

Metso

Lokotrack LT-series

Doc No. D100018832 Revision 1

Original instructions

DRIVING INSTRUCTIONS



For more information and
language versions, see:
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Driving instructions

These driving instructions are valid for Lokotrack machines with IC790C/IC890C automation system. The purpose of these instructions is to enable safe moving of the machine during transportation.



NOTE: Do not use the machine for screening or crushing solely based on these instructions. The actual instruction manual for the machine is delivered separately.



NOTE: In these driving instructions, it is assumed that the machine is in the transport position. If needed, see the actual instruction manual of the machine for information on how to prepare the machine for transportation.

The illustrations in this instruction may not fully correspond to your machine.

1.1

Safety

Because of the size and weight of the machine, pay special attention when moving the machine. It is highly recommended that a banksman is used when the machine is moved.



 DANGER

GENERAL HAZARD

Will cause death or serious injury.

In a dangerous situation, stop the machine with the emergency stop button, the key switch of the machine, or with the remote stop button (located on either the radio control box or the remote control box).



Figure 1. Emergency stop button



 DANGER

GENERAL HAZARD

Will cause death or serious injury.

Read the safety section before working with the unit. Only competent and trained personnel are allowed to work with the unit.

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⚠ WARNING

PERSONAL INJURY HAZARD

Can cause death or serious injury.

Before starting the machine, make sure that there are no persons in the area whose safety may be endangered. Walk around the machine and make sure that there is nobody on, by or below the machine. Warn everybody nearby before starting.



⚠ WARNING

CRUSHING HAZARD

Can cause death or serious injury.

Do not drive the machine in locations where there is a risk of squeezing. If possible, drive the machine either from the feed end or discharge end. Make sure the cable of the drive control device does not get caught under the tracks.



⚠ WARNING

UNEXPECTED MOVEMENT HAZARD

Can cause death or serious injury.

Be extremely cautious when driving in cold temperatures (below 0°C, 32°F). The response time of the controls might be longer than usual due to stiff hydraulic oil.



⚠ WARNING

COLLISION HAZARD

Can cause death or serious injury.

Always drive the machine from a safe distance. Pay attention to the machine dimensions to avoid power lines, bridges, branches and other obstacles.

NOTE:

Make sure the following:



- The process is set to OFF and it will not be started during transportation.
- The driving route is smooth enough.
- Differences in altitude or inclinations do not prevent driving.
- The lighting is appropriate at the site or near the machine.
- The driving surface is not icy or slippery. If needed, sprinkle sand on the surface.

1.2 Starting the engine



⚠ CAUTION

EXPLOSION HAZARD
Can cause moderate injury or property damage.
Never use startup spray or any other similar product to help the engine start. Startup sprays and similar products can cause a destructive explosion in the intake manifold.



⚠ WARNING

PERSONAL INJURY HAZARD
Can cause death or serious injury.
Before starting the machine, make sure that there are no persons in the area whose safety may be endangered. Walk around the machine and make sure that there is nobody on, by or below the machine. Warn everybody nearby before starting.

1. Locate the battery isolator switch and make sure that it is in the ON position. See the figure below for possible switch types.

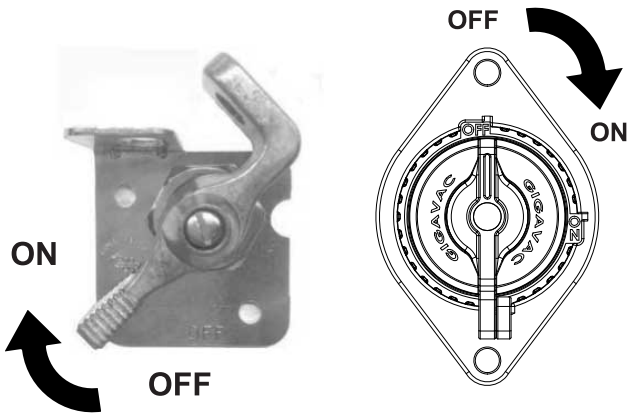


Figure 2. Battery isolator switch to ON position

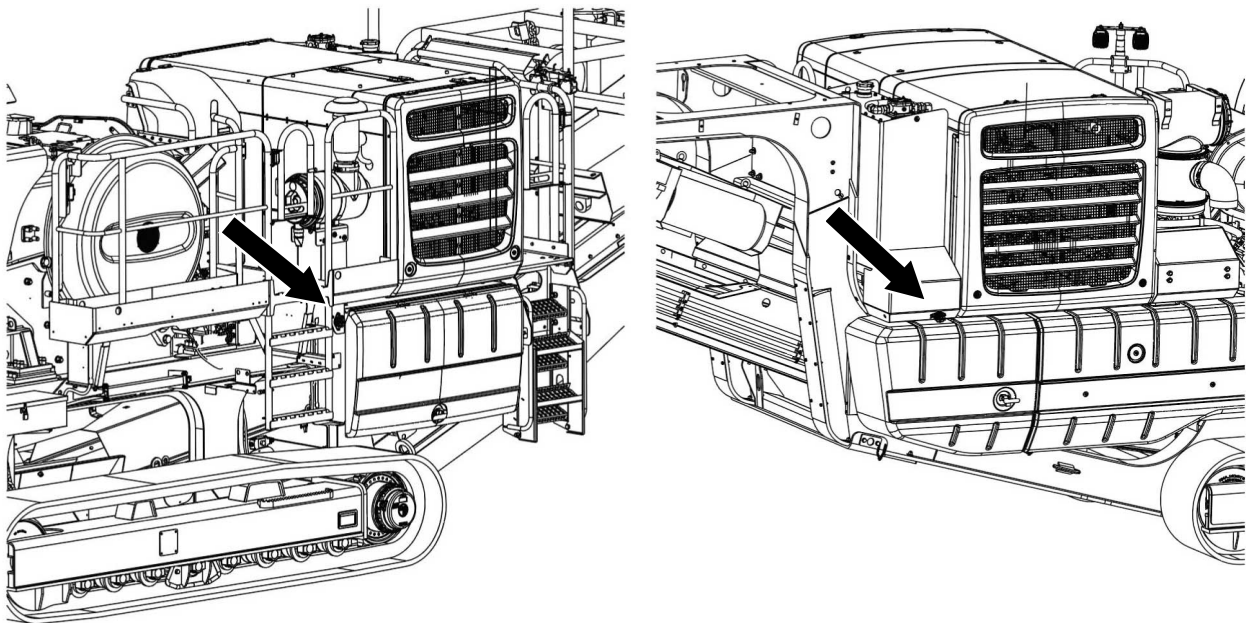


Figure 3. LT96 (left arrow), LT106, LT116, LT120, LT1110, LT1110(S), LT1213(S), LT7150, LT200HP(S), LT200HPX, LT220GP (right arrow)

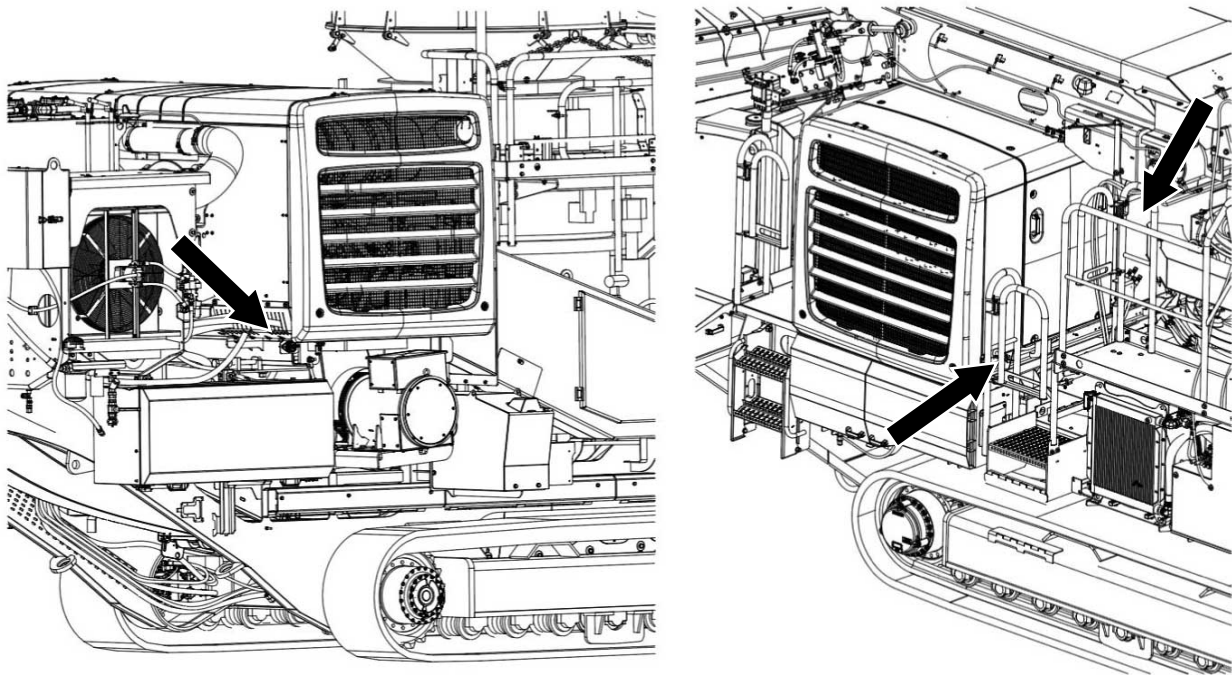


Figure 4. LT300GP/HP (left arrow), LT220D (middle arrow), LT330D, LT130E (right arrow)

2. Check the position of the following switches:

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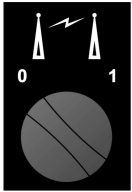
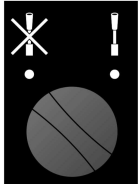
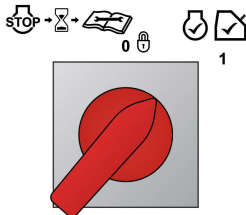
Radio control selection switch (on the main control panel)	Must be in position 0	
Manual valve selection switch (on the main control panel or on the hydraulic center)	Must be in OFF position	
If equipped: conveyor safety switch (on the hydraulic center or the main electric center)	Must be in position 1	
Only for LT1213(S) and LT1110(S): crusher maintenance safety switch (on the control panel)	Must be in position 1	

Figure 5. Position of switches

- 3. Disconnect the drive control device from its socket if it is connected. Refer to [Figure 11. Connecting the cable drive control device](#).
- 4. Switch on the power with the key switch (see figure below) on the control panel by turning the key to position "1". Wait for the control system to finish initialization.

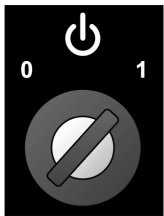


Figure 6. Control panel key switch ON

After initialization, a pop-up with machine information will appear and close automatically after 30 seconds if not closed manually.

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5. Wait for the engine status indication in the middle of the display to turn from yellow to green and indicate that the engine is ready to start (see figure below).



Figure 7. Engine ready to start

If the display shows alarms, see instructions from [Troubleshooting](#).

6. If any of the emergency stop buttons have been pressed, do the following to reset the system:
- a) Reactivate the emergency stop button by pulling or rotating the knob.
 - b) Switch power off and on again.
7. Check that the machine has enough fuel, especially if you are track driving the machine on a sloped surface. You can see fuel level from the display main view or the main view pop-up that appears after initialization.
8. Start the engine by pressing and holding the **Engine start/stop** button (see figure below). The machine gives an acoustic warning signal before it starts. Release the **Engine start/stop** button when the engine is clearly running. If the engine does not start, see [Troubleshooting](#).

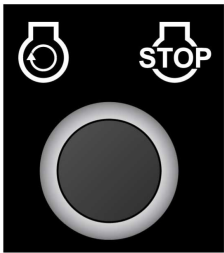


Figure 8. Engine start/stop button

9. If alarms are displayed on the control panel display, fix the alarm causes and sign off the alarms. See [Handling alarms](#).



⚠ DANGER

GENERAL HAZARD

Will cause death or serious injury.

In a dangerous situation, stop the machine with the emergency stop button, the key switch of the machine, or with the remote stop button (located on either the radio control box or the remote control box).

1.3 Handling alarms



NOTE: Reading and understanding the alarm messages as well as the using the help information will help you to understand functions of the machine.

 **NOTE:** If there is a malfunction that is preventing the track driving, it must be fixed before proceeding. If necessary, contact Metso.

In a problem situation, check if there are any active alarms.

1. If the alarm indicator (1) is red and pulsating, tap it.

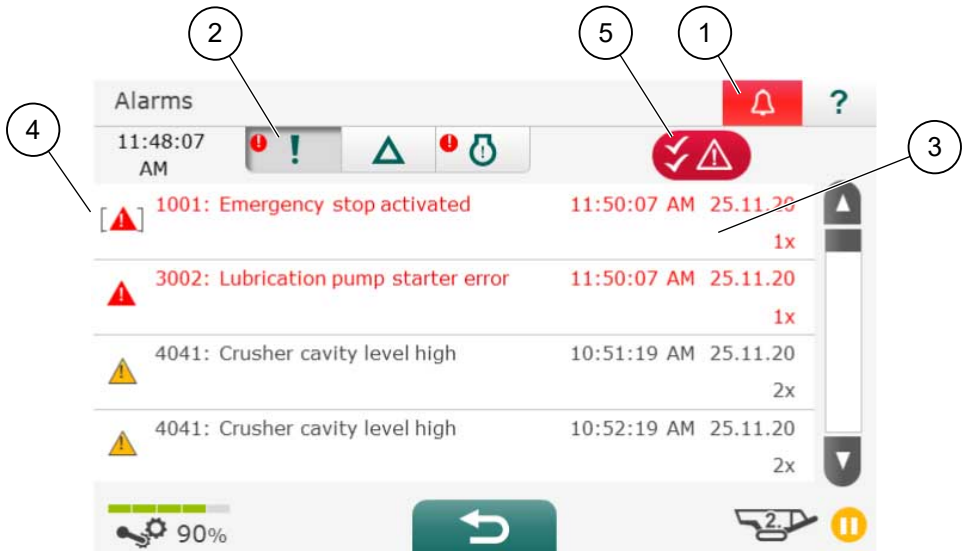


Figure 9. Alarm view

2. Tap **Alarms** button (2) to see alarm descriptions. Red icon and text in the description indicate an active alarm. By tapping any description row (3), you get specific information about the alarm/warning.
3. Fix the cause of the alarm(s). When the cause is fixed and the alarm can be signed off, brackets (4) appear around the alarm symbol.
4. When all alarm causes are fixed, sign off the alarms by tapping **Acknowledge all events** button (5).

1.4 Driving with drive control device



 **WARNING**

FIRE HAZARD
Can cause death or serious injury.
Always deactivate the diesel particulate filter regeneration before transporting the machine to a work site, or into a cargo ship, or into any closed space. Also make sure that the filter soot load level is below 60% before beginning the transportation of the machine. If the filter soot load level is 60% or above 60%, perform the forced regeneration before beginning machine transportation. Before track driving long distances, always perform the forced regeneration. Remember to activate the diesel particulate filter regeneration again when the machine transportation is completed.

 **NOTE:** Note that forced regeneration can take up to 1 hour to complete.



WARNING

FIRE HAZARD

Can cause death or serious injury.

Stay away from the exhaust pipe. Do not place any flammable objects in front of the exhaust pipe. The exhaust gas is very hot. Note that the exhaust gas can be even hotter during regeneration of the diesel particulate filter.



WARNING

COLLISION HAZARD

Can cause death or serious injury.

Always drive the machine from a safe distance. Pay attention to the machine dimensions to avoid power lines, bridges, branches and other obstacles.



NOTE: When driving on a sloping surface or onto a trailer truck, the automation system may stop the machine if the hydraulic fluid or the coolant level is too low. If the machine stops unexpectedly, see the alarm on the display.

Lateral	5 °
Longitudinal	15 °

Figure 10. Maximum inclinations during track driving



CAUTION

PROPERTY DAMAGE HAZARD

Can cause moderate injury or property damage.

Be extremely cautious when driving the machine onto a ramp.

Make sure that the ramp is properly positioned, in perfect technical order and can support the weight of the machine.

1. If your machine has an engine with active regeneration, make sure that regeneration is switched off when the machine is transported in an environment that presents a fire hazard. See [Switching off active regeneration](#).
2. Before driving the unit, make sure the remote stop button on the drive control device is pulled up, the radio control selection switch is in position 0 (turned to the left), and the control levers of the driving control device are in neutral position.



NOTE: The cable drive control device CANNOT be used if the radio control mode (optional) is switched on (in position 1). See [Figure 5. Position of switches](#).



NOTE: Before connecting the drive control device plug, make sure all driving preparations have been made and the engine is running.

3. Connect the drive control device plug to one of the alternative driving sockets. There are two driving sockets: one at the front (below the control center) and one at the rear of the machine.

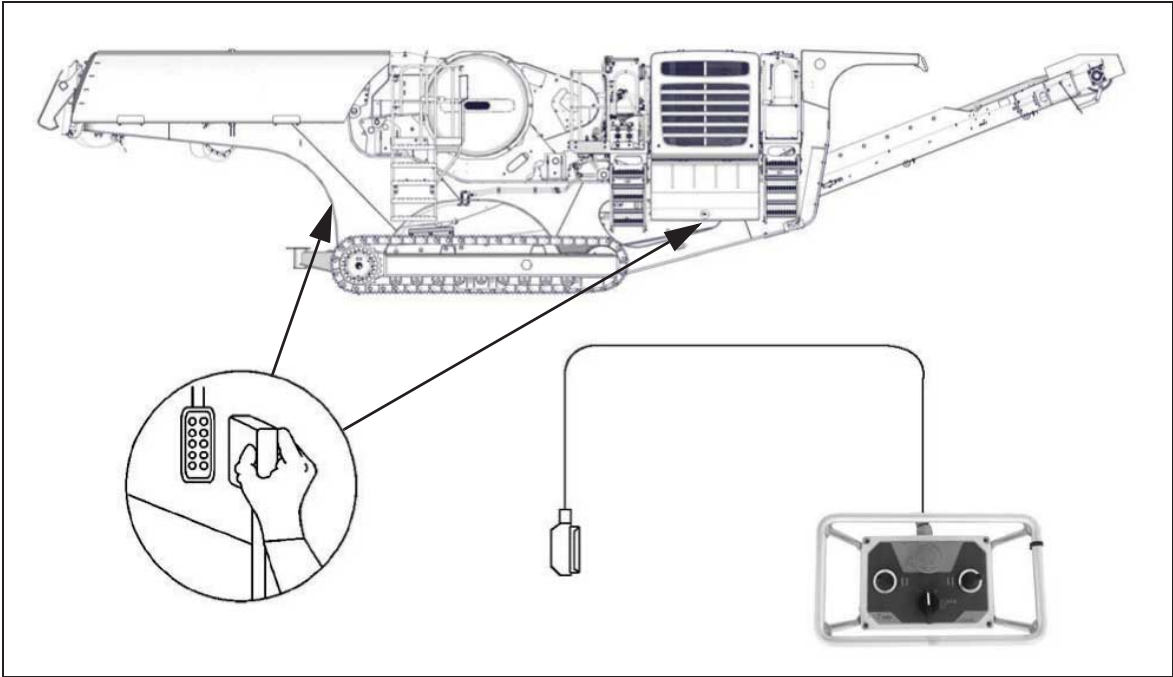


Figure 11. Connecting the cable drive control device



NOTE: The location of the driving sockets may vary depending on the model of the machine.

The driving sockets are protected with the cover shown in the figure below:

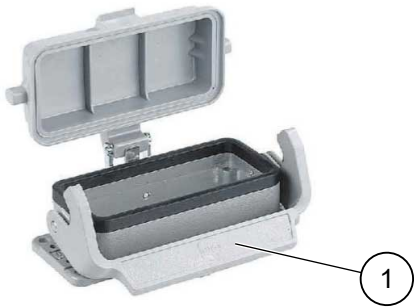


Figure 12. Driving socket cover



NOTE: Make sure the plug is connected straight and locked with lever (callout (1) in figure above).

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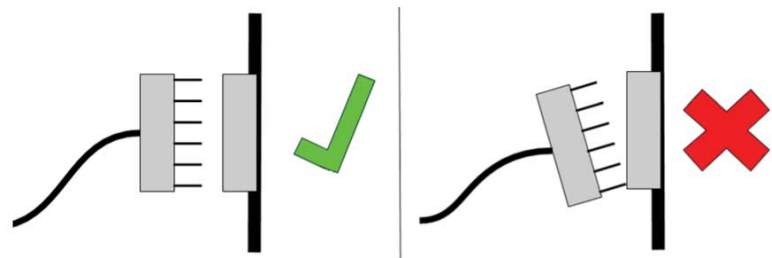
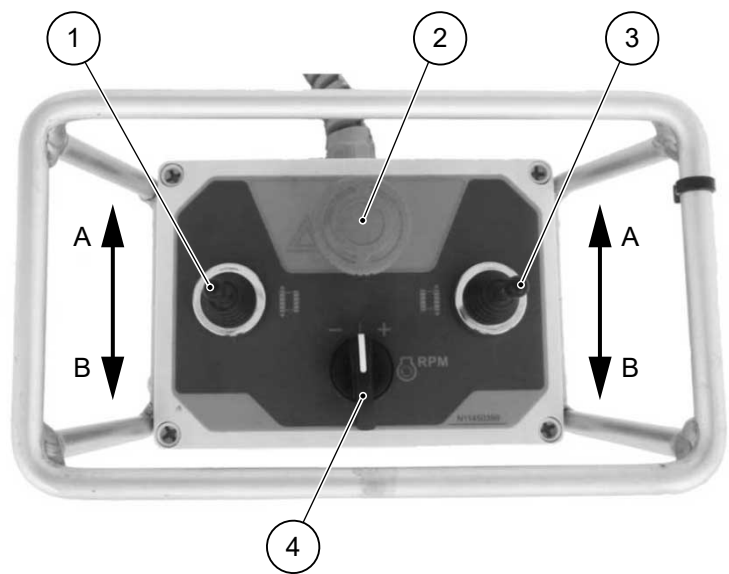


Figure 13. Connect the drive control device plug. Left: Straight, ok. Right: Not ok.

⚠ WARNING

UNEXPECTED MOVEMENT HAZARD
Can cause death or serious injury.

Before taking the drive control device into use, check visually that the drive control device, cable or plugs are not damaged. Also make sure that the connectors are clean and that there is no moisture in the plug or connectors.



1. Drive control lever, left track (A = forward, B = backward)

2. Remote stop button
3. Drive control lever, right track (A = forward, B = backward)

4. Engine speed and track drive speed controller

Figure 14. Drive control device

- NOTE:** The directions right and left are defined from the direction of travel of the material from the feeder side perspective.
- NOTE:** The track drive does not function if the selector switch for hand valves in the control panel has been switched ON (position 1) or the conveyor safety switch (if equipped) is in OFF position (position 0).

4. From the control system display, check that all preconditions for track drive are met and have a green check mark. If a precondition is not met, a red cross mark (2) is shown next to the precondition.

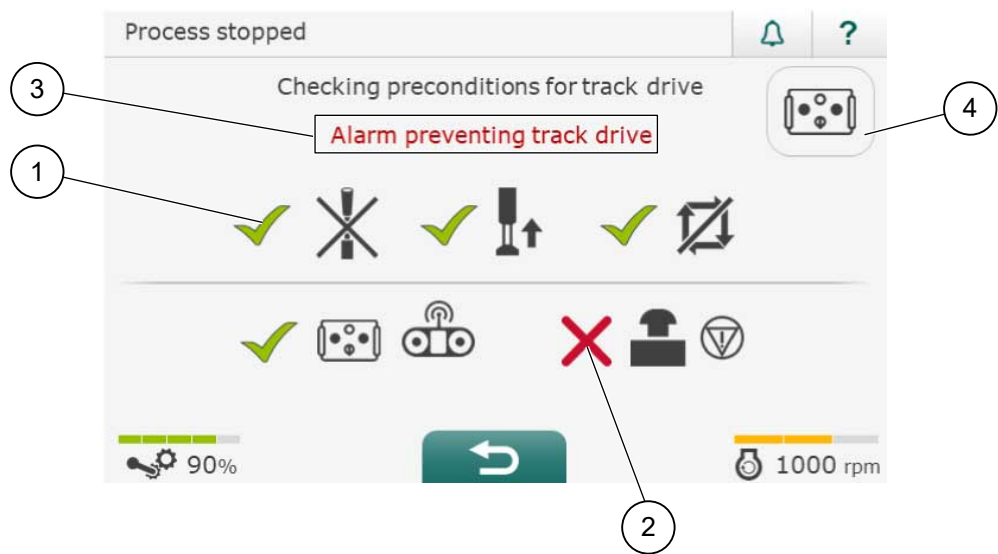


Figure 15. Checking preconditions for track drive

If any of the unmet preconditions prevent track driving, perform corrective actions based on the written information (3) shown on the display until all conditions are met. After all preconditions are met, the view changes automatically to the next view for activating the control levers.

5. To activate track driving, move and release both control levers to all directions. The control system display also guides you through the lever activation by showing the activation directions (1) and successfully activated directions with a green check mark (2):

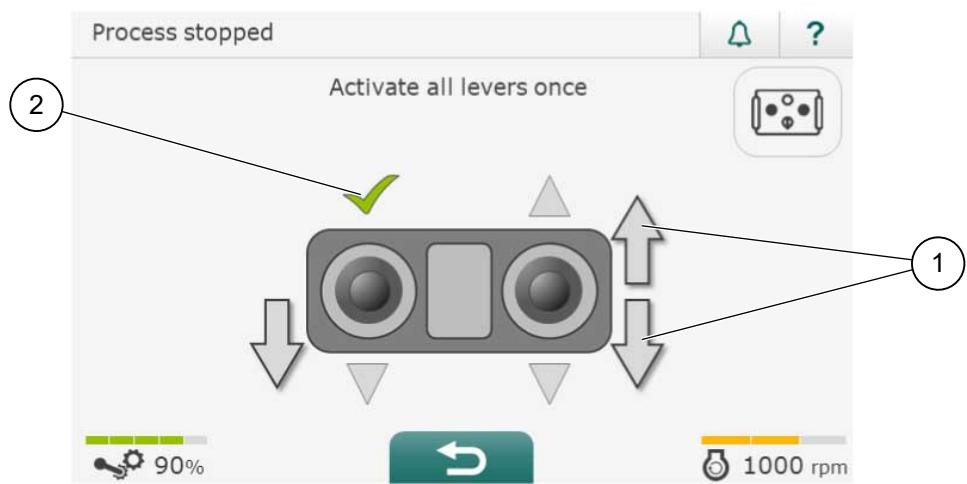
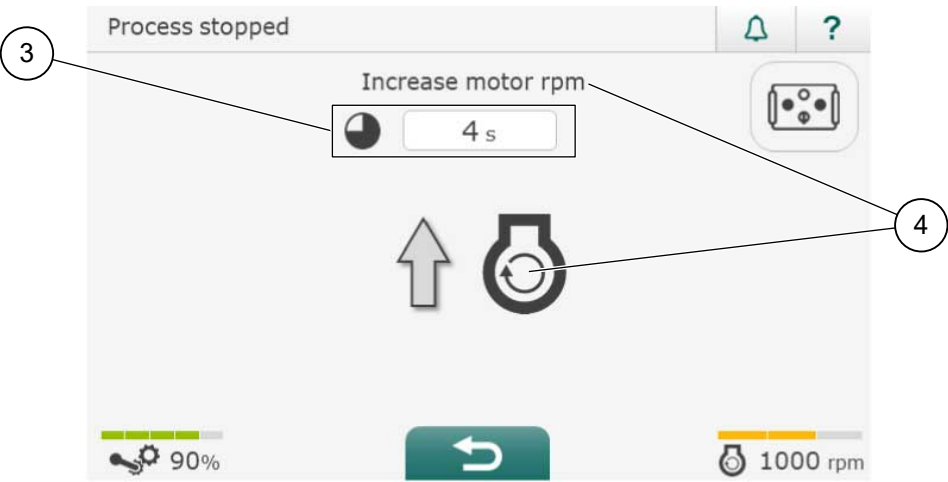


Figure 16. Activating levers in track drive view

 **NOTE:** Track driving will deactivate if you stop driving for 2 minutes. Re-activate the levers to continue driving.

6. After lever activation, wait for the track drive enabling countdown (3) on the display to end. The display also shows the automated steps taken to activate track drive with an icon and text (4):

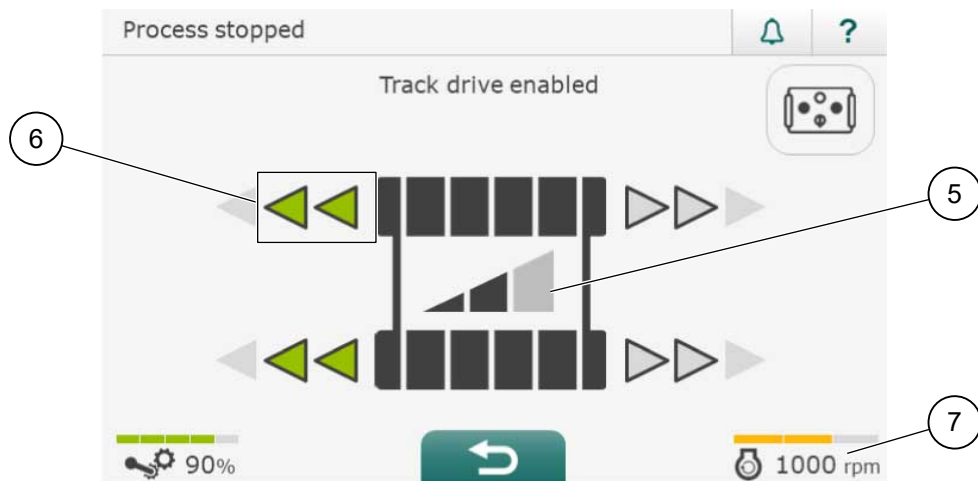


If the levers are not in neutral position, the display will show the faulty lever:



7. After the countdown ends, track driving is active and the machine can be driven. The display will show **Track drive enabled** view. When track driving, the view will show track drive speed with an icon (5) and 1-3 green arrows (6). You can also view engine speed (7).

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8. You can change the driving speed by adjusting the engine speed (machines with variable speed engine) or driving speed (machines with constant speed engine) from the drive control device. Track drive has three possible speeds:

Driving speed range	Engine speed
Slow driving	850..1200 rpm
Normal driving	1200...1750 rpm
Fast driving	1750...max rpm

Figure 17. Track driving speeds



NOTE: Changing the track driving speed changes the engine speed only with machines with variable speed engine. If your machine has a constant speed engine, the engine speed will not change.



NOTE: While driving, stand either behind or in front of the machine at a safe distance. Make sure you have a clear escape route.

9. Drive the machine to the desired location. To drive the machine straight, move both drive control levers simultaneously to the same direction. When turning the machine, use only one lever at the time. When turning, avoid driving the tracks in opposite directions. Continuously pay attention to the machine and the surroundings while driving.



NOTE: Make sure that the drive control device cable does not get under the tracks.



NOTE: After driving with track drive continuously for 30 minutes: Stop and wait for 30 minutes, to allow the components to cool down before continuing the track drive.



NOTE: Be aware of the driving conditions. Weather or ground conditions (firmness of the ground), can affect the traction. If driving on uneven ground, always note the ground clearance of the machine and the irregularities of the ground. In bad terrain, the machine might not move if the engine speed is too low.

10. After driving, adjust the engine rpm to idle, disconnect the drive control device, then close and lock the lid of the socket.



⚠ WARNING

UNEXPECTED MOVEMENT HAZARD

Can cause death or serious injury.

Make sure the cable of the drive control device does not get caught in the tracks or in any other moving part of the machine during driving.

You must disconnect the drive control device from the unit immediately after driving and store it in a safe place when not in use.

Only lift and hold the drive control device by its handles. Do not pull the drive control device from the cable.

1.4.1 Switching off active regeneration

If your machine has an engine with active regeneration, it must be switched off before driving when the machine is being transported in an environment that presents a fire hazard.

1. In the **Main view** of the display, tap **Control** (1).
2. In the **Control view**, tap **Engine controls** (2).

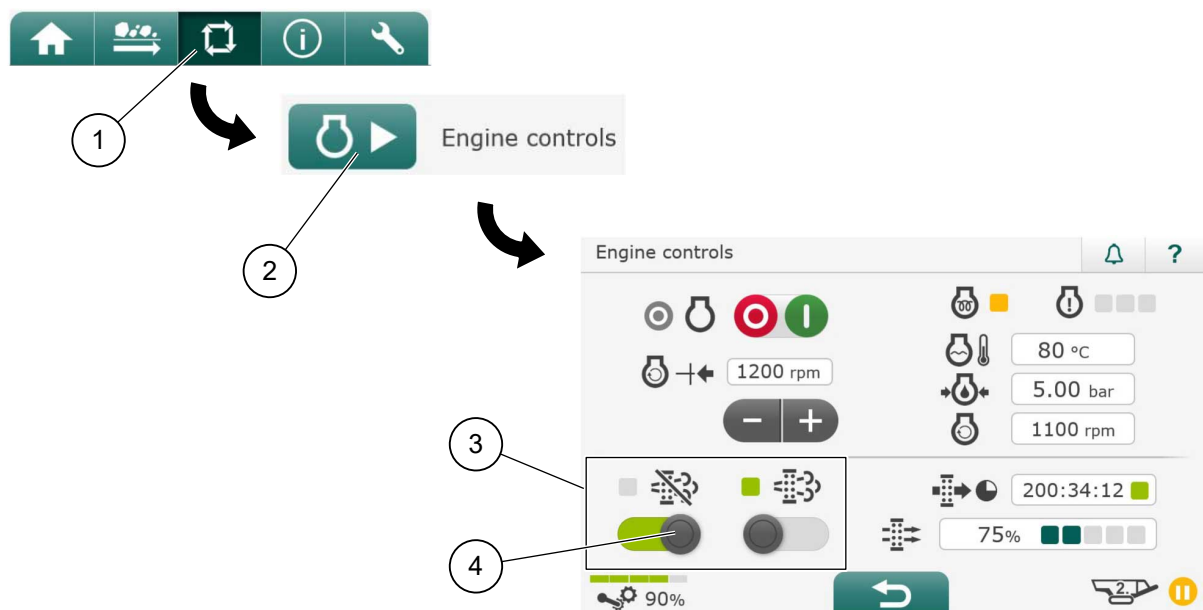


Figure 18. Switching off active regeneration

3. Check the **Engine controls** view for active regeneration controls (3).
If the controls are not visible, switching off active regeneration is not needed. If the controls are visible, continue with the following steps.
4. If the slider for deactivating active regeneration is grey, tap it so that it turns green (4).
5. To activate regeneration after driving, tap the slider (4) again so that it turns grey.

1.4.2 Increasing ground clearance for LT330D/LT220D

When the machine is in transport position and it needs to be driven up or down a steep surface (for example a ramp), there may be a need to temporarily increase its ground clearance to avoid damaging the machine. Always make sure that there is enough clearance under the machine before driving the machine up or down on steep surfaces.



NOTE: These instructions are only for LT330D/LT220D machines.

1. If your machine is LT220D, the side conveyors must be raised first to avoid damage to the machine. Switch on the hand valves from the hydraulic center and raise the side conveyors using the hand valves (1) on both sides of the machine. Conveyors should be raised to create enough clearance but not so much as to lift them higher than the machine itself.



NOTE: Make sure that there is enough clearance above the conveyors to raise them.

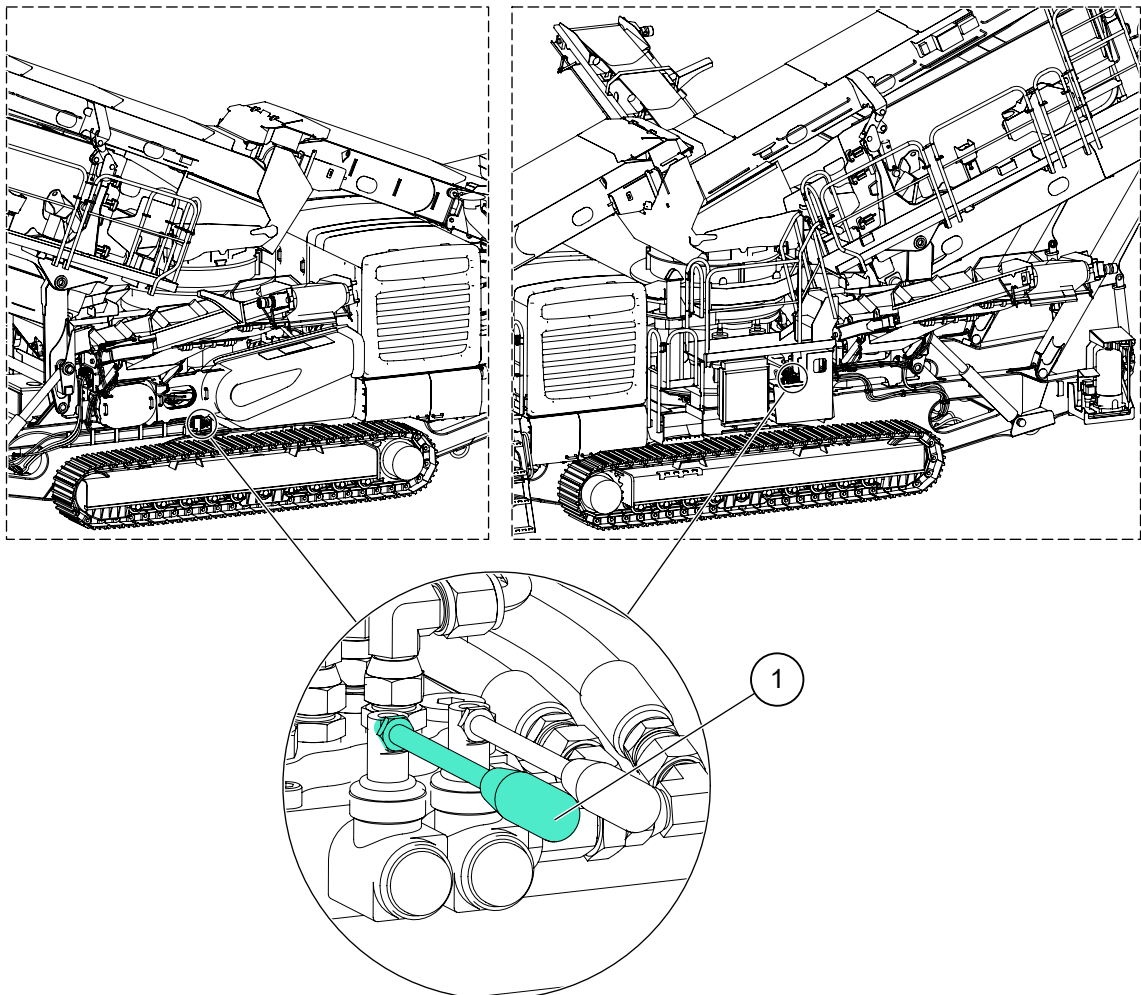


Figure 19. LT220D side conveyor valves

2. Connect the plant setup device to the machine (see figures below).

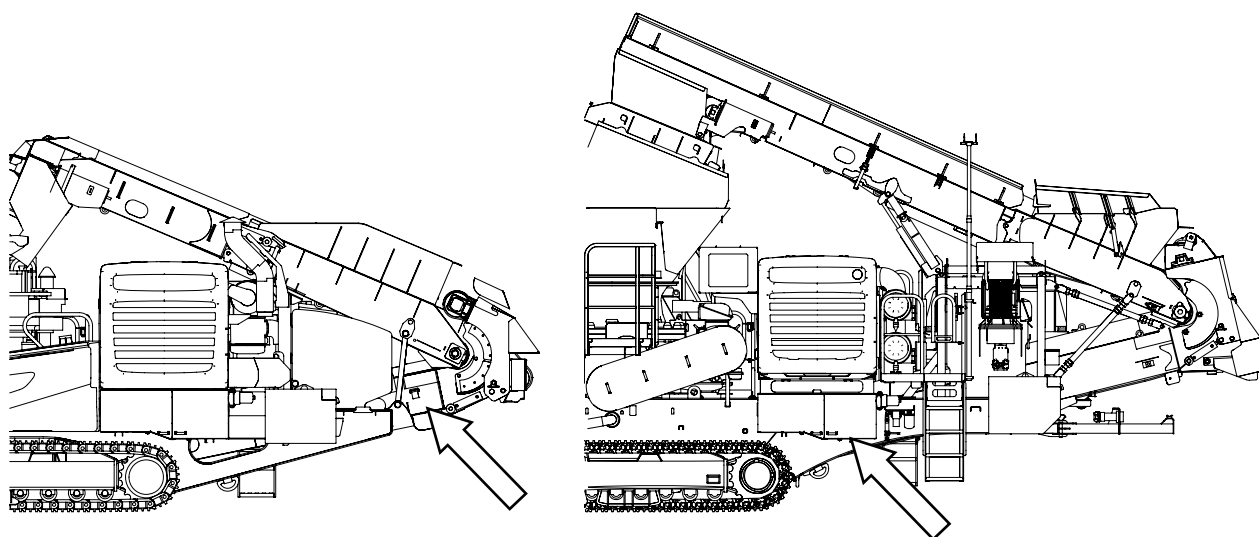


Figure 20. LT220D (left) and LT330D (right) plant setup device connection plug

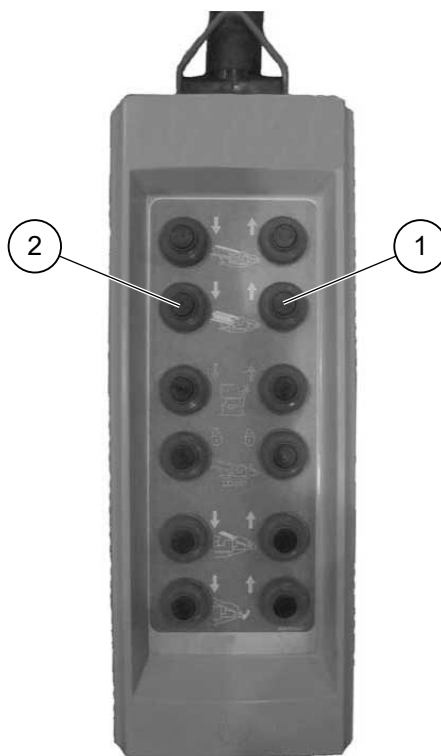


Figure 21. Plant setup device

3. Lift the screen up with button (1).



NOTE: Make sure that there is proper clearance between the screen and conveyors before lifting the screen.

4. Switch off the hand valves (LT220D) and disconnect the plant setup device.
5. Drive the machine to the desired location following these driving instructions.
6. Connect the plant setup device and lower the screen using button (2) in [Figure 21. Plant setup device](#).

7. If your machine is LT220D, switch on the hand valves and lower the side conveyors using the hand valves on both sides of the machine (see [Figure 19. LT220D side conveyor valves](#)).
8. Switch off the hand valves (LT220D) and disconnect the plant setup device.

1.5 Stopping the engine

1. Before stopping the engine, let the engine to idle (cool down) for approximately 5 minutes.
2. Shut down the engine: In the control panel, push the engine start/stop button. See [Figure 8. Engine start/stop button](#).
3. Turn the control panel key switch to position 0.
4. Wait for 3 minutes.
5. Turn the battery isolator switch to OFF position. See [Figure 2. Battery isolator switch to ON position](#).



NOTE: If the machine is to be shipped or stored, make sure that the battery isolator switch is left in OFF position. This is for preventing decrease in battery charge level.

1.6 Troubleshooting

Here is listed the most common faults that may prevent track driving.

Display does not turn on.	Battery isolator switch is in the open/OFF position.
	Batteries are empty. Use the jump start.
Display turns off when starting the engine.	Batteries are empty. Use the jump start.
Engine is running but track driving is not working.	Check the switches (see Figure 5. Position of switches for switch positions): • Radio control selection switch must be in position 0 • Hand valves selection switch must be in OFF position • Conveyor safety switch must be in position 1 (if equipped) • Crusher maintenance safety switch must be in position 1 (only for LT1213(S) and LT1110(S))
	Check that the support leg (if equipped) is up.
	Disconnect the drive control device plug and reconnect it.
Engine is not running properly or it suddenly stops.	Fuel tank is empty. Check and add fuel.
System display shows an alarm and engine does not start.	See Handling alarms .
System display shows an emergency stop alarm and engine will not start.	See step 2 from Starting the engine and Handling alarms .
With LT330D/LT220D: There is not enough ground clearance to drive the machine up or down a steep surface.	See Increasing ground clearance for LT330D/LT220D .

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