albin pump
since 1928

ALBIN PUMP

ALHP in-line pulsation dampener

Manual of maintenance

Manual of maintenance

CONTENTS

1 GENERAL

1.1 How to use this manual

This manual is intended as a reference book by means of which qualified users are able to install, commission, operate and maintain the pulsation dampener mentioned on the front cover.

1.2 Service and support

For information with respect to specific adjustments, installation, maintenance or repair that fall beyond the scope of this manual, contact your Albin Pump SAS representative. They will be happy to help. Make sure you have the following information at hand:

- serial number pulsation dampener
- type number pulsation dampener

You will find this data on the identification plate of the pulsation dampener

1.3 Disposal of waste and the environment

Enquire within your local government about the possibilities for reuse or environment friendly processing of packaging materials, (contaminated) lubricant and oil.

Always observe the local rules and regulations with respect to processing (non-reusable) parts of the pulsation dampener.

1.4 Specifications

Pulsation absorption can be as much as 85%.
Best result when the pick of maximum pulsation is +- 6 bar
Minimum pulsation dampening pressure: 2 bar
Maximum dampening pressure on air: 10 bar
Maximum temperature: 70°C

2 SAFETY

2.1 Symbols

In this manual the following symbols are used:

WARNING
Procedures, which, if not carried out with the necessary care, may result in serious damage to the pulsation dampener or in serious bodily harm.

CAUTION
Procedures not carried out with the necessary care, may result in serious damage to the pulsation dampener, the surrounding area or the environment.

Remarks, suggestions and advice.

Procedures, remarks, suggestions or advice which refers to use in potentially explosive atmospheres (ATEX) in accordance with European guideline 94/9/EC.

2.2 Intended use

The pulsation dampener is exclusively designed for the damping of pulses on the discharge side of an Albin hose pump. After consultation with your Albin Pump SAS representative, and only on certain conditions, the pulsation dampener may be used as a pressure relief valve. Every other or further use is not in conformance with the intended use1. The manufacturer cannot be held responsible for any damage or harm resulting from this. The pulsation dampener is designed in conformance with the current European standards and directives. Only use the pulsation dampener in conformance with the intended use described above. If you want to change the application of your pulsation dampener, contact your Albin Pump SAS representative first.

2.2.1 The “intended use” as laid down in EN 292-1 is “...the use for which the technical product is intended in accordance with the specifications of the manufacturer, inclusive of his indications in the sales brochure”. In case of doubt it is the use which appears to be its intended use judging from the construction, execution and function of the product. Observing the instructions in the user’s documentation also belongs to intended use.

2.3 Compliance Pressure Equipment Directive

The pulsation dampeners as mentioned on the front cover are in full compliance with the European Pressure Equipment Directive 97/23/EC.

2.4 Use In Potentially Explosive Environments (ATEX)

The pulsation dampeners ALHP20 to ALHP125 **do not fall** under the European guideline 94/9/EC: Equipment for Use in Potentially Explosive Atmospheres (ATEX), if following instructions are respected:

- Pulsation Dampener to be installed, operated and maintained according this manual, with respect to earthing (see: 5 Installation and Commissioning), allowable pressures and temperatures (see: 1.4 Specifications).

2.5 Responsibility

The manufacturer does not accept any responsibility for damage or harm caused by not strictly observing the safety regulations and instructions in this manual or by negligence during installation, use, maintenance and repair of the pulsation dampeners mentioned on the front cover. Depending on the specific working conditions or accessories used, additional safety instructions can be required.

Immediately contact your Albin pump SAS representative, if you notice a potential danger while using your pulsation dampener.

WARNING

The user of the pulsation dampener is always fully responsible for observing the local valid safety regulations and directives. Observe these safety regulations and directives when using the pulsation dampener.

2.6 Qualification of the user

The installation, operation and maintenance of the pulsation dampener should be carried out by well trained and qualified users. Temporary staff and persons in training may only use the pulsation dampener under the supervision and responsibility of well trained and qualified users.

2.7 Regulations and instructions

- Everyone who works with the pulsation dampener should be aware of the content of this manual and observe the instructions with great care.
- Never change the order of the actions to be carried out.
- Always store the manual near the pulsation dampener.

3 WARRANTY CONDITIONS

The manufacturer offers a two year warranty on all parts of the pulsation dampener. This means that all parts will be repaired or replaced free of charge with the exception of consumables such as hoses, seals or parts which have been misused or have been intentionally damaged.

If no original Albin parts are used, every warranty claim becomes void.

Damaged parts which are covered by the applicable warranty conditions can be returned to the manufacturer. The parts must be accompanied by a fully completed and signed safety form, as present in the back of this manual. The safety form must be applied to the outside of the shipping carton. Parts which have been contaminated or which have been corroded by chemicals or other substances which can pose a health risk must be cleaned before they are returned to the manufacturer. Furthermore, it should be indicated on the safety form which specific cleaning procedure has been followed, and it should be indicated that the equipment has been decontaminated. The safety form is required at all items, even if the parts have not been used.

Warranties purporting to be on behalf of Albin ump SAS made by any person, including representatives of Albin pump SAS., its subsidiaries, or its distributors, which do not accord with the terms of this warranty shall not be binding upon Albin ump SAS unless expressly approved in writing by a Director or Manager of Albin ump SAS.

4 DESCRIPTION

4.1 Identification of the product

The pulsation dampener and pulsation dampener hose can be identified by the contents of the name plate on the pulsation dampener housing and the hose label.

The name plate of the pulsation dampener contains the following information, relevant for identification: Type name: company name, serial number.

4.2 Operation of the pulsation dampener

The Albin pulsation dampener reduces the pulses created in the discharge line by the hose pump. This is achieved by means of a thick-walled, reinforced rubber hose which is mounted in a carbon steel, cylindrical pressure vessel. The hose is surrounded by compressed gas (air or nitrogen).

Pulses are created when a pressing shoe leaves the pump hose, while rotating. Instantly the volume in the discharge line will increase with the volume of the pressing shoe. This will result in a pressure drop in the discharge line.

When the discharge pressure drops, the pulsation dampener hose collapses and compensates for the released volume of the pressing shoe in the discharge line. Hereby the pulse will be reduced.

Dependant on the application the dampener can reduce the pulse down to 10%. The dampener is most effective above 3 bar discharge pressure. The pulsation dampeners can be applied up to a operating pressure of 15 bars. The pulsation dampeners are safeguarded for over-pressure by a pressure-relief valve.

4.3 Pulsation dampener hose

The pulsation dampener hose liner material should be chemically resistant to the product to be pumped. Dependent on the specific requirements of your application, a matching hose should be selected.

For each pulsation dampener, various hose types are available. The material of the inner liner of the hose determines the hose type. Each hose type is marked by a unique colour code.

Hose type	Material	Colour line
NR	Natural rubber	white
NBR	Buna rubber	Yellow
EPDM	EPDM	Red

Consult your Albin representative for hose pumps for more detailed information about the chemical and temperature resistance of pulsation dampener hoses.

Store the pulsation dampener hose in a cool, dry place and do not subject it to sunlight.

4.4 Pulsation dampener selection

The pulsation dampener types mentioned on the front cover are functional with more than one type of Albin Pump hose pump type. In the following table the right pulsation dampener can be selected to match your hose pump: Selection table pump and pulsation dampener

Pulsation dampener type	Hose Pump type:
ALHP20	ALHO5, ALH10, ALH15, ALH20
ALHP40	ALH25, ALH32, ALH40, ALHX40
ALHP50	ALH 50, ALH65
ALHP100	ALH100, ALHX80, ALH80
ALHP125	ALH125

5 INSTALLATION AND COMMISIONING

5.1 Unpacking

When unpacking carefully follow the instructions as given on the packaging or on the pulsation dampener.

5.2 Inspection

Check that your delivery is correct and check it for any transport damage

5.3 Installation conditions

5.3.1 Ambient conditions

Make sure the ambient temperature, during normal operation of the pulsation dampener, does not fall to below -20°C, and does not exceed +65°C.

5.3.2 Set-up

When installing the pulsation dampener consider the following points:

- The pulsation dampener will not be effective for variable pump speeds or variable dis charge pressures.
- Limit the presence of sharp bends. Make sure that the radius of the bent discharge line is as large as possible. It is recommended to use Y-connections instead of T-connec tions.
- The pulsation dampener will be most effective if it is directly mounted onto the hose pump. Minimise the distance between pump and pulsation dampener.
- The pulsation dampener may be installed in either the horizontal or vertical position.
- The pulsation dampener must be suitably supported.

If installed in potentially explosive atmospheres properly earth the pulsation dampener and respect the instructions as mentioned in paragraph: “Use in Potentially Explosive Environments (ATEX)”

- Avoid, at all times, a pressure higher than the maximum operating pressure.
- Avoid too heavy loads on the flanges. The maximum forces are given in the table below:

5.4 Lifting and moving the pulsation dampener

To lift, move and position the pulsation dampener, suitable hoisting belts must be used. The best place to attach the hoisting belts is immediately behind both flanges of the pulsation dampener. Keep in mind the pulsation dampener’s weight. For weights see also paragraph “Weights table”.

WARNING

If the pulsation dampener is to be lifted, ensure that all safety regulations for lifting movements are adhered to and that the lifting is carried out by qualified personnel only.

5.5 Pressurizing the pulsation dampener

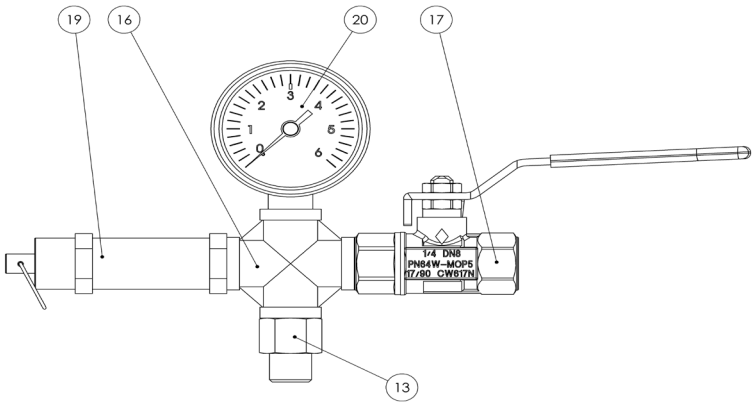
CAUTION

Do not pressurize the pulsation dampener if it is not built into the pipe system. Con sider the maximum operating pressure. Exceeding the maximum operating pressure may lead to serious injuries or damage to the pump and the environment.

CAUTION

Consider the filling medium for the pulsation dampener housing – in this case com pressed air or nitrogen. If in doubt concerning the correct filling medium for your pulsa tion dampener, contact your Albin Pumps representative for assistance.

Pressurize the vessel to approximately 85% of the actual working pressure of the hose pump. Then fine-tune the pressure until optimal dampening is reached.



1. Shut the ball valve (pos. 17) on the pulsation dampener.
2. Connect the filling medium to the filling nipple.
3. Apply pressure to the pulsation dampener by the filling medium.
4. Open the ball valve (pos. 17) gently. Filling medium will now enter and pressurize the vessel. Check the pressure gauge (pos. 20) for the actual pressure inside the vessel.
5. Pressurize the vessel to approximately 85% of the actual working pressure of the hose pump.
6. When the required pressure is reached, shut off the ball valve (pos. 17). If the vessel is pressurized over the maximum allowable working pressure, the pressure-relief valve will open automatically.
7. Leave the pulsation dampener pressurized for at least 20 minutes. If the pressure has dropped, check the pulsation dampener for any leakage or see paragraph “Troubleshooting” for solving the problem.

CAUTION

If you want to check the function of the pressure-relief valve, apply pressure to the vessel just over the maximum working pressure. The valve should automatically open. If not, do not apply more than 1000 kPa (10 bar) to the vessel, relieve the pressure and replace the pressure-relief valve.

8. Fine-tune the pulsation dampener, by adjusting the pressure inside the vessel while the pump is running, to an optimal dampening.

6. MAINTENANCE

During the development of the pulsation dampener, Albin Hose Pumps has once more applied its reputation in the area of simplicity, reliability, and maintenance-friendliness. However, careful maintenance and, in particular, scrupulous cleaning are essential conditions for problem-free operation of the pulsation dampener.

- Before carrying out any maintenance to the pulsation dampener, please thoroughly acquaint yourself with the directives in the paragraph “Safety”.
- Any repair to the pulsation dampener is to be carried out by skilled and authorised users only.
- After cleaning and maintenance work, do not use the pulsation dampener until all parts that have been removed, are reinstalled correctly.

WARNING
Release the pressure from the pulsation dampener by means of the ball valve near the pressure-relief valve, before starting on any work to the pulsation dampener.

WARNING
Protect your hands and face from any dangerous substances when handling or examining the pulsation dampener hose.

CAUTION
After maintenance has been carried out, and before switching the pump back on, ensure that all valves present in the pipe work are opened.

6.1 Cleaning the pulsation dampener hose internally

The inside of the pulsation dampener hose is easily cleaned by flushing the pump and pulsation dampener with clean water. If a cleaning fluid is added to the water, it must be checked that the hose liner material is resistant to that.

With many products to be pumped, it is necessary to clean the pulsation dampener hose immediately once the pump is stopped, to avoid solidification and hardening of the product within the hose.

6.2 Removing the pulsation dampener hose

1. Disconnect the electrical supply from the corresponding pump and close any valves to minimise product loss.
2. Position a tray under the pulsation dampener. This tray must be sufficiently large to collect all liquid products inside the pulsation dampener.
3. Release all pressure from the pulsation dampener using the ball valve (pos. 17).

WARNING
If the pulsation dampener hose is cracked or worn, liquid product to be pumped may escape via the ball valve (pos. 17). Therefore, take the necessary safety precautions.

4. Support the pulsation dampener in such a way that it cannot fall during disassembly.
5. Remove the mounting bolts from both flanges. Lift the pulsation dampener onto a suitable workbench. Adhere to the instructions for lifting and moving as mentioned in paragraph “Lifting and moving the pulsation dampener”.
6. Loosen the hose clamps (pos. 8) from both ends.
7. Unscrew the bolts (pos. 11 and 12) from both flanges (pos. 9).
8. Unscrew the locknut (pos. 7) on both sides until the compression on the pulsation dampener hose has relieved.
9. Remove both inserts (pos. 10) from the pulsation dampener hose.
10. Remove both metal rings (pos. 5 + 6), O-rings (pos. 4) and neck-rings (pos. 3)
11. Remove the mounting bolts from both flange supports (pos. 9) together with the inserts (pos. 10).
12. Remove the pulsation dampener hose from the housing.

6.3 Mounting the pulsation dampener hose

After the pulsation dampener hose has been removed, as described in “Removing / replacing the pulsation dampener hose”, the (new) hose can be mounted in the pulsation dampener.

CAUTION

If you are mounting a new pulsation dampener hose, and you wish to continue pumping the same product, ensure that the colour code of the new hose matches the colour code of the old, used hose.

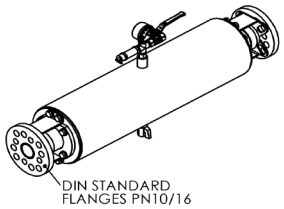
1. Check all parts to be mounted for any damage and replace when necessary.
2. Grease all metal parts which are not corrosion-protected and O-rings with Molykote® 55M or equivalent.
3. Place one of the collar bushes (pos. 3) in the dampener housing. Install the pulsation dampener hose (pos. 2). Place the second collar bush (pos. 3).
4. Slide both O-rings (pos. 4) at both ends over the pulsation dampener hose.
5. Place both metal rings (pos. 5 + 6) and hand-tighten both pressing rings (pos. 7).
6. Loosely place the hose clamps (pos. 8) at both ends.
7. Loosely place the flanges on both sides (pos. 9) and place the inserts. (pos. 10)
8. Tighten the pressing rings (pos. 7) (see also paragraph “Torque values”).
9. Tighten both flanges (pos. 9) using the corresponding bolts and spring washers. (pos. 11 and 12)
10. Lift the pulsation dampener from the work bench and place it back into the pipe work. Observe the instructions for lifting and moving as mentioned in paragraph “Lifting and moving the pulsation dampener”. Mount and tighten the mounting bolts to the flanges at both ends.
11. Connect the electrical supply to the hose pump and open all necessary valves.
12. Pressurize the pulsation dampener following the steps in paragraph “Pressurizing the pulsation dampener”.
13. Tighten both hose clamps (pos. 8) (see also paragraph “Torque values”).

7 TROUBLESHOOTING

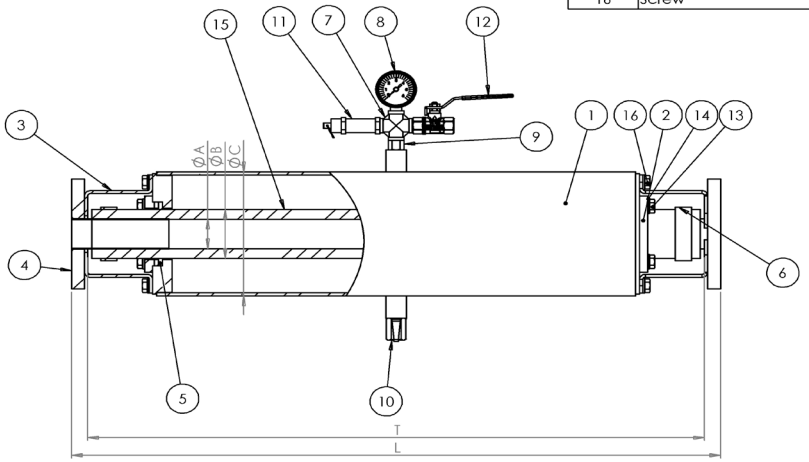
If the pulsation dampener does not function (correctly), consult the following checklist to see if you can remedy the problem yourself. If you cannot, please contact your Albin Pump SAS representative.

Problem	Possible cause	Solution
(Heavy) vibration of Pump, Pulsation dampener or pipe-work	Pressure inside vessel too low	Pressurize the vessel of pulsation dampener again according paragraph “Pressurizing the pulsation dampener”.
	Pressure inside vessel too high	
Product leakage	Not all parts have been greased properly.	Grease all necessary parts. See also paragraph “Mounting the pulsation dampener hose”
Pressure loss at pulsation dampener housing	Damaged O-ring (pos.4 or 5)	Replace the O-ring concerned.
	Pressing ring (pos. 7) incorrectly mounted	Tighten to the specified torque settings (see “Torque values”)
Short pulsation dampener hose life	Chemical corrosion of the hose	Check the compatibility of the hose material with the product to be pumped. Consult your Albin Pump SAS for correct hose selection.
	High discharge pressures	Maximum operating pressure is 15 Bar. Check whether the discharge line is blocked. Make sure the shut-off valves are fully opened and the pressure-relief valve (if present) in the discharge line is functioning properly.
	High product temperature	Consult Albin Pump SAS for correct pulsation dampener hose selection.
	High pulsations	Restructure the discharge and inlet conditions.

ALHP40.50.100.125



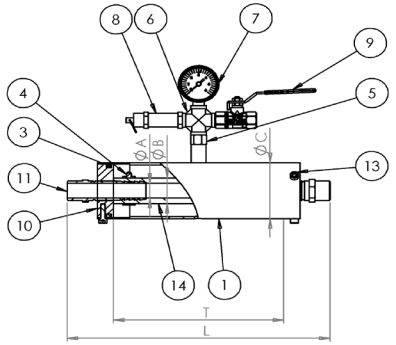
No. ARTICLE	DESCRIPTION	Défaut/QTE
1	Body	1
2	Seal flange	2
3	Flange bracket	4
4	Flange insert	2
5	Rubber seal	2
6	Clamp	2
7	Threated crosses	1
8	Pression manometer	1
9	Hexagon nipples	1
10	Bleed cock	1
11	Safety valve	1
12	Ball Valve	1
13	Screw	8
14	Washer	16
15	Hose	1
16	Screw	8



	ALHP20	ALHP40	ALHP50	ALHP100	ALHP125
L SS Inserts	324	800	962	1370	1370
L PP-PVDF Inserts	NOT AVAILABLE	840	1002	1430	1430
Hose T	210	750	900	1280	1280
A	20	40	50	100	125
B	35	67	80	144	167.5
C	76.1	170	273	323	323
PUMP TYPE	ALH05.10.15.20	ALH25.32.40.X40	ALH50.65	ALHX80.80.100	ALH125
CONNEXIONS	3/4"G male thread	DN25 DN32 DN40	DN50 DN65	DN80 DN100	DN125

ALHP20

No. ARTICLE	DESCRIPTION	Défaut/QTE
1	Body	1
3	Seal	2
4	Clamp	2
5	Hexagon nipples	1
6	Threated crosses	1
7	Pression manometer	1
8	Safety valve	1
9	Ball Valve	1
10	Cap	2
11	Insert	2
13	Screw	6
14	Hose	1



MATERIAL: WEIGHT: TREATMENT:	General clearance: -	PUMP TYPE: ALHP 20 to 125	
TITLE: ALHP 20 to 125 Overall dimensions			ALBIN PUMP AB Alegardsgatan 1 431 50 Mölndal SWEDEN
SCALE: 1:10	DWG N°:	Created: 16/06/2009	SIZE: A2 REV:

8. TECHNICAL SPECIFICATIONS

8.1 General information of the pulsation dampener

Description	Value
Max. operating pressure	16 bar (232 psi)
Ambient temperature	-20°C to 45°C (-4°F to 113°F)
Product temperature	-10°C to 70°C (14°F to 158°F)
Storage temperature	-40°C to 70°C (-40°F to 158°F)
PED directive	97/23/EC
Max. volume	See type plate

8.2 Torque values and weight

Description	ALHP20	ALHP40	ALHP50	ALHP100	ALHP125
Hose clamp (Pos 6)	S-band 12mm	SL72	SL94	Supra 140-148	Supra 162-174
Thread	---	M10	M12	M10	M10
Torque value [lb-ft]	4,13	33,19	58,26	33,19	33,19
Key width [mm]	7	17	19	17	17
Flange bracket / body (Pos 13)					
Thread	---	M10	M16	M16	M16
Torque value [lb-ft]	---	33,19	146,03	146,03	146,03
Key width [mm]	---	17	24	24	24
Seal flange / body (Pos 16)	(Pos 13)				
Thread	M6	M10	M12	M12	M12
Torque value [lb-ft]	7	33,19	58,26	58,26	58,26
Key width [mm]	CHC 6	17	19	19	19
Pulsation dampener [Kg]	3,5	35	90	135	220
Hose [Kg]	0,2	1,9	3,3	12,4	14,6

Offical local distributor

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