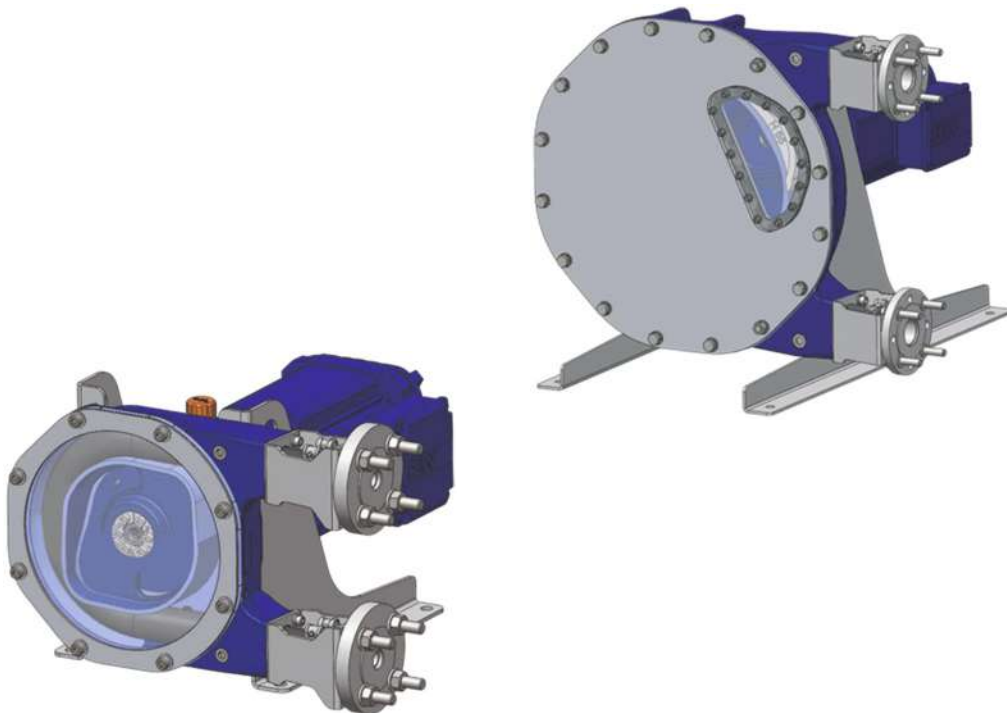




## NAYARA ADPV HOSE PUMPS



## ADPV Shoe Technology

Installation use and maintenance manual

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# Declaration of Conformity

in compliance with the Machinery Directive 2006/42/EC

We hereby declare, that the pump units manufactured in series production

**Designation:** NAYARA HOSE PUMPS

**Series** : NAYARA ADPN , NAYARA ADPV

Manufactured By : **AlphaDynamic  
PUMPS**

59 Km Nat. Road Athens – Lamia  
32011 – INOFITA – GREECE  
Tel + 30 215 215 9580  
[www.alphadynamic.eu](http://www.alphadynamic.eu)

in the version delivered by us, are in compliance with the following applicable regulations:

**EC Machinery Directive:** 2006/42/EC

**Harmonized standards:** EN 809:1998+A1:2009 , DIN EN 60204-1:2006  
EN ISO 12100:2010 , EN 13857:2008  
EN 953:1997+A1:2009

Signature of authorized person

Date : 30/6/2025

Printed name of authorized person : Ing . Nikolaos Prodromidis

Title : Technical Manager

## 1.0 General conditions

### Propose of the manual

This manual is specific for the following hose pumps: NAYARA ADPV.

Its contents have been checked for correctness and conformity to the pumps described; however, it is not possible to guarantee the absence of any differences.

Technical data is subject to change without notice.

No part of this manual may be reproduced in any form or by any means, electronic or mechanical, for any purpose, without the written consent of NAYARA Pumps.

The images attached to this manual are to be considered as a general reference and do not necessarily contain all the technical details.

For the purposes of this user manual, the term machine, as set out in the Machinery Directive, always refers to the assembly made up of different parts connected to each other.

NAYARA Pumps produces, by means of this use and maintenance manual, the Declaration of conformity, as indicated in point B of Annex II to Directive 2006/42/CE of the European Economic Community

NAYARA Pumps has carried out a risk analysis and has verified the conformity of the machine with the applicable Standards.

NAYARA Pumps also prepared this manual that contains confidential information and, therefore, cannot be reproduced or copied, in whole or in part, without its consent.

This documentation is the property of NAYARA Pumps and is an integral part of the machine with which it is supplied for the correct installation, maintenance and use thereof.

This manual must accompany the machine in case of transfer to a new owner.

### 1.1 Responsibility

The manual must be kept throughout the technical lifetime of the machine and must be updated every time a procedure or safety part is changed.

The manual and the certification contained in it must accompany the machine in case of sale or transfer to a new user.

This manual contains all the information deemed necessary for the best knowledge, installation, use and maintenance of these pumps.

Any change in its use and any modification or addition of non-original accessories or that are incompatible with the original design will relieve NAYARA Pumps of any liability and will oblige the user to review the EC certificate of conformity and to assume ownership thereof, in accordance with the laws in force. Before changing the application conditions, the user must contact his NAYARA distributor.

To obtain a swift response, the following information must be provided:

Pump model

Pump serial number and year of construction

Order reference.

NAYARA Pumps disclaims any liability for direct or indirect damage to people as a result of unauthorised modifications to the pumps or not documented in this manual. Also, the need for specific measures or additional Safe design information must be assessed according to the operating conditions or to the process in which the pump is used.

If in doubt, the user must contact the technical service centres of NAYARA Pumps.

## 1.2 Warranty

NAYARA offers a 1-year warranty (unless otherwise agreed in the order) on the pump components. NAYARA undertakes to repair or replace all damaged parts free of charge unless the damage is due to incorrect use of the pump.

Any repair and replacement works carried out under warranty shall be provided ex-works NAYARA premises.

NAYARA will not be able to accept warranty claims if the components used are not original NAYARA parts. Any damaged parts covered by the warranty must be returned to the NAYARA manufacturing facility or local NAYARA pump distributor.

The returned parts must be accompanied by the safety form (annexed to this manual) duly completed in its entirety and signed.

The form must be attached on the outside of the packaging so that it is readily visible.

Parts that have been in contact with materials and substances that are potentially hazardous to health must be cleaned before being returned to the manufacturer. The safety form must indicate how the parts have been cleaned and which parts have been decontaminated.

NAYARA is not obliged to respect any warranties provided on its behalf by third parties, regardless of whether the latter is a NAYARA representative or subsidiary unless there is a special agreement signed by a NAYARA manager.

## 2.0 Description

The **ADPV** hose pumps are particularly suitable to convey dirty liquids, thick and viscous mixtures as well as abrasive and corrosive liquids. The rotor is supported by the heavy-duty bearings of the casing or gearbox.

## 2.1 Performance (l/h)

| Pump Model | Motor Power kw | Gear Ratio | Rpm | flowrate |
|------------|----------------|------------|-----|----------|
| ADPV 5     | 0.25           | 1:135      | 10  | 4.4 L/h  |
|            |                | 1:45       | 30  | 13.3 L/h |
| ADPV 10    | 0.55           | 1:135      | 10  | 12 L/h   |
|            |                | 1:69       | 20  | 24 L/h   |
|            |                | 1:48       | 29  | 35 L/h   |
|            |                | 1:35       | 40  | 48 L/h   |
| ADPV 15    | 0.55           | 1:135      | 10  | 36 L/h   |
|            |                | 1:69       | 20  | 71 L/h   |
|            |                | 1:48       | 29  | 101 L/h  |
|            |                | 1:35       | 40  | 140 L/h  |
| ADPV 20    | 0.55           | 1:135      | 10  | 57 L/h   |
|            |                | 1:69       | 20  | 110 L/h  |
|            |                | 1:48       | 29  | 158 L/h  |
|            |                | 1:35       | 40  | 218 L/h  |
| ADPV 25    | 2.20           | 1:70       | 20  | 270 L/h  |
|            |                | 1:46       | 30  | 410 L/h  |
|            |                | 1:32       | 43  | 580 L/h  |
|            |                | 1:28       | 50  | 670 L/h  |

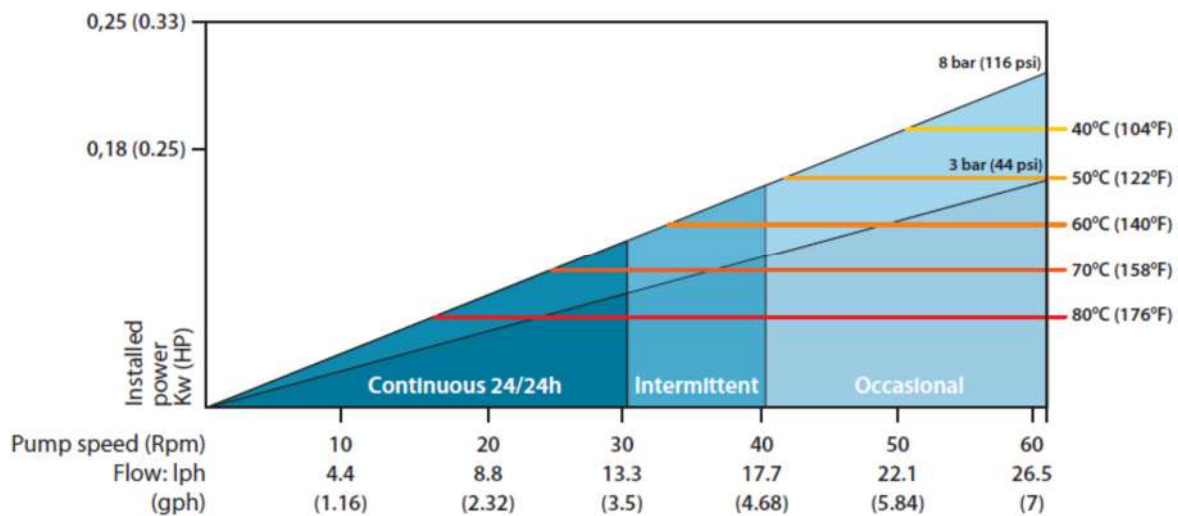
| Pump Model | Motor Power kw | Gear Ratio | Rpm | flowrate |
|------------|----------------|------------|-----|----------|
| ADPV 5-3   | 0.25           | 1:135      | 10  | 4.4 L/h  |
|            |                | 1:45       | 30  | 13.3 L/h |
| ADPV 10-3  | 0.55           | 1:135      | 10  | 12 L/h   |
|            |                | 1:69       | 20  | 24 L/h   |
|            |                | 1:48       | 29  | 35 L/h   |
|            |                | 1:35       | 40  | 48 L/h   |
| ADPV 15-3  | 0.55           | 1:135      | 10  | 36 L/h   |
|            |                | 1:69       | 20  | 71 L/h   |
|            |                | 1:48       | 29  | 101 L/h  |
|            |                | 1:35       | 40  | 140 L/h  |
| ADPV 20-3  | 0.55           | 1:135      | 10  | 57 L/h   |
|            |                | 1:69       | 20  | 110 L/h  |
|            |                | 1:48       | 29  | 158 L/h  |
|            |                | 1:35       | 40  | 218 L/h  |
| ADPV 25-3  | 2.20           | 1:70       | 20  | 270 L/h  |
|            |                | 1:46       | 30  | 410 L/h  |
|            |                | 1:32       | 43  | 580 L/h  |
|            |                | 1:28       | 50  | 670 L/h  |

| Pump Model | Motor Power kw | Gear Ratio | Rpm | flowrate               |
|------------|----------------|------------|-----|------------------------|
| ADPV 32    | 2.2            | 1:121      | 12  | 0.46 m <sup>3</sup> /h |
|            |                | 1:66       | 21  | 0.81 m <sup>3</sup> /h |
|            |                | 1:46       | 31  | 1.16 m <sup>3</sup> /h |
|            |                | 1:33       | 42  | 1.59 m <sup>3</sup> /h |
| ADPV 40    | 2.2            | 1:121      | 12  | 0.70 m <sup>3</sup> /h |
|            |                | 1:66       | 21  | 1.25 m <sup>3</sup> /h |
|            |                | 1:46       | 31  | 1.79 m <sup>3</sup> /h |
|            |                | 1:33       | 42  | 2.45 m <sup>3</sup> /h |
| ADPV 40L   | 4.0            | 1:77       | 10  | 1.52 m <sup>3</sup> /h |
|            |                | 1:46       | 20  | 2.56 m <sup>3</sup> /h |
|            |                | 1:34       | 29  | 3.36 m <sup>3</sup> /h |
|            |                | 1:29       | 40  | 4.0 m <sup>3</sup> /h  |

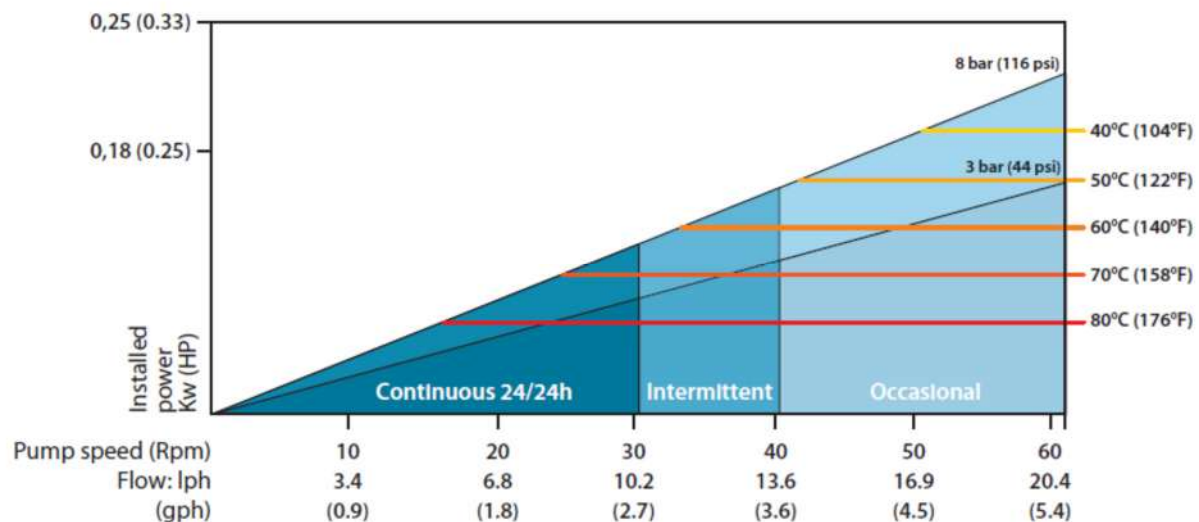
| Pump Model | Motor Power kw | Gear Ratio | Rpm | flowrate               |
|------------|----------------|------------|-----|------------------------|
| ADPV 50    | 7.5            | 1:141      | 10  | 1.8 m <sup>3</sup> /h  |
|            |                | 1:72       | 20  | 3.4 m <sup>3</sup> /h  |
|            |                | 1:45       | 30  | 5.3 m <sup>3</sup> /h  |
|            |                | 1:36       | 40  | 7.0 m <sup>3</sup> /h  |
| ADPV 65    | 7.5            | 1:141      | 10  | 2.3 m <sup>3</sup> /h  |
|            |                | 1:72       | 20  | 4.6 m <sup>3</sup> /h  |
|            |                | 1:45       | 30  | 6.9 m <sup>3</sup> /h  |
|            |                | 1:36       | 40  | 9.2 m <sup>3</sup> /h  |
| ADPV 80S   | 15             | 1:152      | 10  | 5.5 m <sup>3</sup> /h  |
|            |                | 1:72       | 20  | 11 m <sup>3</sup> /h   |
|            |                | 1:60       | 29  | 16.5 m <sup>3</sup> /h |

| Pump Model | Motor Power kw | Gear Ratio | Rpm | flowrate             |
|------------|----------------|------------|-----|----------------------|
| ADPV 80    | 18.5           | 1:152      | 10  | 7 m <sup>3</sup> /h  |
|            |                | 1:72       | 20  | 14 m <sup>3</sup> /h |
|            |                | 1:60       | 30  | 21 m <sup>3</sup> /h |
| ADPV100    | 18.5           | 1:152      | 10  | 12 m <sup>3</sup> /h |
|            |                | 1:72       | 20  | 24 m <sup>3</sup> /h |
|            |                | 1:60       | 30  | 36 m <sup>3</sup> /h |
| ADPV125    | 37             | 1:292      | 5   | 11 m <sup>3</sup> /h |
|            |                | 1:146      | 10  | 22 m <sup>3</sup> /h |
|            |                | 1:72       | 20  | 44 m <sup>3</sup> /h |

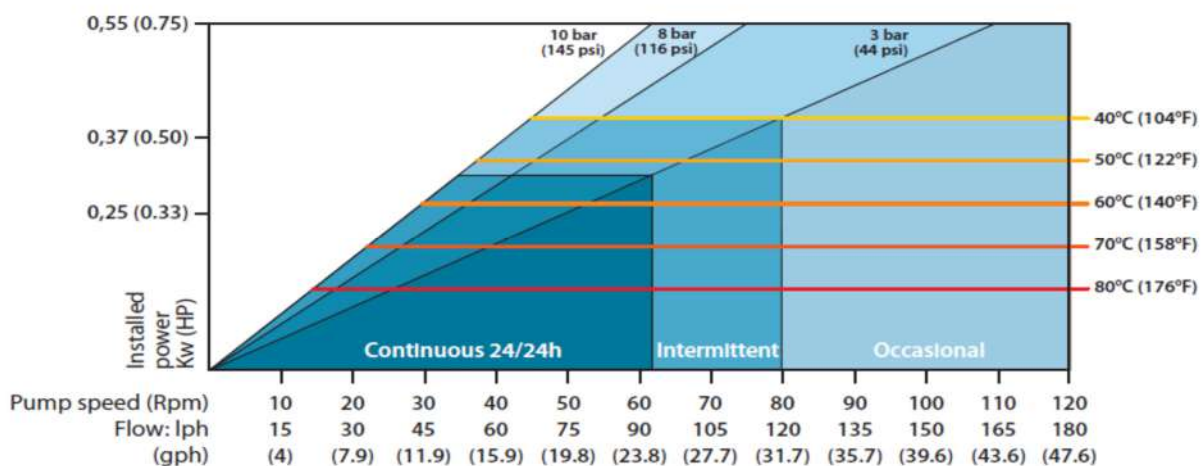
## ADPV 5



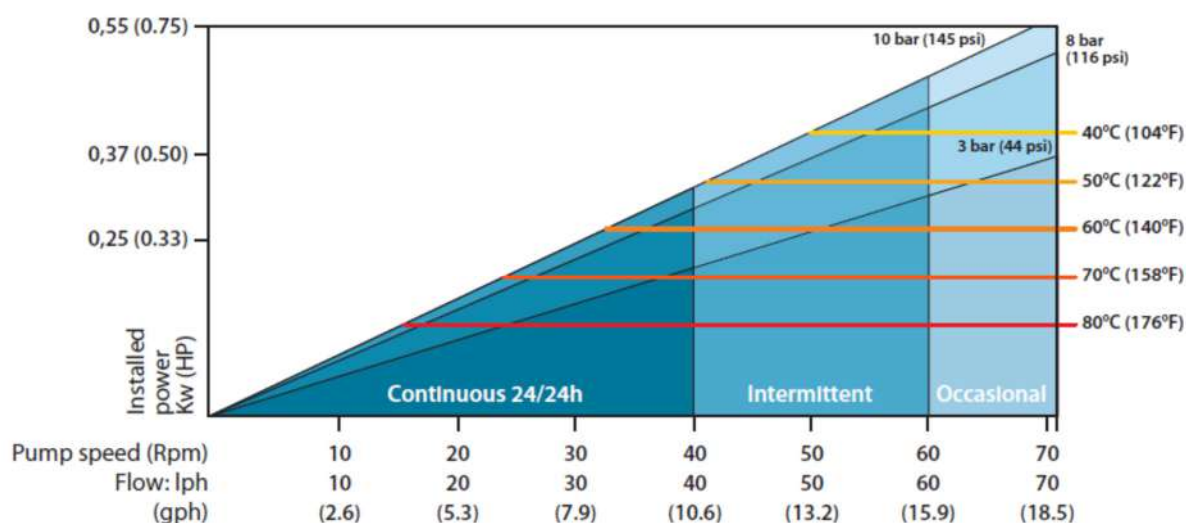
## ADPV 5-3



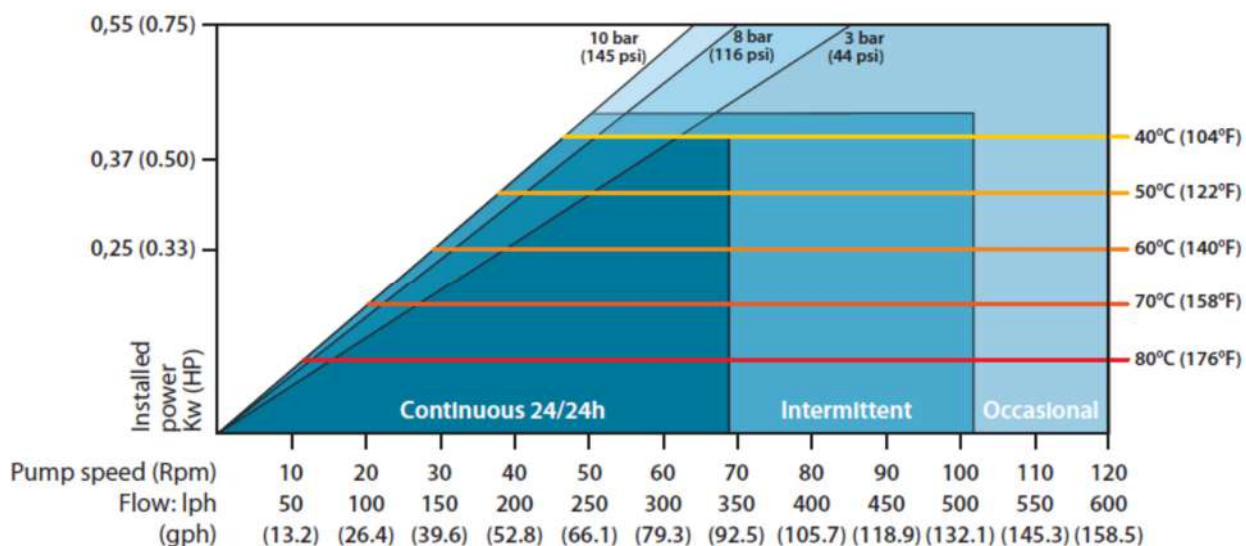
## ADPV 10



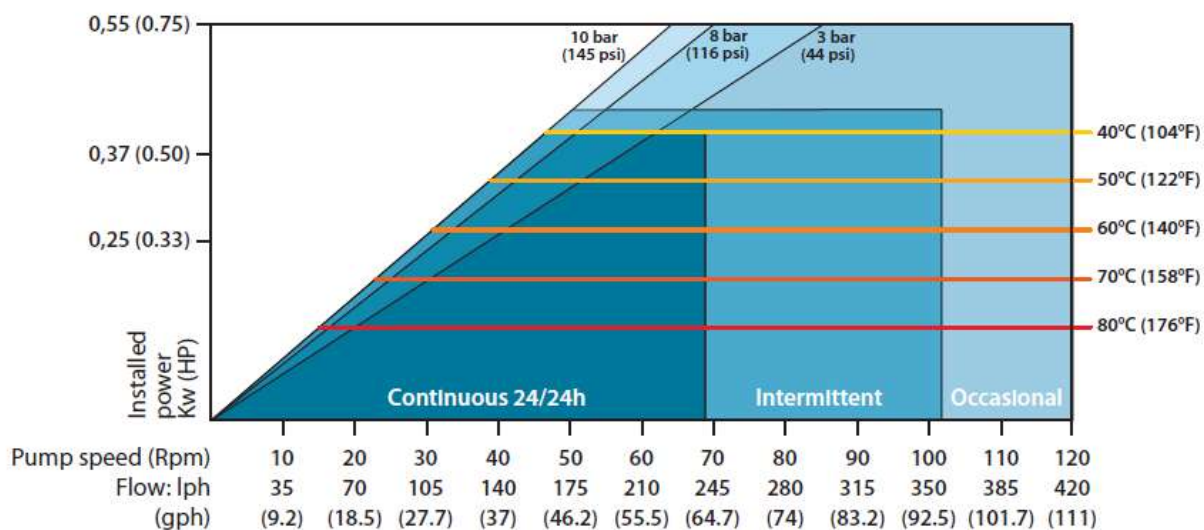
### ADPV 10-3



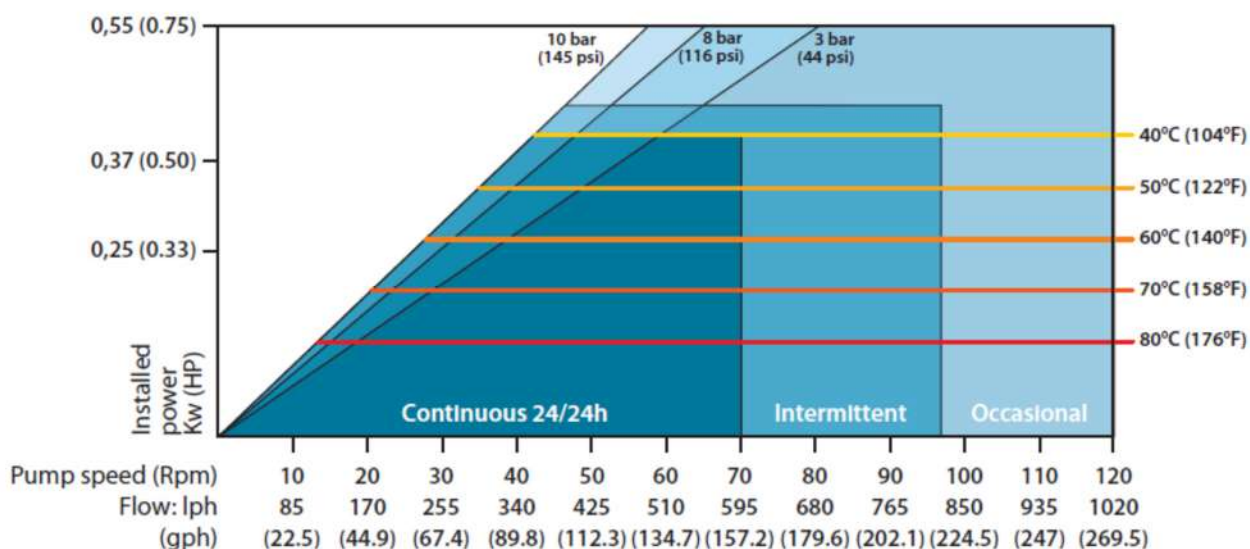
### ADPV 15



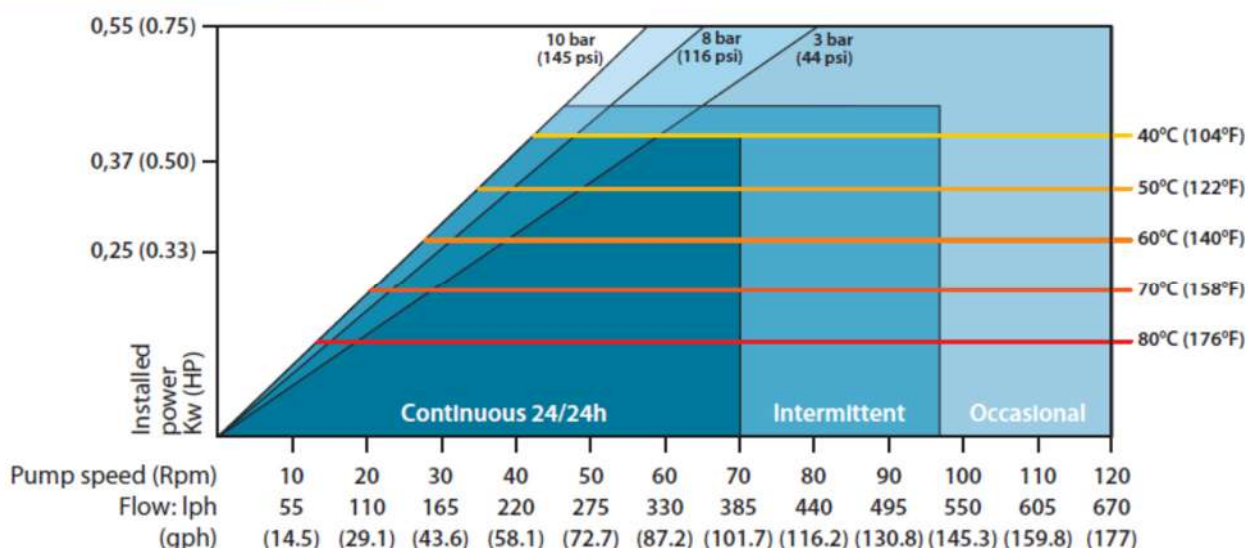
### ADPV 15-3



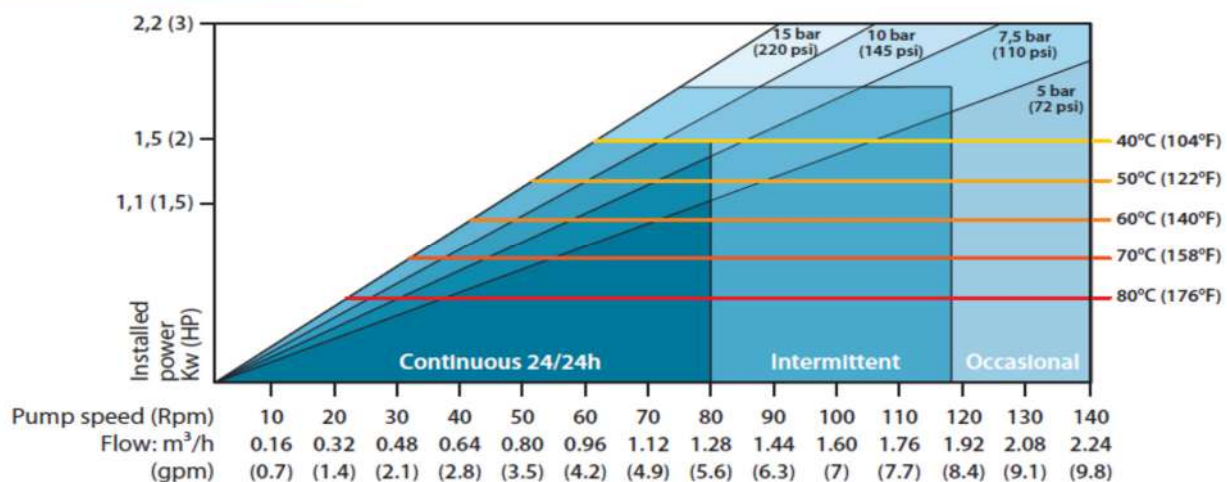
## ADPV 20



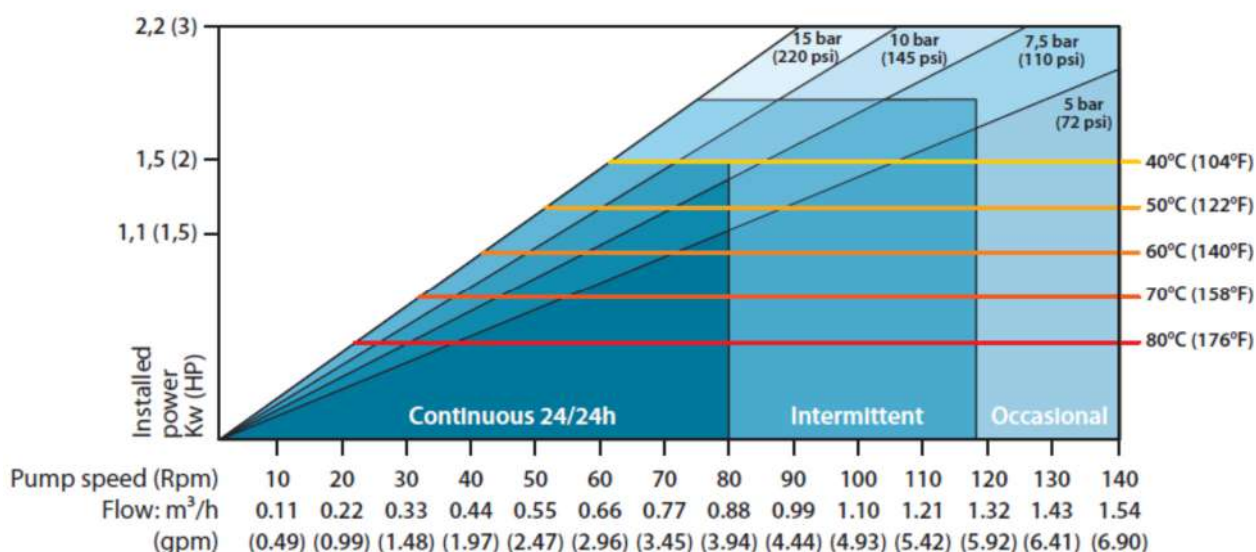
## ADPV 20-3



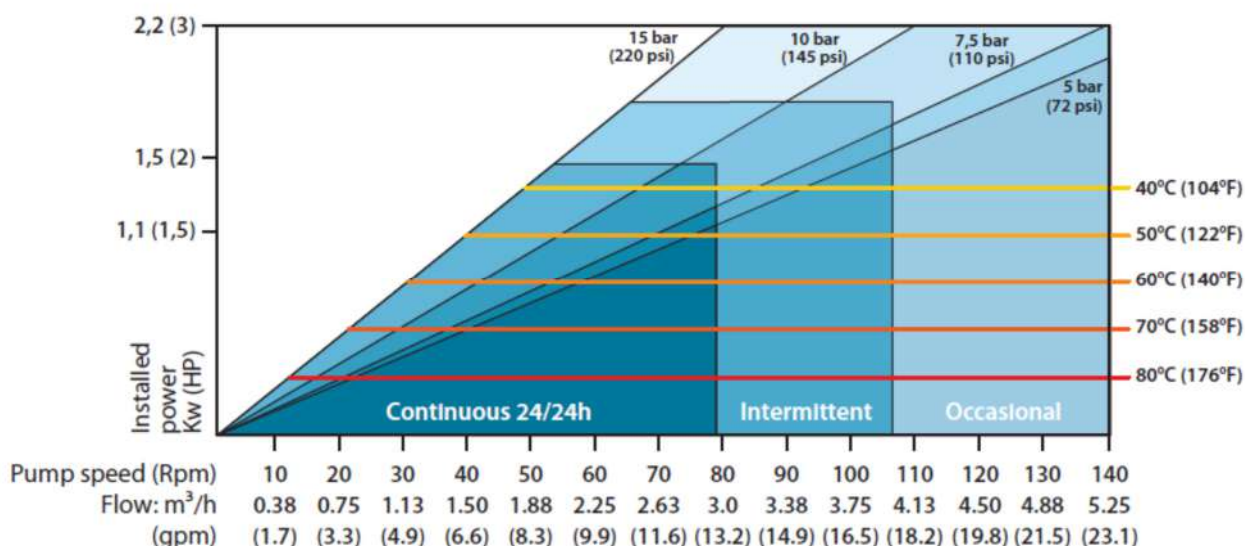
## ADPV 25



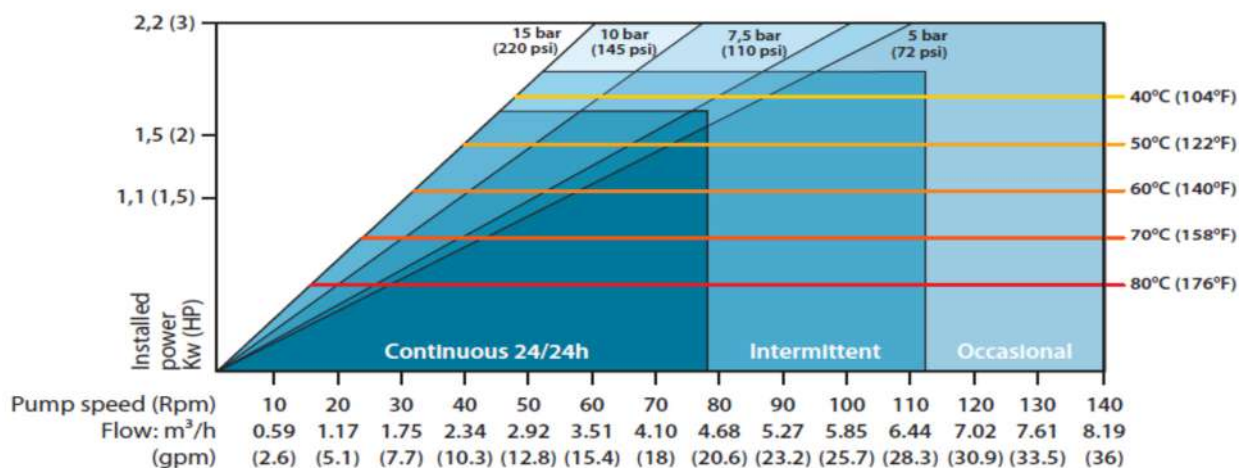
### ADPV 25-3



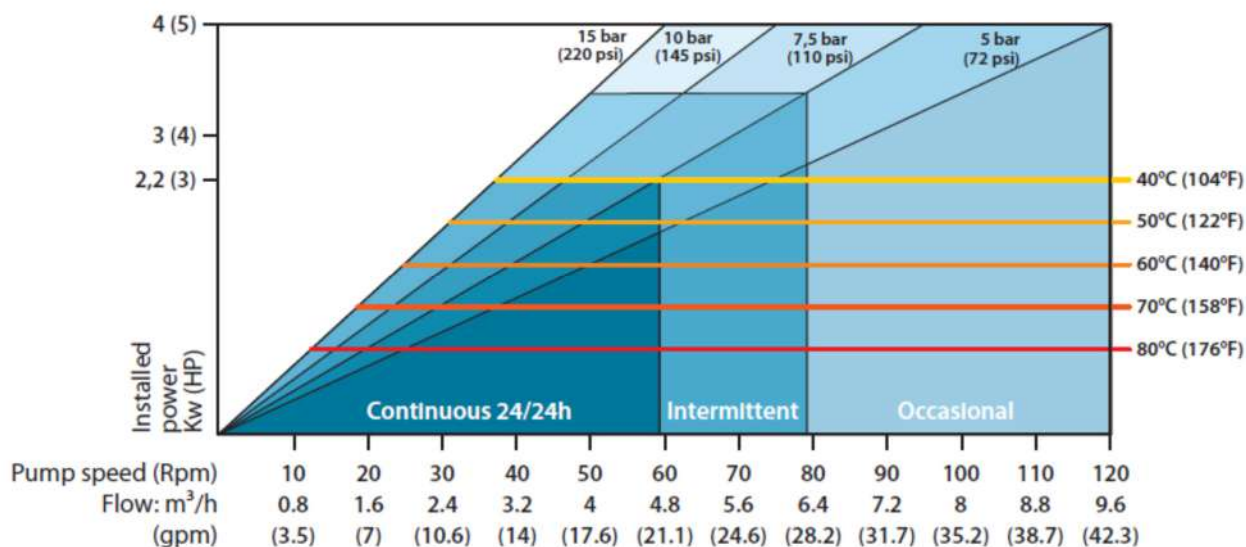
### ADPV 32



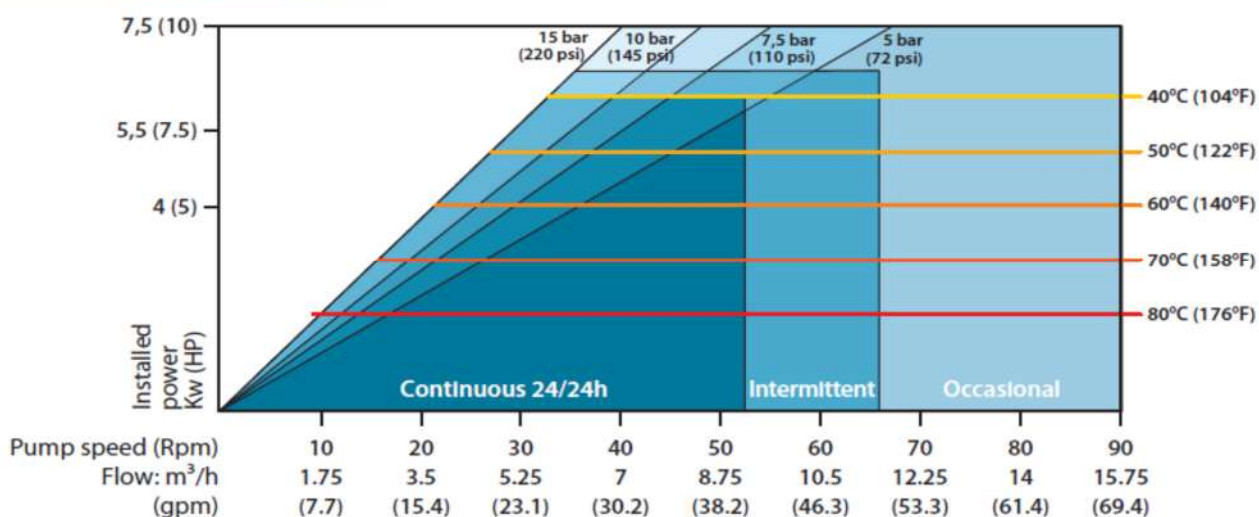
### ADPV 40



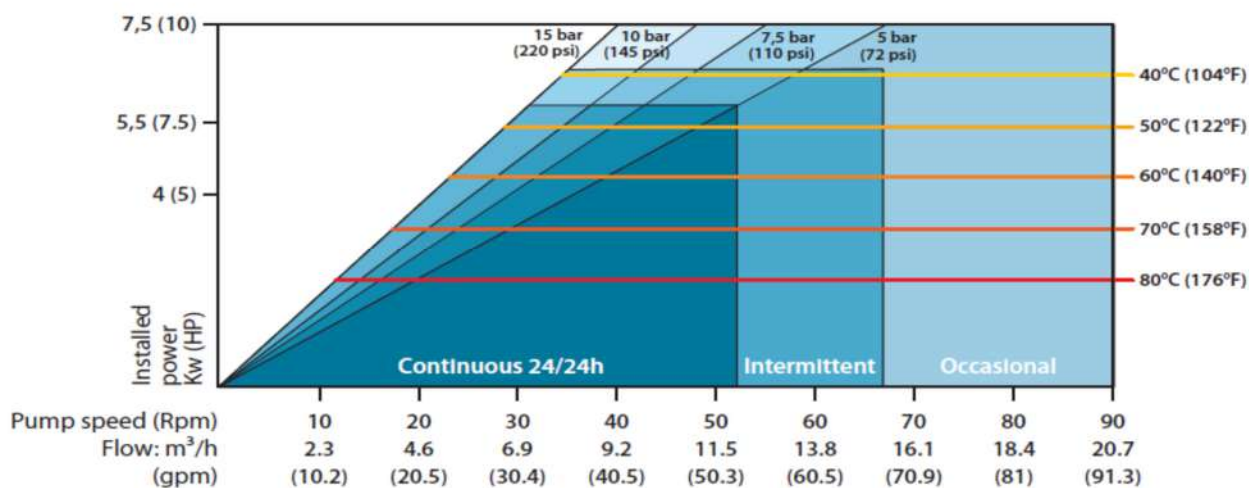
## ADPV 40L



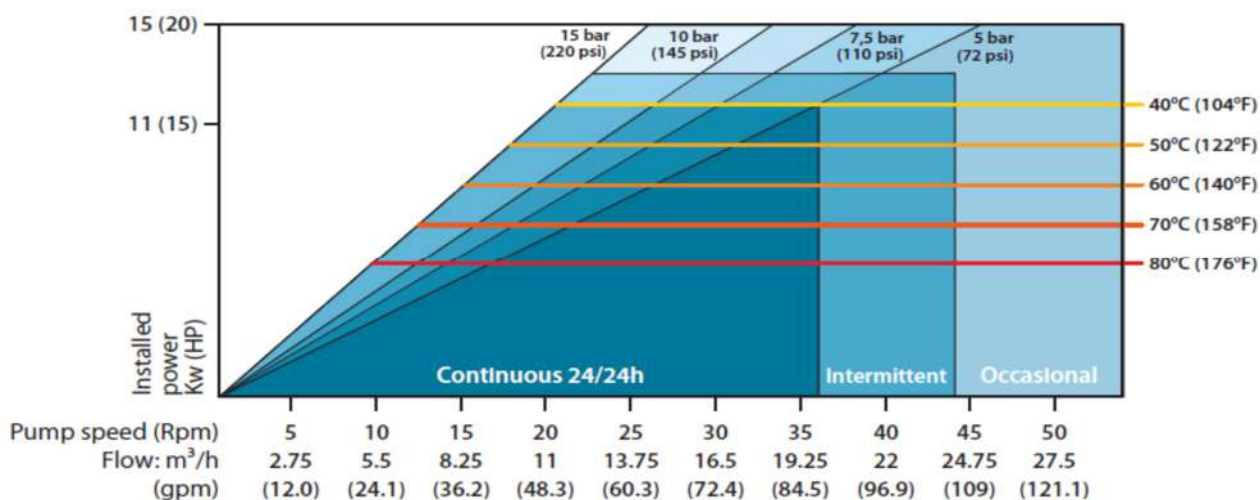
## ADPV 50



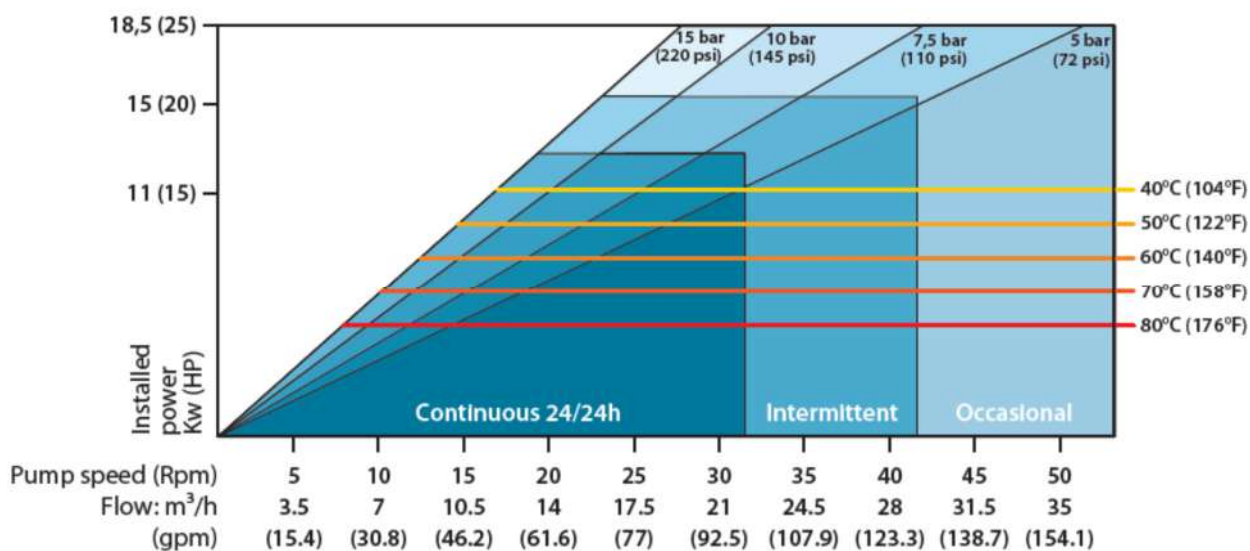
## ADPV 65



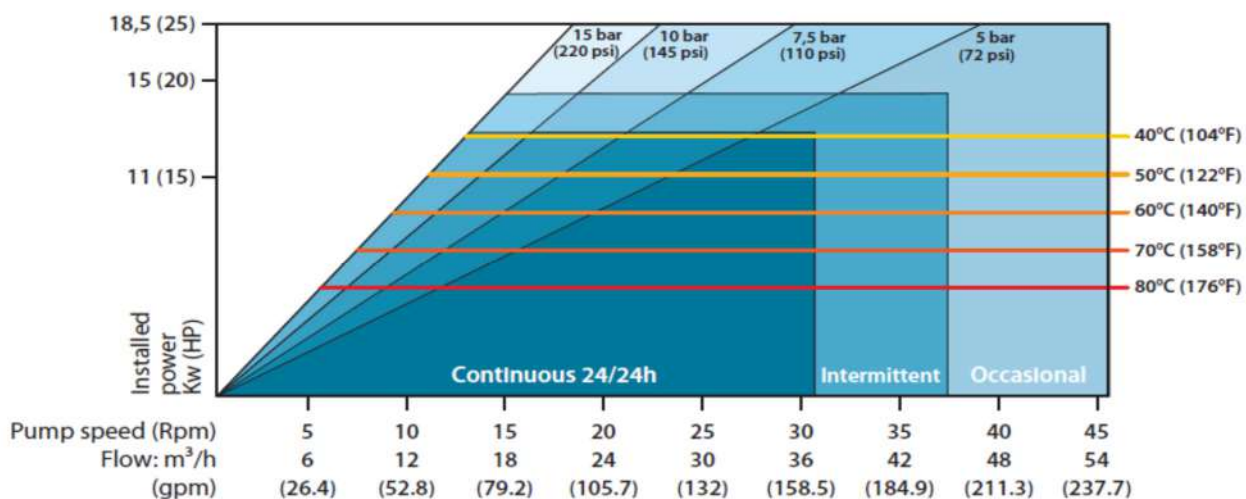
### ADPV 80S

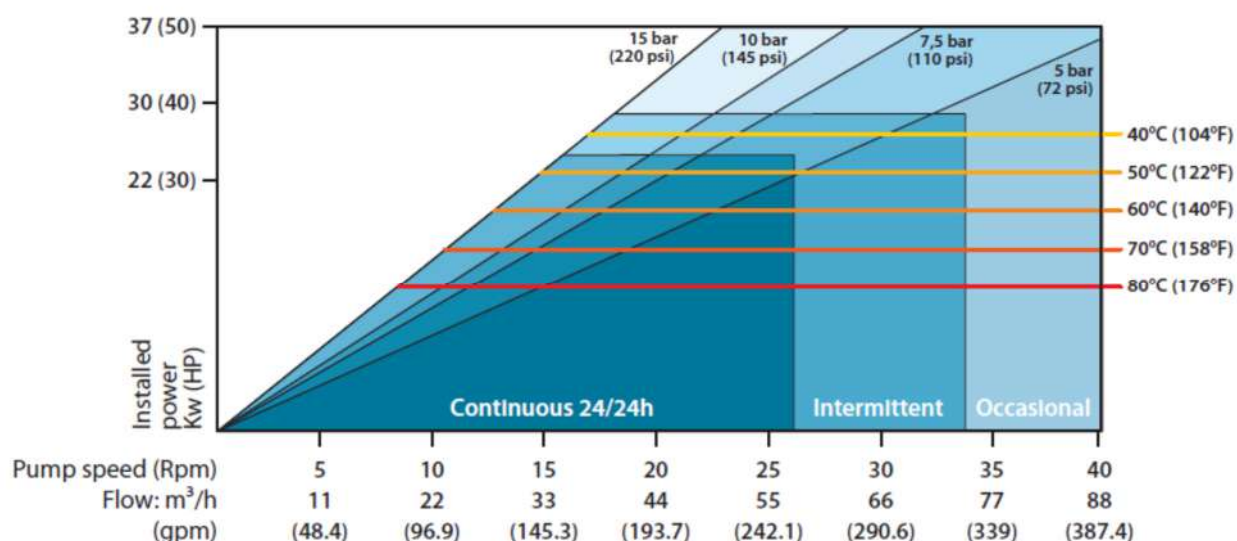


### ADPV 80



### ADPV 100





## 2. 1 Transmission components and moving parts

The moving parts of the machine are operated by means of an electric motor, connected with a gear reducer. The shaft of the pumps are connected with the gearbox to transfer the rotation to the pump.

## 2. 2 Material in contact with process fluids

The **ADPV** hose pumps are made of materials resistant to almost all liquid products used in processes that involve hose a product into a hydraulic network, such as: food, textile, chemical, water treatment industry, agriculture, etc.

If in doubt about the compatibility of the materials with the products to be used, please contact the Technical Service Centre of **NAYARA Pumps**.

The parts of the **ADPV** hose pumps in contact with the processed products can be made of different types of materials: this offers the possibility to process even particularly aggressive fluids (acids, bases, organic solvents or solutions in organic solvents).

The selected construction material may limit the performances of the pump, in terms of the maximum pressure reached by the fluid at the supply outlet.

### MATERIALS:

Hose: NR , NBR , EPDM , VITON FKM

Insert: PTFE, SS316L, PPH and PVDF

### OPERATING CONDITIONS:

The pump is suitable for operation under normal conditions:

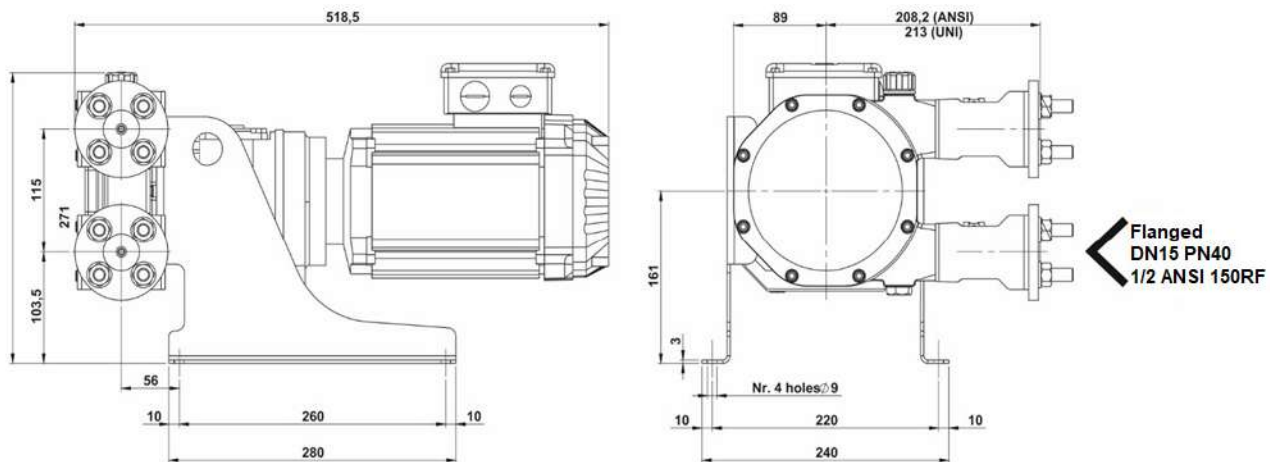
**Ambient temperature:** 0 ... 40 °C

| Hose type | Liquid temperature [°C] |
|-----------|-------------------------|
| NR        | 0 ÷ +80                 |
| NBR       | 0 ÷ +80                 |
| EPDM      | 0 ÷ +90                 |
| FKM       | 0 ÷ +90                 |

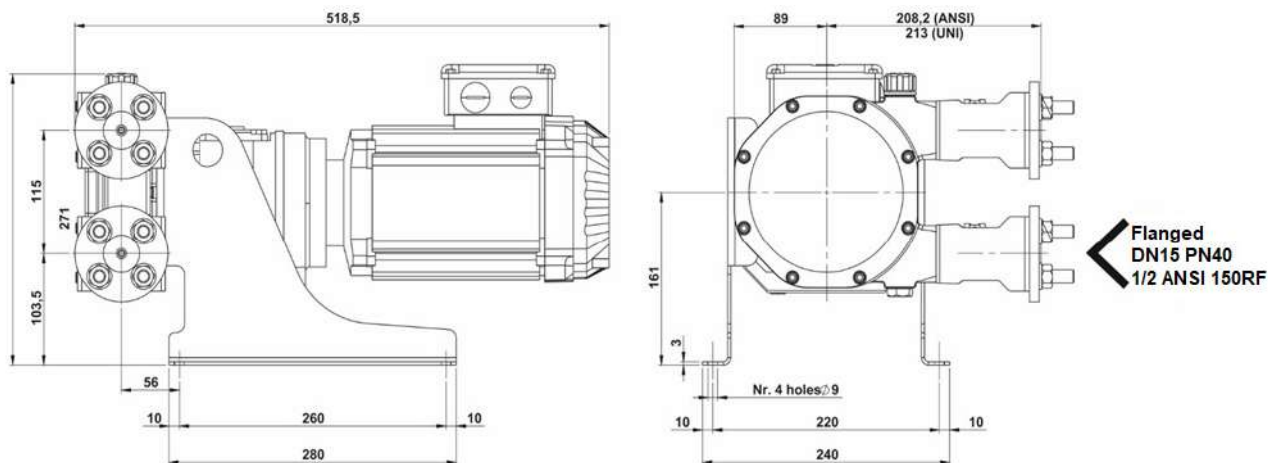
The fluids to be pumped can be processed under conditions slightly exceeding the allowed temperature limits for the external environment, depending on the material of which the hose has been realized.

2.3 Overall drawings of the pumps

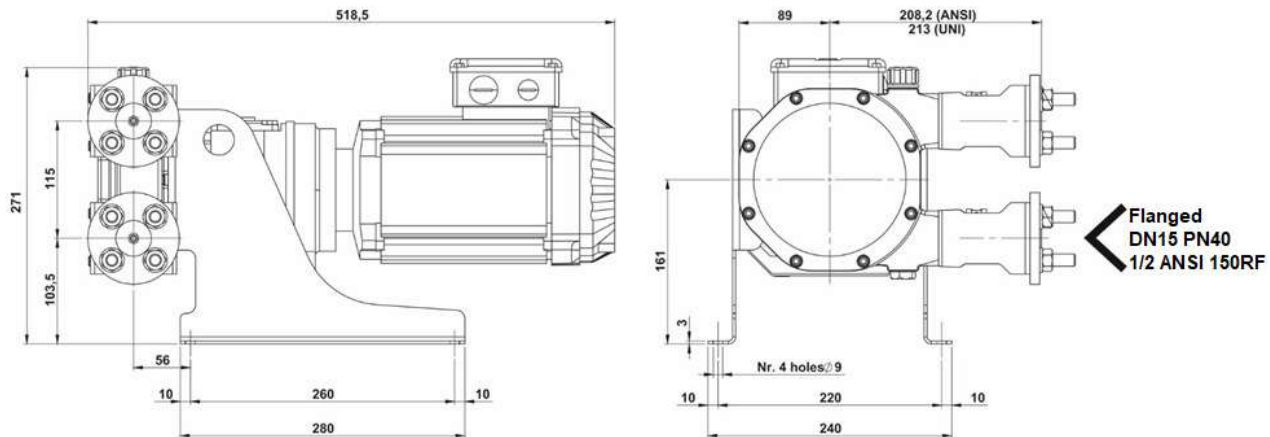
DIMENSIONS ADPV 5



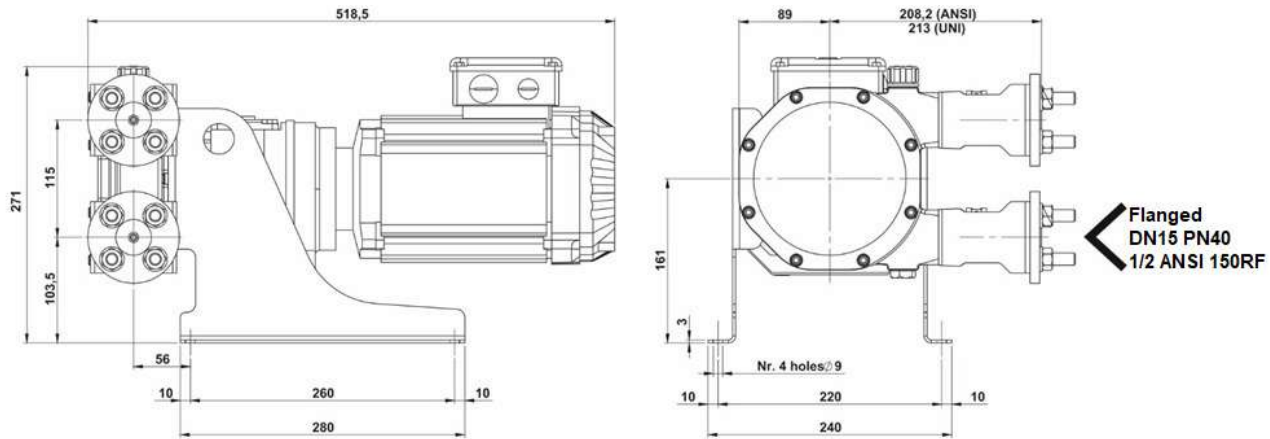
DIMENSIONS ADPV 5-3



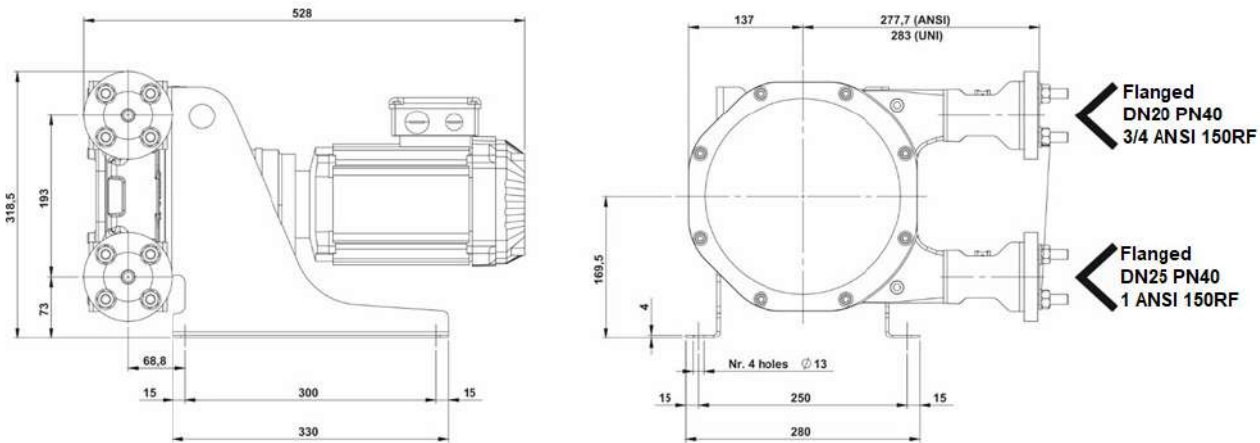
DIMENSIONS ADPV 10



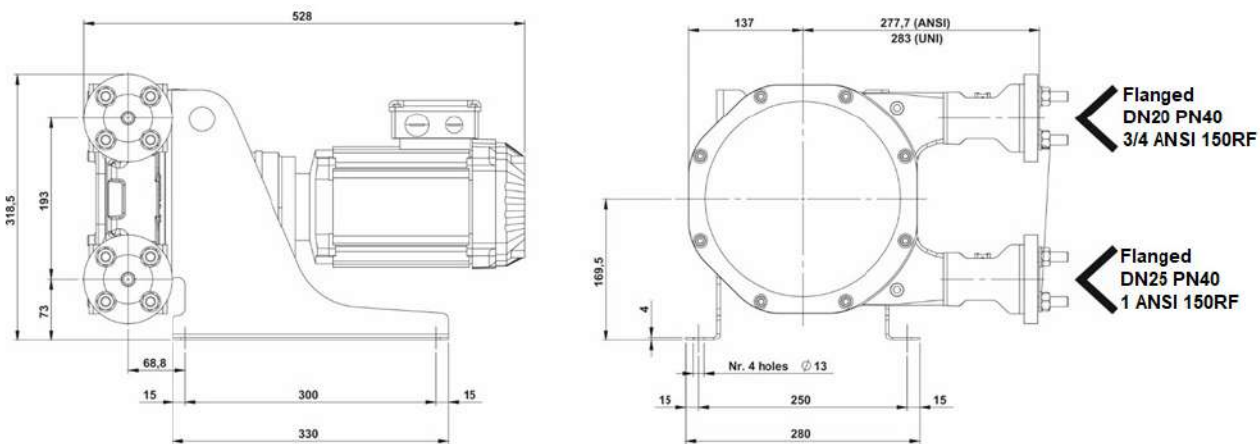
DIMENSIONS ADPV 10-3



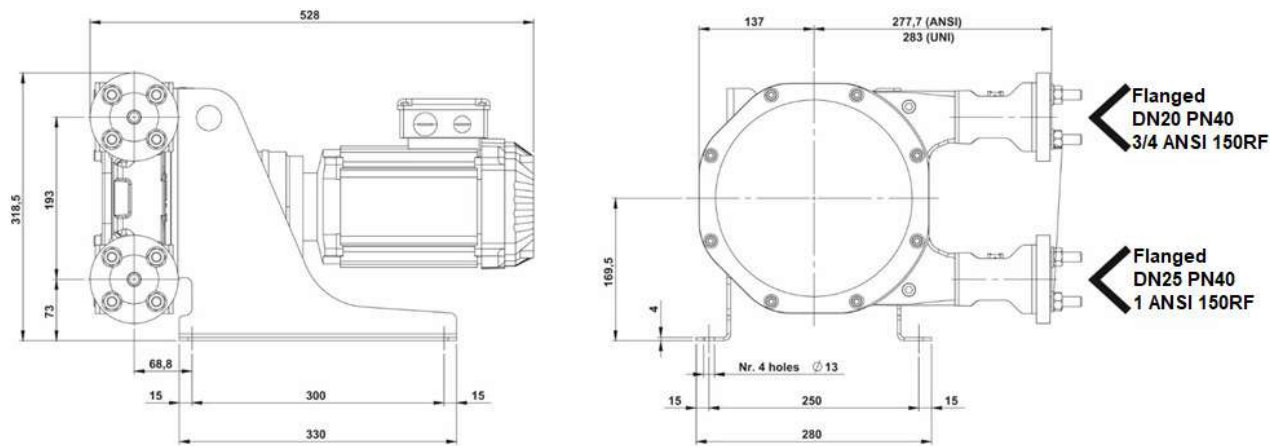
DIMENSIONS ADPV 15



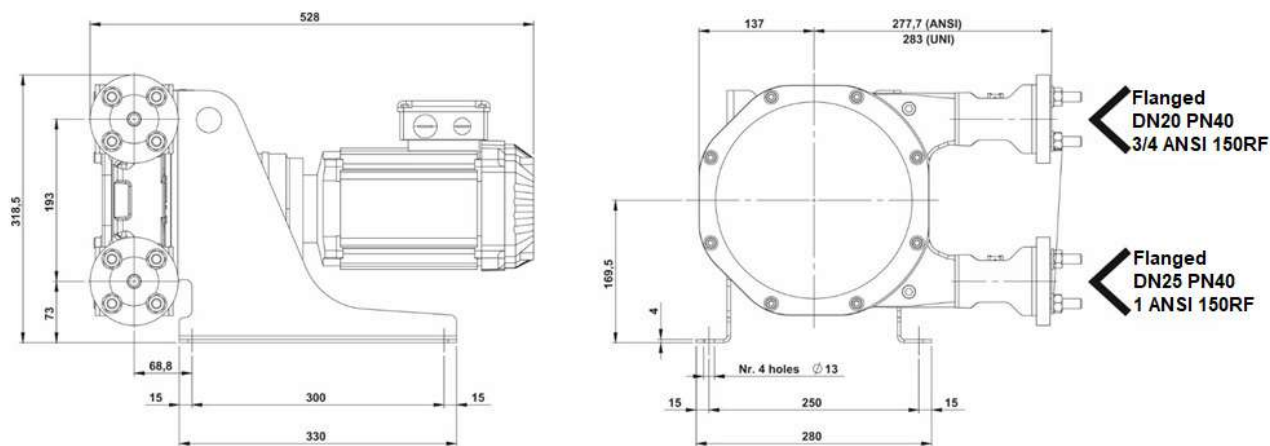
DIMENSIONS ADPV 15-3



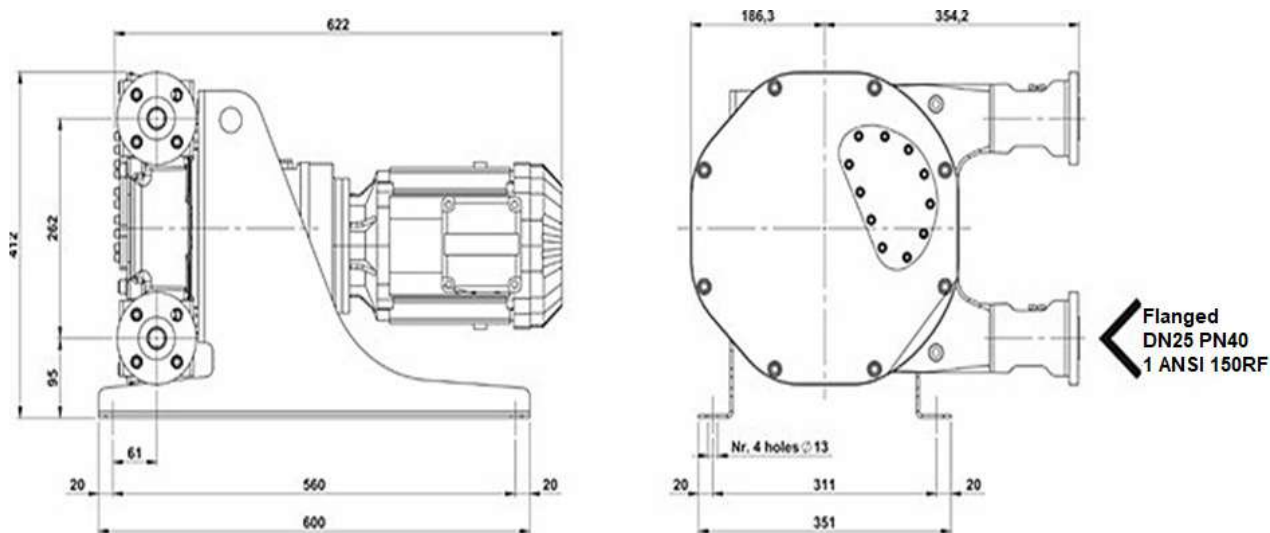
DIMENSIONS ADPV 20



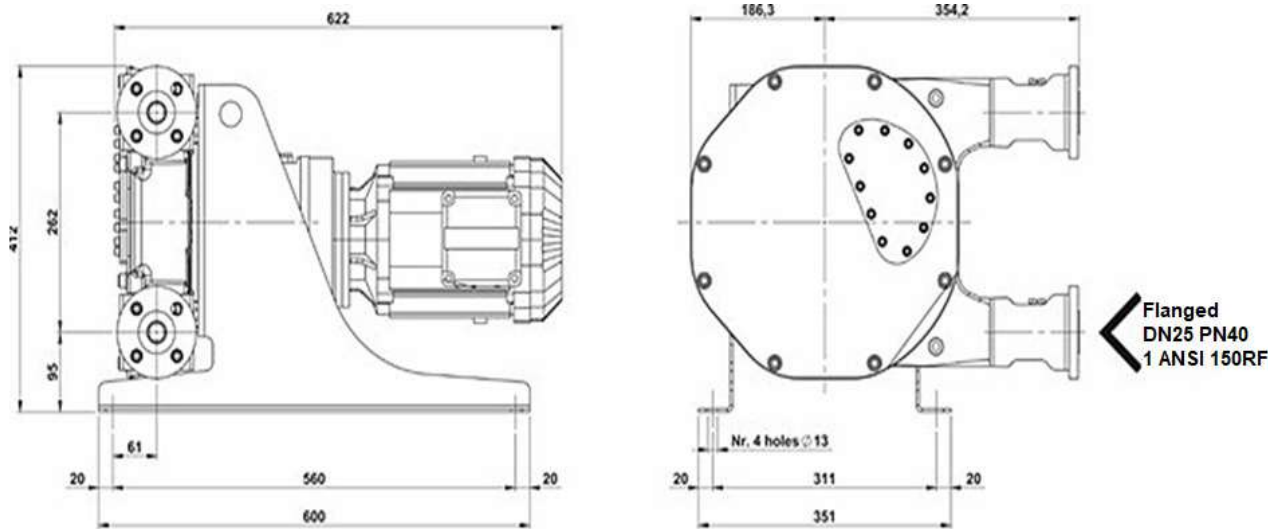
DIMENSIONS ADPV 20-3



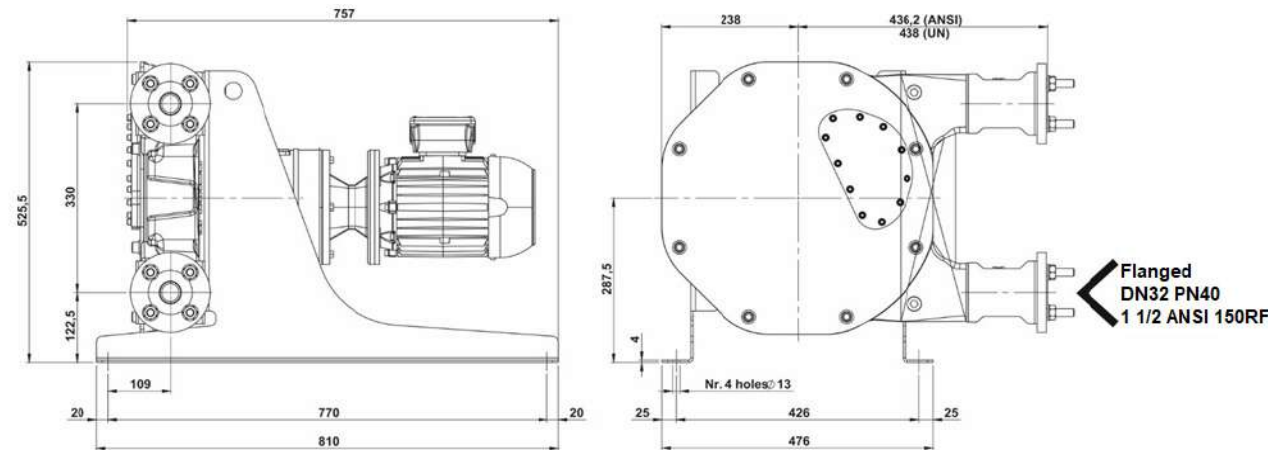
DIMENSIONS ADPV 25



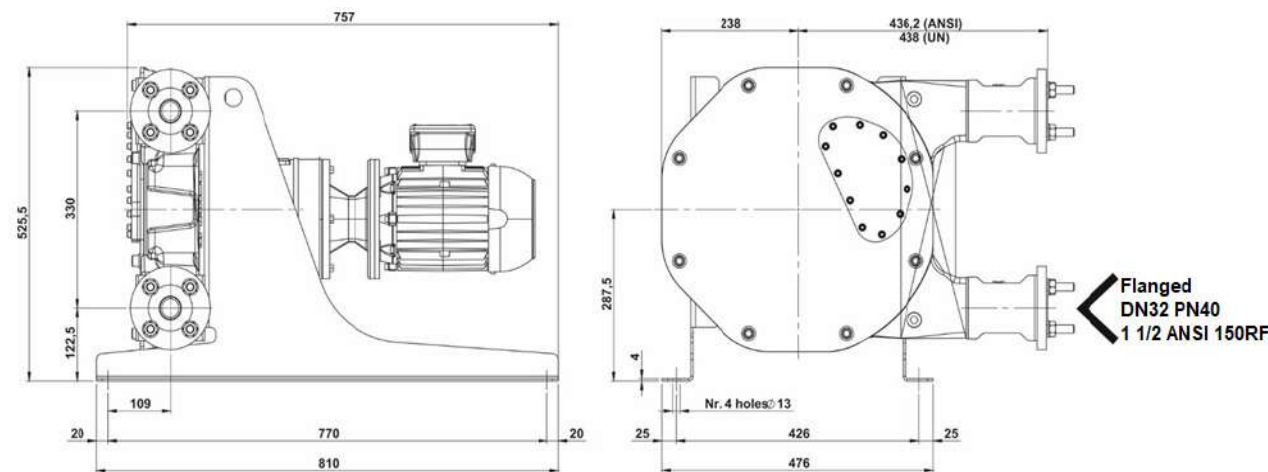
DIMENSIONS ADPV 25-3



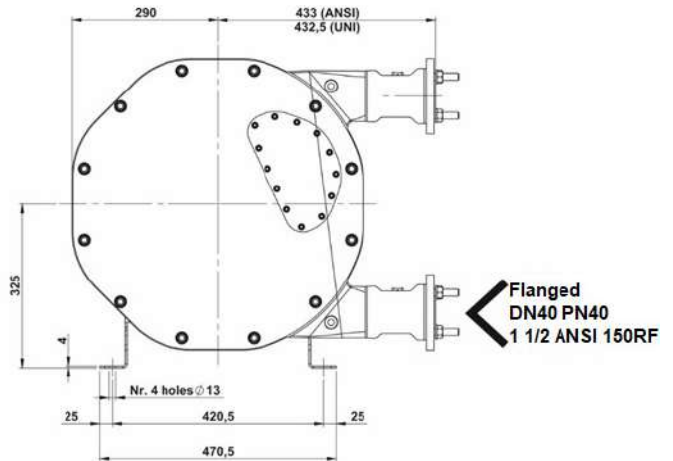
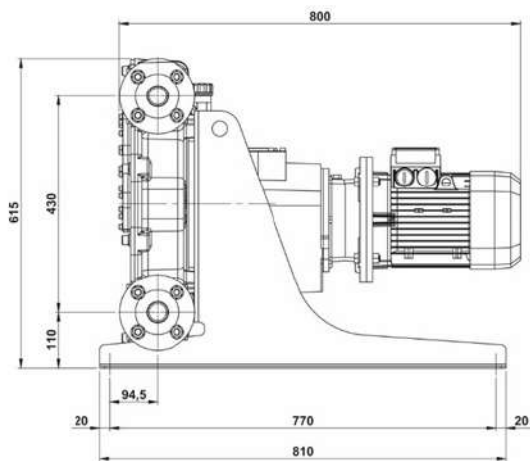
DIMENSIONS ADPV 32



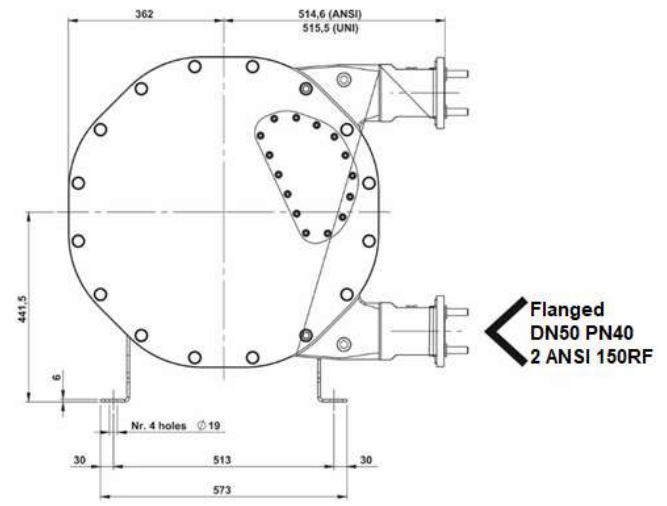
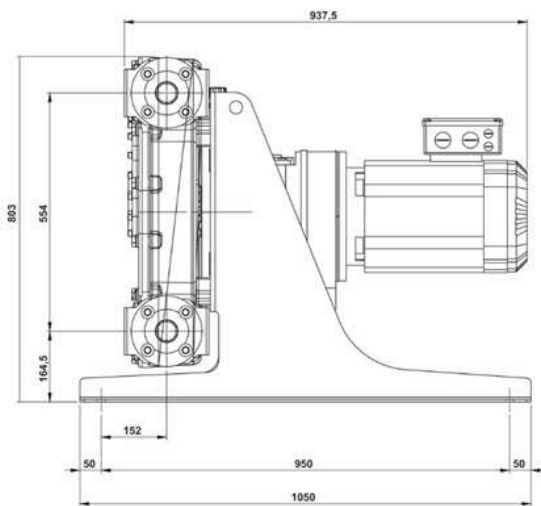
DIMENSIONS ADPV 40



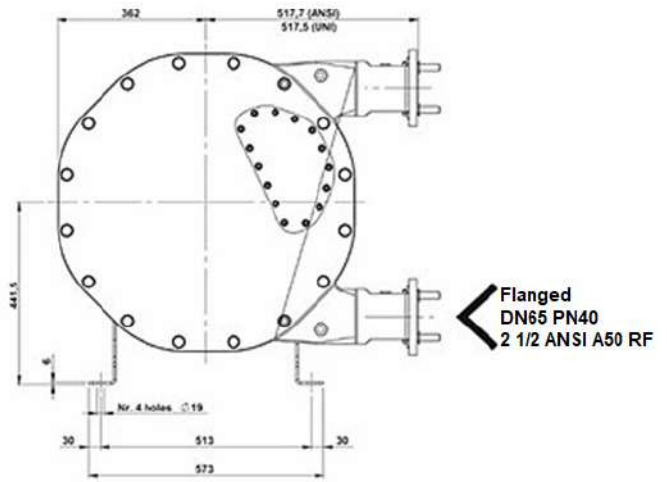
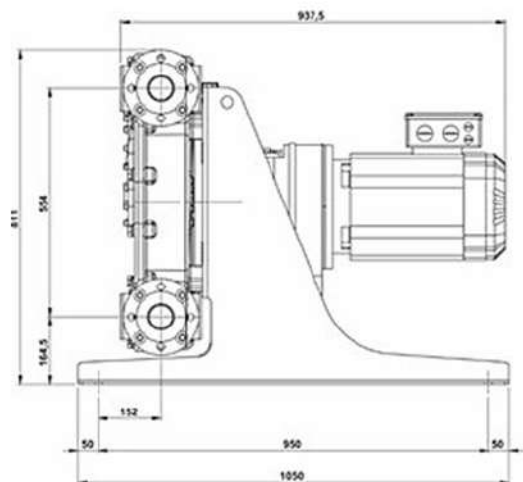
DIMENSIONS ADPV 40L



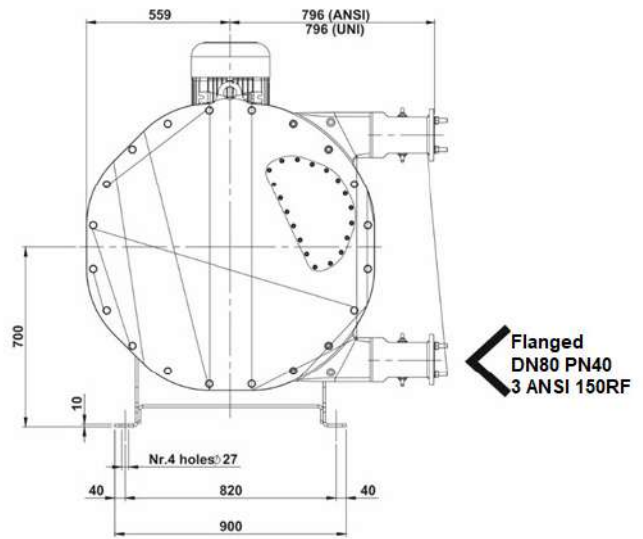
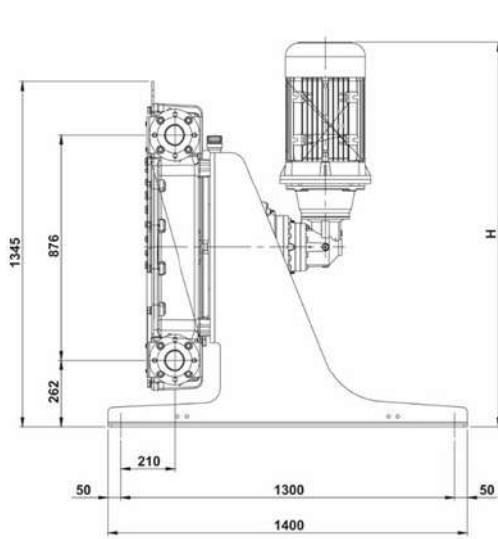
DIMENSIONS ADPV 50



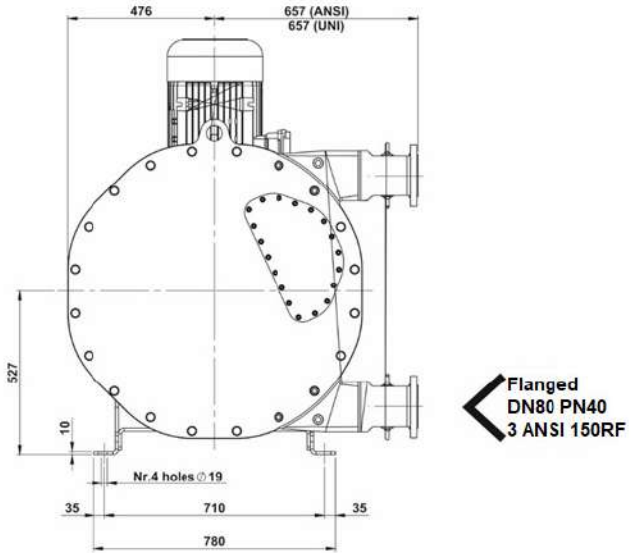
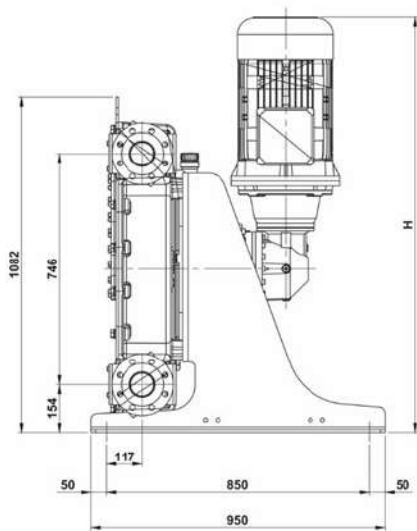
DIMENSIONS ADPV 65



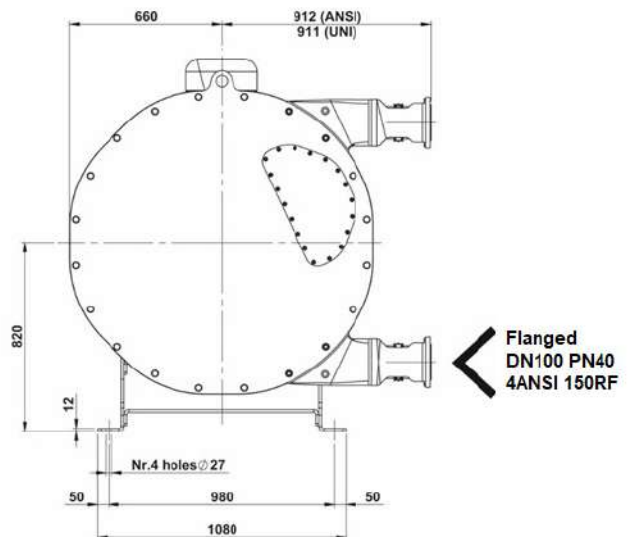
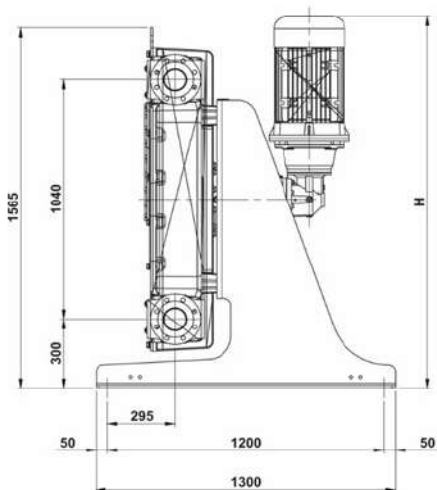
### DIMENSIONS ADPV 80



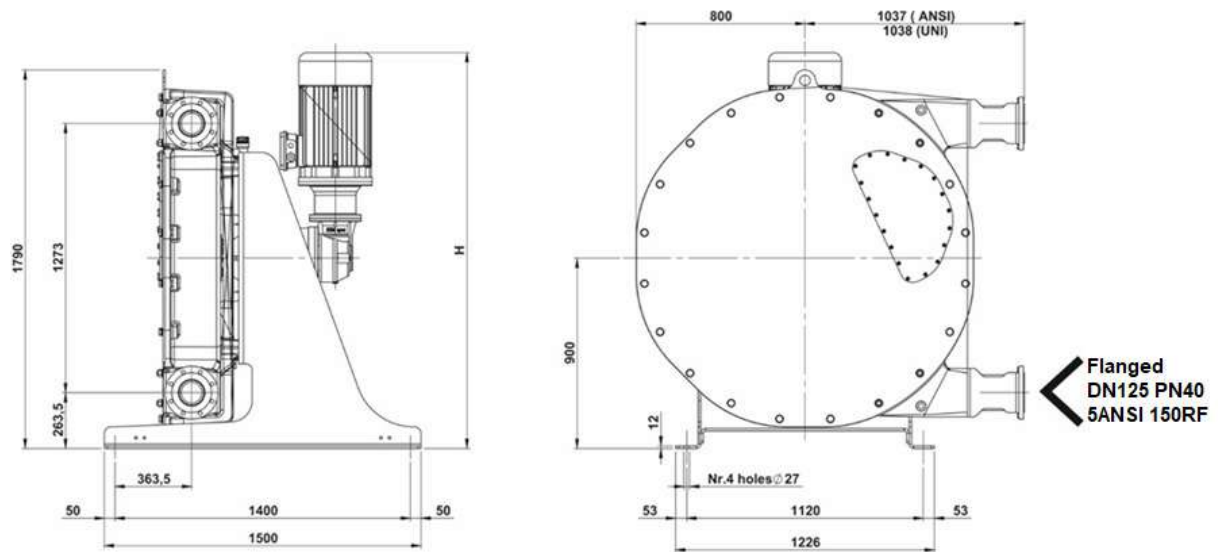
### DIMENSIONS ADPV 80S



### DIMENSIONS ADPV 100



## DIMENSIONS ADPV 125



### 2.4 Hose Dimensions

The NAYARA hoses are manufactured according to very strict specifications to acquire the best performances of the pump and to assure an optimum hose life. They are available different materials: NR, NBR, EPDM , VITON FKM. The material of the hose must be compatible with the pumped liquid.

Consult a NAYARA distributor to define the best hose for your process or consult the chemical resistance table on our website

### HOSE DIMENSION (mm)

| MODEL   | ø INTERNAL | THICKNESS | LENGHT |
|---------|------------|-----------|--------|
| ADPV05  | 5          | 13,5      | 570    |
| ADPV10  | 10         | 11        | 570    |
| ADPV15  | 15         | 11        | 830    |
| ADPV20  | 20         | 9         | 830    |
| ADPV25  | 25         | 14,5      | 1090   |
| ADPV32  | 32         | 15,5      | 1360   |
| ADPV40  | 38         | 13,5      | 1360   |
| ADPV40L | 40         | 13,5      | 1500   |
| ADPV50  | 51         | 15        | 1850   |
| ADPV65  | 60         | 13,5      | 1850   |
| ADPV65L | 60         | 17,5      | 2335   |
| ADPV80S | 80         | 17,5      | 2400   |
| ADPV80  | 80         | 21,5      | 2910   |
| ADPV100 | 100        | 22        | 3410   |
| ADPV125 | 125        | 21,25     | 4000   |

## 2.5 Motor types

Each pump is supplied with a suitable motor. Motor can be electric or air motor.

In case of electric motor:

Power supply voltage/frequency: according to user availability according to the relevant wiring diagrams (see chapter 4.6 of this manual).

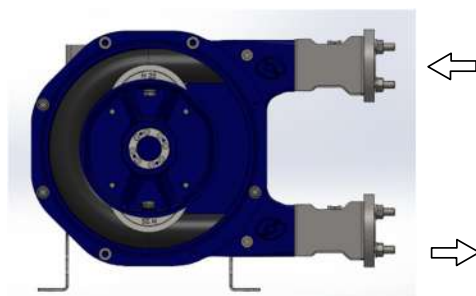
Available motors:

| Voltage (V) | Power            | Frequency(Hz) | Phases | Connection | Protection            |
|-------------|------------------|---------------|--------|------------|-----------------------|
| 400         | See type of pump | 50 / 60       | 3 + PE | Star       | Motor Saver           |
| 230         | See type of pump | 50 / 60       | 3 + PE | Triangle   | Motor Saver           |
| 220         | See type of pump | 50            | 1+N+PE | -          | Thermomagnetic switch |
| 110         | See type of pump | 60            | 1+N+PE | -          | Thermomagnetic switch |

## 2.6 Operating cycle

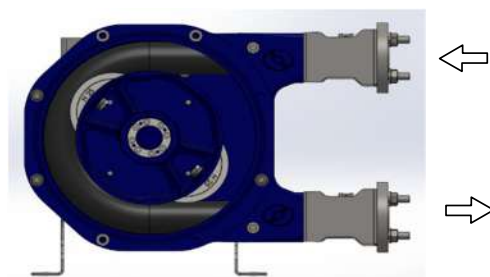
### PHASE 1.

The pump hose is compressed successively by two pressing shoes assembled on a rotating wheel. The first shoe, by pressing the walls of the hose, will create a vacuum and attract the pumped liquid into the hose.



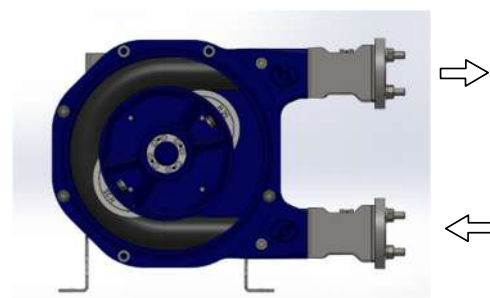
### PHASE 2

The pumped liquid has now entered the hose. The second shoe will compress the hose and push the liquid towards the pump outlet



### PHASE 3

As soon as, at the discharge side, the shoe is detached from the hose, the other shoe diametrically opposite is already in compression thus avoiding an internal product leakage. The product is then successively sucked and pushed due to the wheel rotation



The operators are required only to connect and inspect the suction lines, to check the connection of the supply line and that the latter is not obstructed and to make sure that the liquid has been transferred into the supply line or tank.

The operator must be trained in these operations.

The adopted guards protect the operator from the moving parts of the machine and have been chosen taking into account the «reasonably foreseeable misuse», i.e., the use of the machine in a manner different from that indicated in the instructions for use, but which may result from readily predictable human behaviour.

The adopted guards do not protect the operator from risks related to the shutting off of the pump supply lines.

The pumps can be used for the transfer and hose of any liquid free of suspended solid particles after assessing its compatibility with the materials used in the making of the pump housing, with which the liquid will come into contact.

*For the temperature of the processed liquids, refer to the table*

The following operations involve a physical interface between the operator and the machine:

The main activities that must be carried by the operators are as follows:

- Connection to the pipeline of the liquid to be pumped:

- Checking that the pump is correctly anchored

- Checking the direction of rotation of the motor

- Checking the connection continuity

- Checking the suction line head

Connection to the supply line

- Checking the connection continuity

- Lack of obstructions along the supply line

- Ensuring the connection to the discharge piping

- Checking the pressure/head on the supply piping

Starting the pump

- Liquid transfer and hose

- Checking the flow using the pump

- Checking the amount of liquid transferred (totalisation)

- Stopping the pump

Pump operation check

- Checking the tightness of the clamp of the hose

- Checking the tightness of the inlet / outlet connections

- Checking the transferred liquid flow rate

The operators must be properly informed and trained in relation to the operating and control procedures described above for the proper use of the machine and in how to carry out the manual operations assigned to them.



## 2.7 Safeguards

The machine is equipped with the following guards:

- fixed guards that isolate the transmission parts:
- these guards consist of
  - the gearbox that encloses and protects the transmission parts between the motor and the pump axle.
  - the pump housing that encloses and isolates the movements of the rotor.
- The pump housing is connected to the gearbox by means of a hub that also keep the pump assembly together; the connection box is closed by a cover fixed with screws.
- The oil level inside the gearbox (if any) must be maintained.
- Always disconnect the power supply before removing the fixed guards.

***The safe use of the machine also involves careful care on the part of the users, in the context of the department safety, during the incorporation of the machine in the operating site, particularly as regards the internal passageways and the necessary escape routes***

***The various parts of the machine for which periodic maintenance and fine-tuning operations are foreseen must be accessible only to the authorised personnel in charge of said operations and only when the machine is stopped.***

As regards the live electrical parts, appropriate safety measures have been provided in accordance with the National Regulations in force and, in particular, with EN 60204.

## 2.8 Layout

The pumps must be positioned with the shaft positioned horizontally.

The working area of the pump operator must allow for

- adequate access to the actual pump housing for the correct connection of the suction and supply lines and for maintenance
- access to the transmission unit for oil level check and top-up (if any)

The observance of the rules indicated above will also ensure accessibility to the pump motor (also necessary for proper ventilation).

Suction line piping:

- The internal diameter of the pipe must be greater than the diameter of the pump pipe (see §2.5.).
- It must be as short and direct as possible to avoid head losses.

- Install a valve on the suction line especially if the pump is loaded.
- Limit the presence of curves and make sure they are as wide as possible.
- Make sure that the pipeline can support the service pressure of the pump.

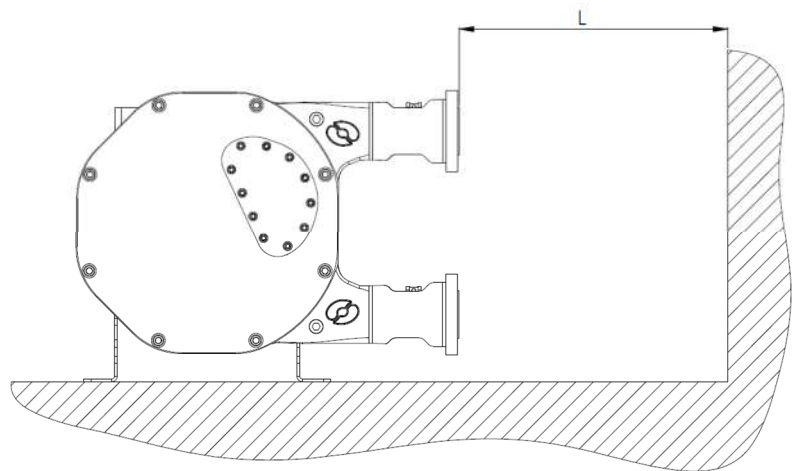
Discharge line piping:

- The internal diameter of the pipe must be greater than the diameter of the pump pipe
- It must be as short and direct as possible to avoid head losses.
- Limit the presence of curves and make sure they are as wide as possible.
- Provide space for a pulsation damper.
- If there is a valve on the discharge line, install a pressure reducing valve or an overpressure protection gauge to avoid any possible damage to the pump and the installation.
- It is recommended to install a flexible connection to absorb the vibrations created by pump pulsations.

When planning the layout for installing the pump, allow for sufficient space for changing the tubing and for the possible installation of a pulsation damper.

The length (L), shown in the table below, is the minimum distance required for tube removal.

| PUMP    | DISTANCE (L) |
|---------|--------------|
| ADPV10  | 400          |
| ADPV15  | 500          |
| ADPV20  | 500          |
| ADPV25  | 800          |
| ADPV32  | 1000         |
| ADPV40  | 1000         |
| ADPV40L | 1200         |
| ADPV50  | 1400         |
| ADPV65  | 1400         |
| ADPV80S | 1600         |
| ADPV80  | 2000         |
| ADPV100 | 2800         |
| ADPV125 | 3000         |



### 3. Safety

#### 3.1 Symbols

The following symbols have been used throughout this manual:



General mandatory action



Ask for information



Read carefully



Disconnect before working



Check the grounding connection



Wear suitable and/or protective clothing



Watch your hands



Warning



Warning; live parts



Warning; hot surface



Do not remove the safety devices



Do not carry out work on moving parts



General prohibition

### 3.2 Field of application (intended use of the machines)

The **ADPV** pumps are peristaltic pumps designed to transfer liquids (even with dispersed solids).

**All pumps of this series are not equipped of internal safety valve.**



The **ADPV** pumps are designed and built for the above operations in continuous flow regulation or discontinuous for totalisation of transferred liquid: their flow can be regulated by varying the speed of the rotor, by means of an inverter or mechanical variator (even with the pump in movement).

The **ADPV** pumps are made of various materials to be selected based on the products dosed or transferred: the performance of the pumps in terms of maximum discharge pressure also varies according to the construction materials selected

### Unintended use of the machines



- Transfer of liquids that are chemically incompatible materials of which the pump housing is made.
- Transfer of liquids into vessels with pressures higher than indicated for the selected pump.
- Starting the pump with the supply line shut off.

For any use other than that intended, contact the technical department of **NAYARA** Pumps.



**The use of the machine for purposes other than those intended and not conforming to what is described in this manual will be considered improper and prohibited, and will also relieve the Manufacturer of any liability, direct and/or indirect.**

From an operational point of view, the user must follow the main instructions below:



- Make sure that the fixing screws of the pump housing and those closing the gearbox are properly tightened at all times.
- Maintenance work on the pump housing and gearbox must always be carried out after cutting off the power supply to the motor.
- Do not start the pump if the shut-off valve is closed.
- Check that the maximum pressure at the supply outlet does not exceed the maximum allowed pressure for the pump model being used.

### 3.3 Personnel requirements



The machine is designed for professional use and even if the operator does not necessarily have to possess specific qualifications, in order to prevent any damage to people or property, ***the Customer must entrust the use of the machine to experienced personnel*** or provide suitable training by shadowing personnel who is already very well familiarised with the use of the machine.



The personnel in charge of using or servicing the machine must also be aware of his responsibilities and mature; he also must be able to interpret the information in this manual correctly so that he can carry out the checks safely and thoroughly.

**In addition to acquiring perfect knowledge of this manual, the personnel in charge of using the machine must constantly adopt the appropriate standards of good practice, together with the personal protective equipment required by the laws of the country and anything else made available by their Employer.**



### 3.4 General safety information

**NAYARA Pumps** has carried out an overall assessment of the risks associated with the use of the machine and has adopted all the necessary measures to reduce or eliminate them; however, when using electromechanical equipment, appropriate safety precautions must always be taken to further reduce the risk of accident or injury.



Before using the machine, therefore, carefully read and memorize the following safety regulations.

- Check that there are no leaks from the suction and delivery ports or from the pump transmission box.
- Check the flow of the product to be pumped on the product suction line, check the cleanliness of any filter on the suction line, check the pressure seal of the delivery line.
- Check that the shut-off valves on the delivery line are open.
- Repairing or having it repaired by personnel not authorized by the Manufacturer means, in addition to losing the guarantee, operating with unsafe and potentially dangerous equipment.
- Any type of check, control, cleaning, maintenance, change and replacement of parts must be carried out with the machine stopped with the main switch open.
- Check that the mains power supply system complies with the regulations in force in the country of installation and that it has been designed and built in a suitable measure for the power installed.
- Make sure that the ground is effectively connected.
- Wear work clothes and individual protective devices foreseen in suitable conditions.

- Do not use chemical products, for cleaning or other, not expressly recommended in this manual
- Periodically check the integrity of the electrical cables and replace them if not intact. This last operation must only be carried out by competent and authorized personnel.
- Safeguard cables from high temperatures, lubricants and sharp edges. Also avoid twisting and knotting the cable. Keep the motor terminal box closed.
- Do not touch and do not let the live electric cables touch.
- Only use original spare parts described in these operating instructions.

**The machine is designed to operate automatically once suitably incorporated into its hydraulic circuit, under the control of a single operator.**

**NAYARA Pumps disclaims any liability for failure to comply with the safety and accident prevention rules described in this manual. The company also disclaims any liability for damage resulting from improper use of the machine or unauthorised changes.**

### 3.5 Risk Analysis

ADPV Pumps has carried out an analysis of the risks associated with the conditions of use of the pump in question, also highlighting those reasonably foreseeable.

The exposure to hazards of the operator depends on the time for which he/she is exposed to the possibility of being affected by the source of danger and also on the frequency with which he/she accesses the danger zones of the pump.

The reasons for exposure to hazards are:

- production requirements;
- need for maintenance;
- need for cleaning;
- accident.

The risk assessment was carried out according to standard UNI EN 12100, using factors related to the severity of harm and to the probability of occurrence of that harm.

#### Risks arising from the use of the pump

The risks to which the operator may be exposed are essentially due to (in accordance with EN ISO 12100):

#### Hazards related to the stability of the machine:

The pump may move on the support surface, generating stresses and strains on the lines of the hydraulic circuit.

Mechanical hazards:

These hazards may arise from contact with transmission parts and other moving parts in the pump housing, such as the rotor.

and involve:

- crushing
- dragging hazard

These hazards are also conditioned by the shape of the machine parts, their relative location, mass, stability, speed and acceleration, mechanical strength, potential energy of elastic elements (springs) or of liquids under pressure.

Electrical hazards:

These hazards can result in injury or death from electrocution or burning:

- contact with live parts (direct contact);
- contact with parts which have become live as a result of an insulation failure (indirect contact);
- Insulation not suitable for the intended conditions of use;
- electrostatic phenomena;
- thermal radiation or other phenomena resulting from short circuits, overloads, etc.

Hazards generated by noise

- permanent hearing loss.
- tinnitus.
- tiredness, stress, etc.;
- other effects such as loss of balance, loss of awareness, etc.;
- impairment of speech communication.

Hazards generated by failure to comply with ergonomic principles:

Inappropriate machine positioning in relation to the control and adjustment, cleaning and maintenance activities carried out by the operators may lead to:

- physiological effects;
- psycho-physiological effects;
- human error.

Hazards generated by the release of hazardous materials and/or substances:

These hazards derive from the release of substances or leaks due to the improper connection of the pump housing to the hydraulic circuit lines and to the gearbox.

In order to prevent any risks associated with shutting off the supply line, the user can install a safety valve calibrated to the maximum pressure allowed by the part with the lowest design pressure (pipe, tank or other, installed between the pump and the shut-off valve).

## Risks during machine maintenance

Risks due to electricity: risk of direct contact with live parts located in the electrical cabinet that contains the electrical parts

Precautions:

The operation is to be carried out only by skilled authorised personnel and only after opening the main switch.

Risk of crushing: risk of having hands caught between the moving parts of the machine located in the pump housing and in the gearbox.

Precautions:

- Stop, switch off, disconnect the main switch located on the main panel by setting it to the open position and prevent third parties from restarting the machine;

- Report the ongoing maintenance work by means of appropriate signs;
- Use appropriate personal protective equipment for the upper limbs.

Risk of low back injury: risks due to the need to access the machine from remote positions near the floor, and to move significantly heavy masses from these positions.

Risks due to the position that must be adopted in order to approach the machine.

Precautions:

Respect the indicated clearances for machine positioning.

### 3.6 Solutions adopted to prevent risks

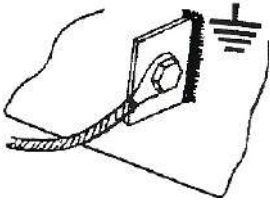
The machine has been equipped with the most suitable devices for the complete protection of the operator:

- The machine is equipped with a base that can be fixed to the ground with mechanical anchors or to a frame with bolts. It is advisable to make the connection to the hydraulic circuit only after positioning and fixing the machine, providing appropriate fasteners on the supply and suction lines, suitable for the process temperatures and pressures.
- All rotating transmission parts are located inside the gearbox and in the pump housing;
  - The pump housing and the connection box are fixed guards.
- The motor connection box can be opened with the use of special tools.
- The machine is remarkably compact and sturdy in design: it ensures an extremely silent operation: if correctly lubricated, the noise emission level at full speed is below 70 dB (A). However, the noise threshold allowed by the Laws in force in the country where the machine is installed may be exceeded in the actual installation environment.
- In this case, the Customer must:
  - ensure the safety of the operators by providing suitable personal protective equipment;
  - inform the operator in advance about the need to use the personal protective equipment provided;
  - ensure that the hearing of the operators is checked periodically.
- The positioning of the machine as shown in the layout will ensure the necessary manoeuvring space for the operators.
- The machine is equipped with seals (O-rings)
  - between the parts of the pump housing;
  - on the connection to the gearbox.

The connections to the supply and suction lines are tight.

However, it is advisable to check the pump housing, line connections and connection box periodically for leaks or dripping.

- There is a grounding terminal in the motor terminal block and also on the motor housing that the user must use in order to ensure the complete protection of the metal frame.



- The pumps must be connected to a specific control and stop system; to be provided by the user.
- Maintenance and cleaning must be performed with the machine stopped and put in safe mode.
- Use the personal protective equipment indicated
- Set up warning and danger signs.



**Tampering with or failing to take care of the safety devices causes risks for machine users and other exposed persons.**

### 3.7 Residual risks

Although equipped with the safety devices described above, and built in compliance with the regulations in force and according to the best techniques currently available, the machine presents residual risks that, although limited, cannot be completely eliminated:

### 3.8 Mechanical risks

#### Crushing

Any disassembly and replacement of worn or faulty parts (O-rings, hoses) installed in the pump housing shall be carried out on the workbench, with the pump disconnected from the hydraulic circuit lines and from the dowels.

#### Dragging

There are no particular operations to be carried out on the connection box; however, any work on this part is to be carried out on the bench.



### 3.9 Electrical risks

#### Electrical contact

All the electrical equipment of the machine is made in accordance with the applicable standards; however, this risk may arise due to failure to protect, service or check the cables.

It is, therefore, essential that the operator carry out a periodic check of the motor connection cables, in compliance with the applicable safety standards.

## Other risks

Risks caused by leaks of hazardous products and substances

These risks arise from the presence of the substances processed by the pump.

The user will be responsible for identifying and equipping the operators with the protective equipment required in case of contact with the specific substances processed by the pump.



## 4.0 Machine maintenance

Adjustment, maintenance, repair and cleaning work must be carried out with the machine stopped and under conditions such as to prevent any risk: any replacement of components shall be carried out on the workbench.

The distances from nearby fixed structured must be such as to allow easy maintenance.

The following precautions shall be taken for such operations:

- isolate the machine from energy sources;
- tighten the fixing screws of the pump housing and connection box.

*Place appropriate **signs** near the machine, in a place visible to the operators, to warn them about the risks associated with the work carried out.*

*In particular, they must prohibit tampering with and removal of the installed safety devices.*

### 4.1 Personal protective equipment

Before using the machine, remember that it presents residual risks that the employer must minimise by making sure that the operators use the personal protective equipment required by the laws in force.

The use of personal protective equipment and clothing is intended to protect a certain part of the body from the risks associated with the work carried out.

As a general rule, they should be used only when the measures adopted to reduce the risk at source are not enough to ensure the complete elimination of the hazard and, therefore, the safety and health of the operator.

See in this regard the chapter on residual risks.

Therefore, the following PPE must be available during operation and maintenance (preventive and in the event of a breakdown):

|                        |                                                                                                    |
|------------------------|----------------------------------------------------------------------------------------------------|
| hand protection:       | Gloves for protection against mechanical aggression and from contact with processed substances (^) |
| eye protection         | Goggles against jets of liquid under pressure                                                      |
| feet protection        | Safety footwear                                                                                    |
| body protection        | Overall.                                                                                           |
| respiratory protection | Suitable protective equipment that must be worn when handling the processed substances (^)         |

(^) according to specific safety instructions

The list above does not exclude the need to use other PPE, depending on the conditions of the work environment.

The personal protective equipment used must comply with the regulations in force in the country of installation and must be CE marked.

## 5.0 Machine handling and installation

### 5.1 Unpacking and control

Upon receipt of the pump, please follow the instructions found on the packaging. Carry out a visual inspection to make sure that no damage has occurred during transport. In case, contact your distributor of NAYARA pumps as soon as possible or, if it belongs to you and your responsibility, the transporter in charge.

#### Conditions of use

ADPV pumps can operate in atmospheres with temperatures between 0°C and 40°C. The pumps are supplied painted with a 100 µm thick polyurethane varnish which provides protection against certain aggressive environments. They are designed for indoor and outdoor installations.

#### Setup

Before installing the pump, check the following points:

- The pump is delivered with a frame provided with four anchoring holes. It must be fixed on a solid base with a slope which does not exceed 5mm for 1m and must be firmly fastened to this one.
- Require enough space around the pump to carry out maintenance. If such was not possible, consider the moving of the pump to a space provided for this purpose.
- Make sure that the room is adequately ventilated to relieve the heat generated by the pump. Leave a space behind the motor ventilation hood so as not to obstruct air intake.

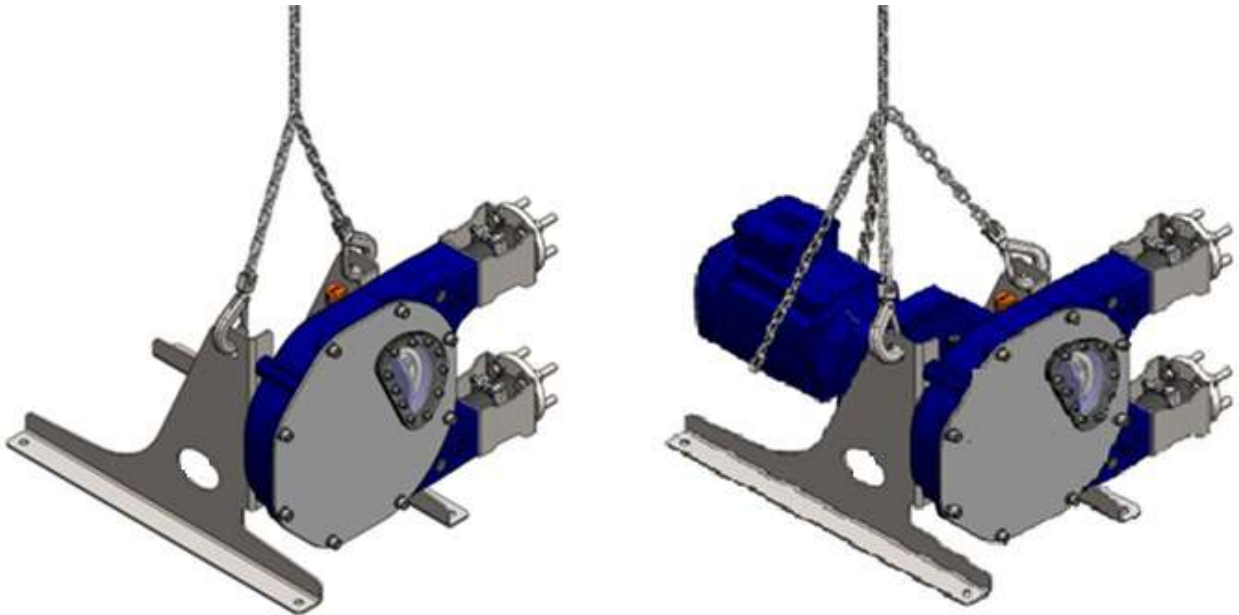
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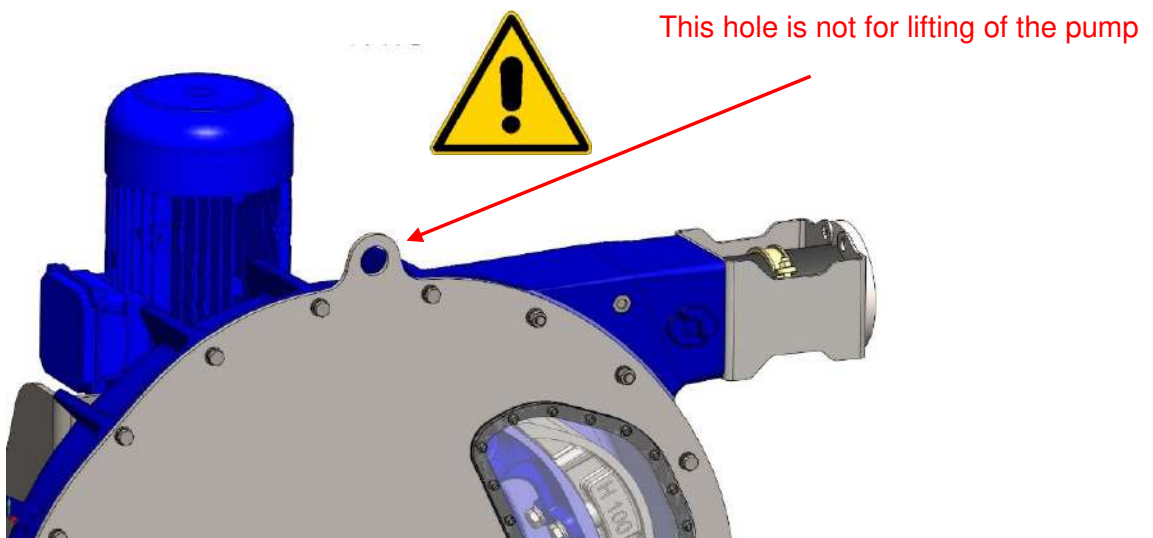
## 5.2 Lifting the pump

The pumps are supplied with two hoist rings positioned on top of the support frame. When lifting the pump, observe the following points:

- Lift the complete peristaltic pump using the hoist rings plus additional support on the gearbox and motor using suitably sized straps or slings.
- Never exceed the lifting limits and check the weight of the motorized pump in the table below.
- The motorized pump, given its center of gravity, tends to unbalance on the side of the pump head. Make sure people are at a safe distance from the pump to avoid injury.
- Never lift the pump except by the pump lifting rings.
- Never lift the pump by its orifices or supports.



For pump ADPV80S, ADPV80, ADPV100 and ADPV125 please note that hole on cover is not for lifting but only for movement of the cover during disassembly and reassembly:



### 5.3 Handling and storage

The pumps are normally supplied packaged in closed or suitable packaging based on the type of transport chosen, in which they can be kept in a closed warehouse until used.

The overall weight of the machines is always greater than 20 kg in all possible configurations, therefore they cannot be moved by hand.

### 5.4 Installation

For installation, choose a position protected from rain and jets of water (if the installation is outdoors, the application of a roof canopy is recommended), away from heat sources and well ventilated.

Place the pump on a perfectly horizontal rigid surface to allow good lubrication of all internal elements.

Provide sufficient space in accordance with the lay-out indications

Fix the pump to the chosen flat surface by means of 4 screws.

### 5.5 Power supply

For AC power supply, a motor protector must be installed and adjusted according to its rated power (motor overload protection or circuit breaker) (See diagrams 1 and 2 below).

For connection to a direct current power supply unit, ensure the protection of the motor by means of fuses suitable for the maximum current consumption.

The control and monitoring device must be made in accordance with the provisions of the Machinery Directive.

Diagram 1

Three-phase connection

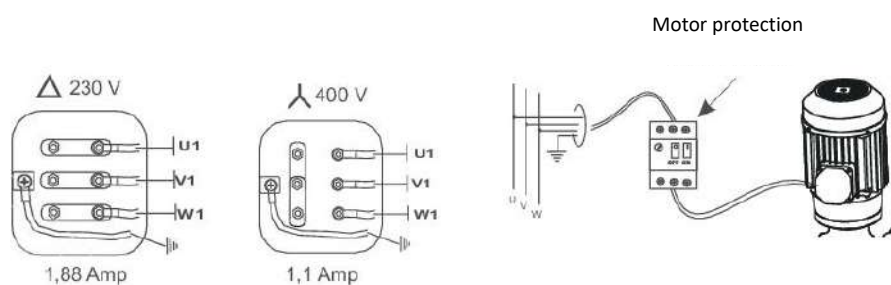
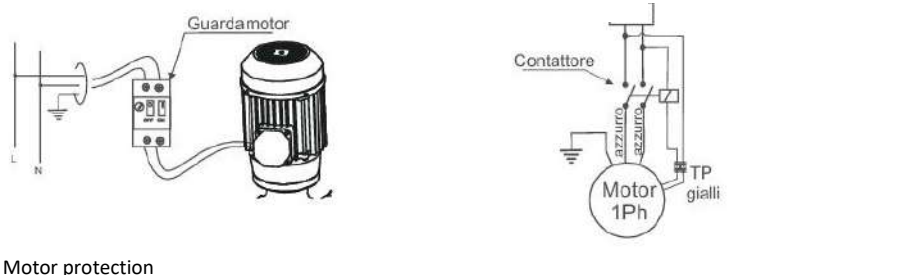


Diagram 2

Single-phase connection



## 5.6 Using the machine

### Checks prior to commissioning

Before proceeding with the calibration of the machine's production cycle, the installer must ensure that:

- **SUPPORT:** Check that the pump is firmly fixed on its support.
- **GLYCERINE:** check the glycerine level through the porthole. Possibly supplement the glycerine from the filler cap.
- **CHECKING THE HYDRAULIC CIRCUIT:** Check that all the shut-off valves are open and that the outlets of the bleed and safety valves pour the liquid adequately.
- **SHOE SHIMMING:** Make sure that the pump is shimmed according to the process conditions of the pumped fluid (see §5.6)
- **DIRECTION OF ROTATION:** Start the pump to check that the direction of rotation of the motor is the same as that indicated by the arrow. To change the direction of rotation, two phases in the motor terminal box must be inverted.
- **CHECK THE PUMP:** Perform a visual / acoustic check of the correct operation of the pump.
- **PRIMING:** To make priming the pump easier, especially for reduced flow rates or in the absence of a priming valve, it is advisable to reduce the pressure in the delivery and/or fill the pipe via the suction.
- **PROTECTION AGAINST EXCESS PRESSURE:** Select the safety valve and adjust according to the desired value to protect the installation without ever exceeding the maximum nominal pressure of the pump.
- **ELECTRIC PROTECTION:** Select and adjust the electrical protection device according to the motor rated current.

## 5.7 Checking the actual flow rate

The flow rate to be pumped can be adjusted by means of the mechanical variator and/or inverter. Refer to the operating manual of the drive and/or inverter for the definition of the operating range of the number of revolutions. To obtain a correct measurement, the use of a flow meter is recommended.

## 6.0 Maintenance

### Preventive maintenance

Maintenance operations must be carried out by trained and qualified personnel.

Electrical equipment may only be replaced by suitably qualified personnel.

All machine maintenance operations must be carried out only after pressing the Off (disconnection) button located on the motor protector (circuit breaker) that powers the pump or after cutting off the power supply to the entire system in which the pump is installed.

A suitable warning sign must be placed on the switch.

## System under Maintenance

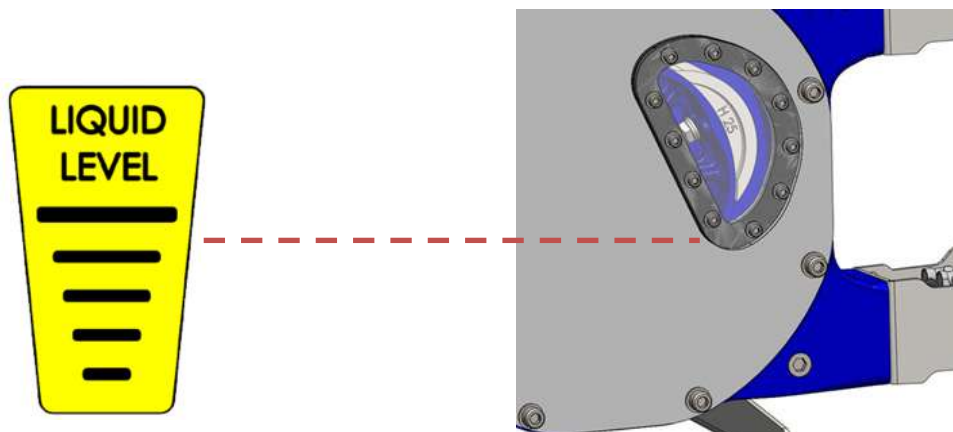


**Do not touch**

After repair or maintenance, carry out a thorough cleaning and check that there are no tools or other items left and, if necessary, check the correct assembly of the equipment on which work has been done.

### 6.1 Emptying and filling of the lubricant.

1. Stop the pump.
2. Place a tray under the drain plug (ITEM 74).
3. If necessary, install a drain cock and loop in place of the drain plug (ITEM 74).
4. Make sure that the tray can hold the amount of lubricant during the draining process (see lubricant volume table §9).
5. Unscrew the cap (ITEM 52) and start emptying.
6. Place and tighten the plug (ITEM 52) by applying Teflon® tape or waterproof paste or close the drain plug.
7. Remove the sight glass ITEM 15 and the gasket ITEM 46 and fill the body with the NAYARA lubricant (see the lubricant table §9). You can also fill the body through the ITEM 23 vent cap located behind the pump body. The level of lubricant required is at the sight glass level or below the shaft line (see figure below).
8. Check the condition of the gasket ITEM 46 and reassemble the porthole ITEM 15 or tighten the breather plug ITEM 23.



## 6.2 Hose cleaning

The hose cleaning can be done without removing the hose. It can be done with water or with a cleaning liquid (check compatibility with hose material). With numerous products, it is necessary to clean the hose after every pumping in order to avoid the hardening of the product inside this one.



**CAUTION! Make sure that the cleaning liquid temperature is adapted to the hose material.**

## 6.3 Hose replacement

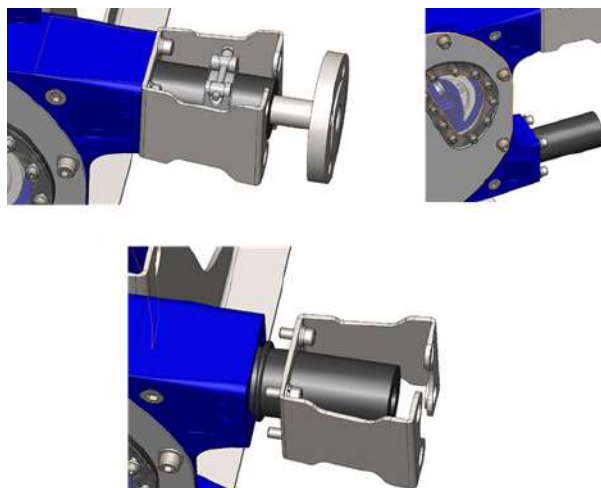


**CAUTION! Before any hose change, check the following points:**

- a. This service has to be performed by skilled personnel that is acquainted with this manual. Inlet and outlet valves have to be closed to minimize product loss.
- b. Always carry clothes and necessary protection according to the pumped product.
- c. Respect all security and environmental rules necessary for the manipulation of the pumped product.

## 6.4 Hose removal

- a. Disconnect and remove the suction and discharge pipes.
- b. Drain the lubricant as explained
- c. Loosen the clamp of the inlet ITEM 09.
- d. Loosen the clamp of the outlet ITEM 09.
- e. Extract the ITEM 12 insert including the flange.
- f. Remove bracket ITEM 18 and O-ring ITEM 50
- g. Run the motor for an instant to get the tube out of the pump body on the delivery side





**WARNING! The hose can come out of the pump casing very fast and cause harm. Check that nobody is in front of the pump's brackets while removing the hose**

## 6.5 Pump Casing Cleaning

This operation is necessary when a hose has burst and when the product has contaminated the inside of the pump casing.

1. Unscrew cover bolts by leaving two screws partly fastened to the casing. Slightly withdraw the cover from the casing and fix a shackle in one of the cover's highest fastening holes. (Pumps ADPV80, 100 and 125 are equipped with a lifting ring). Install a lift equipment in this shackle and slightly raise the cover. Unfasten the remaining screws and withdraw the cover.
2. Check the state of the cover seal ITEM 10 and replace if necessary.
3. Check the state of wear of the pressing shoes ITEM 05 and replace them if necessary



**CAUTION! A wear of shoes can cause problems to the pump and provoke abnormal hose lifetime.**

4. In the case of a hose burst, it is possible that the shaft seal ITEM 26 as well as the seal ring ITEM 27 have been notably damaged when pumping an abrasive liquid. Relate to §6.4 if a replacement of these parts is necessary.
5. Wash the casing with clear water and withdraw any residues.
6. Dry the pump casing entirely.
7. Replace the cover seal in its groove.
8. Reassemble the pump cover.



**WARNING! You should never assemble a new hose without a mounted cover.**

1. Carefully clean the new NAYARA tube. Lightly coat it with NAYARA lube. Lightly lubricate the seat of the ITEM 50 o-ring.
2. Insert the pipe from the delivery.
3. Reverse the direction of rotation of the motor.
4. While pushing the tube, run the motor for a moment and check the direction of rotation.
5. The shoes installed on the rotor "swallow" the tube and push it to the suction port. Always in jerks, bring the pipe until it comes out from the suction side, by a measure equal to that of the delivery side.
6. Push the O-rings on the discharge and suction sides into their respective seats.
7. Mount the brackets ITEM 18 and bolt them.

8. Pre-assemble the clamp ITEM 09 on the discharge and suction side.
9. Fit the ITEM 12 insert including the flange in the delivery pipe until the flange reaches the ITEM 18 bracket. Tighten the band ITEM 09.



**If you meet difficulties in introducing inserts into the pump hose, coat them slightly with NAYARA lubricant. Never use another lubricant**

10. Repeat the same operation on the suction side.
11. Fill the pump with the required quantity of NAYARA lubricant
12. Check the direction of rotation of the pump.
13. Check that there are no lubricant leaks from the insert, o-rings or cover.

## 6.6 Replacement of spare parts

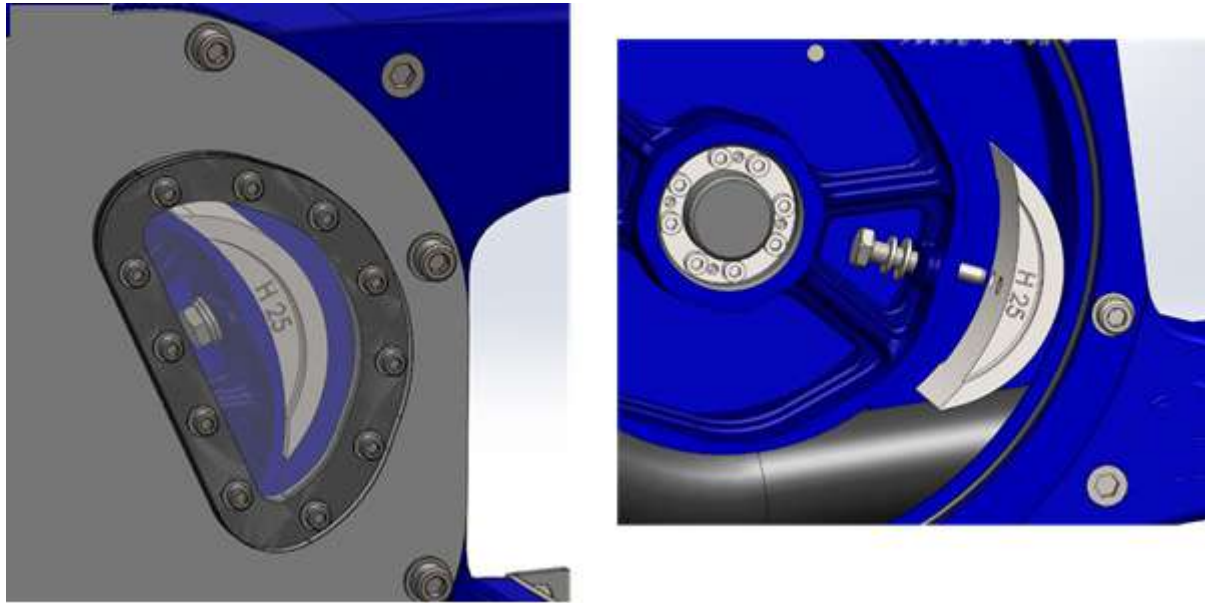
### 6.6.1 Replacement of pump shoes (except for ADPV05, ADPV10 ADPV15 ADPV20)

1. Run the engine for a moment and place one of the runners in front of the porthole.
2. Shut off the power supply.
3. Drain the lubricant
4. Remove the pump cover REF2 and the cover gasket ITEM 10.
5. Remove the pad that is not in contact with the pipe and remove any shims. Check that the ITEM 30 pin is still on the rotor (ADPV25 to ADPV 80S).
6. Fit a new pad on the rotor (do not forget the washer ITEM 29 and the grower ITEM 56). Slide the shims between the pad and rotor before tightening.



**CAUTION: Be careful of the position of the shoe with the centering pin ITEM 30 (ADPV25 to ADPV 80S).**

7. Tighten the shoe on the rotor.
8. Reassemble the cover with 3 temporary bolts positioned approximately 120° apart.
9. Briefly turn the motor 180° to bring the second skid in front of the porthole.
10. Remove the lid once more and repeat steps 5 - 7.
11. Replace the cover and tighten all cover screws

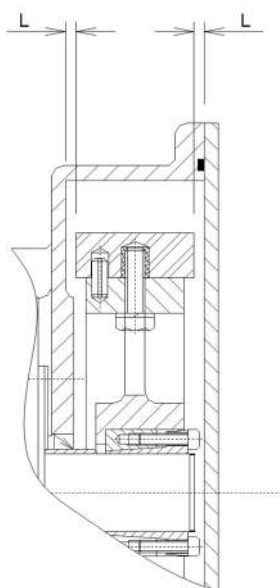


#### 6.6.2 Replacement of the seal ring ITEM 27 and shaft seal ring ITEM 26

NAYARA peristaltic pumps are equipped with a leak channel which allows you to see the wear of the seal ring or shaft seal. This channel is located behind the pump housing, under the gearbox flange. This also protects the gearbox seals as it allows the lubricant or product to pass freely to the rear of the pump body.

1. Isolate the pump from the power supply.
2. Empty the lubricant and clean the pump
3. Remove the pump hose
4. Disassemble the pump cover and remove the cover gasket ITEM 10.
5. Disassemble the rotor by unscrewing the locking ring ITEM 19.
6. Remove the pump shaft rotor with a suitable lifting device.
7. Support the gearbox with a suitable lifting device.
8. Unscrew the nuts ITEM 42 and remove the transmission from the pump body.
9. Extract the damaged sealing ring ITEM 26.
10. Insert the spacer ring ITEM 73 (where present) and glue it to the shaft. Place the new seal ring ITEM 27 against the spacer ring or against the reducer shaft shoulder. Fill the keyway with silicone caulk to ensure proper sealing.
11. Remove the shaft seal ITEM 26 with a dowel pin to align the holes.
12. Replace with a new shaft seal ITEM 26 with an appropriate tool (wooden or plastic mallet). Check the installation position of the gasket (open side facing the cover)).
13. Fit the reducer to the body taking care not to damage the shaft seal. Tighten the nuts ITEM 42 with their washer ITEM 71 and grower ITEM 72.

14. Mount the rotor on the pump shaft positioning it according to the following table and drawing.



| PUMP                          | ADPV<br>05 - 10 | ADPV<br>15 – 20 | ADPV<br>25 | ADPV<br>32 | ADPV<br>40 | ADPV<br>40L | ADPV<br>50 - 65 | ADPV<br>80S | ADPV<br>80 |
|-------------------------------|-----------------|-----------------|------------|------------|------------|-------------|-----------------|-------------|------------|
| Distance<br>casing / shoe (L) | 4 mm            | 2,75 mm         | 5,5 mm     | 6 mm       | 2,5 mm     | 5 mm        | 3 mm            | 6,5 mm      | 8 mm       |
| Tolerance<br>+ or -           | 0,5 mm          | 0,5 mm          | 0,5 mm     | 0,5 mm     | 0,5 mm     | 0,5 mm      | 0,5 mm          | 0,5 mm      | 0,5 mm     |



For Pumps ADPV100 and ADPV125 the wheel is automatically positioned by the spacer ring and seal ring. Therefore, no adjustment is necessary.

15. Cross tighten the expansible hub with a dynamometric spanner to the torques that figure in the table below. Check the wheel position once again.

| PUMP TYPE           | TORQUE Nm |
|---------------------|-----------|
| ADPV05-10-15-20     | 14        |
| ADPV25-32-40        | 14        |
| ADPV40L             | 35        |
| ADPV50-65           | 41        |
| ADPV 80S            | 110       |
| ADPV80 (shaft Ø90)  | 110       |
| ADPV80 (shaft Ø100) | 190       |

16. Mount the cover seal ITEM 10 in its groove and mount the cover.

17. Mount the pump hose .

### 6.6.3 Shoe Shimming

**NOTE:** This paragraph does not concern pumps ADPV05 to ADPV20.



**CAUTION!** The shimming of shoes is an operation which consists in adding shims under the shoe to stop any internal leakage. An internal leakage considerably reduces the lifetime of the hose as well as the flow. As a result, it is essential to adjust the shoe's shimming according to the rotation speed of the pump, the desired discharge pressure, and the liquid viscosity.

**WARNING!** Never run the pump without the sight glass.

The shoe shimming can be made without disassembling the hose or the cover. Shims are inserted or withdrawn by the sight glass as pointed out below:

1. Jog run the motor and bring a shoe in front of the sight glass.
2. Cut the power supply of the pump.
3. Unscrew the sight glass bolts and withdraw taking care in not damaging the seal.
4. Slightly unscrew the shoe's fastening bolt(s) and lift the shoe off the wheel with a screwdriver or a similar tool.
5. You can now either slide in or withdraw the necessary number of shims under the shoe.



**Consult the shimming table §10 to determine the precise number of shims according to your application.**

6. Tighten the shoe bolts.
7. Reassemble the sight glass with its seal.
8. Re-connect and jog run the motor to bring the second shoe in front of the sight glass.
9. Cut the power supply of the pump.
10. Repeat operations 3, 4, 5, 6 and 7. Replace the sight glass seal ITEM 46 if necessary.

## 7.0 Maintenance and periodic inspections

|    |                                                                                                                    |                                                                                                 |
|----|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| 1  | Pump hose replacement.                                                                                             | In prevention, change the pump hose after                                                       |
| 2  | Lubricant replacement.                                                                                             | At the end of two hose changes or 5000 hours of functioning.<br>Otherwise, in every hose break. |
| 3  | Gearbox oil replacement.                                                                                           | Refer to the gearbox maintenance manual provided with the pump.                                 |
| 4  | Replacement of the seal ring REF27.                                                                                | In case of presence of lubricant in the leak channel.                                           |
| 5  | Replacement of the shaft seal REF26.                                                                               | In case of presence of lubricant in the leak channel.                                           |
| 6  | Replacement of the shaft seal REF105 and REF106 (ADPVS series).                                                    | In case of presence of oil in the leak channel or at the lip seals.                             |
| 7  | Replacement of the shoes.                                                                                          | If these are worn on the contact surface.                                                       |
| 8  | Replacement of the cover seal REF10.                                                                               | In the case of a leak around the pump cover.                                                    |
| 9  | Replacement of the sleeves REF6.                                                                                   | If these are damaged.                                                                           |
| 10 | Replacement of the bearings REF103 and REF104 (ADPVS series)                                                       | If there are abnormal noises coming from the bearing case.                                      |
| 11 | Check the lubricant level.                                                                                         | Before starting the pump and periodically during the pump service.                              |
| 12 | Check for lubricant leakage at the leakage channel.                                                                | Before starting the pump and periodically during the pump service.                              |
| 13 | Check the pump casing to discern possible leakages around the cover, the sight glass, the flanges and the sleeves. | Before starting the pump and periodically during the pump service.                              |
| 14 | Check for wear on the shoe's pressing surface.                                                                     | At every hose change.                                                                           |
| 15 | Check the presence of a gearbox oil leakage.                                                                       | Before starting the pump and periodically during the pump service.                              |
| 16 | Check for strange noises coming from the pump, gearbox and bearing case or abnormal pump casing temperature.       | Periodically during the pump service.                                                           |

## 7.1 ADPV series complementary information

Before the setup of the pump, check the following points:

1. The ADPVS pump is delivered without a frame. Assembly holes are at the back of the pump for assembly on a frame. Dimensions of these assembly holes can be found in § 2.3 The pump with its drive and frame must be fixed to a solid base with a slope which does not exceed 5mm for 1m and must be firmly fastened to this one.
2. The pump frame must be built in order to support the stress and deformations delivered by the pump and drive. It should be built by qualified staff with good engineering practice. In no case NAYARA PUMPS is responsible for its construction or conception.
3. The alignment of pump and drive shafts must be made in accordance with instructions given by the manufacturer of the coupling. Refer to the specific notice of such material. To achieve alignment and coupling, use a perfectly straight ruler to control the misalignment, and a feeler gauge for angular misalignment. Control four points (top, bottom, left, right) at each stage of the installation (after setting on foundations, after fixing pipes and after a first start).
4. Make sure there is enough room around the pump to carry out maintenance. If that was not the case, envisage the moving of the pump in a space provided for this purpose.
5. Make sure the room is adequately ventilated to relieve the heat generated by the pump. Leave a space behind the motor ventilator hood so as not to obstruct the air intake.

### 7.1.1 Pump starting

The hose is not mounted on bare shaft pumps when delivered. Therefore, hose mounting operations should be followed before the starting up.

### 7.1.2 Bearing case dismantling and lip seal ITEM 26 replacement

Disassemble the bearing case in the same way as for the gearbox.

1. 1 Remove lip seals ITEM 105 & ITEM 106 from the bearing case.
2. 2 Remove the circlips ITEM 107.
3. 3 Remove the shaft with the bearings.
4. 4 Carry out the disassembly of the bearings and replace them together with the shaft ITEM 102 if necessary.

### 7.1.3 Maintenance and periodical controls

Regularly check the absence of grease coming from the leakage channel or from the lip seal ITEM 106.

## 7.2 STORAGE

### 7.2.1 Storage of the pump

Store the pump in a sheltered and dry place and ensure that the storage room temperature is between -20°C and +45°C. Protect the pump if necessary and block the inlet and outlet orifices:

If the pump stays without working more than 1 month, withdraw the hose from the pump or withdraw one of the shoes as well as its centring pin and position the wheel so that the second shoe can be seen through the sight glass.

For models ADPV05-10-15-20, position the wheel so that one of the cam lobes remains submerged in the lubricant.

If you can neither withdraw the hose or one of the shoes, run the pump 5min a week.

### 7.2.2 Storage of the pump hoses

Hoses must be stored sheltered from light in a cool place. Their life is reduced after two years. The performance of hoses

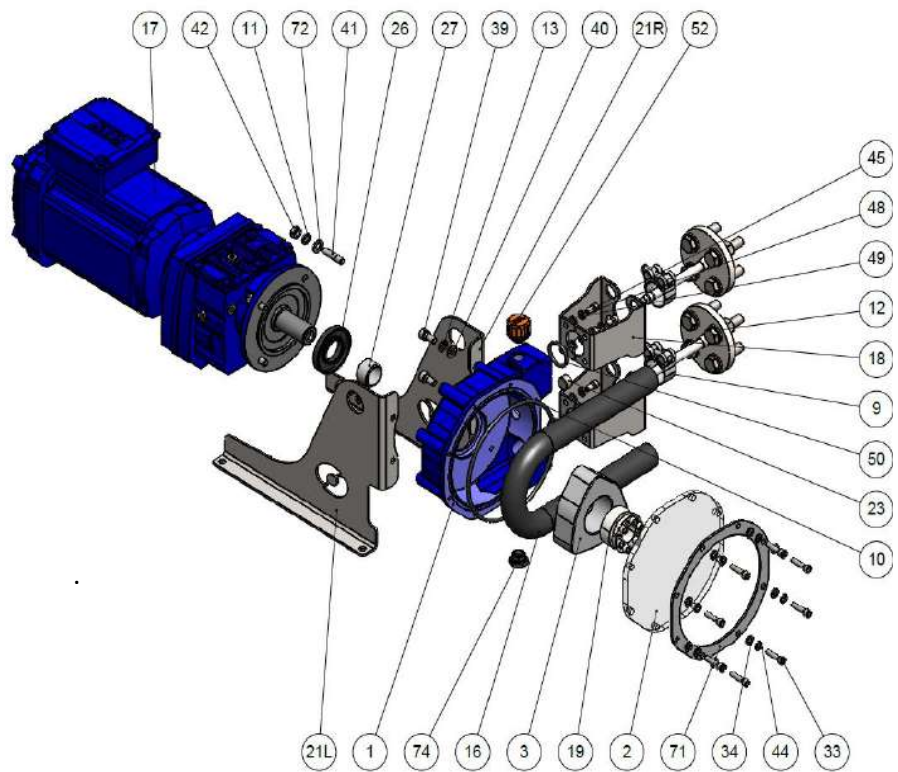
is reduced at the end of this expiry date due to the ageing of rubber.

## 8.0 Troubleshooting

| PROBLEM                                                                         | POSSIBLE REASON                                                                                                                | CORRECTION                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>The pump does not work</b>                                                   | No power supply.                                                                                                               | Check that the pump power switch is on position "ON".<br>Check the connection of the motor.                                                                                                                                                                                                                                                                             |
|                                                                                 | The wheel of the pump stalls.                                                                                                  | Check the fixing of the hose.<br>Check that the discharge pressure is not too high.<br>Check that the product hasn't sedimentated in the hose.                                                                                                                                                                                                                          |
|                                                                                 |                                                                                                                                | Check the reason for which the level detector has been operated.                                                                                                                                                                                                                                                                                                        |
|                                                                                 |                                                                                                                                | Check the correct functioning of this one. If the pump hose has bursted, undertake the replacement of the pump hose.                                                                                                                                                                                                                                                    |
|                                                                                 | The lubricant level detector has been operated.                                                                                | Check the reason for which the level detector has been operated.                                                                                                                                                                                                                                                                                                        |
|                                                                                 |                                                                                                                                | Check the correct functioning of this one. If the pump hose has bursted, undertake the replacement of the pump hose.                                                                                                                                                                                                                                                    |
| <b>Low capacity or pressure</b>                                                 | Not enough Shims under shoes.                                                                                                  | Add the sufficient number of shims.                                                                                                                                                                                                                                                                                                                                     |
|                                                                                 | Air leak at the inlet of the pump.                                                                                             | Check the tightening of the clamps of the pump and the sealing of the inlet piping.                                                                                                                                                                                                                                                                                     |
|                                                                                 | Valve closed or partly closed at inlet.                                                                                        | Fully open the valve.                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | Wear of the hose.                                                                                                              | Replace the hose.                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                 | Product too viscous or too high pump speed in comparison with the product viscosity.                                           | Ask for advice from your NAYARA distributor.                                                                                                                                                                                                                                                                                                                            |
|                                                                                 | Piping blocked or partly blocked at inlet.                                                                                     | Unblock piping at inlet and make sure of the good flow of the product.                                                                                                                                                                                                                                                                                                  |
| <b>Hose life is too short.</b>                                                  | Incompatibility of the hose with the pumped product.                                                                           | Make sure the compatibility of the hose with your product and contact your NAYARA distributor.                                                                                                                                                                                                                                                                          |
|                                                                                 | Discharge pressure too high.                                                                                                   | Check that the discharge pressure of the pump does not exceed 15 bars (or 8 bars for ADPV05 to ADPV20). Check that the outlet piping is not blocked up and that all valves are opened.<br>Make sure that the security valve works correctly.<br>Make sure that the piping friction losses do not exceed the value requested for an appropriate functioning of the pump. |
|                                                                                 |                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                 |                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                 | Pump speed too high.                                                                                                           | Reduce the pump speed.                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                 | Wrong shimming.                                                                                                                | Check the shimming.                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                 | Too high temperature of the product.                                                                                           | Contact your NAYARA distributor.                                                                                                                                                                                                                                                                                                                                        |
| <b>Lubricant leakage around the cover</b>                                       | Deficient tightening of cover bolts.                                                                                           | Tighten cover bolts. Replace cover seal.                                                                                                                                                                                                                                                                                                                                |
|                                                                                 | Wear of the cover seal.                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Lubricant leakage in the leakage channel (underneath the gearbox flange)</b> | Wear of the shaft seal or the seal ring.                                                                                       | Replace these parts.                                                                                                                                                                                                                                                                                                                                                    |
| <b>Lubricant leakage at the sleeves</b>                                         | Deficient tightening of clamps or spoilt sleeve (s).                                                                           | Tighten clamps or replace sleeves.                                                                                                                                                                                                                                                                                                                                      |
| <b>Pulsations in piping.</b>                                                    | Deficient fastening of the piping.                                                                                             | Fix piping correctly.                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                 | Process creating important pulsations due to the product, the speed of the pump, dis- charge pressure or the sizing of piping. | Contact your NAYARA distributor.                                                                                                                                                                                                                                                                                                                                        |
| <b>Grease leakage (ADPVS series).</b>                                           | Worn lip seals                                                                                                                 | Remplace the lip seals REF105 and REF106. See §6.4 and §6.6.                                                                                                                                                                                                                                                                                                            |
| <b>Abnormal noise coming from the bearing case (ADPVS series).</b>              | Lack of lubricant in the bearing case.                                                                                         | Refill the bearing case with appropriate grease.                                                                                                                                                                                                                                                                                                                        |
|                                                                                 | Worn bearings.                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                         |

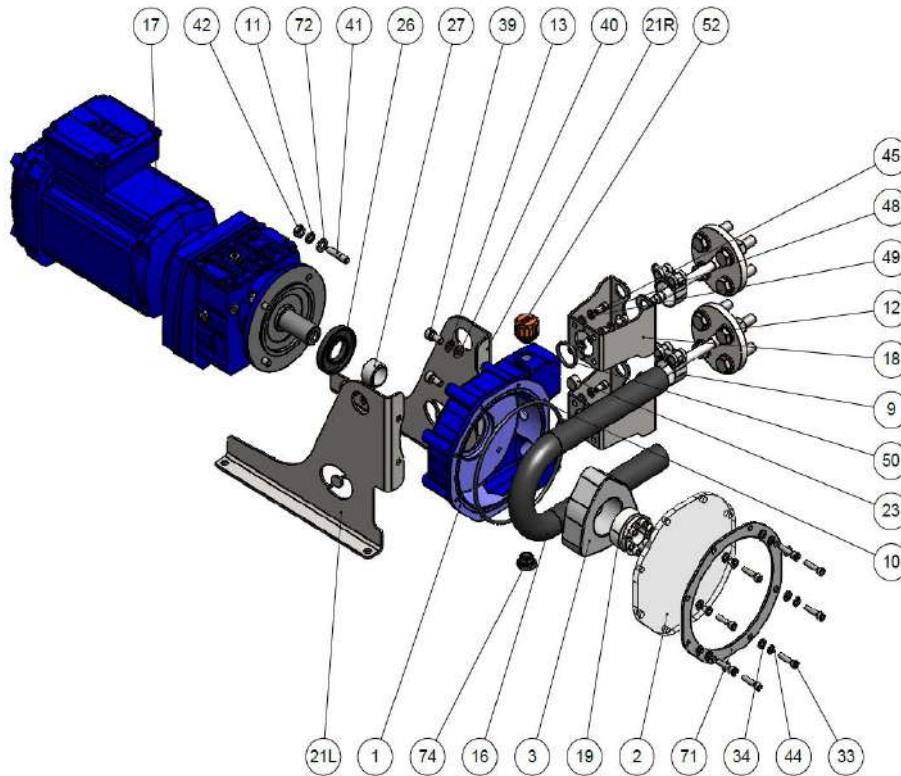
9.0 Exploded view and spare parts list

ADPV 5 exploded view



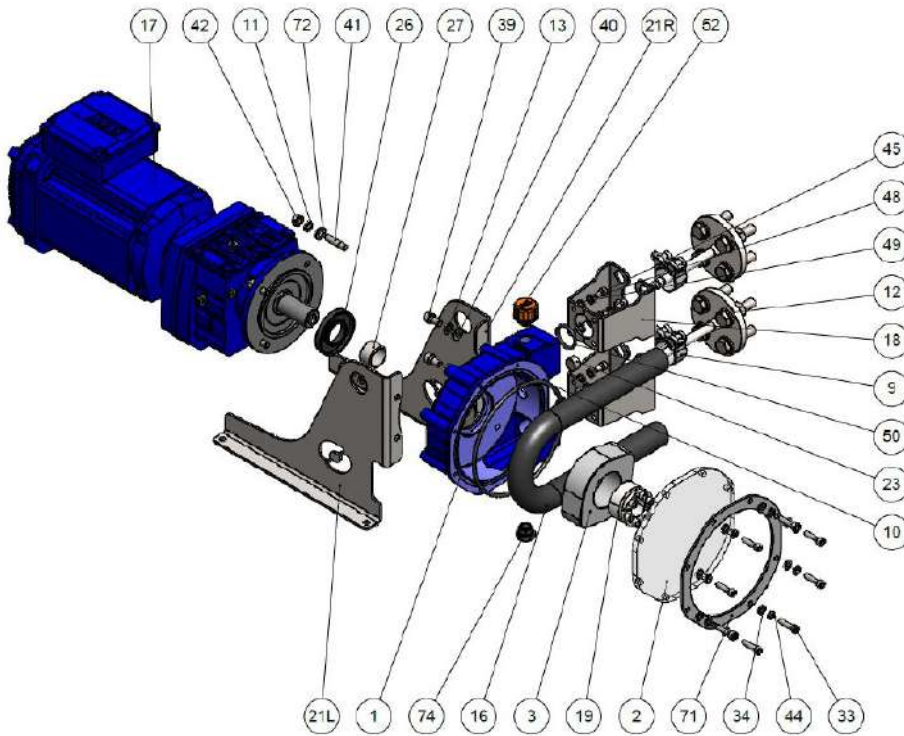
| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | SIGHT GLASS        |
| 3   | BILOBE WHEEL       |
| 9   | CLAMP              |
| 10  | SIGHT GLASS SEAL   |
| 11  | GROWER             |
| 12  | ISO FLANGED DN 15  |
| 12  | ANSI FLANGE 1/2"   |
| 13  | GROWER             |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 19  | HUB                |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 23  | PLUG               |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 39  | SCREW              |
| 40  | WASHER             |
| 41  | GEARBOX STUD       |
| 42  | NUT                |
| 44  | GROWER             |
| 45  | GROWER             |
| 48  | SCREW              |
| 49  | WASHER             |
| 50  | BRACKET SEAL       |
| 52  | PLASTIC VENT       |
| 71  | SIGHT GLASS FLANGE |
| 72  | WASHER             |
| 74  | PLUG               |

# ADPV 5- 3 exploded view



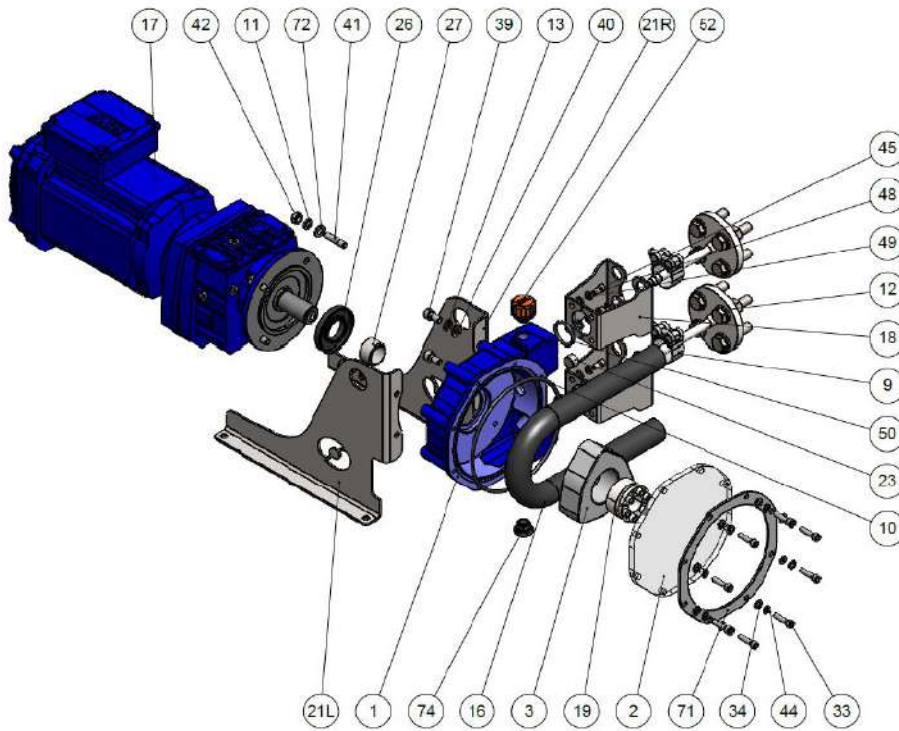
| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | SIGHT GLASS        |
| 3   | TRILOBE WHEEL      |
| 9   | CLAMP              |
| 10  | SIGHT GLASS SEAL   |
| 11  | GROWER             |
| 12  | ISO FLANGED DN 15  |
| 12  | ANSI FLANGE 1/2"   |
| 13  | GROWER             |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 19  | HUB                |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 23  | PLUG               |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 39  | SCREW              |
| 40  | WASHER             |
| 41  | GEARBOX STUD       |
| 42  | NUT                |
| 44  | GROWER             |
| 45  | GROWER             |
| 48  | SCREW              |
| 49  | WASHER             |
| 50  | BRACKET SEAL       |
| 52  | PLASTIC VENT       |
| 71  | SIGHT GLASS FLANGE |
| 72  | WASHER             |
| 74  | PLUG               |

# ADPV 10 exploded view



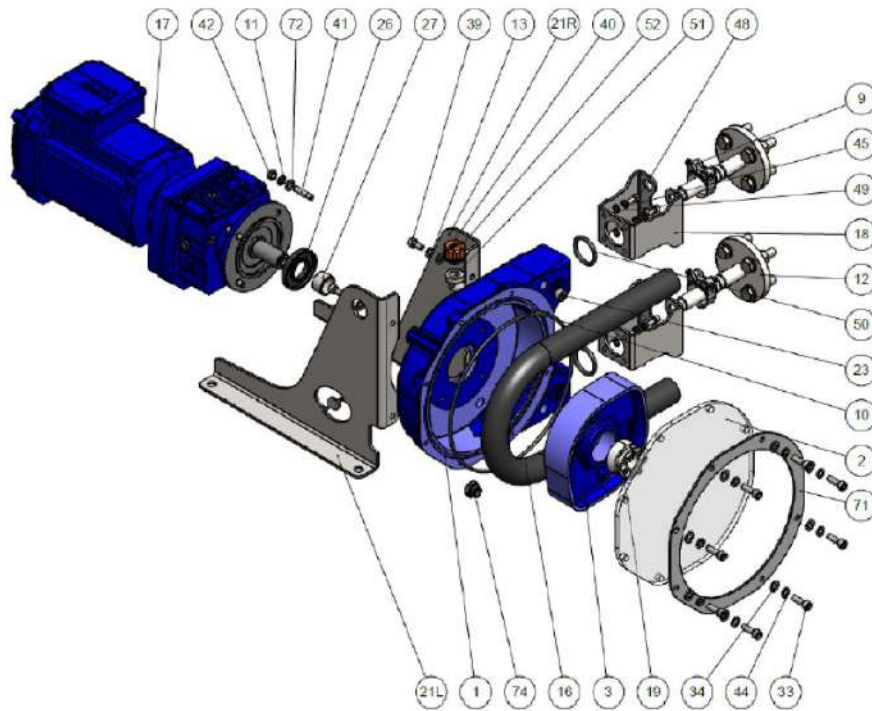
| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | SIGHT GLASS        |
| 3   | BILOBE WHEEL       |
| 9   | CLAMP              |
| 10  | SIGHT GLASS SEAL   |
| 11  | GROWER             |
| 12  | ISO FLANGED DN 15  |
| 12  | ANSI FLANGE 1/2"   |
| 13  | GROWER             |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 19  | HUB                |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 23  | PLUG               |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 39  | SCREW              |
| 40  | WASHER             |
| 41  | GEARBOX STUD       |
| 42  | NUT                |
| 44  | GROWER             |
| 45  | GROWER             |
| 48  | SCREW              |
| 49  | WASHER             |
| 50  | BRACKET SEAL       |
| 52  | PLASTIC VENT       |
| 71  | SIGHT GLASS FLANGE |
| 72  | WASHER             |
| 74  | PLUG               |

# ADPV 10-3 exploded view



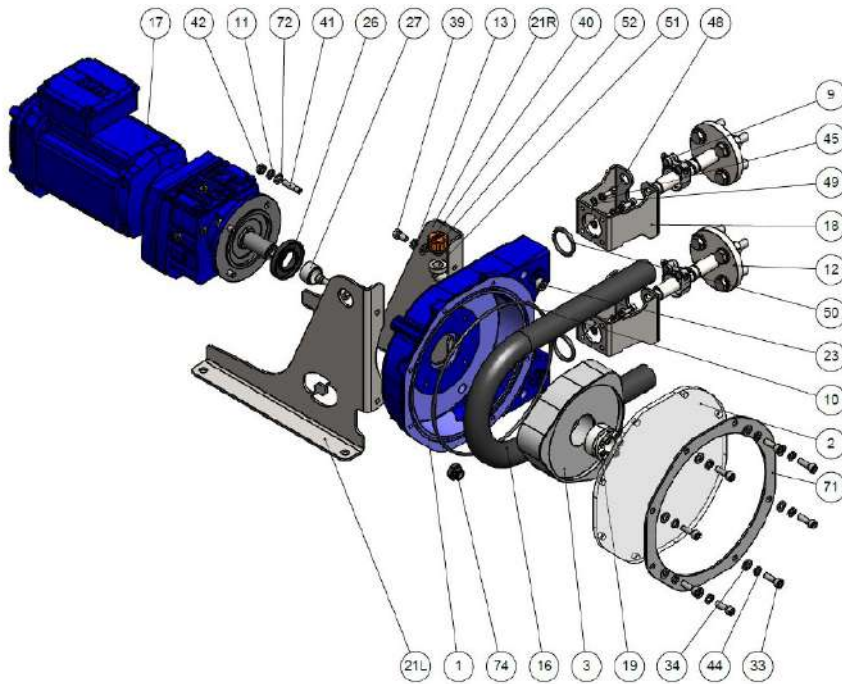
| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | SIGHT GLASS        |
| 3   | TRILOBE WHEEL      |
| 9   | CLAMP              |
| 10  | SIGHT GLASS SEAL   |
| 11  | GROWER             |
| 12  | ISO FLANGED DN 15  |
| 12  | ANSI FLANGE 1/2"   |
| 13  | GROWER             |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 19  | HUB                |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 23  | PLUG               |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 39  | SCREW              |
| 40  | WASHER             |
| 41  | GEARBOX STUD       |
| 42  | NUT                |
| 44  | GROWER             |
| 45  | GROWER             |
| 48  | SCREW              |
| 49  | WASHER             |
| 50  | BRACKET SEAL       |
| 52  | PLASTIC VENT       |
| 71  | SIGHT GLASS FLANGE |
| 72  | WASHER             |
| 74  | PLUG               |

ADPV 15 exploded view



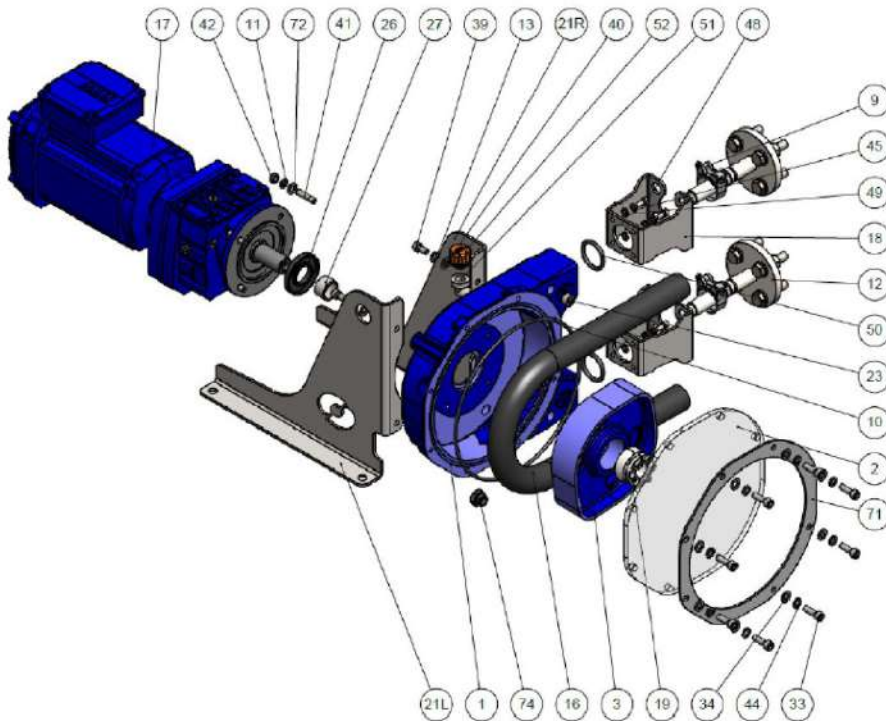
| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | SIGHT GLASS        |
| 3   | BILOBE WHEEL       |
| 9   | CLAMP              |
| 10  | SIGHT GLASS SEAL   |
| 11  | GROWER             |
| 12  | ISO FLANGED DN 15  |
| 12  | ANSI FLANGE 3/4"   |
| 13  | GROWER             |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 19  | HUB                |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 23  | PLUG               |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 39  | SCREW              |
| 40  | WASHER             |
| 41  | GEARBOX STUD       |
| 42  | NUT                |
| 44  | GROWER             |
| 45  | GROWER             |
| 48  | SCREW              |
| 49  | WASHER             |
| 50  | BRACKET SEAL       |
| 51  | 90° BEND           |
| 52  | PLASTIC VENT       |
| 71  | SIGHT GLASS FLANGE |
| 72  | WASHER             |
| 74  | PLUG               |

# ADPV 15-3 exploded view



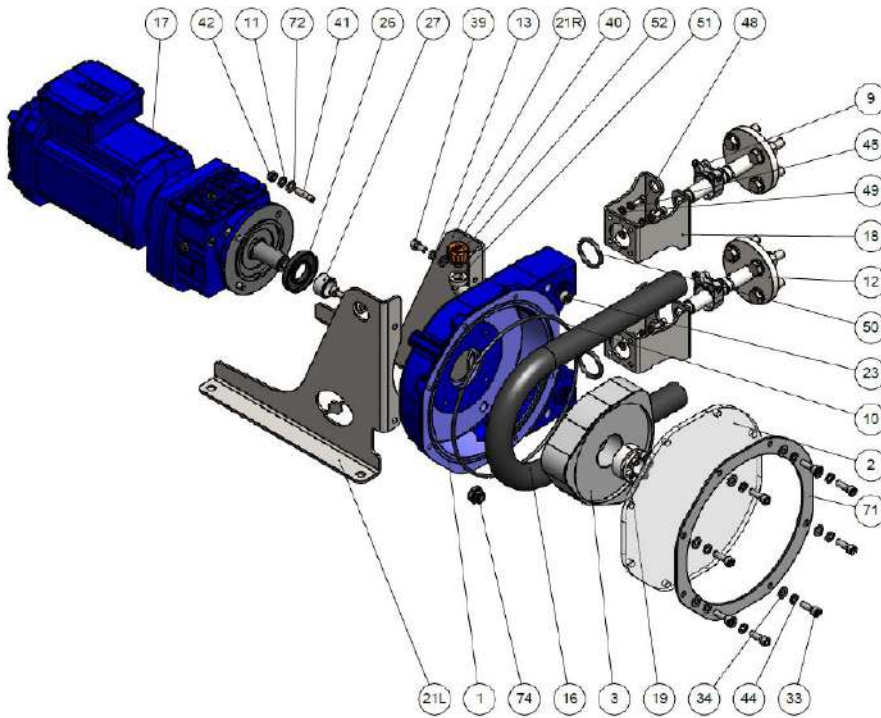
| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | SIGHT GLASS        |
| 3   | TRILOBE WHEEL      |
| 9   | CLAMP              |
| 10  | SIGHT GLASS SEAL   |
| 11  | GROWER             |
| 12  | ISO FLANGED DN 15  |
| 12  | ANSI FLANGE 3/4"   |
| 13  | GROWER             |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 19  | HUB                |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 23  | PLUG               |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 39  | SCREW              |
| 40  | WASHER             |
| 41  | GEARBOX STUD       |
| 42  | NUT                |
| 44  | GROWER             |
| 45  | GROWER             |
| 48  | SCREW              |
| 49  | WASHER             |
| 50  | BRACKET SEAL       |
| 51  | 90° BEND           |
| 52  | PLASTIC VENT       |
| 71  | SIGHT GLASS FLANGE |
| 72  | WASHER             |
| 74  | PLUG               |

ADPV 20 exploded view



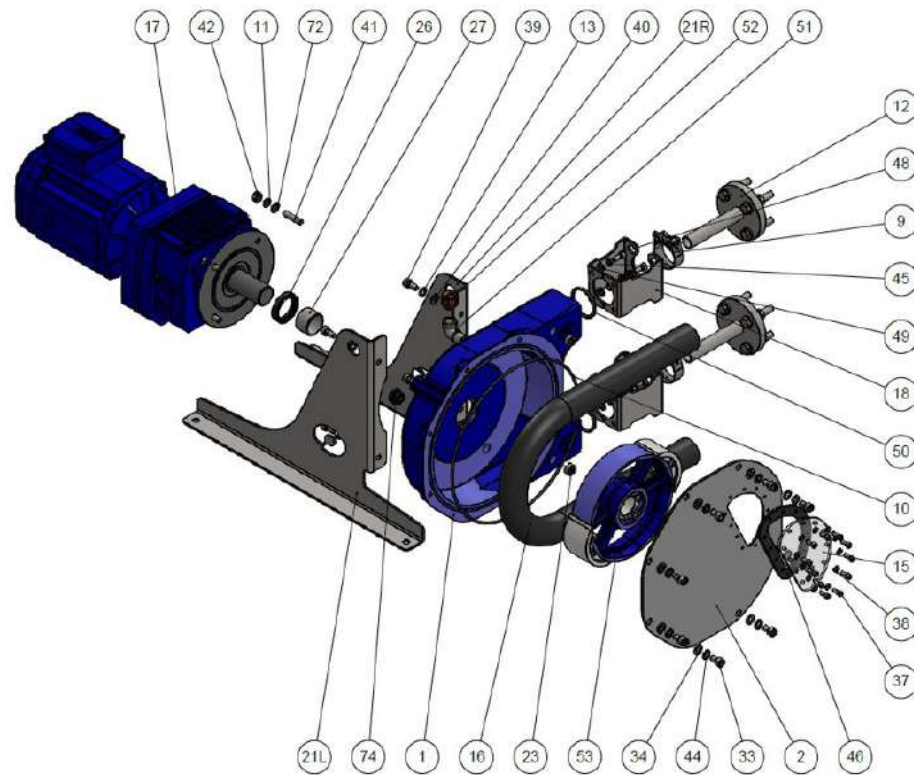
| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | SIGHT GLASS        |
| 3   | BILOBE WHEEL       |
| 9   | CLAMP              |
| 10  | SIGHT GLASS SEAL   |
| 11  | GROWER             |
| 12  | ISO FLANGED DN 25  |
| 12  | ANSI FLANGE 1"     |
| 13  | GROWER             |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 19  | HUB                |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 23  | PLUG               |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 39  | SCREW              |
| 40  | WASHER             |
| 41  | GEARBOX STUD       |
| 42  | NUT                |
| 44  | GROWER             |
| 45  | GROWER             |
| 48  | SCREW              |
| 49  | WASHER             |
| 50  | BRACKET SEAL       |
| 51  | 90° BEND           |
| 52  | PLASTIC VENT       |
| 71  | SIGHT GLASS FLANGE |
| 72  | WASHER             |
| 74  | PLUG               |

ADPV 20-3 exploded view

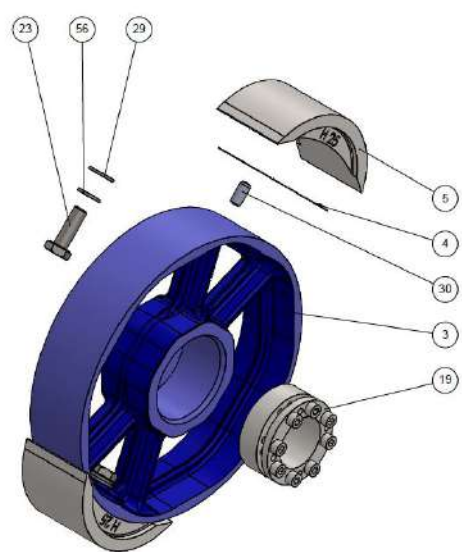


| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | SIGHT GLASS        |
| 3   | TRILOBE WHEEL      |
| 9   | CLAMP              |
| 10  | SIGHT GLASS SEAL   |
| 11  | GROWER             |
| 12  | ISO FLANGED DN 25  |
| 12  | ANSI FLANGED 1"    |
| 13  | GROWER             |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 19  | HUB                |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 23  | PLUG               |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 39  | SCREW              |
| 40  | WASHER             |
| 41  | GEARBOX STUD       |
| 42  | NUT                |
| 44  | GROWER             |
| 45  | GROWER             |
| 48  | SCREW              |
| 49  | WASHER             |
| 50  | BRACKET SEAL       |
| 51  | 90° BEND           |
| 52  | PLASTIC VENT       |
| 71  | SIGHT GLASS FLANGE |
| 72  | WASHER             |
| 74  | PLUG               |

ADPV 25 exploded view

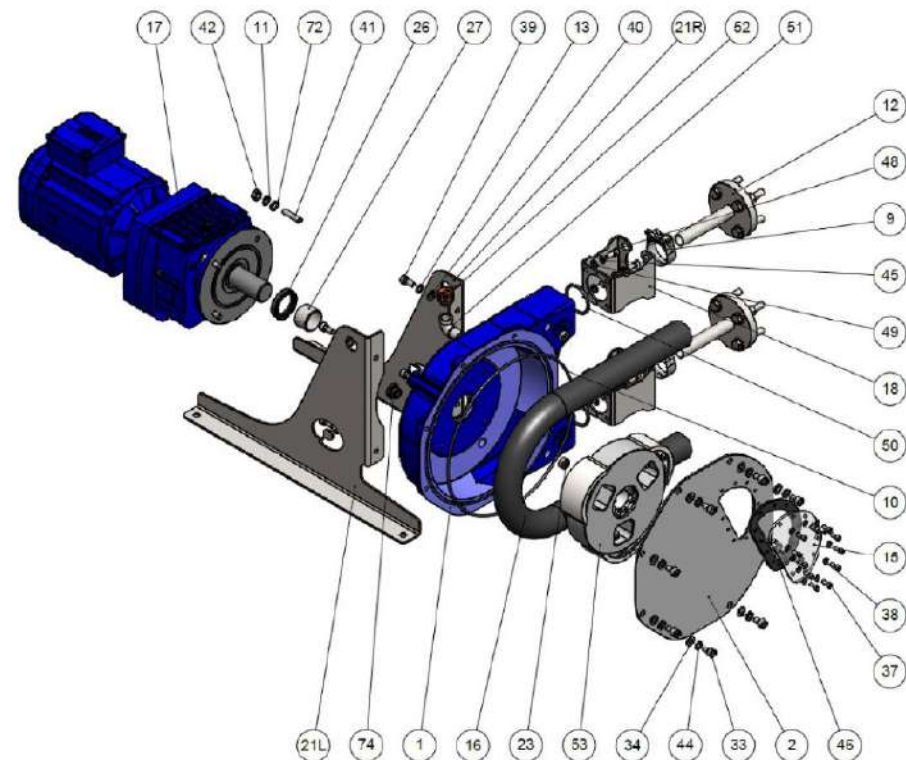


| POS | DESCRIPTION       |
|-----|-------------------|
| 1   | CASING            |
| 2   | COVER             |
| 9   | CLAMP             |
| 10  | COVER SEAL        |
| 11  | GROWER            |
| 12  | ISO FLANGED DN 25 |
| 12  | ANSI FLANGED 1"   |
| 15  | SIGHT GLASS       |
| 16  | HOSE              |
| 11  | WASHER            |
| 18  | BRACKET           |
| 21L | LEFT FRAME        |
| 21R | RIGHT FRAME       |
| 23  | PLUG              |
| 26  | SHAFT SEAL        |
| 27  | SEAL RING         |
| 33  | SCREW             |
| 34  | WASHER            |
| 37  | SCREW             |
| 38  | WASHER            |
| 39  | SCREW             |
| 40  | GROWER            |
| 41  | GEARBOX STUD      |
| 42  | NUT               |
| 44  | GROWER            |
| 45  | GROWER            |
| 46  | SIGHT GLASS SEAL  |
| 48  | SCREW             |
| 49  | WASHER            |
| 50  | BRACKET SEAL      |
| 51  | 90° BEND          |
| 52  | PLASTIC VENT      |
| 72  | WASHER            |
| 74  | PLUG              |

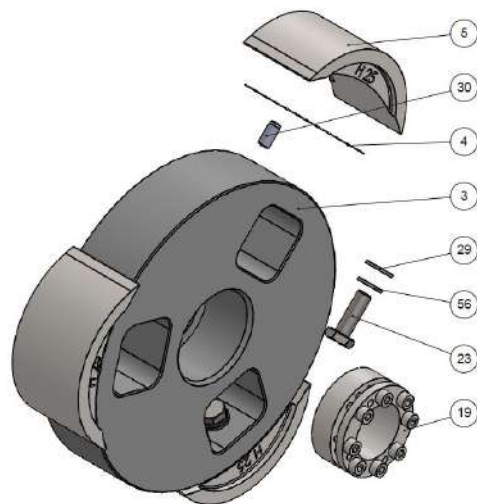


| POS | DESCRIPTION |
|-----|-------------|
| 3   | WHEEL       |
| 4   | SHIM        |
| 5   | SHOE        |
| 19  | HUB         |
| 23  | SCREW       |
| 29  | WASHER      |
| 30  | PIN         |
| 56  | GROWER      |

ADPV 25-3 exploded view

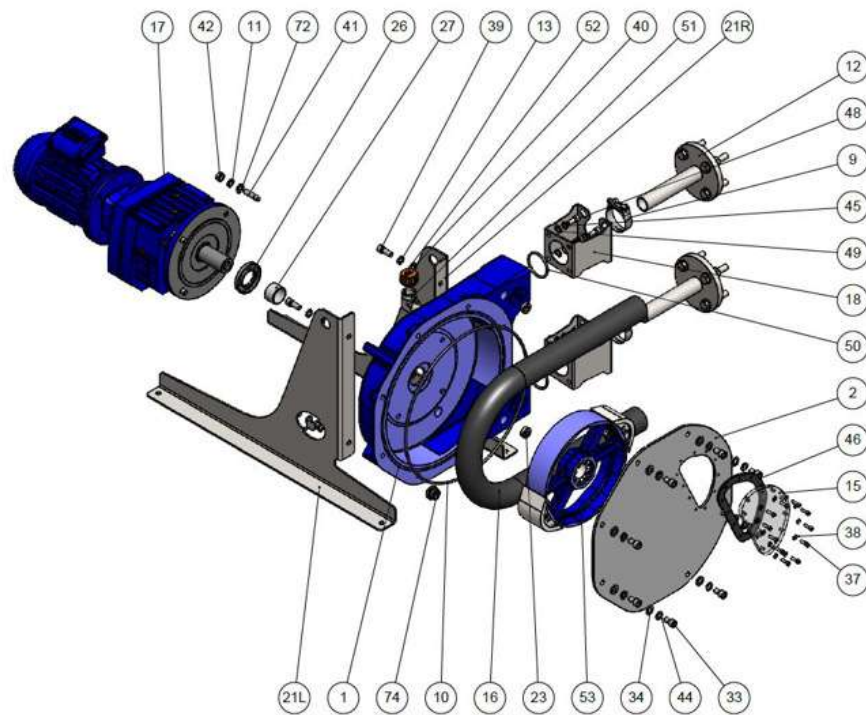


| POS | DESCRIPTION       |
|-----|-------------------|
| 1   | CASING            |
| 2   | COVER             |
| 9   | CLAMP             |
| 10  | COVER SEAL        |
| 11  | GROWER            |
| 12  | ISO FLANGED DN 25 |
| 12  | ANSI FLANGED 1"   |
| 15  | SIGHT GLASS       |
| 16  | HOSE              |
| 17  | GEARBOX           |
| 11  | WASHER            |
| 18  | BRACKET           |
| 21L | LEFT FRAME        |
| 21R | RIGHT FRAME       |
| 23  | PLUG              |
| 26  | SHAFT SEAL        |
| 27  | SEAL RING         |
| 33  | SCREW             |
| 34  | WASHER            |
| 37  | SCREW             |
| 38  | WASHER            |
| 39  | SCREW             |
| 40  | GROWER            |
| 41  | GEARBOX STUD      |
| 42  | NUT               |
| 44  | GROWER            |
| 45  | GROWER            |
| 46  | SIGHT GLASS SEAL  |
| 48  | SCREW             |
| 49  | WASHER            |
| 50  | BRACKET SEAL      |
| 51  | 90° BEND          |
| 52  | PLASTIC VENT      |
| 72  | WASHER            |
| 74  | PLUG              |

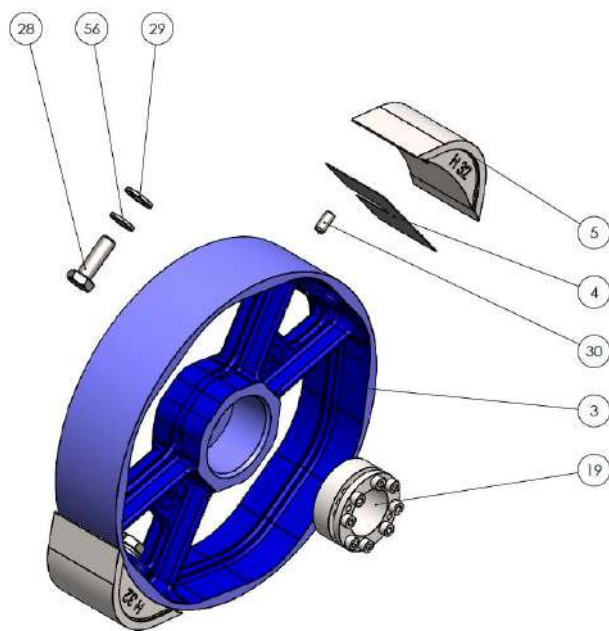


| POS | DESCRIPTION |
|-----|-------------|
| 3   | WHEEL       |
| 4   | SHIM        |
| 5   | SHOE        |
| 19  | HUB         |
| 23  | SCREW       |
| 29  | WASHER      |
| 30  | PIN         |
| 56  | GROWER      |

ADPV 32 exploded view

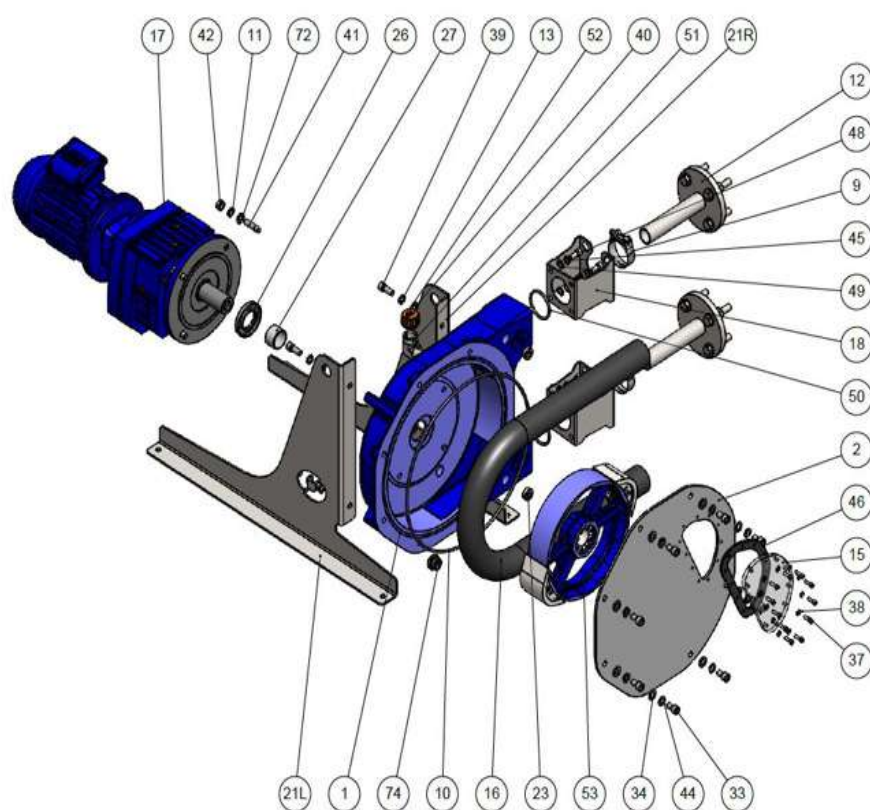


| POS | DESCRIPTION         |
|-----|---------------------|
| 1   | CASING              |
| 2   | COVER               |
| 9   | CLAMP               |
| 10  | COVER SEAL          |
| 11  | GROWER              |
| 12  | ISO FLANGED DN 32   |
| 12  | ANSI FLANGED 1" 1/2 |
| 13  | GROWER              |
| 15  | SIGHT GLASS         |
| 16  | HOSE                |
| 17  | GEARBOX             |
| 18  | BRACKET             |
| 21L | LEFT FRAME          |
| 21R | RIGHT FRAME         |
| 23  | PLUG                |
| 26  | SHAFT SEAL          |
| 27  | SEAL RING           |
| 33  | SCREW               |
| 34  | WASHER              |
| 37  | SCREW               |
| 38  | WASHER              |
| 39  | SCREW               |
| 40  | GROWER              |
| 41  | GEARBOX STUD        |
| 42  | NUT                 |
| 44  | GROWER              |
| 45  | GROWER              |
| 46  | SIGHT GLASS SEAL    |
| 48  | SCREW               |
| 49  | WASHER              |
| 50  | BRACKET SEAL        |
| 51  | 90º BEND            |
| 52  | PLASTIC VENT        |
| 72  | WASHER              |
| 74  | PLUG                |

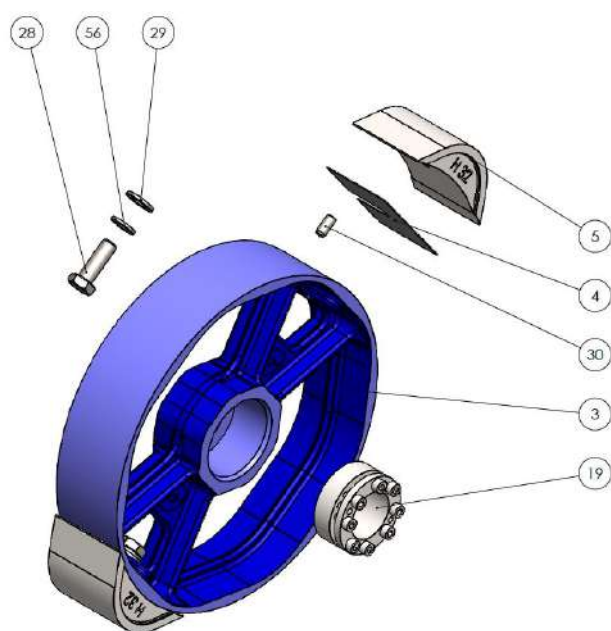


| POS | DESCRIPTION |
|-----|-------------|
| 3   | WHEEL       |
| 4   | SHIM        |
| 5   | SHOE        |
| 19  | HUB         |
| 28  | SCREW       |
| 29  | WASHER      |
| 30  | PIN         |
| 56  | GROWER      |

.ADPV 40 exploded view

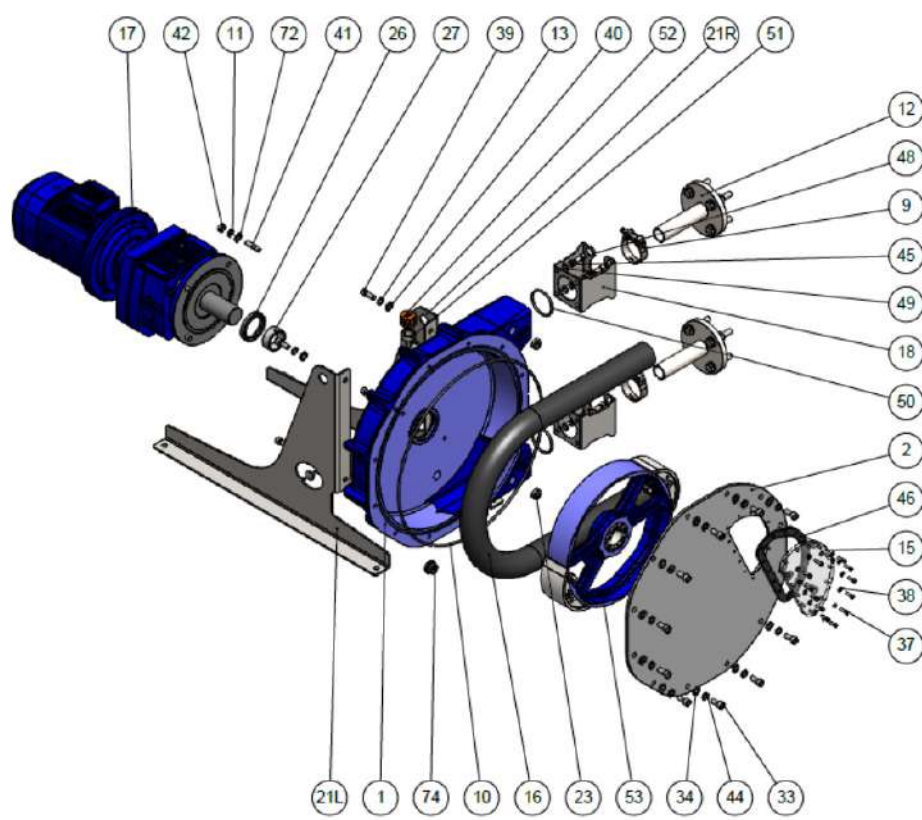


| POS | DESCRIPTION         |
|-----|---------------------|
| 1   | CASING              |
| 2   | COVER               |
| 9   | CLAMP               |
| 10  | COVER SEAL          |
| 11  | GROWER              |
| 12  | ISO FLANGED DN 40   |
| 12  | ANSI FLANGED 1" 1/2 |
| 13  | GROWER              |
| 15  | SIGHT GLASS         |
| 16  | HOSE                |
| 17  | GEARBOX             |
| 18  | BRACKET             |
| 21L | LEFT FRAME          |
| 21R | RIGHT FRAME         |
| 23  | PLUG                |
| 26  | SHAFT SEAL          |
| 27  | SEAL RING           |
| 33  | SCREW               |
| 34  | WASHER              |
| 37  | SCREW               |
| 38  | WASHER              |
| 39  | SCREW               |
| 40  | WASHER              |
| 41  | GEARBOX STUD        |
| 42  | NUT                 |
| 44  | GROWER              |
| 45  | GROWER              |
| 46  | SIGHT GLASS SEAL    |
| 48  | SCREW               |
| 49  | WASHER              |
| 50  | BRACKET SEAL        |
| 51  | 90° BEND            |
| 52  | PLASTIC VENT        |
| 72  | WASHER              |
| 74  | PLUG                |

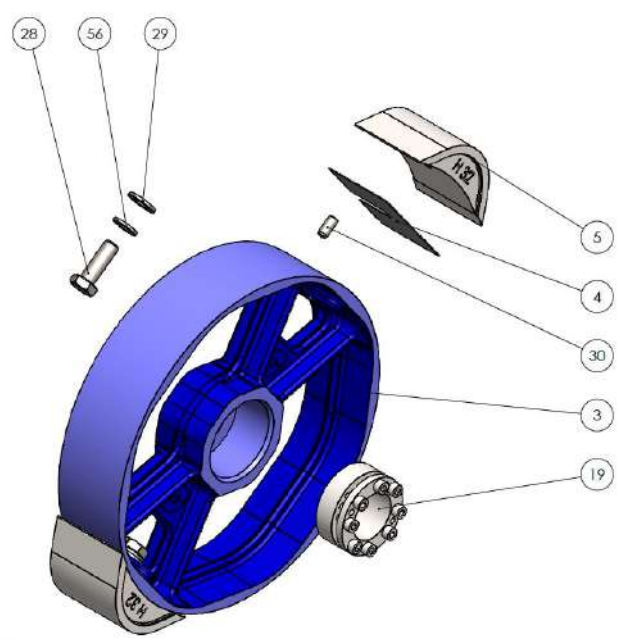


| POS | DESCRIPTION |
|-----|-------------|
| 3   | WHEEL       |
| 4   | SHIM        |
| 5   | SHOE        |
| 19  | HUB         |
| 28  | SCREW       |
| 29  | WASHER      |
| 30  | PIN         |
| 56  | GROWER      |

ADPV 40L exploded view

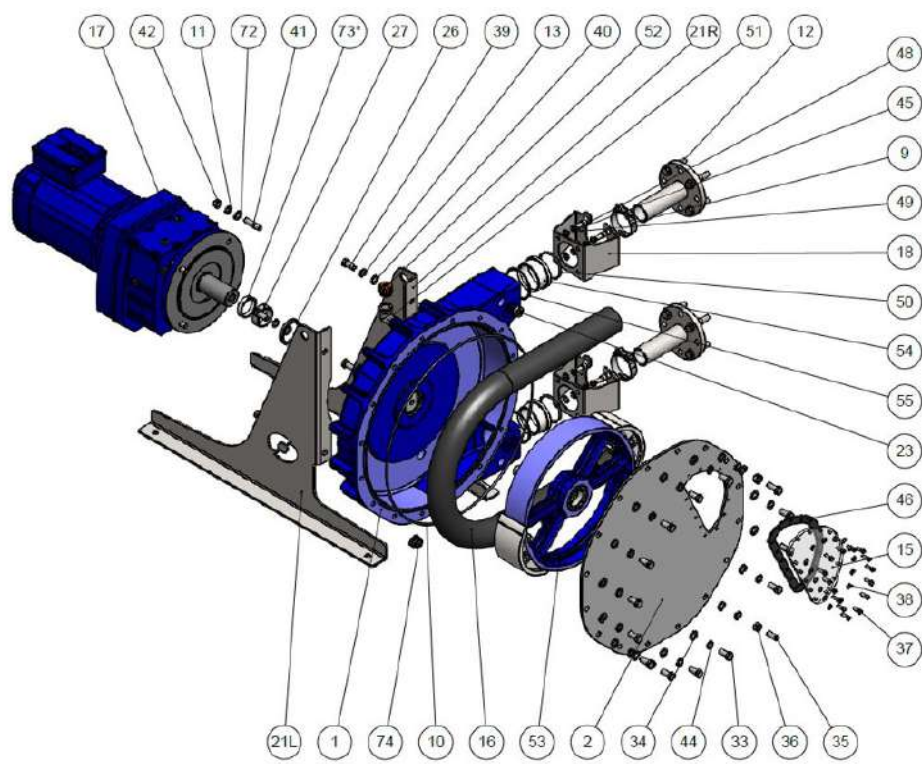


| POS | DESCRIPTION         |
|-----|---------------------|
| 1   | CASING              |
| 2   | COVER               |
| 3   | WASHER              |
| 9   | CLAMP               |
| 10  | COVER SEAL          |
| 11  | GROWER              |
| 12  | ISO FLANGED DN 40   |
| 12  | ANSI FLANGED 1" 1/2 |
| 13  | GROWER              |
| 15  | SIGHT GLASS         |
| 16  | HOSE                |
| 17  | GEARBOX             |
| 18  | BRACKET             |
| 21L | LEFT FRAME          |
| 21R | RIGHT FRAME         |
| 23  | PLUG                |
| 26  | SHAFT SEAL          |
| 27  | SEAL RING           |
| 33  | SCREW               |
| 34  | WASHER              |
| 37  | SCREW               |
| 38  | WASHER              |
| 39  | SCREW               |
| 40  | WASHER              |
| 41  | GEARBOX STUD        |
| 42  | NUT                 |
| 44  | GROWER              |
| 45  | GROWER              |
| 46  | SIGHT GLASS SEAL    |
| 48  | SCREW               |
| 49  | WASHER              |
| 50  | BRACKET SEAL        |
| 51  | 90º BEND            |
| 52  | PLASTIC VENT        |
| 72  | WASHER              |
| 74  | PLUG                |

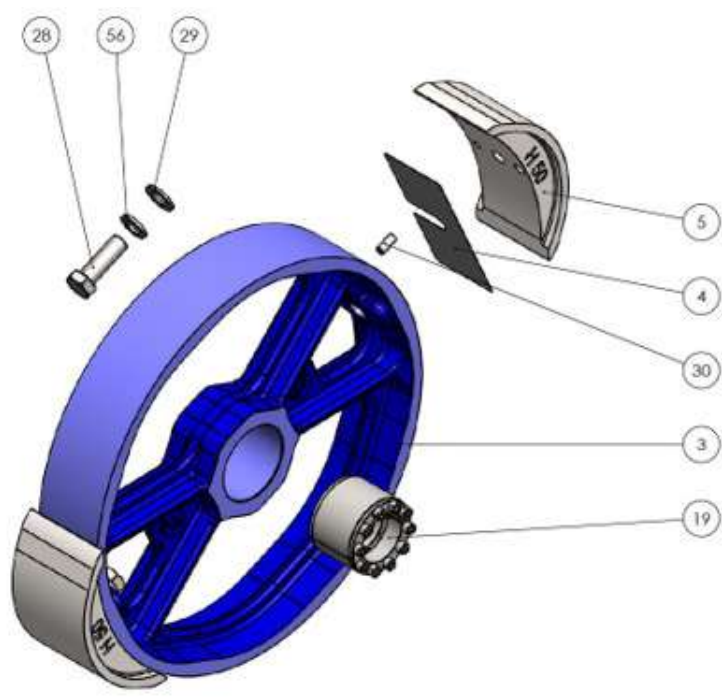


| POS | DESCRIPTION |
|-----|-------------|
| 3   | WHEEL       |
| 4   | SHIM        |
| 5   | SHOE        |
| 19  | HUB         |
| 28  | SCREW       |
| 29  | WASHER      |
| 30  | PIN         |
| 56  | GROWER      |

ADPV 50 exploded view

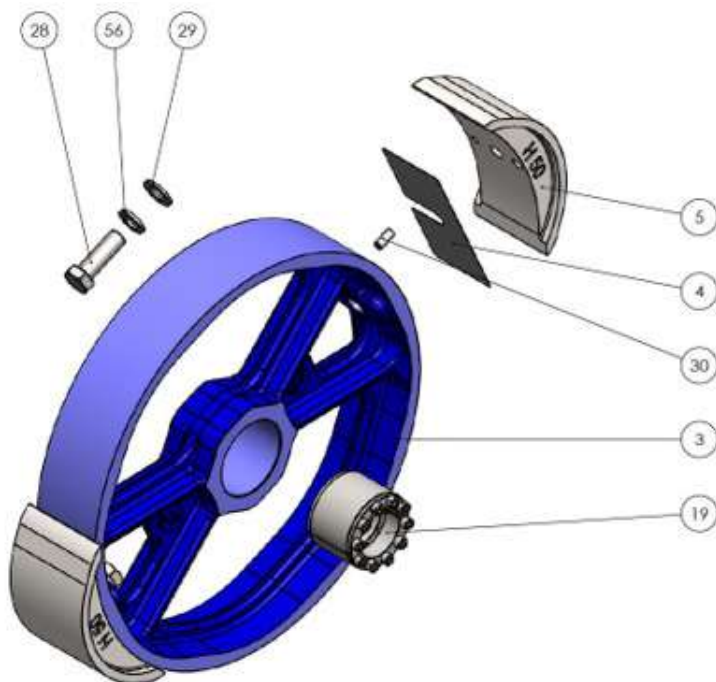
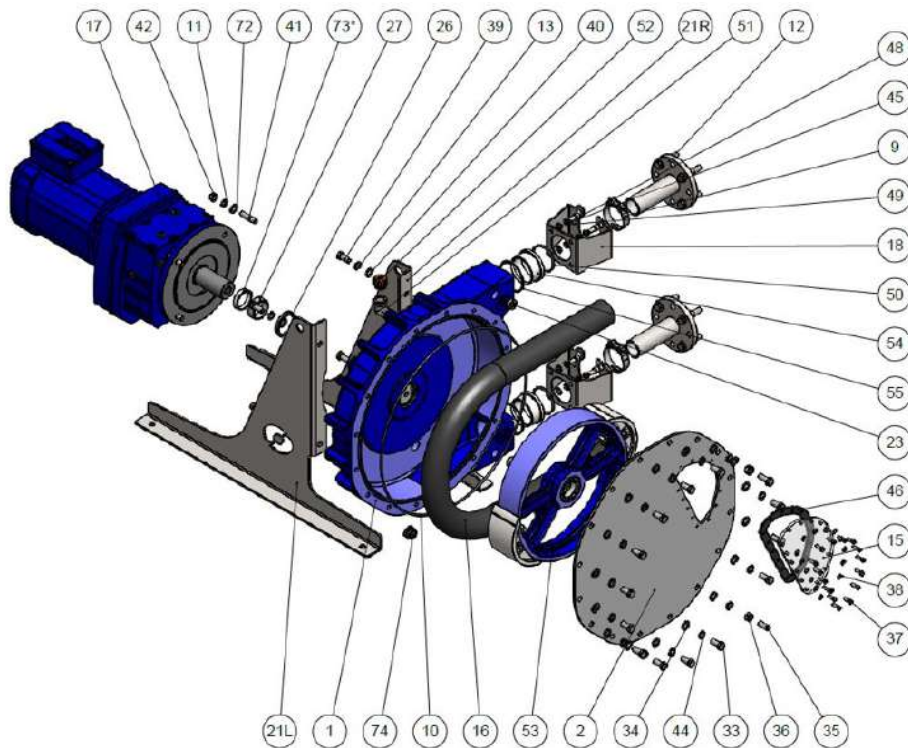


| POS | DESCRIPTION       |
|-----|-------------------|
| 1   | CASING            |
| 2   | COVER             |
| 9   | CLAMP             |
| 10  | COVER SEAL        |
| 12  | ISO FLANGED DN 50 |
| 12  | ANSI FLANGED 2"   |
| 13  | GROWER            |
| 15  | SIGHT GLASS       |
| 16  | HOSE              |
| 17  | GEARBOX           |
| 18  | BRACKET           |
| 21L | LEFT FRAME        |
| 21R | RIGHT FRAME       |
| 23  | PLUG              |
| 26  | SHAFT SEAL        |
| 27  | SEAL RING         |
| 33  | SCREW             |
| 34  | WASHER            |
| 35  | COVER STUD        |
| 36  | NUT               |
| 37  | SCREW             |
| 38  | WASHER            |
| 39  | SCREW             |
| 40  | WASHER            |
| 44  | GROWER            |
| 45  | GROWER            |
| 46  | SIGHT GLASS SEAL  |
| 48  | SCREW             |
| 49  | WASHER            |
| 50  | BRACKET SEAL      |
| 51  | 90º BEND          |
| 52  | PLASTIC VENT      |
| 54  | ADAPTER           |
| 55  | ADAPTER SEAL      |
| 74  | PLUG              |



| POS | DESCRIPTION |
|-----|-------------|
| 3   | WHEEL       |
| 4   | SHIM        |
| 5   | SHOE        |
| 19  | HUB         |
| 28  | SCREW       |
| 29  | WASHER      |
| 30  | PIN         |
| 56  | GROWER      |

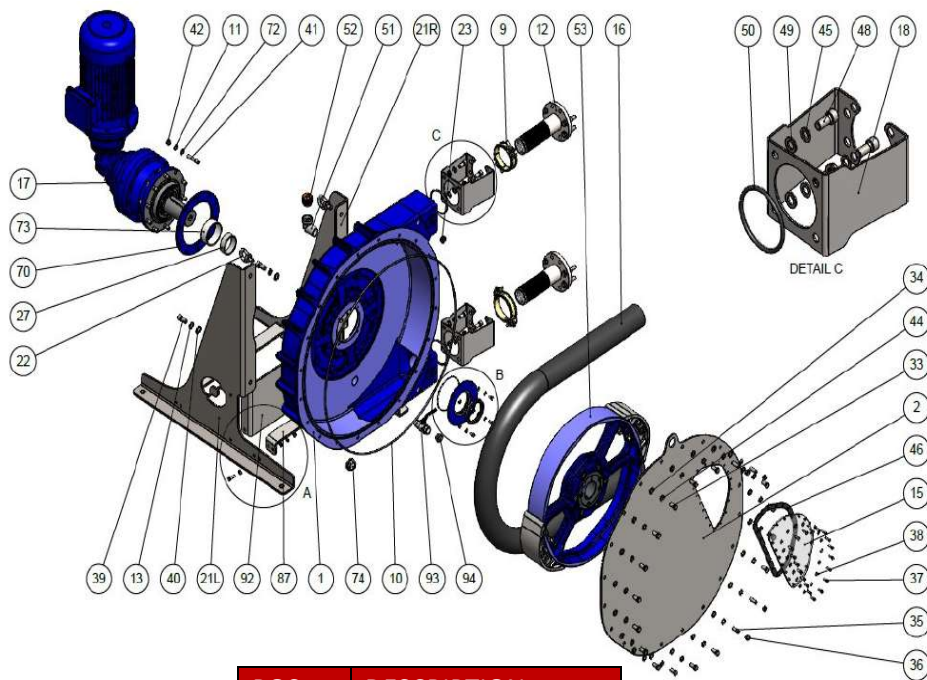
ADPV 65 exploded view



| POS | DESCRIPTION       |
|-----|-------------------|
| 1   | CASING            |
| 2   | COVER             |
| 9   | CLAMP             |
| 10  | COVER SEAL        |
| 12  | ISO FLANGED DN 65 |
| 12  | ANSI FLANGED 2" ½ |
| 13  | GROWER            |
| 15  | SIGHT GLASS       |
| 16  | HOSE              |
| 17  | GEARBOX           |
| 18  | BRACKET           |
| 21L | LEFT FRAME        |
| 21R | RIGHT FRAME       |
| 23  | PLUG              |
| 26  | SHAFT SEAL        |
| 27  | SEAL RING         |
| 33  | SCREW             |
| 34  | WASHER            |
| 35  | COVER STUD        |
| 36  | NUT               |
| 37  | SCREW             |
| 38  | WASHER            |
| 39  | SCREW             |
| 40  | WASHER            |
| 44  | GROWER            |
| 45  | GROWER            |
| 46  | SIGHT GLASS SEAL  |
| 48  | SCREW             |
| 49  | WASHER            |
| 50  | BRACKET SEAL      |
| 51  | 90° BEND          |
| 52  | PLASTIC VENT      |
| 54  | ADAPTER           |
| 55  | ADAPTER SEAL      |
| 74  | PLUG              |

| POS | DESCRIPTION |
|-----|-------------|
| 3   | WHEEL       |
| 4   | SHIM        |
| 5   | SHOE        |
| 19  | HUB         |
| 28  | SCREW       |
| 29  | WASHER      |
| 30  | PIN         |
| 56  | GROWER      |

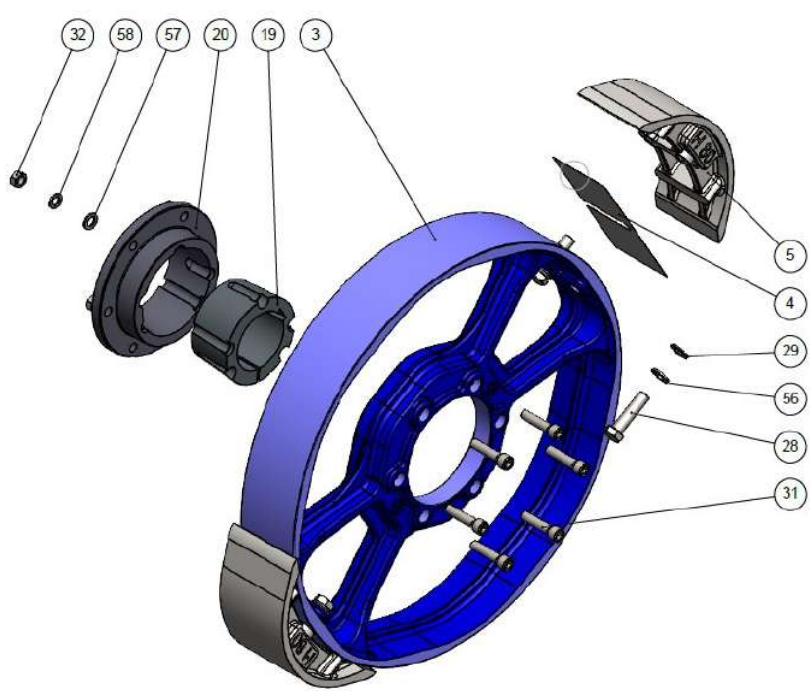
## ADPV 80 exploded view



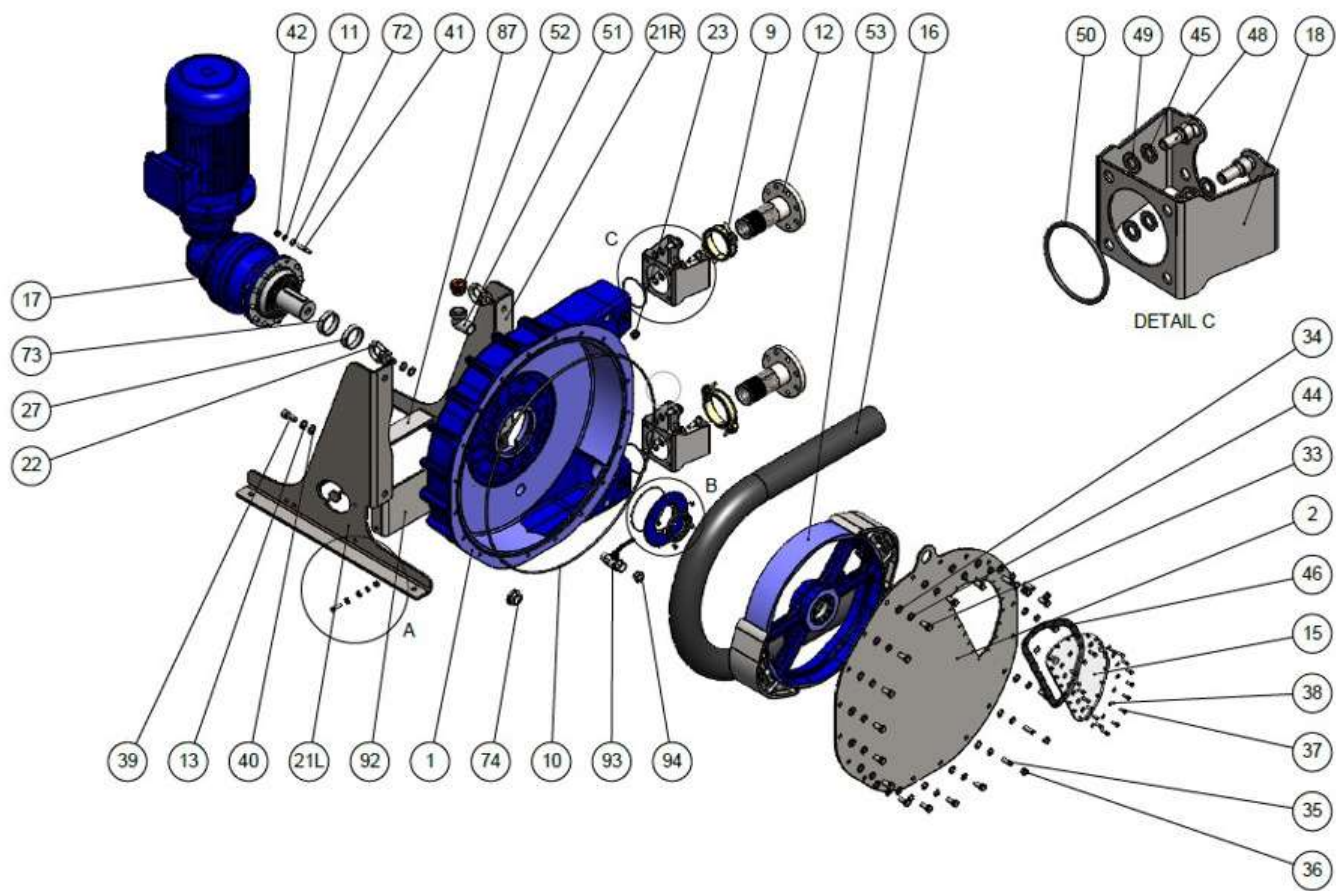
| POS | DESCRIPTION      |
|-----|------------------|
| 40  | WASHER           |
| 41  | GEARBOX STUD     |
| 42  | NUT              |
| 43  | SCREW            |
| 44  | GROWER           |
| 45  | GROWER           |
| 46  | SIGHT GLASS SEAL |
| 48  | SCREW            |
| 49  | WASHER           |
| 50  | BRACKET SEAL     |
| 51  | 90° BEND         |
| 52  | PLUG             |
| 67  | O-RING           |
| 72  | WASHER           |
| 74  | PLUG             |
| 87  | FRAME RIB        |
| 88  | SCREW            |
| 89  | WASHER           |
| 90  | GROWER           |
| 91  | NUT              |
| 92  | FRAME ROB        |
| 93  | BALL VALVE       |
| 94  | PLUG             |
|     |                  |

| POS | DESCRIPTION       |
|-----|-------------------|
| 1   | CASING            |
| 2   | COVER             |
| 9   | CLAMP             |
| 10  | COVER SEAL        |
| 12  | ISO FLANGED DN 80 |
| 12  | ANSI FLANGED 3"   |
| 13  | GROWER            |
| 15  | SIGHT GLASS       |
| 16  | HOSE              |
| 17  | GEARBOX           |
| 18  | BRACKET           |
| 21L | LEFT FRAME        |
| 21R | RIGHT FRAME       |
| 23  | PLUG              |
| 25  | SEAL FLANGE       |
| 26  | SHAFT SEAL        |
| 27  | SEAL RING         |
| 33  | SCREW             |
| 34  | WASHER            |
| 35  | COVER STUD        |
| 36  | NUT               |
| 37  | SCREW             |
| 38  | WASHER            |
| 39  | SCREW             |

| POS | DESCRIPTION   |
|-----|---------------|
| 3   | WHEEL         |
| 4   | SHIM          |
| 5   | SHOE          |
| 19  | HUB           |
| 20  | BOLT ON PLATE |
| 28  | SCREW         |
| 29  | WASHER        |
| 31  | SCREW         |
| 32  | NUT           |
| 56  | GROWER        |
| 57  | WASHER        |
| 58  | GROWER        |



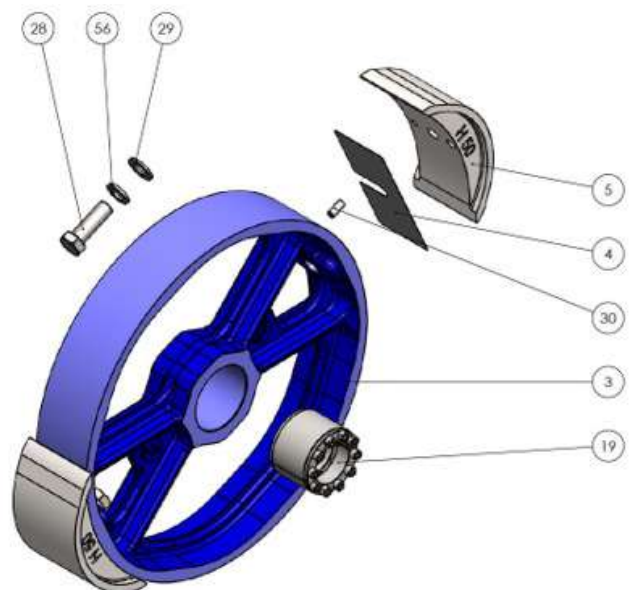
ADPV 80S exploded view



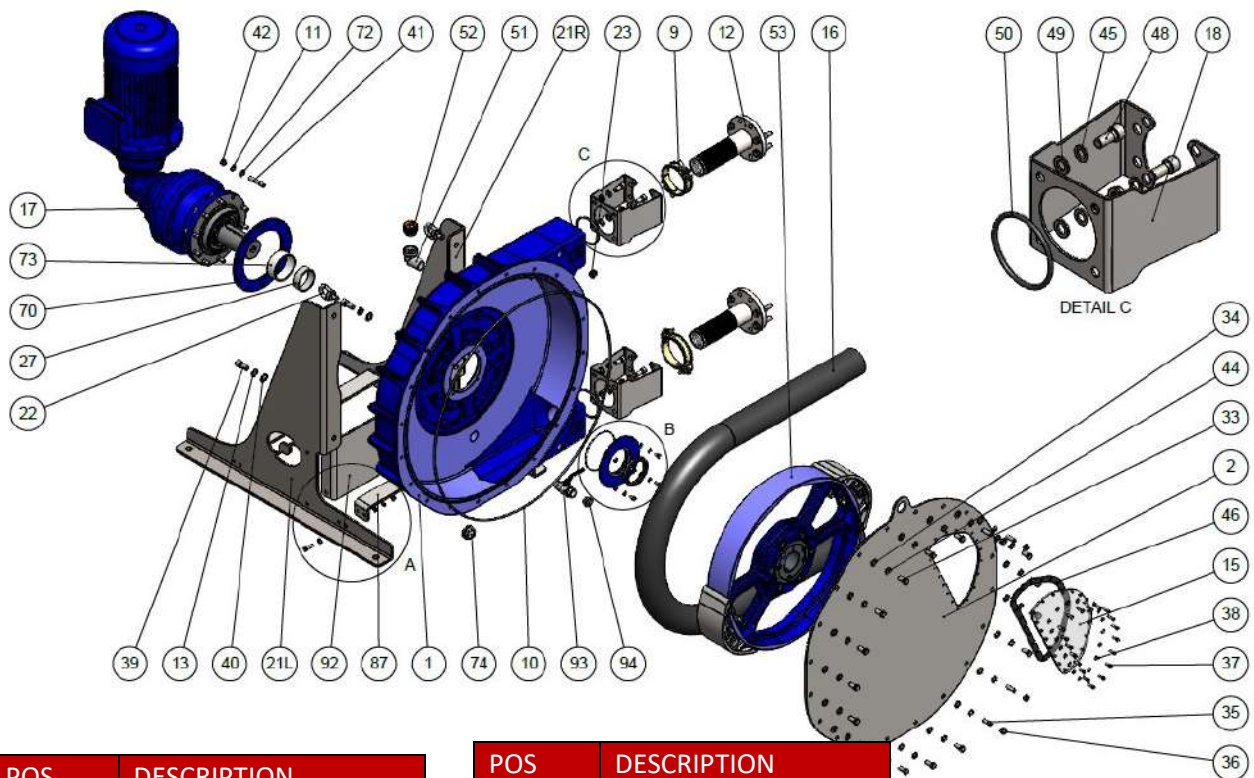
| POS | DESCRIPTION       |
|-----|-------------------|
| 1   | CASING            |
| 2   | COVER             |
| 9   | CLAMP             |
| 10  | COVER SEAL        |
| 12  | ISO FLANGED DN 80 |
| 12  | ANSI FLANGED 3"   |
| 13  | GROWER            |
| 15  | SIGHT GLASS       |
| 16  | HOSE              |
| 17  | GEARBOX           |
| 18  | BRACKET           |
| 21L | LEFT FRAME        |
| 21R | RIGHT FRAME       |
| 23  | PLUG              |
| 25  | SEAL FLANGE       |
| 26  | SHAFT SEAL        |
| 27  | SEAL RING         |
| 33  | SCREW             |
| 34  | WASHER            |
| 35  | COVER STUD        |
| 36  | NUT               |
| 37  | SCREW             |
| 38  | WASHER            |
| 39  | SCREW             |

| POS | DESCRIPTION      |
|-----|------------------|
| 40  | WASHER           |
| 41  | GEARBOX STUD     |
| 42  | NUT              |
| 43  | SCREW            |
| 44  | GROWER           |
| 45  | GROWER           |
| 46  | SIGHT GLASS SEAL |
| 48  | SCREW            |
| 49  | WASHER           |
| 50  | BRACKET SEAL     |
| 51  | 90º BEND         |
| 52  | PLUG             |
| 67  | O-RING           |
| 72  | WASHER           |
| 74  | PLUG             |
| 87  | FRAME RIB        |
| 88  | SCREW            |
| 89  | WASHER           |
| 90  | GROWER           |
| 91  | NUT              |
| 92  | FRAME ROB        |
| 93  | BALL VALVE       |
| 94  | PLUG             |
|     |                  |

| POS | DESCRIPTION |
|-----|-------------|
| 3   | WHEEL       |
| 4   | SHIM        |
| 5   | SHOE        |
| 19  | HUB         |
| 28  | SCREW       |
| 29  | WASHER      |
| 30  | PIN         |
| 56  | GROWER      |



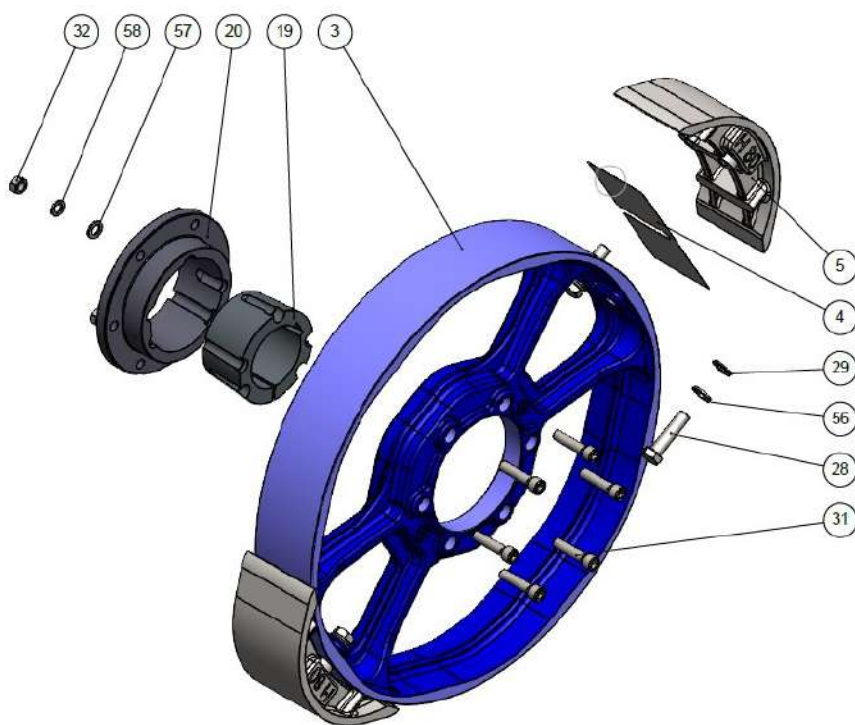
ADPV 100 exploded view



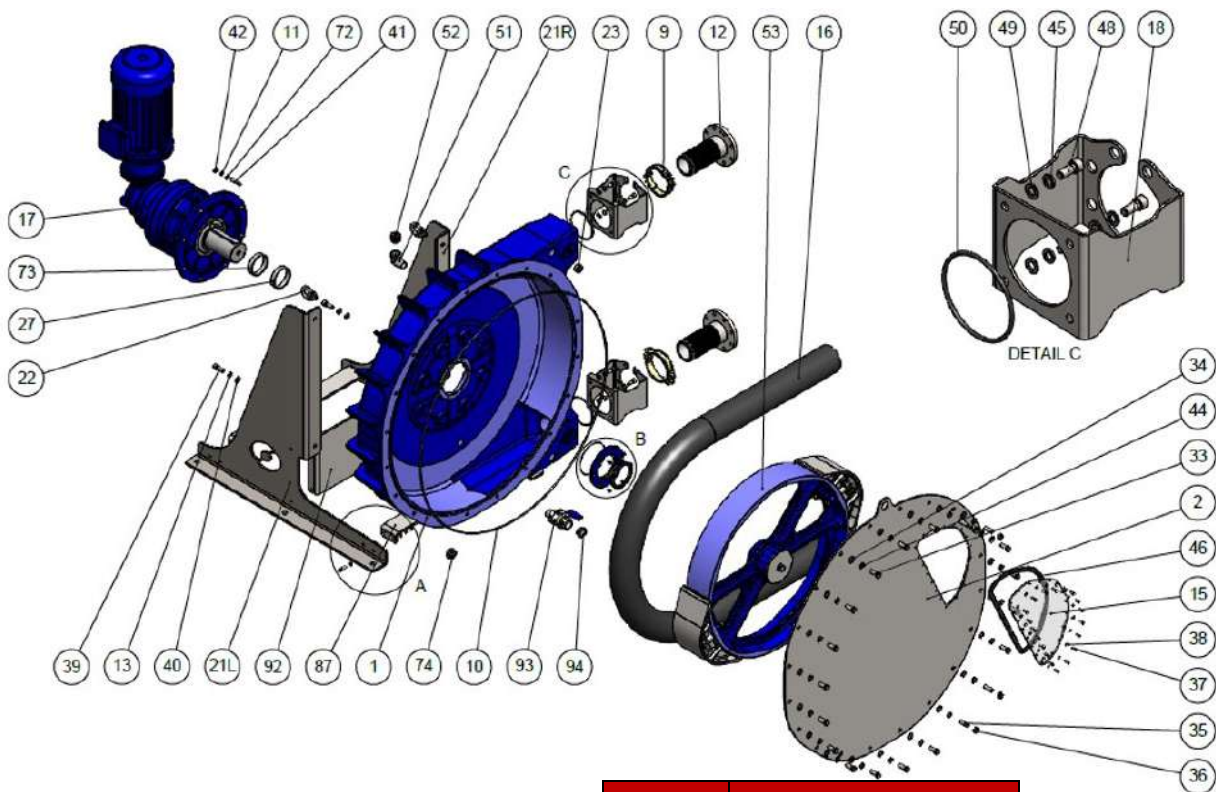
| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | COVER              |
| 9   | CLAMP              |
| 10  | COVER SEAL         |
| 12  | ISO FLANGED DN 100 |
| 12  | ANSI FLANGED 4"    |
| 13  | GROWER             |
| 15  | SIGHT GLASS        |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 22  | LIFT RING          |
| 23  | PLUG               |
| 25  | SEAL FLANGE        |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 35  | COVER STUD         |
| 36  | NUT                |
| 37  | SCREW              |
| 38  | WASHER             |

| POS | DESCRIPTION      |
|-----|------------------|
| 39  | SCREW            |
| 40  | WASHER           |
| 41  | GEARBOX STUD     |
| 42  | NUT              |
| 43  | SCREW            |
| 44  | GROWER           |
| 45  | GROWER           |
| 46  | SIGHT GLASS SEAL |
| 48  | SCREW            |
| 49  | WASHER           |
| 50  | BRACKET SEAL     |
| 51  | 90° BEND         |
| 52  | PLUG             |
| 67  | O-RING           |
| 72  | WASHER           |
| 74  | PLUG             |
| 87  | FRAME RIB        |
| 88  | SCREW            |
| 89  | WASHER           |
| 90  | GROWER           |
| 91  | NUT              |
| 92  | FRAME ROB        |
| 93  | BALL VALVE       |
| 94  | PLUG             |

| POS | DESCRIPTION   |
|-----|---------------|
| 3   | WHEEL         |
| 4   | SHIM          |
| 5   | SHOE          |
| 19  | HUB           |
| 20  | BOLT ON PLATE |
| 28  | SCREW         |
| 29  | WASHER        |
| 31  | SCREW         |
| 32  | NUT           |
| 56  | GROWER        |
| 57  | WASHER        |
| 58  | GROWER        |



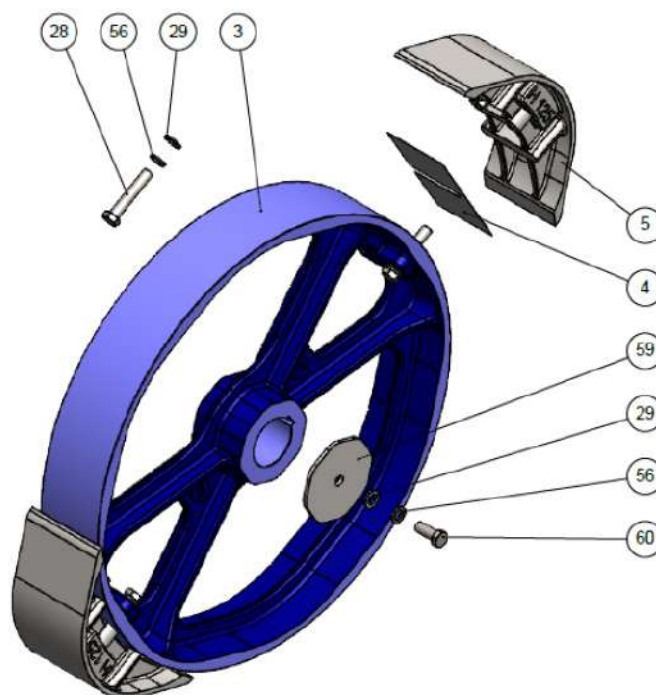
# ADPV 125 exploded view



| POS | DESCRIPTION        |
|-----|--------------------|
| 1   | CASING             |
| 2   | COVER              |
| 9   | CLAMP              |
| 10  | COVER SEAL         |
| 12  | ISO FLANGED DN 125 |
| 12  | ANSI FLANGED 5"    |
| 13  | GROWER             |
| 15  | SIGHT GLASS        |
| 16  | HOSE               |
| 17  | GEARBOX            |
| 18  | BRACKET            |
| 21L | LEFT FRAME         |
| 21R | RIGHT FRAME        |
| 22  | LIFT RING          |
| 23  | PLUG               |
| 25  | SEAL FLANGE        |
| 26  | SHAFT SEAL         |
| 27  | SEAL RING          |
| 33  | SCREW              |
| 34  | WASHER             |
| 35  | COVER STUD         |
| 36  | NUT                |
| 37  | SCREW              |
| 38  | WASHER             |

| POS | DESCRIPTION      |
|-----|------------------|
| 39  | SCREW            |
| 40  | WASHER           |
| 41  | GEARBOX STUD     |
| 42  | NUT              |
| 43  | SCREW            |
| 44  | GROWER           |
| 45  | GROWER           |
| 46  | SIGHT GLASS SEAL |
| 48  | SCREW            |
| 49  | WASHER           |
| 50  | BRACKET SEAL     |
| 51  | 90° BEND         |
| 52  | PLUG             |
| 67  | O-RING           |
| 72  | WASHER           |
| 74  | PLUG             |
| 87  | FRAME RIB        |
| 88  | SCREW            |
| 89  | WASHER           |
| 90  | GROWER           |
| 91  | NUT              |
| 92  | FRAME RIB        |
| 93  | BALL VALVE       |
| 94  | PLUG             |

| POS | DESCRIPTION       |
|-----|-------------------|
| 3   | WHEEL             |
| 4   | SHIM              |
| 5   | SHOE              |
| 28  | SCREW             |
| 29  | WASHER            |
| 56  | GROWER            |
| 59  | WHEEL BOLT WASHER |
| 60  | SCREW             |
| 77  | WASHER            |
| 95  | GROWER            |



## 10.0 Table of lubrication

The table indicates the quantity of lubricant necessary for every pump size. Employ only the NAYARA lubricant for NAYARA hose pumps.

| PUMPS                          | ADPV05-10 | ADPV15-20 | ADPV25   | ADPV 32 | ADPV 40  | ADPV 40L |
|--------------------------------|-----------|-----------|----------|---------|----------|----------|
| QUANTITY OF LUBRICANT (LITRES) | 0,4       | 0,8       | 1,4      | 2,3     | 2,3      | 6        |
| PUMPS                          | ADPV 50   | ADPV 65   | ADPV 80S | ADPV 80 | ADPV 100 | ADPV 125 |
| QUANTITY OF LUBRICANT (LITRES) | 9         | 9         | 20       | 40      | 60       | 100      |

## 10.1 Shoe Shimming table

The table below points out the necessary number of shims under every shoe according to the speed, pressure and the temperature of the product. Respect these indications scrupulously to optimize the hose life and to avoid a possible deterioration of the internal parts.

For temperatures over 60°C, withdraw one shim in comparison with the table below.

For viscosities over 3000cP or concentrations exceeding 300g / l, withdraw one shim in comparison with the table below. For a suction lift higher than 4 metres, add one shim to the following figures.



**CAUTION: Every shoe must include the same number of shims (0.5mm).**

| PUMP TYPE ADPV 25                          |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 40     | 0               |
|                                            | 40 to 160   | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5$ (108,75) | 0 to 40     | 2               |
|                                            | 40 to 125   | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10$ (145) | 0 to 40     | 3               |
|                                            | 40 to 105   | 2               |
| $10 (145) \leq \Delta P \leq 15$ (217,5)   | 0 to 40     | 4               |
|                                            | 40 to 90    | 3               |

| PUMP TYPE ADPV 32                          |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 45     | 0               |
|                                            | 40 to 140   | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5$ (108,75) | 0 to 40     | 2               |
|                                            | 45 to 140   | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10$ (145) | 0 to 40     | 3               |
|                                            | 45 to 110   | 2               |
| $10 (145) \leq \Delta P \leq 15$ (217,5)   | 0 to 40     | 4               |
|                                            | 45 to 80    | 3               |

| PUMP TYPE ADPV 40                          |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 40     | 0               |
|                                            | 40 to 160   | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5$ (108,75) | 0 to 40     | 2               |
|                                            | 40 to 125   | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10$ (145) | 0 to 40     | 3               |
|                                            | 40 to 105   | 2               |
| $10 (145) \leq \Delta P \leq 15$ (217,5)   | 0 to 40     | 4               |
|                                            | 40 to 90    | 3               |

| PUMP TYPE ADPV 40L                         |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 55     | 0               |
|                                            | 40 to 120   | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5$ (108,75) | 0 to 55     | 2               |
|                                            | 40 to 95    | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10$ (145) | 0 to 55     | 3               |
|                                            | 40 to 75    | 2               |
| $10 (145) \leq \Delta P \leq 15$ (217,5)   | 0 to 55     | 4               |
|                                            | 40 to 60    | 3               |

| PUMP TYPE ADPV 50                          |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 30     | 0               |
|                                            | 30 to 100   | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5$ (108,75) | 0 to 30     | 2               |
|                                            | 30 to 65    | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10$ (145) | 0 to 30     | 3               |
|                                            | 30 to 50    | 2               |
| $10 (145) \leq \Delta P \leq 15$ (217,5)   | 0 to 30     | 4               |
|                                            | 30 to 42    | 3               |

| PUMP TYPE ADPV 65                          |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 30     | 0               |
|                                            | 30 to 90    | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5$ (108,75) | 0 to 30     | 2               |
|                                            | 30 to 55    | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10$ (145) | 0 to 30     | 3               |
|                                            | 30 to 47,5  | 2               |
| $10 (145) \leq \Delta P \leq 15$ (217,5)   | 0 to 30     | 4               |
|                                            | 30 to 40    | 3               |

| PUMP TYPE ADPV 80S                         |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 25     | 0               |
|                                            | 25 to 65    | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5 (108,75)$ | 0 to 25     | 2               |
|                                            | 25 to 46    | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10 (145)$ | 0 to 25     | 3               |
|                                            | 25 to 40    | 2               |
| $10 (145) \leq \Delta P \leq 15 (217,5)$   | 0 to 25     | 4               |
|                                            | 25 to 31    | 3               |

| PUMP TYPE ADPV 80                          |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 20     | 0               |
|                                            | 20 to 60    | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5 (108,75)$ | 0 to 20     | 2               |
|                                            | 20 to 47    | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10 (145)$ | 0 to 20     | 3               |
|                                            | 20 to 37    | 2               |
| $10 (145) \leq \Delta P \leq 15 (217,5)$   | 0 to 20     | 4               |
|                                            | 20 to 31    | 3               |

| PUMP TYPE ADPV 100                         |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 15     | 0               |
|                                            | 15 to 50    | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5 (108,75)$ | 0 to 15     | 2               |
|                                            | 15 to 32,5  | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10 (145)$ | 0 to 15     | 3               |
|                                            | 15 to 25    | 2               |
| $10 (145) \leq \Delta P \leq 15 (217,5)$   | 0 to 15     | 4               |
|                                            | 15 to 20    | 3               |

| PUMP TYPE ADPV 125                         |             |                 |
|--------------------------------------------|-------------|-----------------|
| Pressure bar (psi)                         | Speed - Rpm | Number of shims |
| $\Delta P \leq 5$ (72,5)                   | 0 to 10     | 0               |
|                                            | 10 to 35    | 0               |
| $5 (72,5) \leq \Delta P \leq 7,5 (108,75)$ | 0 to 10     | 2               |
|                                            | 10 to 27,5  | 1               |
| $7,5 (108,75) \leq \Delta P \leq 10 (145)$ | 0 to 10     | 3               |
|                                            | 10 to 25    | 2               |
| $10 (145) \leq \Delta P \leq 15 (217,5)$   | 0 to 10     | 4               |
|                                            | 10 to 20    | 3               |



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