



Jaw Crusher Operations

It is imperative that the operator carries out regular and diligent checks before operating the plant especially with operational safety in mind including (but not limited to) those listed below.

Additionally, the operator should always consider what particular safety hazards could occur at specific operating sites and take steps to eliminate them before commencing work.

Pre Start Checks

All PPE MUST BE WORN

Read and fully understand operator's manual before operating machine

The plant may only be operated if the safety instructions provided in the operator's manual have been observed and the described procedures have been performed.

Pre start checks should concentrate on ensuring that the machine is ready to work safely and reliably.

Checks should include :

- Read and understand all warning signs on machine
- Engine coolant
- Engine Oil
- Feeder Oil
- Hydraulic Oil
- Fuel level
- **Emergency Stops**
- Check jaw liner and cheek plate bolts
- Check all guards and hand rails are in position and secure

ALL WALKWAYS AND AREAS AROUND THE MACHINE ON GROUND LEVEL SHOULD BE CLEAN AND FREE OF LOOSE MATERIAL AND BUILD UP

Always use the appropriate walkways!

(no walking over bonnet or on top of the machine)

Safe Start-Up Procedure:

Before starting up the machine it is important that all safety aspects are checked:

- Observe all safety warnings
- Check for build up under machine
- Ensure the full length of both tracks are in contact with a firm level surface
- Check the crushing chamber and feed hopper is empty
- Check discharge opening measurement and adjust if necessary
- Check all 5 emergency stops are operational and in the out position
- Manual Clutch only. Ensure the clutch is disengaged
- Check the throttle or toggle switch is at idle position
- Check that all guards are in position and secure
- Visually check that all tools and equipment that are hazardous to operation are removed from the immediate site

Don't crank the engine for too long, if it doesn't start promptly you can do serious damage to the starter motor and over heat the wiring, if it won't start check for a problem.

While the engine is warming up carry out a visual inspection around the machine for any oil leaks, wear and tear, loose bolts etc.

After Start Checks:

Once you have started the machine check that the oil pressure is OK, if not shut it down and find out why. (serious damage can be done to the engine if allowed to continue to run).

- Observe all safety warnings
- With engine idling, start the product conveyor
- Engage crusher
- While machine is warming up check for leaks or faults
- Increase engine rpm to 1750-1800 rpm
- Start feeder
- Check the stability of the plant. The chassis **SHOULD NOT** have undue vibration during operation
- Run the plant empty for a short period of time and check for abnormal noises, vibration or excessive heat from shaft bearings
- Ensure that all drives are running before any feed is introduced to the plant and that the feed is maintained at a constant rate, irregular and excessive feed rates reduce the efficiency of the plant

IN AN EMERGENCY SITUATION, STOP THE ENGINE USING THE EMERGENCY STOP BUTTONS.

Avoid standing on the upper maintenance platform whilst the crusher and feeder are operating

Stop feeding the feed hopper with material if an operator is standing at the controls to the feeder/control box

Never stand on any part of the machine including walkways while the machine is being walked.



Operation

A properly designed mobile crushing operation should not need any person to be present on the crusher access platform during normal crushing operations

Being on the access platform during normal operation presents the following risks:

- Struck by objects ejected from the crusher, such as bits of stone or metal.
- Being pulled into the crushing chamber when attempting to pull out contaminants (e.g. reinforcing bar).
- Struck by excavator or loader bucket if the access platform is within the working radius of the loading machine
- Falling if adequate guardrails and access arrangements are not provided
- Noise, Process noise at this level can cause deafness and adequate hearing protection is required
- Dust, especially in the case of crushing concrete, approved respiratory protection must be used
- Whole body vibration. Anyone on the platform would be subjected to constant low frequency vibration

It may be necessary for a person equipped with appropriate PPE (e.g. ear protection, dust mask, eye protection, hard hat, protective footwear, high visibility clothes) to spend a few minutes setting the feed speed initially. The feed should then be controlled from the machine feeding the crusher by varying the loading rate into the feed hopper.

Moving the machine

Make sure all personnel are clear of the machine

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 plant. Failure to observe this warning could result in danger to persons and damage to the plant.

Do not stand on any of the platforms or ladders of the Premiertrak whilst it is being manoeuvred

When manoeuvring the Premiertrak to its operating position make sure you stand well clear of the machine (away from idlers) but are in a position to have all round vision to see any obstacles, dangers that may lie ahead e.g. personnel, overhead cables, ditches, rocks etc.

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

Control valves mounted on the engine and beneath the feeder are NOT to be used to manoeuvre the Premiertrak. They are for use by service personnel only.



Shut down procedure:

Observe all safety warnings

Ensure that the feeder and crusher are empty, and that all materials have run off the conveyor

Stop the feeder

Using the speed control, decrease the engine rpm to 1200rpm (idle)

Disengage crusher

Stop the product belt

Idle the machine for at least 5 minutes before shutting down.

Stop the engine

Turn isolation key off, remove keys, shut and lock the control box to prevent unauthorised use

Following the shut down procedure above, it is recommended that at the end of production for the day the plant is routinely cleaned down and thoroughly examined to check for any damage, breakages, wear, leaks etc which should be rectified before further operations

Blocked belt procedure

If a conveyor belt is overloaded or jammed, the machine must be shut down and locked out before any work is carried out.

- 1. Shut down machine**
- 2. Lock and Tag out**
- 3. Inspect machine for the cause of the overload ? example- roller jammed, belt slipping, torn skirts, hole in belt, etc**
- 4. If the belt is to be shovelled off, all safety precautions must be observed, at no point should anyone be on the belt itself if it's above 1.5m with out hand rails or safety harness (**contact supervisor if you cannot access belt from under 1.5m in height**)**
- 5. After belt has been emptied, Inspect for any damage or causes for the blockage**
- 6. Remove Tag and Lock , run belt and check for any problems**
- 7. Make any notes on time sheet or notify supervisor if immediate action is required**



Folding Hopper Plates

Do Not attempt to undo any fastenings holding the hopper sides or end plate until securely held.

When the hopper side plates are lowered into the travelling position, one of the hopper side plates will fold on top of the folded dirt conveyor. The dirt conveyor head drum guard and also the rear feeder maintenance platform handrails must be removed before the hopper side plates are folded into the travelling position.

Raising Hopper Side Procedure

A suitable pad must be made for the operator to stand on to install Hopper Bin Bolts

A pad can be made using either loader or excavator and must have a safe level working area to stand on, if this cannot be achieved you must contact your supervisor

Under no circumstances should anyone stand on or use a machine to gain height to install bin bolts

1. Observe all safety warnings
2. Start the engine
3. Remove locking wedges from toolbox
4. Locate the two hydraulic control levers inside the rear of the plant chassis. One lever will raise both hopper side plates and the other lever the hopper back plate into their working positions.
5. Raise the side plates into position and lock into place using the four locking wedges. (Note: The hopper hydraulic lever may have to be "toggled" briefly in order to align the wedges) Attach the locking wedge chains to the plant.
6. Raise the end plate into position.
7. Shut machine down
8. Install and tighten bolts.
9. Repeat step 8 on other side hopper plate.
10. Hopper plates should now be secure and ready to use, However bolts and wedges should be routinely checked.



Lowering Hopper side Procedure

Under no circumstances should anyone stand on or use a machine to gain height to install bin bolts

1. Observe all safety warnings
2. Position jaw crusher as close as possible to a suitable pad to stand on
3. Remove bolts holding hopper side and back plate.
4. Remove wedges from hopper sides and store in toolbox on crusher.
5. Start the engine.
6. Ensure that the dirt conveyor belt is in the “up” position.
7. Ensure hand rails on upper platform are removed. (depending on machine model)
8. Locate the two hydraulic control levers inside the rear of the plant chassis. One lever will lower both hopper side plates and the other lever the hopper back plate into their transport positions.
9. Lower back plate then side plates to transport position.
10. Stop the engine, unless further required.
11. Ensure hopper sides are clean for transport.



Safe Operating Tips:

Don't operate the machine unless you have had appropriate training and experience, or are training under the supervision of a competent operator.

Read and understand your machines operator's manual and any warning labels on the machine.

Ensure good house keeping

Be alert while operating the machine.

Avoid frequent starting and stopping of the machine.

The crusher should be fed by an excavator such that the bucket does not pass over or near to personnel or the machine apart from the feed hopper.

Plan your work, and operate on a level work surface whenever possible.

Always be aware of other people, machinery working nearby.

Never allow anyone on or near the machine while operating.

Never work close to overhead or underground power lines unless a full risk assessment has been completed and you are satisfied that it is safe to do so. Aurora energy provides specific advice on working near lines. If unsure always check before commencing work.

Always keep the machine a safe distance from the edge of a bench or excavation. Be alert for unstable ground.

Never undermine the machine while excavating material.

Never operate underneath an overhang

General Maintenance

Practice safe maintenance

Observe all safety warnings

Only suitably competent personnel with the necessary training/experience should approach the task

A person should never work alone.

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

Disengage all power and operator controls to relieve pressure.

Stop the engine.

Implement lockout procedure.

Allow machinery to cool.

Do not stand on handrails to gain height

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

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

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

Remove any build up of grease, oil or debris.

Disconnect battery cable (-) before making adjustments on electrical systems or welding on machine

BEFORE WORKING ON PLANT, SWITCH OFF, “LOCKOUT”, AND “TAGOUT”

Lubrication and servicing

Do not climb on machines to reach high greasing points, if the machine does not have remote greasing points at ground level or on a hand railed walkway notify your supervisor

Regular lubrication of the plant in accordance with this schedule is essential.

Air filters must be checked on a regular basis

The frequency of the lubrication required is as follows:

- Crusher jaw stock bearings: min of 20 grease gun pumps per shift
- Crusher mainframe bearings: min of 20 grease gun pumps per shift
- The most important issue with these bearings is that they are not running dry, allowing dust and water to enter.
- Clutch bearings (older machines): 3-4 pumps per shift
- Conveyor belt bearings: grease once per week, 4-5 pumps per bearing.

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

To deliver the specified quantity of grease to each of the four crusher eccentric shaft bearings, ascertain the amount your grease gun will deliver with each “pump”.

Do not assume! Check the greasing equipment used on a regular basis.

It is bad practice to mix greases. Use only one brand.

It is the operator's responsibility to ensure that all bearings are greased with the correct quantity and quality of grease at the correct intervals specified above.

Fuelling up

Do not fill tank to capacity.

Allow room for expansion and clean up spilt fuel immediately

Diesel is highly flammable

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

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.

Remember If you are unsure about something, ask your supervisor for advice