Introduction

Dear customer,

Thank you for choosing our product. Please read this manual carefully before using the spraying pump.

This instruction manual has been drawn up by the manufacturer and it is an integral part of the product supplied. All the information that it provides is addressed either to unqualified (that is to say unskilled) or to highly qualified personnel.

This instruction manual makes clear the intended purpose of the pump and contains all the information needed to ensure its safe and correct installing and use.

Further technical information that might not be contained in this instruction manual can be found in a technical file drawn up by **SINAER** and which is available for consultation at its offices.

Consult carefully this instruction manual before proceeding to installation, use or any intervention on the pump.

A constant observance of the regulations it contains ensures both the operator and the pump's safety, the working economy and a longer working life to the pump. While designing and realizing this pump we have respected all the standards and dispositions needed to meet the basic safety requirements provided for by the European community regulations.

The careful analyzing of risks made by **SINAER** has ensured the elimination of the most part of them; however it is recommended to keep strictly to the instructions contained in this instruction manual. Never fail to consult this manual before accomplishing any operation.

Preserve this manual with care and try to place it close to the pump or not too far from it so that it can be easily found for consultation.

Schemes and charts are supplied with an exemplifying purpose; the manufacturer, in his pursuit of a strategy for the constant development and updating of this product, might make changes in it without any notice.

This instruction manual must be preserved during the pump's whole lifetime; in case of loss or destruction you should ask for a copy from the manufacturer specifying its

identification data (the price will be fixed by the manufacturer). If the pump is sold to outside parties, the manufacturer has to be informed (through written communication) of the name and address of the new user.

SINAER will take care of informing its customers of any modification concerning the **SAFETY REGULATIONS** of the pump.

Every suggestion from the customers concerning improvements to apply to our pump will be welcomed: **SINAER** will surely analyze the possibility of realizing them.

SINAER claims the absolute right of ownership on this document: it is forbidden to disclose it, either totally or partially, to a third party without written authorization by **SINAER.**

The pump is also supplied with:

- **Declaration of conformity**
- **WARRANTY:** *(see chapter at the end of the manual)*

DECLARATION OF CONFORMITY

SINAER s.r.l.
located in 06030 Marcellano (PG) – Italy, via Villa Rodi, 26
declares on behalf of its legal representative, that the machine

SPRAYING PUMP

Model:……

Serial number:……..

which this declaration refers to, conforms to
the provisions of the law governing machinery directives:
89/392/CEE, 91/368/CEE, 93/44/CEE, 93/68/CEE, 72/23/CEE, 89/336/CEE.

The legal representative

INDICE

1. HOW TO EMPLOY AND PRESERVE THIS INSTRUCTION MANUAL

In this chapter we supply some information about the correct way of using this manual together with the fixed limits of use.

1.1 To whom this instruction manual is addressed

This manual is intended for the following users:

- transportation, loading and unloading personnel
- operators
- installers
- maintenance personnel.

1.2 Purpose of the information contained in this instruction manual

The instruction manual explains how to employ the pump according to the project; it supplies the technical characteristics, the instructions for the removal, transportation, installing, regulating and use; it gives advice for the maintenance operations and for ordering the spare parts.

1.3 Limits of use of the instruction manual

Users are reminded that this manual can never replace the necessary experience of the operator and that it can be only a reminder of the main operations to be executed. Furthermore, we want to remind that it reflects the technical achievements at the moment of the purchase and that the manufacturer has the right of updating either the manual or the equipment without making changes, with a few exceptions, to previous manuals and products.

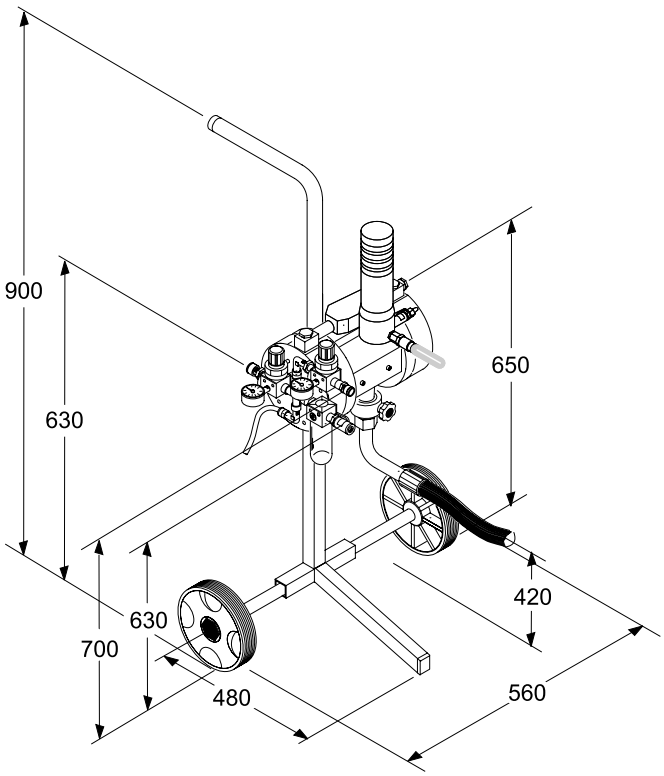
1.4 How to preserve your instruction manual

We remind users that the manual has to be carefully preserved to ensure it to last as long as the pump. For this purpose it is provided with a suitable case to protect it from wear and tear.
The section concerning the transportation of the pump is supplied in two copies so as to allow the transporter and the personnel in charge of unloading operations to consult their own copy without recurring to the original.
In case of loss or destruction of the manual, you can ask for a copy addressing your request to the area agent or to the manufacturer specifying model, serial number and year of production of the machine.

1.5 Symbols used in the user manual

	Description: This symbol highlights the special indications which may bring about physical harm to people or may jeopardize human life if not strictly complied with.
	Description: This symbol highlights the special indications which may cause damage to things or may even destroy the pump if not strictly complied with.

2 TECHNICAL DATA



SPRAYING PUMP

Technical data	Model DM 202	DM 2000S	DM 303
Flow	35	25	45
Compression ratio	1:1	1:1	1:1
Max product pressure (bar)	7	7	7
Max feeding pressure (bar)	7	7	7
Maximum drop tank (L)	6	6	6
Air inlet connection	1/4”	1/4”	1/4”
Suction connection	3/4”	3/4”	3/4”
Pump casing weight without trolley (kg)	15	15	15
Level of noise (dB) (A)	70	70	70

3 TRANSPORTATION OF THE PUMP

In this chapter we supply all the necessary directions to accomplish correctly the operations of loading-unloading, transportation and installing of the pump.

3.1 On receipt of the pump

The pump, depending on the needs, is sent as follows:

A) In a cardboard box
B) In a common case internally coated with tar paper.
C) The same as in B added with a protective vacuum sealed packing (barrier bag) for shipment.

The choice among the above mentioned alternatives depends on the length of the transportation, on the customer's instructions and on the amount of time the pump has to remain packed up.
In packing B) and C), on the four sides of the case the following data are paint-written:

- Destination
- Contract number
- Weights: net - gross - tare
- Dimensions : length - width - height
- Copy of the packing-list (if present inside the case).

3.2 Unloading operations of the pump

The orientation of the cased pump has to conform to the indications given by the picture-writings and inscriptions found on the outer side of the casing (fig. 1).

Any damage to the pump provoked by wrong dislocation movements are not under WARRANTY.

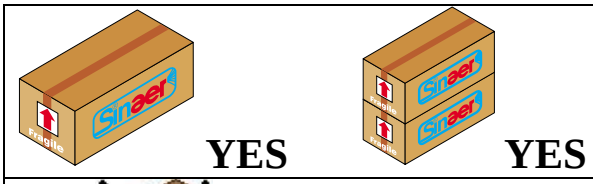
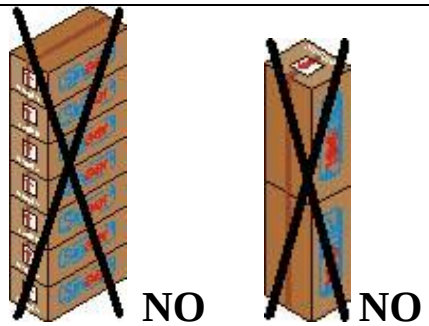
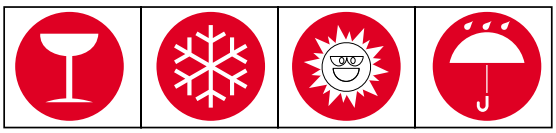
	Standard packaging: Cardboard box
	**NEVER** place more than 2 boxes containing the pumps on top of each other. Check the contents of the packaging if there are signs of damages.
	Temporary or extended storage must be carried out in closed environments away from atmospheric agents and the pumps must be handled with care.

Fig.1

3.3 Unpacking

All of the materials used for packaging can be recycled and must be disposed off in compliance with local legislative regulations. Make sure that all plastic components are carefully disposed of to avoid the creation of sources of danger (suffocation) for children.

4. MARKING DATA

4.1. Marking data of the pump

Upon reception of the pump it is very **IMPORTANT** to read carefully all indications on the plate and the **declaration of conformity**. Any problems encountered in compliance with the order, must be immediately transmitted to **SINAER**, before proceeding with any operation whatsoever.

4.1.1 Serial number of the pump

Always refer to the serial number of the pump when technical assistance is required or when spare parts are ordered. Old models and recent models (which can only be identified by the serial number) may differ slightly, or a different measure may be necessary before carrying out any kind of technical assistance.
The identification plate of the pump can be found on the right hand side fixed to the flange, as illustrated in figure 2.

The following drawing indicates manufacturer details.

THE MANUFACTURER:

4.1.2. CE Mark

This stamp, to be found on the identification plate of the pump, together with the "Declaration of Compliance" certifies compliance of the pump in accordance with essential safety requirements (RES) defined by the Machines Directive 89/392/CEE, 73/23CEE, 91/368/CEE, 93/44CEE, 93/68CEE, 72/23/CEE, 89/336/CEE.

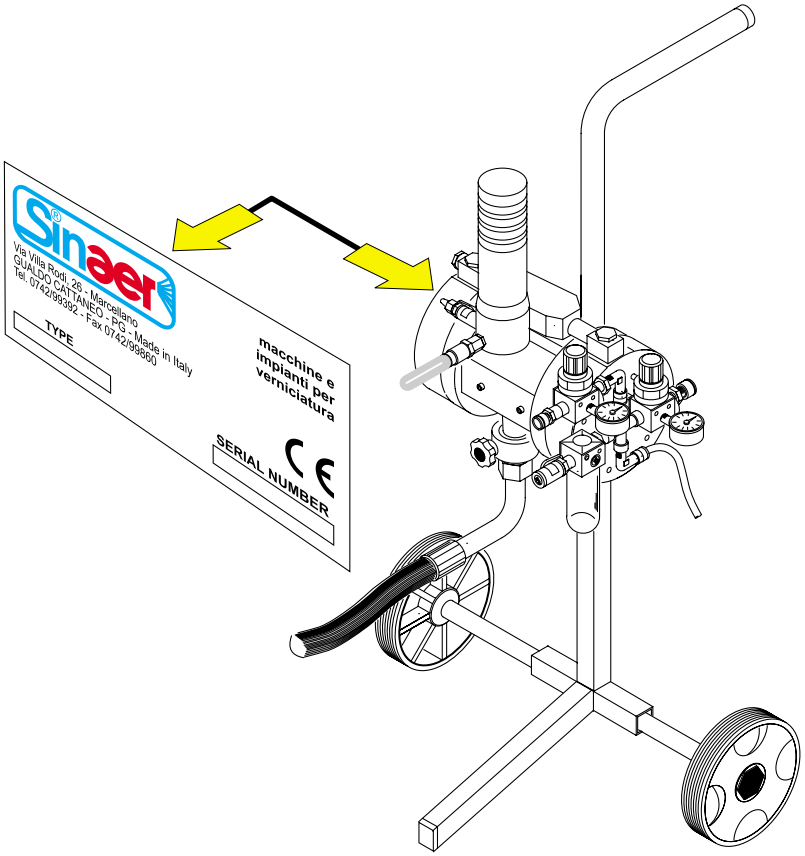


Fig. 2

5. TECHNICAL DESCRIPTION OF THE PUMP

In this chapter we provide a technical description of the machine and of the way it works; we will supply all the details that can be useful either to the operator or the maintenance personnel to understand its correct way of working and to find quickly any break-down or trouble.

5.1 Description of the main components

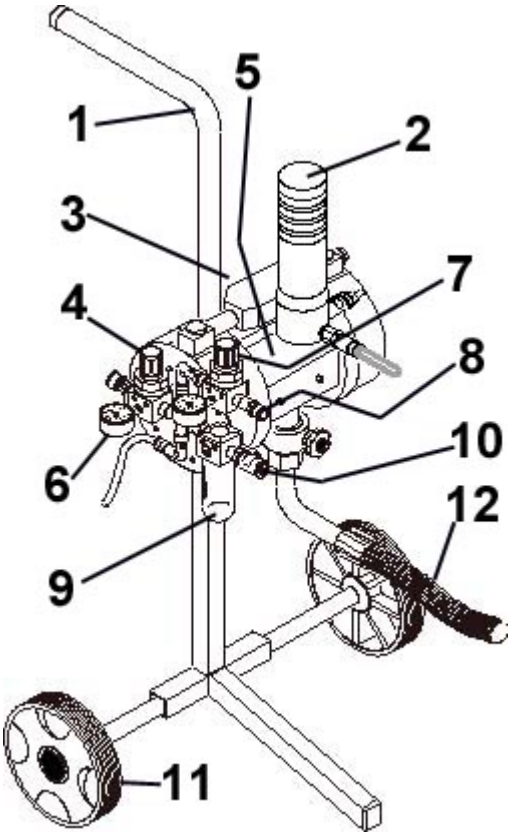


Fig. 3

1	Trolley	7	Air gun pressure regulator
2	Low pressure filter	8	Air outlet for spray gun
3	Recycle tap	9	Inlet filter
4	Pressure pump regulator	10	Air supply inlet
5	Pump casing	11	Wheel
6	Pressure gauge	12	Suction pipe

5.2 Technical description of the pump

5.2.1 Trolley

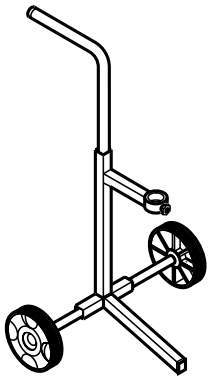


Fig. 4

The trolley, which is the supporting element of the entire machine is made from round and square tubular steel and is fitted with wheels to make movement of the pump fast and easy. The surfaces have been opportunely designed and treated to avoid the formation of rust and to guarantee a long lasting product.

5.2.2 Pump casing

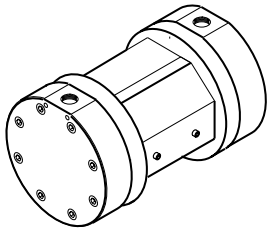


Fig. 5

The pump casing is made entirely in aluminum. Attachments for the manifolds (superior and inferior) can be found in the two bases. Maintenance is extremely easy thanks to the presence of a whole range of bolted pans which guarantee a high level of safety and therefore avoid any contact with organs in movement.

5.2.3 Air gun pressure regulator

The regulator allows for control and regulation of the direct pressure to the spray gun. Regulation comes about by rotating the upper ring nut. The pressure gauge allows for the pressure value to be kept under control.

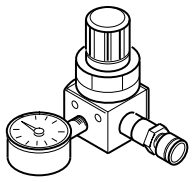


Fig. 5

5.2.4 Low pressure filter

The filter allows for the elimination of any impurities to be found in the product delivered before reaching the spray gun. Made from aluminum it is composed of two units, one fixed (lower filter casing ❶, Fig.7) and one mobile (upper filter casing, ❷). The filter element ❸ is fixed to the lower casing.
The removable upper filter casing allows for the filter unit to be inspected for maintenance. The filter has been designed to resist pressures of **up to 50 bars, any higher values are not permitted and are considered as rather dangerous.**

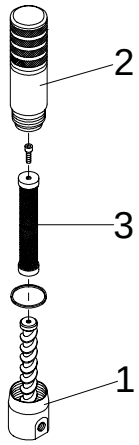
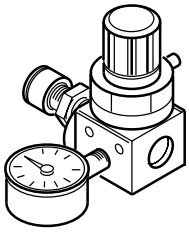


Fig. 7

5.2.5 Pressure pump regulation



The regulator allows for regulation of the working pressure of the pump.

Fig. 8

5.2.6 Suction pipe

The pipe allows for suction of the product to be delivered right inside the pump. The end piece holds a filter that eliminates the largest impurities to be found in the product. It is connected to the lower manifold of the pump casing by a mechanical joint which can only be removed using a specific tool (32 mm. spanner).

Fig. 9

5.2.7 Air inlet filter

The air control group filters the air that comes from the air-line before sending it to the inside of the pump.

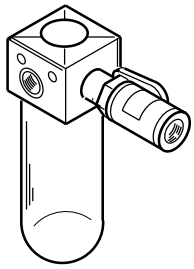


Fig. 10

5.2.8 Spray gun (optional)

An element that allows for the delivery and application of the product, it is fitted with a rapid attachment that is easy to handle. Air and the product reach the inside through a pair of PVC pipes.

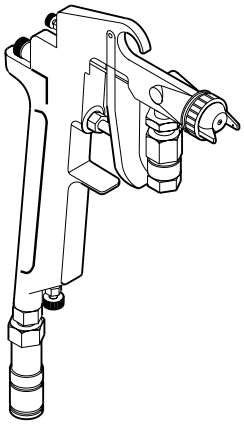


Fig. 11

6. ASSEMBLY OF THE PUMP

6.1. Generalities

This chapter provides all technical information necessary to carry out installation operations in compliance with current regulations.

Assembly and correct working of this product must be carried out by qualified personnel in compliance with the assembly instructions attached.

In the event of an incorrect assembly **SINAER** declines any responsibility for damages to things and/or people.

6.2. Assembly steps

In order to carry out a correct assembly, carry out the following steps:

1 Remove the pump from its package making sure that the packaging is disposed of in compliance with local regulations with regards to waste disposal (fig. 12).

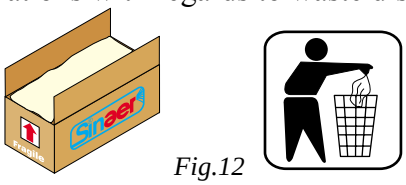


Fig.12

2 Check to make sure that the goods have not been damaged during transport and the pump has **NEVER** been used with elements damaged even partially (fig. 13).

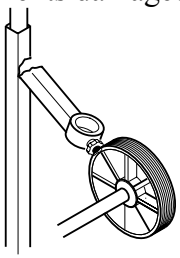


Fig.13

3 Take one of the wheels ❶ and fix it to the axle ❷ using the relative screw ❸ and washer ❹ provided (fig. 14)

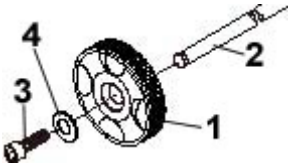


Fig. 14

4 Insert the wheel and the axle into the lower tube ❺ of the frame. Place the axle ❼ so that it is centered in comparison with the frame and subsequently block using the screws ❻ (fig. 15).

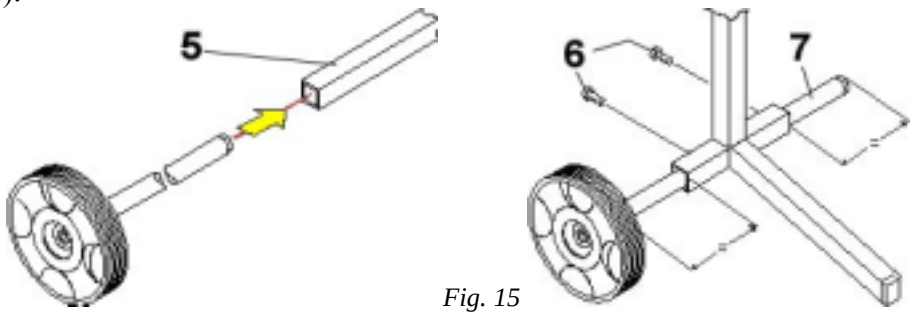


Fig. 15

5 Once the axle has been fixed proceed and install the other one (fig. 16).

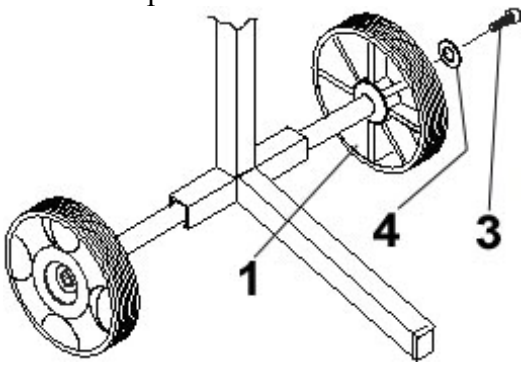


Fig. 16

6 Insert the upper bar ❽ of the frame onto the frame ❾ and block at the height desired using the relative screws ❿ (fig. 17).

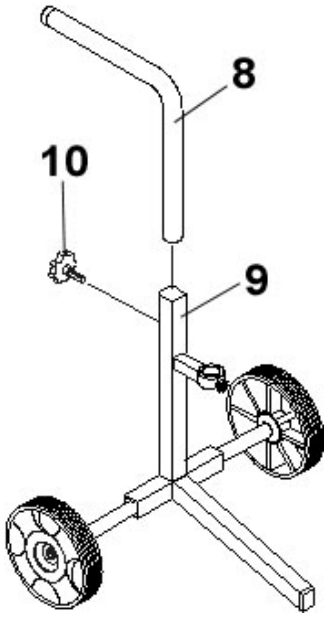


Fig. 17

7 Assemble the pump casing (**11**) onto the previously mounted frame by blocking the ring nut (**12**) using the screw provided (**13**) (fig. 18).

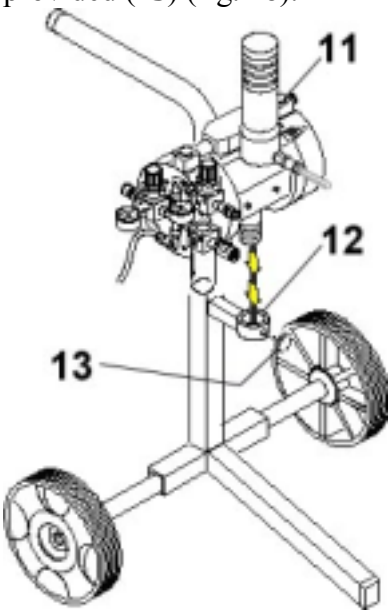


Fig. 18

8 Fix the suction pipe (**14**) to the pump casing using the relative joint (**15**) (Fig. 19). Screw down the joint using an open tool and check to make sure that it is fixed correctly.

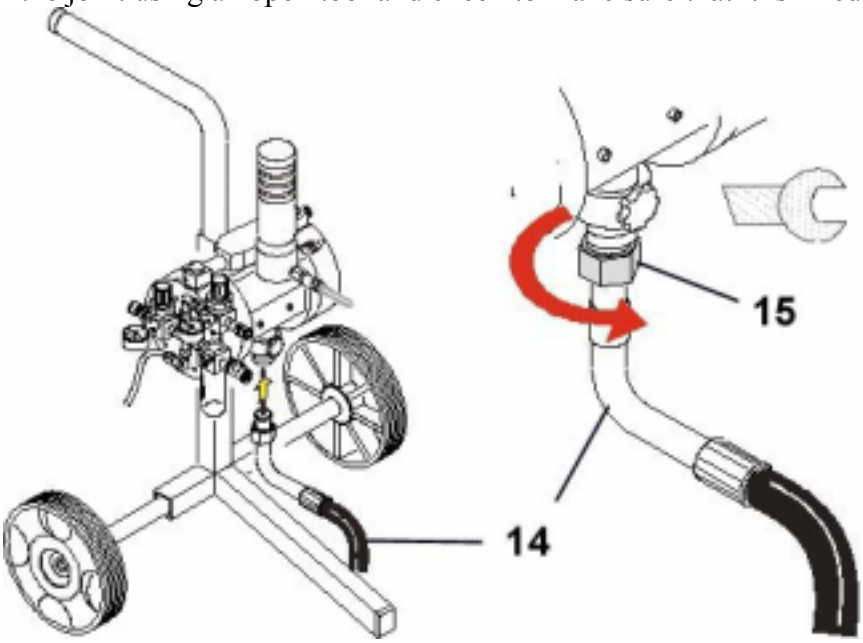
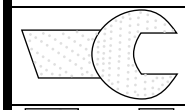
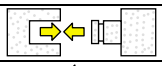


Fig. 19

If the product leaks from the joint switch off the pump immediately.

Legend	
	Attachment that requires a tool
	Rapid attachment
	Screw attachment

9 Attach the compressed air feed pipe (**16**) (fig. 20) from the air-line (use dehumidified air only). Connection must come about in the absence of air. The joint mounted onto the air control (**17**) group is of a bayonet type: tools are not required to carry out this connection.

Before connection make sure that the tap (18) of the air inlet filter is "closed".

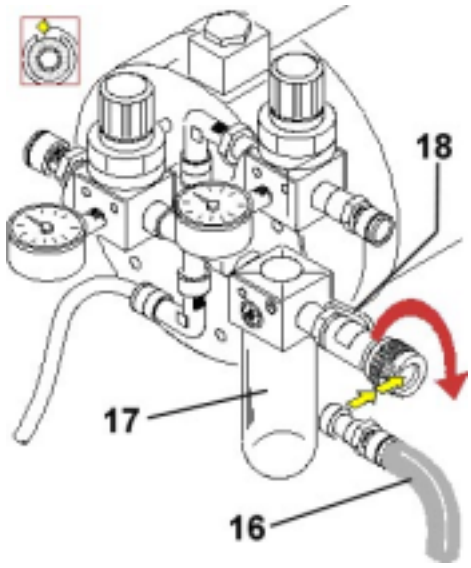


Fig.20

10 Connect the air spray gun pipe. The joint mounted onto the pressure regulator is of a rapid type and does not require tools for its connection (fig. 21).

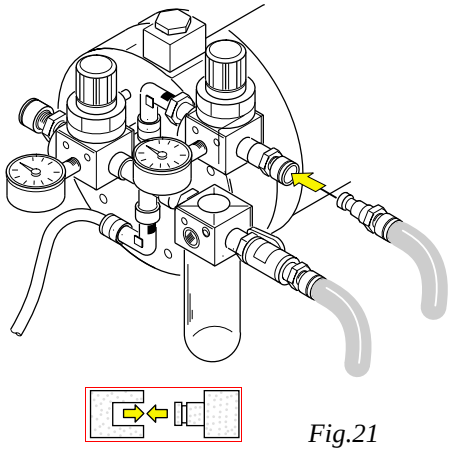


Fig.21

11 Connect the pipe that brings the product delivered to the spray gun (fig. 22).

The pipe must be fixed using a screw joint, screw down using an open key.

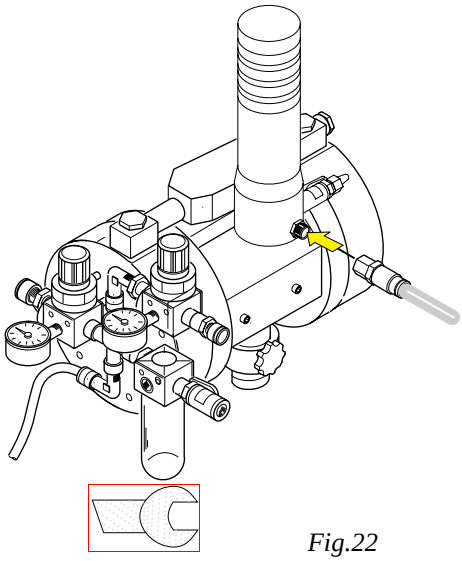


Fig.22

7. INTENDED USE OF THE PUMP

This chapter provides information of a general nature on the aims the pump was designed for, describing the main functions and limits of use.

7.1 What is the machine used for

SINAER has designed and created a range of pumps used for painting large surface areas. The products that can be used with these kinds of pumps are normal paints which are very commonly used in manufacturing processes.
Special attention has been made and studies have been carried out with regards to safety systems for the operator as well as for the surrounding environment.

Any other use must be considered contrary to the applications provided for by the manufacturer and therefore the manufacturer will not be held responsible for any damages to external things or to the pump itself, nor damages to people caused by incorrect use of the machine.

Therefore we must point out that whoever carries out improper use of the machine will also be responsible for any other consequence.

Any change arbitrarily made to this pump exempts the manufacturer from any responsibility for damages or injuries. The manufacturer and all of the organizations operating in the distribution network, including all national, regional or local dealers, will be relieved from any responsibility for damages caused due to the incorrect operation of parts and/or components not approved by the manufacturer and used in the maintenance and/or repair of the product manufactured and sold by the manufacturer.

It is absolutely excluded that any kind of guarantee of any nature on the product manufactured by the manufacturer be granted for damages caused by incorrect operation of parts or components not approved by the manufacturer himself.

7.2 Intended purpose of the pump

The pump has been designed for industrial use and cannot be used for other reasons.
An incorrect use of the pump may cause serious damages to the operator and/or to the environment in which they live, therefore the following are **strictly prohibited**:

- **To deliver high risk products to the pump such as explosives and/or corrosives or products not permitted by the manufacturer;**
- **To not comply with the user manual and maintenance instructions indicated in the present manual;**
- **The use of equipment and/or various components other than those provided by the manufacturer;**
- **The use of the pump in an incorrect manner and not in compliance with current regulations.**

7.3 Safety precautions

7.3.1 Safety regulations for use

The best operator is the most cautious one. The majority of accidents could be avoided if some precautions are observed.
In order to favor the prevention of accidents read and comply with the following precautions. The pump must be used only by those who are authorized and have been trained for its use.

In this manual when components are indicated reference is always made to whether they are on the left or right hand side of the pump.
In the majority of situations **"right"** and **"left"** mean in accordance with the operator placed in front of the pump (fig. 23), unless specifically indicated.

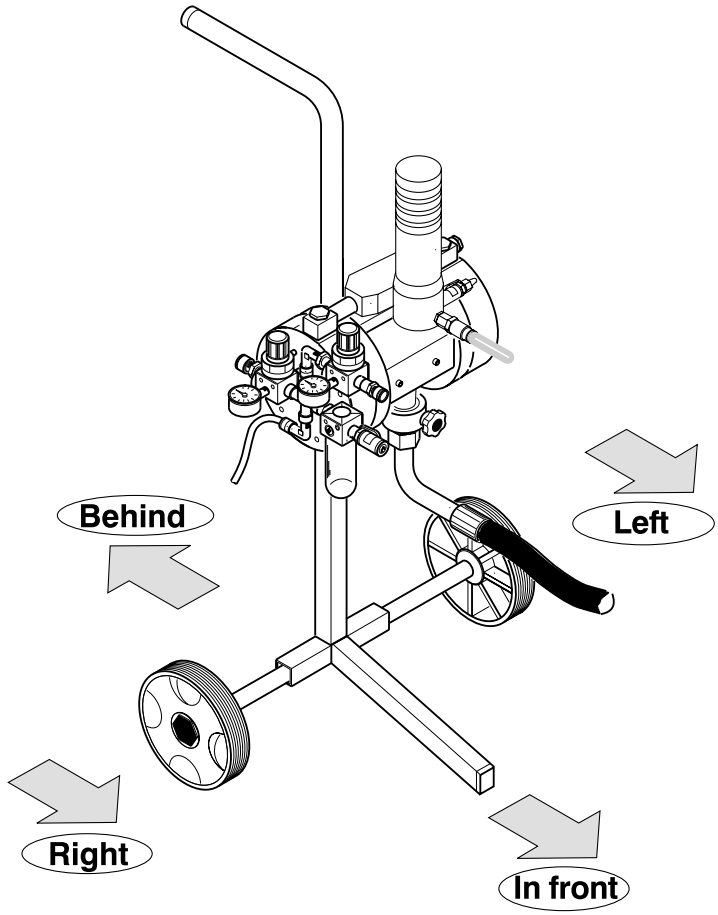


Fig. 23

Nobody should be allowed to use the pump without correct instructions.
In many countries it is obligatory that all operators are trained on the correct procedures for use of operation of the pump and safety methods before use (fig. 24).

Fig.24

Fig.25

Read the user and maintenance manual carefully before using the pump (fig. 25).
Ignorance of the regulations for use may cause accidents.
Make sure that every piece of equipment or accessory is installed correctly and that these pieces are approved for use on this type of machine.

1) Move the machine near to the area in which it should be used. Check to make sure that there are no people and/or things that may be run over during these stages.

2) Prepare all of the material required.

3) Mount the spray gun making sure that it is clean (fig. 26).

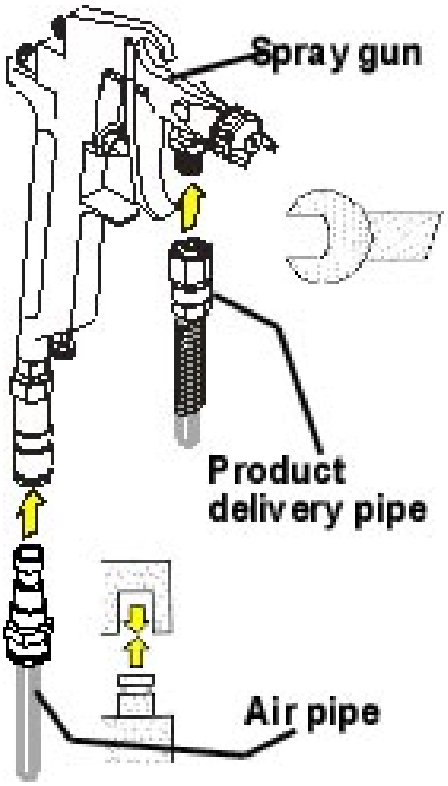


Fig.26

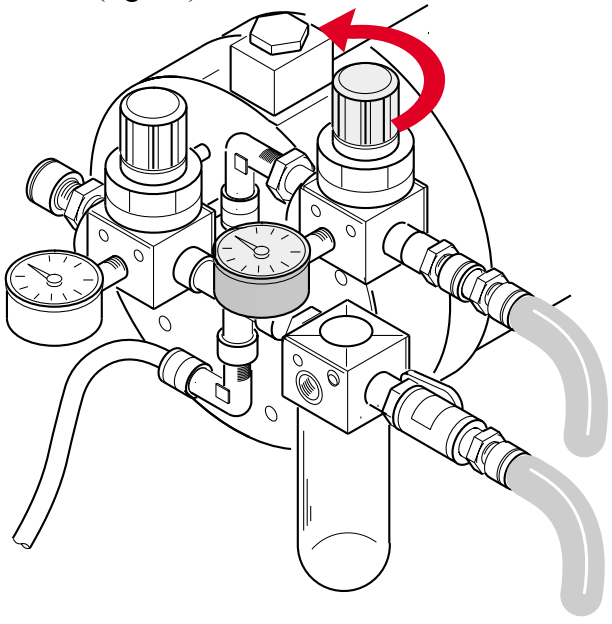


Fig.27

4) Rotate the pressure regulator ring nut in an anticlockwise direction (air spray gun) until the pressure reaches “0” (fig. 27).

5) Insert the suction pipe ❶(fig. 28) and the recycle pipe ❷ into the container of the product to be delivered.
The recycle pipe must be placed in the relative support located in the end part of the suction pipe.

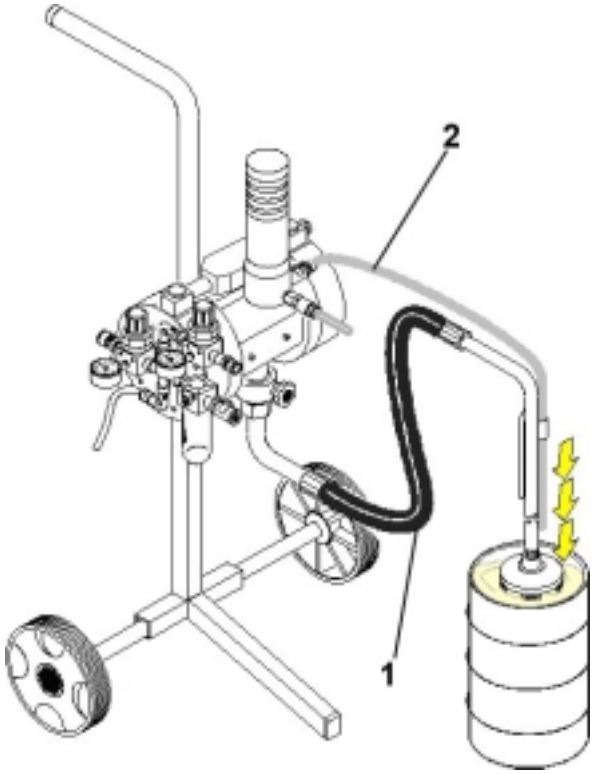


Fig.28

6) Open the discharge tap ❶ to remove all of the air inside the circuit (fig. 29).

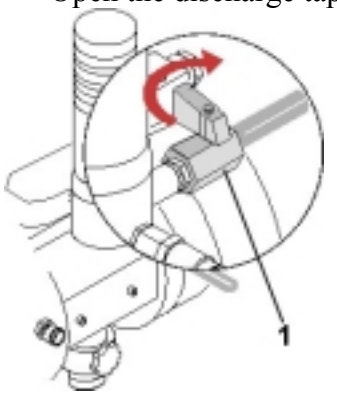


Fig.29

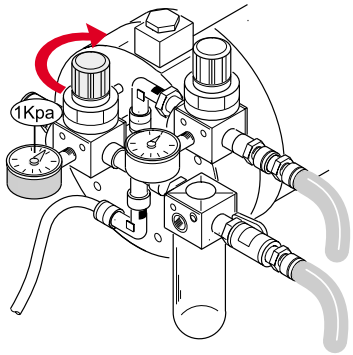


Fig.30

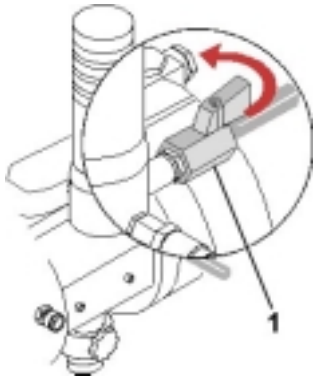


Fig.31

7) Rotate the pressure regulator ring nut in a clockwise direction until the pressure gauge reaches 1 Kpa (fig. 30). At this point the pump starts to operate and the air inside the circuit is eliminated from the discharge pipe.

8) Once the air has stopped coming out of the discharge pipe, close the tap ❶ (fig. 31) so that the pump can reach its own static pressure balance.

9) At this point according to the viscosity of the product take the air pressure between 2 and 7 Kpa by rotating the regulator ring nut in a clockwise direction (fig. 32).

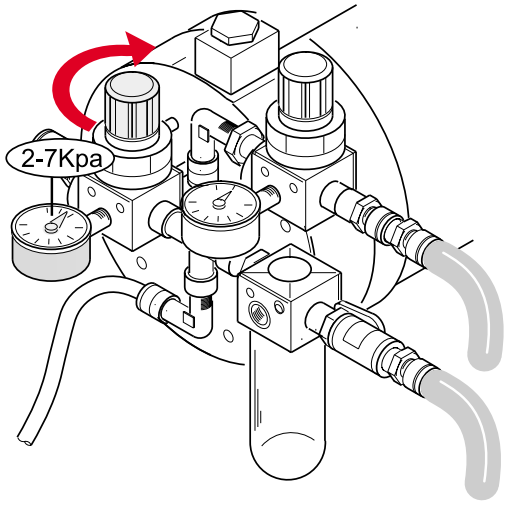


Fig.32

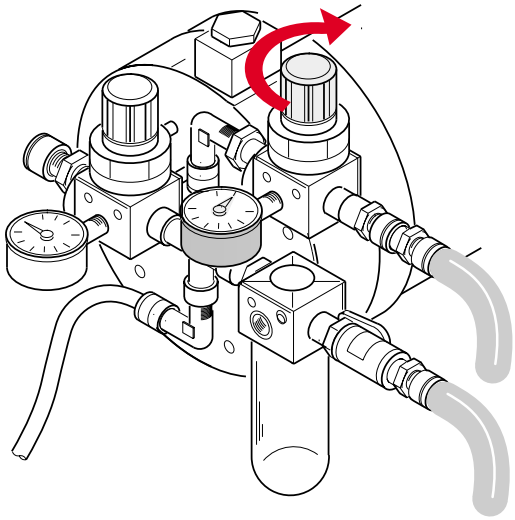


Fig.33

10) Regulate the air pressure gun by taking it to a suitable value according to the type of product to be delivered (fig. 33).

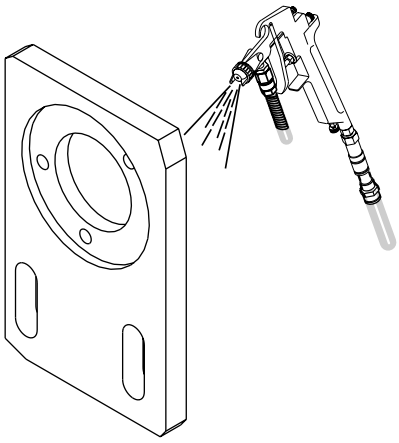


Fig.34

11) Once the correct pressure has been reached aim the spray gun at the product to be painted and begin operations (fig. 34).

12) The low pressure filter installed on all of the machine has been designed to resist pressures of **up to 50 bars, higher values are not permitted and therefore are considered as dangerous**. Therefore we recommend that this parameter is always kept under control (fig. 35).

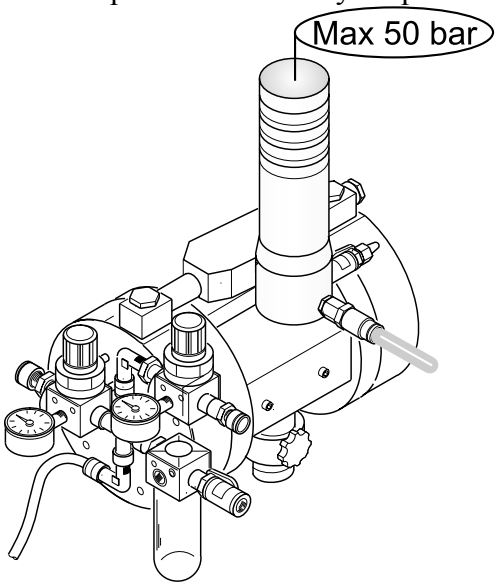


Fig.35

7.4 Incorrect use of the pump

We hereby provide some indications to be followed to avoid accidents during use of the pump.

1) Before starting the job place the pump in an area that will not obstruct the passage of machines and/or people.

2) Check to make sure that the pump is in a stable position to avoid it falling (fig. 36).

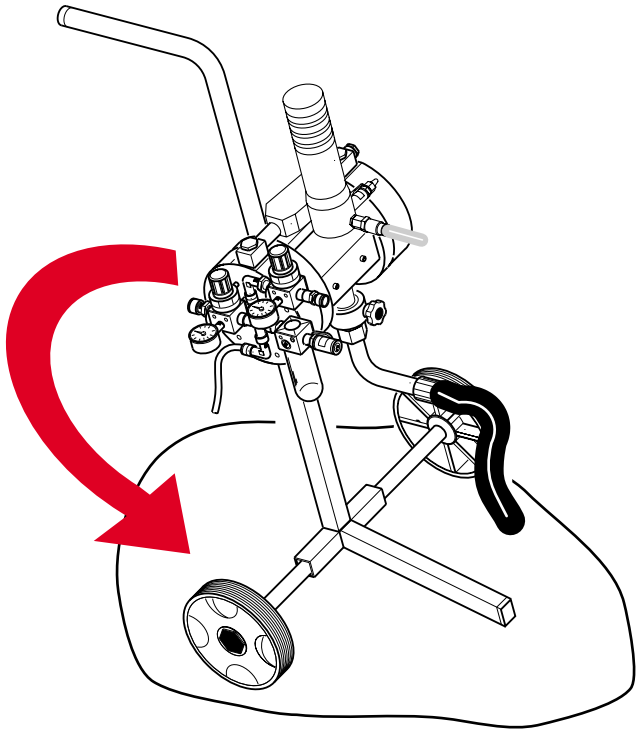


Fig.36

3) Check to make sure that all of the pipes (air and product) are connected correctly (fig. 37). In the event of an incorrect fixing ***before disconnecting any pipe close the air inlet tap.***

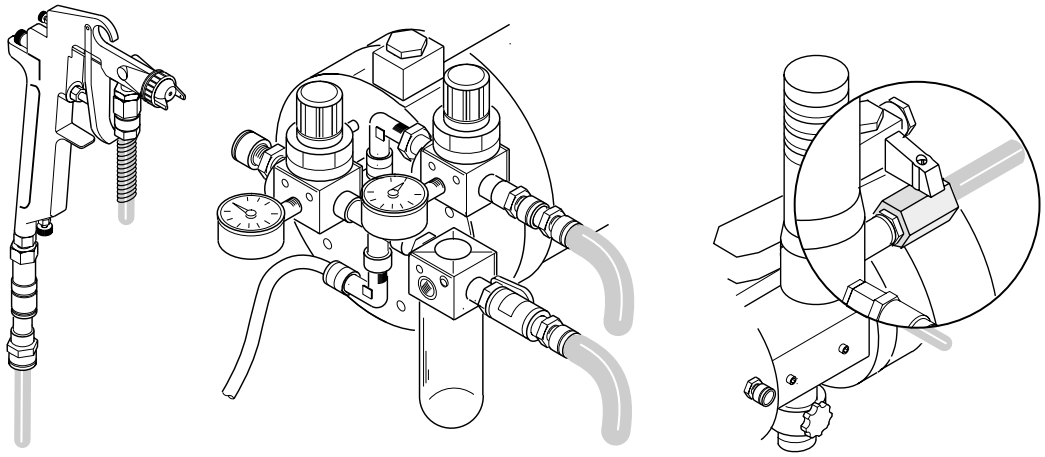


Fig.37

4) **NEVER** remove the upper filter casing while the machine is in operation (fig. 38) but proceed in the following way:

- stop the machine by closing the air inlet tap
- discharge the pressure inside the circuit
- remove the filter casing

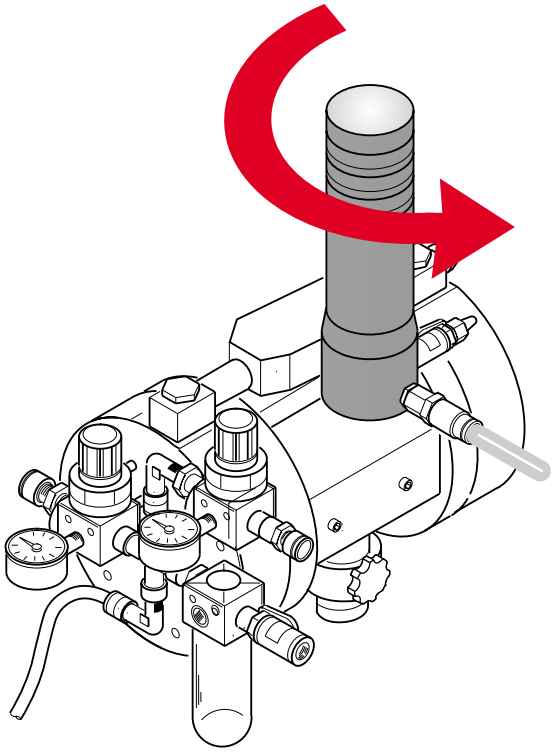


Fig.38

5) Use the pump in ventilated environments. The use of highly flammable materials must always be present therefore avoid contact with free flames or incandescent materials.

6) Always use individual safety devices in order to avoid poisoning or the contact of aggressive materials with parts of the casing.

7) The spray gun **MUST NEVER** be aimed at people (fig. 39) or objects that are not involved in the operations. Any kind of operation should be carried out with the gun facing downwards.

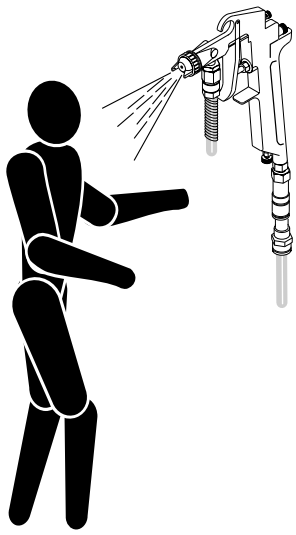


Fig.39

8) **NEVER** use toxic and/or explosive products with the pump. ***Always check the technical details of the products and their compatibility with the machine before starting any kind of job.***

9) **NEVER** use "mixed" products with this kind of pump as they may cause irreparable damages.

10) The product that is discharged during the unloading or the residues during washing **MUST NEVER** be dispersed on the ground but collected in suitable containers and disposed of in accordance with local regulations.

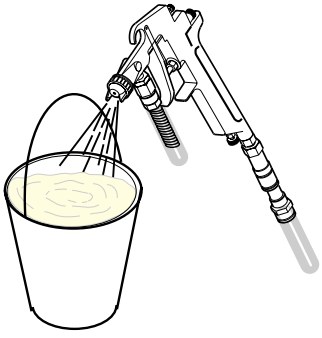


Fig.40

7.4.1 Transfers

Transfers have been put on the pump to indicate the dangerous points or warnings for the operator and technical assistants.
Before using the pump it is necessary to become familiar with the meaning of this transfer, and most of all to know exactly where they have been placed. As the transfer is adhesive it may fall off and/or deteriorate and if this was to happen they must be replaced with new transfers of exactly the same kind.

We hereby indicate the transfers placed on the pump with the meaning alongside:

	**WARNING**	Before starting any kind of maintenance and/or regulation operation carefully read the user manual.
	**DANGER**	Maintain a safety distance with regards to the ray of action of the pump.
	**WARNING**	Always wear protection goggles during use of the pump.
	**WARNING**	Always use protection gloves during work processes.
	**WARNING**	Always use a protection mask during work processes.

The above-mentioned individual safety devices must:

- **be in excellent condition**
- **be replaced when damaged, even partially**
- **correspond with current regulations**

Fig. 41 indicates the position in which the general plate is to be found with all details.

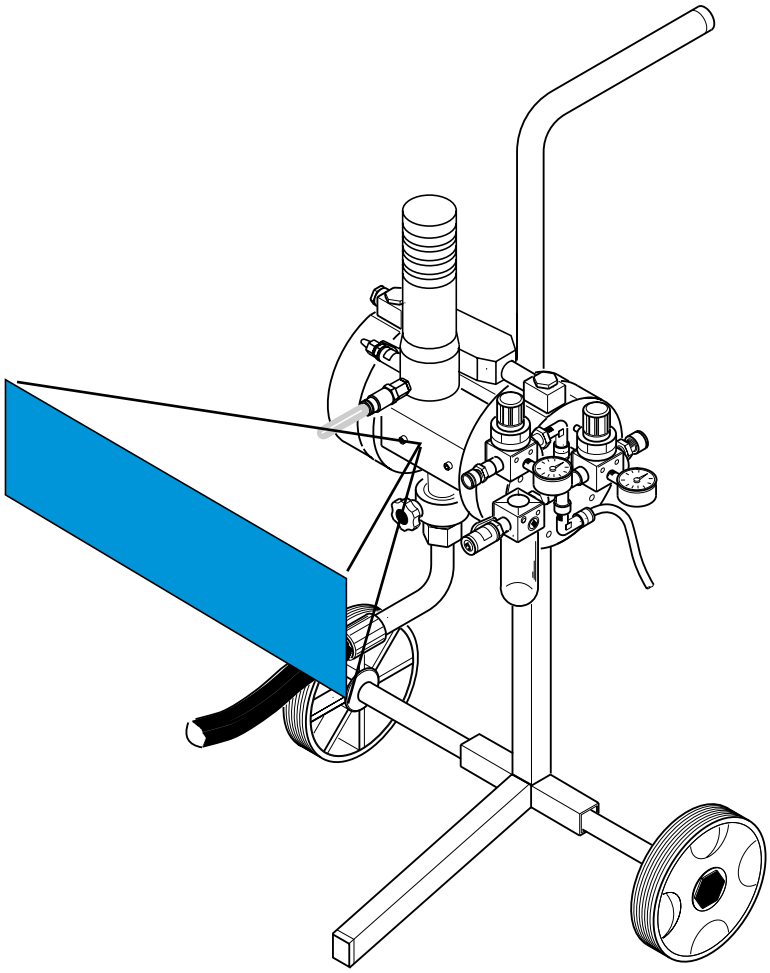


Fig.41

7.4.2 Requirements of the operator

The pump must be used **EXCLUSIVELY** by qualified personnel. An operator is considered qualified if:

- **He understands and is familiar with the written instructions, the laws and the regulations**

Written instructions by SINAER include the manual and the indications written on the pump. Current laws and regulations in the country of use of the pump may require higher levels of safety requirements or may identify further risks compared with those listed in the manual.

- **He knows the conditions of use**

He must be aware of the values indicated in the technical specifications for every kind of material used. The operator must know all of the possible uses of the pump as well as the areas in which the pump must not be used.

- **He is not under the effect of drugs or alcohol**

The use of these substances may jeopardize quick reflexes and the coordination of those using the pump. An operator that uses the above-mentioned drugs must consult a doctor with regards to suitability of use for the complete safety of the pump.

- **He complies with all of the requirements necessary.**

An operator with sight or hearing problems or with slow reflexes is not considered as a qualified operator.

7.4.3 Requirements of the maintenance operators

The maintenance of the pump must be carried out **EXCLUSIVELY** by qualified personnel. An operator is considered qualified if:

- **He understands and is familiar with the written instructions, the laws and the regulations**

Written instructions by SINAER include the manual and the indications written on the pump. Current laws and regulations in the country of use of the pump may require higher levels of safety requirements or may identify further risks compared with those listed in the manual.

- **He is not under the effect of drugs or alcohol**

The use of these substances may jeopardize quick reflexes and the coordination of those using the pump. An operator that uses the above-mentioned drugs must consult a doctor with regards to suitability of use for the complete safety of the pump.

7.5 Storage

The pump in operation must be correctly stored according to the estimated period of storage (temporary storage or long term storage, that is to say more than 3 months).
In any case the pump should always be stored in closed areas, away from atmospheric agents (wind, rain, snow, sand etc.).

However, always apply the following suggestions:

1) If the pump is not packed

- Check the state of preservation of the material after transport.
- Protect the components and the pump with pieces of polyethylene, keeping the air vents free (the polyethylene must contain additives and must support increases and decreases in temperature, humidity and light without any visible signs of decay).
- Check the protection weekly and in particular make sure the air and/or draining vents are free.

2) If the pump is packed according to special methods

- Check the state of preservation of the packaging and separate the packages according to the storage specifications indicated on them.
- Protect the loose components (if there are any) using a polyethylene cloth and check the effectiveness of the protection as indicated in the previous point.
- For the material packed in crates check the internal state of the packaging (cloth, bag etc.) and carry out subsequent controls as indicated in the previous point.

3) Installation of the stored materials

- After having removed the protection and the packages (if there are any) carry out a careful visual check of each single component and intervene, wherever necessary, to bring the materials back to their original conditions.
- Carry out functional tests, especially after a long period of storage.
- Never use the pump if any part is damaged.

Never attempt to repair the pump alone, incorrect operations may damage the operation of the pump as well as being a source of danger for the operator.

8. MAINTENANCE

8.1 Generalities

This chapter deals with all of the service procedures required to keep the pump in maximum efficiency. All of the operations indicated below must be carried out **exclusively by qualified personnel** or directly by SINAER technicians. Contact specialized centers or repair centers to carry out intervention on this kind of machine.

8.2 Security regulations in terms of maintenance

Before carrying out any kind of intervention for any maintenance operation it is necessary to read carefully the contents of the manual.
The person in charge of maintenance must comply with the following, if not it may lead to serious damage.

- Using special signs indicate that maintenance work is being carried out.
- Carry out maintenance to the pump and its various components, especially the air and product pipes, and keep them in good and reliable conditions to protect your safety and to comply with current regulations.
- Never carry out maintenance intervention to the pump without instructions.
- Before carrying out any kind of maintenance intervention make sure that:
  a) the pump is disconnected from the power supply grid
  b) the internal pressure has been discharged
  c) wear all of the individual safety devices previously indicated
  d) the area in which maintenance is carried out must be suitable for such operations, in particular it must be ventilated and with sufficient lighting.

- The pump and its components must never be modified or altered and nobody must be allowed to modify or alter the pump and its components or any of its functions, without consulting the manufacturer beforehand.
- **NEVER** use free flames during maintenance operations.
- Do not smoke.
- Once intervention has been terminated, clean the area used and dispose of any materials in compliance with local regulations.

8.3 Classification of maintenance intervention

Maintenance intervention can be classified into two different types:

- Preventive maintenance: defined as the type of maintenance that is carried out to keep the pump in normal operative conditions, or be it without the need to replace parts and which includes:
  - Intervention during the first 10 hours of work
  - Daily intervention: every 10 hours
  - Weekly intervention: every 50 hours
  - Monthly intervention: every 250 hours
  - Intervention every six months: every 500 hours
  - Annual intervention: every 1,000 hours

- Extraordinary maintenance: understood as maintenance that consists of:
  - Intervention to be carried out due to breakdowns
  - Intervention to be carried out at rather long intervals, i.e. corresponding to the life limit of a primary organ and which requires an interruption in the working of the pump.

8.4 Cleaning of the pump

At the end of the working day it is very important to carry out accurate cleaning of the pump to avoid the particles of the product delivered from getting caught up inside the circuit.
In order to carry out the cleaning process, proceed as follows:

1) Lift the suction pipe and the recycle pipe from the container, making sure that the product does not fall on the ground (fig. 42).

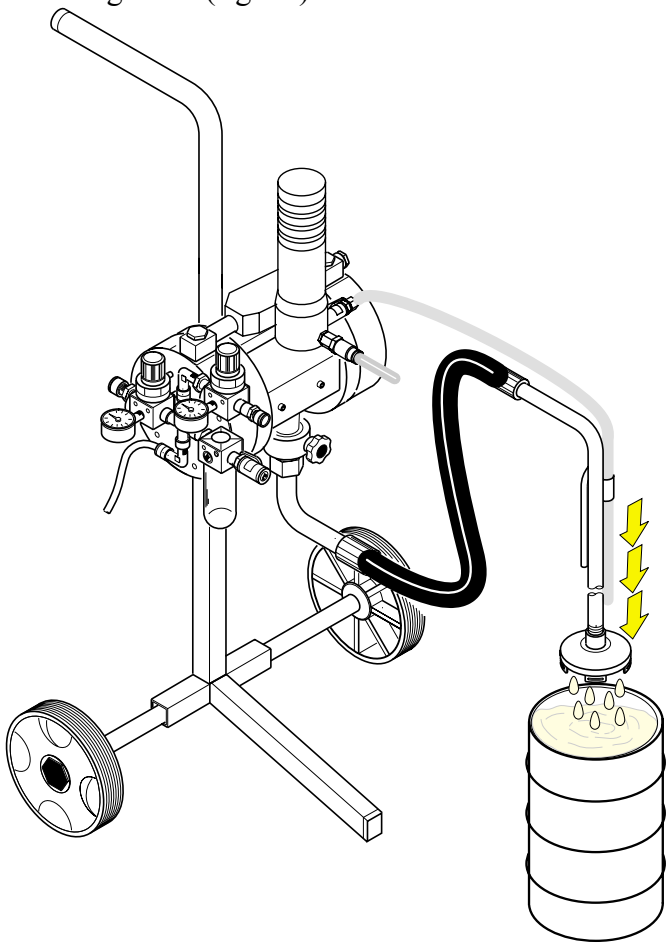


Fig.42

2) Discharge the pressure within the pump by closing the air inlet tap (fig. 43) and discharging all of the product left in the spray gun.
3) Insert the suction pipe and the recycle pipe inside a bowl containing some solvent. Open the air inlet tap and the recycle tap.
4) After a few seconds when there is no longer any air inside the circuit close the recycle tap.

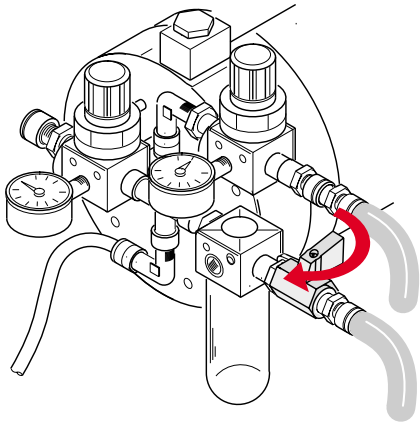


Fig.43

5) Using the gun discharge any residue of the product and the solvent into a bowl and dispose of in compliance with current regulations.
Do not dispose of the product in the environment. Carry on discharging the product until the solvent is pure.
6) Close the air supply entrance (fig. 44) and open the recycle tap (fig 45) to remove all of the solvent and the air still to be found inside the circuit.

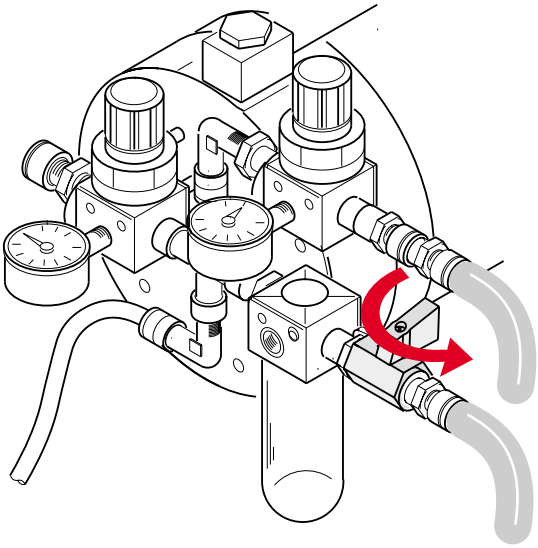


Fig.44

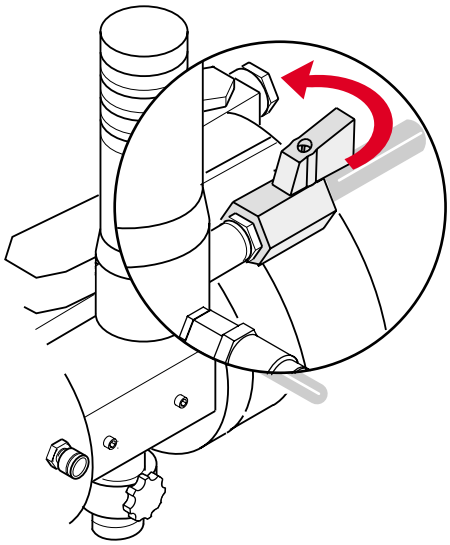
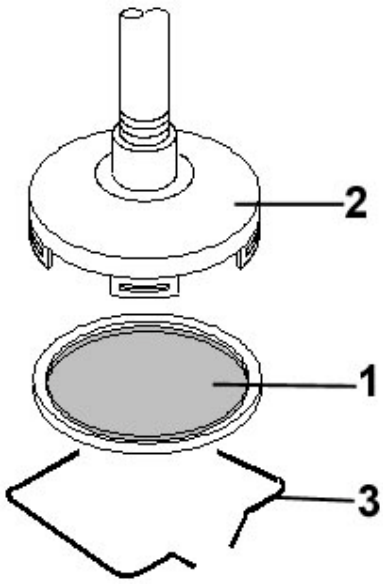


Fig.45

7) Remove the upper filter casing (fig. 46) and proceed with internal cleaning of the filter unit using a solvent.

8) Remove the filter (fig. 47) placed at the end of the suction pipe by removing the fixing spring and clean it using a solvent.



1. Filter
2. Suction pipe
3. Spring

Fig.47

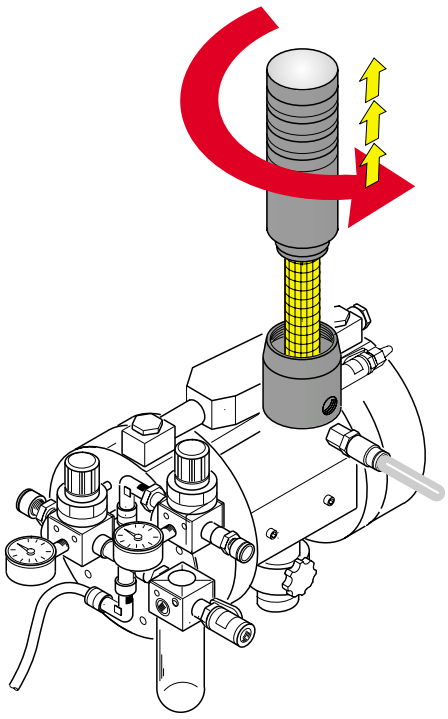


Fig.46

8.5 Diagnosis of problems

This table provides indications of a general nature allowing for identification of any possible faults and a rapid repairs procedure.

Fault	Cause	Remedy
The pump does not start	• The air pipe is blocked.	• Check to make sure that the air arrives properly.
	• The pressure regulator may be damaged.	• Check to make sure that the regulator is not blocked.
	• The pump group is completely catalytic.	• Check to make sure that there are no closed valves along the pipe and that there is no dry product that blocks it.
The pump does not suck up	• The suction pipe filter is not completely emerged.	• Emerge the filter completely or add more product to the container.
	• The suction pipe filter is blocked.	• Clean the filter.
	• The suction pipe is not connected to the pump casing correctly.	• Fix the pipe correctly.
	• The suction pipe is damaged.	• Replace the suction pipe.
	• The suction valves are glued to their relative seats.	• Remove the suction pipe and unblock the ball.
The pump sucks up but does not create pressure	• The internal valves are blocked.	• The intervention of a specialised technician is reqired.
Insufficient pressure on the gun	• The low pressure filter is blocked.	• Clean the filter.
Spraying is irregular	• The membranes are perforated.	• Intervention of a specialised technician.
	• The ball or the seats are scratched.	• Intervention of a specialised technician.
	• The low pressure filter is blocked.	• Clean the filter.

9. TORQUE WRENCH SETTING OF SCREWS AND BOLTS

Dxp	Preloading *(N)*				Torque wrench setting *(Nm)*			
	4.8	**8.8**	**10.9**	**12.9**	**4.8**	**8.8**	**10.9**	**12.9**
M4x0.7	1970	3930	5530	6640	1.5	3.1	4.3	5.2
M5x0.8	3180	6360	8950	10700	3	6	8.5	10.1
M6x1	4500	9000	12700	15200	5.2	10.4	14.6	17.5
M8x1.25	8200	16400	23100	27700	23.3	24.6	34.7	41.6
M8x1	8780	17600	24700	29600	13	26	36.6	43.9
M10x1.5	13000	26000	36500	43900	25.1	50.1	70.5	84.6
M10x1.25	13700	27400	38500	46300	26.2	52.4	73.6	88.4
M12x1.75	18900	37800	53000	63700	42.4	84.8	119	143
M12x1.25	20600	41300	58000	69600	45.3	90.6	127	153
M14x2	25800	51500	72500	86900	67.4	135	190	228
M14x1.5	28000	56000	78800	94500	71.7	143	202	242
M16x2	35200	70300	98900	119000	102	205	288	346
M16x1.5	37400	74800	105000	126000	107	214	302	362
M18x2.5	43000	86000	121000	145000	142	283	398	478
M18x1.5	48400	96800	136000	163000	154	308	434	520
M20x2.5	54900	110000	154000	185000	200	400	562	674
M20x1.5	60900	122000	171000	206000	216	431	607	728
M22x2.5	67900	136000	191000	229000	266	532	748	897
M22x1.5	74600	149000	210000	252000	286	571	803	964
M24x3	79100	158000	222000	267000	345	691	971	1170
M24x2	86000	172000	242000	290000	365	731	1030	1230
M27x3	103000	206000	289000	347000	505	1010	1420	1700
M27x2	111000	222000	312000	375000	534	1070	1500	1800
M30x3.5	126000	251000	353000	424000	686	1370	1930	2310
M30x2	139000	278000	391000	469000	738	1480	2080	2490

Spare parts request form

*To be photocopied, filled in and sent to **SINAER** by fax (+39/0742/99860)*

Customer code:_____

Customer name:_____

Address to which spare parts should be sent:

_____

_____

_____

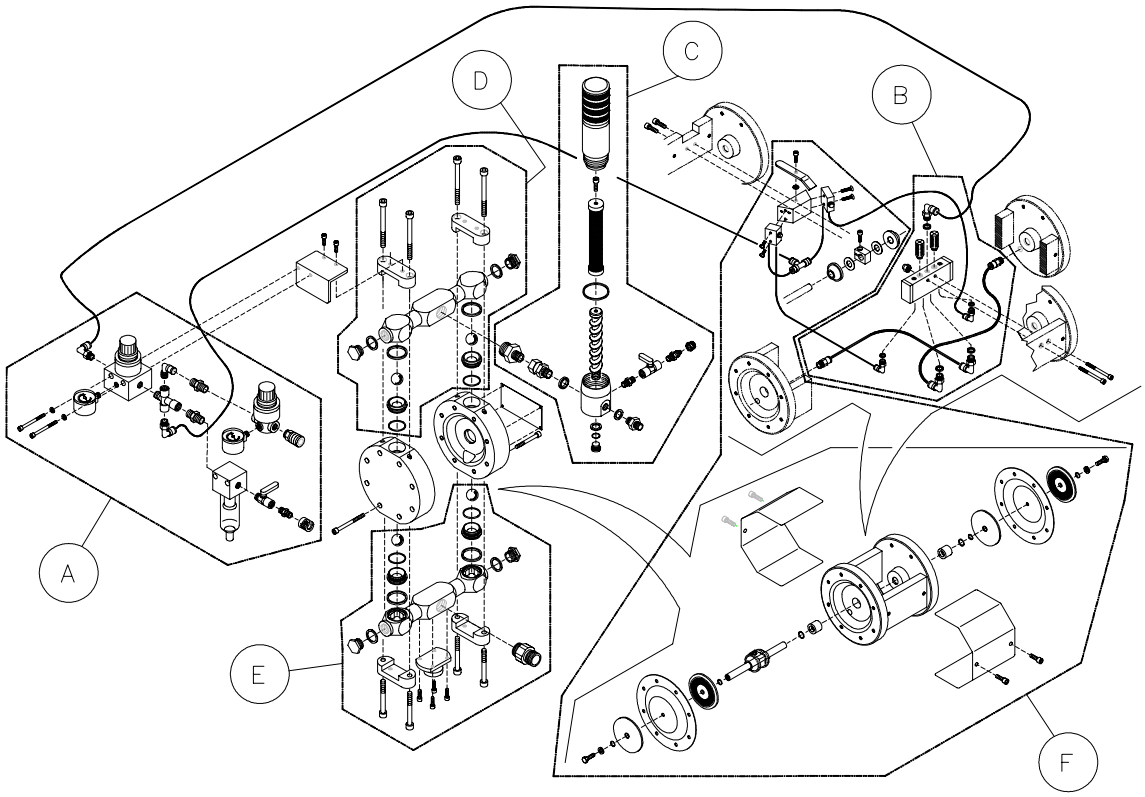
Purchase date of the pump:_____

Pump model:	**Pump serial number:**	**Exploded drawing no.**
_____	_____	_____

Detail no.	**Description**	**Quantity requested**

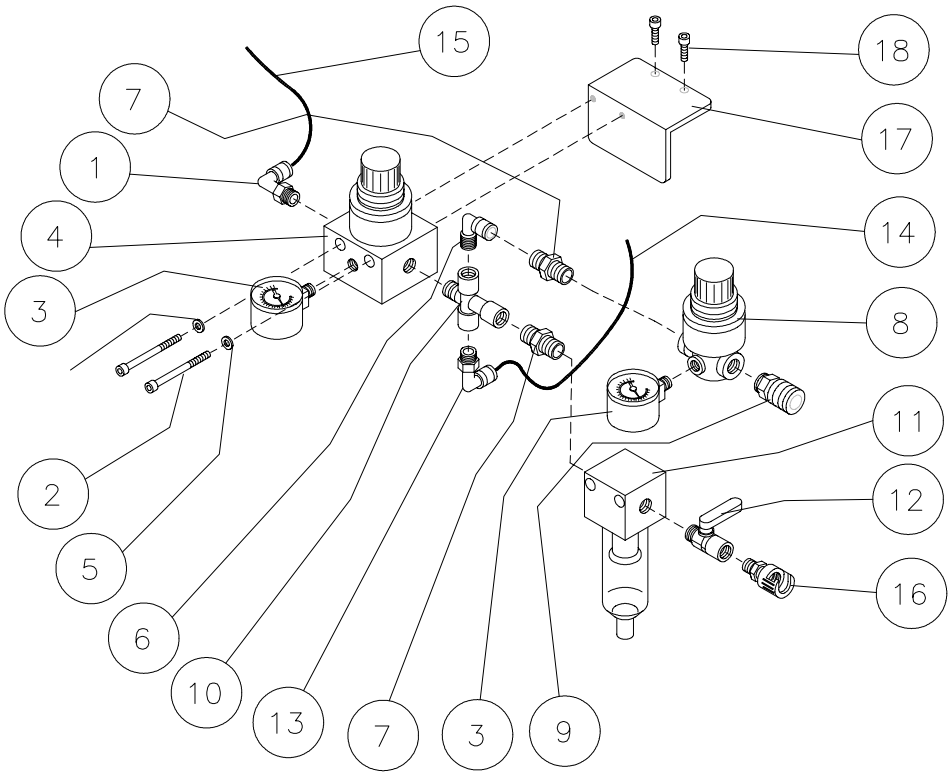
10. SPARE PARTS

Index



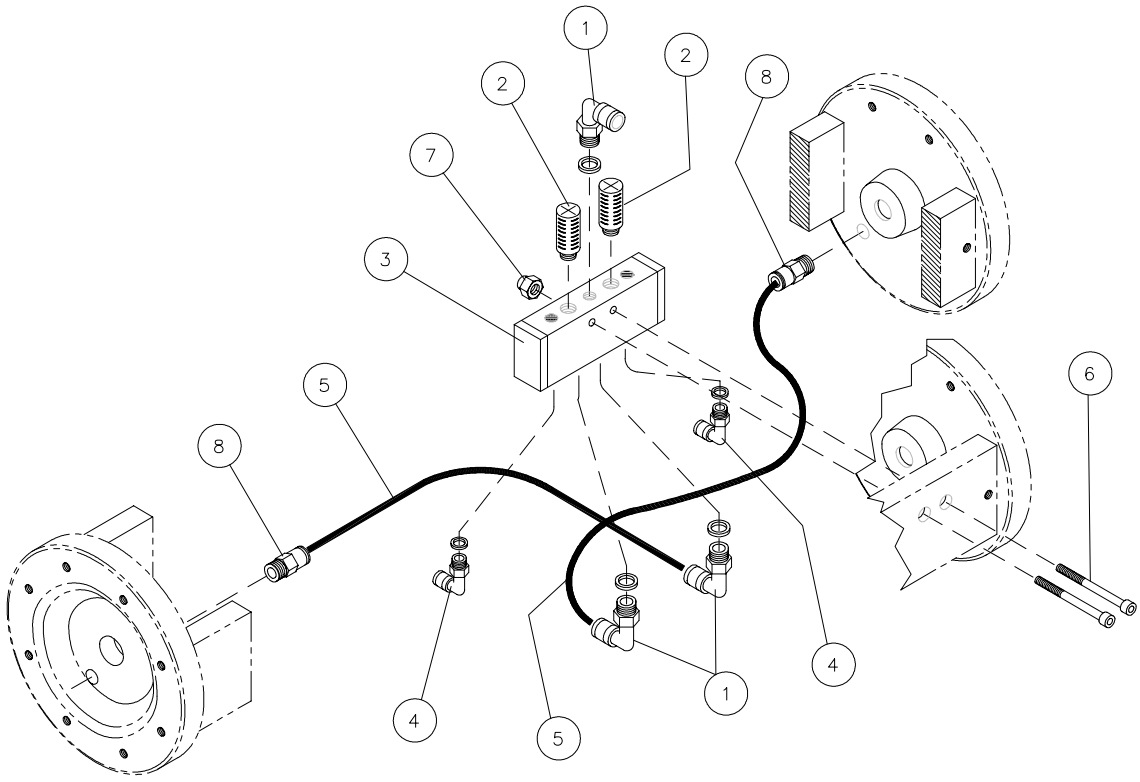
Ref.	Group	Description
A	A0137011B	Air regulation DM 2000S
B	092028B	Complete distribution valve DM 2000S
C	A4037053	Low pressure filter
D	203002C 203029C	Complete ¾ manifold Complete valve
E	203024C 203028C	Complete suction manifold Complete suction valve DM 2000S
F	203000C	Complete pump DM 2000S

10.1 Group – A – A0137011B Air regulation



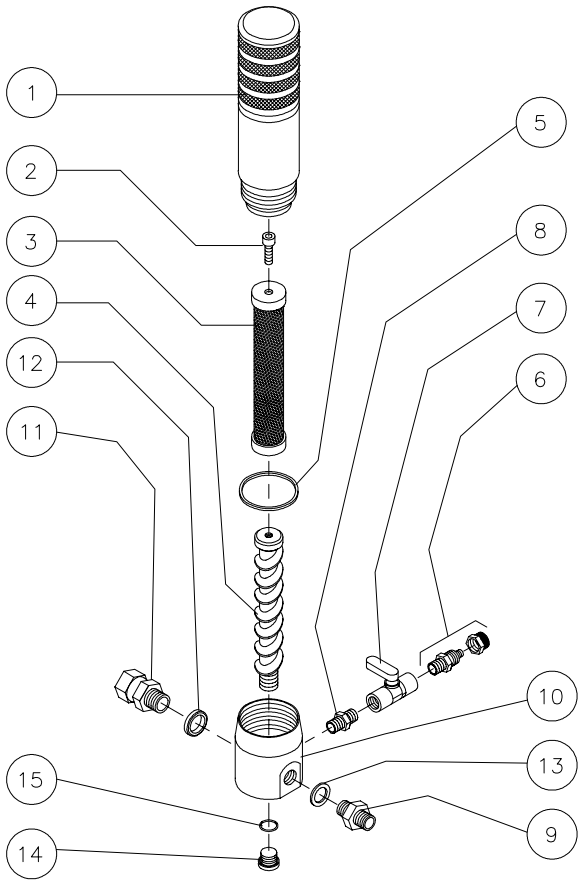
Ref.	Code	Description	Quantity
1	094001	¼-L-shaped connecting pipe	1
2	201003	M5x50 socket head cap screw	2
3	102019	⅛ /40 0:10 air gauge	2
4	092013	R ¼ pressure regulator	1
5	011013	Ø5 Ø11 washer	2
6	343102	¼MF L-shaped connecting pipe	1
7	094005	¼ cone-shaped nipple (art. 2000)	3
8	092014	MR ¼ air regulator	1
9	094019	¼ M quick connection (art. 111) (5051)	1
10	263003	¼ cross (art. 6025)	1
11	102027	¼ air filter	1
12	202003	¼ tap M-F (art. 3931)	1
13	094023	¼-4 L-shaped connecting pipe (art. 8115)	1
14	092009	4-2 rilsan hose for 25cm	1
15	094035	6 rilsan hose for 28cm	1
16	094018	¼ air connection	1
17	093070	Group Support FRL	1
18	PSP6136	Socket head cap screw M6x10	2

10.2 Group – B – 092028B Complete distribution valve



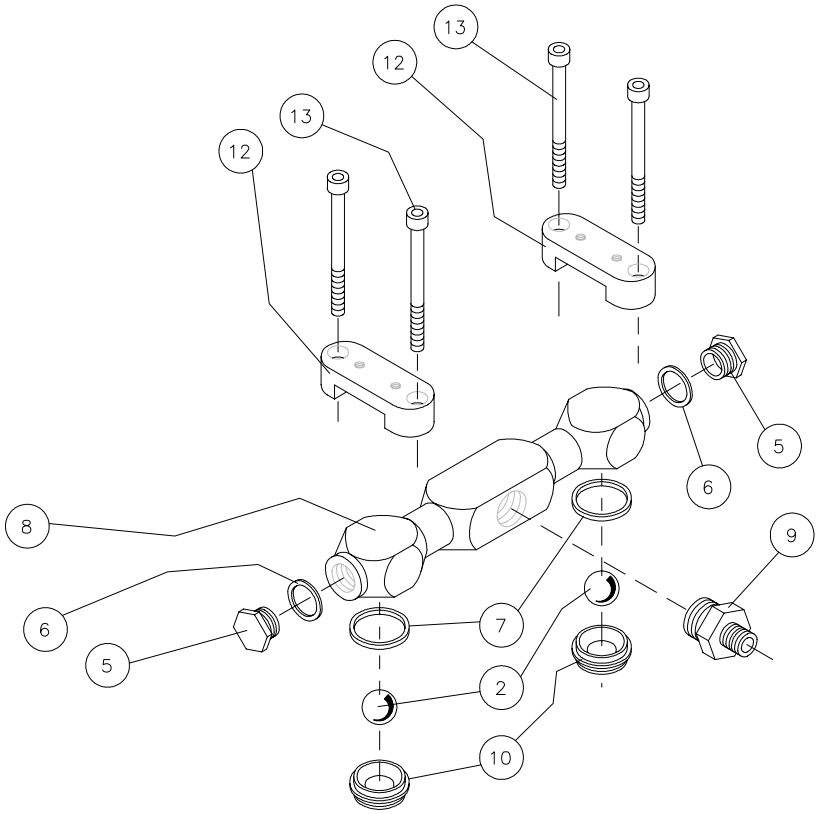
Ref.	Code	Description	Quantity
1	094003	⅛-6 L-shaped connecting pipe (art. 8115)	3
2	342014	⅛ M silencer (art. 7070)	2
3	092028	DM 2000S distribution valve	1
4	094002	1/8 Ø4 L-shaped connecting pipe	2
5	094026	Rilsan hose 6x10 cm	2
6	PSP6247	Socket head cap screw M5x40	2
7	011012	M5 self-locking nut	2
8	094020	Straight connecting pipe 1/8 Ø6	2

10.3 Group – C – A4037053 Low pressure filter



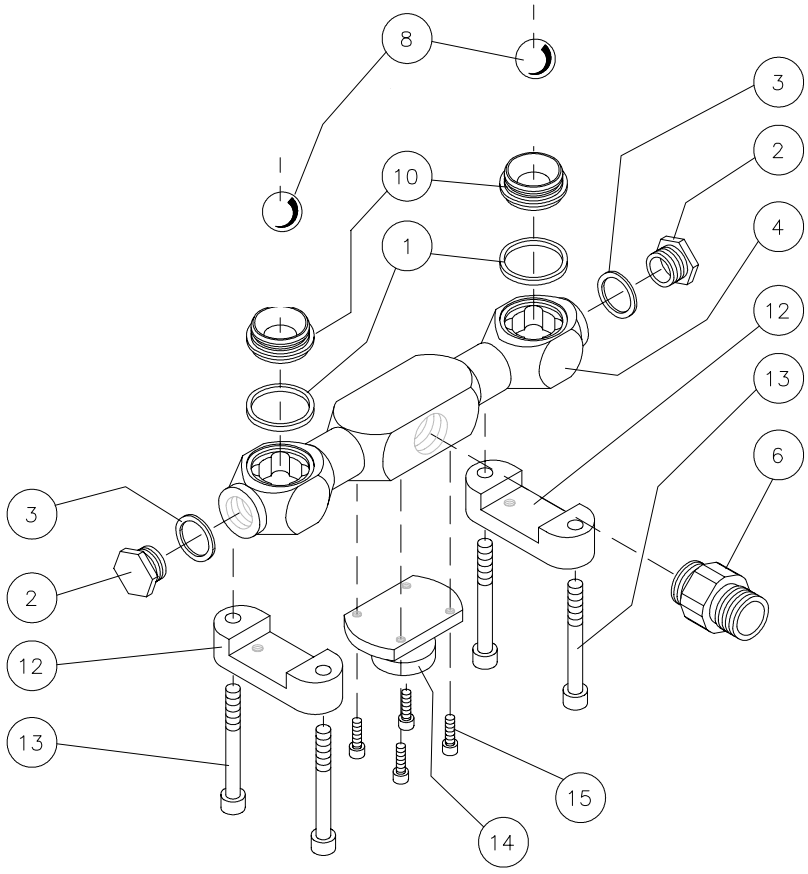
Ref.	Code	Description	Quantity
1	094034	Higher aluminium low pressure filter casing	1
2	101001	M6x16 socket head cap screw	1
3	A2237084	Long 100-mesh screen for low pressure filter	1
4	223033AL	¼ long filter support	1
5	095003	42.5/36.5x3 teflon gasket	1
6	184001	¼ -8/6 straight connecting pipe (art. 1000)	1
7	102033	¼ tap F/F (6400)	1
8	094005	¼ cone-shaped nipple (art. 2000)	1
9	014005	¼-¼ nipple	1
10	103040	Lower low pressure filter casing	1
11	094011	⅜ M - ⅜ FG adapter	1
12	093068	22/16x4 aluminium spacer	1
13	011003	¼ 13x19x1.5 copper washer	1
14	102014	¼ cone-shaped tap (grain) 3025	1
15	013003	¼ copper washer	1

10.4 Group – D – 203002C – 203029C Complete valve – Complete ¾ manifold



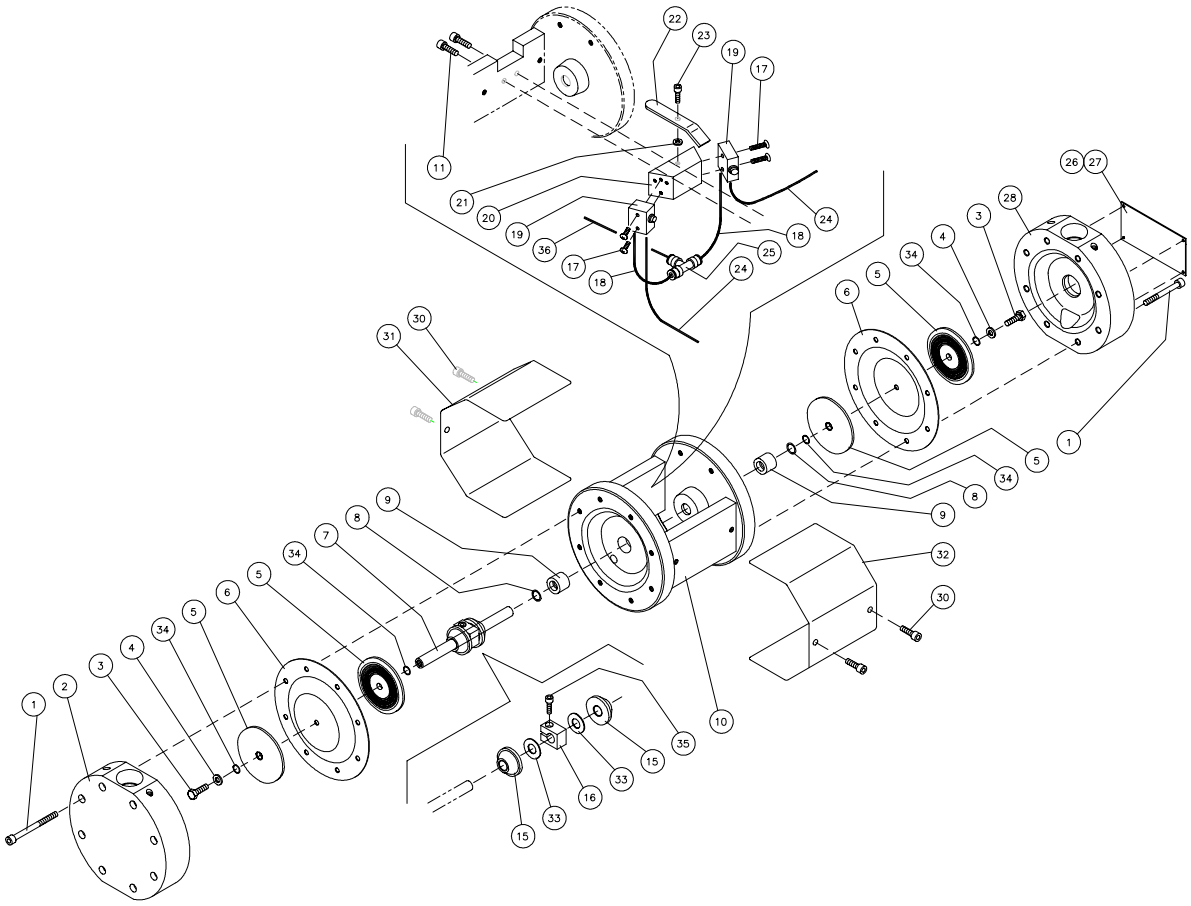
Ref.	Code	Description	Quantity
2	102015	Ø25 stainless steel ball	2
5	202008	½ cap	2
6	092002	½ (27/21x1.5) copper washer	2
7	093066	34x27x3 gasket	4
8	203002	¾ DM 2000S manifold	1
9	203020X	⅜-¾ stainless steel nipple	1
10	203029	Out valve block DM 2000S	2
12	094062	Manifold support DM	2
13	091007	Socket head cap screw M8x55	4

10.5 Group – E – 203024C – 203028C Complete suction manifold – Complete suction valve



Ref.	Code	Description	Quantity
1	093066	37x32x3 gasket	4
2	202008	½ cap	2
3	092002	½ 27/21x1.5 copper washer	2
4	203024	DM 2000S manifold	1
6	204004	¾ - ¾ nipple	1
8	102015	Ø25 stainless steel ball	2
10	203028	In valve block DM 2000S	2
12	094062	Manifold support DM	2
13	091007	Socket head cap screw M8x55	4
14	203009	Aluminium support DM pump	1
15	011014	Socket head cap screw M5x10	4

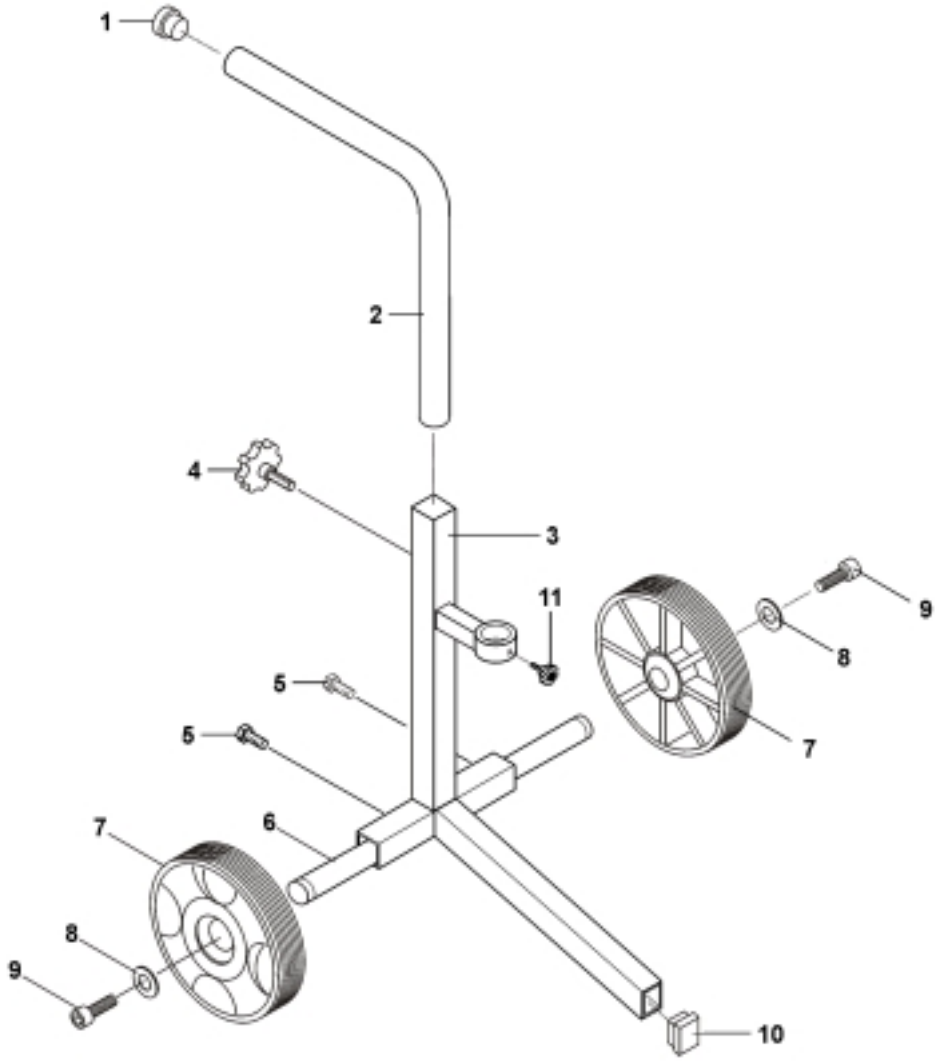
10.6 Group – F – 203000C Complete pump



Ref.	Code	Description	Quantity
1	181003	M6x40 socket head cap screw	16
2	203010	150x35 left external flange	1
3	011006	M8x20 hexagonal screw	2
4	011010	Ø8 plain washer	2
5	093006X	MM-DM membrane disk control	4
6	093005	DM 2000S membrane	2
7	203014	DM 12x138 cursor	1
8	182008	115 (11.91-17.15x2.62) toric ring	2
9	092004	20 bush	2
10	203000	DM 2000S pump casing	1
11	011016	M6x20 socket head cap screw	2
15	094030	DM 2000S pin contactor feeler	2
16	094031	DM 2000S pin holder feeler	1
17	092029	M4x20 flat head screw	4
18	094032	4x6.5cm rilsan hose	2
19	092006	MM 101 DM 2000S pin stop feeler	2
20	093060	DM 2000S pin support feeler	1
21	PSP6092	6/18x1.5 plain washer	1

22	094033	DM 2000S starting device lever	1
23	011016	M6x20 head cap screw	1
24	014034	4x9.5 rilsan hose	2
25	094010	Union tee (art. 8230)	1
26	312006	3x6 rivet	4
27	093024	DM serial number plate	1
28	203011	150x37 DM 101 right external flange	1
30	011014	M5x40 galvanized socket head cap screw	4
31	093021SD	DM 2000S right housing	1
32	093021SS	DM 2000S left housing	1
33	343201	Wulkollan ring	2
34	102013	“O-Ring” (2031)	4
35	011015	Socket head cap screw M5x16	1
36	092009	Rilsan hose Ø4	25cm

10.7 List of spare parts CDM223 (Trolley with wheels)



Ref.	Code	Description	Quantity
1	012003	24 rubber cap	1
2	093028	25 handgrip	1
3	093023	25 base frame for trolley	1
4	092010	M8x10 knob	1
5	PSP6084	M8x16 hexagonal screw	2
6	093027	20 trolley support	1
7	102048	260x85 F.20 wheel	2
8	PSP6094	6-/24x2 plain washer	2
9	PSP6136	M6x10 socket head cap screw	2
10	PSP6233	MM 30x30 square rubber cap	1
11	PSP6084	M8x16 hexagonal screw	1

11. WARRANTY

INSTRUCTIONS UPON DELIVERY

Upon delivery of the pump Sales Organization Personnel must provide the Customer with initial detailed instructions on installation, use and maintenance.
These instructions are the ones listed below:

IMPORTANT:

During this explanation the Customer should put a cross alongside the instructions received.

- Inform the Customer about the safety regulations to be followed. Such regulations are indicated on the adhesives applied to the pump casing and the User and Maintenance manual.
- Warn the Customer that it is very important to read carefully and to understand the User and Maintenance manual before installing or starting the pump. This manual contains the main instructions related to installation, the use and the maintenance of the pump.
- Train the Customer on how to install the pump correctly.
- Train the Customer on the correct use of the pump and any accessories connected to the same, indicating the various safety devices.
- Illustrate the chapter of the manual that refers to maintenance. It is very important to explain that regular maintenance guarantees the correct operation and long life of the pump.
- With the manual train the Customer on the various stages of maintenance, highlighting the risks that may arise in this stage.
- Help the Customer to fill in the table and the warranty certificate. Once this certificate has been completed it must be sent to the Manufacturer.

SINAER (hereinafter called the "Manufacturer") guarantees that none of its new products have production and material faults when they leave the production plant. The manufacturer undertakes to replace any pieces free of charge returned due to effective material and/or production faults.

This guarantee is valid for 12 (twelve) months from the date of delivery to the Customer. In this sense, the date indicated on the invoice indicating delivery to the first User, as well as payment within the period of time established, will be considered valid.

In order to benefit from the guarantee it is vital that:

- **The first User sends the "Warranty Certificate" to the Manufacturer within 10 (ten) days upon receipt of the pump. The "Warranty Certificate" can be found inside this manual and must be filled out in all parts before the User sends it to the Manufacturer.**
- **The faulty pieces must be sent to the Manufacturer's production plant for relative tests to be carried out, free of any charges etc. and together with the identification data indicated on the plate applied to the pump.**
- **The programs and maintenance operation times provided for by the Manufacturer, indicated in the chapter "USE AND MAINTENANCE" of the present manual, must be respected.**

Transport costs of the pieces replaced and any possible intervention by our technicians required to ascertain the causes of the fault will be borne by the User. The examination for faults and their causes may be carried out exclusively by staff of the Manufacturer or technicians assigned by the same.

The pieces replaced under the warranty will remain the property of the manufacturer.

The warranty does not cover:

- **components not directly produced by the manufacturer and for which the respective manufacturer will be responsible**
- **faults deriving from normal use**
- **faults brought about by the incorrect use according to the specifications of the chapter "INCORRECT USE"**
- **faults due to negligence, accidents, impatience in the use and incorrect use according to the indications and the normal destination of the pump**
- **damages deriving from the pump being out of use for too long**
- **damages produced by people, things or animals following faults.**

Warranty:

WARRANTY CERTIFICATE

RETAILERS' STAMP

TYPE _____

SERIAL NUMBER _____

DELIVERY DATE _____

CLIENT _____

ADDRESS _____

P.C. _____ TOWN _____ (PROV.) _____

_____

CLIENT'S SIGNATURE

Via Villarote, 26 Marcellano
Gualdo Cattaneo (PG) Italy
Tel. 0742/99392
Fax 0742/99860

(Spedire al Costruttore entro 10 giorni dalla data di consegna).