

# Safety Manual

4812334128.pdf



**Must not be removed from the roller.**

**Valid for DRA and DRS rollers.**



## Table of Contents

1. Safety Instructions, general .....	1
2. Before starting.....	5
2.1 Preparations before starting.....	5
3. Operation .....	9
3.1 Preparations before starting.....	9
3.2 Procedures after starting.....	9
3.3 Starting in cold climate.....	10
3.4 Operating .....	11
3.5 Procedures after operating.....	15
4. Transport.....	17
4.1 Personal safety .....	17
4.2 The transport vehicle.....	17
4.3 Loading/unloading with ramp .....	17
4.4 Loading/unloading with a crane .....	18
4.5 Towing.....	18
5. Refueling.....	19
5.1 Safety procedures during refueling .....	19
5.2 Fire protection .....	19
6. Repair and maintenance.....	21
6.1 Preparations for repair and maintenance.....	22
6.2 Working with the diesel engine .....	23
6.3 Working with the cooling system.....	24
6.4 Working with the hydraulic system.....	25
6.5 Working with the battery.....	26
6.6 Working with the tires.....	27
6.7 Inspection of ROPS (Roll-Over Protective Structures).....	28
6.8 Climate control and pressure vessel .....	29
6.9 Anti-slip protection.....	29
6.10 Heavy parts .....	30
6.11 Control units and software .....	30





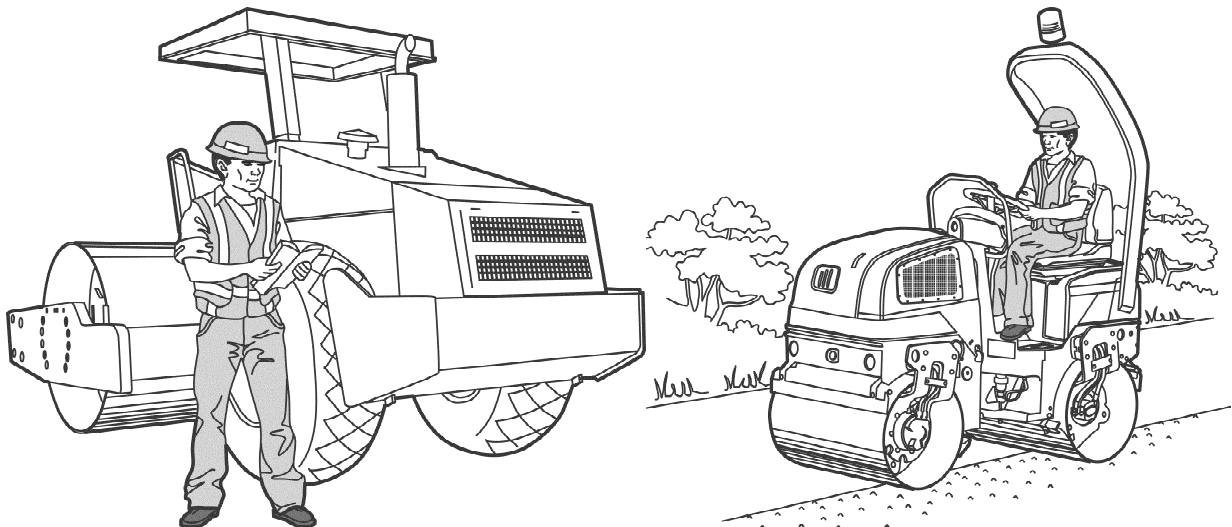
**1. Safety Instructions, general**

**This is why safety is important for you!**

**Our design engineers have put your safety and the safety of your fellow workers first to guarantee that you get a safe and reliable machine from Dynapac.**

**Nevertheless, safety remains your own personal responsibility.**

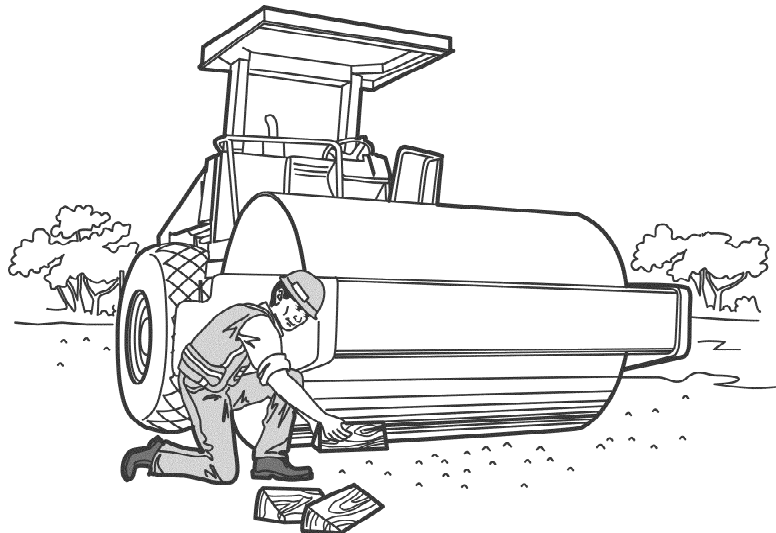
**The purpose of this Safety Manual is to draw your attention to certain safety measures that you and your colleagues can be expected to encounter during your daily work with Dynapac's rollers.**





- The operator must be familiar with the contents of the OPERATION section before starting the roller.
- Ensure that all instructions in the MAINTENANCE section are followed.
- Only the operator is allowed to be on the roller. Remain seated at all times when operating the roller.
- Never use the roller if it is in need of adjustment or repair.
- Only ascend and descend the roller when it is stationary. Use the intended footsteps, grips and rails. Always use the three-point grip (both feet and one hand, or one foot and both hands) when ascending or descending the machine. Never jump down from the machine.
- Dynapac always recommends mounted ROPS (Roll Over Protective Structure), or a ROPS-approved cab and seat belt usage.
- Drive slowly in sharp bends.
- Avoid driving across slopes. Drive straight up or straight down the slope.
- Never operate with the drum outside the edge, the substrate might not have full bearing strength or the edge is close to a slope. Avoid operating close to edges and ditches and the like as well as on poor ground conditions that jeopardizes the bearing strength and capacity to support the roller.
- Make sure that there are no obstacles in the direction of travel, on the ground, in front of or behind the roller, or overhead.
- Drive particularly carefully on uneven ground.
- Keep the roller clean. Clean any dirt or grease that accumulates on the footsteps or operator platform to avoid slipping risk. Keep all signs and decals clean and legible.
- Safety measures before refueling:
  - Stop the engine
  - Do not smoke.
  - No naked flames in the vicinity of the roller.
  - Earth the filling equipment nozzle by keeping it in contact to the tank opening to avoid sparks.
- Before repairs or service:
  - Chock the drums/wheels.
  - Lock the articulation if necessary.
  - Place blocks under overhanging equipment, such as strike-off blade, edge cutter/compactor and chip spreader.
- Hearing protection is recommended if the noise level exceeds 80 dB(A). The noise level can vary depending on the equipment on the machine and the surface the machine is being used on.

- **Modifications to the roller, including the use of any attachment/equipment, not approved by Dynapac that might compromise safety (including visibility) are not allowed. Any modifications are only to be made after written approval has been given by Dynapac.**
- **Avoid using the roller before the hydraulic fluid has reached its normal working temperature. Braking distances can be longer than normal when the fluid is cold.**
- **For your own protection always wear:**
  - working boots with steel toecaps
  - ear protectors
  - reflecting clothing/high visibility jacket**Also wear:**
  - helmet if no cab or FOPS, or if required by worksite management
  - working gloves if no cab and for work outside operator's platform.
- **If the machine seems to be responding abnormally during travel, stop and check it.**





**2. Before starting****2.1 Preparations before starting**

As the operator of the roller you must be familiar with the safety regulations applicable for your employer and the local regulations applicable for the work, such as signals, hand signals, signs and markings. It is strictly prohibited to operate or work with the roller under influence of alcohol, drugs or medicines.

If the machine is used in coordination with other machines, vehicles and people on the jobsite, the operator shall follow jobsite organization rules where the machine is supposed to be used.

Find out where fire extinguishers and first-aid supplies are located and be aware of contact information in case of emergency.

Use your common sense to avoid incidents and accidents. If an accident should occur, avoid acting in panic. Take rapid and effective action to save human life as the first priority, and secondly to avoid material damage.

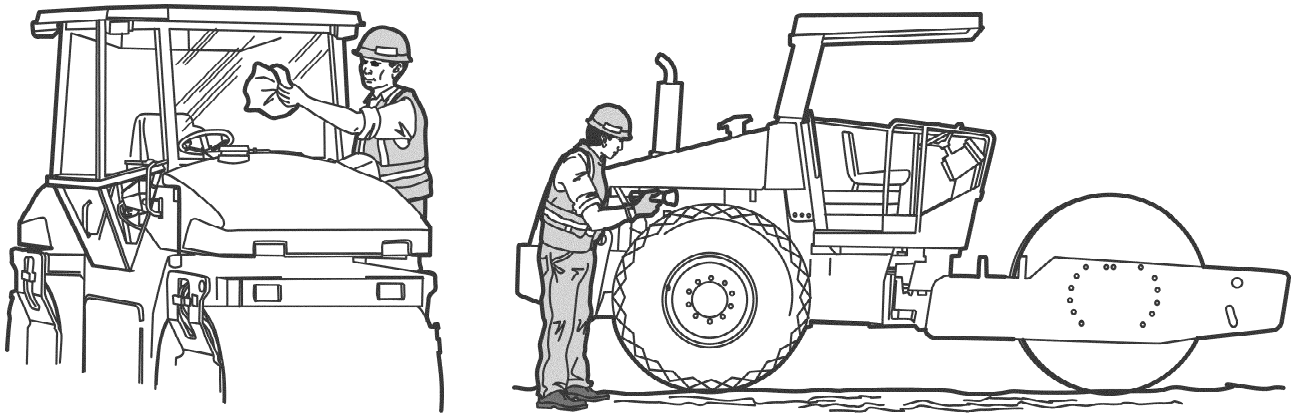
For your own personal protection always use:

- work shoes with toecaps
- hearing protection
- reflecting clothes/high-visibility jacket

Also wear:

- helmet if no cab or FOPS, or if required by worksite management.
- working gloves if no cab and for work outside operator's platform.

When necessary use protective glasses and face mask.



### **2.1.1 Inspect the machine**

**Check:**

- that there is no damage to the machine, such as loose parts, cracks or damaged parts. If there is any damage, do not use the machine until it has been repaired (place a warning sign on the machine to prevent operation of damaged machine).
- that windows and mirrors are clean and in good condition.
- that all signs and decals are clean and legible.
- that all hand and foot controls, steps, anti-slip protection and grips are not icy, or covered with oil or dirt.
- that no tools or other objects are lying unsecured on the machine.
- that all fluids are up to the correct level. Top up if necessary.
- that there is enough fuel, see section for Refueling.
- that the lights work.

**Note that smoking is prohibited when checking the oil and refueling the machine!**

**If you have detected a fault, or suspect any damage to the roller, contact your foreman for the requisite measures.**

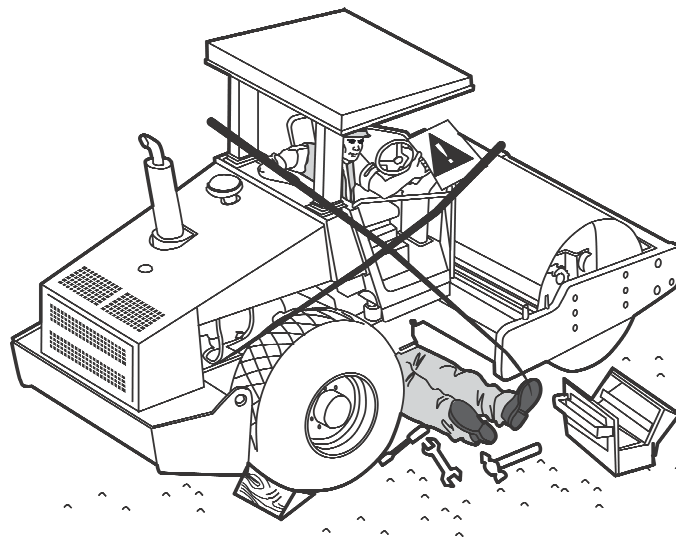
**Do not use the roller in explosive atmospheres (ATEX) for example from dust in saw mills, explosive gas areas etc. Do not use the roller in contaminated areas. Never work in enclosed, unventilated environments, since the engine emits hazardous exhaust fumes.**

**If materials that release dust are to be compacted, use a machine with cab, fitted with an appropriate fresh air filter, water the underlying surface, or use a face mask.**



### 2.1.2 The competence of the operator

- The operator must always have undergone training and/or be experienced in operating the machine, and also familiar with the machine, its controls, markings and symbols.
- The operator must know the capacity and limitations of the machine, such as speed limits, cross-slope limits, and braking and steering capacities.
- The operator must know where the emergency stop is located.



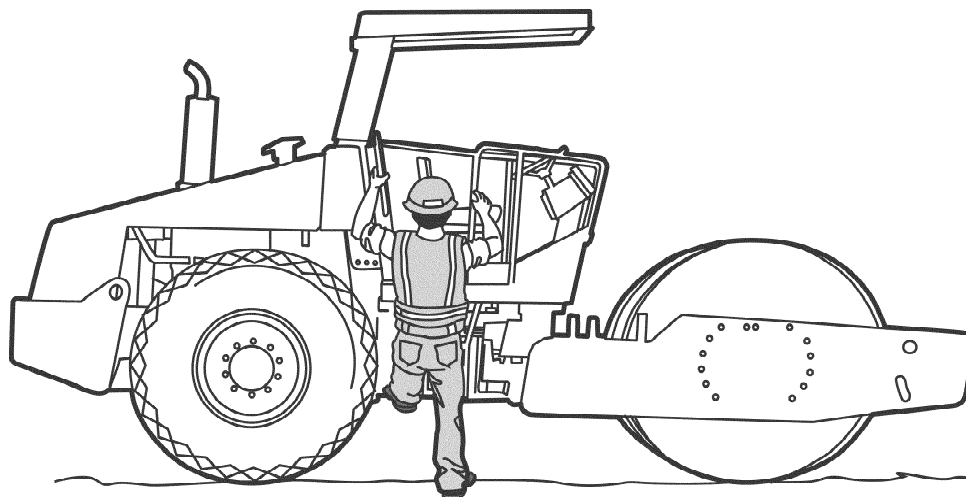
### 2.1.3 Personal safety

**Check that there are no signs indicating that the roller must not be operated, or is being repaired. Check that no technicians are working on the roller. Always use the seat belt if the roller is fitted with ROPS or a ROPS approved cab.**

**2.1.3 Personal safety**

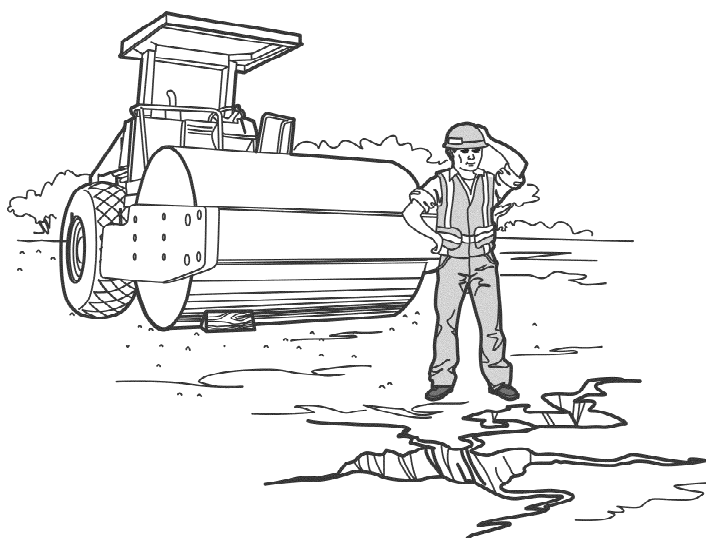
Only ascend and descend the roller when it is stationary. Use the intended footsteps, grips and rails. Always use the three-point grip (both feet and one hand, or one foot and both hands) when ascending or descending the machine. Never jump down from the machine. Only the operator is allowed to be on the roller.

Do not adjust the seat when in motion, it can move unexpectedly. Check that the seat is locked in place. When you have adjusted the back rest, check that it is locked in place. Always remain seated when operating the roller.

**2.1.4 Working area**

Make sure that there are no obstacles in the direction of travel, on the ground, in front of or behind the roller, or overhead. Avoid driving in cracks or holes in the ground that can cause damage to the machine.

Check that there are no buildings, underground tubes, lines (e.g. gas, electrical) or equipment that can be damaged by vibrations from the roller. Remember that vibrations can be propagated in the underlying surface and affect objects even at a distance.





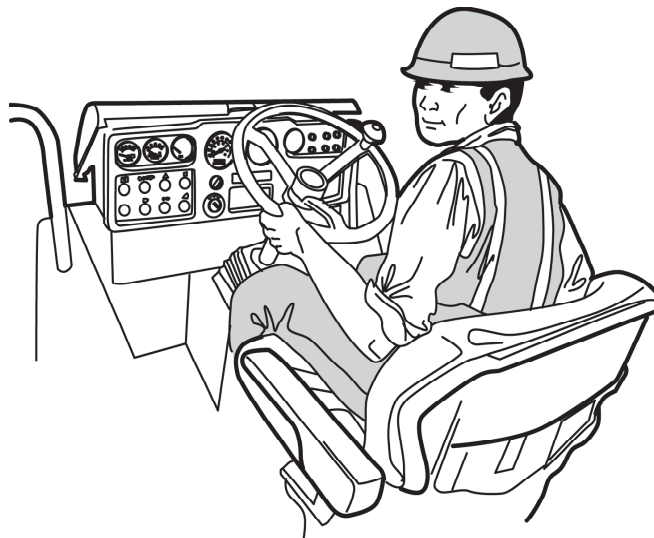
### **3. Operation**

#### **3.1 Preparations before starting**

**Check that:**

- the parking brake is activated
- all the controls are working

**Start the machine as shown in the Instruction Manual. When starting and operating a cold machine (with cold hydraulic fluid) the braking distance will be longer until the oil reaches the normal working temperature.**



#### **3.2 Procedures after starting**

- Check that all the instruments produce the requisite readings.
- Check that the horn works.
- Test manoeuvre the machine and check that it responds correctly to all the controls, especially the brakes, in accordance with the Instruction Manual.
- If any faults are detected, switch off the engine and place a warning sign on the roller before leaving it.

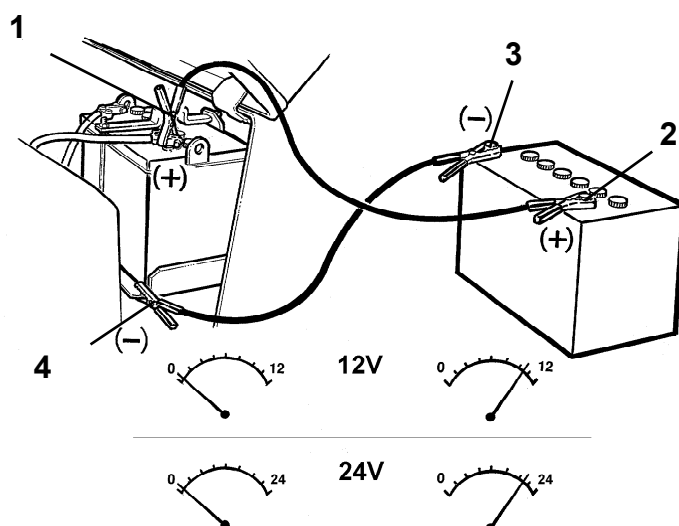
**3.3 Starting in cold climate**

Follow the procedures for starting in a cold climate noted in the Instruction manual.

When starting with the use of jump leads, follow the instructions carefully. Otherwise there is a risk of serious personal injury and damage to the machine, electrical damage or damage to the electronic equipment, as a result of an exploding battery or corrosive acid etc.

Always make sure to avoid sparks when connecting the leads.

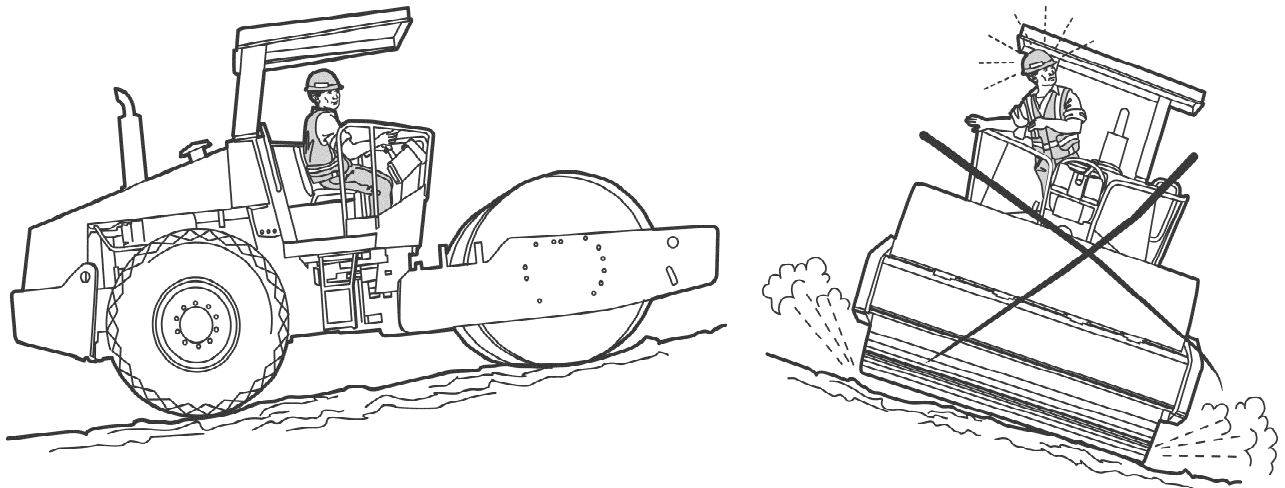
Always check that the jump start battery has the same rated voltage as the dead battery.  
(12V or 24V)



### 3.4 Operating

#### 3.4.1 Remember!

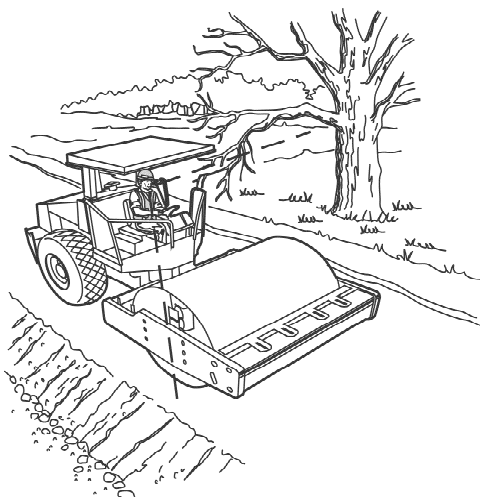
- When the engine is running never leave the operator station without activating the parking brake.
- Always operate the machine with the cab doors closed. Always lock open windows in working position.
- Always maneuver the roller carefully.
- Make sure you always have a good view of the working area, especially when reversing the roller.
- Always pay attention with your eyes, ears and sense of smell to see if any damage has occurred on the roller.
- (For machines with combustion engine) Pay attention to the risk of inhaling exhaust fumes (contain highly dangerous carbon monoxide).
- Keep to a slow speed in sharp bends. Keep to the recommended speed limits.



#### 3.4.2 Operating on slopes

**Always go straight up and straight down slopes.**

**Always stay in working mode, not transport mode, on slopes. Refer also to the regulations applicable for the roller in the Instruction Manual.**

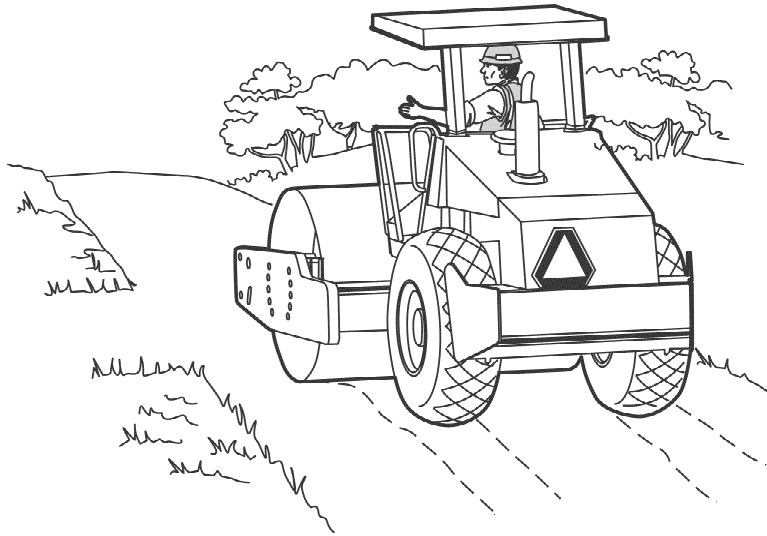


### **3.4.3 Work driving**

**Dynapac always recommends mounted ROPS (Roll Over Protective Structure), or a ROPS-approved cab and seat belt usage.**

**Avoid operating close to edges and ditches and the like as well as on poor ground conditions that influence the bearing strength and capacity to support the roller. Pay attention to potential obstacles above the machine, such as overhead cables and the branches of trees etc.**

**Pay particular attention to the stability of the substrate when compacting close to edges and holes. Do not compact with a large overlap from the previous track in order to maintain roller stability. Consider other compaction methods such as remote-control or a walk-behind roller close to steep slopes or where the bearing strength of the substrate is unknown.**

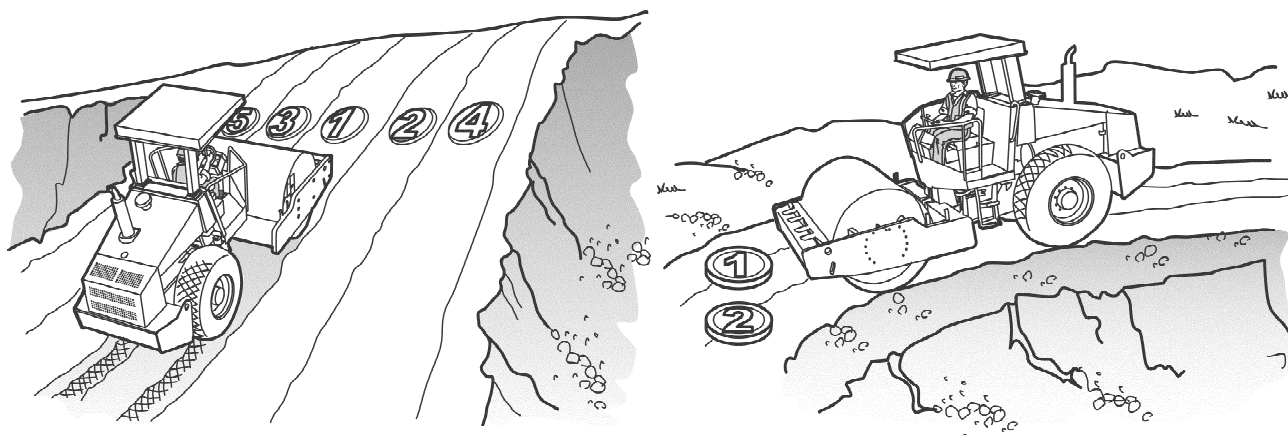


#### **3.4.4 The use of public roads**

**Always follow the traffic regulations for public roads. Regulations might vary between countries. Head lights, turn lights, special warning lights (rotating beacon), Slow Moving Vehicle sign might be required.**

**Never exceed the speed limits, and take into consideration the braking distance.**

**Go straight over railway lines at level crossings, and never allow the drums to be in contact with both rails at the same time. Look out for high-tension cables over the track. Never remain stationary on the track if the barriers should close, break through the barriers instead.**



### **3.4.5 Compaction of road embankments**

**Always compact sloping road embankments from the middle and outwards to the edges.**

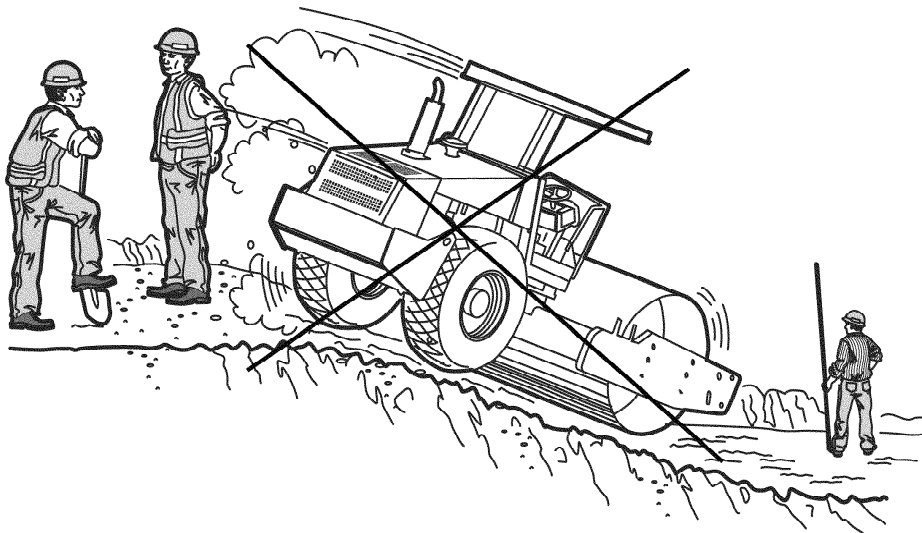
**Always overlap previously compacted tracks by at least half the width of the drum.  
Operate the machine in a forward direction.**

**3.5 Procedures after operating****3.5.1 Park safely**

**Never park the machine so that it obstructs other traffic, or can create incidents, especially in the dark. Park to one side, with the red reflectors visible to approaching traffic. Always park on firm and level ground. Always use the parking brake.**

**Always use stop chocks when parking for longer periods. Never leave the machine before you are sure that it cannot roll away in any direction.**

**If the roller has a strike-off blade, release the hydraulic pressure by lowering the blade to the ground.**



### **3.5.2 Switching off the engine**

**Always follow the regulations in the Instruction Manual when switching off the engine. Never switch off the engine when the machine is in motion.**

**Always remove the battery master switch key so that no unauthorized persons can use the machine.**

**Only ascend and descend the roller when it is stationary. Use the intended footsteps, grips and rails. Always use the three-point grip (both feet and one hand, or one foot and both hands) when ascending or descending the machine. Never jump down from the machine.**

### **3.5.3 Preventing unintentional operation**

**Lock all hoods, guards, panels and doors before leaving the machine to prevent unauthorized use and vandalism.**



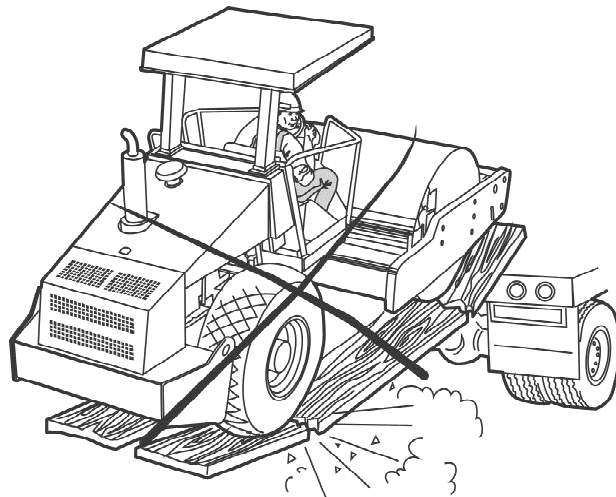
## **4. Transport**

### **4.1 Personal safety**

**Loading and unloading a machine on a vehicle can lead to the risk of accidents. Never stand under or close to the machine when loading or unloading is taking place. Never try to move the machine or tow vehicle by hand. Pay attention to the risk of pinch injuries during the loading.**

### **4.2 The transport vehicle**

**The transport vehicle must comply with the requisite requirements, such as maximum load, engine power and braking capacity etc. The transport vehicle shall also be specially intended for the transport of rollers.**



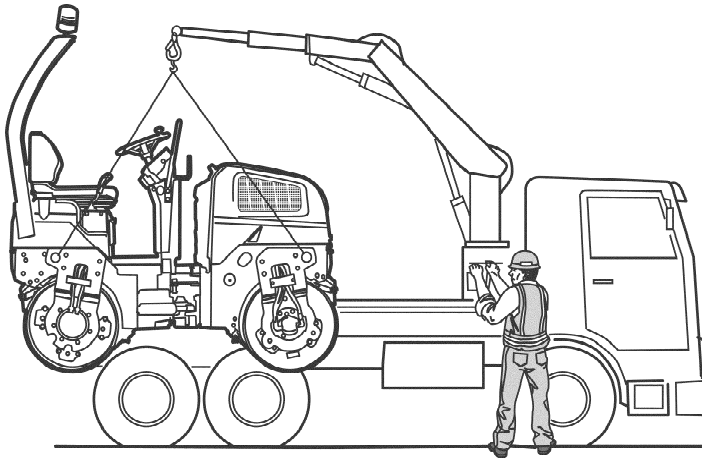
### **4.3 Loading/unloading with ramp**

**The best way of transporting the roller long distances is on the back of a transport vehicle. Large machines can be loaded/unloaded on a ramp. Always make sure that the ramp is in one piece. Use a metal ramp, never timber of poor quality. Check that the ramp is securely fixed to the transport vehicle and to the ground. The angle must not be too steep.**

**Use rubber cloth on metal ramps as the machine has steel drum/roller.**

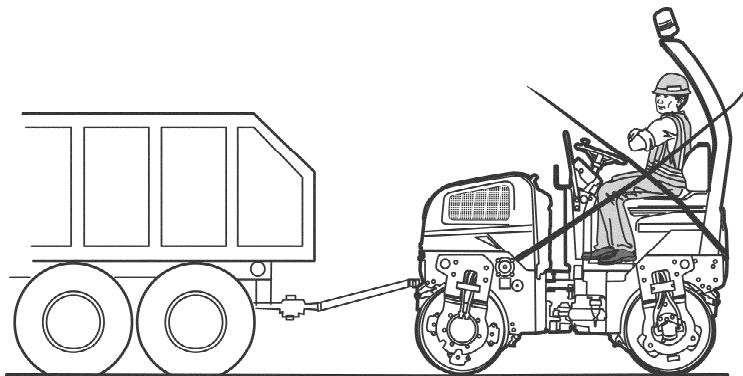
**The ramp should have a side flange so that the machine cannot slip sideways. Winch up the machine if possible. Check that the ramp is not covered in oil, snow, ice, clay or other dirt.**

**Make sure that the transport vehicle is secured with brake chocks. Secure the lifting chains to the roller and the winch on the transport vehicle. Always use chains or wires of an adequate dimension, never ropes.**



#### 4.4 Loading/unloading with a crane

Small machines can be lifted with a crane from the ground onto the back of the transport vehicle. All small machines have lifting eyes for this purpose. The weight of the machine can be read on the machine plate or in the Instruction manual. Always follow the safety instructions for the operation of the crane. **Never go under a suspended load!**

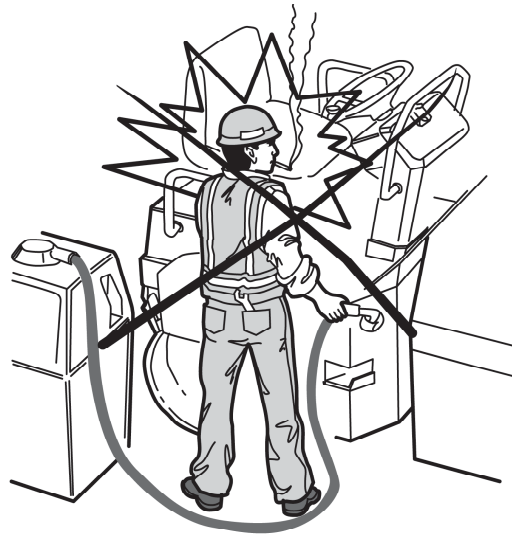


#### 4.5 Towing

**Never tow the roller for long distances (maximum 300 m). Always follow the applicable traffic regulations. For max towing speed, see operator's manual. Do not allow persons to sit on a towed roller.**

See the Instruction manual for further information.

## 5. Refueling



### 5.1 Safety procedures during refueling

- Stop the engine.
- Do not smoke.
- No naked flames in the vicinity.
- Do not refuel in enclosed areas.
- Ground the nozzle of the filling device against the tank to prevent sparks.
- Always check that you are filling the correct fuel in the correct tank.
- Always wipe up spilt fuel before starting the engine.
- Check that the fuel cap is screwed on tight to prevent fuel running out in the event of an accident.

### 5.2 Fire protection

- Never allow inflammable fluids to come in contact with hot surfaces.
- Never overfill fuel or hydraulic tanks.
- In the event of leakage, wipe up all the spilled fluid before starting.
- Check electric cables/leads for wear. Always replace worn/abraded cables with new ones.
- Hand-held fire extinguishers are available as an accessory via Dynapac.



**6. Repair and maintenance**

**Never use a roller that is damaged or dangerous in traffic.**

**Trained personnel are required for qualified repair work. However, the roller must be maintained by the operator as shown in sections for Maintenance in the Instruction manual.**

**Before starting to work on the roller, find out where fire extinguishers and first-aid supplies are located and be aware of contact information in case of emergency.**

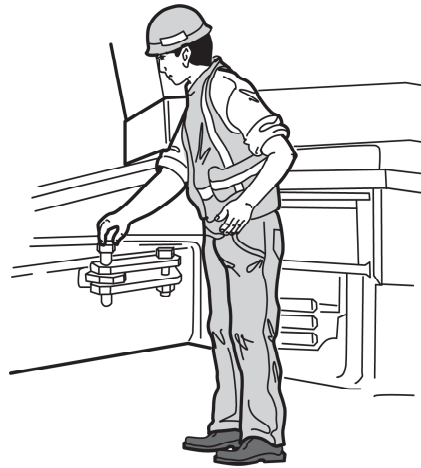
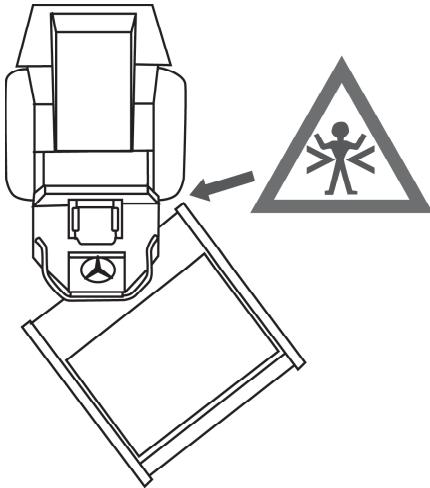
**Use your common sense to avoid incidents and accidents. If an accident should occur, avoid acting in panic. Take rapid and effective action to save human life as the first priority, and secondly to avoid material damage.**

**For your own personal protection always use:**

- helmet
- work shoes with toecaps
- hearing protection
- reflecting clothes/high-visibility jacket
- work gloves

**When necessary use protective glasses and face mask.**

**Smoking, naked flames or hot objects are prohibited when working on the machine. For welding work, see 6.1 Preparations for repair and maintenance.**



### 6.1 Preparations for repair and maintenance

**Always put up a sign on the roller to show that repair work is in progress. Disconnect the battery with the battery disconnecter and keep the key in your pocket. Make sure that the machine is well-cleaned.**

**Always pay attention to pinch risks at jointed machine parts.**

**If welding or other work at high temperatures or with naked flames it to be carried out, drain the tanks and ventilate well. When welding on the tanks, fill them with water. Always make sure that there is a fire extinguisher in the vicinity of the workplace. For electric welding, always check that the battery connections are disconnected.**

**Never weld in the vicinity of plastic or rubber material, e.g. scrapers with polyurethane. Toxic gases are formed at high temperatures.**

**When working on the electrical system, always check that the battery connections are disconnected.**



**Never use petrol for cleaning purposes. Store inflammable or hazardous substances in well-sealed vessels when they are not in use. Wear appropriate face mask when using hazardous substances.**

**Avoid working on the machine when the engine is running. As a general rule the engine hood should be closed when the engine is running. If the engine is running, check that the forward/reverse lever is in neutral and that the parking brake is activated. When starting the machine indoors the exhaust pipe must be connected to the a fan system so that the fumes do not remain in the room.**

**Pallet blocks must always be used if the machine needs to be lifted, to prevent the machine from falling down or tipping. Always use a reliable jack when lifting the machine. Never allow the machine to remain resting only on the jack.**

**Always use Dynapac spare parts.**

## **6.2 Working with the diesel engine**

**Observe care when the engine is running. If possible always stop the engine before working on it. On completion of the work all the guards that have been removed must be replaced.**

**Never wear clothes with loosely fitting parts when working with the engine.**

**Always pay attention to the warnings specified in the engine manufacturer's manual. Remember to allow the engine to cool before working on it.**

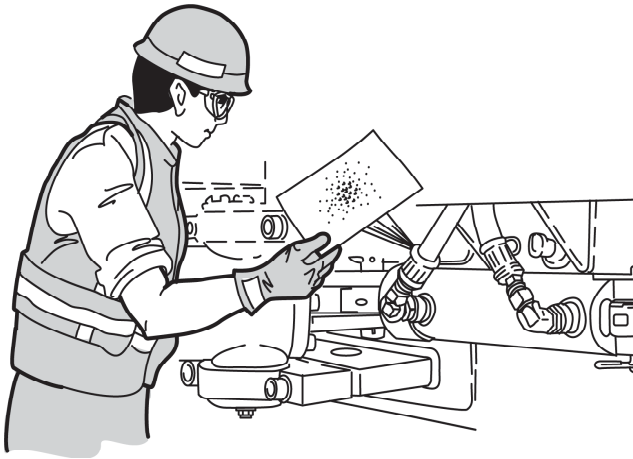


### 6.3 Working with the cooling system

**Before inspecting, always switch off the engine. If possible allow the engine to cool. If the engine is hot, observe the greatest possible care when opening the cap for the coolant container.**

**Wear heavy-duty gloves, clothes, and protective goggles. Stand at a safe distance from the cap. Do not remove the cap before the pressure has been released in the cooling system. Observe care when filling cold liquid in the hot container.**





#### **6.4 Working with the hydraulic system**

**Periodic maintenance of the hydraulic system is important. The machines work with a high oil pressure. Minor damage, or a crack in a hose or coupling, can have devastating consequences. Hydraulic hoses are made of rubber and therefore age, which can cause the formation of cracks. In the event of the slightest doubt concerning their strength, or if abrasion damage is detected, replace with new original hoses from Dynapac. Do not keep hoses in stock for too long, they are perishable goods!**

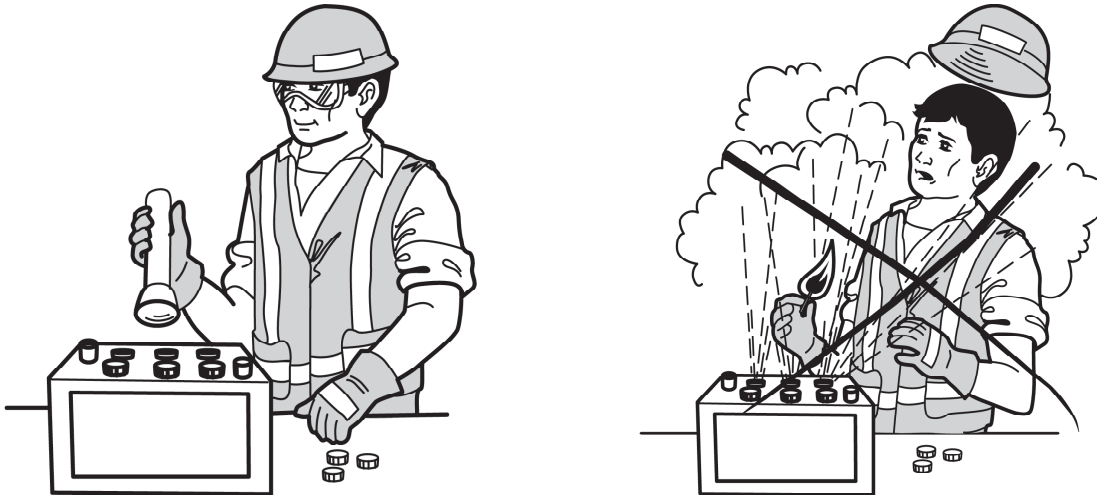
**Bear in mind that the hydraulic system can be pressurized even if the machine is switched off. Always release the pressure in the system before working on it.**

**When inspecting the hydraulic system always wear protective glasses and gloves. Always use a piece of cardboard to detect leaks, never feel with your hand. Contact a doctor immediately if hydraulic oil has penetrated into the skin or if you have got oil in your eyes.**

**Observe care when removing the tank cap to top up the hydraulic fluid. Smoking and naked flames are prohibited when filling hydraulic fluid. Always wipe up spilled oil.**

**Check that the pressure limiting values are correctly set. If the pressure is too high this can rupture the hoses and cause damage. If the pressure is too low it can be difficult to maneuver the machine.**

**See also the instructions specific to the machine in the respective instruction manuals. Some models require special tools and procedures to make the requisite adjustments on the machines.**



### 6.5 Working with the battery

Some battery models are sealed and maintenance-free, and therefore must not be opened. The battery contains toxic and corrosive sulphuric acid. Wear protective glasses and avoid getting acid on your skin, clothes or on the machine.

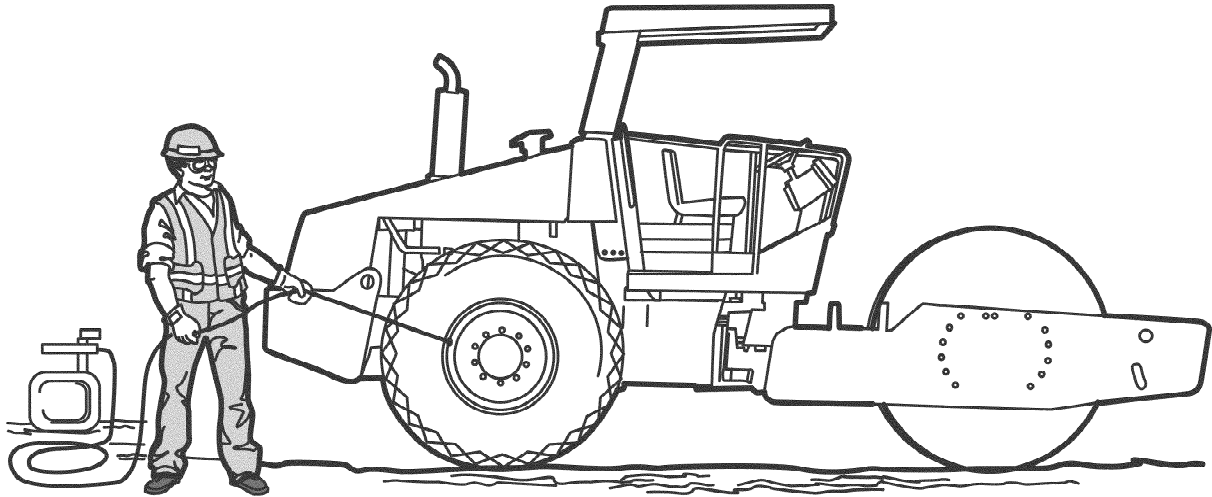
Take off any clothes that have come in contact with the acid. Rinse your skin immediately in water for at least 15 minutes and then contact a doctor.

If you get acid in your eyes, rinse them in water for at least 15 minutes and then contact a doctor. If possible bathe your eyes in water from a sponge or cloth on the way to the doctor.

The gas normally formed in the battery is explosive. It can explode in the vicinity of a naked flame or spark.

Take care when installing or removing a battery not to short circuit the battery poles. When disconnecting the battery, always remove the minus lead first.

When charging a battery with a battery charger, always disconnect the battery charger from the mains before connecting the leads.



### **6.6 Working with the tires**

**For machines fitted with tires take the following into consideration:**

**Repair or service tires in an authorized workshop. Tires are filled with compressed air and special tools and machines are needed to change them.**

**Always put the correct air pressure into the tires, which is specified on the roller and in the Instruction Manual. Bear in mind that heat from sunlight or friction can increase the pressure in the tires. Do not release the pressure in the tire by opening the valve manually. Always use an air nipple with a long filler pipe to adjust the pressure in the tire.**

**Always check the tires for any damage that can cause accidents. Check also the tire wear regularly.**

**Bear in mind that rubber tires can be filled with liquid. The volume of liquid must be adjusted in a special tire workshop.**



### **6.7 Inspection of ROPS (Roll-Over Protective Structures)**

**Always check ROPS for damage, and to make sure it is securely attached. Check the attachment bolts on the ROPS regularly with a torque wrench (the torque is specified in the Instruction manual). Do not drill holes in or weld anything to the ROPS. Do not repair a damaged or deformed ROPS, replace with a new Dynapac original ROPS.**

**Always check the condition and function of the seat belt. Replace with a new original belt if damaged or after overloading.**



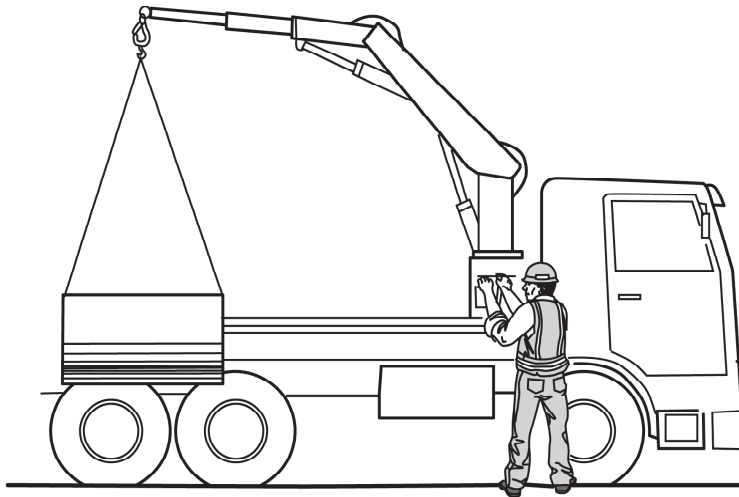
### **6.8 Climate control and pressure vessel**

**If the machine is equipped with climate control, do not weld close to the intake. All repairs to the climate control unit, including filling of coolant, must be done in a service workshop.**

**Machines equipped with compressed air units have a pressure vessel, which must be maintained and repaired in a service workshop.**

### **6.9 Anti-slip protection**

**Operator platforms and service surfaces are coated with a special anti-slip material. This material becomes worn and must at regular intervals be inspected and replaced. Always use Dynapac's replacement parts and carefully follow the instructions.**



### 6.10 Heavy parts

**Remember to always use lifting tools that are dimensioned for the weight of each machine part. Block the drums to prevent them rolling. The weight of the rubber tires is specified in the Instruction manual.**

### 6.11 Control units and software

**The rollers can be equipped with electronic control and operating systems. Always make sure that all connectors and earth points are securely connected.**

**Do not expose the machine to temperatures higher than specified in the technical data.**

**Do not do any repairs to the control system that can adventure safety. All the software from Dynapac has been tested so that it can be safety used on each machine. Do not change any parameters, follow the provided instructions.**

**Do not wash electronics boxes with high-pressure jets.**

**Do not connect accessories to the electrical system without making sure that the safety functions are working.**