



XA750S JAW CRUSHER

Operations Manual

SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

Original Instructions

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XA750S

USER MANUAL

OPERATION
SET-UP
TRANSPORT

SERVICING
LUBRICATION
WEAR PARTS

SAFETY

This manual contains safety information which the operator should read and follow. Failure to do this will increase the risk of injury or may result in death. This user manual is part of the plant and must always be available wherever the plant is in use and kept with it at all times.



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01 EN Introduction

Introduction to User Manual

1. This instruction manual contains important information on how to operate the machine safely, properly and most efficiently.
2. To be assured of faultless operation we would ask you to carefully read the manual and give the required time and attention to essential maintenance, cleaning and inspection.
3. Observing these instructions and exercising common sense helps to avoid danger, to reduce repair costs and down time and to increase the reliability and life of the machine. Failure to do so may invalidate any warranties in force.
4. This manual is part of the machine and must always be available wherever the machine is in use and kept with it at all times.
5. These operating instructions must be read and applied by any person in charge of and/or working on the machine such as:-

Operation

6. Includes manoeuvring, setting up, operation during the course of work, evacuation of production material and waste, care and disposal of fuels and consumable items, etc.

Servicing

7. Servicing, lubrication, inspection and adjustments.

Transport

8. Follow all applicable laws and safety regulations for accident prevention and environmental protection.

Safety Warnings and Symbols

9. The following signs and designations are used in the manual to designate instructions of particular importance.



02



This is the safety alert symbol. When you see this symbol on the machine or in this manual be alert to the potential for personal injury or equipment damage. Follow the recommended precautions and safe operating practices.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe working practices.



DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

NOTICE

Indicates a statement of company policy as the message relates directly or indirectly to the safety of personnel and protection of property.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Designated Use of Machine

10. Tracked crusher machines are designed exclusively as a self-contained mobile unit for crushing materials in a wide range of quarry applications, within the parameters set out and described within this manual. It is also possible for some models to be used in demolition and recycling applications.
11. The machine is intended to be used only in above ground open air environments. Use of the machine in any other way is contrary to its intended use.
12. Operating the machine outside it's recommended range of applications and operating parameters shown will result in a loss of guarantee and the manufacturer/supplier cannot be held liable for any damage resulting from such use. The risk of such misuse lies entirely with the user.



WARNING

This machine is designed for stone crushing applications. It is vitally important that large pieces of steel or similar uncrushable objects are not allowed to enter the crushing chamber as severe damage and injury may occur. The machine is not designed to accept large pieces of steel or other uncrushable objects such as bucket teeth from a loading shovel.

NOTICE

If you have any doubts about any aspect of the machine's capability or servicing procedures, you must consult your local Powerscreen® dealer or Powerscreen® technical support.

Additional Information and Features

MACHINES CAN VARY IN SPECIFICATION.

The machine may have several changes such as:

OPTIONAL EQUIPMENT
SPECIAL FEATURES
ADDITIONAL FEATURES OR INFORMATION
MODIFICATIONS

THESE CHANGES MAY AFFECT THE INFORMATION GIVEN IN THIS MANUAL.
CHECK FOR ANY ADDENDUM OR BULLETIN WHICH IS INCLUDED IN THIS
SECTION TO SUPPORT THESE VARIATIONS.
TAKE NOTE OF ANY VARIATIONS AS THEY MAY AFFECT PROCEDURES.



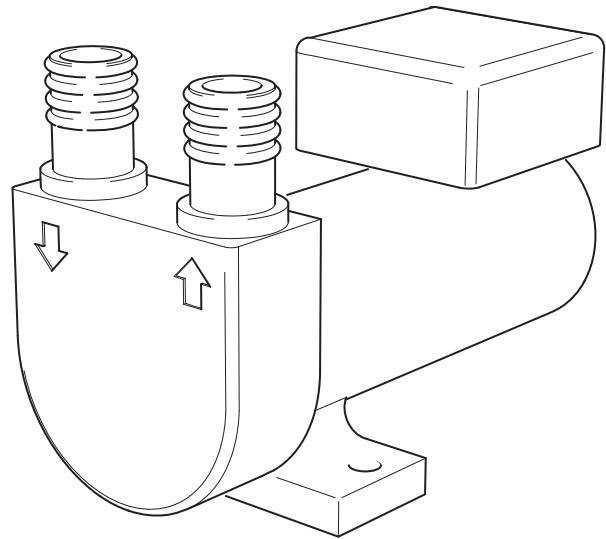
Addendum to User Manual

Operating Instructions

AM0009 Fuel Transfer Pumps [EN]

Introduction and Specification

1. This is available as originally fitted equipment installed at the time of machine manufacture.
2. The pump is for the purpose of transferring diesel fuel from a fuel container positioned at ground level alongside the machine fuel tank.
3. The pump is permanently mounted in a suitable position on the machine in the vicinity of the engine and is electrically driven from a 24v DC supply. The unit is fitted with an integral on/off switch.
4. Also supplied as part of the kit are lengths of plain hose 25mm (1in) bore for suction [with strainer] and delivery.
5. The 2573-7002 pump is suitable for equipment with diesel fuel tanks between 200 and 500 litres (53 and 132 US gallons). Flow is 50 l/min (13.2 US gal/min)
6. The 2573-7014 pump is suitable for equipment with diesel fuel tanks between 500 and 1000 litres (132 and 264 US gallons). Flow is 100 l/min (26.4 US gal/min)
7. Duty is continuous up to 40°C (104°F) ambient, self priming dry up to 3m (9.8 ft) head. Maximum head 10m (32.8 ft).



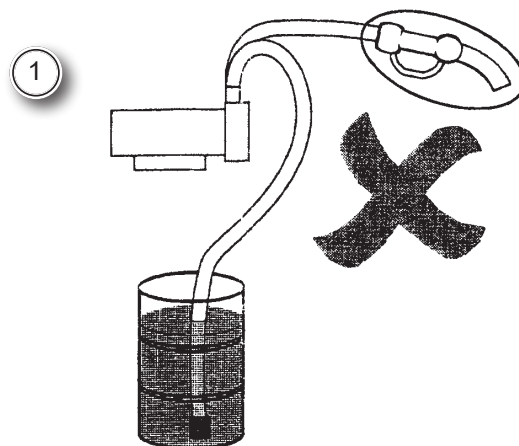
DANGER

Do not use the fuel transfer pump for any other purpose than filling the diesel fuel tank.

Observe the safety instructions in these instructions plus safety and information given in the re-fuelling section of the machine user manual.

SAFETY

1. DO NOT USE A TRIGGER NOZZLE FOR DELIVERY INTO THE FUEL TANK.



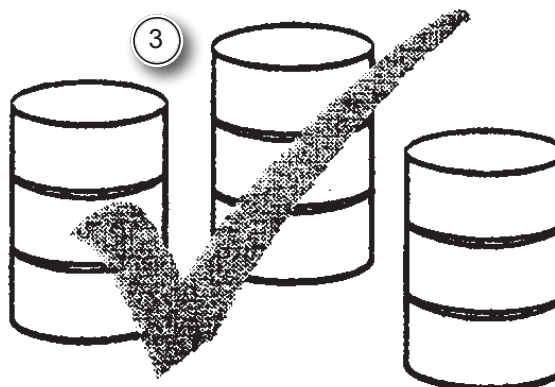
2. FLASHPOINT BELOW 37°C (99°F)

PETROL
GASOLINE
BENZINE



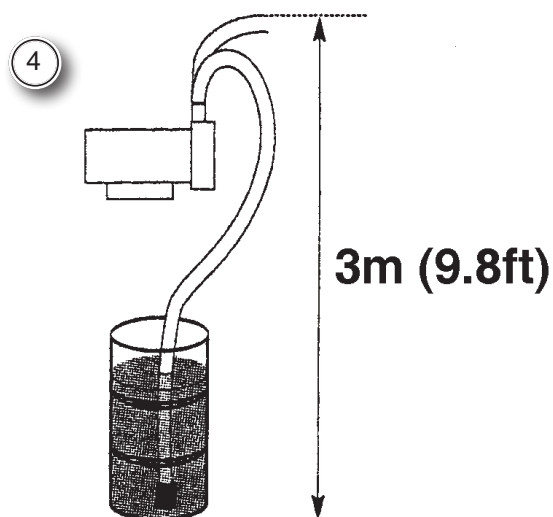
3. FLASHPOINT ABOVE 37°C (99°F)

DIESEL
GAS OIL
FUEL OIL

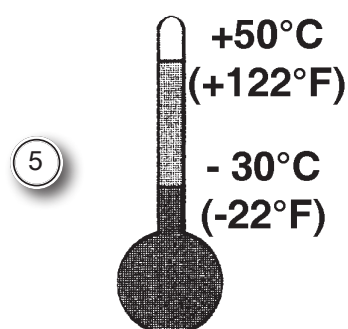


INSTALLATION & USE

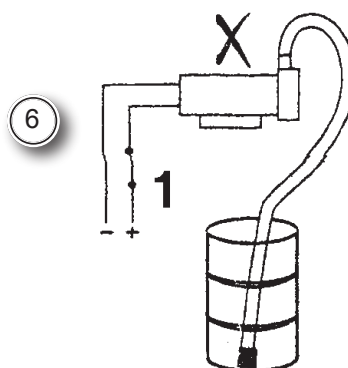
4. CONTINUOUS DUTY AT 40°C (104°F)



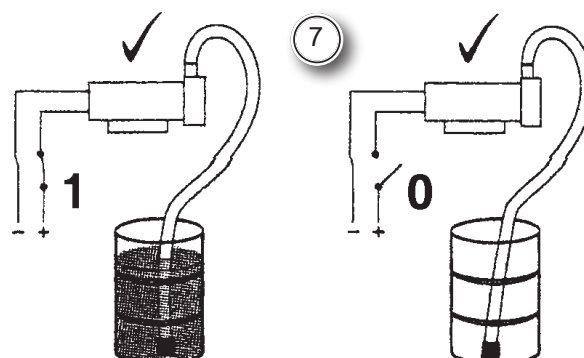
5. TEMPERATURE RANGE



6. DO NOT ALLOW THE PUMP TO RUN DRY.



7. SWITCH OFF IMMEDIATELY DELIVERY OF THE FUEL IS COMPLETED.



Top Up With Fuel

1. Check the fuel gauge on the machine.
2. Observe all safety warnings.
3. Follow the instructions to re-fuel in the machine user manual
4. Connect both hoses to the pump and insert the suction hose into the fuel supply.
5. Remove the filler cap and insert the delivery hose into the machine fuel tank.
6. Operate the switch on the pump to top up the fuel tank. Use only in accordance with the introduction and specification.
7. When re-fuelling is complete, switch off the pump and stow the hoses.
8. Replace the filler cap.
9. If the machine is to be operated, refer to engine starting in the user manual to start up.
10. If the machine is not being used, set the isolation switch to the '0' position.

NOTICE

Do Not fill the tank to overflow or full capacity.

Allow room for expansion and wipe up spilt fuel immediately.

DANGER

Diesel fuel is highly flammable and is an explosion/burns hazard. NEVER remove the filler cap or re-fuel, with the engine running.

NEVER add petrol, gasoline or any other fuel mixes to diesel because of increased fire or explosion risks.

DO NOT smoke while refilling or carrying out maintenance on the fuel system. DO NOT carry out maintenance on the fuel system near naked lights or sources of sparks, such as welding equipment.

Addendum to User Manual

AM0010 M.C.S. Belt Weigher BW100 [EN]

ROUTINE CALIBRATION SIMPLIFIED GUIDE

1. The Following procedures may be performed on a routine basis as required.
2. Important: The belt should be stopped and secured prior to suspending or removing the test weights for span calibration.
3. Safe working practice should be adopted at all times.

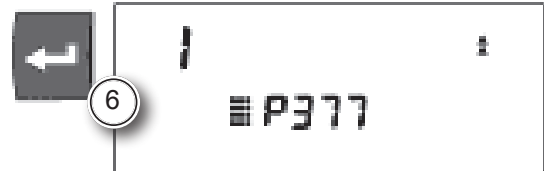
Zero Calibration

4. With belt running empty at normal speed with test weights removed.

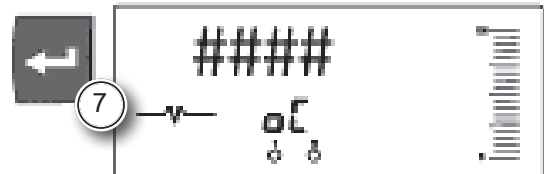
5. ZERO CALIBRATION REQUIRED.



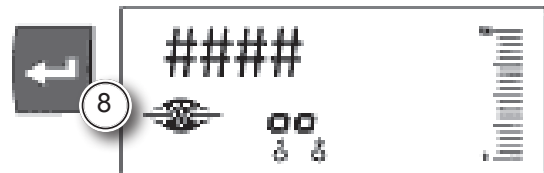
6. INITIAL ZERO COUNT.



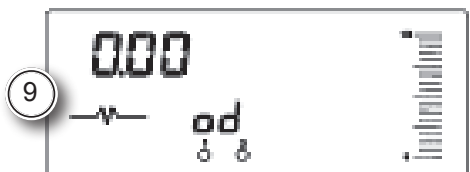
7. FREQUENCY COUNT DISPLAYED DURING CALIBRATION.



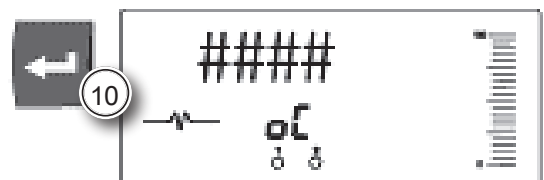
8. DEVIATION.



9. NEW ZERO COUNT CALIBRATION COMPLETE - RETURN TO RUN MODE.



10. PRESS TO RETURN TO RUN MODE.



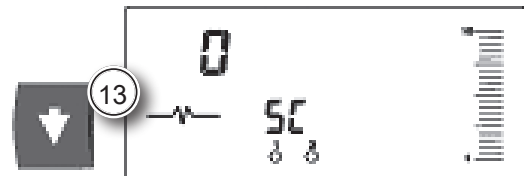
11. SPAN REQUIRED.



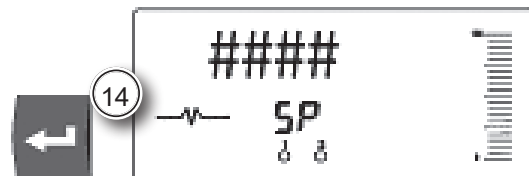
Span Calibration

12. With belt running empty at normal speed with test weights applied.

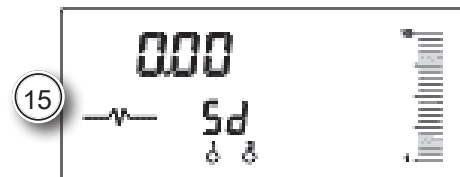
13. INITIAL SPAN COUNT.



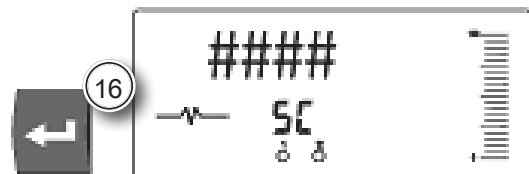
14. FREQUENCY COUNT DISPLAYED DURING CALIBRATION.



15. DEVIATION.



16. NEW SPAN COUNT.



17. CALIBRATION COMPLETE - REMOVE TEST WEIGHTS

18. PRESS TO RETURN TO RUN MODE.



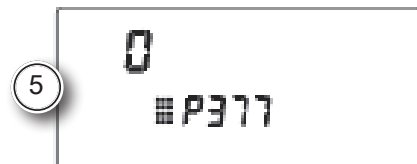
INITIAL CALIBRATION SIMPLIFIED GUIDE

1. The Following procedures may be performed when messages E3 and E4 are displayed during routine calibration.
2. The E3 and E4 messages indicate a mechanical problem: i.e. Bearing failure on weigh idler and also idlers adjacent to the weigher, new belt fitted, build up on the weigher etc.
3. Important: The belt should be stopped and secured prior to suspending or removing the test weights for span calibration. Safe working practice should be adopted at all times.

Zero Calibration

4. With belt running empty at normal speed with test weights removed.

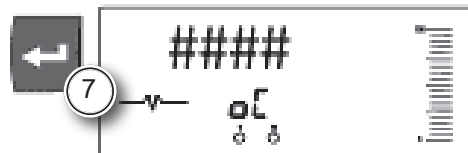
5. SELECT PARAMETER P377.



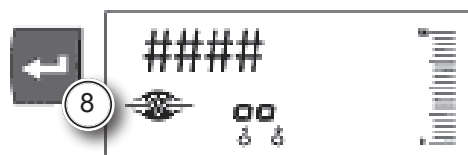
6. INVOKE INITIAL ZERO ENTER "1".



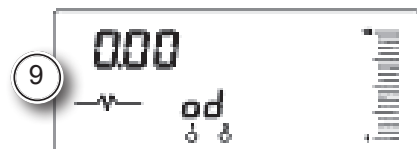
7. CURRENT ZERO COUNT.



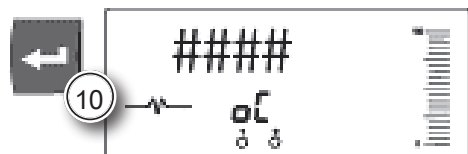
8. ZERO CALCULATION FREQUENCY COUNT DISPLAYED.



9. ZERO DEVIATION.



10. ZERO DEVIATION ACCEPTED - INITIAL ZERO COUNT= ####.



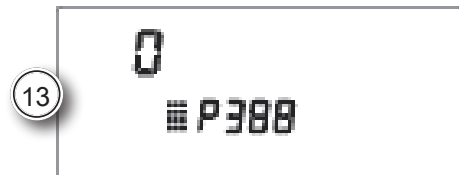
11. PROCEED WITH SPAN CALIBRATION OR RETURN TO RUN MODE.



Span Calibration

12. With belt running empty at normal speed with test weights applied.

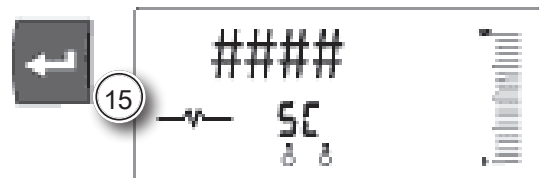
13. SELECT P388 .



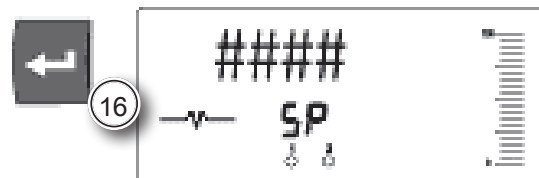
14. INVOKE INITIAL SPAN ENTER " 1 " .



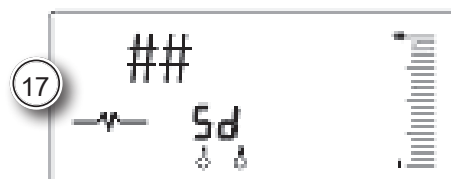
15. CURRENT SPAN COUNT= #####.



16. SPAN CALCULATION - FREQUENCY COUNT DISPLAYED.



17. SPAN DEVIATION= ##.



18. ZERO DEVIATION ACCEPTED - INITIAL ZERO COUNT= #####.



19. RETURN TO RUN MODE.





Addendum To User Manual

AM0011 Water Pump [EN]

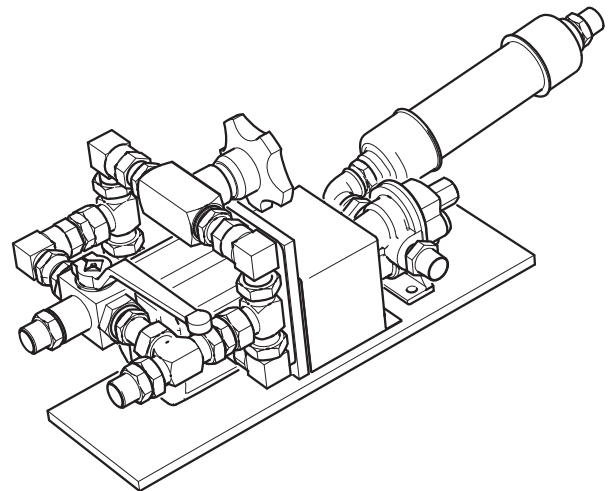
2575-2002 for dust suppression system

2575-2009 for dust suppression system plus additional requirements

TYPICAL INSTALLATION SHOWN

Optional Water Pump [If fitted]

1. This option is available as originally fitted equipment installed at the time of machine manufacture.
2. Two models are available:
 - 2575-2002: 25 l/min nominal (6.6 US gall/min) to supply the machine spray bars only.
 - 2575-2009: 65 l/min nominal (17 US gall/min) to supply the machine spray bars, plus additional capacity for requirements additional to the machine.
3. The pump is to provide a pressurised supply of clean water to the dust suppression spray nozzles included on machines. For details of clean water requirements for the dust suppression system, refer to the machine user manual.
4. The pump is permanently mounted in a suitable position on the machine near to the water system inlet and is driven by the machine hydraulic system.



DANGER

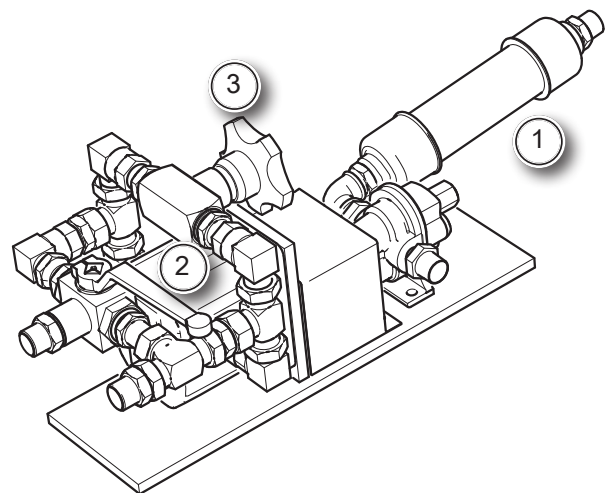
Refer to Safety Notices Section for relevant warning and procedure



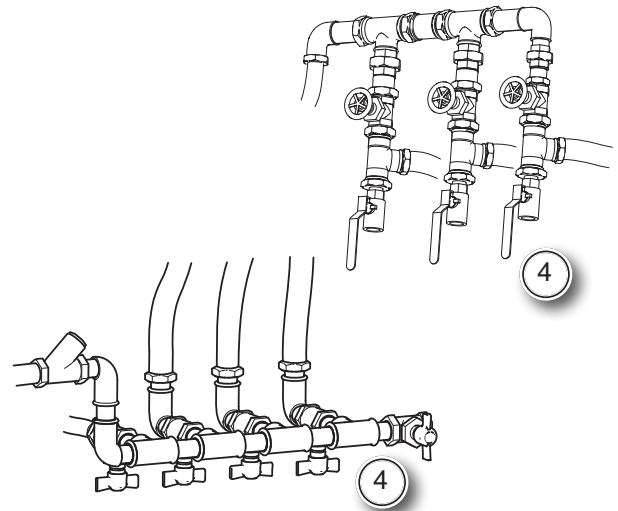
SKIN INJECTION
HAZARD

Controls

1. The water inlet is a hose connector for the provision of suitable supply piping from a clean water container close to the machine.
2. Initial on and off control of the pump is by means of a three position valve lever.
3. Whilst valve lever 2 is in the on position the screw type valve can be used to regulate the supply to the machine water system.



4. If the higher capacity pump is fitted, the supply to the additional equipment can be taken off one of the drain valves.



Servicing

5. No specific maintenance is required for the pump unit except to check for hydraulic oil leaks when carrying out the normal machine checks.

Protection from Freezing

6. Precautions must be taken in cold weather to ensure water does not freeze within the system, by opening the water manifold drain valves and draining the system.
7. Detach the pump water inlet feed pipe and any additional equipment supply also.

< 0°C / 32°F

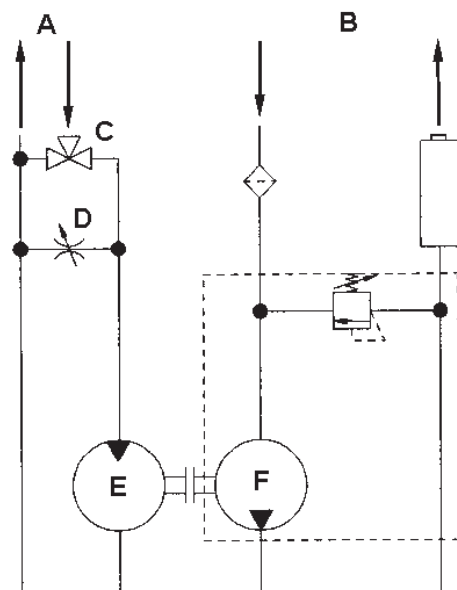


NOTICE

Drain water from system when not in use, if there is a possibility of freezing.

Pump Hydraulic and Water Circuits

- A. Hydraulic Fluid
- B. Water
- C. Three Position Valve
- D. Flow Control Valve
- E. Hydraulic Motor
- F. Water Pump



AX868-180-601

Water Pump [if fitted]

02 EN Safety Notices and Hazards

Safety Notices

DANGER

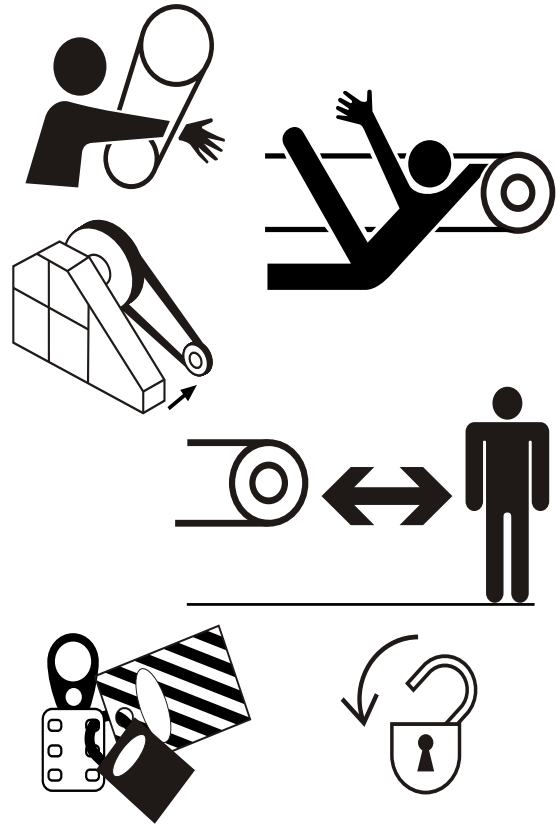
ENTANGLEMENT HAZARD

In-running nip points can cause serious injury or even death.

DO NOT reach into an unguarded machine.

Your arm could be pulled in and amputated.

SWITCH OFF, LOCKOUT and TAGOUT machine before opening or removing guards.



DANGER

SKIN INJECTION HAZARD

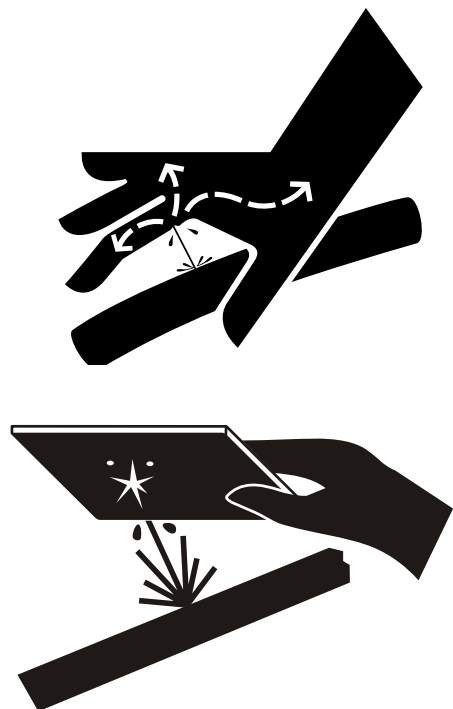
Hydraulic fluid under high pressure can penetrate the skin causing serious injury.

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

ALWAYS use a piece of cardboard to check for leaks. DO NOT use your hand.

If fluid is injected under the skin, it must be surgically removed or gangrene may result.

Get medical help immediately.





WARNING PERSONAL PROTECTIVE EQUIPMENT

Loose or baggy clothing can be caught in running machinery.

ALWAYS wear correctly fitting [E.N./A.N.S.I. approved] personal protective equipment.

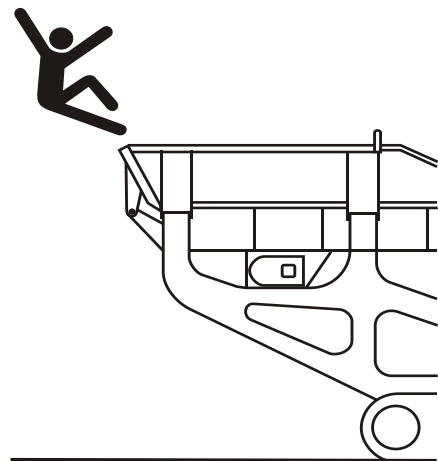
Personal Protective Equipment includes Hard Hat, Safety Glasses, Hearing Protection, Dust Mask, Close Fitting Overalls, Steel Toed Boots, Industrial Gloves and High Visibility Vest.



WARNING FALLING HAZARD

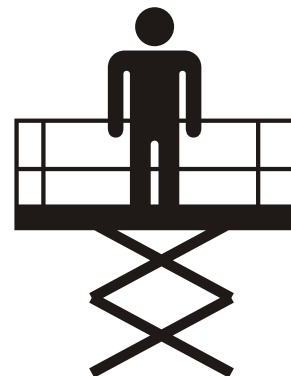
Falling from and/or onto a machine can cause serious injury or even death.

DO NOT climb onto the machine whilst it is in operation.



ALWAYS use the walkways/platforms provided or a safe and secure platform approved by the local regional safety enforcing authority.

ALWAYS use a suitable lifting platform before attempting any maintenance work above 2m (6ft 6in).

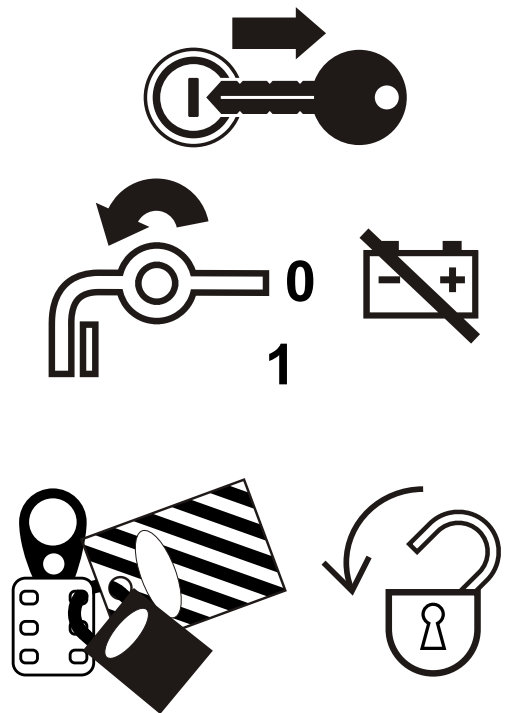


WARNING

LOCKOUT PROCEDURE

When carrying out maintenance or adjustment to the machine the following lockout procedure must be followed.

1. Switch off engine or motor.
2. Remove ignition or isolation key.
3. Keep keys on person during lockout.
4. Turn the battery or isolation switch to '0' when the machine is not being used, especially when mobile machine is being transported.
5. Place appropriate maintenance warning signs [i.e. TAGOUT]
6. NEVER work alone.



WARNING

NOISE LEVEL HEARING HAZARD EXCEEDS 90 dB [A]

May cause loss or degradation of hearing over a period of time.

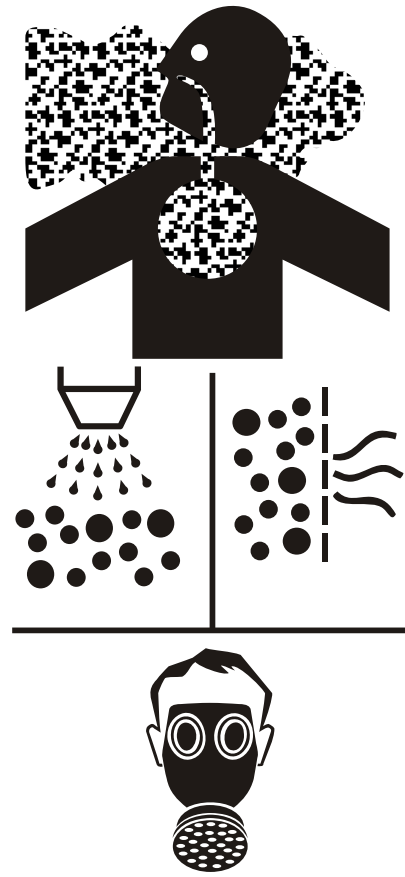
Wear proper hearing personal protective equipment.



! WARNING**DUST GENERATION INHALATION
HAZARD**

Death, serious injury or delayed lung disease may result from breathing dusts that are generated when certain hazardous materials are crushed, screened or conveyed with this equipment.

When dusts are generated by the operation of this equipment, use approved respiratory protection, as required by National, Federal, State and Local safety and health regulations.

**! DANGER****FLYING MATERIAL HAZARD ON
MAINTENANCE PLATFORMS**

Platforms are for maintenance access only.
There is a danger of being hit by flying material.
Do not use platforms when the machine is
working.



Safety Information

Important Safety Notices

1. The environment in which the machine will operate contains inherent risks to health and safety which the operator must take steps to guard against. Dangers from overhead conveyor discharges, overspill material, vehicle movements, etcetera, as well as other site related hazards must be anticipated. Avoid these by carrying out risk assessments before the machine is put into operation to ensure appropriate exclusion zone measures are put in place and site personnel safety awareness training has been undertaken.
2. Follow all applicable safety regulations and recommendations in this manual as appropriate to your machine and the situation/conditions prevailing at the time.
3. Read this manual carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or equipment damage.
4. Federal, State, National and Local laws and safety regulations must be complied with at all times to prevent possible danger to persons or property from accidents or harmful exposure.
5. See also the separate Operation and Maintenance Manual provided for the diesel engine when fitted and supplied as a complete Pegson machine. In particular read and observe the instructions within the Safety Section of the engine manual.
6. This safety section covers a wide variety hazardous situations, but not necessarily limited to those described, which may or may not apply to any specific machine use or installation. They are given for general guidance only to assist the operator in setting up and maintaining an appropriate regime for the protection of health and safety.
7. Where the crusher is supplied for incorporation into machine/equipment designed, supplied and located by others, or as a replacement crusher only, Powerscreen® cannot be aware of particular hazards that may be present or might occur and therefore accept no liability for addressing or resolving these issues.

8. For further U.K. information also refer to:



<http://www.hse.gov.uk/quarries/crushing.htm>

Organisation Measures

9. Ascertain from the appropriate Authority and observe all statutory and any other regulations that may apply to the planned location before operating the machine.
10. Loose or baggy clothing can get caught in running machinery.
11. Where possible when working close to engines or machinery, only do so when they are stopped. If this is not practical, remember to keep tools, test equipment and all other parts of your body well away from the moving parts.
12. For reasons of safety, long hair must be tied back or otherwise secured, garments must be close fitting and no jewellery such as rings may be worn. Injury may result from being caught up in the machinery or from rings catching on moving parts.
13. Always wear correctly fitting [EN/A.N.S.I. approved] protective clothing.
14. Protective clothing includes hard hat, safety glasses, ear protection, dust mask, close fitting overalls, steel toed boots and a high visibility vest.
15. You can be injured if you do not obey the safety instructions as indicated on warning signs.
16. Observe all safety instructions and warnings attached to the machine.
17. Keep warnings and instruction labels clean to ensure safety instructions and warnings attached to the machine are always complete and perfectly legible.
18. Replace unreadable or missing labels with new ones before operating the machine. Make sure replacement parts include warning or instruction labels where necessary.
19. Understand service procedure before doing work. Keep areas clean and dry.
20. Never lubricate, clean, service or adjust machinery while it is moving. Keep hands, feet and clothing clear of power driven parts and in running nip-points. Disengage all power and operate controls to relieve pressure. Stop the engine. Implement lockout procedure. Allow the machinery to cool.
21. Keep all parts in good condition. Ensure that all parts are properly installed. Fix damage immediately. Replace worn and broken parts. Remove any build up of grease, oil and debris.
22. Disconnect battery ground cable before making adjustments on electrical systems or welding on machine.
23. Never make any modifications, additions or conversions, which might affect safety without the supplier's approval.
24. In the event of safety relevant modifications or changes in the behaviour of the machine during operation, stop the machine and lock out immediately and report the malfunction to the competent authority/person.

Selection and Qualification of Personnel - Basic Responsibilities

1. Trained, reliable and authorised personnel only must execute any work on and/or with the machine. Statutory minimum age limits must be observed.
2. Work on electrical system and equipment of the machine must be carried out only by a skilled electrician or by instructed persons under the supervision and guidance of a skilled electrician and in accordance with electrical engineering rules and regulations.
3. Only personnel with special knowledge and experience of hydraulic equipment must carry out work on the hydraulic system.

Safety Instructions Governing Specific Operational Phases

Standard Operation

4. Take the necessary precautions to ensure that the machine is used only when in a safe and reliable state.
5. Operate the machine only for its designed purpose and only if all guarding, protective and safety orientated devices, emergency shut-off equipment, sound proofing elements and exhausts, are in all place and fully functional.
6. Before starting the engine ensure it is safe to do so.
7. In the event of material blockage, any malfunction or operational difficulty, stop the machine immediately and lockout. Have any defects rectified immediately.
8. In-running nip points on moving machinery can cause serious injury or even death.
9. Do not reach into unguarded machinery. Your arm could be pulled in and amputated.
10. Switch off and lockout the machine before removing, for adjustment purposes, any safety devices or guarding.
11. NEVER leave the machine unattended whilst it is in operation.

Special Work In Conjunction with Utilisation of the Plant

Maintenance and Repairs During Operation;
Disposal of Parts and Consumable items

12. Observe the adjusting, maintenance and intervals set out in these operating instructions, except where:
 - Warning horn/light/gauge or indicator calls for immediate action.
 - Adverse conditions necessitate more frequent servicing.
13. Observe information on the replacement of parts and equipment. These activities may be executed by skilled personnel only.
14. When the machine is completely shutdown for maintenance and repair work, it must be secured against inadvertent starting by:
 - Switching off the engine and remove the ignition key.
 - Implementing the lockout procedure.
 - Attaching warning signs to the machine in appropriate positions.

Safety Hazards

15. Carry out maintenance and repair work only if the machine is positioned on stable and level ground and has been secured against inadvertent movement and buckling.
16. Never allow unqualified or untrained personnel to attempt to remove or replace any part of the machine, or anyone to remove large or heavy components without adequate lifting equipment.
17. 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. Use only suitable and technically adequate lifting equipment.
18. Never work or stand under suspended loads.
19. Keep away from the feed hopper. There is risk of serious injury or death due to the loading of material.
20. Keep away from underneath the product conveyor and the conveyor discharge area. There is risk of serious injury or death due to the material falling from the conveyor.
21. Falling from and/or onto a Pegson machine can cause injury or even death.
22. Do not climb on the machine. Never use machine parts as a climbing aid.
23. Beware of moving haulage and loading equipment in the vicinity of the machine.
24. For carrying out overhead assembly work always use specially designed or otherwise safety-oriented ladders and working platforms.
25. Always use any walkway/platforms provided or a safe and secure platform approved by the regional safety enforcing authority.
26. Always use an EN/A.N.S.I. approved safety harness when reaching any points 2m (7ft) or more above the ground level.
27. Keep all handles, steps, handrails, platforms, landing and ladders free from dirt, oil, snow and ice.
28. The fastening of loads and instructing of crane operators should be entrusted to experienced persons only. The person marshalling and giving the instructions must be within sight or sound of the operator.
29. After cleaning, examine all fuel, lubricant and hydraulic fluid lines for leaks, loose connections, chafe marks and damage. Any defects found must be rectified without delay.
30. Any safety devices removed for setting up, maintenance or repair purposes must be refitted and checked immediately upon completion of the maintenance and repair work to ensure full working order.
31. Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with Pegson equipment includes such items as oil, fuel, coolant, filters and batteries, etc.
32. Use leak proof trays and sealed containers for drained fluids. Do not use food or beverage containers that may mislead someone into drinking from them.
33. Do not pour waste onto the ground, down a drain or into any water source.
34. Ensure that all consumable items and replaced parts are disposed of safely and with minimum environmental impact.

35. Always ensure that any safety fitment such as locking wedges, securing chains, bars or struts are utilised as indicated in these operating instructions.
36. Particularly make sure that any part of the machine raised for any reason is prevented from falling by securing in a safe reliable manner.
37. Never work under unsupported equipment.
38. Never work alone.
39. Diesel fuel is highly flammable.
40. Never remove the filler cap, or refuel, with the engine running.
41. Never add gasoline or any other fuels mixed to diesel because of increased fire or explosion risks.
42. Do not smoke or carry out maintenance on the fuel system near naked lights or sources of sparks, such as welding equipment.
43. Use of non-approved structures like walkways or platforms etc. in the vicinity of a Pegson machine is very dangerous and could lead to serious injury or even death through falling and/or entanglement with the machine.
44. Do not use any unauthorised structures.

Warning of Special Dangers

Electric Energy

1. Use only original fuses with the specified current rating. Switch off the machine immediately if trouble occurs in the electrical system.
2. Plants with high voltage electrical equipment must be suitably earth bonded by a qualified electrician prior to activating the main isolator switch.
3. When working with the machine, maintain a safe distance from overhead electric lines. If work is to be carried out close to overhead lines, the working equipment must be kept well away from them. Check out the prescribed safety distances.
4. If your machine comes into contact with a live wire:
 - Warn others against approaching and touching the machine.
 - Have the live wire de-energised.
5. Work on the electrical system or equipment may only be carried out by a skilled and qualified electrician or by specially instructed personnel under the control and supervision of such an electrician and in accordance with applicable electrical engineering rules.
6. If provided for in the regulations, the power supply to parts of machines and machines, on which inspection, maintenance and repair work is to be carried out, must be cut off. Before starting any work, check the de-energised parts for presence of power and ground or short circuit them in addition to insulating adjacent live parts and elements.
7. The electrical equipment of the machine is to be inspected and checked at regular intervals. Defects such as loose connections or scorched or otherwise damaged cables must be rectified immediately.
8. Necessary work on live parts and elements must be carried out only in the presence of a second person, who can cut off the power supply in the case of danger by actuating the emergency shut off or main power switch. Secure the working area with a red and white safety chain and a warning sign. Use insulated tools only.
9. Before starting work on high voltage assemblies and after cutting out the power supply, the feeder cable must be grounded and components such as capacitors short-circuited with a grounding rod.
10. Tracked machines are wired with negative earth. Always observe correct polarity.
11. Always disconnect battery leads before carrying out any maintenance to the electrical system.
12. If welding is to be carried out on the machine it is essential that the power pack is isolated, refer to servicing safety & precautions.
13. The batteries contain sulphuric acid, an electrolyte which can cause severe burns and produce explosive gases.
14. Avoid contact with the skin, eyes or clothing.

Gas, Dust, Steam, Smoke and Noise

15. Always operate internal combustion engines and fuel operated heating systems only out of doors or in a well-ventilated area.
16. Before starting the machine in enclosed areas, make sure that there is sufficient ventilation.
17. Observe the regulations in force at the respective site.
18. Dust found on the machine or produced during work on the machine should be removed by extraction, not blowing.
19. Dust waste should be dampened, placed in a sealed container and marked, to ensure safe disposal.
20. Carry out welding, flame cutting and grinding work on the machine only if this has been expressly authorised, as there may be a risk of explosion and fire.
21. Before carrying out welding, flame cutting and grinding operations, clean the machine and its surroundings from dust and other flammable substances and make sure the premises are adequately ventilated as there may be a risk of explosion.
22. Always ensure that operators are provided with ear defenders of approved pattern and that these are worn at all times when the machine is operating.
23. Ensure operators wear a suitable face mask where exposed to possible harmful effects of air pollution of any kind.

Hydraulic and Pneumatic Equipment

24. Only persons having special knowledge and experience in hydraulic systems may carry out work on hydraulic equipment.
25. Check all lines, hoses and screwed connections regularly for leaks and obvious damage. Repair damage immediately. Splashed oil may cause injury and fire.
26. Depressurise all system sections and pressure pipes [hydraulic system, compressed air system] to be removed in accordance with the specific instructions for the unit concerned before carrying out any repair work.
27. Hydraulic and compressed air lines must be laid and fitted properly. Ensure that no connections are interchanged. The fittings, lengths and quality of the hoses must comply with the technical requirements.
28. Always practice extreme cleanliness servicing hydraulic components.
29. Hydraulic fluid under pressure can penetrate the skin causing serious injury.
30. Always use a piece of cardboard to check for leaks. Do not use your hand.
31. If fluid is injected under the skin, it must be surgically removed or gangrene will result.
32. Get medical help immediately.
33. Always relieve pressure from the hydraulic system before carrying out any kind of maintenance or adjustment.

Safety Hazards

Hazardous Substances

1. Ensure that correct procedures are formulated to safely handle hazardous materials by correct identification, labelling, storage, use and disposal.
2. All hazardous materials must be handled strictly in accordance with the manufacturers instructions and all applicable regulations observed at all times.

Transporting, Manoeuvring and Re - commissioning

3. The machine is remote controlled and may start without notice. Stay clear of the machine.
4. The machine must be loaded and transported only in accordance with the operating instructions.
5. For manoeuvring the machine, observe the prescribed transport position, admissible speed and itinerary.
6. Use only appropriate means of transport and lifting equipment where applicable of adequate capacity.
7. The re-commissioning procedure must be strictly in accordance with the operating instructions.
8. Before travelling with the machine, check that the braking and any signalling and lighting systems are fully functional.
9. Before setting the machine in motion always check that the accessories have been safely stowed away.
10. When travelling on public roads, ways and places, always observe the valid traffic regulations and, if necessary, ensure beforehand that the machine is in a condition compatible with these regulations.
11. In conditions of poor visibility and after dark, always switch on the lighting system of the transporting vehicle.
12. When crossing underpasses, bridges and tunnels or when passing under overhead lines always make sure that there is sufficient clearance.
13. Never travel across slopes; always keep the working equipment and the load close to the ground, especially when travelling downhill.
14. On sloping terrain, always adapt your travelling speed to the relevant ground conditions. Never change to a lower gear on a slope. Always change gear before reaching a slope.

Safety Signs

Location

1. Refer to machine specification and information for the identification and positions of safety signs on the machine.



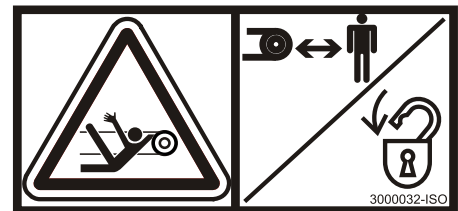
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Maintenance

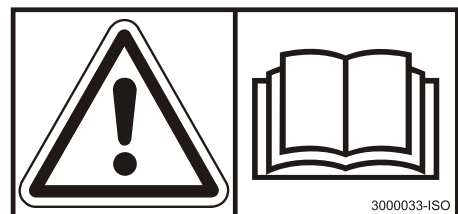
2. Replace any missing or damaged safety signs.
3. Keep operator safety in mind at all times.
4. Keep safety signs clean using mild soap and water only. Do not use solvent based cleaners because they may damage the safety signs.

Illustrations

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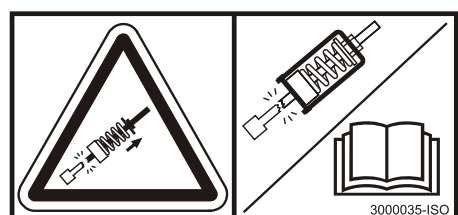
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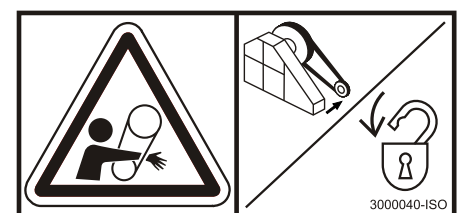
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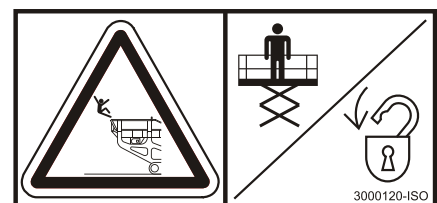
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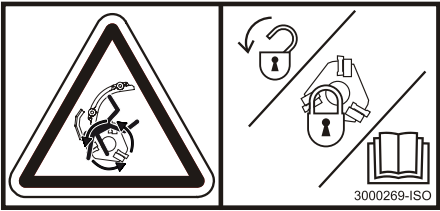
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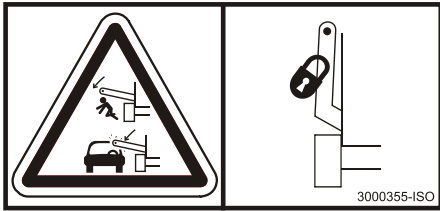
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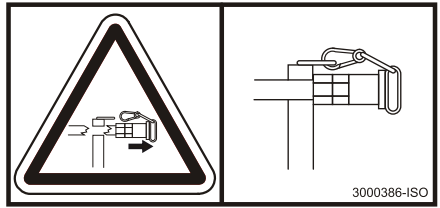
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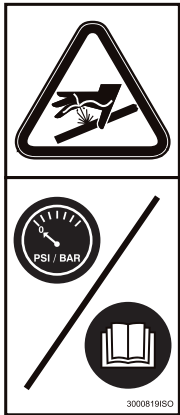
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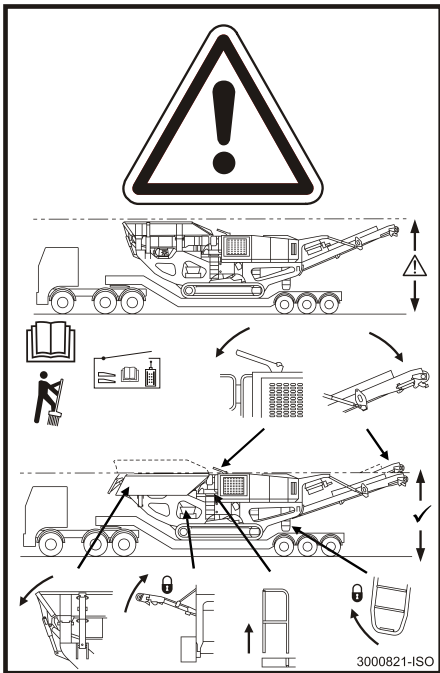
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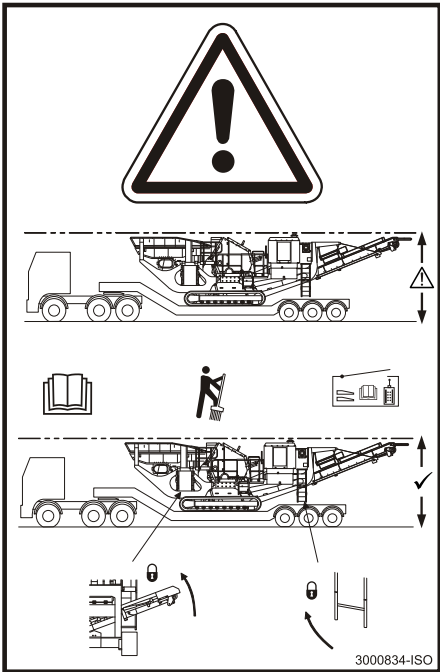
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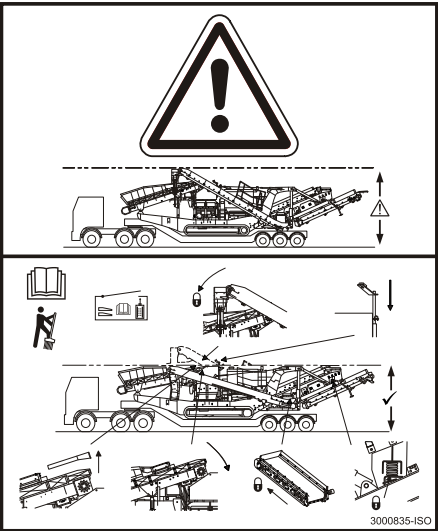
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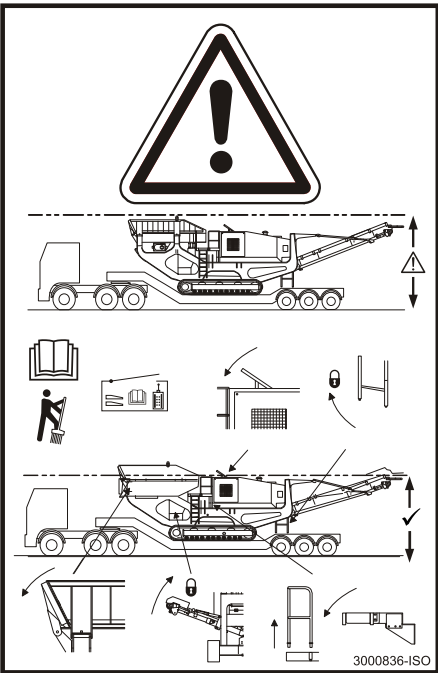
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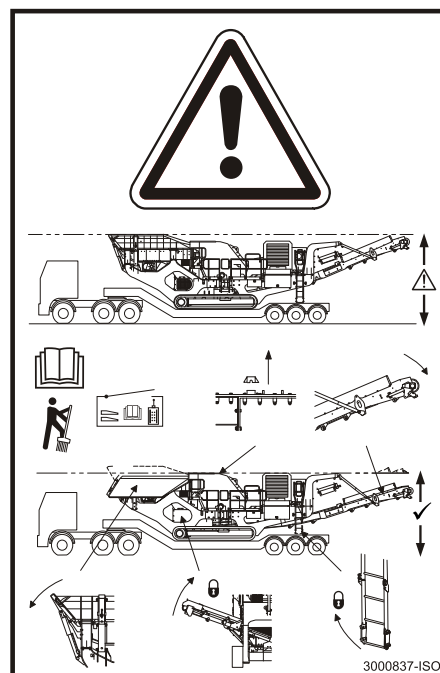
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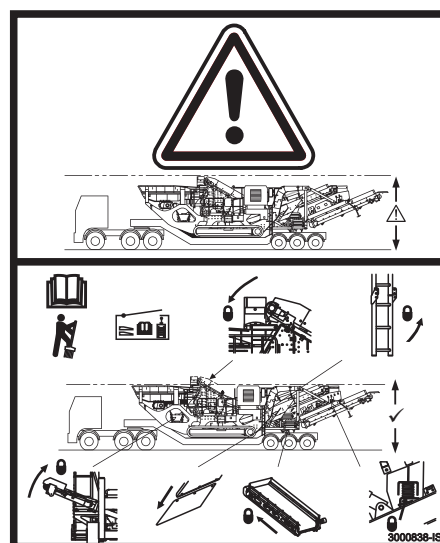
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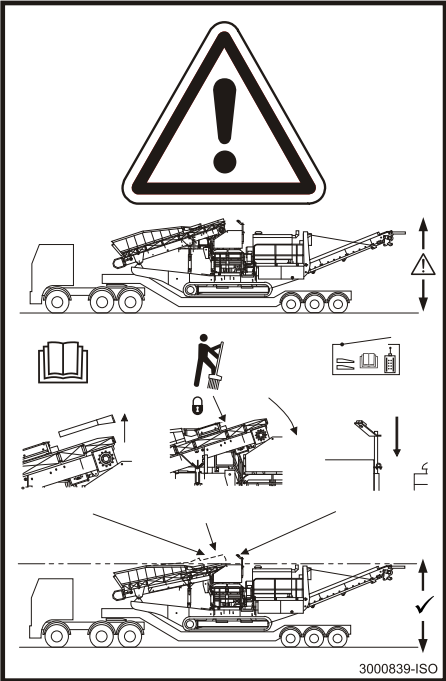
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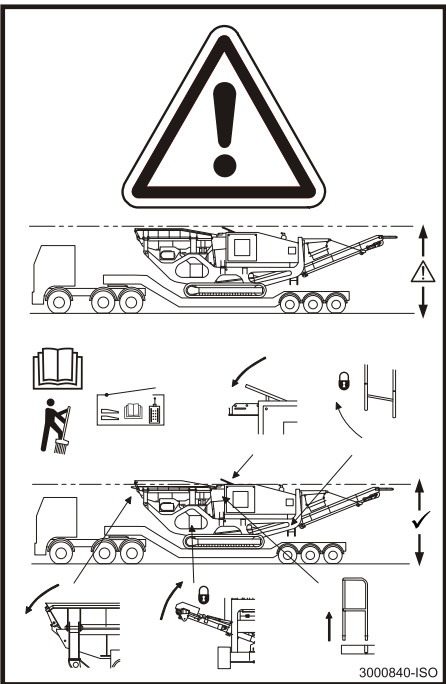
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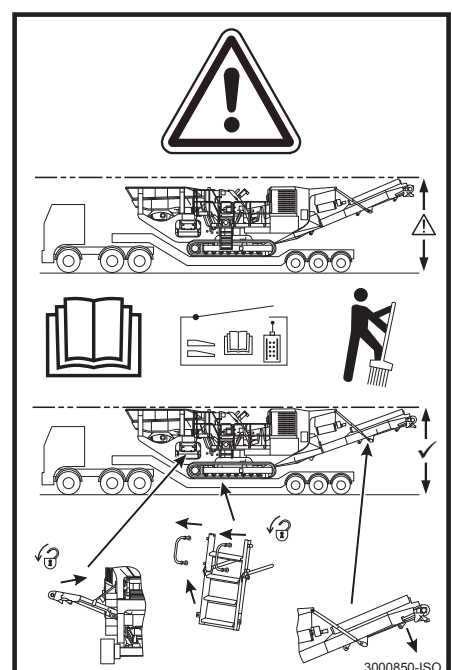
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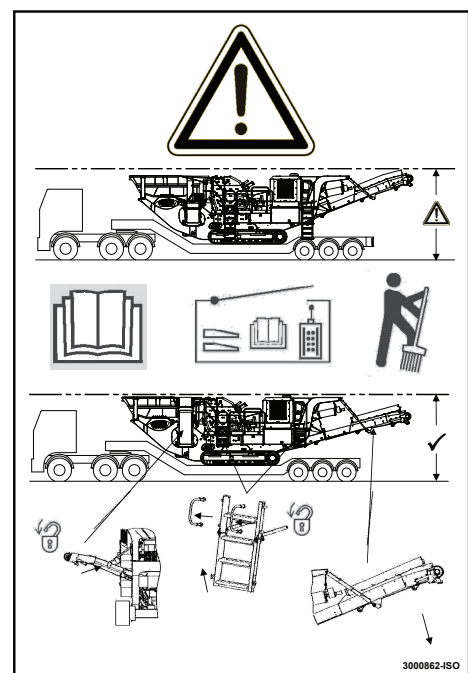
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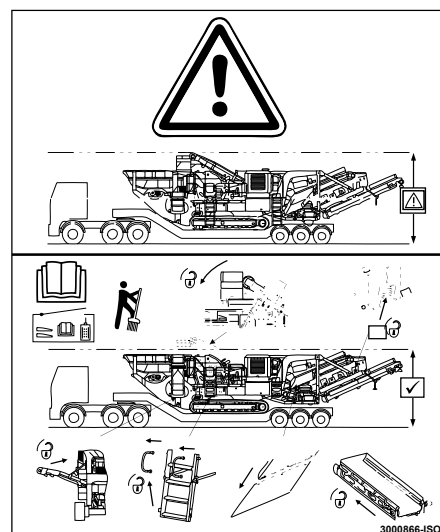
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03 EN General Information

General

1. The machine has been manufactured with quality materials and assembled and tested with care.
2. Close attention has been paid in assembly, tests and final inspection.
3. We are confident that the machine will give you every satisfaction over a long period.
4. The machine is simple to operate and adjust. Expert assistance is seldom required, provided that ordinary care is exercised in daily use.
5. The machine has been built in accordance with current standards and recognised safety rules.
6. It is designed to be reliable, efficient and safe when used and maintained in accordance with the instructions given in this manual.

7. When the machine is new and first commissioned, refer to initial checks - running in.



33

EC Conformity

8. This machine is in conformity with the provisions of the current EC Machinery Directive.



Units of Measure

9. Metric ISO units are used within this manual.

Threads and Fasteners

10. Metric threads and fasteners are used throughout the machine normally.
11. Where a standard component is used on the machine, the thread and fastener system on that component may not be metric.

Copyright

12. The copyright of this user manual is reserved by Terex ®. The right is reserved to alter any details contained in this manual without notice.
13. This user manual contains information and technical drawings, which may not be copied, distributed, altered, stored on electronic media, revealed to others or used for the purpose of competition, either partially or in its entirety.

Operating Temperature

1. The normal operating temperature range of the machine is -12°C to +40°C (+10.4°F to +104°F). Refer to the engine operation manual also. For use in temperatures outside of this range, contact your Powerscreen® dealer or Powerscreen® technical support department for details.
2. Appropriate oils, lubricants & coolant to suit the local operating environment and conditions must be used, as specified in the manual.

Information and Advice

3. If you need information or advice regarding your machine or wish to order additional copies of this manual, contact your local Powerscreen® dealer or Powerscreen® technical support.

Powerscreen®

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Dungannon

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04 EN Plant Specification and Information

Specification and Plant Information

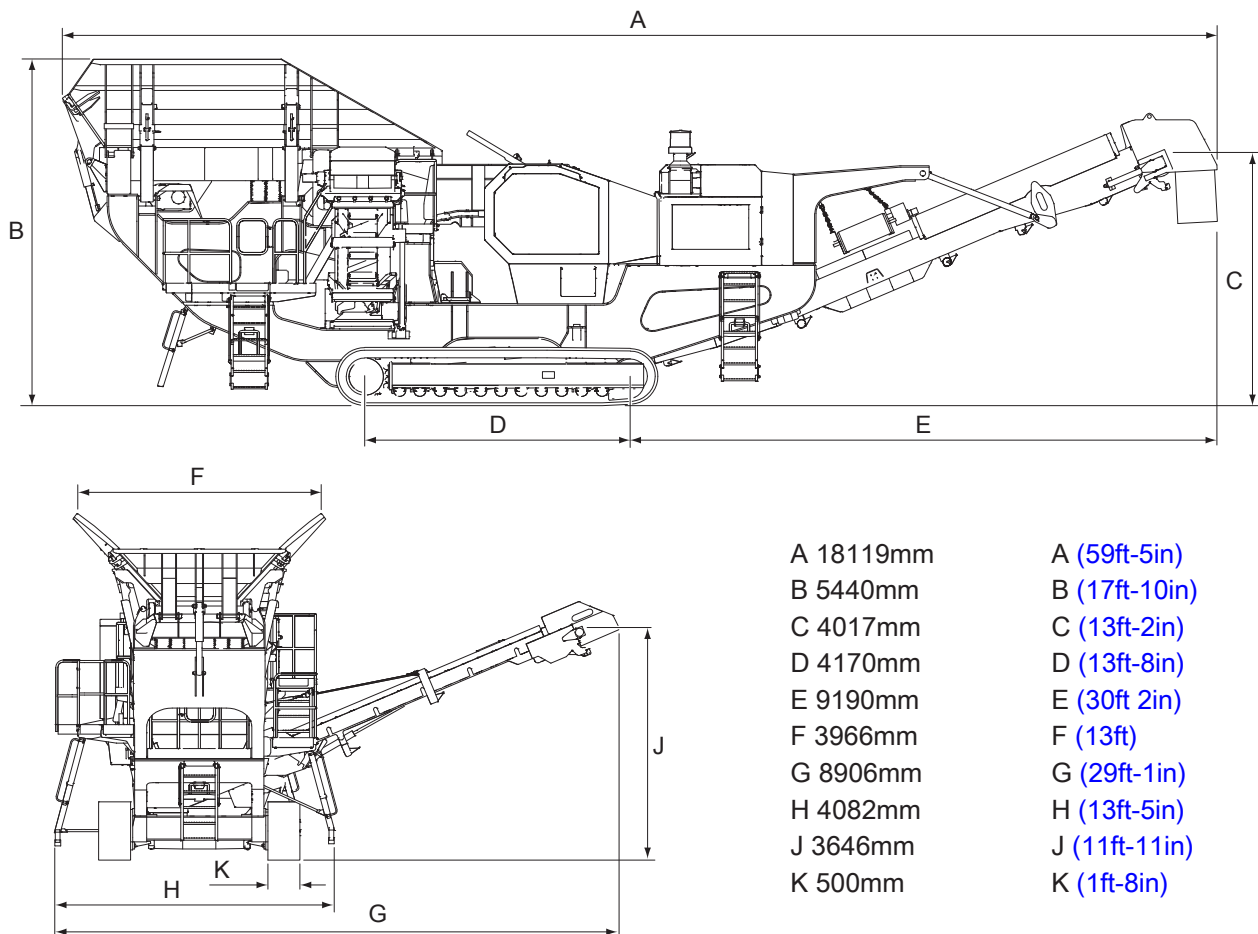
Dimensions

Working Dimensions

All dimensions are in millimetres.

Approximate dimensions are in (Feet - Inches).

Feed hopper raised and product conveyor fully raised



Overall Transport Dimensions

[All conveyors, chute and grid in transport positions].

Length: 18626mm

Width: 3408mm

Height: 4320mm

Track width: 3160mm

Overall Transport Dimensions

[All conveyors, chute and grid in transport positions].

Length: (61ft-1in)

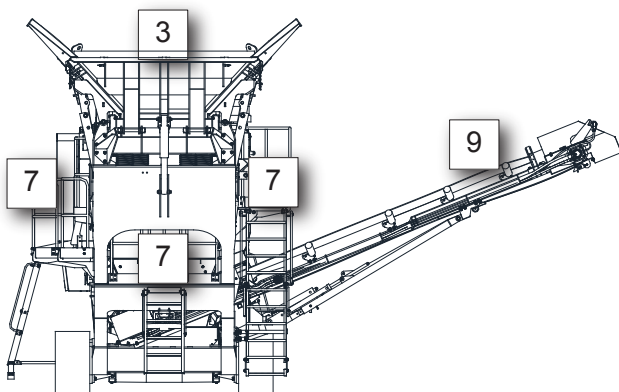
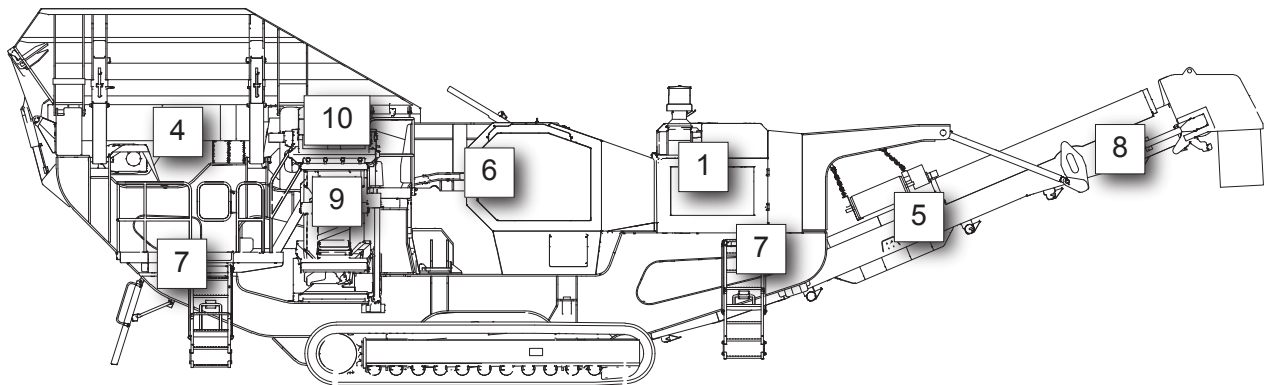
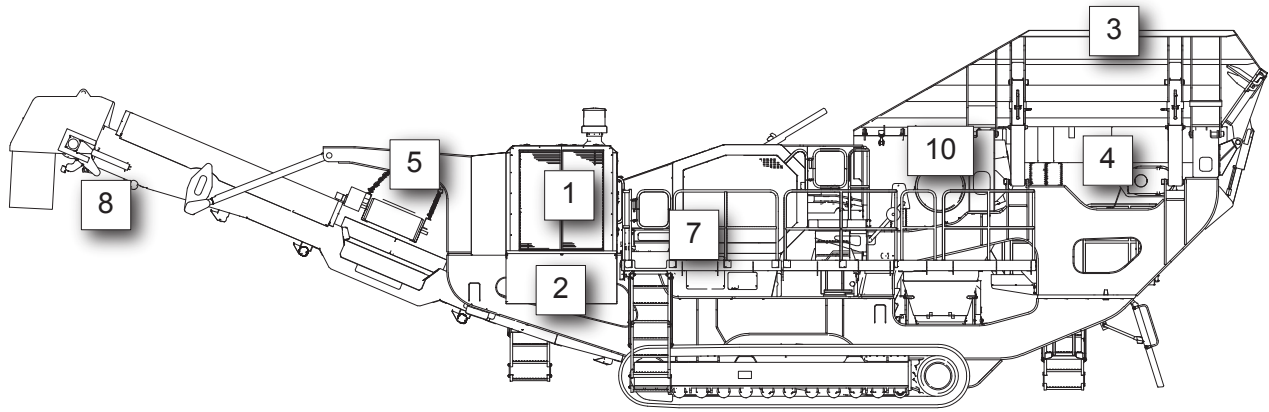
Width: (11ft-2in)

Height: (14ft-2in)

Track width: (10ft-4in)

Plant Description

1. Recycling/Crushing plant with Diesel/Hydraulic drives. Refer to the diagrams to identify the main areas of the plant and the term with which they are referred to in this manual.
2. The plant has been designed and built to provide a range of equipment choices to meet a wide variety of individual needs and preferences as selected at the time of initial purchase.



1. Engine Power pack
2. Control Box
3. Feed Hopper
4. Vibrating Feeder
5. Optional Magnetic Over Band Separator
6. Jaw Crusher
7. Maintenance Platform
8. Product Conveyor
9. Optional Dirt Conveyor
10. Pre-Screen

Weights

3. The weight is dependant on options, therefore refer to plate fixed to plant.

Plant Components

Hopper and Feeder

1. Hopper with hydraulic folding sides and end plates.
2. Spring mounted vibrating grille feeder, driven by a heavy duty vibrating mechanical unit with twin eccentric rotating shafts.
3. Drive is by hydraulic motor with variable speed control.
4. Feeder grille is a double section of welded tapered finger type bars, fabricated in abrasion resistant steel.

Under screen

5. A rubber blanking mat will be fitted where the plant does not have the dirt conveyor fitted.
6. The under screen has a removable mesh, used in conjunction with the optional dirt conveyor. If the material is able to be screened, it allows the extraction of smaller fines onto the dirt conveyor with the coarser material discharging onto the product conveyor.
7. By removing the mesh entirely all the fines are directed to the dirt conveyor.

Pre-Screen

8. The pre-screen is prior to crushing, this removes the fine material that does not need to be crushed, therefore increasing efficiency of the crusher. The pre-screen fines drops to the dirt conveyor therefore bypassing the crusher unit.

Crusher

9. Single toggle jaw crusher with feed gape of 820mm (32in) and width of 1420mm (56in), operated by eccentric shaft driven by vee belts and pulleys from engine.
10. The crusher has setting adjustment by hydraulic operation of wedges.

Product Conveyor

11. Plain troughed belt with a vulcanised joint.
12. Hydraulic motor drive via coupling to drive drum at pre-set speed.
13. Canvas type removable dust covers are fitted at the head end.

Tracks

14. Heavy-duty track pitch chain tracks driven by integral hydraulic motors and gearboxes with dual speed control by umbilical control, [or radio remote control, if fitted].

Power Pack

15. Water-cooled diesel engine driving the crusher via an hydraulic clutch and hydraulic pumps.
16. Hydraulic pumps drive the tracks, feeder, product conveyor and other items.
17. Engine is enclosed with integral fuel tank and batteries.

Specification and Plant Information

Maintenance Platforms

18. Steel grid maintenance platforms, fitted with double row handrails and access ladders, are provided for daily checks and servicing of the crusher and power pack

WARNING

Refer to Safety Notices Section for relevant warning and procedure



**FLYING MATERIAL
HAZARD ON
MAINTENANCE
PLATFORMS**

Controls

19. Controls are fitted on the plant for setting up and preparing the plant for transport, adjusting crusher settings, feeder and conveyors. Engine and plant controls are in a lockable box.
20. An umbilical control unit is provided for operating the tracks to move the plant.
21. Emergency stop buttons are provided on each side of the plant and on the umbilical control.

Guards

22. Wire mesh or sheet metal guards are provided for all drives, flywheels, pulleys, couplings, gears and vee belts.
23. The guards provided are designed and manufactured to ensure so far as reasonably practicable that the machinery and plant on which they are fitted can be operated safely and without risk to health when properly used. However, it cannot be guaranteed that the guards will meet the requirements laid down by individual inspectors.

Specifications

24. Every endeavour will be made to supply equipment as specified, but we reserve the right, where necessary, to amend specifications without prior notice as we operate a policy of continual product development.
25. It cannot be guaranteed that the equipment specified will meet any specific requirements in respect of noise or vibration levels, dust emission, or any other factors relevant to health and safety measures or environmental protection needs.

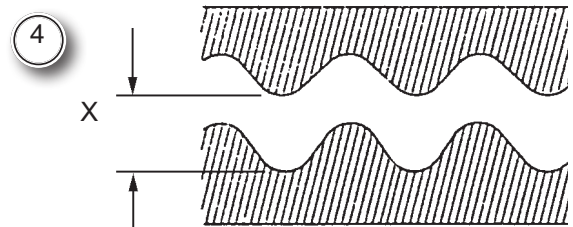
26. For any available extras and option details, contact Powerscreen®.



03

Jaw Crusher

1. In order to obtain the optimum output from the crusher, it's feed should be continuous and regulated.
2. All feed should be of a size that will readily enter the crusher chamber.
3. In order to avoid packing of the discharge opening and excessive wear of the plant jaws, under size material should be removed from the feed prior to entry to the crusher.
4. The crusher must not be operated at a discharge opening less than shown as 'X', 100mm (4in) minimum for quarry applications. Operating the crusher below this setting may result in extensive damage.
5. The only exception to this being for crushing bricks and demolition materials.



NOTICE

DO NOT feed non crushable material larger than the closed jaw gap setting.

6. The percentage of oversize output from the crusher, for a given discharge opening, will depend largely on the quality and character of the feed material.
7. The crusher has been designed to work with feed materials having a 10% fines value not exceeding 390kN (87675 lbf).

06 EN General Screen Icons

Plant Screen Icons

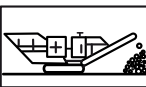
Plant Icons

1. This section provides a general reference and explanation of icons used.
2. Not all icons are used on all plants.

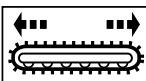
3. For explanation of specific plant icons or optional components icons, refer to individual operation section of this manual.



4. Escape back to previous display screen page.



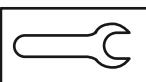
5. Plant mode for crushing operations.



6. Track mode to move the plant using the track controls.



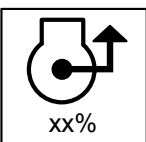
7. Information about the plant and configuration settings.



8. Set up mode to make adjustments to the plant for crushing or for transport.



9. Engine speed display.



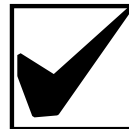
10. Engine load display.



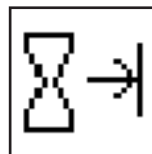
11. Engine start up.



12. When positioned next to icon, that item is not operating.



13. When positioned next to icon, that item is operating.



14. Engine operating hours.



15. Number of times the engine has been started.



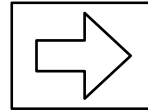
16. Scroll to highlight the next icon or plant component in a clockwise direction.



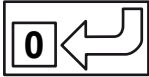
17. Scroll to highlight the next icon or plant component in an anti-clockwise direction.



18. Enter the selected highlighted icon screen or accept set parameters.



25. Hollow right arrow indicates more information on next page.



19. Switch off the selected plant component icon.



26. Higher track speed setting



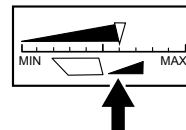
20. Switch on the selected plant component icon.



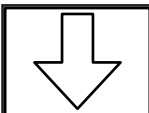
27. Slower track speed setting.



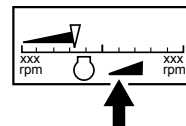
21. Solid arrow up or down highlights a plant component or icon.



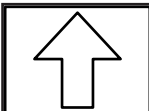
28. Feeder speed adjustment.



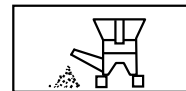
22. Hollow arrow down decreases the speed of a plant component.



29. Engine speed adjustment.



23. Hollow arrow up increases the speed of a plant component.



30. Switch dirt conveyor on of off when highlighted.

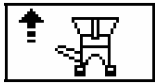


24. Rotating arrow indicates the component adjacent on screen is running.



31. Dirt conveyor control set up.

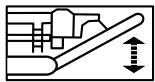
Plant Screen Icons



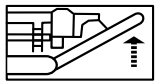
32. Raise dirt conveyor into the transport position.



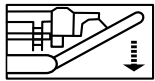
33. Lower dirt conveyor into the working position.



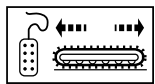
34. Product output conveyor control set up.



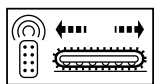
35. Raise product output conveyor



36. Lower product output conveyor



37. Control the tracks with the wired umbilical control.



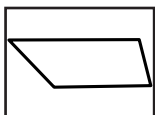
38. Control the tracks with the radio control.



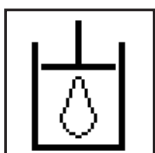
39. Press horn button on control being used, either umbilical or radio control, to start or stop the track operation.



40. Crusher general icon.



41. Feeder general icon.



42. Hydraulic fluid general icon.

10 EN Preparing to Move the Plant

Initial Preparation

1. Before moving the plant it must be cleared of any material.
2. The discharge end of the product conveyor must be lowered which, by pivoting, also gives more ground clearance by raising the base of the conveyor.
3. Observe all safety warnings.

4. Refer to preparing to finish crushing to make sure the feed hopper and crusher are empty and that all materials have run off all of the conveyors.
5. Clear the tracks of any obstructions and remove any crushed or fine material and dirt.



31

WARNING

Prior to attempting any manoeuvring of the plant the tracks must be free of obstructions, including crushed material and fines. Do not push or tow the plant.

Failure to observe this warning could result in danger to persons and damage to the plant which may also invalidate warranty.

Preparing for Loading [Engine stopped]

6. Before loading, the plant must be prepared for transportation, refer to initial preparation.



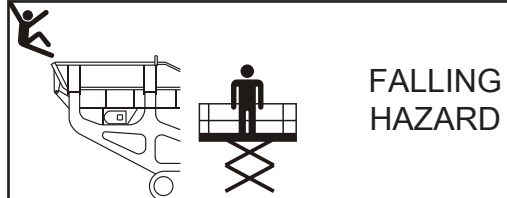
7. Refer to specification and plant information for travel dimensions.



8. Observe all safety warnings.

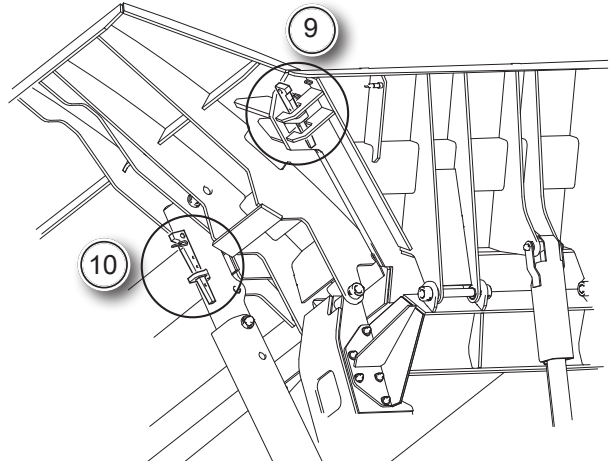
WARNING

Refer to Safety Notices Section for relevant warning and procedure



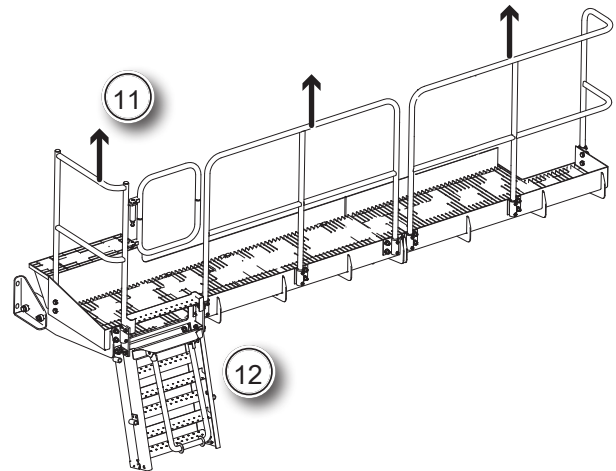
9. Remove the wedges at each rear corner of the hopper.

10. Remove two wedges at each hopper side, to prepare the hopper for lowering.

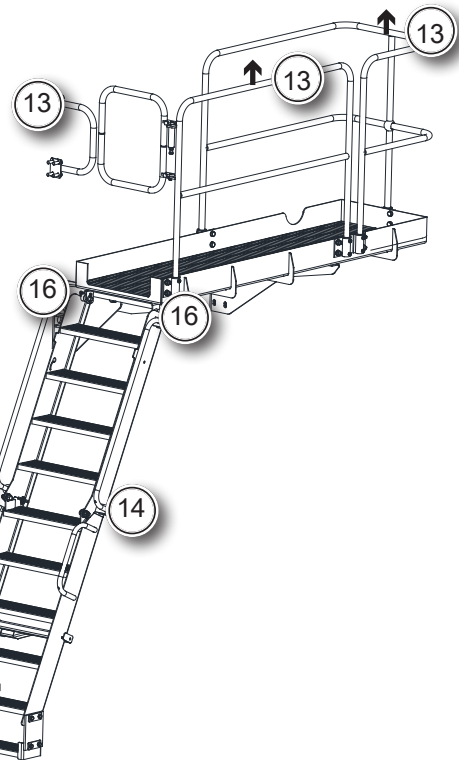


Preparing to Move Plant

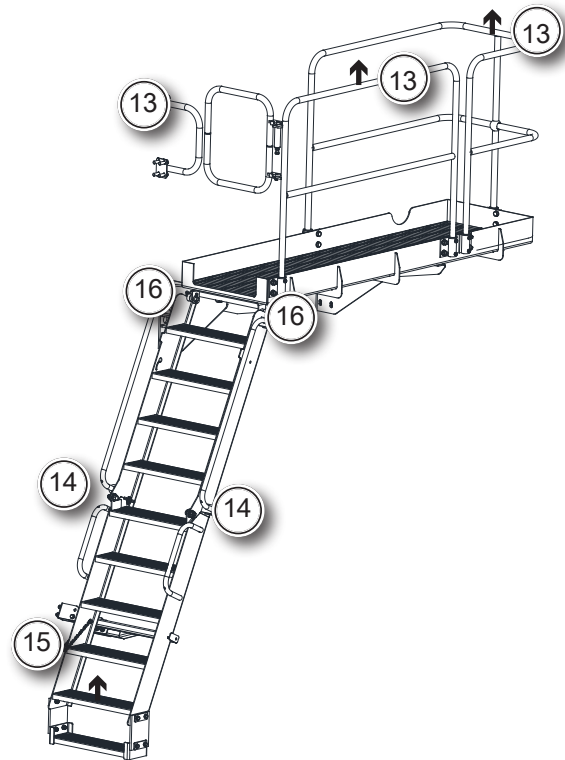
11. Remove the fasteners, lift and remove the handrail sections on the maintenance platform.



12. Remove clips and ladder handrails then fold side ladders upward and secure with clips.

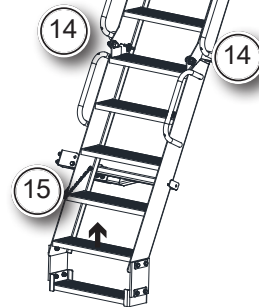


13. Remove the fasteners, lift and remove the handrail sections on the maintenance platform.



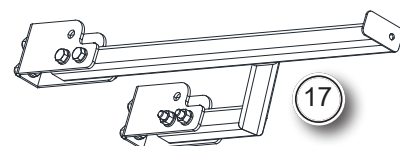
14. Remove the securing bolts from the pivot points on the ladder.

15. Fold up the ladder and fit the securing chain.



16. Remove the securing pins and carefully remove the ladder with suitable lifting equipment .

17. Place the ladder support bracket on the chassis into the transport position and secure.



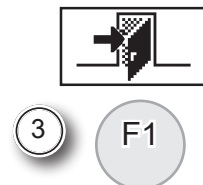
Product Conveyor

1. Start the engine, see engine starting.

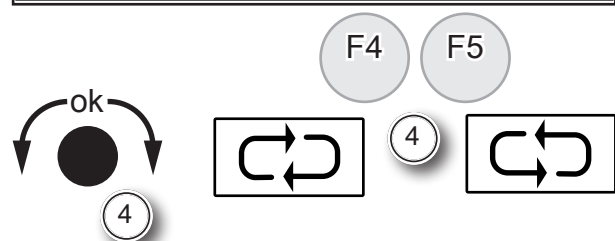
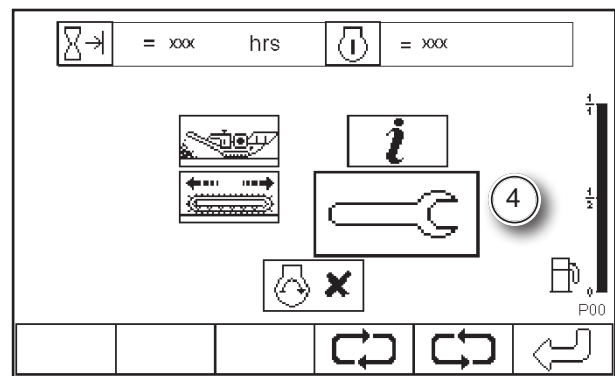


2. The plant control screen will display the last working screen in use.

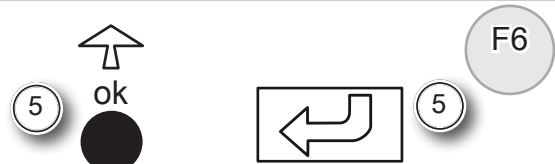
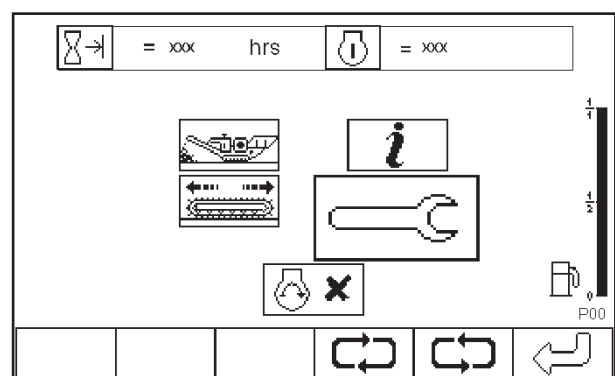
3. The plant preparation can only be undertaken in set-up mode P20. If the plant is not in this mode, return to screen display P00 by pressing function button as required.



4. Scroll to highlight set-up mode using 'ok' knob or function buttons.



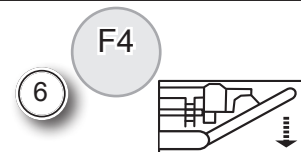
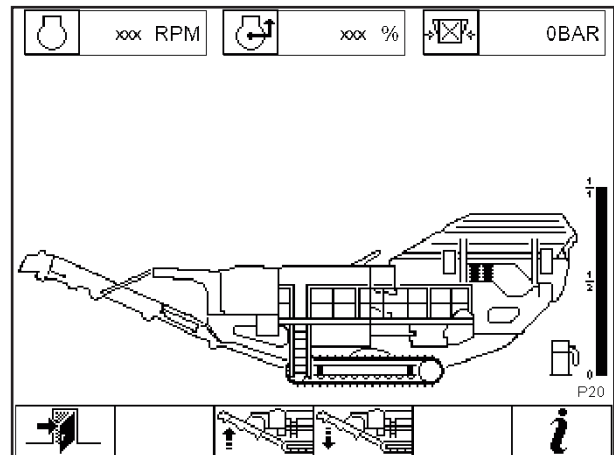
5. Select set-up mode by either pressing 'ok' or function button.



Preparing to Move Plant

Upper Section

6. Press and hold the product conveyor lower function button until conveyor is fully down for transport.

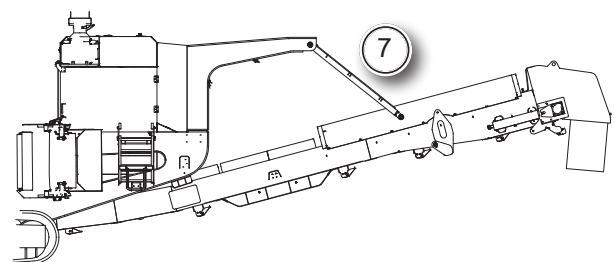


NOTICES

After pressing a button there is a 3 second delay, during which there is an audible alarm and the button light flashes, before any movement takes place.

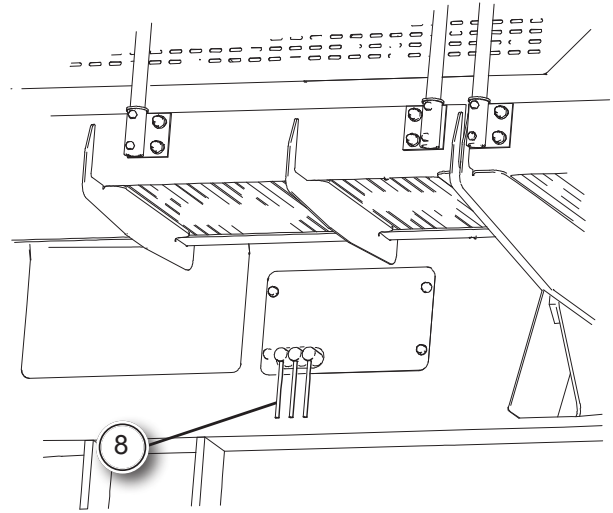
When moving the conveyor ensure that the hydraulic hoses and conveyor belt are not entangled with any part of the plant.

7. Ensure that the product conveyor is in fully lowered position with hydraulic cylinders at their maximum extension.



Lower Section

8. The controls for the conveyor lower section are located on the left side of the plant.

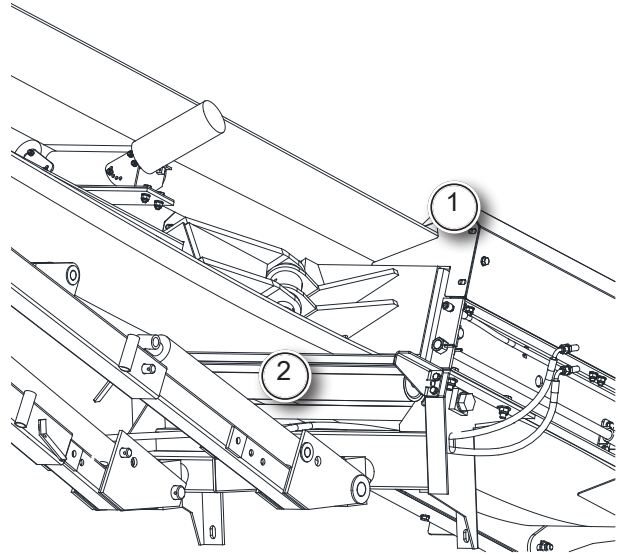


9. Fully raise the lower part of the product conveyor using the control lever.

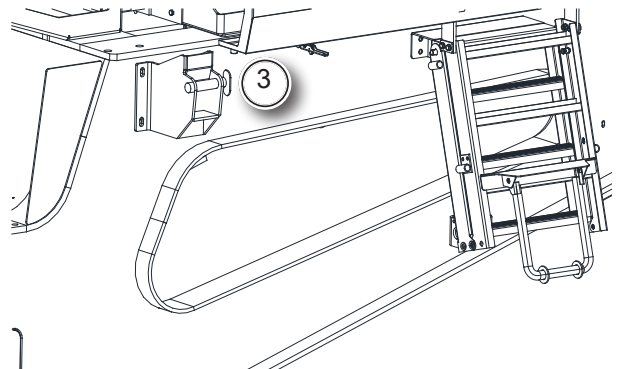
Preparing to Move Plant

Dirt Conveyor [If fitted]

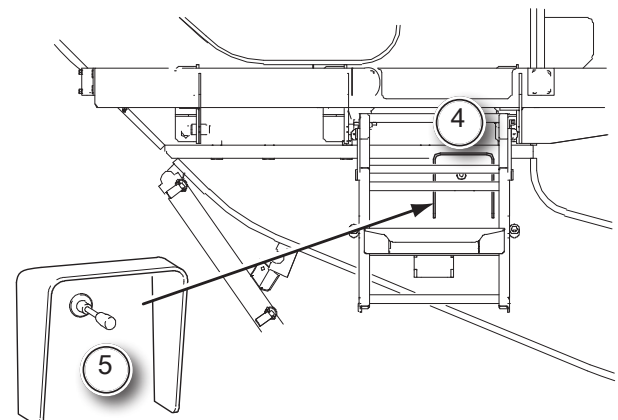
1. Remove the end cover plate to prevent it from being damaged when folding.
2. Remove the roller and roller nip guard.



3. If fitted, remove the securing pin from the transport bracket to allow the dirt conveyor to operate into the transport position.

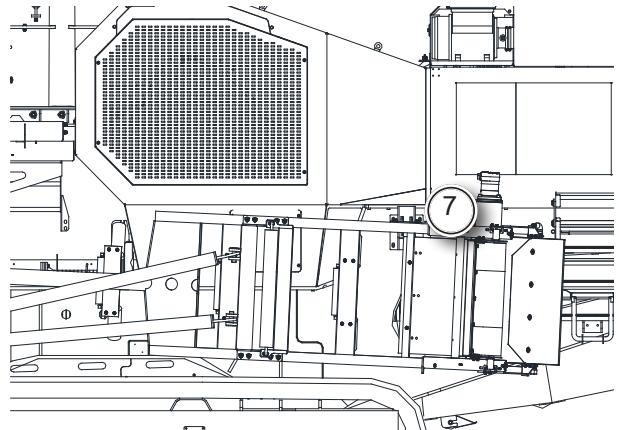


4. Locate the dirt conveyor control bank.
5. Operate lever to fold the dirt conveyor for transport.



6. When folding the dirt conveyor, observe the conveyor belt, particularly in the pivot point area. If any folding or tucking of the belt begins to occur, Stop folding the conveyor and carefully pull the tuck/fold out of the belt and then resume the folding process.

7. When the dirt conveyor is in the transport position place the securing pin into place and fit the securing clip.



NOTICE

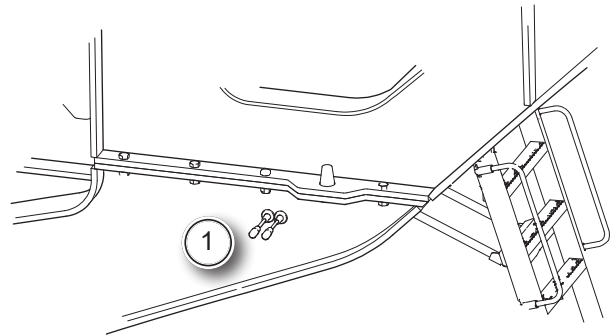
During folding of the conveyor ensure that the hydraulic hoses and conveyor belt are not entangled with any part of the plant.

Failure in releasing any tucks/folds in the dirt conveyor belt may result in ripping or tearing the belt.

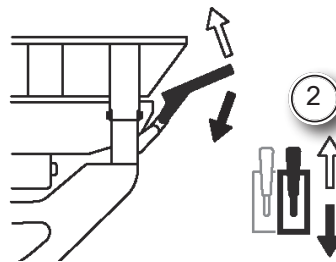
Preparing to Move Plant

Hopper

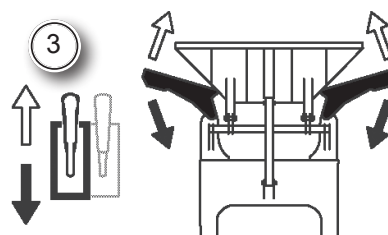
1. The hopper controls are positioned at the rear of the chassis.



2. Operate the lever to disengage the end plate of the hopper from the wedges then fully lower the plate.

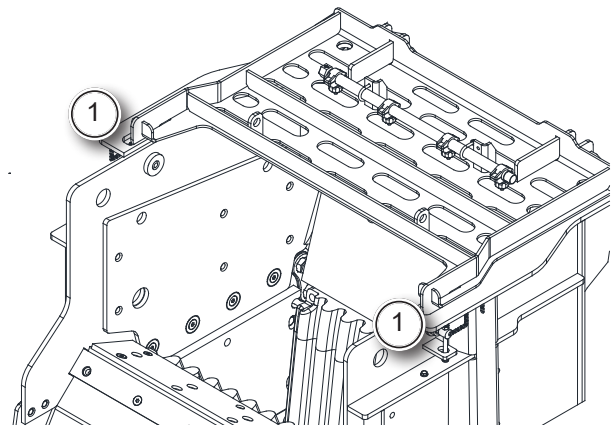


3. Operate the lever to fully lower both hopper side plates at the same time.

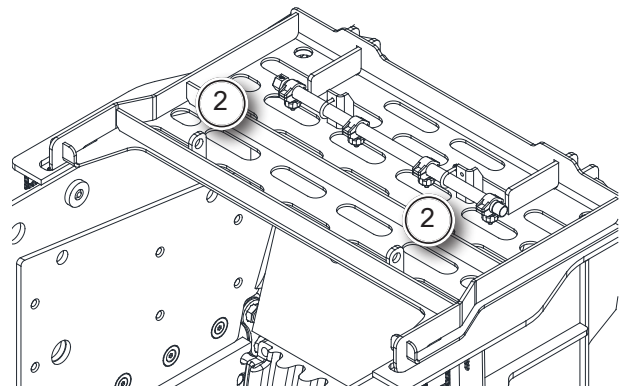


Safety Grid

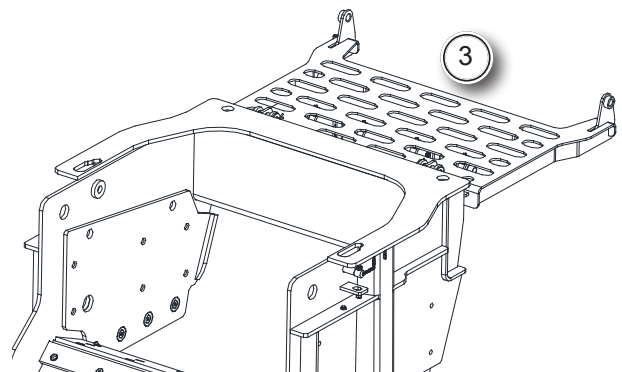
1. Remove the two securing pins to allow the safety grid to rotate back into the transport position.



2. Connect suitable lifting shackles and lifting equipment to the lifting points on the safety gate.



3. Raise the gate using the lifting equipment and rotate the gate back 180° until the gate is supported by its own weight.



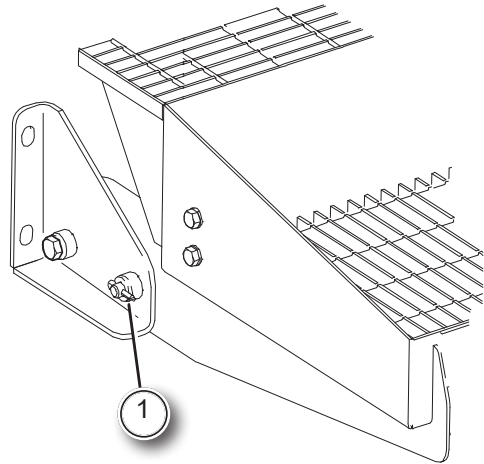
4. Ensure the safety gate is completely lowered before attempting to remove the chains and shackles..

NOTICE

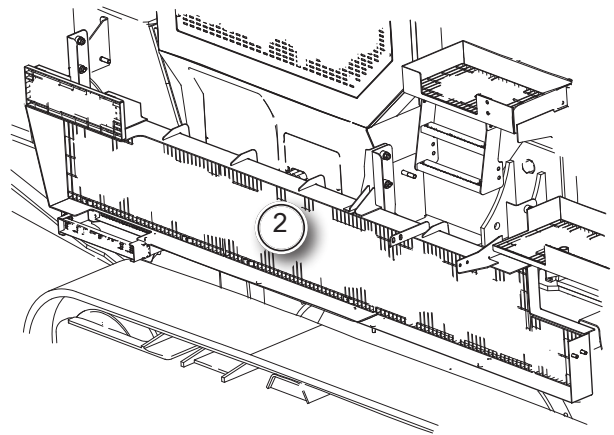
Ensure that suitable lifting equipment is used when putting the safety gate into the transport position. Under NO circumstances should the safety gate be lifted manually.

Maintenance Platforms

1. Remove required fasteners securing the platform to the frame. Secure all loose items removed to prevent loss.



2. Lower the platform down on the hinges for transport.



Secure Loose Items

1. Ensure all loose items are carefully stowed and secured if these are to be transported on the plant.
2. Small items should be stored in the left side of the control cabinet.

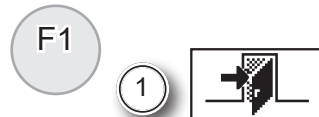
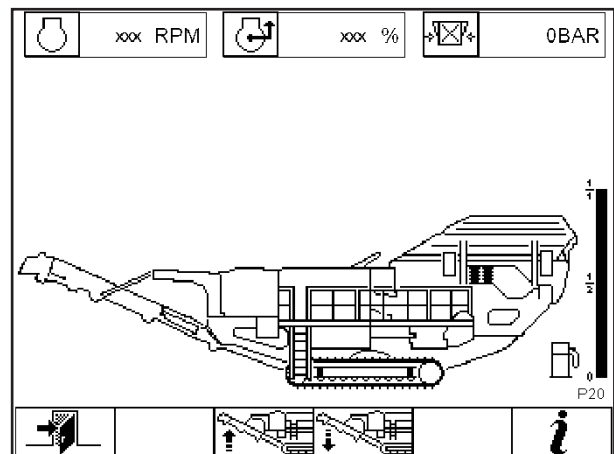
WARNING

Prior to transportation always check the plant for loose or damaged components.

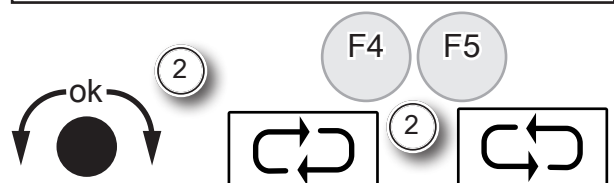
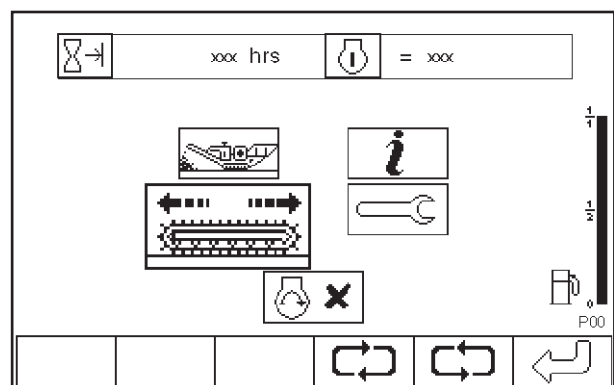
Fasten all loose parts, replace missing items or make repairs as found necessary to ensure that all components are safely secured during transportation.

Set Plant to Track Mode

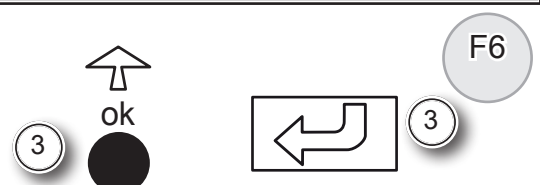
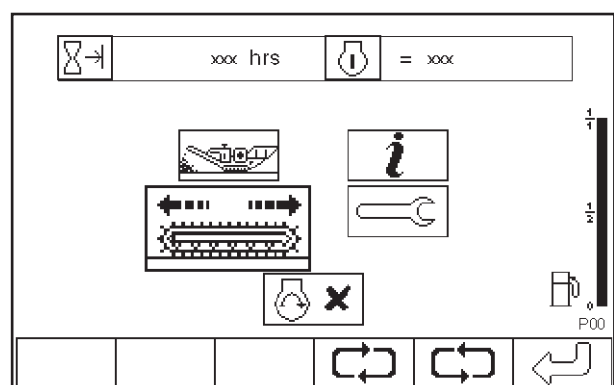
1. Set the screen display to P00 by pressing function button, if necessary.



2. Scroll to highlight track mode using 'ok' knob or function buttons.



3. Select track mode by either pressing 'ok' or function button.



4. To load the plant on to a transporting trailer, refer to unloading and loading.



11

5. To manoeuvre the plant, refer to moving the plant.



12

6. Stop the engine, see engine stop, unless required further.



15



11 EN Unloading and Loading - Transport Trailer

Unloading from Trailer

1. If the machine has been manufactured to connect to a special rear bogie, refer to the special instructions to separate the bogie.
2. Removing the fastenings securing the machine and any loose items to a trailer is the responsibility of the haulage contractor.
3. A tracked machine will normally be secured to a transport trailer.
4. Observe all safety warnings.
5. Make sure suitable ramps are positioned at the end of the trailer for unloading.
6. Check that any loose items transported with the machine will not cause a hazard while unloading.



01

NOTICE

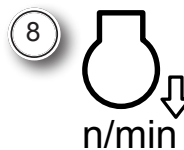
On some machines, the air inlet filter may have been removed to obtain the minimum transport height, remove transportation cap and fit the air filter. Store the transport cap in the toolbox.

7. Start the engine, see engine starting.



13

8. Set the engine at the slowest speed, if applicable. Some machines have automatic engine speed control.



9. Unload the machine slowly off the trailer into a safe position or plant operating position, manoeuvring the machine with the tracks. Use the umbilical control or the remote radio control, if fitted, see moving the machine.



12



15

10. Stop the engine, see engine stop, unless required further.

Loading on to Trailer

11. Before loading, the machine must be prepared for transport, refer to preparing to move machine.

12. Check that the travelling dimensions and weight, when loaded, will be within the regulation limits, refer to specification and information and plate fixed on the machine.



04

13. Observe all safety warnings.

14. Ensure all loose items are carefully stowed and secured if these are to be transported on the machine.

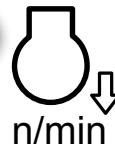
15. Make sure suitable ramps are positioned at the end of the trailer for loading.

16. Start the engine, see engine starting.



13

17. Set the engine at the slowest speed, if applicable. Some machines have automatic engine speed control.



18. Load the machine slowly on the trailer, manoeuvring with the tracks, using the umbilical control or the remote radio control, if fitted, see moving the plant.



12

19. Stop the engine, see engine stop, unless required further.



15

NOTICE

To obtain the minimum transport height on some machines it is necessary to remove the engine air inlet filter. If necessary, remove it when the engine has been stopped. Fit the transport cap in its place.

18. Securing the machine and any loose items to the transport trailer is the responsibility of the haulage contractor.

CAUTION

Ensure that all components are safely secured for transport. Fasten all loose parts, replace missing items or make repairs as found necessary.

Prior to transport always check the machine for loose or damaged components.

12 EN Moving the Machine ['860' control]

Moving the machine on the tracks

1. The machine is manoeuvred with the tracks using the umbilical control or the radio remote control, if fitted.

2. Prepare the machine for moving, see preparing to move.



10

Initial Preparation

3. Observe all safety warnings.

4. Start the engine, see engine starting.



13

5. Set operation mode to track.



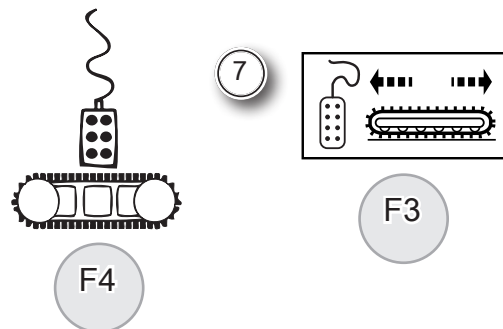
10

Preparing Umbilical Control

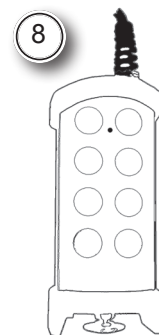
6. The umbilical control is the default track control on some machines and does not have to be selected. De-select the radio remote control, if fitted, to activate the umbilical control. Refer to preparing to move - setting to track mode.



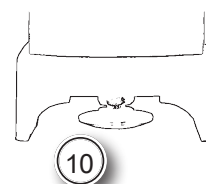
7. If an umbilical option is shown, set track control to umbilical, referring to icon and appropriate function button, as machines vary.



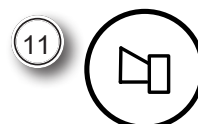
8. Take the umbilical control from the control box
9. Stand well clear of the machine.



10. Hold the control with the stop button nearest to the operator



11. Press the horn button to sound the safety warning horn. The missing beep or break in the alarm after five seconds indicates that the tracks are ready for use. The alarm will continue to sound.

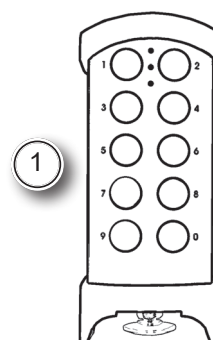


12. To move the machine, refer to manoeuvring the machine.

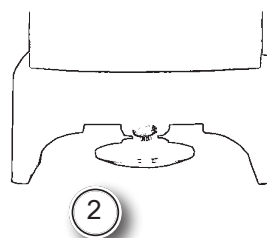


Preparing Radio Control [if fitted]

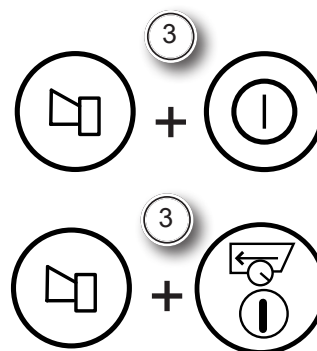
1. Take the radio remote control from the control box



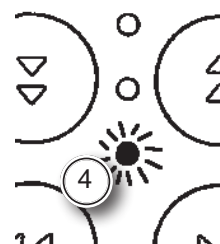
2. Hold the radio remote control with the stop button nearest to the operator and switch it on by pulling out the stop button.



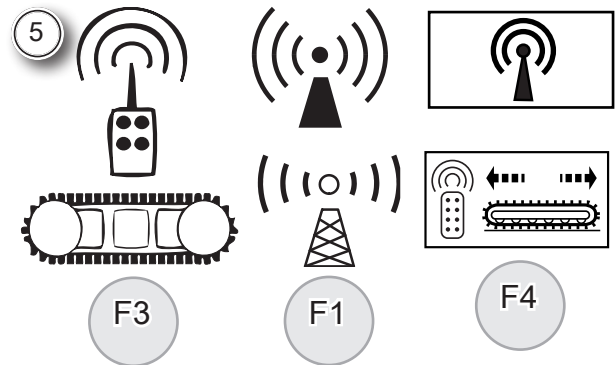
3. Press both of the safety buttons at the same time for at least 1 second and a red light will illuminate. Release the safety buttons.



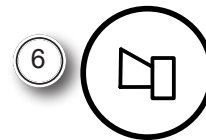
4. The red light will change colour to green when it is ready for use.



5. Set track control mode to radio, referring to icon and appropriate control, as machines vary.



6. Press the horn button to sound the alarm. The missing beep or break in the alarm after five seconds indicates that the tracks are ready for use. The alarm will continue to sound.



7. To move the machine, refer to manoeuvring the machine.



8. The radio control has a safety function that prevents any action from involuntary cutting-in when it is switched on.
9. The radio control will not start if a button is pressed or stuck prior to the missing beep in the pre-start warning.

10. Keep the internal re-chargable battery fully charged, see radio remote control.



Manoeuvring the Machine

WARNING

Prior to manoeuvring the machine, the tracks must be free of obstructions, including crushed material and fines. The tracks must be correctly tensioned before moving.

Do not push or tow the plant. Failure to observe this warning could result in danger to persons and damage to the machine which may invalidate warranty.

1. The machine cannot be manoeuvred when mode is set to crush or 0.
2. The alarm sounds continuously whilst the machine is being manoeuvred.

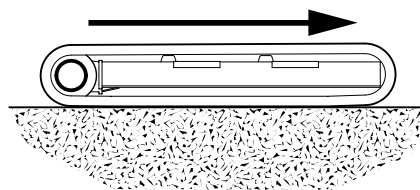
DANGER

DO NOT stand on any of the maintenance platforms or ladders of the machine whilst it is being manoeuvred.

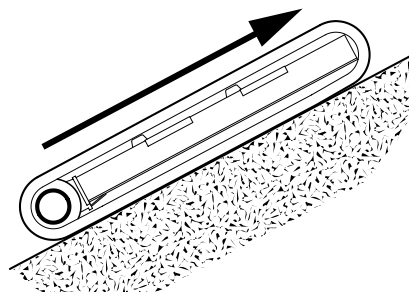
Ensure all personnel are clear of the machine before manoeuvring.

When manoeuvring the machine make sure you stand well clear but are in a position to have all-round vision to see any obstacles or dangers that may lie ahead such as personnel, overhead cables, ditches, unsafe roadways etc.

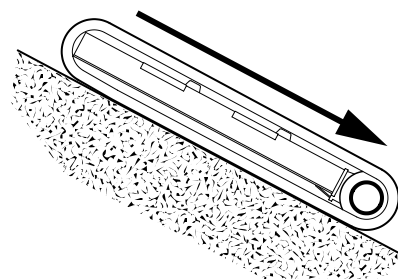
3. To prolong the life of the track and prevent avoidable damage to the track components, wherever possible drive the machine with the circular track drive gearbox in the position shown in the diagrams.



4. This is particularly important if the machine is being driven up an incline.
5. Do not manoeuvre the machine on a gradient [fore and aft directions] steeper than 30°, as damage may occur to the engine or the machine.



6. The track drive gearbox is not fitted in the same position on all machines, relative to the other parts of the machine.



DANGER

Stop the machine for 30 minutes after tracking it continuously for 30 minutes, to allow the components to cool down..

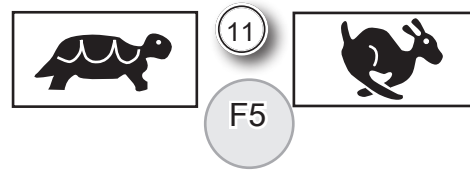
NEVER track the machine constantly more than 30 minutes without providing adequate rest.

7. Avoid manoeuvring the machine over extremely uneven ground or damage may occur.
8. Control valves mounted on the engine and beneath the feeder are NOT to be used to manoeuvre the machine. They are for use by Powerscreen® service engineers only.
9. Initial start up in cold weather may result in a tendency to steer to the right whilst tracking fast forward due to the hydraulic oil being cold. Run the plant for about 10 minutes with the conveyor and feeder running to warm the oil, prior to manoeuvring the machine.
10. Stand well clear of the machine.

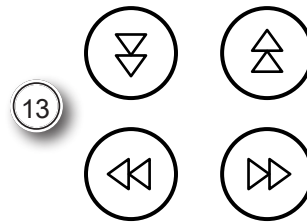
DANGER

Extreme care must be used when manoeuvring the machine with the umbilical control. Stand as far away as possible. Do not allow the cable of the hand set to sag and become entangled with the tracks.

11. Some machines can be driven with different engine speeds which provides two speed ranges. Select range to suit requirements, the slow speed in high range is equal to the fast speed in slow range.
12. Only use the faster speed where safe to do so. Use the slower speed for more accurate manoeuvring.
13. The directional control buttons are double pressure switches. The initial pressure 1 operating the slow speed mode and second pressure 2 operates the faster speed.
14. Press the buttons to manoeuvre the machine in the desired direction.
15. Release the buttons to stop movement.



PRESS BUTTON TO MOVE



RELEASE BUTTON TO STOP MOVEMENT

NOTICES

If the machine is being moved using the radio remote control and moves out of the operating range of the radio or the battery becomes discharged, the engine and machine will stop.

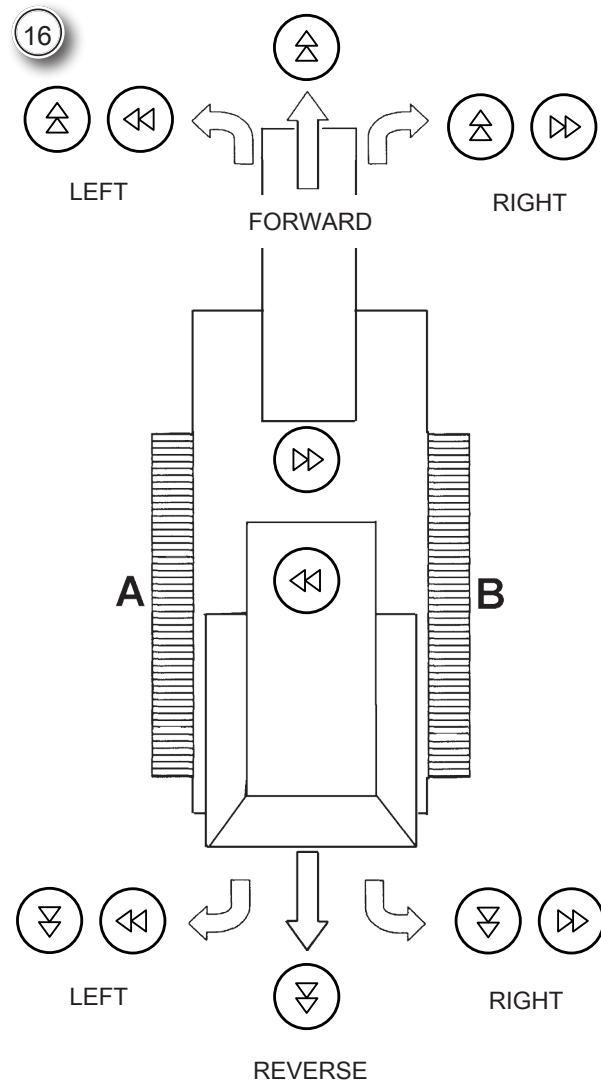
Pressing the stop button on the radio or umbilical control will immediately halt the operation and cut out the engine but it is necessary to manually switch off the engine ignition.

16. Refer to direction control diagram.
17. The controls will stop operating if the track control has not been used for a period of time.
18. The engine speed will vary with the use of the track controls.

PLAN VIEW OF THE MACHINE

Forward = Product Conveyor first

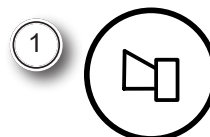
Reverse = Hopper first



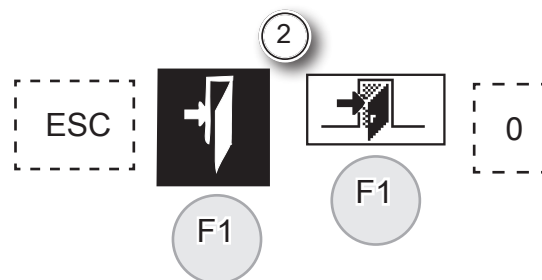
| | |
|--|--|
| Forward slow 1 or fast 2 [tracks A & B forward] | |
| Right turn slow [forward track A] | |
| Left turn slow [forward track B] | |
| Reverse slow 1 or fast 2 [tracks A & B reverse] | |
| Right turn slow [reverse track A] | |
| Left turn slow [reverse track B] | |
| Rotate clockwise [track A forward & B reverse] | |
| Rotate counter-clockwise [track A reverse & B forward] | |

Finish Manoeuvring the Machine

1. When the machine is in the correct position, press the horn button to disengage the tracks which will turn the safety warning horn off.



2. Set track operation mode off by esc, exit, '0' or crush, depending on the type of controls fitted.



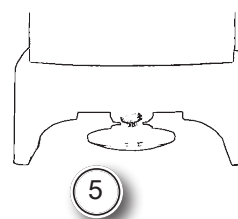
3. If crushing is to commence, see preparing to crush.



4. If not required further, switch off the engine, see engine stop.



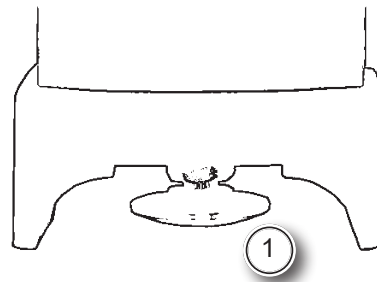
5. If not required further, switch off the radio remote control, push in the stop button. This will also conserve the battery charge.



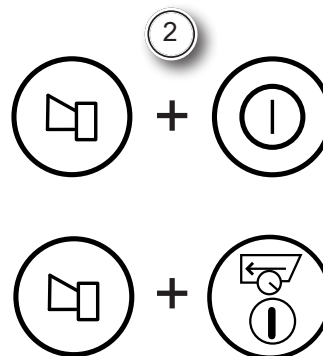
14 EN '860' Radio Remote Control

Operation [if fitted]

1. To switch on the control, pull the stop button out.



2. To enable the radio remote control to be used, press both of the safety buttons at the same time for at least 1 second and a red light will illuminate. Release the safety buttons and it will change to green.



3. To switch off the control, push in the stop button when the plant is not set to radio mode or is not operating.
4. To conserve the battery charge the hand set should be switched off when not in use.
5. Store the control in a dry, secure place when not being used to prevent damage and unauthorised use.

Battery Recharging

6. The radio remote control has a built in NiMH battery and charging unit.

7. Battery charge status is indicated by the light in the transmitter:

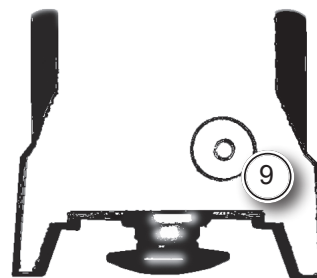
Red - battery needs charging

Green - battery charged



8. The light on the hand set changes from green to red when there is about 3% power left in the battery, approximately 1 hour continuous operation remaining, and indicates it requires recharging.

9. The input charging point on the rear of the control can accept a charging voltage from either 12VDC or 24VDC systems.



10. A charging cable is supplied, suitable for plugging into a vehicle auxiliary or cigarette lighter point. Some machines have a 24V socket on the control panel.
11. Battery capacity is 2000mAh.
12. Charging time from completely empty battery is approximately 4 hours.
13. Operating time with fully charged battery is approximately 30 hours.
14. During the charging of the batteries the light will be red until changing to green when fully charged. The battery cannot be overcharged.
15. The plant warning horn will also sound when battery recharging is required.

Battery Replacement

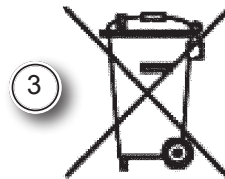
1. The radio remote control contains rechargeable batteries which are unable to be replaced, therefore the radio control should be recycled.
2. Contact your local Powerscreen® dealer or Powerscreen® technical support department for advice on recycling the radio remote control.



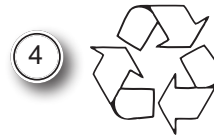
03

Battery Recycling

3. Do not dispose of the radio remote control or any old batteries with normal waste that may go to landfill.



4. All batteries shall be disposed of correctly to be recycled at an approved treatment facility.



15 EN Engine Stop

Switching off engine

NOTICE

For normal closing down the machine, DO NOT use the emergency stop buttons or, if fitted, radio remote control stop buttons. DO NOT switch off the engine ignition to close down the machine. Always follow the correct sequence to finish crushing with the machine.

1. Observe all safety warnings.
2. Follow instructions to prepare to finish crushing or finish manoeuvring in moving the plant.



31

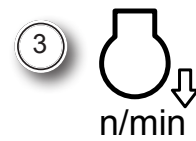


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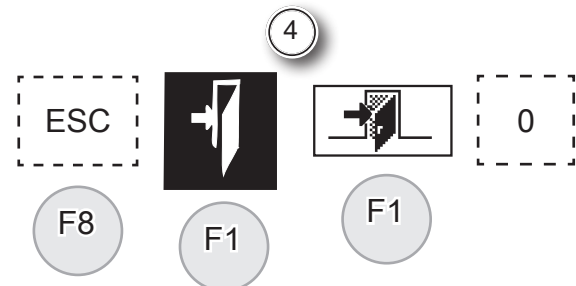
NOTICE

The feeder, crusher and conveyors must be stopped in sequence and emptied before the next section is stopped.

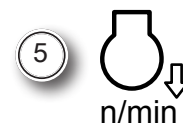
3. Machines with automatic engine speed control will set the engine speed to the slowest speed when all plant components are switched off. Check the engine is running at its slowest speed.



4. Switch plant controls off if necessary by esc, exit or '0', depending on the type of controls fitted.

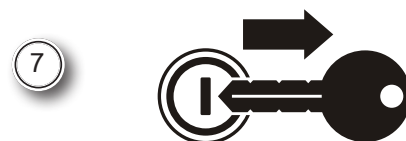


5. On plants with manual engine speed control, set the engine at its slowest speed.

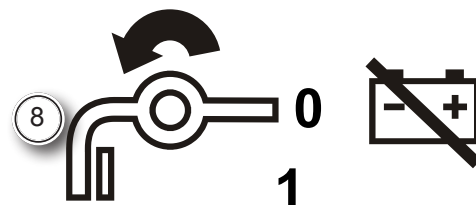


6. Let the engine idle with no load for 3 to 5 minutes.

7. Turn the ignition key to '0' to stop the engine then remove the key.



8. Set the the battery disconnect switch to '0' and lockout.



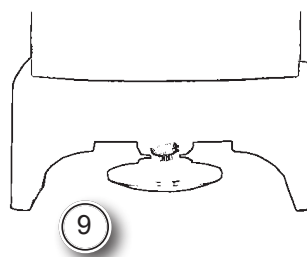
WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT
PLANT

9. If the radio remote control, if fitted, has been in use switch off by depressing the stop button.



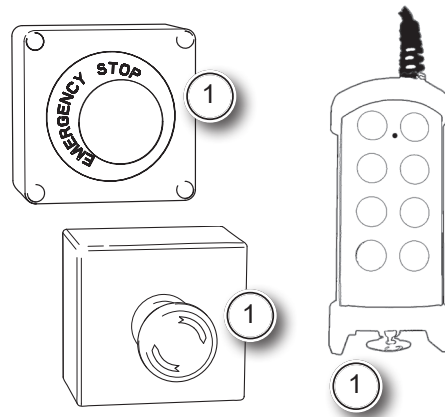
16 EN Emergency Stop

Emergency Stop

Emergency Stopping the Machine

IN AN EMERGENCY ONLY, STOP THE ENGINE AND PLANT OPERATION BY USING AN EMERGENCY STOP BUTTON

1. Pressing any of the emergency stops on the plant or umbilical control will stop the engine and machine.



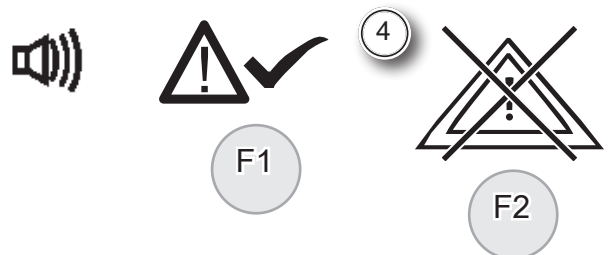
WARNING

The stop button on the remote radio control, if fitted, is NOT an emergency stop as it may not be operative at all times.

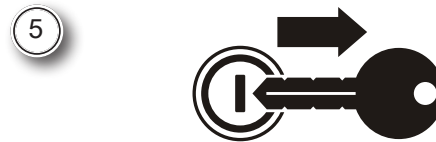
2. When the machine has been stopped using an emergency stop button the ignition switch stays on.
3. Emergency stop activation and alarm messages are shown on plants with a display, refer to alarms.



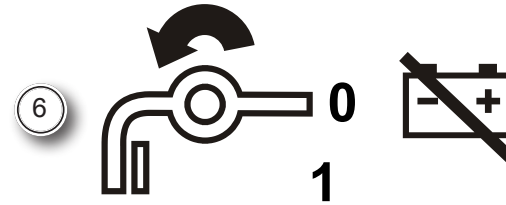
4. The safety alarm will sound until it is acknowledged and cancelled.



5. Turn the key off the 0 position as soon as possible and remove the key.



6. Set the battery disconnect switch off to the '0' position.



! WARNING

When an emergency stop has been initiated, DO NOT attempt to restart the engine until it is safe to do so.

NOTICE

The machine should not be re-started if the crusher is full of material. Remove all material from the machine before starting.

Re-Setting Emergency Stops

7. The button will remain engaged until physically released by pulling or twisting, depending upon the type fitted.
8. The engine cannot be started if any of the emergency stops remain depressed.

Emergency Stop

Testing Emergency Stops

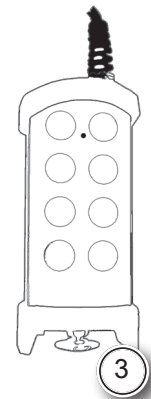
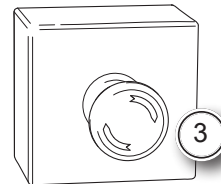
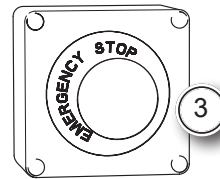
WARNING

Daily, before commencing crushing operations, test each emergency stop button is operative.

1. Observe all safety warnings.
2. Start the engine, see engine starting.
3. Push in an emergency stop on the machine or umbilical control and the engine will stop.
4. Alarm messages are shown on machines with a display.
5. The safety alarm will sound.
6. Acknowledge the alarm.
7. Re-set the emergency stop by pulling or twisting, depending on the type fitted.
8. Turn the key off the 0 position.
9. Turn ignition key to the first position again.
10. Wait for the pre-start warning to complete.
11. Turn ignition key to start the engine again.
12. Repeat the process for all other emergency stops.



13



5



6



F1

F2

9



11



17 EN Preparing to Crush

Plant Location Considerations

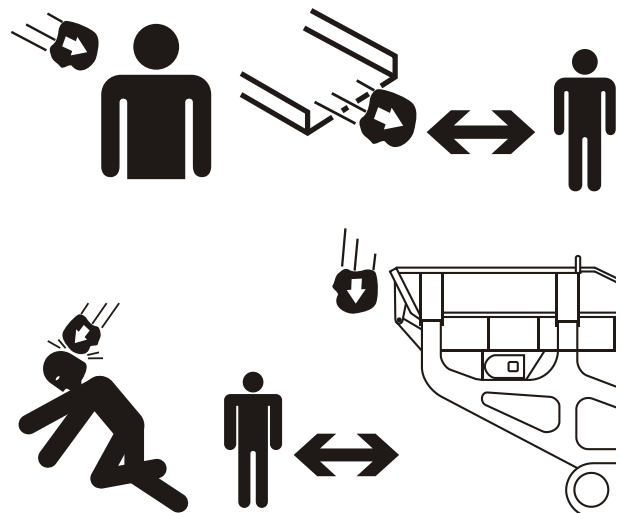
DANGER

The environment in which the plant will operate contains inherent health and safety risks, which the operator must take steps to avoid.

Dangers from overhead conveyor discharges, overspill material, vehicle movements, etc., as well as other site related hazards must be anticipated.

Avoid these by carrying out risk assessments before the plant is put into operation to ensure appropriate exclusion zone measures are put in place and site personnel safety awareness training has been undertaken.

1. Prior to setting up the plant, consideration should be given to a suitable layout to prevent oversize material or metal from entering the plant. In order to prevent bridging of the crusher no material above the size recommended should be fed into the plant.
2. Position the plant in a safe, level, operating position making sure both tracks are in full contact with the ground to minimise movement of the plant. Regularly check the plant is level and stable.
3. Pay attention to access from the loading area and to where material is to be deposited.
4. Ensure the area under the tail drum of the product conveyor is free of large stones etc. Which may cause damage to the belt.



Initial Preparation

NOTICE

If the air inlet filter has been removed to obtain the minimum transport height, remove transportation cap and fit the air filter. Store the transportation cap in the toolbox.

5. Observe all safety instructions.

6. Start the engine, see engine starting, leaving the engine at its idling speed.



13

7. The plant control screen will display the last working screen in use.

8. The plant preparation can only be undertaken in set-up mode P20. If the plant is not in this mode, return to screen display P00 by pressing function button as required.

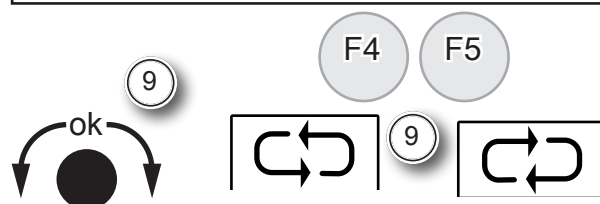
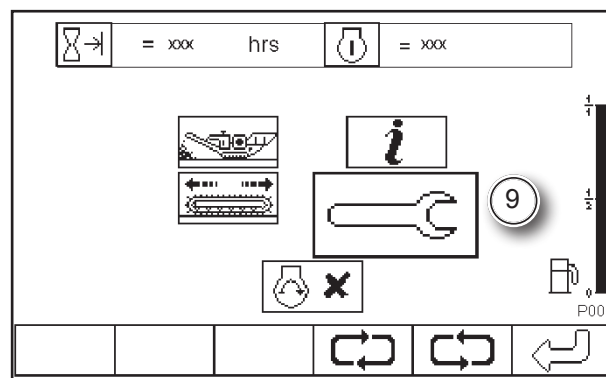


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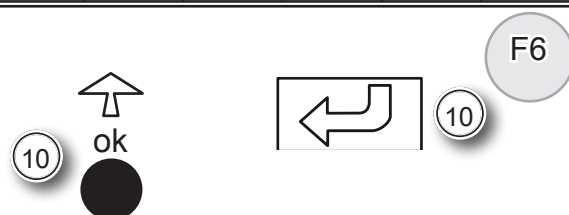
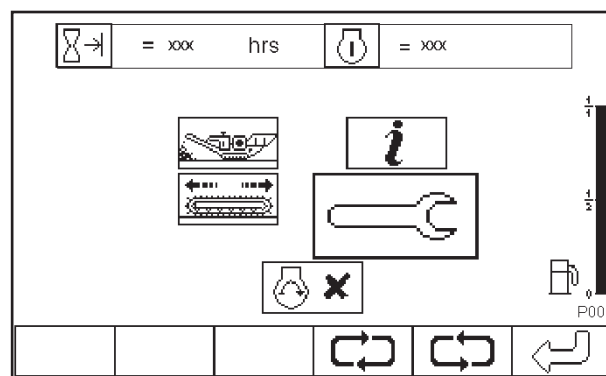
F1

Preparing to Crush

9. Scroll to highlight set-up mode using 'ok' knob or function buttons.

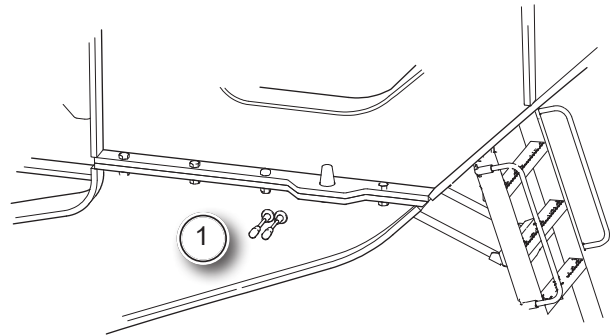


10. Select set-up mode by either pressing 'ok' or function button.

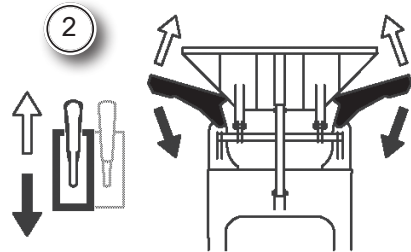


Hopper

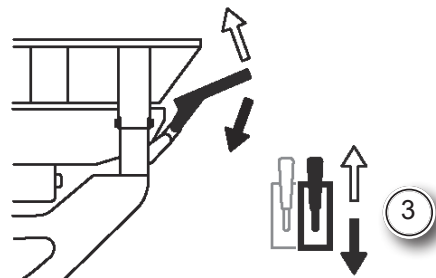
1. The hopper controls are positioned at the rear of the chassis.



2. Operate the lever to fully raise both hopper side plates at the same time.



3. Operate the lever to fully raise the hopper end plate and engage the wedge lugs on the side plates.

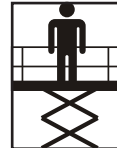
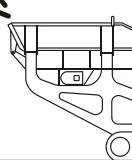


Secure Hopper



WARNING

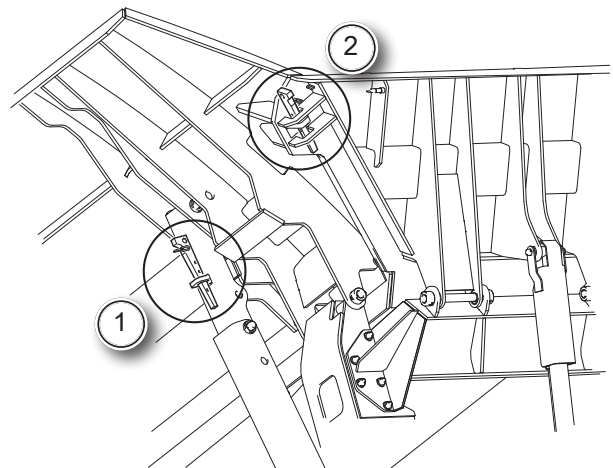
Refer to Safety Notices Section for relevant warning and procedure



FALLING
HAZARD

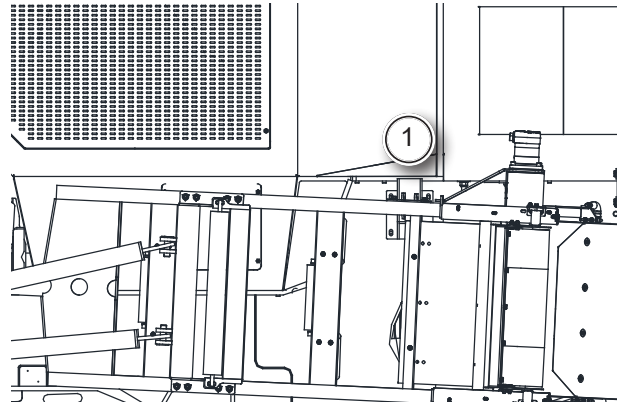
1. Fit two wedges in each hopper side plate.

2. Fit the two rear corner wedges to secure the hopper in the working position.

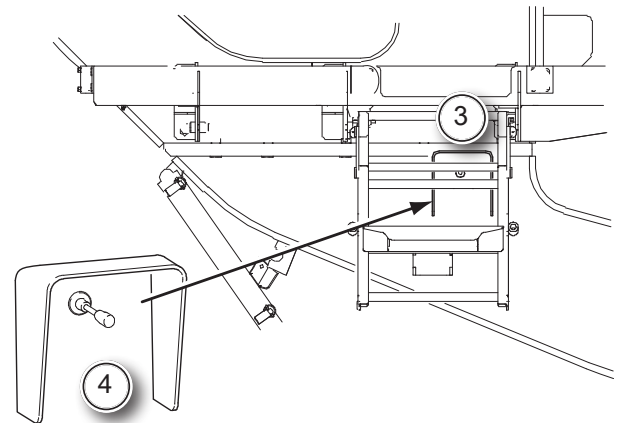


Dirt Conveyor [if fitted]

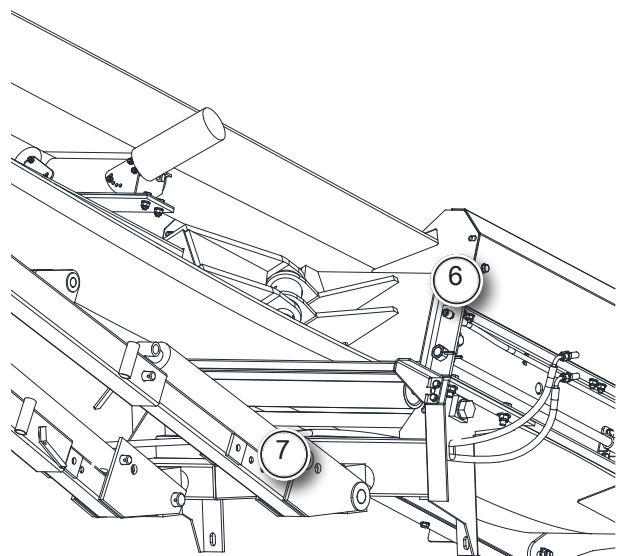
1. Remove the transportation securing bar and pin.
2. Replace bar and pin to prevent their loss, after positioning the dirt conveyor.



3. Dirt conveyor control is positioned on the chassis.
4. Operate lever to fully unfolded the dirt conveyor into the working position.
5. When unfolding the dirt conveyor observe the conveyor belt, particularly in the pivot point area. If any folding or tucking of the belt begins to occur, Stop folding the conveyor and carefully pull the tuck/fold out of the belt and then resume the folding process.

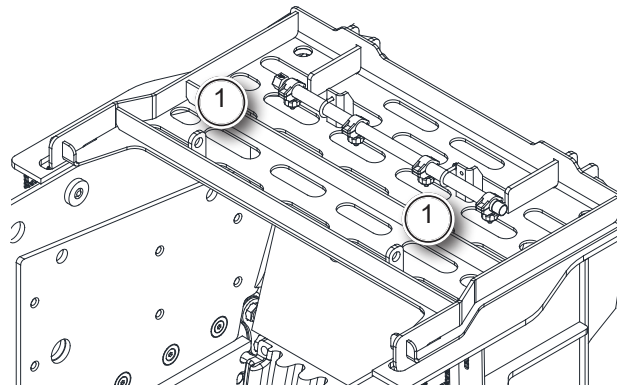


6. Securely fit the end plate.
7. Fit the roller and roller nip guard securely.

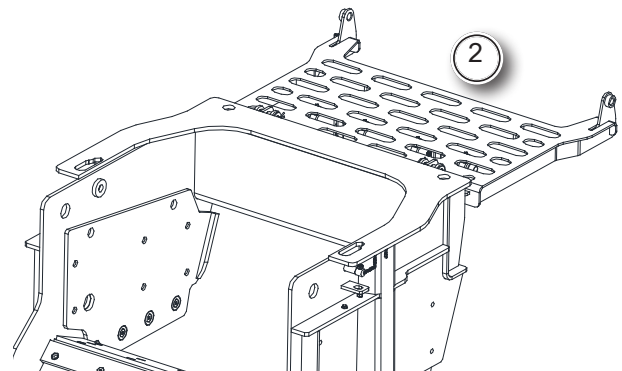


Crusher Safety Grid

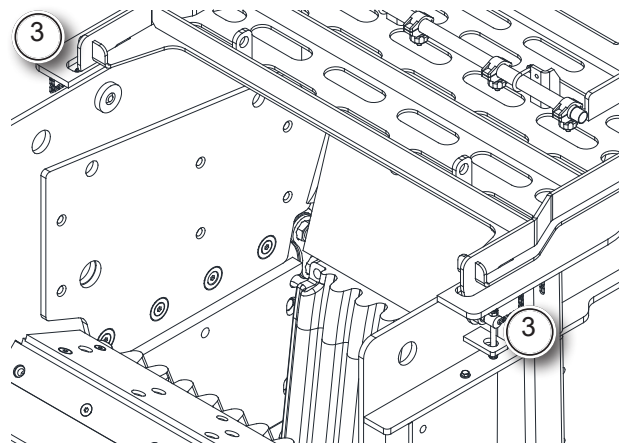
1. Locate the 2 lifting points on the safety gate.
(Illustration for showing the lifting points only).



2. Connect suitable lifting shackles and lifting equipment to the lifting points on the safety gate and raise the safety gate from the transport position to the working position.



3. Secure the safety gate in the working position by fitting the securing bolts.



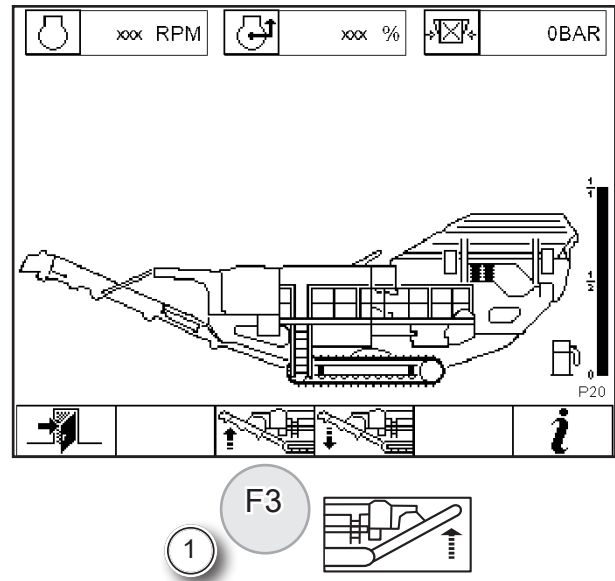
NOTICE

Ensure that suitable lifting equipment is used when putting the safety gate into the working position. Under NO circumstances should the safety gate be lifted manually.

Product Conveyor

Upper Section

1. Press and hold the product conveyor raise function button until the conveyor is fully raised into its working position.



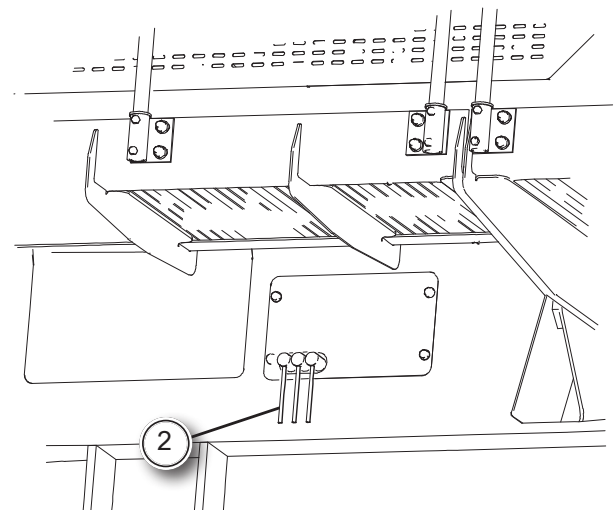
NOTICE

After pressing a button there is a 3 second delay, during which there is an audible alarm and the button light flashes, before any movement takes place.

When moving the conveyor ensure that the hydraulic hoses and conveyor belt are not entangled with any part of the plant.

Lower Section

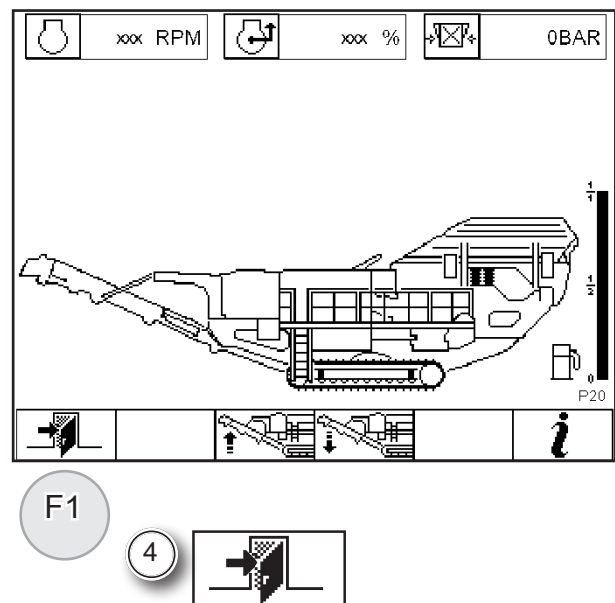
2. The controls for the conveyor lower section are located on the left side of the plant.



Preparing to Crush

3. Fully lower the lower part of the product conveyor into the working position, using the control lever.

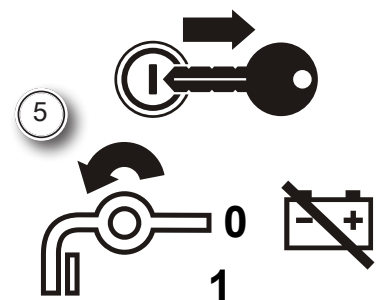
4. Return to screen display P00 by pressing function button as required.



5. Stop the engine, refer to engine stop and implement the lockout procedure, refer to safety notices and hazards.



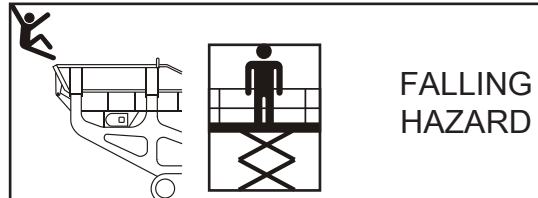
15



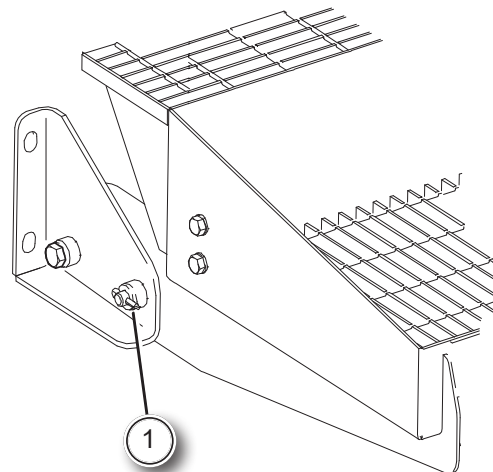
Access Platforms and Ladders

WARNING

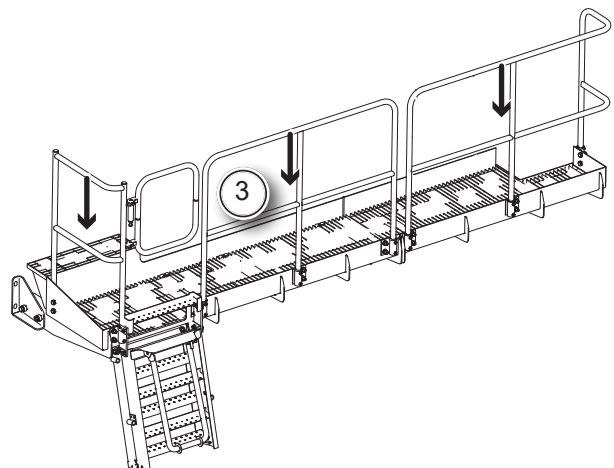
Refer to Safety Notices Section for relevant warning and procedure



1. Raise platform up into the working position on the hinges and secure with the fasteners.
2. Secure the platform to the upper section and ladder.



3. Fit the handrail sections on the maintenance platform and secure with fasteners.

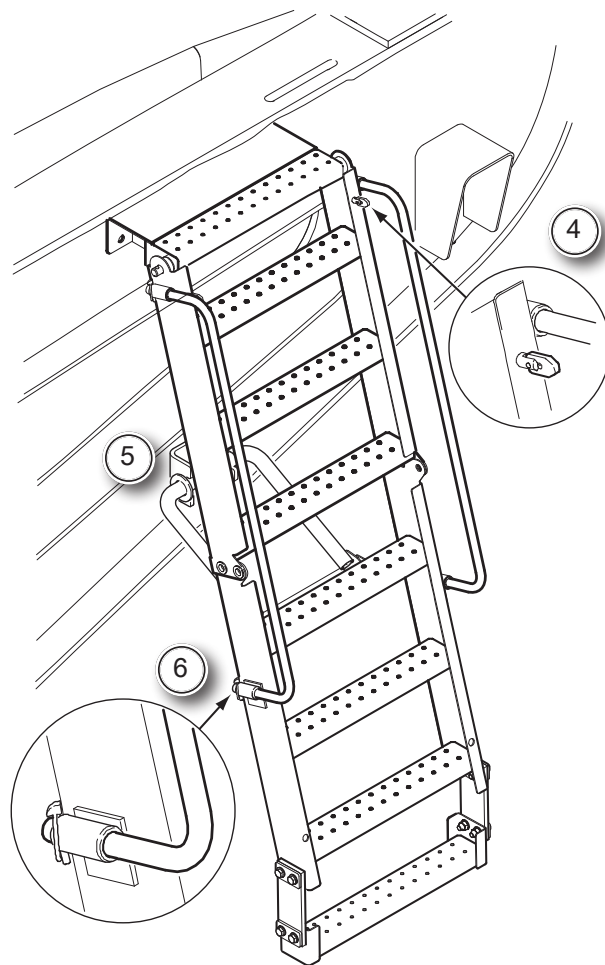


Preparing to Crush

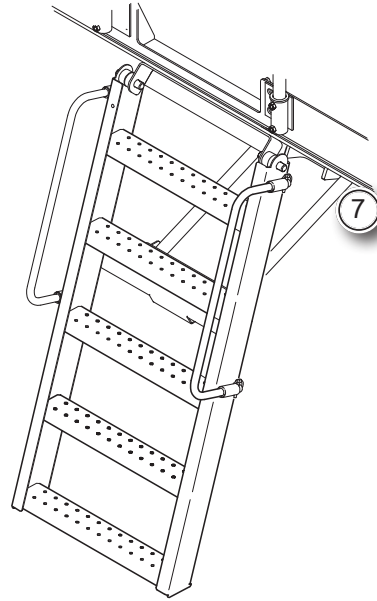
4. Release the latch and unfold the engine maintenance platform ladder down.

5. Locate support bar into the slots.

6. Fit the hand rails and secure with pins.

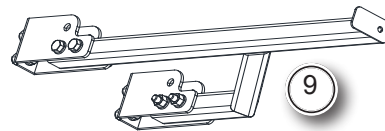


7. Prepare the other side ladders for use in a similar manner.



8. Proceed to the right hand side maintenance platform.

9. Place the ladder support bracket into the working position and secure.



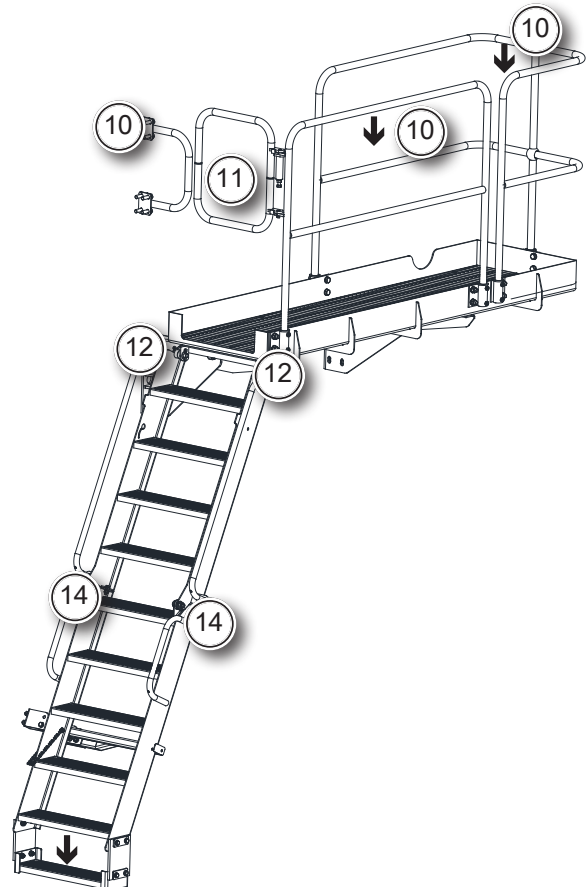
10. Fit the handrails into position on the maintenance platform and secure with the fasteners.

11. Make sure the spring tension on the gate is correctly adjusted to be self closing.

12. Using suitable lifting equipment, fit the ladder using the securing pins provided.

13. Carefully remove the transport chain and fold the ladder down into the working position.

14. Fit the securing bolts at the pivot points to secure the ladder into position.





18 ^{EN} Loading the Vibrating Feeder Hopper

Loading the Vibrating Feeder Hopper

Correct Loading of Hopper

1. Observe all safety warnings and notices.
2. Make sure all personnel are clear of the plant as described in plant location considerations, refer to preparing to crush.



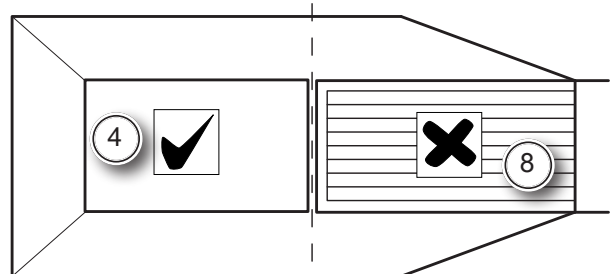
17

3. Material for crushing must be within the sizes specified in the crusher capacity of the plant, refer to specification and plant information.

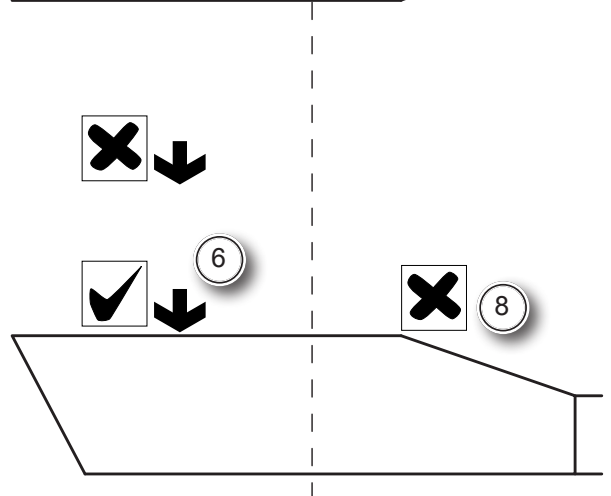


04

4. Material for crushing must be fed into the rear part of the plant hopper on to the base plate designed for loading.
5. This method will allow feed material to pass over the feeder bars gradually to allow them to function correctly.



6. The feed bucket should pass as close as possible to the hopper top edge, just clearing the sides or end of the hopper.
7. Empty the bucket to drop material the minimum height into the hopper base plate.
8. Do not drop material on to the feeder bars as they are not designed for impact of material from a great height.



9. Load material into the hopper at a rate the feeder and crusher can work efficiently.

10. Set the feeder speed such that material is fed evenly and does not build up, refer to crusher operation.



20

11. Do not feed excess material into the hopper.



20 EN Crusher Operation

Starting to Crush Material

DANGER

Refer to Safety Notices Section for relevant warning and procedure



FLYING MATERIAL HAZARD
ON MAINTENANCE
PLATFORMS

WARNING

Ensure that all safety aspects are checked before starting the engine.

Before Starting Plant

1. Ensure the full length of both tracks are in contact with a firm and level surface.
2. Check that the crushing chamber and feed hopper are empty.
3. Measure the crusher discharge opening and adjust if necessary.
4. Check that all guards are in position and secure.
5. Make sure all personnel are clear of the plant.



21

Starting the Plant

6. Observe all safety instructions.

7. Start the engine, see engine starting, leaving the engine at its idling speed.



13

8. The plant control screen will display the last working screen in use.

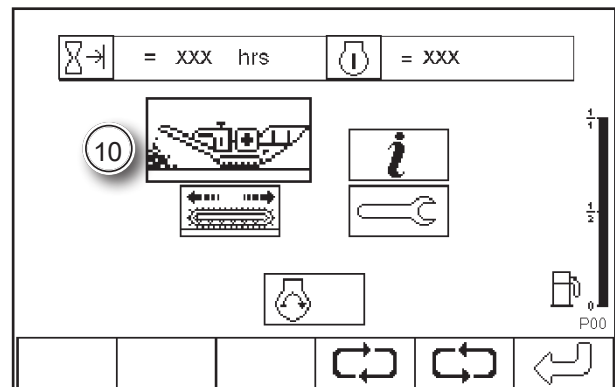
9. The crusher can only be operated in plant mode, display screen P10. If the plant is not in this mode, return to display screen P00 by pressing function button.



9

F1

10. Scroll to highlight plant mode using 'ok' knob or function buttons.



F4

F5

10

ok

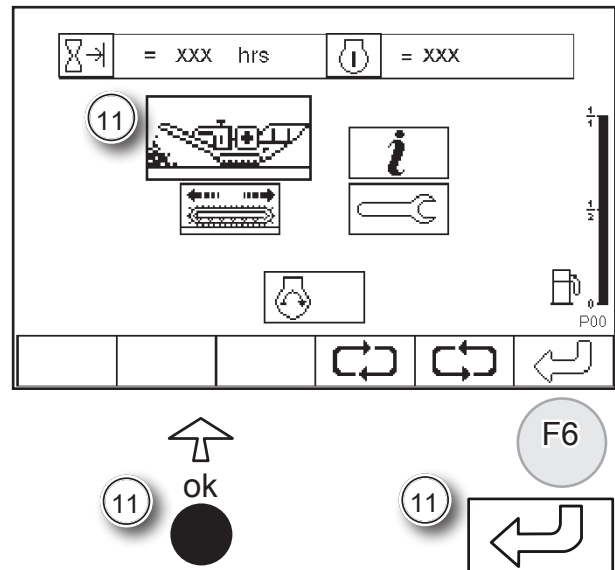


10

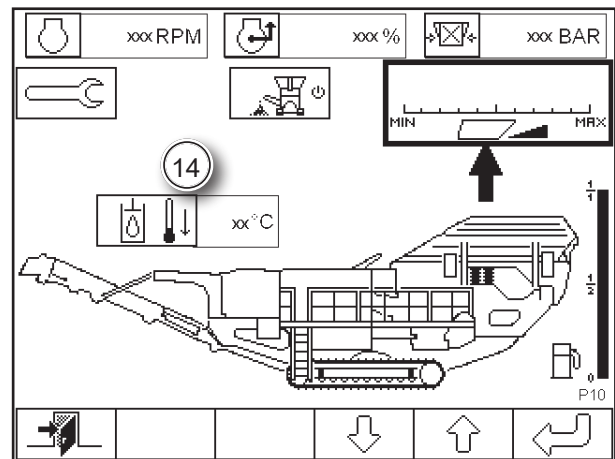


Crusher Operation

11. Select plant mode P10 by either pressing 'ok' or function button.
12. The plant can then be started in an automated sequence or manually.

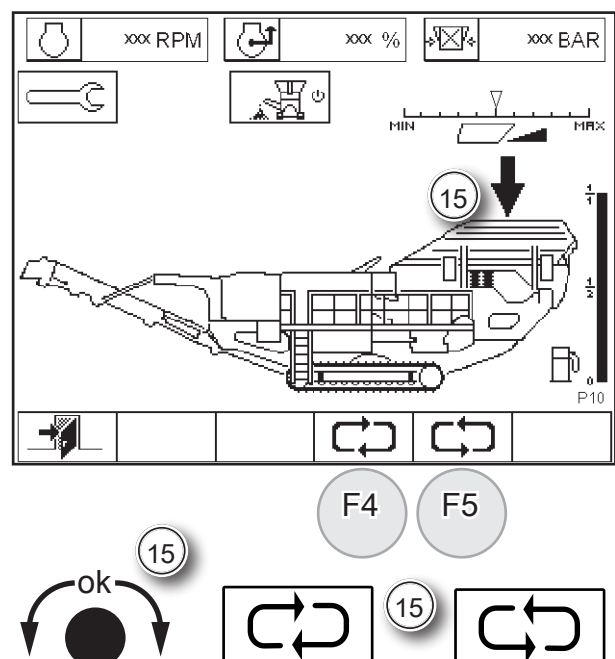


13. For the plant to operate, the temperature of the hydraulic system needs to be above 10°C (50°F).
14. The plant will not operate if the temperature is too low and notification will appear on the screen.

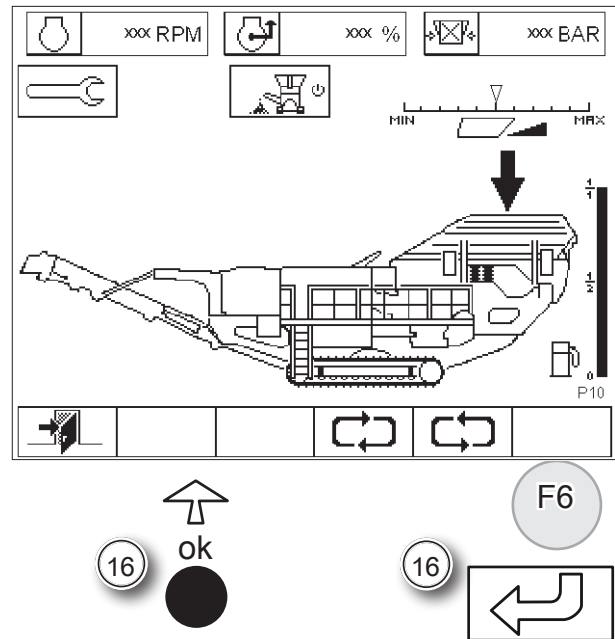


Starting Automatic Sequence

15. Scroll to highlight feeder using 'ok' knob or function buttons.



16. Select automatic sequence start by either pressing 'ok' or function button.



17. The plant will follow an automatic sequence of starting sections of the plant.
18. There will be a delay between each section starting.
19. The engine speed will change as sections start.

20. The dirt conveyor, if fitted, is not started automatically but it can be started manually, refer to dirt conveyor.



Starting Manual Sequence

21. Start the individual plant items only in the following sequence.

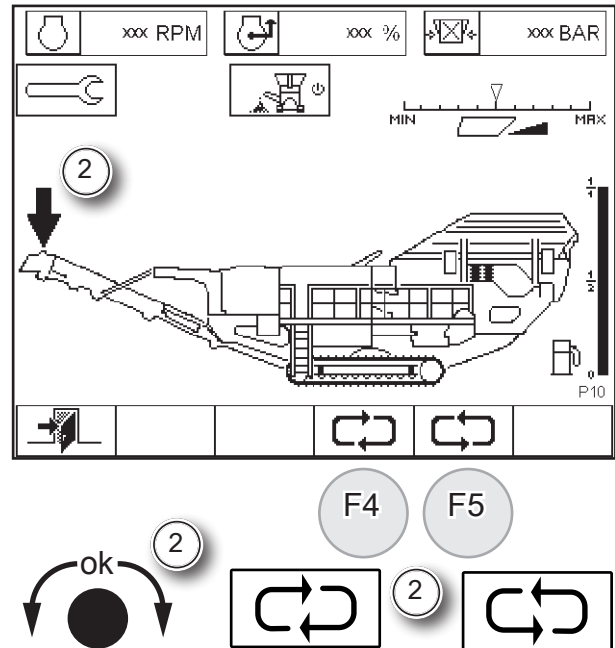
Product conveyor
Crusher
Dirt conveyor [if fitted]
Vibrating feeder



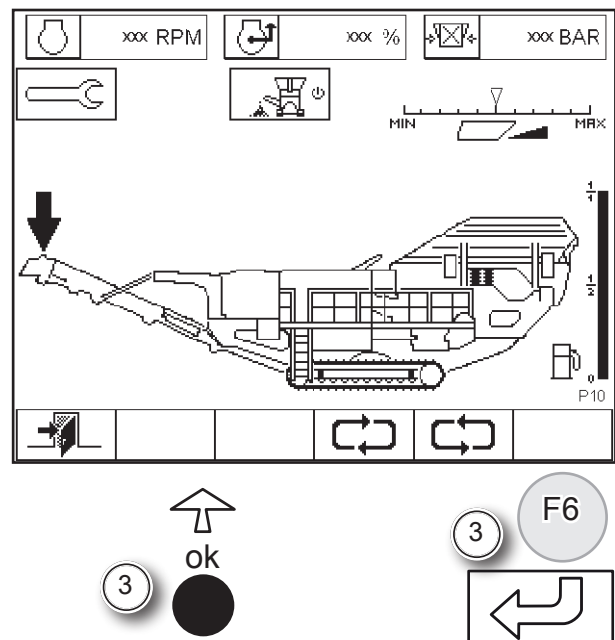
Product Conveyor

1. Observe all safety instructions.

2. Scroll the arrow to highlight product conveyor using 'ok' knob or function buttons.



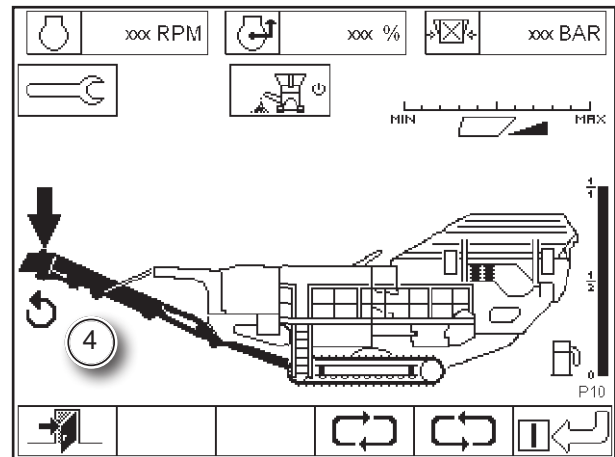
3. Switch on product conveyor by either pressing 'ok' or function button.



NOTICE

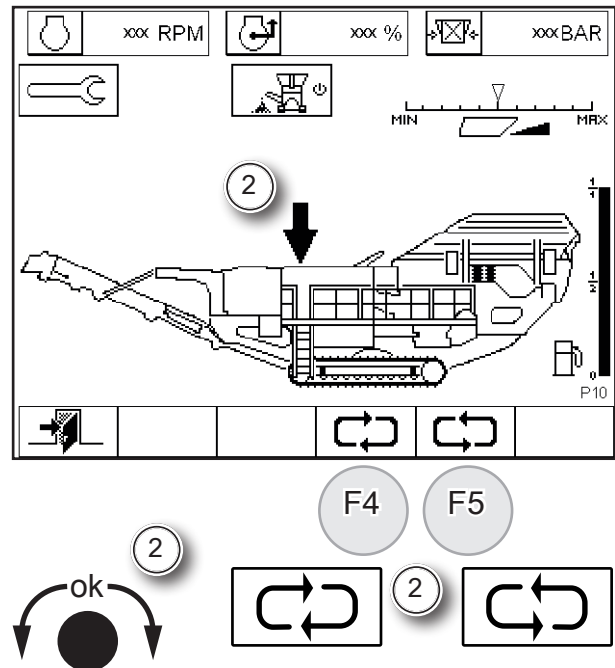
After pressing a button there is a 3 second delay, during which there is an audible alarm and the button light flashes, before any movement takes place.

4. The plant component icon becomes solid when on and displays a running icon adjacent.
5. Check conveyor is running satisfactorily.
6. The crusher can now be started.

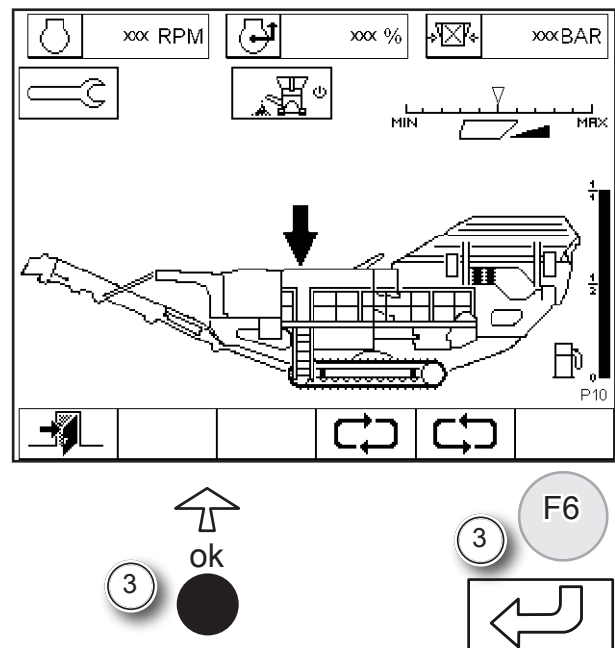


Crusher

1. The crusher can only be operated in plant mode, display screen P10, when the product conveyor is running.
2. Scroll the arrow to highlight crusher using 'ok' knob or function buttons.



3. Switch on product conveyor by either pressing 'ok' or function button.
4. The alarm will sound and a message will display until the pressure set point is reached.

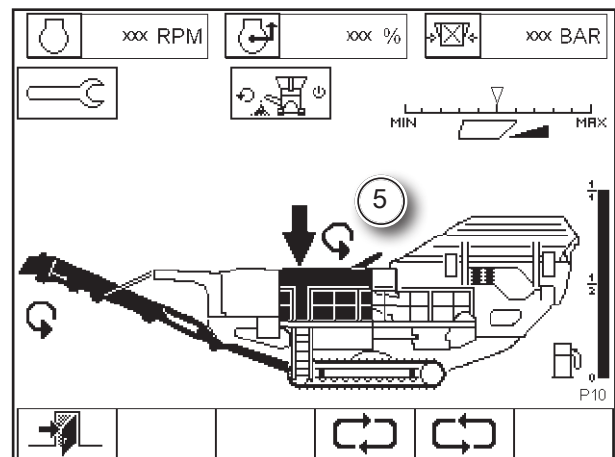




NOTICE

To avoid damaging the clutch DO NOT increase the engine speed to the operating speed until after starting the crusher.

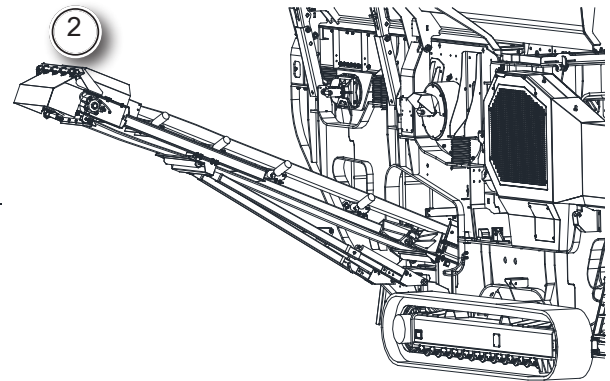
5. The plant component icon becomes solid when on and displays a running icon adjacent.
6. The feeder can now be started.



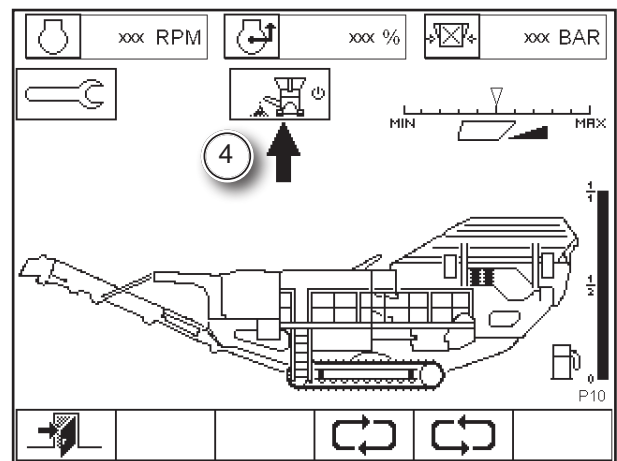
Crusher Operation

Dirt Conveyor [if fitted]

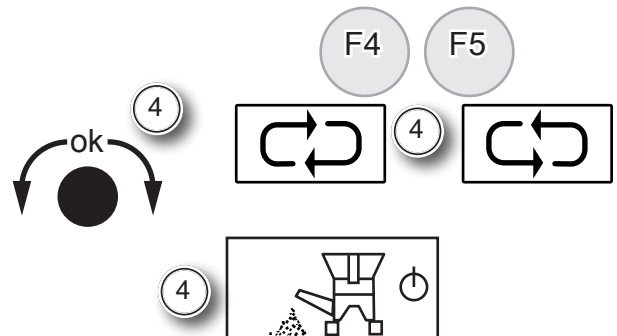
1. Observe all safety instructions.
2. Visually confirm that the dirt conveyor [if fitted] has been lowered outward into its working position.



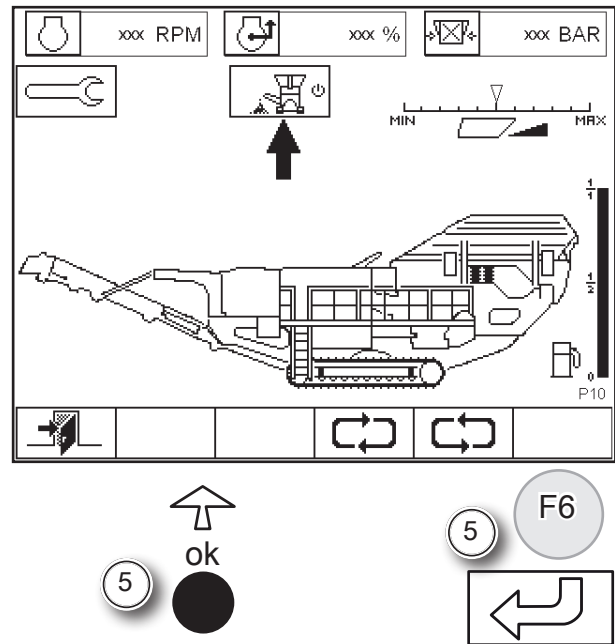
3. The conveyor can only be operated in plant mode, a display screen P10.



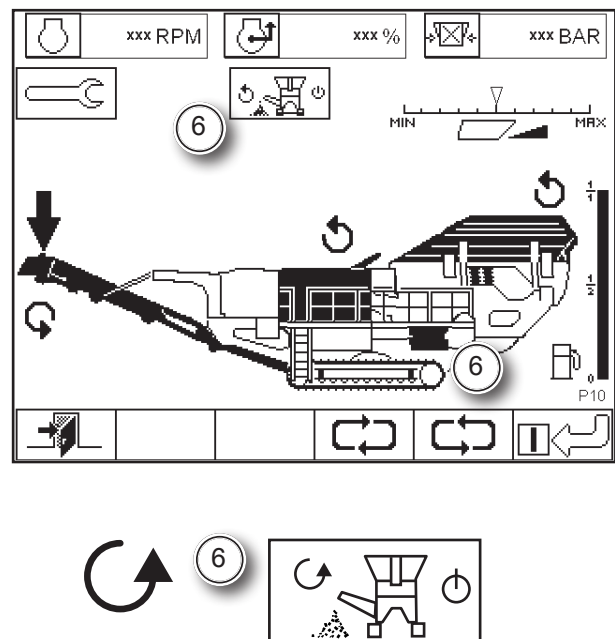
4. Scroll the arrow to highlight dirt conveyor using 'ok' knob or function buttons.



5. Switch on dirt conveyor by either pressing 'ok' or function button.



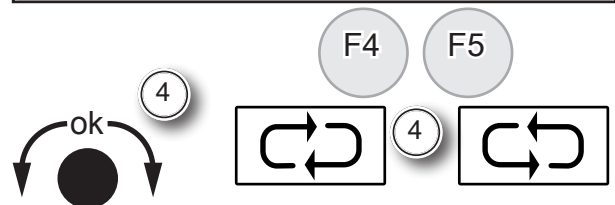
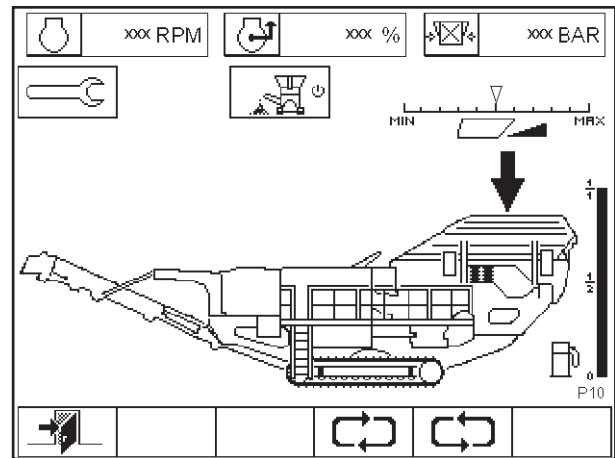
6. The plant component icon becomes solid when on and displays a running icon adjacent.



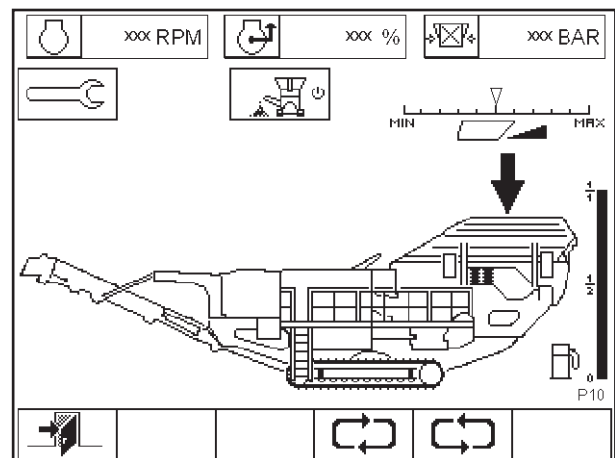
Vibrating Feeder

Starting

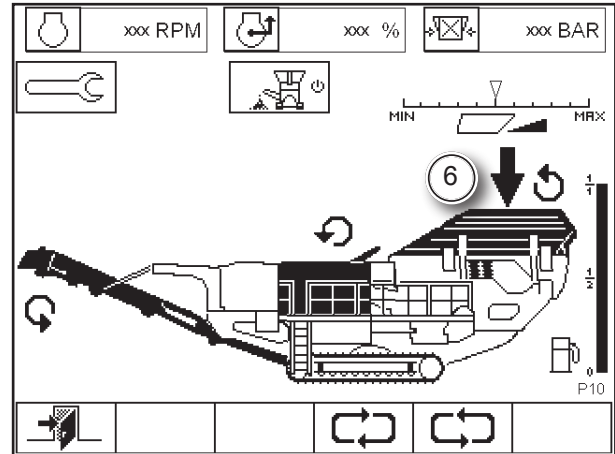
1. Observe all safety instructions.
2. The product conveyor and crusher should already be running, check they are operating.
3. The feeder can only be operated in plant mode, display screen P10, when the crusher is running.
4. Scroll to highlight vibrating feeder using 'ok' knob or function buttons.



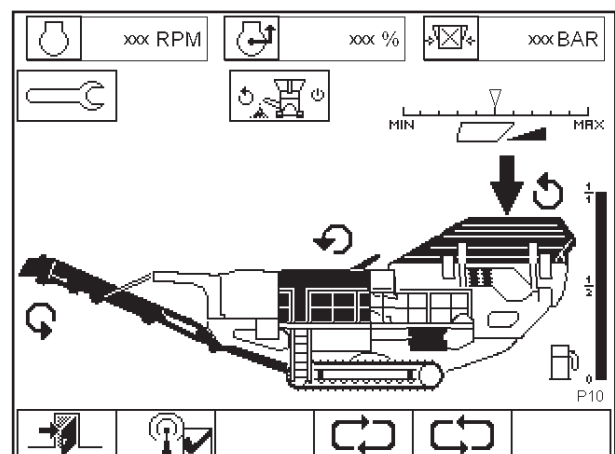
5. Switch on feeder by either pressing 'ok' or function button.



6. The vibrating feeder icon has a running icon adjacent when it is on.



7. The vibrating feeder can also be operated remotely with the radio remote control, if fitted and selected. Refer to feeder stop & start 860.
8. The feeder can be switched on and off remotely with the radio remote control, if fitted and selected, but the speed can only be adjusted by the feeder control on the plant.

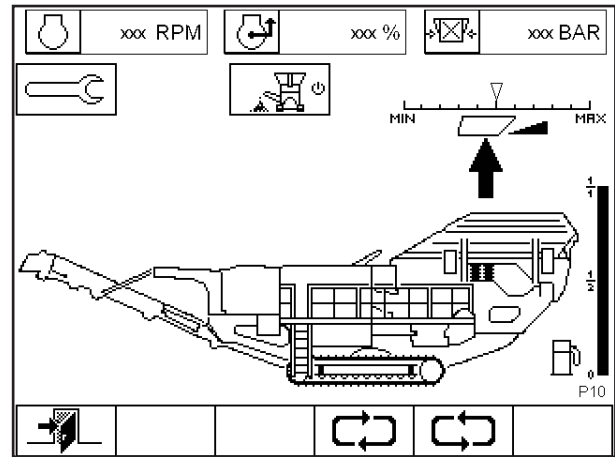


9. If a radio remote control is fitted and switched on it can be switched on of off by pressing the function button.
10. Switch radio off to control the vibrating feeder at the plant controls.

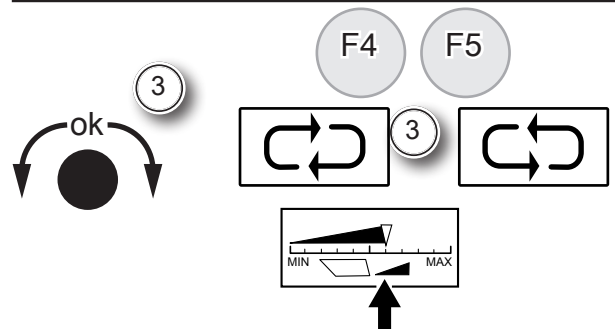


Setting the Speed of the Vibrating Feeder

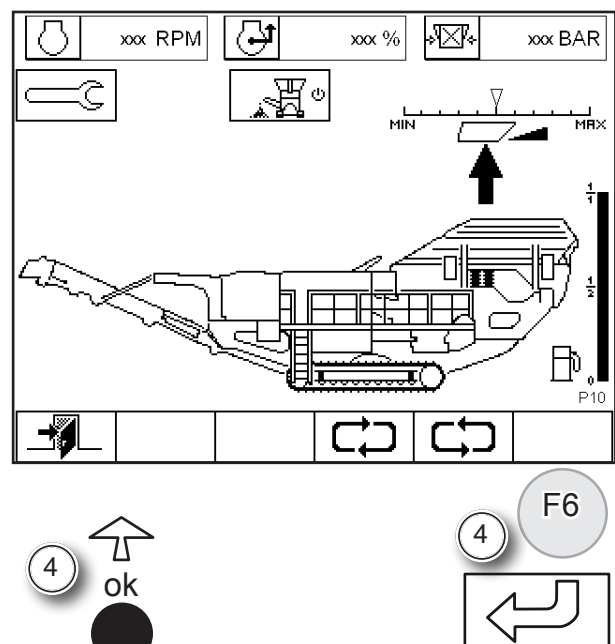
1. The speed of the feeder will need adjusting, depending upon the type of material being fed into the plant, to maintain an even regular flow through the crusher.
2. The feeder speed can be set in plant mode, display screen P10.



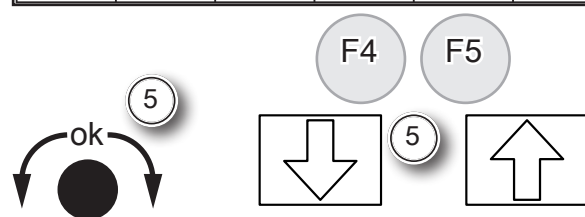
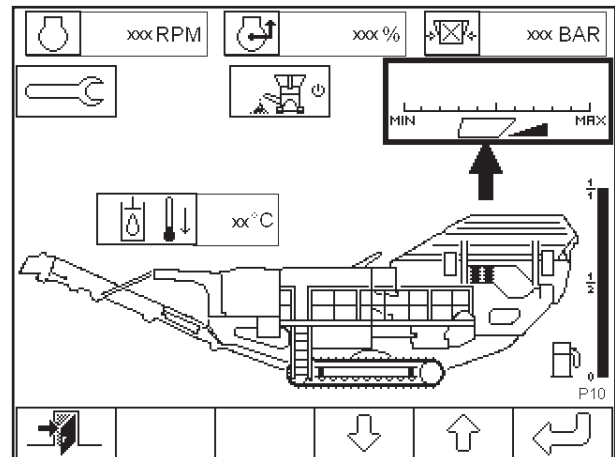
3. Scroll to highlight speed control for the vibrating feeder using 'ok' knob or function buttons.



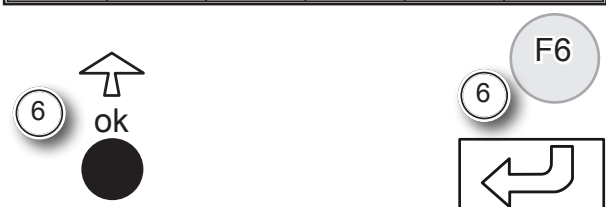
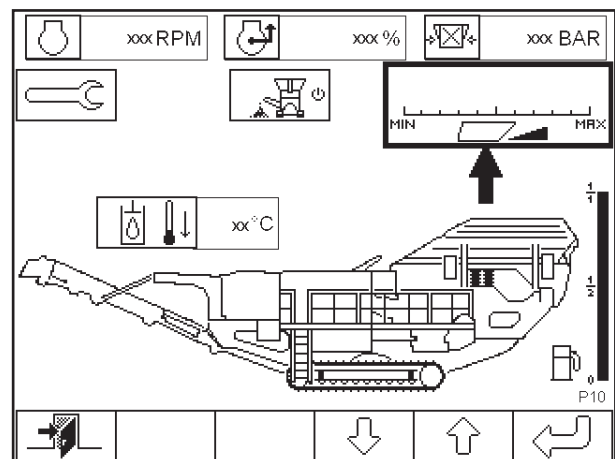
4. Select vibrating feeder speed control by either pressing 'ok' or function button.



5. To adjust the feeder speed use the 'ok' knob or function buttons, down or up arrows.



6. Press 'ok' or function button to confirm and set the feeder speed.



Finishing Plant Start Up

1. Check that all items are running satisfactorily.
2. Ensure the plant is stable and without undue vibration. If necessary, reposition the plant on firm, level area with the full length of both tracks in contact with the ground.
3. Check all other aspects of the plant are ready for the introduction of material.

1. Stop the plant, refer to preparing to finish crushing.



2. Refer to specification and plant information for setting range.



WARNING

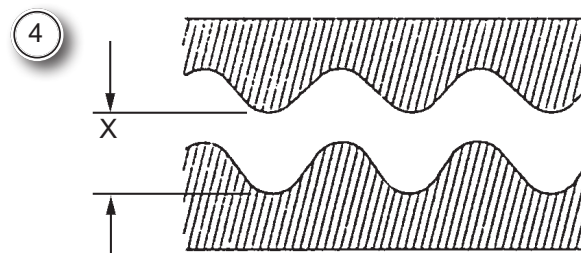
Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT PLANT

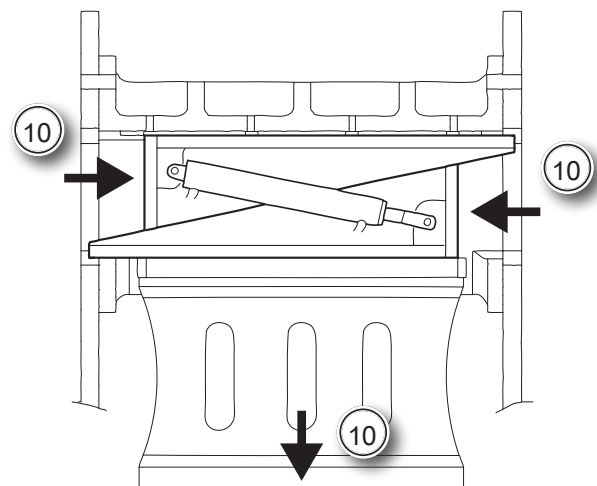
3. The discharge opening is the distance between the fixed and moving jaw plates at the bottom of the crushing chamber and regulates the size of the product material.

4. The discharge opening 'X' is measured from the top of the tooth on one jaw plate to the corresponding root between two teeth on the other jaw plate.
5. The opening should ideally be measured when the jaw is closed, at a point of shortest distance between the two jaw plates. This is when the eccentric shaft is at its highest point but the crusher will not stop naturally at this point.
6. The crusher normally stops with the jaw plates open, therefore the measured distance is 40mm (1.5in) above the discharge opening.
7. Measure the distance with the crusher stopped and subtract 40mm (1.5in) to give the actual discharge opening.
8. The crusher must be stationary to make measurements.

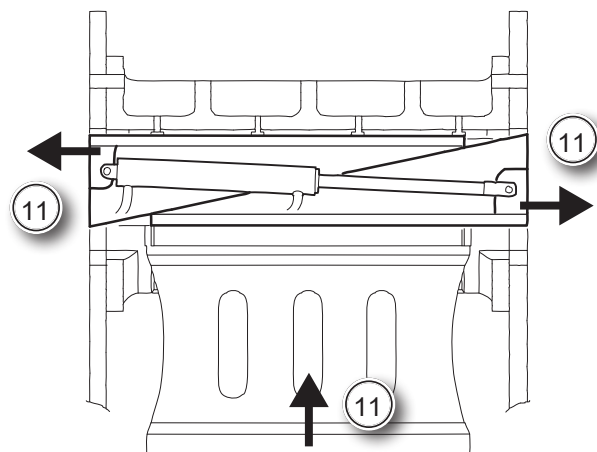


9. Adjustment to the crusher discharge opening is made by two wedges sliding on each other and moved by a hydraulic cylinder, controlled by a lever.

10. When the adjustment cylinder is fully retracted the wedges move the jaw to the minimum gap setting.



11. When the adjustment cylinder is fully extended the wedges move outward moving the toggle plate and jaw to obtain the maximum gap setting.



1. Ensure the crusher is completely empty of material.

2. Measure the distance to obtain the current discharge opening, refer to measuring discharge opening.



3. Observe all safety warnings.

4. Start the engine, see engine starting.

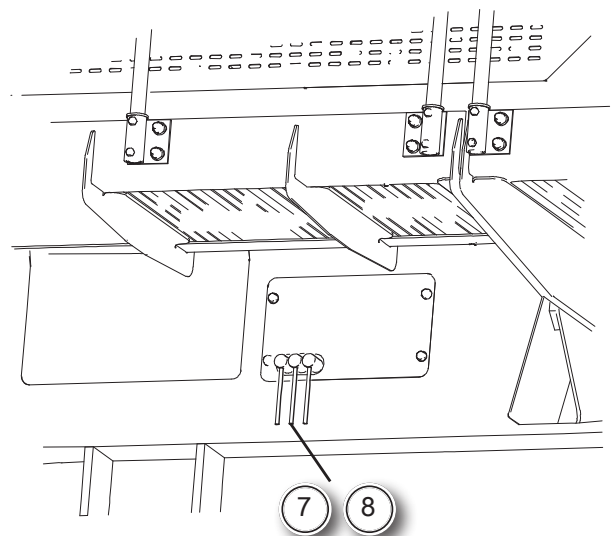


5. DO NOT start any part of the plant.

6. The crusher must be stationary to make adjustments.

7. Operate the control lever upward to reduce the discharge opening

8. Operate the control lever downward to increase the discharge opening.



9. Stop the engine, refer to engine stop.



15

10. Check measurement and discharge opening,
refer to measuring discharge opening.



<-

11. Start the engine and make further adjustments
as necessary.



13

12. Refer to plant operation to resume crushing.



20



22 EN Operation - Clearing Blockages

Clearing Blocked Crusher

1. This model does not have a special way of clearing blockages and is cleared in the same manner as a standard jaw crusher.

2. Refer to separate section on clearing jaws.

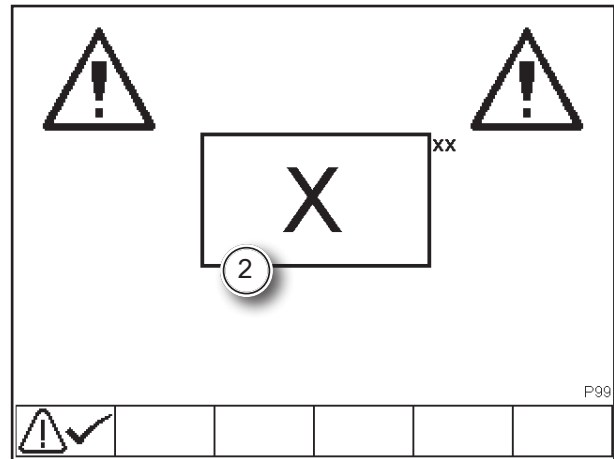


32

23 EN Plant Alarms

Active Plant Alarms

1. Should an active alarm occur the alarm will sound and the appropriate current active alarm will appear on the screen.
2. In the illustration example, an alarm icon will replace the X and the alarm reference number will replace the xx. Refer to the list of fault alarms for icons and information.



3. Pressing the function button will acknowledge and mute the alarm.
4. If the system remains switched on and the fault is not rectified, the alarm will repeat after a short period.



NOTICE

A fault must be rectified before crushing operations can be resumed.

WARNING

To rectify faults which require repairs or replacements of parts where specialist tools or expertise is required, contact your local Powerscreen® dealer or Powerscreen® Technical Support department.

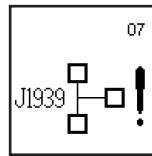


03

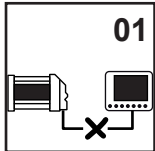
List of Fault Alarms



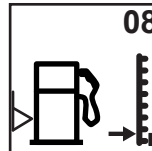
00 No active alarms.



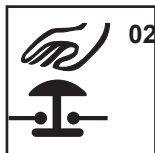
07 Clutch control fault.



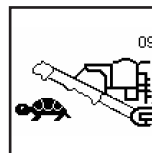
01 Loss of communication between display screen and logic control.



08 Fuel level low.



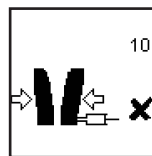
02 Emergency stop activated.



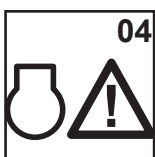
09 Product conveyor running too slow.



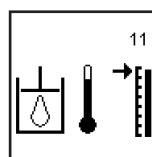
03 Stop on radio control activated.



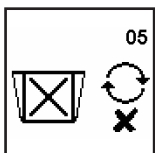
10 Jaw hydraulic system fault.



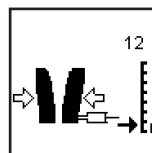
04 Engine fault reported.



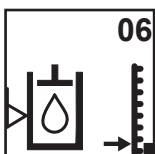
11 Hydraulic fluid temperature high.



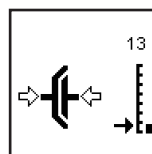
05 Crusher stopped - start fault.



12 Jaw hydraulic system fluid pressure low.

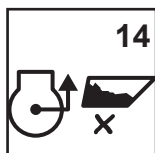


06 Hydraulic fluid level low.

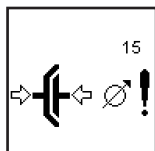


13 Clutch hydraulic pressure low.

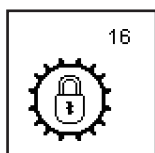
Crusher Operation



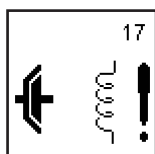
14 Feeder stopped - engine load too high.



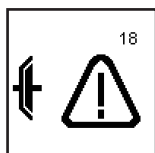
15 Clutch pressure sensor fault.



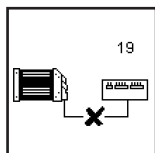
16 Clutch locked out.



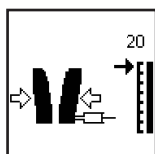
17 Clutch coil fault.



18 Clutch fault.



19 Communication connection fault.



20 Jaw hydraulic system fluid pressure high.

24 EN Daily Plant Checks

Checks Prior to Daily Start

WARNINGS

It is imperative that the operator carries out regular and diligent checks before operating the plant, especially with operational safety in mind.

Always consider what particular safety hazards could occur at specific sites and eliminate them before commencing work.

While it may not be the operator's responsibility to perform servicing or mechanical maintenance, the operator must be thoroughly familiar with the plant and its proper care since their own safety is involved.

Plant

1. Observe all safety warnings.
2. Visually check and inspect all guards, covers and doors are in position and secure.
3. Check that all equipment and tools that are hazardous to operation are removed from the immediate site.
4. Perform all actions required in the lubrication schedule requiring a daily check or lubrication, refer to servicing - lubrication.



41

DANGER

DO NOT allow an excavator bucket feeding material into the hopper to pass overhead or near the plant operator.

WARNING

NEVER leave the plant unattended whilst it is in operation.

NOTICES

Check frequently the stability of the plant. The chassis **SHOULD NOT** bounce during operation.

DO NOT run the engine below its recommended working speed when crushing.

Check regularly that all cooler fans are running correctly and that dust or dirt has not built up in the fan and radiator or heat exchanger element. Overheating can occur if dust or dirt is allowed to build up. Clean out if necessary.

Avoid frequent starting and stopping of the plant unnecessarily, as it will cause damage to the plant and excessive wear.

5. Make sure all warning and safety signs are clean and visible, see plant specification and information for their positions.
6. Ensure that the crusher and the feed hopper are empty.
7. Check hydraulic oil level and filter condition indicators.
8. Visually check the hydraulic system for damage or leaks.



04

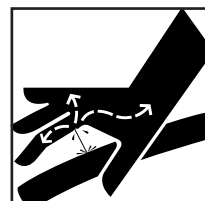


51



DANGER

Refer to Safety Notices Section for relevant warning and procedure



SKIN INJECTION
HAZARD

Daily Plant Checks

Engine

1. Observe all safety warnings.
2. Refer to the engine manual for the daily checks required such as oil level and filters.



3. Check fuel level.



26

4. Check the hydraulic fluid filter condition indicators, if fitted.



51

5. Check coolant level when cold and top up as necessary, refer to engine manual and servicing - lubrication.

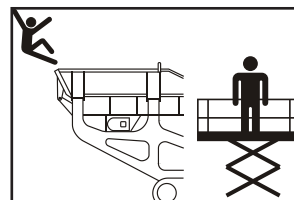


41

6. Some plants are fitted with a coolant header tank for filling and topping up.
7. Some plants are fitted with an expansion bottle for topping up. If the expansion bottle is empty, first fill through the radiator filler then top up via the expansion bottle.

WARNING

Refer to Safety Notices Section for relevant warning and procedure



FALLING
HAZARD

Tracks

8. Observe all safety warnings.



WARNING

Refer to Safety Notices Section for relevant warning and procedure

9. Close down the plant and implement the lockout procedure.

10. Check the track rollers and idler wheels for possible leakage.

11. Check the surface of the track, rollers, idler wheels, track shoes and drive sprockets for wear and loose mounting bolts.

12. Clean out any heavy build up of material from around the tracks.



LOCKOUT
PLANT

13. Check the tension of the tracks, refer to servicing of tracks.



47

14. Check the track frames for any damage

Daily Plant Checks

Conveyors

15. Observe all safety warnings.
16. Check that all conveyor rollers are free to rotate.
17. Remove any build up of material on the plant chassis or framework below conveyors.

NOTICE

DO NOT allow a build up of material at the feed on points to any conveyor.

Other Plant Checks

18. General plant items should be inspected on a weekly basis and at 500 hour intervals for damage in the following areas:

Main chassis.

Feeder.

Track frames.

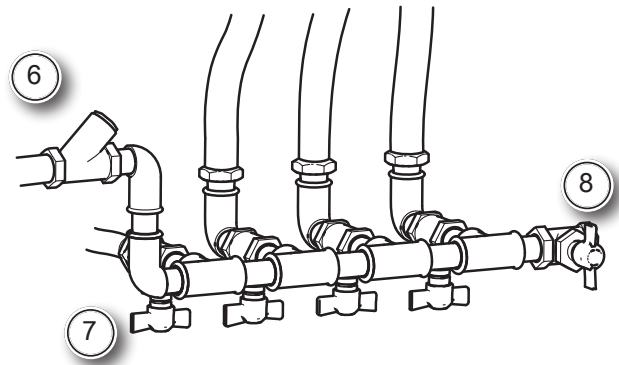
Conveyor frames.

25 ^{EN} Dust Suppression System

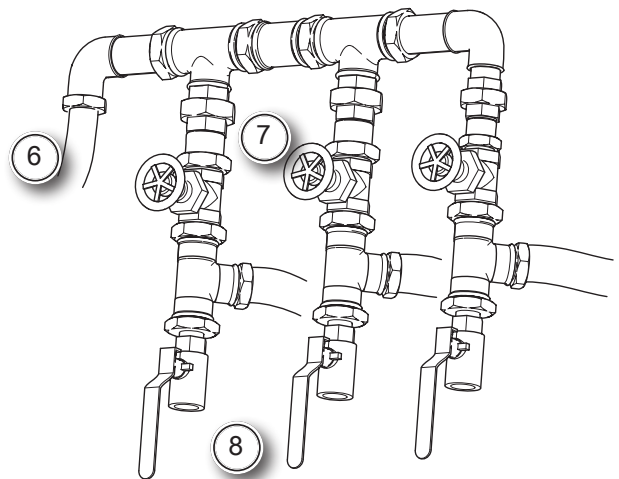
Dust Suppression Water Spray System [if fitted]

1. The plant dust suppression is a plain water spray system with one inlet feeding separate circuits. The customer or user should provide the clean pressurised water supply.
2. The layout of the valves and pipe work varies on different type of plant.
3. Each circuit consists of spray bars each fitted with atomiser nozzles.
4. These are normally located in the following areas:-
 - Crusher or impactor discharge area.
 - Product conveyor discharge.
 - Crusher feed,.
 - Dirt conveyor, [not all plants].
- 5 The total flow requirement for the system is 25litres/min (6.6US gall/min) at a pressure of 2.8bar (42lbf/in²).

6. The system requires a clean pressurised plain water supply to the connection point.
7. Shut-off valves are provided for each spray bar circuit.



8. The water can be drained from the system using the drain valves located below the inlet. This is particularly important when there is the likelihood of the system freezing.



< 0°C / 32°F



NOTICE

Drain water from system when not in use, if there is a possibility of freezing.

9. All nozzles should be kept free of dirt and blockages.
10. Each nozzle should be checked every time the dust suppression is switched on.



26 EN Re-fuelling

Check Fuel Level and Fill Up

DANGER

Diesel fuel is highly flammable and is an explosion/burns hazard.

NEVER remove the filler cap or refuel, with the engine running.

NEVER add gasoline, petrol or any other fuel mixes to diesel because of increased fire or explosion risks.

DO NOT smoke while refilling or carrying out maintenance on the fuel system.

DO NOT carry out maintenance on the fuel system near naked lights or sources of sparks, such as welding equipment.

Fuel Sight Glass

1. Some plants have a fuel sight glass for checking the tank level.

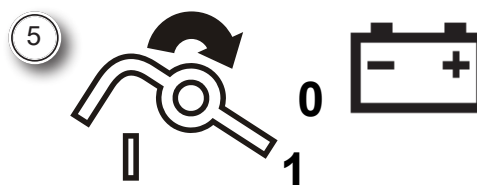
2. Check level and fill up with fuel, refer to fuel filling.



Fuel Gauge

3. Some plants have an electric fuel gauge.
4. Observe all safety warnings.

5. Turn the battery switch to the '1' position.



6. Turn ignition to the '1' position.
7. Check the fuel level gauge.
8. Turn ignition switch to '0'.



Fuel Filling

9. Clean the area around the fuel filler cap. On some plants the filler is located behind a door or panel. Some plants have an external fuel tank fitted with filler.

10. Remove the filler cap and fill up with fuel as required with specified diesel fuel. Refer to the engine manufacturer's operation manual.



NOTICES

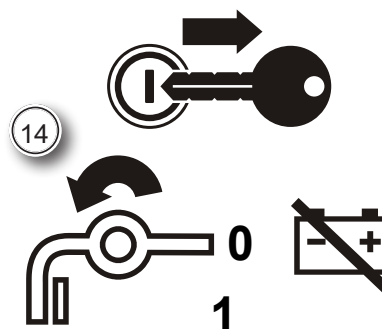
Do Not fill the tank to overflow or full capacity.

Allow room for expansion and wipe up spilt fuel immediately.

Re-fuelling

11. Preferably re-fuel at the end of each day where possible, to reduce overnight water condensation within the tank.
12. Replace the filler cap and close the door if applicable.
13. On plants fitted with an electric fuel gauge, switch on the ignition briefly to check the level, if required.

14. When finished, turn ignition switch to '0' and remove key then turn the battery switch to '0'.



Fuel Transfer Pump

15. Some plants are fitted with an electrically operated pump, refer to addendum AM0009.



01 - AM0009

27 EN Feeder Stop and Start ['860' Radio Remote]

Radio Remote Control - Feeder Stop & Start, [if fitted]

1. Observe all safety instructions.

2. Set up the plant for operation in plant mode.
Refer to specific plant controls.



3. Activate the radio remote control, refer to radio remote '860'.



4. Start the engine. Refer to specific plant and engine controls.



5. Prepare the plant for normal crushing. Refer to specific plant controls.



6. Set the plant to normal crushing operation mode with the plant controls, making sure the feeder is running.



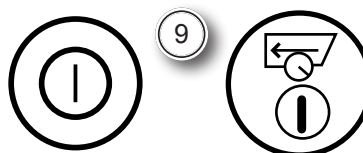
7. Set the desired feeder speed at the plant controls or set to automatic, depending upon the specific controls fitted to the plant.



8. The feeder speed on some plants can also be controlled with the radio, refer to feeder speed adjust '860', if applicable.



9. Press the button to start and stop the feeder.
Alternative icons are used on some plant controls.



31 ^{EN} Preparing to Finish Crushing

Normal Closing Down the Plant

NOTICE

For normal closing down the plant, DO NOT use the emergency stop buttons, umbilical or radio, if fitted, hand set stop buttons or by switching off the engine ignition to close down the plant. Always follow the correct preparation sequence.

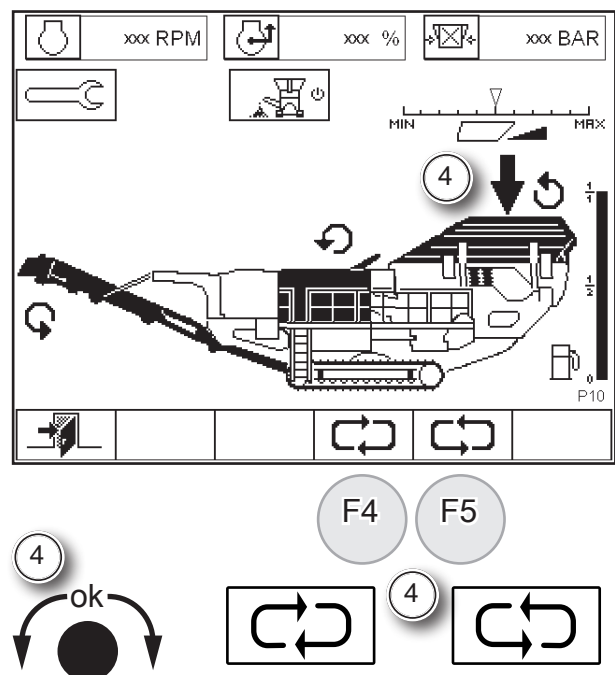
Always close down in the following sequence:

1. To finish crushing each section of the plant must be emptied in sequence before being stopped.

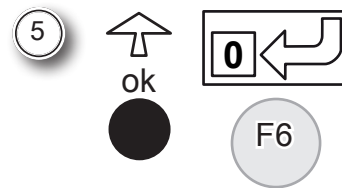
Feeder

2. Wait until the feeder is empty of material then stop the feeder.
3. The feeder is operated in plant mode P10.

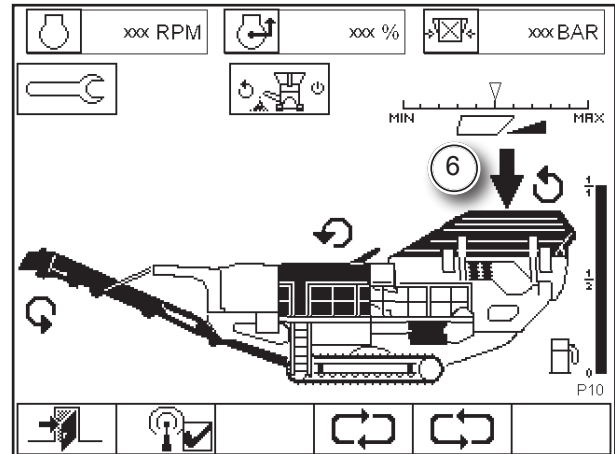
4. Scroll to highlight vibrating feeder using 'ok' knob or function buttons.



5. Switch off feeder by either pressing 'ok' or function button.



6. The feeder icon and its running icon will clear and it will stop.

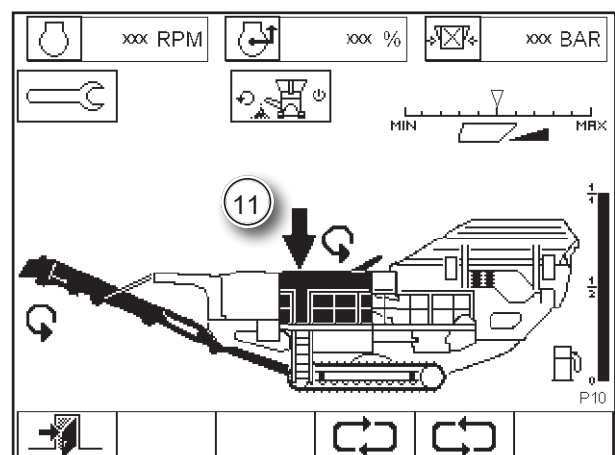


7. As an alternative, if a radio remote is fitted and selected and being used, press the button on the radio remote control to stop the feeder.
8. Wait until the feeder has stopped before stopping the next item.

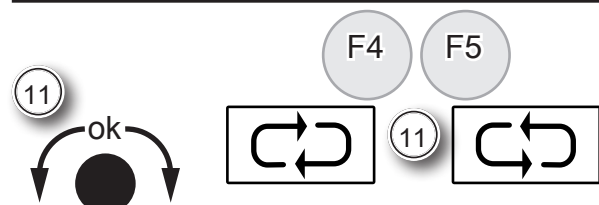


Crusher

9. When the crusher is empty of material, then stop the crusher.
10. The crusher is operated in plant mode P10.

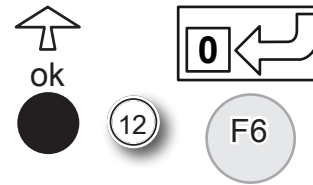


11. Scroll to highlight crusher using 'ok' knob or function buttons.

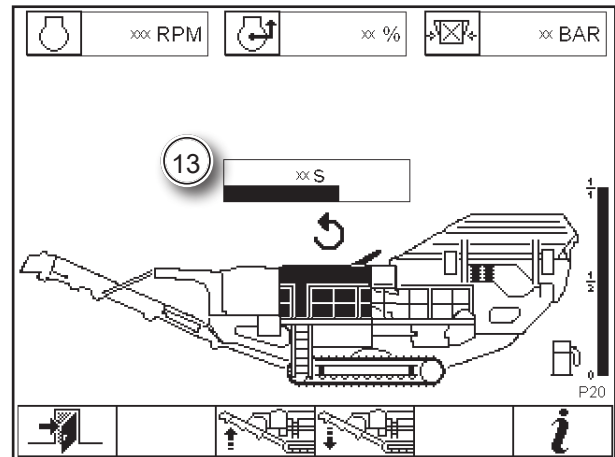


Preparing to Finish Crushing

12. Switch off crusher by either pressing 'ok' or function button.

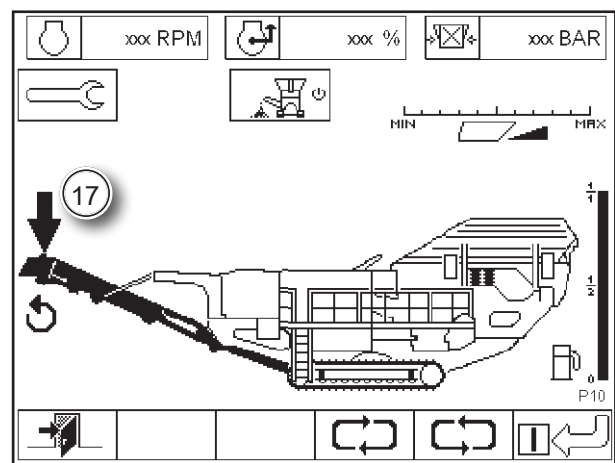


13. The crusher icon and its running icon will clear and it will follow a slowing and stopping procedure.
14. Wait until the crusher has stopped completely before stopping the next item.

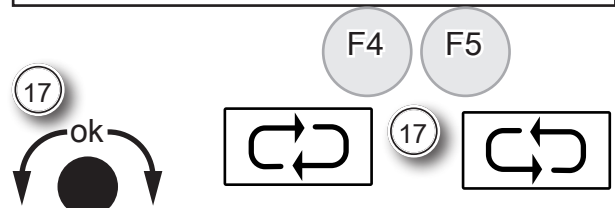


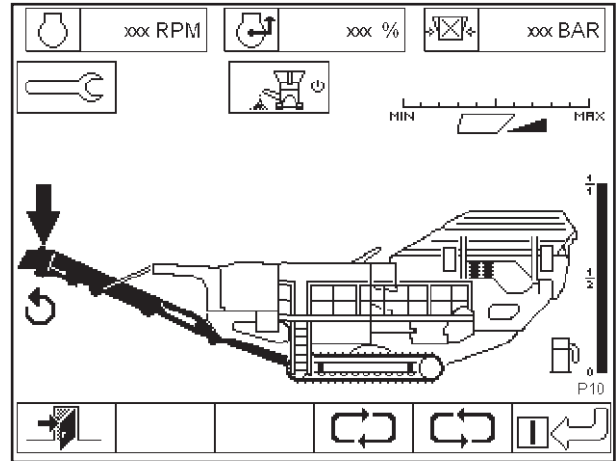
Product Conveyor

15. When all materials have run off the product conveyor, stop the product conveyor.
16. The product conveyor is operated in plant mode P10.



17. Scroll to highlight product conveyor using 'ok' knob or function buttons.

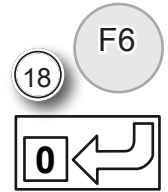
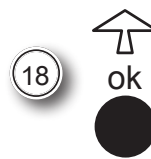




18. Switch off product conveyor by either pressing 'ok' or function button.
19. The product conveyor icon and its running icon will clear and it will stop.

20. The engine speed will reduce when all components of the plant have stopped.

21. If the engine is not required further, stop the engine as described in engine stop.



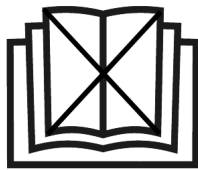
15

Final Preparation

22. It is recommended that at the end of operation for the day the plant is routinely cleaned down and thoroughly examined to check for any damage, breakages, wear, leaks etcetera which should be rectified before further operation.

NOTICE

Use of high pressure washing equipment is to be avoided where the ingress of water will be detrimental to plant components. For example: crusher bearings, conveyor bearings, hydraulic tank, electrical equipment etcetera.



32 ^{EN} Clearing a Stalled Jaw Crusher

Clearing a Stalled Jaw Crushers

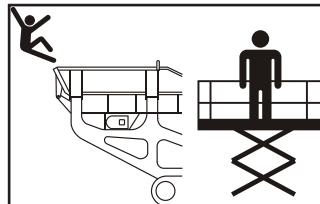
Stalled Jaw Crusher

WARNING

Refer to Safety Notices Section for relevant warning and procedure



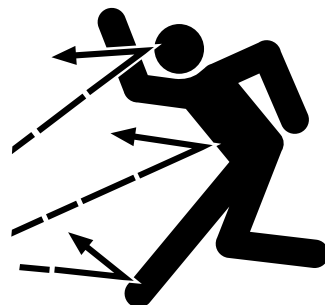
LOCKOUT
MACHINE



FALLING
HAZARD

Safety

1. In the situation where an oversize or tramp piece of material causes the crusher to stall, and the toggle plate does not fail, it is possible that very high pressure will be sustained on the moving swing jaw, dependent on which position the stall occurred in the crushing cycle.
2. This pressure may result in the object to be ejected upwards under high force and therefore will need to be released under controlled conditions to enable safe removal of the material that has created the stall condition.



WARNING

CUTTING THROUGH THE TOGGLE PLATE WILL CAUSE THE RELEASE OF STORED ENERGY IN THE MOVING JAW WHICH MAY SWING VIOLENTLY BACK TOWARDS THE PERSON PERFORMING THE CUTTING OPERATION.

BEFORE ANY ATTEMPT TO CARRY OUT THE PROCEDURES TO CLEAR THE STALLED CONDITION OF THE CRUSHER THE MACHINE MUST BE ISOLATED FROM ALL SOURCES OF SUPPLY AND THE SAFETY GRID AT THE MOUTH OF THE CRUSHER MUST BE SECURELY FASTENED IN PLACE.

SUITABLE PERSONAL PROTECTION EQUIPMENT MUST BE WORN.



CAUTION

The following procedure or any other procedure developed to remove tramp metal, or any other material that results in the stalling of the crusher should be incorporated into a permit to work procedure. This procedure should be maintained under the control of the component person appointed by the management.

3. The procedure should cover all factors of safety including notification to the manager, isolation of systems and locking out procedure, methods of removal, safe positions for persons and any other precautions as may be deemed necessary.

Clearing a Stalled Jaw Crushers

Procedure to release a stalled jaw crusher

1. Observe all safety warnings.
2. Isolate machine from all energy sources.
3. Ensure the safety grid is over the mouth of the crusher.
4. If the crusher is equipped with hydraulic drive, attempt to start the machine in reverse.
5. If the crusher is equipped with a hydraulic wedge adjust system, attempt to release the pressure on the jaw by opening the jaw using the machine controls.
6. If none of the above operations are applicable, or successful, then the toggle plate must be cut.
7. Before the cutting operation is commenced adequate and appropriate provision **MUST** be made to support the weight of the stored energy in order to prevent the violent swinging movement of the jaw.
8. The toggle plate should be heated across the centre line, between the holes, using a long-handled large gas torch, such that the operator can stand in a protected position, well clear of the back of the crusher frame.
9. Heat the material to a dull red, starting at the mid point, and working outwards either side in turn. Ideally, the toggle plate should be heated until it yields. The yielding of the toggle plate will reduce or eliminate the pressure on the trapped object.
10. If the plate does not yield, then it is recommended that small cuts are made in either side of the toggle plate with an acetylene cutting torch approximately 50mm (2in) from each side and the heating procedure repeated until yielding occurs.
11. After the pressure is released due to the toggle plate yielding, the toggle plate should be cut in two and removed.

For advice, contact your local dealer or technical support.



33 EN Initial Checks - Running In

Initial Start-Up

1. Check the oil levels in the vibrating unit oil baths.

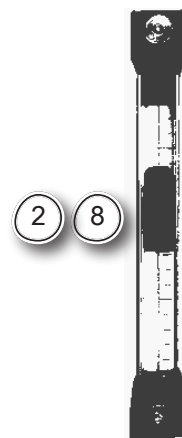


43

2. Check the hydraulic oil level in the tank.



51



3. Refer to engine manual for initial start up of engine.



4. Run the plant empty for a short period of time and check for abnormal noises, vibration or excessive heat from the shaft bearings.




03


NOTICE

Checks on the plant are crucial during the first week of operation.


This section should be read and understood prior to starting the plant. If there are any doubts, consult your local Powerscreen® dealer or Powerscreen® technical support.

Actions During Running-In Period Plant

5. Each day during the initial days of operation check the tension of the conveyor belts: product conveyor, and dirt conveyor if one is fitted.  46
6. Frequently check the overall stability of the plant, re-position if necessary.
7. Check the plant is level, re-position if necessary.

8. Frequently check the hydraulic fluid level in the tank.  51

Crusher

9. On hydraulic jaw plants, regularly check the crusher slider pads for wear.
10. Check the alignment and tension of the vee belt drive daily during the initial days of operation.  45
11. Check the shaft bearing temperature daily using a contact thermometer and record for future reference and fault diagnosis. The maximum acceptable working temperature is 80°C (176°F).
12. Avoid overloading the crusher; restrict loading to 50% of full capacity on the first few days and increase gradually to full capacity when the crusher has been operating 60 hours.
13. Ensure that all drives are running before any feed is introduced to the plant and that the feed is maintained at a constant rate, irregular and excessive feed rates reduce the efficiency of the plant.

Initial Checks

14. Check all liner fixings daily whilst liners settle in, when the plant is new or if the liners have been disturbed. This should be checked daily until no adjustment is required.
15. Ensure that all under size feed [smaller than the discharge setting] and oversize feed [greater than 80% of the feed opening] is removed prior to introduction into the crusher.
16. If the crusher has not been run for some time, re-grease all the crusher bearings then run empty for approximately 2 hours.

Feeder

17. Frequently check the oil levels in the vibrating unit oil baths.
18. After first 8 hours of operation, change the oil in the vibrating unit oil baths, see servicing vibrating feeder.
19. Check the vibrating unit bearing temperatures using a contact thermometer on the oil baths; record for future reference and fault diagnosis. Maximum acceptable temperature is 80°C (176°F).
20. Ensure that the vibrating feeder unit is operating before any material is introduced to the plant.





43

34 EN Jaw Crusher Checks



Jaw Checks

Jaw Crushers

1. Check discharge opening with callipers and adjust as necessary, to the required settings.  21
2. Check the jaw and side cheek securing nuts daily.
3. In high ambient temperatures, grease the jaw eccentric shaft, see servicing - lubrication.  41

Wear Checks

Jaw faces

4. Monitor the wear on the jaw liners from new and turn or renew them when 95% worn.  60
5. Monitor and check the wear of the jaw liners regularly.
6. DO NOT allow the jaw liners to wear below the bottom of the grooves. Any wear below this will result in the support block at the base being worn.
7. Continued crushing with heavily worn jaws increases the crushing forces and power consumption. This may limit the minimum setting on hard materials.
8. The jaws are double ended can be turned to use the other end, if one end has become worn. The worn area then being at the top of the crusher.  60

Toggle Plate and Seats

9. The toggle seats and toggle plate should be checked for wear as this can effect the operation of the spring system and in extreme cases cause the mechanism to fail [the greater the wear the closer the spring bracket gets to the jaw – collision could occur].

10. If inspection reveals the toggle plate and seats are worn then replacement is required. Do not modify the jaws or spring system to effect additional clearance as this may adversely effect the structural integrity of components leading to failure and loss of any warranty.

11. Specialist training and experience are required for this work, contact your local Powerscreen® dealer or Powerscreen® technical support for advice.



03

HR - Hydraulic Release Jaw Crushers

Toggle Beam Slider Pads

12. In applications where the crusher is subjected to frequent overload release situations, wear on the slider pads may be accelerated.
13. Regularly check to make sure there is no rocking movement of the toggle beam. View through the chassis shim aperture guards whilst the crusher is running.
14. Excessive wear or damaged pads could result in movement of the toggle beam or cylinders in normal operation, which will result in further machine damage.

15. If the slider pads are worn, these should be replaced as soon as possible to prevent failure during crushing.

16. Specialist training and experience are required for this work, contact your local Powerscreen® dealer or Powerscreen® technical support for advice.



03

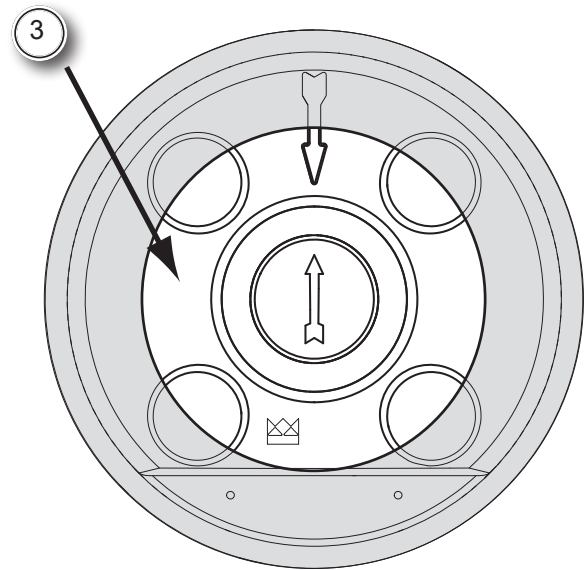
Jaw Checks

Routine Inspection Checks

Crushers should be inspected on a weekly basis and at 500 hour intervals for damage in the following areas:

1. Crusher body.
2. Wear Parts.

3. Flywheel[s] Area to inspect.



40 EN Servicing Safety and Precautions

Servicing Safety Information



General Information

1. When performing servicing, always observe rules provided in the safety section.
2. Breakdown caused by insufficient or improper servicing will cause high repair costs and long term standstill. Therefore, regular servicing is imperative.
3. The reliability and life of the plant depends on regular and proper servicing.
4. The servicing instructions and schedules are for normal operating conditions.
5. For servicing where it is necessary to remove any guards, make sure that they are replaced before the machine is restarted.



WARNING

PRIOR TO ANY MAINTENANCE

The servicing instructions are intended for day to day checks and servicing to keep the plant in good running order. For all other maintenance issues, repairs or replacements of parts where specialist tools or expertise is required, contact your local Powerscreen® dealer or Powerscreen® technical support.

NOTICE

When the plant is operated in extreme climatic conditions: below -15°C (5°F) or above 30°C (86°F) or in very dusty conditions for a longer period of time, the servicing schedules will change. Contact your local Powerscreen® dealer or Powerscreen® technical support department for advice.

Servicing Safety Precautions

6. Make sure that only suitably competent personnel with the necessary training/experience for the task[s] in hand are employed.
7. A person should never work alone.
8. Observe the advice in the Safety Sections as appropriate to any task[s] undertaken.
9. Read the appropriate manual relevant to the operation in hand.
10. Carry out a risk assessment for all servicing operations.
11. Have suitable lifting equipment available for the components involved together with all necessary and suitable tools/equipment ready for the task[s] in hand and always secure parts liable to movement before starting work.

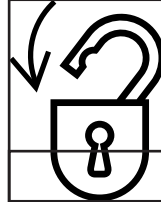
12. Powerscreen® technical support department is available for advice when required.
13. The plant should be completely emptied of all material.



03

WARNING

Refer to Safety Notices Section for relevant warning and procedure

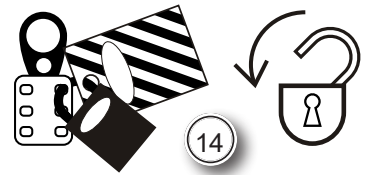


LOCKOUT
PLANT

14. Implement the lockout procedure and display a prominent 'tag' at the control station or other appropriate place to warn of work being carried out.
15. Keep clear of moving parts when trying to identify or isolate any unusual noises.
16. Fit dismantled parts in the same location from which they were removed.
17. Ensure that the area surrounding the servicing site is clear of any obstructions.



02



Welding on a plant

WARNING

Refer to Safety Notices Section for relevant warning and procedure

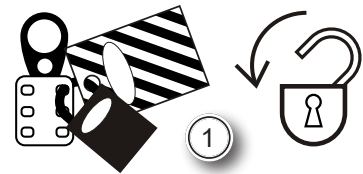


**LOCKOUT
PLANT**

1. BEFORE WORKING ON THE PLANT, SWITCH OFF, 'LOCKOUT' AND 'TAG OUT'



02

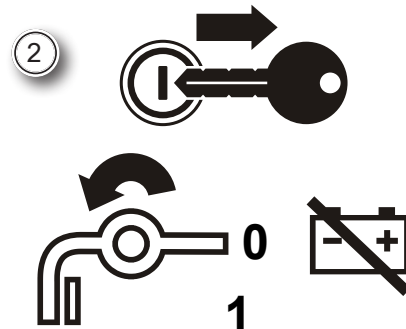


NOTICES

Before welding on a plant, these precautions shall be followed to protect the electronic controls.

Refer also to any welding instruction label inside the engine canopy.

2. Turn the battery disconnect switch off to the '0' position and lockout.



3. Disconnect the battery ground negative [-] battery cable at the battery and at the battery disconnect switch.

Servicing Safety & Precautions

4. Connect the welder ground cable clamp directly to the member to be welded as close as possible to the weld.
5. If arc-welding work is involved in any repair operation, make sure that the current does not pass through any bearings, hydraulic components, electrical components and ground straps.
6. Do not use electrical components, the electronics control module or electrical ground stud for grounding the welder.
7. Protect any wiring and electrical or hydraulic components from welding debris or splatter.
8. Disconnect engine management system as described in any welding instruction label inside the engine canopy.
9. Use standard welding techniques to weld the materials together.

After Extensive Maintenance

Refer to initial checks - running in.



33

WARNING

PRACTICE SAFE MAINTENANCE

Understand service procedure before doing any work. Keep areas clean and dry.

Never lubricate, clean, service or adjust machine whilst it is moving.

Keep hands, feet and clothing clear of power driven parts and in-running nip points.

Disengage all the power and operate controls to relieve pressure. Stop the engine. Implement lockout procedure. Allow machinery to cool.

Securely support any plant or machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Attend to damage immediately. Replace worn or broken parts.

Remove any build up of grease, oil or debris.

Disconnect battery ground cable, negative, [-] at the battery and the battery disconnect switch before making adjustments on electrical systems or welding.



41 EN Servicing - Lubrication

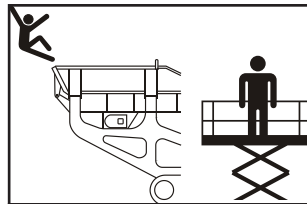
Lubrication Requirements

WARNING

Refer to Safety Notices Section for relevant warning and procedure



**LOCKOUT
PLANT**



**FALLING
HAZARD**

Regular Servicing

1. It is important that a strict routine of regular servicing is undertaken from the start of operation of the plant.
2. Regular checks on fluids and the lubrication of the plant, in accordance with the schedule, is essential.
3. In addition to the lubrication points, the lubrication schedule lists the regular attention required to the plant hydraulic system.

NOTICES

To deliver the specified quantity of grease, ascertain the amount the grease gun will deliver with each 'pump'. Do not guess or assume an amount ! Check the greasing equipment used regularly.

To prevent contamination of the grease, wipe the grease nipples clean before applying the grease gun.

4. Refer to lubricant and fluid specifications for all oil or grease lubricants and hydraulic fluid requirements.

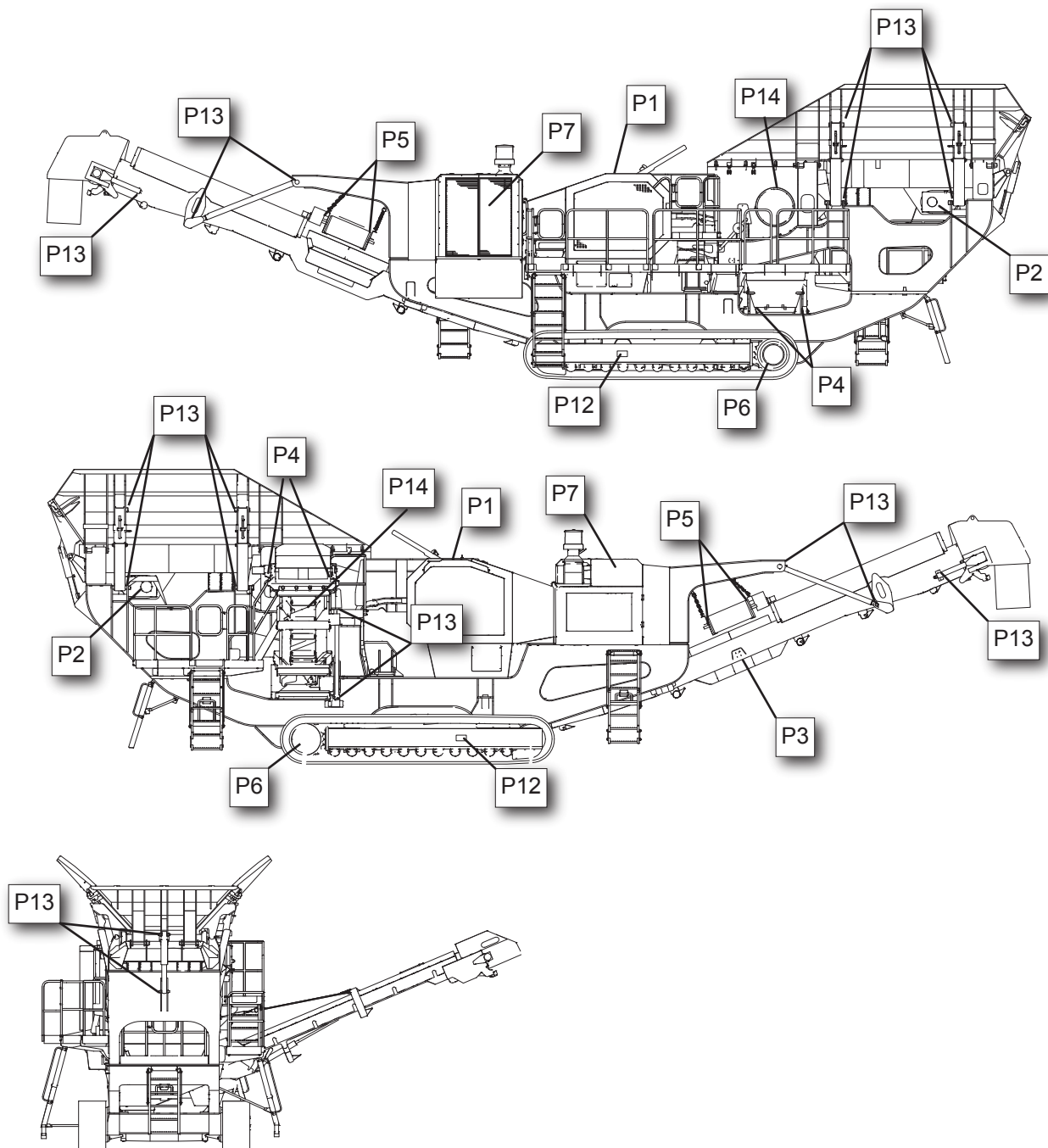


42

NOTICE

DO NOT MIX LUBRICANTS OR FLUIDS OF DIFFERENT MAKES OR TYPES.

Lubrication and Hydraulic System Schedule



- 5. All hours stated are working hours for the component concerned.
- 6. Schedules are based on the plant operating 8 hours a day and 40 hours a week.

Monthly = 160 hours
Annually = 2000 hours
Adjust schedule to suit actual operating hours.

- 7. Jaw and eccentric shaft, refer also to servicing jaw crushers.



44



| P1 Eccentric Jaw shaft | |
|--|-------------------|
| Locations · · · · · | 4 |
| Lubricant · · · · · | Y |
| Normal operating conditions <35°C (95°F) | |
| Quantity each bearing · · · · · | 50g (1.8 oz) each |
| Re-grease · · · · · | 8 Hours |
| High ambient conditions >35°C (95°F) | |
| Quantity each bearing · · · · · | 50g (1.8 oz) |
| Re-grease · · · · · | 8 Hours |

NOTICE
DO NOT use grease that contains molybdenum disulphide [MoS₂].

Servicing - Lubrication

8. Check hopper feeder vibrating oil baths on both sides, refer also to servicing vibrating feeder.



43



P2 Vibrating Hopper Feed Oil Bath

Locations · · · · · 2

Lubricant:

Below 4°C (39°F) · · · · · A

4°C (39°F) to 15°C (59°F) · · · · · B

Above 15°C (59°F) · · · · · C

Quantity:

Drive side · · · · · 3 litres (6.3 US pints)

Non drive · · · · · 2.5 litres (5.3 US pints)

Check sight glass and top up · · · · · Every day

Change oil · · · · · Every 200 hours

9. Product conveyor head and tail shaft bearings at remote grease nipples located on side of the conveyor. Refer also to servicing conveyors.



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P3 Product Conveyor Shafts

Locations · · · · · 4

Lubricant · · · · · D

Re-grease · · · · · Every 2 weeks

10. Dirt conveyor, if fitted, head and tail shaft bearings are located on the housings. Refer also to servicing conveyors.



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P4 Dirt Conveyor Shafts

[If fitted]

Locations · · · · · 4

Lubricant · · · · · D

Re-grease · · · · · Every 2 weeks

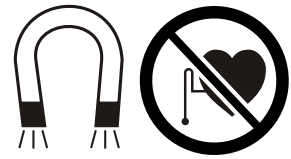
11. If fitted, refer also to servicing magnetic separator.

P5 Magnetic Separator
[If fitted]

| | |
|---------------------|---------------|
| Locations · · · · · | 4 |
| Lubricant · · · · · | D |
| Re-grease · · · · · | Every 2 weeks |



49



! WARNING

The belt magnet assembly is very powerful and permanently charged. The strong magnetic field produced could affect heart pacemakers, watches, credit cards, mobile phones etc. The operator has the sole responsibility to keep anyone at risk clear of the plant.

Persons with medical implants which may be affected by the magnetic field should keep a minimum of 3m (10ft) away

12. Type 'C' track gearboxes are fitted to the plant, refer also to servicing tracks.

P6 Track gearbox
Type C gearbox

| | |
|-----------------------------------|------------------------|
| Quantity · · · · · | 10 litres (2.6 US gal) |
| Normal ambient temperature: | |
| From -20 to +30°C (-4 to 86°F) | Lubricant · · · K |
| Higher ambient temperature: | |
| From -10 to +45°C (+14 to +113°F) | Lubricant · X |



47



13. Refer also to servicing the clutch. Type 'G' clutch is fitted to this plant.



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14. The engine also requires servicing which is detailed in the separate engine manufacturer's manual. Refer to engine manual



P7 Engine

| | | |
|---------------------------------|-----------|------------------|
| Lubricating oil | · · · · · | # |
| Fuel | · · · · · | # |
| Coolant # | · · · · · | E.L.C.* |
| Coolant Extender # | · · · · · | E.L.C.* Extender |
| *E.L.C. = Extended Life Coolant | | |
| # = See engine manual | | |

15. Plant hydraulic system level, refer also to servicing hydraulic system.



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P8 Hydraulic Fluid System

Fluid:

| | | |
|-------------------------------|-----------|------------------------|
| Temperature Below 30°C (86°F) | · · · · · | F |
| Temperature Above 30°C (86°F) | · · · · · | G |
| Quantity | · · · · · | 380 litre (100 US gal) |
| Check, top up as necessary | · · · · · | Weekly |
| Change | · · · · · | Every 2000 hours |

16. Hydraulic pressure filters P9, suction filter P10 and return filters P11. Refer also to servicing hydraulic system.



P9, P10, P11 Hydraulic filters

P9 Pressure:

Locations · · · · · 3

P10 Suction:

Location · · · · · 1

P11 Return:

Location · · · · · 3

Check · · · · · Daily

Change · · · · · Every 1000 hours

Change · · · · · if indicator shows RED

17. Track tension adjustment, also refer to servicing of tracks.



P12 Track Tension

Track Tension · · · · · D, E or H

18. Periodically lubricate all other hinges, cylinder pivot pins, threads and similar points to prevent seizure.



P13 General Grease Points

Locations:

Hopper cylinder pivots · · · · · 10

Product conveyor cylinder pivots · · · · · 4

Dirt conveyor cylinder pivots · · · · · 2

Conveyor belt tensioners · · · · · 4

Lubricant · · · · · D

Re-grease · · · · · Every 200 hours

Expel old grease as required

P14 Pre-Screen Bearings

Locations · · · · · 2

Lubricant · · · · · P

Re-grease · · · · · Every 50Hrs

Quantity · · · · · 4 grams/2 pumps

Ambient Temperature Variations

1. The frequency and type of lubrication and hydraulic fluids in the some parts of the plant are dependent upon the ambient operating temperature.
2. Ambient temperatures are defined as daily temperatures which are consistently below the temperature stated or consistently above the temperature stated.



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Lubrication in High or Low Ambient Temperatures

3. Contact your local Powerscreen® dealer or Powerscreen® Technical Support for advice.



03



Oil Specification Grade A

ISO VG150 EP

Flashpoint: minimum 199°C (390°F)
 Pour point -18°C (-0.4°F)
 Kinematic viscosity at:
 40°C, mm²/s (104°F, in²/s) 150 (0.232)
 100°C, mm²/s (212°F, in²/s) 15.4 (0.0238)
 Viscosity index 105+
 Timken OK lb minimum 50
 Extreme pressure agent Yes
 R & O agent Yes
 Anti foaming agent Yes
 Copper strip corrosion test pass Yes

Suppliers

Shell Omala 150
 Century Centlube E76
 Mobil Mobilgear 629
 Esso Spartan EP150
 Gulf EP LUB MULTI H
 BP Energol GR-XP150

Oil Specification Grade B

ISO VG220 EP

Flashpoint: minimum 204°C (399°F)
 Pour point -18°C (-0.4°F)
 Kinematic viscosity at:
 40°C, mm²/s (104°F, in²/s) 220 (0.341)
 100°C, mm²/s (212°F, in²/s) 20.1 (0.031)
 Viscosity index 105+
 Timken OK lb minimum 50
 Extreme pressure agent Yes
 R & O agent Yes
 Anti foaming agent Yes
 Copper strip corrosion test pass Yes

Suppliers

Shell Omala 220
 Century Centlube F76
 Mobil Mobilgear 630
 Esso Spartan EP220
 Gulf EP LUB HD220
 BP Energol GR-XP220



Oil Specification Grade C

ISO VG460 EP

Flashpoint: minimum 216°C (421°F)
 Pour point -18°C (-0.4°F)
 Kinematic viscosity at:
 40°C, mm²/s (104°F, in²/s) 460 (0.713)
 100°C, mm²/s (212°F, in²/s) 32.9 (0.051)
 Viscosity index 105+
 Timken OK lb minimum 50
 Extreme pressure agent Yes
 R & O agent Yes
 Anti foaming agent Yes
 Copper strip corrosion test pass Yes

Suppliers

Shell Omala 680
 Century Centlube H76
 Mobil Mobilgear 634
 Esso Spartan EP460
 Gulf EP LUB HD460
 BP Energol GR-XP460

Oil Specification Grade K

Specification API GL-5

Gear oil SAE 80w/90

Oil Specification Grade R

Shell Omala 100

BP Energol GR-XP 100

Oil Specification Grade L

ISO VG150 with EP additives

Oil Specification Grade S

Shell Omala 68

BP Energol GR-XP 68

Oil Specification Grade N

SAE 30 - SAE 40

ISO VG 100 - ISO VG 150

[DO NOT use synthetic oil]

Oil Specification Grade T

Viscosity index 195

Viscosity at 50°C (122°F) 5.3

Supplier

Texaco Rando HD-CZ 68

Oil Specification Grade Q

Specification API GL-4

Gear oil SAE 90

Oil Specification Grade X

Specification API GL-5

Gear oil SAE 85w/140

Check the grease to be used is to the correct specification, do not assume a general reference or name used by a supplier will conform to the required specification.



Grease Specification Grade D

| | |
|--|----------------------|
| NLGI grade number | 2 |
| DIN classification | DIN 51 825 KP 2 K-20 |
| ISO classification | ISO 6743-9 L-XBCEB-2 |
| Unworked penetration at 25°C (77°F) | 280 |
| Worked penetration at 25°C (77°F) | 285 |
| Drop point | 185°C (365°F) |
| ASTM corrosion test pass [14 days] | Yes |
| Wheel bearing test pass at 135°C (275°F) | Yes |
| Timken test [lb] pass | 40/50 |
| Extreme pressure agent | Yes |

NOTICE
GRADE D

DO NOT use grease that contains molybdenum disulphide [MoS₂].

Use ONLY a grease with lithium or lithium complex soap containing extreme pressure additives and having a base oil viscosity of 220 cst at 40°C (104°F) / 17 cst at 100°C (212°F) suitable for an operating range of -20 to +120°C (-4 to 248°F).

Grease Specification Grade P

| | |
|-------------------|-----------------------------|
| NLGI grade number | 2 |
| Soap base | Lithium |
| Temperature range | -20 to +120°C (-4 to 248°F) |
| Viscosity | <150cst at 40°C (104°F) |
| Speed factor | >200.000 |
| Duty | Heavy |

Suppliers

| | |
|---------|---------------|
| Castrol | Spheerol EPL2 |
| Shell | Albida LX |
| Kluber | Centoplex 2EP |
| FAG | Arcanol L135V |

Grease Specification Grade H

| | |
|-------|-------------|
| Shell | Retinax EP2 |
|-------|-------------|

Grease Specification Grade M

NLGI grade number 3 Medium/Heavy Duty
Penetration at 25°C (77°F) 220/250
Temperature range . . . -20 to 200°C (-4 to 392°F)
Drop point None
Water resistance Complete
Supplier
Chemodex Moly-Bentone MP

NOTICE

GRADE M

For cone crusher wedge rings, this grease only MUST be used

Grease Specification Grade U

General purpose grease containing molybdenum disulphide [MoS₂]

Grease Specification Grade W

NLGI grade number 3
DIN classification K3K-30
Thickening agent Lithium soap
Drop point 182°C (360°F) minimum
Worked penetration 220-250
Temperature range -30 to +125°C (-22 to 257°F)

Grease specification grade Y

NLGI grade number 2
DIN classification DIN 51825 KP2N-20
Duty High load
Temperature range . . . -20 to 140°C (-4 to 284°F)
Drop point 170 to 220°C (338 to 428°F)
Kinematic viscosity at:
40°C, mm²/s 400 to 450
(104°F, in²/s 0.62 to 0.7)
100°C, mm²/s 27 to 28
(212°F, in²/s 0.042 to 0.043)

NOTICE

It is bad practice to mix greases. The blend can have a lower specification than the individual greases and can lead to premature bearing failure. USE ONE BRAND ONLY.

It is the operators responsibility to ensure that all bearings are greased with the correct quantity and type of grease at the correct intervals specified.

Hydraulic Fluid Specification Grade E ISO VG 32

Kinematic viscosity at:

40°C mm²/s (104°F, in²/s) 32 (0.049)

100°C mm²/s (212°F, in²/s) 5.5 (0.085)

Viscosity index 95+

Rust inhibitor Yes

De-foamer Yes

Anti scuff Yes

Suppliers

Shell Hydra 37 or Tellus 37

Mobil DTE24

Century Centraulic PWLA

Esso Nuto H32

Gulf Hydrasil 32

BP Energol HLPP-HM32



Hydraulic Fluid Specification Grade G ISO VG 68

Kinematic viscosity at:

40°C mm²/s (104°F, in²/s) 68 (0.105)

100°C mm²/s (212°F, in²/s) 8.5 (0.013)

Viscosity index 95+

Rust inhibitor Yes

De-foamer Yes

Anti scuff Yes

Suppliers

Shell Hydra 69 or Tellus 69

Mobil DTE26

Century Centraulic PWLC

Esso Nuto H68

Gulf Hydrasil 68

BP Energol HLPP-HM68

Hydraulic Fluid Specification Grade F ISO VG 46

Kinematic viscosity at:

40°C mm²/s (104°F, in²/s) 46 (0.0713)

100°C mm²/s (212°F, in²/s) 6.5 (0.010)

Viscosity index 95+

Rust inhibitor Yes

De-foamer Yes

Anti scuff Yes

Suppliers

Shell Hydra 46 or Tellus 46

Mobil DTE25

Century Centraulic PWLB

Esso Nuto H46

Gulf Hydrasil 46

BP Energol HLPP-HM46

Hydraulic Fluid Specification Grade J ISO HM 32

Suppliers

Shell Tellus 32

Mobil DTE 24

Esso Nuto H32

BP Energol HLP-32

Hydraulic Fluid Specification Grade V

Shell Donax TD

43 EN Servicing Vibrating Hopper Feeder

Servicing Vibrating Hopper Feeder

Vibrating Hopper Feeder - Servicing

1. After the initial 8 hours of operation, renew the oil in the feed hopper vibrating unit oil baths.



WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT
PLANT

FALLING
HAZARD

2. Unscrew the plug to drain oil from each oil bath.
Re-fit plug to seal.

3. Fill each oil bath with suitable oil, see servicing - lubrication plus lubricant and fluid specifications.

4. Oil should be level with the line on sight glass.

5. Always check the oil level before starting the plant.
6. The vibrating feeder must be regularly inspected for any wear, damage or breakage with the mainframe and support springs being paid particular attention. Rectify any faults immediately.
7. Make sure that the feeder can vibrate freely without fouling against the adjacent hopper or chute work and that any hardened material inside the pan is not allowed to build up and affect the performance of the plant.
8. Check to ensure that the hydraulic drive is operating efficiently.
9. Check the condition of the bars for both wear and build up of material and rectify if necessary.
10. Check the vibrating unit bearing temperatures using a contact thermometer on the end covers; record for future reference and fault diagnosis. Maximum acceptable temperature is 80°C (176°F).
11. Check the security of all fasteners on the vibrating feeder and any bolted sections of the feeder bars.

Servicing Vibrating Hopper Feeder

44 ^{EN} Servicing Jaw Crusher

Jaw Crusher Lubrication

WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT PLANT

1. The lubrication of the eccentric shaft and jaw bearings varies in frequency and amount of grease depending on the ambient temperature. It is important that the crusher eccentric shaft is greased at the correct intervals, refer to servicing - lubrication.



41

2. Use the correct grease only, not a mixture, refer to lubricant and fluid specifications.



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3. Contact your local Powerscreen® dealer or Powerscreen® Technical Support department for advice if in doubt.



03

4. Access to the eccentric shaft is from the maintenance platform.
5. Lubricate the jaw bearing at the grease nipples.
6. Lubricate the shaft bearings at the grease nipples.

45 EN Servicing Vee Belts

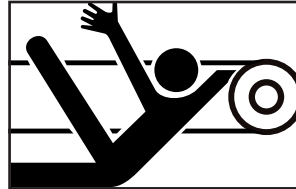
General

1. The Vee belt drive is a highly efficient power transmission medium, but optimum performance will not be achieved without correct tensioning and alignment.
2. Vee belt drives are used on the plant between the engine and the crusher and also to drive the hydraulic pumps on some plants.
3. Drive belts should be inspected regularly for wear and also to monitor any pattern in the wear if it is occurring.
4. Insufficient belt tension will cause slippage leading to loss of drive efficiency, heat generation and belt failure.
5. Over tensioning will exert excessive loading on the shaft bearings and can lead to premature failure.
6. When replacing a multi-belt drive always use a set of 'matched' new belts so that equal force can be applied to all the belts.
7. Ensure that any ventilation provided in the drive guarding is kept clear to avoid overheating.
8. Do not allow contaminating material to come into contact with the drive elements.



DANGER

Refer to Safety Notices Section for relevant warning and procedure



ENTANGLEMENT HAZARD



WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT PLANT



WARNING

Do not inspect or carry out work on belt drives before closing down the plant and implementing the Lockout Procedure. Never operate the plant without effective drive guarding in place.

Alignment

9. It is important to align the pulleys, otherwise the belt flanks will wear quickly.

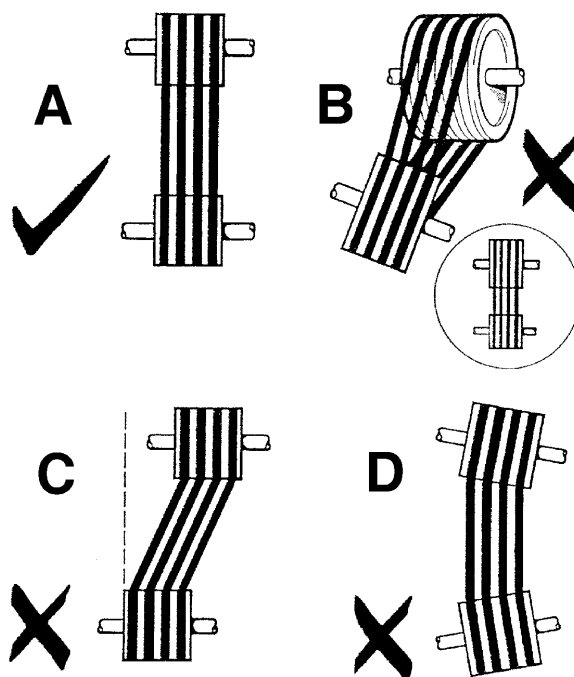
10. Ensure axis are parallel when viewed from all planes.

A - Correct installation, both shafts and pulleys are parallel and in alignment.

B - Incorrect, shafts are parallel from above but not from end view.

C - Incorrect, shafts are parallel and in alignment but pulleys are not in alignment.

D - Incorrect, shafts are not parallel to one another when seen from above.

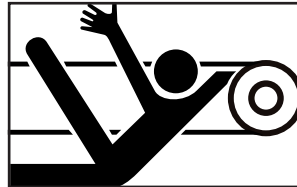


Adjustment



DANGER

Refer to Safety Notices Section for relevant warning and procedure



ENTANGLEMENT
HAZARD

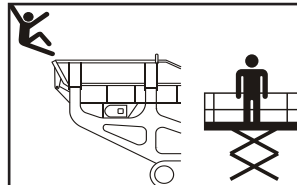


WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT
PLANT



FALLING
HAZARD

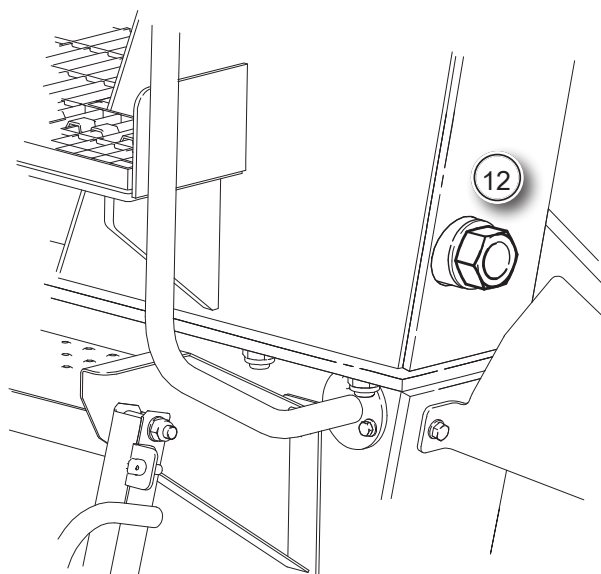
1. Belt adjustment is by means of adjusting screws to increase or decrease the distance between the shaft centres. Locknuts on the tension screws must be tight whilst running the plant.
2. Drives tensioned horizontally have a sliding base frame with four clamping bolts which must be tight whilst running the plant.
3. Drives tensioned vertically have the moving power pack base frame mounted on four adjusting screws which must have all the locknuts tight whilst running the plant.
4. Some plants with vertical tensioning have a hydraulic assisted system, refer to hydraulic assisted belt tensioning.
5. Adjust each screw only to a limited extent at a time and by equal amounts to ease the movement of the base frame.

Manual Adjustment

6. Observe all safety warnings.
7. Close down the plant and implement the Lockout Procedure.
8. Remove guarding as necessary to gain access to the Vee belt drive and tensioning elements.
9. Mark or measure the existing position, assuming correct alignment, of the moving frame at each tension screw.
10. Loosen the clamping bolts securing the moving base frame [horizontal drives].
11. Undo locknuts on the tension screws to allow the base frame to be moved in the required direction.
12. On the Pegson XH250, XH320 and XH320SR the two adjusters are positioned as shown and do not have locknuts.
13. Either by turning a nut on the screw or the screw itself, depending on the type, tension or slacken the drive belts as required. Make an equal amount of adjustment to each screw.



02



14. To establish correct belt tension, use the method described in 'drive belt tensioning'.



~>

DANGER

Under no circumstances should any check on the belt tension be made whilst the machine is running. There is an entanglement hazard and risk of trapping parts of the body.

15. Use the marks or measurements made before adjustment to ensure that the correct pulley alignment has been restored.
16. Tighten all locknuts and/or clamping bolts.
17. Ensure that all the drive guarding is replaced and secured before start the plant.

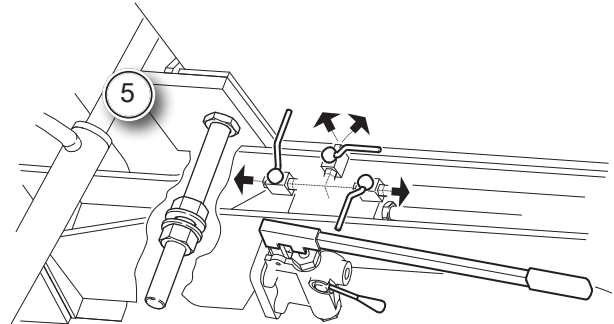
Servicing Vee Belts

Vertical Belt Adjustment - Hydraulic Assisted, [only fitted to some plants]

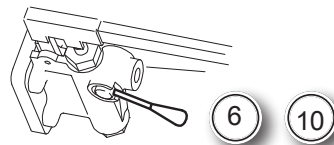
1. Observe all safety warnings.
2. Close down the plant and implement the lockout procedure.
3. Remove guarding as necessary to gain access to the Vee belt drive and tensioning elements.
4. Mark or measure the existing position of the moving frame at each tension screw, assuming the frame is correctly aligned.



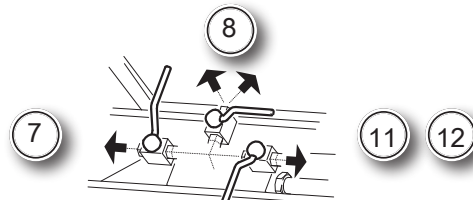
5. The hand operated hydraulic pump and controls are positioned under the engine and frame.



6. Set hydraulic direction control to up.



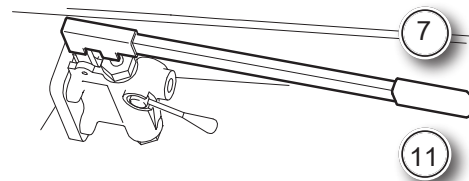
7. Open each of the three valves in turn and operate the pump to raise each cylinder and take the weight of the engine and frame off the nuts.



8. The centre valve operates two cylinders at the belt end.

9. Release the appropriate locking nuts on the support studs to enable the frame to be raised to tighten the belts or lower to slacken.

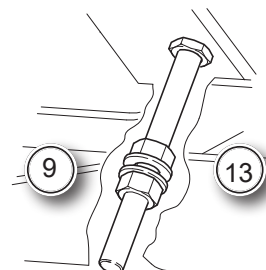
10. Set the hydraulic direction control as required to raise or lower.



11. Open each of the three valve in turn and operate the pump to move the frame a little at a time and keep it level.

12. Close all valves when in the final level position to maintain the position.

13. When the belts are tensioned correctly, tighten all the locking nuts.



Replacement

14. The Vee belts must be of the same type, size, and number to those originally fitted and specified.
15. Before fitting new belts, check the pulley grooves are free from score marks or sharp edges. Also check the grooves for wear. Ensure the pulleys are tight on their shafts.

16. If replacement of the belts is necessary due to premature failure, the cause should be investigated and rectified before fitted new belts. Refer to servicing vee belts, fault finding.



17. The drive centre distance must be reduced prior to installation so that new belts can be fitted without the use of force.
18. Under no circumstance must belts be prised into the grooves as belts and pulley grooves can be damaged by using sharp tools to stretch the belts over the pulley rim.
19. The procedure for fitting new belts is generally the same as described for belt adjustment except it is necessary to slacken off the drive enough to remove the old belts and fit the new without damage. It may also be necessary to remove more of the guarding to gain access.

Drive Belt Tension

1. Observe all safety warnings.
2. Close down the machine and implement the Lockout Procedure.
3. Remove the guards from around the belt.
4. Calculate the deflection distance in mm (or inches) on a basis of 16mm (0.6in) deflection per 1 metre (1 yard) of belt span.

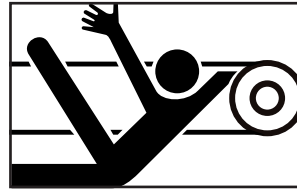
METRIC: Centre to Centre Distance in metres
x 16 = Deflection in mm.

5. If a belt tension indicator is available:

- a. Set the lower marker ring at the deflection distance required on the lower scale.
- b. Set the upper marker ring against the bottom edge of the top tube.
- c. Place the belt tension indicator on top of the belt at the centre of the belt span, and apply a force at right angles to the belt deflecting it to the point where the lower marker ring is level with the top of the adjacent belt.
- d. Read off the setting force value indicated by the top edge of the upper marker ring.
- e. Compare this value to the value shown in the table.

DANGER

Refer to Safety Notices Section for relevant warning and procedure



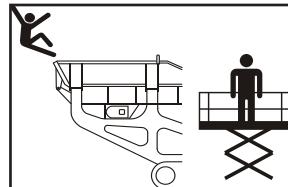
ENTANGLEMENT
HAZARD

WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT
PLANT

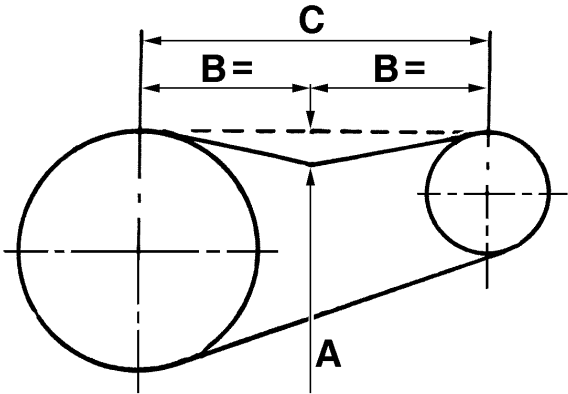


FALLING
HAZARD

DANGER

Under no circumstances should any check on the belt tension be made whilst the machine is running. There is an entanglement hazard and risk of trapping parts of the body.

6. If a belt tension indicator is not available:
- a. Use a spring balance to pull the belt down at the centre of the span.
 - b. When the belt has been pulled down [measure using a rule] by the deflection calculated in step 4, read off the force from the spring balance.
7. If the measured force falls within the values given, the drive should be satisfactory. A measured force below the lower value indicates under-tensioning. Some new drive belts are tensioned to the x1.25 Setting Force value to allow for the normal drop in tension during the running-in period. This is not recommended for all belts.
8. Replace all guards before start-up.



Belt Tensioning Measurements

- A - 16mm deflection per metre (0.6in per 3ft).
B - Belt tension indicator applied to mid-span.
C - Centre to centre distance.

| [x1] BASIC SETTING FORCES | |
|------------------------------|------------------|
| SPB BELT SECTION | |
| Small Pulley Diameter: | |
| 112 to 160mm (4.4 to 6.3in) | 4.0kgf (8.8lbf) |
| 170 to 224mm (6.7 to 8.8in) | 5.1kgf (11.2lbf) |
| 236 to 355mm (9.3 to 14.0in) | 6.3kgf (13.9lbf) |
| Over 355mm (14in) | 6.6kgf (14.6lbf) |
| SPC BELT SECTION | |
| Small Pulley Diameter: | |
| 224 to 250mm (8.8 to 9.8in) | 7.1kgf (15.7lbf) |
| 265 to 355mm (10.4 to 14in) | 9.4kgf (20.7lbf) |
| Over 375mm (14.8in) | 12kgf (26.5lbf) |
| [x1.25] BASIC SETTING FORCES | |
| If recommended for new belts | |
| SPB BELT SECTION | |
| Small Pulley Diameter: | |
| 112 to 160mm (4.4 to 6.3in) | 5.1kgf (11.2lbf) |
| 170 to 224mm (6.7 to 8.8in) | 6.3kgf (13.9lbf) |
| 236 to 355mm (9.3 to 14.0in) | 7.9kgf (17.4lbf) |
| Over 355mm (14in) | 8.3kgf (18.3lbf) |
| SPC BELT SECTION | |
| Small Pulley Diameter: | |
| 224 to 250mm (8.8 to 9.8in) | 8.9kgf (19.6lbf) |
| 265 to 355mm (10.4 to 14in) | 11.8kgf (26lbf) |
| Over 375mm (14.8in) | 15kgf (33.1lbf) |

NOTICE

After the drive has been running for 15 to 20 minutes, the plant should be stopped and the tension checked. If necessary, re-adjusted to the basic setting force value by repeating the above procedure from step 1.

Fault Finding

Small Cracks on V-belt side and Base

Generally caused by shortage of belt tension but excessive heat and/or chemical fumes can also give same failure.

Vee Belt Swelling or Softening

Caused by excessive contamination by oil, certain cutting fluids or rubber solvent.

Whipping During Running

Usually caused by incorrect tensioning, principally on long centre drives. If a slightly higher [or lower] tension does not cure the problem there may be a critical vibration frequency in the system which requires rectification.

Consult your local Powerscreen® dealer or Powerscreen® Technical Support department.

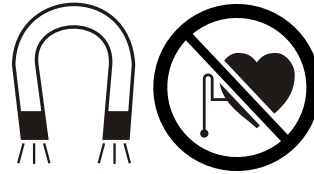


03

46 EN Servicing Conveyors

Magnetic Separator [if fitted]

1. The self cleaning suspended magnet utilises a two pulley design. The tail pulley has adjustment available to take up belt stretch and for tracking purposes.



WARNING

The belt magnet assembly is very powerful and permanently charged. The strong magnetic field produced could affect heart pacemakers, watches, credit cards, mobile phones etc. The operator has the sole responsibility to keep anyone at risk clear of the machine.

Persons with medical machines which may be affected by the magnetic field should keep a minimum of 3m (10ft) away

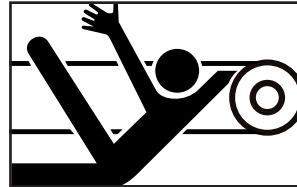
Training of Belts

2. Before starting the conveyor, it is essential to check the following.
3. The conveyor is straight and correctly levelled.
4. The head and tail drums are correctly fitted. i.e. They are level, and that their axes are square to the centre line of the conveyor.
5. All trough type and parallel idlers are correctly fitted with their axles square to the centre line of the conveyor, the side roller lead is in the correct direction [i.e. forward of centre] and all rollers are rotating freely.
6. In the case of screw-type take up gears, that these are adjusted initially to take up slack from the belt and that equal tension is applied to each side such that the pulley is square to the centre line of the conveyor.
7. Where skirt rubbers are fitted they are not bearing down heavily on the belt.
8. There is no obstruction on the conveyor that could cause accident or damage when the conveyor is started.
9. Tracking should be carried out with the belt empty. With very stiff belts, which do not trough well nor make proper contact with the centre idlers roller when empty, it may only be possible to track the return strand when empty and the troughed side when loaded.
10. If the belt tends to run to one side the most likely cause of the trouble will usually be some distance before the point where the running off is apparent, and in the case of troughed strand probably at the second or third idler behind the point where the belt is moving out of its true line.



DANGER

Refer to Safety Notices Section for relevant warning and procedure



ENTANGLEMENT
HAZARD



WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT
MACHINE



DANGER

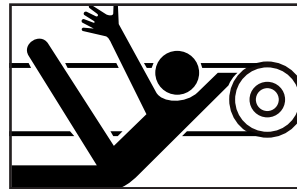
Under no circumstances should any adjustment be made on the belt whilst the machine is running. There is an entanglement hazard and risk of trapping parts of the body.

Conveyor Belt Tensioning

1. Conveyor belts are tensioned by a pair of screw type mechanisms located on either side of the conveyor.
2. Best practice is to tension each side a little at a time and by the same amount until the belt is tensioned. When tensioned, the drum must be square to the conveyor frame.
3. The correct tension is achieved when the drive drum starts the belt and keeps it running when loaded without any slip occurring.
4. The tension adjusting screws should be kept clean and well oiled.

DANGER

Refer to Safety Notices Section for relevant warning and procedure



ENTANGLEMENT
HAZARD

WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT
MACHINE

DANGER

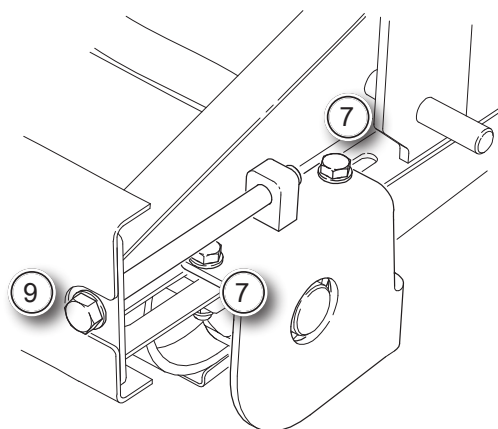
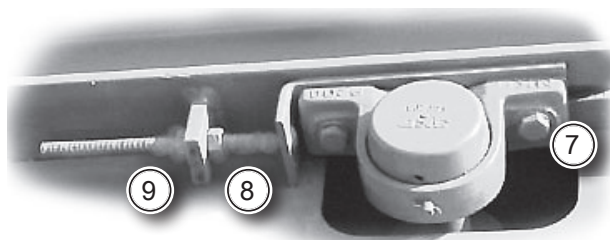
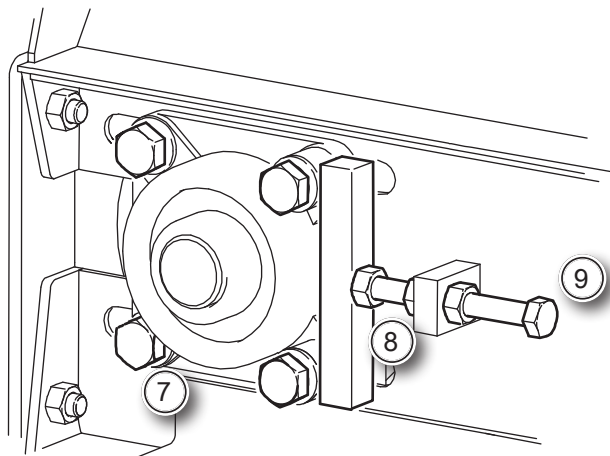
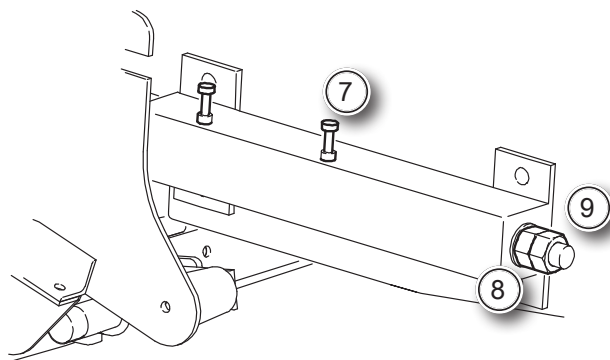
Under no circumstances should any adjustment be made on the belt whilst the machine is running. There is an entanglement hazard and risk of trapping parts of the body.

5. Observe all safety warnings.
6. Close down the machine and implement the lockout procedure.

7. Loosen any screws used to clamp the tensioning mechanism or securing a sliding bearing.

8. Loosen the screw tension lock nuts, where fitted.

9. Either by turning a nut on the screw or the screw itself, depending on the type, tension or slacken the belt as required. Make an equal amount of adjustment to each screw.



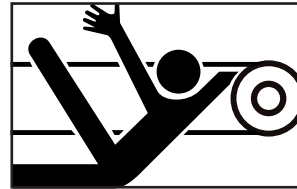
10. Once correct tension has been achieved, tighten the lock nuts and clamping nuts.

Inspection of Conveyors

1. The following checks should be made regularly in order to keep the conveyors in good working order:
2. Observe all safety warnings.
3. Close down the machine and implement the lockout procedure.
4. Ensure that central feed onto the conveyor belt is maintained at all times and that the belt at the point of feed is kept straight and central at all times.
5. Inspect the skirt plate sealing strips and ensure that they are adjusted close enough to the belt to prevent spillage or material jamming between the seals and the belt, but at the same time not bearing hard on the belt.

DANGER

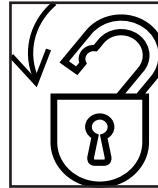
Refer to Safety Notices Section for relevant warning and procedure



ENTANGLEMENT
HAZARD

WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT
MACHINE

6. Check that the belt generally is running centrally and straight on both the carrying strand and the return strand. If not, refer to training of belts.
7. Inspect the condition of the conveyor belt regularly and arrange for the earliest possible repair of any damage which may have occurred as this can make a worthwhile extension of the useful life of the belt. Repair a cut or tear in the rubber by cleaning thoroughly and plugging with a rubber repair compound.



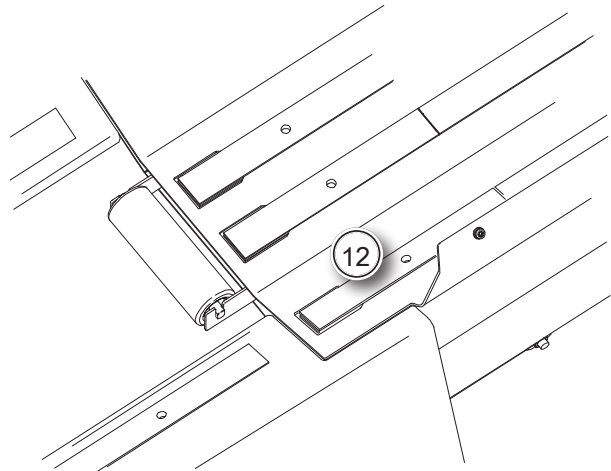
DANGER

Clip joints can be dangerous and should not be used. Belt repairs/replacements should be performed by vulcanising only.

8. Check that there is no evidence of belt slip at the driving drum, as belt slip will cause premature wear on the belt. Check also for undue sag between idlers. Both would indicate lack of belt tension, refer to conveyor belt tensioning.



9. Check regularly that the idler rollers are rotating freely. If not either free them or replace the idler. Failure to do so will result in belt wear and tracking problems.
10. Check that the belt cleaning equipment is operating correctly and efficiently. In the case of scrapers ensure that they are not choked with a build up of material. Also check that the blades are not bearing on the belt any more than necessary, and that any blades which are unevenly worn or in a condition likely to cause damage to the belt are renewed immediately.
11. In the interests of efficient operation and general safety, it is important that operating conditions are kept as clean as possible and that any spillages are cleaned up regularly and are not allowed to build up.
12. Some conveyors are fitted with low friction strips under the belt. If the strips are fitted, check if they are worn down. Slide them out and turn them over for further use or renew as necessary.



DANGER

As many inspections as possible should be made whilst the belt is stationary. When this is not possible extreme care should be taken when inspecting the belt whilst it is moving as there is an entanglement hazard and risk of trapping parts of the body.

Lubrication

1. Lubricate the product conveyor tail section pivots, where fitted and dirt conveyor, if fitted, pivots.

2. Refer to the machine specific schedule in servicing - lubrication.



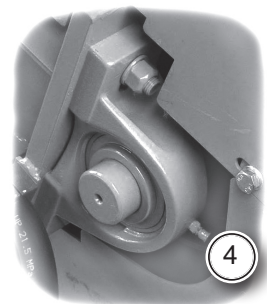
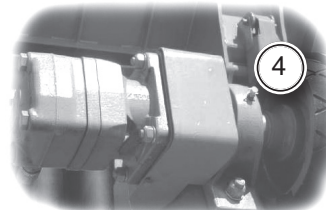
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3. Refer to lubricant and fluid specifications for the correct lubricants.

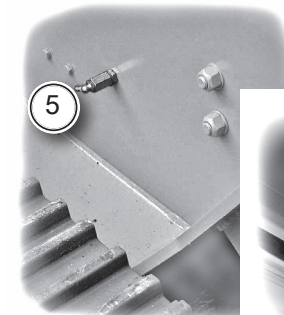


42

4. Grease the head and tail drum bearings of the conveyors as specified in the servicing - lubrication schedule.

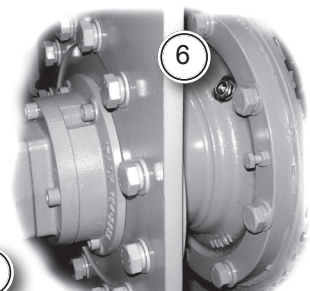
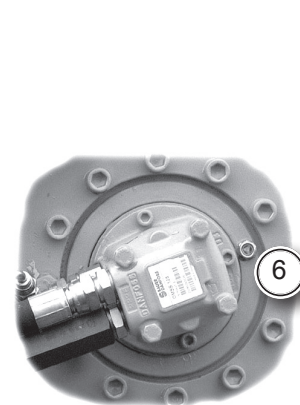


5. The grease nipples for some conveyors are placed in more convenient positions remotely from the bearing.



6. Where the machine does not have a vibrating feeder but includes a feed conveyor with an oil lubricated speed reduction gearbox inside the head drum, refer to the machine specific schedule in Servicing - Lubrication.

Maximum gearbox oil temperature 90°C (194°F).



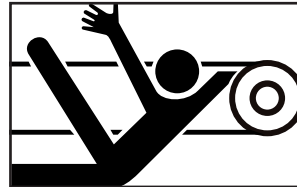
Cleaning Conveyor Belts

7. If the conveyor belts are not properly maintained and skirting rubbers are not kept in correct adjustment, it may be necessary to remove resultant spillage material and / or blockages from the conveyor belts, particularly at the feed section.
8. The machine should be switched off and isolated by means of the lockout and tag out procedure prior to the commencement of any work.
9. Use suitable personal protective equipment i.e. eye, foot, hand and head protection etc as may be required or necessary to undertake the task.
10. Gloves to protect the skin against abrasive materials, sharp surfaces, or penetration of the skin should be worn.
11. Goggles should be worn to protect eyes from fragments, particles and dust.
12. Not only the workers cleaning the belts but also others close by who may be affected, must also wear protective equipment.
13. Before commencing, make sure all procedures mentioned previously have been followed.



DANGER

Refer to Safety Notices Section for relevant warning and procedure



ENTANGLEMENT
HAZARD

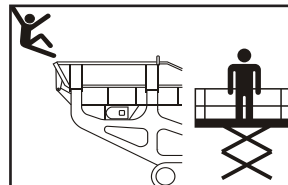


WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT
MACHINE



FALLING
HAZARD



WARNING

It is important that these procedures are followed when cleaning the conveyor belts. Failure to follow these procedures can result in death or serious injury.

Servicing Conveyors

14. The conveyor belts can be cleaned using a number of methods, a water hose; a rod with scraper attached, or a brush or shovel.
15. In the case of a blockage at a drive or tail drum it may be necessary to loosen the tension on the conveyor belt so that the blockage can be removed. Re-tension and re-align the belt after blockage is removed.
16. When work is complete, make sure that all guards are closed or replaced and secured before re-starting the machine.

47 EN Servicing of Tracks

Plant Tracks

Keeping the track correctly adjusted will increase the service life of the track and drive components.

Frequently check for loose bolts, oil leaks, master pins are correctly located and tight, general wear and damage, correct track tension, etc. to ensure safe working and long life.

WARNING

Refer to Safety Notices Section for relevant warning and procedure



**LOCKOUT
PLANT**

NOTICE

To maximise the life of the track, keep it movable and avoid damage, the plant should be moved at least every week, by a distance exceeding four times the track length. It should also be parked on level ground overnight and during periods of non-usage. This is particularly important when working in adverse conditions.

It is essential that the tracks are correctly tensioned at all times. Check track tension regularly.

Moving the plant with incorrectly tensioned tracks can cause severe damage to the undercarriage components and may invalidate the warranty.

Always stop the machine for 30 minutes after tracking it continuously for 30 minutes, to allow the components to cool down

Never track the machine constantly more than 30 minutes without providing adequate rest

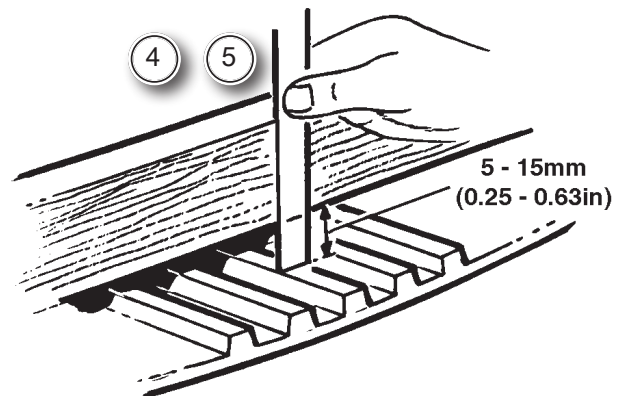
Measuring Track Tension

1. Observe all Safety Warnings.
2. Position the plant on solid and level ground and drive 2 metres (2 yards) minimum in a forward direction, track idler roller leading.

WARNING

Prior to attempting any manoeuvring of the plant the tracks must be free of obstructions, including crushed material and fines. Do not push or tow the plant. Failure to observe this warning could result in injury to persons and damage to the plant which may invalidate warranty.

3. Close down the plant and implement the Lockout Procedure.
4. One track at a time, measure the sag on the top part of the track on the longest section of unsupported track by placing a 'straight edge' long enough to reach from the drive sprocket to the nearest skid plate.
5. Measure the maximum amount of track sag from the high point of the track to the bottom of the 'straight edge'. Correctly adjusted, the sag should be approximately 15mm (0.63in) but must not be less than 5mm (0.2in).



6. Depending upon the need to either slacken or tension the track, proceed as follows.



Adjusting Track Tension

DANGER

Refer to Safety Notices Section for relevant warning and procedure



SKIN INJECTION
HAZARD

WARNING

Refer to Safety Notices Section for relevant warning and procedure



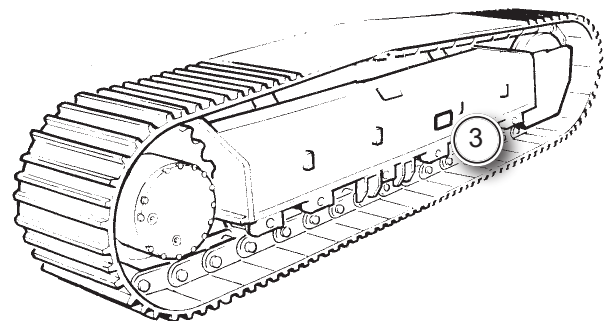
LOCKOUT
PLANT

1. Observe all Safety Warnings.
2. Close down the plant and implement the Lockout Procedure.

WARNING

‘GREASE UNDER HIGH PRESSURE’

3. Locate the access aperture on the side of the track frame and remove the cover, where fitted, to reveal the relief valve inside.

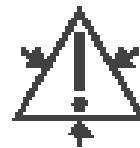


To Release Track Tension [After measurement]:-

4. Loosen the relief valve by turning counter clockwise using gradual increments until the grease begins to be expelled. Care must be taken not to loosen the relief valve too quickly because the grease inside is under high pressure.
5. When the correct track tension has been measured, turn the relief valve clockwise to tighten and then clean away all trace of expelled grease.
6. If the track fails to slacken after the grease fitting has been loosened, do not attempt to remove the tracks or disassemble the track tension system, or remove the grease fitting. It is possible that running the tracks with the grease fitting loosened may help to expel the grease.

DANGER

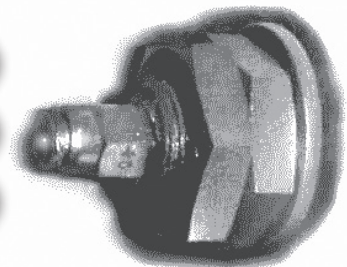
Grease coming out of the relief valve under pressure can penetrate the body causing injury or death; DO NOT watch the relief valve to see if grease is escaping but instead watch the track adjustment cylinder to verify that the track is being loosened.



4

5

7



To Increase Track Tension [After measurement]:-

7. Connect the grease gun to the grease fitting and add grease until the track tension is within the specified dimension, see 'Measuring Track Tension' and refer to lubricant and fluid specifications.



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Re-check Tension

8. Operate the plant in track mode and drive the plant 50 metres (50 yards) forwards and 50 metres (50 yards) backwards, check track tension and repeat the above steps if it is within the specified dimension, see 'Measuring Track Tension'.
9. If room for manoeuvring the plant is restricted, drive the plant forwards and backwards several times over a shorter distance.

DO NOT SET TRACK TENSION TOO TIGHT.

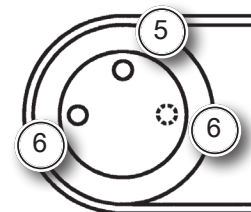
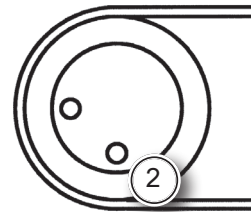
Drive Oil Draining & Filling

Alternative track motor drive and gearbox may be fitted. Refer to illustrations to identify if type A, B, C or D is fitted.

Type A

Refer to these instructions for servicing if the casing has two plugs and appears as shown.

1. Observe all safety warnings.
 2. Rotate the gearbox housing until one of the plugs is at the lowest point.
 3. Unscrew both plugs
 4. Discharge the oil into a container for correct disposal.
-
5. To refill, rotate the gearbox housing so that one plug is at the top position and the other plug is as shown.



6. Fill through upper hole until the oil flows from lower hole. Use only the correct oil, refer to servicing - lubrication.



41

7. Clean plugs using a clean non-flammable solvent.
8. Apply thread sealant to the plugs and refit.
9. Repeat procedure on the other side.

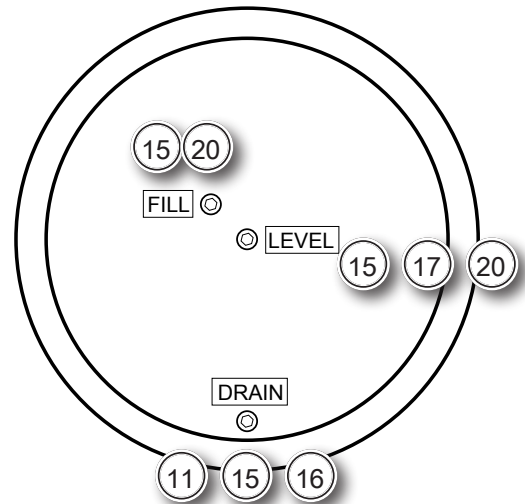
Note:- Over filling the final drive will cause the travel motor seal to allow hydraulic fluid or water to enter and contaminate the drive

Type B

For identification, the letter V has been added to the end of the track serial number.

Refer to these instruction for servicing if the casing has three plugs and appears as shown.

10. Observe all safety warnings.
11. Drive the track to position the motor and gearbox as shown with the drain positioned lowest.
12. The plant should be positioned horizontally side to side.
13. Close down the plant and implement the lockout procedure.
14. Place a suitable container in position to collect the old oil.
15. Remove the filling, level and drain plugs and drain the old oil, looking for metal particles indicating component wear.
16. Re-fit drain plug, taking care not to damage the seal.
17. Add new oil until it begins to overflow through the centre level hole.



18. Use only the correct oil, refer to servicing - lubrication.



41

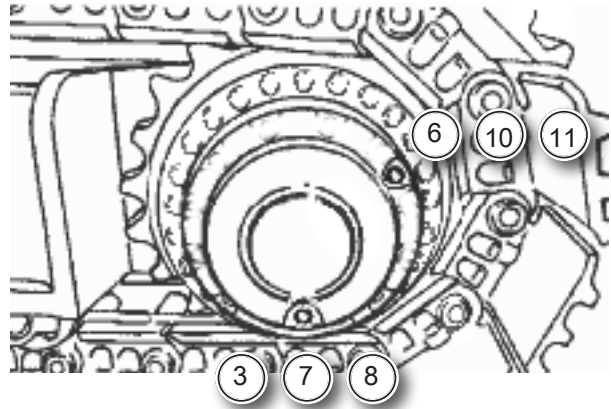
19. Do not mix different types or brands of oil.

20. Re-fit level and fill plugs, taking care not to damage the seals.

Servicing of Tracks

Type C and D

1. Refer to these instruction for servicing if the casing has two plugs and appears as shown.
2. Observe all safety warnings.
3. Drive the track to position the motor and gearbox with a plug at the lowest point for drainage.
4. The plant should be positioned horizontally side to side.
5. Place a suitable container in position to collect the old oil.
6. Remove the filling plug.
7. Remove the drain plug and drain the old oil, looking for metal particles indicating component wear.



8. Clean and re-fit the drain plug, taking care not to damage the seal.
9. Use only the correct type and quantity oil suitable for the type of gearbox and ambient temperature, refer to servicing - lubrication.
10. Add new oil until it is level with the filling hole.
11. Clean and re-fit level and fill plug, taking care not to damage the seal.
12. Repeat procedure on the other side.



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48 EN Servicing Clutch type 'G'

Engine Power Transmission

Identification

1. The clutch can be identified by the name PT Tech HPTO 12 on the housing.

Servicing - Clutch

2. The bearing in this type of clutch is lubricated by oil, serviced via the plant system.

Servicing - Inspection

3. Every 500 hours of operation, check the tightness of clutch securing bolts and hydraulic connections.
4. At every 5000 hours of operation, the clutch must be inspected and serviced. Contact your local Powerscreen® dealer or Powerscreen® technical support.
5. If the clutch is allowed to operate beyond 5000 hours without servicing, the drive torque may reduce rapidly and possibly damage the clutch.

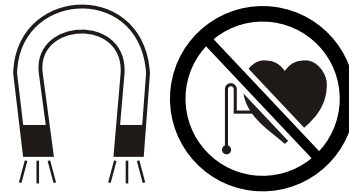


03

49 ^{EN} Servicing Magnetic Separator

Magnetic Separator - General [if fitted]

The self cleaning suspended magnet utilises a two pulley design. The tail pulley has adjustment available to take up belt stretch and for tracking purposes.



WARNING

The belt magnet assembly is very powerful and permanently charged. The strong magnetic field produced could affect heart pacemakers, watches, credit cards, mobile phones etc. The operator has the sole responsibility to keep anyone at risk clear of the machine.

Persons with medical implants which may be affected by the magnetic field should keep a minimum of 3m (10ft) away

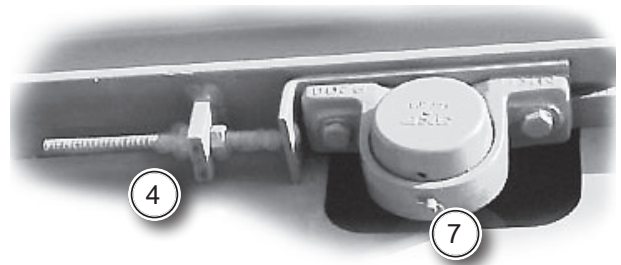
Inspection

1. Be sure the magnet frame is visibly square and has not been damaged or twisted.
2. Check belt alignment.
3. Momentarily energise the belt drive and check that the belt is tracking properly and is not wandering laterally. Never start the belt and allow it to run continuously until the belt is properly "trained". If the belt wanders, note the direction and adjust as follows:

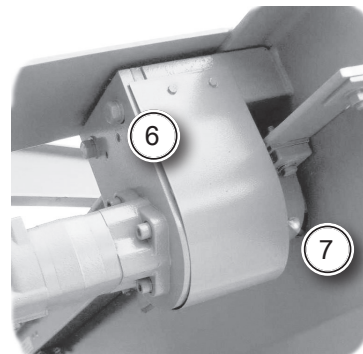
| | |
|---|--------------------------------|
|  DANGER | |
| Refer to Safety Notices Section for relevant warning and procedure | |
|  | ENTANGLEMENT HAZARD |

Servicing

4. Belt tracking should be checked frequently and adjusted as necessary. To track the belt, the tail pulley should be moved in a direction to tighten the belt on the side opposite to the direction in which the belt wanders. Tighten the side of the belt to which you want the belt to move.
5. When tracking or tensioning the belt take care not to over-tension as this will cause the shaft bearings to fail.



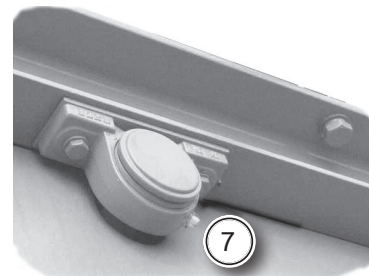
6. Regularly check the hydraulic motor mounting bolts for tightness and that both halves of the coupling between the motor and the drive shaft are in alignment.



7. Lubricate bearings consistent with schedule in servicing - lubrication using suitable grease.



41



8. Refer to lubricant and fluid specifications.



42

DANGER

As many inspections as possible should be made whilst the belt is stationary. When this is not possible extreme care should be taken when inspecting the belt whilst it is moving as this creates an entanglement hazard and risk of trapping parts of the body.



50 EN Servicing Electrical System

General

1. The plant electrical equipment is a self contained 24V DC system operated via automotive batteries which are recharged when the engine is running.
2. Depending upon the model of plant and the equipment fitted, various types of control, monitoring, sequencing, electrical safeguards and fault detection devices are built into the system including a multi station emergency stop circuit.
3. Any work on the plant electrical system shall only be undertaken by a qualified electrician, familiar with this type of system.
4. Circuit protection fuses or circuit breakers fitted depend upon the plant model. The replacement of a protection device after failure must not exceed the rating of the original otherwise damage to components may occur and any warranty invalidated. A repeat of the failure must be investigated and the problem rectified by a competent person.
5. Always keep the electrical cabinets and control boxes closed during the crushing operation to prevent the ingress of dust and damp.
6. At regular intervals check the tightness of the electrical components on the plant and look for any damage to the electrical wiring.

DANGER

Emergency stop equipment and all other safety systems, including the audible warning siren, must be operative at all times whilst the plant is running or being manoeuvred.

The safety devices must be checked as fully operational at each daily start and must not have been tampered with or disabled in any way.

7. Refer to emergency stop section.



Battery Replacement

Safe Handling of Automotive Batteries

8. The plant contains 2 automotive type batteries which are replacable.
9. Battery Posts, terminals and related accessories contain lead and lead compounds.
10. Handle batteries carefully and keep them level as they contain sulphuric acid, an electrolyte which can cause severe burns and produce explosive gases.
11. Avoid contact with the skin, eyes or clothing.
12. Wash hands thoroughly after handling.

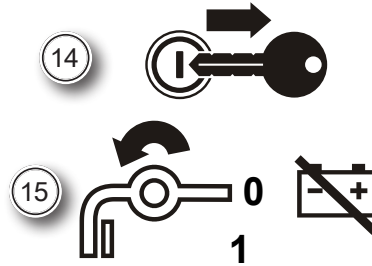
Servicing Electrical System

Automotive Battery Replacement

13. Batteries should only be replaced by a competent person.

14. Stop the plant and remove the ignition key.

15. Set the battery disconnect switch to '0' and lockout.



16. Two batteries are used for the plant electrical system, located near or within the engine powerpack.

17. Remove fasteners and guard, cover or floor panel to gain access to the batteries.

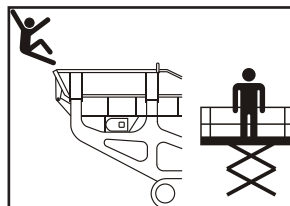
WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT
PLANT

18. On some plants it is necessary for a suitable working platform to be used.



FALLING
HAZARD

19. The plant has a negative [-] chassis connection.
20. Disconnect the cable at the negative [-] battery terminal first.
21. Disconnect the positive [+] plant feed cable at the battery terminal.
22. Disconnect the battery linking cable.

23. Release the batteries from the securing clamps and remove batteries.
24. Replacement batteries must be of the same type and capacity as the original ones fitted.

25. Contact your local Powerscreen® dealer or Powerscreen® technical support department for advice if in doubt.



03

Battery Recycling

26. Do not dispose of any old batteries with normal waste that may go to landfill.

26



27. All batteries shall be disposed of correctly to be recycled at an approved treatment facility.

27





51 ^{EN} Servicing Hydraulic System

General

All hydraulic functions are powered by pumps driven by the engine.

Note:- All relief valve pressures are factory set and should not be adjusted.

The hydraulic fluid reservoir together with associated equipment must be maintained in accordance with the set level and in the schedules and types, refer to:

Daily plant checks



24

Lubrication - checks - specifications.



41



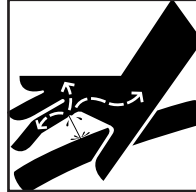
42

ONLY USE A RECOMMENDED FLUID.



DANGER

Refer to Safety Notices Section for relevant warning and procedure



SKIN INJECTION
HAZARD



DANGER

THIS IS A HIGH PRESSURE SYSTEM. Never carry out any maintenance work without ensuring the hydraulic system is locked out and depressurised. Check the pressure gauges and control screen, if fitted, to view the current system pressure. Open the bleed valve, if fitted, until all pressure is relieved then close the valve. Do not amend the hydraulic system. In the event of any problems these should only be dealt with by suitably experienced and qualified engineers.

Hydraulic Fluid Level

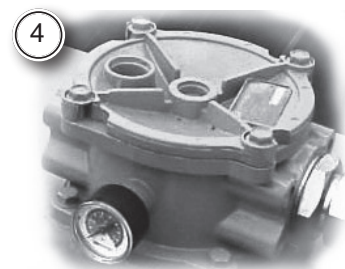
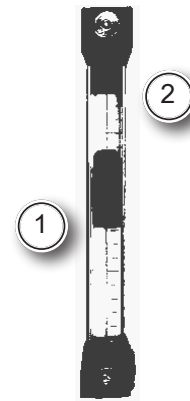
WARNING

Refer to Safety Notices Section for relevant warning and procedure



**LOCKOUT
PLANT**

1. Check the fluid level on the gauge and top up as necessary.
2. Maximum approximately 40mm (1.5in) below upper mark.
3. It is essential when replenishing hydraulic fluid, attending to filters, etc. to apply the greatest degree of cleanliness as it is most important that contaminants are not allowed to enter the system.
4. If hydraulic fluid needs to be added to maintain the correct level, this should be poured in after removing the return filter cover but with the filter element left in place.



Suction Filter

1. Locate the hydraulic suction filter and gauge within the engine canopy.
2. Observe all safety warnings.
3. The filter housing has an internal shut off valve to permit the filter to be changed.
4. Close down the machine and implement the lockout procedure.
5. Make sure the oil has cooled before changing a filter.

DANGER

Refer to Safety Notices Section for relevant warning and procedure



SKIN INJECTION
HAZARD

WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT
PLANT



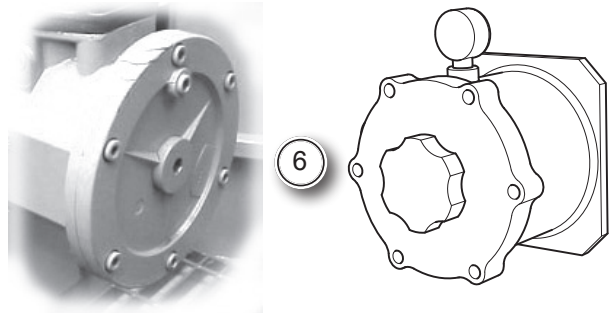
NOTICE

The hydraulic fluid filters have condition indicators to show when the filter element needs to be renewed.

When the gauge changes from green to red whilst the system is running at normal operating temperature the filter must be renewed.

In cold ambient temperatures the filter indicators may show an incorrect red condition until the system reaches normal operating temperature.

6. Depending on which type is fitted, unscrew the centre bolt or turn shut off valve in the centre of the filter housing until it reaches the stop.
7. Place container below filter to collect spillage of fluid.
8. Remove screws and the cover plate.
9. Remove filter and clean inside the housing and cover plate with lint free cloth.



NOTICE

It is important to ensure that the bolt or knob in the centre of the housing is fully screwed in before starting the plant, otherwise damage will occur to the plant.

10. Fit new filter of the approved pattern and specification.
11. Lightly smear the 'O' ring with fluid and make sure it is properly seated in the groove.
12. Replace the cover plate and screws evenly to ensure a good seal.
13. Depending on which type is fitted, fully screw in the centre bolt or shut off valve in the centre of the filter housing.

Return Filter

DANGER

Refer to Safety Notices Section for relevant warning and procedure



SKIN INJECTION
HAZARD

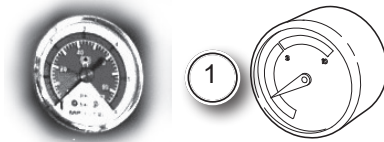
WARNING

Refer to Safety Notices Section for relevant warning and procedure

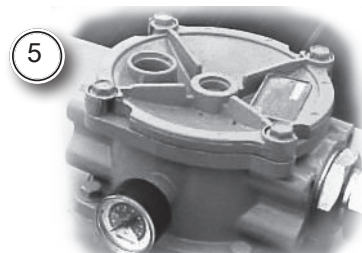


LOCKOUT
PLANT

1. Locate the hydraulic return filter and gauge within the engine canopy.
2. Observe all safety warnings.
3. Close down the machine and implement the lockout procedure.
4. Make sure the fluid has cooled before changing a filter.

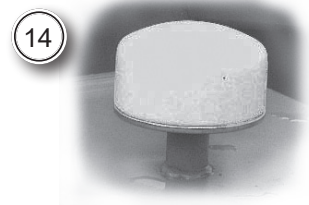


5. Remove the screws and remove the cover plate together with internal spring.
6. Remove the old filter and clean inside the housing and cover with lint free cloth.
7. Fitting new filter of the approved pattern and specification.
8. Replace the spring which holds the filter in place.
9. Lightly smear the 'O' ring with fluid and make sure it is properly seated in the groove.
10. Replace the cover plate and screws evenly to ensure a good seal.



Tank Breather

11. The breather is also a filter and should be changed after the first 100 hours of operating and thereafter after 1000 hours but in dusty atmosphere it is recommended to change more frequently depending upon conditions.
12. Observe all safety warnings.
13. Close down the machine and implement the lockout procedure.
14. Unscrew and renew the breather whilst the plant is shut down.
15. Clean breather cap every 200 hours.



Pressure Filters [if fitted]

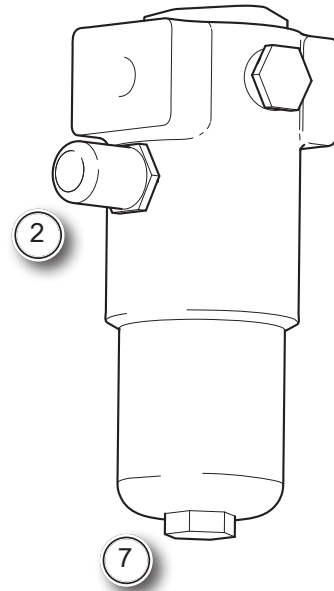
WARNING

Refer to Safety Notices Section for relevant warning and procedure



**LOCKOUT
PLANT**

1. Locate the hydraulic pressure filters within the engine canopy. Not fitted to all systems.
2. Check the filter condition indicator.
3. Observe all safety warnings.
4. Close down the plant and implement the lockout procedure.
5. Make sure the fluid has cooled before changing filter.
6. Place container below filter to collect spillage of fluid.
7. Unscrew the filter bowl, turn anti-clockwise looking from below.
8. Remove the old filter and clean inside the bowl and housing with lint free cloth.
9. Fit new filter and small 'O' ring of the approved pattern and specification.
10. Lightly smear the 'O' ring with fluid and place on it's seating in the bowl making sure it is properly seated.
11. Replace and secure bowl to ensure a good seal, taking care as it has a fine thread.



60 EN Replacing Worn Jaws

Jaw Replacement

WARNING

Refer to Safety Notices Section for relevant warning and procedure.



**LOCKOUT
PLANT**

1. Observe all safety warnings.
2. Set the discharge opening to maximum to provide maximum clearance for access and run the crusher until completely empty.

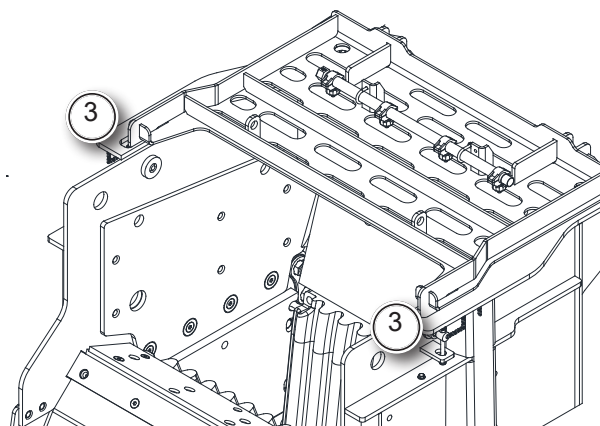


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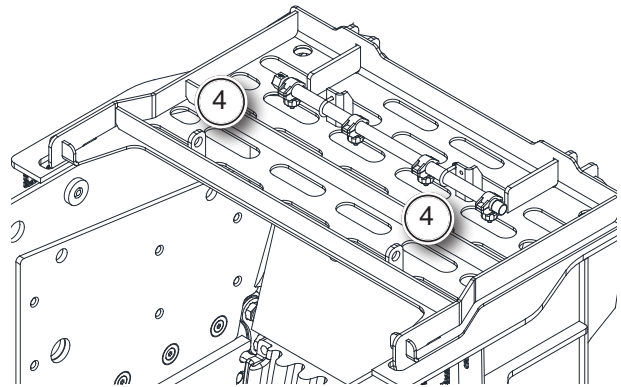
NOTICE

After turning or replacing the jaws check the wedges are firmly seated and the clamping nuts are secure. It is recommended this is checked before starting crushing again, after 3 days and after 1 week. Further checks should also be made at least every month.

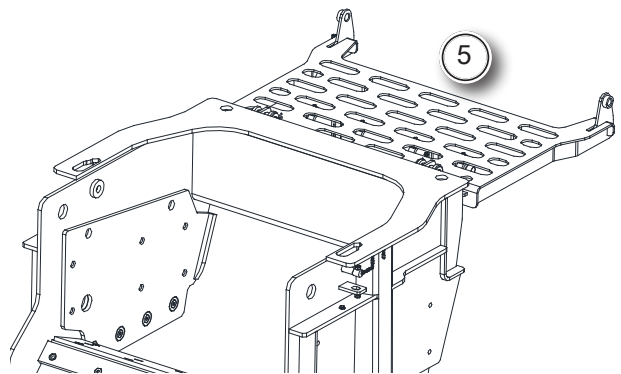
3. Remove the two securing pins to allow the safety grid to rotate back into the transport position.



4. Connect suitable lifting shackles and lifting equipment to the lifting points on the safety gate.



5. Raise the gate using the lifting equipment and rotate the gate back 180° until the gate is supported by its own weight.



NOTICE

Ensure that suitable lifting equipment is used when putting the safety gate into the transport position. Under NO circumstances should the safety gate be lifted manually.

6. Close down the plant and implement the lockout procedure.



02

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

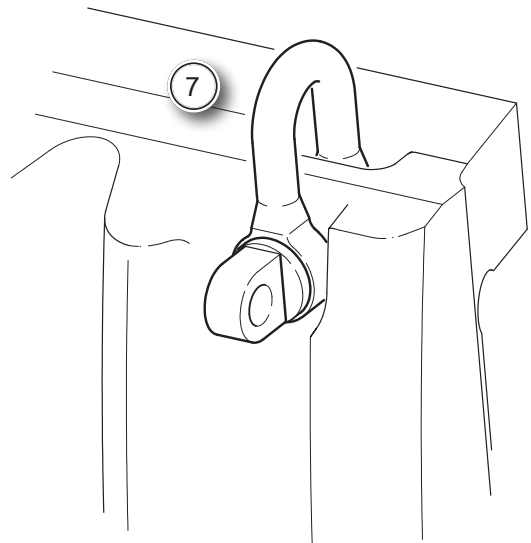


LOCKOUT PLANT

Wear Parts - Replacing Jaws

Moving Jaw Removal

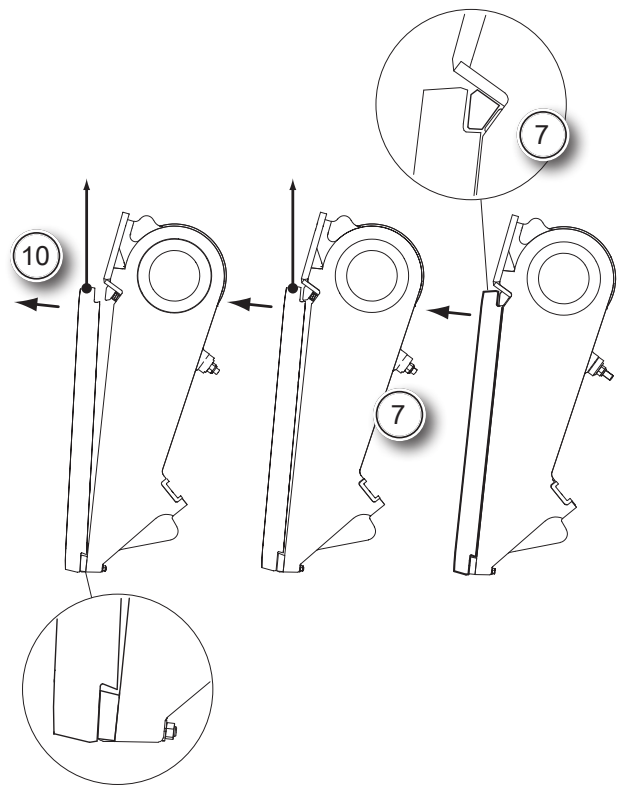
7. Fit suitable lifting shackles to the upper corners of the jaw.
8. Fix suitable lifting equipment to the shackles and support the weight using suitable lifting equipment.



DANGER

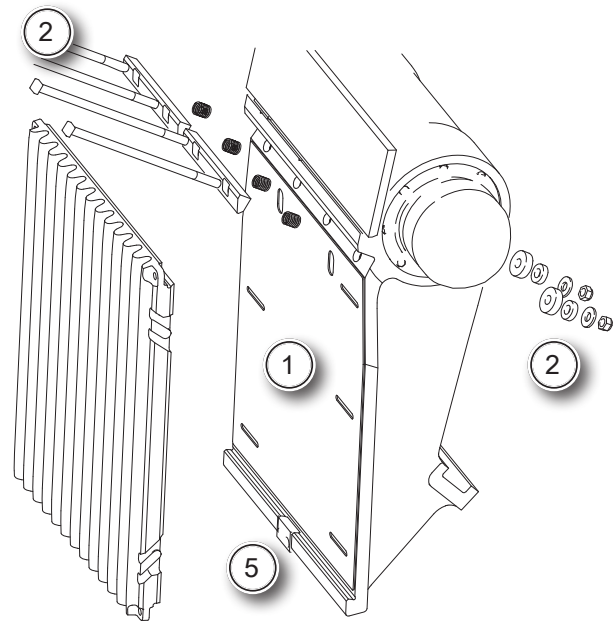
Only use lifting equipment suitable for the work to be carried out.

9. Unscrew the jaw clamp nuts at the rear of the jaw holder until they are level with the end of the threads.
10. Protect the threads on the bolts and nuts and strike the bolt to loosen the wedges.
11. Springs are fitted below the bolt heads to help release the wedges.
12. Move the top of the jaw forward using a suitable winch and lift it out of the crusher chamber.



Fitting the Moving Jaw

1. Inspect the backing plate and remove any burrs as necessary to create a smooth surface or renew the plate.
2. Renew any wedge locking nuts and bolts if they are damaged or bolt is bent.
3. The jaw can be turned when half worn, the lower worn part being re-fitted at the top.
4. When turning over and re-using a jaw, clean the back face and remove any burrs

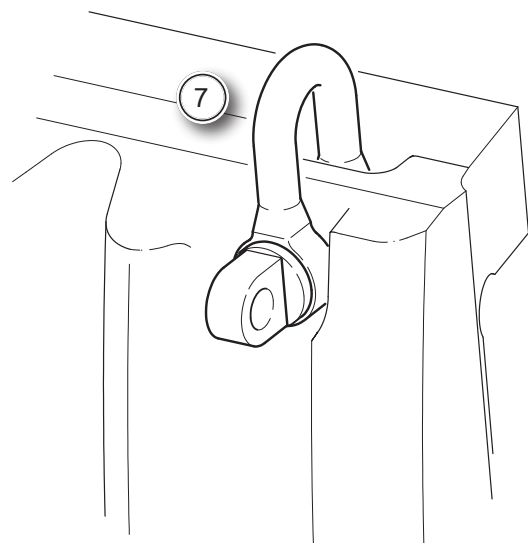


5. Check the centre jaw location for wear. The nominal width of the location lug on the jaw holder when new is 73 to 74mm (2.9in) and if the wear is more than 5mm (0.2in), the sides will require building up with hard weld and shaping to make sure it locates the jaw centrally.

6. If welding is required, refer to any welding notices on plant and in servicing safety and precautions.

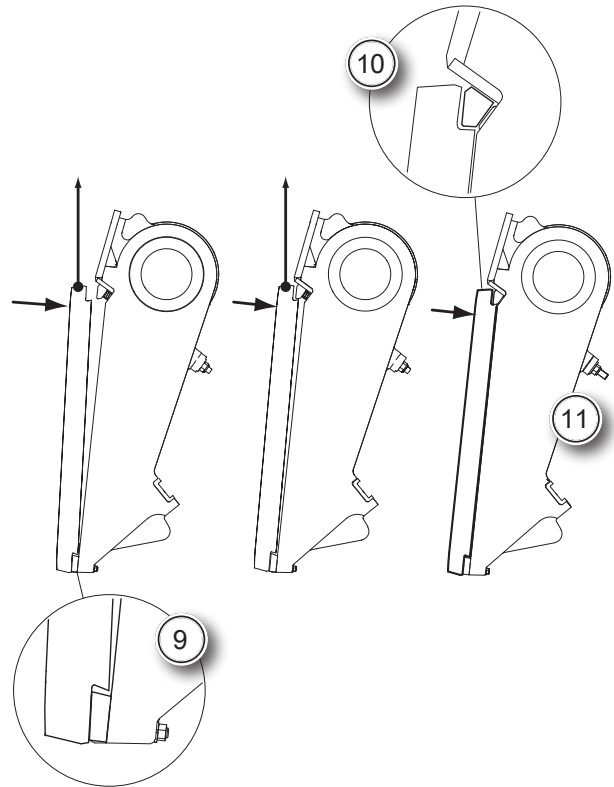


7. Fit suitable lifting shackles to the upper corners of the jaw.
8. Fix suitable lifting equipment to the shackles and support the weight using suitable lifting equipment.

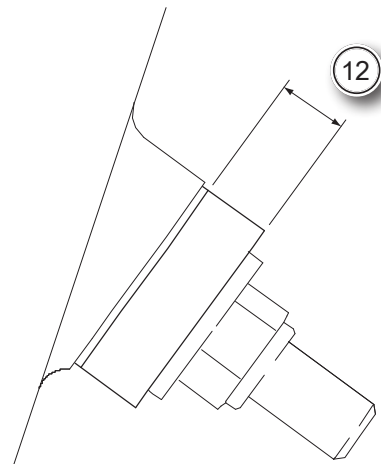


Wear Parts - Replacing Jaws

9. When fitting the jaw, locate the jaw centrally and hook on base of the jaw to engage with the jaw holder.
10. Move the top of the jaw towards the holder and locate the clamp into the hook on the jaw.
11. Lightly tighten the clamping nuts and hammer the jaw and clamp to ensure it is fully seated.

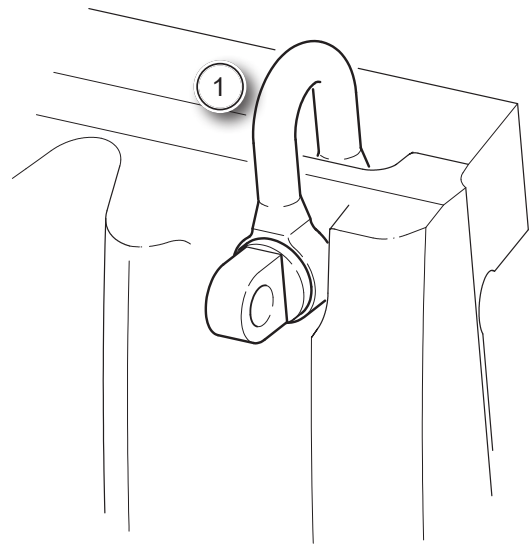


12. Tighten the clamping nuts until the soft washers compress to 6mm (0.24in) thick. Do not overtighten.

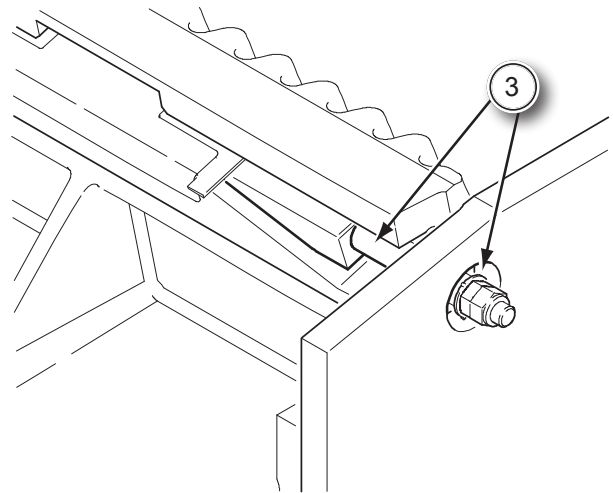


Fixed Jaw Removal

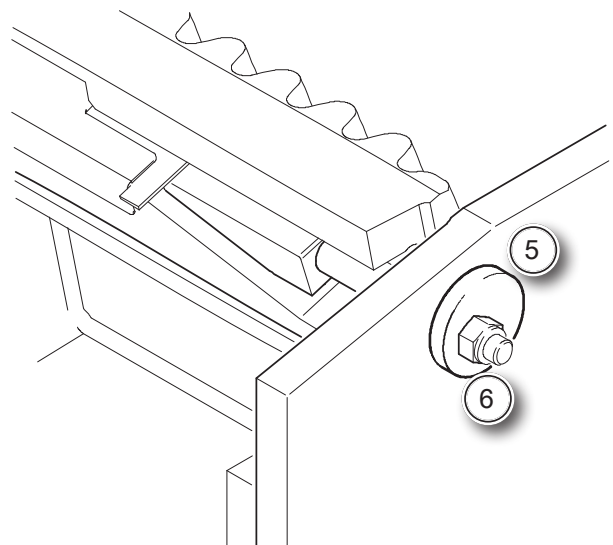
1. Fit suitable lifting shackles to the upper corners of the jaw.
2. Fix suitable lifting equipment to the shackles and support the weight of the jaw.



3. Remove the two nuts, washer and spacer tube from the jaw clamping rod.
4. Remove the same items on the other side to allow the clamping rod to move.



5. Take the extraction washer from toolbox and fit it and a nut to the jaw clamping rod.
6. Tighten the nut to pull the wedge outward with the clamping rod.
7. Use the extraction washer on the other side to release the other wedge. After use, place the extraction washer in the toolbox to prevent loss.



8. With both wedges moved outward, the jaw can be released at the upper and lower locations.
9. Lift the jaw up and clear.

Wear Parts - Replacing Jaws

Fitting the Fixed Jaw

10. Inspect the backing plate and remove any burrs as necessary to create a smooth surface or renew the plate.

11. Check the centre jaw location for wear. The nominal width of the location when new is 270mm (10.6in) and if the wear is more than 5mm (0.2in), the sides will require building up with hard weld and shaping to make sure it locates the jaw centrally.

12. If welding is required, refer to any welding notices on plant and in servicing safety and precautions.



40

13. Check the wedges for wear on the contacting surfaces and remove any burrs as necessary.

14. Repair or renew the wedges if the wear is more than 5mm (0.2in).

15. Renew the wedge locking nut and bolt if they are damaged or bolt is bent.

16. The jaw can be turned when half worn, the lower worn part being re-fitted at the top.

17. When turning over and re using a jaw, clean the back face and remove any burrs.

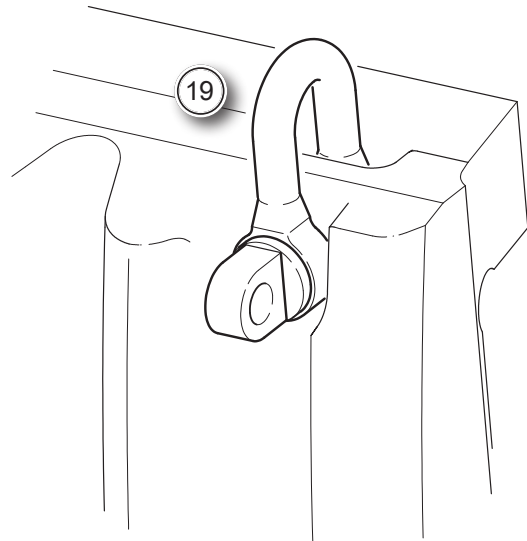
18. Clean and lubricate the sliding faces of the wedges and bolt threads with an anti-sieze compound.

19. Fit suitable lifting shackles to the upper corners of the jaw.

20. Fix suitable lifting equipment to the shackles and support the weight using suitable lifting equipment.

21. Locate the jaw centrally so the hook on base of the jaw will engage over the jaw holder.

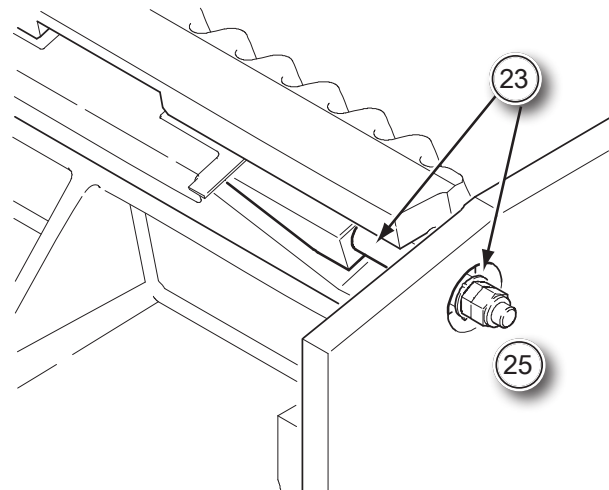
22. Raise the jaw to engage the lower jaw hook over the full width then slew the top over the side wedges to fully engage with the jaw holder.



23. Fit the spacer tubes, washers and thin nuts to each end of the clamping rod.

24. Tighten both nuts equally on the clamping rod to pull both wedges inward toward each other. This will locate and lift the jaw into position.

25. Secure the nuts with the locking nuts.



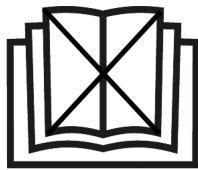


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(1) Non-USA Sales Warranty

Terex GB Ltd. (hereafter referred as "Seller") warrants its new Equipment, to be free of defects in material or workmanship for a period of (i) 12 months from the date the Equipment is first placed into service, whether such Equipment is sold, rented or leased or (ii) 2,000 hours of use, whichever first occurs, provided that in no event shall this warranty extend beyond a period of 24 months from the date of shipment from the factory; provided that (1) the Buyer or the end-user sends Seller written notice of the defect within sixty (60) days of its discovery and establishes to the Seller's satisfaction that: (i) the Equipment has been maintained and operated within the limits of rated and normal usage, and that there have been no alterations to it; and (ii) the defect did not result in any manner from the intentional or negligent action or inaction by Buyer or the end-user or any of their respective agents or employees or any person using it and (2) a new machine registration certificate or the commissioning documents have been completed, signed and delivered to Seller within thirty (30) days of the equipment's "in-service" date. If requested by Seller, Buyer must return the defective equipment to Seller's manufacturing facility, or other location designated by Seller, for inspection, and if Buyer cannot establish that conditions (1) (i) and (1) (ii) above have been met, then this warranty shall not cover the alleged defect.

Subject to the Buyer establishing that conditions (1)(i) and 1(ii) above have been met, Seller warrants all Critical Components (as defined herein) to be free, under normal use and service, of any defects in manufacture or materials for a period of: (1) twenty four (24) months from the date of commissioning, (2) 4000 hours of use, or (3) Thirty Six (36) months the date of shipment from the factory, whichever occurs first. For the purposes of this warranty, Critical Components shall mean:

- Cone machines :- Main frame, Upper frame Countershaft and Housing, Drive pulley Drive Pinion and Gear, Eccentric, Wedge Ring (Excluding Pads)
- M Series Jaw Machines :- Mainframe including Cross Beam, Eccentric Shaft, Jaw Stock, Toggle Beam, Flywheels Main Adjustment Cylinders on HA & HR Machines Only
- Impactor Machines (vertical and horizontal shaft):- Rotor, Main shaft, Crusher Body and Drive Pulley
- Screen Boxes;- Screen Box Welded Assembly, Screen Box Sub frame, Main Shaft

Seller's obligation and liability under this warranty is expressly limited to, at Seller's sole option, repairing or replacing, with new or remanufactured parts or components, any part, which appears to Seller upon inspection to have been defective in material or workmanship. Such parts shall be provided at no cost to the owner. If requested by Seller, components or parts for which a warranty claim is made shall be returned to Seller at a location designated by Seller. All components and parts replaced under this limited product warranty become the property of Seller.

This warranty shall be null and void if parts (including wear parts) other than genuine OEM Seller parts are used in the equipment.

Accessories, assemblies and components included in the Seller equipment, which are not manufactured by Seller, are subject to the warranty of their respective manufacturers. Normal maintenance, adjustments, or maintenance/wear parts, including without limitation, friction plates, glass, clutch, proper tightening of bolts, nuts and brake linings pipe fittings, adding or replacing of fluids, filters, wire rope, belts, screening media, rubber skirting, chute linings and paint, are not covered by this warranty and are the sole maintenance responsibility of Buyer.

Seller makes no other warranty, express or implied, and makes no warranty of merchantability or fitness for any particular purpose.

No employee or representative is authorized to modify this warranty unless such modification is made in writing and signed by an authorized officer of Seller.

Seller's obligation under this warranty shall not include duty, taxes, environmental fees, including without limitation, disposal or handling of tires, batteries, petrochemical items, or any other charges whatsoever, or any liability for direct, indirect, incidental, or consequential damages.

Improper maintenance, improper use, abuse, improper storage, operation beyond rated capacity, operation after discovery of defective or worn parts, accident, sabotage or alteration or repair of the equipment by persons not authorized by Seller shall render this warranty null and void. Seller reserves the right to inspect the installation of the product and review maintenance procedures to determine if the failure was due to improper maintenance, improper use, abuse, improper storage, operation beyond rated capacity, operation after discovery of defective or worn parts, or alteration or repair of the equipment by persons not authorized by Seller.

Parts Warranty: Seller warrants the parts ordered from the Seller's parts department to be free of defect in material or workmanship for either (1) a period of 12 months after date of shipment from the factory or (2) 2000 hrs of use or (3) the balance of the remaining new equipment warranty, whichever occurs first. With respect to parts ordered from the Seller's parts department for Equipment that is no longer covered under this limited product warranty due to lapse of time or usage in excess of 4,000 hours of Critical Components, Seller warrants such parts to be free of defect in material or workmanship for a period of either 12 months after date of shipment from the factory or 2000 hrs of use, whichever occurs first.

NO TRANSFERABILITY OF WARRANTY: This warranty is limited to the original purchaser or original end-user if sold to a distributor, and is not assignable or otherwise transferable without the written agreement of Seller. Please contact your local distributor for additional details if needed.

ITEMS NOT COVERED BY SELLER WARRANTY

The following items are NOT covered under the Seller Warranty (the following list is not exhaustive):

- 1 Items sold by any individual, corporation, partnership or any other organization or legal entity that is not an authorized Seller distributor.
- 2 Components which are not manufactured by Seller are not covered by Seller's warranty. Such components are covered only by the warranty that is provided by the manufacturer of such components. Such components may include, but are not limited to, chassis, air compressors, batteries, tires engines, engine components, and customer supplied products.
- 3 Replacement of assemblies: Seller has the option to repair or replace any defective part or assembly. It is Seller's policy to refuse claims for the replacement of a complete assembly that is field repairable by the replacement or repair of defective part(s) within the assembly.
- 4 Normal Operational Maintenance Services and Wear Parts: Maintenance services and wear parts are excluded from warranty claims. Maintenance services and wear parts not covered include, but are not limited to, such items as: seals, gaskets, hoses, friction plates, glass, clutch and brake linings, filters, wire rope, exterior coatings, proper tightening of bolts, nuts and pipe fittings, adding or replacing of fluids, filters, belts, screening media, rubber skirting, chute linings and paint, services supplies such as hand cleaners, towels and lubricants, and inspections, diagnostic time and travel time.
- 5 Transportation cost and/ or damage: Any damage caused by carrier handling is a transportation claim and should be filed immediately with the respective carrier.
- 6 Deterioration: Repairs, work required or parts exposed as the result of age, storage, weathering, lack of use, demonstration use, or use for transportation of corrosive chemicals.
- 7 Secondary Failures: Should the owner or operator continue to operate a machine after it has been noted that a failure has occurred, Seller will not be responsible under the warranty for resultant damage to other parts due to that continued operation.
- 8 Workmanship of Others: Seller does not accept responsibility for improper installation or labor costs or costs of any kind from personnel other than authorized Seller distributor personnel.
- 9 Stop and Go Warranty: Seller does not recognize "Stop and Go" warranties.
- 10 Incidental or Consequential Damage: Seller shall not be liable for any incidental or consequential damages of any kind, including, but not limited to, lost profits, loss of production, increased overhead, loss of business opportunity, delays in production, costs of replacement components and increased costs of operation that may arise from the breach of this warranty. Customer's sole remedy shall be limited to (at Seller's sole option) repair or replacement of the defective part.

THIS WARRANTY IS EXPRESSLY IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, REPRESENTATIONS AND CONDITIONS, EXPRESS OR IMPLIED AND ALL OTHER STATUTORY, CONTRACTUAL, TORTIOUS AND COMMON LAW OBLIGATIONS OR LIABILITY ON SELLER'S PART ARE HEREBY EXPRESSLY EXCLUDED TO THE MAXIMUM EXTENT PERMITTED BY LAW. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY CONTAINED HEREIN. Seller neither assumes nor authorizes any other person to assume for Seller any other liability in connection with the sale of Seller's equipment. This warranty shall not apply to any of Seller's equipment or any part thereof which has been subject to misuse, alteration, abuse, negligence, accident, acts of God or sabotage. No action by any party shall operate to extend or revive this limited warranty without the prior written consent of Seller. In the event that any provision of this warranty is held unenforceable for any reason, the remaining provisions shall remain in full force and effect.

IN THE EVENT OF ANY BREACH OF THE WARRANTY BY SELLER, SELLER'S LIABILITY SHALL BE LIMITED EXCLUSIVELY TO THE REMEDIES (AT SELLER'S SOLE OPTION) OF REPAIR OR REPLACEMENT OF ANY DEFECTIVE EQUIPMENT COVERED BY THE WARRANTY. IN NO EVENT SHALL SELLER, OR ANY SUBSIDIARY OR DIVISION THEREOF BE LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES OR LOSSES RESULTING FROM ANY BREACH OF WARRANTY, REPRESENTATION OR CONDITION, EXPRESS OR IMPLIED, OR ANY OTHER TERMS OF THIS WARRANTY, OR ANY BREACH OF ANY DUTY OR OBLIGATION IMPOSED BY STATUTE, CONTRACT, TORT OR COMMON LAW OR OTHERWISE (WHETHER OR NOT CAUSED BY THE NEGLIGENCE OF THE SELLER, ITS EMPLOYEES, AGENTS OR OTHERWISE), INCLUDING, WITHOUT LIMITATION, LOSS OF USE, LOST PROFITS OR REVENUES, LABOUR OR EMPLOYMENT COSTS, LOSS OF USE OF OTHER EQUIPMENT, DOWNTIME OR HIRE CHARGES, THIRD PARTY REPAIRS, IMPROPER PERFORMANCE OR WORK, LOSS OF SERVICE OF PERSONNEL, LOSS OF CONTRACT OR OPPORTUNITY AND PENALTIES OF ANY KIND, OR FAILURE OF EQUIPMENT TO COMPLY WITH ANY APPLICABLE LAWS. THE SELLER'S LIABILITY TO THE BUYER SHALL NOT IN ANY EVENT EXCEED THE PURCHASE PRICE OF THE EQUIPMENT, PROVIDED THAT NOTHING CONTAINED IN THIS LIMITED PRODUCT WARRANTY SHALL OPERATE TO EXCLUDE THE SELLER'S LIABILITY FOR DEATH OR PERSONAL INJURY.

(2) USA Sales Warranty

Terex GB Ltd. and Terex USA, LLC (hereafter referred to collectively as “Seller”) warrants its new Equipment, to be free of defects in material or workmanship for a period of (i) 12 months from the date the Equipment is first placed into service, whether such Equipment is sold, rented or leased or (ii) 2,000 hours of use, whichever first occurs, provided that in no event shall this warranty extend beyond a period of 24 months from the date of shipment from the factory; provided that (1) the Buyer or the end-user sends Seller written notice of the defect within sixty (60) days of its discovery and establishes to the Seller’s satisfaction that: (i) the Equipment has been maintained and operated within the limits of rated and normal usage, and that there have been no alterations to it; and (ii) the defect did not result in any manner from the intentional or negligent action or inaction by Buyer or the end-user or any of their respective agents or employees or any person using it and (2) a new machine registration certificate or the commissioning documents have been completed, signed and delivered to Seller within thirty (30) days of the equipment’s “in-service” date. If requested by Seller, Buyer must return the defective equipment to Seller’s manufacturing facility, or other location designated by Seller, for inspection, and if Buyer cannot establish that conditions (1) (i) and (1)(ii) above have been met, then this warranty shall not cover the alleged defect. Subject to the Buyer establishing that conditions (1)(i) and 1(ii) above have been met, Seller warrants all Critical Components (as defined herein) to be free, under normal use and service, of any defects in manufacture or materials for a period of: (1) twenty four (24) months from the date of commissioning, (2) 4000 hours of use, or (3) Thirty Six (36) months the date of shipment from the factory, whichever occurs first. For the purposes of this warranty, Critical Components shall mean:

- Cone machines :- Main frame, Upper frame Countershaft and Housing, Drive pulley Drive Pinion and Gear, Eccentric, Wedge Ring (Excluding Pads)
- M Series Jaw Machines :- Mainframe including Cross Beam, Eccentric Shaft, Jaw Stock, Toggle Beam, Flywheels Main Adjustment Cylinders on HA & HR Machines Only
- Impactor Machines (vertical and horizontal shaft):- Rotor, Main shaft, Crusher Body and Drive Pulley
- Screen Boxes;- Screen Box Welded Assembly, Screen Box Sub frame, Main Shaft

Seller’s obligation and liability under this warranty is expressly limited to, at Seller’s sole option, repairing or replacing, with new or remanufactured parts or components, any part, which appears to Seller upon inspection to have been defective in material or workmanship. Such parts shall be provided at no cost to the owner. If requested by Seller, components or parts for which a warranty claim is made shall be returned to Seller at a location designated by Seller. All components and parts replaced under this limited product warranty become the property of Seller.

This warranty shall be null and void if parts (including wear parts) other than genuine OEM Seller parts are used in the equipment.

Accessories, assemblies and components included in the Seller equipment, which are not manufactured by Seller, are subject to the warranty of their respective manufacturers. Normal maintenance, adjustments, or maintenance/wear parts, including without limitation, friction plates, glass, clutch, proper tightening of bolts, nuts and brake linings pipe fittings, adding or replacing of fluids, filters, wire rope, belts, screening media, rubber skirting, chute linings and paint, are not covered by this warranty and are the sole maintenance responsibility of Buyer.

Seller makes no other warranty, express or implied, and makes no warranty of merchantability or fitness for any particular purpose.

No employee or representative is authorized to modify this warranty unless such modification is made in writing and signed by an authorized officer of Seller.

Seller’s obligation under this warranty shall not include duty, taxes, environmental fees, including without limitation, disposal or handling of tires, batteries, petrochemical items, or any other charges whatsoever, or any liability for direct, indirect, incidental, or consequential damages.

Improper maintenance, improper use, abuse, improper storage, operation beyond rated capacity, operation after discovery of defective or worn parts, accident, sabotage or alteration or repair of the equipment by persons not authorized by Seller shall render this warranty null and void. Seller reserves the right to inspect the installation of the product and review maintenance procedures to determine if the failure was due to improper maintenance, improper use, abuse, improper storage, operation beyond rated capacity, operation after discovery of defective or worn parts, or alteration or repair of the equipment by persons not authorized by Seller.

Parts Warranty: Seller warrants the parts ordered from the Seller’s parts department to be free of defect in material or workmanship for either (1) a period of 12 months after date of shipment from the factory or (2) 2000 hrs of use or (3) the balance of the remaining new equipment warranty, whichever occurs first. With respect to parts ordered from the Seller’s parts department for Equipment that is no longer covered under this limited product warranty due to lapse of time or usage in excess of 4,000 hours of Critical Components, Seller warrants such parts to be free of defect in material or workmanship for a period of either 12 months after date of shipment from the factory or 2000 hrs of use, whichever occurs first.

NO TRANSFERABILITY OF WARRANTY: This warranty is limited to the original purchaser or original end-user if sold to a distributor, and is not assignable or otherwise transferable without the written agreement of Seller. Please contact your local distributor for additional details if needed.

ITEMS NOT COVERED BY SELLER WARRANTY

The following items are NOT covered under the Seller Warranty (the following list is not exhaustive):

- 1 Items sold by any individual, corporation, partnership or any other organization or legal entity that is not an authorized Seller distributor.
- 2 Components which are not manufactured by Seller are not covered by Seller's warranty. Such components are covered only by the warranty that is provided by the manufacturer of such components. Such components may include, but are not limited to, chassis, air compressors, batteries, tires engines, engine components, and customer supplied products.
- 3 Replacement of assemblies: Seller has the option to repair or replace any defective part or assembly. It is Seller's policy to refuse claims for the replacement of a complete assembly that is field repairable by the replacement or repair of defective part(s) within the assembly.
- 4 Normal Operational Maintenance Services and Wear Parts: Maintenance services and wear parts are excluded from warranty claims. Maintenance services and wear parts not covered include, but are not limited to, such items as: seals, gaskets, hoses, friction plates, glass, clutch and brake linings, filters, wire rope, exterior coatings, proper tightening of bolts, nuts and pipe fittings, adding or replacing of fluids, filters, belts, screening media, rubber skirting, chute linings and paint, services supplies such as hand cleaners, towels and lubricants, and inspections, diagnostic time and travel time.
- 5 Transportation cost and/ or damage: Any damage caused by carrier handling is a transportation claim and should be filed immediately with the respective carrier.
- 6 Deterioration: Repairs, work required or parts exposed as the result of age, storage, weathering, lack of use, demonstration use, or use for transportation of corrosive chemicals.
- 7 Secondary Failures: Should the owner or operator continue to operate a machine after it has been noted that a failure has occurred, Seller will not be responsible under the warranty for resultant damage to other parts due to that continued operation.
- 8 Workmanship of Others: Seller does not accept responsibility for improper installation or labor costs or costs of any kind from personnel other than authorized Seller distributor personnel.
- 9 Stop and Go Warranty: Seller does not recognize "Stop and Go" warranties.
- 10 Incidental or Consequential Damage: Seller shall not be liable for any incidental or consequential damages of any kind, including, but not limited to, lost profits, loss of production, increased overhead, loss of business opportunity, delays in production, costs of replacement components and increased costs of operation that may arise from the breach of this warranty. Customer's sole remedy shall be limited to (at Seller's sole option) repair or replacement of the defective part.

THIS WARRANTY IS EXPRESSLY IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED (INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) AND ALL OTHER OBLIGATIONS OR LIABILITY ON SELLER'S PART. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY CONTAINED HEREIN. Seller neither assumes nor authorizes any other person to assume for Seller any other liability in connection with the sale of Seller's equipment. This warranty shall not apply to any of Seller's equipment or any part thereof which has been subject to misuse, alteration, abuse, negligence, accident, acts of God or sabotage. No action by any party shall operate to extend or revive this limited warranty without the prior written consent of Seller. In the event that any provision of this warranty is held unenforceable for any reason, the remaining provisions shall remain in full force and effect.

IN THE EVENT OF ANY BREACH OF THE WARRANTY BY SELLER, SELLER'S LIABILITY SHALL BE LIMITED EXCLUSIVELY TO THE REMEDIES (AT SELLER'S SOLE OPTION) OF REPAIR OR REPLACEMENT OF ANY DEFECTIVE EQUIPMENT COVERED BY THE WARRANTY. IN NO EVENT SHALL SELLER, OR ANY SUBSIDIARY OR DIVISION THEREOF BE LIABLE FOR INCIDENTAL, INDIRECT, CONSEQUENTIAL OR OTHER DAMAGES OR LOSSES RESULTING FROM A BREACH OF WARRANTY INCLUDING, WITHOUT IMITATION, LABOR COSTS, LOSS OF USE OF OTHER EQUIPMENT, THIRD PARTY REPAIRS, LOST PROFITS, LOST TIME, TOWING OR HAULING OF EQUIPMENT, RENTAL COSTS, PERSONAL INJURY, EMOTIONAL OR MENTAL DISTRESS, IMPROPER PERFORMANCE OR WORK, PENALTIES OF ANY KIND, LOSS OF SERVICE OF PERSONNEL, OR FAILURE OF EQUIPMENT TO COMPLY WITH ANY FEDERAL, STATE OR LOCAL LAWS.

(3) Engine Warranty

To register the warranty of this machine please visit: <http://warranty.finlayhydrascreens.com>.

Depending on the engine fitted to your machine you must also register the engine of your product via:

Catapillilar

<http://www.cat.com/cda/layout?m=37532&x=7&id=3836261>

Scania

<http://www.scania.co.uk/engines/service/start-up-report/index.aspx>

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