



MINIDOZER (HIGH SPEED MODEL)

OPERATOR'S MANUAL

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Important:

All the images in this document are **FOR REFERENCE ONLY**. Your machine may differ slightly the model and the options installed on it.

1. Important warnings

1.1 Information

- Read Operator's Manual of the TRACK-O and/or the accessory from cover to cover and make sure to understand it.
- The employer must make sure that every operator of the TRACK-O and/or the accessory has the skills to operate it safely, after he has received all the information and the evaluation from a competent person. It is the obligation of the employer to make sure that the operator has received the required information. This information must be provided by the manufacturer of the machine. They also have to provide you a written medium with the general warnings concerning the operation of the machine.
- Before putting the TRACK-O to use, the operator must know about and master the fundamental principles of operations and safety governing the machine and/or the accessories. Please abide by all the conditions spelled out on the following pages.
- The owner and/or the operator is responsible for the accidents or injuries caused with the TRACK-O and/or the accessory and must prevent them by respecting the warnings listed in this manual.

1.2 Preparation

- Before each use, verify the battery state of charge and the general condition of the TRACK-O and/or the accessory. Should at any point in time the TRACK-O and/or the accessory prove defective or should you experience any doubts as to its proper operation, we strongly urge you to contact Movex Innovation technical support. Whatever you do, do not incur any unnecessary risks that would jeopardize your safety and conceivably cause you serious and possibly mortal injuries.
- Make sure that the load respects the maximum rated capacities of the TRACK-O and/or the accessory you are operating.
- Never hesitate to make some tests without the load you want to carry to become familiar with the controls and the space available to operate the machine. These tests may also help you to prevent possible constraints like the dimensions of a door.
- Make sure that the path where the TRACK-O will be passing does not need any particular protection. Fire aisles, access to stairways, and fire equipment shall be kept clear.
- Make sure that the path where the TRACK-O will be passing can support the weight of the machine with the accessory and the load installed on it. Do not take any risk if you have any doubts.
- All traffic regulations shall be observed, including authorized plant speed limits (plants, public spaces, hospitals, shopping centers, etc.).
- Make sure that the accessory is correctly installed on the TRACK-O before using it.

1.3 Operation

- Stunt driving and horseplay shall not be permitted.
- Never let the TRACK-O and/or the accessory in a place where it could be harmful.

1. Important warnings (continued)

- Never leave the TRACK-O unattended with the emergency stop button at the "RUN" position (the machine could accidentally be set in motion if someone inadvertently presses some button on the wireless remote controller).
- Never use the TRACK-O in the water, it is not amphibious.
- Never let anyone stand closer than 12 ft from the machine while it is in operation. This warning applies to the operator and to anyone standing within the operation area.
- When the temperature of any part of the TRACK-O and/or accessory is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the machine shall be removed from service and not returned in service until the cause for such overheating has been eliminated.
- Running over loose objects on the roadway surface shall be avoided.
- It is strongly recommended that you keep your hands clear of the TRACK-O's rubber tracks and other motorized components, as long as it is not on the "Stop" position and that the machine has completely stopped moving.
- Never operate the TRACK-O and/or the accessory under the influence of alcohol and/or drugs.

1.4 Maintenance and storage

- At the end of each operation and before storing the TRACK-O, turn the machine power off by pressing the red emergency stop button located on the control panel of the machine. Also press the wireless remote controller red emergency stop button to turn its power off.
- When not in service, always connect the TRACK-O to a power supply to keep the batteries as charged as possible.
- The maintenance should always be performed by a qualified person.
- Always use Movex Innovation's replacement parts to guarantee that the machine and/or the accessory meets the standards for which it was designed.
- Before performing any operation on the TRACK-O and/or the accessory, make sure that all the circuit breakers have been placed in the "OFF" position and that the battery cables have been unplugged.
- Always use proper equipment to lift and secure the TRACK-O and/or the accessory.
- Always maintain the TRACK-O and/or accessory parts in good working condition. Make sure that the nuts and bolts are correctly tightened. Verify that the safety decals are readable and replace them if necessary.
- Depending on the model, the batteries may contain sulfuric acid that is a deadly poison and that can cause serious burns. Always wear personal protective equipment such as security goggles and rubber gloves when performing any maintenance operation on the batteries.
- If the TRACK-O and/or the accessory hits an obstacle or get hit by an obstacle, inspect immediately if it is still in good working condition. Otherwise, perform the repairs before operating it.
- Store the MINIDOZER and its accessories in a place protected from the rain or the snow and at temperature between -10°C (14°F) and 30°C (86°F).

1. Important warnings (continued)

1.5 Safety decals

1. Keep hands away from moving parts



2. Shut down power before making any repair or maintenance



3. Emergency stop button



4. Lifting position



5. Lifting slings information



6. Lifting points information



7. Alarm must be audible



8. Always charge immediately after use



2. Overview

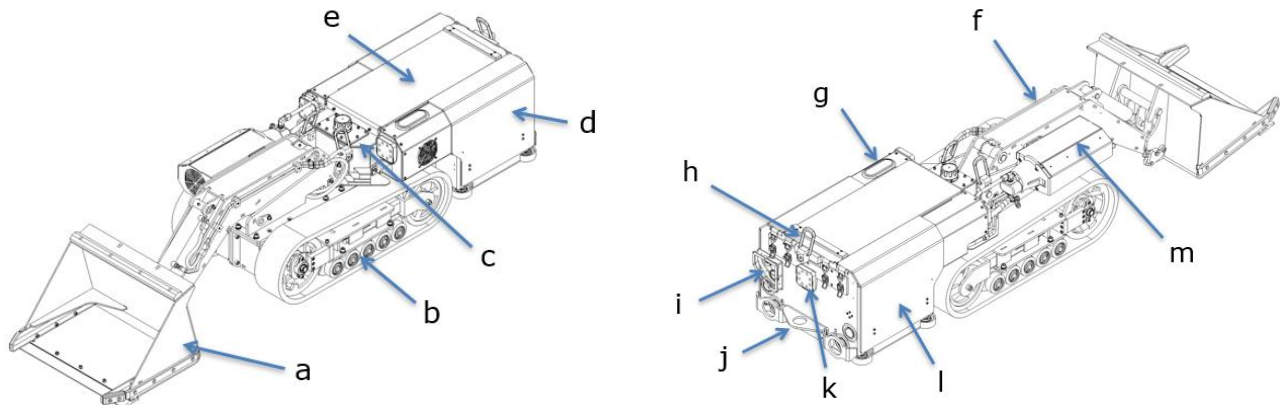


Figure 1 : Overview of the MINIDOZER (M-27 model shown)

- a. Bucket
- b. Traction system
- c. Hydraulic fluid tank
- d. Electric compartment
- e. Battery compartment
- f. Lifting arm
- g. Stroboscopic light
- h. Lifting rings
- i. Control panel and indicator lights
- j. Tow ring
- k. Working lights (optional)
- l. Hydraulic compartment
- m. Hydraulic pump-motor assembly

2.1 Control panel and indicator lights

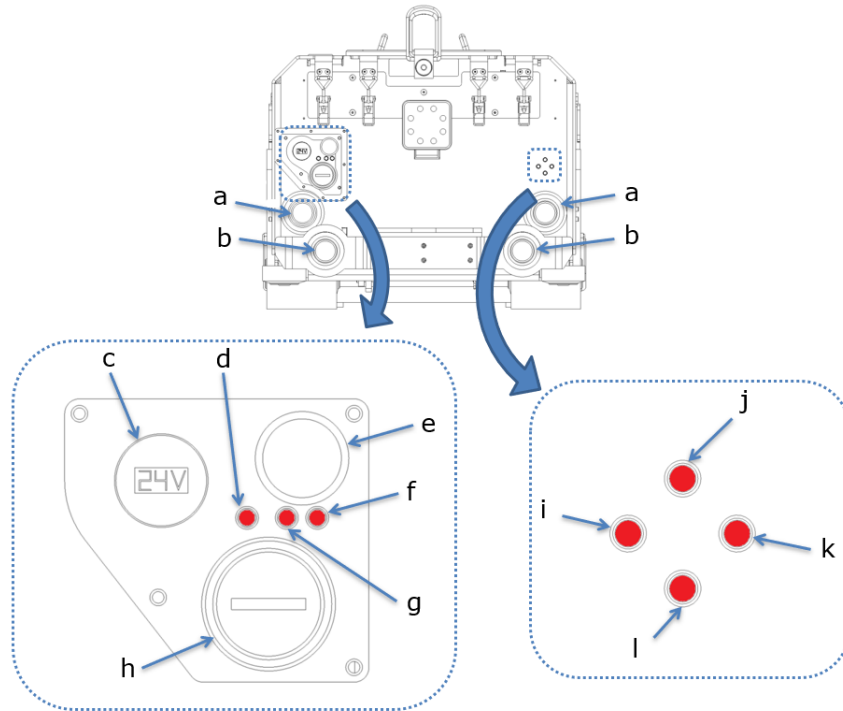


Figure 2 : Overview of the control panel and indicator lights

- a. Forward movement indicator lights (orange)
 - Indicate that at least one of the tracks is moving forward.
- b. Rear movement indicator lights (red)
 - Indicate that at least one of the tracks is moving rearward.
- c. Voltmeter
 - Indicates the battery voltage
- d. Hydraulic motor status light (red)
 - When the wireless remote controller is logged to the machine, indicates that the hydraulic motor controller is active.
 - Flashes if the motor controller is in an error state (see the [Troubleshooting](#) section for more information).
- e. Emergency stop button
 - Pull to activate the machine
 - Push to deactivate the machine
- f. Right traction motor controller status light (red)
 - When the wireless remote controller is logged to the machine, indicates that the right traction motor controller is active.
 - Flashes if the motor controller is in an error state (see the [Troubleshooting](#) section for more information).
- g. Left traction motor controller status light (red)
 - When the wireless remote controller is logged to the machine, indicates that the left traction motor controller is active.
 - Flashes if the motor controller is in an error state (see the [Troubleshooting](#) section for more information).

- h. Hour meter and battery discharge indicator (BDI)
 - The lower section indicates the hours of operation of the machine
 - The upper section indicates the remaining battery energy (green = full, double flashing red = low battery)
- i. Bucket up indicator light (red)
 - Indicates that the hydraulic system receives the signal to tilt the bucket up
- j. Lifting arm down indicator light (red)
 - Indicates that the hydraulic system receives the signal to lower the arm
- k. Bucket down indicator light (red)
 - Indicates that the hydraulic system receives the signal to tilt the bucket down
- l. Lifting arm up indicator light (red)
 - Indicates that the hydraulic system receives the signal to raise the arm

2.2 Wireless remote controllers

OMNEX wireless remote controller

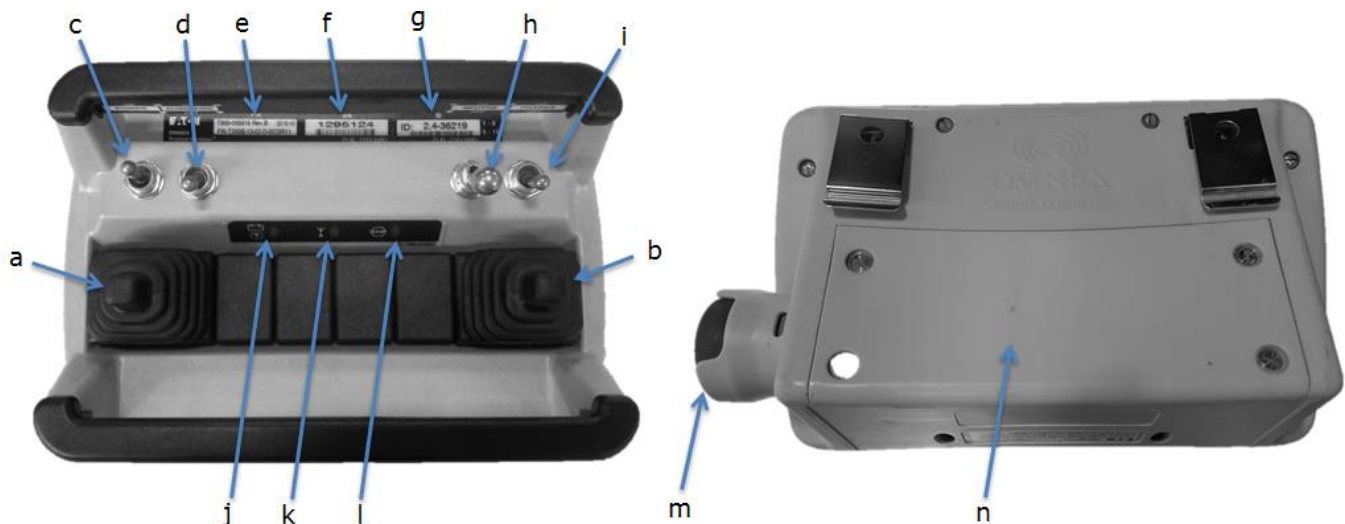


Figure 3 : Overview of the wireless remote controller

- a. Traction system joystick
 - The speed of the MINIDOZER is proportional to the position of the joystick. So, the machine will move faster as the joystick moves away from its center (stop position).
 - Move the joystick straight forwards or straight backwards to move the machine forward or backward, respectively.
 - Move the joystick to the left or to the right to perform a rotation of the machine upon itself to the left or to the right, respectively.
 - The other positions of the joystick allow the operator to move in a combination of forward or backward and rotation to perform more precise actions.
 - For the AL-27 and AL-48 models, a magnetic shield surrounds the joystick to protect against magnetic fields.
- b. Hydraulic system joystick
 - The speed of the hydraulic system movements does not vary depending on the position of the joystick. The joystick acts like an "ON-OFF" switch for the 4 movements.

- Move the joystick forward to lower the lifting arm and backward to lift it.
 - Move the joystick to the left to tilt the bucket up and to the right to tilt the bucket down.
 - For the AL-27 and AL-48 models, a magnetic shield surrounds the joystick to protect against magnetic fields.
- c. Power / calibration switch
- Mainly used to power up the wireless remote controller (see the [Activating the MINIDOZER / wireless remote controller](#) section).
 - Also used for troubleshooting purposes.
- d. Speed adjustment switch
- 2 different speeds can be set with the remote controller.
 - When turning on the remote controller, the MINIDOZER is always set to the lowest speed (33%).
 - Push the switch up to increase the speed to 100%.
 - Push the switch down to decrease the speed.
- e. Part number
- f. Serial number
- g. ID number
- h. Neutral switch
- Pull and move upward to deactivate the Traction system joystick and to release the motor brakes.
 - For troubleshooting purposes.
- i. Light switch
- Activates the lights (if equipped).
- j. Battery / pendant LED
- Indicates that the batteries are low. The wireless remote controller will run approximately 20 hours after the light starts flashing.
 - Also used for troubleshooting purposes.
- k. Active LED
- Indicates that the wireless remote controller is logged to the machine (flashing).
 - When a function is activated, the light remains solid momentarily and starts to flash again.
 - Also used for troubleshooting purposes.
- l. E-Stop LED
- When the wireless controller is active, indicates that the emergency stop button is pressed.
- m. Emergency stop button
- Press to deactivate the wireless remote controller.
 - Turn clockwise to release (used to power up the wireless remote controller, see the [Activating the MINIDOZER / wireless remote controller](#) section).
- n. Battery compartment
- Contains 4 "C" batteries.
 - The batteries are removed before the shipping therefore they need to be installed before the first use.

NBB wireless remote controller



Figure 4 : Overview of the wireless remote controller

- a. Traction system joystick
 - The speed of the MINIDOZER is proportional to the position of the joystick. So, the machine will move faster as the joystick moves away from its center (stop position).
 - Move the joystick straight forwards or straight backward to move the machine forward or backward, respectively.
 - Move the joystick to the left or to the right to perform a rotation of the machine upon itself to the left or the right, respectively.
 - The other positions of the joystick allow the operator to move in a combination of forward or backward movements and rotation to perform more precise actions.
- b. Hydraulic system joystick
 - The speed of the hydraulic system movements does not vary depending on the position of the joystick. The joystick acts like an "ON-OFF" switch for the 4 movements.
 - Move the joystick forward to lower the lifting arm and backward to lift it.
 - Move the joystick to the left to tilt the bucket up and to the right to tilt the bucket down.
- c. LED display
 - Display the set channel
 - The quick blinking of the letter L shows the end of the battery capacity. The remaining operation time is approximately 30 minutes.
- d. On switch
 - Mainly used to power up the wireless remote controller (see the [Activating the MINIDOZER / wireless remote controller](#) section).
- e. Light switch
 - Activates the lights (if equipped).
- f. Neutral switch
 - Pull and move upward to deactivate the Traction system joystick and to release the motor brakes.
 - For troubleshooting purposes.
- g. Emergency stop button
 - Press to deactivate the wireless remote controller.
 - Turn clockwise to release (used to power up the wireless remote controller, see the [Activating the MINIDOZER / wireless remote controller](#) section).
- h. Auxiliary switch
 - Activate an option (many possibilities offered).

- i. Speed adjustment switch
 - 4 different speeds can be set with the remote controller.
 - When turning on the remote controller, the MINIDOZER is always set to the lowest speed (25%).
 - Push the switch up to increase the speed (50%, 75%, and 100%).
 - Push the switch down to decrease the speed.
- j. Frequency change switch
 - Used to change the frequency of the remote controller (please observe the country-specific regulations)
 - Push up to display the set channel
- k. Battery compartment
 - Press the locking pin and slide out the battery
- l. Nameplate
 - Includes the serial number and part number

2.3 Technical specifications

NOTE: For more information on this product, consult the complete technical specifications on our website (www.movexinnovation.com).

NOTE: These technical specifications are subject to change without notice.

Model	M-48 / AL-48 (HIGH SPEED)	M-27 / AL-27 (HIGH SPEED)	M-39 / AL-39 (HIGH SPEED)
Length	110 in (2794 mm)	112 ³ / ₄ in (2863 mm)	110 ¹ / ₈ in (2797 mm)
Width	50 in (1270 mm)	27 ³ / ₄ in (705 mm)	39 ³ / ₈ in (999 mm)
Height to lowest position (<i>frame</i>)	22 in (559 mm)	22 ⁵ / ₁₆ in (567 mm)	19 ³ / ₈ in (492 mm)
Height to highest position (<i>frame</i>)	29 in (737 mm)	29 ⁵ / ₁₆ in (745 mm)	26 ³ / ₈ in (670 mm)
Height (<i>bucket to maximum</i>)	59 ¹ / ₄ in (1505 mm)	62 ¹ / ₂ in (1590 mm)	60 in (1524 mm)
Clearance under bucket (<i>to maximum height</i>)	38 ¹ / ₂ in (978 mm)	37 ¹ / ₂ in (950 mm)	38 ¹ / ₂ in (978 mm)
Weight	3612 lb (1638 kg)	2400 lb (1089 kg)	3000 lb (1364 kg)
Lifting capacity	1170 lb (531 kg)	642 lb (291 kg)	950 lb (432 kg)
Bucket capacity	0.175 yd ³ (0.133 m ³)	0.096 yd ³ (0.073 m ³)	0.142 yd ³ (0.109 m ³)
Maximum speed (<i>flat surface</i>)	200 ft/min 61 m/min 3.6 km/h	200 ft/min 61 m/min 3.6 km/h	200 ft/min 61 m/min 3.6 km/h

3. Operation

3.1 Operating conditions

IMPORTANT: This section explains the conditions that the MINIDOZER can operate in. However, to maximize the lifespan of the machine and its components, it is important to follow the maintenance schedule.

Operating temperatures

IMPORTANT: When the temperature of any part of the TRACK-O and/or the accessory is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the machine shall be removed from service and not returned in service until the cause for such overheating has been eliminated.

IMPORTANT: The batteries must be fully charged before operating the MINIDOZER under 0°C (32°). Operating the machine under this temperature with a partial or incomplete charge could cause permanent damages to the batteries.

- The MINIDOZER HS models are designed to operate at temperatures between -25°C (-13°F) and 40°C (104°F).
 - To achieve these performances, the operating time described in section **Operating time** must be followed.
 - Operating the machine at a temperature higher than 40°C (104°F) will cause a stop of the motors or their controllers. After cooling these components, the MINIDOZER will then become operational.
 - Operating the machine at a temperature lower than -25°C (-13°F) will cause a reduction of the speed and the power of the MINIDOZER. It will also considerably reduce the capacity of the batteries.

Operating time

- The machine must be stopped for 10 minutes every hour.
- The machine must be stopped for 1 hour every 4 hours of use.

NOTE: During the pauses, to optimize the cooling, bring the machine in a cool area.

Important: Do not charge the batteries during these pauses, this could overheat them.

3.2 Starting up the MINIDOZER

NOTE: Due to cross-border shipping regulations, the batteries are unplugged, prior to shipment. However, before the shipping, the batteries have been completely charged and tested. Therefore, after completing these start-up steps, the machine will be ready to use.

1. Remove the electric cover using the latch located at the back of the machine (see [Figure 5](#)) to have access to the electric components.

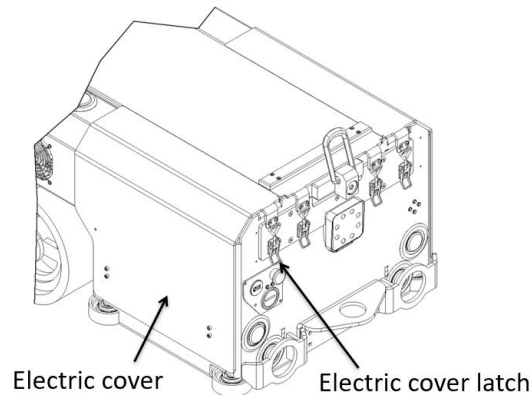


Figure 5 : Electric cover details

2. Plug the battery connectors into the mating connectors located in or coming from the electric compartment (see Figure 5). The location of the connectors may slightly be different depending on the model.
3. Put all the circuit breakers at the "ON" position. The location of the breakers may slightly be different depending on the model.
4. Reinstall the electric cover and secure it using the latch described at the step 1.

3.3 Activating the MINIDOZER / wireless remote controller

OMNEX wireless remote controller

1. To switch the MINIDOZER on, pull the red emergency button located on the control panel, at the back of the machine. A yellow strobe light located on the top of the machine should turn on. The MINIDOZER needs to be activated before activating the wireless remote controller.
2. To start the wireless remote controller, make sure that the wireless remote controller emergency stop button is pressed.
3. Press the power / calibration switch upward and release. The red E-Stop LED should start to flash.

IMPORTANT: The Auxiliary switch, the Neutral switch and the Light switch must all be at the "OFF" position (toward the operator) when starting the wireless remote controller. If any of these 3 switches are at the "ON" position, the wireless remote controller will not be able to power up.

4. To log the wireless remote controller to the machine, turn its emergency stop button clockwise. The red E-Stop LED should turn off and the yellow Active LED should turn on. The MINIDOZER is now ready to use.
5. To deactivate the MINIDOZER, push the emergency stop buttons of the machine and the wireless remote controller.

NBB wireless remote controller

1. Make sure that the wireless remote controller emergency stop button is pressed.
2. To switch the MINIDOZER on, pull the red emergency button located on the control panel, at the back of the machine. The MINIDOZER needs to be activated before activating the wireless remote controller.

3. To log the wireless remote controller to the machine, turn its emergency stop button clockwise. Two acoustic signal sounds will be heard and a red dot will flash in the LED display.
4. Press the "ON" switch up to activate the link between the wireless remote controller and the MINIDOZER.
5. To deactivate the MINIDOZER, push the emergency stop buttons of the machine and the wireless remote controller.

3.4 Linking a wireless remote controller to a receiver

To link a wireless remote controller to a receiver, refer to the manufacturer's manual provided with the machine.

3.5 Charging the wireless remote controller battery (NBB only)

The charging state is indicated by the 2 LEDs on the charger:

- Solid green LED
 - o STANBY. The charger is ready for operation. Insert the battery in the battery compartment.
- Solid orange LED
 - o CHARGING. The battery is being charged.
- Rapidly flashing orange LED
 - o Charging complete
- Slowly flashing orange LED
 - o The battery is deeply discharged or the ambient temperature for quick charging is too low. There is a regeneration or warm-up phase with a reduced charging current before changing over to actual quick charging.

IMPORTANT: Leaving the battery in the charger beyond the charging time is not a hazard. Only use the charger when it is dry.

3.6 Removing or installing the bucket

NOTE: Other accessories are designed to replace the bucket and can be used for different applications. Refer to the accessory's Operator's Manual to know how to install it on the MINIDOZER. For the complete list of accessories and to know which is compatible with your model, please refer to our website (www.movexinnovation.com) or contact your local dealer.

1. To remove the bucket, lower it to the ground with the hydraulic system.
2. Remove the 2 hairpin cotter pins and the 2 cylindrical pins and disengage the locking plate (see [Figure 6](#)).

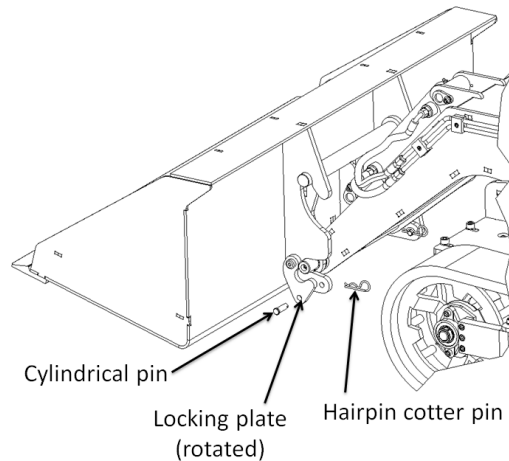


Figure 6 : Removing the bucket - Step 2

3. Using the hydraulic system, tilt down the quick attach (left side of the hydraulic system joystick, see the [Wireless remote controller](#) section) until its upper section is free (see [Figure 7](#)).

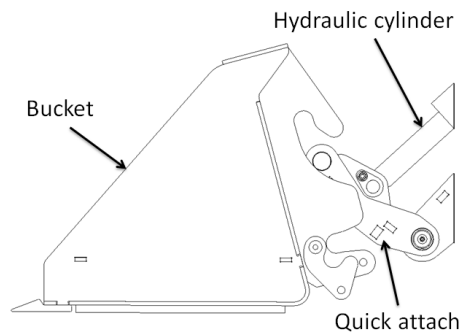


Figure 7 : Removing the bucket - Step 3

4. Back up with the MINIDOZER.
5. To install the bucket, repeat the steps 1 to 4 in reverse order.

3.7 Verifying and adjusting the hydraulic fluid level

IMPORTANT: Always use AW32 hydraulic fluid.

1. Lower the lifting arm and the bucket to the ground.
2. Locate the sight level gauge on the hydraulic fluid tank (see [Figure 8](#)). The level should be slightly above the black line of the gauge (see [Figure 9](#)). If the level is too low, add hydraulic fluid following the next steps.

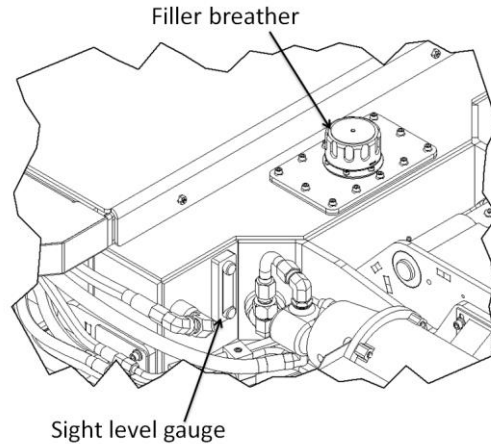


Figure 8 : Hydraulic fluid tank components

3. Remove the filler breather (see Figure 8) and add hydraulic fluid until the level reaches the black line of the sight level gauge (see Figure 9).

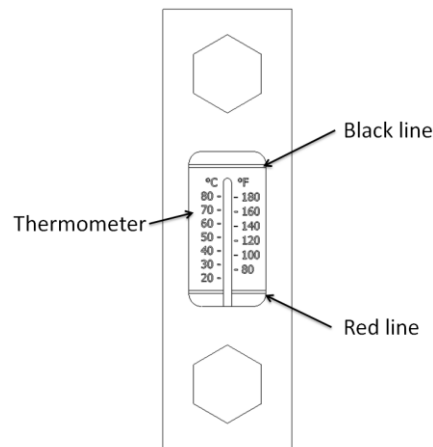


Figure 9 : Sight level gauge details

4. Reinstall the filler breather.

3.8 Charging the batteries

NOTE: The battery charger provided with the machine requires a particular power supply that depends on the model of MINIDOZER. Refer to the charger's manual for its installation.

IMPORTANT: Always charge the batteries in a well-ventilated area.

IMPORTANT: The MINIDOZER should always be plugged to the battery charger at the end of its period of use (daily). The float mode of the charger allows to keep the batteries fully charged without damaging them.

IMPORTANT: When the machine is not plugged to the charger, the batteries gradually discharge, even if they are not solicited. If the batteries state of charge is too low, the smart battery charger, provided with the machine, will not work correctly because it needs to detect a minimum state of charge to start. In this case, an external standard battery

charger should be used to recharge the batteries until the smart charger starts. Also note that excessive discharge can damage the batteries.

1. Remove the battery cover using the 2 latches located at the back of the machine (see [Figure 10](#)) to make sure that there is no temperature build-up and that the battery emanations will flow freely during the charging cycle.

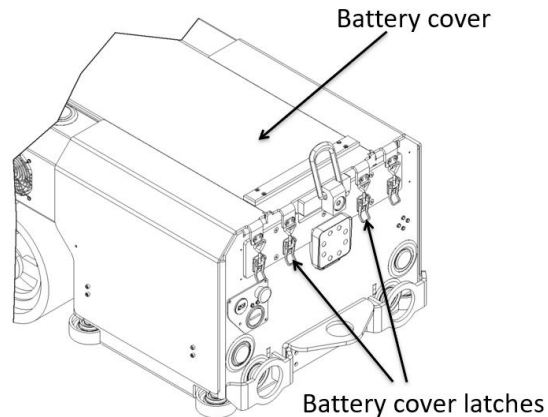


Figure 10 : Battery cover details

2. Remove the electric cover using the latch located at the back of the machine (see [Figure 5](#)) to have access to the electric components.
3. Place all the circuit breakers at the "OFF" position.
4. Unplug the battery connectors.
5. Plug the battery connectors in the mating connectors of the charger (see [Figure 11](#)). The charger may differ depending on the model of MINIDOZER.

NOTE: For the MINIDOZER M-48 and AL-48, it is recommended to charge the 2 battery packs simultaneously.

IMPORTANT: Before plugging the battery connectors into the charger connectors, make sure that the charger power cord is not plugged to the power supply and that its switch is at the "OFF" position (if applicable, depending on the model).

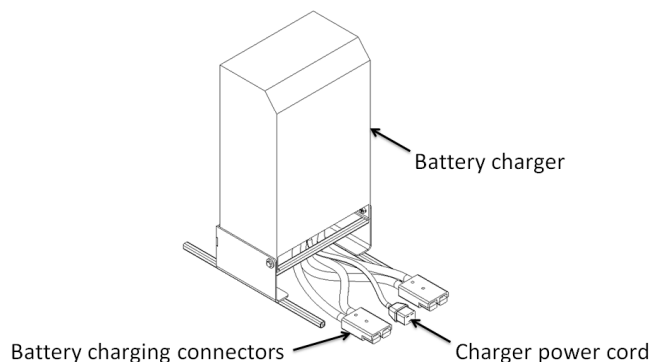


Figure 11 : Battery charger components

6. Plug the charger power cord to the power supply and turn its power on using the switch (if applicable, depending on the model).
7. For the M-27 and the AL-27 models, the current indicator of the charger indicates a value between 2 and 60 amps depending on the actual state of charge of the batteries. Please note that if the indicator is at 60 amps, it does not mean that the batteries are completely discharged. It only means that the charging rate is at its maximum. It will gradually lower as the state of charge of the batteries will increase until it reaches its storage state (2 amps).

For the M-48 and AL-48 models, three different values indicate the state of the charger. The output voltage indicates approximately 28 volts during the whole charging cycle. The output current indicates the charging rate of the batteries. If the batteries are low enough, the total output current (combining the 2 outputs), will be about 100 amps. It will gradually lower as the batteries are charging. The last column of lights indicates the state of charge of the charger. When the battery is fully charged, the state of the charger indicates "Float", then "Storage".

NOTE: For more information on the operation of the charger provided with the MINIDOZER, please refer to the charger manual.

3.9 Adjusting the rear compartment height

WARNING: Before performing the height adjustment on the MINIDOZER, make sure that all the circuit breakers have been placed at the "OFF" position and that the battery cables have been unplugged. See the 3.2 Starting up the MINIDOZER section for more information on the location of these components.

1. Remove the battery cover using the 2 latches located at the back of the machine (see [Figure 10](#)) to have access to the batteries.
2. Insert the battery lifting tool into the battery pack and slowly lift it out of the machine (see [Figure 12](#)). Repeat this step for the second battery pack if necessary (depending of the model).

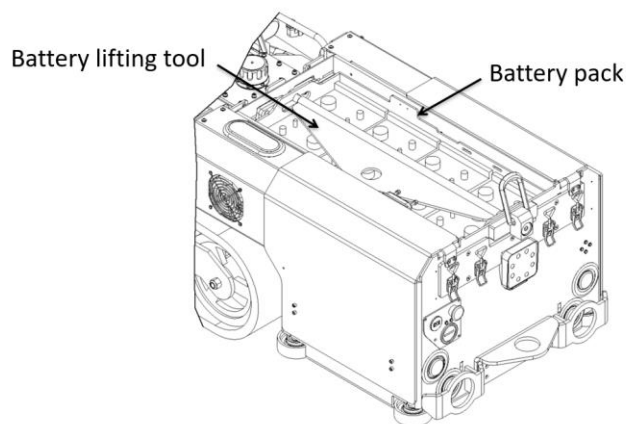


Figure 12 : Removing the battery (electric cables not shown for clarity)

WARNING: Always use an appropriate lifting equipment to lift the battery packs. A complete battery pack weighs about 620 lb (282 kg).

3. Secure the rear compartment of the MINIDOZER.
4. Unbolt the rear compartment by removing the 12 bolts that fasten it to the frame. Follow the order specified in the [Figure 13](#).

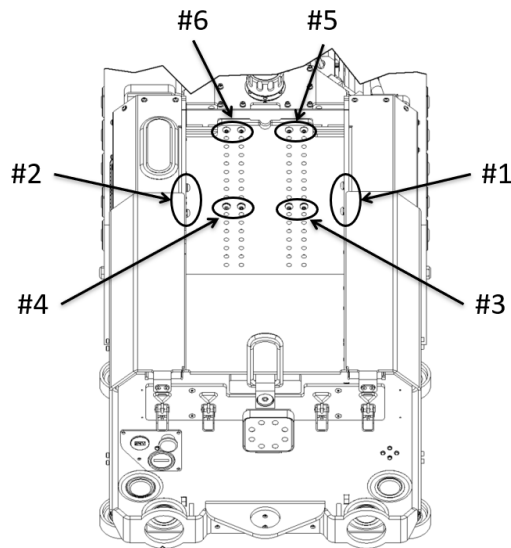


Figure 13 : Removing the rear compartment bolts

5. Before moving the rear compartment, unplug the 6 flexible hydraulic hoses located on the right side of the MINIDOZER and cut the tie-wraps that hold them together.

NOTE: Some hydraulic fluid will slightly flow of the hoses, so prepare some rags to wipe it.

IMPORTANT: Identify the hydraulic hoses to make sure that they will be reinstalled respectively on the right component.

6. Adjust the rear compartment to the desired height with proper lifting equipment.

IMPORTANT: While adjusting the height, make sure that the hydraulic hoses and the electric cables do not bend, stretch or get stuck between 2 moving parts. Stop the adjustment to rearrange the hoses or the cables if necessary.

7. When the compartment is at the desired height, reinstall the 12 bolts removed at the step 4. Make sure that the rear compartment is parallel to the back of the oil tank and that the holes are correctly aligned before screwing any bolt. The bolts must be installed in the reverse order of the [Figure 13](#) to facilitate the assembly. Refer to the [Table 1](#) to apply the right torque when reinstalling the bolts.

Table 1 : Torque by bolts location

Bolts	Part numbers	Torque
#1 & #2	B0E-1210 + THREADLOCKER (BLUE)	31.5 N.M.
#3 & #4	B4Y-1210 + THREADLOCKER (BLUE)	31.5 N.M.
#5 & #6	B4Y-1211 + EC1-0612	44.3 N.M.

8. When the rear compartment is correctly installed, reinstall the 6 flexible hydraulic hoses. Place the excess hoses inside the rear compartment. Avoid hoses excessive bending to limit wear. You may have to rotate some of the hydraulic fittings to complete the installation, but make sure that they are tightened enough to avoid leakage. You may also have to change the hoses path from the original. Use tie-wraps to hold the hoses together when they are correctly placed.
9. Using the lifting tool and proper lifting equipment, reinstall the battery pack in the rear compartment.

10. Follow the steps of the **3.2 Starting up the MINIDOZER** section to reinstall the battery cables and to reactivate the circuit breakers.

3.10 Lifting of the Minidozer

WARNING: Always use the 3 lifting points to lift the Minidozer.

WARNING: Always lift the Minidozer with a lifting point at a minimum of 66" (1.7m) above the oil cap.

WARNING: Always use slings with a WLL of 7650lb (3477kg)

IMPORTANT: Make sure that no one stands under the load during lifting operations.

IMPORTANT: Always use lifting equipment that are in good condition and has a WLL that fit the loads.

1. Position the Minidozer bucket and arm as follow:



Figure 14 : Lifting position of the Minidozer

2. Attach the lifting slings to the lifting rings (2 lifting rings are positioned near the oil tank and 1 is on the rear end).
3. Using the proper lifting equipment, lift the Minidozer to its working area.

Lifting rings inspection criteria

Before every use, make sure to inspect the following criteria:

- The working load limit should be clearly visible on the lifting components such as the lifting rings, the slings and the lifting device.
- Check for deformation of the component parts such as body, load ring and bolt.
- Check for mechanical damage such as notches or other problems that could cause malfunction of the lifting rings.
- Check for evidence of corrosion.
- Rotate the rings on both directions to make sure the lifting ring is free of any movement.
- **The structural bolts identified in the Figure 15 must be inspected before each lifting operation.** Additional information regarding this inspection is described below:

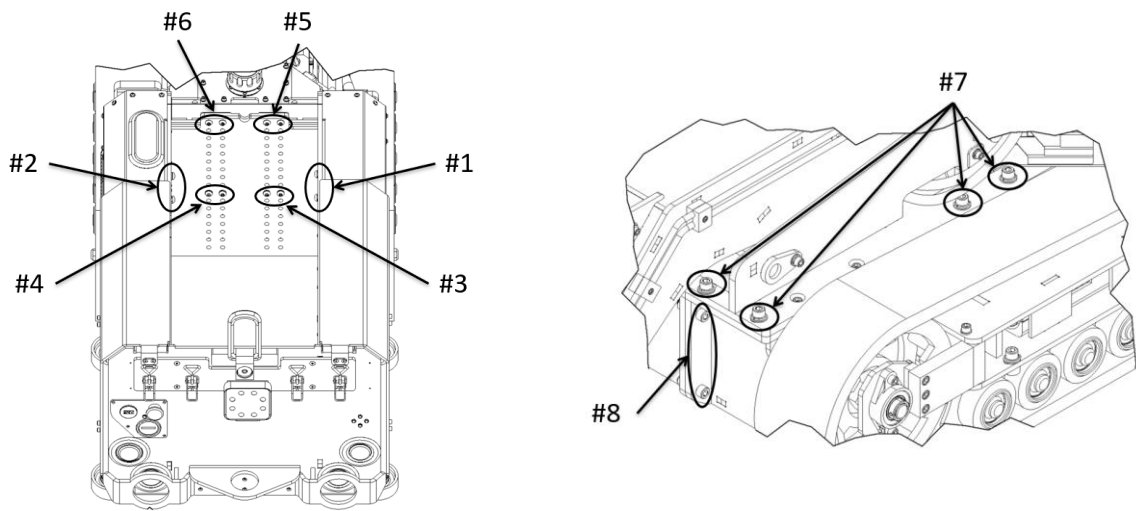


Figure 15 : Structural bolts locations

WARNING: Before making any maintenance on the MINIDOZER, make sure that all the circuit breakers have been placed at the “OFF” position and that the battery cables have been unplugged, except if specified. See the [3.2 Starting up the MINIDOZER](#) section for more information on the location of these components.

- a. Remove the battery cover using the 2 latches located at the back of the machine (see [Figure 10](#)) to have access to the batteries.
- b. Insert the battery lifting tool into the battery pack and slowly lift it out of the machine (see [Figure 12](#)). Repeat this step for the second battery pack if necessary (depending of the model).

WARNING: Always use an appropriate lifting equipment to lift the battery packs. A complete battery pack weighs about 620 lb (282 kg).

- c. Secure the rear compartment of the MINIDOZER.
- d. To verify these bolts, follow these steps:
 - i. Verify that the bolt is not broken or damaged.
 - If it is broken or damaged, replace using the right part number and by applying the appropriate torque (see [Table 2](#)).
 - If it is not broken, using the appropriate tool, verify that it is not loose. If it is, apply the right torque (see [Table 2](#)).

Table 2 : Torque by bolts location

Bolts	Part numbers	Torque
#1 & #2	B0E-1210 + THREADLOCKER (BLUE)	31.5 N.M.
#3 & #4	B4Y-1210 + THREADLOCKER (BLUE)	31.5 N.M.
#5 & #6	B4Y-1211 + EC1-0612	44.3 N.M.
#7	B0T-1412 + RD0-1214 + THREADLOCKER (BLUE)	126.2 N.M.
#8	B0T-1412 + EC0-8614 + THREADLOCKER (BLUE)	126.2 N.M.

4 Maintenance

WARNING: Before making any maintenance on the MINIDOZER, make sure that all the circuit breakers have been placed at the “OFF” position and that the battery cables have been unplugged, except if specified. See the [3.2 Starting up the MINIDOZER](#) section for more information on the location of these components.

IMPORTANT: Before each use, perform a visual inspection of the machine and fill the DVI sheet with the required information.

4.1 Recommended maintenance schedule

Maintenance interval	Maintenance description
After the first 75 hours	Replace the hydraulic filter
Before each lifting operation of the machine	Inspect the Minidozer (including the structural bolts). Refer to the 3.10 Lifting of the Minidozer section for more information.
Before each use	- Keep machine clean of dust and debris - Verify hydraulic fluid level - Verify the hydraulic system for leaks - Lubricate the lifting arm and bucket pivots - Verify and adjust the track tension - Verify the tracks for excessive wear and replace them if necessary - Verify for loose fasteners - Lubricate the rolling bearings
Every 2 weeks or 80 hours	Verify and adjust the battery electrolyte (wet lead-acid batteries only)
Every month or 160 hours	- Clean the battery poles - Verify the battery connectors
Every 1 ½ month or 250 hours	- Replace the hydraulic filter - Verify and grease the road wheels
Every 3 months or 500 hours	Change the hydraulic fluid
Every 6 months or 1000 hours (every model)	Inspect the Minidozer and the structural bolts. Refer to the 3.10 Lifting of the Minidozer section for more information.
Every 6 months or 1000 hours (aluminum smelter models only)	Perform the rotation of the motors (with the rebuilt ones)
Every year or 2000 hours	- Verify safety decals and replace if necessary - Replace the hydraulic fluid tank gasket
Every 4000 hours	Change the gearboxes oil

4.2 Lubrication

IMPORTANT: Always use NLGI grade 2 grease.

Lubricating the lifting arm and bucket pivots

- Frequency: Before each use*
- Lower the lifting arm and tilt the bucket down before deactivating the machine.
 - Deactivate the machine by putting all the circuit breakers to the “OFF” position and by unplugging the battery cables. Refer to the [3.2 Starting up the MINIDOZER](#) section for more information.

3. Locate the #1 to #4, #6 and #7 pivot grease fittings (see [Figure 16](#)).

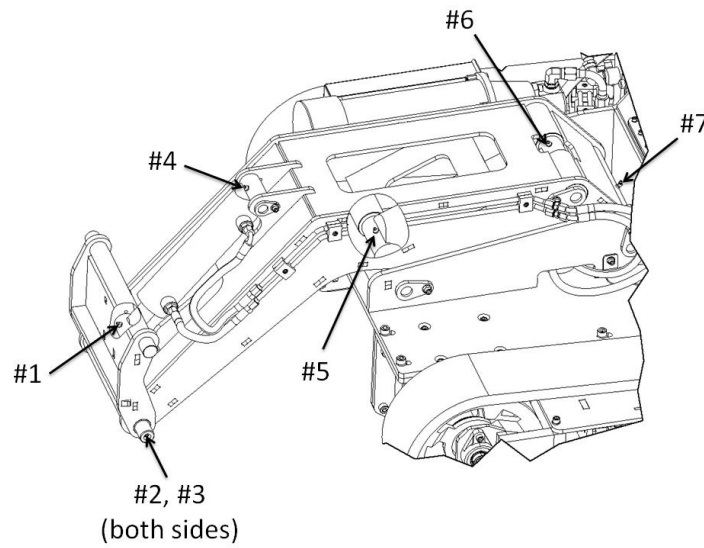


Figure 16 : Pivot grease fittings locations (bucket removed for clarity)

4. Clean the grease fittings with a rag.
5. Use a grease gun to inject the grease inside the grease fitting. Stop when the grease begins to ooze out of the sleeve.
6. Wipe up any excess grease with a rag.
7. Activate the machine by putting all the circuit breakers to the "ON" position and by plugging the battery cables. Refer to the [3.2 Starting up the MINIDOZER](#) section for more information.
8. Raise the lifting arm to its maximum and secure it.
9. Deactivate the machine by putting all the circuit breakers to the "OFF" position and by unplugging the battery cables. Refer to the [3.2 Starting up the MINIDOZER](#) section for more information.
10. Repeat the steps 4 to 6 for the grease fitting #5.
11. Activate the machine by putting all the circuit breakers to the "ON" position and by plugging the battery cables. Refer to the [3.2 Starting up the MINIDOZER](#) section for more information.

Lubricating the rolling bearings

- *Frequency: Before each use*
1. Clean the grease fitting with a rag (see [Figure 17](#)).

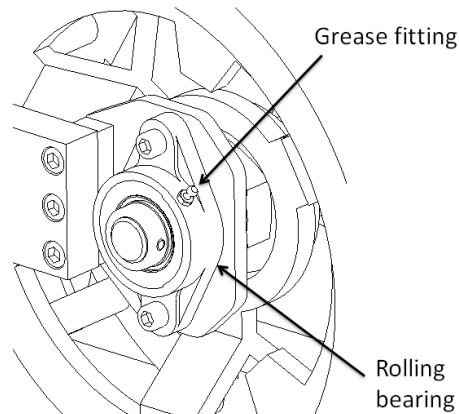


Figure 17 : Rolling bearing grease fitting location

2. Use a grease gun to inject the grease inside the bearing.

IMPORTANT: Grease slightly to make sure that the bearing seal is not damaged. Do not wait to see grease oozing out of the bearing.

3. Wipe up any excess grease with a rag.
4. Repeat these steps for the second rolling bearing.

4.3 Battery maintenance

DANGER: Depending on the model, the MINIDOZER may be equipped with wet lead-acid batteries. The battery electrolyte contains sulfuric acid which is a deadly poison and can cause severe burns. Never drink the electrolyte and avoid contact with skin, eyes and clothing. Always wear personal protective equipment such as protection goggles and rubber gloves when making any maintenance on the batteries. If acid comes into contact with skin or eyes, immediately rinse with clean water. Always wait 2 hours after charging the batteries to perform any maintenance operations on them.

Cleaning the battery poles

- *Frequency: Every month or every 160 hours (whichever comes first)*
1. Remove the battery cover using the 2 latches located at the back of the machine (see [Figure 10](#)) to have access to the batteries.
 2. Clean the top of the batteries, the terminals and the poles with a rag or a brush and a sodium bicarbonate solution (1 cup of sodium bicarbonate for 1 gallon of water).

IMPORTANT: Make sure that the sodium bicarbonate solution does not get into the batteries.

3. Rinse with water and dry up with a clean rag.
4. Reinstall the battery cover and secure it using the 2 latches described at the step 1.

Verifying the electrolyte level (wet lead-acid batteries only)

- Frequency: Every 2 weeks or every 80 hours (whichever comes first)

NOTE: It is not necessary to remove the batteries from the MINIDOZER to perform this verification.

*NOTE: The batteries must be fully charged before verifying the electrolyte level or adding water in them. Refer to the **3.8 Charging the batteries** section for more information on the steps to follow to charge the batteries.*

1. Remove the battery cover using the 2 latches located at the back of the machine (see [Figure 10](#)) to have access to the batteries.
2. Remove the white battery caps (3 per battery) to have access to the interior of the battery (see [Figure 18](#)).

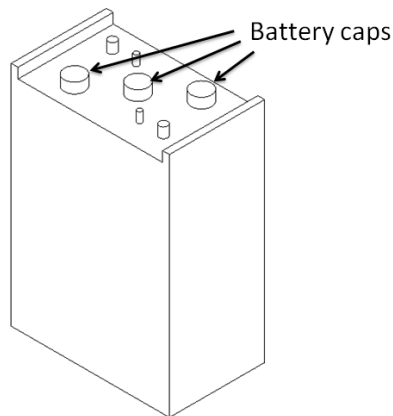


Figure 18 : Battery caps location

3. Verify through each of the 3 openings that the level is nearly 1/8 in (3 mm) below the top of the cell chamber (see [Figure 19](#)). If this is the case, the level is sufficient. The white battery caps can be reinstalled as well as the battery cover of the MINIDOZER. If the level is not sufficient, distilled or deionized water must be added in the batteries (see the **Adding electrolyte in the batteries (wet lead-acid batteries only)** section).

IMPORTANT: Each of the 3 openings gives access to an independent cell. The electrolyte level must be verified for each cell.

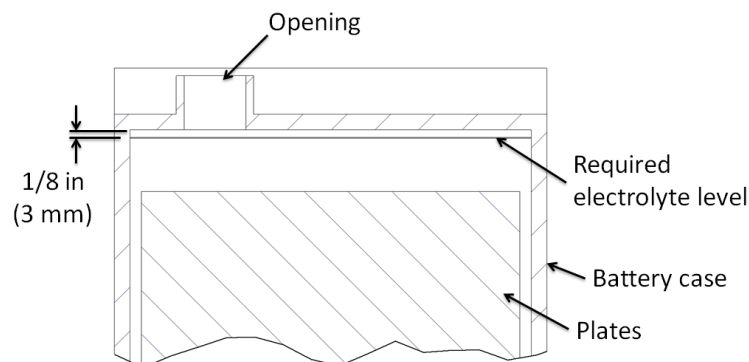


Figure 19 : Electrolyte level details

Adding electrolyte in the batteries (wet lead-acid batteries only)

- *Frequency: If necessary, after verifying the electrolyte level of the batteries.*

NOTE: It is not necessary to remove the batteries from the MINIDOZER to adjust the electrolyte level of the batteries.

IMPORTANT: Use only distilled or deionized water to adjust the electrolyte level of the batteries.

1. Slowly pour water inside the cells where the electrolyte level is not sufficient. Fill the cell until the electrolyte level is nearly 1/8 in (3 mm) below the top of the cell chamber (see [Figure 19](#)).

IMPORTANT: When pouring water in the batteries, make sure not to splash the other components of the machine. Sulfuric acid could damage them and cause corrosion.

Replacing the batteries

- *Frequency: When run-time performance is no longer acceptable*

NOTE: The batteries require some charging cycles to achieve their maximum performance. Thereafter, they will slowly degrade with each charging cycle as well as the run-time of the machine.

NOTE: When replacing the batteries, it is important to dispose of the old batteries in an environmentally friendly and legal manner. Local battery dealers may accept to take the old batteries. If you do not know how or where to dispose of the batteries, contact your local municipal authorities for proper instructions.

1. Remove the battery cover using the 2 latches located at the back of the machine (see [Figure 10](#)) to have access to the batteries.
2. Insert the battery lifting tool into the battery pack and slowly lift it out of the machine (see [Figure 12](#)).

WARNING: Always use an appropriate lifting equipment to lift the battery packs. A complete battery pack weighs about 620 lb (282 kg).

3. Remove all the battery cables using an appropriate tool.

WARNING: The tool used to remove the battery connectors must be handled with care to make sure that it does not enter in contact with 2 poles at the same time. This may result in electrical shock and serious injury.

4. Remove the batteries from the battery case and replace them with the new ones.

IMPORTANT: Always use batteries approved by Movex Innovation to guarantee that the machine meets the standards for which it was designed and to make sure that they are compatible with the charger.

5. Reinstall the battery cables on the new batteries (see step 3).
6. Reinstall the battery pack in the battery compartment of the machine (see step 2).
7. Repeat steps 2 to 6 to replace the batteries of the second battery pack if necessary (depending on the model).
8. Reinstall the battery cover on the machine and secure it with the 2 latches described at the step 1.

4.4 Hydraulic system maintenance

Replacing the hydraulic filter

- *Frequency:* - After the first 75 hours
- Every 250 hours
1. Lower the lifting arm to the ground, tilt the bucket up and secure.
 2. Remove the hydraulic cover using the latch located at the back of the machine (see [Figure 20](#)) to have access to the hydraulic filter.

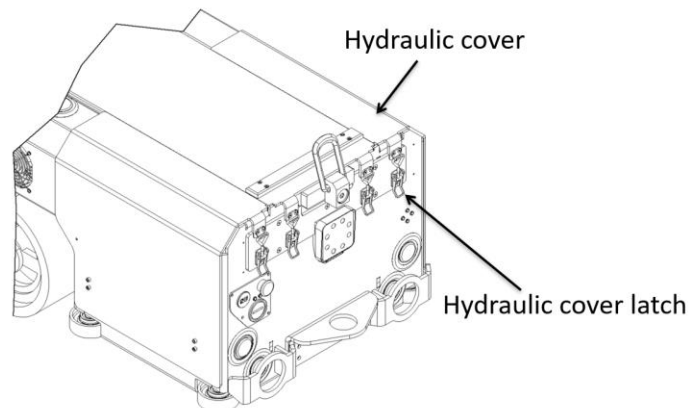


Figure 20 : Hydraulic cover details

3. Unscrew the hydraulic filter (see [Figure 21](#)). The location of the hydraulic filter may slightly be different depending on the model.

NOTE: Some hydraulic fluid may flow of the filter head, so place a pan under the filter to collect it.

IMPORTANT: Make sure that the seal of the filter to be removed is still on the filter and is not stuck on the filter head.

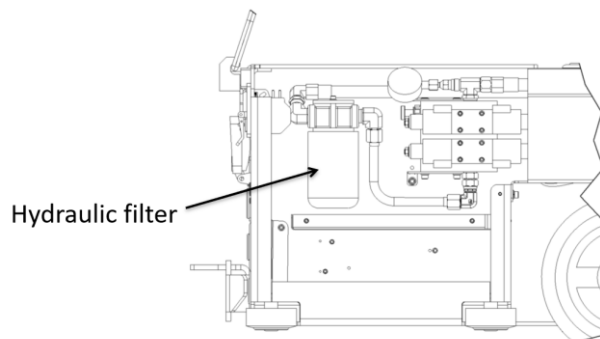


Figure 21 : Hydraulic filter location

4. Prepare the new hydraulic filter by filling it with hydraulic fluid. Also lubricate the seal with a small amount of hydraulic fluid.
5. Install the new hydraulic filter on the filter head. Screw it until the hydraulic filter seal is pressed against the filter head and tighten another 3/4 turn (refer to the instructions on the hydraulic filter).

6. Wipe the hydraulic fluid that have spilled in the compartment.
7. Move the lifting arm up and down for about 2 minutes to purge the air from the hydraulic system and lower it to the ground when it is done.
8. Verify the hydraulic fluid level through the sight level gauge located on the hydraulic fluid tank and adjust if needed (see the [3.7 Verifying and adjusting the hydraulic fluid level](#) section for more information).

Replacing the hydraulic fluid tank gasket

- *Frequency: Every year or every 2000 hours (whichever comes first)*
1. Remove the 12 bolts of the hydraulic fluid tank cover (see [Figure 22](#)). Remove the cover to have access to the gasket.

IMPORTANT: Before removing the hydraulic fluid tank cover, clean the top of the tank to make sure that no contaminant falls into the hydraulic fluid.

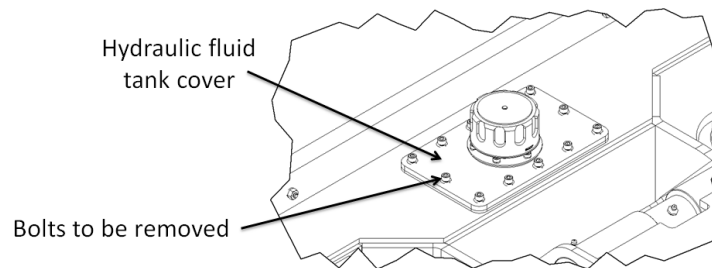


Figure 22 : Hydraulic fluid tank cover details

2. Remove the gasket and replace by a new one.
3. Reinstall the cover using the 12 bolts removed at the step 1.

Replacing the hydraulic pump

- *Frequency: When necessary*

NOTE: Some hydraulic fluid may flow from the hoses and the components when they are disconnected. Prepare some rag to wipe the fluid.

1. Lower the lifting arm and tilt the bucket down before deactivating the machine.
2. Remove the orange plastic insert from the motor adapter (see [Figure 23](#)).

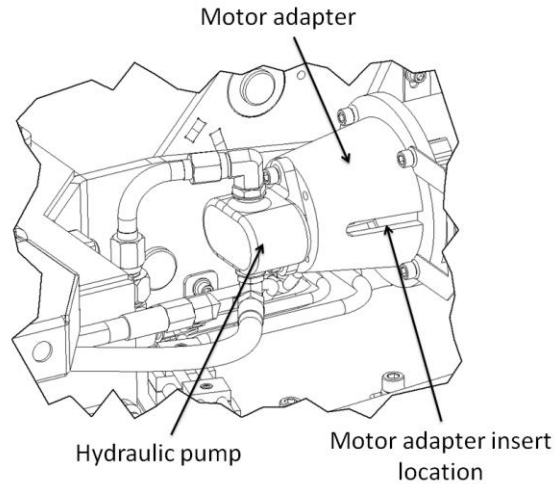


Figure 23 : Motor adapter details

3. Disconnect the upper rigid hydraulic hose, then remove the upper fitting (see [Figure 24](#)). The rigid hydraulic hose may need to be loosened on the tank side then rotated to remove the fitting.

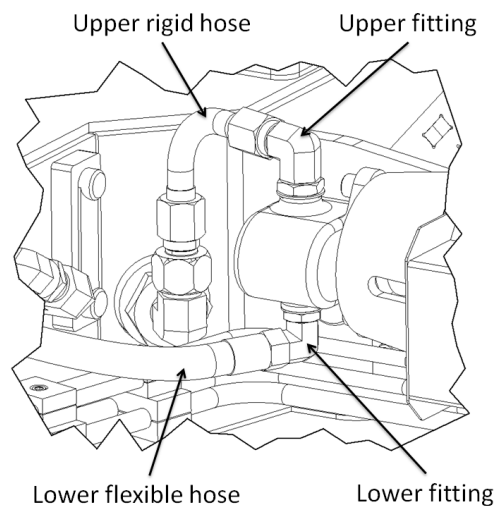


Figure 24 : Hydraulic pump hoses details

4. Remove the lower flexible hydraulic hose, then the lower fitting (see [Figure 24](#)).
5. Unscrew the 2 bolts, then remove the hydraulic pump. Make sure that the coupling insert is still in the electric motor coupling.
6. Unscrew the set screw then remove the coupling from the hydraulic pump shaft (see [Figure 25](#)).

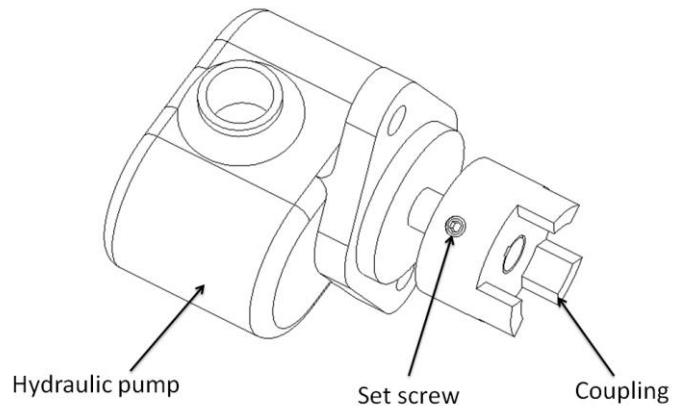


Figure 25 : Hydraulic pump coupling details

7. Install the coupling on the new pump shaft. Do not tighten completely the set screw, but only to keep the key in its keyseat. It will have to be adjusted when mated with the electric motor coupling.
8. Insert the pump shaft and its coupling in the motor adapter. Mate the 2 couplings (hydraulic pump and electric motor) and make sure that the pump set screw can be seen through the opening of the motor adapter to ease the adjustment. A flat screwdriver may be necessary for this operation.
9. Install the pump with the 2 bolts removed at the step 5.
10. Using a flat screwdriver, adjust the distance between the 2 couplings to about 1/16" (1.5 mm) (see [Figure 26](#)).

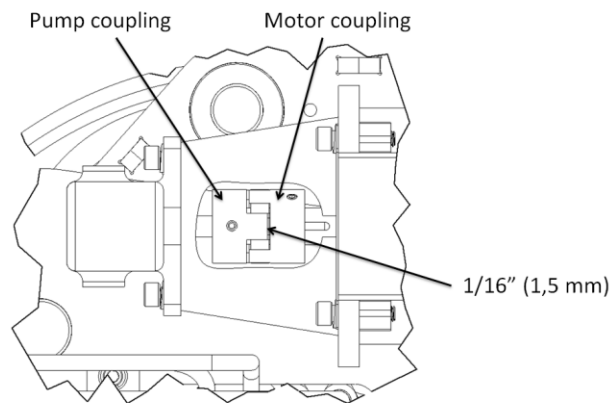


Figure 26 : Coupling adjustment

11. Install the lower fitting and the lower flexible hydraulic hose.
12. Install the upper fitting and the upper rigid hydraulic hose.
13. Activate the machine (see the [3.2 Starting up the MINIDOZER](#) section).
14. Perform many movements with the lifting arm and the bucket to make sure to purge the air from the hydraulic system.
15. Verify the hydraulic fluid level through the sight level gauge located on the hydraulic fluid tank and adjust if needed (see the [3.7 Verifying and adjusting the hydraulic fluid level](#) section for more information).

Replacing the hydraulic valves

- *Frequency: When necessary*

NOTE: Some hydraulic fluid may flow from the hoses and the components when they are disconnected. Prepare some rag to wipe the fluid.

1. Lower the lifting arm and tilt the bucket down before deactivating the machine.
2. Unscrew the 4 bolts to remove the hydraulic valve. Make sure that the 4 o-rings are still inserted in the valve. Repeat this operation for the second valve if necessary.

NOTE: If both valves need to be removed, start with the lower one to prevent spilling hydraulic fluid on it when removing the upper valve.

3. Install the new valves using the bolts removed at the step 2. Make sure that all the o-rings are correctly inserted in the valves.
4. Perform many movements with the lifting arm and the bucket to make sure to purge the air from the hydraulic system.
5. Verify the hydraulic fluid level through the sight level gauge located on the hydraulic fluid tank and adjust if needed (see the **3.7 Verifying and adjusting the hydraulic fluid level** section for more information).

Replacing the hydraulic valves (with aluminum smelters protection)

- *Frequency: When necessary*

NOTE: Some hydraulic fluid may flow from the hoses and the components when they are disconnected. Prepare some rag to wipe the fluid.

1. Lower the lifting arm and tilt the bucket down before deactivating the machine.
2. Unscrew the 4 screws to remove the cover of the valves' protection box.
3. Unscrew the 4 bolts to remove the hydraulic valve. Make sure that the 4 o-rings are still inserted in the valve. Repeat this operation for the second valve if necessary. When removing the second valve (if necessary), make sure to hold the protection box because it is only assembled with the valves' screws. If the box is removed, also verify that the 8 o-rings are still inserted in it.

NOTE: If both valves need to be removed, start with the lower one to prevent spilling hydraulic fluid on it when removing the upper valve.

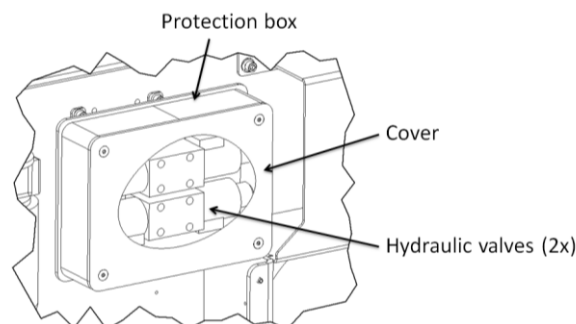


Figure 27 : Protection box details

4. Reinstall the valves and the box using the hardware removed at the step 3.

5. Reinstall the protection box cover using the screws removed at the step 2.
6. Perform many movements with the lifting arm and the bucket to make sure to purge the air from the hydraulic system.
7. Verify the hydraulic fluid level through the sight level gauge located on the hydraulic fluid tank and adjust if needed (see the [3.7 Verifying and adjusting the hydraulic fluid level](#) section for more information).

Changing the hydraulic fluid

- *Frequency: Every 3 months or every 500 hours (whichever comes first)*

1. Lower the lifting arm to the ground, tilt the bucket up and secure.
2. Prepare a pan that can hold about 5 gallons.
3. If the drain plug located under the hydraulic fluid tank is easily accessible, place the pan under it. Remove the drain plug and collect it with the pan. Reinstall the drain plug afterwards.

If the drain plug is not accessible, simply remove the filler breather and using an appropriate device, suck the hydraulic fluid up.

NOTE: Always dispose of the used hydraulic fluid in an environmentally friendly and legal manner.

4. Replace the hydraulic filter (follow the steps 1 to 6 of the [Replacing the hydraulic filter](#) section).
5. Fill the hydraulic fluid tank with AW32 fluid until the level reaches the black line of the sight level gauge (approximately 5 US gallons (19 liters) for the M-48 and AL-48 models and with approximately 2.5 US gallons (9.5 liters) for the M-27 and AL-27 models) and reinstall the filler breather.
6. Move the lifting arm up and down for about 2 minutes to purge the air from the hydraulic system and lower it to the ground when it is done.
7. Verify the hydraulic fluid level through the sight level gauge located on the hydraulic fluid tank and adjust if needed (see the [3.7 Verifying and adjusting the hydraulic fluid level](#) section for more information).

Verifying the hydraulic system for leaks

- *Frequency: Before each use*

DANGER: Never use hands or fingers to search for hydraulic leaks. It is important to only use the far end of a long object such as a piece of cardboard or wood in the suspected path of the hydraulic fluid stream. High pressure hydraulic fluid can penetrate skin and cause injury. Immediately call for emergency medical services if it occurs because the hydraulic fluid must be surgically removed within a few hours.

1. Verify around, under and on the MINIDOZER for hydraulic fluid that may have leaked from the hoses or from the fittings.
2. Replace the worn components and/or tighten the loose fittings if needed.

4.5 Traction system maintenance

Adjusting the track tension

- *Frequency: Before each use*

There should be 2 ¾ in (7 cm) between the tension nut and the end of the tension tube (see [Figure 28](#)). If not, adjust the track tension using the following procedure:

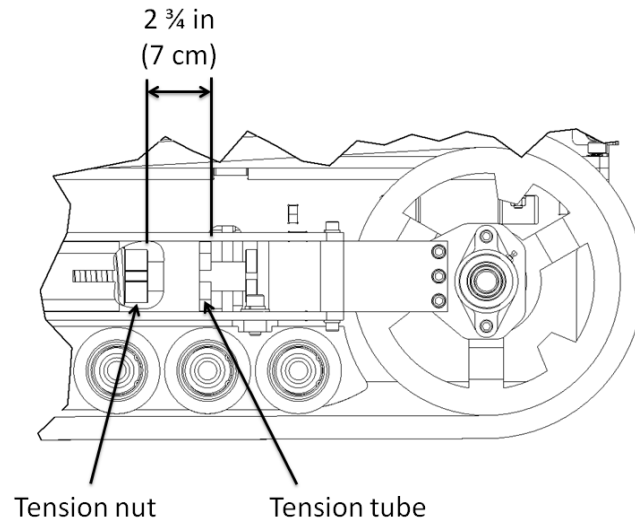


Figure 28 : Track tension validation

1. Lift the MINIDOZER and secure the device.
2. Using a ½ in drive socket wrench, turn the tensioning screw counter-clockwise (see [Figure 29](#)) until the distance between the tension nut and the back of the tension tube is 2 ¾ in (7 cm).

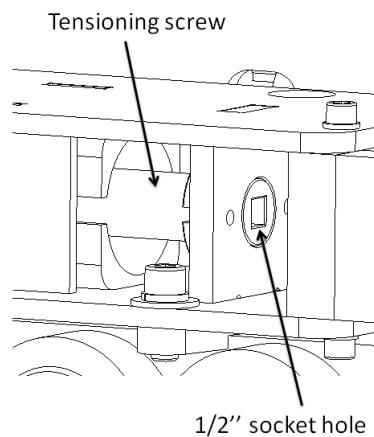


Figure 29 : Adjustment of the track tension

3. Repeat these steps for the other track if necessary.
4. Lower the MINIDOZER to the ground.

Replacing the tracks

- *Frequency: Verify the track wear before each use and replace if necessary*

NOTE: Do not deactivate the machine by putting all the circuit breakers to the "OFF" position and by unplugging the battery cables.

1. Lift the MINIDOZER and secure the device.
2. Using a ½ in drive socket wrench, release the drive tension by turning the tensioning screw clockwise and push the tension wheel until the tension tube is retracted to the maximum.

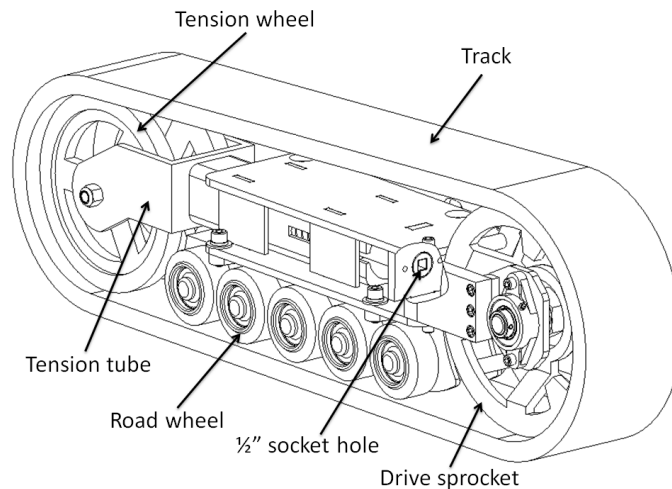


Figure 30 : Traction system parts identification

3. Insert a pry bar between the track and the top of the drive sprocket and apply a tension toward the exterior of the MINIDOZER to force the track lugs out of the sprocket. Keep the tension and rotate forward slowly the drive sprocket using the remote controller. When the track is no more attached to the drive sprocket, it can be removed from the tension wheel and the road wheels.

NOTE: If it is possible, remove completely the tension tube and use NLGI grade 2 grease to lubricate the tensioning screw and the spring assembly. Reinstall the tension tube afterwards.

4. To install the new track, place it around the tension wheel then under and between the road wheels. When the lugs of the tracks are correctly inserted in the tension wheel and between the road wheels, the track can be installed on the drive sprocket. Insert the lugs in the bottom of the drive sprocket while rotating the track rearward to complete the installation.
5. When the track is in place, adjust its tension by turning the tensioning screw counter-clockwise with a ½ in drive socket wrench until the distance between the tension nut and the back of the tension tube is about 2 ¾ in (7 cm) (see [Figure 28](#) and [Figure 29](#)).
6. Repeat steps 1 through 5 to replace the other track.

Lubricating the road wheels

- *Frequency: Every 1 ½ month or every 250 hours (whichever comes first)*

1. Remove the tracks (refer to the [Replacing the tracks](#) section).
2. Remove the 4 bolts of the track guides (one guide per side).

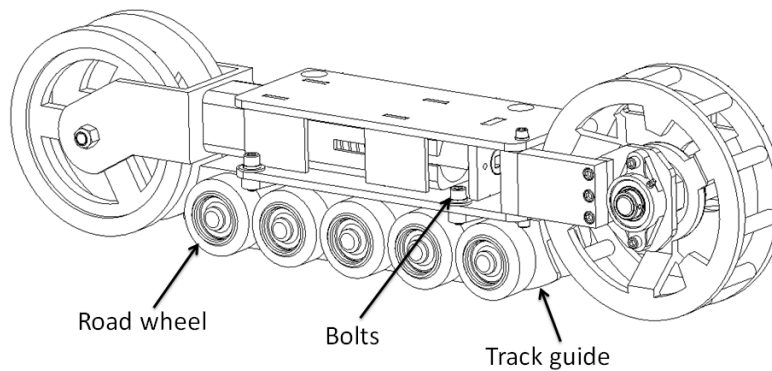


Figure 31 : Removing the track guide

3. Remove the snap ring and the cap from one of a road wheel to have access to the gasket and the hex bolt (see [Figure 32](#)).

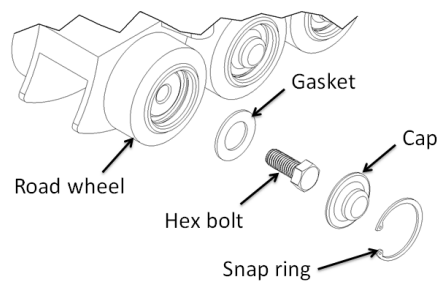


Figure 32 : Road wheel assembly

4. Check the grease under the cap and around the gasket. If it is dirty or depleted, clean it out, replace the gasket and add new grease.
5. Make sure that the road wheel can turn smoothly on its bearing. Replace the road wheel if it's not the case (contact Movex Innovation or your local dealer for more instructions).
6. Place the greased cap over the hex bolt head and secure the assembly with the snap ring.
7. Repeat steps 3 through 6 for the other road wheels (both sides of the traction system).
8. Reinstall the track guide using the bolts removed at the step 2.
9. Reinstall the tracks (refer to the [Replacing the tracks](#) section).

4.6 Gearbox maintenance

Changing the gearbox oil (IP44 model (standard))

IMPORTANT: Always use ISO VG 220 mineral oil to replace the gearboxes oil.

1. Secure the rear compartment so it will not be unbalanced when it will be separated from the traction system.
2. Remove the 8 bolts indicated in the [Figure 33](#). Cut the tie-wraps of the electric cables if there are any.

NOTE: There may be tie-wraps between the 2 sections of the traction system, in the spacer, under the upper section of the MINIDOZER.

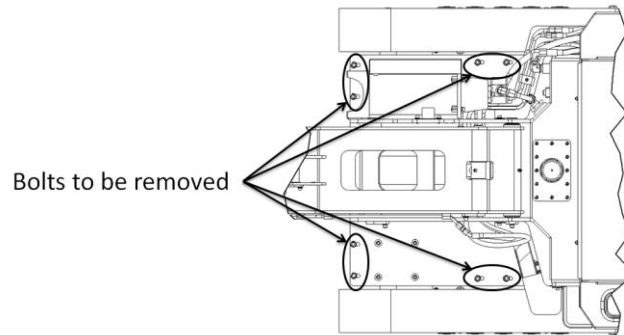


Figure 33 : Bolts to remove to separate the upper section of the MINIDOZER

3. Slowly lift the upper section of the MINIDOZER until all the connectors of the motors are accessible then disconnect them.

WARNING: Before disconnecting the motor connectors, secure the upper section to ensure that this action is performed safely.

IMPORTANT: Make sure not to stretch the electric cables while lifting the rear compartment.

IMPORTANT: Always use proper lifting equipment to lift any part of the MINIDOZER.

4. Completely remove the upper section of the MINIDOZER.
5. For the M-27 and AL-27 models, separate the 2 sections of the traction system by removing the 4 bolts (see [Figure 34](#)).

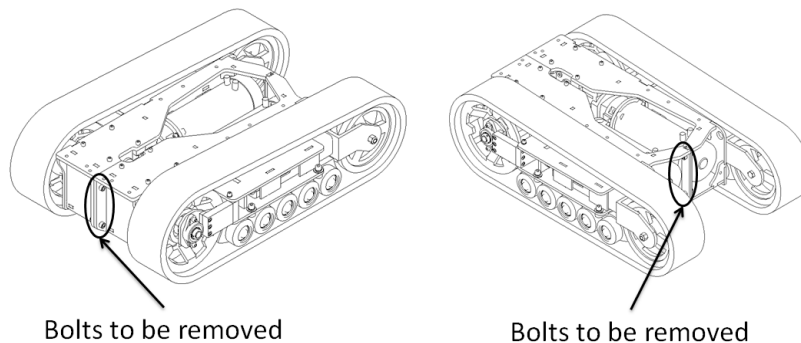


Figure 34 : Separate the traction system (M-27 and AL-27)

For the M-48 and AL-48 models, separate the 2 sections of the traction system from the center spacer by removing the 8 bolts (see [Figure 35](#)).

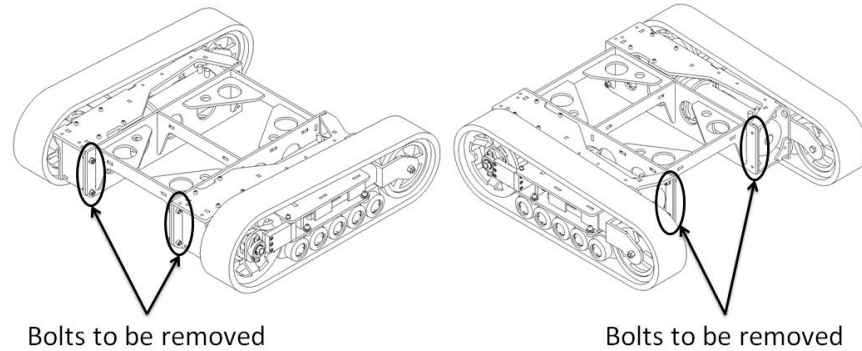


Figure 35 : Separate the traction system (M-48 and AL-48)

6. Take one of the 2 sections and locate the drain plugs on the gearbox (see Figure 36). Remove one of the upper ones to use as a vent and after, remove the lower drain plug and gather the gearbox oil with a pan that can hold up to 0.52 US gallon (2 liters).

NOTE: The gearbox does not have to be removed from the traction system to change its oil.

NOTE: Always dispose of the used gearbox oil in an environmentally friendly and legal manner.

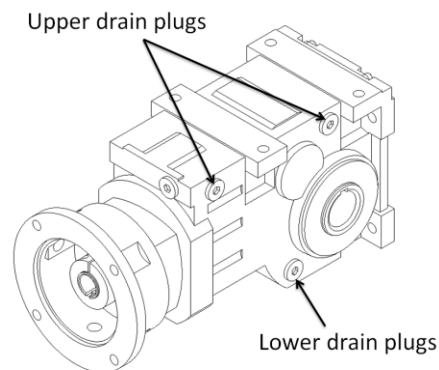


Figure 36 : Gearbox drain plugs location

7. When all the oil has been removed from the gearbox, reinstall the lower drain plug.
8. Remove a second upper drain plug and fill the gearbox with about 0.52 US gallon (2 liters) of ISO AVG 220 mineral oil.
9. Reinstall the 2 upper drain plugs on the gearbox.
10. Repeat the steps 6 to 9 to change the oil of the second gearbox.
11. Reassemble the MINIDOZER following the steps 1 to 5 in the reverse order.

Changing the gearbox oil (IP65 model (standard))

IMPORTANT: Always use ISO VG 220 mineral oil to replace the gearboxes oil.

1. Secure the rear compartment so it will not be unbalanced when it will be separated from the traction system.

2. Unplug the motor connectors located on the left side of the machine then separate the cable from the connector.
3. Remove the 8 bolts indicated in the [Figure 33](#). Cut the tie-wraps of the electric cables if there are any.

NOTE: There may be tie-wraps between the 2 sections of the traction system, in the spacer, under the upper section of the MINIDOZER.

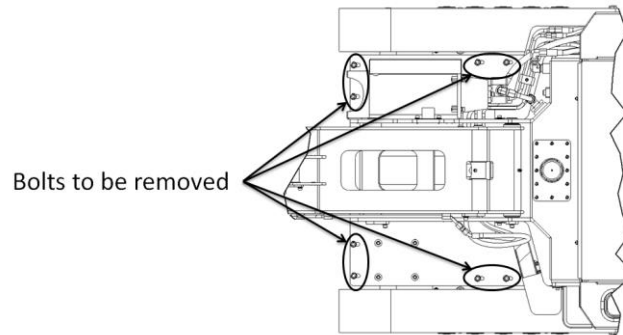


Figure 37 : Bolts to remove to separate the upper section of the MINIDOZER

4. Slowly lift the upper section of the MINIDOZER until the remaining motor connectors are accessible then disconnect them. Make sure that the cables unplugged at the step 2 slide through the opening of the upper section while raising it.

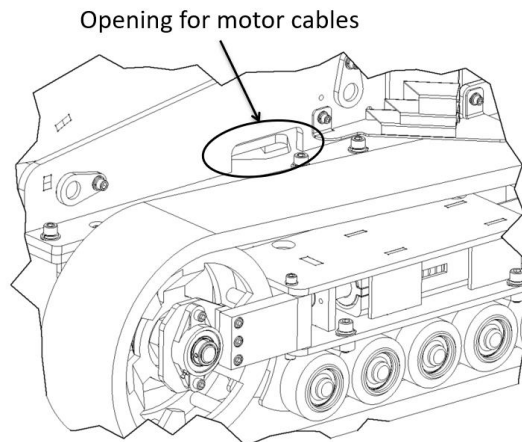


Figure 38 : Upper section opening details

WARNING: Before disconnecting the motor connectors, secure the upper section to ensure that this action is performed safely.

IMPORTANT: Make sure not to stretch the electric cables while lifting the rear compartment.

IMPORTANT: Always use proper lifting equipment to lift any part of the MINIDOZER.

5. Completely remove the upper section of the MINIDOZER.
6. For the M-27 and AL-27 models, separate the 2 sections of the traction system by removing the 4 bolts (see [Figure 34](#)).

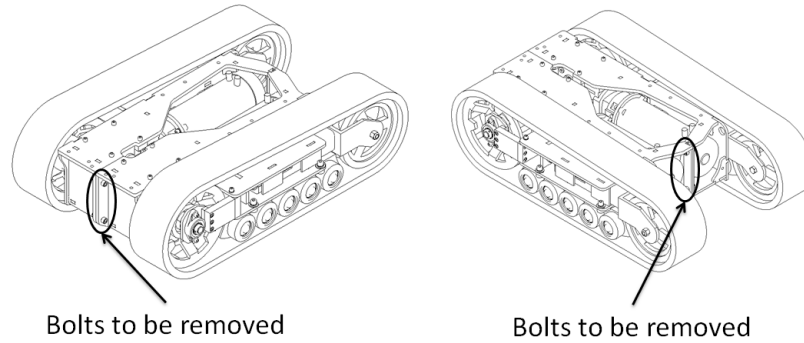


Figure 39 : Separate the traction system (M-27 and AL-27)

For the M-48 and AL-48 models, separate the 2 sections of the traction system from the center spacer by removing the 8 bolts (see Figure 35).

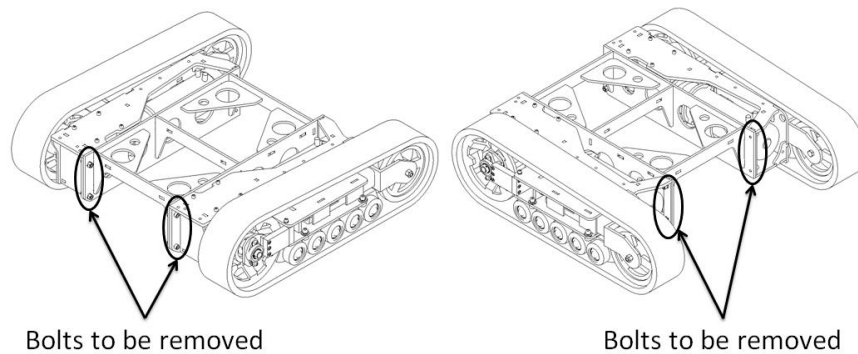


Figure 40 : Separate the traction system (M-48 and AL-48)

7. Take one of the 2 sections and locate the drain plugs on the gearbox (see Figure 36). Remove one of the upper ones to use as a vent and after, remove the lower drain plug and gather the gearbox oil with a pan that can hold up to 0.52 US gallon (2 liters).

NOTE: The gearbox does not have to be removed from the traction system to change its oil.

NOTE: Always dispose of the used gearbox oil in an environmentally friendly and legal manner.

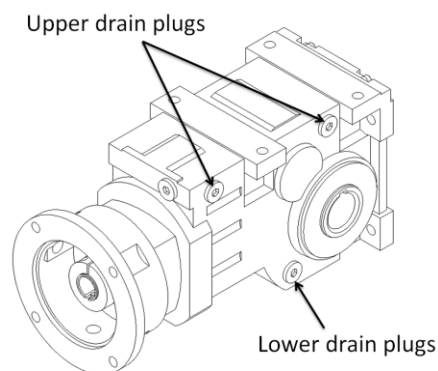


Figure 41 : Gearbox drain plugs location

8. When all the oil has been removed from the gearbox, reinstall the lower drain plug.

9. Remove a second upper drain plug and fill the gearbox with about 0.52 US gallon (2 liters) of ISO AVG 220 mineral oil.
10. Reinstall the 2 upper drain plugs on the gearbox.
11. Repeat the steps 6 to 9 to change the oil of the second gearbox.
12. Reassemble the MINIDOZER following the steps 1 to 5 in the reverse order.

4.7 DC Electric motors maintenance

In order to improve the lifespan of the DC electric motor for the aluminum smelters models (1 for the hydraulic system), Movex suggests to change it every 6 months or 1000 hours (whichever comes first). It should be sent to an electric motor specialist company to be cleaned or rebuilt if necessary. Another motor should be used until the next replacement. With only 2 motors and the preventive maintenance, the lifespan of this component can be greatly improved.

Changing the hydraulic DC electric motor

1. Remove the motor guard (4 bolts)

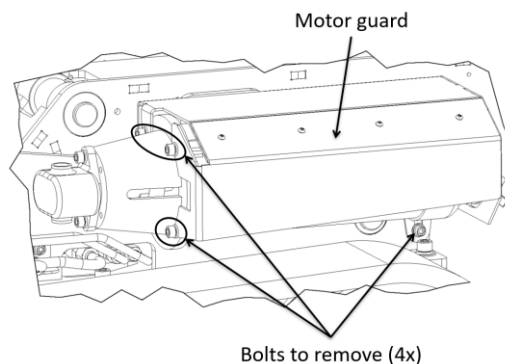


Figure 42 : Removing the motor guard (hoses hidden for clarity)

2. Remove the remaining screw that fasten the motor to the pump adapter.

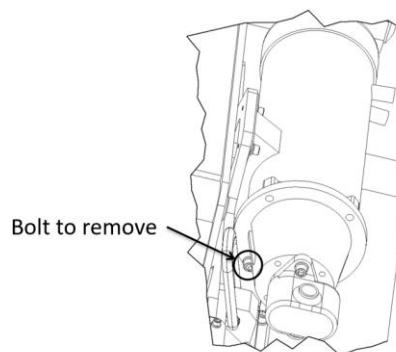


Figure 43 : Unfastening the motor from the pump adapter (hoses hidden for clarity)

3. Unscrew the 4 bolts that fasten the motor to the frame.

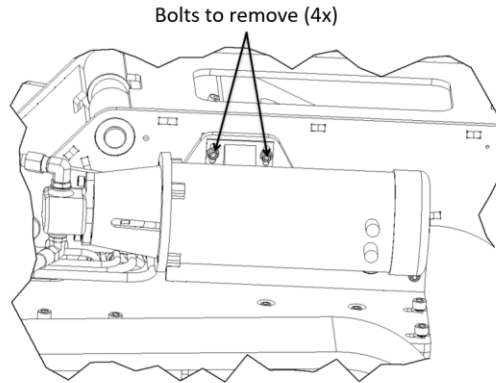


Figure 44 : Removing the hydraulic motor

4. Take note of the position of the coupling on the electric motor shaft. It will need to be placed at the same position on the new motor.
5. Install the coupling on the new motor (with the measure taken at the previous step).
6. Install the motor on the machine following the steps 1 to 3 in the reverse order.

4.8 Cleaning the MINIDOZER

IP44 model (standard)

IMPORTANT: Never use water (high pressure water jet or other) to clean the machine (interior and exterior). Doing so could damage the electric components that are weatherproof, not waterproof.

1. Remove the electric, battery and hydraulic covers (see [Figure 5](#), [Figure 10](#) and [Figure 20](#)).
2. Using an air jet and a vacuum cleaner, remove the dirt and the debris from the MINIDOZER. A dry or damp rag can also be used to remove stubborn dirt.
3. Reinstall the electric, battery and hydraulic covers.

IP65 model (optional)

When a Minidozer is equipped with this feature, it is allowed to use water to clean the motors of the traction system. For the rest of the machine, refer to the [IP44 model \(standard\)](#) section.

5 Storage

- Before storing the MINIDOZER, turn the machine power off by pressing the red emergency stop button located on its control panel. Also press the wireless remote controller red emergency stop button to turn its power off.
- When not in service, always connect the machine to the charger to keep the batteries as charged as possible.
- Store the MINIDOZER and its accessories in a place protected from the rain and the snow and at temperature between -10°C (14°F) and 30°C (86°F).

6 Troubleshooting

#	Observation	Answer	Solution
1	The MINIDOZER does not start and the voltmeter shows no reading.	The MINIDOZER is not correctly powered.	Verify that the battery cables are correctly plugged, that the circuit breakers are at the "ON" position and that the fuses are not blown.
		The MINIDOZER was probably stored without an external power source. The batteries are completely dead and the smart charger is not able to charge them.	Remove the battery cover and recharge the batteries with a manual charger for 20 minutes then recharge with the smart charger.
2	The speed and/or strength of the track system or the hydraulic system is abnormally reduced. Red indicator lights may also be flashing.	The temperature of the motor controller is too high.	Lower the temperature of the machine before continuing to operate.
		The motor controllers are defective.	Replace the motor controller(s). Contact Movex Innovation technical support for assistance.
		The electric motors are defective.	Replace the electric motor(s). Contact Movex Innovation technical support for assistance.
3	The battery charger of the MINIDOZER is not working properly.	The main may not be appropriate.	Measure the main and refer to the charger manual to confirm if the electric installation is adequate.
4	The MINIDOZER is not moving properly, either traction or hydraulic functions, and some lights are flashing on the wireless remote controller.	There is a malfunction in the wireless remote system.	Refer to the Wireless remote controller section for more information.
			Contact Movex Innovation technical support on how to interpret the error code and for telephone assistance.
5	The wireless remote controller does not log to the MINIDOZER.	The logging procedure is not adequate.	Refer to the Activating the MINIDOZER / wireless remote controller section.

Notes

[illegible]

