprocket - transmission**

Clean all locating/joining surfaces thoroughly. Hoist the sprocket with hoisting gear onto the transmission and tighten onto the hub of the transmission without any heavy knocks.

Insert the bolts with and washers for fastening the sprocket into the holes and screw into the thread in the transmission by hand, after applying Loctite Red (#262) to the bolt threads. Pre-tighten all bolts in the correct order and then to correct tension using a torque wrench (see torque level table).

### 3.2.2 Removing sprocket



Slacken off track and undo track lock (see "Track" chapter).

Remove dirt from all parts and fastening elements. Use hoisting gear to secure the sprocket against falling over. Undo the bolts on the driving wheel crosswise and remove completely.

Remove the driving wheel from transmission seat by tapping lightly with rubber hammer. If provided, insert pull-off bolts into provided threaded holes and tighten evenly. Push the sprocket off the transmission seat in this way and lift out using the hoisting gear.

### 3.2.3 Removing transmission



Remove dirt from all parts and fastening elements. Use hoisting gear to secure the transmission against falling over. Undo the bolts on the frame crosswise and remove completely.

Loosen the transmission from the frame seat by tapping lightly with rubber hammer, and then lift the transmission out of the frame carefully using the hoisting gear.

- Catch any dripping/leaking oil in suitable containers
- Only use approved transporting elements for transportation

### 3.2.4 Drive – Maintenance and inspection

#### General instructions

The complete drive unit consists of the following components:

- Motor
- Sprocket
- Transmission
- Integrated brake (only on request)
- Disengaging mechanism (only on request)

Always replace the complete component if it fails. Only use specialist workshops for repairs.

### 3.2.5 Filling, topping-up and changing transmission oil



The transmission must be filled with fresh clean oil before starting up for the first time (see details of lubricants for types of oil).

See the "Inspection intervals" table for intervals for oil checks or change.

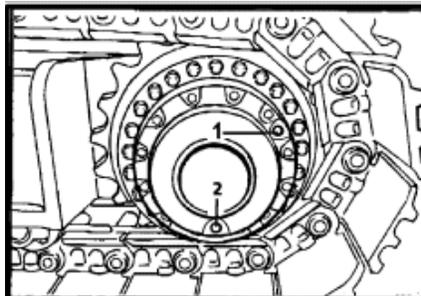
Drive the machine onto a horizontal surface in a position where appropriate access to the drive transmission is possible (see illustration).

#### Filling/Topping up with transmission oil:



Position the transmission so that the oil drain plug (2) is positioned vertically at its lowest point (about 6 o'clock). The oil filler plug (1) should then be on the left or right outside of the transmission middle (about 10 or 2 o'clock).

Fill up with oil until the level has reached the height of the filling hole. Insert filler plug with new seal washer and tighten.



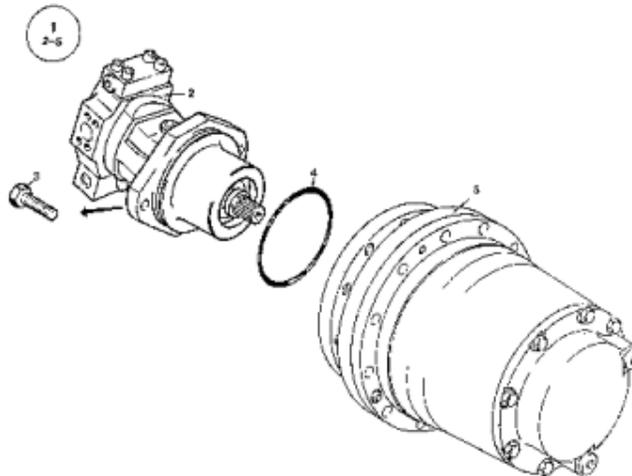
**Draining off transmission oil:**

Danger of scalds and burns from hot transmission oil. The transmission housing may also be hot after running for longer periods. Always wear protective gloves and allow the transmission to cool down first. Collect draining oil in appropriate containers and dispose of in an environmentally safe manner.

Place oil collection container underneath the transmission. Undo and remove oil filler plug (1) and oil drain plug (2). Drain oil completely. Insert drain plug with new washer and tighten.

**3.2.6 Motor**

The motor is maintenance free and only has to be checked visually for leaks during inspection.

**3.2.7 Multi-disc parking brake**

The multi-disc parking brake is integrated into the transmission on the motor side and is lubricated by the transmission oil. Because of this design, the brake is maintenance free and consequently only has to be checked for damage when carrying out a general overhaul of the complete transmission.



The brake circuit must be vented (bled) after working on the brake or the hydraulic connections.

**3.2.8 Disengaging mechanism**

The disengaging clutch is located on the rotor gear side (opposite the motor) and is not subject to any special maintenance regulations.

### 3.2.9 Transmission oil filling quantities

<b>O &amp; K Gruppo Carraro</b>		
	in Liter [dm <sup>3</sup> ]	
Description	Quantity from	Quantity to
F 10	2.70	3.30
F 13	2.70	3.30
F 20	2.80	3.40
F 30	3.30	3.80
F 40	3.60	4.40
F 44	4.00	5.00
F 55	5.00	6.00
F 60	5.40	6.60
F 80	6.30	7.50
F 100	7.80	9.30
F 130	12.00	14.00
F 180		
F 220	18.00	22.00
F 360	22.00	26.00
<b>Lohmann + Stolterfoht Rexroth Bosch Group</b>		
	in Liter [dm <sup>3</sup> ]	
Description	Quantity from	Quantity to
GFT 7	0.70	0.90
GFT 9	0.80	1.10
GFT 60	7.20	8.80
GFT 110	8.20	9.80
GFT 330	32.00	38.00
<b>Trasmital Bonfiglioli Group</b>		
	in Liter [dm <sup>3</sup> ]	
Description	Quantity from	Quantity to
701 C1	0.75	0.85
705 C2 H	1.00	1.30
706 C3 H	1.60	2.00
710 C3 B	3.60	4.40
707 C3 B1	2.15	2.65
709 C3 B1	3.25	3.85
713 C3 B1	4.50	5.50
715 C3 B	5.40	6.60
718 C3 H	13.50	16.50
720 C3 H	13.50	16.50
All figures are only guidelines (no liability assumed), the quantities can vary according depending auxiliary components.		

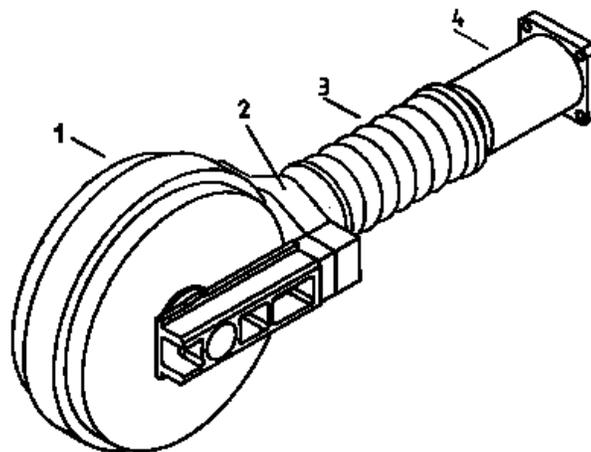
## 4. Front idler unit

### 4.1. Front idler unit – Function and description

#### 4.1.1 Design of front idler units

Front idler units consist of the groups:

- Pos.1 Front idler with sliding blocks
- Pos.2 Yoke
- Pos.3 Spring unit (pre-tensioned)
- Pos.4 Track tensioner



(Illustration of a standard front idler unit with spring unit and grease cylinder)

The front idler with sliding blocks (1) has a lifetime oil lubrication filling. The running surfaces have been hardened to reduce wear. The yoke (2) acts as a transmission element between the front idler and the following components. The spring unit (3) acts as protection for the complete undercarriage against overloads from outer influences (e.g. dirt) and is therefore an important component of the undercarriage.



**Important! Any work whatsoever on the pre-tensioned spring unit may only be carried out by trained specialist personnel.**

The track tensioner (4) is used for correct setting of track tension. The grease cylinder may be filled with/operated by grease or hydraulic oil.

---

**The following applies for all spring units:**

All spring units can be bolted, inserted or fastened onto the front idler yoke. This ensures easy fitting and removal. The pre-tensioned spring in the frame is an exception.

This spring is tensioned first when in the undercarriage frame and then secured with a locking system.



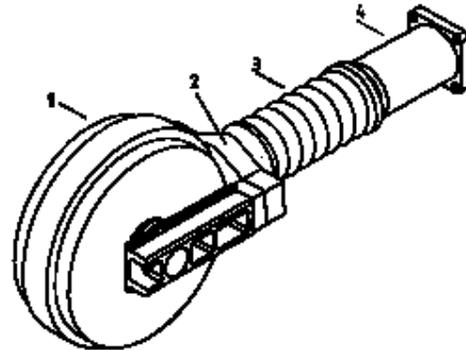
Dismantling the spring units may only be carried out by a specialist workshop. The following applies to all spring units: Replace the complete unit if a repair is necessary.

Repairing spring units involves extensive safety measures and should only be carried out by a specialist workshop.

### 4.1.2 Types of front idler units

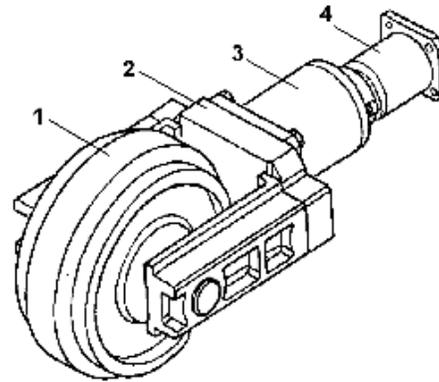
#### Type 1 Standard

- Pos.1 = Front idler
- Pos.2 = Yoke
- Pos.3 = Pre-tensioned spring unit
- Pos.4 = Track tensioner



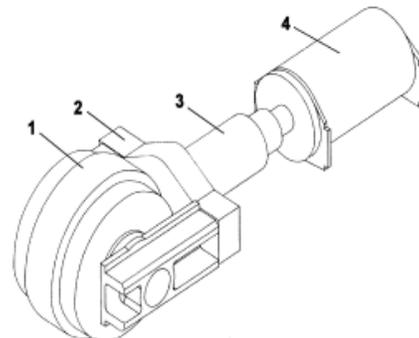
#### Type 2 Nitrogen

- Pos.1 Front idler
- Pos.2 Yoke
- Pos.3 Nitrogen spring unit
- Pos.4 Track tensioner



#### Type 3 Elastomer

- Pos.1 Front idler
- Pos.2 Yoke
- Pos.3 Track tensioner
- Pos.4 Elastomer spring element

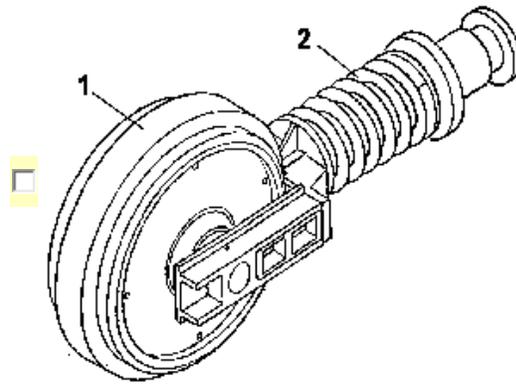




### Type 4 Integrated tensioning units

Pos.1 = Front idler

Pos.2 = Compact tensioning unit



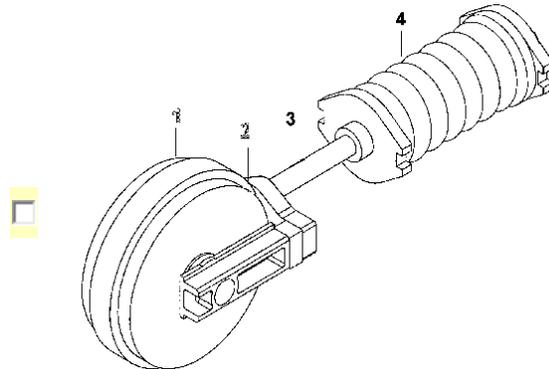
### Type 5 Special design

Pos.1 = Front idler

Pos.2 = Yoke

Pos.3 = Thrust rod

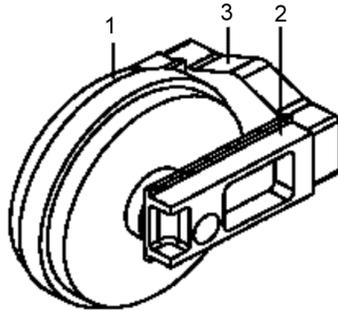
Pos.4 = Compact tensioning unit



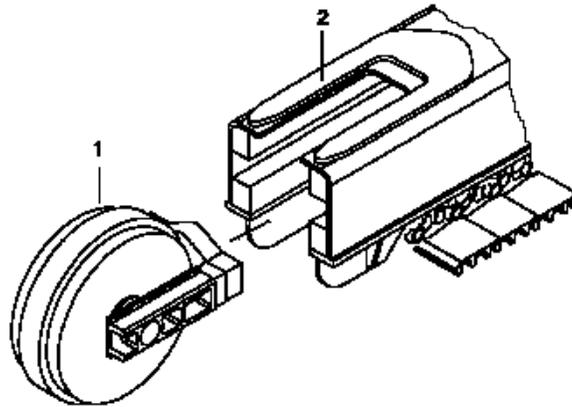
### 4.1.3 Front idler complete with sliding blocks and yoke

The front idler unit fulfils the following functions:

- Deflection with simultaneous guidance of the track.
- Positional adjustment via sliding blocks for setting track pre-tension and for guidance during spring actions



Pos.1 Front idler  
Pos.2 Sliding block  
Pos.3 Yoke



The front idler (1) runs in the steel mount (2) with its sliding blocks and can move in a longitudinal direction.



**Other components may be fastened on the front idler depending on the type of front idler.**

#### 4.1.4 Spring unit



The function of the spring is to secure the complete undercarriage against overloads. An overload can be caused by external influences (e.g. dirt accumulation) resulting in an increase in track tension. Under these circumstances, the spring element action provides relief for all components.

The spring can only operate perfectly as long as there is no significant dirt accumulation on the spring.

#### 4.1.5 Types of spring units

Various types of designs can be used as spring elements, depending on the intended application and load occurrence.

In a compressed state the spring element requires an opening in its counterpart (e.g. in the cross-bar or paneling).

#### Coil spring unit

- Pre-tensioned by tension rod (fig. 1)
- Integrated spring tensioning system (fig. 2)

**Fig. 1**

Standard - Coil spring unit

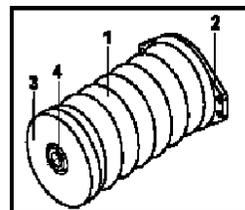
Pos.1 Coil spring

Pos.2 Spring carrier

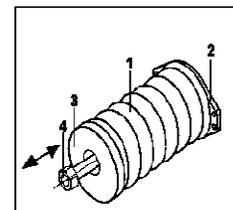
Pos.3 Thrust plate

Pos.4 Tension rod

**Not Compressed**



**Compressed**

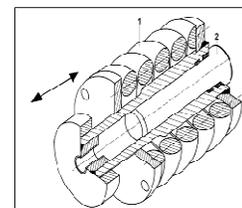
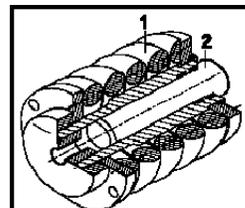


**Fig. 2**

Integrated – spring – Tensioning unit

Pos.1 Coil spring

Pos.2 Integrated grease tensioner



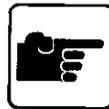
### Spring elements on a fluid basis

Spring elements on a fluid basis are available in designs with or without a reservoir tank. Nitrogen, elastomer and oil are used as a medium.

The systems that are fitted with a reservoir tank feed the medium into a reserve tank in the event of overpressure. The medium is returned back into the system when the pressure is reduced.

On systems without a reservoir tank, the medium is fed away through a pressure relief valve in the event of overpressure. With these systems, it is then necessary to top up the tank again with new medium.

The spring element is a complete modular unit. The pressure can be checked with a filling device and adjusted where necessary (i.e. topped off again). The spring element is pre-tensioned. The prescribed pressure levels must not be exceeded.



Observe the permitted pressure levels for the respective unit (filling pressure, max. pressure, operating pressure, test pressure)!

Please note the details on the rating plate of the pressure tank (only provided with nitrogen as medium).



Medium is discharged in cases of overload. Loitering in the danger area is strictly forbidden. Observe pressure equipment guidelines. Heating the tank is forbidden. Danger of explosions.

If the crawler track cannot hold pre-tension while driving, check the spring unit and grease adjuster.

With nitrogen as medium, standard commercial N<sub>2</sub> in pressurized canisters is used.

The filling medium "Elastomer" has been tested in compliance with DIN 52900. It is in a fluid form and is odorless.

Non-water soluble at 20 °C

Elastomer medium table

Thermal decomposition point	Above 300 °C
Flash point	from 300 °C
Ignition temperature	above 400 °C
pH value	neutral
Dangerous reactions	none
Traffic regulations	none
Protective measures	not applicable
Disposal	according to local official regulations
Leakage/Spillage	Pick up with fluid-binding material, e.g. diatomite and dispose of in compliance with regulations
Extinguisher	Water mist / spray jet, foam, CO <sub>2</sub> , powder-type extinguishers, sand
First aid	not applicable

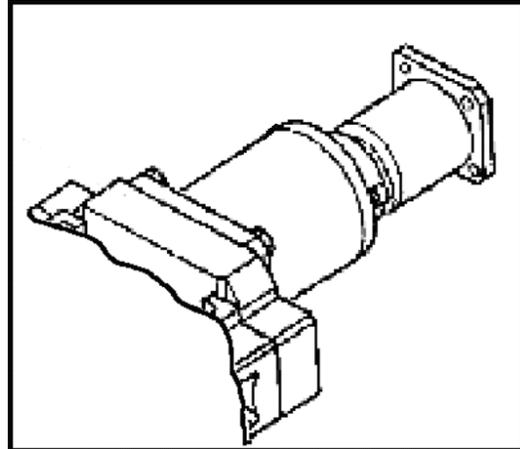
Manufacturer	Description
Wacker Silicone	AK 50



If the track vehicle is being used at temperatures of +10 °C to –40 °C, the filling pressure in the spring unit will have to be checked using a pressure gauge and, if necessary, adjusted to the prescribed setting using a hand pump.

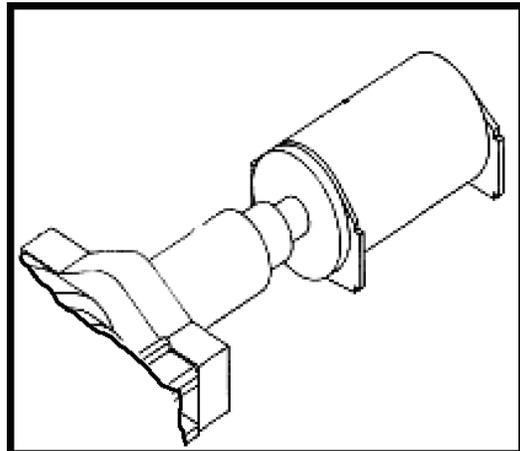


Spring element on nitrogen basis



(Nitrogen adjuster)

Spring element on elastomer basis



(Elastomer spring element)

### Filling instructions for spring elements with elastomer as medium

De-tension track and loosen (see Crawler Track chapter)

Remove cover from appropriate side section.

Fill up tank with elastomer using hand pump.

Bleed hose by pumping slowly. Connect pump to adapter and pump spring unit up to prescribed filling pressure.

Disconnect pump from adapter upon completion of the filling process.

**Important!**  
**Hand pump and special bolt are not included with delivery**

### De-tensioning the spring element with elastomer as medium

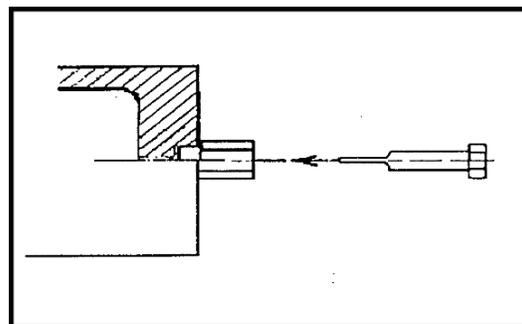
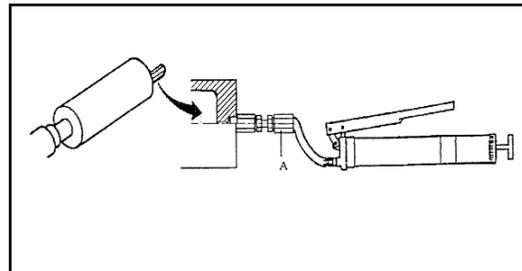
De-tension track and loosen (see Crawler Track chapter).

Remove cover from appropriate side section.

Using the special bolt, screw into the valve seat of the filling valve until about ¼ liters of elastomer emerge from the cross groove on the nut.

The volume can be read off on the pressure gauge.

Remove the special bolt slowly. The valve closes automatically.



## Filling instructions for spring elements with nitrogen as medium

(Positions 2-8 are not included with delivery). These items can be purchased from Intertractor America under kit part number UQ900Z00N70001 (includes items 2-7). Item 8 needs to be sourced by user.

Remove protective cap from nitrogen spring element and then screw the brass cap off the gas valve. Secure the valve against turning while doing so (hold tight with a wrench).

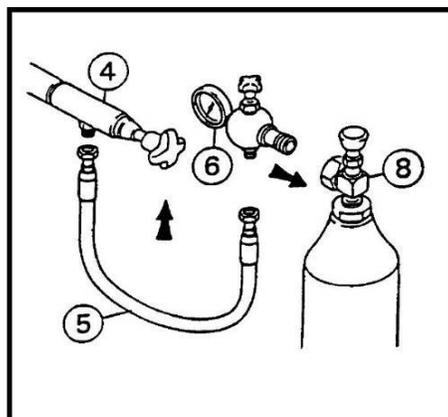
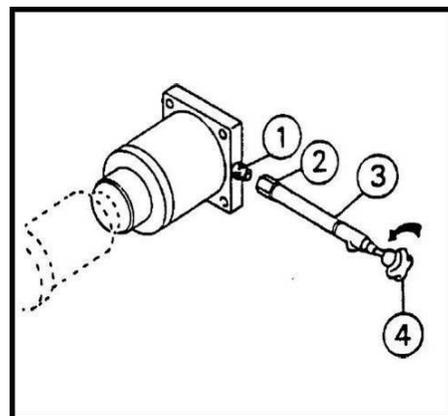
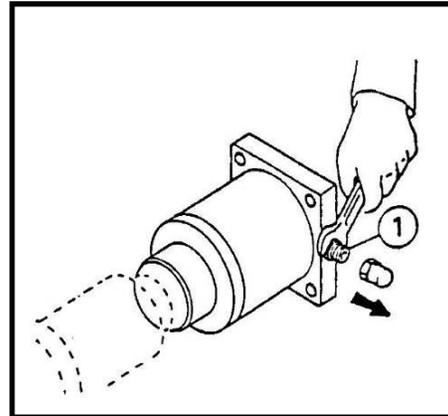
Check whether hand wheel on the filling valve has been turned back or closed completely.

### **IMPORTANT!**

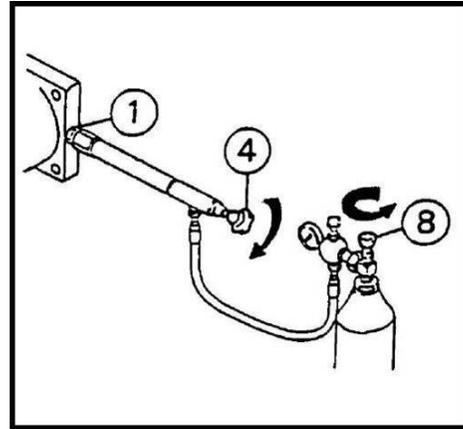
Turning direction **anti-clockwise**.

Screw union nut (2) with filling valve (4) and extension (3) onto the gas valve.

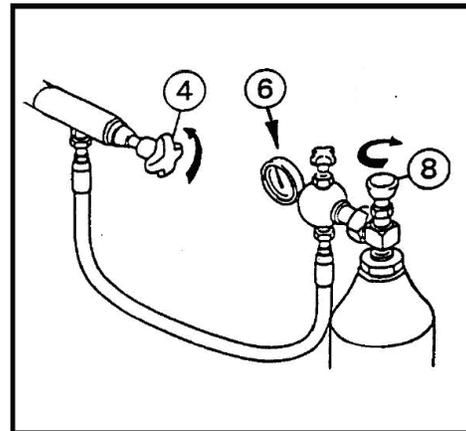
Screw pressure gauge valve (6) onto the nitrogen-filling canister (8). Connect hose (5) between filling valve (4) and pressure gauge valve (6).



Turn hand wheel on filling valve (4) to right (**clockwise**) so that the gas valve (1) opens.  
Open nitrogen filling canister (8) (**Turn anti-clockwise**):



Check filling pressure on the pressure gauge (6). When pressure level has been reached – settling time min. 5 minutes – close filling canister (8) again. Turn hand wheel (4) back to left. Gas valve closes automatically.



Repeat individual work stages in reverse order and protect the gas valve with a protection cap. Replace brass cap and copper ring.

**IMPORTANT!**

Make absolutely sure that no dirt particles get into the gas valve.

## Pressure control for spring elements with nitrogen as medium

Carry out work stages as in the previous section (Filling instructions for spring elements with nitrogen as medium).

Turn hand wheel on filling valve (4) to the right (clockwise) so that the gas valve on the spring element opens.

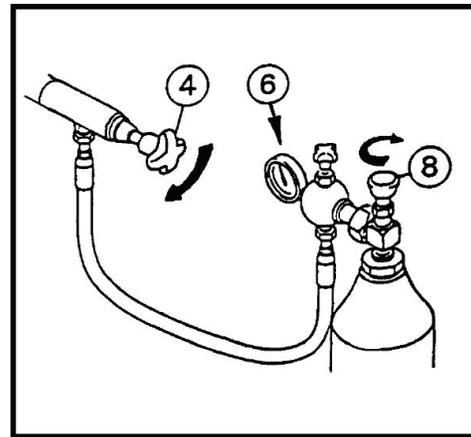
The nitrogen canister (8) **must remain closed**.

Read off the pressure on the pressure gauge (6).

If checking without nitrogen canister, the filling connection on the pressure gauge must be plugged with a stopper.

Close as described in the previous section (Filling instructions for spring elements with nitrogen as medium).

The pressure loss during the inspection procedure is about 5 bar.



## Releasing pressure on spring elements with nitrogen as medium

Carry out work stages as in the previous section (Filling instructions for spring elements with nitrogen as medium).

Turn hand wheel on filling valve (4) to the right (clockwise) so that the gas valve (1) on the spring element opens.

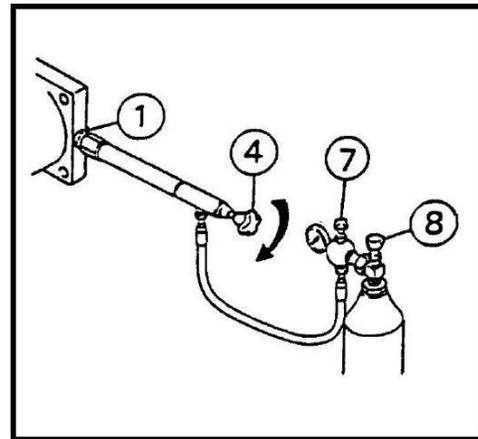
The pressure valve must be connected to the filling canister or it must be plugged with a stopper.

Release gas pressure by undoing the small pressure release screw (7) on the pressure gauge valve.

Repeat individual work stages in reverse order and protect the gas valve with a protection cap. Replace brass cap and copper ring.

### **IMPORTANT!**

Make absolutely sure that no dirt particles get into the gas valve.



### **Spring elements with oil as medium**

This spring element is not described in any further detail in this manual. **Intertractor** must be contacted before attempting to exchange or top-up this medium.



### **Instructions for spring elements with nitrogen as a medium**

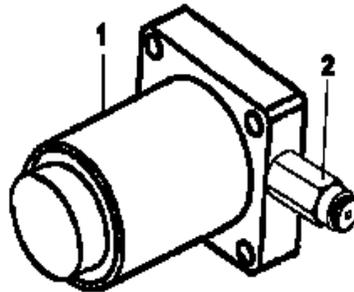
- If scrapping, the unit must be depressurized first in compliance with safety regulations

The following are forbidden:

- Undoing the screw connections
- Undoing the valve
- Using force of any form (knocking, jolting) on the unit
- Increasing the pressure beyond the level specified on the rating plate
- Carrying out repairs on pressurized parts
- Having repairs carried out by unauthorized persons
- Replacing components with non-authorized spare parts
- Heating or cooling the container excessively
- Transporting incorrectly (non-secured transportation)

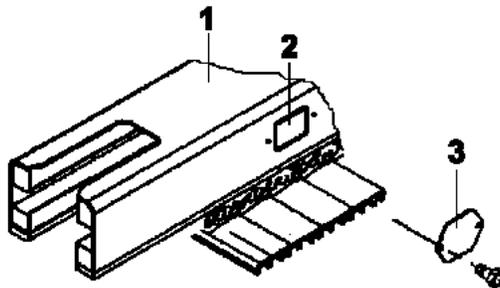
#### 4.1.6 Track Tensioner

The track is provided with the necessary pre-tension by the tensioning cylinder. In the event of wear occurring to the undercarriage components or if there are changes in terrain conditions, it will be necessary to adjust the tension of the track up or down (see chapter Setting Track Pre-tension, Crawler Track).



The tensioning cylinder (1) is supplied in standard design as a grease-tensioning cylinder. To tension or slacken off the track, grease is either applied through a special grease nipple (2) on the tensioning cylinder or the grease filling can be drained off by unscrewing the grease nipple halfway (illus. above).

Access to the grease tensioner is through hand hole (2) that is located at the side of the steel frame (1) (illus. below).



The hand hole may be closed by a covering plate (3).



Attention must be paid to the state of wear of the track in order to avoid damage to the track tensioner.

Re-tensioning is not permitted after reaching the wear limits for the track as this would cause excess strain on the undercarriage components beyond the permitted limits and there would no longer be any safety against forced breakage.

#### 4.1.7 Lubricant details for grease tensioning cylinders

##### Substance/Preparation description

Chemical characterization  
Type of product

Lubricating grease  
Lithium grease NLGI class 2 or 3

##### Physical and chemical properties

###### Physical condition at 20 °C

Color  
Odor

**pasty**  
yellow / brown  
characteristic

###### Change of state at 1013 kPa

Melting point  
Flash point (ASTM D 92)  
Density at 20 °C  
Behavior in water at 20 °C

>190 °C  
>200 °C  
896 to 904 kg/m<sup>3</sup>  
not soluble

##### Notes on disposal



Disposal in compliance with local official regulations. Disposal of the product must be in compliance with regulations for recycling and applicable refuse laws.

This product is a water-endangering substance and must not be allowed to enter the ground, drains, and surface bodies of water or ground water.

## 4.2. Front idler unit – Fitting and removal

### 4.2.1 Fitting front idler unit – in general

Fitting and removing the front idler unit complete varies according to the design of the unit. The various designs are described in the following chapters.



Under all circumstances, appropriate steps must be taken whenever working on the front idler unit to ensure that the device cannot start up of its own accord or through intervention by others. An undercarriage, which is not connected with the track by the sprocket, is not prevented from moving by the gear brake. This means that the undercarriage must be secured separately.

Furthermore, attention must be drawn to the dangers that can occur when working on or with spring elements.

**If a tension rod is damaged or broken, there is danger that a coil spring will not remain in its pre-tensioned position but will force the front idler out of the frame through sudden de-tensioning when the track is removed (see fig. 1., chap. Types of Spring Elements → Coil spring).**

This possible danger is detectable by the track remaining tensioned even after releasing the pre-tension pressure out of the grease tensioner.

The spring elements that operate on a nitrogen or elastomer basis are high-pressure containers that under no circumstances should be subjected to additional stress through incorrect handling or external heat application.



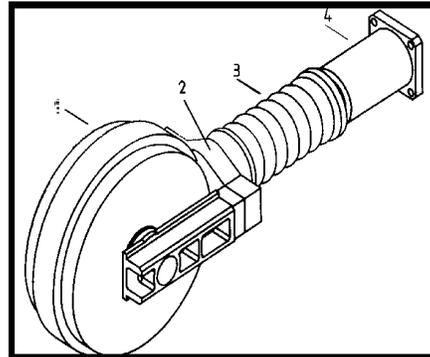
If handling the track tensioner, make sure that any emerging oil or grease is collected and disposed of in an environmentally correct manner.

The crawler track must be opened first before being able to fit or remove the front idler unit (see Crawler Track chapter).

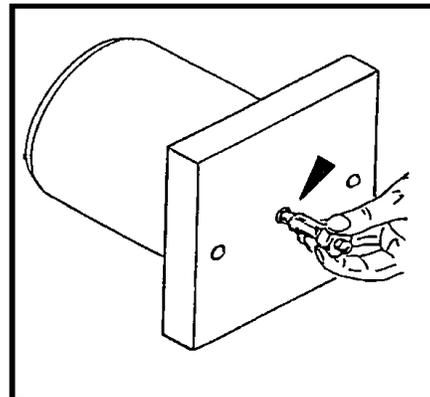
## 4.2.2 Front idler unit – standard design

This design consists of:

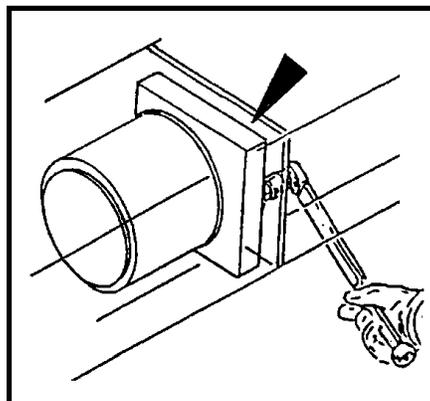
- Front idler comp. with yoke (1+2)
- Spring unit (3)
  - Screwed onto cross-bar
  - Available in coil spring or hydraulic spring element designs
- Track tensioner (4)



Push the piston of the track tensioner right in as far as it will go. Screw the seal washer and grease nipple into the hydraulic Tensioner and tighten.

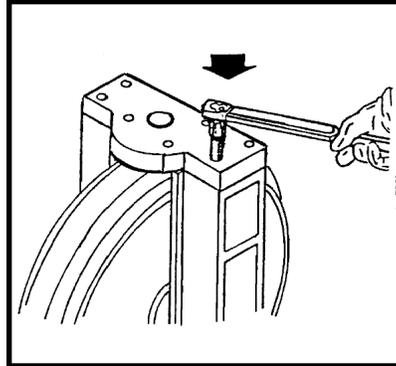


Insert the track tensioner from below into the frame so that the grease nipple fits through the appropriate hole in the paneling. Set the tensioner in position using the fastening bolts with Loctite Red (#262) applied to threads and then tighten.

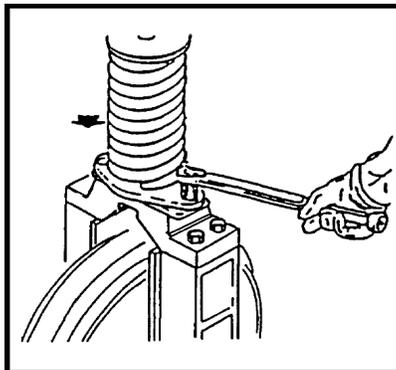




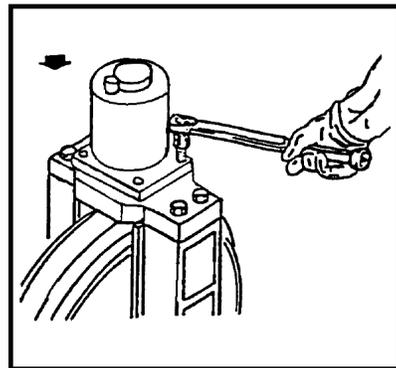
Place yoke on sliding blocks and fasten in place with bolts having Loctite Red (#262) added to the threads of the bolt holes within the idler slide bars.



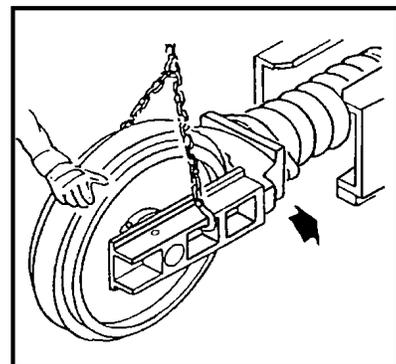
Place spring unit on the yoke and tighten in place with bolts having Loctite Red (3262) applied to threads.



Installation as described above though with a fluid spring element.



Insert the assembled front idler unit carefully into the greased guide rails of the side sections using appropriate lifting gear.

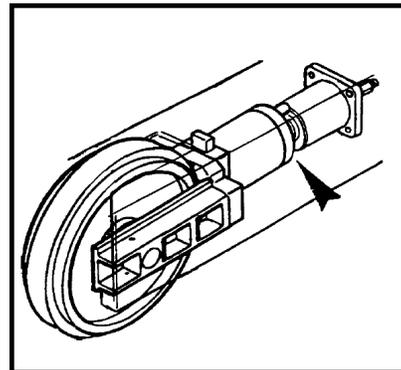
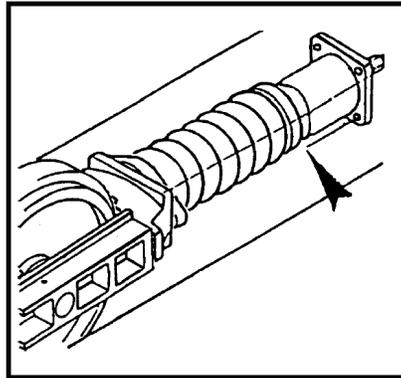
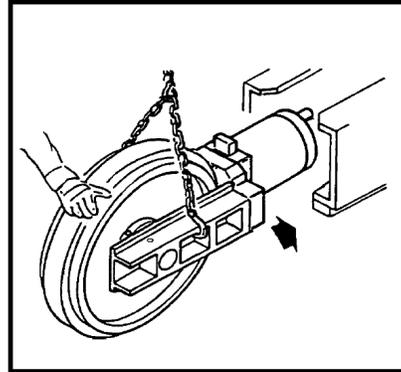




Installation as described above though with a fluid spring element.

Make sure that the front idler unit is pushed in far enough without any collision until the spring unit knocks against the piston of the track tensioner.

Shown with a fluid spring element.



### 4.2.3 Front idler unit plug-in unit

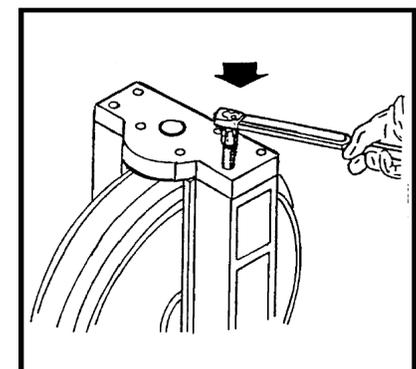
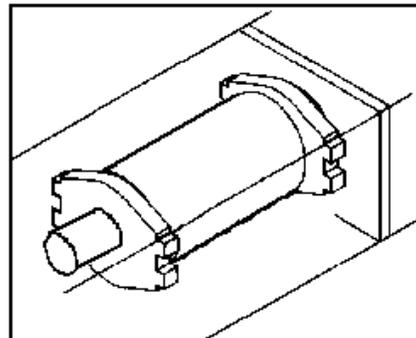
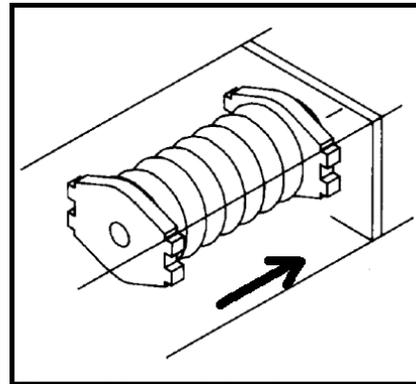
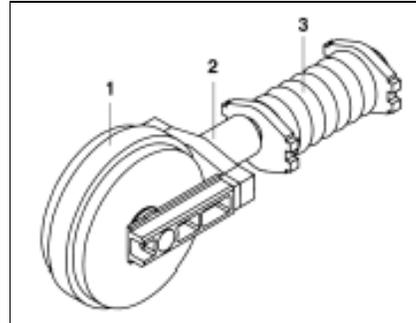
The design consists of:

- Front idler comp. with yoke (1)
- Track tensioner (2)
- Spring unit (3)

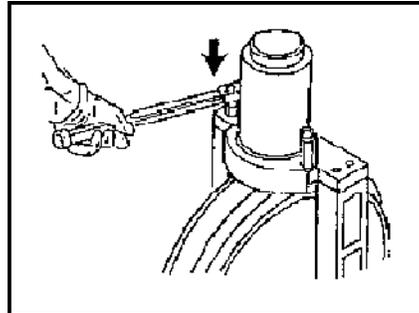
If the spring has been designed as a plug-in unit, lift carefully into the greased guide rails of the frame using appropriate lifting gear.

Alternative illustration of a plug-in unit as fluid spring element (e.g. nitrogen or elastomer)

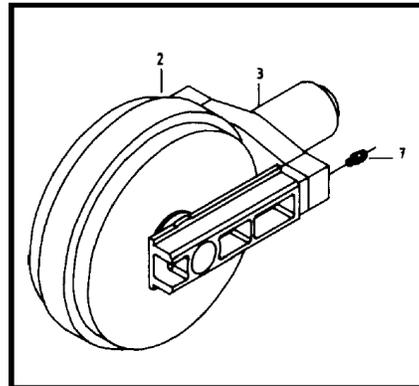
Insert Loctite Red (#262) onto the threads of the bolt holes within the idler slide bars. Place yoke on sliding blocks and tighten with bolts.



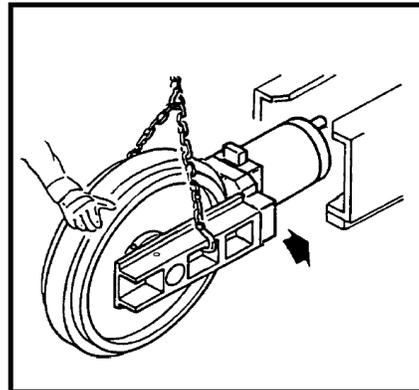
Screw track tensioner onto the yoke after applying Loctite Red (#262) to the bolt threads. If the track tensioner has been supplied as complete unit with yoke, place complete unit on sliding blocks as described above and fasten in place using the fastening elements.



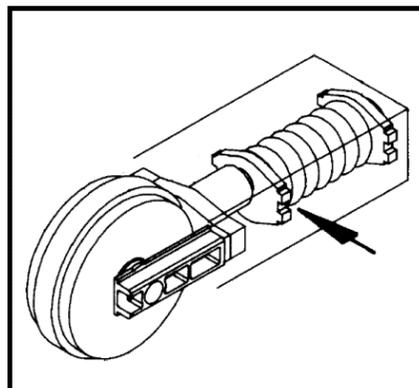
Push the piston of the track tensioner in as far as the cylinder pipe. Screw the washer and grease nipple into the track tensioner and tighten.



Insert the assembled front idler unit carefully into the greased guide rails of the side sections using appropriate lifting gear.



Make sure that the front idler unit is pushed in far enough without any collision until the spring unit knocks against the piston of the track tensioner.



#### 4.2.4 Front idler unit compact tensioning unit

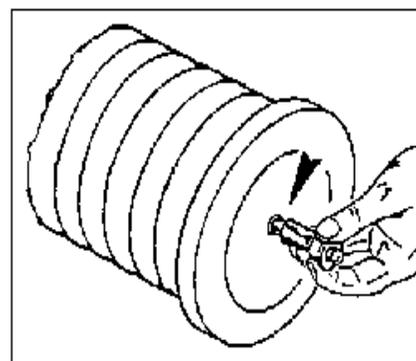
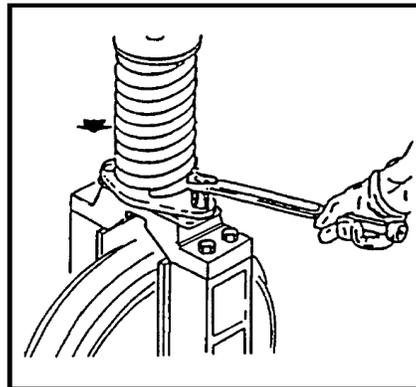
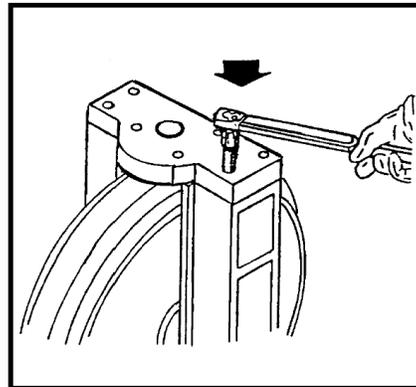
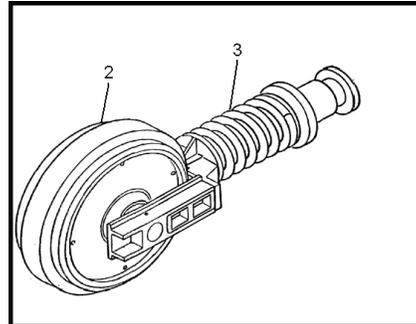
This design consists of:

- Front idler comp. with yoke (2)
- Spring tensioning unit (3) screwed or pushed onto the yoke

Place yoke on sliding blocks and fasten in place using the fastening elements after Loctite Red (#262) has been applied to the threads of the bolt holes in the idler slide bars.

Screw the compact spring tensioning unit onto the yoke after adding Loctite Red (#262) to the bolt threads. If the unit is designed with an integrated yoke, place the complete unit on the sliding blocks and fasten in place using the fastening elements.

Push the piston of the tensioning element in as far as it will go. Screw high pressure lubricating nipple with washer into the track tensioner and tighten.

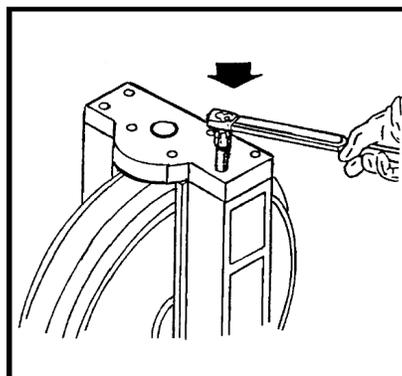
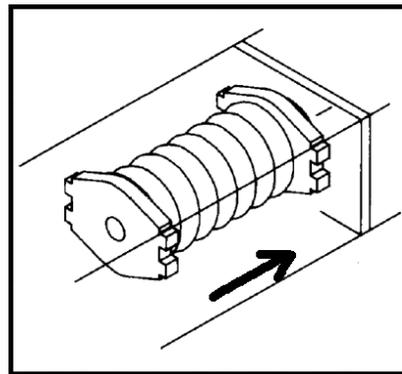
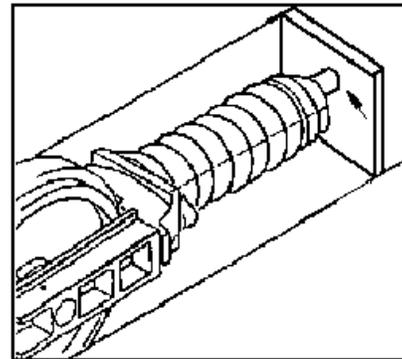
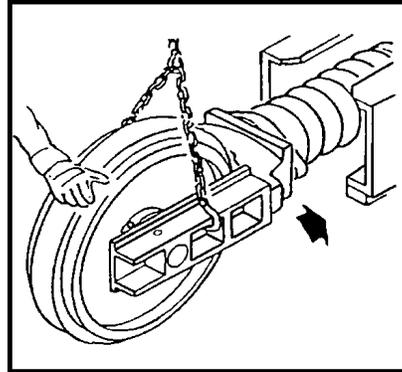


Insert the assembled front idler unit carefully into the greased guide rails of the side sections using appropriate lifting gear.

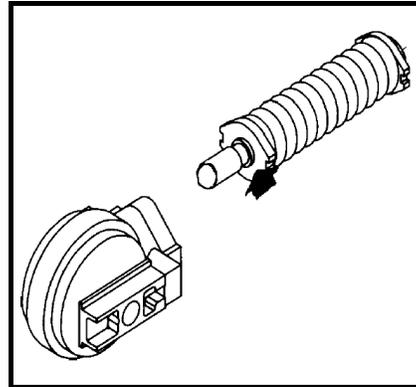
Make sure that the front idler unit is pushed in far enough without any collision until the spring unit knocks against the partitioning panel of the frame and remains there.

If the compact tensioning unit has been designed as a plug-in unit, lift carefully into the greased guide rails of the frame using appropriate lifting gear.

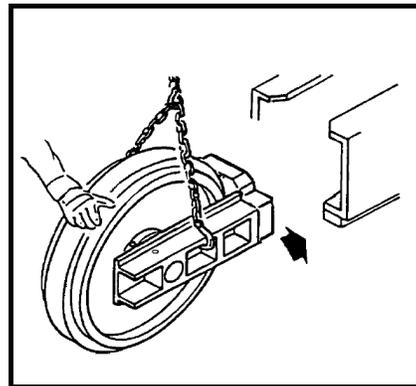
Place yoke on sliding blocks and fasten in place with bolts having Loctite Red (#262) applied to threads.



Insert the assembled front idler unit with yoke carefully into the greased guide rails of the side sections using appropriate lifting gear.



Make sure that the front idler unit is pushed in far enough without any collision until the yoke knocks against the spring unit.



#### 4.2.5 Removal

Removal is carried out analogue to the above in reverse order.

#### 4.2.6 Exceptions

In certain cases, as an exception, it is not possible to remove the front idler unit to the front. In this case, special installation and removal instructions are required.

## 5. Carrier rollers/support rails

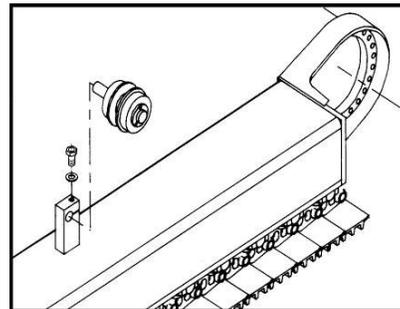
### 5.1. Carrier rollers/support rails – Function and operation

#### 5.1.1 In general

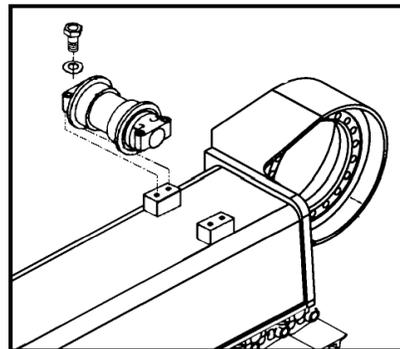
The carrier rollers/support rails are supplied as complete unit. The complete unit has to be exchanged in the event of any damage, repairs or upon reaching wear limits.

#### 5.1.2 Types of carrier rollers

Carrier rollers with one-sided bearing

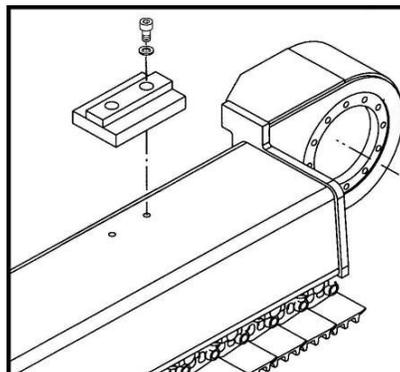


Carrier rollers with two-sided bearing



Support rails are available in the designs:

- Wear-resistant steel
- Plastic support rails



### 5.1.3 Function

The carrier rollers fulfill the following functions:

- Guiding the track in the upper strand
- Supporting the track in order to minimize track sag so as to prevent damage to neighboring components.

The running surface of the carrier rollers/support rails has been hardened (not in the case of plastic support rails) to prevent wear. It is fitted with a "lifetime" seal (carrier rollers) in order to prevent penetration by dirt and any loss of oil.

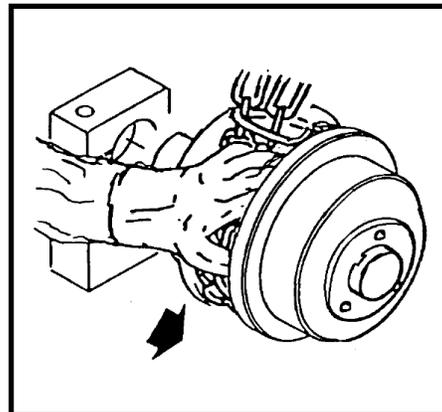
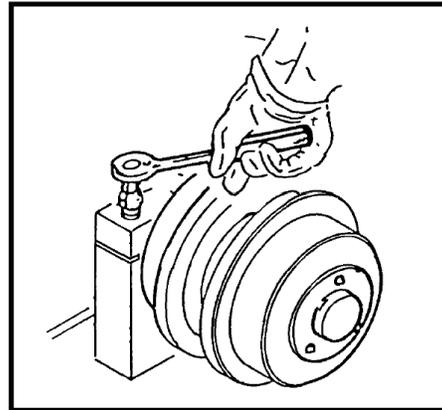
The carrier rollers are fitted as complete units at the intended installation points above the steel bearers and are ready for immediate use.

## 5.2. Carrier rollers/support rails – Fitting and removal

Slacken off track and undo track fastener (see "Track" chapter).

Undo the bolts of the faulty carrier roller, remove and dispose.

Fit new roller using new bolts and re-join track again as described in the following chapter.



**NB:**

These fitting/removal instructions also apply analogue for two-sided bearing support rollers and for the support rails

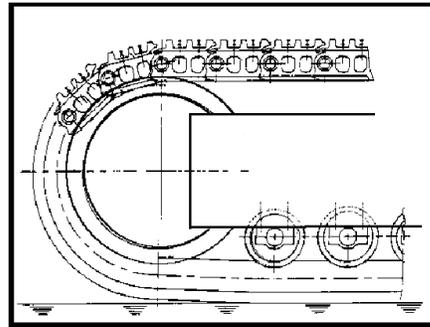
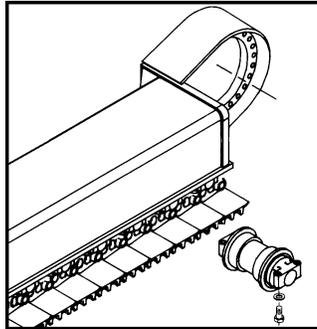
The only difference to the displayed fitting/removal of one-sided bearing carrier rollers is the number and position of the bolts.

## 6. Track rollers

### 6.1. Track rollers – Function and operation

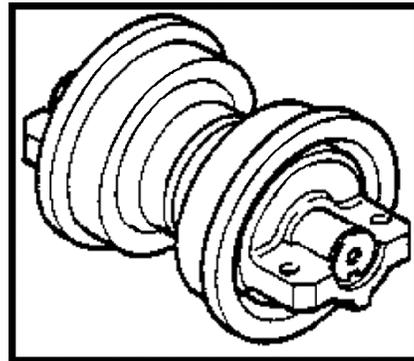
#### 6.1.1 In general

The track roller is supplied as a complete unit. The complete unit has to be exchanged in the event of any damage, repairs or upon reaching wear limits.

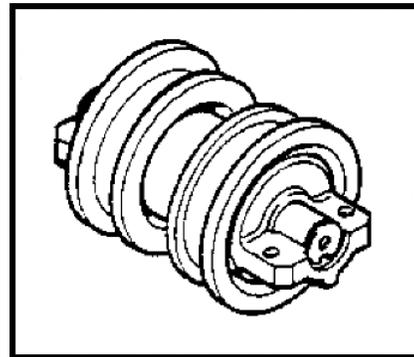


### 6.1.2 Types of track roller

Single flange track roller



Double flange track roller



### 6.1.3 Function

The track rollers achieve the following functions:

- Guidance of the track so that the dynamic forces of the track are transmitted to the ground
- Take-up loads coming from the machine

The surface of the roller has been hardened to reduce wear.

It is fitted with "lifetime" seals in order to prevent penetration by dirt and any loss of oil.

The track rollers are fitted as a complete unit at the intended installation points under the rail (see chapter "Track rollers – Fitting and removal") and are ready for immediate use.



## 6.2. Track rollers – Fitting and removal

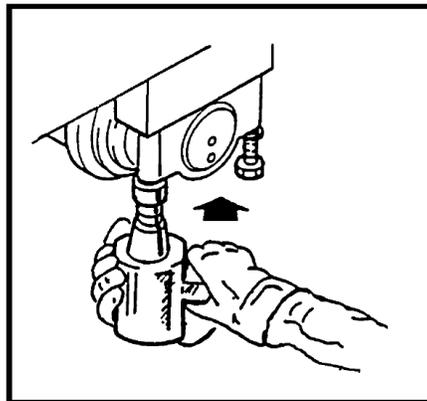
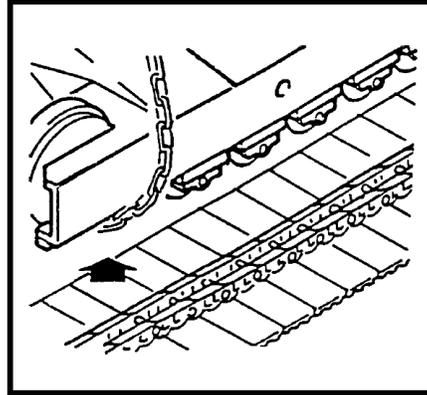
If necessary, slacken off track and undo track fastener (see "Track" chapter).

Raise the track undercarriage using a lifting device and clean dirt off of all parts.

Undo the bolts of the faulty track roller, remove and dispose.

If track guide is fitted, it will have to be removed first at the appropriate points before dismantling.

Fit new roller using new bolts with Loctite Red (#262) on the threads and fasten in place. Re-join track again as described in the following chapter.



## 7. Crawler track and grouser shoe

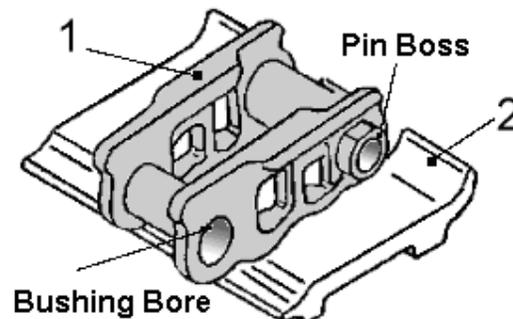
### 7.1. Crawler track and grouser shoe - Function and description

#### 7.1.1 Design of the crawler track with grouser shoes

The grouser shoes are bolted onto the crawler track and forms a complete unit in accordance with specification.

1 –Track segment

2 –Grouser shoe



#### 7.1.2 Design of the crawler track

The crawler track, carrier of the grouser shoes, consists of the segments which are divided into left and right track links.

These track links together with the corresponding bushings and pins are pressed together and form a unit. This unit can be linked to any required length.

The individual elements of the crawler track have been induction hardened making them extremely wear resistant.



### 7.1.3 Types of crawler tracks

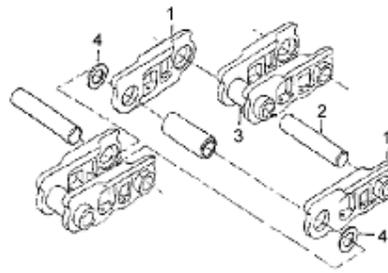
- Dry tracks
- Sealed tracks (dry) \*
- Grease lubricated tracks \*\*
- Oil lubricated tracks \*\*

\*) Fitted with steel gaskets in order to prevent dirt penetration and therefore keep inner wear to a minimum.

\*\*\*) Fitted with seals in order to prevent dirt penetration, loss of grease or oil and therefore keep inner wear to a minimum.

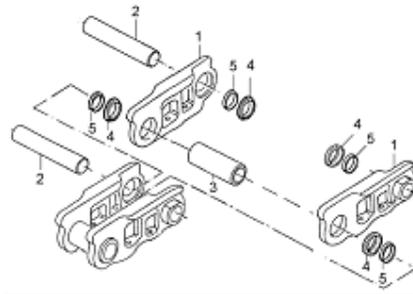
#### Dry track

- 1 – track links (right and left)
- 2 - pin
- 3 - bushing
- 4 - spacer



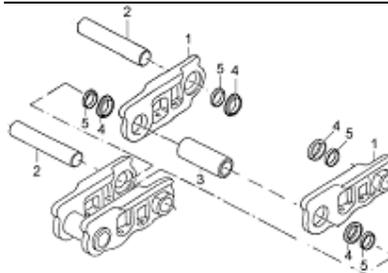
#### Sealed track (dry)

- 1 - track links (right and left)
- 2 - pin
- 3 - bushing
- 4 - spacer
- 5 – seal washer



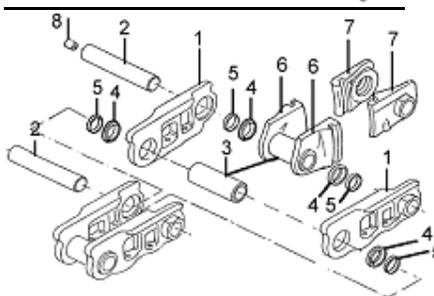
#### Grease lubricated track

- 1 – track links (right and left)
- 2 – pin
- 3 - bushing
- 4 - spacer
- 5 – Polyurethane seal



#### Oil lubricated track

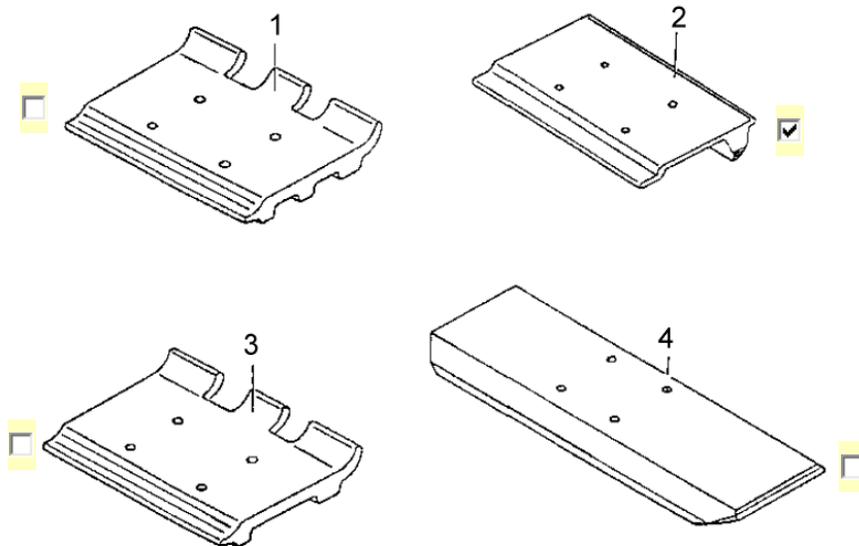
- 1 – track links (right and left)
- 2 – pin
- 3 – bushing
- 4 – track seal
- 5 – thrust ring
- 6 – split master link bushing side
- 7 – split master link bolt side
- 8 – stopper



### 7.1.4 Grouser shoes – General description

#### Grouser shoes

The grouser shoes are supplied in many forms and widths depending on requirements and demands.



#### Types of base plates

- 1-tripple grouser shoe
- 2-single grouser shoe
- 3-double grouser shoe
- 4-flat shoe
- Box-type shoe (not illus.)
- Rubber bonded shoe (not illus.)
- Polyurethane bonded shoe (not illus.)

### 7.1.5 Function

The following functions are fulfilled by crawler tracks with grouser shoes:

- Taking-up loads coming from the machine
- Transmission of drive output into drive movement

The running surface of the crawler track has been hardened to reduce wear.

## 7.2. Crawler track and grouser shoes – Fitting and removal

### 7.2.1 In general



These instructions describe the correct method of fastening the shoes onto the track. Incorrect assembly is the most common cause for failure of the connection between grouser shoe and crawler track.



- Remove all forms of foreign bodies/materials from the contact surfaces of the links, which could get into the connection with the shoes and the bolts (e.g. paint, primer, rust, dirt etc.). Brushing or grinding lightly can achieve this.
- Clean the contact surfaces and the nut seats of the track links
- Coat the thread and contact surfaces underneath the bolt heads with a thin layer of oil (preferably) or grease



- Driving hardened end bolts in or out by hammer involves considerable danger for personnel as a result of material shearing off. Take appropriate protective measures to prevent injuries (e.g. by wearing safety glasses).

### 7.2.2 Fitting grouser shoes

It is often underestimated how important it is to observe the correct procedure when fitting grouser shoes.

Work that is carried out incorrectly can result in the bolts being over-stretched and in the worst case even lead to damage to the track links.

We urgently recommend **always using NEW bolts and nuts** for fitting grouser shoes. Used bolts can already be deformed and no longer guarantee optimum clamping force.

#### Grouser shoes

Remove all forms of foreign body/material from the contact surfaces of the shoes that could get into the connection with the track links and the bolts (e.g. paint, primer, rust, dirt etc.). Brushing or grinding lightly can achieve this.

Also clean the contact surfaces and the nut seats of the track links.

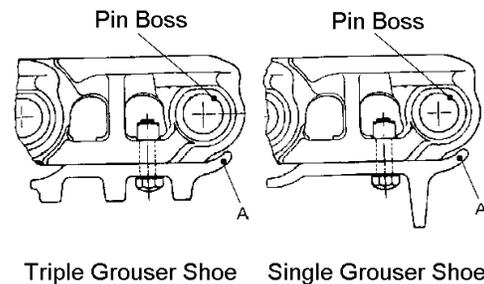
Place the grouser shoes with the front edge (A) over the bolt hole of the track links.

Coat the thread and contact surfaces underneath the bolt heads with a thin layer of oil (preferably) or grease.

Insert the bolts in the holes and screw into the nuts by a few turns.

Make sure that the flatter side of the nuts is resting against the nut seat in the track link (the rounded side of the nut must be facing the running surface of the track link).

Tighten all bolts fully without applying any particular force.

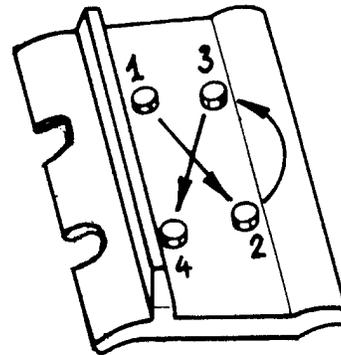




Tighten all bolts to the appropriate torque value according to the table at the end of these instructions.

Tighten the bolts crosswise according to the selected tightening procedure as shown in the diagram.

**Caution!**  
**Do not over-tighten the bolts!**



### Torque check / Re-tightening

Due to normal settling occurrences, all bolts should be re-tightened after about 50 operating hours. A torque system must be used for this **without undoing the bolts beforehand.**



Further checks must be made at regular intervals based on the experience of the machine owner/operator and/or the recommendation of the machine manufacturer. If the bolts can be turned on by more than 90° at required torque setting during an inspection, have the complete grouser shoe fitted again new as described above.



## Fitting master links and master shoes

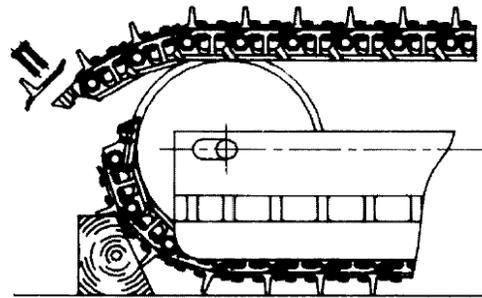
The following recommendations especially for tracks with split master links must be observed in addition to the "Instructions for fitting grouser shoes".

- Carefully clean the threaded holes of the master links
- Make sure that the bolts can be screwed in easily by hand
- Clean the contact surfaces of the master links
- Lubricate the cleaned thread and contact surface underneath the bolt heads with a thin coat of oil. Avoid using grease wherever possible or only use it very sparingly because otherwise it could settle at the base of the threaded hole and prevent the bolts from being tightened properly
- Close the master links and tighten the bolts as described

Please note that in some cases the bolts for the master links require special torque settings (see table "Master track bolts" at the end of these instructions).



Depending on the design of the master links (if fitted), it is possible that there are different hole patterns in the master shoes.



---

### **Tightening procedure for track bolts**

The necessary torque for each individual bolt is specified for a straight torque procedure.

The torque levels are specified for ISO strength classes 11.9, 12.9 and special bolts 13.9.

### **Torque procedure**

Tighten the bolts to the appropriate torque level in the above stated order. The torque level is to be achieved using a torque wrench whereby attention must be paid to an even turning movement. Sudden jerking movements result in torque peaks and lead to incorrect results. Stop tightening as soon as the prescribed torque level has been reached.



Tightening the bolts in excess of specifications leads to stress on the bolts beyond the yield point combined with permitted plastic deformation and the danger of a premature failure of the bolt connection.

Tightening torque for track bolts [Nm]

[Nm] Bolt	Strength class 11.9	Strength class 12.9	Strength class 13.9
	Torque procedure	Torque procedure	Torque procedure
M10 x 1	80 ± 4	90 ± 5	100 ± 5
M12 x 1	150 ± 7	160 ± 8	170 ± 9
M14 x 1.25	230 ± 10	250 ± 10	270 ± 10
M14 x 1.5	220 ± 10	240 ± 10	260 ± 10
M16 x 1.5	340 ± 20	370 ± 20	400 ± 20
M18 x 1.5	490 ± 20	540 ± 30	580 ± 30
M19 x 1.5	590 ± 30	650 ± 30	700 ± 40
M20 x 1.5	690 ± 30	750 ± 40	810 ± 40
M22 x 1.5	940 ± 50	1020 ± 50	1110 ± 60
M24 x 1.5	1240 ± 60	1350 ± 70	1460 ± 70
M27 x 1.5	1770 ± 90	1930 ± 100	2090 ± 100
M27 x 2	1700 ± 90	1860 ± 90	2010 ± 100
M30 x 2	2380 ± 120	2600 ± 130	2810 ± 140
M32 x 2	2820 ± 140	3070 ± 150	3330 ± 170
M33 x 2	3200 ± 160	3490 ± 170	3780 ± 190
[Nm] Bolt	Strength class 11.9	Strength class 12.9	Strength class 13.9
	Torque procedure	Torque procedure	Torque procedure
7/16"–20 UNF	110 ± 5	120 ± 6	130 ± 6
1/2"–20 UNF	170 ± 8	180 ± 9	200 ± 10
9/16"–18 UNF	240 ± 10	260 ± 10	280 ± 10
5/8"–18 UNF	330 ± 20	360 ± 20	390 ± 20
3/4"–16 UNF	590 ± 30	640 ± 30	700 ± 30
7/8"–14 UNF	940 ± 50	1020 ± 50	1110 ± 60
1"–14 UNF	1430 ± 70	1560 ± 80	1690 ± 80
1 1/8"–12 UNF	2030 ± 100	2210 ± 110	2390 ± 120
1 1/4"–12 UNF	2740 ± 140	2980 ± 150	3230 ± 160
1 3/8"–12 UNF	3790 ± 190	4140 ± 210	4480 ± 220



Tightening torque for track bolts [ft-lb]

[ft-lb]	Strength class 11.9 Torque procedure	Strength class 12.9 Torque procedure	Strength class 13.9 Torque procedure
Bolt			
M10 x 1	60 ± 5	65 ± 5	75 ± 5
M12 x 1	110 ± 5	120 ± 5	125 ± 5
M14 x 1.25	170 ± 5	185 ± 5	200 ± 5
M14 x 1.5	160 ± 5	180 ± 5	190 ± 5
M16 x 1.5	250 ± 15	275 ± 15	295 ± 15
M18 x 1.5	360 ± 15	400 ± 20	430 ± 20
M19 x 1.5	435 ± 20	480 ± 20	515 ± 30
M20 x 1.5	510 ± 20	555 ± 30	600 ± 30
M22 x 1.5	695 ± 35	750 ± 35	820 ± 45
M24 x 1.5	915 ± 45	995 ± 50	1075 ± 50
M27 x 1.5	1305 ± 65	1425 ± 75	1540 ± 75
M27 x 2	1255 ± 65	1370 ± 65	1480 ± 75
M30 x 2	1755 ± 90	1920 ± 95	2075 ± 105
M32 x 2	2080 ± 105	2265 ± 110	2455 ± 125
M33 x 2	2360 ± 120	2575 ± 125	2790 ± 140
[ft-lb]	Strength class 11.9 Torque procedure	Strength class 12.9 Torque procedure	Strength class 13.9 Torque procedure
Bolt			
7/16"-20 UNF	80 ± 5	90 ± 5	95 ± 5
1/2"-20 UNF	125 ± 5	135 ± 5	150 ± 5
9/16"-18 UNF	175 ± 5	195 ± 5	210 ± 5
5/8"-18 UNF	245 ± 15	265 ± 15	290 ± 15
3/4"-16 UNF	435 ± 20	475 ± 20	515 ± 20
7/8"-14 UNF	695 ± 35	750 ± 35	820 ± 45
1"-14 UNF	1055 ± 50	1150 ± 60	1245 ± 60
1 1/8"-12 UNF	1495 ± 75	1630 ± 80	1765 ± 90
1 1/4"-12 UNF	2020 ± 105	2200 ± 110	2385 ± 120
1 3/8"-12 UNF	2795 ± 140	3055 ± 155	3305 ± 160



**Tightening torque for master track bolts [Nm and ft-lb]**

The bolts mentioned here can be used for closing various master links.

The KLOC master links are an exception that can be closed with standard bolts according to specification. Although split master links initially appear the same, there are differences with regard to rigidity, expansion lengths and stress in the bolt connection.

Torque levels for the torque procedure have been specified in the table below. The specification can be independent of the differing rigidity because of the strength of the bolt.

Metric thread (ISO Std.)				
Bolt (metric)	Torque procedure [Nm]		Torque procedure [ft-lb]	
	Strength class 12.9	Strength class 13.9	Strength class 12.9	Strength class 13.9
M12 x 1	160 ± 8	170 ± 9	120 ± 5	125 ± 5
M14 x 1.25	250 ± 10	270 ± 10	185 ± 5	200 ± 5
M16 x 1.5	370 ± 20	400 ± 20	275 ± 15	295 ± 15
M19 x 1.5	650 ± 30	700 ± 40	480 ± 20	515 ± 30
M20 x 1.5	750 ± 40	810 ± 40	555 ± 30	595 ± 30
M24 x 2	1270 ± 60	1380 ± 70	935 ± 45	1020 ± 50
M27 x 2	1860 ± 90	2010 ± 100	1370 ± 65	1480 ± 75
M30 x 2	2600 ± 130	2810 ± 140	1920 ± 95	2075 ± 105
M33 x 2	3490 ± 170	3780 ± 190	2575 ± 125	2790 ± 140
Bolt (inch)				
Bolt (inch)	Torque procedure [Nm]		Torque procedure [ft-lb]	
	Strength class 12.9	Strength class 13.9	Strength class 12.9	Strength class 13.9
1/2"-20 UNF	180 ± 9	200 ± 10	135 ± 5	150 ± 5
9/16"-18 UNF	260 ± 10	280 ± 10	190 ± 5	205 ± 5
5/8"-18 UNF	360 ± 20	390 ± 20	265 ± 15	290 ± 15
3/4"-16 UNF	640 ± 30	700 ± 30	470 ± 20	515 ± 20
7/8"-14 UNF	1020 ± 50	1110 ± 60	750 ± 35	820 ± 45
1"-12 UNF	1520 ± 80	1650 ± 80	1120 ± 60	1215 ± 60
1 1/8"-12 UNF	2210 ± 110	2390 ± 120	1630 ± 80	1765 ± 90
1 1/4"-12 UNF	2980 ± 150	3230 ± 160	2200 ± 110	2380 ± 120
1 3/8"-12 UNF	4140 ± 210	4480 ± 220	3055 ± 155	3305 ± 160

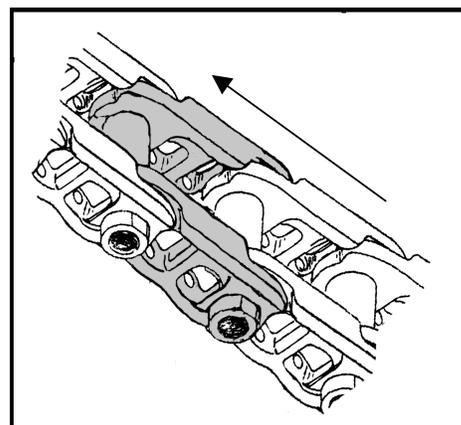
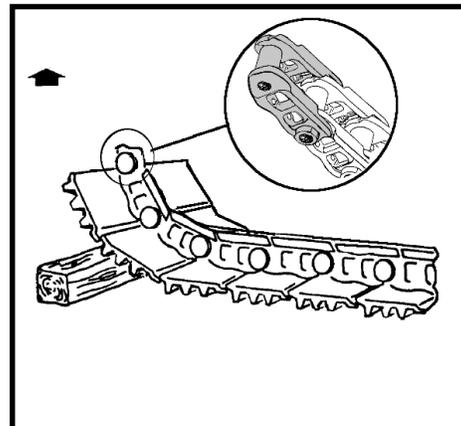
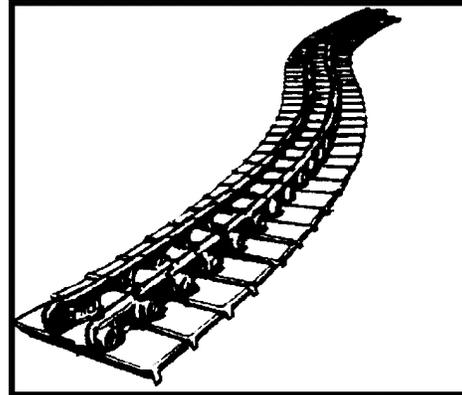


## Fitting the crawler track

When laying out the track, pay attention to straightness and possibly track dimensions.

Place a wooden block under the end position of the track (front idler side, bushing side of the free track upwards).

Pay attention to the correct position and direction of the track segments and grouser shoes.

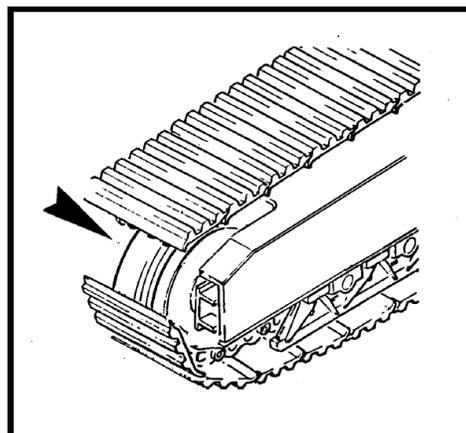
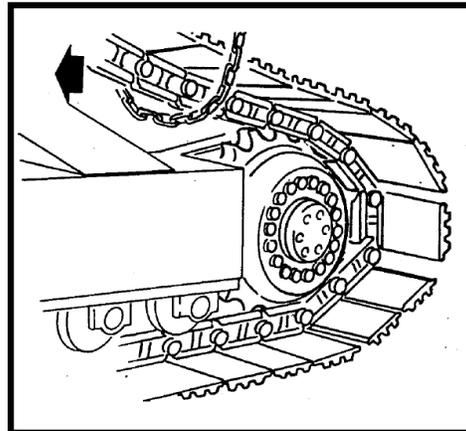
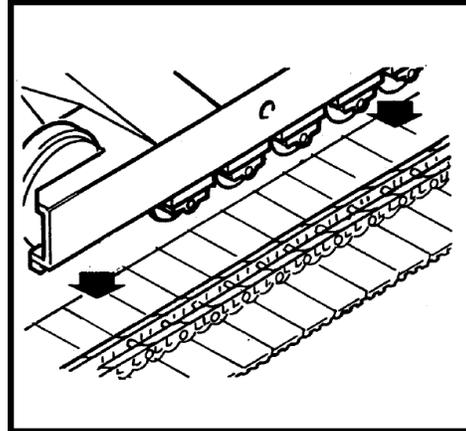




Place the complete pre-assembled side section on the track.  
Important! If running gears (left and right side) have to be positioned to each other, carry out an intermediate check and align appropriately.

If the trackside is standing correctly in line, pull the track over the drive unit in the direction of the front idler over the side section.  
Make sure that the bushings of the track slip into the gaps between the teeth of the sprocket.

End position of the track ends up in the upper section of the front idler.



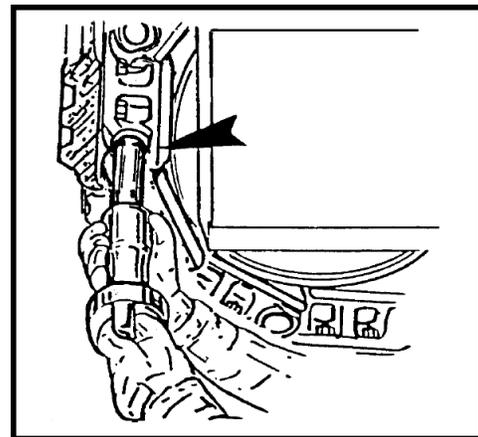
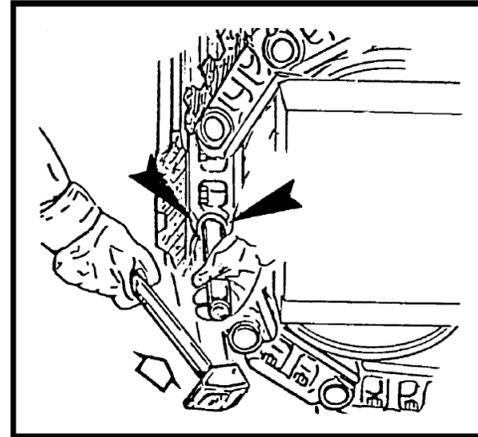
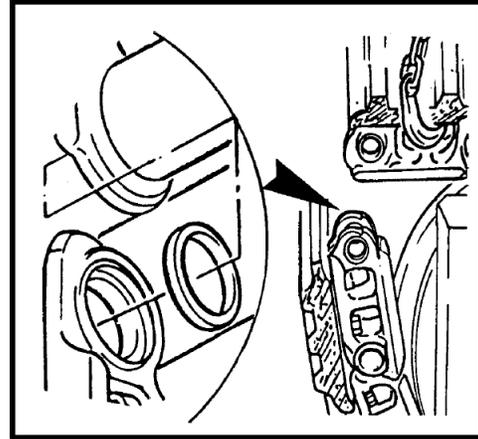


### Design without split master links

Grease two spacers and insert in the counter bores of the track links (use seal washers as well, if necessary).

Align track segments to each other. Grease the tips of the master pin and insert in the hole. Drive in with a heavy hammer if using small track sizes. Observe safety instructions. Driving master pin in and out with a hammer can cause danger by material chipping off. Wear protective goggles.

If using larger tracks, drive the master pin in using a hydraulic pin-driving tool.





### Designs with split master links

Drive track until it is in the position shown. Secure lower track strand on front idler with wooden block. Make sure that the swivel angle is retained for feeding in. Before closing, clean paint and any other foreign bodies off the master link teething and oil lightly.

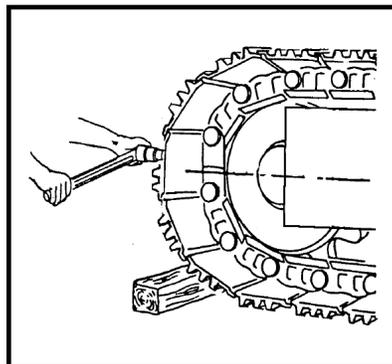
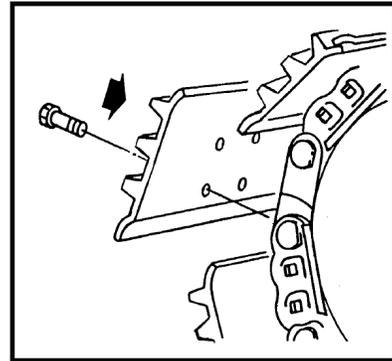
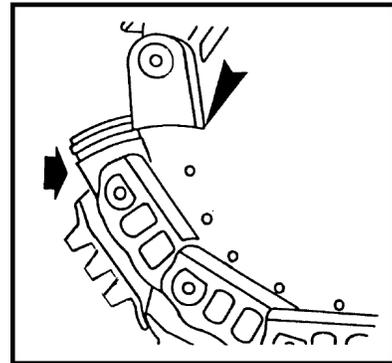
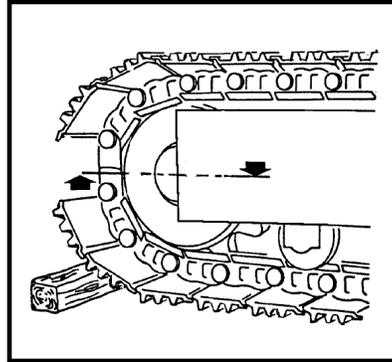
Angle the master link pin end towards the front idler center. Feed in the master link bushing end and join together until the grouser shoe resting surfaces are on a level plane.

#### Important

Take care not to damage grouser shoe resting surfaces. Only the bushing end can be fed in.

Clean the threads of the master link halves.  
Apply oil to the track bolts.

Tighten track bolts with a torque wrench (see Tightening Torque table)





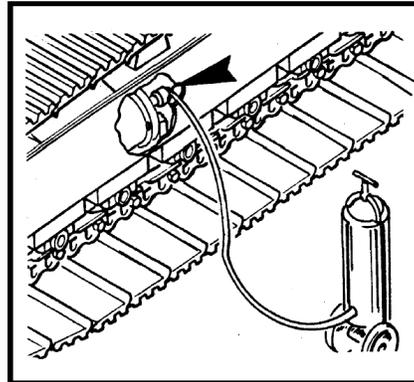
## Tightening the track (all models)

Attention must be paid that all components of the track are in the correct position.

A grease gun is required for tightening. Push the connector on the end of the hose over the grease nipple of the grease-tensioning valve. Activate the grease gun for as long as necessary until the track tension is correct (see notes on tensioning element in the “Front idler unit” chapter).

On some designs, it may be necessary for a pressure gauge to be fitted on the grease gun.

Grease gun adaptor fittings can be purchased from Intertractor America under part number UQ900Z00N40001. This part includes the button head fitting along with grease gun hose.

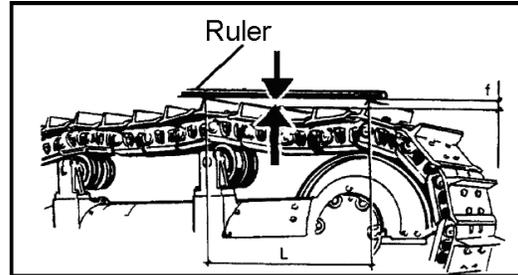




### Important!

There must be sag of 2-3 cm over a length (L) of 1 m. This applies linear for the free length (L) smaller or greater than 1 m (at least 4 track elements).

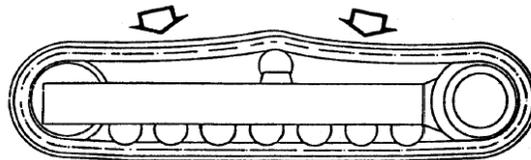
Measure the extent of sag using a ruler. This is achieved by measuring the distance (f) from the edge of the grouser shoe to the ruler (in the middle of the sag).



Remove the connector upon completion of the tensioning process. The undercarriage should now be moved back and forth by about 1 turn of the sprocket. Check position of the tracks on front idler and sprocket.

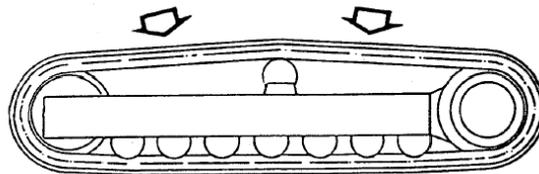


Tracks that are too loose can slip out of the flanges of the rollers, sprocket and front idler and increase wear.



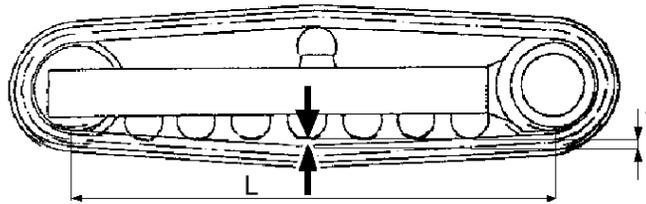
Tracks that are too tight increase the wear on the front idler and drive bearings as well as the wear on track pins and bushings.

It also requires greater motor output for driving and consequently a higher consumption of fuel.





Depending on the design, it is possible that there is no sag in the upper strand on some models. In this case, the track tension can be set by pressure measurement in the tensioning element or by lifting the undercarriage (measurement of the sag in the lower strand – the above rules for the distances  $L$  and  $f$  also apply in this case).



## Removing the crawler track

Position the undercarriage so that the master pin (pin has a hole in the facing side) is within the lower section of the front idler, approx. under 45° from the middle downwards).

### Important!

Secure grouser shoe with wooden block against falling out after opening the track. The track must be de-tensioned first. This is achieved by unscrewing the grease nipple on the grease-tensioning valve until grease can emerge from the side hole of the nipple (see Front idler unit chapter → Tensioning element).

### Important!

**The grease in the tensioning element is under pressure. Undo the filling valve carefully and slowly – but not too far!**

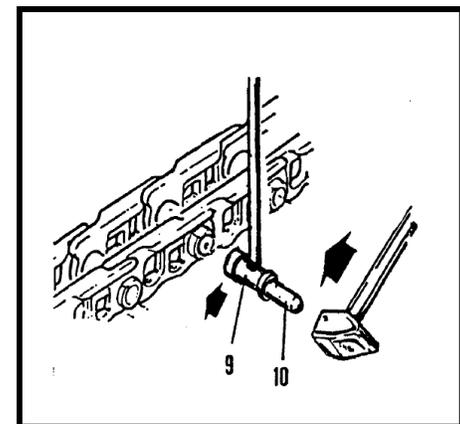
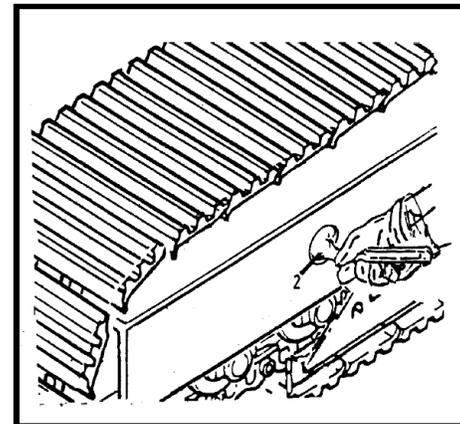
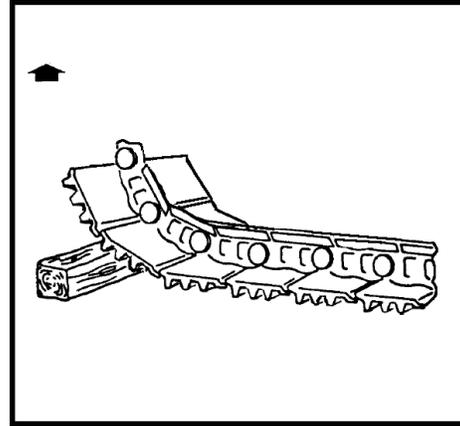
The front idler turns back automatically or it will have to be turned back manually.

### Important!

**Observe the safety instructions for the spring elements in the Front idler unit chapter (the Front idler unit reset can occur as a result of design or damage to the spring unit).**

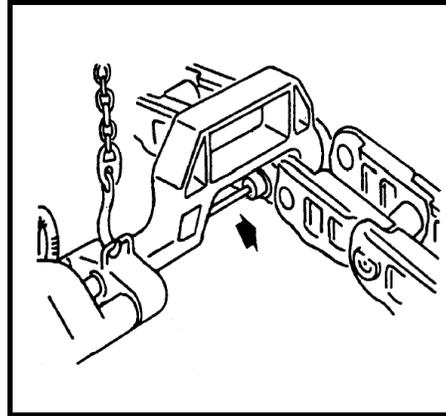
### Design without master links

Establish where the master pin is located. Apply guide pipe (9). Insert drive mandrel (10) and knock out pin.





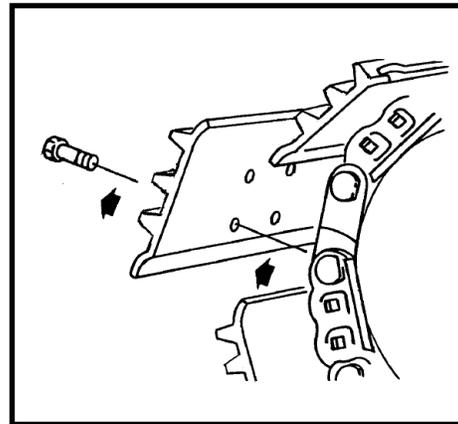
For larger tracks, press the master pin out using a hydraulic pin remover.



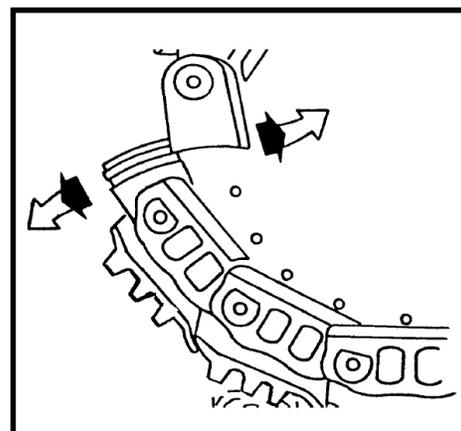
### Design with master links

Drive track to sprocket until the master link and sprocket centre are at the same height.

Secure track against rolling off front idler. Remove shoe over master link.



Knock the pin end of the master link towards the drive middle or press the bushing end out of the pin end using a rod or crowbar until the track has been opened.



### Important for K-LOC designs!

Only the bushing end can be opened outwards. Open out the end of the track.

There are various designs of master links that are not shown here in detail.



**The following applies for all designs:**

Pull the track off in the drive direction using suitable lifting gear.  
Lay track out. Raise machine so that the track can be removed.

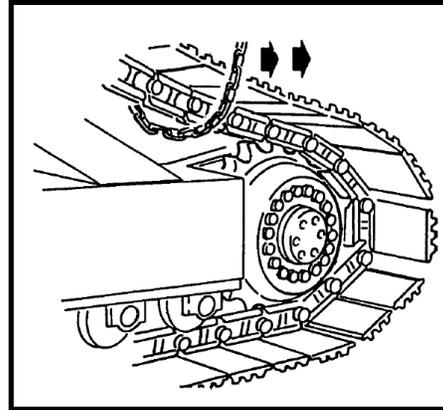
**Caution!**

**Do not drive the undercarriage off the track after laying out. There is a danger of non-braked undercarriages rolling. Secure the undercarriage against any unintentional rolling.**



People should not be standing within the danger area of the track when pulling it off because the track sets down on the ground suddenly.

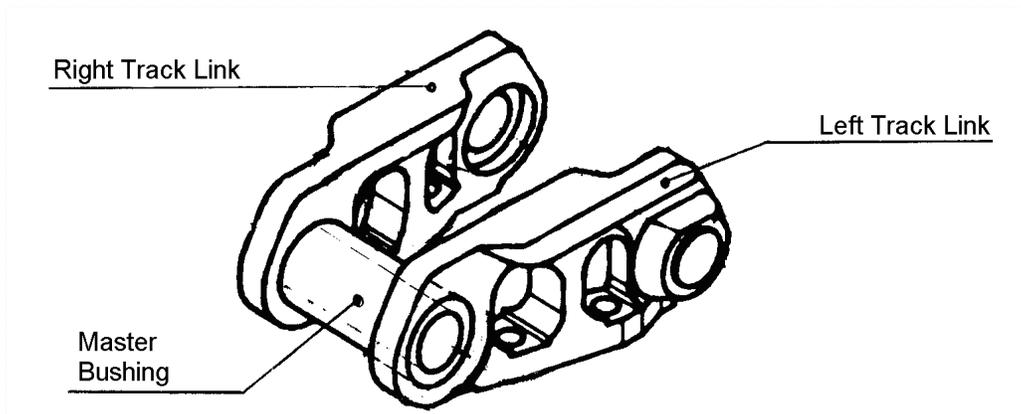
Fit new track as described under Fitting Crawler Track above, or replace damaged track element as described in next section.



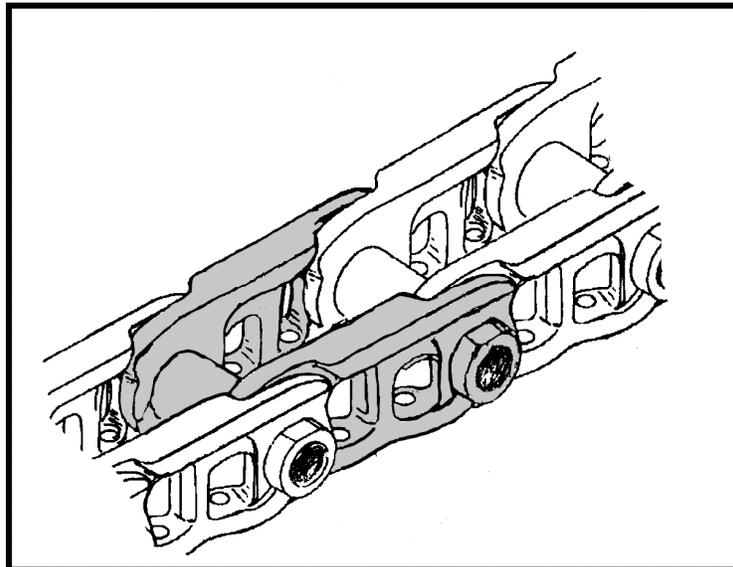
## 7.2.3 Removal and repair (crawler track / grouser shoe)

The repair segment differs from the element that is already fitted in the existing track.

### Repair segment



### Existing track



Necessary spare parts:

- Repair segment as shown above
- Master pins
- Spacers (poss. seal washers)



## Repair / Replacement of a track segments

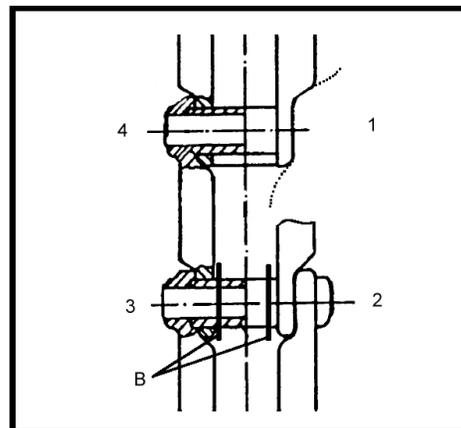
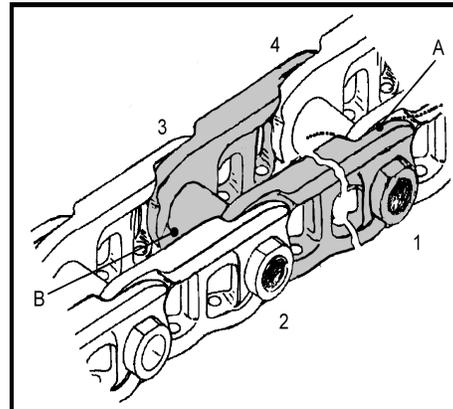
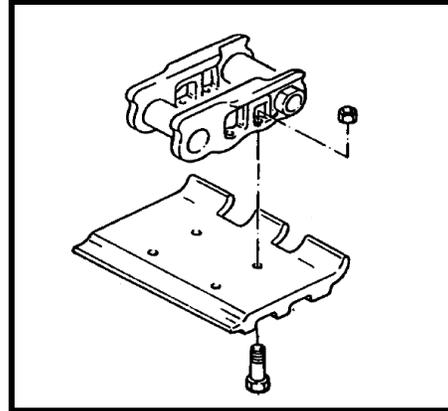
The bolts have to be removed in order to be able to reach a damaged track link or replace a damaged grouser shoe.



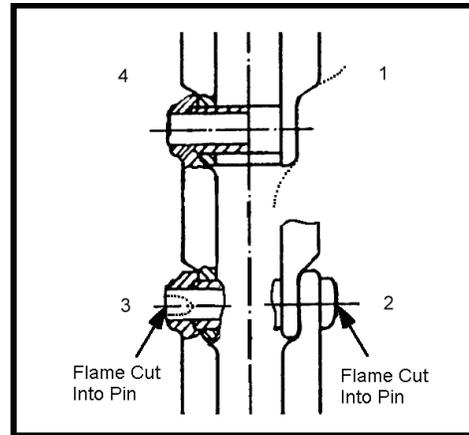
Observe personal safety requirements and fire prevention regulations.

If a track link has been damaged, a repair segment can replace it. To do so, using a flame cutter cut through the damaged track links from above at point (A). The flame-cut section on side 1 drops out.

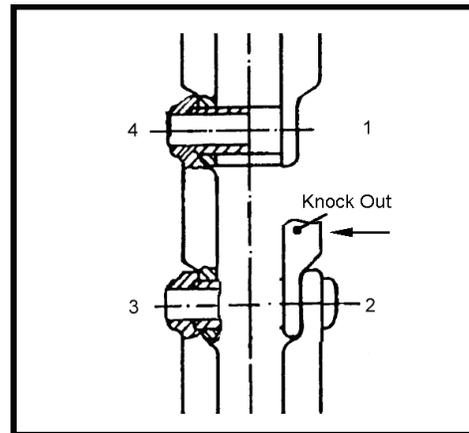
Also cut through the pins and bushings at the marked points (B) using the flame cutter. Remove cut parts.



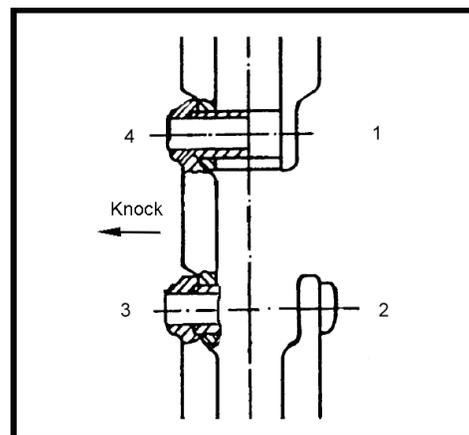
Flame cut into the pins in the middle on sides 2 and 3 by about 20 – 40 mm depending on the track size.



Knock out remaining track link with remaining bushing on side 2 inwards. Also knock out remaining pins.



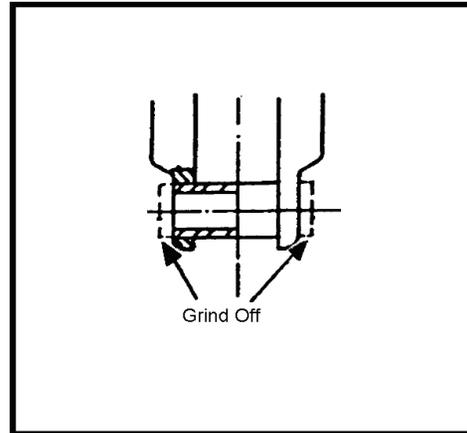
Knock track link on side 3 from out to in until the bushing emerges from the track seat and the track link rotates around the hinge on side 4.  
Remove residual pins first if there is not enough play in the track.



Then knock the track link with the residual pins on side 4 from in to out.



Grind off protruding bushing ends at the sides and grind flat any damage caused by flame cutting the track link at the side.

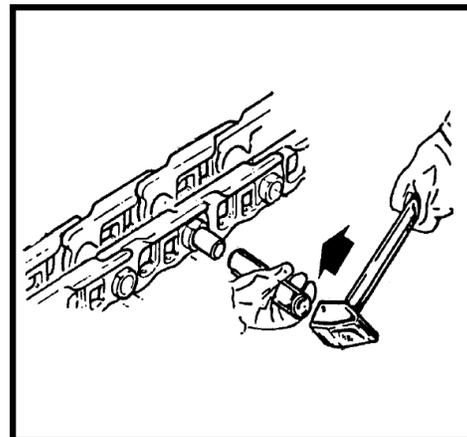


Insert spacers (poss. seal washers) and insert segments in track.

Knock or press in (on larger tracks) both master pins. If knocking in, make sure to provide counter-pressure behind the track link.

Grease tips of pins and insert in the holes. Drive in with heavy hammer on smaller track sizes.

A pin-driving tool is necessary for larger tracks (see illus. in previous section).



Screw grouser shoe onto repair segment as described in previous section.

## 8. Other/Special components

### 8.1. Track guide – Function and operation

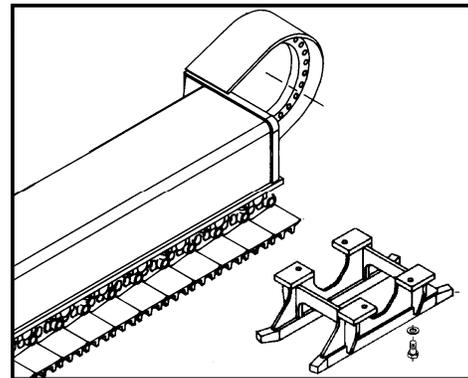
#### 8.1.1 In general

Track guides are used wherever track sag occurs on undercarriages while travelling over obstructions. The result is that the track can run outside the flanges of the track rollers.

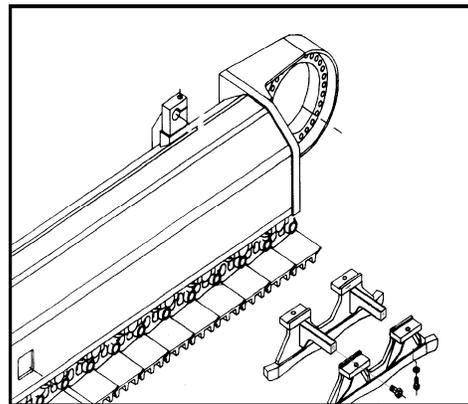
There are various types of track guides. Differentiation is made between welded and bolted designs. There are also designs that cover the complete length of the undercarriage and others that are fitted in sections.

#### 8.1.2 Types of track guide

Track guide, welded design as segment  
(With this design, the undercarriage has to be raised for fitting or removal).

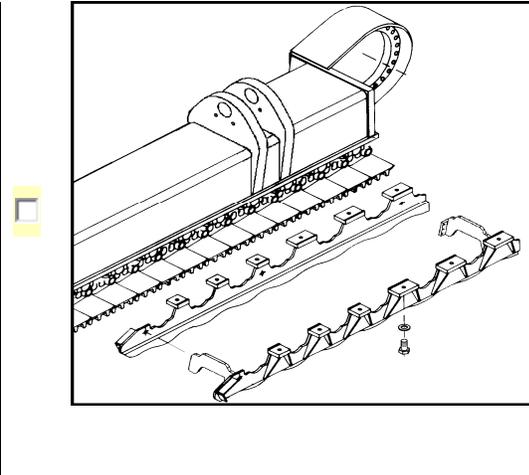


Track guide, bolted design as segment  
(With this design, the undercarriage does not have to be raised for fitting or removal).



Version without cross-link possible →  
"lightweight design"

Track guide, bolted design over complete length of the side frame.  
(With this design, the undercarriage does not have to be raised for fitting or removal).



### 8.1.3 Function

The track guide acts as a "threading aid" for the track. If sagging occurs in the track, it comes away from the track rollers. As the sag recedes, the track guide ensures that the track and the track roller are properly aligned again.

## 8.2. Track guide – Fitting and removal

### 8.2.1 General description

There are two fundamental designs of track guide.

In the case of the **welded design**, the undercarriage has to be raised in order to be able to fit the track guide because there is no possibility of fitting the chain guide from the side. After raising the undercarriage, the track guide is mounted onto the undercarriage with bolts with Loctite Red (#262) applied to the threads. Removal is analogue in reverse order.

In the case of **bolted designs**, they can be fitted without raising the undercarriage because the track guide is in several parts. In this case, one side of the track guide is bolted onto the undercarriage. The cross link is then connected to the first side of the track guide. The second side of the track guide is then bolted onto the cross-link. The second side is then connected to the undercarriage with bolts having Loctite Red (#262) applied to the threads. Removal is analogue in reverse order.



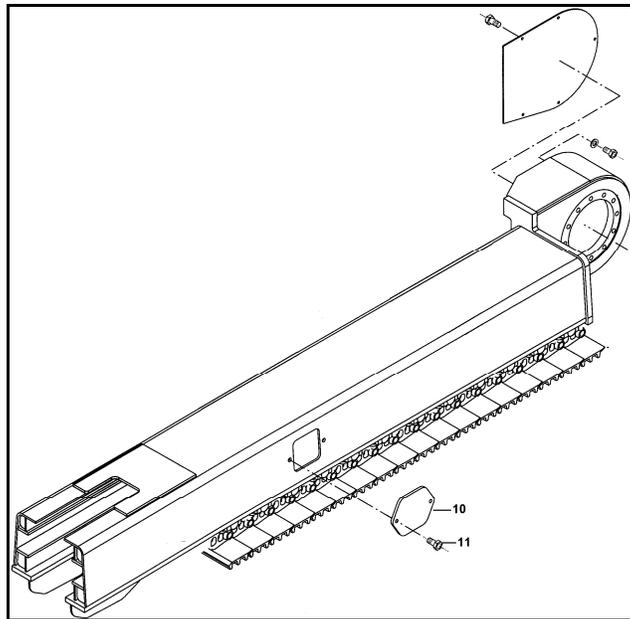
Attention must be paid that there is no contact between the track guide and the track roller body and that there is adequate play between the track guide and the track (pin boss of the track).

## 8.3. Covers

### 8.3.1 In general

Covers are shown in the following illustration, they occur on all standard undercarriages (not all covers are present on all undercarriages).

It is also possible that additional covers are present on the undercarriage that is not shown in the illustration. Typical covers are for the hydraulic motor or for the hand hole for access to the lubrication nipple of the tensioning element.



Take care when handling the plates as they can be very heavy depending on size and can therefore cause injuries.

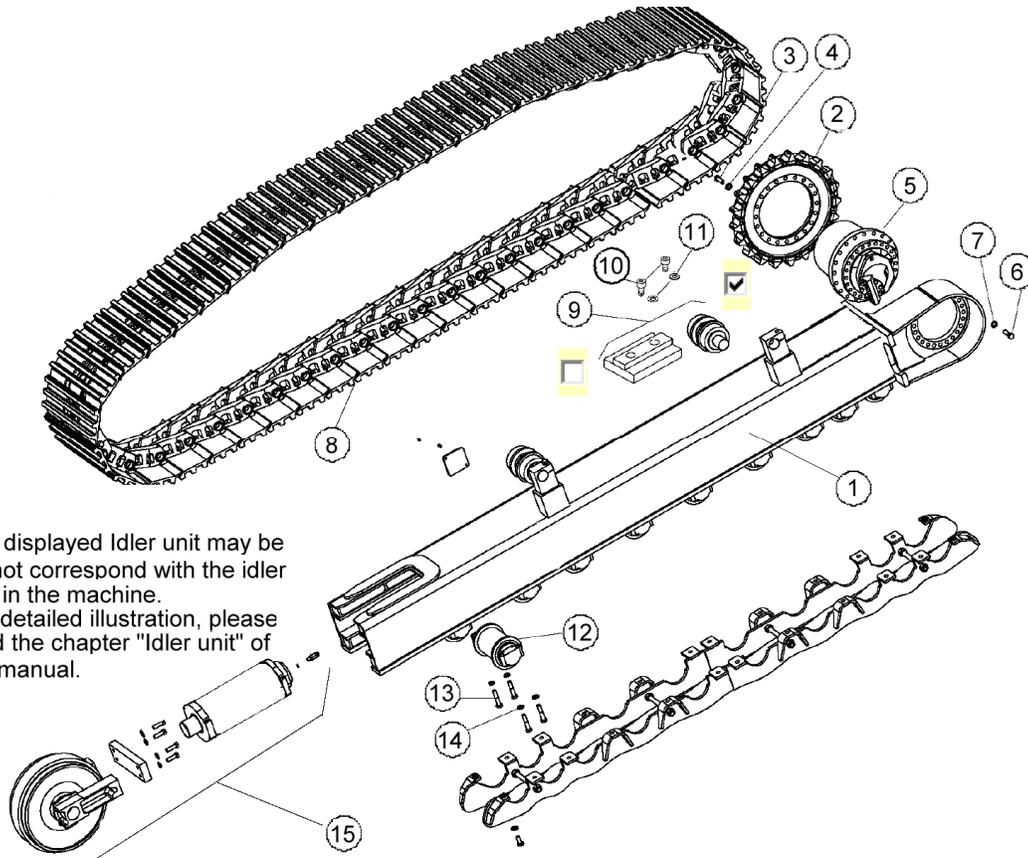
### 8.3.2 Function

Covers made of sheet metal are used on an undercarriage. They are used for:

- Covering units and hydraulic lines
- Protection against dirt and contamination
- Protecting people against injury

## 9. Spare Parts UQ908A00N00013/14

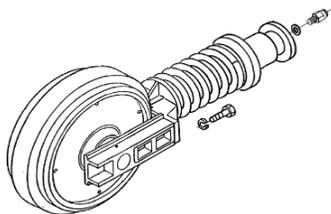
### 9.1. Exploded View



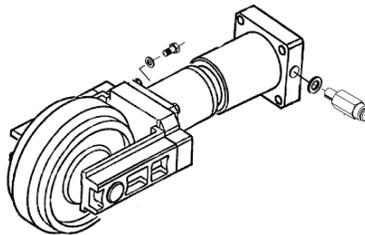
The displayed Idler unit may be do not correspond with the idler unit in the machine. For detailed illustration, please read the chapter "Idler unit" of the manual.

\*) The upper illustration is only symbolic.

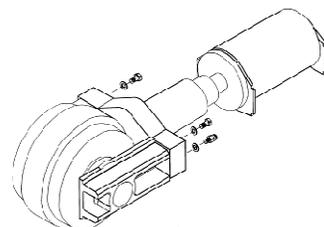
#### 9.1.1 Type of tension group



Spring coil



Nitrogen



Elastomer

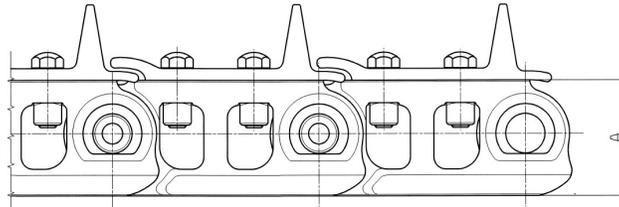


**9.2. BOM UQ908A00N00013/14**

POS.		PART NUMBER	DESCRIPTION	QTY
1		UQ908A00N40007/8	Steel Frame	1
2		R01080A0Y01	Sprocket	1
3		UQ900Z00N60313	Bolt (Sprocket)	27
4		WW0025916 09	Washer (Sprocket)	27
		UQ908Z00N60056	Sprocket Adaptor	1
		WW0025857 09	Bolt (Sprocket Adaptor)	28
		WW0046159 09	Washer (Sprocket Adaptor)	28
5		N/A	Final Drive (supplied by customer)	1
6		WW0027318 09	Bolt (Final Drive)	28
7		WW0046159 09	Washer (Final Drive)	28
<b>8</b>		<b>L14081E0Y63900</b>	<b>Track Chain With Shoes</b>	<b>1</b>
	8.1	FY4088E0Y00063	Track Chain Without Shoes	1
	8.2	Z1408100N0900V	Shoe	63
	8.3	D14080A0N15	Bolt (Shoe to Chain)	252
	8.4	D14080A0N17	Nut (Shoe to Chain)	252
9		C01081A0Y00	Carrier Roller	3
10		WW0029614 09	Bolt (Carrier Roller)	3
11		WW0046159 09	Washer (Carrier Roller)	3
12		A14080CAY00	Track Roller	12
13		WW0028669 09	Bolt (Track Roller)	48
14		WW0025917 09	Washer (Track Roller)	48
<b>15</b>			<b>Idler Unit</b>	<b>1</b>
	15.1	PY4083A0Y00	Idler With Brackets & Yoke	1
	15.2	PU1328A0N70	Gas Spring Unit	1
	15.3	WW0027245 09	Bolt (Spring to Idler)	4
	15.4	WW0010117 09	Washer (Spring to Idler)	4
	15.5	PY407900N00	Tension Unit	1
	15.6	WW0025344 09	Bolt (Tension Unit to Frame)	4
	15.7	WW0025368 09	Nut (Tension Unit to Frame)	4
	15.8	WW0011368 09	Washer (Tension Unit to Frame)	4
	15.9	SU0944	Grease Fitting	1
	15.10	WW0030142 09	Fitting Seal	1
16		UQ908Z00N60057	Final Drive Cover Plate	1
17		P7611300N06	Bolt (Drive Cover)	5
18		WW0043105 09	Adjuster Cover Plate	1
19		WW0017025 09	Bolt (Adjuster Cover)	4
20		WW0049536 09	Chain Guide (Front/Rear)	2
21		WW0025910 09	Bolt (Chain Guide)	16
22		WW0025917 09	Washer (Chain Guide)	16

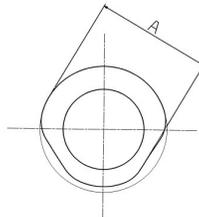
## 10. Component wear tables

### 10.1. Track link and bushing wear measurement



LINK HEIGHT

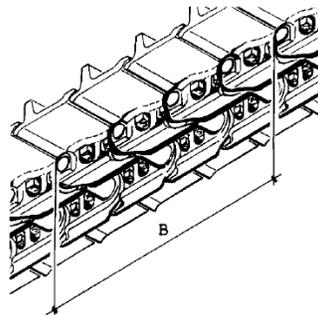
ITM Part Number	New A	10%	20%	25%	30%	40%	50%	60%	70%	75%	80%	90%	100%	110%	120%
FY4088E0Y00063	139.2	138.3	137.3	136.8	136.3	135.2	134.0	132.8	131.5	130.8	130.1	128.6	127.0	125.4	123.8



BUSHING DIAMETER

ITM Part Number	New A	10%	20%	25%	30%	40%	50%	60%	70%	75%	80%	90%	100%	110%	120%
FY4088E0Y00063	76.0	75.5	75.0	74.8	74.5	74.0	73.4	72.7	72.1	71.7	71.4	70.6	69.8	69.0	68.2

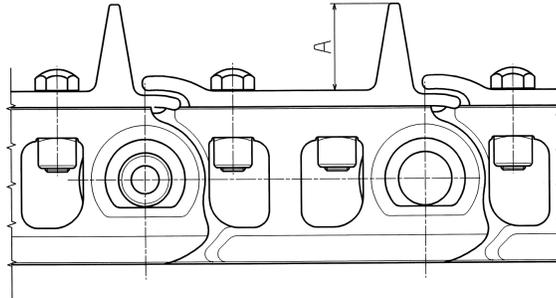
### 10.2. Track chain wear measurement



PIN AND BUSHING PITCH INCREASE

ITM Part Number	New B	10%	20%	25%	30%	40%	50%	60%	70%	75%	80%	90%	100%	110%	120%
FY4088E0Y00063	914.4	916.2	918.0	919.0	920.0	922.1	924.3	926.7	929.3	930.5	931.8	934.8	937.8	940.9	943.9

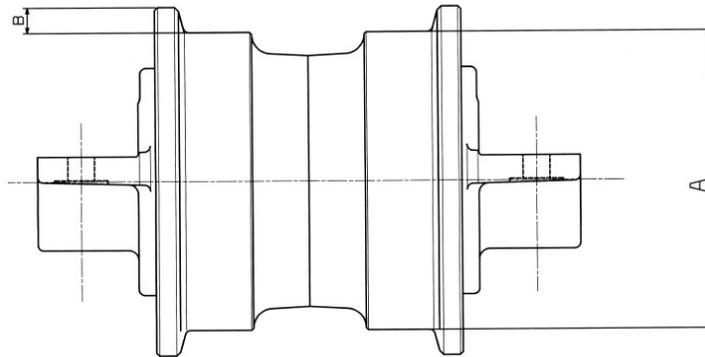
### 10.3. Track shoe wear measurement



STEG HEIGHT

ITM Part Number	New A	10%	20%	25%	30%	40%	50%	60%	70%	75%	80%	90%	100%	110%	120%
Z1408100N0900V	77.5	72.4	67.2	64.7	62.1	56.9	51.8	46.5	41.3	38.7	35.9	30.5	25.0	19.4	13.9

### 10.4. Track roller wear measurement



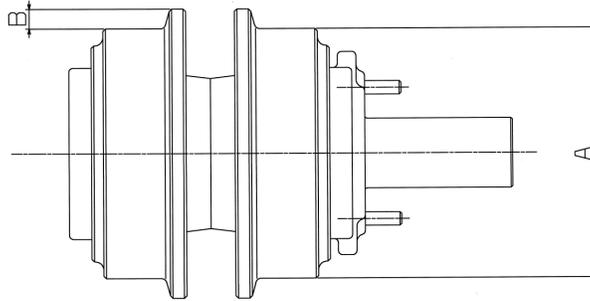
CALIPER METHOD

ITM Part Number	New A	10%	20%	25%	30%	40%	50%	60%	70%	75%	80%	90%	100%	110%	120%
A14080CAY00	250.0	248.1	246.1	245.1	244.0	241.8	239.4	236.9	234.1	232.8	231.4	228.3	225.0	221.7	218.4

DEPTH GAUGE METHOD

ITM Part Number	New B	10%	20%	25%	30%	40%	50%	60%	70%	75%	80%	90%	100%	110%	120%
A14080CAY00	25.0	25.9	26.9	27.5	28.0	29.1	30.3	31.6	32.9	33.6	34.3	35.9	37.5	39.1	40.8

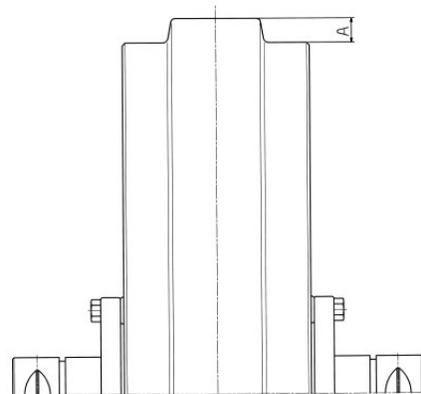
### 10.5. Carrier roller wear measurement



CALIPER METHOD

ITM Part Number	New A	10%	20%	25%	30%	40%	50%	60%	70%	75%	80%	90%	100%	110%	120%
C01081A0Y00	191.0	189.7	188.2	187.4	186.5	184.7	182.8	180.8	178.6	177.4	176.2	173.6	171.0	168.4	165.7

### 10.6. Idler wear measurement



DEPTH GAUGE METHOD

ITM Part Number	New A	10%	20%	25%	30%	40%	50%	60%	70%	75%	80%	90%	100%	110%	120%
PY4083A0Y00	30.0	30.5	30.9	31.2	31.4	32.0	32.6	33.2	33.8	34.2	34.5	35.2	36.0	36.9	37.8