

YAMIT FILTRATION

Sand Separator Hydrocyclone & Sedimentation Tank

Installation & Operation Manual



Table of Contents

	<u>Pág. No.</u>
1. General Information & Operation	3
2. Description	4
3. Technical Data	5
4. Initial Installation & Operation	7
5. Sedimentation Tank	8
5.1 Flushing	8
5.2 Periodic Cleaning	8
5.3 Maintenance	8
6. IPB & Spare Parts description	9
7. International Warranty	13

1. General Information & Operation

Applications:

Sand separator for well applications

Standard Characteristics:

- **Filter housing material of construction:** Carbon Steel ST37.2
- **Pre-treatment:** sand blasting up to Sa 2.5 grade
- **Exterior & Interior coating:** electrostatic oven baked polyester-epoxy powder coating with a thickness of 150-200 micron
- **Connections:** VIC, Male Threaded and Flange
- **Maximum recommended working pressure:** 10 bars (145 psi).
- Inlet is tangential to the body
- Conical rubber protection or expendable connection on the joint between hydrocyclone and the sedimentation tank

Operation:

Water enters the hydrocyclone via the tangential inlet which creates a spiral flow along the walls of the filter. The centrifugal force separates the Suspended solids and sand particles and pushes them towards the walls of the sand separator. Those particles gravitate downwards and into the sedimentation tank, while clean water moves upwards and exits through the top outlet. For the sand separator to operate correctly, the lead loss must remain between 2-5m. The separation efficiency is not affected by the accumulation of dirt in the sedimentation tank. The sedimentation tank is drained by opening a flush valve for a few seconds manually or automatically by timer.



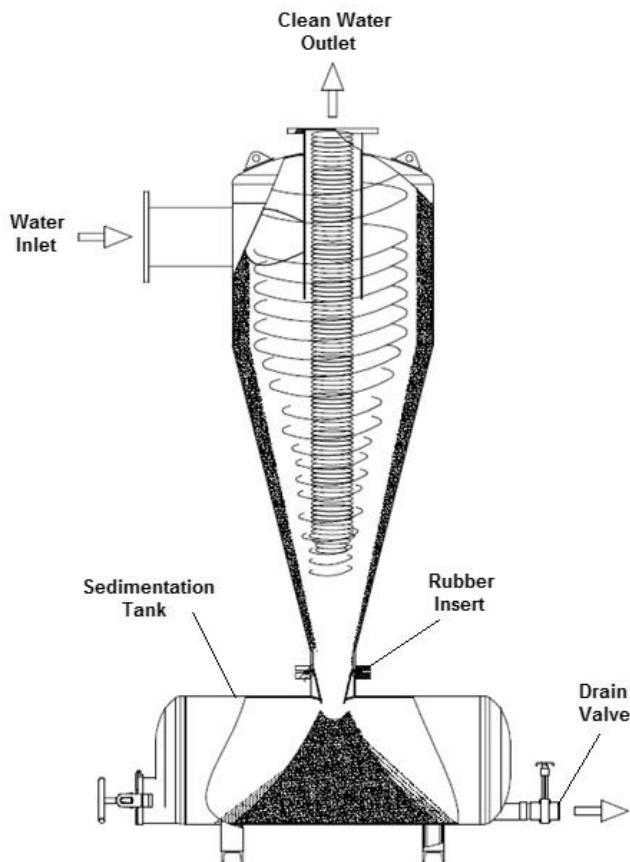
2. Description

A Hydrocyclone separates sand and other solid matter from water with very little head loss and 90% or better efficiency. There is no head loss build up and no clogging when the solids are separated. Hydrocyclones are easy to operate and maintain, and have no moving parts or screens.

Versatility in system configurations and ease of installation are some of its great advantages.

A Hydrocyclone uses a tangential injection flow process, enhancing the centrifugal forces and moving solid particles outwards. The dispersed particles move downward in a spiral path into an underflow chamber (sedimentation tank) while clean liquid moves upwards to the center of the spiral, towards the top outlet.

A specially designed rubber insert protects the neck of the Hydrocyclone from erosion and increases separation efficiency. The Sedimentation Tank can be drained automatically with an automatic flushing kit (an electric valve, controller and small command filter). Automatic flushing will not interfere with the proper functioning of the Hydrocyclone. The Hydrocyclone has a 120-200 micron protective coating of extra durable polyester applied electrostatically and oven cured after a sandblasting process and heating the metal to a temperature of 356°F.



Hydrocyclone Flow and Mode of Separation

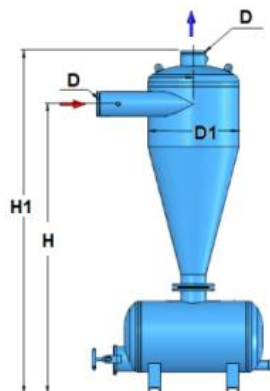
3. Technical Data & Specifications

As a rule, the separation efficiency improves as the Hydrocyclone diameter decreases and the head loss increases. Miniature Hydrocyclones may be used for easy sampling of liquids, for determining filter (including larger Hydrocyclones) operation and efficiency and for testing the feasibility of operation for the problem at hand.

Each filter is designed and manufactured in order to achieve the highest standard of quality and finish.

- Recommended head loss for effective operation: 3-8 psi
- Maximum recommended working pressure: 120 psi
- Maximum pressure: 145 psi
- Water inlet and outlet: horizontal and vertical
- Inserts: standard on all sizes except 3", 4", 6" & 8" (74HC8)
- Protective coating: polyester on zinc-phosphate layer
- Pressure relief valve: must be installed before the filters if pressure is not controlled
- Available sizes: 3", 4", 6", 8", 12", 16", 20", 24" and 30"
- End connections: Thread (TH), Flange (FL), Groove (GR)
- Sedimentation Tank connections:
 - * Thread: 3", 4", 6" & 8" size
 - * Flange: 12", 16", 20", 24", and 30" size
 - * Groove: 8" size

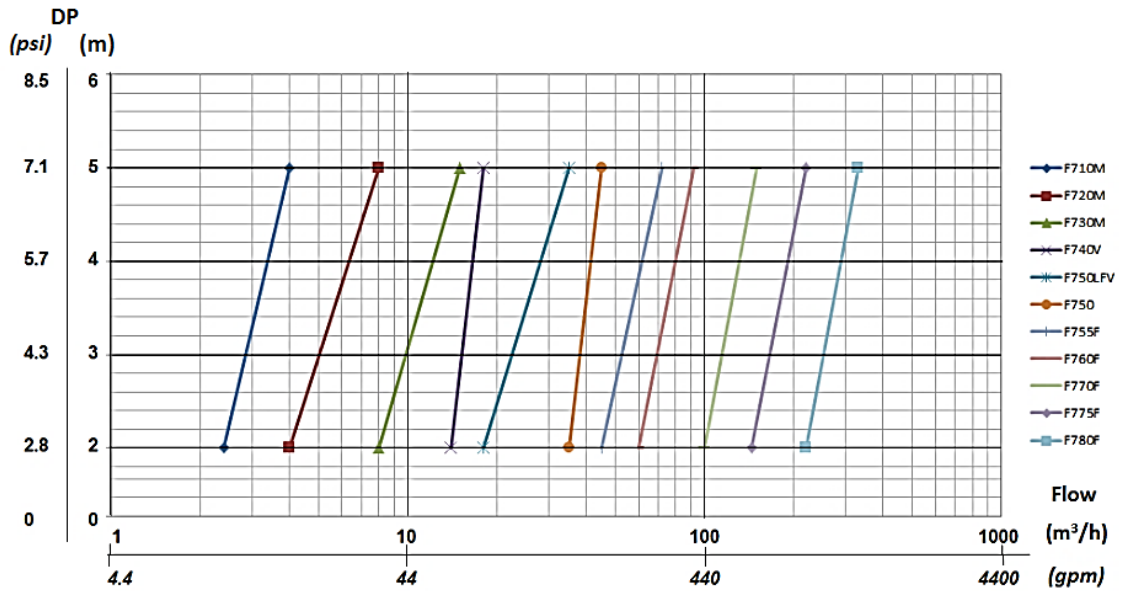
Model	ØD1 (in)	In/out ØD (in)	H (in)	H1 (in)	Shipping Weight (lb)	Packaging Vol. LxWxH (ft)	Flow rate (GPM)	Sedimentation tank (lt)
F710	3	¾	380	475	8.3	0.31x0.31x0.19	2.4 – 4	1.5
F720	4	1	460	600	10.1	0.54x0.28x0.22	3.5 – 6	2.5
F730	6	1.5	594	740	15.5	0.55x0.32x0.28	6.5 – 10	5
F740	8	2	755	900	23.4	0.63x0.42x0.30	11 – 19	5
F750VLF	8	3	765	930	32.5	0.67x0.55x0.28	20 – 35	5
F750	8	3	765	930	32.5	0.67x0.55x0.28	29 – 45	5
F755	12	4x3	1285	1550	75.0	1.37x0.77x0.22	45 – 73	30
F760	16	4	1495	1765	97.5	1.26x0.77x0.26	60 – 93	60
F770	20	6	1671	1996	187.0	1.40x1.20x1.00	93 – 155	150
F775	24	6	1940	2300	230.0	1.70x0.90x1.00 ciclón 1.30x0.77x0.80 tanque	145 – 225	150(220*)
F780	30	8	2492	2897	328.0	2.10x0.95x1.15 ciclón 1.40x0.77x1.00 tanque	200 - 330	300



Filtration Grade Conversion Table

MESH	120	140	180	200	270	325	600
MICRON	130	105	90	75	53	44	25

Pressure loss at 130 micron



4. Initial Installation & Operation

General

Based on the centrifuge principle, the particles are spun against the outside wall of the Hydrocyclone and gravitate towards the bottom into the Sedimentation Tank. The velocity at which the water flows through the Hydrocyclone determines the efficiency at which the particles are separated from the water.

- Normal working conditions are achieved when headloss on the Hydrocyclone is not less than 3 psi with a recommended range of 3-8 psi.

–A headloss of less than 3 psi will reduce the separation efficiency and a headloss of more than

8 psi might induce increased erosion.

- The Hydrocyclone is designed for a maximum recommended working pressure of 120 psi and should not exceed 145 psi.

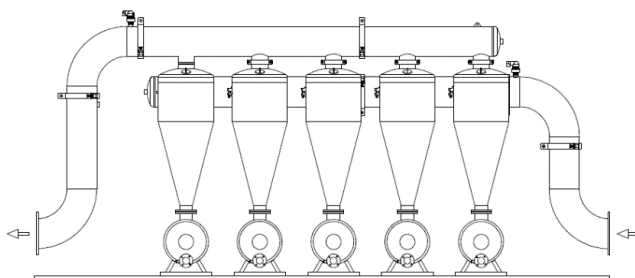
Installation

- Install and connect the Hydrocyclone vertically with the Sedimentation Tank underneath the Hydrocyclone.
- Special attention must be given to the correct flow direction: horizontal inlet and top vertical outlet are clearly marked by arrows.
- Install the manual ball valve to the flush port of the Sedimentation Tank.
- Check that the actual flow rate through the Hydrocyclone is within the recommended range. Inadequate flow rate will result in reduced performance.
- If more than one Hydrocyclone is installed, leave sufficient space between units to facilitate maintenance.
- A quick acting pressure relief valve must be installed upstream of the Hydrocyclone if the pressure is not controlled effectively.

INSTALLATION WITH OPTIONAL AUTOMATIC FLUSHING KIT

- Automatic Flushing Kit includes an electric Gate valve, controller and small command filter.
- Install the electric Gate valve on the outlet opening of the Sedimentation Tank.
- Connect the controller to the electric Gate valve.
- Insert the batteries inside the controller (or plug in for AC) and close the cover tightly.
- Adjust the controller as follows:
 - Flushing time for Sedimentation Tanks with 0.4-16 gallons: 15-20 seconds
 - Flushing time for Sedimentation Tanks with 32-60 gallons: 30-40 seconds
 - Time between flushing: 30-120 minutes
 - If the water contains high loads of dirt, shorten the time between flushing

Multiple Hydrocyclone & Sedimentation Tank Installation



5. Sedimentation Tank

51 FLUSHING

- The Sedimentation Tank can be flushed manually or automatically with an irrigation controller or backflush controller at periodic intervals.
- When a manual valve is installed, drain the Sedimentation Tank at periodic intervals according to the recommendations.
- The Sedimentation Tank should be drained when it is 1/3 full.
- Do not let the Sedimentation Tank get filled more than ½ of its volume, otherwise the sand will not flush properly.
- As a result, the sand will spin, have no place to drain, and cause pin holes in the neck of the Hydrocyclone.

5.2 SEDIMENTATION TANK PERIODIC CLEANING

- Check that the rubber insert and/or the metal insert is not worn or damaged and replace if necessary. When separating sand, the rubber insert may need to be replaced every 2-3 years. When separating silt, the rubber insert may need to be replaced every year.
- Close the valve at the inlet of the Hydrocyclone.
- Open the drain valve located at the bottom of the Sedimentation Tank to release pressure and drain.
- Take off the cover.
- Remove all the sediments collected in the Sedimentation Tank.
- Thoroughly rinse the inside of the empty Sedimentation Tank.
- Replace the cover on the Sedimentation Tank so that the cover gasket fits over it.
- Mount tightening bracket and tightening handle properly.

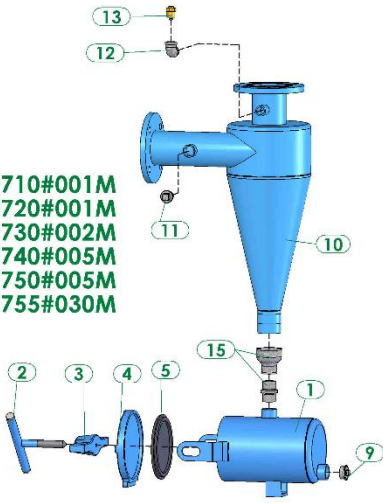
WARNING: Do not tighten or open cover during operation or under pressure.

5.3 MAINTENANCE

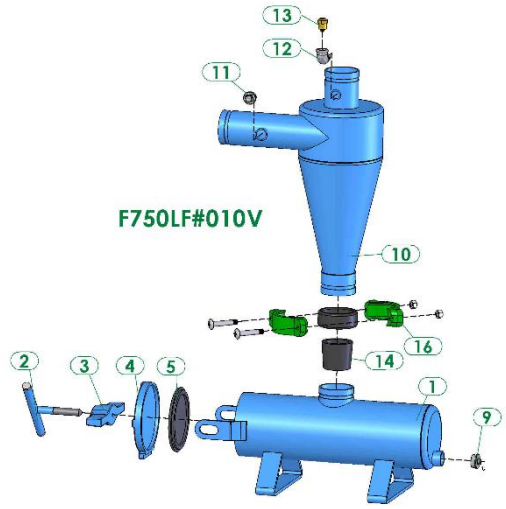
- Apply a layer of grease to handle threads once a year.
- Immediately repair any damage to the tank's protective coating by following these steps:
 1. Polish the damaged area by sandpaper till the surface will be smooth (no any bumps on the painted area).
 2. Apply epoxy thinner (to clean the area from dust and oils)
 3. Paint by brush the area with two component epoxy primer (after mixing the primer with the appropriate harden coat) Diluted at a ratio of 1 to 5(20%).
 4. After 16 - 24 hours paint a second layer (according item 3).
 5. After another 16 - 24 hours, polish lightly the repaired and painted area, and paint with **Polyurethane** topcoat (after mixing the topcoat with the appropriate harden coat) by brush.

6. Illustrated Parts Breakdown

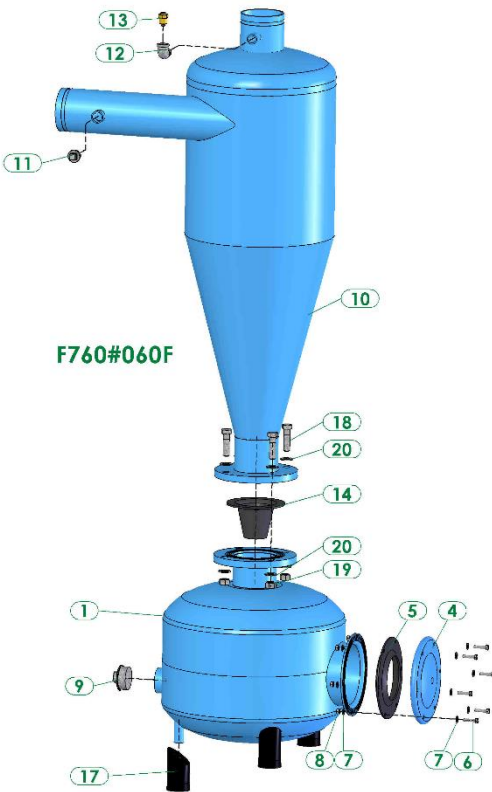
F710#001M
F720#001M
F730#002M
F740#005M
F750#005M
F755#030M



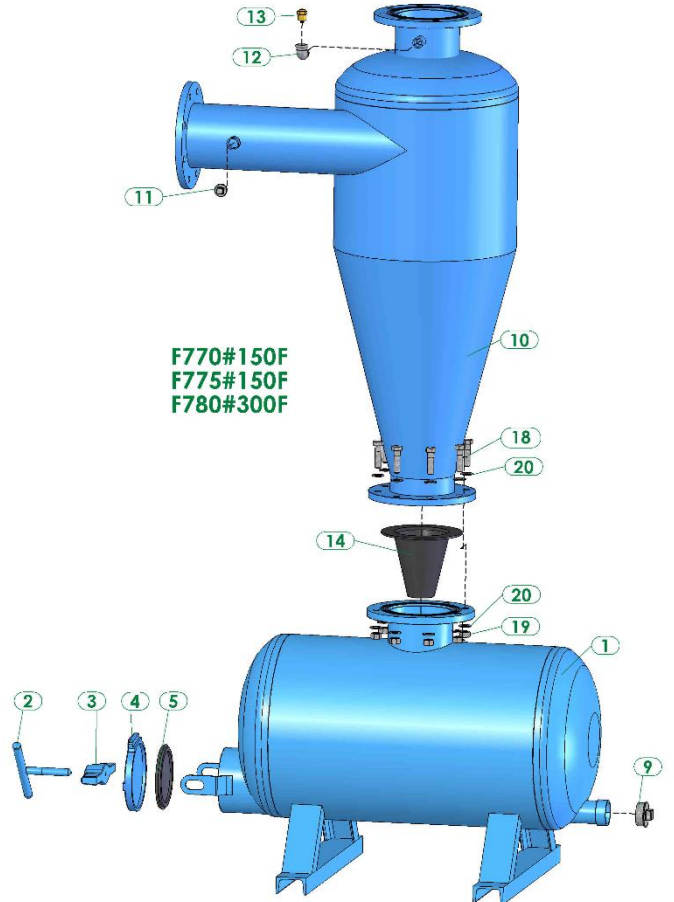
F750LF#010V



F760#060F



F770#150F
F775#150F
F780#300F



IPB	Model		Catalog No	Description		
1	F700#000#	FT000	N/A	UNDER FLOW CHAMBER BODY		
2	F710#001M	FT001M	E6020104000	TIGHTENING HANDLE 4" FOR F115/215/FT001-2		
	F720#001M					
	F730#002M					
	F740#005M	FT005M	E6020106000	TIGHTENING HANDLE 6"/8"		
	F750#005M					
	F750LF#010V	FT010V				
	F755#030M	FT030M				
	F770#150F	FT150F				
	F775#150F					
F780#300F	FT300F					
3	F710#001M	FT001M			6012004000-P	TIGHTENING BRACKET 4" F/F115/215/FT001-2
	F720#001M					
	F730#002M					
	F740#005M	FT005M	6012006000-P	TIGHTENING BRACKET 6" F100-400 2"/3",F605		
	F750#005M					
	F750LF#010V	FT010V				
	F770#150F	FT150F				
	F775#150F					
	F780#300F	FT300F				
F755#030M	FT030M	6012108000-P			TIGHTENING BRACKET 8" F/F100-400 4"/6",F500-600	
4	F710#001M	FT001M			5320010400-P	COVER 4"" FOR F115/215/FT001/FT002
	F720#001M					
	F730#002M					
	F755#030M	FT030M	5320010801-P	COVER 8" F140/240/340, FT030		
	F760#060F	FT060F	5320010600-P	SERVICE HOLE COVER 6" F610-660/FT060		
	F740#005M	FT005M	5320200601-P	COVER 6" F100-300 2"/3",F605,FT05/10/150/300		
	F750#005M					
	F750LF#010V	FT010V				
	F770#150F	FT150F				
F775#150F						
F780#300F	FT300F					
5	F710#001M	FT001M			5312090600-010	COVER GASKET 4"(SCREEN 90) F115/215/FT001/FT002
	F720#001M					
	F730#002M					
	F755#030M	FT030M	5312200600-151	COVER GASKET 8" FT030		
	F760#060F	FT060F	5311150600-045	HYD GASKET FOR SERVICE HOLE 6" F610-660/FT060		
	F740#005M	FT005M	5311150600-040	COVER GASKET 6" F605/FT05/10/150/300		
	F750#005M					
	F750LF#010V	FT010V				
	F770#150F	FT150F				
F775#150F						
F780#300F	FT300F					

IPB	Model		Catalog No	Description
6	F760#060F	FT060F	4102110401-030	BOLT HEX HEAD 5/16"NC*1.1/4" HOT GALVANIZED
7	F760#060F	FT060F	4122110401	WASHER 5/16" HOT GALVANIZED
8	F760#060F	FT060F	4112110401	NUT 5/16"NC HOT GALVANIZED
9	F710#001M	FT001M	4180056501	PLUG 1/2"BSP PLASTIC
	F720#001M			
	F730#002M	FT002M		
	F740#005M	FT005M	4180076501	PLUG 3/4"BSP PLASTIC
	F750#005M			
	F750LF#010V	FT010V	4180106501	PLUG 1"BSP PLASTIC
	F755#030M	FT030M	4180156501	PLUG 1.1/2"BSP PLASTIC
	F760#060F	FT060F	4180206501	PLUG 2"BSP PLASTIC
	F770#150F	FT150F		
F775#150F				
10	F700#000#	F0700	N/A	HYDROCYCLON BODY
11	F730#002M	F0730	4180056501	PLUG 1/2"BSP PLASTIC
	F740#005M	F0740	4180076501	PLUG 3/4"BSP PLASTIC
	F750#005M	F0750		
	F750LF#010V	F0750VLF		
	F755#030M	F0755		
	F760#060F	F0760		
	F770#150F	F0770		
	F775#150F	F0755		
	F780#300F	F0780		
12	F730#002M	F0730	4170050300	ELBOW 1/2"BSP FM GALVANIZED
	F740#005M	F0740		
	F750#005M	F0750		
	F750LF#010V	F0750VLF		
	F755#030M	F0755		
	F760#060F	F0760		
	F770#150F	F0770		
	F775#150F	F0755		
F780#300F	F0780			
13	F730#002M	F0730	E5412013901	ANTI VACUUM VALVE 1/2"BSP
	F740#005M	F0740		
	F750#005M	F0750		
	F750LF#010V	F0750VLF		
	F755#030M	F0755		
	F760#060F	F0760		
	F770#150F	F0770		
	F775#150F	F0755		
F780#300F	F0780			
14	F750LF#010V	F0750VLF	5312080600-450	RUBBER INSERT 3" F750VLF
	F760#060F	F0760	5312100600	RUBBER INSERT 4" F760
	F770#150F	F0770	5312150600	RUBBER INSERT 6" F770-780
	F775#150F	F0775		
	F780#300F	F0780		

IPB	Model		Catalog No	Description
15	F710#001M	F0710	E4200100300	STEEL INSERT 1"*1/2"BSP F710/720
	F720#001M	F0720		
	F730#002M	F0730	E4200150300	STEEL INSERT 1.1/2"*3/4"BSP F730
	F740#005M	F0740	E4200200301	STEEL INSERT 2"*1"BSP F740/750
	F750#005M	F0750		
	F755#030M	F0755	E4200200300	STEEL INSERT 2"*1.1/2"BSP F755
16	F750LF#010V	F0750VLF	4150103000-01P	QUICK COUPLING 3" MODEL 75
17	F760#060F	FT060	5312007600-068	RUBBER BASE FOR LEG F530-550/620/630
18	F760#060F	F0760	4102160301-070	BOLT HEX HEAD 5/8"NC*2.3/4" GALVANIZED
	F770#150F	F0770		
	F775#150F	F0775		
	F780#300F	F0780		
19	F760#060F	F0760	4112160301	NUT 5/8"NC GALVANIZED
	F770#150F	F0770		
	F775#150F	F0775		
	F780#300F	F0780		
20	F760#060F	F0760	4122160301	WASHER 5/8" GALVANIZED
	F770#150F	F0770		
	F775#150F	F0775		
	F780#300F	F0780		

7. International Warranty

YAMIT Filtration & Water Treatment Ltd. (hereinafter -" **YAMIT**") guarantees to the customers who purchased **YAMIT's** products directly from **YAMIT** or through its authorized distributors, that such products will be free from defect in material and/or workmanship for the term set forth below, when such products are properly installed, used and maintained in accordance with **YAMIT's** instructions, written or verbal.

Should such products prove defective within one year as of the day it left **YAMIT's** premises, and subject to receipt by **YAMIT** or its authorized representative, of written notice thereof from the purchaser within 30 days of discovery of such defect or failure - **YAMIT** will repair or replace or refund the purchase price, at its sole option, any item proven defective in workmanship or material.

YAMIT will not be responsible, nor does this warranty extend to any consequential or incidental damages or expenses of any kind or nature, regardless of the nature thereof, including without limitation, injury to persons or property, loss of use of the products, loss of goodwill, loss of profits or any other contingent liabilities of any kind or character alleged to be the cause of loss or damage to the purchaser.

This warranty does not cover damage or failure caused by misuse, abuse or negligence, nor shall it apply to such products upon which repairs or alterations have been made by other than an authorized **YAMIT** representative.

This warranty does not extend to components, parts or raw materials used by **YAMIT** but manufactured by others, which shall be only to the extent warranted by the manufacturer's warranty.

No agents or representatives shall have the authority to alter the terms of this warranty nor to add any provisions to it not contained herein or to extend this warranty to anyone other than **YAMIT's** customers.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, EXCEPT THIS WARRANTY WHICH IS GIVEN IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.