

WARRIOR 1800

OPERATIONS MANUAL

SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

Original Instructions

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PARTS MANUAL ON USB INSIDE FRONT COVER



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1 Introduction

1.1 Notes to the Operations Manual

This operations manual contains important information on how to operate the machine safely and correctly. Read this manual carefully to learn how to operate your machine. Failure to do so could result in personal injury or equipment damage. Consider this manual a permanent part of your machine. Keep it with the machine at all times. Included with this manual is a disc which contains the original language version of this manual which is English.

There is a separate engine manufacturer's manual which should also be read and understood prior to any operation or maintenance of the machine.

The following procedure bar indicates the start of a procedure. Any safety warnings related to the procedure will be highlighted before the procedure.

PROCEDURE

Any results from a step in the procedure will be indicated in italic below that step. The end of a procedure is indicated with a line under the last step or the last image in a procedure.

Follow all applicable safety regulations and recommendations in this manual as appropriate to your machine and the situation/conditions prevailing at the time.

Federal, State, National and Local laws and safety regulations must be complied with at all times to prevent possible danger to person(s) or property from accidents or harmful exposure.

Where supplied as a basic machine only, (with or without optional extras, e.g. drive elements, etc.), the machine is intended for incorporation into a complete processing machine that is NOT designed and/or constructed by Terex. In these circumstances, or where supplied as a replacement machine, Terex will NOT be responsible for addressing environmental issues and/or health and safety protection measures for the machine installation as a whole and will bear NO responsibility for ensuring compliance with any regulations and/or statutory requirements that may apply unless specifically included in the Contract of Sale.

INFORMATION AND ADVICE

If you need any information or advice regarding your machine please contact:

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(1) Units

Within this operations Manual figures shown within brackets () after the Metric unit of measure are approximate conversions from the actual metric measurement of the item concerned to the imperial measurement.

(2) Optional Equipment

Terex machines can include optional equipment and/or special features additional to the standard specification. These may affect the information given in this operations manual. Refer to Chapter 4 of the operations manual for extra equipment or variations that can be applicable to the standard specification. Take note of any variations to the standard procedures and/or component specifications.

1.2 Safety Information

(1) Safety Alert Symbol



The safety alert symbol is used on safety signs and throughout this manual to alert you to potential personal injury hazards. Obey all messages that follow this symbol to avoid injury or death.

Conduct thorough risk assessments and mitigate identified risks in accordance to the assessment.

(2) ANSI Hazard Classification System

A multi-tier hazard classification system is used to alert you to potential personal injury hazards. Signal words used with the safety alert symbol indicate a specific level of severity of the potential hazard. Signal words used without the safety alert symbol relate to property damage and protection only. All are used as attention-getting devices throughout this manual as well as on ANSI type decals and labels fixed to the machine.

DANGER

This indicates a hazardous situation which, if not avoided, will result in death or serious injury. The safety alert symbol is shown with this danger classification.

WARNING

This indicates a hazardous situation which, if not avoided, could result in death or serious injury. The safety alert symbol is shown with this danger classification.

CAUTION

This indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. The safety alert symbol is shown with this danger classification.

NOTICE

This indicates a message related to property damage. The safety alert symbol is not shown with this danger classification.

All hazards associated with each procedure will be listed before each procedure as described above.

(3) California Proposition 65 Warnings

▲ WARNING

Operating, servicing and maintaining this equipment can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. These chemicals can be emitted from or contained in other various parts and systems, fluids and some component wear by-products. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your equipment and vehicle in a well-ventilated area and wear gloves or wash your hands frequently when servicing your equipment or vehicle and after operation. For more information go to www.P65Warnings.ca.gov/passenger-vehicle.

1.3 Intended Use

This product and its approved attachments are designed to be used in Material Processing crushing and screening applications. Compliance with the operating instructions, the performance of maintenance work as specified and adherence to maintenance intervals are all aspects of proper use. Use of this product in any other way is prohibited and contrary to its intended use.

1.4 Prohibited Use

Operating the machine outside of its recommended range of applications or for any use which it is not intended, will result in a loss of any guarantee. The manufacturer or supplier cannot be held liable for any damage or injury resulting from such misuse.

Use of this product in any way other than its intended use is prohibited. The manufacturer will not be liable for any damage resulting from such use.

1.5 Declaration of Conformity

This machine is in conformity with the provisions of the EC Machinery Directive 2006/42/EC together with appropriate EN Harmonised Standards and National BS Standards and Specifications.

A Declaration of Conformity certificate is applicable to each machine. Refer to Appendix A for an example of a Declaration of Conformity certificate. The original copy of the certificate is sent out with the machine.

1.6 Warranty

Refer to Appendix B for an example of the warranty. It is important that it is read and fully understood.

1.7 Copyright

The copyright of this operations manual is reserved by Powerscreen.

This operations 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.

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1.8 Bulletin Distribution and Compliance

Safety of product users is of paramount importance to Terex. Various bulletins are used by Terex to communicate important safety and product information to dealers and machine owners. The information contained in bulletins is tied to specific machines using the machine model and serial numbers. Distribution of bulletins is based on the most current owner on record along with their associated dealer, so it is important to register your machine and keep your contact information up to date. To provide for the safety of personnel and the reliable continued operation of your machine, be sure to comply with actions indicated in all safety and product notices.

1.9 Transfer of Machine Ownership

If you are not the original owner of this machine, provide the model number and PIN number of your machine. Also include your name and the date of the transfer of ownership. It ensures that you are the owner on record for this machine, allowing you to receive any applicable notices and advisories in a timely manner.

1.10 Contacting the Manufacturer

At times it may be necessary to contact the manufacturer of this machine. When you do, be ready to supply the model number and PIN number of your machine, along with your name and contact information. At minimum, the manufacturer should be contacted for any of the following reasons:

- Accident reporting
- Questions regarding product applications and safety
- Standards and regulations compliance information
- Questions regarding product modifications
- Current owner updates, such as changes in machine ownership or changes in your contact information (See Transfer of Machine Ownership).

Please contact:

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2 Safety

This safety section covers a wide variety of hazardous situations, (but not necessarily limited to those described), which may or may not apply to any specific machine 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. Where the machine is supplied for incorporation into plant/equipment designed, supplied and located by others, Terex cannot be aware of particular hazards that may be present or might occur and therefore accept no liability for addressing or resolving these issues.

2.1 General Safety

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

(1) Safety Alert Symbol



The safety alert symbol is used on safety signs and throughout this manual to alert you to potential personal injury hazards. Obey all messages that follow this symbol to avoid injury or death.

Conduct thorough risk assessments and mitigate identified risks in accordance to the assessment

(2) ANSI Hazard Classification System

A multi-tier hazard classification system is used to alert you to potential personal injury hazards. Signal words used with the safety alert symbol indicate a specific level of severity of the potential hazard. Signal words used without the safety alert symbol relate to property damage and protection only. All are used as attention-getting devices throughout this manual as well as on ANSI type decals and labels fixed to the machine.

DANGER

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CAUTION

This indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

The safety alert symbol is shown with this danger classification

(3) Property Damage Messages







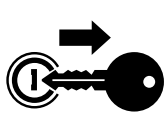


The signal word NOTICE, shown without the safety alert symbol, is used throughout this manual and on machine labels to address specific practices, or draw attention to supplemental information that is not related to personal injury.






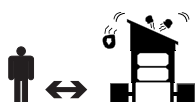




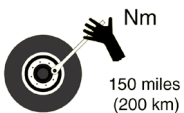
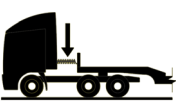

NOTICE










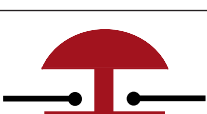

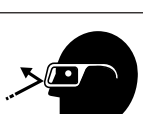

This indicates information considered important, but not hazard related. This is a message related to property damage. The safety alert symbol is not shown with this danger classification.

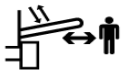








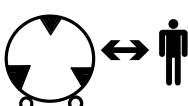

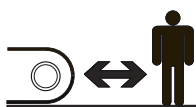

(4) Description of Safety Symbols







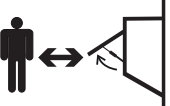
Table 2.1 - Description of Safety Symbols

| Symbol | Description |
|---|---|
|  | Electrocution hazard Electrical shock/ electrocution from conveyor to power line contact. |
|  | Stay sufficient distances from electrical power lines. |
|  | Entanglement hazard Entanglement in belt drive or conveyor. |
|  | Entanglement hazard Arm entanglement in belt drive. |
|  | Stay clear of conveyor. |
|  | Install covers and guards before operation. |
|  | Turn machine off and remove the key. |
|  | Lockout machine. |
|  | Read and understand operations manual before using equipment. |

| Symbol | Description |
|---|---|
|  | Injection hazard Skin injection from high pressure fluid. |
|  | Use cardboard or wood to check for leaks. |
|  | Crush hazard Crushed foot from support leg. |
|  | Stay clear of support legs and jacks. |
|  | Falling material hazard Struck from falling or flying material. |
|  | Stay clear of hopper during operation. |
|  | Fall Hazard Falling from a height. |
|  | Do not climb onto the machine. |
|  | Use personnel lift to reach high places. |
|  | Check tyre pressures prior to transport. |
|  | Check wheel nut torque. Recheck wheel nut torque every 150 miles (200km). |
|  | Connect and check braking system. |
|  | Crush hazard Crushing of fingers or hand. Force applied in one direction. |

| Symbol | Description |
|---|--|
|  | Keep hands clear of openings. |
|  | Hand entanglement in pulley/ winch |
|  | Keep hands clear of moving components |
|  | Electrocution hazard Electric shock/ electrocution. |
|  | Hearing hazard Loss or degradation of hearing. |
|  | Wear hearing personal protective equipment. |
|  | Explosion hazard Explosion during an operation or service procedure. |
|  | Burn hazard Burns from corrosive material. |
|  | Keep open flame away. |
|  | Emergency Stop Press to engage, twist to reset. |
|  | Flying Material Hazard Face struck by flying objects |
|  | Wear eye personal protective equipment |
|  | Crush Hazard Crush from overhead impact. |

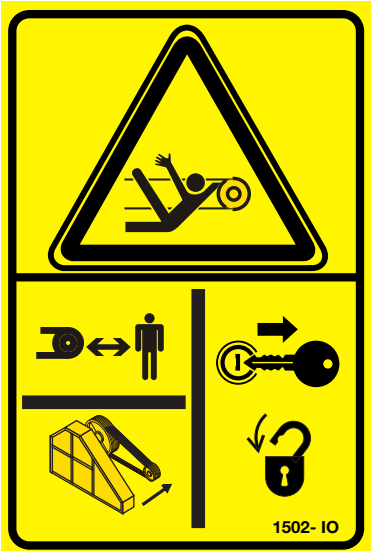

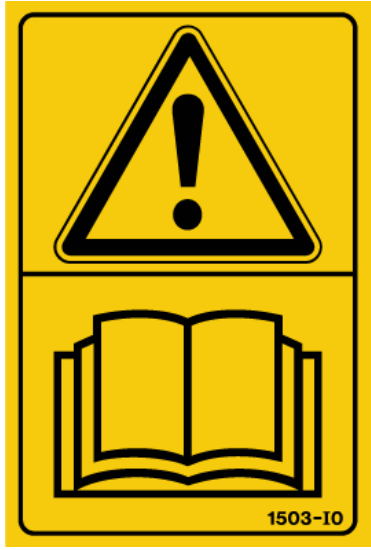
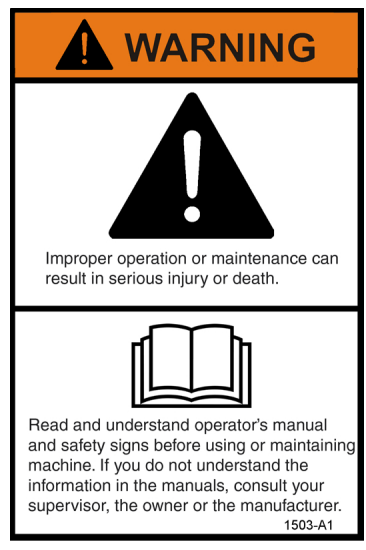
| Symbol | Description |
|---|--|
|  | Stay clear of moving conveyors. |
|  | Unauthorized persons prohibited. |
|  | Flying Material Hazard Struck by flying material. |
|  | Do not stand on platform while machine is in operation |
|  | Do not stand on machine while in operation. |
|  | Inhalation Hazard Inhalation of poisonous/ toxic fumes or dust. |
|  | Use dust suppression (water spray) or dust collection (filter) during operation of this equipment. |
|  | Wear respiratory personal protective equipment. |
|  | Cutting Hazard Contact with knives in trommel drum will result in death or serious injury. |
|  | Stay clear of sharp knives in trommel drum. |
|  | Crush Hazard Crush from track machine run over. |
|  | Stay clear of track machine. |
|  | Crush Hazard Crush from wheel machine run over. |




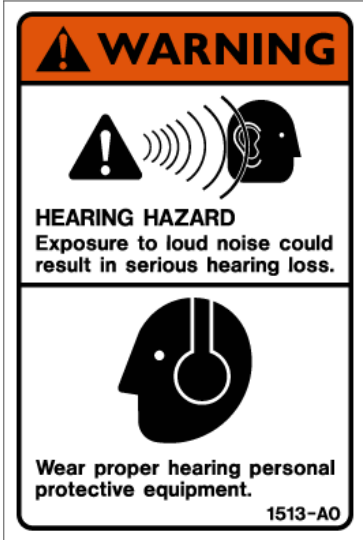
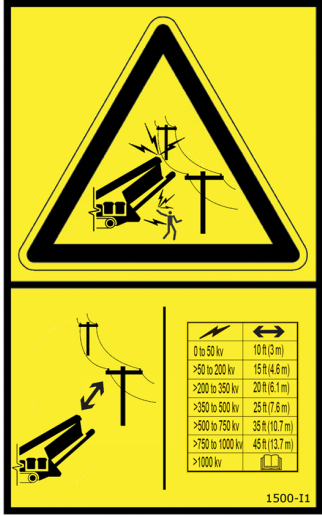
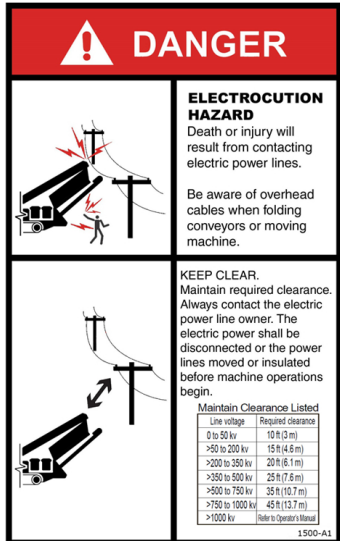
| Symbol | Description |
|---|---|
|  | Stay clear of wheeled machine. |
|  | Explosion Hazard Battery Explosion. |
|  | Keep welding sparks away from the battery area. |
|  | Burn Hazard Burn from hot surface or liquid |
|  | Stay clear of hot surface or liquid. |
|  | Impact Hazard Impact from spring loaded door. |
|  | Stay clear of spring loaded door while opening. |






2.2 Positions of Safety Signs on the Machine

Table 2.2 lists the safety signs that are on this machine. The item number indicates the position of the safety sign on the machine, Reference: Figure 2.1.

Table 2.2 - Safety Signs

| Item | Sign | |
|------|---|--|
| | ISO | ANSI |
| 315 |  |  |
| 316 |  |  |

| Item | Sign | |
|------|---|---|
| | ISO | ANSI |
| 905 |  |  |
| 903 |  |  |
| 253 |  |  |

| Item | Sign | |
|------|--|--|
| | ISO | ANSI |
| 410 |  <p>1507- IO</p> |  <p>1507-A0</p> |
| 426 |  <p>1508- IO</p> |  <p>1508-A0</p> |
| |  <p>1021008009 0</p> | |


| Item | Sign | |
|------|---|--------------|
| | ISO | ANSI |
| | <div>  <p>WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov</p> <p>Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.</p> <ul style="list-style-type: none"> - Always start and operate the engine in a well-ventilated area. - If in an enclosed area, vent the exhaust to the outside. - Do not modify or tamper with the exhaust system. - Do not idle the engine except as necessary. <p>For more information go to: www.P65Warnings.ca.gov/diesel</p> </div> | |
| | | 1021008008 0 |

Figure 2.1 shows the positions of these safety signs on the machine.

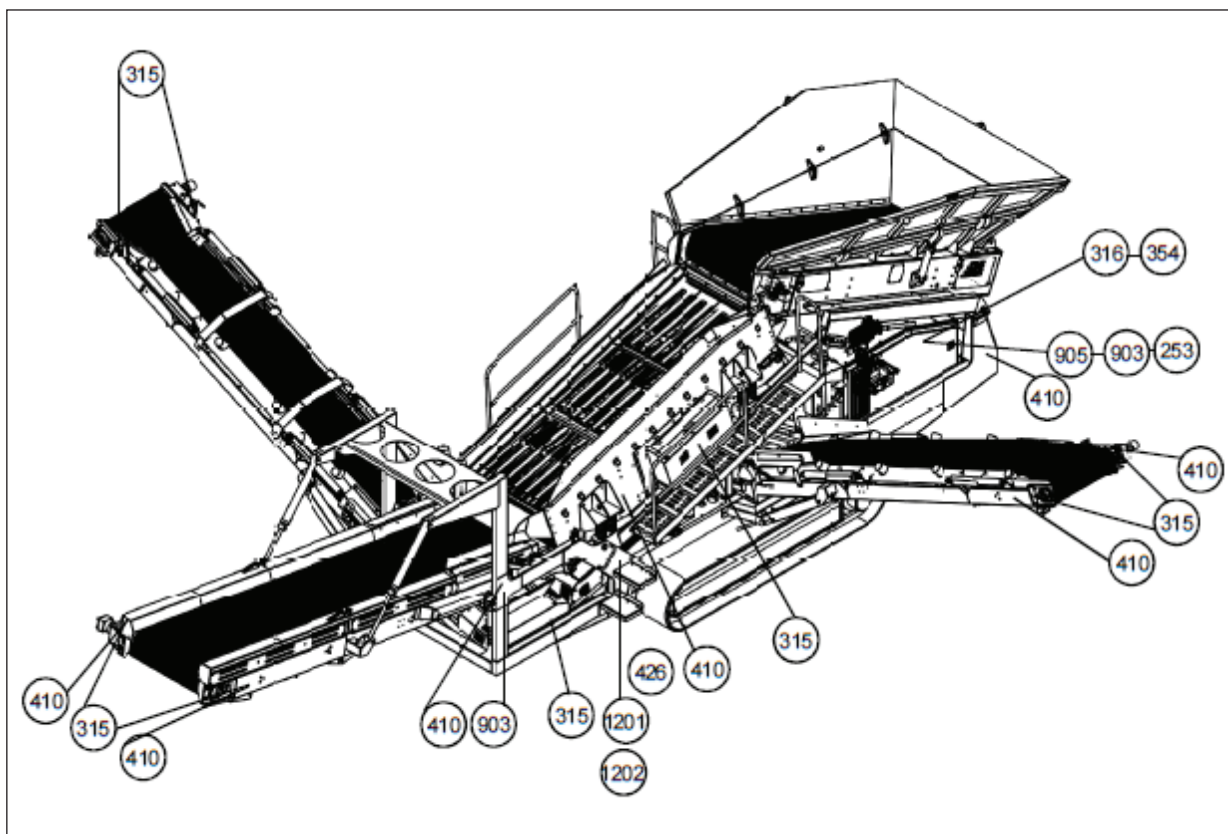


Figure 2.1 - Safety Sign Positions

2.3 Personal Safety

Ascertain from the appropriate authority and observe all statutory and any other regulations that may apply to the planned location before operating the machine. Operators must be trained in the correct and safe use of all equipment.

Before operation the operator(s) must:

- Have received specific and adequate training in the task to be carried out.
- Have read and understood the operations manual and the Safety Signs in this manual and around the machine(s).
- Knows the location and function of controls and safety features such as emergency stop buttons and safety guards.
- Be aware of all moving parts of the machine.

Any work on and/or with the machine must be executed by trained, reliable and authorised personnel only. Statutory minimum age limits must be observed.

Work on the 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.

Work on the hydraulic system must be carried out only by personnel with special knowledge and experience of hydraulic equipment.

(1) Personal Protective Equipment

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. Loose or baggy clothing can get caught in running machinery.

For reasons of safety, long hair must be tied back or otherwise secured, garments must be close fitting and no jewelry such as rings may be worn. Injury may result from being caught up in the machinery or from rings catching on moving parts.

Always wear correctly fitting (EN/ANSI approved) protective clothing.

Protective clothing includes: Hard Hat, Safety Glasses, Ear Protection, Dust Mask, Close fitting Overalls, Steel Toed Boots and a High Visibility Vest.

2.4 Work Area Safety

(1) General Work Area Guidelines

Operators must have received specific training in all operating and service tasks as required for the safe operation and service of the machine. Operators must know the location and correct operation of all controls and safety features such as remote stop buttons and isolator switches. Operators must be aware of all moving parts on the machine.

Keep the work area as neat and as clean as practical. Keep your equipment clean and free of dirt and grease so it can be checked for loose, cracked or broken parts. Replace defective parts as soon as they are discovered.

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 provided will meet the requirements laid down by individual Inspectors and any additional guard and/or modification to guarding supplied, which may be required for any reason whatsoever, will be charged as an addition to the Contract Price.

Walkways should only be used when the machine is turned off, unless to perform specific maintenance procedures which require the machine to be operational. In this instance, only suitable trained and authorised personnel equipped with the correct PPE should be allowed access and the machine must be running empty and cleared of all material beforehand.

Always check that walkways and handrails are fully secured in place before using.

Do not smoke or allow smoking near flammable fuels or solvents. Use non flammable solvents for cleaning parts and equipment. Know where fire extinguishers and other fire suppression equipment are located and learn how to use them.

Always use hoisting equipment for heavy loads. Regularly check hooks, cables, shackles and chains for stretch and wear. Never overload hoists, cranes or other lifting devices.

Avoid electrical and static sparks and any open flame while handling, storing, moving or pouring fuels, electrolytes for batteries, hydraulic fluids or coolants.

(2) Safety Warnings and Labels

You can be injured if you do not obey the safety instructions as indicated on warning signs. Observe all safety instructions and warnings attached to the equipment.

Ensure that safety instructions and warnings attached to the equipment are always complete and perfectly legible. Keep warnings and instruction labels clean and up to date.

Replace unreadable or missing labels with new ones before operating the machinery. Make sure replacement parts include warning or instruction labels where necessary.

(a) Modifications

Never make any modifications, additions or conversions which might affect safety without the supplier's approval.

In the event of safety relevant modifications or changes in the behavior of the machinery during operation, stop the machine and lock out immediately and report the malfunction to the competent authority/ person.

(3) Transportation Safety

Before transporting the machine, observe the prescribed transport position, admissible speed and itinerary. Only use appropriate means of transport and lifting gear of adequate capacity. Know the overall height to avoid contacting overhead obstructions such as bridges, power lines etc.

The preparations to move equipment by an articulated lorry should be supervised by a minimum of two persons. Ensure persons transporting the machine adhere to all safety signs and procedures.

Before transportation on public roads, ensure the machine has been properly secured with no loose material left in or on the machine. Always observe the valid traffic regulations and, if necessary, ensure beforehand that the machine is in a condition compatible with these regulations.

Extreme caution is required when transporting machinery on site. Soft or uneven ground may cause accidents. 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.

The machine is remote controlled and may start without notice. Stay clear of the machine. The machine must be loaded and transported only in accordance with the operating instructions. For manoeuvring the machine, observe the prescribed transport position, admissible speed and itinerary. Use only appropriate means of transport and lifting equipment and where applicable of adequate capacity. The re-commissioning procedure must be strictly in accordance with the operating instructions. Before travelling with the machine, check that the braking and any signalling and lighting systems are fully functional. Before setting the machine in motion always check that the accessories have been safely stowed away.

On wheeled machine:

Ensure wheel nuts are torqued between 500 to 550 ft.lb (69 to 76 kg.m) prior to transport.

Check your tires for:-

- correct pressure
- cuts or bulges
- nails or spikes
- uneven or excessive wear
- missing valve caps

Check your wheels for:-

- damaged rims
- missing or loose wheel nuts or bolts
- obvious misalignment

Have cuts or punctures repaired by authorised personnel before adding air. Beware that an over-inflated tire can explode and cause serious injury or death.

(4) Operation Safety

Before attempting to operate the machine, DO read, fully understand and observe the contents of this manual. Also any other relevant manual for other equipment incorporated in the machine, e.g. Engine manual. Study all safety signs on your machine.

It is emphasized that all safety aspects are checked before starting the machinery.

Make sure that you fully understand the operating procedures for the machine before attempting to start.

Take the necessary precautions to ensure that the machine is used only when in a safe and reliable state.

Operate the machine only for it's designed purpose and only if all guarding, protective and safety orientated devices, emergency shut-off equipment, sound proofing elements and exhausts, are in place and fully functional.

Before starting the engine ensure it is safe to do so. NEVER leave the machine unattended whilst it is in operation.

Before starting, walk completely around the machine. Make sure no one is under it, on it or close to it. Let other workers and bystanders know you are starting up and do not start until everyone is clear of the machine.

Before moving the machine, ensure that everyone is clear from the surrounding area and that the warning siren and beacon and the tracking umbilical Machine Stop button are operating correctly

Make certain enough ventilation is present to run engines safely. Do not start an engine in an enclosed space without properly vented exhaust. Exhaust fumes from gasoline or diesel engines can kill.

DO NOT allow a build up of solid material or dust in any part of the machine. In the event of material blockage, any malfunction or operational difficulty, stop the machine immediately and lockout. Have any defects rectified immediately.

Be alert and watch for pinch points, closing mechanisms, and falling parts when working on or around any machinery. Keep hands and tools clear. In-running nip points on moving machinery can cause serious injury or even death. Do not reach into unguarded machinery. Your arm could be pulled in and amputated. Switch off and lockout the machine before removing any safety devices or guarding.

Never work or stand beneath machinery or attachments as it is raised or lowered. Never work or stand beneath machinery as they are being loaded with and/or discharging material. During operation, do not climb onto, over or under moving conveyor belts and rollers. Always use ladders, steps and walkways when mounting and dismounting.

Hole alignment on mechanical supports must be checked and secured with pins provided and in accordance with safety signs.

Follow safe operating practices. Operate the machine controls smoothly. Avoid sudden stops, starts or changes in direction. Only use emergency stop buttons or emergency stop lines (if fitted) in emergency situations or during safety drills.

Never check the tension of 'V' belts, drive chains and conveyors when machine is running.

DO check frequently the stability of the machine. The chassis SHOULD NOT have undue vibration during operation.

After each day's operation, always run the machine dry; never leave material in the beltfeeder on conveyor belts or screenbox. Starting a machine with a full load will cause strain problems in your machine.

(5) Hydraulic and Pneumatic Safety

Only persons having special knowledge and experience in hydraulic and pneumatic systems may carry out work on hydraulic and pneumatic equipment. Never disable or alter any hydraulic circuit or component without consulting with Terex.

Relieve all pressure in the hydraulic system by returning all controls to the neutral position. Turn off the machine and isolate power supply before any pipes, filter caps, filters or hydraulic fittings are disconnected or removed. Depressurize 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.

Check for leaks in tanks or tubing with flashlights or other proper equipment. Never use an open flame to check for leaks. Always use a piece of cardboard to check for leaks. Do not use your hand. Hydraulic fluid under pressure can penetrate the skin causing serious injury. If fluid is injected under the skin, it must be surgically removed or gangrene will result. Get medical help immediately if this occurs. Wear personal protective equipment including goggles and gloves.

Check all lines, hoses and screwed connections regularly for leaks and obvious damage. Splashed oil may cause injury and fire. Repair any damage immediately.

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.

Always practice extreme cleanliness servicing hydraulic components.

Do not exceed safe limits. Never set a pressure relief valve to a pressure higher than that set at the factory.

For questions concerning accumulators, which are pressure-containment vessels, contact your Terex distributor. Malfunctioning valves or poor maintenance practices can result in build-up of extremely high hydraulic and/or pneumatic pressures inside the accumulator.

(6) Electrical Safety

The electrical mode of operation on the electric hydraulic machines operates at 380-415 Volts AC, 50/60Hz.

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 and regulations.

Use only original fuses with the specified current rating. Switch off the machine immediately if trouble occurs in the electrical system.

Machines with high voltage electrical equipment must be suitably earth bonded by a qualified electrician prior to activating the main isolator switch. If machine is electric-hydraulic or direct electric drive, the 'mains' electrical supply to the machine should always be isolated by unplugging/uncoupling the 'mains' power socket. It is recommended that an earth leakage safety switch be fitted in the supply line to the power point on site. Special care should be taken to ensure that earth wires are correctly connected.

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.

If your machine comes into contact with a live wire:

- Warn others against approaching and touching the machine.
- Have the live wire de-energised.

If provided for in the regulations, the power supply to machines and parts of 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.

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.

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.

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.

Tracked machines are wired with negative earth. Always observe correct polarity.

Always disconnect battery leads before carrying out any maintenance to the electrical system or servicing the engine. Never short across the starter terminals of a battery as this can cause a fire and could also damage the electrical system. If welding is to be carried out on the machine, it is essential that the powerpack is isolated.

The battery contains sulphuric acid, an electrolyte which can cause severe burns and produce explosive gases. Wear personal protective equipment and avoid contact with the skin, eyes or clothing.

Diesel engine exhaust emissions contain products of combustion which may be harmful to your health. Always operate the machine in a well ventilated area and if operating in an enclosed area, vent the emissions outside. Do not touch any part of the engine or exhaust system. Allow the engine and exhaust to cool before performing any repair or maintenance.

Never fill the fuel tank with the engine running, while smoking or when near an open flame. Never overfill the tank or spill fuel. If fuel is spilled, clean it up immediately.

(7) Maintenance Safety

Understand the service procedures before doing work. Keep working area clean and dry. 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 the lockout and tag out procedure and allow the machinery to cool before carrying out any maintenance.

Whenever maintenance or service is being carried out a minimum of two (2) persons should be present at all times. **NEVER WORK ALONE.**

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.

Never attempt repairs or adjustments to the machine while it is running unless specified to do so.

Before carrying out any maintenance, relieve all hydraulic pressure by returning the controls to the neutral position and secure all hydraulically operated attachments with pins provided.

Disconnect the battery ground cable before making adjustments on electrical systems or welding on machinery. For the execution of maintenance work, tools and workshop equipment adapted to the task on hand are absolutely indispensable.

Remove only guards or covers that provide access. Wipe away any excess grease and oil. Never leave guards off or access doors open when unattended. Keep bystanders away if access doors are open.

When working beneath raised equipment, always use blocks, jack-stands or other rigid and stable supports. Make sure that any part of the machine raised for any reason is prevented from falling by securing in a safe reliable manner. Never work under unsupported equipment.

For carrying out overhead assembly work always use specially designed or otherwise safety-oriented ladders and working platforms. Always use any walkway/platforms provided or a safe and secure platform approved by the regional safety enforcing authority.

When working at height make sure you take all necessary precautions in line with local regulations and use approved PPE, safety harnesses and work platforms. If you are not aware of working at height requirements speak to your manager before starting any work. Keep all handles, steps, handrails, platforms, landing and ladders free from dirt, oil, snow and ice.

Return idler roller guards should be checked for wear/damage during routine maintenance. The gap between the guard and the idler roller should not exceed 6mm. The gap between the idler roller and the guard must be renewed. Contact your local Terex dealer to obtain an approved replacement.

Maintenance and Repairs During Operation; Disposal of Parts and Consumables

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.

Observe information on the replacement of parts and equipment. These activities may be executed by skilled personnel only.

When the machine is completely shutdown for maintenance and repair work, it must be secured against inadvertent starting by:

- Switching off the engine and removing the ignition key or isolating the electrical supply as applicable.
- Implementing the lockout procedure.
- Attaching a warning sign(s) to the machinery in appropriate positions.

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.

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.

To avoid the risk of accidents, individual parts and large assemblies being moved for replacement purposes should be carefully attached to lifting tackle and secured. Use only suitable and technically adequate lifting gear. Never work or stand under suspended loads.

Keep away from the feed hoppers and stockpile conveyor discharge points, where there is risk of serious injury or death due to the loading and removal of material.

Falling from and/or onto Terex machines can cause injury or even death. Do not climb on the machine whilst it is in operation. Never use machine parts as a climbing aid.

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

The fastening of loads and instructing of crane operators should be entrusted to experienced persons only. The marshaller giving the instructions must be within sight or sound of the operator.

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.

Any safety devices removed for setup, maintenance or repair purposes must be refitted and checked immediately upon completion of the maintenance and repair work to ensure full working order.

Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with Terex equipment includes such items as oil, fuel, coolant, filters and batteries, etc. Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them. Do not pour waste onto the ground, down a drain or into any water source. Ensure that all consumables and replaced parts are disposed of safely and with minimum environmental impact.

Always ensure that any safety fitment such as locking wedges, securing chains, bars or struts are utilized as indicated in these operating instructions.

Diesel fuel is highly flammable. Never remove the filler cap, or refuel, with the engine running. Never add gasoline or any other fuels mixed to diesel because of increased fire or explosion risks. Do not carry out maintenance on the fuel system near naked lights or sources of sparks, such as welding equipment or whilst smoking.

After maintenance, tighten all bolts, fittings and connections. Install all guards, covers and shields. Replace or repair any damaged ones. Refill and recharge pressure systems with recommended fluids. Start the engine and check for leaks. Operate all controls and make sure the machine is functioning properly. After testing, shut down, check the work you performed. Recheck all fluid levels before releasing machine for operation.

Gas, Dust, Steam, Smoke

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.

Always operate internal combustion engines and fuel operated heating systems only out of doors or in a well-ventilated area. Before starting the machine in enclosed areas, make sure that there is sufficient ventilation.

Observe the regulations in force at the respective site.

Dust found on the machine or produced during work on the machine should be removed by extraction, not blowing. Dust waste should be dampened, placed in a sealed container and marked, to ensure safe disposal.

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

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.

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.

Ensure operators wear a suitable face mask where exposed to possible harmful effects of air pollution of any kind.

(8) Hazardous Substances

Ensure that correct procedures are formulated to safely handle hazardous materials by correct identification, labelling, storage, use and disposal.

All hazardous materials must be handled strictly in accordance with the manufacturers instructions and all applicable regulations observed at all times. Store hazardous materials in restricted access areas and mark them clearly.

(9) Noise Levels

HEARING HAZARD EXCEEDS 90 dB (A)

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

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.

2.5 Emergency Stop Locations

Emergency stops are located at both the left hand and right hand sides of the machine.

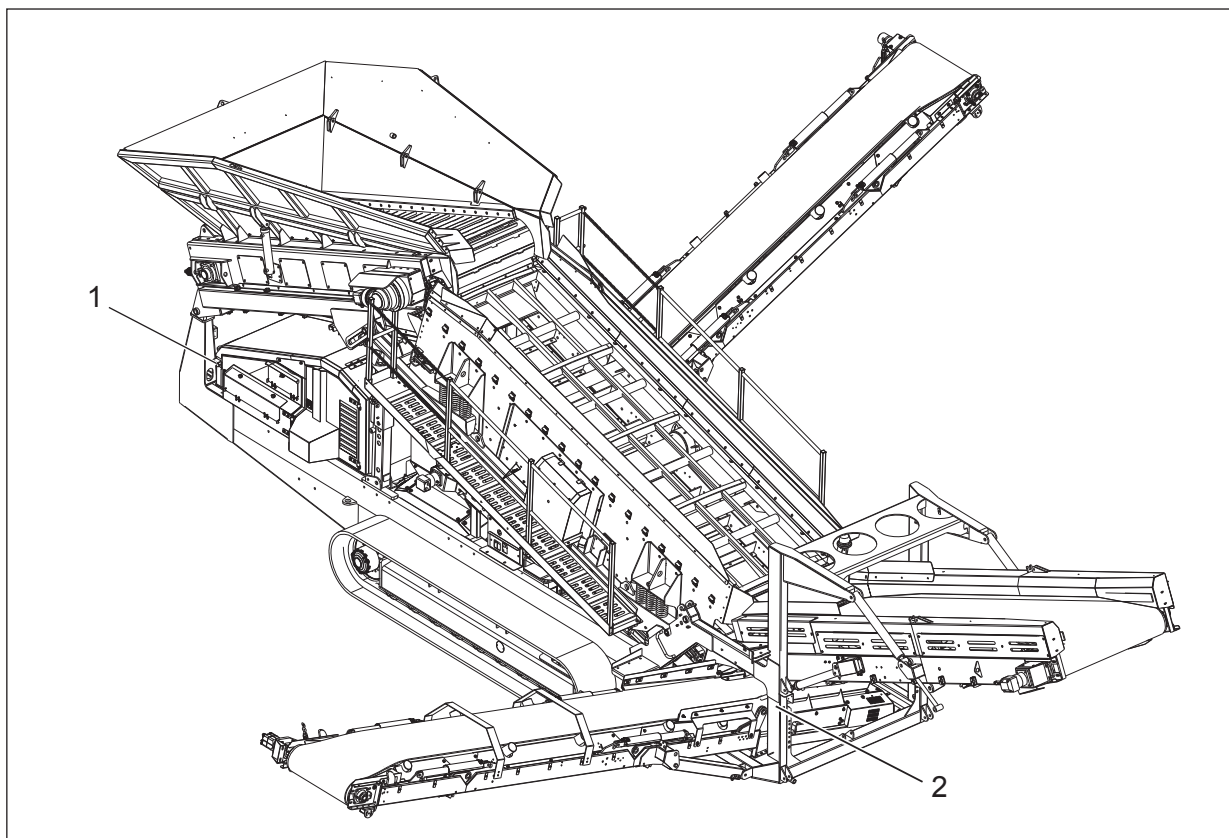


Figure 2.2 - Emergency Stop Locations

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3 Technical Data

3.1 General Information

Machine Warrior 1800

Type Mobile Screening Machine

(1) Machine Weights

Total weight (Belt feeder) 29,000 kg*

Total weight (Apron feeder) 31,500 kg*

*The 'Total weight' refers to the weight of the machine in standard configuration only. Any optional extras added will have a considerable influence on the overall plant weight.

3.2 Machine Component Specifications

(1) Feeder Unit (A)

(a) Warrior feed hopper (Standard & Apron)

Opening size 4.4 m x 2.7 m (14'5" x 8'10")

Capacity 6.8 cu m (8.9 cu yds)

Feed in height 4.23 m (13' 10") (side)

Feed in height 3.63 m (11' 11") (rear)

Feed in height 3.20 m (10' 8") (collapsed hopper)

(b) Feed Conveyor (not Apron Feeder)

Belt width 1300 mm (51")

Type 3 ply (4 ply on light duty machine)

(2) Collection Conveyor (E)

Belt width 1200 mm (48")

(3) Screen unit (B)

Warrior 1800 Screenbox

Width 1.5 m (5')

Length 5 m (16')

Weight 4200 kgs

Screen Angle 14° - 18°

(4) Side Conveyors (D & F)

Belt width 900 mm (36")

(5) Tail Conveyor (C)

Belt width 1400 mm (55")

Stockpile Height..... 3.73 m (12.3")

Degree of incline:

Working Angle 10 - 24°

(6) Power unit (G)

Refer to engine operation manual supplied with machine.

(a) Tier 4 Engine

CAT C4.4 Tier 4 Final - 4 cylinder diesel engine developing 82 kW (110 Hp) @ 2200 RPM

(b) Tier 3 Engine

CAT 4.4 Tier 3 - 4 cylinder diesel engine developing 83kW

(c) Constant Speed Engine

CAT C4.4 97kW Constant Speed Engine

(d) Battery

Type 12 Volt, negative earth

Cranking Power 810 amps SAE

(7) Chassis (I)

(a) Warrior 1800 Tracks

Gradability degrees 28.1° (low speed)

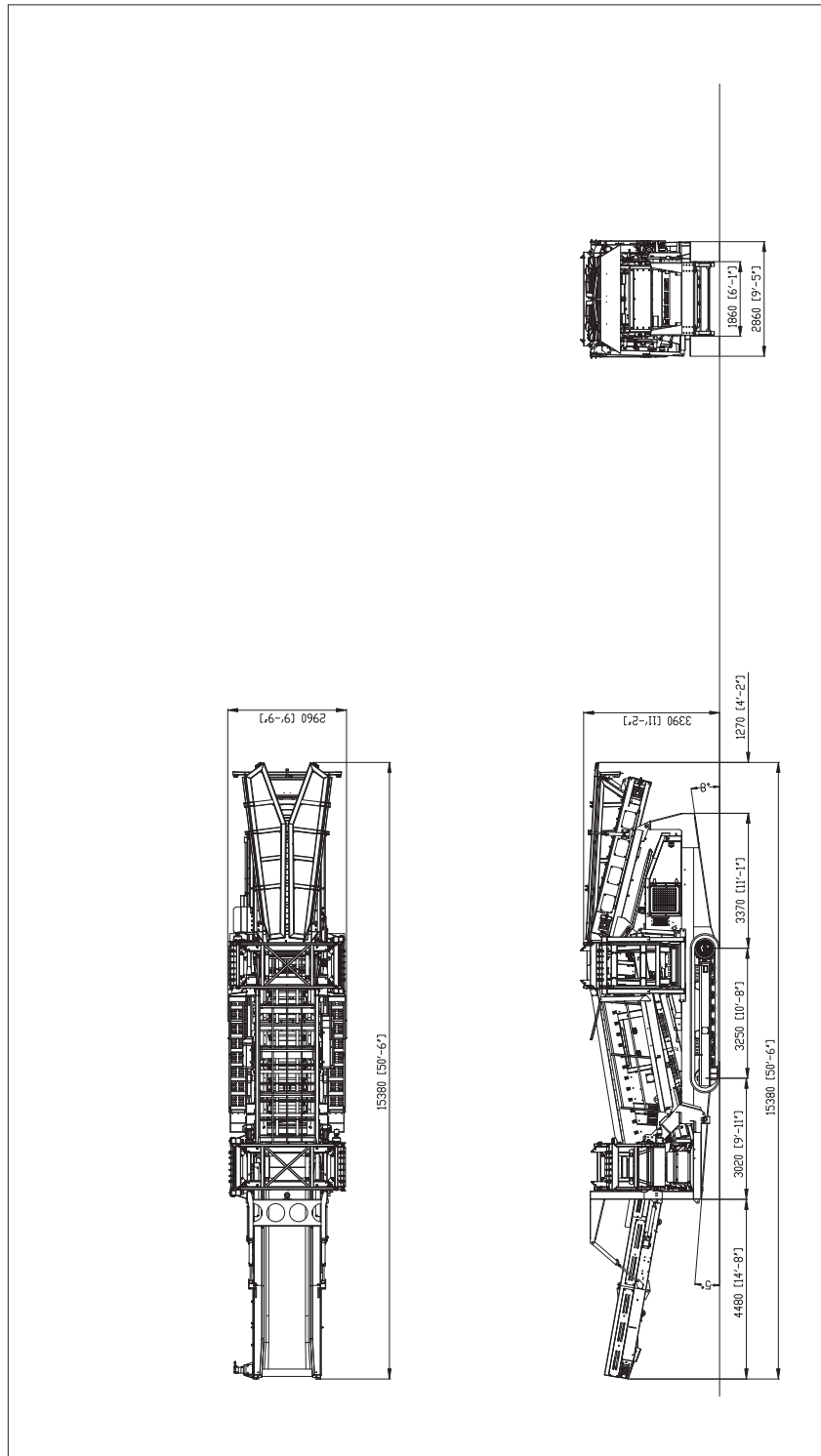
Gearbox ratio 1:123

Hydraulic motor 85.9 cc/rev.

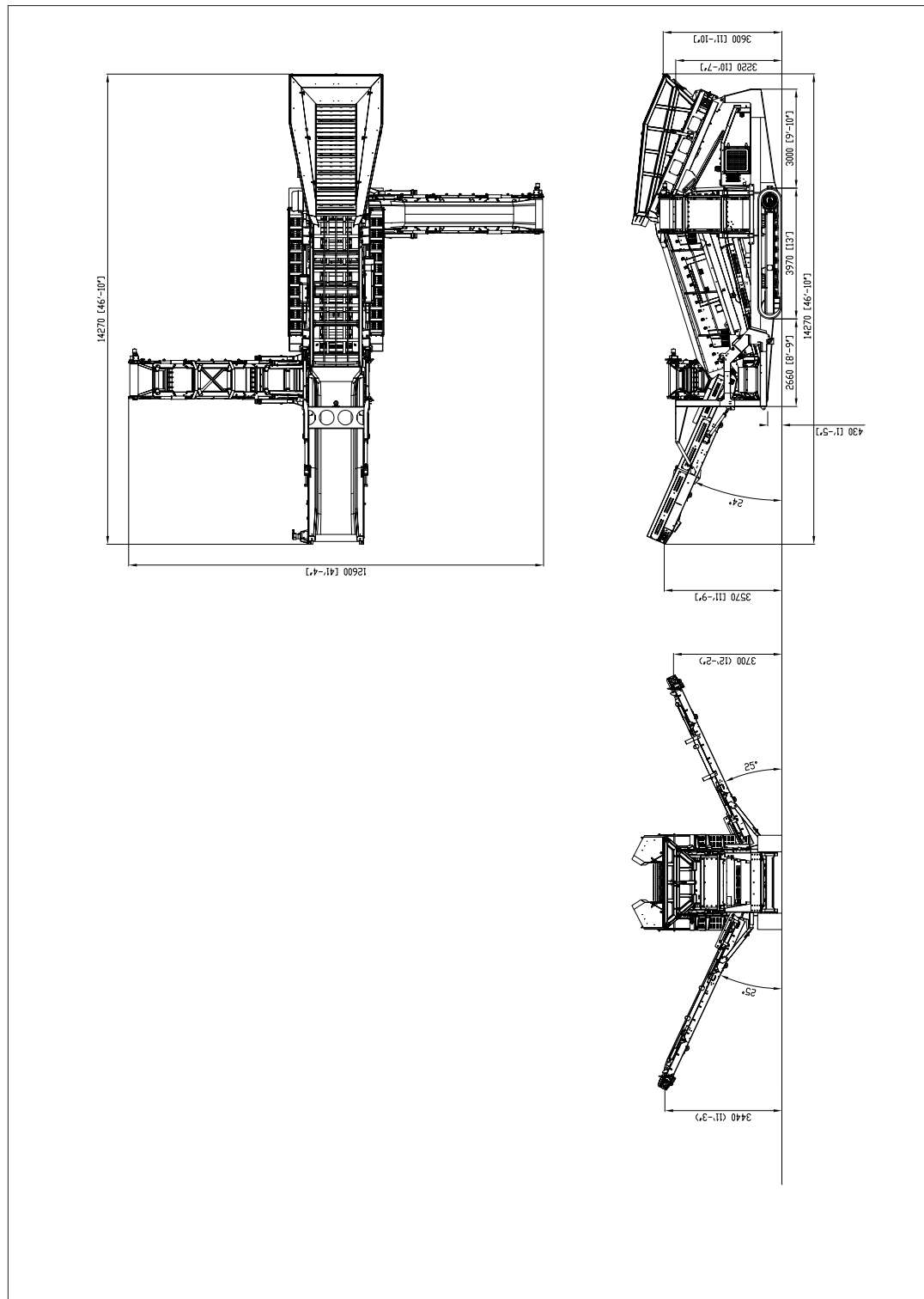
Approximate speed..... 1.0 - 1.8 Km/hr (0.62 Mph)

3.3 Machine Drawings

(1) Warrior 1800 Transport Plan



(2) Warrior 1800 Working Plan



3.4 Noise Levels

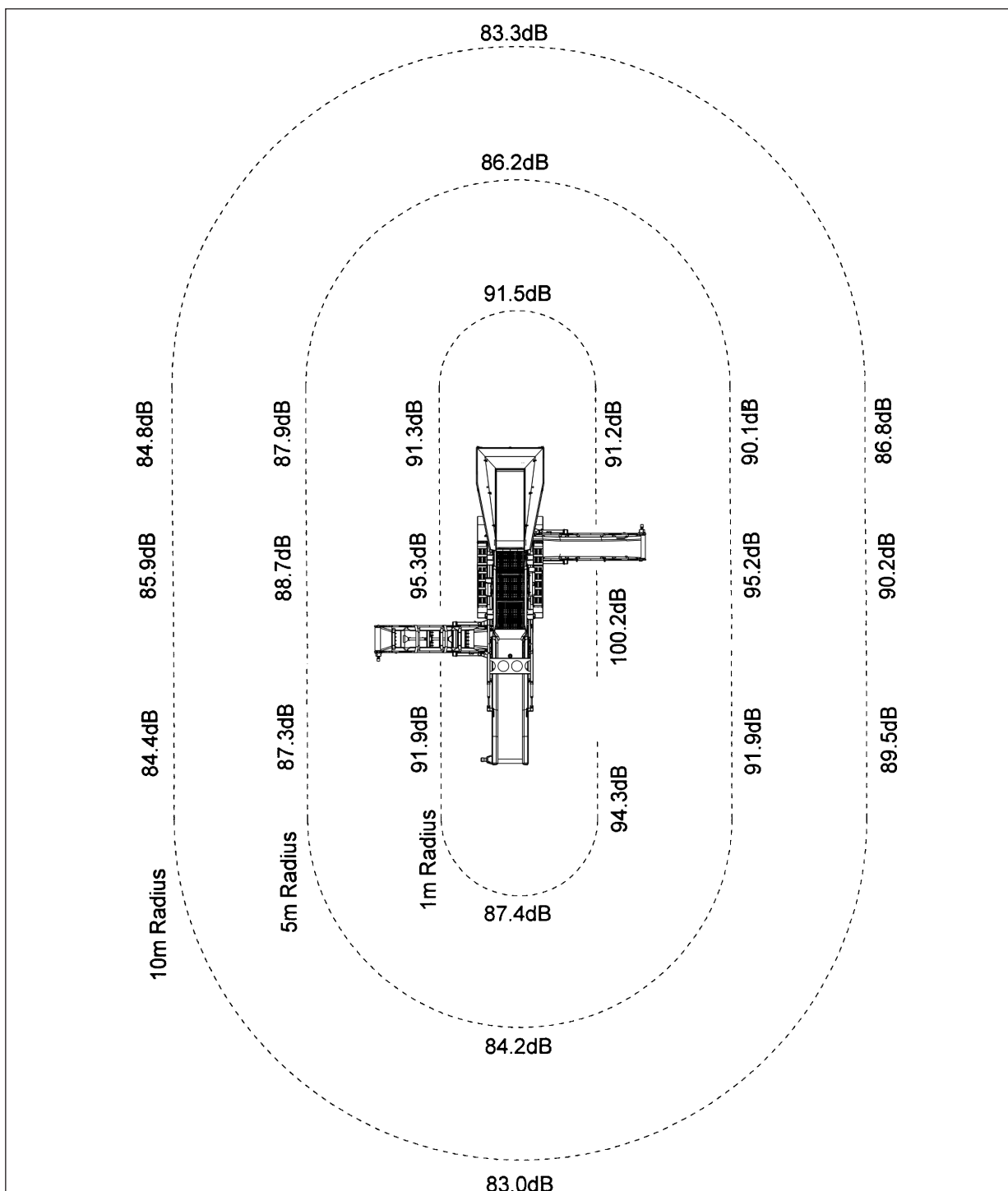


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4 Machine Description

4.1 General Information

(1) Identification Plate

The machine identification plate gives important information about the machine.

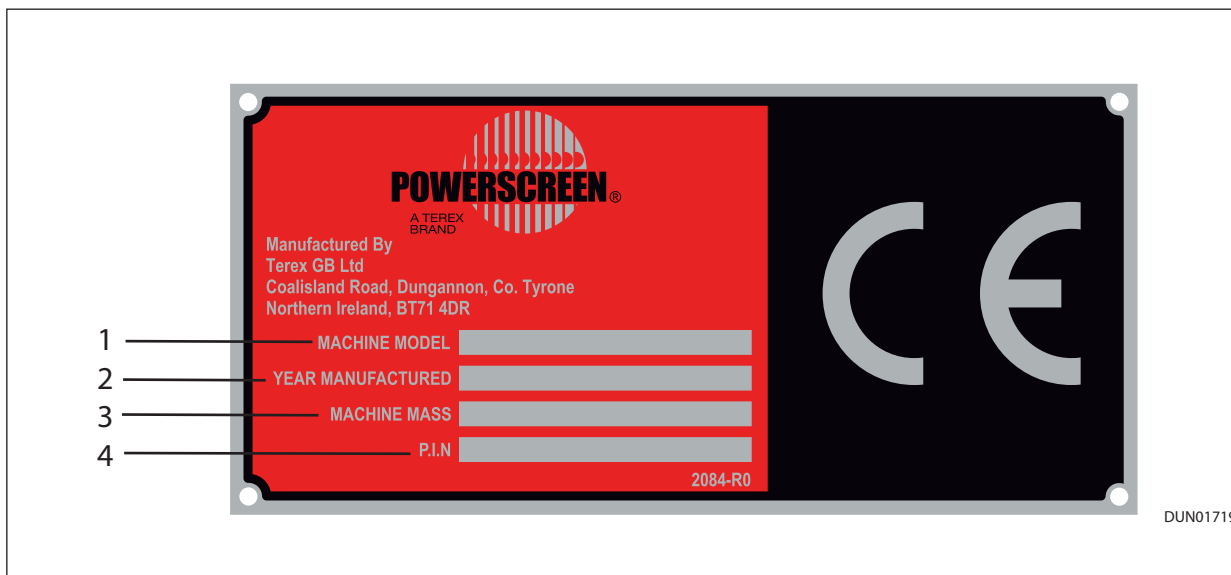


Figure 4.1 - Identification Plate

- 1 Machine model
- 2 Year manufactured
- 3 Machine mass
- 4 Serial number

The machine identification plate is located on the outside of the powerunit.

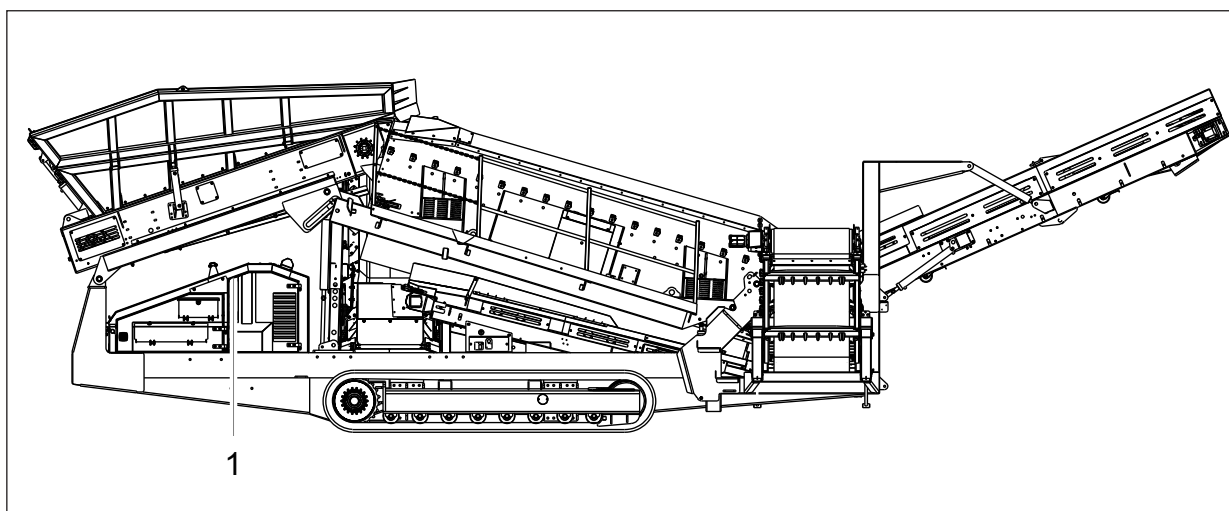


Figure 4.2 - Location of Machine Identification Plate

(2) Machine References

When using this handbook, at all times the right and the left hand references are viewed from the feeder end of the machine. When using this handbook, at all times the rear of the machine is situated at the feeder end.

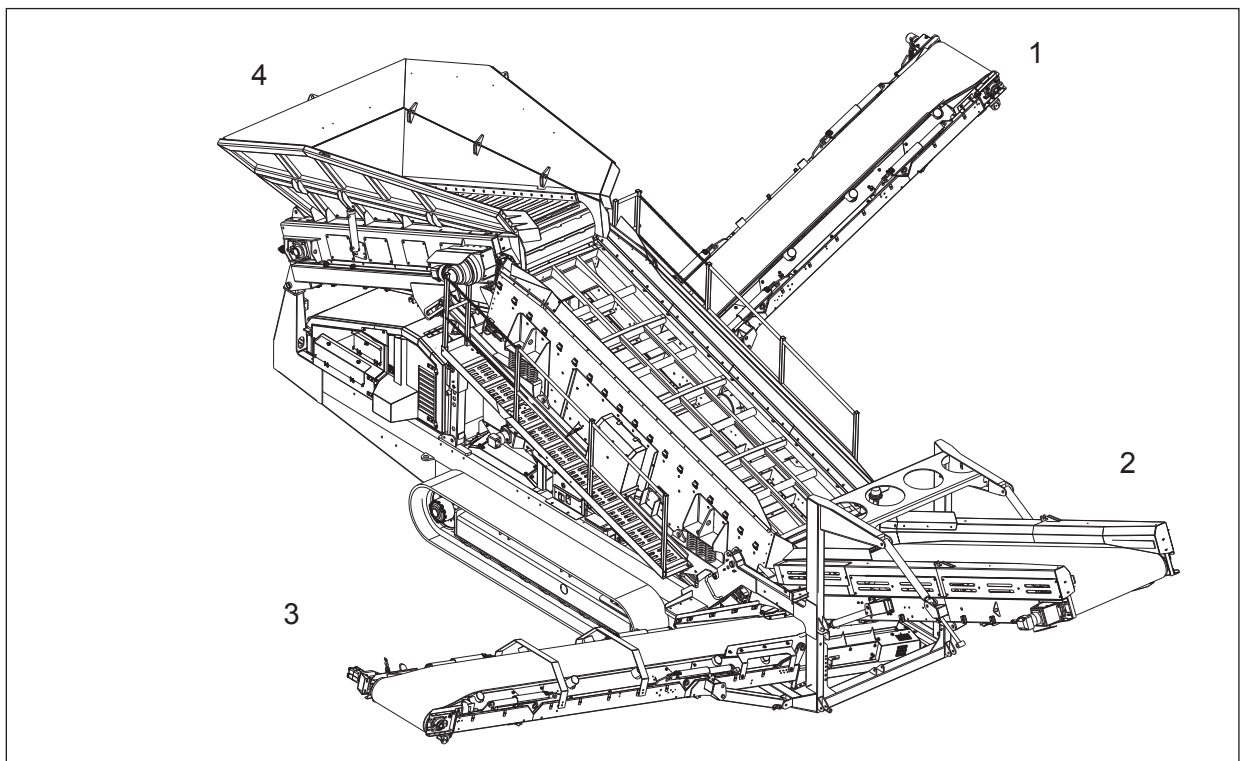
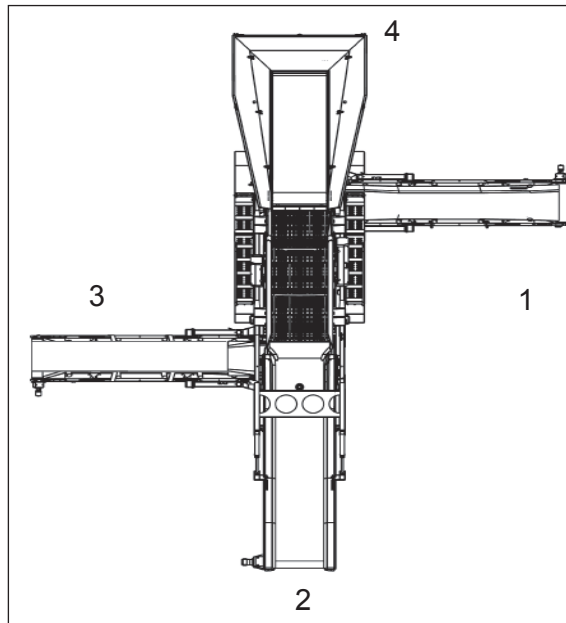


Figure 4.3 - Machine References

- 1 Left Hand Side
- 2 Front
- 3 Right Hand Side
- 4 Rear

4.2 Nomenclature and Technical Data

The following sections identify the main components of the machine and the term with which they are referred to in this manual.

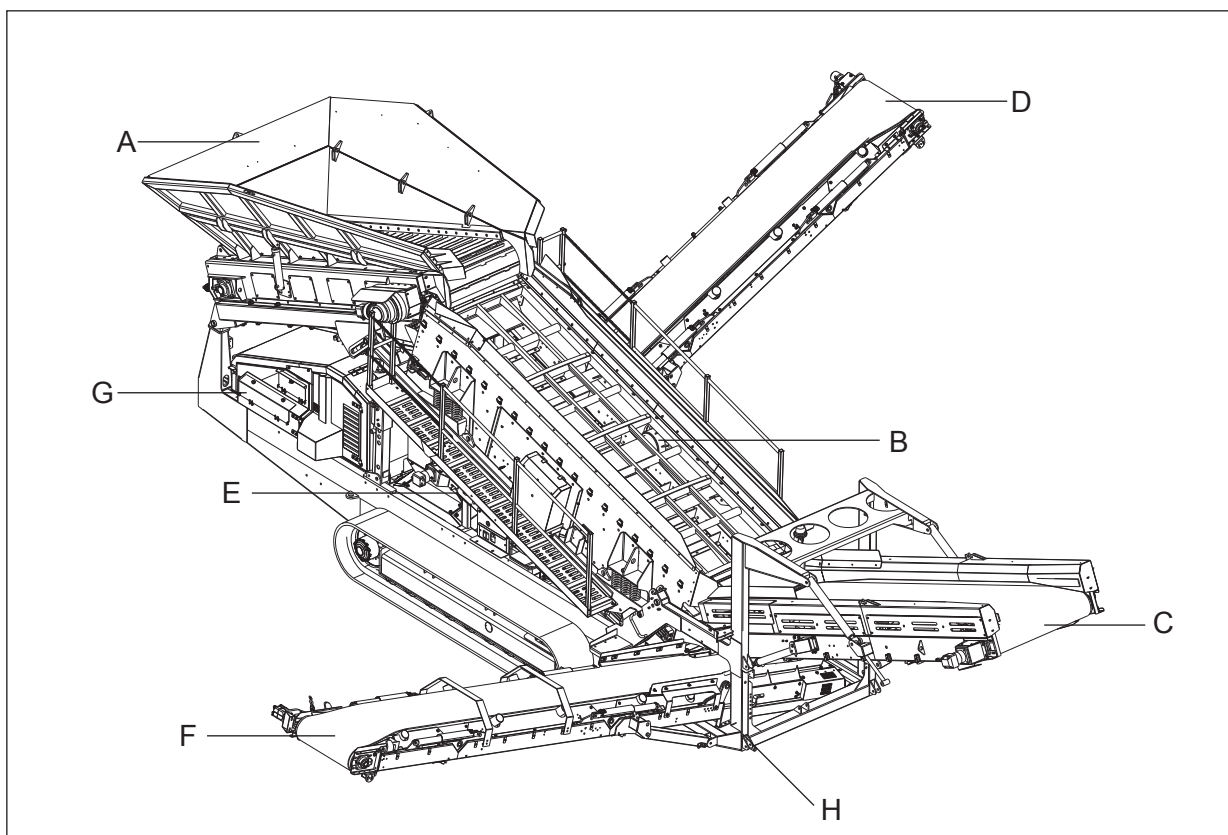


Figure 4.4 - Nomenclature and Technical Data

| ID | Construction Unit | Component |
|----|---------------------------|-------------------------------|
| A | Feeder unit | Feeder hopper/Feeder conveyor |
| B | Screen unit | Screen box |
| C | Tail conveyor (Oversize) | |
| D | Fines side conveyor | |
| E | Collection conveyor | |
| F | Mid product side conveyor | |
| G | Power unit | Engine |
| H | Chassis | |

4.3 Construction Units

(1) Feeder Unit (A)

The feeder unit consists of 2 main components, the hopper and conveyor.

A1 Feeder Unit

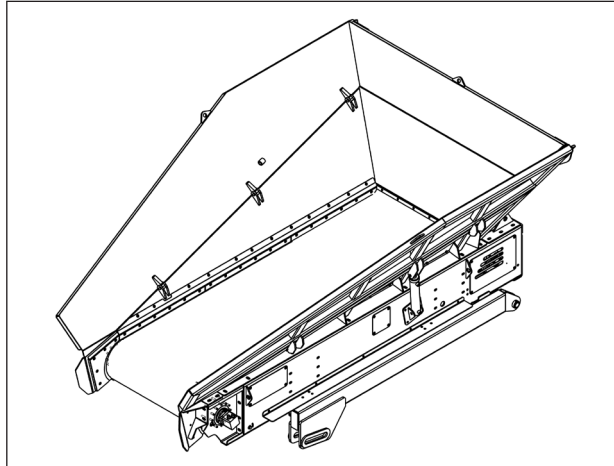


Figure 4.5 - Feeder Unit

A2 Feeder Hopper

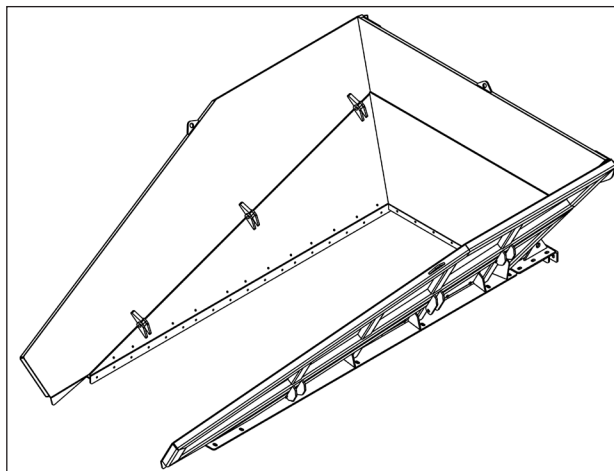


Figure 4.6 - Feeder Hopper

A3 Feeder Conveyor

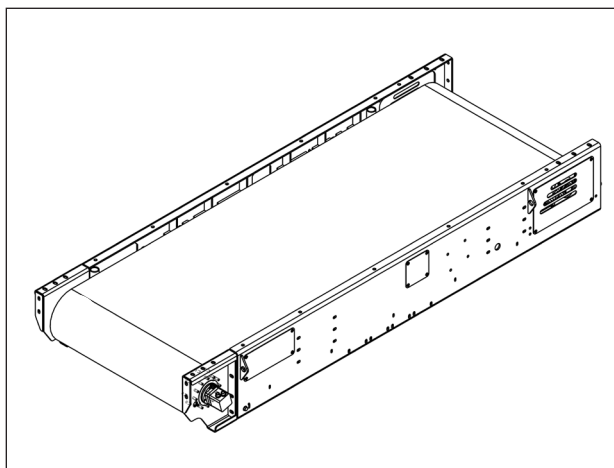


Figure 4.7 - Feeder Conveyor

A4 Apron Conveyor (Option)

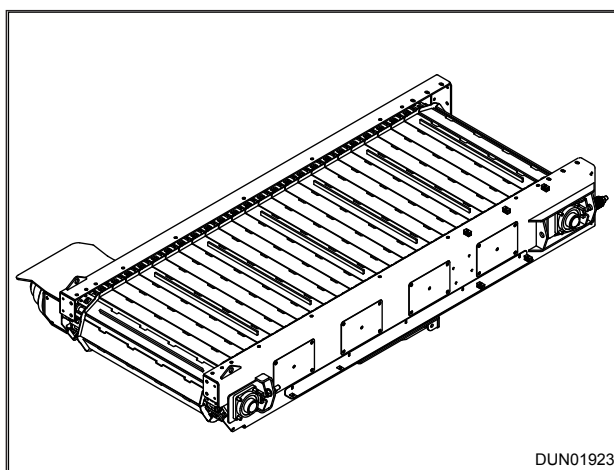


Figure 4.8 - A4 Apron Conveyor

(a) Feeder Conveyor

The feeder conveyor is attached to the hopper unit for the purpose of feeding material from the feed hopper and to the main conveyor.

The feeder belt is driven by two hydraulic motors with two variable speed gearboxes.

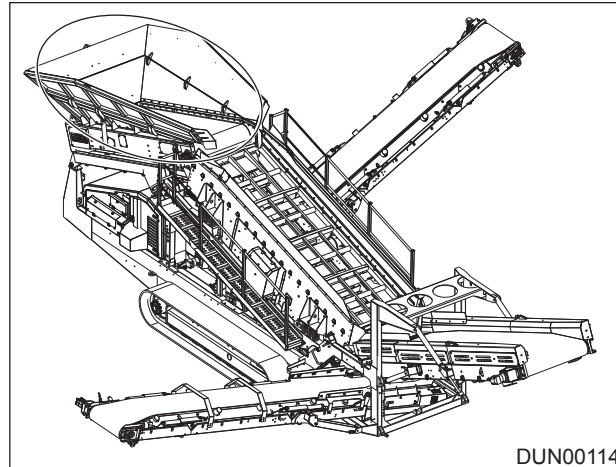


Figure 4.9 - Feeder Conveyor

Conveyor Belt Assembly

The conveyor belt assemblies on all machines consists of :

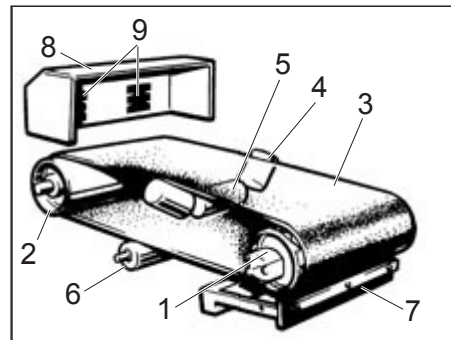


Figure 4.10 - Conveyor Belt Assembly

- 1 Drive drum and motor
- 2 Tail drum
- 3 Conveyor belting
- 4 Side rollers
- 5 Centre rollers
- 6 Return rollers
- 7 Belt scrapers
- 8 Guarding
- 9 Viewing apertures

(2) Collection Conveyor

The collection conveyor is attached to the chassis for the purpose of feeding material from the screen unit to the fines conveyor.

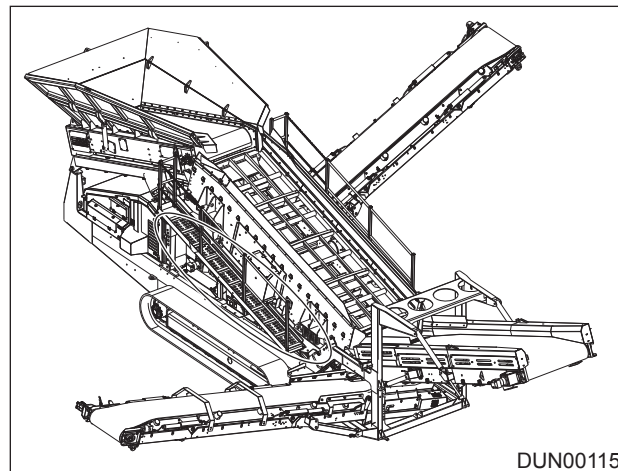


Figure 4.11 - Collection Conveyor

(3) Side Conveyors

The side conveyors are attached to the chassis for the purpose of feeding material from the screen unit to stockpile.

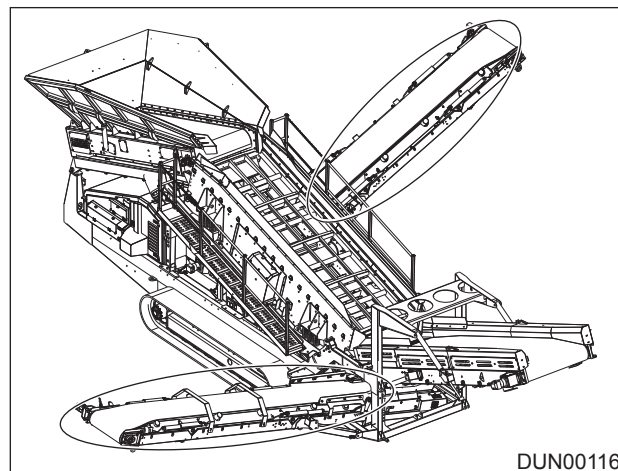


Figure 4.12 - Side Conveyors

(4) Tail Conveyor

The tail conveyor is attached to the chassis for the purpose of feeding material from the screen unit to stockpile.

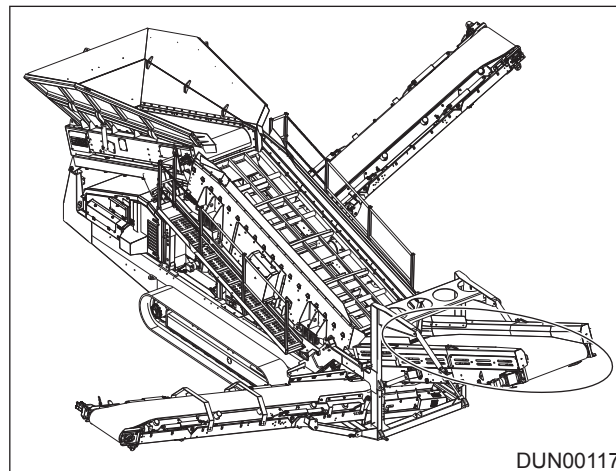


Figure 4.13 - Tail Conveyor

(5) Screen Unit

The screen unit is attached at the end of the feeder conveyor where it screens raw material into different sizes.

Screening action is provided by out of balance flywheels and an eccentric screenshaft in a conventional 2 bearing screen arrangement.

Material is fed onto the screen from the hopper by the feed conveyor. A range of mesh sizes are available and are side tensioned to the top deck and end tensioned to the bottom deck. All are designed to facilitate easy replacement.

Material is discharged from the screen unit onto the conveyors. Oversize material from the top deck is discharged to the tail conveyor. Midsize material is discharged to the midsize side conveyor. Fines material is collected in the collection conveyor and is conveyed to the fines conveyor for discharge to the fines stockpile.

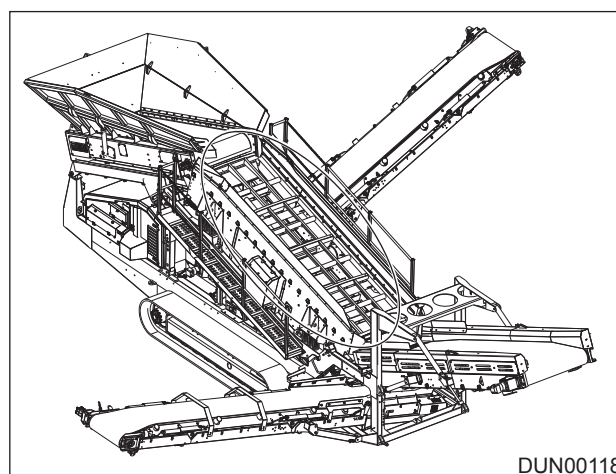


Figure 4.14 - Screen Unit

(6) Power Unit

The power unit is attached at the chassis, under the feeder unit. The power unit is completely enclosed, sound suppressed and lockable.

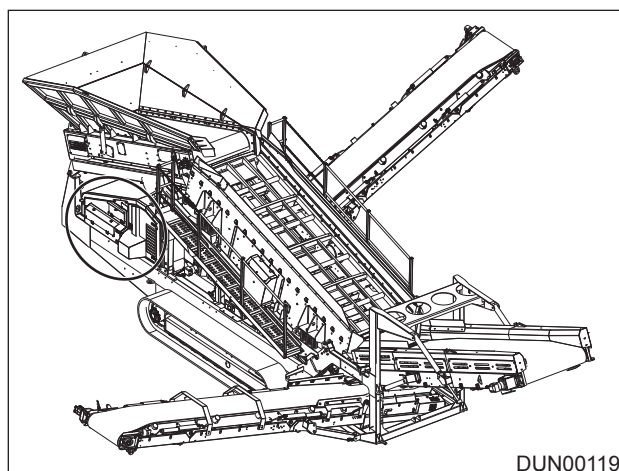


Figure 4.15 - Power Unit

The Warrior has up to eight control units.

The control valve unit (1), hand throttle (when fitted) (2) and control panel (3) are situated at the power unit on the right hand side of the machine.

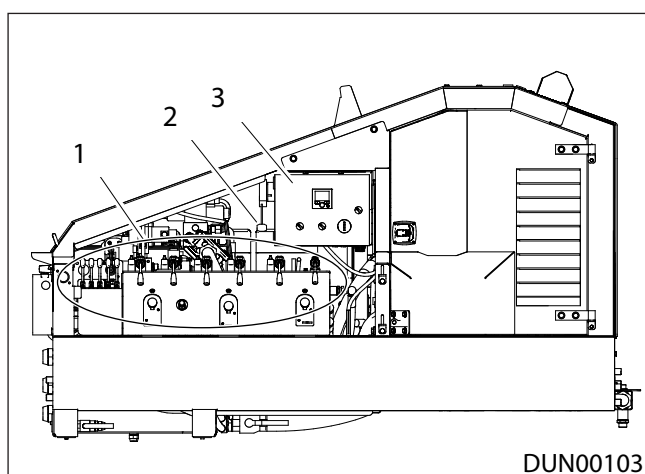


Figure 4.16 - Power Unit

The control valves (G4 & G5) are situated at the middle of the machine. They can be found to the right hand and left hand sides respectively, under the screen box.

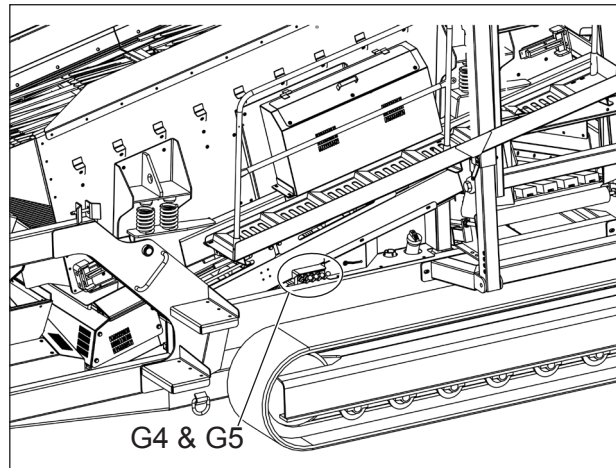


Figure 4.17 - Control Valves

The tracking control handsets are independent control units. They control the movement of the tracks.

Figure 4.18 shows the dual power control panel which is an option available on this machine.

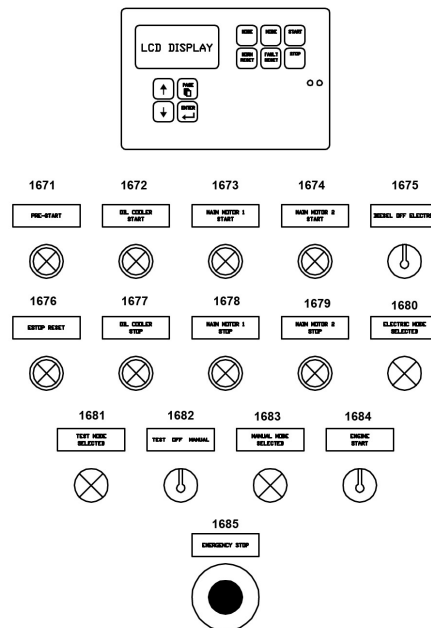


Figure 4.18 - Tier 3 MCU 200 Dual Power Control Panel (Control panels may vary)

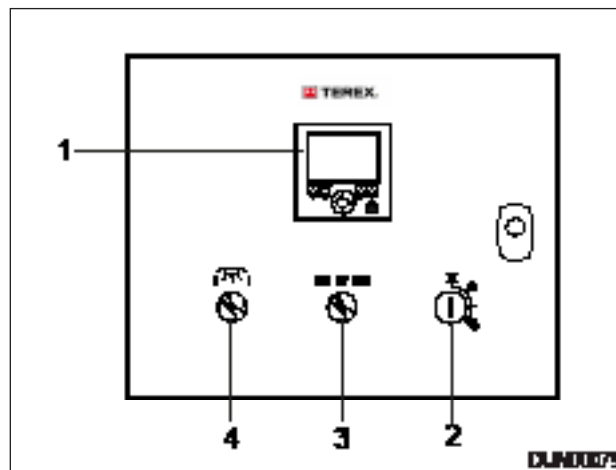


Figure 4.19 - MCU 300 Control Panel (Control panels may vary)

4.4 Control and Display Elements

(1) MCU 300 Control Panel - Tier 4

The main hydraulic control panel, fitted at ground level, has all the controls centrally located. This allows the operator to quickly and easily optimize production preventing unnecessary downtime. There is a display screen on the control panel which indicates the current state of the machine. Figure 4.22 shows the MCU 300 control panel.

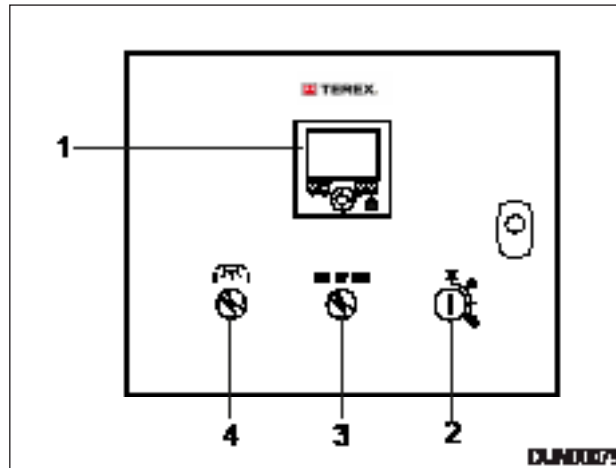


Figure 4.20 - Control Panel

- 1 MCU 300 Control panel display screen
- 2 Ignition switch
- 3 Engine speed switch
- 4 Powerunit light

When the ignition switch is turned to the ON position the Home Screen (Wait To Start) is displayed on the control panel display screen, this screen will only stay on for a few seconds until the engine warms up, Reference: Figure 4.21.

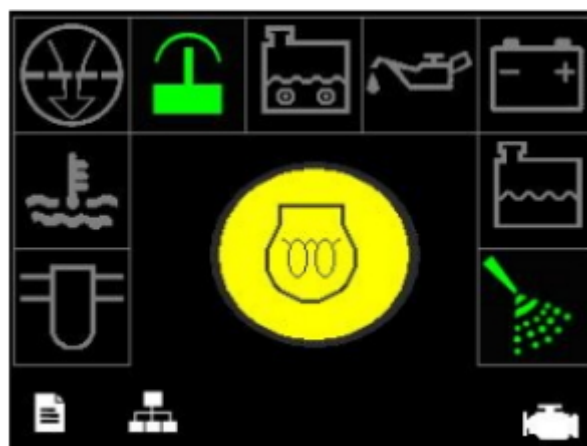


Figure 4.21 - Home Screen (Wait To Start)

When the engine is warmed up the Home Screen is displayed on the control panel display screen.

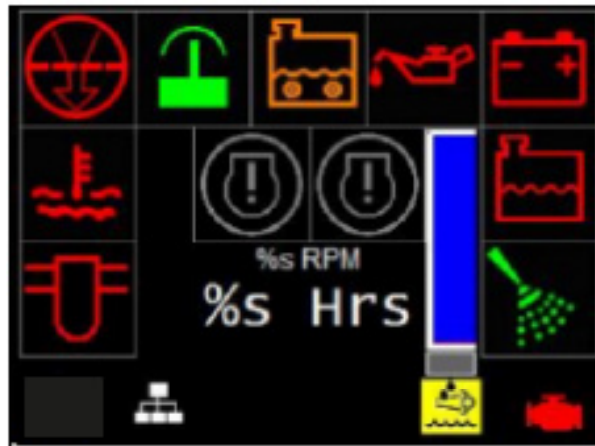


Figure 4.22 - Home Screen (No faults)

The total engine run hours are displayed in the centre of the home screen (Item 12, Figure 4.23).

Refer to Section 7.4 for more information on the operation of the MCU300 Control Panel.

If there are active faults these will be displayed on the home screen, Reference: Figure 4.23. An indicator light on the control panel display screen will illuminate when a machine fault occurs. The light or lights which illuminate will depend on the fault, Reference: Table 4.1.

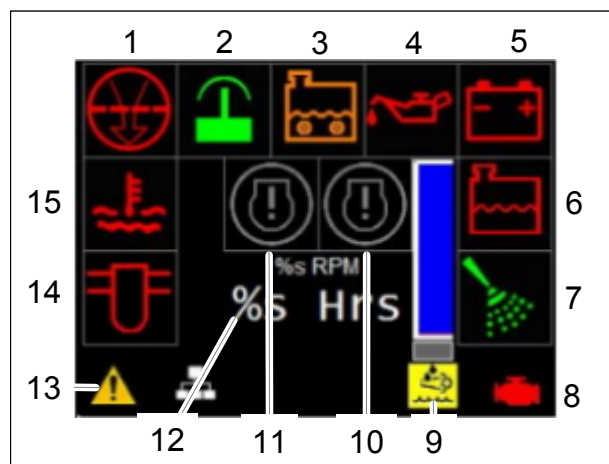


Figure 4.23 - Home Screen (Faults)

Table 4.1 - Display Screen Fault Codes

| ID | Name | Description |
|----|-------------------------------------|--|
| 1 | AIR FILTER RESTRICTION LAMP | RED – Air Filter Blocked AMBER – Blockage Removed (Machine key off/on needed to reset fault) SPN – 107 |
| 2 | EMERGENCY STOP LAMP | RED (Flashing) – ESTOP Activated AMBER – ESTOP Healthy (Machine key off/on needed to reset fault) GREEN – ESTOP Healthy |
| 3 | HYDRAULIC OIL LEVEL LOW LAMP | RED – Hydraulic oil level low AMBER – Level Healthy (Machine key off/on needed to reset fault) |
| 4 | OIL PRESSURE LAMP | RED – Engine Oil Pressure High SPN – 100 |
| 5 | BATTERY LAMP | RED – Battery voltage low (Alternator not Charging) |
| 6 | COOLANT LEVEL LAMP | RED – Engine Coolant level low SPN – 111 |
| 7 | FUEL SOLENOID LAMP | GREEN – Fuel Solenoid Engaged |
| 8 | ENGINE INFORMATION | Click to access the engine information screen If flashing red then a DM1 code is present |
| 9 | UREA LEVEL | Monitors the Adblue level in the tank. When the engine senses a low level the yellow symbol will flash and the bar at the bottom of the level will flash red. SPN – 5245 |
| 10 | ENGINE SHUTDOWN LAMP | RED – The shutdown lamp is used to warn the operator of the presence of critical active Engine Diagnostic Codes that necessitate the engine to possibly derate and shutdown. There are 2 levels, solid and flashing, flashing indicates a more severe fault. FLASHING: SPN – 3039 SOLID: SPN – 623 |
| 11 | ENGINE WARNING LAMP | AMBER – The warning/diagnostic lamp is used to warn the operator of the presence of an active Engine Diagnostic Code. There are 2 levels, solid and flashing, flashing indicates a more severe fault. FLASHING: SPN – 3038, 3040 & 3041 SOLID: SPN - 624 & 987 |
| 12 | ENGINE HOURS | Monitors the engine total hours of operation SPN – 247 |
| 13 | ACTIVE ALARM | Symbol will flash when there is an active alarm, Machine key on/off will be required to clear the symbol once fault has been fixed. |

| ID | Name | Description |
|----|--------------------------------|--|
| 14 | FUEL CONTAMINATION LAMP | RED – Engine Fuel Filter has detected contamination (Water/Dirt) SPN – 97 |
| 15 | ENGINE TEMPERATURE LAMP | RED – Engine temperature High SPN – 110 |

* The SPN number indicates the fault code.

The control panel also displays an engine fault screen (Figure 4.24) if there is a problem with the engine.



Figure 4.24 - Engine Fault Screen

Refer to the table in Troubleshooting for a list of the engine fault codes. Refer to the engine manufacturer's manual or your local dealer for more information.

(2) Tier 4 Dual Power

(a) Control Panel Component Identification

Figure 4.25 below shows the dual power control panel as used on mobile machines. Control panels may vary. Table 4.2 identifies each component on the control panel door.

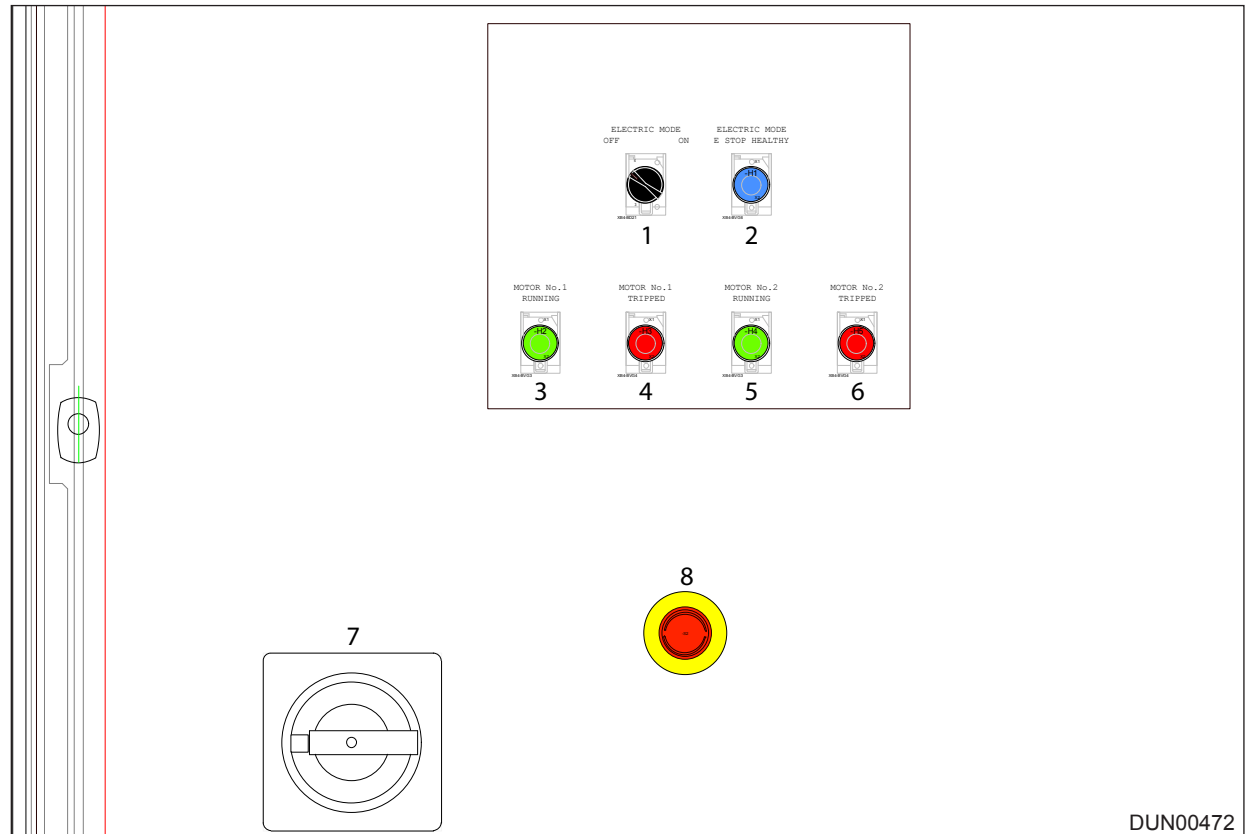


Figure 4.25 - Tier 4 Dual Power Control Panel

Table 4.2 below gives the description of the various switches and lamps on the tier 4 dual power control panel door.

Table 4.2 - Tier 4 Dual Power Control Panel Door Component Identification

| ID | Description |
|----|------------------------------|
| 1 | Electric mode ON/OFF switch |
| 2 | Electric mode E-stop healthy |
| 3 | Motor No. 1 Running |
| 4 | Motor No. 1 Tripped |
| 5 | Motor No. 2 Running |
| 6 | Motor No. 2 Tripped |
| 7 | Main Isolator Switch |
| 8 | Emergency Stop |

(3) Tier 3 Dual Power

(a) Control Panel Component Identification

Figure 4.26 below shows the Dual Power control panel as used on the mobile machines. Control panels may vary.

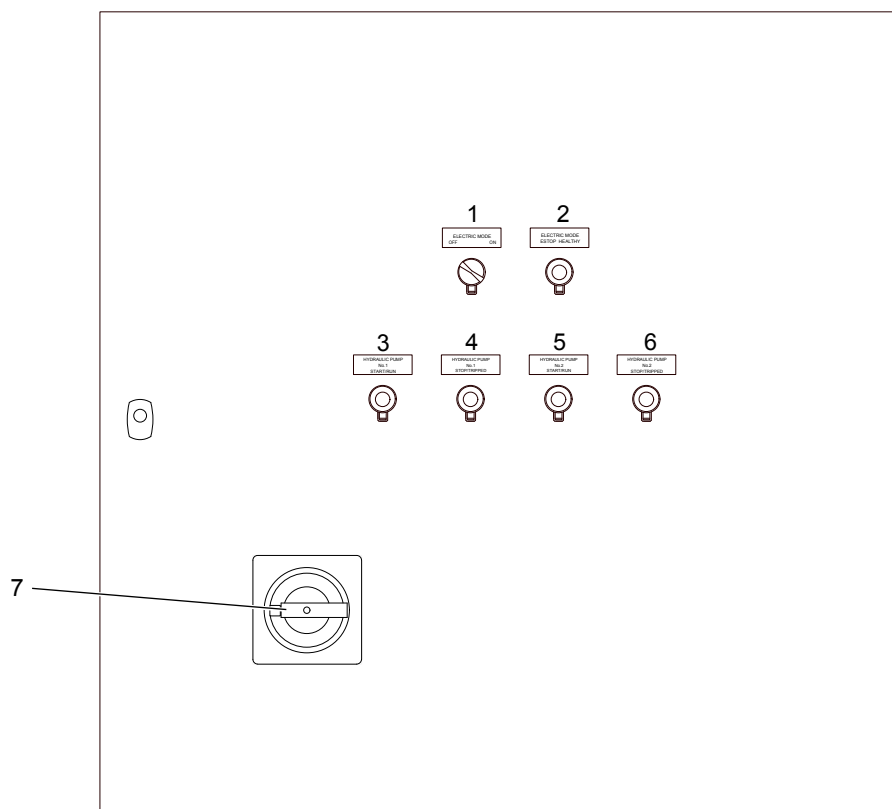


Figure 4.26 - Dual Power Control Panel

Table 4.3 below gives the description of the various switches and lamps on the dual power control panel door

Table 4.3 - Control Panel Door Component Identification

| ID | Description | Function |
|----|--|---------------------------------------|
| 1 | MCU200 Controller | Diesel Mode Control |
| 2 | Pre-start Button / Lamp | Electric Mode Prestart |
| 3 | Oil Cooler Start button / Run Lamp | Electric Mode Oil Cooler start |
| 4 | Motor 1 Start button / Run Lamp | Electric Mode Motor 1 start |
| 5 | Motor 2 Start button / Run Lamp | Electric Mode Motor 2 start |
| 6 | Diesel / Electrical Mode Select Switch | Select between Electric / Diesel Mode |
| 7 | EStop Reset button / Lamp | Electric Mode EStop Reset |
| 8 | Oil Cooler Stop button / Trip Lamp | Electric Mode Oil Cooler stop |
| 9 | Motor 1 Stop button / Trip Lamp | Electric Mode Motor 1 stop |
| 10 | Motor 2 Stop button / Trip Lamp | Electric Mode Motor 2 stop |
| 11 | Electric Mode On Lamp | Indication of Electric Operating Mode |
| 12 | Test Mode Lamp | Indication of Test Mode |
| 13 | Test / Off / Manual Selector Switch | Select between Test / Manual Mode |
| 14 | Manual Mode Lamp | Indication of Manual Mode |
| 15 | Ignition Switch | Switch on Power in Diesel Mode |
| 16 | Emergency Stop button | EStop Plant in Diesel / Electric Mode |
| 17 | Diagnostic / Maintenance Button / Lamp | Achieve Flash Codes |
| 18 | Speed Selection Switch | Select Engine Speed in Diesel Mode |

(b) Control Panel Internal Component Identification

Figure 4.27 below shows the internal component layout in the main control panel on Dual Power Machines.

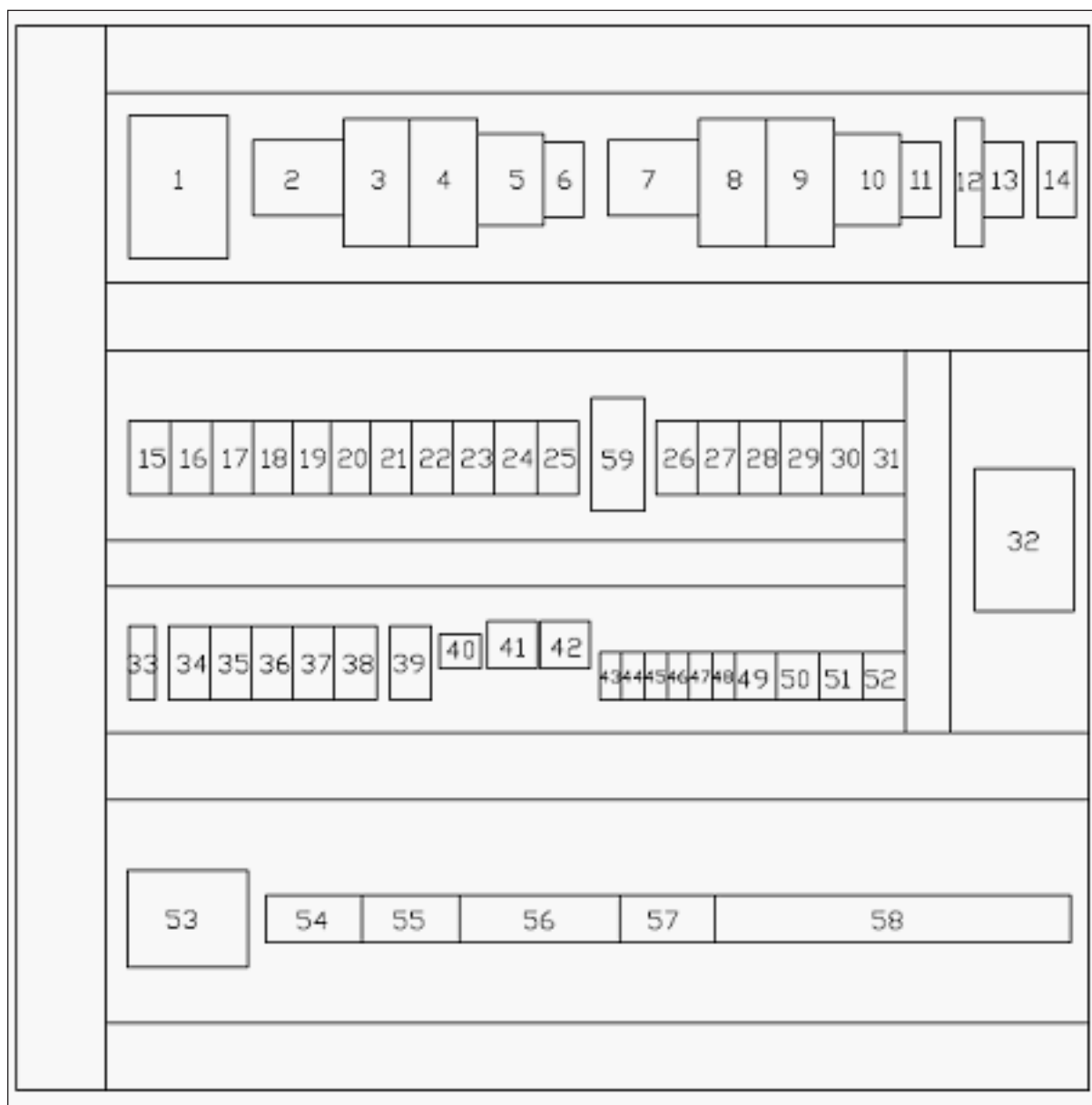


Figure 4.27 - Main Control Panel Internal Component Layout

Table 4.4 below gives the description of the internal components used in the Dual Power main control panel

Table 4.4 - Main Panel Internal Component Identification

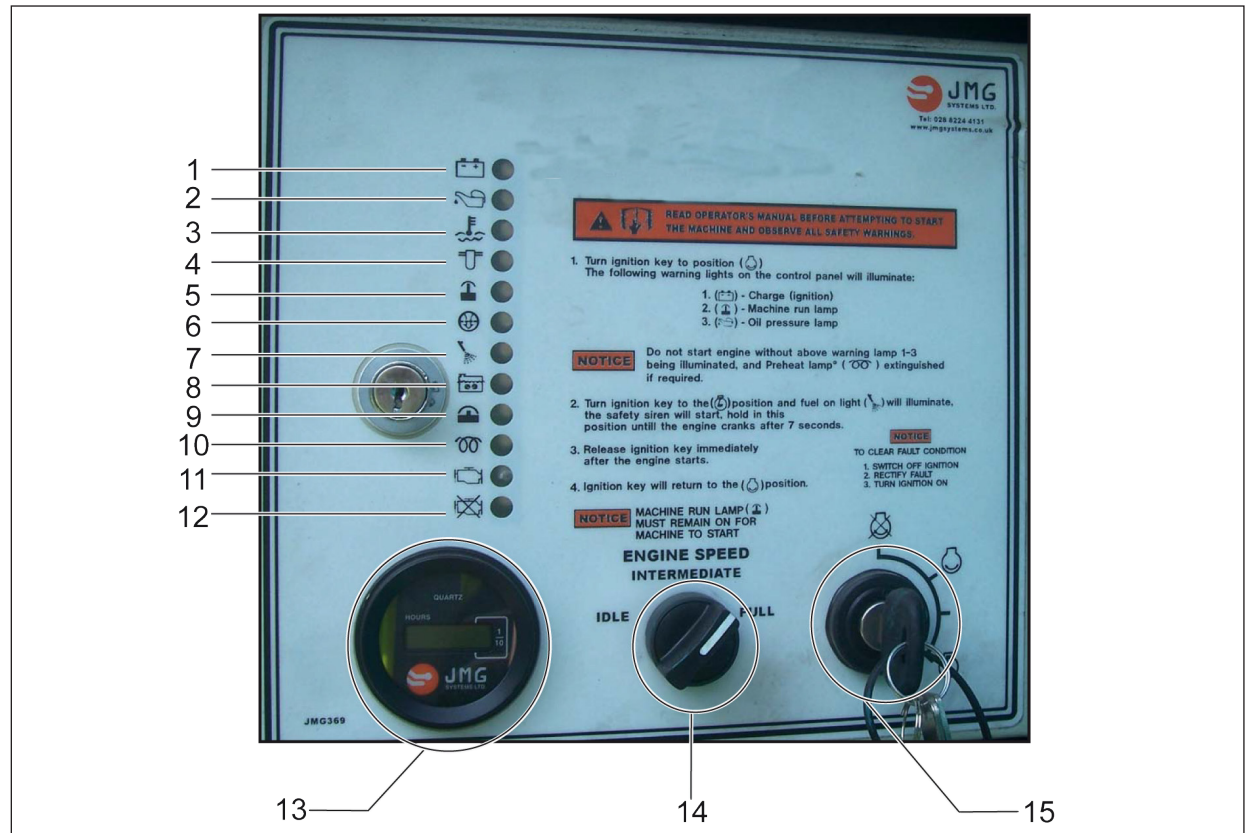
| ID | Tag | Description |
|----|-------|---|
| 1 | PS1 | 110VAC – 12VDC 25A Power Supply |
| 2 | CB1 | Motor 1 MCB |
| 3 | KM1 | Motor 1 Main Contactor |
| 4 | KM1.1 | Motor 1 Delta Contactor |
| 5 | KM1.2 | Motor 1 Star Contactor |
| 6 | T3 | Motor 1 Star / Delta Timer |
| 7 | CB2 | Motor 2 MCB |
| 8 | KM2 | Motor 2 Main Contactor |
| 9 | KM2.1 | Motor 2 Delta Contactor |
| 10 | KM2.2 | Motor 2 Star Contactor |
| 11 | T4 | Motor 2 Star / Delta Timer |
| 12 | ESR | Emergency Stop Safety Relay |
| 13 | K1 | Emergency Stop Auxiliary Relay |
| 14 | X10 | Auxiliary Machine Interlock Terminals |
| 15 | CB3 | 415 – 110 Transformer DP Circuit Breaker |
| 16 | CB4 | 110VAC Control Circuit Breaker |
| 17 | CB5 | 110VAC – 12VDC Power Supply Circuit Breaker |
| 18 | T1 | Pre-start Timer 1 |
| 19 | T2 | Pre-start Timer 2 |
| 20 | T5 | Fan Interlock Delay Timer |
| 21 | R4 | Pre-start Relay 1 |
| 22 | R5 | Pre-start Relay 2 |
| 23 | R6 | Pre-start Relay 3 |
| 24 | K2 | Remote Interlock Relay |
| 25 | HRC | Hours Run Clock (Electric Mode) |
| 26 | R1 | Test Mode Relay 1 |
| 27 | R2 | Test Mode Relay 2 |
| 28 | R3 | Manual Mode Relay |
| 29 | R7 | Motor 1 Trip Relay |
| 30 | R8 | Motor 2 Trip Relay |
| 31 | R9 | Electric Mode On Relay |
| 32 | TX1 | 415VAC – 110VAC 630VA Transformer |
| 33 | CB6 | 12VDC Power Supply Control Circuit Breaker |
| 34 | R11 | Remote Tipping Grid Supply Interlock Relay |
| 35 | R12 | Tracks Enabled Relay |
| 36 | IR1 | EStop Healthy Signal Interface Relay |
| 37 | IR2 | Keyswitch Start Signal Interface Relay |
| 38 | IR3 | Radio Tracks On Relay |

| ID | Tag | Description |
|----|-------|--|
| 39 | X1/X2 | 12VDC Power Rail Terminals (Electric Mode) |
| 40 | AR6 | Engine Crank Automotive Relay 70A |
| 41 | AR11 | Engine Preheat Automotive Relay 100A |
| 42 | AR1B | Battery Power On Automotive Relay 100A |
| 43 | AR12 | Fan 2 Delay Automotive Relay (Electric Mode) 30A |
| 44 | AR1A | Mains On Interlock Automotive Relay 15A |
| 45 | AR7 | ECU Ignition Relay / Fuel Solenoid Relay 15A |
| 46 | AR8 | Siren / Beacon Automotive Relay 15A |
| 47 | AR9 | Fan 1 Ground Interlock Automotive Relay 30A |
| 48 | AR10 | Fan 2 Ground Interlock Automotive Relay 30A |
| 49 | AR2 | Fan 1 Supply Interlock Automotive Relay 30A |
| 50 | AR3 | Fan 2 Supply Interlock Automotive Relay 30A |
| 51 | AR4 | Fan 1 On Automotive Relay 30A |
| 52 | AR5 | Fan 2 On Automotive Relay 30A |
| 53 | ISO1 | Main Isolator 160A 3P |
| 54 | 1UVW | Main Motor 1 Connection Terminals |
| 55 | 2UVW | Main Motor 2 Connection Terminals |
| 56 | TERM | Terminals |
| 57 | X6 | Automotive Fuses |









(4) Tier 3 (Including Constant Speed)

(a) Control Panel

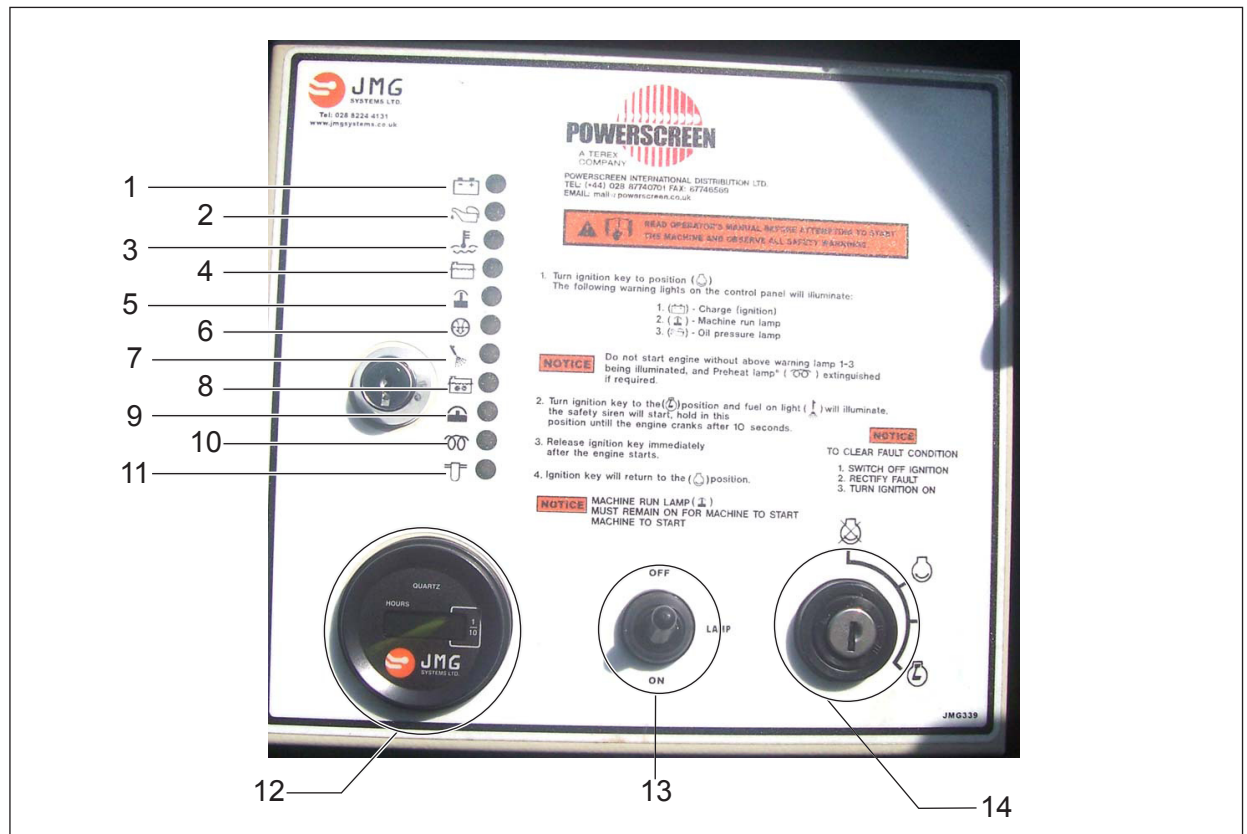
CAT Main Electronic Panel



| ID | Symbol | Name | Description |
|----|--------|-----------------------------------|---|
| 1 | | Battery Charging warning light | This light should illuminate when the key switch is turned to the ON position. As soon as the engine starts it should go out. If it fails to illuminate when the key is turned on, or if it illuminates when the engine is running, it indicates that there is a fault in the charging circuit. Stop the engine and have the circuit checked. |
| 2 | | Oil Pressure Warning Light | This light should illuminate when the key switch is turned to the ON position. As soon as the engine starts it should go out. If a fault occurs in the oil pressure system the engine will shutdown after 2 seconds. |
| 3 | | Coolant Temperature Warning Light | This light will only illuminate if a problem occurs in the coolant system, such as low water level. The engine will shut down 5 seconds after the fault has been detected. |
| 4 | | Fuel contamination light | This light illuminates if a problem occurs in the fuel system, such as water contamination. The engine will shut down 1 second after the fault has been detected. |








| ID | Symbol | Name | Description |
|----|---|---|--|
| 5 |  | Engine Run Light | This light will only illuminate when the key is turned to the ON position and will remain on at all times. If it goes out then an E-Stop has been pressed and the engine will shut down immediately. |
| 6 |  | Air Breather Restriction Warning Light | This light should illuminate if a problem occurs in the air breather system. After 30 minutes the engine will shut down but the light will remain on until the fault has been repaired. |
| 7 |  | Fuel On Light | This light should illuminate when the engine starts and will remain on at all times. It will go out when the engine has been shut down. |
| 8 |  | Hydraulic Oil Level Warning Light (not shown) | This light will only illuminate if the hydraulic oil level is low. The engine will shut down 5 seconds after the fault has been detected. |
| 9 |  | E-Stop Activated Light | This light will only illuminate when an E-Stop has been pressed. This will immediately shut down the engine. If the light is flashing after shut down, this indicates that the manual tracking umbilical E-Stop has been pressed. If the light remains on constantly then another E-Stop has been pressed. |
| 10 |  | Engine Pre-Heater Indicator Light | This light only illuminates when the pre-heat button is operated during start up. |
| 11 |  | CAT Warning Light | This light will only illuminate when the Caterpillar engine or Caterpillar component has developed a problem. This can result in an engine shut down. In the event of a fault causing this light to illuminate you should contact your local Caterpillar dealer for further information. |
| 12 |  | CAT ECU Warning Light | This light will only illuminate when the Caterpillar engine control unit detects a problem. This can result in an engine shut down. In the event of a fault causing this light to illuminate you should contact your local Caterpillar dealer for further information. |
| 13 | | Hour Clock | This will record the number of hours that the engine has been running. |
| 14 | | Throttle Control/ Two-speed tracking | This is used to control the engine throttle by selecting one of the 3 speeds.. On constant speed machines there is no throttle switch, instead it is a two-speed tracking switch. |
| 15 | | Key Start Switch | This is used to start the engine when required. |

CAT Manual Throttle



| ID | Symbol | Name | Description |
|----|--------|-----------------------------------|---|
| 1 | | Battery Charging Warning Light | This light should illuminate when the key switch is turned to the ON position. As soon as the engine starts it should go out. If it fails to illuminate when the key is turned on, or if it illuminates when the engine is running, it indicates that there is a fault in the charging circuit. Stop the engine and have the circuit checked. |
| 2 | | Oil Pressure Warning Light | This light should illuminate when the key switch is turned to the ON position. As soon as the engine starts it should go out. If a fault occurs in the oil pressure system the engine will shutdown after 2 seconds |
| 3 | | Coolant Temperature Warning Light | This light will only illuminate if a problem occurs in the coolant system, such as low water level. The engine will shut down 5 seconds after the fault has been detected.. |
| 4 | | Coolant Level Warning Light | This light will only illuminate if a problem occurs in the coolant system, such as low water level. The engine will shut down 5 seconds after the fault has been detected. |

4 Machine Description

| ID | Symbol | Name | Description |
|----|---|---|--|
| 5 |  | Engine Run Light | This light will only illuminate when the key is turned to the ON position and will remain on at all times. If it goes out then an E-Stop has been pressed and the engine will shut down immediately. |
| 6 |  | Air Breather Restriction Warning Light | This light should illuminate if a problem occurs in the air breather system. After 30 minutes the engine will shut down. The light will remain on until the fault has been repaired. |
| 7 |  | Fuel On Light | This light should illuminate when the engine starts and will remain on at all times. It will go out when the engine has been shut down. |
| 8 |  | Hydraulic Oil Level Warning Light (Not Shown) | This light will only illuminate if the hydraulic oil level is low. The engine will shut down 5 seconds after the fault has been detected.. |
| 9 |  | E-Stop Activated Light | This light will only illuminate when an E-Stop has been pressed. This will immediately shut down the engine. If the light is flashing after shut down, this indicates that the manual tracking umbilical E-Stop has been pressed. If the light remains on constantly than another E-Stop has been pressed. |
| 10 |  | Engine Pre-Heater Indicator Light | This light only illuminates when the pre-heat button is operated during start up. |
| 11 |  | Fuel Contamination Light | This light illuminates if a problem occurs in the fuel system, such as water contamination. The engine will shut down 1 second after the fault has been detected. |
| 12 | | Hour Clock | This will record the number of hours that the engine has been running. |
| 13 | | Optional Work Light Switch | This optional light can be switched on to give more light when working at the power unit. |
| 14 | | Key Start Switch | This is used to start the engine when required. |

Engine Pre-heat - STD Diesel Unit only

If an engine pre-heat sequence was installed to the control panel during manufacture, it will be either automatic or manual.

If it is automatic then the pre-heat light will illuminate when the key is turned to the start position (Item 3), Reference: Figure 4.28. The engine will crank automatically once the pre-heat operation has been completed and the light will go out.

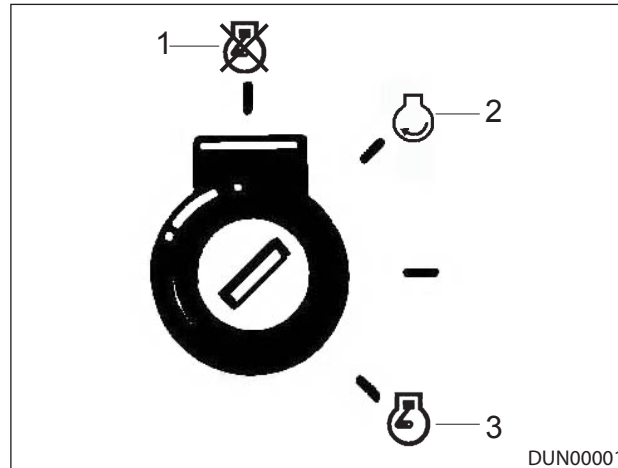


Figure 4.28 - Ignition Key Positions

If manual pre-heat has been fitted then the light will illuminate when the key is turned to the pre-heat position. The engine can be manually preheated by holding in the preheat button (Item 1) on the side of the control panel, Reference: Figure 4.29. The light will extinguish after the preheat operation has been completed and the key can be turned to the start position to crank the engine.

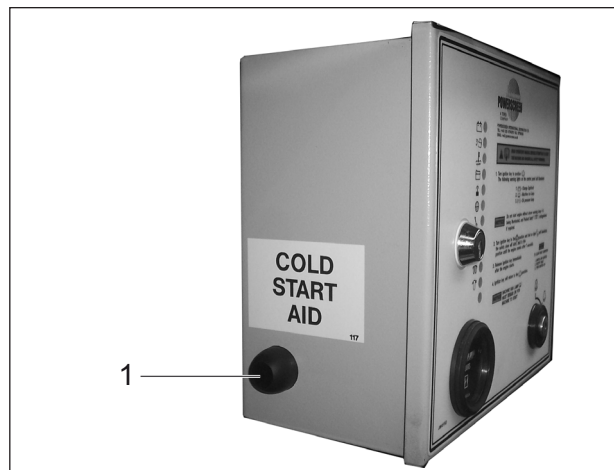


Figure 4.29 - Engine Pre Heat Button

(6) Manual Tracking System

Figure 4.30 below shows the manual tracking umbilical layout.

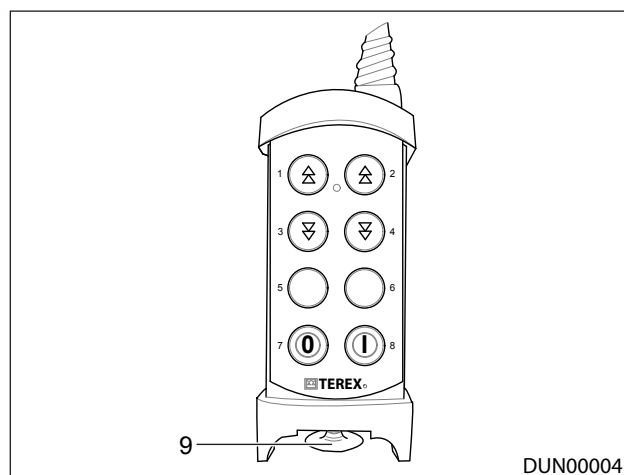


Figure 4.30 - Tracking Umbilical Layout

Table 4.5 below gives a description of each button on the tracking umbilical shown above.

Table 4.5 - Tracking Umbilical Layout

| ID | Description |
|----|---------------------|
| 1 | Left Track Forward |
| 2 | Right Track Forward |
| 3 | Left Track Reverse |
| 4 | Right Track Reverse |
| 5 | Unused |
| 6 | Unused |
| 7 | Stop Tracks |
| 8 | Start Tracks |

(7) Teleradio Remote Tracking Kit

Figure 4.31 below shows the Teleradio Radio Remote Tracking transmitter layout.

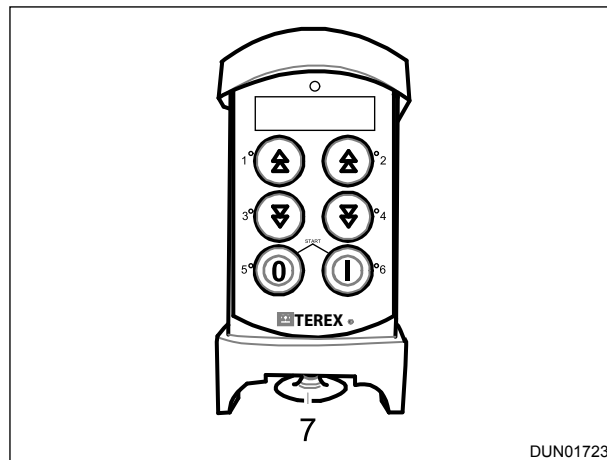


Figure 4.31 - Radio Remote Tracking Layout.

Table 4.6 below gives a description of each button on the Radio Remote Tracking transmitter shown above.

Table 4.6 - Radio Remote Tracking

| ID | Description |
|----|---------------------|
| 1 | Left Track Forward |
| 2 | Right Track Forward |
| 3 | Left Track Reverse |
| 4 | Right Track Reverse |
| 5 | Stop Tracks |
| 6 | Start Tracks |
| 7 | Machine Stop |

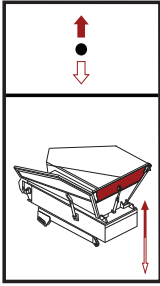
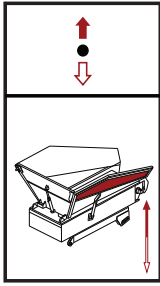
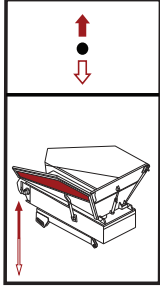
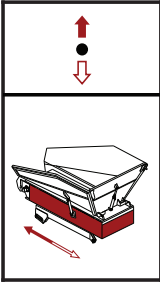
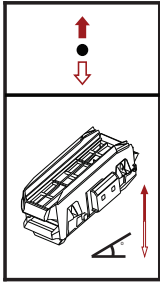
4.5 Pictorial Decal Descriptions

Pictorial decals have been placed on the machine to ensure that the machine is correctly operated and maintained. Operations decals describe the operations of levers on the machine. Information decals give details about how to correctly operate and maintain the machine.

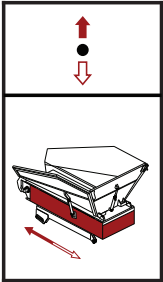
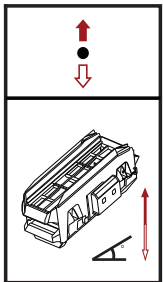
(1) Machine Operations Decals

Each operation decal is placed on the machine beside the corresponding lever or control. The following tables give short explanations of each operation decal used on the machine. The operations of the levers or controls will remain the same. The up arrow in the decals indicates moving the lever forward or up. The circle in the decals indicates the neutral position. The down arrow in the decals indicates moving the lever back or down. The new pictorial decals contain an image of a component or of the machine with a shaded component. This indicates the part of the machine and the operation that the lever controls. The conveyor orientation may differ from the decal dependent on the machine option.

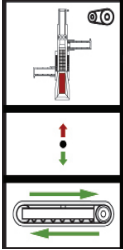
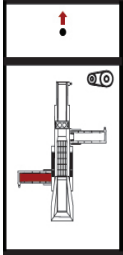
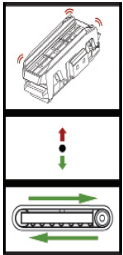
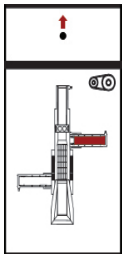
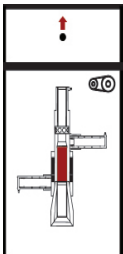
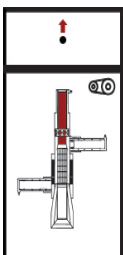
Auxiliary Control Bank

| New Decal | Explanation | |
|---|-------------|--------------------------------|
|  | ↑ | Raise Hopper Back |
| | ● | Hold |
| | ↓ | Lower Hopper Back |
|  | ↑ | Raise Hopper Right Hand Side |
| | ● | Hold |
| | ↓ | Lower Hopper Right Hand Side |
|  | ↑ | Raise Hopper Left Hand Side |
| | ● | Hold |
| | ↓ | Lower Hopper Left Hand Side |
|  | ↑ | Raise Hopper Slide |
| | ● | Hold |
| | ↓ | Lower Hopper Slide |
|  | ↑ | Raise Screen Angle/Jack Up Box |
| | ● | Hold |
| | ↓ | Lower Screen Angle/Jack Up Box |

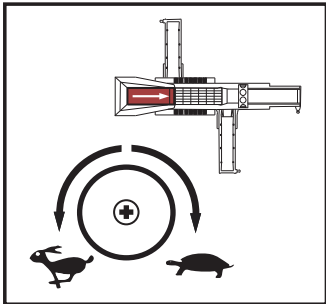
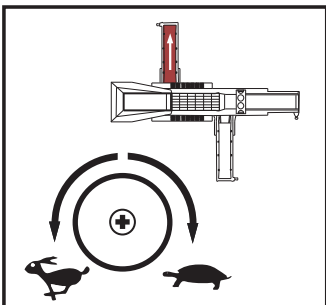
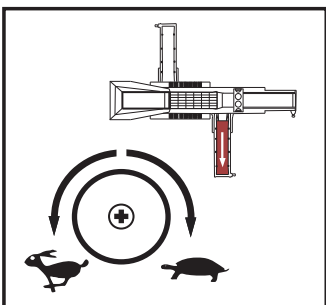
Auxiliary Control Bank Warrior Light Duty

| New Decal | Explanation | |
|---|-------------|--------------------------------|
|  | ↑ | Raise Hopper Slide |
| | ● | Hold |
| | ↓ | Lower Hopper Slide |
|  | ↑ | Raise Screen Angle/Jack Up Box |
| | ● | Hold |
| | ↓ | Lower Screen Angle/Jack Up Box |

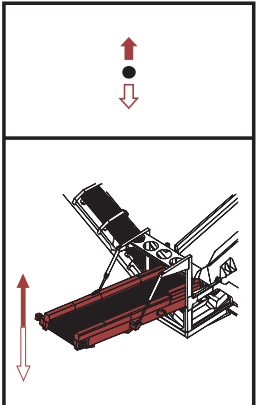
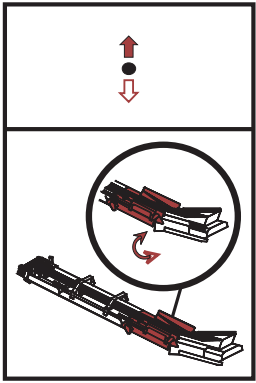
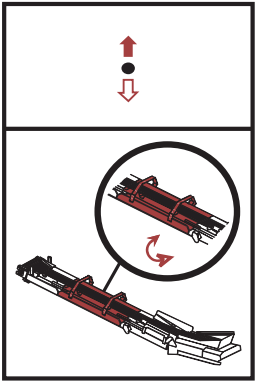
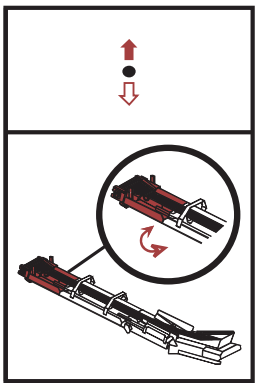
Drive Control Bank Warrior 1800 Light Duty

| New Decal | Explanation | |
|---|-------------|--------------------------------|
|  | ↑ | Drive Feeder Conveyor |
| | ● | Hold |
| | ↓ | Engage Tracks |
|  | ↑ | Drive Left Hand Side Conveyor |
| | ● | Hold |
|  | ↑ | Drive Screen |
| | ● | Hold |
| | ↓ | Engage Tracks |
|  | ↑ | Drive Right Hand Side Conveyor |
| | ● | Hold |
|  | ↑ | Drive Collection Conveyor |
| | ● | Hold |
|  | ↑ | Drive Tail Conveyor |
| | ● | Hold |

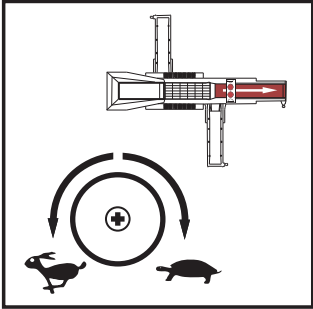
Main Flow Control Bank Warrior 1800 Standard

| New Decal | Explanation |
|---|--|
|  | <p>Turn flow control valve clockwise to decrease feeder speed.</p> <p>Turn flow control valve anti-clockwise to increase feeder speed</p> |
|  | <p>Turn flow control valve clockwise to decrease left hand side conveyor speed.</p> <p>Turn flow control valve anti-clockwise to increase left hand side conveyor speed.</p> |
|  | <p>Turn flow control valve clockwise to decrease right hand side conveyor speed.</p> <p>Turn flow control valve anti-clockwise to increase right hand side conveyor speed.</p> |

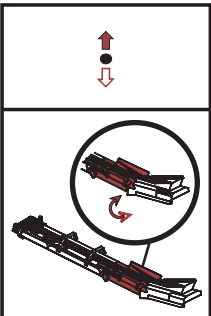
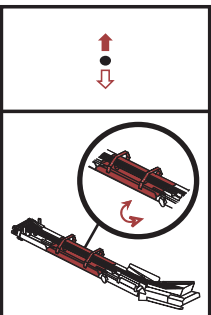
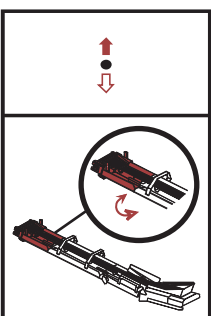
LHS & Tail Conveyor Control Lever Decals

| New Decal | Explanation | |
|---|-------------|------------------------------------|
|  | ↑ | Raise/Slide Out Tail Conveyor |
| | ● | Hold |
| | ↓ | Lower/Slide In Tail Conveyor |
|  | ↑ | Raise Side Conveyor Front Section |
| | ● | Hold |
| | ↓ | Lower Side Conveyor Front Section |
|  | ↑ | Raise Side Conveyor Middle Section |
| | ● | Hold |
| | ↓ | Lower Side Conveyor Middle Section |
|  | ↑ | Raise Side Conveyor Head Section |
| | ● | Hold |
| | ↓ | Lower Side Conveyor Head Section |

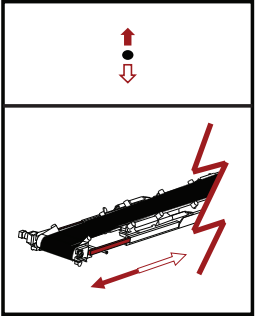
Tail Conveyor Flow Control Valve

| New Decal | Explanation |
|---|--|
|  | <p>Turn flow control valve clockwise to decrease tail conveyor speed.</p> <p>Turn flow control valve anti-clockwise to increase tail conveyor speed.</p> |

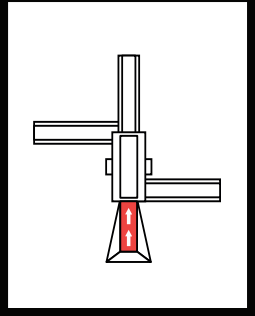
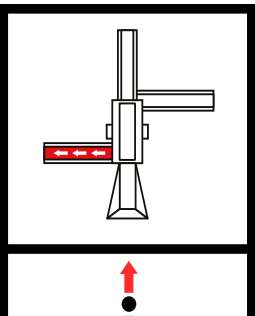
Conveyor Control Levers

| New Decal | Explanation |
|---|---|
|  | <p>↑ Raise Side Conveyor Front Section</p> |
| | <p>● Hold</p> |
| | <p>↓ Lower Side Conveyor Front Section</p> |
|  | <p>↑ Raise Side Conveyor Middle Section</p> |
| | <p>● Hold</p> |
| | <p>↓ Lower Side Conveyor Middle Section</p> |
|  | <p>↑ Raise Side Conveyor Head Section</p> |
| | <p>● Hold</p> |
| | <p>↓ Lower Side Conveyor Head Section</p> |

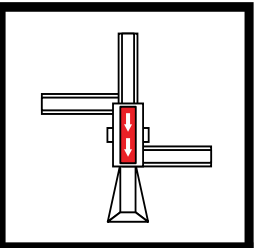
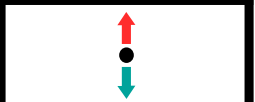
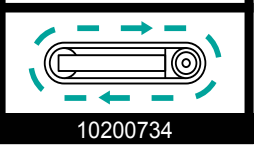



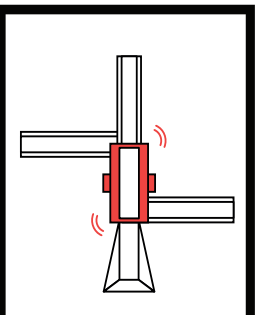



Telescopic Conveyor Control Levers

| New Decal | Explanation | |
|---|-------------|---------------------------------|
|  | ↑ | Retract Telescopic Head Section |
| | ● | Hold |
| | ↓ | Extend Telescopic Head Section |

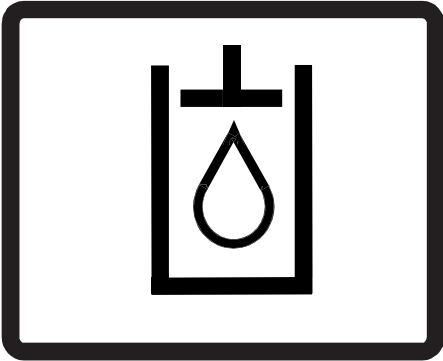
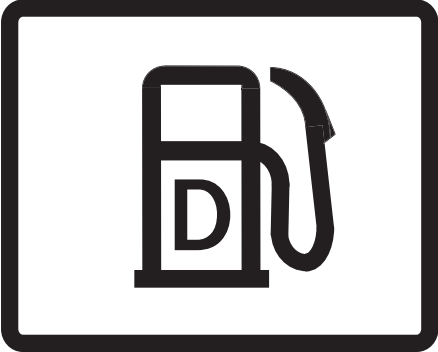
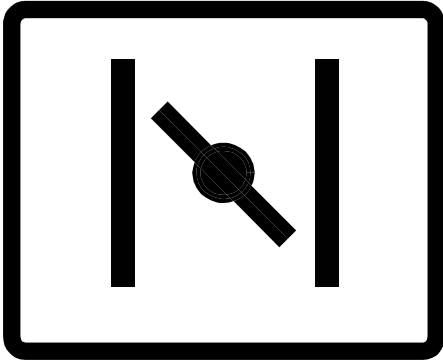
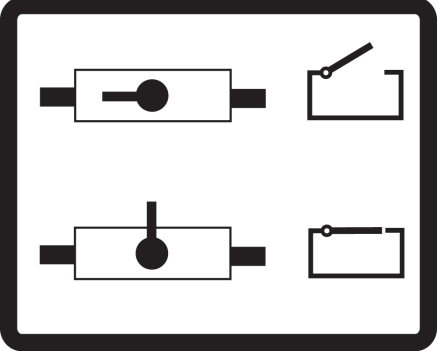
Constant Speed Machine Operation Decals


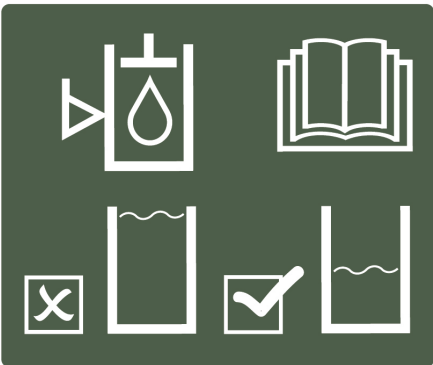
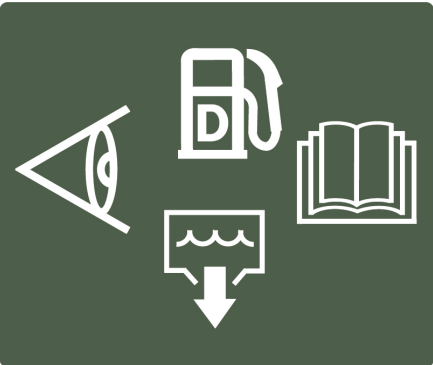

| New Decal | Explanation | |
|---|-------------|--------------------|
|  | ↑ | Run Feeder |
| | ● | Stop |
|  | ↑ | Run Fines Conveyor |
| | ● | Stop |
| | ↓ | Engage Tracks |
| | ↓ | Engage Tracks |

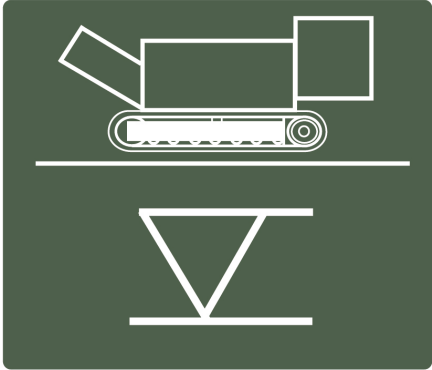
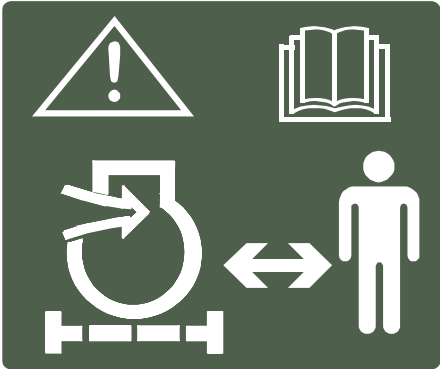
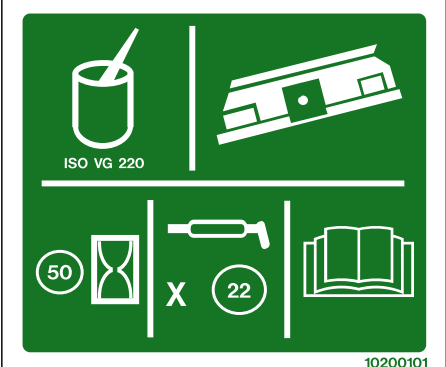
4 Machine Description

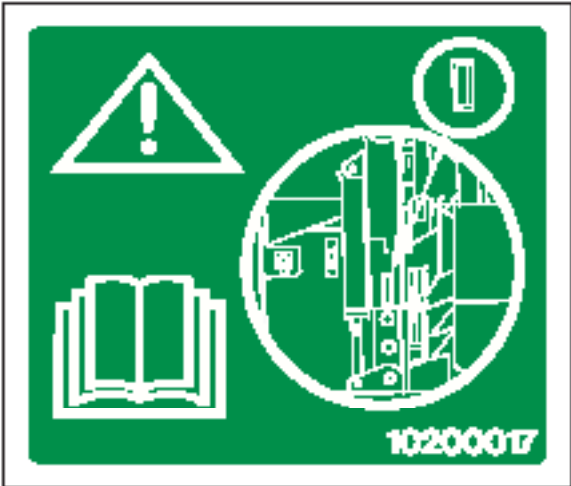
| New Decal | Explanation | |
|---|---|-------------------------|
|    10200734 |  | Run Collection Conveyor |
| |  | Stop |
| |  | Engage Tracks |
|   10200733 |  | Run Screenbox |
| |  | Stop |

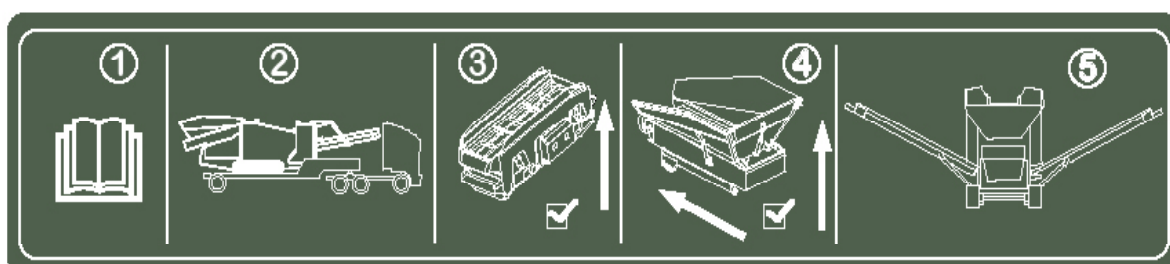
(2) Machine Information Decals

| Decal | Explanation |
|---|--------------------------|
|  | Hydraulic oil |
|  | Diesel oil |
|  | Cold start aid |
|  | Ball valve open + closed |

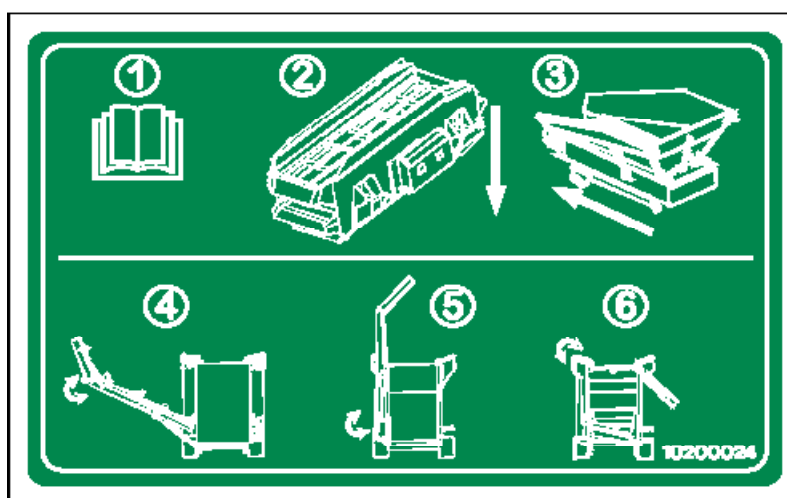
| Decal | Explanation |
|---|---|
|  | Engine oil only |
|  | Important: Do not over fill hydraulic oil tank. |
|  | Important: Check and drain diesel water trap daily. |
|  | Screenbox speed. |

| Decal | Explanation |
|---|--|
|  | <p>Important: Machine must be level at all times.</p> |
|  | <p>Air intake are must be kept clear at all times.</p> |
|  | <p>Greasing screenbox: 22 grease gun strokes every 50 working hours.</p> |

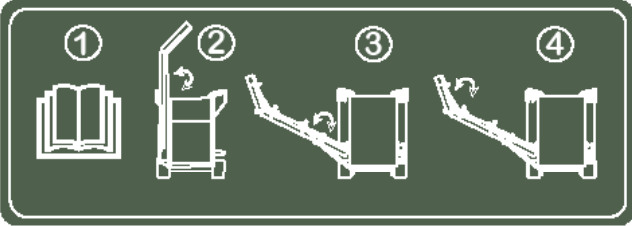
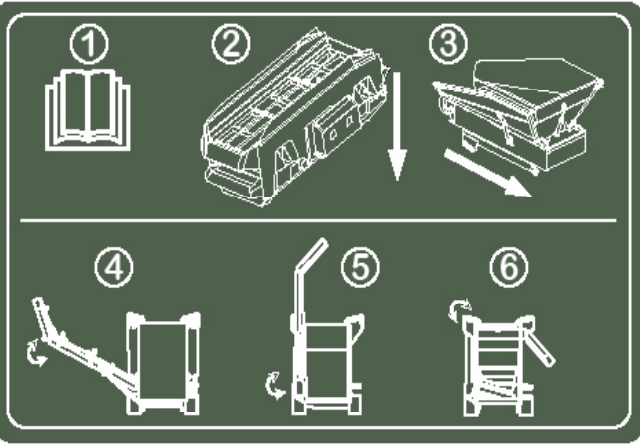
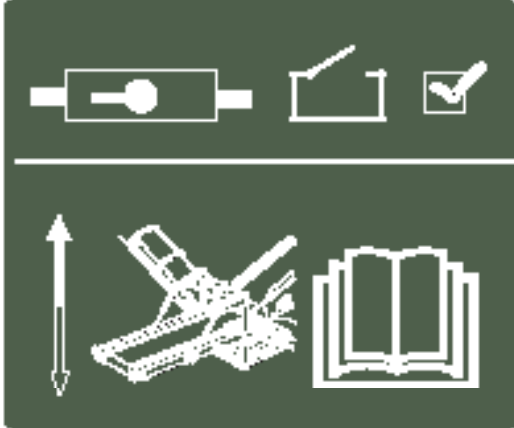
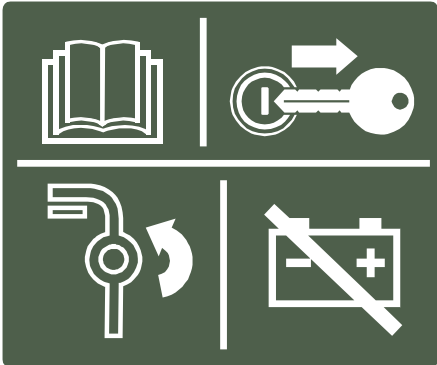
| Decal | Explanation |
|---|--|
|  | <p>Important: Screen angle must be pinned in the second working hole on both sides prior to jacking up the Screenbox. Failure to do so could result in MACHINE DAMAGE</p> <p>Important: Screen angle jacking arm must be pinned on both sides prior to setting Screen angle. Failure to do so could result in MACHINE DAMAGE</p> |



When setting the machine into the working position, the screenbox unit must be raised prior to raising the feeder.



When folding the machine for transport, the feeder must be lowered before lowering the screenbox.

| Decal | Explanation |
|---|---|
|  | <p>Important: Conveyor Unfolding</p> <ol style="list-style-type: none"> 1. Read Operations Manuals 2. Fold Out Head Section Fully 3. Fold Middle Lower Section Fully 4. Fold Lower Section Fully |
|  | <p>Important Folding Conveyor</p> <ol style="list-style-type: none"> 1. Read Operations Manuals 2. Lower Screenbox into Transport Position 3. Slide Hopper into Transport Position 4. Fold In Lower Section fully 5. Fold In Middle Section fully 6. Fold In Head Section fully |
|  | <p>IMPORTANT</p> <p>Please ensure the Ball valve is in the OPEN position before Raise/Lower of Tail Conveyor</p> |
|  | <p>Battery isolator switch</p> <p>Isolate power and lock out machine before maintenance is carried out</p> |


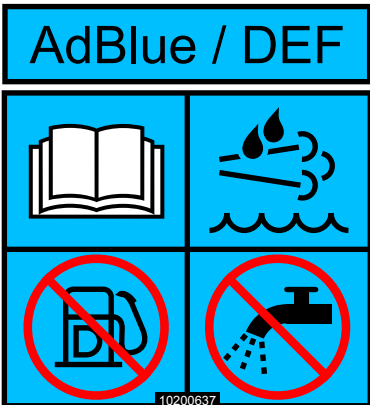
| Decal | Explanation |
|--|---|
|  | <p>Use ultra low sulfur fuel only. (Tier 4 engines)</p> |
|  | <p>Read and fully understand instructions on refilling urea tank. Refill using correct fluid. Do not use water.</p> |

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5 Transportation

5.1 Prior to Transportation

CAUTION

Prior to transportation always check the machine for loose or damaged components. Ensure all loose items are carefully stowed and secured if these are to be transported on the machine.

Check that the travelling dimensions and weight of the machine will be within the regulation limits.

Before transporting the machine, observe the prescribed transport position, admissible speed and itinerary. Only use appropriate means of transport and lifting gear of adequate capacity. Know the overall height to avoid contacting overhead obstructions such as bridges, power lines etc.

The preparations to move equipment by an articulated lorry should be supervised by a minimum of two persons. Ensure persons transporting the machine adhere to all safety signs and procedures.

Before transportation on public roads, ensure the machine has been properly secured with no loose material left in or on the machine. Always observe the valid traffic regulations and, if necessary, ensure beforehand that the machine is in a condition compatible with these regulations.

Extreme caution is required when transporting machinery on site. Soft or uneven ground may cause accidents. 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.

The machine is remote controlled and may start without notice. Stay clear of the machine. The machine must be loaded and transported only in accordance with the operating instructions. For manoeuvring the machine, observe the prescribed transport position, admissible speed and itinerary. Use only appropriate means of transport and lifting equipment and where applicable of adequate capacity. The re-commissioning procedure must be strictly in accordance with the operating instructions. Before travelling with the machine, check that the braking and any signalling and lighting systems are fully functional. Before setting the machine in motion always check that the accessories have been safely stowed away.

On wheeled machine:

Ensure wheel nuts are torqued between 500 to 550 ft.lb (69 to 76 kg.m) prior to transport. Recheck the wheel nut torque every 150 miles (200 km).

Connect and check the braking system.

Check your tires for:-

- Correct pressure
- Cuts or bulges
- Nails or spikes
- Uneven or excessive wear
- Missing valve caps

Check your wheels for:-

- Damaged rims
- Missing or loose wheel nuts or bolts
- Obvious misalignment

Have cuts or punctures repaired by authorised personnel before adding air. Beware that an over-inflated tire can explode and cause serious injury or death.

5.2 Removing Machine from the Low Loader

A tracked machine will normally be secured to a low loader trailer. If the machine has been manufactured to connect to special rear bogie, refer to the special instructions to separate the machine from its bogie.

⚠ WARNING

The engine stop on tracking remotes should only be used in emergencies, the engine should be shut off at the control panel once manoeuvring has been completed. The engine stop on the remote control does not result in a control panel reset and so is not the same as the emergency stops located else where on the machine.

Check that any loose items transported with the machine will not cause a hazard while unloading.

Wear personal protective equipment.

Ensure all personnel are clear from the machine.

NOTICE

Removing the fastenings securing the machine and any loose items from a trailer is the responsibility of the haulage contractor.

Refer to Chapter 4, for complete specification on radio/remote control units before attempting the following procedures.

All control levers must be in the neutral (non-operational) position.

PROCEDURE

1. Observe all safety warnings.
2. Prepare the low loading trailer, for removing the machine on tracks.
3. Make sure suitable ramps are positioned at the end of the trailer to unload the machine.
4. Start the machine. (See chapter 7).
5. Ensure that engine is set to idle during unloading process.
» *For constant speed engine, reduce speed of tracks.*
6. Ensure all loose parts and items shipped with machine are removed.
7. Ensure all ties are removed from low loader.
8. Activate track circuits by engaging track control hydraulic levers in the power unit (Levers are identified by decals).

(1) Remote Control

Carry out steps 1 to 8 of the previous procedure, Reference: Section 5.2.

PROCEDURE

1. Remove the dummy plug (Item 1) and insert the remote control unit plug into it's socket at the rear of the machine.

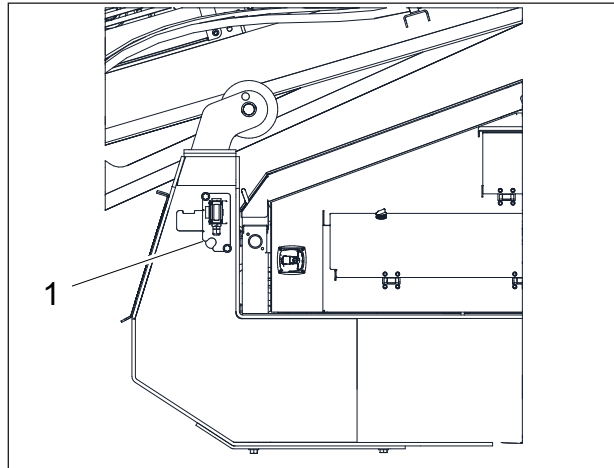


Figure 5.1 - Remote Control Unit Connection

2. Move the track levers down, to activate the tracks.
3. Activate the remote control unit by pressing the tracks start button.
4. Operate the track buttons on the remote control unit to move the machine off the low loading trailer.

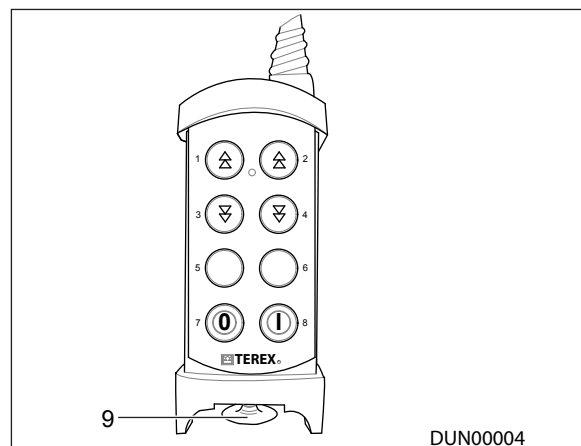


Figure 5.2 - Remote Tracking Control Units

5. Press the forward or backward buttons, on the corresponding handset, to move the machine in the desired direction.
6. Unload the machine slowly off the trailer into a safe position or machine operating position,
7. Move the machine into the required position on the work site.
8. Deactivate the remote control, press the track stop button the handset.
9. Switch off the machine.

(2) Teleradio Remote Control

Carry out steps 1 to 8 of procedure, Reference: Section 5.2. The remote will show an E-Stop fault if the machine and remote are not turned on in the correct order.

PROCEDURE

1. Remove the dummy plug (Item 1) and insert the remote control unit plug into it's socket at the rear of the machine.

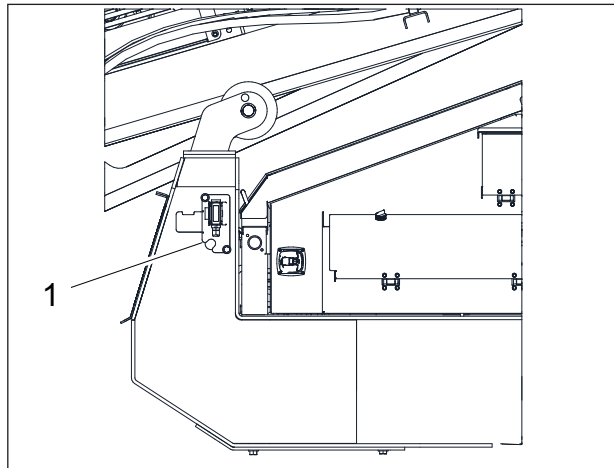


Figure 5.3 - Remote Control Unit Connection

2. Turn the transmitter on using the switch on the back.
3. Release the machine stop (button 7) at the bottom of the transmitter.
4. Hold buttons 5 and 6 until the transmitter beeps indicating the log-in process has begun.
» *The machine siren will sound and there will be a 7 second delay before the tracks can be operated.*

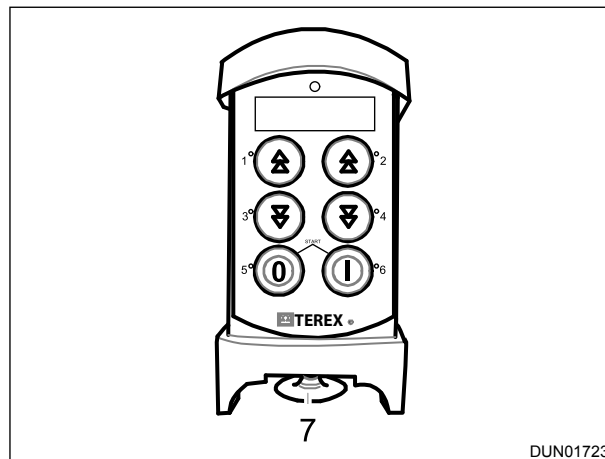


Figure 5.4 - Teleradio Remote Tracking Transmitter

5. Use buttons 1, 2, 3 and 4 to operate the tracks.
6. Unload the machine slowly off the trailer into a safe position or machine operating position.
7. Move the machine into the required position on the work site.
8. Press button 5 to disable the tracks. Press button 7 to switch off the machine.

5.3 Putting the Machine into the Transport Position

Prior to transportation the machine must be put into the transport position.

WARNING

Entanglement hazard. Ensure all personnel are clear from the machine.

Ensure all machine components are stopped before putting the machine into the transport position.

Wear personal protective equipment.

CAUTION

Fall hazard.

Falling material hazard.

Crush hazard.

NOTICE

The machine must be put into the transport position in the correct order.

PROCEDURE

1. Observe all safety warnings.
2. Prepare the walkways for transport.
3. Start the machine, Reference: Chapter 7.
4. Prepare the feeder conveyor for transport (slide back).
5. Fold in hopper sides, fold out hopper back.
6. Prepare the screenbox for transport.
7. Prepare the LH side conveyor for transport.
8. Prepare the RH side conveyor for transport.
9. Prepare the tail conveyor for transport.

Refer to the following instructions.

(1) Walkway Retraction Instructions

⚠ WARNING

Wear personal protective equipment.

Fall hazard. Always use a safe and secure platform when working at a height.

Switch off the machine and implement the lockout procedure.

NOTICE

Machine must be on level ground prior mounting.

All control levers must be in the neutral (non-operational) position.

PROCEDURE

1. Observe all safety warnings.
2. Remove walkway bolts and nuts (B), 3 off LHS/RHS.

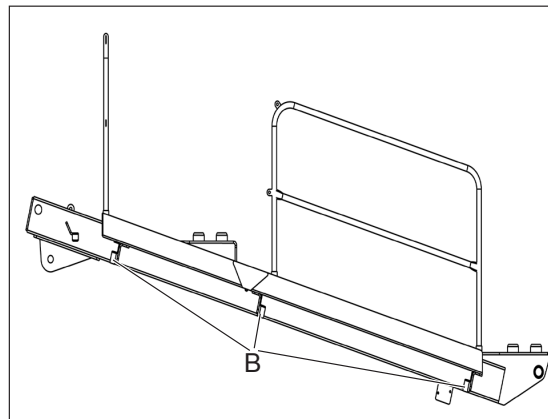


Figure 5.5 - Walkway Bolts and Nuts

3. Raise the upper half of the walkway into the transport position (TP).

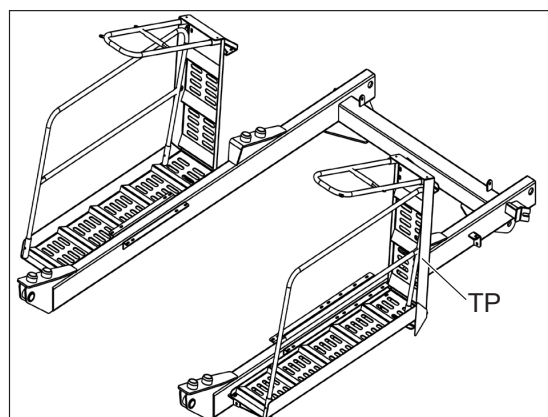


Figure 5.6 - Walkway in Transport Position

4. Relocate bolts and nuts (B), 3 off LHS/RHS, to secure the walkway in the transport position.

(2) Folding Down Hopper Sides and Lowering Screenbox for Transport

⚠ CAUTION

Falling material hazard. Ensure there is no water or material lying on hopper sides before putting them into the working position.

Wear personal protective equipment.

PROCEDURE

1. Observe all safety warnings.
2. Start the machine, Reference: Chapter 7.
3. Remove the bolts on both sides at the rear of the hopper.

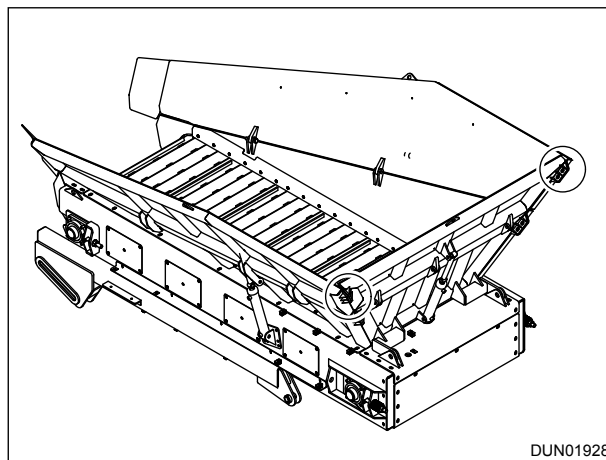


Figure 5.7 - Hopper Bolts

4. Identify the hopper control levers located in the power unit section, they will be clearly marked using decals.

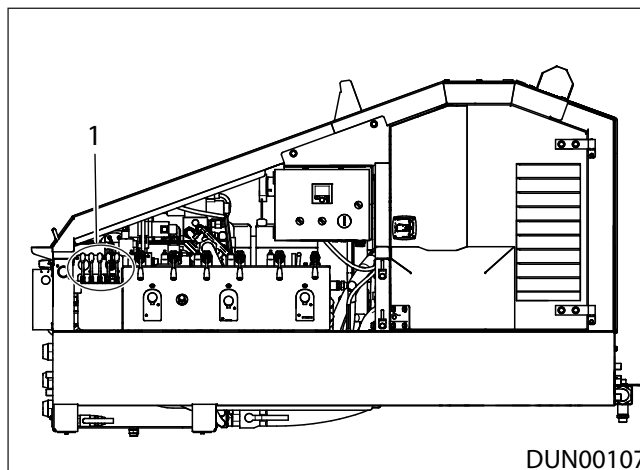


Figure 5.8 - Hopper Control Levers

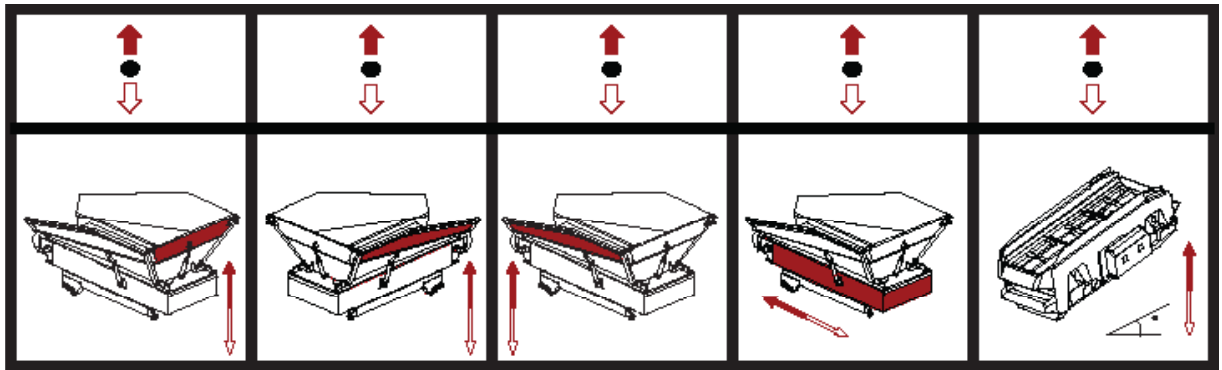


Figure 5.9 - Decals for Hopper Control Levers

5. Ensure ball valve is open before moving levers.
6. Lower the lever to fold down the hopper rear.
7. Lower the lever to fold down the hopper right hand side.
8. Lower the lever to fold down the hopper left hand side.
9. Move the hopper slide lever to the down position to slide feeder fully into transport position.
10. Move the screenbox lever to the down position to lower the screenbox and hopper angle into the transport position.

(3) Close in the Side Conveyors

The following procedure is the same for both the left hand side and right hand side conveyors. Some images in the following procedure are shown for one side conveyor only.

⚠ CAUTION

Wear personal protective equipment.

NOTICE

All control levers must be in the neutral (non-operational) position.

Screenbox must be in the transport position before the side conveyors can be put into the transport position.

Take care not to nip the conveyor belt between moving parts.

PROCEDURE

1. Observe all safety warnings.
2. Detach the side conveyor skirting (Item 1).

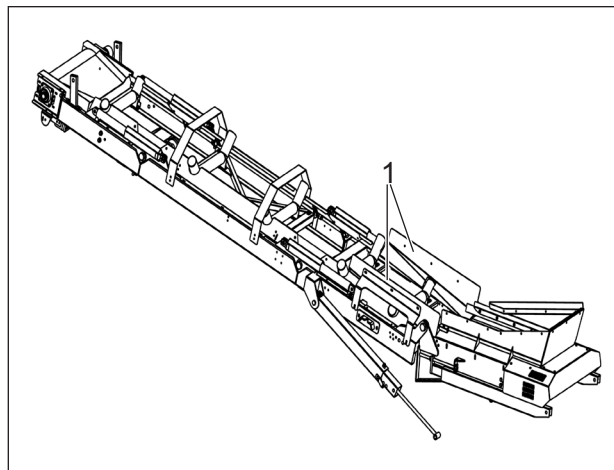


Figure 5.10 - Conveyor Skirting

3. Start the engine, Reference: Chapter 7.
4. Remove the working pins, 1 off RHS/LHS for each conveyor.

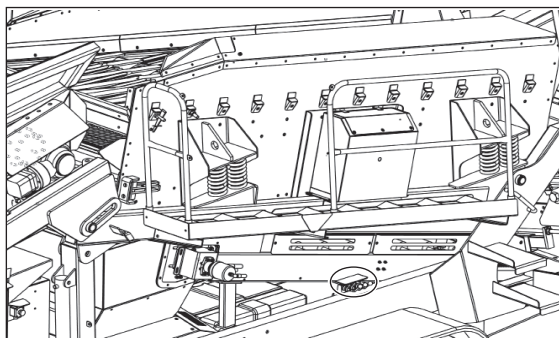


Figure 5.11 - RHS Conveyor Control Levers

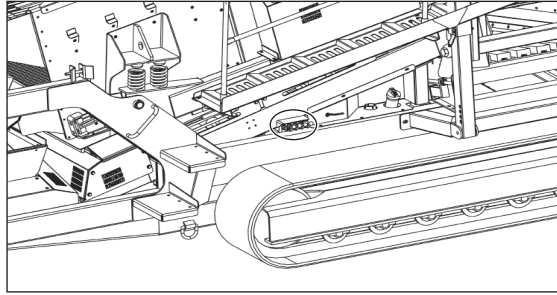


Figure 5.12 - LHS Conveyor Control Levers

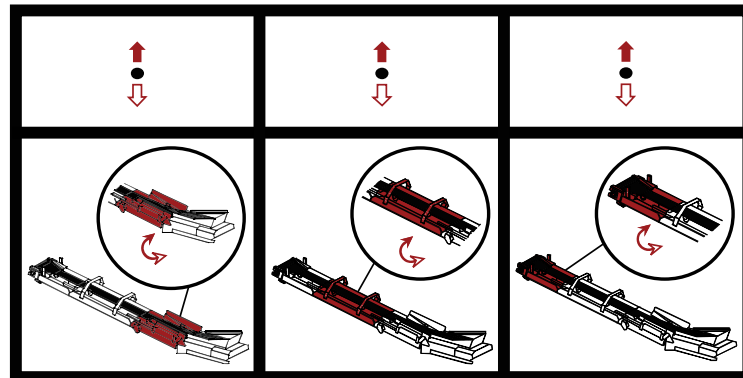


Figure 5.13 - Side Conveyor Control Lever Decals

5. Move the side conveyor head section lever to the up position to raise the side conveyor head section into 45 degree position.

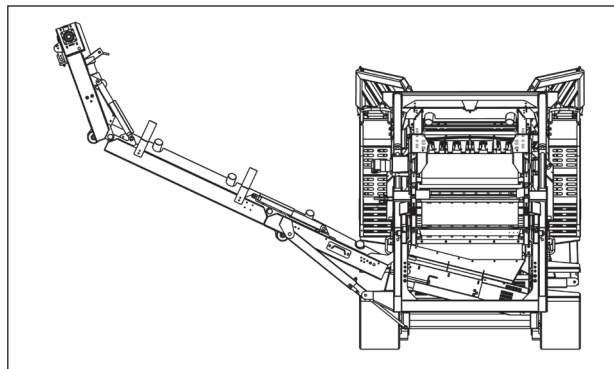


Figure 5.14 - RHS Lower Section Unfolded

6. Move the side conveyor lower section lever to the up position to raise the side conveyor lower section to the vertical position.

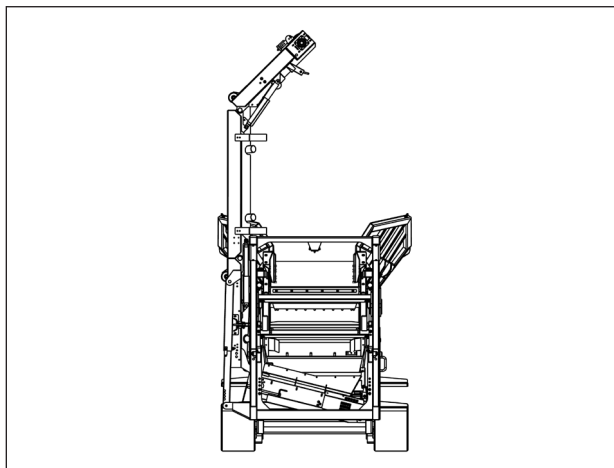


Figure 5.15 - RHS Middle Section at Vertical

7. Move the side conveyor middle section lever to the up position to raise the side conveyor middle section to 90 degree position.

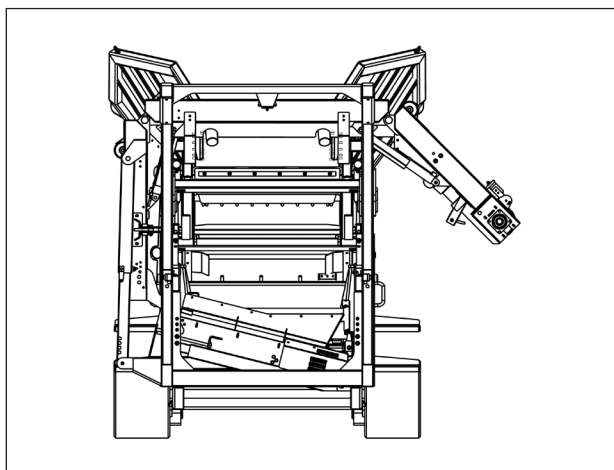


Figure 5.16 - RHS Head Section at 45 Degrees

8. Move the side conveyor head section to the up position to lower the side conveyor head section into the resting position.
9. Insert transport pins and R-clips.
10. If the conveyor is telescopic, remove pins and fully retract the telescopic section by moving the lever to the down position.
11. Replace pins in the conveyor telescopic.

(4) Fold the Tail Conveyor For Transport

⚠ CAUTION

Wear personal protective equipment.

NOTICE

All control levers must be in the neutral (non-operational) position.

Take care not to nip the conveyor belt between moving parts.

PROCEDURE

1. Observe all safety warnings.
2. Ensure the tail conveyor slide pins are in position (P).

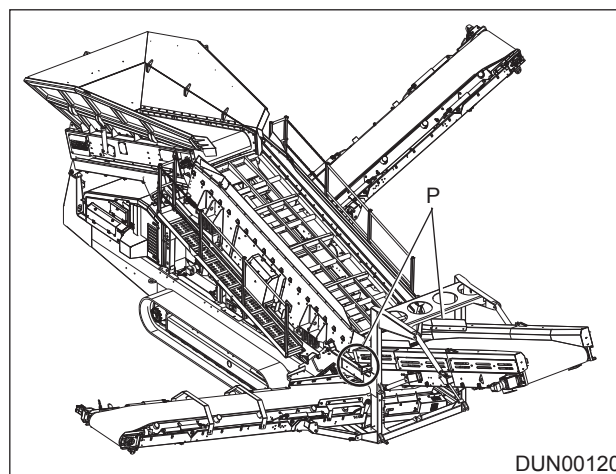


Figure 5.17 - Tail Conveyor Slide Pins

3. Ensure the ball valve is open before moving levers.

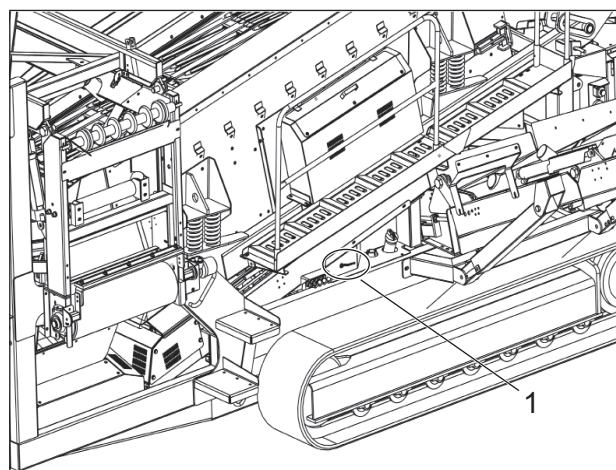


Figure 5.18 - Ball Valve Control Lever

4. Move the tail conveyor lever to the down position to lower the tail conveyor angle rams to the transport position (10 degrees).
5. Turn the ball valve anti-clockwise to shut off the ball valve.

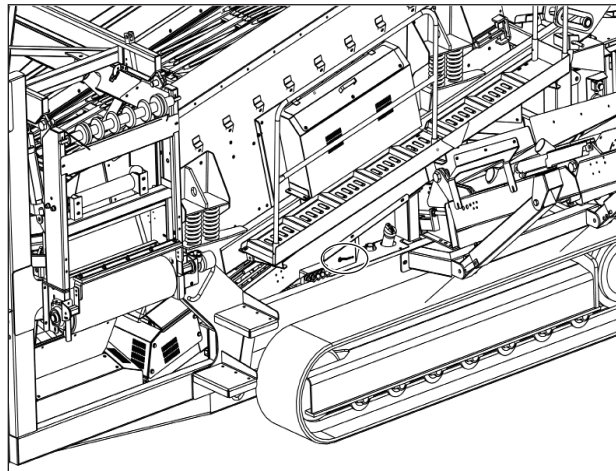


Figure 5.19 - Ball Valve Control Lever

5.4 Loading the Machine to the Low Loading Trailer

NOTICE

Securing the machine and any loose items to the low loader trailer is the responsibility of the haulage contractor.

PROCEDURE

1. Before loading, the machine must be prepared for transportation, refer to putting the machine into the transport position.
2. Check that the travelling dimensions and weight, when loaded, will be within the regulation limits, refer to machine specification and information.
3. Make sure suitable ramps are positioned at the end of the trailer to load the machine.
4. Ensure all loose items are carefully stowed and secured if these are to be transported on the machine.
5. Check that any loose items transported with the machine will not cause a hazard while loading.
6. Ensuring that the engine/motors are running at idle load the machine slowly on the trailer, manoeuvring the machine with the tracks, using the umbilical control or the remote radio control, if fitted, see moving the machine.
» On machines fitted with a Constant Speed engine, there is no throttle switch, instead it is a two-speed tracking switch. Select the slow tracking speed.
7. Stop the machine.

(1) Ready for Transport

⚠ WARNING

Do not transport this machine without it being properly secured on to the lowloader.

Before transporting this machine you must read and understand the Safety section in this manual.

NOTICE

Before tracking the machine ensure the engine speed is idle.

The machine should now be ready for transport.

Secure machine with Chain shackles to the Lowloader.

Use securing eyes (Item 1) fitted on the machine undercarriage on either side.

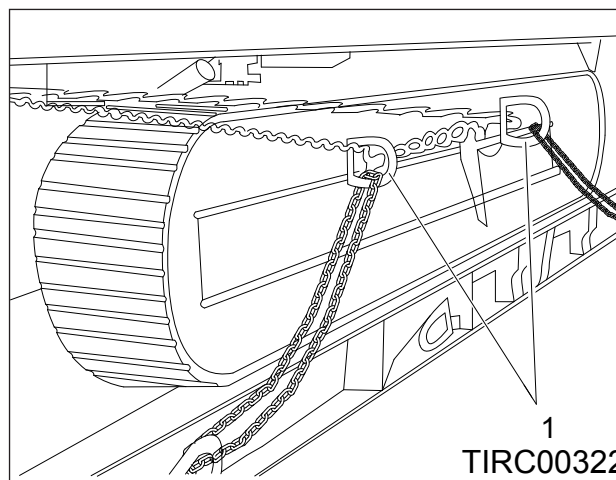


Figure 5.20 - Tracks Secured on Lowloader

The machine can also be secured in place using the tie down points on the side of the machine.

(2) Prior to Haulage

PROCEDURE

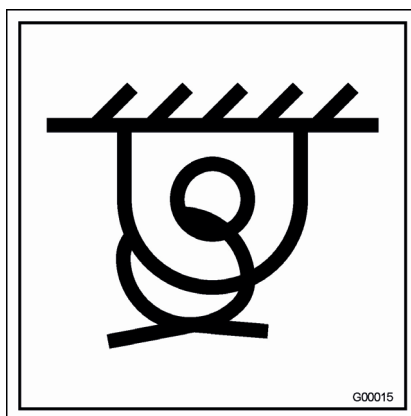
1. Check for loose parts or debris on the machine.
2. Ensure all pins are secured with 'R' pins and Split pins.
3. Raise the support legs fully (if fitted).
4. Ensure persons transporting the machine adhere to all safety signs and procedures.

(3) Transport Tie Down Points

NOTICE

When transporting the machine, it is the responsibility of the haulage contractor to safely secure it to the transporter.

This machine is fitted with transport tie down brackets, the brackets are indicated on the machine by a safety symbol. Under NO circumstances should these be ever used as a lifting point for the machine.



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Figure 5.21 - Tie Down Points Symbol

The tie down points are located on both sides of the machine.

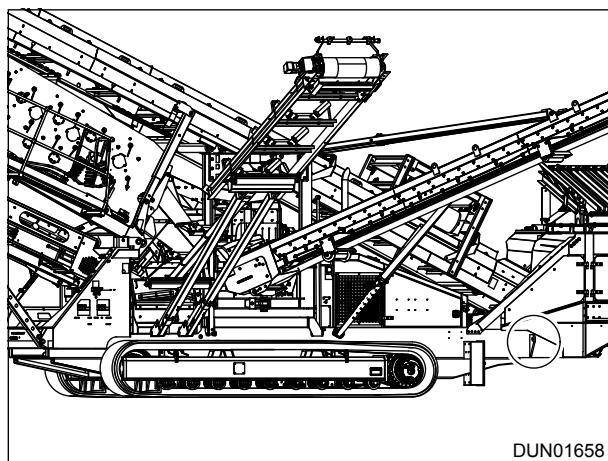


Figure 5.22 - Location of Tie Down Points

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6 Initial Setup and Adjustments

NOTICE

Terex recommends that the assembly and installation work of the machine be carried out by the Terex customer service department. The manufacturer/supplier will not be liable for damage caused by improper assembly or installation.

The environment in which the machine 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 machine is put into operation to ensure appropriate exclusion zone measures are put in place and site personnel safety awareness training has been undertaken.

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

6.1 Initial Inspection

When the machine is delivered, thoroughly check for any damage that might have occurred during transport. Do not set up the unit until the inspection is complete. Complete any delivery and start-up forms that were supplied with the equipment. Take note of any damage found, and photos if possible, and have the driver initial your description of any problem(s).

Check all loose parts, small-parts boxes, and tools against the packing list to ensure all items shipped are present. Check in and around the machine for any loose items that may have been shipped inside the machine.

6.2 Machine Location Considerations

Prior to setting up the machine, consideration should be given to a suitable layout to prevent oversize material or metal from entering the machine. In order to prevent damage of the screen unit, no material above the size recommended should be fed into the machine.

Position the machine in a safe and level operating position, making sure both tracks are in full contact with the ground to minimise movement of the Machine. Regularly check the machine is level and stable.

Pay attention to access from the loading area and to where material is to be deposited.

Ensure the area under the tail drum of the product conveyor is free of large stones etc. Which may cause damage to the belt.

For dusty conditions some account should be taken of the prevailing wind direction to minimize the possibility of dust entering the air intake.

When setting up the machine, ensure that enough space is available around the machine to enable easy set up, servicing and repair work.

Machinery arranged before and after this machine will have to be placed on the site accordingly.

6.3 Measures Before Set Up

We recommend that the assembly/ installation work of the machine be carried out by the Terex customer service department. The manufacturer/supplier will not be liable for damage caused by improper assembly/ installation.

PROCEDURE

1. Ensure all guards are fully secured in correct/closed position.
 2. Remove all loose items from the belt by untying the securing ropes.
 3. Put control valve levers in neutral (non-operational) position.
 4. The machine must be placed on solid ground capable of carrying the machine's weight.
 5. Before detaching the machine from the prime mover, it is important that the chosen site is level. Level the work site foundation with the loading shovel.
 6. Level the machine with a precision spirit level.
 7. Do not position the machine above ground level, eg. on blocks etc.
-

6.4 Measures After Long Term Standstill

NOTICE

Prior to putting into operation perform daily (10 hour) maintenance schedule.

Check tracks before transporting or moving the machine.

6.5 Initial Setup

(1) Opening Out the Side Conveyors

WARNING

Wear personal protective equipment.

NOTICE

Ensure belt is fully tensioned before use. All control levers must be in the neutral (non-operational) position.

Ensure that all transport stays are removed before attempting to move side conveyors.

As part of this process is obstructed from view by the machine it may be beneficial to have a second person available.

This example shows the right hand side conveyor but the process is the same for the left hand conveyor.

Take care not to nip the conveyor belt between moving parts

PROCEDURE

1. Observe all safety warnings.
2. Start the machine. (See chapter 7).
3. Remove transport stays and safety pins from conveyor.

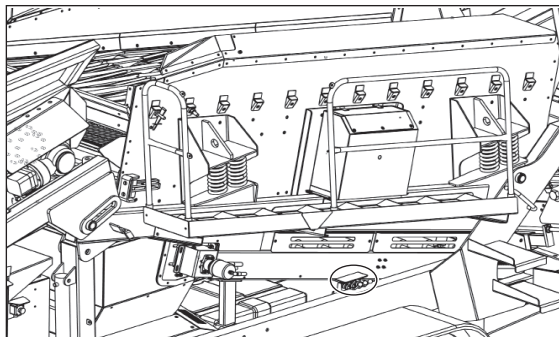


Figure 6.1 - RHS Conveyor Control Levers

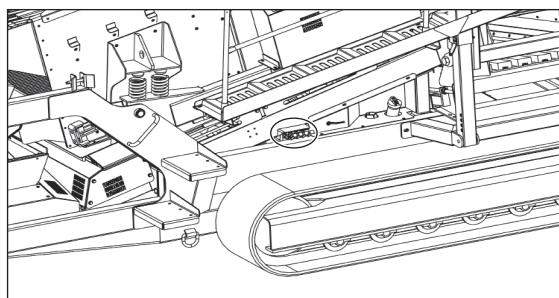


Figure 6.2 - LHS Conveyor Control Levers

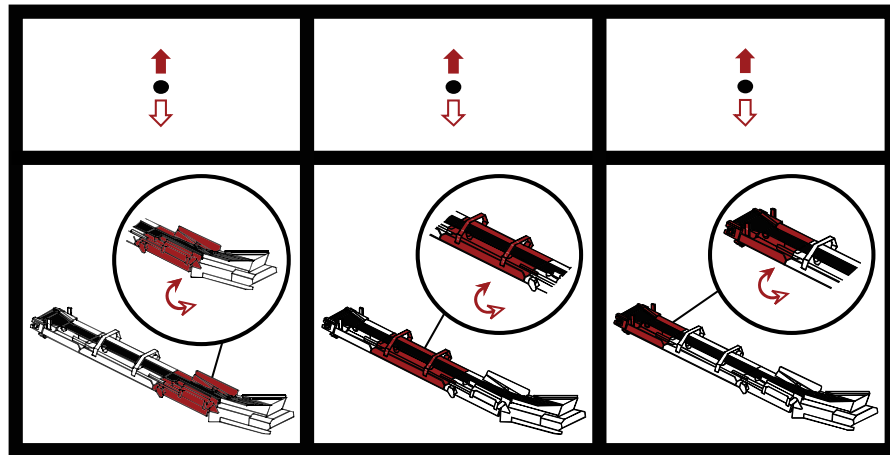


Figure 6.3 - Control Lever Decal

4. Follow the instructions on the control lever decal and move the conveyor head section into a 45 degree position.

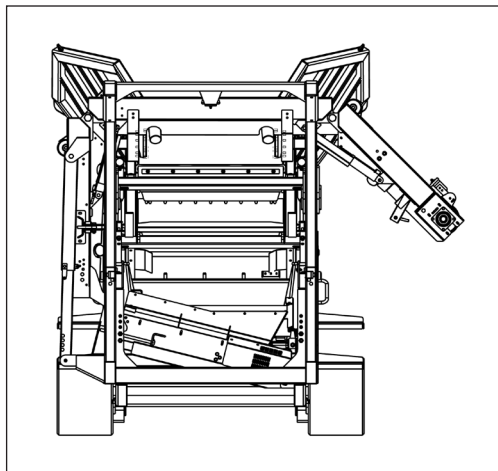


Figure 6.4 - RHS Head Section at 45 Degrees

- » For machines with the telescopic side conveyor option, remove the safety pins when the head section of the conveyor is at 45 degrees. See Section: Opening Out the Telescopic Side Conveyors.
5. Move the conveyor middle section into a vertical position by placing the middle section lever in the down position.

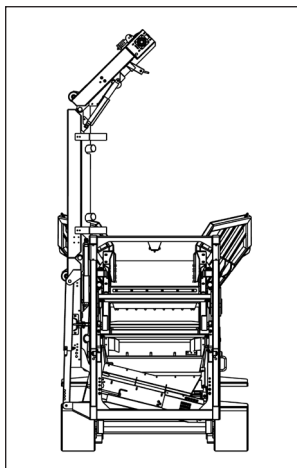


Figure 6.5 - RHS Middle Section at Vertical

6. Move the conveyor lower section to the required angle by placing the lower section lever in the down position.

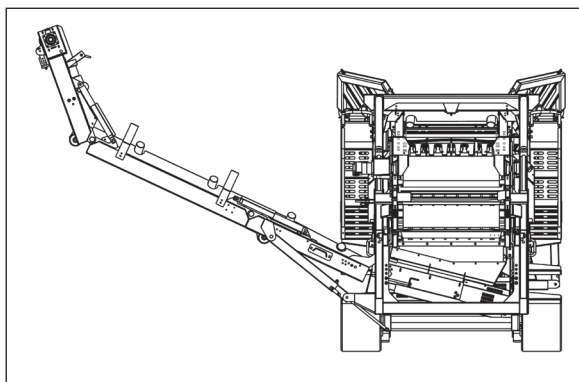


Figure 6.6 - RHS Lower Section Unfolded

7. Complete the fold out of the head section.
8. Fit the conveyor safety pins to each of the support legs once the correct conveyor angle has been set.

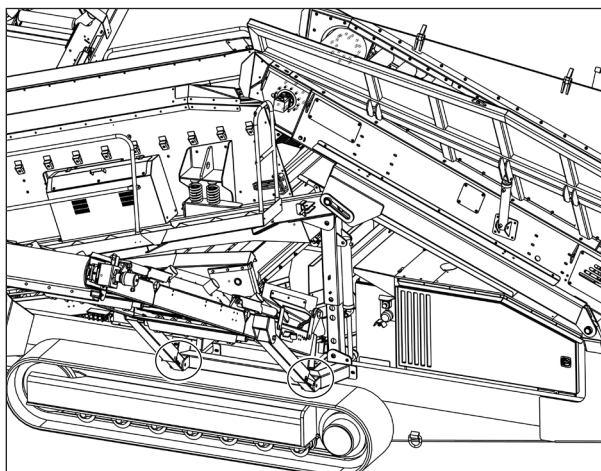


Figure 6.7 - Conveyor Safety Pins

9. Fit the side conveyor skirting (Item 1) to the lower section.

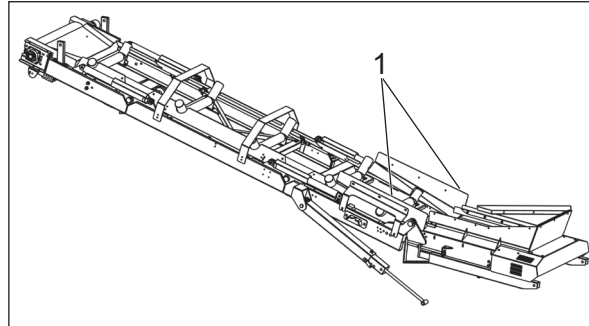


Figure 6.8 - Side Conveyor Skirting

(a) Opening Out the Telescopic Side Conveyors

There is an option of telescopic side conveyors on this machine. The fold out procedure remains the same but the telescopic section must be extended when the conveyor head section is in the 45 degree position.

PROCEDURE

1. Observe all safety warnings.
2. Start the machine. (See chapter 7).
3. Remove transport stays and safety pins from conveyor.
4. Move the conveyor head section into a 45 degree position by placing the head section lever in the down position.

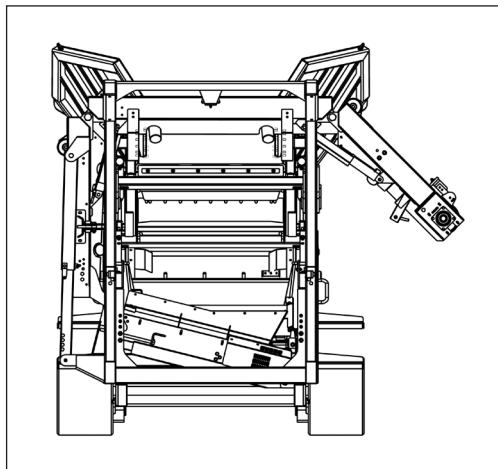


Figure 6.9 - RHS Head Section at 45 Degrees

5. Remove the safety pins when the head section of the conveyor is at 45 degrees.

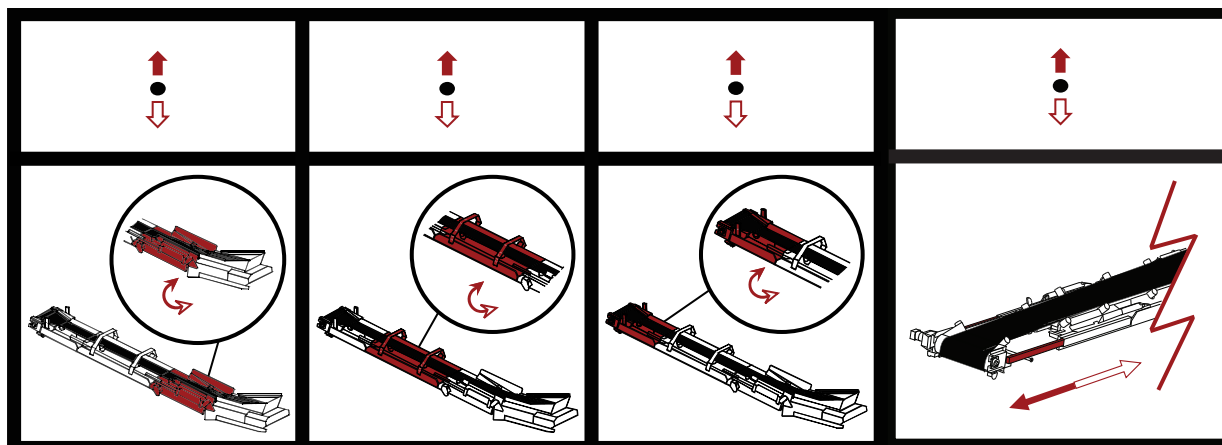


Figure 6.10 - Telescopic Conveyor Option Decal

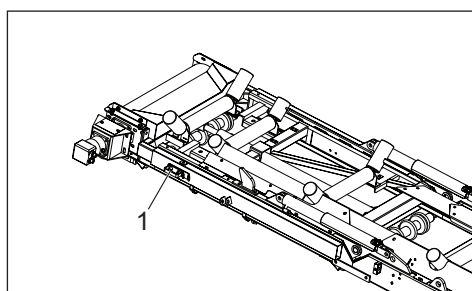


Figure 6.11 - Telescopic Side Conveyor Retracted Position

6. Follow the instructions on the control lever decal and place the lever in the up position to extend telescopic conveyor.

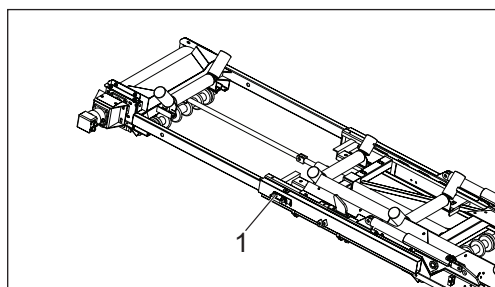


Figure 6.12 - Telescopic Side Conveyor Extended Position

7. Fit safety pins (Item 1) to telescopic section when desired extension is reached.
8. Continue the Opening Out the Side Conveyors procedure.

(2) Operating Hopper Sides

⚠ WARNING

Wear personal protective equipment

Falling material hazard. Ensure there is no water or material lying on hopper sides when in transport position.

NOTICE

All control levers must be in the neutral (non-operational) position.

Ensure there is no material lying on sides before they are unfolded to working position.

Ensure that side conveyors have been unfolded before this procedure is started.

PROCEDURE

1. Observe all safety warnings.
2. Ensure all transport brackets and stays are removed.
3. Start the machine, Reference: Chapter 7.
4. Identify the hopper control levers located in the power unit section, they will be clearly marked using decals.

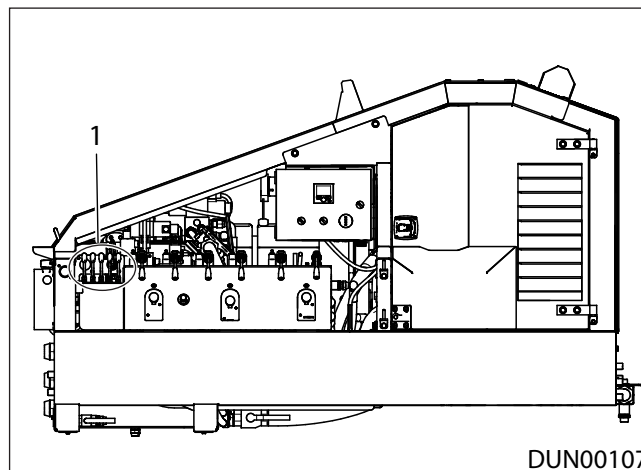


Figure 6.13 - Hopper Control Levers

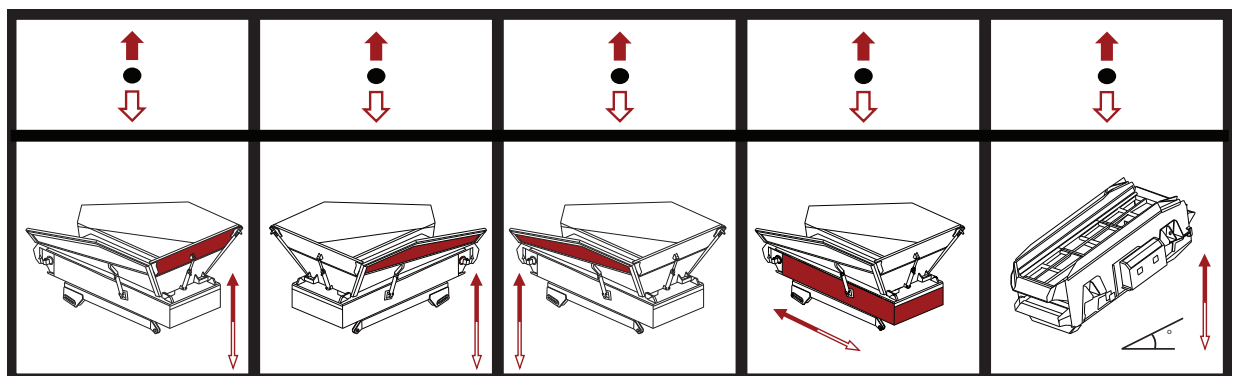


Figure 6.14 - Hopper Control Decals

5. Raise the lever to fold up the hopper left hand side.
6. Raise the lever to fold up the hopper right hand side.
7. Raise the lever to fold up the hopper rear.
8. Insert hopper bolts where side and rear hopper portions meet.

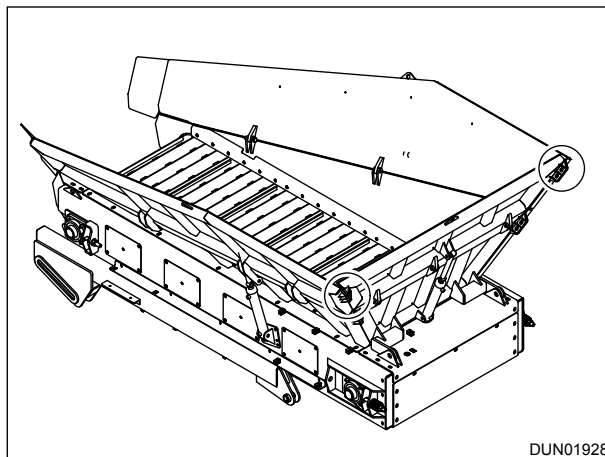


Figure 6.15 - Hopper Bolts

(3) Increasing Hopper Angle/Raising Screen

NOTICE

Ensure that the screenbox subframe is locked in position at jacking location.

Before running the screenbox, ensure the subframe is fully seated in the chassis at the jack-up link arm pin.

PROCEDURE

1. Observe all safety warnings.
2. Remove the pin.
3. Move lever to the up position to adjust the screen and hopper angle to the required position

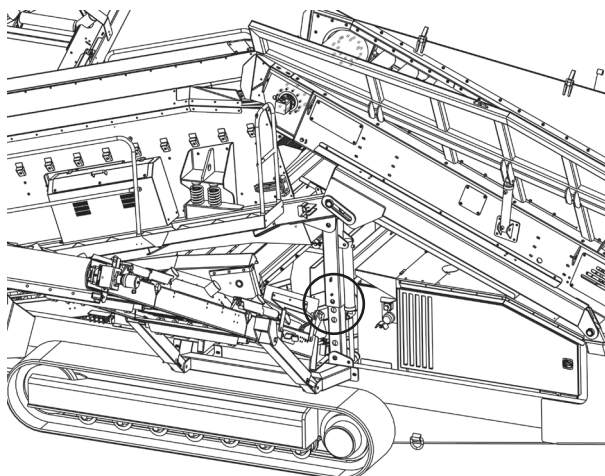


Figure 6.16 - Hopper and Screen in Working Position

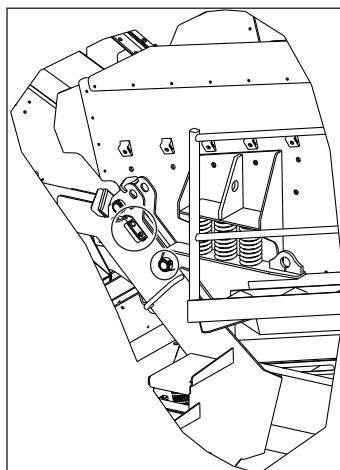


Figure 6.17 - Screenbox Subframe Locked in Working Position

(4) Moving the Hopper into Working Position

WARNING

Wear personal protective equipment.

NOTICE

All control levers must be in the neutral (non-operational) position.

Ensure that side conveyors have been unfolded before this procedure is started.

Ensure that the hopper ball valve is opened before and closed after moving the hopper. The ball valve is intend to lock the hydraulic circuit.

PROCEDURE

1. Observe all safety warnings.
2. Start the machine, Reference: Chapter 7.
3. Ensure the ball valve (Item 1) is open before moving levers. It is located inside the power unit. This will allow the hopper hydraulic circuit to function.

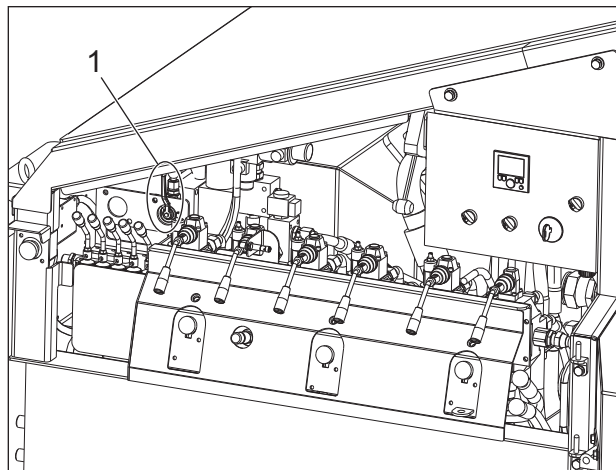


Figure 6.18 - Hopper Ball Valve Control Lever

4. Slide hopper forward to working position using control lever.

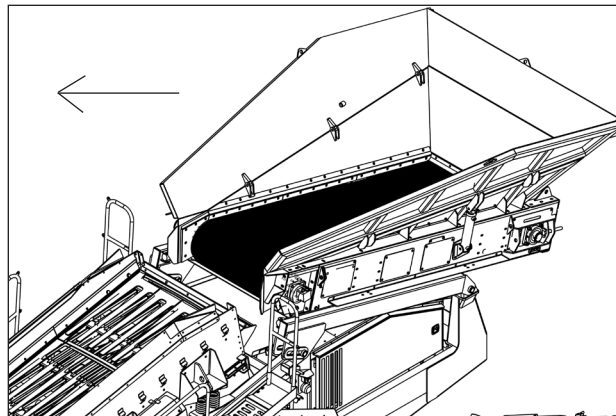


Figure 6.19 - Slide Hopper into the Working Position

5. Once the hopper has been moved to its working position return the control lever to its neutral position and close the ball valve. This will isolate the hopper hydraulic circuit and stop the hopper from sliding down.

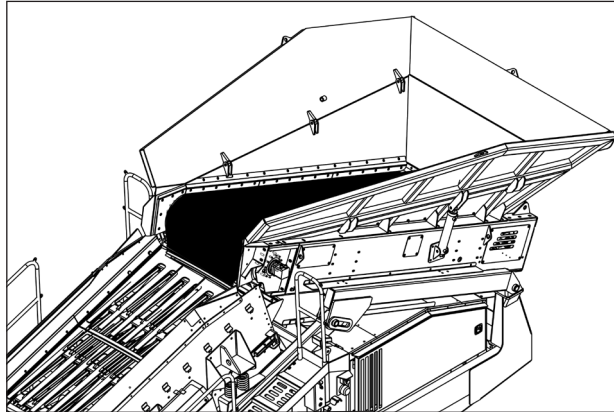


Figure 6.20 - Hopper in the Working Position

(5) Opening Out the Tail Conveyor

⚠ WARNING

Wear personal protective equipment.

Fall hazard.

Lockout and tagout.

NOTICE

All control levers must be in the neutral (non-operational) position.

Ensure that all transport stays are removed before attempting to move side conveyors.

As part of this process is obstructed from view by the machine it may be beneficial to have a second person available.

PROCEDURE

1. Observe all safety warnings.
2. Stop the machine and implement the LOCKOUT procedure.
3. Ensure the tail conveyor is positioned in the lower pinning position, and that the pins are secure (P).

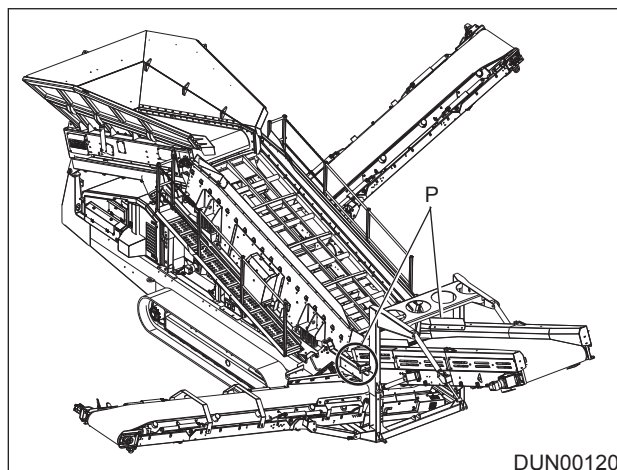


Figure 6.21 - Tail Conveyor Pins

4. Start the machine, Reference: Chapter 7.
5. Ensure ball valve is open before move any control levers.
6. Move the tail conveyor up to the required angle by placing the tail conveyor lever in the up position (H5).

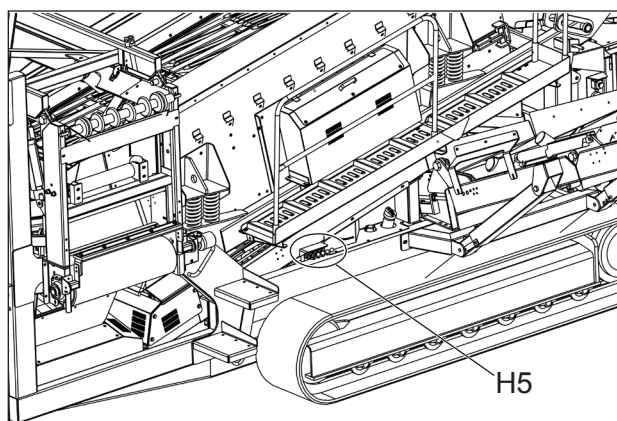


Figure 6.22 - Tail Conveyor Lever

7. Shut off ball valve control lever (Item 1).

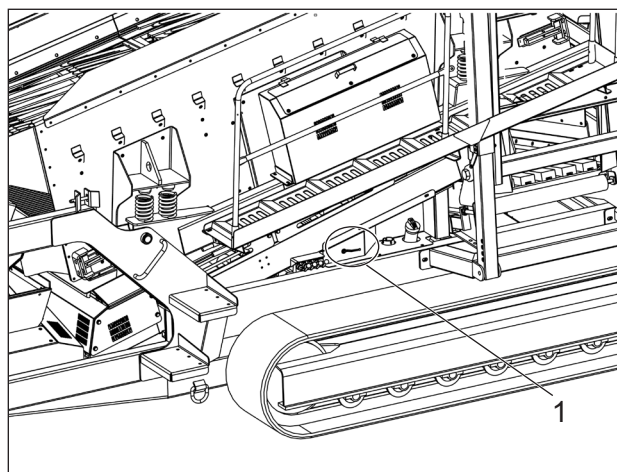


Figure 6.23 - Ball Valve Control Lever

(6) Warrior 2 Products onto Tail Conveyor

NOTICE

If retrofitting onto an older machine, additional work must be done to the chassis prior to fitting the drop down kit. Contact Engineering Department for welding and drilling details and locations.

PROCEDURE

1. Once side conveyor has been removed, jack-up screenbox and slide back tail conveyor. Pin jack-up screenbox. The jack up control valve is located in the power unit and the tail conveyor slide back lever on the LH side of machine. Fit RH & LH drop down tail conveyor mounts (Item 1) using the bolts supplied. Reference: Figure 6.24.
2. Using the 4 bank lever located on the LH side of the machine, slide the tail conveyor back to its working position. Take the weight off the tail conveyor, slide back ram and remove (Item 2), shown in Figure 6.24.

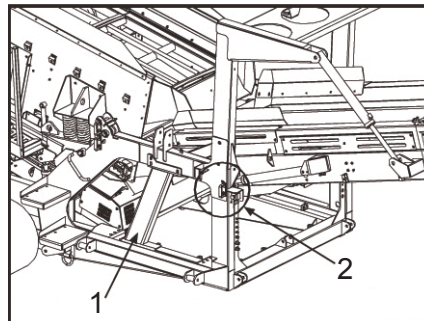


Figure 6.24 - Tail Conveyor Mounts and Slide Ram Pin

3. Extend the ram and locate the head of the ram into the cleats mounted on the chassis, as shown in Figure 6.25. Pin in place.

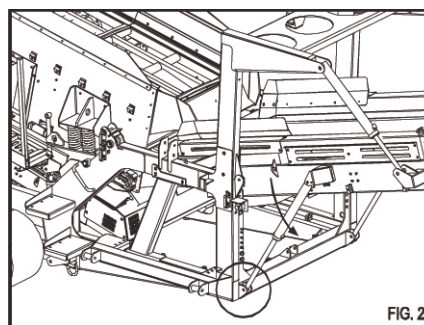


Figure 6.25 - Ram Pinned in Place

4. Using 4 bank control valve take the weight off the tail conveyor block. Remove fasteners and tail block, as shown in Figure 6.26.

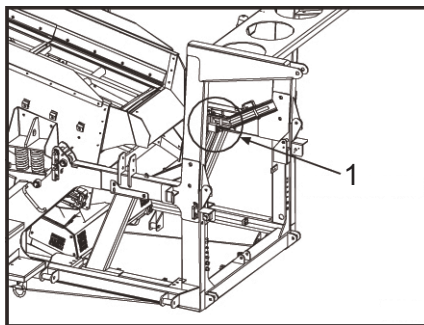


Figure 6.26 - Tail Conveyor Block

5. Using 4 bank control valve lower tail conveyor into lowest position. Using 5 bank control valve in power unit, lower the screen box into working position and pin, as shown in Figure 6.27.

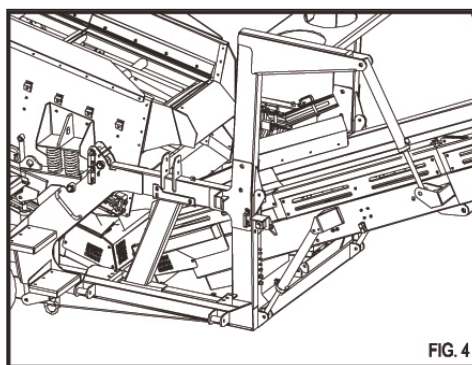


Figure 6.27 - Tail Conveyor and Screenbox Lowered

(7) Walkway Setup Instructions

⚠ DANGER

Fall Hazard. Do not climb onto working or moving machinery. Use suitable lifting equipment when working at a height.

⚠ WARNING

Hazardous nip and crush points. Keep clear of folding equipment. Wear personal protective equipment. Switch off, tag out and lock out before working at the machine.

Ensure all nuts, bolts and wedges are inserted correctly before using the walkway.

NOTICE

Machine must be on level ground prior mounting. All control levers must be in the neutral (non-operational) position.

PROCEDURE

1. Observe all safety warnings.
2. Remove walkway nuts and bolts (B), 3 off LHS/RHS.

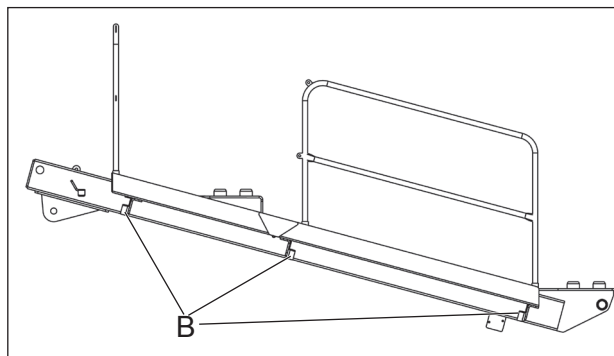


Figure 6.28 - Walkway Nuts and Bolts

3. Lower the walkway down to the subframe (SF).

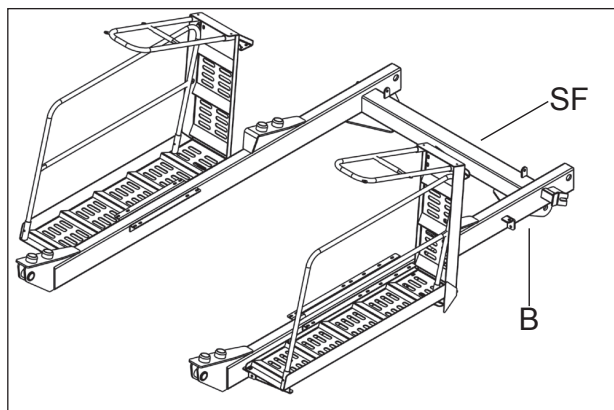


Figure 6.29 - Walkway Up From the Sub Frame

4. Relocate nuts and bolts (B), 3 off LHS/RHS, to secure the walkway in the working position.

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7 Standard Operating Procedures

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7 Standard Operating Procedures

7.1 Pre Operating Checks

DANGER

DO not stand on the maintenance platform whilst the screen and feeder are operating.

WARNING

Wear personal protective equipment. Always wear a EN/ANSI approved hard hat and footwear with adequate toe protection when working in the vicinity of the machine and on the work site.

The machine may only be operated if the safety instructions provided in this manual have been observed and the described procedures have been performed.

Keep away from the conveyor belts, where there is risk of serious injury or death due to rejected processed material and danger from other heavy machinery working in the area, unless you are a fully-trained operator engaged in collecting processed material.

Fall hazard.

Switch off, tag out and lock out machine before carrying out pre-operating checks.

NOTICE

In the event the machine malfunctions for any reason, stop the machine and lock out immediately. Report the malfunction to the competent authority in charge. DO NOT continue to operate the machine UNTIL the malfunction is corrected!

AVOID frequent starting and stopping of the machine unnecessarily as it WILL cause damage to the machine.

PROCEDURE

1. Ensure the machine is placed on solid level ground capable of carrying the machine's weight. Regularly check the stability of the plant. The chassis should not bounce during operation.
2. Ensure there is adequate space around the machine for operation, material stockpiles, maintenance and vehicular movement.
3. Ensure all guards are fully secured in correct/closed position.
4. Check that all safety equipment, alarms and interlocks are operative.
5. Remove all loose items from the belt by untying the securing ropes.
6. Ensure all control valve levers are in the neutral (non-operational) position.
7. Check the engine oil level and the fuel level and replenish if necessary.
8. Check the hydraulic oil level and replenish if necessary.
9. Ensure the material being feed into the feeder or screen unit is below the size limitations recommended by the manufacturer. Do not allow build up of material at feed points.
10. Check the wear parts to ensure speed is suitable for the application and the feed rate is not excessive.
11. DO NOT allow the engine RPM to run at a speed not suited for the application. Check the wear parts to ensure speed is suitable for the application and feed rate not excessive.

» *Engine RPM cannot be changed on a Tier III Constant Speed machine.*

12. Check setup of the screen unit and adjust as necessary to the required settings.
13. Observe all safety instructions and ensure the correct protective clothing and equipment are used by operators.
14. Check the oil cooler fan and radiator for any build up of dust/dirt. Check regularly that the oil cooler fan is running correctly and that dust/dirt has not built up in the fan and radiator unit (overheating can occur if dust/dirt is allowed to build up). Blow out dust/dirt if necessary.

7.2 Initial Startup

NOTICE

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

These checks must be carried out before operating the machine.

Ensure that there is mesh in the screenbox in all decks when the machine is operational. Should only one of the decks be needed, then an oversize mesh should be fitted to retain the structure of the screenbox, as well as to minimise wear

This section should be read and understood prior to starting the machine. If there are any doubts, consult your local dealer or Terex Technical Support department.

PROCEDURE

1. Refer to the engine manufacturer's manual for initial start up of the engine.
2. Run the machine empty for a short period of time and check for abnormal noises, vibration or excessive heat from the shaft bearings.
3. Each day during the initial days of operation check the tension of the conveyor belts.
4. Frequently check the overall stability of the machine, re-position if necessary.
5. Check the machine is level, re-position if necessary.
6. Frequently check the hydraulic oil level in the tank.
7. Frequently check all oil levels.
8. Ensure that the tension of the screen mesh(es) is satisfactory.
9. Frequently check the flow of material over the screen mesh(es) to confirm satisfactory separation is taking place.
10. Make sure that the screen mesh apertures are free of 'pegged' material and that they remain in good condition.
11. Check the vibrating unit bearing temperatures using a contact thermometer on the end covers; record the temperature for future reference and fault diagnosis. (Maximum acceptable temperature is 80 °C [176°F] .)
12. Ensure that all components of the machine are operating before any material is introduced to the machine.

7.3 Standard Tier 3 and Tier 3 Constant Speed Engines

(1) Starting The Engine

⚠ WARNING

Before operation you must read and understand the safety section in section 2 of this manual.

NOTICE

Do not start engine without the above mentioned lights being illuminated.

Preheating is normally necessary when ambient temperature is below zero degrees celsius (32 degrees Fahrenheit)

The engine must be started to provide hydraulic power to all functions.

PROCEDURE

1. Check the engine oil level and the fuel level and replenish if necessary.
2. Place throttle (Item 7, Reference: Figure 7.1) at idle.
» *On machines fitted with a Tier III Constant Speed engine, there is no engine speed switch, therefore this first step does not apply.*
3. Turn the ignition key (Item 8, Reference: Figure 7.1) to position (Item 8, Reference: Figure 7.2), the "on" position
» *The following warning lights on the control panel will illuminate.*
 - A red light (Item 1, Reference: Figure 7.1) alternator.
 - A red light (Item 2, Reference: Figure 7.1) oil pressure lamp
 - A green light (Item 3, Reference: Figure 7.1) should illuminate indicating the machine can be run.
 - A green light (Item 4, Reference: Figure 7.1) should illuminate indicating fuel on.
 - Lights (Items 5 & 6, Reference: Figure 7.1) will light for 2 seconds, then extinguish.

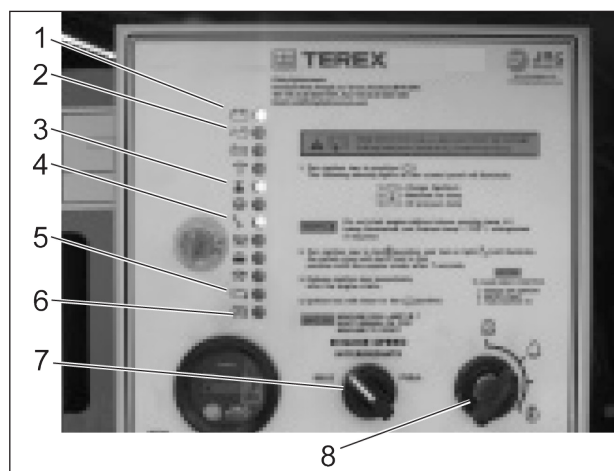


Figure 7.1 - Starter Control Panel & Throttle

4. Now turn the key to position (Item 2, Reference: Figure 7.2). Hold this position until the engine will crank and start after the warning beeper has sounded for approximately 7 seconds.

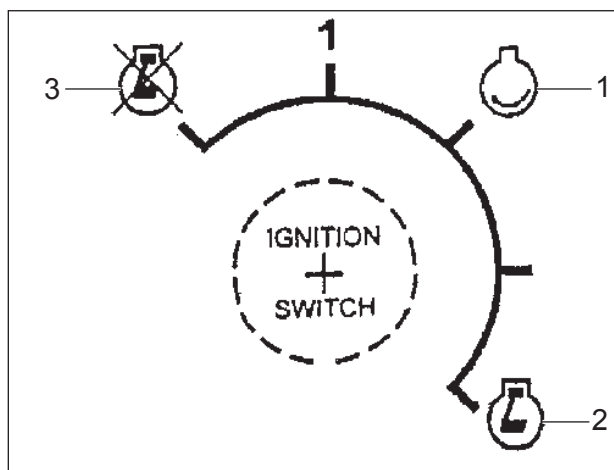


Figure 7.2 - Key Positions













5. All the lights should extinguish after start-up (with the exception of the machine run and fuel on lamps). If the other lights remain illuminated or illuminate during operation, there is a fault relevant to that indicator. Return ignition key to (Item 1, Reference: Figure 7.2) immediately after the engine starts.
6. When stopping the engine, ensure all control levers are in neutral. Reduce engine speed gradually by adjusting the throttle lever. Then turn the key to position (Item 3, Reference: Figure 7.2) and the engine will stop.
 - » *On machines fitted with a Tier III Constant Speed engine, there is no engine speed switch. Run the machine empty with no load for 3 to 5 minutes before turning the engine off.*

(a) Starter Panel Indicators (Caterpillar C4.4)

⚠ DANGER



All electrical work must be carried out by a qualified electrician.

Each light on the starter box (Item A-K) will illuminate when the following occur.

| Item | Indicator Light | Description |
|--------|---|-------------------------------|
| Item A |  | Alternator Failure |
| Item B |  | Low Oil Pressure |
| Item C |  | Low Coolant Level |
| Item D |  | Fuel Contamination |
| Item E |  | Machine Run Lamp |
| Item F |  | Air Filter Element Restricted |
| Item G |  | Fuel On Lamp |
| Item H |  | Low Hydraulic Oil Level |
| Item I |  | Emergency Stop Engaged |
| Item J |  | Preheat On |
| Item K |  | Warning Lamp |
| Item L |  | Shutdown Lamp |

The Monitoring Lamps (Items K & L) monitor the Engine. The following table outlines the various lamp combinations and their meaning. For complete details of the Monitoring system, refer to the Engine Operation and Maintenance manual supplied with your machine.

(b) CAT 4.4 Monitoring System

| | |
|---|---------------|
|  | Warning Lamp |
|  | Shutdown Lamp |

| Warning Lamp | Shutdown Lamp | Lamp Status | Description of Lamp Status | Engine Status |
|--------------|---------------|-------------------------|---|---|
| On | On | Lamp Check | When the engine start switch is turned to the 'ON' position both lamps will illuminate for 2 seconds only. | The engine has not been started. |
| Off | Off | No Faults | There are no active diagnostic faults. | The engine is running normally |
| On | Off | Active Diagnostic Fault | An active diagnostic fault has been detected. | The engine is running normally |
| On | Flashing | Active Diagnostic Fault | A serious active diagnostic fault has been detected and an engine derate has been invoked. | The engine is running but has been derated. |
| Flashing | Off | Warning | One or more of the engine protection values has been exceeded. | The engine is running normally |
| Flashing | Flashing | Derate and warning | One or more of the engine protection values has been exceeded. | The engine is running but has been derated. |
| On | On | Engine Shutdown | One or more of the engine protection values has been exceeded or a serious active diagnostic fault has been detected. | The engine is shutdown or shutdown is imminent. |

7.4 MCU 300 Operation (CAT Tier 4 Engine)

(1) Starting the Engine

NOTICE

Do not start the engine if any red warning lights or fault symbols are shown on the display screen. A fault symbol indicates that there is a fault relevant to that indicator which must be fixed before starting the engine.

(a) No Faults on the Display Screen

PROCEDURE

1. Switch the engine speed switch (Item 3) to low, Reference: Figure 7.3.

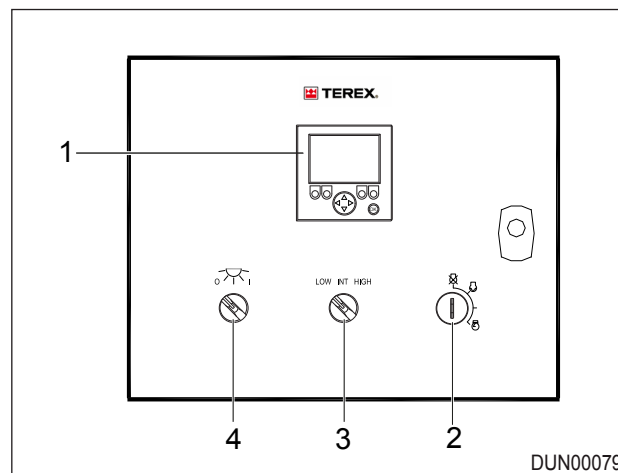


Figure 7.3 - Control Panel

2. Turn the ignition key on the control panel to the "ON" position, Figure 7.4 (Item 2).

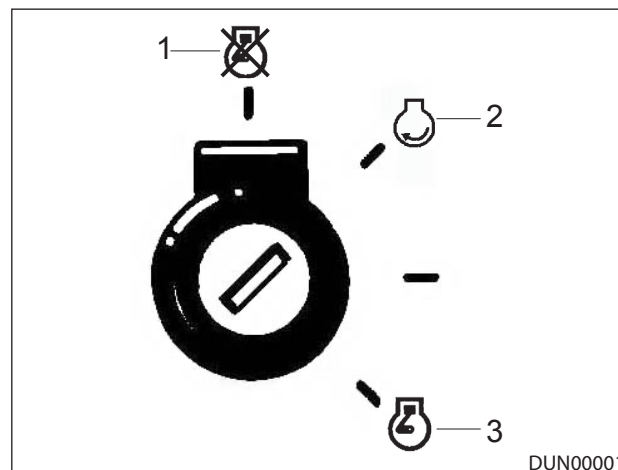


Figure 7.4 - Ignition Key Positions

» The home screen will be displayed on the control panel display screen, Reference: Figure 7.5. The indicator lamps in the centre of the screen will illuminate and extinguish after two seconds if there are no faults present. If the indicator lamps do not extinguish. The e-stop healthy and fuel on symbols only should light up green. Do not start the engine if any other lights are illuminated red or if there are any other faults shown on the display screen.

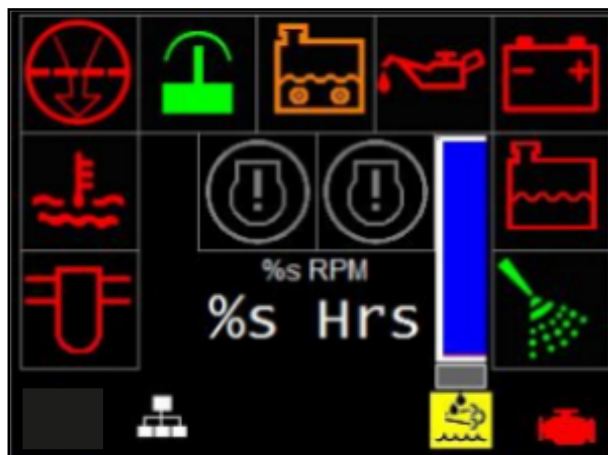


Figure 7.5 - Home Screen (No Faults)

» On Tier 4 machines the wait to start lamp is illuminated briefly on the home screen, Reference: Figure 7.6. The engine can be started after this lamp goes out.

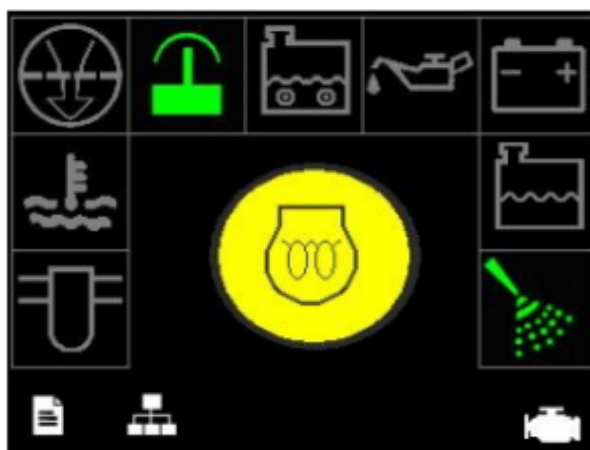


Figure 7.6 - Home Screen (Wait to Start)

3. Turn the key to the crank position, Reference: Figure 7.4 (Item 3).
 » The engine will crank and start after the warning siren has sounded for approximately 7 seconds.
4. To view engine information, press the button under the engine symbol (Item 4), Reference: Figure 7.7.

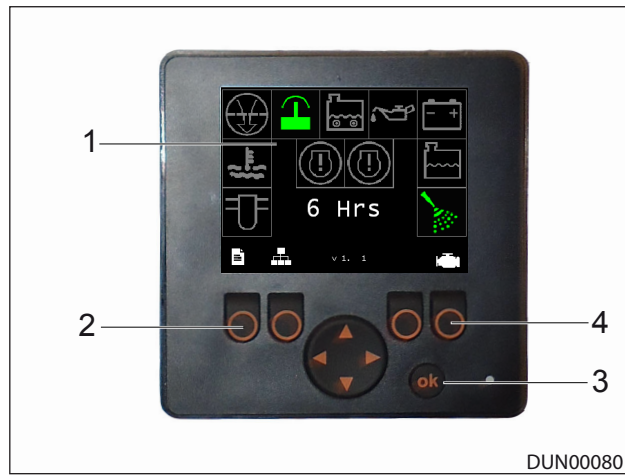


Figure 7.7 - Control Panel Display

» The engine information screen is displayed, Reference: Figure 7.8. Refer to Table 7.1 for a description of each of the symbols.

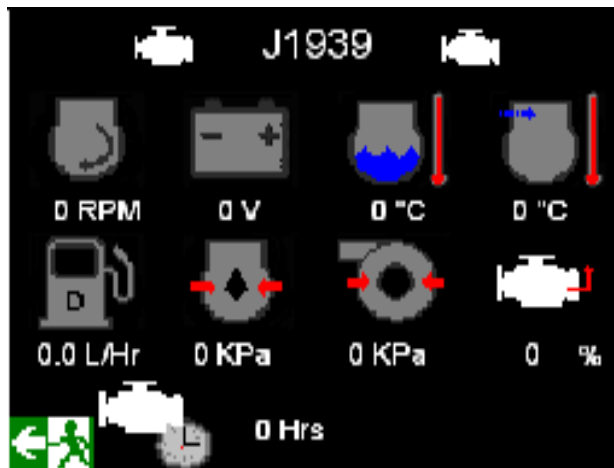






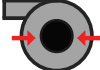




Figure 7.8 - Engine Information Screen

Table 7.1 - Engine Information Screen Symbols

| Symbol | Description |
|---|----------------------------------|
|  | Engine speed |
|  | Battery voltage |
|  | Coolant temperature |
|  | Air intake temperature |
|  | Fuel rate |
|  | Engine oil pressure |
|  | Engine boost (or turbo) pressure |
|  | Engine load |
|  | Engine run hours |











When a DM 1 code is present the DM 1 symbol will flash red. Pressing the button will take you to the Active Fault page

To return to the main menu home screen any time press the button under the exit symbol (Item 2), Reference: Figure 7.7.

(b) Active Fault on the Display screen

A fault symbol will be illuminated red on the home screen when a fault occurs. The symbols shown will depend on the fault, Reference: Table 7.2.

Table 7.2 - Display Screen Fault Codes

| Indicator | Fault Code | Indicates |
|---|------------|---|
|  Flashing Icon | FC001 | Emergency stop engaged |
|  | FC002 | Low hydraulic oil level |
|  | SPN111 | Low coolant level |
|  | SPN110 | High engine temperature |
|  | FC005 | Air filter element restricted |
|  | SPN232 | Fuel contamination |
|  | SPN100 | Low oil pressure |
|  | FC008 | Remote stop |
|  | FC009 | Battery Voltage LOW |
|  | FC010 | Communication loss between master and display |

NOTICE

Do not start the engine if any red warning lights or fault symbols are shown on the display screen. The fault symbol indicates that there is a fault relevant to that indicator which must be fixed before starting the engine.

PROCEDURE

1. Switch the engine speed switch (Item 3) to low, Reference: Figure 7.3.
2. Turn the ignition key to the "ON" position, (Position 2), Reference: Figure 7.4.
 - » The main menu is displayed on the control panel screen. A fault symbol around the outer edge of the home screen is highlighted red and a yellow safety warning symbol is displayed in the bottom left hand corner of the screen indicating that there is a fault, Reference: Figure 7.9.



Figure 7.9 - Home Screen (Active Fault)

3. Press the button under the warning symbol (Item 2) to view the alarm history, Figure 7.10.

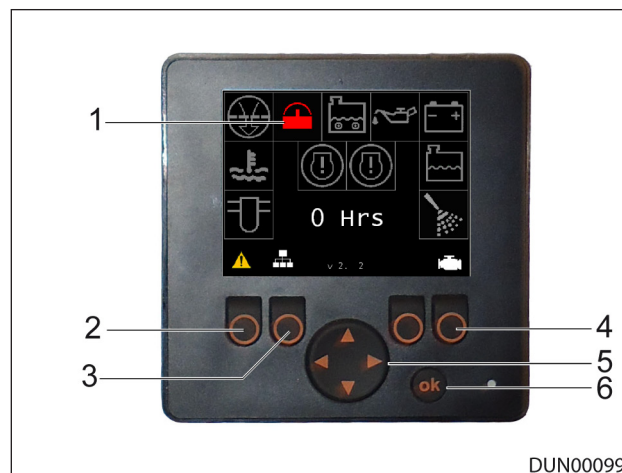


Figure 7.10 - Main Menu Active Fault

» A screen showing the alarm symbol and corresponding fault code is displayed, Reference: Figure 7.11. The engine run hours at which the fault occurred is also displayed. Active alarms will have the yellow warning symbol displayed beside the fault symbol. If a fault symbol is shown without the yellow warning symbol, this indicates that the alarm has occurred but it is now inactive.

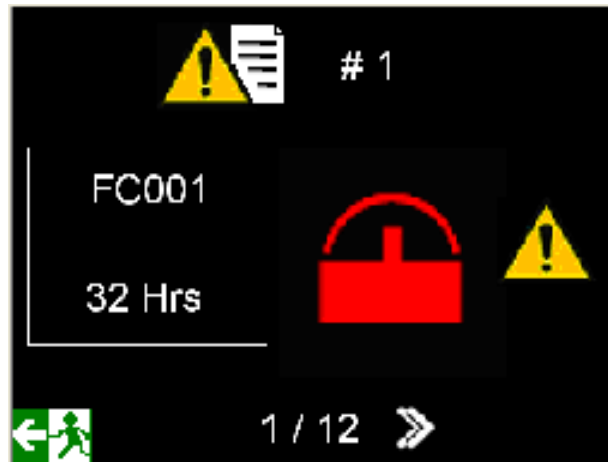


Figure 7.11 - Active Fault Screen

4. The last 12 faults are stored in the control panel. Press the right direction button (Item 5) on the panel to scroll through the active faults, Reference: Figure 7.10.
5. To return to the main menu home screen any time press the button under the exit symbol (Item 2), Reference: Figure 7.10.
6. Determine the cause of the fault(s) and ensure that the problem(s) has been fixed before continuing. Refer to Table 7.2 for fault code descriptions. If the engine fault screen is shown (Figure 7.12) there is a problem with the engine. Refer to the table in Appendix D for a list of the engine fault codes. Refer to the engine manufacturer's manual or your local dealer for more information.



Figure 7.12 - Engine Fault Screen

7. Press the button (Item 2) on the control panel to return to the home screen, Reference: Figure 7.10.
» The home screen will be displayed with the fault symbol shown orange indicating that the fault is cleared, Reference: Figure 7.13.

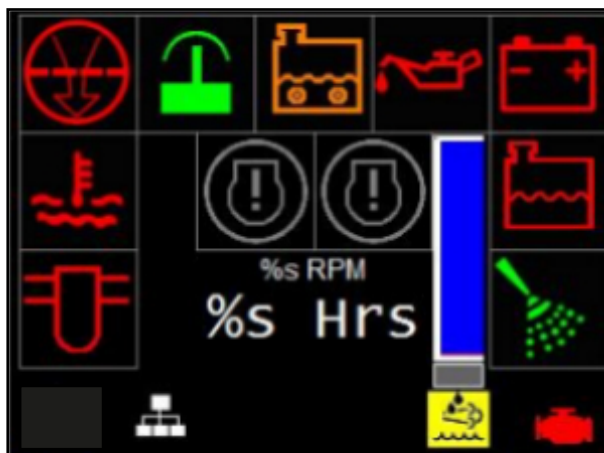


Figure 7.13 - Home Screen (Fault Cleared)

8. If there is a communication loss fault (FC010), the communication loss fault icon will be displayed in the centre of the home screen , Reference: Figure 7.14.



Figure 7.14 - Home Screen (Communication Fault)

9. Press the button 3 (Reference: Figure 7.10) on the panel to view the machine inputs and outputs, Reference: Figure 7.15.
» The controller status screen showing the input and output connections will be displayed, Reference: Figure 7.15. If there is a communications fault, all of the icons will be shown in grey.

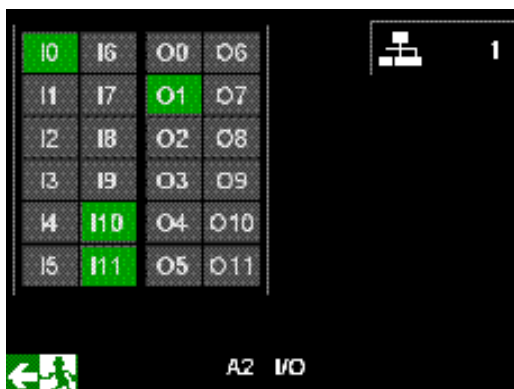


Figure 7.15 - Controller Status Screen

10. If any of the inputs or outputs are illuminated green, there is healthy communication between the PLC and the display screen. If any of the inputs are grey, the input to the controller is not active. If any of the outputs are grey, the output to the controller is not active. Ensure that all connections are correct.

» *Refer to tables below for descriptions of each of the inputs and outputs shown on the controller status screen.*

Table 7.3 - Inputs

| Item | Description |
|------|------------------------|
| I0 | ESTOP HEALTHY |
| I1 | TRACK REQUEST |
| I2 | LOW SPEED |
| I3 | INTERSPEED |
| I4 | HIGH SPEED |
| I5 | CONV1 START REQ |
| I6 | SPARE |
| I7 | SPARE |
| I8 | AIR FILTER RESTRICTION |
| I9 | START ENGINE |
| I10 | REMOTE STOP |
| IN11 | HYD OIL LEVEL |

Table 7.4 - Outputs

| Item | Description |
|------|---------------|
| O0 | ENGINE CRANK |
| O1 | FUEL SYSTEM |
| O2 | HYD OIL FAN |
| O3 | SIREN/BEACON |
| O4 | TRACKS ENABLE |
| O5 | SPARE |
| O6 | SPARE |
| O7 | SPARE |
| O8 | SPARE |
| O9 | SPARE |
| O11 | CONV1 RUN |
| O11 | SPARE |

Table 7.5 - Expansion Node Inputs

| Item | Description |
|------|------------------|
| I1 | FOLDING SENSOR 1 |
| I3 | FOLDING SENSOR 2 |
| I5 | FOLDING SENSOR 3 |
| I7 | SPARE |

Table 7.6 - Expansion Node Outputs

| Item | Description |
|------|-------------|
| O2 | FOLD1 SOL |
| O4 | FOLD2 SOL |
| O6 | FOLD3 SOL |
| O8 | SPARE |

1. Press the button (Item 2) on the control panel to return to the home screen, Reference: Figure 7.10.
2. Turn the ignition key to the crank position (Item 3).
» *The engine will crank and start after the warning beeper has sounded for approximately 7 seconds.*

(c) CAT Fault Indicator Lamps

The fault indicator lamps in the centre of the home screen will flash when powering up the CAT ECU on switch on but will switch off again if there are no faults.

If either or both of the indicator lamps are illuminated or flashing while the engine is running, there is a fault with the engine system which must be dealt with immediately, Reference: Figure 7.16 and Figure 7.17. Refer to Table 7.7 to determine the fault indicated by the lamps.

NOTICE

All faults must be identified and resolved as soon as possible.



Figure 7.16 - Warning Lamp (Alert Lamp)

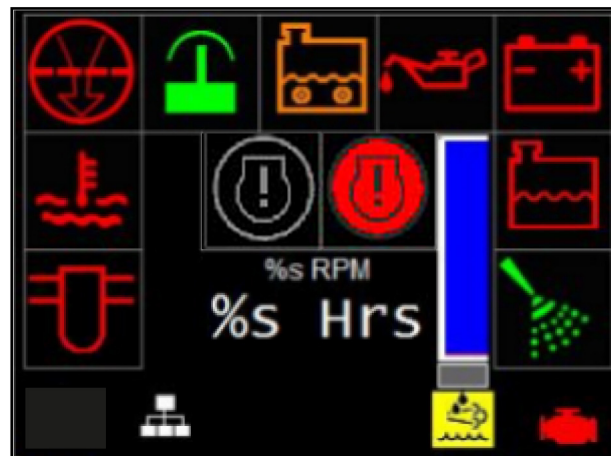


Figure 7.17 - Shutdown Lamp (Action Lamp)

Table 7.7 - Indicator Lamps Logic

| Warning Lamp | Shutdown Lamp | Lamp State | Description | Engine State |
|--------------|---------------|---------------------------------------|---|---|
| On | On | Bulb Check | When the ignition is turned on the EMS shall illuminate each bulb for 2 seconds and extinguish them afterwards. | Key on but engine has yet to be cranked. |
| Off | Off | No faults present | With both lamps off whilst engine is running then there are no currently active warnings diagnostic's or events. | Engine is running with no detected faults. |
| On | Off | Active diagnostic | Should the warning lamp illuminate during engine running this indicates that an Active diagnostic (Electrical fault) is present. | Engine is running normally but has one or more faults with the engine management system. |
| On | Flash | Derate (invoked by active diagnostic) | Should the warning lamp illuminate and the shutdown lamp flash during engine running this indicates that an Active diagnostic (Electrical fault) is present. The diagnostic is sufficiently serious to invoke engine derate. | Engine is running but has one or more Active diagnostic events that have initiated engine derate. |
| Flash | Off | Warning (warning only) | Should the warning lamp flash during engine running this indicates that one or more of the engine protection strategy warning values have been exceeded but not to a level that will invoke Derate or Shutdown. | Engine is running normally but has one or more monitored engine parameters outside of the acceptable range. |
| Flash | Flash | Derate (warning and derate) | Should both the Warning lamp and Shutdown lamp flash during engine running this indicates that one, or more, of the engine protection strategy values have been exceeded beyond the level required to invoke engine Derate. | Engine is running but one or more of the monitored engine parameters has gone beyond that of warning only and has now exceeded those set for engine derate. |
| On | On | Engine shutdown | Should both the Warning lamp and Shutdown lamp illuminate during engine running this indicates that either: 1. One or more of the engine protection strategy shutdown values has been exceeded. 2. A serious Active diagnostic has been detected. Shortly after (time duration to be agreed) engine will shutdown. | Engine is either shutdown or shutdown is imminent, one or more monitored engine parameters have gone beyond that of warning or derate and have now exceeded those set for engine shutdown. Or a serious Active diagnostic has been detected |

(2) Tier 4 Dual Power Machine Operation

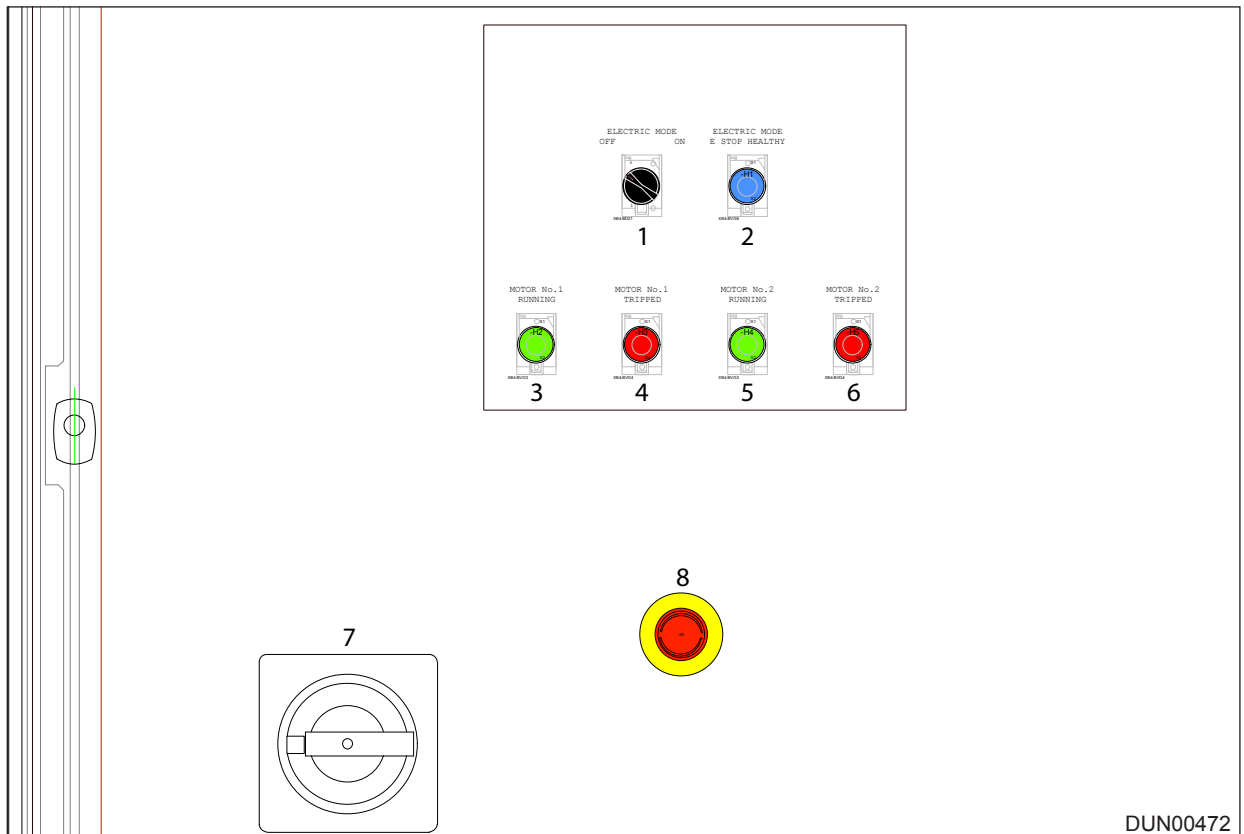


Figure 7.18 - Tier 4 Dual Power Control Panel

(3) Diesel Mode Operation

PROCEDURE

1. Ensure the Electric mode switch (Item 1) is OFF, Reference: Figure 7.18.
2. Switch the isolator switch (Item 7) on the control panel to off.
3. To operate the machine in diesel mode refer to Section 7.3 MCU 300 Machine Operation.

(4) Electric Mode Operation

NOTICE

To operate in electric mode, first make sure that a suitably sized supply cable is connected safely to the Dual power Control panel isolator Input side.

Ensure that this cable is suitably protected at the supply side with the appropriate protection and isolating device in strict accordance with local and international regulations.

Supply cable should only be installed by a qualified electrician.

(a) Pre-run Check

NOTICE

Do not leave Motor running while checking the direction. Simply 'Pulse' the motor as described. Failure to follow these directions may result in damage to the motors and/or pumps.

Before the machine can be run normally, the direction of both motors must be checked.

PROCEDURE

1. First, note the required direction of the hydraulic pumps, usually indicated on the pump housing. If unsure, contact Terex for advice.
2. Ensure all circuit breakers are in the ON position.
3. Ensure all Emergency Stop buttons are released and that it is safe to start the machine.
4. Switch on the Main Panel 3P 160A Isolator switch.
5. Switch the Operating Mode Selector Switch to Electric Mode.
6. Emergency stop healthy lamp should be illuminated.
7. Turn the ignition key to the crank position.
8. Turn off the ignition key.
9. Check Motor 1 is running in the correct direction.
10. If motor 1 is not rotating in correct direction, swap two phases of supply cables.
11. Turn on ignition key, turn to crank position.
12. Wait until both motors are running.
13. Turn off ignition key, verify both motors are running in the correct direction.
14. Do not swap the motor connections in the main control panel as these are tested before leaving the factory.
15. Once the motors are running in the correct direction the machine can be started as follows.

(b) Electric operation

PROCEDURE

1. To allow the machine to operate in Electric mode, ensure the electric mode switch (Item 1) is ON, Reference: Figure 7.19.
2. Switch the isolator switch (Item 7) on the control panel to on, Reference: Figure 7.19.

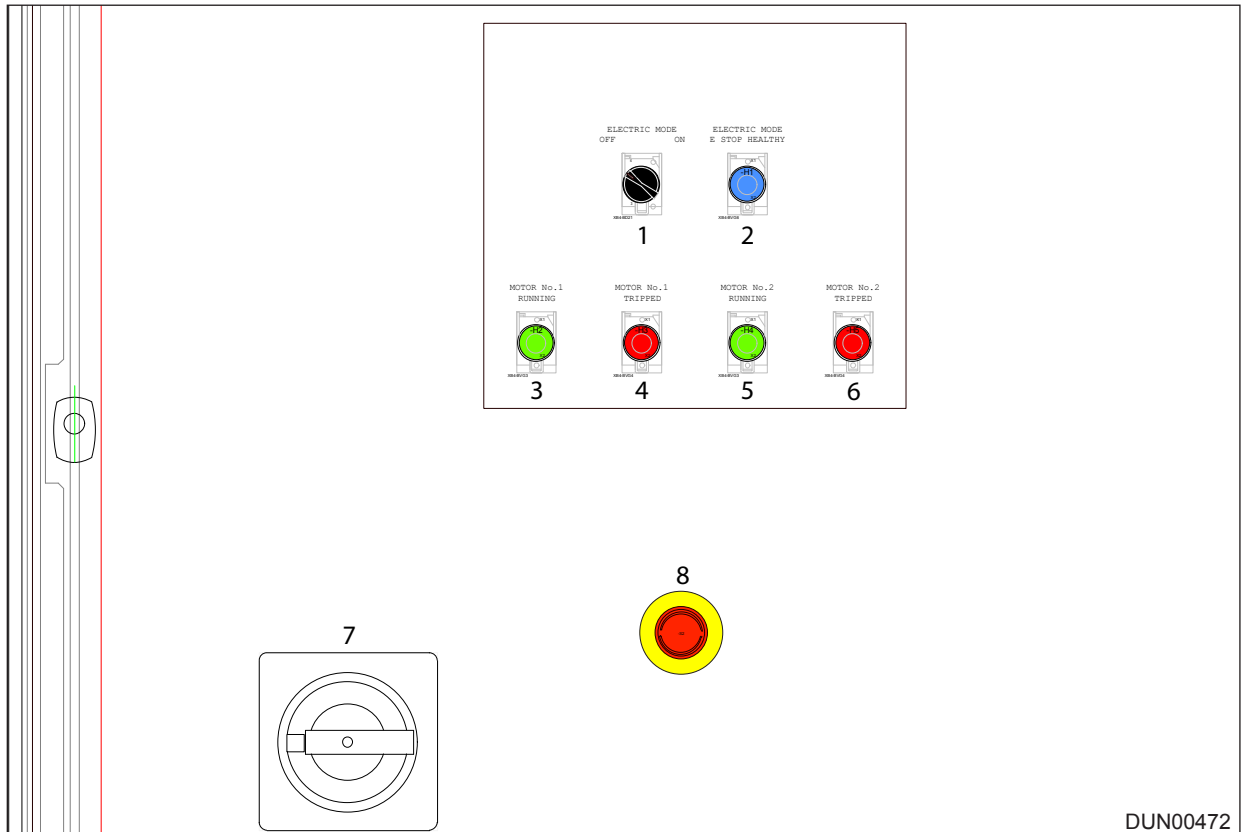


Figure 7.19 - Tier 4 Dual Power Control Panel

3. Turn the ignition key on the control panel to the "ON" position, Figure 7.20 (Item 2).

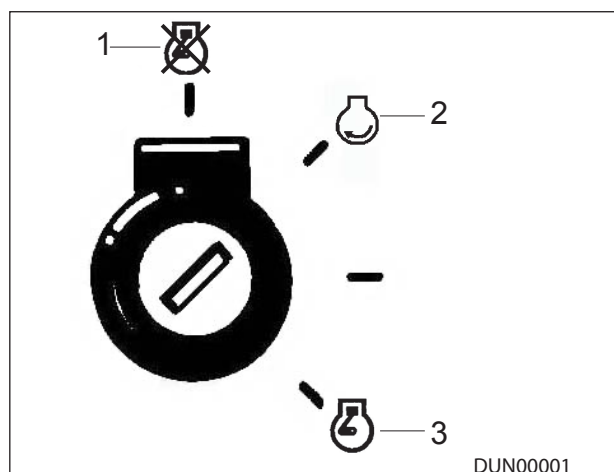


Figure 7.20 - Ignition Key Positions

- » If all Emergency Stops on machine are OK then “Electric Mode Estop Healthy” Lamp (Item 2) should illuminate, Reference: Figure 7.19.
- » The electric mode home screen will be displayed on the control panel, Reference: Figure 7.21.

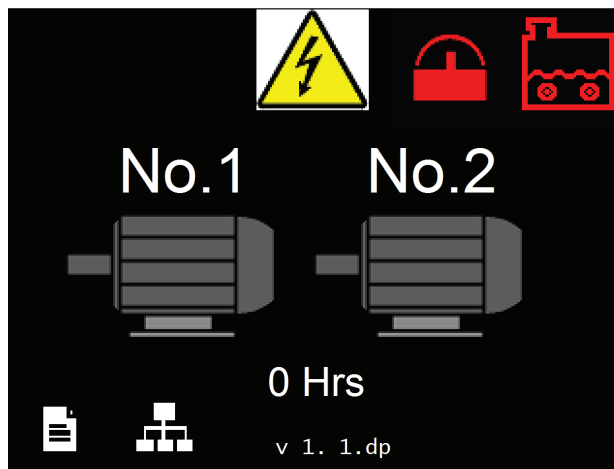


Figure 7.21 - Electric Mode Home Screen

4. Turn the ignition key to the crank position, Reference: Figure 7.20 (Item 3).
 - » Motor No.1 starts to flash green, when fully running will change to steady green, Reference: Figure 7.22 (Item 3).

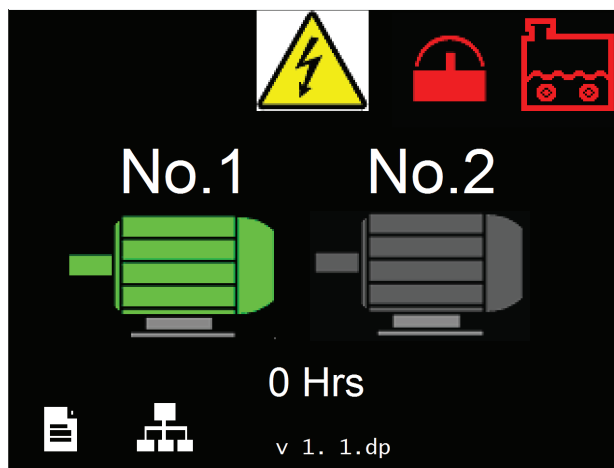


Figure 7.22 - Motor 1 Running

- » Then motor No.2 starts to flash green, when fully running will change to steady green, Figure 7.23.

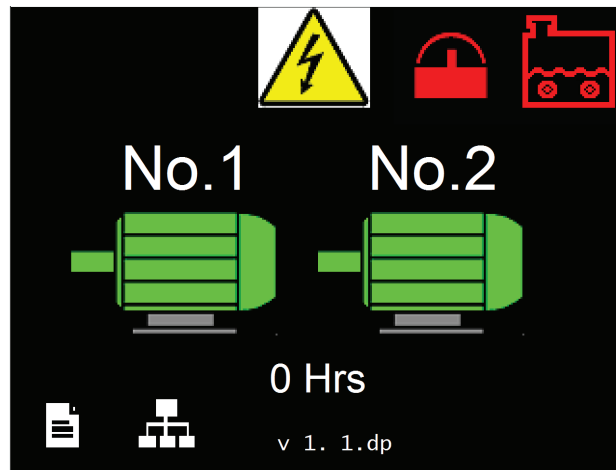


Figure 7.23 - Motor 1 and 2 Running

5. If a motor goes to Fault condition the motor symbol will change to red, Reference: Figure 7.24.

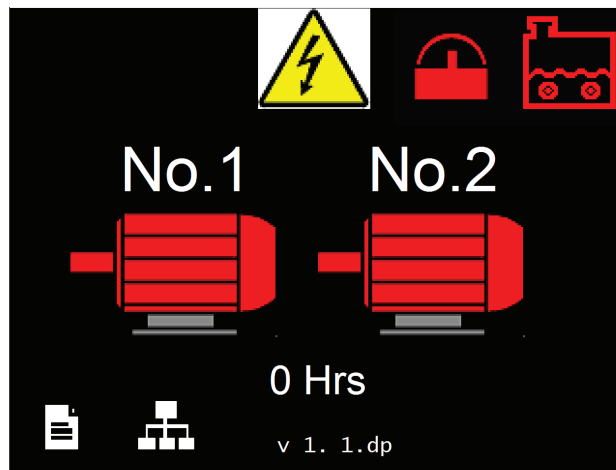


Figure 7.24 - Motor 1 and 2 Fault

6. Switch off the machine and ensure the problem is fixed before restarting

7.5 Tier 3 Dual Power Operation

(1) Electric Mode Operation

NOTICE

To operate in electric mode, first make sure that a suitably sized supply cable is connected safely to the Dual power Control panel isolator Input side.

Ensure that this cable is suitably protected at the supply side with the appropriate protection and isolating device in strict accordance with local and international regulations.

Supply cable should only be installed by a qualified electrician.

(a) Pre-Run Check

NOTICE

Do not leave Motor running while checking the direction. Simply 'Pulse' the motor as described. Failure to follow these directions may result in damage to the motors and / or pumps.

Before the machine can be run normally, the direction of both motors must be checked.

PROCEDURE

1. First, note the required direction of the hydraulic pumps, usually indicated on the pump housing. If unsure, contact Terex for advice.
2. Ensure all circuit breakers are in the ON position and that the Battery Isolator switch on the machine Powerunit is locked in the OFF position.
3. Ensure all Emergency Stop buttons are released and that it is safe to start the machine.
4. Switch on the Main Panel 3P 160A Isolator switch.
5. Switch the Operating Mode Selector Switch to Electric Mode.
» *The Electric Mode lamp will illuminate*
6. Switch Test / Manual selector switch to TEST mode.
7. Press the Emergency Reset Button on the main control panel.
» *Providing the emergency stop circuit is healthy, the green Emergency Stop Healthy Lamp will illuminate.*
8. Next Press the Pre-Start button.
» *This will cause the siren and beacon to activate. After 7 seconds the, Pre-Start lamp will illuminate indicating it is clear to start the machine.*
9. Press the Oil Cooler Start Button.
» *The Oil Cooler Run Lamp will illuminate and the Oil Cooler Fans in the engine Powerunit will activate.*
10. Next press Motor 1 Start button followed by Motor 1 Stop button in quick succession.
11. Check that Motor 1 is running in the correct direction.
12. Repeat step 10 for Motor 2.
13. If the motors are running the wrong direction, swap 2 of the supply cable phases.
14. Do not swap the motor connections in the main control panel as these are tested before leaving the factory.

15. Once the motors are running the correct direction the machine can be started as follows

(b) Normal Start Procedure

NOTICE

If the Main Motors & oil cooler are not started within 30 seconds of the Pre-Start lamp illuminating, The Pre-Start sequence will reset and will need to be repeated in order to start the machine.

PROCEDURE

1. Ensure all circuit breakers are in the ON position and that the Battery Isolator switch on the machine Powerunit is locked in the OFF position.
2. Ensure all Emergency Stop buttons are released and that it is safe to start the machine
3. Switch on the Main Panel 3P 160A Isolator switch.
4. Switch the Operating Mode Selector Switch to Electric Mode.
 - » *The Electric Mode lamp will illuminate*
5. Switch Test / Manual selector switch to MANUAL mode.
6. Press the Emergency Reset Button on the main control panel.
 - » *Providing the emergency stop circuit is healthy, the green Emergency Stop Healthy Lamp will illuminate*
7. Next Press the Pre-Start button.
 - » *This will cause the siren and beacon to activate. After 7 seconds the, Pre-Start lamp will illuminate indicating it is clear to start the machine.*
8. Press the Oil Cooler Start Button.
 - » *The Oil Cooler Run Lamp will illuminate and the Oil Cooler Fans in the engine Powerunit will activate.*
9. Press Motor 1 Start button.
 - » *The Main contactor and Star contactors (KM1 and KM1.1) will energise. After aprox. 5 seconds, the Star contactor will disengage and the Delta contactor (KM1.2) will energise. This will cause the Motor 1 Run Lamp to illuminate.*
10. Press Motor 2 Start button.
 - » *The Main contactor and Star contactors (KM2 and KM2.1) will energise. After aprox. 5 seconds, the Star contactor will disengage and the Delta contactor (KM2.2) will energise. This will cause the Motor 2 Run Lamp to illuminate*
11. Once both motors and the oil cooler fans are running, the machine items can be started via the manual levers.

(c) Diesel Mode

To run the machine on the diesel engine, the key switch on the large electrical panel needs to be switched to diesel. Starting / stopping and engine protection functions are carried on the large electrical panel. The small electrical panel within the power unit is removed. All hydraulics are then operated in the normal way.

(d) Electrical Mains Power Mode

NOTICE

There is also a timer if the oil cooler button has not been pressed within 30 seconds after the pre start delay the sequence must be restarted.

To run the machine from three phase supply electric the operation sequence of the electrical mode as follows:

PROCEDURE

1. Set the key switch on the large electrical panel to the electric selection.
2. Suitably rated AC supply from a mains source or generator must be supplied and a trained electrician must fit the electrical cables and ensure the electric motors are rotating in the correct direction.
3. Main isolator must be switched to the on position.
4. The pre start is then pressed for the delay and siren.
5. Once complete the oil cooler can be started by pressing oil cooler start button on the panel front.
6. When the oil cooler has been started motor 1 can be started by pressing motor 1 start button on the panel front.
7. Once motor 1 has been started motor 2 can then be started by pressing motor 2 start button on the panel front.
8. Then the hydraulics can be operated as if using the diesel mode.

(2) Diesel Mode Operation

NOTICE

To operate in diesel mode first make sure that the mains electric supply is switched off and disconnected if possible.

It is not advised to run the machine in Diesel mode with the electric cable attached due to the ability of the machine to be tracked in this mode.

PROCEDURE

1. Ensure the battery is connected and the battery isolator switch is in the ON position
2. Ensure the Main Panel Isolator is in the OFF position
3. Switch the Operating Mode Selector Switch to Diesel Mode.
4. Switch the Ignition Switch to the ON position
 - » *The MCU 200 controller will power up and the screen will illuminate.*
5. If there are any un-cleared or active faults, the Display will show 'Not Ready'.
6. Press the Fault Reset Button on the MCU 200 to clear any inactive faults.
7. Ensure the MCU 200 is in MAN mode.

Once the MCU 200 displays 'Ready' it is clear to begin the Start Procedure. The engine can be started by two methods:

(a) Using the Start Push Button

PROCEDURE

1. To start the engine using the start push button simply press the start button when ready to start the engine
 - » *This will cause the Siren and Beacon to operate for ten seconds*
 - » *After 10 seconds, the starter solenoid will energise for five seconds and the engine will try to start.*
 - » *If the engine has not started within the five seconds the starter solenoid will disengage and there will be a pause of three seconds.*
 - » *After the three second pause, the Siren and Beacon will operate for ten seconds*
 - » *After 10 seconds, the starter solenoid will energise again for five seconds and the engine will try to start.*
2. If the engine has not started within the five seconds the starter solenoid will disengage and there will be a pause of three seconds.
3. This process will be repeated three times in total after which if the engine has not started the MCU 200 will display 'StartFail' alarm
4. Once the MCU 200 reads a speed level from the engine the engine starter solenoid will disengage and the MCU 200 will display 'Running'
5. The engine speed will be displayed on the MCU 200 visually as an analogue gauge and the RPM value displayed beside it..

(b) Using the Ignition Switch

PROCEDURE

1. To start the engine using the Ignition Switch simply turn the Ignition to the 'Crank' position and release. The start sequence will be the same as detailed above
-

7.6 Tier 3 Diesel Machine Operation

(1) Starting the Engine

⚠ WARNING

Wear personal protective equipment.

NOTICE

Do not start engine without the mentioned warning lights being illuminated and the preheat lamp being extinguished if required.

All control levers must be in the neutral (non-operational) position.

If the warning lights fail to extinguish stop the engine. Detect and rectify the fault before using the machine.

PROCEDURE

1. Observe all safety warnings.
2. Turn ignition key to position 2, Reference: Figure 7.25.

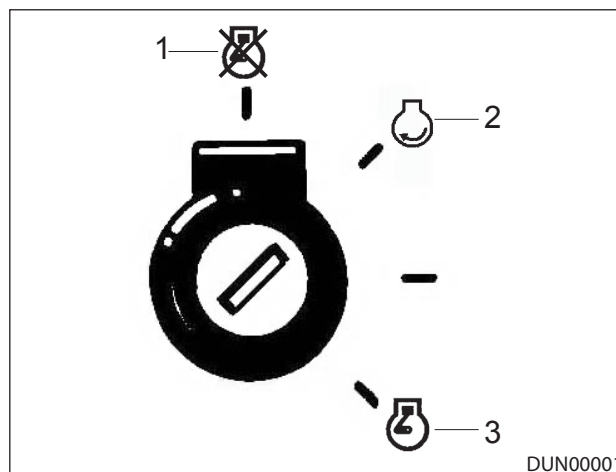


Figure 7.25 - Ignition Key Positions

» The following warning lights on the control panel will illuminate:

| | |
|--|-------------------------|
| | (B) - Charge lamp |
| | (D) - Control lamp |
| | (F) - Oil pressure lamp |
| | (O) - Emergency stop |

3. Fully depress and hold override button.

7 Standard Operating Procedures

- » *Fuel solenoid engages and the control lamp (D) is extinguished.*
 - 4. Turn ignition key to position 3 and holds until the safety siren stops, Reference: Figure 7.25.
 - » *The fuel on light will illuminate and the engine will start.*
 - » *The oil pressure light will illuminate for 5 seconds after key on and then go out.*
 - 5. Release ignition key immediately after the engine starts.
 - » *Oil pressure lamp (F) should extinguish.*
 - 6. When oil pressure lamp (F) is extinguished release override button (H).
-

7.7 Machine Operation

(1) Putting into Operation

Refer to Section 4.5 for pictorial decal descriptions.

⚠ WARNING

Ensure all personnel are clear of the machine. Wear personal protective equipment.

Fluid injection hazard.

Nip point hazard.

NOTICE

There is an option on the machine to have the collection and fines controls split. The collection and LH side conveyors are activated by separate drive control levers and flow controls.

Ensure that there is mesh in the screenbox in all decks when the machine is operational. Should only one of the decks be needed, then an oversize mesh should be fitted to retain the structure of the screenbox, as well as to minimise wear

The machine components must be put into operation in the correct order.

PROCEDURE

1. Observe all safety warnings.
2. Start the engine and gradually increase speed to maximum (2200 RPM).
» *In the case of machines fitted with a Constant Speed engine, the engine speed cannot be changed. The engine will run at constant 1800 RPM.*
3. Move up lever 6 to start and drive the tail conveyor.
4. Move up lever 4 to start and drive the RH side conveyor (mid-fines conveyor).
5. Move up levers 2 and 5 to start and drive the collection and LH side (fines) conveyors.
6. Move up lever 3 to start and drive the screenbox.
7. Move up lever 1 to start and drive the feeder conveyor.

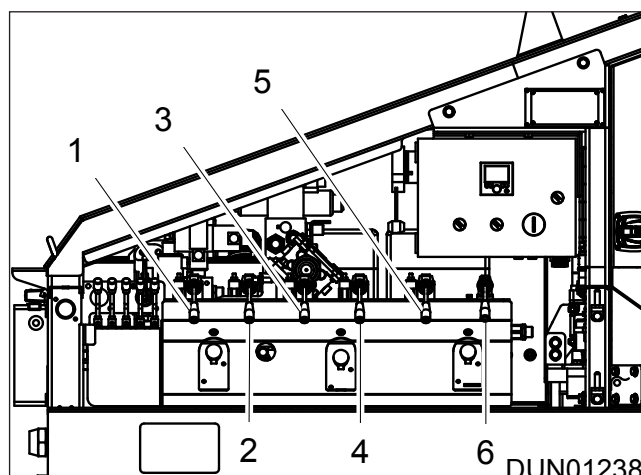


Figure 7.26 - Tier 4 Control Lever Bank

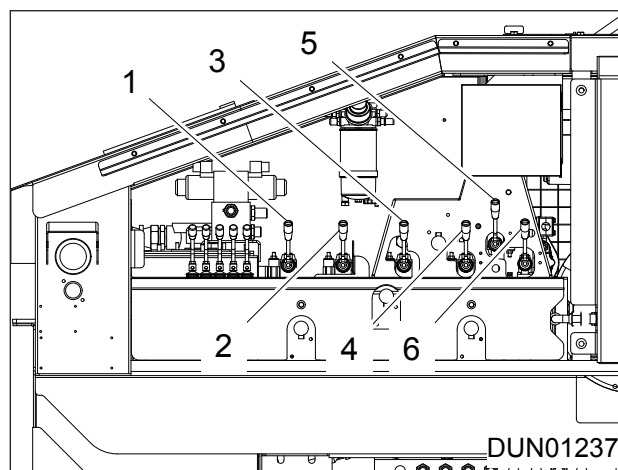


Figure 7.27 - Tier 3 Control Lever Bank (Including Constant Speed)

Control Lever Bank functions

- 1 Feeder Conveyor
- 2 Fines Conveyor
- 3 Screenbox
- 4 Mid-Fines Conveyor
- 5 Collection Conveyor
- 6 Tail Conveyor

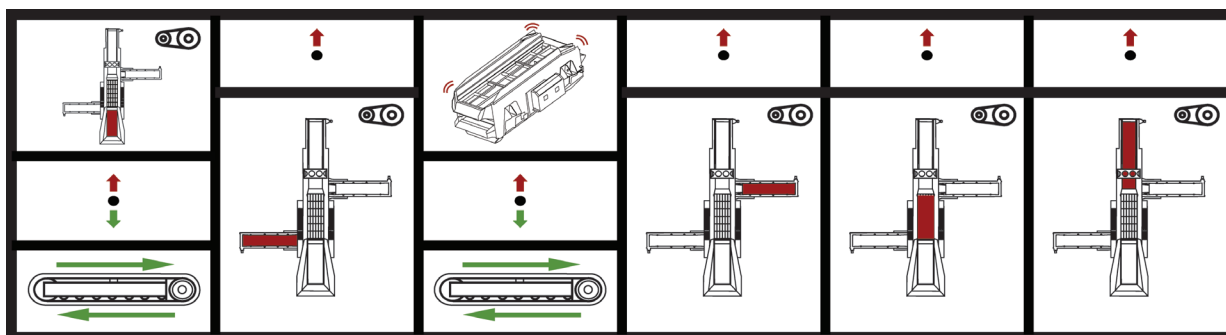


Figure 7.28 - Conveyor and Fines Split Option Decals

8. The variable speed flow control valves control the speed of the conveyors when the corresponding control valve is engaged.

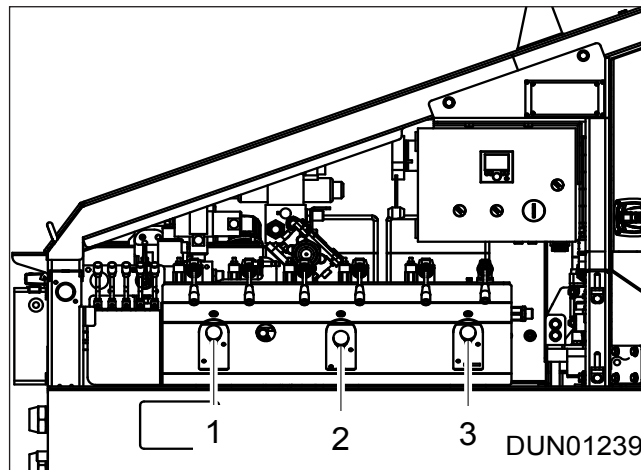


Figure 7.29 - Tier 4 Variable Speed Flow Control Valves

Control Lever Bank functions

- 1 Feeder Conveyor
- 2 Fines Conveyor
- 3 Mid-Fines Conveyor

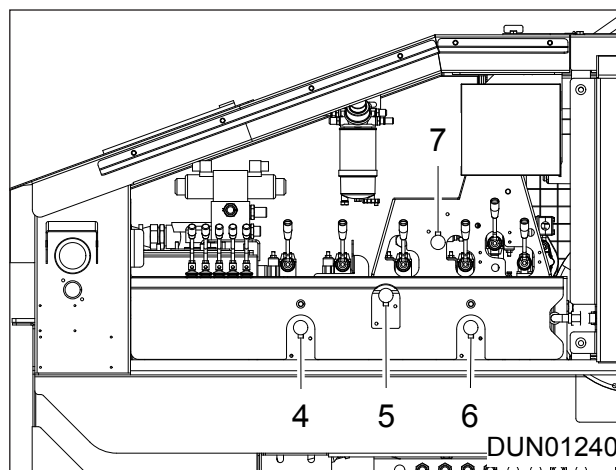


Figure 7.30 - Tier 3 Variable Speed Flow Control Valves

Control Lever Bank functions

- 4 Feeder Conveyor
- 5 Fines Conveyor
- 6 Mid-Fines Conveyor
- 7 Collection Conveyor

9. Set the feeder, fines, mid-fines, tail, and collection conveyor speeds using the variable speed controls, relative to the material.

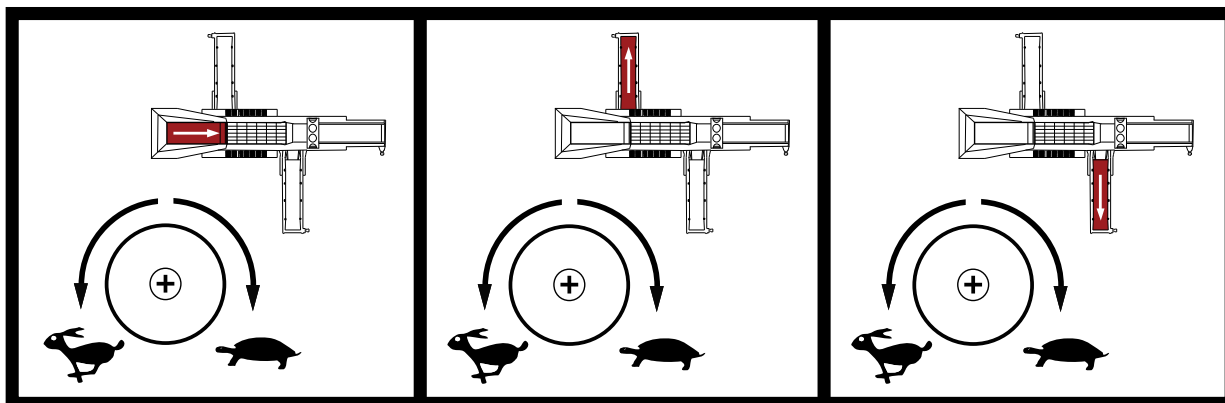


Figure 7.31 - Variable Speed Flow Control Valves Decals

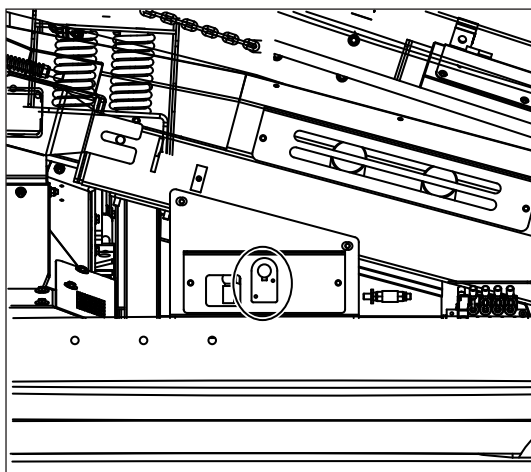


Figure 7.32 - Tail Conveyor Speed Control Valves

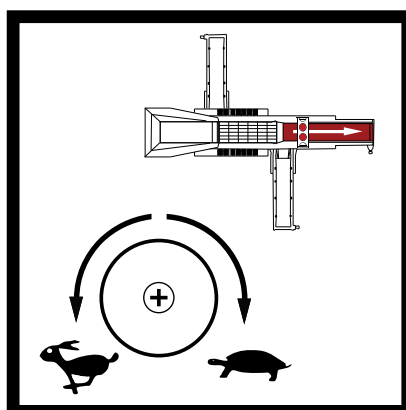


Figure 7.33 - Tail Conveyor Speed Control Decal

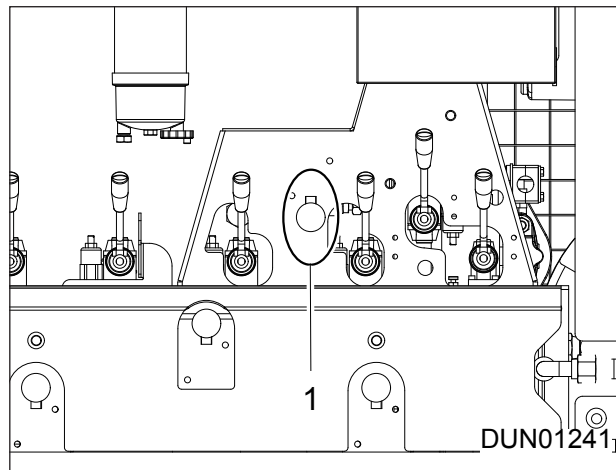


Figure 7.34 - Tier 3 Collection Conveyor Speed Control Valve

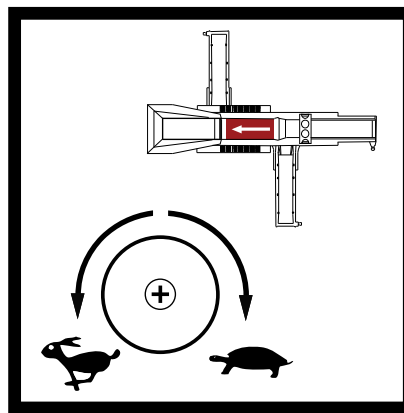


Figure 7.35 - Collection Conveyor Speed Control Decal

10. Turn the control knob of the correct variable speed flow control valve counter clockwise to increase conveyor speed.
11. Turn the control knob of the correct variable speed flow control valve clockwise to decrease conveyor speed.
12. Check that all conveyor belts are running in alignment. Refer to "Maintenance" section if an adjustment is necessary. Check that screenbox is running and is capable of screening.
13. To obtain optimum conveyor speed, repeat steps 10 to 12 as required.
14. The machine is now adjusted for continuous operation.

7.8 Manoeuvring

(1) Manoeuvring - General

DANGER

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

When manoeuvring your machine to its operating position make sure you stand well clear of the machine but are in a position to have all-round vision to see any obstacles or dangers that may lie ahead e.g. Personnel, overhead cables, ditches, unsafe roadways etc.

WARNING

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

- Before manoeuvring the machine, ensure the feed hopper and screen are empty, and that all materials have run off the conveyors. STOP the feeder, screen unit and product conveyors.
- The safety warning horn/siren sounds continuously whilst the machine is being manoeuvred.
- Avoid manoeuvring the machine over extremely uneven ground or damage may occur. Due to the limited ground clearance, avoid running over isolated objects between the tracks.

(a) Undercarriage

Terex machinery can be moved in one of two different ways depending on the type of machine;

- Bogie
- Tracks

Each type of undercarriage must be properly maintained to ensure a safe, effective working environment. Track machines are designed for ease of movement around the site and should not be used on public roads. Haulage equipment, such as a low loader or a roll in bogie, should be used for this purpose. Non track machines should be transported using the appropriate haulage equipment.

(2) Manual Tracking Information

WARNING

Only a fully qualified and competent electrician must connect the electrical supply to this machine.

The electrical supply to this machine must be carried out in strict accordance with all relevant local and international electrical safety regulations.

The electrical supply to this machine must have adequate protection for safe disconnection in the event of either over-current, short circuit or earth leakage faults.

The electrical supply to this machine must be fully tested and inspected by a qualified electrician in strict accordance with all relevant local and international electrical regulations.

This machine must not, under any circumstances, be operated or tracked unless it is absolutely safe to do so.

As the Electrical Hydraulic machine must be connected to a three phase 415VAC 50Hz electrical supply to power the electrical motors that control the hydraulic track pumps, absolute care must be taken when tracking this machine.

The operator must ensure that strict attention is paid to all relevant health and safety regulations and guidelines when operating and tracking this machine.

The electrical supply to this machine must be connected via the supplied industrial 'spring release' plug with safety tension cord properly attached to facilitate safe disconnection should the cable come under strain. No other connection method to this machine is acceptable.

When tracking the machine, it must be ensured that the supply cable to the machine is behind the direction of travel or away from the tracks and the path of travel at all times.

(3) Tracking the Machine

DANGER

DO NOT stand on any of the platforms or ladders of the machine whilst it is being manoeuvred. When tracking your machine to its operating position make sure you stand well clear of the machine but are in a position to have all-round vision to see any obstacles or dangers that may lie ahead e.g. Personnel, overhead cables, ditches, unsafe roadways etc.

NOTICE

Before tracking the machine on site ensure that all material has been processed through it and that no material is left on any belts, in the hopper or the screenbox. Ensure no material has built up around or on the tracks.

For large tracking manoeuvres or when loading the machine onto a low loader it is necessary to fold the side conveyor. Never track the machine over long distances with the conveyors in the working position.

The machine should be tracked at least 10 m in either direction every day to minimise the risk of chain seizure

When travelling up a gradient, the tracks should be driven forward (i.e. idlers first, drive sprocket to the rear). When travelling down a gradient, tracks should be driven sprocket first. Do not manoeuvre the machine on a gradient steeper than 30 degrees.

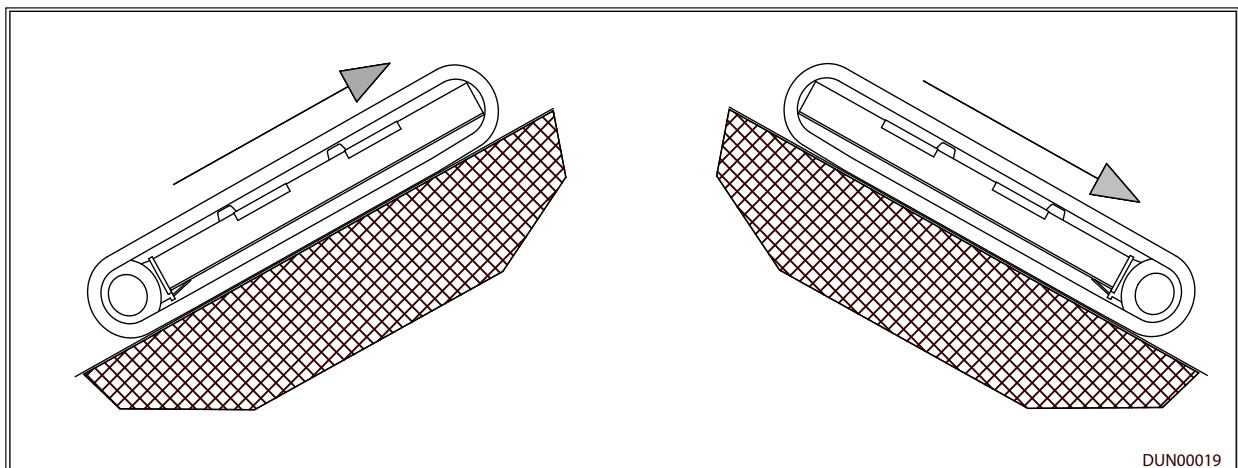


Figure 7.36 - Tracking Uphill and Downhill

Avoid manoeuvring the machine over extremely uneven ground. Ensure the terrain that the machine is working on is firm enough to adequately support the machine.

Always park the machine on flat, level ground. If it is necessary to park the machine on a gradient, the tracks should be solidly blocked.

Move all of the control levers to the neutral positions to stop all machine parts prior to manoeuvring.

Never attempt to track the machine if there is any build up of material around the tracks and drive sprockets or if the tracks are frozen to the ground.

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 for more than 30 minutes without providing adequate rest.

Ensure no leakage of oil from gearbox, roller and idler before and during tracking.

(4) Machine Tracking Directions

NOTICE

The machine can be tracked using either the umbilical remote tracking unit, the radio tracking unit or the teleradio tracking unit. Familiarize with the controls before tracking the machine.

Familiarize with the machine tracking directions before tracking the machine.

When tracking the machine, at all times the right and the left hand directions are viewed from the feeder end of the machine.

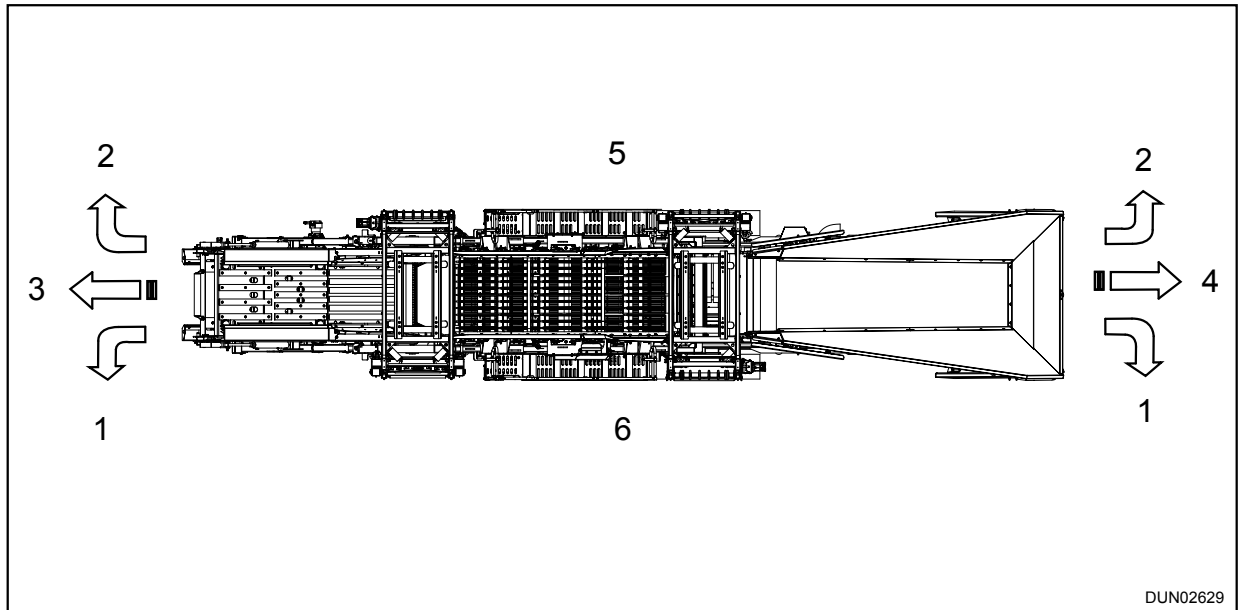


Figure 7.37 - Machine Tracking Directions

The following list identifies the machines directions.

- 1 Left
- 2 Right
- 3 Forward
- 4 Reverse
- 5 Right-Hand Side Track
- 6 Left-Hand Side Track

(5) Manual Tracking Umbilical

NOTICE

When the Radio Control is ENABLED and the Radio Stop button on the Radio Handset is ACTIVE. Pressing the Radio Stop button at this stage will shut down the machine.

Once the radio control is DISABLED the radio stop button on the radio handset is INACTIVE. Pressing the radio stop button at this stage will have no effect.

The machine can be tracked using either the umbilical remote tracking unit, the radio tracking unit or the teleradio radio remote tracking unit.

The umbilical remote control unit cable must be connected to the socket at the rear of the machine.

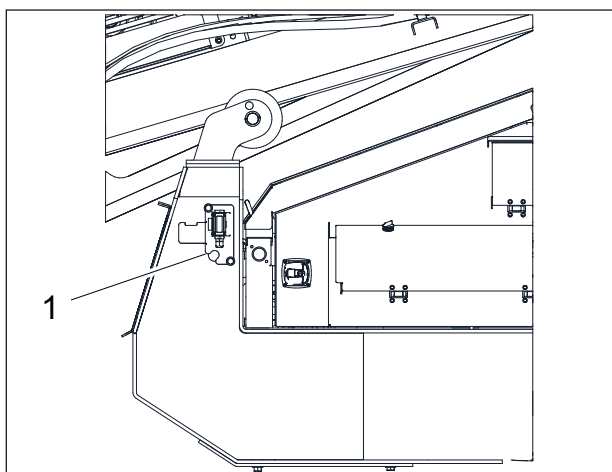


Figure 7.38 - Manual tracking umbilical socket location

(a) Manual tracking with the umbilical handset

PROCEDURE

1. Ensure engine is running, all conveyors are OFF and the track control valves are engaged.
2. Press the Tracks Start button on the umbilical remote (Item 8).
 - » *The Led Indicator will illuminate RED. The Siren and Beacon will activate and continue to do so until the Tracks Stop button (Item 7) is pressed.*

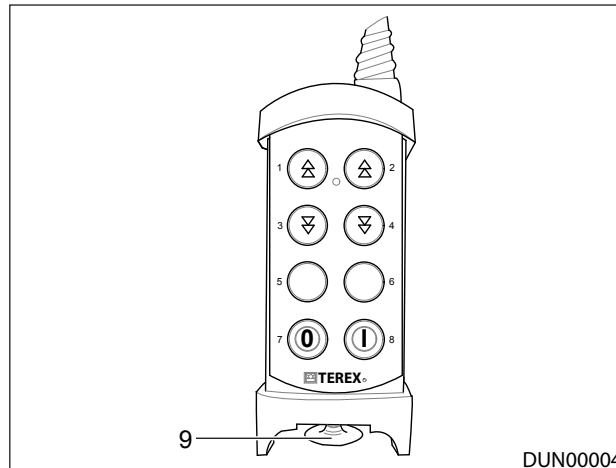


Figure 7.39 - Tracking Umbilical Layout

3. After a period of 10 seconds the LED Indicator will illuminate GREEN.
4. At this stage pressing the various Track direction buttons will engage the respective track solenoid.
5. To stop the Tracking function, simply press the Tracks Stop button on the Umbilical (Item 7).

(b) Radio Tracking with the Teleradio Remote Control

PROCEDURE

1. Ensure engine is running and all conveyors, feeder etc are OFF.
2. Remove the dummy plug (Item 1) and insert the remote control unit plug into it's socket at the rear of the machine.

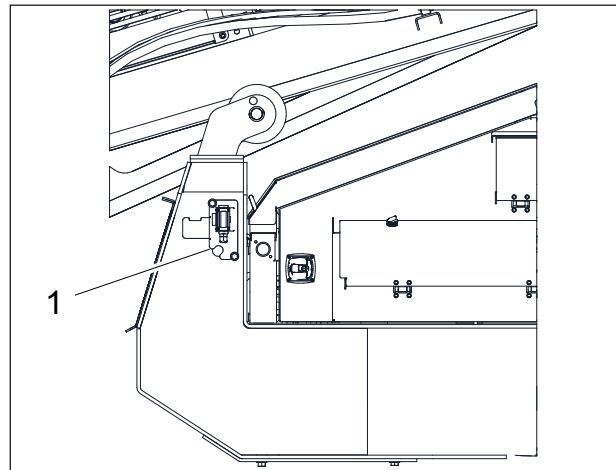


Figure 7.40 - Remote Control Unit Connection

3. Turn the transmitter on using the switch on the back and release the machine stop button (button 7) at the bottom of the transmitter.
4. Hold buttons 5 and 6 until the transmitter beeps indicating the log-in process has begun.
» The machine siren will sound and there will be a 7 second delay before the tracks can be operated.

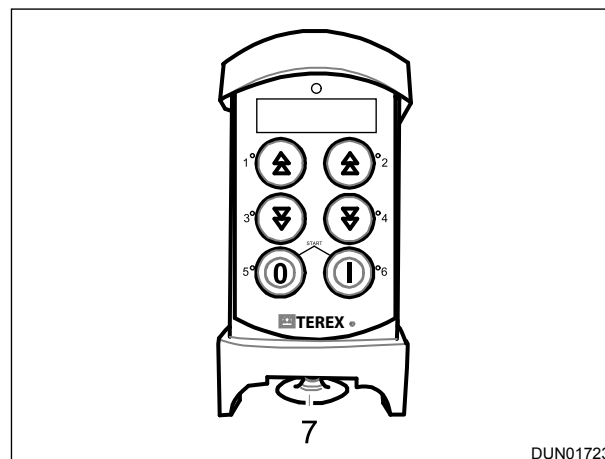


Figure 7.41 - Teleradio Remote Tracking Transmitter

5. Use buttons 1, 2, 3 and 4 to operate the tracks..
6. Move the machine into the required position on the work site.
7. Press button 5 to disable the tracks. Press button 7 to switch off the machine.
8. If you have finished with the tracking function, the radio control unit can be disabled by pressing the radio stop button at the base of the radio handset.

(c) Fast Tracking

Some machines are fitted with two-speed tracking systems.

Both the Umbilical Handset and the Radio Handset have two-step push buttons on the Track Directions. The first level is the Normal Track speed. The second press level is the Fast Track Speed.

You cannot slew the machine with Fast Tracks – only both forward or both reverse tracks will engage the fast track function.

When tracking with the engine speed set to 'high', the engine speed will ramp up to 2200 rpm to further increase the travel speed when the push buttons are pressed to the second level.

(d) Fast Tracking - Constant Speed Engine

Constant Speed machines are fitted with a two-speed tracking system. To engage fast tracking, turn the central dial (Item 3) to the right. The engine speed will not increase during this process.

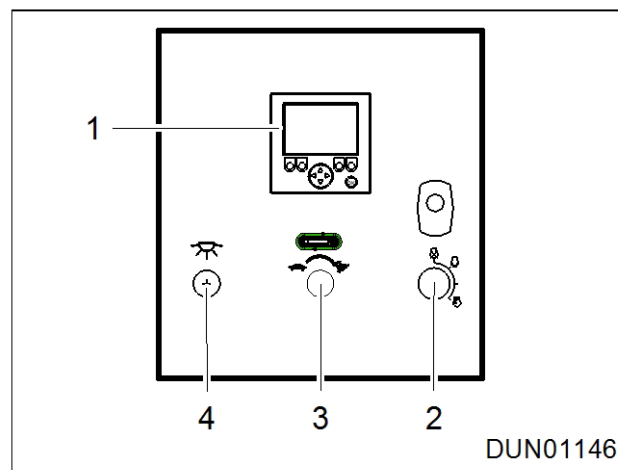


Figure 7.42 - Constant Speed Control Panel

You cannot slew the machine with fast tracking engaged – only both tracks going forward or both tracks reversing together will work with fast tracking engaged.

7.9 Stopping the Machine

(1) Stopping the Machine

NOTICE

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

When shutting down the machine or carrying out maintenance or adjustment the following procedure must be followed.

Turning all machine components at once causes a pressure spike in the hydraulic circuit and a voltage spike in the electrical circuit both of which are detrimental to the machine. A slight pause between disengaging each component can prevent this spike taking place.

The machine must be running empty of material before the feeder, screenbox and conveyors are stopped in the correct sequence.

PROCEDURE

1. Disengage each machine component in the correct order using the correct control levers.
2. Turn off the machine components in the following order.
 - 1 Feeder
 - 2 Screen
 - 3 Collection Conveyor
 - 4 Fines Conveyor
 - 5 Mid-Fines Conveyor
 - 6 Tail Conveyor
3. Switch off engine and remove ignition key.
4. Engage an emergency stop on the machine.
5. If carrying out maintenance on the machine implement the lockout and tagout procedure.

(2) Tier 4 Final Machine Shutdown

⚠ WARNING

Do not hit the emergency stop during this process unless completely necessary.

The battery isolator should not be used to close down the control panel during this period.

NOTICE

The system DEF must be purged of DEF fluid on engine shutdown to protect the system components from damage due to DEF freezing. For this reason it is important that electrical power is maintained to the engine ECM and after treatment system after the ignition has been turned off. It is therefore important that the machine battery isolator is not turned off until the system purge has been completed and the battery disconnect light is off (Item 1). There is a maximum purge time of 20 minutes. *The engine ECU records every time the engine is isolated before the wait to disconnect light has gone out.*

PROCEDURE

1. Observe all safety warnings.
2. Stop all hydraulic components in the correct sequence.
3. Switch the engine speed switch (Item 3) to low, Reference: Figure 7.43.
4. Let the engine idle with no load for 3 to 5 minutes.
5. Turn the ignition key (Item 2) to the off position to stop the engine and remove the key, Reference: Figure 7.43.

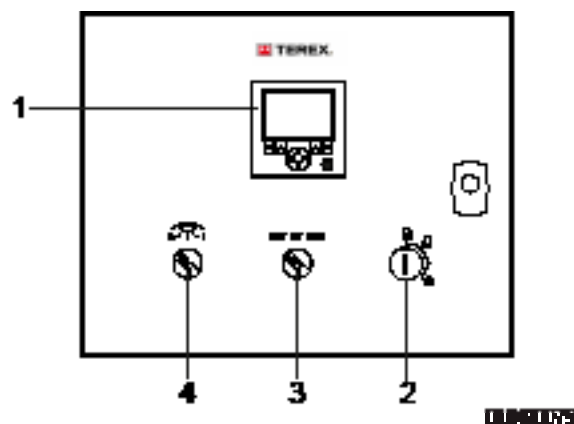


Figure 7.43 - MCU 300 Control Panel

6. Engage an emergency stop on the machine.
7. Before carrying out maintenance on the machine ensure the battery disconnect light is off.

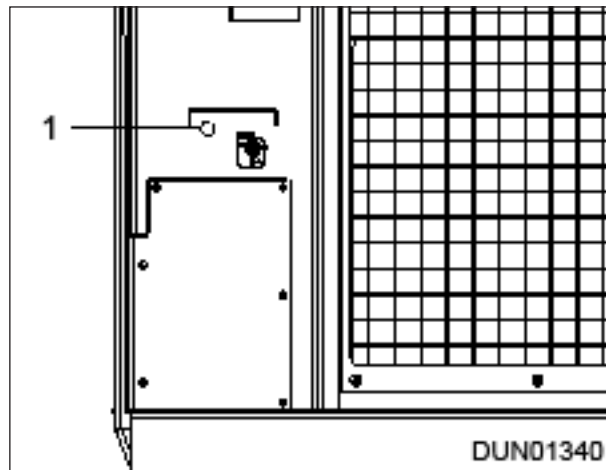


Figure 7.44 - Battery Wait to Disconnect Light



Figure 7.45 - Battery wait to Disconnect Decal

» When battery disconnect light is ON do not isolate battery. When battery disconnect light is OFF battery can be isolated.

8. Implement the lockout and tagout procedure, Reference: Chapter 8.

(3) Tier 3 Constant Speed Shutdown

PROCEDURE

1. Observe all safety warnings.
 2. Disengage each machine component in the correct order using the correct control levers.
 3. Turn off the machine components in the following order.
 - 1 Feeder
 - 2 Screen
 - 3 Collection Conveyor
 - 4 Fines Conveyor
 - 5 Mid-Fines Conveyor
 - 6 Tail Conveyor
 4. Let the engine run with no load for 3 to 5 minutes.
 5. Turn the ignition key to the off position to stop the engine and remove the key.
 6. If the radio remote control, if fitted, has been in use switch it off by depressing the stop button
 7. Engage an emergency stop on the machine.
 8. If carrying out maintenance on the machine implement the lockout and tagout procedure, Reference: Chapter 8.
-

(4) Tier 3 Diesel Machine Shutdown

NOTICE

For normal closing down the machine, DO NOT use the emergency stop buttons [or, if fitted, radio remote control stop buttons] or by switching off the engine ignition to close down the machine. Always follow the correct preparation sequence.

The feeder, screenbox and conveyors must be emptied and stopped in the correct sequence before the machine is shut down.

PROCEDURE

1. Observe all safety warnings.
2. Disengage each machine component in the correct order using the correct control levers.
3. Turn off the machine components in the following order.
 - 1 Feeder
 - 2 Screen
 - 3 Collection Conveyor
 - 4 Fines Conveyor
 - 5 Mid-Fines Conveyor
 - 6 Tail Conveyor
4. Set the engine at its slowest speed.
5. Let the engine idle with no load for 3 to 5 minutes.
6. Turn the ignition key to the off position to stop the engine and remove the key.
7. If the radio remote control, if fitted, has been in use switch off by depressing the stop button
8. Engage an emergency stop on the machine.
9. If carrying out maintenance on the machine implement the lockout and tagout procedure, Reference: Chapter 8..

(5) Tier 3 Dual Power Machine Shutdown

(a) Diesel Mode

The diesel mode dual power hydraulics operate as any other diesel machine.

PROCEDURE

1. Firstly stop all hydraulics.
2. Set the engine to its lowest speed.
3. Then stop the engine, which is carried out by the large electrical panel, the small panel within the power unit is not present on dual power machinery.
4. On dual power units stop the machine/diesel engine via the key switch on the large electrical panel, it also needs to be switched from Diesel to off.

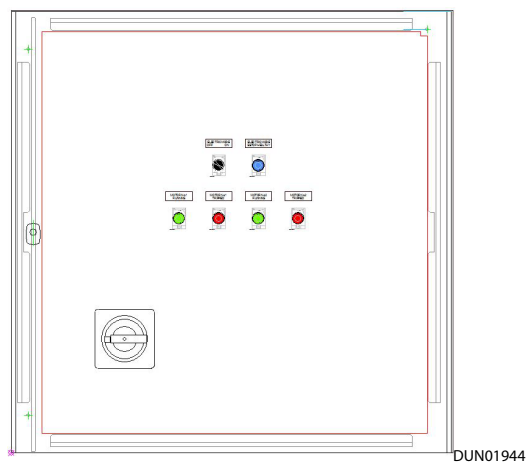


Figure 7.46 - Dual Power Electrical Panel. Panels can vary!

(b) Electrical Mains Power Mode

To shutdown the machine from three phase supply electric, the sequence of the electrical mode is as follows:

PROCEDURE

1. Firstly stop all hydraulics.
2. Turn the ignition key to crank position.
3. Main isolator must be switched to the off position.
4. Set the key switch on the large electrical panel from electric selection to the off selection.

(6) Tier 4 Dual Power Machine Shutdown

(a) Diesel Mode

The diesel mode dual power hydraulics operate as any other diesel machine.

PROCEDURE

1. Disengage each machine component in the correct order using the correct control levers.
2. Turn off the machine components in the following order.
 - 1 Feeder
 - 2 Collection conveyor/screen
 - 3 Fines side conveyor
 - 4 Mid side conveyor
 - 5 Tail conveyor
3. Set the engine at its slowest speed.
4. Let the engine idle with no load for 3 to 5 minutes.
5. Switch off the engine and remove ignition key.
6. Engage an emergency stop on the machine.
7. If carrying out maintenance on the machine implement the lockout and tagout procedure, Reference: Chapter 8

(b) Electrical Mains Power Mode:

To shutdown the machine from three phase supply electric, the sequence of the electrical mode is as follows:

PROCEDURE

1. Stop all hydraulics.
2. Turn ignition key to off position on operations panel.
3. Turn off main isolator on large electrical panel

(7) Electric Hydraulic Machine Shutdown

Electrical mains power mode:

To shutdown the machine from three phase supply electric the sequence of the electrical mode as follows:

PROCEDURE

1. Firstly stop all all hydraulics.
2. Turn the ignition key to crank position.
3. Main isolator must be switched to the off position.
4. Set the key switch on the large electrical panel from electric selection to the off selection.

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8 Emergency Operating Procedures

8.1 Lockout and Tagout

This procedure is designed to prevent injuries caused by the unexpected start-up or movement of a machine. These procedures are to be followed every time a machine is to be cleaned, maintained, adjusted or repaired. When used as intended, Lockout also protects personnel from energy stored in devices such as springs, accumulators, batteries, hydraulic systems, etc.

Where the lock out and tagout symbols (Reference: Chapter 2) appear on a safety sign it indicates that the machine must be switched off and locked out before any work is carried out.

WARNING

Never give your key to anyone else and where more than one person is working on the equipment they must fit their lock also

(1) Before Carrying out any Work on the Machine

NOTICE

Depending on the type of machine, there can still be several kinds of energy remaining after the power is turned off. Secondary energy sources are hydraulic (fluid under pressure), pneumatic (air under pressure), kinetic (force of moving parts) and potential (force contained in weights that have been raised).

If, the machine will not be used for periods longer than 24 hours, the machine must be locked out and tagged out until further use is required.

After, key off the isolator switch must remain in the "ON" position for a minimum of 20 seconds to allow all systems to shut down properly.

PROCEDURE

1. Turn off the engine at the starter panel and remove key.
2. Lock the panel and put the key in a safe place.
3. After 20 seconds, rotate the isolator switch from the "ON" position (Item 1) to the "OFF" position (Item 2).

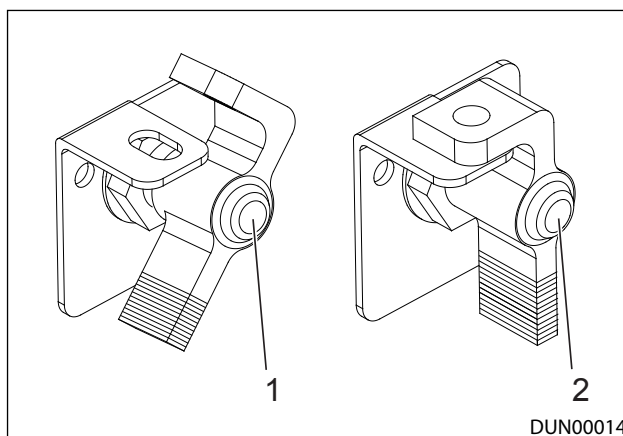


Figure 8.1 - Isolator Switch

4. Fit the lock out hasp (Item 3) and unique padlock (Item 2) on the main power isolator and keep the key to make sure no one can remove your lock and turn the power back on.
5. Place a Tag (Item 1) on the lock that identifies you (by your name, picture or number) as well as the date and time you locked it out.

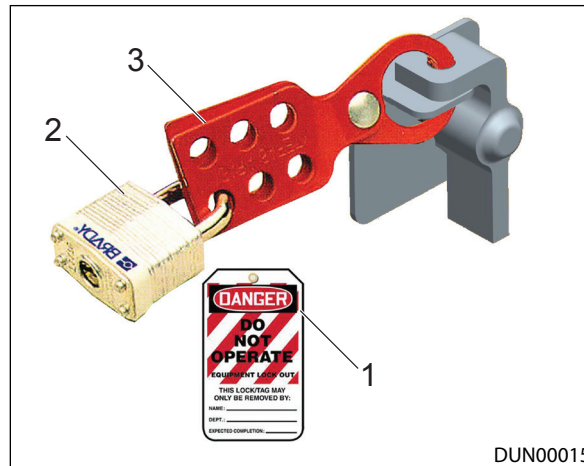


Figure 8.2 - Isolator Switch Off, Locked and Tagged

6. Release stored energy from the system, such as hydraulic fluid under pressure, so that the machine is in a zero energy state.
7. Try to start or activate the machine to make sure that the power is off. (Don't forget to push the stop button again, afterward.)

(2) After Carrying out any Work on the Machine

PROCEDURE

1. Secure the work area by replacing guards and shields, removing blocks, picking up tools and inspecting the work area.
2. Take your lock and tag off the main power Isolator.
3. If there are no other locks on, turn the main power isolator switch to the ON position
4. Unlock the operator's control panel.
5. Warn others before starting the machine.
6. Start the machine and proceed with your work.

8.2 Emergency Stop

In an emergency situation only stop the machine by pressing an emergency stop button on the 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.

When an emergency stop has been initiated, the ignition switch stays on. Do not attempt to restart the engine until it is safe to do so.

PROCEDURE

1. Press any emergency stop to stop the engine and machine. Emergency stops are located on both the left hand side and right hand side of the machine.
» The safety alarm will sound until it is acknowledged and cancelled.
2. Turn the ignition key to the off position as soon as possible, if safe to do so.
3. Remove the ignition key.
4. Set the isolator switch too the off position.
5. When safe, release the emergency stop button(s) by pulling or twisting.

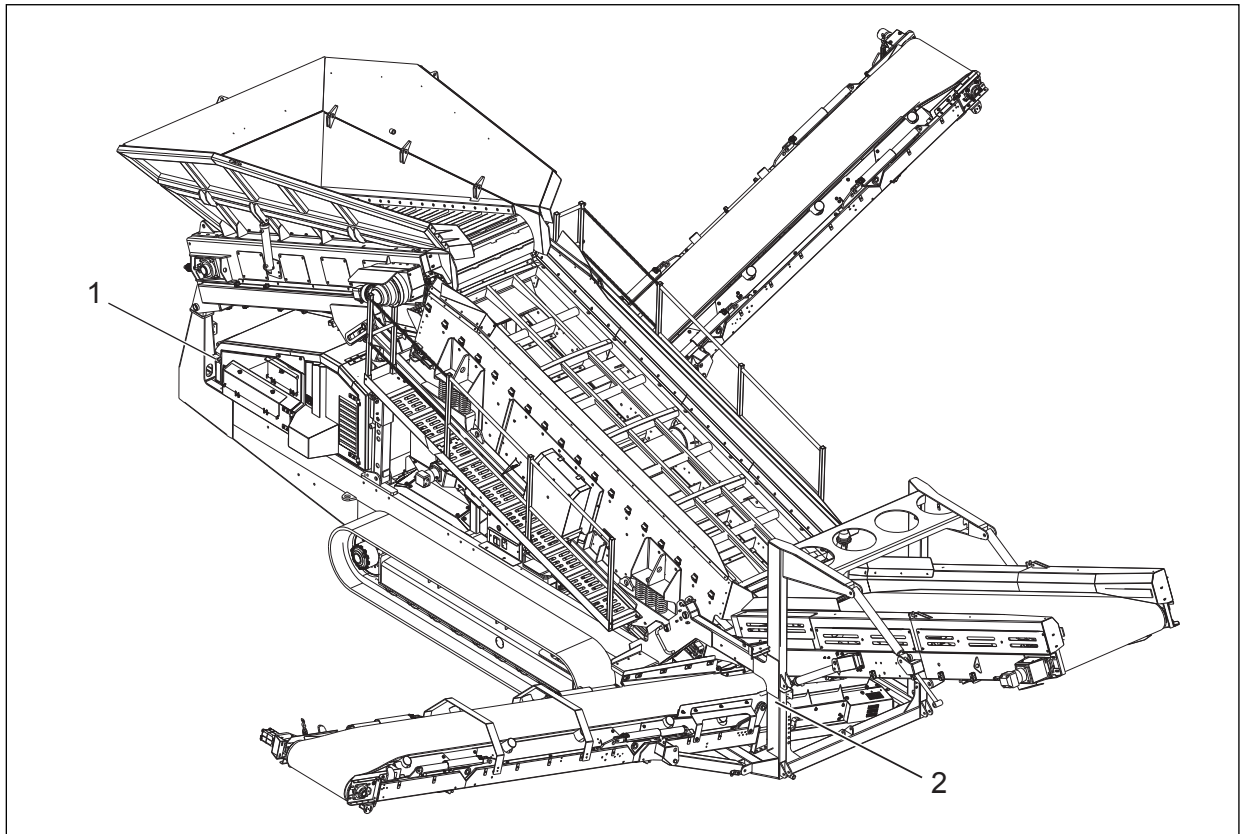


Figure 8.3 - Emergency Stop Locations

8.3 Restarting after Emergency Stop

WARNING

Ensure that the problem has been solved and all personnel are clear of the machine. Before restarting, ensure that all guards are correctly fitted and fully functional. Do not restart until it is safe to do so.

NOTICE

The machine must not be restarted if there is any material in and/or on the machine. Ensure there is no material in and/or on the machine before restarting.

PROCEDURE

1. Release the emergency stop button(s) by pulling or twisting.
2. Restart the machine, Reference: Chapter 7.

8.4 Testing Emergency Stops

PROCEDURE

1. Start the engine.
2. Push in an emergency stop button.
» The engine will stop, the safety alarm will sound and alarm messages are shown on the display screen..
3. Acknowledge the alarm.
4. Re-set the emergency stop by pulling or twisting, depending on the type fitted.
5. Turn the ignition key to the 'Off' position.
6. Turn ignition key to the first position again.
7. Wait for the pre-start warning to complete.
8. Turn ignition key to start the engine again.
9. Repeat the procedure for all other emergency stops.

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9 Maintenance

Refer to Chapter 2 Safety for relevant safety information before attempting to carry out any maintenance on the machine.

⚠ WARNING

Before undertaking any maintenance, repairs or retooling work on the machine, switch off the machine and implement the lockout and tagout procedure.

Maintenance procedures in the maintenance section of this operations manual are intended to be carried out by trained operators. You must satisfy yourself that you have received to the correct training before attempting any procedure in the maintenance section, if you have any doubts do not attempt any procedure and speak to your manager. More complex machine maintenance that is not covered in the maintenance section of the operators manual must only be carried out by fully trained service personnel who have taken part in specific maintenance training provided by us or our approved dealer, please contact your local dealer for further details.

9.1 Safety Before and During Maintenance

⚠ WARNING

Practice safe maintenance. Read and understand the operators manual before doing any work.

Before undertaking any maintenance, repairs or retooling work on the machine, switch off the machine and implement the lockout and tagout procedure.

⚠ CAUTION

Maintenance should only be carried out by trained and qualified personnel.

PROCEDURE

1. Whenever maintenance or service is being carried out a minimum of two (2) persons should be present at all times. **NEVER WORK ALONE.**
2. When performing maintenance tasks, always observe the local site safety rules or as provided in the safety section of this manual.
3. Prepare yourself. Wear a hard hat, safety goggles, hearing protection and other protective equipment as required by job conditions. Do not wear loose clothing or jewelry that can catch on controls or moving parts. Long hair must be tied back.
4. Prepare the machine. Move the machine onto a level surface and apply parking brakes and/or wheel chocks. Shut off the engine and remove the key. Relieve all hydraulic pressure by returning controls to neutral. Secure all hydraulically operated attachments with pins provided.
5. Isolate all electrical supplies to the machine before starting any maintenance work.
6. Never attempt repairs or adjustments to the machine while it is running. Exempt to this rule: Belt tracking adjustments are only possible during working process (see Belt Tracking & Tensioning).
7. Remove only guards or covers that provide access. Wipe away excess grease and oil.
8. Never leave guards off or access doors open when unattended. Keep bystanders away if access doors are open.

9. When working beneath raised equipment, always use blocks, jack-stands or other rigid and stable supports. Never work under unsupported equipment.
10. When working at height make sure you take all necessary precautions in line with local regulations and use approved PPE, safety harnesses and work platforms. If you are not aware of working at height requirements speak to your manager before starting any work. Keep all handles, steps, handrails, platforms, landing and ladders free from dirt, oil, snow and ice
11. Never operate any type of engine without proper ventilation – EXHAUST FUMES CAN KILL. (See Electrical and Engine Safety for more detailed checklist).
12. Checking for hydraulic leaks. Beware hydraulic fluid under pressure can penetrate the skin or damage eyes. Fluid leaks under pressure may not be visible. Use a piece of cardboard to find leaks but do not use bare hand.
13. Wear safety goggles for eye protection. If fluid enters skin or eye, get immediate medical attention. (See Hydraulic Safety for more detailed checklist).
14. Clean or replace damaged, missing or painted over safety signs that cannot be read.
15. Rotating and moving parts must be inspected during maintenance and replaced if cracked or damaged. Excessively worn or damaged parts can fail and cause injury or death.
16. After maintenance, tighten all bolts, fittings and connections. Install all guards, covers and shields. Replace or repair any damaged ones. Refill and recharge pressure systems with recommended fluids. Start the engine and check for leaks. Operate all controls and make sure the machine is functioning properly. After testing, shut down, check the work you performed (any missing cotter pins, washers, locknuts, etc.)? Recheck all fluid levels before releasing machine for operation.
17. NEVER make any modifications, additions or conversions which might affect safety without the supplier's approval.
18. It is dangerous to perform maintenance on the machine directly after use. To prevent any burns or scalds allow the hydraulic oil to cool down to a safe temperature before carrying out any maintenance tasks. A suitable cool down period of approximately 90 minutes is required between ending operation and accessing the machine for maintenance.

9.2 Regular Servicing

NOTICE

To deliver the specified quantity of grease to shaft bearings, 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.

It is bad practice to mix oils or greases. The blend can have a lower specification than the individual oils or 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/oil at the correct intervals specified.

It is important that a strict routine of regular servicing is undertaken from the start of operation of the machine.

Regular checks on fluids and the lubrication of the machine, in accordance with the schedule, is essential.

In addition to the lubrication points, the lubrication schedule lists the regular attention required to the machine hydraulic system.

The engine oil and coolant also require checking regularly.

When power or steam cleaning the machine be aware of the risk of damaging components i.e., electrical components, bearings. Water ingress or heat may penetrate or damage seals leading to premature failure.

(1) Daily Checks

DANGER

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

WARNING

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

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

NEVER leave the machine unattended whilst it is in operation.

PROCEDURE

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.
5. Make sure all warning and safety signs are clean and visible, see plant specification and information for their part numbers and positions.
6. Ensure that the screen unit 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.
9. Check belts for damage, wear and fraying.
10. Clean away dirt and grit from maintenance platforms.
11. On plants fitted with an Apron Feeder, check the return rollers are fully functional and rotating with the moving apron feeder. Remove any build-up of material around the rollers and ensure the rollers are clean of debris.

9.3 Non Scheduled Maintenance

⚠ WARNING

Wear personal protective equipment.

Switch off the machine and implement the lockout procedure.

(1) Air Cleaner Elements

The life span on air cleaner elements is dependant on the environment the plant is used in and as such a maintenance schedule can not be implemented for their replacement. Machines are equipped with an air filter restriction sensor which will highlight the need for maintenance. We recommend that air cleaner elements are replaced and not washed or reused.

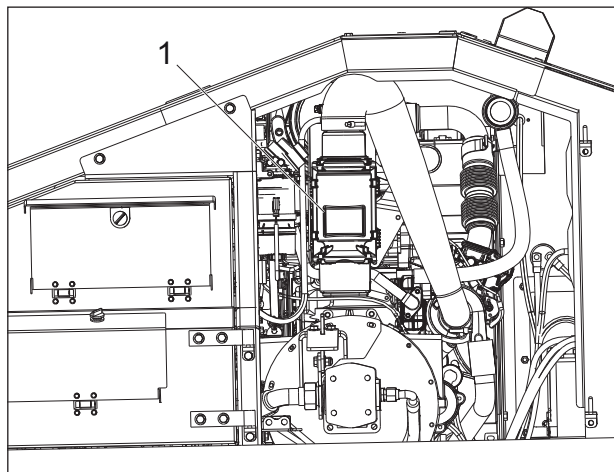


Figure 9.1 - Air Cleaner Element

(2) Tracks

The maintenance schedule for the tracks will depend greatly on the amount of travel a machine is expected to do in its day to day operation and for that reason is not included in the following hourly schedules. Before any attempt is made to move this machine refer to the Tracks Maintenance section of this manual.

(3) Control Systems

Ensure that only qualified and trained personnel operate and maintain this equipment.

Always keep control panels closed to avoid water ingress and dust contamination and keep keys in secure locations.

Regularly check the control system and connections for any damage.

Never adjust any components or settings without authorisation from Terex.

9.4 Maintenance Schedule

For further engine maintenance information, refer to the engine manufacturer's operation manual supplied.

| General | Job | 10 Hours (Daily) | 50 Hours (Weekly) |
|--|-----------------------------|---------------------|----------------------|
| Emergency stop system | Check / Repair | ✓ | |
| Decal either missing or damaged | Check / Replace | | ✓ |
| Diesel level in fuel tank | Check / Refill | ✓ | |
| Material build up | Check/ Clean | ✓ | |
| Electrical defects | Check / Repair | | ✓ |
| Safety guards are in place | Check / Replace | ✓ | |
| Loose parts, nuts, bolts & pins | Check / Tighten | ✓ | |
| Walkways, steps and railings are safe and secure | Check / Tighten loose bolts | ✓ | |
| Grease Filled Bearings | Grease | | ✓ |
| Battery Electrolyte Level | Check | | ✓ |
| Hydraulic System | | | |
| Hydraulic oil level | Check / Top up | ✓ | |
| Hydraulic return line filter indicator | Check | ✓ | |
| Hydraulic hoses for leaks | Tighten / Replace | ✓ | |
| Hydraulic cylinders for leaks | Tighten / Replace | ✓ | |
| Hydraulic pumps for leaks | Tighten / Replace | ✓ | |
| Hydraulic motors for leaks | Tighten / Replace | ✓ | |
| Conveyors | | | |
| Conveyor belts for rips and tears | Check / Repair | ✓ | |
| Belt alignment | Check / Align | ✓ | |
| Direct drive motor coupling (if applicable) | Check / Replace | | ✓ |
| Belt Scraper | Check / Adjust / Replace | | ✓ |
| Rollers are free moving and unobstructed | Check / Free | ✓ | |
| Skirting rubbers - tension and spillage | Check / Adjust / Replace | | ✓ |
| Obstruction to drums | Check / Remove | | ✓ |
| Drum bearings | Grease | | ✓ |
| Gearbox bolts | Check / Tighten | | ✓ |
| Feeder Hopper | | | |
| Skirting rubbers | Check / Adjust/ Replace | | ✓ |
| Feeder gearbox oil | Change | | ✓ |
| Belt cleaners | Check / Adjust | | ✓ |
| Apron feeder return rollers | Check / Replace | ✓ | |

| Screenbox | Job | 10 Hours (Daily) | 50 Hours (Weekly) |
|--|----------------------------|---------------------|----------------------|
| Screen mesh - wear | Check / Replace | ✓ | |
| Screen mesh - tension | Check / Tighten | ✓ | |
| Tensioner Sleeve | Check / Replace | | ✓ |
| Bearings | Grease | | ✓ |
| Springs | Check / Replace | ✓ | |
| Rubber cushions | Check / Replace | ✓ | |
| Snubber Rubbers* | Check/Adjust | | ✓ |
| Labyrinth seals (1 gram only) | Grease | | ✓ |
| Parameters (speed & throw) | Check / Set | ✓ | |
| Screen Blanket | Check / Replace | ✓ | |
| Screen Drive Belt | Check Adjust / Replace | | ✓ |
| Tracks | | | |
| Tension of tracks | Check / Repair | | ✓ |
| Material build up | Clean / Check | ✓ | |
| Track for oil leaks | Check / Tension | | ✓ |
| Run Machine Forwards and Backwards 10 m | Perform | ✓ | |
| Dual Power Electric Motors | | | |
| Keep the motor clean and ensure free ventilation airflow | Inspect / Clean | | ✓ |
| Shaft Seal | Check / Replace | | ✓ |
| Engine | | | |
| Engine Oil Level | Check / Top up | ✓ | |
| Battery Electrolyte Level | Check / Top up | | ✓ |
| Alternator Belt | Check / Adjust / Replace | ✓ | |
| Engine Air Cleaner Service Indicator | Check | ✓ | |
| Engine Air Precleaner | Check / Clean | ✓ | |
| Hoses and Clamps | Check / Replace | ✓ | |
| Fuel Tank Water and Watertrap | Drain | | ✓ |
| Fuel Tank Breather / Cap | Check / Clean | ✓ | |
| Fuel System Primary Filter / Water Separator | Drain | ✓ | |
| Cooling System Coolant Level | Check | ✓ | |
| Driven Equipment | Check | ✓ | |
| Hoses and Clamps | Inspect / Replace | ✓ | |
| V-belts | Inspect / Adjust / Replace | ✓ | |

*Ensure Snubber Rubbers maintain a 5 mm gap from the screenbox

**After first 50 hours then after every 2000 hours or annually.

9.5 Service Schedule

For further engine maintenance information, refer to the engine manufacturer's operation manual supplied.

This machine has the following engine options:

- A Tier 3/Stage 3A Caterpillar C4.4 ATAAC
- B Tier 3 Constant Speed Caterpillar C4.4
- C Tier 4 Final Caterpillar C4.4

The tables below list maintenance schedules. The letters in the engine section represent the different engine options on this machine.

| Hydraulic System | Job | First 100 Hours | Every 250 Hours | Every 500 Hours | Every 1000 Hours | Every 2000 Hours |
|--|--|-----------------|-----------------|-----------------|------------------|------------------|
| Hydraulic oil | Analysis - Check / Top-up / Replace if necessary | | | ✓ | ✓ | ✓ |
| | Replace | | | | | ✓ |
| Hydraulic relief pressures | Check / Adjust | | | | ✓ | ✓ |
| Hydraulic Return Filter (1st replace at 100 hours) | Replace | ✓ | | ✓ | ✓ | ✓ |
| Hydraulic Oil Suction Filter | Inspect / clean and change if required | | | | ✓ | ✓ |
| | Replace | | | | | ✓ |
| Conveyors | | | | | | |
| Feeder gearbox oil (1st replace at 100 hours) | Replace | ✓ | | ✓ | ✓ | ✓ |
| Tail drum bearings | Check / Clean | | ✓ | ✓ | ✓ | ✓ |
| Drive drum bearings | Check / Clean | | ✓ | ✓ | ✓ | ✓ |
| Guards | Check / Replace | | ✓ | ✓ | ✓ | ✓ |
| Cylinder pivots, conveyor adjustment pivots and conveyor belt tensioners | Grease | | ✓ | ✓ | ✓ | ✓ |
| Tracks | | | | | | |
| Visual wear on components | Check | | | ✓ | ✓ | ✓ |
| Gearbox oil (1st replace at 100 hours) | Check / Top up | | | ✓ | ✓ | ✓ |
| | Replace | ✓ | | ✓ | ✓ | ✓ |

| Engine Maintenance | Job | | Every 250 Hours | Every 500 Hours | Every 1000 Hours | Every 1500 Hours | Every 2000 Hours |
|--|-----|----------------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|
| Cooling System Coolant Sample (Level 1) | ABC | Obtain | ✓ | ✓ | ✓ | ✓ | ✓ |
| Engine Oil Sample | ABC | Obtain | ✓ | ✓ | ✓ | ✓ | ✓ |
| Engine Oil and Filter* | ABC | Change | ✓ | ✓ | ✓ | ✓ | ✓ |
| Engine Valve Lash | AB | Inspect / Adjust | | ✓ | ✓ | ✓ | ✓ |
| Fan Clearance | ABC | Check | | ✓ | ✓ | ✓ | ✓ |
| V-Belts | AB | Inspect / Adjust / Replace | | ✓ | ✓ | ✓ | ✓ |
| Crankcase Breather (Canister) | AB | Replace | | ✓ | ✓ | ✓ | ✓ |
| Cooling System Supplemental Coolant Additive (SCA) | ABC | Test / Add | | ✓ | ✓ | ✓ | ✓ |
| Engine Air Cleaner Element (Dual element) | ABC | Clean / Replace | | ✓ | ✓ | ✓ | ✓ |
| Engine Air Cleaner Element (Single Element) | ABC | Replace | | ✓ | ✓ | ✓ | ✓ |
| Fuel System Primary Filter (Water Separator) Element | ABC | Replace | | ✓ | ✓ | ✓ | ✓ |
| Fuel System Secondary Filter | ABC | Replace | | ✓ | ✓ | ✓ | ✓ |
| Fuel Filter (In-Line) | C | Replace | | ✓ | ✓ | ✓ | ✓ |
| Radiator | ABC | Clean | | ✓ | ✓ | ✓ | ✓ |
| Engine Protective Devices | AB | Check | | ✓ | ✓ | ✓ | ✓ |
| Diesel Exhaust Fluid Filter | C | Clean / Replace | | | | ✓ | |
| Engine Crankcase Breather Element | C | Replace | | | | ✓ | |
| Pump Main Filter | C | Replace | | | | ✓ | |
| Tank Header Filter | C | Replace | | | | ✓ | |
| Clean Emissions Module Support | C | Inspect | | | | | ✓ |
| Aftercooler Core | ABC | Inspect | | | | | ✓ |
| Belt Tensioner | ABC | Inspect | | | ✓ | | ✓ |
| Belt | C | Inspect | | | ✓ | | ✓ |
| Exhaust Manifold | AB | Inspect | | | | | ✓ |
| Starting Motor | ABC | Inspect | | | | | ✓ |
| Turbocharger | ABC | Inspect | | | | | ✓ |
| Water Pump | ABC | Inspect | | | ✓ | | ✓ |
| Alternator | AB | Inspect | | | | | ✓ |

9 Maintenance

| Engine Maintenance | Job | | Every 250 Hours | Every 500 Hours | Every 1000 Hours | Every 1500 Hours | Every 2000 Hours |
|---|-----|---------|-----------------|-----------------|------------------|------------------|------------------|
| Engine Mounts | ABC | Inspect | | | | | ✓ |
| Cooling System Coolant Sample (Level 2) | ABC | Obtain | | | | | ✓ |

*Due to the severe environment that most machine operate in the engine oil and filter change should be every 250 hours of service. However if oil sampling and analysis is carried out it is possible to increase the engine oil and filter change to every 500 hours of service.

| Engine Maintenance | Job | | Every 3000 Hours | Every 4000 Hours | Every 6000 Hours | Every 10000 Hours | Every 12000 Hours |
|--|-----|----------------------------|------------------|------------------|------------------|-------------------|-------------------|
| Alternator and Fan Belt | ABC | Inspect / Adjust / Replace | ✓ | | ✓ | | ✓ |
| Cooling System Coolant (DEAC) | ABC | Change | ✓ | | ✓ | | ✓ |
| Cooling System Water Temperature Regulator | ABC | Replace | ✓ | | ✓ | | ✓ |
| Fuel Injection Nozzles | AB | Test / Exchange | ✓ | | ✓ | | ✓ |
| Aftercooler Core | ABC | Clean / Test | | ✓ | | | ✓ |
| Coolant System Coolant (ELC) | ABC | Add / Change | | | ✓ | | ✓ |
| Coolant system coolant (ELC) | ABC | Change | | | | | ✓ |
| DEF Manifold Filters | C | Replace | | | | ✓ | |

9.6 Lubrication

(1) Lubrication and Routine Servicing

(a) Machine Lubrication Points

WARNING

Wear personal protective equipment.

Fall hazard.

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

Do not mix greases. The blend can have a lower specification than an individual grease and can lead to premature bearing failure.

Regular lubrication of the machine accordance with the Lubrication and Servicing Schedule is essential.

The locations of the lubrication points are as follows:

- Screen
- Feeder tail drum bearings (Head drum bearings on apron feeder option only)
- Collection conveyor drive and tail bearing grease nipples.
- Track unit gearbox oil levels.
- Side conveyors drive and tail bearing grease nipples.
- Tail conveyor drive and tail bearing grease nipples.
- Feeder unit gearbox oil levels.
- Periodically lubricate hinges, pivot pins, adjusting screws and similar points with oil or grease to prevent seizure during lengthy spells of inactivity.

(b) Lubricants

Use only unadulterated mineral lubricants. On no account should the lubricant contain uncombined mineral acids, free alkaline or metal-corroding additives.

The correct lubricants are listed in below.

(2) Recommended Lubricants

NOTICE

The feeder unit gearbox does NOT use the same type of gear oil as the track gearbox.

Failure to use the appropriate specification of engine oil will reduce the life of your engine. Failure to use the correct specification of engine will also reduce the life and the effectiveness of your after treatment system (if fitted). Refer to the engine manufacturer's manual for additional information that relates to the lubrication for your engine

Always use lubricants and fluids that meet the international specifications.

Greases outside these specifications are not designed for use in Vibrating Screens e.g. greases with molybdenum sulphate additives, and should never be used.

Grease cartridges have a general shelf life of approximately 36 months and should be discarded beyond this point. Consult grease specifications for specific information.

Grease and grease cartridges should always be stored between 0°C and 40°C and in a dry environment. Grease or grease cartridges should be immediately discarded should any sign of moisture or other contamination be present. Similarly, this requirement applies to grease guns or auto greasing systems.

Failure to comply with these recommendations may dramatically reduce screen bearing life and will void warranty on screen bearings and related components.

The Shell grades are for reference only.

Below is a list of the recommended alternatives suitable for use with your machine. These special screen greases are lithium base greases of Class 2 with extreme pressure additives. The listed greases fall under DIN classifications KP2K-20 or KP2K-30.

- Fuchs Renolith EP2
- Mobil Mobilux EP2
- Total Multis EP 2
- Castrol Spheerol EP2
- Shell Retinax EP2
- Maxol Multipurpose EP2
- Texaco Multifak EP2

Table 9.1 - Lubricants and Fluids

| | Volume | International Spec | Recommended |
|---------------------------|------------------|------------------------------------|--|
| Fuel* | 345 ltr | DIN51 601 | |
| Engine Oil (C4.4) | 7 ltr | CAT ECF-3, API CJ-4, AECA E9 | CAT DEO-ULS (SAE 15W-40) |
| Engine Oil | 13.5 ltr | CAT ECF-1-a, API CH-4/CI-4 | CAT DEO (SAE 15W-40) |
| Coolant | 17 ltr | CAT EC-1, ASTM D4985 or ASTM D6210 | CAT Extended Life Coolant (ELC) or CAT Diesel Engine Antifreeze (DEAC) |
| Coolant (Tier 4i) | 16.5 ltr | CAT EC-1, ASTM D4985 or ASTM D6210 | CAT Extended Life Coolant (ELC) or CAT Diesel Engine Antifreeze (DEAC) |
| Hydraulic Oil | 450 ltr | ISO 46 | Shell Tellus 46 |
| Track Gearbox Oil | See Track Manual | SAE 80W/90, ISO 4406 (20/18/18) | Shell Spirax S2 G 80W-90 |
| Feeder Gearbox Oil | 1.3 ltr | SAE 80W/90 | Shell Spirax S2 G 80W-90 |
| Apron Feeder Gearbox | 4 ltr | SAE 80W/90 | Shell Spirax S2 G 80W-90 |
| General Grease | N/A | KP2K-20 KP2K-30. | Refer to "Recommended Lubricants" list |
| Screen Bearing Grease**** | N/A | KPHC 2N-20 KPHC 2N-30. | Mobil Mobilith SHC220 Maxol Heavy Duty Synthetic 220 |

* Low sulphur fuel only should be used in machines with Tier 4 engines.

**Where ambient temperature is above 30°C.

****screen bearing greasing schedule, 20 grams or 22 strokes per week (based on grease gun delivering 1cc per stroke)

Table 9.2 - Hot Climates

| | Capacity (l) | Name | Recommended |
|---------------------|--------------|-------------------------------|----------------------|
| Hydraulic Oil | 780 | Hydraulic Oil Grade 68 | Shell Tellus S2 M 68 |
| Feeder Gearbox | 4/1.3 | Gear Oil Grade 320 | Shell Omala S2 G320 |
| Track Gearbox | | Gear Oil Grade 320 | Shell Omala S2 G320 |
| Engine Oil (Tier 3) | 17.4 | Engine Oil 15W-40 | CAT DEO 15W-40 |
| Engine Oil (Tier 4) | 17.9 | Engine Oil 15W-40 Low SAPS | CAT DEO-ULS |

Where ambient temperatures are +15°C - +50°C.

Table 9.3 - Cold Climate

| | Capacity (l) | Name | Recommended |
|---------------------|--------------|-------------------------------------|--------------------------------|
| Hydraulic Oil | 780 | Hydraulic Oil Grade 32 Cold Climate | Shell Tellus S4 VX |
| Feeder Gearbox | 4/1.3 | Gear Oil Grade 150 Synthetic | Shell Omala S4 GX 150 |
| Track Gearbox | | Gear Oil 75W/90 | Shell Spirax S6 AXME 75W/90 |
| Engine Oil (Tier 3) | 17.4 | Engine Oil 5W-30 | Cat DEO Cold Weather SAE 0W-40 |
| Engine Oil (Tier 4) | 17.9 | Engine Oil 5W-30 Low SAPS | Cat DEO Cold Weather SAE 0W-40 |

Where ambient temperatures are -20°C - +30°C.

(3) Capacities - Fluid

Table 9.4 - Capacities - Fluid

| | |
|-------------------------------------|------------------|
| Engine coolant (Cat) | 11.4 L (2.5 gal) |
| Engine coolant (Deutz) | 13.6 L (3 gal) |
| Engine oil including filter (Cat) | 7.3 L (1.6 gal) |
| Engine oil including filter (Deutz) | 14 L (3.1 gal) |
| Hydraulic tank (Tier 4) | 450 L (118 gal) |
| Hydraulic tank (Tier 3) | 477 L (126 gal) |
| Fuel tank | 346 L (74 gal) |

Table 9.5 - Adjustment Data

| | |
|--------------------|--|
| Engine speed | 2200 rpm 1800 rpm (Constant Speed) |
| Screen shaft speed | 920 rpm ± 20 rpm* 860 rpm ± 20 rpm* |

* Dependant on pulley and weights.

Table 9.6 - Pressures

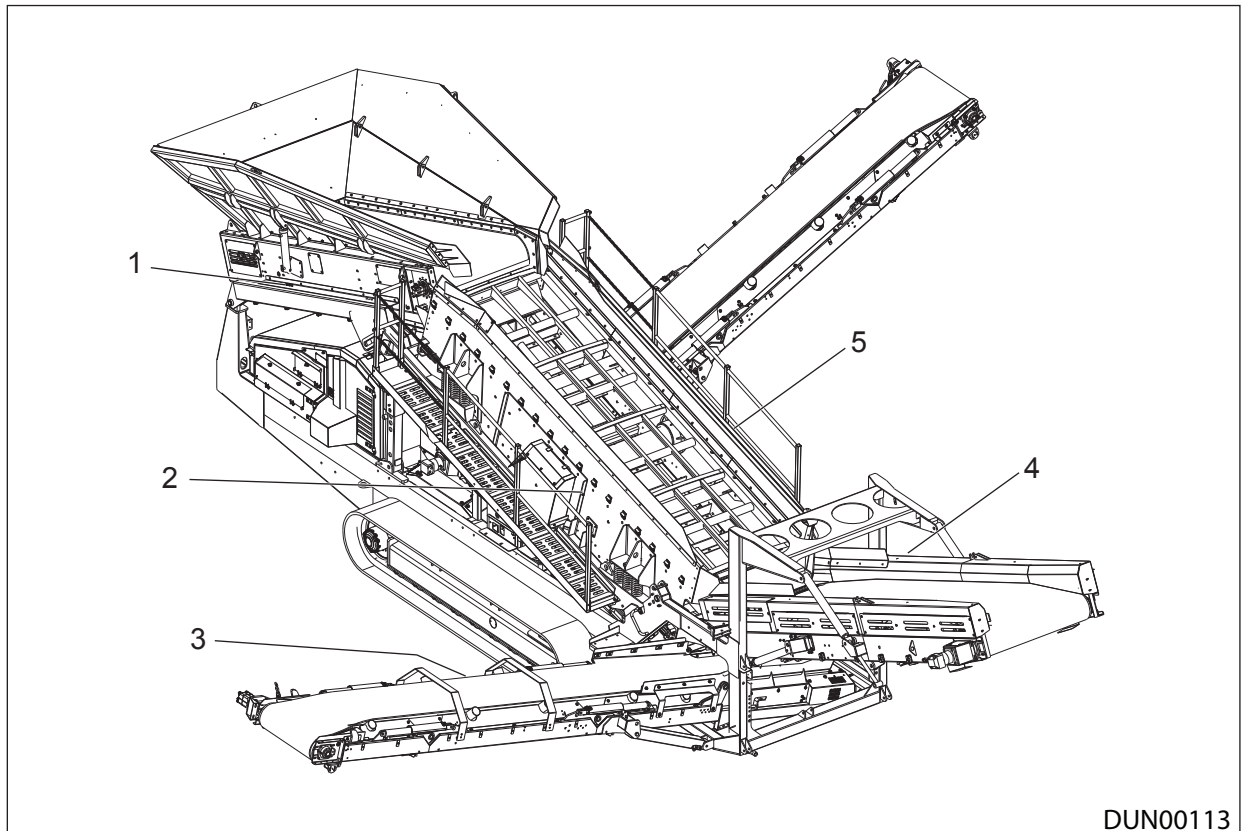
| | |
|------------------|--------------------|
| Hydraulic system | 210 bar (3000 psi) |
|------------------|--------------------|

(4) Greasing schedule

| Area | Frequency | Grams | Ounces |
|--|-----------|-------|--------|
| All conveyor tail drum bearings LH/RH | 100 HRS | 2 | 0.07 |
| All conveyor drive drum bearings LH/RH | 100 HRS | 2 | 0.07 |
| Screen bearings LH/RH | 50 HRS | 20 | 0.71 |

1 Gram = 0.035 Ounces

Each grease gun will put out a differing amount per stroke. Check greasing equipment before use.



DUN00113

Figure 9.2 - Warrior 1800 Greasing Schedule

Figure 9.2 shows the locations of greasing points on the machine. Please note that some greasing points are only shown on one side of the machine but there are greasing points on both the left and right hand sides.

9.7 Servicing the Feeder Unit

(1) Clean & Check the Conveyor Belt

WARNING

Wear personal protective equipment.

Fall hazard.

Switch off the machine and implement the lockout and tagout procedure.

CAUTION

Do not unfasten or remove any guard while the machine is running or start the machine while a guard is unfastened or removed.

If any damage to the belt is found, do not operate the machine until it is repaired or replaced entirely by your local Terex dealer.

PROCEDURE

1. Observe all safety warnings.
2. Stop the engine.
3. Clean the conveyor belt using a high pressure hose. Ensure that eyes are protected by wearing safety glasses.
4. Check the belt for cuts, tears, rips or any other physical damage.
5. Close and secure the guard doors in the correct position.

(2) Tensioning the Feeder Conveyor Belt/Apron Feeder

⚠ WARNING

Wear personal protective equipment.

Fall hazard.

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

Do not over tension the belt as this will damage the drum bearings.

PROCEDURE

1. Observe all safety warnings.
2. Start the feeder conveyor, Refer to Chapter 7.
3. Run the feeder conveyor at desired speed.
4. Secondly, assess the current tension in the apron. We design the system to operate with a maximum deflection of 1.5%. This can be measured using the feeder frame as a reference and comparing the offset at the lowest roller with that at the mid-point between the same roller and the rear sprocket. If this value is less than or equal to 20 mm the apron tension will be sufficient.
5. Should additional tension be required, tighten the feeder conveyor belt by adjusting both adjusters (A) evenly.

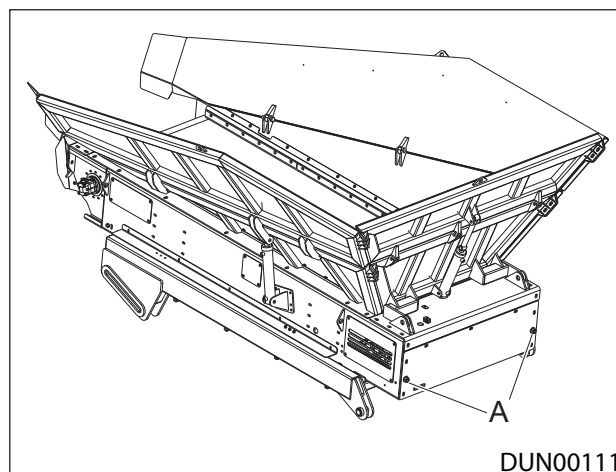


Figure 9.3 - Feeder Conveyor Adjusters

6. Continue to tension until the required deflection measurement is reached.
7. Run the feeder for a short period to observe performance and double check maximum deflection is in reacquired range as per above.
8. Repeat steps above if necessary to successfully re-commission the plant.
9. This procedure is the same for the apron feeder option, with the adjusters located outside.

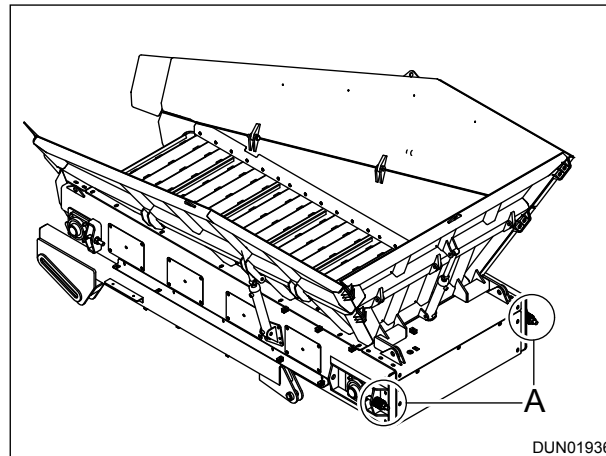


Figure 9.4 - Apron Feeder Adjusters

(3) Feeder Conveyor/Apron Feeder Alignment

⚠ WARNING

Wear personal protective equipment.

Fall hazard.

Switch off the machine and implement the lockout and tagout procedure.

⚠ CAUTION

Do not unfasten or remove any guard while the machine is running or start the machine while a guard is unfastened or removed.

PROCEDURE

1. Observe all safety warnings.
2. Start the feeder conveyor, Refer to Chapter 7.
3. Turn control knob of the variable speed control valve COUNTER CLOCKWISE to run the feeder conveyor at maximum speed.
4. Observe the conveyor through the viewing apertures and determine to which side the conveyor is tracking off.
5. If the conveyor is tracking off to the right side, operate the right side adjuster one turn at a time until the belt tracks correctly.
6. If the conveyor is tracking off to the left side, operate the left side adjuster one turn at a time until the belt tracks correctly.

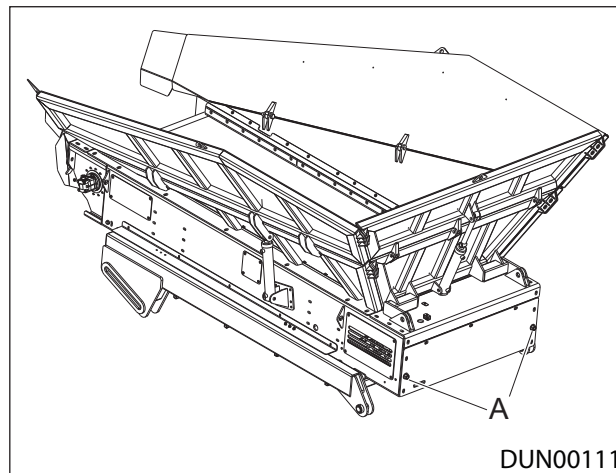


Figure 9.5 - Feeder Conveyor Adjusters

7. This procedure is the same for the apron feeder option, with the adjusters located outside.

9.8 Servicing Conveyors

(1) Clean & Check the Conveyor Belts

WARNING

Wear personal protective equipment. Ensure that eyes are protected by wearing safety glasses.

Fall hazard.

Switch off the machine and implement the lockout and tagout procedure.

CAUTION

Do not unfasten or remove any guard while the machine is running or start the machine while a guard is unfastened or removed.

If any damage to the belt is found, do not operate the machine until it is repaired or replaced entirely by your local Terex dealer.

PROCEDURE

1. Observe all safety warnings.
2. Stop the machine.
3. Implement the lockout and tagout procedure.
4. Open the guard doors where necessary.
5. Clean the conveyor belts using a high pressure hose.
6. Check the belts for cuts, tears, rips or any other physical damage.

(2) Tensioning the Conveyor Belts

⚠ 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.

⚠ WARNING

Wear personal protective equipment.

Fall hazard.

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

Do not over tension the belt as this will damage the drum bearings.

PROCEDURE

1. Observe all safety warnings.
2. For main conveyor, open hopper access doors if necessary.
3. Start the conveyor, Reference: Chapter 7.
4. Tighten the belt by adjusting both belt adjusters evenly, 2 turns at a time until slippage stops.

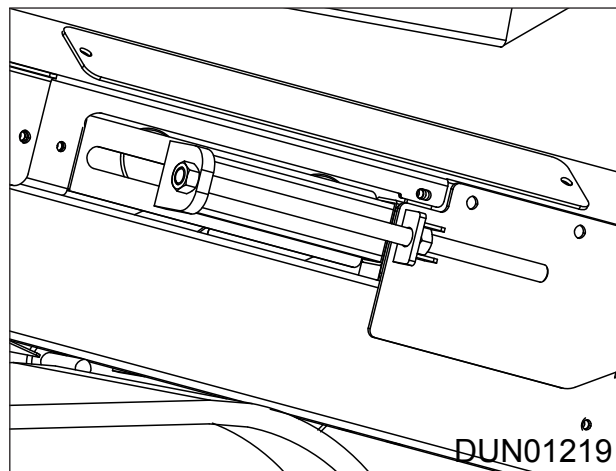


Figure 9.6 - Belt Adjuster

(3) Conveyor Alignment

⚠ WARNING

Wear personal protective equipment

Fall hazard

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

Do not over tension the belt as this will damage the drum bearings.

PROCEDURE

1. Observe all safety warnings.
2. For main conveyor, open hopper access doors if necessary.
3. Start the conveyor to be aligned, Reference: Chapter 7.
4. Observe the conveyor and determine to which side the conveyor is tracking off.
5. If the conveyor is tracking off to the right side, operate the right side adjuster one turn at a time until the belt tracks correctly.
6. If the conveyor is tracking off to the left side, operate the left side adjuster one turn at a time until the belt tracks correctly.

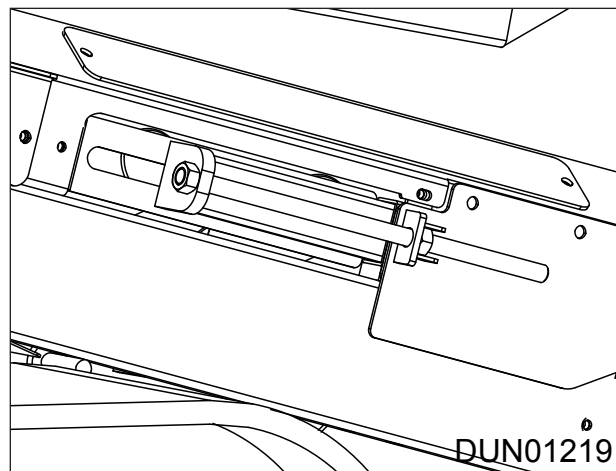


Figure 9.7 - Conveyor Belt Adjusters

9.9 Servicing the Tracks

WARNING

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

(1) Machine Tracks

NOTICE

To maximise the life of the track, keep it movable and avoid damage, the machine 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 machine with incorrectly tensioned tracks can cause severe damage to the undercarriage components and may invalidate the warranty.

PROCEDURE

1. Keeping the tracks correctly adjusted will increase the service life of the tracks and drive components.
 2. 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.
 3. Always check the tracks prior to manoeuvring the machine.
-

(2) Measuring the Track Tension

⚠ 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.

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

PROCEDURE

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.
3. Shutdown the machine and implement the lockout and tagout 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'.

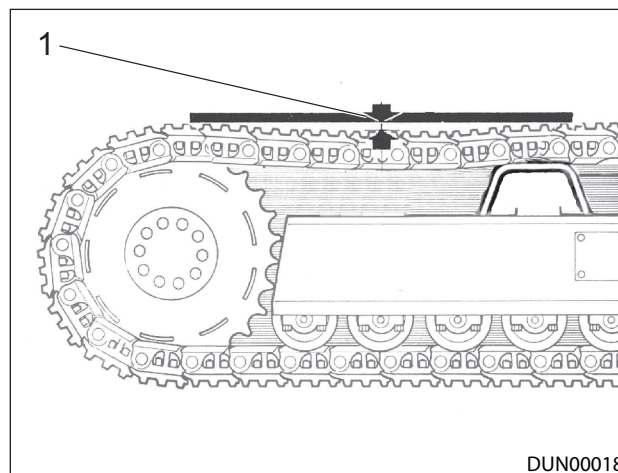


Figure 9.8 - Measuring Track Tension

6. Correctly adjusted, the sag should be within the limits set by the supplier as shown in the table.

Table 9.7 - Track Tension Limits

| IDENTIFICATION | SAG VALUE |
|----------------|------------|
| STRICKLAND | 5MM - 15MM |

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

(3) Adjusting Track Tension

⚠ 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.

⚠ WARNING

Fall hazard. Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

Do not set track tension too tight.

PROCEDURE

1. Observe all Safety Warnings.
2. Shut down the machine, Reference: Chapter 7.
3. Implement the lockout and tagout procedure, Reference: Chapter 8.
4. 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]:-

5. 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.
6. When the correct track tension has been measured, turn the relief valve clockwise to tighten and then clean away all trace of expelled grease.
7. If the track fails to slacken after the grease fitting has been loosened, do not attempt to remove the tracks or disassemble the track tensioner, or remove the grease fitting. It is possible that running the tracks with the grease fitting loosened may help to expel the grease.

To Increase Track Tension [After measurement]:-

8. 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.

Re-check Tension

9. 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'.
10. If room for manoeuvring the plant is restricted, drive the plant forwards and backwards several times over a shorter distance.

(4) Gearbox Oil Level

(a) Checking and Filling Gearbox Oil

⚠ WARNING

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

Dispose of oil safely and in an environmentally friendly manner.

NOTICE

Cleanliness is essential when checking, filling or replacing oil in the gearbox. Gearbox operating life will be dramatically shortened if the oil becomes contaminated. Only use new clean oil in clean containers and fillers.

The Gearbox should hold approximately 5 litres of oil, which should be filtered through a 10 micron filter before entering the gearbox.

PROCEDURE

1. Move the machine to a level surface and bring the oil drain holes to the position shown.
2. Ensure machine is switched off, locked out and tagged out. Remove ignition key, carry it with you.
3. Thoroughly clean around both plugs removing all potential contaminants.
4. Remove both plugs.
5. Fill the oil through the upper hole (Item 1) until it runs out through the lower hole (Item 2).
6. Wait a few moments until any trapped air has escaped and then re-check the level.
7. Add more oil if necessary.

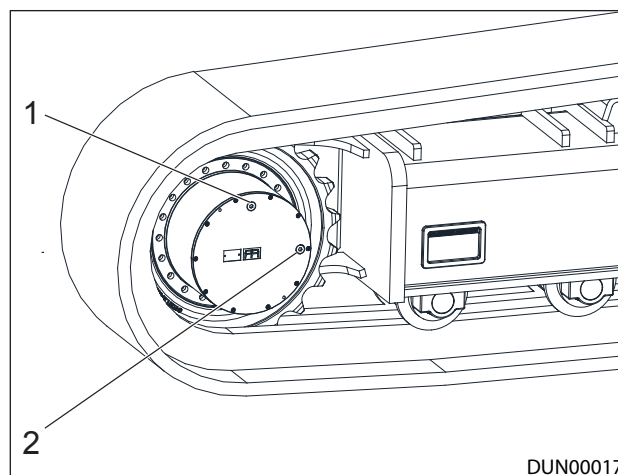


Figure 9.9 - Gearbox Oil Level Fill Position

(5) Draining Gearbox Oil

⚠ WARNING

Do not move the machine any further until the gearbox oil has been replaced.

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

Dispose of oil safely and in an environmentally friendly manner.

NOTICE

Do not move the machine any further until the gearbox oil has been replaced.

PROCEDURE

1. Move the machine to a level surface and bring the oil fill (1) and oil drain holes (2) to the position shown.

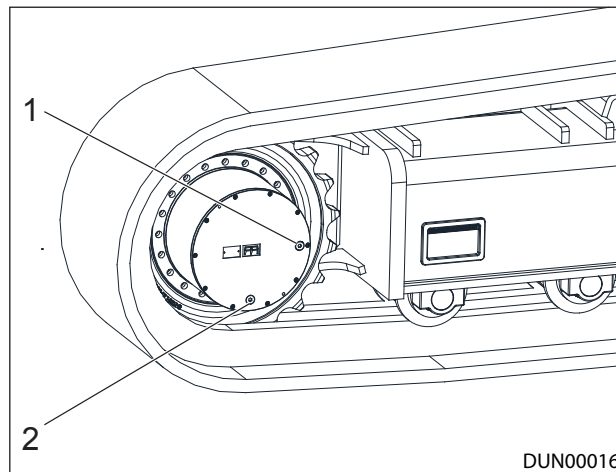


Figure 9.10 - Draining Gearbox Oil

2. Ensure machine is switched off, locked out and tagged out. Remove ignition key, carry it with you.
3. Thoroughly clean around both plugs removing all potential contaminants.
4. Remove both plugs and allow the oil to drain. The oil will drain quickly if it is hot, however care should be taken to avoid burns to the operator.
5. Move the machine to bring the plugs to the fill position shown.
6. Re-fill the oil as per the procedure.

(6) Cleaning the Tracks

PROCEDURE

1. Observe all safety warnings.
2. On a daily basis the tracks should be hosed down to dislodge any build up of material on the tracks.

9.10 Servicing the Electrical System

WARNING

Wear personal protective equipment.

Electrocution hazard.

Switch off the machine and implement the lockout and tagout procedure.

(1) Check Battery

CAUTION

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

The battery contains sulphuric acid, electrolyte which can cause severe burns and produce explosive gases. Avoid contact with the skin, eyes or clothing.

NOTICE

In cold weather, distilled water should only be added immediately before starting the engine, to prevent it freezing.

PROCEDURE

1. Observe all safety warnings.
2. Ensure that all electrical connections are clean and tight and coat the terminals with petroleum jelly to protect them from corrosion.
3. Remove the battery filler plugs and check that the electrolyte level is between 6 and 9 mm (0.25 - 0.37 ins) above the tops of the separators.
4. If necessary, fill up with distilled water.
5. Where batteries have trough fillers, add distilled water to the filling trough until the trough just begins to fill with water.

(2) Battery Removal

⚠ WARNING

Wear personal protective equipment.

Electrocution hazard.

Switch off the machine and implement the lockout and tagout procedure.

⚠ CAUTION

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

The battery contains sulphuric acid, electrolyte which can cause severe burns and produce explosive gasses. Avoid contact with the skin, eyes or clothing.

PROCEDURE

1. Observe all safety warnings.
2. Ensure all electrical circuits are switched off.
3. Unlock battery bottom cover.
4. Remove battery box cover.
5. Disconnect the ground (-) lead from the battery.
6. Disconnect the positive (+) lead from the battery.
7. Lift the battery from the machine.

(3) Battery Installation

⚠ WARNING

Wear personal protective equipment.

Electrocution hazard.

Switch off the machine and implement the lockout and tagout procedure.

PROCEDURE

1. Observe all safety warnings.
2. Ensure all electrical circuits are switched off.
3. Lift the battery onto the machine.
4. Connect the positive (+) lead.
5. Connect the ground (-) lead.
6. Replace battery box cover.
7. Lock battery box cover.

(4) Changing Fuses

WARNING

Wear personal protective equipment.

Electrocution hazard.

Switch off the machine and implement the lockout and tagout procedure.

PROCEDURE

1. Observe all safety warnings. Ensure machine is switched off, locked out and tagged out. Remove ignition key, carry it with you.
2. For additional protection, disconnect both battery terminals.
3. Unlock fuse box at lock on front of control panel, turning one quarter revolution clockwise.
4. Identify which fuse is to be changed.
5. Grip fuse carefully using needle nose pliers or preferably with plastic fuse removal tweezers.



Figure 9.11 - Plastic Fuse Removal Tweezers

6. Check fuse to see if it is blown, a blown fuse should have a gap in the ampoule.

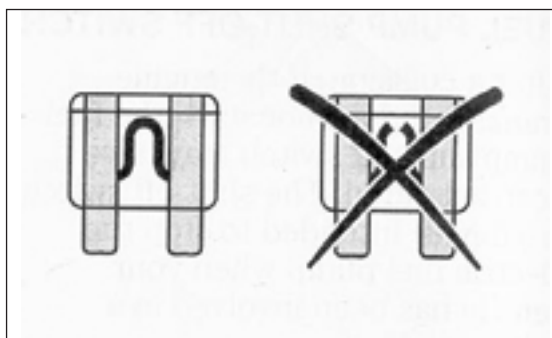


Figure 9.12 - Blown Fuse

7. Insert new fuse into fusebox.
8. Close fuse box , start machine and test if new fuse corrects original problem.

9.11 Servicing the Hydraulic System

(1) General

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.

WARNING

Injection hazard from high pressure fluid. Wear personal protective equipment.
Switch off the machine and implement the lockout and tagout procedure.

NOTICE

All hydraulic functions are powered by pumps driven by the engine / electric motors.

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

The hydraulic fluid reservoir together with associated equipment must be maintained in accordance with the set level and in the schedules and types, see General Routine checks, Specific checks, Lubrication and Fluid Specifications. Only use a recommended fluid.

(2) Hydraulic Fluid

DANGER

The air vents in the cap must be kept open to allow the hydraulic system to “breathe”.

Always use the correct grade of oil, otherwise overheating will occur. (Refer this Section, “lubricants and fluids”)

If the hydraulic system requires filling up on a regular basis, all hydraulic parts and hoses should be inspected for leaks. Any repairs should be made prior to continued operation of the machine.

ALWAYS practice extreme cleanliness when servicing.

WARNING

Injection hazard from high pressure fluid. Wear personal protective equipment.
Switch off the machine and implement the lockout and tagout procedure.

NOTICE

Check the fluid level on the gauge and top up as necessary.

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.

If hydraulic fluid needs to be added, to maintain the correct level, this should be pumped in through the fill port on the large return filter.

(a) Check Hydraulic Oil Level

⚠ WARNING

Injection hazard from high pressure fluid. Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

PROCEDURE

1. Observe all safety warnings.
2. Machine must be on level ground.
3. Always have the hydraulic oil at normal operating temperature.
4. Always have all cylinders retracted (where possible).
5. Check the level indicator (Item 2).
6. The oil level must be between the red and black marks on the gauge.

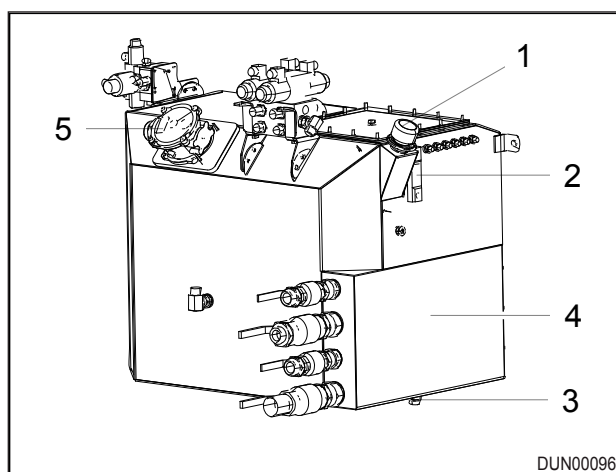


Figure 9.13 - Hydraulic Oil Tank Components

(b) Adding Hydraulic Fluid

⚠ WARNING

Injection hazard from high pressure fluid. Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

⚠ CAUTION

Never overfill the hydraulic tank as this will cause leakage from the filler cap.

PROCEDURE

1. Observe all safety warnings.
2. Machine must be on level ground.
3. Always have all cylinders retracted (where possible).
4. Implement lock-out procedure.
5. Clean the area around the filler cap (Item 1).
6. Open the filler cap (Item 1).

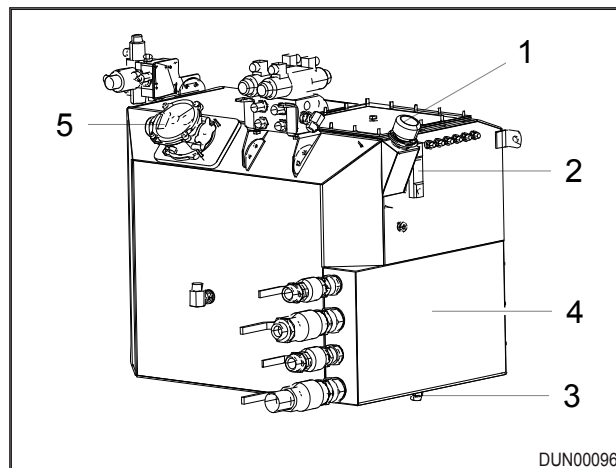


Figure 9.14 - Hydraulic Oil Tank Components

7. Fill the tank to midway between red and black marks on the level indicator (Item 2). (Correct grade of hydraulic oil see Section "Lubricants and Fluids").

(c) Change Hydraulic Oil

WARNING

Injection hazard from high pressure fluid. Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

ALWAYS practice extreme cleanliness when servicing.

Before removing the drain plug (Item 3):

- Release any pressure in the hydraulic tank by slowly unscrewing the filler cap (Item 1).
- Ensure a suitable container is placed on the ground to catch the full capacity of oil in the tank.
- Remember to stand on one side to avoid oil which will spill from the drain hole.

Change the suction elements when an oil change is being carried out.

PROCEDURE

1. Observe all safety warnings.
2. Always have the hydraulic oil at normal operating temperature.
3. Always have all cylinders retracted (where possible).
4. Drain the tank by removing the drain plug (Item 3).
5. Remove the cover plate under the filler cap (Item 1).
6. Discard the gasket.
7. Remove the suction filters (Item 4) by unscrewing them from the suction pipes.
8. Flush out the tank with clean hydraulic oil taking extreme care to remove all dirt and foreign matter.
9. Fit new suction filters (Item 4) to the suction pipes.
10. Re-fit cover plate to the tank using a new gasket and refit drain plug (Item 3)
11. Change the return line filter element.
12. Refill the tank with clean hydraulic oil to midway between the red and black marks on level indicator. (Correct grade of hydraulic oil must be used, see Section "Lubricants and Fluids".)
13. Run the engine to circulate the oil.
14. Operate the hydraulic controls to purge any air from the system.
15. Stop the engine and implement the lock-out and tagout procedure.
16. Fill up the system as required.

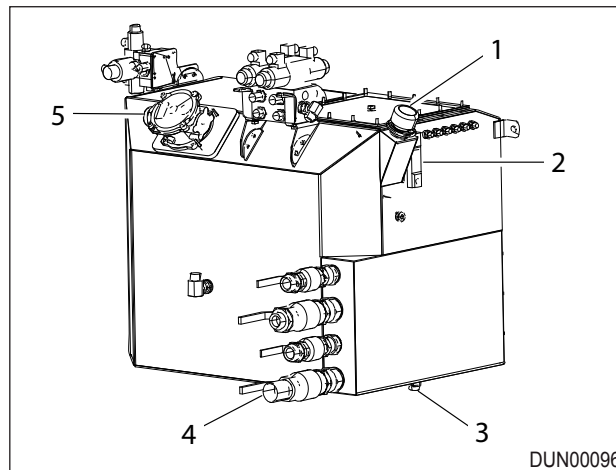


Figure 9.15 - Hydraulic Tank

(d) Changing the Suction Filters

⚠ WARNING

Injection hazard from high pressure fluid.

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

ALWAYS practice extreme cleanliness when servicing.

Change the suction filters when an oil change is being carried out.

PROCEDURE

1. Observe all safety warnings.
2. Turn engine off and return all control levers to the neutral position.
3. Open the Filler cap to relieve any pressure inside the tank.
» *It is recommended to change the suction filters when an oil change is being carried out.*
4. Drain the tank by removing the drain plug.
5. Remove the bolts (Item 1) securing the cover plate in place.

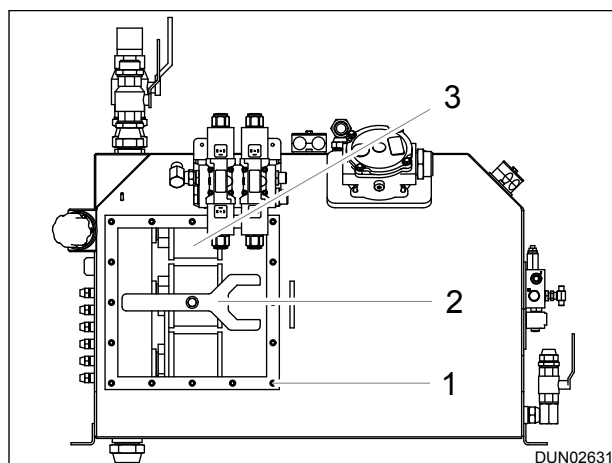


Figure 9.16 - Suction Filters

6. Remove the suction filter spanner (Item 2) from the cover plate.
7. The Suction filters (Item 3) are fitted inside the hydraulic tank. Unscrew the Filters.
8. Lift out the old filters and discard safely and responsibly.
9. Replace the old filters with new filters. Hand tighten the filters.
10. Replace inspection covers and filler cap.

(3) Checking the Return Line Filter

⚠ WARNING

Wear personal protective equipment

Switch off the machine and implement the lockout and tagout procedure.

Injection hazard

PROCEDURE

1. Observe all safety warnings.
2. Always have the engine running at maximum speed.
3. Always have all hydraulic equipment working.
4. Always have the hydraulic oil at normal operating temperature.
5. Check the return line filter blockage indicator (Item 1).
6. Change the filter element immediately when the green sector of the blockage indicator goes to red.

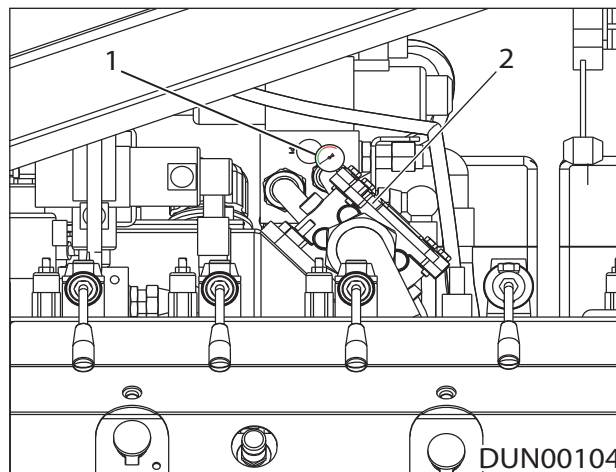


Figure 9.17 - Return Line Filter and Indicator

(4) Changing the Return Line Filter

DANGER

Burn hazard. Wear personal protective equipment.

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

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 will result.

PROCEDURE

1. Observe all safety warnings.
2. Ensure machine is switched off, locked out and tagged out. Remove ignition key, carry it with you.
3. Ensure all cylinders are closed (where possible).
4. Release any pressure in the hydraulic tanks by slowly unscrewing the filler cap.
5. Clean the outside of the filter housing. (Item 1).
6. Remove the filter by unscrewing the 4 securing nuts and removing cover.
7. Lift out the old element and discard it safely and responsibly.
8. Wash out the filter cap and dry with an air hose. DO NOT USE A RAG.
9. Re-fit new filter ensuring seal ring is in good condition and correctly positioned.
10. Fit cover and fasten 4 securing nuts.

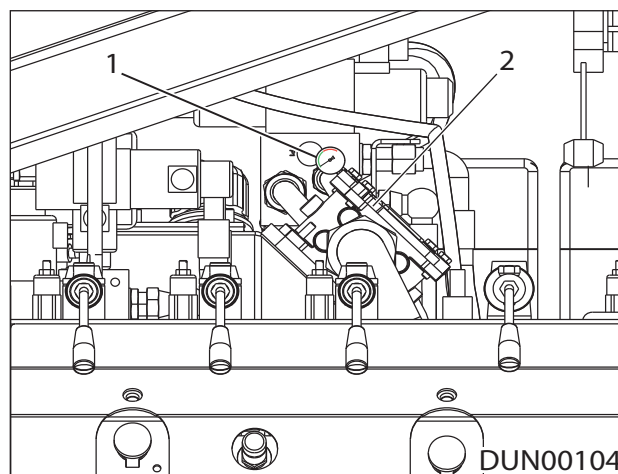


Figure 9.18 - Return Line Filter and Indicator

9.12 Tier 3 Engine Maintenance

(See the engine Operators Manual for more detailed information regarding the Engine)

DANGER

Fluid Injection Hazard

This is a high pressure system and only suitably qualified experienced engineers should tackle any problems that may arise. Always relieve the pressure from the hydraulic system before carrying out any kind of maintenance or adjustment.

Burn Hazard

The oil in the system can be of a high temperature. Take precaution when working with high temperature fluids.

Electrocution Hazard

The system also includes high voltage electrical equipment and any work for maintenance and/or replacement should only be undertaken by suitably qualified experienced electrical engineers.

WARNING

Always implement the lockout procedure when carrying out maintenance or adjustments to the machine.

Hazardous nip points exist.

Wear personal protective equipment.

CAUTION

Hot surfaces. Beware of burns from hot oil.

NOTICE

For the diesel engine power pack fitted to your machine to continue to perform safely, efficiently and reliably it is imperative that all the recommendations given in the separate engine manual are strictly followed with regard to:

- Safety
- Operation
- Lubrication
- Maintenance
- Service

See the engine operators manual for more detailed information regarding the engine before carrying out any maintenance work.

Adhere to the regular maintenance schedules and procedures specified by the manufacturer using the numbers of hours run as displayed on the engine service meter.

It is recommended to change the Oil filter when changing the oil.

Dispose of old filters in a correct and environmentally friendly manner.

(1) Changing Engine Filters & Oil

(See the engine Operators Manual for more detailed information regarding the Engine)

CAUTION

Hot surfaces. Beware of burns from hot oil.

(a) Checking Engine Oil

PROCEDURE

1. Turn off the engine. Open the engine inspection door (Item 1).

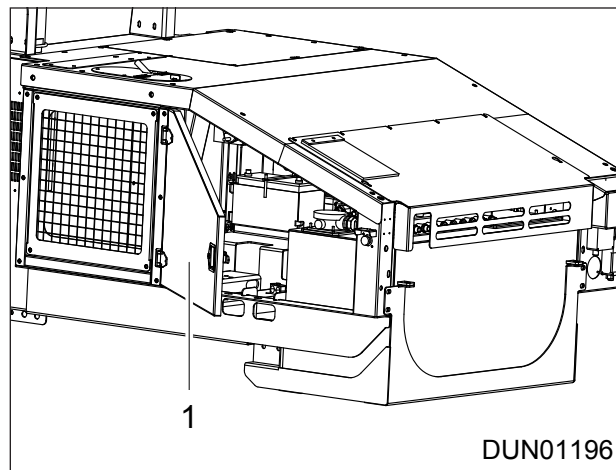


Figure 9.19 - Engine Inspection Door

2. Remove dipstick (Item 1) from the engine and clean. Re-insert the dipstick fully.

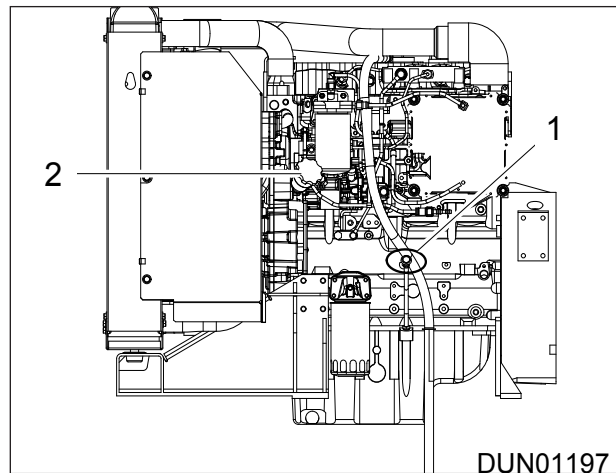


Figure 9.20 - Engine view through inspection door

3. Remove the dipstick again and observe that the oil level is between the minimum and maximum levels. If the level is below the minimum mark oil has to be added through the filler cap (Item 2).
4. It is important the oil level is not above the maximum level. If this happens some oil must be removed.

(b) Changing Engine Oil & Filter

PROCEDURE

1. Operate the engine to ensure the oil is warm, this enables the oil to flow more easily, also when the oil is cool waste particles settle on the bottom of the oil pan and will not drain off.
2. Stop the engine and open the filler cap (Item 2).
3. Remove the drain plug located underneath the engine and drain the oil to an external container large enough to hold all the oil.

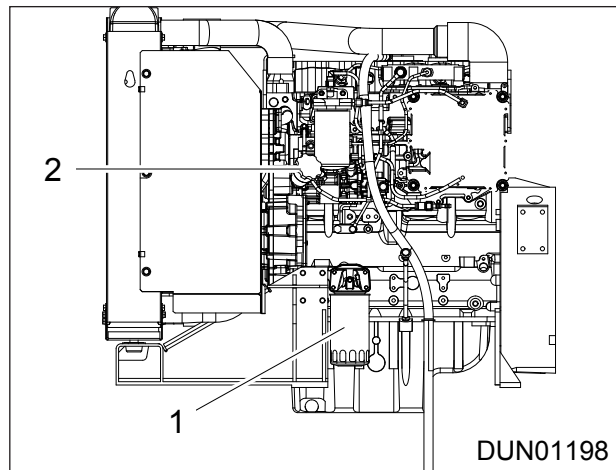


Figure 9.21 - Engine Oil Filter

4. When all the oil has drained off replace the drain plug.
5. Loosen the Filter (Item 1) and dispose off properly. Replace the new filter and hand tighten.
6. Refill the engine with oil and dip the engine.

(2) Changing Fuel Filters

(a) Draining the Fuel Filter Water Trap

⚠ WARNING

Lock-out machine.

Wear personal protective equipment

Diesel fuel is highly flammable.

Do not smoke or carry out maintenance on the fuel system near open flame or sources of sparks, such as welding equipment, etc.

PROCEDURE

1. Observe all safety warnings.
2. Turn off the engine. Open the engine inspection door (Item 1).
3. Unscrew the drain bung (Item 1, Reference: Figure 9.23) at the bottom of the water trap (Item 2, Reference: Figure 9.21) and allow the water to drain out into a suitable container.

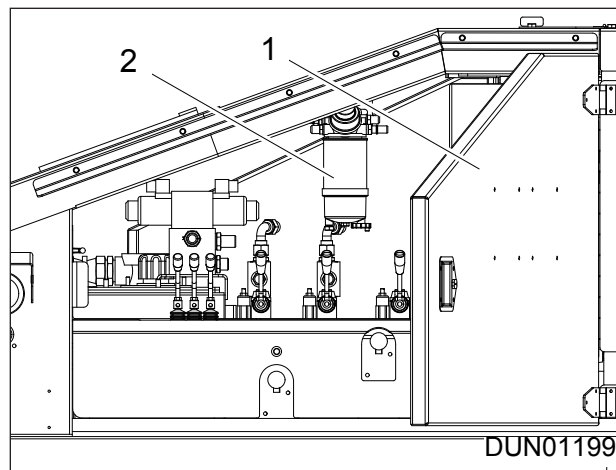


Figure 9.22 - Engine Oil Filters

4. Tighten the drain plug when pure diesel starts to come out.
5. Clean up any spilt diesel.

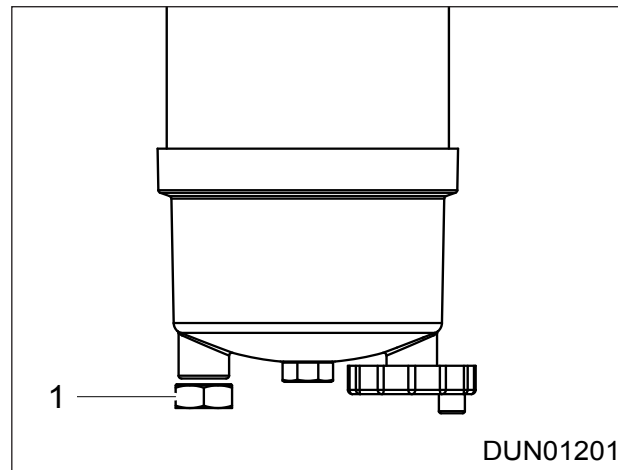


Figure 9.23 - Water Trap

(b) Changing Watertrap Filter

To change the watertrap filter element (Item 2) follow the procedure outlined.

PROCEDURE

1. Stop the machine and turn the fuel supply off.
2. Remove the bleed.
3. Remove the filter& watertrap bowl.
4. Remove the watertrap bowl from the filter element.
5. Oil the watertrap bowl.
6. Attach new element to watertrap bowl.
7. Oil top of filter element.
8. Attach the filter element.
9. Prime the fuel system to fill the element and watertrap, and to remove air from the system.
10. Replace the bleed.

(c) Changing the Fuel Filters

⚠ WARNING

Lock-out machine.

Wear personal protective equipment

Diesel fuel is highly flammable.

Do not smoke or carry out maintenance on the fuel system near open flame or sources of sparks, such as welding equipment, etc.

NOTICE

Fill up the new fuel filter with diesel. This will make the restart of the machine easier.

PROCEDURE

1. Observe all safety warnings.
2. Unscrew the fuel filter (Item 1)

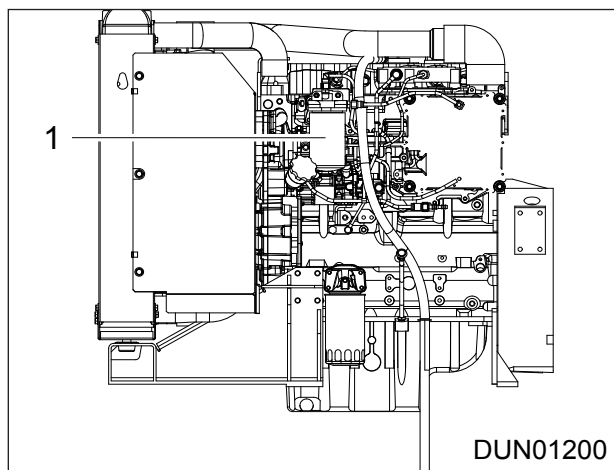


Figure 9.24 - Engine Fuel Filters

3. Fill the new filters with diesel and fit into position.
4. Tighten the new fuel filter and o-ring.

9.13 Tier 4 Engine Maintenance

(See the engine Operators Manual for more detailed information regarding the Engine)

DANGER

Fluid Injection Hazard

This is a high pressure system and only suitably qualified experienced engineers should tackle any problems that may arise. Always relieve the pressure from the hydraulic system before carrying out any kind of maintenance or adjustment.

Burn Hazard

The oil in the system can be of a high temperature. Take precaution when working with high temperature fluids.

Electrocution Hazard

The system also includes high voltage electrical equipment and any work for maintenance and/or replacement should only be undertaken by suitably qualified experienced electrical engineers.

WARNING

Always implement the lockout procedure when carrying out maintenance or adjustments to the machine.

Hazardous nip points exist.

Wear personal protective equipment.

CAUTION

Hot surfaces. Beware of burns from hot oil.

NOTICE

For the diesel engine power pack fitted to your machine to continue to perform safely, efficiently and reliably it is imperative that all the recommendations given in the separate engine manual are strictly followed with regard to:

- Safety
- Operation
- Lubrication
- Maintenance
- Service

See the engine operators manual for more detailed information regarding the engine before carrying out any maintenance work.

Adhere to the regular maintenance schedules and procedures specified by the manufacturer using the numbers of hours run as displayed on the engine service meter.

It is recommended to change the Oil filter when changing the oil.

Dispose of old filters in a correct and environmentally friendly manner.

(1) Changing Engine Oil & Filters

(See the engine Operators Manual for more detailed information regarding the Engine)

⚠ CAUTION

Hot surfaces. Beware of burns from hot oil.

(a) Checking Engine Oil

PROCEDURE

1. Turn off the engine. Open the engine inspection door (Item 1).

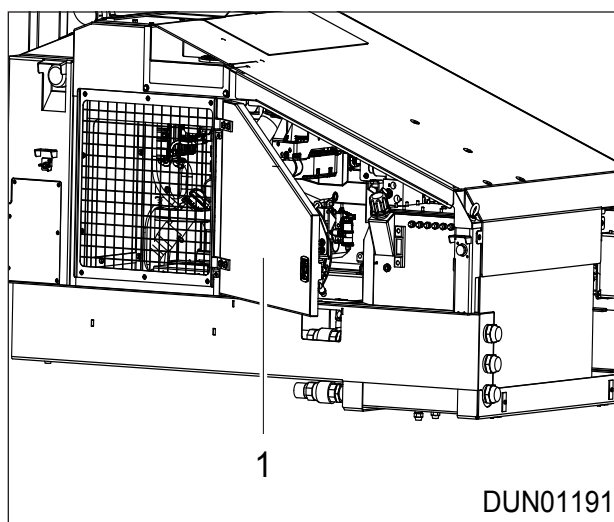


Figure 9.25 - Engine Inspection Door

2. Remove dipstick (Item 1) from the engine and clean. Re-insert the dipstick fully.

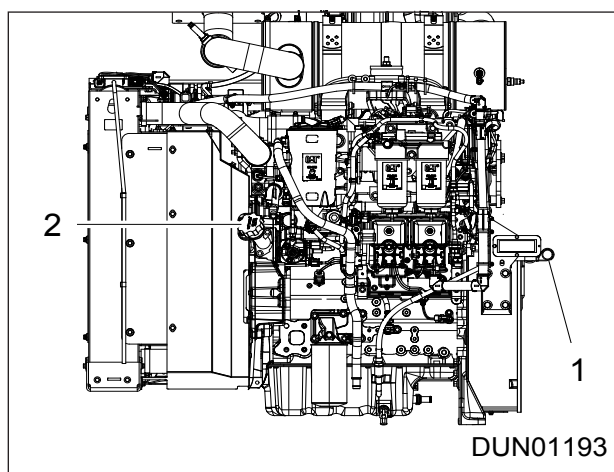


Figure 9.26 - Engine Oil Filler Cap & Dipstick

3. Remove the dipstick again and observe that the oil level is between the minimum and maximum levels. If the level is below the minimum mark oil has to be added through the filler cap (Item 2) .
4. It is important the oil level is not above the maximum level. If this happens some oil must be removed.

(b) Changing Engine Oil & Filter

PROCEDURE

1. Operate the engine to ensure the oil is warm, this enables the oil to flow more easily, also when the oil is cool waste particles settle on the bottom of the oil pan and will not drain off.
2. Stop the engine and open the filler cap (Item 2).
3. Remove the drain plug located underneath the engine and drain the oil to an external container large enough to hold all the oil.

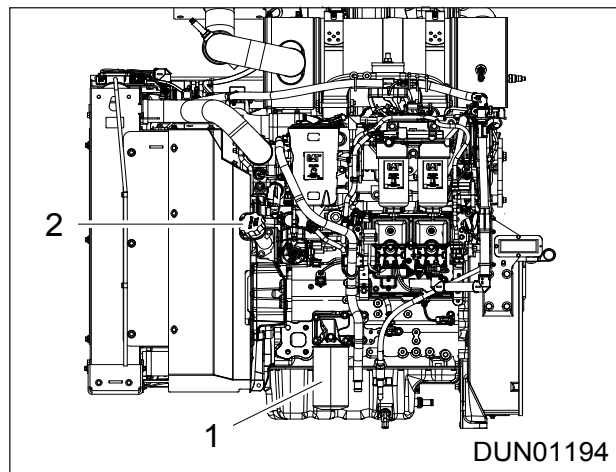


Figure 9.27 - Engine Oil Filter

4. When all the oil has drained off replace the drain plug.
5. Loosen the Filter (Item 1) and dispose off properly. Replace the new filter and hand tighten.
6. Refill the engine with oil and dip the engine.

(2) Changing Fuel Filters

(a) Draining the Fuel Filter Water Trap

WARNING

Lock-out machine.

Wear personal protective equipment

Diesel fuel is highly flammable.

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

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

Do not smoke or carry out maintenance on the fuel system near open flame or sources of sparks, such as welding equipment, etc.

PROCEDURE

1. Observe all safety warnings.
2. Turn off the engine. Open the engine inspection door (Item 1).
3. Unscrew the drain bung (Item 1, Reference: Figure 9.29) at the bottom of the water trap (Item 2, Reference: Figure 9.28) and allow the water to drain out into a suitable container.

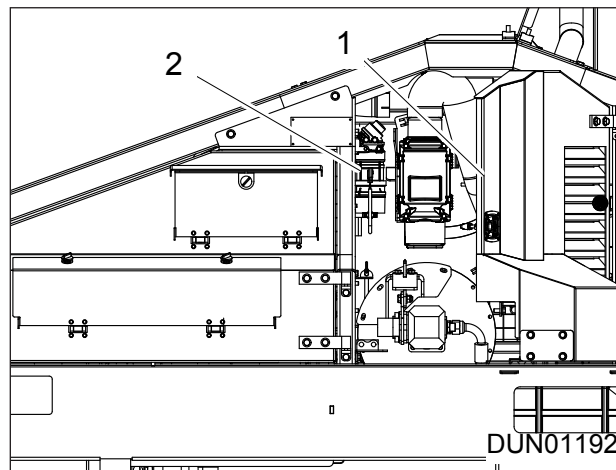


Figure 9.28 - Engine Oil Filters

4. Tighten the drain plug when pure diesel starts to come out.
5. Clean up any spilt diesel.

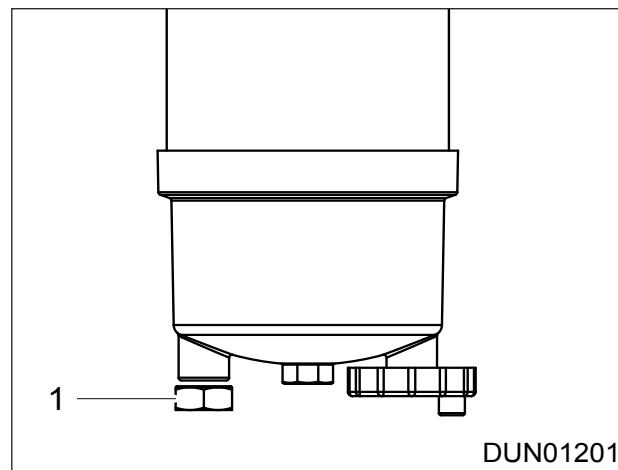


Figure 9.29 - Water Trap

(b) Changing Watertrap Filter

To change the watertrap filter element (Item 2) follow the procedure outlined.

PROCEDURE

1. Stop the machine and turn the fuel supply off.
2. Remove the bleed.
3. Remove the filter& watertrap bowl.
4. Remove the watertrap bowl from the filter element.
5. Oil the watertrap bowl.
6. Attach new element to watertrap bowl.
7. Oil top of filter element.
8. Attach the filter element.
9. Prime the fuel system to fill the element and watertrap, and to remove air from the system.
10. Replace the bleed.

(c) Changing the Fuel Filters

⚠ WARNING

Lock-out machine.

Wear personal protective equipment

Diesel fuel is highly flammable.

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

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

Do not smoke or carry out maintenance on the fuel system near open flame or sources of sparks, such as welding equipment, etc.

NOTICE

Fill up the new fuel filter with diesel. This will make the restart of the machine easier.

PROCEDURE

1. Observe all safety warnings.
2. Unscrew the fuel filters (Item 1)

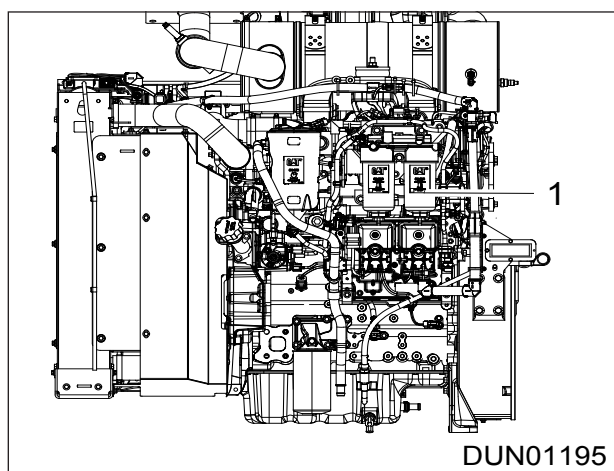


Figure 9.30 - Engine Fuel Filters

3. Fill the new filters with diesel and fit into position.
4. Tighten the new fuel filter and o-ring.

(3) Servicing The DEF (Diesel Exhaust Fluid) System

⚠ WARNING

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

Hot Surface Hazard

Beware of hot DEF and surfaces.

DEF is corrosive and therefore must be stored in tanks constructed of approved materials. (Refer to engine manual for more details)

Care should be taken when dispensing DEF. Spills should be cleaned immediately. All surfaces should be wiped clean and rinsed with water.

DEF that has been split will crystallize when the water within the liquid evaporates. Split DEF will attack paint and metal. If DEF is split, wash the area with water immediately.

Caution should be used when dispensing DEF near an engine that has recently been running. Spilling DEF onto hot components may cause the release of ammonia vapours. Do not breathe ammonia vapors. Do not clean up any spills with bleach.

NOTICE

It is recommended that filter elements are not cleaned or reused but replaced with new items.

Do not run the engine with the filter elements removed.

Do not use agricultural grade urea solutions. Do not use any fluids that do not meet ISO 22241-1 requirements in SCR emissions reduction systems. Use of these Fluids can result in numerous problems including damage to SCR equipment and a reduction in NOx conversion efficiency.

(a) DEF Tank Location

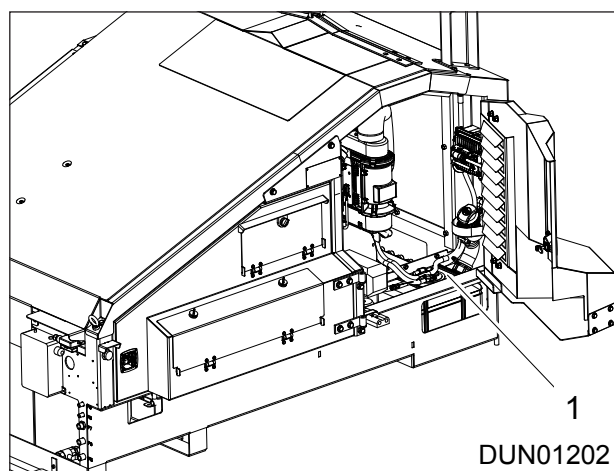


Figure 9.31 - Location of the DEF tank - Item 1

(b) Changing the Pump Main Filter**⚠ WARNING**

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

Hot Surface Hazard

Beware of hot DEF and surfaces.

NOTICE

It is recommended that filter elements are not cleaned or reused but replaced with new items.

Do not run the engine with the filter elements removed.

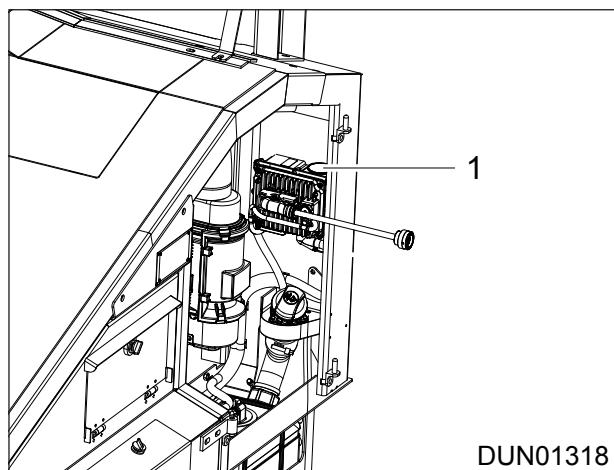
PROCEDURE

Figure 9.32 - Pump Main Filter Location - Item 1

1. Ensure that the area around the Diesel Exhaust Fluid (DEF) filter (Item 1) is clean and free from dirt. The DEF filter threaded cap and the filter element area combined assembly.

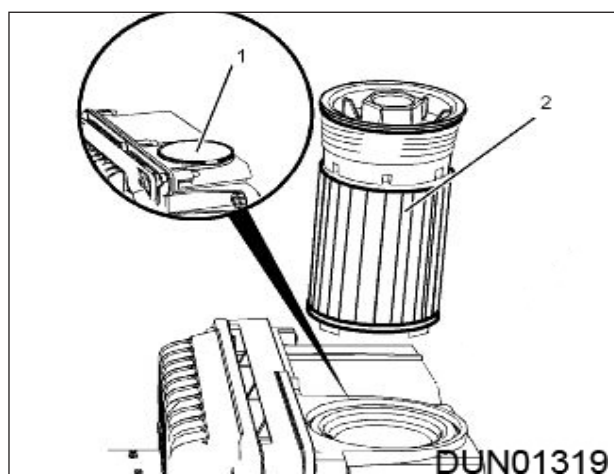


Figure 9.33 - Pump Main Filter Parts

2. Remove the protective cover (Item 1). Remove the DEF filter assembly and discard the filter assembly. Reference: Figure 9.33.
3. Install a new DEF filter assembly into DEF pumphousing (Item 2).
4. Tighten filter assembly to a torque of 14N m (124lbin). Install the protective cover.
5. Turning on the power will automatically prime the DEF system.

(c) Changing the DEF Tank Filler Screen

⚠ WARNING

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

Hot Surface Hazard

Beware of hot DEF and surfaces.

NOTICE

It is recommended that filter elements are not cleaned or reused but replaced with new items.

Do not run the engine with the filter elements removed.

PROCEDURE

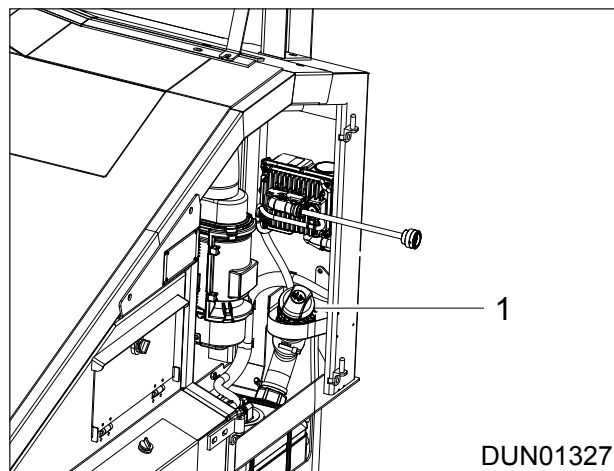


Figure 9.34 - DEF Tank Remote Filter location

1. Ensure that the area around the DEF filler cap is clean and free from dirt (Item 1).

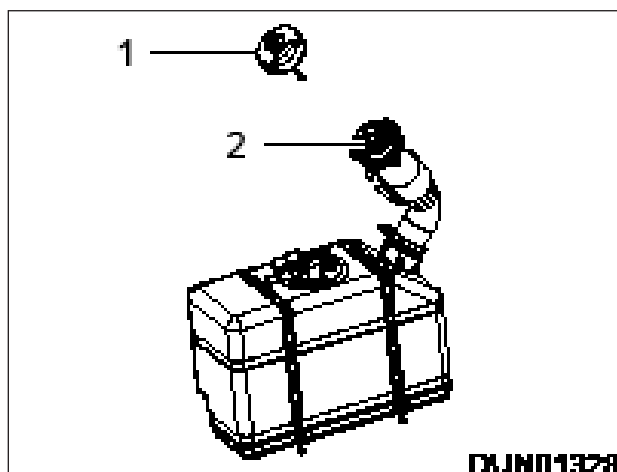


Figure 9.35 - DEF Tank Remote Filter parts

2. Unscrew the filler cap (Item 1).
3. Remove the filter (Item 2) by rotating it and lifting it out. Insert the new one.
 - » *Depending on the condition of the filter, it can be cleaned in water and dried out using compressed air. If the filter screen cannot be cleaned or the filter screen is damaged, then the filter screen must be replaced.*
4. Replace the filler cap and screw it in place.

(d) Changing the DEF Manifold Filter

⚠ WARNING

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

Hot Surface Hazard

Beware of hot DEF and surfaces.

NOTICE

If contamination of the Diesel Exhaust Fluid (DEF) is suspected, the DEF tank will need to be drained and the DEF tank flushed.

Do not run the engine with the filter elements removed.

PROCEDURE

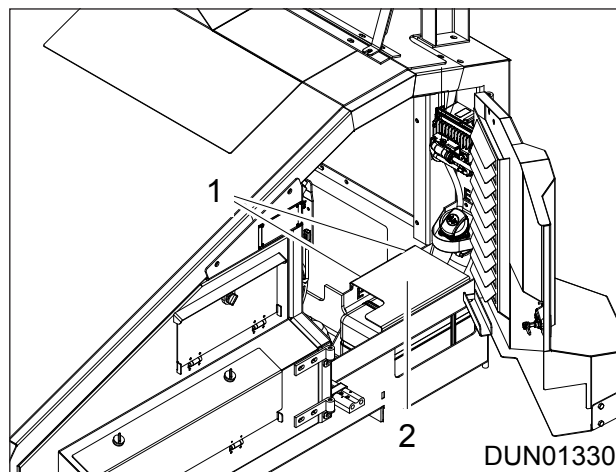


Figure 9.36 - DEF Tank Cover

1. Remove the 2 bolts (Item 1) securing the DEF Tank cover in place and remove the cover (Item 2).

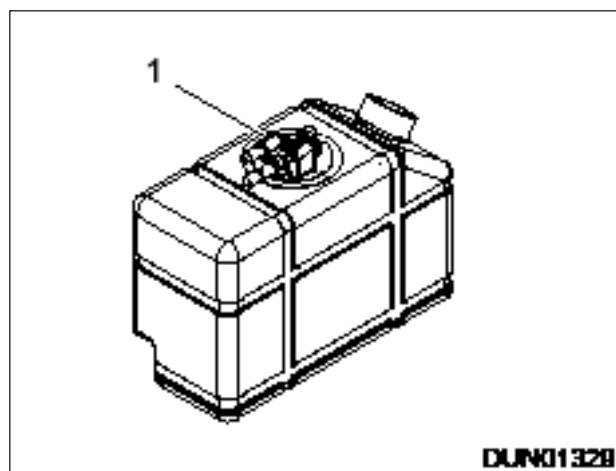


Figure 9.37 - DEF Manifold Filter

2. Unclip the hoses and the sensor from the top of the DEF Manifold (Item 1), Reference: Figure 9.37.
3. Remove the 2 screws securing the Manifold to the top of the tank and lift it out.

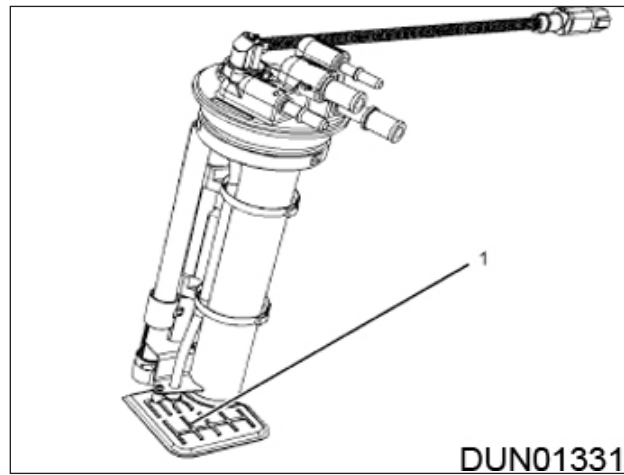


Figure 9.38 - DEF Manifold Filter

4. Remove the filter (Item 1; Reference: Figure 9.38) and replace with a new one.
5. Insert the Manifold back in to the tank and secure in place with the 2 screws.
6. Reattach all the hoses and the sensor.

(e) DEF Tank Flush

⚠ WARNING

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

Hot Surface Hazard

Beware of hot DEF and surfaces.

DEF is corrosive and therefore must be stored in tanks constructed of approved materials. (Refer to engine manual for more details)

Care should be taken when dispensing DEF. Spills should be cleaned immediately. All surfaces should be wiped clean and rinsed with water.

DEF that has been split will crystallize when the water within the liquid evaporates. Split DEF will attack paint and metal. If DEF is split, wash the area with water immediately.

Caution should be used when dispensing DEF near an engine that has recently been running. Spilling DEF onto hot components may cause the release of ammonia vapours. Do not breathe ammonia vapors. Do not clean up any spills with bleach.

NOTICE

If contamination of the Diesel Exhaust Fluid (DEF) is suspected, the DEF tank (2) will need to be drained and the DEF tank flushed.

Ensure that the vessel that will be used is large enough to collect the fluid to be drained.

Dispose of the drained fluid in accordance with local regulations.

PROCEDURE

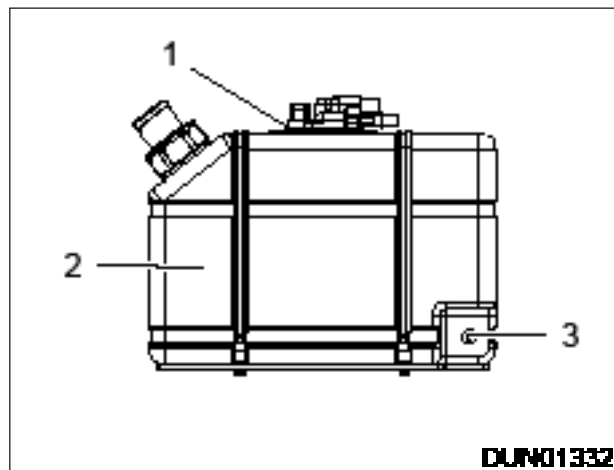


Figure 9.39 - DEF Drain Plug

1. Ensure that the purging of the DEF system has been completed.
2. Position a suitable vessel below the drain plug (Item 3). Remove the tank filler cap.
3. Remove the drain plug and allow the fluid to drain.
4. Remove the Manifold (DEF Header) (Item 1) after draining the fluid.

5. Install the drain plug (Item 3). Tighten the drain plug to a torque of 6N·m (53lbin). Remove the vessel used for draining.
6. Reinstall the Manifold in to the tank.
7. Refill the DEF tank.

(f) Filling the DEF Tank

WARNING

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

Hot Surface Hazard

Beware of hot DEF and surfaces.

DEF is corrosive and therefore must be stored in tanks constructed of approved materials. (Refer to engine manual for more details)

Care should be taken when dispensing DEF. Spills should be cleaned immediately. All surfaces should be wiped clean and rinsed with water.

DEF that has been split will crystallize when the water within the liquid evaporates. Split DEF will attack paint and metal. If DEF is split, wash the area with water immediately.

Caution should be used when dispensing DEF near an engine that has recently been running. Spilling DEF onto hot components may cause the release of ammonia vapours. Do not breathe ammonia vapours. Do not clean up any spills with bleach.

NOTICE

If contamination of the Diesel Exhaust Fluid (DEF) is suspected, the DEF tank will need to be drained and the DEF tank flushed.

Before filling the DEF tank, ensure that the DEF lines have been purged. Purging of the DEF lines will take place, after the engine has stopped. Only after purging the DEF lines should the DEF tank be filled. For more information on the time taken for purging the DEF lines, refer to the Engine Operation and Maintenance Manual.

Ensure that the tank is full before starting work.

Do not over fill the tank. The DEF will require room for expansion.

PROCEDURE

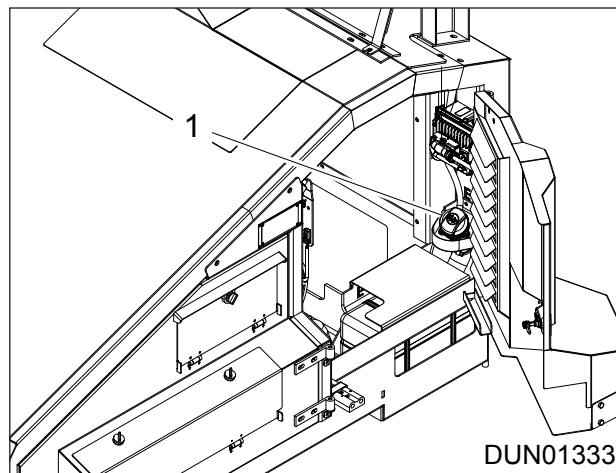


Figure 9.40 - DEF Tank Filler Cap

1. Ensure that the DEF cap (Item 1) and the surrounding area is clean and free from dirt. Ensure that all equipment used in filling the tank is clean and free from dirt.
2. Remove the DEF filler cap.
3. Fill the tank with the required amount of DEF. Ensure that dirt is not introduced into the tank during filling.
4. Reinstall the DEF filler Cap.
5. Visually inspect the DEF tank for any signs of leakage.

9.14 Inspecting the Clean Emissions Module Supports

⚠ WARNING

Wear personal protective equipment.

Switch off the machine and implement the lockout and tagout procedure.

Hot Surface Hazard

Beware of hot surfaces on and around the engine.

PROCEDURE

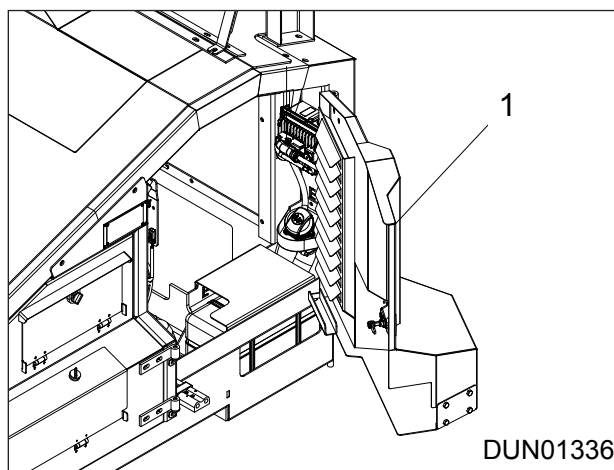


Figure 9.41 - Power Unit Inspection Door

1. Open the Power Unit inspection door (Item 1) to gain access to the rear of the Clean Emissions Module.

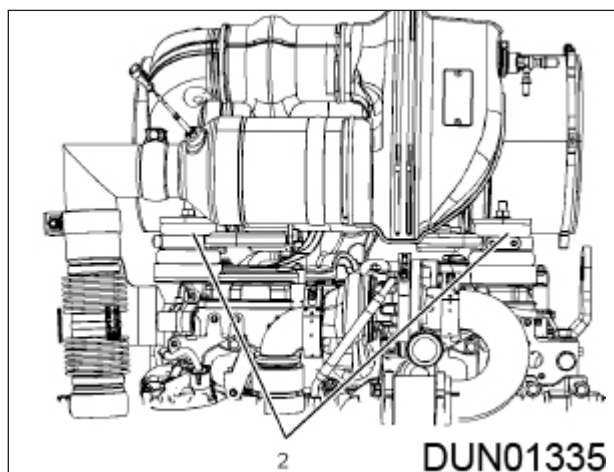


Figure 9.42 - Clean Emissions Module Mounts

2. Inspect mounts (Items 2) for wear or damage.

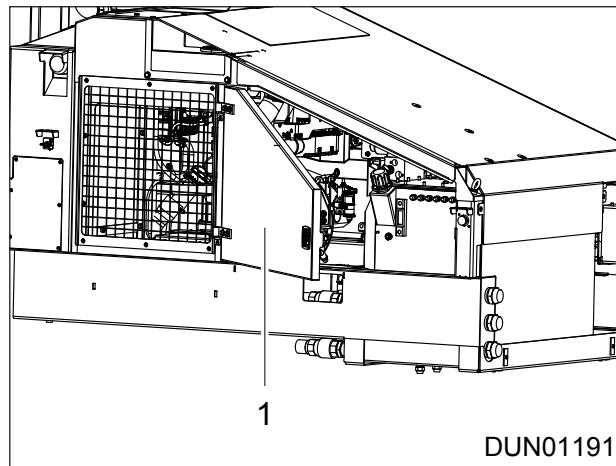


Figure 9.43 - Power Unit Inspection Door

3. Open the Power Unit inspection door (Item 1) to gain access to the front of the Clean Emissions Module.

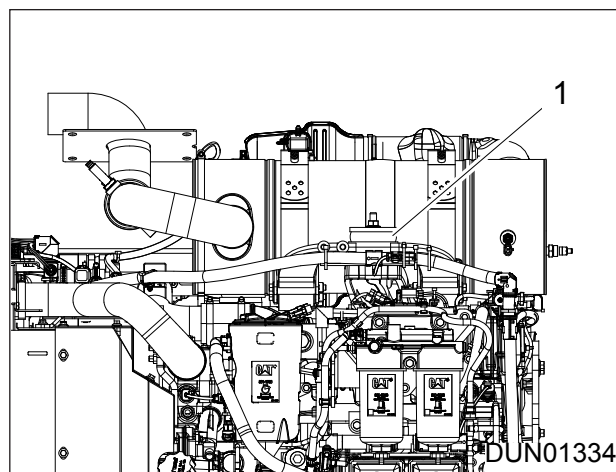


Figure 9.44 - Clean Emissions Module Mount

4. Inspect mounts (Item 1).
5. If wear or damage is found the mounts must be replaced.
» *Contact your local dealer for more information on how to replace these.*

9.15 Changing Air Filters

(1) Air Filtration

The air required to run the engine is inducted into the engine after passing through a filtration system. As air passes into the breather system it is initially met by the first filter known as the precleaner. This removes the heaviest of the dust, some of which escapes through a vent at the bottom or at the back of the precleaner.

The air then passes through the outer filter which removes more dust and then finally the air passes through the inner air filter. This filtration system removes virtually all the dust being inducted into engine.

(2) Check Both Air Cleaner Elements

NOTICE

It is recommended that air cleaner elements are not cleaned or reused but replaced with new items. Do not run the engine with the cover (Item 3) removed.

PROCEDURE

1. Observe all safety warnings.
2. Ensure machine is switched off, locked out and tagged out, Remove the ignition key and carry it with you.
3. Release the tension clips (Item 4) at side of the outer cover (Item 5).
4. Remove the outer cover.
5. Carefully remove outer filter (Item 3) and inner filter (Item 2).
6. Discard the elements if they are distorted.
7. Hold each element up to the light to check for damage to the paper. The elements should be discarded if pin pricks of light can be seen or if there are areas of paper that appear thin.
8. Refit new or existing elements as required.

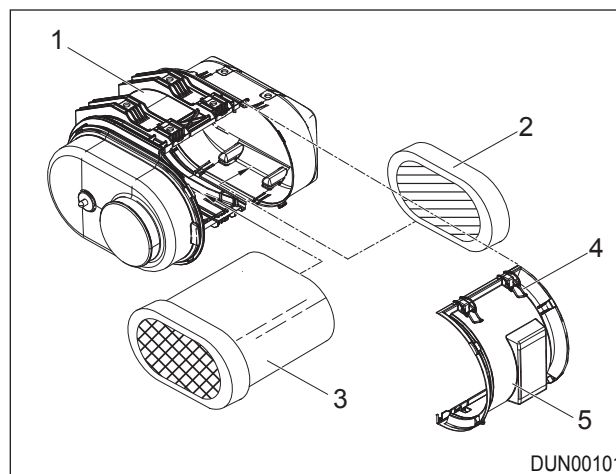


Figure 9.45 - Air Cleaner Elements

(3) Changing the Air Cleaner Elements

NOTICE

It is recommended that air cleaner elements are not cleaned or reused but replaced with new items.

Do not run the engine with the filter cover (Item 3) removed.

If the outer element has not been changed for 500 operating hours, a leak in the induction system must be suspected. Check that the air cleaning casing and hoses to the engine are not damaged. Check that all hose connections are airtight.

PROCEDURE

1. Observe all safety warnings.
2. Ensure machine is switched off, locked out and tagged out, Remove the ignition key and carry it with you
3. Release the tension clips (Item 4) at the side of the cover (Item 5)..
4. Remove the cover (Item 5).
5. Carefully remove the outer filter (Item 3), minimizing the amount of dust spilled.
6. Remove the inner element (Item 2).
7. Clean the inside of the air cleaner casing using a damp, lint free cloth.
8. Fit a new inner filter element (Item 2).
9. Fit a new outer filter element (Item 3).
10. Replace the outer cover (Item 5) and fasten the tension clips (Item 4).

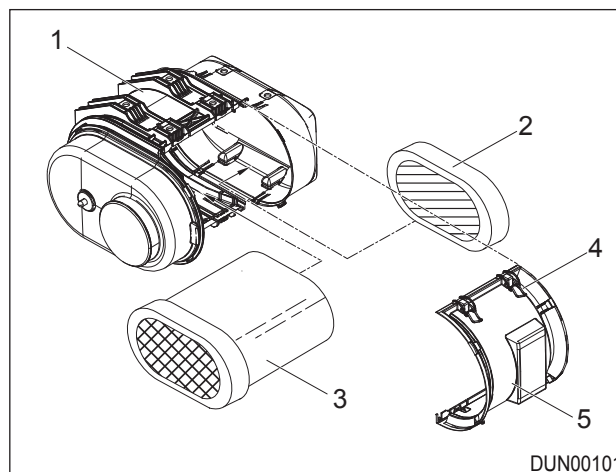


Figure 9.46 - Engine Air Filter

9.16 Coolant System

(a) Topping up Coolant Level

Refer to Engine Manual for Fill and Bleed procedures.

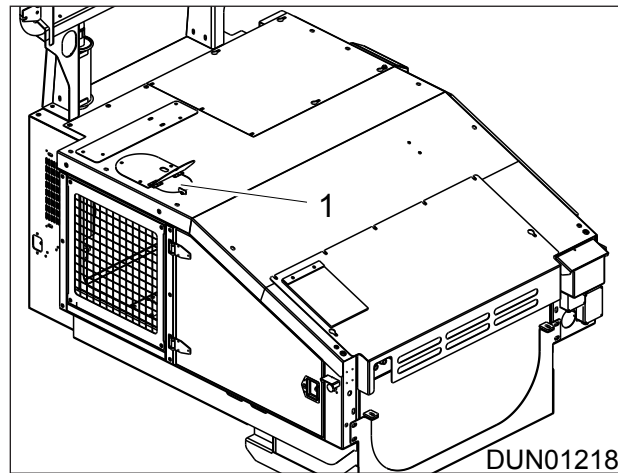


Figure 9.47 - Engine Inspection Doors

PROCEDURE

1. Turn off the engine.
2. Carefully open the radiator cap (Item 1) through the hole located on top of the power unit.
3. Fill the radiator with coolant.
4. Check the indicator on the control panel to ensure the indicator is no longer illuminated.

9.17 Priming the Fuel System

(1) Electric Fuel Pump Priming

⚠ WARNING

Wear personal protective equipment

Diesel fuel is highly flammable.

Do not smoke or carry out maintenance on the fuel system near open flame or sources of sparks, such as welding equipment, etc.

NOTICE

Do not crank the engine continuously for more than 30 seconds. Allow the starting motor to cool for two minutes before cranking again.

If air enters the system, the air must be purged from the fuel system before the engine can be started.

Do not loosen the high pressure fuel line in order to purge air from the fuel system. This procedure is not required.

After the engine has stopped, you must wait for 60 seconds in order to allow to allow the fuel pressure to be purged from the high pressure fuel lines before any service or repair is performed on the engine or fuel lines.

PROCEDURE

1. Ensure the fuel system is in working order and that the fuel supply is switched on.
2. Turn the ignition key to the 'ON' position (Item 2).

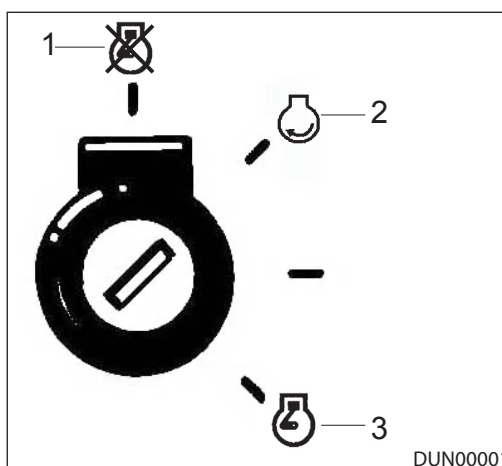


Figure 9.48 - Key Positions

3. This allows the electric priming pump to operate. Operate the electric priming pump. The ECM will stop the pump after 2 minutes.
4. Turn the ignition key to the 'OFF' position (Item 1). The fuel system should now be primed and the engine should be able to start.
5. Turn the ignition key to the crank position (Item 3)
 - » The engine will crank and start after the warning siren has sounded for approximately 7 seconds.

6. After the engine has started, operate it at low idle for a minimum of 5 minutes, immediately after the air has been removed from the fuel system. This will help ensure that the fuel system is free of air.
7. Ensure that the fuel system is free of leaks.

(2) Manual Fuel Pump Priming

⚠ WARNING

Wear personal protective equipment

Diesel fuel is highly flammable.

Do not smoke or carry out maintenance on the fuel system near open flame or sources of sparks, such as welding equipment, etc.

NOTICE

Do not crank the engine continuously for more than 30 seconds. Allow the starting motor to cool for two minutes before cranking again.

If air enters the system, the air must be purged from the fuel system before the engine can be started.

Do not loosen the high pressure fuel line in order to purge air from the fuel system. This procedure is not required.

After the engine has stopped, you must wait for 60 seconds in order to allow to allow the fuel pressure to be purged from the high pressure fuel lines before any service or repair is performed on the engine or fuel lines.

PROCEDURE

1. Ensure the fuel system is in working order and that the fuel supply is switched on.

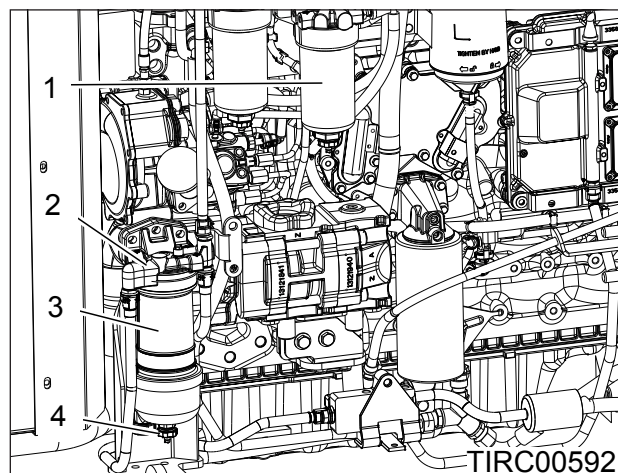


Figure 9.49 - Fuel Priming Pump

2. Operate the fuel priming pump (Item 2). Count the number of operations of the priming pump. After 100 depressions of the priming pump, stop.
3. The fuel system should now be primed and the engine should be able to start.
4. Turn the ignition key to the crank position (Item 3).

» *The engine will crank and start after the warning siren has sounded for approximately 7 seconds.*

5. After the engine has started, operate it at low idle for a minimum of 5 minutes, immediately after the air has been removed from the fuel system. This will help ensure that the fuel system is free of air.
6. Ensure that the fuel system is free of leaks.

(3) Fuel System Prime (Tier 3 CAT4.4 83KW Mechanical Engines)

If air enters the fuel system, the air must be purged from the fuel system before the engine can be started. Air can enter the fuel system when the following events occur:

- The fuel tank is empty or the fuel tank has been partially drained.
- The low pressure fuel lines are disconnected.
- A leak exists in the low pressure fuel system.
- The fuel filter is replaced.

⚠ CAUTION

NEVER leave your product unattended whilst it is in operation.

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.

NOTICE

Unless the cause of the air in fuel has been rectified, it is likely that any replacement fuel injection pump will have a problem in a short space of time. Ensure that the source of the air leak in the fuel system has been located and rectified. Ensure that the fuel system has been primed in order to ensure that there is no trapped air in the fuel system.

The fuel injection pump can be damaged by trapped air.

Air that is present in the fuel can collect in the fuel injection pump. If the hydraulic damping for the fuel is not effective the movement of the automatic advance piston is uncontrolled. This can damage the cover plate, the O-ring seal and the fasteners. Investigations have shown that this can lead to fuel leaks. In extreme cases, the advance piston travel can shear the cover screws.

Problems can occur within a few hours of the start up of the engine, depending on the duty cycle and the amount of air in the fuel.

Do not crank the engine continuously for more than 30 seconds. Allow the starting motor to cool for two minutes before cranking the engine again.

Use the following procedure to remove air from the fuel system.

PROCEDURE

1. Turn the key switch to the RUN position.
2. Leave the key switch in the RUN position for three minutes. If a manual purging screw is installed, the purging screw should be slackened during priming the fuel system.
3. Crank the engine with the throttle lever in the CLOSED position until the engine starts.
4. If necessary, loosen the union nuts (1) on the fuel injection lines at the connection with the fuel injector until fuel is evident. Stop cranking the engine. Tighten the union nuts (1) to a torque of 30 N•m (22 lb ft).

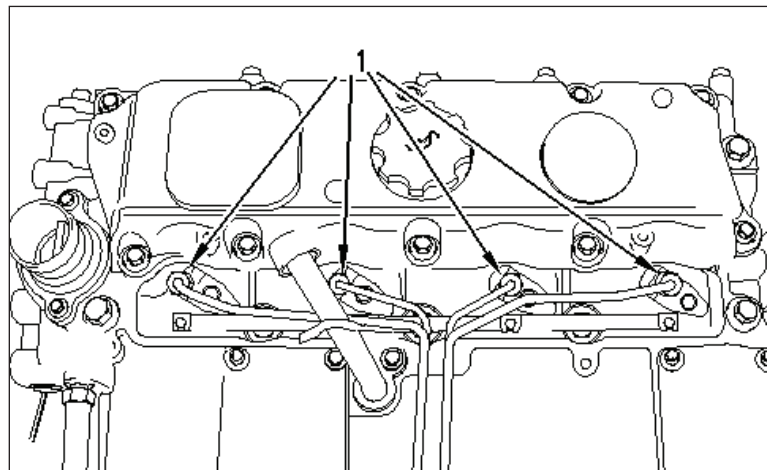


Figure 9.50 - Union Nuts

5. Start the engine and run the engine at idle for one minute.
6. Cycle the throttle lever from the low idle position to the high idle position three times. The cycle time for the throttle lever is one second to six seconds for one complete cycle.
7. In order to purge air from the fuel injection pump on engines with a fixed throttle, the engine should be run at full load for thirty seconds. The load should then be decreased until the engine is at high idle. This should be repeated three times. This will assist in removing trapped air from the fuel injection pump.
8. Check for leaks in the fuel system.

9.18 Fuel Level and Topup

DANGER

NEVER leave your product unattended whilst it is in operation.

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.

NOTICE

Ultra low sulfur diesel must be used in machines with CAT Tier 4 engines.

The use of fuel additives is not recommended. Additives may not be compatible with the fuel.

Do not fill the tank to overflow or full capacity.

Allow room for expansion and wipe up spilt fuel immediately.

PROCEDURE

1. Observe all safety warnings.
2. Check the fuel level gauge / indicator.
3. Clean the area around the filler cap.
4. Remove the filler cap and top up fuel level as required with specified diesel fuel. Refer to the engine manufacturer's operation manual.
5. Preferably re-fuel at the end of each day where possible, to reduce overnight water condensation within the tank.
6. Replace the filler cap and close the door if applicable.
7. If required, switch on the ignition briefly to check the fuel gauge.

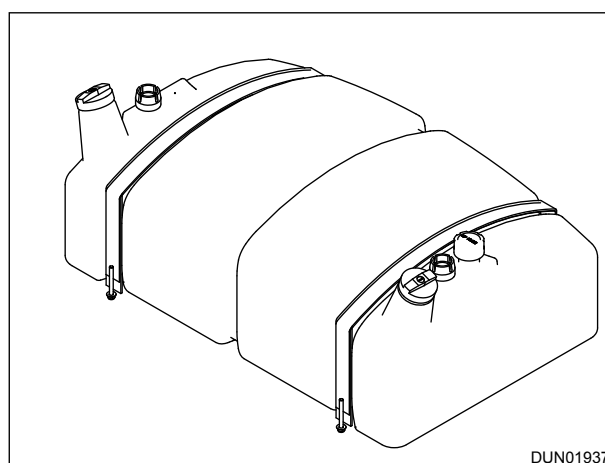


Figure 9.51 - Diesel Tank

9.19 Screen Unit Maintenance

(1) Checking Screen Drive Belt Tension

⚠ WARNING

Wear personal protective equipment.

Nip hazard.

Fall Hazard.

Ensure that there is mesh in the screenbox in all decks when the machine is operational. Should only one of the decks be needed, then an oversize mesh should be fitted to retain the structure of the screenbox, as well as to minimise wear.

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

The recommended amount of slack in the belt is 9mm.

PROCEDURE

1. Observe all safety warnings.
2. Ensure machine is switched off, locked out and tagged out, Remove the ignition key and carry it with you.

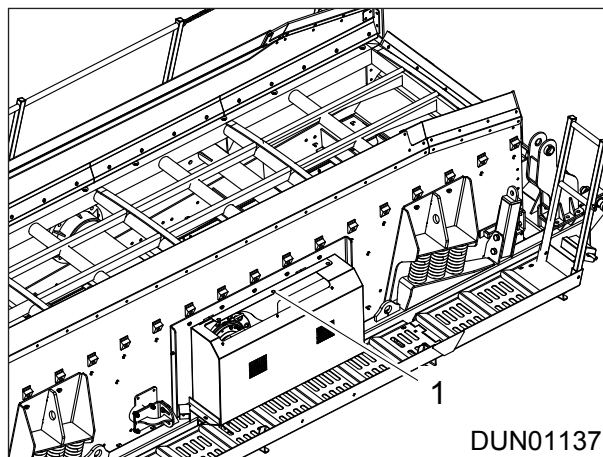


Figure 9.52 - Screen drive belt inspection door.

3. Undo the bolts and open the inspection door (Item 1) on the screen box flywheel cover and the screen drive belt will be visible.
4. Check the tension of the belt by pushing down on it in the center and measuring the deflection (Item A).

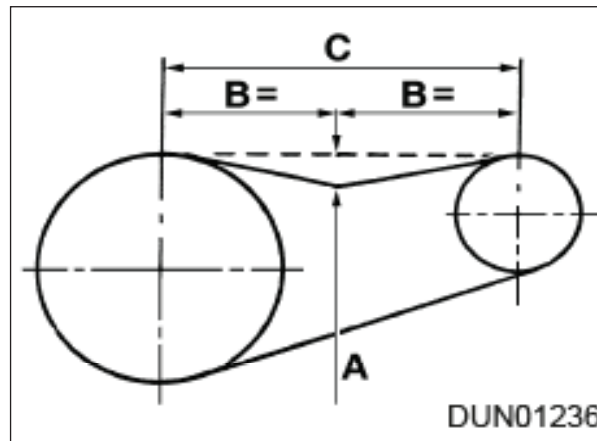


Figure 9.53 - Measuring belt tension

5. Depending on the value of the deflection measurement, the belt may need tensioned. See Section 9.19 (2).

(2) Snubber Rubber Maintenance

⚠ WARNING

Wear personal protective equipment.

Nip hazard.

Fall Hazard.

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

Snubber Rubbers must have a clearance of 5 mm at all times.

Both Snubber rubber spacing and condition must be checked on a weekly basis.

PROCEDURE

1. Observe all safety warnings.
2. Ensure machine is switched off, locked out and tagged out. Remove the ignition key and carry it with you.
3. There are four Snubber Rubbers that require maintenance, two located on either side of the screenbox.
4. The Snubber Rubbers must have a clearance of 5 mm from the screenbox. If this clearance is incorrect it can be adjusted.
5. The four bolts on the snubber rubber frame can be adjusted to allow the snubber rubbers to move up and down. The sub frame mounts allow the snubber rubbers to move in and out.
6. Adjust these when necessary to allow for optimal performance.

(3) Tensioning the Screen Drive Belt

WARNING

Wear personal protective equipment.

Nip hazard.

Fall Hazard.

Switch off the machine and implement the lockout and tagout procedure.

NOTICE

Do not over tension the belt as this will damage the belt and the belt tensioner.

The recommended amount of slack in the belt is 9 mm.

PROCEDURE

1. Observe all safety warnings.
2. Ensure machine is switched off, locked out and tagged out. Remove the ignition key and carry it with you.
3. Undo the bolts securing the drive side of the screen box flywheel cover (Item 1) and remove.

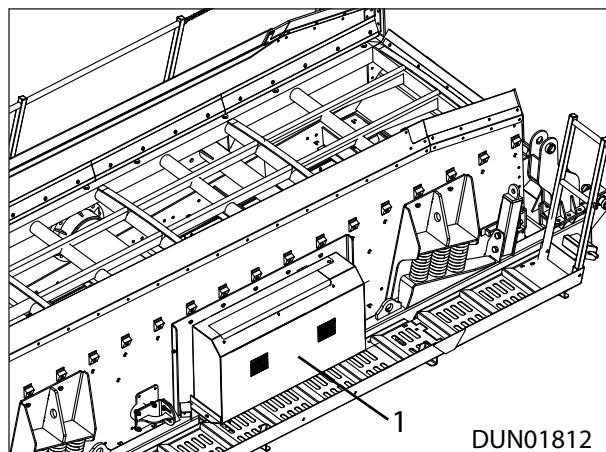


Figure 9.54 - Screen Box Flywheel Cover

4. Tighten the nuts on the V belt adjuster (Item 1) until the required tension is reached in the V belts (Item 2). The correct tension is approximately 9 mm of slack.

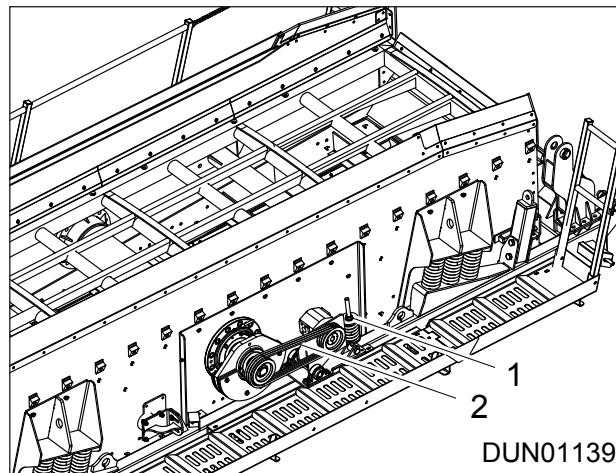


Figure 9.55 - Screen Box Drive Belt Tensioner

5. Replace the cover (Items 1).and bolt in position using the bolts.

(4) Changing the Screen Mesh

⚠ WARNING

Switch off the machine and implement the lockout and tagout procedure.

⚠ CAUTION

Only lifting equipment capable of lifting 500 kg or more may be used for this operation.

Tail conveyor must not be used as a platform unless:

- Tail conveyor has been pinned in position.
- Screenbox has been pinned in position.
- Engine lockout procedure has been implemented.

The following instructions should be carried out on both the right and left hand side. The screen tensioning ram control lever controls both screen tensioning rams.

Do not operate machine if there is any vibration present in the screenbox or walkway.

NOTICE

The centre of the mesh tensions first and the appropriate tension is reached when the outside edges of the mesh are taut. Absolute maximum tension is obtained when the screen tension bar is parallel with the hook on the screen mesh, Reference: Figure 9.56. This amount of tension is not always required.

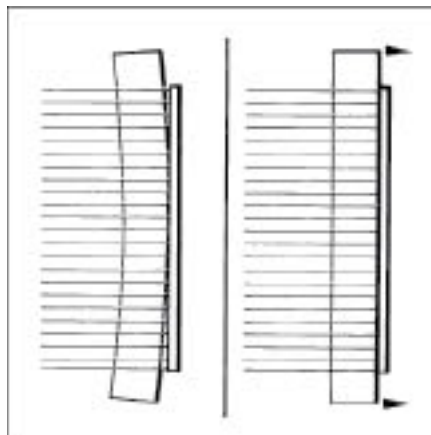


Figure 9.56 - Maximum Screen Mesh Tension

PROCEDURE

1. Observe all safety warnings.
2. Start the machine, Reference: Chapter 7.
3. Raise the screenbox angle and pin in the second working position on both sides.
4. Lower the tail conveyor to its lowest position. The purpose of this is to allow easier access to the lower meshes. (Item 1), Reference: Figure 9.57.
5. Remove retaining pin (Item 2) and slide tail conveyor away from screenbox, Reference: Figure 9.57.
6. Lock tail conveyor in position using retaining pin before removing meshes.

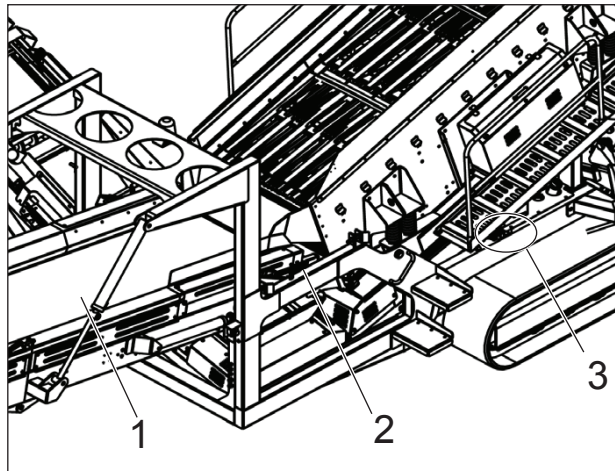


Figure 9.57 - Screenbox in Second Working Position

7. Remove the pin from the jack-up link arm on both sides.

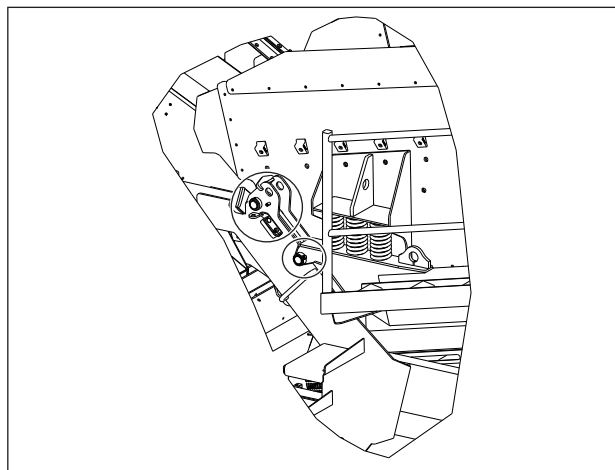


Figure 9.58 - Jack-up Link Arms Pin Removed

8. Raise screenbox into mesh change position.
9. Pin the jack-up link arms in this position and secure pins with R-clips, Reference: Figure 9.59.

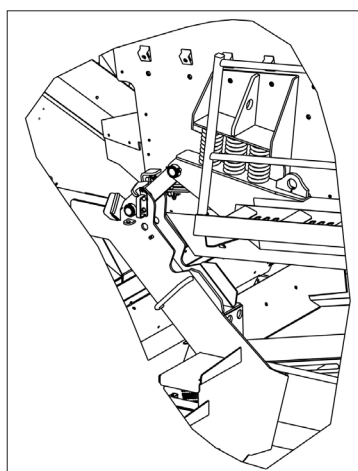


Figure 9.59 - Jack-Up Link Arms

10. Implement the shutdown/lockout procedure.

11. Loosen the bolts (A) that hold the screen tension, Reference: Figure 9.60.
12. Remove pins and spring pins (C), 1 off LHS/RHS.
13. Slide back the screen tension bar (B).

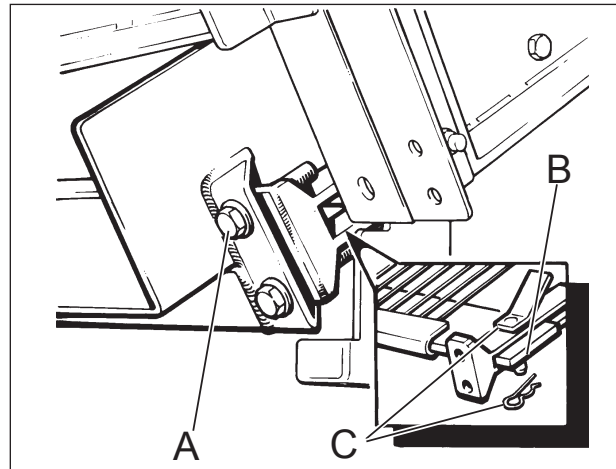


Figure 9.60 - Screen Tension Bar

14. Push the screen mesh back up until it is free to lift up.
15. Lift up using a prise bar and slide the old mesh out under the tail conveyor
16. Check rubber cushions and replace if necessary
17. Clean the screen box to remove any build up of material.
18. Insert new screen mesh ensuring the hooked end of the mesh is in the correct position around the tension bar.
19. Insert screen tension bar (B) ensuring it is fitted as shown.
20. Replace pins and spring pins (C), 1 off LHS/RHS.
21. Tighten screen tension bolts as required.
22. Visually check for vibration in the screen mesh when the screen box is running.
23. To release side tension mesh, slacken the nuts, remove the side clamps and then remove the mesh, Reference: Figure 9.61.

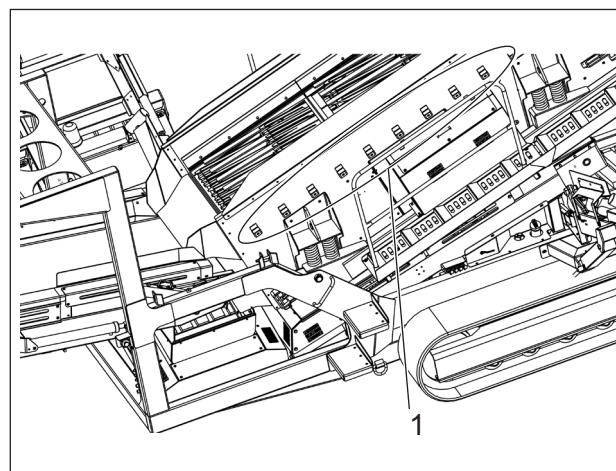


Figure 9.61 - Top Deck Mesh Fasteners

(5) Re-Tuning the Screen Unit

⚠ WARNING

Wear personal protective equipment.

Fall hazard.

Entanglement hazard.

⚠ CAUTION

Re-tuning should only be performed by personnel trained in accordance with instructions provided in this manual or by trained Terex personnel.

When altering the flywheel counter weights, always act on both sides of the screen shaft.

PROCEDURE

1. Observe all safety warnings.
2. Start the machine. (See chapter 7).
3. Set up the machine to it's working/operating position.
4. Engage all conveyors (See Chapter 7, Plant Operation controls).
5. Let the machine run at idle for 45 minutes to allow the hydraulics to warm up properly.
6. Record the screen box speed using a tachometer. (See the following tables for machine and screenbox speed information).
7. Tune the screenbox speed by adjusting the pulley accordingly. Contact the Terex service department for further information.
8. Set screen speed to that recommended in the following table.
9. Stop the machine and implement "Lockout" procedure.

Information on Machine and Screenbox Speed

| Machine Type | Engine Type | Running Engine Speed Approx. | Screenbox Speed Working Temp Approx 58° | Screenbox Size |
|--------------|----------------------|------------------------------|--|--------------------|
| Warrior 1800 | Cat 3054C DIT 109 HP | 2200 rpm +/- 40 1800 rpm | 920 rpm +/- 10 rpm 10 mm stroke 840 rpm +/- 10rpm 12 mm stroke | 16 x 5 - 2 Bearing |

Information on Screenbox Tuning

| Machine Type | Flywheel Size Typical | Number Of Steel Plates To Use To Tune Screenbox |
|--------------------------|-----------------------|--|
| Warrior 1800 (2 Bearing) | 30 mm thick | 10 mm Throw 12 x 10 mm half-moon's (6 each side) To be evenly distributed each side of flywheel |
| | | 12 mm Throw 16 x 10 mm half-moon's (8 each side) |

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10 Troubleshooting

NOTICE

The information included in this document is intended for experienced personnel familiar with this type of equipment. Only trained and competent personnel should perform the work outlined in this document.

Operation and maintenance of the machine must be done in accordance with the instructions in the operation manual for the machine.

The diagnostic codes may alert the operator to conditions that may damage the machines components. Never ignore a Machine fault if one occurs. Always investigate thoroughly or if in doubt contact your Terex supplier.

10.1 General Troubleshooting

| Fault | Cause | Correct Measure |
|---------------|--------------------------------|--------------------------------------|
| Machine Stops | Fuel | Top up as necessary |
| | Coolant level | Top up as necessary |
| | High coolant temperature | Clean Radiator / check fan operation |
| | Hydraulic oil level | Top up as necessary |
| | High Hydraulic oil temperature | Clean oil cooler / Replace |
| | Emergency stop depressed | Check all Emergency stops |

10.2 Conveyors Troubleshooting

| Fault | Cause | Correct Measure |
|---|---|---|
| Drive drum turns but belt does not move | Too much load on belt | Reduce load on belt |
| | Incorrectly tensioned belt | Tension belt |
| | Worn belt | Replace belt |
| | Worn drum lagging | Replace drum lagging |
| | Rollers cannot rotate freely | Clean/check/replace rollers |
| Belt completely stopped | Material jam | Remove material jam |
| | Taperlock is not tight or broken | Tighten or replace taperlock |
| Belts are tracking off | Machine is not level | Ensure machine is on level ground |
| | Belts are not aligned | Align belts |
| | Belts are not being fed evenly, material is tending to be fed to one side of the conveyor | Ensure conveyor is fed more evenly |
| Material collects under belt | Conveyor belt is loose | Tighten or replace as necessary |
| | Conveyor belt misaligned | Align conveyor belt |
| | Skirting rubbers not adjusted | Adjust skirting rubbers |
| Feeder conveyor is not moving | Feeder kickout circuit has been activated | Allow material in drum to be processed before re-engaging control |
| Rumbling noise from bearing | Bearing lacking lubricant | Follow greasing procedure |
| | Incorrectly aligned bearing | Align bearing |
| | Bearing is damaged | Replace bearing |
| Screeching noise when conveyor is running | Conveyor belt wedged or rubbing against fixed parts | Clear obstruction, adjust and align conveyor belt |
| | Belt scraper too tightly placed against belt | Re-adjust belt scraper |

10.3 Screen Troubleshooting

| Fault | Cause | Correct Measure |
|------------------------------------|--|--|
| Screen Starts Slow (if applicable) | Drive belt slipping | Tighten belt; replace worn belt |
| | In cold weather, wheel case oil may be too heavy | Check |
| | Motor may be weak | Consult licensed electrician |
| Screen Spillage | Screen angle too steep | Set it to run at a more shallow angle |
| | Screen speed too fast | Set it to run slower |
| | Worn screen rubbers or curtain | Replace screen rubbers or curtain |
| | Stroke is too long | Reduce stroke length, if possible |
| Screen decks overflowing | Screen is overloaded | Decrease feed of material |
| Rock Moves Down One Side of screen | Screen not laterally (side-to-side) level | Level screen |
| | Feed is introduced to one side of the screen only | Check in feed conveyor |
| Rock moves across screen too fast | Screen angle too steep | Decrease Screen angle |
| | Rpm too high | Decrease rpm but stay within stroke-speed range |
| | Screen base is not level | Level screen |
| Rock moves across screen too slow | Screen angle too shallow | Increase Screen angle |
| | Rpm too low | Increase rpm but stay within stroke-speed range |
| Excessive vibration | Loose or misaligned weights | Check counterweight bolts |
| | Build up of material | Remove build up and ensure build up is regularly removed |
| | Anti-rock stays have not been removed | Remove anti rock stays |
| | Meshes are not secure | Ensure all meshes, punchplate, etc are secure |
| | Machine and Screenbox are not level | Ensure machine and screenbox are level |
| | coil springs, fatigued, sagging springs bottoming out | Replace springs |
| | Screen shaft is not at correct speed | Correct screen shaft speed |
| | Bearing failure (excessive heat, excessive grease, lack of oil, or excessive movement) | Replace Bearing |
| | Excessive feed overloading | Co-ordinate feed loading with tuning of screenbox, adjust screen angle |

| Fault | Cause | Correct Measure |
|-------------------------------|--|---|
| Screen “dead” on feed end | Screen is overloaded | Reduce feed. |
| | | Check springs on feed end |
| | | Check plug weight placement, Increase rpm, but stay within strike speed range |
| Deck Blinds over with clay | Wire cloth too heavy | Use smaller guage wire |
| | insufficient water spray | Spray more water, if possible |
| | Feed material has too much clay content | Clean feed material before screening |
| Dirty oil spot near gear case | Leaky gearcase bolt or impulse case bolt | Retighten to 305Nm(225lb) |
| | | Install a balldeck |
| Product out of specification | hole in wire cloth | Replace wire cloth |
| | Incorrect wire cloth | Replace wire cloth |
| Water in the gear case | Condensation in the case | Check oil breather clearance or plugging, water entering from breather |
| | Leaking Wheel case bolt(in wet screening applications) | Retighten to 305Nm(225lb) |

10.4 Components Troubleshooting

| Fault | Cause | Correct Measure |
|---|---|---|
| Machine components running slowly | Obstruction (e.g stone, material build up etc) | Clear obstruction |
| | Check general condition of machine (eg oil leaks, excessive heat, hose blockages etc) | Correct problem if possible |
| | Low engine speed | Correct engine speed |
| | Engine performance | Consult engine manual |
| | Low hydraulic oil level. | Top up hydraulic oil level |
| | Return line filter blockage | Replace return line filter |
| | Pre pump filter blockage | Replace suction strainer |
| | Loose or damaged drive couplings | Tighten/replace drive couplings |
| | Machine is overloaded | Check setting parameters |
| | Worn or damaged drive motor | Replace motor |
| | Worn or damaged pump | Replace pump |
| | Incorrect relief pressure settings | Check and correct relief pressure settings |
| | Pump cavitation, suction line is collapsed | Check oil level and gate valve is open fully (if applicable) |
| | Flow at pump is not as expected | Check flow after pump, after control valve and after motor. These values should be the same |
| Components do not start | Faulty switch | Check for power |
| | | Replace switch |
| | PVG solenoid | Check for power Replace solenoid |
| | wiring connection (loose) | carry out visual inspection |
| Machine will not jack to working position | Machine is not level | Place machine on level ground |
| | Securing pins not removed | Remove securing pins |
| | Blockage along hose | Remove blockage, replace hose if necessary |
| | Incorrect control valve relief pressure | Correct control valve relief pressure |

10.5 Hydraulic Troubleshooting

| Fault | Cause | Correct Measure |
|---------------------------------------|---|--|
| Excessively noisy pump | Low oil level causing cavitation | Top up oil level |
| | Blockage at pre pump filter | Replace suction strainer |
| | Misalignment between drive source and pump | Correctly align drive source to pump |
| | Incorrect hydraulic oil | Drain hydraulic oil and replace with correct oil |
| | Hydraulic oil tank breather clogged | Disassemble and clean |
| | Pressure relief valve stuck in open position | Disassemble, clean or replace the spring nozzle |
| | Contaminated hydraulic oil | Drain tank and replace hydraulic oil |
| | Damaged pump | Replace pump |
| | Obstruction at inlet pipe | Remove obstruction |
| Low or erratic pressure | Contaminants in hydraulic oil | Drain tank and replace hydraulic oil |
| | Worn or sticking relief valve | Replace relief valve |
| | Dirt or chip holding valve partially open | Clean around valve. Replace valve |
| | Control valve relief pressure set too low | Set relief pressure to correct level |
| Irregular motion of the cylinder | Air mixed in the cylinder | Check the piping, hose and coupling. After checking and repair, remove air |
| | Filters blocked | Replace |
| No response from any hydraulic system | Low oil level | Top up hydraulic oil level |
| | Return line element is clogged (check blockage indicator) | Replace return line element |
| | Damaged suction line | Replace suction line pipe |
| | Air mixed from the suction | retighten couplings and replace the piping as necessary |
| | Blockage at pre pump filter | Remove and clean |
| | Pressure relief valve stuck in open position | Contact Terex |
| The pump does not start | Rotating direction error | Check the rotating direction and reconnect |
| | Low oil level | Top up oil level |
| | Pump seized | Check that the pump shaft rotates, fit replacement if faulty |

| Fault | Cause | Correct Measure |
|---|--|---|
| Machine operating slowly. No external oil leaks | Low oil level | Top up hydraulic oil level |
| | Incorrect hydraulic oil | Drain tank and replace hydraulic oil |
| | Engine performance | Consult engine manual |
| | Loose or damaged taperlocks | Tighten / replace taperlock |
| | Worn or damaged drive motor | Replace motor |
| | Worn or damaged pump | Replace pump |
| Oil in system becomes excessively hot | Pump running continuously under pressure | Check for symptoms of pressure build up |

10.6 Production Troubleshooting

| Fault | Cause | Correct Measure |
|------------------------------|---|---------------------------|
| Low Product Output | Not enough raw material delivered to machine | Increase feed rate. |
| | Not enough hauling equipment for finished product | Increase removal rate. |
| | Incorrect machine parameter settings | Change parameter settings |
| | Incorrect or worn liners | Replace liners |
| | Incorrect mesh fitted | Replace mesh |
| Product out of specification | Incorrect or worn liners | Replace liners |
| | Incorrect mesh fitted | Replace mesh |
| | Incorrect machine parameter settings | Change parameter settings |

10.7 Tracks Troubleshooting

| Fault | Cause | Correct Measure |
|--|--|---|
| One track not operating or operating slower than the other | Parameter settings | Check parameter setting within the PLC screen and adjust if necessary (independently) |
| | Brake jammed | Check if the brake is releasing. Fit a pressure clock to the brake hose. A pressure of at least 285 PSI / 20 bar is required to release the brakes |
| | Different sizes of motors fitted to tracks | Check that the same size of motors have been fitted to both tracks |
| | Incorrect pressure going to the brake hose caused by a problem with the motion control block possibly contamination. If a load control valve should jam due to oil-entrained debris then the likelihood is that it will not open and will not allow the motor to turn in one direction. This will cause the Host Machine to 'crab' in one direction. Swapping the valves over from one Track to the other will usually transfer the problem to the opposite direction. | Try removing the valves and cleaning them thoroughly taking care not to damage the external cavity seals. Also check the ports in the block for dirt etc. If this does not work replace the valves with new ones. Always cross-reference the part numbers on the new valves with the old valve, before fitting. It is critical that the correct valves are fitted. Valves should never be dismantled as no internal seals or parts are available. |
| | Brake pressure regulator valve jammed due to debris will stop the motor turning on one side | Swap the pressure regulator from the opposite block to see if the problem is in the brake valve. If the valves continue to jam then the oil in the hydraulic system is not being filtered to the required level of cleanliness. |
| | Motor Fault | Swap over the motors on the two tracks. If the fault is in the motor, replace with a new motor |
| | Faulty brake | Remove the motor and look into the gearbox for heat discolouration and/or fragments of brake disc. If the fault is in the brakes the complete gearbox will have to be replaced. |
| | Faulty brake piston seals | Remove the motor. If there is hydraulic oil in the gearbox entrance then the seals are damaged. While it may be possible to replace these seals on-site we strongly recommended that a replacement gearbox is fitted and an overhaul of the damaged gearbox be carried out off-site. |

| Fault | Cause | Correct Measure |
|---|---|---|
| Excessive oil leaking around drive assembly | Seal damaged between Motion control block and motor | Remove motion control block and replace seals |
| | Seal damaged between motor and gearbox | Remove motor and replace seal |
| | Seal damage may be caused by excessive oil temperatures | Check oil operating temperature and environmental conditions |
| Track will not stay tensioned | Grease escaping | Check that the track adjuster grease valve is tight, has a properly fitted seal and that there is no grease leaking past it |
| | | Check around the tensioning Cylinder for escaping grease. This will indicate that the seals are damaged in the tensioning cylinder. Replace with a new cylinder immediately |
| Track group running off Sprocket and / or idler | Track group too loose | Check track tension |
| | Excessive misalignment | Check alignment of Sprocket Idler and track rollers |
| | Excessive component wear | Check wear limits |
| | Twisted track frame | Check track frame |
| Track roller leaking oil | Damaged or worn seals | Replace with a new Track Roller |

10.8 Electrical Troubleshooting

| Fault | Cause | Correct Measure |
|---|---|---|
| Control panel lights up but engine does not start | Faulty ignition switch | Replace ignition switch |
| | Low engine oil level (warning light should be on) | Top up oil level |
| | Low engine coolant level (warning light should be on) | Top up coolant level |
| | Emergency stop buttons depressed | Check all emergency stop buttons |
| | Faulty starter motor relay | Replace starter motor relay |
| | Faulty starter motor | Replace starter motor |
| Control panel does not light up | Low battery voltage | Top up electrolyte level Charge up battery |
| | Fuse blown | Replace fuse |
| | Isolator on | turn off isolator |
| | Faulty ignition switch terminals | Correct connections/replace |
| | Damaged battery | Replace battery |
| Battery goes flat while engine is running | Low battery voltage | Top up electrolyte level Charge up battery |
| | Faulty Alternator | Replace alternator |
| | loose fanbelt | Adjust tension |
| | Blown fuse | Replace fuse |
| Battery goes flat while engine is running | Faulty starter motor relay | Replace starter motor relay |
| | Faulty starter motor | Replace starter motor |
| Track radio remote control does not work | Remote control is out of range | Move remote control to within 100 m of the machine |
| | Batteries are dead | Charge or replace batteries |
| | Control bank levers are not in the correct position | Place control levers in the correct position |
| | Remote control not programmed to receiver box | Program receiver box |
| Tracks do not operate | Control bank levers are not in the correct position | Control bank levers are not in the correct position |
| | Fuse blown | Replace fuse |
| Components do not start | Faulty switch | Check for power Replace switch |
| | PVG solenoid | Check for power Replace solenoid |
| | wiring connection (loose) | Carry out visual inspection |
| | | |
| 7 second delay warning siren does not operate | Blown fuse | Replace fuse |
| | Siren has been damaged | Replace siren |

| Fault | Cause | Correct Measure |
|---|---|---|
| Tipping grid remote control does not work | Remote control is out of range | Move remote control to within 100m of the machine |
| | Batteries are dead | Replace batteries |
| | Tipping grid cycle not set | Set program |
| | Remote control not programmed to receiver box | Program receiver box |

10.9 Engine Troubleshooting

| Fault | Cause | Correct Measure |
|--|---------------------------------|--|
| Engine non-start or difficult to start | Not declutched | Check |
| | Battery defective or discharged | Check |
| | Incorrect valve clearance | Check |
| | Diagnostic code | Check the display for fault code and refer to engine manual for instructions |
| | ECM module | Check for battery voltage to ECM |
| | Starting aids | Check that cold start system is operating correctly |
| | Emergency stop switches | Check that all emergency stops are depressed and functioning correctly |
| | Starter motor | Remove the starter and visually inspect the drive pinion and flywheel for damage |
| | | Check battery voltage to starter motor and solenoid, test the operation of both , replace as necessary |
| | Engine speed | Check and clean speed sensor electrical connections |
| | | Check speed sensor for proper installation |
| | Fuel injector | Check injector electrical connection and clean as necessary |
| | | Check for injector line leakage/ have the engine manufacturer repair as necessary |
| | Fuel supply | Check the fuel level, do not rely on the fuel gauge only, add fuel as necessary |
| | | Check the fuel lines for restrictions, collapsed and pinched lines, repair / have the engine manufacturer replace as necessary |
| | | Check fuel in the tank for contamination |
| | | Check condition of fuel filters, replace as necessary |

| Fault | Cause | Correct Measure |
|--|---|--|
| Engine starts, but runs irregularly or fails | Fuel injection line leaks | Check / repair as necessary |
| | Fuel injector defective | Check / have the engine manufacturer Replace as necessary |
| | Air in the fuel system | Check / Replace |
| | Fuel filter / fuel pre- cleaner soiled | Check |
| | Fuel quality not as per operation manual | Check / Clean |
| Engine becomes excessively hot | Oil level too low | Top up |
| | Oil level too high | Check |
| | Air cleaner clogged / turbocharger | Check / Replace |
| | Air cleaner service switch / indicator defective | Check |
| | Charge airline leaking | Check / have the engine manufacturer replace |
| | Coolant pump defective | Check / Clean |
| | Coolant heat exchanger soiled | Check / Clean |
| | Cooling air temperature rise / heating short circuits | Check |
| | Ventilation line blocked (coolant heat exchanger) | Have the engine manufacturer check |
| | Fuel injector defective | Check / have the engine manufacturer replace as necessary |
| | Oil filter defective | Check |
| | Coolant deficiency | Check / Clean |
| Engine does not run on all cylinders | Electrical connections | Check electrical connection to engine ECM |
| | Fuel injection line leaks | Check / have the engine manufacturer repair as necessary |
| | Fuel injector defective | Check / have the engine manufacturer replace as necessary |
| | Air in the fuel system | Check / Replace |
| | Air inlet | Check for air inlet restriction, clean/ replace filters as necessary |
| | Fuel filter / fuel pre- cleaner soiled | Check |

| Fault | Cause | Correct Measure |
|---|---|---|
| Engine output is deficient | Engine shut off lever still in stop position | Check |
| | Oil level too high | Check |
| | Air cleaner clogged / turbocharger | Check / Replace |
| | Air cleaner service switch / indicator defective | Check |
| | CPD defective (connection line leaks) | Have the engine manufacturer check |
| | Charge airline leaking | Check / have engine manufacturer replace as necessary |
| | Intercooler soiled | Check / Clean |
| | Cooling air temperature rise / heating short circuits | Have the engine manufacturer check |
| | Incorrect valve clearance | Have the engine manufacturer check |
| | Fuel injection line leaks | Check / have the engine manufacturer repair as necessary |
| | Fuel injector defective | Check / have the engine manufacturer repair as necessary |
| | Air in the fuel system | Check / Replace |
| | Fuel filter / fuel pre- cleaner soiled | Check |
| | Fuel quality not as per operation manual | Check / Clean |
| Engine oil pressure is non-existent or very low | Oil level too low | Top up |
| | Excessive engine wear | Have the engine manufacturer check for excessive crankcase blow by at the engine breather |
| | Incorrect engine lube | Check / Replace |
| Engine oil consumption is excessive | Oil level too high | Check |
| | Excessive engine wear | Have the engine manufacturer check for excessive crankcase blow by at the engine breather |
| | Turbo charger seal | Check the turbo for oil leaks, have the engine manufacturer repair as necessary |
| | Oil leaks | Check the engine for oil leaks, have the engine manufacturer repair as necessary |

| Fault | Cause | Correct Measure |
|--------------------|--|---|
| Engine smoke blue | Oil level too high | Check |
| | Excessive engine wear | Have the engine manufacturer check for excessive crankcase blow by at the engine breather |
| Engine smoke white | Below starting limit temperature | Check |
| | Incorrect valve clearance | Have the engine manufacturer check |
| | Starting aids | Have the engine manufacturer check that cold start system is operating correctly |
| | Fuel injectors defective | Check / have the engine manufacturer repair as necessary |
| | Fuel quality not as per operation manual | Check / Clean |
| Engine smoke black | Air cleaner clogged / turbocharger | Check / Replace |
| | Air cleaner service switch / indicator defective | Check |
| | CPD defective (connection line leaks) | Have the engine manufacturer check |
| | Charge airline leaking | Have the engine manufacturer check / Replace |
| | Incorrect valve clearance | Have the engine manufacturer check |
| | Fuel Injector defective | Check / have the engine manufacturer repair as necessary |

| Fault | Cause | Correct Measure |
|---|------------------------|---|
| Alternator charging problem | Alternator drive belts | Check the condition of the drive belts, if worn or damaged replace the belts Check the tension of the drive belts, adjust the tension if necessary |
| | Charging circuit | Check the battery cables, wiring and connections in the charging circuit. Clean and tighten all connections. Replace faulty parts |
| | Regulator | Have the engine manufacturer verify the regulator is operating correctly, replace if necessary |
| | Alternator | Have the engine manufacturer verify the alternator is operating correctly, repair or replace if necessary |
| Coolant in engine oil | Engine oil cooler core | Check for leaks in the oil cooler core, if a leak is found the engine manufacturer replace as necessary. Drain the engine oil and replace with clean oil and oil filter |
| | Cylinder head gasket | Have the engine manufacturer remove cylinder head and replace head gasket |
| | Cylinder liner | Have the engine manufacturer with the cylinder head removed check the cylinder liner for cracks, replace as necessary |
| | Cylinder head | Have the engine manufacturer check for cracks in the cylinder head, if necessary repair or replace the cylinder head |
| | Cylinder block | Have the engine manufacturer check for cracks in the cylinder block, if necessary repair or replace the cylinder head |
| ECM will not communicate with other systems or displays | Electrical connections | Check and clean electrical connections |

| Fault | Cause | Correct Measure |
|----------------------------------|-------------------------|--|
| Engine cranks but will not start | Diagnostic code | Check the display for fault code and refer to engine manual for instructions |
| | ECM module | Check for battery voltage to ECM |
| | Starting aids | Have the engine manufacturer check that cold start system is operating correctly |
| | Emergency stop switches | Check that all emergency stops are depressed and functioning correctly |
| | Starter motor | Have the engine manufacturer remove the starter and visually inspect the drive pinion and flywheel for damage |
| | | Check battery voltage to starter motor and solenoid, test the operation of both , replace as necessary |
| | Engine speed | Check and clean speed sensor electrical connections |
| | | Have the engine manufacturer check sensor for proper installation |
| | Fuel injector | Check injector electrical connection and clean as necessary |
| | Fuel supply | Check the fuel level, do not rely on the fuel gauge only, add fuel as necessary |
| | | Check the fuel lines for restrictions, collapsed and pinched lines, have the engine manufacturer repair and replace as necessary |
| | | Check fuel in the tank for contamination |
| | | Check condition of fuel filters, replace as necessary |

| Fault | Cause | Correct Measure |
|------------------------------|-------------------------|--|
| Engine oil in cooling system | Engine oil cooler core | Check for leaks in the oil cooler core, if a leak is found have the engine manufacturer replace as necessary. Drain the engine oil and replace with clean oil and oil filter |
| | Cylinder head gasket | Have the engine manufacturer remove cylinder head and replace head gasket |
| Intermittent engine shutdown | Emergency stop switches | Check that all emergency stops are depressed and functioning correctly |
| | Electrical connections | Check and clean electrical connections between the engine ECM system display |
| | Circuit breakers | Check the status of circuit breakers |
| | Fuel supply | Check the fuel level, do not rely on the fuel gauge only, add fuel as necessary |
| | | Check the fuel lines for restrictions, collapsed and pinched lines, have the engine manufacturer repair and replace as necessary |
| | | Check fuel in the tank for contamination |
| | | Check condition of fuel filters, replace as necessary |
| | Diagnostic code | Check the display for fault code and refer to engine manual for instructions |

10.10 Engine Fault Codes

If there is an engine fault the engine fault screen will be shown on the display (Figure 10.1) when the alarm button (Item 2) is pressed.



Figure 10.1 - Engine Fault Screen

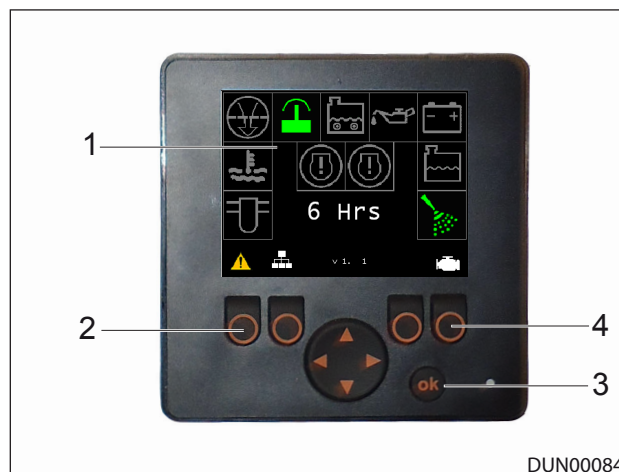


Figure 10.2 - Control Panel Display

The engine fault screen displays the following information:

- The SPN number identifies the specific component which has a fault.
- The number of hours specifies the engine run hours when the fault occurred.
- The FMI number indicates the type of failure that is associated with the component.
- The OC number specifies how many times that particular fault has occurred.

The table gives a list of the fault codes and descriptions of the faults corresponding to the combination of codes from the engine fault screen. The table can be used to determine what the active fault is.

Example:

The table gives a list of the engine fault codes along with a description of the fault.

The J1939 code is made up of two numbers separated by a dash. The first number is the SPN number. The second number is the FMI number.

The engine fault screen is shown on the display screen. The SPN number is 172 and the FMI number is 4. The corresponding numbers in Figure 10.1 indicate that the engine coolant level is low.

Extract from table:

| J1939 Code | Description | Refer to Procedure |
|-----------------------|---|--|
| 172-4 | Engine Air Inlet Temperature : Voltage Below Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |

The engine fault screen also shows that this fault has occurred twice and the last time it occurred was when the engine run hours was 6 hours. The yellow warning symbol at the right hand side of the screen indicates that the fault is currently active.

Table 10.1 - Engine Fault Codes and Descriptions

| J1939 Code | Description | Refer to Procedure |
|-------------------|--|---|
| 27-3 | Engine Exhaust Gas Recirculation Valve Position Sensor : Voltage Above Normal | Valve Position Sensor - Test |
| 27-4 | Engine Exhaust Gas Recirculation Valve Position Sensor : Voltage Below Normal | Valve Position Sensor - Test |
| 29-2 | Accelerator Pedal Position 2 : Erratic, Intermittent, or Incorrect (Engines equipped with a throttle switch) | Throttle Switch Circuit - Test |
| 29-2 | Accelerator Pedal Position 2 : Erratic, Intermittent or Incorrect (Engines equipped with an analog throttle) | Analog Throttle Position Sensor Circuit - Test |
| 29-3 | Accelerator Pedal Position 2 : Voltage Above Normal (Engines equipped with an analog throttle) | Analog Throttle Position Sensor Circuit - Test |
| 29-3 | Accelerator Pedal Position 2 : Voltage Above Normal (Engines equipped with a digital throttle) | Digital Throttle Position Sensor Circuit - Test |
| 29-4 | Accelerator Pedal Position 2 : Voltage Below Normal (Engines equipped with an analog throttle) | Analog Throttle Position Sensor Circuit - Test |
| 29-4 | Accelerator Pedal Position 2 : Voltage Below Normal (Engines equipped with a digital throttle) | Digital Throttle Position Sensor Circuit - Test |
| 29-8 | Accelerator Pedal Position 2 : Abnormal Frequency, Pulse Width or Period | Digital Throttle Position Sensor Circuit - Test |
| 51-3 | Engine Throttle Position : Voltage Above Normal | Valve Position Sensor - Test |
| 51-4 | Engine Throttle Position : Voltage Below Normal | Valve Position Sensor - Test |
| 91-2 | Accelerator Pedal Position 1 : Erratic, Intermittent, or Incorrect (Engines equipped with a throttle switch) | Throttle Switch Circuit - Test |
| 91-2 | Accelerator Pedal Position 1 : Erratic, Intermittent or Incorrect (Engines equipped with an analog throttle) | Analog Throttle Position Sensor Circuit - Test |
| 91-3 | Accelerator Pedal Position 1 : Voltage Above Normal (Engines equipped with an analog throttle) | Analog Throttle Position Sensor Circuit - Test |
| 91-3 | Accelerator Pedal Position 1 : Voltage Above Normal (Engines equipped with a digital throttle) | Digital Throttle Position Sensor Circuit - Test |
| 91-4 | Accelerator Pedal Position 1 : Voltage Below Normal (Engines equipped with an analog throttle) | Analog Throttle Position Sensor Circuit - Test |
| 91-4 | Accelerator Pedal Position 1 : Voltage Below Normal (Engines equipped with a digital throttle) | Digital Throttle Position Sensor Circuit - Test |
| 91-8 | Accelerator Pedal Position 1 : Abnormal Frequency, Pulse Width or Period | Digital Throttle Position Sensor Circuit - Test |
| 97-3 | Water In Fuel Indicator : Voltage Above Normal | Water in Fuel Sensor - Test |
| 97-15 | Water In Fuel Indicator : High - least severe (1) | Fuel Contains Water |

| J1939 Code | Description | Refer to Procedure |
|-------------------|--|--|
| 97-16 | Water In Fuel Indicator : High - moderate severity (2) | Fuel Contains Water |
| 100-1 | Engine Oil Pressure : Low - most severe (3) | Oil Pressure Is Low |
| 100-3 | Engine Oil Pressure : Voltage Above Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 100-4 | Engine Oil Pressure : Voltage Below Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 100-17 | Engine Oil Pressure : Low - least severe (1) | Oil Pressure Is Low |
| 100-21 | Engine Oil Pressure : Data Drifted Low | 5 Volt Sensor Supply Circuit - Test |
| 102-16 | Engine Intake Manifold #1 Pressure : High - moderate severity (2) | Intake Manifold Air Pressure Is High |
| 102-18 | Engine Intake Manifold #1 Pressure : Low - moderate severity (2) | Intake Manifold Air Pressure Is Low |
| 105-3 | Engine Intake Manifold #1 Temperature : Voltage Above Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 105-4 | Engine Intake Manifold #1 Temperature : Voltage Below Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 105-15 | Engine Intake Manifold #1 Temperature : High - least severe (1) | Intake Manifold Air Temperature Is High |
| 105-16 | Engine Intake Manifold #1 Temperature : High - moderate severity (2) | Intake Manifold Air Temperature Is High |
| 107-15 | Engine Air Filter 1 Differential Pressure : High - least severe (1) | Inlet Air Is Restricted |
| 108-3 | Barometric Pressure : Voltage Above Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 108-4 | Barometric Pressure : Voltage Below Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 108-13 | Barometric Pressure : Calibration Required | Sensor Calibration Required - Test |
| 108-21 | Barometric Pressure : Data Drifted Low | 5 Volt Sensor Supply Circuit - Test |
| 110-0 | Engine Coolant Temperature : High - most severe (3) | Coolant Temperature Is High |
| 110-3 | Engine Coolant Temperature : Voltage Above Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 110-4 | Engine Coolant Temperature : Voltage Below Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 110-15 | Engine Coolant Temperature : High - least severe (1) | Coolant Temperature Is High |

| J1939 Code | Description | Refer to Procedure |
|-------------------|--|--|
| 110-16 | Engine Coolant Temperature : High - moderate severity (2) | Coolant Temperature Is High |
| 111-1 | Engine Coolant Level : Low - most severe (3) | Coolant Level is Low |
| 157-3 | Engine Injector Metering Rail #1 Pressure : Voltage Above Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 157-4 | Engine Injector Metering Rail #1 Pressure : Voltage Below Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 157-16 | Engine Injector Metering Rail #1 Pressure : High - moderate severity (2) | Fuel Rail Pressure Problem |
| 157-18 | Engine Injector Metering Rail #1 Pressure : Low - moderate severity (2) | Fuel Rail Pressure Problem |
| 158-2 | Keyswitch Battery Potential : Erratic, Intermittent or Incorrect | Ignition Keyswitch Circuit and Battery Supply Circuit - Test |
| 168-2 | Battery Potential / Power Input 1 : Erratic, Intermittent or Incorrect | Ignition Keyswitch Circuit and Battery Supply Circuit - Test |
| 168-3 | Battery Potential / Power Input 1 : Voltage Above Normal | Ignition Keyswitch Circuit and Battery Supply Circuit - Test |
| 168-4 | Battery Potential / Power Input 1 : Voltage Below Normal | Ignition Keyswitch Circuit and Battery Supply Circuit - Test |
| 172-3 | Engine Air Inlet Temperature : Voltage Above Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 172-4 | Engine Air Inlet Temperature : Voltage Below Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 174-3 | Engine Fuel Temperature 1 : Voltage Above Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 174-4 | Engine Fuel Temperature 1 : Voltage Below Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 174-15 | Engine Fuel Temperature 1 : High - least severe (1) | Fuel Temperature Is High |
| 174-16 | Engine Fuel Temperature 1 : High - moderate severity (2) | Fuel Temperature Is High |
| 190-8 | Engine Speed : Abnormal Frequency, Pulse Width or Period | Engine Speed/Timing Sensor Circuit - Test |
| 190-15 | Engine Speed : High - least severe (1) | Engine Overspeeds |
| 411-3 | Engine Exhaust Gas Recirculation Differential Pressure Sensor : Voltage Above Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 411-4 | Engine Exhaust Gas Recirculation Differential Pressure Sensor : Voltage Below Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 411-13 | Engine Exhaust Gas Recirculation Differential Pressure Sensor : Calibration Required | Sensor Calibration Required - Test |

| J1939 Code | Description | Refer to Procedure |
|-------------------|---|--|
| 412-3 | Engine Exhaust Gas Recirculation Temperature: Voltage Above Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 412-4 | Engine Exhaust Gas Recirculation Temperature: Voltage Below Normal | Engine Temperature Sensor Open or Short Circuit - Test (Passive Sensors) |
| 412-15 | Engine Exhaust Gas Recirculation Temperature : High - least severe (1) | NRS Exhaust Gas Temperature Is High |
| 412-16 | Engine Exhaust Gas Recirculation Temperature : High - moderate severity (2) | NRS Exhaust Gas Temperature Is High |
| 558-2 | Accelerator Pedal 1 Low Idle Switch : Erratic, Intermittent or Incorrect | Idle Validation Switch Circuit - Test |
| 626-5 | Engine Start Enable Device 1 : Current Below Normal | Ether Starting Aid - Test |
| 626-6 | Engine Start Enable Device 1 : Current Above Normal | Ether Starting Aid - Test |
| 630-2 | Calibration Memory : Erratic, Intermittent or Incorrect | Flash Programming |
| 631-2 | Calibration Module : Erratic, Intermittent or Incorrect | ECM Memory - Test |
| 637-11 | Engine Timing Sensor : Other Failure Mode | Engine Speed/Timing Sensor Circuit - Test |
| 651-2 | Engine Injector Cylinder #01 : Data Incorrect | Injector Data Incorrect- Test |
| 651-5 | Engine Injector Cylinder #01 : Current Below Normal | Injector Solenoid Circuit - Test |
| 651-6 | Engine Injector Cylinder #01 : Current Above Normal | Injector Solenoid Circuit - Test |
| 652-2 | Engine Injector Cylinder #02 : Data Incorrect | Injector Data Incorrect- Test |
| 652-5 | Engine Injector Cylinder #02 : Current Below Normal | Injector Solenoid Circuit - Test |
| 652-6 | Engine Injector Cylinder #02 : Current Above Normal | Injector Solenoid Circuit - Test |
| 653-2 | Engine Injector Cylinder #03 : Data Incorrect | Injector Data Incorrect- Test |
| 653-5 | Engine Injector Cylinder #03 : Current Below Normal | Injector Solenoid Circuit - Test |
| 653-6 | Engine Injector Cylinder #03 : Current Above Normal | Injector Solenoid Circuit - Test |
| 654-2 | Engine Injector Cylinder #04 : Data Incorrect | Injector Data Incorrect- Test |
| 654-5 | Engine Injector Cylinder #04 : Current Below Normal | Injector Solenoid Circuit - Test |
| 654-6 | Engine Injector Cylinder #04 : Current Above Normal | Injector Solenoid Circuit - Test |
| 655-2 | Engine Injector Cylinder #05 : Data Incorrect | Injector Data Incorrect- Test |
| 655-5 | Engine Injector Cylinder #05 : Current Below Normal | Injector Solenoid Circuit - Test |

| J1939 Code | Description | Refer to Procedure |
|-------------------|--|---|
| 655-6 | Engine Injector Cylinder #05 : Current Above Normal | Injector Solenoid Circuit - Test |
| 656-2 | Engine Injector Cylinder #06 : Data Incorrect | Injector Data Incorrect- Test |
| 656-5 | Engine Injector Cylinder #06 : Current Below Normal | Injector Solenoid Circuit - Test |
| 656-6 | Engine Injector Cylinder #06 : Current Above Normal | Injector Solenoid Circuit - Test |
| 676-6 | Engine Glow Plug Relay : Current Above Normal | Starting Aid (Glow Plug) Relay Circuit - Test |
| 678-3 | ECU 8 Volts DC Supply : Voltage Above Normal | Digital Throttle Position Sensor Circuit - Test |
| 678-4 | ECU 8 Volts DC Supply : Voltage Below Normal | Digital Throttle Position Sensor Circuit - Test |
| 723-8 | Engine Speed Sensor #2 : Abnormal Frequency, Pulse Width or Period | Engine Speed/Timing Sensor Circuit - Test |
| 1075-5 | Engine Electric Lift Pump for Engine Fuel Supply : Current Below Normal | Fuel Pump Relay Circuit - Test |
| 1075-6 | Engine Electric Lift Pump for Engine Fuel Supply : Current Above Normal | Fuel Pump Relay Circuit - Test |
| 1076-5 | Engine Fuel Injection Pump Fuel Control Valve : Current Below Normal | Solenoid Valve - Test |
| 1076-6 | Engine Fuel Injection Pump Fuel Control Valve : Current Above Normal | Solenoid Valve - Test |
| 1188-5 | Engine Turbocharger 1 Wastegate Drive : Current Below Normal | Solenoid Valve - Test |
| 1188-6 | Engine Turbocharger 1 Wastegate Drive : Current Above Normal | Solenoid Valve - Test |
| 1196-9 | Anti-theft Component Status States : Abnormal Update Rate | Data Link Circuit - Test |
| 1239-0 | Engine Fuel Leakage 1: High - most severe (3) | Fuel Rail Pressure Problem |
| 2659-7 | Engine Exhaust Gas Recirculation (EGR) Mass Flow Rate : Not Responding | NRS Mass Flow Rate Problem |
| 2791-5 | Engine Exhaust Gas Recirculation (EGR) Valve Control : Current Below Normal | Motorized Valve - Test |
| 2791-6 | Engine Exhaust Gas Recirculation (EGR) Valve Control : Current Above Normal | Motorized Valve - Test |
| 2791-7 | Engine Exhaust Gas Recirculation (EGR) Valve Control : Not Responding Properly | Motorized Valve - Test |
| 2882-2 | Engine Alternate Rating Select : Erratic, Intermittent, or Incorrect | Mode Selection Circuit - Test |
| 2970-2 | Accelerator Pedal 2 Low Idle Switch : Erratic, Intermittent, or Incorrect | Idle Validation Switch Circuit - Test |
| 3241-3 | Exhaust Gas Temperature 1 : Voltage Above Normal | Engine Temperature Sensor Open or Short Circuit - Test (Active Sensors) |

| J1939 Code | Description | Refer to Procedure |
|-------------------|--|---|
| 3241-4 | Exhaust Gas Temperature 1 : Voltage Below Normal | Engine Temperature Sensor Open or Short Circuit - Test (Active Sensors) |
| 3242-3 | Particulate Trap Intake Gas Temperature : Voltage Above Normal | Engine Temperature Sensor Open or Short Circuit - Test (Active Sensors) |
| 3242-4 | Particulate Trap Intake Gas Temperature : Voltage Below Normal | Engine Temperature Sensor Open or Short Circuit - Test (Active Sensors) |
| 3242-15 | Particulate Trap Intake Gas Temperature : High - least severe (1) | Diesel Particulate Filter Temperature Is High |
| 3242-16 | Particulate Trap Intake Gas Temperature : High - moderate severity (2) | Diesel Particulate Filter Temperature Is High |
| 3242-18 | Particulate Trap Intake Gas Temperature : Low - moderate severity (2) | Diesel Particulate Filter Temperature Is Low |
| 3251-3 | Particulate Trap Differential Pressure : Voltage Above Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 3251-4 | Particulate Trap Differential Pressure : Voltage Below Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 3251-13 | Particulate Trap Differential Pressure : Calibration Required | Sensor Calibration Required - Test |
| 3358-3 | Engine Exhaust Gas Recirculation Inlet Pressure: Voltage Above Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 3358-4 | Engine Exhaust Gas Recirculation Inlet Pressure: Voltage Below Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 3358-13 | Engine Exhaust Gas Recirculation Inlet Pressure : Calibration Required | Sensor Calibration Required - Test |
| 3358-21 | Engine Exhaust Gas Recirculation Inlet Pressure : Data Drifted Low | 5 Volt Sensor Supply Circuit - Test |
| 3464-5 | Engine Throttle Actuator 1 Control Command : Current Below Normal | Motorized Valve - Test |
| 3464-6 | Engine Throttle Actuator 1 Control Command : Current Above Normal | Motorized Valve - Test |
| 3464-7 | Engine Throttle Actuator 1 Control Command : Not Responding Properly | Motorized Valve - Test |
| 3473-31 | Aftertreatment #1 Failed to Ignite | Diesel Particulate Filter Collects Excessive Soot or ARD Failed to Ignite |
| 3474-14 | Aftertreatment #1 Loss of Combustion : Special Instruction | ARD Loss of Combustion |
| 3474-31 | Aftertreatment #1 Loss of Combustion | Diesel Particulate Filter Collects Excessive Soot or ARD Loss of Combustion |
| 3479-5 | Aftertreatment #1 Fuel Pressure Control : Current Below Normal | Solenoid Valve - Test |

| J1939 Code | Description | Refer to Procedure |
|-------------------|---|---|
| 3479-6 | Aftertreatment #1 Fuel Pressure Control : Current Above Normal | Solenoid Valve - Test |
| 3480-3 | Aftertreatment #1 Fuel Pressure #1 : Voltage Above Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 3480-4 | Aftertreatment #1 Fuel Pressure #1 : Voltage Below Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 3480-15 | Aftertreatment #1 Fuel Pressure #1 : High - least severe (1) | ARD Pilot Fuel Pressure Is High |
| 3480-16 | Aftertreatment #1 Fuel Pressure #1 : High - moderate severity (2) | ARD Pilot Fuel Pressure Is High |
| 3480-17 | Aftertreatment #1 Fuel Pressure #1 : Low - least severe (1) | ARD Pilot Fuel Pressure Is Low |
| 3480-18 | Aftertreatment #1 Fuel Pressure #1 : Low - moderate severity (2) | ARD Pilot Fuel Pressure Is Low |
| 3483-11 | Aftertreatment #1 Regeneration Status : Other Failure Mode | Diesel Particulate Filter Requires Initial Regeneration |
| 3484-5 | Aftertreatment #1 Ignition : Current Below Normal | ARD Ignition - Test |
| 3484-6 | Aftertreatment #1 Ignition : Current Above Normal | ARD Ignition - Test |
| 3487-5 | Aftertreatment #1 Air Pressure Control : Current Below Normal | Motorized Valve - Test |
| 3487-6 | Aftertreatment #1 Air Pressure Control : Current Above Normal | Motorized Valve - Test |
| 3487-7 | Aftertreatment #1 Air Pressure Control : Not Responding Properly | Motorized Valve - Test |
| 3488-3 | Aftertreatment #1 Air Pressure Actuator Position : Voltage Above Normal | Valve Position Sensor - Test |
| 3488-4 | Aftertreatment #1 Air Pressure Actuator Position : Voltage Below Normal | Valve Position Sensor - Test |
| 3509-3 | Sensor Supply Voltage 1 : Voltage Above Normal | 5 Volt Sensor Supply Circuit - Test |
| 3509-4 | Sensor Supply Voltage 1 : Voltage Below Normal | 5 Volt Sensor Supply Circuit - Test |
| 3510-3 | Sensor Supply Voltage 2 : Voltage Above Normal | 5 Volt Sensor Supply Circuit - Test |
| 3510-4 | Sensor Supply Voltage 2 : Voltage Below Normal | 5 Volt Sensor Supply Circuit - Test |
| 3556-7 | Aftertreatment Fuel Injector #1 : Not Responding Properly | ARD Nozzle - Test |
| 3563-3 | Engine Intake Manifold #1 Absolute Pressure : Voltage Above Normal | Engine Pressure Sensor Open or Short |
| 3563-4 | Engine Intake Manifold #1 Absolute Pressure : Voltage Below Normal | Engine Pressure Sensor Open or Short |

| J1939 Code | Description | Refer to Procedure |
|-------------------|---|---|
| 3563-13 | Engine Intake Manifold #1 Absolute Pressure : Calibration Required | Sensor Calibration Required - Test |
| 3563-21 | Engine Intake Manifold #1 Absolute Pressure : Data Drifted Low | 5 Volt Sensor Supply Circuit - Test |
| 3609-3 | Diesel Particulate Filter Intake Pressure 1 : Voltage Above Normal | Engine Pressure Sensor Open or Short |
| 3609-4 | Diesel Particulate Filter Intake Pressure 1 : Voltage Below Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 3609-13 | Diesel Particulate Filter Intake Pressure 1 : Calibration Required | Sensor Calibration Required - Test |
| 3609-15 | Diesel Particulate Filter Intake Pressure 1 : High Least Severe | Diesel Particulate Filter Has High Inlet Pressure |
| 3609-17 | Diesel Particulate Filter Intake Pressure 1 : Low Moderate Severity | Diesel Particulate Filter Has Low Inlet Pressure |
| 3609-21 | Diesel Particulate Filter Intake Pressure 1 : Data Drifted Low | 5 Volt Sensor Supply Circuit - Test |
| 3703-31 | Particulate Trap Active Regeneration Inhibited Due to Inhibit Switch | Diesel Particulate Filter Collects Excessive Soot or ARD Is Disabled |
| 3711-31 | Particulate Trap Active Regeneration Inhibited Due to Low Exhaust Gas Temperature | Diesel Particulate Filter Collects Excessive Soot or ARD Temperature Is Low |
| 3714-31 | Particulate Trap Active Regeneration Inhibited Due to Temporary System Lockout | Diesel Particulate Filter Collects Excessive Soot |
| 3715-31 | Particulate Trap Active Regeneration Inhibited Due to Permanent System Lockout | Diesel Particulate Filter Collects Excessive Soot |
| 3719-0 | Particulate Trap #1 Soot Load Percent : High - most severe (3) | Diesel Particulate Filter Collects Excessive Soot |
| 3719-16 | Particulate Trap #1 Soot Load Percent : High - moderate severity (2) | Diesel Particulate Filter Collects Excessive Soot |
| 3720-15 | Particulate Trap #1 Ash Load Percent : High - least severe (1) | Diesel Particulate Filter Has High Ash Load |
| 3720-16 | Particulate Trap #1 Ash Load Percent : High - moderate severity (2) | Diesel Particulate Filter Has High Ash Load |
| 3750-31 | Diesel Particulate Filter 1 Conditions Not Met for Active Regeneration | Diesel Particulate Filter Collects Excessive Soot or ARD Is Disabled |
| 3837-3 | Aftertreatment 1 Secondary Air Pressure : Voltage Above Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 3837-4 | Aftertreatment 1 Secondary Air Pressure : Voltage Below Normal | Engine Pressure Sensor Open or Short Circuit - Test |
| 3837-13 | Aftertreatment 1 Secondary Air Pressure : Calibration Required | Sensor Calibration Required - Test |
| 3837-17 | Aftertreatment 1 Secondary Air Pressure : Low - least severe | ARD Combustion Supply Air Pressure Is Low |

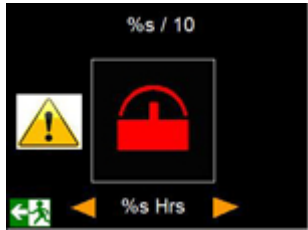
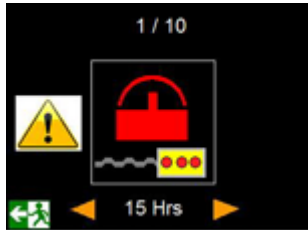
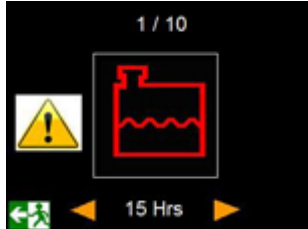
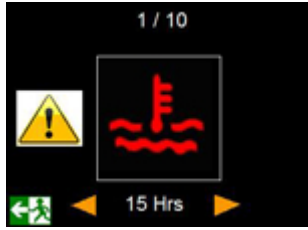
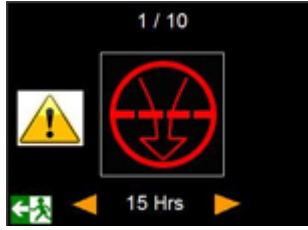
| J1939 Code | Description | Refer to Procedure |
|-------------------|---|--|
| 3837-21 | Aftertreatment 1 Secondary Air Pressure : Data Drifted Low | 5 Volt Sensor Supply Circuit - Test |
| 4265-5 | Aftertreatment #1 Transformer Secondary Output : Current Below Normal | ARD Ignition - Test |
| 4265-6 | Aftertreatment #1 Transformer Secondary Output : Current Above Normal | ARD Ignition - Test |
| 4301-5 | Aftertreatment #1 Fuel Injector #1 Heater Control : Current Below Normal | ARD Nozzle Heater - Test |
| 4301-6 | Aftertreatment #1 Fuel Injector #1 Heater Control : Current Above Normal | ARD Nozzle Heater - Test |
| 4783-2 | DPF #1 Mean Soot Signal : Erratic, Intermittent, or Incorrect | Soot Sensor - Test |
| 4783-3 | DPF #1 Mean Soot Signal : Voltage Above Normal | Soot Sensor - Test |
| 4783-4 | DPF #1 Mean Soot Signal : Voltage Below Normal | Soot Sensor - Test |
| 4783-9 | DPF #1 Mean Soot Signal : Abnormal Update Rate | Soot Sensor - Test |
| 4783-12 | DPF #1 Mean Soot Signal : Failure | Soot Sensor - Test |
| 4783-13 | DPF #1 Mean Soot Signal : Out of Calibration | Soot Sensor - Test |
| 4783-21 | DPF #1 Mean Soot Signal : Data Drifted Low | Soot Sensor - Test |
| 5423-5 | Aftertreatment Regeneration Device Fuel Pump Relay : Current Below Normal | ARD Fuel Supply - Test |
| 5423-6 | Aftertreatment Regeneration Device Fuel Pump Relay : Current Above Normal | ARD Fuel Supply - Test |
| 5571-0 | High Pressure Common Rail Fuel Pressure Relief Valve : High - most severe (3) | Fuel Rail Pressure Problem |
| 5576-2 | Aftertreatment #1 Identification Number Module : Erratic, Intermittent, or Incorrect | Diesel Particulate Filter Identification Signal - Test |
| 5576-8 | Aftertreatment #1 Identification Number Module : Abnormal Frequency, Pulse Width, or Period | Diesel Particulate Filter Identification Signal - Test |
| 5576-14 | Aftertreatment #1 Identification Number Module : Special Instruction | Diesel Particulate Filter Identification Signal - Test |

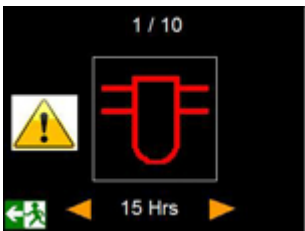
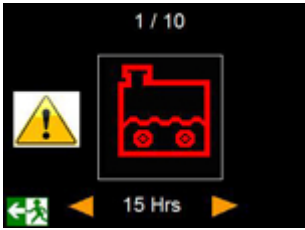

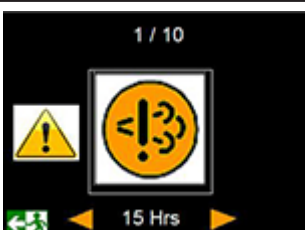
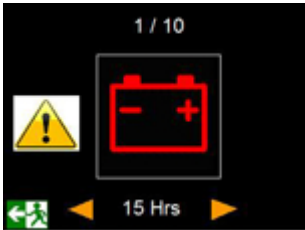

10.11 Machine Fault Codes and Descriptions

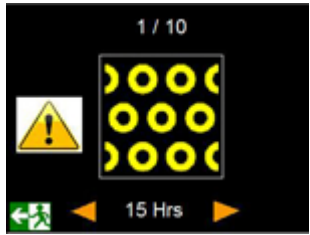
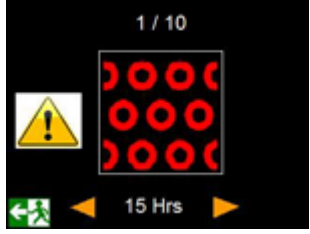
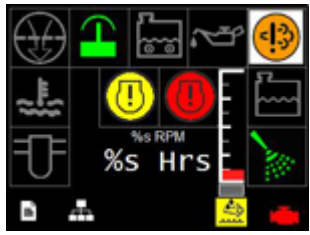
NOTICE

The fault codes may alert the operator to conditions that may damage the machines components. Never ignore a Machine fault if one occurs. Always investigate thoroughly or if in doubt contact your Terex plant supplier.

Table 10.2 - Machine Fault Codes

| Fault | Description | Graphic |
|-------|--|---|
| 1 | Emergency Stop Activated Emergency Stop on the machine has been activated at ?? Hrs Run Machine will Shutdown |  |
| 2 | Machine Stop Activated Machine Stop on the doglead has been activated at ?? Hrs Run Machine will Shutdown |  |
| 3 | Coolant Level Low - SPN 111 Coolant Level is low, activated at ?? Hrs Run. Machine will Shutdown |  |
| 4 | Engine Temperature - SPN 110 Engine temperature is above normal, activated at ?? Hrs Run. Warning only |  |
| 5 | Air Filter Restriction - SPN 107 Air Filter for Engine has become blocked activated at ?? Hrs Run. Machine will show this Alarm for 30 Minutes after which the machine will Shutdown |  |

| Fault | Description | Graphic |
|-------|---|--|
| 6 | <p>Fuel Contamination - SPN 97</p> <p>The water trap is full, activated at ?? Hrs Run.</p> <p>Machine will Shutdown</p> |  <p>1 / 10</p> <p>Warning icon (yellow triangle with exclamation mark)</p> <p>Icon of a fuel filter/water trap</p> <p>15 Hrs</p> |
| 7 | <p>Hydraulic Oil Level Low</p> <p>Hydraulic Oil Level is low, activated at ?? Hrs Run.</p> <p>Machine will Shutdown</p> |  <p>1 / 10</p> <p>Warning icon (yellow triangle with exclamation mark)</p> <p>Icon of a hydraulic tank with low level</p> <p>15 Hrs</p> |
| 8 | <p>Oil Pressure - SPN 100</p> <p>Engine oil pressure low, recorded at ?? Hrs Run.</p> <p>Engine will not start</p> |  <p>1 / 10</p> <p>Warning icon (yellow triangle with exclamation mark)</p> <p>Icon of an engine with low oil pressure</p> <p>15 Hrs</p> |
| 9 | <p>After treatment Fault - SPN 5246 & 3038</p> <p>The After treatment is not functioning, recorded at ?? Hrs Run.</p> <p>The engine will de-rate</p> <p>This warning will also appear on the Home screen when present</p> |  <p>1 / 10</p> <p>Warning icon (yellow triangle with exclamation mark)</p> <p>Icon of a circular warning symbol with a question mark</p> <p>15 Hrs</p> |
| 10 | <p>Battery Voltage</p> <p>Battery voltage has fallen below the required level, Alarm recorded at ?? Hrs Run.</p> <p>Also an indication that the engines alternator has stopped charging.</p> |  <p>1 / 10</p> <p>Warning icon (yellow triangle with exclamation mark)</p> <p>Icon of a battery with low voltage</p> <p>15 Hrs</p> |
| 11 | <p>Comms Fault</p> <p>MCU Controller has lost CAN Communication with the MCU Display Screen, Alarm recorded at ?? Hrs Run.</p> <p>Engine will not start</p> |  <p>1 / 10</p> <p>Warning icon (yellow triangle with exclamation mark)</p> <p>Icon of a screen with a red X and a list of items</p> <p>15 Hrs</p> |

| Fault | Description | Graphic |
|-------|--|--|
| 12 | <p>DPF Warning - SPN 3719-16</p> <p>DPF soot level has reached 100%, activated at ?? Hrs Run.</p> <p>Engine regen is required</p> |  |
| 13 | <p>DPF Critical Warning - SPN 3719-31</p> <p>DPF soot level has reached 116%, activated at ?? Hrs Run.</p> <p>Engine regen is required, engine will shut down after 30 seconds</p> |  |
| 14 | <p>Emissions System Malfunction - SPN 3038</p> <p>The engine will de-rate.</p> <p>If the engine is run in this mode the engine will go into harbour mode.</p> |  |

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11 Storage

On receipt of the machine and the separate lubrication and hydraulic equipment carry out a careful inspection and immediately report any component damage or loss. Conduct a careful visual check of the machine and check all the separate loose items against the equipment delivery note.

The equipment should be stored in a dry, well-ventilated area free of excessive dust. All openings should be sealed to prevent the ingress of dirt or moisture.

If the machinery cannot be stored indoors it must be sheeted over and made thoroughly weatherproof to avoid deterioration.

Contact Terex for advice on any situation wherever storage or inactivity is in excess of that reasonably to be expected or where a possibly hostile environment exists, as the defects liability warranty may be affected.

12 Glossary of Terms

Anti Rock Stay

A strap which is used to stabilise the screen unit whilst in transport.

Antiloosen Fastener

A type of fastener used to secure some doors.

Assemblies

Individual sections of the platform made up of different components parts.

Auxiliary Control Valve

A bank of hydraulic valves which carry out various movement functions throughout the platform.

Belt Scraper

A device fixed or flexible mounted across the width of a belt of a conveyor for removing adherent material.

Bogie

Undercarriage on chassis to which axles are bolted.

Centre Roller

A roller, which supports the loaded belt.

Transfer Conveyor

A conveyor used to transfer the fines material from underneath the drum onto the incline conveyor.

Control Panel

A panel that is situated in the power unit which is used to start the engine and view the various warning lights.

Controller

An electromechanical device or assembly of devices for starting, stopping, accelerating, or decelerating a drive, or serving, to govern in some predetermined manner the power delivered to the drive.

Conveyor

A horizontal, inclined, or vertical device for moving or transporting bulk material, packages, or objects, in a path determined by the design of the device, and having points of adding and discharge, fixed or selective.

Conveyor belt

A belt used to carry materials and transmit the power required to move the load being conveyed.

Conveyor, extendable

A conveyor that may be lengthened or shortened to suit operating needs.

Conveyor, live roller

A series of rollers over which objects are moved by the application of power to all or some of the rollers. The power transmitting medium is usually belting or chain.

Conveyor, mobile

Conveyor supported on a mobile self propelled structure. These conveyors normally handle bulk material.

Conveyor, portable

A transportable conveyor which is not self propelled, usually having supports that provide mobility.

Conveyor, screw

A conveyor screw revolving in a suitably shaped stationary trough or casing fitted hangers, trough ends, and other auxiliary accessories.

Control Valve

A hydraulic valve, which carries out a movement function on the machine.

Depressurised

To release the pressure from a vessel i.e. a tire, hydraulic system.

Discharge Area

The area where material is dumped from the machine.

Dolly Axle

An axle that can be fitted to king pin, used for towing purpose.

Drive

An assembly of the necessary structural, mechanical, and electrical parts provide the motive power to change direction.

Drive Drum

The drum that drives the conveyor belt sometimes called the head drum.

Non Drive Drum

The drum that is non-driven in the conveyor belt sometimes called the tail drum.

Drum Lagging

Rubber glued around the drive drum to grip the conveyor belt.

Feed Conveyor

Conveyor used to move the material from the hopper to the main conveyor.

Feedboot

An extended metal surround located at the bottom of the main, tail & side conveyors.

Feeder Unit

Conveyor which feeds the material onto the incline conveyor at an even rate.

Filler Cap

A cap used to seal a tank and is removed in order to fill the tank.

Fines Material

Material that is screened through the lower screen deck and is discharged on to the tail conveyor.

Four Bank

A bank of hydraulic control valves used to control functions of the machine.

Flywheel

A half moon shaped counter weight, which is mounted on the screen unit shaft for the purpose of counter acting the weight of the eccentric of the screen shaft.

Gate

A device or structure by means of which the flow of material may be stopped or regulated; also a section of a machine equipped with a hinge mechanism for movable service often called a hinge section.

Grid Aperture

The spacing between the grid bars (typically 100mm) which determines the material size that enters the feed hopper.

Grid Bar

Bars used on the grid spaced out with equal spacing. Used to roughly screen material.

Grating

A coarse screen made of parallel and crossed bars used to prevent passage of oversized material.

Guard

A covering, barricade, grating, fence, or other form of barrier used to prevent inadvertent physical contact with operating components such as gears, sprockets, chains, and belts.

Hopper

A box having a funnel shaped bottom, or a bottom reduced in size, narrowed, or necked to receive material and direct it to a conveyor, feeder, or chute.

Hydraulic Components

A part used in the hydraulic system of the machine i.e. valve, motor etc.

Hydraulic Screen Tension

The assistance of hydraulic rams when tensioning the screen meshes.

Jacking legs

Hydraulic adjustable legs which raise or lower the back of the machine for the purpose of coupling to the tractor unit.

King Pin

Coupling used for towing by the tractor unit.

Landing Leg

A support leg which lowers from the machine and is used to stabilise it whilst in the working position.

LHS

Left Hand Side, used with reference to the side conveyors.

Lockout

Procedure to be carried out to ensure the machine is safe for maintenance or repairs.

Machine Stop

A stop arising from a sudden and unexpected need, and not as a part of the normal operation.

Main Conveyor

Conveyor used to move the material from the hopper to the screen unit.

Nip Point

A point at which a machine element moving in line meets a rotating element in such a manner that it is possible to nip, pinch, squeeze, or entrap a person or objects coming into contact with one or two of the members.

Optimum Speed

The best or most favorable speed to run a conveyor for example.

Oversize material

Material that is larger than the mesh size and runs off the top screen deck.

Platform

A working space for persons, elevated above the surrounding floor or ground for the operation of machinery and equipment.

Power unit

An inclosed unit situated under the main conveyor which houses the component parts which together drive the machine.

Prevent

When used in a context such as prevent access or prevent physical contact, means to impede or block; when used in a context such as prevent injury, means to reduce the chances of, but does not imply that an injury cannot occur.

P.S.I

Pounds per square inch. Unit of Pressure. Conversion 1 Bar = 14.5 P.S.I

Rated speed

The speed, as established by the manufacture or a qualified person, at which safe and satisfactory service can be expected.

Recommissioning

To prepare the machine for use.

Reject Grid

An arrangement of equally spaced grid bars which is used to separate the large stones before the material enters the feed hopper.

Remote control

Any system of controls in which the actuator is situated in a remote location.

Retract

Withdraw or fold up conveyor.

Return Roller

A roller, which is used to support the unladen belt on the underside of the conveyor.

RHS

Right Hand Side, used with reference to the side conveyors.

Safety device

A mechanism or an arrangement placed in use for the specific purposes of preventing an unsafe condition, preventing the continuation of an unsafe condition, warning of an unsafe condition, or limiting or eliminating the unsafe effects of a possible condition.

Scraper

A device fixed or flexibly mounted across the width of a belt of a conveyor for removing adherent material.

Screen Drum

Drum which mesh is fitted onto rotates during operation to screen material (Trommel).

Screen Unit

Vibratory unit used to separate by size raw materials.

Should

As used in the context of a provision of this manual, indicates a recommendation, the advisability of which depends on the facts in a particular situation.

Shredder Safety Stay

Metal strap which restrains the shredder unit whilst in the raised position.

Shredder Unit

Swinging flail type unit which is located at the discharge end of the feed conveyor and is used to break down material.

Side Conveyor

Conveyor used to collect the material from the screen unit and move it to the discharge area at 90 degrees to the main machine.

Side Roller

Roller used to create arc on the belt to reduce spillage.

Sound Baffles

Plates used to blank out noise from the power unit.

Spillage

Material that spills over the edge of a conveyor etc.

Spill guard

A stationary device of sufficient strength and capacity to catch, retain, and contain any reasonably foreseeable spillage from a conveyor passing overhead.

Spreader Plate

Swinging plate located at the discharge end of the main conveyor and is used to spread the material evenly on the screen unit.

Sprocket

A toothed wheel arranged to fit into the links of a chain.

Strut

Rigid support used to hold an assembly in place.

Swivel Conveyor

Conveyor used to discharge fines material. Swivel through 180° to increase stockpiling capacity.

Tail Conveyor

Conveyor used to collect the fines material from the screen unit and move it to the discharge area.

Take-up

The assembly of the necessary structural and mechanical parts that provides the means to adjust the length of belts, cables, chains, etc. to compensate for stretch, shrinkage, and wear.

Telescopic Head Section

A section of a conveyor which extends out telescopically into transport position.

Tow pin

A movable or fixed member, used to engage a push or pull.

Tracks

The beams, shapes, or formed section on which trolleys, rollers, shoes, or wheels roll or slide while propelled.

Transport Bracket

A bracket used to hold an assembly in place whilst in transport.

Transport Position

The position of the machine when conveyors are folded.

Variable Speed Flow Control

A device which is used to hydraulically vary the speed of the conveyor belt.

Viewing Apertures

Opening holes to view the conveyor belt.

Vulcanized Belt

A conveyor belt that has been joined seamlessly using a special treatment.

Wheel Nut Torque

A measure of pressure applied to tighten a nut.

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Appendix

Appendix A EC Declaration of Conformity

Appendix B Warranty

Appendix C Schematics

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Appendix A EC Declaration of Conformity

This machine is in conformity with the provisions of the EC Machinery Directive 06/42/EC together with appropriate EN Harmonised Standards and National BS Standards and Specifications.

A Declaration of Conformity certificate is applicable to each machine. The original copy of the certificate is sent out with the machine.

The following page shows an example of a Declaration of Conformity certificate and the information which should be included in it.

Each item of information on the example is numbered and the list of explanations below refer to the corresponding numbered items on the example.

- 1 Full name and address of the manufacturer of the machine.
- 2 The name of the person authorised to compile the technical file.
- 3 The address of the person authorised to compile the technical file.
- 4 The function of the machine.
- 5 The model or type of the machine.
- 6 Serial number or pin number of the machine.
- 7 Commercial name of the machine.
- 8 Manufacturers declaration of conformity to the Machinery Directive 2006/42/EC.
- 9 Manufacturers declaration of conformity to the EMC Directive 2004/108/EC.
- 10 The place where the machine was issued from.
- 11 The date on which the machine was issued.
- 12 Identification of the person empowered to sign on behalf of the manufacturer.

Example



Original EC Declaration of Conformity

2006/42/EC 'Machinery Directive'

Manufacturer: Terex GB Limited
200 Coalisland Road
Dungannon
BT71 4DR
United Kingdom

1

Name of person authorised to compile the Technical File
Address of person authorised to compile the Technical file

Michael O'Neill
Terex GB Ltd (address as above)

2

3

Machine Function: Mobile Screener

4

Model / Type:

5

Serial / PIN number:

6

Commercial Name:

7

Terex GB Limited hereby declare that the above piece of industrial equipment has been designed and manufactured to comply with the relevant provisions of the Machinery Directive 2006/42/EC.

8

Terex GB Limited hereby declare that the above of industrial equipment has been designed and manufactured to comply with the EMC Directive 2004/108/EC.

9

Place of issue: Dungannon, United Kingdom.

10

Date of issue: AUGUST 2011

11

Empowered signatory:

12



Appendix B Warranty

The following pages show warranty information.

NON USA SALES ONLY

LIMITED PRODUCT WARRANTY (NON USA)

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)
- Jaw Machines: - Mainframe including Cross Beam, Eccentric Shaft, Jaw Stock, Toggle Beam, Flywheels.
- Impactor Machines: - 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 authorised 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, petro-chemical 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.

Telematics.

If a telematics system is included with the Equipment, the telematics system is administered by a third party ("Teleservices Provider") and collects a range of operational data about the Equipment including, but not limited to, usage, performance and reliability. Buyer consents to Seller's obtaining such data from the Teleservices Provider for warranty, product improvement and customer support purposes. Buyer understands that the Equipment warranty is conditioned on the proper operation of the telematics system and Buyer shall not disable, tamper or interfere with the telematics system.

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, engines, air compressors, batteries, tires, 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 fittings, adding or replacing of fluids, filter, breathers, belts, nozzles, adjustments of any kind, services supplies such as hand cleaners, towels and lubricants, inspections, diagnostic time, 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 ANY: (A) LOST PROFITS AND/OR BUSINESS INTERRUPTION (WHETHER DIRECT OR INDIRECT); AND (B) INDIRECT, INCIDENTAL, CONSEQUENTIAL (WHETHER DIRECT OR INDIRECT) OR OTHER DAMAGES OR LOSSES OF ANY KIND, 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.

USA SALES ONLY**LIMITED PRODUCT WARRANTY (USA)**

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)
- Jaw Machines: - Mainframe including Cross Beam, Eccentric Shaft, Jaw Stock, Toggle Beam, Flywheels.
- Impactor Machines: - 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 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 and brake linings, filters, wire rope 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 authorised 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.

Telematics.

If a telematics system is included with the Equipment, the telematics system is administered by a third party ("Teleservices Provider") and collects a range of operational data about the Equipment including, but not limited to, usage, performance and reliability. Buyer consents to Seller's obtaining such data from the Teleservices Provider for warranty, product improvement and customer support purposes. Buyer understands that the Equipment warranty is conditioned on the proper operation of the telematics system and Buyer shall not disable, tamper or interfere with the telematics system.

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, engines, air compressors, batteries, tires, 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 fittings, adding or replacing of fluids, filter, breathers, belts, nozzles, adjustments of any kind, services supplies such as hand cleaners, towels and lubricants, inspections, diagnostic time, 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 AFFILIATE, SUBSIDIARY OR DIVISION THEREOF BE LIABLE FOR ANY A) LOST PROFITS AND/OR BUSINESS INTERRUPTION (WHETHER DIRECT OR INDIRECT); AND (B) INDIRECT, INCIDENTAL, CONSEQUENTIAL (WHETHER DIRECT OR INDIRECT) OR OTHER DAMAGES OR LOSSES OF ANY KIND, RESULTING FROM A BREACH OF WARRANTY INCLUDING, WITHOUT LIMITATION, 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.

To register the warranty of this machine please visit: <http://www.powerscreenwarranty.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>

Telematics

If a telematics system is included with the Equipment, the telematics system is administered by a third party and collects a range of operational data about the Equipment including, but not limited to, usage, performance and reliability. Buyer consents to Seller's obtaining such data for warranty, product improvement and customer support purposes. Buyer understands that the Equipment warranty is conditioned on the proper operation of the telematics system and Buyer shall not disable, tamper or interfere with the telematics system.

To access telematics system information visit our website:

<http://powerscreen.com/en/pulse/>

Table of Content

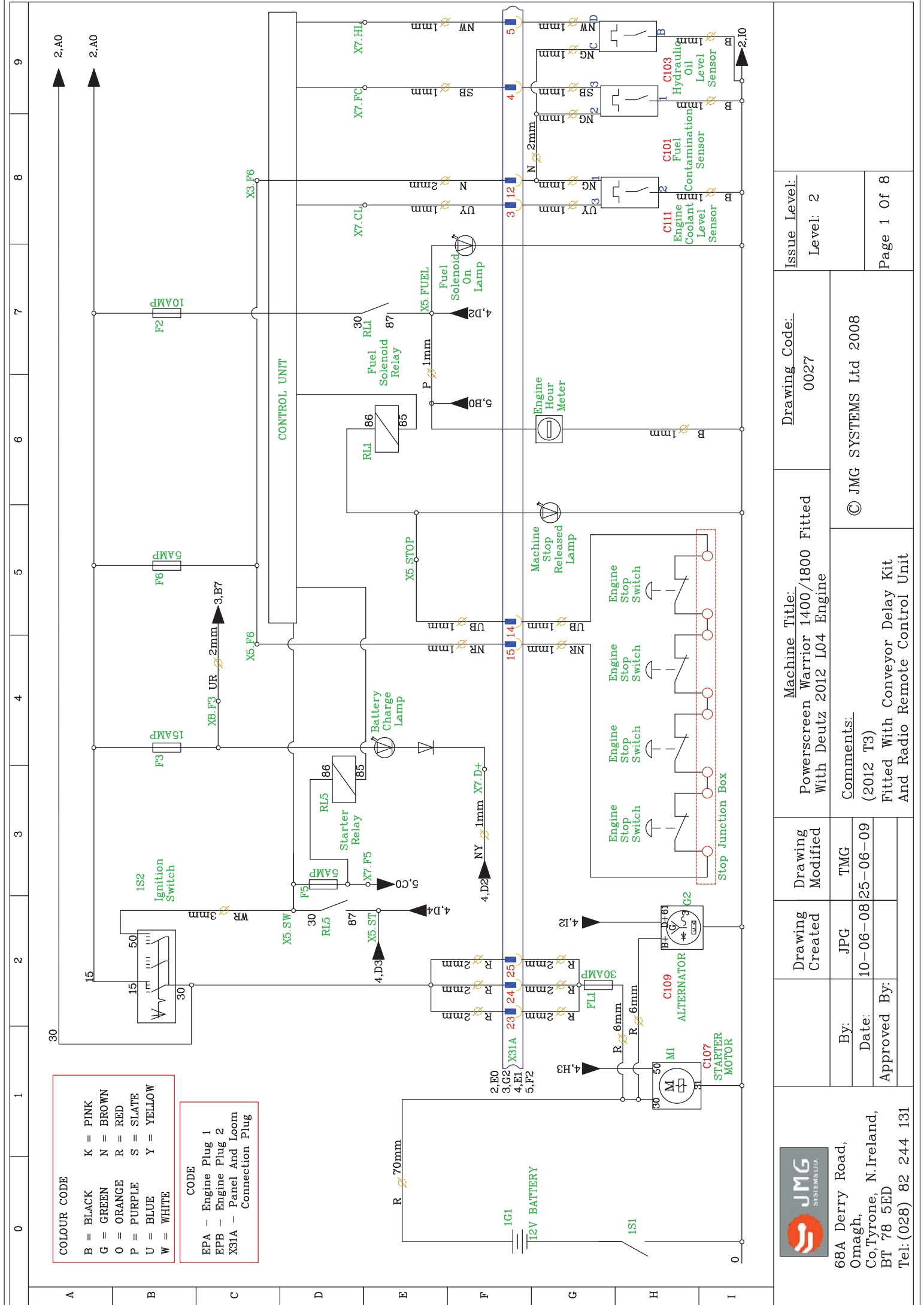
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| Appendix C Schematics | C-3 |
| (1) Tier 3 Schematics | C-3 |
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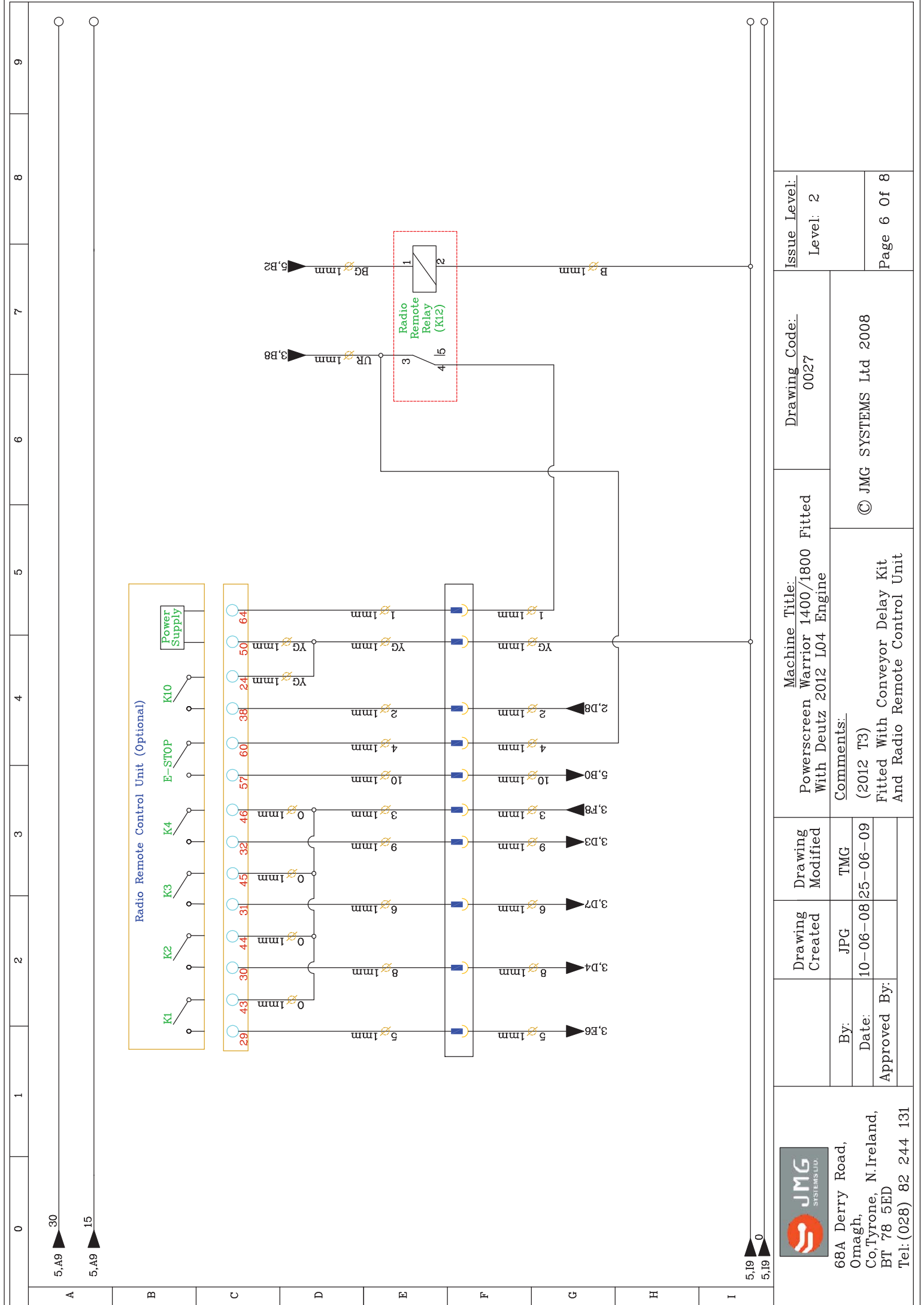
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Appendix C Schematics

(1) Tier 3 Schematics

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68A Derry Road,
Omagh,
Co.Tyrone, N.Ireland,
BT 78 5ED
Tel:(028) 82 244 131

By:
Date:
Approved By:

JPG TMG

Drawing Created Modified

Machine Title:
Powerscreen Warrior 1400/1800 Fitted
With Deutz 2012 L04 Engine

Comments:
(2012 T3)
Fitted With Conveyor Delay Kit
And Radio Remote Control Unit

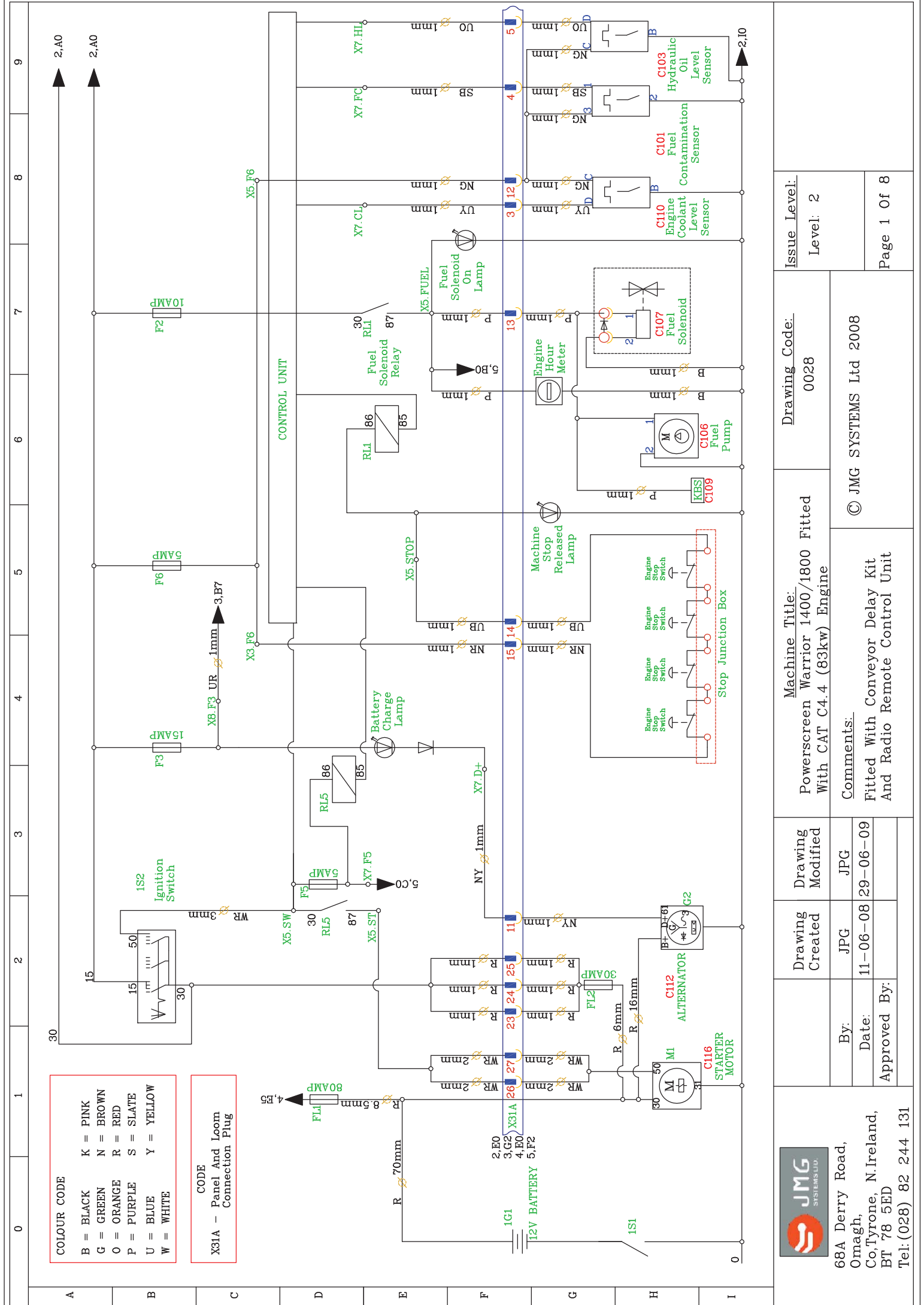
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Issue Level:
Level: 2

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| | | | | | | | | | | |
|--|--|---|---|---|---|---|---|---|---|---|
| 0 | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| A | <div><div>TRACK CONTROL TIMER (SD3)</div><div><div>K8</div><div>K9</div><div>K10</div><div>K11</div><div>K12</div></div><div><div>X31A</div></div></div> <div>LAYOUT OF PANEL BASE</div> <div>CSD1</div> | | | | | | | | | |
| B | | | | | | | | | | |
| C | | | | | | | | | | |
| D | | | | | | | | | | |
| E | | | | | | | | | | |
| F | | | | | | | | | | |
| G | | | | | | | | | | |
| H | | | | | | | | | | |
| I | | | | | | | | | | |
| <div><div><div><div></div><div>JMG</div><div>SYSTEMS LTD.</div></div><div>68A Derry Road, Omagh, Co,Tyrone, N.Ireland, BT 78 5ED Tel: (028) 82 244 131</div></div></div> | | | <div><div>Drawing Created</div><div>By:</div><div>Date:</div><div>Approved By:</div></div> <div><div>Drawing Modified</div><div>TMG</div><div>10-06-08</div><div></div></div> | | <div>Machine Title: Powerscreen Warrior 1400/1800 Fitted With Deutz 2012 L04 Engine</div> <div>Comments: Layout Of Panel (2012 T3) Fitted With Conveyor Delay Kit And Radio Remote Control Unit</div> | | <div>Drawing Code: 0027</div> <div>© JMG SYSTEMS Ltd 2008</div> | | <div>Issue Level: Level: 2</div> <div>Page 7 Of 8</div> | |



68A Derry Road,
Omagh,
Co.Tyrone, N.Ireland,
BT 78 5ED
Tel:(028) 82 244 131

Machine Title:
Powerscreen Warrior 1400/1800 Fitted
With CAT C4.4 (83kw) Engine

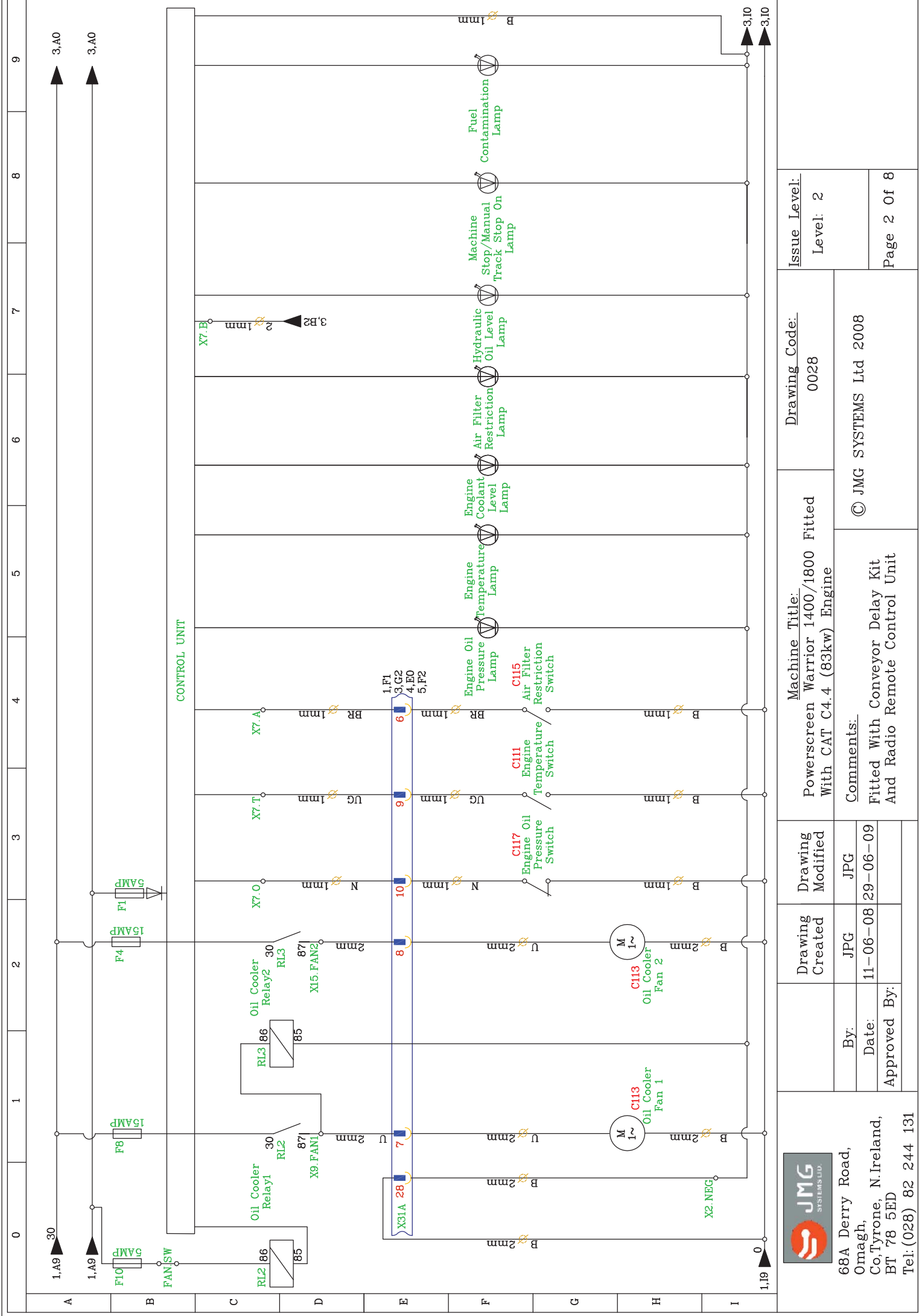
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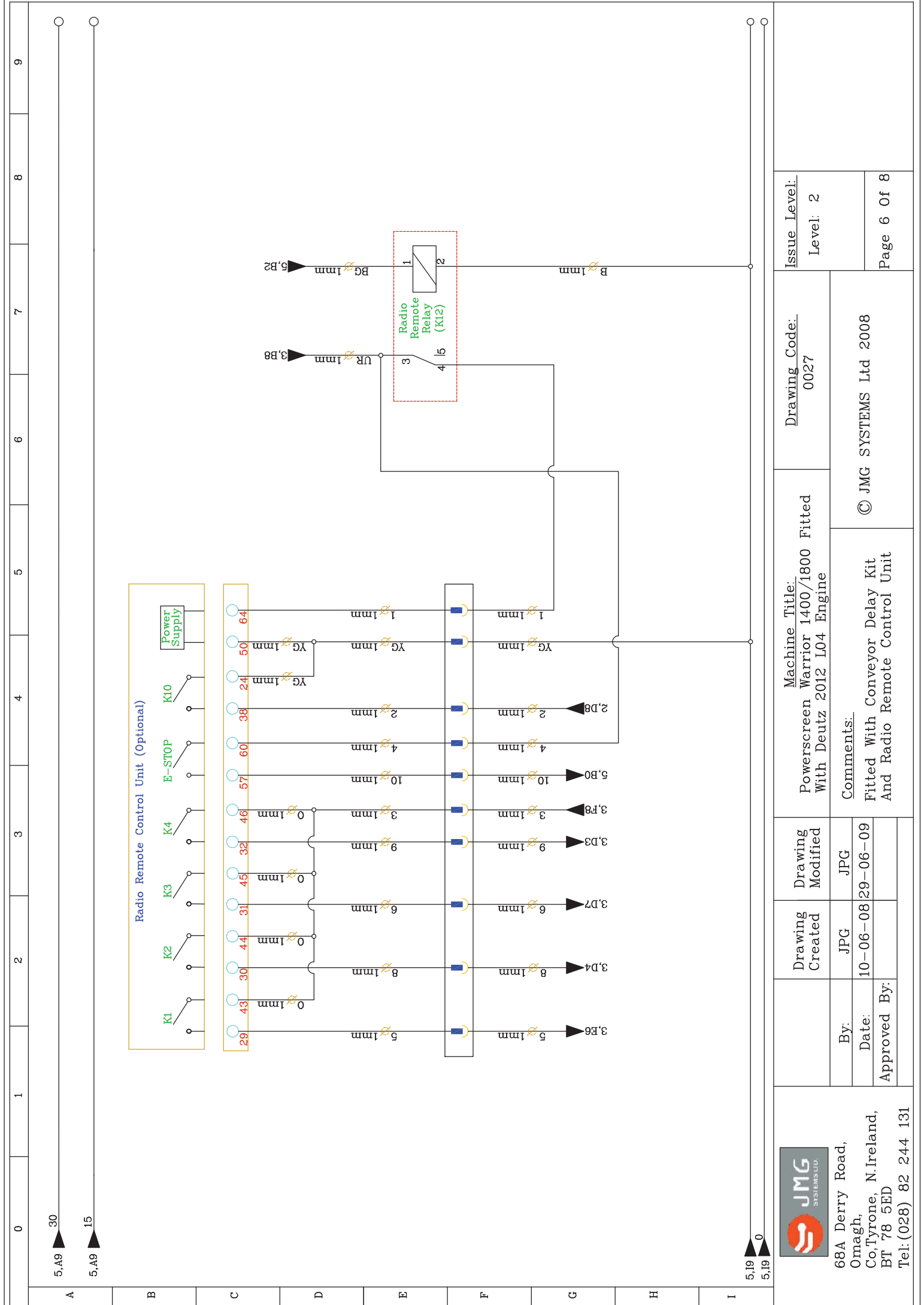
Comments:
Fitted With Conveyor Delay Kit
And Radio Remote Control Unit

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Issue Level:
Level: 2

Page 1 Of 8





68A Derry Road,
Omagh,
Co.Tyrone, N.Ireland,
BT 78 5ED
Tel:(028) 82 244 131

By:
Date:
Approved By:

JPG
10-06-08 29-06-09

Drawing Created
Modified

Machine Title:
Powerscreen Warrior 1400/1800 Fitted
With Deutz 2012 L04 Engine

Comments:
Fitted With Conveyor Delay Kit
And Radio Remote Control Unit

Drawing Code:
0027

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Issue Level:
Level: 2

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| | | | | | | | | | | | | | | |
|---|--|---|---|------------------------------|---|---|----------------------|--|---|------------------------|--------------------|-------------|-----------------------|--|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | |
| A | <div><div>LAYOUT OF PANEL LEFT SIDE</div><div><div><div>PRE-HEAT SWITCH</div></div><div><div>TRACK CONTROL TIMER (SD3)</div></div><div><div>K8</div><div>K9</div><div>K10</div><div>K11</div><div>K12</div></div><div><div>X31A</div></div><div>LAYOUT OF PANEL BASE</div></div></div> | | | | | | | | | | | | | |
| B | | | | | | | | | | | | | | |
| C | | | | | | | | | | | | | | |
| D | | | | | | | | | | | | | | |
| E | | | | | | | | | | | | | | |
| F | | | | | | | | | | | | | | |
| G | | | | | | | | | | | | | | |
| H | | | | | | | | | | | | | | |
| I | | | | | | | | | | | | | | |
| | | <div><div>LAYOUT OF PANEL LEFT SIDE</div><div><div>PRE-HEAT SWITCH</div></div><div><div>TRACK CONTROL TIMER (SD3)</div></div><div><div>K8</div><div>K9</div><div>K10</div><div>K11</div><div>K12</div></div><div><div>X31A</div></div><div>LAYOUT OF PANEL BASE</div></div> | | | | CSD1 | LAYOUT OF PANEL BASE | | | | Drawing Code: 0028 | | Issue Level: Level: 2 | |
| | | <div><div><div><div>JMG</div><div>SYSTEMS LTD.</div></div><div>68A Derry Road, Omagh, Co.Tyrone, N.Ireland, BT 78 5ED Tel: (028) 82 244 131</div></div></div> | | | | Machine Title: Powerscreen Warrior 1400/1800 Fitted With CAT C4.4 (83kw) Engine | | Comments: Layout Of Panel Fitted With Conveyor Delay Kit And Radio Remote Control Unit | | © JMG SYSTEMS Ltd 2008 | | Page 7 Of 8 | | |
| | | By: Date: Approved By: | | JPG 11-06-08 29-06-09 | | JPG | | | | | | | | |

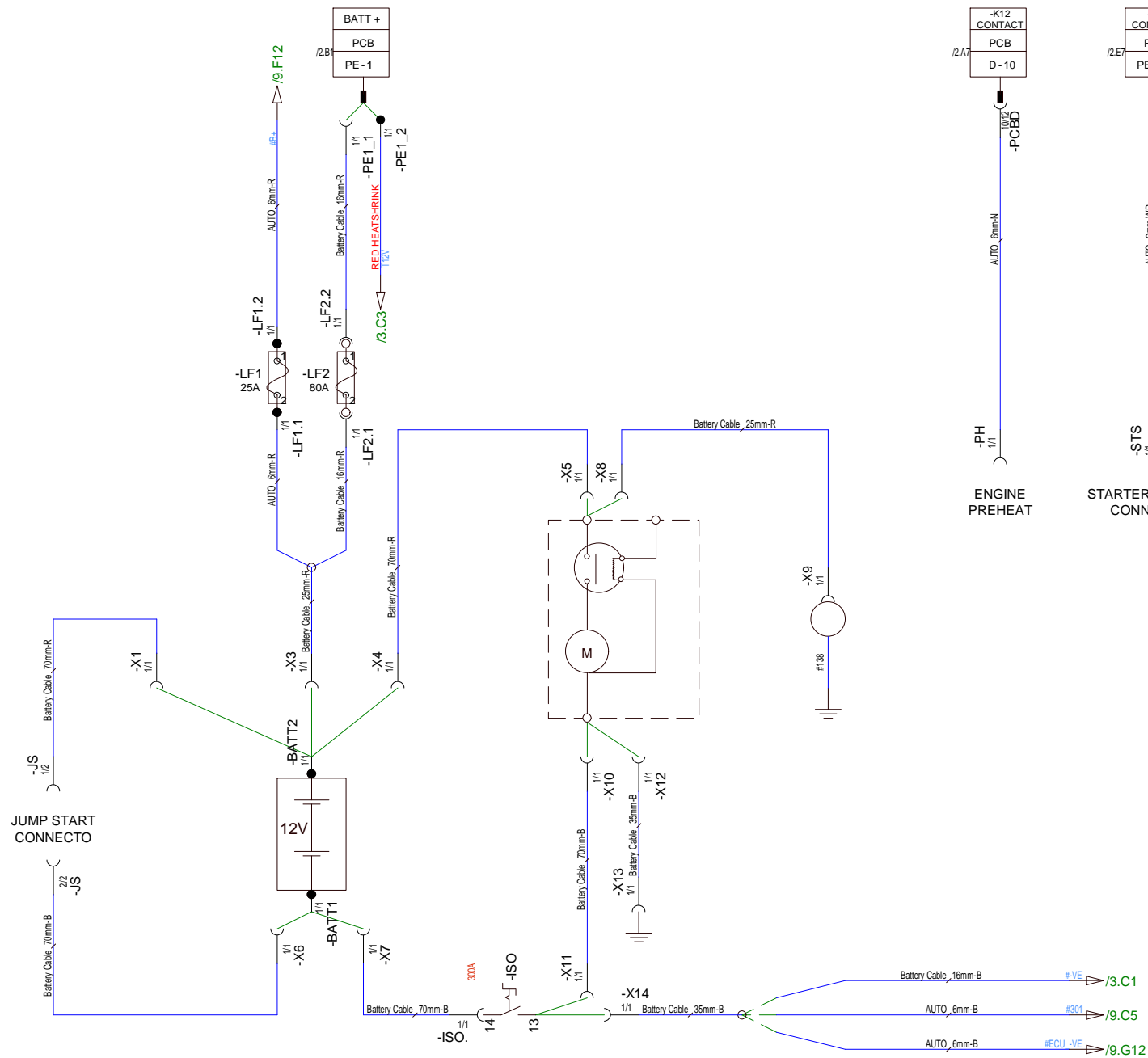
(2) Tier 4 Schematics


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(3) Dual Power Schematics

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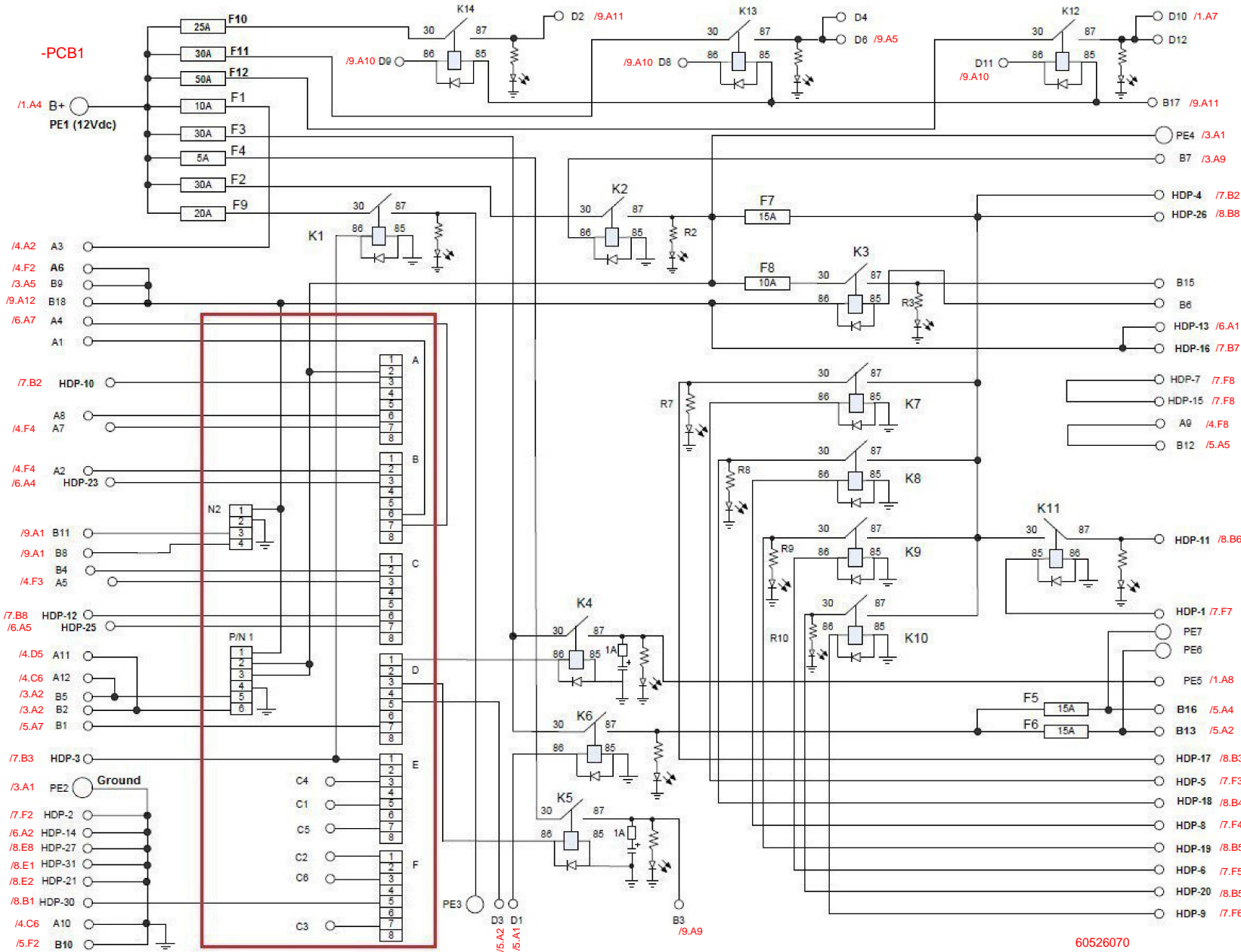
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| | | | | | | | | | | | |
|----------------------------------|----------|---------------------|---------------|------|------|----------|---|--------|----------|-----------------------------|-----------------------|
| Changing drawing only in the E3! | 3 | Remove Preheat Link | 20.07.17 | | Date | Name |  TEREX. | Type | Standard | Description: Electrical Kit | Assignment |
| | 2 | Telematics Wiring | 16.01.17 | AJC | User | | | P-Nr.: | | POWER UNIT | Location +PU |
| | 1 | Cable Colours | 13.12.16 | AJC | | | | | | | |
| | 0 | First Draft | 28.11.16 | AJC | | | | | | | |
| | Revision | ECO | Revision text | Date | Name | Provided | | | | Drawing number 60552902 | Sheet 1 No. 16 Sh. |

PCB SCHEMATIC

PCB SHEET REFERENCE



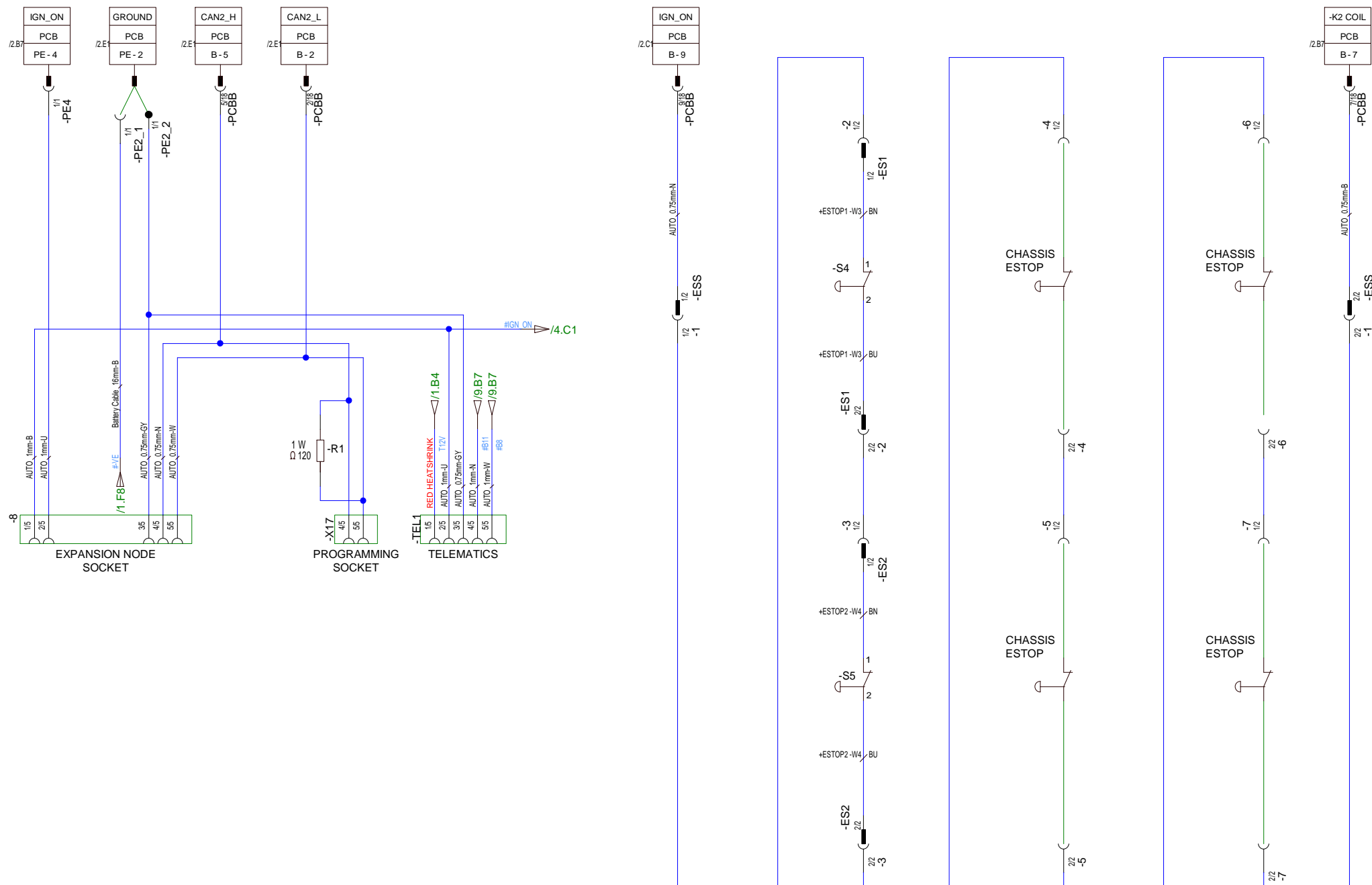
| -PCB1 | | |
|------------|-----------|---------------------|
| B+ (12VDC) | GND (-VE) | |
| /1.A4 | A1 | HDP-1 /7.E7 |
| /4.F4 | A2 | HDP-2 /7.E2 |
| /4.A2 | A3 | HDP-3 /7.B3 |
| /6.B7 | A4 | HDP-4 /7.B2 |
| /4.F3 | A5 | HDP-5 /7.E3 |
| /4.F2 | A6 | HDP-6 /7.E5 |
| /4.F4 | A7 | HDP-7 /7.E8 |
| | A8 | HDP-8 /7.E4 |
| /4.F8 | A9 | HDP-9 /7.E6 |
| /4.C6 | A10 | HDP-10 /7.B2 |
| /4.D5 | A11 | HDP-11 /8.B6 |
| /4.D6 | A12 | HDP-12 /7.B8 |
| | | HDP-13 /6.B2 |
| /5.A7 | B1 | HDP-14 /6.B2 |
| /3.A3 | B2 | HDP-15 /7.E7 |
| /9.A9 | B3 | HDP-16 /7.B7 |
| | B4 | HDP-17 /8.B3 |
| /3.A2 | B5 | HDP-18 /8.B4 |
| | B6 | HDP-19 /8.B5 |
| /3.A9 | B7 | HDP-20 /8.B6 |
| /9.A1 | B8 | HDP-21 /8.E2 |
| /3.A5 | B9 | HDP-22 Not Used |
| /5.E2 | B10 | HDP-23 /6.B4 |
| /9.A1 | B11 | HDP-24 Not Used |
| /5.A6 | B12 | HDP-25 /6.B5 |
| /5.A3 | B13 | HDP-26 /8.B8 |
| Not Used | B14 | HDP-27 /8.E8 |
| | B15 | HDP-28 Not Used |
| /5.A4 | B16 | HDP-29 Not Used |
| /9.A11 | B17 | HDP-30 /8.B1 |
| /9.A12 | B18 | HDP-31 /8.E1 |
| | C1 | (track lgt) PE3 |
| | C2 | |
| | C3 | (Sw Pwr) PE4 /3.A1 |
| | C4 | |
| | C5 | (Starter) PE5 /1.A8 |
| | C6 | |
| /5.A2 | D1 | (Fan 1) PE6 |
| /9.A11 | D2 | |
| /5.A2 | D3 | (Fan 2) PE7 |
| | D4 | |
| Not Used | D5 | |
| /9.A5 | D6 | |
| Not Used | D7 | |
| /9.A10 | D8 | |
| /9.A11 | D9 | |
| /1.A7 | D10 | |
| /9.A10 | D11 | |
| | D12 | |


REMOVE JP-C1/C2 1A FUSES

| | | | | | | | | | | |
|----------------------------------|-----|---------------------|----------|------|--------|------|------|----------|--|-------------------------|
| Changing drawing only in the E3! | 3 | Remove Preheat Link | 20.07.17 | AJC | Date | Name | Type | Standard | Description: Electrical Kit POWER UNIT | Assignment Location +PU |
| | 2 | Telematics Wiring | 16.01.17 | AJC | | | | | | |
| | 1 | Cable Colours | 13.12.16 | AJC | User | | | | | |
| | 0 | First Draft | 28.11.16 | AJC | Provid | | | | | |
| Revision | ECO | Revision text | Date | Name | | | | | Drawing number 60552902 | Sheet 2 No. 16 Sh. |

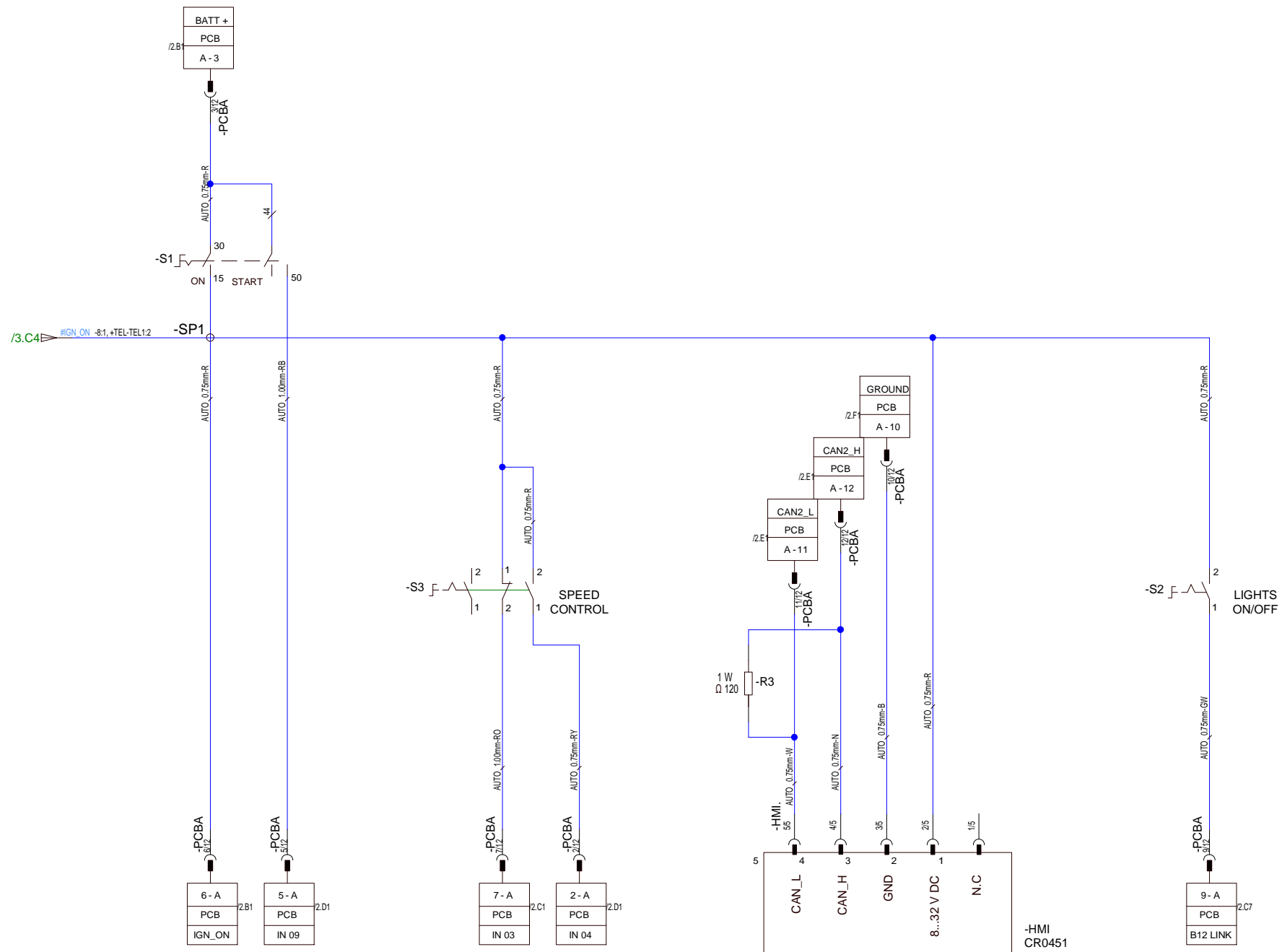
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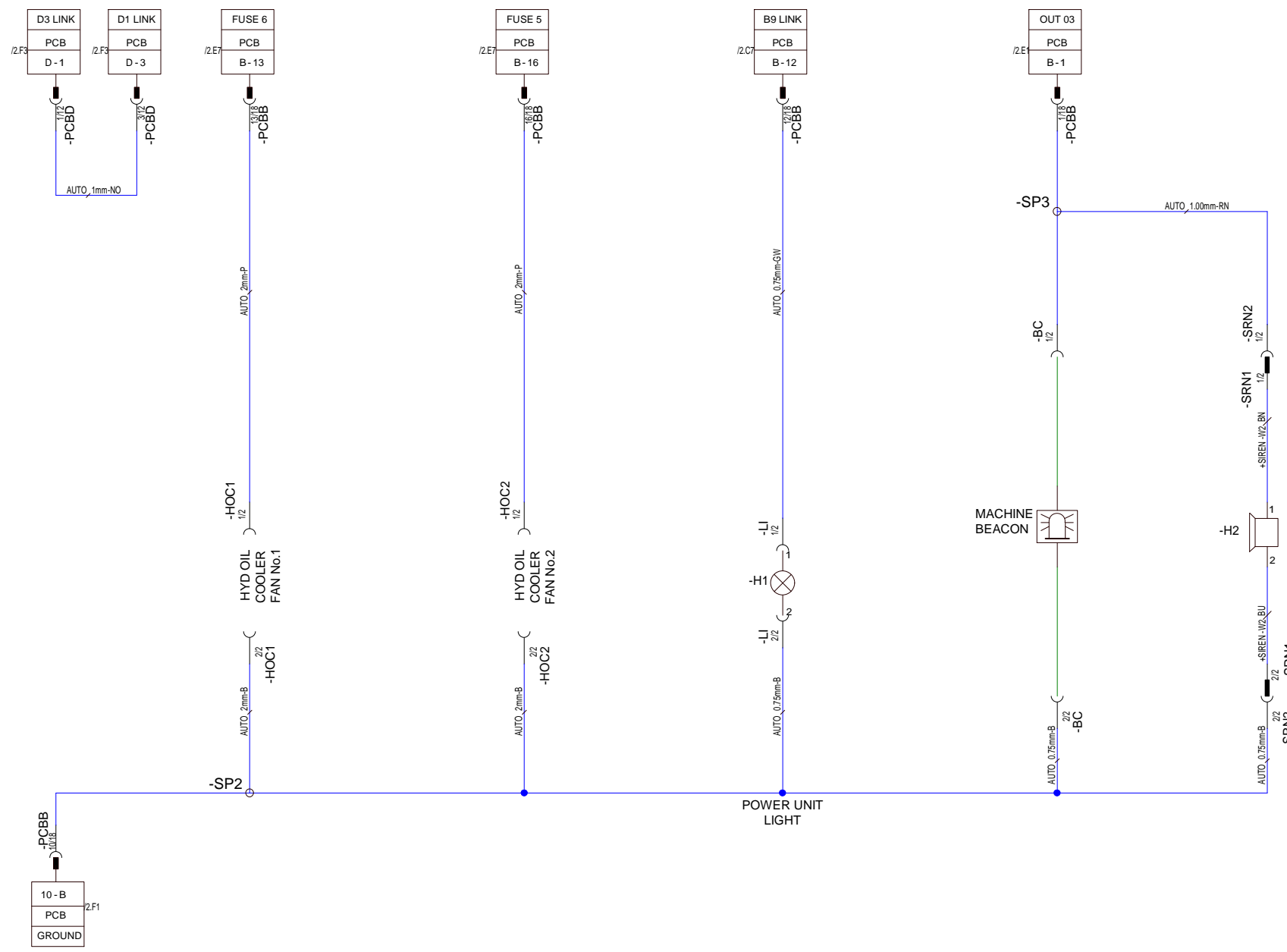
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| Changing drawing only in the E3! | 3 | Remove Preheat Link | 20.07.17 | | Date | Name |  | Type | Standard | Description: Electrical Kit | Assignment | |
| | 2 | Telematics Wiring | 16.01.17 | AJC | User | | | P.-Nr.: | | POWER UNIT | | Location +PU |
| | 1 | Cable Colours | 13.12.16 | AJC | | | | | | | | |
| | 0 | First Draft | 28.11.16 | AJC | | | | | | | | |
| | Revision | ECO | Revision text | Date | Name | Provided | | | | | Drawing number 60552902 | Sheet 3 No. 16 Sh. |


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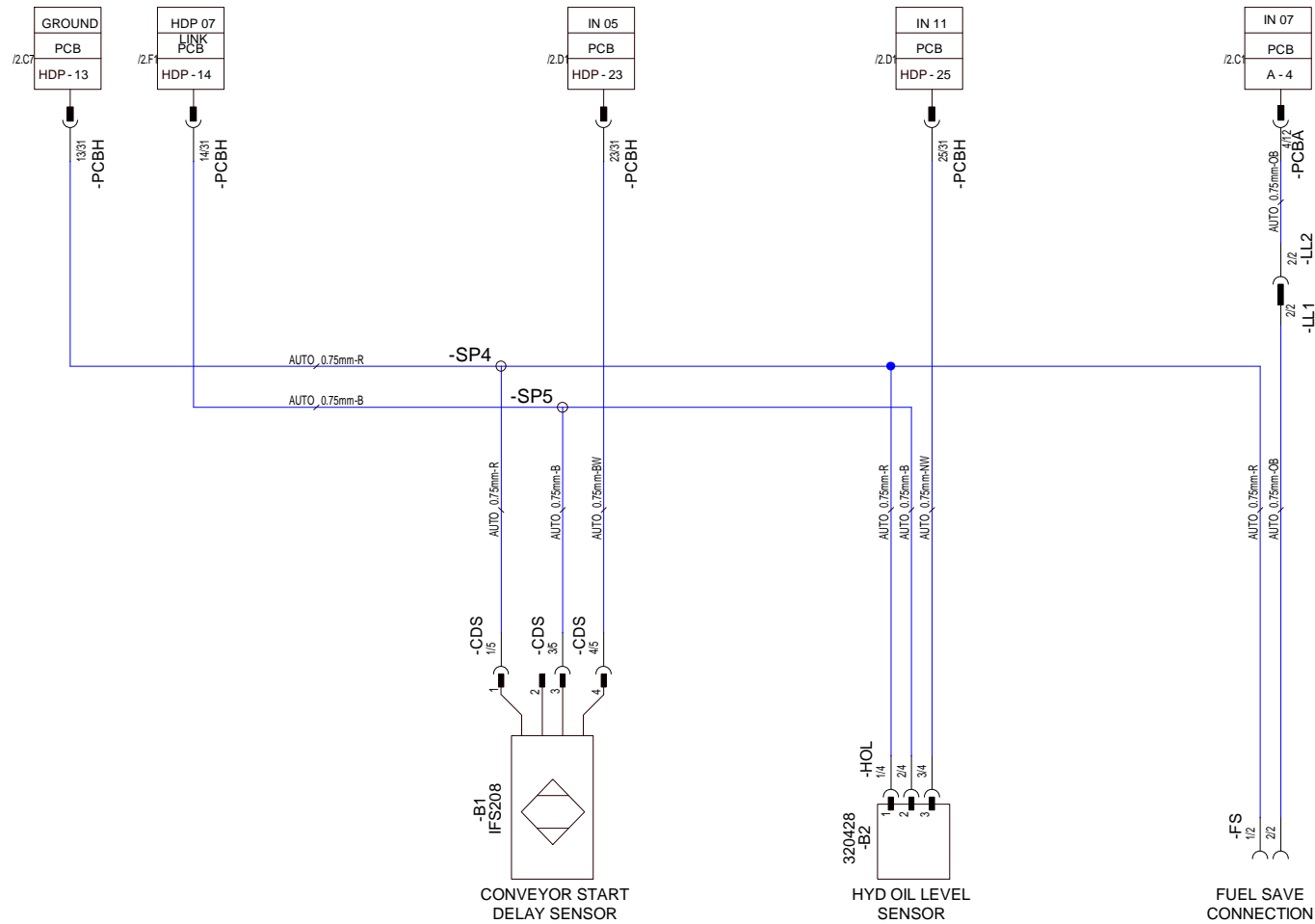
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| Changing drawing only in the E3! | 3 | | Remove Preheat Link | 20.07.17 | | Date | Name |  | Type Standard P.-Nr.: | Description: Electrical Kit POWER UNIT | Assignment |
| | 2 | | Telematics Wiring | 16.01.17 | AJC | | | | | | Location +PU |
| | 1 | | Cable Colours | 13.12.16 | AJC | User | | | | | |
| | 0 | | First Draft | 28.11.16 | AJC | Proved | | | | | |
| | Revision | ECO | Revision text | Date | Name | | | | | | |
| | Drawing number 60552902 | | | | | | | | | | Sheet 4 |
| | | | | | | | | | | No. 16 Sh. | |


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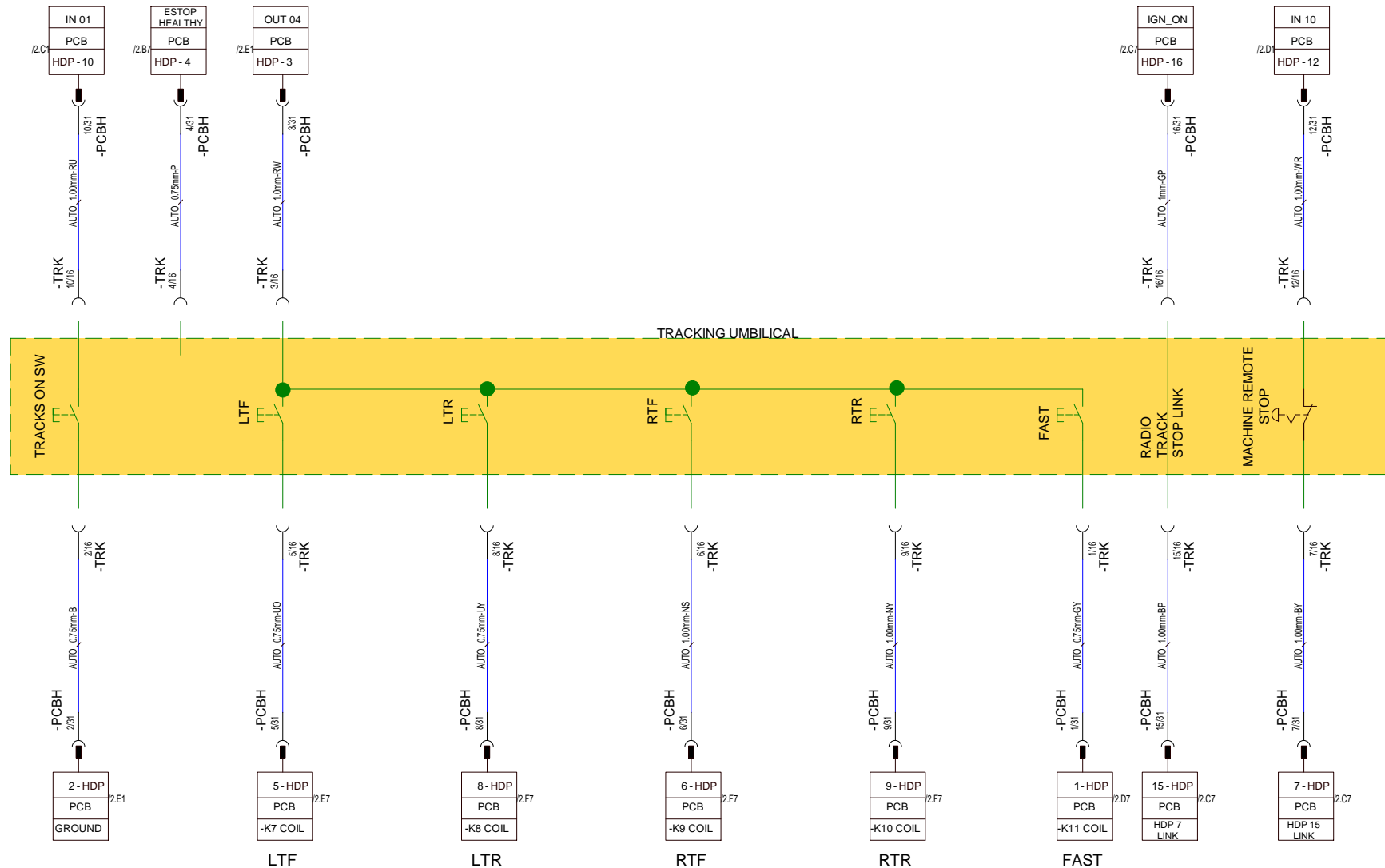
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| Changing drawing only in the E3! | 3 | | Remove Preheat Link | 20.07.17 | | | Date | Name |  | Type Standard P.-Nr.: | Description: Electrical Kit POWER UNIT | Assignment |
| | 2 | | Telematics Wiring | 16.01.17 | AJC | | | | | | | Location +PU |
| | 1 | | Cable Colours | 13.12.16 | AJC | User | | | | | | Sheet 5 |
| | 0 | | First Draft | 28.11.16 | AJC | Proved | | | | | | No. 16 Sh. |
| | Revision | ECO | Revision text | | Date | Name | | | | | | |

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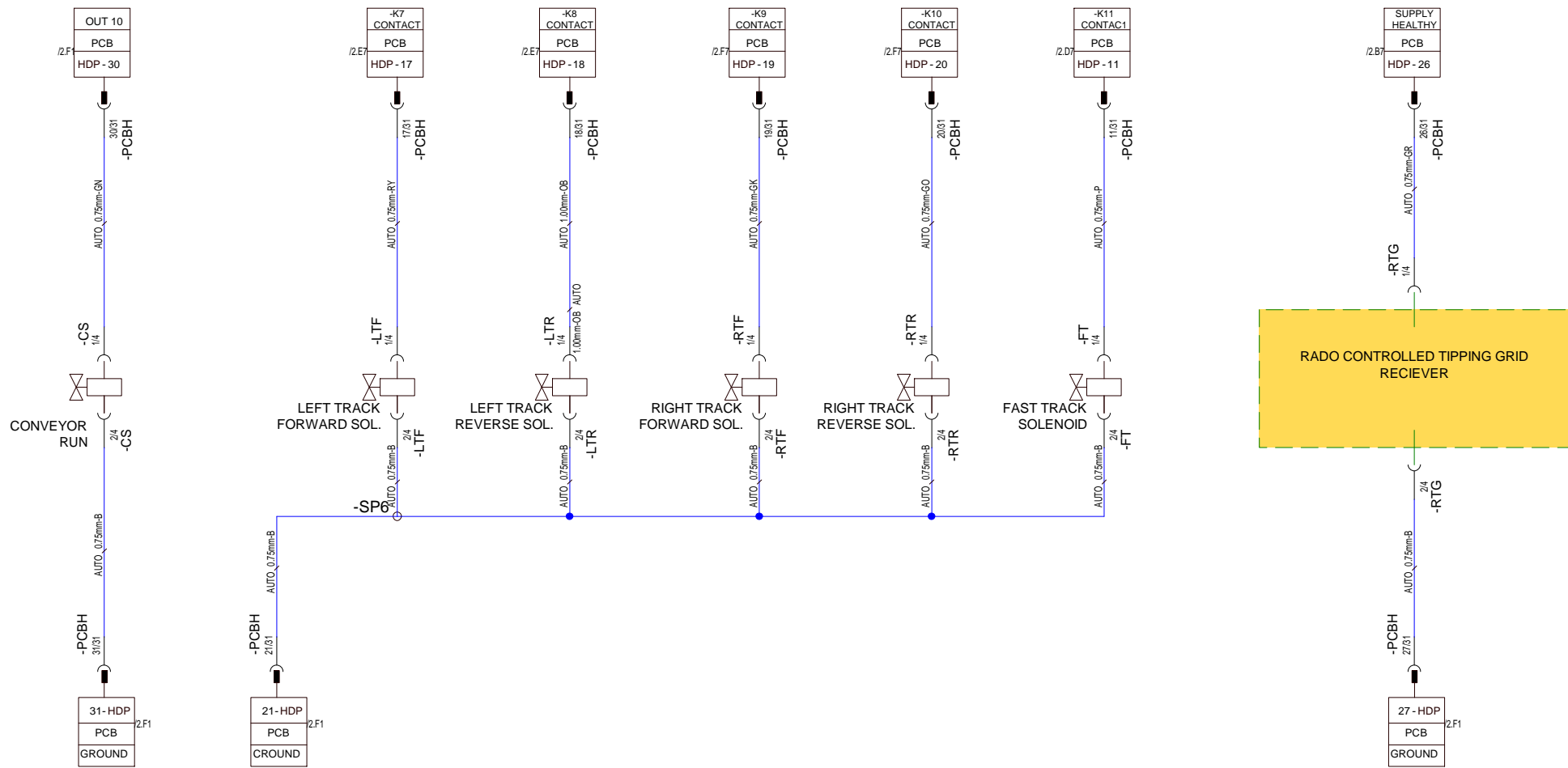
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| Changing drawing only in the E3! | 3 | Remove Preheat Link | 20.07.17 | | | Date | Name |  | Type Standard P.-Nr.: | Description: Electrical Kit POWER UNIT | Assignment | | |
| | 2 | Telematics Wiring | 16.01.17 | AJC | | | | | | | Location +PU | | |
| | 1 | Cable Colours | 13.12.16 | AJC | | User | | | | | | | |
| | 0 | First Draft | 28.11.16 | AJC | | Proved | | | | | | | |
| | Revision | ECO | Revision text | Date | Name | | | | | | | Drawing number 60552902 | Sheet 6 |
| | | | | | | | | | | | | No. 16 Sh. | |

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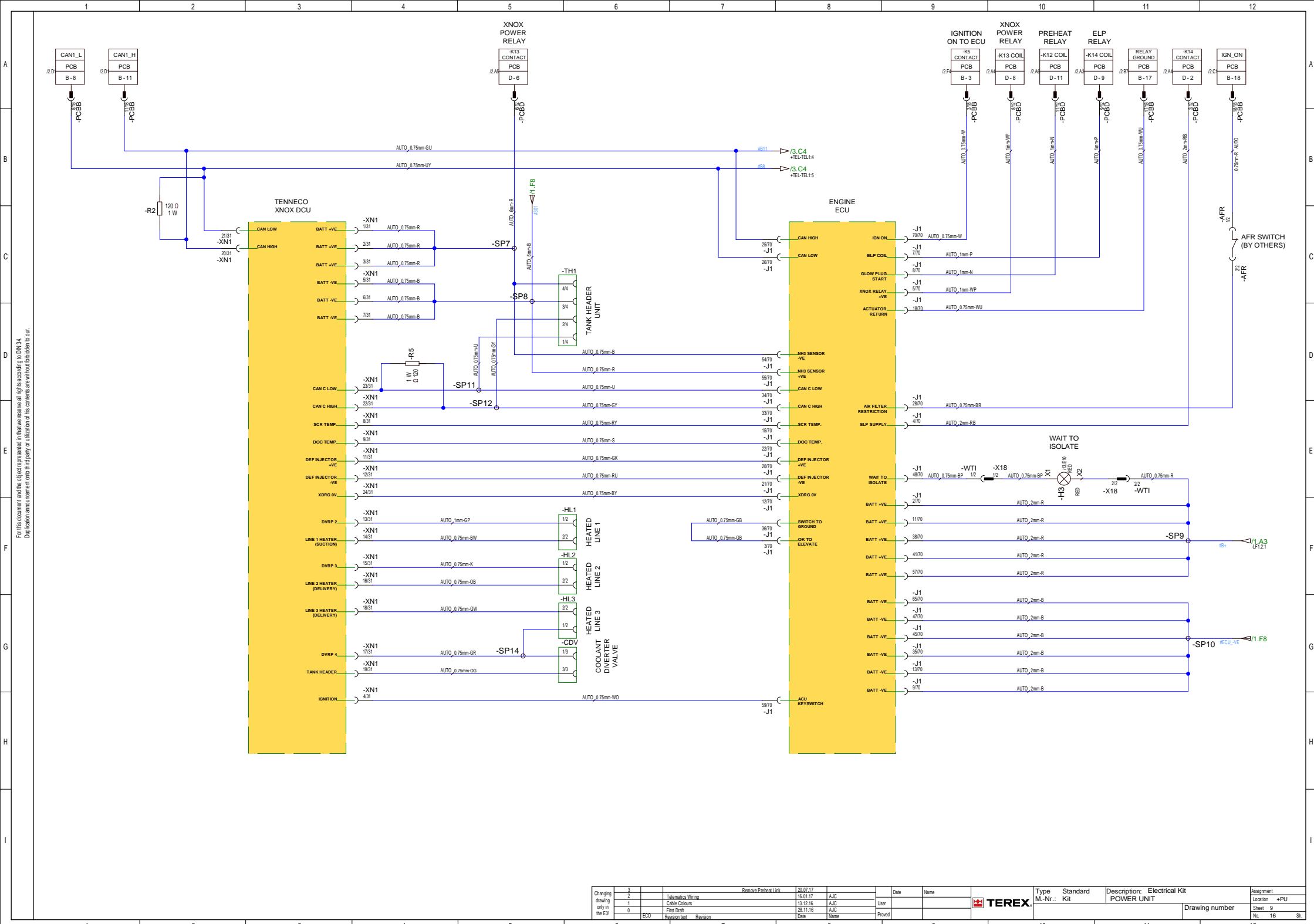


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| Changing drawing only in the E3! | 3 | Remove Preheat Link | 20.07.17 | | Date | Name | | Type | Standard | Description: | Electrical Kit | Assignment |
| | 2 | Telematics Wiring | 16.01.17 | AJC | User | | | P.-Nr.: | | POWER UNIT | Location +PU | |
| | 1 | Cable Colours | 13.12.16 | AJC | | | | | | | | |
| | 0 | First Draft | 28.11.16 | AJC | | | | | | | | |
| | Revision | ECO | Revision text | Date | | | | Name | Provided | | Drawing number 60552902 | Sheet 7 No. 16 Sh. |

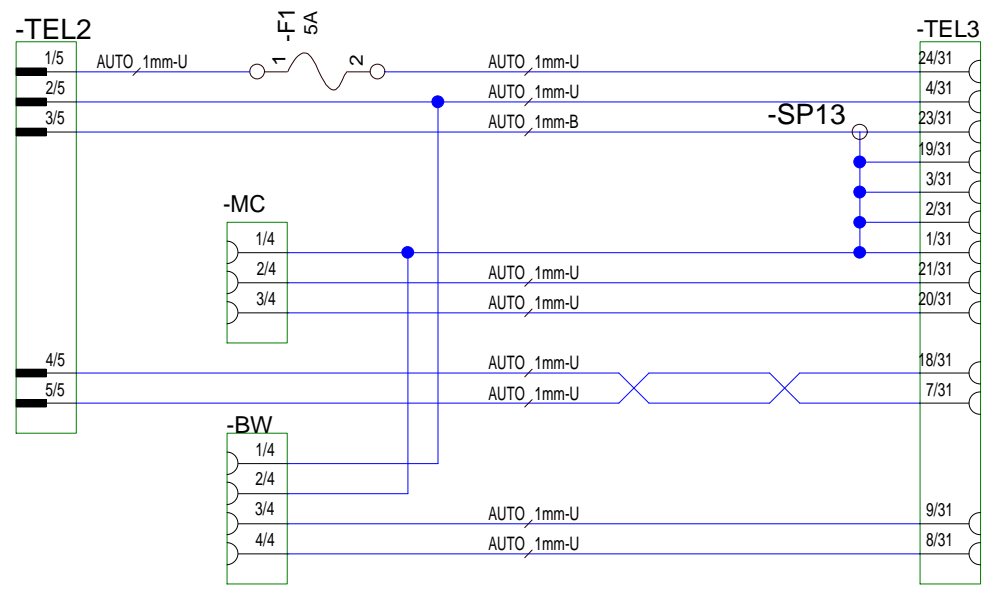
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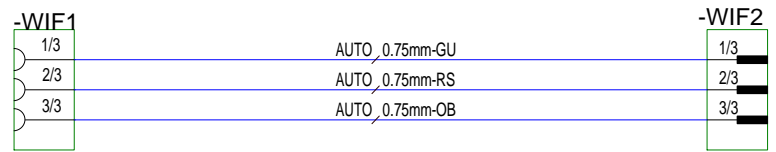
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| | 2 | | Telematics Wiring | 16.01.17 | AJC | | | | | | |
| | 1 | | Cable Colours | 13.12.16 | AJC | User | | | | | |
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| Revision | ECO | | Revision text | Date | Name | | | | | Drawing number 60552902 | |



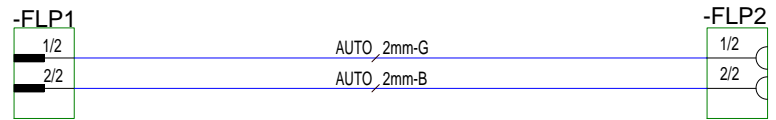
TELEMATICS




WATER IN FUEL

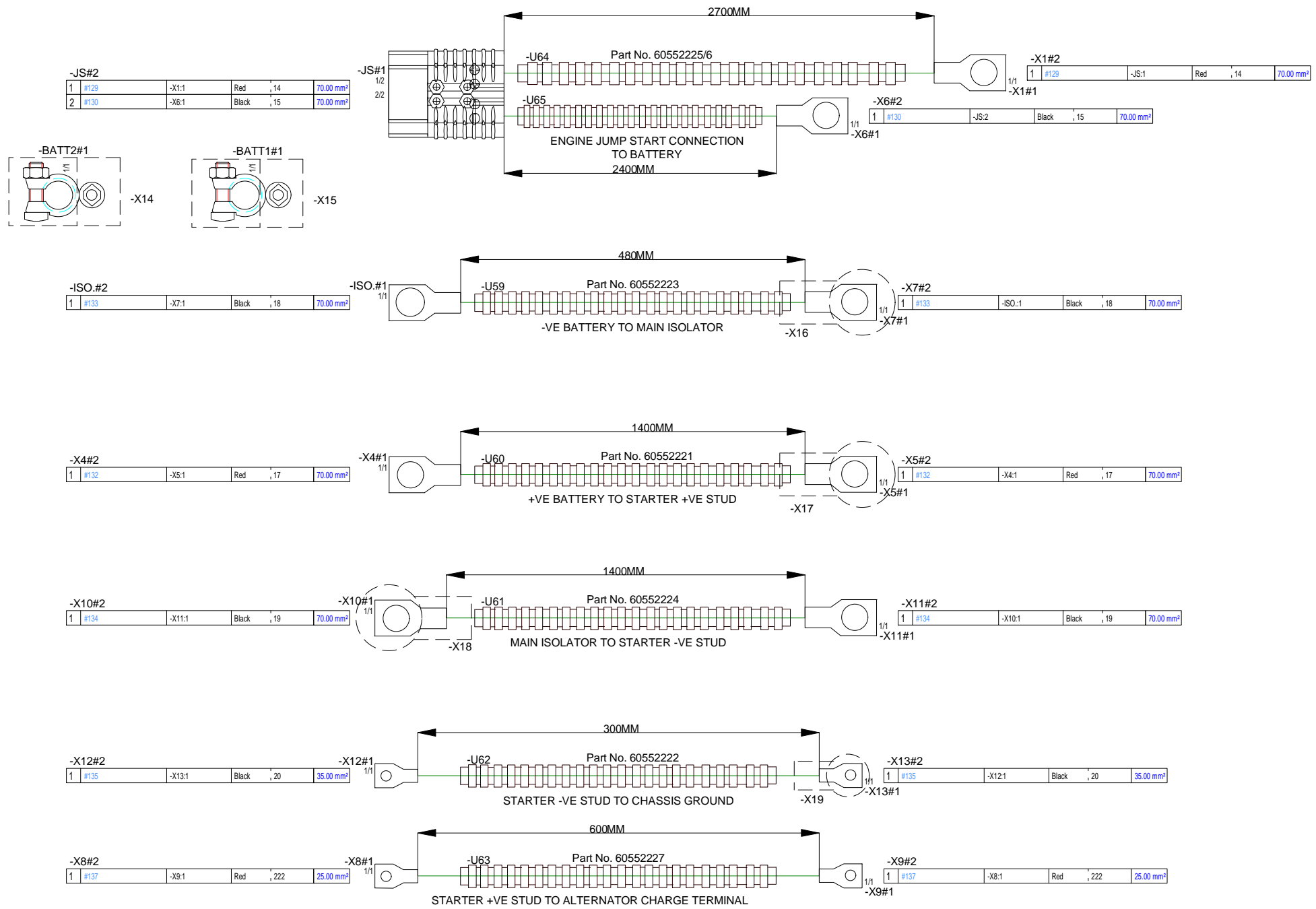


FUEL LIFT PUMP



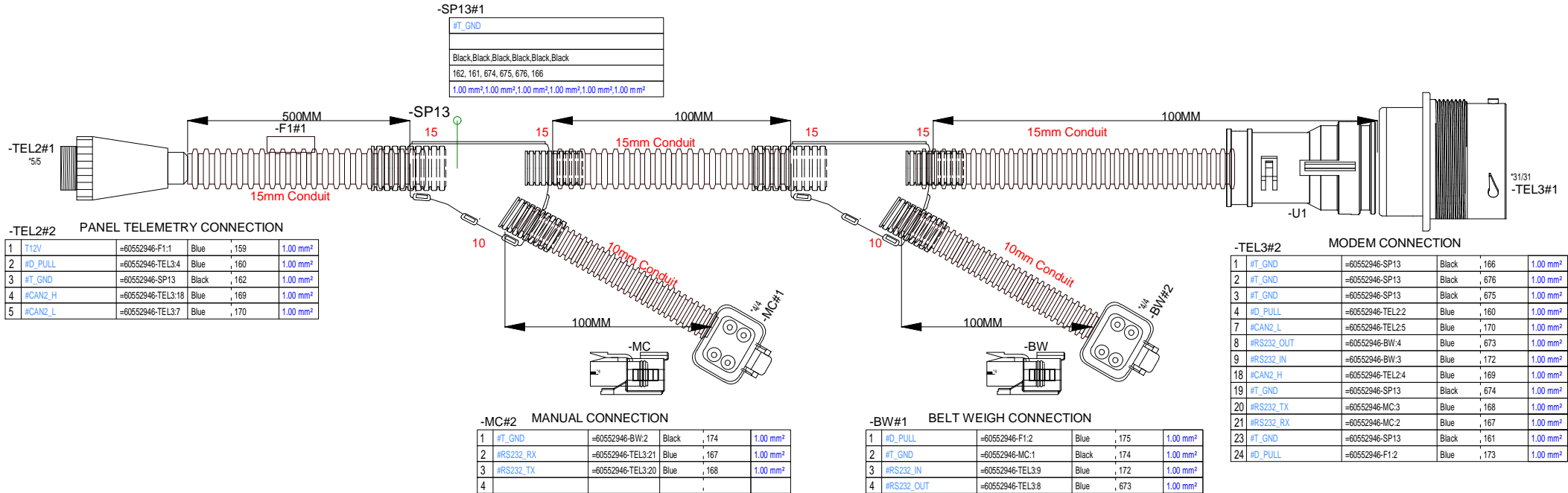
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| | 2 | | Telematics Wiring | 16.01.17 | AJC | | | | | | | | Location | |
| | 1 | | Cable Colours | 13.12.16 | AJC | | | | | | | | | |
| | 0 | | First Draft | 28.11.16 | AJC | | | | | | | | | |
| | Revision | ECO | Revision text | Date | Name | Proved | | | | | | | | |
| | | | | | | | | | | Drawing number 60552902 | | Sheet 10 No. 16 Sh. | | |

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| | | | | | | | | | | | |
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| Changing drawing only in the E3! | 3 | Remove Preheat Link | 20.07.17 | | Date | Name | | Type P.-Nr.: | Standard | Description: Electrical Kit POWER UNIT | Assignment Location +BATT |
| | 2 | Telematics Wiring | 16.01.17 | AJC | | | | | | | |
| | 1 | Cable Colours | 13.12.16 | AJC | User | | | | | | |
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| Revision | ECO | Revision text | Date | Name | | | | | | Drawing number 60552902 | No. 16 Sh. |

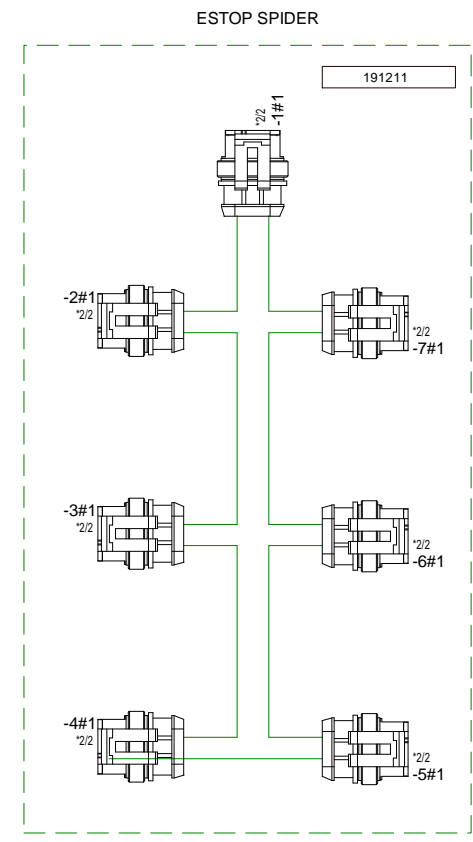
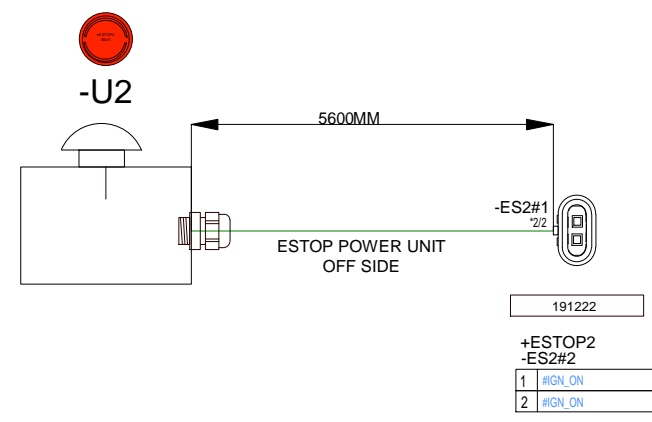
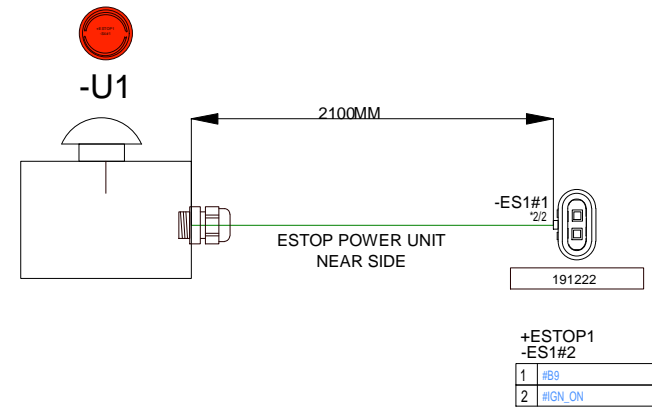
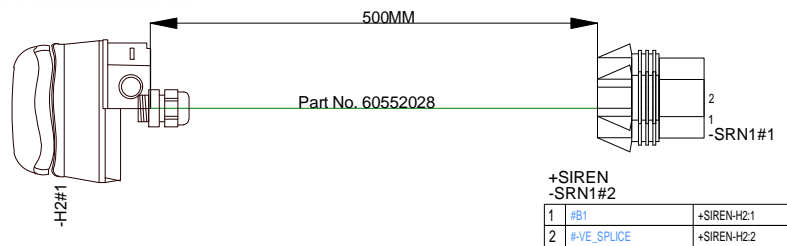
TELEMETRY HARNESS - 60552946



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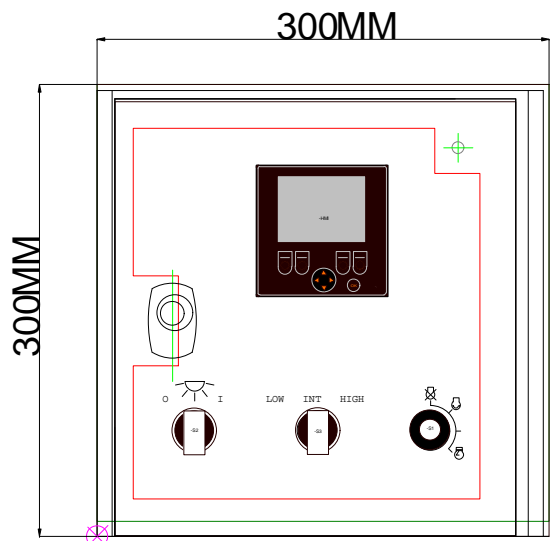
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| | 2 | Telematics Wiring | 16.01.17 | AJC | | | | | | |
| | 1 | Cable Colours | 13.12.16 | AJC | User | | | | | |
| | 0 | First Draft | 28.11.16 | AJC | Proved | | | | | |
| Revision | ECO | Revision text | Date | Name | | | | | Drawing number 60552902 | Sheet 14 No. 16 Sh. |

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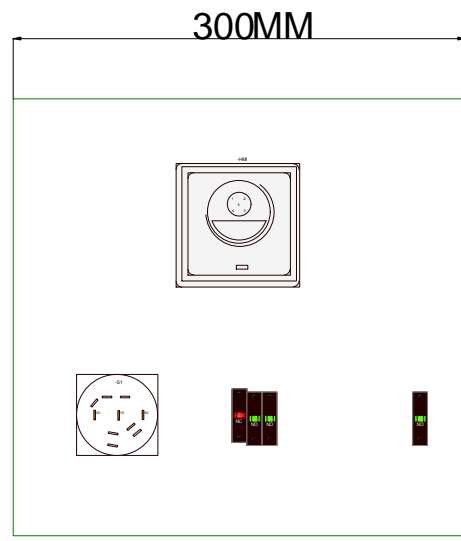


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| | 2 | Teleomatics Wiring | 16.01.17 | AJC | | | | P.-Nr.: | | | Location +CHAS |
| | 1 | Cable Colours | 13.12.16 | AJC | User | | | | | | Sheet 15 |
| | 0 | First Draft | 28.11.16 | AJC | Proved | | | | | Drawing number 60552902 | No. 16 Sh. |
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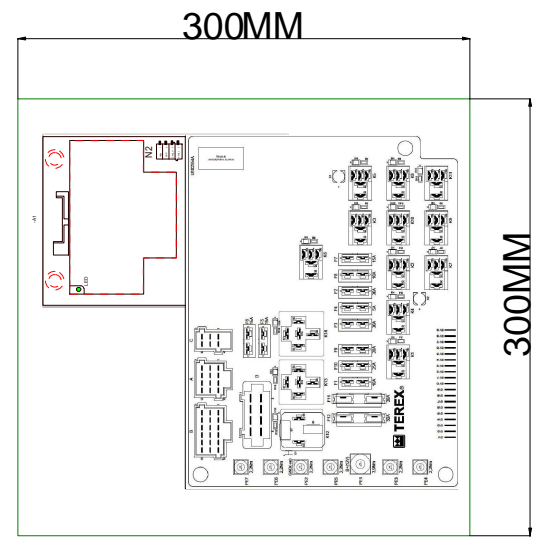
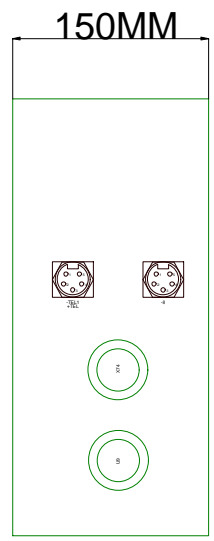
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FRONT



RHS

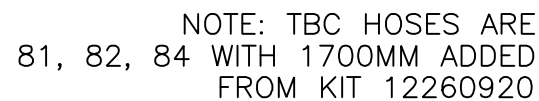


INTERNAL


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| | 1 | | Cable Colours | 13.12.16 | AJC | | | | | | | |
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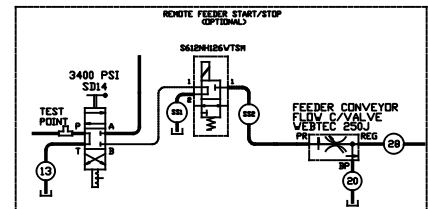
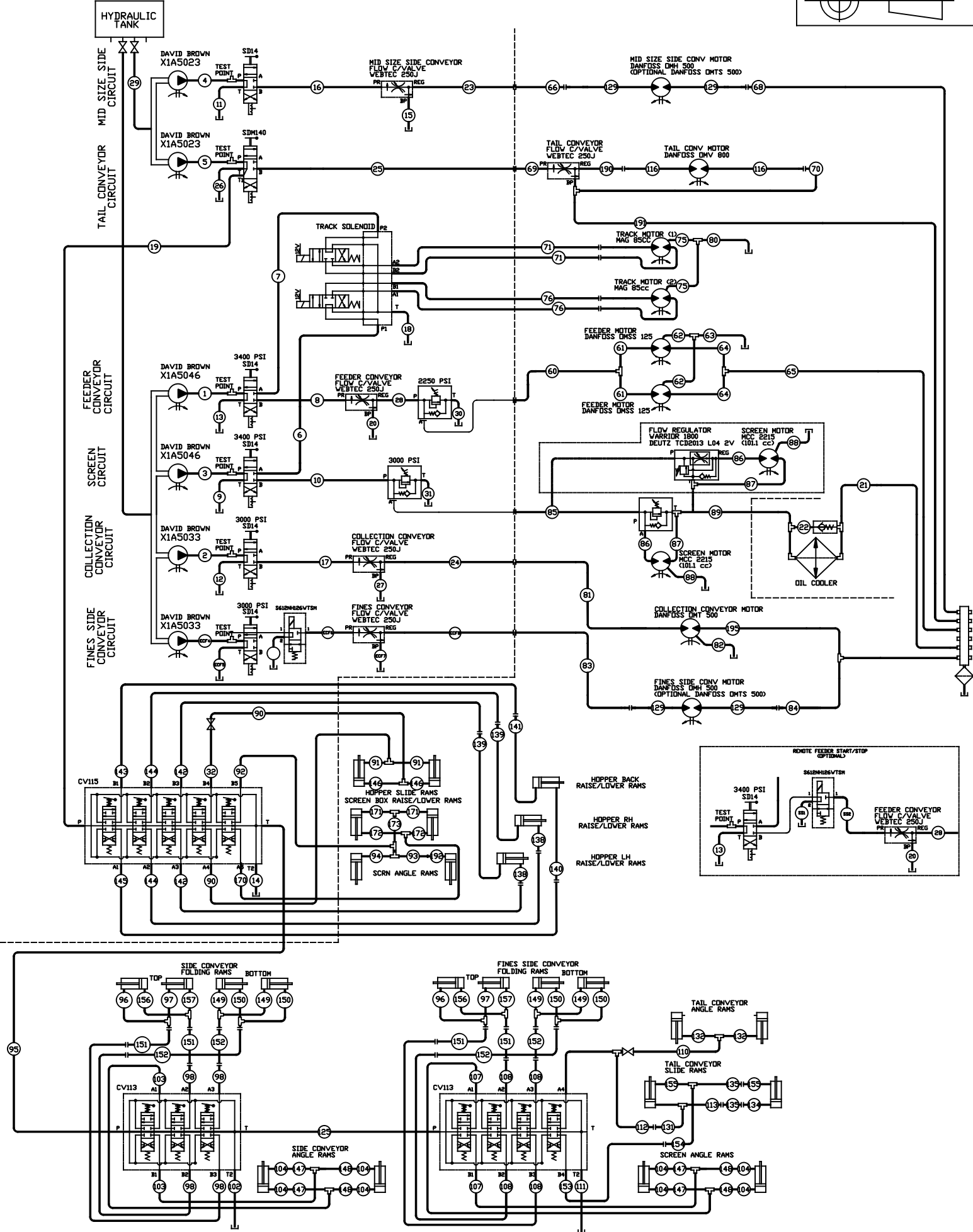
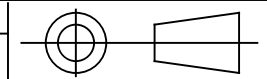
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
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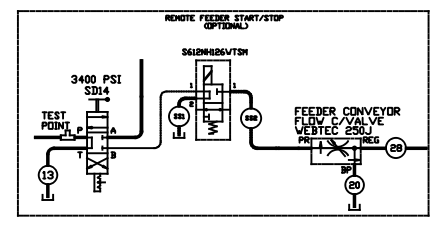



NOTE: CV113 & CV114
REMAIN IN SAME LOCATION

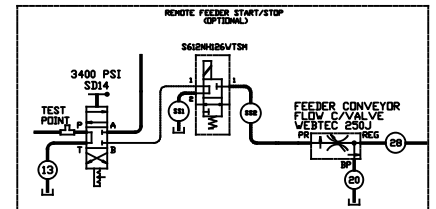
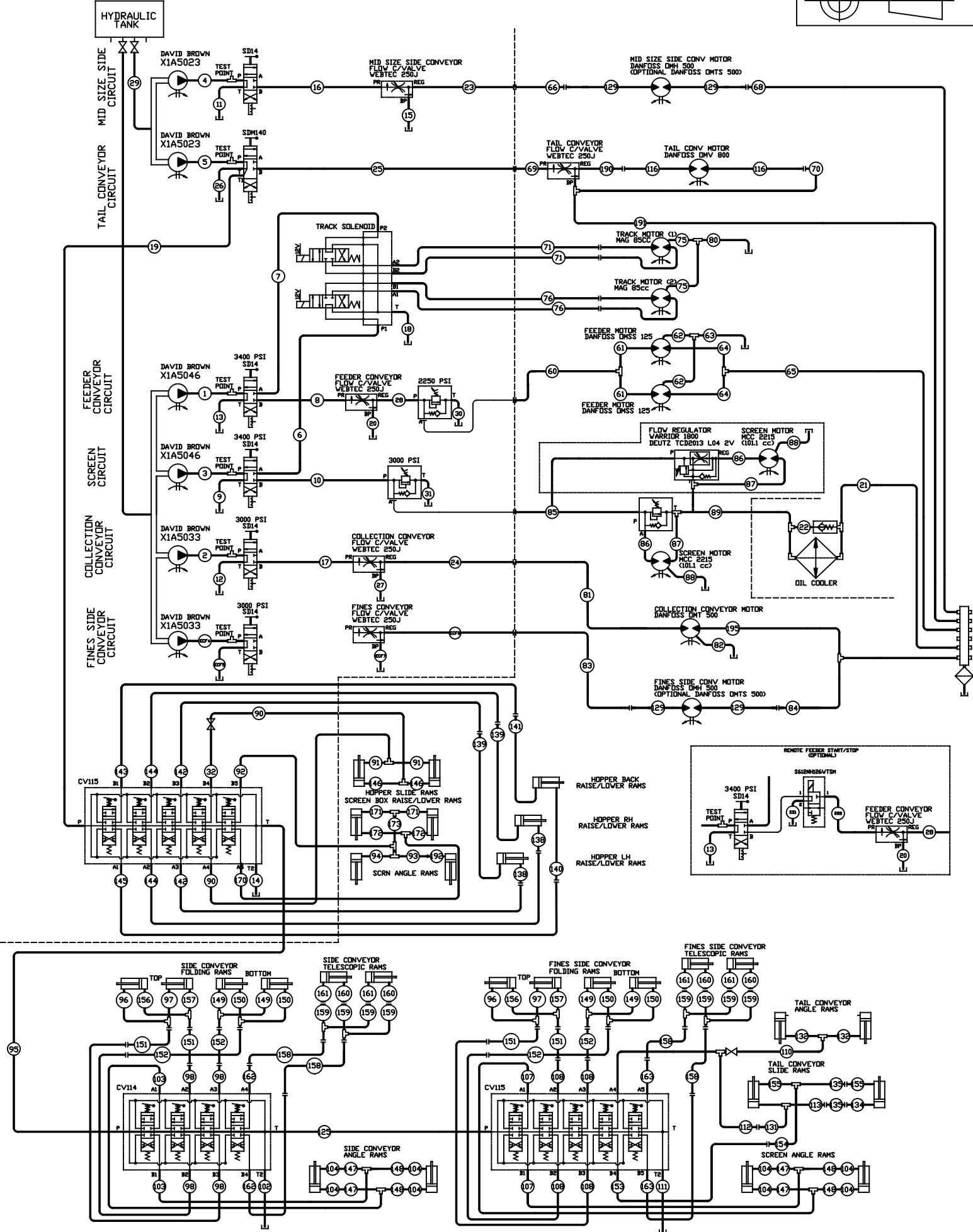
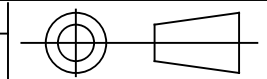
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| WARRIOR 1400 | | | HYDRAULIC CIRCUIT TEIR 3 NO MID CONV, REVERSED FINES BELTFEEDER & JACKUP BOX | | 12260110 | | .DWG | |
| | | | | | SHEET OF | | BOOKS | |
| SCALE REF. | DRN. BY | DATE | CHD. BY | DATE |  POWERSCREEN INTERNATIONAL DISTRIBUTION LIMITED | | | |
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


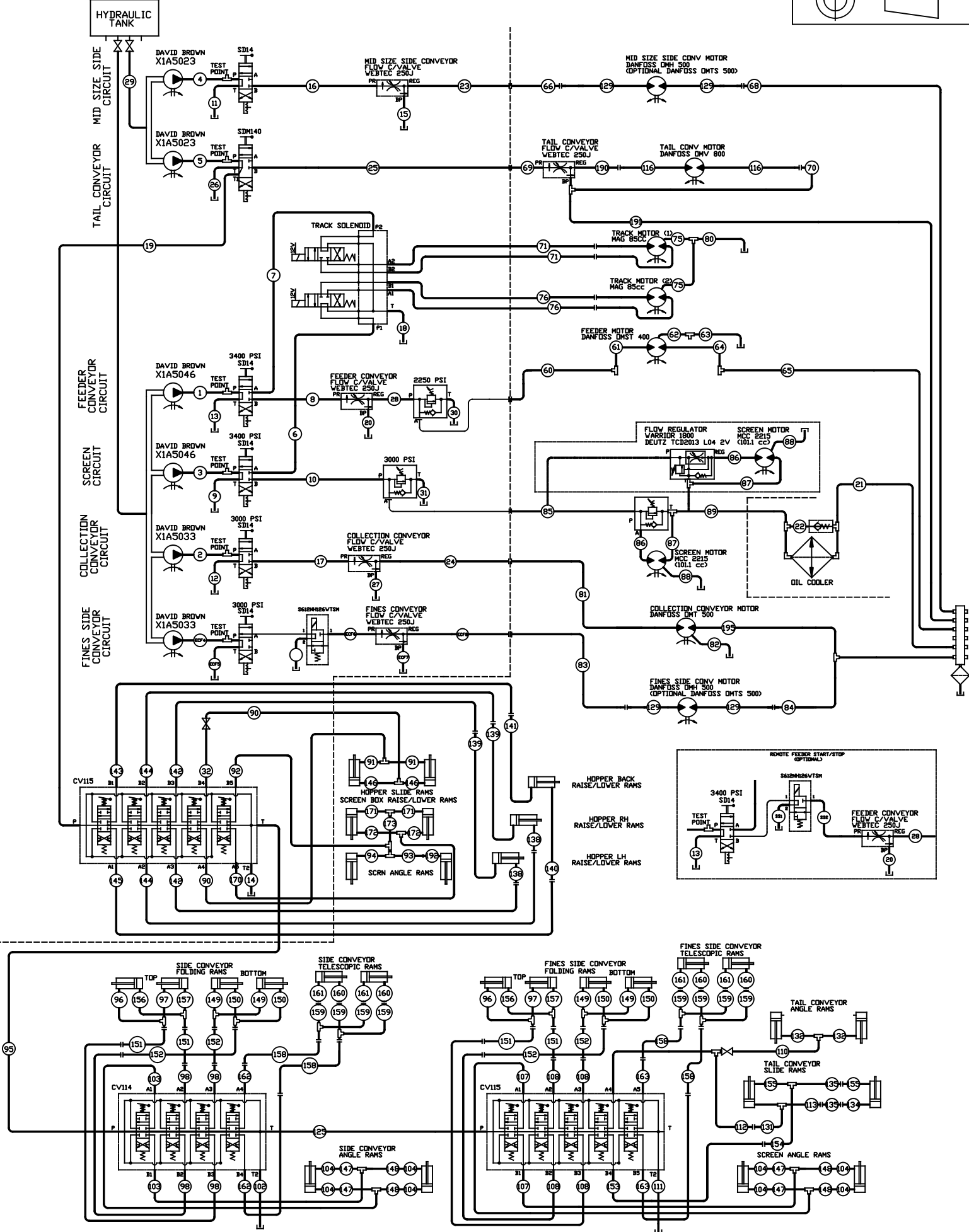
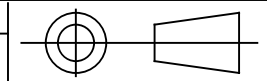
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| | | | | | SHEET ONE OF ONE | |
| SCALE REF. | DRN. BY | DATE | |  | POWERSCREEN INTERNATIONAL DISTRIBUTION LIMITED | |
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|--------------|---------|------------|---|---|---|--|
| MACHINE TYPE | | | TITLE | | DRAWING NUMBER | |
| WARRIOR 1800 | | | TIER 3 POWERUNIT APRON FEEDER & JACKUP BOX COLL/FINES SPLIT – QUAD PUMP | | 12360110 | |
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|--------------|---------|------------|--|---|---|--|
| MACHINE TYPE | | | TITLE | | DRAWING NUMBER | |
| WARRIOR 1800 | | | TIER 3 POWERUNIT BELTFEEDER, JACKUP, TELE SIDES COLL/FINES SPLIT – QUAD PUMP | | 12360110 | |
| | | | | | SHEET ONE OF ONE | |
| | | | | | | |
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MACHINE TYPE

WARRIOR 1800

TITLE

TIER 3 POWERUNIT
APRON FEED, JACKUP, TELE SIDES
COLL/FINES SPLIT - QUAD PUMP

DRAWING NUMBER

12360110

SHEET ONE OF ONE

SCALE REF.

DRN. BY

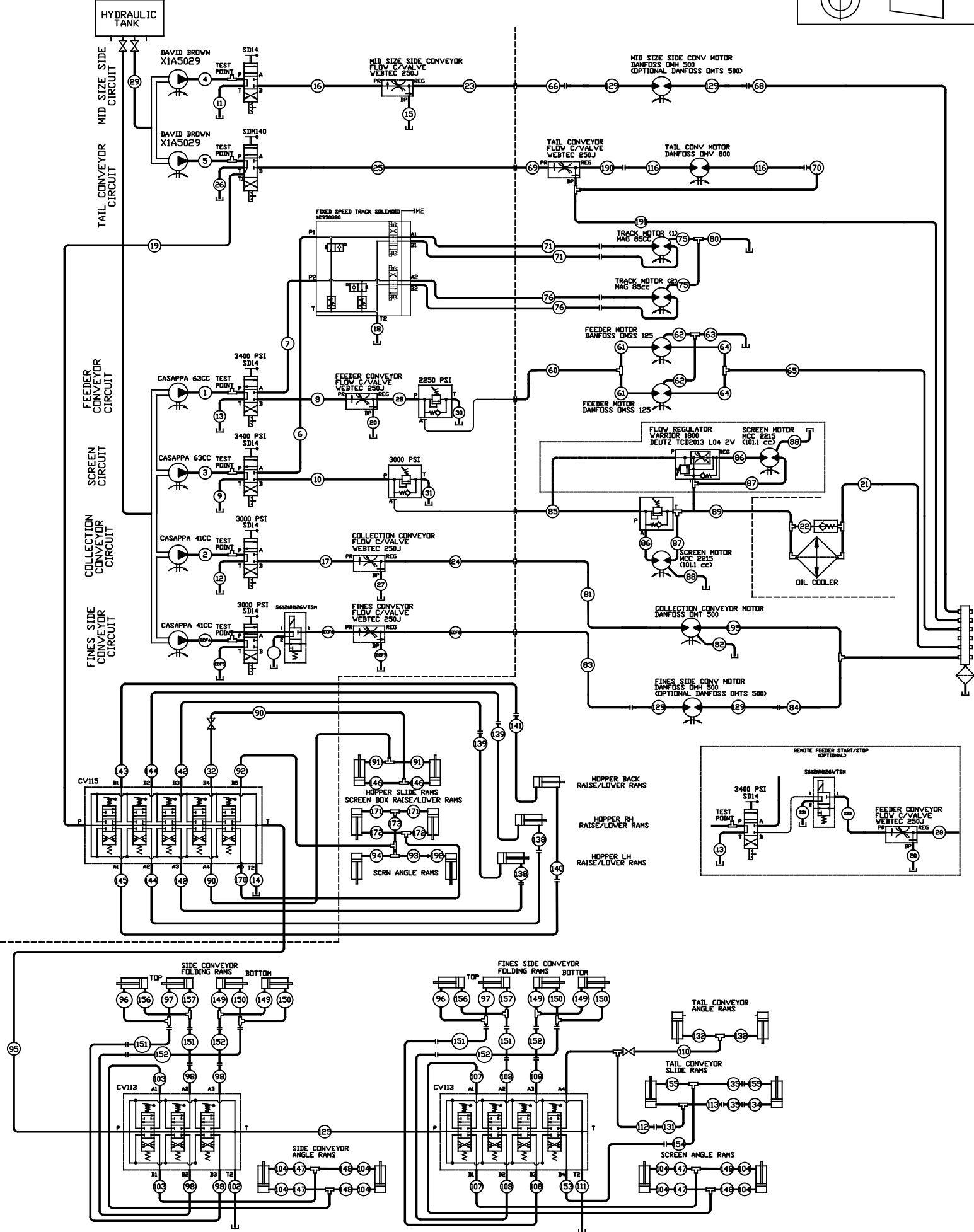
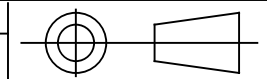
DATE

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MACHINE TYPE

TITLE

DRAWING NUMBER

WARRIOR 1800

STAGE IIIA FIXED SPEED POWERUNIT
BELTFEEDER & JACKUP BOX
COLL/FINES SPLIT - QUAD PUMP

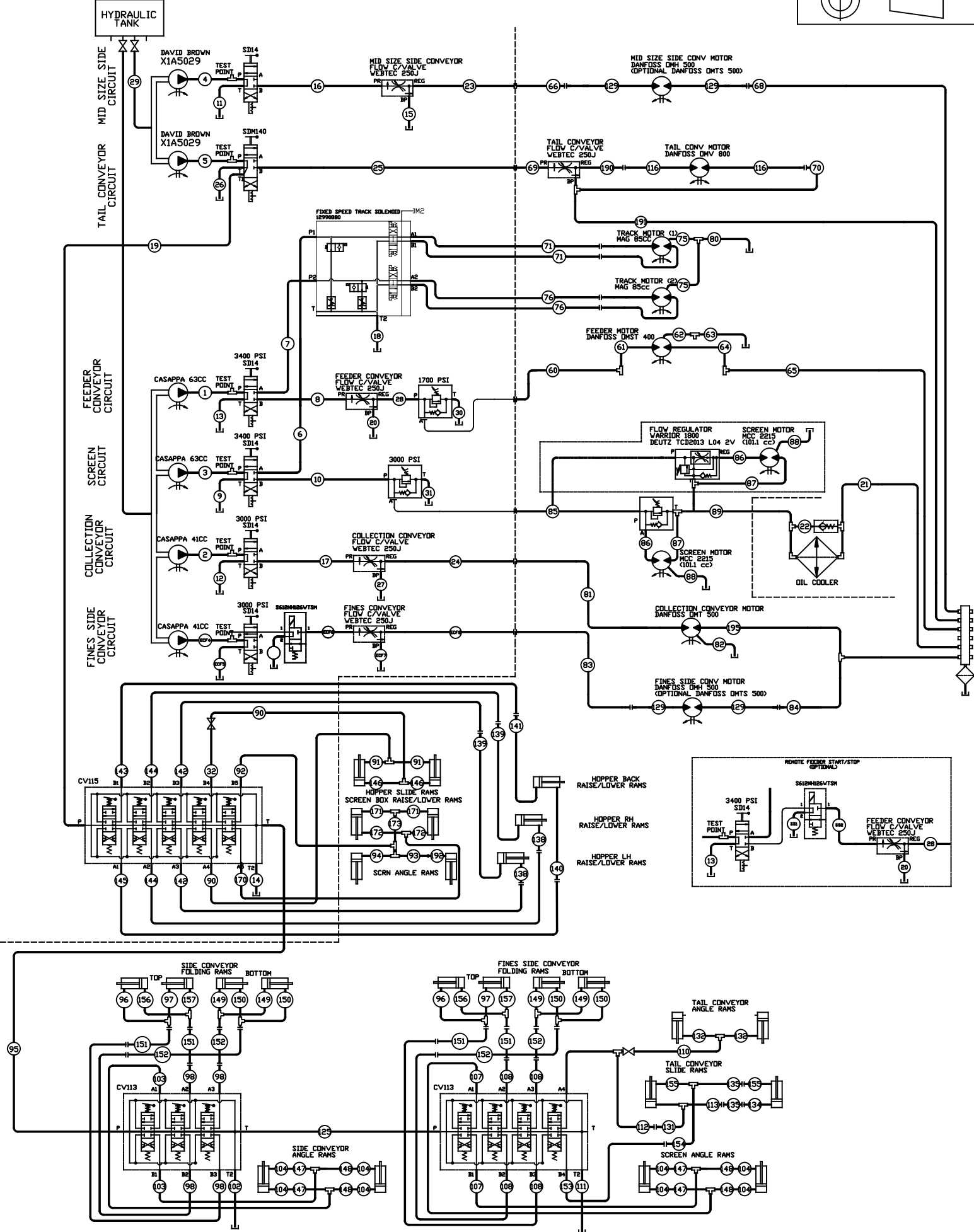
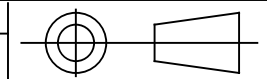
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MACHINE TYPE

TITLE

DRAWING NUMBER

WARRIOR 1800

STAGE IIIA FIXED SPEED POWERUNIT
APRON FEEDER & JACKUP BOX
COLL/FINES SPLIT - QUAD PUMP

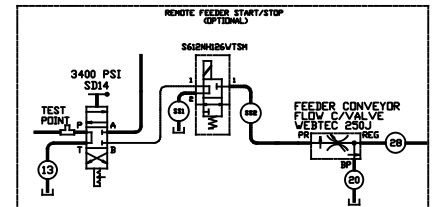
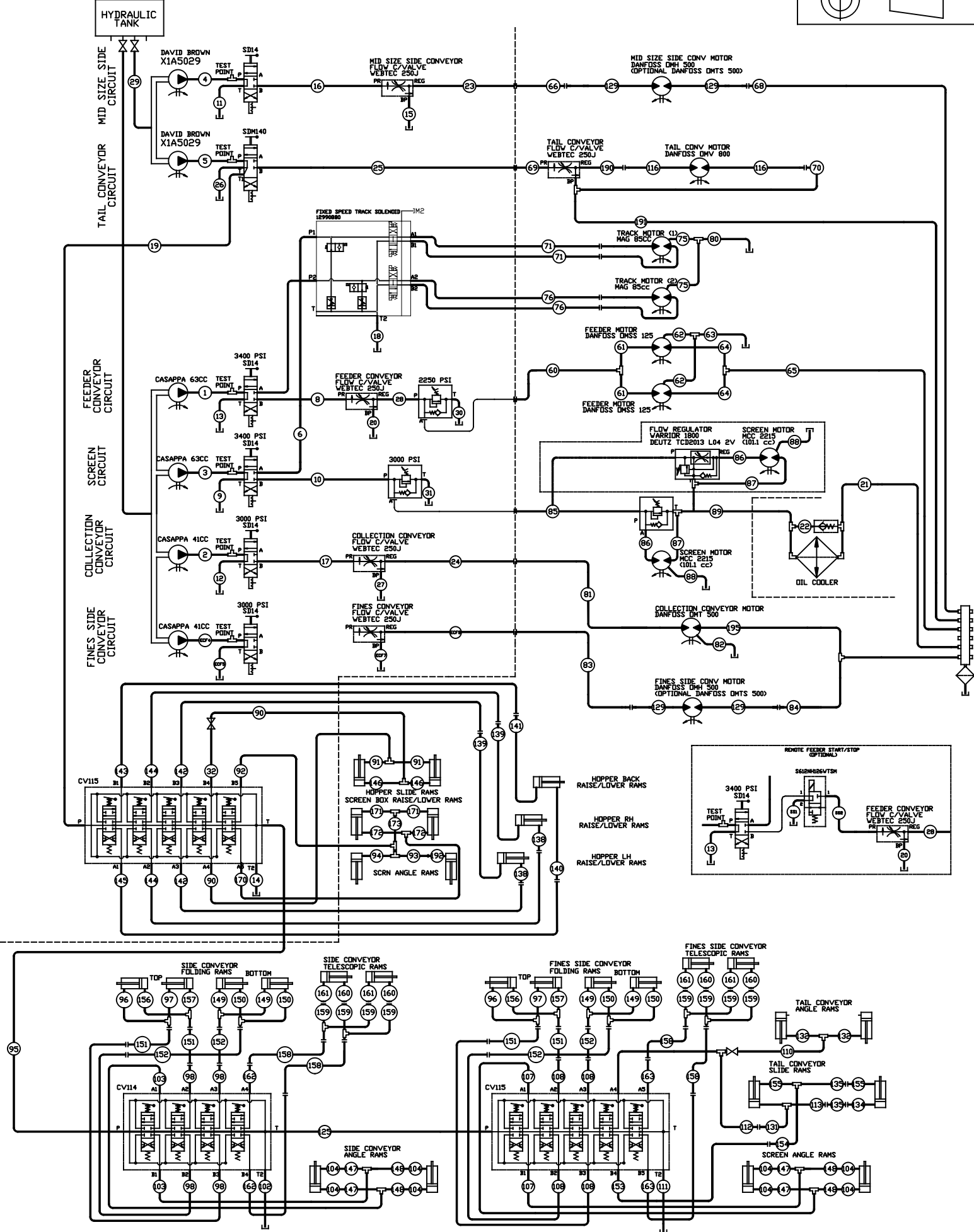
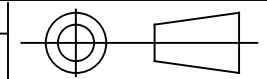
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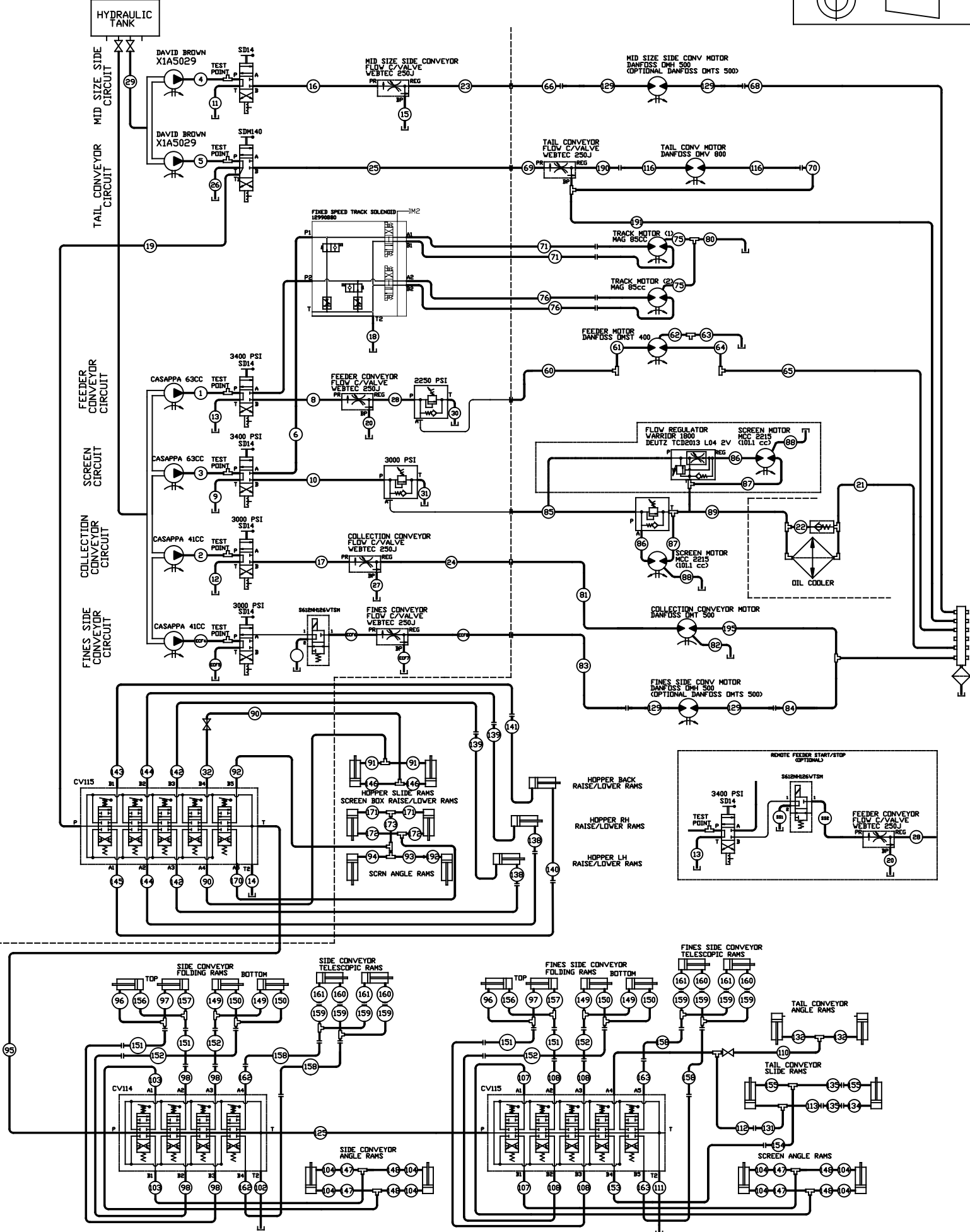
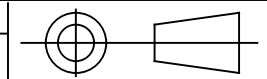
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| MACHINE TYPE | | | TITLE | DRAWING NUMBER |
|--------------|---------|------------|--|---|
| WARRIOR 1800 | | | STAGE IIIA FIXED SPEED POWERUNIT BELTFEEDER, JACKUP, TELE SIDES COLL/FINES SPLIT - QUAD PUMP | SHEET ONE OF ONE |
| SCALE REF. | DRN. BY | DATE | | POWERSCREEN INTERNATIONAL DISTRIBUTION LIMITED |
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MACHINE TYPE

TITLE

DRAWING NUMBER

WARRIOR 1800

STAGE IIIA FIXED SPEED POWERUNIT
 APRON FEED, JACKUP, TELE SIDES
 COLL/FINES SPLIT - QUAD PUMP

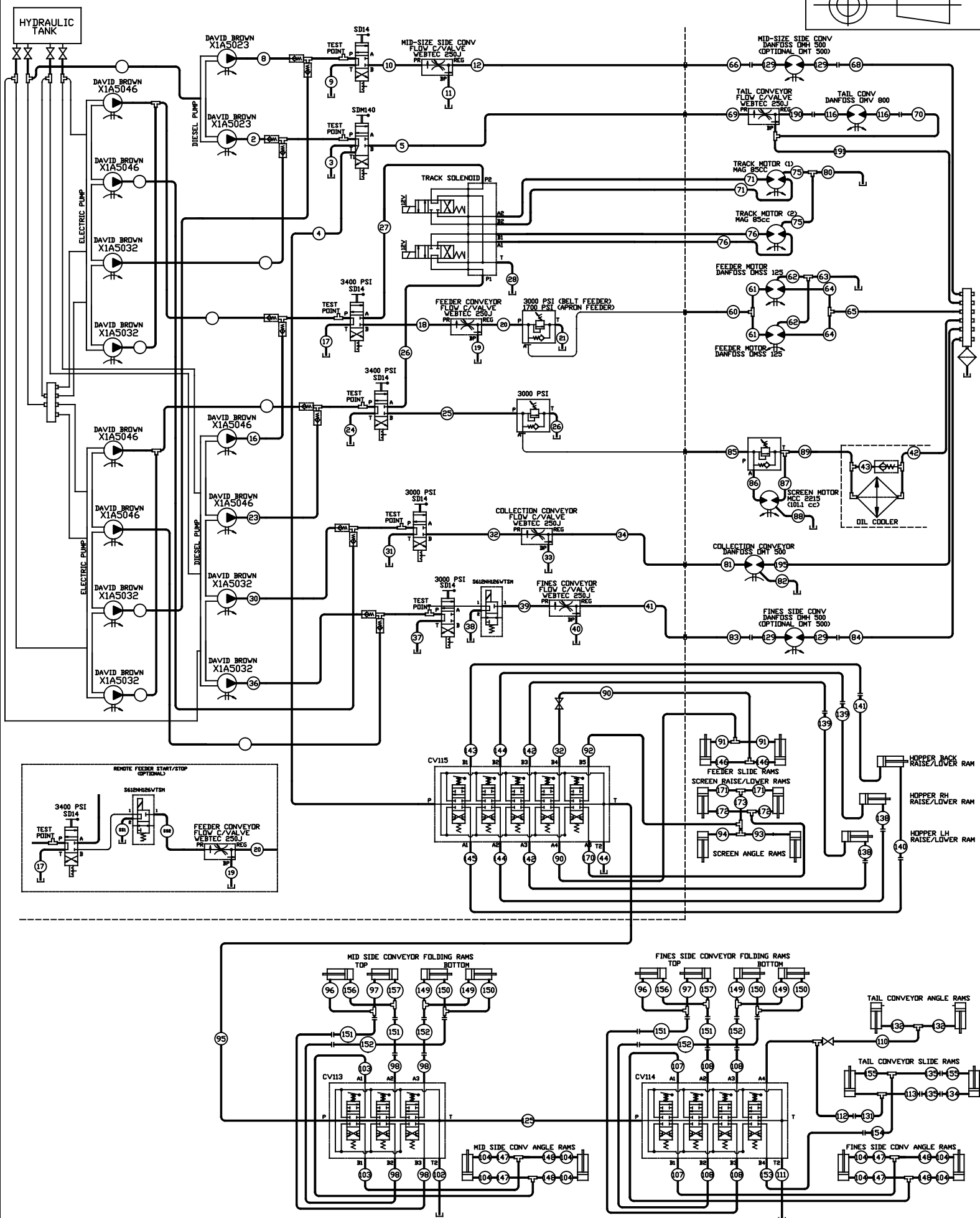
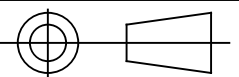
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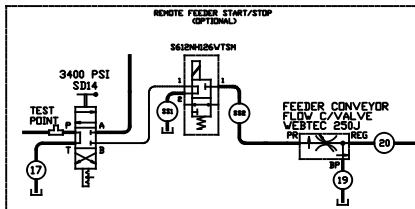
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| WARRIOR 1800 DUAL POWER | | C4.4 T3 ENGINE (2200RPM) BELTFEEDER & JACKUP BOX QUAD PUMP ENGINE & MOTOR | | 12360110 | |
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|----------------------------|---------|------------|---|--|------------------|--|
| MACHINE TYPE | | | TITLE | | DRAWING NUMBER | |
| WARRIOR 1800 DUAL POWER | | | CAT STAGE IIIA CONSTANT SPEED BELTFEEDER & JACKUP BOX QUAD PUMP ENGINE & MOTOR | | 12360110 | |
| | | | | | SHEET ONE OF ONE | |
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Email: sales@powerscreen.com

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