ASDM40 – 3/8“ Plastic / Air Operated Diaphragm Pump

Safety instructions

- Operating and safety regulations must be observed.
- All safety instructions must be observed and followed.
- Only use the pump for its intended purpose.
- Suction and discharge connections should be flexible connections (such as flexible hose), not rigidly piped.
- Ensure that discharge hoses and other components are able to withstand fluid pressures developed by this pump.
- Ensure that the hose is securely fixed to the hose connector.
- Regularly check all hoses and connections for damage or wear to ensure safe operation.
- Verify the chemical compatibility of the pump wetted parts with the liquids being pumped, flushed or recirculated. Chemical compatibility may change with temperature and concentration of the chemicals within the pump.
- Maximum temperatures are based on mechanical stress only. Certain chemicals will significantly reduce maximum safe operation temperature.

Follow internal instructions. Wear protective clothing (face and breathing protection, protective gloves, etc.)

- Do not operate the pump dry for long periods of time (dry operation may cause un-necessary wear or damage the pump).
- The pump should not be exposed to the weather (UV-radiation, extreme temperatures, etc.).
- Clean after each operation
- Proper ventilation of area where pump and container are located.
- Keep containers closed when not in use.
- Avoid stress on the pump parts. Do not use the pump for the structural support of the piping system.
- Make sure that the system components are properly supported to prevent stress on the pump parts.
- Control the operating pressure by a pressure controller and the pumping cycle by a speed regulating valve.

Do not exceed the maximum inlet air $P_{Nmax.}$ as stated on the name plate ($P_{Nmax.}$ at 20°C operating temperature). Excessive air pressure can cause personal injury, pump or property damage.

- To extend the service life of the diaphragm pump only use filtered and lubricated air. (Fill the drip lubricator with a high-grade, resin-free SAE90 oil and adjust to a maximum of 1 drop per minute).
- Use silencer or exhaust hose.

Recommended air hoses:

	Air supply hose	Air exhaust hose
ASDM40	DN10	DN10
ASDM55	DN10	DN10

- Disconnect the air supply from the pump if it is to be inactive for a few hours.
- Do not service or clean pump, hoses and dispensing valve, while the system is pressurized. Disconnect air supply line and relieve pressure from the system.

Hazardous materials can cause serious injury or property damage.

- Obtain Material Safety Data Sheet on all liquids from their manufacturer for proper handling instructions.
- Pump exhaust may contain contaminants which can cause severe injury.

In the event of a diaphragm rupture material can be forced out of the air exhaust silencer.

- Pipe the exhaust away from work area and personnel.
- Prevent the pump and air hoses from freezing.

Safety instructions in hazardous areas

When using air-operated diaphragm pumps in hazardous areas or when transferring flammable liquids, please observe the following instructions:

- Connect the grounding wire to the designated screw on the pump.
- The containers should be grounded separately, if they are not already grounded by the mode of the installation.
- All pipelines (flexible hoses, hose fittings …) and other additional equipment must be certified for use in hazardous areas. Grounding of such equipment has to be made separately.
- Secure pump, connections and all contact points to avoid vibration and generation of contact or static spark.
- Designation of the pump according to ATEX Directive is: II 2 G D X.

Static spark can cause explosion resulting in severe injury or death.

- The models FDM .. / AL containing aluminium wetted parts are not allowed for use with 111-trichloroethane, methylene chloride or other halogenated hydrocarbon solvents which may react and explode.
- Avoid dry running of the pump.
- Comply with all relevant safety instructions (explosion proofness document).

The installation and operation must comply with the relevant Health & Safety Regulations. (In the Federal Republic of Germany these are “TRbF” and also “BG Chemie”.

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Before commissioning

Before connecting the air supply hose, close the pressure controller and speed regulating valve.

- Before each operation check air supply lines.
- When the diaphragm pump is used in a forced-feed (flooded inlet) situation, it is recommended to install a check valve between the pump and the container as well as a return valve at the air inlet. This prevents any draining of the container in case of diaphragm rupture.
- ASDM40 may only be installed and operated in a vertical position (pump lags to the ground).
- Secure the diaphragm pump to a suitable surface.
- The material of the hoses and pipes should not be to small or restrictive. The delivery rate is governed not only by the air supply, but also by the liquid supply available at the inlet.
- Re-torque all screws before operation to insure against liquid or air leakage. Use appropriate tools (inch size).

	Type	Torque [Nm]
ASDM40	plastic	6,8
ASDM55	Plastic/ metallic	6,8

- In case of leakage during operation re-torque screws on pump housing.

Starting operation / Information on operating

- Connect to supply line in the liquid being dispensed and securely fix the outlet hose on the container.
- Set the maximum required operating pressure with the pressure controller.
- Slowly open air supply valve until the pump is started.
- Slowly start the pump until it is fully primed and the hose and dispensing valve is free from any air.
- As soon as the pump is completely filled with liquid and no more air is present within the system, the speed regulating valve can be set to achieve the requested delivery rate. If the requested delivery rate will not be achieved, increase the air pressure by the pressure controller.
- When transferring liquids which tend to “deposit”, the pump has to be flushed after any stop period. For flushing use the pump itself to avoid any pressure difference on the diaphragms.

Cleaning

- Always flush the pump with a cleaning agent.
- The cleaning agent must be compatible with the liquid being pumped, the materials of the pump, fittings, dispensing valve, hose and/or pipes.

Maintenance and repair

- Thoroughly flush and drain the pump before disassembly.
- To completely drain the pump, it must be put upside down (pump legs to the top). The ball valves will then open and the liquid chambers will drain by the outlet ports.

Do not attempt to return a pump to the factory or service center that still contains hazardous liquid.

Temperature application limits

Maximum surface temperature:
The maximum surface temperature relates to the operational conditions of the heated liquids in the pump.
Do not exceed the indicated maximum temperatures.
Clean the pump regularly to prevent dust build up on the surface of the pump. Some dusts can ignite at the maximum allowed surface temperature of the pump.
Highest temperatures limitations are based only on mechanical load / stress. Certain chemicals will reduce the maximum safe temperatures of AOD pumps.
Please refer to the manufacturer of the chemical substances to learn more about the chemical compatibility and the temperature limits.
With the following materials: aluminium, stainless steel and cast iron, the limits of the physical properties of the diaphragm / seal / ball must not be exceeded. Metallic pumps must not exceed 100°C. Non-metallic pumps and elastomers (diaphragms, balls, seals) must not exceed the recommended temperatures.

Temperatures for pumps made of plastic

Material	Temperature min.	Temperature max.
Acetal	- 10ºC	+ 80ºC
Polypropylen	0ºC	+ 70ºC
PVDF	- 10ºC	+ 90ºC

Temperatures for diaphragms, balls and seals

Material	Temperature min.	Temperature max.
CR	- 10ºC	+ 80ºC
EPDM	- 10ºC	+ 80ºC
NBR	- 10ºC	+ 80ºC
PTFE	+ 5ºC	+100ºC

In order to determine the maximum allowable temperature for a combination of the liquid area / seal material and diaphragm / seal / ball material choose the highest “low temperature” (T min) and the lowest “upper temperature” (T max).

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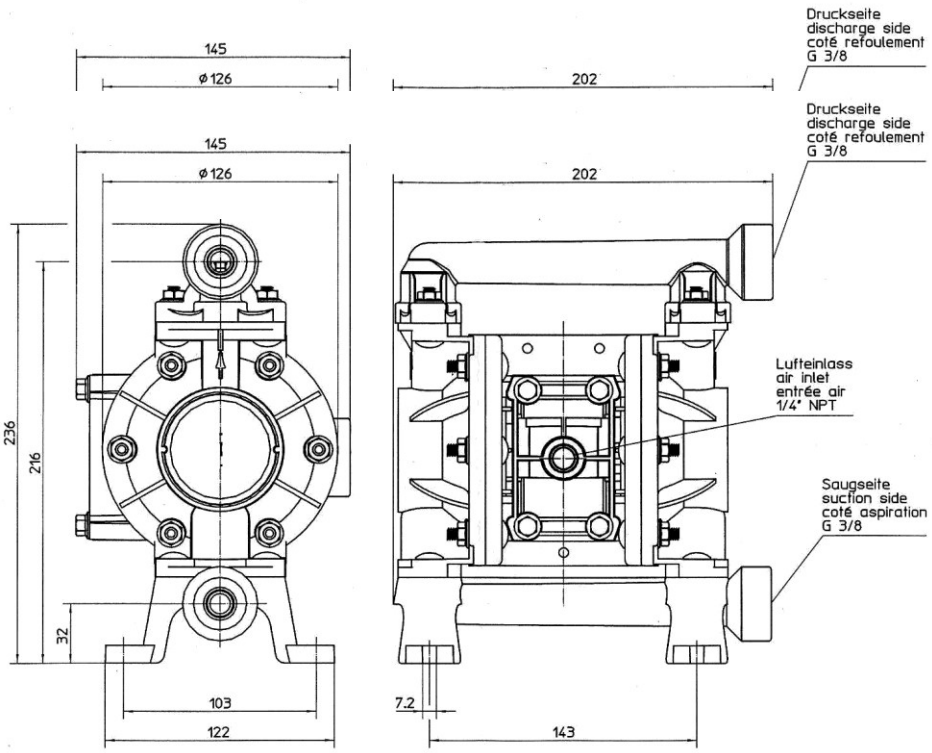
Example: diaphragm pump with polypropylene body and Teflon diaphragms.

Area	Material	Temperature min.	Temperature max.
Pump material	Polypropyl	0°C	+ 65°C
Diaphragms, balls, seals	PTFE	+ 5°C	+ 100°C
Temperature limits		0°C	+ 65°C



Dimension data in millimetre

Liability:

AS Strömungstechnik GmbH can accept no liability for errors or damages that result from improper handling of the QC container closures.
Improper handling includes, in particular, failure to observe the operating instructions. Testing the chemical resistance of the dip tubes and their operational life is the responsibility of the customer. In the interest of the further development of AS products, we reserve the right to make design changes.

QC-System – a product from AS Strömungstechnik GmbH.

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