FISNAR®

PP450-GL Pressure Reservoir

Operating Manual

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The PP450-GL Reservoir fall in the Pressure Equipment Directive 2014/68/EU Article 4, Clause 3 – Sound Engineering Practice and has been certified safe to use by FISNAR

SAFETY WARNINGS

Halogenated Hydrocarbon Fluid Hazard

- ⚠ NEVER USE halogenated hydrocarbon solvents or fluids containing such solvents in this equipment. Examples of halogenated hydrocarbon solvents are: trichloroethane, methylene chloride, fluids with the prefix “fluoro-“, “chloro-“, “bromo-“ or “iodo-“, etc.
- These solvents can cause an explosion when used in a pressurized fluid pumping system. The resulting explosion may cause death, serious bodily injury or substantial property damage.

LIST OF RECOMMENDED FLUIDS

The following is a non-exhaustive list of examples of fluids recommended with our reservoirs.

- Accelerators
- Activators
- Anaerobic
- Conformal coating
- Cyanoacrylate adhesives
- Electrolytes
- Epoxies
- Liquid fluxes
- Low viscosity greases
- Low viscosity silicones
- Inks
- Oils
- Optical dyes
- Lacquers and Optical lacquers
- Paints
- Primers
- Reagents
- Saline solutions
- UV adhesives and UV inks
- Water and Water based fluids
- White glue

For all other fluids, please refer to the manufacturer technical data sheets for compatibility.

SAFETY CONTINUED

Pressurized Equipment Hazard

- High pressure fluid can cause serious injury. This equipment is for professional use only. Observe all warnings.
- Read and understand all applicable instruction manuals before placing equipment into service.

Equipment Misuse Hazard

GENERAL SAFETY – Any use of the reservoir and related accessories not consistent with that described in this manual, such as modifying or removing parts, over pressurising, using incompatible fluids and chemicals, or using worn, damaged or incompatible parts can cause them to rupture resulting in serious bodily injury, including fluid splashed in the eyes or on the skin, or fire, explosion or other property damage.

⚠	***NEVER*** alter or modify any part of this equipment, as doing so may cause it to malfunction.
	CHECK all reservoir components regularly and replace any worn or damaged parts with only FISNAR supplied or approved parts. BE SURE that all connected equipment and accessories are rated to withstand the maximum operating pressure of the reservoir.

Personal Protective Equipment

- Wear all protective eyewear, gloves, clothing and respirator as recommended by the manufacturer of the fluid used.

System Pressure

NEVER exceed the maximum reservoir operating pressure of 60 psi (4.0 bar). The maximum supply pressure to the reservoir regulator must not exceed 10 bar gauge (150psi).

⚠	***BE SURE*** that all connected equipment and accessories are rated to withstand the maximum operating pressure of the reservoir.
	If an Air filter regulator is not used, be certain your plant air is properly filtered and dry. Oil or particles in the air supply line can cause erratic performance and can contaminate the fluid contained, if not properly filtered.

Fluid Compatibility

BE SURE that all fluids, including their vapors, contained in the reservoir are compatible with all the reservoir components and fluid lines. Read the fluid manufacturer's literature, including the MSDS (Material Safety Data Sheet) and observe all warnings before using the reservoir. For any questions regarding compatibility, contact Fisnar for chemical compatibility to ensure safe installation and use of the product.

Tipping and Dropping Hazard

- **BE SURE** that the reservoir is placed on a hard, level surface and that all tubing lengths are of sufficient length to allow free motion of all movable components attached to the reservoir.
- DO NOT pull on tubing to move the reservoir.
- Tipping the reservoir or otherwise supporting it on its side can cause fluid to enter both the pressure regulator and pressure relief valve and interfere with their normal function. A damaged pressure regulator and/or damaged pressure relief valve may lead to an over-pressure condition within the reservoir. If the reservoir tips or the pressure regulator and/or pressure relief valve otherwise become blocked, they must be replaced with Fisnar supplied or approved parts.
- Dropping the reservoir from any height can damage the pressure regulator, pressure relief valve, the glass or plastic body and fittings and/or compromise the integrity of the reservoir base and cover. A damaged pressure regulator and/or damaged pressure relief valve may lead to an over-pressure condition within the reservoir. A damaged reservoir body and/or lid can be an explosion hazard. If the reservoir falls from any height, it must be thoroughly inspected for cracks or damages to the body, pressure regulator and pressure relief valve. If damage to a component is suspected, it must be replaced with Fisnar supplied or approved parts.

Tubing Safety
• Pressurized tubing can be very dangerous. Tubing whose integrity is compromised due to any kind of wear, damage or misuse can develop a leak, spraying the contents of the vessel at high pressure. This spray can enter the eyes or cover the skin or cause other serious bodily injury, fire or property damage.

Before Pressurizing the Reservoir:	
1.	***BE SURE*** all fluid connections to the reservoir are properly secured.
2.	Examine the reservoir body and rods for lose screws or cracks, examine all tubing for cuts, wear, bulges and leaks. If any of these conditions exist, call FISNAR or replace the tubing immediately with FISNAR supplied or approved tubing.
3.	***BE SURE*** that the fluid to be pressurized is compatible with the tubing material. Contact the fluid manufacturer or refer to the MSDS (Material Safety Data Sheet).
4.	***BE SURE*** that the tubing will not be exposed to operating temperatures in excess of 100°F (38°C) or below 39°F (4°C) during the application.

SPECIFICATIONS	
Capacity	1.2 Gl. / 4.5 litres
Maximum Operating Pressure:	60 psi (4 bar)
Maximum Operating Temperature	100°F / 38 °C
Minimum Operating Temperature	39°F / 4°C
Weight:	11 Lbs / 3.5 kg
Internal Diameter	6 inch / 150mm
Internal Height	10 Inch / 254mm
External Width	6.5 x 6.5 Inch / 165 x 165 mm
External Height	16 Inch / 406mm

ACCESSORIES	
Item No.	**Description**
560620	Dip Tube
580047A-10-36	Fluid Line .10" ID x 36" long
560657	Female Fitting 1/4NPT x 1/4 Tube
5801450	Male Luer Lock Adapter
562320	Male LL Adapter 1/4"MPT x 1/8" FPT
562321	Male LL Adapter x 1/8"NPT
562322	PP Compression Fitting 1/4"MPT x 1/4" Tube thru Hole
561415-IJ-10FT	P.E. Tubing .170" ID x 1/4" OD
561851	Air Line

Rules and Regulations for the use of Pressure Tanks

The following information applies only to pressure vessels within the scope of the Pressure Equipment Directive 2014/68/EU. Material pressure reservoirs that fall below the limit values of Category 1 (“C0”, product of pressure PS and volume V lower than 25 bar L) are not covered by the directive.
The PP Series pressure reservoirs fall into product group II (article 4 – 3 of PED 2014/68/EU).

Operators must observe and comply with all safety regulations and other rules and regulations relevant for the specific application as well as for the place of use, in particular those regulations imposed by trade and industry law, transport law and water protection law. Before the pressure reservoir is used for the first time, it is recommended to contact an authorised inspection agency to supervise pressure equipment of the corresponding category in order to determine the rules and regulations covering the specific application and coordinate further procedures.

The pressure reservoir has been designed, approved and marked by the manufacturer in accordance with the EU Pressure Equipment Directive 2014/68/EU. The category in which the equipment is classified, the scope of the assessment (vessel or assembly) and the applied conformity module can be found in the Certificate of Conformance.

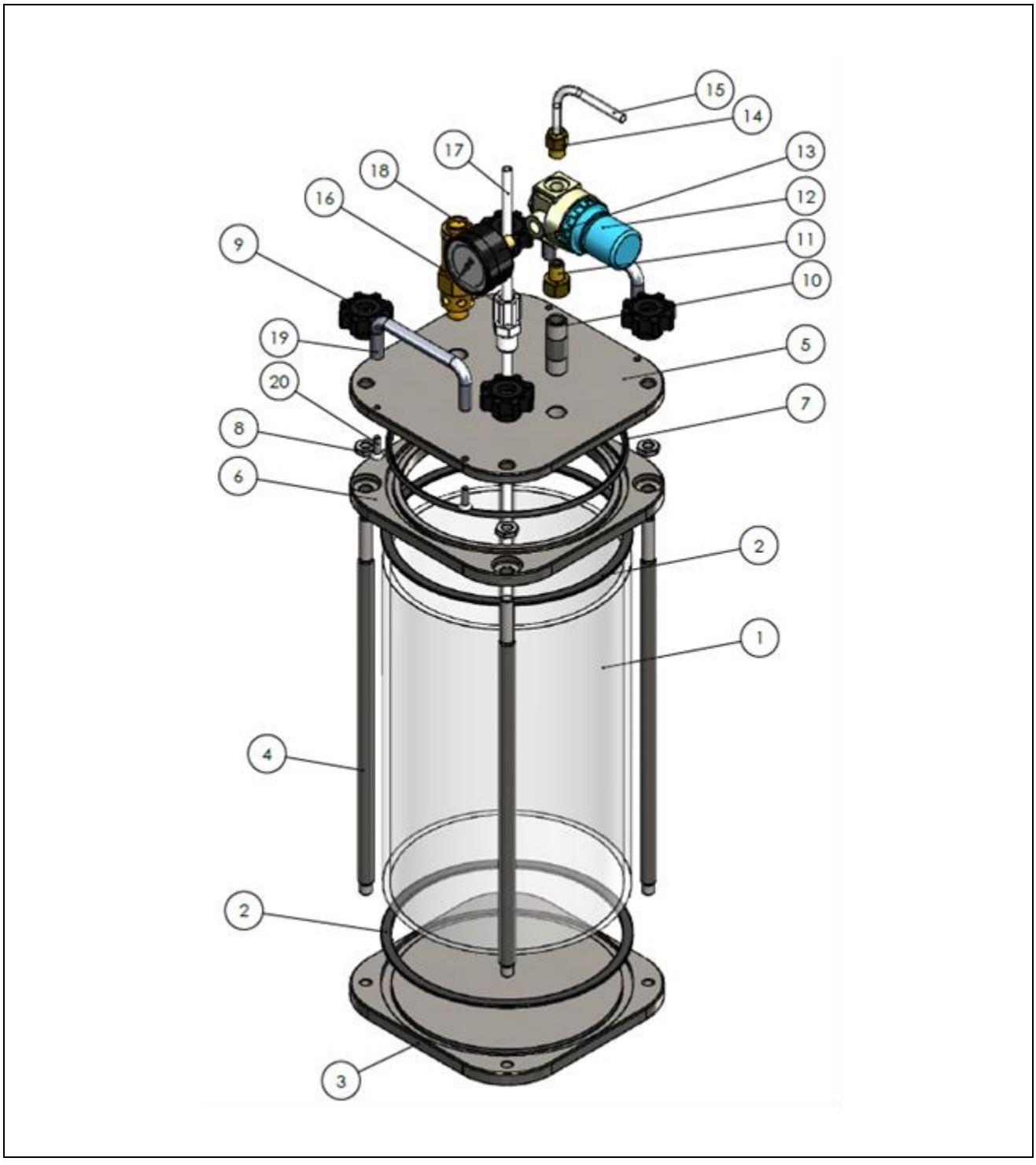
All pressure equipment within the scope of the Pressure Equipment Directive is subject to surveillance in accordance with legislation governing safety of equipment and industrial safety.

Any person using equipment within the scope of the Regulations on Industrial Safety is required to perform an assessment of the dangers involved in using the equipment and to determine the measures necessary to ensure safe installation and operation of the equipment. In particular, this includes those dangers relating to the operation of the equipment itself as well as any dangers at the workplace resulting from interaction with other equipment or with materials or with the working environment.

Any person using pressure equipment is required to keep the equipment in an orderly condition, to operate the equipment in accordance with the rules and regulations, to monitor the condition of the equipment, to perform any necessary maintenance work without delay and to ensure that all the relevant safety measures relating to the specific application have been taken. If the equipment is found to have defects that might endanger its safe operation, it must be taken out of operation immediately.

Pressure equipment is subject to prescribed tests before being put into operation, including after any refitting or maintenance work have been carried out.

EXPLODED VIEW



SPARE PARTS LIST

Line #	Item #	Description	Quantity
1	562323	Glass cylinder	1
2	562324	Viton flat seal	2
3	562325	Base plate	1
4	562326	Rod	4
5	562327	Lid	1
6	562328	Top plate	1
7	562329	O-ring	1
8	562330	Nut stainless steel MB	4
9	562331	Locking knob M8	4
10	560949	Slide air valve 1/4"MPT x 1/4"FPT	1
11	560716	Nipple 1/4" NPT	1
12	562332	Air pressure regulator 0-60 PSI	1
13	562333	Pressure gauge 0-60 PSI	1
14	560746A	Push connector 1/4"NPT x 1/4" Tube	1
15	561851	Air line	1
16	562322	PP Compression Fitting 1/4"MPT x 1/4" Tube	1
17	561415-IJ-10FT	P.E. Tubing 1/4" OD	1
18	562334	Safety valve 60psi	1
19	562337	Aluminum Handle	2
20	562338	M4 Hex screws for Aluminum Handles	4
21*	560620	Dip tube	1
22*	580047A-10-36	Fluid Line .10" ID x 36" long	1
23*	562320	Male LL Adapter 1/4"MPT x 1/8" FPT	1
24*	562321	Male LL Adapter x 1/8"NPT	1
25*	560657	Female Fitting 1/4NPT x 1/4 Tube	1
26*	5801450	Male Luer Lock Adapter	1

Item Not Shown

Conditions of use

In its standard design, a Fisnar material pressure reservoir consists of a container with a removable lid, a compressed air inlet fitting assembly comprised of an air pressure regulator with back pressure control, a pressure gauge, a quick release slide valve, a tested safety relief valve, and a material outlet fitting (also on the lid).

The reservoir operates as a feed system to the user's fluid dispensing or spraying device. Fisnar material pressure reservoirs are suitable for multiple fluid applications such as dosing, spraying and mixing.

The required delivery pressure or fluid flow rate is adjusted by a pressure regulator with a back-pressure control in the air input side. Once the operating pressure has been set, the reservoir ensures an even flow of the fluid to the user's device.

Fisnar material pressure reservoirs can also be equipped with precision regulators and gauges as well as a wide range of level sensors.

Material pressure vessels are designed to be used for delivering low to medium fluids and materials that are put under pressure by compressed air.

Fisnar undertakes the responsibility for the device subject of delivery, i.e. for the pressure device and other components of the equipment supplied. Operators are obliged to observe the applicable regulations, instructions and be personally responsible for the equipment.

This implies that operators have read, understood and observed all instructions set out in this manual. Fisnar cannot be held responsible for property damages, injuries or any other form of losses if operating and safety instructions described in this manual have not been followed.

The pressure reservoir must not be operated solely with liquid pressure (e.g. filled to the top flange).

pressure vessel must not be pressurized using toxic, flammable or aggressive gases. Pressurizing the vessel with pure oxygen is strictly prohibited: **RISK OF EXPLOSION!**

The pressure reservoir must not be operated with nitrogen.

The pressure reservoirs must not be used for transporting materials. Exceptions are permissible only if suitable measures have been taken by the customer to allow the tank being used at various locations within the same plant.

The pressure reservoir must not be used for long-term storage of materials.

The pressure reservoir must not be used for materials that are incompatible with the reservoir and all other wetted parts in the tank.

No changes or modifications should be made to the pressure reservoir and its components prior consulting Fisnar.

The components and accessories fitted to the reservoir (safety valve, regulator, gauge, etc…) must not be changed or tempered with. The reservoir should be protected against dirt and contamination.

Instructions

Observe all the safety instructions from this manual to avoid damage to the equipment and risk to the operators and staff working in close proximity of the pressure tank.

If the reservoir is placed in an area with risk of electrostatic charges, the pressure reservoir, the air line, fluid line and all electric conductive surfaces within the working area of the reservoir must be earthed.

Air quality and connection conditions

We strongly recommend the use of 5µm coalescing filter to achieve clean and dry compressed air supply to the tank.

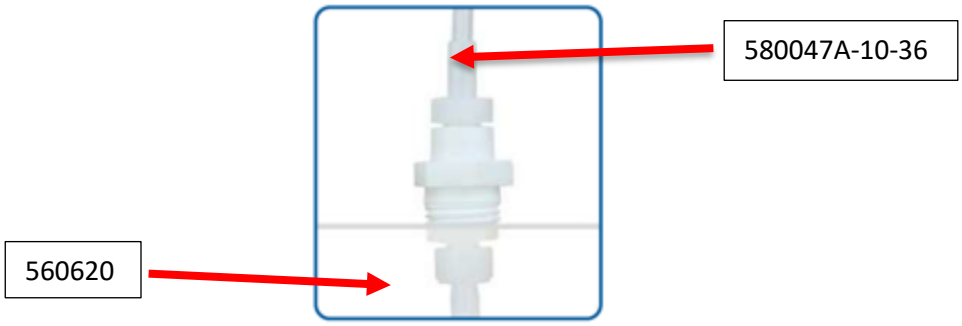
Prescribed air quality as per DIN ISO 8573-1, Quality Class 4.

SET UP

The PP450-GL Offer two options for dispensing fluids, one is fed through a luer lock style fluid line and the other is fed through using ¼" O.D. tubing.

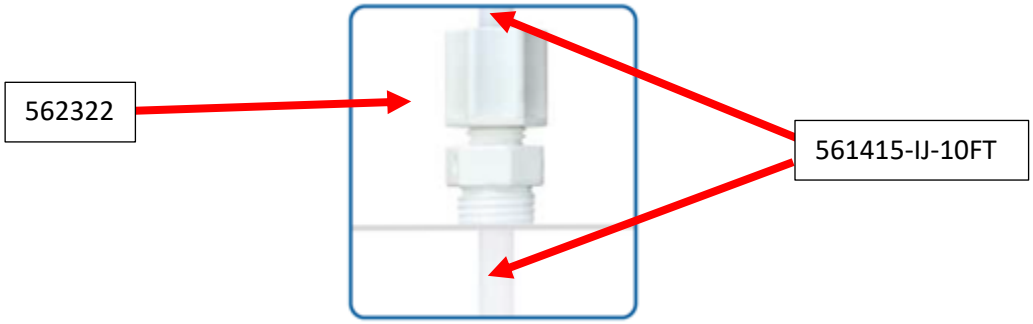
The PP450-GL is provided assembled with the first option (Luer Lock style fittings) and can easily change to work with the second option when needed.

Fluid Line Set Up



1.	Unpack the regulator assembly and attach it to the slide valve already assemble on the reservoir lid. Install the air line p/n 561851 to the regulator push-to-connect inlet port. The maximum operating pressure is 60 psi (4 bar). If no air filter regulator is available, please install one.
2.	Open the lid and connect the dip tube line p/n 560620 to the inner luer lock fitting. Cut the dip tube line slightly at an angle to the appropriate length, adding enough length to reach inside the reservoir bottom end just above the surface.
3.	Put the bottle of material to be dispense inside the reservoir chamber.
4.	Close the lid, ensuring that the feed tube is inserted into the bottle properly.
5.	Secure the locking knobs on the lid and tighten all four securely.
6.	Connect the fluid line p/n 580047A-10-36 to the outer luer lock fitting and attach the other end of the luer lock to the other part of your dispensing system.
7.	Adjust the reservoir air regulator to a pressure sufficient enough to pressurize the material. Typical settings are 5 to 10 psi (0.3 to 0.6 bar) for low viscosity and up to 60psi (4bar) for higher viscosity fluids.
8.	When filling or refilling the reservoir, open the lid slowly and use a cup (not included) to catch any excess material that drips from the feed tube. Take care during the opening and closing of the lid to avoid for the potential of spraying material residue left on the wetted part of the fluid tubing.

Dispensing Tube Set Up



1. Unpack the regulator assembly and attach it to the slide valve already assemble on the reservoir lid and install the air line p/n 561851 to the regulator push-to-connect inlet port. The maximum operating pressure is 60 psi (4 bar). If no air filter regulator is available, please install one.
2. Open the lid and remove the female luer lock fitting p/n 562321 from the inner side of the lid. Remove the male luer lock fitting p/n 562320 from the outer side of the lid.
3. Attach the compression fitting p/n 562322 to the outer side of the lid.
4. Cut one end of the feed tubing p/n 561415-IJ-10FT slightly at an angle. Push the tubing through the compression fitting 562322 to the appropriate length, adding enough length to reach inside the reservoir's bottom end. Tighten the compression nut to secure the tube
5. Put the bottle of material to be dispense inside the reservoir chamber.
6. Close the lid, ensuring that the dispense tube is inserted into the bottle properly.
7. Secure the locking knobs on the lid and tighten all four securely.
8. Connect the other end of the feed tubing 561415-IJ-10FT to the other part of your dispensing system (please note that for convenience an adapter assembly is included to connect the tubing to the luer lock if needed).
9. Adjust the reservoir air regulator to a pressure sufficient enough to pressurize the material. Typical settings are 5 to 10 psi (0.3 to 0.6 bar) for low viscosity and up to 60psi (4bar) for higher viscosity fluids.
10. When filling or refilling the reservoir, open the lid slowly and use a cup (not included) to catch any excess material that drips from the feed tube. Take care during the opening and closing of the lid to avoid for the potential of spraying material residue left on the wetted part of the fluid tubing.

Compatibility between the equipment described in this manual, the fluid, the usage and the application remain the responsibility of the operator. Special attention must be paid to potential risks of corrosion and abrasion forming inside the reservoir. If signs of corrosion or abrasion are detected, safely disconnect the equipment and remove the reservoir away from the working area.

If, while operating with the equipment, something unusual is noticed, immediately stop all operations involving the pressure tank and contact FISNAR.
If the reservoir is not installed and connected correctly, not maintained regularly, used in a different way than its intended purpose, modified in any ways or safety instructions not followed, serious injuries to operators and staff working in clause proximity can result out of it. FISNAR cannot be held responsible for misuse of the equipment.

Relief Procedure

To reduce the risk of bodily injury, including fluid splashing into the eyes, **NEVER** attempt to open the reservoir without first performing this procedure.

1.	Slide the quick release valve down, this will decompress the chamber quickly
2.	Actuate the air relief valve. Hold the relief valve open until any hissing sounds end.
3.	Confirm that the indicated gauge pressure is zero. If the gauge reads zero, slowly release the star grip and open the lid.
4.	If the pressure gauge does not read zero after performing Steps 1 to 3, remove the air input hose from the air regulator and set the regulator pressure to zero. A hissing sound should be heard from the regulator during this step. Once the gauge reads zero, return to Step 4. Do not use the reservoir until the air relief valve is replaced.

Refilling

- To refill the reservoir, follow the Pressure Relief Procedure above and follow the setup steps according to the set up configuration used prior.
- **Note:** When pressurized, it is normal to hear a hissing sound coming from the regulator. This is due to the constant-bleed regulator feature.

Troubleshooting

Maintenance and repair work may be carried out only on a reservoir which has been completely depressurized and fully disconnected from both fluid and air lines.

Trouble: Cannot set or maintain reservoir pressure

	Possible Cause	Solution
➤	Star grip not secured	Make sure the star grip is secured hand tight.
➤	Leaking feed tube compression fitting	Make sure compression fitting is assembled per instructions. If leak continues after proper installation, replace with new fitting.
➤	Damaged lid O-ring or seal	Replace damaged O-ring or seal.
➤	Damaged/malfunctioning air relief valve	Replace with new air relief valve.
➤	Kinked air supply line	Make sure air supply line is straight and protected from other equipment.
➤	Lid seal surface dirty or damaged	Clean both the vessel's flange and the lid. Do not use sharp or pointy tools. Make sure lid and top plate sealing surface are free from debris or other contamination. The reservoir or the lid should be replaced if there is a cut or gouge in the sealing surface deep enough to prevent the reservoir from achieving its set pressure
➤	Damaged/malfunctioning air regulator	Replace with new air regulator.
➤	Damaged/malfunctioning pressure gauge	Replace with new pressure gauge.
➤	Air supply is fluctuating	Supply system regulator is required. Set the regulator to the lowest plant air fluctuation.

Maintenance and Cleaning

Note: When pressurized, it is normal to hear a hissing sound coming from the regulator. This is due to the constant-bleed regulator feature.

1.	The air relief valve must be cycled with the reservoir pressurized at least once per month. The valve should operate smoothly with normal finger pressure. If the valve requires excessive force to operate or is visibly contaminated, it must be replaced.
2.	The condition of the O-ring should be checked for cuts, tears, etc. Any spills on the sealing surface of the reservoir should be wiped clean immediately with a soft, damp cloth and mild soapy water.
3.	The pressure regulator should be checked at regular intervals to ensure that it is fully functional.

If further cleaning is required, please follow the safety instruction below.

Make sure the reservoir has been completely depressurized and disconnected from both air line and fluid line.

If cleaning agents are being used on the reservoir, observe the manufacturer's safety instruction, especially for aggressive and corrosive cleaning agents.

Always wear proper protective clothing and breathing protection when carrying out cleaning work with chemicals.

During cleaning, ensure that material residues do not react and are not ignited by the tools and cleaning agents used.

The use of highly flammable materials means that there is an increased risk of explosion and fire in the working area.

For cleaning the reservoir, use only cleaning agents which **DO NOT** contain the following components: halogenated hydrocarbons (such as trichloroethane, methylene chloride, etc…) acids, and acidic cleaning agents, regenerated solvents (so-called cleaning solvents) or paint removers. These components cause chemical reactions and can result in corrosion damage.

Do not use hard or sharp objects to clean the reservoir to avoid scratching the surface.

Never immerse the complete reservoir in solvent or any other cleaning agent as the chemicals will damage the components mounted on the lid and temper their safety function. The reservoir will no longer be guaranteed.

Do not use cleaning methods which could cause corrosion, or which reduce the thickness of the plates (e.g mechanical sanding or sand blasting).

Maintenance and repair work may be carried out only on a reservoir which has been completely de-pressurized and fully disconnected from both fluid and air lines.

The use of compressed air and regular maintenance will ensure that serious faults will hardly ever occur.

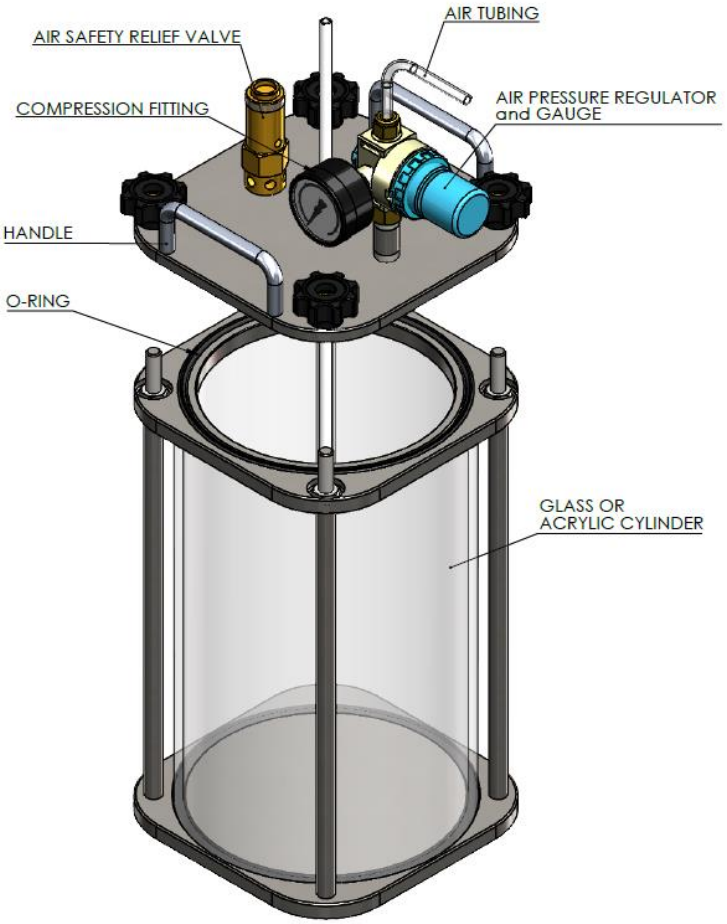
All regulating and safety components must, if they have been supplied by FISNAR, be replaced only by original FISNAR parts. List of replacement parts can be found on page 10.

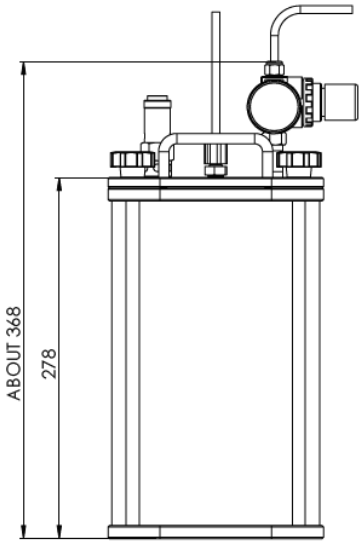
Please contact us if you require replacement parts.

Disposal *

Materials that remain after cleaning and maintenance must be disposed in compliance with the laws and regulations in place in the country where the equipment is being used. Materials, fluids, cleaning agent improperly disposed endangers the environment and health of beings.

Drawing


AIR TUBING
AIR SAFETY RELIEF VALVE
COMPRESSION FITTING
AIR PRESSURE REGULATOR and GAUGE
HANDLE
O-RING
GLASS OR ACRYLIC CYLINDER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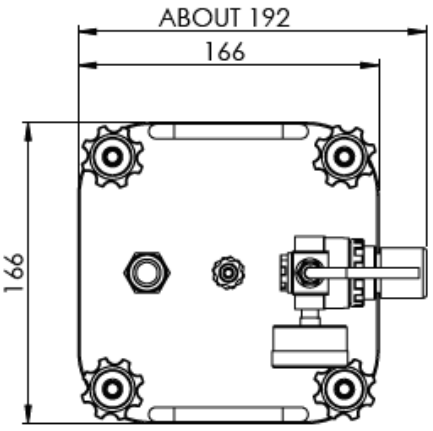
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Notes

Notes

Notes

LIMITED WARRANTY

Manufacturer warrants this product to the original purchaser for a period of one (1) year from the date of purchase to be free from defects in material and workmanship, but not against damages caused by misuse, negligence, accident, faulty installation, abrasion, corrosion or by not operating in accordance with factory recommendations and instructions. Manufacturer will repair or replace (at factory's option), free of charge, any component of the equipment thus found to be defective, upon prepaid return of the equipment to the factory during the warranty period of the equipment. In no event shall any liability or obligation of Manufacturer arising from this warranty exceed the purchase price of the equipment. This warranty is valid only when 5 micron filtered air is used. The manufacturer's written liability, as stated herein, cannot be altered or enlarged except by a written statement signed by an officer of the company. In no event shall manufacturer be liable for consequential or incidental damages. A return authorization is required prior to shipping a defective machine to the factory.

Manufacturer reserves the right to make engineering or product modifications without notice.

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