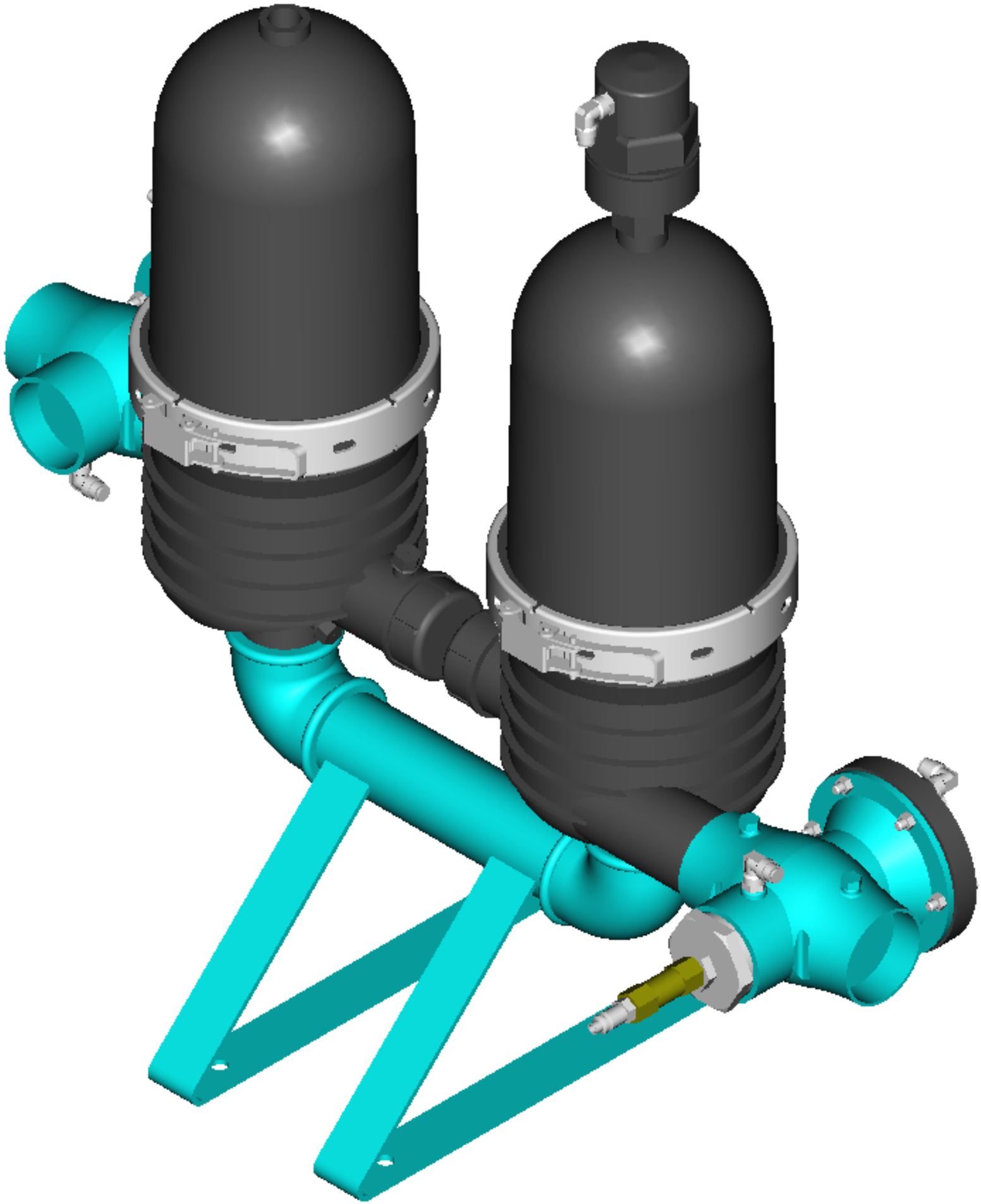
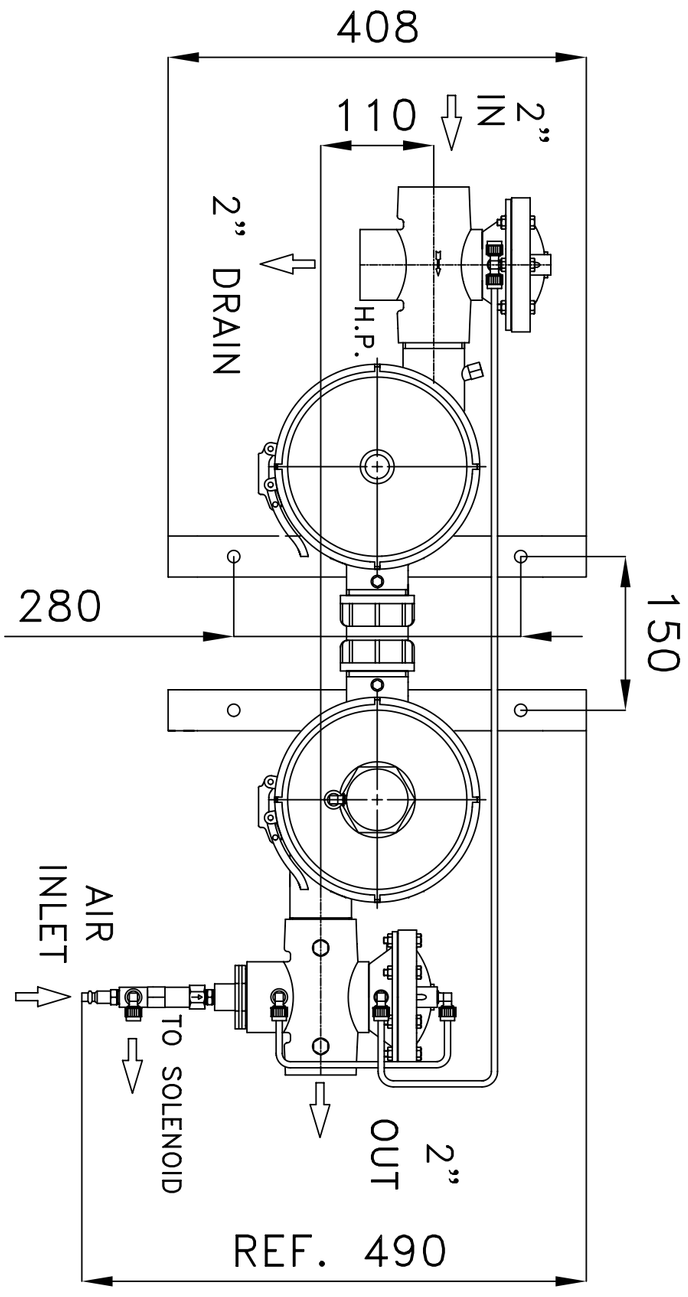
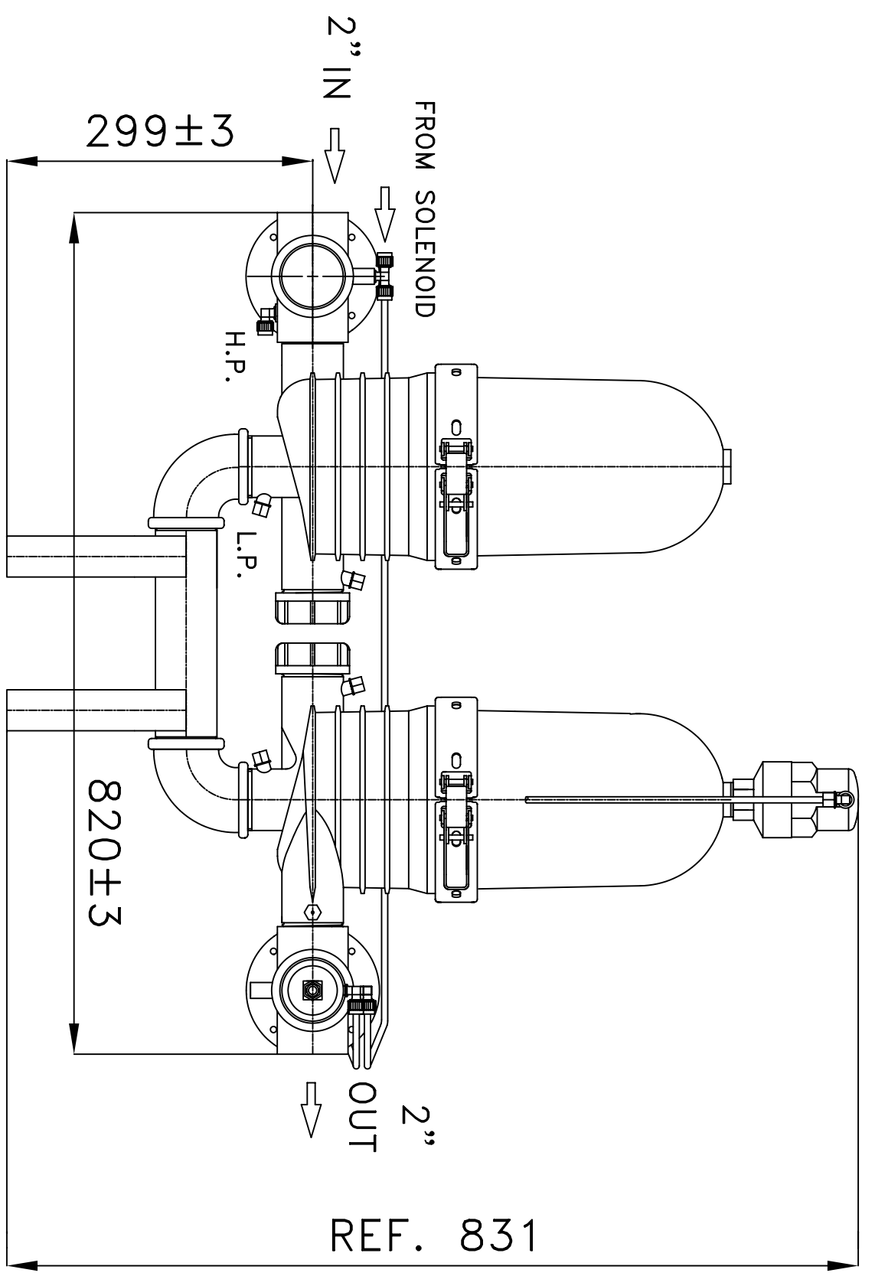






MODIFIC.	DATE	DESCRIPTION	SIGN.

ARKAL
ARKAL
FILTRATION SYSTEM
BET-ZERA 15135
TEL. 972-6-6775140
FAX. 972-6-6775461
ISRAEL

PROJECT: 2" S.K. COMPACT WITH WATER TANK & AIR AIDED FLUSHING — PAGE 1 OF 2

TITLE: ASSEMBLY DRAWING — CATALOGUE No: 1508M020103

PATH BATERIES\2INCH\COMPACT DOROT-NEW/AIR — FILE CODE: 1508M020103

	NAME	DATE	SIGNATURE
DRAWN	Nikolay	15.12.99	
CHECKED	ZALI	15.12.99	
APPROVED	OMRY	15.12.99	
	IRINA	22.11.00	IRINA

ASSEMBLY DRAWING FILE CODE:

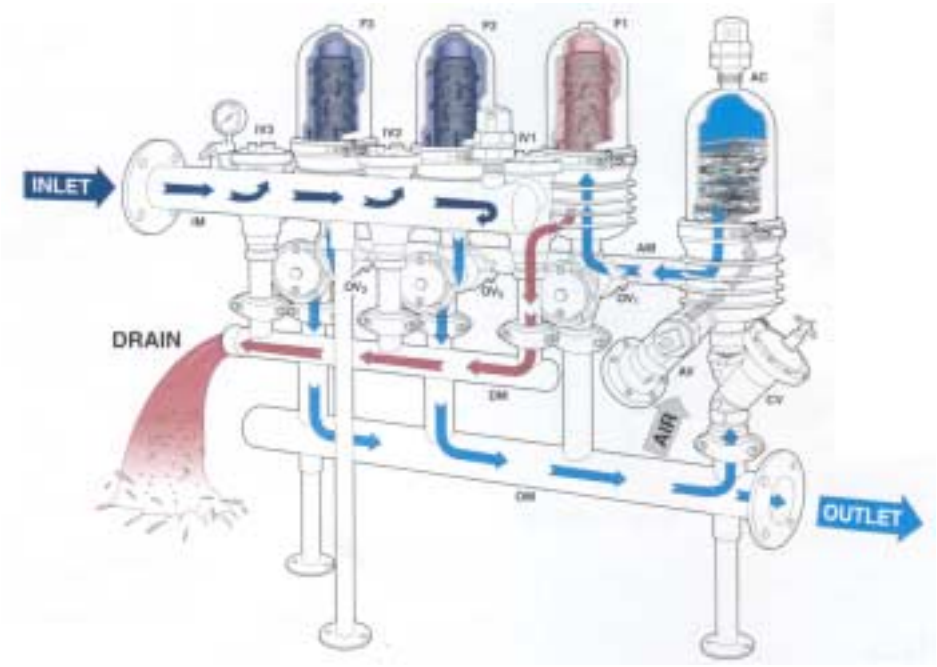
BACKUP: DISK-11

FILE CODE DRAWING OF MANIFOLDS: 5729 0201T0

DRAWER N: 2020

Air Aided Flushing Spin Klin® Battery – A. A. F.
Operation and Maintenance Manual

IM	Inlet Manifold
OM	Outlet Manifold
AM	Aerosol Manifold
DM	Drain Manifold
F	2” Spin Klin filter
IV	2”x2” Inlet Valve
OV	2”x2” Outlet Valve
AV	Air Inlet Valve
CV	Check Valve
AC	Accumulator



Filtration Process

- During the filtration stage water flows through the **INLET MANIFOLD** (IM), distributing through the **INLET VALVES** (IV) to the 2” **SPIN KLIN FILTERS** (F).
- The water passes through the **FILTER** (F) and flows out clean through the **OUTLET VALVE** (OV) and **OUTLET MANIFOLD** (OM) to the customer.
- At this stage the **ACCUMULATOR TANK** (AC) fills up with clean water from the **OUTLET MANIFOLD** (OM) through the **CHECK VALVE** (CV).

Backflushing Process

1. The **CONTROLLER** transmits a pulse (as per pressure differential or time, whichever is first.
2. Pneumatic command from solenoid No. 1 sends a pressure pulse to two users simultaneously.

   A. To the **INLET VALVE** (IV) converting it from filtration mode to backflush mode.

   B. To the **OUTLET VALVE** (OV1) converting it from filtration mode to backflush mode.
3. Air command from the solenoid of the **AIR VALVE** (AV):
   - Opens the **AIR VALVE** (AV).
   - The compressed air enters the **ACCUMULATOR** (AC).
   - The piston of the **SPIN KLIN FILTER** (F1) rises, thus decompressing discs.
   - The air is mixed with clean water and is carried to a **FILTER** (F1) which is then flushed.
   - The ratio between air and water will rise until there is hardly any water at termination (air alone does not spin the discs).

Spin Klin Technology- Spin Klin Spine Model 2

General:

The Spin Klin discs are stacked on the Spin Klin spine.

The discs are color-coded by micron **size,** and are assembled according to your water filtration requirements. The spine assembly has a spring compression unit and an internal piston, which are used to alternately compress and release the discs during filtration and backflush cycles.

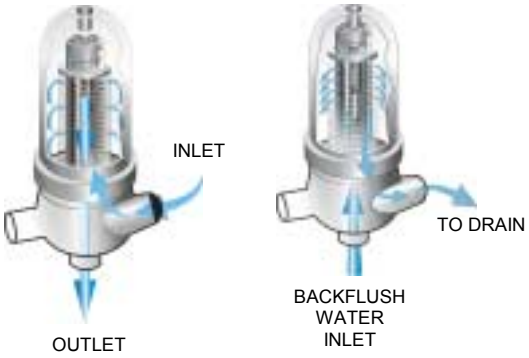
Filtration Mode:

During the filtration process the filter discs are tightly compressed together by the spring and the differential pressure, forcing the water to flow through the grooves and traps of the discs**.**

Backflush Mode:

During backflush the discs are released by releasing the inlet hydraulic pressure. Multi-jet nozzles provide tangential spray on the loosened discs, causing them to spin, and release the retained solids, which are flushed out to the drain.

Filtration Mode **Backflush Mode**



2" x 2" Backflush Valve

Filtration Mode:

Water flows from port A (main supply) to port B (filter connection).

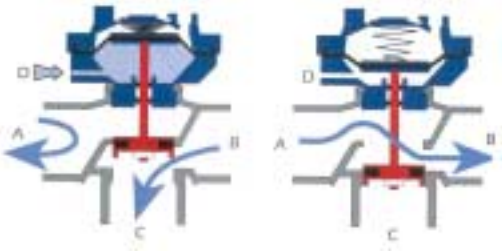
Port C (drain water outlet) is closed by the seal.

Backflush Mode:

Command pressure is applied to the bottom side of the diaphragm through port D. The diaphragm moves up, pulling the sealed body by the shaft. Port A is closed by the seal, preventing flow to the filter. Port C is now open allowing flushing water to flow from port B (filter connection) to the drain.

Inlet Valve

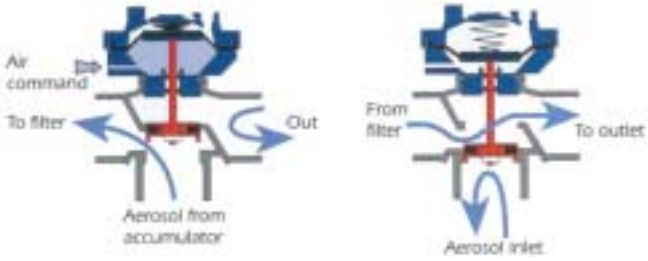
Mode of Operation:



Backflush Mode **Filtration Mode**

Outlet Valve

Mode of Operation:



Backflush Mode **Filtration Mode**

Technical Data

Minimum water pressure:	0.8 bar (12 P. S. I.)
Maximum water pressure:	8.0 bar (115 P. S. I.)
pH:	4-11
Maximum Temperature:	70ºC (158ºF)
Water Flush volume:	12 – 22 liters (3.2-5.8 galon) per single filter unit. The variance is according to the length of aerosol manifold
Air pressure control:	Equal or higher pressure used for backflushing Control source should be remote from flushing source
Recommended air compressor:	¾" H. P. + 80 liter (21 galon) tank

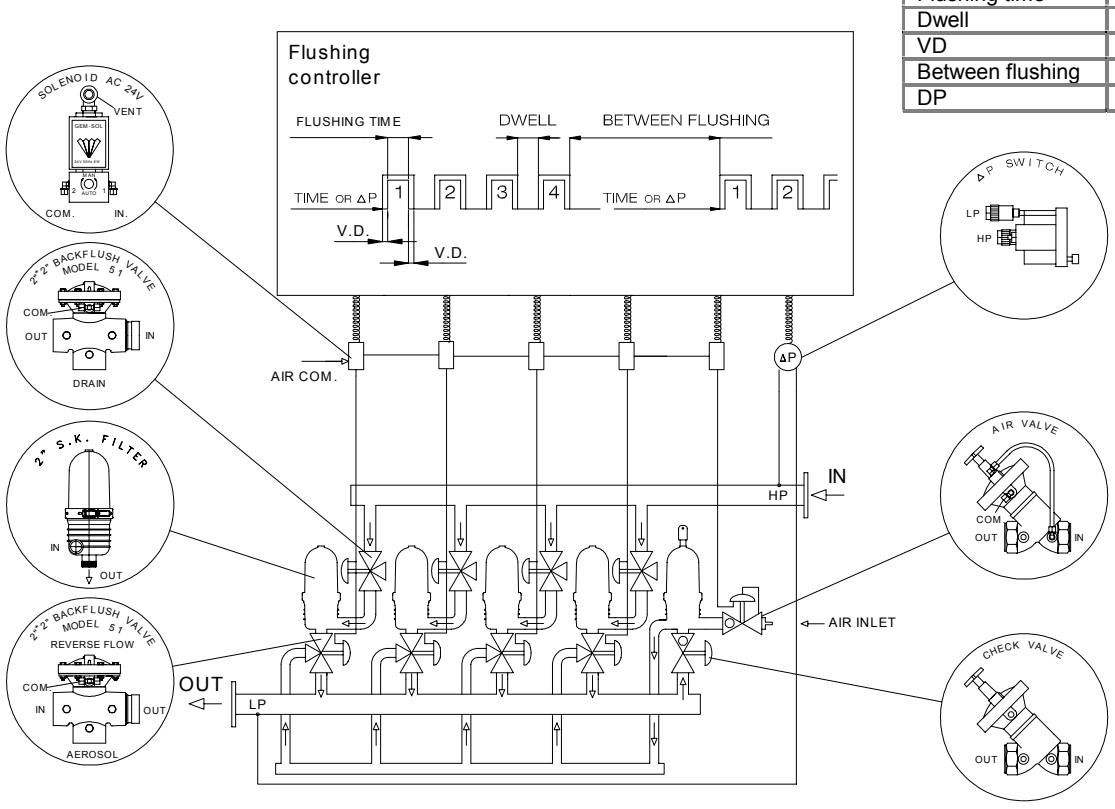
Air Volume and Flow Rate at Different Pressures

Air Pressure…6 Bar (65 P. S. I.)						
Water Pressure		Time	Air Flow Rate		Total Volume	
Bar	P. S. I.	Seconds	Ft^3/MIN	Liter/Minute	Liter	Ft^3
6	84	7.5	9.5	269	33.6	1.18
3.5	50	7.5	9.5	269	33.7	1.18
1.5	20	7.5	10	283.2	35.4	1.25

Air Pressure…4.5 Bar (85 P. S. I.)						
Water Pressure		Time	Air Flow Rate		Total Volume	
Bar	P. S. I.	Seconds	Ft^3/MIN	Liter/Minute	Liter	Ft^3
6	84	Air Pressure Always Needs to be Higher than Water Pressure				
3.5	50	8.5	9.5	269	38.1	1.3
1.5	20	8.8	11	311.5	45.7	1.6

Recommended Setup Time:

Flushing time	5 - 7 sec
Dwell	15-25 sec
VD	1 sec
Between flushing	1-2 hour
DP	(3-4.5)m, (4-6.5) psi



Spin Klin – System Maintenance

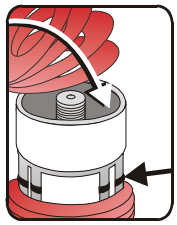
WEEKLY **Check:** * Inlet / Outlet Pressure
* Leakage
* Backflush controller

MONTHLY Operate backflush in S.K. system according to Δp meter and check:
* Solenoids
* Backflush valves
* Downstream pressure and drain

SEASONAL DISCS MAINTENANCE

To guarantee thorough cleaning the following steps should to be taken:

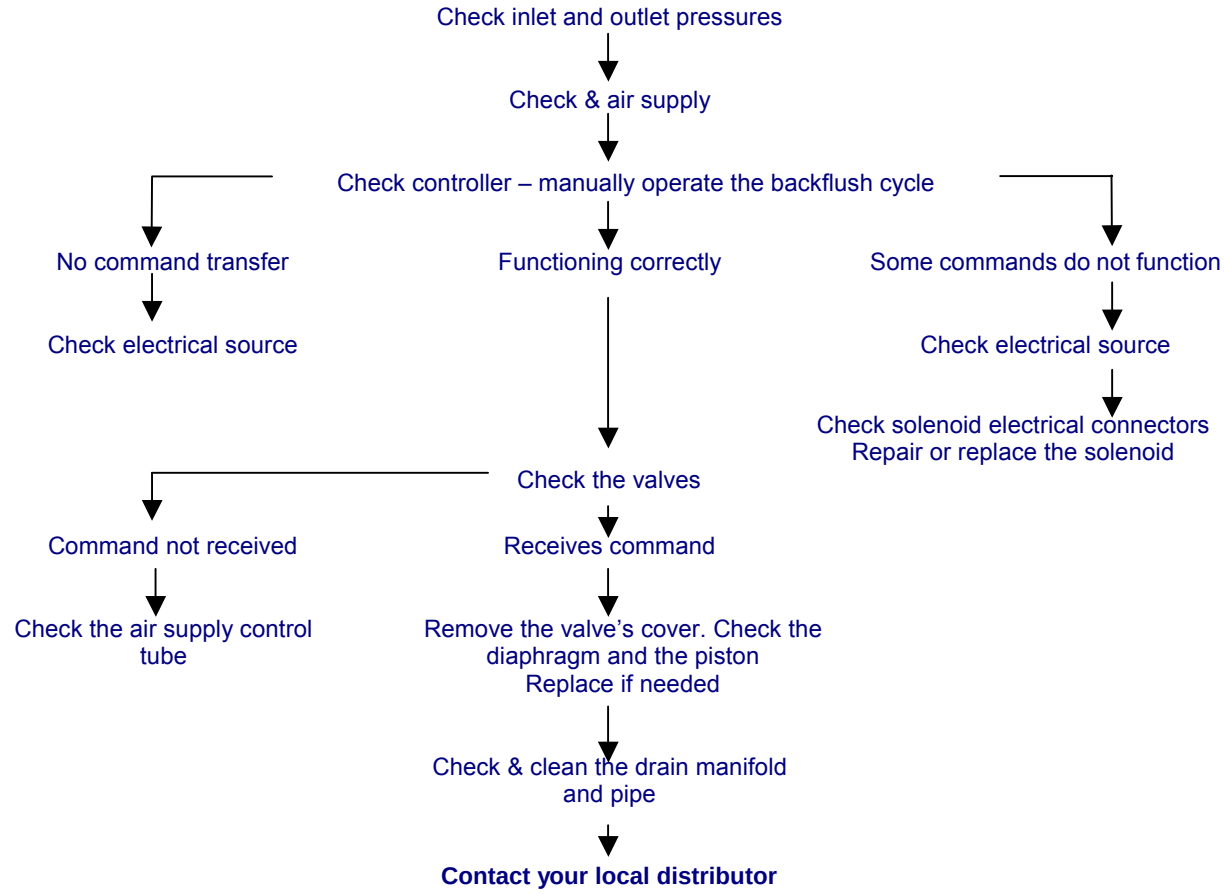
- Close the water inlet after backflushing the system
- Make certain that there is no pressure in the system
- Remove the cover by opening the clamp
- Unscrew the butterfly nut on the filtration element
- Remove the tightening cylinder



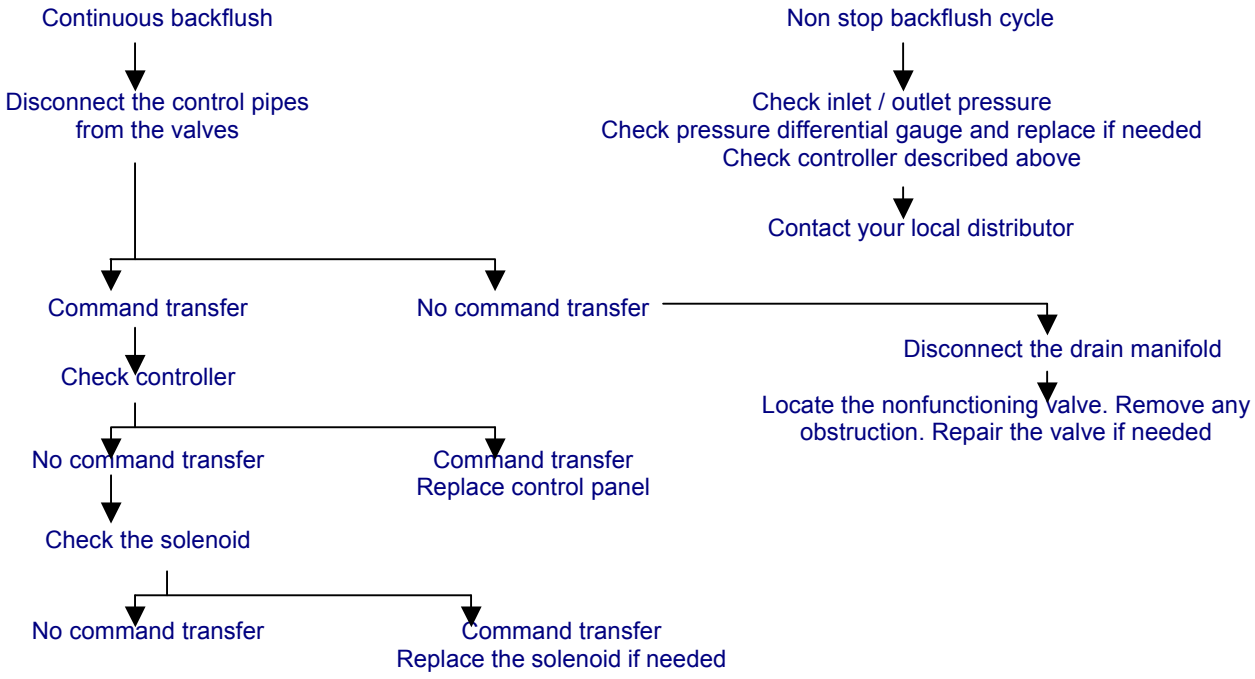
- Remove the disc sets, tie each set on a string and place them in a cleaning solution (HCL, Chlorine, or other)
- Thoroughly wash the discs with fresh water and then reassemble the discs on the spines
- Check that the correct level of discs are assembled on the spine: when the discs are pressed with two hands make sure that the top disc reaches the imprinted circle (see above, drawing) on the outside of the spine
- Reassemble the tightening cylinders and tighten the butterfly nuts until the stopping points. Use the butterfly wrench to ensure that the nuts are sufficiently tightened
- Reassemble filter cover and tighten the clamp

Identifying Malfunctions in the 2" Spin Klin system

No Backflush Operation



Continuous or Non-stop Backflushing

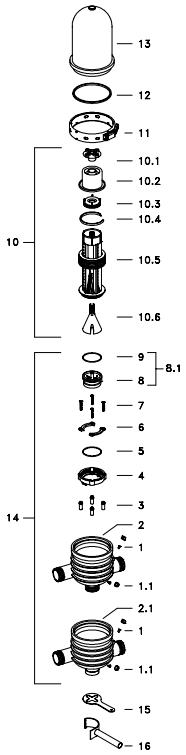


Contact your local distributor

2” Spin Klin Filter

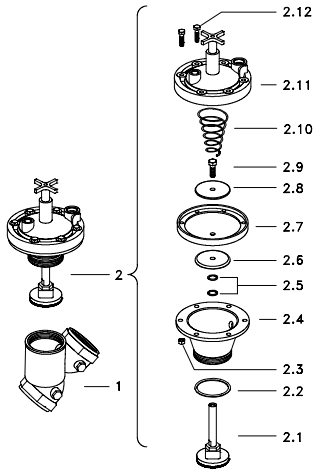
PARTS LIST

NO.	CAT. NO.	DESCRIPTION	MATERIALS
1	5006 0004	GAUGE PORT SEAL (SINGLE UNIT)	EPDM
1.1	2511 0103	GAUGE PORT NUT (SINGLE UNIT)	REINFORCED POLYPROPYLENE
2	2200 2200	BODY - THREADED CONNECTIONS	REINFORCED POLYAMIDE
2.1	2200 2201	BODY - VICTAULIC CONNECTIONS	REINFORCED POLYAMIDE
3	2530 0204	SPINE SUPPORTT LEGS (SINGLE UNIT)	REINFORCED POLYAMIDE
4	2506 0222	THREADED SPINE CONNECTOR	REINFORCED POLYAMIDE
5	5003 2146	O-RING 2-146	EPDM
6	2530 0206	ARC SHAPED FIXTURES (SINGLE UNIT)	REINFORCED POLYAMIDE
7	5040 1006	CONNECTOR SCREWS (PER SCREW)	STAINLESS STEEL
8	2503 0221	SPINE SEAT	REINFORCED POLYAMIDE
8.1	2199 0124	SPINE SEAT ASSEMBLY	
9	5003 7604	O-RING 76x4	EPDM
10*	2199 1002	ASSEMBLED S.K. MODEL 2 SPINE	
10.1	2506 0224	"BUTTERFLY" NUT	REINFORCED POLYAMIDE
10.2	2506 0226	TIGHTENING CYLINDER	REINFORCED POLYAMIDE
10.3	2530 0216	PISTON	REINFORCED POLYAMIDE
10.4	2253 1225	SLIDING WASHER	POLYETHYLENE
10.5	2022 1___	DISC SET	POLYPROPYLENE
10.6	5006 0008	CONE MEMBRANE	NATURAL RUBBER
11	5042 0030	CLAMP	STAINLESS STEEL
12	5005 0002	HYDRAULIC SEAL	EPDM
13	2501 0220	FILTER COVER	REINFORCED POLYAMIDE
	2501 9220	TRANSPARENT COVER	POLYCARBONATE
14	2226 1122	2" S.K. BODY COMPLEX VICTAULIC OUT	
	2226 1022	2" S.K. BODY COMPLEX THREADED OUT	
15	5076 0028	BUTTERFLY NUT WRENCH	GALVANIZED STEEL
16	5076 0019	SPINE WRENCH	GALVANIZED STEEL



* Not including 10.5

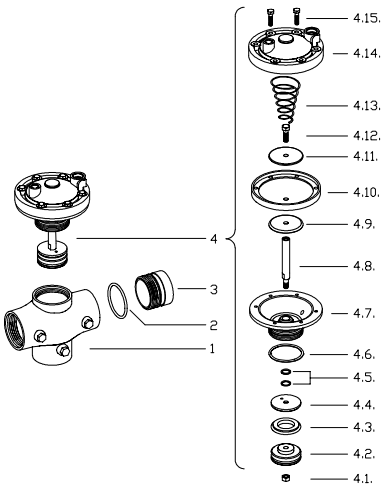
“DOROT” “GALIL” Backwash Control Valve, Model 09T-NC



NO.	CAT. NO.	DESCRIPTION	MATERIALS
1.	5060 0122 01	VALVE BODY	BRASS
2.	5060 0012	ACTUATOR ASSEMBLY	
2.1.	5060 0122 201	STEM ASSEMBLY	
2.2.	5060 1211 406	ACTUATOR BODY O-RING	NITRILE RUBBER
2.3.	5060 0122 203	NUT	STAINLESS STEEL
2.4.	5060 0122 204	ACTUATOR BODY	BRASS
2.5.	5060 0122 205	O-RING	NITRILE RUBBER
2.6.	5060 1211 409	LOWER DISC	BRASS
2.7.	5060 1211 410	DIAPHRAGM	NITRILE RUBBER
2.8.	5060 1211 411	UPPER DISC	BRASS
2.9.	5060 1211 412	BOLT	STAINLESS STEEL
2.10.	5060 1211 413	SPRING	STAINLESS STEEL
2.11.	5060 0122 211	COVER	REINFORCED POLYAMIDE
2.12.	5060 0122 212	BOLTS	STAINLESS STEEL
2.13.	5060 0122 213	SITE	BRASS
2.17.	5060 0122 217	STEM	STAINLESS STEEL

“DOROT” 2” x 2” Backflus Valve, Model 51

NO.	CAT. NO.	DESCRIPTION	MATERIALS
1	5060 1211 01	VALVE BODY	BRASS
2	5060 1211 02	O-RING	NITRILE RUBBER
3	5060 1211 03	ADAPTOR	BRASS
4.A.	5060 0021	ACTUATOR FOR INLET VALVE	
A.B.	5060 0026	ACTUATOR FOR OUTLET VALVE	
4.1	5060 1211 401	NUT	STAINLESS STEEL
4.2	5060 1211 402	SEAL BOWL	BRASS
4.3	5060 1211 403	SEAL	
4.4	5060 1211 404	SEAL DISC	BRASS
4.5	5060 1211 405	O-RING	NITRILE RUBBER
4.6	5060 1211 406	ACTUATOR BODY O-RING	NITRILE RUBBER
4.7	5060 1211 407	ACTUATOR BODY	BRASS
4.8	5060 1211 408	SHAFT	STAINLESS STEEL
4.9	5060 1211 409	LOWER DISC	BRASS
4.10	5060 1211 410	DIAPHRAGM 06	NITRILE RUBBER
4.11	5060 1211 411	UPPER DISC	BRASS
4.12	5060 1211 412	BOLT	STAINLESS STEEL
4.13	5060 1211 413	SPRING 52 FOR 2x2 BFV	STAINLESS STEEL
4.14	5060 1211 414	COVER	REINFORCED POLYAMIDE
4.15	5060 1211 415	BOLTS	STAINLESS STEEL



ARKAL FILTRATION SYSTEMS Bet Zera, Jordan Valley, 15135, ISRAEL Tel: 972-4-677-5140
www.arkal.com E-mail:filters@arkal.com Fax: 972-4-677-5476