

CHAPTER 34

CLEANING INSTRUCTIONS – WATER PURIFICATION PLANT

SKID OR PALLET MOUNTED

- 34.1 This chapter provides basic and specific cleaning requirements for selected vehicles. Where there is a specific requirement or need to highlight particular problem areas detailed cleaning guides are provided as tables and figures in this chapter.
- 34.2 While water Purification Plant do appear to be quite innocuous, they are very complex pieces of machinery. While all contamination and BRM must be removed, the main areas of concern are:
- a. external areas;
 - b. engines, radiators and pumps;
 - c. electronics;
 - d. power cables;
 - e. batteries;
 - f. filtration systems and filters;
 - g. hoses;
 - h. tarpaulins; and
 - i. camouflage nets.
- 34.3 All points are not specific to all water purification plants.

External Areas

- 34.4 The cleaning instructions for the Water Purification Plant external areas include the points detailed in Table 34-1.

Table 34–1: Cleaning Instructions for the Water Purification Plant External Areas

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	All CES is to be removed and independently cleaned. Where possible/practical do not refit until after the equipment has been inspected by DA.	
2	Access panels and covers are to be removed and the track area cleaned of all soil, plant and insect matter with high-pressure water.	
3	Hydraulic/electrical lines are to be wiped clean of all soil and fluid. Cable conduit is to be cleaned with high-pressure water or removed.	
4	Toolboxes/stowage compartments are to be emptied and cleaned. The rubber seals around the doors are to be inspected to ensure all soil,	

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<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
	plant and insect matter is removed.	
5	The exterior of the purifier is to be washed (taking care not to wet electronics or solenoids) to remove all dust and dirt. Pressure water clean around the fittings using a flexible nozzle as is necessary to get into all areas.	
6	Clean all recesses and access points (such as forklift tine points, pallet stands, pallet interlocks, twist lock tie-down points, power outlets)	

Engines, Radiators and Pumps

34.5 The cleaning instructions for Water Purifier engines, radiators and pumps include the points detailed in Table 34-2.

Table 34–2: Water Purifier Engines, Radiators and Pumps

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	Clean the engine compartment and engine to ensure they are free of dust, built up dirt and grease, insect and plant material.	
2	Ensure any engine openings / breathers are taped or plugged to stop ingress of water.	2.0
3	Ensure the starter motor and alternator are covered and taped to stop ingress of water.	2.0
4	Do not direct high-pressure water jets at any of the engine openings/breathers, or at any of the electrical/electronic components.	0.5
5	Remove the air cleaner element and dispose of. Replace the air cleaner element with a new part.	
6	Remove the grill (if applicable) and high-pressure air or pick clean the radiator to ensure there are no seed or insect debris embedded. Inspect behind number plate and tactical signage.	0.5
7	The radiator cowling may need to be removed to facilitate the cleaning of the radiator.	
8	Flush radiator and oil cooler from both sides to verify fin/core cleanliness.	
9	Loosen radiator shroud to let any loose debris fall through after flushing.	
10	Check either side of radiator for vertical hollow support structures. Flush to verify internal cleanliness if present.	
11	Check all wiring harnesses for internal cleanliness.	
12	All water reservoirs must be emptied (excluding radiator).	
13	Remove all contaminated grease.	

Electronics

34.6 The cleaning instructions for Water Purifier electronics include the points detailed in Table 34-3.

**EXTREME CAUTION
ELECTRICAL COMPONENTS**

Do not use water or steam to clean any interiors areas of the GPU's engine compartments – Use air clean only and only under the supervision of a qualified technician

Table 34-3: Water Purifier Electronics

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	WARNING: Use air clean only and only under the supervision of a qualified technician	

Power Cables

34.7 The cleaning instructions for Water Purifier power cables include the points detailed in Table 34-4.

Table 34-4: Water Purifier Power Cables

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	All power cables are to be fully extended and cleaned to ensure they are free of BRM	
2	Plastic-coated cabling should be wiped down and all cable ties removed.	
3	Electrical tape, which has been used to secure cabling, is to be removed and destroyed, as this provides an ideal area for plant and soil particles to collect	
4	The power cable compartment is to be cleaned are free of BRM	

Batteries

34.8 The cleaning instructions for Water Purifier batteries include the points detailed in Table 34-5.

Table 34-5: Water Purifier Batteries

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	Remove the batteries from the compartment and clean.	
2	Clean the battery boxes and cradles and ensure they are free of dirt, dust, plant and insect material.	
3	Where possible/practical re-fit batteries only after inspection by DA.	

Filtration Systems and Filters

34.9 The cleaning instructions for Water Purifier filtration systems and filters include the points detailed in Table 34-6.

Table 34-6: Cleaning Instructions for the Filtration Systems and Filters

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	WARNING: The cleaning of the filtration systems and filters should only be conducted under the supervision of a qualified technician	
2	Back flush and pump clean water through the system.	
3	Remove any active carbon filter material (if applicable) and dispose of.	

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<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
4	Refer to user documentation for removal. Remove all plastic filters, membranes, elements, separators and strainers for cleaning. Either clean or replace. If cleaning, ensure they remain outside the purification unit until cleared by a DA officer.	
5	Ensure all internal areas are free of BRM.	
6	Open all valves for flushing action.	
7	Clean all valves and ensure they are free of BRM.	

Hoses

34.10 The cleaning instructions for Water Purifier hoses include the points detailed in Table 34-7.

Table 34–7: Cleaning Instructions for the Filtration Hoses

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	Unroll all hoses and clean all oil and grease material to ensure there is no soil, plant or insect matter. Clean hose assembly with a high-pressure water cleaner.	
2	Clean all hose couplings and hose coupling assembly with a high-pressure water cleaner.	
3	The inside of the hoses is to be flushed out and treated with chlorinated water with a chlorine solution (400 parts per million) and then allowed drain and air dry.	

Tarpaulins

34.11 The cleaning instructions for the tarpaulins include the points detailed in Table 34-8.

Table 34–8: Cleaning Instructions for Tarpaulins

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1.	All tarpaulins are to be given a brush down, brush scrubbing and hose cleaning, paying particular attention to the seam areas and then hung so as not to contact the ground for drying.	
2.	All ropes and universal dispatch straps are to be extended to their full length and wiped or washed clean of all soil, plant and insect matter. Attention to attachment points and fixtures and tension devices is required. Personnel are to inspect and remove all twigs, foliage, and so on that has become embedded in the rope fibres.	
3.	Velcro panels and seams (where fitted) are to be brushed and washed to ensure all seed, plant and soil material is removed.	
4.	Canvas bags are to be turned inside out and checked for burrs, seeds and insects.	
5.	Where fitted, poles, knuckles and pegs are to be subject to a high-pressure water clean to remove all soil, plant and insect matter (ants, spiders and mud wasps are of particular concern).	

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<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
6.	If tarpaulins have not been used during the entire deployment, then the requirement is for all tarpaulins to be unrolled, brushed and swept clean to ensure no vermin or insect infestation and then subject to an inspection.	

Camouflage Nets

34.6 The cleaning instructions for camouflage nets include the points detailed in Table 34-9.

34-9: Cleaning Instructions for Camouflage Nets

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	Removal of grass and debris may be achieved by use of a petrol powered blower/vacuum in the first instance, use of water should be avoided.	
2	Heavily soiled camouflage nets may require further scrubbing and a dip in an approved detergent/ disinfectant (one in 20 solution). This has been achieved in the past by using trailers with required additive.	
3	Depending on the degree of contamination and diligence in the cleaning process, camouflage nets may require three or more trailer dips to achieve the required DA clearance.	
4	Drying is to be achieved by hanging the camouflage net so that it does not come into contact with the ground.	
5	Nets are to be inspected to ensure that all plant material is removed.	
6	Camouflage poles are to be brushed or swept clean; and metal joiners are to be removed cleaned and inspected.	

Annexes:

- A. Cleaning Instructions - Water Purification Plant Veolia CMF 4M10C
- B. Cleaning Instructions - Water Purification Plant Reverse Osmosis 6250 Litres
- C. Cleaning Instructions - Water Purification Plant Pall ISO 1D container - 400,000 Litres
- D. Cleaning Instructions - Water Purification Plant Reverse Osmosis Pall ISO 1D Container - 100,000 Litres
- E. Cleaning Instructions - Water Purification Plant Equipment Storage Unit Pall ISO 1D Container

ANNEX A TO CHAPTER 34

CLEANING INSTRUCTIONS – WATER PURIFICATION PLANT

VEOLIA CONTINUOUS MICROFILTRATION (CMF) 4M10C

1. This chapter provides basic and specific cleaning requirements for selected vehicles. Where there is a specific requirement or need to highlight particular problem areas detailed cleaning guides are provided as tables and figures in this Annex.
2. The cleaning requirements that follow are in addition to those points for water purification plants included in Chapter 34 of this publication.

External Areas

3. The cleaning instructions for the Water Purification Plant Veolia 4M10C external areas, as illustrated in Figure 34A-1 include the points detailed in Table 34A-1.



Figure 34A-1: Water Purification Plant Veolia 4M10C External Areas

Table 34A–1: Cleaning Instructions for the Water Purification Plant VEOLIA 4M10C External Areas

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	All CES is to be removed and independently cleaned. Where possible/practical do not refit until after the machine has been inspected by DA.	
2	Access panels and covers are to be removed and the area cleaned of all soil, plant and insect matter.	
3	Clean underside with special attention given to the stands and stand	

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
	ends	
4	Refer to Chapter 34 for detailed cleaning guidelines.	

Filtration Systems and Filters

4. The cleaning instructions for Water Purifier filtration systems and filters include the points detailed in Table 34A-2.

Table 34A-2: Cleaning Instructions for the Filtration Systems and Filters

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	Refer to Chapter 34 for detailed cleaning guidelines.	

ANNEX B TO CHAPTER 34

CLEANING INSTRUCTIONS – WATER PURIFICATION PLANT

REVERSE OSMOSIS 6250 LT

- 1.1 This chapter provides basic and specific cleaning requirements for selected vehicles. Where there is a specific requirement or need to highlight particular problem areas detailed cleaning guides are provided as tables and figures in this Annex.
- 1.2 The cleaning requirements that follow are in addition to those points for water purification plants included in Chapter 34 of this publication.

External Areas

- 1.3 The cleaning instructions for the Water Purification Plant Reverse Osmosis 6250's external areas, as illustrated in Figure 34B-1 include the points detailed in Table 34B-1.



Figure 34B-1: Water Purification Plant Reverse Osmosis 6250 External Areas

Table 34B-1: Cleaning Instructions for the Water Purification Plant Reverse Osmosis 6250 External Areas

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	All CES is to be removed and independently cleaned. Where possible/practical do not refit until after the equipment has been inspected by DA.	
2	Access panels and covers are to be removed and the track area cleaned of all soil, plant and insect matter with high-pressure water.	
3	Refer to Chapter 34 for detailed cleaning guidelines.	
4	Detailed cleaning instructions for these systems are to be advised.	

Filtration Systems and Filters

- 1.4 The cleaning instructions for Water Purifier filtration systems and filters include the points detailed in Table 34B-2.

Table 34B–2: Cleaning Instructions for the Filtration Systems and Filters

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	Refer to Chapter 34 for detailed cleaning guidelines.	

ANNEX C TO CHAPTER 34

CLEANING INSTRUCTIONS – WATER PURIFICATION UNIT PALL

ISO 1D CONTAINER - 400,000 LITRES

1. This annex provides basic and specific cleaning requirements for selected equipment. Where there is a specific requirement or need to highlight particular problem areas detailed cleaning guides are provided as tables and figures in this annex.
2. The cleaning requirements that follow are in addition to those points for water purification units included in Chapter 34 of this publication.

External Areas

3. The cleaning instructions for the Water Purification Unit ISO 1D container - 400,000 litre's external areas, as illustrated in Figure 34C-1 include the points detailed in Table 34C-1.



Figure 34C–1: Water Purification Unit ISO 1D container - 400,000 litres External Areas

Table 34C–1: Cleaning Instructions for the Water Purification Unit Reverse Osmosis 6250 It External Areas

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	All CES is to be removed and independently cleaned. Where possible/practical do not refit until after the equipment has been inspected by DA.	
2	Access panels and covers are to be removed and the track area cleaned of all soil, plant and insect matter with high-pressure water.	
3	Refer to Chapter 34 for detailed cleaning guidelines.	
4	Detailed cleaning instructions for these systems are to be advised.	

Filtration Systems and Filters

4. The cleaning instructions for Water Purifier filtration systems and filters include the points detailed in Table 34C-2.

Table 34C–2: Cleaning Instructions for the Filtration Systems and Filters

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	Detailed cleaning instructions for these systems are to be advised.	

Water Purification Unit Equipment Storage Unit Pall ISO 1D Container

5. The Water Purification Unit ISO 1D Container - 400,000 litres comes in conjunction with a Unit Equipment Storage Units Pall ISO 1D Container which contains all the CES and stores for the plants operation. Refer to Annex E this Chapter for detailed cleaning guidelines for the Equipment Storage Unit.

ANNEX D TO CHAPTER 34

CLEANING INSTRUCTIONS – WATER PURIFICATION UNIT

(MEDIUM) PALL ISO 1D CONTAINER - 100,000 LT

1. This chapter provides basic and specific cleaning requirements for selected equipment. Where there is a specific requirement or need to highlight particular problem areas detailed cleaning guides are provided as tables and figures in this Annex.
2. The cleaning requirements that follow are in addition to those points for water purification units included in Chapter 34 of this publication.

External Areas

3. The cleaning instructions for the Water Purification Unit Reverse Osmosis (Medium) ISO 1D Container - 100,000 litres external areas, as illustrated in Figure 34D-1 include the points detailed in Table 34D-1.



Figure 34D-1: Water Purification Unit Reverse Osmosis (Medium) ISO 1D Container - 100,000 litres External Areas

Table 34D-1: Cleaning Instructions for the Water Purification Unit Reverse Osmosis (Medium) ISO 1D Container - 100,000 litres External Areas

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	All CES is to be removed and independently cleaned. Where possible/practical do not refit until after the equipment has been inspected by DA.	
2	Access panels and covers are to be removed and the track area cleaned of all soil, plant and insect matter with high-pressure water.	
3	Refer to Chapter 34 for detailed cleaning guidelines.	
4	Detailed cleaning instructions for these systems are to be advised.	

Filtration Systems and Filters

4. The cleaning instructions for Water Purifier filtration systems and filters include the points detailed in Table 34D-2.

Table 34D–2: Cleaning Instructions for the Filtration Systems and Filters

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	Detailed cleaning instructions for these systems are to be advised.	

Water Purification Unit Equipment Storage Unit Pall ISO 1D Container

5. The Water Purification Unit Reverse Osmosis (Medium) ISO 1D Container - 100,000 litres comes in conjunction with a Unit Equipment Storage Units Pall ISO 1D Container which contains all the CES and stores for the plants operation. Refer to Annex E this Chapter for detailed cleaning guidelines for the Equipment Storage Unit.

ANNEX E TO CHAPTER 34

CLEANING INSTRUCTIONS – WATER PURIFICATION UNIT

EQUIPMENT STORAGE UNITS PALL ISO 1D CONTAINER

1. This annex provides basic and specific cleaning requirements for selected equipment. Where there is a specific requirement or need to highlight particular problem areas detailed cleaning guides are provided as tables and figures in this annex.
2. The cleaning requirements that follow are in addition to those points for water purification plants included in Chapter 34 of this publication.
3. The Water Purification Unit Equipment Storage Units ISO 1D container contains all the Complete Equipment Schedule (CES) and stores for the operation of Pall water purification plants. The container goes in conjunction with the water treatment plant. For the Water Purification Unit Pall ISO 1D container - 400,000 litres; refer to Annex C this Chapter for detailed cleaning guidelines. For the Water Purification Unit Reverse Osmosis (Medium) ISO 1D Container - 100,000 litres; refer to Annex D this Chapter for detailed cleaning guidelines.
4. A CES Equipment Storage Unit will be fitted out to contain interconnecting supply, waste, output and inlet hoses, fittings, flexible potable water tanks, a generator to operate the water purifier, electrical cables and facilities for the safe storing and handling of the process chemicals and reagents.

External Areas

5. The cleaning instructions for the Water Purification Unit Equipment Storage Units ISO 1D container's external areas, as illustrated in Figure 34E-1 include the points detailed in Table 34E-1.



Figure 34E-1: Water Purification Unit Equipment Storage Units ISO 1D container's External Areas

**Table 34E-1: Cleaning Instructions for the Water Purification Unit Equipment Storage Units
ISO 1D container's External Areas**

<i>Serial</i>	<i>Comments or Tasks</i>	<i>Technical Time (hours)</i>
1	All CES is to be removed and independently cleaned. Where possible/practical do not refit until after the equipment has been inspected by DA.	
2	Access panels and covers are to be removed and the track area cleaned of all soil, plant and insect matter with high-pressure water.	
3	Refer to Chapter 34 for detailed cleaning guidelines.	
4	Detailed cleaning instructions for these systems are to be advised.	