HOW TO...
REMOVE WATER-FORMED DEPOSITS FROM FILTER DISCS

INTRODUCTION
The most important maintenance action of the filter bank is to regularly clean the small command filter that filters the control water. Open the command filter weekly and clean. A command filter supplies the hydraulic water to the solenoids-sagiv to open and close the butterfly valve. When this filter gets dirty, the flow rate is not sufficient to open and close the backwash valves. With a reduced flow rate through the backwash valve, the valve opens fully just prior to the signal to close the valve again. This means that the discs have not been properly flushed. As a result of this pressure, more dirt accumulates deeper into the grooves of the filter discs. Therefore the filter bank is constantly in a backwash mode with low downstream system pressure. Water-formed deposits may have had an affect on the filter discs. The formation of these deposits depends on the quality of the filtered water and environmental conditions like temperature, pH, light, duration of filtration and more. Identification of the possible deposits can be obtained from the water analysis. Common water-formed deposits are as follows:

- Biological or organic deposits (mucous or oily to the touch. Beige, brown or green in colour).
- Iron oxide (rust) or other metal oxides.
- Carbonates (white or grey deposit).
- Combinations of the above.

WARNING
Always add the chemicals to the water. Do not add water to chemicals.
Chemicals are dangerous to handle. Wear protective clothing, gloves and glasses. It can lead to blindness and burns.
Drinking or inhalation of the gases can be fatal. Work in a well-ventilated area.
Read the manufacture’s instructions carefully regarding the chemicals.
Safety glasses, gloves, long pants, long sleeved shirt and shoes must be worn.

OPENING OF THE FILTER
Always isolate and drain filter to ensure that there is no pressure in the system before opening the filter. Do not insert any sharp tools or objects in between the cover and the body, it may damage the hydraulic seal and the cover. Keep each spine’s discs together as a set by using a chemical resistant plastic rope to tie each set.
Close the water inlet after backwashing the system. Make sure that there is no pressure in the systems.

1 & 2. Open the clamp and remove the cover
3. Unscrew the butterfly nuts on the filtration elements.
4. Remove the tightening cylinder.
5 & 6. Remove the discs. For convenience it is recommended using a plastic bag. Tie each set on a string.
7. Place them in a cleaning solution. Thoroughly wash the disc with fresh water.
8. Ensure that the correct quantities of discs are assembled on the spines. When the discs are pressed with two hands, the top disc should be level with the imprinted circle on the outside of the spine.
9. Please reassemble the tightening cylinder onto the spines.
10. Check that the hydraulic seal is properly sealed in the cover (the holes should be in the direction of the filter).
11. Replace the cover.
12. Tighten the clamp.
TREATMENT OF THE FILTER DISCS
The following chemicals are recommended for treatment purposes of different residue:

- **PEROXIDE (H2O2):** a strong oxidizing liquid, commercial concentration: 35% or 50% that oxidizes and **removes organic and biological residue.** Mix a 10% peroxide solution, using a 15 litre container, pour 7 litres of water into a container and add 3 litres of hydrogen peroxide (35%), or pour 8 litres of water into the container and then add 2 litres of hydrogen peroxide (50%) to the water.
  - Soak the discs in the solution.
  - Make sure that the discs are loose enough to have good contact on both sides with the peroxide solution. Do not try and put too many discs in at a time.
  - Stir the discs a few times in the solution.
  - The contact time in the solution is 1 to 3 hours.
  - If the solution is not cleaning the discs, replace it with a new mixture.
  - Remove the discs and rinse them well. There should not be any residue in between the grooves of the discs.

- **HYDROCHLORIC ACID (HCl):** a very corrosive liquid, commercial concentration: 30% to 35% that dissolves and **removes carbonates, iron oxide, and other residues.** Mix a 10% Hydrochloric Acid solution, use 15 litre container. Pour 7 litres water into the container and then add 3 litres Hydrochloric Acid (30-35%) to the water.
  - Soak the discs in the acid solution. Make sure that the discs are loose enough to have good contact on both sides with the acid solution. Do not try and put too many discs in at a time.
  - Stir the discs a few times in the solution.
  - The contact time in the solution is 1 to 3 hours.
  - If the solution is not cleaning the discs, replace it with a new mixture.
  - Remove the discs and rinse them well in water. There should only be a pale sedimentation on the discs.
FIGURE 1: TREATMENT OF MANGANESE, IRON AND OTHER CARBONATE RESIDUE

Step 1: Acid treatment 0.6%
Step 2: Hydrogen peroxide 10%

FIGURE 2: TREATMENT OF ORGANIC AND BIOLOGICAL RESIDUE

Algae accumulated on outside and grooves are clean
Dirt accumulated inside the grooves
TREATMENT OF MANGANESE

- Filter discs are placed for a very short time (seconds) in a 10% solution of Hydroxyl Ammonium Chloride after which it will be clean.
- The product is produced in a powder form and can be dissolved in water.
- Use a plastic container with a tight fitting lid. Mix a 10% solution by dissolving 500g of the product in 5 litres of water.
- Place one set of discs in the solution, seal and shake the container.
- Discs must thereafter be rinsed in clean water.
- This solution is normally sufficient to clean 15 sets of discs.

SUMMARY
It is important that the filter discs are cleaned properly so as to prevent clogging.

ACKNOWLEDGEMENTS