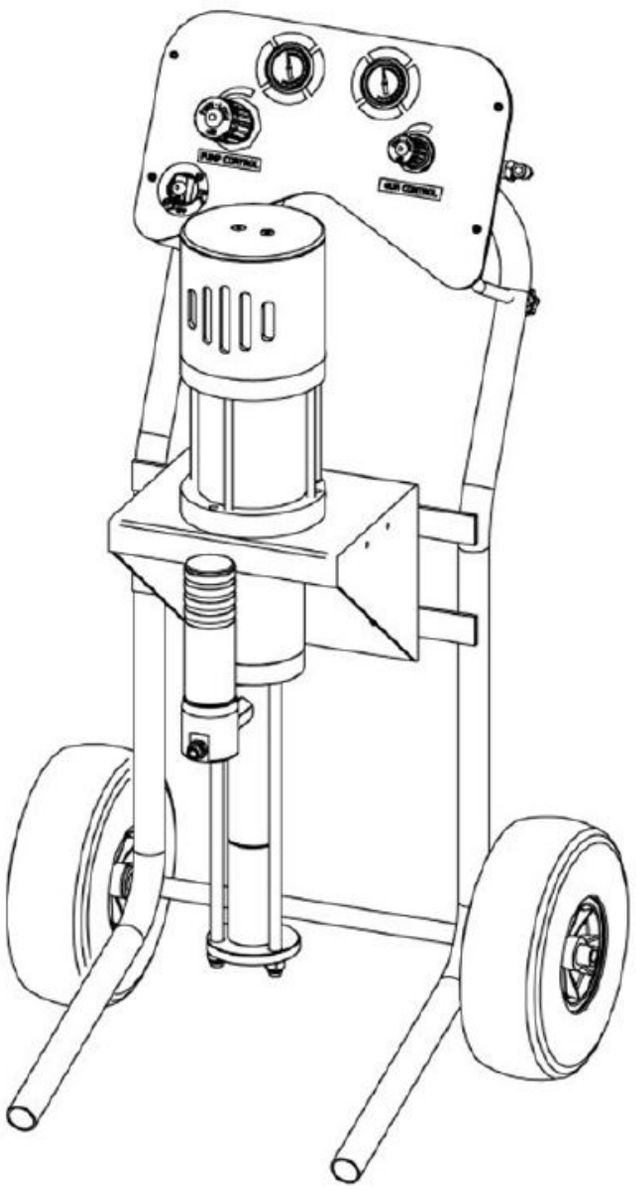
BERIZZI
SPRAYING TECHNOLOGY



Use and maintenance manual
APOLLO 303 - PNEUMATIC PISTON PUMP

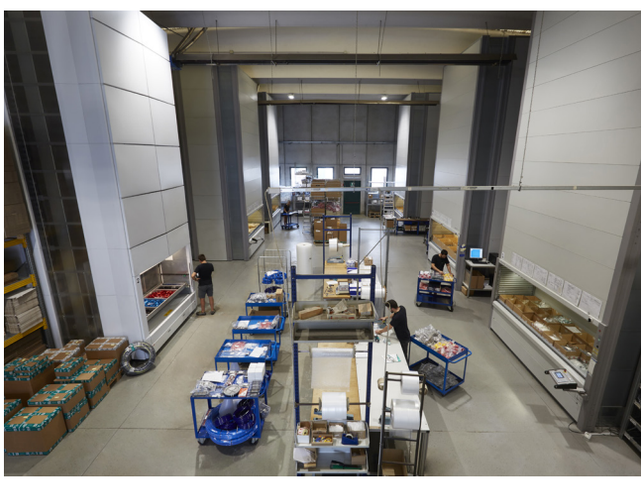
APOLLO 303

ABOUT THE COMPANY

The company was established as Filtermedia in 1996 in Calolziocorte, Northern Italy.
In 2020 Filtermedia became Berizzi, maintaining the same ownership and headquarters as well as its productive and organizational characteristics.
Today, it is one of the leading European manufacturers of high quality “Made in Italy” parts and components for fluid handling.

Berizzi is an Italian company producing components and accessories for paint spraying and fluid handling with high quality standards at highly competitive prices in the market. Berizzi also provides assistance, repair and maintenance services for its fluid handling equipment to its dealers/distributors all over the world.

Berizzi works with an eye on the future and new technologies, always in constant search for increasingly modern and cutting-edge solutions. It also aims to provide timely and excellent customer service. Berizzi fulfills every client’s request quickly and efficiently. Customer satisfaction is its priority.



THE AIMS OF CORPORATE BUSINESS ARE:

- Excellence in the quality of “Made in Italy” products and services provided
- Products manufactured internally always available in stock
- 100% functional high quality products
- Shipments within 24 hours all over the world
- Prompt communication and customer service
- Guarantee of customer satisfaction
- Continuous development of internal production

CERTIFICATION

Since some years ago, Berizzi has started a procedure of corporate certification according to the main international standards.
All processes and services are in fact certified in accordance with the UNI EN ISO 9001: 2015 standard, certification body accredited by ACCREDIA. For all products, Berizzi has acquired the most important certifications in the sector.

ISO 9001 CERTIFICATION ™
intertek
Certificato n.
1115801-00

The use and maintenance manual is a document that accompanies the equipment from its construction to its demolition. In other words, it is an integral part of the equipment.
The manual must be read before starting ANY ACTIVITY involving the equipment, including handling or unloading it from the means of transport.

For better consultation, the instruction manual is divided into the following contents:

PRODUCER DATA

BERIZZI SRL
Via Torchio, 10 - 24034 Cisano Bergamasco (BG)
T. +39 0341 630184 - info@berizzi.it
www.berizzi.it

PRODUCT DATA
Tipe : APOLLO 303

TECHNICAL DATA
Motor: Pneumatic
Max. Air outlet Pressure: 240 Bar
Max. Air inlet Pressure: 8 Bar
Ratio: 30:1

REGULAR REFERENCE
BERIZZI SRL declares that the machine refers to this declaration, it is conforms with the prescritions in the following directives:

Machinery Directive 2006/42/EC
ATEX Directive 2014/34/EU
Ex II 2/2 G Ex h IIB T6 Gb

PED Directive 2014/68/EU – 'Pressure Equipment'
Consolidated text on safety, Italian Legislative Decrees 81/2008 and 106/2009

AND TO THE FOLLOWING STANDARS
EN ISO 4414:2012 - EN ISO 12100:2010 - EN ISO 1127-1:11 -
EN ISO 80079-36:16 - EN ISO 80079-37:16

1 INTRODUCTION

The purpose of this manual is to provide the information necessary for the correct and safe use of the machine/line as described in Italian Legislative Decree 17/2010, which implements the Machinery Directive 2006/42/EC and ATEX Directive 2014/34/EU.
• The information provided below is intended EXCLUSIVELY for specialized operators who are capable of interacting with the machine/line in conditions of the utmost safety for people, equipment and the environment, in full compliance with the requirements set out below and the current safety and health regulations.
The use of this manual cannot make up for the lack of experience and professionalism on behalf of the operators.
• To properly use the machine/line, it is necessary to ensure the readability, storage and availability of the manual in anticipation of possible future consultation.
• In the event of deterioration or for any technical/operational details, immediately contact BERIZZI S.r.l.
• For any communications regarding the machine/line, always indicate the **machine model, serial number and year of manufacture on the type** plate attached to the frame.
The plate must not be removed or damaged.
• The quality and efficiency of our assistance greatly depend on the correct specific information provided by you in the reason for the assistance request.
• BERIZZI S.r.l. reserves the right to improve or modify the machine/line for any construction or commercial need, without the obligation to update this manual.

In addition to the Machinery Directive 2006/42/EC, which defines the requirements of some specific products, more general directives that define and regulate the marketing of 'pressure equipment' have also been issued. These include, in particular, **Directive 2014/68/EC, formerly European Directive 97/23/EC**, also known as the 'PED Directive' from the acronym 'Pressure Equipment Directive'. This directive defines pressure equipment generically as 'devices and equipment designed to work with gases, liquids or vapours under pressure'.

Compliance with the safety requirements of the ATEX Directive 2014/34/EU is guaranteed through compliance of the product with the following harmonized standards:
Standard EN 1127-1:11 Explosive atmospheres. Explosion prevention and explosion protection — Part 1: Basic concepts and methodology.
Standard EN 80079-36:16 Non-electrical equipment for explosive atmospheres. Part 1: Basic method and requirements.
Standard EN 80079-37:16 Non-electrical equipment for explosive atmospheres.
Part 5: Protection for construction safety 'c'.

2 SAFETY STANDARDS AND GENERAL PRECAUTIONS

Before operating the machine/line, please always read and understand the contents of this manual.

- **A failure to comply with the requirements contained herein relieves BERIZZI S.r.l. from any liability.**
- The machine/line has been designed for the purposes described in the following paragraphs. Improper use or a failure to comply with the technical parameters listed below may constitute a hazard for the safety of people and/or property.
- **Any other use not included in or inferrable from the pages in this manual is considered IMPROPER USE.**
- Check that the operation of the machine/line and each of its units does not lead to a hazardous situation for people and/or property.
- Tampering with safety equipment and/or devices is strictly prohibited.
- If a malfunction is detected, stop the machine/line immediately and request an intervention by BERIZZI S.r.l. or qualified personnel.
- Always wear appropriate personal protection equipment in accordance with Italian Legislative Decree 81/2008 (for ITALY).

The start-up, procedural control, operation of control units and operations on the control panels **require competence and prudence on behalf of the operator.**

3 DESCRIPTION OF THE MACHINE/LINE

APOLLO 303

3.1 TYPE OF MACHINE/LINE

Pneumatic piston pump for medium pressure professional paint spraying assisted-airless, suitable for the wood and metal sectors with low and medium viscosity enamels, lacquers, base coats and varnishes. The air motor is very robust and requires minimal maintenance. All valves in contact with the product are made of tungsten carbide for greater wear resistance.

The advantages of this equipment are:
- Accurate spraying with a minimum overspray;
- Minimal or no dilution of the paint;
- The pumps draw directly from the paint can;
- Variable pressure from 0 to 240 bar;
- Variety of nozzles available for slower or faster spraying;
- Lightweight and compact;
- Silent, low power consumption;
- Stable spraying pressure;
- No fan fluctuation;
- Quick cleaning, few parts subject to wear

3.2 OPERATION

The pump that causes the product to move forms the basis of the airless system. This double-acting pump is based on the so-called 'twin shaft' system, i.e. the piston moves between two kits of gaskets which are fixed or move with respect to the piston.
The piston is covered with a layer of hard chrome or tungsten carbide (depending on the type of pump) to obtain the highest possible wear resistance. The two valves are made entirely of tungsten carbide. Different types of gasket kits are used, the most common of which are mixed polyethylene and leather. As for the paint part, various versions are available: electroless nickel-plated steel, stainless steel or anodized aluminium, depending on the various needs and affordability.
The results are the following: minimal air consumption, excellent gun performance, no fluctuation and minimal wear.

3.3 APPLICATION

The machine is ideal for applying all conventional coatings — e.g. latex paint, stain, water, lacquer, ink, washable paint, protective paint and many other coatings in construction, such as some elastomers and glues.

3.4 LAY-OUT

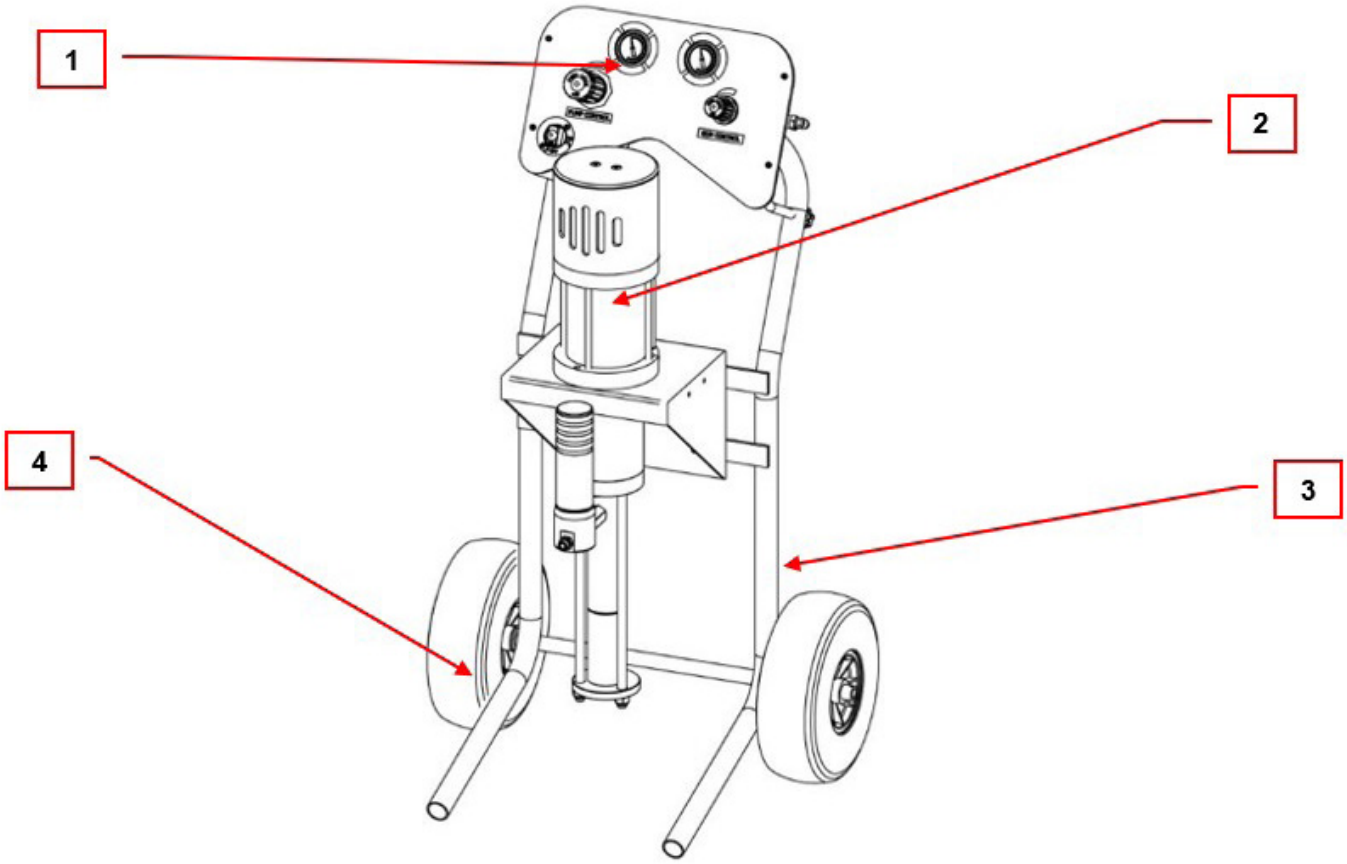


Figure 2 — Machine/line component groups

3.5 MACHINE/LINE COMPONENT GROUPS

N.	MACHINE/LINE COMPONENT GROUPS
1	Control panel
2	Pump and motor
3	Trolley
4	Full plastic wheels

Table 1 — Machine/line component groups

ATTENTION

This machine/line has been designed for professional painting. Other uses of the machine/line constitute hazardous conditions for people and/or property.

3.6 TECHNICAL FEATURES OF THE MACHINE/LINE

ATTENTION

To avoid causing damage to the machine/line or creating hazardous situations, respect the technical data, recommendations and notes described in the following sections.

TECHNICAL SPECIFICATIONS	APOLLO 303	
Compression ratio		30:1
Pump capacity per cycle	cm^3	40
Stroke	mm	60
Max. delivery free flow	L/min	4
Number of cycles per litre	Bar (PSI)	25
Max. Material outlet pressure	Bar (PSI)	240 (3480)
Max. air inlet pressure	Bar (PSI)	8 (116)
Weight	kg	14
Air consumption	L/min	250 - 400
Gasket kit		Fixed
Material inlet connection		M 3/4"
Material outlet connection		M 1/4"
Gasket material		PTFE - PE

Table 2 — Technical features of the machine/line

DIMENSIONS, ENCUMBRANCE AND MASS OF THE MACHINE/LINE		
Width:	mm	500 (including packaging)
Height:	mm	700 (including packaging)
Mass:	kg	25

Table 3 — Dimensions, encumbrance and mass of the machine/line

3.7 FEATURES REGARDING EXPLOSION PROTECTION

The resulting marking for a potentially explosive GAS atmosphere is the following:

II 2/2 G Ex h IIB T6 Gb **0°C < Tamb < + 40°C**

II Surface industries
2/ Category 2 equipment referred to within the process in the presence of an explosive atmosphere consisting of zone 1 GAS.
2 Category 2 equipment referred to outside process in the presence of an explosive atmosphere consisting of zone 1 GAS.

Ex Conventional symbol Ex
h Protective mode for constructive safety 'c' in accordance with EN 80079-37:16
II B Product suitable for installation in the presence of GAS GROUP IIB.
T6 Maximum surface temperature
Gb EPL Gb protection level in accordance with EN 60079-0:12 and EN 80079-36:16.

3.8 TYPE PLATE

In line with the above, the plate affixed to the machine is the following:

Figure 1 — Identification plate

ATTENTION
IT IS STRICTLY FORBIDDEN TO REMOVE OR DAMAGE THE MACHINE IDENTIFICATION PLATE

3.9 IMPROPER USE

Use of the equipment for purposes other than those indicated by the manufacturer may damage the equipment and lead to hazards for the operator. The equipment is not designed for processing hazardous, explosive and/or toxic materials. To process special materials other than those indicated by BERIZZI S.R.L., the manufacturer's consent must be requested in advance.

ATTENTION: MAKE SURE THAT THERE IS ALWAYS FLUID INSIDE THE INTAKE CONTAINER

IT IS FORBIDDEN TO PROCESS FLUIDS AT TEMPERATURES OUTSIDE THE RANGE OF 15–40°C

CHECK THAT THE COMPRESSION RATIO OF THE PUMP IS AT LEAST AN ORDER OF MAGNITUDE LOWER THAN THE POSSIBLE SELF-IGNITION COMPRESSION RATIO OF THE FLUID BEING USED

4 INSTRUCTIONS FOR USE

The APOLLO 303 machine is sold without the spray gun or nozzle.
This and the following chapters describe the instructions for use and maintenance, also in the event you wish to add components.
Guns and nozzles not produced by BERIZZI may be used on the machine, even if BERIZZI products are highly recommended due to their efficiency. It is essential to follow the instructions and perform the correct maintenance.

4.1 NOZZLE

ATTENTION: **Do not start spraying before you have read this section and all the previous safety information.**

4.1.1 FEATURES

The machine has nozzles that are easy to replace. No tools are needed and the operation is quick. The nozzles have a long-lasting gasket that is resistant to solvents and does not swell or leak.
The nozzle rotates easily, even at high pressures, and has finger protection: it reduces paint accumulation, helping to protect the hands and prevent accidental leaks from the nozzle.

4.1.2 OPERATION

When the tip becomes clogged, turn the handle of the tip 180° to the 'clean' position. The gun trigger and pressure in the line will eliminate the obstruction. DO NOT spray or empty the hose in the 'clean' position, as this will cause extreme wear and premature failure. Always remove the tip when cleaning the hose.

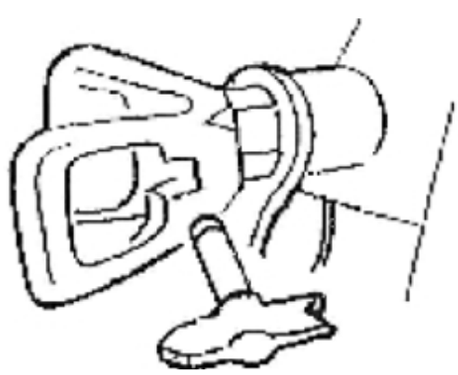
4.1.3 CLEANING A CLOGGED NOZZLE

1. Turn the nozzle to the 'clean' position;
2. Pull the trigger and spray. This procedure should clear the nozzle of any obstruction;
3. Turn the nozzle back to the 'spray' position and continue spraying;
4. If the blockage continues, clean or replace the gun filter.

ATTENTION: DO NOT USE STICKS OR SHARP OBJECTS TO CLEAN THE NOZZLE

4.1.4 CHANGING THE FM6 NOZZLE

1. Rotate the FM6 nozzle by 90°;
2. Remove it from the body;
3. Install a new FM6 nozzle;
4. Rotate it 90° to the spray position.



4.1.5 CHANGING THE GASKET

1. Release pressure from the system and lock the trigger;
2. Remove the body of the nozzle from the gun;
3. Remove the nozzle from the body;
4. Insert an object in the front and press the gasket out of the body;
5. Insert a new gasket on the cap of the FM6 nozzle and place the gasket in the body on the nut side;
6. Install the nozzle;
7. Screw the self-cleaning body to the sleeve of the gun by hand

COATINGS	VISCOSITY	NOZZLE SIZE						
	(Centipoise)	.009"	.011"	.013"	.015"	.018"	.021"	.023"
Lacquer, enamel, wood stain	30–70	X	X					
Industrial enamel, mordant, coloured lacquer	40–160	X	X	X	X			
Paints, solid mordant, latex	120–400		X	X	X	X		
Oil-based products, latex	210–600			X	X	X	X	
Dense latex, ready mixed plaster	600–1000				X	X	X	
Ready mixed plaster	1000–3000					X	X	X

Table 5 — Nozzles

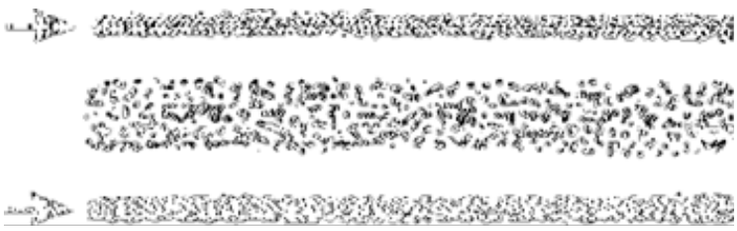
4.1.6 HOW TO SELECT THE PAINT AND NOZZLE

The correct pressure adjustment and appropriate nozzle selection are very important for obtaining the best coating with a given material:

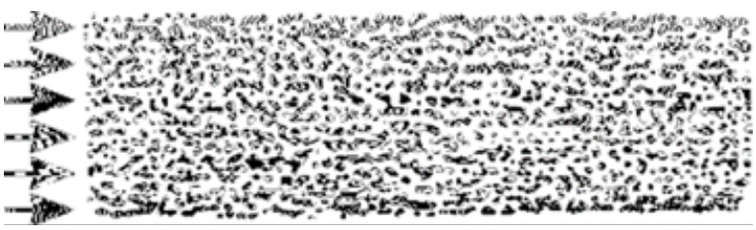
1. In any given situation, the lowest possible pressure will be the best for guaranteeing adequate painting. It leads to a long lifetime of the pump and nozzle and minimal overspray.

2. Dense materials generally require a larger nozzle and higher pressure than more fluid paints. Some very dense paints may require slight dilution (5–10%) depending on the type of pump, nozzle size and application. The material is diluted when a good coating is not obtained with the appropriate nozzle size at maximum pressure.

Lines:
The nozzle is too small or partially closed



Denser deposits on the edges:
The pressure is too low, the nozzle is too wide or the paint is too thick

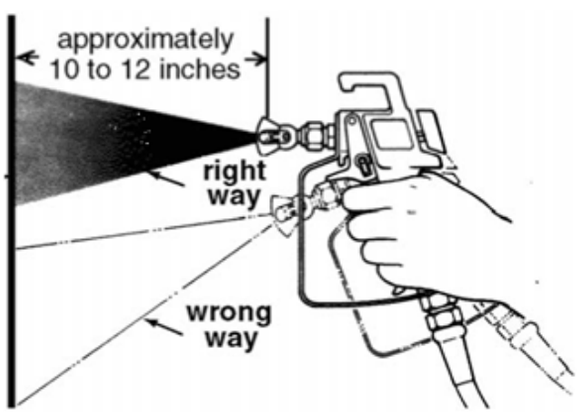


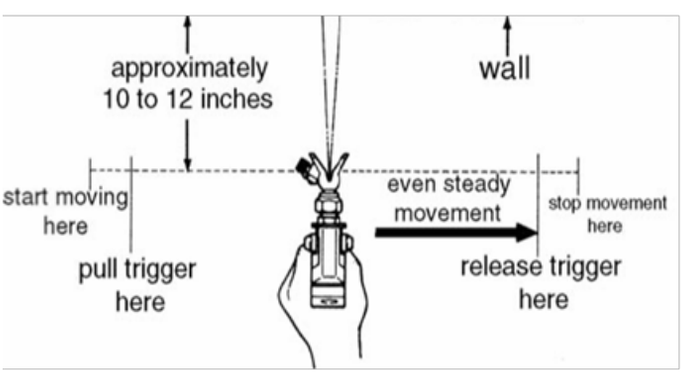
Uniform:
Correct pressure and nozzle adjustment

4.1.7 PAINTING METHOD

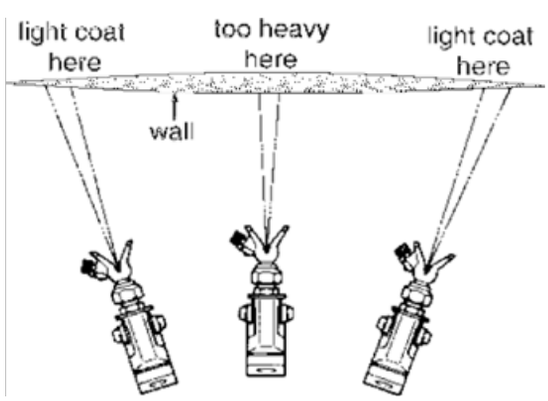
1. Always keep the gun perpendicular to the surface with the nozzle at a distance of approximately 30 cm. If held at an angle (up or down, side to side), the paint will settle irregularly, leaving the work spotty.

2. Move your arm continuously. Move the gun firmly and steadily, perpendicular to the surface. Do not move the gun quickly because this could cause overspray, leading to a nonuniform coating.





How to move the gun properly



Result of correct movement

3. Start moving the gun before opening the trigger to obtain a uniform finish and prevent excessive paint from settling. At the end of the stroke, release the trigger.

NOTE: For uniform paint coverage, overlap each layer by 40–50%.

4. Intermittent use. If painting is stopped for a few minutes, close the trigger of the gun and immerse the nozzle in a container of suitable solvent. This prevents the paint from hardening and the nozzle from clogging. Be sure to release the pressure by opening the return valve and turning off the pump.

4.2 GUN

1. Wash the gun thoroughly before each use with a solvent compatible with the paint being sprayed.
2. Clean the gun thoroughly after each use. A clean gun works better and lasts longer.
3. Clean the gun with white spirit when not in use for 3 or 4 days.

4.3 PAINT

1. Prepare the paint according to the manufacturer's instructions.
2. Remove any dry paint residue.
3. Shake the paint well.

4.4 NOZZLE FOR PAINTING

1. Use the minimum pressure to obtain a good paint finish, reduce wear on the nozzle and pump and avoid overspray.
2. Replace the nozzles before they are too worn out. Worn nozzles consume paint and make the equipment work harder than necessary.

4.5 PAINT HOSE

1. Check the hose periodically; do not use worn or damaged hoses.
2. Only use hoses manufactured for high-pressure and airless equipment. Airless equipment generates a working pressure of 3200 PSI (220 bar). Make sure the hose has been grounded and check whether static is dispersed through a textile or metal braid.
3. Protect both the paint hose and electrical cord from moving equipment and pointed or sharp objects.
4. For better performance, the maximum length of the hose is 100 m for 1/4". The maximum length depends largely on the size of the nozzle and the density of the paint.

4.6 FILTERS

1. Clean the filters after every use.
2. Use the correct filter for the size of the tip and type of paint. See the table of suggestions on the next page.

NOTE: For each nozzle size, the following fan angle widths can be chosen:

SELFCLEANER

Inches (mm)	Spray corner	CAPACITY MEASURED IN LT/MIN. AT FOLLOWING PRESSURES: 35 Bar	70 Bar	105 Bar	140 Bar	ADVISED FILTER Nr. Ref.		
0,007 (0,18)	20 °	0,10	0,14	0,17	0,19	69A072	■	
0,007 (0,18)	40 °	0,10	0,14	0,17	0,19	69A074	■	200 Mesh
0,007 (0,18)	60 °	0,10	0,14	0,17	0,19	69A076	■	
0,009 (0,23)	20 °	0,14	0,20	0,25	0,29	69A092	■	
0,009 (0,23)	40 °	0,14	0,20	0,25	0,29	69A094	■	
0,009 (0,23)	60 °	0,14	0,20	0,25	0,29	69A096	■	
0,011 (0,28)	20 °	0,22	0,3	0,38	0,45	69A112	■	
0,011 (0,28)	40 °	0,22	0,3	0,38	0,45	69A114	■	
0,011 (0,28)	60 °	0,22	0,3	0,38	0,45	69A116	■	
0,013 (0,33)	20 °	0,34	0,45	0,56	0,64	69A132	■	150 Mesh
0,013 (0,33)	40 °	0,34	0,45	0,56	0,64	69A134	■	
0,013 (0,33)	60 °	0,34	0,45	0,56	0,64	69A136	■	
0,015 (0,38)	20 °	0,45	0,60	0,75	0,85	69A152	■	
0,015 (0,38)	40 °	0,45	0,60	0,75	0,85	69A154	■	
0,015 (0,38)	60 °	0,45	0,60	0,75	0,85	69A156	■	
0,018 (0,44)	20 °	0,65	0,88	1,10	1,26	69A182	■	
0,018 (0,44)	40 °	0,65	0,88	1,10	1,26	69A184	■	100 Mesh
0,018 (0,44)	60 °	0,65	0,88	1,10	1,26	69A186	■	
0,021 (0,53)	20 °	0,90	1,25	1,55	1,75	69A212	□	
0,021 (0,53)	40 °	0,90	1,25	1,55	1,75	69A214	□	
0,021 (0,53)	60 °	0,90	1,25	1,55	1,75	69A216	□	
0,023 (0,58)	20 °	1,05	1,52	1,85	2,15	69A232	□	
0,023 (0,58)	40 °	1,05	1,52	1,85	2,15	69A234	□	
0,023 (0,58)	60 °	1,05	1,52	1,85	2,15	69A236	□	50 Mesh
0,026 (0,66)	20 °	1,30	1,98	2,30	2,73	69A262	□	
0,026 (0,66)	40 °	1,30	1,98	2,30	2,73	69A264	□	
0,026 (0,66)	60 °	1,30	1,98	2,30	2,73	69A266	□	
0,031 (0,79)	20 °	2,00	2,80	3,45	4,15	69A312	□	
0,031 (0,79)	40 °	2,00	2,80	3,45	4,15	69A314	□	
0,031 (0,79)	60 °	2,00	2,80	3,45	4,15	69A316	□	
0,036 (0,91)	20 °	2,65	3,50	3,82	4,55	69A362	NOT RECOMMENDED	
0,036 (0,91)	40 °	2,65	3,50	3,82	4,55	69A364		
0,036 (0,91)	60 °	2,65	3,50	3,82	4,55	69A366		

Figure 3 — Table indicating nozzles and related filters with flow data for water (L per minute) at various pressures

5 HANDLING AND TRANSPORT

The handling and transport of the machine/line are affected first, by its characteristics (shape, size and mass) and second, by the availability of specific equipment for the people performing such operations.
This chapter is intended to provide an overview of how our product is transported and the most common and appropriate means for handling and transporting our machines.
Strictly follow the “MACHINE/LINE” section for the mass and dimensions of the machine/line, its shape and the positions of the anchor points.
Note that the choice of handling and transport system is the responsibility of the Safety Manager at the final company.

ATTENTION

BERIZZI S.r.l. does not assume any responsibility for damage to the machine/line due to handling and/or transport performed without full compliance with the instructions listed below.

5.1 PACKAGING

The unit is packed in a cardboard box for transport and shipping in Italy or abroad. All components supplied as optional equipment (hoses, suction unit, gravity tank) are included in the same package. To reduce the size of the package and facilitate its transport, the pump trolley has a removable handle. Once the pump has been unpacked, straighten the pump and secure it using the appropriate sleeves.
The packaging may be heavy, so it cannot be lifted by hand.

Figure 4 — Packaging

5.2 LIFTING AND TRANSPORT

To transport the unit, use a hand truck and do not move more than one box at a time.
Attention: the package of a wheeled pump is 700 mm high and 500 mm wide.

Figure 5 — Lifting and transport with a hand truck

5.3 STORAGE

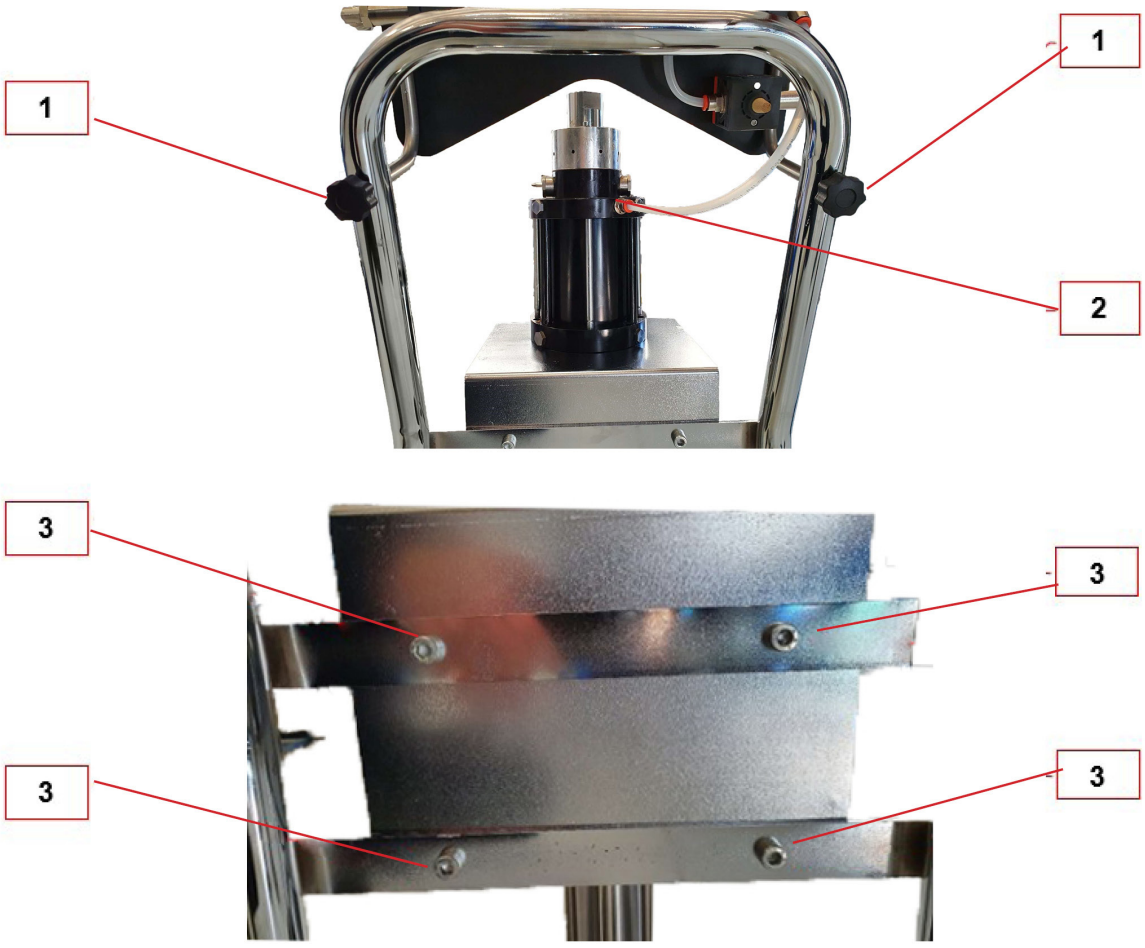
During transport and storage, make sure that the temperature range of –15°C to 40°C is not exceeded, or 50°C for short periods not exceeding 24 hours, which could damage the unit.

If the unit will be stored and not used for a given period of time, we recommend the following steps:
- Disconnect the unit from power sources.
- Completely clean the equipment of any paint residue.
- Let the diluent circulate through the hoses.
- Cover the unit with a waterproof sheet.

Store the unit in a dry area with a humidity level
between 30% and 80%. To preserve the mechanical parts, the ambient temperature must be between 15°C and 40°C.

5.4 MACHINE HANDLING

For handling, no means of transport or other instruments are necessary because the machine is equipped with wheels. The wheels are made of solid plastic to prevent possible deflation and be more rigid.
For easier transport, the machine/line can be disassembled because the control panel can be removed using the screws **(1) and the hose detached from the pump (2).** In addition, the pump can also be detached from the cart using the screws **(3)**.



6 INSTALLATION

ATTENTION

As a precaution, always check compliance with the minimum standards for the placement and operation of the machine/line, assessing the environmental conditions, temperature, humidity, lighting, vibrations, dust and the cleanliness of the occupied spaces. It is absolutely forbidden to place the machinery in rooms subject to the risk of flooding, explosion or fire.
As a precaution, always check for any damage suffered during transport and handling. In this case, immediately contact BERIZZI S.r.l.
The installation of the equipment does not require any particular precautions. Please follow the instructions below.

6.1 INSTALLATION CONDITIONS

• The paint container must be placed near the machine;
• The machine/line must rest evenly on the ground, be perfectly balanced and always in a vertical position. The ground should preferably be flat and strong enough.

THE MACHINE MUST ALWAYS TOUCH THE GROUND AT THE POINT INDICATED IN THE FIGURE BELOW

6.2 STRUCTURES TO PREPARE

Painting (when not done outdoors) should preferably be carried out in a special cabin equipped with fume extraction. Do not use the unit if the extraction system is not working. Wear PPE. Connect all parts of the unit to earth (using the supplied cable); static electricity could cause sparks or explosions. The original hoses supplied with the machine are all antistatic.

6.3 COMPRESSED AIR PREPARATION

The system is operated using compressed air. Even if the motor design does not necessarily require it, we recommend using adequately filtered, dry compressed air. In this way, the seals in the air motor will last longer.

6.4 ICE FORMATION

The system as designed has the great advantage that ice formation is significantly reduced when the air is discharged. However, air lubricated with antifreeze should be used at very low temperatures for greater safety.

6.5 LUBRICATION CHAMBER

The compact paint pump is screwed onto the air motor. The space between the air motor and paint pump forms a lubrication chamber. The oil fed into this chamber rinses and lubricates the pumping piston with each stroke. In this way, no encrustation occurs on the piston rod. The gaskets thus protected eliminate the problem of seizing.

6.6 CONNECTION DIAGRAM

The machine is powered by a pneumatic network, so it is governed by technical standard EN ISO 4414:2010, which defines the general standards and safety requirements for pneumatic systems and related components. The pneumatic connection is located on the right side with the inlet valve, while the air outlet valve for attaching the gun is located on the left.

Figure 6 — Connection diagram

6.7 CONNECTION TO THE PNEUMATIC NETWORK

The pneumatic system supplies the pneumatic valves and cylinders in the machine/line.

CAREFULLY FOLLOW the instructions below:
• Always check that there is no damage to the equipment following transport. Otherwise, immediately notify the manufacturer, BERIZZI S.r.l.;
• Use hoses suitable for the total volume of compressed air; these are included in the package;
• As a precaution, always ensure that the network system can supply a pressure of up to 8 bar (0.8 MPa), adapted to the needs of the machine/line;
• Connect the supply hose to the pump inlet valve;
• Connect the gun to the outlet valve;
• Open the discharge valve.

6.7.1 DESCRIPTION OF THE PNEUMATIC UNIT

Figure 7 — Pneumatic unit

1) Pump pressure regulator
2) Pump pressure gauge
3) Gun pressure gauge
4) Gun pressure regulator
5) Pump pressure gauge hose connection
6) Air connection valve
7) Pump air inlet
8) Gun connection valve
9) Gun pressure gauge hose attachment

6.7.2 ADJUSTMENT OF THE PNEUMATIC UNIT

The maximum working pressure is 8 bar (0.8 MPa). To adjust the pressure in the air supply pump, turn the knob **(2) until the desired pressure as indicated on the pressure gauge (3) is reached.** To adjust the pressure in the gun, turn the knob **(5) until the desired pressure as indicated on the pressure gauge (4) is reached.**

Figure 8 — Adjustment of compressed air in the pneumatic unit

6.8 OPERATOR POSITION AND ENCUMBRANCE

During the operation of the machine/line, the operator need not assume any particular position, as the machine is placed on a trolley.
The wheels allow for total control of the system and maintenance of safety conditions within the operating area. The encumbrance is determined by the machine and any supply hoses.
The Safety Manager of the final company is responsible for verifying the correct composition and installation of the safety barriers.

ATTENTION

BERIZZI S.r.l. does not assume any responsibility for non-compliance with the procedures described

7 START-UP

7.1 OPERATING STANDARDS

• Before setting up any operating manoeuvres, don personal protection equipment (PPE) in accordance with the safety regulations.
• Check that the machine/line can operate in a suitable environment. Excessive temperatures and humidity levels may alter the proper operation. Limit the presence of dust in the air. Ensure that no explosive or flammable materials are present.
• Observe the procedures for checking all safety systems beforehand. In case of any anomalies, contact BERIZZI S.r.l. immediately and exclusively.
• As a precaution, always check that the operation of the machine/line and each of its units does not lead to a hazardous situation for people and/or property.
• Do not use the machine/line for any purposes other than those intended by the manufacturer.

7.2 PRELIMINARY CHECKS

For proper use and in compliance with the safety parameters, any operations must be preceded by the checks and actions listed below:

- Check that the transport and handling of the machine/line have not damaged any of its parts.
- Ensure that symbols, warnings and plates on the machine/line are complete and legible.

This manual must always be available and accessible.

- Remove any locks placed on moving parts. These devices are applied to prevent some parts from being damaged during handling and transport.
- Clean the machine/line thoroughly after each use.
- Check the correct connection of the pneumatic network.
- Check the operation of the safety devices.
- Ensure free access to control elements and buttons.

ATTENTION

It is strictly forbidden to start the machine/line if there are any anomalies. Disconnect the machine/line from the power/air sources and contact BERIZZI S.r.l.

7.3 PROCEDURE FOR START-UP AND USE

- Make sure the machine is properly placed on the ground.
- Don the required PPE, namely protective glasses.
- Connect the general compressed air supply to the inlet valve.

The maximum supply pressure must be 8 bar (0.8 MPa).

- Attach the gun to the outlet valve.
- Check that the pressure regulators are turned to the minimum.
- Turn the general switch to the ‘ON’ position.
- Adjust the pressure of the pump and gun according to the work in question.
- Once the work is done, turn the general switch to the ‘OFF’ position.
- Disconnect the general compressed air supply and gun.

7.4 SHUTDOWN PROCEDURE

To stop the machine/line at any time, turn the general switch to the ‘OFF’ position.

7.5 EMERGENCY SITUATIONS

If an emergency occurs due to the process (anomalies in operation, use, maintenance, etc.) or aspects external to the operations, turn the general switch to the ‘OFF’ position and stop any activity in progress.

8 SAFETY MEASURES

Since it is not possible to actively protect the work area around the system and thus the operator from unexpected ruptures of the hoses or pressure elements, it is MANDATORY TO CHECK THAT:

- No system components are worn or damaged
- The filter fittings and connections are tight
- Keep in mind that the unit is used with paints and solvents that are highly flammable. Therefore, use the system in a well-ventilated environment and avoid any actions that could lead to fire (for example: smoking, high-temperature slag or chips, sparks or any electrical hazards). To avoid the risk of sparks due to electrostatic charges, connect the unit to earth
- Check the safety data sheets of the products for chemical compatibility. Further specifications on the materials that make up the unit are available on request directly from BERIZZI S.R.L.
- The use of products containing organic solvents may lead to poisoning due to the emission of toxic vapours
- Do not use with food or medicinal products
- Do not exceed the indicated maximum operating pressures
- Before any disassembly, cleaning, maintenance or reassembly, drain the product under pressure in the hoses
- Use the unit strictly in combination with a spray booth with fume extraction system
- The user must don the following PPE before use:

- Protective glasses with side protection;
- Protective mask;
- Protective body suit;
- Protective gloves;
- Shoes with leather or antistatic soles

- Never point the paint gun towards any person or animal
- The unit must be used by only one operator.

8.1 PERSONAL PROTECTIVE EQUIPMENT

According to the expected activities, resulting exposures and detected risks, the work should be carried out with the use of the following personal protective equipment:

TYPE OF PPE	WHEN	SIGN
Body suit	Highly recommended	
Rubber, nitrile or PVC gloves	Highly recommended	
Protective filter mask (at least TYPE A/P2)	Highly recommended	
Protective or splash-proof glasses	MANDATORY	
Protective footwear	Highly recommended	

8.2 EMERGENCY SITUATIONS

FIRE: Use powder fire extinguishers, which must be located near the equipment as REQUIRED BY LAW (Italian Law 81/2008 on workplace safety). DO NOT USE WATER.
Staff must be trained so that they know how to act under such conditions.

ATTENTION

Solvents such as trichloroethane and chloromethylene (dichloroethane) can react chemically with the aluminium that makes up most of the pump and gun, producing hazardous explosions.
We recommend that you always read the technical data sheet of the product you intend to apply very carefully, avoiding the use of materials that contain these types of solvents. Do not use chlorinated solvents to clean and/or dilute paints. When using regenerated solvents (cleaning thinners), make sure they are acid-free (caused by regeneration), since these acids can corrode the gun and pump.
DO NOT USE the equipment with HALOGENATED HYDROCARBON solvents (e.g. chloroethane, trichloride, etc.) that could cause explosions when in contact with aluminium parts or galvanized materials.

8.3 HAZARDOUS POINTS

The potential risks that may be generated when using the machine/line and the measures taken to prevent them are listed in the table below.

NOTE

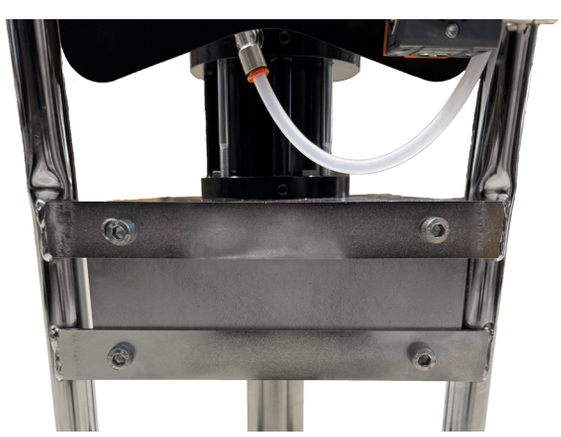
The table refers to the hazardous points of machines supplied by BERIZZI S.r.l.
Additional risks, which are not specified in this section, could be generated by other machines in the line supplied by third parties. We refer the risk analysis and prevention to the suppliers of these machines.

ATTENTION

To avoid hazardous situations for people and/or property, it is strictly forbidden to tamper with or remove the safety devices. Otherwise, BERIZZI S.r.l. does not assume any responsibility.

8.4 RISKS

The risks that the manufacturer cannot eliminate are listed in the following table. **For these risks, it is necessary for the user to prepare risk prevention measures.** It is necessary to inform workers of the risks and provide them with appropriate PPE (personal protective equipment).

NO.	Element/zone/ hazardous situation	Potential risk	Behaviour and/or precautions for the user to take
1	Machine positioning phase	The machine may fall to the ground during operations or possibly break down	All operations must be carried out by qualified personnel (informed of the risks). The machine must be placed on even ground, avoiding slopes
			
2	Compressed air leaking from hoses or actuators due to ruptured ducts or incorrect regulation/maintenance	Eye contact with compressed air under pressure containing paints or other substances	Use PPE
			

NO.	Element/zone/ hazardous situation	Potential risk	Behaviour and/or precautions for the user to take
3	Possibility that the pump vents	Sudden release of air	The safety valve activates, blocking the escape of air
4	Prolonged use may cause breakdowns that cause the machine to block	None, the machine stops	Perform maintenance or replace parts
5	Possibility for the machine to build up static electricity	The jet of paint points back-ward, hitting the user	Check that the earthing wire is present and use appropriate PPE
6	There is a hole in the pump where the piston moves	Inserting your hands while the machine is running	Do not insert hands or objects
	 		
7	The machine suffers impacts and is damaged	The jet of paint does not come out correctly	Do not damage the machine

Table 4 — Risks

8.5 WARNING SIGNS ON THE MACHINE/LINE

There are no warning signs on the machine/line.

8.6 NOISE DETECTION

It was not necessary to make a phonometric study as the machine does not make loud noises.

9 COMMANDS

ATTENZIONE

Under no circumstances can this general description make up for the lack of specific technological and computer knowledge.

9.1 GENERAL POWER SWITCH

The machine/line has no safety controls because it is equipped with a general power switch that allows it to be switched 'ON' and 'OFF' quickly in any hazardous situation.

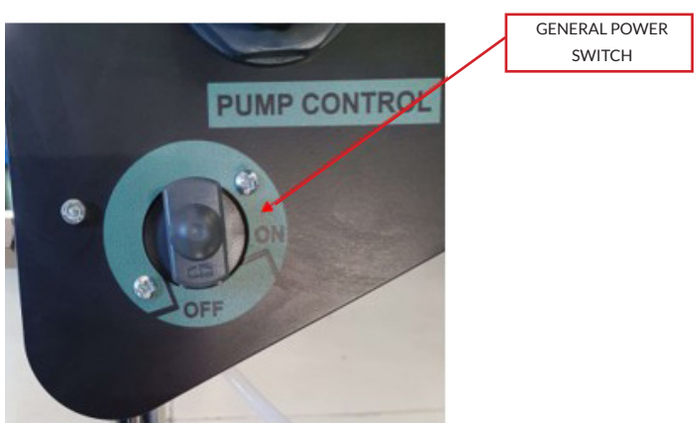


Figure 9 — General power switch

9.1.1 MAIN CONTROL PANEL

The table below shows the general usage buttons on the main control panel for the use of the machinery.

NO.	DEVICE	FORM/ COLOUR	TAG/ PICTOGRAM	FUNCTION PERFORMED
1	General switch	Black and green	ON/OFF	Turn to ON to start the process and turn to OFF to turn off.
2	Pump power regulator	Black and green	PUMP CONTROL	Turn clockwise to increase the air power supplied from the pump. Turn anticlockwise to decrease the air power supplied from the pump.
3	Pump pressure gauge	/	/	Instrument for measuring the air pressure inside the pump.
4	Gun pressure gauge	/	/	Instrument for measuring the air pressure inside the gun.
5	Gun power regulator	Black and green	GUN CONTROL	Turn clockwise to increase the paint delivery power from the gun. Turn anticlockwise to decrease the paint delivery power from the gun.

Table 5 — Elements of the main control panel

ATTENTION

Under no circumstances can this general description make up for the lack of specific technological and computer knowledge.

10 ROUTINE MAINTENANCE

After several uses, it is necessary to clean the gun and the pump properly, otherwise correct operation is not guaranteed. Clogged valves and filters are the most common causes of problems. If well maintained, the gun and pump work without reduced performance.
ATTENTION: If water-soluble products are used, clean with water. If using oil-based paints, clean with paint thinner.
Note: From here on, both water and diluents are defined as solvents.
The main considerations to take when servicing the equipment are the following:

- Disconnect the power supply before removing any parts of the unit or replacing any elements;
- Do not wear rings, watches, bracelets, chains, etc. during maintenance operations;
- Always use the mandatory personal protective equipment;
- Do not smoke;
- Do not use open flames, points or pins for cleaning;
- Use only original spare parts.

ATTENTION **ALL MAINTENANCE OPERATIONS MUST BE PERFORMED ONLY WITH THE MACHINE/LINE TURNED OFF.**

Adjustment, lubrication, cleaning and routine maintenance must be carried out when the machine/line is stationary, in full control of the operating elements and in compliance with current safety and health regulations.

ATTENTION

The following sections constitute an index of periodic interventions. For proper operation of the machines and to maintain safe working conditions, compliance with the requirements is mandatory. The use of spare parts that do not meet the characteristics set out below, modifications or even minor tampering with the machine relieves BERIZZI S.r.l. from any liability relating to people and/or property.

10.1 GENERAL CLEANING

To obtain excellent results and long life for the equipment, it is very important to clean it correctly. The procedure is simple and very similar to the washing procedure. Cleaning and washing are also required when changing the colour or type of paint, for example from latex to oil-based paint, etc. The general cleaning procedure is as follows:

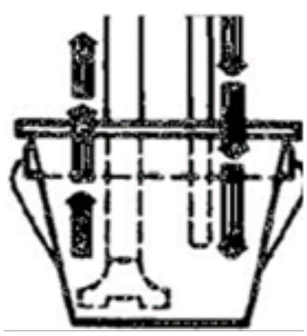
1. Lock the gun trigger, turn the pressure regulator to minimum and open the return valve to release all the pressure from the system;

2. Turn the nozzle half way and remove it from the gun;

3. For the version with suction system: lift both the suction system and the return hose above the level of the paint and increase the pressure by about two turns. Let the paint drain from the system (for the version with tank: put the return hose in a container and increase the pressure by 2 turns). Let the paint drain from the tank);

Pump out the fluid

4. Place the suction/return hose in a container with the appropriate solvent and circulate the solvent through the pump. Also clean the outside of the suction system. (For the version with tank, add one litre of solvent to the tank and circulate through the pump. While the pump is running, clean the inside of the tank well with a brush or rag;



Clean the pump with the appropriate solvent

5. Turn the pressure to minimum and close the return valve;

6. Unlock the trigger and, with the nozzle still removed and the pressure at minimum, place the gun in an empty container and pull the trigger until the paint finishes draining and the solvent starts to flow. Release the trigger. Place the gun in the solvent container and circulate the solvent for about two minutes. To reduce spatter, direct the flow of fluid to the inner corner of the bucket and stay above the level of the fluid (or immerse the nozzle in the solvent). Unlock the trigger. Point the gun into an empty bucket and spray at least 1 litre of solvent;

Pump until the solvent is clean.
ATTENTION: Containers in conductive metal can be used when spraying flammable products. Always let the solvent flow at low pressure with the nozzle removed. The metal part of the spray gun must be held firmly against the wall of the metal bucket. Then release the pressure in the gun.

7. Drain the solvent from the pump by removing both the return hose and suction hose from the solvent. Turn the control knob to minimum and open the return valve to release pressure from the system. Lock the trigger and clean the nozzle before reassembling it on the gun.

8. Follow steps 1 to 7 using the solvent to thoroughly wash the equipment. At this point, compressed air should be blown into the nozzle (return valve open and with the motor off) to clean out the solvent.

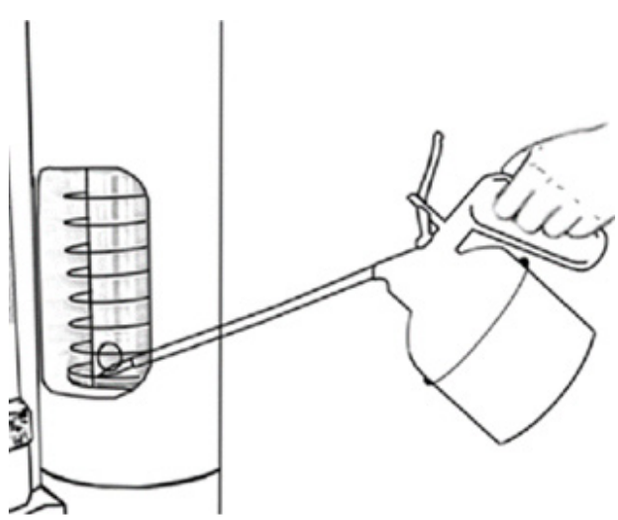
9. If the type of paint is changed, such as from water-based to solvent-based paint, carefully wash the equipment with mineral water and white spirit, following steps 1 to 7. These operations prepare the equipment for solvent-based paint. Use water to clean the equipment only if the solvent-based paint is changed to water-based products.

10. Make sure that the pressure regulator is turned to minimum and that all pressure has been released. Disconnect the compressed air.

11. Unscrew the handle from the gun body. Remove the filter and wash it with a suitable solvent. Check the filter for damage. Replace it if necessary. Lightly grease the handle threads (petroleum jelly, self-greaser) and install the filter again by squeezing it tightly.

12. Remove the line filter cover (if applicable). Unscrew the line filter screen and clean it. Use a brush if necessary. Check the screen for damage. Replace it if necessary.

13. Let the equipment sit for more than three days. If the equipment has been cleaned with paint remover or white spirit, it is ready to be stored.
If the equipment is cleaned with water or a strong solvent (e.g. paint solvent or hydrogen peroxide) repeat the procedure, starting with step 8.
If white spirit is not available, drain all of the solvent from the hose, gun and pump. (The tungsten carbide parts in the valves will corrode if left in water for a long period of time.) While the pump is running, oil the suction valve. Let the pump run until spurts of oil exit through the return valve. This step further removes the solvent and lubricates the valves.



Oil the valves before storage

DO NOT WIND THE PAINT HOSE TOO TIGHT. THIS COULD CAUSE CREASES, WEAKENING IT. A PAINT HOSE WITH CREASES OR OTHER DAMAGE IS CONSIDERED UNSAFE AND MUST BE REPLACED IMMEDIATELY.

ATTENTION: DO NOT CLEAN THE GUN WITHOUT FIRST RELEASING THE PRESSURE FROM THE SYSTEM.

Note: If the equipment is used regularly, at the end of the day, the pump and hoses should be left FULL of the paint solvent normally used to cycle through the system. If the equipment is used sporadically or stored for a long time, it is recommended that diesel be circulated through the pump. Make sure to drain all the diesel and then circulate the appropriate solvent through the pump.

10.2 MAINTENANCE OPERATIONS

Ordinary maintenance can be performed by the operator in charge of the machine/line. Daily cleaning of the entire equipment (pump, gun and nozzles for painting) is necessary. Make sure that dry paint residues do not affect the smooth action of the moving parts.
ATTENTION: BEFORE CARRYING OUT ANY MAINTENANCE, DISCONNECT THE EQUIPMENT AND RELEASE THE PRESSURE BY OPENING THE RETURN VALVE.

10.2.1 CLEANING THE PUMP

Each time the pump is used, it must be prepared depending on the type of paint to be used.
This involves washing the equipment with an appropriate fluid (water for latex paint, white spirit for oil-based paint, etc.). Incorrect washing could cause the valves to block and lead to application problems.

WASHING THE PUMP:
1. Check that the hose, gun handle and connecting nozzles are tight;
2. Place the trigger at 'STOP'. Connect the compressed air hose to the pressure regulator located on the air compressor. Turn on the compressor and adjust the compressed air pressure to about 2 bar;
3. Place the return valve in the 'open' position;
4. Place the suction hose inside the container with the appropriate solvent or add about one litre of solvent to the tank (if applicable);
5. The equipment starts pumping and the solvent exits from the return hose. Run the system for 30 seconds (version with tank) or 2 minutes (version with suction system).
If the equipment does not run, see how to 'inspect the suction valve'.
6. Turn the pressure control knob to minimum. Turn the return valve to 'Close'.
7. Turn the pressure up to 1/6 of a turn. This produces a low pressure ideal for washing.
8. Turn the adjustment knob to the minimum and open the return valve to release the pressure.
9. For suction, raise both hoses above the level of the washing liquid and increase the pressure to let the liquid drain from the pump. In the tank version, take the return hose to an empty container, increase the pressure and let the remaining liquid drain from the tank.

CIRCULATION WITH PAINT:
Follow the procedure from points 1 to 8 to cycle and wash with paint. Follow the points below:

1. Remove the self-cleaning body from the gun;

2. Unlock the trigger. Put the gun in the solvent container and hold the trigger until the solvent has drained out and the paint starts to flow. Lock the trigger. Reassemble the self-cleaning body;

3. Before starting the work, test the spray on a piece of cardboard. Increase or decrease the pressure to achieve the best results.

10.2.2 HIGH-PRESSURE HOSE
Check the high-pressure hose periodically. If the hose is twisted, cut or worn, it must be replaced.
A hose that bursts at 220 bar (3200 psi) can seriously damage objects and people, causing serious injuries. Replace with a high-pressure airless paint hose that is calibrated to a working pressure of at least 220 bar (3200 psi).

10.2.3 RETURN VALVE
If the return valve is not properly cleaned after each use, it may wear out prematurely.
If it is worn out, the paint will leak out of the return hose even when the valve is turned to 'closed'. The pressure drops progressively when the valve is worn. A new return valve must be installed immediately to prevent the equipment from working too hard.
Tips for the best use of the return valve: always reduce the pressure before opening/closing the valve.

10.2.4 SPRAY GUN
The filter should be cleaned or replaced after each use to minimize clogging. See nozzle table for details.

10.2.5 NOZZLE
The nozzle is one of the most important parts for quality spraying. It should therefore be replaced periodically (every 200–800 L) to maintain high performance and prevent equipment fatigue (see the Nozzle section for details).

10.2.6 SUCTION AND COMPRESSION VALVES
The suction and compression valves are subject to wear. The rate of wear depends on the type and quality of paint being used. The average lifespan of the valves is about 2000 L.
A simple method for determining wear on the valve is the following:
1. With the equipment started and in the spraying position, pull the trigger.
2. During the upper piston cycle, release the trigger. If the piston does not stop but continues the cycle, the compression valve is worn out.
3. Conversely, release the trigger during the lower piston cycle. If the piston does not stop but continues the cycle, the suction valve is worn out.

10.2.7 LOWER GASKET KIT

Regular service is not required. The lower gasket kits of this equipment are either movable or fixed. The lower kits are adjusted independently using the lower reset spring. Wear in the lower kit is revealed by a significant drop in pressure.
ATTENTION: First check the wear on the nozzle, as this could lead to the same problem.

10.2.8 UPPER GASKET KIT

Lubricate daily with oil. The upper gasket kits are adjusted independently using the upper reset spring or by manually tightening the appropriate ring. Wear in the upper kits is revealed by a loss of material in the upper part of the central body.

IMPORTANT NOTE: Both gasket kits are included in a single kit and should be replaced together for better performance.

10.3 REGULAR MAINTENANCE OPERATIONS

BERIZZI pneumatic equipment must be serviced regularly after about 1,000 hours of use, or sooner if there are excessive losses from the upper kit or if the pump cycles become too fast on one of the two strokes. We recommend using a lubricant such as Lubrisolv to lubricate the upper kits.
Do not use oil, water or solvents to lubricate kits.

10.4 SUMMARY TABLE OF MAINTENANCE OPERATIONS

OPERATION	FREQUENCY			CONDITIONS
	Daily	Weekly	Monthly	
Clean the equipment	X			
Check hose integrity	X			Operations to perform on the equipment
Check valve operation	X			Stop without conducting work activities
Check paint filters		X		
Check hose seals			X	
Check pump screw tightness			X	
Check connections			X	
Check parts subject to wear			X	

Table 6 — Summary of maintenance operations

11 POSSIBLE FAULTS

If all the instructions in the above-mentioned manual have been followed, the machine/line will operate efficiently without any problems requiring assistance. Many unexpected problems that arise can be remedied independently using the table below. If you are unable to solve the problem, take the machine to the nearest authorized service centre.

PROBLEM	CAUSE	REMEDY
The gun does not spray	a. Clogged nozzle	a. Clean according to the instructions
	b. Clogged gun or line filter	b. Clean the filters, rinse and use thinner materials
	c. Stuck suction valve	c. Without relief valve
	d. Blocked air motor	d. Contact BERIZZI service
Drop in paint pressure	a. Foreign bodies in the suction valve	a. Clean
	b. Clogged suction filter	b. Clean
	c. Clogged gun filter	c. Clean
	d. Worn gaskets	d. Replace
	e. Viscosity too high	e. Dilute the material
	f. Nozzle too large for the equipment flow rate	f. Replace with another nozzle
The pump works irregularly, the spray angle changes	a. Valves, gaskets and piston are worn	a. Replace
	b. Stuck no-return valve	b. Clean
	c. Paint pressure is too low	c. Increase air pressure
	d. Viscosity too high	d. Dilute the material
The pump works but does not take up the product	a. Worn piston valve gaskets	a. Replace parts through BERIZZI
The pneumatic motor freezes	a. The high piston speed leads to the formation of frost	a. Install a smaller nozzle and reduce the air pressure
	b. High amount of water and condensate	b. Install a suitable condensation separator
	c. Temperature close to freezing	c. Lubricate air with antifreeze oil

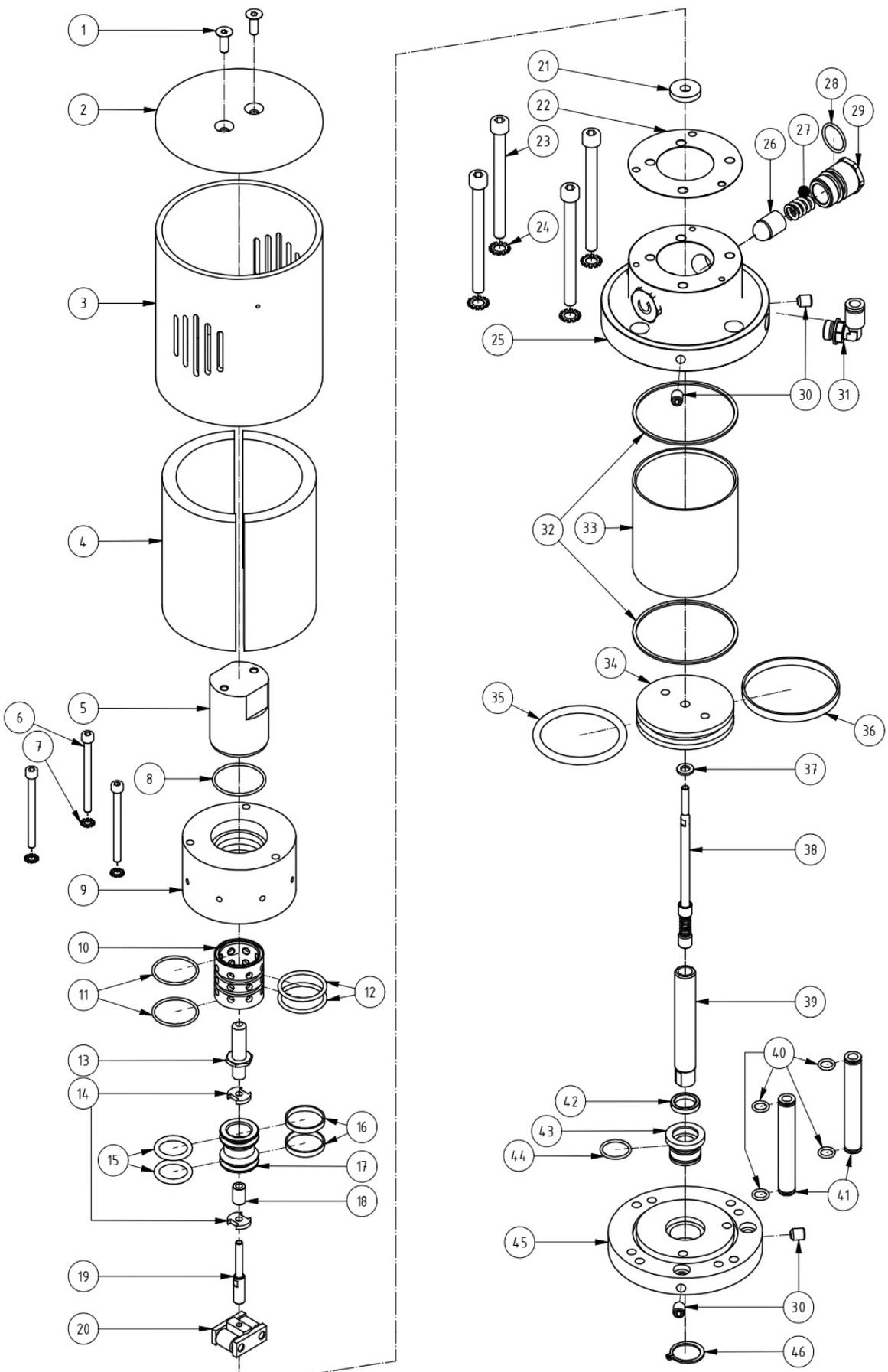
12 DISMANTLING THE MACHINE

Dismantling the machine/line involves the disassembly and separation of the various components. Steel parts (Fe 360 – C 40), such as the structure frame, loader, etc., can be recovered through scrapping.
Aluminium parts, such as pneumatic cylinders, must be recovered and recycled at authorized centres. Sheaths, flexible ducts, plastic or other non-metallic components must be disassembled and disposed of separately.
Note that the collection and disposal of oils, coolants and other working fluids require special precautions. Strictly comply with the provisions in current regulations on the collection of special hazardous waste (Italian Legislative Decree 152/2006) in full respect of the environment.

NOTE

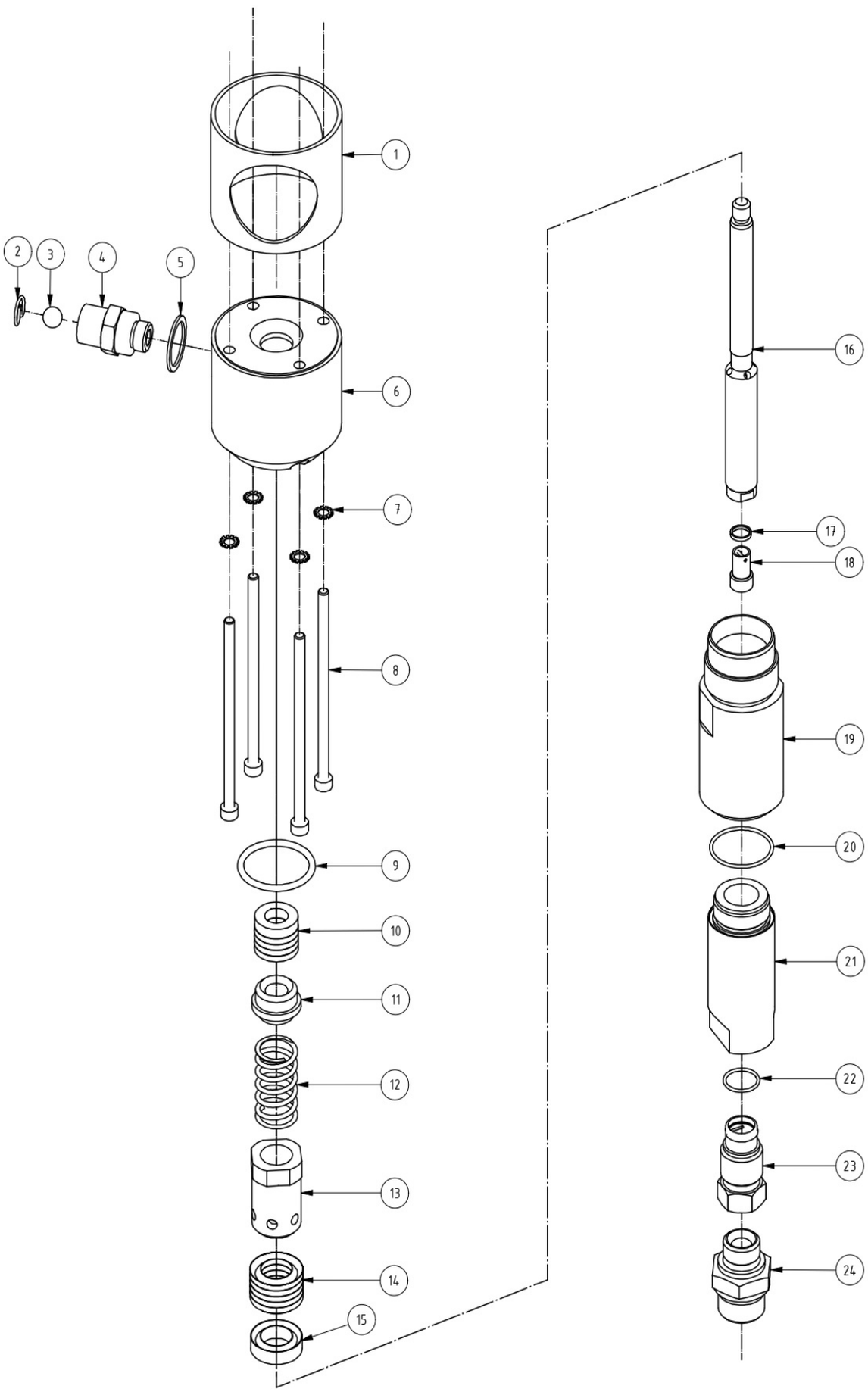
Deposit scrap parts in appropriate containers to prevent accidental spills of liquids and hazardous substances.
Always prepare the technical/administrative documentation required for the disposal of special hazardous and non-hazardous waste (transport forms, registrations, possible chemical analyses) in accordance with EC Directives and Italian Legislative Decree 152/2006.
The identification plates of the machine/line and any other related documentation should be destroyed during disposal.

13 APOLLO 303 SPARE PARTS – AIR MOTOR



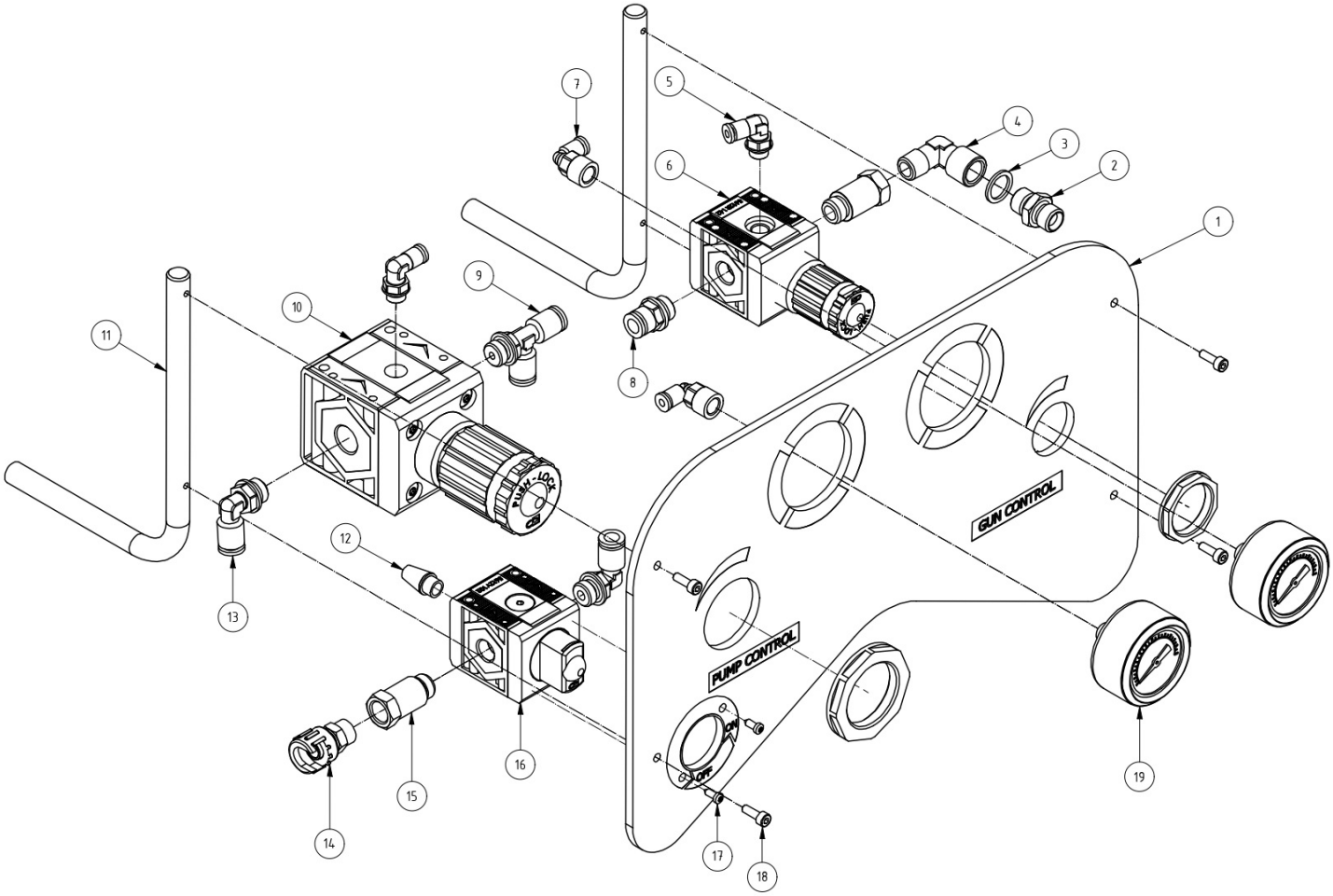
POS	COD.	DESCRIPTION	QTY
1	VTSCESXUS	Cover plug screws	1
2	TR24626	Cover plug	1
3	TR24627	Cover	1
4	TT3106	Sound Proofing Cap	1
5	TT3102	Complete Cap	1
6	VTCECXSZ	Fixing Screw	1
7	RSHMC	Fuse Seat	1
8	ORDUT7N	OR Hood Seal	1
9	TT3107	Fuse Seat Body	1
10	TT3108	Seal Fuse	1
11	ORDUUON	OR Upper seal Fuse	1
12	ORTUUON	OR Middle seal Fuse	1
13	TT3103	Upper Small Shaft	1
14	TT3111	Fuse Washer	1
15	ORQZOUN	OR Fuse	1
16	LRPQZOU	Lubroring	1
17	TT3109	Fuse	1
18	TT3110	Fuse Spacer	1
19	TT3113	Lower Small Shaft	1
20	TT3115	Seat Reversing Gear	1
21	TT3117	Lower Buffer	1
22	TT3112	Flexoid gasket	1
23	VTCEOXNZ	Screw	1
24	RSHMO	Washer	1
25	TR24602	Complete Upper Motor Flange	1
26	TT3114A	Tracer Point	1
27	BBS724	Tracer spring	1
28	ORDZ7CN	Tracer point o-ring	1
29	TT3114B	Tracer point body	2
30	GRCNOXUZ	Grub screw	1
31	119814	Automatic fitting	1
32	TR24622	Air cylinder gasket	1
33	TR24605	Air cylinder	1
34	TR24115	Air piston	1
35	ORSDDCN	Piston gasket	1
36	LRPSDDC	Piston lubroring	1
37	TR24631	Washer	1
38	TR24580	Complete Needle	1
39	TR24104	Piston Rod	1
40	ORUZON	Air hose O-Ring	1
41	TR24604	Air Hose	1
42	TR24157	Piston gasket	1
43	TR24108	PTFE Bush	1
44	ORDZ7CN	OR Bush	1
45	TR24603	Lower Flange	1
46	SEDDZ	Exteneral seeger	1
	TRK303M	AIR MOTOR REPAIR KIT (Pos. 8-2x11-2x12-2x15-2x16-22-2x28-2x32-35-36-4x40-42-43-44)	1

APOLLO 303 - PUMPING



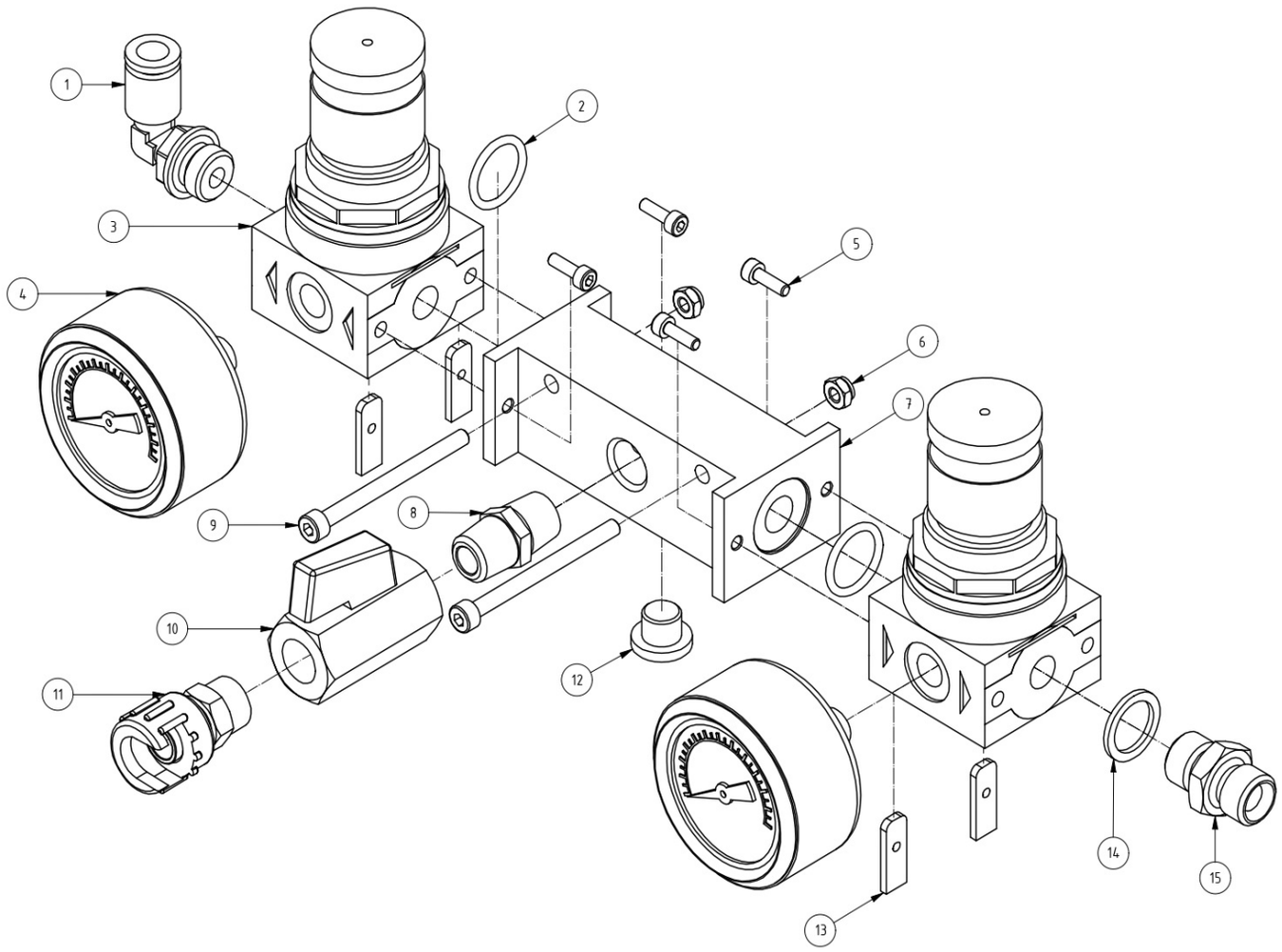
POS	COD.	DESCRIPTION	QTY
1	TR24161	Air Spacer for paint	1
2	BBS1727	Seeger	1
3	SFE011	Ball	1
4	TR23162A	Set no flowback valve	1
5	GR0116	Copper washer 16x1,5	1
6	TR24183	Central body	1
7	RSHMS	Washer	1
8	VTCESXUZZ	Screw	1
9	300002T	PTFE O-Ring	1
10	TR24152	Upper packing gasket	1
11	TR24116	Upper pressure washer	1
12	TR24134	Spring packing gasket	1
13	TR24137	Pressure spacer	1
14	TR24150	Lower packing gasket	1
15	TR24152D	Spacer	1
16	TR24101	Material piston	1
17	TR966	Compression valve gasket	1
18	TR24147	Complete compressione valve	1
19	TR24179	Lower Body pump A	1
20	ORDUTUP	Pumps gasket	1
21	TR24181	Lower Body pump A	1
22	BRZ1012A	Suction valve	1
23	TR24301	Complete suction body valve	1
24	151234I	Inlet fitting	1
	TRK303P	GASKET REPAIR KIT FOR PUMPING (Pos. 10-14)	1

APOLLO 303 - PANEL



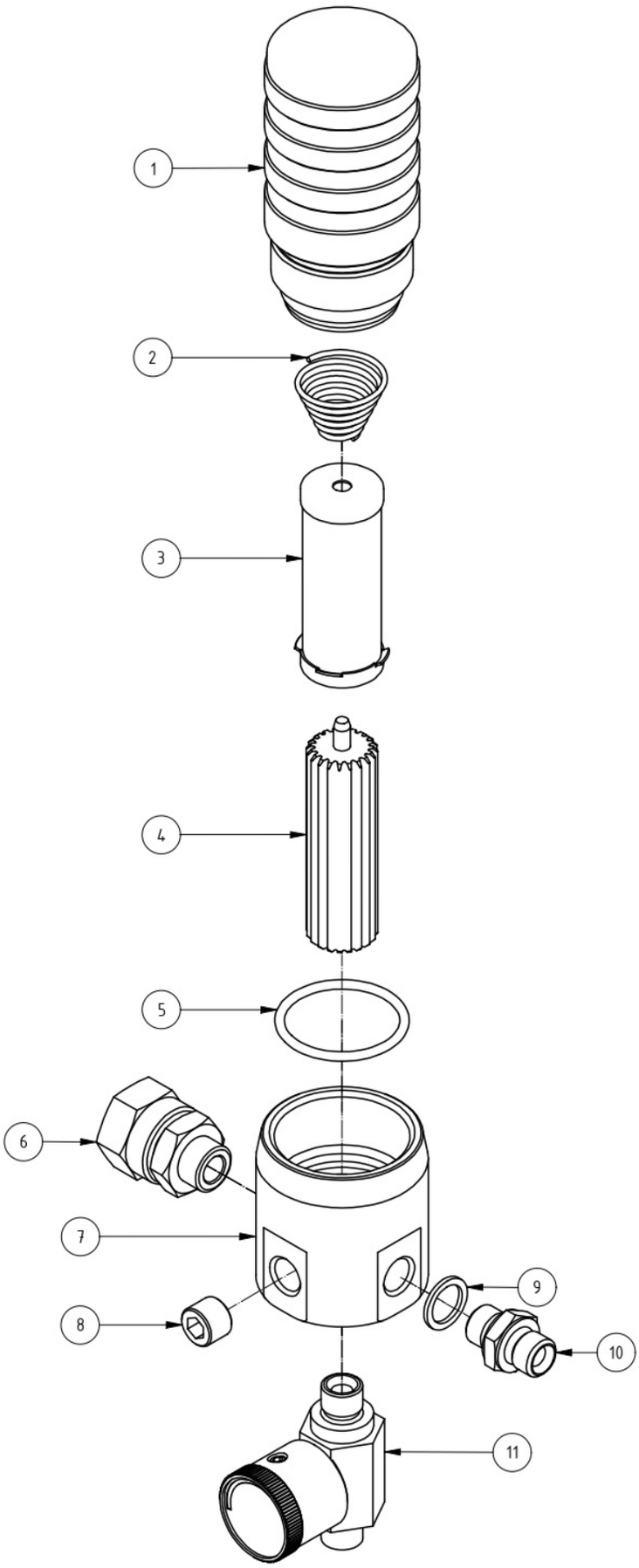
POS	COD.	DESCRIPTION	QTY
1	BBS1045S	Pressure panel	1
2	151414	Double connector	1
3	GR0114	Copper gasket	1
4	50400	L Fitting	1
5	119418	Quick 90° fitting	1
6	BIT015	Regulator	1
7	119418F	Female quick 90° fitting	1
8	110814	Quick fitting	1
9	BBR43	2 Ways quick fitting	1
10	BIT016	Regulator	1
11	BBS1051	Board support	1
12	BBS1718	Silencer	1
13	119814	Quick 90° fitting	1
14	40180	Bayonet fitting	1
15	21507	Extension	1
16	BIT017	ON-OFF valve	1
17	VTCAQXUD	Self-tapping screw	1
18	VTCEQXUD	Screw	1
19	212488	Pressure gauge	1
	PANMIX	Complete panel	1

APOLLO 303 - AIR-ASSISTED AIRLESS REGULATOR ON WALL SUPPORT



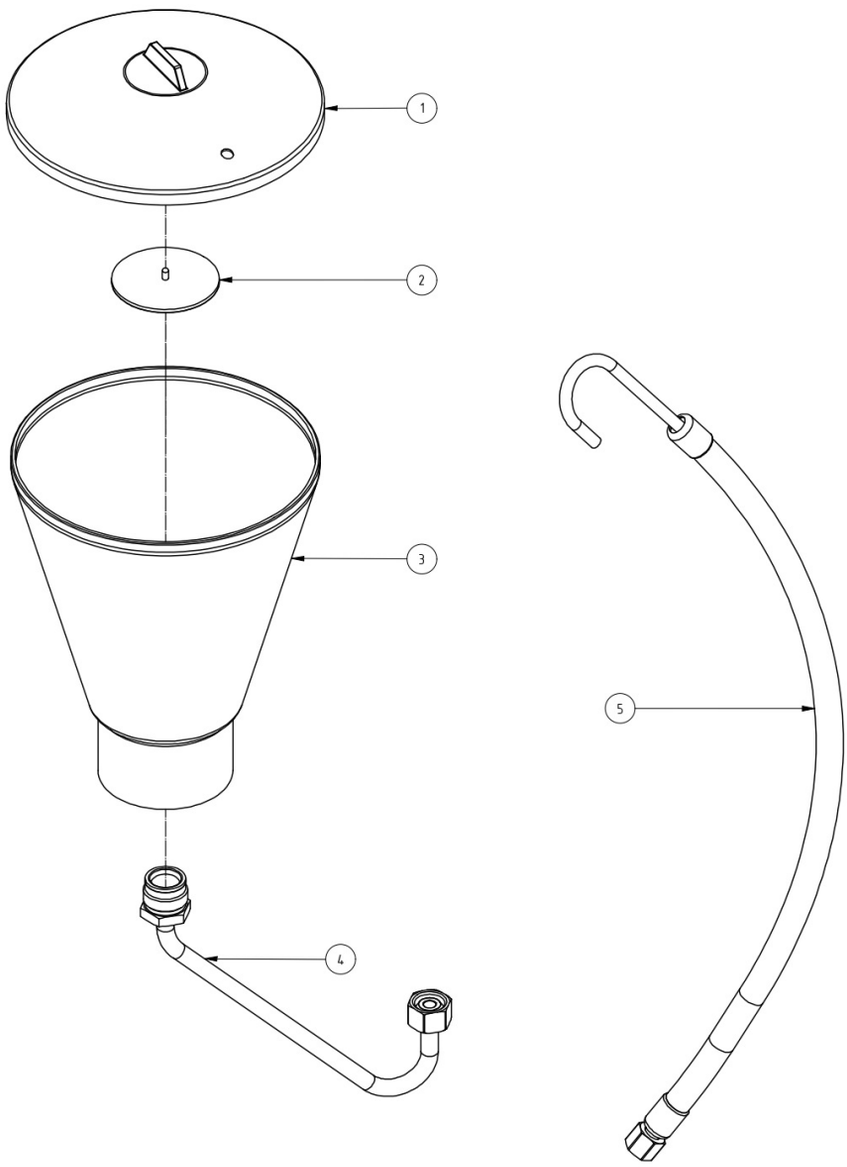
POS	COD.	DESCRIPTION	QTY
1	119814	Rapid 90° fitting	1
2	KITREP2	O-Ring	1
3	BIT000	Regulator	1
4	212486	Manometer	1
5	VTCETXUD	Lock regulator screw	1
6	DAMQ	Nut	1
7	BBS193	Support	1
8	46100	Double Connector	1
9	VTCEQXCC	Screw	1
10	383038	Ball valve	1
11	40180	Bayonet fitting	1
12	BIT000T	Plug	1
13	KITREP1	Plate for regulator	1
14	GR0114	Washer	1
15	151414	Double Connector	1

APOLLO 303 - INLINE FILTER



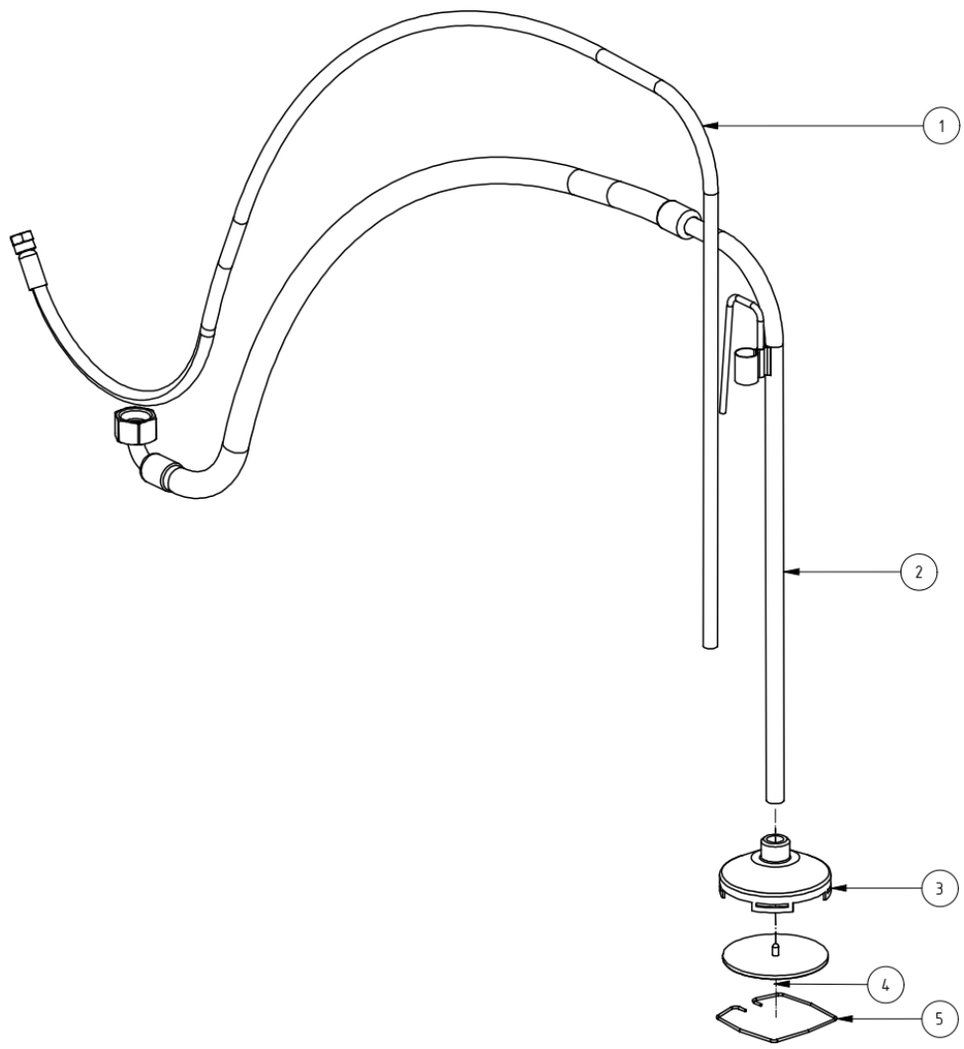
POS	COD.	DESCRIPTION	QTY
1	301005R	Stainless steel upper body	1
2	300004R	Stainless steel spring	1
3	FM2302	Sieve filter	1
4	FM620020	Nylon support for filter	1
5	300002R	PTFE gasket	1
6	163838IR	Stainless steel adapter M 3/8"(BSP) x F 3/8" (BSP)	1
7	301001R	Stainless steel lower body	1
8	301006R	Grain	1
9	GR0114	Copper Washer	1
10	151414I	Stainless steel double connector	1
11	023006	Relief valve	1
	FM62013	Complete inline filter	1

APOLLO 303 - SUCTION SYSTEM AND GRAVITY TANK



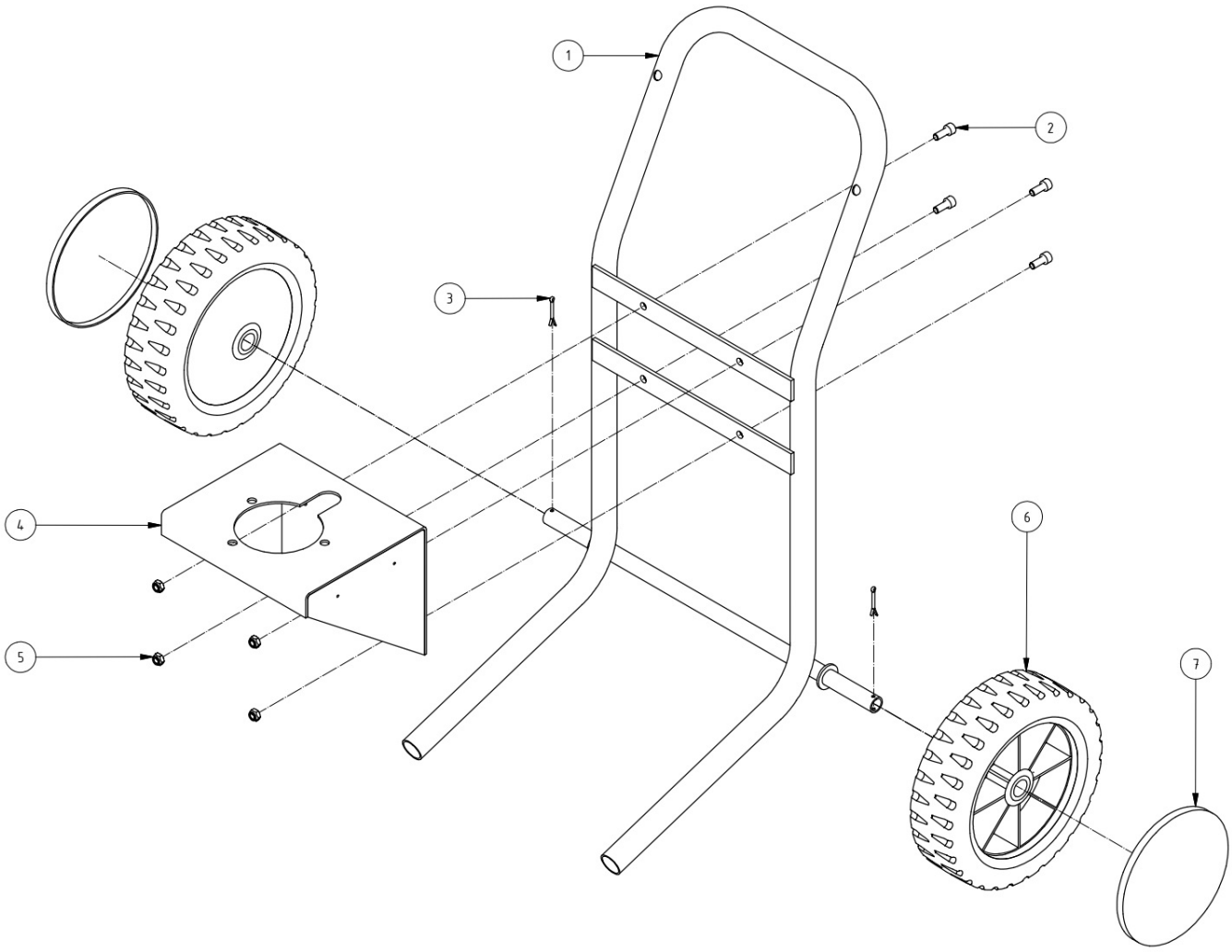
POS	COD.	DESCRIPTION	QTY
1	FM61000C	White cover	1
1	FM61000CB	Black cover	1
2	FM3010	Disc filter	1
3	FM61000A	Only white tank	1
3	FM61000AB	Only black tank	1
4	FM610061	Oblique adapter	1
5	RITAPO	Suction hose	1
	FM61000	Complete white tank (Pos. 1-3)	1
	FM61000B	Complete black tank (Pos. 1-3)	1

APOLLO 303 - SUCTION SYSTEM



POS	COD.	DESCRIPTION	QTY
1	RAP3040	Return hose	1
2	69034912I	Suction hose	1
3	FM60001	Only housing	1
4	FM3010	Disc filter	1
5	FM60003	Spring	1
	69034912AK	Complete suction system (Pos. 1-2-3-4-5)	1
	FM60005	Complete suction housing kit (Pos. 3-4-5)	1

APOLLO 303 - TROLLEY



POS	COD.	DESCRIPTION	QTY
1	BBS480	Trolley	1
2	VTCEOXDZ	Screw	1
3	TR1038	Pin	1
4	BBS481	Support pump	1
5	DAMO	Autolock nut	1
6	RUOT26	Wheel	1
7	RUOT26C	Wheel cover	1
	CAR30	Complete trolley (Pos. 1-2-3-4-5-6-7)	1

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