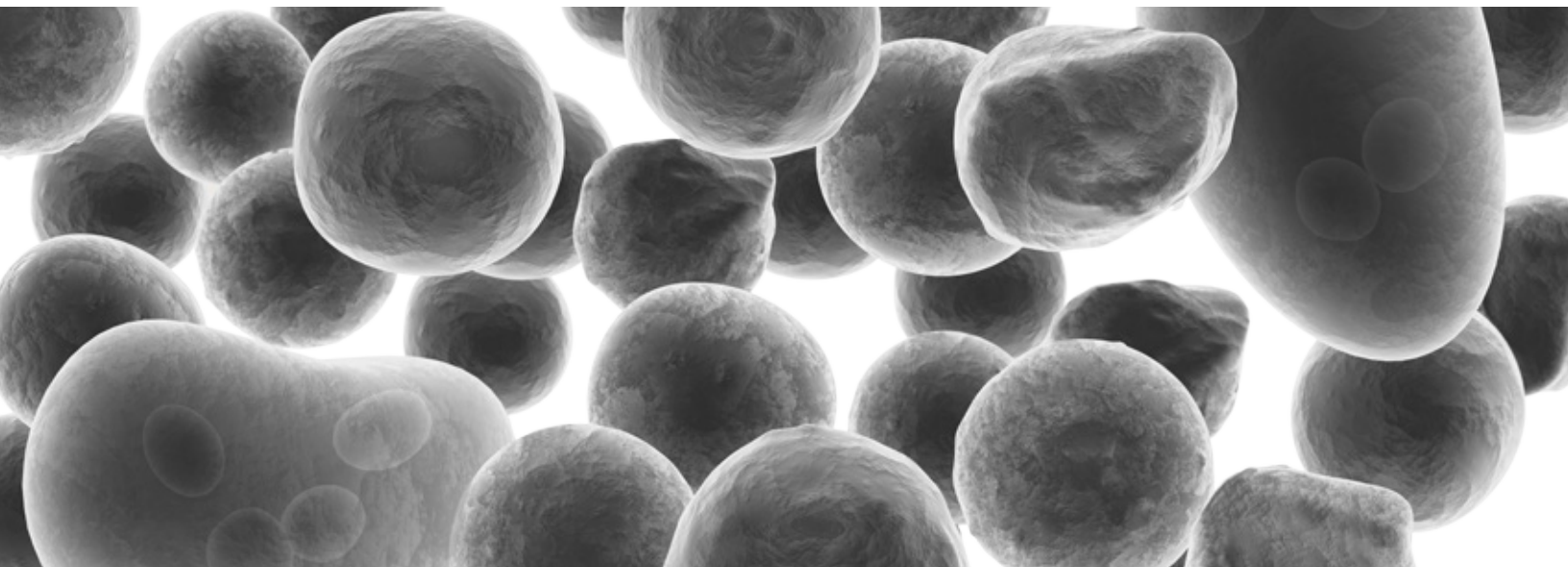


Filta-Max *xpress** Version 2.0

Pressure Elution Station • Operator's Guide (Biological)



For technical support, please call:

North/South America: +1 207 556 4496 or +1 800 321 0207

Europe: +00800 4339 9111

UK: +44 (0) 1638 676800

China: +86 21 61279528

Japan: +81 422 71 5921

Australia: +1300 44 33 99

idexx.com/water

IDEXX

One IDEXX Drive
Westbrook, Maine 04092 USA

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Filta-Max *xpress** Version 2.0

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Introduction

The IDEXX Filta-Max *xpress** version 2.0 Pressure Elution Station is used to automate the elution of *Cryptosporidium* spp. oocysts and *Giardia* spp. cysts from Filta-Max *xpress** Filter Modules.

The Pressure Elution Station and elution procedures are designed for use with 10–1,000 L water samples.

NOTE: The recovery of *Giardia* spp. cysts from large-volume finished water samples may be affected by residual chlorine in the sample.¹

The Pressure Elution Station has been designed specifically for this purpose and should not be used to elute other types of Filter Modules or cartridges.

Safety

For your safety, read this guide thoroughly before using the Filta-Max *xpress* version 2.0 Pressure Elution Station.

IDEXX recommends that you perform your own safety assessments of the Filta-Max *xpress* version 2.0 system and follow your own in-house health and safety guidelines.

All water samples, spills, splashes, aerosols, filters and eluates should be handled with at least the same precautions as the water source with regard to biohazards. The Pressure Elution Station does not render such samples to be safe and, in fact, concentrates the biological risks into the eluate.

Ensure that the connections between the Filter Housings and any sampling equipment are capable of withstanding the operating pressure of the elution station.

Ensure that you understand all instructions and safety precautions listed in this manual. If you have any questions, contact IDEXX Technical Service in the United States at +1 800 321 0207 or in Europe at +44 (0)1638 676800.

Components

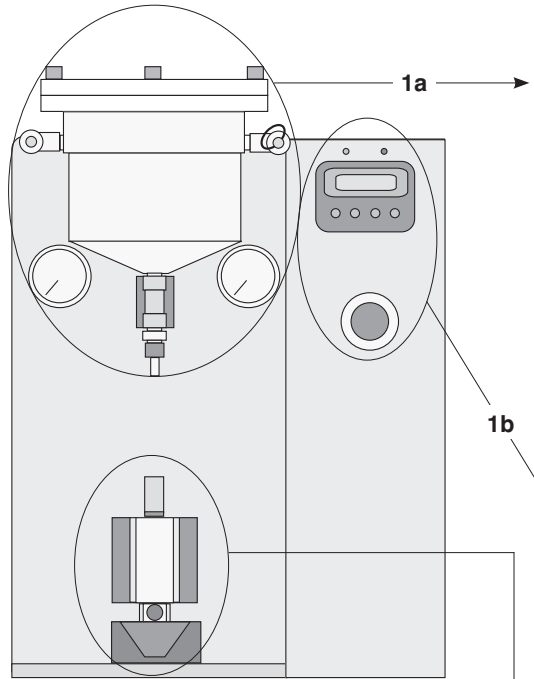


Figure 1: Pressure Elution Station without a Filter Housing and diverter assembly.

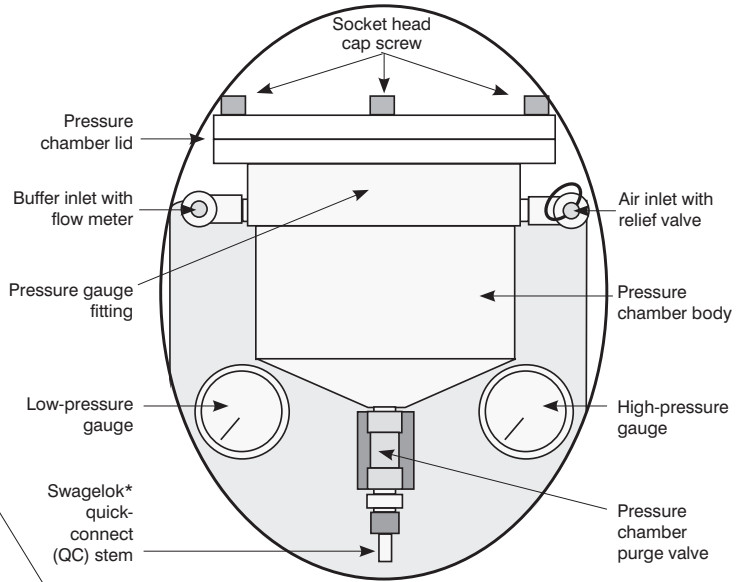


Figure 1a: Pressure chamber and gauges.

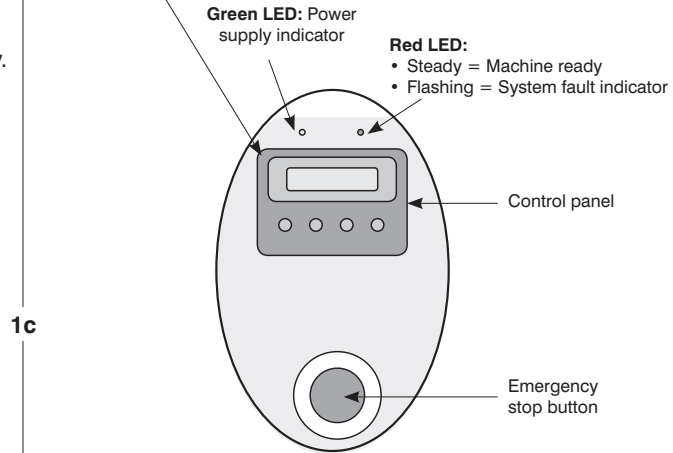


Figure 1b: Switches and buttons.

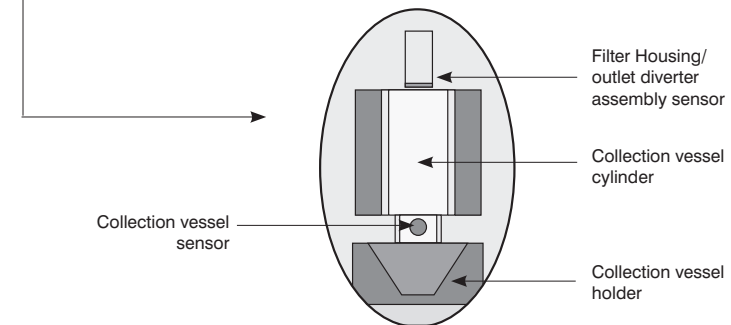


Figure 1c: Sensors, fittings, and vessels.

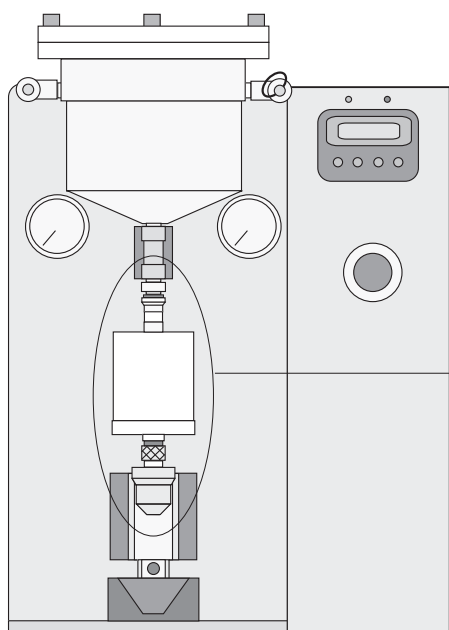


Figure 2: Pressure Elution Station with a Filter Housing and diverter assembly attached.

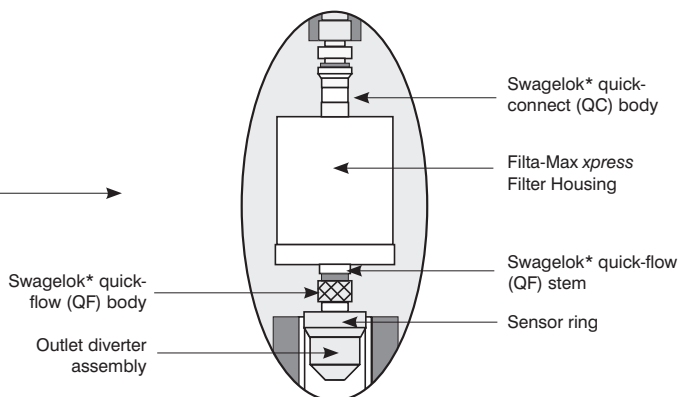


Figure 2a: Filta-Max *xpress* Filter Housing and diverter assembly.

Equipment, Consumables, and Reagents

The following additional equipment, consumables, and reagents are necessary for filter elution.

Equipment and Consumables

NOTE: These items are not supplied by IDEXX.

- Sampling pump that is suitable for use with the sampling fittings or a suitable sampling rig for use with a pressurized water supply
- Tubing (13–15 mm internal diameter) suitable for use with the sampling pump or pressurized water supply
- 500 mL Corning* centrifuge tubes (or equivalent)
- Centrifuge with capacity for 500 mL Corning tubes and 2,000 xg (g-force or relative centrifugal force)
- Alcohol-soaked wipes, laboratory grade ethanol, or sodium hypochlorite solution

Equipment and Consumables

NOTE: These items may be purchased from IDEXX. For more information, see Appendix A.

- Filta-Max *xpress* Filter Housing
- Filta-Max *xpress* Filter Module
- Filta-Max *xpress* Sampling Kit
- Filta-Max *xpress* Housing Conversion Kit

Reagents

NOTE: These items are not supplied by IDEXX.

- Phosphate Buffered Saline (PBS)
- Polyoxyethylene sorbitan monolaurate (Tween* 20)

For additional information on the reagents, see “Preparing the Buffer Solution” on page 5.

Assembly

Sampling Equipment

Sample collection can be performed at the point of source or in the laboratory. IDEXX provides the equipment necessary to perform sample filtration using the Filta-Max *xpress* Filter Modules, Filter Housings, and sampling and elution fittings (see Appendix A).

To set up the sampling equipment:

1. Connect the Swagelok quick-flow (QF) body to the Swagelok hose-tail fitting to create the sampling inlet.

2. Attach the sampling inlet to a hose that is connected to the water supply or a pump.

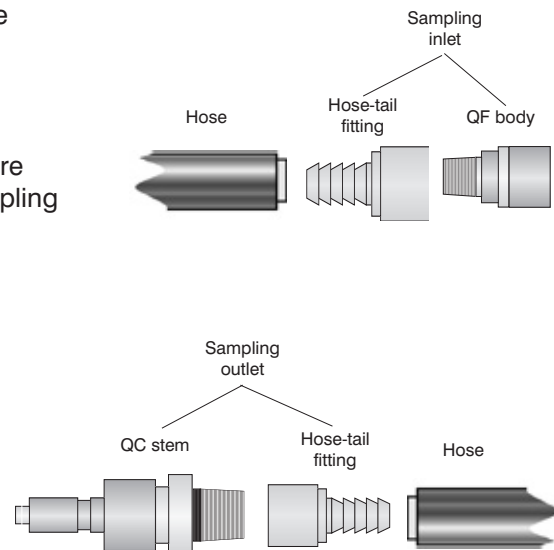
NOTE: A hose clip may be required to ensure that the seal between the hose and the sampling inlet is watertight.

NOTE: If a pump (diaphragm, peristaltic, etc.) is used to sample water, it must be installed upstream of the Filter Housing.

3. Connect the Swagelok quick-connect (QC) stem to a Swagelok hose-tail fitting to create the sampling outlet.

4. Attach the sampling outlet to a hose that is connected to a suitable waste outlet.

NOTE: A hose clip may be required to ensure that the seal between the hose and the sampling outlet is watertight.



Operating Pressure

A head pressure of 0.5 bar (7.5 psig) is required to generate flow through the filter. The recommended operating pressure is 5.0 bar (72.5 psig) which should generate a flow of 1–2 liters per minute (LPM). The operating pressure should not exceed 8.0 bar (116 psig). Pressure spikes should be avoided where possible.

Filter Module Location and Sample Filtration

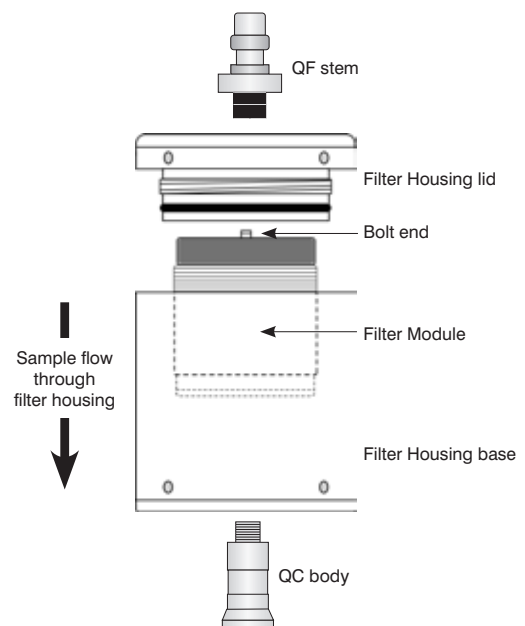
To assemble the Filter Housing and Filter Module:

1. Place the Filter Module bolt-head down into a Filter Housing and secure.

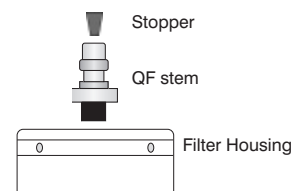
NOTE: The Filter Module must be placed correctly within the Filter Housing to work effectively by tightening the lid until the two serial numbered tag holes are aligned and a gap of approximately 0.5 mm is left between the lid and the base.

2. Tighten the lid an additional 1/8 of a turn past this point and then back to align the tag holes. This step correctly seats the O-ring.

3. Connect the Filter Housing to the sampling set-up by connecting the QF stem to the sampling inlet and the QC body to the sampling outlet.



- Turn on the water supply and restrict the flow to 1–2 LPM using a suitable flow restrictor located downstream of the Filter Housing.
- When sampling is complete, turn off the water supply.
- Disconnect the Filter Housing from the sampling setup and seal the QF stem using the stopper provided.



NOTE: The QC body on the Filter Housing is self-sealing and does not require an additional seal.

NOTE: Sample filtration may be performed in suitable Filter Housings fitted with connectors other than those required for use with the Pressure Elution Station. In this case, the Filter Module must be transferred to a Filter Housing suitable for use with the Pressure Elution Station. For more information, refer to “Eluting the Sample” on page 7.

Operating the Pressure Elution Station

Preparing the Buffer Solution

Before you begin mixing the buffer solution, determine the amount of buffer solution required for the number of samples you are going to elute. 400 mL of buffer solution are required for the initial system check of the Pressure Elution Station and for each subsequent elution.

Reagents for the buffer solution include the following:

Reagent	Manufacturer	Code	Amount/Liter
Phosphate Buffered Saline (PBS) Tablets	Sigma-Aldrich	P4417	5 Tablets/L
Tween 20	Sigma-Aldrich	P7949	0.1 mL/L

NOTE: Phosphate buffered saline solution may also be prepared using individual ingredients in the following proportions:

- Sodium chloride / Sigma-Aldrich / S7653 / 8.0g/L
- Potassium chloride / Sigma-Aldrich / P9333 / 0.2g/L
- Disodium hydrogen phosphate / Sigma-Aldrich / S7907 / 1.15g/L
- Potassium dihydrogen phosphate / Sigma-Aldrich / P5655 / 0.2g/L

To prepare one liter of the buffer solution:

- In a suitable container, add 5 PBS tablets (or the individual ingredients for PBS) to 0.9 L of reagent grade water.
- Place the container on a stirrer and mix for 10 minutes.
- Add 0.1 mL of Tween 20 and mix for a further 10 minutes.

NOTE: Tween 20 is very viscous and requires careful pipetting.

- Add reagent grade water until the total volume in the container equals 1.0 L.

To fill the buffer reservoir:

The Buffer Reservoir Kit includes one 10 L bottle and one 4 L bottle.

NOTE: The buffer reservoirs provided by IDEXX are manufactured from heavy-duty HDPE. Only heavy-duty reservoirs should be used in this application.

NOTE: Due to the performance of the initial system check and buffer purge, two reservoirs are required. IDEXX suggests that the 10 L reservoir be used for the buffer solution and the 4 L reservoir be used for reagent grade water.

1. After mixing the buffer solution, decant it into a buffer reservoir bottle.
2. Attach the buffer reservoir to the Pressure Elution Station using the supplied closure cap located on the back of the elution station. The closure cap is attached to a hose that is connected to the elution station.
3. Ensure that a tight seal is formed between the reservoir body and the closure cap.
NOTE: When the closure cap is new, the integral seal is quite stiff and may be difficult to tighten. After several uses, tightening the closure cap will become easier.

Performing the Initial System Check

Prior to performing sample elution, it is necessary to perform an initial system and integrity check to ensure that no error messages are generated during sample elution. This initial step also serves to purge reagent grade water from the lines and replace it with buffer solution.

1. Place a blank Filter Module into a Filta-Max *xpress* Filter Housing. (See “Filter Module Location and Sample Filtration” on page 4 for instructions.)
NOTE: This blank Filter Module can be reused for 1 month when performing the initial system check or when purging buffer solution from the system (see “Purging the Buffer Solution” on page 8 for more information).
2. Complete steps 1–8 of “Eluting the Sample” on page 7.
NOTE: The Pressure Elution Station will run through a complete elution cycle. If no errors are generated, proceed to sample elution. If a pressure or flow error occurs, refer to Appendix C.
3. At the end of the elution cycle, discard the liquid from the centrifuge tube.
NOTE: The centrifuge tube can be reused when performing the initial system check or when purging buffer solution from the system.
4. Disconnect the Filter Housing from the Pressure Elution Station, and then disconnect the outlet diverter fitting from the Filter Housing.
5. Clean the Swagelok QC stem on the elution station with alcohol-soaked wipes.
NOTE: Because the system uses positive pressure to elute filters, there is limited to no risk of sample-to-sample cross-contamination.[†]
6. Proceed with the steps in “Transferring Filter Modules to an Alternative Housing” and/or “Eluting the Sample.”

Transferring Filter Modules to an Alternative Housing

NOTE: If sample filtration was performed in a housing other than one suitable for use with the Pressure Elution Station, the Filter Module must be transferred to an appropriate housing prior to elution.

1. Remove the lid of the housing used for sampling, or the transport container, and carefully transfer the Filter Module, bolt-head down, to a Filta-Max *xpress* Filter Housing, which will be used in the Pressure Elution Station.
2. Pour any remaining liquid from the housing or container into the collection vessel.
3. Rinse the Filter Housing or container with reagent grade water and transfer this rinse to the collection vessel.
NOTE: The total volume transferred to the collection vessel should not exceed 50 mL.
4. Seal the second housing as directed in “Filter Module Location and Sample Filtration” on page 4.

[†]Data on file, IDEXX Laboratories, Inc.

Eluting the Sample

1. Turn on the Pressure Elution Station by depressing the on/off switch to the “1” position. The green LED (power) and the red LED (machine ready) are lit.
NOTE: The on/off switch is located on the back of the Pressure Elution Station.
2. Remove the lid from a 500 mL Corning centrifuge tube and place the tube into the collection vessel holder.
3. With the Filter Housing’s QF stem facing upward, attach the outlet diverter fitting to the QF stem by pulling back the collar and pushing the fittings together.
4. Turn the Filter Housing over and place the outlet diverter over the centrifuge tube to catch any sample which may leak.
5. Connect the Filter Housing’s QC body to the QC stem on the Pressure Elution Station by pushing the fittings together.
NOTE: If you have already performed a system check, you can skip steps 6 and 7 and proceed directly to step 8.
6. Check that the air supply is set up correctly, the air line is connected to the Pressure Elution Station, and the air inlet valve is open.
NOTE: Compressed air must be used with the Pressure Elution Station. IDEXX can provide you with an air compressor, if necessary. See Appendix B for information on how to set up this compressor.
7. Ensure that there is sufficient buffer solution in the buffer reservoir bottle and that the seal between the closure cap and the reservoir bottle is airtight.
8. Press **F1** on the control panel to start the filter elution cycle.
NOTE: During the elution cycle, the collection vessel holder and centrifuge tube are lifted into position. Do not override the door sensors, as they protect you from pinch-points produced by this movement. If the door sensors fail to function, do not place your hands or any objects in this area. Contact IDEXX Technical Service for assistance.
9. At the end of the elution cycle, disconnect the Filter Housing from the Pressure Elution Station by pushing the collar on the QC body upwards while pulling the Filter Housing down. Then disconnect the outlet diverter fitting from the Filter Housing.
10. Open the Filter Housing, remove the Filter Module, and discard the Filter Module according to appropriate disposal regulations. Filter Modules should be decontaminated prior to disposal using an autoclave set to 121°C for at least 15 minutes.
11. Cap the centrifuge tube and remove it from the collection vessel holder.
NOTE: The Pressure Elution Station contains several sensors. The elution station will not start an elution cycle if a centrifuge tube, the Filter Housing, or the outlet diverter are not in place. At the end of an elution cycle, the elution station will not start the next cycle unless the centrifuge tube is removed from the collection vessel holder and replaced with a fresh tube.
12. Clean the QC stem on the Pressure Elution Station with alcohol-soaked wipes.
NOTE: Because the system uses positive pressure to elute filters, there is limited to no risk of sample-to-sample cross-contamination.[†]
13. Proceed with subsequent sample elutions.

[†]Data on file, IDEXX Laboratories, Inc.

Concentrating the Eluates and Resuspending the Pellet Prior to IMS

Following the elution of the samples, the eluates must be further concentrated prior to purification by immunomagnetic separation (IMS).

To concentrate the eluates:

1. Balance the centrifuge tubes (collected in step 11 of “Eluting the Sample” on page 7), the cushions and the centrifuge buckets to within 0.5 g of each other.

NOTE: Failure to balance the tubes correctly can result in centrifuge imbalance and can affect the target sedimentation efficiency due to excessive vibration.

2. Centrifuge the samples at 2,000 xg for 15 minutes (not including the time taken to reach 2000 xg), allowing the centrifuge to coast to a stop at the end of centrifugation. **DO NOT USE THE BRAKE.**

NOTE: The deceleration profiles of different centrifuge models can vary. For optimal performance, the centrifuge should be used without any braking during deceleration. Check the operator’s guide provided with the centrifuge or the centrifuge vendor’s technical service department for the deceleration profile of your centrifuge. Deceleration via braking can reduce the performance of this procedure.

The sample separates into supernatant and concentrated eluates that form a pellet at the bottom of the tube.

To resuspend the pellets:

1. From the centrifuge tube, aspirate the sample leaving approximately 7–8 mL of the supernatant in the tube. Aspirate the sample using a wide bore pipette (such as a 5 mL serological pipette) or equivalent attached to a vacuum source.

NOTE: IDEXX suggests the use of a peristaltic pump attached to a waste trap for this procedure.

Do not exceed a vacuum of -0.5 psig. The flow rate during this procedure should be approximately 200 mL per minute (+/- 20 mL). During aspiration, hold the pipette in the center of the tube and aspirate the sample from the surface of the liquid. Avoid disturbing the pellet.

2. Resuspend the pellet by vortexing the sample for 20 seconds.
3. Transfer the sample to a Leighton tube using a suitable pipette primed with buffer solution.

NOTE: Priming, by drawing up buffer into the pipette and subsequently expelling it, prevents any target organisms from sticking to the wall of the pipette.

4. Rinse the sides of the centrifuge tube twice with half the remaining volume of reagent water or reagent grade water, transferring each of these wash volumes to the same Leighton tube. For example, if the volume remaining in the centrifuge tube is 7 mL, perform two rinses each with 1.5 mL of reagent water.
5. Perform the IMS step according to appropriate procedures, for example U.S. EPA Method 1622/1623, UK DWI *Cryptosporidium* regulations or other appropriate guidelines.

Purging the Buffer Solution

After all of the Filter Modules have been eluted, it is necessary to remove any remaining buffer solution from the lines of the Pressure Elution Station by purging the system with reagent grade water.

NOTE: Should sample elution be performed infrequently during a day—for example early morning and late afternoon—it is advisable to perform a buffer purge between elution events. This will increase the volume of buffer solution required.

1. Load a blank Filter Module into a Filta-Max *xpress* Filter Housing. (See “Filter Module Location and Sample Filtration” on page 4 for instructions.)

NOTE: This blank Filter Module can be reused for one month when performing the initial system check or when purging buffer solution from the system.

2. Complete steps 1–8 of “Eluting the Sample” on page 7.

NOTE: When performing a buffer solution purge, the buffer solution should be replaced with reagent grade water.

3. At the end of the elution cycle, discard the liquid from the centrifuge tube.

NOTE: The centrifuge tube can be reused when performing the initial system check or when purging buffer solution from the system.

4. Disconnect the Filter Housing from the Pressure Elution Station and then disconnect the outlet diverter fitting from the Filter Housing. The lines are now filled with reagent grade water.

5. Clean the Swagelok QC stem on the Pressure Elution Station with alcohol-soaked wipes.

NOTE: Because the system uses positive pressure to elute filters, there is limited to no risk of sample-to-sample cross-contamination.[†]

Maintenance and Cleaning

The following guidelines should be used during the decontamination of equipment and peripherals associated with the use of the Filta-Max *xpress* 2.0 system.

After each elution

- Clean the QC stem on the Pressure Elution Station using an alcohol-soaked wipe or equivalent.
- Decontaminate the sampling kit, outlet diverter fittings, and the Filter Housing by soaking in warm (40°C–60°C) water containing laboratory grade detergent for 15 to 30 minutes. Subsequently, equipment should be cleaned physically using a bottle brush or similar device followed by rinsing with oocyst free finished water and finally with reagent grade water. **NOTE:** This process is equivalent to Part 14 of *The Microbiology of Drinking Water (MoDW)*.

Should more stringent decontamination be required, equipment may be soaked for 30 minutes in a 6% solution of sodium hypochlorite (60 mL of household bleach in 1 L of water). Subsequently, equipment should be cleaned physically using a bottle brush or similar device followed by rinsing with oocyst-free finished water and finally with reagent grade water.

- All O-rings should be relubricated.

On a daily basis

Clean the applicable surfaces of the Pressure Elution Station with laboratory disinfectant or alcohol-soaked wipes.

NOTE: With the air supply turned off, the collection vessel holder may be raised to improve access to the base plate.

On a monthly basis

1. Using the small hex wrench provided, remove the top cover of the Pressure Elution Station.
2. Using the large hex wrench provided, loosen the four socket-head screws on the pressure chamber lid.
3. Using the angled screwdriver provided, locate the notch between the pressure chamber and the pressure chamber lid and pry off the lid.
4. Clean the inside of the pressure chamber and the lid with laboratory grade ethanol or a 6% solution of hypochlorite in reagent water. Subsequently, clean the inside of the pressure chamber and the lid with reagent grade water.

[†]Data on file, IDEXX Laboratories, Inc.

5. Lubricate the O-ring on the pressure chamber lid, with high vacuum grease.
6. Replace the pressure chamber lid, taking care not to trap the O-ring.
7. Replace the four socket-head screws and tighten (roughly 10 in./lb).
8. Replace the top cover of the Pressure Elution Station.
9. Perform one or more elution cycles with reagent grade water as described in “Purging the Buffer Solution” on page 8.

NOTE: If you do not use the Pressure Elution Station for a period of one week or longer, the Pressure Elution Station should be cleaned as described.

Storage of the Filta-Max *xpress* Pressure Elution Station

If the Pressure Elution Station will not be used for a period of time greater than 1 week, it is recommended that the unit be stored appropriately. These procedures should be followed to ensure that the unit remains fully functional.

1. Purge the unit of buffer:
 - a. Run two complete elution cycles using reagent grade water.
2. Drain the liquid feed line:

NOTE: A Filter Housing containing a Filter Module, an outlet diverter fitting, and a collection vessel must be in place to perform this procedure.

- a. Detach the closure cap from the buffer reservoir.
- b. Empty the reagent grade water from the buffer reservoir.
- c. Replace the closure cap.
- d. Start an elution cycle and allow the first two cycles to complete.

NOTE: With some instruments it is likely that a “High Flow” error will be displayed. This happens when the water in the lines has been replaced with air. Hit the emergency stop button to reset the instrument and consider the purging (draining) process complete.

- e. Press the emergency stop button to halt the elution cycle process.
- f. Dry the liquid feed tube and closure cap and place them in a polyethylene bag.

NOTE: Do not detach the closure from the air and liquid feed lines.

3. Clean the pressure chamber:
 - a. Remove the pressure chamber lid.
 - b. Dry the inside of the chamber using paper towels.
 - c. Clean the inside of the pressure chamber using absolute ethanol.
 - d. Allow the chamber to air-dry.
 - e. Replace the pressure chamber lid.
4. Detach the Filter Housing and the diverter fitting, and remove the collection vessel.
5. Clean the inside of the unit using appropriate procedures as detailed in the operator’s guide.
6. Detach the air supply.

NOTE: In order to start using the Pressure Elution Station again, appropriate procedures should be followed.

1. Reattach the air supply.
2. Fill the buffer reservoir with reagent grade water and attach the closure cap.

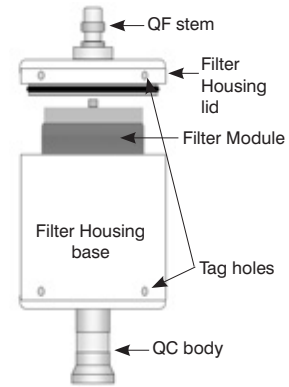
- Attach a Filter Housing and diverter to the elution station and place a collection vessel in the holder.
- Perform three elution cycles and check for any errors or issues with functionality.

NOTE: If the Pressure Elution Station has been stored for more than 2 weeks, it is recommended that the pressure chamber be cleaned as described above.

Appendix A: Consumables

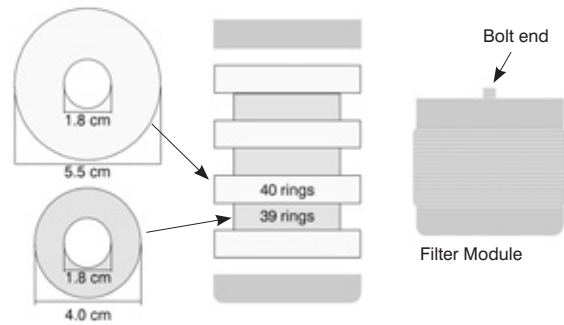
Filta-Max *xpress* Filter Housing

- Materials of construction:** polyethylene terephthalate (PET) and O-rings (nitrile)
- Connections:** Swagelok quick-connect (QC Body) and quick-flow (QF Stem) fittings for connection to sampling and elution equipment
- Dimensions:** 18.0 cm (7.2 in.) length, 8.5 cm (3.4 in.) diameter



Filta-Max *xpress* Filter Module

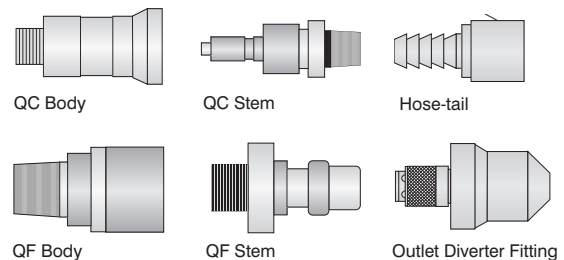
- Materials of construction:** open-cell reticulated polyurethane rings in two sizes that are interlaced and compressed to form a filter. Ring size:
 - 5.5 cm (OD) x 1.8 cm (ID) x 1.0 cm (D)
 - 4.0 cm (OD) x 1.8 cm (ID) x 1.0 cm (D)
- Pore size:** 1.0 μm nominal
- Dimensions:** 5.0 cm (2.0 in.) length, 5.5 cm (2.2 in.) diameter
- Storage:** 16–24°C (60–74°F)



Filter Module construction

Filta-Max *xpress* 2.0 Sampling and Elution Fitting

- Materials of construction:** stainless steel (grade 316), O-rings (Viton*)
- Connection types:** Swagelok QC Body and QC Stem, QF Body and QF Stem, Hose-tail and Outlet Diverter Fitting



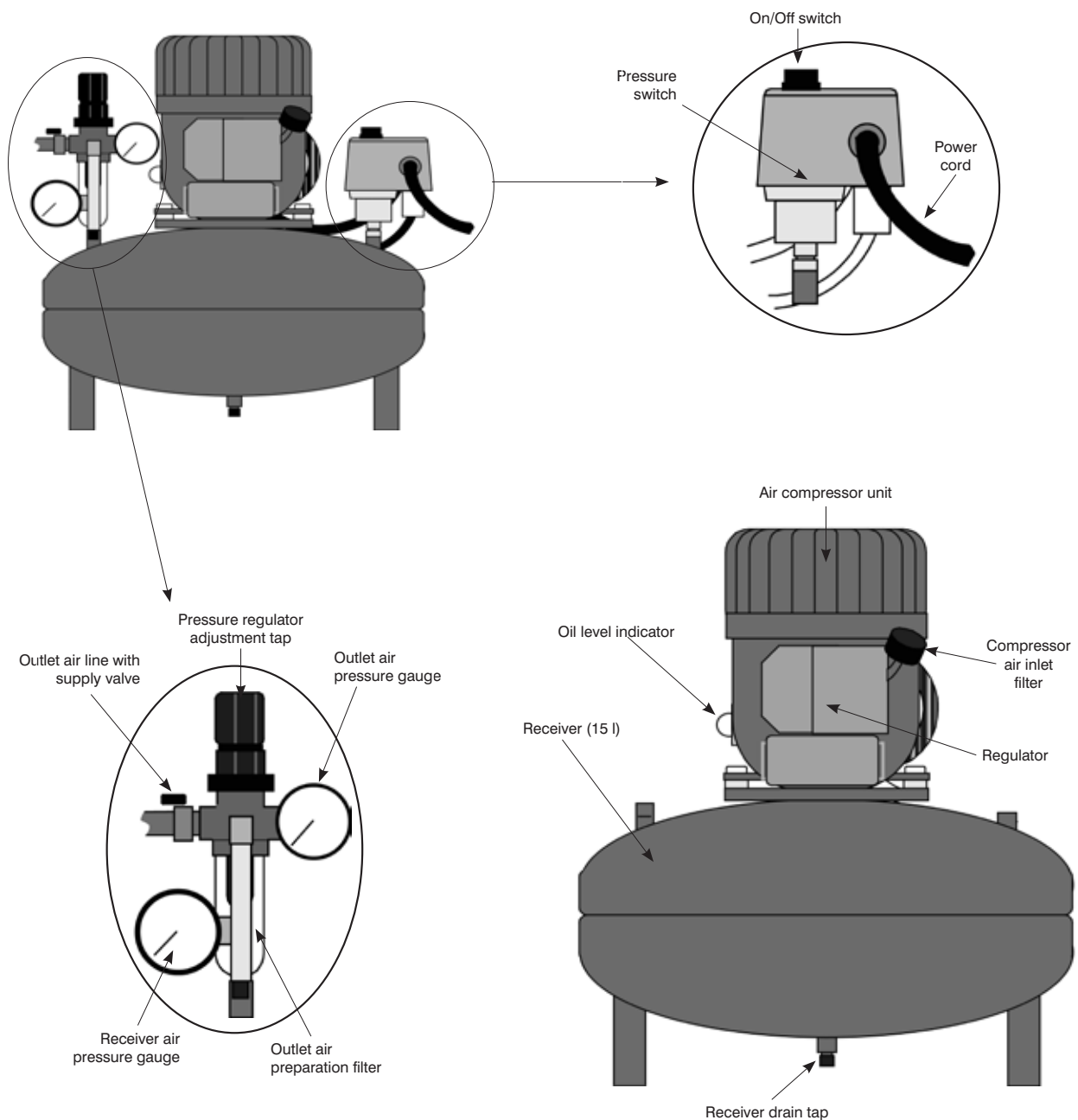
Appendix B: Air Supply Requirements

Compressed air is required for the Filta-Max *xpress* 2.0 Pressure Elution Station to function properly as it supplies the air pressure needed to elute the Filter Modules. IDEXX supplies a hose kit that allows you to connect your facility's air supply to the Pressure Elution Station. The hose kit consists of a 12-foot self-retracting hose and connector.

NOTE: The air supply should be set to a minimum pressure of 5.0 bar (72.5 psig) and a maximum of 8.0 bar (116 psig).

For further details regarding the air supply, please refer to the instruction manual provided or call IDEXX Technical Services.

Example of a typical compressor:



Appendix C: Troubleshooting

Contact IDEXX Technical Service for assistance in the United States at 1-800-321-0207 or in Europe at +44 (0)1638 676800. Email at emeatechsupport@idexx.com or watertechnicalservice@idexx.com.

Issue	Action
"No Flow" error message displays, and the LED flashes red	<ul style="list-style-type: none">• Check that the air compressor is turned on and the air compressor's inlet valve is open.• Check that the air line is connected to the inlet connector on the Pressure Elution Station.• Check that the lockable air inlet with relief valve on the elution station is open.• Check that there is sufficient buffer solution in the buffer reservoir.
Buffer solution does not enter the chamber; the "Low Flow" error message displays, and the LED flashes red	<ul style="list-style-type: none">• Check that the air compressor is turned on, and the air compressor's inlet valve is open.• Check that the pressure in the air compressor receiver is above 6.0 bar (87.0 psig).• Check that the air line is connected to the inlet connector on the Pressure Elution Station.• Check that the air compressor's outlet regulator is set to at least 5.0 bar.• Check that the lockable air inlet with relief valve on the elution station is open.• Check the seal between the buffer reservoir bottle and the closure cap.
"Fill Error" message displays	<ul style="list-style-type: none">• Check that the closure cap on the buffer reservoir bottle is sealed correctly and is airtight.• Check that there is sufficient buffer solution in the buffer reservoir.• Check that all tubes are attached correctly and are airtight.
"High Flow" error message displays, and the LED flashes red	<ul style="list-style-type: none">• Check the air supply and the low-pressure regulator settings.• Check that there is sufficient buffer solution in the buffer reservoir.• Check that the liquid inlet tube, located below the closure cap, is:<ul style="list-style-type: none">– below the level of the buffer solution– attached to the blue liquid feed tube (located above the closure cap)
Elution cycle starts but ceases mid-cycle; "Low Pressure" error message displays, and the LED flashes red	<ul style="list-style-type: none">• Check that there is sufficient pressure in the compressor receiver.• Check the alternative air supply, if in use.

Issue	Action
"Chamber Pressure Error" message displays	<ul style="list-style-type: none"> • Check that there is sufficient pressure in the compressor receiver. • Check the alternative air supply, if in use. • Ensure that the pressure switch on the air compressor is set correctly.
"Containment Vessel Missing" error message displays	<ul style="list-style-type: none"> • Check that a centrifuge tube has been placed in the collection vessel holder.
"Filter Module Missing" or "Diverter Missing" error message displays	<ul style="list-style-type: none"> • Check that the Filter Housing contains a Filter Module and that both are connected properly. • Check that the outlet diverter is correctly attached to the Filter Housing. • Ensure that the air pressure chamber, Filter Housing, and outlet diverter are aligned correctly.
"Door Open" error message displays	<ul style="list-style-type: none"> • Ensure the door to the Pressure Elution Station is closed properly.

Reference

1. Drinking Water Inspectorate. The enumeration of *Giardia* in drinking water: final report. http://dwi.defra.gov.uk/research/completed-research/reports/DWI70-2-155_giardia.pdf. Published December 2003. Accessed August 20, 2014.



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