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McCOMEL ROBOCUT

REMOTE CONTROLLED MOWER

Operator & Parts Manual



IMPORTANT

VERIFICATION OF WARRANTY REGISTRATION



DEALER WARRANTY INFORMATION & REGISTRATION VERIFICATION

It is imperative that the selling dealer registers this machine with McConnel Limited before delivery to the end user – failure to do so may affect the validity of the machine warranty.

To register machines go to the McConnel Limited web site at www.mccommel.com, log onto 'Dealer Inside' and select the 'Machine Registration button' which can be found in the Service Section of the site. Confirm to the customer that the machine has been registered in the section below.

Should you experience any problems registering a machine in this manner please contact the McConnel Service Department on 01584 875848.

Registration Verification

Dealer Name:
Dealer Address:
Customer Name:
Date of Warranty Registration:/...../..... Dealer Signature:

NOTE TO CUSTOMER / OWNER

Please ensure that the above section above has been completed and signed by the selling dealer to verify that your machine has been registered with McConnel Limited.

IMPORTANT: During the initial 'bedding in' period of a new machine it is the customer's responsibility to regularly inspect all nuts, bolts and hose connections for tightness and re-tighten if required. New hydraulic connections occasionally weep small amounts of oil as the seals and joints settle in – where this occurs it can be cured by re-tightening the connection – *refer to torque settings chart below*. The tasks stated above should be performed on an hourly basis during the first day of work and at least daily thereafter as part of the machines general maintenance procedure.

CAUTION: DO NOT OVER TORQUE HYDRAULIC FITTINGS AND HOSES

TORQUE SETTINGS FOR HYDRAULIC FITTINGS

HYDRAULIC HOSE ENDS		
BSP	Setting	Metric
1/4"	18 Nm	19 mm
3/8"	31 Nm	22 mm
1/2"	49 Nm	27 mm
5/8"	60 Nm	30 mm
3/4"	80 Nm	32 mm
1"	125 Nm	41 mm
1.1/4"	190 Nm	50 mm
1.1/2"	250 Nm	55 mm
2"	420 Nm	70 mm

PORT ADAPTORS WITH BONDED SEALS		
BSP	Setting	Metric
1/4"	34 Nm	19 mm
3/8"	47 Nm	22 mm
1/2"	102 Nm	27 mm
5/8"	122 Nm	30 mm
3/4"	149 Nm	32 mm
1"	203 Nm	41 mm
1.1/4"	305 Nm	50 mm
1.1/2"	305 Nm	55 mm
2"	400 Nm	70 mm

WARRANTY POLICY

WARRANTY REGISTRATION

All machines must be registered, by the selling dealer with McConnel Ltd, before delivery to the end user. On receipt of the goods it is the buyer's responsibility to check that the Verification of Warranty Registration in the Operator's Manual has been completed by the selling dealer.

1. LIMITED WARRANTIES

- 1.01. All machines supplied by McConnel Limited are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 12 months, unless a different period is specified.
- 1.02. All spare parts supplied by McConnel Limited are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 6 months.
- 1.03. The manufacturer will replace or repair for the purchaser any part or parts found, upon examination at its factory, to be defective under normal use and service due to defects in material or workmanship. Returned parts must be complete and unexamined.
- 1.04. This warranty does not apply to any part of the goods, which has been subjected to improper or abnormal use, negligence, alteration, modification, fitment of non-genuine parts, accident damage, or damage resulting from contact with overhead power lines, damage caused by foreign objects (e.g. stones, iron, material other than vegetation), failure due to lack of maintenance, use of incorrect oil or lubricants, contamination of the oil, or which has served its normal life. This warranty does not apply to any expendable items such as blades, flails, flap kits, skids, soil engaging parts, shields, guards, wear pads or pneumatic tyres.
- 1.05. Temporary repairs and consequential loss - i.e. oil, downtime and associated parts are specifically excluded from the warranty.
- 1.06. Warranty on hoses is limited to 12 months and does not include hoses which have suffered external damage. Only complete hoses may be returned under warranty, any which have been cut or repaired will be rejected.
- 1.07. Machines must be repaired immediately a problem arises. Continued use of the machine after a problem has occurred can result in further component failures, for which McConnel Ltd cannot be held liable, and may have safety implications.
- 1.08. Except as provided herein, no employee, agent, dealer or other person is authorised to give any warranties of any nature on behalf of McConnel Ltd.
- 1.09. For machine warranty periods in excess of 12 months the following additional exclusions shall apply:
 - 1) Hoses, external seals, exposed pipes and hydraulic tank breathers.
 - 2) Filters.
 - 3) Rubber mountings.
 - 4) External electric wiring.
- 1.10. All service work, particularly filter changes, must be carried out in accordance with the manufacturer's service schedule. Failure to comply will invalidate the warranty. In the event of a claim, proof of the service work being carried out may be required.

NB Warranty cover will be invalid if any non-genuine parts have been fitted or used. Use of non-genuine parts may seriously affect the machine's performance and safety. McConnel Ltd cannot be held responsible for any failures or safety implications that arise due to the use of non-genuine parts.

2. REMEDIES AND PROCEDURES

- 2.01. The warranty is not effective unless the Selling Dealer registers the machine, via the McConnel web site and confirms the registration to the purchaser by completing the confirmation form in the operator's manual.
- 2.02. Any fault must be reported to an authorised McConnel dealer as soon as it occurs. Continued use of a machine, after a fault has occurred, can result in further component failure for which McConnel Ltd cannot be held liable.
- 2.03. Repairs should be undertaken within two days of the failure. Claims submitted for repairs undertaken more than 2 weeks after a failure has occurred, or 2 days after the parts were supplied will be rejected, unless the delay has been authorised by McConnel Ltd.
- 2.04. All claims must be submitted, by an authorised McConnel Service Dealer, within 30 days of the date of repair.
- 2.05. Following examination of the claim and parts the manufacturer will pay, at their discretion, for any valid claim the cost of any parts and an appropriate labour allowance if applicable.
- 2.06. The submission of a claim is not a guarantee of payment.
- 2.07. Any decision reached by McConnel Ltd. is final.

3. LIMITATION OF LIABILITY

- 3.01. The manufacturer disclaims any express (except as set forth herein) and implied warranties with respect to the goods including, but not limited to, merchantability and fitness for a particular purpose.
- 3.02. The manufacturer makes no warranty as to the design, capability, capacity or suitability for use of the goods.
- 3.03. Except as provided herein, the manufacturer shall have no liability or responsibility to the purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the goods including, but not limited to, any indirect, special, consequential, or incidental damages resulting from the use or operation of the goods or any breach of this warranty. Notwithstanding the above limitations and warranties, the manufacturer's liability hereunder for damages incurred by the purchaser or others shall not exceed the price of the goods.
- 3.04. No action arising out of any claimed breach of this warranty or transactions under this warranty may be brought more than one (1) year after the cause of the action has occurred.

4. MISCELLANEOUS

- 4.01. The manufacturer may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.
- 4.02. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.
- 4.03. Applicable law may provide rights and benefits to the purchaser in addition to those provided herein.



DECLARATION OF CONFORMITY

Conforming to EU Machinery Directive 2006/42/EC

We,

McCONNEL LIMITED, Temeside Works, Ludlow, Shropshire SY8 1JL, UK

Hereby declare that:

The Product; Radio Controlled Tracked Mower

Product Code; RMOW

Serial No. & Date Type

Manufactured in; Italy

Complies with the required provisions of the Machinery Directive 2006/42/EC
The machinery directive is supported by the following harmonized standards;

- BS EN ISO 14121-1 (2007) Safety of machinery - Risk assessment, Part 1: Principles Part 2: practical guide and examples of methods.
- BS EN ISO 12100-1 (2010) Safety of machinery - Part 1: Basic terminology and methodology Part 2: Technical principles.
- BS EN 349(1993)+ A1 (2008) Safety of machinery - Minimum distances to avoid the entrapment with human body parts.
- BS EN 953 (1998) Safety of machinery - Guards General requirements for the design and construction of fixed and movable guards.
- BS EN 982(1996)+ A1 (2008) Safety requirements for fluid power systems and their components. Hydraulics

McCONNEL LIMITED operates an ISO 9001:2008 quality management system, certificate number: FM25970.

This system is continually assessed by the;
British Standards Institution (BSI), Beech House, Milton Keynes, MK14 6ES, UK
BSI is accredited by UK Accreditation Service, accreditation number: UKAS 003.
The EC declaration only applies if the machine stated above is used in accordance with the operating instructions.

Signed *Responsible Person*
CHRISTIAN DAVIES on behalf of **McCONNEL LIMITED**

Status: General Manager

Date: May 2011

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GENERAL INFORMATION

Always read this manual before attempting to operate the machine – whenever any doubt exists contact your dealer or the McConnel Service Department for advice and assistance.

Use only McConnel Genuine Service Parts on McConnel Equipment and Machines

DEFINITIONS – *The following definitions apply throughout this manual:*

WARNING

An operating procedure, technique etc., which –
can result in personal injury or loss of life if not observed carefully.

CAUTION

An operating procedure, technique etc., which –
can result in damage to either machine or equipment if not observed carefully.

NOTE

An operating procedure, technique etc., which is –
considered essential to emphasis.

LEFT AND RIGHT HAND

These terms are applicable to the machine when it is viewed from the rear facing forwards.

Note: The illustrations in this manual are for instructional purposes only and may on occasion not show some components in their entirety. In some instances an illustration may appear slightly different to that of your particular model but the general procedure will be the same. E&OA.

MACHINE & DEALER INFORMATION

Record the Serial Number of your machine on this page and always quote this number when ordering parts. Whenever information concerning the machine is requested remember also to state the make and model of tractor to which the machine is fitted.

Machine Serial Number:

Installation Date:

Machine Model details:

Dealer Name:

Dealer Address:

Dealer Telephone No:

Dealer Email Address:

FEATURES & SPECIFICATIONS

RoboCut

- 40HP (29kW) 3 Cylinder ISUZU Diesel Engine
- Tracked Carriage Hydraulically Driven via Piston Pumps
- Self-Tightening Tracks
- Remote Controlled Operation (up to 150m range)
- Rubber Tracks with Removable Riveted Stirrups
- Rubber Stopper Spike Protection for Transport
- Potentiometer Speed Control from 0 to 100%
- Independent Cooling System for Hydraulic Circuits
- Self-Cleaning Reversible Fan
- Electronically Controlled, Hydraulically Powered Flail Head
- Proportional Joystick Speed Control – Forwards & Backwards 0 to 7km/h
- 21 Litre Fuel Tank Capacity
- 1280mm Carriage Width
- 1.3m Flail Head capable of cutting materials up to 30mm diameter
- Machine Weight 1000kg





This machine has the potential to be extremely dangerous - in the wrong hands it can kill or maim; It is therefore imperative that both owner and operator of the machine reads and understands the following section to ensure they are fully aware of the dangers that do, or may exist, and their responsibilities surrounding the use and operation of the machine.

The operator of this machine is responsible not only for their own safety but equally for the safety of others who may come into the close proximity of the machine, as the owner you are responsible for both.

When the machine is not in use it should be parked on a firm level site with the cutting head resting on the ground and the starting key removed.

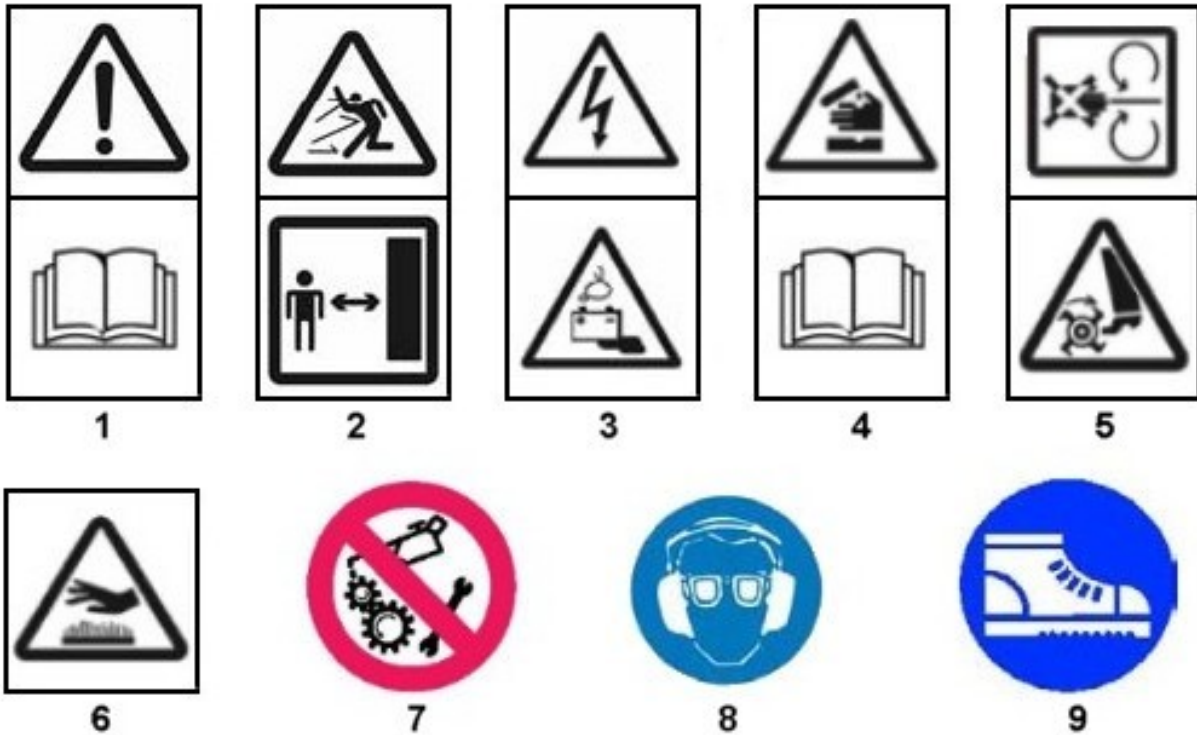
In the event of any fault being detected with the machine's operation it must be stopped immediately and not used again until the fault has been corrected by a qualified technician.

- *Before starting the machine the operator must read and understand all aspects of use and maintenance of the machine as stated in this manual.*
- *The machine must only be used by a responsible adult who is familiar with all aspects relating to safe operation.*
- *The machine must not be operated by children or non-authorized persons.*
- *Operators must know the meaning of all operation and safety decals on both the machine and the remote control unit.*
- *Operators must know the procedure for switching the machine off normally and by using the Emergency Stop.*
- *Do not attempt to use the machine if the Emergency Stop switch is damaged or malfunctioning.*
- *Never use the machine with safety guarding removed or defective.*

- *Operators should practice operation on flat open ground to familiarise themselves with driving and manoeuvring the machine before attempting to use it on sloping ground.*
- *Operators should practice manoeuvring the machine around obstacles without the flail head running before using the machine for work purposes.*
- *Never operate the machine when your vision is blocked by obstacles such as vehicles, buildings, hedges etc.; move to a position where you have an un-interrupted view of the machine.*
- *Never operate the machine standing directly in the line of travel.*
- *Do not use the machine on sand piles, gravel, or similar materials.*
- *Only operate the machine in good light conditions.*
- *Never run the machine in an enclosed area or building.*
- *Keep the machine clean to avoid build ups of dry materials that could ignite on hot components.*
- *Never stand directly below a machine that is operating or parked on a slope.*
- *Always operate the joystick control slowly; rapid or jerky movements can cause the machine to rear up causing loss of control.*
- *When operating the machine with the flail head running the operator must remain at least 5 metres away from the machine; always switch the flail head off before approaching it.*
- *When using the machine the operator should place themselves in a position that provides optimum visibility over the work area.*
- *Never leave a running machine unattended; always switch the engine off and remove the ignition key.*
- *Always stop and switch the machine off if persons or animals enter the work area, do not restart the machine until they are at a safe distance.*
- *Never use the machine to perform tasks it was not designed for.*
- *Never ride, or allow others to ride on the machine.*
- *Always inspect the work area prior to operation and remove stones, glass, metal, wire or any other foreign objects that are hazardous. Immovable hazards should be 'marked' so they can be avoided.*
- *Take extra care when operating the machine on slopes or uneven ground, there is increased risk of objects being thrown from the flail head when working in these conditions.*
- *The machine can be used on slopes of up to 50° (maximum) providing the surface is dry and firm.*

- *Should a machine overturn, a suitable crane or winch should be used to recover it, keep all persons at a safe distance before and during recovery.*
- *Do not operate the machine in foggy or frosty conditions as there is increased risk of accidents.*
- *Take extra care when working in close proximity to electrical cables; in some circumstances, operating the machine under overhead power lines can result in loss of radio signal causing the engine to deactivate.*
- *Do not operate the machine close to vehicles or properties where there is risk of damage by objects accidentally thrown from the flail head.*
- *It is the user's responsibility to protect persons in or near the work zone.*
- *When servicing or maintaining the machine no one should be allowed beneath it when it is raised unless it is securely supported on suitable ramps or stands.*
- *Never attempt to service or maintain the machine whilst it is running; always switch off the engine and remove the starting key.*
- *When transporting the machine on another vehicle or trailer the engine must be switched off and the machine chocked and secured using suitable ropes or chains.*
- *Check the condition of the flails and fixings on a regular basis; never use the machine with damaged/missing flails or loose fixings.*
- *Always clean the machine after use; care must be taken if the machine is hot. Never use solvent based chemicals for cleaning.*
- *When operating in excessively dusty conditions work may need to be interrupted on a regular basis to remove any build ups of dust on components that could cause overheating.*
- *Always press the Emergency Stop switch before refuelling.*
- *Wherever possible refuel the machine before work when the engine is cold. If refuelling during work, switch off the engine and allow it to cool before adding fuel.*
- *Test the Emergency Stop switch before each period of work to ensure it functions correctly.*
- *Never leave the machine, ignition key and control unit unattended where it could be started and used by un-authorized persons.*
- *Any inspection, service or maintenance of the flail head must only be performed with machine switched off and the starting key removed.*
- *Always wear safety gloves and glasses when performing service or maintenance on the flail head.*
- *Flail head must always be switched off when manoeuvring outside of the work zone.*

SAFETY & WARNING DECALS



1.

WARNING: Read the manual first.

2. DANGER: Risk of thrown objects, keep your distance.

3. DANGER: Electrical voltage and harmful substances.

4. DANGER: Acid, read the user and maintenance manual.

5. DANGER: Rotating components, keep clear.

6. DANGER: Hot components, risk of burns.

7. WARNING: Do not lubricate or service moving components, stop the machine first.

8. ADVISORY: Always wear ear defenders and safety glasses when using the machine.

9. ADVISORY: Always wear safety footwear when using the machine.

SAFETY DEVICES & EMERGENCY STOP

Automatic Emergency Safety Features

As the RoboCut is operated by remote control and the user is not directly operating the driving elements of the machine specific safety features have been built in to protect the user, third party persons and the machine itself; these are as follows

Danger / Risk Situation	Automatic Safety Feature
Machine beyond signal reception area or radio signal blocked.	EMERGENCY STOP will activate.
Radio signal failure.	EMERGENCY STOP will activate.
Another machine on same frequency operating in the area.	EMERGENCY STOP will activate.

Manual Emergency Safety Feature

In addition to the automatic safety features stated above the operator can immediately stop the machine either by pressing the Emergency Stop button located on the remote control unit or by pressing the Emergency Stop button located on the top panel of the machine itself.

In all instances stated above, emergency stopping of the machine will take a maximum of 0.2 seconds from execution of the automatic or manual command and the following actions will occur;

- Engine will be switched off
- Ignition will be turned off.
- Machine movement will be halted.
- Electrical voltage will be deactivated.
- Entire electrical system will be disabled.

In the unlikely event of movement malfunction

If machine movements perform in an unexpected or incorrect manner follow the instructions below;

- 1) Release the forwards/backwards movement joystick – *the control is equipped with automatic zero position; on release it will automatically return to the central (stop) position, this action activates the track brakes.*
- 2) Press the Emergency Stop button on the control unit.

DANGER! Do not approach the machine if it is moving.

- 3) Press the machine's Emergency Stop button.
- 4) Turn the ignition key into the off position (*anti-clockwise*) and remove the key.

Contact your Authorised Dealer or McConnel Service – do not attempt to operate the machine until advice has been sought.

MACHINE DELIVERY

The machine will be delivered ready for use having been pre-filled with all necessary lubricants and fluids other than fuel.

Before use all packaging must be removed and the transport fasteners loosened.

The reception antenna will be supplied as a loose item and must be screwed onto the machines receiver prior to use.

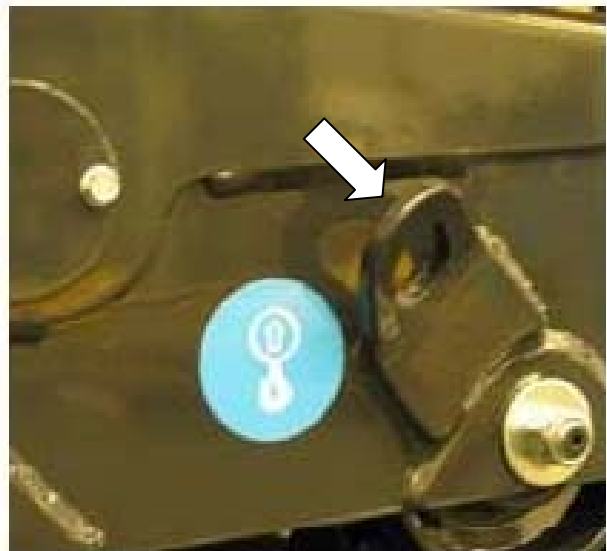
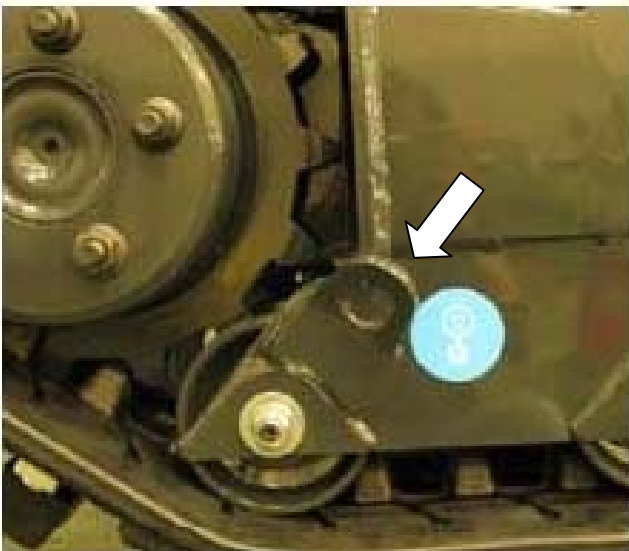
The standard items supplied will be as follows:

Standard Equipment

- *Machine with Mounted Receiver*
- *Transmitter and Battery Pack*
- *Reserve Battery Pack*
- *Battery Charger 12V CA*
- *Antenna*
- *Belt for the Radio Control*
- *Ignition Key*
- *Use and Maintenance Manual for Machine*
- *Use and Maintenance Manual for Transmitter*
- *Use and Maintenance Manual for Engine*

Machine Lifting Points

The photos below shown the machine's lifting points; the lifting eyes are located at each end of the track plates on both sides of the machine. The positions of the lifting points enable the machine to be safely raised using suitable overhead lifting equipment.



Note: All equipment used to raise the machine must have a SWL in excess of the total weight of the machine – keep all persons at a safe distance from the machine during the lifting procedure.

MACHINE OVERVIEW – Component Identification



◀ Right Side View

1. Oil Tank
2. Diesel Fuel Tank
3. Track Tensioner Access
4. Track Roller
5. Drive Wheel
6. Alternator (12V)

Left Side View ▶

1. Hydraulic Motor
2. Electrics
3. Warning Beacon Mount
4. Water / Oil Radiator
5. Conveyor & Radiator Guard
6. Rubber Tracks
7. Electric Actuator
8. Track Tensioner Access
9. Lubrication Point
10. Hydraulic Ram (Front Hood)



◀ Engine Top View

1. Air Filter Clogging Sensor
2. Radio Control Antenna
3. Warning Beacon Mount
4. Engine Oil Filler Plug
5. Air Filter
6. Air Filter Breather

Engine Right Side View ►

1. Radiator Filler
2. Radio Control Antenna
3. Warning Beacon Mount
4. Emergency Stop Switch
5. Electric Plug for Services (12V)
6. Horn
7. Electric Compressor (Self-Cleaning Radiator Fan)
8. Ant-vibration Engine Support
9. Exhaust Pipe
10. Alternator (12V)
11. Air Filter



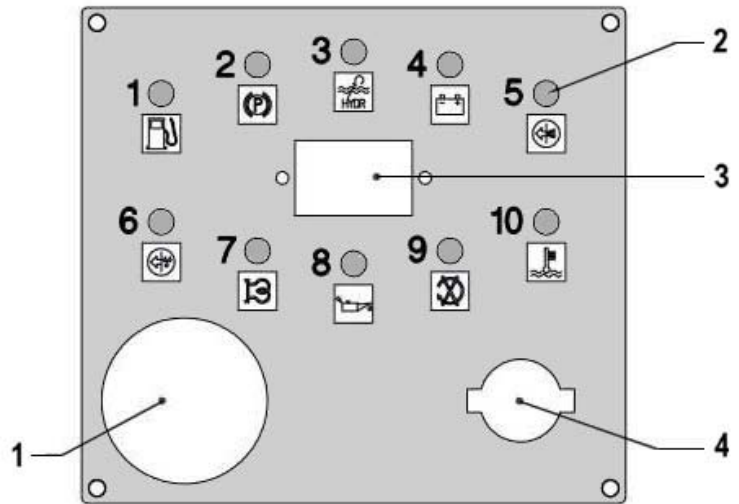
◀ Engine Left Side View

1. Emergency Stop Switch
2. Warning Beacon Mount
3. Air Filter
4. Radiator Fan Guard
5. Radiator Filler
6. Oil Cooler Input
7. Oil Cooler Output
8. Engine Oil Filler Plug
9. Secondary Fuel Filter
10. Electric Actuator
11. Electric Pump
12. Temperature Gauge (Engine Coolant)
13. Ignition Key



Ignition Panel Components

1. Temperature Gauge (Engine Coolant)
2. LED Lights 1-10 (*see symbols below*)
3. Hours Counter (Engine Running Time)
4. Ignition Switch



Ignition Panel Warning Symbols



1. Reserve diesel supply warning



6. Clogged hydraulic filter warning



2. Parking brake warning



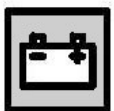
7. Pre-heat plugs



3. Low hydraulic oil level warning



8. Oil pressure warning (engine)



4. Battery not charging



9. Engine stop













5. Clogged air filter warning



10. Coolant temperature warning

Ignition Panel Warnings

WARNING SYMBOL	LED LIGHT REFERENCE	AUDIBLE WARNING	CAUSE	REMEDY
	1. Yellow LED Light	Yes	Fuel tank running on reserve.	Top up fuel.
	2. Red LED Light	No	Parking brake on.	Check brake release valve pressure.
	3. LED Light	Yes	Hydraulic oil level too low.	Check for leaks and repair. Replenish hydraulic oil.
	4. Red LED Light	No	Alternator not charging battery.	Contact local dealer.
	5. Yellow LED Light	No	Air filter blocked.	Disassemble the filter cartridge and clean with compressed air line.
	6. Red LED Light	Yes	Oil filter blocked	Replace oil filter cartridge.
	7. Yellow LED Light	No	Pre-heat plugs are on.	Wait for light to go out before attempting to start engine.
	8. Red LED Light & 9. Red LED Light	Yes	Insufficient engine oil pressure.	Replenish oil if required. If oil level correct seek advice from local dealer.
	9. Red LED Light	No	Engine stop	Reset Emergency Switch.
	10. Red LED Light	Yes	Coolant temperature too high.	Check coolant level. Clean radiator matrix and protection guard.

Radio Control Unit – Control Locations & Functions



- 1. Display
- 2. Potentiometer – Speed Regulator
- 3. Right Joystick
 - Steering (Left / Right) ◀○▶
 - Flail Head (Up / Down) ▼
- 4. Auxiliary #1
- 5. Auxiliary #2
- 6. Front Hood
- 7. Flail Head Pump Control (Rotor Speed)
- 8. Emergency Stop Switch
- 9. Rotor Direction Selector

- 10. Gear Selector
- 11. Direction Swap
- 12. Fan Reverse Control (Radiator Self-Clean)

- 13. Left Joystick
 - Drive (Forward) ▲
 - Drive (Reverse) ▼
- Default ◀  ▶
- Drive Swap Mode ◀  ▶
- ▼ *switch 11 activated*

- 14. Steering Bios
- 15. Engine Start
- 16. Horn
- 17. Codified Key
- 18. Engine Stop
- 19. Engine Revs (-)
- 20. Battery
- 21. Engine Revs (+)

STARTING THE ENGINE



Before attempting to start the engine ensure you have read and understood the manual and observe all safety instructions surrounding use of the engine and machine.



WARNING!

Engine must only be started in open air, never in an enclosed environment.

Diesel Engine Starting

- Observe all Safety Instructions.
- Ensure machine is in the open air and not in an enclosed environment.
- Check fuel level and replenish if required.
- Turn ignition key on the machine clockwise to the first position; pre-heat plug light on the ignition panel will illuminate – *wait until light goes out before continuing.*

NOTE: When the ignition key is turned to the first position the machine will perform a sequence of system checks during which time lights on the control panel will be lit or flashing, when the check is complete these lights will stay lit.

- Start engine by a further turn of the ignition key.

Linking Remote Control Unit to Machine

To operate the machine remotely the control unit must first be 'linked' to the machine so that command signals can be transmitted and received; the procedure is as follows;

NOTE: Ignition key must either be turned to the pre-starting position or the engine running to allow the remote control to link to the machine.

- Turn on the control unit by rotating the Emergency Stop Switch clockwise – *the button will 'spring out' to the ON position.*
- Press and hold the horn button down – *the unit will search for the machine's transmitter and lock onto the signal, the horn will sound to confirm that the units are linked. Release the horn button as soon as the confirmation sound is received.*
- If not already running, the machine can now be started by operation of the start button on the remote controls (refer to controls section) – *release button as soon as the engine starts.*

NOTE: If the engine fails to start within 5 seconds release the button and wait for a minute or so before trying again.

GENERAL CAUTION!

Never operate a starter for excessive uninterrupted periods attempting to start an engine as this can damage or burn out the starter motor.

DRIVING & MANOUEVERING THE MACHINE



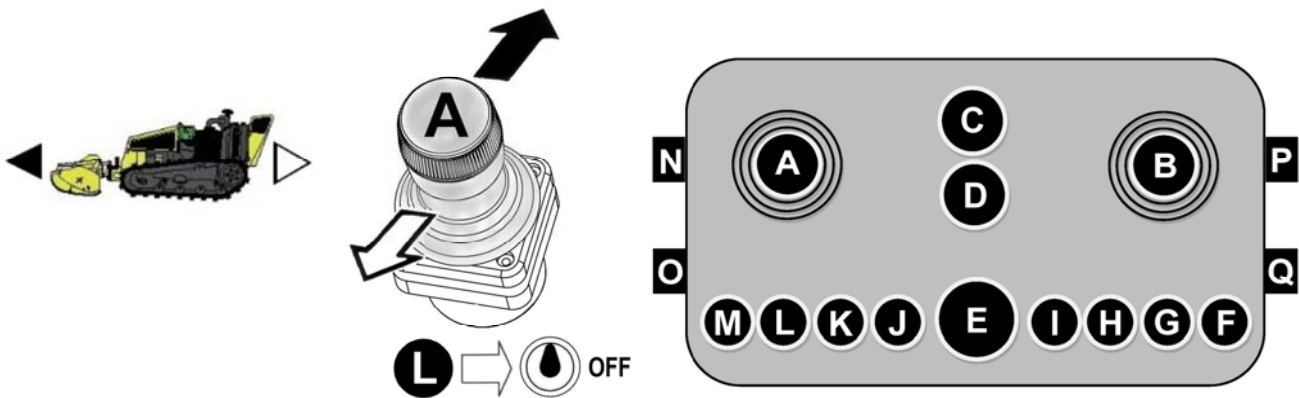
Operation of the machine must only be performed by a responsible person who has read the manual and is familiar with the machine controls and all aspects relating to its safe use.



It is advisable that all new operators practice using the machine, without the cutting head running, in a safe open area in order to familiarise themselves with the controls and movements of the machine.

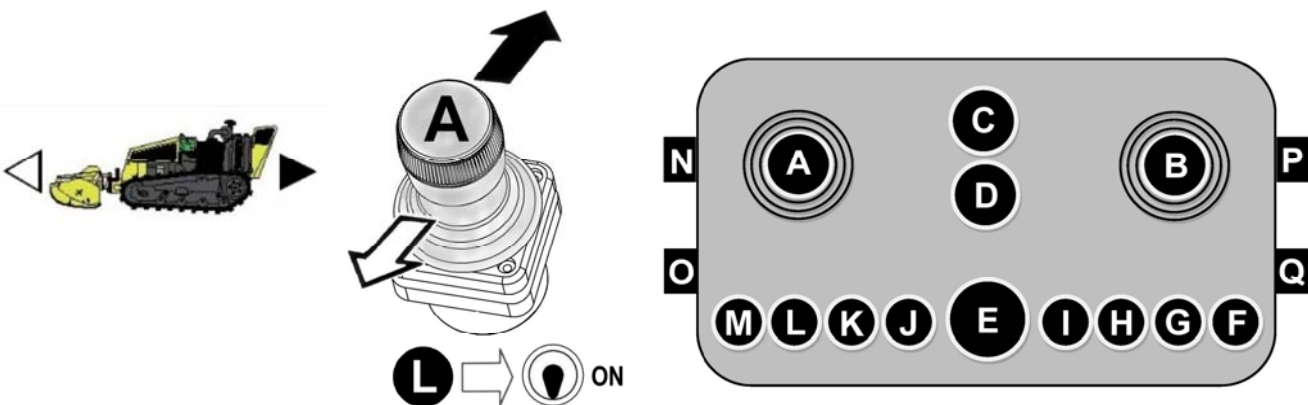
Forwards & Backwards Travel (Default Mode)

Operation of the machine's forward and backwards movements are controlled by using the left-hand joystick (A) on the remote controls; push the lever forwards to move the machine forwards, pull the lever backwards to move the machine backwards. The joystick operates proportionally, therefore; the further the lever is moved the faster the machine travels. The maximum speed available will be determined by gear and potentiometer settings, switch 'K' and dial switch 'C', details of which are in the following pages.



Forwards & Backwards Travel (Direction Swap Mode)

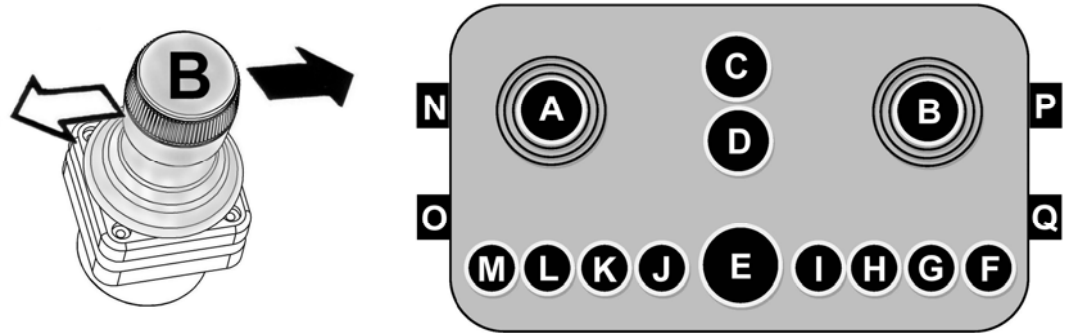
Direction Swap Mode is selected by activation of switch 'L'; this swaps the machines direction of travel on operation of joystick 'A'. The primary function of this feature is for ease of operation when the machine's particular work tool is 'rear mounted' type and requires the machine to be operated in reverse.



Steering Direction Control

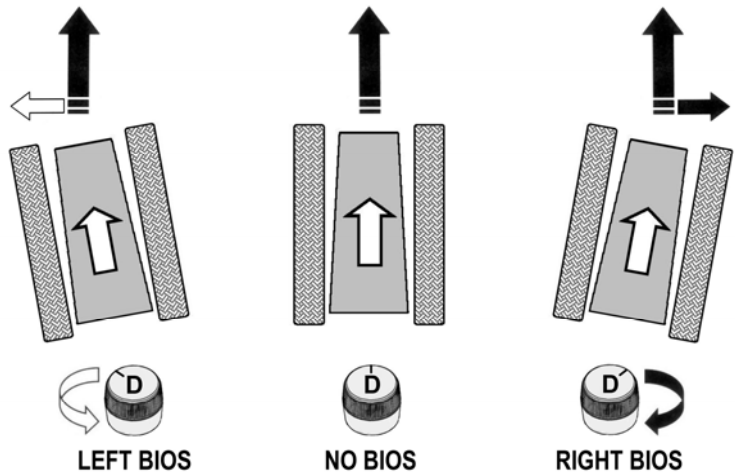
The steering direction of the machine is controlled by sideways operation of the right-hand joystick (B); moving the lever to the right will steer the machine to the right and moving the lever to the left will steer the machine left.

Steering is achieved by adjusting the speed or the turning direction of the tracks in relation to each other; depending on the intensity of the turn one or other track will decelerate, stop or even reverse causing the machine to change direction, the sharpness of the turn is relative to how far the operation lever is moved.



Steering Bios

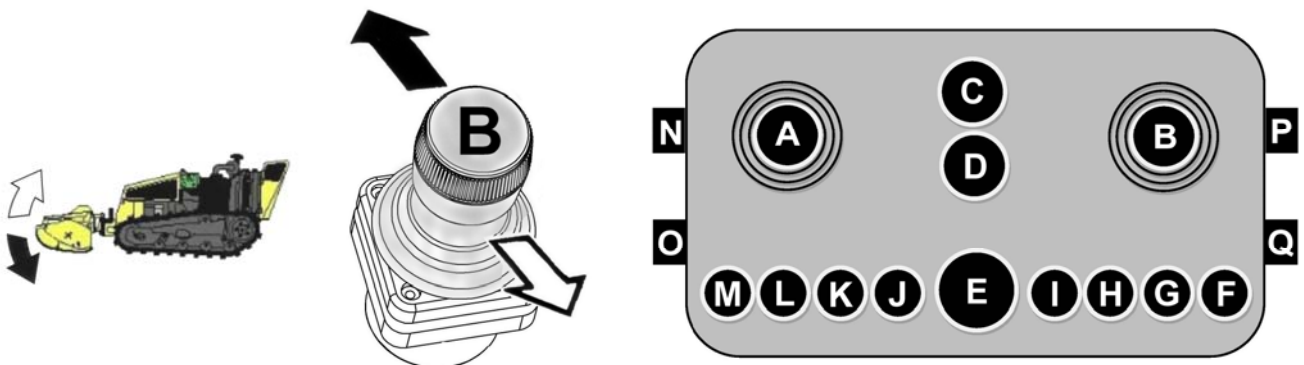
The steering bios feature allows a degree of 'steer' to be pre-set for operating the machine across slopes, adjustment is made using the dial switch 'D'; rotate the dial either clockwise or anti-clockwise for right or left bios respectively, the further it is rotated the greater the bios. Although steering will still need to be monitored and operated as normal it will be to a much lesser degree.



NOTE: When the machine is operating in 'direction swapped mode' (refer to previous page), steering direction control will be swapped so the steering direction lever continues to operate in the same left and right manner to match the selected drive direction, the same will also apply to the steering bios feature.

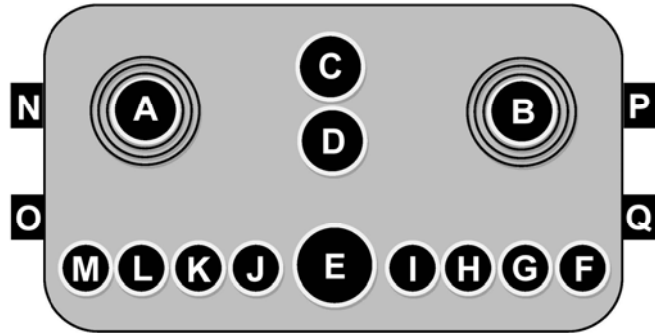
Flail Head (Tool) Height Control

The tool height is controlled by forward and backwards operation of the right-hand joystick (B); pushing the lever forwards will lower the tool and pulling the lever backwards will raise the tool.



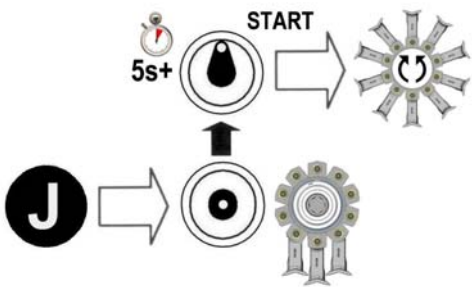
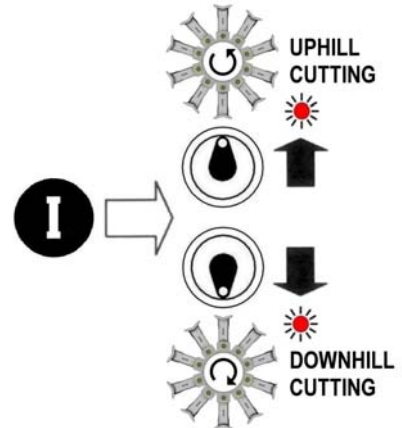
Flail Head Rotor Controls

Operation of the rotor is controlled by using switches 'I' & 'J'. Each of the switches performs a dual function; switch 'I' is for pre-setting the rotor cutting direction and for switching the rotor off, and switch 'J' is for starting the rotor and adjusting its speed. Refer below for specific details of each function.



Selection of Rotor Cutting Direction ▶

Switch 'I' is for pre-selection of the rotor cutting direction; move the switch to the up position for uphill cutting or to the down position for downhill cutting - an led light will be illuminated to indicate the direction selected. Starting the rotor is performed by operation of switch 'J' – see below.

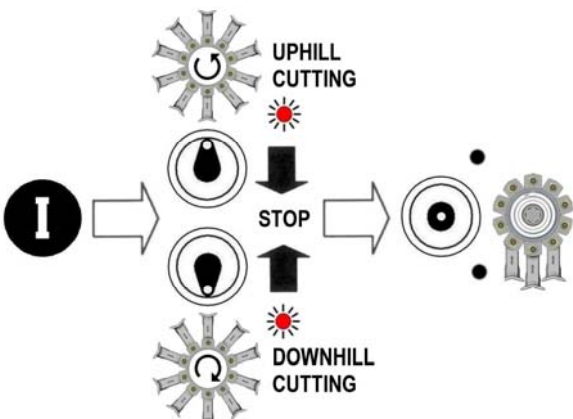
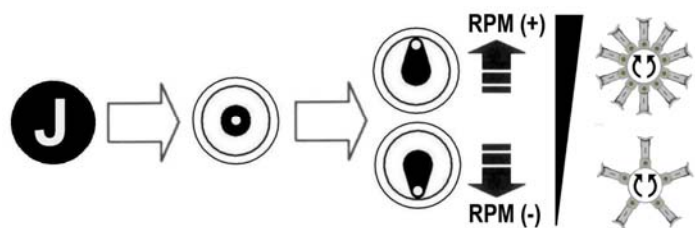


◀ Rotor Start

Starting the rotor is by operation of switch 'J'; set engine speed to run at minimum revs before pressing the switch upwards – the switch has a built in time delay to avoid unintentional rotor operation and must be held in position for at least 5 seconds; release the switch as soon as the rotor starts to run. Engine revs can now be increased according to requirements.

Rotor Speed (RPM) ▶

Once the rotor is running its speed can be increased or decreased as required by subsequent operations of switch 'J'; each upward or downward operation of the switch will respectively speed up or slow down the rotor by a determined amount.



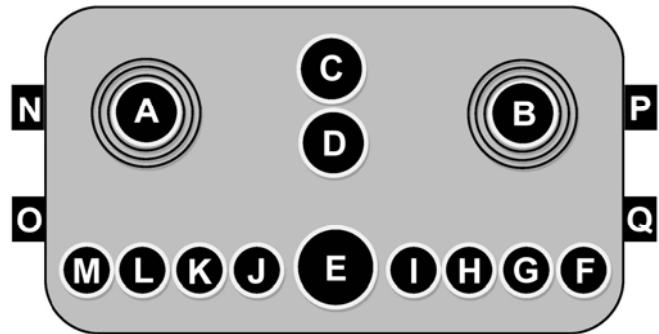
◀ Rotor Stop

To stop the rotor, first reduce the rotor speed to its minimum using switch 'J' as described above, then move Switch 'I' into the central 'off' position.

Note; in an emergency situation the rotor can be stopped by use of the Emergency Stop button – this will immediately switch off and deactivate all machine functions completely, including the engine.

Flail Hood Control

The flail head is equipped with hydraulically operated front hood allowing the operator to remotely adjust its opening position to suit differing materials and conditions. The hood, which is powered by a hydraulic ram, is controlled by up and down operation of switch 'H'; the switch is self-centering so operation of the hood in either direction only occurs when the switch is held in the up or down 'on' positions, on release of the switch hood operation stops.



Engine Speed Control (RPM)

The speed of the engine is adjusted using control buttons 'P' and 'Q'; pressing button 'P' will increase engine revs and pressing button 'Q' will decrease the revs.

Gear Control

The machine has 2 gears to provide a choice of travel speeds; in addition to the gear selected the travel speed will be managed by operation of the travel joystick which itself is directly proportional to the speed setting of the potentiometer – see below.

When in work it is recommended that the machine is operated in gear 1 and speed limited especially when working on steep slopes. Gear 2 is primarily for use when driving the machine between work areas on smooth even terrain where it is safe to use higher speed.

Potentiometer

The potentiometer control (rotational switch 'C') determines the maximum travel speed capability of the machine, from 0 – 100%, when operating the travel joystick - it is in effect an adjustable speed governor.

Adjustment is by rotating the switch to the required speed (%) position; the setting chosen will depend on numerous factors but should always be at a setting that allows the operator optimum control of the machine in work.



Engine Shutdown

Before shutting down the engine all machine movements must be halted, engine revs reduced to minimum and the rotor switched off. Allow the machine to run at this level for about 1 minute to stabilize pressures and temperatures - shutting down the engine is then performed by pressing button 'N' which will stall the engine. When the engine has stopped the procedure is completed by switching off the ignition key on the machine.

If the machine is to be left unattended the key should be removed and control unit and key placed in a secure safe location.

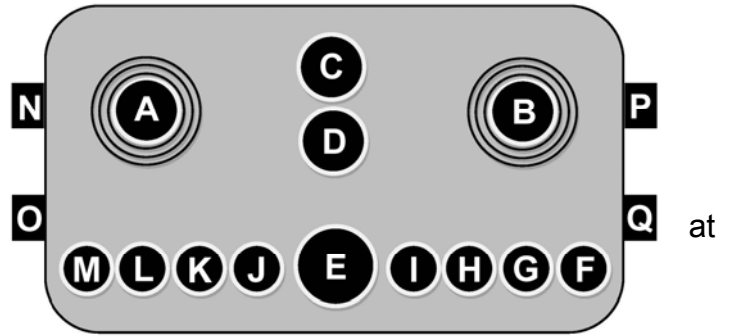
Engine Start

Engine start from the remote control unit is by use of button 'O' – refer to 'Starting Engine' section for details of this procedure.

Clean Fix Control

Clean Fix is a built in 'self-clean' feature designed to reduce the build up of dirt and dust in the radiator matrix; on activation of the its control switch ('M') the blades of the fan change angle diverting air flow back through the radiator thus removing dirt and dust particles.

Although Clean Fix operates automatically preset periods, the operator control allows the user to override the function to perform additional cleaning cycles when working in dirty or dustier conditions.



Normal fan operation ▲
 – air drawn through radiator for cooling



Clean Fix activated ▲
 – air blown through radiator for cleaning

Manual Control Unit (Emergency Track Operation only)

A manual control device for track operation is provided with the machine to allow the operator to bypass the Radio Controller in the event of a controller malfunction.

When connected to the machine, this device will allow the operator to raise and lower the flailhead and manoeuvre the mower in any direction.

This feature is primarily for use in an emergency situation to allow transport of the machine in the event of a sudden breakdown or for diagnosing an issue with the controller.

When operated in this mode the machine will only travel at minimum speed and all other control features are deactivated.

To use this control the unit must first be connected to the electronic ignition box, refer to the following page for details.



WARNING!

The manual track control is for emergency situations and troubleshooting purposes only – never attempt to use this feature for normal work operations.

Manual Controller



- A) Forwards left track
- B) Backwards left track
- C) Flailhead (tool) lift
- D) Flailhead (tool) lower
- E) Forwards right track
- F) Backwards right track

Manual Controls Operation

To manoeuvre the machine;

Forward travel is by simultaneous operation of buttons 'A' & 'E'.

Right turn is by operation of button 'A' only.

Left turn is by operation of button 'E' only.

Reverse travel is by simultaneous operation of buttons 'B' & 'F'.

Counter-rotation to the right is by simultaneous operation of buttons 'A' & 'F'.

Counter-rotation to the left is by simultaneous operation of buttons 'B' & 'E'.

Flailhead (tool) lift is by operation of button 'C'.

Flailhead (tool) lower is by operation of button 'D'.

Converting the Machine for use with the Manual Control Unit

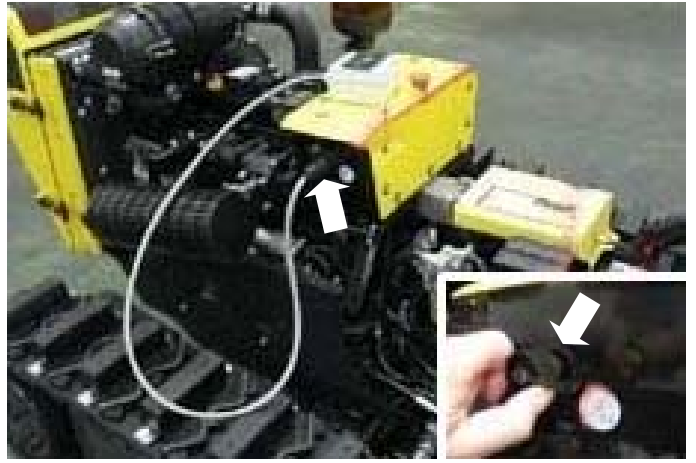
The method of adapting the machine for use with the manual control unit requires attachment of the Control Unit and deactivation of the Brake Control Module; the procedures are as follows;

Control Unit Attachment

Connect the manual control unit to its connection point on the electronic ignition box, this point is located on the right hand side of the machine as shown in the photos below.



Location of connection point for the Manual Control Unit



Remove dust cover and plug unit into the connection point

Deactivating the Brake Control Module

Under normal operating conditions when using the remote control, movement of the joystick sends a signal to the brake system instructing it to release the brakes.

When using the manual control unit the brake controller must be bypassed to allow the brakes to release, this is achieved by disconnecting the wiring loom from the brake control module.

The brake control module is located under the bonnet on the right hand side of the machine – indicated 'T' in the photographs opposite and below.



Location of Brake Control Module (T)



Brake Control Module identification (indicated 'T')



Disconnect the wiring loom plug from the Brake Control Module to allow machine operation with Manual Control



Note: Failure to disconnect the Brake Control Module will result in the engine stalling when attempting to transport the machine in Manual Control Mode.

PRE-OPERATION CHECKS



WARNING! All checks or inspections of the machine should be performed with the machine parked on firm level ground with the engine switched off and the starting key removed.

The following checks should be made daily before using the machine;

- Check all safety guarding is in good condition and fitted correctly.
- Check nuts and bolts for tightness, retighten if required.
- Check flail head for damaged or missing flails – replace if required before use.
- Check oil, coolant and fuel levels, replenish if required.
- Check filters – clean or replace if required.
- Check radiator matrix is clean – clear blockages if required using compressed air.
- Lubricate machine as per details stated in the maintenance section.



Work and Work Area Precautions

- Always inspect the work area prior to operations; check for and remove foreign bodies such as large stones, metal component, wire and glass etc. which could damage machine component or be ejected by the flail head. Any immovable object should be visually marked or avoided.
- Ensure the area is clear of animals and persons. Never manoeuvre the machine into an area where you can no longer see it working.
- Only work the machine in grass or brushwood that is within its cutting capability; attempting to cut materials beyond the machines capability will damage components.
- When working on slopes always start at the bottom and work up.
- Never run the machine down a slope in excess of 50°
- Never operate the machine on slopes or ground where there is a risk of overturn.

OPERATION



Always wear safety shoes, ear defenders and safety glasses when operating the machine.



Always work in good lighting conditions. If necessary, use artificial lighting in compliance with local rules in force.



Do not smoke near the machine; oils, fuels and lubricants are flammable.

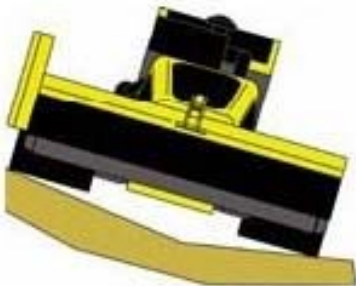
Before moving the machine, ensure that there are no persons, animals, or obstacles in the work zone.



Do not change direction whilst moving on kerbs, rocks or surfaces with considerable differences in height (*more than 20cm*); in these instances always move perpendicular to the obstacles.



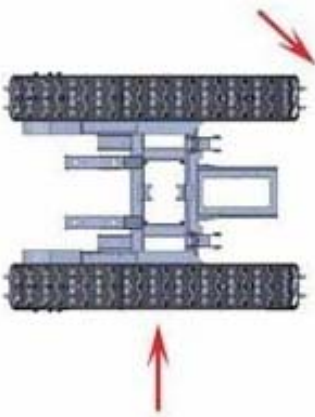
When reversing uphill, do not steer when transferring from the level surface to the slope, if this is unavoidable, perform the manoeuvre gradually.



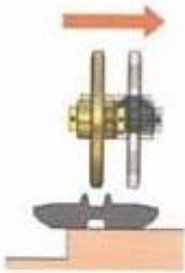
Do not move along the edge of a slope or on uneven ground with one track in the horizontal position and the other inclined or partially raised (*when machine is inclined in excess of 10°*). To avoid risk of track damage, always proceed with both tracks travelling on the same horizontal plane.



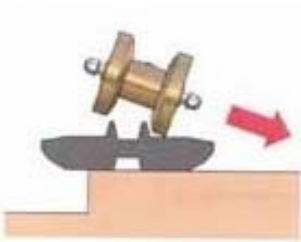
When the machine manoeuvres over an obstacle, a space is created between the bearing rollers and the track - this can cause the track to come off its seat. The same situation can occur in reverse when a space is created between bearing roller, idler roller, and track. To eliminate this risk, track guides are provided on the front part of the undercarriage.



If the machine changes direction, and the track cannot move sideways due to the presence of an obstacle, there is a risk that the track can be damaged or come off its seat; wherever possible avoid turning the machine when it is against an obstacle, if unavoidable, make manoeuvres slowly and gradually until clear of the object.



◀ If the machine moves in reverse in these conditions, there is risk of the track coming off its seat.



◀ If the machine is steered in these conditions, the track will come off its seat.

MAINTENANCE SECTION

Diesel Engine Maintenance

For specific service and maintenance information regarding the diesel engine, refer to the engine manufacturer's handbook provided with the machine. Ensure all service and maintenance work on the engine is carried out at the intervals stated in that manual.

Maintenance Scheme (General Machine)

Every Hour

Clean radiator air suction filter.

Clean radiator matrix using 'Clean Fix' system or if required using a compressed air line.

Clean air intake area around the oil radiator.

Clean oil radiator.

After Initial 8 Hours - New Machine

Check nuts, bolts, pipes and hoses for tightness – *tighten if required.*

Check track tension and adjust if required – *refer to specific section for details.*

Check hydraulic oil level – *replenish if required.*

Clean radiator matrix – *use compressed air line.*

Daily

Clean radiator using compressed air line.

Check hydraulic oil level – *replenish if required.*

Check engine oil level – *replenish if required.*

Check coolant level – *replenish if required.*

Every 50 Working Hours

Grease carrying rollers and sliding rollers.

Check track tension and adjust if required.

After Initial 100 Hours - New Machine

Drain and replace hydraulic oil.

Replace hydraulic oil filter.

Drain and replace engine oil.

Replace engine oil filter.

Check track tension and adjust if required.

Every 100 Working Hours

Check alternator belt tension and tighten if required.

Replace engine oil.

Every 250 Working Hours

Drain and replace hydraulic oil.

Replace hydraulic oil filter.

Drain and replace engine oil.

Replace engine oil filter.

Replace engine air filter

Replace fuel filter

Maintenance Scheme (Track Components)

Daily Checks

Check track tension.

Check condition of gear motors.

Check track condition; *replace tracks when there is less than 10mm of tread remaining or sooner if there are visible signs of deep cuts or cracks.*

Check there are no stones or foreign bodies within the tracks, rollers, gears or sprockets.

Monthly Checks

Check oil level in gear unit.

Check rollers are correctly fastened.

Check there is no slack in the bearings.

Six Monthly Checks

Check wear and tear and overall condition of connections, pinions and lower rollers – *these must be replaced when they reach their maximum wear limit; refer to 'wear limits' page.*

Check brakes are working correctly.

Check all nuts and bolts for tightness.

Periodic Checks

Check brakes and safety warning decals are in good condition.

Make sure the machine is thoroughly cleaned on a regular basis.

Check all fastenings, supports, steel structural parts, welds and pins etc. are in good condition.

Ensure paintwork is kept in good condition.

Lubricate the tracked undercarriage every 20 working hours.

Hydraulic Hoses

Hoses and hydraulic connections should be inspected for signs of wear or damage on a regular basis, damaged or worn components must be replaced immediately. The working life of undamaged hoses is approximately six years, they should be replaced after this period.

Cleaning the Air Filters Grills & Radiator

If the machine is running, reduce to minimum revs and allow engine to run for a further minute before switching off – *remove and pocket the ignition key.*

Clean outsides of air suction grills before releasing the three rubber hooks and opening the cover. Clean the radiator matrix, inside of the air intake grill and surrounding area using a compressed air line, do not use any tools to clean the radiator that may cause damage to the fins. Close the cover and secure in place with the rubber hooks.



Clean air intake grills of the machines front cover to ensure maximum airflow to the engine.



Ensure covers are closed and secured correctly to stop dirt getting in.

WARNING!

If the engine temperature becomes too high a red temperature warning light on the ignition panel will be illuminated to notify the operator – where this occurs refer to the engine manufacturer's manual.

Checking Hydraulic Oil Level

The procedure for checking and replenishing the machines hydraulic oil is as follows;

- Park the machine on a firm level site.
- Ensure engine is switch off and the key removed and pocketed.
- Release rubber hooks and raise the front engine cover.
- Unscrew the dipstick (located under the filler cap), remove and wipe with a clean rag.
- Replace dipstick without screwing in, then remove again and check the level – *oil level is correct if the oil reaches the marker on the dipstick.*
- If oil level is too low, top up using 'PANOLIN HLP SYNTH 46' oil (*E2019HLPSE46*).
- When oil level is correct, screw the dipstick back in, close and secure the engine cover.

Note: Only use 'PANOLIN HLP SYNTH 46' oil for topping up and oil changes; *failure to use the specified oil will result in a non-compliance of the Warranty.*

Checking Engine Oil Level

The procedure for checking and replenishing the machines engine oil is as follows;

- Park the machine on a firm level site.
- Ensure engine is switch off and the key removed and pocketed.
- Undo the 4 knurled head screws and lower the cover.
- Remove dipstick and wipe with a clean rag.
- Replace dipstick then remove again and check the level – *oil level is correct if the oil reaches the upper marker on the dipstick.*
- If oil level is too low, top up using 'MOBIL SUPER 3000 X1 5W40' oil (*E2022MB05W40*).
When topping up oil always clean the surrounding area of the filler cap before removal of the cap to avoid the risk of dirt contaminating the oil.
- When oil level is correct, replace dipstick before raising and securing the cover.



Location of engine oil dipstick

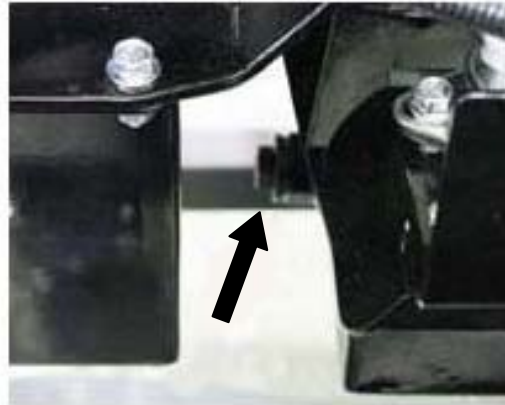
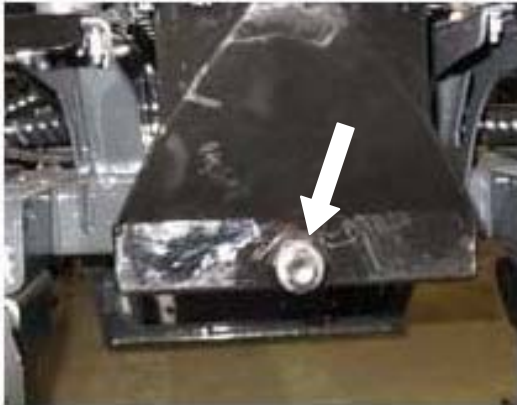
Engine Oil Replacement and Filter Change

Oil Capacity: 6.1L without filter
6.6L with filter

Oil Type: MOBIL SUPER 3000 X1 5W40 (E2022MB05W40)

The procedure for changing the engine oil and filter is as follows;

- Park the machine on a firm level site.
- Remove drain plug and release the oil into a suitable container – *ensure the container used has sufficient capacity for the amount of oil.*



Engine oil drain plug location

- Once all the oil has been released, replace drain plug and torque to 34.5Nm.
- Unscrew and remove the engine oil filter ►



- Take the new filter and smear some engine oil on the rubber seal before fitting – *screw the filter hand tight, then turn it approximately a further $\frac{3}{4}$ of a turn.*
- Remove filler cap and slowly refill with 6.6L of MOBIL SUPER 3000 X1 5W40 engine oil.
- Replace filler cap and start the engine.
- Run engine for 5 minutes or so and stop for a further 3 minutes before checking the oil level is correct.

NOTE: Used engine oil is both a dangerous waste and a precious raw material; collect it in a suitable container and recycle it. Never pour waste oil into drains or waterways – it is harmful and illegal.

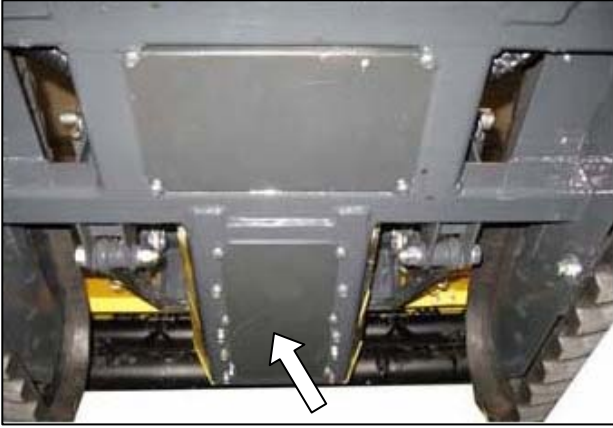
Hydraulic Oil Replacement and Filter Change

Hydraulic Oil Tank Capacity: 18 Litres

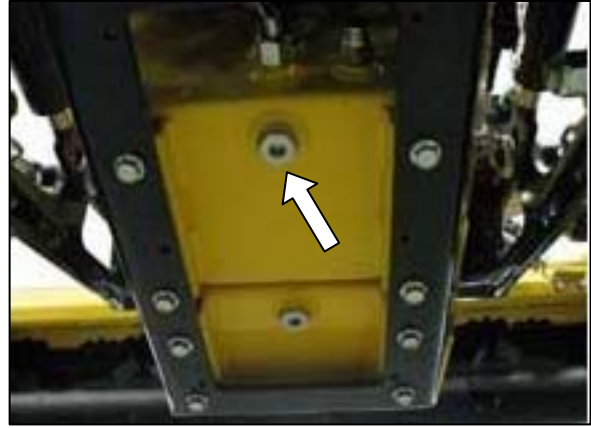
Complete System Capacity: 28 Litres

The procedure for changing the hydraulic oil and filter is as follows;

- Remove the protection plate from the underside of the hydraulic oil tank.
Note: Removal of the plate allows access to both the hydraulic tank drain plug and the fuel tank drain plug – identify the correct plug before continuing to the next step.



Tank protection plate

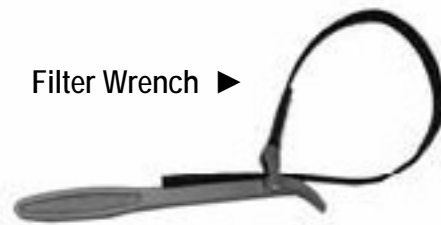


Hydraulic oil tank drain plug

- Remove drain plug and release the oil into a suitable container.
- When the oil has drained completely, replace drain plug and refit protection plate.
- Unscrew and remove the hydraulic oil filter, this is located under the bonnet on the left hand side of the machine – *the filter can be removed by using either a filter wrench or a hexagonal 19mm spanner.*



◀ Hydraulic oil filter location



Filter Wrench ▶

- Fit new hydraulic oil filter and tighten securely – take care not to over tighten.
Note: Always replace filters at the intervals stated in the maintenance schedule using quality original filters as specified and supplied by the manufacturer.
- Refill the hydraulic oil tank with 'PANOLIN HLP SYNTH 46' hydraulic oil – check using the dipstick until the level is correct.
- Start engine and allow it to run for 2 minutes.
- Stop engine and re-check oil level on the dipstick, top up if the level has dropped.
- Check all components and covers are tightly secured before using the machine.



Hydraulic oil tank filler location

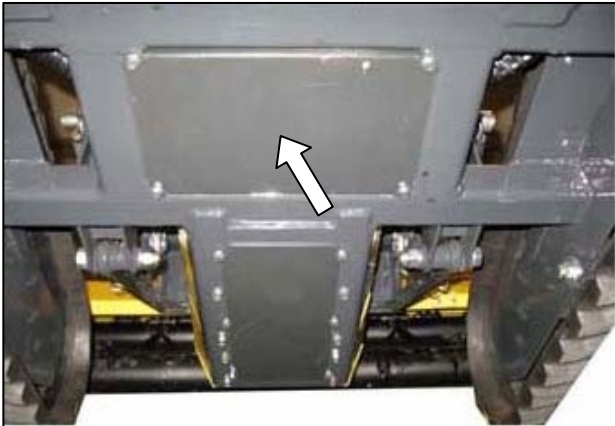
Hydraulic Distributor Valve

The distributor valve that controls the hydraulic functions of the machine is located under the vehicle and is only accessible from beneath the machine. When working on this, or any other item located under the machine, great care must be adopted to ensure the machine is securely positioned before attempting to access or work on the component.



WARNING: Never attempt to work under any machine that it not safely supported and chocked using suitable equipment specifically designed for the task and capable of supporting its weight.

Access to the valve is gained by removal of the protection plate which is held in position by six bolts.



Hydraulic valve protection plate



Hydraulic distributor valve

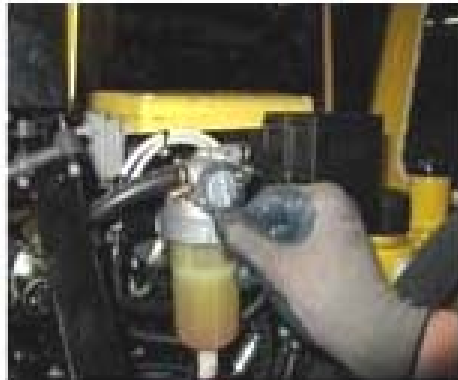
Fuel Filter Cleaning / Replacement

The procedure for cleaning or renewing the fuel filter is as follows;

Park the machine on a firm level site, switch the engine off and open the engine cover.



Fuel Filter



Fuel Supply Tap

- Close the fuel supply tap located on the filter housing.
- Place a suitable container under the filter assembly and unscrew the filter bowl securing ring using a filter key.
- Carefully remove filter bowl using the container underneath to catch spilled fuel - retain sealing ring for subsequent re-attachment.
- Remove and clean (or renew) the filter element.
- Clean out the inside of the filter bowl using a clean rag.
- Re-install the filter and refit the filter bowl ensuring the sealing ring is fitted.
- Screw the filter bowl securing ring to a point where the sealing ring seats on the housing and tighten further third of a turn.
- Open tap to restore the fuel supply to the filter.
- Unscrew the breather screw on the fuel filter by approximately one turn.
- Place a collecting bowl under the fuel filter.
- Turn ignition key to position 1, this will switch on the electric fuel pump.
- Allow the pump to run until fuel (free of bubbles) begins to flow from the breather screw.
- Screw the breather screw back in.
- Start the engine.
- Check components to ensure there is no fuel leakage.

WARNING: Do not allow the starter motor to run for more than 30 seconds at a time if the engine fails to start – allow at least 2 minutes before re-starting.

Fuel Filter Water Drain

Water will accumulate in the filter bowl that will from time to times need to be purged; the frequency of this task will primarily depend on the quality of the diesel being used. The filter bowl should be regularly inspected, and water drained off as and when required. The procedure for draining the water is as follows;

- With the engine switched off, place a suitable container under the fuel filter.
- Open the water drain valve located on the base of the filter bowl.
- Allow water to run into the container until it is gradually replaced by a flow of fuel.
- Close the drain valve.



Water Drain Valve

Priming the Fuel System

If at any time the machine runs out of fuel, it will be necessary to prime the fuel system in order to get it running again – the procedure for this is as follows;

- Fill the tank with fuel.
- Unscrew the breather screw on the fuel filter by approximately one turn.
- Place a collecting bowl under the fuel filter.
- Turn ignition key to position 1, this will switch on the electric fuel pump.
- Allow the pump to run until fuel (free of bubbles) begins to flow from the breather screw.
- Screw the breather screw back in.
- Start the engine.

WARNING: Do not allow the starter motor to run for more than 30 seconds at a time if the engine fails to start – allow at least 2 minutes before re-starting.

Support Springs

The hydraulic rams that position the front mounted flailhead are equipped with support springs, the support pressure offered by the springs can be adjusted to suit differing needs and applications by altering their work position tension. The procedure for adjusting the springs is as follows;

- Raise the flailhead fully by operation of the hydraulic rams.
- Remove bolt and washer from the ram rod end and release the chain from the lug.
- Re-attach the chain selecting an alternative link to either increase or decrease tension.
- Replace washer and bolt to secure in position.
- Repeat the process on the opposite ram.



Steel Tracks

Tracks equipped with steel treads can be supplied as an alternative to the normal all rubber type - the steel tread version has the additional option of being fitted with steel spikes.

To fit the spikes remove every second steel tread by removal of the 3 x M8 Allen headed screws, and replace with the steel spike treads using the screws supplied and torque to 70Nm.

If a machine is fitted with spikes the operator must avoid driving the machine on any surfaces that would suffer damage from the spikes such as roads, car parks, recreation areas etc. unless the machine has been fitted with rubber transport blocks specifically designed to protect surfaces.



Transport Blocks Fitment

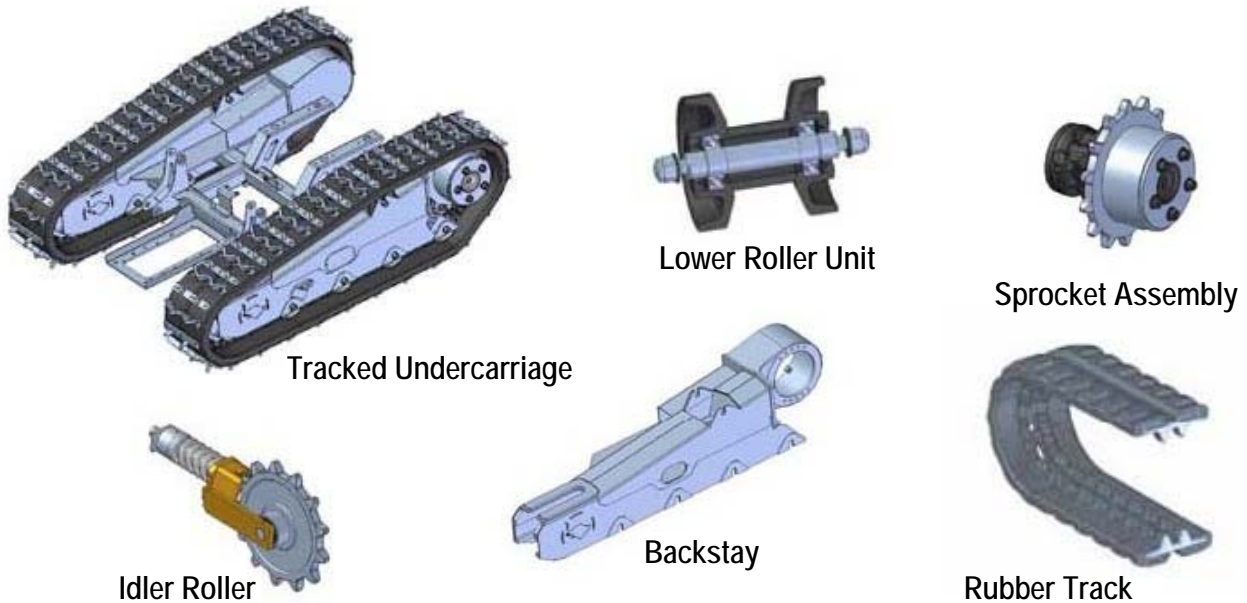
The rubber transport blocks have holes in them that locate on the spikes and are fitted by pushing them onto each set of accessible spikes before slowly driving the machine forward so its weight forces them tightly into place; repeat the process until all the spike sets are fitted with a block. After transportation a lever or large screwdriver will be required to prise the blocks back off the spikes.



Replacing Tracks

Tracks must be changed when only 10mm of tread remains, or before if they show signs of excessive cuts or cracks.

The components shown below are constituent parts of the track system illustrated here for identification purposes.

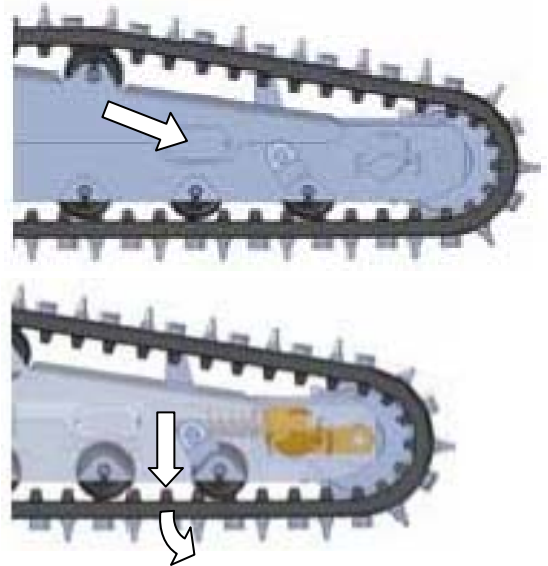


The procedure for changing the tracks is as follows;

WARNING: Never attempt to work on any machine that is not safely supported and chocked using suitable equipment specifically designed for the task and capable of supporting its weight. Ensure suitable safety gear is worn at all times when performing maintenance tasks. Beware, there is 'pinch risk' when working on these components.



- Raise the machine off the ground to a height of approximately 30-40cm; *ensure the machine is stable and suitably supported.*
- Clean undercarriage components and their surrounding area prior to performing maintenance on them.
- Remove backstay side cover ►
- Loosen valve on the tensioner unit to release the grease pressure.
- Once pressure has been fully released the valve can be removed.
- Compress the idler roller; this can be done by using your foot to press the track back.
- Draw the track down and outwards at its mid point on the lower run to pull it off its seating, levering between the track and the idler roller until it is free enough to be removed. Take care to keep clear of the track as it falls to the ground.



Installing the new track is basically a reversal of the above – tension the track by pumping grease into the tensioner unit to a pressure of 130 Bar. (Max. 150 Bar).

Track Tension Kit (Optional)

A grease tensioner system controls the track tension on the machine. Keeping the tracks correctly tensioned is an important duty that must be carried out at the intervals stated in the maintenance schedule; failure to observe the correct tension can result in the tracks coming off the machine during operations.

A Tension Kit, comprising of a grease pump equipped with a manometer, is available as an option for use in correctly checking and setting the pressure. The correct pressure is 130 Bar. (Max. 150 Bar).



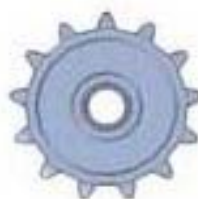
Track Tension Kit (4000271)

Wear Limits

The track components shown opposite must be replaced when they reach their maximum wear limit, corresponding to 100% in the figures stated below;



Lower Rollers



Front Cogs



Drive Cogs

Ø when new	▶	130.0mm	264.0mm	290.0mm
Ø at 25% wear	▶	128.0mm	263.0mm	289.0mm
Ø at 50% wear	▶	126.0mm	261.5mm	287.5mm
Ø at 75% wear	▶	124.0mm	259.5mm	285.5mm
Ø at 100% wear	▶	121.0mm	257.0mm	283.0mm

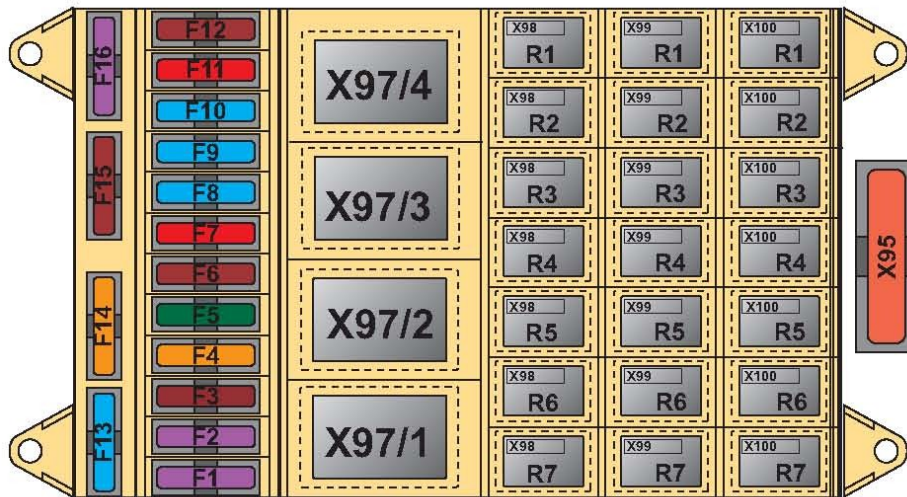
Lubrication of Undercarriage Components

Components of the tracked undercarriage (rollers, pins, bushings etc.), must be greased every 20 working hours.

UNDERCARRIAGE SPECIFICATIONS

Loading Capacity	1.2T
Length	1548mm
Axle to axle length	1192mm
Track height	479.5mm
Crossmember height (from ground)	150mm
Fixed undercarriage width	1260mm
Number of lower rollers per side (per machine)	4 + 4 (8)
Number of upper rollers per side (per machine)	1 + 1 (2)
Track width	230mm
Number of links per side (per machine)	47 + 47 (94)
Chain pitch	72mm
Track tensioner pressure (Max)	150Bar
Total weight	444kg
Hydraulic motor displacement	332cm ³
Hydraulic motor pressure (Max)	190Bar
Hydraulic flow rate (Max)	39l/min
Maximum speed	7km/h
Operating temperature range	-10/+40°C
Maximum operating humidity	95%
Brake release pressure range	12-16Bar
Maximum gradeability	114%

ELECTRICAL SYSTEM (Machines Serial No. ROBO021200089 onwards)



Fuses & Relays

F1	+12V sensors	3 Amp
F2	Actuator	3 Amp
F3	+12V Park brake	7,5 Amp
F4	Hold Solenoid + saftey stopdown	10 Amp
F5	Pull Solenoid	30 Amp
F6	Unloading Valve	7,5 Amp
F7	Alternator	5 Amp
F8	Horn	15 Amp
F9	Manual command	15 Amp
F10	Clean Fix fan / Beacon	15 Amp
F11	Light warns	5 Amp
F12	Fuel pump	7,5 Amp
F13	+30 Hp units	15 Amp
F14	+12V Plug	10 Amp
F15	Fuse Receiver	7,5 Amp
F16	Air filter sensor	3 Amp
X95	General fuse	40 Amp

X97/R1	Pull Solenoid relay	X99/R2	Manual control
X97/R2	Air Heater (optional)	X99/R3	Beacon lamp
X97/R3	Starter relay	X99/R4	Clean Fix fan
X97/R4	Battery switch	X99/R5	Unloading Valve
X98/R1	Actuator +	X99/R6	Manual comand track R/H
X98/R2	Actuator -	X99/R7	Manual comand track L/H
X98/R3	Horn	X100/R1	Check test before start
X98/R4	Hyd. oil filter pressure	X100/R2	Low fuel level
X98/R5	Lower hyd. oil level	X100/R3	Engine oil pressure sensor
X98/R6	Hold solenoid	X100/R4	High water engine temp.
X98/R7	Radio-Control switch off	X100/R5	Angle sensor (Opt)
X99/R1	Radio-Control stop (Link missing)	X100/R6	Alternator LED
		X100/R7	Parking brake relay

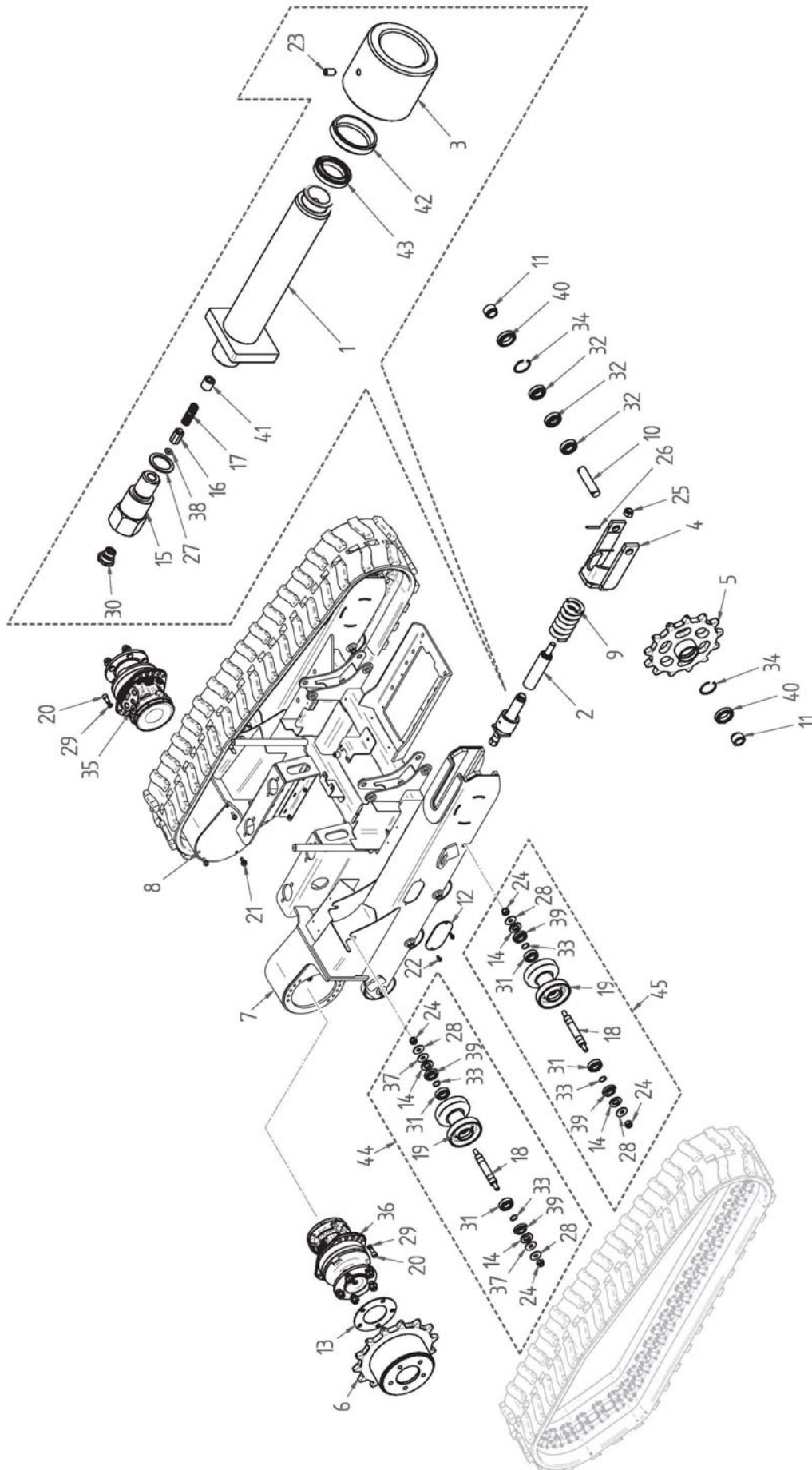
TROUBLESHOOTING

Symptom	Possible Cause	Solution
Track damage.	Excessive tread wear; Loosening/breaking of internal structural steel rope.	Replace track.
Track slackens frequently.	Faulty tensioner valve. Damaged tensioner seal. Worn tensioner components.	Replace valve. Replace seal. Replace worn components.
Upper track does not stay in position.	Track slide worn. Upper roller worn.	Replace slide. Replace upper roller.
Lower track does not stay in position.	Lower track guide worn. Lower roller worn.	Replace lower track guide. Replace lower roller.
Track 'jams' when the machine is steering.	Material (stones, rocks, earth etc.) trapped between rollers, sprockets, idler roller and track.	Remove material by turning the track in both directions while slackening slightly, raise machine at same time if possible.
Oil leakage	Hardened seals. Gasket/seals damaged or worn.	Clean around component and recheck after a few days. Contact dealer.
Excessive noise.	Internal malfunction. Worn seals.	Contact dealer.
Excessive vibration.	Internal malfunction. Worn seals.	Contact dealer.
Overheating	Lack of oil. Arduous conditions/hot climate. Brakes binding.	Add oil. Contact dealer. Check brake release pressure.
Motor runs but gear unit not working.	Motor wrongly assembled. Internal malfunction. Brake jammed.	Check coupling between motor and gear unit. Contact dealer. Check braking system.
Brake not releasing.	Lack of brake pressure. Faulty brake seals.	Check brake connections. Contact dealer.
Brakes not locking.	Residual pressure in circuit. Worn brake components.	Check hydraulic system. Contact dealer.

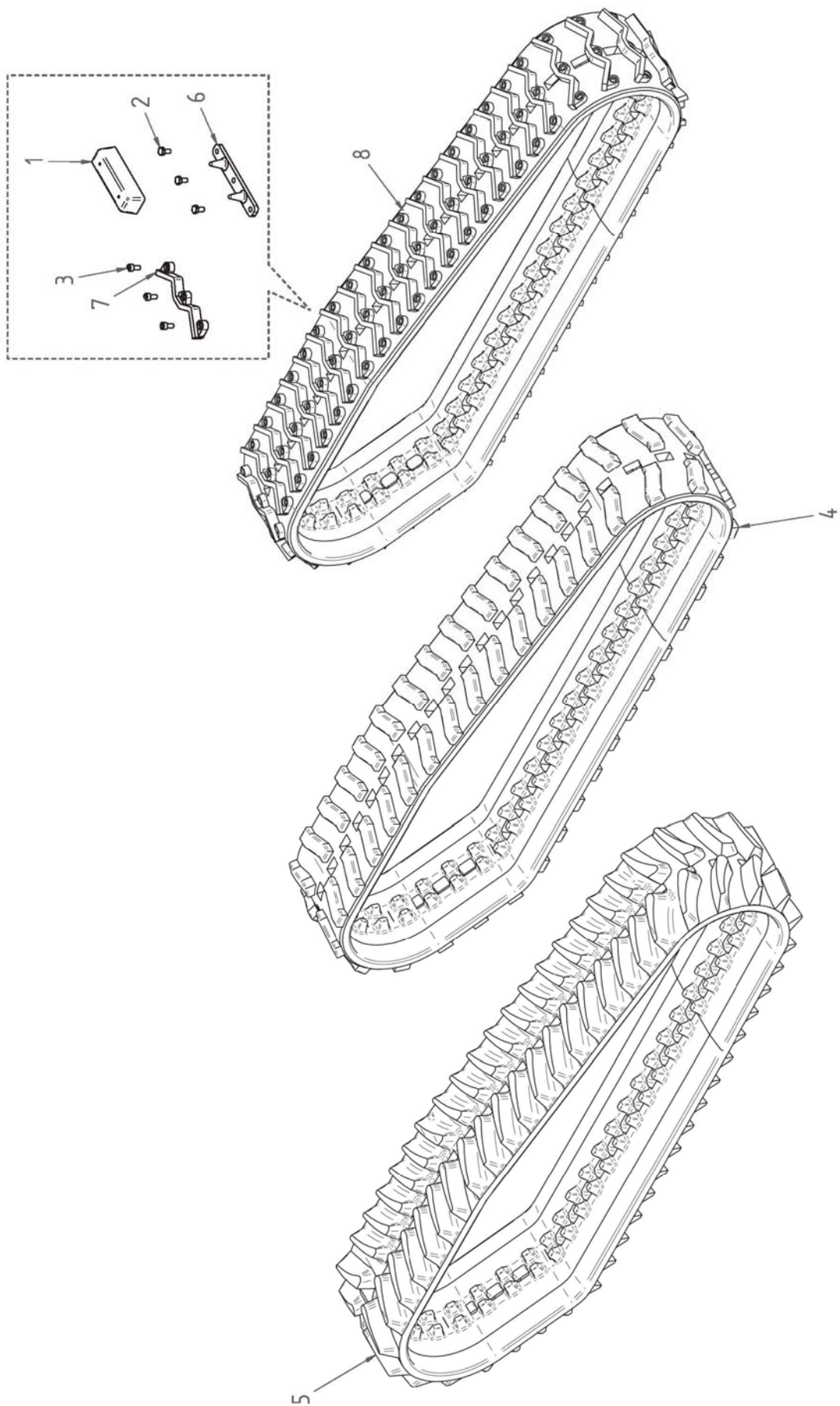


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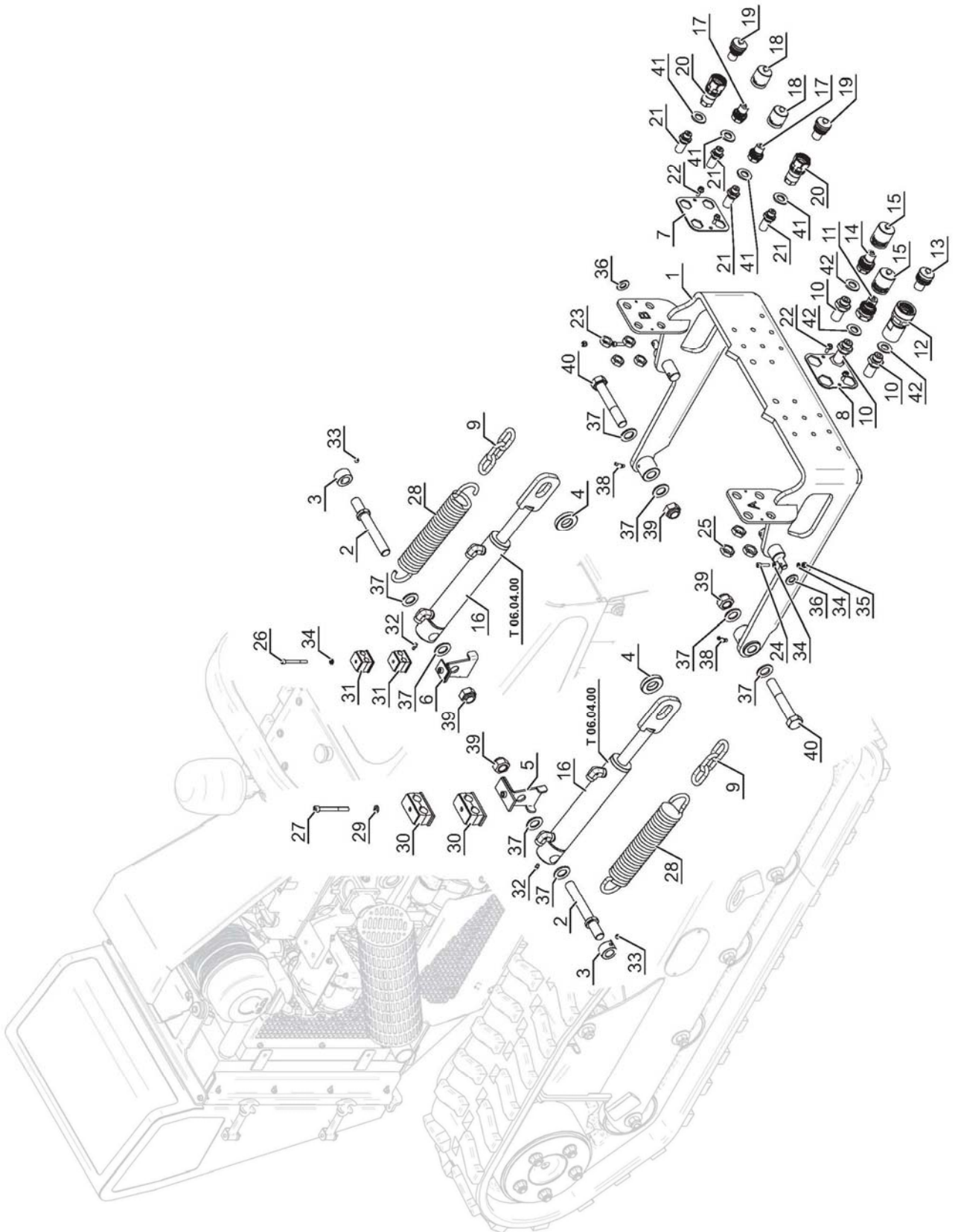
- Parts Section -



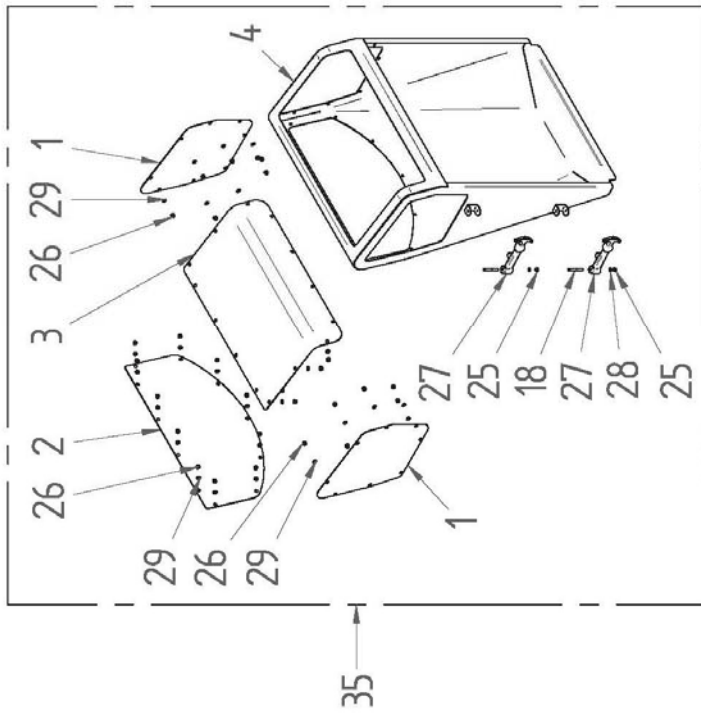
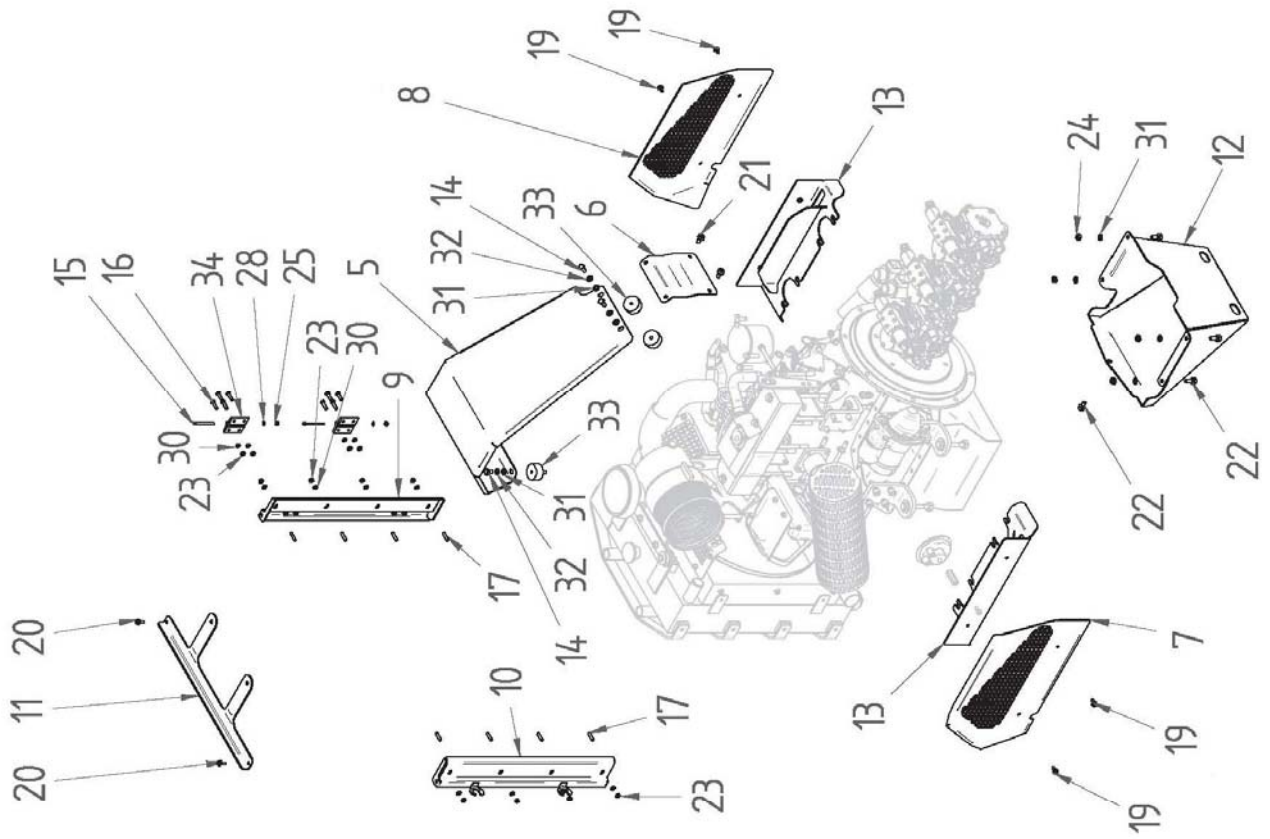
REF.	QTY.	PART No.	DESCRIPTION
			CHASSIS ASSEMBLY
1	2	4000001	INNER BARREL
2	2	4000002	OUTER BARREL
3	2	4000003	BUSH
4	2	4000004	SPROCKET FORK
5	2	4000005	SPROCKET
6	2	4000006	DRIVE SPROCKET
7	1	4000039	UNDERCARRIAGE HOUSING
8	2	4000007	MOTOR COVER
9	2	4000008	SPRING
10	2	4000009	PIN
11	4	4000010	BUSH
12	2	4000011	COVER PLATE
13	2	4000347	SPACER
14	20	4000351	ROLLER WASHER
15	2	4000012	VALVE HOUSING
16	2	4000013	VALVE
17	2	4000014	VALVE SPRING
18	10	4000015	PIN
19	10	4000016	ROLLER
20	20	4000352	CYLINDRIC HEAD SCREW
21	8	4000353	FLANGED HEAD SCREW
22	4	4000316	FLANGED HEAD SCREW
23	2	4000354	GRUB SCREW
24	20	4000355	LOCK NUT
25	2	4000018	LOCK NUT
26	4	4000032	ROLL PIN
27	2	4000356	COPPER WASHER
28	20	4000019	WASHER
29	20	4000357	KNURLED WASHER
30	2	4000358	BUTTING HEAD FITTING
31	20	1021002	TRACK ROLLER BEARING
32	6	1021250	BEARING
33	20	4000023	CIRCLIP
34	4	4000024	CIRCLIP
35	1	4000359	LH TRACK DRIVE MOTOR
36	1	4000360	RH TRACK DRIVE MOTOR
37	4	4000361	WASHER - <i>Serial No. 00056</i> ▶
38	2	4000030	O RING
39	20	4000026	ROLLER SEAL
40	4	4000027	SEAL
41	2	4000029	NUT
42	2	4000028	SCRAPER RING
43	2	4000031	SEAL
44	2	4000362	UPPER ROLLER ASSEMBLY
45	2	4000705	LOWER ROLLER ASSEMBLY



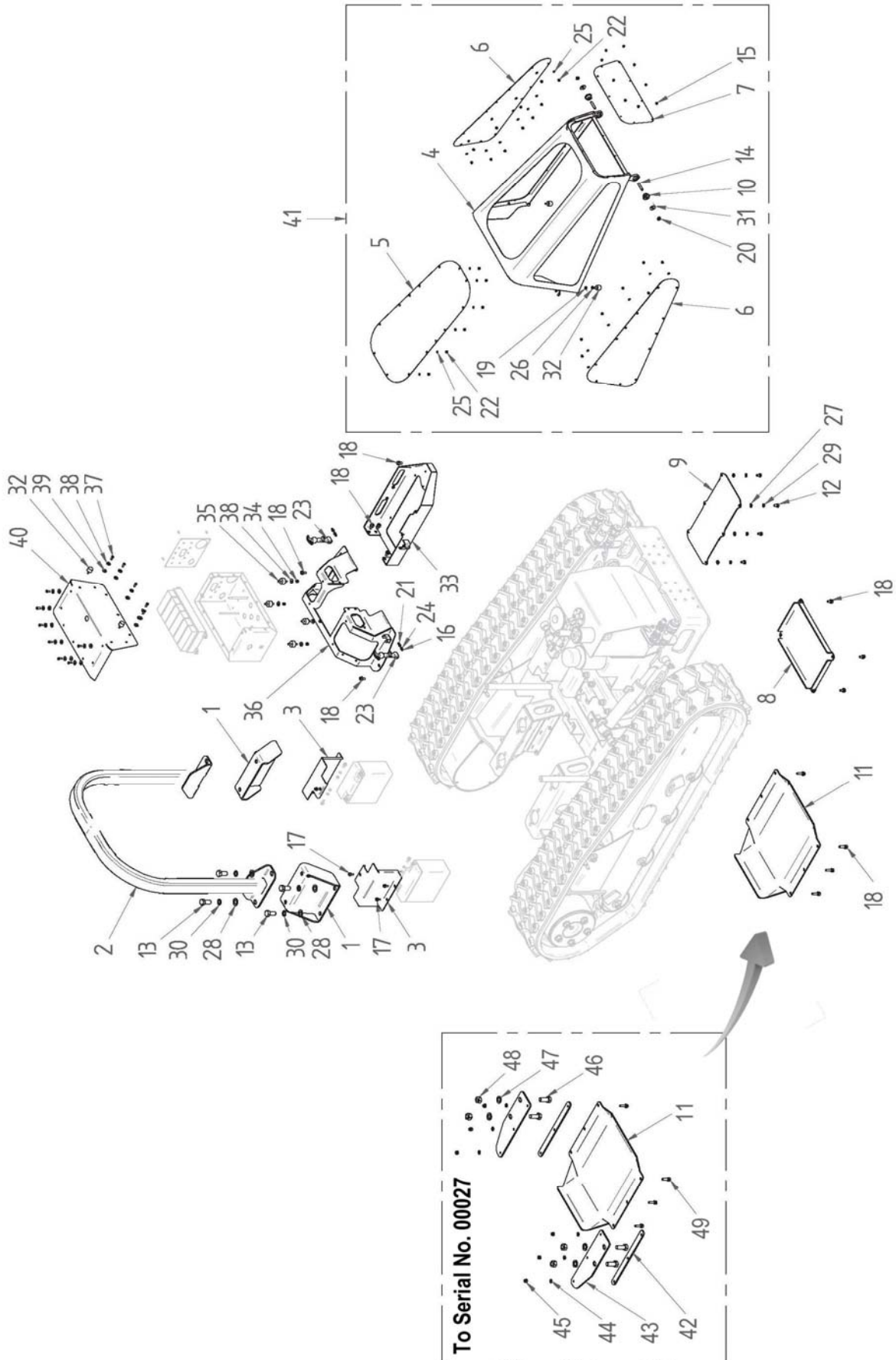
REF.	QTY.	PART No.	DESCRIPTION
			RUBBER TRACKS
1	46	4000036	RUBBER TRANSPORT BLOCK
2	138	4000038	BOLT
3	282	4000037	BOLT
4	2	4000263	RUBBER TRACK 250/72/47
5	2	4000289	RUBBER TRACK 280/72/47
6	46	4000034	RIVETED STIRRUP
7	94	4000035	STEEL STIRRUP
8	2	4000290	RUBBER TRACK (MOVEABLE STIRRUPS)



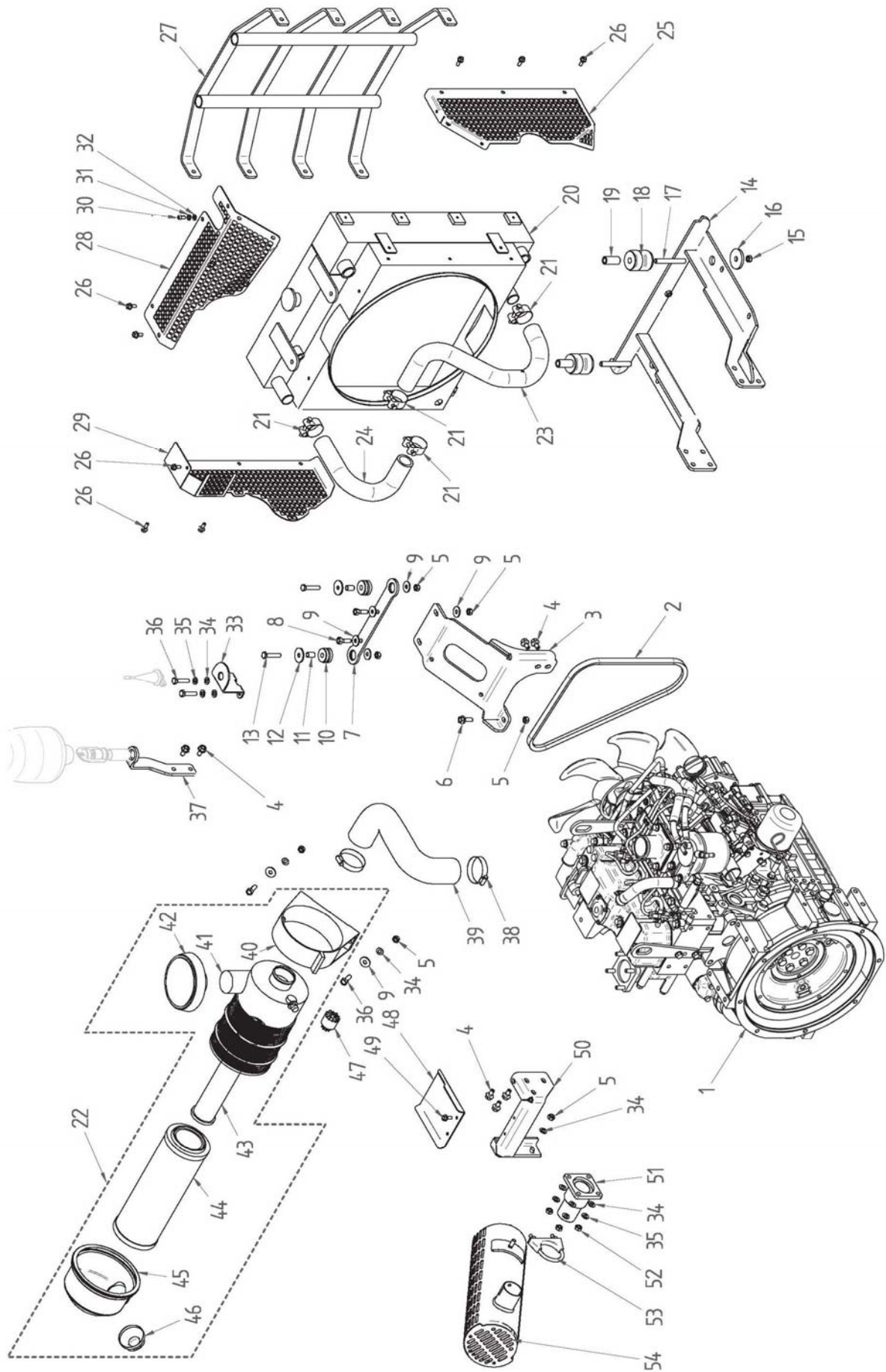
REF.	QTY.	PART No.	DESCRIPTION
			EQUIPMENT MOUNTING ASSEMBLY
1	1	4000088	ATTACHMENT MOUNTING FRAME
2	2	4000089	RAM PIN
3	2	4000090	RETAINING COLLAR
4	2	4000091	WASHER
5	1	4000363	RH HOSE SUPPORT BRACKET
6	1	4000364	LH HOSE SUPPORT BRACKET
7	1	4000092	LEFT BULKHEAD FIXING PLATE
8	1	4000093	RIGHT BULKHEAD FIXING PLATE
9	2	4000095	CHAIN
10	3	4000129	BULKHEAD FITTING
11	1	4000136	QR COUPLING
12	1	4000133	QR COUPLING
13	1	4000139	PLUG (Option)
14	1	4000134	QR COUPLING
15	2	4000137	PLUG (Option)
16	2	4000101	HYDRAULIC RAM
17	2	4000135	QR COUPLING
18	2	4000138	PLUG (Option)
19	2	4000140	PLUG (Option)
20	2	4000132	QR COUPLING
21	4	4000128	BULKHEAD FITTING
22	4	4000316	FLANGED HEAD SCREW
23	4	4000130	NUT
24	2	9313053	BOLT
25	3	4000131	NUT
26	1	4000108	CYLINDRIC HEAD SCREW
27	1	4000365	CYLINDRIC HEAD SCREW
28	2	4000110	SPRING
29	1	9100104	FLAT WASHER
30	2	4000366	HOSE CLAMP
31	2	4000367	HOSE CLAMP
32	2	4000368	GREASE NIPPLE
33	2	4000369	SETSCREW
34	4	9100103	FLAT WASHER
35	2	9163003	LOCK NUT
36	2	05.281.14	FLAT WASHER
37	8	4000370	BAR WASHER
38	2	4000371	GREASE NIPPLE
39	4	4000372	LOCK NUT
40	2	4000373	SCREW
41	4	7315818	BONDED SEAL
42	3	8650104	BONDED SEAL



REF.	QTY.	PART No.	DESCRIPTION
			ENGINE COVER ASSEMBLY
1	2	4000154	SIDE MESH
2	1	4000155	CENTRAL LOWER MESH
3	1	4000374	CENTRAL UPPER MESH
4	1	4000156	RADIATOR BONNET
5	1	4000166	AIR FILTER BONNET
6	1	4000167	AIR FILTER BONNET SUPPORT
7	1	4000164	RIGHT SIDE BONNET
8	1	4000165	LEFT SIDE BONNET
9	1	4000169	RADIATOR LEFT SUPPORT
10	1	4000170	RADIATOR RIGHT SUPPORT
11	1	4000171	RADIATOR CLOSING SUPPORT
12	1	4000172	REAR COVER
13	2	4000375	SIDE PROTECTION SUPPORT
14	4	4000376	SCREW
15	2	4000377	CYLINDRIC HEAD SCREW
16	8	4000378	COUNTERSUNK HEAD SCREW
17	8	4000176	HEADLESS SCREW
18	2	4000250	CYLINDRIC HEAD SCREW
19	4	4000379	FLANGED HEAD SCREW
20	2	4000316	FLANGED HEAD SCREW
21	2	4000353	FLANGED HEAD SCREW
22	5	4000380	FLANGED HEAD SCREW
23	12	4000075	AUTOGRIP NUT
24	4	4000381	AUTOGRIP NUT
25	4	9163001	LOCK NUT
26	41	05.287.09	LOCK NUT
27	2	4000112	BONNET FASTENER
28	4	9100101	WASHER
29	41	9100102	WASHER
30	12	9100103	WASHER
31	4	9100104	WASHER
32	4	9100204	SPRING WASHER
33	4	4000382	ANTI-VIBRATION BLOCK
34	2	4000383	HINGE
35	1	4000401	RADIATOR BONNET COMPLETE

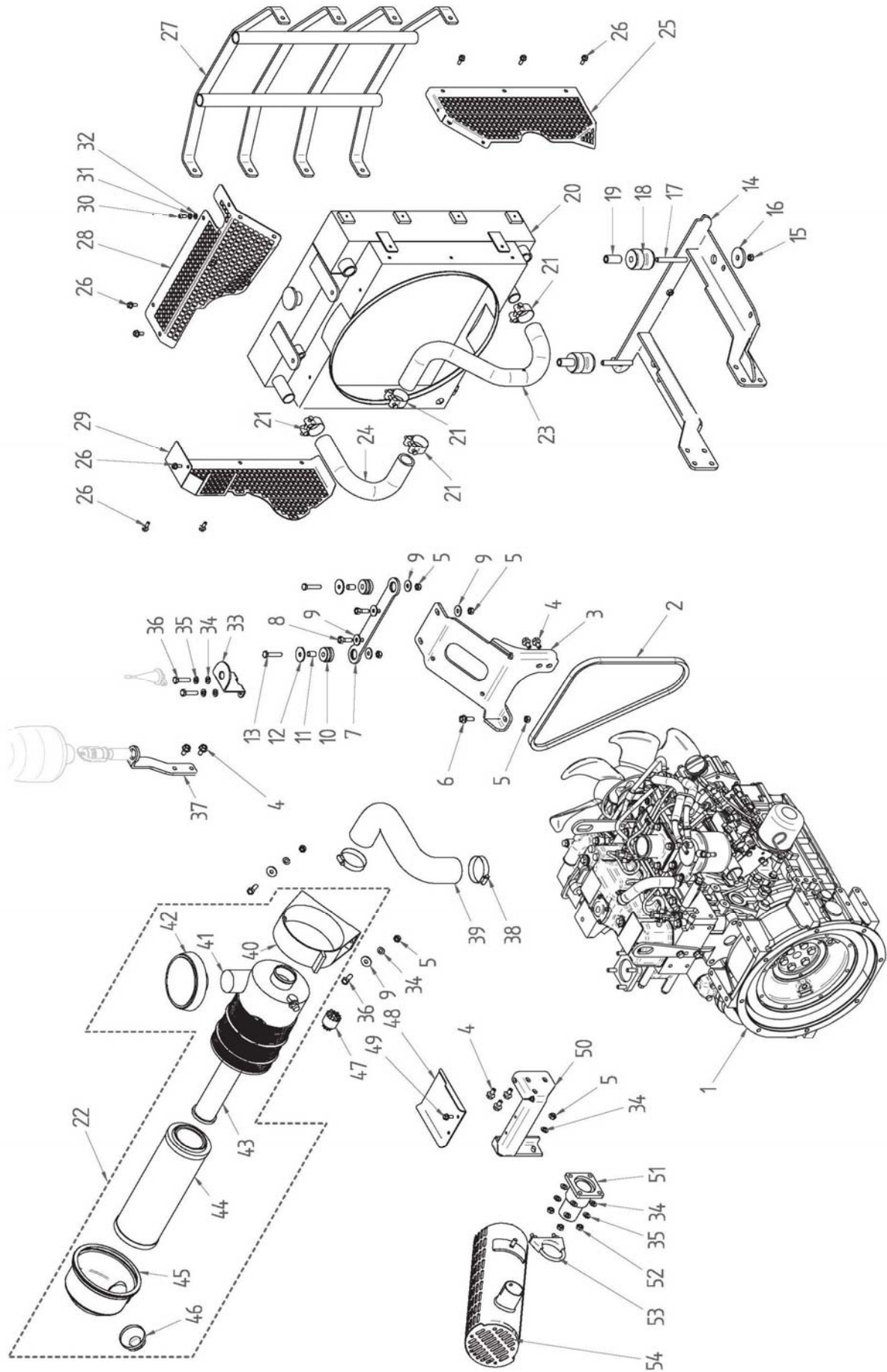


REF.	QTY.	PART No.	DESCRIPTION
			MACHINE COVER ASSEMBLY
1	2	4000151	ROLL BAR SUPPORT
2	1	4000152	ROLL BAR
3	2	4000153	BATTERY COVER
4	1	4000157	UPPER BONNET
5	1	4000158	UPPER MESH
6	2	4000159	SIDE MESH
7	1	4000160	FRONT MESH
8	1	4000161	VALVE COVER PLATE
9	1	4000162	TANK COVER PLATE
10	2	4000163	BUSHING
11	1	4000168	OIL SUMP PROTECTION
12	6	4000376	SCREW
13	8	4000175	SCREW
14	2	4000384	HEADLESS SCREW
15	9	4000177	HEX SKT BUTTON HEAD SCREW
16	2	4000107	CYLINDRIC HEAD SCREW
17	6	4000316	FLANGED HEAD SCREW
18	17	4000353	FLANGED HEAD SCREW
19	2	4000075	AUTOGRIP NUT
20	2	4000381	AUTOGRIP NUT
21	2	9163001	LOCK NUT
22	32	05.287.09	LOCK NUT
23	2	4000112	BONNET FASTENER
24	4	9100101	WASHER
25	32	9100102	WASHER
26	2	9100103	WASHER
27	6	9100104	WASHER
28	8	0100106	WASHER
29	6	9100204	SPRING WASHER
30	8	9100207	SPRING WASHER
31	2	4000385	WASHER (LARGE SERIES)
32	4	4000251	ANTI-VIBRATION BLOCK
33	1	4000099	REMOTE RECEIVER MOUNTING
34	4	9163003	LOCK NUT
35	4	4000386	ANTI-VIBRATION BLOCK
36	1	4000098	ELECTRIC BOX MOUNTING FRAME
37	12	4000387	HEX SKT BUTTON HEAD SCREW
38	16	4000321	WASHER (LARGE SERIES)
39	12	4000388	RUBBER WASHER (LARGE SERIES)
40	1	4000103	ELECTRICAL BOX COVER
41	1	4000402	UPPER BONNET COMPLETE
42	2	4000384	EXTENSION PLATE - <i>Serial No. ▶ 00027</i>
43	2	4000385	EXTENSION - <i>Serial No. ▶ 00027</i>
44	6	9100104	WASHER - <i>Serial No. ▶ 00027</i>
45	6	9163004	LOCK NUT - <i>Serial No. ▶ 00027</i>
46	4	4000175	HEX HEAD SCREW - <i>Serial No. ▶ 00027</i>
47	4	0100100	WASHER - <i>Serial No. ▶ 00027</i>
48	4	4000227	LOCK NUT - <i>Serial No. ▶ 00027</i>
49	6	4000430	FLANGED HEAD SCREW - <i>Serial No. ▶ 00027</i>

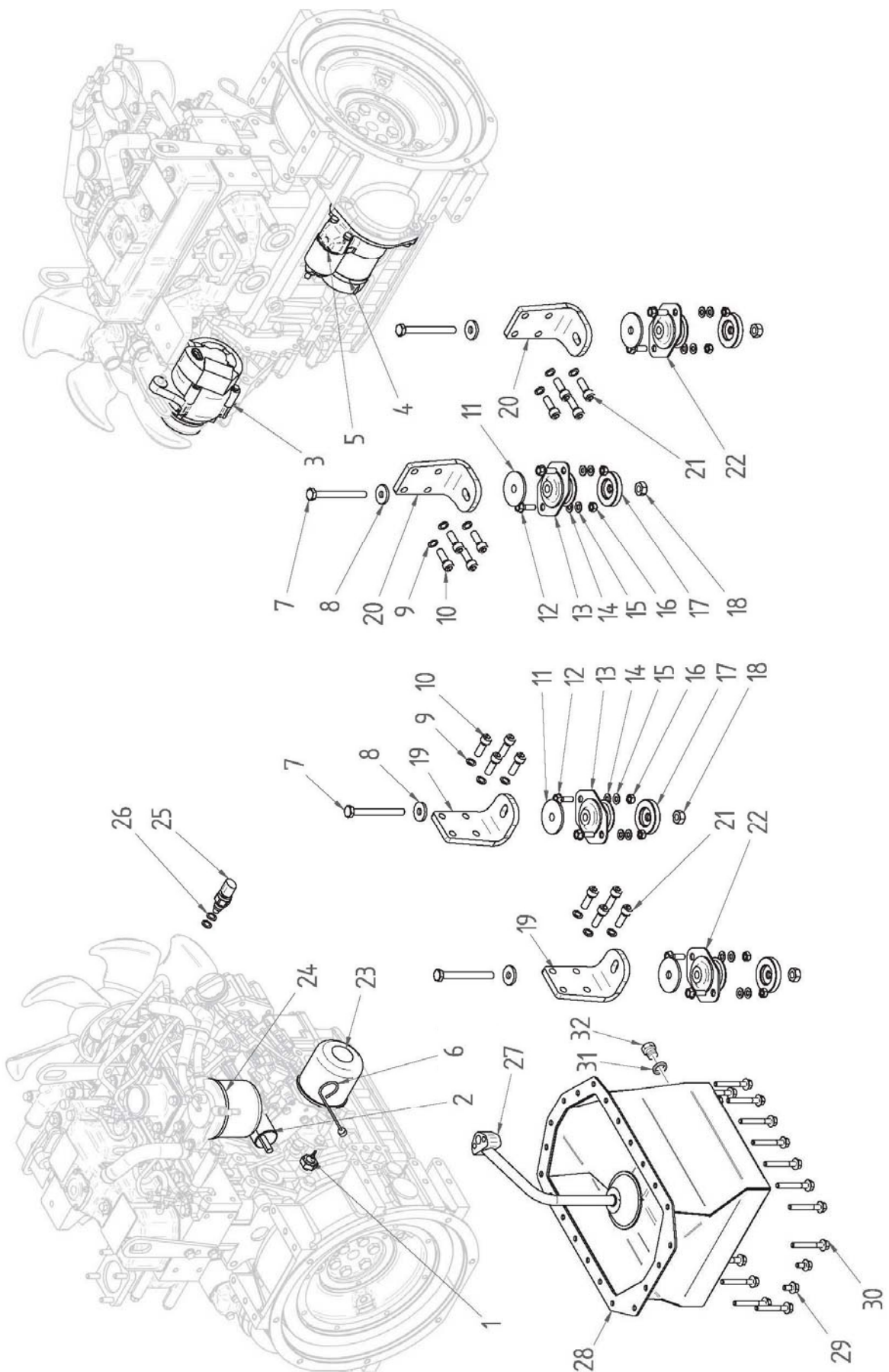


REF.	QTY.	PART No.	DESCRIPTION
			DIESEL ENGINE
1	1	4000701	ISUZU ENGINE (40HP)
2	1	4000275	MOTOR BELT
3	1	4000054	AIR FILTER MOUNTING
4	7	4000353	FLANGED HEAD SCREW
5	8	4000381	AUTOGRIP NUT
6	1	4000380	FLANGED HEAD SCREW
7	1	4000055	RADIATOR BRACKET
8	2	9313064	SETSCREW
9	8	4000385	WASHER (LARGE SERIES)
10	2	4000084	ANTI-VIBRATION RUBBER
11	2	4000389	SPACER
12	2	4000080	WASHER (LARGE SERIES)
13	2	9313084	SETSCREW
14	1	4000045	RADIATOR MOUNTING BRACKET
15	2	4000077	AUTOGRIP NUT
16	2	4000390	WASHER
17	2	4000068	HEADLESS SCREW
18	2	4000083	ANTI-VIBRATION MOUNTING
19	2	4000391	SPACER
20	1	4000046	RADIATOR
21	4	0904106	HOSE CLIP
22	1	4000400	AIR FILTER COMPLETE c/w CLIP
23	1	4000392	RADIATOR HOSE LEFT
24	1	4000394	RADIATOR HOSE RIGHT
25	1	4000041	LEFT MESH GUARD
26	11	4000394	FLANGED HEAD SCREW
27	1	4000047	RADIATOR PROTECTION
28	1	4000043	UPPER MESH GUARD
29	1	4000042	RIGHT MESH GUARD
30	1	4000395	SCREW
31	1	9100203	WASHER
32	1	9100103	WASHER
33	1	4000396	ANTENNA BRACKET
34	9	9100104	WASHER
35	6	9100204	SPRING WASHER
36	4	9313074	SETSCREW
37	1	4000286	LIGHT BRACKET
38	2	4000397	CLIP
39	1	4000398	RUBBER HOSE
40	1	4000052	AIR FILTER BRACKET
41	1	4000048	AIR FILTER HOUSING
42	1	4000051	AIR FILTER COVER

Continued ...

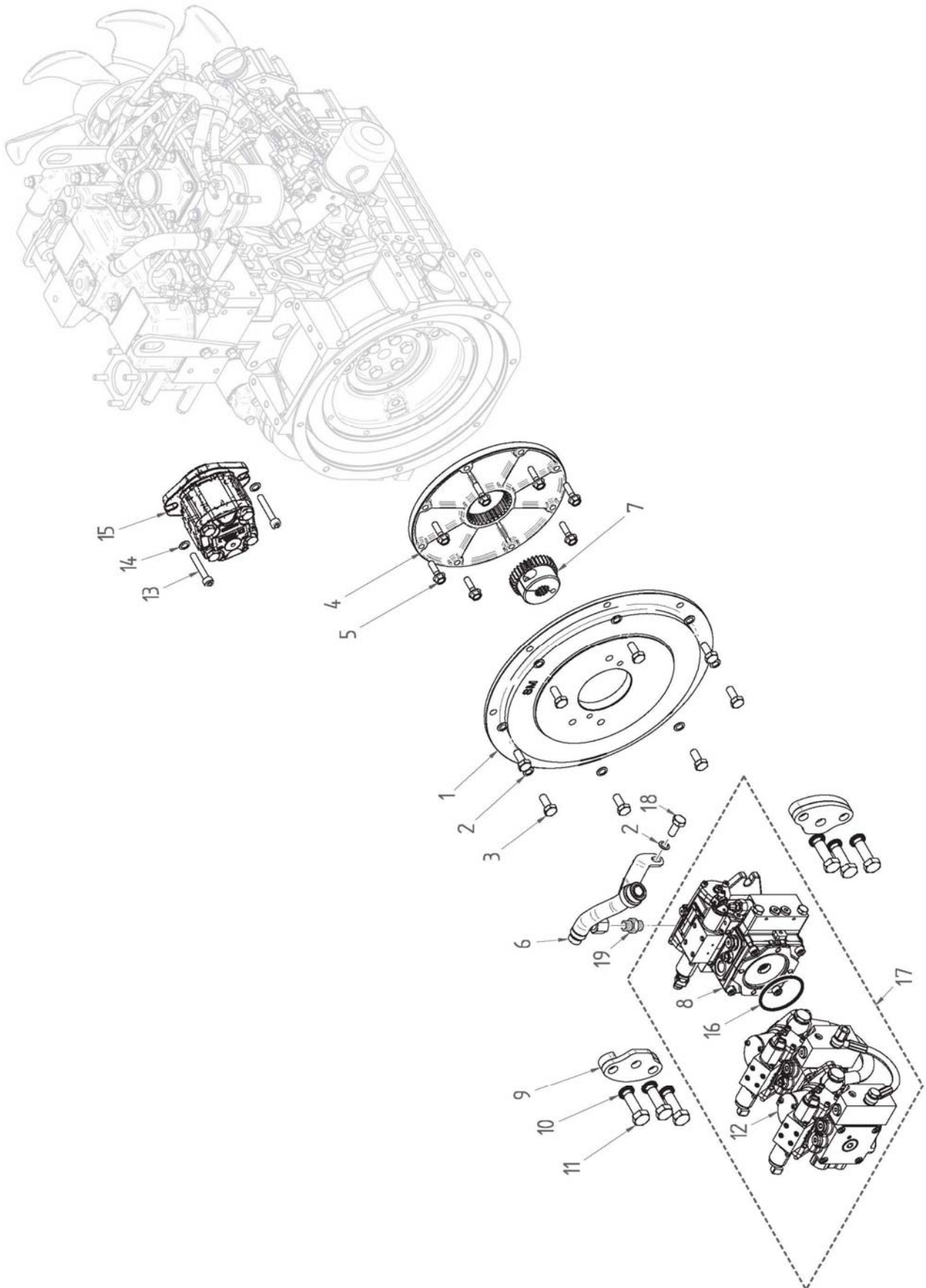


REF.	QTY.	PART No.	DESCRIPTION
			DIESEL ENGINE (Continued)
43	1	4000261	SECONDARY AIR FILTER
44	1	4000260	PRIMARY AIR FILTER
45	1	4000280	FILTER HOUSING CAP
46	1	4000279	RUBBER VALVE
47	1	4000281	CLOGGING SENSOR
48	1	4000063	ALTERNATOR LID
49	2	4000379	FLANGED HEAD SCREW
50	1	4000062	EXHAUST SUPPORT
51	1	4000061	EXHAUST MANIFOLD
52	4	9113004	NUT
53	1	4000399	CLIP
54	1	4000065	EXHAUST SILENCER

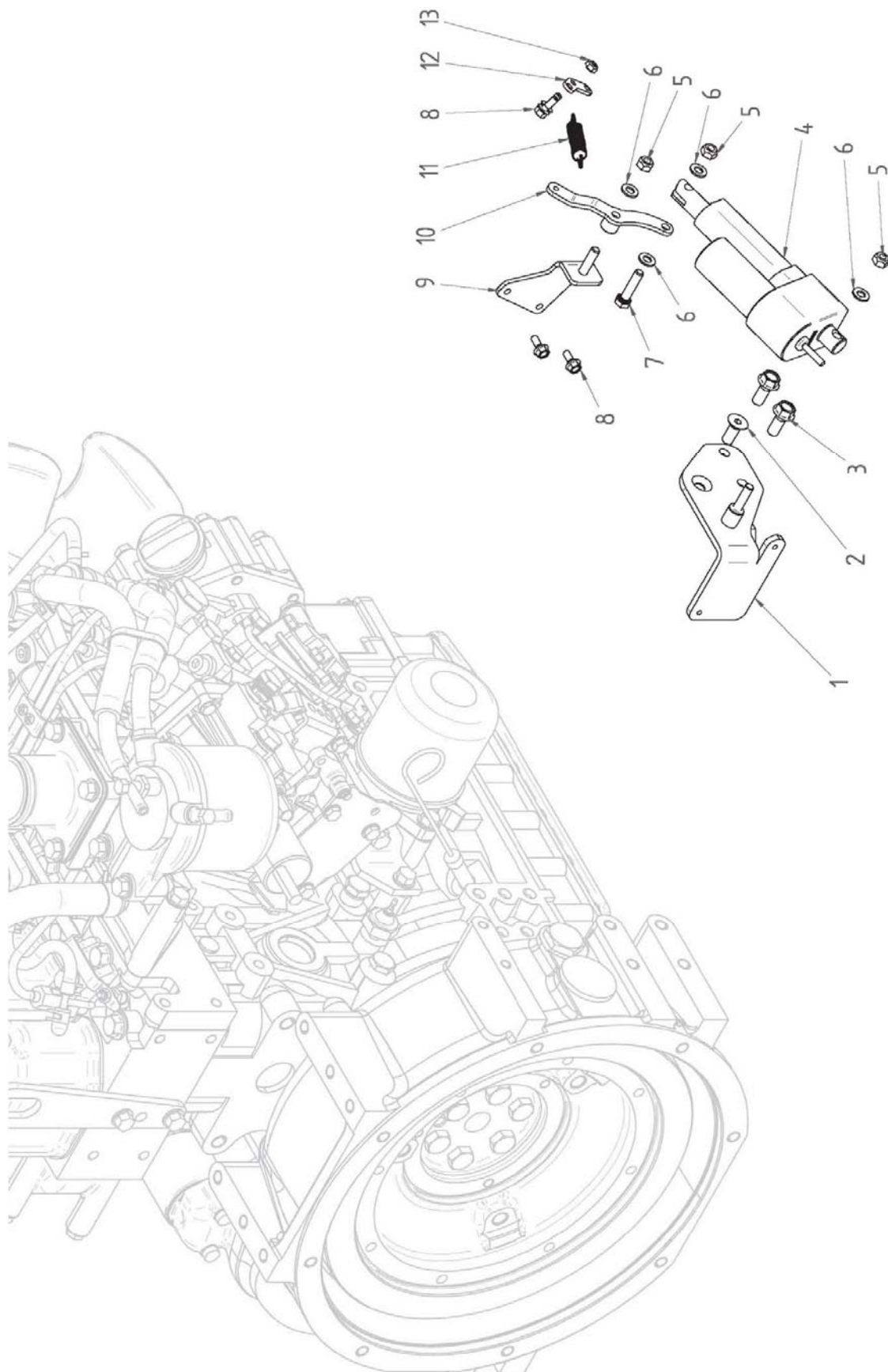


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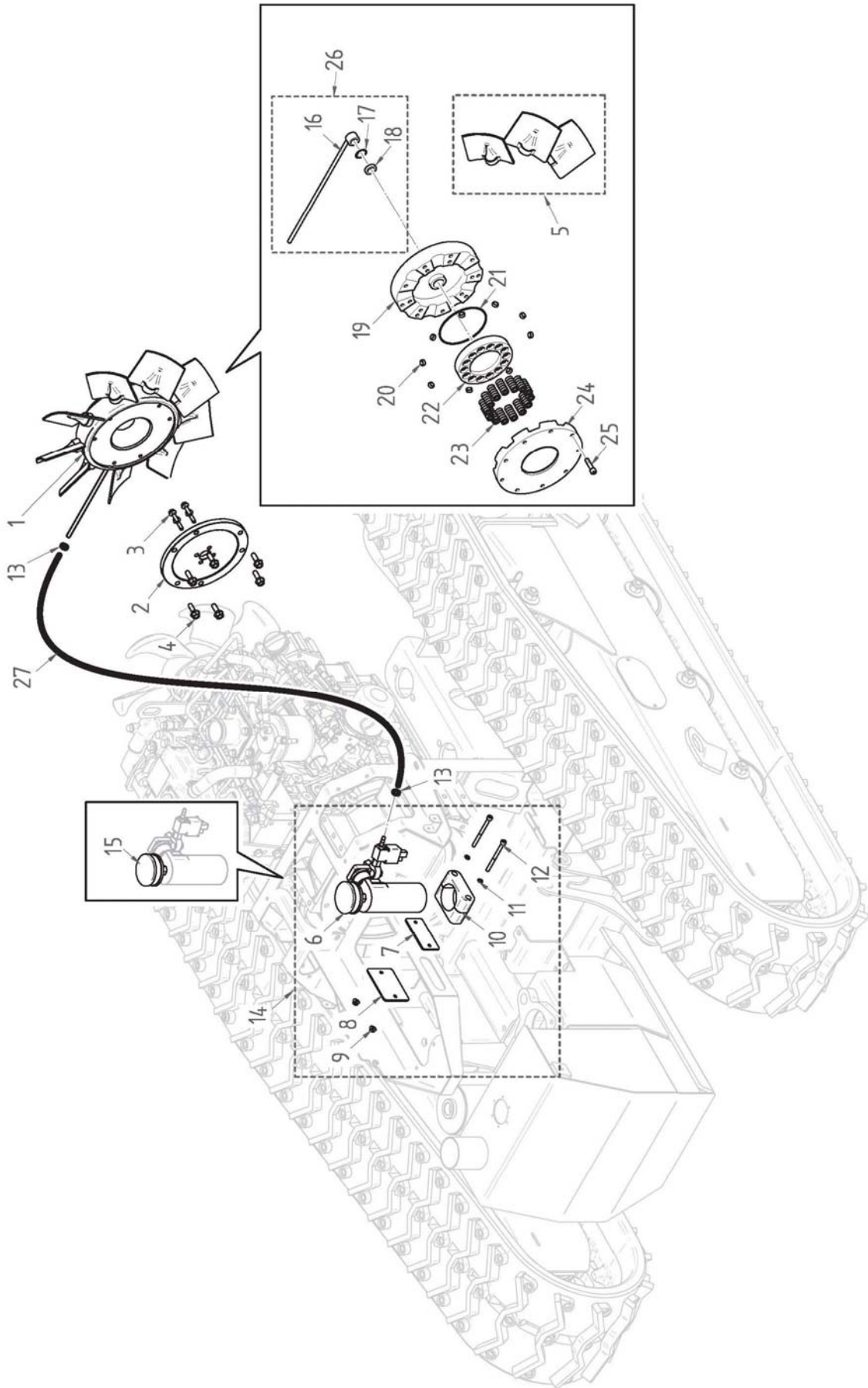
REF.	QTY.	PART No.	DESCRIPTION
			DIESEL ENGINE COMPONENTS
1	1	4000403	OIL SENSOR
2	1	4000404	SOLENOID - ELECTRICAL STOP
3	1	4000405	ALTERNATOR
4	1	4000406	STARTER MOTOR
5	1	4000407	SOLENOID - STARTER MOTOR
6	1	4000408	DIPSTICK
7	4	4000409	SETSCREW
8	4	9100106	WASHER
9	16	4000410	KNURLED WASHER
10	8	4000411	CYLINDRIC HEAD SCREW
11	4	4000412	SILENCING WASHER
12	8	9300166	HEX SKT BUTTON HEAD SCREW
13	2	4000414	REAR ANTI-VIBRATION MOUNTING
14	8	9100105	WASHER
15	8	4000415	WASHER
16	8	4000416	AUTOGRIP NUT
17	4	4000417	ANTI-VIBRATION BLOCK
18	4	4000418	AUTOGRIP NUT
19	2	4000419	LH ENGINE MOUNTING - <i>Serial No. 00074</i> ▶
	2	4000597	ENGINE MOUNTING - <i>Serial No. 00073</i>
20	2	4000420	RH ENGINE MOUNTING - <i>Serial No. 00074</i> ▶
	2	4000597	ENGINE MOUNTING - <i>Serial No. 00073</i>
21	8	4000421	CYLINDRIC HEAD SCREW
22	2	4000422	FRONT ANTI-VIBRATION MOUNTING
23	1	4000257	ENGINE OIL FILTER
24	1	4000105	FUEL FILTER
25	1	4000285	WATER SENSOR - <i>Serial No. 00076</i>
	1	4000423	WATER SENSOR - <i>Serial No. 00077</i> ▶ <i>00322</i>
	1	4000698	WATER SENSOR - <i>Serial No. 00323</i> ▶
26	2	4000424	COPPER WASHER
27	1	4000425	SUCTION STRAINER
28	1	4000053	OIL SUMP
29	2	4000353	FLANGED HEAD SCREW
30	20	4000426	FLANGED HEAD SCREW
31	1	4000427	COPPER WASHER
32	1	4000428	PLUG



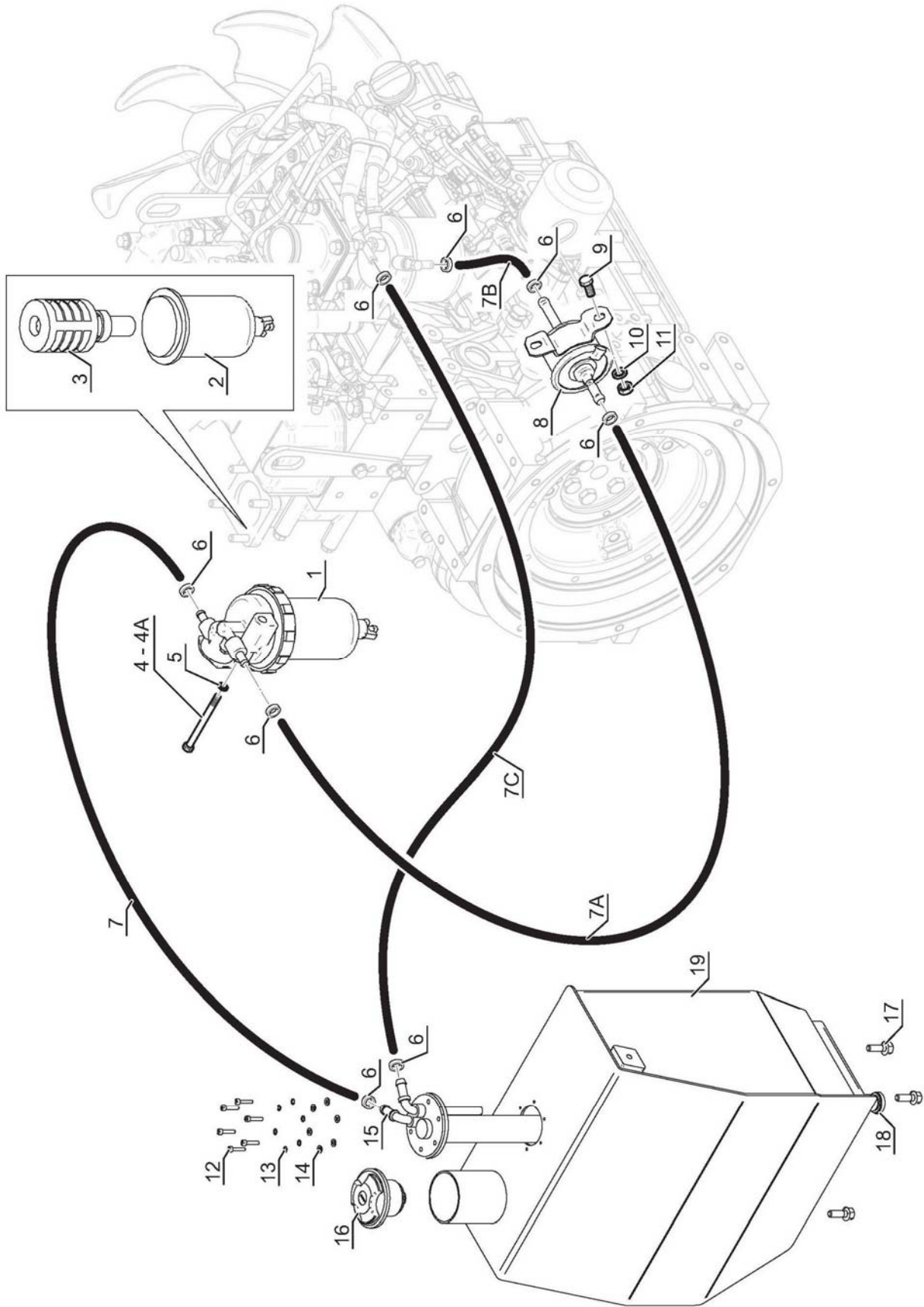
REF.	QTY.	PART No.	DESCRIPTION
			PUMPS ASSEMBLY
1	1	4000429	FLYWHEEL PUMP ADAPTOR
2	9	4000410	KNURLED WASHER
3	8	4000038	HEX HEAD SCREW
4	1	4000297	FLYWHEEL
5	8	4000430	FLANGED HEAD SCREW
6	1	4000431	PUMP MANIFOLD
7	1	4000432	GROOVED JOINT
8	1	4000296	ROTOR PUMP
9	2	4000433	PUMP CLAMP
10	6	4000434	LOCK WASHER
11	6	4000435	HEX HEAD SCREW
12	1	4000436	TANDEM PISTON PUMP - <i>Serial No. 00074</i> ▶
	1	4000598	TANDEM PISTON PUMP - <i>Serial No. ▶00073</i>
13	2	4000437	CYLINDRIC HEAD SCREW
14	2	9100105	WASHER
15	1	4000345	GEAR PUMP
16	1	4000438	O RING
17	1	4000439	PISTON PUMP
18	1	4000440	HEX HEAD SCREW
19	1	7315797	CONNECTOR



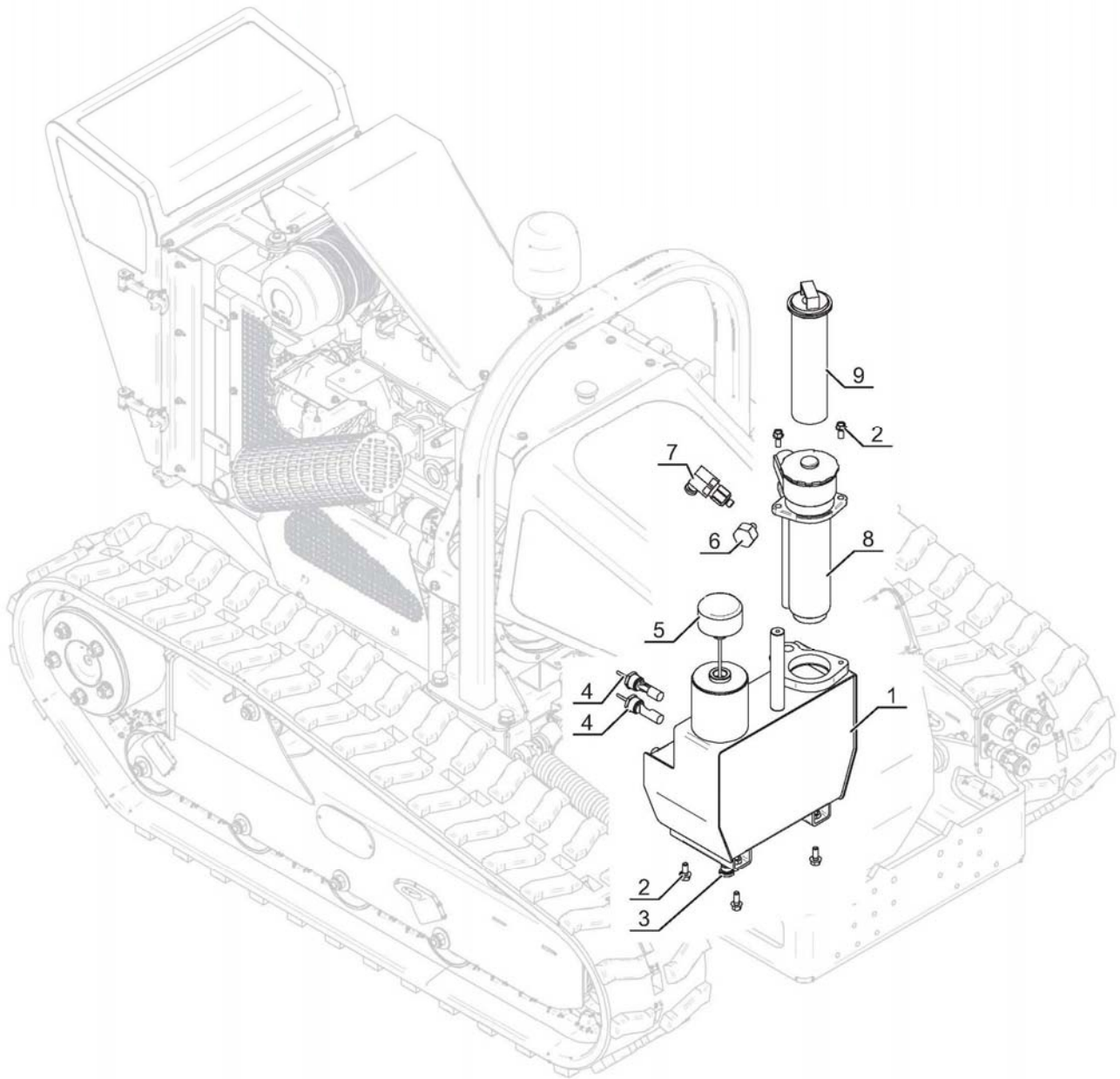
REF.	QTY.	PART No.	DESCRIPTION
			ACTUATOR ASSEMBLY
1	1	4000057	BRACKET
2	1	4000441	COUNTERSUNK HEAD SCREW
3	2	4000442	FLANGED HEAD SCREW
4	1	4000086	ACTUATOR
5	3	4000381	AUTOGRIP NUT
6	4	9100104	WASHER
7	1	9313064	HEX HEAD SCREW
8	4	9313033	FLANGED HEAD SCREW
9	1	4000058	THROTTLE BRACKET
10	1	4000059	ACTUATOR ARM
11	1	4000074	THROTTLE SPRING
12	1	4000060	ACTUATOR SPRING LINKAGE
13	2	4000443	AUTOGRIP NUT



REF.	QTY.	PART No.	DESCRIPTION
			REVERSIBLE FAN ASSEMBLY
1	1	4000274	REVERSIBLE FAN
2	1	4000276	FLANGE
3	4	4000444	FLANGED HEAD SCREW
4	6	4000445	FLANGED HEAD SCREW
5	3	4000278	BLADE SET FOR FAN (3 BLADES)
6	1	4000446	COMPRESSOR
7	1	4000447	COMPRESSOR PLATE (OUTER)
8	1	4000448	COMPRESSOR PLATE (INNER)
9	2	4000449	FLANGED NUT
10	1	4000450	COMPRESSOR CLAMP
11	2	9100103	WASHER
12	2	4000452	CYLINDRIC HEAD SCREW
13	2	4000453	HOSE CLAMP
14	1	4000451	FAN COMPRESSOR c/w FITTINGS
15	1	4000454	FAN COMPRESSOR FILTER
16	1	4000455	AIR HOSE COMPLETE
17	1	4000456	SAFETY RING
18	1	4000457	GASKET
19	1	4000458	FRONT FLANGE
20	9	4000459	ECCENTRIC PIN
21	1	4000460	SQUARE SEALING RING
22	1	4000461	PISTON
23	14	4000462	SPRING
24	1	4000463	REAR FLANGE
25	9	4000464	CYLINDRIC HEAD SCREW
26	1	4000465	PIPE KIT
27	1	4000466	AIR HOSE



REF.	QTY.	PART No.	DESCRIPTION
			DIESEL FUEL CIRCUIT
1	1	4000292	PRIMARY FUEL FILTER
2	1	4000341	FUEL FILTER CAP
3	1	4000342	PRIMARY FILTER CARTRIDGE
4	1	9213144	HEX HEAD SCREW
5	1	9100104	WASHER
6	8	4000467	HOSE CLAMP
7	1	4000468	DIESEL HOSE - 1190mm
7A	1	4000469	DIESEL HOSE - 870mm
7B	1	4000470	DIESEL HOSE - 260mm
7C	1	4000471	DIESEL HOSE - 1350mm
8	1	4000126	FUEL PUMP
9	2	4000472	FLANGED HEAD SCREW
10	2	9100103	WASHER
11	2	4000443	AUTOGRIP NUT
12	6	4000106	CYLINDRIC HEAD SCREW
13	6	4000113	SPRING WASHER
14	6	9100101	WASHER
15	1	4000473	FUEL LEVEL SENSOR
16	1	4000474	FUEL CAP
17	8	7315750	FLANGED HEAD SCREW
18	2	4000127	PLUG
19	1	4000096	FUEL TANK

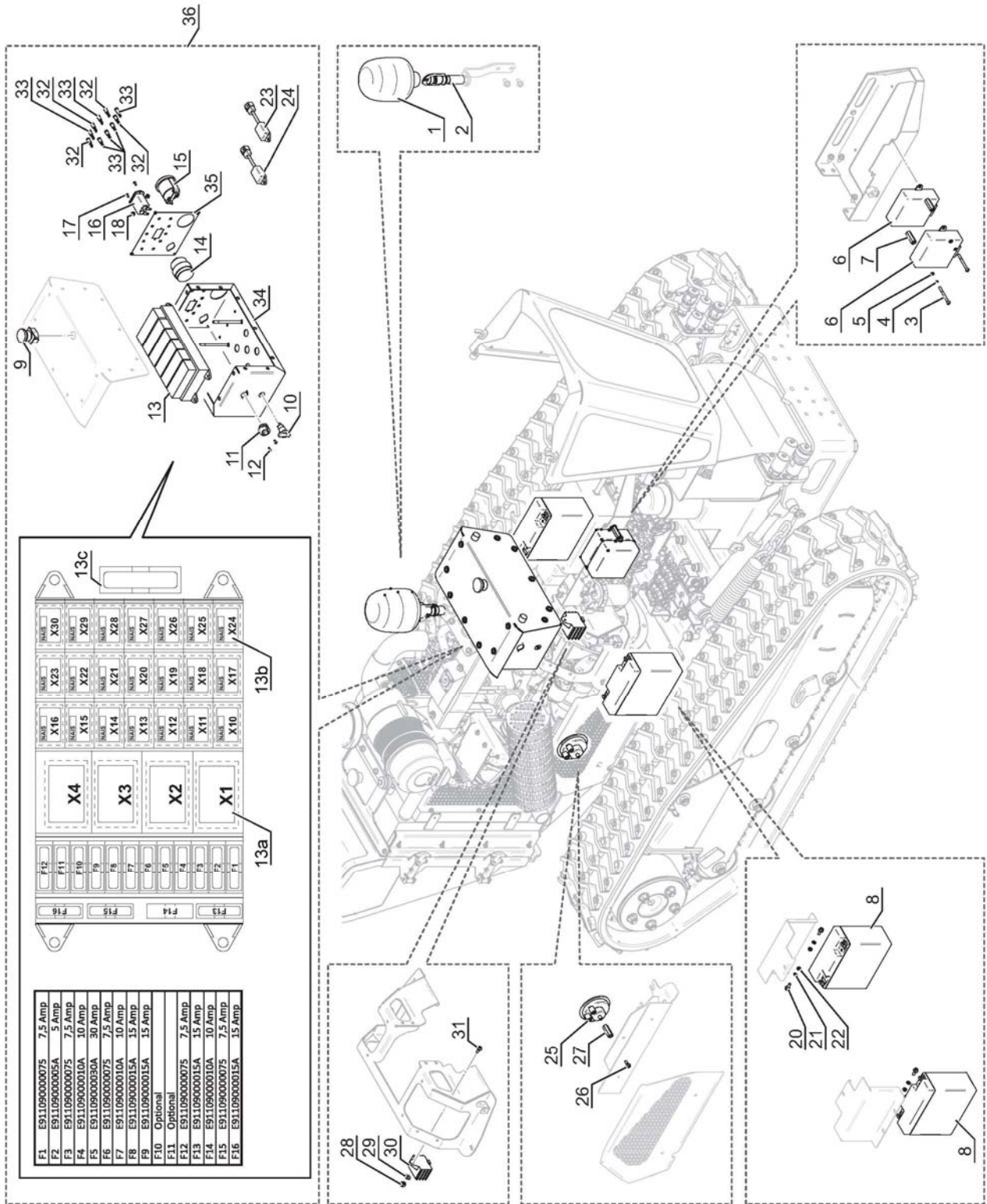


REF.	QTY.	PART No.	DESCRIPTION
			OIL TANK ASSEMBLY
1	1	4000097	OIL TANK
2	6	7315750	FLANGED HEAD SCREW
3	2	4000127	PLUG
4	2	4000148	LEVEL SENSOR
5	1	4000124	OIL CAP / LEVEL
6	1	4000475	OIL FILTER SENSOR BRACKET
7	1	4000476	FILTER CLOGGING SWITCH
8	1	4000122	OIL FILTER HOUSING
9	1	4000259	OIL FILTER ELEMENT

ELECTRICAL COMPONENTS

ROBOCUT (Machine Serial No. ► 00088)

McCONEL



F1	E911090000075	7.5 Amp
F2	E91109000005A	5 Amp
F3	E911090000075	7.5 Amp
F4	E91109000010A	10 Amp
F5	E91109000030A	30 Amp
F6	E911090000075	7.5 Amp
F7	E91109000010A	10 Amp
F8	E91109000015A	15 Amp
F9	E91109000015A	15 Amp
F10	Optional	
F11	Optional	
F12	E911090000075	7.5 Amp
F13	E91109000015A	15 Amp
F14	E91109000010A	10 Amp
F15	E911090000075	7.5 Amp
F16	E91109000015A	15 Amp

ELECTRICAL COMPONENTS

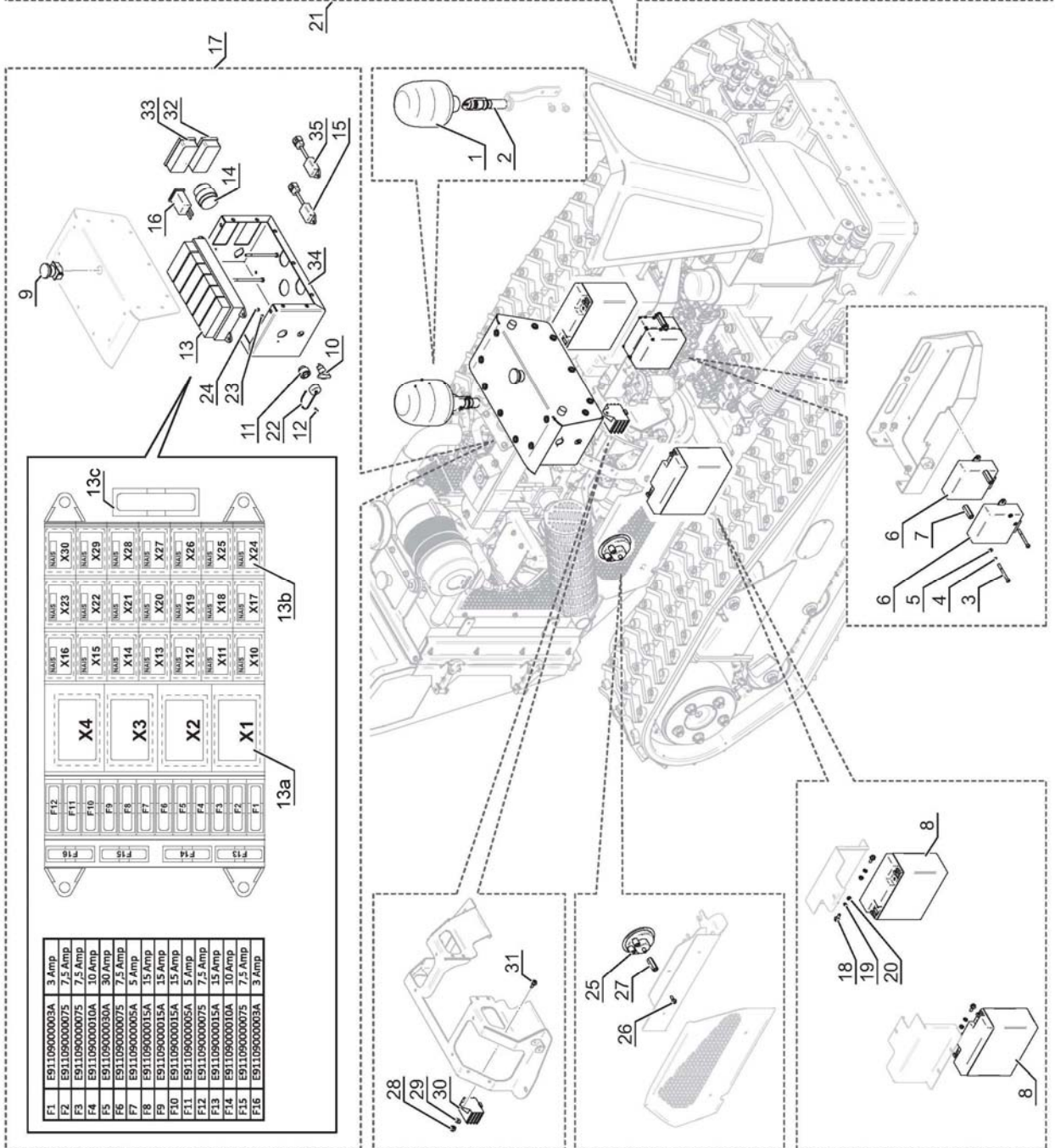
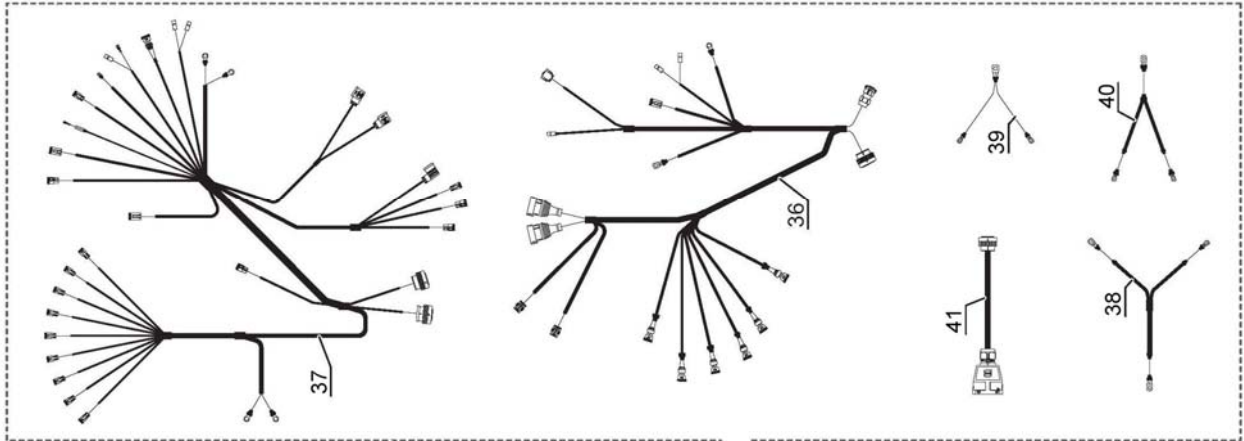
McCONNEL

ROBOCUT (Machine Serial No. ► 00088)

REF.	QTY.	PART No.	DESCRIPTION
ELECTRICAL COMPONENTS			
Machine Serial No. ► 00088			
1	1	4000294	BEACON
2	1	4000284	BEACON CONNECTION
3	2	4000108	CYLINDRIC HEAD SCREW
4	2	9100203	SPRING WASHER
5	2	9100103	WASHER
6	2	4000304	MICROPROCESSOR
7	2	4000305	NUT
8	2	4000181	BATTERY
9	1	4000306	EMERGENCY SWITCH (RED)
10	1	4000307	PLUG 12V
11	1	4000599	CONNECTOR PLUG (FEMALE)
12	2	4000600	COUNTERSUNK SCREW
13	1	4000147	RELAYS / FUSE BOX
13a	4	4000302	RELAY WITH DIODE
13b	21	4000303	MICRO RELAY
13c	1	4000311	FUSE (40A)
14	1	4000312	IGNITION SWITCH
15	1	4000143	WATER TEMPERATURE INDICATOR
16	1	4000149	HOURS COUNTER
17	2	4000309	HEX SKT BUTTON HEAD SCREW
18	2	9163001	LOCK NUT
19	1	4000484	FEMALE CONNECTOR
20	1	4000316	FLANGED HEAD SCREW
21	1	9100103	WASHER
22	1	4000075	AUTOGRIP NUT
23	1	4000326	INJECTION PUMP DELAY
24	1	4000313	PRE AIR HEATER
25	1	4000301	HORN (12V)
26	1	4000319	FLANGED HEAD SCREW
27	1	4000320	NUT
28	1	9163003	AUTOGRIP NUT
29	1	4000321	WASHER (LARGE SERIES)
30	1	4000322	SHUNT BOX
31	1	4000316	FLANGED HEAD SCREW
32	4	4000601	YELLOW LED
33	6	4000602	RED LED
34	1	4000102	ELECTRICAL BOX
35	1	4000104	INSTRUMENT PANEL
36	1	4000603	ELECTRICAL BOX ASSEMBLY

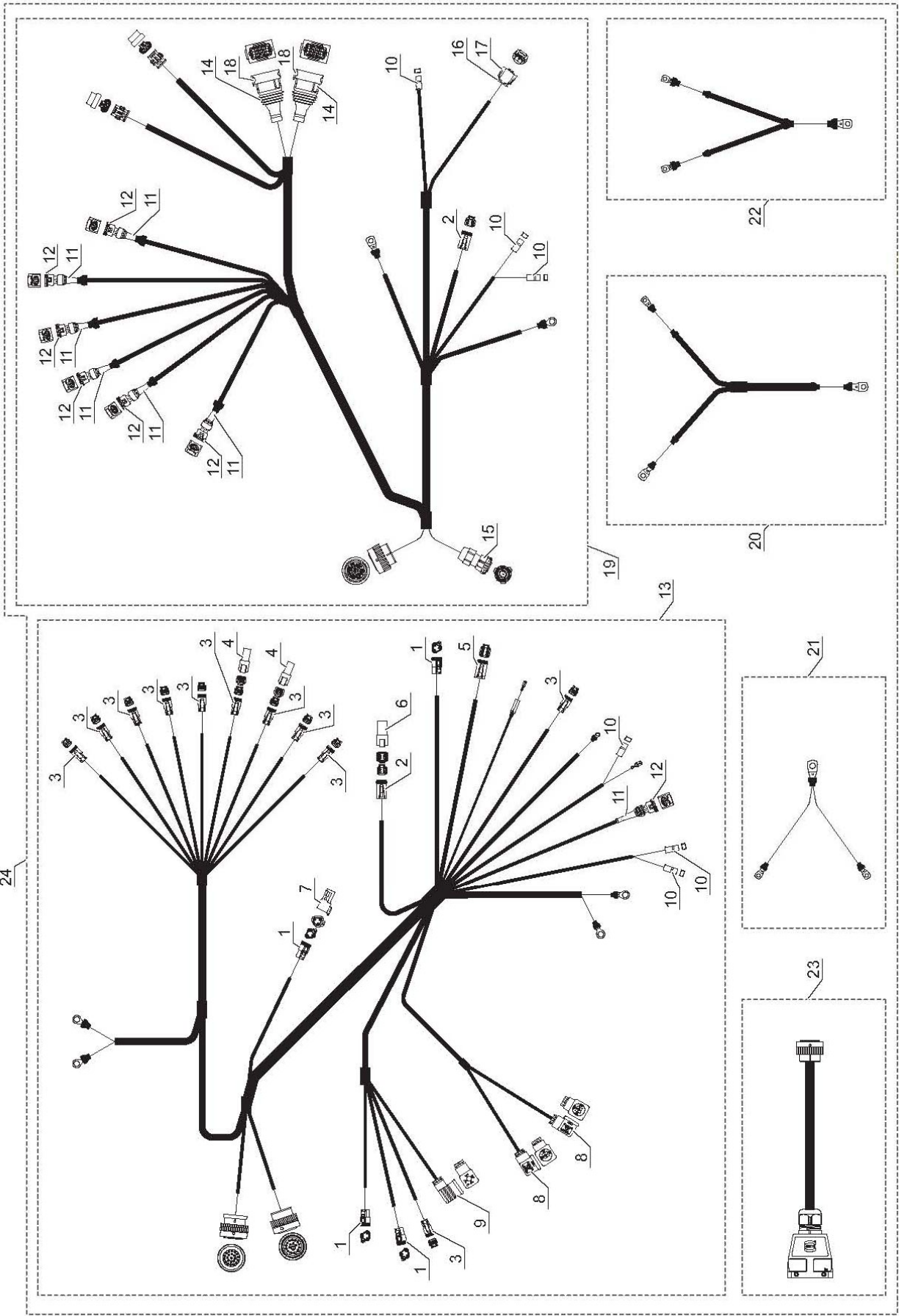
ELECTRICAL COMPONENTS

ROBOCUT (Machine Serial No. 00089 ►)



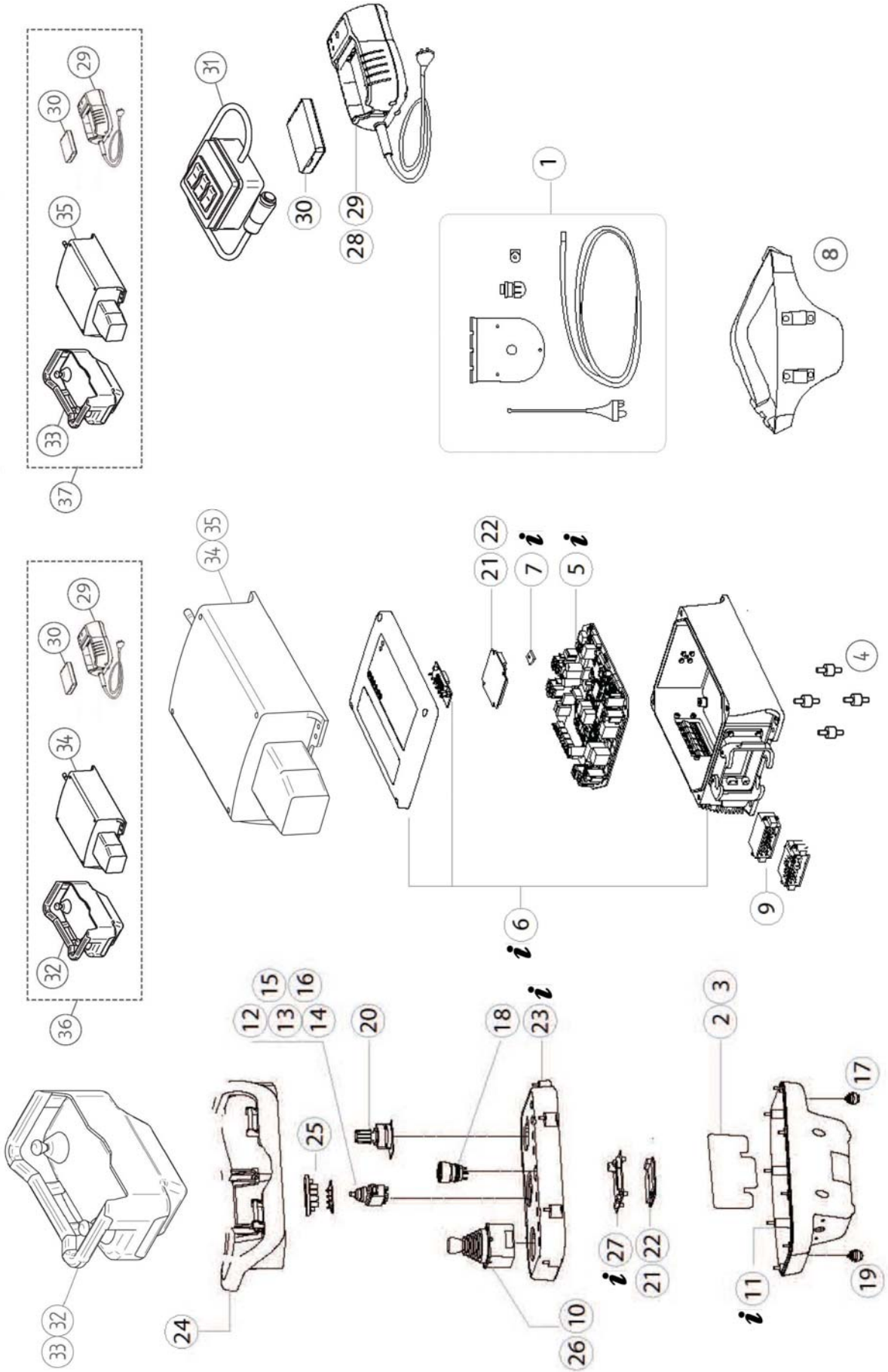
F1	E91109000003A	3 Amp
F2	E911090000075	7.5 Amp
F3	E911090000075	7.5 Amp
F4	E91109000010A	10 Amp
F5	E91109000030A	30 Amp
F6	E911090000075	7.5 Amp
F7	E911090000065A	5 Amp
F8	E91109000015A	15 Amp
F9	E91109000015A	15 Amp
F10	E91109000015A	15 Amp
F11	E91109000065A	5 Amp
F12	E911090000075	7.5 Amp
F13	E91109000015A	15 Amp
F14	E91109000010A	10 Amp
F15	E911090000075	7.5 Amp
F16	E91109000003A	3 Amp

REF.	QTY.	PART No.	DESCRIPTION
			ELECTRICAL COMPONENTS
			Machine Serial No. 00089 ►
1	1	4000294	BEACON
2	1	4000284	BEACON CONNECTION
3	2	4000108	CYLINDRIC HEAD SCREW
4	2	9100203	SPRING WASHER
5	2	9100103	WASHER
6	2	4000304	MICROPROCESSOR
7	2	4000305	NUT
8	2	4000181	BATTERY
9	1	4000306	EMERGENCY SWITCH (RED)
10	1	4000307	PLUG 12V
11	1	4000308	FEMALE CONNECTOR
12	2	4000309	HEX SKT BUTTON HEAD SCREW
13	1	4000310	RELAYS / FUSE BOX
13a	4	4000302	RELAY WITH DIODE
13b	21	4000303	MICRO RELAY
13c	1	4000311	FUSE (40A)
14	1	4000312	IGNITION SWITCH
15	1	4000313	PRE AIR HEATER
16	1	4000314	HOURS COUNTER
17	1	4000315	ELECTRICAL BOX ASSEMBLY
18	4	4000309	FLANGED HEAD SCREW
19	4	4000321	WASHER
20	4	9163003	AUTOGRIP NUT
21	1	4000317	ELECTRICAL SYSTEM COMPLETE
22	1	4000318	CONNECTOR PLUG (FEMALE)
23	1	9100101	WASHER
24	1	9163001	LOCK NUT
25	1	4000301	HORN (12V)
26	1	4000319	FLANGED HEAD SCREW
27	1	4000320	NUT
28	1	9163003	LOCK NUT
29	1	4000321	WASHER (LARGE SERIES)
30	1	4000322	SHUNT BOX
31	1	4000316	FLANGED HEAD SCREW
32	1	4000323	ELECTRICAL UNIT
33	1	4000324	ELECTRICAL UNIT
34	1	4000325	ELECTRICAL BOX
35	1	4000326	INJECTION PUMP DELAY
36	1	4000327	WIRING LOOM (CUTTING HEAD)
37	1	4000328	WIRING LOOM (DISTRIBUTOR)
38	1	4000329	BATTERY CABLE (POSITIVE)
39	1	4000330	BATTERY CABLE (NEGATIVE)
40	1	4000331	WIRING LOOM (STARTER/ALTERNATOR)
41	1	4000332	POWER LINE (RECEIVER)



REF.	QTY.	PART No.	DESCRIPTION
			ELECTRICAL WIRING
1	4	4000477	3-WAY MALE CONNECTOR
2	2	4000478	4-WAY MALE CONNECTOR
3	11	4000479	2-WAY MALE CONNECTOR
4	2	4000480	2-WAY FEMALE CONNECTOR
5	1	4000481	6-WAY MALE CONNECTOR
6	1	4000482	4-WAY FEMALE CONNECTOR
7	1	4000483	3-WAY FEMALE CONNECTOR
8	2	4000484	2 POLE FEMALE CONNECTOR
9	1	4000485	3 POLE FEMALE CONNECTOR
10	5	4000486	CONNECTOR
11	7	4000487	RUBBER CABLE SLEEVE
12	7	4000337	2-WAY CONNECTOR
13	1	4000328	WIRING LOOM (DISTRIBUTOR)
14	2	4000488	24-WAY CONNECTOR
15	1	4000489	3-WAY FEMALE CONNECTOR
16	1	4000490	CONNECTOR
17	1	4000491	RUBBER CABLE SLEEVE
18	2	4000492	SLIDE FOR 24-WAY CONNECTOR
19	1	4000493	WIRING LOOM (CUTTING HEAD)
20	1	4000329	BATTERY CABLE (POSITIVE)
21	1	4000330	BATTERY CABLE (NEGATIVE)
22	1	4000331	WIRING LOOM (STARTER MOTOR)
23	1	4000332	WIRING LOOM (RECEIVER)
24	1	4000317	WIRING LOOM COMPLETE

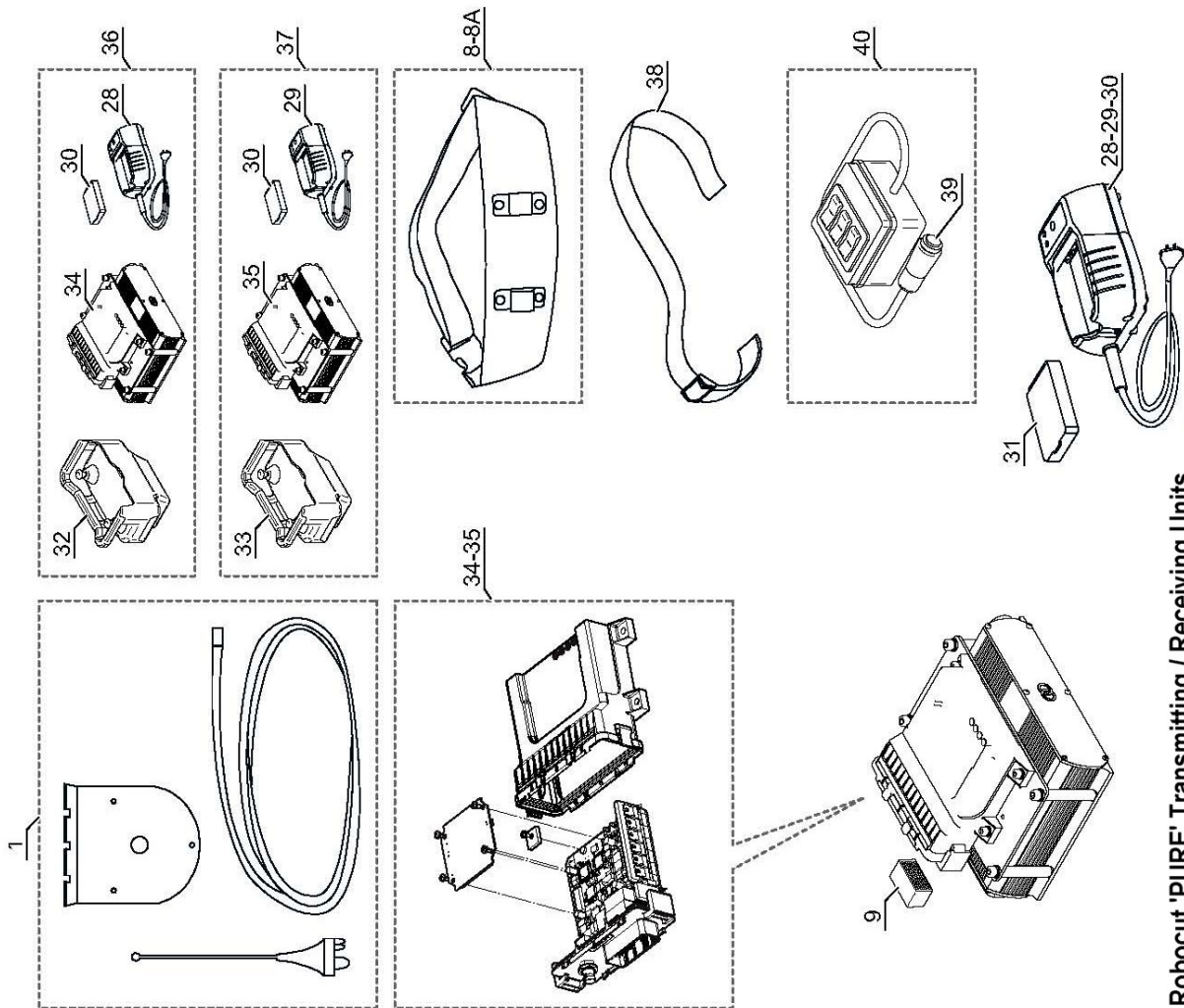
i NOTE: The Serial No. of the Remote Control is required to order items #5, 6, 7, 11, 23 & 27



ROBOCUT

REF.	QTY.	PART No.	DESCRIPTION
			CONTROL TRANSMITTING/RECEIVING UNITS
1	1	4000282	AERIAL (ANTENNA)
2	1	4000494	ANTENNA (EUR)
3	1	4000495	ANTENNA (USA)
4	1	4000496	VIBRATION DAMPER KIT
5	1	4000497	<i>i</i> MOTHERBOARD (<i>Requires Serial No. of R/C</i>)
6	1	4000498	<i>i</i> ARM CASING (<i>Requires Serial No. of R/C</i>)
7	1	4000499	<i>i</i> ADDRESS KEY (<i>Requires Serial No. of R/C</i>)
8	1	4000500	WAIST BELT
	1	4000501	WAIST BELT XXL (Optional)
9	1	4000502	SOCKET
10	2	4000503	PROPORTIONAL JOYSTICK (DUAL AXIS)
11	1	4000504	<i>i</i> LOWER CONTROL UNIT (<i>Requires Serial No. of R/C</i>)
12	1	4000505	TOGGLE SWITCH (ON)-OFF-(ON)
13	1	4000506	TOGGLE SWITCH ON-OFF-ON
14	1	4000507	TOGGLE SWITCH (ON)-ON
15	2	4000508	TOGGLE SWITCH ON-ON
16	1	4000509	TOGGLE SWITCH 2 POLES ON-OFF-ON
17	4	4000510	PUSH-BUTTON (BLACK)
18	1	4000511	STOP PUSH-BUTTON
19	1	4000512	PUSH-BUTTON (GREEN)
20	2	4000513	POTENTIOMETRIC SELECTOR
21	1	4000514	RADIO MODULE (EUR)
22	1	4000515	RADIO MODULE (USA)
23	1	4000516	<i>i</i> UPPER CONTROL UNIT (<i>Requires Serial No. of R/C</i>)
24	1	4000517	CONTROL UNIT FRAME
25	1	4000518	KIT CARD (4 LEDS)
26	1	4000519	JOYSTICK GAITOR
27	1	4000525	<i>i</i> CODER CARD (<i>Requires Serial No. of R/C</i>)
28	1	4000293	BATTERY CHARGER - EUR
29	1	4000526	BATTERY CHARGER - USA (Optional)
30	1	4000270	REMOTE CONTROL BATTERY
31	1	4000527	MANUAL CONTROLLER - <i>Machine Serial No. 00089</i> ►
	1	4000715	MANUAL CONTROLLER - <i>Machine Serial No.</i> ► 00088
32	1	4000273	TRANSMITTER (EUR)
33	1	4000528	TRANSMITTER (USA - AUS)
34	1	4000530	RADIO R/CONTROL RECEIVER (USA-AUS)
35	1	4000529	RADIO R/CONTROL RECEIVER (EUR)
36	1	4000291	RECEIVER / TRANSMITTER SET (EUR)
37	1	4000532	RECEIVER / TRANSMITTER SET (USA-AUS)

ROBOCUT



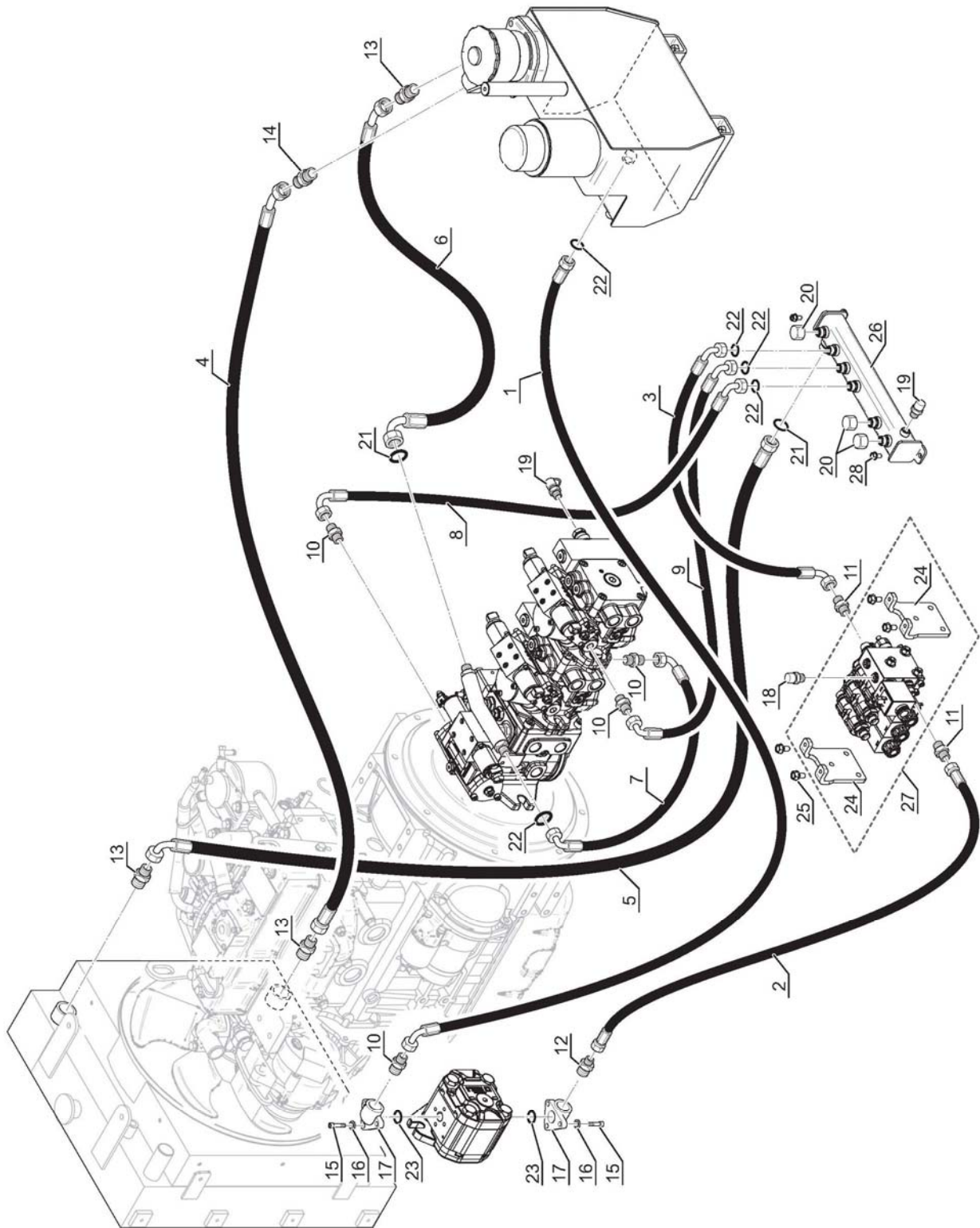
Robocut 'PURE' Transmitting / Receiving Units

REF.	QTY.	PART No.	DESCRIPTION
			CONTROL TRANSMITTING/RECEIVING UNITS
1	1	4000282	AERIAL (ANTENNA)
2	1	4000494	ANTENNA (EUR)
3	1	4000495	ANTENNA (USA)
4	4	4000717	SWITCH COVER
5	1	4000718	START KEY CONNECTOR KIT
6	1	4000349	START KEY
7	1	4000719	PROPORTIONAL JOYSTICK (SINGLE AXIS)
8	1	4000500	WAIST BELT
	1	4000501	WAIST BELT XXL (Optional)
9	1	4000502	SOCKET
10	1	4000503	PROPORTIONAL JOYSTICK (DUAL AXIS)
11	1	4000720	i LOWER CONTROL UNIT (<i>Requires Serial No. of R/C</i>)
12	1	4000721	TOGGLE SWITCH (ON)-OFF-(ON)
13	1	4000722	TOGGLE SWITCH ON-OFF-(ON)
14	1	4000723	TOGGLE SWITCH ON-(ON)
15	2	4000724	TOGGLE SWITCH (ON)-ON
16	1	4000725	TOGGLE SWITCH ON-OFF-ON
17	5	4000510	PUSH-BUTTON (BLACK)
18	1	4000511	STOP PUSH-BUTTON
19	1	4000512	PUSH-BUTTON (GREEN)
20	2	4000513	POTENTIOMETRIC SELECTOR
21	1	4000514	RADIO MODULE (EUR)
22	1	4000515	RADIO MODULE (USA)
23	1	4000726	i UPPER CONTROL UNIT (<i>Requires Serial No. of R/C</i>)
24	1	4000727	CONTROL UNIT FRAME
25	1	4000518	KIT CARD (4 LEDS)
26	1	4000519	JOYSTICK GAITOR
27	1	4000525	i CODER CARD (<i>Requires Serial No. of R/C</i>)
28	1	4000526	BATTERY CHARGER 80-250V - USA
29	1	4000293	BATTERY CHARGER - EUR
30	1	4000728	BATTERY CHARGER 110V - USA
31	1	4000270	REMOTE CONTROL BATTERY
32	1	4000273	TRANSMITTER (EUR)
33	1	4000528	TRANSMITTER (USA - AUS)
34	1	4000729	RECEIVER UNIT 870MHZ / TRANSMITTER KEY
35	1	4000730	RECEIVER UNIT 915MHZ / TRANSMITTER KEY
36	1	4000731	REMOTE CONTROL KIT (870MHZ)
37	1	4000732	REMOTE CONTROL KIT (915MHZ)
38	1	4000733	SHOULDER BELT
39	1	4000734	CONNECTOR
40	1	4000527	MANUAL CONTROLLER - <i>Machine Serial No. 00089</i> ►
	1	4000715	MANUAL CONTROLLER - <i>Machine Serial No. 00088</i> ►

INTAKE & DRAIN PUMPS

ROBOCUT (Machine Serial No. 00028 ▶ 00088)

McCONEL



INTAKE & DRAIN PUMPS**McCONNEL**

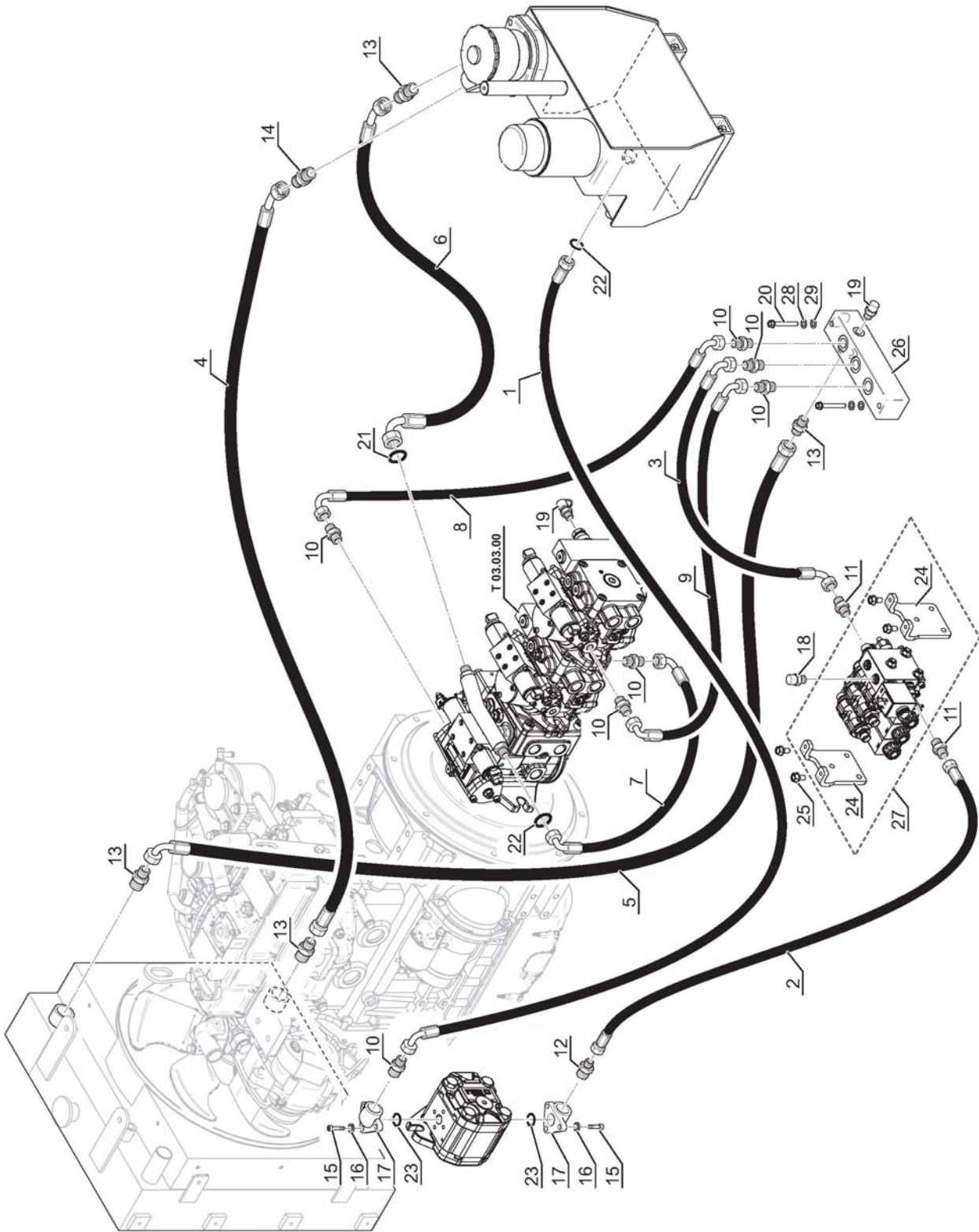
ROBOCUT (Machine Serial No. 00028 ► 00088)

REF.	QTY.	PART No.	DESCRIPTION
			INTAKE & DRAIN PUMPS
			Machine Serial No. 00028 ► 00088
1	1	4000533	HYDRAULIC HOSE
2	1	4000534	HYDRAULIC HOSE
3	1	4000535	HYDRAULIC HOSE
4	1	4000536	HYDRAULIC HOSE
5	1	4000537	HYDRAULIC HOSE
6	1	4000538	HYDRAULIC HOSE
7	1	4000539	HYDRAULIC HOSE
8	1	4000540	HYDRAULIC HOSE
9	1	4000541	HYDRAULIC HOSE
10	7	7315797	CONNECTOR
11	2	7315777	CONNECTOR
12	1	7315775	CONNECTOR
13	4	7315774	CONNECTOR
14	1	4000542	CONNECTOR
15	6	4000543	CYLINDRIC HEAD SCREW
16	6	4000544	SPRING WASHER
17	2	4000545	PUMP CONNECTION
18	1	4000546	CHECK COUPLING
19	2	7315769	CHECK COUPLING
20	3	4000604	FEMALE PLUG
21	1	4000548	O RING
22	2	4000549	O RING
23	2	4000550	O RING
24	2	4000551	VALVE BLOCK BRACKET
25	8	4000353	FLANGED HEAD SCREW
26	1	4000100	OIL MANIFOLD
27	1	4000553	VALVE BLOCK
28	2	4000353	FLANGED HEAD SCREW

INTAKE & DRAIN PUMPS

ROBOCUT (Machine Serial No. 00089 ▶)

McCONEL



INTAKE & DRAIN PUMPS**McCONNEL**

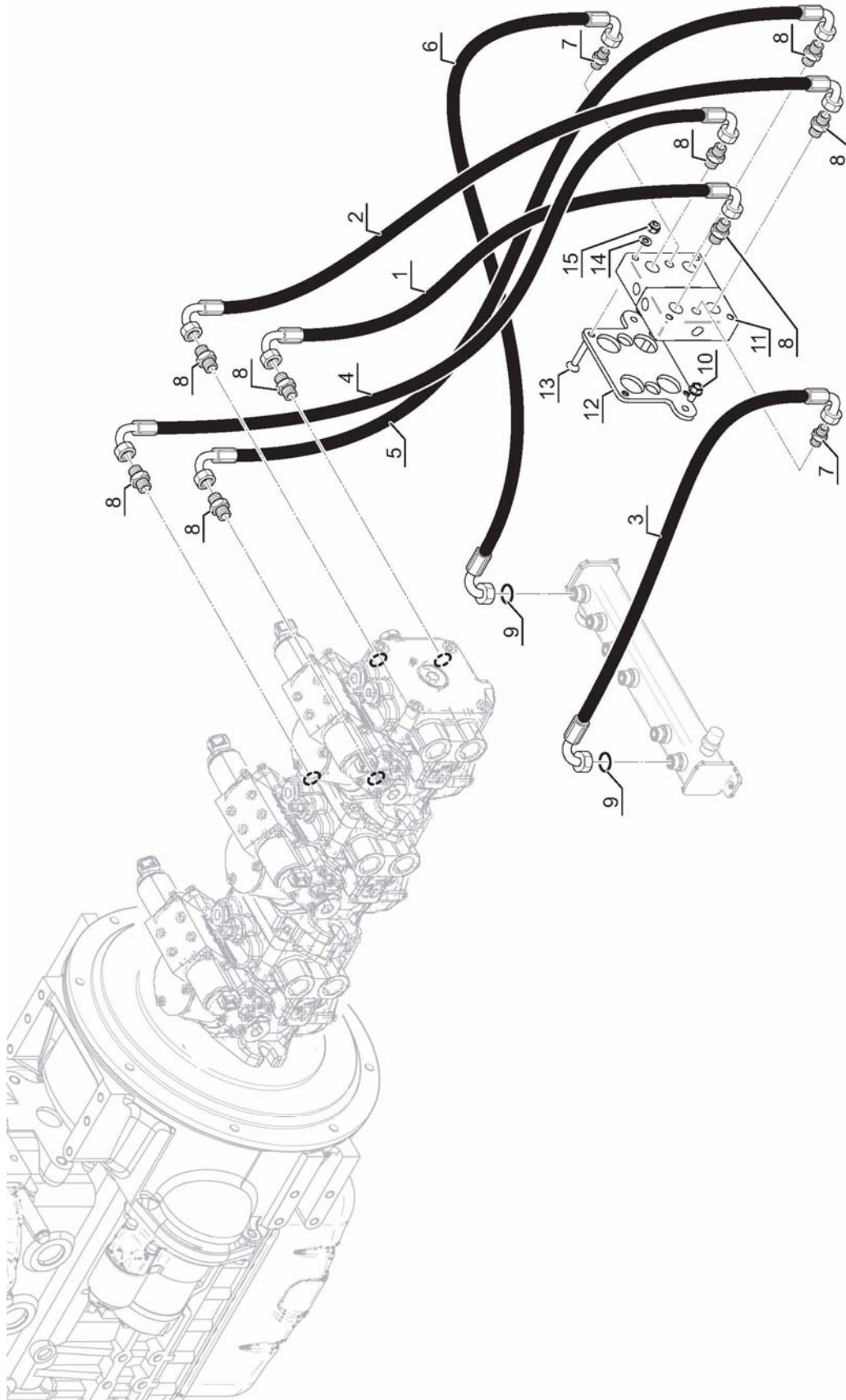
ROBOCUT (Machine Serial No. 00089 ►)

REF.	QTY.	PART No.	DESCRIPTION
			INTAKE & DRAIN PUMPS
			Machine Serial No. 00089 ►
1	1	4000533	HYDRAULIC HOSE
2	1	4000534	HYDRAULIC HOSE
3	1	4000535	HYDRAULIC HOSE
4	1	4000536	HYDRAULIC HOSE
5	1	4000537	HYDRAULIC HOSE
6	1	4000538	HYDRAULIC HOSE
7	1	4000539	HYDRAULIC HOSE
8	1	4000540	HYDRAULIC HOSE
9	1	4000541	HYDRAULIC HOSE
10	7	7315797	CONNECTOR
11	2	7315777	CONNECTOR
12	1	7315775	CONNECTOR
13	4	7315774	CONNECTOR
14	1	4000542	CONNECTOR
15	6	4000543	CYLINDRIC HEAD SCREW
16	6	4000544	SPRING WASHER
17	2	4000545	PUMP CONNECTION
18	1	4000546	CHECK COUPLING
19	2	7315769	CHECK COUPLING
20	2	4000547	HEX HEAD SCREW
21	1	4000548	O RING
22	2	4000549	O RING
23	2	4000550	O RING
24	2	4000551	VALVE BLOCK BRACKET
25	8	4000353	FLANGED HEAD SCREW
26	1	4000552	OIL MANIFOLD
27	1	4000553	VALVE BLOCK
28	2	9100204	SPRING WASHER
29	2	9100104	FLAT WASHER

CHANGE OVER VALVE CIRCUIT

ROBOCUT (Machine Serial No. ► 00073)

McCONEL



CHANGE OVER VALVE CIRCUIT**McCONNEL**

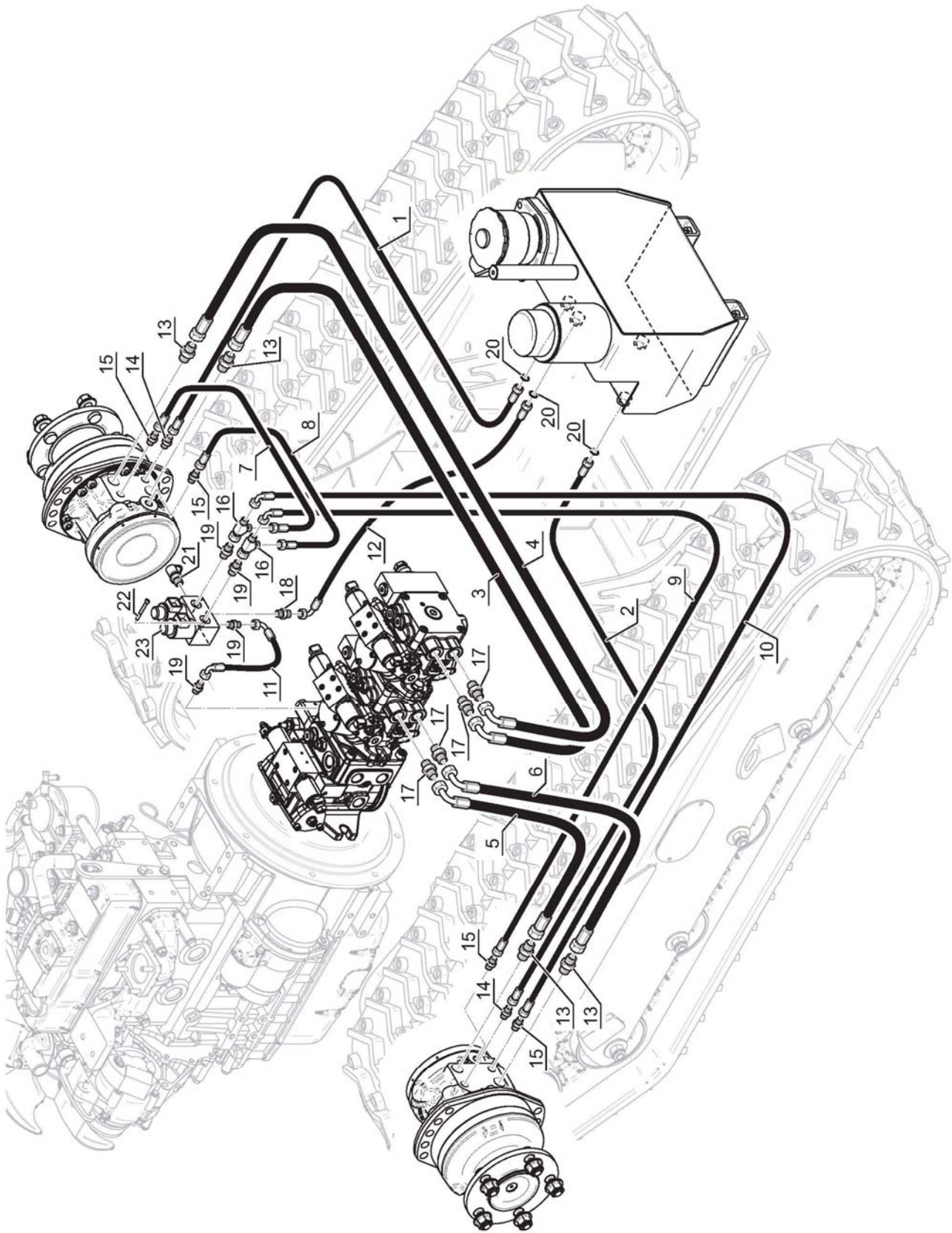
ROBOCUT (Machine Serial No. ► 00073)

REF.	QTY.	PART No.	DESCRIPTION
			CHANGE OVER VALVE CIRCUIT
			Machine Serial No. ► 00073
1	1	4000554	HYDRAULIC HOSE
2	1	4000555	HYDRAULIC HOSE
3	1	4000556	HYDRAULIC HOSE
4	1	4000557	HYDRAULIC HOSE
5	1	4000558	HYDRAULIC HOSE
6	1	4000559	HYDRAULIC HOSE
7	2	4000560	CONNECTOR
8	8	7315777	CONNECTOR
9	2	4000549	O RING
10	2	4000353	FLANGED HEAD SCREW
11	2	4000561	CHANGE OVER VALVE
12	1	4000562	VALVE PLATE
13	4	4000563	COUNTERSUNK HEAD SCREW
14	4	9100104	WASHER
15	4	9163004	LOCK NUT

TRACKS HYDRAULIC CIRCUIT

ROBOCUT (Machine Serial No. ► 00088)

McCONEL



TRACKS HYDRAULIC CIRCUIT

McCONNEL

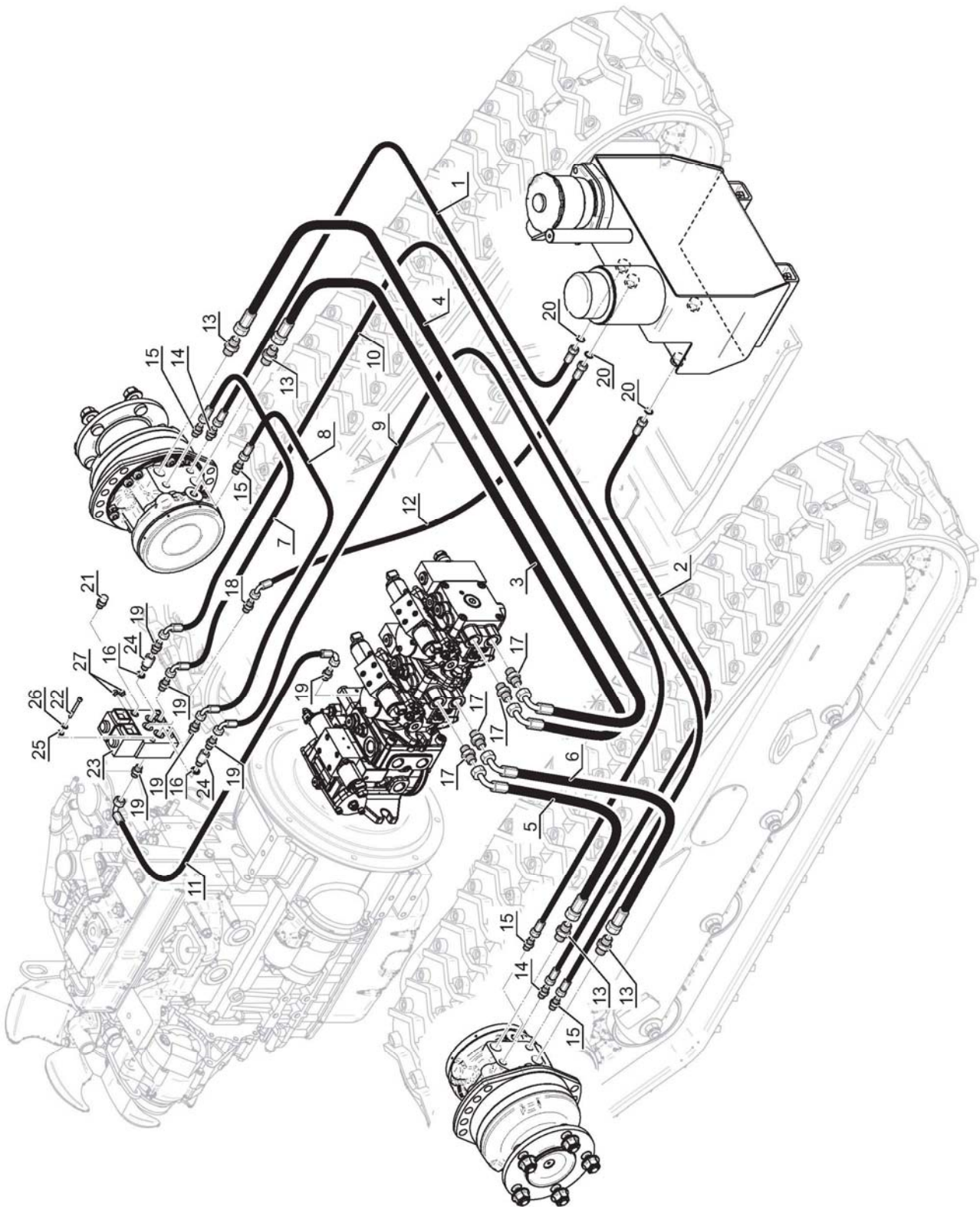
ROBOCUT (Machine Serial No. ► 00088)

REF.	QTY.	PART No.	DESCRIPTION
			TRACKS HYDRAULIC CIRCUIT
			Machine Serial No. ► 00088
1	1	4000564	HYDRAULIC HOSE
2	1	4000565	HYDRAULIC HOSE
3	1	4000566	HYDRAULIC HOSE
4	1	4000567	HYDRAULIC HOSE
5	1	4000568	HYDRAULIC HOSE
6	1	4000569	HYDRAULIC HOSE
7	1	4000570	HYDRAULIC HOSE
8	1	4000571	HYDRAULIC HOSE
9	1	4000572	HYDRAULIC HOSE
10	1	4000573	HYDRAULIC HOSE
11	1	4000574	HYDRAULIC HOSE
12	1	4000575	HYDRAULIC HOSE
13	4	4000576	CONNECTOR
14	2	4000577	CONNECTOR
15	4	4000578	CONNECTOR
16	2	4000588	TEE FITTING
17	4	7315775	CONNECTOR
18	1	4000560	CONNECTOR
19	5	4000579	CONNECTOR
20	3	4000549	O RING
21	1	4000546	CHECK COUPLING
22	2	4000069	CYLINDRIC HEAD SCREW
23	1	4000606	SPEED-BRAKE VALVE

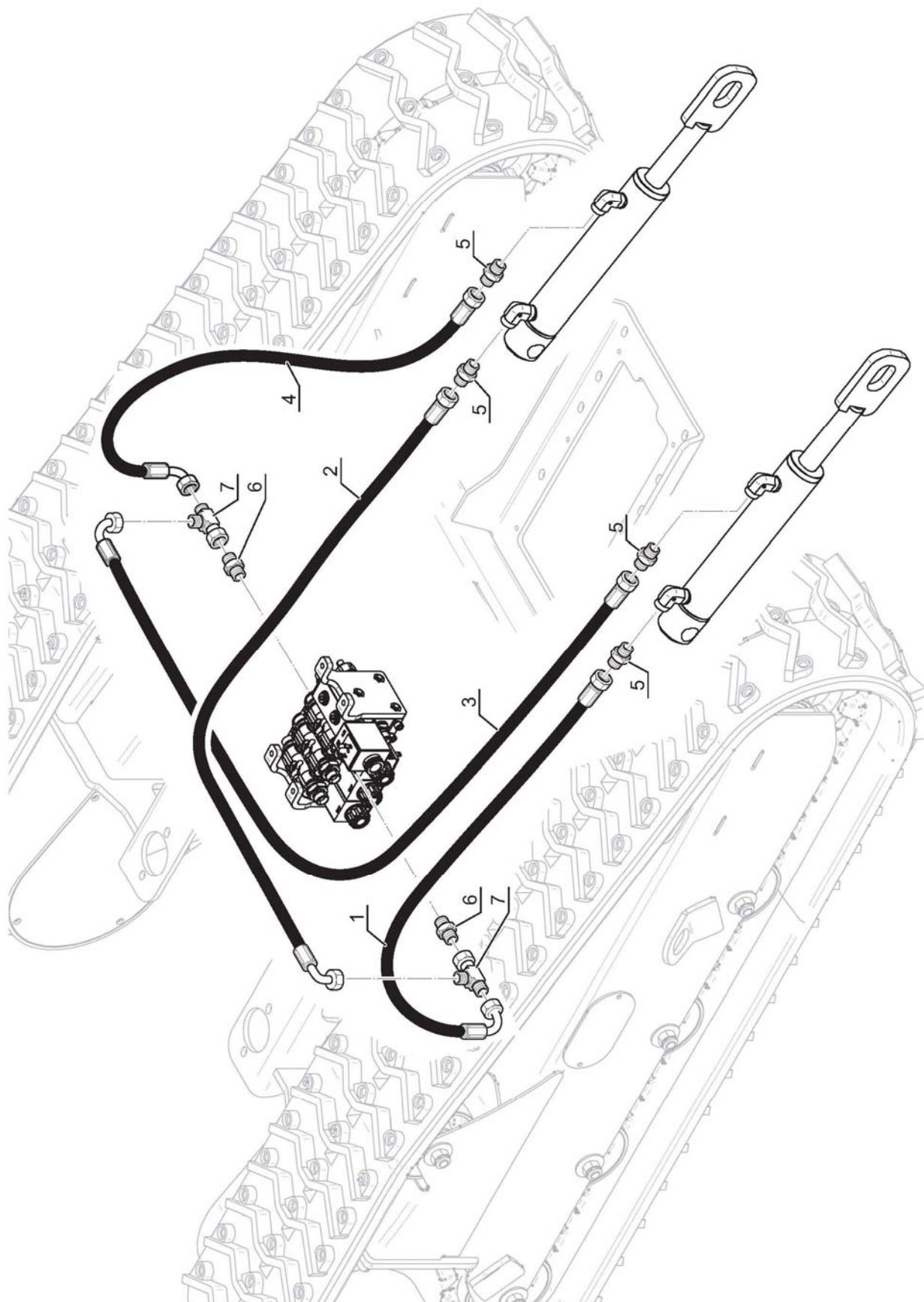
TRACKS HYDRAULIC CIRCUIT

ROBOCUT (Machine Serial No. 00089 ►)

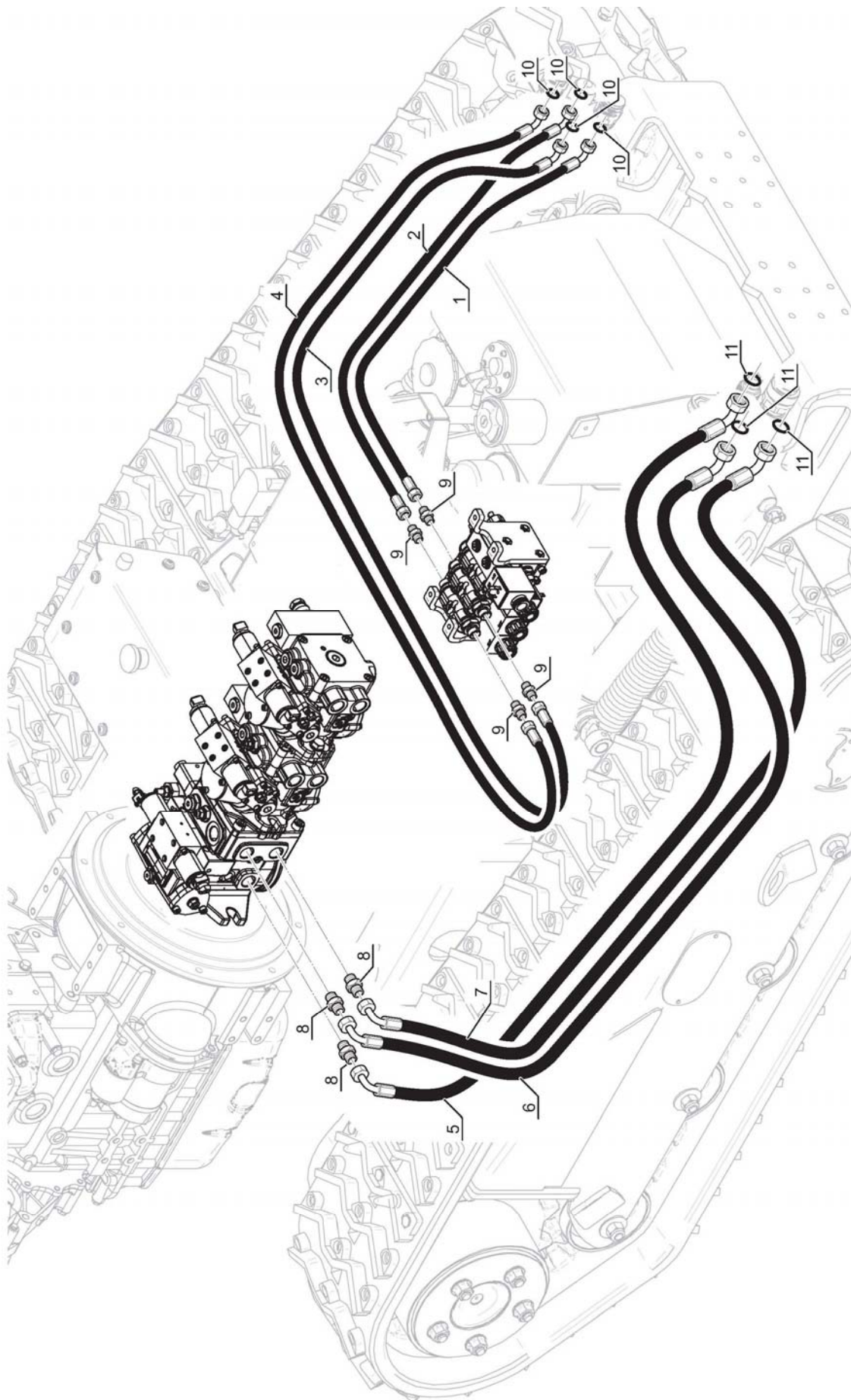
McCONEL



REF.	QTY.	PART No.	DESCRIPTION
			TRACK HYDRAULIC CIRCUIT
			Machine Serial No. 00089 ►
1	1	4000564	HYDRAULIC HOSE
2	1	4000565	HYDRAULIC HOSE
3	1	4000566	HYDRAULIC HOSE
4	1	4000567	HYDRAULIC HOSE
5	1	4000568	HYDRAULIC HOSE
6	1	4000569	HYDRAULIC HOSE
7	1	4000570	HYDRAULIC HOSE
8	1	4000571	HYDRAULIC HOSE
9	1	4000572	HYDRAULIC HOSE
10	1	4000573	HYDRAULIC HOSE
11	1	4000574	HYDRAULIC HOSE
12	1	4000575	HYDRAULIC HOSE
13	4	4000576	CONNECTOR
14	2	4000577	CONNECTOR
15	4	4000578	CONNECTOR
16	2	8650102	BONDED SEAL
17	4	7315775	CONNECTOR
18	1	4000560	CONNECTOR
19	5	4000579	CONNECTOR
20	3	4000549	O RING
21	1	4000546	CHECK COUPLING
22	2	4000580	CYLINDRIC HEAD SCREW
23	1	4000522	SPEED-BRAKE VALVE
24	1	4000581	HEXAGON SPACER
25	2	4000544	SPRING WASHER
26	2	9100103	WASHER
27	2	4000582	PLUG



REF.	QTY.	PART No.	DESCRIPTION
			HYDRAULIC RAMS CIRCUIT
1	1	4000583	HYDRAULIC HOSE
2	1	4000584	HYDRAULIC HOSE
3	1	4000585	HYDRAULIC HOSE
4	1	4000586	HYDRAULIC HOSE
5	4	4000579	CONNECTOR
6	2	4000587	CONNECTOR
7	2	4000588	TEE FITTING

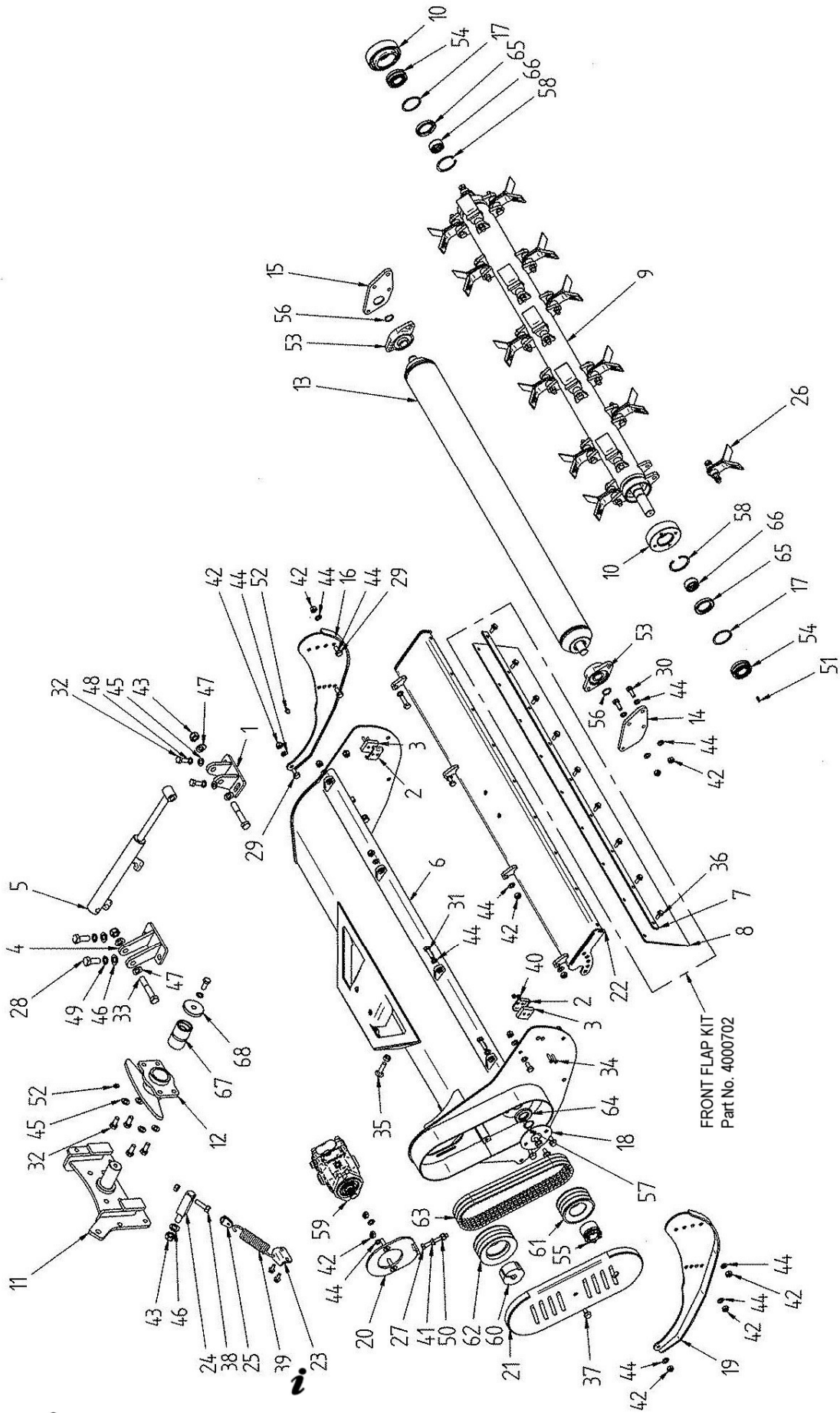


REF.	QTY.	PART No.	DESCRIPTION
			HYDRAULIC EQUIPMENT CIRCUIT
1	1	4000589	HYDRAULIC HOSE
2	1	4000590	HYDRAULIC HOSE
3	1	4000591	HYDRAULIC HOSE
4	1	4000592	HYDRAULIC HOSE
5	1	4000593	HYDRAULIC HOSE
6	1	4000594	HYDRAULIC HOSE
7	1	4000595	HYDRAULIC HOSE
8	3	7315797	CONNECTOR
9	4	4000587	CONNECTOR
10	4	4000596	O RING
11	3	4000549	O RING

FLAILHEAD ASSEMBLY

ROBOCUT

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i Items # 23 & 39 refer to notes in parts list important information on these components

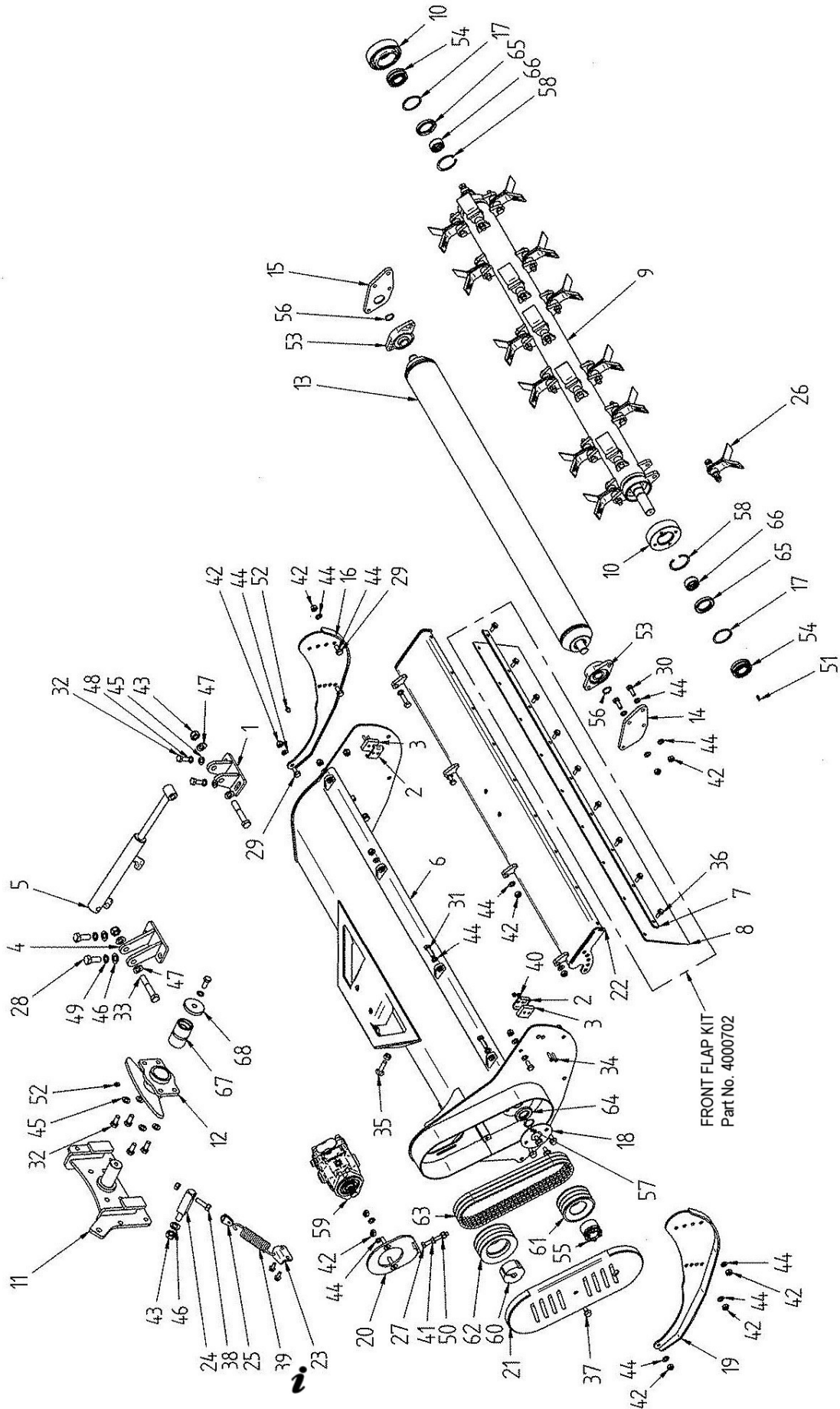
REF.	QTY.	PART No.	DESCRIPTION
			FLAILHEAD ASSEMBLY
1	1	4000182	CYLINDER FIXING STIRRUP
2	2	4000183	RUBBER SUPPORT
3	2	4000184	UPPER PROTECTION SUPPORT
4	1	4000185	RAM BRACKET
5	1	4000186	HYDRAULIC RAM
6	1	4000187	HEAD CASING (1.3m)
7	1	4000188	CLAMP STRIP
8	1	4000189	RUBBER FLAP
9	1	4000190	ROTOR (1.3m)
10	2	4000191	ROTOR BEARING SUPPORT
11	1	4000192	HEAD PIVOT BRACKET
12	1	4000193	PIVOT JOINT
13	1	4000194	ROLLER
14	1	4000195	ROLLER BRACKET - R/H
15	1	4000196	ROLLER BRACKET - L/H
16	1	4000197	LEFT SKID
17	2	4000198	WASHER
18	1	4000199	PLATE
19	1	4000200	RIGHT SKID
20	1	4000201	MOTOR MOUNTING PLATE
21	1	4000202	BELT COVER
22	1	4000203	FRONT HOOD
23	1	4000204	<i>i</i> SPRING BRACKET (Fits Spring 4000219 only)
	1	4000338	<i>i</i> SPRING BRACKET (Fits Springs 4000219 & 4000749)
24	1	4000205	SPRING TENSIONER FIXING
25	1	4000206	SPRING TENSIONER
26	1	4000255	Y-FLAILS KIT (SINGLE STATION)
	1	4000268	Y-FLAILS KIT (22 STATION)
27	1	4000208	SCREW
28	1	4000252	SCREW
29	2	4000209	SCREW
30	1	4000210	SCREW
31	1	4000211	SCREW
32	2	4000212	SCREW
33	1	4000213	SCREW
34	1	4000214	SCREW
35	1	4000215	SCREW
36	1	4000216	SCREW
37	1	4000217	SCREW
38	1	4000218	NUT
39	1	4000219	<i>i</i> SPRING (Item now obsolete use Spring 4000749)
	1	4000749	<i>i</i> SPRING (Not compatible with Spring Bracket 4000204)

i When replacing the now obsolete early type Spring 4000219 with the later type Spring 4000749 the early type Bracket 4000204 must also be replaced with later type bracket 4000338.

FLAILHEAD ASSEMBLY

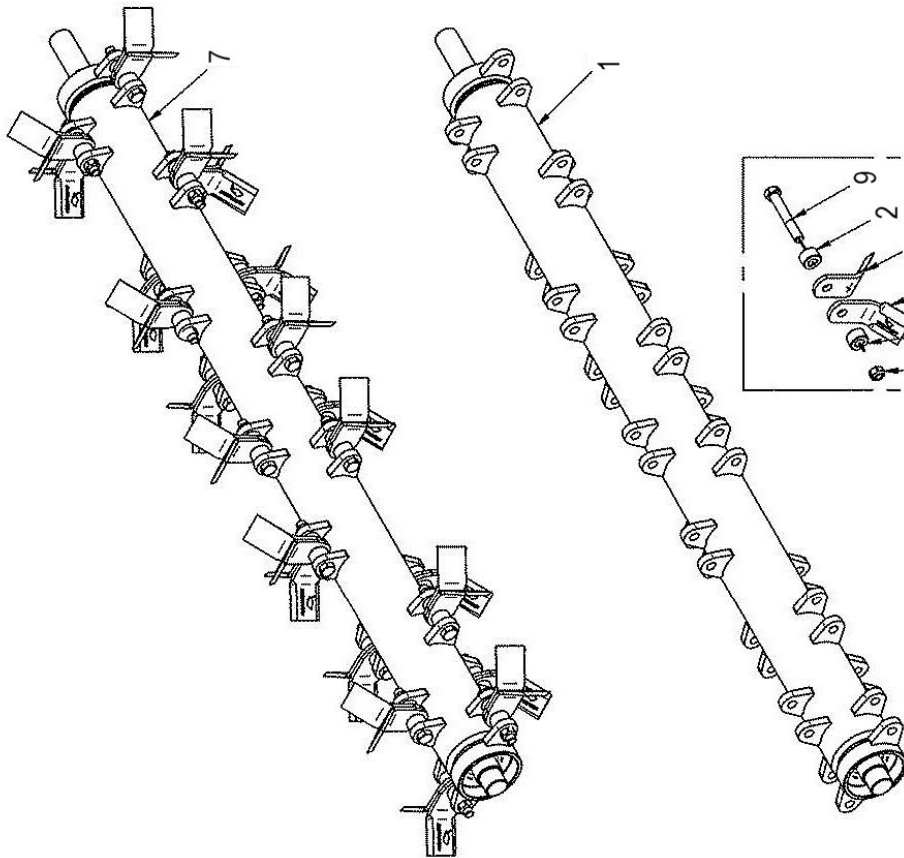
ROBOCUT

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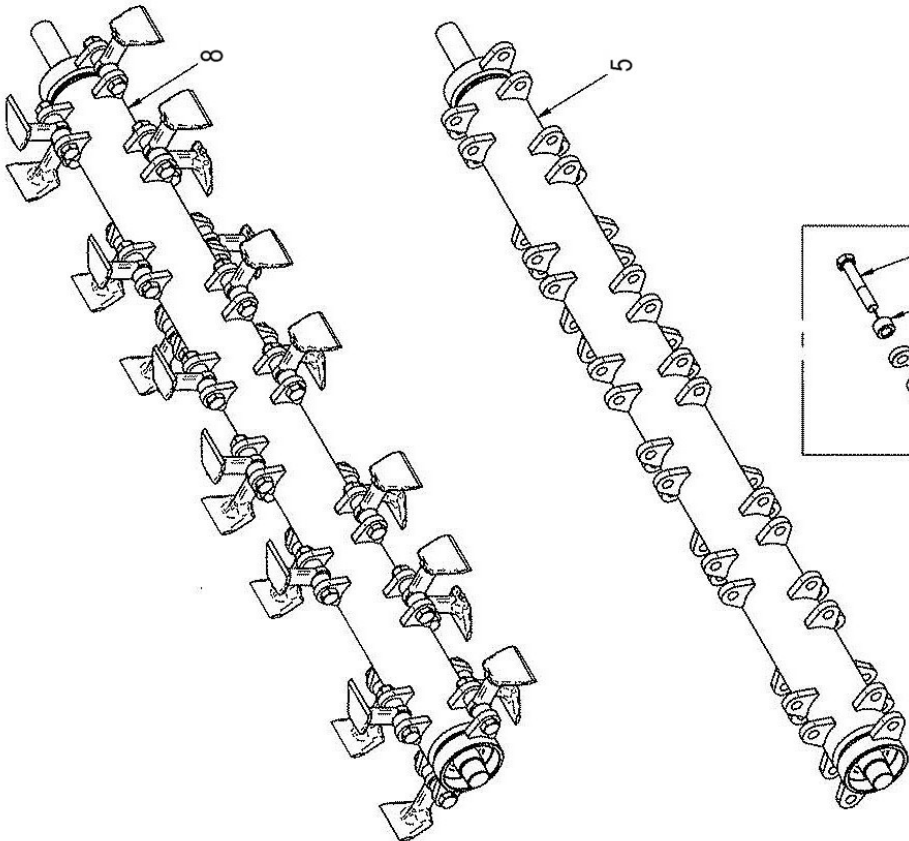


i Items # 23 & 39 refer to notes in parts list important information on these components

REF.	QTY.	PART No.	DESCRIPTION
			FLAILHEAD ASSEMBLY
40	1	9163003	LOCK NUT
41	1	4000220	FLANGED NUT
42	8	9163005	LOCK NUT
43	2	4000221	LOCK NUT
44	11	9100105	WASHER
45	2	9100106	WASHER
46	2	4000253	WASHER
47	2	4000222	WASHER
48	1	9100206	SPRING WASHER
49	1	4000254	WASHER
50	1	9100105	WASHER
51	1	4000223	GREASER
52	2	4000224	GREASER
53	2	4000225	BEARING
54	2	4000226	ROLLER BEARING
55	1	4000227	TAPERLOCK BUSH
56	2	4000023	CIRCLIP
57	1	4000228	RETAINING RING
58	2	4000024	CIRCLIP
59	1	4000229	MOTOR
60	1	4000230	CONICAL BUSH
61	1	4000231	PULLEY
62	1	4000232	PULLEY
63	3	4000233	TRAPEZOIDAL TOOTHED BELT
64	1	4000234	OILSEAL
65	2	4000235	OIL SEAL
66	2	4000236	GUIDE FOR OIL SEAL
67	1	4000237	BUSH
68	1	4000238	WASHER
		4000716	SEAL KIT FOR MOTOR 4000229



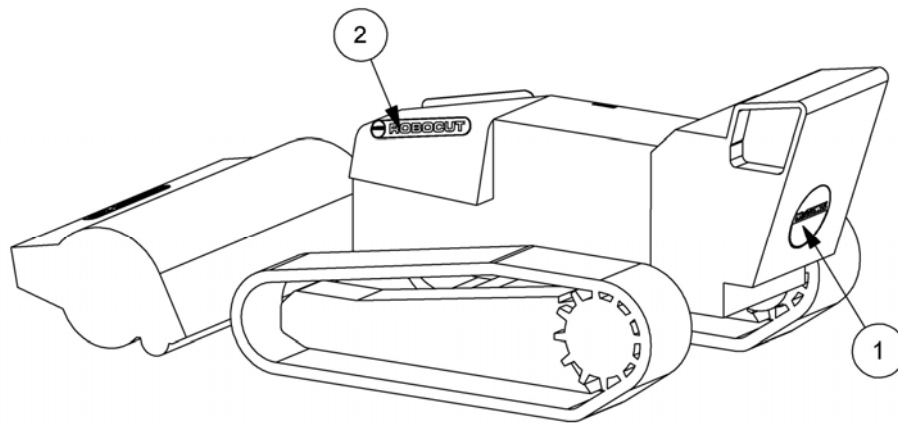
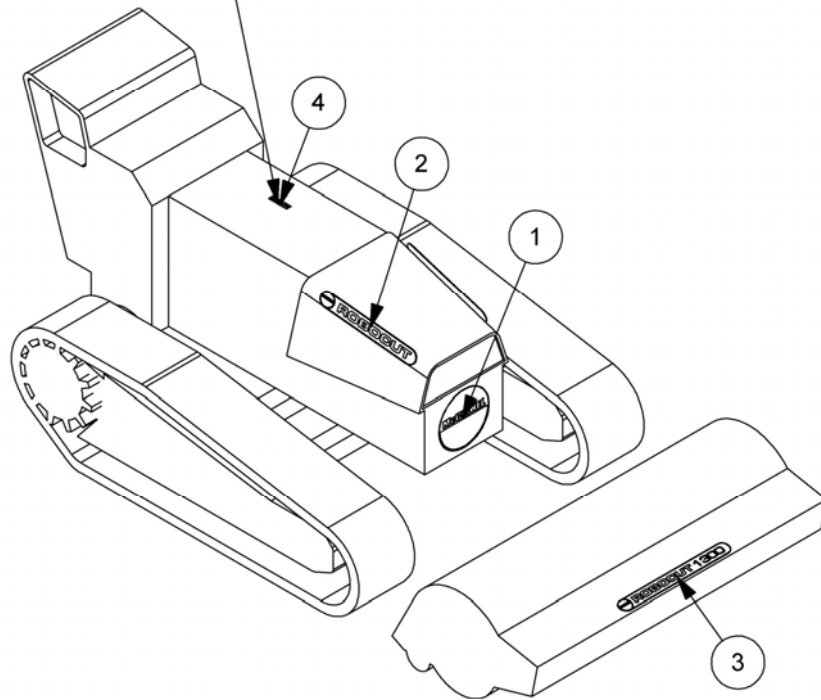
Part No. 4000255
Y-FLAILS KIT (6mm)
(Single Station)



Part No. 4000256
HAMMER FLAIL KIT
(Single Station)

REF.	QTY.	PART No.	DESCRIPTION
ROTORS & FLAILS ASSEMBLY			
1	1	4000190	1.3M ROTOR (Y-FLAILS TYPE)
2	2	4000241	STEEL BUSHING
3	2	4000242	Y-FLAIL (6mm)
4	1	4000243	HAMMER FLAIL
5	1	4000244	1.3M ROTOR (HAMMER FLAIL TYPE)
6	2	4000245	BUSHING
7	1	4000703	1.3M ROTOR C/W Y-FLAILS
8	1	4000704	1.3M ROTOR C/W HAMMER FLAILS
9	2	4000246	SCREW
10	1	4000247	SCREW
11	2	4000248	AUTOGRIP NUT
12	1	4000249	AUTOGRIP NUT
SINGLE STATION FLAIL KITS			
	1	4000255	Y-FLAILS KIT (6mm Flail)
	1	4000256	HAMMER FLAIL KIT
22 STATION FLAIL KIT			
	1	4000268	Y-FLAILS KIT (6mm Flail)

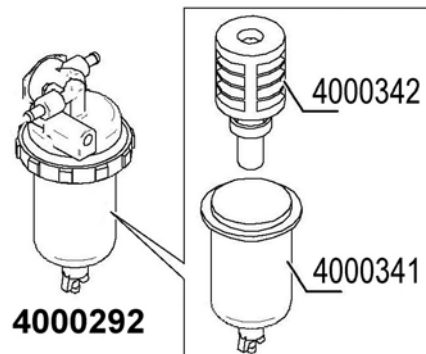
ROBOCUT
OVERLAY FOR
CONTROL BOX



REF.	QTY.	PART No.	DESCRIPTION
		4000700	ROBOCUT DECAL KIT
1	2	1290829	DECAL - MCCONNELL ROUNDEL
2	2	1290954	DECAL - ROBOCUT
3	1	1290955	DECAL - ROBOCUT 1300
4	1	1290956	DECAL - ROBOCUT (OVERLAY)



FUEL FILTER
(Part No. 4000105)



PRIMARY FUEL FILTER



OIL FILTER
(Part No. 4000257)



Fitted to Early Models
HYDRAULIC OIL FILTER CARTRIDGE (Part No. 4000258)

Fitted to Later Models
HYDRAULIC OIL FILTER CARTRIDGE (Part No. 4000259)



PRIMARY AIR FILTER CARTRIDGE (Part No. 4000260)



SECURITY AIR FILTER CARTRIDGE (Part No. 4000261)



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