

CE

EN

AIRLESS UNIT

- ALS 653**
- ALS 663**





Dear Customer,

We thank you for the preference you gave us and we are glad to count you among our customers. We hope the use of this equipment will satisfy you and your staff.

We have first of all designed our products by focusing not only on our experience, but also on the latest mechanical innovations. The products have then been manufactured with first-rate materials and techniques and tested by considering your requirements.

We thank you once again and remember that all our technical services are at your disposal for any present and future requirement.

ANEST IWATA EUROPE TORINO - ITALY

The company ANEST IWATA EUROPE Srl mission is to supply all their product and spray painting equipment users and distributors with the STATE-OF-THE-ART of technology and with continuous innovations, to obtain the best finish at the lowest cost.

Our product range must offer the perfect balance between the energy use and its consequences, to help to safeguard and improve the environment.

All Anest Iwata Europe s.r.l. staff members use their knowledge and skills to provide their customers with an excellent service to satisfy them with high quality and reliability and with continuous innovation.

Our activities, as those of many other companies, are in compliance with several European Directives (Safety and Environment) and International Standards (ISO - Quality and Environment).

As to SAFETY, the standards our products refer to are the CE 89/382 Directive and subsequent; all our items of this type have the CE marking, are supplied with a Technical File which can be consulted on request and are accompanied by a use manual (standardized by the European standards EN 292) available in different languages.

There are also some specific safety standards, that is EN 1953 standard as to spray guns, and **prEN 12621** as to pressure pumping circuits. These standards can be consulted or bought at **UNI**.

As to **QUALITY standards (ISO 9000)**, ANEST IWATA EUROPE is provided with the ISO 9002 certification. Our company philosophy gives all our partners, distributors and users any possible information, which is very useful for our product use, for the environment safeguard and for the operators' safety.



INDICE GENERALE

USE OF THE MANUAL	Page 4
SYMBOLS USED	4
INFORMATIVE LETTER	5
WARRANTY	7
1. TRANSPORT AND HANDLING	8
1.1 TRANSPORT	8
1.2 TRANSPORT WITH CARDBOARD PACKING	8
1.3 HANDLING	9
1.4 TEMPORARY STORAGE	9
2. PRODUCT IDENTIFICATION	10
2.1 PLATE DATA	10
2.2 THE DIFFERENT MODELS	10
2.3 TECHNICAL SPECIFICATIONS	11
2.4 SAFETY SYSTEMS	13
2.5 WORKABLE PRODUCTS	14
3. OPERATION	15
3.1 OPERATION DESCRIPTION	15
4. INSTALLATION AND STARTING-UP	16
4.1 CHECK ON THE PURCHASED PRODUCT	16
4.2 CONDITIONS FOR INSTALLATION	16
4.3 INSTALLATION	16
4.4 CAUTIONS	17
5. USE	18
5.1 USE	18
5.2 SAFETY RULES DURING USE	18
5.3 CLOTHES	18
5.4 UPPER GASKETS PREWASH AND ADJUSTMENT	19
5.5 STARTING-UP	19
5.6 DAILY INTERRUPTIONS	20
5.7 WRONG AND DANGEROUS USES	21
5.8 PRESSURE RELEASE PROCESS	22
6. MAINTENANCE AND INSPECTION	22
6.1 GENERAL NOTES	22
6.2 SAFETY RULES DURING MAINTENANCE	22
6.3 RECOMMENDED SCHEDULED OPERATIONS	23
6.4 PACKINGS ADJUSTMENT	23
7. TROUBLESHOOTING	24
8. EXPLODED VIEWS WITH SPARE PART LISTS	26
8.1 AIRLESS UNIT ALS 653/663 PNEUMATIC MOTOR	26
8.2 AIRLESS UNIT ALS 653/663 LOWER PUMP SET	28
9. ACCESSORIES	30
9.1 PAINT FILTER SET	30
9.2 AIR REGULATOR SET	30
9.3 DIP TUBE WITH FILTER	32
9.4 WHEEL CART SET	33
10. DISMANTLING	34
10.1 EQUIPMENT STORAGE	34
10.2 DISMANTLING	34



Use of the manual

The use and maintenance manual is the document accompanying the equipment from its manufacture till its dismantling. Therefore, it is an integral part of the equipment.

The manual must be read before starting ANY ACTIVITY involving the equipment including its handling.

For a better consultation the instruction manual is divided into the following sections:

SECTION 1

Transport, packaging, handling and check on the purchased product.

SECTION 2

Description of the equipment and of its field of application.

It also describes all the technical features of the equipment.

This information can be compared to that of an illustrative leaflet.

SECTION 3

Equipment operation.

SECTION 4

Equipment installation.

SECTION 5

Ordinary and extraordinary maintenance.

ENCLOSURES

Exploded view and list of components.

Symbols used

The operations which can be dangerous if they are not carried out correctly, are indicated with the symbol:



The operations requiring a qualified or specialised staff, to avoid any danger, are indicated with the symbol:



It is advisable to train the staff who have to use the equipment and to check if everything is understood and carried out.



Other symbols



Index of the use and maintenance manual



Transport



Description of the equipment



Installation



Ordinary use



Wiring and hydraulic diagrams



Dismantling



Maintenance procedures

Informative

This use and maintenance manual is an integral part of the equipment and it must be easily available to the staff in charge of its use and maintenance.

The user and the maintenance man must know the content of this manual. All the descriptions and pictures contained in this manual are not binding.

Although the main features of this equipment are not subject to change, the manufacturing Company reserves itself the right to change those components, details and accessories it deems necessary to improve the machine or to meet manufacturing or commercial requirements, at any time and without updating this manual immediately.



WARNING

TO ENSURE THE GOOD WORKING OF THE EQUIPMENT AND OF ITS SAFETY DEVICES, THE PUMP MUST BE INSTALLED BY A QUALIFIED STAFF.



WARNING

ALL RIGHTS ARE RESERVED. THE REPRODUCTION OF ANY PART OF THIS MANUAL, IN ANY FORM, IS STRICTLY FORBIDDEN WITHOUT PRIOR WRITTEN AUTHORIZATION OF THE MANUFACTURING COMPANY.

THE CONTENT OF THIS MANUAL CAN BE MODIFIED WITHOUT NOTICE. GREAT CARE HAS BEEN TAKEN IN COLLECTING AND CHECKING THE DOCUMENTATION CONTAINED IN THIS MANUAL TO MAKE IT AS COMPLETE AND COMPREHENSIBLE AS POSSIBLE.



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It is advisable to train the staff who have to use the equipment and to check if everything is understood and carried out.



Warranty

All **ANEST IWATA** s.r.l. products have a one-year guarantee from the invoice date, unless otherwise stated in writing. The warranty covers all manufacturing faults and material defects. Any spare part replacement or repair operations are covered only if they are carried out by our technicians at our servicing shops.

The faulty parts must be sent CARRIAGE PAID.
Once the components have been repaired, they will be sent CARRIAGE FORWARD to the customer.

The warranty covers no intervention of our technicians during installation or dismantling operations. If for practical purposes one of our technicians is sent on site, a charge will be made for the time plus extra for travelling and expenses.

Our warranty does not cover direct or indirect damage to people or property caused by our equipment. It covers no repair operations carried out by the customer or by a third party, either.

THE WARRANTY DOES NOT COVER:

- Damage or breakdown caused by improper use or assembly.
- Damage or breakdown caused by the use of spare parts that are different from the original or recommended ones.
- Damage or breakdown caused by a bad preservation.
- Components subject to wear (described in the spare part list).

WARRANTY FORFEITURE:

- In case of delayed payment or other contractual defaults.
- Whenever changes or repairs are carried out on our equipment without prior authorization.
- Whenever the serial number is damaged or removed.
- When the damage is caused by improper use or functioning, or if the equipment falls, is bumped or by other causes not due to the normal working conditions.
- Whenever the unit is disassembled, tampered with or repaired without the authorization of **ANEST IWATA s.r.l.**

All repair interventions carried out under warranty do not interrupt its duration.

All disputes will be settled in the court of justice of Turin.



1.1 Transport

To transport the equipment only the systems described below can be used. In any case make sure that the transport and lifting device can bear the weight of the equipment with its packaging.



WARNING
ALWAYS KEEP THE PACKAGING IN VERTICAL POSITION.



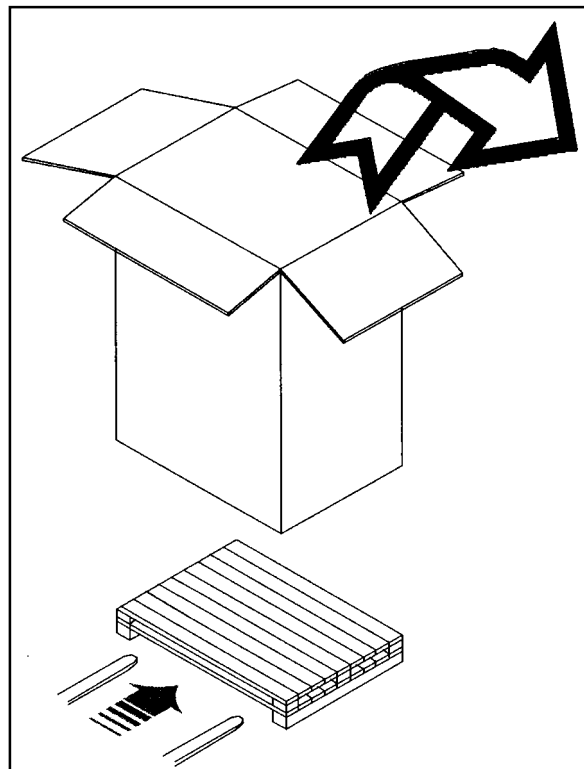
WARNING
IT IS ADVISABLE THAT THE STAFF IN CHARGE OF HANDLING THE EQUIPMENT WEAR PROTECTIVE GLOVES AND SAFETY SHOES.



WARNING
WHILE LIFTING OR HANDLING THE EQUIPMENT OR ANY OF ITS COMPONENTS CLEAR THE WORKING AREA. LEAVE ALSO A SUFFICIENT SAFETY AREA AROUND THE EQUIPMENT TO AVOID DAMAGING PEOPLE OR OBJECTS WHICH COULD BE THERE.

1.2 Transport with cardboard packaging

The equipment is put inside a cardboard packaging and wrapped with some shockproof material. Before assembling, is necessary to screw the pround, supplied with the unit and packed separately from the equipment.





1.3 Handling

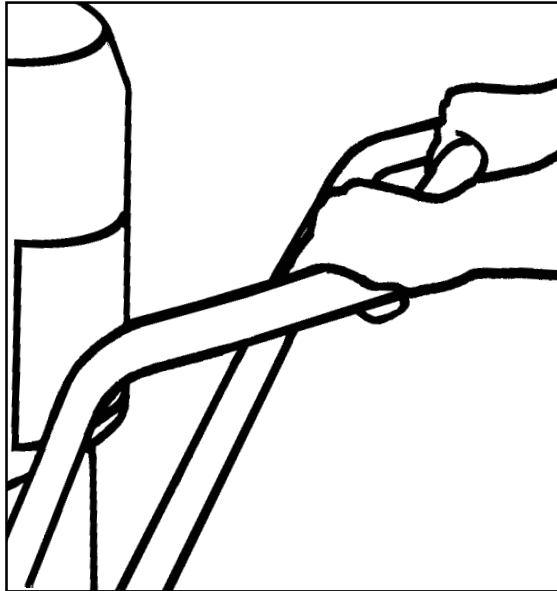
To handle the cardboard packaging use a trolley.
To handle or displace the airless unit only use the handle.



WARNING
FOLLOW THE INSTRUCTIONS ON THE PACKAGING BEFORE HANDLING AND OPENING IT.

HANDLING BY MEANS OF HANDLE

HANDLING BY MEANS OF TROLLEY



1.4 Temporary storage

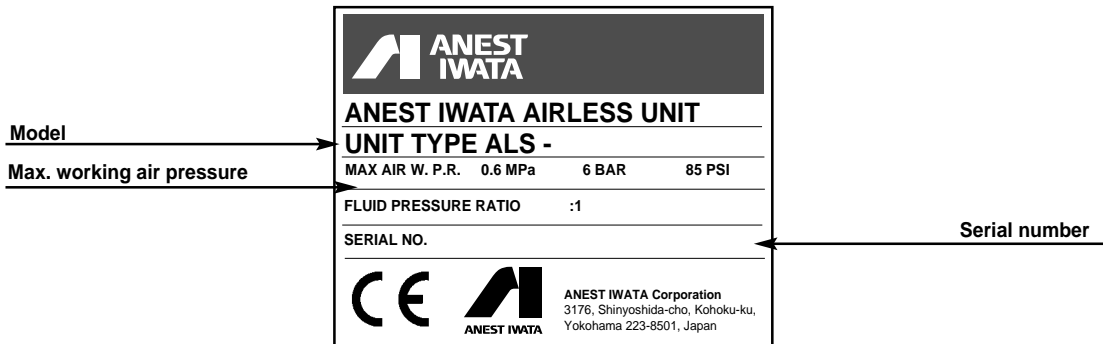
During transport and storage make sure the temperatures between 0 and 40° C are not exceeded.
In case of storage, make sure the equipment is not put in places with an excessive humidity.



2.1 Plate data

The manufacturer's identification plate is applied on the airless unit (see picture below).

It must not be removed at all, even if the equipment is resold. For any communication with the manufacturer always mention the serial number written on the plate itself.



2.2 The different model

ALS 653: ALS 653 AIRLESS UNIT

Piston pump assembled on wheel cart with air regulator, dip tube with filter, paint filter unit, fluid recirculation and 2 safety devices (1 overpressure valve, 1 three-way valve).

ALS 663: ALS 663 AIRLESS UNIT

Piston pump assembled on wheel cart with air regulator, dip tube with filter, paint filter unit, fluid recirculation and 2 safety devices (1 overpressure valve, 1 three-way valve).

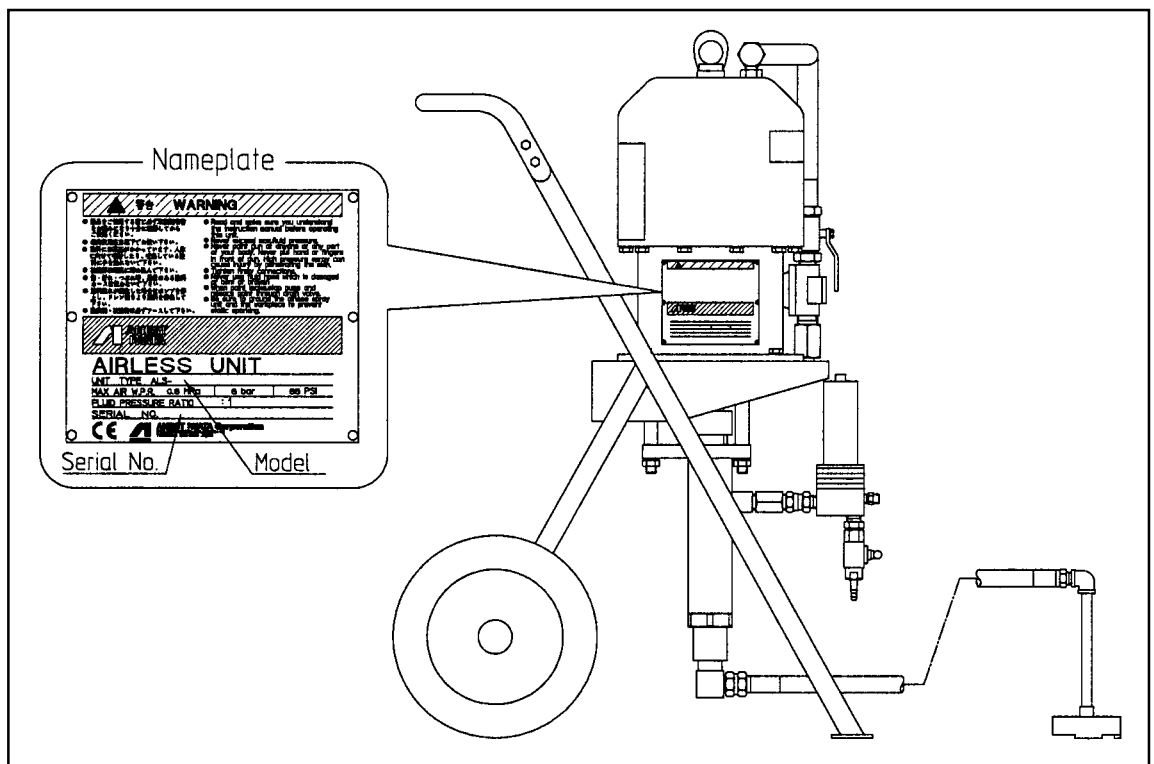


2.3 Technical specifications

**ALS 653
ALS 663**

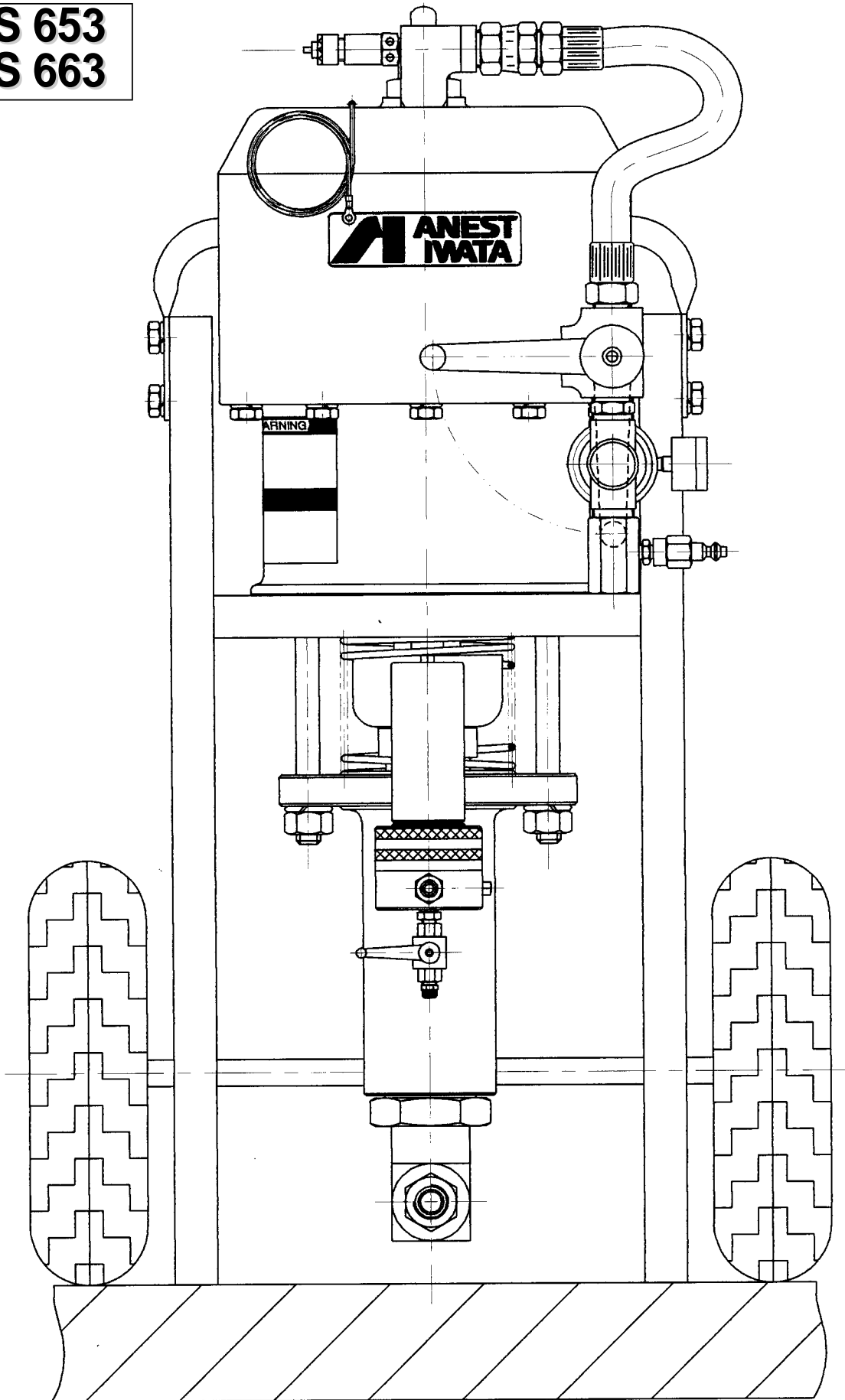
MODEL	ALS 653	ALS 663
Dimensions (mm)	800x730x1200	
Weight	86 Kg	83 Kg
Air hose connection	15 mm nipple with quick coupler connect to air hose of inner dia. 1/2"	
Fluid hose connection	G 1/4"	
Paint filter	60 Mesh	
Suction filter	30 Mesh	
Max. working air pressure	6.0 bar	
Max. working fluid pressure	270 bar	378 bar
Compression ratio	45:1	63:1
Max. fluid delivery	12.5 l/min	11.0 l/min
Delivery cycle	~ 250 ml/cycle	~ 220 ml/cycle
Max. No. cycle per minute	50 cycle/min	
Cycle stroke	120 mm	
Compressor (required power)	> 0,75 Kw	
Working temperature	5~40 °C	
Noise level	93 dB(A)*	
Drain valve	Two-way valve 1/4"	
Suction hose connection	G 1/2"	
Ø Air cilinder	254 mm	
Ø Fluid suction hose	51 mm	45,3 mm

*This noise level has been measured in compliance with Machinery Directive 89/392 and with ISO 3744 standards.





**ALS 653
ALS 663**





2.4

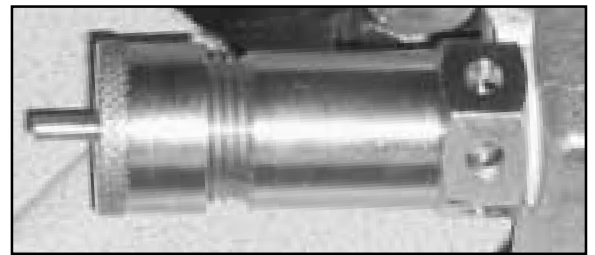
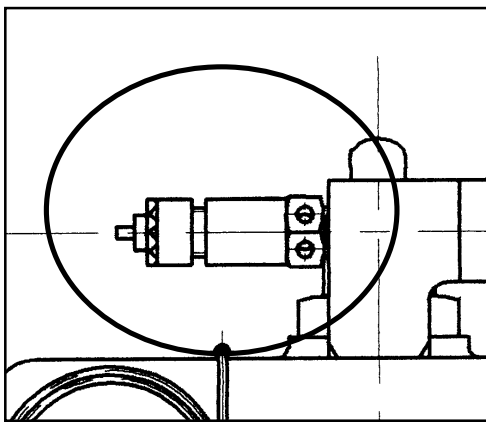
Safety systems

Several safety systems have been conceived during the airless unit design and manufacture to safeguard the operator, in compliance with pr EN 12621 Directive about paint.

SAFETY VALVE

A 7 bar calibrated safety valve is installed to ensure the pump working pressure does not exceed the limits inside the feeding circuit.

If the calibration pressure is exceeded, the valve opens by releasing the excess of air.

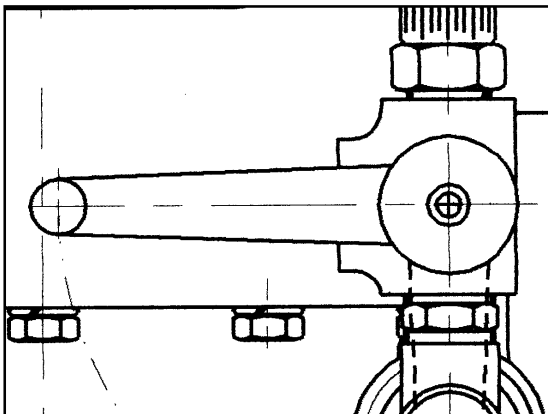


WARNING

DO NOT REMOVE THE SAFETY VALVE. ANY TAMPERING WITH COULD BE DANGEROUS FOR THE OPERATOR AND COMPROMISE THE EQUIPMENT GOOD WORKING.

THREE-WAY VALVE

In case of anomalies during working, turn 90° the three-way valve lever. In this way the air supply will be interrupted and the residual pressure inside the pump will be released.





Safety pictograms

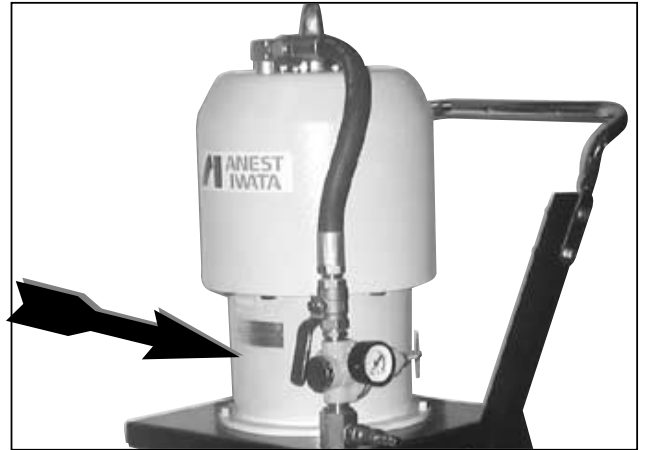
Some pictograms can be found on the pump with the safety warnings to follow by anyone who is going to use it.



WARNING

THE MANUFACTURING COMPANY IS NOT TO BE HELD RESPONSIBLE FOR DAMAGE OR ACCIDENTS TO PEOPLE OR THINGS COMING FROM THE NON-COMPLIANCE WITH THE PRESCRIBED RULES. THE RESPONSIBILITY RESTS ENTIRELY WITH THE OPERATOR HIM SELF

WARNING	
	<p>Leggere attentamente e comprendere questo manuale. L'installazione dell'impianto deve essere effettuata da personale istruito che dovrà aver letto le importanti avvertenze, precauzioni e operazioni contenute nello stesso.</p> <p>Be sure to read and understand this instruction manual. To operator shall be fully conversant with the requirements stated within the instruction manual including important warnings, cautions and operations.</p> <p>Lire attentivement et bien comprendre ce Manuel. L'installation de l'équipement doit être effectuée par un personnel informé qui aura lu précédemment tous avertissements, toutes précautions et opérations contenues à l'intérieur.</p>
	<p>Non usare vicino a scintille o fiamme libere. Leggere attentamente le cause che possono generare incendi, riportate di seguito. Usare l'impianto in un luogo ben ventilato. Verniciare o pulire in ambienti ridotti, non sufficientemente ventilati o con fiamme libere può causare incendio o esplosioni, a causa della presenza di vernici o solventi.</p> <p>Assicurarsi che l'impianto, la pistola, il pezzo da verniciare e i contenitori delle vernici o solvente siano collegati al cavo di terra. L'esclusione di questi collegamenti potrà essere causa di esplosioni o incendi.</p> <p>Never use near sparks or open fire. Especially the following will cause fire. Use it in well-ventilated place. Painting or cleaning in a narrow place with insufficient ventilation can cause fire or explosion due to sprayed mist of paint or solvent which catch's fire.</p> <p>Securely ground pump, spray gun, work pieces and containers containing paint or solvent insufficient grounding will cause explosion or fire if exposed to a spark of electricity.</p> <p>Ne pas utiliser près d'étincelles ou flammes libres. Lire attentivement ci de-suita les causes qui peuvent provoquer des incendies. Utiliser l'équipement dans un endroit bien aéré. Peindre ou nettoyer dans des endroits réduits, pas suffisamment aérés ou avec présence de fiammes libres peut provoquer des incendies ou des explosions, à cause de la présence de vernis et/ou solvants. S'assurer que l'équipement, la pistolet, la pièce à peindre et le récipient de la vernice ou du solvant soient reliés au fil de terre. L'exclusion de ces liaisons pourra être cause d'incendie ou explosion.</p>
	<p>L'utilizzo oltre la pressione massima di esercizio costituisce un grande pericolo e può essere causa di scoppio. Non puntare verso persone o animali la pistola, non spruzzare sul corpo o sulle dita indipendentemente dal tipo di pistola utilizzata. Quando si verificano perdite di vernice dalla pistola, dal pesante o dai raccordi, non fermare la perdita con la mano. Arrestare invece immediatamente l'aria di alimentazione e interrompere il funzionamento della pompa.</p> <p>Il contatto della vernice o solvente, contenuti nel bidone, con il corpo, occhi, bocca o sulla pelle è molto pericoloso.</p> <p>Be sure to use airless unit at less than max. fluid operating pressure. Usage at more than max. fluid operating pressure can cause explosion of pump resulting in great danger. Never point toward a person or animal or your trigger of gun when human body or fingers come near by of gun. When paint leaks from airless gun, fluid hose and joint section, never try to stop leakage by hand. In such a case, immediately stop air supply and stop pump operation.</p> <p>If done, paint or solvent can enter human body through eyes, mouth and skin, which is very dangerous.</p> <p>Pendant l'utilisation de l'équipement, ne jamais dépasser la pression maximum conseillée. L'utilisation au-delà de la pression maximum représentera un grand danger et peut être la cause d'une explosion. Ne jamais diriger vers des personnes ou des animaux. Ne jamais vaporiser sur le corps et sur les doigts indépendamment du type de pistolet utilisé.</p> <p>Si des pertes ont lieu par le pistolet, par le tube ou par les raccords, ne jamais arrêter la perte avec la main. Arrêter au contraire immédiatement l'air de l'alimentation et interrompre le fonctionnement de la pompe.</p> <p>Le contact de la vernice ou du solvant, contenus dans le bidon, avec le corps, les yeux, la bouche ou la peau est très dangereux.</p>
	<p>Non toccare gli organi in movimento (stele) quando la pompa è in funzione. La mano può essere intrappolata nel recipiente. Do not touch sliding section (rod) during pump operation if done, hand can be entangled. Ne jamais toucher les parties en mouvement (tige) quand la pompe est en mouvement. La main peut rester coincée dans le récipient.</p>



WARNING		
<ul style="list-style-type: none"> ● Leggere e assicurarsi di aver compreso il manuale di istruzioni, prima di iniziare ad utilizzare l'apparecchiatura. ● Non superare la pressione massima di esercizio. ● Mai puntare la pistola in direzione del proprio corpo. Mai mettere la mano o le dita davanti alla pistola. L'alta pressione penetrando nella pelle può causare ferite molto gravi. ● Stringere forte ogni connessione. ● Non utilizzare tubazioni danneggiate, piegate o rotte. ● Quando si verifica una perdita, arrestare la pompa e scaricare completamente la vernice mediante le apposite valvole. ● Assicurare la messa a terra dell'impianto e del pezzo per prevenire il rischio di incendio. 	<ul style="list-style-type: none"> ● Read and make sure you understand the instruction manual before operating this unit. ● Never exceed max. fluid pressure. ● Never point gun at anyone or any part of your body. Never put hand or fingers in front of gun. High pressure spray can cause injury by penetrating the skin. ● Tighten firmly connections. ● Never use fluid hose which is damaged or bent or broken. ● When paint leaks, stop pump and release paint through drain valve. ● Be sure to ground the airless spray unit and the work piece to prevent static sparking. 	<ul style="list-style-type: none"> ● Pêre de lire et s'assurer d'avoir bien compris le Manuel d'instructions, avant d'utiliser l'appareil. ● Ne pas dépasser la pression maximum d'utilisation. ● Ne jamais diriger le pistolet vers le corps. Ne jamais mettre la main ou les doigts devant le pistolet. La haute pression peut provoquer des blessures très graves en pénétrant dans la peau. ● Serrer très fort toutes connexions. ● Ne pas utiliser des tubes endommagés ou cassés. ● Quand une perte a lieu, arrêter la pompe et décharger le vernis par les valves. ● S'assurer la mise à la terre de l'équipement et de la pièce afin de prévenir le risque d'incendie.

2.5 Workable products

All airless ANEST IWATA pumps are conceived to paint ferrous material in general, wood and plastic.

ANEST IWATA is not liable for any accident due to UNAUTHORISED and non qualified personnel using the pump or personnel using it for purposes that are different from the above-mentioned ones.



WARNING

DO NOT USE:

- ANY HALOGENATED HYDROCARBON SOLVENTS, SUCH AS TRICHLOROETHANE, METHYLENE CHLORIDE OR SOMETHING LIKE THAT;
- ANY INFLAMMABLE OR VERY TOXIC PRODUCTS SUCH AS PETROL, KEROSENE, INFLAMMABLE SOLVENTS OR COMBUSTIBLE GASES;
- ANY HERBICIDE OR PESTICIDE
- ANY RADIOACTIVE FLUID



3. OPERATION

3.1 Operation description

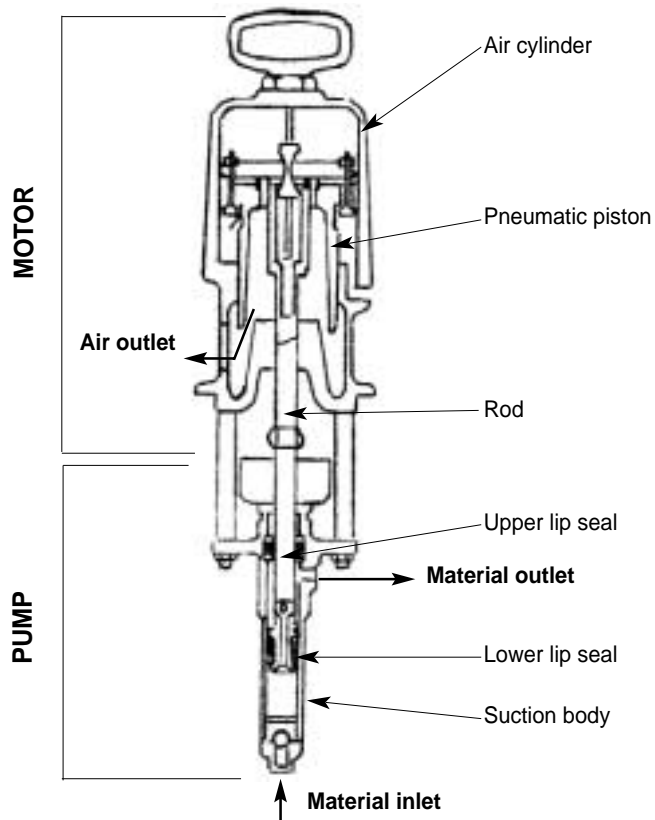
Airless pumps are composed of two main parts: the pneumatic motor and the pumping unit. The pneumatic motor is provided with an internal valve system for changing the movement direction.

The pumping unit is composed of an anti-wear chromium plated suction body (liner) and a rod. The gaskets can be adjusted.

The motor straight and alternate movement produces an equivalent movement in the pumping unit.

A system of valves allows the simultaneous suction and pressurisation of the product to be sprayed, in the two chambers of the suction body, therefore guaranteeing the utmost uniformity during the application

PICTURE 1





4.1 Check on the purchased product

Before using the pump, make sure it has not been damaged during transport or storage. Also check that all standard components are inside the packaging.

4.2 Conditions for installation

The equipment must be installed by a **specialized and authorized staff**. In any case, follow the instructions below.

Painting **must preferably take place inside a suitable spray booth equipped with suction device**.

Do not use the unit if the suction device is off.



WARNING

IF PAINTING IS CARRIED OUT OUTSIDE THE SPRAY BOOTH, ALWAYS OPERATE IN A PLACE WITH A RIGHT VENTILATION TO AVOID CONCENTRATING INFLAMMABLE VAPOURS COMING FROM SOLVENTS OR PAINTS.

4.3 Installation

- Place the equipment on the floor, on a horizontal surface.
- Connect the suction pipe steadily (pos. A in pic. 2 on page 17)
- Connect the high pressure pipe for paint to the compensating filter.
- Earth the free end of the ground cable directly.
- Connect the airless gun to the other end of the air/paint twin pipe.
- Connect the air supply pipe to the installation.



WARNING

- CHECK THE PROPER TIGHTENING OF ALL FITTINGS, SINCE THEIR SUDDEN OPENING CAN SERIOUSLY INJURE PEOPLE.

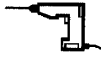


WARNING

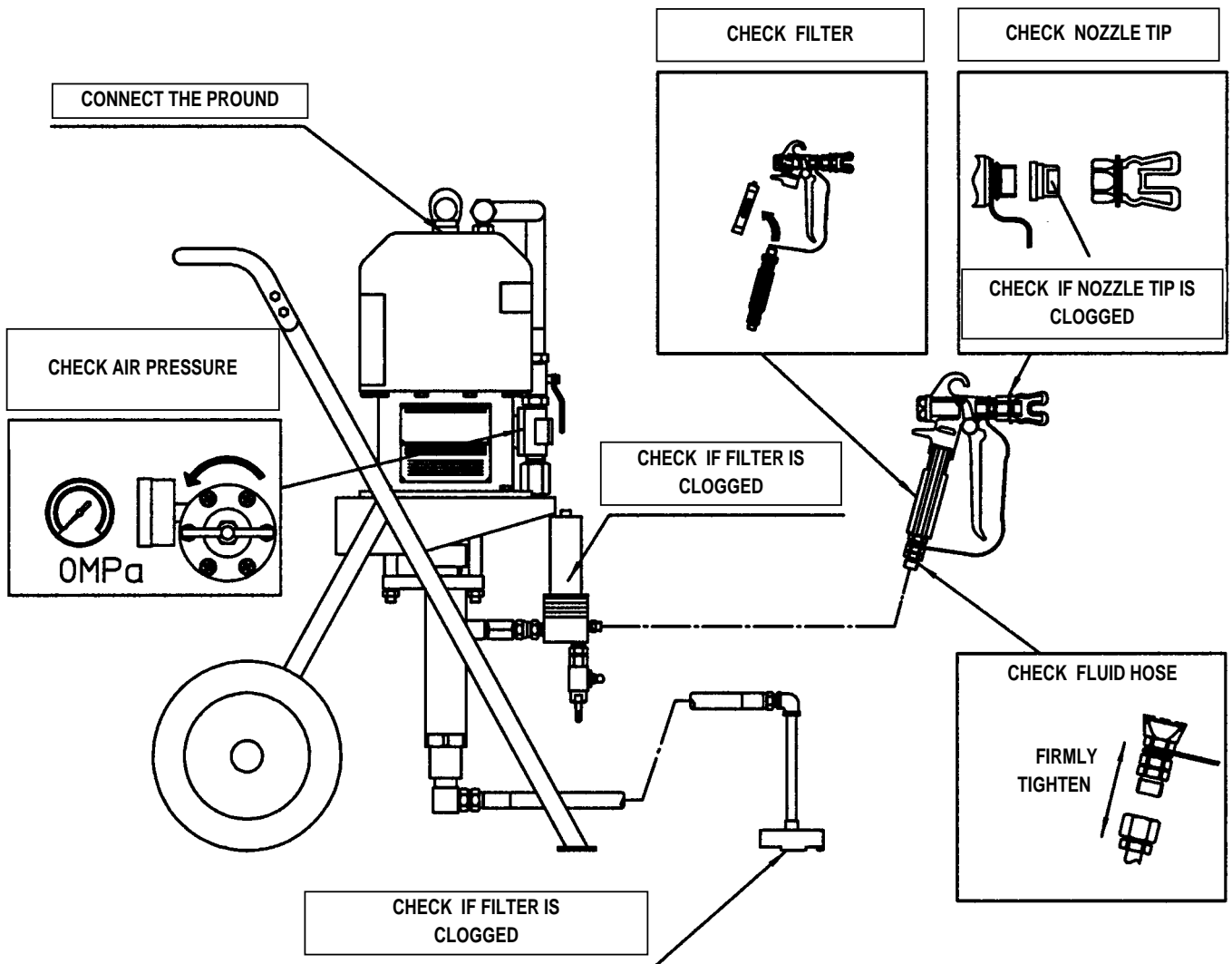
- CONSULT THE LOCAL CODE FOR DETAILED INSTRUCTIONS RELATIVE TO GROUND CONNECTIONS IN THE WORK AREA AND TO THE TYPE OF SYSTEM USED.

- THE GROUND CABLE (INCLUDED IN THE SUPPLY) MUST HAVE A MINIMUM SECTION EQUAL TO 1.5 mm².

- ONE END OF THE CABLE MUST BE EARTHEN WHILE THE OTHER MUST BE CONNECTED TO THE LID OF THE PNEUMATIC MOTOR SILENCER.



PICTURE 2



4.4 Cautions



1. Operate the pump with air filtered by means of an air filter with a filtering section smaller than 50 μm ; we recommend using a filter with condensate automatic discharge.
2. Do not run the pump idle.
3. Do not spray paint or solvents towards the pump.
4. Do not place the pump close to heat sources or exposed to the sun. Locate it in a place sheltered from water sprinkles.



5.1 Use

This section describes the airless unit use in compliance with the safety standards in force. Read this section carefully.

5.2 Safety rules during use

TO USE the airless unit **COMPLY WITH** the safety precautions and rules described below.

The manufacturing company declines all responsibility if the operator does not comply with them. It is not to be held responsible for any carelessness during the pump use, either.



If the system is used improperly, it could be broken by causing serious damage.

Use the airless unit for professional purposes only.

Do not change the system; use only Anest Iwata original spare parts.

Check the system daily: repair or replace immediately all worn or damaged parts.

Never exceed the maximum working pressure: 6.0 bar.

IT IS FORBIDDEN to use the equipment for purposes that are different from the ones it is destined to which are described in the use and maintenance manual. If in doubt, apply to your Anest Iwata reseller.

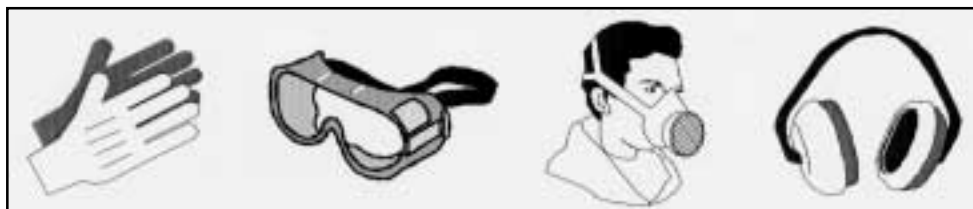
Use paints and solvents compatible with the system parts they come in touch with. Refer to the paint and solvent features mentioned by the manufacturer.

Wear the protective clothes described in section 5.3.

Comply with all the local standards on electric safety and fire risks.

5.3 Clothes

Wear some protective gloves and goggles, an oxygen mask and some ear protections during working. Always follow the laws in force (Ex. LAW 626/94).





5.4 Prewash

1. Make sure the pump has been properly installed; (see point 4.3)
2. Immerse dip tube page 32, in the cleaning liquid (clean solvent or water, according to the purchased model).
3. Place the three-way valve pic. 5 page 31 in the proper position.
4. Open the recirculation valve pic. 5 page 31 located on the paint filter.
5. Loosen the upper gaskets adjusting cup pic. 4 page 29.
6. Gradually open the air pressure regulator up to the minimum pressure required for the straight and alternate movement of the pump (about 0.5 bar).
7. Adjust the upper gaskets by gradually tightening the adjusting cup pic. 4 page 29 until stopping the cleaning liquid outflow, and the pump movement.
NOTE: The failure to observe this point as well as an improper initial adjustment of the gaskets might reduce their duration.
8. Once the gaskets have been adjusted, increase the air supply pressure (up to about 2 bar) and let the cleaning liquid flow in the recirculation pipe for a few minutes.
9. Close the recirculation valve pic. 5 page 31, clean the paint pipe and the gun by keeping its trigger pulled.
10. Once you are sure the cleaning has been properly carried out, lift the dip tube from the vessel containing the cleaning liquid and let the residual liquid flow out of the gun first, and then from the recirculation pipe.



WARNING

THE PUMP MUST BE CLEANED BEFORE USING IT FOR THE FIRST TIME, IF IT IS NOT USED FOR A LONG TIME AND AFTER ANY COLOUR CHANGE.

5.5 Starting-up

Before beginning working, start the pump by following the instructions below:

1. Dip the suction pipe in the tank with the product to be pumped.
2. Open the two-way valve for paint recirculation pic. 5 page 31.
3. Lift and gradually turn the pressure reducer knob pic. 5 page 31. Adjust it at a pressure slightly higher than 2.0 bar, to enable the pump to release the air.
4. Close the two-way valve for paint recirculation pic. 5 page 31 and release the air through the gun, as well.
5. Increase the pressure of the reducer connected to the pump, according to the desired working pressure.



CAUTIONS

- a) Use airless guns only.
- b) When the paint level inside the tank decreases, the pump might suck some air. Increase the level of paint.
- b) Do not drag the pump by pulling it by the pipes.
- d) Do not spray towards the eyes or towards other people.



CAUTIONS: EMERGENCY STOP

Whenever the pump must be stopped due to one of the following reasons:

- a) The material never stops coming out of the gun
- b) Fluid discharge through the connectors or the damaged pipe. THEN, close the THREE-WAY valve 4-2 pic. 5 page 31.

WARNING



- a) When assembling or removing the gun nozzle, always block the trigger by means of the safety catch.
- b) Never remove the gun trigger safety catch.
- c) Never exceed the maximum working pressure (6.0 bar).
- d) Always use a airless ANEST IWATA gun, which is provided with various safety devices.
- e) During functioning, never touch the moving parts. Before carrying out any maintenance operation, disconnect the air supply and discharge the residual pressure.

5.6 Daily interruptions

1. Upon suspending the use of the pump:

- It is not necessary to disconnect the air supply if the interruption is short.
- If the interruption is long, turn the three-way valve 4-2 pic. 5 page 3, discharge the air from the circuit and open the recirculation valve 3-13 pic. 5 page 31 to release the residual fluid pressure.

2. When the pump is stopped at the end of the working day:

- Clean the fluid passages.
- Remove the dip tube filter, the filter inside the compensator and the gun filter, and clean them.



5.7

Wrong and dangerous uses



A wrong earthing, an insufficient ventilation, a naked flame or a spark can cause a fire or an explosion and provoke some serious injuries.



WARNING

**IF SOME SPARKS OR AN ELECTRIC DISCHARGE WERE PERCEIVED, INTERRUPT IMMEDIATELY ALL PAINTING OPERATIONS.
DO NOT USE THE SYSTEM UNTIL THE PROBLEM CAUSE IS IDENTIFIED.**

Keep away from the working area all kinds of waste, of solvent container, of solvent or petrol soaked rags or clothes.

Before starting the system disconnect all the electrical connections inside the working area.

Before using the system switch off all the naked flames and pilot lights inside the working area.

Do not smoke inside the working area.

During painting operations, or if there are some vapours in the air, do not switch on or off the lights inside the working area.

Do not use any petrol engine inside the working area.

Some organic solvents or discharged toxic vapours can enter the eyes or the skin, be swallowed or inhaled, by provoking serious injuries.

When the air engine is running, keep the face away from the exhaust.



5.8 Pressure release process



WARNING

1. Close the air supply to the pump by turning the pressure reducer adjustment counter-clockwise down to 0 bar.
2. Activate the safety catch of the airless gun trigger.
3. Make sure the recirculation pipe is not clogged, then gradually open the recirculation ball valve, and leave it open.
4. Hold the gun tightly and lean it against the metal vessel with the paint. Remove the safety catch of the airless gun trigger, and gently pull the trigger to release the pressure inside the airless pipe and inside the gun.
5. Block the airless gun trigger once more by means of the safety catch.
6. If you believe the pressure has not been fully released by following the instructions provided in point 4, loosen the gun nozzle carrier to gradually release the residual pressure, then loosen it completely. Clean the fluid passage ducts.



6. MAINTENANCE AND INSPECTION

6.1 General notes



A suitable maintenance is important for a longer duration of the equipment in good working conditions and efficiency ensuring functional safety as time goes by.

All maintenance operations must be carried out by a qualified staff. The pump design and the materials used to manufacture it limit the maintenance interventions to a simple periodic cleaning.

The staff must be provided with the individual protections that are generally used for similar operations. They also must follow the safety rules described in section 6.2.

6.2 Safety rules during maintenance

The main rules to follow during maintenance interventions on the unit are:

1. Disconnect the pneumatic supply before replacing any component.
2. Do not wear rings, watches, chains, bracelets, etc. during maintenance operations.
3. Always use the individual protections (gloves, safety shoes, etc.).
4. Do not use naked flames, points or pins for cleaning.
5. Do not smoke.



6.3 Recommended scheduled operations

Daily maintenance

- A. Clean nozzle tip.
- B. Clean gun filter.
- C. Loosen air regulator to allow pressure to fall to 0 bar by exhausting paint from gun. When you don't clean pump, always keep paint surface in paint container above paint intake set.
- D. Clean fluid intermediate filter.

Every 50 hours

- A. Clean paint passages (especially when paint has lot of pigments or deposits easily)

Every 100 hours

- A. Clean paint passages with cleaning liquid.
Clean intake filter.

Every 300 hours

- A. Tighten packings of lower pump set.

Every 500 hours

- A. Apply grease to each sliding section of lower pump set and air motor set.

Every 1000 hours

- A. Overhaul the whole unit.
- B. Replace worn parts.

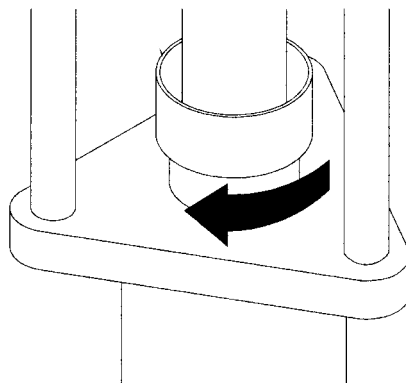


CAUTION:

REGARDING THE TWO LAST ITEMS ABOVE,BEFORE OPERATE ASK THE ANEST IWATA .

6.4 Packings adjustment

If paint leaks from thinner cup, tighten it gradually to stop paint leakage. During this operation, be sure to reduce air pressure to lowermost possible.





Problem	Causes	Remedies
1. Air pressure does not rise.	<ul style="list-style-type: none"> a) Air inlet valve is not open. b) Air regulator is not closed. c) Insufficient air pressure of air source. 	<ul style="list-style-type: none"> a) Fully open it. b) Tighten his knob. c) Replace air compressor.
2. The pump does not operate	<ul style="list-style-type: none"> a) Air inlet valve is not open. b) Air regulator is not closed. c) The pump does not operate 	<ul style="list-style-type: none"> a) Fully open it. b) Tighten his knob.. c) Disassemble air motor*.
3. The pump stops and the fluid pressure does not rise (air pressure rises)	<ul style="list-style-type: none"> a) Filter (fluid intermediate filter) is clogged. b) Upper packings are tightened too much. 	<ul style="list-style-type: none"> a) Clean filter b) Loosen it.(Refer to ref. 10 in the chapter of Inspection and maintenance)
4. Although plunger pump operates, fluid pressure does not rise	<ul style="list-style-type: none"> a) Intake hose set is not in paint. b) Ball in suction tube sticks. c) Filter (intake hose set) is t clogged 	<ul style="list-style-type: none"> a) Put it in paint b) Remove intake hose set and push ball up by bar from connection. c) Clean filter.
5. Although plunger pump operates and fluid pressure rises, paint does not come out.	<ul style="list-style-type: none"> a) Safety lock of airless gun is not unlocked. b) Nozzle tip is clogged. c) Filter (fluid intermediate filter) is clogged. 	<ul style="list-style-type: none"> a) Unlock safety gun. b) Remove clogged thing with attached needle and clean. c) Clean filter
6. Plunger pump does operation.	<ul style="list-style-type: none"> a) Drain valve is not closed b) Paint is insufficient. c) The pump drawn air. d) Air remains in paint passages e) Paint leaks from thinner cup. 	<ul style="list-style-type: none"> a) Close drain valve. b) Replenish paint. c) Securely connect intake hose set. d) Loosen drain valve and release air. e) Tighten upper packing or replace*.



Problem	Causes	Remedies
6. Plunger pump does operation.	f) Ball in suction tube sticks to seat. g) Leakage from fluid passages. h) Scratch or dust on ball or seat	f) Remove intake hose set and push ball up with bar from connection. g) Tighten. h) Disassemble, clean or replace*.
7. Vibration appears (spray pattern becomes large or small)	a) Filter (fluid intermediate filter) is clogged. b) Nozzle tip is worn out. c) Lower packing is worn out. d) Intake joint is loosened. e) Scratch or dust on ball or seat	a) Clean filter. b) Replace it*. c) Tighten or replace*. d) Tighten e) Disassemble, clean or replace*.
8. Air pressure cannot be adjusted by air regulator	a) Rubber valve of air regulator is damaged.	a) Replace parts*.

Ask the dealer about * marked items. If they are not solved properly, it can cause poor performance.

REMEDIES ABOUT PAINTING DETAILS

Problem	Causes	Remedies
1. Paint sagging on painting surface	a) Fluid pressure is not suitable for paint property. b) Fluid viscosity is high c) Filter of intake hose set or filter of airless gun is clogged.	a) Adjust fluid pressure so that fluid pressure does not cause tails (generally the higher the fluid pressure, the less likely tailing will occur). b) Dilute fluid and reduce fluid viscosity. c) Disassemble and clean filter to remove foreign matter.
2. Coating surface is rough (particles are large).	a) Fluid output is too large	a) Move gun faster to produce thin coating film. b) Reduce fluid pressure and fluid output.

8. EXPLODED VIEWS WITH SPARE PART LIST



8.1

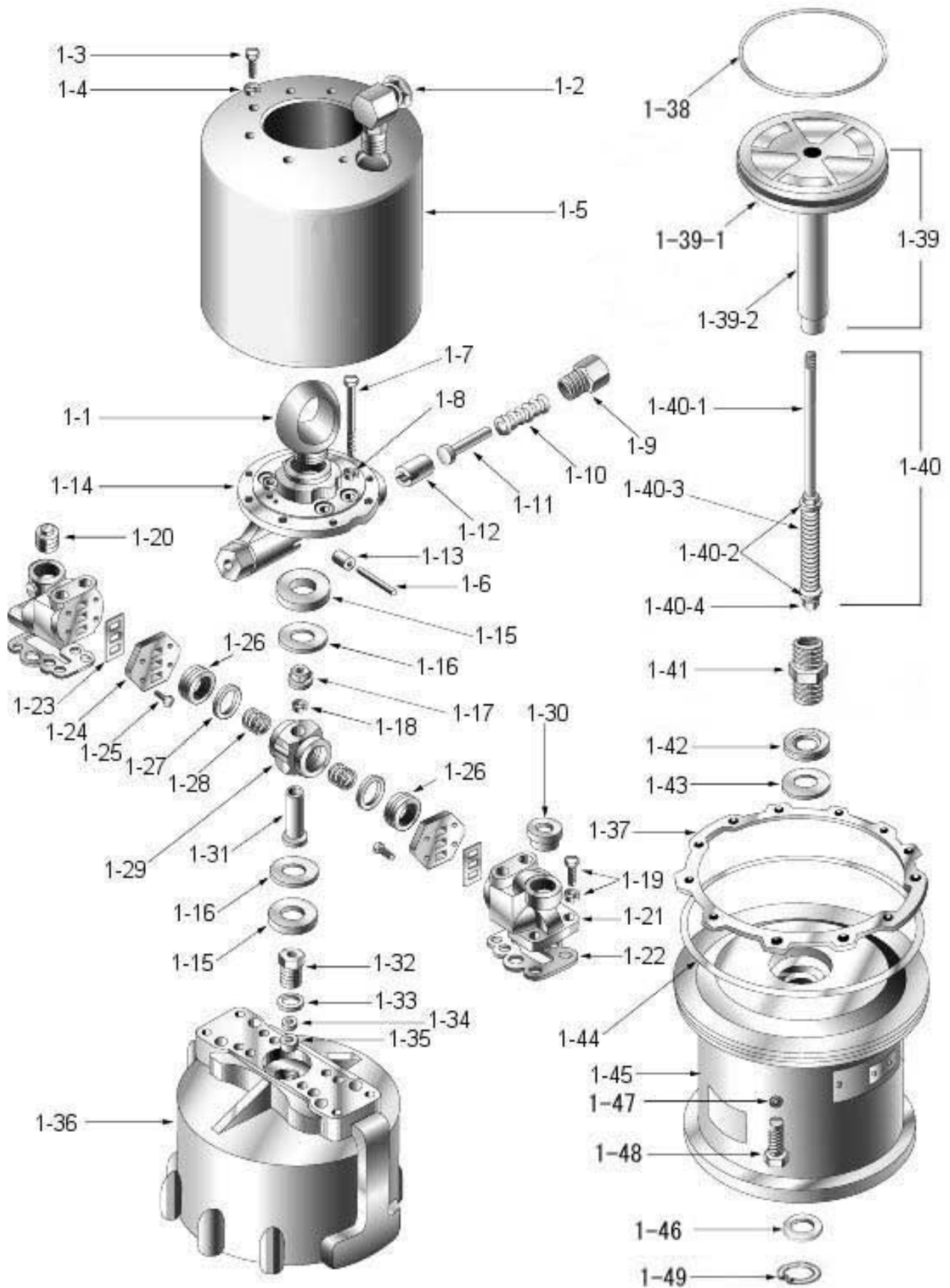
ALS 653 /663 PNEUMATIC MOTOR Ref. Picture on the next page

Ref.	Description
1-1	EYEBOLT
1-2	ELBOW UNION
1-3	HEX. BOLT
1-4	SPRING WASHER
1-5	AIR MOTOR COVER
O 1-6	PIN
1-7	HEX. BOLT
1-8	SPRING WASHER
1-9	RETAINER
O 1-10	SPRING
O 1-11	SPRING GUIDE
O 1-12	PLUNGER
O 1-13	ROLLER
1-14	HOUSING
1-15	DAMPER
1-16	WASHER
1-17	NUT
1-18	SPRING WASHER
1-19	BOLT + WASHER
1-20	PLUG WITH HEXAGON HOLE
1-21	MANIFOLD
O 1-22	GASKET
O 1-23	SEAL VALVE PLATE
O 1-24	VALVE PLATE
1-25	SCREW
O 1-26	VALVE
O 1-27	O RING
O 1-28	SPRING
1-29	VALVE HOUSING
1-30	GROMMET
1-31	HUB
O 1-32	BEARING
O 1-33	GASKET
O 1-34	LEATHER PACKING
O 1-35	PACKING
1-36	AIR CYLINDER
O 1-37	CYLINDER GASKET
O 1-38	O RING
1-39-1	PISTON
1-39-2	PISTON ROD
O 1-40	CHANGEOVER ROD SET
1-41	PISTON TUBE
O 1-42	"U" PACKING
1-43	WASHER
1-44	O RING
1-45	BASE
O 1-46	SEAL
1-47	SPRING WASHER
1-48	HEX. BOLT
1-49	SNAP RING

(O) Parts subject to wear.



PICTURE 3



8.2

ALS 653 /663 LOWER PUMP SET

Ref. Picture on the next page

	Ref.	Description
	2-1	CAP NUT
	2-2	COUPLING
	2-3	PACKING NUT
O	2-4	GLAND (F)
O	2-5	"V" PACKING(Teflon)
O	2-6	"V" PACKING(Leather)
	2-7	CONNECTING ROD
O	2-8	GLAND
	2-9	HEX. NUT
	2-10	PUMP HOUSING
O	2-11	GASKET
O	2-12	SLEEVE
O	2-13	ROD
O	2-14	BOLT
O	2-15	BALL (7/8")
O	2-16	WASHER
O	2-17	PISTON
	2-18	RETAINER
	2-19	PIN
O	2-20	O RING
O	2-21	BALL (1-1/4")
	2-22	BALL GUIDE
O	2-23	INTAKE HOSE
	2-24	ELBOW
	2-25	NIPPLE

(O) Parts subject to wear.

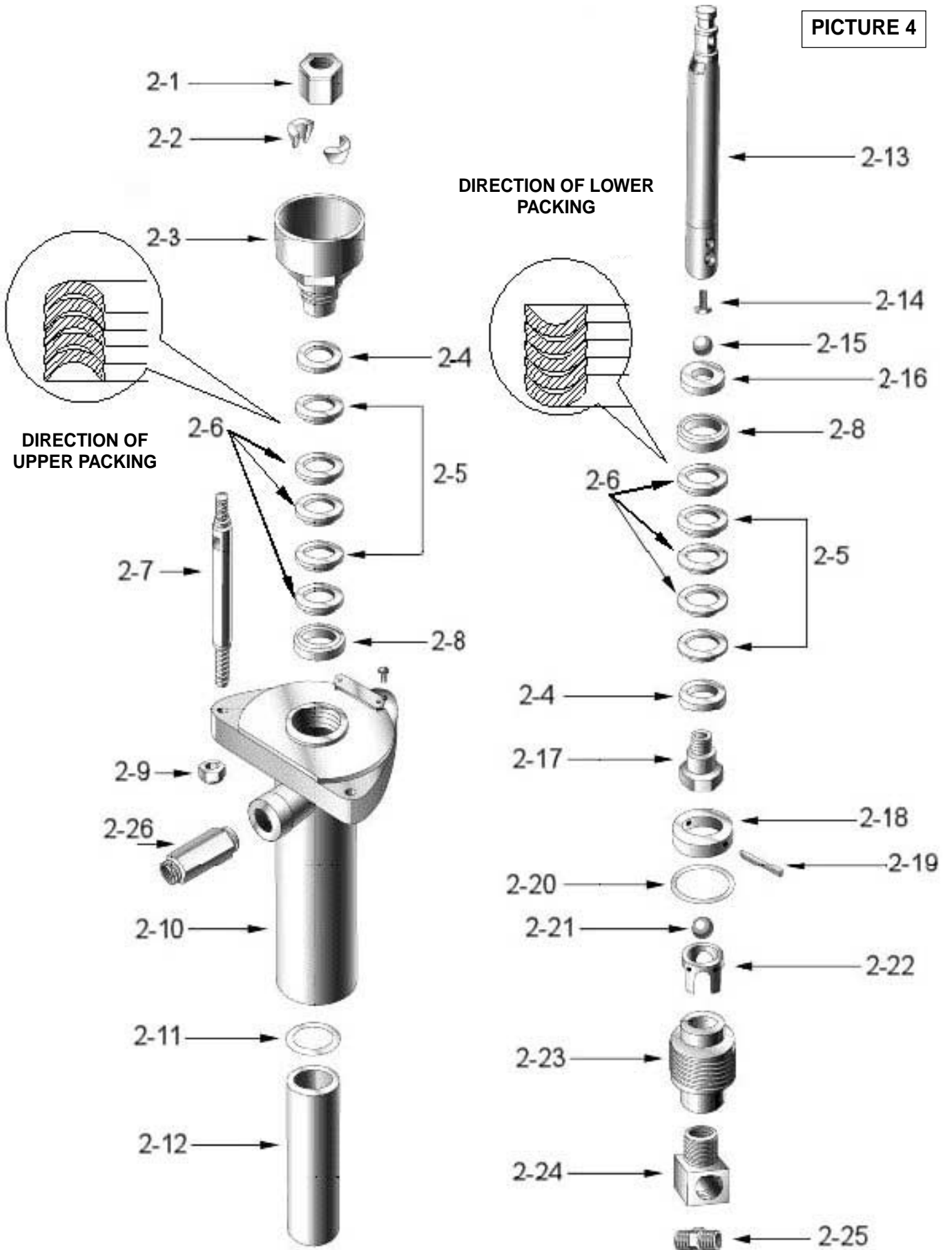


CAUTION:

PARTS MARKED IN GREY ARE DIFFERENT FOR ALS 653 AND ALS 663. OTHER PARTS ARE THE SAME BETWEEN TWO MODELS.



PICTURE 4





9.1

PAINT FILTER SET

Ref. Picture on the next page

Ref.	Description
3-1	RING
3-2	PLUG
3-3	CYLINDER
○ 3-4	SPRING
○ 3-5	FILTER
3-6	FILTER HOLDER
○ 3-7	PACKING
3-8	BODY
3-9	(OUTLET) JOINT
3-10	PLUG
3-11	(INLET) JOINT
3-12	NIPPLE
○ 3-13	BALL VALVE
3-14	NIPPLE

(○) Parts subject to wear.

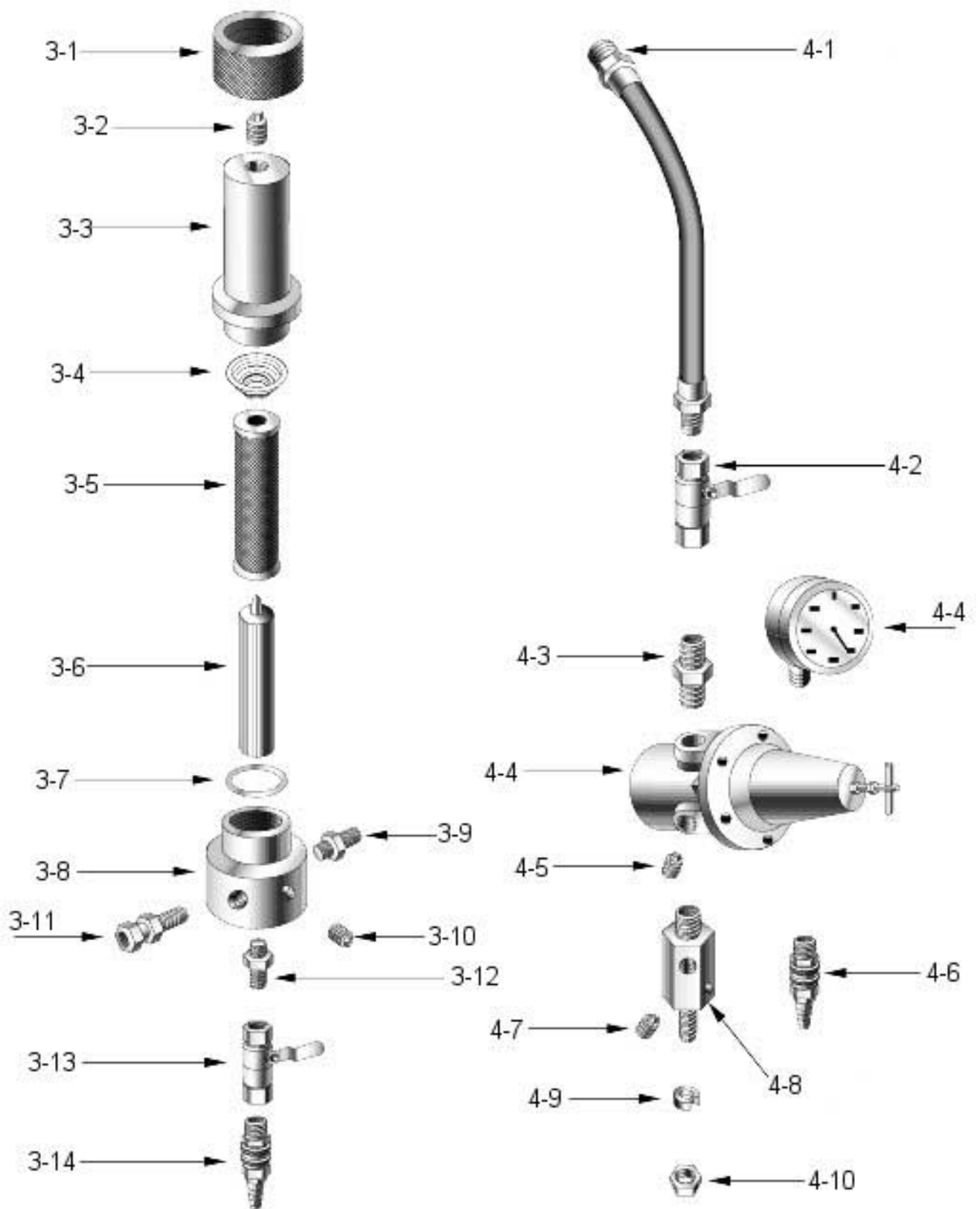
9.2

AIR REGULATOR SET

Ref.	Description
4-1	AIR HOSE
4-2	THREE WAY-VALVE
4-3	NIPPLE
4-4	AIR REGULATOR+GAUGE
4-5	PLUG
4-6	COUPLING SET
4-7	PLUG
4-8	MANIFOLD
4-9	SPRING WASHER
4-10	HEX. NUT



PICTURE 5



9.3

DIP TUBE WITH FILTER

Ref. Picture on the next page

Ref.	Description
○ 5-1	FILTER
○ 5-2	SPRING
5-3	FILTER COVER
5-4	SUCTION HOSE
5-5	"L" JOINT
○ 5-6	FLEXIBLE HOSE

(○) Parts subject to wear.



PICTURE 6



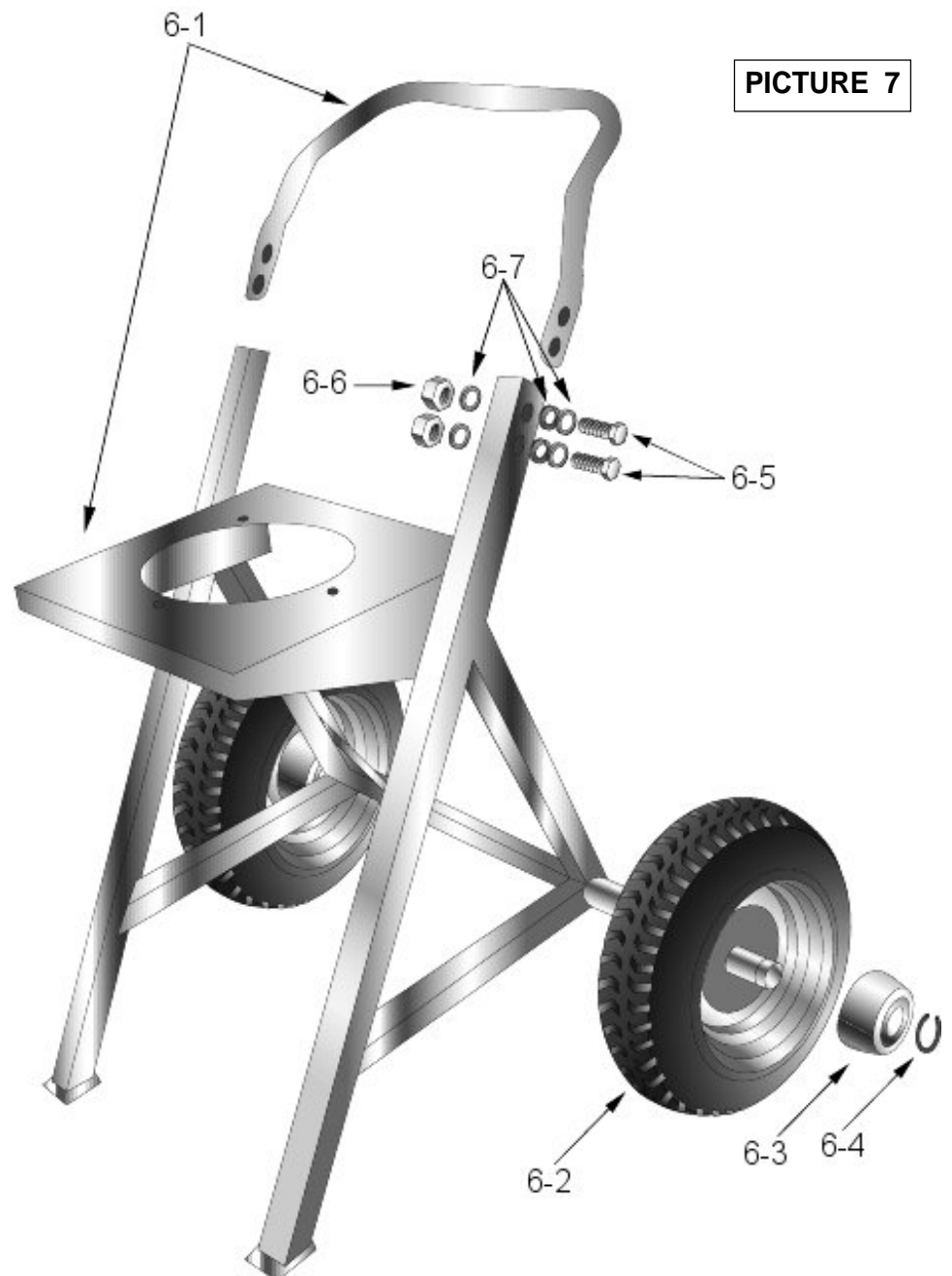
9.4

WHEEL CART SET

Ref. Picture on the next page

Ref. Description

6-1	WHEEL CART SET
6-2	WHEEL
6-3	BEARING
6-4	SEEGER
6-5	HEX. BOLT
6-6	NUT
6-7	WASHER





10.1 Equipment storage

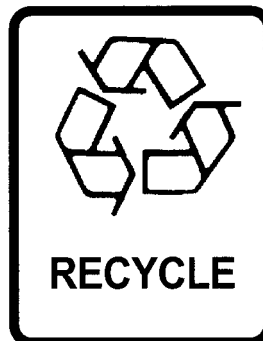
If the airless unit is to be stored for a certain period, the following operations are recommended:

Disconnect the equipment from the energy sources.
Remove all residues and deposits from the pump.
Cover the equipment with a waterproof tarpaulin.

10.2 Dismantling

If for any reason the pump is to be dismantled, some important rules have to be followed to safeguard the environment.

All sheaths, flexible ducts and plastic or non metal components will have to be disposed of separately.





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