

## **SAND FILTER SYSTEM INSTALLATION AND USER'S GUIDE**

**IMPORTANT : SAFETY INSTRUCTIONS**  
**READ AND FOLLOW ALL INSTRUCTIONS**  
**SAVE THESE INSTRUCTIONS**

**(D.450 mm – D.2000 mm)**

### **GENERAL**

You may find everything about sand filters to assembly, switching adjustments and periodical maintenances in this manual

These filters are used for cleaning swimming pools, decorative pools, spa, garden pools, open square pools and they have widespread usage fields

Those sand filters have no productivity alone, only physical purification procedures of water from other sources are well performed

Filters do not include any electrical or electronic circuit either, they work completely manually and do the physical treatment

Their installation can be performed easily

### **Technical specifications :**

Sand filters : Made of polyester glassfiber reinforced which is resistant to corrosion ,they are complete with PVC waterjet, internal equipment ,manometer and air draining purger

Max working pressure : 1,5 bar

Test pressure : 3,5 bar

Max. working temperature : 28 C

However when flow of pumps are selected to match filters in the pools, characteristically maximum pressure height should have a value of no more than 20 mss

Ø mm	Valve	Flow Rate 50m <sup>3</sup> /h/m <sup>2</sup>	Filtration surface m <sup>2</sup>	Quartz Sand 0,5-1,2mm kg	Quartz Sand 1-3mm kg
450	1 1/2"	8 m <sup>3</sup> /h	0,16	50	25
600	1 1/2"	14 m <sup>3</sup> /h	0,28	75	50
750	2"	21 m <sup>3</sup> /h	0,44	175	75
900	2"	31 m <sup>3</sup> /h	0,64	275	125
1050	2 1/2"	43 m <sup>3</sup> /h	0,86	750	300
1250	3"	56 m <sup>3</sup> /h	1,13	1050	350
1600	4"	100 m <sup>3</sup> /h	2,01	2100	700
2000	5"	157 m <sup>3</sup> /h	3,14	3300	1100

Table 1 : (Sand filters technical values table)

## SPARE PART DIAGRAM

450-600-750-900 mm FILTER SPARE PART

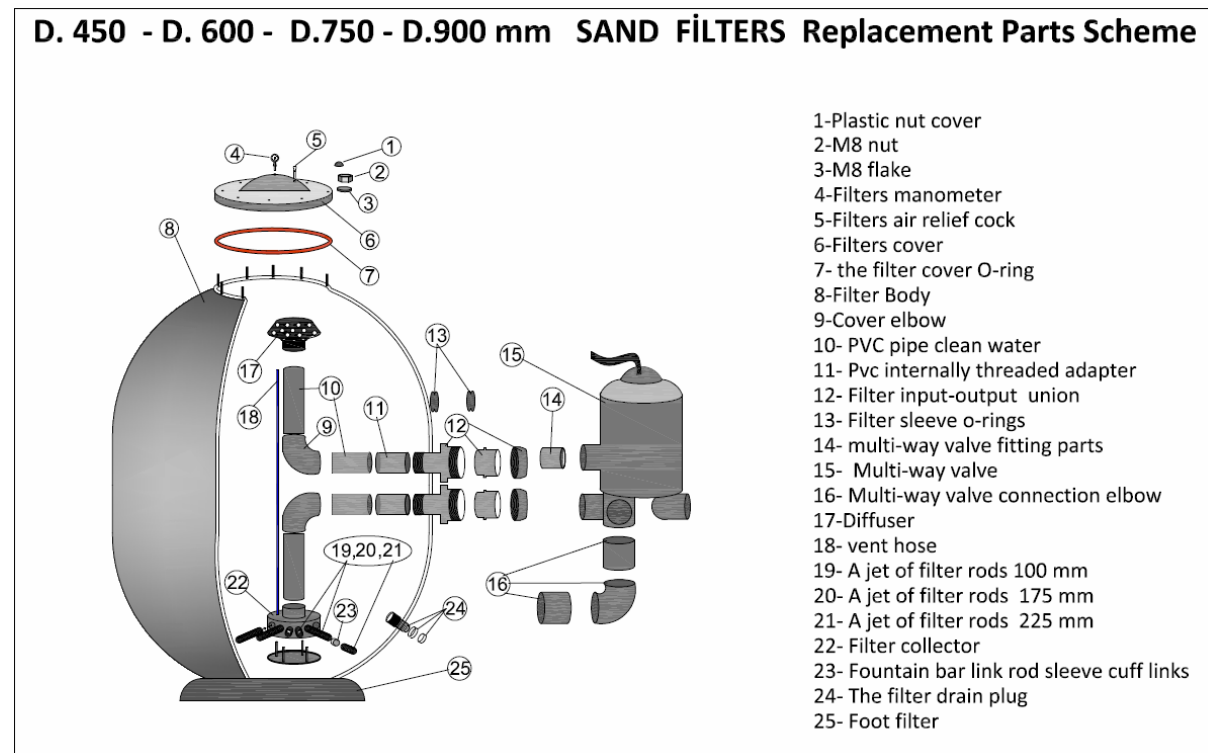
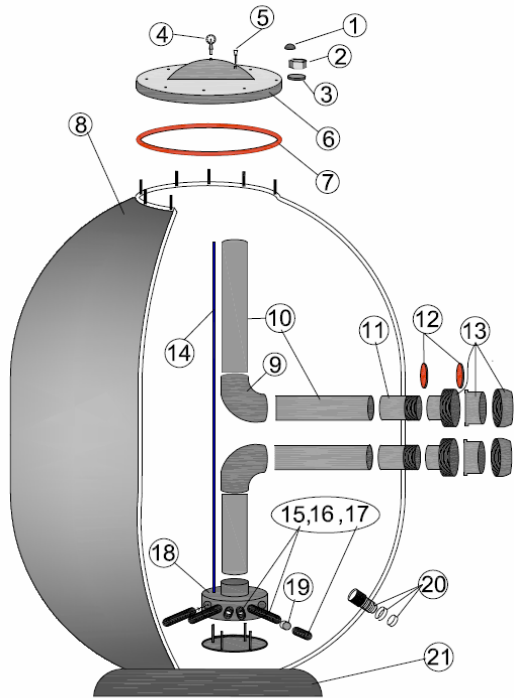


TABLE 2 : D.450-900 mm sand filter spare part diagram

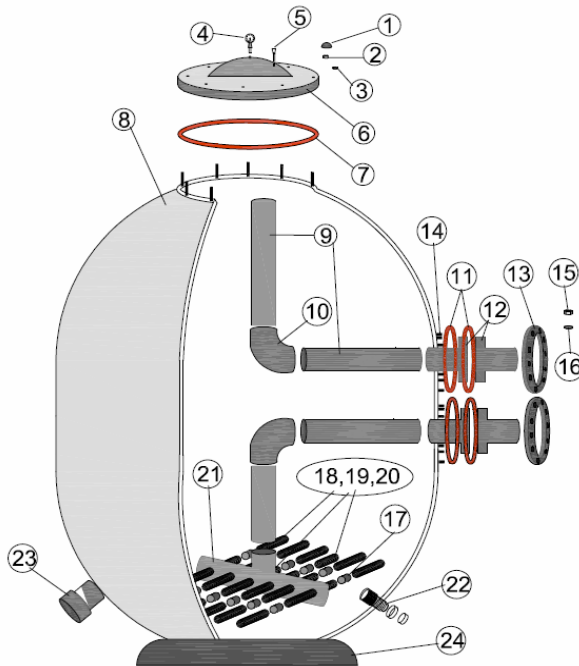
## D. 1050 - D. 1250 mm SAND FILTERS Replacement Parts Scheme



- 1-Plastic nut cover
- 2-M12 nut
- 3-M12 flange
- 4-Filters manometer
- 5-Filters air relief cock
- 6-Filters cover
- 7- Filter cover gasket
- 8-Filter Body
- 9- pvc elbow off
- 10- PVC pipe clean water
- 11- PVC outer threaded adapter
- 12- filter sleeve o-rings
- 13- input-output filter mount
- 14- - vent hose
- 15- A jet of filter rods 100 mm
- 16- A jet of filter rods 175 mm
- 17- A jet of filter rods 225 mm
- 18- Filter collector
- 19- Fountain bar link rod sleeve cuff links
- 20- The filter drain plug
- 21- Foot filter

Table 3 : (D.1050-1250 mm) sand filter spare part diagram

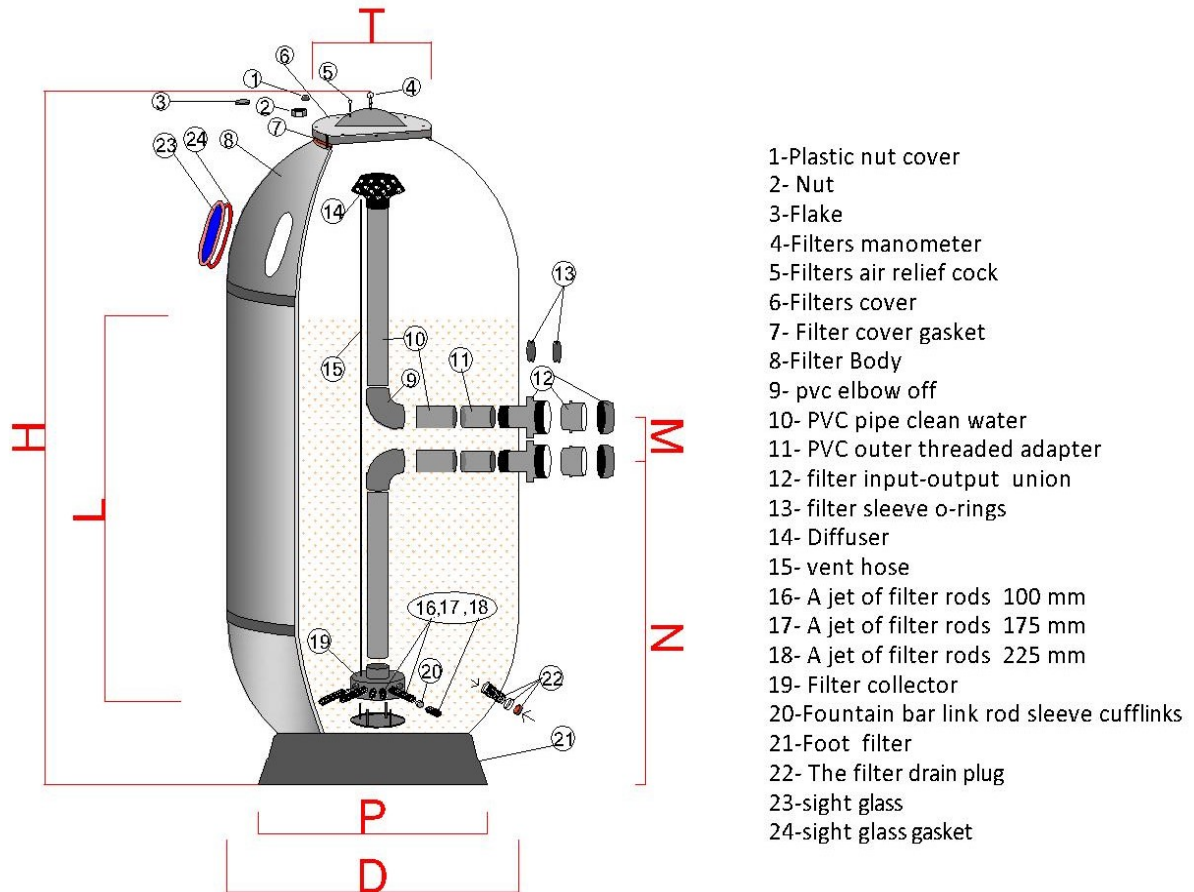
## D. 1600 - D. 2000 mm SAND FILTERS Replacement Parts Scheme



- 1-Plastic nut cover
- 2-M12 nut
- 3-M12 flange
- 4- hydrometer
- 5-Filters air relief cock
- 6-Filters cover
- 7- Filter cover gasket
- 8-Filter Body
- 9- PVC pipe clean water
- 10- pvc elbow off
- 11- 125 slaves seals
- 12- pvc slave
- 13- Pvc flange
- 14- M16 bolts
- 15- M16 NUT
- 16-M 16 flange
- 17- Fountain connection sleeves
- 18- A jet of filter rods 100 mm
- 19- A jet of filter rods 175 mm
- 20- A jet of filter rods 225 mm
- 21-collector of fountain
- 22- The filter drain plug
- 23- Emptying sand drain fitting
- 24-- Foot filter

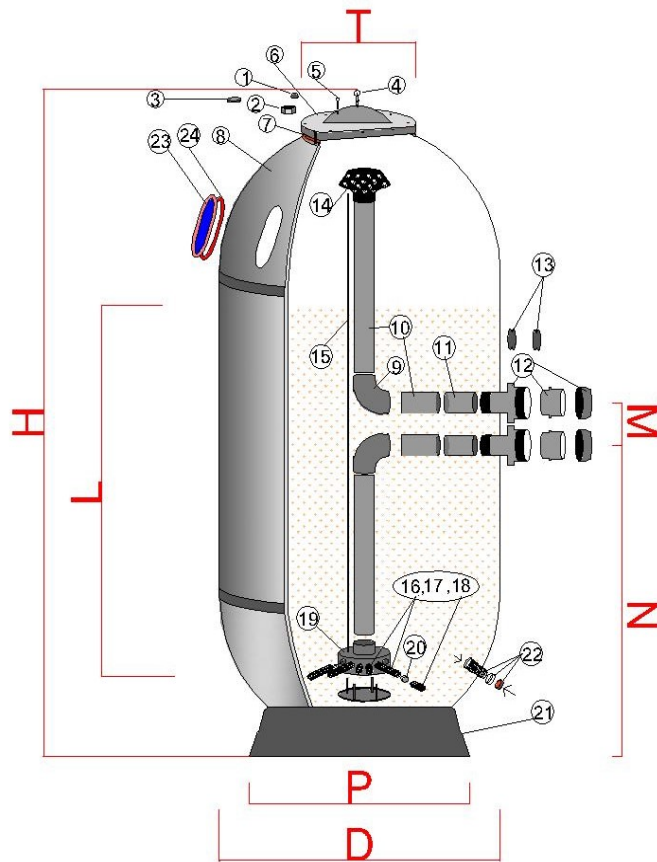
Table 4 : (D.1600 mm-D.2000 mm) sand filter spare part diagram

## HIGH EFFICIENCY ELITE SERIES SAND FILTERS



CODE	D	M	N	P	H	L	T
03020450	Ø450	170	480	360	1320	800	290
03020600	Ø600	170	480	490	1320	800	290
03020800	Ø800	220	480	620	1450	800	290
03020900	Ø900	220	480	650	1450	800	290

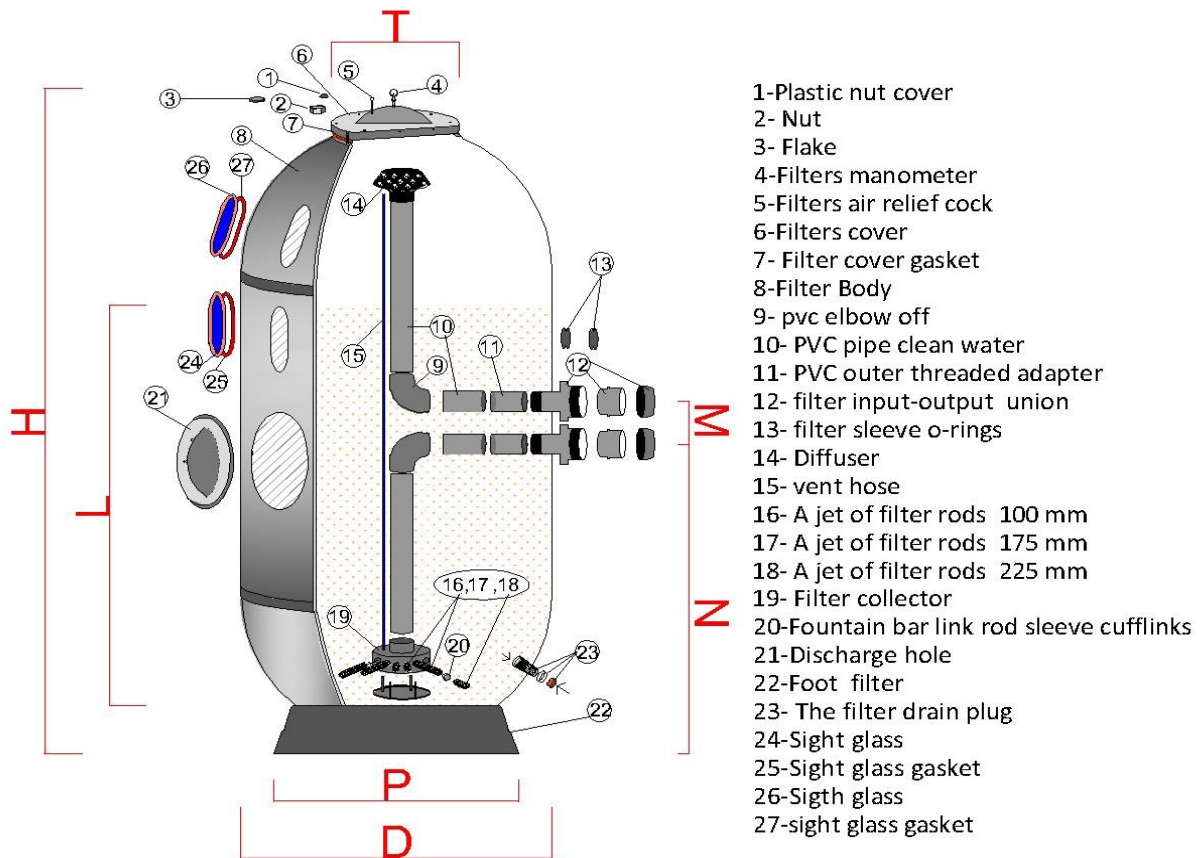
## IRIS SERIES DIN NORM SAND FILTERS



- 1-Plastic nut cover
- 2- Nut
- 3-Flake
- 4-Filters manometer
- 5-Filters air relief cock
- 6-Filters cover
- 7- Filter cover gasket
- 8-Filter Body
- 9- pvc elbow off
- 10- PVC pipe clean water
- 11- PVC outer threaded adapter
- 12- filter input-output union
- 13- filter sleeve o-rings
- 14- Diffuser
- 15- vent hose
- 16- A jet of filter rods 100 mm
- 17- A jet of filter rods 175 mm
- 18- A jet of filter rods 225 mm
- 19- Filter collector
- 20-Fountain bar link rod sleeve cufflinks
- 21-Foot filter
- 22- The filter drain plug
- 23-sight glass
- 24-sight glass gasket

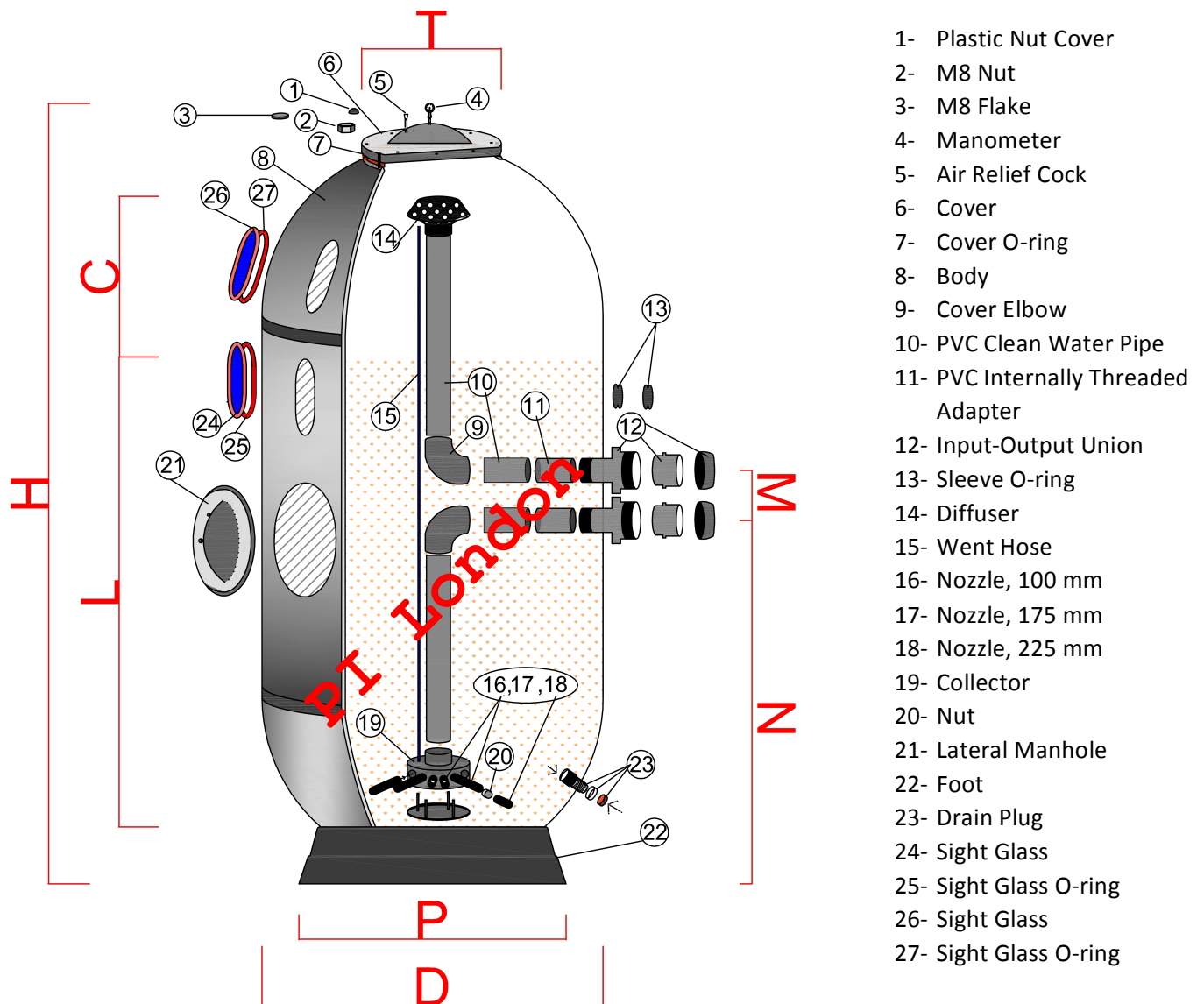
CODE	D	M	N	P	H	L	T
03040450	Ø450	230	670	490	1650	1000	290
03020600	Ø600	230	670	630	1750	1000	290
03020800	Ø800	300	900	630	1900	1000	290
03020900	Ø900	300	900	750	1900	1000	290
03041050	Ø1050	300	900	850	2200	1000	520
03041250	Ø1250	300	900	1000	2200	1000	520

## ELITE PLUS SERIES DIN NORM SAND FILTERS



CODE	D	M	N	P	H	L	T
03030600	Ø600	230	670	490	1950	1200	290
03030800	Ø800	230	670	630	2100	1200	290
03030900	Ø900	300	900	750	2100	1200	290
03031050	Ø1050	300	900	850	2300	1200	520
03031250	Ø1250	300	900	1000	2400	1200	520

## DIN NORM SAND FILTERS TECHNICAL DATA SHEET



Made of PVC and polyester reinforced with glassfiber which is resistant to corrosion.

Max. working pressure : 2,5 bar

Test pressure : up to 4 bars



Code	Dia (mm)	M	N	P	D	H	L	C	T
03031050	Ø1050	300	900	850	1050	2300	1200	650	520
03031250	Ø1250	300	900	930	1250	2300	1200	650	520
03031450	Ø1400	350	1000	1220	1400	2400	1200	650	520

Code	Dia (mm)	Valve*	Filtration Surface (m <sup>2</sup> )	Fresh Water Filtration Speed for 30 m/hour (flow rate m <sup>3</sup> /hour)	Salt Water Filtration Speed for 24 m/hour (flow rate m <sup>3</sup> /hour)	DIN Norm High Speed Filters for 50 m/hour (flow rate m <sup>3</sup> /hour)
03031050	1050	2 ½"	0,865	25,95	20,76	43,25
03031250	1250	3"	1,226	36,78	29,42	61,3
03031400	1400	4"	1,54	46,2	36,9	77

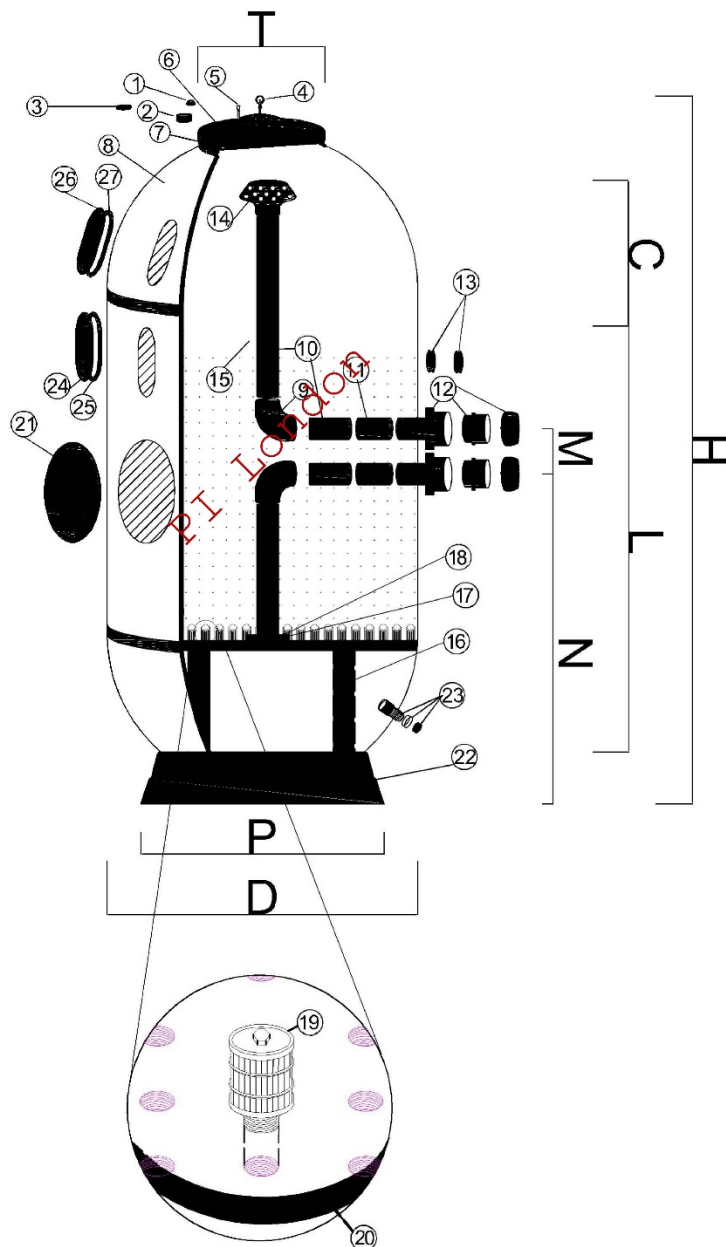
**Sand weight for 1.2 m sand deepness**

Code	Dia (mm)	Valve*	Anthracite Sand (0,8 - 1,5 mm)	Quartz Sand (0,5 - 1,2 mm)	Quartz Sand (1 - 3 mm)
03031050	1050	2 ½"	475 KG	425 KG	400 KG
03031250	1250	3"	700 KG	650 KG	475 KG
03031400	1400	4"	800 KG	750 KG	675 KG



## TECHNICAL DATA SHEET

### DIN NORM SAND FILTER WITH NOZZLE PLATE



- 28- Plastic Nut Cover
- 29- M8 Nut
- 30- M8 Flake
- 31- Manometer
- 32- Air Relief Cock
- 33- Cover
- 34- Cover O-ring
- 35- Body<sup>1</sup>
- 36- Cover Elbow
- 37- PVC Clean Water Pipe
- 38- PVC Internally  
Threaded Adapter
- 39- Input-Output Union
- 40- Sleeve O-ring
- 41- Diffuser
- 42- Went Hose
- 43- Footstall Pipe
- 44- Flange
- 45- Nut
- 46- Nozzle
- 47- Nozzle Plate
- 48- Manhole
- 49- Foot
- 50- Drain Plug
- 51- Sight Glass
- 52- Sight Glass O-ring
- 53- Sight Glass
- 54- Sight Glass O-ring

Made of PVC and polyester<sup>1</sup> reinforced with glassfiber which is resistant to corrosion.

Maximum working pressure: 2,5 bar

Test pressure: up to 4 bars

Code	Dia (mm)	M (mm)	N (mm)	P (mm)	D (mm)	H (mm)	L (mm)	C (mm)	T (mm)
03031050	Ø1050	300	900	850	1050	2300	1200	650	520
03031250	Ø1250	300	900	930	1250	2300	1200	650	520
03031450	Ø1400	350	1000	1220	1400	2400	1200	650	520

Code	Dia (mm)	Valve <sup>2</sup>	Filtration Surface (m <sup>2</sup> )	Fresh Water Filtration Speed for 30 m/hour (flow rate, m <sup>3</sup> /hour)	Salt Water Filtration Speed for 24 m/hour (flow rate, m <sup>3</sup> /hour)	DIN Norm High Speed Filters for 50 m/hour (flow rate, m <sup>3</sup> /hour)
03031050	1050	2 ½"	0,865	25,95	20,76	43,25
03031250	1250	3"	1,226	36,78	29,42	61,3
03031400	1400	4"	1,54	46,2	36,9	77

**Sand weight (for 1,2 m sand deepness)**

Code	Dia (mm)	Valve <sup>2</sup>	Anthracite Sand <sup>3</sup> (0,8 - 1,5 mm)	Quartz Sand <sup>3</sup> (0,5 - 1,2 mm)	Quartz Sand <sup>3</sup> (1 - 3 mm)
03031050	1050	2 ½"	475 KG	425 KG	400 KG
03031250	1250	3"	700 KG	650 KG	475 KG
03031400	1400	4"	800 KG	750 KG	675 KG

**Sand filter working principles :**

### **Valve Position and Water Flow Directions :**

6 way valve has an arm with 6 positions which shows necessary operations to be chosen by user. Those positions ; filtration, washing reversely, rinsing, throwing into channel, directly, providing water circulation before entering into filter, switching off the system

#### **FILTRATION**

: From pump, through valve, downward through filter sand bed, up through center pipe to valve return port, and back to the pool for normal filter action and vacuuming pool through filter.

#### **BACKWASH**

: From pump, through valve, down through center pipe, up through filter sand to valve, and out wasteport. This position is used for cleaning filter by reversing flow.

#### **RINSE**

: From pump, through valve, downward through filter sand, up through center pipe to valve and out waste port. This position is used for start up cleaning and resettling filter bed after backwashing.

#### **WASTE**

: From pump, through valve, bypasses filter and goes to wasteport. This position is for vacuuming directly to waste, lowering pool level, or draining pool.

#### **CLOSED**

: NO FLOW IN THIS POSITION - **DO NOT USE THIS**

#### **SETTING WITH PUMP OPERATING.**

#### **RECIRCULATING**

: From pump, through valve, bypass filter and goes to return port and back to pool. This position is for circulating water without going through filter.

Water cleaning is ensured by keeping dirt particles within water by passing water from sand filter which pump absorbs.

Flocculation is performed by adding chemicals to the water or by other methods which increases the capability of filtering.

Flocculation makes the particles tenable by combining the particles in smallness which sand never catch. That way the small particle sizes in the water decreases into 20 microns and even into less levels so pool water gains clarity

As the cleaned water leaves dirt into filter, filter gets stuck and its pressure increases. In case pressure value that manometer reads increases 3 mss., the filter must be cleaned as opposite side washing.

Opposite side washing brings important benefit even if the filter pressure does not increase in the clean pool water by flowing process

#### **Tips to be considered during transportations :**

Protect sand filter against hard strokes during transportation

Carry sand filters in the direction shown by the arrows on their boxes so that water jet and inner installation of the filter doesn't get any harm

#### **Warnings :**

Do not use it for purposes except usage classification

It must be removed carefully, since it will be classified as chemical solid waste after its usage life ends

It must not be burnt and used as tank in which water or liquid flood is kept for a long while

Quartz sand used in the filter is not harmful for human health

### Information about usage faults :

Filter must be placed as near to the swimming pool as possible. Filter must be assembled at least 50 cm below the pool water level, preferably, since air collection inside the filter during water circulation may cause weakening of the circulation. One must be careful about that the waste water drainage exists in the pump section in which filter is assembled

Cautions must be taken to protect pump section from water flooding in case of impossibilities

It is importantly recommend that the sand type used in the filter must be quartz sand

Particle sizes of both pad sand and filter sand are given. It is also recommended that the sand types must be eliminated twice at least

Do not switch on the pump when valve /valves of the filter is closed. Possible over pressure harms the filter.

Do not connect the filter to the city water network or to air pressure tank circuit directly

Mount the filter lid regularly. Do not tighten lid screws too much. Otherwise the lid and the O'ring for water leakproof will be deformed

In case filter's water pressure goes over working pressure described above, fullfill opposite washing in any case. The value on the pressure indicator will decrease

Do not change the position of the valves the pump works in any case

Do not detach the valve under pressure

### Information about assembly, switching and usage :

Assembly instruction :

Check the sand filter whether it was damaged during transportation especially to make sure about its inner equipment waterjets were not damaged

Put the filter into horizontal, safe and clean place

Assembly the filter and pump at a place which it will work ultimately in a sheltered, airy environment without humid and freezing threat

Assembly filter/filters within gaps to be reached valves while placing

Assembly installation pipes (prefer only PVC pipes used in drinking and usage water)

Take care to use offset, T number in minimum amount not to increase pressure decrease as using calculated pipe in the correct size as well

Place the manometer T, vacuuming screw, air relief cock, manometer as stated in the diagram. Teflon usage is not necessary, separately, since these accessories are tightened with water resistant gasket.

Do not tighten manometer T with an instrument, since manual determination will be satisfactory.

### Placing sand :

Fill in sand to filter in the amounts as much as is stated in Table 1 to get the best efficiency from your filter

This operation must be fulfilled in the following order :

Take off the lid and its gasket

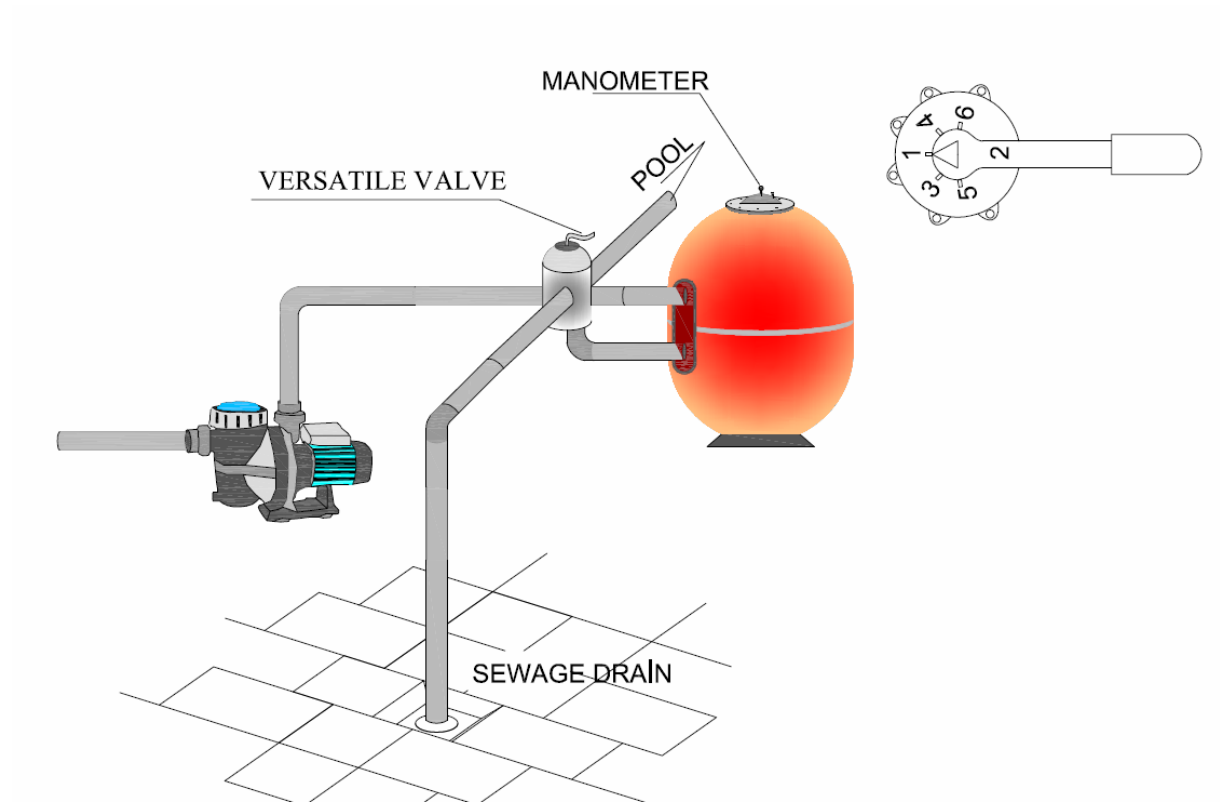
Fill in the filter with sand after its pipe connections and inner controls is fulfilled in its ultimate place

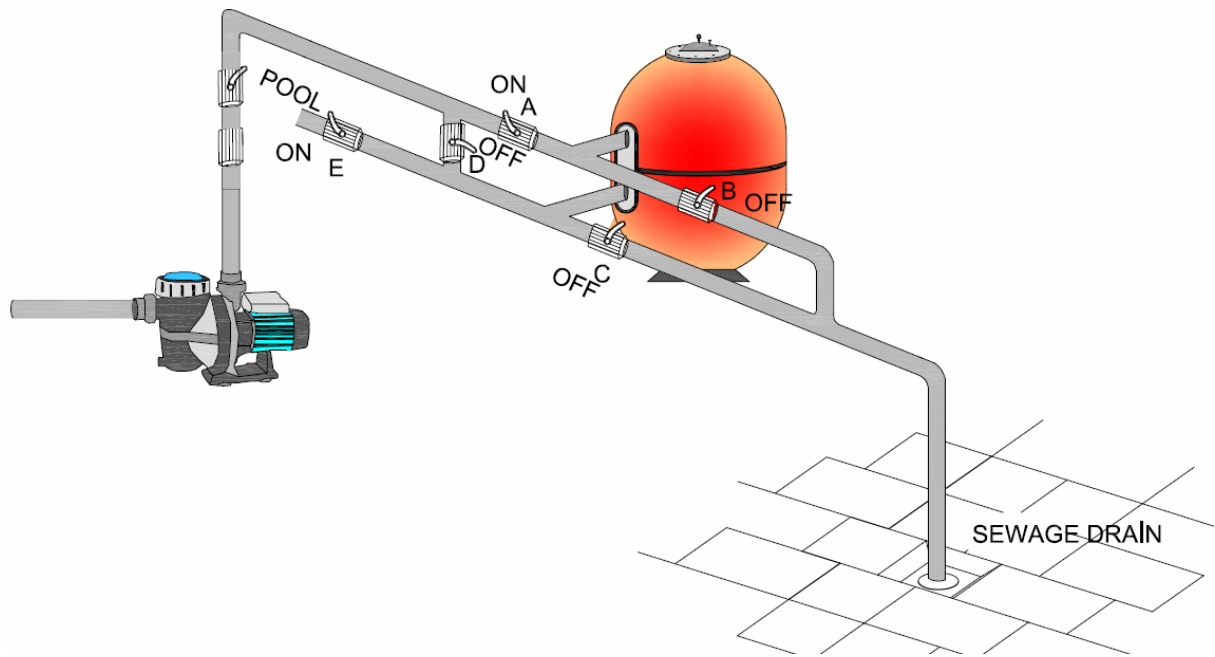
Fill in the filter with water slowly. Observe whether there is any leakage while filling in

Clean the place where lid gasket will be placed

Fix the gasket and lid of the filter into its place. Tighten the screws mutually and with equal weight

**Filtering operation :**





## FILTRATION

### FROM POOL TO THE FILTER AND TO THE POOL

--→ SUCTION FROM POOL      -----→ CLEAN WATER (TOWARD POOL)

**!!! IMPORTANT : Do not change the position of the valve in any case as the pump works**

Pump is turned into 6 way valve's arm filtration position as kept closed

Pump is switched on

Manometer must be controlled in specific intervals during this process, since it shows the saturation level of the filter. When the pressure value at the manometer is shown 0,3 kg/cm<sup>2</sup> above its normal value, back washing operation must be fulfilled

### Back Washing :

Sand within the filter ensures cleaning of water while catching particles during filtration. At that time the spaces among sand decreases the filtration speed of water while filling in course of time. Pressure increases for that reason. Since sand in the filter becomes not the collect the particles within water when it goes 0,3 kg/cm<sup>2</sup> over good filtration limit its cleaning must be fulfilled as below

6 way valve is turned into back washing position. Bottom pool or balancing tank/skimmer valves are opened. It is paid attention that feeding valves are closed. Pump is switched on and clarifying of flowing dirty water is waited from the observation window. It is observed that water becomes clear around 3-5 min. Later and backwashing process and pump is stopped

After that multiway valve is turned into rinsing position. Pump is switched on for 1-2 minutes. Thus sand is cleaned and again it becomes possible to return into normal working position anymore

## **BACKWASH**

### **WHEN FILTER IS DIRTY**

**WHEN MANOMETER SHOWS YELLOW OR RED**

-----→ **SUCTION FROM POOL**      -----→ **DIRTY WATER (TOWARDS OUTLAY)**

## **RECIRCULATION**

In the cases which 6 way valve is turned into that position water coming from the pump goes to the pool without entering into filter and it completes its circulation by turning into pump again.

Clearance of the pool walls and floor is ensured by putting some chemicals into pool water by this system

## **EMPTYING**

It is a position used for sending swimming pool water directly into the main manhole quickly or emptying water into high level drainage system in case a natural ejector doesn't exist. In this case 6 way valve must be in "waste" position

## **RINSING**

After backwashing process is fulfilled, 6 way valve is turned into rinsing position against the possibility that sand is partially dirty and that muddy water may go into the pool in the normal filter. 6 way valve is turned into rinsing position. Pump is switched on for around 1 minute. Rinsed water in this position will be sent to the manhole directly

Valve is turned into "filter" position again after pump is turned off

## **RINSING**

### **WASHING THE SAND FROM THE OTHER DIRECTION FOR A PERFECT CLEANING**

-----→ **SUCTION FROM POOL**      -----→ **DIRTY WATER (TOWARDS OUTLAY)**

## **CLOSED**

This position is used for opening and repairing collector in the pump while cutting off water flowing from the filter to pump

## **INFORMATION ABOUT MAINTENANCE REPAIRMENT AND PRODUCT CLEANING**

### **CLEANING INSTRUCTION :**

Filter must be cleaned when the pressure value goes over the value it must have (0,3 – 0,5 bar)

Turn off the pump before beginning the cleaning of the filter

Turn multi way valve into "back washing" position

Turn on the pump

Operate the pump until seeing clear water from the observation window on the multi way valve approx. 3 min



Turn off the pump

Turn multiway valve into “rinse” position

Turn off the pump after operating it around 1 min again

Operate the pump again by turning multiway valve into “filtration” position

**MAINTENANCE :**

Do not use solvent to clean filter cover

Replace eroded pieces and gaskets all the time

Fulfill backwashing and rinsing in accordance with the instructions

Sand within the filter must be cleaned with cleaning chemicals once in a year. Sand must be cleaned completely in every 3 years

**Preparation for winter :**

Pay attention to the following subjects in order that filter isn't damaged during winter

Fulfill back washing and rinsing following the subjects mentioned in the Maintenance instructions