QA340

Operator's Manual

SANDVIK

QA340

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CERTIFICATE OF CONFORMITY

Supply of Machinery Safety Regulations 98/37/EC

Serial No:

Engine Serial No:

Production Manager:

Date of build:

Issued Declaration of Conformity on next page.

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DECLARATION OF CONFORMITY

98/37/EC Machinery
89/336/EEC EMC

Name of manufacturer or supplier
Sandvik Screens & Crushers Ltd

Full postal address including country of origin
Hearthcote Road, Swadlincote, Derbyshire, England, DE11 9DU

Description of product
Screener

Name, type or model, batch
QA340
In built diesel
22278/D516

Sandvik Screens & Crushers Ltd
Swadlincote, Derbyshire, DE11 9DU

Standards used, including number, title, issue date and other relative documents
EN292-1, EN292-2, EN349, EN418, EN954-1, EN1050

Place of issue
Sandvik Screens & Crushers Ltd

Originating certification by
Laidler Associates, Belasis Business Centre, Coxwold way, Billingham, Teesside, TS23 4EA
Certificate number 22278/D516

Declaration

I declare that the above information in relation to the supply / manufacture of this product, is in conformity with the stated standards and other related documents following the provisions of the above Directives and their amendments.

Signature of the Production Manager _____ Date

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1. SAFETY SECTION

To ensure maximum safety, ***ALWAYS*** read this section carefully ***BEFORE*** carrying out any work on the equipment or making any adjustments.

1.1 Safety Essentials



a. Breathing or inhaling tiny silica dust particles will cause death or serious injury. ***ALWAYS*** work with a respirator approved by the respirator manufacturer for the job you are doing.

b. This equipment is manufactured in accordance with the Machinery Directive 98/37/EC.[1] The customer should make sure that this equipment is in conformance with local and national legislation if used outside of the EU.



c. Read this manual and familiarize yourself with any associated documentation. If in doubt ask. ***Do not take personal risk***.

d. Only trained personnel should be allowed to install, set, operate, maintain, and decommission this equipment. Make sure that a copy of this manual is available for any persons installing, using, maintaining or repairing this equipment.



e. Training should be provided to make sure that safe working practices are followed. Initial commissioning and starting must only be undertaken by a competent person who has read and fully understands the information provided in the manual pack. ***ALWAYS follow the procedures outlined in the operating and maintenance instructions.***



f. To avoid the risk of electric shock, ***ALWAYS*** isolate this equipment from the supply source before removing any guards or covers or performing any maintenance or adjustment to the equipment.

Note! *The manufacturer declines all responsibility for injury or damage if the instructions and precautions in this manual are not followed.*

1.2 Safety Signs and Labels

1. Directive 98/37/EC of 22.06.98 (OJ n° L 207 of 23.07.98, p.1)

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a. The term "DANGER" indicates a hazardous situation which, if not avoided, will result in death or serious injury.



b. The term "WARNING" indicates a hazardous situation which, if not avoided, could result in death or serious injury.



c. All electrical control boxes are labelled. Make sure that these labels remain in place and are clearly visible at all times.

d. Other hazards identified within this manual may also be marked on the equipment with safety labels. Make sure that these safety labels remain in place and are clearly visible at all times.

1.3 Safety Hazards Pertaining to the Equipment



The following safety symbols may be posted on the equipment or contained in the manuals. You MUST observe all safety symbols, labels, and instructions.

a. ***MAKE SURE*** that safety instructions and safety labels attached to the equipment are ***ALWAYS*** complete and perfectly legible.

b. Keep safety instructions and safety labels clean and visible at all times.

c. Replace any illegible or missing safety instructions and safety labels with new ones before operating the equipment. See “Stickers” on page 199. in this manual for part numbers.

d. Make sure replacement parts include safety instructions and labels.

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1.3.1 Symbols for Mandatory Actions



1: Wear Safety Gloves



2: Wear Eye Protection



3: Wear Safety Helmet



4: Wear Safety Harness



5: Wear Ear Protection



6: Wear Safety Boots



7: Wear Close Fitting Overalls



8: Wear Dust Mask



9: Wear High Visibility Vest



10: Wear Respirator



11: Disconnect Power Source From Supply



12: Switch Off and Lockout Equipment



13: Read the Manual

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1.3.2 Symbols for Prohibited Actions



14: No Climbing



15: No Smoking



16: Do Not Touch



17: No Open Flames



18: Limited or Restricted Access



19: Do Not Weld



20: Do Not Remove Safety Guard

1.3.3 Hazard Symbols



21: Crushing Hazard - Hands



22: Crushing Hazard - Feet



23: Chemical Burn Hazard



24: Electrical Hazard



25: Electrical Shock/Electrocution Hazard



26: Entanglement Hazard

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27: Entanglement Hazard



28: Falling Hazard



29: Falling Load Hazard



30: Flammable Hazard



31: Flying Material Hazard



32: Hazardous or Poisonous Material Hazard



33: Lifting Hazard



34: Skin Injection Hazard



35: Silica or Other Dust Hazard



36: Trip Hazard

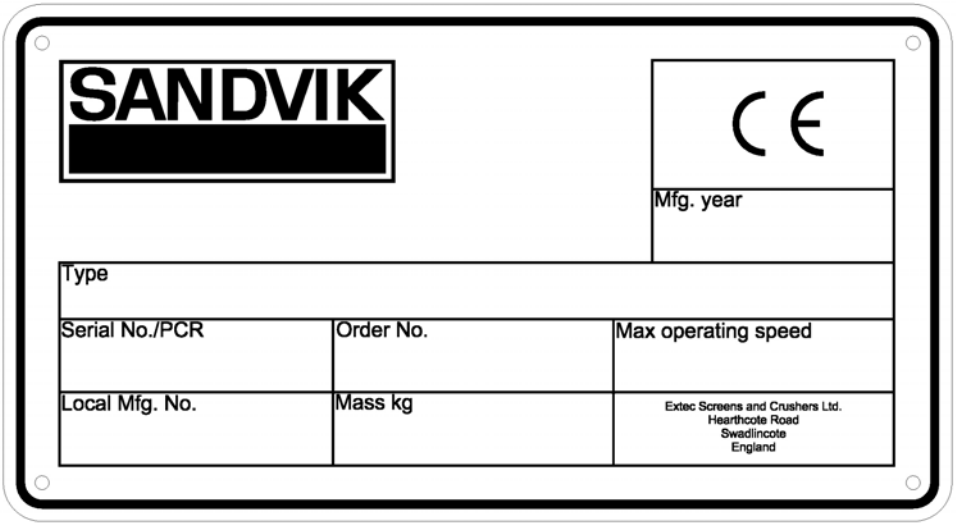


37: Magnet Hazard

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1.3.4 Machine Legend Plate



1.4 Component Safety Features



a. ***DO NOT*** use this equipment if any safety guards or devices have been removed or are installed improperly.



b. Operating this equipment with any safety guards or devices which have been removed or installed improperly could result in death or serious injury.

1.5 Features for Operator Safety

a. Safety features associated with this equipment have been assessed in accordance with BS EN 954-1 to Category 3.



b. Emergency Stop buttons have been installed to prevent death or serious injury. Make sure that the Emergency Stop buttons are visible and are not obstructed in any way.



c. The Emergency Stop circuit is a 24 V DC series circuit and hard wired to remove power from the ECU Engine management system and stop the engine. ***To avoid electric shock or cutting injury, you MUST wait at least ten full seconds after activating the Emergency Stop to allow the system to release its electrical charge.***



d. You ***MUST*** study the detailed Safety Circuit diagram which is within the drawing pack as an appendix to this manual.



e. Safety guards have been installed to prevent death or serious injury. ***DO NOT*** remove, modify, or alter any safety guard. Make sure that all safety guards are bolted down.

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f. Steps, handrails, tread plates, and fixed guards are provided where personnel are required to climb on the machine.

g. If for any reason other areas of the machine need to be accessed, risks ***MUST*** be assessed and appropriate safety measures taken.

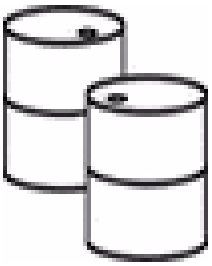
1.6 Environmental Safety

To avoid unnecessary engine emissions, you ***MUST*** regularly service the machine as specified in the machine maintenance sections contained in this manual.

1.6.1 Hazardous Materials

WARNING





- Potentially harmful waste used on this equipment includes items such as oil, fuel, coolant, filters, batteries, etc.
- ***DO NOT*** store harmful waste in food or beverage containers that may mislead someone into drinking from them, which could cause death or serious injury
- Use leak proof containers when draining fluids
- ***DO NOT*** pour waste onto the ground, down a drain or into any water source.



a. Diesel spillages ***MUST*** be cleaned up immediately due to fire hazard.

b. ***ONLY*** use the lubricating oils recommended in the maintenance schedule.



c. ***OBSERVE*** the COSHH information contained in the appendix to this manual.

d. Local & National regulations ***MUST*** be observed when disposing of waste.

e. Improperly disposing of waste ***CAN THREATEN*** the environment and ecology and is illegal.

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f. ***MAKE SURE*** that all hazardous and replaced parts are disposed of safely and with minimum environmental impact.

1.6.2 Machine Disposal

This equipment ***MUST ONLY*** be disposed of at a specialist machine breaker.

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1.7 Personal Protective Equipment (PPE)

1.7.1 Entanglement Hazards

DANGER





1. Loose clothing, tools, jewellery, long hair, or body parts can get caught in running machinery, which will result in death or serious injury.
2. ***ALWAYS*** wear correctly fitting (CE approved) personal protective equipment. Garments must be close fitting and no jewellery such as rings may be worn.
3. ***DO NOT*** work close to machinery unless it is stopped.

1.7.2 Required Personal Protective Equipment

This includes:


- Hard Hat


- Safety Glasses/Goggles


- Hearing Protection


- Dusk Mask


- Close Fitting Overalls


- Safety Boots


- Industrial Gloves


- High Visibility Vest or Jacket


- Respirator

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1.8 Measure Noise Level



Ear protection must be worn if you are within 10 meters (approximately 33 feet) of the machine when the engine and other parts of the machine are running.

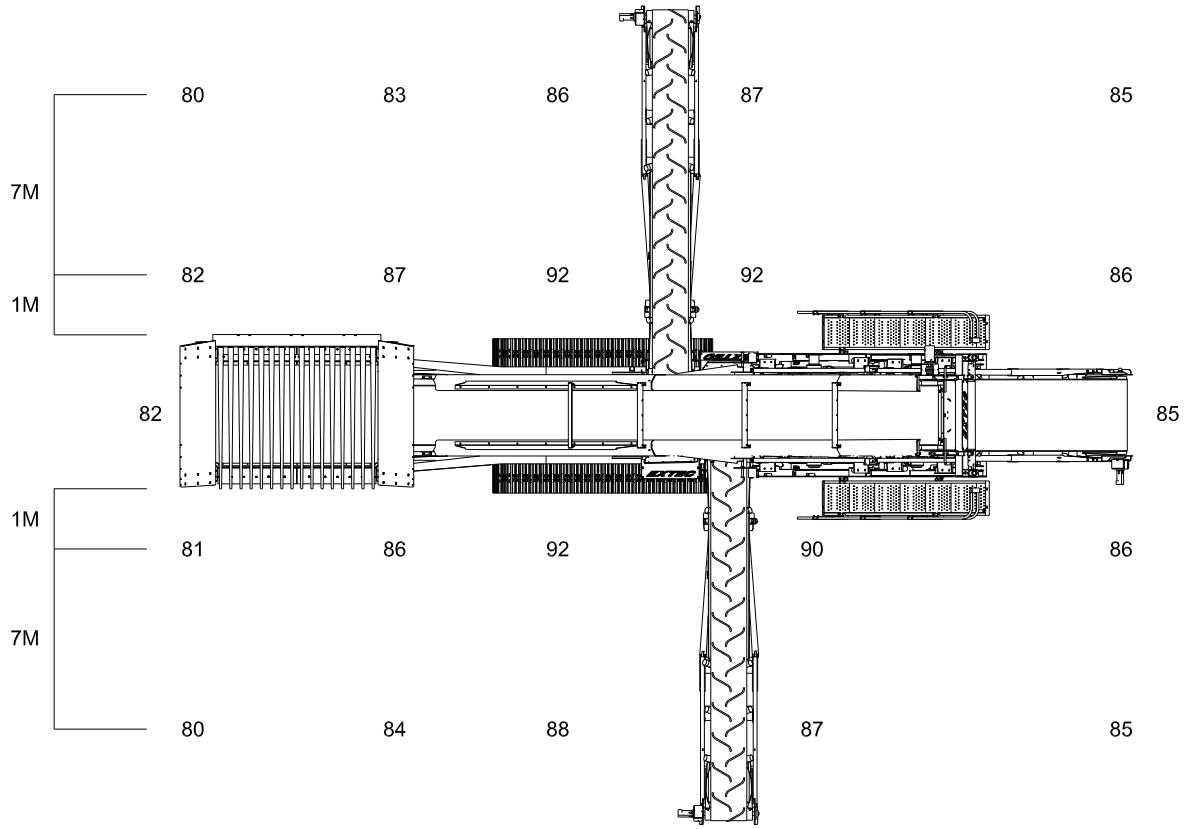


Figure 1-1: Measured Noise Level

The above diagram indicates the measured noise levels at a measured distance; i.e. 7 m (approximately 23 feet) - 85 dB indicates that at 7 meters the sound measured was 85 decibels. The readings were measured using a Castle GA101/701 meter with a calibration date of 20/06/06 and with all systems running situated on the factory assembly line. The product and local conditions will affect the noise levels.

1.9 Vibration Levels

There are ***NO*** circumstances where an operator needs to be on or touching the machine when it is running.

1.10 Organisational Safety Measures



The following safety measures ***MUST*** be observed at all times:



- Understand the service procedure before doing work. Keep area clean and dry.
- ***NEVER*** lubricate, clean, service, or adjust machinery while it is moving.
- Allow the machinery to cool before performing any maintenance or adjustments.

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- ***MAKE SURE*** that all parts are properly installed and are in good condition. Replace worn and broken parts ***IMMEDIATELY***.

- Remove any build up of grease, oil and debris from equipment.



- Disconnect battery ground cable before making adjustments on electrical systems or welding on the equipment.

- During maintenance ***ONLY*** use the correct tool for the job.

- ***NEVER*** make any modifications, additions, or conversions which might affect safety without the manufacturer's approval.



- If clothing, tools, or any body parts become entangled in machinery, ***IMMEDIATELY*** disengage all power and operate controls to relieve pressure. Stop the engine and implement lockout procedures.



- If the equipment exhibits any unusual movement or sound, stop the equipment, lock out ***IMMEDIATELY***, and report the malfunction to a competent authority or personnel.

Personnel Qualifications, Requirements and Responsibilities



a. All work involving the equipment ***MUST ONLY*** be performed by trained, reliable and authorized personnel only. Statutory minimum age limits must be observed.



b. Work on electrical system and its equipment ***MUST ONLY*** be carried out by a skilled electrician or by instructed persons under the supervision and guidance of a skilled electrician and in accordance with electrical engineering rules and regulations.

c. Work on the hydraulic system ***MUST ONLY*** be carried out by personnel with special knowledge and experience of hydraulic equipment.

1.12 Safety Advice Regarding Specific Operational Phases

1.12.1 Standard Operation

a. Take the necessary steps to make sure that the equipment is used ***ONLY*** when it is in a safe and reliable state.



b. Operate the equipment ***ONLY*** for its designed purpose, and only if all guarding, protective, and safety devices, emergency shut-off equipment, sound proofing elements and exhausts, are in place and fully functional.



c. ***MAKE SURE*** that any local barriers are erected to stop unauthorized entry to the equipment.

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d. ***BEFORE*** starting the engine make sure that it is safe to do so.

1.12.2 Blockage or Malfunction



In the event of material blockage, any malfunction or operational difficulty, stop the equipment and lockout immediately. Repair any defects or hazardous conditions immediately.

1.12.3 Unguarded Areas



a. Limit access to the equipment and its surrounds by erecting barrier guards to reduce the risk of other mechanical hazards, falling loads and ejected materials.



b. Switch off and lockout the equipment before removing any safety devices or guarding.

DANGER





- To avoid death or serious injury, ***ALWAYS*** keep your hands and other body parts away from pinch points on the machine.
- ***DO NOT*** reach into unguarded machinery.

1.13 Special Work, Including Equipment Maintenance and Repairs During Operation, Disposal of Parts, and Hazardous Materials



a. Observe the adjusting, maintenance, and service intervals set out in the operating instructions, except where:

- Warning horns, lights, gauges, or indicators call for immediate action; or
- Adverse conditions require more frequent servicing.

b. ***ALWAYS*** only use Original Equipment Manufacturer's ("OEM") recommended replacement parts and equipment.

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c. Make sure that only properly trained personnel undertake these tasks.

1.13.1 Securing the Equipment Before Performing Maintenance



When undertaking maintenance and repair work, the equipment must first be made safe.



a. Switch off the engine using the ignition key. Switch off at isolation point and remove the ignition key.



b. Implement lockout procedures.

c. Attach a hazard sign(s) to the equipment in appropriate positions to alert all personnel of potential hazards.

1.13.2 Maintenance Site Conditions



Prior to starting any maintenance work, ***MAKE SURE*** the equipment is positioned on stable and level ground and has been secured against inadvertent movement and buckling.

1.13.3 Replacement & Removal of Components



a. ***ALWAYS*** observe handling instructions itemized in this manual, the Original Equipment Manufacturer's manuals, or the spare parts suppliers' instructions.

b. ***NEVER*** allow untrained staff to attempt to remove or replace any part of the equipment.



c. The removal of large or heavy components without adequate lifting equipment is ***PROHIBITED***.

d. To avoid the risk of accidents, individual parts and large assemblies being moved for replacement purposes should be carefully attached to lifting tackle and secured. ***ONLY*** use suitable and technically adequate lifting gear supplied or approved by Original Equipment Manufacturer.



e. ***NEVER*** work or stand under suspended loads.



f. ***KEEP AWAY*** from the feeder hopper and product conveyor discharge, where there is risk of serious injury or death from contact with ejected debris.



g. ***LIMIT ACCESS*** to the equipment and its surrounds by erecting barrier guards to reduce the risk of residual mechanical hazards, falling lifted loads, and ejected materials.

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1.13.4 Climbing, Falling



a. Falling from and/or onto this equipment could result in death or serious injury.



b. ***NEVER*** climb on the equipment while it is in operation or use equipment parts as a climbing aid.



c. ***ALWAYS*** keep the area around the equipment clear of debris and trip hazards.

d. Beware of moving haulage and loading equipment in the vicinity of the equipment.

e. For carrying out overhead assembly work, ***ALWAYS*** use specially designed or otherwise safety-oriented ladders and working platforms.

f. ***ONLY*** use walkways/platforms provided on the equipment. ***ALWAYS*** perform work from an approved, safe and secure platform.



g. When reaching any points 2m (approximately 6 feet) or more above the ground level, ***ALWAYS*** use CE certified safety harness.



h. Keep all handles, steps, handrails, platforms, landing areas, and ladders free from dirt, oil, snow and ice.

1.13.5 Safety Considerations During Maintenance



It is essential that you take the following steps to MAKE SURE you and others are safe.



a. During maintenance, ***RESTRICT ACCESS*** to essential staff only. Where appropriate, erect barrier guards and post warnings.



b. The fastening of loads and instructing or guiding of crane operators should be entrusted to qualified persons only.



c. The marshal providing instructions must be within sight or sound of the operator and positioned to have an all around view of the operation.

d. ***ALWAYS*** make sure that any safety device such as locking wedges, securing chains, bars, or struts are utilized as indicated in these operating instructions.

e. Make sure that any part of the equipment raised for any reason is prevented from falling by securing it in a safe reliable manner.



f. ***NEVER*** work under unsupported equipment.

g. ***NEVER*** work alone.

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1.13.6 Safety Considerations During Cleaning



a. This equipment ***MUST*** be isolated prior to cleaning.



b. ***DO NOT*** direct power washers near or into control boxes and devices.

c. After cleaning, examine all fuel, lubricant, and hydraulic fluid lines for leaks, loose connections, chafe marks and damage. Any defects found ***MUST*** be repaired immediately.

1.13.7 Removal of Safety Devices and Guards



a. Prior to operation, all safety devices (control devices or guards) temporarily removed for set-up, maintenance or repair purposes ***MUST*** be refitted and checked immediately upon completion of the maintenance and repair work.



b. To avoid serious personal injury or death, ***NEVER*** operate the equipment with safety devices or guards removed or unsecured.

c. ***ALWAYS*** report any defects regarding guards, safety devices or control devices.

1.13.8 Surrounding Structures



a. This equipment ***MUST ONLY*** be operated in a position away from buildings, permanent structures or high ground to eliminate the risk of persons falling onto the equipment or its surrounds.

b. Any temporary structures erected around the equipment ***MUST*** be removed prior to operation.

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1.13.9 Safety When Refueling

WARNING







- Diesel fuel is flammable and creates a potential hazard which could result in death or serious injury.
- To avoid spillages use drip trays.
- ***ONLY*** refuel with diesel from approved storage and supply equipment.
- ***NEVER*** remove the filler cap or refuel with the engine running.
- ***NEVER*** add gasoline or any other fuels mixed to diesel due to increased fire or explosion risks and damage to the engine.
- Smoking is ***PROHIBITED*** when refueling or handling diesel fuel.
- ***DO NOT*** carry out maintenance on the fuel system near naked lights or sources of sparks, such as welding equipment.
- ***IMMEDIATELY*** clean up spilt fuel and dispose of correctly to minimize any environmental impact.

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1.14 Specific Hazards

1.14.1 Electrical Energy

A. External Considerations and Hazards

When working with the equipment, maintain a safe distance from overhead electric lines. If overhead cables are in the vicinity, a risk assessment ***MUST*** be completed prior to operating the equipment

DANGER	
	Contact with overhead electric lines will cause death or serious injury. If your equipment comes into contact with a live wire, you ***MUST***: • Vacate the area; • Warn others against approaching and touching the equipment; • Report the incident and have the live wire shut off.

B. Machine - Electrical



1. Work on the electrical system or equipment ***MUST ONLY*** be carried out by a skilled and qualified electrician or by specially instructed personnel under the control and supervision of such an electrician and in accordance with applicable electrical engineering rules.



2. Before starting any maintenance or repair work, the power supply to the equipment ***MUST*** be isolated. Check the de-energized parts to make sure they do not have any power. In addition to insulating any adjacent parts or elements, ground or short circuit them to avoid the risk of electrical shock.



3. The electrical equipment is to be inspected and checked at regular intervals. Defects such as loose connections or scorched or otherwise damaged cables MUST be fixed immediately.
4. Use ***ONLY*** original fuses with the specified current rating. Switch off the equipment ***IMMEDIATELY*** if trouble occurs in the electrical system.
5. This equipment is wired on a negative earth. ***ALWAYS*** observe correct polarity.

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1.14.2 Battery



a. ***ALWAYS*** disconnect battery leads before carrying out any maintenance to the electrical system.

b. Recharge the battery in a well ventilated area.



c. The battery contains sulphuric acid, an electrolyte which can cause severe burns and produce explosive gases.

d. ***AVOID*** contact with the skin, eyes or clothing.



e. Smoking is ***PROHIBITED*** when maintaining the battery.

f. ***ALWAYS*** wear appropriate personal protective equipment.

1.14.3 Gas, Dust, Steam, Smoke and Noise



a. ***ALWAYS*** operate internal combustion engines outside or in a well ventilated area.

b. If, during maintenance, the equipment must be operated in an enclosed area, ***MAKE SURE*** that there is sufficient ventilation or provide forced ventilation.

c. Observe the regulations in force at the respective site.

d. Dust found on the equipment or produced during work on the equipment ***MUST NOT*** be removed by blowing with compressed air.

e. Dust waste ***MUST ONLY*** be handled by authorized persons. When disposing of dust waste, the material must be dampened, placed in a sealed container and marked to ensure proper disposal.

f. Breathing or inhaling tiny silica dust particles will cause death or serious injury. ***ALWAYS*** work with a respirator approved by the respirator manufacturer for the job you are doing.



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1.14.4 Welding or Naked Flames

WARNING





- Welding or naked flames on or around the equipment creates the risk of an explosion or fire, which could result in death or serious injury.
- ***AVOID*** all naked flames in the vicinity of this equipment.
- Welding, flame cutting and grinding work on the equipment ***MUST ONLY*** be carried out if this has been expressly authorized, as there may be a risk of explosion and fire.
- Before carrying out welding, flame cutting and grinding operations, clean the equipment and its surroundings from dust and other flammable substances and make sure the premises are adequately ventilated, as there may be a risk of explosion
- The battery ***MUST BE*** isolated.

1.14.5 Hydraulic Equipment

a. Work on hydraulic equipment must be carried out by persons having special knowledge and experience of hydraulic systems.

WARNING



- Splashed oil creates the risk of a fire, which could result in death or serious injury.
- Check all lines, hoses and screwed connections regularly for leaks or other damage.
- Repair damaged lines, hoses, or screwed connections IMMEDIATELY.

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b. ***ALWAYS*** relieve pressure from the hydraulic system before carrying out any kind of maintenance or adjustment.



c. ***BEFORE*** carrying out any repair work, depressurize all system sections and pressure pipes (i.e. hydraulic system, compressed air system, etc.) requiring removal, in accordance with the specific instructions for the unit concerned.

d. Hydraulic and compressed air lines ***MUST*** be laid and fitted properly. Make sure that no connections are interchanged. The fittings, lengths and quality of the hoses ***MUST*** comply with the technical requirements.

e. ***ONLY*** fit replacement components of a type recommended by the manufacturer.

f. ***ALWAYS*** practice extreme cleanliness when servicing hydraulic components.

DANGER





- Hydraulic fluid under pressure can penetrate the skin, which will result in death or serious injury.
- If fluid is injected under the skin, it must be surgically removed or gangrene will result. ***GET MEDICAL HELP IMMEDIATELY***.
- ***ALWAYS*** use a piece of cardboard to check for leaks. ***DO NOT USE YOUR HAND***.

1.14.6 Hazardous Substances



a. ***MAKE SURE*** that correct procedures are formulated to safely handle hazardous materials in strict accordance with the manufacturer's instructions and all applicable regulations by correctly identifying, labelling, storing, using and disposing of the materials.



b. A full list of Hazardous Substances associated with this equipment can be found in the appendix of this document.

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2. TRANSPORT & TECHNICAL DATA

2.1 Transport

This machine must only be transported between sites on a suitable low loader or by utilising the optional bogie where available.

The machine must be tracked onto and off the trailer. See section - Tracking.

Note! *This equipment must never be tracked on gradients that are more than: 10 degrees Port to Starboard or 20 degrees Front to Back. The machine must always be on flat, solid ground when operating in its normal mode.*

A bogie is available as an optional extra.

Ensure the loading/ unloading site is clear of non-essential personnel. Erect barriers around the area and post warning signs where site conditions warrant this.

Loading/ unloading must only be carried out on firm flat ground.

The operator must be fully trained in the operation of this equipment.

When tracking, the operator must be in a position to have an all round view of the operation. A banks man or marshal should assist where this is not possible.

The total weight of this machine is 33500 kg.

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2.2 Machine Transportation Dimensions

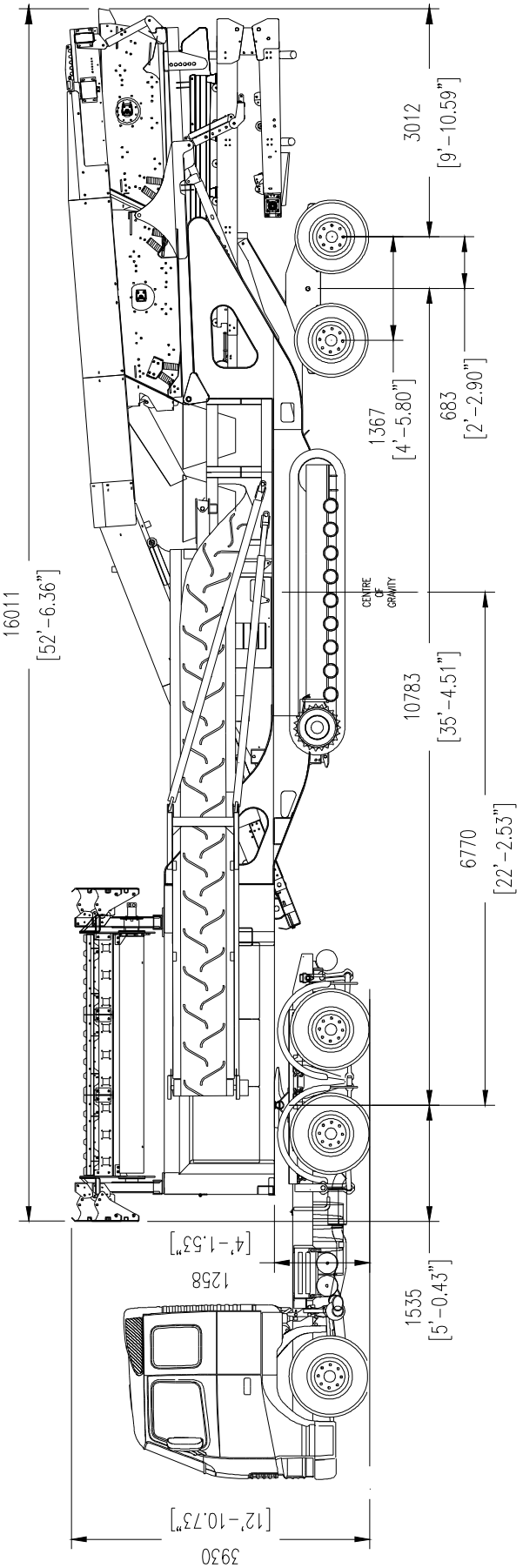


Figure 2-1: Machine Transportation Dimensions

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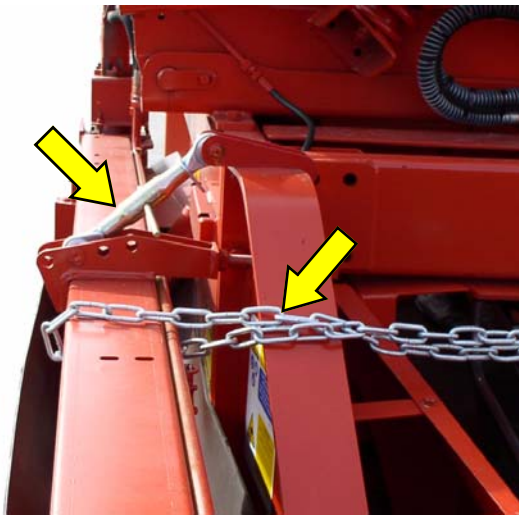
2.3 Machine Transportation

IMPORTANT TRANSPORTATION INFORMATION

Before transporting on the road, the load dimensions must be checked to ensure that they are within the legal transport limits.



Machines fitted with vibrating grid - FOLD DOWN SIDE FLARES



Side conveyor transportation clamp & chains.

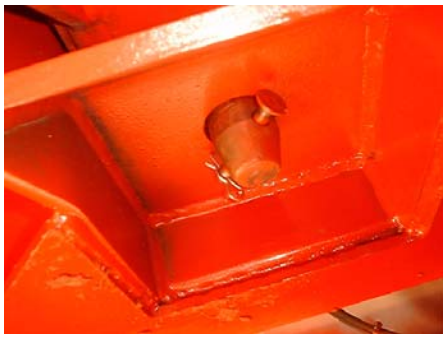


Side conveyor belt retaining straps.

Ensure all parts of the machine are ***folded*** or ***closed down*** and ***locked*** into transport position. Additionally ensure the side conveyors are securely clamped in place, as well as the retaining straps fitted around the conveyor belt (as shown above). Ensure the towing bogie is securely fitted with pins and stop plates.

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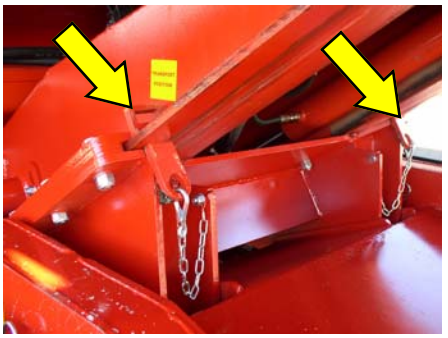
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Towing bogie pivot pin & locking pin



Towing bogie locking pin



Towing bogie stop plates



Loosen the clip and remove the exhaust extension. Stow away safely

2.4 Machine Unhitching

- Find a level and firm piece of ground (of suitable size and location). **FIRST** remove the air brake and electrical connections. See “Starting Procedure” on page 44. on how to start the engine.
- Lower the chassis jacking legs to raise fifth wheel sufficient to unhitch the machine from the tractor unit.
- With the tractor unit removed raise the chassis jacking legs to lower the front of the machine onto its tracks.
- Remove the bogie stop plates then lower the towing bogie until machine is completely sat on its tracks.
- Release pressure from lift ram hoses.
- Remove the bogie locking pin, air brake, electrical & hydraulic connections and umbilical chord.

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- Raise the hydraulic pin then manoeuvre the machine away. See “Machine Manoeuvring” on page 34.





1: Lower chassis jacking legs & retain with locking pins.



2: Remove air brake and electrical connections. Remove tractor unit.

Note! *Make sure legs are lowered simultaneously to prevent instability.*





3: Raise chassis jacking legs & store locking pin as shown.



4: Remove towing bogie locking pin.

Note! *Make sure both legs are fully raised before moving machine.*



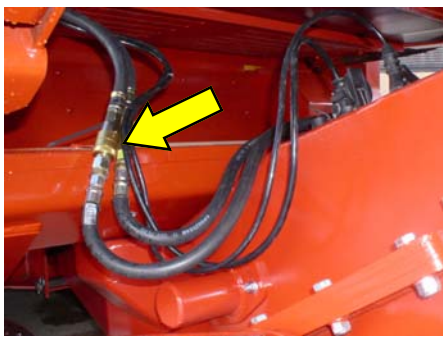
5: Remove stop plates (2 off).



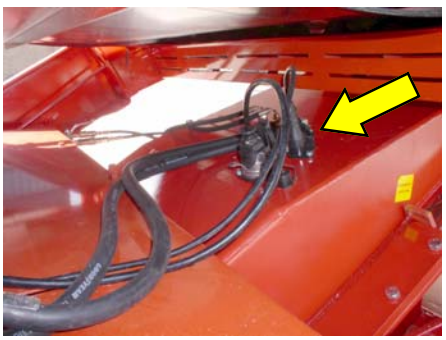
6: Lower towing bogie.



7: Turn lever clockwise to release pressure from hoses & disconnect bogie hoses.



8: Disconnect braking connections from umbilical chord.



9: Disconnect electrical connections from umbilical chord.



10: Disconnect umbilical chord from underneath hopper & remove from machine.

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11: Disconnect tail board socket.



12: Remove R-clip & locking pin from bogie towing pin.



13: Raise bogie towing pin.

2.5 Machine Manoeuvring

The QA340 can now be manoeuvred by remote control, use either the remote handset or hard wire drive to move machine to desired position.

BEFORE TRACKING THIS MACHINE IT IS IMPORTANT THAT THE FOLLOWING IS ADHERED TO:

1. The hopper **MUST** be empty of material.
2. The hopper jacking legs MUST be retracted. See below
3. The chassis jacking legs **MUST** be retracted. See below.
4. The towing bogie is unhitched. See “Machine Unhitching” on page 32.



1: Hopper jacking legs retracted.



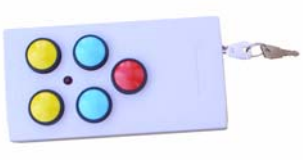
2: Chassis jacking legs retracted.

TRACKS ON *disables other hydraulic functions.*

Note!

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1. Ensure that the electronic receiving unit, located in the power pack, is switched on and the Track ON/OFF hydraulic lever at the rear of the machine has been activated.
2. The white remote handset is supplied with the machine and must be fully recharged at regular intervals. Use the correct instructions for your type of controller.



1: Remote Handset



2: Umbilical Cord



3: Plug in Hard Wire Umbilical Socket



4: Hard Wire Handset

For safety reasons, it is essential to check all around machine for obstacles or personnel which may be endangered by moving your machine.

When moving the machine, ensure that it is only moved over firm ground suitable for carrying the weight of the machine. It is **ESSENTIAL** that both tracks are in contact with firm level ground to avoid excessive vibration or rocking of the machine. ***DO NOT MOVE THE MACHINE ACROSS EXCESSIVELY SLOPING GROUND.***

Note!

1. When operating the White Remote Handset, the yellow buttons are for forward movement and the blue ones for reverse. (These correspond to direction indicator stickers on machine).
2. When operating the Hard Wire Handset, the yellow buttons are for forward movement and the blue ones for reverse. (These correspond to direction indicator stickers on machine). See below.



DE1007

When the machine is moved to its desired operating position, prepare the QA340 for operation by following the procedures laid out in the following pages.

2.6 Preparing the Machine for Transportation

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1. Ensure that all materials have run off the conveyor belts and that the hopper is empty.
2. Folding the tail & side conveyors is a complete reversal of the instructions “Side conveyor unfolding procedure” on page 48 and “Tail conveyor unfolding procedure” on page 47.

DO NOT FOLD ANY CONVEYORS UNLESS MOVING PARTS ARE STOPPED.

Ensure that:

3. All belt retention straps have been fitted.
4. Side conveyor and tail conveyor have been secured with all necessary chains, links & straps as supplied with machine.
5. Check and if necessary inflate/ deflate the tyre pressures to the tyre manufacturer’s recommendations.
6. All loose parts have been secured.
7. The engine must be switched off.
8. Machine is cleaned off loose debris.

REMEMBER, THE DRIVER IS RESPONSIBLE FOR HIS LOAD & WHAT HE IS TOWING.

2.7 Transporting the Machine by Bogie

DO NOT MOVE THE MACHINE WITHOUT ALL TRANSPORTATION FITMENTS SECURELY IN POSITION AND SAFETY PINS IN PLACE.

1. Ensure that the towing bogie has been secured.
2. Any air pressure is released from air cylinder relief valve and handbrake released.



1: Release handbrake.



2: Release any air pressure from bogie to aid in alignment with machine.



3: Switch TRACKS ON.

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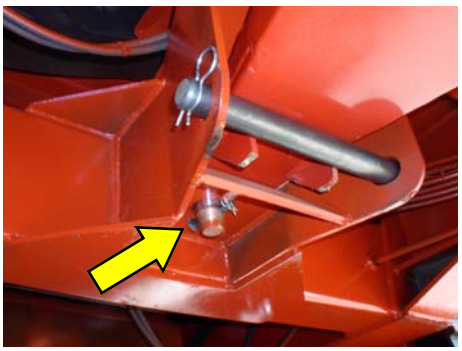
4: Manoeuvre machine over bogie, lining up the hitches on the chassis and bogie.



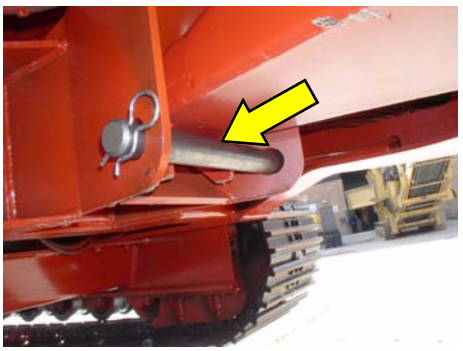
5: Switch **TRACK OFF**.



6: Lower bogie towing pin.



7: Retain bogie towing pin with locking pin and R-clip.



8: Insert bogie pin and retain with R-clip.



9: Attach bogie lift ram hoses and turn lever forward.



10: Attach umbilical chord brake and electrical connections under hopper.



11: Attach umbilical chord brake and electrical connections to bogie and secure chord to machine.



12: Raise bogie into place.



13: Attach bogie stops (2 off).



14: Lower chassis jacking legs to raise the front of the machine.

Note! *Make sure legs are lowered simultaneously to prevent instability.*

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15: Attach air brake and lighting connections.



16: Raise chassis jacking legs.



17: Plug in tail gate socket on bogie.



18: Secure tail gate to tail conveyor.



19: Tail gate fitted.

Check and verify the transportation fitments, brakes and electrical connections on completion.

2.8 Application & Limitations

The QA340 has been designed and constructed to screen minerals such as stone, concrete and limestone to a predetermined size. The QA340 must not be used for any other purpose without first contacting Sandvik Screens & Crushers Ltd. technical department.

The QA340 must not be operated until the instructions supplied with the machine are read and fully understood. The QA340 is not recommended for night operation.

2.9 Description

The QA340 is a self contained tracked machine built to withstand the rigours and conditions of operating in quarries and within the construction industry. The QA340 utilises a diesel engine to provide the power to the hydraulic power pack and to generate electricity for the electrical systems of the machine.

The tracks, hopper, conveyors and all other working parts of the machine are all hydraulically driven.

Where possible all of the moving parts of this machine are guarded, where not, warnings are provided. The Safety Section of this manual must be read and fully understood. Any residual organisational, personal and environmental issues must be fully addressed as detailed in the safety section.

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This equipment has been manufactured and assessed to be in accordance with the Machinery Directive 98/37/EC.

2.10 Operation Description

Section 2 and 4 of this manual provides details of Transport, Commissioning and Operation this must be read and fully understood before operating this equipment.

Material is loaded normally by excavator into the hopper where material falls onto the hopper conveyor. The material is then fed into the main conveyor.

The material then travels up the conveyor where at the top it transfers onto the screen box, the material passes over a series of meshes which separates the material into 4 grades.

The larger and medium grades are separated onto the side conveyors leaving the fines to travel up the tail conveyor. Each grade falls into separate piles around the machine.

2.11 Key Features of the Sandvik QA340

- Diesel hydraulic power via Deutz BF4M 2012 engine - 74.9 kw (100.4 hp) - water cooled.
- Heavy duty construction - used worldwide in quarries and gravel pits.
- Hopper fitted with variable speed belt feeder.
- Main conveyor has variable speed and variable angle to facilitate the handling of the widest range of material.
- Separate hydraulic adjustment of the screening angle of each screen box giving over twenty different combinations of screening angle.
- Self-loading hydraulic bogie gives independent road transportation without the use of low loaders.
- Rapid ratchet tensioners give fast mesh changes.
- Optional double deck vibrating grid. This handles the most heavy difficult material and produces three precise grades from the screen box.
- Each screening unit of the QA340 system has a uniquely high inertia ensuring that superb separation is carried out over the full surface of the screen deck.
- Remote control of tracking and grid tip functions.
- Steel pipe runs used in hydraulic system gives improved temperature control and extended hose life.
- Weight - 35 tons (excluding the bogie).

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- Hydraulic walkways deploy in seconds, giving low access height and safe working area for maintenance and mesh change.
- 10000 Kg is the maximum recommended load to the hopper.

2.12 Common Applications

- Granite
- Slate
- Bricks
- Limestone
- Recycling/ Demolition
- Asphalt

This list is by no means exhaustive. Contact Sandvik Screens & Crushers Ltd for further details of performance figures and advice on your material.

2.13 Machine Layout Indicating Main Components

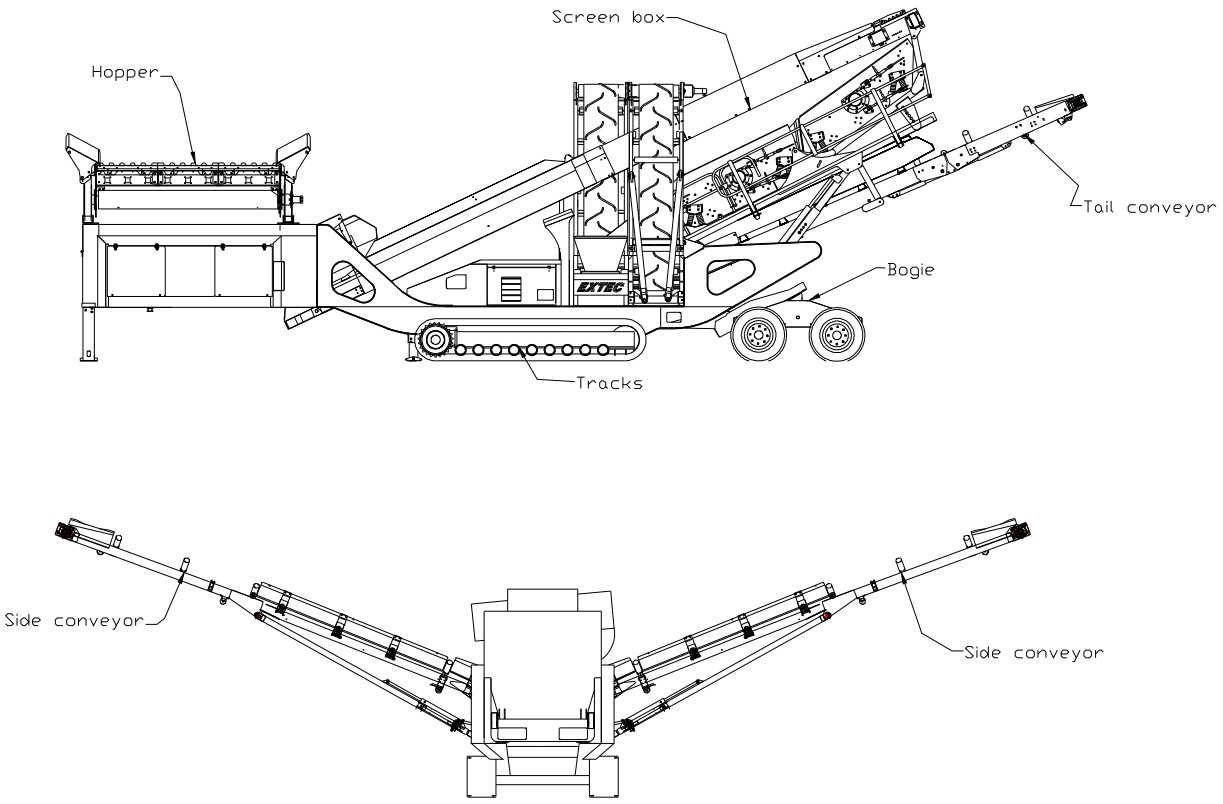


Figure 2-2: Main Components

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2.14 Machine Layout Indicating Emergency Stop Positions

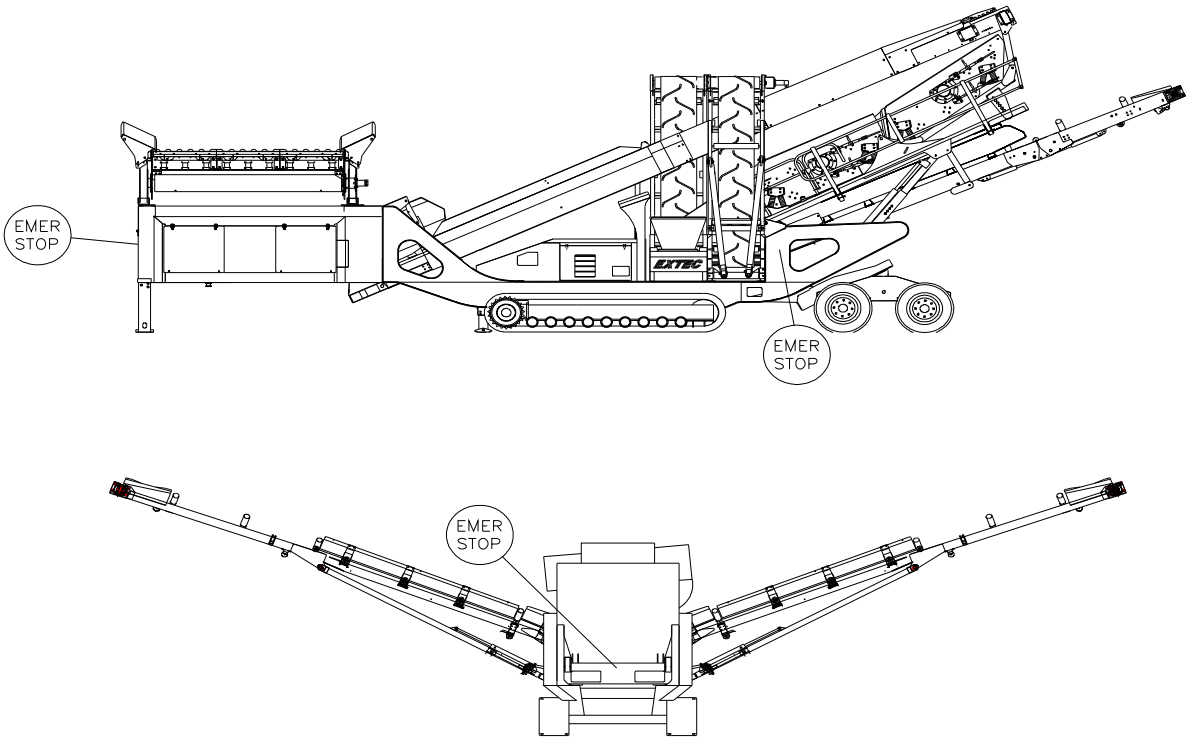


Figure 2-3: Emergency Stops

2.15 Data

Screen size

Triple Screen box assembly:

Primary screen box	1500 x 2500 mm
Secondary screen box	1500 x 2500 mm

Conveyors

Hopper belt	1200 x 3500 mm (hydraulic drive)
Main conveyor	1000 x 11125 mm (hydraulic drive)
Tail conveyor	1200 x 7140 mm (hydraulic drive)
Side conveyors	700 x 9715 mm (hydraulic drive)
Side conveyor discharge height	

Dimensions

Transport Length	16011 mm
Transport Width	2590 mm
Transport Height on Bogie	3930 mm
Working Length	17835 mm
Working Width	17051 mm
Working Height	6165 mm

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Weight	33500 kg (excluding bogie)

Engine Details

Engine	Deutz BF4M2012
Engine maximum power	74.9 kW @ 2200 rpm (98ps)
Fuel Tank Capacity	290 litres
Hydraulic Tank Capacity	370 litres

Fuel Consumption Guide

100% Full load, continuous	17 litres/ hour

2.16 Sandvik QA340 Transport Dimensions

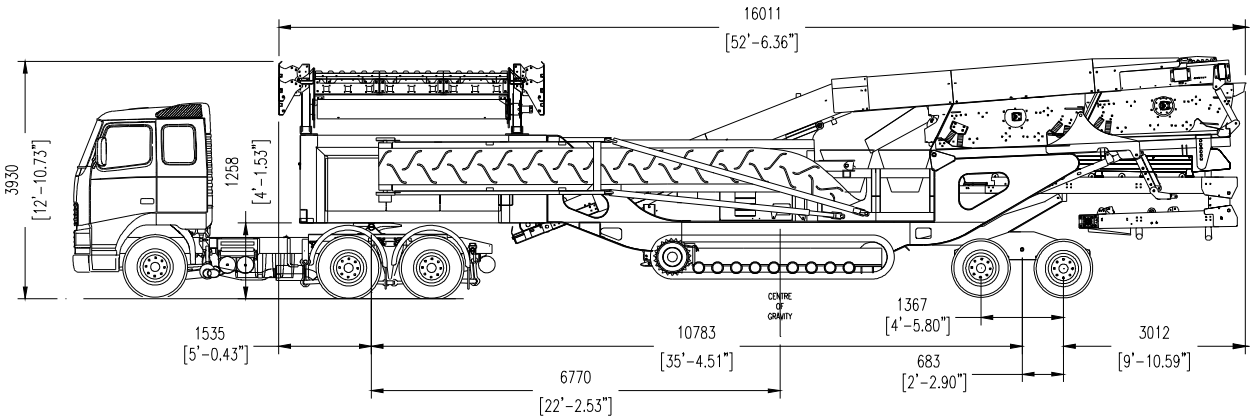


Figure 2-4: QA340 Machine Transport Dimensions

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3. PRODUCT OVERVIEW

3.1 QA340 Assemblies & Options

The QA340 Screener has the assemblies:

- Main Conveyor
- Side Conveyors
- Tail Conveyor
- Magnetic Conveyor
- Screen Box
- Power Pack
- Hopper
- Tracks

The QA340 Screener has the options:

- Main Conveyor (Short)
- Triple Transport Bogie
- Extended Hopper/Tipping Grid
- Vibrating/Tipping Grid

3.2 Machine Layout Indicating Main Components

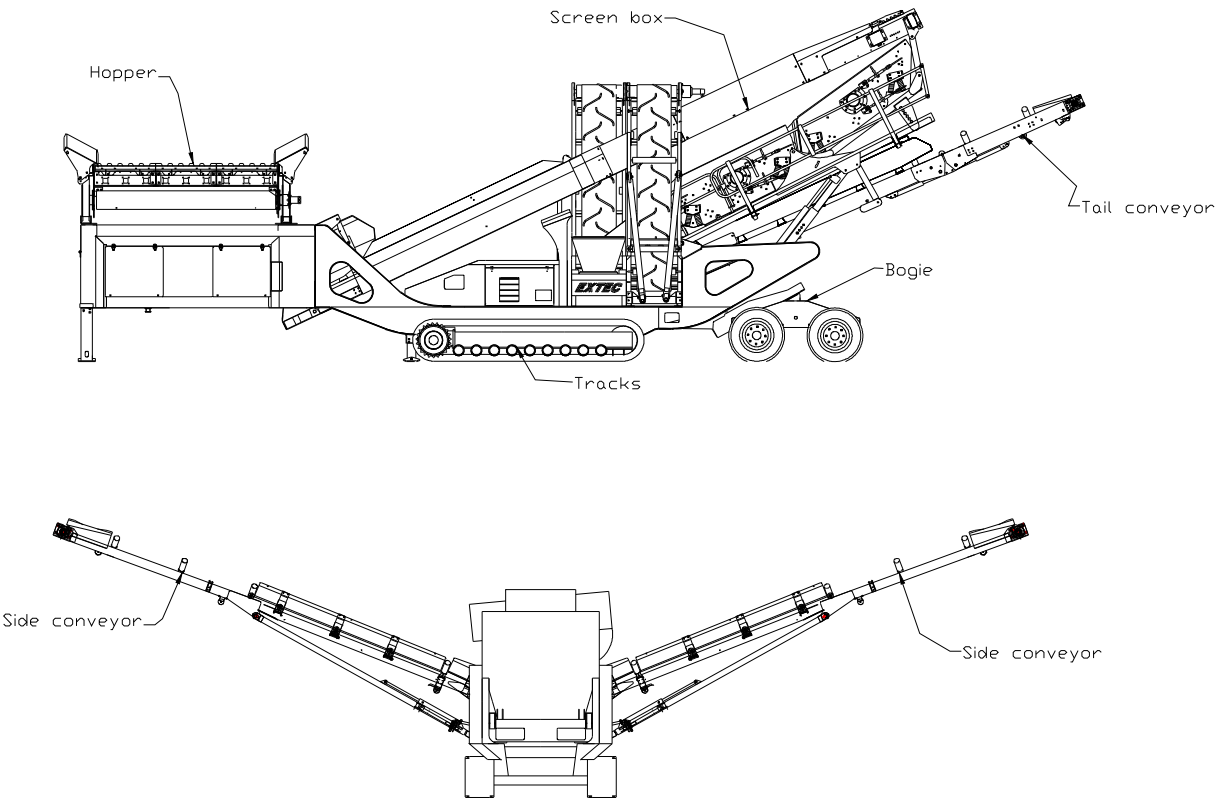


Figure 3-1: Main Components

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4. COMMISSIONING & SHUT DOWN

4.1 Pre Start Instructions

Before starting this machine it is important that the instructions below are followed:

1. Ensure that this manual is read and understood. Do not attempt to start this machine until you are aware of all aspects of its operation.
2. Remove any temporary sealing and transport straps.
3. Check that the machine is in good mechanical condition and that there is no component damage or loss.
4. Ensure that all bolts and fixings are tight and that all guards are in place with all safety devices operating correctly. Never start this equipment without guards and safety devices operating correctly.
5. Ensure that the hopper, screen and conveyor belts are free of material.
6. Remove all tools and equipment from the operational area.
7. Ensure all personnel are well clear of the machine, drives, tracks and auxiliary equipment.
8. Ensure that the pre-start checks outlined in the engine manufacturer's instruction manual are complied with.
9. Check the fluid levels in engine.
10. Check that all rollers turn freely. This must be done by hand. (Never attempt to touch the drums or rollers whilst the machine is running.)
11. Ensure that the skirting rubbers and scrapers are in good condition and working properly.
12. Jacking legs are positioned correctly.
13. Safety pins are in appropriate positions.
14. All transit fastenings to conveyor belts undone and securely positioned away from moving parts.
15. All personnel are positioned at a safe distance from the moving parts of the machine and away from the conveyor discharge areas.
16. Ensure all operating levers are in an off position.

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4.2 Main Control Devices

4.2.1 Electrical Control Box

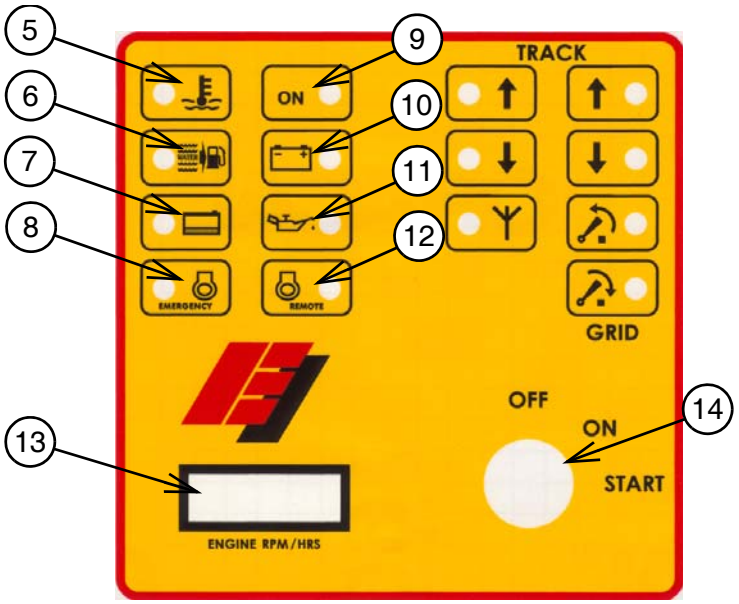
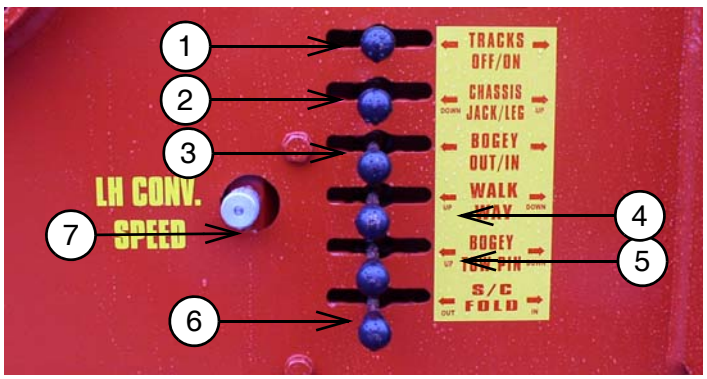


Figure 4-1: Electrical Control Box

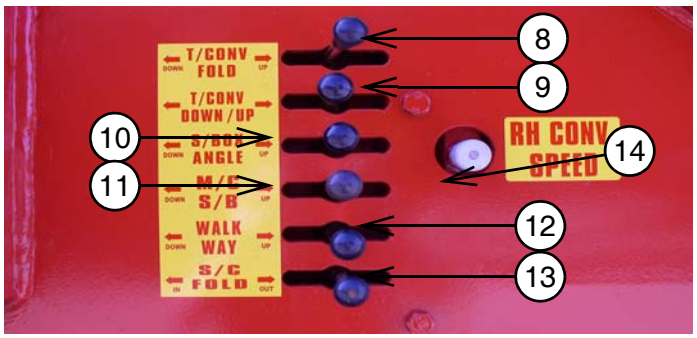
5. Water Temperature
6. Water and Fuel Sensor
7. Low Water Level
8. Emergency Stop Light
9. Engine On Light
10. Battery Light
11. Oil Light
12. Remote Control Emergency Stop
13. Engine Rev Counter/ Hour Clock
14. Ignition Switch Position

4.2.2 Hydraulic Controls



1: Rear L/H Side of Machine

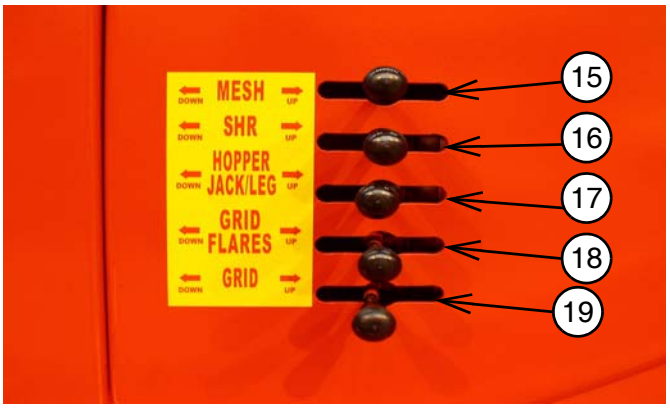
1. Tracks On/ Off
2. Chassis Jacking Legs
3. Bogie Lift/ Lower
4. Walkway Fold/ Unfold
5. Bogie Towing Pin Lift/ Lower (if fitted)
6. L/H Side Conveyor Fold/ Unfold
7. L/H Side Conveyor Speed Control



2: Rear R/H Side of Machine

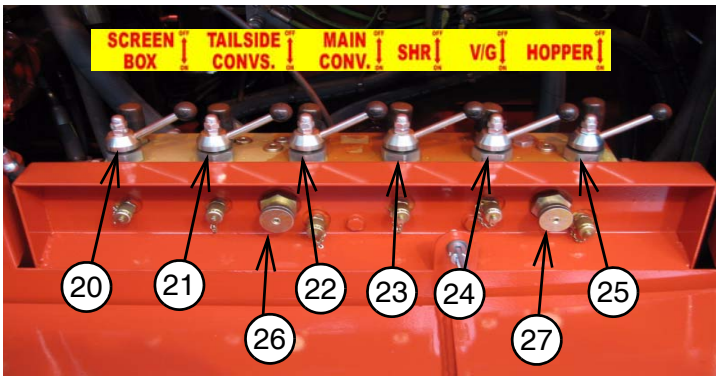
8. Tail Conveyor Fold/ Unfold
9. Tail Conveyor Up/ Down
10. Screen Angle
11. Main Conveyor Lift/ Lower
12. Walkway Fold/ Unfold
13. R/H Side Conveyor Fold/ Unfold
14. R/H Side Conveyor Speed Control

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3: L/H Side of Powerpack

15. Mesh Up/ Down
16. Shredder Lift/ Lower (if fitted)
17. Hopper Jacking Legs
18. Grid Flairs (if fitted)
19. Grid Up/ Down



4: L/H Side of Powerpack

20. Screen Box Drive
21. Tail & Side Conveyor Drives
22. Main Conveyor Drive
23. Shredder Drive
24. Vibrating Grid Drive
25. Hopper Conveyor Drive
26. Main Conveyor Speed Control
27. Feeder Speed Control

4.2.3 Remote Control



5: Remote Control



Start Vibrating Grid
Stop Vibrating Grid
Cycle Vibrating Grid
Remote Stop Engine
No Action
No Action
Sound Track Alarm whilst held

IMPORTANT: If for any reason, the 10 amp fuse on the electronic board fails it must only be replaced by another 10 amp fuse. Incorrect fuse replacement can cause extensive damage to the electronic components.

The QA340 is equipped with safety shutdown control panel. With this type of system, built-in switches set to factory preset limits, operate such that if during operation, either the oil

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pressure or engine temperature reaches its preset limit, the system will experience a safety shutdown and turn the engine off.

If a safety shutdown occurs, the condition causing the engine to shut down must be corrected before any attempt is made to restart it.

4.3 Starting Procedure

1. Set throttle lever to idle position.
2. Insert ignition key into ignition switch.
3. Turn key clockwise to 'ON' position. All lights will flash for several sec's.Then the 'ON' light, battery light and oil light will remain lit.



Figure 4-2: Electrical Control Box with Key

4. Turn key fully clockwise to 'START' position. The engine will start.
5. Release key. Engine will now run at idle.
6. Pull throttle to maximum. The engine is now running at operating speed.

Note! *In low temperatures the engine should be run at idle for 5 minutes.*

COLD START: When starting the machine in temperatures of 0°C or below, run all systems at minimum engine speed for 5 minutes then increase engine speed to maximum and run all systems for 10 minutes to allow hydraulic oil to reach working temperature. ***DO NOT*** feed material into machine during this time.

Note! *The machine MUST be level and set up on firm level ground before being operated. Failure to comply with this or any other instructions in this manual may cause damage to the machine and may invalidate any warranty.*

4.4 Stopping the Machine

To stop the machine, it is ESSENTIAL that the following steps be followed in order to prevent damage to the machine:

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1. Stop feeding material into hopper.
2. Wait for all material to fully discharge from the tail and two side conveyor belts.
3. Switch off all drive control levers.
4. Push throttle back to low idle position and allow to run at this speed for 1 minute.
5. Turn key fully counter clockwise.

4.5 Stopping Machine in an Emergency

THE MACHINE CAN BE STOPPED IN AN EMERGENCY BY PRESSING THE EMERGENCY STOP BUTTONS LOCATED ON CHASSIS SIDE AND HOPPER FRONT END.



1: Emergency stop located at hopper end of machine.



2: Emergency stop located on L/H side of chassis at tail end of machine.



3: Emergency stop located on R/H side of chassis at tail end of machine.

Make sure all emergency stops are test daily.

ENSURE THAT ALL PERSONNEL IN THE VICINITY OF THE MACHINE ARE FULLY AWARE OF THE LOCATION OF THE EMERGENCY STOPS.

4.6 Preparing the QA340 For Operation

4.6.1 Setting Up/ Location

Find a level and firm piece of ground (of suitable size and location). See “Machine Manoeuvring” on page 32. Remove bogie if fitted. See “Machine Unhitching” on page 30. Lower the hopper jacking legs to support the hopper.This may require raising the jacking legs and re-

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moving or adding hard standing under the feet of the hopper legs. Before any loading can take place the hopper leg pins **MUST** be inserted & retained with R-clip.



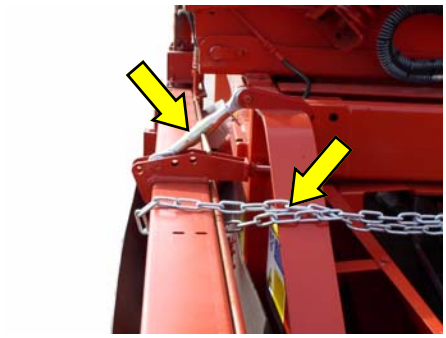
1: Lower Hopper Jacking Legs



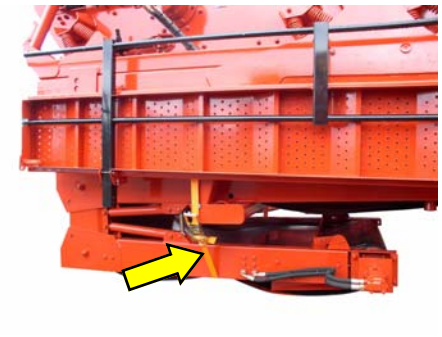
2: Hopper Jacking Legs lowered



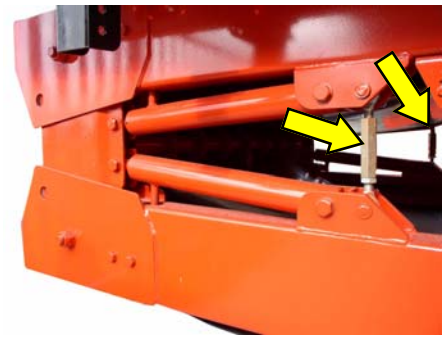
3: Insert leg lockout pin & retain with R-clip.



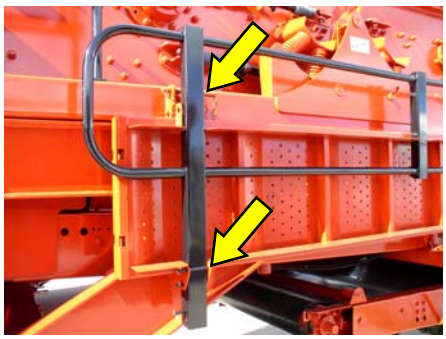
4: Remove side conveyor transportation links & chains.



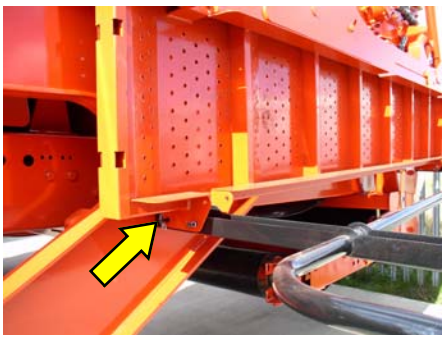
5: Remove tail conveyor transportation strap.



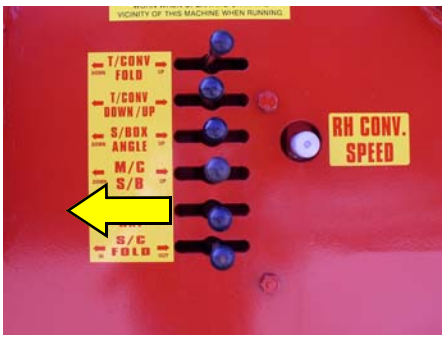
6: Remove tail conveyor transportation links.



7: Remove frame R-clips & handrail retention pin.



8: Lower hand rail frame. Re-insert pin & R-clips to lock out handrail.



9: Rotate walkway to its working position.



10: Pull back & drop down walkway locking device.



11: Insert handle pins & retain with R-clips to lock the walkway.

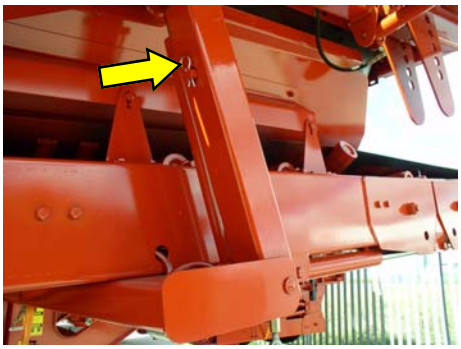


12: Insert top pins & retain with R-clips to lock the walkway.

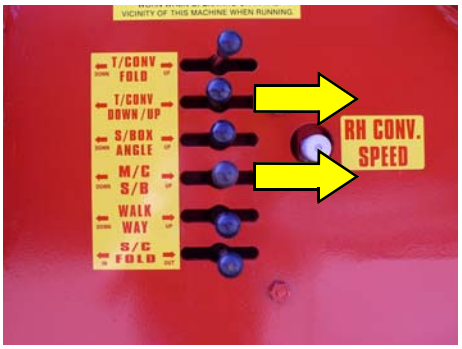
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4.6.2 Tail Conveyor Unfolding Procedure

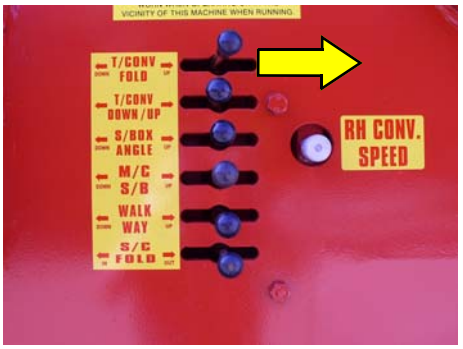
Ensure tail conveyor transportation straps, links and telescopic arms safety pins are removed. See page 49.



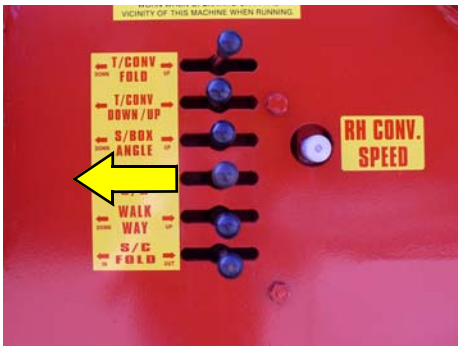
1: Remove telescopic arm safety pins.



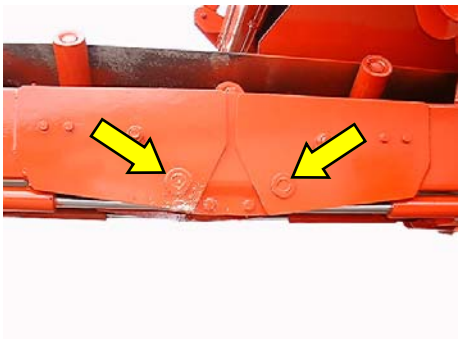
2: Raise main conveyor, screen & tail conveyor to fully raised position.



3: Unfold tail conveyor (check tail conveyor is high enough to clear floor).



4: Lower tail conveyor to reach lock out pins.



5: Fit tail conveyor lock out pins & raise tail conveyor to working position.

Note! *Tail conveyor hinge may need levelling, See "Tail Conveyor Pivot Adjustment" on page 71. for adjustment.*



6: Raise tail conveyor into position.

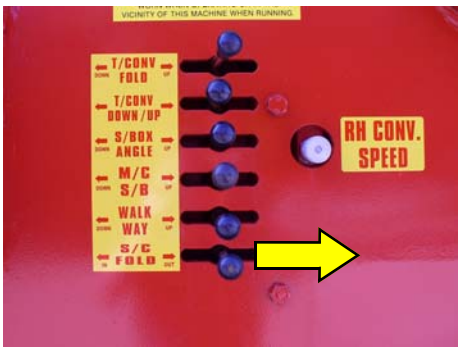
Note! *All pins should be in place or damage may occur whilst machine is in operation.*

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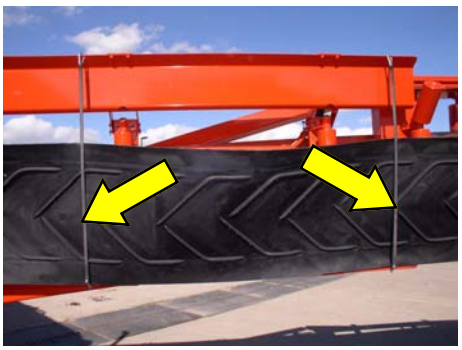
ID: QA340-en-11858

4.6.3 Side Conveyor Unfolding Procedure

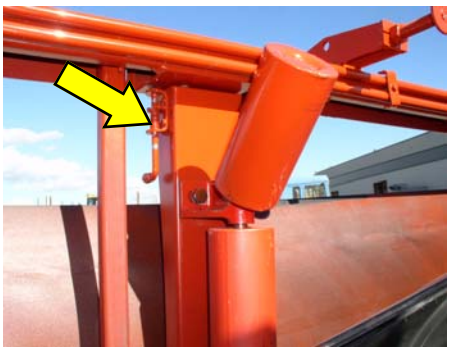
1. Ensure side conveyor transportation clamps and chains are removed. See “Side Conveyor Unfolding Procedure” on page 52.
2. Start engine as described on page 48.



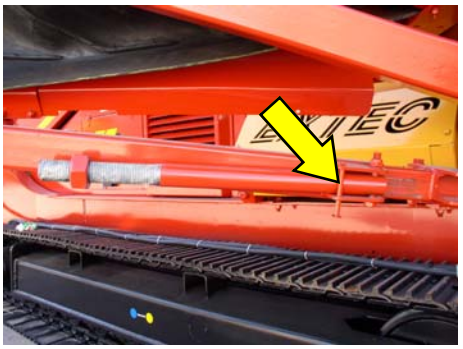
1: Unfold R/H conveyor to about halfway and stop.



2: Remove belt retaining straps (2 off).



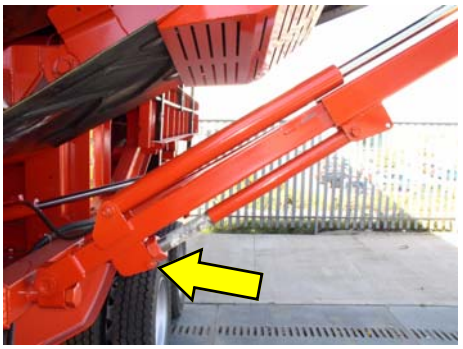
3: Rotate roller assembly into position & retain with catches shown.



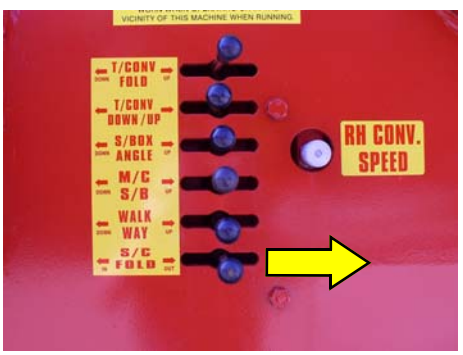
4: Release tracking support rod.



5: Remove flair pins, raise side flairs & refit pins.



6: Locate support rod to lower retaining bracket. Retain with pin.



7: Unfold conveyor to working position.



8: Unfold L/H conveyor using same procedure as for R/H.



9: Conveyor working position

Note! *All pins should be in place or damage may occur whilst machine is in operation.*

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4.7 Closing Down The Machine

1. Ensure that all materials have run off the conveyor belts and that the hopper is empty.
2. Turn off the vibrating grid if fitted.
3. Turn off hopper conveyor.
4. Turn off shredder & magnet if fitted.
5. Turn of main conveyor.
6. Turn off screen box.
7. Turn off the tail & side conveyors.
8. Reduce engine speed to idle for 1 minute.
9. Switch off engine and remove the key.

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5. OPERATIONS

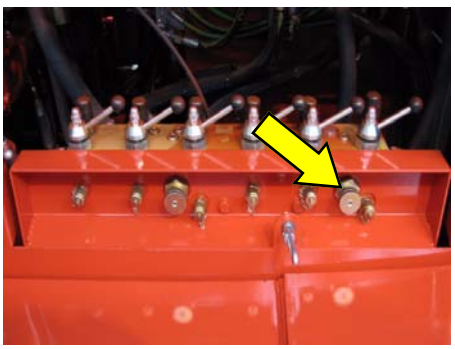
5.1 Start up the Machine

Refer to “Starting Procedure” on page 48

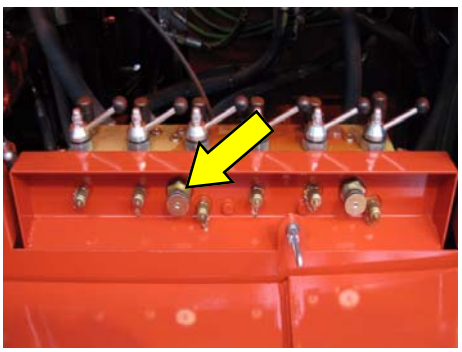
5.2 Screening

There are five main variables which effect the screening capacity and efficiency of the QA340.

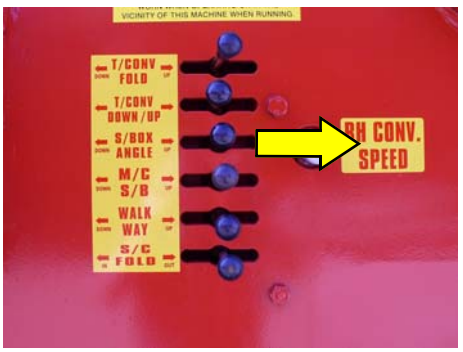
1. Hopper feed rate.
2. Main conveyor feed rate.
3. Screen Box Angle. Maximum feed rate can be achieved when the optimum screen angle has been determined, adjust the screen angle with the machine running so that the grading of the material can be established.
4. In conjunction with the secondary screen the primary screen angle can be adjusted to give six progressive angles to obtain optimum screening.
5. Screen meshes. See “Screen Box Mesh Fitting and Removal” on page 73.



1: Hopper feed rate control



2: Main conveyor feed rate control



3: Screen box angle



4: Primary screen shown on maximum tilt

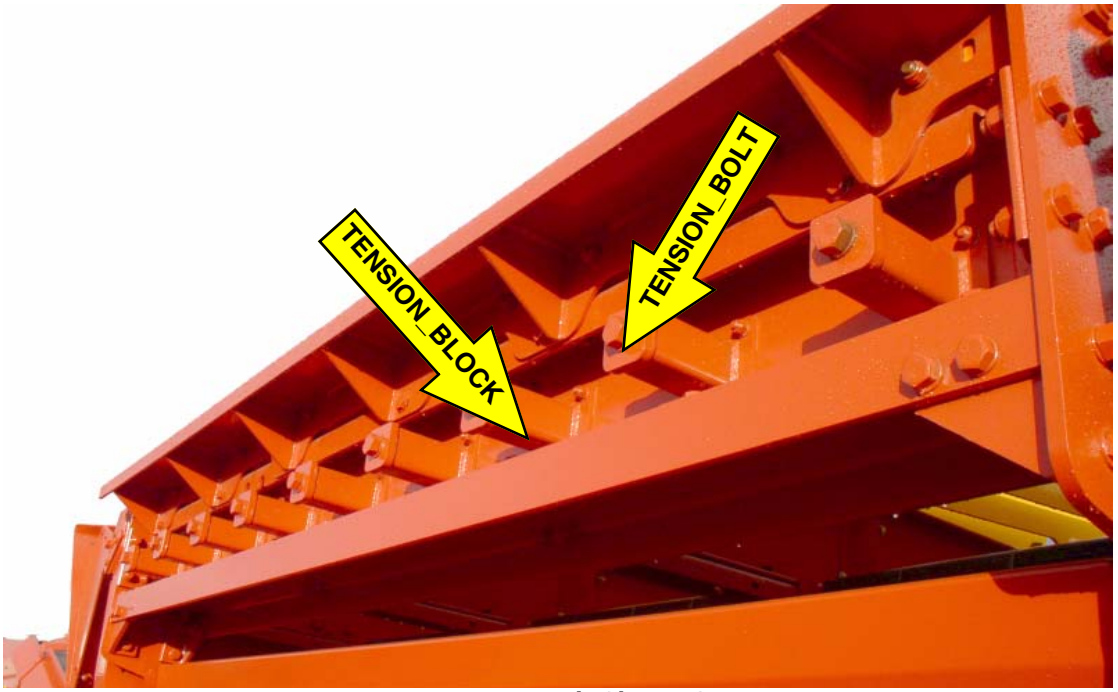


5: Screen box with meshes

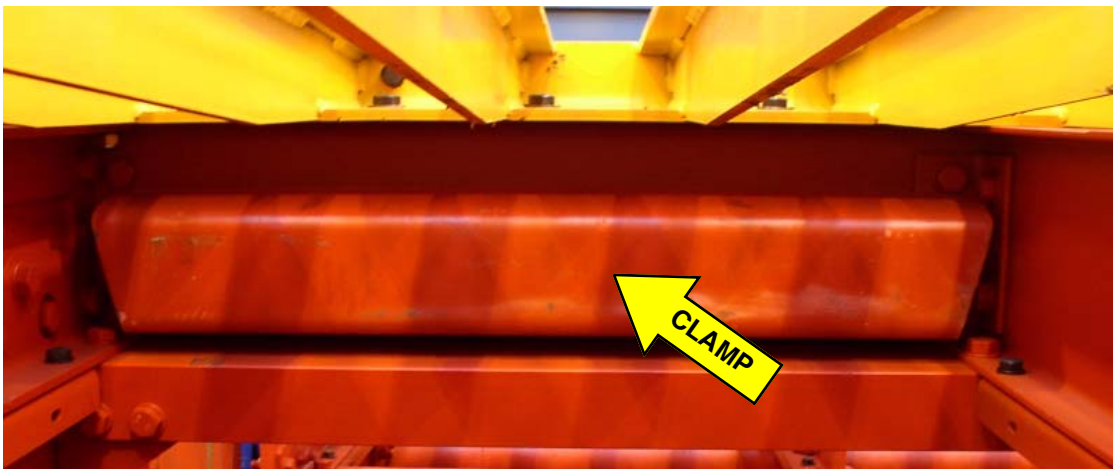
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5.2.1 Screening Without Hopper Mesh



1: Hopper Mesh Clamp Set



2: Mesh Clamp inside Hopper

When operating the screener without the mesh for short periods, it is recommended that the clamp bolts be tightened.

Tighten all the tension bolts ensuring that the mesh clamp is secure against the hopper. Repeat for each clamp. Inspect regularly (50 hours) and ensure that all clamps remain secure.

When the mesh is not used for longer periods (200 hours) of operations, it is recommended all tension bolts and clamps be removed.

Completely remove all tension bolts, nuts and clamps. Failure to remove the mesh clamps may result in damage to the hopper.

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5.3 Material Control



1: Main conveyor feed control.



2: Hopper feeder belt control.



3: L/H side conveyor feed control.



4: R/H side conveyor feed control.

5.4 Reject Grid Operation



1: Grid tipping.



2: Adjustment leg stop.

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5.4.1 Grid Loading



1: Load from rear.

Note! *The QA340* **must** *always be loaded from the rear of the hopper from as low as height as possible, this will ensure both speed and efficiency.*

5.4.2 Remote Grid Operation



1: Remote control hand unit.

A. BY PRESSING THE YELLOW BUTTON ON THE REMOTE CONTROL

A signal is sent to the timer allowing the rams to open fully and remain open for 2/3 seconds then close fully, thus tipping the grid and returning it back to rest.

B. BY PRESSING THE TOP GREEN BUTTON ***

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A signal is sent to the unit allowing the rams to open while the button is depressed.

C. BY PRESSING THE BOTTOM GREY BUTTON ***

A signal is sent to the unit allowing the rams to lower while the button is depressed.

******quick stabbing of these buttons will give the grid a "shaking action"***

D. BY PRESSING THE RED BUTTON (USE ONLY IN EMERGENCY)

A signal is sent to the unit and stops the engine from running, thus stopping all hydraulic power.

THE RED BUTTON IS ONLY TO BE USED AS AN QUICK STOP. FREQUENT USE WILL CAUSE DAMAGE TO HYDRAULIC COMPONENTS.

5.4.3 Timer Adjustment Setting

1. The timer for operation of the grid tipping will have been pre-set at the factory.
2. It may be necessary to reset the timer during the working life of the unit, or in different temperatures.



1: The timer control is located behind the electrical control box.



2: Operate grid. Ensure full stroke of ram & 2/3 sec. delay before return to fully closed grid.



3: If necessary adjust timer to achieve previous operation.

5.5 Shut Down the Machine

Refer to “Closing Down The Machine” on page 53

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6. MAINTENANCE

Maintenance is essential for ensuring the best possible performance from your QA340 by reducing the chances of breakdowns.

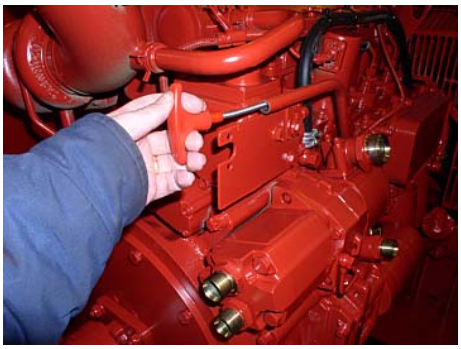
WARNING: The machine MUST be switched off and isolated with the ignition keys removed BEFORE making any adjustments.

All adjustments must **ONLY** be carried out by trained personnel.

All adjustments to set screen & vibrating grid speeds, maximum engine revs or hydraulic system must be carried out by trained **Sandvik Service Engineers.** When performing any maintenance on the machine refer to engine manufacturer's handbook for appropriate maintenance schedules.

6.1 Daily Maintenance Schedule

It is recommended that the following daily maintenance schedule is carried out:



1: Check engine oil level.
Refer to the engine manufacturer's handbook for engine oil specifications.



2: Refill if necessary. (CN6098)

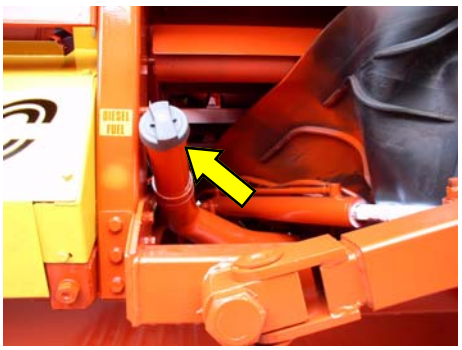


3: Check engine coolant level. Refill if necessary. Use 50% antifreeze.

Hot coolant can cause serious burns. To open the cooling system filler cap, stop the engine and wait until the cooling system components are cool. Loosen the cooling system pressure cap slowly in order to relieve the pressure.



4: Check diesel fuel level.



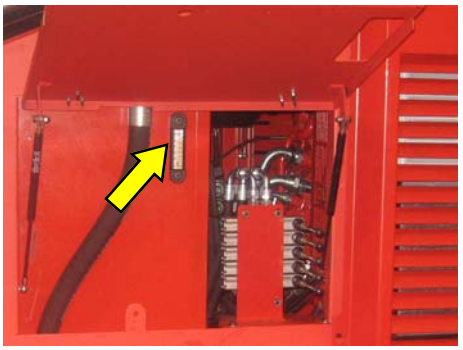
5: If necessary refill diesel tank. Use standard diesel as suitable for the operating climate.



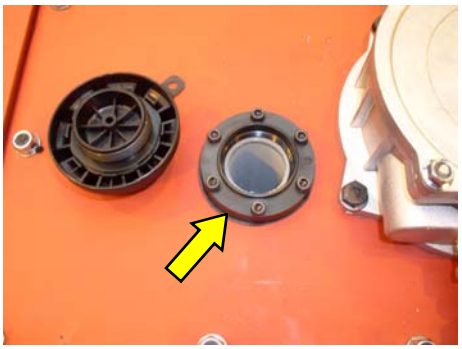
6: Drain water from diesel in-line water tap. (EN7896)

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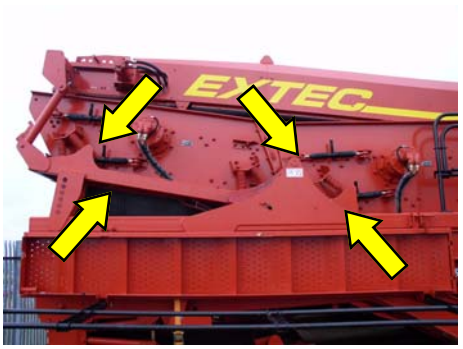
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7: Check hydraulic oil level.



8: Refill if necessary with hydraulic oil. (CN6070)
(See “Oils And Fluids” on page 82.)



9: Check condition of screen mesh and tension.



10: Check condition of belt scrapers and adjustment.



11: Check condition of tyres and pressures.



12: Inspect the oil bath filter at least every ten hours. (Where fitted.) See “Filter Maintenance” on page 63. (EN7379)

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Service and Maintenance

6.4 Combustion Air Filter

6

The operator have to evaluate the operating conditions and clean the oil bath filter accordingly.

6.4.2 Emptying Cyclone Type Precleaner

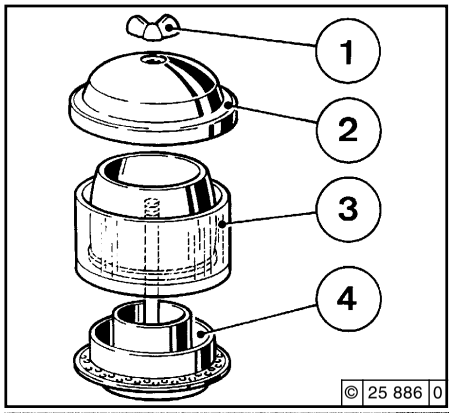
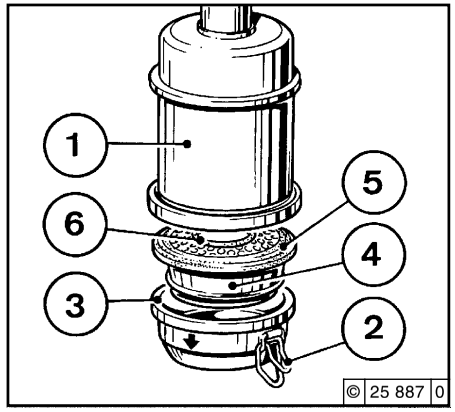


Figure 6-1: Filter Maintenance

- Undo wing nut 1 and remove cover 2.
- Remove collector bowl 3 from lower section 4 and empty. Clean leaves, straw and other foreign matter from lower section of pre-cleaner.
- Reposition collector bowl 3 onto lower section 4, fasten cover 2 in place by tightening wing nut 1.

Never fill collector bowl with oil. Replace collector bowl if damaged.

6.4.3 Clean Oil Bath Air Filter



- Turn engine off and wait about 10 minutes for the oil to drain from filter housing 1.
- Loosen quick fasteners 2 and remove oil cup 3 with filter element 4; if necessary, loosen filter element with the aid of a screwdriver at the separating point. Do not damage rubber gasket 5!
- Remove dirty oil and sludge. Clean oil cup.
- Clean filter element 4 in diesel fuel and allow to drip-dry.
- Clean filter housing 1 if very dirty.
- Inspect and replace rubber gasket 5 and 6 if necessary.
- Fill oil cup with engine oil up to the mark (arrow) (for viscosity, see 4.1.2).
- Refit oil cup and element to filter housing and secure with snap clips.



Never clean filter with gasoline! Dispose of old oil in accordance with environmental regulations!

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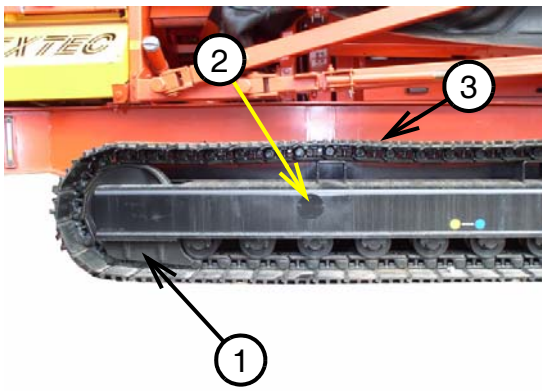
13: Check tension of belts. See “Tensioning and Tracking of Conveyor Belts” on page 73.



14: If fitted remove pieces of metal on magnet conveyor that may cause jamming around rotating parts.

REMEMBER TO MAINTAIN YOUR TRACKS

1. Check your track rollers and idler wheels for possible leakage.
2. Check the track surface of the track rollers, idler wheels, track shoes and drive sprockets for wear and loose mounting bolts.
3. Listen for abnormal noises when the machine is moving slowly.



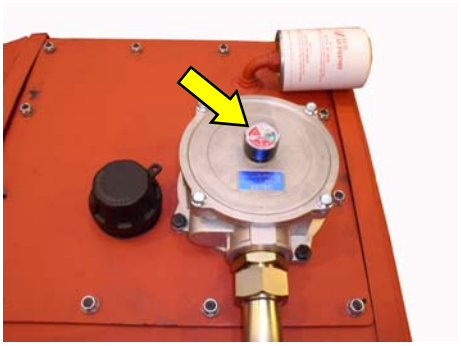
1. Idle Roller
2. Relief Valve
3. Track Surface

4. See “Track Adjustment” on page 79.

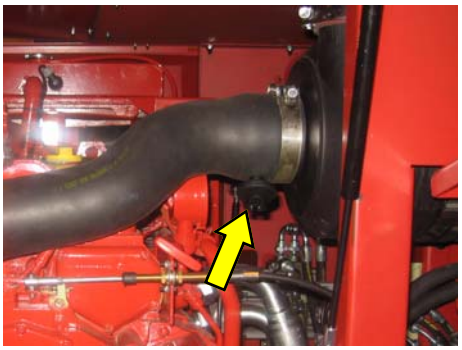
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6.2 Weekly Maintenance Schedule

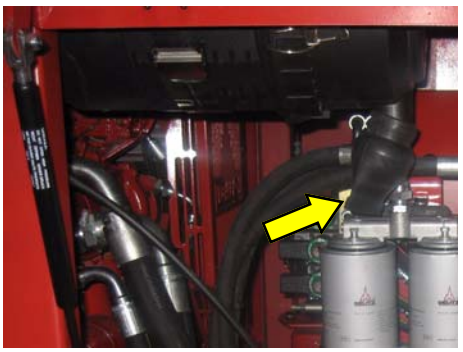
Every week the following maintenance must be carried out to ensure the best performance and least possible breakdowns from your machine:



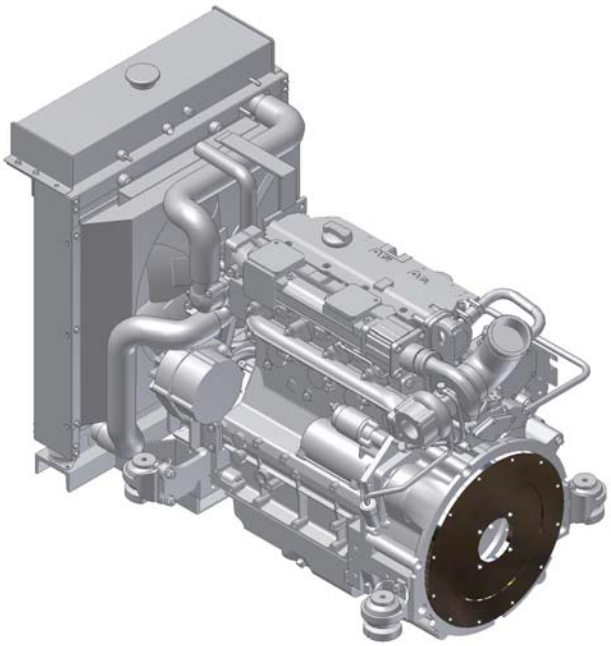
1: Check hydraulic filter indicator. (EN1504)
If shows red whilst machine running - change filters.(HF1004)



2: Check air filter indicators at ingnition box (water/fuel light)
If shows red whilst machine running - change filters. (EN9320 & EN9321)



3: Open dust discharge valve. (EN7879)



4: Follow routine maintenance in engine handbook.

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5: HOPPER SIDE SKIRTS - To adjust side skirts open all clamp plates and push wear rubbers down on to conveyor belt by using a screwdriver or similar tool through the holes provided on top of the clamps. When adjustment is complete re-tighten all clamps securely.

Note! *Make sure bottom of clamp is no more than 10-15 mm above belt.*



6: MAIN CONVEYOR - To adjust wear rubbers loosen both clamps, one either side of the feed boot and pull the wear rubber down to the conveyor belt ensuring a good seal all along the feed boot and re-tighten the clamps securely.

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7: SIDE CONVEYOR -To adjust wear rubbers loosen both clamps, one either side of the feed boot and pull the wear rubber down to the conveyor belt ensuring a good seal all along the feed boot either side of the chevron conveyor belt. Re-tighten clamps securely.



8: TAIL CONVEYOR -To adjust wear rubbers loosen the three clamps, one at rear and one either side of the feed boot. Pull the wear rubbers down to conveyor belt ensuring a good seal is maintained along the side of the feed boot. This may also be achieved by sliding the feed boot up or down on its support legs as required, by loosening six nuts and six bolts, one on each leg. Adjust the boot to the height required and re-tighten the nuts and bolts securely.

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9: Adjust belt scrapers.
If required, adjust belt scrapers by loosening bolts in rosta springs, adjusting scraper and re-tightening bolts. (Both sides should be adjusted simultaneously.)



10: Remove any blockages in screen box.



11: If fitted check condition of support chains on the magnet conveyor.

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Ensure all the below areas are cleared of material.



12: Remove covers to expose main conveyor tail drum & clear debris.



13: Return rollers.



14: Canopy top and exhaust area.

6.2.1 Greasing Bearings

Sandvik Screens & Crushers Ltd use SKF sealed-for-life bearings that reduce grease consumption, lower life cycle cost, lower recycling costs and reduce pressure on the environment. The results are dramatically increased up time for the machines and the consequent reduction in maintenance costs. Only apply grease where otherwise indicated.

NEVER USE GREASE CONTAINING MOLYBDENUM. DOING SO MAY CAUSE DAMAGE TO MACHINE PARTS AND WILL INVALIDATE ANY WARRANTY.

Using suitable equipment, the following bearings must be greased every week. See following pictograms for details of grease points.



15: Screen box bearings grease points.

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16: Vibrating grid bearings grease points.

6.3 Machine Maintenance - Every 250 Hrs

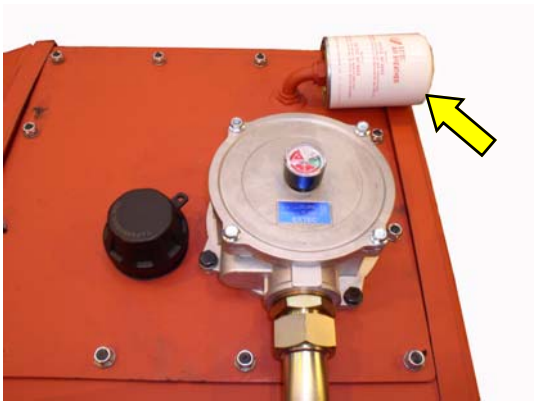
Every 250 hours, the following maintenance must be carried out to ensure the best performance and least possible breakdowns from your machine.

1. Follow maintenance instructions laid out in engine manufacturers handbook.
2. Inspect condition of conveyor belt and tracking.
3. Inspect and adjust belt scrapers.
4. Inspect and adjust wear rubbers.
5. Inspect condition and tension of screen mesh.
6. Inspect condition of all belt drums.
7. Check for hydraulic leaks on pipes.

6.4 Machine Maintenance - Every 500 Hrs

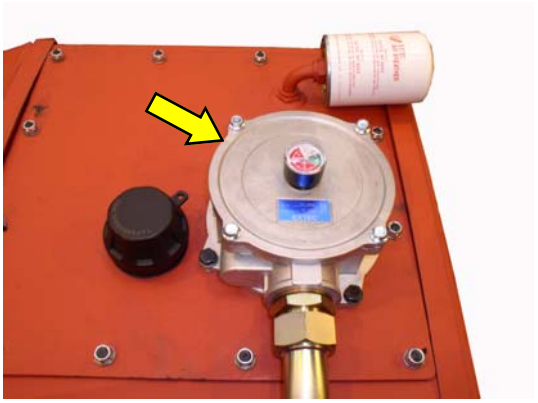
Every 500 hours, the following maintenance must be carried out:

1. Follow maintenance instructions laid out in engine manufacturers handbook.
2. Carry out 250 hour maintenance schedule.



3. Replace hydraulic air tank breather. (HF4003)

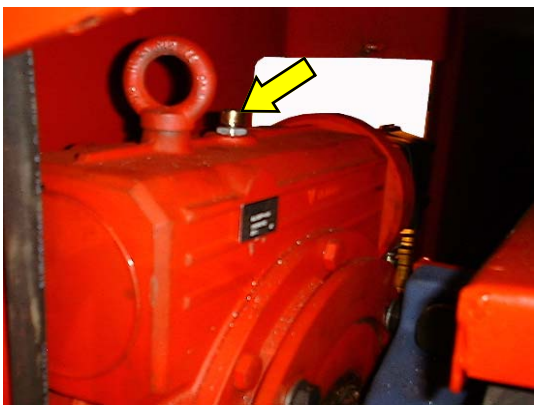
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4. Replace hydraulic return filter. (HF1004))



5. Check hopper conveyor gearbox oil.



6. Refill if necessary. See “Oils And Fluids” on page 82.

6.5 Machine Maintenance - Every 1000 Hrs

Every 1000 hours, the following maintenance must be carried out:

1. Follow maintenance instructions laid out in engine manufacturers handbook.
2. Carry out 250 hour maintenance schedule.
3. Renew hydraulic oil. (CN6070)

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4. Replace suction filters.



17: VIEW ON SUCTION FILTERS (HF1017)

5. Replace twist on hydraulic air tank breather. (HF4003)
6. Change oil in the tracks. See “Changing Track Oil” on page 78.

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6.6 Tensioning and Tracking of Conveyor Belts

6.6.1 Tensioning of Hopper Conveyor Belt

The machine MUST be switched off and ignition key removed BEFORE making any adjustments.

1. Tensioning and tracking of hopper conveyor should be done initially with the hopper empty.





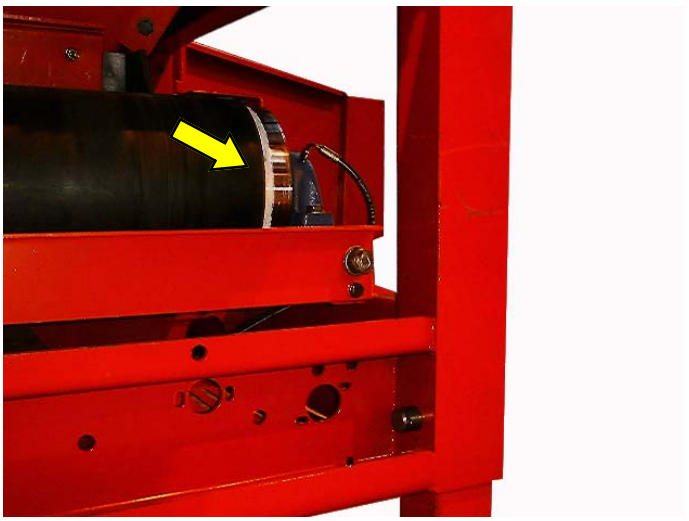
2. Open all access doors.



3. Slacken off tail drum bearing fasteners.

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4. With adjusting bolts tension or track the belt.
5. Re-tighten tail drum bearing fasteners, stand clear of conveyor, start the machine and run the belt for a few minutes, observing the alignment of the belt.
6. If after a short time, the belt appears to be in track, stop the belt and switch off the machine. Close and secure all doors.
7. If the conveyor is running out of track when the material is on the belt, then slacken off and adjust the roller carrier angles forward or back to achieve correct tracking.
8. Start the engine and run the machine with material on the belt, observing the tracking of the belt. If the belt is still running out of track, repeat No.7.

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6.6.2 Tensioning of Main & Side Conveyor Belts

Remove the safety guards, loosen the tail drum bearing fasteners bolts and follow the same procedure as for the tail conveyor. Re-tighten the bearing fasteners, adjust the scraper and **REPLACE SAFETY GUARDS CORRECTLY.**



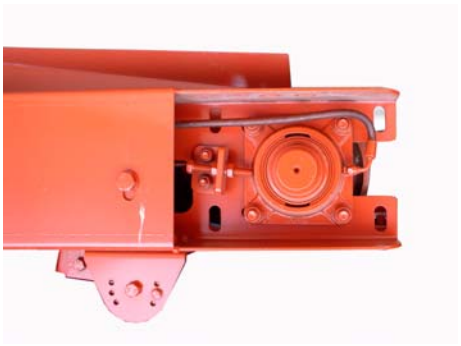
1: Remove tail end guards.



2: Slacken off tail drum bearing fasteners.



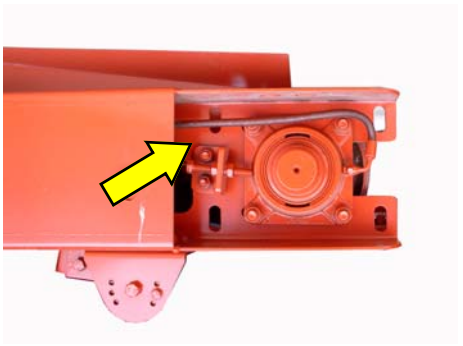
3: Slacken off scraper fasteners.



4: Slacken off head drum bearing fasteners.



5: With adjusting bolts tension or track the belt.



6: With adjusting bolts tension or track the belt.

7: Re-tighten bearing fasteners, adjust scraper, close and re-bolt the doors.

8: Start the machine, run the belt and stand well clear, observing the alignment of the belt. If further adjustment is required, repeat the above procedure.

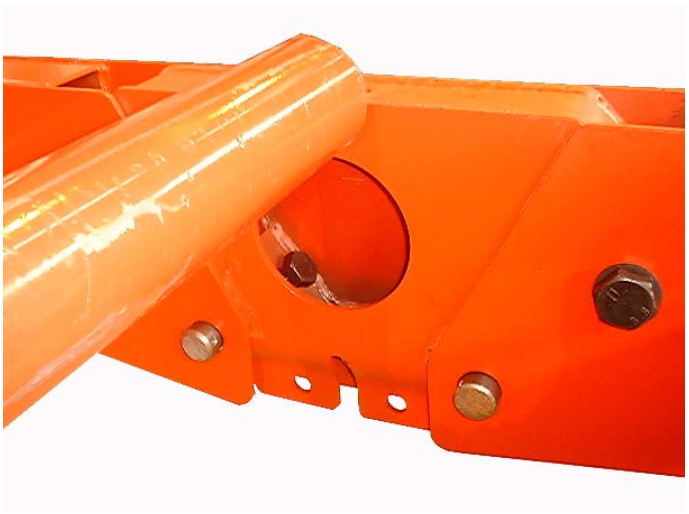
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6.7 Tail Conveyor Pivot Adjustment

Periodically adjustment may be required to keep tail conveyor level. To make adjustments see below:



Tail Conveyor Hinge Link Assembly



Adjustment Bolt access hole

1. Fix lockout pins in place.
2. Release locknut (4 off).
3. Tighten (or un-tighten) bolts (4 off) until conveyor becomes level.
4. Re-tighten lock nuts.

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6.8 Screen Box Mesh Fitting and Removal

The machine MUST be switched off and ignition key removed BEFORE making any adjustments.

6.8.1 Screen Box Mesh Access

To aid in changing the screen box mesh & clearing any blockages, the main conveyor & tail conveyor can be raised and lowered independently.



1: Raise main conveyor.



2: Remove tail conveyor pin.



3: Lower tail conveyor.

6.8.2 Screen Box Mesh Removal

Using the ratchet's on either side of screen box retract the tension spring bar back to the end of the side plate slots. The existing mesh can now be removed by lifting and unhooking from the front mesh hook.



1: Screen mesh tensioning ratchet.

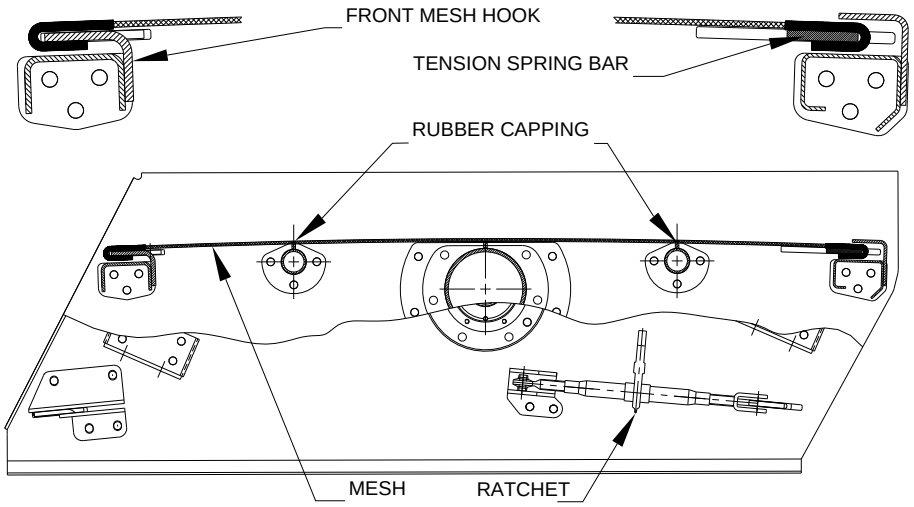
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6.8.3 Screen box Mesh Fitting

Before changing screen mesh **ENSURE** the capping rubber is in good condition.

Insert mesh into the box on the required level and anchor one end around the front mesh hook. Rest the screen mesh on the cross supports and using the ratchet's either side of the screen box extend the tension spring bar along the side plate slots until the correct tension is achieved. Restart the machine and run the screen box motor's, if the meshes rattle or make any noise, stop the machine and apply further tension.



6.9 Changing Track Oil

To drain oil from the track gearbox, drive the machine until the oil drain plug is at the bottom of the gearbox. Remove both plugs and the oil will drain out. Use a suitable container to collect waste oil. Replace drain plug.

Disposing of waste oil must be done in a manner that complies with current environmental legislation.

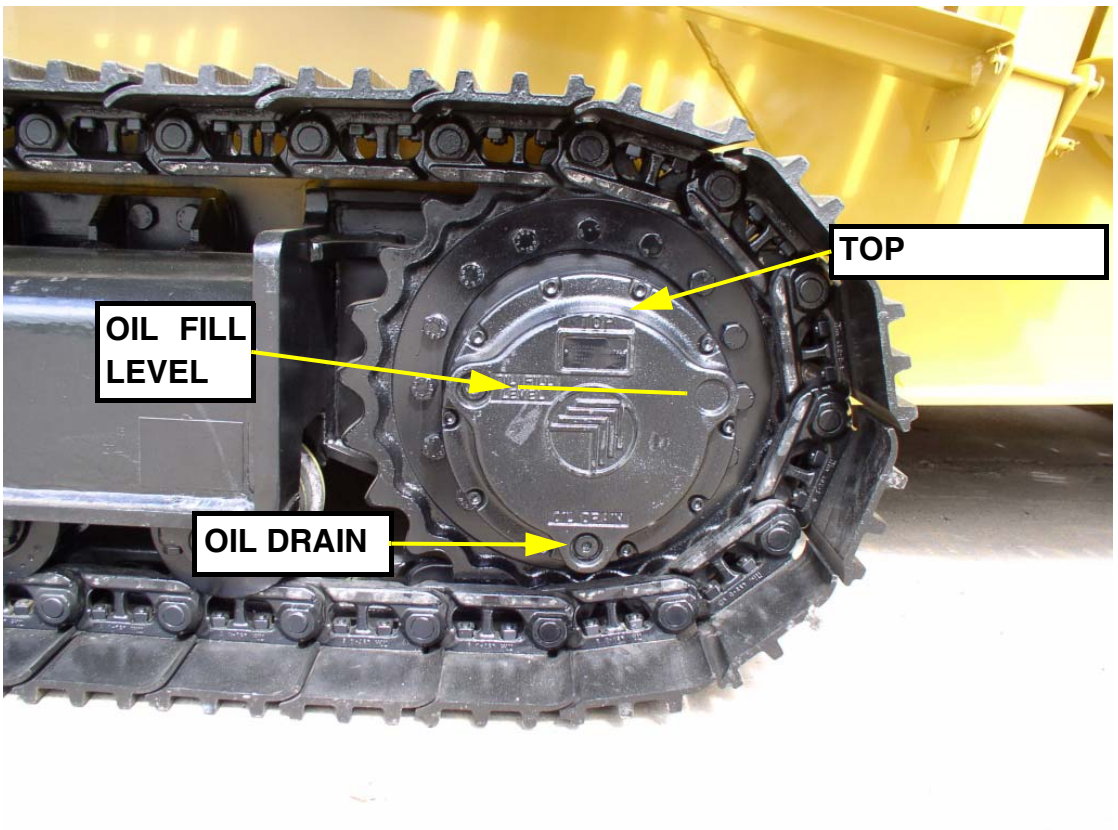
To refill track gearbox with oil, drive the machine until the gearbox is in the correct position. See below.

Note! *This will only be 1/3 turn of the track gearbox.*

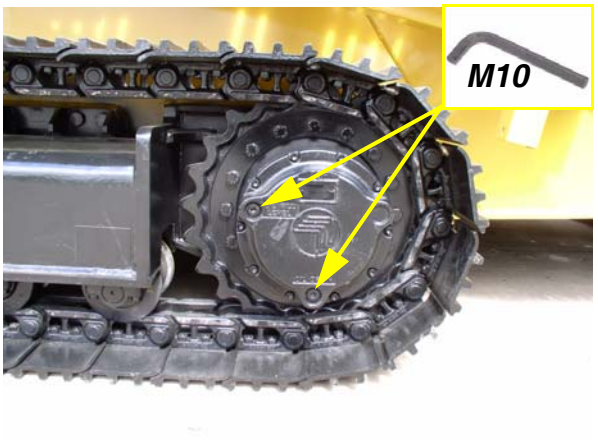
DO NOT drive machine any further until oil has been replaced in tracks. Remove the oil level plug as shown in the photographs below. Fill with oil until it starts to come out of the plug

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hole. Replace oil level plug ***BEFORE*** driving the machine. Each track gearbox will have to be maintained separately..



1: Track gearbox in correct position to refill with oil.



When changing oil in the tracks, use Exol Ethena EP90 Gear Oil.

2: Remove oil level plug.

6.10 Track Adjustment

WARNING!

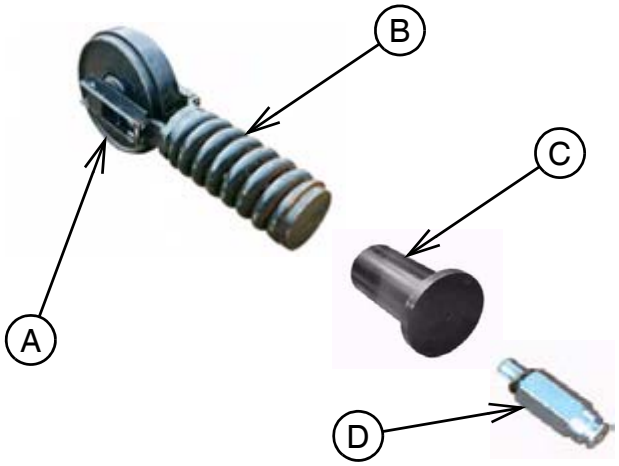
Grease under pressure can cause serious injury. Never unscrew a track adjuster valve by more than a ½ turn, when the track is under tension.

After maintenance or over time the track will become slack and will have to be adjusted. The adjustment of the tracks operates through a tensioning cylinder (C). When the cylinder is

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filled with grease it extends and pushes the spring tension unit (B), and the idler (A), forward. The grease is filled through the track adjuster grease valve (D).



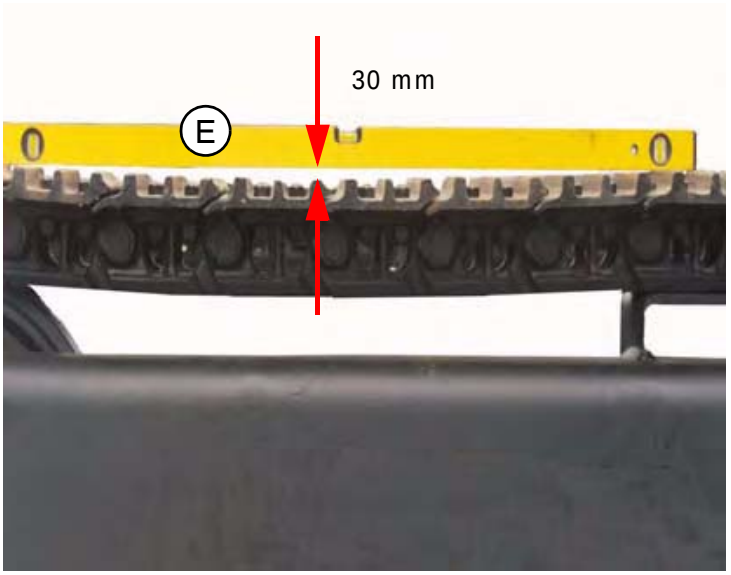
1: Track Adjustment

In order to establish if the track requires tensioning, move the Host machine a few metres forwards and backwards on level ground. This allows the tracks to adopt their natural degree of tension.

Note! *Do not slew the machine.*

Using a straight edge and a measuring tape, measure the droop of the track group as shown at (E). For this particular track set, the droop should not exceed 30 mm.

Note! *It is also important that the track is not tensioned too tightly as this places excessive loads on the gearbox and idler bearings. It will also lead to accelerated wear and premature failures.*



2: Track Adjustment Settings

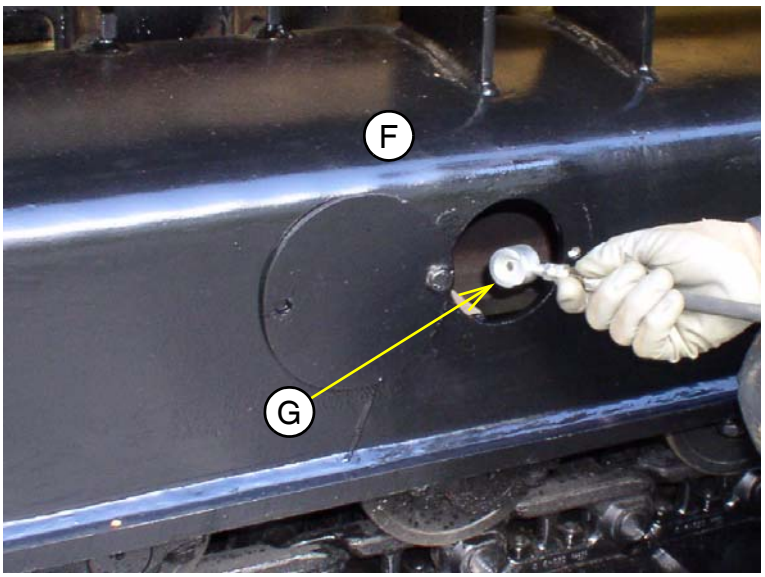
6.10.1 Increasing The Track Tension

To increase the tension of the track:

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1. Remove the inspection cover on the side of the track frame as shown at (F).
2. Ensure that the track adjuster valve (H), is tight.
3. Attach the special grease gun connector (G), to a grease gun and fit it onto the track adjuster valve (H).
4. Pump grease into the valve until the droop of the track is correct.
5. Move the Host machine backwards and forwards a few times more and then re-check the droop. Add more grease if required.
6. Check for any escaping grease around the tensioning unit and finally close the inspection cover when finished.

Important: Ensure that the correct grease is used.



3: Increasing The Track Tension

6.10.2 Releasing The Track Tension

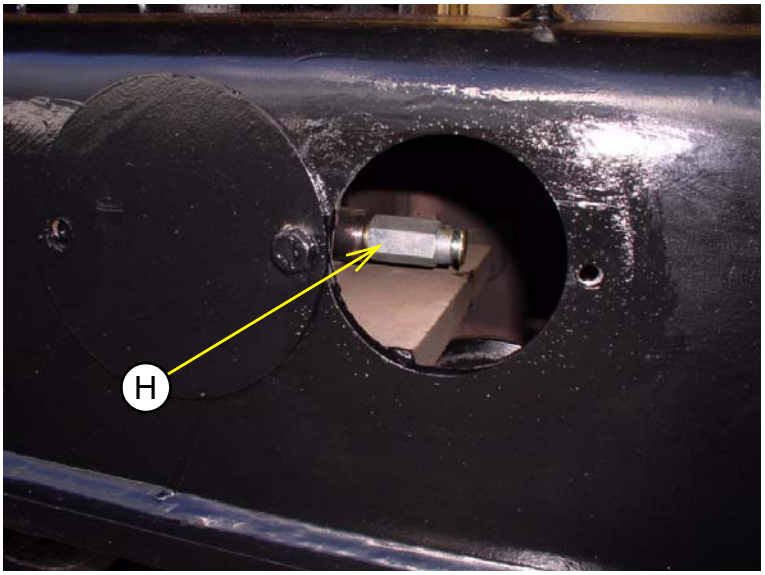
To the release the tension on the tracks:

1. Remove the inspection cover on the side of the track frame as shown at (F).
2. Loosen the track adjuster valve (H), by turning it one half turn anticlockwise.
3. Grease should now escape slowly from the track tensioning cylinder and the track should slacken.
4. If the track fails to loosen, apply a little pressure to the idler end of the track to push the idler group in.

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5. Replace the inspection cover when completed.



4: Releasing The Track Tension

6.11 Magnetic Conveyor

The machine MUST be switched off and ignition key removed BEFORE making any adjustments.

Follow maintenance instructions laid out in the magnet manufacturer's handbook. See "ERIEZ MAGNET MODELS CP & OP INSTRUCTIONS IM-108GB-(F.01)" on page 221.

6.12 Hydraulic Hoses

Sandvik recommend that the hydraulic hoses are replaced after 5 years.

6.13 Oils And Fluids

A full list of Substances Hazardous to Health associated with this equipment can be found in the appendix of this document.

Lub/ Oil and Grease Points	Max. Vol.	Temperature	Viscosity	Manufacturers Equivalent Specifications	Sandvik Part Number
Anti Freeze				Shell Safe Anti Freeze Concentrate	
Diesel	290Lt			Shell Agricultural Gas Oil	CN6004
Engine Oil	10Lt			Shell Diesel Engine Oil Rimula 15W-40	CN6098

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Lub/ Oil and Grease Points	Max. Vol.	Temperature	Viscosity	Manufacturers Equivalent Specifications	Sandvik Part Number
	10Lt	Cold Weather		Shell Diesel Engine Oil Rimula 5W-30	
Engine Oil - Alternative	10Lt			See Manufacturer's Handbook	
Hydraulic System	570Lt		ISO VG 32	Shell Tellus Arctic 32	
	570Lt		ISO VG 46	Shell Tellus Oil 46	CN6070
	570Lt		ISO VG 68	Shell Tellus Oil 68	
	570Lt		ISO VG 100		
	570Lt	Environmentally friendly		Shell Naturelle HF-E 46	
General Lubrication Points				Shell Albida Grease EP2	
		Arctic		Shell Aeroshell 33	
Screen Box				Exxon Unirex N 3 Grease	
Tracks	5Lt			Exol Ethena EP90 Gear Oil	
Tracks - Alternative	5Lt			Shell SPIRAX GSX75W-80	

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6.14 Maintenance and Service Parts

For 500 hours the required items are:

Part No.	Part Description	Quantity
1. CN6098	SHELL RIMULA ULTRA OIL 10W40	10
2. EN1338	FUEL FILTER ELEMENT	2
3. EN9320	OUTER AIR FILTER ELEMENT	1
4. EN9321	INNER AIR FILTER ELEMENT	1
5. EN1504	VISUAL POP UP INDICATOR - SUITS MP1002	1
6. EN1601	FILTER UNIT	1
7. EN5000	VORTEX PRE-CLEANER	1
8. EN7379	OIL BATH FILTER	1
9. EN9322	SERVICE INDICATOR	1
10. EN7896	FUEL PRE-FILTER COMPLETE	1
11. EN7897	FUEL PRE-FILTER ELEMENT	1
12. EN7898	FUEL PRE-FILTER GASKET KIT	1
13. HF1004	FILTER ELEMENT	1
14. HF1018	FILTER TANK TOP RETURN LINE	1
15. HF4003	SPIN ON AIR BREATHER	1

For 1000 hours add the items:

Part No.	Part Description	Quantity
16. CN6070	HYDRAULIC OIL HM46 [TELLUS OIL 46]	570
17. HF1017	FILTER SUCTION STR1004SG1M90-2	5

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7. TROUBLE SHOOTING

Below is a list of some of the common problems that might occur on your machine. If these problems arise, carry out the checks listed.

PROBLEM	*SOLUTION*
Engine losing power or hard to start.	*Check air filter is not blocked.* *Check diesel filter and sediment bowl.*
Engine will not start or keeps shutting off.	*Check that emergency stops are not pushed in.* *Check water level in radiator.* *Check fuel level.* *Check that batteries are charged and terminals are tight.* *Check oil pressure, temperature and battery lights on control panel.*
One or all of the conveyor belts is/ are not moving, or running at the correct speed.	*Check belt tension.* *Check that there is no build up of material underneath the conveyors.* *Check for blockages in hydraulic return and suction filters.*
Screen box has excessive vibration.	*Check that screen box meshes are tight.* *Check meshes for pegging i.e. trapped material.* *Check machine is running at maximum set operating speed.*
Machine "rocking" excessively.	*Check ground conditions are firm and level.* *Check tracks are not slack. If they are see "Track Adjustment" on page 76 for adjustment.*
Machine not tracking.	*Check that track lever is in the ON position.* *Check oil level in the hydraulic tank.* *Check remote handset is fully charged - plug in Hard Wire Drive and try to move machine.*
Chassis jacking legs not lowering simultaneously.	*Raise jacking legs fully, hold lever open making sure both legs are fully retracted.* **Note!** *This may take a few minutes.* *Lower jacking legs and check if lowering simultaneously - if not repeat above procedure.*

IF ANY PROBLEM PERSISTS AFTER CARRYING OUT THE RECOMMENDED SOLUTION, OR A PROBLEM ARISES THAT IS NOT ON THIS LIST, CONTACT Sandvik SERVICE DEPARTMENT FOR FURTHER ASSISTANCE.

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QA340

Spare Parts Catalogue

SANDVIK

QA340

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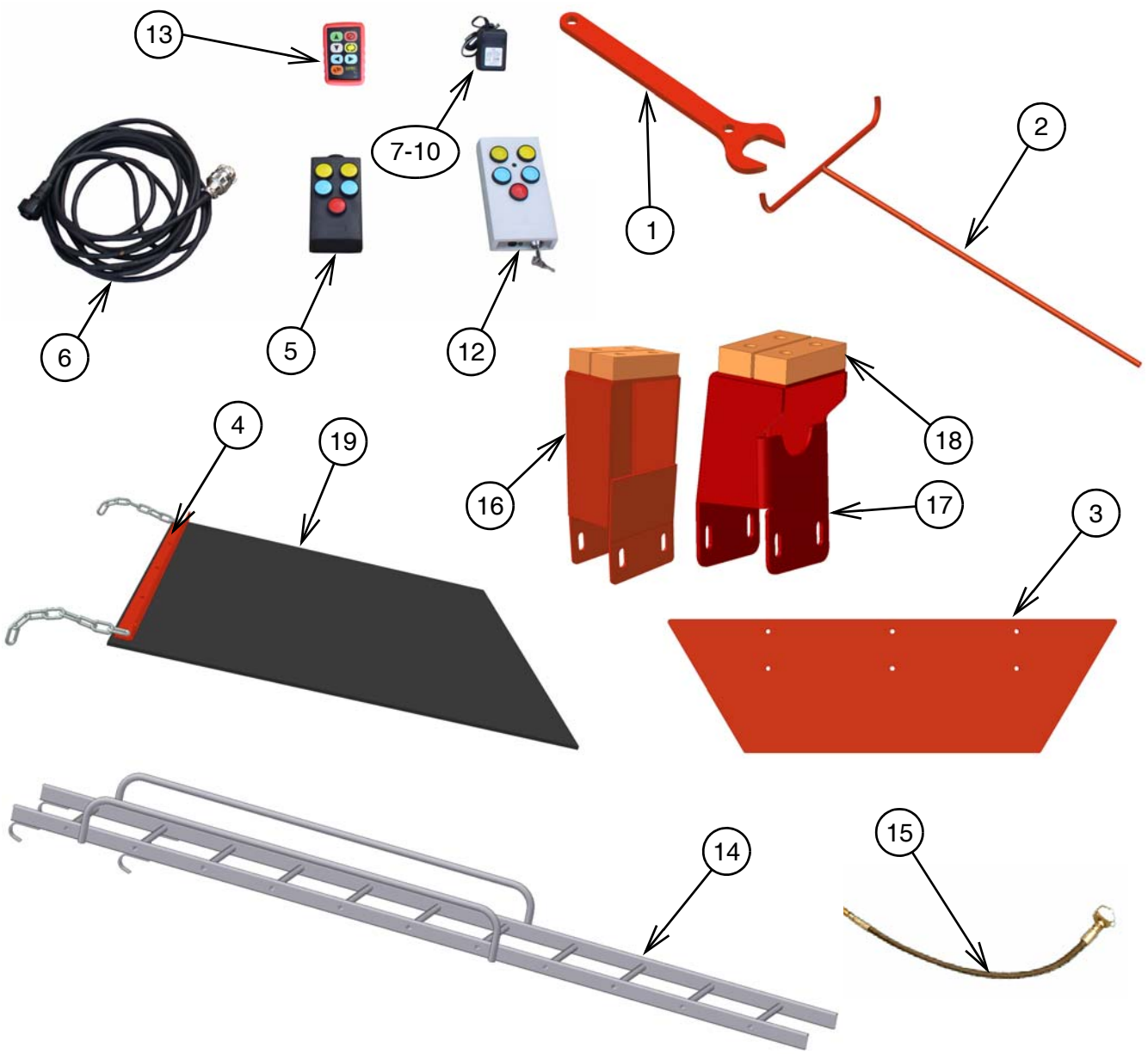
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1. LOOSE ITEMS



1: LOOSE ITEMS

Part No.		Part Description	Quantity
1.	B0290000	SIDE CONVEYOR SPANNER	1
2.	C7880000	HOPPER SIDE DOOR BRACE	2
3.	C7960000	HOPPER MOUTH REDUCING PLATE	1
4.	D9860000	CROSS BEAM	2
5.	EL2069	MANUAL HANDSET	1

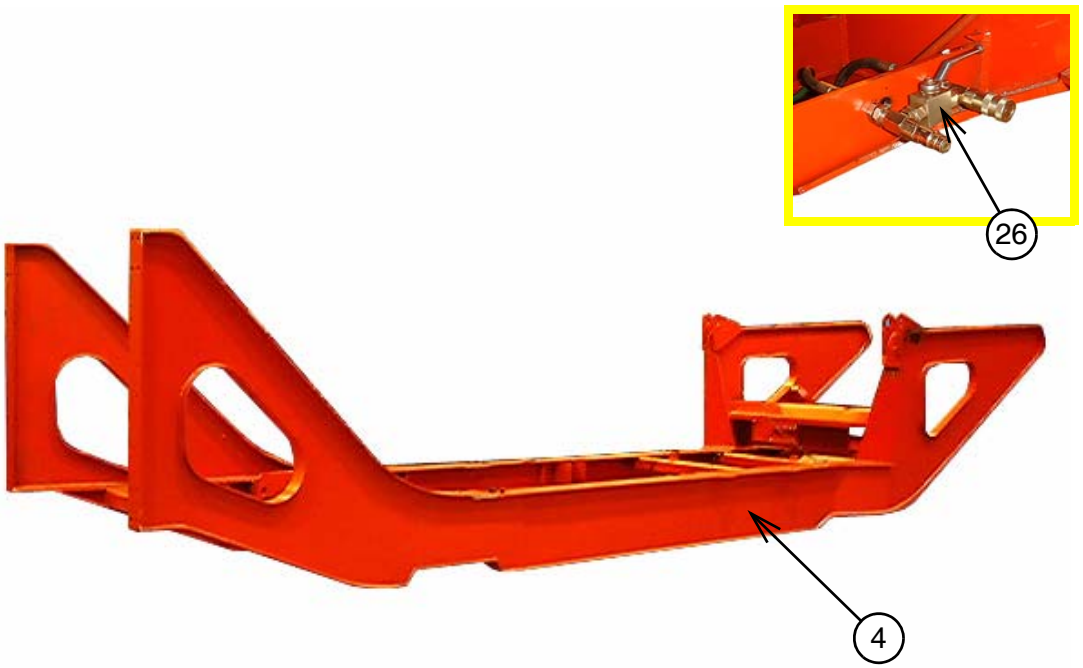
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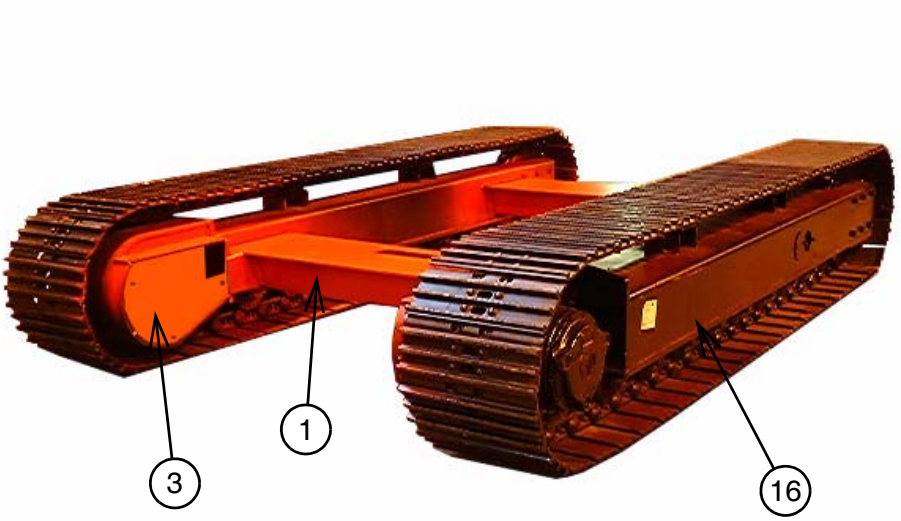
Part No.	Part Description	Quantity
6. EL2070	UMBILICAL CHORD (7 m)	1
7. EL2104	REMOTE CONTROL HANDSET CHARGER (UK ONLY)	1
8. EL2105	REMOTE CONTROL HANDSET CHARGER (CONTINENT ONLY)	1
9. EL2106	REMOTE CONTROL HANDSET CHARGER (JAPAN ONLY)	1
10. EL2109	REMOTE CONTROL HANDSET CHARGER (USA ONLY)	1
11. EL2110	JAW ADJUST REMOTE CONTROL	1
12. EL4418	REMOTE CONTROL HANDSET (433 MHz)	1
13. EL4426	FEEDER REMOTE CONTROL (433 MHz)	1
14. G8190000	ALUMINIUM LADDER	2
15. HHGR33	GREASE NIPPLE ADAPTER HOSE	1
16. H1340000	HEIGHT ADJUSTING STOOL (TIPPING GRID)	2
17. H6360000	HEIGHT ADJUSTING STOOL (VIBRATING GRID)	2
18. PY1021	SHOCK ABSORBER	4
19. RU1145	HANGING RUBBER	2
20. UC4003	GREASE NIPPLE ADAPTOR (TRACKS)	1

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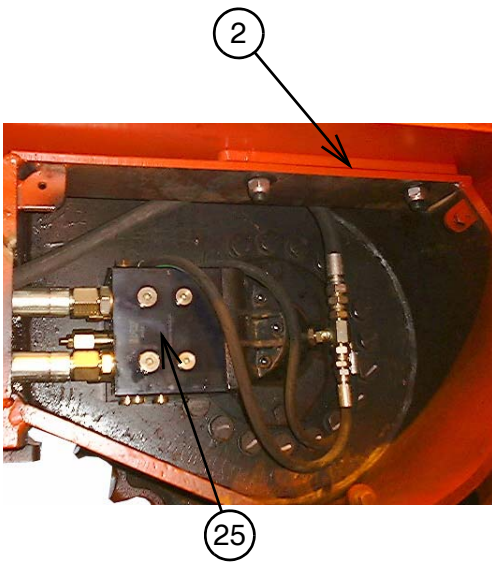
2. CHASSIS



1: CHASSIS FRAME



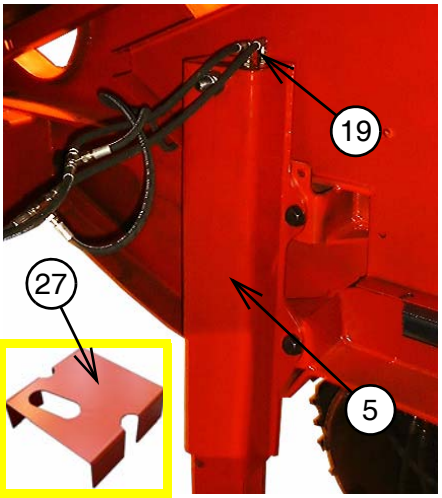
2: TRACKED BOGIE



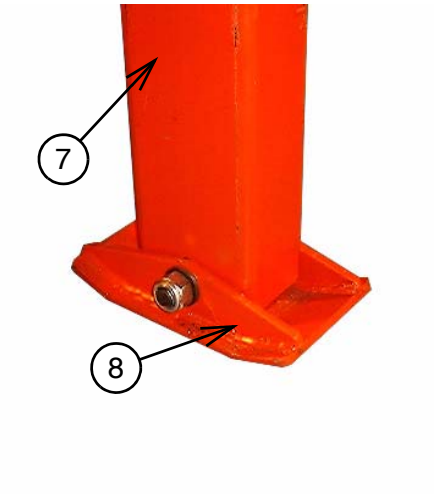
3: TRACK CONTROL BOX

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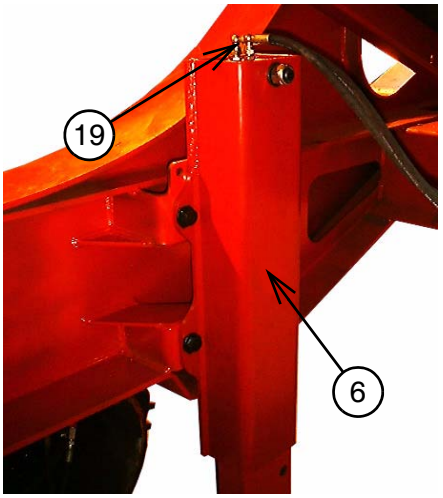
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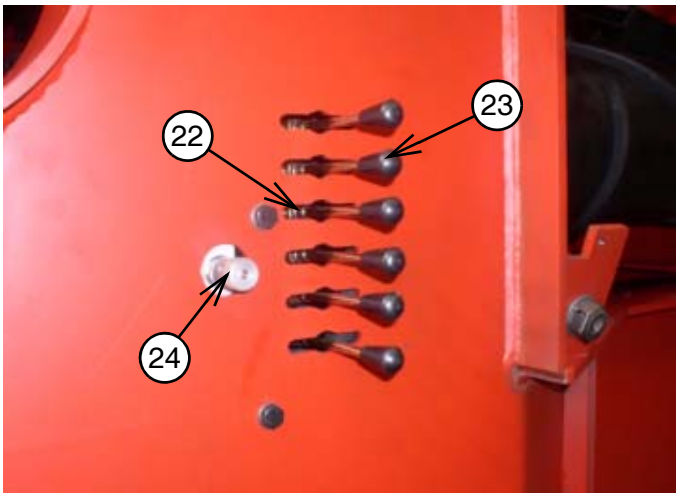
4: LH JACKING LEG



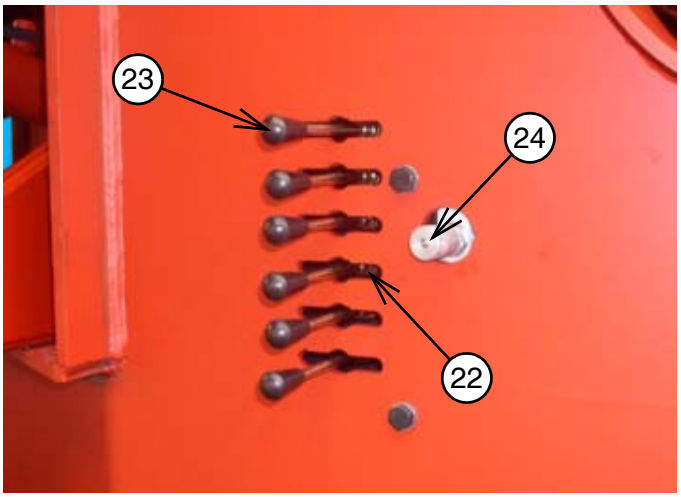
5: JACK LEG FOOT



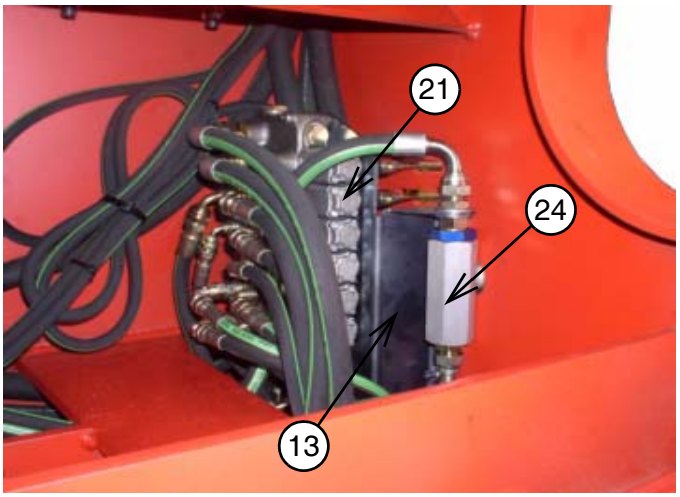
6: RH JACKING LEG



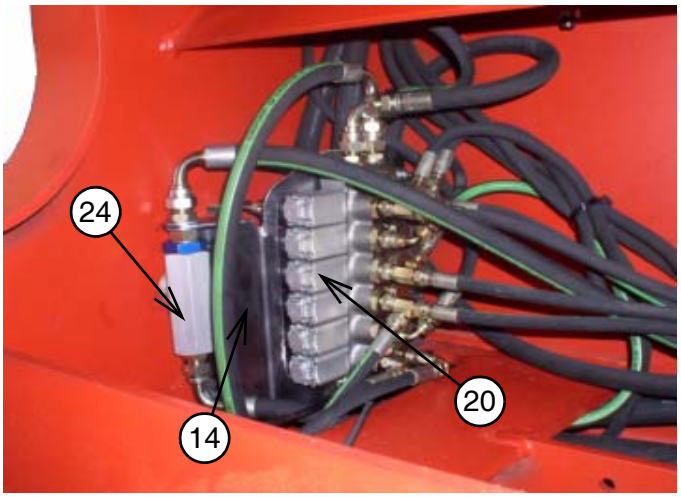
7: LH SPOOL VALVE - VIEWED FROM OUTSIDE



8: RH SPOOL VALVE - VIEWED FROM OUTSIDE

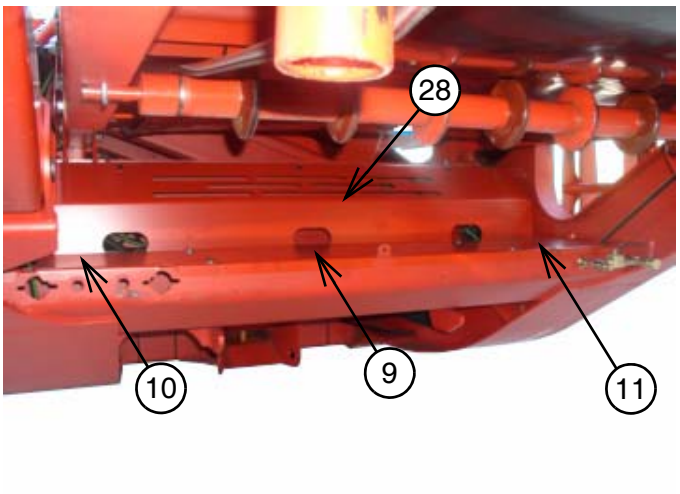


9: LH SPOOL VALVE - VIEWED FROM REAR

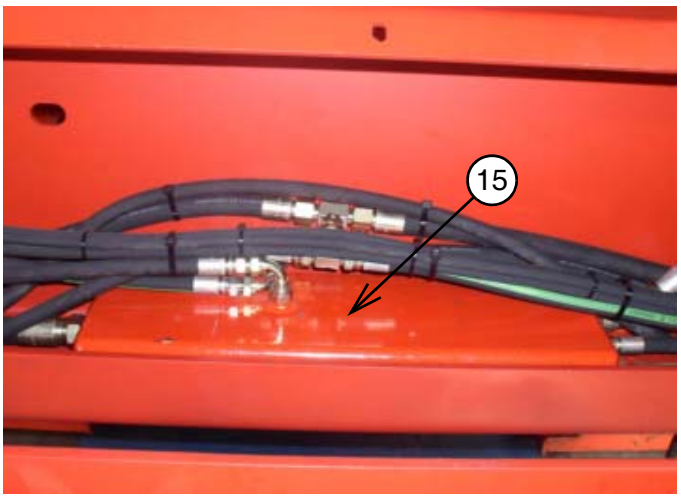


10: RH SPOOL VALVE - VIEWED FROM REAR

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11: VIEW ON REAR CROSS BEAM TOOL BOX



12: RETURN MANIFOLD - REAR CROSS BEAM



13: CHASSIS MOUNTED EMERGENCY STOP

Part No.		Part Description	Qty
1.	A10900000	TRACKED BOGIE ASSEMBLY	1
2.	A10910000	BOGIE PACKER (12mm THICK)	2
	A10940000	BOGIE PACKER (8mm THICK)	AS REQ.
	A10950000	BOGIE PACKER (5mm THICK)	AS REQ.
	A10960000	BOGIE PACKER (3mm THICK)	AS REQ.
3.	A10920000	TRACK MOTOR HOUSING COVER	2
4.	A11000000	CHASSIS ASSEMBLY	1
5.	A11020000	CHASSIS LH JACK LEG OUTER	1
6.	A11030000	CHASSIS RH JACK LEG OUTER	1

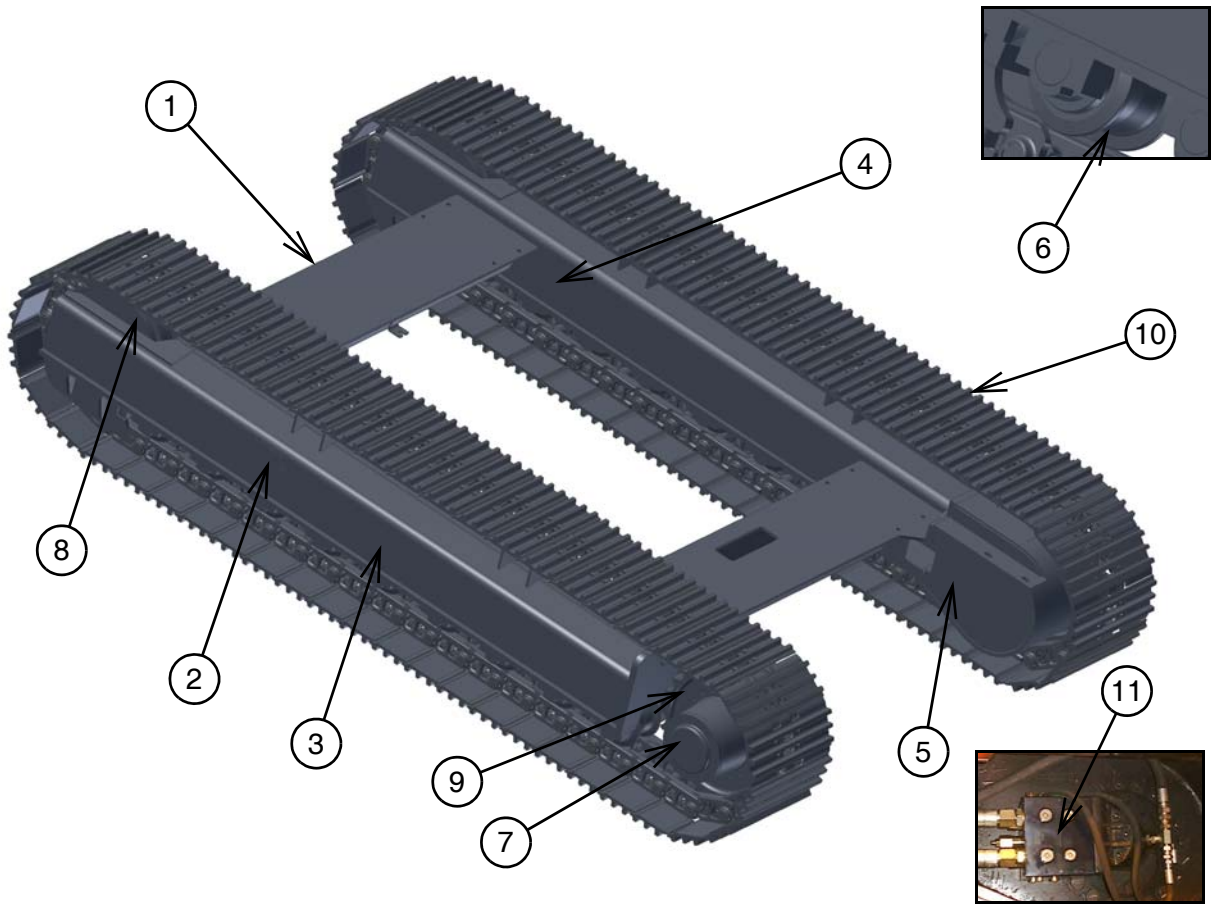
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ID: QA340-en-11858

Part No.		Part Description	Qty
7.	A11040000	CHASSIS JACK LEG INNER	2
8.	A11050000	CHASSIS JACK LEG FOOT	2
9.	A11060000	DS FULLTRACK TOOL BOX LID	1
10.	A11070000	REAR CROSSBEAM COVER RH	1
11.	A11080000	REAR CROSSBEAM COVER LH	1
12.	A1190000	EMERGENCY STOP GUARD	2
13.	B5780000	LH SPOOL LEVER MOUNTING BRACKET	1
14.	B5970000	RH SPOOL LEVER MOUNTING BRACKET	1
15.	B5760000	REAR BULKHEAD RETURN MANIFOLD	1
16.	UC3020	TRACK ASSEMBLY (PAIR)	1
17.	R0220000	MOTOR HOUSING COVER	2
18.	EL2063	EMERGENCY STOP SWITCH	2
19.	HR1069	JACK LEG RAM	2
20.	HV1040	6 LEVER SPOOL VALVE	1
21.	HV1041	6 LEVER SPOOL VALVE	1
22.	HV1511	SPOOL VALVE HANDLE ASSEMBLY	12
23.	HV1528	SPOOL LEVER HANDLE	12
24.	HV2006	WEBTEC FLOW CONTROL VALVE	2
25.		TRACK CONTROL BLOCK	2
26.	HV3533	FLOW DIVERTER	1
27.	A11310000	JACKING LEG COVER	2
28.	A11990000	REAR BULKHEAD COVER PANEL	1

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3. TRACKS



1: TRACK ASSEMBLY

	Part No.	Part Description	Quantity
1.	A10900000	S5 TRACKED BOGIE ASSEMBLY	1
2.	R0630000	C10 TRACK BODY ACCESS COVER	2
3.	R0720000	TRACK BODIES FOR S5 MACHINE	1
4.	R0730000	TRACK BODIES FOR S5 MACHINE	1
5.	R0740000	S5 SCREEN CHASSIS COVER PLATE	2
6.	UC5420	VA542 ROLLER	18
7.	UC7090	709A2FE63 GEARBOX + MOTOR COMP WITH MOTION CONTROL V/V	2
8.	UC7130	FA6E HD IDLER GROUP C/W AT37D4 TENSIONER	2
9.	UC7220	SPROCKET	2
10.	UC7235	TRACK GROUP FT1244/53/500	2
11.	UC7300	MOTION CONTROL VALVE	2

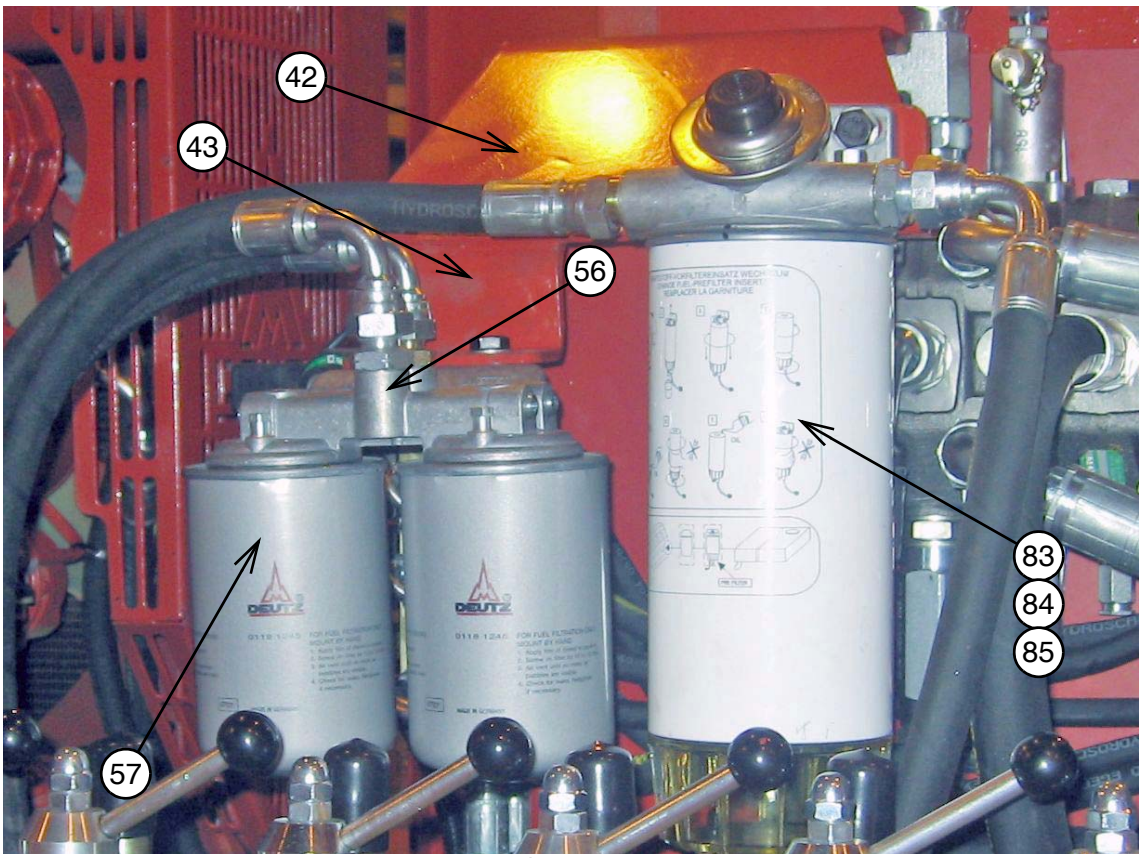
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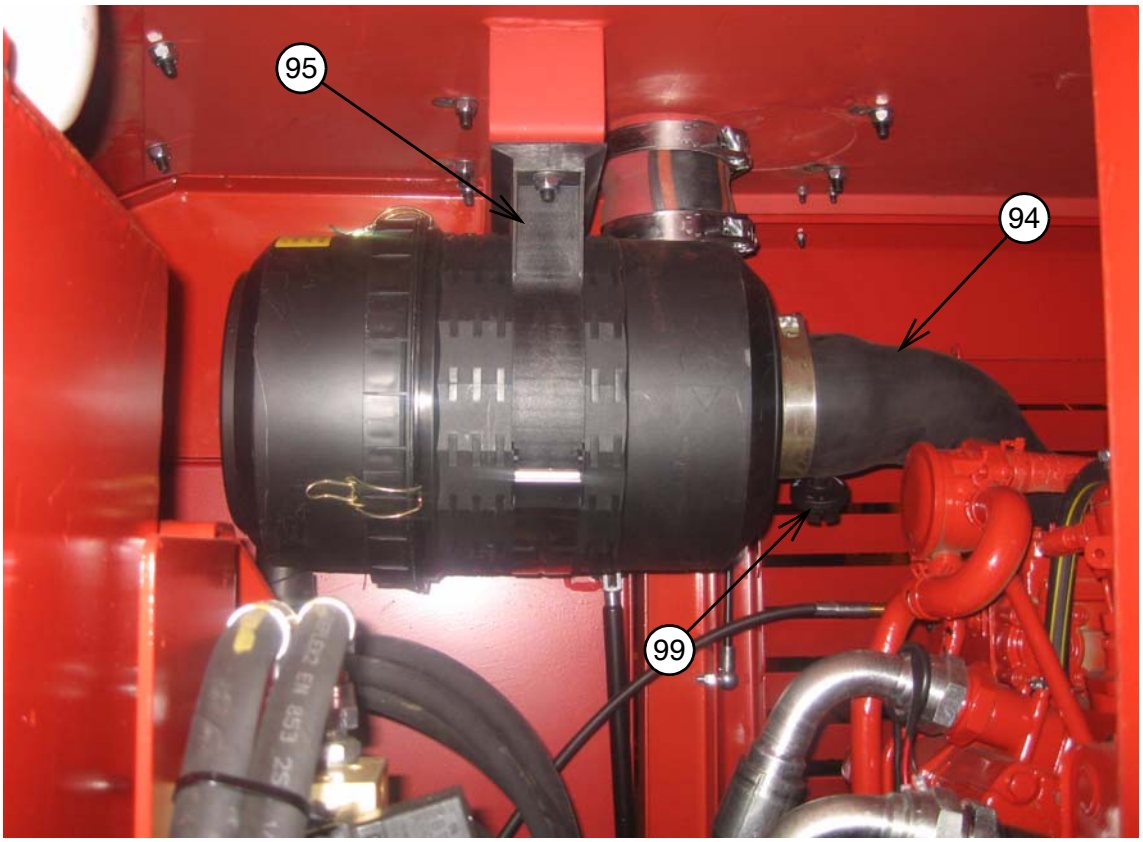
Part No.	Part Description	Quantity
THE LIST OF ITEMS NOT SHOWN, FOLLOWS:		
12. FAB20X60(10.9)	M20X60 (10.9) HEX-HEAD BOLT	32
13. FAB20X70(10.9)	M20X70 (10.9) HEX-HEAD BOLT	40
14. FAS16X40	M16 X 40 SET SCREW	20
15. FAW16SP	M16 FORM A SPRING WASHER	92
16. FAW20SP	SPRING WASHER	72
17. FAB16X70	M16 X 70 HEX HEAD	72
18. HHM1461	HYDRAULIC TRACK HOSE, 1/4 90S-1/4 BANJO X 0.55	2
19. HHM1460	HYDRAULIC TRACK HOSE, 3/8-1/4 BANJO X 0.56	2
20. UC4006	TENSION CYLINDER GREASE VALVE	2
21. HHGR33	GREASE PIPE	1
22. UC4003	GREASE ADAPTOR	1
23. B6540000	S5 STEEL TRACK PIPE - 2012	1
24. HA299	PIPE FITTING - 3/4 BSP - 20MM	1
25. HA305	PIPE FITTING 3/4 BSP - 20MM EX	1
26. B6570000	S5 STEEL TRACK PIPE - 2012	1
27. HA299	PIPE FITTING - 3/4 BSP - 20MM	1
28. HA305	PIPE FITTING 3/4 BSP - 20MM EX	1
29. B6560000	S5 STEEL TRACK PIPE - 2012	1
30. HA299	PIPE FITTING - 3/4 BSP - 20MM	1
31. HA305	PIPE FITTING 3/4 BSP - 20MM EX	1
32. B6550000	S5 STEEL TRACK PIPE - 2012	1
33. HA299	PIPE FITTING - 3/4 BSP - 20MM	1
34. HA305	PIPE FITTING 3/4 BSP - 20MM EX	1

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4. POWER PACK



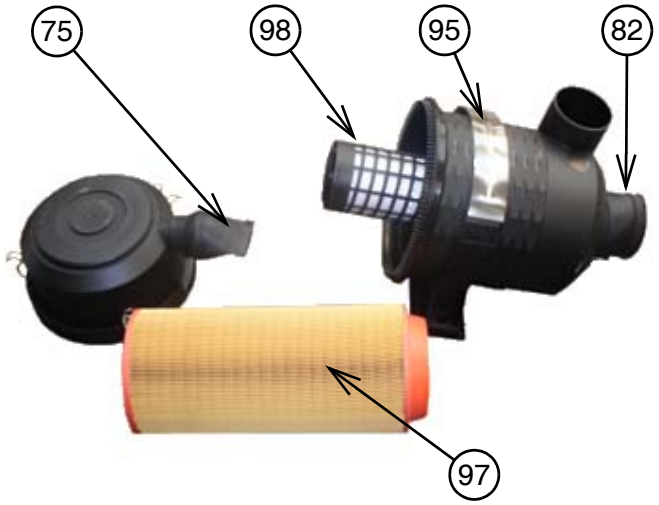
1: VIEW ON FUEL FILTER



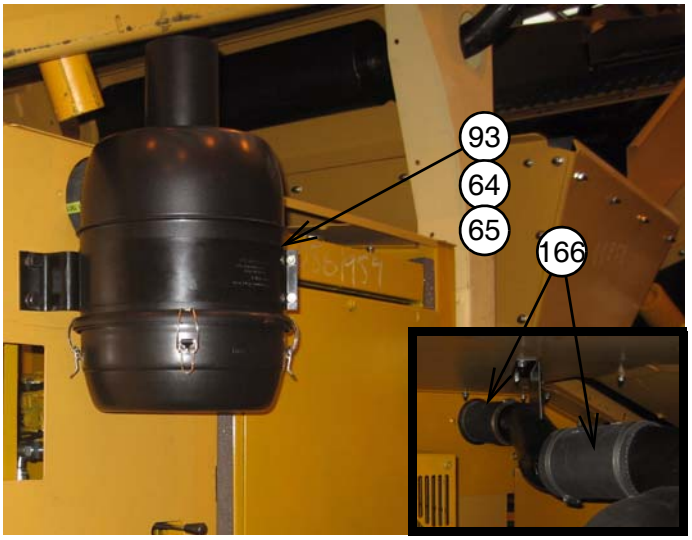
2: VIEW ON AIR CLEANER

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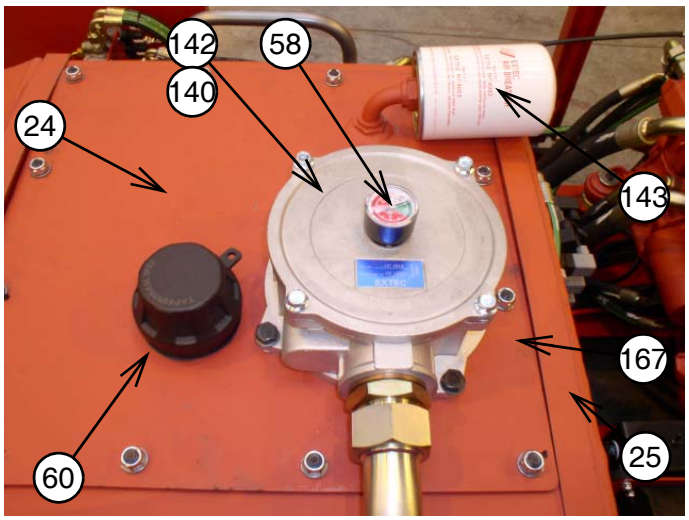
ID: QA340-en-11858



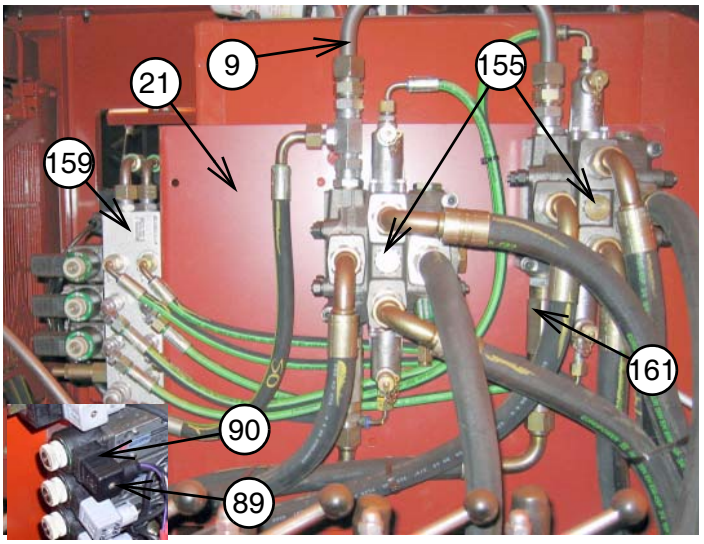
3: VIEW ON AIR CLEANER COMPONENTS



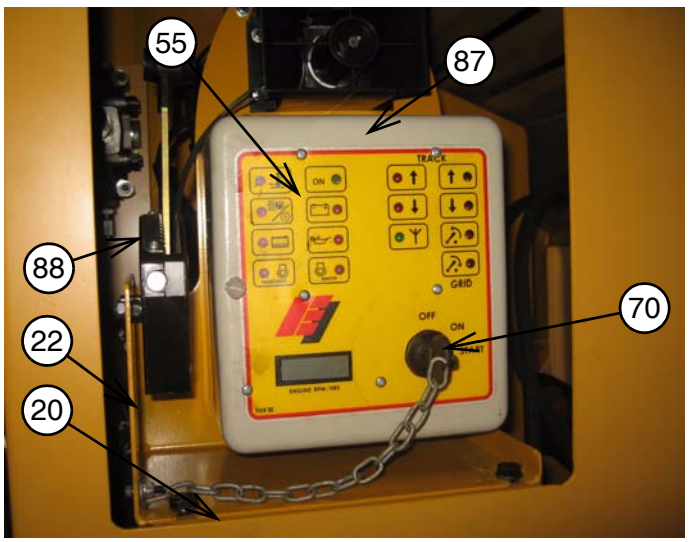
4: VIEW ON OIL BATH FILTER (WHERE FITTED)



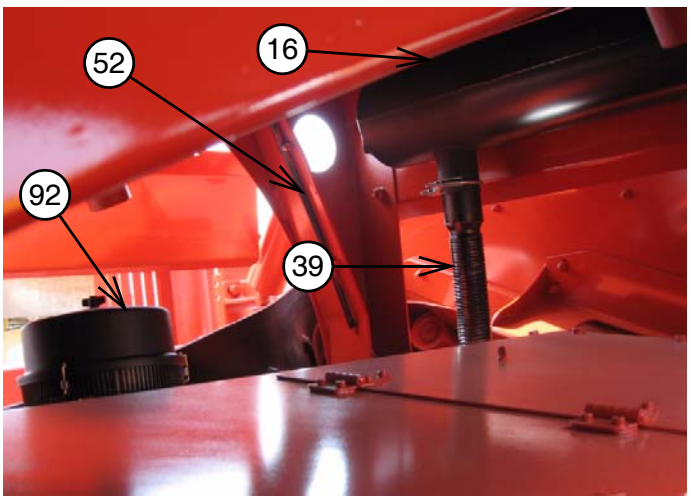
5: VIEW ON HYDRAULIC FILTER



6: VIEW ON TRACK VALVE

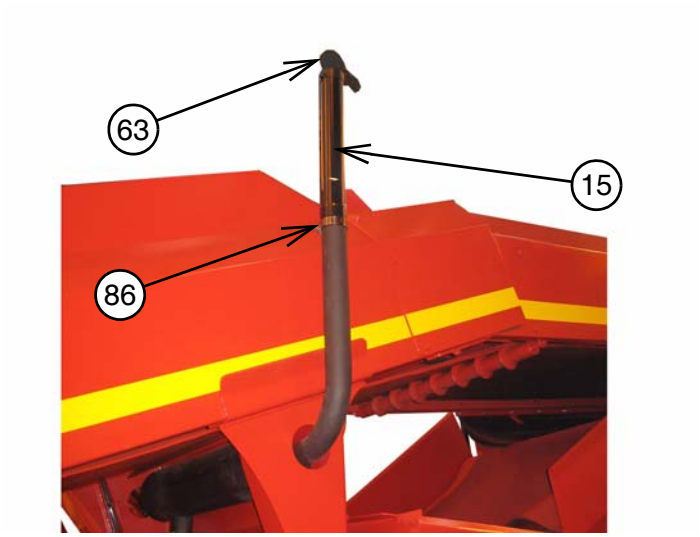


7: VIEW OF IGNITION CONTROL BOX

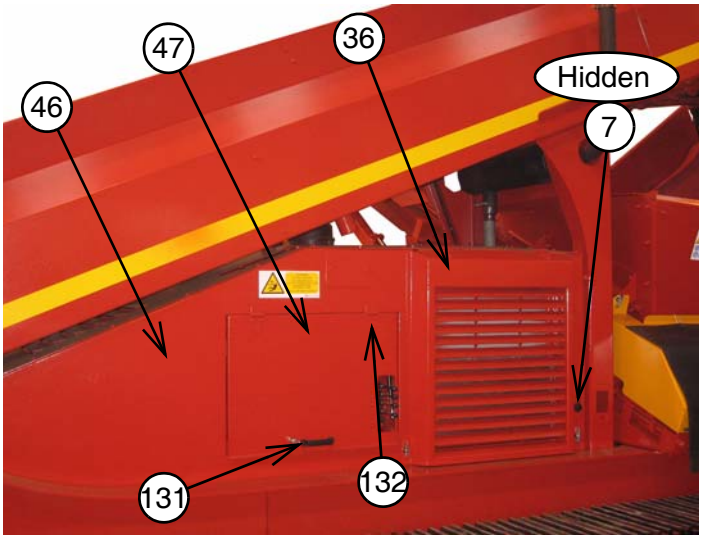


8: VIEW ON EXHAUST SILENCER

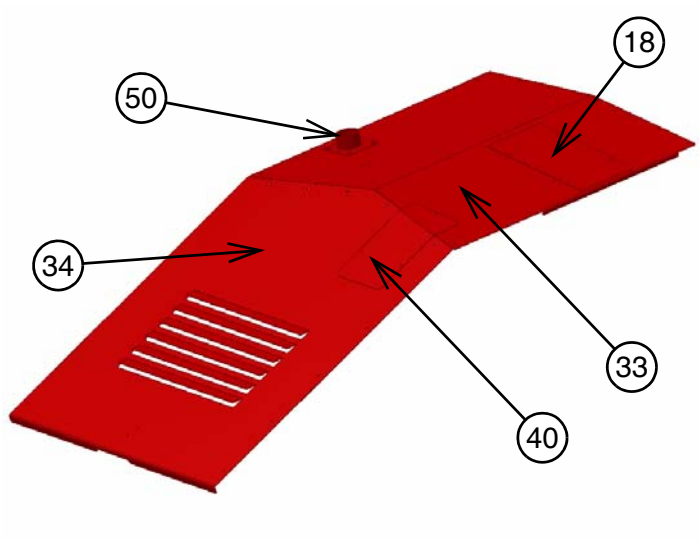
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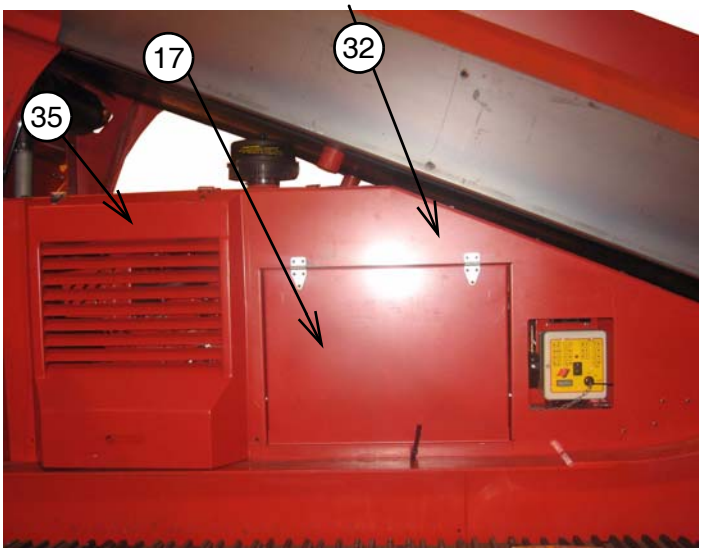
9: VIEW ON EXHAUST STACK



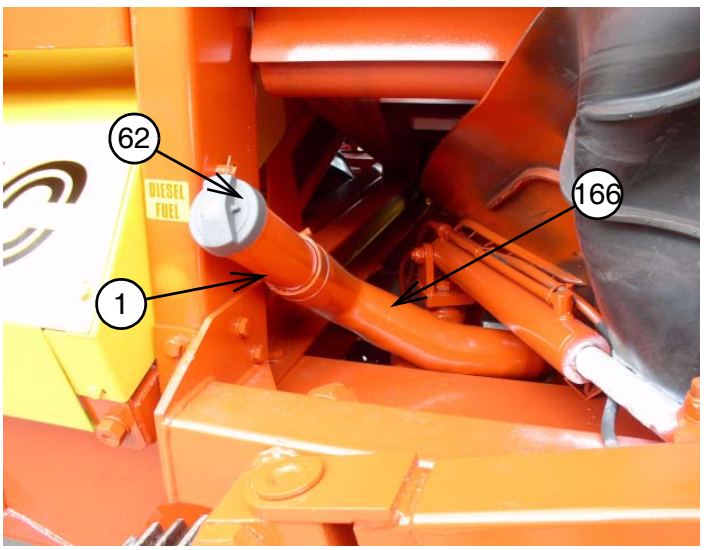
10: R/H VIEW OF POWER PACK



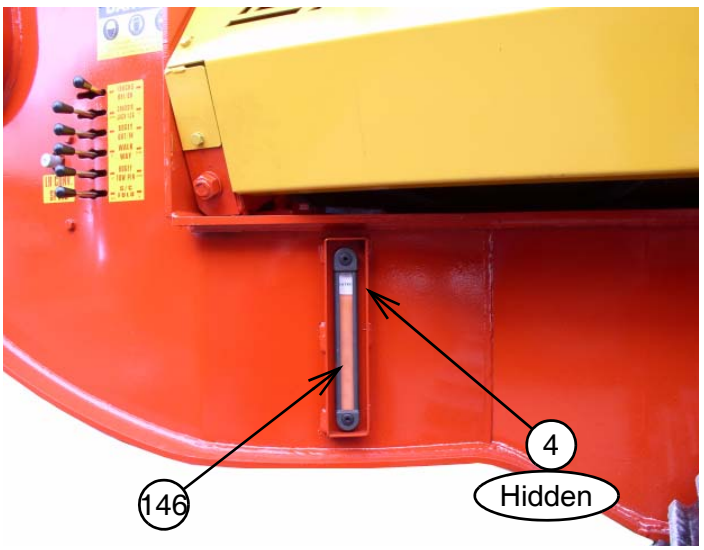
11: VIEW ON TOP PANELS



12: L/H VIEW OF POWER PACK

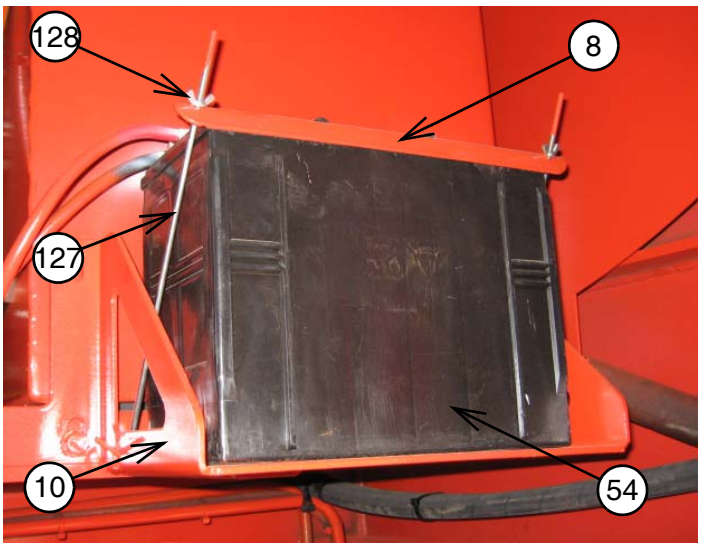


13: FUEL FILLER NECK

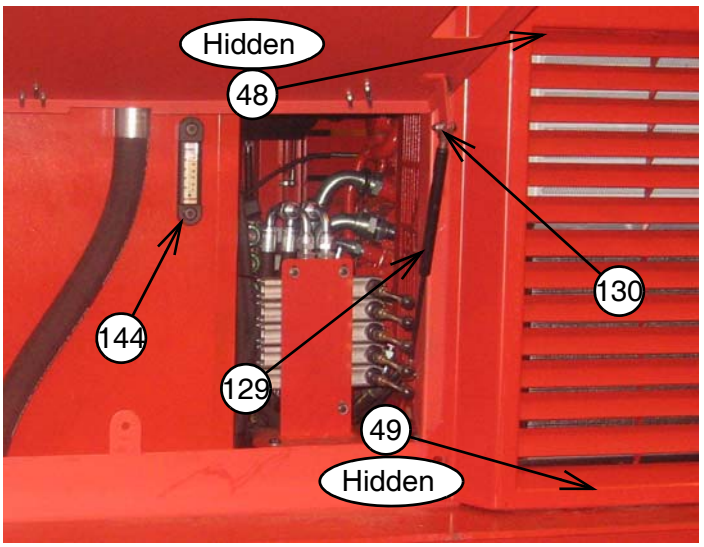


14: FUEL GAUGE

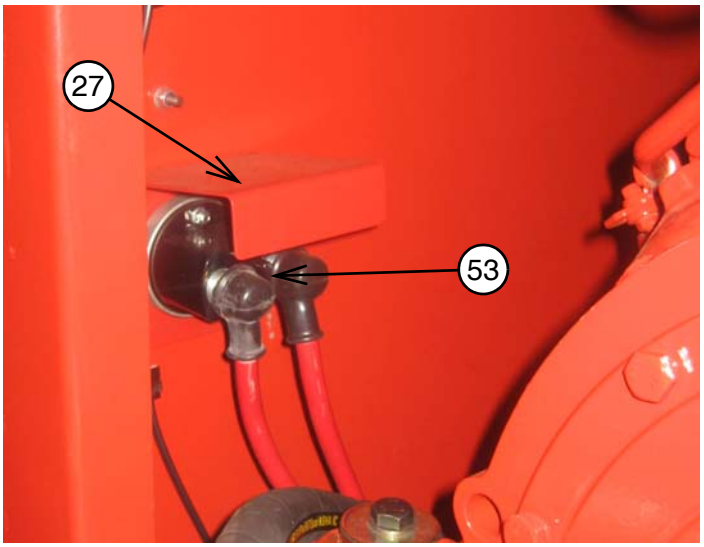
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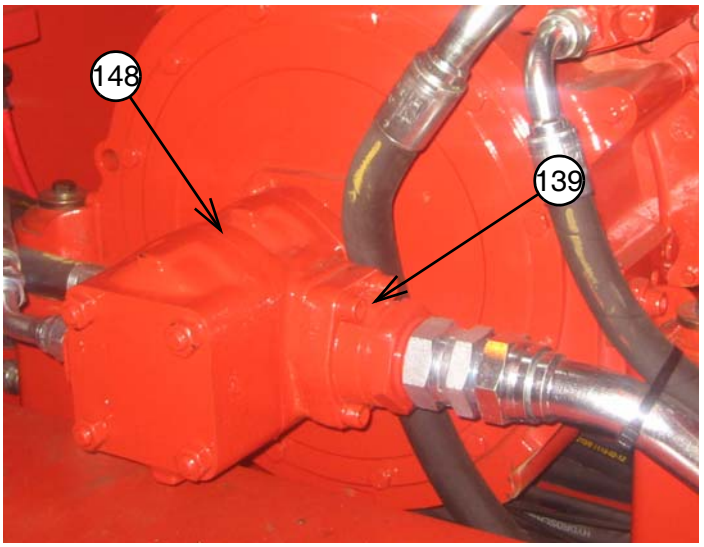
15: VIEW ON BATTERIES



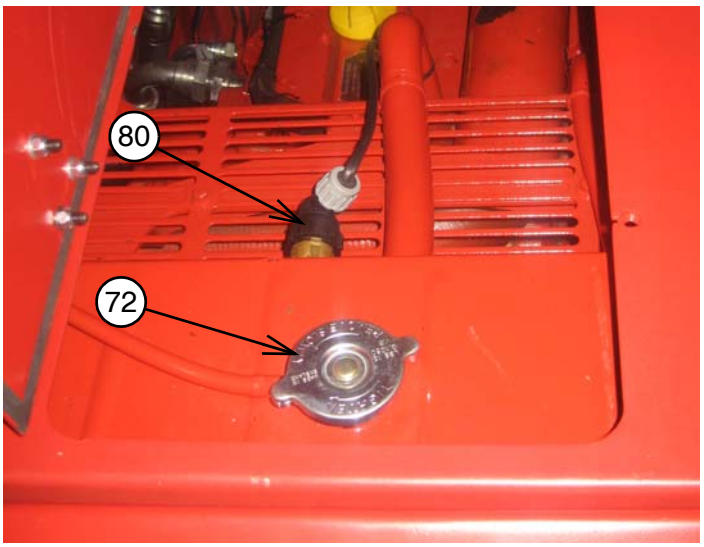
16: ACCESS DOOR STRUT



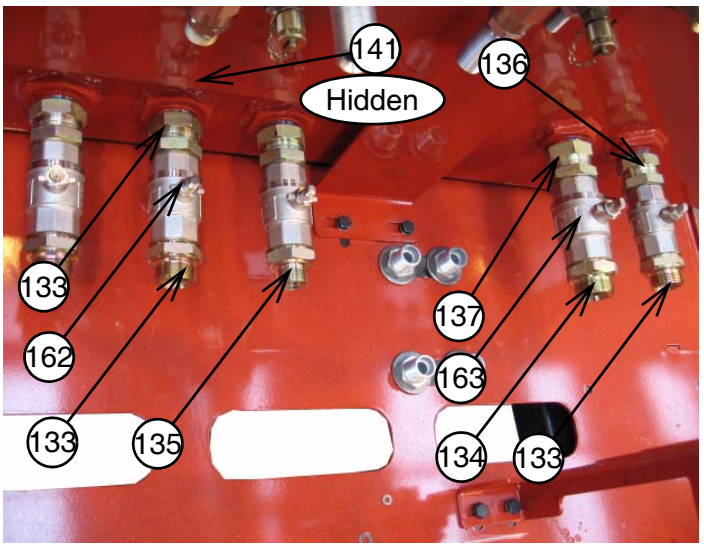
17: VIEW ON ISOLATION SWITCH



18: VIEW ON TANDEM PUMP

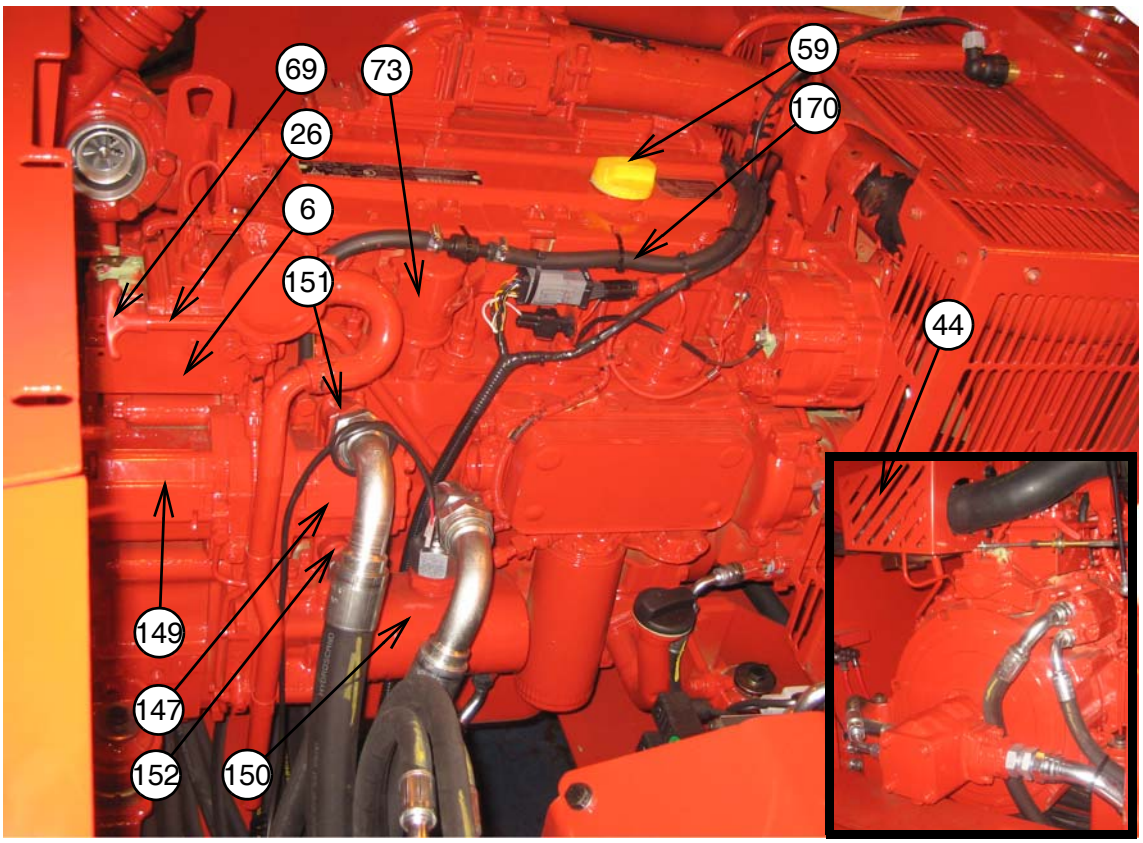


19: VIEW ON RADIATOR

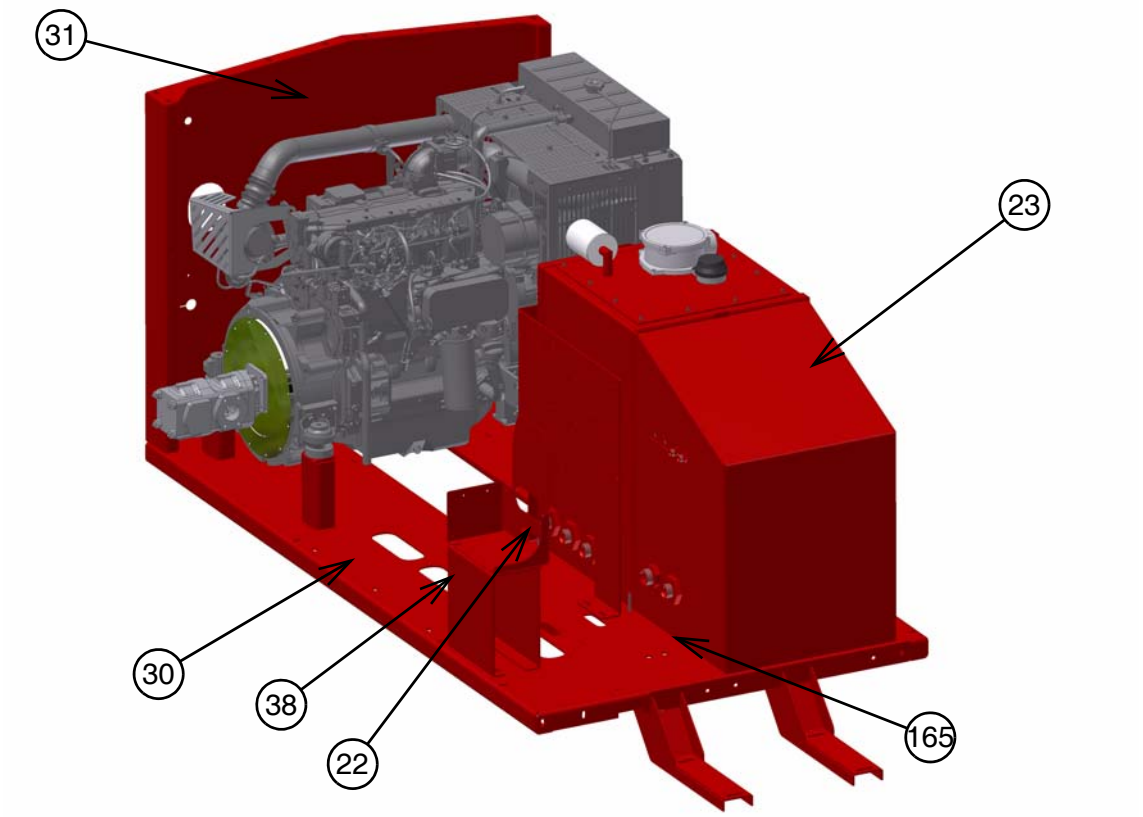


20: VIEW ON HYDRAULIC TANK BALL VAVLES

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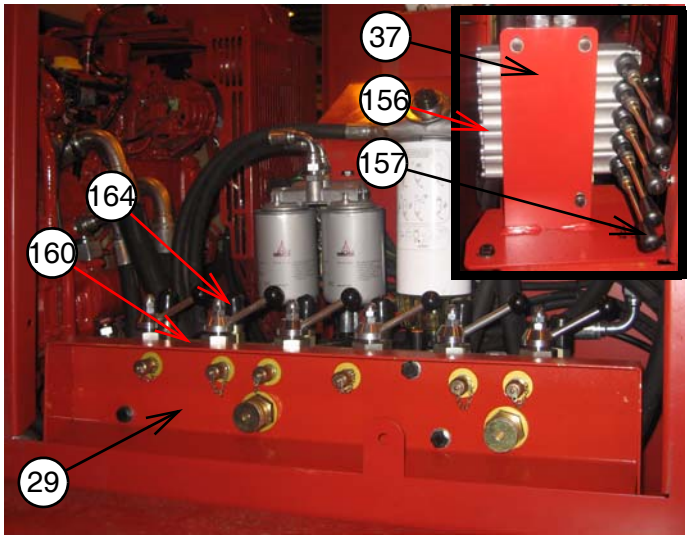
21: VIEW ON ENGINE SIDE



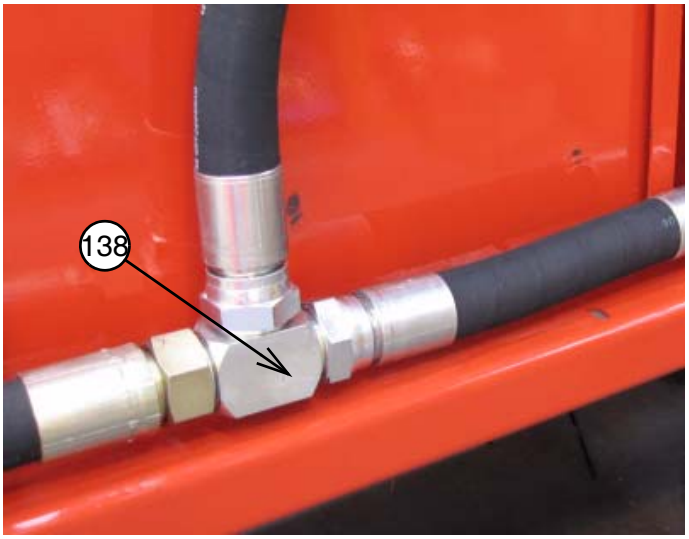
22: VIEW ON HYDRAULIC TANK

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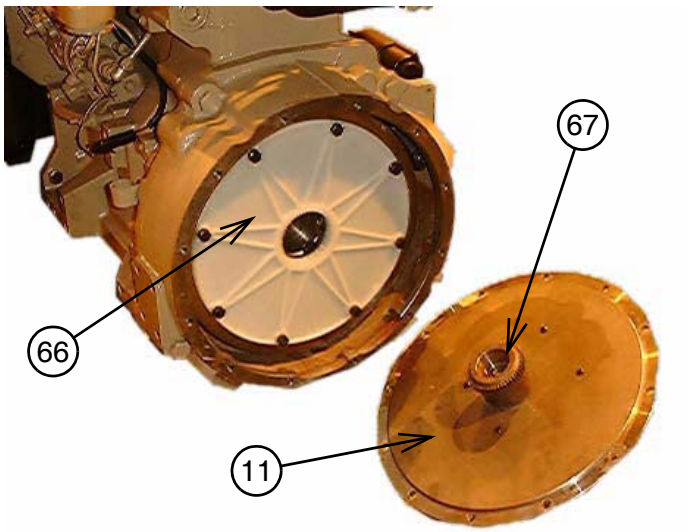
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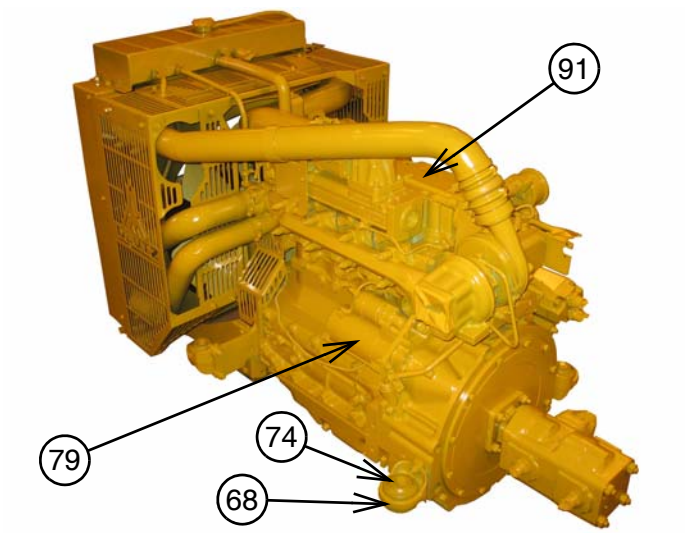
23: VIEW ON BALL VALVES AND LEVERS



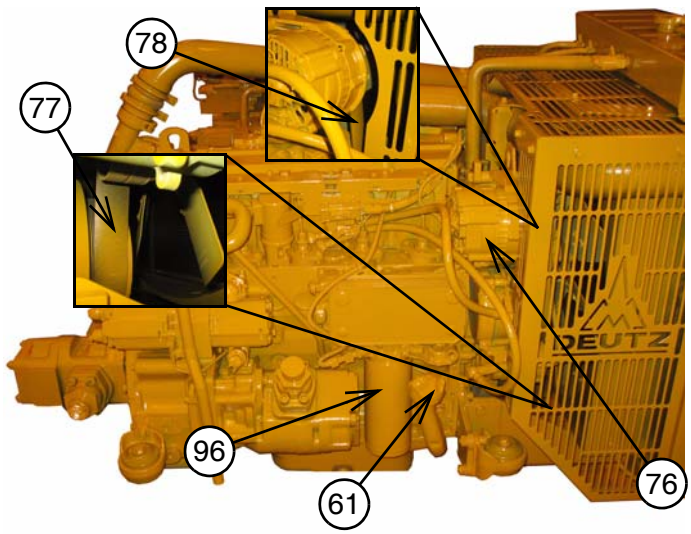
24: VIEW ON HYDRAULIC 'T'



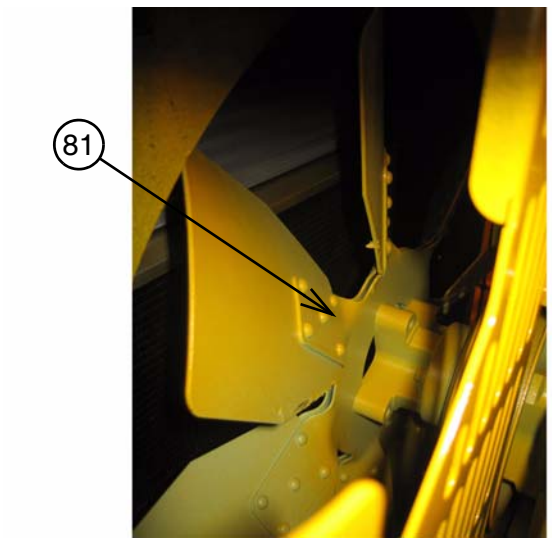
25: DETAILED VIEW OF BELL HOUSING



26: VIEW ON ENGINE

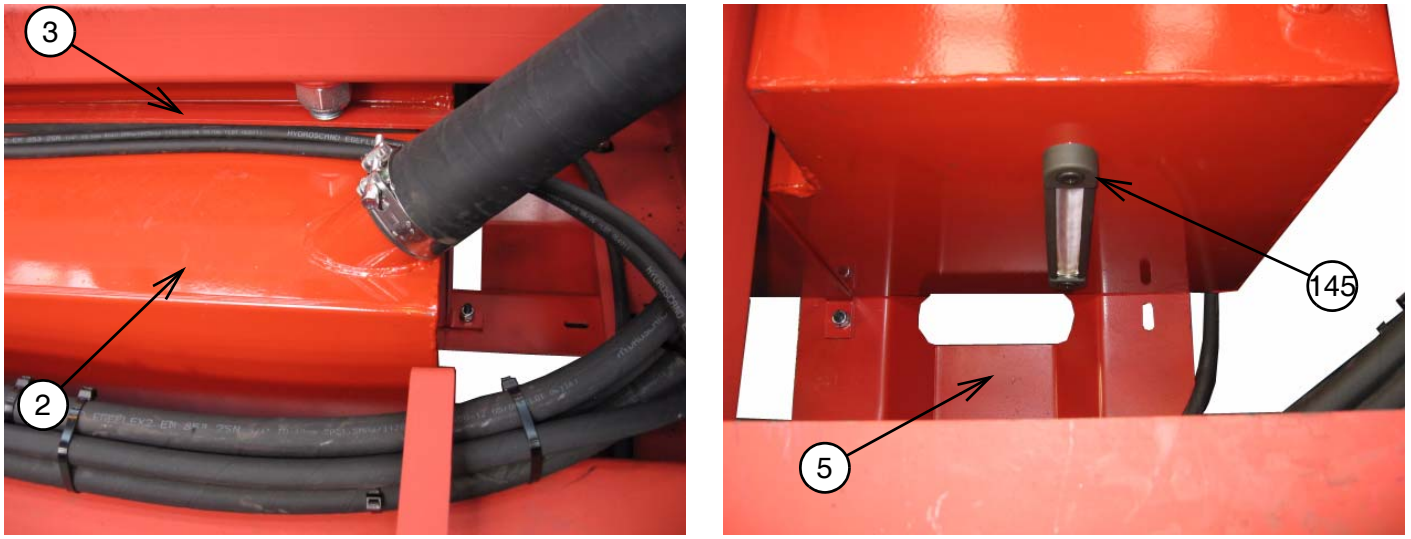


27: VIEW ON PULLEY BELTS

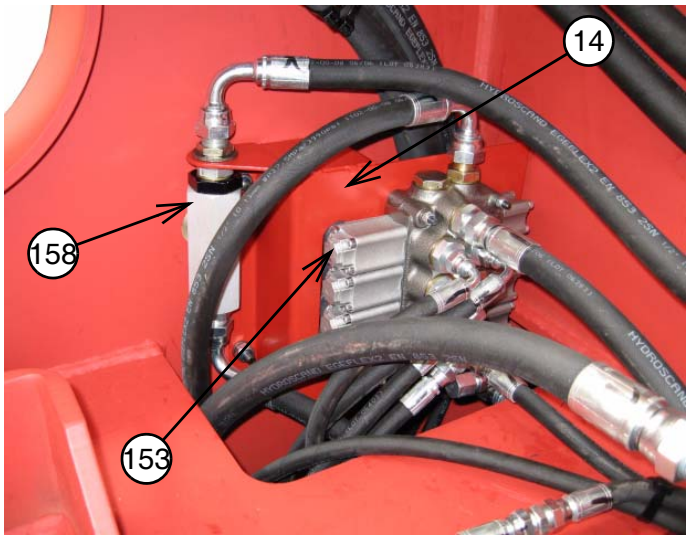


28: DETAILED VIEW ON FAN

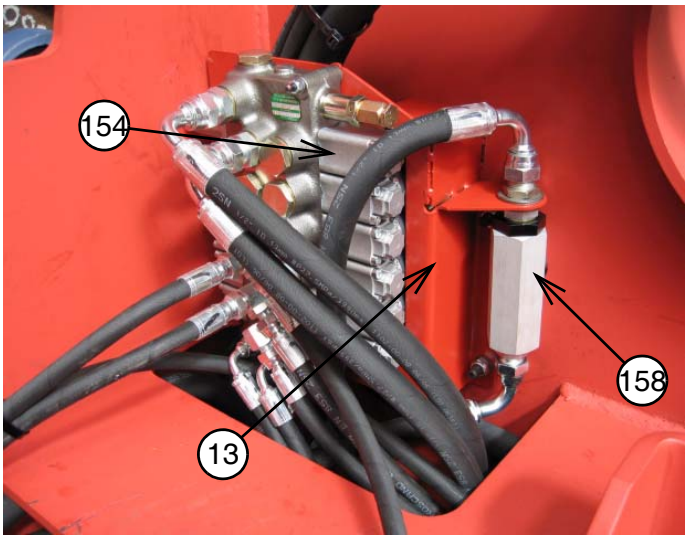
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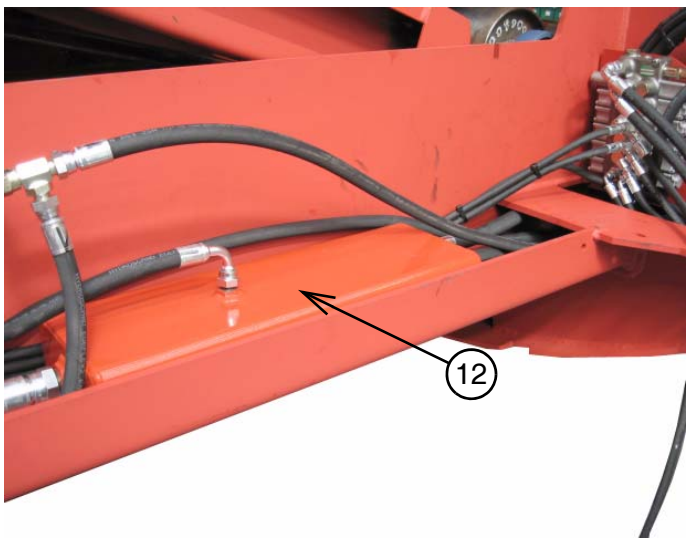
29: VIEW ON DIESEL TANK



30: RH SPOOL VALVE



31: LH SPOOL VALVE



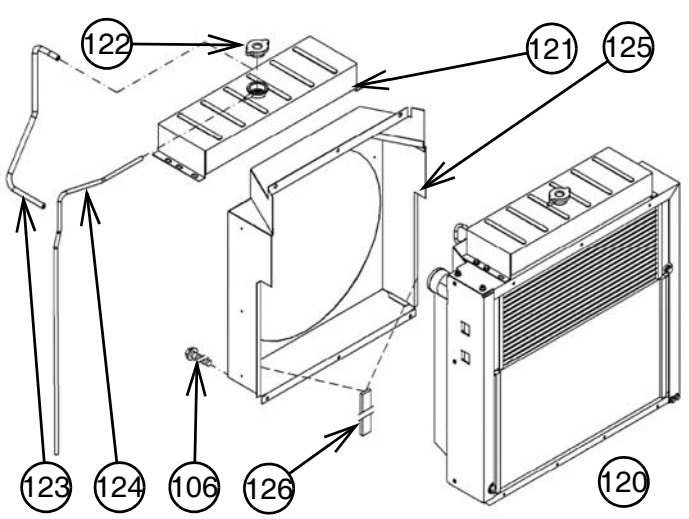
32: RETURN MANIFOLD



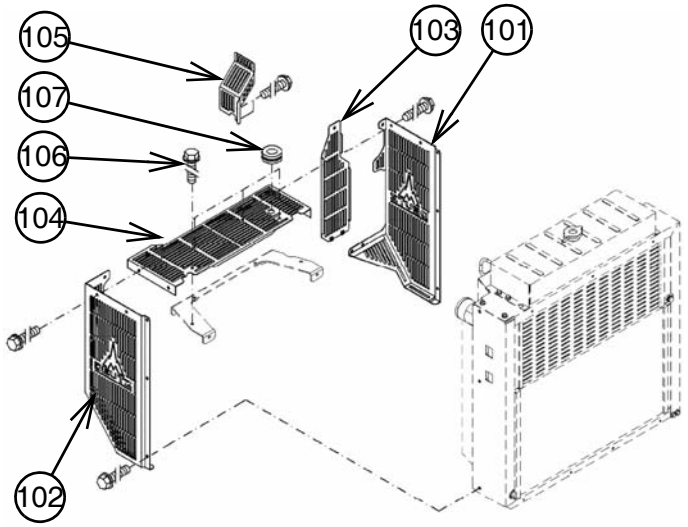
33: LH SPOOL VALVE

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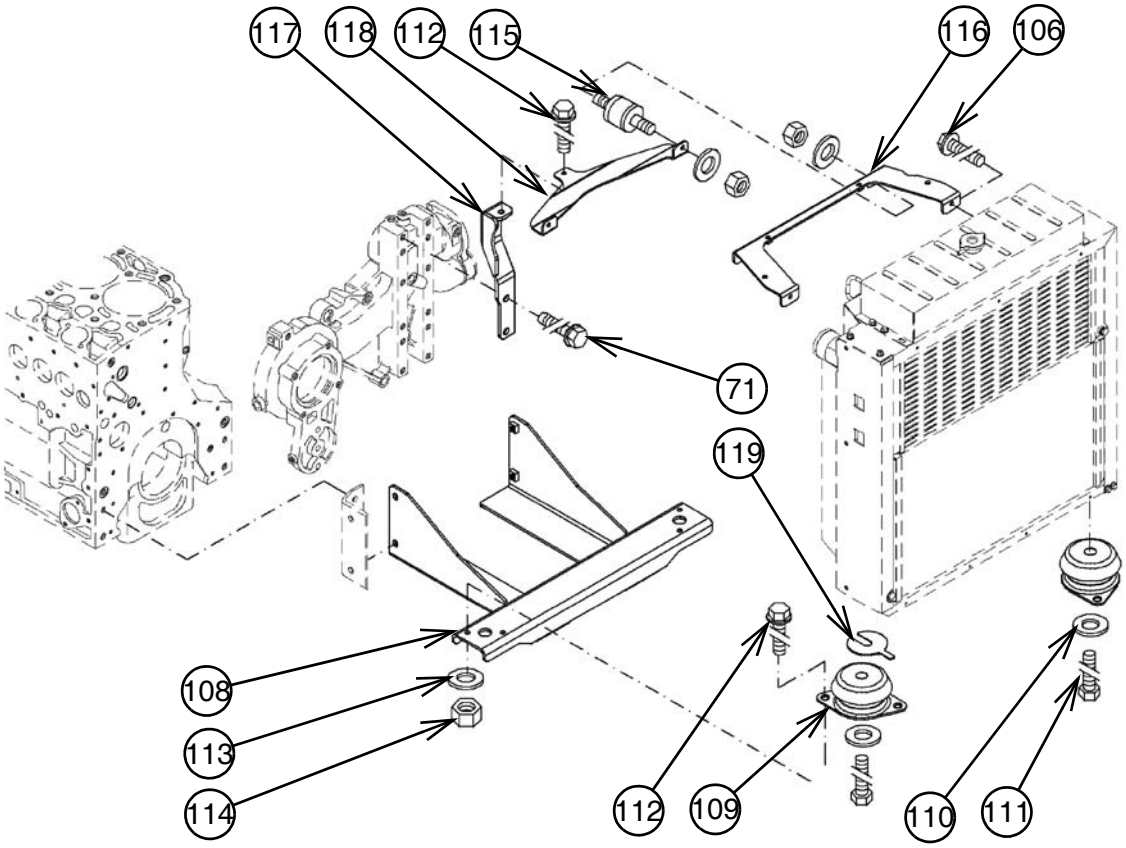
ID: QA340-en-11858



34: RADIATOR - COVER



35: RADIATOR - GUARDS



36: RADIATOR - MOUNT

Part No.	Part Description	Quantity
1. A11110000	FILLER NECK TUBE INC	1
2. A11330000	STEEL FUEL TANK	1
3. A11340000	STEEL FUEL TANK STRAP	1
4. A11750000	FUEL GAUGE BACKING plate	1

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Part No.	Part Description	Quantity
5. A11860000	FUEL TANK BELLY GUARD	1
6. B0270000	TURBO ENGINE CABLE BRACKET	1
7. B0950000	UMBILICAL CORD BRACKET	1
8. B2160000	BATTERY LOCATION ANGLE	1
9. B5540000	HYDRAULIC PIPE ASSY	1
10. B5580000	BATTERY MOUNTING	1
11. B5730000	PUMP MOUNTING PLATE	1
12. B5760000	CHASSIS FRONT MANIFOLD	1
13. B5770000	6 WAY SPOOL MVV BRACKET	1
14. B5780000	6 WAY SPOOL VALVE BRACKET	1
15. B5890000	EXHAUST EXTENSION TUBE	1
16. B6300000	SILENCER BOX	1
17. B6390000	RH DOOR SPOOL	1
18. B6400000	WATER AND OIL INSPECTION	1
19. B6470000	REAR BULKHEAD PLATE	1
20. B6480000	REAR MANIFOLD	1
21. B6490000	TRACK VALVE PLATE	1
22. B6500000	THROTTLE & IGNITION BOX BRACKET	1
23. B6510000	HYDRAULIC TANK	1
24. B6520000	HYDRAULIC TANK LID	1
25. B6530000	TANK STRAP	2
26. B6620000	DIPSTICK TUBE	1
27. B7410000	ISOLATOR SWITCH GUARD	1
28. B7930000	CAPPING PLATE	1
29. B7840000	6 SPOOL BRACKET	1
30. B8860000	POWER PACK BASE PLATE	1
31. B8870000	BACK PANEL	1
32. B8880000	POWER PACK SIDE PANEL	1
33. B8900000	ROOF	1
34. B8910000	SLOPING ROOF	1
35. B8920000	PUMP BAY DOOR	1
36. B8930000	RAD BAY DOOR	1
37. B8940000	SPOOL VLV MTG PLATE	1
38. B8950000	IGNITION BOX MTG PLATE	1
39. B8980000	FLEXIBLE EXHAUST	1

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Part No.	Part Description	Quantity
40. B9010000	INSPECTION TANK COVER	1
41. B9130000	COVER PLATE	1
42. B9140000	FILTER MTG PLATE	1
43. B9150000	FILTER MTG PLATE	1
44. B9160000	TURBO GUARD	1
45. B9460000	OIL BATH PIPE	1
46. B9570000	POWER PACK SIDE PANEL	1
47. B9580000	IGNITION DOOR	1
48. B9600000	RAD SEAL PLATE - TOP	1
49. B9610000	RAD SEAL PLATE - BOTTOM	1
50. B9640000	BULKHEAD PLATE - TOP PANEL	1
51. EL2041	EMERGENCY STOP SYSTEM	1
52. EL2102	AERIAL	1
53. EL2143	BATTERY ISOLATING SWITCH	1
54. EL3001	BATTERY	1
55. EL9539	S SERIES ELECTRICAL KIT	1
56. EN1218	FUEL FILTER	1
57. EN1338	FUEL FILTER ELEMENT	1
58. EN1504	VISUAL INDICATOR SUITS	1
59. EN1522	OIL FILLER CAP	1
60. EN1601	LOCKABLE FILLER CAP	1
61. EN1603	OIL CAP	1
62. EN1609	80MM LOCKABLE FILLER CAP	1
63. EN2006	3" COUNTER BALANCED RAIN CAP	1
64. EN7381	ELEMENT	1
65. EN7382	GASKET	1
66. EN7442	PLASTIC FLANGE	1
67. EN7443	HUB	1
68. EN7610	ENGINE MOUNT	4
69. EN7628	2012 DIPSTICK	1
70. EN7713	IGNITION KEY	1
71. EN7754	HEXAGON BOLT	2
72. EN7834	RADIATOR CAP	1
73. EN7872	RUN START SOLENOID	1
74. EN7878	ENGINE MOUNT	4

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Part No.	Part Description	Quantity
75. EN7879	AIR FILTER DUST OUTLET	1
76. EN7882	ALTERNATOR	1
77.	ALTERNATOR BELT	1
78.	FAN/ LIFT PUMP DRIVE BELT	1
79. EN7886	STARTER MOTOR	1
80. EN7887	TEMPERATURE SENSOR	1
81.	FAN ASSEMBLY	1
82. EN7889	AIR FILTER CONNECTION RING	1
83. EN7896	FUEL PRE-FILTER COMPLETE	1
84. EN7897	PRE-FILTER ELEMENT	1
85. EN7898	FUEL FILTER GASKET KIT	1
86. EN7915	SILENCER CLAMP	3
87. EN7916	IGNITION CONTROL BOX (COMPLETE)	1
88. EN7932	THROTTLE CABLE	1
89. EN8611	BRASS SCREW	7
90. EN8613	GASKET	7
91. EN9275	DEUTZ ENGINE KIT	1
92. EN9286	VORTEX PRE CLEANER	1
93. EN9294	OIL BATH	1
94. EN9296	INDUCTION HOSE	1
95. EN9298	AIR FILTER	1
96. EN9319	DEUTZ ENGINE OIL FILTER	1
97. EN9320	PRIMARY AIR FILTER	1
98. EN9321	SECONDARY AIR FILTER	1
99. EN9322	AIR FILTER ELECTRICAL SWITCH	1
100. EN9380	COMPLETE RADIATOR ASSEMBLY	1
101. EN9381	GRILLE/GRID	1
102. EN9382	GRILLE/GRID	1
103. EN9383	GRILLE/GRID	1
104. EN9384	GRILLE/GRID	1
105. EN9385	GRILLE/GRID	1
106. EN9386	HEXAGON BOLT	30
107. EN9387	RUBBER GROMMET	1
108. EN9388	BRACKET	1
109. EN9389	SILENTBLOC	2

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Part No.	Part Description	Quantity
110. EN9390	PLAIN WASHER	2
111. EN9391	HEXAGON BOLT	2
112. EN9392	HEXAGON BOLT	5
113. EN9393	PLAIN WASHER	10
114. EN9394	HEXAGON NUT	8
115. EN9395	MOUNT	2
116. EN9396	BRACKET	1
117. EN9397	RETAINING PLATE	1
118. EN9398	RADIATOR BRACE	1
119. EN9399	SHIM	6
120. EN9400	COOLING SYSTEM	1
121. EN9401	EXPANSION TANK	1
122. EN9402	COVER	1
123. EN9403	COMPENSATING LINE	1
124. EN9404	DISCH./DRAIN PIPE	1
125. EN9405	FAN COWLING	1
126. EN9406	SEALING SECTION	1,500 MM
127. FAB06X300H	BATTERY HOOK BOLT	2
128. FAW06W	WING NUT	2
129. FD1004	GAS STRUT	6
130. FD1505	FORK END GAS STRUT 8MM TAPPED	6
131. FD2005	HANDLE BLACK PLASTIC PULL TYPE	5
132. FD2105	HINGE 3+2 HOLE	12
133. HA1000004	1¼" BSP M-M ADA PTER	3
134. HA1000017	1½" BSP M-M ADA PTER	1
135. HA1000026	1" - 1¼" BSP M-M ADA PTER	1
136. HA1014007	1¼" BSP M-F SWIVEL ADAPTER	4
137. HA1120004	1½" BSP M-F SWIVEL ADAPTER	1
138. HA1120005	1½" M/M/M TEE	
139. HAB200001	2" BSP SAE3000 FLANGE + BOLTS	1
140. HF1004	FILTER ELEMENT	1
141. HF1017	FILTER SUCTION	5
142. HF1018	FILTER TANK TOP RETURN LINE	1
143. HF4003	SPIN ON BREATHER	1
144. HG1002	5" TEMP/LEVEL GAUGE	1

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Part No.	Part Description	Quantity
145. HG1003	10" SIGHT GAUGE	1
146. HG1005	10" SIGHT GAUGE	1
147. HP1010	PUMP	1
148. HP1039	X1A 5029 5029/149905/1C	1
149. HP1040	18CC REAR PORTED GEAR PUMP	1
150. HP1044	TANDEM PUMP	1
151. HP6012	INLET ELBOW	1
152. HP6013	OUTLET ELBOW	1
153. HV1036	4 LEVER SPOOL VALVE	1
154. HV1040	6 LEVER SPOOL VALVE	1
155. HV1045	6 SINGLE SPOOL DIR	2
156. HV1053	5 LEVER SPOOL VALVE	1
157. HV1502	SPOOL VALVE HANDLE ONLY	14
158. HV2006	FLOW CONTROL VALVE	2
159. HV3008	RFEXT1432/12V PILOT OPERATED	1
160. HV3041	6 STATION BLOCK	1
161. HV5004	3/4" (6 BAR) CHECK VALVE	2
162. HV8008	1 1/4" L/P BALL VALVE	4
163. HV8009	1 1/2" L/P BALL VALVE	1
164. HV8501	1/4" BSP PRESSURE TEST POINT	10
165. RU1012	S/A SORBO 100MMX15MMX10MM	0.25
166. RU1179	102mm I/D RAD HOSE (1M LENGTHS)	1/4 M
167. RU5201	FOAM RUBBER SEAL STRIP 40MMX6M	0.25
168. RU5202	EDGING TRIM	0.5
169. RU5208	S/A FOAM RUBBER SEAL STRIP	3
170. RU6044	3/8" BSAU108 (10MM)	0.15

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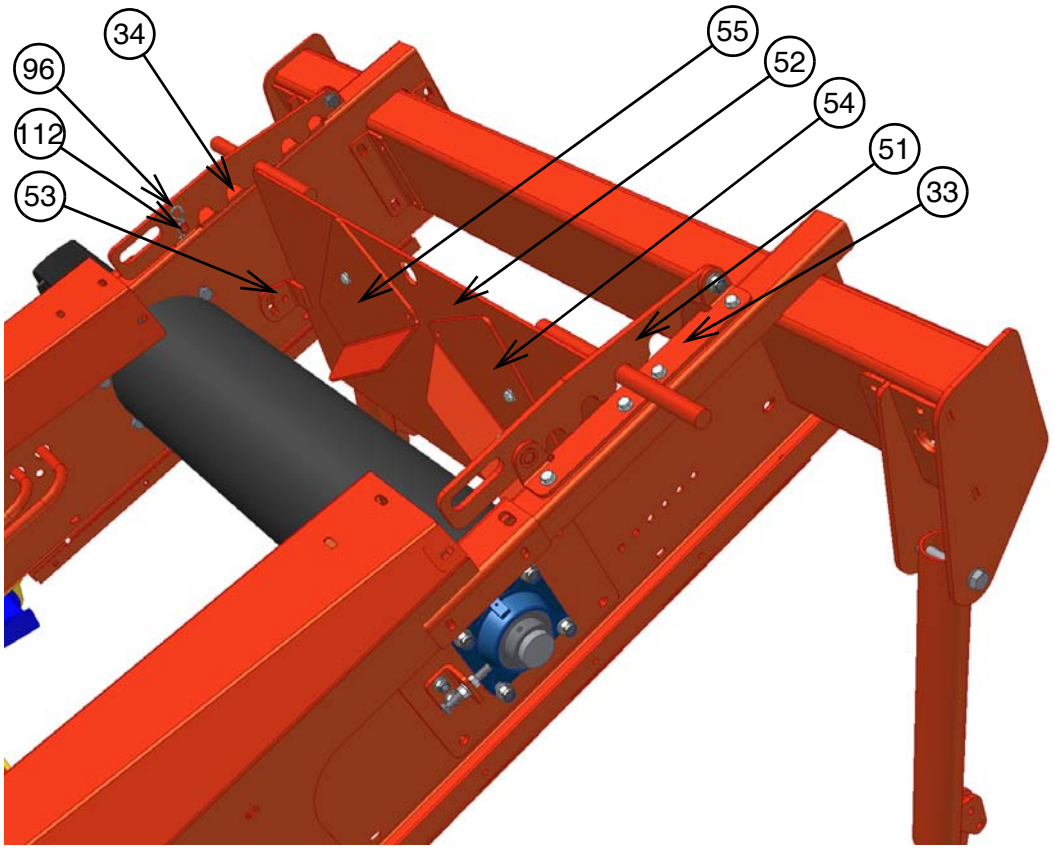
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5. MAIN CONVEYOR ASSEMBLY



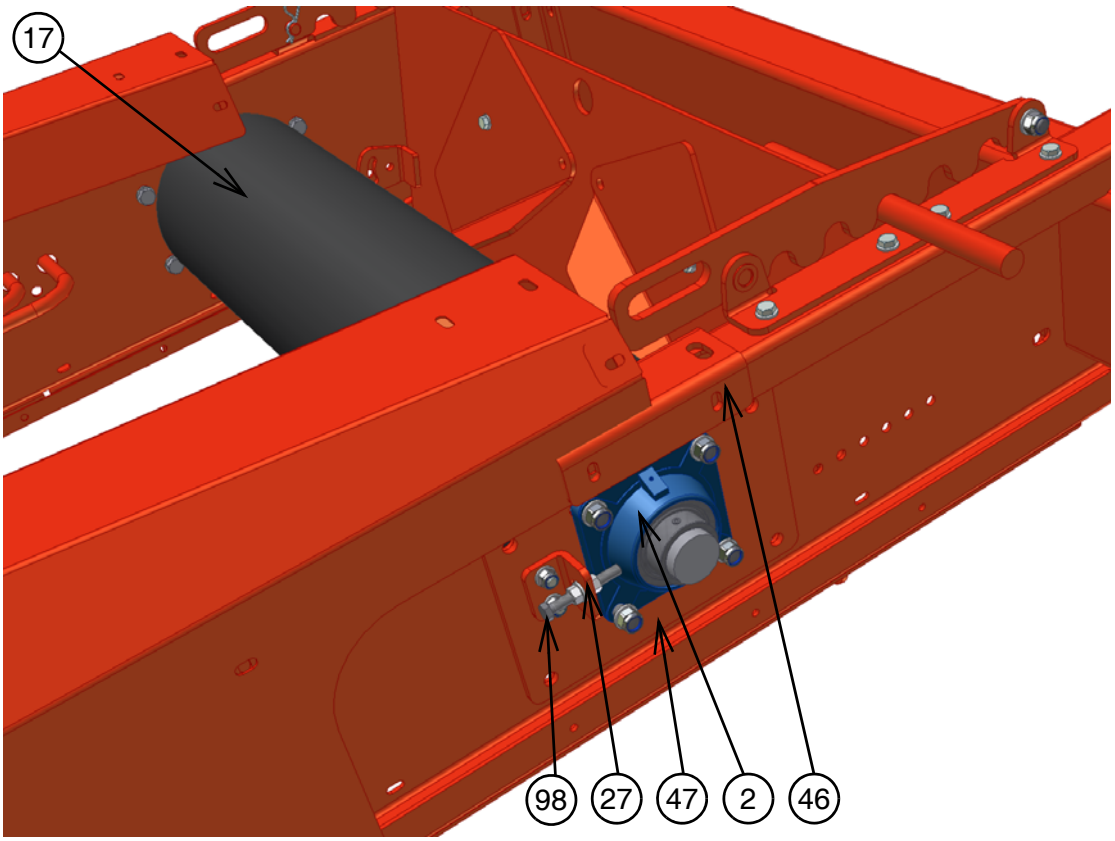
1: VIEW ON TOP END CROSS BEAM



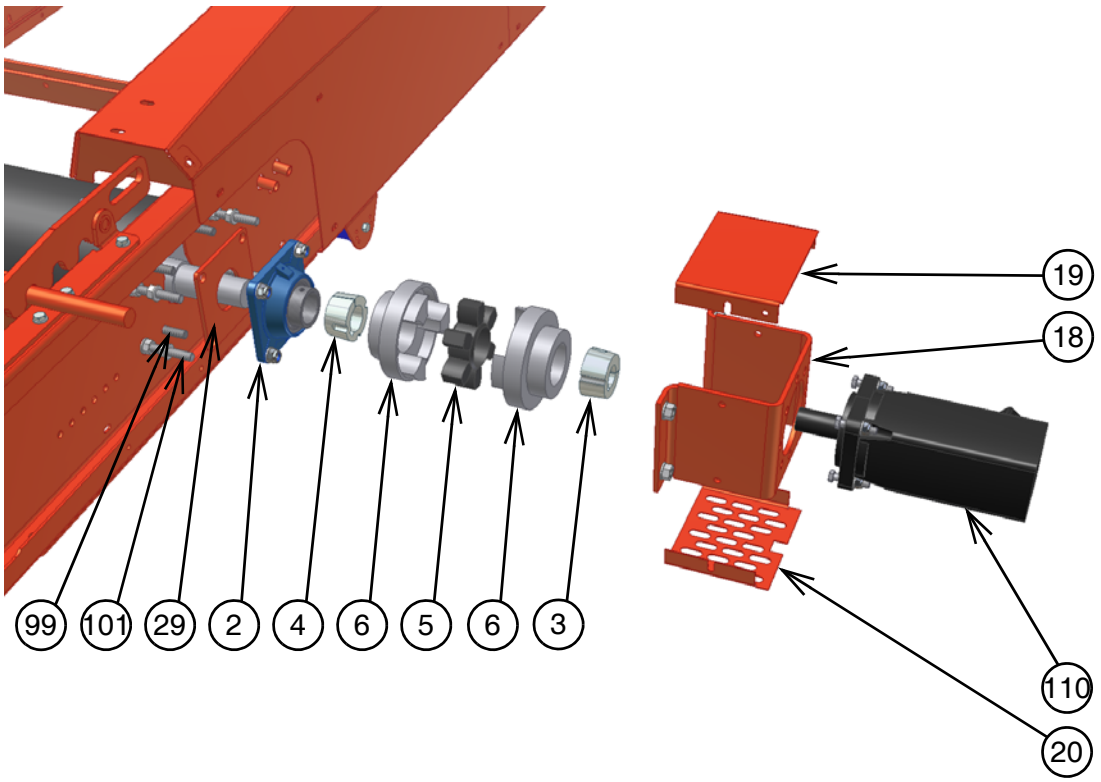
2: VIEW ON SPREADER PLATE

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ID: QA340-en-11858

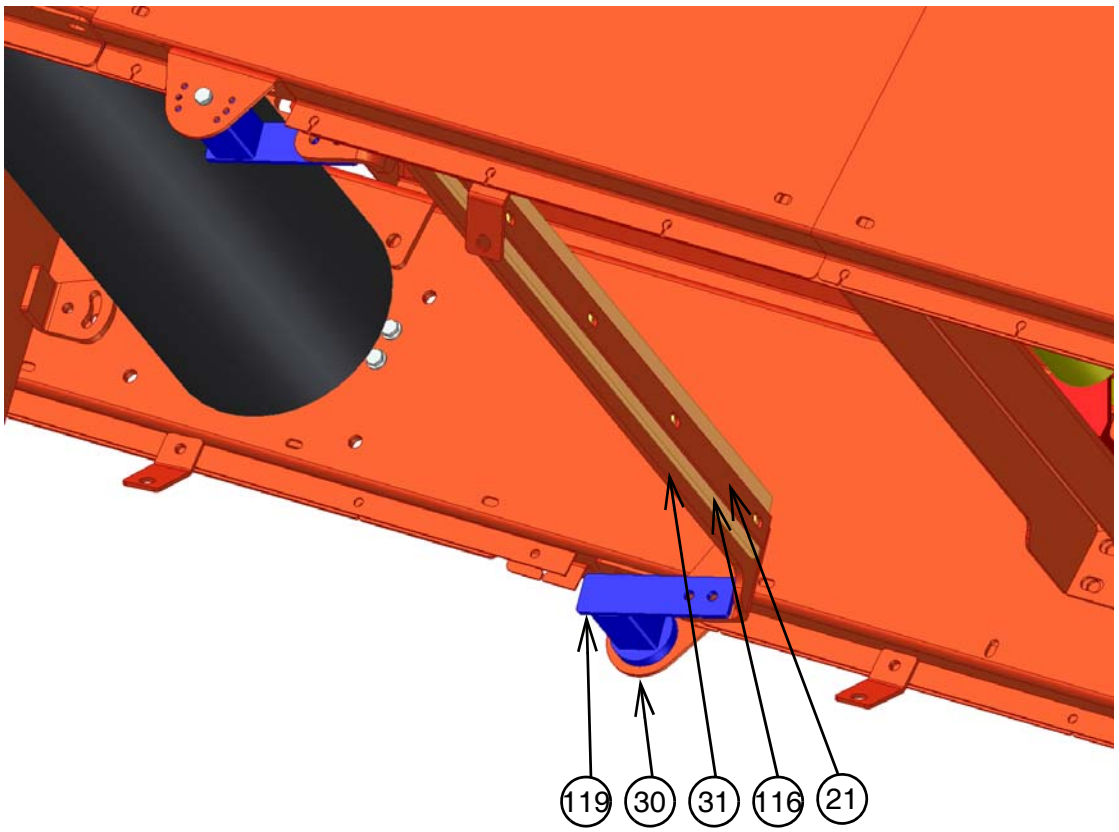


3: VIEW ON HEAD DRUM BEARING

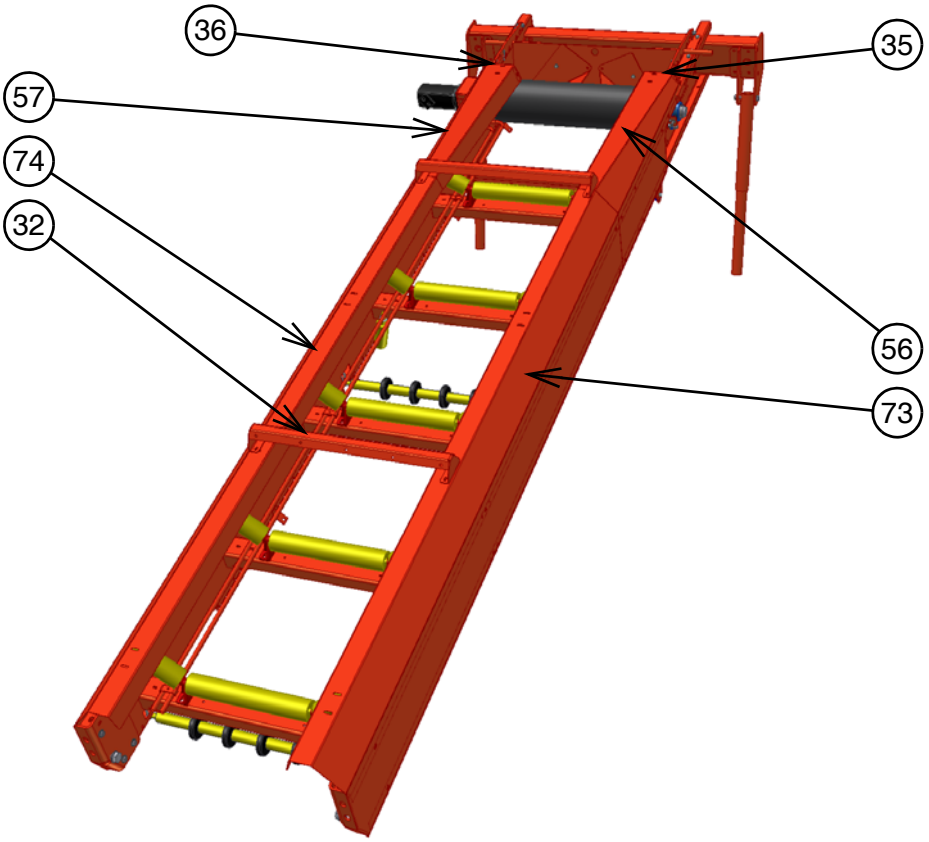


4: VIEW ON MOTOR & COUPLING

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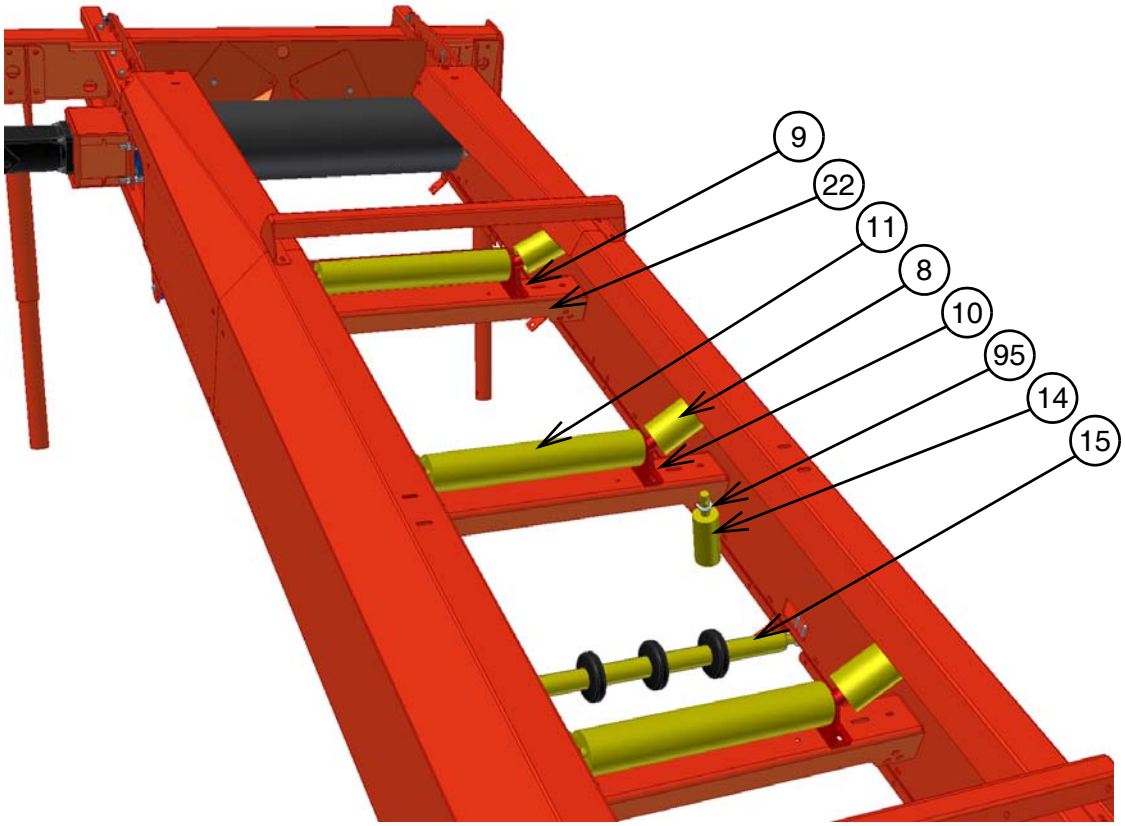
5: VIEW ON SCRAPER CROSS BEAM



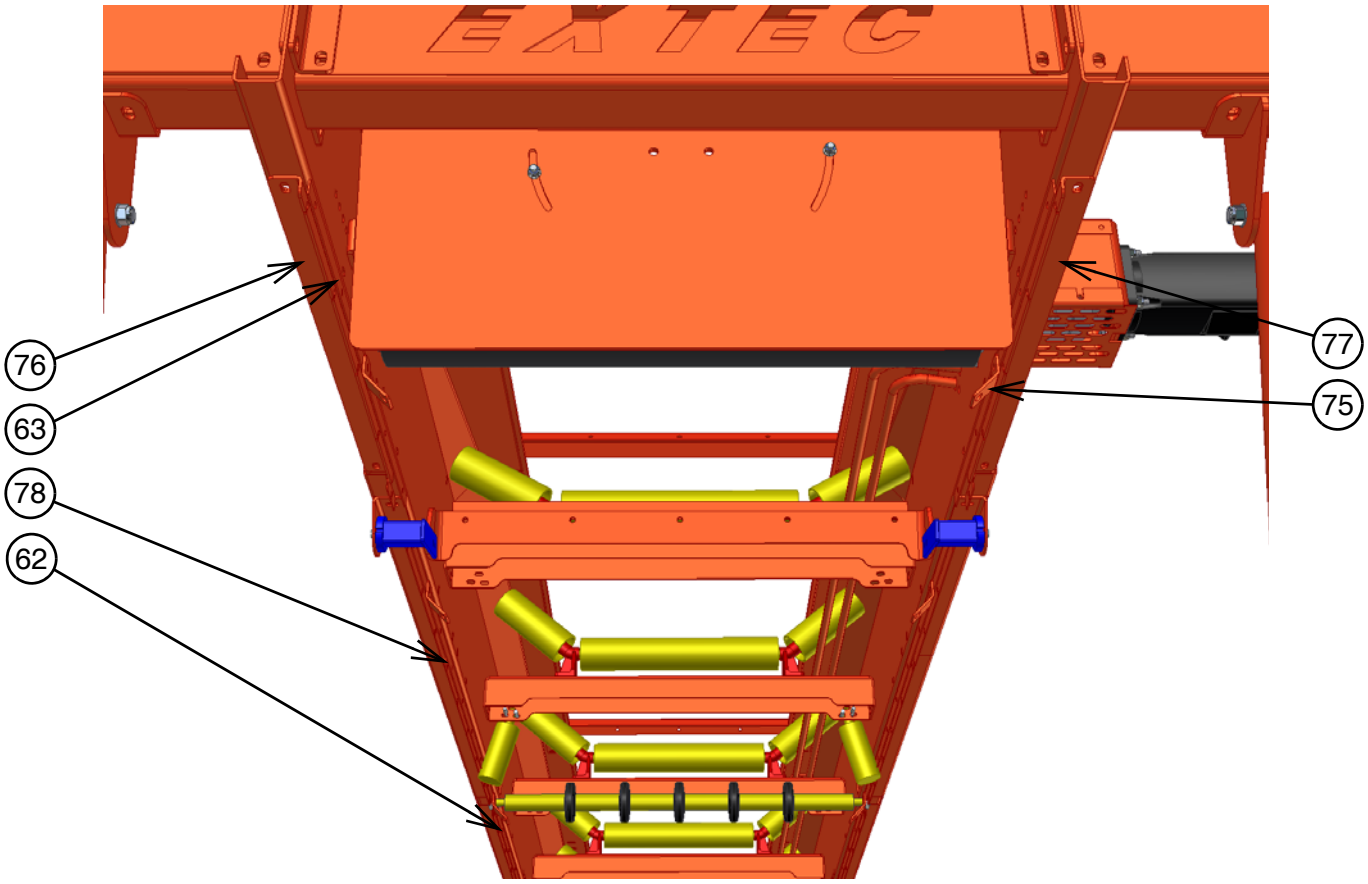
6: VIEW ON UPPER FLAIR PANELS

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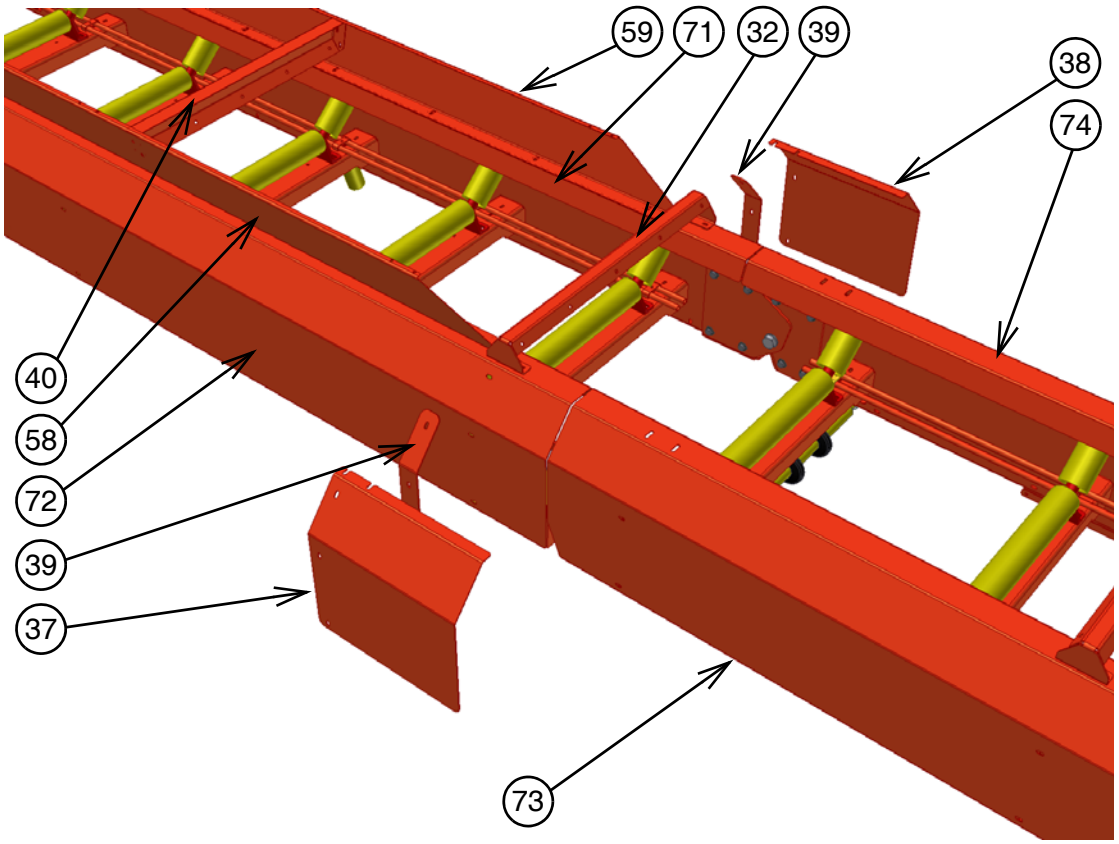


7: VIEW ON FRONT CARRYING ROLLERS

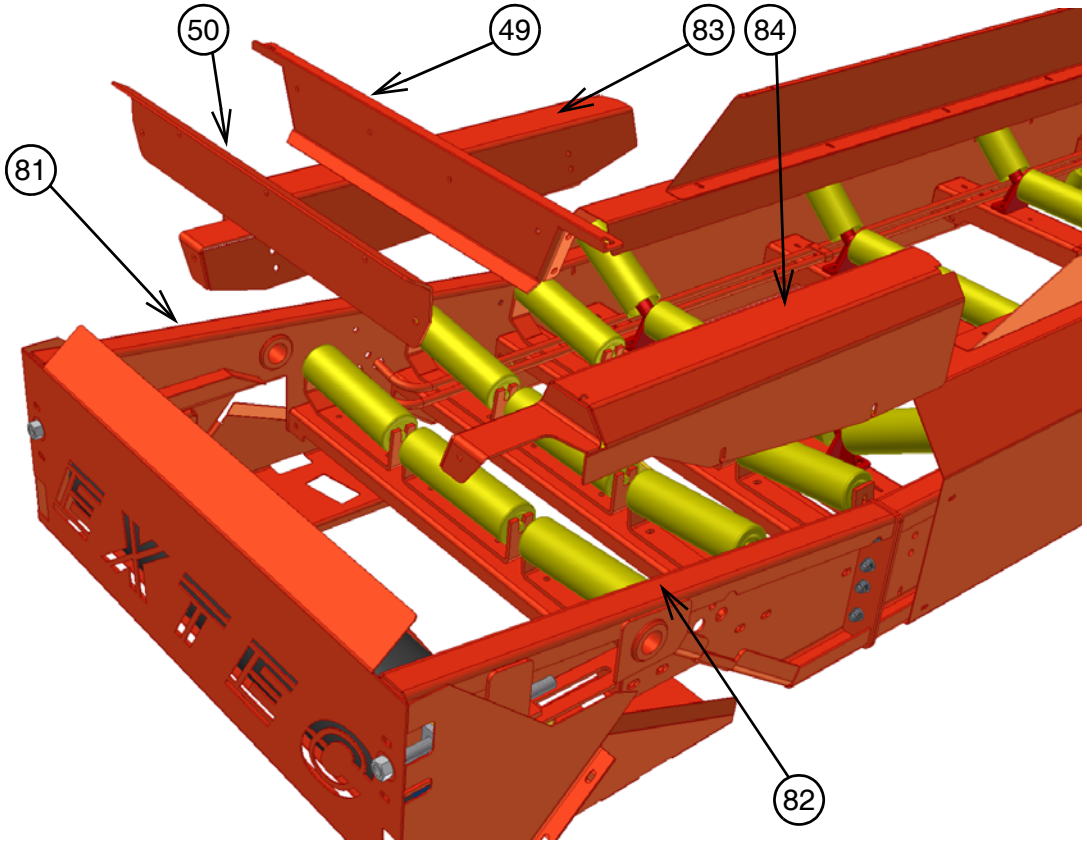


8: VIEW ON UPPER HANGING RUBBER BRACKETS

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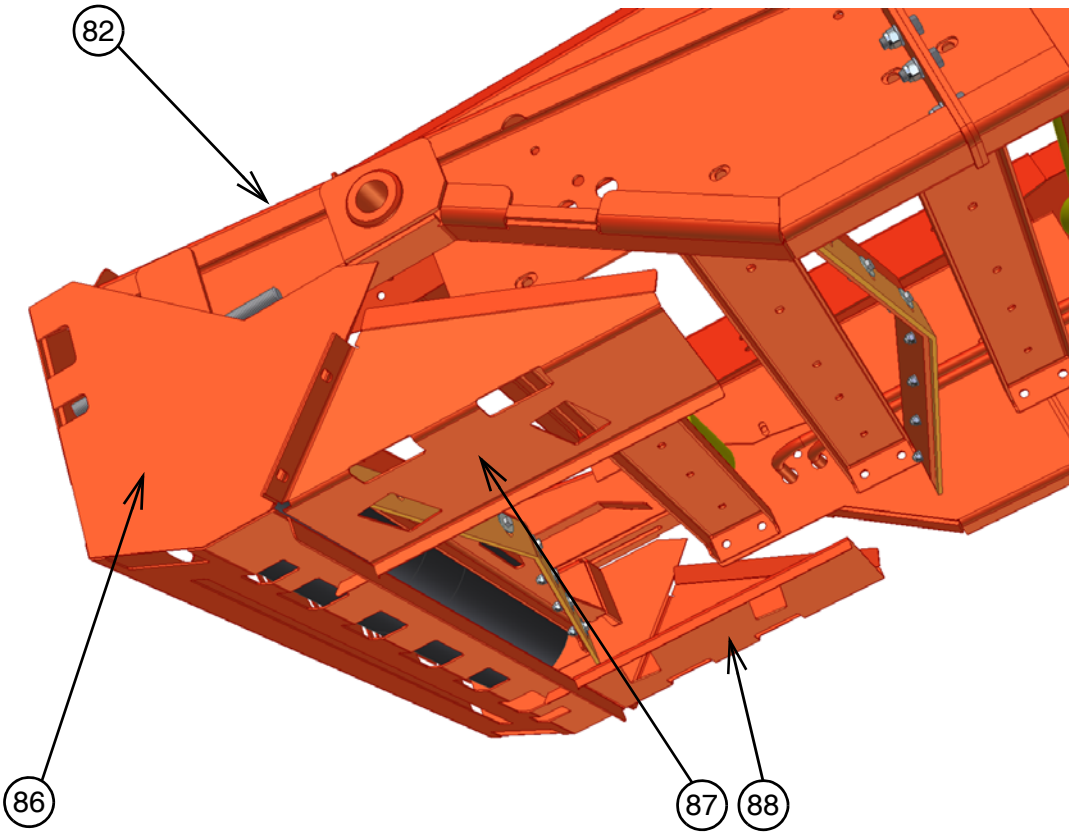


9: VIEW ON FLAIR INFIL PANEL

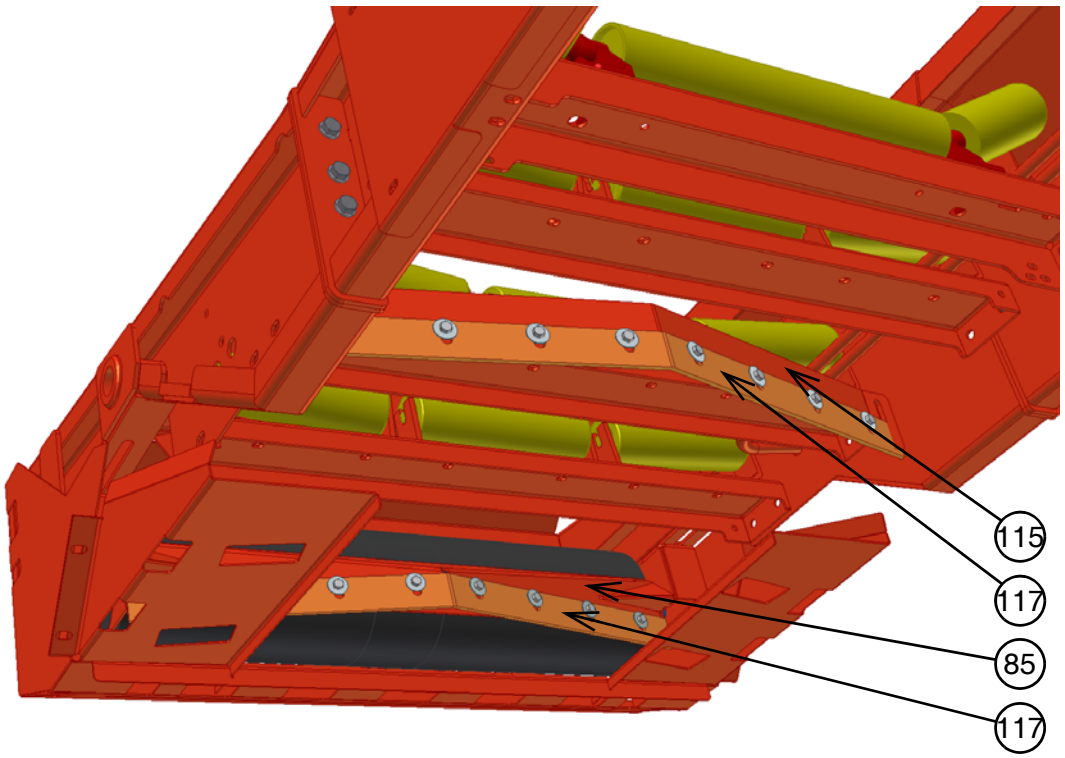


10: VIEW ON FEED BOOT

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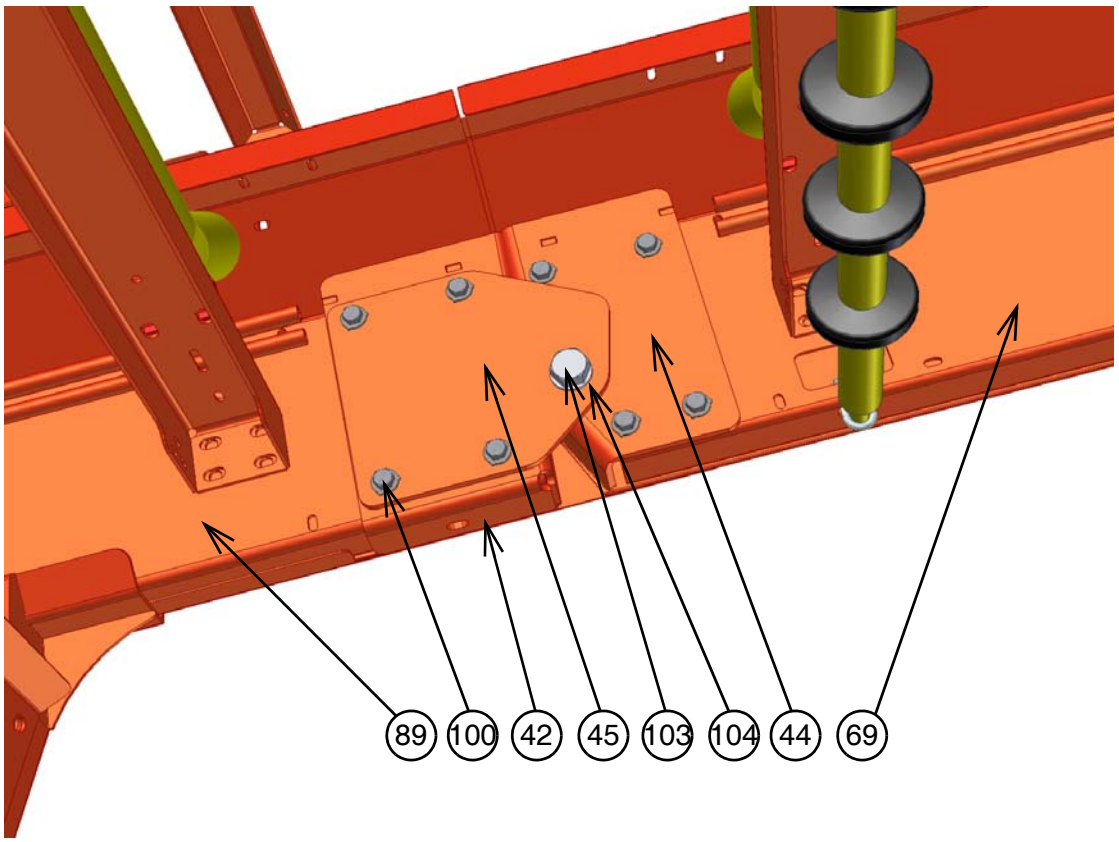


11: VIEW ON TAIL DRUM GUARD

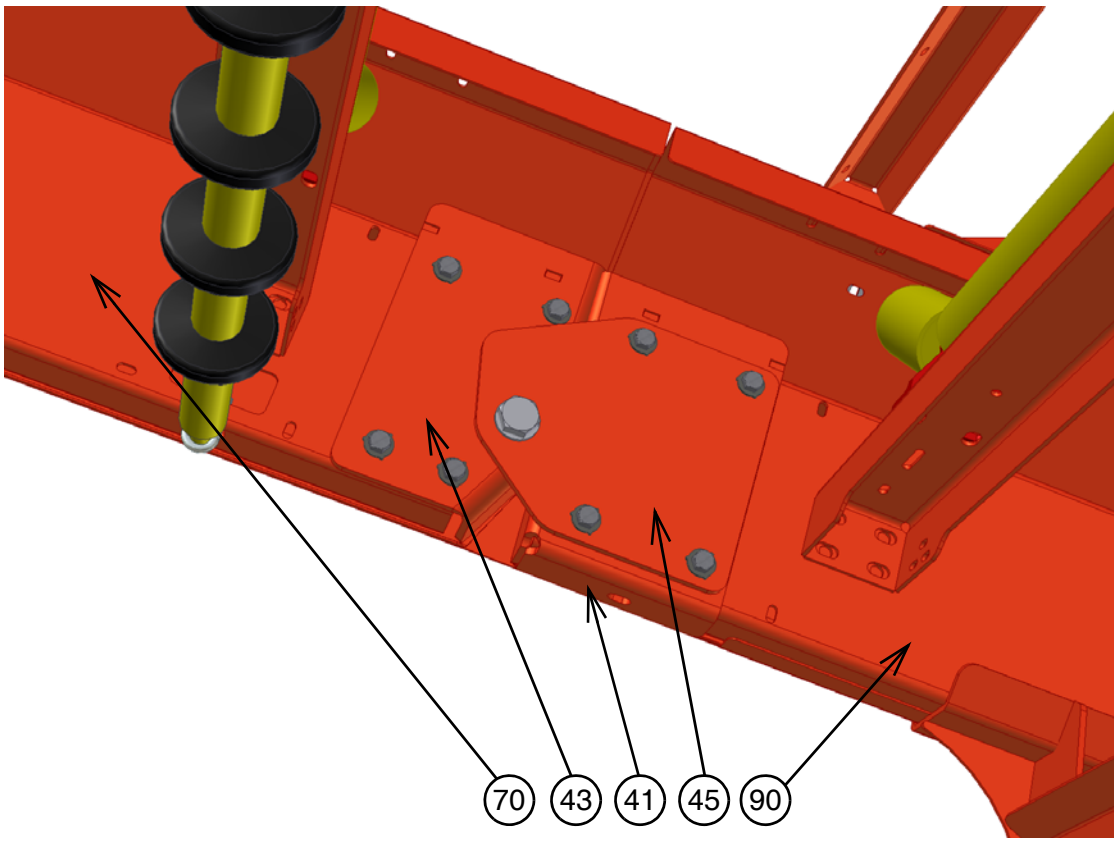


12: VIEW ON SCRAPERS

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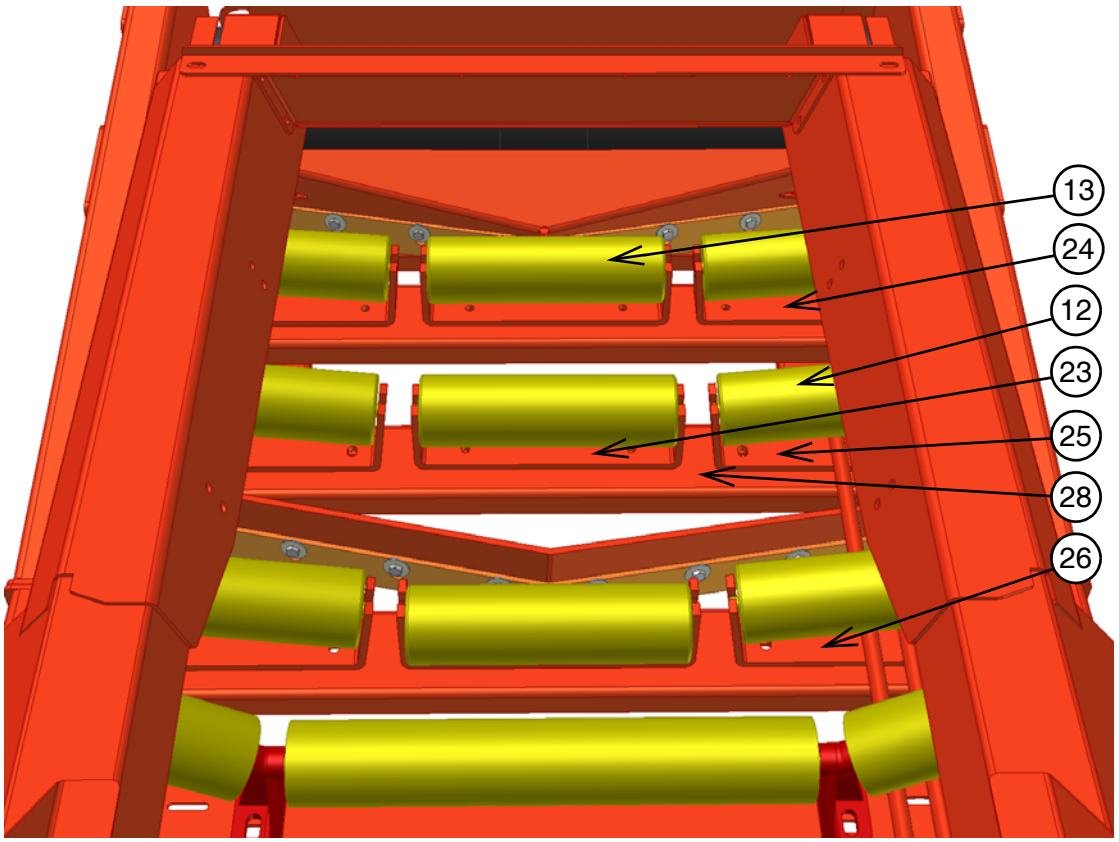
13: VIEW ON OUTER CENTRE JOINT L/H



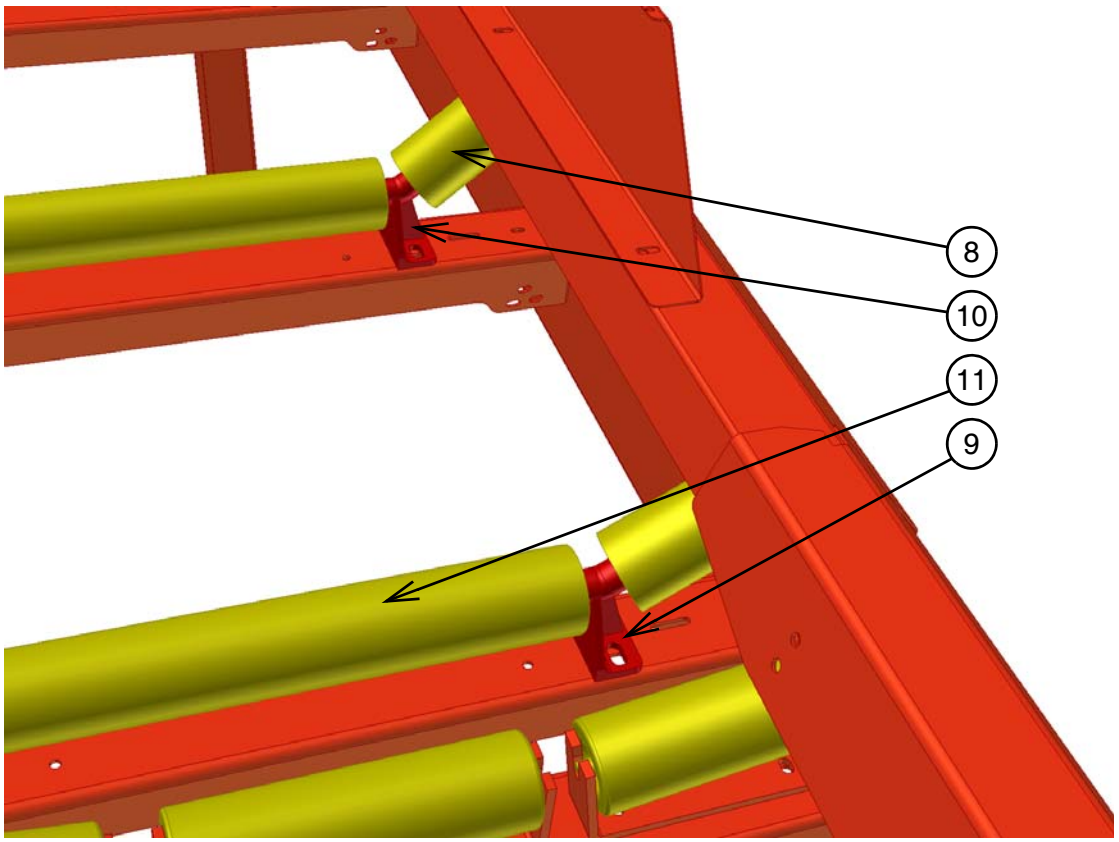
14: VIEW ON OUTER CENTRE JOINT R/H

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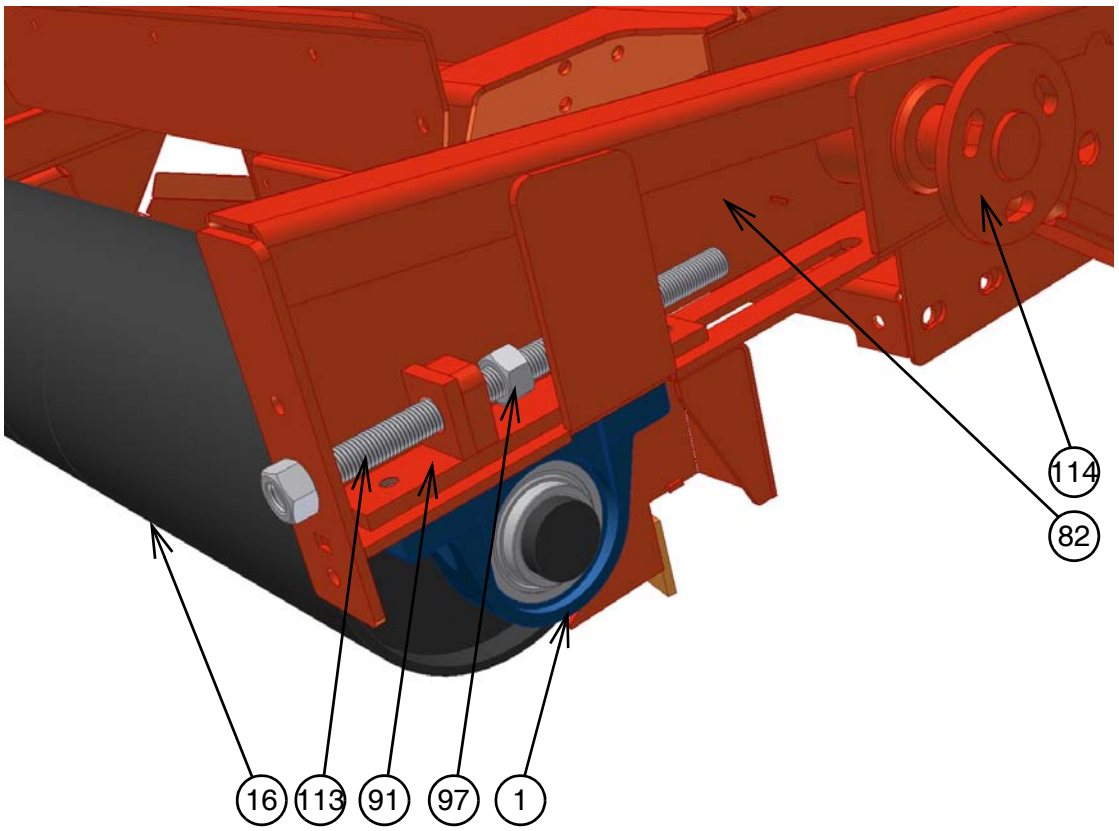


15: LOWER ROLLER GROUP

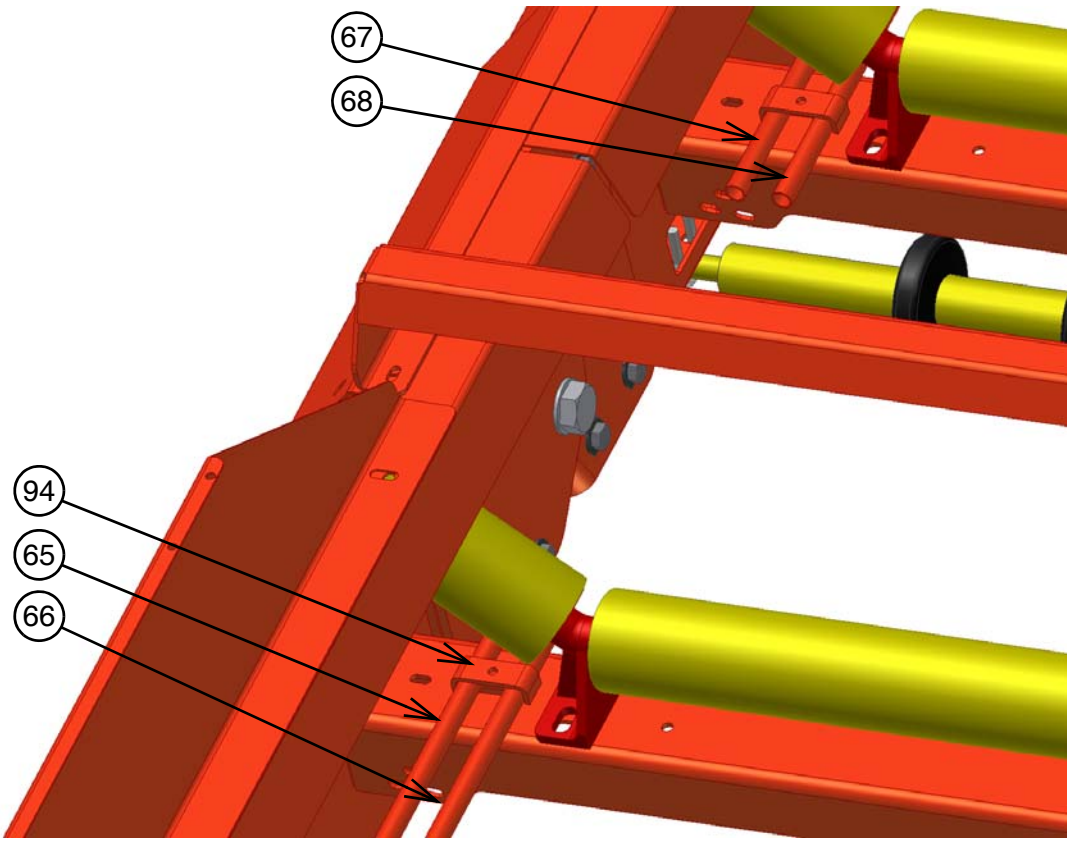


16: 2nd & 3rd ROLLER GROUP

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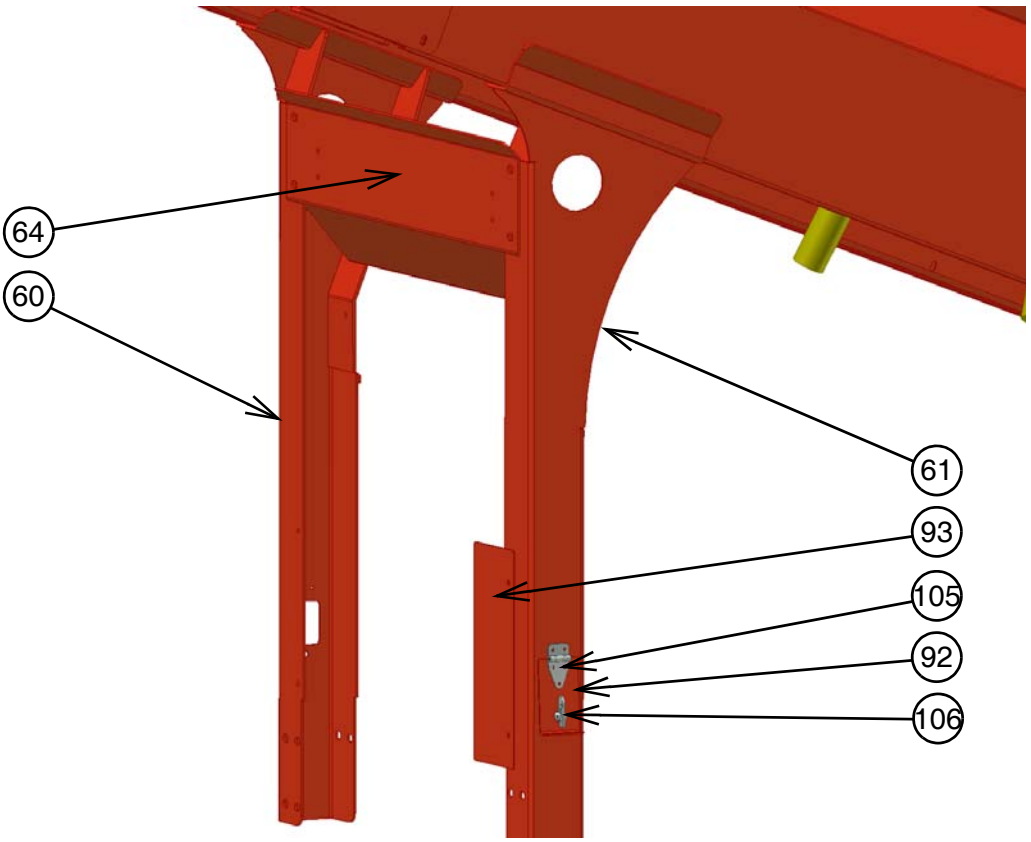
17: VIEW ON TAIL DRUM



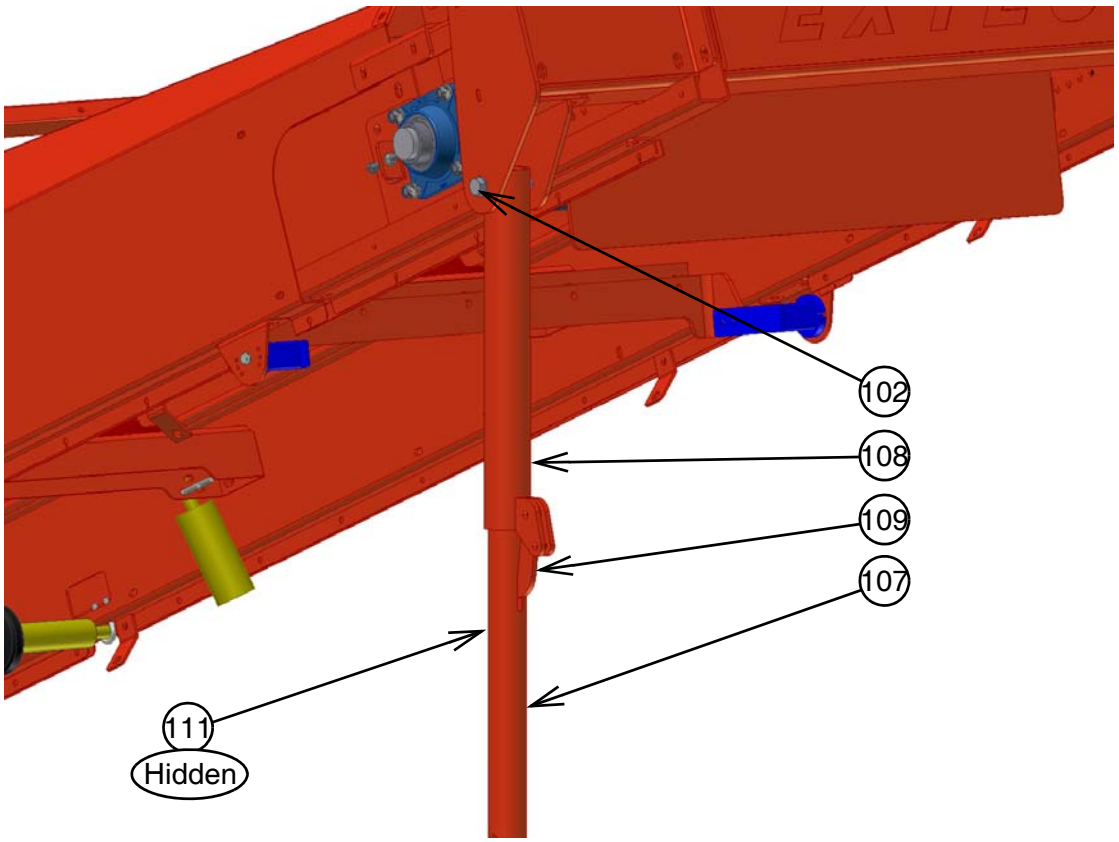
18: VIEW ON STEEL HOSE ASSEMBLY

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19: VIEW ON MAIN CONVEYOR SUPPORT LEGS



20: VIEW ON NON DRIVE SIDE SUPPORT LEG

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Part No.		Part Description	Quantity
1.	BT1010	PLUMMER BEARING	2
2.	BT2010	BEARING FLANGE	2
3.	BT5009	TAPER LOCK BUSH	1
4.	BT5010	50 mm TAPER LOCK	1
5.	BT6516	SPIDER INSERT	1
6.	BT6517	DRIVE COUPLING (SET)	1
7.	CB231001000	CHEVRON BELT 23.10M X 1000MM	1
8.	CR1003	WING ROLLER	22
9.	CR1004	30° ROLLER BRACKET	4
10.	CR1006	40° ROLLER BRACKET	18
11.	CR1017	BED ROLLER	11
12.	CR1021	BOTTOM SECTION ROLLER	6
13.	CR1022	BOTTOM SECTION BED ROLLER	3
14.	CR1024	TRACKING ROLLER	4
15.	CR1041	DISC ROLLER	3
16.	D0100000	TAIL DRUM	1
17.	D0140000	HEAD DRUM	1
18.	D0180000	MOTOR MOUNTING BRACKET	1
19.	D0190000	MOTOR MOUNTING BRACKET	1
20.	D0200000	MOTOR MOUNTING BRACKET BOTTOM	1
21.	D2510000	SCRAPER CROSS BAR	1
22.	D3200000	ROLLER CROSS BEAM	11
23.	D3570000	CENTRE ROLLING MOUNTING BRACKET	3
24.	D3580000	SIDE ROLLING MOUTING BRACKET	2
25.	D3590000	SIDE ROLLING MOUTING BRACKET	2
26.	D3600000	SIDE ROLLING MOUTING BRACKET	2
27.	D3780000	HEAD DRUM BEARING ADJUSTER BRACKET	1
28.	D4060000	ROLLER CROSS BEAM	3
29.	D4070000	BEARING PACKER	1
30.	D4080000	ROSTA BRACKET	2
31.	D4090000	ROSTA SCRAPER CROSS BEAMS	1
32.	D4240000	PANEL CROSS BRACE	3
33.	D7820000	SPREADER PLATE MOUNTING BRACKET	1
34.	D7830000	SPREADER PLATE MOUNTING BRACKET	1

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Part No.	Part Description	Quantity
35. D8140000	FLAIR CAP	1
36. D8150000	FLAIR CAP	1
37. D8240000	INFILL PANEL	1
38. D8250000	INFILL PANEL	1
39. D8260000	INFILL SPACER	2
40. D8570000	SCREEN BRACKET	1
41. D8940000	HINGE PLATE	1
42. D8950000	HINGE PLATE	1
43. D8960000	HINGE PLATE	1
44. D8970000	HINGE PLATE	1
45. D8980000	HINGE PLATE	2
46. D8990000	SIDE COVER PLATE	1
47. D9010000	BEARING SPACER	1
48. D12890000	TOP CROSS BEAM	1
49. D9090000	FEED BOOT BACK	1
50. D9130000	FEED BOOT BACK	1
51. D9140000	SPREADER PLATE	2
52. D9150000	SPREADER PLATE	1
53. D9160000	SPREADER PLATE	2
54. D9170000	SPREADER PLATE	1
55. D9180000	SPREADER PLATE	1
56. D9280000	TOP FLAIR	1
57. D9290000	TOP FLAIR	1
58. D9300000	FLAIR PANEL EXTENSION	1
59. D9310000	FLAIR PANEL EXTENSION	1
60. D9370000	R/H MAIN LEG SUPPORT	1
61. D9380000	L/H MAIN LEG SUPPORT	1
62. D9410000	RUBBER CLAMP	2
63. D9440000	RUBBER CLAMP	2
64. D9460000	SUPPORT LEG BRIDGING	1
65. D9470000	STEEL PIPE DETAIL	1
66. D9480000	STEEL PIPE DETAIL	1
67. D9490000	STEEL PIPE DETAIL	1
68. D9500000	STEEL PIPE DETAIL	1
69. D9510000	TOP SECTION	1

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Part No.	Part Description	Quantity
70. D9520000	TOP SECTION SIDE PANEL	1
71. D9550000	LOWER FLAIR	1
72. D9560000	FLAIR PANEL	1
73. D9570000	UPPER FLAIR	1
74. D9580000	UPPER FLAIR	1
75. D9630000	HANGING RUBBER FIX	8
76. D9650000	TOP RUBBER BRACKET	1
77. D9660000	TOP RUBBER BRACKET	1
78. D9830000	RUBBER CLAMP	2
79. D9860000	HANGING RUBBER BRACKET	2
80. D10120000	BELT PLOUGH SCRAPER	1
81. D11510000	L/H UNDERSLUNG SECTION	1
82. D11520000	R/H UNDERSLUNG SECTION	1
83. D11530000	L/H FEED BOOT	1
84. D11540000	R/H FEED BOOT	1
85. D11550000	TAIL DRUM SCRAPER	1
86. D11570000	TAIL GUARD	1
87. D11580000	R/H SIDE GUARD	1
88. D11590000	L/H SIDE GUARD	1
89. D11620000	L/H BOTTOM SECTION	1
90. D11630000	R/H BOTTOM SECTION	1
91. D11670000	BEARING ADJUSTER	2
92. D11790000	LOCKOUT HATCH	1
93. D11800000	LOCKOUT COVER	1
94. E2910000	PIPE CLAMP	6
95. FAB1004	U BOLT	8
96. FAHC1025	COTTERS, HAIRPIN	2
97. FAN24	M24 HEX NUT	2
98. FAS12X90	HEX HEAD BOLT	1
99. FAS16X55	HEX HEAD BOLT	4
100. FAS16X60	HEX HEAD BOLT	8
101. FAS16X110	HEX HEAD BOLT	4
102. FAS20X150	HEX HEAD BOLT	2
103. FAS30X70	HEX HEAD BOLT	2
104. FAW30A	BRIGHT WASHER	2

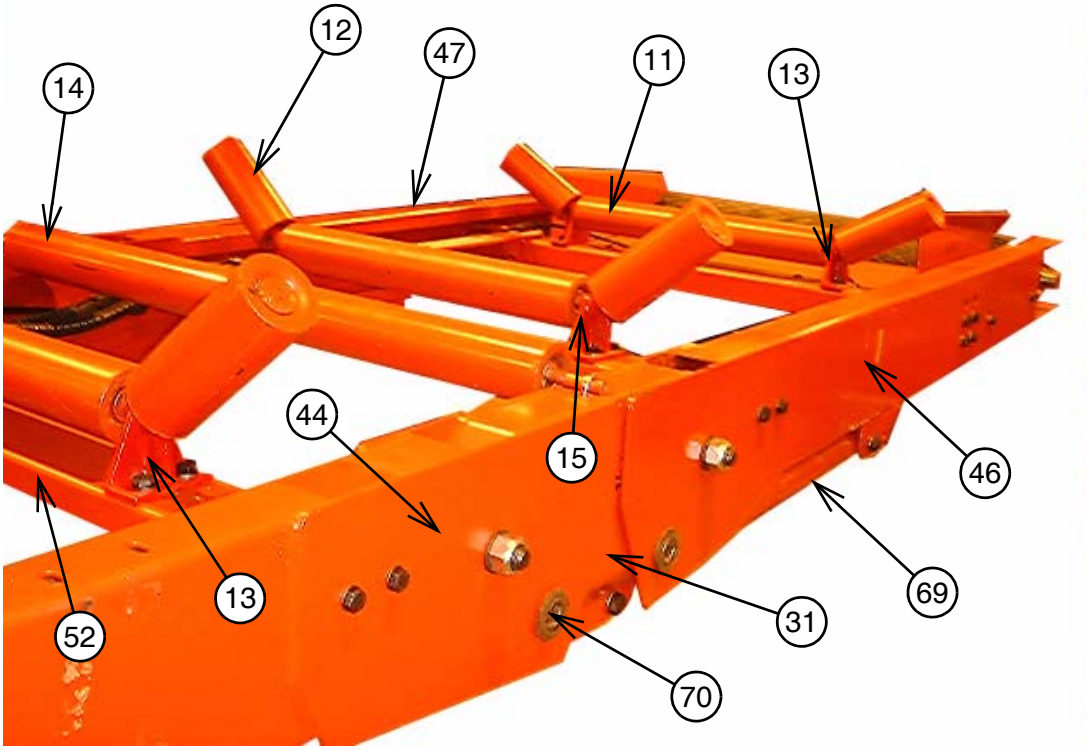
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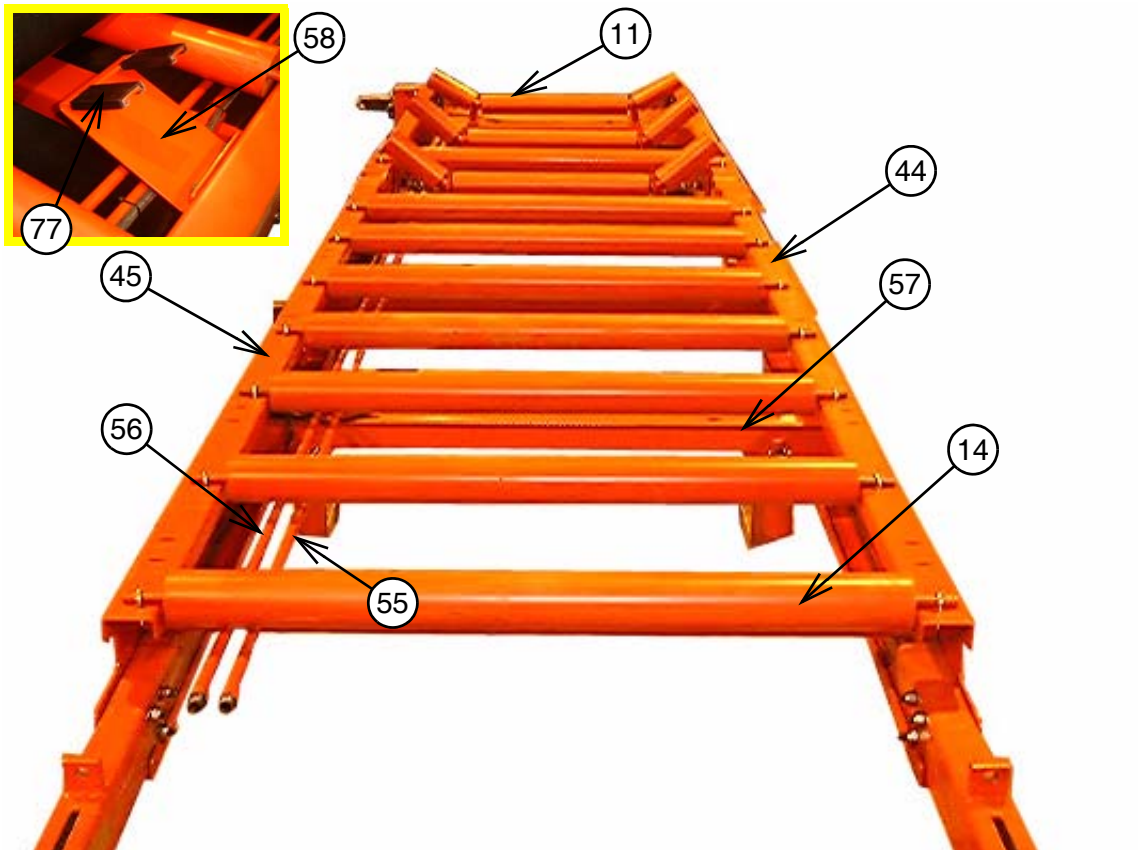
Part No.	Part Description	Quantity
105. FD2105	HINGE 3+2 HOLE	1
106. FD3114	ANTI LOOSE FASTNER	1
107. G5800000	LEG INNER TUBE	2
108. G5810000	LEG OUTER TUBE	2
109. G5820000	SAFETY LATCH	2
110. HM1016	HYDRAULIC MOTOR	1
111. HR1065	RAM	2
112. PN1028	PIVOT PIN	2
113. PN1031	M24 X 380 ADJUSTER BOLT	2
114. PN1163	MOUNTING PIN	2
115. PY1002	SEALING RUBBER	1
116. PY1009	1060X80X8 mm POLY SCRAPER	1
117. PY1017	1200X70X8 mm POLY SCRAPER	1
118. RU1003	RUBBER BIR 3440 X 90 X 10	1
119. RU5501	SE27 TENSIONING ELEMENT	2

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6. TAIL CONVEYOR



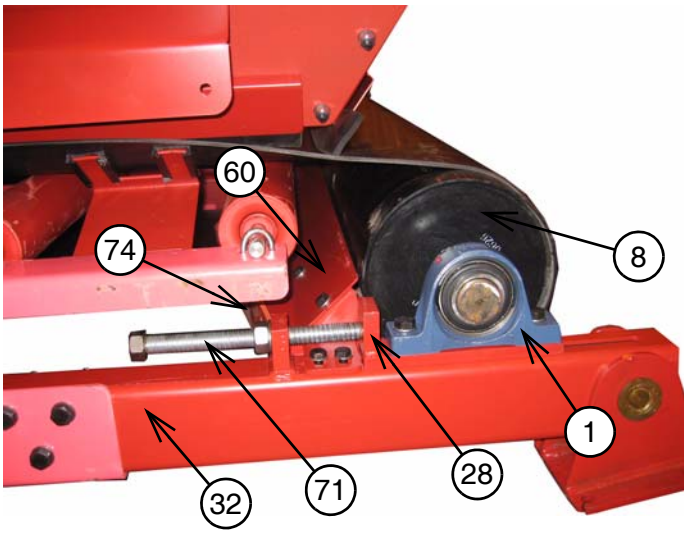
1: VIEW ON CARRYING ROLLERS

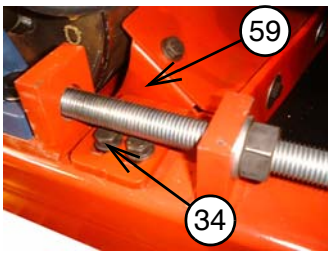


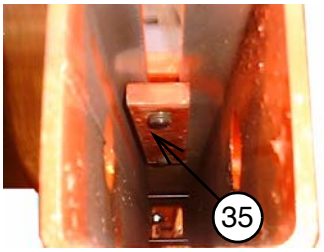
2: VIEW ON CARRYING ROLLERS

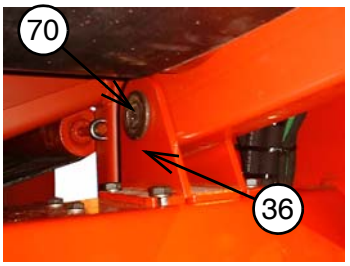
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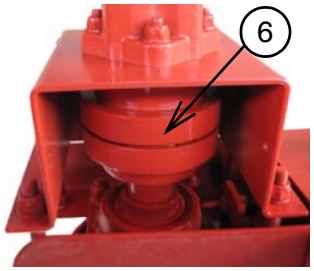
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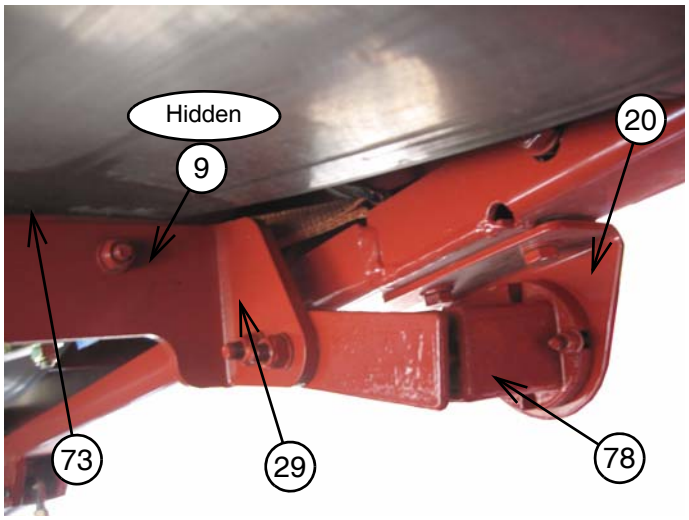




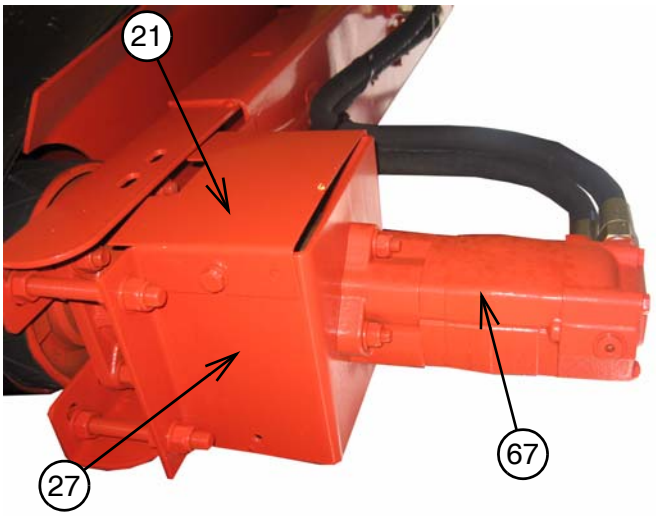




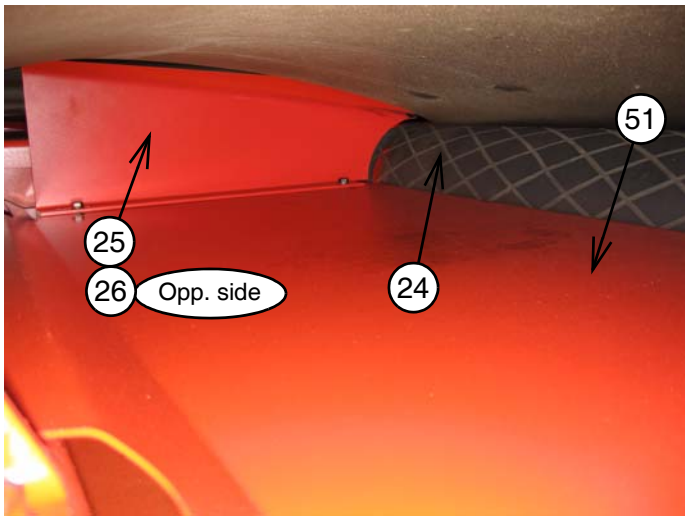
3: VIEW ON TAIL DRUM



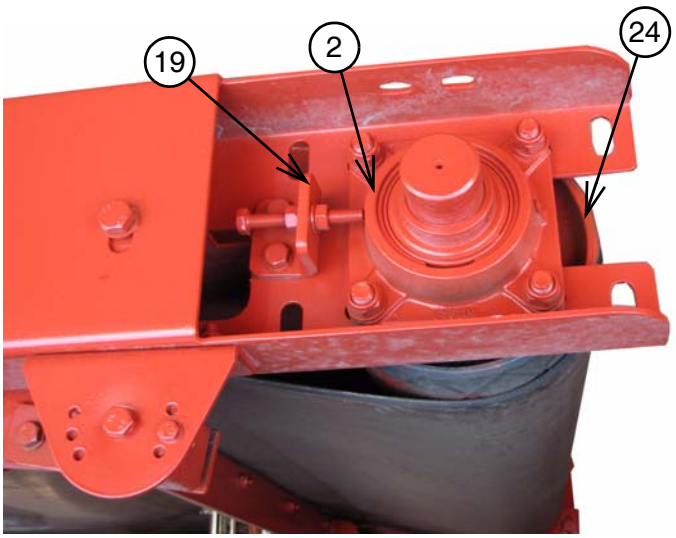
4: VIEW ON DRIVE DRUM SCRAPER



5: VIEW ON TOP SIDE OF MOTOR

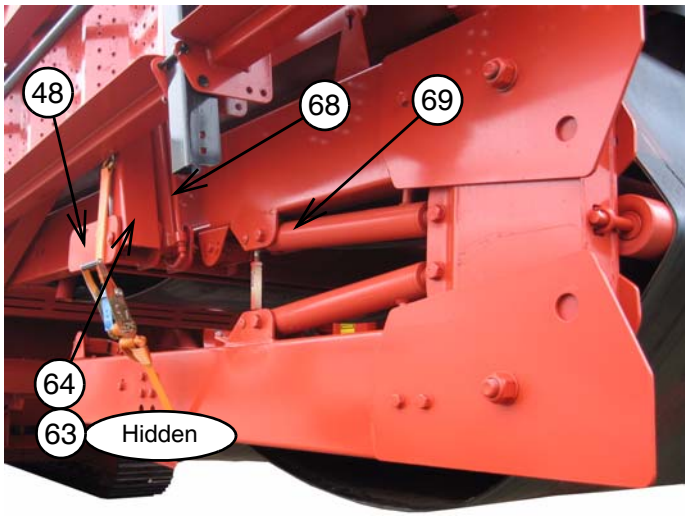


6: VIEW ON DRIVE DRUM

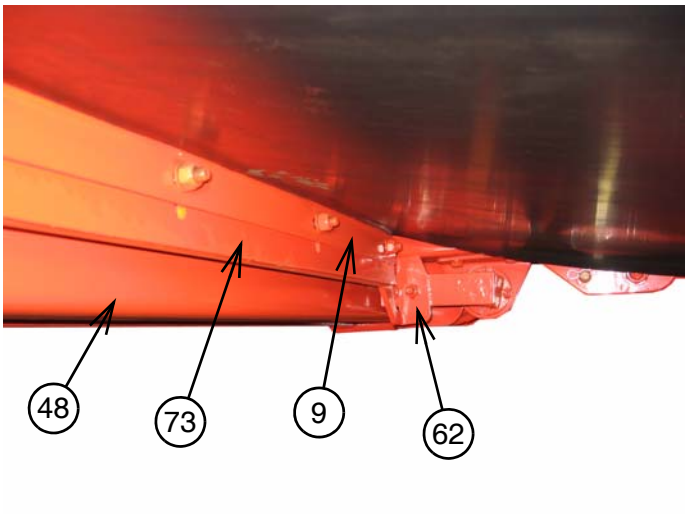


7: VIEW ON DRIVE BEARING

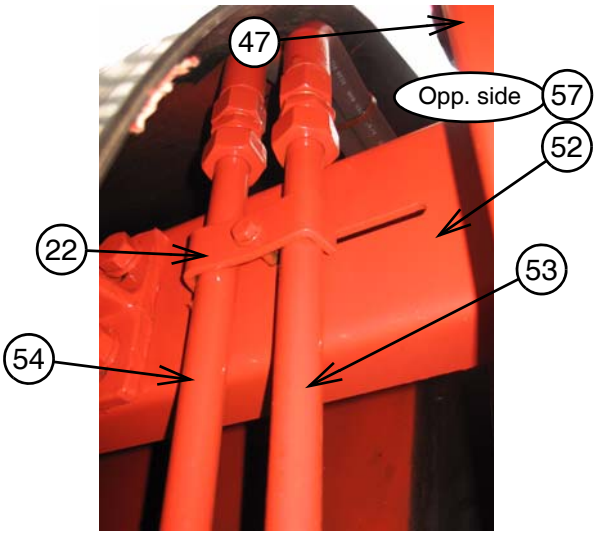
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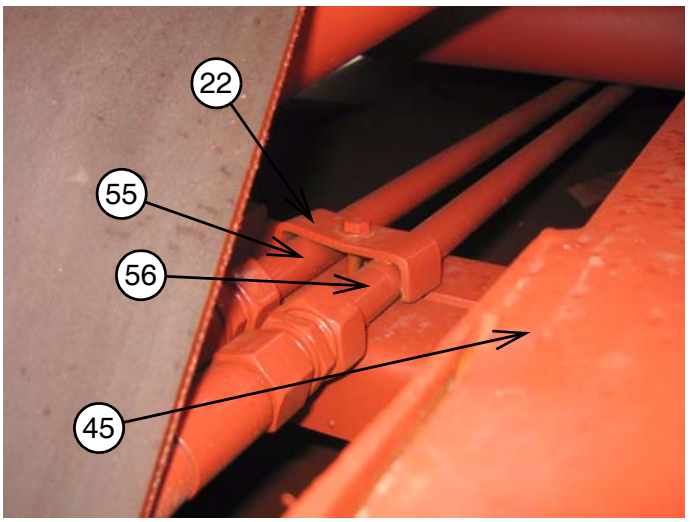
8: VIEW ON TAIL CONVEYOR LIFT LEG



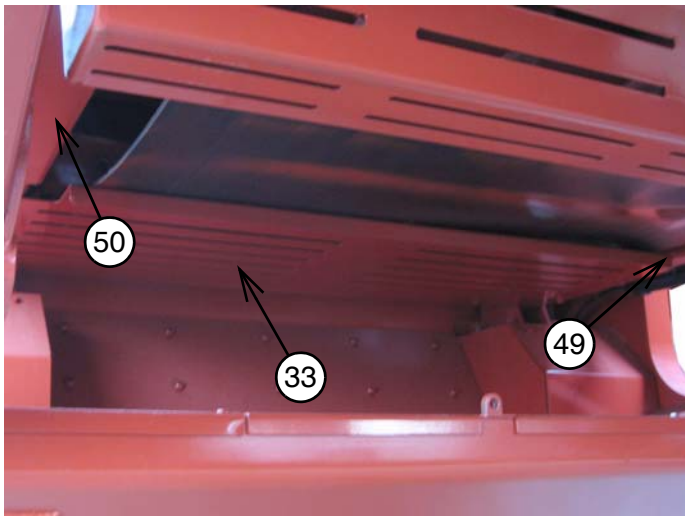
9: VIEW ON CENTRE SCRAPER



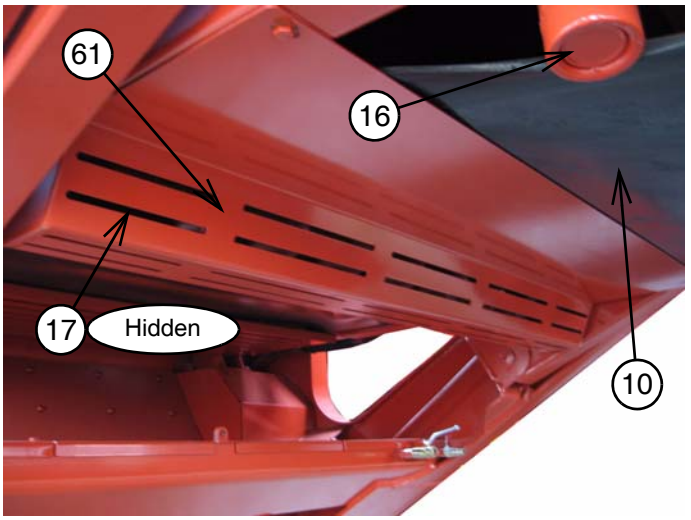
10: VIEW ON UPPER STEEL HOSES



11: VIEW ON LOWER STEEL HOSES



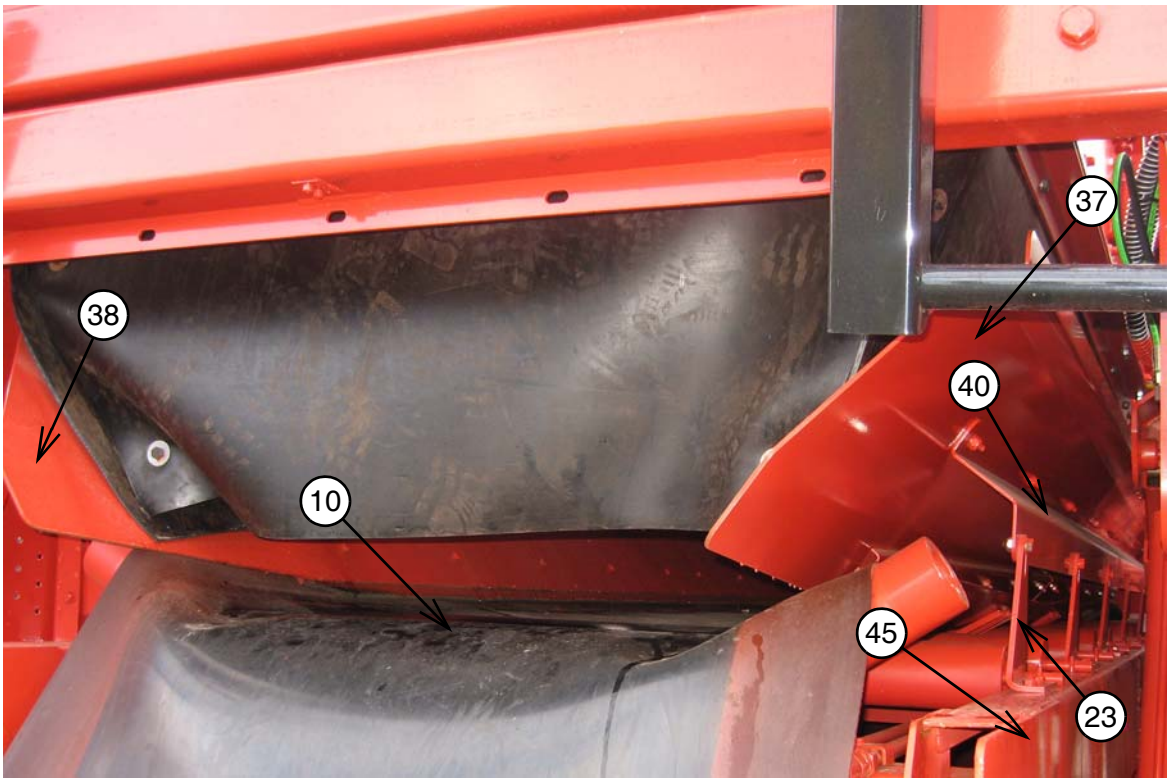
12: VIEW ON TAIL DRUM GUARDS



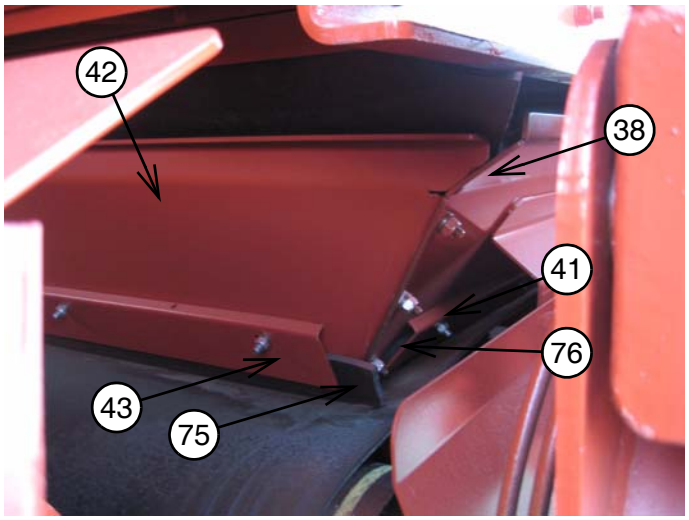
13: VIEW ON RETURN ROLLER GUARD

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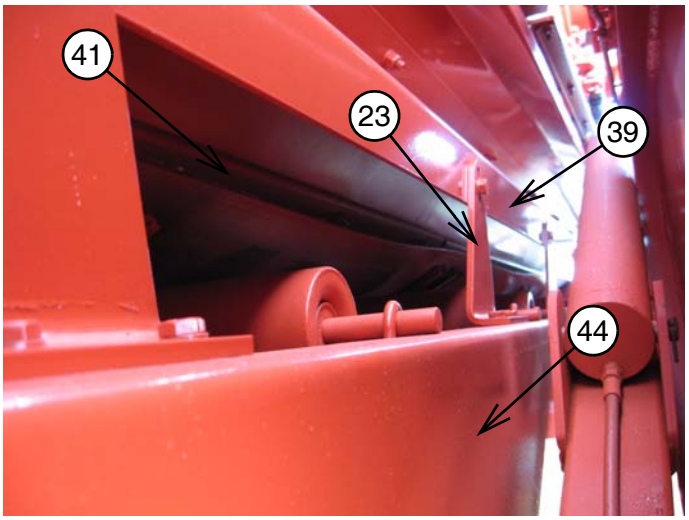
ID: QA340-en-11858



14: VIEW ON CARRYING ROLLERS



15: VIEW ON REAR OF FEED BOOT



16: VIEW ON RH SIDE OF FEED BOOT

Part No.		Part Description	Quantity
1.	BT1009	BEARING PLUMMER SY55TR	2
2.	BT2009	BEARING FLANGE FY55TR	2
3.	BT5005	2012/32 TAPER LOCK BUSH	1
4.	BT5006	2012/50 TAPER LOCK BUSH	1

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Part No.		Part Description	Quantity
5.	BT6514	TX150 DRIVE COUPLING INSERT	1
6.	BT6515	TX150F DRIVE COUPLING WITH 201	1
7.	BT8000	BEARING GREASE POINT PLUG	4
8.	C0090000	LONG HOPPER TAIL DRUM (WAS CD7	1
9.	C2870000	ROBOTRAC HOPPER SCRAPER CLAMP	3
10.	CB150201200	15.020M T/CONV BELT S3	1
11.	CR1002	CENTRE ROLLER	3
12.	CR1003	WING ROLLER	6
13.	CR1004	30° ROLLER BRACKET - 44XT	4
14.	CR1005	RETURN ROLLER	9
15.	CR1006	40° ROLLER BRACKET - 44XV	2
16.	CR1024	TRACKING ROLLER	2
17.	CR1040	TAIL CONV DISC RETURN	2
18.	CR2019	TAIL CONV KIT QA340	1
19.	D3780000	MCONV HEAD SECT BRG ADJUSTER A	2
20.	D4080000	MCONV ROSTA SCRAPER SUPT BRKT	2
21.	E0240000	MTR MTG TOP COVER PLATE	1
22.	E2910000	22MM PIPE CLAMP FULLTRACK	5
23.	F0080000	TC F BOOTLEG	10
24.	F0260000	TAIL CONV DRIVE DRUM (REPLACES	1
25.	F0270000	TC NIP GUARD SIDE RH	1
26.	F0280000	TC NIP GUARD SIDE LH	1
27.	F0320000	TCONV MOTOR MOUNTING BRACKET	1
28.	F0360000	TC BRG ADJUSTER	2
29.	F1380000	TAILCONV ROSTA SCRAPER CROSSBE	1
30.	F1550000	TCONV BRG ADJ	2
31.	F2330000	TCONV BTM SECT LINK ARM X-BEAM	2
32.	F2340000	NEW MINITRAC TAILDRUM SLIDER	2
33.	F2430000	TCONV UNDERSIDE GD	1
34.	F2470000	TCONV TDRUM SCRAPER BRKT	2
35.	F2480000	TCONV BEARING LOCATION PLT	2
36.	F3000000	TAIL CONV MOUNTING BRKT	2
37.	F3010000	DS FULLTRAC FBOOT SIDE PNL	1
38.	F3020000	DS FULLTRAC FBOOT SIDE PNL	1
39.	F3030000	DS FULLTRAC FBOOT SIDE PNL SUP	1

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Part No.	Part Description	Quantity
40. F3040000	DS FULLTRAC FBOOT SIDE PNL SUP	1
41. F3050000	DS FULLTRAC SIDE PNL RBR CLAMP	4
42. F3060000	DS FULLTRAC FBOOT BACK PNL	1
43. F3070000	DS FULLTRAC FBOOT BACK PNL CLA	1
44. F3080000	DS FULTRAC TCONV BTM SECT S PN	1
45. F3090000	DS FULTRAC TCONV BTM SEC S/PNL	1
46. F3100000	DS FULTRAC TCONV TOP SEC S/PNL	1
47. F3110000	DS FULTRAC TCONV TOP SEC S/PNL	1
48. F3120000	TCONV BTM SECT LINK SUPT MEMBE	1
49. F3130000	DS FULLTRAC TCONV GD	1
50. F3140000	DS FULLTRAC TCONV GD	1
51. F3150000	DS FULLTRAC HDRUM NIP GD	1
52. F3170000	DS FULLTRAC TCONV CROSSBEAM	4
53. F3180000	DS FULLTRAC TOP END STEEL PIPE	1
54. F3190000	DS FULLTRAC TOP END STEEL PIPE	1
55. F3280000	DS FULLTRAC TCONV BTM END STEE	1
56. F3290000	DS FULLTRAC TCONV BTM END STEE	1
57. F3300000	FULLTRAC TCONV CROSSBEAM	2
58. F3320000	QA340 WING GUIDE BRKT	8
59. F3720000	TAIL DRM NIP GD	1
60. F3730000	TC TAIL DRUM SCRAPER	1
61. F4220000	QA340 TCONV RETURN ROLLER GUARD	1
62. F4230000	1200 BELT TCONV ROSTA SCRAPER	1
63. G5390000	TAIL CONVEYOR OUTER LIFT LEG	2
64. G5400000	TAIL CONETOR INNER LIFT LEG	2
65. HA00014025	ADAPTOR - BRG TO GREASE PIPE	4
66. HHSF01	TAIL CONV KIT QA340	1
67. HM1006	CHARLYNN 2K395 BAA MOTOR (104-	1
68. HR1003	C536 RAM (SIDE CONV) CLOSED CE	2
69. HR1053	RAM GAD602 TAIL CONV CLOSED CE	4
70. PN1012	PIN -M40X133 MS/CONV SUPPORT A	4
71. PN1031	ADJUSTER BOLT M24X360	2
72. PN1081	PIN	4
73. PY1015	1220X80X8MM P SCRAPER (RED) (5	2
74. PY1019	1300X80X8MM P.SCRAPER (RED) C/	1

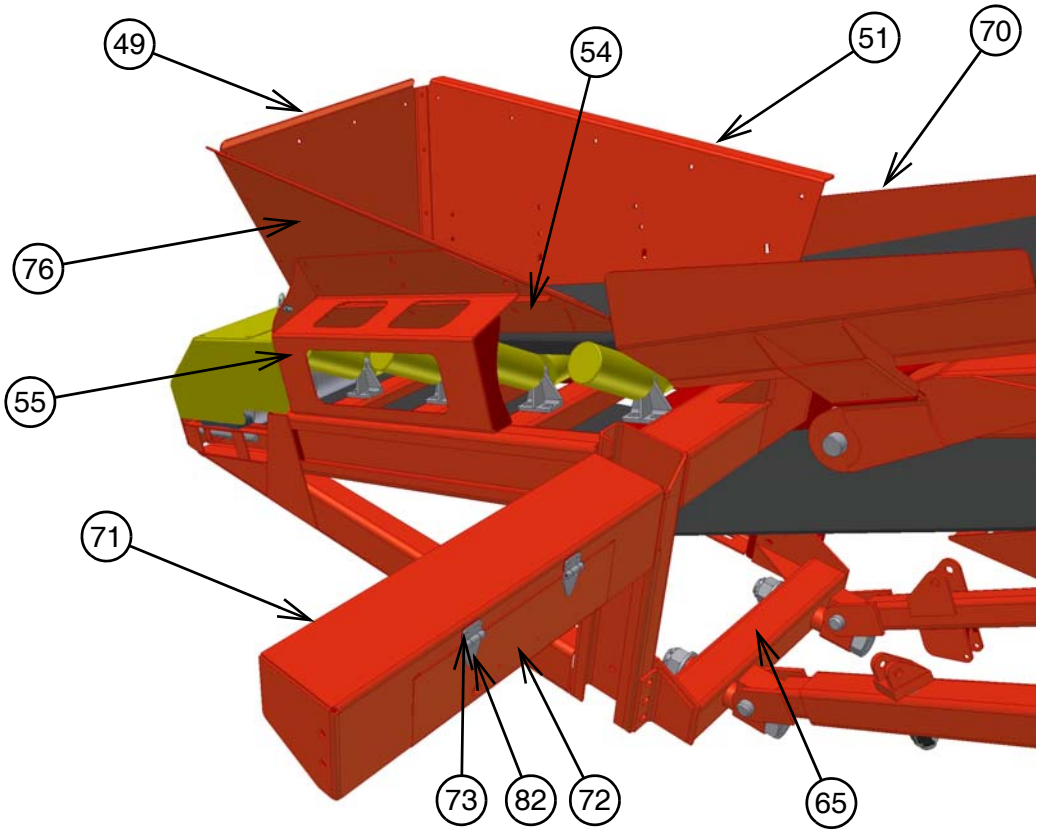
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Part No.	Part Description	Quantity
75. RU1001	BIR 1300X70X10	1
76. RU1023	BIR 4000 X 90 X 10	2
77. RU5206	C7 - E C PROFILE BLACK [3M	0.50
78. RU5501	SE27 TENSIONING ELEMENT	4

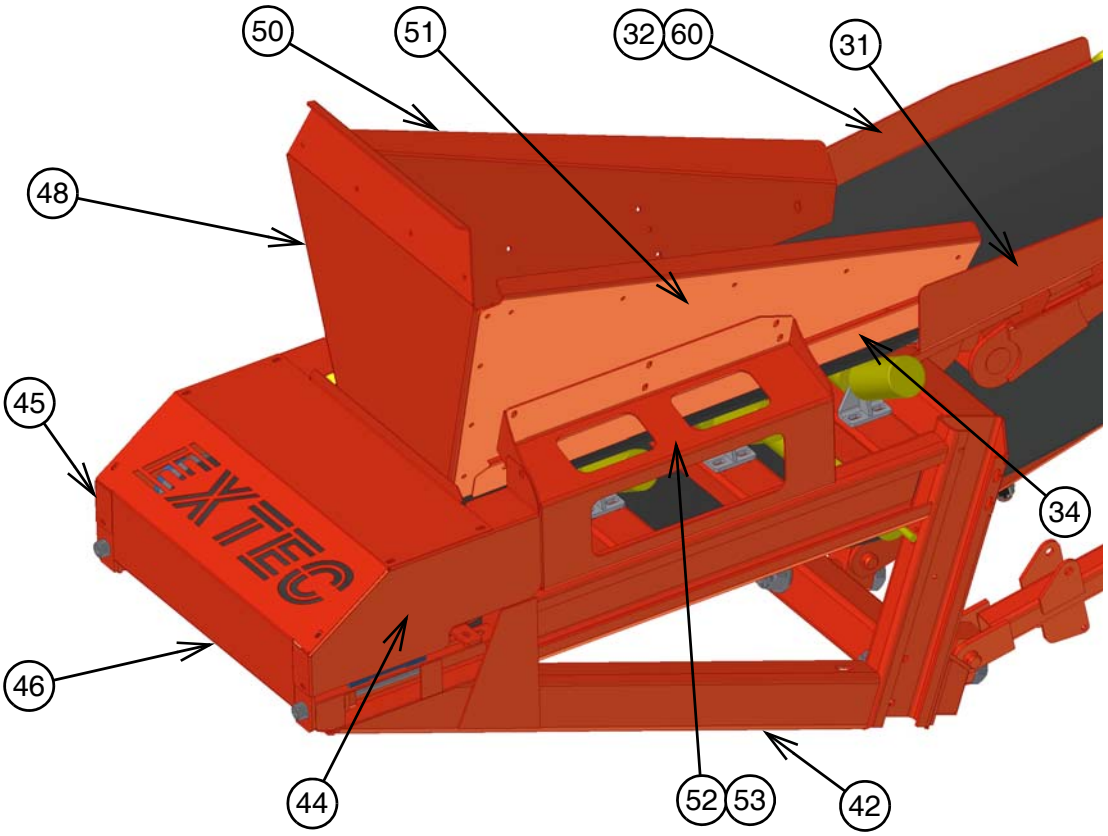
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7. SIDE CONVEYORS



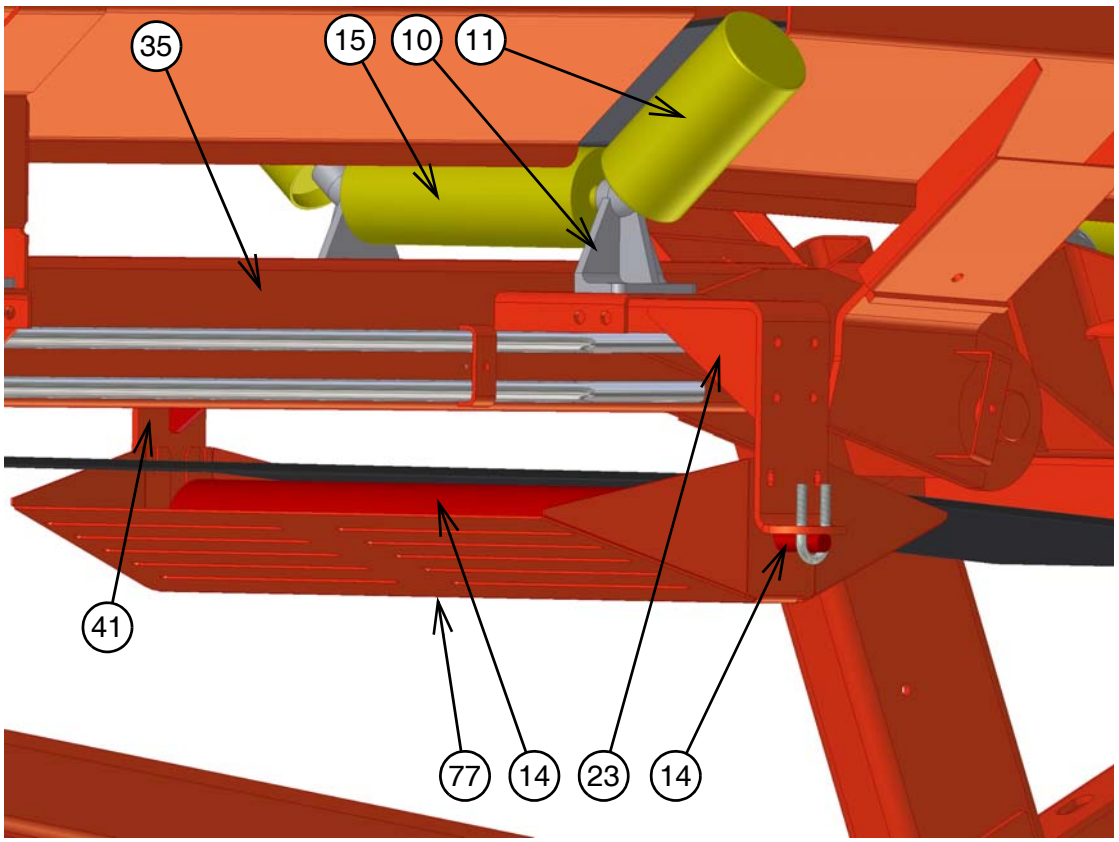
1: VIEW ON L/H FEED BOOT



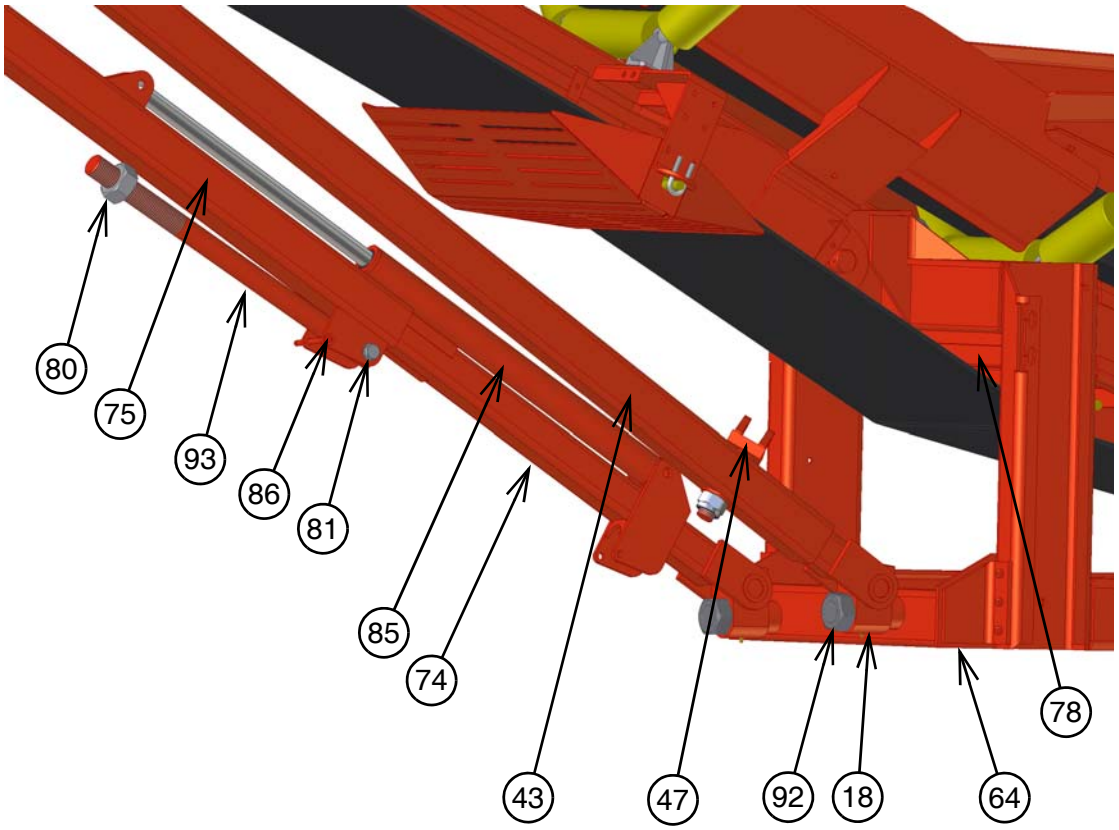
2: VIEW ON R/H FEED BOOT

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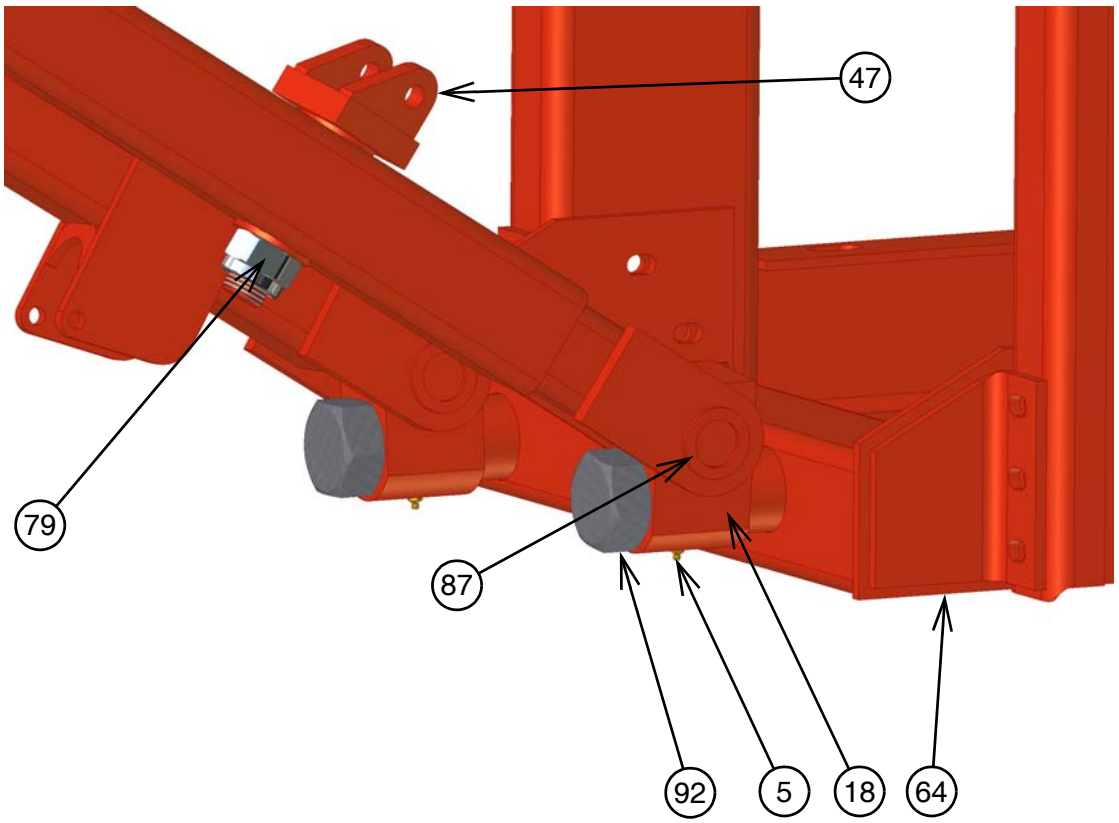


3: VIEW ON CONVEYOR ROLLERS

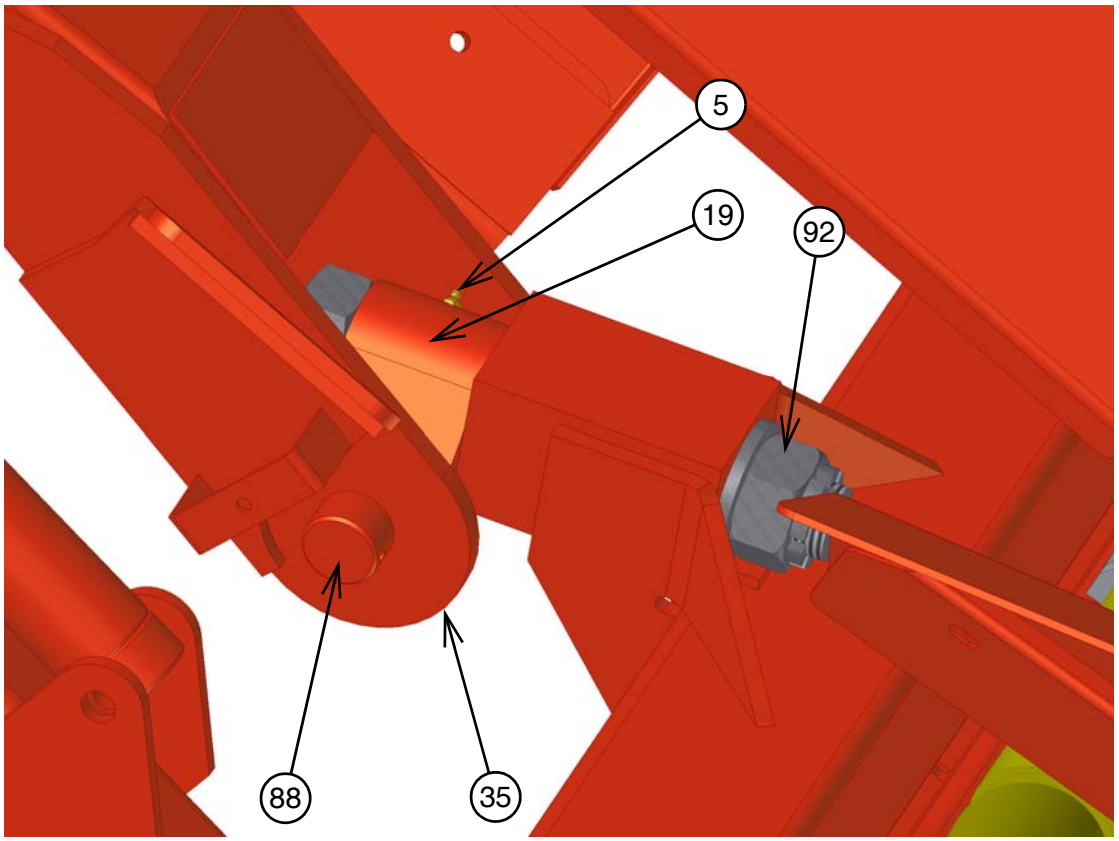


4: VIEW ON R/H SIDE CONVEYOR SUPPORTS

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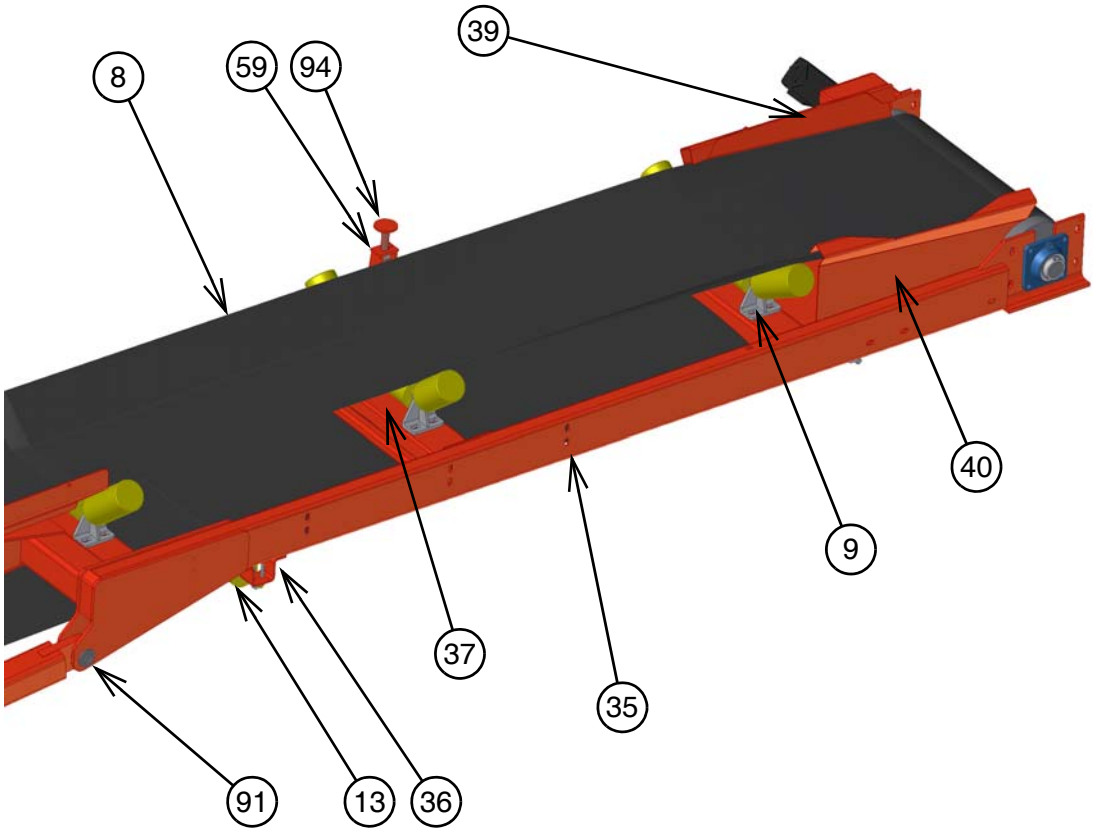
5: VIEW ON R/H CONVEYOR HINGES



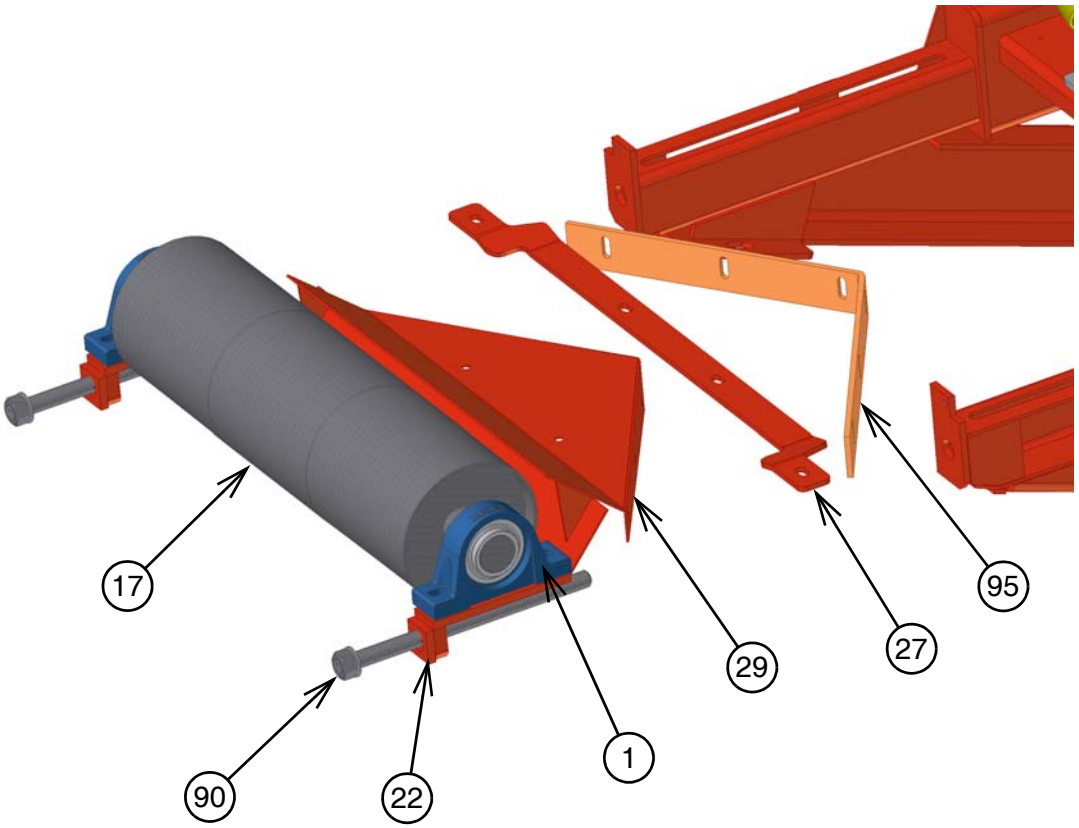
6: SPINE SPIVOT POINT

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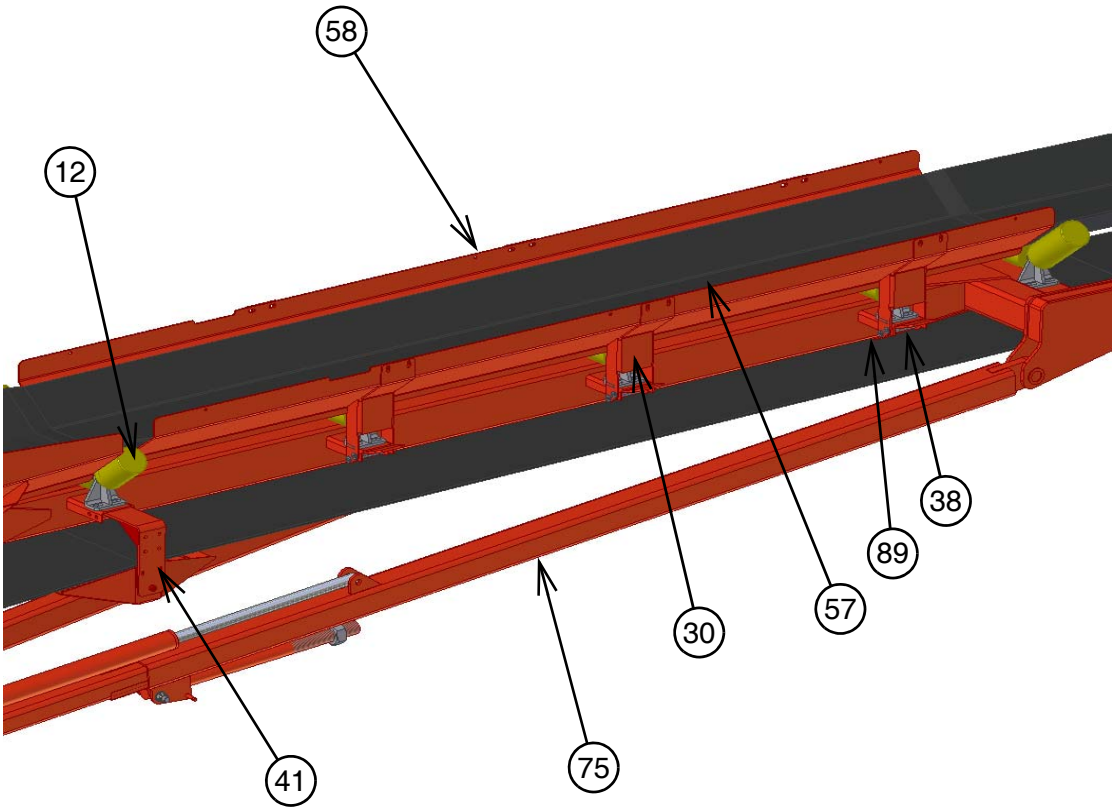


7: CONVEYOR TOP SECTION

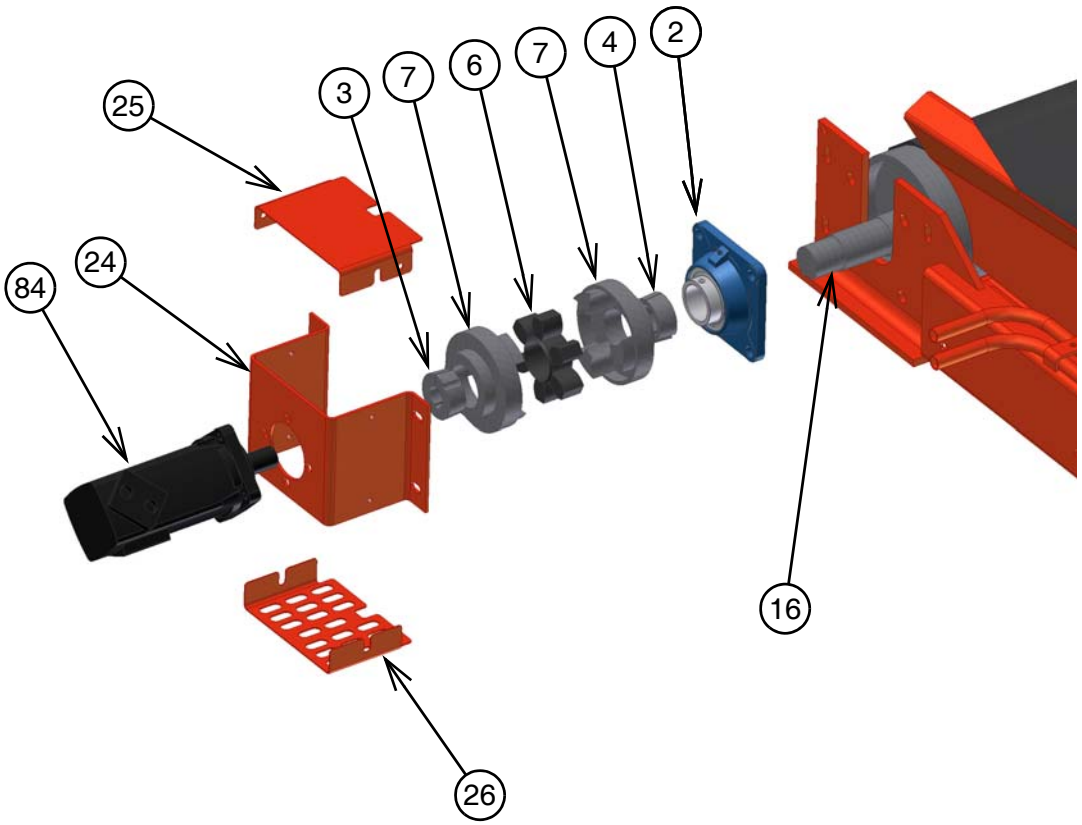


8: VIEW ON TAIL DRUM

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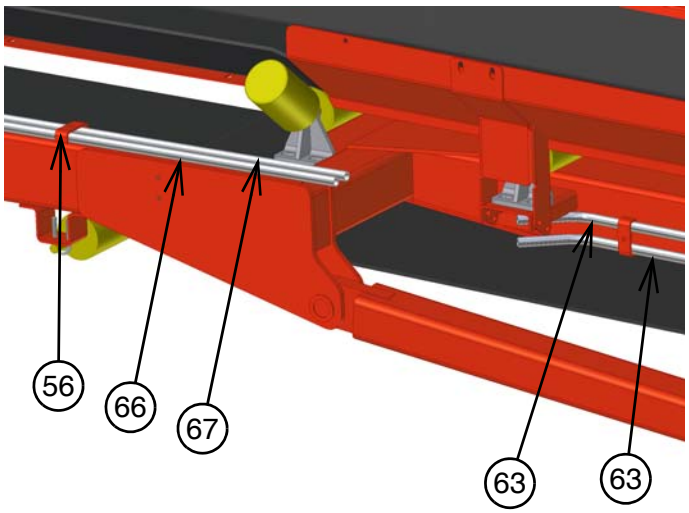
9: VIEW ON CONVEYOR MID SECTION



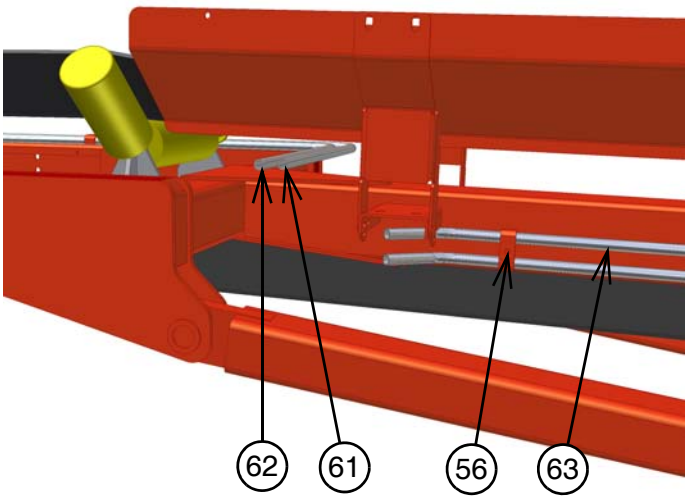
10: DRIVE COUPLING

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11: VIEW OF L/H SIDE CONVEYOR PIPING



12: VIEW OF R/H SIDE CONVEYOR PIPING

Part No.	Part Description	Quantity
1. BT1009	TAIL DRUM PLUMBER BLOCK BEARING SY55TR	2
2. BT2009	BEARING FY55TR	2
3. BT5005	2012/32 T LOCK	2
4. BT5006	2012/50 TAPERLOCK	2
5. BT5501	HP2 1/8" BSP STRAIGHT GREASE NIPPLE (C12)	2
6. BT6514	HRC150 INSERT	2
7. BT6515	SPIDERFLEX COUPLING	2
8. CB20000700CH	20m ENDLESS CHEVRON SIDE /CONV BELT 700mm,EP250/2,3+1	2
9. CR1004	30° ROLLER BRACKET 44XT	20
10. CR1006	40° ROLLER BRACKET 44XV	24
11. CR1011	WING ROLLER	31
12. CR1012	S/CONV WING ROLLER (19EGBCSZAG) 102mm X 150mm	2
13. CR1014	CR1014	4
14. CR1015	SIDE CONVEYOR RETURN ROLLER (UNBALANCED SHAFT)	2
15. CR1016	SIDE CONV CENTRE ROLLER	22
16. E0070000	DRIVE DRUM ASSEMBLY	2
17. E0080000	END DRUM ASSEMBLY	2
18. E0090000	LEG PIVOT BLOCK	4
19. E0100000	SPINE PIVOT BLOCK	2
20. E0110000	CLEVIS PIN	2
21. E0130000	SIDE CONV BELT RETAINING HOOP	0

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Part No.	Part Description	Quantity
22. E0150000	TAILDRUM BEARING SLIDER	4
23. E0190000	SIDE CONV RETURN ROLLER BRKT	2
24. E0230000	SC.MOTOR MTG.BRKT.	2
25. E0240000	MOTOR MTG PLTS	2
26. E0250000	MOTOR COVER	A/R
27. E0330000	SCON PLOUGH SCRAPER FIXING STR	2
28. E0380000	SLAPPER ROLLER	2
29. E0390000	PLOUGH SCRAPER - ALSO ON ORDER	2
30. E0860000	SCONV BTM SECT SIDE FLAIR PIVO	12
31. E0880000	SCONV SIDE FLAIR TOP DECK REMO	1
32. E0890000	SCONV SIDE FLAIR TOP DECK REMO	1
33. E2380000	SIDE CONVEYOR FEED BOOT RUBBER CLAMP	3
34. E2390000	SIDE CONVEYOR FEED BOOT RUBBER CLAMP	1
35. E2600000	QA340 SIDE CONV SPINE ASSY	2
36. E2610000	SIDE CONV RETURN ROLLER BRKT	4
37. E2630000	SIDEC ONV ROLLER PIVOT BRKT	2
38. E2650000	SIDE CONV GREEDY BOARD STOP	6
39. E2660000	QA340 SCONV NIP GD	2
40. E2670000	QA340 SCONV NIP GD	2
41. E2680000	QA340 RETURN ROLLER BRKT	2
42. E2700000	QA340 A - FRAME	2
43. E2720000	SCONV RIGID LEG	2
44. E2780000	QA340 SCONV TAILDRUM GD	2
45. E2790000	QA340 SCONV TAILDRUM GD	2
46. E2800000	QA340 SCONV TAILDRUM CENTRE	2
47. E2810000	QA340 CLEVIS PIN	2
48. E2820000	R/H SIDE CONVEYOR L/H FEED BOOT BACK	1
49. E2840000	L/H SIDE CONVEYOR FEED BOOT BACK	1
50. E2850000	L/H FEED BOOT SIDE R/H	1
51. E2860000	L/H FEED BOOT SIDES	2
52. E2870000	SCONV FEED BOOT SUPPORT	1
53. E2880000	SCONV FEED BOOT SUPPORT	2
54. E2890000	QA340 FEED BOOT CLAMP	1
55. E2900000	SCONV FEED BOOT SUPPORT	1
56. E2910000	SCONV PIPE CLAMP	12

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Part No.	Part Description	Quantity
57. E2920000	SCONV BTM SECT SIDE FLAIR	2
58. E2930000	SCONV BTM SECT SIDE FLAIR	2
59. E2940000	QA340 TRAVEL BRKT	2
60. E2950000	QA340 BTM DECK REMOVABLE	1
61. E2960000	QA340 STEEL PIPE DETAIL	1
62. E2970000	QA340 STEEL PIPE DETAIL	1
63. E2980000	QA340 STEEL PIPE DETAIL	4
64. E2990000	QA340 LOWER CROSSBEAM	1
65. E3000000	QA340 LOWER CROSSBEAM	1
66. E3010000	QA340 SCON STEEL PIPE	1
67. E3020000	QA340 SCON STEEL PIPE	1
68. E3030000	QA340 REMOVABLE SCON BRK	1
69. E3040000	QA340 REMOVABLE SCON BRK	1
70. E3050000	QA340 SCONV BTM DECK REM	1
71. E3060000	SCON TIE BAR / TOOL BOX - S SERIES	1
72. E3070000	SIDE CON TIE BAR LID	1
73. E3080000	SIDE CON TIE BAR/TOOLBOX HINGE SPACER	2
74. E3090000	S4 SCONV TELELEG INNER	2
75. E3100000	S4 SCONV TELELEG OUTER	2
76. E3110000	R/H FEED BOOT SIDE L/H SIDE CONVEYOR	1
77. E3850000	SIDE CONVEYOR RETURN ROLLER GUARD	2
78. E3900000	'S' SERIES SIDE CONVEYOR RETURN ROLLER GUARD	2
79. FAN36N	M36 NYLOC NUT	2
80. FAN48	M48 PLAIN NUT	2
81. FAS20X120	M20x120 SET SCREW	2
82. FD2105	HINGE	2
83. FD3113	SPRING BOLT (0837/001)	4
84. HM1006	CHARLYNN 2K395 BAA MOTOR - TAIL1 SIDE 2	2
85. HR1064	HYDRAULIC RAM	2
86. PN1011	TELE-LEG ADJUSTER ROD PIN	2
87. PN1012	SUPPORT PIN BTM OF LEGS	4
88. PN1013	SUPPORT PIN SPINE	2
89. PN1014	PIN	24
90. PN1031	M24 X 380 ADJUSTER BOLT	4
91. PN1039	SUPPORT PIN TOP OF LEGS	4

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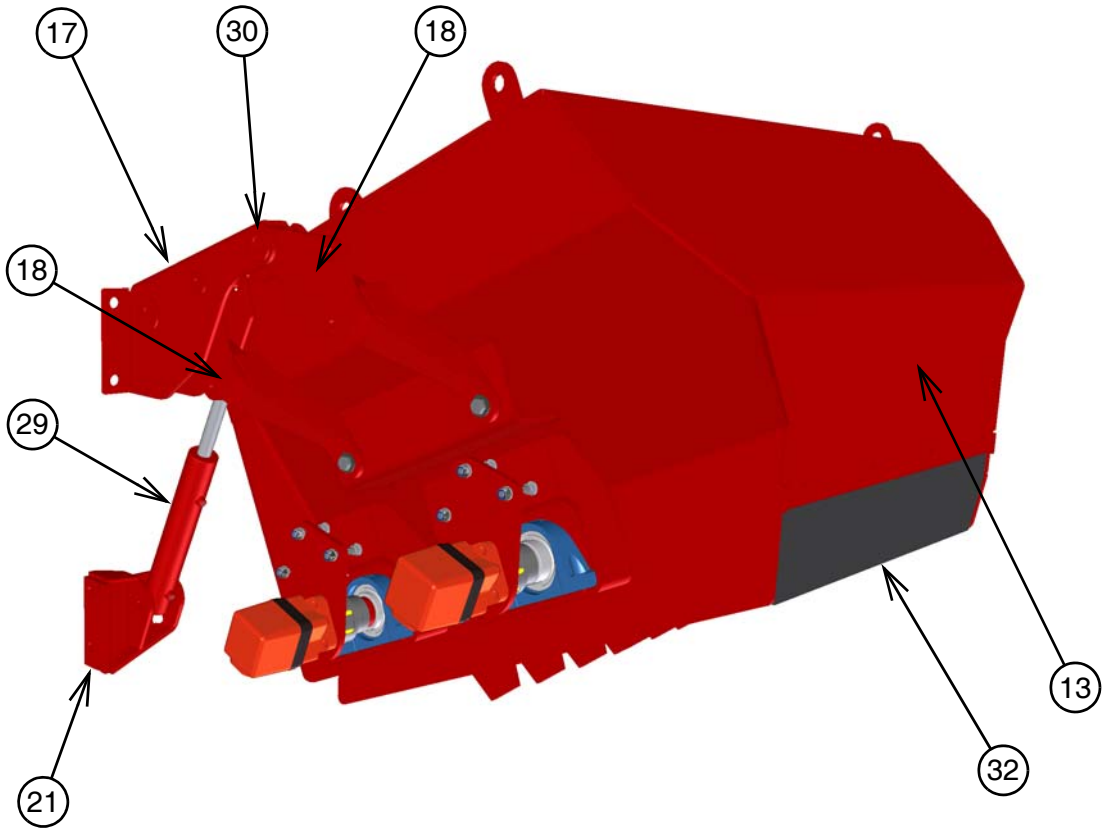
Part No.	Part Description	Quantity
92. PN1060	M48 x 320 BOLT & CASTLE NUT	6
93. PN1066	LOCK OUT RODS	2
94. PN1128	S SERIES SIDE CON STOWAGE ADJUSTER PIN	2
95. PY1001	900 x 65 x 8mm P.SCRAPER (6 SLOTS)	2
96. RU1006	BIR 1500 X 100 X 10	4

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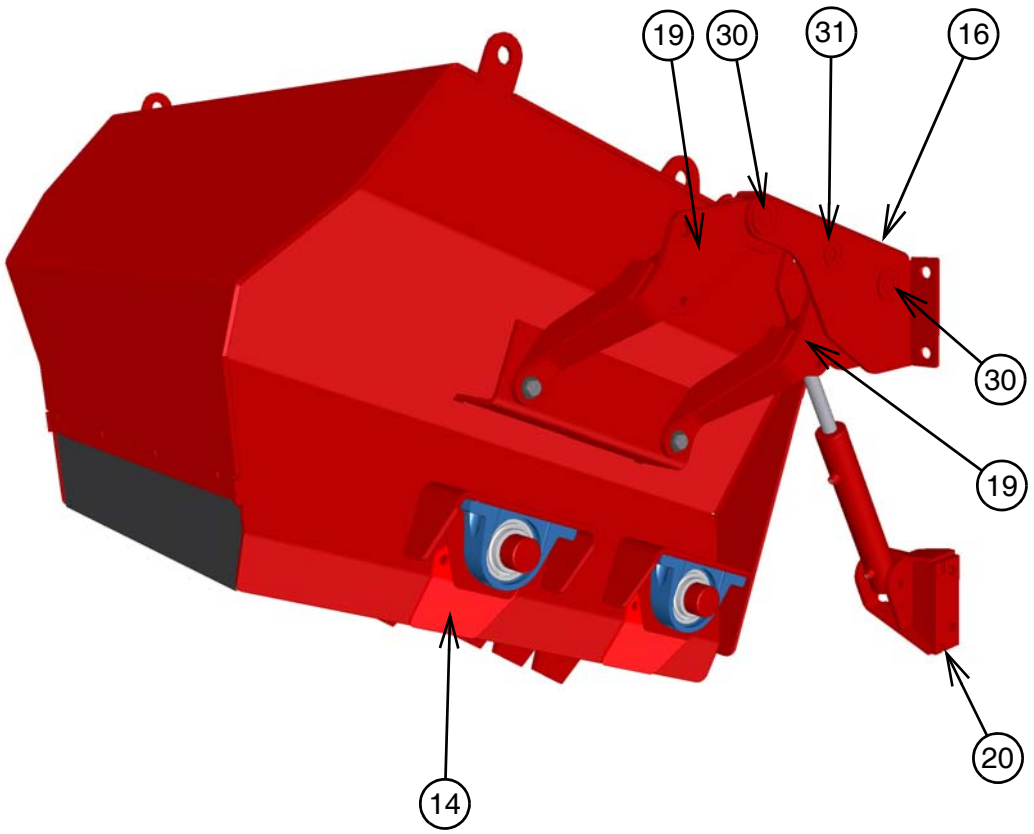
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8. SHREDDER



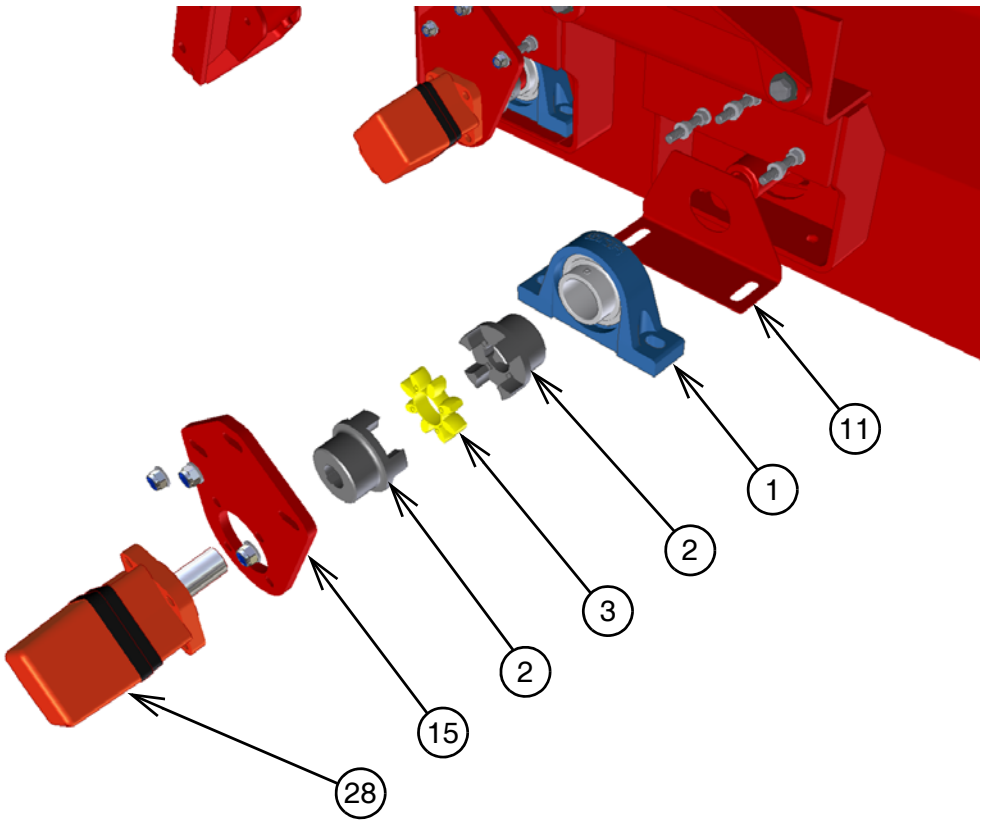
1: DRIVE SIDE LIFT ARMS



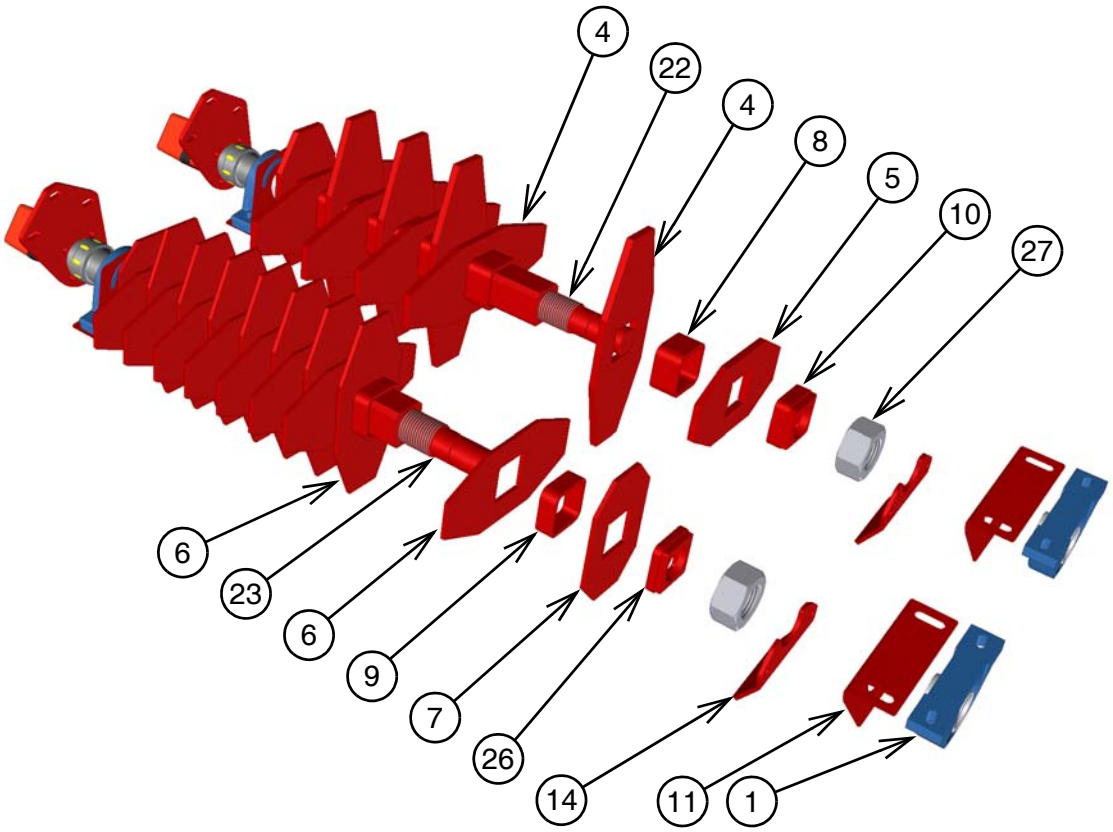
2: NON DRIVE SIDE LIFT ARMS

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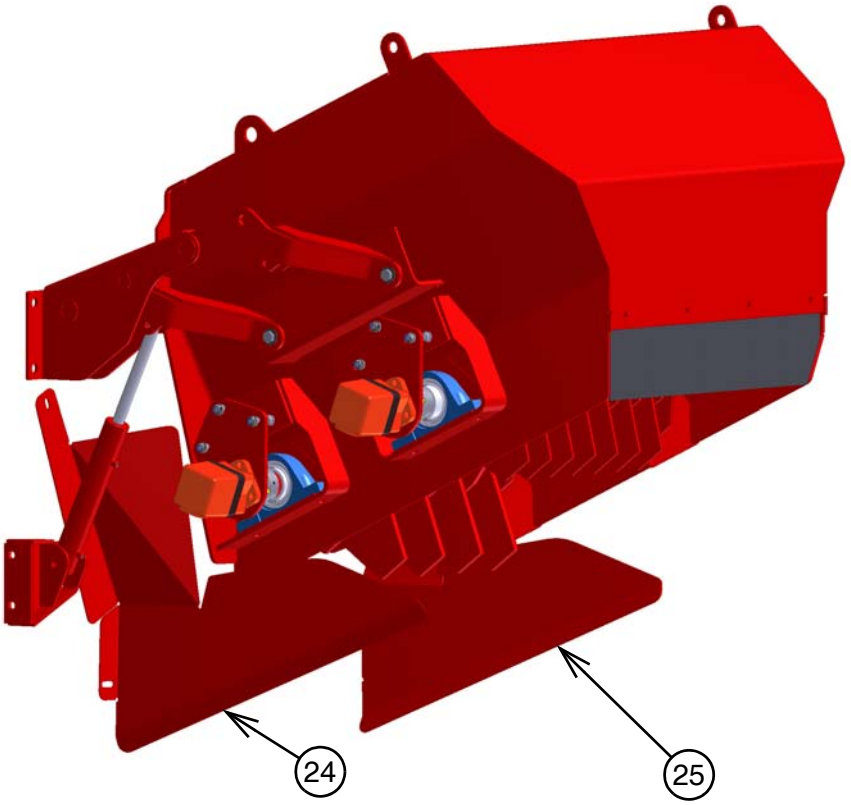


3: DRIVE COUPLING



4: SHREDDER FLAIL

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5: DISCHARGE CHUTES

Part No.		Part Description	Quantity
1.	BT1010	PLUMMER BEARING	4
2.	BT6535	COUPLING COMPLETE	1
3.	BT6552	INSERT	1
4.	C0640000	FLAIL	8
5.	C0650000	FLAIL	2
6.	C0660000	FLAIL	15
7.	C0670000	FLAIL	2
8.	C0680000	FLAIL SPACER 58 mm	9
9.	C0690000	FLAIL SPACER 34.5 mm	16
10.	C0700000	FLAIL LOCKING CAP	1
11.	C6990000	DUST PLATE	1
12.	C7320000	FLAIL SPACER 32 mm	A/R
13.	C7740000	SHREDDER ASSY	1
14.	C7750000	COVER PLATE	2
15.	C7770000	SHREDDER MTR	2

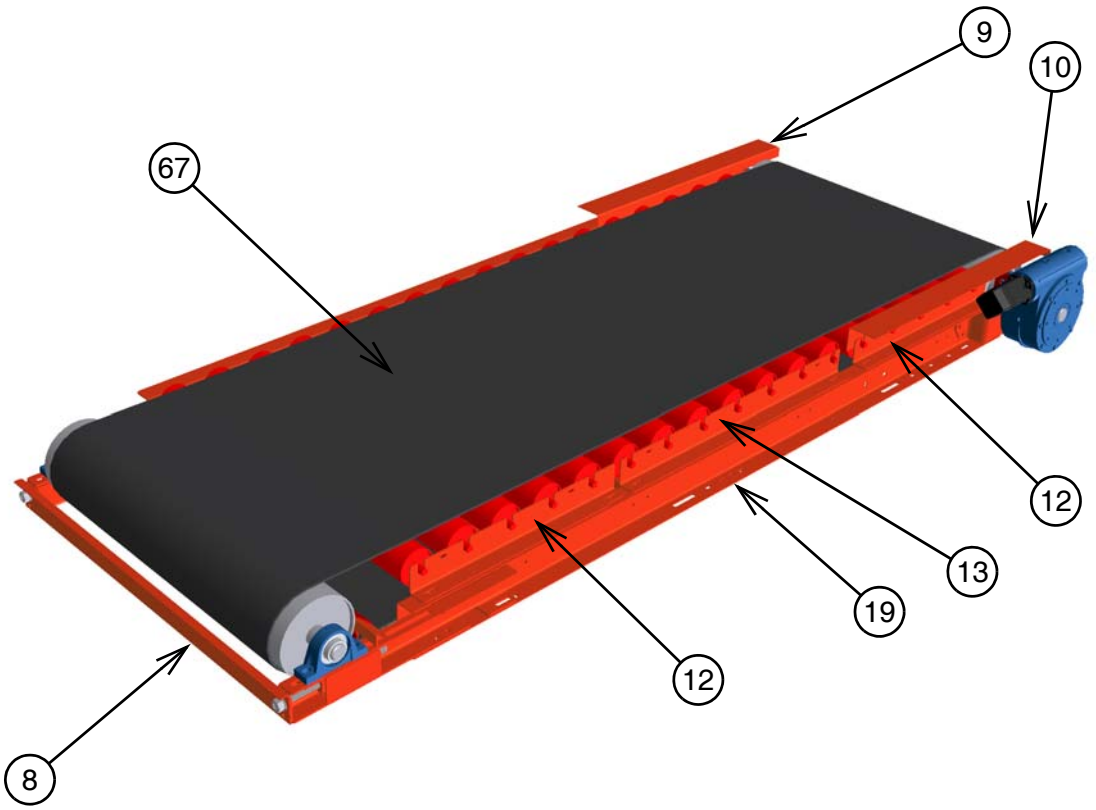
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ID: QA340-en-11858

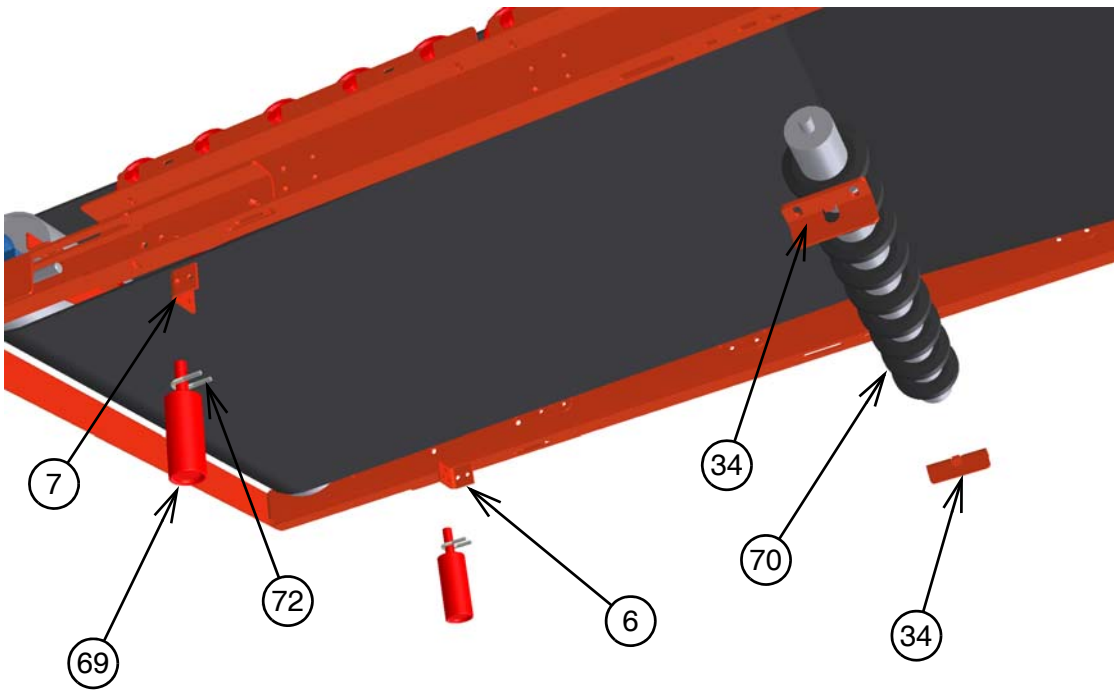
Part No.	Part Description	Quantity
16. C7780000	SHREDDER BRACKET	1
17. C7790000	SHREDDER BRACKET	1
18. C7800000	SHREDDER BRACKET	2
19. C7810000	SHREDDER BRACKET	2
20. C7820000	SHREDDER BRACKET	1
21. C7830000	SHREDDER BRACKET	1
22. C7840000	SHAFT	1
23. C7850000	SHAFT	1
24. C7860000	DEFLECTOR PLATE	1
25. C7870000	DEFLECTOR PLATE	1
26. C8100000	LOCKING CAP	1
27. FAN68	M68 GRADE 8 NUT 6MM PITCH	2
28. HM1028	HYDRAULIC MOTOR	2
29. HR1001	HYDRAULIC RAM	2
30. PN1074	PIN - M30X90	4
31. PN1078	PIN - M95X20	2
32. RU1146	SHREDDER RUBBER	1

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9. HOPPER



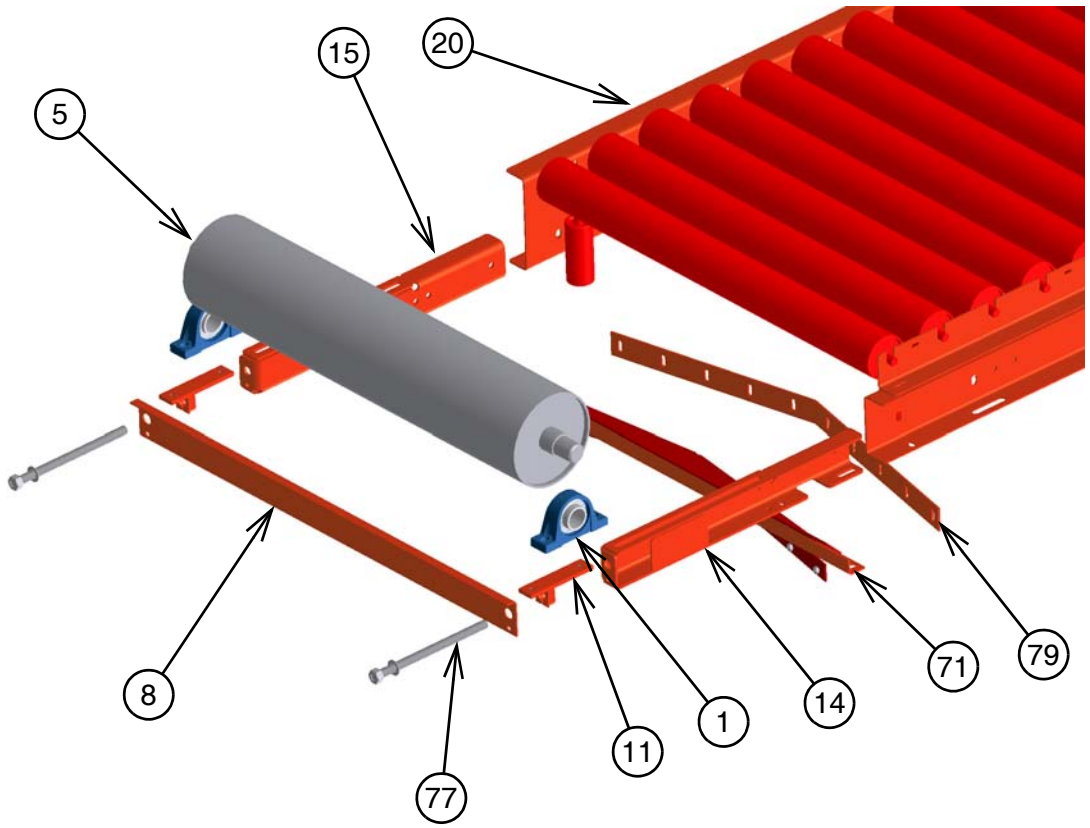
1: CONVEYOR



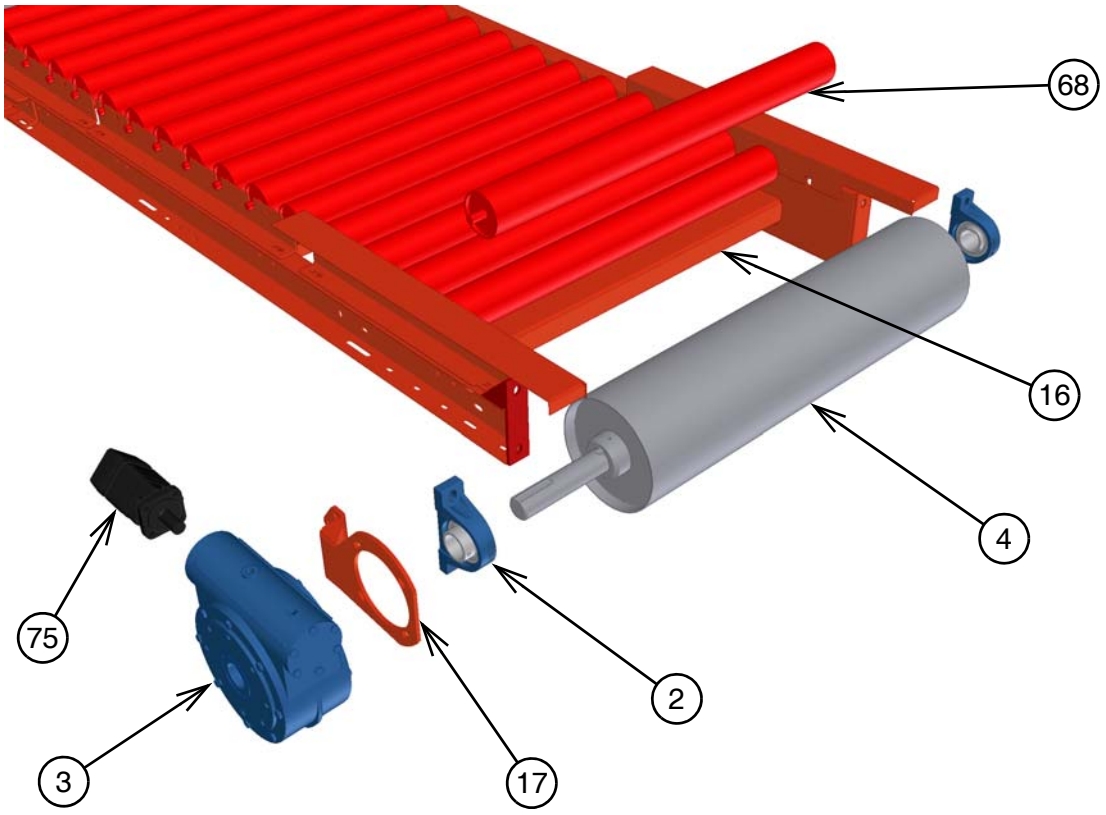
2: RETURN ROLLERS

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ID: QA340-en-11858

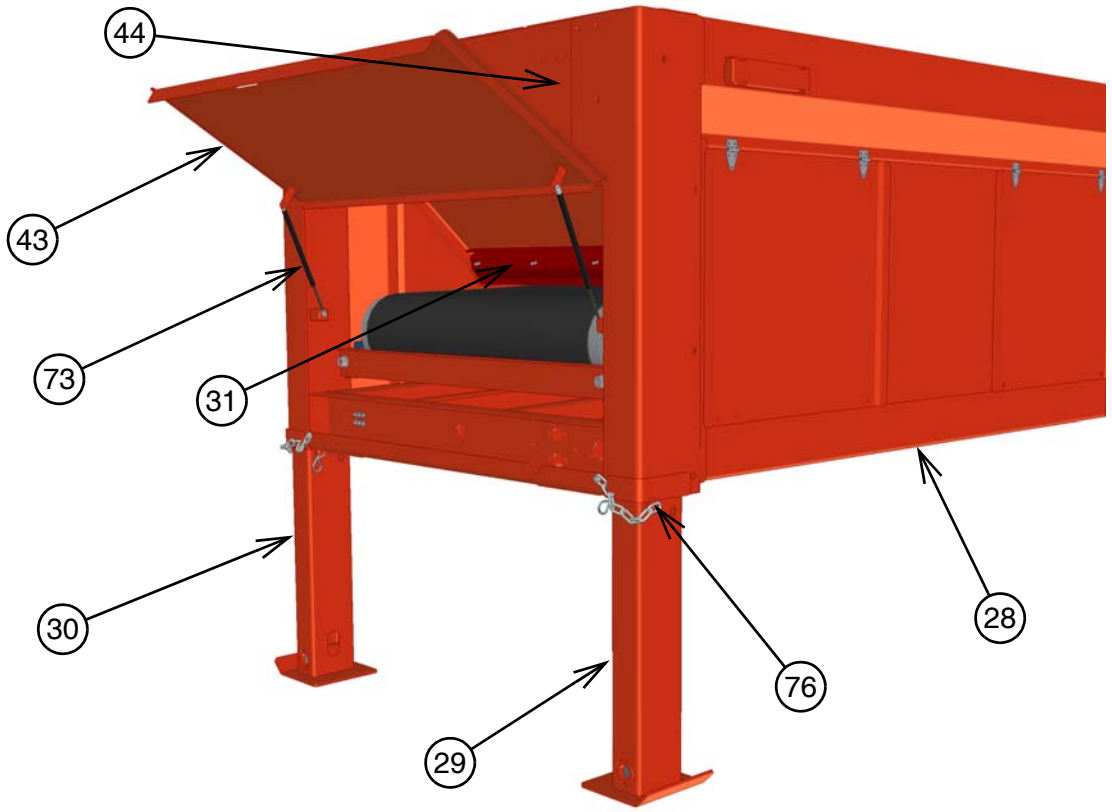


3: DETAILED VIEW OF TAIL DRUM

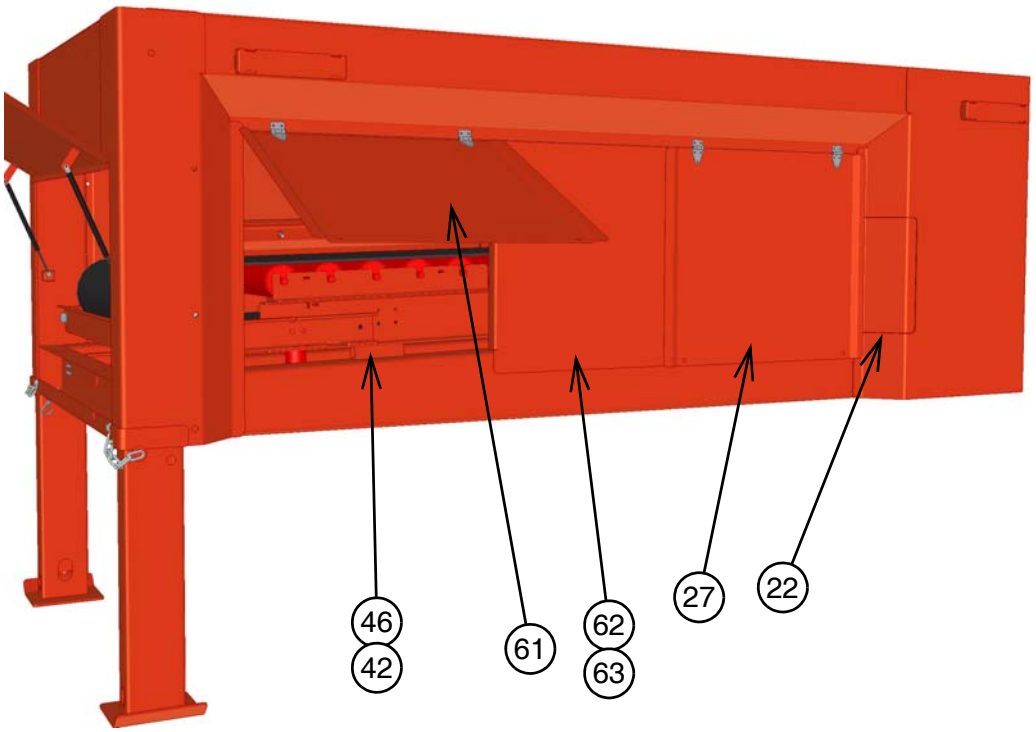


4: VIEW ON HEAD DRUM

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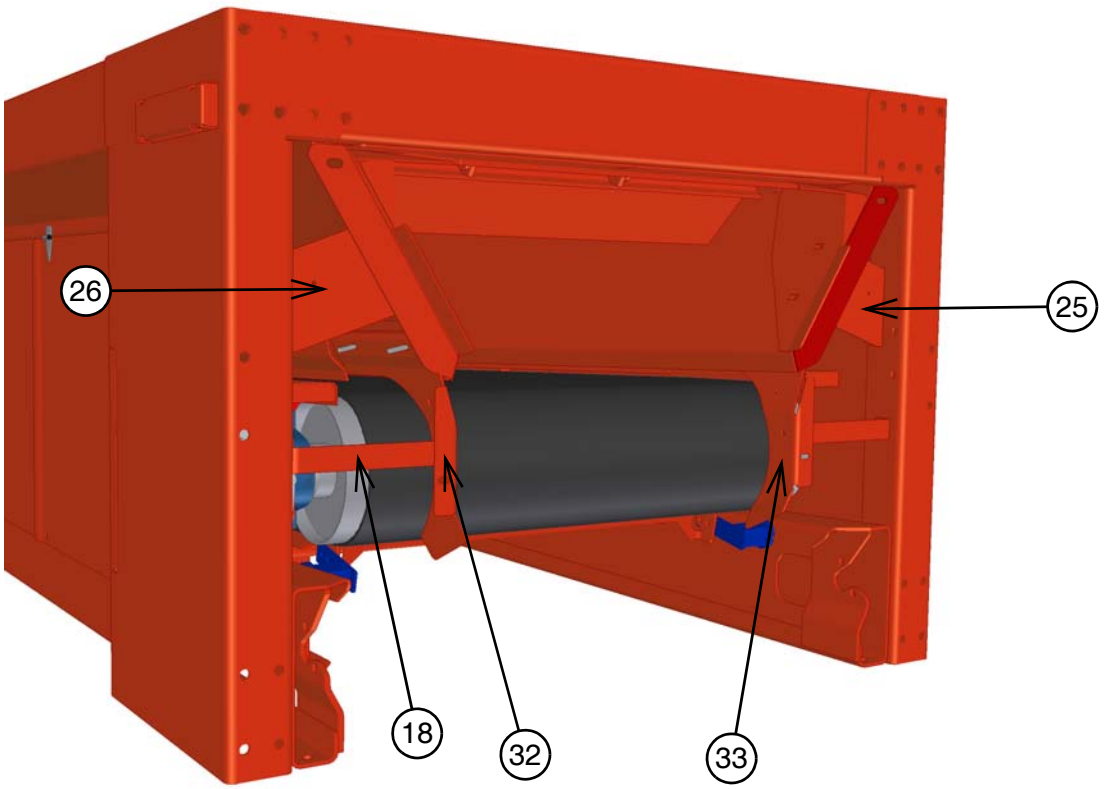


5: HOPPER REAR

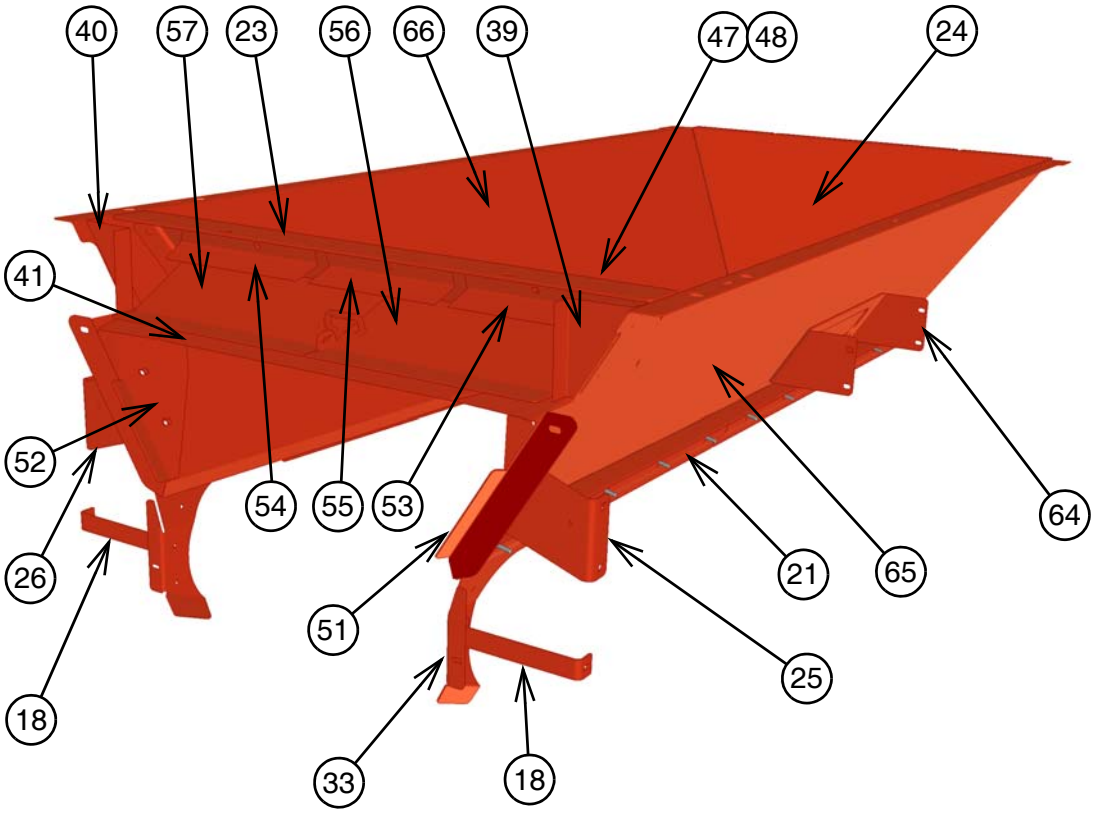


6: VIEW ON HOPPER SIDE

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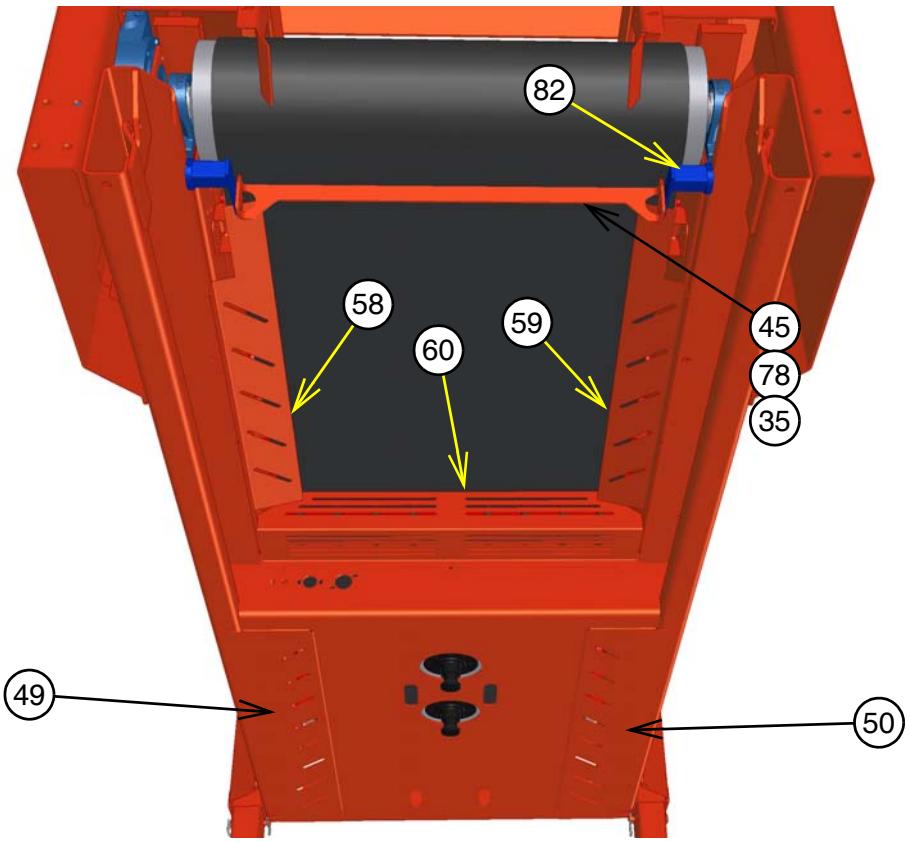


7: HOPPER FRONT

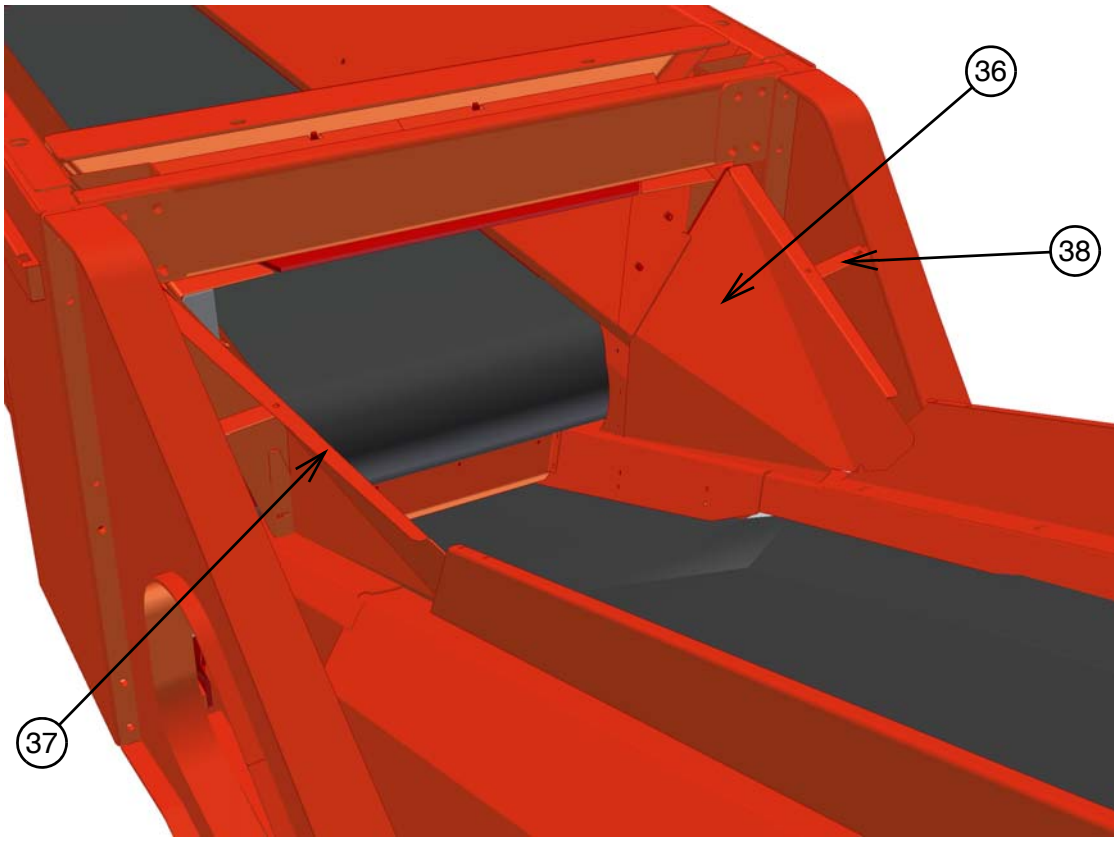


8: HOPPER FEED BOOT

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9: HOPPER UNDERSIDE



10: DISCHARGE CHUTE

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Part No.	Part Description	Quantity
1. BT1009	BEARING PLUMMER SY55TR	2
2. BT1011	BEARING PLUMMER SY65TF	2
3. BT6528	WORM DRIVE GEARBOX	1
4. C0080000	DRIVE DRUM	1
5. C0090000	TAIL DRUM	1
6. C0140000	TRACKING ROLLER BRACKET	1
7. C0150000	TRACKING ROLLER BRACKET	1
8. C0170000	CROSS BRACE	1
9. C0180000	FRONT ROLLER GUIDE	1
10. C0190000	ROLL GUIDE	1
11. C0920000	BEARING ADJUSTER	2
12. C1940000	BED ROLL BRACKET	2
13. C1950000	BED ROLL BRACKET	1
14. C4090000	SLIDER ASSY	1
15. C4100000	SLIDER ASSY	1
16. C4110000	CROSS BEAM BOLT UP	4
17. C4440000	MOUNTING PLATE	1
18. C6520000	DRUM SEAL SUPPORT	2
19. C6540000	L/H SIDE FRAME	1
20. C6550000	R/H SIDE FRAME	1
21. C6640000	RUBBER CLAMP	6
22. C7410000	MOTOR DOOR	1
23. C7420000	FRONT PANEL	1
24. C7430000	HOPPER BIN	1
25. C7460000	BIN GUSSET	1
26. C7470000	BIN GUSSET	1
27. C7510000	HOPPER DOOR	2
28. C7520000	HOPPER DOOR	2
29. C7530000	HOPPER TELELEG	1
30. C7540000	HOPPER TELELEG	1
31. C7550000	RUBBER CLAMP	1
32. C7560000	DRUM SEAL PLATE	1
33. C7570000	DRUM SEAL PLATE	1
34. C7580000	RETURN ROLLER BRACKET	2

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Part No.	Part Description	Quantity
35. C7590000	SCRAPER CLAMP	1
36. C7610000	DISCHARGE CHUTE	1
37. C7620000	DISCHARGE CHUTE	1
38. C7640000	DISCHARGE BRACKET	2
39. C7650000	PIPE COVER	1
40. C7660000	PIPE COVER	1
41. C7670000	CAT FLAP ASSY	1
42. C7680000	CASSETTE SUPPORTS	4
43. C7690000	BACK DOOR	1
44. C7700000	CROSSBEAM	1
45. C7730000	SCRAPER CLAMP	1
46. C7930000	HOPPER CASS SUPPT	2
47. C7950000	HOPPER MOUTH REDUCER	1
48. C7960000	HOPPER MOUTH REDUCER	1
49. C8080000	BELLY GUIDE	1
50. C8090000	BELLY GUIDE	1
51. C9000000	SEALING PLATE	1
52. C9010000	SEALING PLATE	1
53. C9020000	SEALING BRACKET	1
54. C9030000	SEALING BRACKET	1
55. C9040000	SEALING BRACKET	1
56. C9840000	SEALING PLATE	1
57. C9850000	SEALING PLATE	1
58. C10640000	UNDER GUARD	1
59. C10650000	UNDER GUARD	1
60. C10850000	ROLLER GUARD DETAIL	1
61. C11430000	FRAME ASSY	1
62. C11440000	FRAME CENTRE PANEL	1
63. C11450000	FRAME CENTRE PANEL	1
64. C11460000	BIN CENTRE SUPPORT BRACKET	2
65. C11470000	BIN SIDE ASSY	1
66. C11480000	BIN SIDE ASSY	1
67. CBHD79001200	HEAVY DUTY BELT	1
68. CR1001	BED ROLLER	18
69. CR1004	TRACKING ROLLER	2

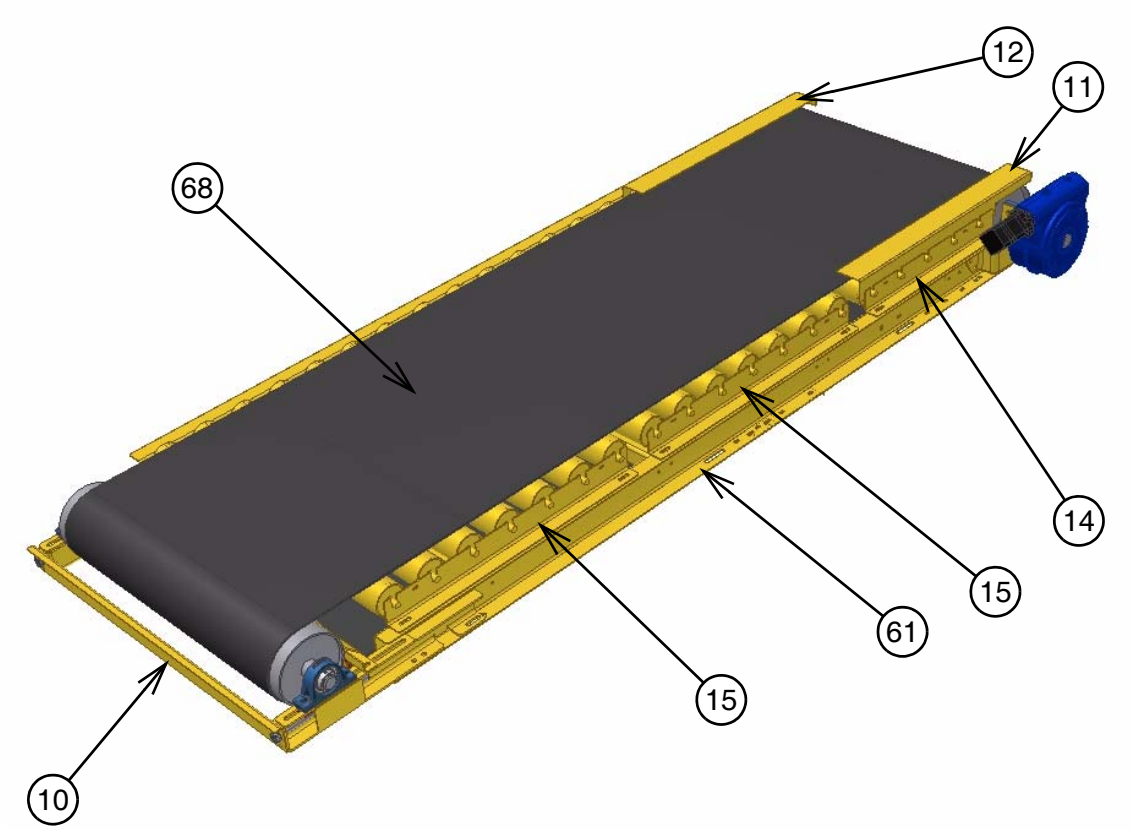
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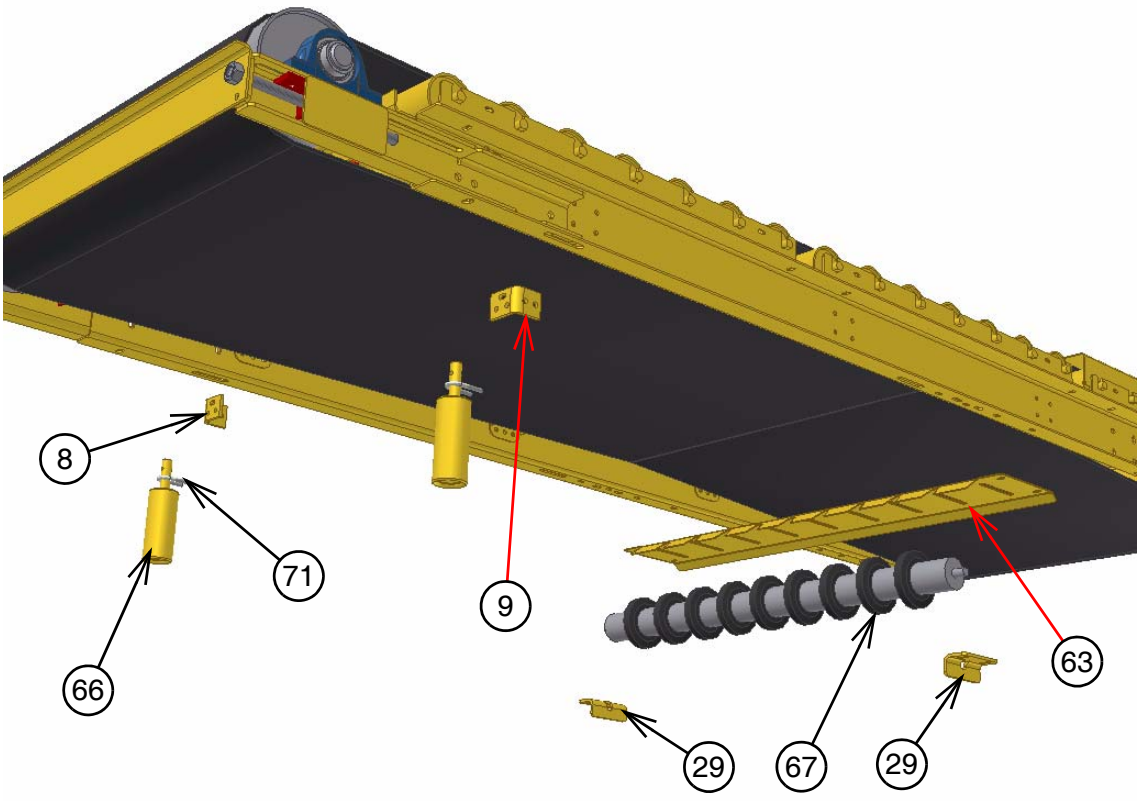
Part No.	Part Description	Quantity
70. CR1052	RETURN ROLLER	1
71. D11490000	TAIL DRUM SCRAPER	1
72. FAB1004	U BOLT	2
73. FD1005	GAS STRUTS	2
74. FD2105	HINGE 3+2 HOLE	10
75. HM1005	HYDRAULIC MOTOR	1
76. PN1008	PIN	2
77. PN1031	ADJUSTER BOLT M24X360	2
78. PY1007	POLYURETHANE SCRAPER	1
79. PY1012	POLY SCRAPER	1
80. RU1023	BIR 4000 X 90 X 10	2
81. RU1024	BIR 1000 X 90 X 10	1
82. RU5501	TENSIONING ELEMENT	2

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10. EXTENDED HOPPER



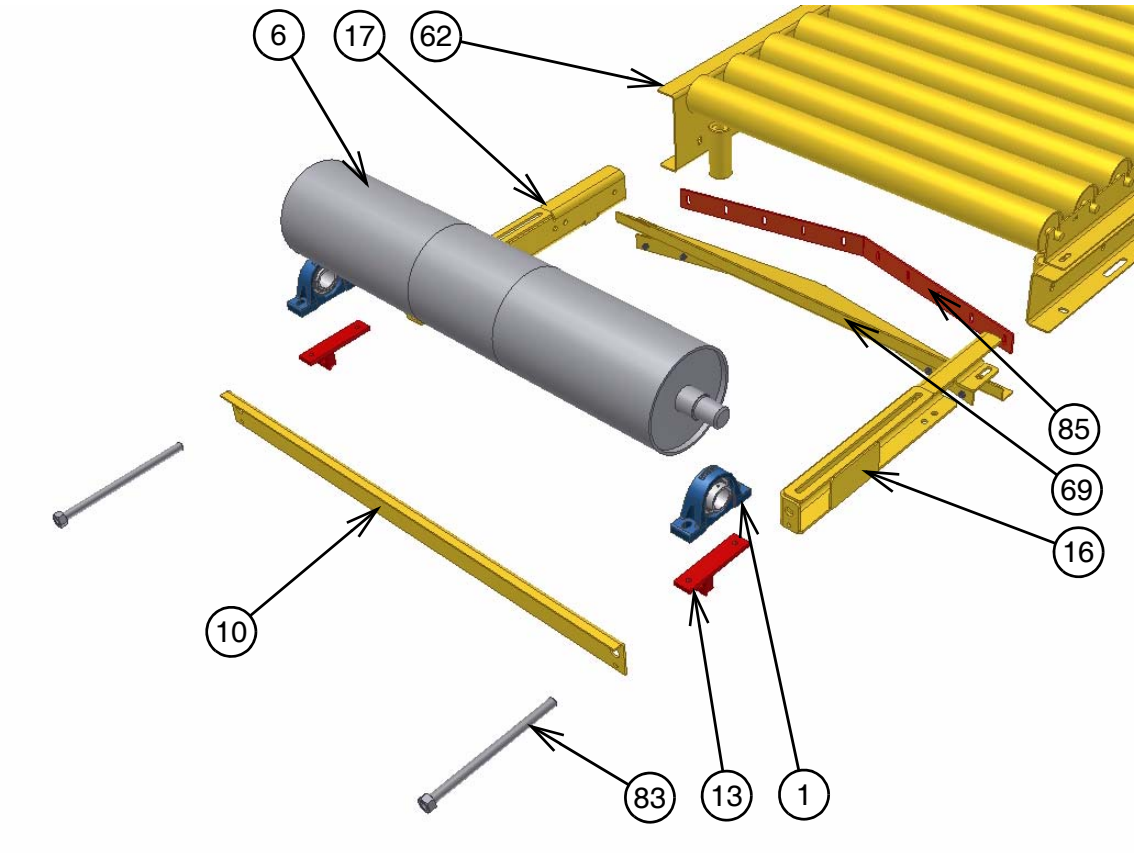
1: CONVEYOR



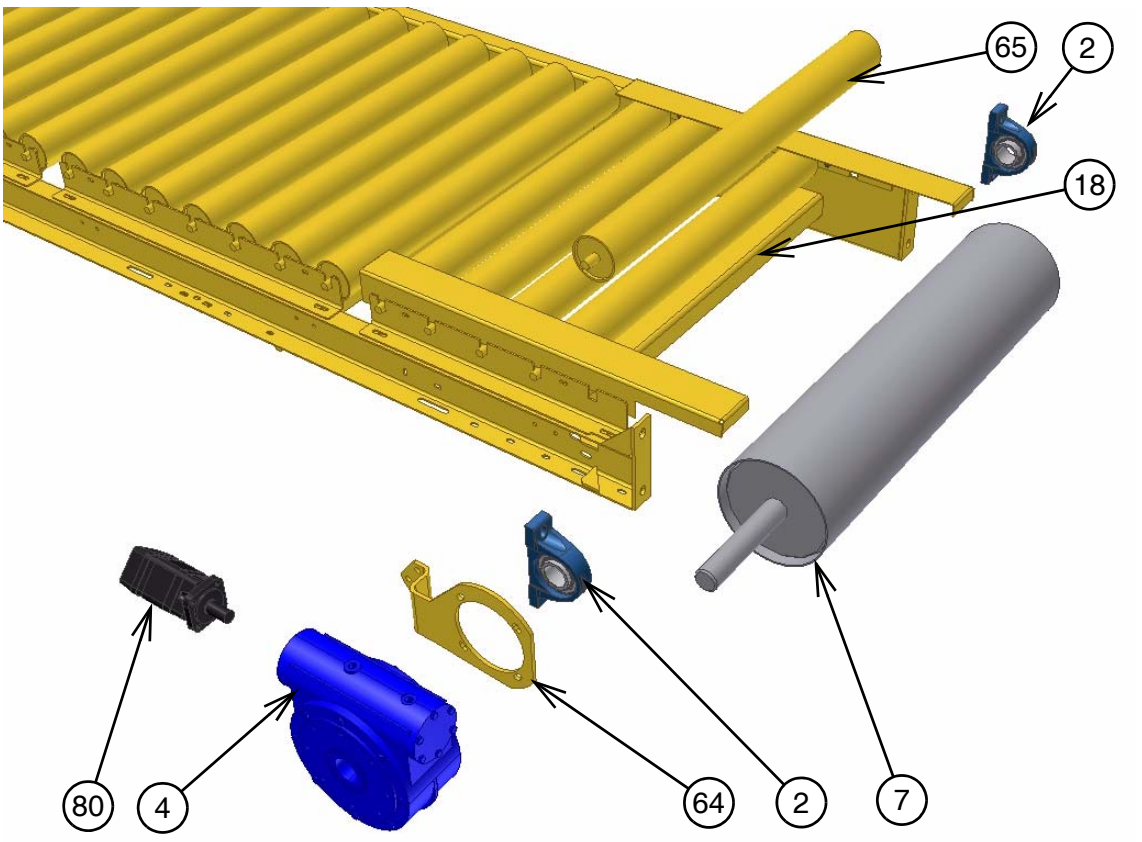
2: RETURN ROLLERS

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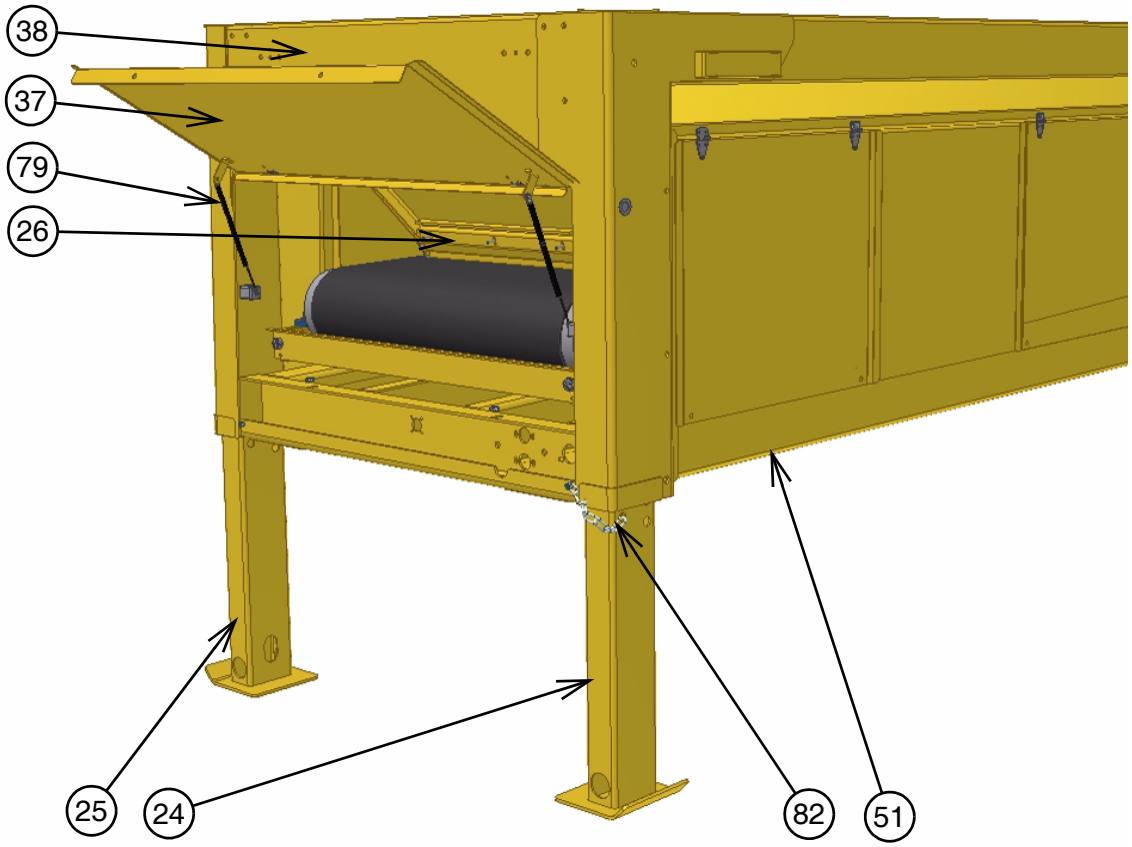


3: DETAILED VIEW OF TAIL DRUM

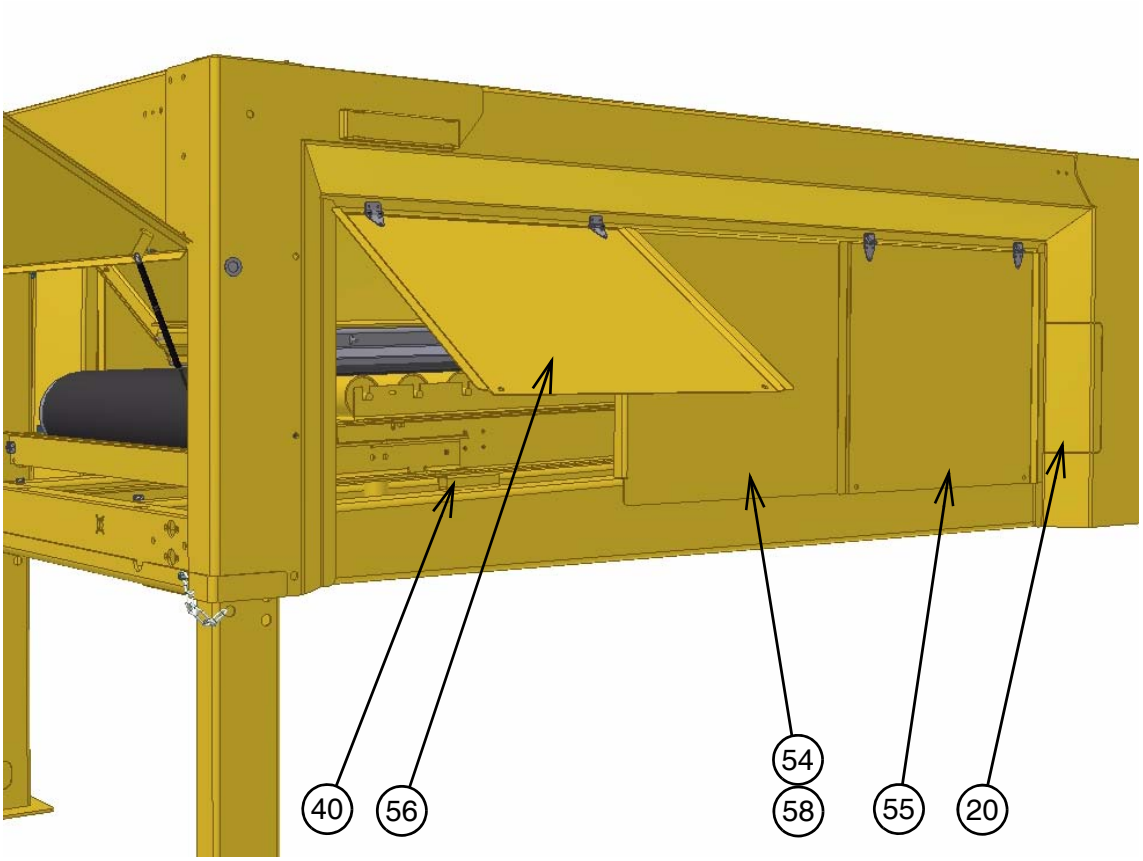


4: VIEW ON HEAD DRUM

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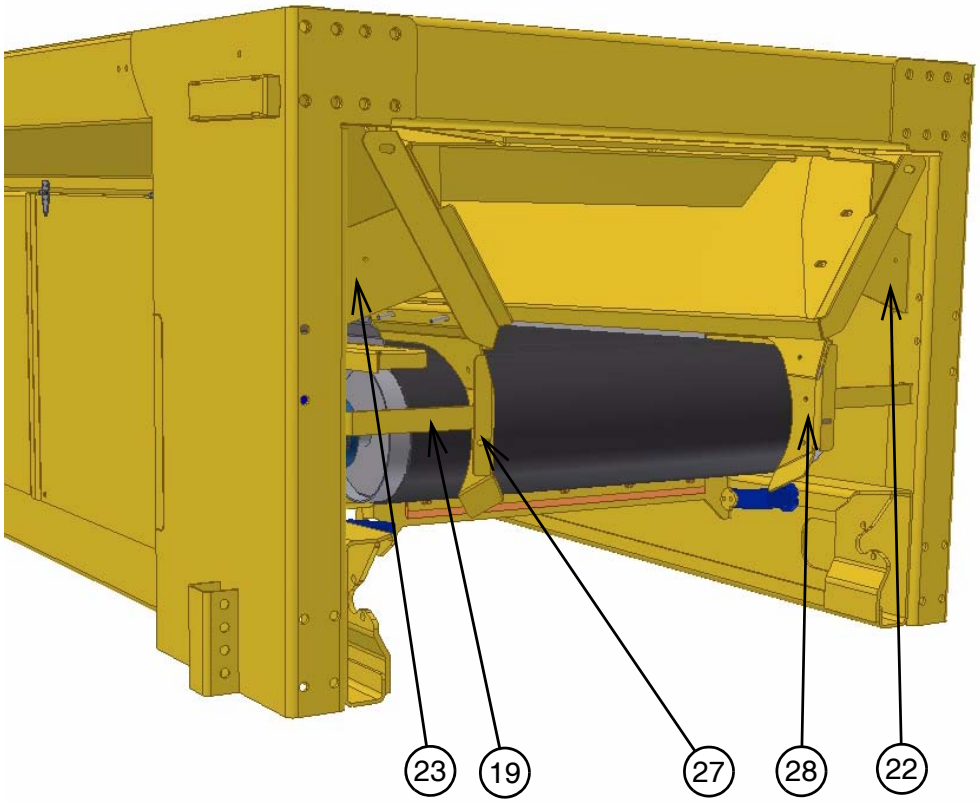
5: VIEW ON HOPPER REAR



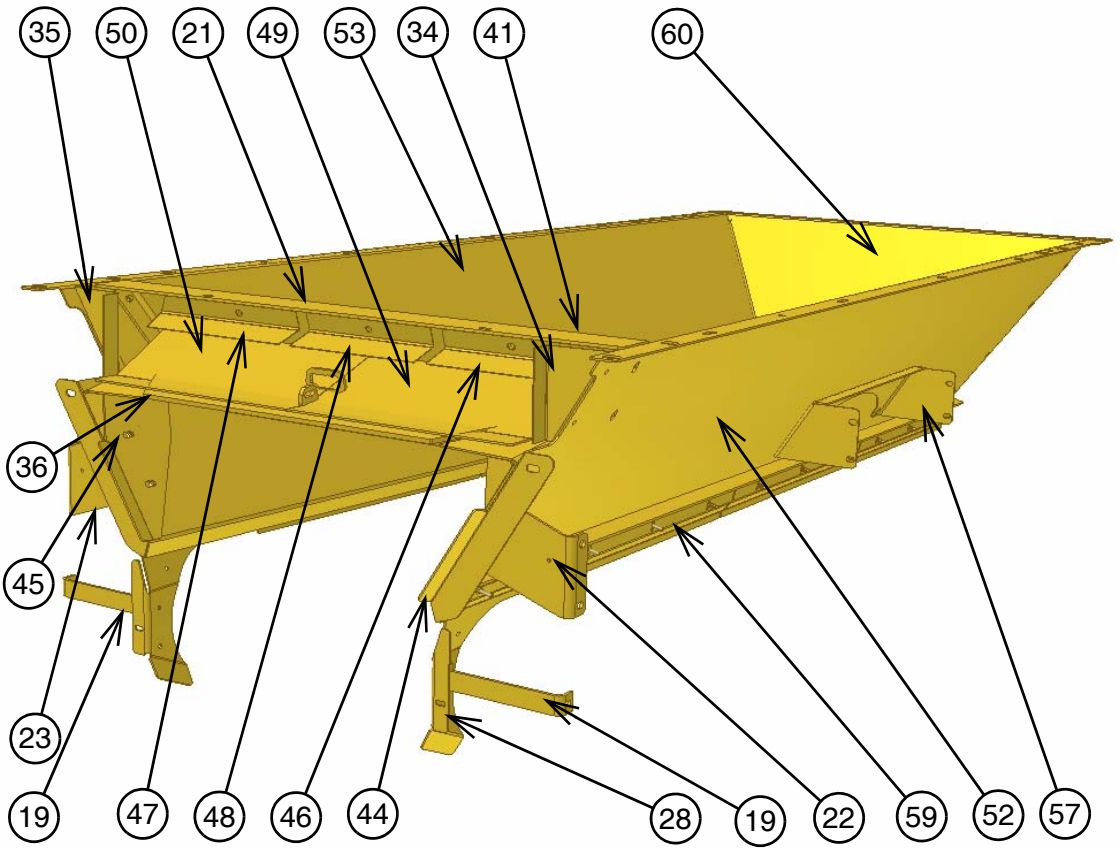
6: VIEW ON HOPPER SIDE

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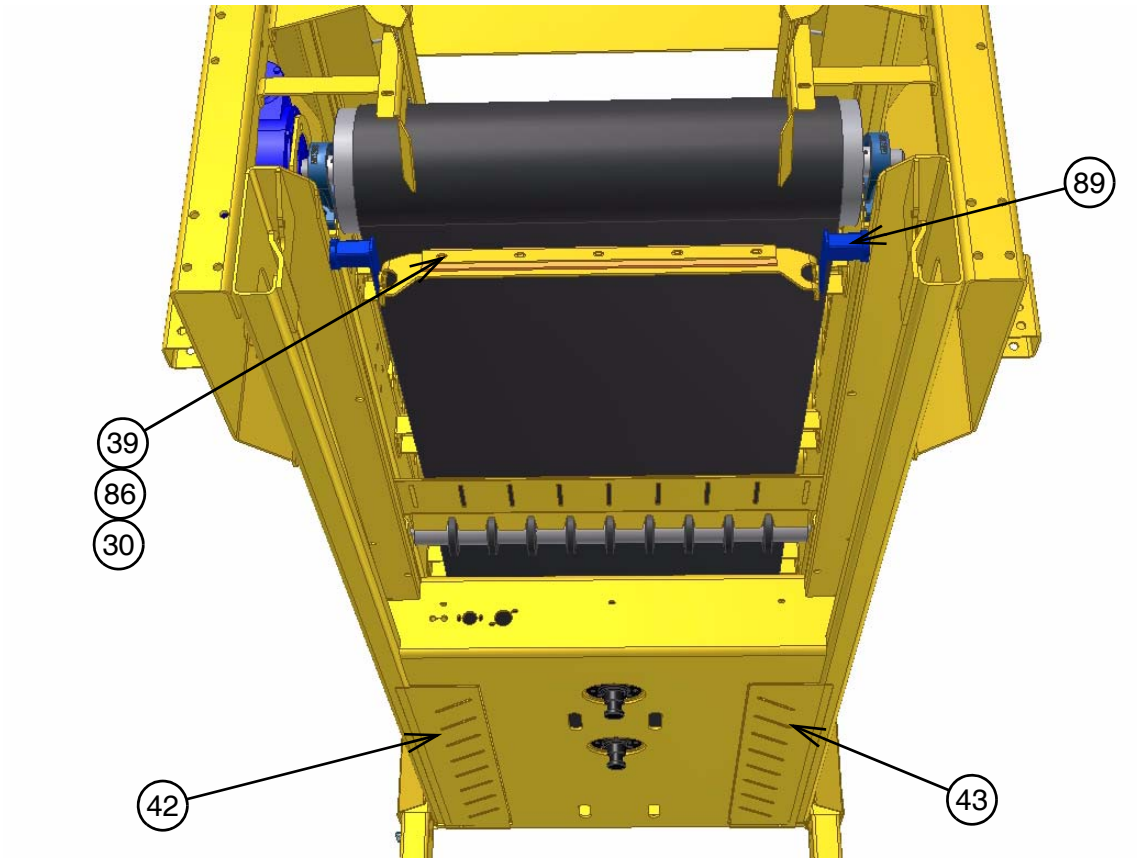


7: VIEW ON HOPPER FRONT

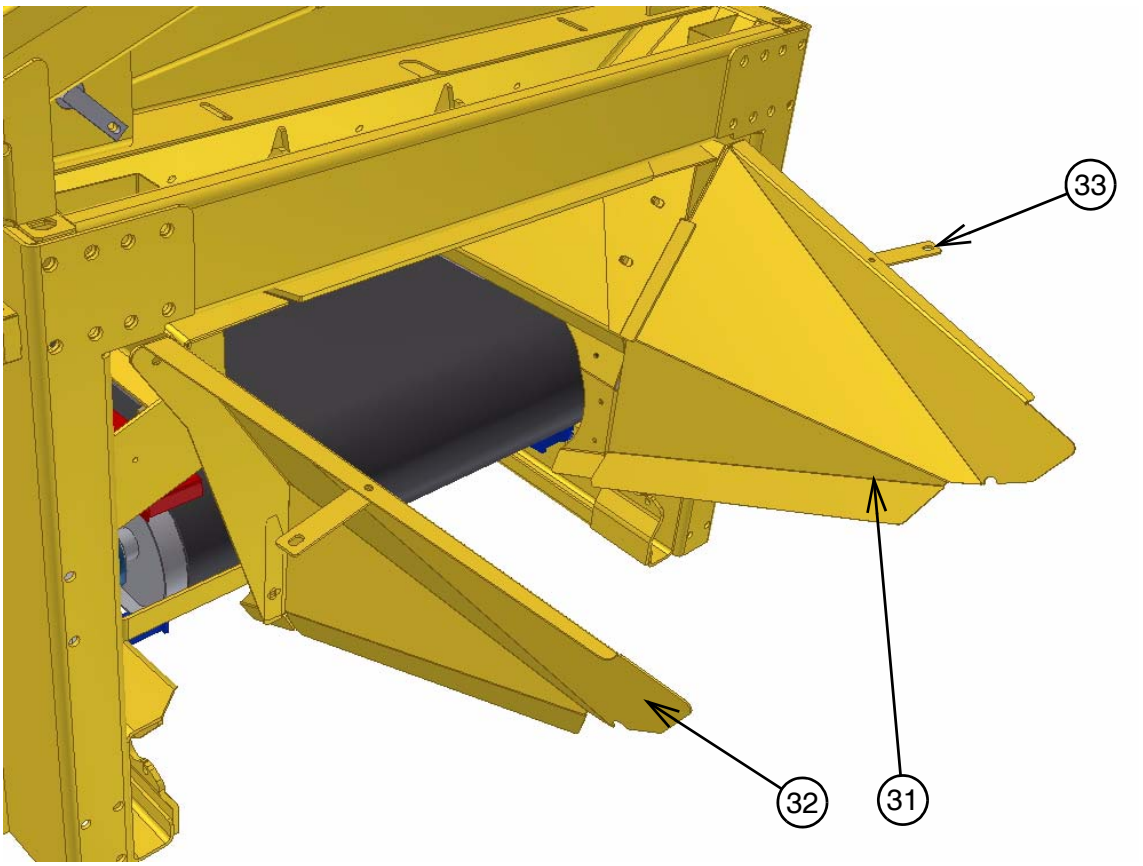


8: VIEW ON FEED BOOT

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9: VIEW ON HOPPER UNDERSIDE



10: VIEW ON DISCHARGE CHUTE

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Part No.	Part Description	Quantity
1. BT1003	TAIL DRUM PLUMMER BEARING	2
2. BT1005	HEAD DRUM PLUMMER BEARING	2
3. BT1011	<NO DESCRIPTION>	2
4. BT6550	SCWO160 [20 : 1]WORM DRIVE G/BOX 1-7310 REV A	1
5. BT8000	GREASE NIPPLE	4
6. C0090000	HOPPER CASSETTE TAIL DRUM	1
7. C0080000	<NO DESCRIPTION>	1
8. C0140000	CASSETTE L/H TRACKING ROLLER BRACKET	1
9. C0150000	CASSETTE R/H TRACKING ROLLER BRACKET	1
10. C0170000	CASSETTE TAIL DRUM BEARING SUPPORT	1
11. C0180000	CASSETTE L/H FRONT BED ROLLER GUARD	1
12. C0190000	CASSETTE R/H FRONT BED ROLLER GUARD	1
13. C0920000	<NO DESCRIPTION>	2
14. C1940000	HOPPER CASSETTE FRONT BED ROLLER SUPT	'2
15. C1950000	HOPPER CASSETTE BED ROLLER SUPT' (UNIVERSAL)	1
16. C4090000	LARGE HOPPER CASSETTE SLIDER ASSEMBLY DETAIL AS SHOWN	1
17. C4100000	LARGE HOPPER CASSETTE SLIDER ASSEMBLY DETAIL OP HAND	1
18. C4110000	HOPPER CASSETTE BOLT-IN CROSS BEAM	4
19. C6520000	TURBO 5000 HOPPER DRUM SEAL PLATE SUPPORT	2
20. C7410000	DS FULLTRAC MOTOR DOOR	1
21. C7420000	DS FULLTRAC HOPPER FRONT PANEL	1
22. C7460000	DS FULLTRAC HOPPER BIN SUPPORT BRACKETS	1
23. C7470000	DS FULLTRAC HOPPER BIN SUPPORT BRACKETS	1
24. C7530000	DS FULLTRAC HOPPER TELESCOPIC LEG	1
25. C7540000	DS FULLTRAC HOPPER TELESCOPIC LEG	1
26. C7550000	DS FULLTRAC HOPPER REAR RUBBER CLAMP	1
27. C7560000	DS FULLTRAC HOPPER DRUM SEAL PLATE	1
28. C7570000	DS FULLTRAC HOPPER DRUM SEAL PLATE	1
29. C7580000	DS FULLTRAC HOPPER RETURN ROLLER BRACKET	2
30. C7590000	DS FULLTRAC HOPPER HEAD DRUM SCRAPER CLAMP	1
31. C7610000	DISCHARGE PLATE	1
32. C7620000	DISCHARGE PLATE	1
33. C7640000	DISCHARGE BRACKET	1
34. C7650000	DS FULLTRAC HOPPER PIPE COVER	1

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	Part No.	Part Description	Quantity
35.	C7660000	DS FULLTRAC HOPPER PIPE COVER	1
36.	C7670000	DS FULLTRAC CAT FLAP ASSY	1
37.	C7690000	DS FULLTRAC HOPPER BACK DOOR	1
38.	C7700000	DS FULLTRAC HOPPER FRAME END PANEL	1
39.	C7730000	DS FULLTAC HOPPER SCRAPER BRACKET	1
40.	C7930000	DS FULLTRAC HOPPER CASSETTE SUPPORT - CENTRE	6
41.	C7950000	DS FULLTRAC HOPPER MOUTH REDUCER 150MM	1
	C7960000	DS FULLTRAC HOPPER MOUTH REDUCER 250MM	1
42.	C8080000	DS FULLTRAC UNDER BELLY GUARD - R/H	1
43.	C8090000	DS FULLTRAC UNDER BELLY GUARD - L/H	1
44.	C9000000	QA340 ADDITIONAL SHREADER TO HOPPER BIN SEAL LH	1
45.	C9010000	QA340 ADDITIONAL SHREADER TO HOPPER BIN SEAL RH	1
46.	C9020000	LH CATFLAP SEAL	1
47.	C9030000	RH CATFLAP SEAL	1
48.	C9040000	CENTRE CATFLAP SEAL	1
49.	C9840000	LH SEALING PLATE	1
50.	C9850000	RH SEALING PLATE	1
51.	C13840000	QA340/6/7 15' HOPPER FRAME ASSY	1
52.	C13850000	QA340/6/7 15' HOPPER BIN SIDE ASSY	1
53.	C13860000	QA340/6/7 15' HOPPER BIN SIDE ASSY (OPP-HAND)	1
54.	C13870000	QA340/6/7 15' HOPPER FRAME CTR PNL	1
55.	C13880000	15' HOPPER SIDE DOOR, ,	2
56.	C13890000	QA340 HOPPER SIDE DOOR	2
57.	C13900000	15' HOPPER BIN CENTRE SUPPORT BRKT	2
58.	C13910000	15' HOPPER FRAME CTR PNL R/H	1
59.	C13920000	15' HOPPER BIN SIDE RUBBER CLAMP	6
60.	C13930000	15' HOPPER REAR BIN	1
61.	C13940000	QA340/6/7 15' HOPPER L/H CASSETTE FRAME DTL	1
62.	C13950000	QA340/6/7 15' HOPPER R/H CASSETTE FRAME DTL	1
63.	C14060000	15' HOPPER CONV RETURN ROLLER GUARD	1
64.	C14350000	HOPPER GEARBOX MOUNTING ASSY, ,	1
65.	CR1001	HOPPER BED ROLLER19EYBG1XYT 27MM*1300MM	17
66.	CR1024	BELT TRACKING ROLLER	2
67.	CR1052	HOPPER DISC RETURN ROLLER ASSY	1
68.	CBHD87001200	CONVEYOR BELT	1

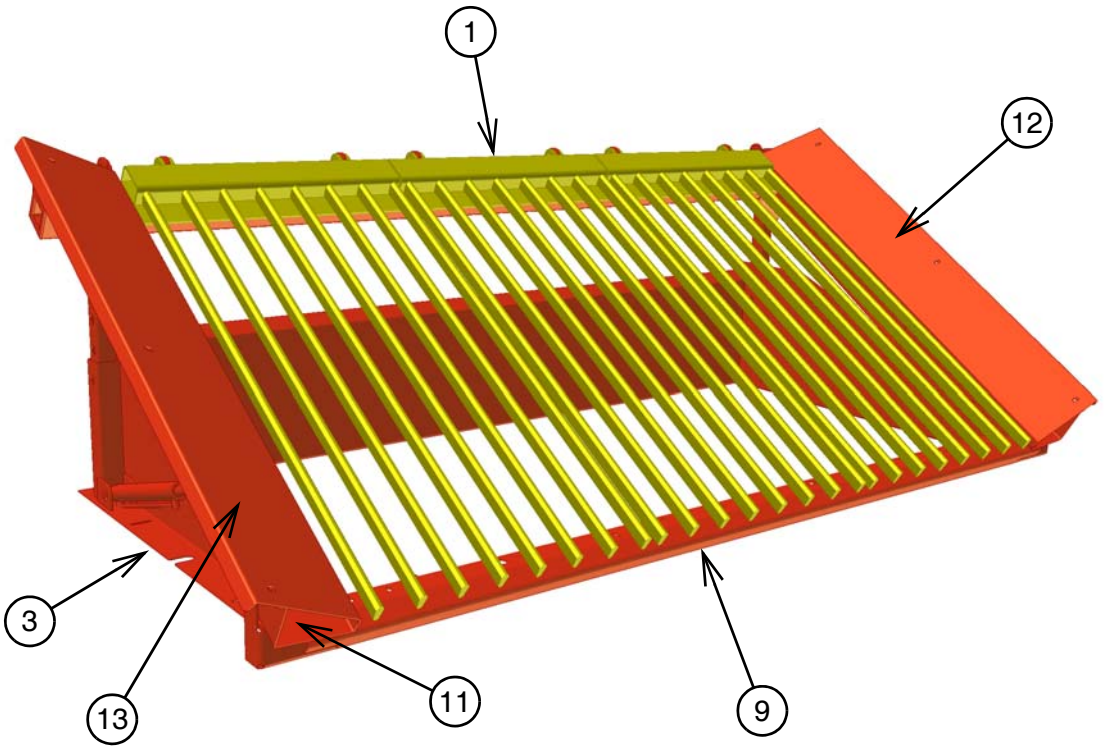
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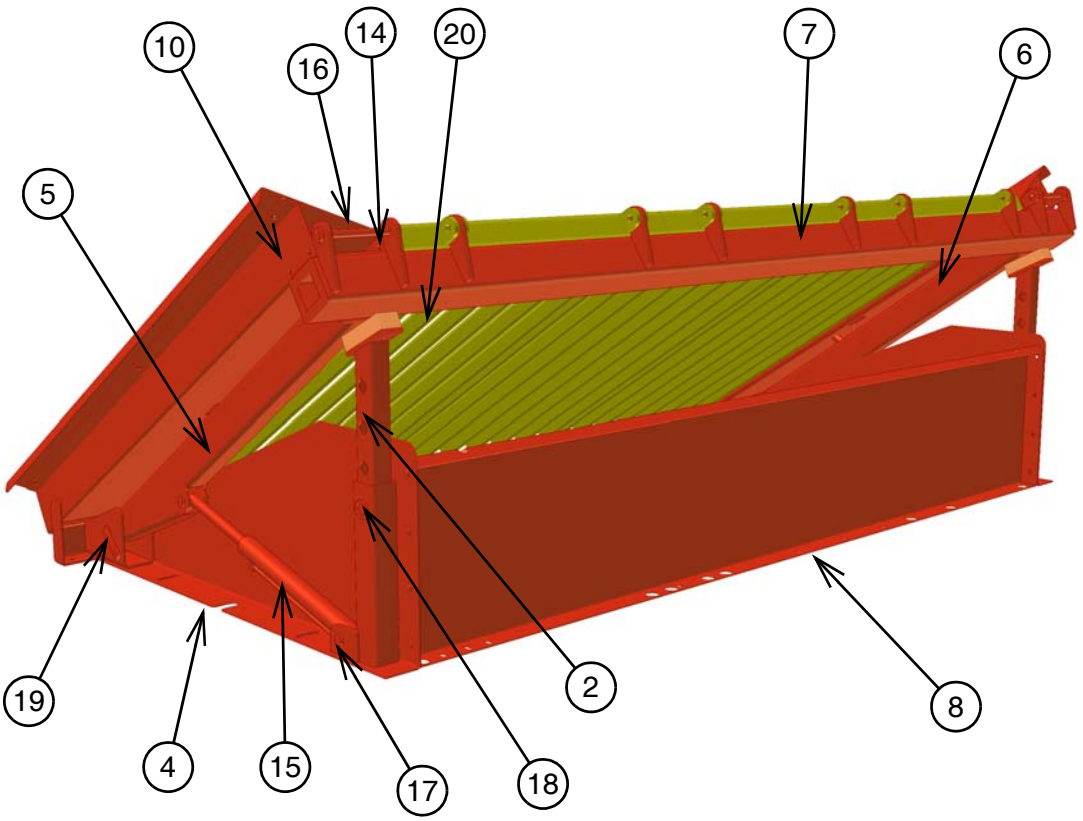
Part No.	Part Description	Quantity
69. D11490000	E7 FINES CONVEYOR TAIL DRUM SCRAPER	1
70. E2910000	DS FULLTRAC SIDE CONVEYOR 22MM PIPE CLAMP	1
71. FAB1004	'U' BOLT	2
72. FAN08	M8 HEX NUT	4
73. FAN12	M12 HEX NUT	10
74. FAN16	M16 HEX NUT	1
75. FAS10X45	HEX-HEAD BOLT	2
76. FAS10X60	M10 X 60 LG SET SCREW	22
77. FAST10X60	SCREW	3
78. FD2105	HINGE	10
79. FD1005	GAS STRUT	2
80. HM1005	CHARLYNN 2K155 BAA MOTOR(104-1387-006), ,	1
81. HR1025	HYDRAULIC RAM	2
82. PN1008	PIN	4
83. PN1031	ADJUSTER BOLT	2
84. PN1049	PIN	3
85. PY1012	SCRAPPER	1
86. PY1016	SCRAPPER	1
87. RU1023	RUBBER	2
88. RU1024	RUBBER	1
89. RU5501	ROSTA SUPPORT SE27	2

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11. TIPPING GRID



1: TIPPING GRID



2: TIPPING GRID RAISED

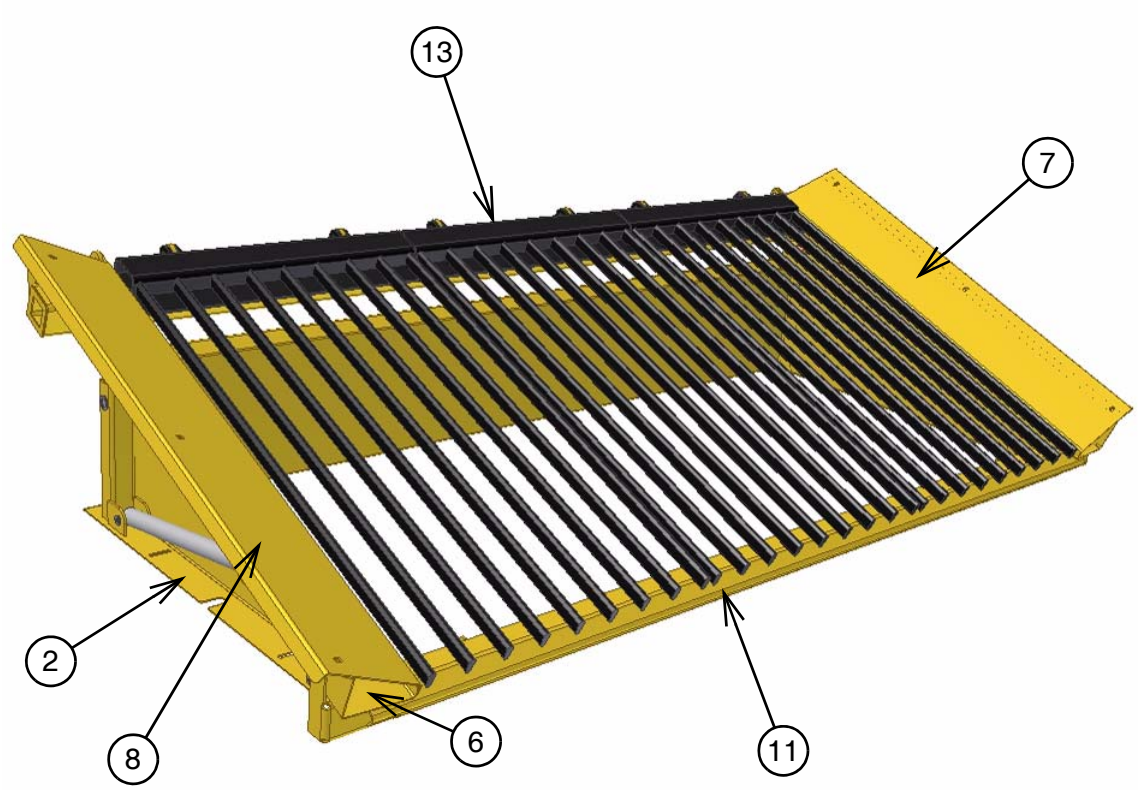
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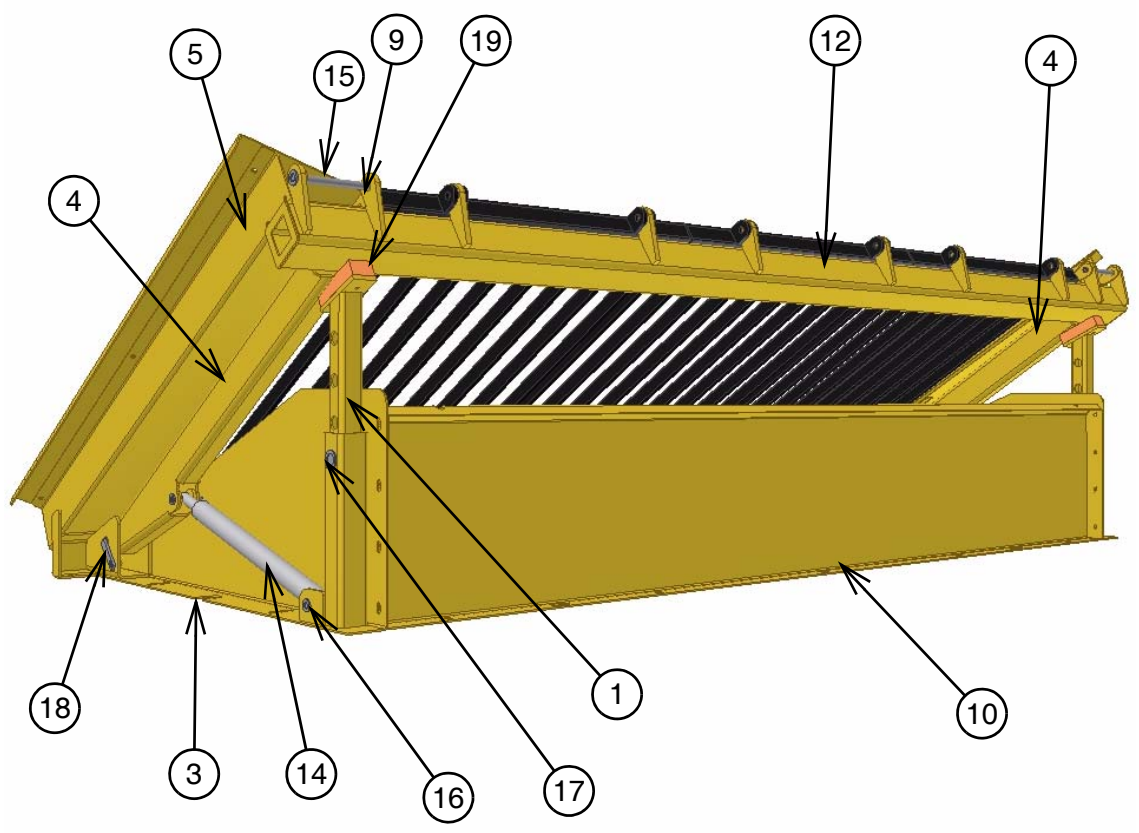
Part No.	Part Description	Quantity
1. C0840003	TIPPING GRID ASSY	3
2. C0850000	TIPPING GRID TELELEG	2
3. C3300000	TIPPING GRID SIDE FRAME	1
4. C3310000	TIPPING GRID SIDE FRAME	1
5. C3320000	TIPPING GRID ARM	1
6. C3330000	TIPPING GRID ARM	1
7. C3340000	TIPPING FRAME	1
8. C3350000	TIPPING GRID REAR PANEL	1
9. C3360000	TIPPING GRID FRONT BUFFER BAR	1
10. C12170000	SIDE WING BOTTOM PANEL	1
11. C12180000	SIDE WING BOTTOM PANEL	1
12. C12190000	SIDE WING TOP PANEL	1
13. C12200000	SIDE WING TOP PANEL	1
14. C12210000	SIDE WING HINGE	4
15. HR1023	HYDRAULIC RAM	2
16. PN1005	PIN	2
17. PN1006	PIN	4
18. PN1012	PIN	2
19. PN1056	PIN	2
20. PY1021	POLY SHOCK ABSORBER	2

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12. EXTENDED TIPPING GRID



1: TIPPING GRID



2: TIPPING GRID RAISED

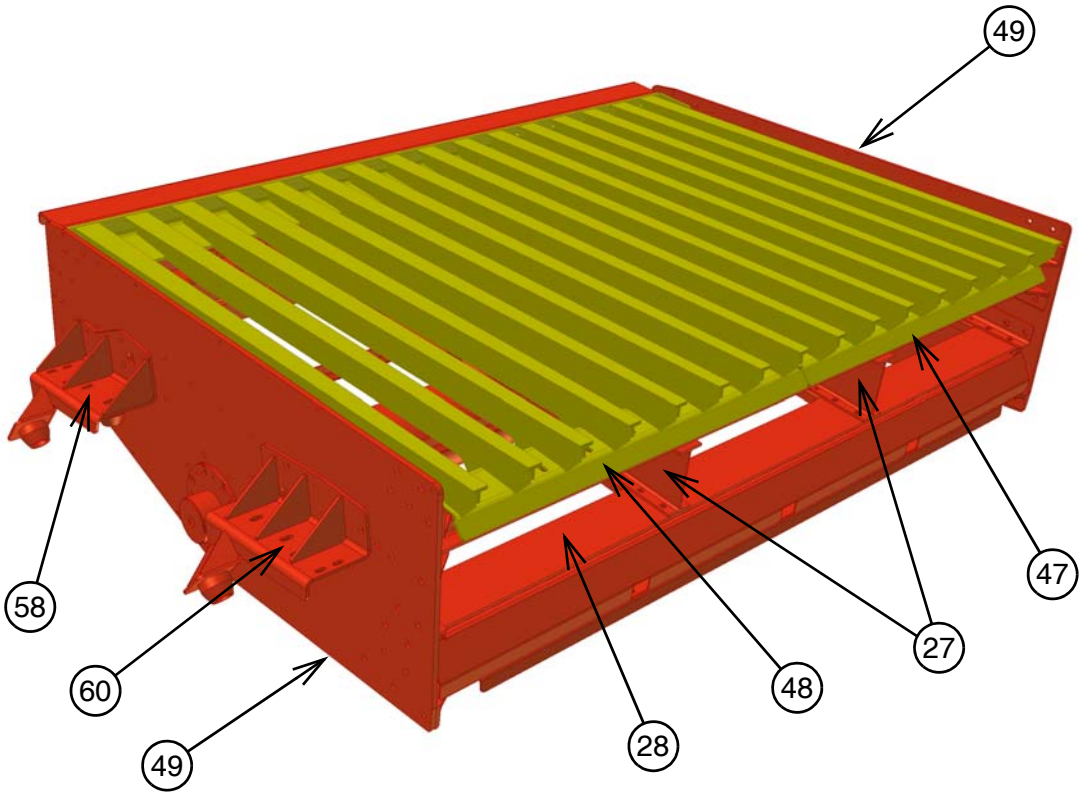
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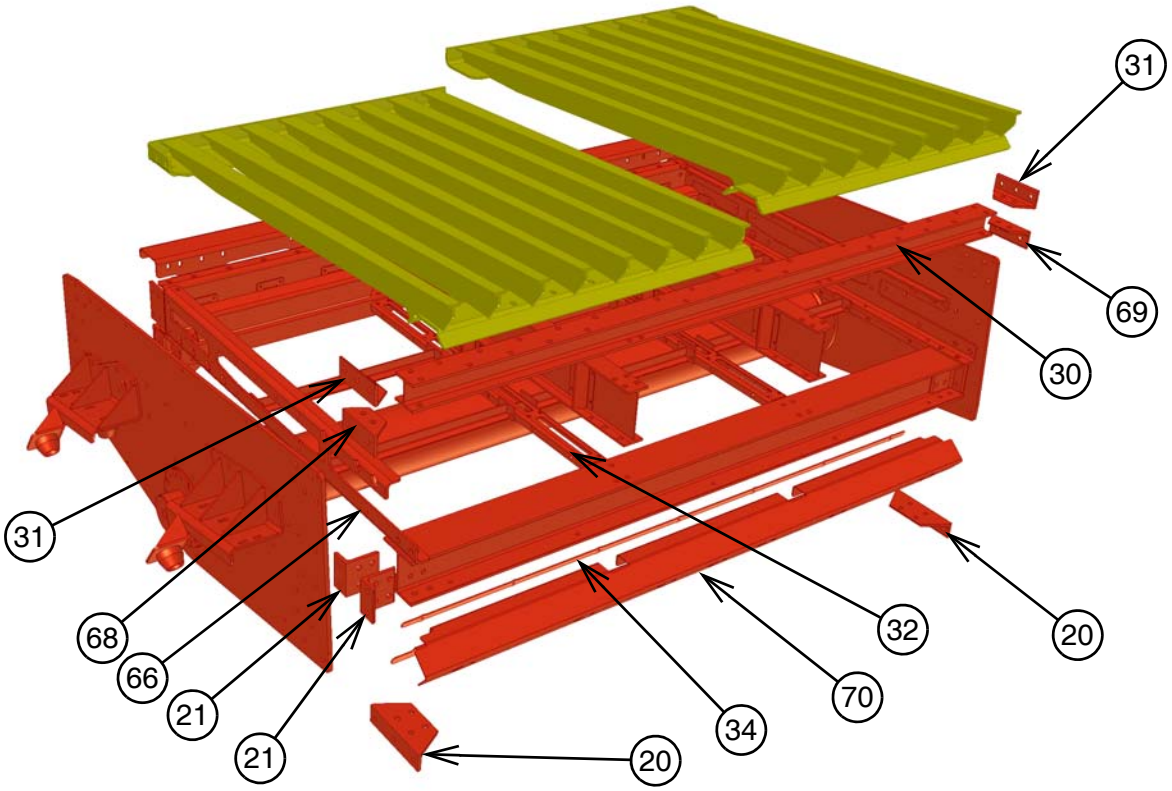
Part No.	Part Description	Quantity
1. C0850000	HOPPER REJECT GRID : TELESCOPIC LEG	2
2. C3300000	TIPPING GRID SIDE PLATE L/H	1
3. C3310000	TIPPING GRID SIDE PLATE R/H	1
4. C3320000	TIPPING GRID SWING ARM	1
5. C12170000	TIPPING GRID SIDE FLAIR BTM PNL	1
6. C12180000	TIPPING GRID SIDE FLAIR BTM PNL	1
7. C12190000	TIPPING GRID SIDE FLAIR TOP PNL	1
8. C12200000	TIPPING GRID SIDE FLAIR TOP PNL	1
9. C12210000	TIPPING GRID SIDE FLAIR HINGE PLT	4
10. C13960000	15' TIPPING GRID REAR PANEL ASSY	1
11. C13970000	15' TIPPING GRID FRONT BUFFER BEAM	1
12. C13980000	15' TIPPING GRID FRAME CROSS BEAM	1
13. C13990000	15' TIP GRID 5" GRID BAR ASSY	3
14. HR1023	5000 REJECT GRID RAM	2
15. PN1005	5000/6000 HOPPER: TIPPING GRID: SIDE WING PIN	2
16. PN1006	5000/6000 HOPPER TIPPING GRID: RAM TO BASE PIN	4
17. PN1012	SIDE CONVEYOR SUPPORT ARM BASE PIN	2
18. PN1056	5000 10X5 SCREENBOX SUBFRAME PIVOT PIN	2
19. PY1021	POLY SHOCK ABSORBER	2

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13. VIBRATING GRID



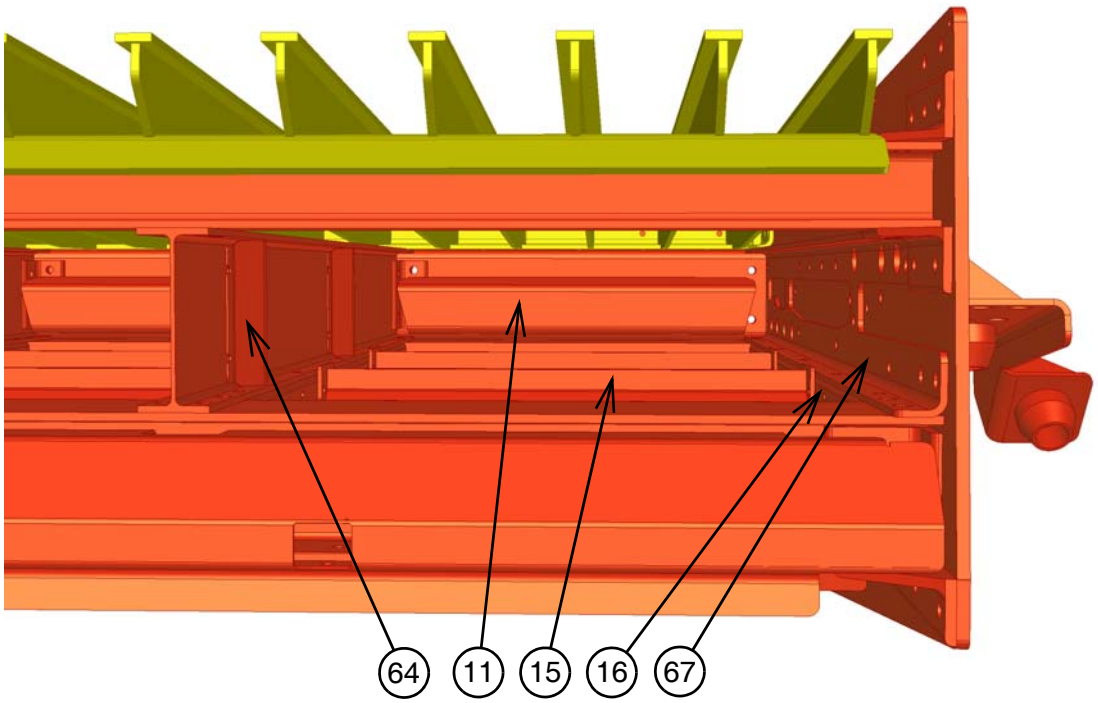
1: VIEW ON VIBRATING GRID



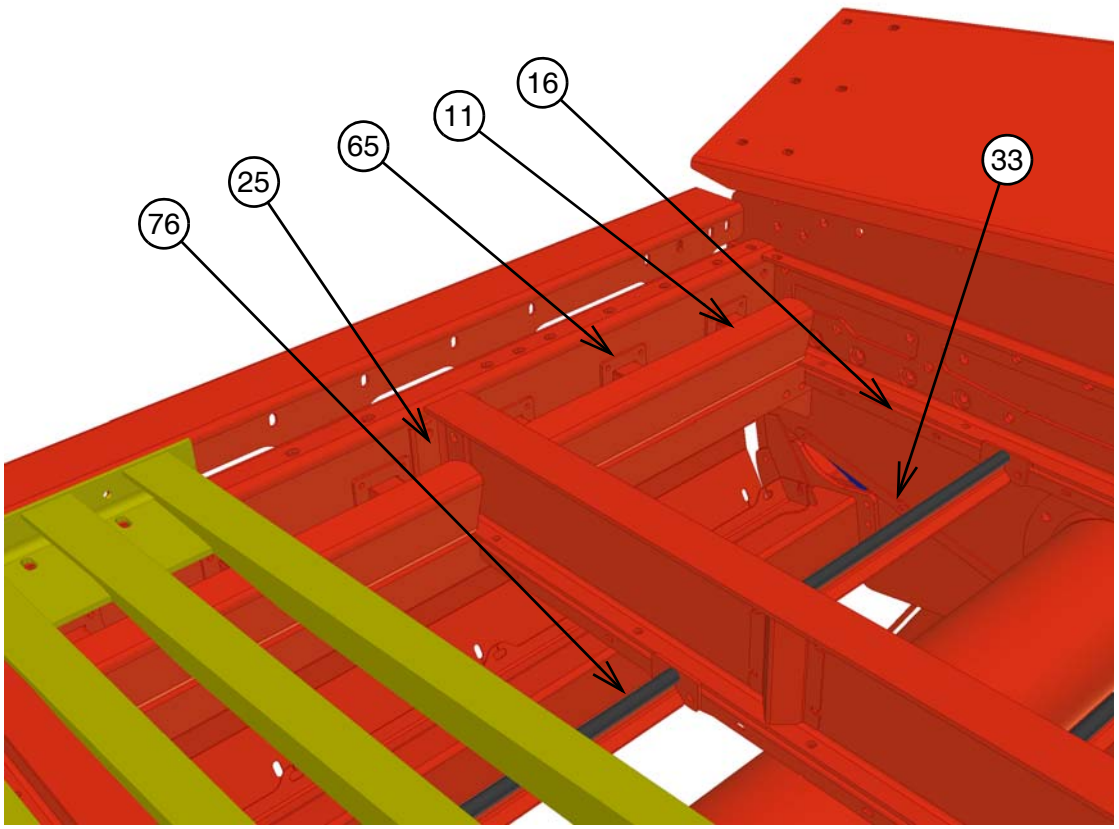
2: VIEW ON FRONT OF VIBRATING GRID

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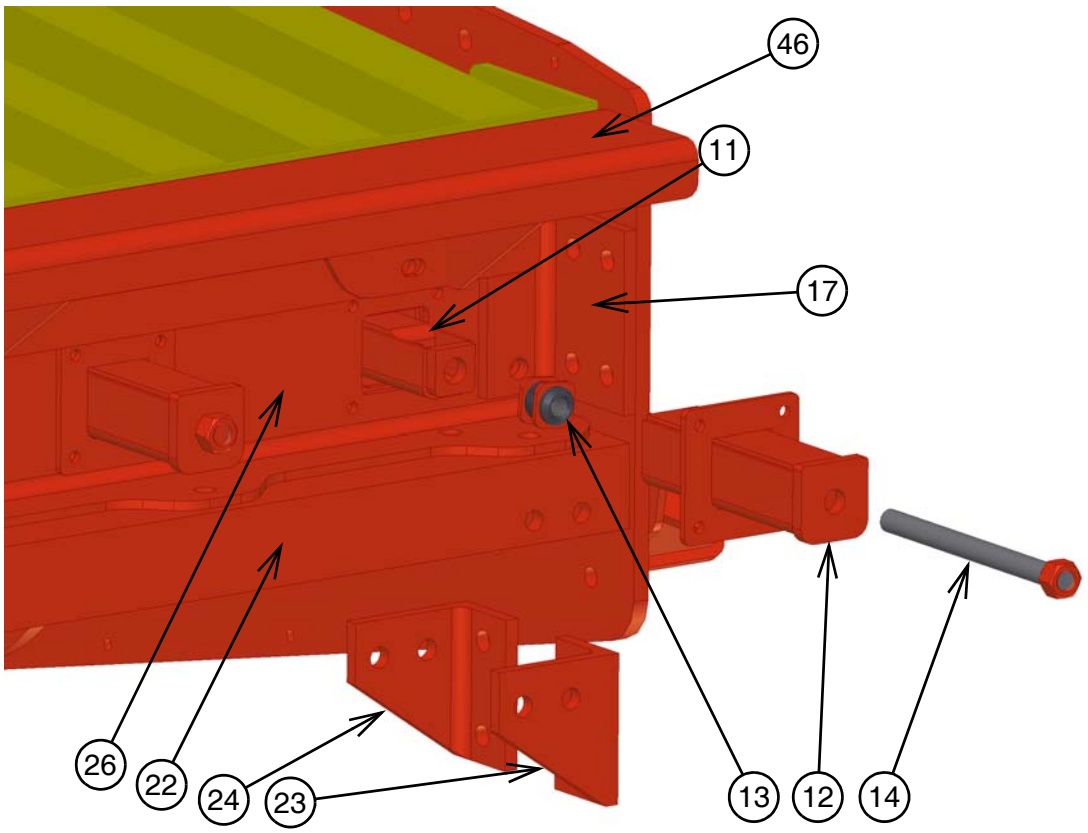


3: INSIDE FRONT VIEW

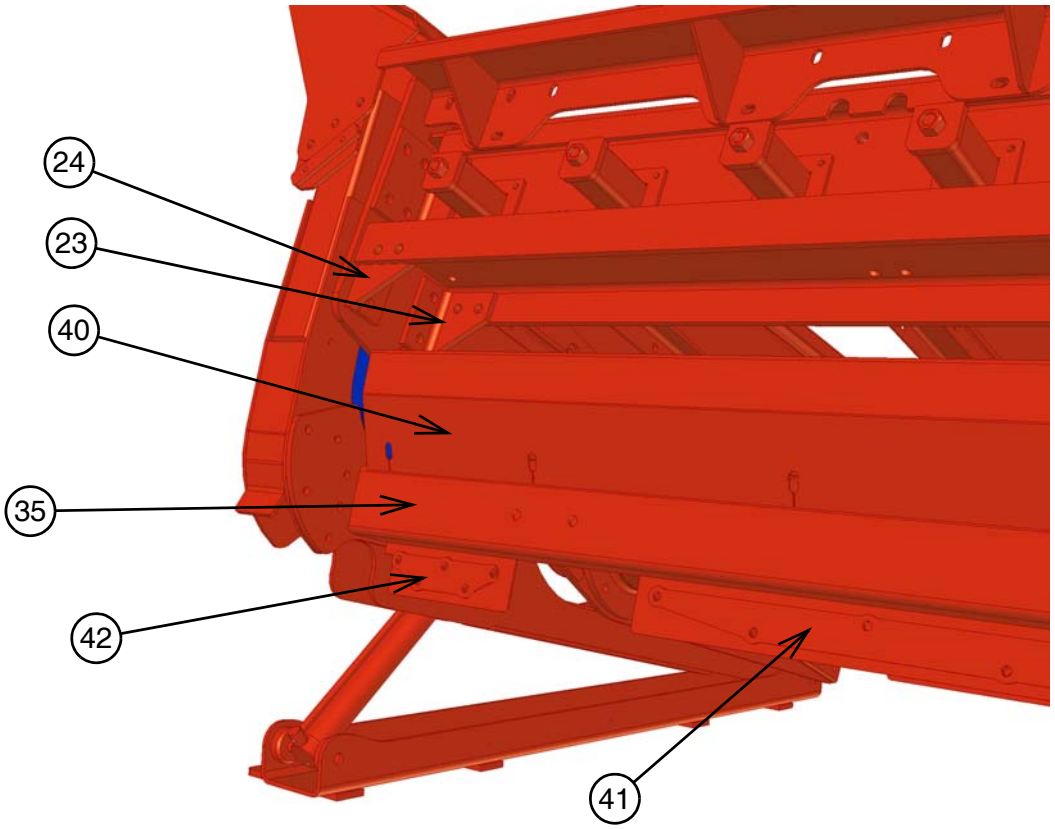


4: INSIDE REAR VIEW

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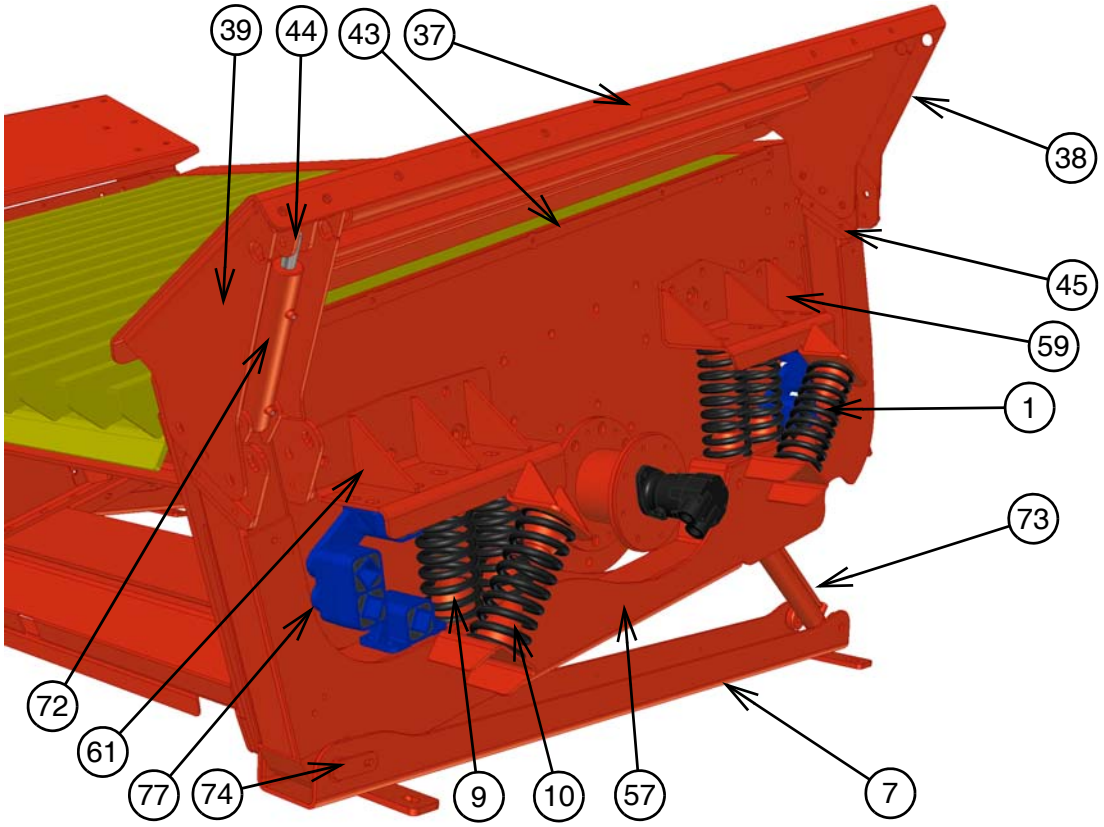


5: VIEW ON REAR OF VIBRATING GRID

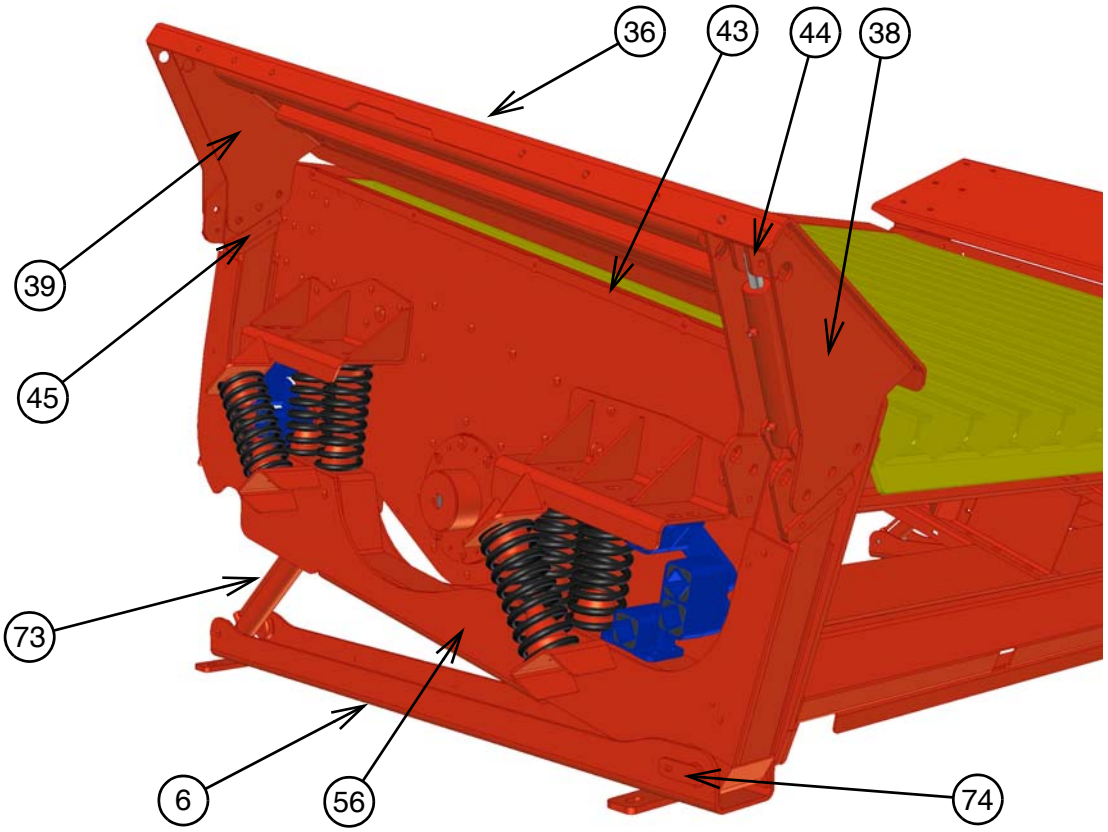


6:

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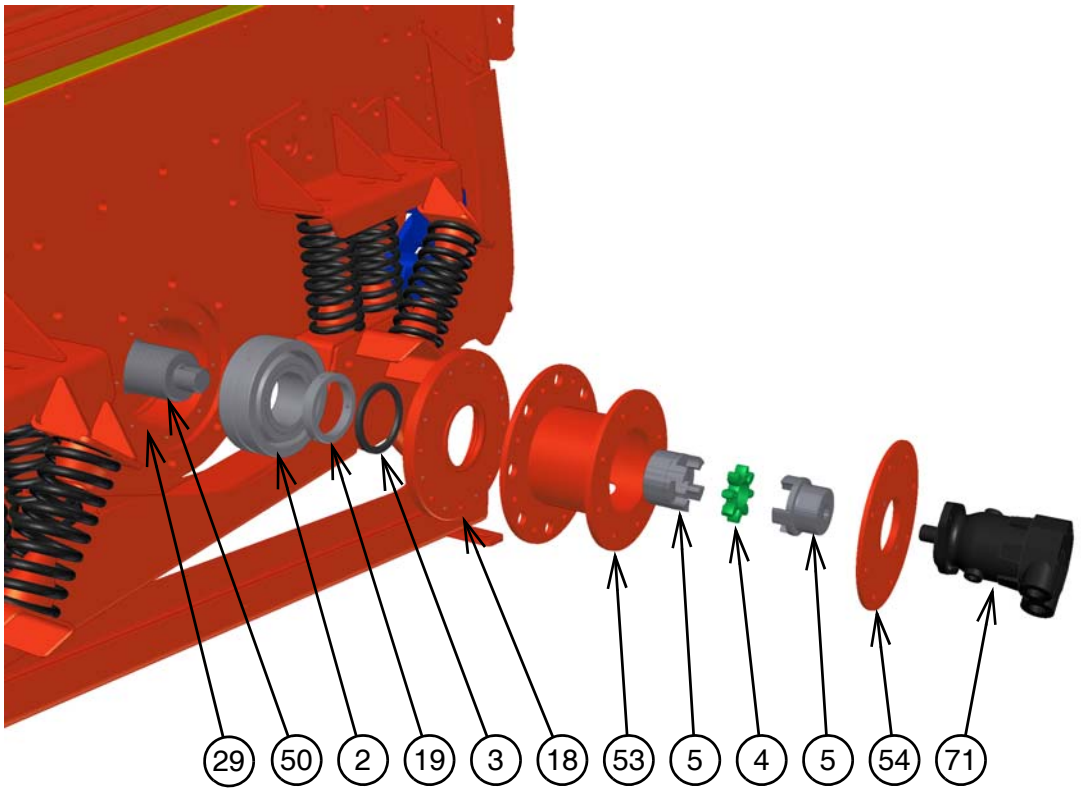


7: VIEW ON DRIVE END

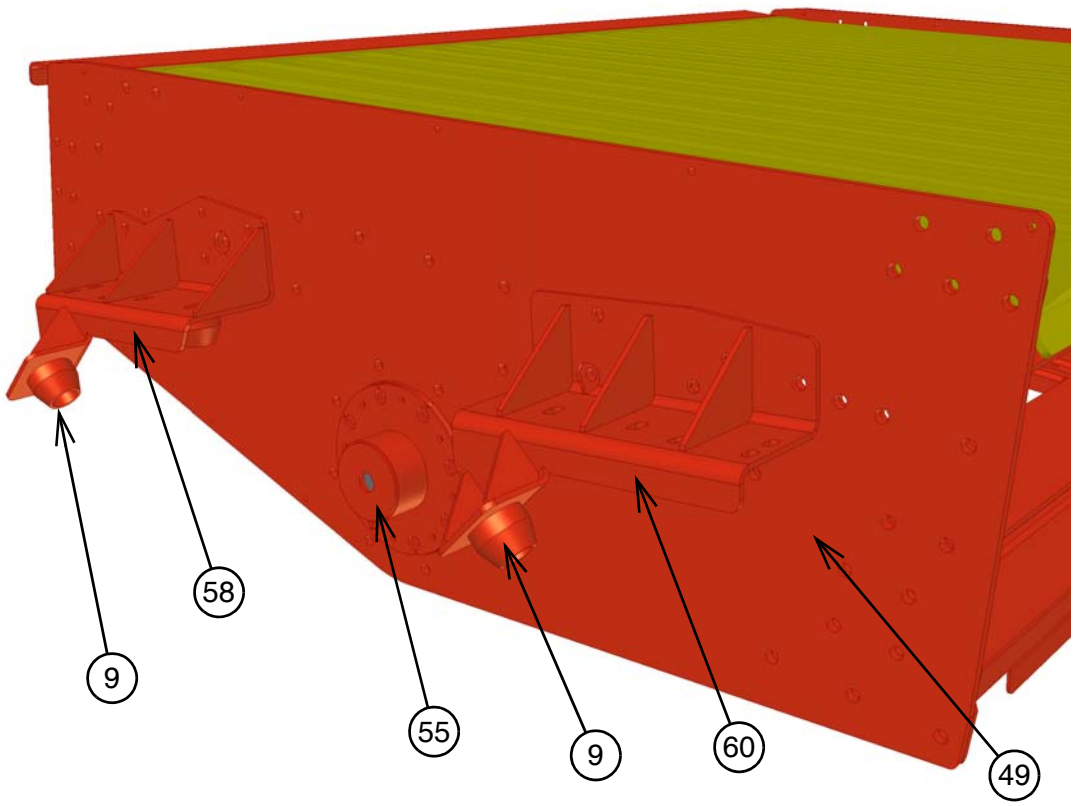


8: VIEW ON NON-DRIVE END

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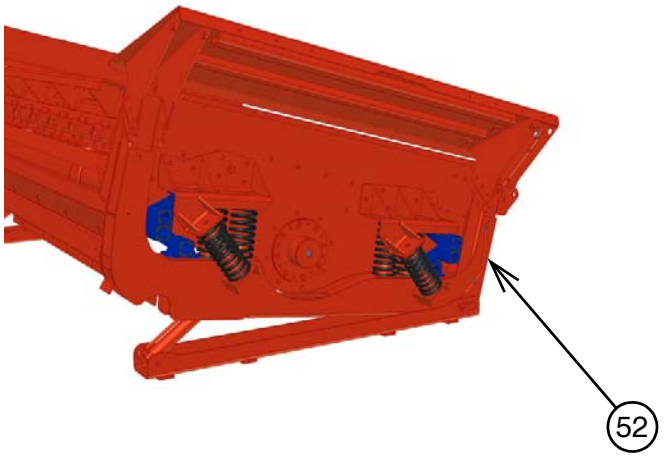
9: DRIVE COUPLING



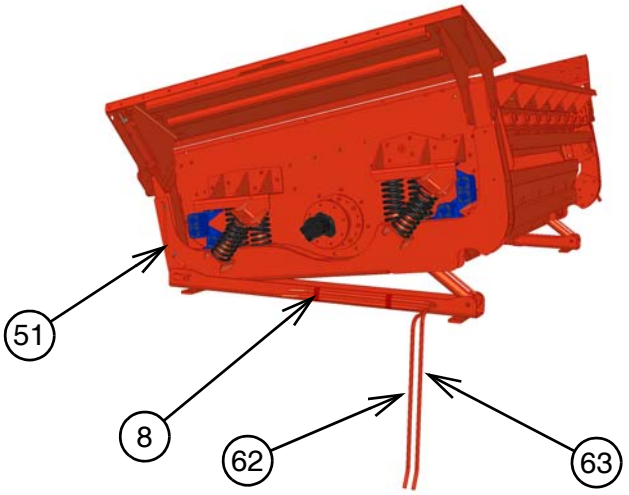
10: VIEW ON NON-DRIVE SIDE

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11: VIEW ON NON-DRIVE SIDE PIPE



12: VIEW ON DRIVE SIDE PIPES

Part No.	Part Description	Quantity
1. BG270000	SPRINGS	12
2. BT3508	BEARING	2
3. BT8014	O-RING	2
4. BT8504	COUPLING INSERT GREEN	1
5. BT8507	DRIVE COUPLING COMPLETE	1
6. C3180000	SUBFRAME	1
7. C3220000	SUBFRAME	1
8. E2910000	PIPE CLAMP	2
9. H0610000	SMALL SPRING LOCATION BUSH	8
10. H0620000	LARGE SPRING LOCATION BUSH	4
11. H1640000	MESH TENSIONING INNER ASSEMBLE	3
12. H1650000	MESH TENSIONING OUTER ASSEMBLE	9
13. H1660000	MESH TENSIONING BLOCK	9
14. H1670000	MESH TENSIONING BOLT	9
15. H1680000	MESH BED CROSS MEMBER	6
16. H1700000	MESH BED SIDE ANGLE	2
17. H3040000	REAR I BEAM SIDE SUPPORT	2
18. H3060300	BEARING HOUSING	2
19. H3070000	LOCKING RING	1
20. H3300000	FRONT I BEAM BOTTOM	2
21. H3310000	FRONT I BEAM SIDE SUPPORT	4

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Part No.	Part Description	Quantity
22. H4510000	REAR BEAM	1
23. H4560000	BEAM SUPPORT	2
24. H4570000	BEAM SUPPORT	2
25. H4580000	BEAM SUPPORT	4
26. H6000000	REAR BEAM TOP CANNEL	1
27. H6040000	CENTER SUPPORT	2
28. H6050000	FRONT BOTTOM I-BEAM	1
29. H6100000	TUBE ASSEMBLY	1
30. H6110000	FRONT TOP I-BEAM	1
31. H6120000	FRONT BEAM TOP	2
32. H6150000	MESH CROSS MEMBER	2
33. H6200000	SIDE PLATE BOTTOM	2
34. H6210000	FRONT DEFLECTOR	1
35. H6240000	SUBFRAME REAR CROSSMEMBER ASSY	1
36. H6250000	L/H SIDE WING	1
37. H6260000	R/H SIDE WING	1
38. H6270000	SUBFRAME L/H WING	4
39. H6280000	SUBFRAME R/H WING	4
40. H6290000	SUBFRAME REAR BEAM	1
41. H6300000	SUBFRAME REAR BEAM RUBBER CLAMP	1
42. H6310000	SUBFRAME REAR BEAM SIDE RUBBER CLAMP	2
43. H6320000	SIDE PLATE RUBBER	2
44. H6330000	WING RAM BRACKET	2
45. H6340000	WING STOP	8
46. H6370000	REAR SPILL PLATE	1
47. H6380000	L/H TAPER GRID	1
48. H6390000	R/H TAPER GRID	1
49. H6410000	SIDE PLATE	2
50. H6440000	ECCENTRIC SHAFT	1
51. H6510000	GRID PIPE	1
52. H6520000	GRID PIPE	1
53. H6580000	DRIVE HOUSING	1
54. H6590000	MOTOR MOUNTING	1
55. H6600000	NON-DRIVE SIDE END COVER	1
56. H6610000	SUBFRAME L/H SIDE FRAME	1

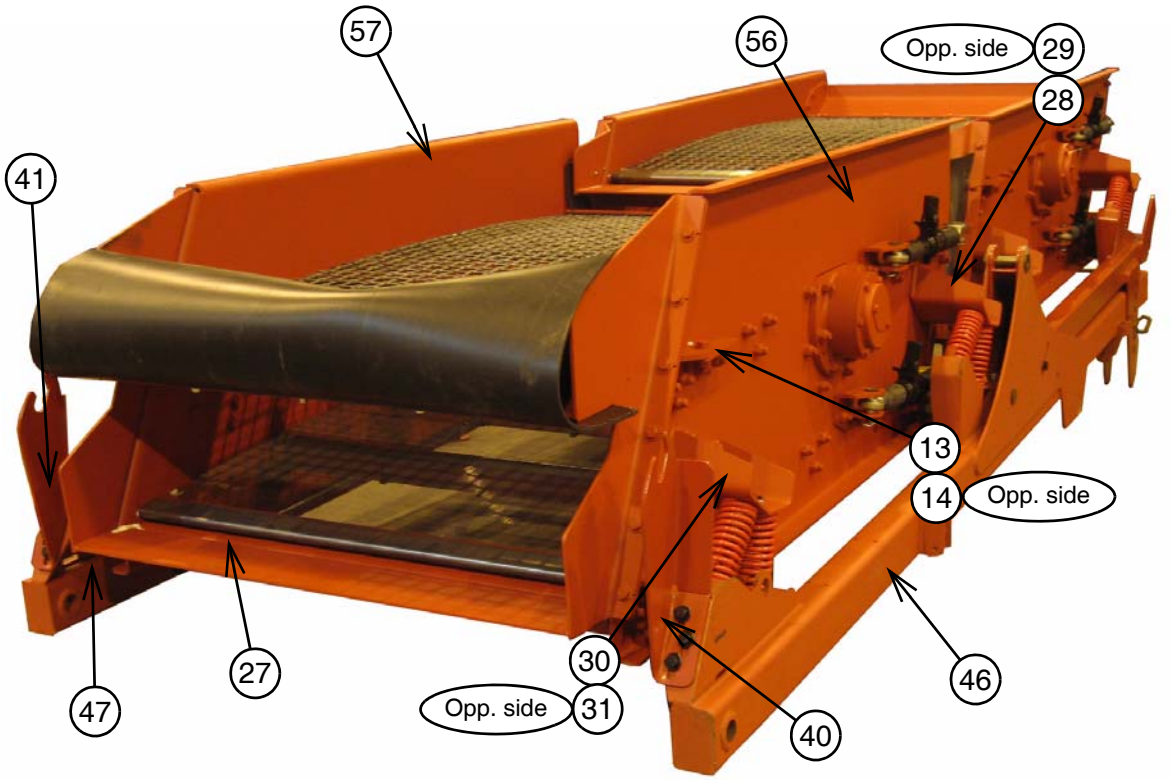
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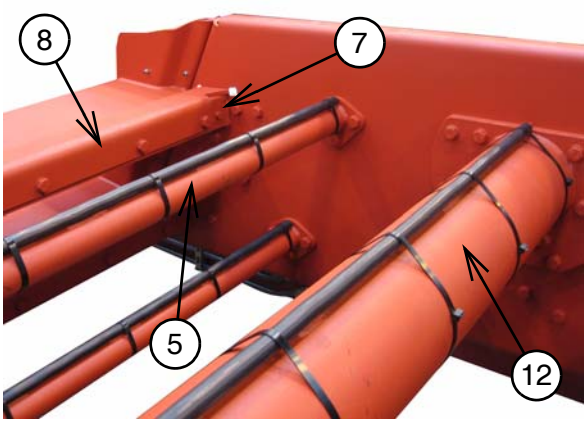
Part No.	Part Description	Quantity
57. H6620000	SUBFRAME R/H SIDE FRAME	1
58. H6630000	L/H REAR SUSPENSION MOUNT	1
59. H6640000	R/H REAR SUSPENSION MOUNT	1
60. H6650000	L/H FRONT SUSPENSION MOUNT	1
61. H6660000	R/H FRONT SUSPENSION MOUNT	1
62. H6670000	STEEL PIPE	1
63. H6680000	STEEL PIPE	1
64. H6690000	CENTER BEAM SIDE DEFLECTOR	8
65. H6890000	BACKING PLATE	9
66. H6960000	VSIDE CHANNEL	1
67. H6970000	SIDE CHANNEL	1
68. H6980000	SUPPORT ANGLE	1
69. H6990000	SUPPORT ANGLE	1
70. H7940000	BEAM DEFLECTOR	1
71. HM1046	HYDRAULIC MOTOR	1
72. HR1001	HYDRAULIC RAM	2
73. HR1024	HYDRAULIC RAM	2
74. PN1084	PIN	2
75. RU1027	SUPER RED RUBBER 10MM X 110MM	1
76. RU5328	CAPPING RUBBER	6
77. RU5504	ROSTA SPRING	4

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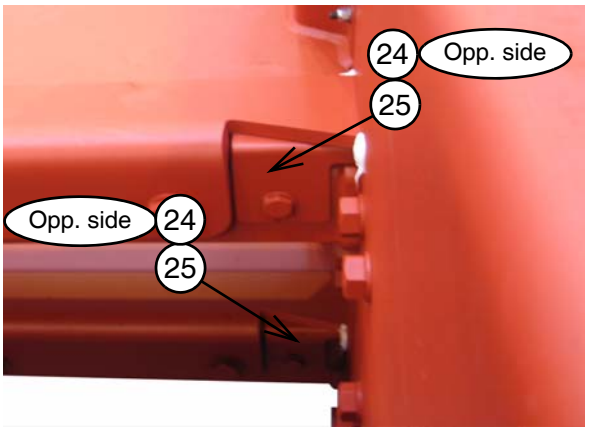
14. DOUBLE SCREEN



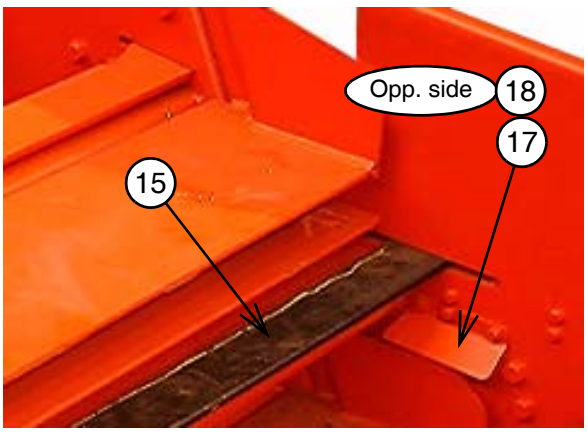
1: SECONDARY SCREENBOX



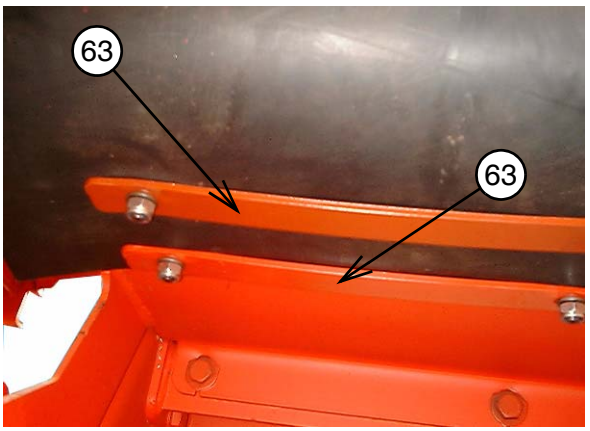
2: MESH SUPPORT BEAMS



3: SUPPORT BEAM HOOKS



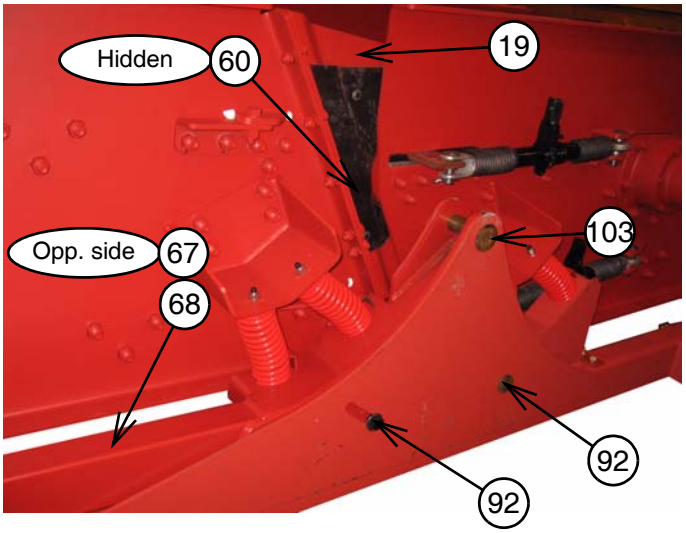
4: VIEW ON SPRING BAR



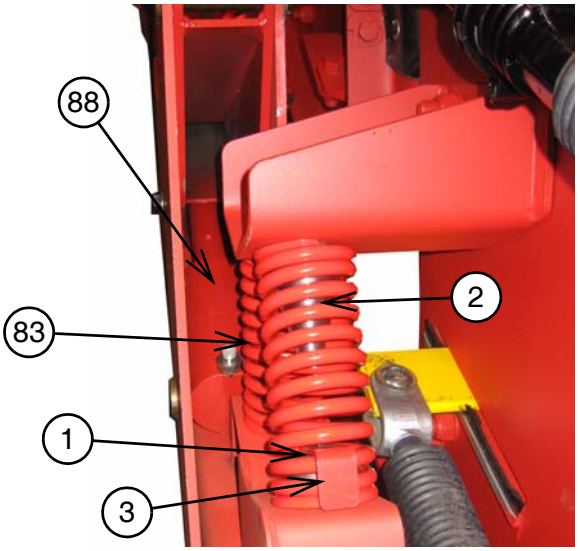
5: VIEW ON SECONDARY RUBBER CLAMP

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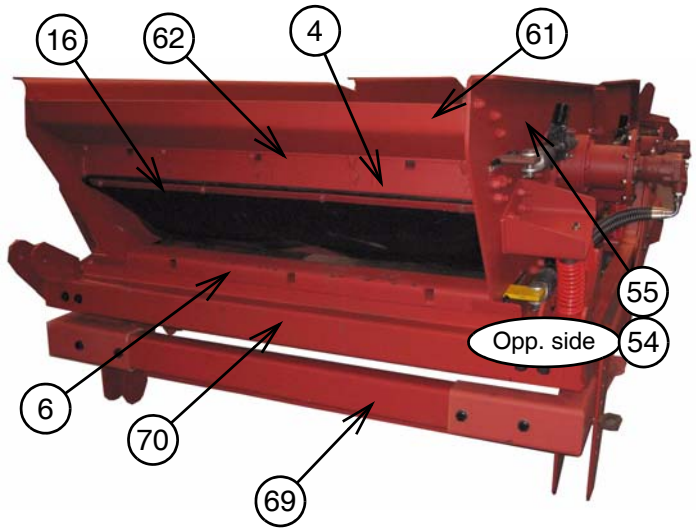
ID: QA340-en-11858



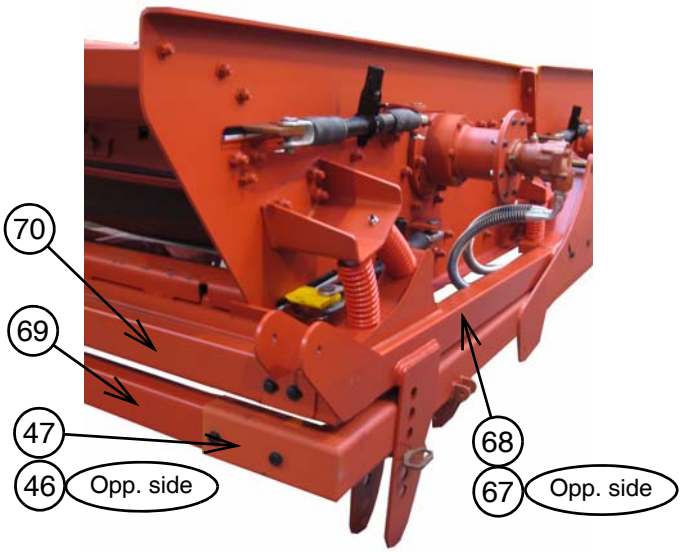
6: VIEW ON PRIMARY BOX SUBFRAME PIVOT



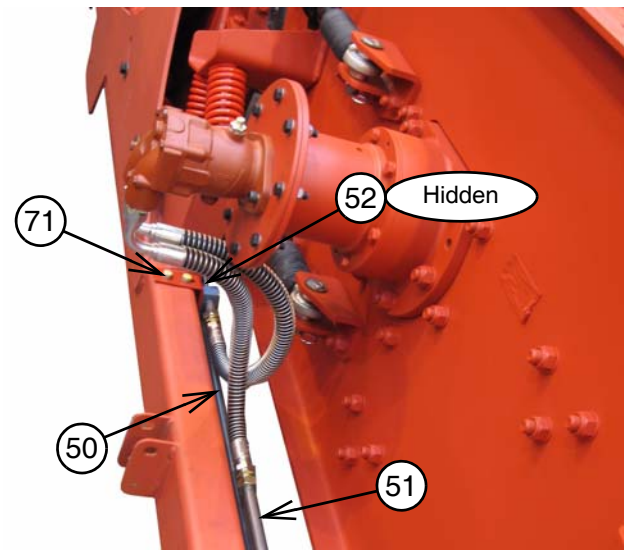
7: VIEW ON PRIMARY BOX SUBFRAME LIFT RAM



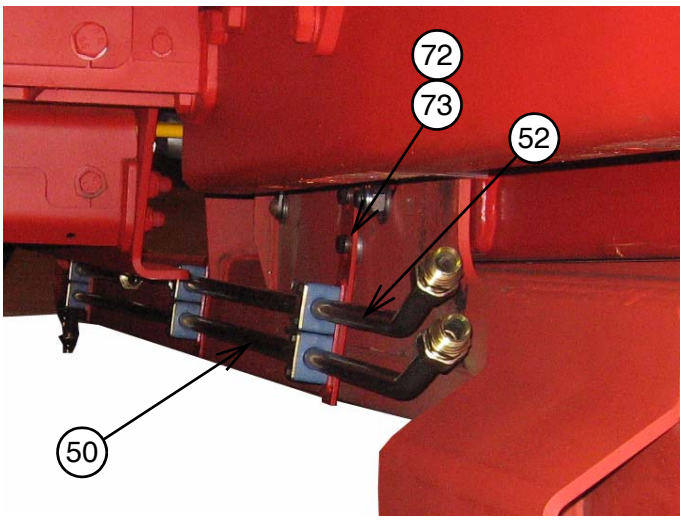
8: VIEW ON REAR OF PRIMARY BOX



9: VIEW ON REAR CORNER OF PRIMARY BOX

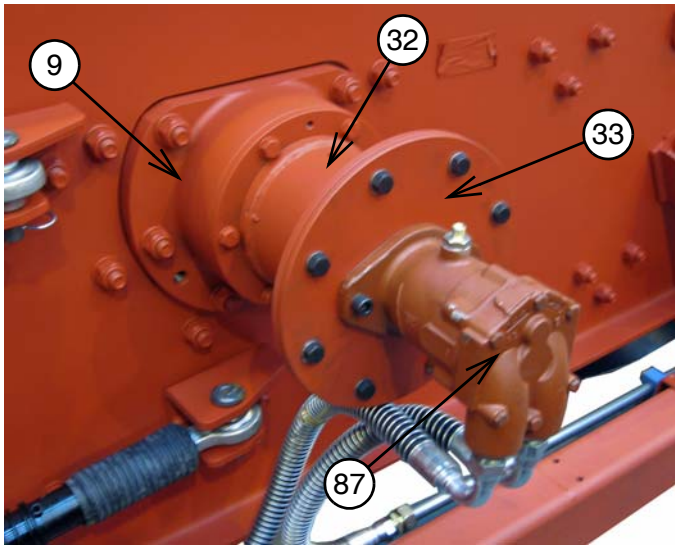


10: VIEW ON STEEL HOSES

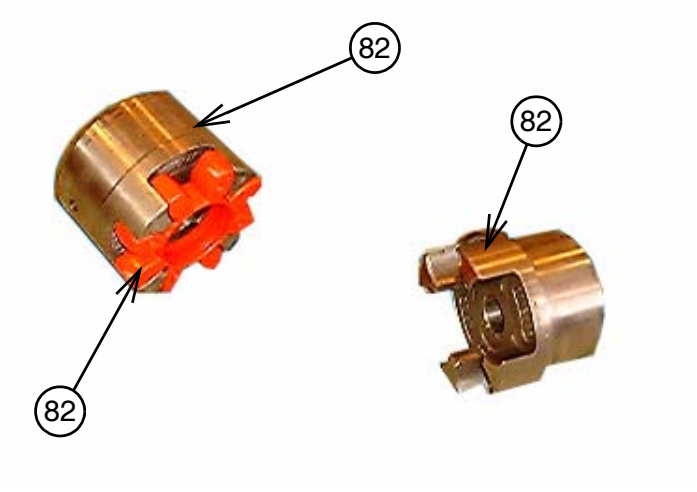


11: VIEW ON STEEL HOSES

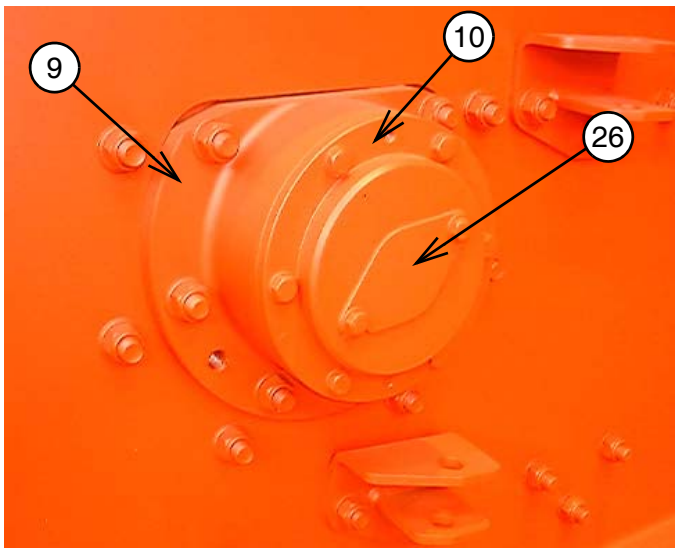
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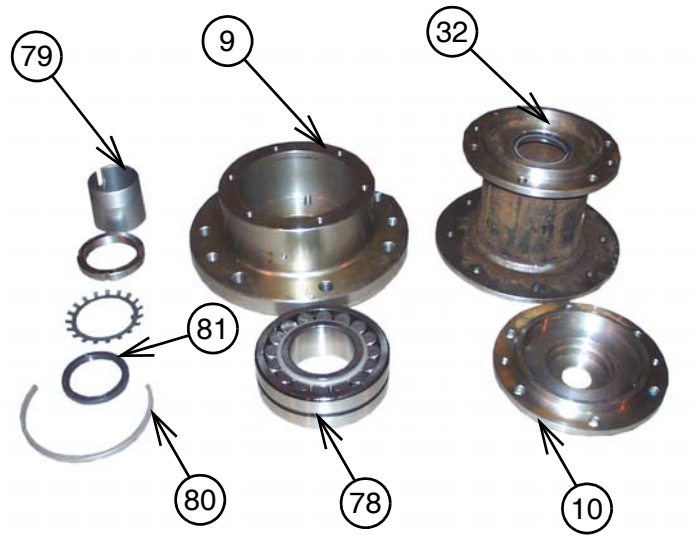
12: VIEW ON MOTOR ASSEMBLY



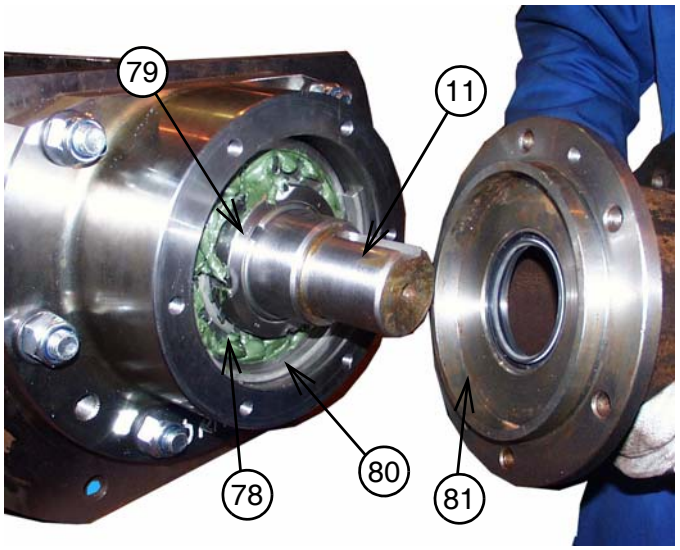
13: VIEW ON MOTOR COUPLING ASSEMBLY



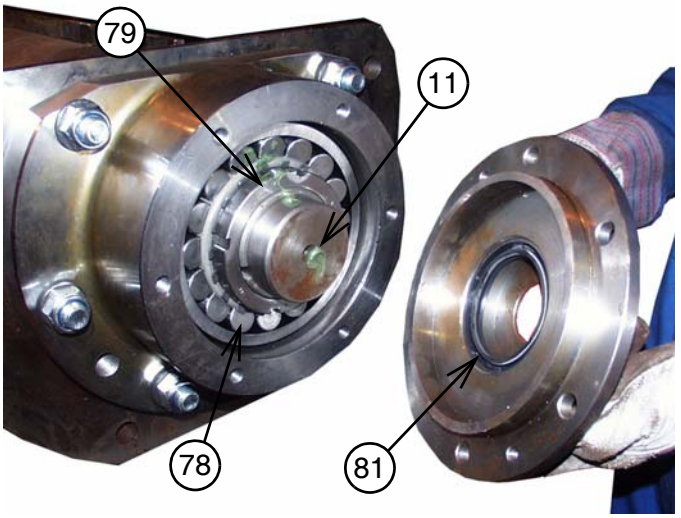
14: VIEW ON NON DRIVE SIDE BEARING HOUSING



15: VIEW ON BEARING ASSEMBLY



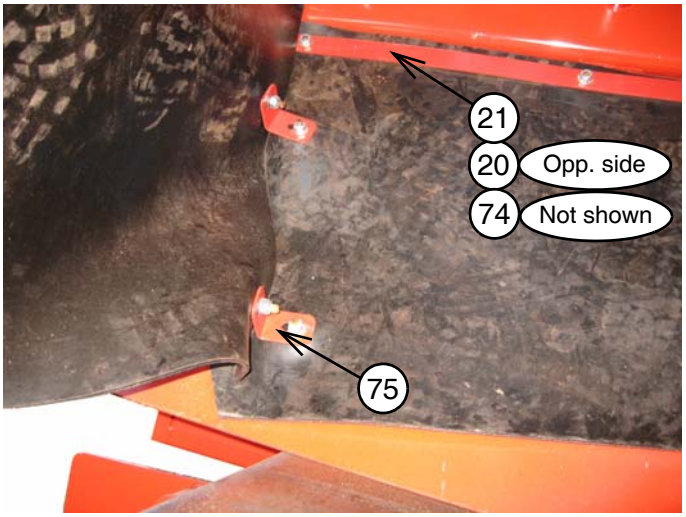
16: VIEW ON DRIVE SIDE BEARING ASSEMBLY



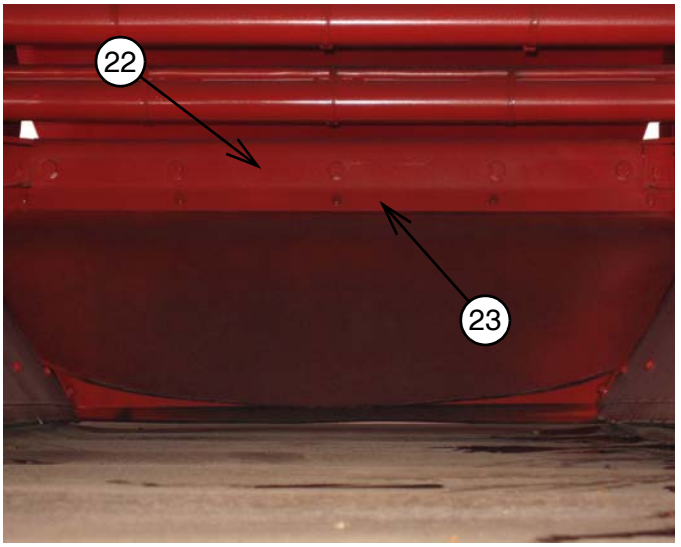
17: VIEW ON NON DRIVE BEARING ASSEMBLY

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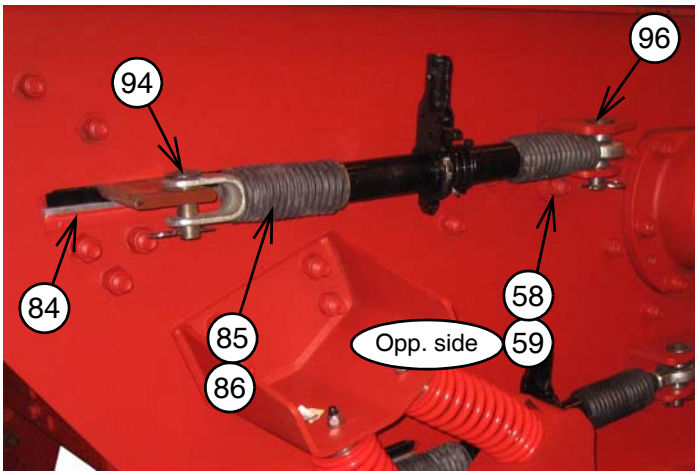
18: VIEW ON PRIMARY BOX HANGING RUBBERS



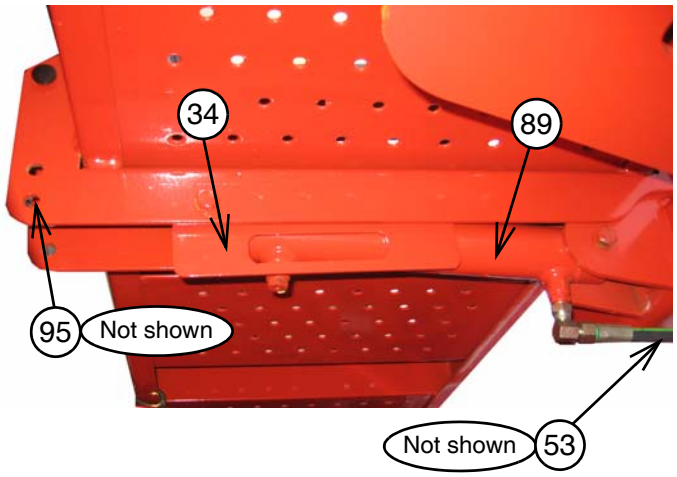
19: VIEW ON CENTRAL HANGING RUBBER



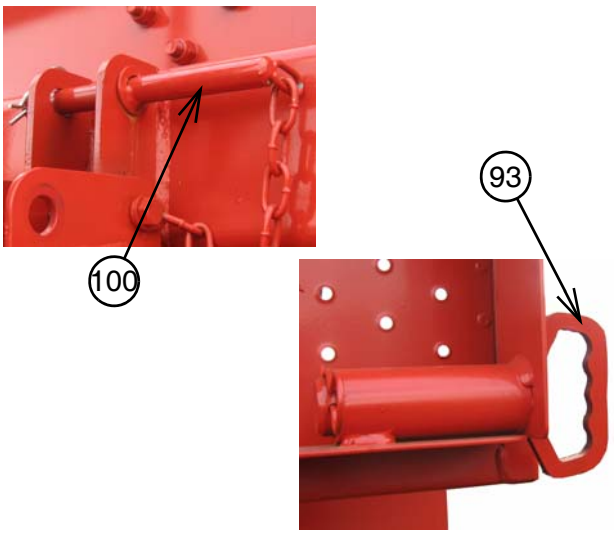
20: VIEW ON PRIMARY BOX HANGING RUBBERS



21: VIEW ON RATCHET MESH TENSIONER

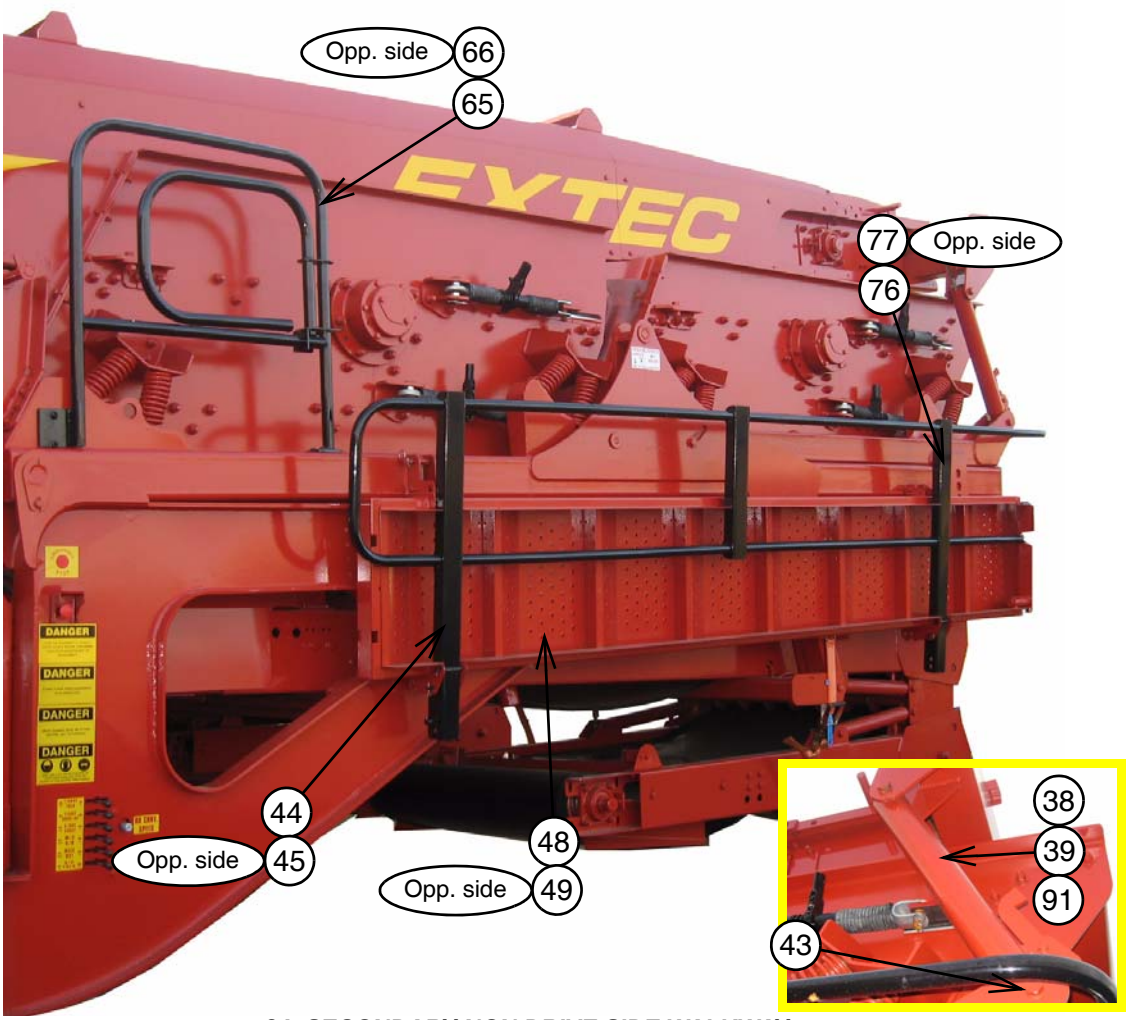


22: VIEW ON WALKWAY LIFT RAM

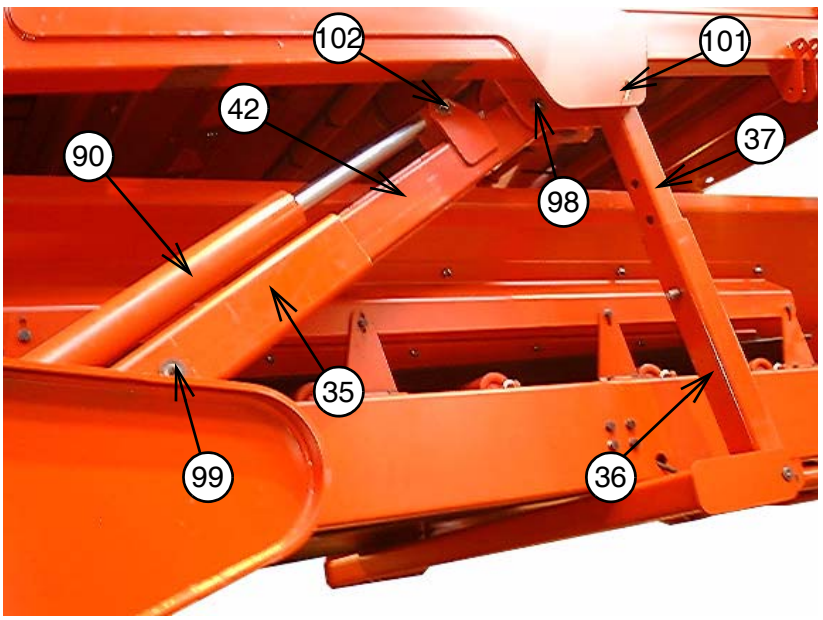


23: VIEW ON LOCKOUT PINS

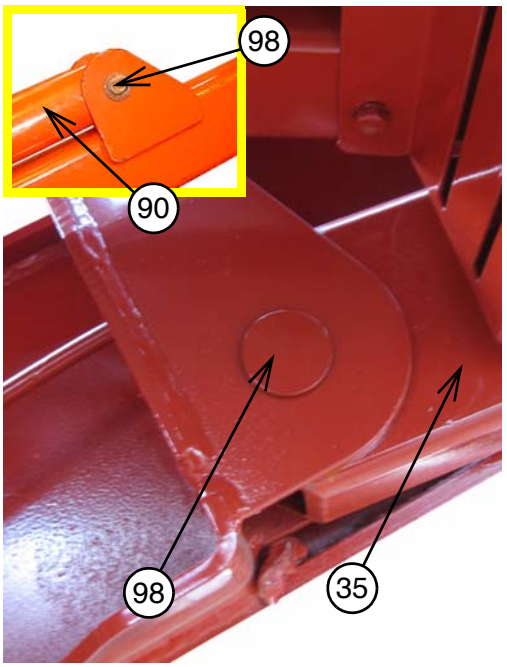
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24: SECONDARY NON DRIVE SIDE WALKWAY



25: VIEW ON NON DRIVE SIDE SUPPORT LEG



26: VIEW ON SUPPORT LEG PIVOT PIN

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Part No.	Part Description	Qty
1. G3090000	SPRING SUPPORT BUSH	16
2. G3490000	EXTENDED SPRING SUPPORT BUSH	16
3. G3870000	SPRING RETAINER	16
4. G4030000	REAR CROSS MEMBER	4
5. G4040000	MESH BED CROSS MEMBER	10
6. G4050000	MESH RETAINER	3
7. G4070000	FRONT END CROSS MEMBER	4
8. G4080000	FRONT MESH HOOK	4
9. G4100000	BEARING HOUSING	4
10. G4110000	BEARING HOUSING CAP (NON DRIVE SIDE)	2
11. G4130000	ECCENTRIC SHAFT	2
12. G4140000	CENTRE TUBE HOUSING	2
13. G4170000	FRONT MESH HOOK BOTTOM RETAINER (NON DRIVE SIDE)	4
14. G4180000	FRONT RH MESH HOOK BOTTOM RETAINER	4
15. G4320000	MESH TENSIONING SPRING BAR (BOTTOM DECK)	2
G5380000	MESH TENSIONING SPRING BAR (TOP DECK)	2
16. G4450000	REAR HANGING RUBBER CLAMP	1
17. G4460000	SECONDARY BOX SIDE DEFLECTOR (NON DRIVE SIDE)	1
18. G4470000	SECONDARY BOX SIDE DEFLECTOR	1
19. G4650000	PRIMARY BOX TOP NOSE ASSEMBLY	1
20. G5430000	SIDE HANGING RUBBER BRACKET LH	2
21. G5440000	SIDE HANGING RUBBER BRACKET RH	2
22. G4740000	HANGING RUBBER BRACKET	1
23. G4750000	HANGING RUBBER CLAMP	1
24. G4840000	FRONT MESH HOOK END SEAL (NON DRIVE SIDE)	4
25. G4850000	FRONT MESH HOOK END SEAL	4
26. G4870000	BEARING HOUSING DUST PLATE (NON DRIVE SIDE)	2
27. G4900000	SECONDARY BOX NOSE ASSEMBLY	1
28. G4920000	REAR SPRING MOUNT (NON DRIVE SIDE)	2
29. G4930000	REAR SPRING MOUNT	2
30. G4970000	FRONT SPRING MOUNT (NON DRIVE SIDE)	2
31. G4980000	FRONT SPRING MOUNT	2
32. G5220000	DRIVE HOUSING	2
33. G5230000	MOTOR MOUNTING PLATE	2

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Part No.	Part Description	Qty
34. G5360000	WALKWAY RAM STOP BRACKET	2
35. G5370000	SUB FRAME LIFT LEG OUTER	2
36. G5390000	SUB FRAME TO TAIL CONVEYOR LINK OUTER	2
37. G5400000	SUB FRAME TO TAIL CONVEYOR LINK INNER	2
38. G5800000	SUB FRAME TO MAIN CONVEYOR LINK INNER	2
39. G5810000	SUB FRAME TO MAIN CONVEYOR LINK OUTER	2
40. G5460000	TOP DECK CHUTE BRACKET (NON DRIVE SIDE)	1
41. G5470000	TOP DECK CHUTE BRACKET	1
42. G5480000	SUB FRAME LIFT LEG INNER	2
43. G5820000	SUB FRAME TO MAIN CONVEYOR LINK RETAINING HOOK	2
44. G8340000	WALKWAY HANDRAIL (NON DRIVE SIDE)	1
45. G8350000	WALKWAY HANDRAIL	1
46. G5520000	SUB FRAME (NON DRIVE SIDE)	1
47. G5530000	SUB FRAME	1
48. G5540000	WALKWAY (NON DRIVE SIDE)	1
49. G5550000	WALKWAY	1
50. G5560000	STEEL PIPE (LOWER)	1
51. G5570000	STEEL PIPE (FRONT UPPER)	1
52. G5580000	STEEL PIPE (REAR UPPER)	1
53. G5590000	STEEL PIPE (REAR)	1
54. G5600000	PRIMARY BOX SIDE PLATE (NON DRIVE SIDE)	1
55. G5610000	PRIMARY BOX SIDE PLATE	1
56. G5620000	SECONDARY BOX SIDE PLATE (NON DRIVE SIDE)	1
57. G5630000	SECONDARY BOX SIDE PLATE	1
58. G5640000	RATCHET LINK BASE BRACKET	4
59. G5650000	RATCHET LINK BASE BRACKET (NON DRIV E SIDE)	4
60. G5660000	PRIMARY BOX BOTTOM NOSE ASSEMBLY	1
61. G5670000	REAR SPILL PLATE	1
62. G5680000	REAR CHUTE SUPPORT	1
63. G5690000	SECONDARY BOX NOSE RUBBER CLAMP	2
64. G5700000	TOP DECK CHUTE	1
65. G8240000	WALKWAY GATE (NON DRIVE SIDE)	1
66. G8250000	WALKWAY GATE	1
67. G5730000	PRIMARY BOX SUB FRAME (NON DRIVE SIDE)	1
68. G5740000	PRIMARY BOX SUB FRAME	1

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Part No.	Part Description	Qty
69. G5750000	MAIN SUB FRAME REAR BEAM	1
70. G5760000	PRIMARY BOX SUB FRAME REAR BEAM	1
71. G5770000	PIPE CLAMPING BRACKET (HOOKED)	2
72. G5780000	PIPE CLAMPING BRACKET	1
73. G5790000	PIPE CLAMPING BRACKET (PACKER)	1
74. G5450000	SIDE HANGING RUBBER CLAMP	2
75. A0370000	HANGING RUBBER FIXING BRACKET	4
76. G8360000	WALKWAY HANDRAIL	1
77. G8370000	WALKWAY HANDRAIL	1
78. BT3010	OUTER BEARING	4
79. BT3507	BEARING INSERT KIT	4
80. BT8003	DISTANCE RING	2
81. BT8008	OIL SEAL	4
82. BT8507	COUPLING ASSEMBLY	2
83. SC2001	SPRING	16
84. FD6010	DUST SEAL STRIP (3M LONG)	2
85. FD4106	RATCHET ASSEMBLY	8
86. FD4107	RATCHET HANDLE	4
87. HM1026	HYDRAULIC MOTOR	2
88. HR1046	PRIMARY BOX LIFT RAM	2
89. HR1001	WALKWAY LIFT RAM	2
90. HR1066	SUB FRAME LIFT RAM	2
91. HR1065	MAIN CONVEYOR LIFT RAM	2
92. PN1026	PRIMARY BOX LIFT RAM PIN	4
93. PN1027	PRIMARY BOX ANGLE LOCKOUT PIN	2
94. PN1029	RATCHET FIXING PIN (SHORT)	8
95. PN1065	WALKWAY HAND RAIL LOCKOUT PIN	6
96. PN1072	RATCHET FIXING PIN (LONG)	8
97. PN1110	SUB FRAME PIVOT PIN	2
98. PN1111	SUPPORT LEG PIVOT PIN	6
99. PN1112	SUPPORT LEG LOCKOUT PIN	2
100. PN1114	WALKWAY LOCK OUT PIN	2
101. PN1118	SCREENBOX TO TAIL CONVEYOR RAM PIN	2
102. PN1120	SUBFRAME LIFT RAM TOP PIN	2
103. PN1025	PRIMARY BOX SUBFRAME PIVOT PIN	2

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15. HYDRAULIC HOSES

When ordering hydraulic hoses, please quote the number stamped on the end of the hose.

The number is in the format HH****.

Complete Hydraulic Hose Kits

Part No.	Part Description	Quantity
1. HHSA01	REAR CHASSIS KIT	1
2. HHSA02	FRONT CHASSIS KIT	1
3. HHSA06	REAR CHASSIS KIT (ADD FOR NO TRACKS OPTION)	1
4. HHSA09	TOWING BOGIE KIT "L" (OPTION)	1
5. HHSB04	ENGINE BAY GRID TIP KIT (ADDITIONAL)	1
6. HHSB05	OIL COOLER KIT "T" (OPTIONAL)	1
7. HHSC01	HOPPER KIT A	1
8. HHSC02	HOPPER KIT B	1
9. HHSC05	SHREDDER KIT (OPTIONAL)	1
10. HHSD01	MAIN CONVEYOR HYDRAULIC HOSE KIT	1
11. HHSE01	SIDE CONVEYOR HYDRAULIC HOSES	1
12. HHSF01	TAIL CONVEYOR KIT	1
13. HHSG01	SCREENBOX/SUBFRAME KIT	1
14. HHSH01	VIBRATING GIRD HYDRAULIC HOSE KIT	1
15. HHSJ01	WATER PUMP KIT (OPTION)	1
16. HHSJ02	WATER PUMP KIT - TAIL CONVEYOR ONLY (OPTION)	1
17. HHSK01	POWER PACK KIT	1
18. HHSK02	ENGINE BAY TRACKS KIT	1
19. HHSK03	ENGINE BAY JACKING LEG KIT	1

Rear Chassis Kit

Kit Number: HHSA01

Revision: Rev 7

Date: 30/10/2006

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2511	¾" R2T	1.780	F	S90F	M/C REAR BULKHEAD TO M/C BULKHEAD, PRESSURE
H2512	¾" R2T	1.790	F	S90F	M/C REAR BULKHEAD TO REAR MANIFOLD

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Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2515	¾" R2T	1.620	F	F	V/G BULKHEAD TO STEEL, PRESSURE
H2516	¾" R2T	1.670	F	S90F	V/G RETURN, STEEL TO MANIFOLD
H2517	¾" R2T	3.670	F	F	HOPPER REAR BULKHEAD TO HOPPER MOTOR, PRESSURE
H2518	¾" R2T	2.790	F	S90F	HOPPER MOTOR TO REAR MANIFOLD, RETURN
H2519	¼" R2T	6.330	F	F	HOPPER LANDING LEG (BULKHEAD) RETURN TO TEE
H2520	¼" R2T	6.390	F	F	HOPPER LANDING LEG (BULKHEAD) PRESSURE TO TEE
H2521	¼" R2T	1.800	F	F	GRID TIP (REAR BULKHEAD) TO TEE, RETURN
H2522	¼" R2T	1.800	F	F	GRID TIP (REAR BULKHEAD) TO TEE, PRESSURE
H2523	¼" R2T	1.770	F	C90F	MESH CHANGE REAR BULKHEAD TO M/C BULKHEAD
H2524	¼" R2T	3.100	F	F	GRID FLAIRS (BULKHEAD) TO TEE
H2722	¼" R2T	5.100	F	C90F	V/G MOTOR DRAIN TO BULKHEAD
H2647	¾" R2T	3.500	F	F	SHREDDER PRESSURE, BULKHEAD TO MOTOR
H2649	¾" R2T	2.970	F	S90F	SHREDDER MOTOR RETURN TO MANIFOLD
H2528	¼" R2T	3.420	F	C90F	TEE ON H2525 TO R/H SHREDDER LIFT RAM
H2529	¼" R2T	2.100	F	C90F	TEE ON H2525 TO L/H SHREDDER LIFT RAM
H2532	3/8" R2T	0.500	F	C90F	L/H JACKLEG RAM RETURN TO TEE
H2533	3/8" R2T	0.645	F	C90F	L/H JACKLEG RAM PRESSURE TO BALANCING VALVE
H2534	3/8" R2T	0.500	F	C90F	R/H JACKLEG RAM RETURN TO TEE
H2535	3/8" R2T	0.645	F	C90F	R/H JACKLEG RAM PRESSURE TO BALANCING VALVE
H2590	¼" R2T	2.980	F	C90F	SHREDDER-BULKHEAD-RAM-RETURN
H2591	¼" R2T	4.320	F	C90F	SHREDDER-BULKHEAD-RAM-RETURN

Front Chassis Kit

Kit Number: HHSA02

Revision: Rev 12

Date: 14/01/2004

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2530	¼" R2T	2.250	F	C90F	BOGIE LOCKING PIN SPOOL PORT "B" TO RAM RETURN
H2531	¼" R2T	2.130	F	S90F	T/C BULKHEAD TO P/P BULKHEAD, PRESSURE

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Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2600	¾" R2T	4.000	F	S90F (M30 X 2)	T/C BULKHEAD, RETURN, TO TEE (TO R/H S/C)
H2605	¾" R2T	2.380	F	S90F (M30 X 2)	TEE (FROM T/C) TO R/H S/C, PRESSURE
H2606	¾" R2T	2.750	F	F	R/H S/C TO TEE (ON R/H S/C WEBTEC)
H2611	¾" R2T	2.700	F	F	TEE (ON R/H S/C WEBTEC) TO L/H S/C
H2612	¾" R2T	5.150	F	F	L/H S/C TO FRONT MANIFOLD
H2617	¾" R2T	4.520	F	F	S/BOX SUBFRAME PIPE TO P/P BULKHEAD, PRESSURE
H2625	¾" R2T	4.000	F	F	S/BOX SUBFRAME PIPE TO FRONT MANIFOLD
H2630	¾" R2T	1.750	F	F	SCREENBOX DRAIN TEE TO FRONT BULKHEAD
H2633	¼" R2T	5.960	F	F	FRONT MANIFOLD RETURN TO TEE
H2897	1" R1T	1.250	F	F	TRACK SPOOL (B) TO BULKHEAD
H2839	½" R2T	3.010	F	S90F	L/H SPOOL VALVE (TRACK) PRESSURE TO P/P BULKHEAD
H2840	½" R2T	3.030	F	S90F	JACKLEG SPOOL (A) TO P/P BULKHEAD, PRESSURE
H2662	3/8" R2T	3.310	F	F	JACKLEG SPOOL (B) TO P/P BULKHEAD, RETURN
H2663	3/8" R2T	3.310	F	F	L/H S/C WEBTEC BOTTOM TO ½" MALE TEE
H2950	½" R2T	0.940	F	S90F	½" MALE TEE TO TOP RH WEBTEC
H2951	½" R2T	1.200	F	S90F	M/C LIFT (TEE ON SPOOL) TO R/H RAM, PRESSURE
H2687	¼" R2T	2.200	F	F	M/C LIFT (TEE ON SPOOL) TO L/H RAM, PRESSURE
H2688	¼" R2T	3.300	F	F	R/H SPOOL C/O TO P/P BULKHEAD
H2843	½" R2T	4.140	F	S90F	L/H S/C WEBTEC TO MANIFOLD
H2620	½" R2T	0.670	F	S90F	BOGIE LIFT SPOOL, PRESSURE, TO QC COUPLING
H2664	¼" R2T	1.200	F	S90F	BOGIE LIFT SPOOL, RETURN TO QC COUPLING
H2665	¼" R2T	1.200	F	S90F	WALKWAYS SPOOL TO TEE, PRESSURE
H2675	¼" R2T	5.470	F	S90F	R/H S/C FOLD SPOOL PRESSURE (A) TO INBOARD RAM ROD END
H2678	¼" R2T	2.760	F	S90F	R/H S/C FOLD SPOOL RETURN (B) TO INBOARD RAM CYL END (TEE)
H2679	¼" R2T	2.740	F	S90F	RHS WEBTEC RETURN TO CHASSIS TEE
H2855	½" R2T	0.870	F	S90F	TEE TO POWERPACK BULKHEAD
H2898	1" R1T	1.420	F	S135F	L/H S/C FOLD SPOOL PRESSURE (A) TO INBOARD RAM ROD END
H2683	¼" R2T	3.370	F	S90F	L/H S/C FOLD SPOOL RETURN (B) TO INBOARD RAM CYL END (TEE)

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Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2684	¼" R2T	3.370	F	S90F	PRIMARY S/BOX LIFT SPOOL (TEE) TO L/H RAM, PRESSURE
H2689	¼" R2T	4.570	F	C90F	PRIMARY S/BOX LIFT SPOOL (TEE) TO R/H RAM, PRESSURE
H2690	¼" R2T	3.720	F	C90F	TAIL CONV LIFT SPOOL TO TEE, PRESSURE
H2691	¼" R2T	5.940	F	C90F	TEE ON T/C FOLD SPOOL TO TEE ON 1ST L/H RAM, PRESSURE
H2694	¼" R2T	6.610	F	F	TEE ON T/C FOLD SPOOL TO TEE ON 1ST R/H RAM, PRESSURE
H2695	¼" R2T	4.960	F	F	TEE ON T/C FOLD SPOOL TO TEE ON 1ST L/H RAM, RETURN
H2696	¼" R2T	7.090	F	F	TEE ON T/C FOLD SPOOL TO TEE ON 1ST R/H RAM, RETURN
H2697	¼" R2T	5.450	F	F	R/H SPOOL TANK PORT TO MANIFOLD
H2702	½" R2T	1.400	F	F	FRONT L/H SPOOL C/O TO FRONT R/H SPOOL PRESSURE
H2841	½" R2T	1.690	F	S90F	FRONT L/H SPOOL RETURN TO MANIFOLD
H2842	½" R2T	0.530	F	S90F	M/C REAR BULKHEAD TO REAR MANIFOLD
H2899	¼" R2T	5.470	F	S90F	BOGIE LOCKING PIN SPOOL PORT "A" TO RAM PRESSURE
H2959	½" R2T	0.750	S90F	S90F	FUEL TANK HOSES
H2960	3/8" R2T	0.750	S90F	S90F	FUEL TANK HOSES
H2961	3/8" R2T	1.000	S90F	S90F	FUEL TANK HOSES

Rear Chassis Kit (Add for no Tracks option)

Kit Number: HHSA06

Revision:

Date: 27/01/2004

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2878	¾" R2T	1.700	F	F	
H2880	¾" R2T	1.790	F	F	
H2881	½" R2T	1.780	F	F	
H2882	½" R2T	0.560	F	S90F	
H2884	¼" R2T	2.070	F	S90F	
H2885	¼" R2T	2.060	F	S90F	
H2871	½" R2T	2.34	f	S90F	

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Towing Bogie Kit "L" (Option)

Kit Number: HHSA09

Revision:

Date: 26/06/2002

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2749	¼" R2T	1.050	F	S90F	QC TO BOGIE, PRESSURE
H2750	¼" R2T	0.990	F	S90F	QC TO BOGIE, RETURN
H2666	¼" R2T	0.385	F	C90F	BOGIE, TEE TO RHS RAM, RETURN
H2667	¼" R2T	0.350	F	C90F	BOGIE, TEE TO LHS RAM, RETURN
H2668	¼" R2T	0.780	F	C90F	BOGIE, TEE TO RHS RAM, PRESSURE
H2669	¼" R2T	0.830	F	C90F	BOGIE, TEE TO LHS RAM, PRESSURE

Engine Bay Grid Tip Kit (Additional)

Kit Number: HHSB04

Revision:

Date:

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2740	½" R2T	0.360	F	S90F	P/P BULKHEAD TO P1, RC051 MANIFOLD
H2741	½" R2T	0.870	F	S90F	RC051 MANIFOLD T TO P/P MANIFOLD
H2742	¼" R2T	0.860	F	S90F	RC051 MANIFOLD (A) TO GRID TIP SPOOL (A) TEE
H2743	¼" R2T	0.945	F	S90F	RC051 MANIFOLD (B) TO GRID TIP SPOOL (B) TEE
H2547	½" R2T	1.250	F	S90F	CETOP P3 TO P/P SPOOL VALVE, PRESSURE

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Oil Cooler Kit "T" (Optional)

Kit Number: HHSB05

Revision: Rev 4

Date: 12/10/2004

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2744	1½" R1T	0.350	F	S90F	CHASSIS MANIFOLD TO 'IN' COOLER
H2745	1½" R1T	2.600	F	S90F	OIL COOLER 'OUT' TO TANK TEE
H2746	1½" R1T	1.200	F	S90F	

Hopper Kit A

Kit Number: HHSC01

Revision:

Date:

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2704	¼" R2T	1.430	F	F	HOPPER LANDING LEG R/H RETURN (TEE) TO HOSE H2708
H2706	¼" R2T	1.430	F	F	HOPPER LANDING LEG R/H PRESSURE (TEE) TO HOSE H2709
H2710	¼" R2T	5.330	F	S90F	GRID TIP RETURN (TEE) TO HOSE H2714
H2711	¼" R2T	2.130	F	F	GRID TIP (TEE) TO REAR RAM, RETURN
H2712	¼" R2T	5.270	F	S90F	GRID TIP PRESSURE (TEE) TO HOSE H2711
H2713	¼" R2T	2.100	F	F	GRID TIP (TEE) TO REAR RAM, PRESSURE
H2714	¼" R2T	0.820	F	S90F	GRID TIP HOSE H2710 TO FRONT RAM, RETURN
H2715	¼" R2T	0.660	F	S90F	GRID TIP HOSE H2712 TO FRONT RAM, PRESSURE
H2716	¼" R2T	2.160	F	F	R/H GRID FLAIR RAM (RETURN) TO TEE
H2717	¼" R2T	4.970	F	F	GRID FLAIRS, TEE TO HOSE H2718

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Hopper Kit B

Kit Number: HHSC02

Revision:

Date: 30/01/2003

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2705	¼" R2T	0.440	F	F	HOPPER LANDING LEG L/H RAM (RETURN) TO TEE
H2707	¼" R2T	0.440	F	F	HOPPER LANDING LEG L/H RAM (RETURN) TO TEE
H2708	¼" R2T	0.440	F	F	HOPPER LANDING LEG R/H RAM (RETURN) TO HOSE H2704
H2709	¼" R2T	0.440	F	S90F	HOPPER LANDING LEG R/H RAM (PRESSURE) TO HOSE H2706
H2751	3/16" R1T	4.250	1/8"F	1/8"S135F	GREASE HOSE, BEARING TO CENTRAL F RH
H2752	3/16" R1T	1.350	1/8"F	1/8"S90F	GREASE HOSE, BEARING TO CENTRAL R RH
H2753	3/16" R1T	5.500	1/8"F	1/8"S135F	GREASE HOSE, BEARING TO CENTRAL F LH
H2754	3/16" R1T	2.400	1/8"F	1/8"S90F	GREASE HOSE, BEARING TO CENTRAL R LH
H2755	3/16" R1T	6.800	1/8"F	1/8"S90F	GREASE HOSE, BEARING TO CENTRAL RHB
H2756	3/16" R1T	5.200	1/8"F	1/8"S90F	GREASE HOSE, BEARING TO CENTRAL LHB

Shredder Kit (Optional)

Kit Number: HHSC05

Revision:

Date:

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2648	¾" R2T	0.600	F	S90F	SHREDDER MOTOR LINK HOSE
H2650	¼" R2T	0.600	F	S90F	SHREDDER MOTOR DRAIN LINK HOSE

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Main Conveyor Hydraulic Kit

Kit Number: HHSD01

Revision:

Date: 07/01/2004

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2621	¾" R2T	0.600	F	F	M/C PIPE LINK HOSE, PRESSURE
H2622	¾" R2T	0.650	F	F(M30X2)	M/C PIPE TO MOTOR, PRESSURE
H2623	¾" R2T	0.570	F	F(M30X2)	M/C PIPE TO MOTOR, RETURN
H2624	¾" R2T	0.600	F	F	M/C PIPE LINK HOSE, RETURN
H2671	3/8" R2T	10.460	F	F	MESH CHANGE M/C BULKHEAD TO HOSE H2672
H2672	¼" R2T	1.850	F	S90F	MESH CHANGE HOSE H2671 TO TEE
H2673	¼" R2T	1.250	F	F	MESH CHANGE, TEE TO L/H RAM PRESSURE
H2674	¼" R2T	1.250	F	F	MESH CHANGE, TEE TO R/H RAM PRESSURE

Side Conveyor Hydraulic Hoses

Kit Number: HHSE01

Revision:

Date:

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2607	¾" R2T	0.480	F	F	R/H S/C PIPE LINK HOSE, PRESSURE
H2608	¾" R2T	0.525	F	F	R/H S/C PIPE TO MOTOR, PRESSURE
H2609	¾" R2T	0.490	F	F	R/H S/C PIPE TO MOTOR RETURN
H2610	¾" R2T	0.480	F	F	R/H S/C PIPE LINK HOSE, RETURN
H2613	¾" R2T	0.595	F	F	L/H S/C PIPE LINK HOSE, PRESSURE
H2614	¾" R2T	0.420	F	F	L/H S/C PIPE TO MOTOR, PRESSURE
H2615	¾" R2T	0.460	F	F	L/H S/C PIPE TO MOTOR RETURN
H2616	¾" R2T	0.530	F	F	L/H S/C PIPE LINK HOSE, RETURN
H2731	3/16" R1T	8.930	1/8"F	1/8"S90F	GREASE PIPE, L/H S/C TOP BEARING TO BULKHEAD (L/H)
H2732	3/16" R1T	8.160	1/8"F	1/8"S90F	GREASE PIPE, L/H S/C TOP BEARING TO BULKHEAD (R/H)
H2733	3/16" R1T	2.950	1/8"F	1/8"F	GREASE PIPE, L/H S/C BOTTOM BEARING TO BULKHEAD L/H
H2734	3/16" R1T	3.770	1/8"F	1/8"S90F	GREASE PIPE, L/H S/C BOTTOM BEARING TO BULKHEAD R/H

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Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2735	3/16" R1T	7.550	1/8"F	1/8"S90F	GREASE PIPE, R/H S/C TOP BEARING TO BULKHEAD (L/H)
H2736	3/16" R1T	8.420	1/8"F	1/8"S90F	GREASE PIPE, R/H S/C TOP BEARING TO BULKHEAD (R/H)
H2737	3/16" R1T	2.950	1/8"F	1/8"F	GREASE PIPE,R/H S/C BOTTOM BEARING TO BULKHEAD L/H
H2738	3/16" R1T	3.770	1/8"F	1/8"S90F	GREASE PIPE, R/H S/C BOTTOM BEARING TO BULKHEAD R/H

Tail Conveyor Kit

Kit Number: HHSF01

Revision:

Date: 07/01/2004

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2601	¾" R2T	0.820	F	F	T/C PIPE LINK HOSE, PRESSURE
H2602	¾" R2T	1.070	F	S90F (M30X2)	T/C MOTOR TO BULKHEAD, PRESSURE
H2603	¾" R2T	0.990	F	S90F (M30X2)	T/C MOTOR TO BULKHEAD, RETURN
H2604	¾" R2T	0.820	F	F	T/C PIPE LINK HOSE, RETURN
H2698	¼" R2T	2.070	F	S90F	TEE ON T/C L/H 1ST RAM TO L/H SECOND RAM, PRESSURE
H2699	¼" R2T	1.140	F	S90F	TEE ON T/C L/H 1ST RAM TO L/H SECOND RAM, RETURN
H2700	¼" R2T	2.070	F	S90F	TEE ON T/C R/H 1ST RAM TO R/H SECOND RAM, PRESSURE
H2701	¼" R2T	1.140	F	S90F	TEE ON T/C R/H 1ST RAM TO R/H SECOND RAM, RETURN
H2727	3/16" R1T	6.600	1/8"F	1/8"S90F	GREASE PIPE, T/C HEAD DRUM BEARING, DRIVE SIDE
H2728	3/16" R1T	8.000	1/8"F	1/8"S90F	GREASE PIPE, T/C HEAD DRUM BEARING, NON-DRIVE SIDE
H2729	3/16" R1T	0.900	1/8"F	1/8"S90F	GREASE PIPE, T/C IDLER BEARING, DRIVE SIDE
H2730	3/16" R1T	2.240	1/8"F	1/8"S90F	GREASE PIPE, T/C IDLER BEARING, NON-DRIVE SIDE

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ID: QA450-en-11785

Screenbox/Subframe Kit

Kit Number: HHSG01

Revision:

Date: 30/09/2004

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2626	¾" R2T	1.130	F	S90F	S/BOX SUBFRAME PIPE TO PRIMARY S/BOX, PRESSURE
H2627	¾" R2T	1.210	F	S90F	PRIMARY S/BOX RETURN TO SECONDART S/BOX PRESSURE
H2628	¾" R2T	0.810	F	S90F	SECONDARY S/BOX STEEL PIPE TO MOTOR, PRESSURE
H2629	¾" R2T	0.660	F	S90F	SECONDARY S/BOX RETURN TO SUBFRAME PIPE
H2631	¼" R2T	3.050	F	C90F	PRIMARY S/BOX MOTOR DRAIN TO TEE
H2632	¼" R2T	0.810	F	C90F	SECONDARY S/BOX MOTOR DRAIN TO TEE
H2676	¼" R2T	0.435	F	F	WALKWAY LIFT RAM TEE TO STEEL PIPE, L/H PRESSURE
H2677	¼" R2T	0.550	F	C90F	WALKWAY LIFT RAM TO STEEL PIPE, R/H PRESSURE
H2692	¼" R2T	1.200	F	C90F	T/C LIFT SPOOL (TEE) TO L/H LIFT RAM
H2693	¼" R2T	1.200	F	C90F	T/C LIFT SPOOL (TEE) TO R/H LIFT RAM

Vibrating Grid Hydraulic Hose Kit

Kit Number: HHSH01

Revision:

Date: 20/08/2003

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2634	¾" R2T	0.930	F	F	V/G STEEL TO GRID MOTOR, PRESSURE
H2635	¾" R2T	0.930	F	F	V/G STEEL TO GRID MOTOR, RETURN
H2718	¼" R2T	0.540	F	S90F	L/H GRID FLAIR RAM (RETURN) TO HOSE H2717

Water Pump Kit (Option)

Kit Number: HHSJ01

Revision: Rev 4

Date: 22/06/2005

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2651	¾" R2T	7.170	F	S135F	M/C BULKHEAD TO WATER PUMP, PRESSURE
H2652	¾" R2T	7.170	F	S135F	WATER PUMP RETURN

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Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2653	½" R2T	13.850	F	F	L/H SIDE CONVEYOR SPRAY BAR TO DOUBLE TEE
H2654	½" R2T	11.080	F	F	R/H SIDE CONVEYOR SPRAY BAR TO DOUBLE TEE
H2655	½" R2T	3.090	F	C90F	WATER PUMP TO DOUBLE TEE
H2656	½" R2T	2.060	F	S90F	TAIL CON B/H TO DOUBLE TEE
H2657	½" R2T	6.800	F	C90F	TAIL CON B/H TO SPRAY BAR

Water Pump Kit - Tail Conveyor Only (Option)

Kit Number: HHSJ02

Revision:

Date: 22/06/2005

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2651	¾" R2T	7.170	F	S135F	M/C BULKHEAD TO WATER PUMP, PRESSURE
H2652	¾" R2T	7.170	F	S135F	WATER PUMP RETURN
H2657	½" R2T	6.800	F	C90F	TAIL CON B/H TO SPRAY BAR
H2658	½" R2T	6.000	F	C90F	PUMP TO T/C B/H

Power Pack Kit

Kit Number: HHSK01

Revision: Rev 13

Date: 18/10/2006

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H3540	¾" R2T	0.980	F	S135F	TANDEM PUMP SECOND SLICE TO SHREDDER BALL VALVE
H3541	¾" R2T	1.165	F	S90F	OUTER PTO PUMP TO VIBRATING GRID BALL VALVE
H3542	¾" R2T	0.835	F	S90F	LHS TRACK SPOOL VALVE C/O TO T/C BALL VALVE
					(NO-TRAC MAIN PUMP 2ND. SLICE TO BALL VALVE MANIFOLD P5 FRONT)
H3543	¾" R2T	0.740	F	S90F	RHS TRACK SPOOL VALVE C/O TO M/C BALL VALVE
					(NO-TRAC MAIN PUMP 1ST SLICE TO BALL VALVE MANIFOLD P4 FRONT)
H3545	½" R2T	2.130	F	S90F	P/P SPOOL VALVE TO P/P MANIFOLD
H3548	½" R2T	1.160	F	S135F	INNER TANDEM PUMP (HOPPER) TO P/P BULKHEAD
H3549	½" R2T	0.820	F	S90F	P/P SPOOL VALVE C/O TO HOPPER BALL VALVE PRESSURE (RUN OF TEE)

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Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H3558	1" R1T	1.270	F	S90F	BALL VALVE MANIFOLD RETURN (P5/P6) TO P/P MANIFOLD LH BOTTOM
H3559	1" R1T	0.900	F	S90F	BALL VALVE MANIFOLD RETURN (P1/P2) TO P/P MANIFOLD RH BOTTOM
H3560	¾" R2T	1.130	F	S135F	T/C BALL VALVE PRESSURE TO P/P BULKHEAD
H3561	¾" R2T	1.260	F	F	S/BOX BALL VALVE PRESSURE TO P/P BULKHEAD
H3564	¾" R2T	9.000	F	S90F	WEBTEC PR TO 6 LEVER P1
H3566	¾" R2T	1.240	F	S135F	M/C BALL VALVE PRESSURE TO REAR BULKHEAD
H3567	¾" R2T	1.100	F	S135F	SHREDDER BALL VALVE PRESSURE TO REAR BULKHEAD
H3568	¾" R2T	0.960	F	S135F	V/G BALL VALVE PRESSURE TO REAR BULKHEAD
H3572	¾" R2T	0.810	F	S90F	INNER PTO PUMP TO SCREEN BOX BALL VALVE
H3573	¼" R2T	0.440	F	S135F	GRID SPOOL TO REAR BULKHEAD TEE RETURN
H3574	¼" R2T	0.445	F	S135F	GRID SPOOL TO REAR BULKHEAD TEE PRESSURE
H3575	¼" R2T	0.510	F	S135F	HOPPER LEG SPOOL TO REAR BULKHEAD, PRESSURE
H3576	¼" R2T	0.510	F	S135F	HOPPER LEG SPOOL TO REAR BULKHEAD, RETURN
H3577	¼" R2T	0.500	F	S135F	GRID FLAIR SPOOL TO REAR BULKHEAD, PRESSURE
H3578	¼" R2T	0.530	F	S135F	SHREDDER LIFT SPOOL TO REAR BULKHEAD, PRESSURE
H3579	¼" R2T	0.570	F	S135F	MESH CHANGE FRONT TO REAR BULKHEAD
H3582	¼" R2T	2.470	F	S90F	FRONT BULKHEAD (SCREENBOX DRAIN) TO TANK
H3583	¾" 4WMS	2.500	F	F	OUTER TRACK PUMP TO LHS TRACK VALVE, PRESSURE
H3584	¾" 4WMS	2.700	F	F	INNER TRACK PUMP TO RHS TRACK VALVE, PRESSURE
H3592	¼" R2T	0.530	F	S135F	SHREDDER LIFT SPOOL TO REAR BULKHEAD, RETURN
H3593	1" R2T	0.890	F	F	CENTRE MANIFOLD TO FRONT BULKHEAD
H3719	¼" R2T	1.290	F	S90F	VIBRATING GRID MOTOR DRAIN, REAR BULKHEAD TO TANK
H3588	¼" R2T	0.670	F	S90F	6 LEVER BALL VALVE WITH FLOW CONTROL LINK PIPE - HV3022
H3538	½" R2T	0.800	F	S90F	PRE-FILTER TO BULKHEAD
H3589	½" R2T	2.130	F	S90F	PRIMER OUT TO PUMP
H3590	½" R2T	2.180	F	S135F	TWIN FILTER TO INJECTOR RAIL
H3591	3/8" R2T	2.180	F	S135F	TWIN FILTER TO PUMP
H3840	1¼" R1T	0.920	S90F	S90F	TANK TO TANDEM PUMP

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Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H3841	1¼" R1T	1.680	S90F	S135F	TANK TO PTO PUMP
H3842	1½" R1T	1.480	S135S	S135F	TANK TO DAVID BROWN PUMP
H3843	1" R1T	1.570	S135S	S90F	TANK TO EXTRA PTO PUMP
H3844	1½" R1T	0.380	F	F	POWERPACK MANIFOLD TO TEE
H3845	1½" R1T	0.840	F	S90F	TANK FILTER TO TEE

Engine Bay Tracks Kit

Kit Number: HHSK02

Revision:

Date: 01/12/2003

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H3544	¾" R2T	0.790	F	S90F	LH TRACK VALVE TO RH CENTRE MANIFOLD
H3546	½" R2T	1.600	F	F	CETOP P1 TO P/P BULKHEAD (TRACK SPOOL)
H3547	½" R2T	2.300	F	S90F	CETOP P3 TO P/P SPOOL VALVE, PRESSURE
H3550	½" R2T	0.465	F	S90F	CETOP CH TO TEE ON LHS TRACK VALVE GALLERY PORT
H3551	½" R2T	0.490	F	F	CETOP T TO MANIFOLD
H3552	½" R2T	2.300	F	S90F	CETOP P2 TO P/P BULKHEAD
H3553	¼" R2T	0.945	F	S90F	CETOP A2 TO RHS TRACK VALVE P1 (TOP)
H3554	¼" R2T	0.860	F	S90F	CETOP A1 TO LHS TRACK VALVE P1(TOP)
H3555	¼" R2T	0.295	F	S90F	CETOP B1 TO LHS TRACK VALVE P2 (BOTTOM)
H3556	¼" R2T	0.535	F	S90F	CETOP B2 TO RHS TRACK VALVE P2 (BOTTOM)
H3557	¾" R2T	1.070	F	S90F	RHS TRACK VALVE TANK PORT (CHECK VALVE) TO MANIFOLD
H3570	¼" R2T	1.740	F	S90F	REAR B/HEAD TEE GRID TIP RETURN TO CETOP A3
H3571	¼" R2T	1.760	F	S90F	REAR B/HEAD TEE GRID TIP PRESSURE TO CETOP B3
H3594	¾" 4WMS	0.660	F(M30X2)	S90F	RH TRACK VALVE TOP TO P/P BASE BHEAD BTM RIGHT
H3595	¾" 4WMS	0.545	F (M30X2)	S90F	RH TRACK VALVE BTM TO P/P BASE BHEAD TOP RIGHT
H3596	¾" 4WMS	0.760	F (M30X2)	S90F	LH TRACK VALVE TOP TO P/P BASE BHEAD BTM LEFT
H3597	¾" 4WMS	0.625	F (M30X2)	S90F	LH TRACK VALVE BTM TO P/P BASE BHEAD TOP LEFT
H3598	½" R2T	0.550	F	S90F	RH TRACK DRAIN TANK TO P/P BASE BHEAD
H3599	½" R2T	0.550	F	S90F	LH TRACK DRAIN TANK TO P/P BASE BHEAD

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Engine Bay Jacking Leg Kit

Kit Number: HHSK03

Revision:

Date: 14/01/2004

Hose No	Pipe	Length (m)	Fitting (A)	Fitting (B)	LOCATION
H2580	3/8" R2T	3.370	F	F	JACK LEGS RETURN, FRONT BULKHEAD TO TEE
H2581	3/8" R2T	3.010	F	F	JACK LEGS PRESSURE, FRONT BULKHEAD TO FLOW BALANCING VALVE

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16. STICKERS

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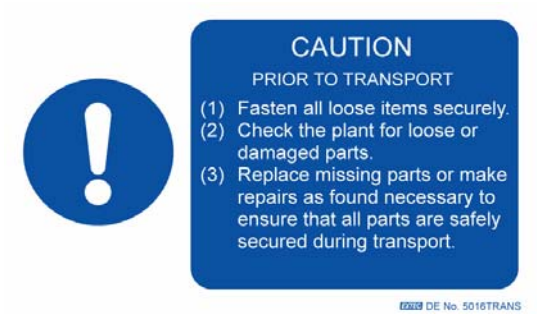
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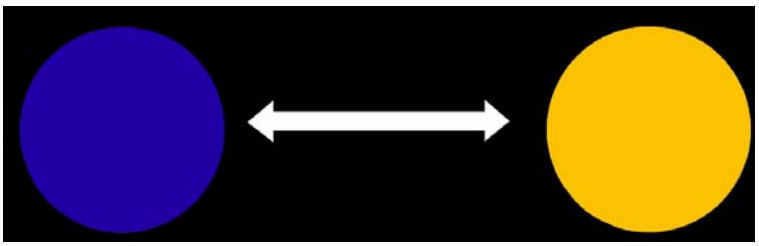
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4



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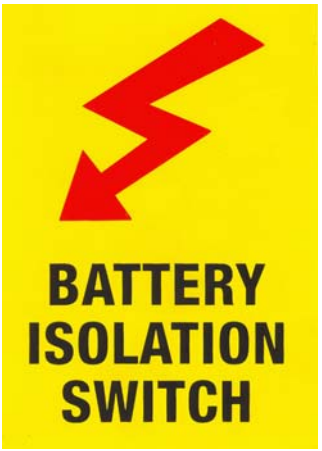
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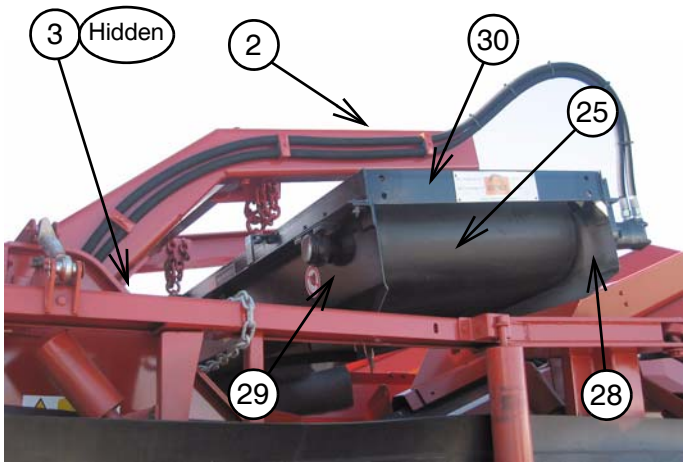
Part No.		Part Description	Quantity
1.	DE0025	DANGER DRIVE GUARDS	4
2.	DE0027	EMERGENCY STOP 100X90 MM	4
3.	DE0038	WARNING - HOPPER MUST BE EMPTY	2
4.	DE0035	MAX TOW SPEED	1

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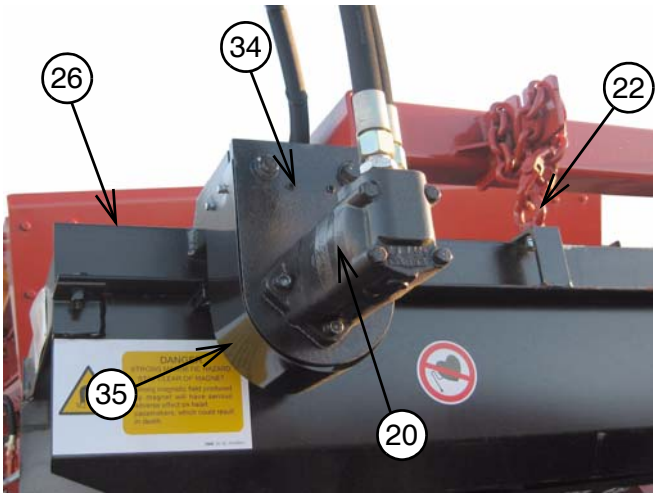
Part No.	Part Description	Quantity
5. DE0045	IMPORTANT WARNING - VIBRATING GRID SPEED	2
6. DE0051	DANGER - HEAD, EAR, EYE PROTECTION	4
7. DE0054	DANGER STAND CLEAR	4
8. DE0055	DANGER STOP EQUIPMENT	4
9. DE0056	DANGER - SUSPENSION U BOLTS	2
10. DE0057	MULTIVIS 46 OIL DECAL	2
11. DE0059	DANGER - LOWER GRID FLARES	1
12. DE1003	GRID SERVICE DATA	1
13. DE1005	CE YEAR DATE DECAL	1
14. DE1007	FORWARD/REVERSE DECAL BLUE YELLOW DOTS	2
15. DE1012	VIBRATING GRID GREASE	2
16. DE1043	BATTERY ISOLATION SWITCH	1
17. DE5001	DANGER - FALLING MATERIAL HAZARD (HARD HAT)	2
18. DE5023	DANGER - FALLING HAZARD/ SWITCH OFF, LOCKOUT & TAGOUT	2
19. DE5008	DANGER - CRUSHING HAZARD	2
20. DE5010	DANGER - ENTANGLEMENT HAZARD SWITCH OFF, LOCKOUT	2
21. DE5011	DANGER - SKIN INJECTION HAZARD DO NOT USE HANDS	1
22. DE5012	DANGER - SKIN INJECTION HAZARD	1
23. DE5013	DANGER - IMPACT HAZARD	2
24. DE5014	DANGER - LOOSE OR BAGGY CLOTHING	2
25. DE5016	DANGER - PRIOR TO TRANSPORT	1
26. DE5019	DANGER - LOCKOUT PROCEDURE	1
27. DE5022	DANGER - STOP & LOCKOUT PLANTBEFORE MAINTENANCE	1

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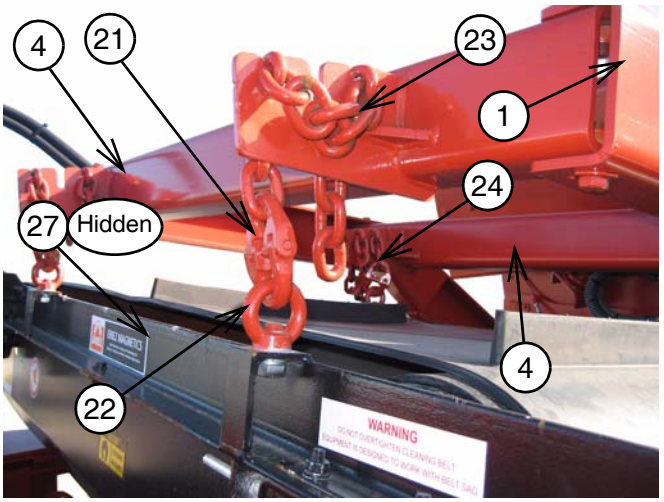
17. MAGNET



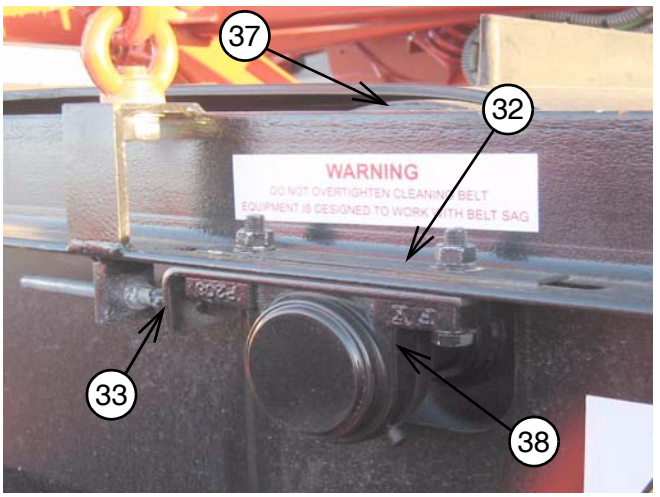
1: View on Drive End of the Magnet



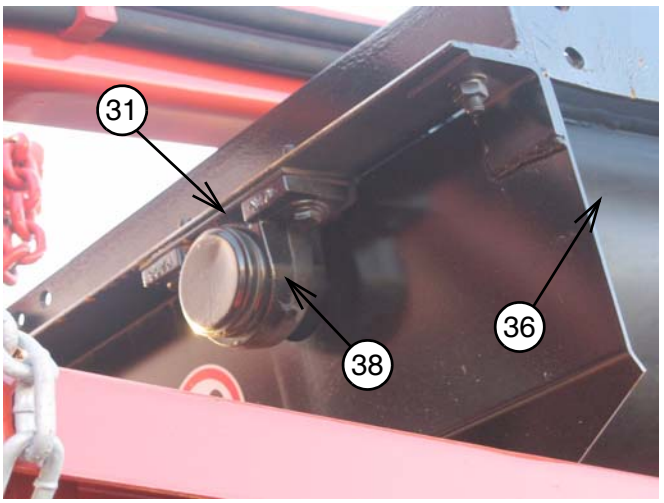
2: View on the Magnet Motor



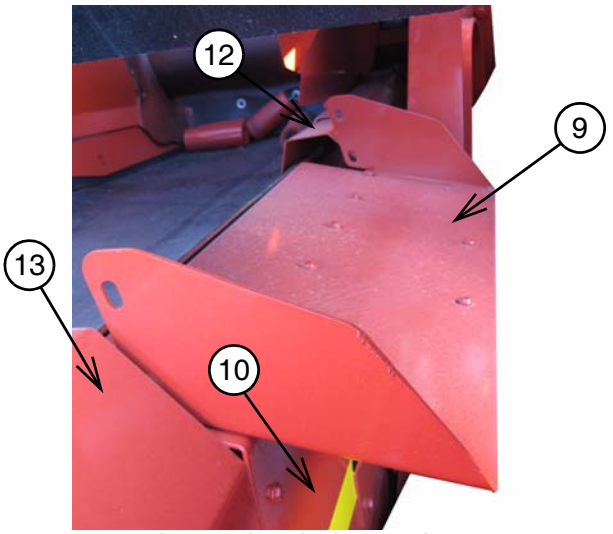
3: View on the Magnet Structure Frame



4: View on the Magnet Non-Drive Bearing



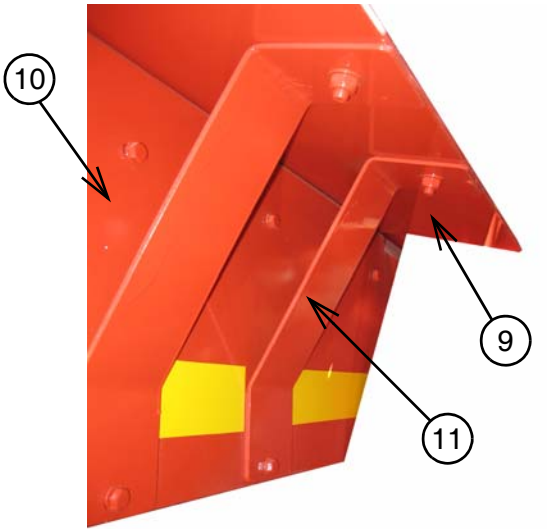
5: View on the Magnet Drive Bearing



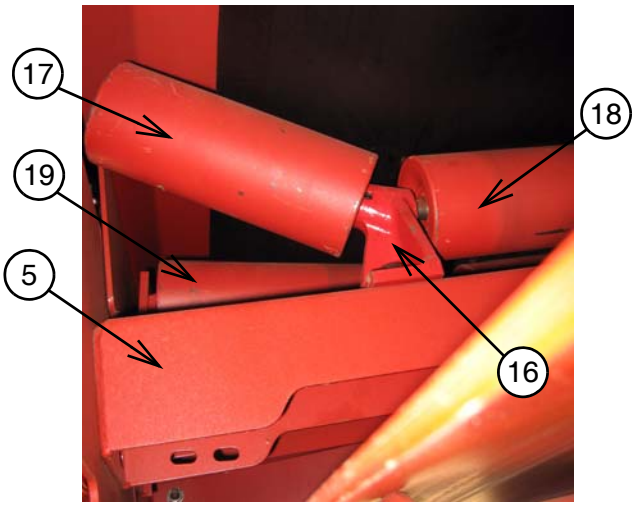
6: View on the Discharge Chute

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7: View on the Bottom of the Discharge Chute



8: View on the Conveyor Rollers

Part No.	Part Description	Qty
1. C7890000	LH SUPPORT ARM	1
2. C7900000	RH SUPPORT ARM	1
3. C7910000	SUPPORT LOWER CROSS BRACE	1
4. C7920000	SUPPORT UPPER CROSS BEAM	2
5. D3200000	MAIN CONVEYOR X-BEAM	2
6. D5490000	MAIN CONVEYOR WING BAR	1
7. D6890000	BASE IMPACT BAR	1
8. D6900000	CONVEYOR WING BAR	1
9. D12050000	ALUMINIUM DISCHARGE CHUTE	1
10. D12060000	MAIN CONVEYOR MAGNET DISCHARGE CHUTE ASSEMBLY	1
11. D12070000	ALUMINIUM CHUTE SUPPORT	2
12. D12080000	DISCHARGE CHUTE SMALL FLAIR	1
13. D12100000	DISCHARGE CHUTE LARGE FLAIR	1
14. D12130000	OPTIONAL GREEDY BOARD	1
15. D12140000	OPTIONAL GREEDY BOARD	1
16. CR1006	40" ROLLER BRACKET	4
17. CR1012	WING ROLLER 102mm X 150mm	2
18. CR1017	BED ROLLER	2
19. CR1021	BTM SECTION ROLLER	2
20. HM1010	HYDRAULIC MOTOR	1
21. MA1001	SHACKLE CONNECTOR	4

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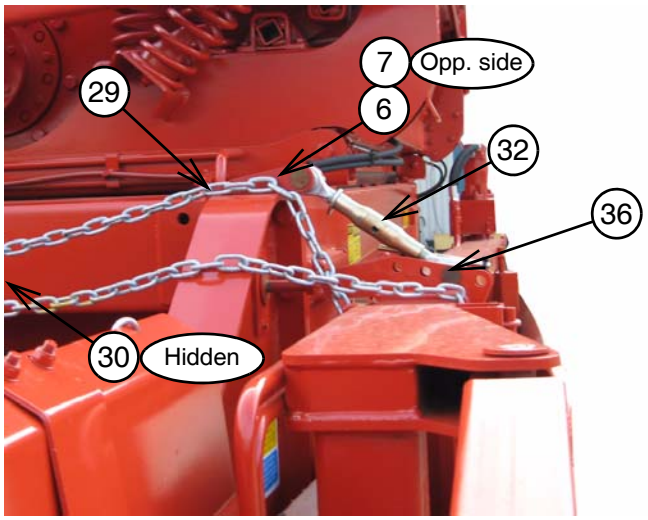
Part No.	Part Description	Qty
22. DIN582	M24 LIFTING EYE	4
23. MA1060	10 LINK CHAIN	2
24. MA1065	16 LINK CHAIN	2
25. MA1054	MAGNET BELT	1
26. MA1050	MAGNET ASSEMBLY	1
27. MA1050_01	MAGNET BOX	1
28. MA1050_02	MAGNET DRIVE SIDE FLAIR	1
29. MA1050_03	MAGNET NON DRIVE SIDE FLAIR	1
30. MA1050_04	MAGNET CONVEYOR FRAME	1
31. MA1050_05	DRIVE BEARING MOUNTING PLATE	2
32. MA1050_06	NON DRIVE BEARING MOUNTING PLATE	2
33. MA1050_07	BEARING ADJUSTER	2
34. MA1050_08	MOTOR MOUNTING PLATE	1
35. MA1050_09	DRIVE COUPLING COVER	1
36. MA1051	MAGNET DRIVE DRUM	1
37. MA1052	MAGNET TAIL DRUM	1
38. BT1008	BEARING	4

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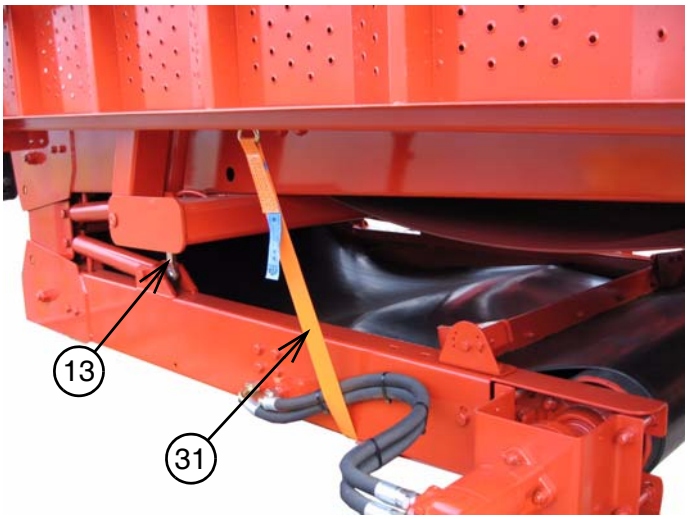
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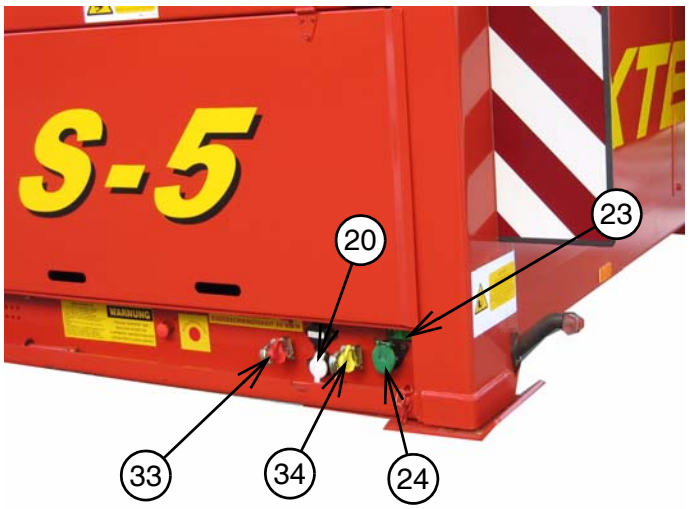
18. TRANSPORTATION PARTS



1: VIEW ON SIDE CONVEYOR RETAINERS



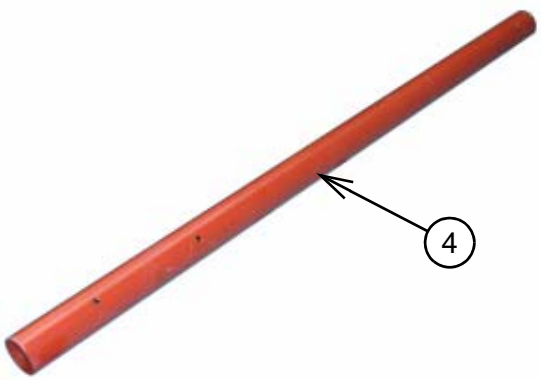
2: VIEW ON TAIL CONVEYOR RETAINERS



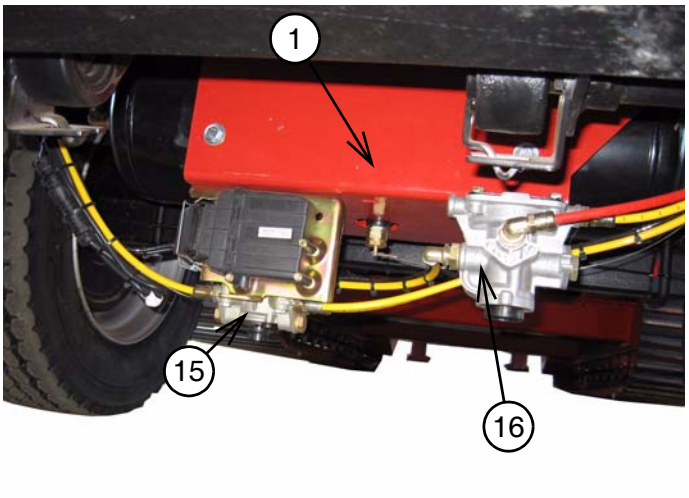
3: VIEW ON TRACTOR UNIT CONNECTIONS



4: VIEW ON FRONT LIGHTING



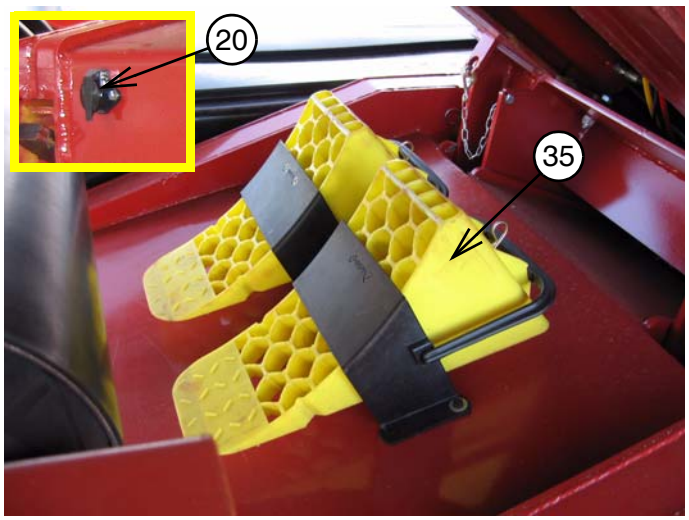
5: VIEW ON CENTRE MUD GUARD BRACKET



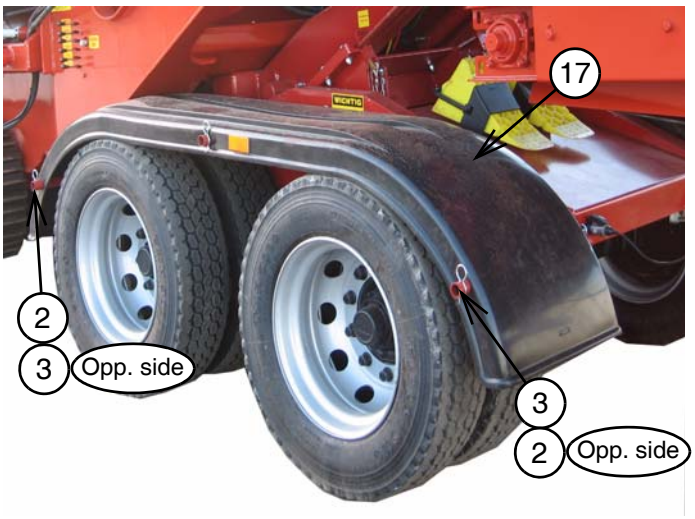
6: VIEW ON BOGIE ABS SYSTEM

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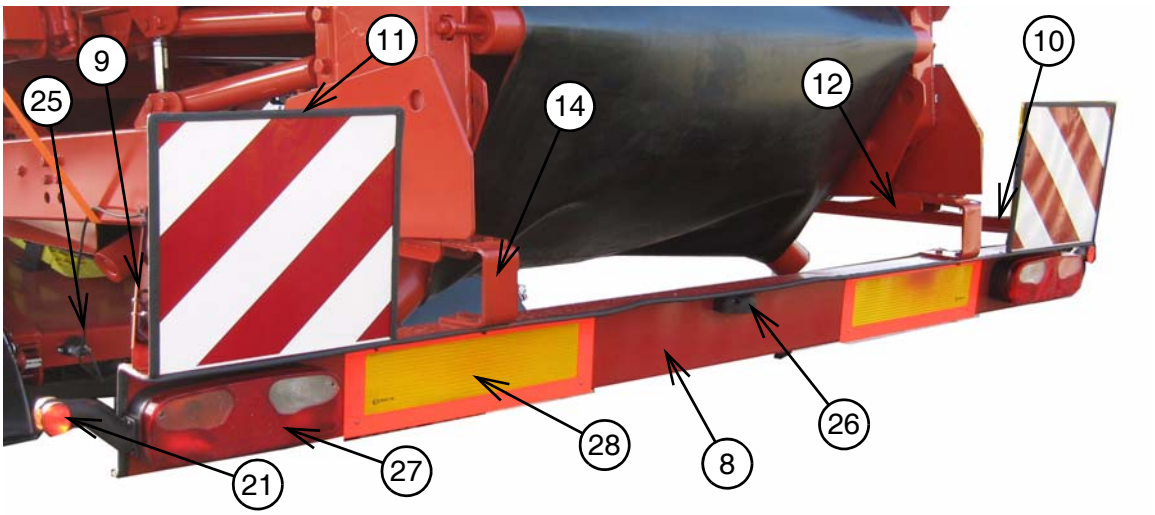
ID: QA340-en-11858



7: VIEW ON REAR OF BOGIE



8: VIEW ON MUDFLAPS



9: VIEW REAR LIGHTING BOARD

Part No.		Part Description	Qty
1.	A10930000	AIR CYLINDER MOUNTING PLATE	1
2.	A11370000	MUD GUARD MOUNTING BRACKET (TUV ONLY)	2
3.	A11380000	MUD GUARD MOUNTING BRACKET (TUV ONLY)	1
4.	A12290000	TUV CENTRE MUD GUARD MOUNTING BRACKET	2
5.	C5190000	HAZARD WARNING MOUNTING PLATE (TUV FRONT ONLY)	2
6.	E3030000	LH SIDE CONVEYOR TRANSPORT BRACKET	1
7.	E3040000	RH SIDE CONVEYOR TRANSPORT BRACKET	1
8.	F0460000	LIGHTING BOARD ASSEMBLY	1
9.	F0500000	LIGHTING BOARD RH STAY	1
10.	F0510000	LIGHTING BOARD LH STAY	1

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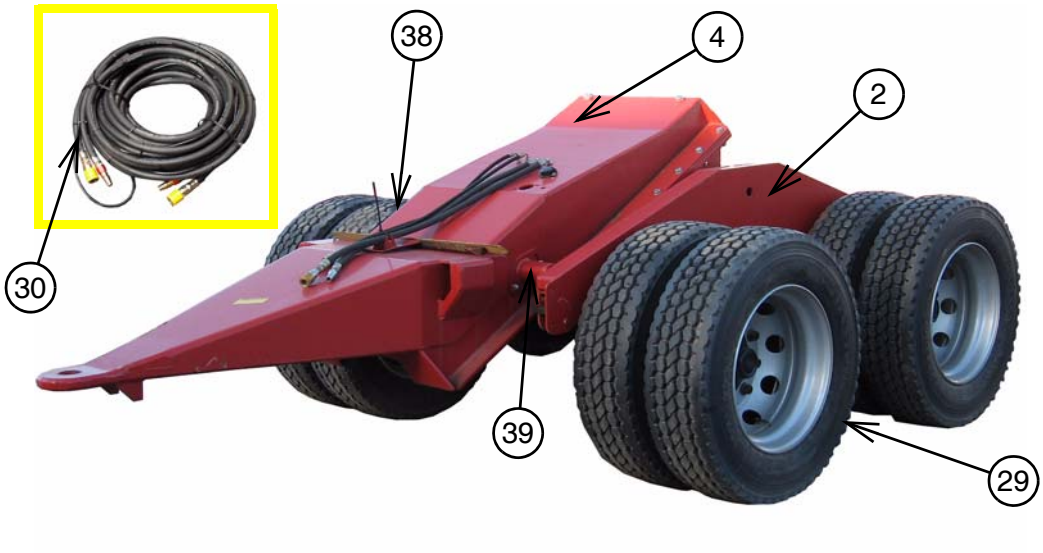
Part No.	Part Description	Qty
11. F0520000	HAZARD WARNING MOUNTING PLATE (TUV REAR ONLY)	2
12. F2580000	LIGHTING BOARD MOUNTING BRACKET	2
13. F3270000	TAIL CONVEYOR TRANSPORT LINK	2
14. F3310000	LIGHTING BOARD LOWERING BRACKET (TUV ONLY)	2
15.	ABS ECU MODULATOR (TUV ONLY)	1
16.	ABS RELAY EMERGENCY VALVE (TUV ONLY)	1
17.	MUD GUARD JT610 (TUV ONLY)	2
18. CN4510	NON ADHESIVE REFLECTOR PLATE	2
19. CN4511	WIDE VEHICLE LIGHTING (FRONT)	2
20. CN4512	CONNECTION BOX	2
21. CN4514	WIDE VEHICLE LIGHTING (REAR)	2
22. CN4530	SELF ADHESIVE REFLECTOR PLATE (TUV ONLY)	10
23. CN4543	ABS WARNING LIGHT (TUV ONLY)	1
24.	ABS CONNECTION SOCKET	1
25.	LIGHTING BOARD LOOM	1
26.	NUMBER PLATE LIGHT	1
27.	REAR LIGHT CLUSTER	2
28.	WARNING PLATE (LONG VEHICLE)	2
29. FACL1005	SIDE CONVEYOR RETAINING CHAIN	1
30. FADL1002	CHAIN RETAINING SHACKLE	2
31. FD4105	TAIL CONVEYOR RETAINING STRAP	1
32. FD4108	SIDE CONVEYOR TRANSPORT LINK	2
33. UC5019	AIR BRAKE CONNECTOR (RED)	1
34. UC5020	AIR BRAKE CONNECTOR (YELLOW)	1
35. UC5503	WHEEL CHOCK & MOUNTING ASSEMBLY (TUV ONLY)	2
36. PN1108	SIDE CONVEYOR TRANSPORT LINK PIN	4

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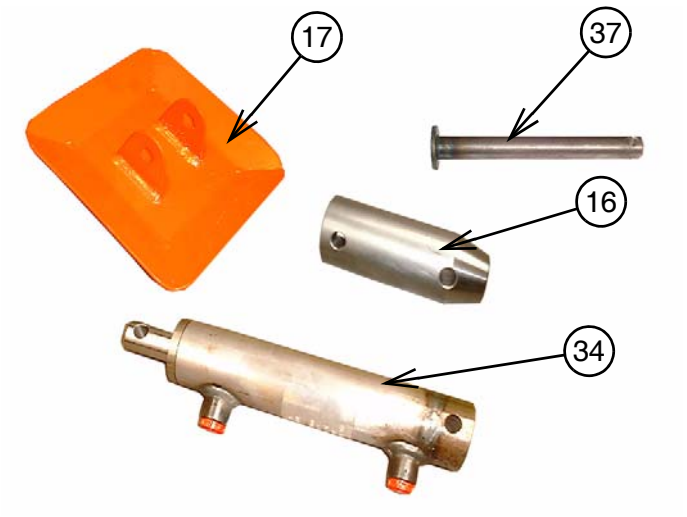
19. TRANSPORTATION BOGIE



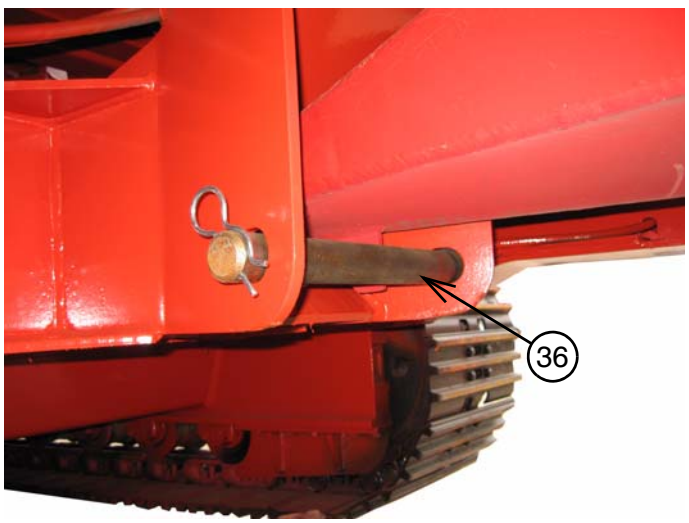
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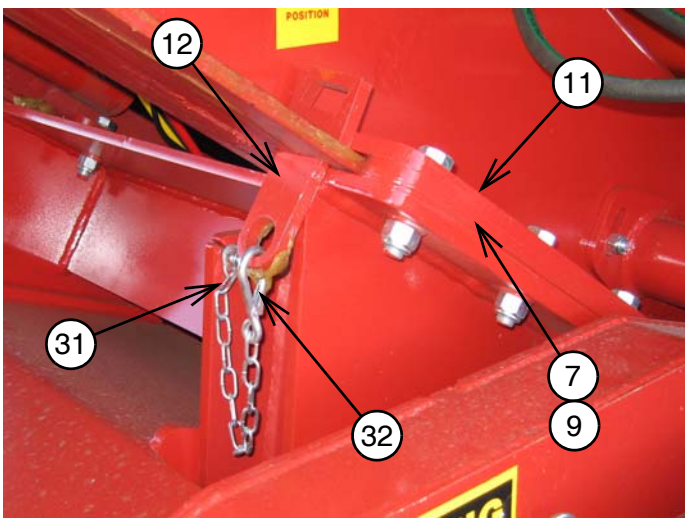
2: VIEW ON BOGIE PIVOT PIN



3: VIEW ON HYDRAULIC LOCKING PIN



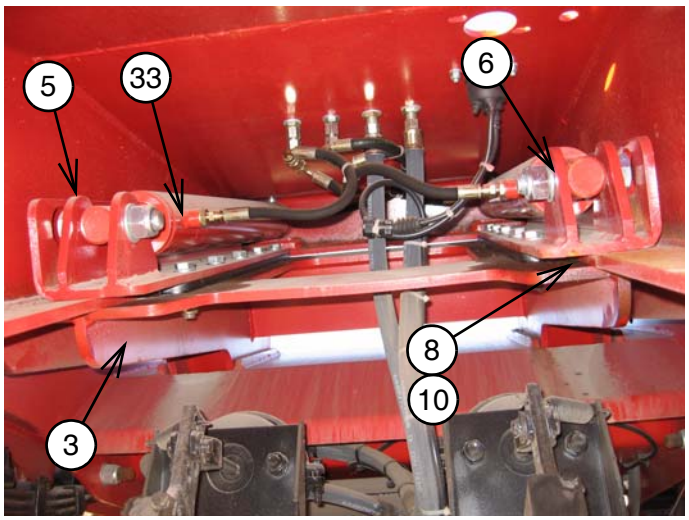
4: VIEW ON BOGIE PIVOT PIN



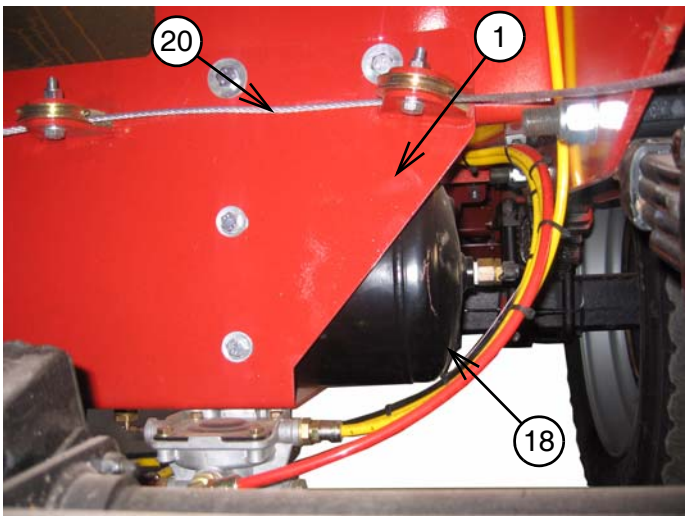
5: VIEW ON HYDRAULIC LOCKING PIN

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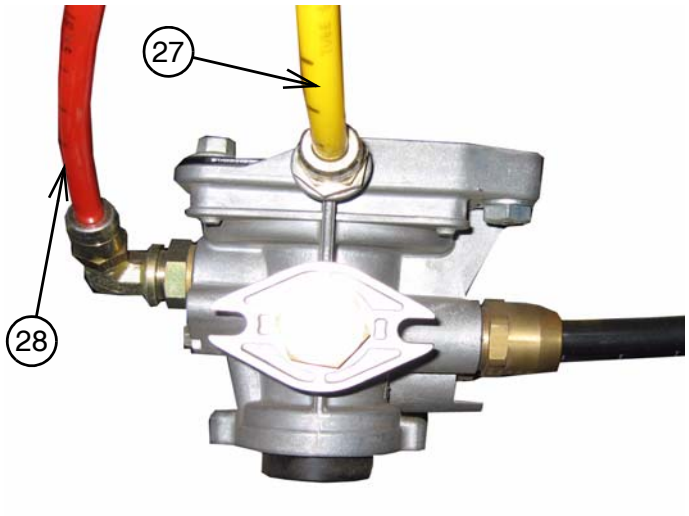
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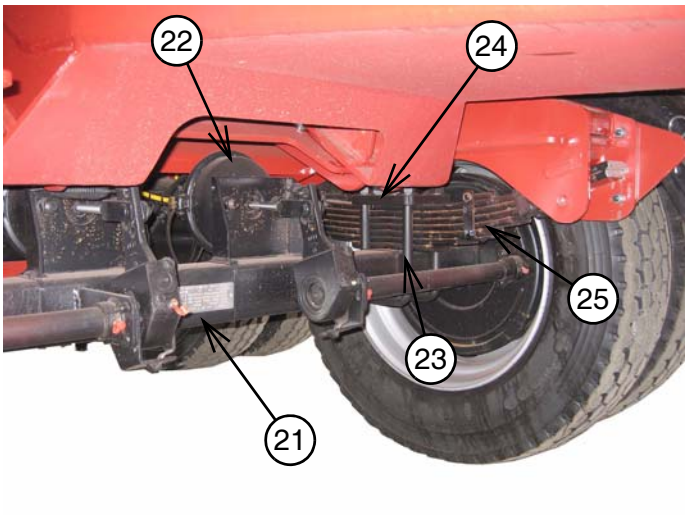
6: VIEW ON BOGIE SLIDER



7: VIEW ON BOGIE AIR CYCLINDER



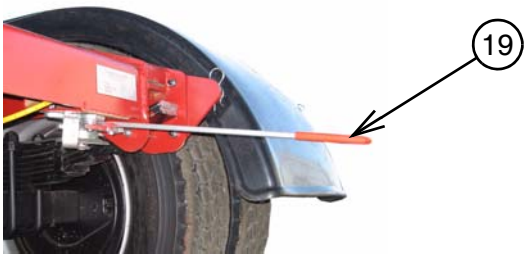
8: VIEW ON AIR LINE ACTUATION VALVE

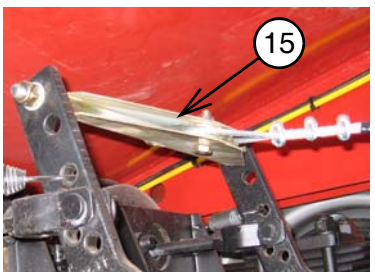


9: VIEW ON BOGIE SUSPENSION



10: VIEW ON MUD GUARDS





11: VIEW ON HANDBRAKE ASSEMBLY

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Part No.	Part Description	Qty
1. A10930000	AIR CYLINDER MOUNTING PLATE	1
2. A11200000	BOGIE BODY ASSEMBLY	1
3. A11210000	BOGIE SLIDER ASSEMBLY	1
4. A11220000	BOGIE PICKUP ARM ASSEMBLY	1
5. A11230000	HYDRAULIC RAM BRACKET RH	1
6. A11240000	HYDRAULIC RAM BRACKET LH	1
7. A11250000	3mm THICK BOGIE PACKING SHIM (OUTER)	AS REQ.
8. A11260000	3mm THICK BOGIE PACKING SHIM (INNER)	AS REQ.
9. A11270000	10mm THICK BOGIE PACKING SHIM (OUTER)	2
10. A11280000	10mm THICK BOGIE PACKING SHIM (INNER)	2
11. A11290000	BOGIE CLAMP PLATE (OUTER)	2
12. A11300000	BOGIE SLIDER LOCKING PIN	2
13. A11370000	REAR LH MUDGUARD BRACKET	2
14. A11380000	REAR RH MUDGUARD BRACKET	2
15. A11410000	HANDBRAKE EQUALISER BRACKET	1
16. A11610000	BOGIE PRIMARY LOCKING PIN	1
17. A11620000	BOGIE LOCKING PIN RAM COVER	1
18.	AIR CYLINDER (8PA180IMP)	1
19.	HANDBRAKE ASSEMBLY (AO381)	1
20.	HANDBRAKE CABLE	1
21. AX1006	AXLE COMPLETE	2
22. AX1210	TYPE 30 BRAKE CHAMBER	4
23.	100mm x 7 /8" UNF 7 LEAF 'U' BOLT	8
24. AX2003	100mm x 7 /8" CLAMP PLATE	4
25.	7 LEAF SPRING ASSEMBLY (210177)	4
26.	MUD GUARD JT610	2
27. UC5016	AIR LINE PIPE (YELLOW)	1
28. UC5017	AIR LINE PIPE (RED)	1
29. WT1016	ROADWHEELS/TYRES	8
30. AX3704	UMBILICAL CHORD	1
31. FACL1004	ATTACHMENT CHAIN	2
32. FAHC1012	CARBINE CLIP	2
33. HR1068	BOGIE LIFT RAM	2
34. HR1070	BOGIE RETAINING RAM	1

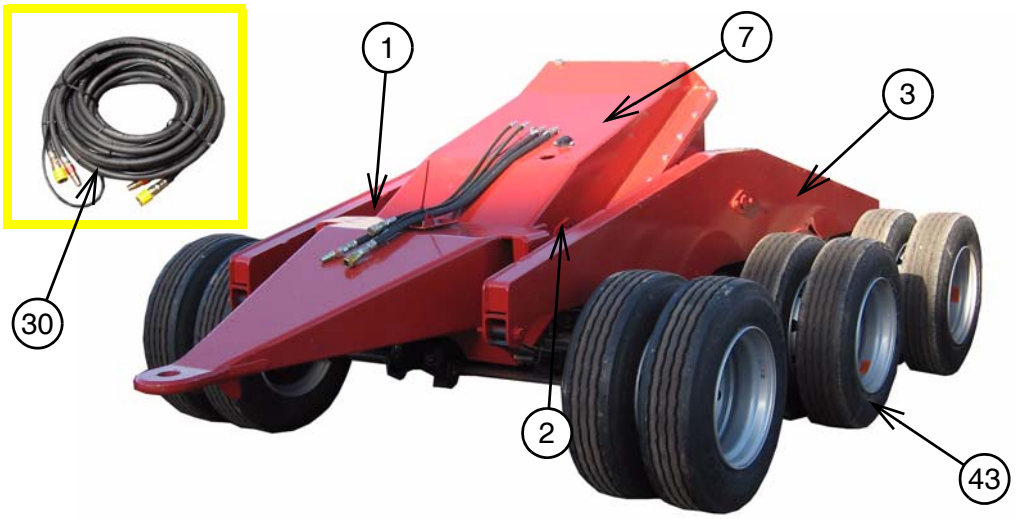
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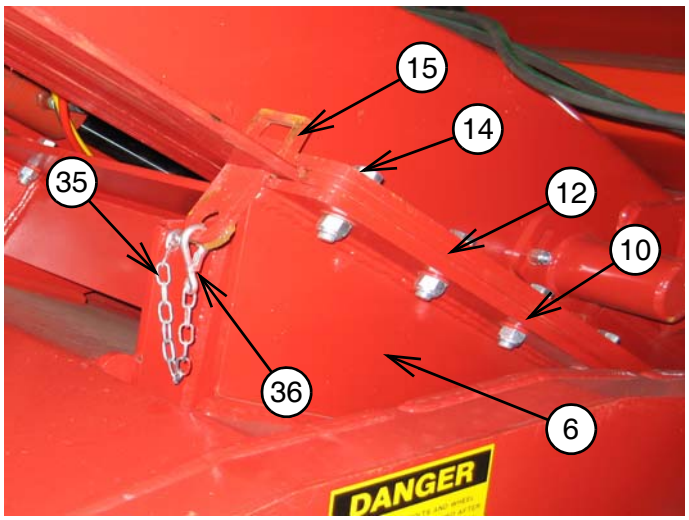
Part No.	Part Description	Qty
35. PN1115	BOGIE PIVOT PIN	2
36. PN1123	SECONDARY LOCKING PIN	1
37. PN1137	BOGIE LOCKOUT PIN	1
38. A10980000	LH TILT ARM ASSEMBLY	1
39. A10990000	RH TILT ARM ASSEMBLY	1

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20. TRIPLE BOGIE (USA ONLY)



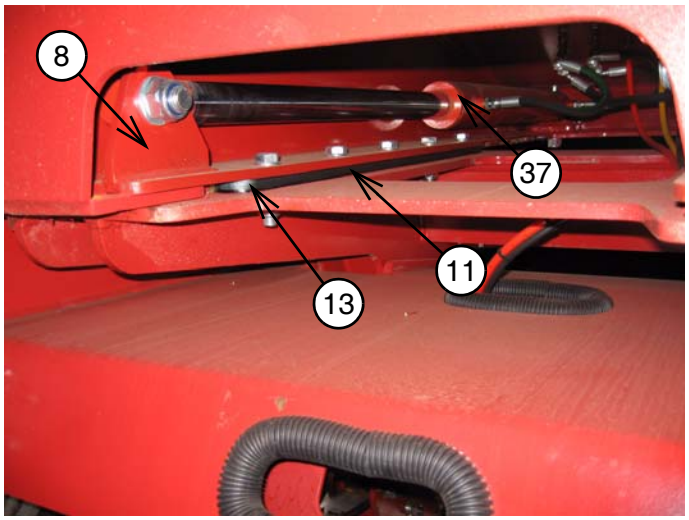
1: TRIPLE BOGIE ASSEMBLY



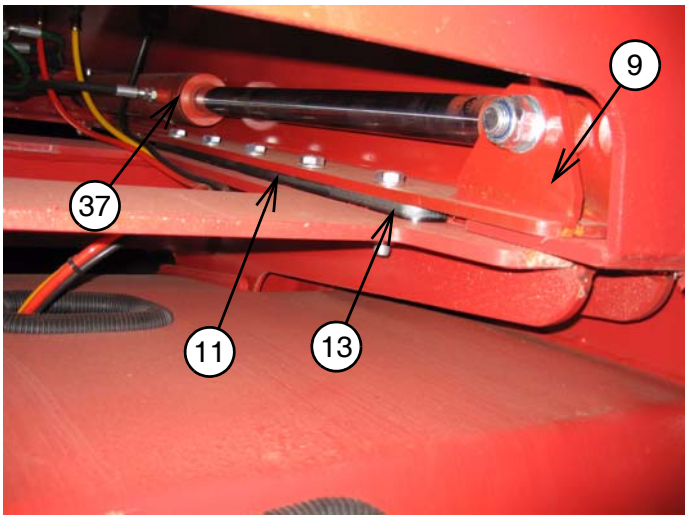
2: VIEW ON SLIDE PLATES



3: VIEW ON BOGIE PIVOT PIN



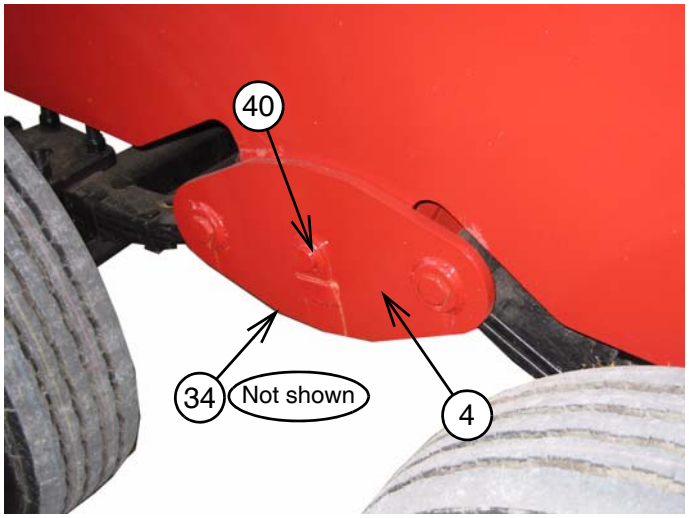
4: VIEW ON LH SLIDE RAM



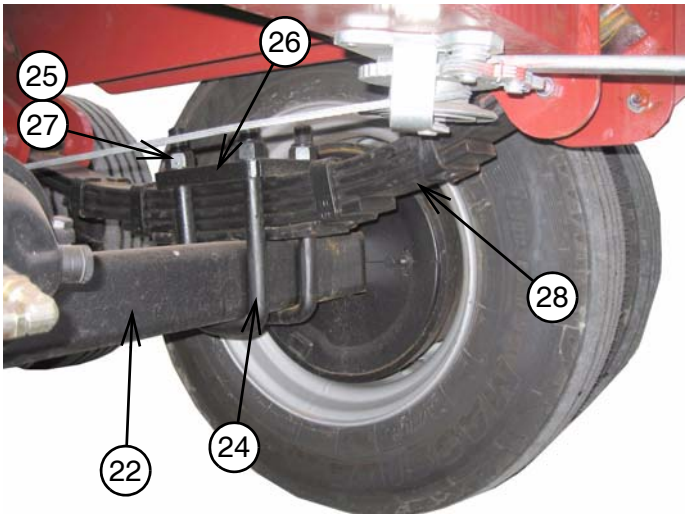
5: VIEW ON RH SLIDE RAM

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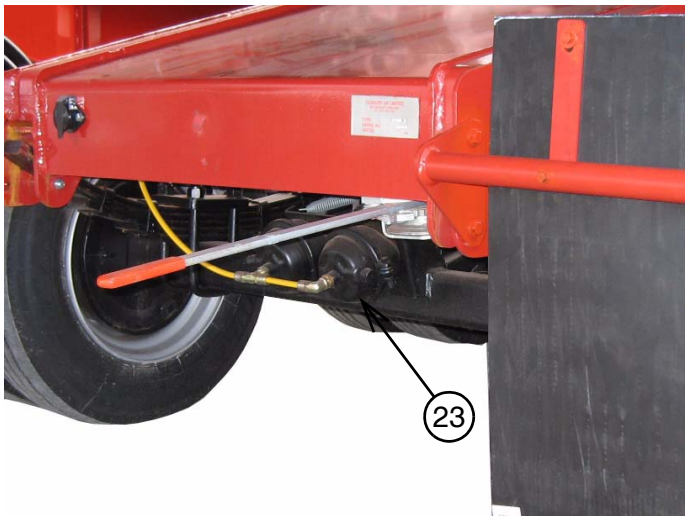
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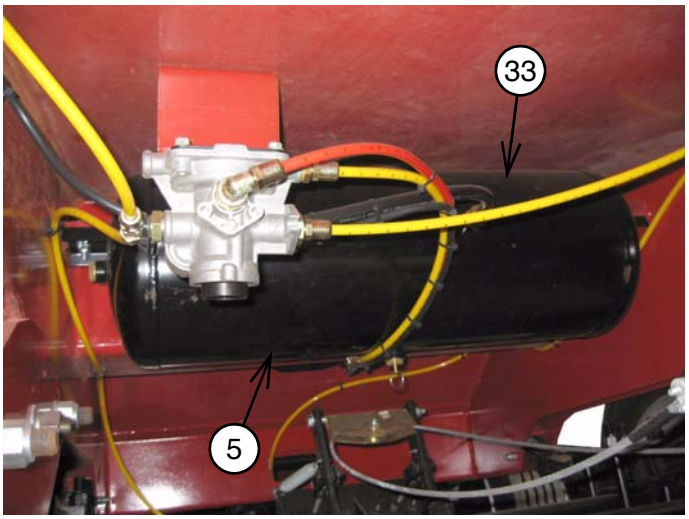
6: VIEW ON SUSPENSION ROCKER



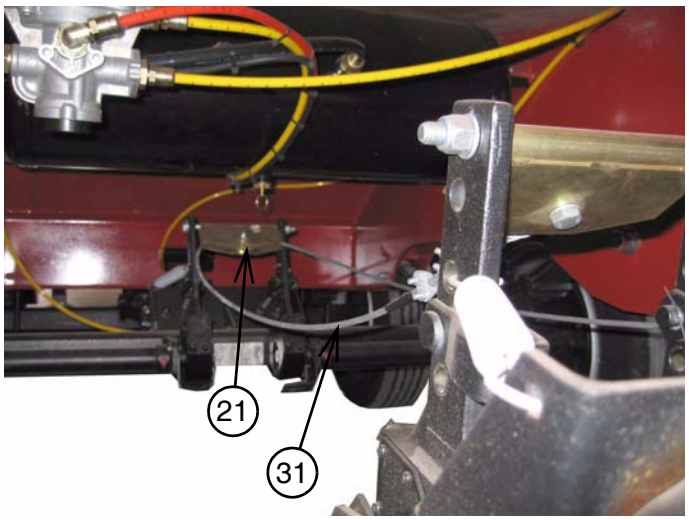
7: VIEW ON SUSPENSION



8: VIEW ON BRAKE CHAMBER



9: VIEW ON AIR BRAKE CYLINDER

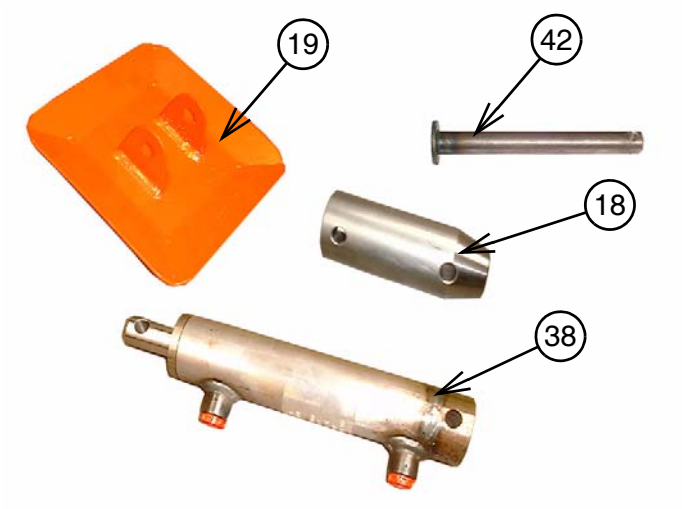


10: VIEW ON HANDBRAKE BRACKETS

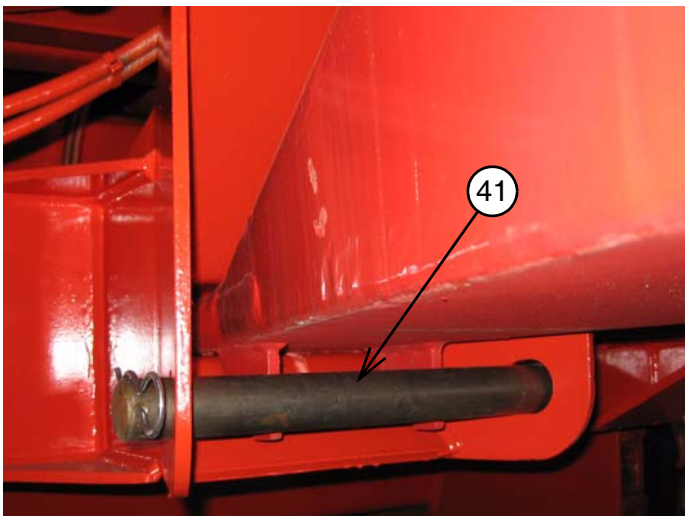


11: VIEW ON HANDBRAKE

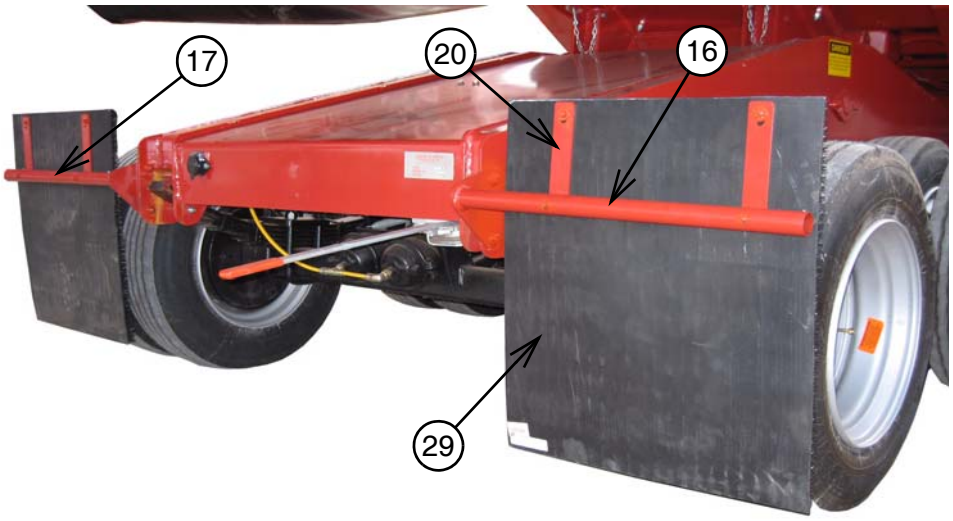
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12: VIEW ON HYDRAULIC LOCKING PIN



13: VIEW ON SECONDARY LOCKING PIN



14: VIEW ON MUD FLAPS

Part No.		Part Description	Qty
1.	A10980000	LH TILT ARM ASSEMBLY	1
2.	A10990000	RH TILT ARM ASSEMBLY	1
3.	A11150000	TRIAXLE BOGIE ASSEMBLY	1
4.	A11160000	ROCKER ASSEMBLY	2
5.	A11170000	AIR CYLINDER MOUNTING BRACKET	1
6.	A11210000	BOGIE SLIDER ASSEMBLY	1
7.	A11220000	BOGIE PICK UP ARM ASSEMBLY	1
8.	A11230000	RH HYDRAULIC RAM BRACKET	1
9.	A11240000	LH HYDRAULIC RAM BRACKET	1
10.	A11250000	3mm THICK BOGIE PACKING SHIM (OUTER)	AS REQ.

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Part No.	Part Description	Qty
11. A11260000	3mm THICK BOGIE PACKING SHIM (INNER)	AS REQ.
12. A11270000	10mm THICK BOGIE PACKING SHIM (OUTER)	2
13. A11280000	10mm THICK BOGIE PACKING SHIM (INNER)	2
14. A11290000	BOGIE CLAMP PLATE (OUTER)	2
15. A11300000	BOGIE SLIDER LOCKING PIN	2
16. A11370000	REAR LH MUDGUARD BRACKET	1
17. A11380000	REAR RH MUDGUARD BRACKET	1
18. A11610000	BOGIE PRIMARY LOCKING PIN	1
19. A11620000	LOCKING PIN RAM COVER	1
20. A11910000	MUDGUARD SUPPORT PLATE	4
21. A11920000	HANDBRAKE BRACKET	2
22. AX1008	100 x 1900 Lg AXLE ASSEMBLY	3
23. AX1210	TY PE 30 BRAKE CHAMBER	4
24. AX2001	7/8" UNF U-BOLT	12
25. AX2002	7/8" UNF NY LOCKNUT (214200)	24
26. AX2003	100mm CLAMP PLATE (210860)	6
27. AX2005	7/8" UNF WASHER (214201)	24
28. AX2302	5 LEAF SUSPENSION SPRING (210135)	6
29. AX3503	MUD FLAP	2
30. AX3704	UMBILICAL CHORD	1
31.	HANDBRAKE CABLE	1
32.	HANDBRAKE ASSEMBLY (A 0381)	1
33.	AIR BRAKE CYLINDER (8PA180IMP)	1
34. BT5501	1/8" BSP GREASE NIPPLE	2
35. FACL1004	ATTACHMENT CHAIN	2
36. FAHC1012	CARBINE CLIP	2
37. HR1068	BOGIE LIFT RAM	2
38. HR1070	BOGIE RETAINING RAM	1
39. PN1115	BOGIE PIVOT PIN	2
40. PN1122	ROCKER PIVOT PIN	2
41. PN1123	SECONDARY LOCKING PIN	1
42. PN1137	BOGIE LOCKOUT PIN	1
43. WT1010	ROAD WHEEL & TYRE ASSEMBLY	12

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QA340

Electrical & Hydraulic Information

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QA340

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Document number: ID: QA340-en-11858

Issue: 20090101

Version: 1

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www.sandvik.com

1. ELECTRICAL & HYDRAULIC DIAGRAMS

	Drawing Number	Title	Issue No	Date
1.	S SERIES CONTROL PANEL	TED8300	sht1	26/04/04
2.	CONTROL PANEL TO ENGINE LOOM	TED8300	sht2	26/04/04
3.	S SERIES RECEIVER & LOOM	TED8300	sht3	26/04/04
4.	QA340 DOUBLE SCREEN HYDRAULIC BLOCK DIAGRAM			
5.	QA340 DOUBLE SCREEN HYDRAULIC DIAGRAM			

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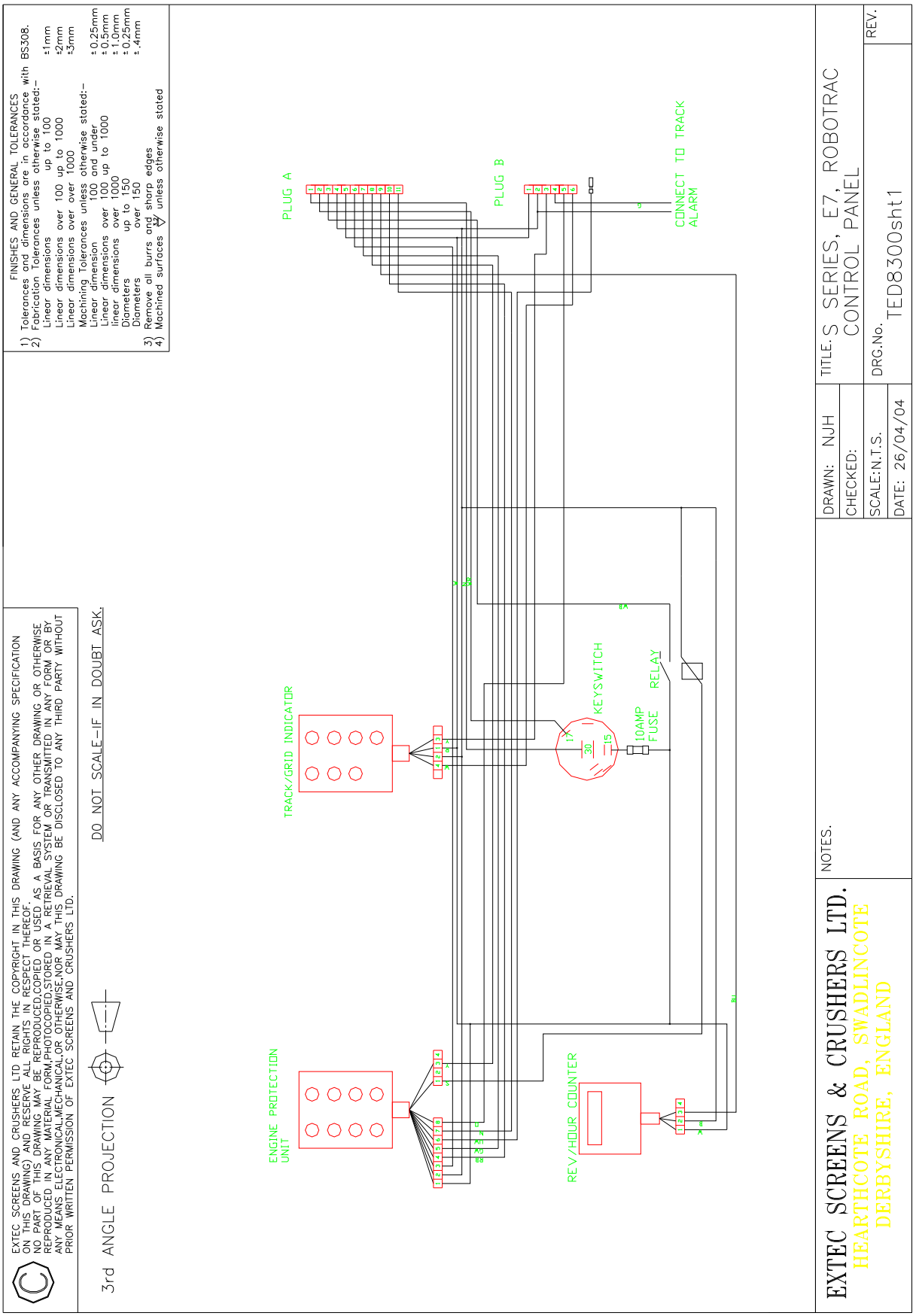


Figure 1-1: S SERIES CONTROL PANEL

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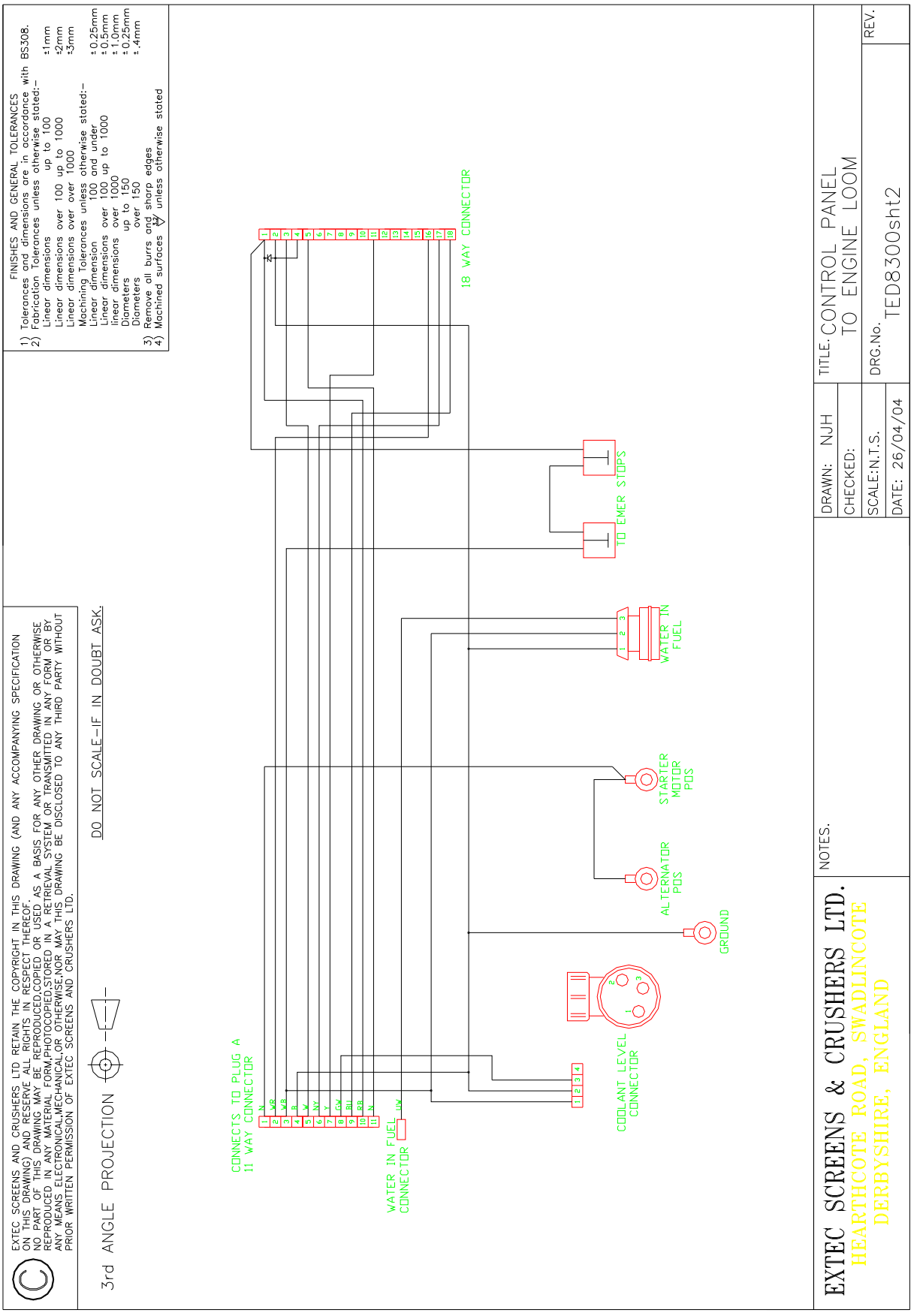


Figure 1-2: CONTROL PANEL TO ENGINE LOOM

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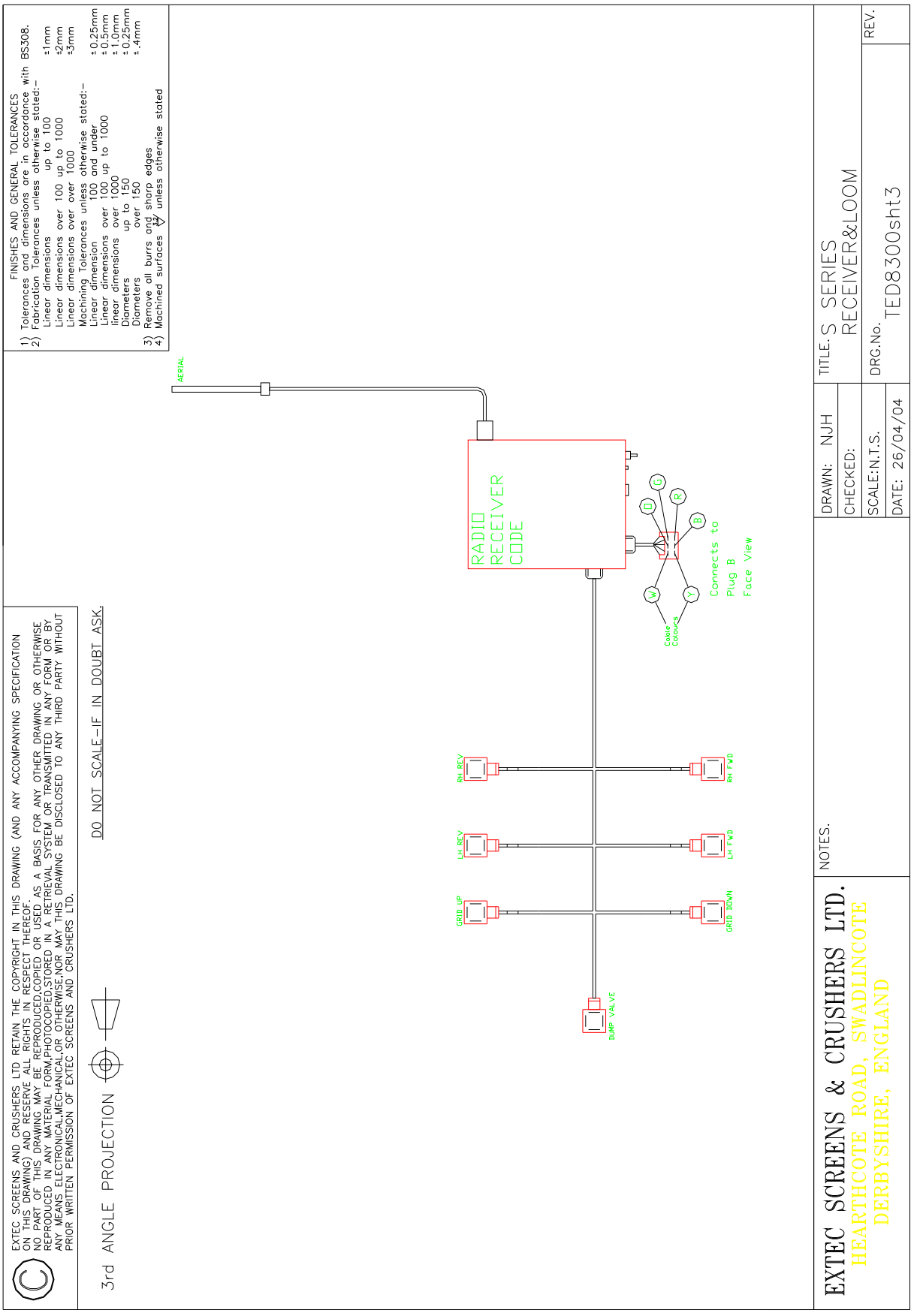


Figure 1-3: ENGINE SCHEMATIC

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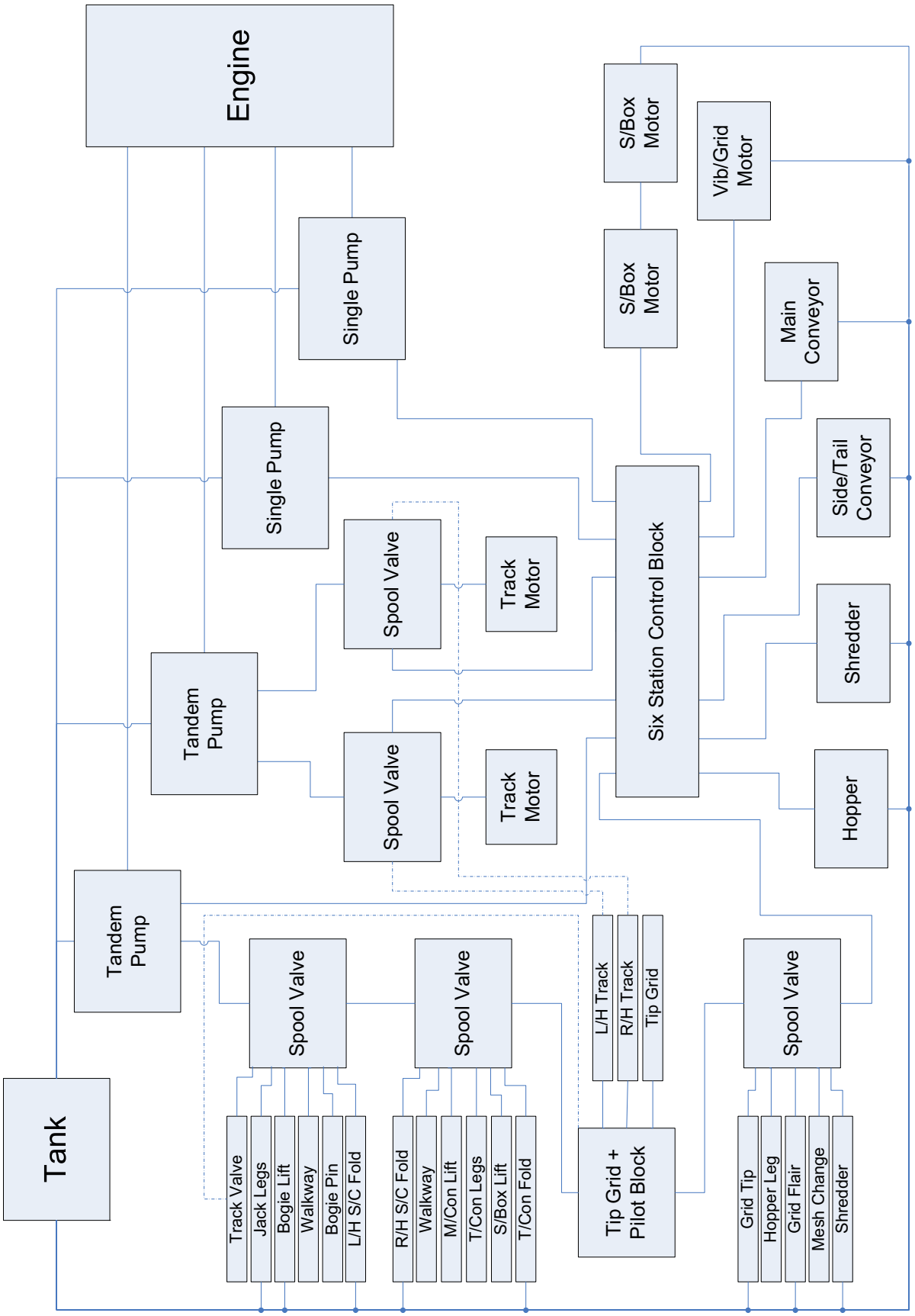


Figure 1-4: HYDRAULIC BLOCK DIAGRAM

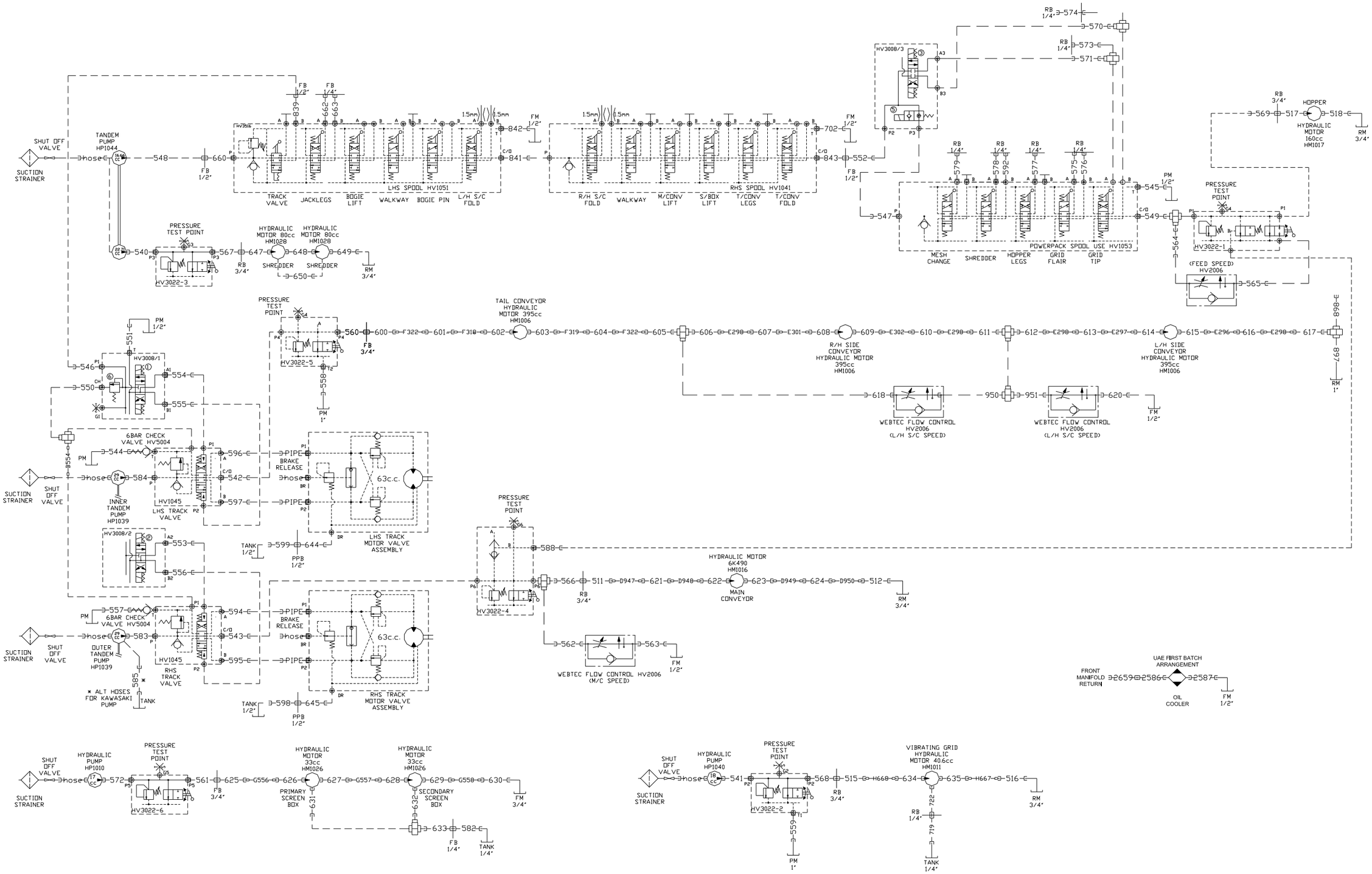
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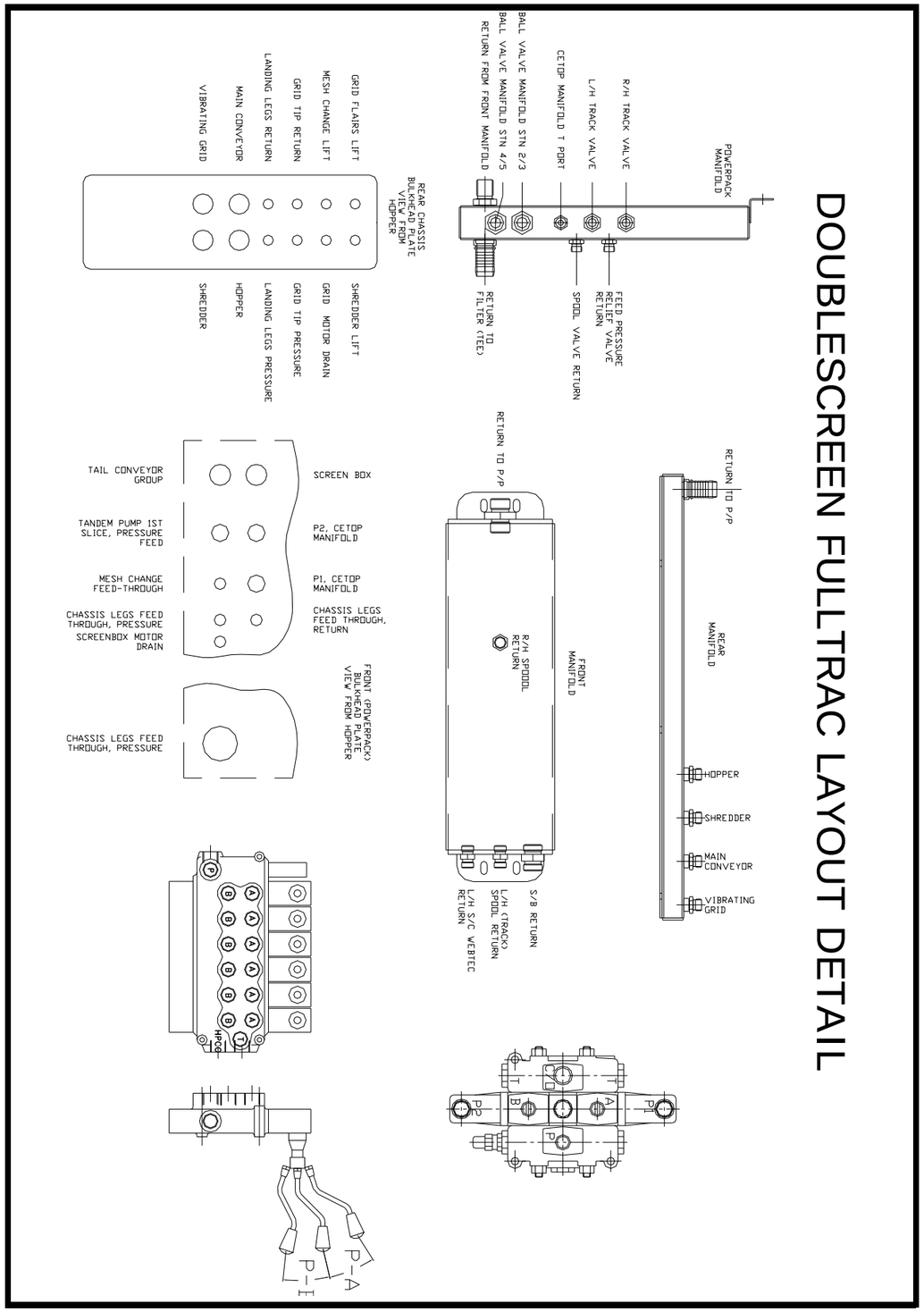
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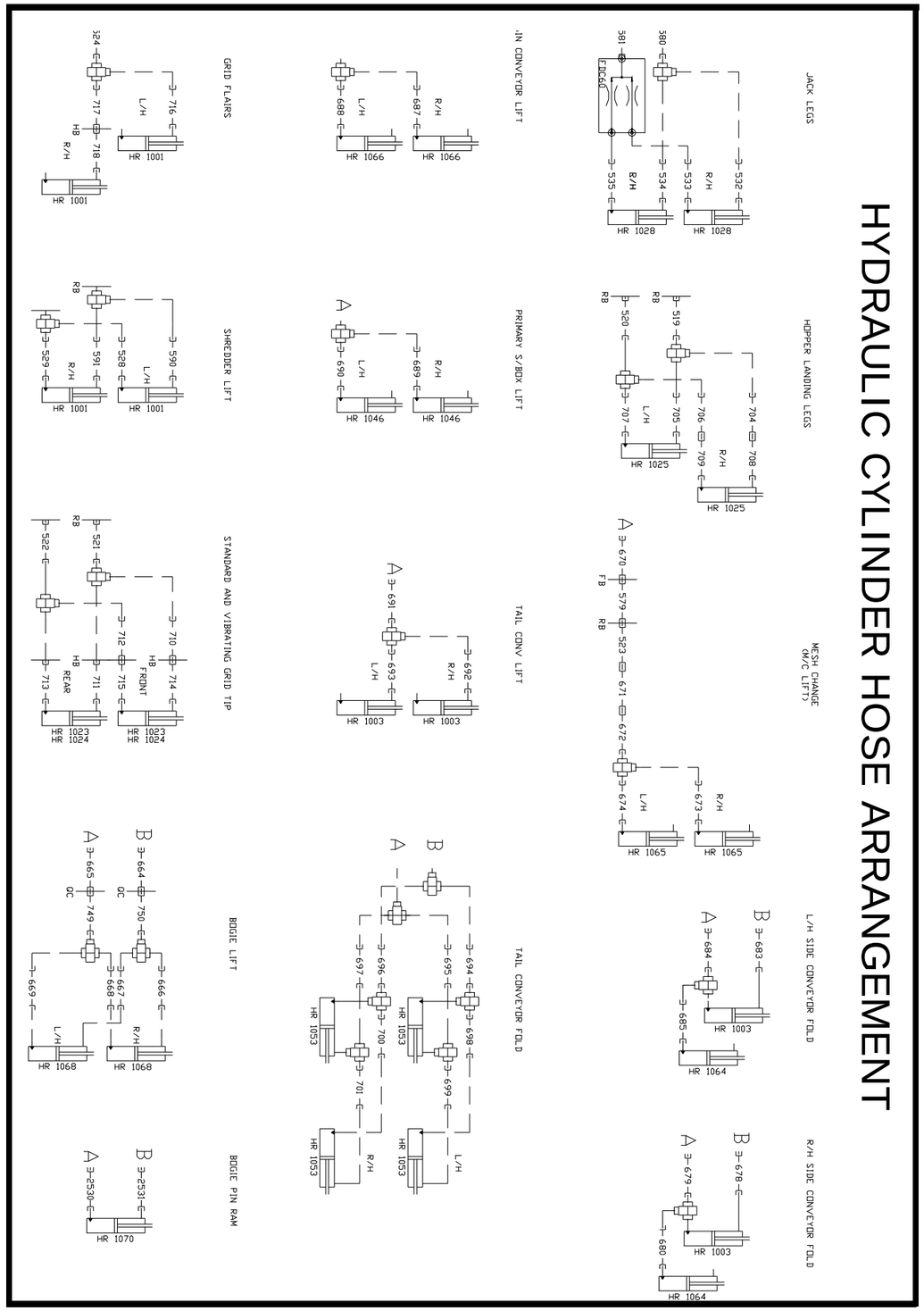
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HYDRAULIC DIAGRAM



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QA340

OEM Documents & Data Sheets

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1. OEM MANUALS

	Title	Issue No	Date
1.	DEUTZ 2012 ENGINE MANUAL.		
2.	ERIEZ MAGNET MODELS CP & OP INSTRUCTIONS	IM-108GB-(F.01)	

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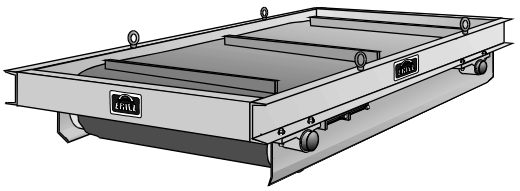
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INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

SUSPENDED PERMANENT MAGNETIC SEPARATORS

MODELS CP & OP



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Bedwas House Industrial Estate,
Bedwas,
Caerphilly. CF83 8YG
United Kingdom

Tel: 029 20 868501 Int +44 29 20 868501
Fax: 029 20 851314 Intl +44 29 20 851314

e-mail eriez@eriezeurope.co.uk

IM – 108GB – (F. 01)

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SUSPENDED PERMANENT MAGNETIC SEPARATORS

MODELS CP & OP

INTRODUCTION

Suspended, permanent magnet heavy-duty separators are designed for use over a moving bed of material from which iron is to be removed. Basically, they are box-shaped units containing blocks of permanent magnet material, arranged to produce a powerful magnetic field. The block arrangement determines the magnetic circuit configuration, designated CP or OP.

Two simple methods of cleaning the extracted ferrous material from the surface of the magnet are available; ***manual cleaning*** (Fig. 1) or ***self cleaning*** (Fig. 2). There is a wide range of sizes available for either style and separators can be mounted in-line with the conveyor belt ***(Position 1)*** or across the conveyor belt ***(Position 2)*** to suit customer requirements.

Manual cleaned magnets are designed for use when tramp iron contamination levels are small. Periodically, it is necessary to remove the accumulation of tramp iron, either by hand or with a moveable stripper plate.

Where large amounts of tramp iron require separation, self-cleaning magnets are more practical. The construction of the magnet box is the same as for the manual cleaning magnet, with the addition of a short belt conveyor built around the assembly to provide an automatic discharge for the tramp iron.

WARNING

THIS EQUIPMENT CONTAINS MAGNETISED MATERIAL AND MUST BE TREATED WITH UTMOST CAUTION TO SAFEGUARD AGAINST INJURY.

- Do not allow the pole faces to face each other. Opposite polarity poles will come together with considerable force.



- Before handling this equipment personnel with pacemakers should confirm that their pacemaker is not affected by magnetism.



- Take care when using ferrous tools or ferrous parts near the pole faces.



- Do not place pre-recorded tapes, computer disks, or credit cards near the magnet box since this could cause erasure.



- Keep all delicate mechanisms, such as mechanical watches, away from the magnet.



- Do not drill or weld near the magnetic unit without first seeking the advice of: ERIEZ MAGNETICS EUROPE LIMITED

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INSTALLATION

General

When unpacking, take care to avoid damage to the equipment and possible personnel injury - ***the magnet assembly is very powerful and permanently charged***. Remove loose ferrous material closer than 600 mm to the magnet box. Spanners and other tools within the vicinity where the equipment is to be installed could become magnetically induced and be attracted to the magnet box with considerable force. Also, when installing OP magnets check that the unit is in the correct orientation, with the heavy steel end poles at right angles to the direction of material flow.

Magnet Position

Position 1 (*In-Line installation)*
The preferred installation of a suspended magnet is over the trajectory of the product material where it discharges from the belt conveyor. This position is referred to as ***Position 1,*** (Figs. 1 and 2). For optimum separation in ***Position 1*** there must be provision to adjust the location of the magnet in relation to the material trajectory.

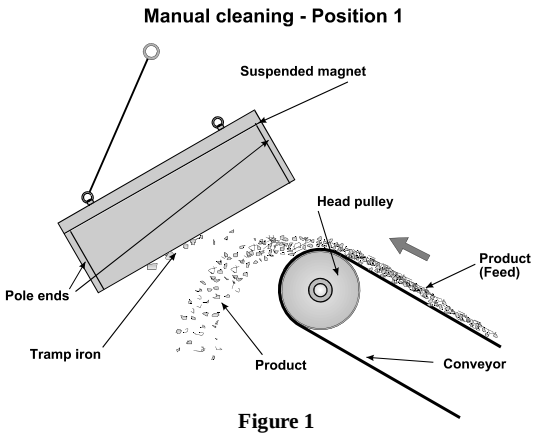


Figure 1

- For low feed conveyor belt speeds, typically less than 100m/min, greater separation efficiency will be achieved by using a non-magnetic head pulley. ***Note: It is preferable if a non-magnetic head pulley is installed, regardless of the speed of the conveyor***

- When installing a self-cleaning unit, examine the area to ensure there is adequate clearance for the belt to run and that provision has been made to collect discharged tramp iron. A hinged ***non-magnetic splitter***, adjustable in length, will be required to prevent extracted tramp from re-entering the non-magnetics.

- At the working suspension height the centreline of the magnet should be approximately perpendicular to the trajectory of the material and

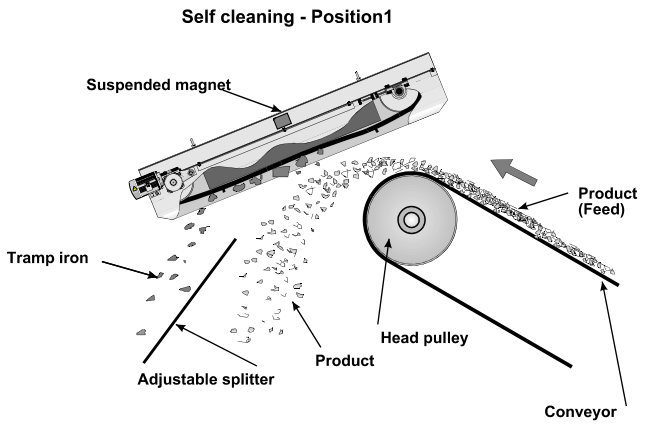


Figure 2

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Position 2 (*Cross Belt installation)*

A separator mounted over a moving bed of material at right angles to the conveyor is referred to as ***Position 2*** (Figs. 3 and 4). This installation usually requires a stronger magnet than ***Position 1*** since tramp iron at the bottom of the burden is more difficult to extract.

- The efficiency of magnetic separators in ***Position 2*** is dependent upon the speed of the conveyor carrying the feed. As conveyor speed increases above 100m/min separation efficiency may fall.
- Conveyor idlers beneath the separator in ***Position 2*** must be ***non-magnetic.***
- Manually cleaning suspended magnets should be installed on the centreline of the material conveyor, Fig. 3. Self-cleaning suspended magnets should be installed with the trailing edge of the magnet box immediately above the outer edge of the conveyor idler. Refer to Fig. 4.

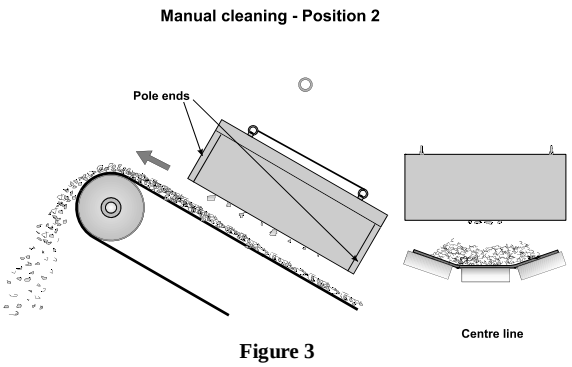


Figure 3

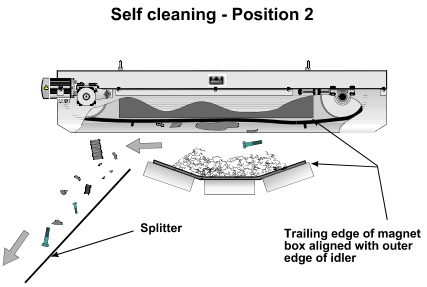


Figure 4

Suspension Height

The magnetic strength and configuration of an OP/CP separator is selected for a specific suspension height and application. The suspension height quoted should be considered a maximum.

When setting the suspension height, Fig. 5, lower the magnet as close as possible to the top of the burden, without interfering with the material flow. If the unit is self-cleaning, ensure that the separator belt is clear to operate freely whilst carrying tramp iron. Failing to do this could result in tramp iron being knocked back into the non-magnetics.

A clearance of 75 mm between the magnet face and the top of the product burden / trajectory should be maintained for self-cleaning units; this clearance can be reduced to 50 mm for manually cleaned units.

WARNING: ***Do not over-tighten the self-cleaning belt as this could damage the bearings. The equipment is designed to operate with belt sag of approximately 25 mm.***

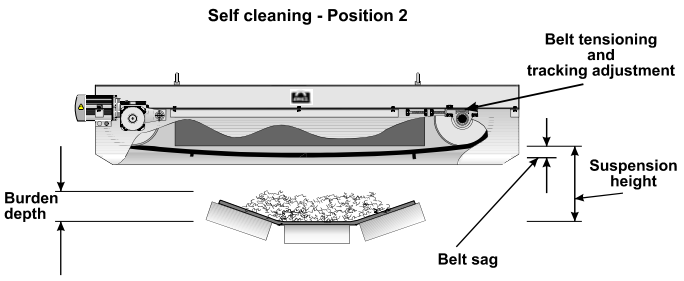


Figure 5

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Burden Depth

One factor in achieving optimum separator performance is to control the burden depth.

- **Position 1 installation.** The installation location is calculated on product throughput. Any variation from this will change the trajectory of the product material with respect to the working surface of the magnet and could result in poor separation.

- **Position 2 installation.** A plough or leveller installed before the magnet will remove high spots or surges in material flow.

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COMMISSIONING

Self-Cleaning Separators

After installation, examine for any obvious visual damage; in particular check that the frame is square and has not been twisted.

Momentarily close the power supply switch to the belt drive and check that the belt is tracking properly and is not wandering laterally. ***Never start the belt drive and allow it to run continuously until the belt is properly trained***. If the belt wanders, note the direction and adjust as follows:

Self-cleaning magnet belts run on two pulleys, one fixed and the other adjustable. The adjustable tail pulley has approximately 10 mm of take up available for both belt stretch and tracking. To track the belt, the tail pulley should be adjusted to tighten the belt on the ***same side*** to which the belt is seen to wanders.

MAINTENANCE

Manual Cleaning Separators No maintenance is required.

Self-Cleaning Separators

- Belt tracking should be checked frequently and adjusted as necessary. Refer to COMMISSIONING
- Lubricate the bearings on a schedule consistent with other equipment in use at the site for the product and environment.
- If the unit is installed within a separate enclosure, provision must be made to the construction of the enclosure to gain easy access to moving parts.
- Check the self-cleaning belt for damage and, if necessary, replace as follows:

Vulcanised Belt

Replacing a vulcanised belt requires the self-cleaning gear to be dismantled after the separator has been removed from its installation. This is a major operation and is not always practical. An alternative method is to replace the belt in situ.

- Slacken the bolts securing the non-drive pulley.
- Slacken the belt tensioning screws.
- Cut through the damaged belt and remove it.
- Wrap the new belt and vulcanise.
- Re-tension the belt; allowing for belt sag, refer to INSTALLATION.
- Re-track; refer to COMMISSIONING.
- Tighten the bearing securing bolts.

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Laced Belt

To replace a laced belt proceed as follows:

- Slacken the bolts securing the non-drive pulley.
- Slacken the belt tensioning screws.
- Remove the braided stainless steel wire.
- Re-tension the belt, allowing for belt sag; refer to INSTALLATION.
- Re-track; refer to COMMISSIONING.
- Tighten the bearing securing bolts.

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TROUBLE SHOOTING & RECOMMENDED SPARES

Manual Cleaning Units

PROBLEM	PROBABLE CAUSE	SOLUTION
1. Magnet will not attract iron	a) Magnet face is overloaded with extracted iron.	a) Examine the face of the magnet for excessive quantities of extracted tramp iron. Discharge more frequently as required.
	b) Magnet set too far from the burden.	b) Check the clearance between the magnet face and the burden. Refer to SUSPENSION HEIGHT and set accordingly.
	c) Magnet set too close to the burden.	c). If the magnet is set too close, material surges can act as a wiper and remove iron from the magnet surface. Check clearance and adjust. Refer to SUSPENSION HEIGHT.

Self Cleaning Units

PROBLEM	PROBABLE CAUSE	SOLUTION
1. Tramp iron entering the product	a) Not sufficient clearance for the iron to be discharged.	a) Position 2 installation: Check the clearance between the bottom of the magnet box and the edge of the conveyor belt for maximum iron size to clear. Adjust as necessary.
	b) Splitter improperly positioned.	b) Position 1 installations: Adjust the splitter angle and length to suit.

Recommended Spares

- 1 set Bearings
- 1 Drive motor and gearbox
- 1 Belt

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2. HAZARDOUS SUBSTANCES

	Title	COSHH Sheet Reference
1.	Exxon Unirex N 3 Grease	570317-00 UNIREX N 3
2.	Shell Albida Grease EP2	ACIYK GB/eng/C 19/03/2005
3.	Shell Rimula Super 15W-40	ACK9D GB/eng/C 26/11/2003
4.	Shell Tellus Oil 46	ACKQ6 GB/eng/C 29/04/2004
5.	Shell Omala 220 Gear Oil	ACH75 GB/eng/C 29/01/2003
6.	Shell Safe Anti Freeze	L84042 Revision 23 08 2004
7.	Shell Agricultural Gas Oil	F32002 Revision 02 10 2002
8.	Exol Ethena EP90 Gear Oil	2nd October 2002

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ExxonMobil

570317-00 UNIREX N 3
MATERIAL SAFETY DATA BULLETIN

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1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: UNIREX N 3
20/10/2003

SUPPLIER: Esso Petroleum Company
ExxonMobil House
Ermyn Way, Leatherhead
Surrey, KT22 8UX
UK

Environmental/Health Emergency telephone: 01372 222 000 (UK)
44 1372 222 000 (Ireland)

INTENDED USE: GREASE

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: SEVERE TREAT MIN. OILS & ADDITIVES

GLOBALLY REPORTABLE MSDS INGREDIENTS:

Substance Name	Approx. Wt%	EU Classification
HYDROXYALKYL LONG-CHAIN ALKENYL IMIDAZOLINE (CAS 27136-73-8)	<1	C;R34 Xn;R22 N;R50/53
N-OLEYLSARCOSINE (CAS 110-25-8)	<1	Xi;R36/38 N;R50/53

3. HAZARDS IDENTIFICATION

This product is considered hazardous according to EU regulatory guidelines (see Section 15).

Symbol: Not applicable.

Risk Phrase(s): R52/53.

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POTENTIAL HEALTH EFFECTS: Under normal conditions of intended use, this product does not pose a risk to health. Excessive exposure may result in eye, skin or respiratory irritation.

POTENTIAL ENVIRONMENTAL EFFECTSHarmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

For further health effects/toxicological data, see Section 11.

NOTE: This product should not be used for any other purpose without expert advice.

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4. FIRST AID MEASURES

EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a doctor.
SKIN CONTACT: Wash contact areas with soap and water. Remove and clean oil soaked clothing daily and wash affected area.
INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.
INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with mechanical device or use mouth-to-mouth resuscitation.
INGESTION: Not expected to be a problem. Seek medical attention if discomfort occurs. Do not induce vomiting.

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5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical and water fog.
SPECIAL FIRE FIGHTING PROCEDURES: Water or foam may cause frothing. Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposures. Prevent runoff from fire control or dilution from entering waterways or drinking water supply.
SPECIAL PROTECTIVE EQUIPMENT: For fires in enclosed areas, firefighters MUST use self-contained breathing apparatus.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None.
COMBUSTION PRODUCTS: Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.
Flash Point C(F): > 204(400) (ESTIMATED FOR OIL, ASTM D-92 (COC)).
Flammable Limits (approx.% vol.in air) - LELNE, UEL: NE
NFPA HAZARD ID: Health: 0 , Flammability: 1 , Reactivity: 0

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6. ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES: Report spills/releases as required to appropriate authorities. In case of accident or road spill, contact the Police and Fire Brigade and, if appropriate, the Area Water Authority.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:
LAND SPILL: Shut off source taking normal safety precautions.

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Take measures to minimize the effects on ground water. Recover by pumping or contain spilled material with sand or other suitable absorbent and remove mechanically into containers. If necessary, dispose of adsorbed residues as directed in Section 13.
WATER SPILL: Confine the spill immediately with booms. Warn other ships in the vicinity. Notify port and other relevant authorities. Remove from the surface by skimming or with suitable absorbents. If permitted by regulatory authorities the use of suitable dispersants should be considered where recommended in local oil spill procedures.
ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewers, water sources or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation.
PERSONAL PRECAUTIONS: See Section 8

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7. HANDLING AND STORAGE

SPECIFIC USES: GREASE

HANDLING: High pressure injection under the skin may occur due to the rupture of pressurized lines. Always seek medical attention. No special precautions are necessary beyond normal good hygiene practices. See Section 8 for additional personal protection advice when handling this product.
STORAGE: Keep containers closed when not in use. Do not store in open or unlabelled containers. Store away from strong oxidizing agents and combustible materials. Do not store near heat, sparks, flame or strong oxidants.
SPECIAL PRECAUTIONS: Prevent small spills and leakages to avoid slip hazard.
EMPTY CONTAINER WARNING: Empty containers retain residue (liquid and/or vapour) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD BRAZE, SOLDER,DRILL,GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS:

This product does not contain any components which have recognized exposure limits.

VENTILATION: Use adequate ventilation.
RESPIRATORY PROTECTION: No special requirements under ordinary conditions of use and with adequate ventilation.
EYE PROTECTION: Generally eye contact is unlikely with this type material. If eye contact is likely, safety glasses with side shields or chemical type goggles should be worn.
SKIN PROTECTION: If prolonged or repeated skin contact is likely, oil impervious gloves MUST be worn. Good personal hygiene practices should always be followed.

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ENVIRONMENTAL CONTROLS: SEE SECTION 7

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9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical properties are given below. Consult Product Data Sheet for specific details.

GENERAL:
PHYSICAL STATE: Grease
COLOUR: Green
ODOUR: Mild
ODOUR THRESHOLD-ppm: NE

IMPORTANT HEALTH, SAFETY AND ENVIRONMENTAL INFORMATION:
pH: NA
BOILING POINT C(F): NE
FLASH POINT C(F): > 204(400) (ESTIMATED FOR OIL, ASTM D-92 (COC))
FLAMMABILITY (solids): NE
AUTO FLAMMABILITY C(F): NA
EXPLOSIVE PROPERTIES: NA
OXIDIZING PROPERTIES: NA
VAPOUR PRESSURE-mmHg 20 C: < 0.1
RELATIVE DENSITY, 15/4 C: 0.93
SOLUBILITY IN WATER: Negligible
PARTITION COEFFICIENT: > 3.5
VISCOSITY AT 40 C, cSt: 150.0
VISCOSITY AT 100 C, cSt: 13.0
VAPOUR DENSITY: NE
EVAPORATION RATE: NE

OTHER INFORMATION:
DROP POINT C(F): > 219(426)
POUR POINT C(F): NA
FREEZING POINT C(F): NE
NOTE: MOST PHYSICAL PROPERTIES FOR OIL COMPONENT.
DMSO EXTRACT, IP-346 (WT.%): <3, for mineral oil only
NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE

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10. STABILITY AND REACTIVITY

STABILITY (THERMAL, LIGHT, ETC.): Stable.
CONDITIONS TO AVOID: Extreme heat and high energy sources of ignition.
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidisers.
HAZARDOUS DECOMPOSITION PRODUCTS: Product does not decompose at ambient temperatures.
HAZARDOUS POLYMERISATION: Will not occur.

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11. TOXICOLOGICAL DATA

---ACUTE TOXICOLOGY---
ORAL TOXICITY: Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
DERMAL TOXICITY: Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the

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components.
INHALATION TOXICITY: Practically non-toxic (LC50: greater than 5 mg/l). ---Based on testing of similar products and/or the components.
EYE IRRITATION: Practically non-irritating. (Draize score: greater than 6 but 15 or less). ---Based on testing of similar products and/or the components.
SKIN IRRITATION: Practically non-irritating. (Primary Irritation Index: greater than 0.5 but less than 3). ---Based on testing of similar products and/or the components.
OTHER ACUTE TOXICITY DATA: Although an acute inhalation study was not performed with this product, a variety of mineral oils and synthetic base oils, such as those in this product have been tested. These samples had virtually no effect other than a nonspecific inflammatory response in the lung to the aerosolized mineral oil. The presence of additives in other tested formulations (in approximately the same amounts as in the present formulation) did not alter the observed effects.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---
No significant adverse effects were found in studies using repeated dermal applications of similar formulations to the skin of laboratory animals for 13 weeks at doses significantly higher than those expected during normal industrial exposure. The animals were evaluated extensively for effects of exposure (hematology, serum chemistry, urinalysis, organ weights, microscopic examination of tissues etc.).

---REPRODUCTIVE TOXICOLOGY (SUMMARY)---
No teratogenic effects would be expected from dermal exposure, based on laboratory developmental toxicity studies of major components in this formulation and/or materials of similar composition.

---CHRONIC TOXICOLOGY (SUMMARY)---
Repeated and/or prolonged exposure may cause irritation to the skin, eyes or respiratory tract. For mineral base oils: Base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of severely treated oils showed no evidence of carcinogenic effects. These results are confirmed on a continuing basis using various screening methods such as Modified Ames Test, IP-346, and/or other analytical methods. Synthetic base oils representative of those in this producthave been tested in the Ames assay and other tests of mutagenicity with negative results. These base oils are not expected to be carcinogenic with chronic dermal exposures.

---SENSITIZATION (SUMMARY)---
Not expected to be sensitizing based on tests of this product, components, or similar products.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS:

This environmental assessment was conducted using information on the individual components as no test data was available for this specific formulation.

ECOTOXICITY: This product is expected to be harmful to aquatic

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organisms. May cause long-term adverse effects in the aquatic environment.

MOBILITY: Not established.

PERSISTENCE AND DEGRADABILITY: This product is expected to be inherently biodegradable, as the principal components have been shown to degrade at slow to moderate rates.

BIOACCUMULATIVE POTENTIAL: Not established.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Product is suitable for burning in an enclosed, controlled burner for fuel value. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at any licensed waste disposal site. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

14. TRANSPORT INFORMATION

USA DOT: NOT REGULATED BY USA DOT.

RID/ADR: NOT REGULATED BY RID/ADR.

IMO: NOT REGULATED BY IMO.

IATA: NOT REGULATED BY IATA.

15. REGULATORY INFORMATION

EU Labelling: Product is dangerous as defined by the European Union Dangerous Substances/Preparations Directives.

Symbol: Not applicable.

Risk Phrase(s): R52/53.
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrase(s): S61.
Avoid release to the environment. Refer to special instructions/Safety data sheets.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
*** NO REPORTABLE INGREDIENTS ***		

--- REGULATORY LISTS SEARCHED ---

1=IARC 1	6=NO ALLERGI	11=DE TERAT B	16=DE CARC B	21=CH CARC
2=IARC 2A	7=SE ALLERGY	12=DE TERAT C	17=AT TERAT A	
3=IARC 2B	8=SE CARC	13=DE TERAT D	18=AT TERAT B	

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4=NTP CARC 9=DK CARC 14=DE CARC A1 19=AT TERAT C
5=NTP SUS 10=DE TERAT A 15=DE CARC A2 20=AT TERAT D

CARC=CARCINOGEN; SUS=SUSPECTED CARCINOGEN; TERAT=TERATOGENIC

AT = Austria DE = Germany NO = Norway
CH = Switzerland DK = Denmark SE = Sweden

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16. OTHER INFORMATION

LIBRARY OF RISK PHRASES LISTED IN SECTION 2 OF THIS DOCUMENT:

R22 Harmful if swallowed.
R34 Causes burns.
R36/38 Irritating to eyes and skin.
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

NOTE: EXXONMOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for other applications. In any case, the following advice should be considered:

INDUSTRIAL LABEL

Under normal conditions of intended use, this product does not pose a risk to health. Excessive exposure may result in eye, skin or respiratory irritation. Always observe good hygiene measures. First Aid: Wash skin with soap and water. Flush eyes with water. If overcome by fumes or vapor, remove to fresh air. If ingested, do not induce vomiting. If symptoms persist seek medical assistance. Read and understand the MSDS before using this product.

COSHH Regulations: Product reviewed and considered to be potentially hazardous to health. The Regulations must be followed and measures to control exposure may be necessary.

Any sections of this Material Safety Data Sheet which are printed in bold text highlights recent significant changes which have been made to the advice or information given.

****

For Internal Use Only: MHC: 1* 1* 1* 1* 1*, MPPEC: A, TRN: 570317-00, ELIS: 407975, CMCS97: 97Q677
EHS Approval Date: 20OCT2003

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Safety Data Sheet

Shell Albida Grease EP 2

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Product Code	001A0091
Infosafe No.	ACIYK GB/eng/C
Issued Date	19/03/2005
Product Type/Use	Automotive and industrial grease.

Other Names	**Name**	**Code**
	Shell Albida Grease EP 2	140000006899

Supplier

SHELL UK PRODUCTS LTD
Stanlow Manufacturing Complex
PO Box 3
Ellesmere Port CH65 4HB
Technical Contact: Product HSE Department
United Kingdom

Telephone Numbers

Emergency Tel.

0151-350-4595

Telephone/Fax Number

Tel: 0151-350-4000

2. COMPOSITION/INFORMATION ON INGREDIENTS

Preparation Description

A lubricating grease containing highly-refined mineral oils and additives. The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

Dangerous Components / Constituents

Exposure limits apply to the following components: Highly refined mineral oil.

Name	CAS	EINECS	Proportion		
Zinc naphthenate	12001-85-3	234-409-2	1-2.4 %		

Other Information

See Section 16 'Other Information' for full text of each relevant Risk Phrase.

3. HAZARDS IDENTIFICATION

EC Classification	Not classified as Dangerous under EC criteria.

Human Health Hazards

No specific hazards under normal use conditions. Prolonged or repeated exposure to skin may give rise to

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dermatitis. Used grease may contain harmful impurities.

Safety Hazards
Not classified as flammable, but will burn.

4. FIRST AID MEASURES

Symptoms and Effects
Not expected to give rise to an acute hazard under normal conditions of use.

Inhalation
In the unlikely event of dizziness or nausea, remove casualty to fresh air. If symptoms persist, obtain medical attention.

Skin
Remove contaminated clothing and wash affected skin with soap and water. If persistent irritation occurs, obtain medical attention. When using high pressure equipment, injection of product under the skin can occur. If high pressure injuries occur, the casualty should be sent immediately to a hospital. Do not wait for symptoms to develop.

Eye
Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

Ingestion
Wash out mouth with water and obtain medical attention. Do not induce vomiting.

Advice to Doctor
Treat symptomatically. Aspiration into the lungs may result in chemical pneumonitis. Dermatitis may result from prolonged or repeated exposure. High pressure injection injuries require prompt surgical intervention and possibly steroid therapy, to minimise tissue damage and loss of function.
High pressure injection injuries require surgical intervention and possibly steroid therapy to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.
There may be a risk to health where low viscosity products are aspirated into the lungs following vomiting, although this is uncommon in adults. Such aspiration would cause intense local irritation and chemical pneumonitis. Children, and those in whom consciousness is impaired, will be more at risk. Emesis of lubricants is not usually necessary, unless a large amount has been ingested, or some other compound has been dissolved in the product. If this is indicated, for example, when there is rapid onset of central nervous system depression from large ingested volume - gastric lavage under controlled hospital conditions, with full protection of the airway is required. Supportive care may include oxygen, arterial blood gas monitoring, respiratory support, and, if aspiration has occurred, treatment with corticosteriods and antibiotics. Seizures should be controlled with Diazepam, or appropriate equivalent drug.

5. FIRE FIGHTING MEASURES

Specific Hazards
Combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide and unidentified organic and inorganic compounds.

Extinguishing Media
Foam and dry chemical powder. Carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media
Water in jet. Use of halon extinguishers should be avoided for environmental reasons.

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Protective Equipment
Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Avoid contact with skin and eyes. Wear PVC, Neoprene or nitrile rubber gloves. Wear rubber knee length safety boots and PVC Jacket and Trousers. Wear safety glasses or full face shield if splashes are likely to occur.

Environmental Precautions
Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Inform local authorities if this cannot be prevented.

Clean-up Methods - Small Spillages
Dispose into a suitable, clearly marked container for disposal or reclamation in accordance with local regulations.

Clean-up Methods - Large Spillages
As for small spills.

7. HANDLING AND STORAGE

Handling
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Avoid prolonged or repeated contact with skin. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Prevent spillages. Cloth, paper and other materials that are used to absorb spills present a fire hazard. Avoid their accumulation by disposing of them safely and immediately. In addition to any specific recommendations given for controls of risks to health, safety and the environment, an assessment of risks must be made to help determine controls appropriate to local circumstances. Exposure to this product should be reduced as low as reasonably practicable. Reference should be made to the Health and Safety Executive's publication 'COSHH Essentials'.

Storage
Keep in a cool, dry, well-ventilated place. Use properly labelled and closeable containers. Avoid direct sunlight, heat sources, and strong oxidizing agents. The storage of this product maybe subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance maybe obtained from the local environmental agency office.

Storage Temperatures
0ºC Minimum. 50ºC Maximum.

Recommended Materials
For containers or container linings, use mild steel or high density polyethylene.

Unsuitable Materials
For containers or container linings, avoid PVC.

Other Information
Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Exposure Limits

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Shell Albida Grease EP 2

Substance	Regulations	Exposure Duration	Exposure Limit	Units	Notes
Oil mist, mineral	Health and Safety Executive. EH40; Occupational Exposure Limits.	TWA	5	mg/m3	
	Health and Safety Executive. EH40; Occupational Exposure Limits.	STEL	10	mg/m3	

Other Exposure Information
Due to the product's semi-solid consistency, generation of mists and dusts is unlikely to occur.

Exposure Controls
The use of personal protective equipment is only one aspect of an integrated approach to the Control Of Substances Hazardous to Health.
The management of Health and Safety at Work Regulations 1992 require employers to identify and evaluate the risks to health and to implement appropriate measures to eliminate or minimise those risks. The choice of personal protective equipment is highly dependent upon local conditions, e.g. exposure to other chemical substances and micro-organisms, thermal hazards (protection from extremes of cold and heat), electrical hazards, mechanical hazards and appropriate degree of manual dexterity required to undertake an activity.
Whilst the content of this section may inform the choice of personal protective equipment used, the limitations of any information which can be provided must be fully understood, e.g. personal protective equipment chosen to protect employees from occasional splashes maybe entirely inadequate for activities involving partial or complete immersion.If the levels of oil mist or vapour in air are likely to exceed the occupational exposure standards then consideration should be given to the use of local exhaust ventilation to reduce personal exposure.
The choice of personal protective equipment should only be undertaken in the light of a full risk assessment by a suitably qualified competent person (e.g. a professionally qualified occupational hygienist).
Effective protection is only achieved by correctly fitting and well maintained equipment and employers should ensure that appropriate training is given. All personal protective equipment should be regularly inspected and replaced if defective. Reference should be made to HSE's publication Methods for the Determination of Hazardous Substances (MDHS) 84 - Measurement of oil mist from mineral oil-based metalworking fluids. Measurement of an employee's exposure to oil vapour maybe supplemented through the use of stain tubes. In the first instance, further guidance maybe obtained through HSE's publication 'COSHH - a brief guide to the regulations' (INDG 136(rev1)).

Respiratory Protection
At standard temperature and pressure, the Occupational Exposure Standard for oil vapour is unlikely to be exceeded. Care should be taken to keep exposures below applicable occupational exposure limits. If this cannot be achieved, use of a respirator fitted with an organic vapour cartridge combined with a particulate pre-filter should be considered. Half masks (EN 149) or valved half masks (EN 405) in combination with type A2 (EN 141) and P2/3 (EN 143) pre-filters maybe considered.
If product is subjected to elevated temperatures, half masks (EN 149) or valved half masks (EN 405) in combination with type AX (EN 371) and P2/3 (EN 143) prefilters maybe considered.

Hand Protection
Chemical protective gloves are made from a wide range of materials, but there is no single glove material (or combination of materials) which gives unlimited resistance to any individual or combination of substances or preparations. The extent of the breakthrough time will be affected by a combination of factors which include permeation, penetration, degradation, use pattern (full immersion, occasional contacts) and how the glove is stored when not in use.
Theoretical maximum levels of protection are seldom achieved in practice and the actual level of protection can be difficult to assess. Effective breakthrough time should be used with care and a margin of safety should be applied. HSE guidance on protective gloves recommends a 75% safety factor to be applied to any figures obtained in a laboratory test. Nitrile gloves may offer relatively long breakthrough times and slow permeation rates. Test data, e.g breakthrough data obtained through test standard EN374-3:1994 are available from reputable equipment suppliers.
Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using

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gloves, hands should be washed and dried thoroughly. A non perfumed moisturiser should be applied.

Eye Protection
Goggles conforming to a minimum standard of EN 166 345B should be considered if there is a possibility of eye contact with the product through splashing. Higher rated eye protection must be considered for highly hazardous operations or work areas. For example, employees involved in metalworking operations such as chipping, grinding or cutting may require additional protection to avert injury from fast moving particles or broken tools.

Body Protection
Minimise all forms of skin contact. Overalls and shoes with oil resistant soles should be worn. Launder overalls and undergarments regularly.

Environmental Exposure Controls
Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Colour	Light brown.
Physical State	Semi-solid at ambient temperature.
Odour	Characteristic mineral oil.
pH Value	Data not available.
Vapour Pressure	Expected to be less than 0.5 Pa at 20°C.
Initial Boiling Point	Data not available.
Solubility in Water	Negligible.
Density	circa 900 kg/m3 at 15ºC.
Flash Point	>250ºC (COC) (based on mineral oil).
Flammable Limits - Upper	10% V/V (typical) (based on mineral oil).
Flammable Limits - Lower	1% V/V (typical) (based on mineral oil).
Auto-Ignition Temperature	Expected to be above 320ºC.
Kinematic Viscosity	Data not available.
Vapour Density (Air=1)	Greater than 1.
Partition co-efficient, n-octanol/water	Log Pow expected to be greater than 6.
Dropping Point	>250ºC (ASTM D-566).

10. STABILITY AND REACTIVITY

Stability
Stable.

Conditions to Avoid
Extremes of temperature and direct sunlight.

Materials to Avoid
Strong oxidizing agents.

Hazardous Decomposition Products
Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

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Basis for Assessment
Toxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the toxicology of similar products.

Acute Toxicity - Oral
LD50 expected to be > 2000 mg/kg.

Acute Toxicity - Dermal
LD50 expected to be > 2000 mg/kg.

Acute Toxicity - Inhalation
Not considered to be an inhalation hazard under normal conditions of use.

Eye Irritation
Expected to be slightly irritating.

Skin Irritation
Expected to be slightly irritating.

Respiratory Irritation
If vapours are inhaled, slight irritation of the respiratory tract may occur.

Skin Sensitisation
Not expected to be a skin sensitizer.

Carcinogenicity
Product is based on mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Other components are not known to be associated with carcinogenic effects.

Mutagenicity
Not considered to be a mutagenic hazard.

Reproductive Toxicity
Not considered to be toxic to reproduction.

Other Information
Prolonged and/or repeated contact with products containing mineral oils can result in defatting of the skin, particularly at elevated temperatures. This can lead to irritation and possibly dermatitis, especially under conditions of poor personal hygiene. Skin contact should be minimised. High pressure injection of product into the skin may lead to local necrosis if the product is not surgically removed. Used grease may contain harmful impurities that have accumulated during use.The concentration of such harmful impurities will depend on use and they may present risks to health and the environment on disposal. ALL used grease should be handled with caution and skin contact avoided as far as possible.

12. ECOLOGICAL INFORMATION

Basis for Assessment
Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

Mobility
Semi-solid under most environmental conditions. Floats on water. If it comes into contact with soil, it will strongly adsorb to soil particles.

Persistence / Degradability
Not expected to be readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.

Bioaccumulation
Contains components with the potential to bioaccumulate.

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Ecotoxicity
Data not available. Poorly soluble mixture. May cause physical fouling of aquatic organisms.

Other Adverse Effects
Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.
Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities.

13. DISPOSAL CONSIDERATIONS

Waste Disposal
Dispose into a suitable, clearly marked container for disposal or reclamation in accordance with local regulations. The competence of the contractor to deal satisfactorily with this type of product should be established beforehand. Do not pollute the soil, water or environment with the waste product.

Product Disposal
As for waste disposal.

Container Disposal
Recycle or dispose of in accordance with the legislation in force with a recognised collector or contractor.

14. TRANSPORT INFORMATION

Transport Information
Not dangerous for transport under ADR/RID, IMO and IATA/ICAO regulations.

15. REGULATORY INFORMATION

EC Symbols	None.
EC Risk Phrase	Not classified.
EC Safety Phrase	Not classified.

EINECS	All components listed or polymer exempt.
TSCA (USA)	All components listed.

National Legislation
Environmental Protection Act 1990 (as amended).
Health and Safety at Work Act 1974
Consumers Protection Act 1987
Control of Pollution Act 1974
Environmental Act 1995
Factories Act 1961
Carriage of Dangerous Goods by Road and Rail (Classification, Packaging and Labelling) Regulations
Chemicals (Hazard Information and Packaging for Supply) Regulations 2002.
Control of Substances Hazardous to Health Regulations 1994 (as amended).
Road Traffic (Carriage of Dangerous Substances in Packages) Regulations
Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations
Road Traffic (Carriage of Dangerous Substances in Road Tankers in Tank Containers) Regulations
Road Traffic (Training of Drivers of Vehicles Carrying Dangerous Goods) Regulations

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Reporting of Injuries, Diseases and Dangerous Occurences Regulations
Health and Safety (First Aid) Regulations 1981
Personal Protective Equipment (EC Directive) Regulations 1992
Personal Protective Equipment at Work Regulations 1992

Packaging & Labelling
Safety data sheet available for professional user on request.

16. OTHER INFORMATION

Revisions Highlighted
To assist harmonisation of sds authoring practices, a version number has been introduced.

References
GUIDANCE NOTES
UK Chemicals Regulatory Atlas, An Overview of how to guide your chemical through to regulatory compliance (DTI).
HSG71 The storage of packaged dangerous substances.
EH/40 Occupational Exposure Limits.
EH/58 The Carcinogenicity of Mineral Oils.
MS24 Health surveillance of occupational skin disease.
HSG 53 The selection, use and maintenance of respiratory protective equipment: A practical guide.
HSG 206 Cost and effectiveness of chemical protective gloves for the workplace: Guidance for employers and health and safety specialists.
L74 First Aid at work: Approved Code of Practice and Guidance.
HSG 136 Workplace transport safety : guidance for employers.
INDG234 (rev) Are you Involved in the Carriage of Dangerous Goods by Road or Rail
OTHER LITERATURE
Concawe Report 3/82 Precautionary Advice on the Handling of Used Engine Oils
Concawe Report 86/69 Health Aspects of Worker Exposure to Oil Mists
Concawe Report 01/97 Petroleum Products - First Aid Emergency and Medical Advice
Concawe Report 01/53 Classification and labelling of petroleum substances according to the EU dangerous substances directive (Concawe recommendations August 2001)
Concawe Report 01/54 environmental classification of petroleum substances summary data and rationale
Concawe Report 5/02 amended safety data sheet directive (2001/58/EC)
Department of the Environment - Waste Management - The Duty of Care - A Code of Practice
Concawe, Boulevard du souverain 165 B - 1160 Brussels, Belgium
www.concawe.be

Restrictions
This product must not be used in applications other than recommended without first seeking the advice of the SHELL technical department.

List of R Phrases in Section 2
R36/38 Irritating to eyes and skin.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Technical Contact Numbers
0151-350-4000.

Further Information
This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It does not constitute a guarantee for any specific property of the product.

... End Of SDS ...

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Shell Albida Grease EP 2

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Safety Data Sheet

Shell Rimula Super 15W-40

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Product Code	001B0415
Infosafe No.	ACK9D GB/eng/C
Issued Date	26/11/2003
Product Type/Use	Engine oil.

Other Names	**Name**	**Code**
	Shell Rimula Super 15W-40	140001010602

Supplier

SHELL UK PRODUCTS LTD
Stanlow Manufacturing Complex
PO Box 3
Ellesmere Port
CH65 4HB
Technical Contact: Product HSE Department
United Kingdom

Telephone Numbers

Emergency Tel.

0151-350-4595

Telephone/Fax Number

Tel: 0151-350-4000

2. COMPOSITION/INFORMATION ON INGREDIENTS

Preparation Description

Highly refined mineral oils and additives. The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

Dangerous Components / Constituents

Exposure limits apply to the following components: Highly refined mineral oil.

Name	CAS	EINECS	Proportion	Hazard	R Phrase
Zinc alkyl dithiophosphate	-	-	1-2.49 %	Xi, N	R38, R41, R51/53

Other Information

See Section 16 'Other Information' for full text of each relevant Risk Phrase.

3. HAZARDS IDENTIFICATION

EC Classification	Not classified as Dangerous under EC criteria.

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Human Health Hazards
No specific hazards under normal use conditions. Prolonged or repeated exposure may give rise to dermatitis. Used oil may contain harmful impurities.

Safety Hazards
Not classified as flammable, but will burn.

Environmental Hazards
Not classified as dangerous to the environment.

4. FIRST AID MEASURES

Symptoms and Effects
Not expected to give rise to an acute hazard under normal conditions of use.

Inhalation
In the unlikely event of dizziness or nausea, remove casualty to fresh air. If symptoms persist, obtain medical attention.

Skin
Remove contaminated clothing and wash affected skin with soap and water. If persistent irritation occurs, obtain medical attention. If high pressure injection injuries occur, obtain medical attention immediately.

Eye
Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

Ingestion
Wash out mouth with water and obtain medical attention. Do not induce vomiting.

Advice to Doctor
Treat symptomatically. Aspiration into the lungs may cause chemical pneumonitis. Dermatitis may result from prolonged or repeated exposure.
High pressure injection injuries require surgical intervention and possibly steroid therapy to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.
There may be a risk to health where low viscosity products are aspirated into the lungs following vomiting, although this is uncommon in adults. Such aspiration would cause intense local irritation and chemical pneumonitis. Children, and those in whom consciousness is impaired, will be more at risk. Emesis of lubricants is not usually necessary, unless a large amount has been ingested, or some other compound has been dissolved in the product. If this is indicated, for example, when there is rapid onset of central nervous system depression from large ingested volume - gastric lavage under controlled hospital conditions, with full protection of the airway is required. Supportive care may include oxygen, arterial blood gas monitoring, respiratory support, and, if aspiration has occurred, treatment with corticosteriods and antibiotics. Seizures should be controlled with Diazepam, or appropriate equivalent drug.

5. FIRE FIGHTING MEASURES

Specific Hazards
Combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide and unidentified organic and inorganic compounds.

Extinguishing Media
Foam and dry chemical powder. Carbon dioxide, sand or earth may be used for small fires only.

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Unsuitable Extinguishing Media
Water in jet. Use of halon extinguishers should be avoided for environmental reasons.

Protective Equipment
Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Avoid contact with skin and eyes. Wear PVC, Neoprene or nitrile rubber gloves. Wear rubber knee length safety boots and PVC Jacket and Trousers. Wear safety glasses or full face shield if splashes are likely to occur.

Environmental Precautions
Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Inform local authorities if this cannot be prevented.

Clean-up Methods - Small Spillages
Absorb liquid with sand or earth. Sweep up and remove to a suitable, clearly marked container for disposal in accordance with local regulations.

Clean-up Methods - Large Spillages
Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Dispose of as for small spills.

7. HANDLING AND STORAGE

Handling
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Avoid prolonged or repeated contact with skin. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Prevent spillages. Cloth, paper and other materials that are used to absorb spills present a fire hazard. Avoid their accumulation by disposing of them safely and immediately. In addition to any specific recommendations given for controls of risks to health, safety and the environment, an assessment of risks must be made to help determine controls appropriate to local circumstances. Exposure to this product should be reduced as low as reasonably practicable. Reference should be made to the Health and Safety Executive's publication 'COSHH Essentials'.

Storage
Keep in a cool, dry, well-ventilated place. Use properly labelled and closeable containers. Avoid direct sunlight, heat sources, and strong oxidizing agents. The storage of this product maybe subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance maybe obtained from the local environmental agency office.

Storage Temperatures
0ºC Minimum. 50ºC Maximum.

Recommended Materials
For containers or container linings, use mild steel or high density polyethylene.

Unsuitable Materials
For containers or container linings, avoid PVC.

Other Information
Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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Exposure Limits

Substance	Regulations	Exposure Duration	Exposure Limit	Units	Notes
Oil mist, mineral	Health and Safety Executive. EH40; Occupational Exposure Limits.	TWA	5	mg/m3	
	Health and Safety Executive. EH40; Occupational Exposure Limits.	STEL	10	mg/m3	

Exposure Controls

The use of personal protective equipment is only one aspect of an integrated approach to the Control Of Substances Hazardous to Health.
The management of Health and Safety at Work Regulations 1992 require employers to identify and evaluate the risks to health and to implement appropriate measures to eliminate or minimise those risks. The choice of personal protective equipment is highly dependent upon local conditions, e.g. exposure to other chemical substances and micro-organisms, thermal hazards (protection from extremes of cold and heat), electrical hazards, mechanical hazards and appropriate degree of manual dexterity required to undertake an activity.
Whilst the content of this section may inform the choice of personal protective equipment used, the limitations of any information which can be provided must be fully understood, e.g. personal protective equipment chosen to protect employees from occasional splashes maybe entirely inadequate for activities involving partial or complete immersion.If the levels of oil mist or vapour in air are likely to exceed the occupational exposure standards then consideration should be given to the use of local exhaust ventilation to reduce personal exposure.
The choice of personal protective equipment should only be undertaken in the light of a full risk assessment by a suitably qualified competent person (e.g. a professionally qualified occupational hygienist).
Effective protection is only achieved by correctly fitting and well maintained equipment and employers should ensure that appropriate training is given. All personal protective equipment should be regularly inspected and replaced if defective. Reference should be made to HSE's publication Methods for the Determination of Hazardous Substances (MDHS) 84 - Measurement of oil mist from mineral oil-based metalworking fluids. Measurement of an employee's exposure to oil vapour maybe supplemented through the use of stain tubes. In the first instance, further guidance maybe obtained through HSE's publication 'COSHH - a brief guide to the regulations' (INDG 136(rev1)).

Respiratory Protection

At standard temperature and pressure, the Occupational Exposure Standard for oil vapour is unlikely to be exceeded. Care should be taken to keep exposures below applicable occupational exposure limits. If this cannot be achieved, use of a respirator fitted with an organic vapour cartridge combined with a particulate pre-filter should be considered. Half masks (EN 149) or valved half masks (EN 405) in combination with type A2 (EN 141) and P2/3 (EN 143) pre-filters maybe considered.
If product is subjected to elevated temperatures, half masks (EN 149) or valved half masks (EN 405) in combination with type AX (EN 371) and P2/3 (EN 143) prefilters maybe considered.

Hand Protection

Chemical protective gloves are made from a wide range of materials, but there is no single glove material (or combination of materials) which gives unlimited resistance to any individual or combination of substances or preparations. The extent of the breakthrough time will be affected by a combination of factors which include permeation, penetration, degradation, use pattern (full immersion, occasional contacts) and how the glove is stored when not in use.
Theoretical maximum levels of protection are seldom achieved in practice and the actual level of protection can be difficult to assess. Effective breakthrough time should be used with care and a margin of safety should be applied. HSE guidance on protective gloves recommends a 75% safety factor to be applied to any figures obtained in a laboratory test. Nitrile gloves may offer relatively long breakthrough times and slow permeation rates. Test data, e.g breakthrough data obtained through test standard EN374-3:1994 are available from



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reputable equipment suppliers.
Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. A non perfumed moisturiser should be applied.

Eye Protection
Goggles conforming to a minimum standard of EN 166 345B should be considered if there is a possibility of eye contact with the product through splashing. Higher rated eye protection must be considered for highly hazardous operations or work areas. For example, employees involved in metalworking operations such as chipping, grinding or cutting may require additional protection to avert injury from fast moving particles or broken tools.

Body Protection
Minimise all forms of skin contact. Overalls and shoes with oil resistant soles should be worn. Launder overalls and undergarments regularly.

Environmental Exposure Controls
Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Colour	Amber.
Physical State	Liquid at ambient temperature.
Odour	Characteristic mineral oil.
pH Value	Data not available.
Vapour Pressure	Expected to be less than 0.5 Pa at 20°C.
Initial Boiling Point	Expected to be above 280°C.
Solubility in Water	Negligible.
Density	888 kg/m3 at 15ºC.
Flash Point	230ºC. PMCC ASTM D93.
Flammable Limits - Upper	10%(V/V).
Flammable Limits - Lower	1%(V/V).
Auto-Ignition Temperature	Expected to be above 320ºC.
Kinematic Viscosity	110 mm2/s at 40ºC.
Vapour Density (Air=1)	Greater than 1.
Partition co-efficient, n-octanol/water	Log Pow expected to be greater than 6.
Pour Point	-30ºC maximum.

10. STABILITY AND REACTIVITY

Stability
Stable.

Conditions to Avoid
Extremes of temperature and direct sunlight.

Materials to Avoid
Strong oxidizing agents.

Hazardous Decomposition Products
Hazardous decomposition products are not expected to form during normal storage.

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11. TOXICOLOGICAL INFORMATION

Basis for Assessment
Toxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the toxicology of similar products.

Acute Toxicity - Oral
LD50 expected to be > 2000 mg/kg.

Acute Toxicity - Dermal
LD50 expected to be > 2000 mg/kg.

Acute Toxicity - Inhalation
Not considered to be an inhalation hazard under normal conditions of use.

Eye Irritation
Expected to be slightly irritating.

Skin Irritation
Expected to be slightly irritating.

Respiratory Irritation
If mists are inhaled, slight irritation of the respiratory tract may occur.

Skin Sensitisation
Not expected to be a skin sensitizer.

Carcinogenicity
Product is based on mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Other components are not known to be associated with carcinogenic effects.

Mutagenicity
Not considered to be a mutagenic hazard.

Reproductive Toxicity
Not considered to be toxic to reproduction.

Other Information
Prolonged and/or repeated contact with this product can result in defatting of the skin, particularly at elevated temperatures. This can lead to irritation and possibly dermatitis, especially under conditions of poor personal hygiene. Skin contact should be minimised. Used engine oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible. It is prudent to assume that prolonged or repeated exposure to used engine oils may cause skin cancer.

12. ECOLOGICAL INFORMATION

Basis for Assessment
Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

Mobility
Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.

Persistence / Degradability
Not expected to be readily biodegradable. Major constituents are expected to be inherently biodegradable, but

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the product contains components that may persist in the environment.

Bioaccumulation
Contains components with the potential to bioaccumulate.

Ecotoxicity
Poorly soluble mixture. May cause physical fouling of aquatic organisms. Product is expected to be practically non-toxic to aquatic organisms, LL/EL50 >100 mg/l. (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

Other Adverse Effects
Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.
Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities.

13. DISPOSAL CONSIDERATIONS

Waste Disposal
Recycle or dispose of in accordance with prevailing regulations, with a recognised collector or contractor. The competence of the contractor to deal satisfactorily with this type of product should be established beforehand. Do not pollute the soil, water or environment with the waste product.

Product Disposal
As for waste disposal.

Container Disposal
Recycle or dispose of in accordance with the legislation in force with a recognised collector or contractor.

14. TRANSPORT INFORMATION

Transport Information
Not dangerous for transport under ADR/RID, IMO and IATA/ICAO regulations.

15. REGULATORY INFORMATION

EC Symbols	None.
EC Risk Phrase	Not classified.
EC Safety Phrase	Not classified.

EINECS	All components listed or polymer exempt.
TSCA (USA)	Not established.

National Legislation
Environmental Protection Act 1990 (as amended).
Health and Safety at Work Act 1974
Consumers Protection Act 1987
Control of Pollution Act 1974
Environmental Act 1995
Factories Act 1961
Carriage of Dangerous Goods by Road and Rail (Classification, Packaging and Labelling) Regulations

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Chemicals (Hazard Information and Packaging for Supply) Regulations 2002.
Control of Substances Hazardous to Health Regulations 1994 (as amended).
Road Traffic (Carriage of Dangerous Substances in Packages) Regulations
Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations
Road Traffic (Carriage of Dangerous Substances in Road Tankers in Tank Containers) Regulations
Road Traffic (Training of Drivers of Vehicles Carrying Dangerous Goods) Regulations
Reporting of Injuries, Diseases and Dangerous Occurences Regulations
Health and Safety (First Aid) Regulations 1981
Personal Protective Equipment (EC Directive) Regulations 1992
Personal Protective Equipment at Work Regulations 1992

Packaging & Labelling
Safety data sheet available for professional user on request.

16. OTHER INFORMATION

Revisions Highlighted
No amendments made to information. To assist harmonisation of sds authoring practices, a version number has been introduced.

References
GUIDANCE NOTES
UK Chemicals Regulatory Atlas, An Overview of how to guide your chemical through to regulatory compliance (DTI).
HSG71 The storage of packaged dangerous substances.
EH/40 Occupational Exposure Limits.
EH/58 The Carcinogenicity of Mineral Oils.
MS24 Health surveillance of occupational skin disease.
HSG 53 The selection, use and maintenance of respiratory protective equipment: A practical guide.
HSG 206 Cost and effectiveness of chemical protective gloves for the workplace: Guidance for employers and health and safety specialists.
L74 First Aid at work: Approved Code of Practice and Guidance.
HSG 136 Workplace transport safety : guidance for employers.
INDG234 (rev) Are you Involved in the Carriage of Dangerous Goods by Road or Rail
OTHER LITERATURE
Concawe Report 3/82 Precautionary Advice on the Handling of Used Engine Oils
Concawe Report 86/69 Health Aspects of Worker Exposure to Oil Mists
Concawe Report 01/97 Petroleum Products - First Aid Emergency and Medical Advice
Concawe Report 01/53 Classification and labelling of petroleum substances according to the EU dangerous substances directive (Concawe recommendations August 2001)
Concawe Report 01/54 environmental classification of petroleum substances summary data and rationale
Concawe Report 5/02 amended safety data sheet directive (2001/58/EC)
Department of the Environment - Waste Management - The Duty of Care - A Code of Practice
Concawe, Boulevard du souverain 165 B - 1160 Brussels, Belgium
www.concawe.be

Restrictions
This product must not be used in applications other than recommended without first seeking the advice of the SHELL technical department.

List of R Phrases in Section 2
R38 Irritating to skin.
R41 Risk of serious damage to eyes.
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Technical Contact Numbers
0151-350-4000.

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Further Information
This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It does not constitute a guarantee for any specific property of the product.

... End Of SDS ...

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Safety Data Sheet

Shell Tellus Oil 46

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Product Code	001B0669
Infosafe No.	ACKQ6 GB/eng/C
Issued Date	29/04/2004
Product Type/Use	Hydraulic oil.

Other Names	**Name**	**Code**
	Shell Tellus Oil 46	140001010640

Supplier

SHELL UK PRODUCTS LTD
Stanlow Manufacturing Complex
PO Box 3
Ellesmere Port
CH65 4HB
Technical Contact: Product HSE Department
United Kingdom

Telephone Numbers

Emergency Tel.

0151-350-4595

Telephone/Fax Number

Tel: 0151-350-4000

2. COMPOSITION/INFORMATION ON INGREDIENTS

Preparation Description

Highly refined mineral oils and additives. The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

Dangerous Components / Constituents

Exposure limits apply to the following components: Highly refined mineral oil.

3. HAZARDS IDENTIFICATION

EC Classification	Not classified as Dangerous under EC criteria.

Human Health Hazards

No specific hazards under normal use conditions. Prolonged or repeated exposure may give rise to dermatitis. Used oil may contain harmful impurities.

Safety Hazards

Not classified as flammable, but will burn.

Environmental Hazards

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Not classified as dangerous for the environment.

4. FIRST AID MEASURES

Symptoms and Effects
Not expected to give rise to an acute hazard under normal conditions of use.

Inhalation
In the unlikely event of dizziness or nausea, remove casualty to fresh air. If symptoms persist, obtain medical attention.

Skin
Remove contaminated clothing and wash affected skin with soap and water. If persistent irritation occurs, obtain medical attention. If high pressure injection injuries occur, obtain medical attention immediately.

Eye
Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

Ingestion
Wash out mouth with water and obtain medical attention. Do not induce vomiting.

Advice to Doctor
Treat symptomatically. Aspiration into the lungs may result in chemical pneumonitis. Dermatitis may result from prolonged or repeated exposure.
High pressure injection injuries require surgical intervention and possibly steroid therapy to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.
There may be a risk to health where low viscosity products are aspirated into the lungs following vomiting, although this is uncommon in adults. Such aspiration would cause intense local irritation and chemical pneumonitis. Children, and those in whom consciousness is impaired, will be more at risk. Emesis of lubricants is not usually necessary, unless a large amount has been ingested, or some other compound has been dissolved in the product. If this is indicated, for example, when there is rapid onset of central nervous system depression from large ingested volume - gastric lavage under controlled hospital conditions, with full protection of the airway is required. Supportive care may include oxygen, arterial blood gas monitoring, respiratory support, and, if aspiration has occurred, treatment with corticosteriods and antibiotics. Seizures should be controlled with Diazepam, or appropriate equivalent drug.

5. FIRE FIGHTING MEASURES

Specific Hazards
Combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide, oxides of sulphur, and unidentified organic and inorganic compounds.

Extinguishing Media
Foam and dry chemical powder. Carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media
Water in jet. Use of halon extinguishers should be avoided for environmental reasons.

Protective Equipment
Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

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Personal Precautions
Avoid contact with skin and eyes. Wear PVC, Neoprene or nitrile rubber gloves. Wear rubber knee length safety boots and PVC Jacket and Trousers. Wear safety glasses or full face shield if splashes are likely to occur.

Environmental Precautions
Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Inform local authorities if this cannot be prevented.

Clean-up Methods - Small Spillages
Absorb liquid with sand or earth. Sweep up and remove to a suitable, clearly marked container for disposal in accordance with local regulations.

Clean-up Methods - Large Spillages
Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Dispose of as for small spills.

7. HANDLING AND STORAGE

Handling
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Avoid prolonged or repeated contact with skin. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Prevent spillages. Cloth, paper and other materials that are used to absorb spills present a fire hazard. Avoid their accumulation by disposing of them safely and immediately. In addition to any specific recommendations given for controls of risks to health, safety and the environment, an assessment of risks must be made to help determine controls appropriate to local circumstances. Exposure to this product should be reduced as low as reasonably practicable. Reference should be made to the Health and Safety Executive's publication 'COSHH Essentials'.

Storage
Keep in a cool, dry, well-ventilated place. Use properly labelled and closeable containers. Avoid direct sunlight, heat sources, and strong oxidizing agents. The storage of this product maybe subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance maybe obtained from the local environmental agency office.

Storage Temperatures
0ºC Minimum. 50ºC Maximum.

Recommended Materials
For containers or container linings, use mild steel or high density polyethylene.

Unsuitable Materials
For containers or container linings, avoid PVC.

Other Information
Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Exposure Limits

Substance	Regulations	Exposure Duration	Exposure Limit	Units	Notes
Oil mist, mineral	Health and Safety Executive. EH40; Occupational Exposure Limits.	TWA	5	mg/m3	

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	Health and Safety Executive. EH40; Occupational Exposure Limits.	STEL	10	mg/m3	

Exposure Controls

The use of personal protective equipment is only one aspect of an integrated approach to the Control Of Substances Hazardous to Health.

The management of Health and Safety at Work Regulations 1992 require employers to identify and evaluate the risks to health and to implement appropriate measures to eliminate or minimise those risks. The choice of personal protective equipment is highly dependent upon local conditions, e.g. exposure to other chemical substances and micro-organisms, thermal hazards (protection from extremes of cold and heat), electrical hazards, mechanical hazards and appropriate degree of manual dexterity required to undertake an activity.

Whilst the content of this section may inform the choice of personal protective equipment used, the limitations of any information which can be provided must be fully understood, e.g. personal protective equipment chosen to protect employees from occasional splashes maybe entirely inadequate for activities involving partial or complete immersion.If the levels of oil mist or vapour in air are likely to exceed the occupational exposure standards then consideration should be given to the use of local exhaust ventilation to reduce personal exposure.

The choice of personal protective equipment should only be undertaken in the light of a full risk assessment by a suitably qualified competent person (e.g. a professionally qualified occupational hygienist).

Effective protection is only achieved by correctly fitting and well maintained equipment and employers should ensure that appropriate training is given. All personal protective equipment should be regularly inspected and replaced if defective. Reference should be made to HSE's publication Methods for the Determination of Hazardous Substances (MDHS) 84 - Measurement of oil mist from mineral oil-based metalworking fluids. Measurement of an employee's exposure to oil vapour maybe supplemented through the use of stain tubes. In the first instance, further guidance maybe obtained through HSE's publication 'COSHH - a brief guide to the regulations' (INDG 136(rev1)).

Respiratory Protection

At standard temperature and pressure, the Occupational Exposure Standard for oil vapour is unlikely to be exceeded. Care should be taken to keep exposures below applicable occupational exposure limits. If this cannot be achieved, use of a respirator fitted with an organic vapour cartridge combined with a particulate pre-filter should be considered. Half masks (EN 149) or valved half masks (EN 405) in combination with type A2 (EN 141) and P2/3 (EN 143) pre-filters maybe considered.

If product is subjected to elevated temperatures, half masks (EN 149) or valved half masks (EN 405) in combination with type AX (EN 371) and P2/3 (EN 143) prefilters maybe considered.

Hand Protection

Chemical protective gloves are made from a wide range of materials, but there is no single glove material (or combination of materials) which gives unlimited resistance to any individual or combination of substances or preparations. The extent of the breakthrough time will be affected by a combination of factors which include permeation, penetration, degradation, use pattern (full immersion, occasional contacts) and how the glove is stored when not in use.

Theoretical maximum levels of protection are seldom achieved in practice and the actual level of protection can be difficult to assess. Effective breakthrough time should be used with care and a margin of safety should be applied. HSE guidance on protective gloves recommends a 75% safety factor to be applied to any figures obtained in a laboratory test. Nitrile gloves may offer relatively long breakthrough times and slow permeation rates. Test data, e.g breakthrough data obtained through test standard EN374-3:1994 are available from reputable equipment suppliers.

Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. A non perfumed moisturiser should be applied.

Eye Protection

Goggles conforming to a minimum standard of EN 166 345B should be considered if there is a possibility of eye contact with the product through splashing. Higher rated eye protection must be considered for highly hazardous operations or work areas. For example, employees involved in metalworking operations such as chipping, grinding or cutting may require additional protection to avert injury from fast moving particles or broken

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tools.

Body Protection
Minimise all forms of skin contact. Overalls and shoes with oil resistant soles should be worn. Launder overalls and undergarments regularly.

Environmental Exposure Controls
Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Colour	Light brown.
Physical State	Liquid at ambient temperature.
Odour	Characteristic mineral oil.
pH Value	Not applicable.
Vapour Pressure	Expected to be less than 0.5 Pa at 20°C.
Initial Boiling Point	Expected to be above 280°C.
Solubility in Water	Negligible.
Density	879 kg/m3 at 15ºC.
Flash Point	218ºC. (PMCC).
Flammable Limits - Upper	10%(V/V) (typical).
Flammable Limits - Lower	1%(V/V) (typical).
Auto-Ignition Temperature	Expected to be above 320ºC.
Kinematic Viscosity	46 mm2/s at 40°C.
Vapour Density (Air=1)	Greater than 1.
Partition co-efficient, n-octanol/water	Log Pow expected to be greater than 6.
Pour Point	-30ºC.

10. STABILITY AND REACTIVITY

Stability
Stable.

Conditions to Avoid
Extremes of temperature and direct sunlight.

Materials to Avoid
Strong oxidizing agents.

Hazardous Decomposition Products
Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment
Toxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the toxicology of similar products.

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Acute Toxicity - Oral
LD50 expected to be > 2000 mg/kg.

Acute Toxicity - Dermal
LD50 expected to be > 2000 mg/kg.

Acute Toxicity - Inhalation
Not considered to be an inhalation hazard under normal conditions of use.

Eye Irritation
Expected to be slightly irritating.

Skin Irritation
Expected to be slightly irritating.

Respiratory Irritation
If mists are inhaled, slight irritation of the respiratory tract may occur.

Skin Sensitisation
Not expected to be a skin sensitizer.

Carcinogenicity
Product is based on mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Other components are not known to be associated with carcinogenic effects.

Mutagenicity
Not considered to be a mutagenic hazard.

Reproductive Toxicity
Not considered to be toxic to reproduction.

Other Information
Prolonged and/or repeated contact with products containing mineral oils may result in defatting of the skin, particularly at elevated temperatures. This may lead to irritation and possibly dermatitis, especially under conditions of poor personal hygiene. Skin contact should be minimised. Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

12. ECOLOGICAL INFORMATION

Basis for Assessment
Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

Mobility
Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.

Persistence / Degradability
Not expected to be readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.

Bioaccumulation
Contains components with the potential to bioaccumulate.

Ecotoxicity
Poorly soluble mixture. May cause physical fouling of aquatic organisms. Product is expected to be practically non-toxic to aquatic organisms, LL/EL50 >100 mg/l. (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.

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Other Adverse Effects
Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.
Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities.

13. DISPOSAL CONSIDERATIONS

Waste Disposal
Recycle or dispose of in accordance with prevailing regulations, with a recognised collector or contractor. The competence of the contractor to deal satisfactorily with this type of product should be established beforehand. Do not pollute the soil, water or environment with the waste product.

Product Disposal
As for waste disposal.

Container Disposal
Recycle or dispose of in accordance with the legislation in force with a recognised collector or contractor.

14. TRANSPORT INFORMATION

Transport Information
Not dangerous for transport under ADR/RID, IMO and IATA/ICAO regulations.

15. REGULATORY INFORMATION

EC Symbols	None.
EC Risk Phrase	Not classified.
EC Safety Phrase	Not classified.

EINECS	All components listed or polymer exempt.
TSCA (USA)	All components in compliance.

National Legislation
Environmental Protection Act 1990 (as amended).
Health and Safety at Work Act 1974
Consumers Protection Act 1987
Control of Pollution Act 1974
Environmental Act 1995
Factories Act 1961
Carriage of Dangerous Goods by Road and Rail (Classification, Packaging and Labelling) Regulations
Chemicals (Hazard Information and Packaging for Supply) Regulations 2002.
Control of Substances Hazardous to Health Regulations 1994 (as amended).
Road Traffic (Carriage of Dangerous Substances in Packages) Regulations
Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations
Road Traffic (Carriage of Dangerous Substances in Road Tankers in Tank Containers) Regulations
Road Traffic (Training of Drivers of Vehicles Carrying Dangerous Goods) Regulations
Reporting of Injuries, Diseases and Dangerous Occurences Regulations
Health and Safety (First Aid) Regulations 1981
Personal Protective Equipment (EC Directive) Regulations 1992

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Personal Protective Equipment at Work Regulations 1992

Packaging & Labelling
Safety data sheet available for professional user on request.

16. OTHER INFORMATION

Revisions Highlighted
No amendments made to information. To assist harmonisation of sds authoring practices, a version number has been introduced.

References
GUIDANCE NOTES
UK Chemicals Regulatory Atlas, An Overview of how to guide your chemical through to regulatory compliance (DTI).
HSG71 The storage of packaged dangerous substances.
EH/40 Occupational Exposure Limits.
EH/58 The Carcinogenicity of Mineral Oils.
MS24 Health surveillance of occupational skin disease.
HSG 53 The selection, use and maintenance of respiratory protective equipment: A practical guide.
HSG 206 Cost and effectiveness of chemical protective gloves for the workplace: Guidance for employers and health and safety specialists.
L74 First Aid at work: Approved Code of Practice and Guidance.
HSG 136 Workplace transport safety : guidance for employers.
INDG234 (rev) Are you Involved in the Carriage of Dangerous Goods by Road or Rail
OTHER LITERATURE
Concawe Report 3/82 Precautionary Advice on the Handling of Used Engine Oils
Concawe Report 86/69 Health Aspects of Worker Exposure to Oil Mists
Concawe Report 01/97 Petroleum Products - First Aid Emergency and Medical Advice
Concawe Report 01/53 Classification and labelling of petroleum substances according to the EU dangerous substances directive (Concawe recommendations August 2001)
Concawe Report 01/54 environmental classification of petroleum substances summary data and rationale
Concawe Report 5/02 amended safety data sheet directive (2001/58/EC)
Department of the Environment - Waste Management - The Duty of Care - A Code of Practice
Concawe, Boulevard du souverain 165 B - 1160 Brussels, Belgium
www.concawe.be

Restrictions
This product must not be used in applications other than recommended without first seeking the advice of the SHELL technical department.

Technical Contact Numbers
0151-350-4000.

Further Information
This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It does not constitute a guarantee for any specific property of the product.

... End Of SDS ...

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Safety Data Sheet

Shell Omala Oil 220

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Product Code	001A0776
Infosafe No.	ACH75 GB/eng/C
Issued Date	29/01/2003
Product Type/Use	Gear lubricant.

Other Names	**Name**	**Code**
	Shell Omala Oil 220	140000006378

Supplier

SHELL UK PRODUCTS LTD
Stanlow Manufacturing Complex
PO Box 3
Ellesmere Port
CH65 4HB
Technical Contact: Product HSE Department
United Kingdom

Telephone Numbers

Emergency Tel.

0151-350-4595

Telephone/Fax Number

Tel: 0151-350-4000

2. COMPOSITION/INFORMATION ON INGREDIENTS

Preparation Description

Highly refined mineral oils and additives. The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346.

Dangerous Components / Constituents

Exposure limits apply to the following components: Highly refined mineral oil.

3. HAZARDS IDENTIFICATION

EC Classification	Not classified as Dangerous under EC criteria.

Human Health Hazards

No specific hazards under normal use conditions. Prolonged or repeated exposure may give rise to dermatitis. Used oil may contain harmful impurities.

Safety Hazards

Not classified as flammable, but will burn.

Environmental Hazards

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Not classified as dangerous for the environment.

4. FIRST AID MEASURES

Symptoms and Effects
Not expected to give rise to an acute hazard under normal conditions of use.

Inhalation
In the unlikely event of dizziness or nausea, remove casualty to fresh air. If symptoms persist, obtain medical attention.

Skin
Remove contaminated clothing and wash affected skin with soap and water. If persistent irritation occurs, obtain medical attention. If high pressure injection injuries occur, obtain medical attention immediately.

Eye
Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.

Ingestion
Do not induce vomiting. Wash out mouth with water and obtain medical attention.

Advice to Doctor
Treat symptomatically. Aspiration into the lungs may result in chemical pneumonitis. Dermatitis may result from prolonged or repeated exposure.
High pressure injection injuries require surgical intervention and possibly steroid therapy to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. Prompt surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetics, and wide exploration is essential.
There may be a risk to health where low viscosity products are aspirated into the lungs following vomiting, although this is uncommon in adults. Such aspiration would cause intense local irritation and chemical pneumonitis. Children, and those in whom consciousness is impaired, will be more at risk. Emesis of lubricants is not usually necessary, unless a large amount has been ingested, or some other compound has been dissolved in the product. If this is indicated, for example, when there is rapid onset of central nervous system depression from large ingested volume - gastric lavage under controlled hospital conditions, with full protection of the airway is required. Supportive care may include oxygen, arterial blood gas monitoring, respiratory support, and, if aspiration has occurred, treatment with corticosteriods and antibiotics. Seizures should be controlled with Diazepam, or appropriate equivalent drug.

5. FIRE FIGHTING MEASURES

Specific Hazards
Combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates and gases, including carbon monoxide and unidentified organic and inorganic compounds.

Extinguishing Media
Foam and dry chemical powder. Carbon dioxide, sand or earth may be used for small fires only.

Unsuitable Extinguishing Media
Water in jet. Use of halon extinguishers should be avoided for environmental reasons.

Protective Equipment
Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

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Personal Precautions
Avoid contact with skin and eyes. Wear PVC, Neoprene or nitrile rubber gloves. Wear rubber knee length safety boots and PVC Jacket and Trousers. Wear safety glasses or full face shield if splashes are likely to occur.

Environmental Precautions
Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Inform local authorities if this cannot be prevented.

Clean-up Methods - Small Spillages
Absorb liquid with sand or earth. Sweep up and remove to a suitable, clearly marked container for disposal in accordance with local regulations.

Clean-up Methods - Large Spillages
Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Dispose of as for small spills.

7. HANDLING AND STORAGE

Handling
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Avoid prolonged or repeated contact with skin. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Prevent spillages. Cloth, paper and other materials that are used to absorb spills present a fire hazard. Avoid their accumulation by disposing of them safely and immediately. In addition to any specific recommendations given for controls of risks to health, safety and the environment, an assessment of risks must be made to help determine controls appropriate to local circumstances. Exposure to this product should be reduced as low as reasonably practicable. Reference should be made to the Health and Safety Executive's publication 'COSHH Essentials'.

Storage
Keep in a cool, dry, well-ventilated place. Use properly labelled and closeable containers. Avoid direct sunlight, heat sources, and strong oxidizing agents. The storage of this product maybe subject to the Control of Pollution (Oil Storage) (England) Regulations. Further guidance maybe obtained from the local environmental agency office.

Storage Temperatures
0ºC Minimum. 50ºC Maximum.

Recommended Materials
For containers or container linings, use mild steel or high density polyethylene.

Unsuitable Materials
For containers or container linings, avoid PVC.

Other Information
Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Exposure Limits

Substance	Regulations	Exposure Duration	Exposure Limit	Units	Notes
Oil mist, mineral	Health and Safety Executive. EH40; Occupational Exposure Limits.	TWA	5	mg/m3	

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	Health and Safety Executive. EH40; Occupational Exposure Limits.	STEL	10	mg/m3	

Exposure Controls

The use of personal protective equipment is only one aspect of an integrated approach to the Control Of Substances Hazardous to Health.

The management of Health and Safety at Work Regulations 1992 require employers to identify and evaluate the risks to health and to implement appropriate measures to eliminate or minimise those risks. The choice of personal protective equipment is highly dependent upon local conditions, e.g. exposure to other chemical substances and micro-organisms, thermal hazards (protection from extremes of cold and heat), electrical hazards, mechanical hazards and appropriate degree of manual dexterity required to undertake an activity.

Whilst the content of this section may inform the choice of personal protective equipment used, the limitations of any information which can be provided must be fully understood, e.g. personal protective equipment chosen to protect employees from occasional splashes maybe entirely inadequate for activities involving partial or complete immersion.If the levels of oil mist or vapour in air are likely to exceed the occupational exposure standards then consideration should be given to the use of local exhaust ventilation to reduce personal exposure.

The choice of personal protective equipment should only be undertaken in the light of a full risk assessment by a suitably qualified competent person (e.g. a professionally qualified occupational hygienist).

Effective protection is only achieved by correctly fitting and well maintained equipment and employers should ensure that appropriate training is given. All personal protective equipment should be regularly inspected and replaced if defective. Reference should be made to HSE's publication Methods for the Determination of Hazardous Substances (MDHS) 84 - Measurement of oil mist from mineral oil-based metalworking fluids. Measurement of an employee's exposure to oil vapour maybe supplemented through the use of stain tubes. In the first instance, further guidance maybe obtained through HSE's publication 'COSHH - a brief guide to the regulations' (INDG 136(rev1)).

Respiratory Protection

At standard temperature and pressure, the Occupational Exposure Standard for oil vapour is unlikely to be exceeded. Care should be taken to keep exposures below applicable occupational exposure limits. If this cannot be achieved, use of a respirator fitted with an organic vapour cartridge combined with a particulate pre-filter should be considered. Half masks (EN 149) or valved half masks (EN 405) in combination with type A2 (EN 141) and P2/3 (EN 143) pre-filters maybe considered.

If product is subjected to elevated temperatures, half masks (EN 149) or valved half masks (EN 405) in combination with type AX (EN 371) and P2/3 (EN 143) prefilters maybe considered.

Hand Protection

Chemical protective gloves are made from a wide range of materials, but there is no single glove material (or combination of materials) which gives unlimited resistance to any individual or combination of substances or preparations. The extent of the breakthrough time will be affected by a combination of factors which include permeation, penetration, degradation, use pattern (full immersion, occasional contacts) and how the glove is stored when not in use.

Theoretical maximum levels of protection are seldom achieved in practice and the actual level of protection can be difficult to assess. Effective breakthrough time should be used with care and a margin of safety should be applied. HSE guidance on protective gloves recommends a 75% safety factor to be applied to any figures obtained in a laboratory test. Nitrile gloves may offer relatively long breakthrough times and slow permeation rates. Test data, e.g breakthrough data obtained through test standard EN374-3:1994 are available from reputable equipment suppliers.

Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. A non perfumed moisturiser should be applied.

Eye Protection

Goggles conforming to a minimum standard of EN 166 345B should be considered if there is a possibility of eye contact with the product through splashing. Higher rated eye protection must be considered for highly hazardous operations or work areas. For example, employees involved in metalworking operations such as chipping, grinding or cutting may require additional protection to avert injury from fast moving particles or broken

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tools.

Body Protection
Minimise all forms of skin contact. Overalls and shoes with oil resistant soles should be worn. Launder overalls and undergarments regularly.

Environmental Exposure Controls
Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES

Colour	Brown.
Physical State	Liquid at ambient temperature.
Odour	Characteristic mineral oil.
pH Value	Data not available.
Vapour Pressure	<0.5 Pa at 20ºC.
Initial Boiling Point	>280ºC.
Solubility in Water	Negligible.
Density	899 kg/m3 at 15ºC.
Flash Point	199ºC (PMCC).
Flammable Limits - Upper	10%(V/V) (typical).
Flammable Limits - Lower	1%(V/V) (typical).
Auto-Ignition Temperature	>320º (typical).
Kinematic Viscosity	220 mm2/s at 40ºC.
Evaporation Rate	Data not available.
Vapour Density (Air=1)	>1 at 20ºC.
Partition co-efficient, n-octanol/water	Log Pow >6 (typical).
Pour Point	-18ºC.

10. STABILITY AND REACTIVITY

Stability
Stable.

Conditions to Avoid
Extremes of temperature and direct sunlight.

Materials to Avoid
Strong oxidizing agents.

Hazardous Decomposition Products
Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment
Toxicological data have not been determined specifically for this product. Information given is based on a

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knowledge of the components and the toxicology of similar products.

Acute Toxicity - Oral
LD50 expected to be > 2000 mg/kg.

Acute Toxicity - Dermal
LD50 expected to be > 2000 mg/kg.

Acute Toxicity - Inhalation
Not considered to be an inhalation hazard under normal conditions of use.

Eye Irritation
Expected to be slightly irritating.

Skin Irritation
Expected to be slightly irritating.

Respiratory Irritation
If mists are inhaled, slight irritation of the respiratory tract may occur.

Skin Sensitisation
Not expected to be a skin sensitizer.

Carcinogenicity
Product is based on mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Other components are not known to be associated with carcinogenic effects.

Mutagenicity
Not considered to be a mutagenic hazard.

Reproductive Toxicity
Not considered to be toxic to reproduction.

Other Information
Prolonged and/or repeated contact with products containing mineral oils may result in defatting of the skin, particularly at elevated temperatures. This may lead to irritation and possibly dermatitis, especially under conditions of poor personal hygiene. Skin contact should be minimised. Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible.

12. ECOLOGICAL INFORMATION

Basis for Assessment
Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

Mobility
Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.

Persistence / Degradability
Not expected to be readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.

Bioaccumulation
Contains components with the potential to bioaccumulate.

Ecotoxicity
Poorly soluble mixture. May cause physical fouling of aquatic organisms. Product is expected to be practically non-toxic to aquatic organisms, LL/EL50 >100 mg/l. (LL/EL50 expressed as the nominal amount of product required to prepare aqueous test extract). Mineral oil is not expected to cause any chronic effects to aquatic

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organisms at concentrations less than 1 mg/l.

Other Adverse Effects
Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.
Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities.

13. DISPOSAL CONSIDERATIONS

Waste Disposal
Recycle or dispose of in accordance with prevailing regulations, with a recognised collector or contractor. The competence of the contractor to deal satisfactorily with this type of product should be established beforehand. Do not pollute the soil, water or environment with the waste product.

Product Disposal
As for waste disposal.

Container Disposal
Recycle or dispose of in accordance with the legislation in force with a recognised collector or contractor.

14. TRANSPORT INFORMATION

Transport Information
Not dangerous for transport under ADR/RID, IMO and IATA/ICAO regulations.

15. REGULATORY INFORMATION

EC Symbols	None.
EC Risk Phrase	Not classified.
EC Safety Phrase	Not classified.

EINECS	All components listed or polymer exempt.
TSCA (USA)	All components in compliance.

National Legislation
Environmental Protection Act 1990 (as amended).
Health and Safety at Work Act 1974
Consumers Protection Act 1987
Control of Pollution Act 1974
Environmental Act 1995
Factories Act 1961
Carriage of Dangerous Goods by Road and Rail (Classification, Packaging and Labelling) Regulations
Chemicals (Hazard Information and Packaging for Supply) Regulations 2002.
Control of Substances Hazardous to Health Regulations 1994 (as amended).
Road Traffic (Carriage of Dangerous Substances in Packages) Regulations
Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations
Road Traffic (Carriage of Dangerous Substances in Road Tankers in Tank Containers) Regulations
Road Traffic (Training of Drivers of Vehicles Carrying Dangerous Goods) Regulations
Reporting of Injuries, Diseases and Dangerous Occurences Regulations
Health and Safety (First Aid) Regulations 1981

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Personal Protective Equipment (EC Directive) Regulations 1992
Personal Protective Equipment at Work Regulations 1992

Packaging & Labelling
Safety data sheet available for professional user on request.

16. OTHER INFORMATION

Revisions Highlighted
No amendments made to information. To assist harmonisation of sds authoring practices, a version number has been introduced.

References
GUIDANCE NOTES
UK Chemicals Regulatory Atlas, An Overview of how to guide your chemical through to regulatory compliance (DTI).
HSG71 The storage of packaged dangerous substances.
EH/40 Occupational Exposure Limits.
EH/58 The Carcinogenicity of Mineral Oils.
MS24 Health surveillance of occupational skin disease.
HSG 53 The selection, use and maintenance of respiratory protective equipment: A practical guide.
HSG 206 Cost and effectiveness of chemical protective gloves for the workplace: Guidance for employers and health and safety specialists.
L74 First Aid at work: Approved Code of Practice and Guidance.
HSG 136 Workplace transport safety : guidance for employers.
INDG234 (rev) Are you Involved in the Carriage of Dangerous Goods by Road or Rail
OTHER LITERATURE
Concawe Report 3/82 Precautionary Advice on the Handling of Used Engine Oils
Concawe Report 86/69 Health Aspects of Worker Exposure to Oil Mists
Concawe Report 01/97 Petroleum Products - First Aid Emergency and Medical Advice
Concawe Report 01/53 Classification and labelling of petroleum substances according to the EU dangerous substances directive (Concawe recommendations August 2001)
Concawe Report 01/54 environmental classification of petroleum substances summary data and rationale
Concawe Report 5/02 amended safety data sheet directive (2001/58/EC)
Department of the Environment - Waste Management - The Duty of Care - A Code of Practice
Concawe, Boulevard du souverain 165 B - 1160 Brussels, Belgium
www.concawe.be

Restrictions
This product must not be used in applications other than recommended without first seeking the advice of the SHELL technical department.

Technical Contact Numbers
0151-350-4000.

Further Information
This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It does not constitute a guarantee for any specific property of the product.

... End Of SDS ...

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ANTIFREEZE CONCENTRATE

Data Sheet No. L84042 Revision : 23 08 2004 REPLACES L84042 :

This data sheet has been prepared in accordance with the requirements of the Data Sheet Directive 91/155/EEC.

RECOMMENDED USES

Antifreeze Concentrate is recommended for use as :

an antifreeze

If Antifreeze Concentrate is used for a purpose not covered in this section, Shell UK Ltd would be grateful to receive information on the application.

KNOWN MISUSES/ABUSES

Antifreeze Concentrate is not to be used as :

The most common misuse is that of ingestion by children. For this reason, Antifreeze Concentrate contains an aversive agent. It is most important that Antifreeze Concentrate be kept safely out of reach or locked away.

The disposal of Antifreeze Concentrate to soil, watercourses and drains is a legal offence.

1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

PRODUCT :	**ANTIFREEZE CONCENTRATE**
COMPANY :	**SHELL UK OIL PRODUCTS LIMITED**
TECHNICAL CONTACT:	**PRODUCT HSE DEPARTMENT**
ADDRESS :	**STANLOW MANUFACTURING COMPLEX, PO BOX 3, ELLESMERE PORT, CH65 4HB**
TELEPHONE :	**0151-350-4000**
EMERGENCY TELEPHONE NUMBER :	**0151-350-4595**

2: COMPOSITION/INFORMATION ON INGREDIENTS

Antifreeze Concentrate is a preparation manufactured from ethanediol (ethylene glycol), additives and a taste aversive agent.

CONC.	COMPONENT	EINECS	CLASS	RISK PHRASES
>90%	Ethanediol	203-473-3	Xn	R22 Harmful if swallowed

Exposure limit values exist for the following constituents:

Ethanediol

3: HAZARD IDENTIFICATION

Antifreeze Concentrate is classified as dangerous for supply.

Antifreeze Concentrate is not classified as dangerous for conveyance.

It contains ethanediol to which exposure limits apply.

Ethanediol is readily biodegradable and poses a significant risk of oxygen deletion in aquatic systems.

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4: FIRST AID MEASURES

INHALATION

Remove the person affected to fresh air. If rapid recovery does not occur, obtain medical attention.

SKIN

Wash contaminated skin with water. Use soap if available. Do not delay.

EYES

Flush the eye with copious quantities of water for up to 10 minutes. Refer for medical attention.

INGESTION

The normal advice given in the case of ingestion of hydrocarbon products is that vomiting should be avoided due to the risk of aspiration into the lungs, however, owing to the toxic effects and rapid absorption from the stomach, this advice is modified for Antifreeze Concentrate as follows :

SEEK QUALIFIED MEDICAL ASSISTANCE IMMEDIATELY.

IF THE PATIENT IS UNCONSCIOUS, DO NOT INDUCE VOMITING.

WITH A CONSCIOUS PATIENT, if hospital assistance is not likely to be immediately available, attempt to induce vomiting.

SHOW A COPY OF THIS DATA SHEET TO THE PHYSICIAN,
draw attention to "Notes for Doctors" in Section 11 below.

5: FIRE-FIGHTING MEASURES

Extinguishants	- Large Fire :	Alcohol Resistant Foam/Water Fog - NEVER USE WATER JET
	- Small Fire :	Alcohol Resistant Foam/Water Fog/Dry Powder/CO2/Sand/Earth

Special Protective Equipment for Firefighters

The choice of protective equipment must only be undertaken in the light of a dynamic risk assessment by the officer in charge of the incident. Whilst the content of this section may inform the choice of protective equipment used, the choice of protective equipment will be highly dependent on local conditions.

For large fires, the officer in charge may consider; self contained breathing apparatus (EN 137).

Further guidance on protective equipment for professional fire fighters can be obtained from the home office.

DECOMPOSITION PRODUCTS

Refer to section 10 - stability and reactivity.

6: ACCIDENTAL RELEASE MEASURES

Extinguish naked flames, avoid contact with skin, eyes, and clothing. Wear plastic or rubber gloves, goggles or face shield and boots. Make best endeavours to prevent entry to drains or watercourses.

LARGE SPILLS should be bunded by a suitable medium such as sand or earth. The liquid should be reclaimed directly or in an adsorbent medium and then transferred to suitable, clearly marked containers and disposed of in accordance with local byelaws and the requirements of the Environmental Protection Act 1990. Any containers used to collect the spilled material or absorbent should be labelled to indicate contents and hazards.

SMALL SPILLS should be soaked up with sand or earth and disposed of as for large spills.

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7: HANDLING AND STORAGE

HANDLING

Antifreeze Concentrate does not require any special handling techniques, but it should be handled in suitable containers and spillage avoided. Avoid contact with skin, eyes and clothing. Do not breathe mists, aerosols or vapours. Maximum handling temperature 60 Deg. C.

STORAGE

The storage of Antifreeze Concentrate is not subject to any special controls or restrictions. It should be stored in properly designed, closable, labelled containers, eg mild steel or high density polyethylene (HDPE). Keep away from children, foodstuffs and animal feed.

8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

The following limits are taken from The Health and Safety Executive's Guidance Note EH40 Occupational Exposure Limits 2002.

UK Occupational Exposure Standards :

Ethanediol, particulate	10 mg/cubic metre 8 hour TWA value
Ethanediol, vapour	60 mg/cubic metre 8-hour TWA value 125 mg/cubic metre 15-min TWA value

RECOMMENDED MONITORING PROCEDURES

Reference should be made to HSE's publication Methods for the Determination of Hazardous Substances (MDHS) 14/3 and 88.

PERSONAL PROTECTIVE EQUIPMENT

The use of personal protective equipment is only one aspect of an integrated approach to the Control Of Substances Hazardous to Health.

The management of Health and Safety at Work Regulations 1992 require employers to identify and evaluate the risks to health and to implement appropriate measures to eliminate or minimise those risks.

The choice of personal protective equipment is highly dependent upon local conditions, e.g. exposure to other chemical substances and micro-organisms, thermal hazards (protection from extremes of cold and heat), electrical hazards, mechanical hazards and appropriate degree of manual dexterity required to undertake an activity.

Whilst the content of this section may inform the choice of personal protective equipment used, the limitations of any data which can be provided must be fully understood, e.g. personal protective equipment chosen to protect employees from occasional splashes maybe entirely inadequate for activities involving partial or complete immersion.

If the levels of vapour or particulate in air are likely to exceed the occupational exposure standards then consideration should be given to the use of local exhaust ventilation to reduce personal exposure. The choice of personal protective equipment should only be undertaken in the light of a full COSHH and risk assessment by a suitably qualified competent person (e.g. a professionally qualified occupational hygienist).

Effective protection is only achieved by correctly fitting and well maintained equipment and employers should ensure that appropriate training is given. All personal protective equipment should be regularly inspected and replaced if defective.

In the first instance, further guidance maybe obtained through HSE's publication "COSHH - a brief guide to the regulations" (INDG136(rev1)).

Hand Protection :-

Chemical protective gloves are made from a wide range of materials, but there is no single glove material (or combination of materials) which gives unlimited resistance to any individual or combination of substances or preparations. The extent of

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the breakthrough time will be affected by a combination of factors which include permeation, penetration, degradation, use pattern (full immersion, occasional contacts) and how the glove is stored when not in use.

Theoretical maximum levels of protection are seldom achieved in practice and the actual level of protection can be difficult to assess.

Effective breakthrough time should be used with care and a margin of safety should be applied. HSE guidance on protective gloves recommends a 75% safety factor to be applied to any figures obtained in a laboratory test.

Nitrile gloves may offer relatively long breakthrough times and slow permeation rates. Test data, e.g breakthrough data obtained through test standard EN374-3:1994 are available from reputable equipment suppliers.

Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. A non perfumed moisturiser should be applied.

Respiratory Protection

At standard temperature and pressure, the Occupational Exposure Standards are unlikely to be exceeded.

Care should be taken to keep exposures below applicable occupational exposure limits. If this cannot be achieved, use of a respirator fitted with an organic vapour cartridge combined with a particulate prefilter should be considered.

Half masks (EN 149) or valved half masks(EN 405) in combination with type A2 (EN 141) and P2/3 (EN 143) prefilters maybe considered.

If Antifreeze Concentrate is subjected to elevated temperatures, say, half masks (EN 149) or valved half masks(EN 405) in combination with type AX (EN 371) and P2/3 (EN 143) prefilters maybe considered.

Eye Protection

Goggles conforming to a minimum standard of BS EN 166 345B should be considered if there is a possibility of eye contact with Antifreeze Concentrate through splashing.

Higher rated eye protection must be considered for highly hazardous operations or work areas, employees involved in metalworking operations such as chipping, grinding or cutting may require additional protection to avert injury from fast moving particles or broken tools.

9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State :		Liquid at ambient temperature
Appearance :		Dyed or colourless
Odour :		Characteristic
Acidity/Alkalinity :		pH 7-9 (solution in water at 50gms/100mls)
Initial Boiling Point :		>150 Deg. C.
Freezing Point :		<-30 Deg. C. (50% solution in water)
Flashpoint :		>100 Deg. C.
Flammability :		Not applicable
Autoflammability :		417 Deg. C. *
Flammability Limits	- Upper :	Not determined
	- Lower :	3.0 % vol. *
Explosive Properties :		Not applicable
Oxidising Properties :		Not applicable
Vapour Pressure @ 20 Deg. C. :		<10 Pa
Relative Density @ 20 Deg. C. :		1.12-1.14
Solubility :	Water Solubility :	Completely miscible
	Fat solubility/solvent :	Not determined
Partition Coefficient, n-octanol water :		>1.0 *
Vapour Density (Air =1) :		Not determined
Viscosity @ 20 Deg. C. :		Not determined

Values marked with a * refer to ethanediol

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10: STABILITY AND REACTIVITY

CONDITIONS TO AVOID

Extremes of temperature. Store between 0 and 50 Deg. C.

MATERIALS TO AVOID

Strong oxidising agents, eg. chlorates which may be used in agriculture.

DECOMPOSITION PRODUCTS

The substances arising from the thermal decomposition of these products will largely depend upon the conditions bringing about decomposition. The following substances may be expected from normal combustion :

Carbon Dioxide
Carbon Monoxide
Water
Unidentified Organic and Inorganic Compounds
Particulate Matter
Nitrogen Oxides

11: TOXICOLOGICAL INFORMATION

Basis of Assessment

Toxicological data may not have been determined specifically for all end points (e.g. mutagenicity, carcinogenicity, reproductive toxicity, repeated dose and acute toxicity, corrosivity, irritation, sensitisation etc) for this substance/preparation. Assessment will be based on a combination of test data, human experience, toxicological data generated on similar components and the conventional method.

Antifreeze Concentrate is classified as harmful by ingestion (deaths have been reported on swallowing large quantities). The toxicity of ethanediol is principally due to it's metabolites. Renal damage has been observed in man with the deposition of oxalate crystals.

At very high doses in animal experiments, foetotoxicity has been observed, but it's relevance to man has still to be clarified.

Antifreeze Concentrate contains an aversive agent which has an extremely bitter taste.

ACUTE HEALTH HAZARDS AND ADVICE

INHALATION

Due to its low vapour pressure, Antifreeze Concentrate is not considered likely to present an inhalation hazard at ambient temperature. At elevated temperatures, the vapour may irritate the respiratory tract.

Precautions :

Inhalation of vapour, mists and aerosols should be avoided. If this cannot be achieved by safe working practices, suitable respiratory protection should be used.

First Aid :

Remove the person affected to fresh air. If rapid recovery does not occur, obtain medical attention.

SKIN

Antifreeze Concentrate is expected to be slightly irritating to the skin and is harmful by skin absorption on prolonged or repeated exposure.

Precautions :

All contact must be avoided by the use of suitable protective clothing Launder contaminated clothing before reusing.

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First Aid :

Wash contaminated skin with water. Use soap if available.

EYES

Antifreeze Concentrate is expected to be moderately, possibly severely, irritating to the eye.

Precautions :

If there is a risk of splashing while handling the liquid, suitable eye protection should be used.

First Aid :

Do not delay. Flush the eye with copious quantities of water for up to 10 minutes. Refer for medical attention.

INGESTION

Ingestion of ethanediol may lead to serious intoxication, and possibly death. There may be effects on the central nervous system, on the cardio-pulmonary system, and on the kidneys, with renal failure. Ingestion of as little as 100 millilitres may be fatal for an adult. Antifreeze Concentrate is rapidly absorbed causing symptoms resembling alcohol intoxication, and cardio-vascular effects. Death may occur from renal or hepatic failure : survivors usually have complete recovery of renal function, although cerebral damage may be permanent.

Precautions :

Accidental ingestion is unlikely except in the case of children. Normal handling and hygiene precautions to avoid ingestion, especially by keeping out of reach of children.

First Aid :

The normal advice given in the case of ingestion of hydrocarbon products is that vomiting should be avoided owing to risks of aspiration into the lungs. Owing to the toxic effects and rapid absorption from the stomach, this advice is modified for Antifreeze Concentrate as follows :

SEEK QUALIFIED MEDICAL ASSISTANCE IMMEDIATELY.

IF THE PATIENT IS UNCONSCIOUS, DO NOT INDUCE VOMITING.

WITH A CONSCIOUS PATIENT, if hospital assistance is not likely to be immediately available, attempt to induce vomiting.

SHOW A COPY OF THIS DATA SHEET TO THE PHYSICIAN.

CHRONIC HEALTH HAZARD AND ADVICE

Continued exposure to vapour of Antifreeze Concentrate can induce unconsciousness, nystagmus and lymphocyosis. Death from ingestion of the liquid is due to renal or hepatic failure. Survivors usually have complete recovery of renal function. Cerebral damage may however be permanent. There is no human or animal evidence for carcinogenicity or mutagenicity.

HEALTH ADVICE TO PHYSICIANS

Treat by observation and supportive measures as indicated by the patient's condition.

The essentials of therapy are :

1. Supportive treatment of respiratory distress and shock.
2. Correction of metabolic acidosis and hypocalcemia.
3. Rapid and sustained diuresis when possible with the use of hypertonic mannitol.
4. Immediate peritoneal or haemodialysis.
5. Thiamine and pyridoxine supplements.
6. Intravenous administration of ethanol if the diagnosis is recognised within 6 hours after ingestion, and
7. Treatment for renal failure with dialysis as needed to keep patient free from signs and symptoms of uraemia.

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12: ECOLOGICAL INFORMATION

Ecotoxicological data may not have been determined specifically for all end points for this substance/preparation. Assessment will be based on a combination of test data, other available evidence, ecotoxicological data generated on similar components and the conventional method.

Antifreeze Concentrate should be managed in the environment as a preparation at most slightly toxic but posing an indirect hazard to the aquatic environment because of ready biodegradation leading to oxygen depletion. Avoid gross contamination of the soil. Minimise contamination of water because of deoxygenation hazard. Spilled material should be contained and removed as completely as possible. Final traces can be dispersed with water.

AIR

Antifreeze Concentrate is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities.

WATER

If released to water, Antifreeze Concentrate will dissolve. In view of deoxygenation hazard, consider dilution or (artificial) reaeration. It will not bioaccumulate significantly.

SOIL

If released to soil Antifreeze Concentrate is highly mobile and will, in significant quantities, permeate to lower soil levels and may reach groundwater in which it will dissolve.

13: DISPOSAL CONSIDERATIONS

Antifreeze Concentrate should be disposed of to a licensed waste contractor.

Any disposal route must satisfy the requirements of the of the Environmental Protection Act, 1990, the Environment Act 1995, and should comply with any local byelaws. byelaws.

Antifreeze Concentrate is controlled by the Special Waste Regulations 1996.

Envirowise offers free advice through a national helpline. Initial contact by industry and commerce should be made to the Environment and Energy helpline (0800 585 794). The Envirowise programme is sponsored by Government and seeks to encourage good practice in environmental protection technology and techniques.

Further guidance can also obtained from the local environment agency agency office.

14: TRANSPORT INFORMATION

Not Dangerous for Conveyance

15: REGULATORY INFORMATION

Dangerous for Supply

Category of Danger :	Harmful	
Symbols :	St Andrew's Cross	
Risk Phrases :	Harmful if swallowed	
Safety Phrases:	S2	Keep out of reach of Children
	S24/25	Avoid contact with skin and eyes
	S46	If swallowed, seek medical advice immediately and show this container or label
Contains :	Ethanediol	

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Additional Information

Safety data sheet available on request

LEGISLATION

Consumer Protection Act 1987
Control of Pollution Act 1974
Environmental Protection Act 1990
Environment Act 1995
Factories Act 1961
Health and Safety at Work Act 1974

Carriage of Dangerous Goods by Road and Rail (Classification, Packaging and Labelling) Regulations
Chemical (Hazards, Information, and Packaging for Supply) Regulations
Control of Substances Hazardous to Health Regulations
Dangerous Substances in Harbour Areas Regulations
Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations
Road Traffic (Carriage of Dangerous Substances in Packages etc.) Regulations
Road Traffic (Carriage of Dangerous Substances in Road Tankers and Tank Containers) Regulations
Road Traffic (Training of Drivers of Vehicles Carrying Dangerous Goods) Regulations
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
Special Waste Regulations 1996
Health and Safety (First Aid) Regulations 1981
Personal Protective Equipment (EC Directive) Regulations 1992
Personal Protective Equipment at Work Regulations 1992

16: OTHER INFORMATION

GUIDANCE NOTES

	UK Chemicals Regulatory Atlas, An Overview of how to guide your chemical through to regulatory compliance (DTI).
HSG71	The storage of packaged dangerous substances
EH/40	Occupational Exposure Limits
MS24	Health surveillance of occupational skin disease
HSG 53	The selection, use and maintenance of respiratory protective equipment: A practical guide
HSG 206	Cost and effectiveness of chemical protective gloves for the workplace: Guidance for employers and health and safety specialists.
HSG 136	Workplace transport safety : guidance for employers
INDG234 (rev)	Are you Involved in the Carriage of Dangerous Goods by Road or Rail.

OTHER LITERATURE

Department of the Environment - Waste Management - The Duty of Care - A Code of Practice

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SHELL AGRICULTURAL GAS OIL

Data Sheet No. F32002 Revision : 02 10 2002 REPLACES F32002 : 11 01 01

This data sheet has been prepared in accordance with the requirements of the Data Sheet Directive 91/155/EEC.

RECOMMENDED USES

Shell Agricultural Gas Oil is recommended for use as :

a fuel for small industrial boilers for horticultural and agricultural space heating applications, furnaces and dryers.

If Shell Agricultural Gas Oil is used for a purpose not covered in this section, Shell UK Ltd would be grateful to receive information on the application.

KNOWN MISUSES/ABUSES

Shell Agricultural Gas Oil is not to be used as :

a solvent or cleaning agent. It should never be siphoned by sucking the liquid up a tube by mouth, or stored near sources of heat or ignition.

The disposal of Shell Agricultural Gas Oil to soil, watercourses and drains is a legal offence.

1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

PRODUCT :	**SHELL AGRICULTURAL GAS OIL**
COMPANY :	**SHELL UK OIL PRODUCTS LIMITED**
TECHNICAL CONTACT:	**PRODUCT HSE DEPARTMENT**
ADDRESS :	**STANLOW MANUFACTURING COMPLEX, PO BOX 3, ELLESMERE PORT, CH65 4HB**
TELEPHONE :	**0151-350-4000**
EMERGENCY TELEPHONE NUMBER :	**0151-350-4595**

2: COMPOSITION/INFORMATION ON INGREDIENTS

Shell Agricultural Gas Oil is a preparation manufactured from gas oils, derived from crude petroleum, and additives, none of which impart any additional hazard to the finished product.

The hydrocarbon components will include straight-run gas oil, and may contain vacuum and/or cracked gas oil components.

It is a requirement of H.M. Customs and Excise that all reduced duty fuels contain Quinizarin and C.I. Solvent Red 24. Rebated fuels marketed within the European Union must also contain C.I. Solvent Yellow 124. Shell Agricultural Gas Oil contains C.I.Solvent Red 24, Quinizarin and C.I. Solvent Yellow 124 at 4 ppm, 1.75 ppm and 6 ppm respectively.

The following components, which have health effects, are present at significant concentrations.

CONC.	COMPONENT	EINECS	CLASS	RISK PHRASES
< 100%	Fuels, diesel	269-822-7	Xn	R40 Limited evidence of a carcinogenic effect
			Xn	R65 Harmful: may cause lung damage if swallowed
				R66 Repeated exposure may cause skin dryness and cracking
			N	R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Exposure limit values exist for the following constituents:

None.

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3: HAZARD IDENTIFICATION

Shell Agricultural Gas Oil is classified for supply purposes as : Harmful (R40: Limited evidence of a carcinogenic effect and R65: Harmful: may cause lung damage if swallowed), and Dangerous for the Environment (R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment).

Shell Agricultural Gas Oil satisfies the criteria for the additional risk phrase - R66: Repeated exposure may cause skin dryness or cracking.

Shell Agricultural Gas Oil is a combustible liquid, which may explode under certain conditions, e.g. in the presence of electrostatic charges generated, for example, during pumping or tank cleaning or by other sources of ignition or flame impingement on containers.

Accidental ingestion can lead to vomiting and aspiration into the lungs, which can result in chemical pneumonitis, which can be fatal.

Prolonged and repeated skin contact can lead to defatting of the skin, drying, cracking, dermatitis, erythema, oil acne and oil folliculitis. Warty growths have occurred and these can become cancerous.

Exposure to high vapour concentrations can lead to nausea, headache and dizziness. Excessive and prolonged exposure to mists may cause a chronic inflammatory reaction of the lungs and a form of pulmonary fibrosis.

It should be assumed that the flashpoint of Shell Agricultural Gas Oil is equal to or less than 60.5 Deg. C. unless the carrier has obtained contrary test data. Consequently, Shell Agricultural Gas Oil is classified for conveyance purposes as a flammable liquid.

Shell Agricultural Gas Oil will not biodegrade in anaerobic conditions and, hence, can be persistent. It contains components which have a high potential to bioaccumulate.

4: FIRST AID MEASURES

INHALATION

Remove the affected person to fresh air. If breathing has stopped administer artificial respiration. Give cardiac massage if necessary. If the person is breathing, but unconscious, place in the recovery position. Obtain medical assistance immediately.

SKIN

Flush the contaminated skin with water. Use soap if available. Contaminated clothing should be soaked with water, removed, and laundered before reuse.

EYES

Flush the eye with copious quantities of water. If irritation persists refer for medical attention.

INGESTION

DO NOT INDUCE VOMITING. If ingestion is suspected, wash out the mouth with water, and send to hospital immediately. Show this Data Sheet to the physician drawing attention to "Notes for Doctors" in Section 11 below.

5: FIRE-FIGHTING MEASURES

Extinguishants	- Large Fire :	Foam/Water Fog - NEVER USE WATER JET
	- Small Fire :	Foam/Dry Powder/CO2/Sand/Earth

6: ACCIDENTAL RELEASE MEASURES

LAND SPILLAGES

IMMEDIATE EMERGENCY ACTION
Clear people away from the area to a safe place
Do not operate electrical equipment unless flameproof
Summon aid of emergency services if warranted
Treat or refer casualties if necessary

FURTHER ACTION - FIRE

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IF SAFE : -
Stop product flow
Use foam, dry powder or carbon dioxide extinguishers
Containers exposed to fire can be cooled by water fog/spray
*** NEVER USE WATER JET ***

FURTHER ACTION - SPILLAGE
IF SAFE : -
Extinguish naked lights, eg cigarettes - AVOID MAKING SPARKS
Position fire fighting equipment
Try to stop the flow of liquid product
Prevent product entering waterways, drains etc. (Covering with wet sacking helps)
Use sand, earth or other suitable material
If product reaches waterways, drains etc. inform local and fire authorities
Reclaim product directly or absorb in suitable medium and transfer to suitable, clearly marked containers
See section 13 for disposal of contaminated product and waste

MARITIME SPILLAGES

Any spillage of Shell Agricultural Gas Oil which results in overside pollution must be treated in accordance with the guidelines laid down in the respective Vessel Oil Spill Response Contingency Plan, as required by MARPOL 73/78 Annex 1, Regulation 26. Where the vessel is not required to comply with such legislation, the Owner's and/or Charterer's instructions must be followed. In the absence of any other guidelines, any spillage in territorial/coastal waters must be immediately reported to the appropriate maritime authority, e.g. coast guard, the vessel's local agent if applicable, and the vessel's Owner/Charterer. In international waters, any spillage should be reported to the nearest coastal state, and additional guidance should sought immediately from the vessel's Owner/Charterer.

7: HANDLING AND STORAGE

HANDLING

Shell Agricultural Gas Oil is designed to be used in closed systems and in off-road vehicle fuel systems. No special handling precautions are necessary other than care to avoid skin contact with the product. Owing to its classification as a carcinogen, care should be taken to minimise contact. Electrical continuity is required between the transport and storage vessels during product transfer.

STORAGE

The main considerations relating to the storage of Shell Agricultural Gas Oil are the suitability of the storage vessel and the avoidance of sources of ignition.

8: EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

The following limits are taken from The Health and Safety Executive's Guidance Note EH40 Occupational Exposure Limits 2000.

None.

RECOMMENDED PROTECTIVE CLOTHING

Impervious gloves and overalls where regular contact is likely, and goggles if there is a risk of splashing

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9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State :		Mobile liquid at ambient temperature
Appearance :		Clear Red/ Brown
Odour :		Characteristic
Acidity/Alkalinity :		Not applicable
Initial Boiling Point :		180 Deg. C.
Flashpoint :		> 56 Deg. C.
Flammability :		Not applicable
Autoflammability :		ca. 220 Deg. C.
Flammability Limits	- Upper :	6 % vol.
	- Lower :	1 % vol.
Explosive Properties :		Not applicable
Oxidising Properties :		Not applicable
Vapour Pressure @ 20 Deg. C. :		<0.1 k.Pa
Relative Density @ 15 Deg. C. :		0.82 to 0.87
Solubility :	Water Solubility :	Very Low
	Fat solubility/solvent :	Not available
Partition Coefficient, n-octanol water :		3 to >6
Vapour Density (Air =1) :		> 5
Viscosity @ 40 Deg. C. :		2 to 5 cSt.

10: STABILITY AND REACTIVITY

CONDITIONS TO AVOID

Sources of ignition. Extremes of temperature.

MATERIALS TO AVOID

Strong oxidising agents, eg. chlorates which may be used in agriculture.

DECOMPOSITION PRODUCTS

The substances arising from the thermal decomposition of these products will largely depend upon the conditions bringing about decomposition. The following substances may be expected from normal combustion :

Carbon Dioxide
Carbon Monoxide
Water
Particulate Matter
Polycyclic Aromatic Hydrocarbons
Unburnt Hydrocarbons
Unidentified Organic and Inorganic Compounds
Nitrogen Oxides
Sulphur Oxides

11: TOXICOLOGICAL INFORMATION

ACUTE HEALTH HAZARDS AND ADVICE

Shell Agricultural Gas Oil is classified as harmful owing to the aspiration hazard.

Shell Agricultural Gas Oil carries the additional risk phrase - repeated exposure may cause skin dryness or cracking.

The main hazards are: in the case of inhalation of higher vapour concentrations, of effects on the central nervous system ; in the case of skin contact of, defatting and irritation ; in the unlikely event of ingestion, of aspiration into the lungs with possible resultant chemically induced pneumonia.

Exposure to higher vapour concentrations can lead to nausea, headache, dizziness, loss of consciousness, and, in oxygen deficient environments, death. A person exposed to significant concentrations of vapour may display drunken behaviour, and his judgement can be impaired.

If the product is accidentally ingested, irritation to the gastric mucous membranes can lead to vomiting. If this occurs, there is a high probability of the product being aspirated into the lungs, which can lead to chemical pneumonitis which can be fatal.

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INHALATION

Under normal conditions of use Shell Agricultural Gas Oil is not expected to present an inhalation hazard.

Precautions :

Inhalation of vapours should be avoided. Where, exceptionally, higher concentrations of the vapour may be encountered, e.g. in the event of a spillage in a badly ventilated area, persons should not be allowed to enter the area, even in an emergency, until the atmosphere has been checked and passed as safe for entry by a competent person.

First Aid :

Remove the affected person to fresh air. If breathing has stopped administer artificial respiration. Give cardiac massage if necessary. If the person is breathing, but unconscious, place in the recovery position. Obtain medical assistance immediately.

SKIN

Shell Agricultural Gas Oil is slightly irritating to the skin, and has a defatting action on the skin.

Precautions :

Avoid contact with the skin by the use of suitable protective clothing.

First Aid :

Flush the contaminated skin with water. Use soap if available. Contaminated clothing should be soaked with water, removed, and laundered before reuse.

EYES

Shell Agricultural Gas Oil may cause discomfort to the eye.

Precautions :

If there is a risk of splashing while handling the liquid, suitable eye protection should be used.

First Aid :

Flush the eye with copious quantities of water. If irritation persists refer for medical attention.

INGESTION

Shell Agricultural Gas Oil is classified as harmful owing to the aspiration hazard. Ingestion can lead to vomiting and aspiration into the lungs, which can result in chemical pneumonitis, which can be fatal.

Precautions :

Accidental ingestion is unlikely. Normal handling and hygiene precautions should be taken to avoid ingestion.

First Aid :

DO NOT INDUCE VOMITING Wash out the mouth with water, and, if ingestion is suspected, send to hospital immediately. Show this Data Sheet to the physician drawing attention to "Notes for Doctors" below.

CHRONIC HEALTH HAZARD AND ADVICE

Shell Agricultural Gas Oil is classified as a category 3 carcinogen.

The main hazards arise from skin contact and in the inhalation of mists.

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Skin contact over prolonged and repeated periods can lead to defatting of the skin, dermatitis, erythema, oil acne and oil folliculitis. Where occupational and personal hygiene practices have been of a poor standard, warty growths have occurred and these can become cancerous.

Excessive and prolonged inhalation of mists may cause a chronic inflammatory reaction of the lungs and a form of pulmonary fibrosis.

NOTES FOR DOCTORS

HIGH PRESSURE INJECTION INJURIES

High pressure injection injuries require surgical intervention and possibly steroid therapy to minimise tissue damage and loss of function. Because entry wounds are small and do not reflect the seriousness of the underlying damage, surgical exploration to determine the extent of involvement may be necessary. Local anaesthetics or hot soaks should be avoided because they can contribute to swelling, vasospasm and ischaemia. PROMPT surgical decompression, debridement and evacuation of foreign material should be performed under general anaesthetic, and wide exploration is essential.

INGESTION AND ASPIRATION OF PETROLEUM PRODUCTS

There may be a risk to health where low viscosity products are aspirated into the lungs following vomiting, although this is uncommon in adults. Such aspiration would cause intense local irritation and chemical pneumonitis. Children, and those in whom consciousness is impaired, will be more at risk. Emesis of lubricants is not usually necessary, unless a large amount has been ingested, or some other compound has been dissolved in the product. If this is indicated - for example, when there is rapid onset of CNS depression from a large ingested volume - gastric lavage under controlled hospital conditions, with full protection of the airway is required. Supportive care may include oxygen, arterial blood gas monitoring, respiratory support and, if aspiration has occurred, treatment with corticosteroids and antibiotics. Seizures should be controlled with Diazepam, or appropriate equivalent drug.

12: ECOLOGICAL INFORMATION

Shell Agricultural Gas Oil contains fuels, diesel which is classified as toxic to aquatic organisms/ may cause long-term adverse effects in the aquatic environment.

AIR

Shell Agricultural Gas Oil is a mixture of mainly non-volatile components, which when released to air will react rapidly with hydroxyl radicals and ozone.

WATER

If released to water, Shell Agricultural Gas Oil will evaporate at a very slow rate. A small proportion will dissolve. Dissolved components will be either absorbed in sediments or evaporate to air. In aerobic water and sediments they will biodegrade, but in anaerobic conditions they will persist.

SOIL

Small volumes released on land will evaporate at a very slow rate, with a proportion of the product being absorbed in the upper soil layers and being subject to biodegradation. Larger volumes may penetrate into anaerobic soil layers in which the product will persist. The product may reach the water table on which it will form a floating layer, and move along with the groundwater flow. In this case the more soluble components, such as aromatics, will cause groundwater contamination.

13: DISPOSAL CONSIDERATIONS

Shell Agricultural Gas Oil is a special waste owing to its supply classification. It should be disposed of to a licensed waste contractor. Any disposal route should comply with local byelaws and the requirements of the Environmental Protection Act, 1990.

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14: TRANSPORT INFORMATION

It should be assumed that the flashpoint of Shell Agricultural Gas Oil is equal to or less than 60.5 Deg. C. unless the carrier has obtained contrary test data.

UN Number :	1202
Proper Shipping Name :	Gas Oil
Symbol :	Flammable Liquid
Packing Group :	III
Marine Pollutant :	No
IATA/ICAO Hazard Class :	3
IMO Hazard Class :	3.3
Class :	3
Classification Code :	F1
Hazard Identification No. :	30
Hazchem Code :	3|Z

15: REGULATORY INFORMATION

This material has been classified according to the requirements of the Chemicals (Hazard Information and Packaging for Supply) Regulations.

Dangerous for Supply

Symbols :	St Andrew's Cross Dead Fish and Tree	
Categories of Danger :	Category 3 Carcinogen Harmful	
Risk Phrases :	R40	Limited evidence of a carcinogenic effect
	R65	Harmful: may cause lung damage if swallowed
	R66	Repeated exposure may cause skin dryness or cracking
	R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the
Safety Phrases :	S2	Keep out of the reach of children
	S24	Avoid contact with the skin.
	S36/37	Wear suitable protective clothing and gloves
	S61	Avoid release to the environment. Refer to special instructions / safety data sheets
	S62	If swallowed, do not induce vomiting : seek medical advice immediately and show this label or container
Contains :	Fuels, diesel	

16: OTHER INFORMATION

The references set out below give further information on specific aspects.

LEGISLATION

Consumer Protection Act 1987
Control of Pollution Act 1974
Environmental Protection Act 1990
Factories Act 1961
Health and Safety at Work Act 1974

Carriage of Dangerous Goods by Road and Rail (Classification, Packaging and Labelling) Regulations
Chemical (Hazards, Information, and Packaging for Supply) Regulations
Control of Substances Hazardous to Health Regulations
Dangerous Substances in Harbour Areas Regulations
Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations
Road Traffic (Carriage of Dangerous Substances in Packages etc.) Regulations
Road Traffic (Carriage of Dangerous Substances in Road Tankers and Tank Containers) Regulations
Road Traffic (Training of Drivers of Vehicles Carrying Dangerous Goods) Regulations
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
Special Waste Regulations

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GUIDANCE NOTES

CS/15	The cleaning and gas freeing of tanks containing flammable residues
HS(G)22	Electrical apparatus for use in potentially explosive atmospheres
HS(G)50	The storage of flammable liquids in fixed tanks (up to 10000m3 total capacity)
HS(G)51	The storage of flammable liquids in containers
HS(G)50	The storage of flammable liquids in fixed tanks (exceeding 10000m3 total capacity)
HS(G)140	The safe use and handling of flammable liquids
HS(G)71	The storage of packaged dangerous substances
EH/40	Occupational Exposure Limits
EH/58	The Carcinogenicity of Mineral Oils
MS24	Health surveillance of occupational skin disease

BRITISH STANDARDS

BS 799	Specification for Oil Burning Equipment
BS 2000	Methods of Test for Petroleum and its Products
BS 2869	Fuel Oils for Oil Engines and Burners for Non-Marine Use
BS 5345	Selection, Installation and Maintenance of Electrical Apparatus for Use in Potentially Explosive Atmospheres
BS 5410	Oil Firing
BS 5958	Control of Undesirable Static Electricity
BS 6380	Low Temperature Properties and Cold Weather Use of Diesel Fuel and Gas Oils (Classes A1, A2 and D of BS 2869)

OTHER LITERATURE

Concawe Report 01/97 Petroleum Products - First Aid Emergency and Medical Advice

Department of the Environment - Waste Management - The Duty of Care - A Code of Practice

European Model Code of Safe Practice in the Storage and Handling of Petroleum Products
Institute of Petroleum Marketing Safety Code
Department of Trade - Code of Portable Tanks and Road Tank Vehicles for the Carriage of Liquid Dangerous Goods in Ships

ADDRESSES

Concawe, Boulevard du Souverain 165 B - 1160 Brussels, Belgium
Institute of Petroleum, 61 New Cavendish Street, London W1

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SAFETY DATA SHEET

ATHENA EP 90 (Group 2)

Mineral oil based GL-4 gear oil
Product code: G010

Date of issue: 2nd October 2002

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of substance/preparation
Athena EP 90

Application
Automotive gear lubricant
For specific application advice see appropriate Technical Data Sheet or consult your eXOL representative

Company Identification
eXOL Lubricants Limited
All Saints Road
Wednesbury
West Midlands
WS10 9TS

Emergency Telephone Number
+44 (0) 121 568 6800

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Composition
Highly refined mineral oil (IP 346 DMSO extract < 3%)
Proprietary performance additives.

Hazardous Components
No component is present at sufficient concentration to require a hazardous classification.

3. HAZARDS IDENTIFICATION

This material is not considered to be hazardous, but should be handled in accordance with good industrial hygiene and safety practices.

USED ENGINE OILS
Used engine oil may contain hazardous components which have the potential to cause skin cancer.
See Toxicological Information, section 11 of this Safety Data Sheet.

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SAFETY DATA SHEET

4. FIRST-AID MEASURES

Eyes
Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain medical advice if any pain or redness develops or persists.

Skin
Wash skin thoroughly with soap and water as soon as reasonably practicable. Remove heavily contaminated clothing and wash underlying skin.

Ingestion
If contamination of the mouth occurs, wash out thoroughly with water.
Except as a deliberate act, the ingestion of large amounts of product is unlikely. If it should occur, do not induce vomiting; obtain medical advice.

Inhalation
If inhalation of mists, fumes or vapour causes irritation to the nose or throat, or coughing, remove to fresh air. If symptoms persist obtain medical advice.

Medical Advice
Treatment should in general be symptomatic and directed to relieving any effects.

---

5. FIRE-FIGHTING MEASURES

Use foam, dry powder or water fog. DO NOT USE water jets.
Fires in confined spaces should be dealt with by trained personnel wearing approved breathing apparatus.
Water may be used to cool nearby heat exposed areas/objects/packages. Avoid spraying directly into storage containers because of the danger of boil-over.

Combustion Products
Toxic fumes may be evolved on burning or exposure to heat.
See Stability and Reactivity, Section 10 of this Safety Data Sheet.

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6. ACCIDENTAL RELEASE MEASURES

Contain and recover spilled material using sand or other suitable inert absorbent material.
It is advised that stocks of suitable absorbent material should be held in quantities sufficient to deal with any spillage which may be reasonably anticipated.
Spilled material may make surfaces slippery.
Protect drains from potential spills to minimise contamination. Do not wash product into drainage system.
In the case of large spills contact the appropriate authorities or telephone 0121-568-6800
In the case of spillage on water, prevent the spread of product by the use of suitable barrier equipment. Recover product from the surface. Protect environmentally sensitive areas and water supplies.

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SAFETY DATA SHEET

7. HANDLING AND STORAGE

Handling Precautions

Avoid contact with eyes. If splashing is likely to occur wear a full face visor or chemical goggles as appropriate.
Avoid frequent or prolonged skin contact with fresh or used product.
Good working practices, high standards of personal hygiene and plant cleanliness must be maintained at all times.
Wash hands thoroughly after contact.
Use disposable cloths and discard when soiled. Do not put soiled cloths into pockets.

Fire Prevention

Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Storage Conditions

Store under cover away from heat and sources of ignition.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

There is no appropriate occupational exposure limit for this material.
Ensure good ventilation.
Avoid, as far as reasonably practicable, inhalation of vapour, mists or fumes generated during use.
If vapour, mists or fumes are generated, their concentration in the workplace air should be controlled to the lowest reasonably practicable level.

Protective Clothing

Wear face visor or goggles in circumstances where eye contact can accidentally occur.
If skin contact is likely, wear impervious protective clothing and/or gloves.
Protective clothing should be regularly dry cleaned. Change heavily contaminated clothing as soon as reasonably practicable; dry clean, launder and preferably starch before re-use. Wash any contaminated underlying skin with soap and water.

Respiratory Protection

Respiratory protection is unnecessary, provided the concentration of vapour, mists or fumes is adequately controlled.
The use of respiratory equipment must be strictly in accordance with the manufacturers' instructions and any statutory requirements governing its selection and use.

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SAFETY DATA SHEET

9. PHYSICAL AND CHEMICAL PROPERTIES

Typical Values			
Grades:			**EP 90**
	Test Method	**Units**	
Physical state			
Colour			
Odour			
Density @ 15°C	ASTM D 1298	**kg/m³**	891
Kinematic viscosity @ 40°C	ASTM D 445	**mm²/s**	229.1
Kinematic viscosity @ 100°C	ASTM D 445	**mm²/s**	19.85
Flash point (COC)	ASTM D 93	**°C**	222
Pour point	ASTM D 97	**°C**	-11

10. STABILITY AND REACTIVITY

Products of this type are stable and unlikely to react in a hazardous manner under normal conditions of use.
Hazardous polymerisation reactions will not occur.
This material is combustible.

Materials to Avoid

Avoid contact with strong oxidizing agents.

Hazardous Decomposition Products

Thermal decomposition products will vary with conditions.
Incomplete combustion will generate smoke, carbon dioxide and hazardous gases, including carbon monoxide, hydrogen sulphide and oxides of sulphur and phosphorus.

11. TOXICOLOGICAL INFORMATION

Eyes

Unlikely to cause more than transient stinging or redness if accidental eye contact occurs.

Skin

Unlikely to cause harm to the skin on brief or occasional contact but prolonged or repeated exposure may lead to dermatitis.

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SAFETY DATA SHEET

USED ENGINE OILS
Combustion products resulting from the operation of internal combustion engines contaminate engine oils during use. Used engine oil may contain hazardous components which have the potential to cause skin cancer. Frequent or prolonged contact with all types and makes of used engine oil must therefore be avoided and a high standard of personal hygiene maintained.

Ingestion
Unlikely to cause harm if accidentally swallowed in small doses, though larger quantities may cause nausea and diarrhoea.

Inhalation
At normal ambient temperatures this product will be unlikely to present an inhalation hazard because of its low volatility.
May cause irritation to eyes, nose and throat due to exposure to vapour, mists or fumes.
May be harmful by inhalation if exposure to vapour, mists or fumes resulting from thermal decomposition products occurs.

---

12. ECOLOGICAL INFORMATION

Mobility
Spillages may penetrate the soil causing ground water contamination.

Persistence and degradability
This product is inherently biodegradable.

Bioaccumulative potential
There is no evidence to suggest bioaccumulation will occur.

Aquatic toxicity
Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

---

13. DISPOSAL CONSIDERATIONS

Where possible, arrange for product to be recycled.
Dispose of via an authorised person/ licensed waste disposal contractor in accordance with local regulations.
Incineration may be carried out under controlled conditions provided that local regulations for emissions are met.

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14. TRANSPORT INFORMATION

Not classified as hazardous for transport (ADR, RID, UN , IMO, IATA/ICAO).

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SAFETY DATA SHEET

15. REGULATORY INFORMATION

Not classified as hazardous for supply.

16. OTHER INFORMATION

Compiled by:

Technical Department
eXOL Lubricants Limited
All Saints Road
Wednesbury
West Midlands
WS10 9TS

This data sheet and the health, safety and environmental information it contains is considered to be accurate as of the date specified below. We have reviewed any information contained herein which we received from sources outside eXOL Lubricants Limited. However, no warranty or representation, express or implied is made as to the accuracy or completeness of the data and information contained in this data sheet.

Health and safety precautions and environmental advice noted in this data sheet may not be accurate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission, recommendation or authorization given or implied to practise any patented invention without a valid licence.

eXOL Lubricants Limited shall not be responsible for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material.

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October 2002	Date of Revision	Approved by:

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3. HEAVY COMPONENT WEIGHTS

Part Number & Description	Weight

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