AQUARIUS SERIES

SAND FILTER FOR SWIMMING POOLS
WITH TOP VALVE AND CIRCULATION PUMP

USE AND MAINTENANCE HANDBOOK

FOR OTHER LANGUAGES:

AQUA S.P.A reserves to change or integrate this handbook in order to improve the product.

SOMMARIO

1 GENERAL PREFACTION

This use and maintenance handbook is a document issued by **AQUA *SPA*.** It is to be considered an **integrating part of the product** for its lifetime, even in case of cession to a third party, until its demolition and draining.

The products described in the this handbook are patented. Every reproduction, even if it is partial, is forbidden.

The aim of this handbook emitted by **AQUA *s.p.a*** is to:

- supply operators and maintenance men with all the instructions and warnings necessaries to work safely ;
- allow the user to use the equipment in a safe and proper way and to maintain the goods in a state of good efficiency and security;

1.1 IDENTIFICATION MANUFACTURER'S DATA

AQUA S.p.A.
Via T. Crotti 1 - 42018 - San Martino in Rio (RE) ITALY
Tel. +39 0522 695805/85 Fax +39 0522 646160
e-mail aqua@aqua.it web: www.aqua.it
C.F. & P.IVA 02026440350

Declares to be the manufacturer and referent of the equipment for eventual operations of technical maintenance assistance and/or changing of the equipment described in this handbook.

- If the explanations reported here are considered not clear or incomplete and if one or more parts of the handbook are not perfectly comprehensible, it is necessary to address to the manufacturer so as to obtain all the necessary additional indications and/or information.
- The manufacturer engages himself, if necessary, to supply a new handbook enriched with the agreed clarifications.
- In order to obtain the best performance from the products, it is recommended to follow carefully the instructions kept in this handbook, which should be read carefully in every single part.
- The indications concerning the use of the equipment should be executed in an absolute and precise way according to what is specified hereafter. In this way the inconveniences caused by a non observance of the rules can be avoided. This handbook is technical, so it is an exclusive property of ***AQUA s.p.a*** whom reserves all rights; every reproduction of this handbook, even if in part or partial, is forbidden by the law.

	**ATTENTION**: **It is not allowed a use of the equipment in different configurations from what is here reported or different working installations from what established and advised by the manufacturer .** **Different, improper, and/or a non correct use regarding the mentioned indications of installation and use present in this handbook make all the manufacturer's responsibility no longer valid.**

2 WARRANTY GENERAL RULES

- **AQUA *s.p.a*** guarantees that the equipment has been designed, manufactured and built in respect of the rules in force, in particular with regards to safety rules.
- The WARRANTY twenty-four months, starting from the installation, and covers entirely the parts considered of inferior quality because of the materials, wrong planning or wrong construction, at the unquestionable manufacturer's judgement.
- **AQUA *s.p.a*** is not responsible for any kind of damages caused by the purchaser during the warranty period and doesn't take any responsibility for the work done outside the term of this warranty.
- Are **excluded** from the WARRANTY:
  a) *water connection ;*
  b) *electricity connection;*
  c) *costs for the transfer of* ***AQUA s.p.a*** *technicians.*
- *Are also excluded from the warranty the defects owing to:*
  a) *Natural usury;*
  b) *Inappropriate use and/or collisions to the unities which constitute the equipment;*
  c) *Bad management and non-observance of the maintenance rules*
- The warranty is void if the equipment is utilized and installed outside the limits established by the standard working conditions given my the manufacturer, even if shortly after installation of the product itself.
- The warranty can not be applied if changes are done after to the installation which have not been authorized or approved by the manufacturer for the said equipment and in case of incorrect accessories used for the products itself
- Any tampering and/or damage created to the equipment will make immediately the WARRANTY VOID and release the manufacturer from any responsibility.
- There is no compensation for any real and/or hypothetical damages caused by a non-performance deriving from the equipment's malfunctioning. .

3 GLOSSARY OF THE USED TERMS

We refer to the table enclosed for what concerns the general definitions of the single equipment's components.

it is defined *INCORRECT USE* the use of the equipment outside the limits specified by this handbook.

Only qualified and authorized staff, competent technicians and installers, are allowed to carry out the following activities:

- installation and start up;
- removal and demolition;
- regulation & setting
- maintenance and repair;

4 RULES OF REFERENCE

A classification of the pressure equipment has been executed according to the 97/23/CE PED directive since it has been submitted to a pressure higher than 0,5 bar.

5 EQUIPMENT DESCRIPTION

5.1 PARTICULARS AND FUNCTION

This equipment is used for the water treatment of the pool for human bathing. The aim is to guarantee the filtration and to keep suspended matter not withheld by the traditional filters baskets installed up stream of the system.

The **AQUA s.p.a** sand filter has been manufactured to hold materials and suspended matter of 0,4 mm and 0,8 mm in size.

The principle of function is that of trapping suspended matter by making the treated water flow through the filtering material situated inside the filter.

5.2 EQUIPMENT'S OVERALL VIEW

5.1: EQUIPMENT'S PICTURE

5.3 STRUCTURAL DATA AND TECHNICAL CHARACTERISTICS

The main indications concerning the equipment's characteristics are given hereafter.

5.4 EQUIPMENT'S TECHNICAL CHARACTERISTICS

The dimensions, the bulks, the connection dimensions and the weights of the different filters are reported on the component cards enclosed at the end of this handbook - picture 13.1 –

Filters should operate only with:
- aqueduct or ground water
- seawater;
- water mixed with sodium hypochlorite in compliance with the UNI 901:2002 rule in a solution of max 0,2 mg/l (2 ppm).

The equipment can be submitted to the working pressure of:

1,5 bar

	**ATTENTION:** **Before the installation check that the inlet system, connected to the filter, is provided with suitable devices which limit and prevent the overflow of the maximum pressure inside the filtration system (4 bar).**

The fluid temperature used by the equipment should be included in the following range:

T_{min}: +5°C
T_{max}: +40°C

	**ATTENTION:** **If it is provided that the fluid temperature can go below the freezing point, isolate the equipment from the inlet system connected to it and empty it, according to the conditions specified in the maintenance section.**

6 RISKS CONNECTED TO THE EQUIPMENT

6.1 UNIVERSALITY

For its own conformation, for its structural prerogatives and for the work that should be accomplish, the equipment shows some not eliminable risks hereafter described.

6.2 CONNECTED RISKS

Reference	*Risk*	*sign*	*danger location*	*remedy*
1	**Fluids' projection**		**Zone surrounding the equipment**	**sign**

6.3 RISKS FOR AN INCORRECT USE

In addition to the risks presciently underlined, it is possible to suppose that, although it has been indicated more than once how to behave properly to limit the risks, there could be situations of anomalous behaviour (incorrect use).

The risks caused by an incorrect use and their prevention are summarized in the following table.

Incorrect use	*Risk*	*Prevention*
Incorrect insertion of the filtering material	**Malfunction, saturation of the filtering mass, gas formation**	**Information on the handbook**
Not suitable treatment with fluid	**Malfunction, saturation of the filtering mass, gas formation**	**Information on the handbook**
Treatment of a part or all equipment with chemicals	**Weakening and/or structure' slough**	**Information on the handbook**
Instable positioning	**upsetting**	**Information on the handbook**
Lid's opening while the equipment is on pressure	**flooding, parts projection**	**Information on the handbook**

6.4 RESIDUAL RISKS

In this way, with the application of what mentioned and arranged, we have prepared a remedy for all kind of not eliminable risks, consequently, there should be no damages. Anyway, the operator should check the absence of people in the risk zone before doing any operation.

The operator should take precautions by wearing the necessaries individual protection means (gloves, glass, anti-noise devices, accident prevention shoes).

7 SIGNS STICKED ON THE EQUIPMENT

The following signs are used inside the handbook and on the machineries :

SYMBOL	EXPLANATION
	Generic danger
	compulsory to protect the respiratory tract

SYMBOL	EXPLANATION
	access prohibited to people not authorized
	compulsory to protect hands with gloves

SYMBOL	EXPLANATION
	compulsory to consult the handbook
	compulsory to remove the electrical connections for the maintenance

PICTURE 7.1: SIGNS LIST

8 TRANSPORT AND INTERNAL MOVING

The following specifications are to be considered:

It is recommended the use of qualified and specialized staff to move, transport and install the equipment. Moving should be executed by lifting the equipment according to the following specifications:

- by the edge with open lid;
- by the base;

For short moving it is possible to use a fork lift and/or manual trolley.

	**ATTENTION:** **carry out all the operations with caution AND RISE THE EQUIPMENT BY FOLLOWING THE INDICATED ZONE**

	**ATTENTION:** **it is necessary to follow the instructions reported in this handbook to rise and to move the equipment.**

9 INSTALLATION

9.1 GENERAL INDICATIONS

9.2 NORMAL WORKING

Connection should be executed by authorized and qualified staff.

Equipment's connection should be linked to the pool system circuit.

Connection should be done by using threaded pipes union which are included in the equipment, the thread and the diameter are indicated in the components card.

Pipe union exit , included in the equipment, should be connected by a glued smooth pipe (PVC)

During the normal working, the equipment should be placed in a covered and dry area protected from the direct sunlight irradiation and from heat.

For proper working conditions, the water temperature should range between +5°C and +40°C.

The filter has a flow stream direction – which should be respected – these are indicated by the arrows situated near the pipe unions.

9.3 STORAGE

During an eventual storage the equipment should be kept in a covered and dry place.

The equipment should be protected from eventual water sprinklings, dust, humidity, collision or accidental damages.

Advisable room temperature should be included between 0°C and +50°C.

9.4 STARTING

Check carefully that the components aren't damaged because of transport collisions .

if any part is damaged or it is not in keeping with the original condition of supplying, don't make the system work and provide for the reparation or for the substitution at the assistance centre.

Check that all the filter connection pipes and the valves are closed.

9.5 REFILLING

Refill the filter by putting in the filtering material from the hole lid.

The Filter media sand used must have the following characteristics:

FILTER MEDIA	GRANULOMETRY
QUARTZ SAND and MILLED QUARTZ	0,4 ÷ 0,8 mm
	1 ÷ 2 mm
	1 ÷ 3 mm
	3 ÷ 6 mm
ZEOLITE	1 ÷ 2,5 mm
	2,5 ÷ 5 mm
DIATOMACEOUS	-
ANTHRACITE	0,8 ÷ 1,8 mm
ACTIVATED CARBON	-

ATTENTION:

<u>Before refilling</u> close the access hole of the centre manifold pipe which is placed just under lid.

Remove the gasket from the filter's entry.

Refill slowly the filter in accordance with the following quantities:

FILTER MODEL	MATERIAL QUANTITY
6 m^3/h	75 Kg
10 m^3/h	100 Kg
14 m^3/h	150 Kg
22 m^3/h	250 Kg

ATTENTION:

<u>At the end of the refill</u> remove the closure used for the manifold pipe which is placed under the lid.

Afterwards fill the sand filter with water.

The refill should be done slowly by letting the water flow in every interstices inside the filtering material.

Refill should be done until the water level overflows the filter's edge.

ATTENTION:

Check that the spreading of the water in excess doesn't cause damages and that there aren't any nearby voltage and/or electric component parts present were the excess water could be in contact with.

9.6 FILTER CLOSING

- Close the filter by the lid, the gasket, the clamp, the screws and the nuts included in the equipment
- Verify that the contact surfaces are clean and eventually remove the dirt or the residual filtering material;
- Place the gasket on the filter.
- Assemble the pressure gauge on the lid in the proper hole (by the threaded hole or by the proper back nut and O-ring);
- Place the lid
- Put the clamp to close the lid and the filter top
- Place the 2 nuts in the clamp
- Close the clamp using the screws, until the two side are coincident. Do not over-screw!

9.7 STARTING

Open **slowly** the valves situated on the connection pipe.
Check that there are no water leaks.

ATTENTION:

In case of water leaks, close immediately the filter valves and proceed with an examination of the system.

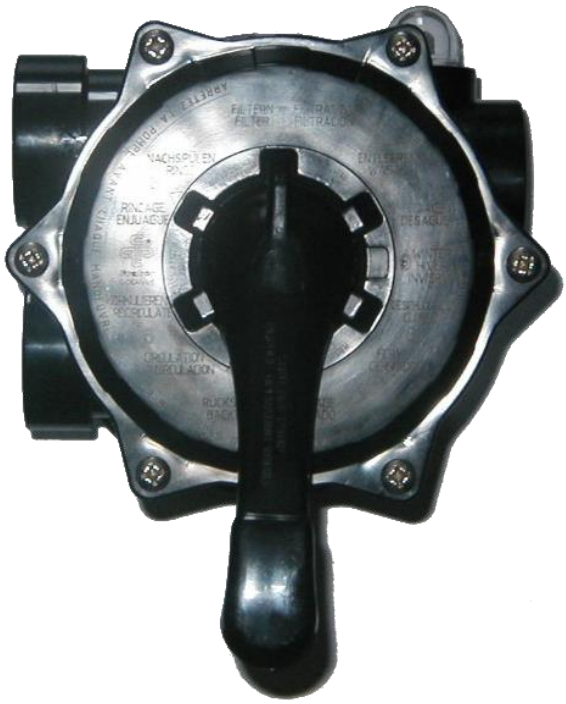
9.8 WORKING

The equipment carries out the filtration of the water according to what is described in this handbook. For a good performance of the filter and for a good management of the system connected to it, there are further functions that should be considered and suggested.

By a different set up of the **multi-port valve** connected to the filter (when models are included) it is possible to carry out these other functions.
A 6 way valve has the following main working positions:

1 - filtration
2 - backwash
3 - rinsing
4 - waste
5 - circulation
6 - lock

the operating conditions of each position are described in detail hereafter



ATTENTION:

the selection with the multiport valve level should be done ONLY WHEN THE SYSTEM IS SWITCHED OFF AND NOT IN USE.

9.9 FILTRATION

It is the normal position of exercise, it carries out the filtration of the treated water from the entry to the exit.

9.10 BACKWASH

It is used for cleaning the filter media present in the filter. This operation removes any suspended matter caught by the filter media during normal exercise

9.11 RINSING

it should be done after the backwash in order to remove eventual impurities inside the valve.

9.12 WASTE

It allows water to flow straight to the waste (ex. emptying the pool)

9.13 CIRCULATION

It allows the system to operate without the filter. water is by-passed straight to the exit

9.14 LOCK

It closes every passage of the valve.

9.15 WINTER

It is an intermediate position which, with an empty system, prevents eventual breakings caused by freezing.

10 ORDINARY AND PREVENTIVE MAINTENANCE

10.1 UNIVERSALITY

The handling of the following operations is left to the user. They also can be executed (*on request*) by **AQUA s.p.a**

If the user intends to do the maintenance by himself, the operations should be entrusted to a qualified person able to estimate an eventual fault and restore the protections and the securities. Maintenance operations, search for faults and repairs are allowed only to qualified staff; non authorized operations make the warranty void.

10.2 ORDINARY MAINTENANCE

Equipment's maintenance is based on a sequence of operations which, if done as indicated hereafter, allows to keep the equipment in perfect working efficiency. Maintenance should be done according to the rules indicated in this handbook.

The indicated control and maintenance slots are to be considered indicative values for the exercise in normal conditions, on the base of a general use of 8 hours a day for 365 days a year. (approx. 3.000 hours/years).

Different conditions can change the maintenance's slot

The main operations are summarized hereafter:

work to be carried out	materials	daily	weekly	monthly	Every 3 months	Every 6 months	yearly	Every 2 years	more	Note
Pressure control	Manometer		X							Pressure should be lower than 1 bar. If it is higher than 0,5 bar do the backwash
Backwash	Multi-port valve position 2								X	Cycle time Max 5 minutes (check the clearness of the multiport valve's lass)
Filtering sand level	Eventually refill with material until half of the filter's high					X				Select the filter from the system, empty it by unscrewing the closing plug situated in the lower part and remove the lid. At the end screw the drain plug.
Filtering material's replacement	Filtering material							X		

ATTENTION:

During the emptying of the filter, check that the spreading of the water in excess doesn't cause damages and that there aren't any nearby voltage and/or electric component parts present were the excess water could be in contact with.

11 DRAINING

The material's waste should be done in accordance to the governing laws in force in the country where the equipment has been installed.

A waste separation should be done when a partial or complete draining is executed.

12 PROHIBITIONS

ATTENTION:

It is not allowed to

- Install the equipment in a non flat and horizontal surface
- Install accessories not authorized by **AQUA s.p.a** ;
- Use the equipment for operations not described in this handbook;
- Use the equipment for pressure or performances higher than what mentioned in this handbook.
- Allow non qualified and non trained staff use the equipment;
- Non use of protection;
- Change the equipment's original parts.

13 MAINTENANCE OPERATION BOOK

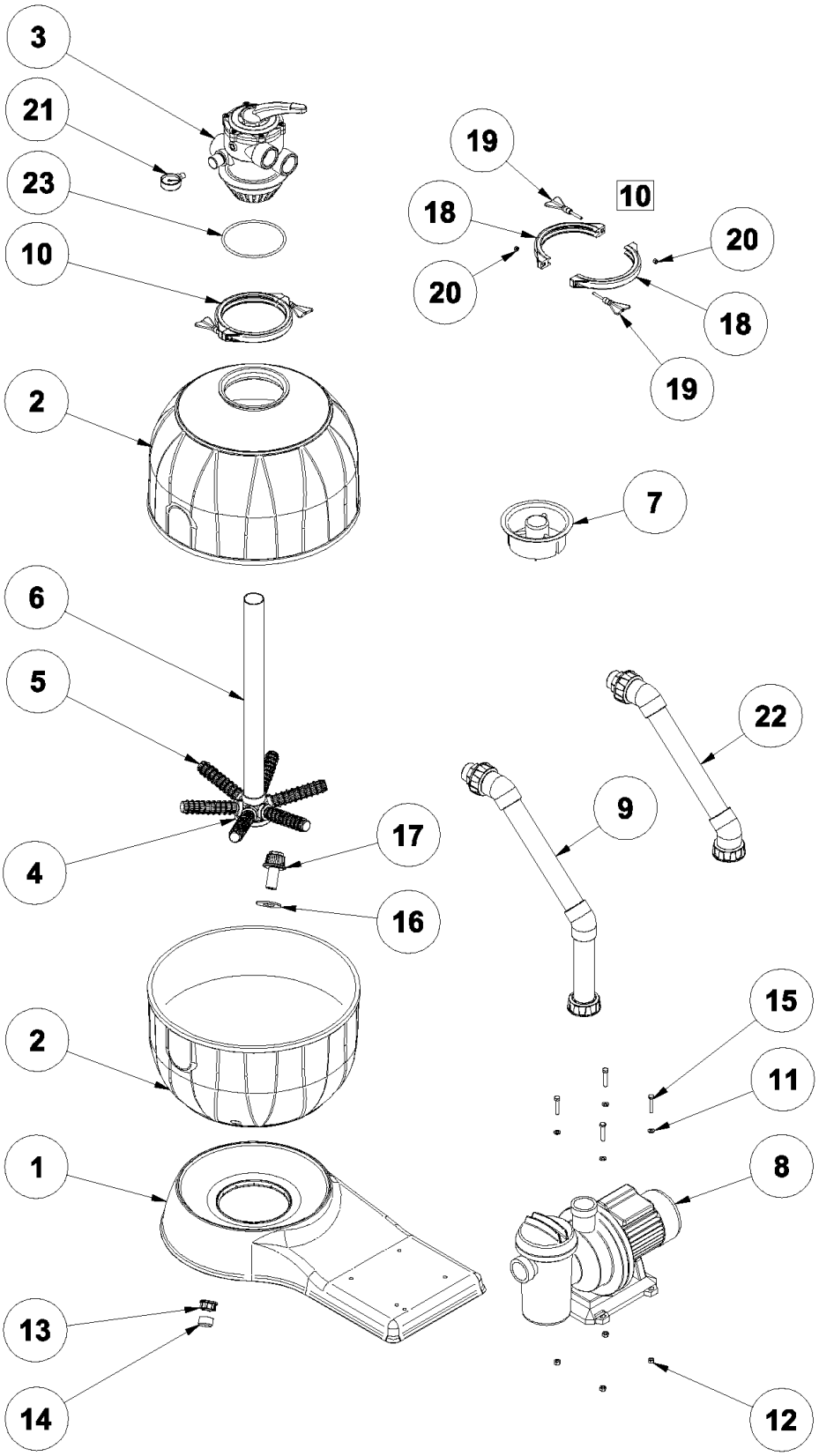
All the operations made on the filter should be reported on the enclosed book.

INSTALLATION'S DATE AND SELLER' STAMP	FILTER CARD		USER
	MODEL	SERIEL N.	OPERATOR

EXAMINATION OPERATION and MAINTENANCE BOOK

Number list	ACTIVITIES'S DESCRIPTION CHECKS AND MAINTENANCE	KIND OF MAINTENANCE Ord.	extra.	Ver.	NOTE	MAINTENANCE DATE	HOURS SPENT	NEXT MAINTENANCE DATE.	SIGN
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

14 COMPONENTS CARD



	100100916	6 M3/hour Sand Filter "AQUARIUS PLUS" for TOP mounting valve	
POS.	***CODE***	***DESCRIPTION***	***QTY.***
1	S9010330	Base for sand filter **"AQUARIUS PLUS"**	1
2	S9010320	Half-Shell sand filter 6 M3/hour	2
3	100100583	ABS Multiport valve level 1"1/2 TOP	1
4	A6079010	*6 way bayonet manifold holder D.50 ABS*	1
5	*A6079020*	*Bayonet type manifolds "B"*	6
6	A6070400	*PVC black tube DN50 SP 3 H.*	1
7	100100935	Ring protector Tube For Sand Filter **"AQUARIUS PLUS"**	1
8	100100201	Centrifugal Pump STD 370-S 1P 0.5 HP 10MC	1
22	100100936	Discharge hose Pump/Valve For Sand Filter **"AQUARIUS PLUS"** 6M3/H	1
11	MB010220	Flat washer D.8 – UNI 6952 INOX A2	4
12	MB010170	Nut M 8 UNI 5588 – INOX A2	4
13	A6079040	Nut for discharge valve D.3/4"G PP	1
14	A6079050	Blanking cap 3/4"F - PP -	1
15	ADSP6000882	Screw M8 X 45 UNI 5739 (T.E.) INOX A2	4
16	A6013000	Flat Gasket rubber	1
17	A6079030	Discharge valve F=0,25mm D.3/4"G L=50/50 PP	1

	100100917	10 M3/hour Sand Filter "AQUARIUS PLUS" for TOP mounting valve	
POS.	***CODE***	***DESCRIPTION***	***QTY.***
1	S9010330	Base for sand filter **"AQUARIUS PLUS"**	1
2	S9010180	Half-Shell sand filter 10 M3/hour	2
3	100100583	ABS Multiport valve level 1"1/2 TOP	1
4	A6079010	*6 way bayonet manifold holder D.50 ABS*	1
5	*A6079020*	*Bayonet type manifolds "B"*	6
6	A6070290	*PVC black tube DN50 SP 3 H.*	1
7	100100935	Ring protector Tube For Sand Filter **"AQUARIUS PLUS"**	1
8	100100202	Centrifugal Pump STD 550-S 1P 0.75 HP 14MC	1
9	100100937	Discharge hose Pump/Valve For Sand Filter **"AQUARIUS PLUS"** 10M3/H	1
11	MB010220	Flat washer D.8 – UNI 6952 INOX A2	4
12	MB010170	Nut M 8 UNI 5588 – INOX A2	4
13	A6079040	Nut for discharge valve D.3/4"G PP	1
14	A6079050	Blanking cap 3/4"F - PP -	1
15	ADSP6000882	Screw M8 X 45 UNI 5739 (T.E.) INOX A2	4
16	A6013000	Flat Gasket rubber	1
17	A6079030	Discharge valve F=0,25mm D.3/4"G L=50/50 PP	1

	100100918	14 M3/hour Sand Filter "AQUARIUS PLUS" for TOP mounting valve	
POS.	***CODE***	***DESCRIPTION***	***QTY.***
1	S9010330	Base for sand filter **"AQUARIUS PLUS"**	1
2	S9010190	Half-Shell sand filter 14 M3/hour	2
3	100100583	ABS Multiport valve level 1"1/2 TOP	1
4	A6079010	*6 way bayonet manifold holder D.50 ABS*	1
5	*A6079020*	*Bayonet type manifolds "B"*	6
6	A6070280	*PVC black tube DN50 SP 3 H.*	1
7	100100935	Ring protector Tube For Sand Filter **"AQUARIUS PLUS"**	1
8	100100203	Centrifugal Pump STD 750-S 1P 1 HP 16MC	1
9	100100938	Discharge hose Pump/Valve For Sand Filter **"AQUARIUS PLUS"** 14M3/H	1
11	MB010220	Flat washer D.8 – UNI 6952 INOX A2	4
12	MB010170	Nut M 8 UNI 5588 – INOX A2	4
13	A6079040	Nut for discharge valve D.3/4"G PP	1
14	A6079050	Blanking cap 3/4"F - PP -	1
15	ADSP6000882	Screw M8 X 45 UNI 5739 (T.E.) INOX A2	4
16	A6013000	Flat Gasket rubber	1
17	A6079030	Discharge valve F=0,25mm D.3/4"G L=50/50 PP	1

10	**A9010450**	***COMPLETE CLOSING CLAMP FOR FILTER LID 6-10-14MC***	
POS.	**CODICE**	***DESCRIZIONE***	***Q.tà***
18	S9010300	Closing clamp for filter lid 6mc-10mc-14mc	2
19	S9010280	M6 special screw for clamp	2
20	ADSP6000495	Nut M6 PG DIN 934OT 58	2
21	AB060090	Pressure gauge R 1/4 D.50 0 -4 ABS	1
23	MG011420	OR 148 x 6 - NBR	1