AMIAD Water Systems Ltd.

MEGA ABF 40,000
ON-LINE FILTER

Serial number:	
Order number:	
Catalog number:	
Filtration degree:	
Tested by:	

Installation and Operation Instructions

CE

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Original Instructions

AMIAD Water Systems Ltd.

MEGA ABF-40,000 ON-LINE FILTER

Amiad's MEGA-ABF-40,000 FILTER is an automatic self-cleaning filter designed for use with non-hazardous liquids only and within the pressure and temperature framework described in the specifications table. For other applications please contact Amiad's marketing department.
This manual is the operation manual of the MEGA ABF-40,000 FILTER; it describes the installation and the commissioning processes for a single filter installation and specifies the end-user operation and regular maintenance procedures.
The Mega ABF filters are available in 16", 18", 20", 24" and 28" inlet/outlet diameters.

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With any inquiry please quote Filter Serial Number, located on the filter housing.

Technical Specifications

General

Maximum flow rate	2500 m^3/h		Consult manufacturer for optimum flow depending on filtration degree& water quality.
Min. working pressure	2 bar	28 psi	Or lower if pressure is increased for flushing.
Max. working pressure	10 bar	150 psi	16 bar = 240 psi upon request.
Filter area	40,000 cm^2		
Inlet/Outlet diameter	400, 450, 500, 600, 700 mm	16", 18, 20", 24",28"	Flange standards as per request.
Filter housing	1400 mm	55.1"	Epoxy-coated steel or other on request.
Max. working temperature	60^0C	140^0F	
Weight (empty)	3120 kg		
Weight (with water)	5850 kg		

Flushing data

Exhaust valve	4 X 80 mm	4 X 3"	
Flushing cycle time	50 - 140 seconds	50 - 140 seconds	
Rejected water per cycle	1,200 liter	530 gallon	at 2 bar = 30 psi
Minimum flow for flushing	50 - 200 m^3/h	220 - 880 US gpm	at 2 bar = 30 psi

Control and electricity

Control voltage	24V AC / DC	
Electric motor	4 X 1.5 HP	50 Hz, 14 Gear output R.P.M.
Rated operation Voltage	3 phase	380/ 440 V, 50 / 60 Hz
	Single phase	110 / 220 V, 50 / 60 Hz
Current consumption	4X3 Amp.	(With 3 phase 380 / 440 V)

Construction materials

Filter Housing and Lid	carbon steel 37-2, Epoxy-coated
Screens	Stainless Steel 316
Cleaning mechanism	Stainless Steel 316, POM
Exhaust valve	Epoxy-coated cast iron, Natural Rubber
Seals	Synthetic Rubber, Teflon
Control	Aluminum, Brass, Stainless Steel, PVC

Standard filtration degrees

	Perforated Screens				Wedge-wire Screens			
Micron	3500	2500	1500	800	800	500	300	200
mm	3.5	2.5	1.5	0.8	0.8	0.5	0.3	0.2

Safety Instructions

General Safety Instructions

- Amiad filtration products always operate as components in a larger system. It is essential for the system designers, installers and operators to comply with all the relevant safety standards.
- Prior to installation, operation, maintenance or any other type of action carried out on the filter, read carefully the safety, installation and operation instructions.
- During installation, operation or maintenance of the filter all conventional safety instructions should be observed in order to avoid danger to the workers, the public or to property in the vicinity.
- Please note: The filter enters into a flushing mode automatically, without prior warning.
- No change or modification to the equipment is permitted without a written notification given in advance by the manufacturer or by its representative, on the manufacturer's behalf.
- Always observe standard safety instructions and good engineering practices whilst working in the filter's vicinity.
- Use the filter only for its intended use as designed by Amiad, any misuse of the filter may lead to undesired damage and may affect your warranty coverage. Please consult with Amiad prior to any non-regular use of this equipment.

Installation

General

- Install the filter according to the detailed Installation Instructions provided with the filter by the manufacturer and according to the description given in this manual.
- Make sure to leave enough clearance so as to enable easy access for future treatments and safe maintenance operations.
- The user should arrange suitable lighting at the area of the filter to enable good visibility and safe maintenance.
- The user should arrange suitable platforms, ladders and safety barriers to enable easy and safe access to the filter without climbing on pipes and other equipment. The user should verify that any platform, barrier, ladder or other such equipment is built, installed and used in accordance with the relevant local authorized standards.
- Check and re-tighten all bolts during commissioning and after the first week of operation.
- Use only appropriate standard tools and equipment operated by qualified operators when installing, operating and maintaining the filter.
- When installation is required in hazardous environment sites, underground or high above ground, make sure that the site design and the auxiliary equipment are appropriate and that installation procedures are carried out in accordance with the relevant standards and regulations.
- Ensure walking areas about the installation are slip free when wet.

Shipment and transporting

- Shipping and transporting the filter must be done in a safe and stable manner and in accordance with the relevant standards and regulations.
- For shipping, lifting and positioning the filter, use only approved lifting equipment and authorized employees and contractors.

Electricity

- Electric wiring should be performed by an authorized electrician only, using standardized and approved components.
- Install a **lockable** main power cut-off switch close to the control panel.
- If due to site constraints, the control panel is installed without a clear line-of sight of the filter, an additional **lockable** power disconnect cut-off switch should be installed near each filter unit.
- Installation of the filter should be performed so as to avoid direct water splashing on the electrical components or on the control panel.

Pneumatics

- Install a **lockable** main cut-off switch, **featured with a pressure release mechanism,** on the compressed air supply line close to the control panel.
- If the control panel is installed far away and there is no eye contact with the filter, a **lockable** compressed air cut-off switch, **featured with a pressure release mechanism,** should be installed near each filter unit.
- The user should make sure that the compressed air supplied to the filter never exceeds the maximum designated pressure for this filter. An air-pressure reduction valve should be installed on the compressed air supply line upstream of the filter's pneumatic inlet port.

Hydraulics

- Extra safety devices should be installed on hot water applications to avoid skin burn danger.
- The user should install a manual Water Cut-off Valve next to the filter's inlet port.
- In cases where the downstream piping network downstream of the filter is pressurized an additional manual Water Cut-off Valve should be installed next to the filter outlet port.
- The user should make sure that the system includes a Pressure Release / Drainage Valve to enable release of residual pressure prior to any maintenance procedure performed on the filter.
- The user should make sure that the filter is never exposed to water pressure exceeding the maximum designated pressure for this filter, if needed a Pressure Reduction Valve should be installed upstream of the filter's water inlet port.
- Please note that the maximum working pressure indicated at the filter's specifications table includes the pressure caused by fluid hammer and pressure surge effects.

Civil Engineering

- Make sure that the filter installation is done by Amiad qualified technicians.
- Make sure that any civil engineering work at the installation site such as construction, lifting, welding, etc. is done by qualified workers / technicians / contractors and in accordance with the relevant local standards.
- While using lifting equipment, make sure that the filter or the lifted part is chained securely and in a safe manner.
- Do not leave lifted equipment if there is no necessity. Avoid working below lifted equipment.
- Wear a safety helmet while using lifting equipment.
- Make sure that the flooring is sloped for drainage and to avoid accumulation of liquids.

Commissioning

- Read carefully the Commissioning and the First Start-up Operation instructions prior to any attempt to operate the filter.
- In order to achieve maximum performance and smooth operation of the filter it is crucial to perform the Startup and First Operation procedures exactly as described in this manual.
- Commissioning the filter should be done by an authorized Amiad technician, do not attempt to commission the filter unaccompanied since this may lead to undesired damage and may affect your warranty coverage.

Operation and Control

- Do not operate the filter before reading carefully and being familiar with its operation instructions.
- Observe the safety stickers on the filter and never perform any operation contradicting the instructions given.
- Never operate or use the filter for purposes other than its original design and operational envelope.

Maintenance

Before any maintenance or non-regular operation please read the following:

- Servicing the filter should be done only by technicians authorized by Amiad.
- Disconnect the filter from the power supply and lock the Main Power Switch.
- Disconnect the compressed air supply, release the residual pressure and lock the Pneumatics Main Valve.
- Disconnect the filter from the water system by closing and securing the Manual Inlet Valve. In cases where the downstream piping network is pressurized, close and secure the Manual Outlet Valve also.
- Release the residual water pressure by opening the Pressure Release / Drainage Valve.
- Empty the filter by opening the Drainage Valve.
- In hot water systems wait till the filter components cool off to a safe temperature.
- Place warning signs around the work area as required by the local standards and procedures.
- Inspect the filter's safety stickers and replace any damaged or faded sticker.

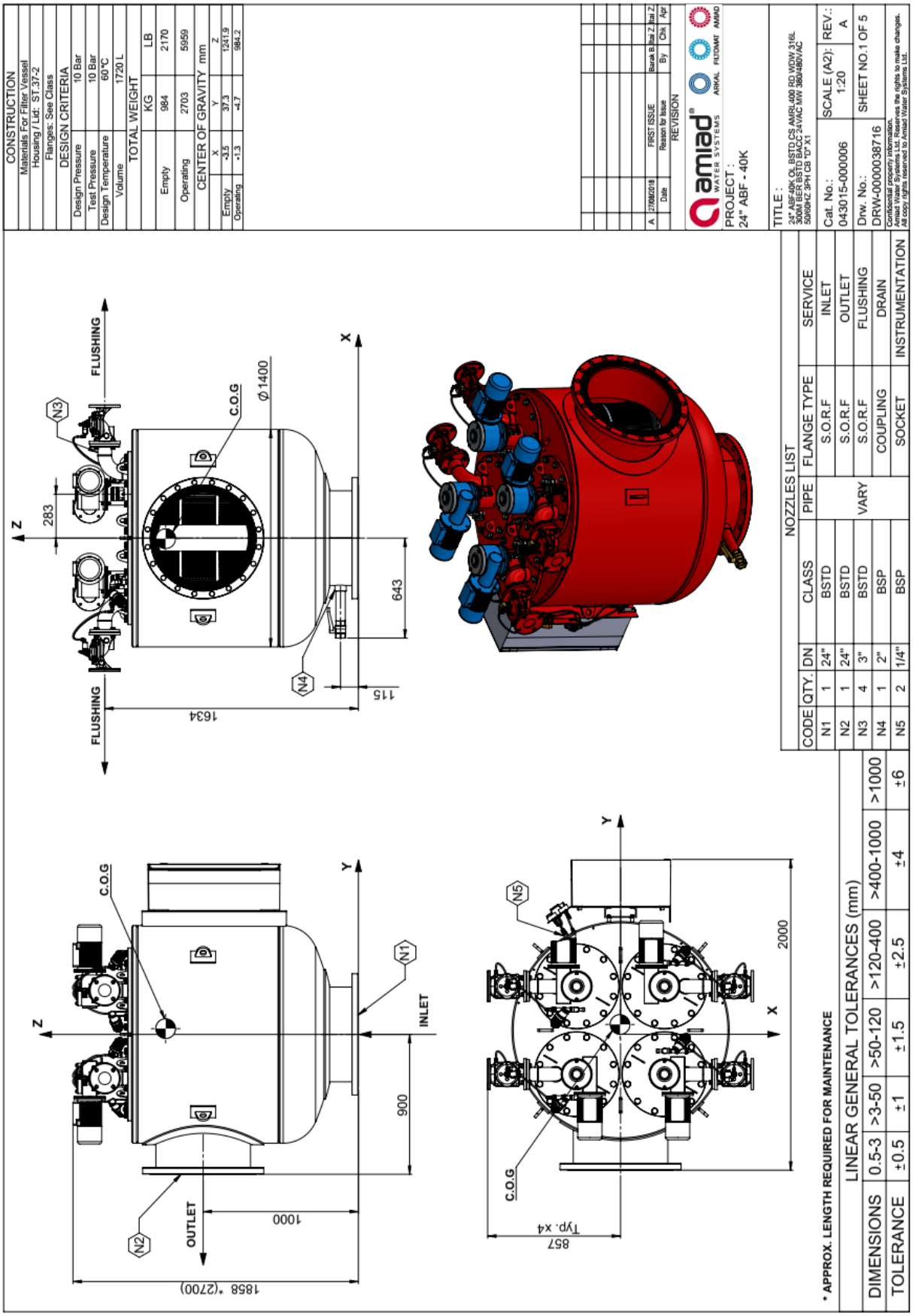
Mechanical

- When working on the filter use only appropriate standard tools.
- Always open and close valves slowly and gradually.
- Remove grease and fat material residues in order to avoid slipping.
- Before disconnecting the filter from the water supply, electricity and pneumatics and before releasing the filter's residual pressure do NOT:
    - loosen or unscrew bolts
    - remove any protection cover
    - open any service port flange
- Avoid splashing and water leakage so as to minimize slippage, electrification or damage to the equipment, caused by moisture.
- While using lifting equipment, make sure that the filter or the lifted part is chained securely and in a safe manner.
- Do not leave lifted equipment if there is no necessity. Avoid working below lifted equipment.
- Wear a safety helmet, goggles, gloves, and any other personal safety equipment required by the local standards and regulations.
- Human entry into a filter must be done in accordance with the relevant local safety instructions, standards and regulations for working in hazardous environment.
- Manual cleaning of filter media using high water pressure or steam should be performed in accordance with the cleaning system instructions, the local standards and regulations and without endangering the operator or the vicinity
- Manual cleaning of filter element using acid or other chemical agents should be performed in accordance with the relevant material safety instructions, the local standards and regulations and without endangering the operator or his vicinity.

Before returning to regular operation

- Re-assemble any protection covers or protection mechanisms removed during service or maintenance operations.
- Make sure that all the tools, ladders, lifting devices, etc. used during the maintenance procedures are taken away from the filter area and stored
- In order to return the filter to regular operation, follow the First Start-up Operation instructions as detailed in your user manual.
- For filters used in potable water systems it is required to disinfect the filter according to the local water authority standards and regulations before putting it back to service.

Dimensional Drawing



Description of Filter Operation

Filtering process:

The MEGA ABF-40,000 FILTER is a sophisticated yet easy-to-operate automatic filter, with a self-cleaning mechanism driven by electric motors. The MEGA ABF consists of four filter unit and is designed to work with various types of screens in filtration degrees from 200 to 3500 micron, and is available in 16", 18", 20", 24" and 28” inlet/outlet diameters.

The water enters through the inlet pipe into the fine screens from the inside out. The "filtration cake" accumulates on the fine screen surface and causes head loss to develop.

Self-cleaning process:

The MEGA ABF-40,000 FILTER starts the self-cleaning process when the pressure differential across the screens reaches a pre-set value or a predetermined lapse of time.

Cleaning of the filter element is carried out by opening a flushing valve located on the housing lid and starting the electric motor, which revolves 2 stainless steel brushes on the inside of the filtration cylinder.

The particles trapped on the cylinder are dislodged by the revolving brushes and flushed out through the open flushing valve.

The cleaning operation duration is approximately 15 seconds per screen.

The service flow of the filtered water is continuous during the cleaning cycle.

The electric control board which is supplied with the filter controls the automatic operation of the filter.

Different modes of filtration:

The filtration system may be found in one of the following modes:

1. Filtering mode: This is the normal function condition. Flushing doesn’t occur & the power light on the control board is lit.
2. Flushing mode: A mode in which the flushing process is in progress. The motors and the exhaust valves open according to the program.
3. Malfunction mode: During malfunction mode the self-cleaning operation is stopped, the malfunction light on the control board is turned on and an external dry contact output is activated.

The filtration system may enter a malfunction mode in the following cases:

1st. When there is a continuous signal from the pressure differential switch for duration of more than 5 minutes. This means that the self-cleaning process is not successful (Could be set differently by changing the settings of the fault timer TAL, inside control board).

2nd. When one of the motor-protectors is activated, manually, or due to overload (in such case the remaining filter elements continue to operate).

Initiation of self-cleaning:

The filter enters the self-cleaning process as a result of any of the following causes:

1. A signal from the Pressure Differential Switch (PDS) - The PDS mounted on the filter body, sends a dry contact when the pressure differential across the screen reaches the pre-set value (usually 0.5 bar / 7 psi). The control board registers the signal and operates the flushing process according to its program. (Closing the manometer valve connected to the low pressure of the PDS for 5 seconds also causes the filter to start flushing.)
2. Manually pressing the "TEST" push button at the control board.
3. The TIMER feature of the control board allows operation of self-cleaning process at pre-set time intervals, independent off the head loss factor. The timer resets after every flushing cycle.

Cleaning cycle stages of single filtration unit:

1) The exhaust valve opens to the atmosphere.

2) The motor starts rotating the shaft with the brushes, for approximately 15 seconds.

3) The exhaust valve closes.

4) The motor stops.

Cleaning cycle of the MEGA ABF unit:

The four filter units are flushing in sequence; one unit at a time.

A common PD Switch provides the signal for flushing the entire system.

1) Unit #1 flushes as described above.

2) The exhaust valve of unit #2 opens as soon as the cleaning cycle of unit #1 ends.

3) The cycle ends when unit #4 has ended its cycle

During the self-cleaning process there is no interruption of the service flow and the PDS constantly monitors the pressure differential between the inlet and the outlet of the filter.

Installation

Design recommendations

1. If flow increases and pressure drops dramatically for a long period of time during network filling-up, it is recommended that a pressure sustaining valve is installed downstream of the filter. The pressure sustaining valve will ensure a controlled filling-up of the line.
2. If continual water flow is essential even during maintenance period, it is recommended that a manual or automatic by-pass is installed, and the isolating valves will be used to isolate each filter.
3. In places where there is an expected temporary worsening of water quality, it is possible to operate an emergency flushing program. In order to do so, a hydraulic controlled valve has to be installed downstream of the filter. For details, please consult the manufacturer.

Installation instructions

1. Before beginning the installation process, carefully read the safety instructions chapter of this document and make sure that all the workers at the installation site are fully aware of and comply with, these and any other local safety instructions.
2. Select a convenient location for the installation of the filter where operation and maintenance will be optimal. It is recommended that a standard and safe lifting auxiliary is available for maintenance.
3. Install the filter horizontally. Please note the minimum clearance (Not including a crane) required in order to allow disassembly of the unit.
4. Ensure that the direction of flow is aligned with the arrows marked on the filter housing.
5. Installation of a mechanical non-return valve downstream of the filter is required.
6. If possible, prior to installing the filter, thoroughly flush the main line at the connection point in order to remove large objects that may damage the filter's internal mechanism.
7. Install a drainage pipe to the exhaust valve. Minimum 2" diameter for a maximum pipe length of 20 meters (60 feet), for longer drainage, 3" pipe diameter must be used for a maximum length of 40 meters (120 feet). Please note that no restriction is allowed on the drainage pipe for a flow of 7.5 m3/h (33 US-gpm). For special applications, please consult the manufacturer.
8. **If the system is designed to operate with working pressure higher than 6 bar (85 psi), it is recommended that a manual valve is installed on the exhaust pipe, in order to enable regulation of the flushing flow rate & pressure.**
9. The user should arrange suitable lighting in the vicinity of the filter to enable good visibility and safe maintenance.
10. The user should arrange suitable platforms and safety barriers to enable easy access to the filter without climbing on pipes and other equipment. All such equipment should comply with the safety clauses of the relevant local standards.

IMPORTANT!!

- Prevent static back pressure or reverse flow through the filter.
- Install a non-return valve at the outlet of the filter.
- Install a manual or a hydraulic valve downstream of the filter.

Electric wiring

1. All electrical works at the installation site must be done by a qualified and authorized electrician only. Make sure that this electrician is fully aware of all the relevant safety instructions.
2. Install the control board in a dry and protected place (In out-door installation sites make sure to use a special control board for out-door installation).
3. **Power connection to the control board:**
    a. Connect a three-phase voltage source through a semi-automatic switch, or 16 Amp. fuse to the L1 L2 L3 inlet at the terminal strip in the control board.
    b. Earth the control board.
4. **Power connection to the motor:**

    Connect the drive units to the control panel by means of a cable of 4 x 1.5mm2 for a distance of up to 5m. For distance of up to 10m a cable of 4 x 2.5mm2 should be used.

Use a long enough cable to allow the drive units to be removed and placed near the filter for maintenance, without having to disconnect them from the cable. (It is recommended that this installation meets or exceeds local or national electrical codes, this is a "high" voltage connection).

5. **Control wiring:**

   The connection between the control junction box and the control board should be by 6 x 1.5 mm 2 (16 AWG) wire in flex-conduct. The numbers on the terminals in the board and in the junction box are identical.

Commissioning, Start-Up and First Operation

1. Before starting-up the filter read the safety instruction as appear at chapter 2 of this document and pay special attention to the commissioning safety instructions.
2. Inspect the filter's installation and make sure that it is installed in accordance with the official installation drawings.
3. Verify (by authorized electrician only) that the electric wiring is correct and complies with the enclosed drawings. Make sure that the electrical start-up operation is done by an authorized electrician only.
4. Switch "OFF" motor protectors E1 - E4
5. Switch "ON" all circuit breakers.
6. Set selector ITSW to the off position (PD only).
7. Switch on E1 and watch the rotation direction of the motor of filter unit #1. If the motor rotates counterclockwise, stop it immediately by turning E1 to the off position. Change the motor direction by switching between two phases.
8. Repeat the above with filter elements #2, 3 and 4.
9. Press the "TEST" push button and verify that the filters are functioning according to the sequence described in this document.
10. Open the water supply and pressurize the filter. It is highly recommended that first "wet" operation is done with static pressure and no flow i.e. the outlet valve is open and the by-pass of the system is open.
11. Operate and simulate the different events by closing the 1/4" Manometer Valves of the PD switch for 5 seconds.
12. If everything is functioning as described, open the outlet valves of the filter and gradually, close the by-pass valve.
13. Set it to 4 - 8 hours and turn selector ITSW to the on position (PD & Time). Follow and monitor the functioning of the filtration system, change its setting if required.

Electrical Control System Description

The **Mega ABF** control board monitors and operates the filter self-cleaning process. The self-cleaning process includes simultaneous operation of the motor and opening of the exhaust valve. The control board will cause the initiation of a flushing cycle as a result of each of the following reasons:

1. Signal from the **PDS**.
2. Manual initiation by **TEST / RESET** push-button.
3. Internal timer, up to 30 hours.

During operation the Main switch, the Motor Protector and the **F2** Circuit Breaker must be "**ON**". In this condition the power pilot light is lit.

Flushing by PDS:

The signal duration from the **PDS** should be longer than the preset time in timer **T0**. It is recommended to set it to 3-5 seconds.

This delay will prevent the filter from entering into flushing mode as a result of a momentary signal from the **PDS**.

Manual Operation:

Quick pressing on the **TEST / RESET** push button will cause operation of self-cleaning.

Flushing according to Time:

The timer is located inside the control board and is marked **"T2"**. It is possible to set it for intervals from a few minutes up to 30 hours.

To cancel the option of flushing by timer, turn off the **SW-1** switch.

Timer T1 determines the minimum flushing duration. It is recommended that flushing duration be set to 15 seconds.

Fault Mode:

The control board is equipped with a protection circuit. It will cause the filter to enter a "fault" mode if continuous signal from the **PDS** is received for duration longer than the preset time in **TAL**. This means that in case that the filter does not manage to clean itself; the **PDS** will continue to send a signal. When the **TAL** time elapses, flushing stops, "fault" pilot light is lit and fault relay is activated. It is possible to use this relay also for an alarm, automatic by-pass, etc.

To come out of fault mode, press the **TEST / RESET** push-button.

The recommended preset time for **TAL** is 5 minutes.

It is possible to order control boards with additional features such as sequential operation of a few filters in a battery, flushing counter, etc.

Follow the drawing in this manual for proper wiring of the control board to the filter.

Maintenance

Before beginning any maintenance procedure, carefully read the safety instructions chapter of this document and make sure that all the workers at the filtration site are fully aware of and comply with, these and any other local safety instructions.

A. General inspection of the filter operation

This is the visual basic general inspection procedure of the filter for proper operation. It should be done regularly and prior to any scheduled maintenance procedure.
Press the test button or close the 1/4" valve at the low pressure sensing port of the pressure differential switch for 5 seconds, this will initiate the self-cleaning cycle; Check that the exhaust valve opens, that the scanner moves outwards, and when it reaches the outer limit switch - verify that the exhaust valve closes.

B. Weekly maintenance

Visual Check:

1. Check that the filter operates properly by following the General Inspection of the Filter Operation as described above.
2. Visually check that there is grease on the brush assembly shaft.
3. Visually check the filter's brush assembly shaft for any leakage.
4. Visually check the filter housing, the valves and the check-valves for leakage.
5. Check the filter for loosen-bolts.

If Necessary:

1. Disconnect and lock the filter's power supply.
2. Disconnect and lock the filter's compressed air supply.
3. Disconnect the filter from the water supply and drain the filter housing.
4. If it is necessary add grease to the filter's brush assembly shaft.
5. Take care of any leakage from the brush assembly shaft. If necessary, replace the Sealing flange Internal O-Ring.
6. Reconnect the filter carefully and safely to its water, air and power supply.
7. Perform a General Inspection of the Filter Operation as described above.

C. Maintenance prior to long term cessation of filter operation

The following must be done if the filter will not be operated for more than a month.

1. Operate flushing cycle (If possible, with a closed downstream valve).
2. Disconnect the control board from the power and lock the main switch before the limit switch disc reaches the switch.
3. Release pressure from the filter.
4. Disconnect the compressed air supply and lock the main switch.
5. Grease the filter's brush assembly shaft.
6. Clean the 3/4" control filter.

D. Maintenance prior to re-operation

1. Make sure that the filter is disconnected from power, compressed air and water supply.
2. Grease the drive shaft and the drive bushing.
3. Connect the control board to the mains.
4. Connect the compressed air supply.
5. Connect the filter to its water supply.
6. Perform a General Inspection of the Filter Operation as described above.
7. If necessary change the tightening nut's internal seal as described above.

E. Every Six Months

Before beginning this maintenance procedure, carefully read the safety instructions chapter of this document and make sure that all the workers at the filtration site are fully aware of and comply with, these and any other local safety instructions.

1. Perform a General Inspection of the filter Operation as described above and carefully inspect the filter visually for:
    a. Proper operation
    b. Any leakage from the filter housing or accessories
    c. Abnormal or unusual noises
    d. Loosen bolts
    e. Non smooth turning of the suction scanner
    f. Unusual load on the filter electrical motor
    g. Any sign of corrosion on the filter housing or accessories
    h. Unusual vibrations
    i. Non smooth operation of the filter valves, air release valves and check-valves
2. Close the inlet and the outlet valves of the filter. Drain the filter housing and release any residual pressure.
3. Disconnect and lock the filter's power supply.
4. Disconnect and lock the filter's compressed air supply and release any residual pressure.
5. Disassemble the filter as described in the next chapter of this document.
6. Inspect the filter screens and components for any wear and tear.
7. Check the brush assemblies.
8. Check the filter bearings.
9. Check the filter housing and lid for any sign of corrosion.
10. Check the filter internal and external coating and pain for damage
11. Replace any damaged component
12. Make sure that your maintenance engineers are aware of even the slightest sign of corrosion in the filter housing, lid or accessories. In such case consider performing a standard pressure vessel tests as required by your local applicable standards.
13. Re-assemble the filter as described in the next section of this document.
14. Perform a complete COMMISSIONING, START-UP AND FIRST OPERATION as described earlier in this document.

IMPORTANT !

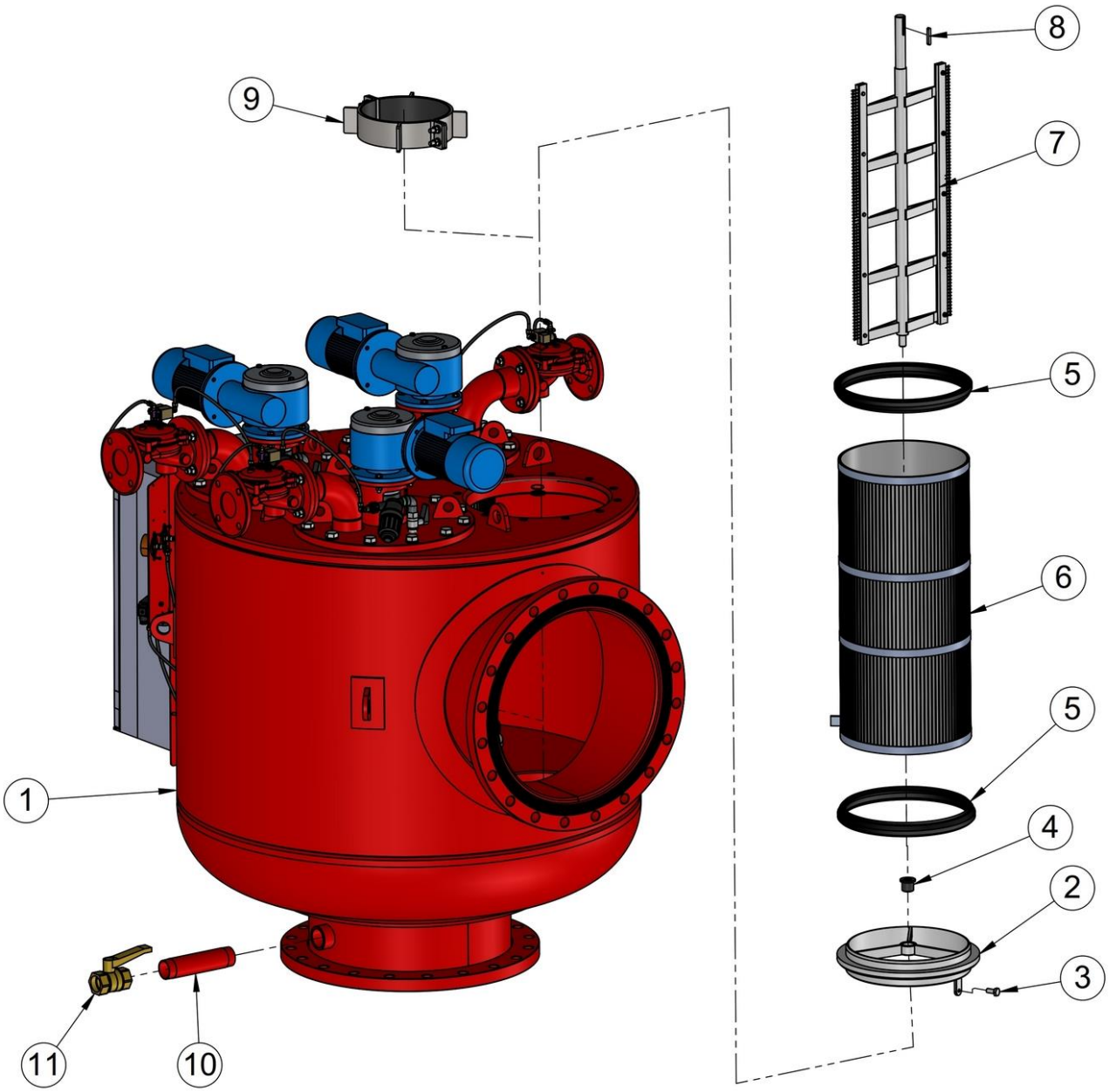
THE DRIVE SHAFT MUST BE LUBRICATED WITH HEAVY-DUTY, WATER RESISTANT GREASE THAT WILL NOT OXIDIZE. (SHELL, DARINA EP-2 OR SIMILAR)

Parts schedule Standard Mega ABF 40K

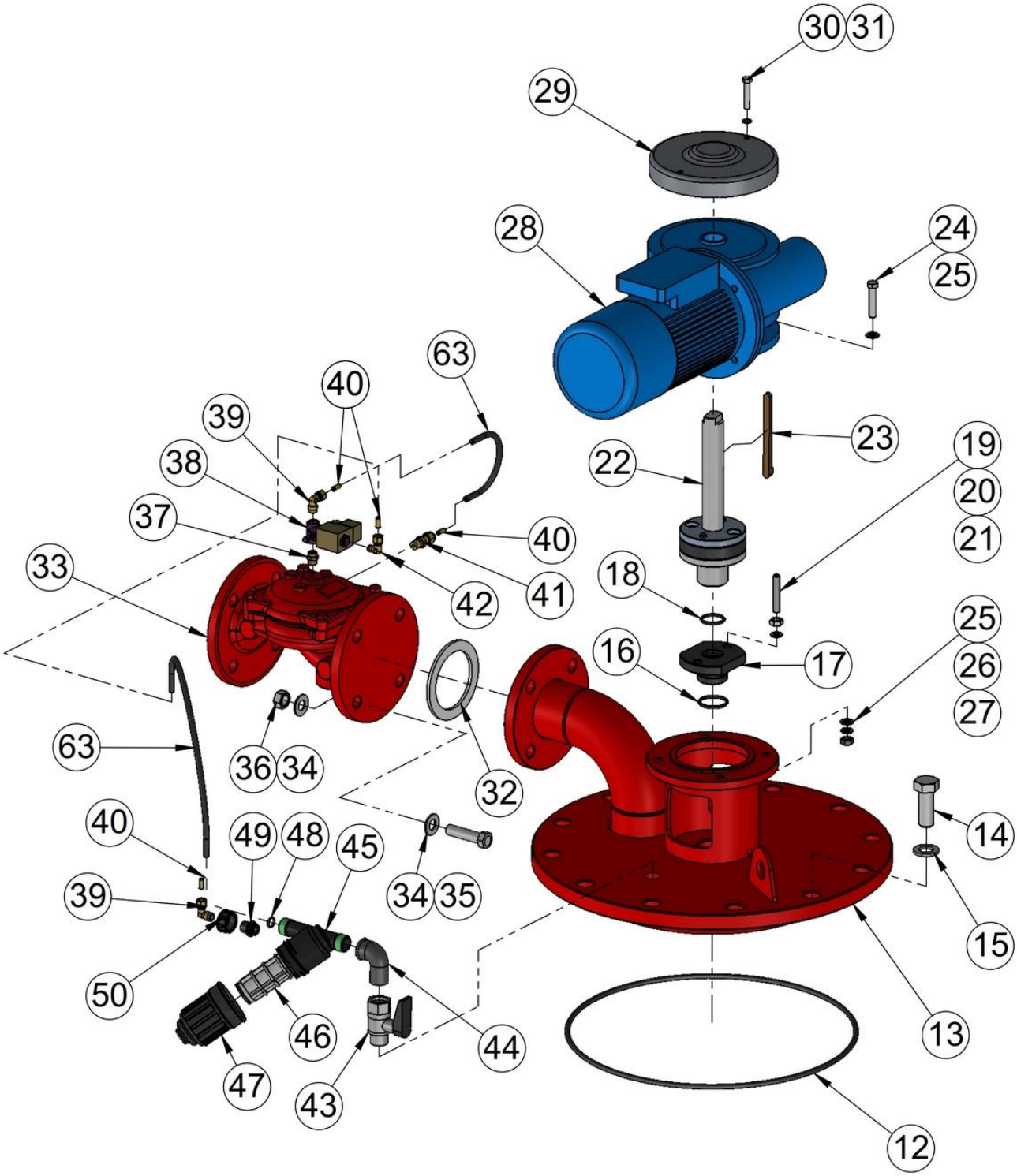
No.	Description	Qty.
1	HOUSING ABF-40K C/ST BSTDO.L. AMRLK 400 IDEB-3002	1
2	ABF-40K SCR.SUPPORT C/ST RB. LINE AMERLOCK 400	4
3	HEX BOLT FULL TH M10X30 S/ST316 DIN933	8
4	LOWER BEARING ABF/EBS10000 POM	4
5	SHAPED SEAL HYD.AM-04NR EBS10000 SCR.NBR	8
6	SCREEN S/ST316L 10000SQ.CM XXXMIC ABF-10K	4
7	ABF-10,000 BRUSH ASSY.FOR COUPLING UNIT	4
8	KEY 55MM ABF-10000 SAE 1040 SHORT F/BRUSH SIDE	4
9	MEGA-ABF SCREEN STOPPER ASSY	1
10	NIPPLE 2" PKPK 3002 C/ST POLYESTER	1
11	2-WAY BALL VALVE 2" BSP	1
12	PARKER O-RING 2-463 NBR 70 SHORE	4
13	LID FOR ABF-40K IDEB 3002 BSTD	4
14	HEX BOLT FULL THRD M22 60MM C/ST DIN933 Z.PLATED	48
15	FLAT WASHER M22 DIN125 ZINC PLATED C/ST	48
16	O-RING 38X4 NBR 70 SHORE NO FLASH	4
17	FLANGE SEALING ABF/EBS DELRIN	4
18	O-RING 30X4 NBR 70 SHORE NO FLASH	4
19	SOCKET SET SCREW M10X60 S/ST304 DIN916	8
20	HEX NUT M10 S/ST316 DIN934	8
21	FLAT WASHER M10 DIN125 S/ST316	8
22	COUPLING ABF ASSY	4
23	KEY ABF-10000 BRASS BRUSH	4
24	HEX BOLT FULL THRD M10X50 Z.PLT C/ST	16
25	FLAT WASHER M10 DIN125 ZINC PLATED C/ST	32
26	SPRING WASHER M10 DIN127 ZINC PL. C/ST	16
27	HEX NUT M10 ZINC PLATED C/ST DIN934	16
28	DR.UNIT ABF10K 380/480AC 50/60HZ RAL5010	4
29	ABF10K DRIVE SHAFT COVER S/ST304 S.BLAST	4
30	HEX BOLT FULL TH M8X45 S/ST316 DIN933	8
31	FLAT WASHER M8 DIN125 S/ST316	8
32	FLANGE GASKET 3" 124X92 NBR	4
33	HYDRAULIC VALVE 3" RAM BSTD RED	4
34	FLAT WASHER M16 DIN125 ZINC PLATED C/ST	32
35	HEX BOLT PARTIAL THR M16X65 Z.PLT C/ST	16
36	HEX NUT M16 ZINC PLATED C/ST DIN934	16
37	PRESS CH POINT CONNECTOR 1/4"X1/4" BRASS	4
38	SOLENOID VALVE 24VAC,50HZ,NO (GEM-SOL)	4
39	L-CONNECTOR 1/4"M X5/16" BSPT BRASS AIGNEP	9
40	ADAPTOR5/16"X5/16" 63PT F/AIR BRAKE TUBE	24
41	CONNECTOR 5/16" X1/4" BRASS HAM-LET	5
42	L-CONNECTOR 1/8"M X5/16" BSPT BRASS AIGNEP	6
43	Ball Valve 3/4" M/F (BRASS)	4
44	L-CONNECTOR 3/4" F/M GALVANIZED	4
45	HOUSING 3/4" (AC,BLACK) BSPT ASSY	4
46	MOLDED WEAVEWIRE SCREEN 140SQ.CM 200MIC AMIAD 3/4"	4
47	3/4" COVER CLOSED ACETAL BLACK	4
48	O-RING 2-112 NBR 70 SHORE NO FLASH	4
49	NIPPLE 1/4" ABF/EBS/SAF POM PLASTIC FILTER	4
50	RACCORD NUT 3/4" FOR 3/4" FILTER	4

No.	Description	Qty.
51	EBS -40K PLATE ST.37-2	1
52	HEX BOLT FULL TH M8X25 S/ST316 DIN933	4
53	Aluminum Amiad Nameplate, CE, EN	1
54	RIVET BLIND 3X6 DIN 7337 S/ST316	4
55	PRESSURE GAUGE 0-16 BAR/PSI 1/4" BSP	2
56	BACK SIDE CLAMP FOR C/ST FOR 1/4'' PRESSURE GAUGE	2
57	ADAPTOR 1/8"FX1/4"F NICKEL PLATED	2
58	PRESSOSTAT SUB-AS. MIDWEST W/O FTNG EL.CABLE ASSY	1
59	MANOMETER VALVE 1/4" W/ DRAIN ASSY	1
60	L-CON. 1/4"F X1/4"M BSPT NIC.PLT AIGNEP	1
61	T-CONNECTOR 1/8"X5/16"X5/16" BRASS	2
62	C.BOARD MEGA EBS/ABF X4 VALVES TYPE-D IP66	1
63	CONTROL TUBE 5/16'' BLACK BACCARA	4.2 [M]

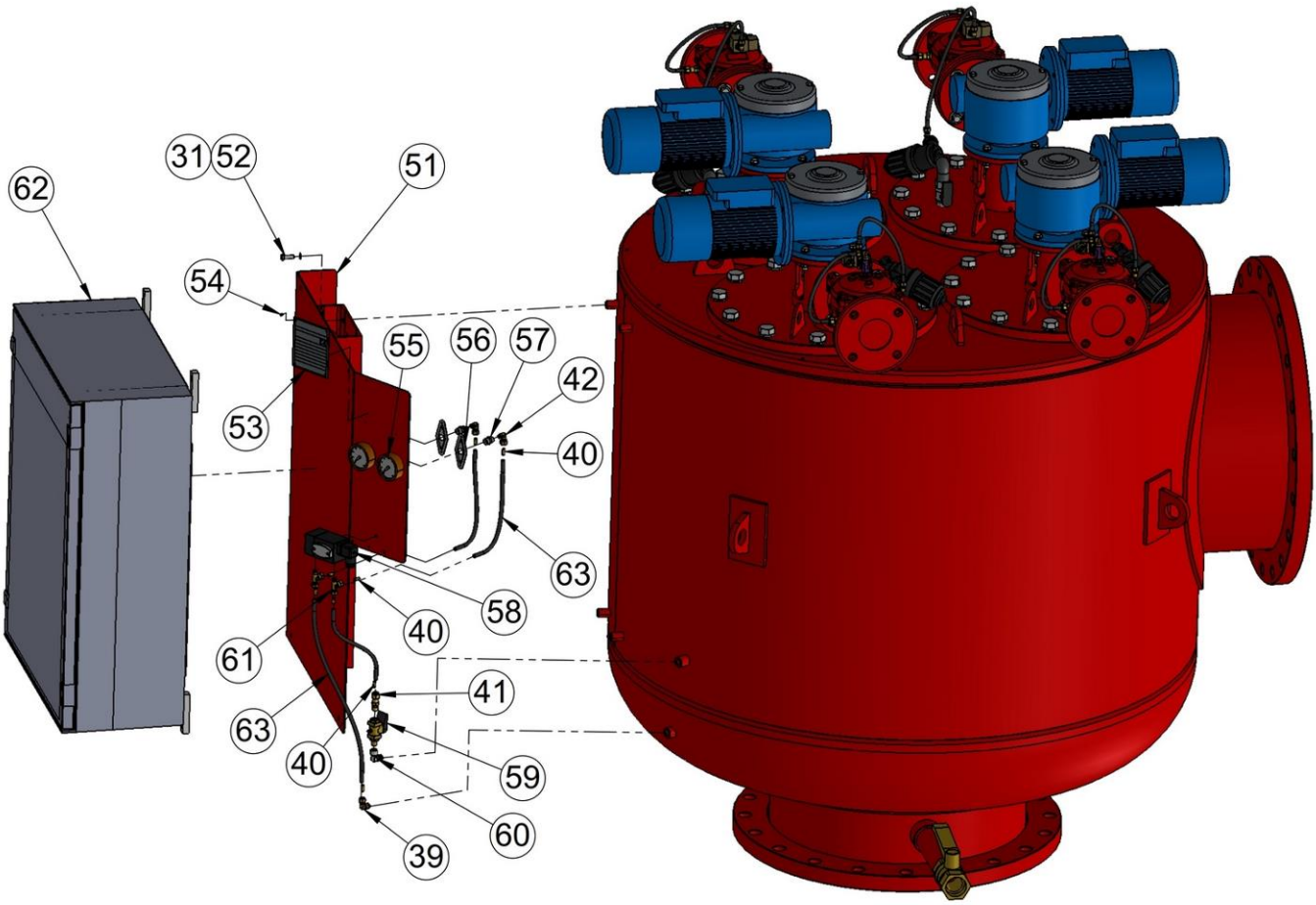
Parts Drawing Standard Mega ABF 40K #1



Parts Drawing Standard Mega ABF 40K #2



Parts Drawing Standard Mega ABF 40K #3



Amiad Limited Warranty

1. This certificate applies to Amiad Water Systems Ltd. ("**Amiad**") products purchased by you (the "**Buyer**") from Amiad unless specifically agreed otherwise in writing by Amiad. This Warranty extends only to the original purchaser, and is not transferable to anyone who subsequently purchases, leases, or otherwise obtains the product from the original purchaser.
2. Amiad hereby warrants that the products are and will be free from defects in material and workmanship under normal use and service. Amiad warrants that it will correct manufacturing defects in the products, in accordance with the conditions set out in this Warranty.
3. This Warranty is enforceable for a period of 12 months after the date upon which the products were delivered (the "**Warranty Period**").
4. In the event that during the Warranty Period the Buyer discovers a defect in material and/or workmanship in any product or part (the "**Defective Product**"), it shall submit a written complaint to Amiad using Amiad's standard Buyer Complaint Form. For the receipt of the Buyer Complaint Form, the submission of the complaint or any questions please contact your service representative.
5. Upon written demand by Amiad the Buyer shall return the Defective Product - or a sample thereof - to Amiad, at Amiad's cost. If the Buyer ships any such Defective Product, Amiad suggests the Buyer package it securely and insure it for value, as Amiad assumes no liability for any loss or damage occurring during shipment. Provided however that in the event Amiad determines that this Warranty does not apply to such product, Buyer shall promptly reimburse Amiad for such cost (including freight and customs). Any returned product or part must be accompanied by the Warranty certificate and the purchase invoice. It is clarified that the Buyer may not return the Defective Product unless such return was coordinated and approved by Amiad in advance.
6. Amiad's obligation under this Warranty shall be limited to, at Amiad's option, the repair or exchange, free of charge, of the product or any part which may prove defective under normal use and service during the Warranty Period. The provision of a repair or replacement of a product during the Warranty Period will result in an extension of the Warranty Period by an additional period of 12 months, provided that the total accumulated Warranty Period shall in any event be no more than 18 months from the date upon which the products were delivered.
7. This Warranty is valid on the condition that the products are installed according to Amiad's instructions as expressed in Amiad's instruction manuals and according to the technical limitations as stipulated in Amiad's literature or as stated by a representative of Amiad.
8. This Warranty will not apply to damaged or defective products resulting from or related to:
   (i) Fire, flood, power surges or failures or any other catastrophe and/or unforeseen occurrence, such as but not limited to those for which the Buyer is customarily insured for, or any force majeure events;
   (ii) Fault, abuse or negligence of the Buyer;
   (iii) Intake water not meeting the agreed standards, as set forth in a written document, approved by Amiad, or improper storage;
   (iv) Improper or unauthorized use of the product or related parts by the Buyer, including Buyer's failure to operate the product in conformity with the recommendations and instructions of Amiad, as set forth in Amiad's manuals and other written materials, the operation of the product other than by a trained and qualified operator, or improper installation of the product by a third party not authorized by Amiad;
   (v) Performance by the Buyer of maintenance or operation other than in conformity with the recommendations and instructions of Amiad, or other than in accordance with procedures defined in the literature supplied for products (including the timely replacement of requisite parts), and for services provided other than by a trained and qualified advanced operator; or
   (vi) Any alteration, modification, foreign attachment to or repair of the products, other than by Amiad or its authorized technical representatives.
9. In no event shall Amiad be liable to the Buyer or any third party for any damages to property, or for any intangible or economic loss, including loss of profits, loss of customers or damage to reputation, for any damages, including indirect, special, consequential damages, or punitive damage arising out of or in connection with this Warranty, or arising out of or in connection with the product's performance or failure to perform, even if it has been advised of the possibility of such damages.
10. Amiad will be excused for failure to perform or for delay in performance hereunder if such failure or delay is due to causes beyond its reasonable control or force majeure preventing or hindering performance.
11. This Warranty set forth herein is the only contractual warranty given by Amiad and is provided in lieu of any other warranties created by any documentation, packaging or otherwise.
12. Amiad makes no warranty whatsoever in respect to accessories or parts not supplied by Amiad. In the event that Amiad is required to correct a Defective Product or product not covered by this Warranty, it will do so solely in consideration for additional fees.
13. The parties will actively endeavor to amicably settle any dispute arising between them. In the event that the parties are unable to reach an equitable settlement of such dispute, any claim or lawsuit related to the Warranty, its validity execution, its performance be brought before only the courts of Tel-Aviv, Israel. Israeli law will govern the Warranty, to the exclusion of any conflict of law rules .

CE

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EC Declaration https://www.amiad.com/certificatesDownload.asp