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10.2 Hazardous substances
1 Safety
1.1 Safety principles

SANDVIK put safety first.

This is to ensure maximum safety measures are taken, ALWAYS read this section carefully BEFORE carrying out any work on the equipment or making any adjustments.

*Note: This equipment is manufactured in accordance with the Machinery Directive 2006/42/EC of 01.01.2010. The customer should make sure that this equipment is in conformance with local and national legislation if used outside of the EU.*

This section includes explanations of safety symbols, signs, signals and labels used on the product and information for use.

1.1.1 Signal words

The following signal words and symbols are used to identify safety messages throughout these instructions:

### DANGER

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

### WARNING

The signal word WARNING indicates a hazardous situation which, if not avoided, could result in serious injury or death.

### NOTICE

The signal word NOTICE indicates a situation which, if not avoided, could result in damage to property or environment.

When you see ANY of the signal words in this manual, be alert; your safety is involved. Carefully read and understand the message that follows, and inform other users.

1.1.2 General hazard symbol

This general HAZARD or other hazard symbol identifies important safety messages in this manual.

When you see ANY of the hazard symbols in this manual, be alert; your safety is involved. Carefully read and understand the message that follows, and inform other users.
1.1.3 Essentials

**DANGER**

INHALATION, BREATHING HAZARD!

Breathing or inhaling silica dust particles will cause death or serious injury.

Ensure suitable breathing equipment is used throughout any procedures carried out. ALL necessary precautions MUST be taken to reduce the risk of breathing dust or particles.

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

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

Training should be provided to make sure that safe working practices are followed. Initial commissioning and starting must only be undertaken by a authorised 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.

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

1.1.4 Safety hazards pertaining to the equipment

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

- Make sure safety instructions and safety labels attached to the equipment are always complete and legible.
- Keep safety instructions and safety labels clean and visible at all times.
- Replace any illegible or missing safety instructions and safety labels before operating the equipment.
- Ensure replacement parts include safety instructions and labels.
1.1.5 Colour coded safety signs

Signs located on the machine and used throughout this manual are colour coded relating to the information they convey, as follows:

- PROHIBITED - YOU CAN NOT DO.
- MANDATORY - YOU MUST DO.
- HAZARD - YOU MUST BE AWARE OF.

1.1.6 Symbols for prohibited actions

Prohibited actions used throughout this manual are indicated by a red circle with a red diagonal line across the circle. The action which is prohibited will always be in black as follows:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="No Climbing" /></td>
<td>No climbing</td>
</tr>
<tr>
<td><img src="image" alt="No Smoking" /></td>
<td>No smoking</td>
</tr>
<tr>
<td><img src="image" alt="Do Not Touch" /></td>
<td>Do not touch</td>
</tr>
<tr>
<td><img src="image" alt="No Open Flames" /></td>
<td>No open flames</td>
</tr>
<tr>
<td><img src="image" alt="Do Not Weld" /></td>
<td>Do not weld</td>
</tr>
<tr>
<td><img src="image" alt="Do Not Remove Safety Guard" /></td>
<td>Do not remove safety guard</td>
</tr>
<tr>
<td><img src="image" alt="Limited or Restricted Access" /></td>
<td>Limited or restricted access</td>
</tr>
<tr>
<td><img src="image" alt="Do Not Use Hand to Test for Hydraulic Leaks" /></td>
<td>Do not use hand to test for hydraulic leaks</td>
</tr>
</tbody>
</table>
### 1.1.7 Symbols for mandatory actions

Mandatory actions used throughout this manual are indicated by white symbols on a blue background as follows:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Gloves" /></td>
<td>Wear safety gloves</td>
</tr>
<tr>
<td><img src="image" alt="Helmet" /></td>
<td>Wear safety helmet</td>
</tr>
<tr>
<td><img src="image" alt="Eye Protection" /></td>
<td>Wear eye protection</td>
</tr>
<tr>
<td><img src="image" alt="Helmet" /></td>
<td>Wear safety helmet</td>
</tr>
<tr>
<td><img src="image" alt="Harness" /></td>
<td>Wear safety harness</td>
</tr>
<tr>
<td><img src="image" alt="Boots" /></td>
<td>Wear safety boots</td>
</tr>
<tr>
<td><img src="image" alt="Overalls" /></td>
<td>Wear close fitting overalls</td>
</tr>
<tr>
<td><img src="image" alt="Respirator" /></td>
<td>Wear respirator</td>
</tr>
<tr>
<td><img src="image" alt="Visibility Vest" /></td>
<td>Wear high visibility vest</td>
</tr>
<tr>
<td><img src="image" alt="Power Source Disconnect" /></td>
<td>Disconnect power source from supply</td>
</tr>
<tr>
<td><img src="image" alt="Switch Off" /></td>
<td>Switch off and lockout equipment</td>
</tr>
<tr>
<td><img src="image" alt="Manual" /></td>
<td>Read the manual</td>
</tr>
<tr>
<td><img src="image" alt="Distance" /></td>
<td>Safe distance from hazard</td>
</tr>
<tr>
<td><img src="image" alt="Leak Testing" /></td>
<td>Use card for hydraulic leak testing</td>
</tr>
</tbody>
</table>
1.1.8 Symbols for hazards

Hazard symbols used throughout this manual are indicated by a yellow triangle with black symbols and black frames as follows:

<table>
<thead>
<tr>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crushing hazard - hands</td>
</tr>
<tr>
<td>Crushing hazard - feet</td>
</tr>
<tr>
<td>Chemical burn hazard</td>
</tr>
<tr>
<td>Electrical hazard</td>
</tr>
<tr>
<td>Noise hazard</td>
</tr>
<tr>
<td>Entanglement hazard</td>
</tr>
<tr>
<td>Entanglement hazard</td>
</tr>
<tr>
<td>Falling hazard</td>
</tr>
<tr>
<td>Falling load hazard</td>
</tr>
<tr>
<td>Ignition hazard</td>
</tr>
<tr>
<td>Flying material hazard</td>
</tr>
<tr>
<td>Lifting hazard</td>
</tr>
<tr>
<td>Skin injection hazard</td>
</tr>
<tr>
<td>Silica or other dust hazard</td>
</tr>
<tr>
<td>Tripping hazard</td>
</tr>
<tr>
<td>Magnet hazard</td>
</tr>
<tr>
<td>Falling material hazard</td>
</tr>
<tr>
<td>Crushing hazard</td>
</tr>
<tr>
<td>Hanging load hazard</td>
</tr>
<tr>
<td>Tipping hazard</td>
</tr>
<tr>
<td>General hazard</td>
</tr>
<tr>
<td>Explosion hazard</td>
</tr>
<tr>
<td>High pressure hazard</td>
</tr>
<tr>
<td>Hot surface hazard</td>
</tr>
<tr>
<td>Poison hazard</td>
</tr>
<tr>
<td>Tipping hazard</td>
</tr>
<tr>
<td>Tipping hazard</td>
</tr>
<tr>
<td>Hot Coolant under pressure</td>
</tr>
<tr>
<td>Electrocution hazard</td>
</tr>
</tbody>
</table>
1.2 Features for operator safety

*Note: Safety features associated with this equipment have been assessed in accordance with ISO21873-2.*

Emergency stop buttons have been installed to prevent death or serious injury. Ensure Emergency stop buttons are visible and not obstructed in any way. Ensure all personnel are trained in the operation and location of emergency stops.

DO NOT use this equipment if any safety guards or devices have been removed or not installed properly. Safety guards have been installed to prevent death or serious injury. All safety guards must be fitted and secured in their correct positions.

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

Steps, handrails, tread plates, and fixed guards are provided where persons are required to climb on the machine. For maintenance access ONLY.

If for any reason other areas of the machine need to be accessed, DO a full recorded risk assessment and take the appropriate safety measures.
1.3 Environmental safety

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

1.3.1 Hazardous materials

**FIRE IGNITION HAZARD!**
Diesel spillage MUST be cleaned up immediately due to fire hazard. Follow local and national regulations.

**ONLY** use fluids and lubrication products recommended in the maintenance schedule or OEM manuals.

Read and understand the instructions and information in the *Hazardous substances* section.

---

**WARNING**

**POISON AND CONTAMINATION HAZARD!**

Drinking from storage containers that have held equipment fluids or other harmful substances could cause serious injury or death. **DO NOT** store fuels, fluids and other materials used in the operation of this machine in food or beverage containers.

Fuels, fluids and other materials used in the operation of this machine may contain chemicals which could cause serious injury or death and or environmental damage if disposed of in an irresponsible manner.

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.

**ALWAYS** dispose of fuels, fluids or other materials used in the operation of this machine in accordance with local and national legal regulations.

**DO NOT** pour waste onto the ground, down a drain or into any water source.

Observe local heath and safety data information and OEM data information detailed in the *Information and Data Sheets* section of this manual when working with components or substance that may contain chemicals.

Use leak proof containers when draining fluids.
1.3.2 Battery disposal

All batteries must be disposed of via a local re-cycling scheme.

Batteries must not be disposed of in normal waste which may go to landfill.

1.3.3 Machine disposal

This equipment MUST ONLY be disposed of at a specialist machine breaker.
1.4 Personal protective equipment (PPE)

Entanglement hazard

<table>
<thead>
<tr>
<th>DANGER</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERSONNEL HAZARD!</td>
</tr>
<tr>
<td>DO NOT wear, loose clothing or jewellery of ANY kind.</td>
</tr>
<tr>
<td>Long hair MUST BE tied back.</td>
</tr>
<tr>
<td>ALWAYS wear (CE approved) minimum Personal Protective Equipment (PPE).</td>
</tr>
</tbody>
</table>

Minimum required personal protective equipment

The following (CE approved P.P.E.) MUST BE WORN by everyone, as a minimum requirement when working on or around the machinery, within 10m (33ft): Additional PPE may be required for specific tasks, which will be detailed in the relevant section throughout the manual.

<table>
<thead>
<tr>
<th>Safety gloves</th>
<th>Eye protection</th>
<th>Safety helmet</th>
<th>Respirator</th>
<th>Ear protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
<td>Close fitting overalls</td>
<td>High visibility vest</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.5 Organisational safety measures

The following safety measures MUST be observed at all times:

- Understand the service procedure before commencing work.
- Keep area clean and dry.
- NEVER lubricate, clean, service, or adjust machinery while it is moving.
- Allow machinery to cool before performing any maintenance or adjustments.
- MAKE SURE 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.
- During maintenance, use ONLY the correct tool for the job.
- NEVER make any modifications, additions, or conversions which may affect safety.
- Disconnect battery ground cable before making adjustments on electrical systems or welding on the equipment.
- If clothing, tools, or any body parts become entangled in machinery, IMMEDIATELY press an emergency stop button to disengage all power. Operate controls to relieve pressure. Switch off engine and implement lockout procedures.
- If equipment exhibits any unusual movement or sound, stop equipment, lock out IMMEDIATELY, and report the malfunction to your supervisor.

1.5.1 Fire risk control measures

Carry out a site specific risk assessment to identify any fire hazards present and the actions required to remove/reduce the risk.

Follow local and national regulations regarding fire safety training as identified in the risk assessment.

Fire extinguishing equipment must be available and easily accessible to the machine operator as identified in the risk assessment.
1.6 Personnel qualifications, requirements and responsibilities

**WARNING**

PERSONNEL HAZARD

Lack of knowledge or understanding could cause serious injury, death or damage to the machine.

ONLY trained, competent, reliable and authorized personnel should operate or maintain this machine.

If necessary seek clarification from your supervisor and or a Sandvik representative, before attempting ANY operations or maintenance. Failure to do so may also invalidate the manufacturers warranties.

Statutory minimum working age limits must be observed.

Work on electrical system and its equipment MUST ONLY be carried out by a skilled electrician or by personnel under the supervision and guidance of a skilled electrician and in accordance with electrical engineering rules and regulations. You MUST fully understand the electrical system, refer to the electrical and hydraulic section.

Work on the hydraulic system MUST ONLY be carried out by persons with training and authorisation to maintain the hydraulic equipment. You MUST fully understand the hydraulic system, refer to the electrical and hydraulic section.
1.7 Safety advice regarding specific operational phases

1.7.1 Standard Operation

Take the necessary steps to ensure the equipment is ONLY used when it is in a safe and reliable state.

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.

ENSURE local barriers are erected to stop unauthorised entry to the equipment or work area.

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

BEFORE starting the engine ensure it is safe to do so.

1.7.2 Blockage or malfunction

In the event of material blockage, any malfunction or operational difficulty, stop equipment and lockout immediately. Rectify problem immediately, refer to the operation section. Contact your dealer for advice and assistance if required.

1.7.3 Unguarded areas

Limit access to the equipment and its surroundings by erecting barrier guards, minimum distance 1.5m (5ft) away, to reduce the risk of other mechanical hazards, falling loads and ejected materials.

Switch off and lockout equipment before removing any safety devices or guarding. Make sure all safety devices and guards are installed correctly before lock out is removed.
1.7.4 Fire risk control measures

Carry out a site specific risk assessment to identify any fire hazards present and the actions required to remove/reduce the risk.

Follow local and national regulations regarding fire safety training as identified in the risk assessment.

Fire extinguishing equipment must be available and easily accessible to the machine operator as identified in the risk assessment.

---

**DANGER**

ENTANGLEMENT HAZARD
Working in close proximity to running machinery could cause serious injury or death.

DO NOT work close to machinery unless it is completely stopped.

DO NOT wear, loose clothing or jewellery of ANY kind.

Long hair MUST BE tied back.

ALWAYS wear (CE approved) minimum Personal Protective Equipment (PPE).
1.8 Special work, including maintenance, parts disposal and hazardous materials

Observe adjustment, maintenance and service intervals detailed throughout this manual, unless:
- Failure of warning lights, horns, gauges, display screens or indicators calls for immediate action.
- Adverse conditions require more frequent servicing.

USE ONLY Original Equipment Manufacturer’s (OEM) recommended replacement parts and equipment.

Make sure only properly trained personnel undertake these tasks.

1.8.1 Securing equipment before performing maintenance

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

PERSONNEL HAZARD

Switch off engine and remove ignition key.
Switch off at isolation point, refer to the commissioning and shut down section.
Implement tag and lockout procedures, refer to the commissioning and shut down section.
Attach hazard sign(s) to equipment in appropriate positions to alert all personnel of potential hazards.
1.8.2 Maintenance site conditions

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

1.8.3 Replacement & removal of components

ALWAYS observe handling instructions detailed throughout this manual, OEM manuals, or spare parts suppliers’ instructions.

Do a full risk assessment and take all necessary safety measures.

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

The removal of large or heavy components without adequate lifting equipment is PROHIBITED, this could cause serious injury or death.

To avoid the risk of accidents, individual parts and large assemblies being moved for replacement purposes should be carefully attached to lifting equipment and secured. ONLY use suitable lifting equipment supplied or approved by OEM.

NEVER work or stand under suspended loads.

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

1.8.4 Climbing and falling

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

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

When reaching any points 2m (6ft) or more above ground level, ALWAYS use CE certified safety harness.
NEVER climb on the equipment while it is in operation or use equipment parts as a climbing aid.

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

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

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

When carrying out overhead assembly work, ALWAYS use specially designed or otherwise safety-oriented ladders and maintenance platforms.

ONLY use Maintenance Platforms provided on the equipment. ALWAYS perform work from an approved, safe and secure platform.
1.8.5 Safety considerations during maintenance

It is essential that you take the following steps to MAKE SURE you and others are safe. DO full risk assessments and take all necessary safety measures.

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

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

NEVER work or stand under suspended loads.

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

ALWAYS make sure any safety device such as locking wedges, securing chains, bars, or struts are utilized as indicated in throughout this manual.

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

Never work alone.

1.8.6 Safety considerations during cleaning

This machine MUST be isolated prior to cleaning.

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.

DO NOT direct power washers near to or into control boxes and electrical devices.

1.8.7 Removal of safety devices, guards and decals

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

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

ALWAYS report any defects regarding guards, safety devices, decals or control devices.
1.8.8 Surrounding structures

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.

All temporary maintenance platforms erected around the equipment MUST be removed prior to operation.

1.8.9 Safety when refuelling

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
</table>

FIRE HAZARD

Smoking is PROHIBITED when refuelling or handling diesel fuel. Smoking and or using other naked flames in the vicinity of flammable materials and or fuels, could cause serious injury or death.

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.

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. To avoid spillage use drip trays.

ONLY refuel with diesel from approved storage and supply equipment.
1.9 Specific hazards

1.9.1 Electrical energy

External considerations and hazards

When working with the machine, maintain a safe distance from overhead electric lines. Be aware that electricity can jump across gaps. If unsure, seek advise from a competent person or source. If overhead cables are in the vicinity, a risk assessment MUST be completed prior to operating the machine. Make sure you follow all local and national regulations.

**DANGER**

ELECTROCUTION HAZARD!

Contact with overhead electric lines will cause serious injury or death.

If your machine comes into contact with a live wire, you MUST:

- Vacate the area.
- Warn others against approaching and touching the machine.
- Report the incident and have the live wire shut off.

Machine - Electrical

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

Before starting any maintenance or repair work, the power supply to the equipment MUST be isolated. Check the de-energized parts to ensure 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.

The electrical equipment is to be inspected and checked at regular intervals. Defects such as loose connections, scorched or otherwise damaged cables MUST be repaired, or replaced immediately. A trained competent person must do this.

Use ONLY original fuses with the specified current rating. Switch off the equipment IMMEDIATELY if trouble occurs in the electrical system.

This equipment is wired on a negative earth. ALWAYS observe correct polarity.
1.9.2 Automotive batteries

Automotive batteries contain sulphuric acid, an electrolyte which can cause severe burns and produce explosive gases when being charged.

Recharge batteries in a well ventilated area.

Do not short circuit batteries as this could cause a large spark and explosion.

Smoking is PROHIBITED when maintaining automotive batteries.

Avoid contact with the skin, eyes or clothing.

Always wear appropriate PPE, Refer to 1.4 Personal protective equipment (PPE).

Always isolate and disconnect the battery leads before carrying out any maintenance to the electrical system.

When disconnecting the batteries, disconnect the negative first and when connecting make sure the negative is connected last.

Batteries must not be disposed of in normal waste which may go to landfill.

All batteries must be disposed of via a local recycling scheme.

1.9.3 Gas, dust, steam, smoke and noise

**DANGER**

Inhalation, breathing hazard!

Breathing or inhaling 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.

Ensure suitable breathing equipment is used throughout any procedures carried out. All necessary precautions MUST be taken to reduce the risk of breathing dust or particles.

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

Dust waste MUST ONLY be handled by authorized personnel. When disposing of dust waste, the material must be dampened, placed in a sealed container and marked to ensure proper disposal.
ALWAYS operate internal combustion engines outside or in a well ventilated area.

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

Observe ALL local and national safety regulations. Contact your local authority for additional information.
1.9.4 Welding or Naked Flames

**WARNING**

**FIRE HAZARD**

Welding or using other naked flames in the vicinity of the equipment creates the risk of an explosion or fire, which could result in serious injury or death from fire or explosion.

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.

Before carrying out welding, flame cutting and grinding operations, clean equipment and its surroundings from dust and debris and other flammable substances and ensure the premises are adequately ventilated.

Before welding, the battery MUST be isolated and disconnected.

On machines and engines with electronic controls they must have these controls isolated and disconnected before welding. Disconnect at the plugs and sockets at machine control panel, engine control unit and input/output module. Refer also to the engine manufacturer’s manual.

1.9.5 Hydraulic equipment

**DANGER**

**SKIN PENETRATION HAZARD**

Hydraulic fluid under pressure can penetrate the skin, which will result in serious injury or death.

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.

Work on hydraulic equipment must be carried out by persons with training and authorisation to maintain the hydraulic equipment. Do a full risk assessment and take all necessary safety measures.

**WARNING**

**FIRE HAZARD**

Splashed or spilled oil creates the risk of a fire, which could result in serious injury or death.

Check all lines, hoses and screwed connections regularly for leaks or other damage.

Repair damaged lines, hoses, or screwed connections IMMEDIATELY.
### 1.9.6 Hazardous substances

For more information, refer to [1.3 Environmental safety](#) and the [Hazardous substances](#) section.
1.10 Vibration levels

There are no circumstances where an operator needs to be on or holding the machine during the crushing operation or moving the machine.
1.11 Hazard exclusion zones when machine is operational

A = Access area to the machine controls, only when not loading material.

C = 20m (66ft) clearance to limit access to equipment and surroundings. Erect barriers around the perimeter of the machine. NO persons allowed within this exclusion zone unless operating machine.

X = 5m (17ft) hazard area at machine loading and material outlet areas. DO NOT ENTER when machine is operating.
1.12 Measured noise levels

**NOISE HAZARD**

Ear protection MUST be worn if you are within 10m (33ft) of the machine when the engine and other parts of the machine are running.

The diagram indicates the measured noise levels at a measured at distances of 1m (3ft-3in), 3m (10ft) and 7m (23ft) and the table shows the measured levels.

Everything running, no material being processed as ISO 21873-2.

No measurements were made to determine the environmental correction factor. However, every effort was made to test in a clear, open area. The noise levels will be affected by the product being processed and local conditions.

The readings were measured using a Casella CEL-244 (Type 2) meter with a calibration date of 11th July 2012.
The sound level meter used for the test = 1321733, calibrator = 1321611.

<table>
<thead>
<tr>
<th>Test point</th>
<th>Background average noise level (Laeq) dB</th>
<th>Machine running average noise level (Laeq) dB</th>
<th>Test point</th>
<th>Background average noise level (Laeq) dB</th>
<th>Machine running average noise level (Laeq) dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>92.2</td>
<td>17</td>
<td>17</td>
<td>49.8</td>
<td>87.0</td>
</tr>
<tr>
<td>2</td>
<td>94.1</td>
<td>18</td>
<td>18</td>
<td>46.2</td>
<td>91.4</td>
</tr>
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<td>3</td>
<td>88.4</td>
<td>19</td>
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<td>48.2</td>
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<td>9</td>
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<td>25*</td>
<td>25</td>
<td>46.8</td>
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<td>10</td>
<td>92.8</td>
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<tr>
<td>11</td>
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<tr>
<td>12</td>
<td>80.9</td>
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<td>13</td>
<td>86.6</td>
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<td>92.4</td>
<td></td>
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<td></td>
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<tr>
<td>15</td>
<td>92.2</td>
<td></td>
<td></td>
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<tr>
<td>16</td>
<td>83.6</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*Test point 25 = Operator standing at control cabinet, ear level.

1.12.1 Vibration levels

There are NO circumstances where an operator needs to be on or touching the machine when it is running.
1.13 Safety decals - Locations
## Decal kit DE7090 Rev A (en)

<table>
<thead>
<tr>
<th>Item</th>
<th>Part No.</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DE0027</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>2</td>
<td>DE1007</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>3</td>
<td>DE7039</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>4</td>
<td>DE1043</td>
<td><img src="image4.png" alt="Image" /></td>
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<tr>
<td>5</td>
<td>DE7091</td>
<td>QA452</td>
</tr>
<tr>
<td>6</td>
<td>DE6019</td>
<td><img src="image5.png" alt="Image" /></td>
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<td>7</td>
<td>DE6048</td>
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</tr>
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<td>8</td>
<td>DE6028</td>
<td><img src="image7.png" alt="Image" /></td>
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<td>9</td>
<td>DE6031</td>
<td><img src="image8.png" alt="Image" /></td>
</tr>
<tr>
<td>10</td>
<td>DE6054</td>
<td><img src="image9.png" alt="Image" /></td>
</tr>
<tr>
<td>11</td>
<td>DE6033</td>
<td><img src="image10.png" alt="Image" /></td>
</tr>
</tbody>
</table>

### Important Safety Information

1. **STOP THE EQUIPMENT AND LOCKOUT POWER SOURCE BEFORE PERFORMING LUBRICATION MAINTENANCE OR ADJUSTMENTS.**

2. **DRIVE GUARDS MUST BE FITTED BEFORE UNIT IS STARTED.**

3. **HOPPER MUST BE EMPTY of material before transporting machine. Failure to do so may damage the equipment.**

4. **HEAD, EAR AND EYE PROTECTION must be worn when operating or in the vicinity of this machine when running.**

5. **GRID FLARES MUST BE LOWERED before transporting machine.**

6. **LOWER MATERIAL HAZARD**
   - Do not walk near material discharge areas
   - Risk of serious head injury or death
   - HARD HAT AND EYE PROTECTION must be worn at all times when working in the vicinity of the machine

7. **CRUSHING/SHEARING HAZARD**
   - Moving parts can crush or cut causing severe injury.
   - Keep hands and feet clear of moving parts during equipment operation.

8. **ENTANGLEMENT HAZARD**
   - DO NOT reach into the conveyor
   - Risk of serious injury
   - SWITCH OFF, LOCKOUT AND TAGOUT machine before opening or removing guards

9. **SKIN INJECTION HAZARD**
   - Hydraulic fluid under pressure can penetrate the skin causing serious injury.
   - DO NOT use your hand.
   - Use a piece of cardboard to check for leaks
   - NEVER perform maintenance tasks on pressurised systems.
   - If fluid is injected under the skin seek medical help immediately.

10. **IMPACT HAZARD**
    - DO NOT allow spring loaded door to be opened unrestrained
    - Risk of injury

11. **LOOSE OR ILL-FITTING CLOTHING CAN GET CAUGHT IN RUNNING MACHINERY**
    - Always wear correctly fitting (E.N/A.N.I approved) personal protective equipment.
    - Personal protective equipment includes hard hat, safety glasses, hearing protection, dust mask, close fitting overalls, safety boots, industrial gloves and high visibility vest.

12. **PRIOR TO TRANSPORT**
    - Fasten all loose items
    - Check the plant for loose or damaged parts
    - Make repairs as found necessary to ensure that all parts are safely secured during transport.

13. **LOCKOUT PROCEDURE**
    - Switch off engine
    - Remove the ignition key
    - Keep the ignition key on person during lockout
    - Place appropriate maintenance warning signs (ie. tagout)
    - NEVER work alone

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QA451 en-160615
<table>
<thead>
<tr>
<th>Item</th>
<th>Part No.</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>DE6040</td>
<td><img src="image1.png" alt="Notice" /> STOP AND LOCKOUT PLANT BEFORE MAINTENANCE</td>
</tr>
<tr>
<td>25</td>
<td>DE6015</td>
<td><img src="image2.png" alt="Warning" /> FALLING HAZARD Work at any height can be dangerous. Do not climb into the machine without fall protection in place.</td>
</tr>
<tr>
<td>26</td>
<td>DE6006</td>
<td><img src="image3.png" alt="Danger" /> DANGEROUS WORK, WORKER HURT OR DEATH Possible</td>
</tr>
<tr>
<td>27</td>
<td>DE6007</td>
<td><img src="image4.png" alt="Danger" /> DANGEROUS WORK, WORKER HURT OR DEATH Possible</td>
</tr>
<tr>
<td>28</td>
<td>DE6042</td>
<td><img src="image5.png" alt="Notice" /> SERVICE &amp; MAINTENANCE Ensure hydraulic oil is filled to middle of guage when cold.</td>
</tr>
<tr>
<td>29</td>
<td>DE6021</td>
<td><img src="image6.png" alt="Notice" /> NOTICE STOP AND LOCKOUT PLANT BEFORE MAINTENANCE</td>
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<tr>
<td>30</td>
<td>DE1075</td>
<td><img src="image7.png" alt="Hydraulic fluid" /> HYDRAULIC FLUID</td>
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<td>31</td>
<td>DE1076</td>
<td><img src="image8.png" alt="Low sulphur diesel" /> LOW SULPHUR DIESEL</td>
</tr>
<tr>
<td>32</td>
<td>DE6024</td>
<td><img src="image9.png" alt="Service &amp; maintenance" /> SERVICE &amp; MAINTENANCE CHECK CONDITION OF FILTERS ON A REGULAR BASIS Change elements when indicators show red. Refer to operators manual for correct grades of oil.</td>
</tr>
<tr>
<td>33</td>
<td>DE5022</td>
<td><img src="image10.png" alt="Powerpack canopy" /> POWERPACK CANOPY DOORS MUST REMAIN LOCKED WHEN MACHINE IS OPERATING.</td>
</tr>
<tr>
<td>34</td>
<td>DE6039</td>
<td><img src="image11.png" alt="Notice" /> READ AND UNDERSTAND OPERATIONS MANUAL AND ALL SAFETY SIGNS BEFORE USING OR MAINTAINING MACHINE.</td>
</tr>
<tr>
<td>35</td>
<td>DE6012</td>
<td><img src="image12.png" alt="Warning" /> EXCEEDS 90dB(A) May cause loss or degredation of hearing over long periods of time. Proper hearing protection must be worn.</td>
</tr>
<tr>
<td>36</td>
<td>DE7103</td>
<td><img src="image13.png" alt="Notice" /> STOP AND LOCKOUT PLANT BEFORE MAINTENANCE</td>
</tr>
<tr>
<td>37</td>
<td>DE7108</td>
<td><img src="image14.png" alt="Premium" /> PREMIUM</td>
</tr>
<tr>
<td>38</td>
<td>DE6014</td>
<td><img src="image15.png" alt="Warning" /> WARNING IMPORTANT NOTICE: THIS MACHINE IS EQUIPPED WITH A COMBINED BRIEFING AND LOCKOUT SYSTEM. BEFORE USING THE MACHINE, READ THE MANUAL COMPLETELY AND FOLLOW THE INSTRUCTIONS.</td>
</tr>
<tr>
<td>39</td>
<td>DE6041</td>
<td><img src="image16.png" alt="Warning" /> WARNING IMPORTANT NOTICE: THIS MACHINE IS EQUIPPED WITH A COMBINED BRIEFING AND LOCKOUT SYSTEM. BEFORE USING THE MACHINE, READ THE MANUAL COMPLETELY AND FOLLOW THE INSTRUCTIONS.</td>
</tr>
<tr>
<td>40</td>
<td>DE6056</td>
<td><img src="image17.png" alt="Warning" /> WARNING IMPORTANT NOTICE: THIS MACHINE IS EQUIPPED WITH A COMBINED BRIEFING AND LOCKOUT SYSTEM. BEFORE USING THE MACHINE, READ THE MANUAL COMPLETELY AND FOLLOW THE INSTRUCTIONS.</td>
</tr>
<tr>
<td>41</td>
<td>DE7097</td>
<td><img src="image18.png" alt="Screen bearing grease point" /> SCREEN BEARING GREASE POINT</td>
</tr>
<tr>
<td>42</td>
<td>DE7098</td>
<td><img src="image19.png" alt="Screen bearing grease point" /> SCREEN BEARING GREASE POINT</td>
</tr>
<tr>
<td>43</td>
<td>DE7117</td>
<td><img src="image20.png" alt="Screen bearing grease point" /> SCREEN BEARING GREASE POINT</td>
</tr>
</tbody>
</table>

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2 Transportation & technical data
2.1 Transport

This machine must only be transported between sites on a suitable licensed low loader.

2.1.1 Pre-start instructions [for transport]

Do not start transport until you have read and fully understood this manual.

Make sure that the machine is off. Never do maintenance while the machine is on.
Stop the machine, isolate, remove the ignition key, and tag out, before all maintenance is started on this machine.

Make sure that this manual is read and understood.
Do not attempt to start this machine until you are aware of all aspects of its operation.
Make sure all temporary sealing and transport straps are installed and all the conveyors and the doors are in the transport positions. Refer to 2.2 Preparing the machine for transportation.
Remove all tools and equipment from the transport area.
Make sure all persons are away from the machine, drives, tracks and auxiliary equipment.

2.1.2 Pre-start machine checks

Lockout and tag the machine, refer to 4.6 Lockout and tag procedures.
Check that the machine is in good mechanical condition and that there is no component damage or loss.
Make sure that all bolts and fixings are tight and that all safety devices operating correctly.

NEVER start the machine without guards and safety devices operating correctly.

Make sure that there is no stone, rock, material or product on the machine, in the hopper, screen box, feeder and on all conveyors.
Make sure that the checks and pre-start procedures outlined in the engine manufacturer’s instruction manual are complied with.
Check all fluid levels are to specification.
Make sure that all the locating pins are in the correct positions.
Make sure all operating levers are in an off or neutral position.
2.1.3 Moving the machine on the tracks

To move the machine, refer to **4.4 Moving machine on the tracks**.

The machine must be moved on the tracks onto and off the trailer:

For the total weight, refer to identification plate on machine.

Loading and unloading the machine must only be carried out on firm level ground.

Make sure that the loading/unloading site is clear of non-essential personnel. Erect barriers around the area and post warning signs where site conditions warrant this and perform necessary risk assessments.

2.1.4 Machine Transportation

Make sure that the Machine is in the transport position:

Make sure that the vibrating grid is in the transport position if fitted, refer to **2.1.5 Vibrating grid**.

Make sure the reject grid is set to the lowest level, refer to **5.3.2 Grid loading**.

Set the screen box and main conveyor height to the lowest position, refer to **4.4.13 Set up the main conveyor an screen box height**.

Make sure the fines conveyor is folded in the transport position, refer to **2.2 Preparing the machine for transportation**.

Make sure the maintenance platforms are in the transport position, **2.2 Preparing the machine for transportation**.

Make sure that the fourth conveyor feed chute is raised for transport and the conveyor is folded into the transport position, refer to **2.2 Preparing the machine for transportation**.

Make sure that the right hand and left hand side conveyors are folded in the transport position, refer to **2.2 Preparing the machine for transportation**.

Make sure the legs are in the transport position, refer to **2.1.12 Raise the legs**.

Before transporting on the road, the load dimensions must be checked to make sure that they are within the local and national legal transport limits.
2.1.5 Vibrating grid

Make sure the machine is off, tagged and locked out before you do maintenance or work to the machine.

For working at heights, make sure that a correct working platform is used with the correct anchor points and safety rails in position, which meets the local and national regulations.

1. Remove the 2 bolts, nuts and washers from the positions shown at both ends. The lower fixings are used as pivot points.

2. Un-tag the machine > 2 Refer to 4.6 Lockout and tag procedures.

3. Start the machine > 3 Refer to 4.2 Engine starting procedure.

4. Set the mode control to auxiliary.

5. Move the lever to lower the grid flares down.
2.1.6 Maintenance Platforms - safety

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PERSONNEL HAZARD</strong></td>
</tr>
<tr>
<td>Working on or in close proximity to the machine whilst it is on or operating could cause serious injury or death.</td>
</tr>
<tr>
<td>Care must be taken while folding and unfolding maintenance platforms.</td>
</tr>
<tr>
<td>Make sure all guards are in place and secure.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FALLING HAZARD</strong></td>
</tr>
<tr>
<td>Falling from heights could cause serious injury or death.</td>
</tr>
<tr>
<td>Some of the steps in this procedure requires working at height, make sure the following applies when working off the ground:</td>
</tr>
<tr>
<td>• Access platforms are in place.</td>
</tr>
<tr>
<td>• All hand rails are fixed in position.</td>
</tr>
<tr>
<td>• All ladders are lowered and fixed in position.</td>
</tr>
<tr>
<td>• A safety harness is worn.</td>
</tr>
</tbody>
</table>
2.1.7 End maintenance platform

1. Un-tag the machine >
   1 Refer to 4.6 Lockout and tag procedures.

2. Start the machine >
   2 Refer to 4.2 Engine starting procedure.

3. Set the mode control to auxiliary.

4. Move the lever to lower the screen box to the transport position.

5. Stop the machine >
   5 Refer to 4.5 Shut down the machine.

6. Lockout the machine >
   6 Refer to 4.6 Lockout and tag procedures.

7. Use suitable access platforms and remove the end handrail retaining bolts.
8. Remove the locking pins and retaining bolts on both sides. Remove the end hand rail from the machine.

9. Remove the retaining bolts and locking pins under the platform.

10. Remove the retaining bolts on both sides.
11. Fold up the front floor section.

12. Remove the infill plate retaining bolts on both sides.

13. Fold the infill plate up into the transport position.
2.1.8 Side maintenance platforms

1. Fold ladder into the transport position > 1 Refer to 2.1.11 Ladder.

2. Remove all the clips and securing pins.

3. Un-tag the machine > 3 Refer to 4.6 Lockout and tag procedures.

4. Start the machine > 4 Refer to 4.2 Engine starting procedure.

5. Set the mode control to auxiliary.

6. Move the lever to fold the right hand maintenance platform down.
7. Move the lever to fold the left hand maintenance platform down.

8. Stop the machine > 8 Refer to 4.5 Shut down the machine.

9. Lockout the machine > 9 Refer to 4.6 Lockout and tag procedures.

10. Remove all the clips and the locating pins so the rail is able to fold.

   *Note: Do not remove the pivot pin, only remove the locating pin in the position shown on each support end.*

11. Secure the gates to handrails for folding up for transport, on both sides.
12. Fold up the handrail and install all the locating pins and clips to secure the rail.

13. Make sure the maintenance platform locating pins are removed.

Note: Do not remove the pivot pin, only remove the locating pin in the position shown on each support end.
2.1.9 Secure loose items

1. Hook the ladder on the maintenance platform and secure.

2. Hook the rear hand rail on the maintenance platform and secure.

3. Secure all other loose items.

2.1.10 Fines end conveyor

1. Remove the clips and pins securing the end section.

2. Un-tag the machine > Refer to 4.6 Lockout and tag procedures.

3. Start the machine > Refer to 4.2 Engine starting procedure.

4. Set the mode control to auxiliary.
5. Operate the lever to lower the fines conveyor.

6. Fines conveyor in low position.

7. Fold the end section up into the transport position.

8. Stop the machine > Refer to 4.5 Shut down the machine.

9. Lockout the machine > Refer to 4.6 Lockout and tag procedures.

10. Secure the end section with the latches.

11. Un-tag the machine > Refer to 4.6 Lockout and tag procedures.

12. Start the machine > Refer to 4.2 Engine starting procedure.
13. Raise the fines conveyor and secure.

14. Stop the machine > Refer to 4.5 *Shut down the machine.*

15. Lockout the machine > Refer to 4.6 *Lockout and tag procedures.*
2.1.11 Ladder

1. Remove retaining clips and pins, then pivot the lower part of the ladder up and towards the machine.

2. Secure the ladder in the transport position.

2.1.12 Raise the legs

Adjust the hopper and chassis legs for transportation of the machine. Make sure the locating pins are removed.

1. Un-tag the machine > 1 Refer to 4.6 Lockout and tag procedures.

2. Start the machine > 2 Refer to 4.2 Engine starting procedure.
3. Set the mode control to auxiliary.

4. Move the lever to raise the leg.

5. Move the lever to raise the leg.

6. Turn the machine off > Refer to 4.5 Shut down the machine.

7. Lock out and tag the machine > Refer to 4.6 Lockout and tag procedures.

8. Install the securing pins and clips.
2.2 Preparing the machine for transportation

Make sure that all materials have run off the conveyor belts and that the hopper is empty.

NOTICE

Do not fold any conveyors unless moving parts are stopped.

Folding the tail, side and fourth conveyors for transport are a reversal of the instructions.

- **4.4.11 Set up the mid oversize conveyor - right hand side.**
- **4.4.12 Set up the mid fines conveyor - left hand side.**
- **4.4.9 Set up the fines conveyor.**
- **4.4.10 Set up the oversize, fourth, conveyor.**

Make sure that:

- All belt retention straps are fitted.
- Left hand side and fines conveyors are secured with all necessary links & straps as supplied with machine.
- All loose parts are secured.
- The engine is switched off.
- Machine is cleaned of loose debris.

1. Install the left hand side conveyor transportation strap & chain.

2. Install the right hand side conveyor belt restraining bar and rotate the turn buckle to make sure that the bar is tight.
3. Install the right hand side conveyor transport bracket and strap.

4. Make sure that the 4th side conveyor is located onto the support hook.

5. Install the locating pin through the oversize side conveyor and the support hook.

6. Install the oversize conveyor transportation strap.
7. Secure the end of the fines conveyor with a strap as shown.

8. Secure fines conveyor belt with strap.

9. Make sure the main conveyor is down.

10. Lock the main conveyor into position with the safety pin.
2.3 Machine data

2.3.1 Hopper

<table>
<thead>
<tr>
<th>Capacity</th>
<th>7,5m³</th>
<th>(9.8yd³) (265ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum capacity</td>
<td>11,33m³</td>
<td>(14.8yd³) (400ft³)</td>
</tr>
<tr>
<td>Grid area</td>
<td>2200 x 3600mm</td>
<td>(7ft-3in x 111ft-11in)</td>
</tr>
<tr>
<td>Grid area with sides raised</td>
<td>2200 x 4400mm</td>
<td>(7ft-3in x 14ft-5in)</td>
</tr>
</tbody>
</table>

2.3.2 Performance

<table>
<thead>
<tr>
<th>Maximum feed size</th>
<th>200mm</th>
<th>(8in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity, up to</td>
<td>600 tonne/h</td>
<td>(660 US ton/h)</td>
</tr>
</tbody>
</table>

2.3.3 Screen sizes

Triple screen box assembly, two bearing, three deck double screen:

<table>
<thead>
<tr>
<th>Deck</th>
<th>Size</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>First deck</td>
<td>6100 x 1524mm</td>
<td>(20ft x 5ft)</td>
</tr>
<tr>
<td>Second deck</td>
<td>6100 x 1524mm</td>
<td>(20ft x 5ft)</td>
</tr>
<tr>
<td>Third deck</td>
<td>5560 x 1524mm</td>
<td>(18ft x 5ft)</td>
</tr>
</tbody>
</table>

2.3.4 Conveyors

<table>
<thead>
<tr>
<th>Component</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed (in the hopper)</td>
<td>1200 x 3890mm (4ft x 12ft-9in)</td>
</tr>
<tr>
<td>Main</td>
<td>1000 x 12390mm (3ft-3in x 40ft-8in)</td>
</tr>
<tr>
<td>Oversize side</td>
<td>650 x 9750mm (2ft-2in x 32ft)</td>
</tr>
<tr>
<td>Fines side</td>
<td>1200 x 10551mm (4ft x 34ft-7in)</td>
</tr>
<tr>
<td>Mid oversize right hand side</td>
<td>700 x 9740mm (2ft-4in x 32ft)</td>
</tr>
<tr>
<td>Mid fines left hand side</td>
<td>700 x 10350mm (2ft-4in x 34ft)</td>
</tr>
</tbody>
</table>
2.4 Transport Dimensions
2.5 Working dimensions
3 Product overview
3.1 Machine main components

3.1.1 General information

For more technical information on the machine, refer to section 2.

Right hand side

Left hand side
Plan view

A. Reject grid
B. Hopper and feed conveyor
C. Main conveyor
D. Primary and secondary screen boxes
E. Mid oversize product right hand side conveyor
F. Oversize product side conveyor (4th)
G. Hydraulic control levers (right hand side)
H. Hydraulic lever control for right hand conveyor ‘E’
I. Mid fines oversize product left hand side conveyor
J. Operation controls
K. Hydraulic control levers (left hand side)
L. Power pack
M. Maintenance platform
N. Fines product (end) conveyor
O. Tracks
3.2 Emergency stop positions

To operate, test and reset an emergency stop, refer to 4.3.2 How to operate an emergency stop.
3.3 Key features of the machine

- Hopper fitted with variable speed belt feeder.
- Remote control of tracking and grid tip functions.
- Optional double deck vibrating grid. Use in applications where large pieces are present in feed. Can also be used to break up lumps.
- Maximum load in hopper = 10 000kg (11 US ton).
- Main conveyor has variable speed and hydraulic raise and lower facility.
- Each screening unit has a high inertia, ensuring superb separation is carried out over the full surface of the screen deck.
- Hydraulic folding maintenance platforms deploy quickly, giving low access height and safe working area for maintenance and mesh change.
- Rapid ratchet tension system to give fast mesh changes.
- Diesel hydraulic power via water cooled Diesel engine.
- Steel pipe runs used in hydraulic system gives improved temperature control and extended hose life.
- Heavy duty construction - used worldwide in quarries and gravel pits.
3.4 Applications

3.4.1 Common applications

- Natural aggregate
- Crushed rock
- Recycling of demolition material
- Sand and gravel

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

3.4.2 Machine application and limitations

This machine has been designed and constructed to screen materials as described above, such as stone, sand and gravel to a predetermined size.

The machine must not be used for any other purpose without first contacting Sandvik Construction.

The machine must not be operated until the instructions supplied with the machine are read and fully understood.

The machine is not recommended for night operation.
3.5 Screening machine

3.5.1 Machine description

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

The tracks, hopper, conveyors, screen boxes 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.

This equipment has been manufactured and assessed to be in accordance with the Machinery Directive 2006/42/EC.

3.5.2 Operation description

Sections 2. Transport & Technical Data, 4. Commissioning & Shut Down and 5. Operations provide details of Transport, Commissioning and Operation of this machine and must be read and fully understood before operating this machine.

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

The material 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 grades.

The larger and medium grades are separated onto the side conveyors leaving the fines to travel up the fines product conveyor. Each grade discharges from the conveyor and falls into separate stock piles around the machine.
3.6 Main control devices

3.6.1 Electrical controls

This machine is equipped with a protection controls which will shut down the engine.
With this system sensors are used on critical elements and should the system reach factory pre set limits the system will experience a safety shut down and turn the engine off.

![WARNING]

PERSONNEL HAZARD
If a safety shut down occurs, the condition causing the engine to shut down must be corrected before any attempt is made to restart it.
3.6.2 Hydraulic controls

Hydraulic fluid under pressure can cause serious injury

- Legs (Hopper)
- Legs (Chassis)
- Maintenance walkway
- Left hand conveyor fold

- Fines conveyor fold
- Fines conveyor up/down
- Maintenance walkway
- Main conveyor/screen up/down
- Raise/lower oversize conveyor
- Slew turntable oversize conveyor
• Mesh change
• Grid hopper flairs
• Reject grid up/down

• Right hand conveyor fold
3.7 Operational controls

3.7.1 Control panel

A. Information and extra operations display.
B. Selection buttons for information and operation display.
C. Machine mode switch: auxiliary, operation, track.
D. Component operation numbers and colour key.
E. Key operated Power, Heater coils, Start engine, Engine run.
F. Component start and stop sequence buttons 1 to 5.
G. Automatic start and stop sequence button 5.
H. Engine speed control.
I. Battery isolator switch and lockout.
3.7.2 Display screen A and buttons B

Icons on the screen show green when an item is available and red when activated.

J. Screen display
K. Four buttons to navigate between display pages and operate functions
L. 4-way screen control
M. OK button [Not used]

3.7.3 Mode switch C

N. Auxiliary mode for setting up machine and preparing it for transport.
O. Operation for screening and position for starting the engine.
P. Track for moving the machine on the tracks.

3.7.4 Ignition switch E

Q. Off
R. Power on, run
S. Heater
T. Start, crank engine
3.8 Display screens

3.8.1 Auxiliary mode home screen

- Auxiliary mode.
- Engine information button.
- Working lights button [Red = on].
- Machine diagnostics button.
- Engine speed.
- Engine operation hours.
3.8.2 Operation mode home screen

- Auxiliary mode.
- Engine information button.
- Working lights button [Red = on].
- Machine diagnostics button.
- Engine speed.
- Engine operation hours.
3.8.3 Track mode home screen

- Track mode.
- Engine information button.
- Working lights button [Red = on].
- Machine diagnostics button.
- Engine speed.
- Engine operation hours.

3.8.4 Engine information

Press engine information button to display the information relating to the engine.

The engine information icons display green normally and display red and an error message with a fault code is displayed if there is a fault, refer to 6.17 Machine error messages and fault codes.
Battery charge.

Oil pressure.

Air filter.

Hydraulic fluid level.

Coolant level.

Water in fuel.

Coolant temperature.

Pre heater for engine starting.

Press button to exit and go to home page from any screen page.

### 3.8.5 Engine fault code display

Refer to 6.17 *Machine error messages and fault codes*.

Press button to exit and go to home page from any screen page.
3.8.6 Machine diagnostics

Press machine diagnosis button to make checks on control systems.

Track control - page 1
To check a track control system, connect and switch on either the umbilical track control or switch on the radio control before the engine is started.

A blank control will be displayed initially. When a button is pressed on the track control the display screen button lights up, when the correct input signal is received from the control unit.

1. Screen page number.

Press button for next page.

Press button to exit and go to home page from any screen page.

Radio signals - page 2
If the radio controls are operational, the display shows transmitted and received radio codes.

2. Screen page number.

Transmitted code.

Received code.

Press button for next page.

Press button to exit and go to home page from any screen page.

Reject grid control - page 3
To check the grid control radio system.

A blank control will be displayed initially. When a button is pressed on the grid control the display screen button lights up, when the correct input signal is received from the control.
If the radio grid control is not operational, the automatic grid operation can be switched on and off using the up or down arrow of the 4-way screen control button.

Screen page number.

Press button for next page.

Press button to exit and go to home page from any screen page.
Sensors - Page 4

Note: A sensor that is not installed or being used should be switched off, shown by a red cross through it.

- Use the left or right arrows of the 4-way screen control to move the white highlight box around the screen to the item required.

Stockpile level sensor [option].

Green stockpile low level, feeder start.

Red stockpile high level, feeder stop.

Speed wheel sensor [option] on feed conveyor.

Hydraulic fluid temperature sensor.

Screen page number.

Press button for next page.

Press button to exit and go to home page from any screen page.

Press button up arrow to turn highlighted item off or down arrow to turn on.

Stockpile sensor [if option fitted] - page 4

Note: When the sensor is switched off, the feeder is on continuously and will not stop regardless of the stop setting.

Note: A sensor that is not installed or being used should be switched off, shown by a red cross through it.
Stockpile On and Off:

Use the left or right arrows of the 4-way screen control to move the white highlight box around the screen.

Highlight the box around the stockpile level indicator to select it.

With the stockpile sensor selected, use the 4-way screen control button to switch it on or off. Press button up arrow to turn it off or down arrow to turn on.

Stockpile start setting:

Use the left or right arrows of the 4-way screen control to move the white highlight box around the screen.

Highlight the box around the green start indicator to select it.

With the green start selected, use the 4-way screen control button to adjust the stockpile start level. Press the up arrow to increase the value, down arrow to decrease.
Stockpile stop setting:

Use the left or right arrows of the 4-way screen control to move the white highlight box around the screen.

Highlight the box around the red stop indicator to select it.

With the red stop selected, use the 4-way screen control button to adjust the stockpile stop level. Press the up arrow to increase the value, down arrow to decrease.

Note: If the speed wheel sensor is off, the feeder will not stop if a low speed is detected.

Note: A sensor that is not installed or being used should be switched off, shown by a red cross through it.

Screen page number.

Press button for next page.

Press button to exit and go to home page from any screen page.

Speed wheel On and Off [it option is fitted to feeder] - page 4

Note: If the speed wheel sensor is off, the feeder will not stop if a low speed is detected.

Note: A sensor that is not installed or being used should be switched off, shown by a red cross through it.

Use the left or right arrows of the 4-way screen control to move the white highlight box around the screen.

Highlight the box around the conveyor indicator to select it.

With the conveyor selected, use the up arrow of the 4-way screen control button to switch the sensor off or the down arrow button to switch it on.

Screen page number.

Press button for next page.

Press button to exit and go to home page from any screen page.

If the speed falls below the minimum pre-set speed it will stop the feeder.
Hydraulic fluid temperature sensor - page 4

**Note:** When the sensor is switched off, the hydraulic fluid cooler is on continuously.

**Note:** A sensor that is not installed or being used should be switched off, shown by a red cross through it.

Use the left or right arrows of the 4-way screen control to move the white highlight box around the screen.

Highlight the box around the hydraulic fluid indicator to select it.

With the hydraulic fluid sensor selected, use the up arrow of the 4-way screen control button to switch the sensor off or the down arrow button to switch it on.

Screen page number.

Press button for next page.

Press button to exit and go to home page from any screen page.

---

Hydraulic valve operation - pages 5 and 6

Displays the current valve status.

- Green indicates the operation is functioning correctly.
- Grey indicates the operation is off.
- Red indicates an error and an error code will be shown

Screen page number 5.

Screen page number 6.

Press button for next page.

Press button to exit and go to home page from any screen page.
Display system information
The installed display, software and panel versions are displayed for reference.

- Press button for page 1.

- Press button for home page.

3.8.7 Service mode
From the normal operation mode screen, press and hold service button for 4 seconds to enable the service mode functions.

- Indicates service mode enabled. The beacon and siren are on whilst in service mode.

- Indicates service mode is not available. It is only available via operation mode.

Press the numbered button to operate only the individual colour coded section of the machine.

Individual sections of the machine can be operated independently.

The individual section of the machine will start immediately.

Press service button again to return to operation mode.

3.8.8 Active error display screen
When the system detects a fault, a message is displayed on the screen.
Each fault is identified by a fault code number, description and icon.
Refer to **6.17 Machine error messages and fault codes** for more information.

Press button to exit and go to home page from any screen page.

If the cause of the error is not cleared, the active error message will re-appear.
3.9 Reject grid radio control

- Move reject grid UP
- Move reject grid DOWN
- Automatic reject grid cycle, [moves up holds for short time then down]
- Engine stop
- Sound alarm when held

- Transmitting indicator
- Transmitting code indicator
3.10 Track controls

The tracks can be operated using the umbilical control or the radio control.

- Remote charging socket for connecting lead to re-charge radio battery when required.
- On/off switch on track control with integral removable key on radio control.

**Note:** *The radio handset must be fully charged at regular intervals. The track control must be connected and switched on before starting the engine.*

When operating the handset, the yellow buttons are for forward movement and the blue ones for reverse. These correspond to the yellow and blue direction indicators on the machine.

**LED indicator:**

- Off - No buttons pressed
- On steady red - Engine stop button active
- On steady green - Track direction button active
- Flashing red - Error detected in button
4 Commissioning and shut down
4.1 Pre-commissioning instructions

4.1.1 Pre-start instructions

Do not start screening until you have read and fully understood this manual.

Make sure that the machine is off. Never do maintenance while the machine is on.
Stop the machine, isolate, remove the ignition key, and tag out, before all maintenance is started on this machine.

Make sure that this manual is read and understood.
Do not attempt to start this machine until you are aware of all aspects of its operation.
Remove any temporary sealing and transport straps.
Make sure all persons are away from the machine, drives, tracks and auxiliary equipment.

4.1.2 Pre-start machine checks

Lockout and tag the machine, refer to 4.6 Lockout and tag procedures.
Check that the machine is in good mechanical condition and that there is no component damage or loss.
Make sure that all bolts and fixings are tight and that all guards are in place with all safety devices operating correctly.

NEVER start the machine without guards and safety devices operating correctly.

Make sure that there is no stone, rock, material or product on the machine, in the hopper, screen box, feeder and on all conveyors.
Remove all tools and equipment from the operational area.
Make sure that the checks and pre-start procedures outlined in the engine manufacturer’s instruction manual are complied with.
Check all fluid levels are to specification.
Make sure that all the locating pins are in the correct positions.
Make sure all operating levers are in an off or neutral position.
Make sure that the conveyor belts, skirting rubbers and scrapers are in good condition and working properly.
4.2 Engine starting procedure

**WARNING**

PERSONNEL HAZARD
Make sure that there are no persons on the machine before it is started. Also make sure there are no persons doing maintenance on the machine. This may cause injury or death to persons on the machine if started.

4.2.1 Before starting engine

1. Make sure the scheduled maintenance checks are done.  
2. Make sure that all emergency stops are released.
3. Before starting the engine, check that the dummy plug is fitted. It is located at the rear, hopper end, of the machine. It must be plugged in for all operations except if the umbilical track control is to be used.
4. The alternative plug with umbilical track control can be plugged in if it is to be used.

1 Refer to 6 *Routine maintenance.*
2 Refer to 3.2 *Emergency stop positions.*
4.2.2 Engine controls

1. Release latch and remove door to access the engine controls.

*Note: The controls may be behind the left hand conveyor if folded down for transport.*

2. Un-tag the machine if necessary.

2 Refer to 4.6 Lockout and tag procedures.

3. Turn battery isolation switch to the on position.

4. Set the engine speed control down to the slowest position.

5. Set mode control switch to screening operation position.
6. Insert the ignition key into the ignition switch and turn it clockwise to the first power on position indicated.

7. Turn the key clockwise to the heater position and hold if the engine pre-heat is required.

8. Turn the key clockwise to the crank position and hold until the pre-start warning time count down is complete and the engine starts, then release the key.

9. The key should return to the power on position.

10. If the engine fails to start the ignition key must be turned to the off position and the complete ignition cycle re-started.

**Note:** The engine will only start when the mode control switch is set to screening operation.

**NOTICE**

When operating the machine at low temperatures of 0°C (32°F) or below, run all systems empty for approximately 15 minutes to allow the hydraulic systems to reach working temperature. Do not load any material into the machine until the hydraulic systems are at working temperature.
4.3 Stopping machine in an emergency

The machine can be stopped in an emergency by pressing any of the emergency stop buttons.

Make sure that all persons in the vicinity of the machine are fully aware of the location of the emergency stops.

4.3.1 Emergency Stop Locations

Refer to 3.2 Emergency stop positions for location of emergency stops.

**NOTICE**

Emergency stops should only be used in an emergency situation not for normal stopping as frequent use will cause damage to hydraulic components and engine.

*Note: Emergency Stop Switches must be reset before the machine can be restarted.*

Make sure the reason for the emergency action has been cleared before the emergency stop is reset.

Make sure that all emergency stops are tested daily. refer to the scheduled maintenance instructions.

4.3.2 How to operate an emergency stop

1. Push a red an emergency stop to stop the machine.

2. To reset the emergency stop. Turn the red emergency stop button clockwise and release.
4.4 Moving machine on the tracks

4.4.1 Introduction and safety

**DANGER**

MOVING MACHINE HAZARD

No persons should be on the machine or in the exclusion zone whilst the machine is being moved as this may cause injury or death.

Do not, under any circumstances, move the machine when any persons are standing on the machine or in the exclusion zones.

**NOTICE**

MACHINE DAMAGE

Only move the machine when all side conveyors are in the transport position, refer to 2.2 Preparing the machine for transportation.

Take care when moving the machine on or off a low loader or over uneven ground due to limited ground clearances.

There is a small possibility that the radio frequency on the radio remote track controller may operate other machinery. Please use the wire connected umbilical controller if this is a problem.

Check all radio frequencies and codes for conflicts and contact the Sandvik dealer if a re-program of the radio remote is necessary.

Moving the machine on the tracks must only be carried out on firm flat ground.

The machine must always be on level, firm ground when operating in its normal mode.

The operator must be fully trained in the operation of this equipment. When moving the machine, the operator must be in a position to have an all round view of the operation. Observers should assist the operator where this is not possible.

In low ambient light conditions, set up sufficient additional lighting to make the operation safe.

Make sure the site is clear of non-essential personnel. Erect barriers around the area and post warning signs where site conditions warrant this.

**TIPPING HAZARD**

This machine must never be moved on the tracks on gradients that are more than:

10 degrees from horizontal left or right.

20 degrees front to back.
Set up either the radio remote track handset or the umbilical wired track control to move the machine to the required position. Refer to 4.4.2 Radio remote track control or 4.4.3 Umbilical track control.

Note: Plug in the umbilical controller, if required, before starting the engine. If the wired umbilical control is being used do not switch on the radio track control as this will stop the umbilical operating. If this should occur, the mode control switch will require setting to operation mode then to track mode again.

4.4.2 Radio remote track control

1. Switch on the track radio remote handset for use if required, before starting the engine. Switch has integral removable key.

2. The remote charging socket for connecting lead to re-charge battery when required. The radio handset must be fully charged at regular intervals.
4.4.3 Umbilical track control

*Note: Connect the umbilical track control, if required, before starting the engine.*

1. Remove the dummy plug from the socket, located at the hopper end of the machine.

2. Connect the umbilical wired track control
   
   *Note: The dummy plug must be inserted for all other machine operations.*

3. Switch on the umbilical track handset for use.
4.4.4 Track control mode

1. Start the engine > 1 Refer to 4.2 Engine starting procedure.

2. Set the mode control switch to track. A pre-start warning time count down timer will display before the tracks will operate.

3. Increase the engine speed using the hand throttle.

Tracking speed is proportional to engine speed.
Always move the machine at a speed suitable to the conditions.
Only use maximum engine speed for longer distances where safe to do so.
Always use slow engine speed for loading onto a trailer or in confined spaces.

*Note: If the hydraulic oil cooler is functioning a higher engine speed will be required.*

4.4.5 Operating track control

*Under no circumstances try to move the machine when any persons are standing on the machine or in the danger zones. No persons are allowed on the machine or in the danger zone while it is not locked and tagged out. This may cause injury or death.*

*NOTICE*

Make sure the legs are up and clear from the ground. If machine is moved with them down it will damage the machine.

Check all around machine for obstacles or personnel which may be endangered by moving the machine.

When moving machine, Make sure that it is only moved over firm ground suitable for carrying the weight of the machine. Prior to operating 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.
The yellow and blue control buttons correspond to the yellow and blue direction indicators on the machine.

The yellow buttons on the left and right are for forward movement of the individual track and the central yellow forward button for moving in a straight line.

The blue button are for reverse movement of the individual track or if pressed together for moving in a straight line.

The engine speed control must only be used in the maximum position when moving the machine in a straight line in an open clear area. If the machine is being manoeuvred on or off a trailer or in a confined space, set the engine to a slower speed.

1. When the machine is in the required position, set mode control to operation.
2. Set engine speed down to idle

3. Turn the machine off >

Refer to 4.5 **Shut down the machine.**

4. Switch off the track control.

5. If the wired umbilical control has been used, disconnect the umbilical wired track control handset and store the control.

6. Insert the dummy plug into the socket. The dummy plug must be inserted for all other machine operations.
4.4.6 Preparing for screening operation

**NOTICE**

The machine MUST always be set up on and operated on flat, firm, solid, level ground when operating in its normal screening mode. Failure to comply with this or any other instructions in this manual may cause damage to the machine and may invalidate any warranty.

1. Lower the jacking support legs to the working position > Refer to 4.4.7 *Set up the legs*.

2. Set up the right hand side conveyor > Refer to 4.4.11 *Set up the mid oversize conveyor - right hand side*.

3. Set up the left hand side conveyor > Refer to 4.4.12 *Set up the mid fines conveyor - left hand side*.

4. Set up the turntable conveyor > Refer to 4.4.10 *Set up the oversize, fourth, conveyor*.

5. Unfold and set up the maintenance platforms > Refer to 4.4.8 *Set up the maintenance platforms*.

6. Set up the fines conveyor > Refer to 4.4.9 *Set up the fines conveyor*.

7. Set up the feed conveyor and screen box > Refer to 4.4.13 *Set up the main conveyor an screen box height*.

8. If fitted setup the optional equipment, such as the vibrating grid > Refer to 4.4.15 *Set up the optional vibrating grid*.
4.4.7 Set up the legs

**NOTICE**

Make sure the machine is off, tagged and locked out before you do maintenance or work to the machine.

Make sure the area under the legs is free from equipment and persons before they are lowered as this may cause serious injury. Make sure that two persons do this operation, an operator and an observer.

**NOTICE**

Make sure that the machine is on firm level ground with enough space for the machine to fit in its working position.

1. Remove the clips and securing pins from all legs.

2. Start the machine in operation mode > Refer to 4.2 *Engine starting procedure*.

3. Set the mode control to auxiliary.
4. Adjust the hopper legs and the chassis legs to support the machine as necessary.

5. When the legs are down, install the locating pins and clips in all legs.

6. Turn machine off > Refer to 4.5 *Shut down the machine.*

7. Lock out and tag the machine > Refer to 4.6 *Lockout and tag procedures.*
4.4.8 Set up the maintenance platforms

**WARNING**

**PERSONNEL HAZARD**
Working on or in close proximity to the machine whilst it is on or operating could cause serious injury or death.
Care must be taken while folding and unfolding maintenance platforms.
Make sure all guards are in place and secure.

**WARNING**

**FALLING HAZARD**
Falling from heights could cause serious injury or death.
Some of the steps in this procedure requires working at height, make sure the following applies when working off the ground:
• Access platforms are in place.
• All hand rails are fixed in position.
• All ladders are lowered and fixed in position.
• A safety harness is worn.

1. Turn the machine off > 1 Refer to 4.5 *Shut down the machine.*
2. Lock out and tag the machine > 2 Refer to 4.6 *Lockout and tag procedures.*
3. Remove rear hand rail from the maintenance platform.
1. Remove the ladder from the maintenance platform.

2. Remove the tag if safe to do so > Refer to 4.6 Lockout and tag procedures.

3. Start the machine in operation mode > Refer to 4.2 Engine starting procedure.

4. Set the mode control to auxiliary.

5. Operate the control lever to unfold and lower the conveyors.


7. Turn the machine off > Refer to 4.5 Shut down the machine.

8. Lock out and tag the machine > Refer to 4.6 Lockout and tag procedures.
9. Remove all the clips and the locating pins so the rail is able to fold.

   *Note: Do not remove the pivot pin, only remove the locating pin in the position shown on each support end.*

10. Fold down the rails and install all the locating pins and clips.

   *Note: Make sure the maintenance platform locating pins are removed.*
11. Open the gates on both sides.

12. Remove tag if safe to do so > 12 Refer to 4.6 Lockout and tag procedures.

13. Start the machine in operation mode > 13 Refer to 4.2 Engine starting procedure.

14. Set the mode control to auxiliary.

15. Move the lever to fold the left hand maintenance platform up.
16. Move the lever to fold the right hand maintenance platform up.

17. Turn the machine off

18. Lock out and tag the machine

19. Install all the securing pins with the clips.

20. Fold the infill plate down into working position.
21. Secure the infill plate retaining bolts both sides.

22. Remove the locking pins, fold the front floor section into working position and secure the locking pins.

23. Secure the retaining bolts both sides.
24. Put the handrail into working position and secure the retaining bolts on both sides.

25. Secure hand rails with the locking pins and the retaining bolts both sides.

26. Turn the machine off > 26. Refer to 4.5 *Shut down the machine*.

27. Lock out and tag the machine > 27. Refer to 4.6 *Lockout and tag procedures*.

4.4.9 **Set up the fines conveyor**

| ! | Make sure the machine is off, tagged and locked out before you do maintenance or work to the machine. |

| 1. Turn the machine off > 1. Refer to 4.5 *Shut down the machine*. |
| 2. Lock out and tag the machine > 2. Refer to 4.6 *Lockout and tag procedures*. |
Note: Make sure that all transport equipment, straps and pins are removed from the fines conveyor. Make sure that the fines conveyor has enough space to fold down into the working position.

3. Release the latches and remove the straps.

4. Make sure the conveyor has enough space and is free to fold into the working position. Set up safety barriers if necessary.

**NOTICE**

Make sure the fines and main conveyors, with the screen box are in the full raised position. If not this may damage the equipment.

5. Un-tag the machine > 5 Refer to 4.6 Lockout and tag procedures.

6. Start the machine in operation mode > 6 Refer to 4.2 Engine starting procedure.
7. Set the mode control to auxiliary.

8. Raise the fines conveyor and main conveyor/screen box to the full raised position.

9. Move the fines conveyor fold lever to unfold it down into the working position.

10. Move the conveyor down/up lever to set it to the necessary working height (4 positions).

11. Lower the main conveyor/screen box down to access the locating pin positions.

12. Turn the machine OFF > Refer to 4.5 Shut down the machine.

13. Lock out and tag the machine > Refer to 4.6 Lockout and tag procedures.

14. Install the pins and clips to secure the conveyor end section.
For working at heights, make sure that a correct working platform is used with the correct anchor points and safety rails in position, which meets the local and national regulations.

15. Install the locating pins with the clips in the position shown.

16. Install the locating pins with the clips in the position shown.

**NOTICE**

Make sure all locating pins are in position and installed correctly, or the equipment may be damaged during operation.

4.4.10 Set up the oversize, fourth, conveyor

Make sure the machine is off, tagged and locked out before you do maintenance or work to the machine.

1. Turn the machine off > 1 Refer to 4.5 *Shut down the machine.*

2. Lock out and tag the machine > 2 Refer to 4.6 *Lockout and tag procedures.*
3. Remove any transportation straps. Remove the locating pin from the oversize, fourth conveyor.

Make sure that the area at the side conveyor is free of equipment and persons as this may cause injury. Set up barriers if necessary.

4. Un-tag the machine > 
4 Refer to 4.6 Lockout and tag procedures.

5. Start the machine in operation mode > 
5 Refer to 4.2 Engine starting procedure.

6. Set the mode control to auxiliary.

7. Move the lever to un-fold the fourth side conveyor out.

8. Move the lever to raise the fourth side conveyor to operating height.

9. Turn the machine off > 
9 Refer to 4.5 Shut down the machine.

10. Lock out and tag the machine > 
10 Refer to 4.6 Lockout and tag procedures.
11. Release the feeder chute and lower the feeder chute into the working position to feed into the conveyor.

4.4.11 Set up the mid oversize conveyor - right hand side

Make sure the machine is off, tagged and locked out before you do maintenance or work to the machine.

1. Turn the machine off > 1 Refer to 4.5 Shut down the machine.
2. Lock out and tag the machine > 2 Refer to 4.6 Lockout and tag procedures.
3. Remove any transport straps from the right hand side conveyor. Remove the clips and pins, then remove the transport retaining bar from the conveyor.
4. Place and secure the transport bar in stowed position.
5. Check that the support rod is in the stowed position and secured with the pin.

Make sure that the area at the side conveyor is free of equipment and persons as this may cause injury. Set up barriers if necessary.

6. Un-tag the machine

7. Start the machine in operation mode

8. Set the mode control to auxiliary.

9. Move the lever, located on the turntable conveyor, to unfold the side conveyor out, to the full working position.

10. Turn the machine off

11. Lock out and tag the machine

6. Refer to 4.6 Lockout and tag procedures.

7. Refer to 4.2 Engine starting procedure.

8. Refer to 4.5 Shut down the machine.

10. Refer to 4.6 Lockout and tag procedures.
12. Remove the clip and pin to release the support rod.

13. Swing support rod down into the working position as shown.

14. Install the retaining pin and clip.

15. Adjust the nut as necessary to straighten the side conveyor.
16. Install the lower infill side flares.
17. Secure side flares with the pins and clips.

4.4.12 Set up the mid fines conveyor - left hand side

Make sure the machine is off, tagged and locked out before you do maintenance or work to the machine.

1. Turn the machine off > 1 Refer to 4.5 Shut down the machine.
2. Lock out and tag the machine > 2 Refer to 4.6 Lockout and tag procedures.
3. Remove any transport straps from the left hand side conveyor to make it ready to unfold into the working position.

Make sure that the area at the side conveyor is free of equipment and persons as this may cause injury. Set up barriers if necessary.

4. Un-tag the machine > 4 Refer to 4.6 Lockout and tag procedures.
5. Start the machine in operation mode > 5 Refer to 4.2 Engine starting procedure.
6. Set the mode control to auxiliary.

7. Move the lever to unfold the side conveyor out, halfway.

8. Conveyor halfway out.

9. Turn the machine off > Refer to 4.5 Shut down the machine.

10. Lock out and tag the machine > Refer to 4.6 Lockout and tag procedures.

11. Install the securing pins and clips.
12. Turn the conveyor roller bracket into the working position.

13. Lock the bracket in place with the locating bolt.

14. Install the support rod as shown but do not tighten the nut.

15. Un-tag the machine > Refer to 4.6 Lockout and tag procedures.

16. Start the machine in operation mode > Refer to 4.2 Engine starting procedure.

17. Set the mode control to auxiliary.

18. Move the lever to unfold the side conveyor out, to the full working position.
19. Turn the machine off > 19 Refer to 4.5 *Shut down the machine*.

20. Lock out and tag the machine > 20 Refer to 4.6 *Lockout and tag procedures*.

21. Adjust the nut as necessary to straighten the side conveyor.

22. Install the lower infill side flares.
23. Secure side flares with the pins and clips.

4.4.13 Set up the main conveyor an screen box height

![Diagram of conveyor setup]

**Make sure the machine is off, tagged and locked out before you do maintenance or work to the machine.**

1. Un-tag the machine > 1 Refer to 4.6 *Lockout and tag procedures*.

2. Start the machine in operation mode > 2 Refer to 4.2 *Engine starting procedure*.

3. Set the mode control to auxiliary.
4. Move the levers to lift the tail/main conveyor and the screen box up, to the necessary position.

5. Turn the machine off ➔ Refer to 4.5 Shut down the machine.

6. Lock out and tag the machine ➔ Refer to 4.6 Lockout and tag procedures.

7. Install the pins and clips to secure the screen box in position.

8. Install the pins and clips to secure the conveyor in position.

**NOTICE**

Make sure all locating pins are in position and installed correctly, or the equipment may be damage during operation.
4.4.14 Reject grid setup

For working at heights, make sure that a correct working platform is used with the correct anchor points and safety rails in position, which meets the local and national regulations.

Make sure that no person are on the machine or in the exclusion zone of the hopper during this operation as material may fall and cause injury or death.

1. Un-tag the machine >
2. Start the machine in operation mode >
3. Set the mode control to auxiliary.
4. Move the grid lever and adjust the angle reject grid up.
5. Turn the machine off >
6. Lock out and tag the machine >

1 Refer to 4.6 Lockout and tag procedures.
2 Refer to 4.2 Engine starting procedure.
3
4
5 Refer to 4.5 Shut down the machine.
6 Refer to 4.6 Lockout and tag procedures.
7. Remove the clips and securing pins then adjust the support leg as necessary. When the legs in the required position to use, install the securing pins and clips.

8. Un-tag the machine > Refer to 4.6 Lockout and tag procedures.

9. Start the machine in operation mode > Refer to 4.2 Engine starting procedure.

10. Set the mode control to auxiliary.

11. Move the grid lever and adjust the angle reject grid DOWN on to the legs.

4.4.15 Set up the optional vibrating grid

Make sure the machine is off, tagged and locked out before you do maintenance or work to the machine.

1. Un-tag the machine > Refer to 4.6 Lockout and tag procedures.

2. Start the machine in operation mode > Refer to 4.2 Engine starting procedure.

3. Set the mode control to auxiliary.
4. Move the lever to lift grid flares up into the working position.

5. Turn the machine off >

6. Lock out and tag the machine >

5  Refer to 4.5 *Shut down the machine.*

6  Refer to 4.6 *Lockout and tag procedures.*

For working at heights, make sure that a correct working platform is used with the correct anchor points and safety rails in position, which meets the local and national regulations.

7. Install the bolts and the nuts with the washers in the positions shown
4.4.16 Ladder

1. Remove retaining clips and pins to release the lower part of the ladder.

2. Pivot the lower part of the ladder down into the working position. Secure the ladder with the pins and clips.
4.5 Shut down the machine

**NOTICE**

To stop the machine operation, it is essential that the correct shut down sequence is followed in order to prevent damage to the machine.

4.5.1 Automatic shut down

Before shutting the machine down, stop feeding material into the hopper and wait for all material to fully discharge from hopper, screen box and all of the conveyors.

1. Press and hold button 5 to begin the automatic shut down sequence. Hold for 3 seconds minimum. The machine will shut down automatically by going through the sequence.

   *Note: There is a time delay and audible warning between each operation sequence, indicated by the button light flashing.*

2. Wait for all of the machine systems to stop, indicated by all five green button lights.

3. Set the engine speed to the slowest low position and allow engine to idle for a few minutes.

4. Select screening operation mode on control panel.

5. Stop the engine by turning the ignition key to the off position.

*Note: When the machine is switched off wait a minimum of 60 seconds before the start sequence is run again or an error code may show.*
4.5.2 Manual shut down

Before shutting the machine down, stop feeding material into the hopper and wait for all material to fully discharge from hopper, screen box and all of the conveyors.

1. Press button 5 first to begin the shut down sequence.

   Note: When this first system has stopped it is indicated by a green button light.

2. Press button 4 then press in sequence of stopping each system by pressing 3, press 2, press 1.

   Note: Wait until the previous system has stopped, indicated by a green button light, before stopping the next system.

3. Wait for all of the machine systems to stop, indicated by all five green button lights.

4. Set the engine speed to the slowest low position and allow engine to idle for a few minutes.

5. Select screening operation mode on control panel.

6. Stop the engine by turning the ignition key to the off position.

   Note: When the machine is switched off wait a minimum of 60 seconds before the start sequence is run again or an error code may show.
4.6 Lockout and tag procedures

4.6.1 Single lock or tag procedure

1. Make sure that the ignition key is in the off position. Remove the ignition key and keep it with you.

2. Locate the battery isolation switch and turn it to the off position.

3. Attach your lock or tag across isolation switch holes to show you are working on the machine.

   Note: The lock or tag must have a 7.9mm (5/16 in) diameter shackle so the isolation switch cannot be turned on.

4. Use a gang tag if more than one person is at work on the machine > Refer to 4.6.3 How to use and fit a gang tag.

4.6.2 To remove a single lock or tag

Make sure that no persons are on the machine or in the danger zones as this may cause injury or death.

1. Make sure that all maintenance and work has stopped.
2. Fit and secure all guards. Check all guards are operational
3. Unlock and remove only your lock, or your lock and tag from the battery isolation switch.
4. Replace the ignition key, if all personnel have finished and are clear of the machine.

5. If a gang tag for multiple locks or tags has been used, refer to 4.6.4 *To remove a gang tag.*

### 4.6.3 How to use and fit a gang tag

1. Make sure that the ignition key is in the off position. Remove the ignition key and keep it with you.

2. Locate the battery isolation switch and turn it to the off position.

3. Attach the gang tag through the holes in the isolation switch as shown.

4. Each person attaches their lock to the gang tag before they start work and keeps their key with them at all times.

   *Note: The lock or tag must have a 7.9mm (5/16in) diameter shackle so the isolation switch cannot be turned on.*

### 4.6.4 To remove a gang tag

1. Make sure that all maintenance and work has stopped.

2. Fit and secure all guards. Check all guards are operational.

Make sure that no persons are on the machine or in the danger zones as this may cause injury or death.
3. Once each person finishes their work they remove only their own lock from the gang tag.

4. When the last person has finished their work and the last lock is removed, the gang tag may also be removed.

5. Replace the ignition key, if all personnel have finished and are clear of the machine.
5 Operations
5.1 Start up the machine [Operating]

5.1.1 Preliminary checks

DO NOT START SCREENING MATERIAL UNTIL YOU HAVE READ AND FULLY UNDERSTOOD THIS MANUAL

Make sure the machine is set for operation refer to 4 Commissioning and shut down and the scheduled maintenance checks are done refer to section 6 Routine maintenance.

COLD START: When starting the machine in temperatures of 0°C (32°F) or below, run the screen box for 15 minutes to allow hydraulic oil to reach working temperature. DO NOT feed material into machine during this time.

In low ambient light conditions, set up sufficient additional lighting to make the operation safe.

DO NOT operate systems contrary to these instructions.

Follow the instruction to feed material through the machine:

• Make sure the mesh is installed as required, refer to 6.11 Installation and removal of the screen box mesh.

• Set up the exclusion zones, with safety barriers and appropriate warnings, for stock piles from all conveyors, refer to 1.11 Hazard exclusion zones when machine is operational.

• Make sure you understand the control panel information and navigation, refer to 3.7 Operational controls.

• To adjust the speed of the conveyors as necessary, refer to 5.2.5 Set up the conveyor speeds.

• Adjust the screen box angle as necessary, refer to 4.4.13 Set up the main conveyor and screen box height.

• Control the tipping/vibrating grid as necessary, refer to 5.3.2 Grid loading.

• Follow the machine starting instructions, refer to 5.2 Screening operation.

5.1.2 Operation and shut down

When the machine is fully set up for operation, the machine can be loaded with material.

When the operations are complete shut down the machine, refer to 4.5 Shut down the machine.

5.1.3 Machine blockage

If the machine becomes blocked:

• Make sure the hopper feed has stopped.

• Make sure the screen box is off.

• Make sure the all of the conveyors have no material on them and are off.
Make sure the machine is off locked and tagged and remove the material with a suitable tool or tools, refer to 4.6 Lockout and tag procedures.

When the material is removed, un-tag the machine, refer to 4.6 Lockout and tag procedures. Start the machine only when safe to do so, refer to 5.2 Screening operation.

<table>
<thead>
<tr>
<th>![Warning]</th>
</tr>
</thead>
</table>

**WARNING**

Make sure no persons are on the machine when it is on, as this may cause injury or death.

Make sure correct safe procedures are followed for the tasks that are done at height. falling may cause injury or death.
5.2 Screening operation

**NOTICE**

Do not start the machine if it contain material. Clear any material away before starting.

5.2.1 Preparation

*Note: The machine has two starting sequences, automatic or manual mode.*

1. Locate and set mode control switch to screen operation position.

2. Start the engine > Refer to 4.2 Engine starting procedure.

3. This screen will be displayed.

*Note: For an overview of the screen display, refer to 3 Product overview.*
4. Set engine speed control up to the fastest position.

   Note: The highest speed position is factory set to 2150 RPM. Alterations to these settings, to increase speed, may lead to premature machine failure and subsequent warranty loss.

5. Start the machine, in automatic or manual sequence.

5.2.2 Machine starting sequence - Automatic

1. Press and hold button 5 to begin the automatic start sequence. Hold for 3 seconds minimum.

   Note: There is a time delay and audible warning between each operation sequence, indicated by a flashing green/red button light.

2. When the automatic sequence is complete, indicated by all five red button lights and the feeder is operating, the machine is ready for loading with the material to be screened.

5. Refer to 4.2 Engine starting procedure.
5.2.3 Machine starting sequence - Manual

1. Press button 1 and wait until the conveyors are operating normally, indicated by red button light.

   Note: A time delay and audible warning will occur, indicated by flashing green/red button light, before the next control can be operated.

2. Press button 2 and wait until the flashing green/red button changes to a continuous red light indicating the system is operating normally.

3. Follow the sequence of starting each system by pressing 3 wait while the button light flashes, press 4 wait, then press 5.

4. When this sequence is complete, indicated by all red button lights, and the feeder is operating, the machine is ready for loading with the material to be screened.

5.2.4 Loading material into machine

Prior to loading material into the machine, make sure the machine is on firm ground and not vibrating excessively.

If necessary, shut down the machine, refer to 4.5 Shut down the machine. Move the machine to more suitable ground if necessary.
1. Make sure the feeder is on, before the material is put on it.

2. Do not put material which is too large in the hopper. If larger material is on the hopper, stop, isolate and tag the machine and remove the large pieces of material with the appropriate equipment.

3. Do not use excavators to force the material into feeder as all damage from this action will invalidate any warranty.

4. Material should be fed carefully and not dropped onto hopper, from about 300mm (1ft) above hopper. Make sure that hopper is evenly loaded over its entire length. This is to help with screening fines material and to maximise production.

5. As you load material into the hopper make sure you do not over fill it.

6. For maximum output and minimum wear, it is recommended that the screen box is fed consistently with the supply of material being steady and constant. Stop/start operation of the hopper feeder should be avoided.

7. Pressure sensors are fitted to the hydraulic circuit such that, if either fines collector conveyor should become over loaded with material or jammed, then the feeder will stop until the material is reduced to an acceptable level. If the conveyor cannot clear itself then the material will have to be cleared manually.

When clearing manually the machine must be shut down, the ignition key removed, locked out and tagged. Remove the material before the machine is started for screening.

5.2.5 Set up the conveyor speeds

Make sure all necessary precaution are taken to reduce the risk of breathing in dust or particles, as this may cause serious injury or death.

Make sure that all material is off the machine and do not load the feeder with material.

Start the machine for screening, refer to 5.1 Start up the machine [Operating].
Right hand conveyor speed adjustment

1. Turn the flow controller as necessary to change to speed.
   [Clockwise = Slower : Anti-Clockwise = Faster]

Left hand conveyor speed adjustment

2. Turn the flow controller as necessary to change to speed.
   [Clockwise = Slower : Anti-Clockwise = Faster]

Main conveyor speed adjustment

3. Turn the flow controller as necessary to change to speed.
   [Clockwise = Slower : Anti-Clockwise = Faster]
Turntable, oversize conveyor, speed adjustment

4. Raise the access door and turn the flow controller as necessary to change to speed.
   [Clockwise = Slower : Anti-Clockwise = Faster]

Hopper feeder conveyor speed adjustment

5. Turn the flow controller as necessary to change to speed.
   [Clockwise = Slower : Anti-Clockwise = Faster]

After the conveyors have been adjusted load the material, refer to 5.2.4 Loading material into machine.

If you need to re-adjust the conveyor speeds, stop loading the material, wait until the material has completely passed through the machine, and do the procedure again.

If necessary, change the screen box mesh, refer to 6.11 Installation and removal of the screen box mesh.
5.3 Installation and removal of the screen mesh

5.3.1 Removal of the mesh

![WARNING]

Make sure that no material is on the machine as this may fall and cause injury or death.

Make sure correct safe procedures are followed for the tasks that are done at height. Falling may cause injury or death.

Make sure the machine is off, locked and tagged, refer to 4.6 Shut down the machine and 4.7 Lockout and tag procedure.

1. Loosen all 3 sets of tension bolts to release the tension block hooks.

2. Make sure that the mesh clamp has moved enough and releases the mesh.
3. Remove the mesh from the mesh clamp down then out.

4. When fitting the mesh, install the mesh into the mesh clamp in and up.

   Note: Make sure that the mesh is installed correctly in the mesh clamp.

5. Tighten the 3 sets of 3 tension bolts evenly against the tension blocks, until the mesh is correctly tightened.
5.3.2 Grid loading

Load material into the machine only from the green marked position.

*Note: The machine must always be loaded from the green marked position of the hopper from as low as height as possible, this will make sure both speed and efficiency.*

5.3.3 Radio remote grid operation

<table>
<thead>
<tr>
<th>![Warning Icon]</th>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure that no material is on the machine as this may fall and cause injury or death.</td>
<td></td>
</tr>
</tbody>
</table>

1. Radio remote grid control.

*Note: Make sure the machine is ON refer to 4.2 Engine starting procedure and make sure it is set for screening refer to 5.1 Start up the machine [Operating].*
2. To move the grid up, press and hold green button until it is in position.

3. To move the grid down, press and hold white button until it is in position.

4. To move the grid automatically fully up then down, press yellow button. This will move the grid up to the full position stay up for a few seconds and then move the grid back down to the initial position.

5. If necessary use the engine stop red button to stop the complete machine.

6. The orange button sounds alarm when held.

**Note:** To shake the reject grid, press the up and down buttons in short quick bursts.

**NOTICE**

DO NOT use this engine stop button to stop the machine as a normal operation because repeated use could cause damage to the machine.
5.3.4 Machine control grid operation

1. If the radio grid control is not operational, the automatic grid operation can be switched on and off at the machine operational controls.

2. Press machine diagnosis button.

3. Press next page button to go to page 3 of the control system screens.

4. For more information -> Refer to 3.8.6 Machine diagnostics.

5. The automatic grid operation can be switched on and off on the reject grid screen page 3.

6. Use the 4-way screen control button, up arrow to switch on or down arrow to switch off.

7. Press button to exit and go to home page.
5.4 Switching off

1. Stop feeding material into the hopper.
2. Wait for all material to fully discharge from hopper, screen box and all conveyors.
3. The machine has two stopping sequences, automatic or manual mode.

5.4.1 Automatic

To switch off the operation automatically, refer to 4.5.1 Automatic shut down.

5.4.2 Manual

To switch off manually, refer to 4.5.2 Manual shut down.

To stop the machine operation, it is essential that the correct shut down sequence is followed in order to prevent damage to the machine.

5.4.3 Isolate and lockout

To isolate the machine and lockout from use, refer to 4.6 Lockout and tag procedures.
6 Routine maintenance
6.1 Introduction - machine maintenance

**WARNING**

PERSONNEL HAZARD

Do not start maintenance until you have read and fully understood this manual - Including the safety section.

The machine must be switched off and isolated with the ignition keys removed, locked out and tagged before doing maintenance. Refer to 4.6 Lockout and tag procedures.

If there is a procedure necessary that is not fully understood or included please contact a Sandvik dealer, before maintenance is started.

Make sure that the correct Personal Protection Equipment (PPE) is worn when maintenance or work is done on the machine.

- Maintenance is essential for safety and to make sure the best possible performance from the machine by reducing the chances of breakdowns.
- All adjustments must only be carried out by trained persons.
- All adjustments to modify hydraulic system must only be carried out by trained Sandvik service engineers.

Make sure oil and fluid is cleaned and disposed of correctly in a way that meets the local and national environmental regulations.

- For extreme operation conditions, decrease the time between checks and maintenance as necessary.
# 6.2 Lubricants and fluids

A list of substances hazardous to health associated with this equipment can be found in section 10. Information and Data sheets

<table>
<thead>
<tr>
<th>Reference</th>
<th>Maximum volume or quantity</th>
<th>Ambient temperature range</th>
<th>Manufacturer - equivalent specifications</th>
<th>Sandvik part no</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine coolant</td>
<td>34 lt (9 US gall)</td>
<td>All</td>
<td>Univar Caflon HDA pre-mixed</td>
<td>CN8015</td>
</tr>
<tr>
<td>Diesel</td>
<td>290 lt (76 US gall)</td>
<td>-</td>
<td>Ultra low sulphur Diesel Also refer to engine manual</td>
<td>CN6004</td>
</tr>
<tr>
<td>Engine Oil</td>
<td>10 lt (2.6 US gall)</td>
<td>-10 to + 50°C (14 to 122°F)</td>
<td>Shell Rimula RT4 15W-40</td>
<td>CN7898</td>
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<tr>
<td></td>
<td></td>
<td>-35 to + 25°C (-31 to + 77°F)</td>
<td>Shell Rimula R6 LME 5W-30</td>
<td>CN7998</td>
</tr>
<tr>
<td>Alternative Engine Oil</td>
<td></td>
<td>-</td>
<td>Refer to engine manufacturer’s handbook</td>
<td>-</td>
</tr>
<tr>
<td>Hydraulic System</td>
<td>450 lt (119 US gall)</td>
<td>-10 to + 50°C (14 to 122°F)</td>
<td>Shell Tellus T46 S2 V46</td>
<td>CN6074</td>
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<tr>
<td></td>
<td></td>
<td>-25 to + 25°C (-13 to 77°F)</td>
<td>Shell Tellus T32 S2 V32</td>
<td>825.0156-00</td>
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<tr>
<td></td>
<td></td>
<td>-35 to + 15°C (-31 to + 59°F)</td>
<td>Shell Tellus Arctic 32 S4 VX 32</td>
<td>CN5700</td>
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<tr>
<td>General grease lubrication points and track tension</td>
<td>-</td>
<td>-</td>
<td>Shell Gadus S3 V220C 2 grease</td>
<td>CN6073</td>
</tr>
<tr>
<td>Auto lubrication system option</td>
<td>-</td>
<td>-20 to + 50°C (-4 to 122°F)</td>
<td>SKF LGHB2 Grease</td>
<td>CN6109</td>
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<tr>
<td>Screen box bearings</td>
<td>-</td>
<td>-</td>
<td>Exxon Unirex N 3 Grease</td>
<td>CN6012</td>
</tr>
<tr>
<td>Track gearbox</td>
<td>5 lt (1.3 US gall)</td>
<td>-</td>
<td>Shell Spirax S2 G 80W-90</td>
<td>CN6100</td>
</tr>
<tr>
<td></td>
<td>1.2 lt (0.32 US gall)</td>
<td>-10 to +50°C (4 to 122°F)</td>
<td>Shell Spirax S2 G 80W-90</td>
<td>CN6100</td>
</tr>
</tbody>
</table>
6.3 Daily maintenance schedule

**WARNING**

PERSONNEL HAZARD

Make sure the machine is OFF and locked out and tagged before you start maintenance on the machine.

Do not work on the machine when it is on this may cause injury or death.

Stop the machine, isolate and remove the ignition key, lock out and tag before maintenance is started, refer to 4.6 Lockout and tag procedures.

Make sure these checks are done before the machine is started each day

**Safety devices**

<table>
<thead>
<tr>
<th>Task</th>
<th>Inspection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check all the bolts and the panels are installed correctly</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Make sure all the safety guards/hand rails/doors are all installed</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>and operate correctly</td>
<td></td>
</tr>
</tbody>
</table>

**Alarms/warnings**

<table>
<thead>
<tr>
<th>Task</th>
<th>Inspection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the control screen for any alarms and take action as necessary</td>
<td>Refer to 6.17 Machine error messages and fault codes.</td>
</tr>
</tbody>
</table>

**Hydraulics**

<table>
<thead>
<tr>
<th>Task</th>
<th>Inspection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check for leaks and damage on the hoses, valves and couplings</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Check the hydraulic tank level</td>
<td>Refer to 6.4.3 Hydraulic fluid.</td>
</tr>
</tbody>
</table>

**Electrical**

<table>
<thead>
<tr>
<th>Task</th>
<th>Inspection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check for damage and corrosion, clean away the dust as necessary</td>
<td>Visual Inspection</td>
</tr>
</tbody>
</table>

**Main conveyor and feeder conveyor**

<table>
<thead>
<tr>
<th>Task</th>
<th>Inspection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the belt for damage</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Check the rollers for damage</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Check the condition of the bearings on the tail and drive drums</td>
<td>Visual Inspection</td>
</tr>
</tbody>
</table>

**Power pack - engine**

<table>
<thead>
<tr>
<th>Task</th>
<th>Inspection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check fuel level and fill as necessary</td>
<td>Refer to 6.4.2 Diesel fuel.</td>
</tr>
<tr>
<td>Check the diesel fuel water trap</td>
<td>Refer to 6.4.2 Diesel fuel</td>
</tr>
<tr>
<td>Inspect the engine and power pack</td>
<td>Visual Inspection</td>
</tr>
</tbody>
</table>
Check the engine oil level and refill as necessary &gt; Refer to 6.4 Procedures.
Check the engine coolant level &gt; Refer to 6.4.4 Engine coolant.
Check the air filter service indicator &gt; Refer to 6.4.5 Air cleaner servicing.
Check the rubber seals of the air cleaner for wear &gt; Visual Inspection
Check the battery and the battery's connections &gt; Refer to 6.14 Battery maintenance.

### Screen box

Check security of fixings, bearing housings, screens and tension systems &gt; Inspection
Check the lubrication &gt; Refer to 6.6.2 Greasing the bearings.
Check for abnormal noise from the screen box &gt; Inspection
Make sure the mesh is free from a build up of material &gt; Visual Inspection
Check for leaks of oil or fluid &gt; Visual Inspection

### Tracks

Make sure the tracks are cleared of material &gt; Visual Inspection
Check the track tension &gt; Refer to 6.12.2 Track tension check.
Check for loose bolts &gt; Visual Inspection
Check for oil and grease leaks &gt; Visual Inspection

### Hopper

Check for abnormal noises from the feeder &gt; Inspection
Check for wear on the hydraulic hoses where it may come in to contact with the chassis &gt; Visual Inspection
Check rubber seals &gt; Visual inspection
If the optional vibrating grid is fitted in the feeder &gt; Refer to 6.16 Vibrating grid in hopper [option].

### Discharge conveyors

Check for build up of material on conveyor rollers, clear as necessary &gt; Inspection
Check the belts for damage &gt; Visual Inspection
Make sure that the tail, drive drums, and the rollers operate correctly > Visual Inspection

### Radio remote batteries

<table>
<thead>
<tr>
<th>Activity</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure all radio control batteries are fully recharged</td>
<td>Inspection</td>
</tr>
<tr>
<td>Check batteries for leaks or corrosion</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Make sure that the batteries hold charge for the correct amount of time</td>
<td>Inspection</td>
</tr>
</tbody>
</table>

### General machine

<table>
<thead>
<tr>
<th>Activity</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure that all the safety guards are in position and installed correctly</td>
<td>Inspection</td>
</tr>
<tr>
<td>Check all around machine to secure any loose components</td>
<td>Inspection</td>
</tr>
</tbody>
</table>
6.4 Procedures

6.4.1 Engine oil

**NOTICE**

Make sure oil and fluid is cleaned and disposed of correctly in a way that meets the local and national environmental regulations.

Make sure the oil is filled correctly to avoid contamination as this will damage the equipment.

Make sure the engine is cool before work or maintenance is started. Make sure that the appropriate personal protection equipment is used.

1. Check engine oil level.
2. Drainage Point.
3. Refill if necessary.
4. For engine oil specification.->

4. Refer to **6.2 Lubricants and fluids** and the engine manufacturer's handbook.
6.4.2 Diesel fuel

Make sure oil and fluid is cleaned and disposed of correctly in a way that meets the local and national environmental regulations.

**NOTICE**

When filling make sure no contamination enters as this will cause damage to the equipment.

Make sure that the appropriate personal protection equipment is used.

1. Check fuel level on the gauge.

2. Clean around the filler cap before opening and refill diesel tank as necessary.

   *Note: Avoid diesel spillage when the tank is being filled.*

3. Drain water from the diesel water trap.

   *Note: If filter is removed, the fuel system will require priming.*
6.4.3 Hydraulic fluid

1. Check the hydraulic fluid level.
2. Clean around the filler cap before opening and fill if necessary.

6.4.4 Engine coolant

**NOTICE**

When filling make sure no contamination enters as this will cause damage to the equipment.

![Warning Symbol]

Make sure that the coolant has cooled before you open the cap as this may cause serious injury.

Remove the bolts and cover plate then check engine coolant level and refill if necessary.

Install the cover plate into position and tighten the bolts.

**NOTICE**

Make sure that all power pack covers are replaced, if not material may fall into the power pack and cause damage, this will invalidate the warranty.
6.4.5 Air cleaner servicing

Make sure all necessary precaution are taken to reduce the risk of breathing in dust or particles as this may cause serious injury or death. Make sure you use correct personal protection equipment when compressed air is use, that meets the local and national regulations.

1. Check air filter indicator at the control panel display screen. If air cleaner indicator shows on the control panel whilst machine running, the filters require changing.

2. If the air filter service icon is red then renew the filter.

   *Note: Indicator shows red when the elements need to be replaced, not cleaned.*

3. Open the clips and remove the cover.
4. Regardless of condition of service indicator, remove outer primary air cleaner element from air cleaner as shown and use a vacuum suction cleaner. Make sure the filter is cleaned away from the filter housing. Never clean inner element.

5. Only remove and replace the secondary air cleaner after five services. After 5 cleaning services, replace both the inner and outer elements.

6. Clean the inside with a dry cloth. Install the filters.

7. Install the cover and close the clips.

8. Press the reset button on the air cleaner if the indicator switch has operated.
NOTICE

When the engine has operated in environments that are dusty or dirty, the air cleaner elements may require more frequent servicing than stated in the maintenance schedules.

6.4.6 Screen mesh tension and adjustments

Make sure correct procedures are followed for the tasks that are done at height. Falling may cause serious injury or death.

Make sure that you do not get trapped in the equipment as this may cause injury.

1. Check condition of all screen meshes and tension evenly on both sides as necessary.
2. Tighten top and bottom mesh using the ratchet.

6.4.7 Belt scrapers

Check the belt scrapers on all the conveyors and adjust them if necessary.

Make sure correct procedures are followed for the tasks that are done at height. Falling may cause serious injury or death.

Make sure that a correct working platform is used with the correct anchor points and/or safety rails in position which meets the local and national regulations.
1. Loosen the pivot bolt.
2. Loosen and remove the clamp bolt.
3. Rotate the adjuster with the spanner to the next slot and install and tighten the clamp bolt an pivot bolt.

4. Loosen the bolts and move the flexible scraper up as necessary. Tighten the bolts to secure.

6.4.8 Optional magnet conveyor

**DANGER**

Strong magnet field, do not go near it if you have a pacemaker, as this may cause death.

Make sure correct procedures are followed for the tasks that are done at height. Falling may cause serious injury or death.

Make sure that a correct working platform is used with the correct anchor points and/or safety rails in position which meets the local and national regulations.
If the optional magnet conveyor is fitted, with the conveyor stationary inspect and remove pieces of metal on magnet conveyor that may cause jamming around rotating parts.

Refer to the manufacturer’s handbook for further information.

6.4.9 Inspection of the tracks

1. Check the 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.

4. To adjust the track tension, refer to 6.12 Track adjustment.
6.5 Weekly machine maintenance

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERSONNEL HAZARD</td>
</tr>
<tr>
<td>Make sure the machine is OFF and locked out and tagged before you start maintenance on the machine.</td>
</tr>
<tr>
<td>Do not work on the machine when it is on this may cause injury or death.</td>
</tr>
<tr>
<td>Stop the machine, isolate and remove the ignition key, lock out and tag before maintenance is started, refer to 4.6 Lockout and tag procedures.</td>
</tr>
</tbody>
</table>

When performing any maintenance on the machine refer to original equipment manufacturer’s manuals for appropriate maintenance schedules.

Maintenance is essential for safety and to make sure the best possible performance from the screener and reduces the chance of breakdowns.

All adjustments must only be carried out by trained personnel.

**Preliminary**

Do the daily maintenance checks and procedures, refer to 6.3 Daily maintenance schedule.

**Safety devices**

| Check all the bolts and the panels are installed correctly > | Visual Inspection |
| Make sure all the safety guards/hand rails/doors are all installed and operate correctly > | Visual Inspection |
| Test all Emergency stops and the function stops > | Refer to 4.3.2 How to operate an emergency stop. |

**Hydraulic system**

| Check for leaks and damage on the hoses, valves and couplings > | Visual Inspection only |
| Check the service indicators on the hydraulic filters > | Refer to 6.6.1 Hydraulic return filter indicator. |
| Check the air breather > | Refer to 6.9.1 Hydraulic tank filters. |

**Electrical**

| Check for damage and corrosion, clean away the dust as necessary > | Visual Inspection |
| Check the battery connections for corrosion and damage > | Refer to 6.14 Battery maintenance |
### Power pack and engine

<table>
<thead>
<tr>
<th>Task</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain water and sediment from the diesel fuel water trap &gt;</td>
<td>Refer to 6.4.2 Diesel fuel.</td>
</tr>
<tr>
<td>Check the battery and the battery connections &gt;</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Clean the air filter &gt;</td>
<td>Refer to 6.4.5 Air cleaner servicing.</td>
</tr>
<tr>
<td>Check and make sure there is no dust or debris on the oil coolers and radiators &gt;</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Check the operation conditions for extreme operation conditions decrease the time between maintenance and checks as necessary &gt;</td>
<td>Visual Inspection</td>
</tr>
</tbody>
</table>

### Screen box

<table>
<thead>
<tr>
<th>Task</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check and make sure that there are no blockages on the screen box &gt;</td>
<td>Refer to 6.6.3 Screen box.</td>
</tr>
<tr>
<td>Check the tension in the mesh and adjust as necessary &gt;</td>
<td>Refer to 6.4.6 Screen mesh tension and adjustments.</td>
</tr>
</tbody>
</table>

### Tracks

<table>
<thead>
<tr>
<th>Task</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the seal for the front idler and tension system &gt;</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Check the tension span of the track front idler &gt;</td>
<td>Refer to 6.12.2 Track tension check.</td>
</tr>
<tr>
<td>Make sure it has not reached its maximum position.</td>
<td></td>
</tr>
<tr>
<td>Check for wear on the front idler and the slide bracket &gt;</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Move the machine using the tracks 50m (164ft) in both directions to prevent chain seizure &gt;</td>
<td>Refer to 4.4 Moving machine on the tracks.</td>
</tr>
</tbody>
</table>

### Hopper

<table>
<thead>
<tr>
<th>Task</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check hopper wing fixing bolts. Tighten if necessary &gt;</td>
<td>Inspection</td>
</tr>
<tr>
<td>Check the tension of the hopper mesh (If fitted) &gt;</td>
<td>Refer to 5.3 Installation and removal of the screen mesh.</td>
</tr>
<tr>
<td>Check for wear on the hydraulic hoses where it may come in to contact with the chassis</td>
<td>Visual Inspection</td>
</tr>
</tbody>
</table>

### Conveyors

<table>
<thead>
<tr>
<th>Task</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the wear strips and adjust as necessary</td>
<td>Refer to 6.6.4 Side sealing strips - conveyor belts.</td>
</tr>
<tr>
<td>Check the impact bars for damage and replace them if necessary</td>
<td>Visual Inspection</td>
</tr>
</tbody>
</table>
### General machine

<table>
<thead>
<tr>
<th>Task</th>
<th>Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check and make sure there is no build up dust and debris on the conveyors</td>
<td></td>
</tr>
<tr>
<td>Check all the bearings for damage and wear</td>
<td>Inspection</td>
</tr>
<tr>
<td>Check the centralised grease system (if fitted)</td>
<td>Inspection</td>
</tr>
<tr>
<td>Check all the oil and grease levels and apply or fill as necessary</td>
<td>Inspection</td>
</tr>
</tbody>
</table>
6.6 Procedures

6.6.1 Hydraulic return filter indicator

1. Remove the access plate.
2. Check the filter condition indicator on top of the filter housing.
3. If the service indicator is red, replace the hydraulic return filter.
4. Refer to 6.9.1 Hydraulic tank filters.

6.6.2 Greasing the bearings

Only apply grease where indicated.

Use suitable equipment to grease the bearings which must be according to the maintenance schedule.

Refer to 6.2 Lubricants and fluids for the specifications.

When performing any maintenance on the machine refer also to original equipment manufacturer’s manuals for appropriate maintenance schedules.

**NOTICE**

Never use grease containing molybdenum as it may cause damage to machine parts and will invalidate any warranty.

A. Conveyor grease points  B. Screen box bearings
C. Turntable on oversize conveyor

6.6.3 Screen box

Make sure correct procedures are followed for the tasks that are done at height. Falling may cause serious injury or death.

Make sure that a correct working platform is used with the correct anchor points and/or safety rails in position which meets the local and national regulations.

Using suitable equipment, re-grease the screen box bearings according to the maintenance schedule.

Only use the correct grease, refer to 6.2 Lubricants and fluids.

Inspect the screen box and remove all blockages.

6.6.4 Side sealing strips - conveyor belts

Make sure correct procedures are followed for the tasks that are done at height. Falling may cause serious injury or death.

Make sure that a correct working platform is used with the correct anchor points and/or safety rails in position which meets the local and national regulations.

Check the condition and position of the conveyor belt side sealing strips.

<table>
<thead>
<tr>
<th>Main conveyor.</th>
<th>Oversize conveyor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right hand side conveyor.</td>
<td>Turntable oversize conveyor.</td>
</tr>
<tr>
<td>Hopper conveyor.</td>
<td>Left hand side conveyor.</td>
</tr>
<tr>
<td>Feed hoppers.</td>
<td></td>
</tr>
</tbody>
</table>

1. If adjustment is necessary loosen the bolts.
2. Move the sealing strip as necessary then tighten the bolts.

Note: Make sure there is no clearance between the conveyor belt and the strip.
6.7 Machine maintenance - every 250 hours

**WARNING**

PERSONNEL HAZARD
Make sure the machine is OFF and locked out and tagged before you start maintenance on the machine.
Do not work on the machine when it is on this may cause injury or death.
Stop the machine, isolate and remove the ignition key, lock out and tag before maintenance is started, refer to 4.6 Lockout and tag procedures.

When performing any maintenance on the machine refer to original equipment manufacturer’s manuals for appropriate maintenance schedules.

Maintenance is essential for safety and to make sure the best possible performance from the screener and reduces the chance of breakdowns.

All adjustments must only be carried out by trained personnel.

**Preliminary**

Do the daily and weekly maintenance checks and procedures, refer to 6.3 Daily maintenance schedule and 6.5 Weekly machine maintenance.

**Hydraulic system**

<table>
<thead>
<tr>
<th>Change the hydraulic filters and check the tank vent filter &gt;</th>
<th>Refer to 6.9.1 Hydraulic tank filters.</th>
</tr>
</thead>
</table>

**Power pack - engine**

<table>
<thead>
<tr>
<th>Clean the fuel filter water trap, and the pre-filter</th>
<th>Refer to 6.4.2 Diesel fuel.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change the air filter</td>
<td>Refer to 6.4.5 Air cleaner servicing.</td>
</tr>
<tr>
<td>For extreme operation conditions, decrease the time between checks and maintenance as necessary.</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Follow the maintenance instructions shown in the engine manufacturer’s manual &gt;</td>
<td>Refer to engine manual</td>
</tr>
</tbody>
</table>

**Conveyors**

<table>
<thead>
<tr>
<th>Check the condition of the belts and the tracking &gt;</th>
<th>Refer to 6.10 Tensioning and tracking of conveyor belts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the condition of all the drums and the rollers</td>
<td>Visual Inspection</td>
</tr>
</tbody>
</table>

**General machine**

<table>
<thead>
<tr>
<th>Check the condition of all the bearings</th>
<th>Inspection</th>
</tr>
</thead>
</table>
6.8 Machine maintenance - every 500 hours

![WARNING]

**PERSONNEL HAZARD**

Make sure the machine is OFF and locked out and tagged before you start maintenance on the machine.

Do not work on the machine when it is on this may cause injury or death.

Stop the machine, isolate and remove the ignition key, lock out and tag before maintenance is started, refer to 4.6 Lockout and tag procedures.

**Preliminary**

Do the 250 hour schedule, refer to 6.7 Machine maintenance - every 250 hours.

**Hydraulics**

<table>
<thead>
<tr>
<th>Change the hydraulic return filter and tank vent filter</th>
<th>Refer to 6.9.1 Hydraulic tank filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the first/initial 500 hours service replace the hydraulic fluid</td>
<td>Refer to 6.4.3 Hydraulic fluid and for specification refer to 6.2 Lubricants and fluids</td>
</tr>
<tr>
<td>[Then renew at every 1000 hours]</td>
<td></td>
</tr>
</tbody>
</table>

**Power pack - Engine**

<table>
<thead>
<tr>
<th>Clean the fuel filter water trap</th>
<th>Refer to 6.4.2 Diesel fuel.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change the air filter</td>
<td>Refer to 6.4.5 Air cleaner servicing.</td>
</tr>
<tr>
<td>Follow the maintenance instructions shown in the engine manufacturer’s manual</td>
<td>Refer also to the engine manual.</td>
</tr>
</tbody>
</table>
6.9 Procedures

6.9.1 Hydraulic tank filters

1. Remove the access plate.

   Note: If the Filter condition service indicator is red at any time, replace the hydraulic return filter.

2. Remove the filter housing, cover and filter.

3. Install the new filter and cover. Make sure the o-rings are in position. Install the plate and tighten the bolts.

4. Remove the access plate and change the hydraulic tank suction filter, when tank is drained for fluid renewal.

5. Check the hydraulic tank vent and filler cap.
6.9.2 Machine maintenance - every 1000 hours

**WARNING**

PERSONNEL HAZARD
Make sure the machine is OFF and locked out and tagged before you start maintenance on the machine.
Do not work on the machine when it is on this may cause injury or death.
Stop the machine, isolate and remove the ignition key, lock out and tag before maintenance is started, refer to 4.6 Lockout and tag procedures.

Preliminary

Do the 500 hour schedule, refer to 6.8 Machine maintenance - every 500 hours.

Hydraulic system

<table>
<thead>
<tr>
<th>Change the hydraulic return filter and tank vent filter</th>
<th>Refer to 6.9.1 Hydraulic tank filters.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace the hydraulic fluid and filters</td>
<td>Refer to 6.4.3 Hydraulic fluid and 6.2 Lubricants and fluids.</td>
</tr>
</tbody>
</table>

*Note: Sandvik recommend that the hydraulic hoses are replaced every 5 years.*

Power pack - engine

<table>
<thead>
<tr>
<th>Change the diesel filters</th>
<th>Refer to 6.4.2 Diesel fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow the maintenance instructions shown in the engine manufacturer’s handbook</td>
<td>Refer to the engine manual</td>
</tr>
</tbody>
</table>

Tracks

<table>
<thead>
<tr>
<th>Check track tension</th>
<th>Refer to 6.12.2 Track tension check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change the oil in track gearboxes</td>
<td>Refer to 6.13 Track gearbox and 6.2 Lubricants and fluids.</td>
</tr>
</tbody>
</table>
6.10 Tensioning and tracking of conveyor belts

6.10.1 Conveyor precautions

The following safety precautions must be adhered to before commencing work on any conveyor.

---

**DANGER**

<table>
<thead>
<tr>
<th>![ caution icon ]</th>
<th>ENTANGLEMENT HAZARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stay clear of machine when a conveyor is running. Keep all guards in place.</td>
<td></td>
</tr>
<tr>
<td>Switch off, lockout and tag out machine before opening or removing guards.</td>
<td></td>
</tr>
<tr>
<td>Do not reach into unguarded machine, you could be pulled in. Risk of serious injury.</td>
<td></td>
</tr>
<tr>
<td>Make sure that the appropriate personal protection equipment is used. Loose clothing can get caught in running machinery. Always wear close fitting overalls.</td>
<td></td>
</tr>
</tbody>
</table>

---

**WARNING**

<table>
<thead>
<tr>
<th>![ caution icon ]</th>
<th>FLYING MATERIAL HAZARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure the feeder, screen box and conveyors are clear of all material before you make adjustments to the machine.</td>
<td></td>
</tr>
<tr>
<td>Switch off and lock and tag out.</td>
<td></td>
</tr>
</tbody>
</table>

---

**NOTICE**

Do not over tighten conveyor belts as this will cause damage to the drum bearings.
6.10.2 Feed conveyor belt

Follow the safety precautions in 6.1 *Introduction - machine maintenance* before working on the conveyor.

1. Remove securing fasteners from access doors.

2. Raise the each side and end access doors.

3. Remove bolts and conveyor drum guards at each side.

4. Loosen the two bearing clamp bolts on both sides of the machine.

5. Adjust the belt tension as necessary by turning the adjusters equally.
6. Make sure that both sides are adjusted equally and the conveyor is aligned correctly and the conveyor belt is in the centre of the drum.

7. Tighten the bearing clamp bolts when the belt is central and the tension is correct.

8. Install all guards and secure with bolts and washers.

9. Close the side and end access doors and secure with bolts and washers.

Make sure that all safety guards are installed before the machine is started.
6.10.3 Main conveyor belt

Follow the safety precautions in 6.1 Introduction - machine maintenance before working on the conveyor.

1. Remove the side plates and guard.

2. Loosen the two bearing clamp bolts on both sides of the machine.

3. Release lock nut and adjust the belt tension as necessary by turning the adjusters.
4. Make sure that both sides are adjusted equally and the conveyor is aligned correctly and the conveyor belt is in the centre of the drum.

5. Tighten the bearing clamp bolts when the belt is central and the tension is correct.

6. Install all guards and secure with bolts and washers.

Make sure that all safety guards are installed before the machine is started.

Note: If necessary repeat the procedure.
6.10.4 Side conveyor belts

Follow the safety precautions in 6.1 *Introduction - machine maintenance* before working on the conveyor.

1. Remove the end and side guards.

2. Loosen the two bearing clamp bolts on both sides of the machine.

3. Adjust the belt tension as necessary by turning the adjusters.

4. Make sure that both sides are adjusted equally and the conveyor is aligned correctly and the conveyor belt is in the centre of the drum.

5. Tighten the bearing clamp bolts when the belt is central and the tension is correct.
6. Install all guards and secure with bolts and washers

Make sure that all safety guards are installed before the machine is started.

Note: If necessary repeat the procedure.

6.10.5 Oversize conveyor belt - 4th

Follow the safety precautions in 6.1 Introduction - machine maintenance before working on the conveyor.

1. Loosen the lock nuts on both sides of the conveyor.
2. Adjust the belt tension as necessary by turning the adjusters.
   Note: Make sure that both sides are adjusted equally and the conveyor is aligned correctly and the conveyor belt is in the centre of the drum.
3. Tighten the lock nuts when the belt is central and the tension is correct.

Make sure that all safety guards are installed before the machine is started.

Note: If necessary repeat the procedure.
6.10.6 Fines conveyor belt

Follow the safety precautions in 6.1 *Introduction - machine maintenance* before working on the conveyor.

1. Remove the two guards.

2. Loosen the two bearing clamp bolts on both sides of the machine.

3. Adjust the belt tension as necessary by turning the adjusters.

   *Note: Make sure that both sides are adjusted equally and the conveyor is aligned correctly and the conveyor belt is in the centre of the drum.*

4. Tighten the two bearing clamp bolts when the belt is central and the tension is correct.

   ![Diagram](image)

   1. Remove the two guards.
   2. Loosen the two bearing clamp bolts on both sides of the machine.
   3. Adjust the belt tension as necessary by turning the adjusters.
   4. Tighten the two bearing clamp bolts when the belt is central and the tension is correct.

   *Make sure that all safety guards are installed before the machine is started.*

   *Note: If necessary repeat the procedure.*
6.11 Installation and removal of the screen box mesh

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERSONNEL HAZARD</td>
</tr>
<tr>
<td>Make sure the machine is OFF and locked out and tagged before you start maintenance on the machine.</td>
</tr>
<tr>
<td>Do not work on the machine when it is on this may cause injury or death.</td>
</tr>
<tr>
<td>Stop the machine, isolate and remove the ignition key, lock out and tag before maintenance is started, refer to 4.6 Lockout and tag procedures.</td>
</tr>
</tbody>
</table>

6.11.1 Introduction

The bottom mesh is the final filter the material will go through and will exit on to the fines collector, or larger sized material not passing through a mesh or perforated plate will exit through one of the other grade conveyors.

Change the mesh or perforated plate if:

- It is damaged or worn, replace meshes or perforated plate
- It is necessary to output a different size of material, change for different sizes.

To fit the screen meshes or perforated plate, proceed in the following manner:

6.11.2 Set up access to the screen box

Make sure that no persons are on or near the machine as this may cause injury or death

1. Start the machine > 1 Refer to 4.2 Engine starting procedure.

2. Set machine mode switch to auxiliary.

3. Raise the main conveyor fully > 3 Refer to 4.4.13 Set up the main conveyor an screen box height.

4. Lower the fines conveyor fully > 4 Refer to 4.4.9 Set up the fines conveyor.
DANGER

PERSONNEL HAZARD
Make sure that all the locating pins are installed correctly before maintenance is started, if not this could cause injury or death.

5. Install the fines conveyor locating pins and the clips.

6. Install the main conveyor locating pins or the hooks correctly

7. Install the locating pins.
6.11.3 Removal of the screen box mesh

**WARNING**

**PERSONNEL HAZARD**

Make sure the machine is OFF and locked out and tagged before you start maintenance on the machine.

Do not work on the machine when it is on this may cause injury or death.

Stop the machine, isolate and remove the ignition key, lock out and tag before maintenance is started, refer to 4.6 *Lockout and tag procedures*.

---

Make sure correct procedures are followed for the tasks that are done at height. Falling may cause serious injury or death.

Make sure that a correct working platform is used with the correct anchor points and/or safety rails in position which meets the local and national regulations.

---

A. Fixed mesh hook
B. Tension adjusting bar
C. Rubber capping
D. Screen mesh
E. Tensioning ratchet
1. Position the ratchet latch then move the levers on both sides to decrease the tension in the mesh then loosen the mesh.

2. Unhook the mesh from the tension spring bar.

3. Move the mesh to the side as shown and up.
6.11.4 Installation of the screen box mesh

**WARNING**

**PERSONNEL HAZARD**

Make sure the machine is OFF and locked out and tagged before you start maintenance on the machine.

Do not work on the machine when it is on this may cause injury or death.

Stop the machine, isolate and remove the ignition key, lock out and tag before maintenance is started, refer to 6.1 Introduction - machine maintenance.

Make sure correct procedures are followed for the tasks that are done at height. Falling may cause serious injury or death.

Make sure that a correct working platform is used with the correct anchor points and/or safety rails in position which meets the local and national regulations.

1. Install and move the mesh from the side and down as shown.

   *Note: Make sure the rubber cappings are in good condition and mesh is hooked in position on the tension spring bar and in the mesh hook.*

2. Position the ratchet latch then move the levers on both sides to increase the tension evenly in the mesh.
6.12 Track adjustment

6.12.1 Introduction

Grease under pressure can cause serious injury.
Never unscrew a track adjuster valve by more than a half 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 grease tensioning cylinder.
When the cylinder is filled with grease it extends and pushes the spring tension and the idler, forward.
The grease is filled through the track adjuster grease valve.

6.12.2 Track tension check

In order to establish if the track requires tensioning, move machine 10m (33ft) forwards and backwards on level ground to allow the tracks to adopt their natural degree of tension. Refer to 4.4 Moving machine on the tracks.

Note: Do not slew the machine.

NOTICE
It is important 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.

1. Use a straight edge and measure the maximum droop of the track.

2. Droop ‘A’ should not exceed 30mm (1.2in).
6.12.3 Increasing the track tension

3. Remove inspection cover on side of track frame.

4. Make sure track adjuster valve is tight.

5. Attach correct grease connector to the track adjuster valve. Pump grease into adjuster valve until droop of the track is correct.

6. Recheck the track tension > Refer to 6.12.2 Track tension check.

7. Clean off any excess grease and install the inspection cover.
6.12.4 Releasing the track tension

1. Remove inspection cover on side of track frame.

2. Check droop of track, refer to 6.12.2 Track tension check

3. Loosen track adjuster valve, by turning it only a half turn anti-clockwise. Grease should slowly escape from track tensioning cylinder and the track slacken.

4. When satisfactorily tensioned, tighten track adjuster valve.

5. Clean off any excess grease and install the inspection cover.
6.13 Track gearbox

Note: Machine must be on level horizontal ground to check and fill gearbox.

6.13.1 Check and fill gearbox

1. Start the engine and prepare the machine for moving >

2. Move the machine until the gearbox is in the correct position shown, with one of the plugs at the top.

3. Stop and tag-out the machine >

4. Clean the area around the plugs then remove the plugs.

5. Top up through the upper hole with oil if required to correct oil level, the bottom of the lower threaded hole. Allow any surplus to drain before installing and tightening plug.

Note: Check plug seal before installing a plug.

Repeat for track gearbox on the other side.

6. For lubrication information >

1 Refer to 4.2 Engine starting procedure..

2

3 Refer to 4.5 Shut down the machine and 4.6 Lockout and tag procedures.

4

5

6 Refer to 6.2 Lubricants and fluids.
6.13.2 Drain gearbox oil

1. Start the Engine and prepare the machine for moving >

2. Move the machine until the gearbox is in the correct position shown, with one of the plugs at the lowest point.

3. Stop and tag-out the machine >

4. Clean the area around the plugs, then using a suitable container to catch the oil, remove the plugs.

5. Allow oil to thoroughly drain then re-install the drain plug.

6. Fill gearbox to correct oil level, the bottom of the threaded hole. Allow any surplus to drain before installing and tightening filler plug.

   **Note:** Check plug seal before installing a plug.

Repeat for track gearbox on the other side.

7. For lubrication information >

**Make sure oil and fluid is cleaned and disposed of correctly in a way that meets the local and national environmental regulations.**
NOTICE

When filling up gearbox oil, make sure no contamination enters the gearbox as this will cause damage.
6.14 Battery maintenance

Refer to 1.9.6 Hazardous substances and 10.2 Hazardous substances for further battery information.

6.14.1 Electrolyte level

If the battery has removable vent caps, regularly check and maintain the electrolyte level:

- Add distilled water to just cover the plates.
- Do not overfill the vent wells.

*Note: Always use de-ionised to prevent chemical contamination.*

6.14.2 Battery terminals

- Clean the terminals if dirty or corroded.
- Remove the Ground Cable (−) first.
- Remove the Positive Cable (+).
- Refit is the reverse.

*Note: Smear the terminals with petroleum jelly or a non acidic grease.*

6.14.3 Battery housing

Keep the battery and housing clean of heavy dirt and oil.
6.15 Optional magnetic conveyor

**DANGER**

Strong magnetic field, do not go near it if you have a pacemaker, as this may cause death.

**WARNING**

PERSONNEL HAZARD

Make sure the machine is OFF and locked out and tagged before you start maintenance on the machine.

Do not work on the machine when it is on this may cause injury or death.

Stop the machine, isolate and remove the ignition key, lock out and tag before maintenance is started, refer to 4.6 Lockout and tag procedures.

Make sure correct procedures are followed for the tasks that are done at height. Falling may cause serious injury or death.

Make sure that a correct working platform is used with the correct anchor points and/or safety rails in position which meets the local and national regulations.

Follow maintenance instructions in the magnet manufacturer’s handbook.
6.16 Vibrating grid in hopper [option]

After the first 50 hours of operation, clear the vibrating grid bars and check all the securing bolts are tight. Tighten bolts if required to the correct general maximum torque settings, refer to .

These bolts and all other fasteners should be checked periodically and any that become loose tightened also.
6.17 Machine error messages and fault codes

When the system detects a fault, a message is displayed on the screen. Each fault is identified by a fault code number, description and icon.

<table>
<thead>
<tr>
<th>Code</th>
<th>Message</th>
<th>Trigger</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>emergency stop activated</td>
<td>Stop button pressed</td>
<td>Stop Engine</td>
</tr>
<tr>
<td></td>
<td>umbilical handset, engine stop requested</td>
<td>Stop button pressed on umbilical handset / bypass link removed</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>102</td>
<td>Radio tracking handset, engine stop requested</td>
<td>Stop button pressed on track handset</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>103</td>
<td>Radio feeder/grid handset, engine stop requested</td>
<td>Stop button pressed on smaller radio handset</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>104</td>
<td>Engine shut down due to low coolant level</td>
<td>Coolant level sensor output is high or sensor disconnected. Engine loom green/white wire. 12V = FAULT</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>105</td>
<td>Engine shut down due to low oil pressure</td>
<td>Engine oil pressure switch has closed to GND. Engine loom green/yellow wire, 0V = FAULT</td>
<td>Stop Engine</td>
</tr>
<tr>
<td></td>
<td>Engine shut down due to high engine temperature</td>
<td>Engine temperature switch has closed to GND. Engine loom blue/yellow wire, 0V = FAULT</td>
<td>Stop Engine</td>
</tr>
<tr>
<td></td>
<td>Engine shut down due to alternator voltage being too low to charge battery</td>
<td>Alternator output is less than 11.5 Volts. Engine loom brown/yellow wire, &lt;11.5V = FAULT</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>106</td>
<td>Engine warning, water in fuel detected</td>
<td>Water in fuel switch has closed to GND. Engine loom white/orange wire, 0V = WARNING</td>
<td>Warning only</td>
</tr>
<tr>
<td></td>
<td>Engine warning, blocked air filter</td>
<td>Blocked filter switch has closed to GND. Engine loom blue/white wire, 0V = WARNING</td>
<td>Warning only</td>
</tr>
<tr>
<td>107</td>
<td>emergency stop positive side only activated</td>
<td>Dual channel emergency stop, one channel only has opened. Engine loom red/yellow wire, 0V = FAULT</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>108</td>
<td>emergency stop negative side only activated</td>
<td>Dual channel emergency stop, one channel only has opened. Engine loom brown/white wire, 12V = FAULT</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>109</td>
<td>Fault with Fuel solenoid relay</td>
<td>Fuel solenoid relay is not working correctly. Replace relay.</td>
<td>Warning only</td>
</tr>
<tr>
<td>Code</td>
<td>Message</td>
<td>Trigger</td>
<td>Action</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>114</td>
<td>Fault with Fuel solenoid relay</td>
<td>Fuel solenoid relay is not working correctly. Replace relay.</td>
<td>Warning only</td>
</tr>
<tr>
<td>115</td>
<td>Hydraulic oil temperature warning, hydraulic oil temperature &gt; 79 degrees for 10 seconds</td>
<td>Hydraulic temperature sensor is reading &gt; 79 degrees. 4-20mA sensor read into I/O module. 20mA = 100 degrees C.</td>
<td>Warning only</td>
</tr>
<tr>
<td>116</td>
<td>Hydraulic oil temperature error, hydraulic oil temperature &gt; 84 degrees for 30 seconds</td>
<td>Hydraulic temperature sensor is reading &gt; 84 degrees. 4-20mA sensor read into I/O module. 20mA = 100 degrees C.</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>117</td>
<td>Hydraulic oil temperature sensor is not connected</td>
<td>Hydraulic temperature sensor disconnected, can be bypassed in service mode.</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>119</td>
<td>Hydraulic oil level is low for &gt; 30 seconds</td>
<td>Hydraulic oil level switch is not closed to GND. 12V = FAULT, can be bypassed in service mode</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>120</td>
<td>Fines wheel speed is too low</td>
<td>Speed wheel is not seeing conveyor belt turning. Can be bypassed in service mode.</td>
<td>Stop Feeder</td>
</tr>
<tr>
<td>121</td>
<td>Downstream machine is requesting pause</td>
<td>Downstream input on panel detected 12V. Pause feeder</td>
<td>Stop Feeder</td>
</tr>
<tr>
<td>122</td>
<td>Stockpile sensor seeing too high stockpile, stop feeder</td>
<td>Stockpile sensor detected too high pile of material.</td>
<td>Stop Feeder</td>
</tr>
<tr>
<td>123</td>
<td>Stockpile sensor disconnected</td>
<td>Stockpile sensor disconnected</td>
<td>Stop Feeder</td>
</tr>
<tr>
<td>124</td>
<td>No CAN messages being received from I/O module (unit used to drive valves)</td>
<td>Communication problem with I/O module. Check wiring to I/O module.</td>
<td>Stop Engine</td>
</tr>
<tr>
<td>125</td>
<td>No CAN messages being received from Radio Receiver</td>
<td>Communication problem with radio receiver. Check wiring to radio receiver</td>
<td>Warning only</td>
</tr>
<tr>
<td>126</td>
<td>Electrical problem with Left Hand Track Reverse Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>127</td>
<td>Electrical problem with Check Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>128</td>
<td>Electrical problem with Grid Down Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>129</td>
<td>Electrical problem with Track Divert Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>130</td>
<td>Electrical problem with Left Hand Track Forward Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>131</td>
<td>Electrical problem with Aux. Divert Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>Code</td>
<td>Message</td>
<td>Trigger</td>
<td>Action</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>132</td>
<td>Electrical problem with Right Hand Track Forward Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>133</td>
<td>Electrical problem with Right Hand Track Reverse Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>134</td>
<td>Electrical problem with Plant Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>135</td>
<td>Electrical problem with Grid Up Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>136</td>
<td>Electrical problem with Spare Output</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>137</td>
<td>Electrical problem with Plant Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>138</td>
<td>Electrical problem with Plant Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>139</td>
<td>Electrical problem with Oil Cooler Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>140</td>
<td>Electrical problem with Plant Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
<tr>
<td>141</td>
<td>Electrical problem with Plant Valve</td>
<td>I/O module detected electrical problem with solenoid coil. Check solenoid coil resistance. Check wiring to coil.</td>
<td>Warning only</td>
</tr>
</tbody>
</table>
7 Trouble shooting
## 7.1 Fault finding tables

Use the tables following to assist in finding a solution to the problem.

If an error message is displayed on the screen, refer to **6.17 Machine error messages and fault codes** for a possible solution.

### 7.1.1 Starting and running

<table>
<thead>
<tr>
<th>Fault</th>
<th>Problem</th>
<th>Solution - Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not crank</td>
<td>Isolation switch is in the Off position</td>
<td>Turn the Isolation switch to the on position (make sure it is not tagged out)</td>
</tr>
<tr>
<td></td>
<td>No charge in the battery</td>
<td>Replace or recharge the battery</td>
</tr>
<tr>
<td></td>
<td>E-Stop engaged</td>
<td>Make sure there are no problems, then disengage the E-Stop.</td>
</tr>
<tr>
<td></td>
<td>Starter or alternator malfunction</td>
<td>Repair or replace the part/s</td>
</tr>
<tr>
<td></td>
<td>Damaged electrical Cables</td>
<td>Replace the cable</td>
</tr>
<tr>
<td>The engine cranks but will not start</td>
<td>No fuel in the engine</td>
<td>Check the fuel tank level re-fill as necessary check the pipes for leaks repair or replace</td>
</tr>
<tr>
<td></td>
<td>Blocked Air, Oil, Fuel filters</td>
<td>Clean or replace the filters as necessary.</td>
</tr>
<tr>
<td></td>
<td>The glow plugs or the injectors malfunction</td>
<td>Consult an engine specialist</td>
</tr>
<tr>
<td></td>
<td>Coolant level low</td>
<td>Check for leaks repair as necessary. Refill engine with oil</td>
</tr>
<tr>
<td></td>
<td>Extreme - Temperature conditions</td>
<td>Make sure the oils and Fluids are correct for the temperature conditions</td>
</tr>
<tr>
<td></td>
<td>The Battery is not fully charged</td>
<td>Replace or recharge the battery</td>
</tr>
<tr>
<td>Loss of power or low engine speed</td>
<td>High Oil pressure</td>
<td>Check for a blockage in the system</td>
</tr>
<tr>
<td></td>
<td>Blocked Air, Oil, Fuel, Hydraulic Filters</td>
<td>Clean or replace the filters as necessary.</td>
</tr>
<tr>
<td></td>
<td>Over heating</td>
<td>see 'Over heats quickly'</td>
</tr>
<tr>
<td>Over heats quickly</td>
<td>Blockages</td>
<td>Check all filters and radiators. Inspect and clean</td>
</tr>
<tr>
<td></td>
<td>Coolant level low</td>
<td>Check the coolant system for leaks repair if necessary. Refill coolant level.</td>
</tr>
<tr>
<td></td>
<td>Engine Oil level Low</td>
<td>Check engine for leaks repair if necessary. Refill the oil</td>
</tr>
<tr>
<td></td>
<td>Hydraulic Fluid low</td>
<td>Check hydraulic fluid system for leaks repair as necessary. Refill hydraulic fluid</td>
</tr>
</tbody>
</table>
## 7.1.2 Moving the machine on the tracks

<table>
<thead>
<tr>
<th>Fault</th>
<th>Problem</th>
<th>Solution - Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not move on the tracks or one of the tracks does not move</td>
<td>The engine is OFF</td>
<td>Start the machine</td>
</tr>
<tr>
<td></td>
<td>No hydraulic drive</td>
<td>Make sure the machine is in track mode function. Check for leaks, or damaged components repair or replace as necessary</td>
</tr>
<tr>
<td></td>
<td>Umbilical lead disconnected</td>
<td>Connect lead</td>
</tr>
<tr>
<td></td>
<td>Radio switched OFF</td>
<td>Switch radio ON</td>
</tr>
<tr>
<td></td>
<td>The Remote/Controller Failure</td>
<td>See “Remote Controls/Control Panels”</td>
</tr>
<tr>
<td></td>
<td>Solenoid failure</td>
<td>Repair or replace</td>
</tr>
<tr>
<td></td>
<td>Tracks plates/chain damaged</td>
<td>Replace or repair</td>
</tr>
<tr>
<td></td>
<td>Motor seized</td>
<td>Repair or replace as necessary</td>
</tr>
<tr>
<td>Slow or uneven track speed</td>
<td>Stabilising jacking legs down</td>
<td>Check the legs for damage repair or replace if necessary. Lift UP the legs</td>
</tr>
<tr>
<td></td>
<td>The track tension is low</td>
<td>Tighten the tracks</td>
</tr>
<tr>
<td></td>
<td>Low hydraulic pressure/flow</td>
<td>Check for leaks and refill as necessary. Check hydraulic system</td>
</tr>
<tr>
<td>Tracks do not move at the same speed</td>
<td>One of the tracks tension is not correctly set</td>
<td>Tighten the Track to the correct tension</td>
</tr>
<tr>
<td></td>
<td>Hydraulic system failure</td>
<td>Check the hoses, pumps, valves and connections for leaks or damage replace as necessary</td>
</tr>
</tbody>
</table>
## 7.1.3 Conveyors, maintenance platforms and legs

<table>
<thead>
<tr>
<th>Fault</th>
<th>Problem</th>
<th>Solution - Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do NOT fold/Do NOT lift up or down</td>
<td>The engine is OFF</td>
<td>Start the engine</td>
</tr>
<tr>
<td></td>
<td>Hydraulic system failure</td>
<td>Check the filters, hoses, valves, pumps for damage. Make sure the hydraulic fluid above the minimum level refill if necessary</td>
</tr>
<tr>
<td></td>
<td>The locating pins or other locking equipment is still installed</td>
<td>Remove the pins or equipment</td>
</tr>
<tr>
<td></td>
<td>The equipment is damage or blocked.</td>
<td>Remove the blockage or repair the equipment</td>
</tr>
<tr>
<td></td>
<td>Lever Failure</td>
<td>Check the valve block, hoses and lever for damage replace or repair</td>
</tr>
<tr>
<td></td>
<td>Hydraulic Ram Failure</td>
<td>Check the hoses, the connections and the seals, repair or replace as necessary</td>
</tr>
<tr>
<td>The belt does NOT move</td>
<td>The engine is OFF</td>
<td>Turn the machine ON</td>
</tr>
<tr>
<td></td>
<td>The valve is in the OFF position</td>
<td>Turn ON the conveyor</td>
</tr>
<tr>
<td></td>
<td>Hydraulic system failure</td>
<td>Check the filters, hoses, valves, pumps and the motors for damage. Make sure the hydraulic fluid above the minimum level refill if necessary</td>
</tr>
<tr>
<td></td>
<td>The belt is too loose</td>
<td>Tighten the belt</td>
</tr>
<tr>
<td></td>
<td>The belt is blocked or stuck</td>
<td>Remove the blockage or align the belt as necessary</td>
</tr>
<tr>
<td>Fold/Lift slow or at uneven speed or The belt moves slow or uneven speed</td>
<td>Blocked or stuck</td>
<td>Remove the blockage or repair as necessary</td>
</tr>
<tr>
<td></td>
<td>Hydraulic system malfunction</td>
<td>Check the filters, hoses, valves, pumps and the motors for damage. Make sure the hydraulic fluid above the minimum level refill if necessary</td>
</tr>
<tr>
<td></td>
<td>The belt tension is low</td>
<td>Tighten the belt</td>
</tr>
<tr>
<td></td>
<td>The rollers/bars are damaged</td>
<td>Replace or repair as necessary</td>
</tr>
<tr>
<td>The belt is slipping</td>
<td>The locating pins or locking equipment is not installed</td>
<td>Install the locating pins or locking equipment</td>
</tr>
<tr>
<td>Rocking/moving while in operation.</td>
<td>The drum bearings are damaged</td>
<td>Replace the bearings</td>
</tr>
<tr>
<td></td>
<td>Belt tension is too tight</td>
<td>Reduce the tension in the belt</td>
</tr>
<tr>
<td></td>
<td>Belt is not tracked correctly</td>
<td>Align the belt as necessary</td>
</tr>
<tr>
<td></td>
<td>There is a blockage</td>
<td>Remove the blockage</td>
</tr>
</tbody>
</table>
## 7.1.4 Loading and operating

<table>
<thead>
<tr>
<th>Fault</th>
<th>Problem</th>
<th>Solution - Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NO or little material is output</strong></td>
<td>Machine is not set for operation</td>
<td>Set the machine for operation</td>
</tr>
<tr>
<td></td>
<td>No Material on the Feeder</td>
<td>Load material on the machine</td>
</tr>
<tr>
<td></td>
<td>Blockage</td>
<td>Check the feeder, screen box and conveyors for blockages. Remove the blockage</td>
</tr>
<tr>
<td><strong>The Feeder is full of material</strong></td>
<td>Screen box is blocked</td>
<td>Shut down immediately. Remove the blockage</td>
</tr>
<tr>
<td></td>
<td>Feeder is OFF</td>
<td>Switch on Feeder</td>
</tr>
<tr>
<td></td>
<td>The screen box is OFF</td>
<td>See “The screen box”</td>
</tr>
<tr>
<td><strong>Material roll back on conveyors</strong></td>
<td>Conveyor speed is too fast</td>
<td>Reduce the conveyor speed</td>
</tr>
<tr>
<td></td>
<td>Product is too light or slippery</td>
<td>Use a chevron belt</td>
</tr>
<tr>
<td></td>
<td>Conveyor angle is too steep</td>
<td>Reduce angle as necessary</td>
</tr>
<tr>
<td><strong>The Machine is unstable or rocking from side to side</strong></td>
<td>The ground in not level</td>
<td>Move the machine to level ground or make the ground level</td>
</tr>
<tr>
<td></td>
<td>The ground is not firm</td>
<td>Move the machine to firm ground or make the ground more suitable</td>
</tr>
<tr>
<td></td>
<td>The stabilising legs, where applicable, are NOT set correctly</td>
<td>Set the stabilising legs on firm level ground to help support the machine</td>
</tr>
<tr>
<td></td>
<td>Uneven or excessive loading</td>
<td>Load the machine correctly</td>
</tr>
<tr>
<td><strong>The screen box does NOT output material or small output of the material</strong></td>
<td>The screen box is blocked/ or OFF</td>
<td>Clear the blockage check both levels and make sure the screen box is ON</td>
</tr>
<tr>
<td><strong>Product output only from one or some conveyors</strong></td>
<td>The screen box mesh is damaged or blocked</td>
<td>Replace the mesh or clear the blockage</td>
</tr>
<tr>
<td></td>
<td>The other conveyors are not functioning</td>
<td>Make sure the conveyors are set for operation</td>
</tr>
<tr>
<td></td>
<td>No smaller product is loaded</td>
<td>Change raw material mixture</td>
</tr>
</tbody>
</table>
## 7.1.5 Screen box

<table>
<thead>
<tr>
<th>Fault</th>
<th>Problem</th>
<th>Solution - Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does NOT operate</td>
<td>The engine is OFF</td>
<td>Turn the engine ON</td>
</tr>
<tr>
<td></td>
<td>The screen box is OFF</td>
<td>Check operation mode is selected and turn the screen box ON</td>
</tr>
<tr>
<td></td>
<td>Hydraulic system Failure</td>
<td>Check the filters, hoses, valves, pumps and the motors for damage. Make sure the hydraulic fluid above the minimum level refill if necessary</td>
</tr>
<tr>
<td></td>
<td>Screen box blocked</td>
<td>Remove the blockage</td>
</tr>
<tr>
<td>Excessive noise</td>
<td>Screen media loose</td>
<td>Inspect and re-tighten</td>
</tr>
<tr>
<td></td>
<td>The bearings are damaged</td>
<td>Inspect, replace bearings if necessary</td>
</tr>
<tr>
<td></td>
<td>The screen box is damaged</td>
<td>Inspect the screen box and repair the screen box if necessary</td>
</tr>
<tr>
<td></td>
<td>The screen box is blocked</td>
<td>Remove the blockages</td>
</tr>
<tr>
<td></td>
<td>The springs are damaged</td>
<td>Check all the springs and replace as necessary</td>
</tr>
<tr>
<td>Vibrates slow or with uneven speed</td>
<td>Hydraulic system Malfunction</td>
<td>Check the filters, hoses, valves, pumps and the motors for damage. Make sure the hydraulic fluid above the minimum level refill if necessary</td>
</tr>
<tr>
<td></td>
<td>The drive shaft system malfunction</td>
<td>Make sure the system is greased correctly and inspect the parts for damage,. Repair or replace as necessary</td>
</tr>
<tr>
<td></td>
<td>The screen box is blocked</td>
<td>Remove the blockage</td>
</tr>
</tbody>
</table>
### 7.1.6 Electrical, radio, umbilical controls

<table>
<thead>
<tr>
<th>Fault</th>
<th>Problem</th>
<th>Solution - Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The buttons do not work</td>
<td>The machine is OFF</td>
<td>Start the machine</td>
</tr>
<tr>
<td></td>
<td>The batteries in the remote are not charged</td>
<td>Recharge the batteries</td>
</tr>
<tr>
<td></td>
<td>The remote control is not programmed to the machine.</td>
<td>Follow the instruction on the back of the remote</td>
</tr>
<tr>
<td></td>
<td>The umbilical cord is not connected</td>
<td>connect the umbilical connector</td>
</tr>
<tr>
<td></td>
<td>Electrical malfunction</td>
<td>Check the wires and components in the control box/controllers/machine repair or replace as necessary</td>
</tr>
<tr>
<td></td>
<td>The buttons are stuck or blocked</td>
<td>Remove the blockage and clean the buttons</td>
</tr>
<tr>
<td></td>
<td>The incorrect mode has been selected on the function switch</td>
<td>Change to correct mode</td>
</tr>
<tr>
<td></td>
<td>Equipment malfunction</td>
<td>Check the equipment under control (tracks, conveyors, feeder, etc.)</td>
</tr>
<tr>
<td>The remote is not communicating with the machine</td>
<td>The remote control is not programmed to the machine.</td>
<td>Follow the instruction on the back of the remote</td>
</tr>
<tr>
<td></td>
<td>The batteries are not charged</td>
<td>Replace or recharge the batteries</td>
</tr>
<tr>
<td>The warning lights or the display do not work or intermittent</td>
<td>The machine is OFF</td>
<td>Turn On the Machine</td>
</tr>
<tr>
<td></td>
<td>The lights/display are damaged</td>
<td>Replace the lights/display</td>
</tr>
<tr>
<td></td>
<td>Electrical malfunction</td>
<td>Check the wires and components in the control box and machine repair or replace as necessary</td>
</tr>
</tbody>
</table>
7.2 Problems not listed

If any problem persists after carrying out the recommended solution, or a problem arises that is not on the fault code or fault finding lists, contact your local Sandvik service department for further assistance.
8 Engine
### 8.1 Engine in power pack

#### 8.1.1 Engine manual

The engine manufacturer supplies a manual which should be referred to for further information on the engine fitted to the power pack of the machine.

#### 8.1.2 Engine alternatives

Different power pack and engine configurations may be fitted to the machine. Identify the engine type by referring to the serial plate of the machine and the following information.

<table>
<thead>
<tr>
<th>Engine Type</th>
<th>Serial Plate Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>74kW engine</td>
<td>- Engine identified on the machine serial plate.</td>
</tr>
<tr>
<td></td>
<td>- Hydraulic pump detail shown -</td>
</tr>
<tr>
<td>83kW engine</td>
<td>- Engine identified on the machine serial plate.</td>
</tr>
<tr>
<td></td>
<td>- 83kW engine on ‘EU’ CN8081 plate.</td>
</tr>
<tr>
<td></td>
<td>- Hydraulic pump detail shown -</td>
</tr>
</tbody>
</table>
9 Electrical & Hydraulic Information
9.1 Schematic diagrams

9.1.1 Electrical schematic diagram

Refer to the electrical schematic document pdf file.

9.1.2 Hydraulic schematic diagram

Alternative engines can be fitted to this machine which have some differences in the hydraulic systems. Refer to the appropriate hydraulic schematic diagrams pdf files.

Common schematic:

HD002905

74kW schematics:

HD002901, HD002902, HD002903, HD002904, HD002906.

83kW schematics:

HD002907, HD002908, HD002909, HD002910, HD002911
10 Information and Data Sheets
10.1 Original equipment manufacturer information

*Note: Please make sure you read this section carefully. It contains information supplied by original equipment manufactures of components used in the machine, therefore Sandvik has reservations for misprints.*

10.1.1 Strickland tracks

10.1.2 Engine (manual supplied separately)

10.1.3 Variations and options (if applicable)

- Eriez magnetic separator
- Auto lubrication system

10.1.4 Electrical schematic diagrams.

10.1.5 Hydraulic schematic diagrams.

*Note: Hydraulic systems vary with alternative engine configuration which can be fitted to this machine.*
10.2 Hazardous substances

- Univar Caflon pre-mixed - engine coolant
- Ultra low/Low sulphur Diesel fuel oil
- Shell Rimula - engine lubrication oil
- Shell Tellus S2 - hydraulic fluid
- Shell Tellus S4 VX - hydraulic fluid
- Shell Tellus S2 - hydraulic fluid
- Shell Gadus S3 V220 C2 - grease
- Exol Ethena EP90 - track gear oil
- Shell Spirax S2 G 80W-90 - track gear oil
- Exxon Unirex N3 grease - screen box bearings
- SKF LGHB2 - auto lubrication system grease
- Shell Aeroshell 33 - auto lubrication system grease