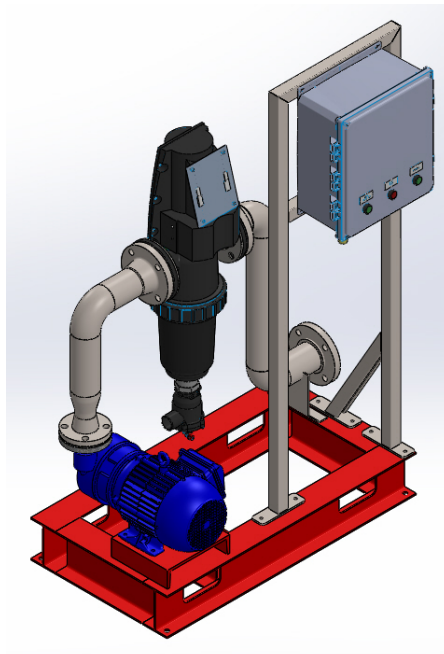


# TAF Pre-Engineered HVAC Filter Skids

## Installation, Operation and Maintenance Instructions



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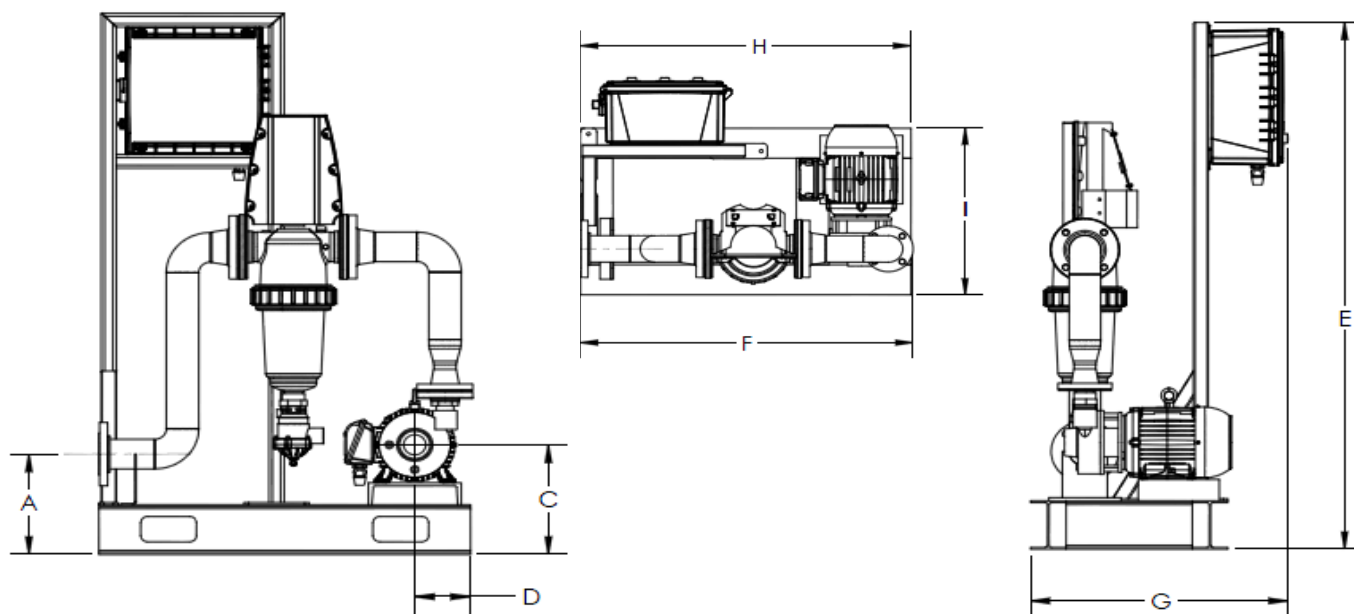
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## GENERAL SYSTEM TECHNICAL DATA

### General System Specifications

MODEL	Flow Rate (gpm)	No. of Filters	Surface Area (in <sup>2</sup> )	Pump HP	Screen UM	Voltage	FLA	PUMP Inlet	Face Pipe	Flush Line	Weight lbs.		
											Filter	Shipping	Operation
TAF 43	43	1	116	3	50	230/460	3.67	2" FNPT	3"	1.5" NPT	387	430	460
TAF 63	63	1	116	3	50	230/460	3.67	2" FNPT	3"	1.5" NPT	387	430	460
TAF 98	98	2	232	5	50	230/460	5.9	2.5" FNPT	4"	1.5" FLG	748	820	870
TAF 142	142	2	232	5	50	230/460	5.9	2.5" FNPT	4"	1.5" FLG	748	820	870
TAF 192	192	2	232	7.5	50	230/460	5.9	3" FNPT	4"	1.5" FLG	765	837	887
TAF 252	252	2	232	10	50	230/460	8.48	3" FNPT	4"	1.5" FLG	794	873	923



### Dimensions (inches)

MODEL	A	B	C	D	E	F	G	H	I
TAF 43	11.875	6	13	6	64.125	40.25	28.562	40	21.875
TAF 63	11.875	6	13	6	64.125	40.25	28.562	40	21.875
TAF 98	11.875	14.812	13.375	7.75	64.125	60	39.312	60	32.625
TAF 142	11.875	14.812	13.375	7.75	64.125	60	39.312	60	32.625
TAF 192	11.875	14.812	13.375	8	64.125	60	39.312	60	32.625
TAF 252	11.875	14.812	14.125	8	64.125	60	39.312	60	32.625

## **SAFETY INSTRUCTIONS**

### **General**

1. Prior to installation or any treatment given to the filter, read carefully the installation and operation instructions.
2. While maintaining the filter all standard safety instructions should be observed in order to avoid danger to the workers, the public or to property in the vicinity.
3. Please note, the filters enter into a flushing mode automatically, without prior warning.
4. No changes or modification to the equipment are permitted without a written notification given by the manufacturer or by its representative, on the manufacturer behalf.

### **Installation**

1. Install the filter according to the installation instructions detailed in this manual.
2. Make sure to leave enough clearance so as to enable easy access for future treatments and safe maintenance operations.
3. Electric wiring should be performed by an authorized electrician only; using standardized and approved components.
4. Install main power disconnect cut-off switch close to the control panel.
5. If the control panel is installed in a location where there is no eye contact with the filter, a power disconnect cut-off switch should be installed near each filter unit.
6. Install the filter so as to avoid water splashing directly on the electrical components or on the control panel.
7. Additional safety devices should be installed on hot water applications to avoid skin burn danger.

### **Operation, Control and Maintenance**

1. Disconnect the filter from power supply before maintenance or treatment.
2. Loosening or unscrewing bolts should be done only after the pressure in the filter had been released.
3. Avoid splashing and water leaking so as to minimize slipping, electrocution or damage to the equipment caused by moisture.
4. Always open and close valves slowly and gradually.
5. Remove grease and fat material residues in order to avoid slipping.
6. After treatment has been completed, re-assemble the protection covers of the drive mechanism.
7. Manual cleaning of filter element using high water pressure or steam should be performed in accordance with the cleaning system instructions and without endangering the operator or his vicinity.
8. Manual cleaning of filter element using acid or other chemical agents should be performed in accordance with the relevant material safety instructions and without endangering the operator or his vicinity.

### **Use of Lifting Equipment**

1. While using lifting equipment, make sure that the filter or the lifted part is chained securely and in a safe manner.
2. Do not leave lifted equipment hanging if not necessary. Avoid working below lifted equipment.
3. Wear a safety helmet while using lifting equipment.

## DESCRIPTION OF FILTER OPERATION

The "TAF" is a sophisticated yet easy-to-operate automatic electric filter, with a self-cleaning mechanism driven by an electric motor. The filter is designed to work with various types of screens in filtration degrees from 500 to 10 micron.

The water enters through the inlet pipe into the screen area and flows through the screen from inside out. The "filtration cake" is accumulated on the screen surface and causes head loss to develop.

### Self-cleaning process

#### Filtering process

The TAF will start the self-cleaning process either when the pressure differential across the screen reaches a pre-set value or after a predetermined lapse of time.

The fine screen filter element is cleaned by the suction scanner whose nozzles spiral across the inner surface of the screen. The filtration cake is "vacuumed" from the screen and expelled out the exhaust valve.

The scanner's spiral motion is achieved by a drive unit which rotates a bi-directional continuous worm shaft.

The exhaust valve is activated for the duration of the cleaning cycle by a 3-way solenoid. Filtered water continues to flow downstream during the flush cycle, which takes approximately 16 seconds.

## INSTALLATION

### Design recommendations

1. The filter requires 5.7m<sup>3</sup>/h (25USgpm) for flushing, in addition to the working flow rate at a minimum pressure of 1.5 bar (22 psi). In the event that the system cannot provide the flushing flow in addition to the working flow, at the minimum required pressure, a hydraulic valve should be installed downstream of the filter. This valve will be closed during the flushing process in order to ensure sufficient cleaning.
2. Do not allow water to flow in opposite direction. In case that there is a chance of back flow a non-return check valve should be installed downstream of the filter.

### Installation instructions

1. Install a manual valve upstream of the filter in order to enable convenient maintenance.
2. The diameter of the inlet pipe must not be smaller than that of the filter inlet.
3. Install the filter in a way that enables convenient approach and enough space to dismantle the filter for maintenance purposes.
4. It is recommended to install the filter horizontally, especially if the water contains sand.
5. Ensure the direction of flow is according to the arrows marked on the filter housing.
6. The exhaust valve can be facing downwards or sideways. Connect a minimum of 1.5" (40 mm) pipe to the exhaust valve using a detachable connector or a flexible pipe. The exhaust pipe should be designed so that it creates minimal resistance to the flow of 5.7m<sup>3</sup>/h (25USgpm).
7. If the system is designed to operate with a working pressure higher than 6 bar (85 psi), it is recommended that a manual valve will be installed on the exhaust pipe, in order to enable regulation of the flushing flow rate.
- 8.

## START- UP AND FIRST OPERATION

1. Set the controller to 16 seconds flushing time and 2-4 hour intervals.
2. Operate a "dry" flushing cycle. Verify proper operation of the controller, the motor and the solenoid valve.
3. Open the inlet valve to the filter, while the outlet valve remains closed or with an open by-pass valve (This will keep the flow in the filter at a minimum), and operate a flushing cycle by pressing the push-button on the controller panel.
4. Make sure the exhaust valve opens and all stages of the flushing cycle are carried out. Attend to leakage, if any.  
If necessary, change the time setting to ensure complete up and down motion of the suction scanner.
5. Gradually open the outlet valve and/or close the by-pass valve. Operate the filter at the designed hydraulic conditions.

## MAINTENANCE

**NOTE:** Depressurize the filter before maintenance (Close inlet and then outlet valves).

### Checking the filter

1. Unscrew the filter cover.
2. Extract the screen and clean if necessary. Cleaning is performed by hosing the screen from outside-in, and/or with a nylon brush.
3. Check the Screen O-ring and apply grease, if necessary.
4. Replace the screen.
5. Return the cover and twist to tighten.

### Checking the PD switch connectors

Check the L-Connectors to the PD Switch to make sure that there are no obstructions.

### Winterization

Filter operations should be suspended in climates where the filter is exposed to freezing temperatures.

1. Check that the outlet valve is closed and perform two manual rinses.
2. Close the inlet valve to the filter and release the pressure.
3. Remove all drain lines from the valves, drain, and reconnect.

### Leaks

In case of a leak contact Amiad technical support.

## PARTS SCHEDULE - 3" TAF-750 FILTER Section 1

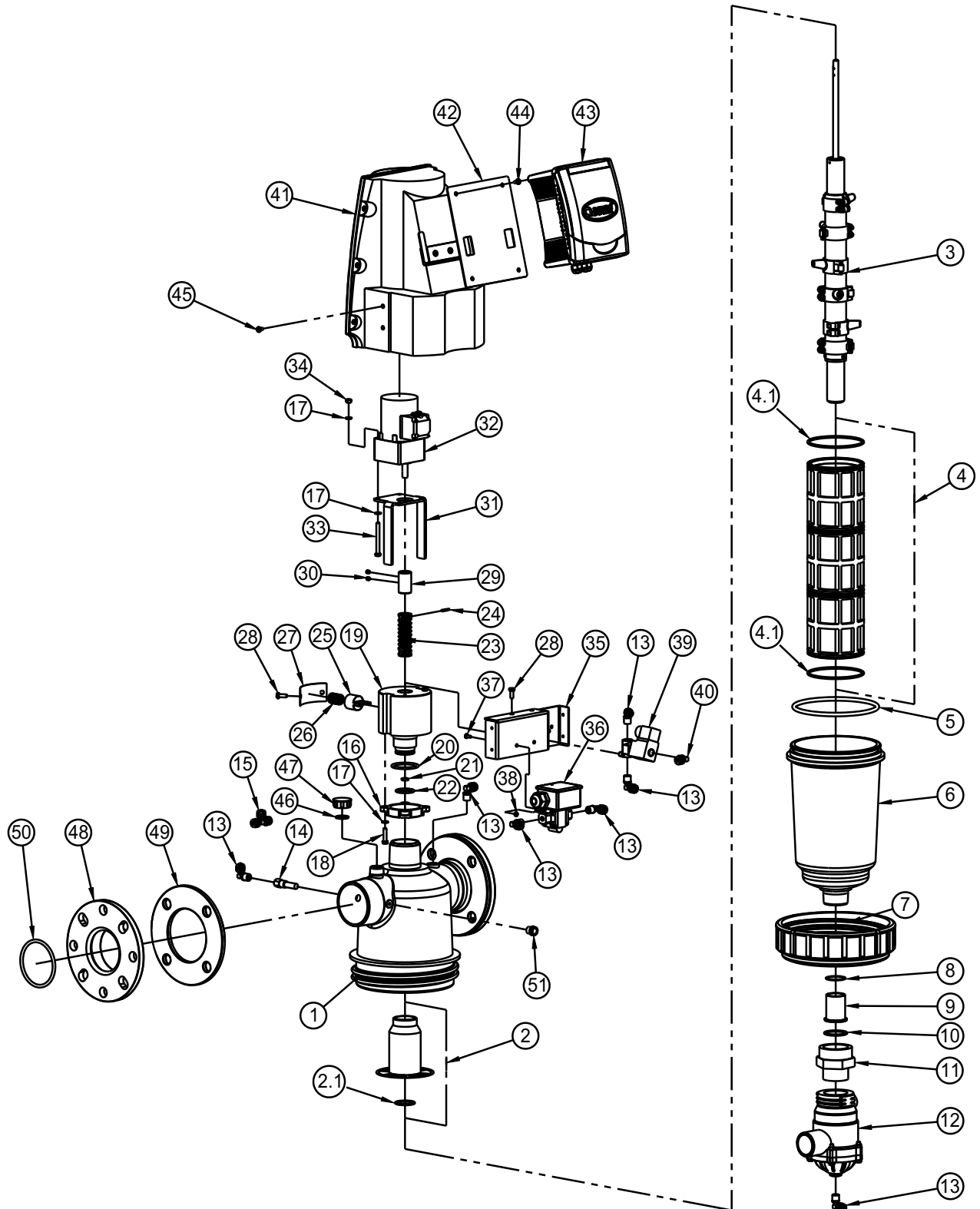
NO.	Cat. Num.	Description	QTY	Material
1	710103-001271	Housing 3" TAF-750 NPT Machined	1	NYLON
2	700190-001924	Pressure Balancing Assembly 3" TAF-750	1	Various
2.1	770102-000092	O-Ring Seal P2-125 Scanner Bearing NBR"S"	1	NBR
3	700190-001926	Suction Scanner 3" TAF-750	1	Various
4	700101-000XXX	Molded weavewire screen XXX micron	1	Various
4.1	770102-000130	O-Ring Seal P2-242 (2"/3 Screen) NBR"S"	2	NBR
5	770102-000169	O-Ring Seal P2-437	1	NBR
6	710103-000562	2"T-S,3"T Lid PA BSPT	1	NYLON
7	710103-000544	Tightening nut (T filters)	1	NYLON
8	770102-000069	O-Ring Rubber Seal P2-028	1	NBR
9	710103-000704	Long Bearing For Suction Scanner 2"T	1	Delrin
10	770102-000096	O-Ring Seal P2-129 NBR	1	NBR
11	780101-000955	Connector 1 1/2"FX1 1/2"M	1	ST.37-2
12	730103-000444	1-1/2" Exhaust Valve	1	Various
13	720501-000198	L-Connector 1/4"X8MM Red/Black	7	NYLON
14	730110-000034	Finger Filter	1	Various
15	720501-000228	T-Connector 8MMX8MMX8MM Black-Red	1	PVC
16	710101-000765	Motor Connecting Flange 2" TAF NPT	1	NYLON
16	710101-000760	Flange Adaptor (HYDROTAF)	1	NYLON
17	760103-000094	Flat Washer M6 DIN125S/ST316	12	SST316
18	760101-000445	Hex Bolt Full Thread M6X25 S/ST316 DIN933	4	SST316L
19	710103-001207	Endless Worm Shaft Housing TAF	1	Delrin



20	770101-000051	O-Ring Seal 3.5X45 TAF Motor Housing NBR	1	NBR
21	710101-000767	Seal U-Cup (Scanner Shaft) Hydro-TAF	1	NBR
22	770101-000049	O-Ring Seal 30X3 NBR "S"	1	NBR
23	710103-001247	Reversible Worm Shaft	1	Acetal
24	760105-000029	Slotted Pin 3x20 DIN1481 S/ST 304	1	S/ST 304
25	710103-001209	Endless Worm Shaft Tooth	1	S/ST 303
26	760107-000065	Spring Tooth S/St302	1	Hastelloy C-276
27	710103-001210	Tooth Cover TAF	1	S/ST 316L
28	760101-000443	Hex Bolt Full Thread M6X15 S/ST304 DIN933	4	SST304
29	710103-001216	Motor Shaft Coupler	1	S/ST 316L
30	760101-000544	Socket Set Screw M6X6 SST304 DIN916	2	SST304
31	710103-001217	Drive Unit Basis TAF	1	S/ST 316L
32	720201-000033	Drive Unit TAF-750 220V AC 1/25	1	Various
32	720201-000032	Drive Unit TAF-750 110V AC 60HZ 0.015KW 1/25	1	Various
33	760101-000607	Hex Bolt Full Thread M6X60 S/ST316 DIN933	4	SST316L
34	760102-000085	Hex Nut M6 S/ST316 DIN934	4	SST316L
35	710103-001212	Instrumentation Bracket	1	S/ST 316L
36	720104-000029	PD Switch UE 24-011	1	Various
37	760101-000529	Phillips Pan Machine Screw M4X10 316	2	SST316L
38	760102-000083	Hex Nut M4 S/ST304 DIN934	2	SST304
39	720103-000187	3/2 N/C Solenoid Valve (Type B) 24VAC 50Hz	1	Various
39	720103-000189	3/2 NC Solenoid Valve 60HZ NC 24VAC	1	Various
40	720501-000209	L-Connector 1/8"MX6MM Black-Red	1	PP

NO.	Cat. Num.	Description	QTY	Material
41	710103-001204	Drive Unit Cover TAF	1	Various
42		Not applicable		
43		Not applicable		
44		Not applicable		
45	760101-000530	Phillips Pan Machine Screw M5X8 304	4	SST304
46	770103-000025	Cap Seal 3/4" NBR	1	NBR
47	710101-000674	3/4" Cap Black	1	PP
48	710103-000568	Plastic Flange 3" NPT	2	PP
49	710105-000041	Flange Support 3" ASA150	2	SAE 1020
50	770102-000150	O-Ring Seal P2-339 (3" Flange)NBR "S"	2	NBR
51	720501-000221	Plug 1/4"M Black	1	PVC

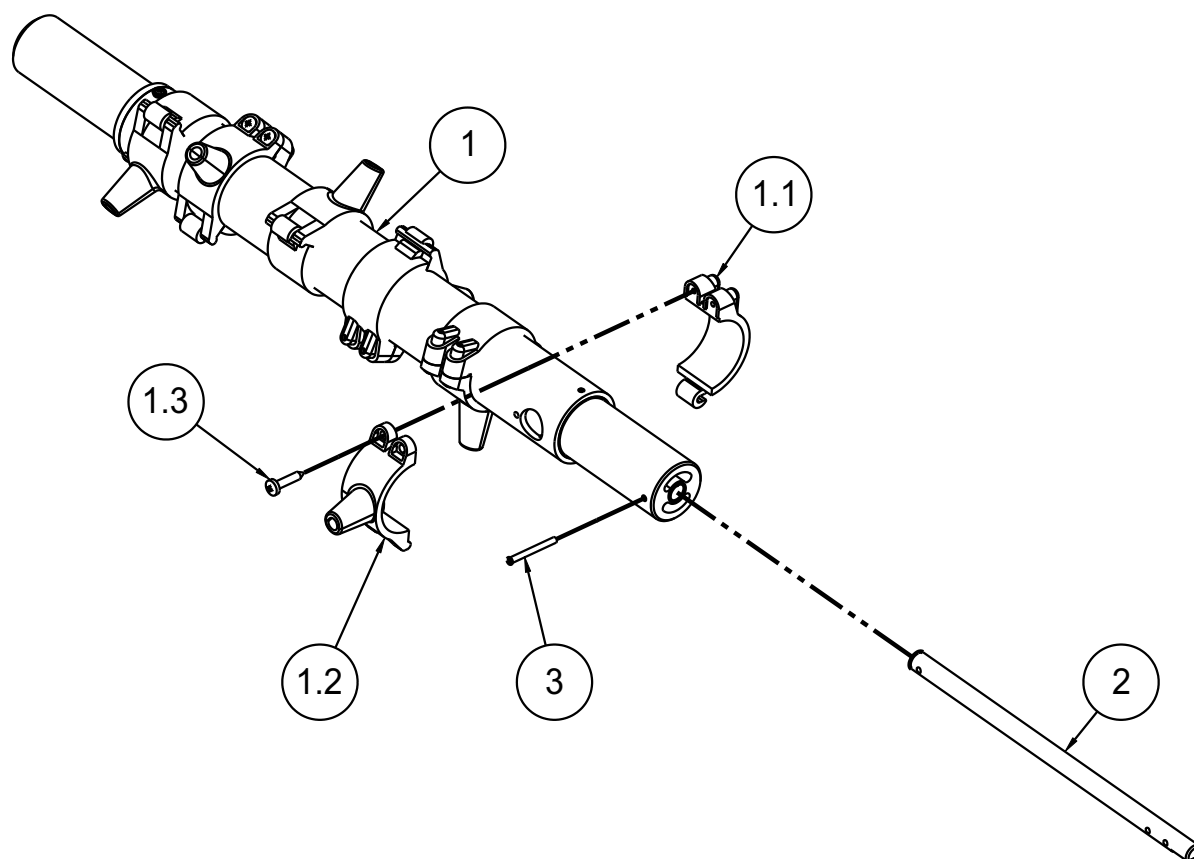
## PARTS DRAWING - 3" TAF-750 FILTER Section 1



## PARTS SCHEDULE & DRAWING - 3" TAF-750 FILTER

### Section 2

NO.	Cat. Num.	Description	QTY	Material
1	700190-001935	Suction Scanner W/O Shaft (2"S/3" TAF)	1	Various
1.1	710101-000751-1	2"-4" Suction Scanner Nozzle No.1	6	PP
1.2	710101-000751-2	2"-4" Suction Scanner Nozzle No.2	6	PP
1.3	760101-000537	Phillips Pan Tap Screw PT4x20 S/ST316	12	S/ST 316
2	710103-001275	Suction Scanner Shaft 3" TAF	1	S/ST 316L
3	760105-000033	Slotted Pin 3x30 DIN1481 S/ST 304	1	S/ST 304

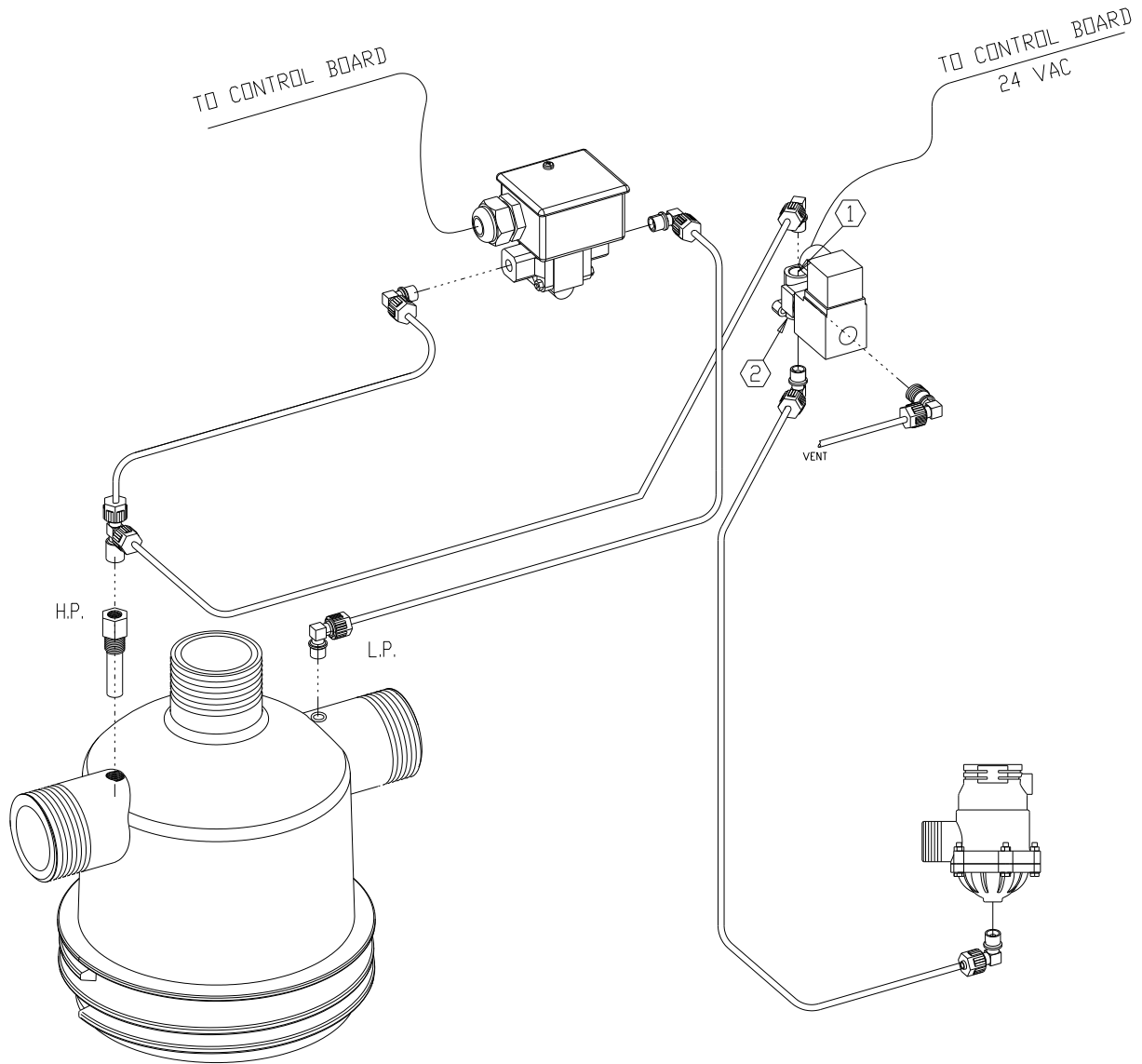


## PARTS SCHEDULE – SKID SYSTEM AND PARTS

### Pumps and seal kits TAF

Description	Filter Model	Part number
<b>Pumps (60 Hz)</b>		
3 HP SCOT #19GN, WEG 182JM SF, BN	TAF-750 43 GPM	720401-000595
3 HP SCOT #19GN, WEG 182JM SF, BN	TAF-750 63 GPM	720401-000572
5 HP SCOT #19, WEG 184JM SF, BN	TAF-750 98 GPM	720401-000585
5 HP SCOT #19, WEG 184JM SF, BN	DUAL TAF-750 142 GPM	720401-000579
7.5 HP SCOT #25, WEG 184JM SF, BN	DUAL TAF-750 192 GPM	720401-000582
10 HP SCOT #25, WEG 215JM SF, BN	DUAL TAF-750 250 GPM	720401-000605
<b>Seal kits</b>		
SEAL KIT - FOR SCOT PUMP # 19GN	43 GPM & 63 GPM UNIT	720401-000269
SEAL KIT - FOR SCOT PUMP # 19	98 GPM & 142 GPM UNIT	720401-000269
SEAL KIT - FOR SCOT PUMP # 25	192 GPM & 250 GPM UNIT	720401-000271

## CONTROL DRAWING



# PUMP CURVES

Pump Data Sheet - Scot Division of Ardox Corp.

Company: Amiad Water Systems  
Name: TAF\_750\_43  
Date: 2/5/2016



## Pump:

Size: 19GN-5.6-2x1.5  
Type: Endsuct-Open  
Synch speed: 3600 rpm  
Curve: 40.000.476  
Specific Speeds:  
Dimensions:  
Speed: 3500 rpm  
Dia: 4.75 in  
Impeller:  
Ns: ---  
Nss: ---  
Suction: 2 in  
Discharge: 1.5 in

## Pump Limits:

Temperature: 300 °F  
Pressure: 175 psi g  
Sphere size: ---  
Power: ---  
Eye area: ---

## Search Criteria:

Flow: 43 US gpm Head: 70 ft

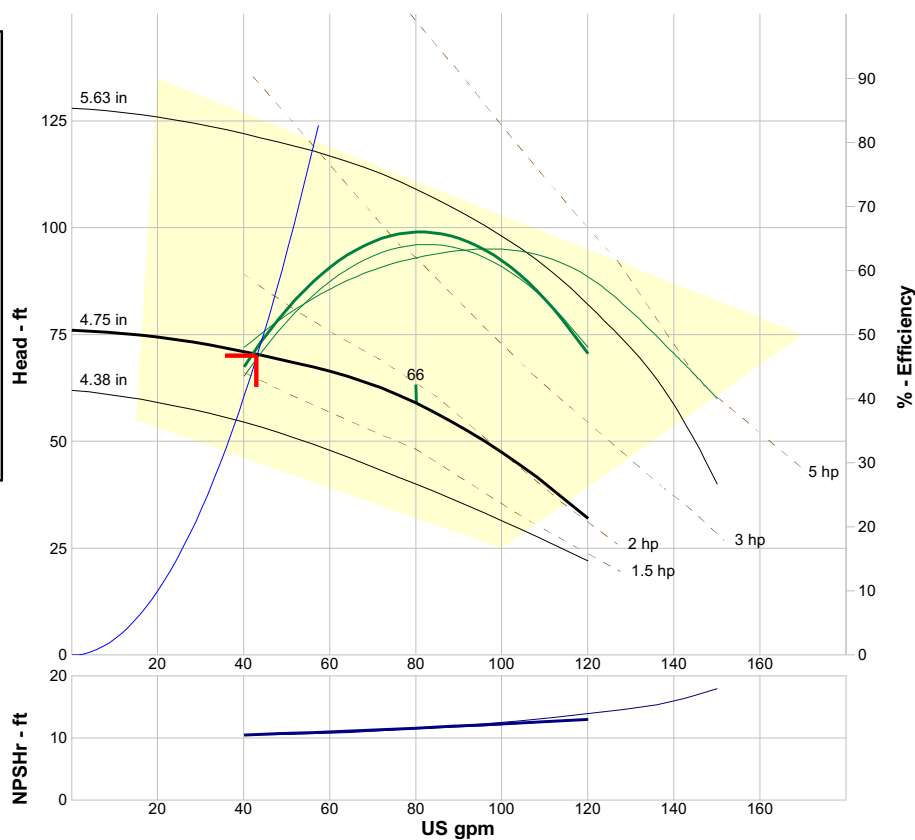
## Fluid:

Water  
SG: 1  
Viscosity: 1.105 cP  
NPSHa: ---  
Temperature: 60 °F  
Vapor pressure: 0.2563 psi a  
Atm pressure: 14.7 psi a

## Motor:

Standard: NEMA  
Enclosure: TEFC  
Size: 3 hp  
Speed: 3600  
Frame: 182T  
Sizing criteria: Max Power on Design Curve

--- Data Point ---	
Flow:	43 US gpm
Head:	70.1 ft
Eff:	47%
Power:	1.61 hp
NPSHr:	10.6 ft
--- Design Curve ---	
Shutoff head:	76 ft
Shutoff dP:	32.9 psi
Min flow:	---
BEP:	66% @ 80 US gpm
NOL power:	2.06 hp @ 120 US gpm
-- Max Curve --	
Max power:	4.4 hp @ 140 US gpm



## Performance Evaluation:

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
51.6	3500	67.5	51	1.66	10.8
43	3500	70.1	47	1.61	10.6
34.4	3500	71.7	42	1.56	10.3
25.8	3500	72.8	38	1.52	10.1
17.2	3500	73.8	33	1.47	9.84

Selected from catalog: Scot.60 Vers: 10.1

**Pump Data Sheet - Scot Division of Ardox Corp.**

Company: Amiad Water Systems  
Name: TAF\_750\_63  
Date: 2/5/2016



**Pump:**

Size: 19GN-5.6-2x1.5  
Type: Endsuct-Open  
Synch speed: 3600 rpm  
Curve: 40.000.476  
Specific Speeds:  
Ns: ---  
Nss: ---  
Dimensions:  
Suction: 2 in  
Discharge: 1.5 in

**Search Criteria:**

Flow: 63 US gpm  
Head: 70 ft  
Near miss: 5 % of Head

**Fluid:**

Water  
SG: 1  
Viscosity: 1.105 cP  
NPSHa: ---  
Temperature: 60 °F  
Vapor pressure: 0.2563 psi a  
Atm pressure: 14.7 psi a

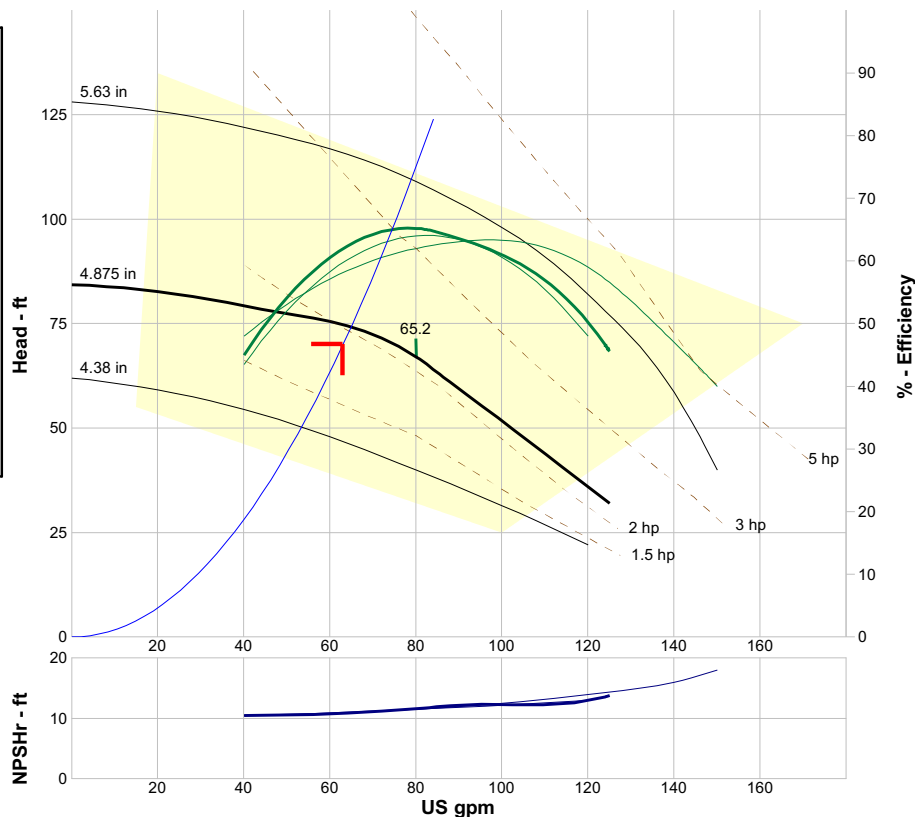
**Pump Limits:**

Temperature: 300 °F  
Pressure: 175 psi g  
Sphere size: ---  
Power: ---  
Eye area: ---

**Motor:**

Standard: NEMA  
Enclosure: TEFC  
Size: 3 hp  
Speed: 3600  
Frame: 182T  
Sizing criteria: Max Power on Design Curve

---- Data Point ----	
Flow:	63 US gpm
Head:	72.2 ft
Eff:	57%
Power:	1.95 hp
NPSHr:	11.1 ft
---- Design Curve ----	
Shutoff head:	84.3 ft
Shutoff dP:	36.5 psi
Min flow:	---
BEP:	65% @ 80 US gpm
NOL power:	2.26 hp @ 124 US gpm
-- Max Curve --	
Max power:	4.4 hp @ 140 US gpm



**Performance Evaluation:**

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
75.6	3500	68.4	63	2.04	11.5
63	3500	72.2	57	1.95	11.1
50.4	3500	76.1	50	1.86	10.8
37.8	3500	79.5	44	1.76	10.4
25.2	3500	81.1	38	1.67	10.1

Selected from catalog: Scot.60 Vers: 10.1



**Pump Data Sheet - Scot Division of Ardox Corp.**

Company: Amiad Water Systems  
Name: Dual TAF 750\_98  
Date: 2/5/2016



**Pump:**

Size: 19-5.6-2.5x2.0  
Type: Endsuct-Open  
Synch speed: 3600 rpm  
Curve: 40.000.112  
Specific Speeds:  
Ns: ---  
Nss: ---  
Dimensions:  
Suction: 2.5 in  
Discharge: 2 in

**Search Criteria:**

Flow: 98 US gpm  
Head: 70 ft  
Near miss: 5 % of Head

**Fluid:**

Water  
SG: 1  
Viscosity: 1.105 cP  
NPSHa: ---  
Temperature: 60 °F  
Vapor pressure: 0.2563 psi a  
Atm pressure: 14.7 psi a

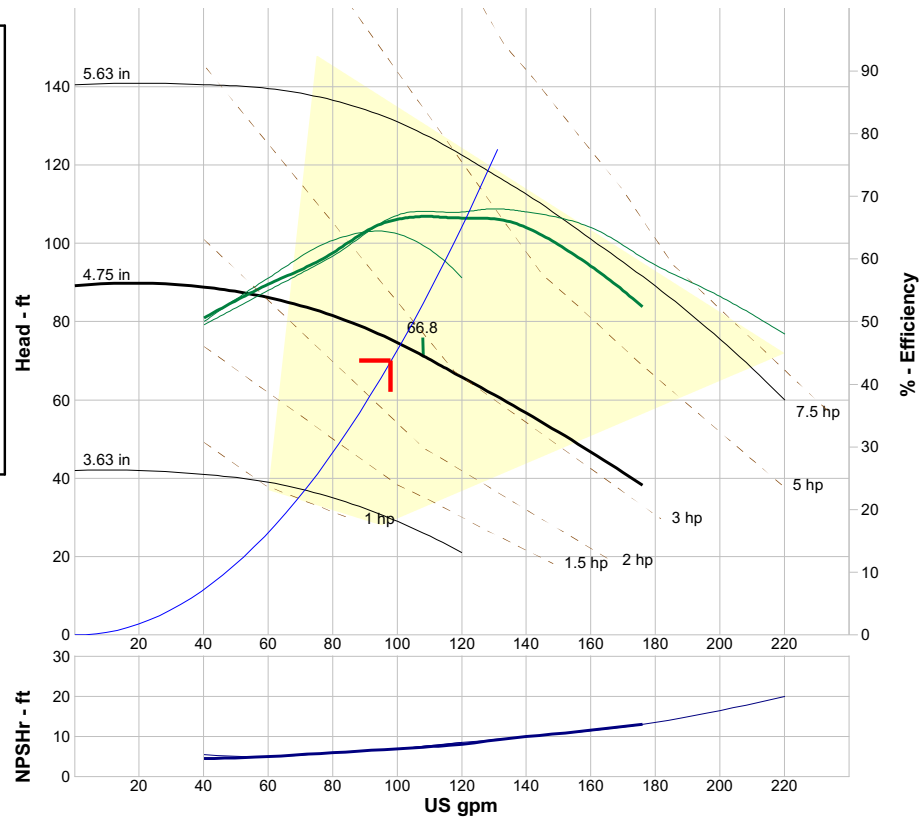
**Pump Limits:**

Temperature: 300 °F  
Pressure: 175 psi g  
Sphere size: ---  
Power: ---  
Eye area: ---

**Motor:**

Standard: NEMA  
Enclosure: TEFC  
Sizing criteria: Max Power on Design Curve  
Size: 5 hp  
Speed: 3600  
Frame: 184T

---- Data Point ----	
Flow:	98 US gpm
Head:	75.4 ft
Eff:	66%
Power:	2.82 hp
NPSHr:	6.9 ft
---- Design Curve ----	
Shutoff head:	89.2 ft
Shutoff dP:	38.6 psi
Min flow:	---
BEP:	67% @ 108 US gpm
NOL power:	3.25 hp @ 176 US gpm
-- Max Curve --	
Max power:	7.06 hp @ 200 US gpm



**Performance Evaluation:**

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
118	3500	66.7	67	2.98	8
98	3500	75.4	66	2.82	6.9
78.4	3500	81.8	61	2.67	5.92
58.8	3500	86.2	56	2.29	5.03
39.2	3500	---	---	---	---

Selected from catalog: Scot.60 Vers: 10.1

**Pump Data Sheet - Scot Division of Ardox Corp.**

Company: Amiad Water Systems  
Name: Dual TAF 750\_142  
Date: 2/5/2016



**Pump:**

Size: 19-5.6-2.5x2.0  
Type: Endsuct-Open  
Synch speed: 3600 rpm  
Curve: 40.000.112  
Specific Speeds:  
Ns: ---  
Nss: ---  
Dimensions:  
Suction: 2.5 in  
Discharge: 2 in

**Search Criteria:**

Flow: 142 US gpm  
Head: 70 ft  
Near miss: 5 % of Head

**Fluid:**

Water  
SG: 1  
Viscosity: 1.105 cP  
NPSHa: ---  
Temperature: 60 °F  
Vapor pressure: 0.2563 psi a  
Atm pressure: 14.7 psi a

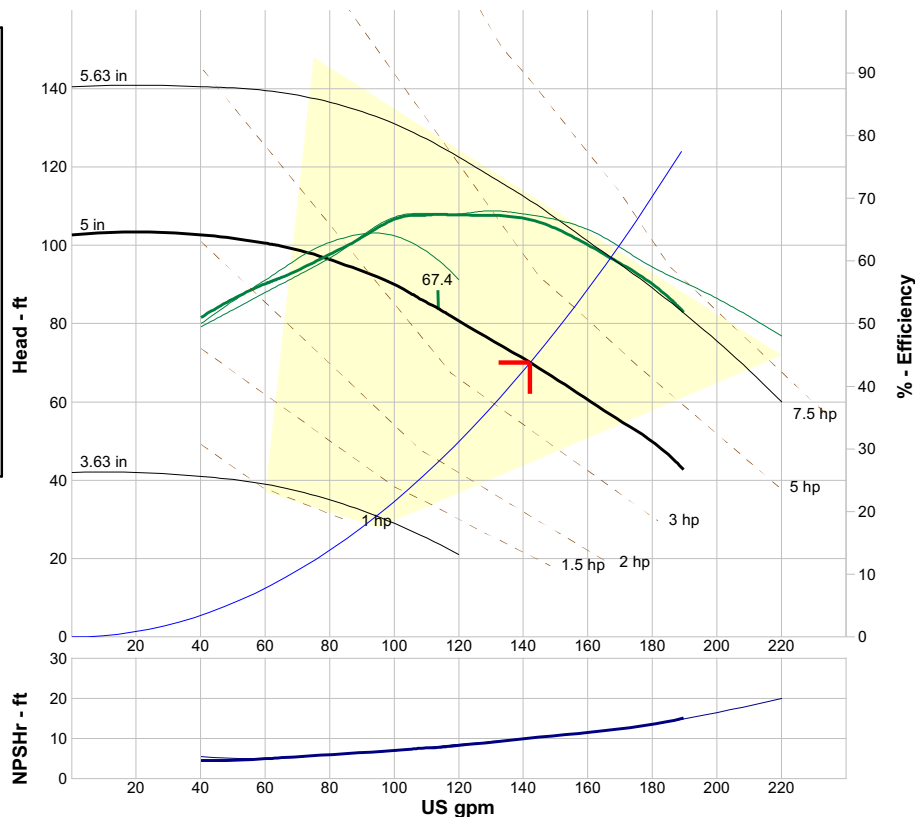
**Pump Limits:**

Temperature: 300 °F  
Pressure: 175 psi g  
Sphere size: ---  
Power: ---  
Eye area: ---

**Motor:**

Standard: NEMA  
Enclosure: TEFC  
Size: 5 hp  
Speed: 3600  
Frame: 184T  
Sizing criteria: Max Power on Design Curve

---- Data Point ----	
Flow:	142 US gpm
Head:	70 ft
Eff:	66%
Power:	3.77 hp
NPSHr:	10.1 ft
---- Design Curve ----	
Shutoff head:	103 ft
Shutoff dP:	44.5 psi
Min flow:	---
BEP:	67% @ 114 US gpm
NOL power:	4.01 hp @ 185 US gpm
-- Max Curve --	
Max power:	7.06 hp @ 200 US gpm



**Performance Evaluation:**

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
170	3500	55	59	3.96	12.6
142	3500	70	66	3.77	10.1
114	3500	83.6	67	3.57	7.86
85.2	3500	94.8	62	3.27	6.26
56.8	3500	101	56	2.59	4.92

Selected from catalog: Scot.60 Vers: 10.1

**Pump Data Sheet - Scot Division of Ardox Corp.**

Company: Amiad Water Systems  
Name: Dual TAF 750\_192  
Date: 2/5/2016



**Pump:**

Size: 25-5.6-3.0x3.0  
Type: Endsuct-Open  
Synch speed: 3600 rpm  
Curve: 40.000.444  
Specific Speeds:  
Ns: ---  
Nss: ---  
Dimensions:  
Suction: 3 in  
Discharge: 3 in

**Search Criteria:**

Flow: 192 US gpm  
Head: 70 ft  
Near miss: 5 % of Head

**Fluid:**

Water  
SG: 1  
Viscosity: 1.105 cP  
NPSHa: ---  
Temperature: 60 °F  
Vapor pressure: 0.2563 psi a  
Atm pressure: 14.7 psi a

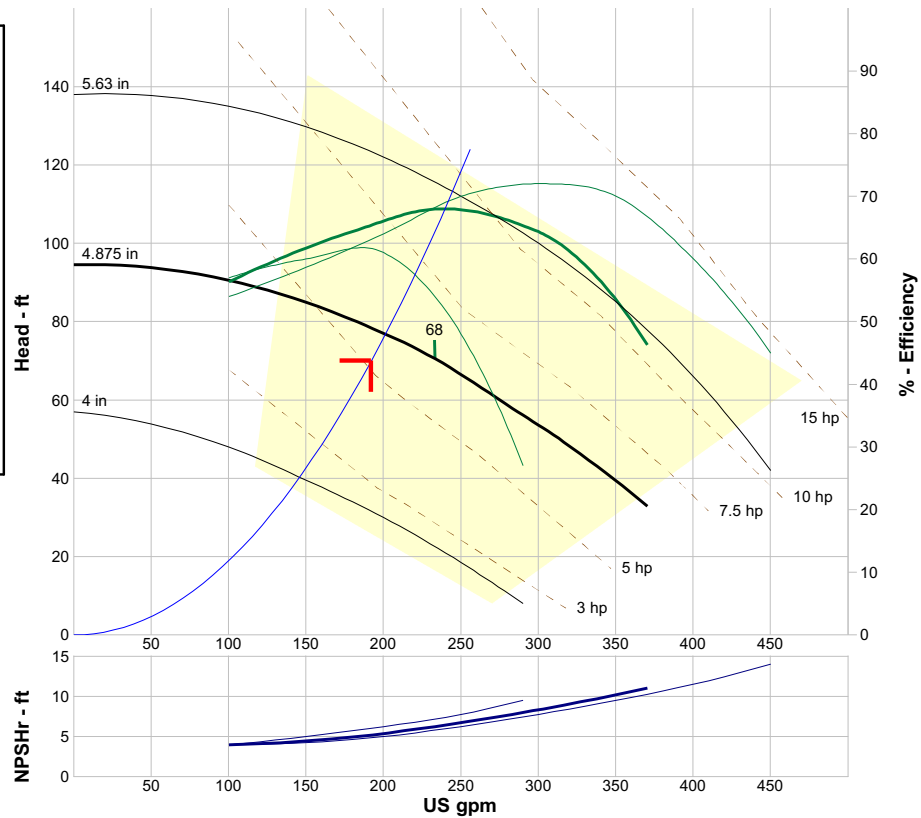
**Pump Limits:**

Temperature: 300 °F  
Pressure: 175 psi g  
Sphere size: ---  
Power: ---  
Eye area: ---

**Motor:**

Standard: NEMA  
Enclosure: TEFC  
Size: 7.5 hp  
Speed: 3600  
Frame: 213T  
Sizing criteria: Max Power on Design Curve

---- Data Point ----	
Flow:	192 US gpm
Head:	78.2 ft
Eff:	65%
Power:	5.78 hp
NPSHr:	5.22 ft
---- Design Curve ----	
Shutoff head:	94.6 ft
Shutoff dP:	41 psi
Min flow:	---
BEP:	68% @ 233 US gpm
NOL power:	6.65 hp @ 370 US gpm
-- Max Curve --	
Max power:	11.1 hp @ 400 US gpm



**Performance Evaluation:**

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
230	3500	71.1	68	6.09	6.17
192	3500	78.2	65	5.78	5.22
154	3500	83.6	62	5.13	4.65
115	3500	88.6	58	4.36	4.18
76.8	3500	---	---	---	---

Selected from catalog: Scot.60 Vers: 10.1

**Pump Data Sheet - Scot Division of Ardox Corp.**

Company: Amiad Water Systems  
Name: Dual TAF 750\_250  
Date: 2/5/2016



**Pump:**

Size: 25-5.6-3.0x3.0  
Type: Endsuct-Open  
Synch speed: 3600 rpm  
Curve: 40.000.444  
Specific Speeds:  
Ns: ---  
Nss: ---  
Dimensions:  
Suction: 3 in  
Discharge: 3 in

**Search Criteria:**

Flow: 250 US gpm  
Head: 70 ft  
Near miss: 5 % of Head

**Fluid:**

Water  
SG: 1  
Viscosity: 1.105 cP  
NPSHa: ---  
Temperature: 60 °F  
Vapor pressure: 0.2563 psi a  
Atm pressure: 14.7 psi a

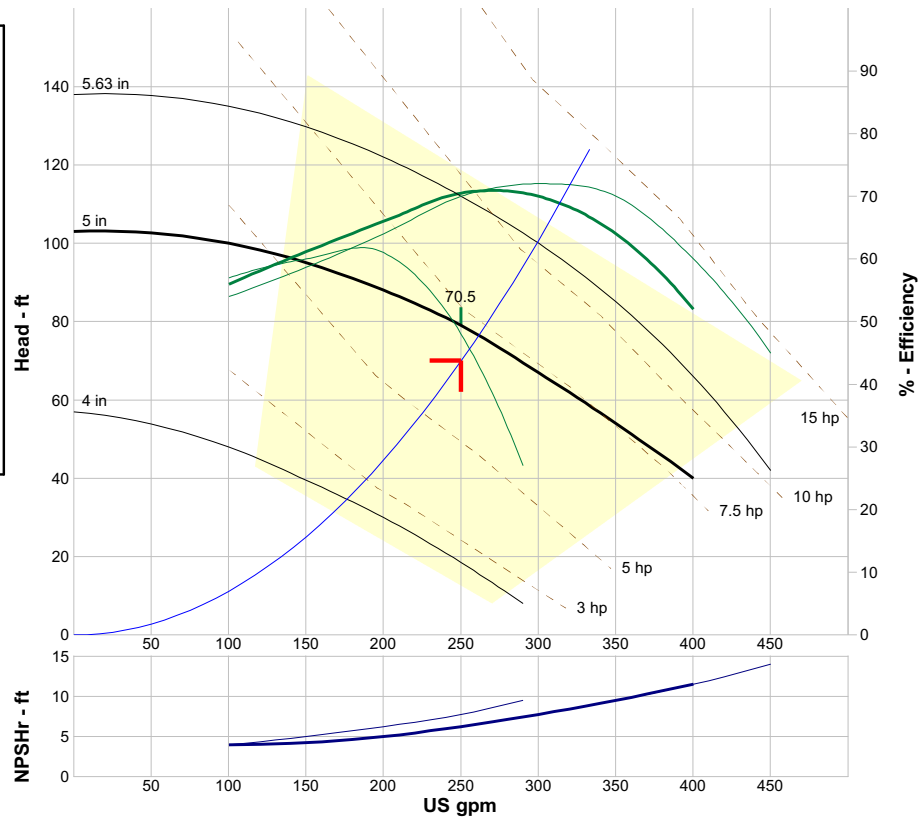
**Pump Limits:**

Temperature: 300 °F  
Pressure: 175 psi g  
Sphere size: ---  
Power: ---  
Eye area: ---

**Motor:**

Standard: NEMA  
Enclosure: TEFC  
Size: 10 hp  
Speed: 3600  
Frame: 215T  
Sizing criteria: Max Power on Design Curve

---- Data Point ----	
Flow:	250 US gpm
Head:	79 ft
Eff:	71%
Power:	7.07 hp
NPSHr:	6.25 ft
---- Design Curve ----	
Shutoff head:	103 ft
Shutoff dP:	44.6 psi
Min flow:	---
BEP:	71% @ 250 US gpm
NOL power:	7.77 hp @ 400 US gpm
-- Max Curve --	
Max power:	11.1 hp @ 400 US gpm



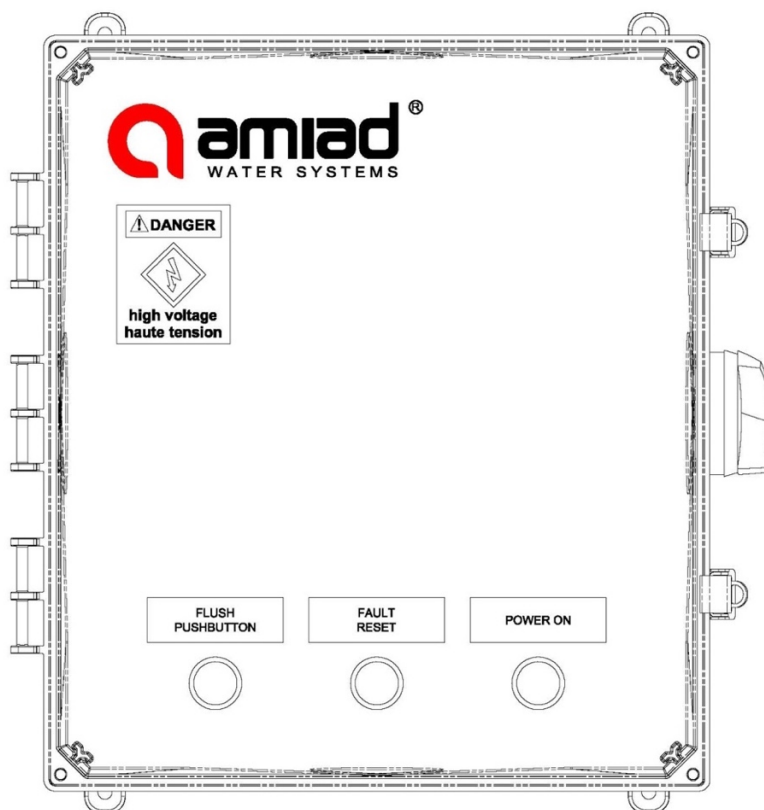
**Performance Evaluation:**

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
300	3500	67	70	7.25	7.75
250	3500	79	71	7.07	6.25
200	3500	88	66	6.73	5
150	3500	94	61	5.62	4.5
100	3500	100	56	4.51	4

Selected from catalog: Scot.60 Vers: 10.1

# Level I+ Filter Controller

## Installation, Operation and Maintenance Instructions



### **Disclaimer:**

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## 1. Introduction

To Our Customers,

Thank you for your purchase from the Amiad filter product line. Amiad products are designed and built to ensure successful operation as a part of your system. If operated and maintained properly, you can expect many years of service from this equipment.

Amiad wants to be sure that this equipment meets all of your needs. We depend upon your feedback to make necessary upgrades and improvements. Please contact our office with any comments or questions.

We look forward to assisting you with this product and any future filter system needs.

Amiad Water Systems  
120-J Talbert Road  
Mooresville, NC 28117  
Toll Free 800 24 FILTER  
Telephone 704.662.3133  
Fax 704.662.3155  
[infousa@amiad.com](mailto:infousa@amiad.com)

## 2. Safety

### 2.1 Intended Use

The Amiad Controller is only intended to be used with the appropriate Amiad products. Appropriate inspection and maintenance should be conducted to ensure safe operation.



Using the equipment in potentially explosive atmospheres is not permitted unless the equipment is designed for such service.

Any

- retrofitting or attachment of third party equipment
- use of spare parts that are not supplied or recommended by Amiad
- repairs implemented by companies or persons that are not authorized by the manufacturer

will result in the warranty becoming null and void.

### 2.2 Personnel Selection and Qualification

Persons operating or maintaining the Amiad Controller should be

- At least 18 years of age
- Properly trained for operation of this equipment
- Familiar with the relevant technical rules and safety regulations



The End-user should ensure that only personnel with the required qualifications and training shall operate and maintain the Amiad equipment.

Work on electronic components should only be performed by qualified personnel.

The term qualified personnel includes persons able to implement the required activities in each case on the basis of their vocational training and experience, as well as their knowledge of relevant and applicable standards and regulations on the prevention of accidents. These persons will be authorized by the equipment owner and by the person responsible for safety and should be trained to correctly operate and maintain this specific equipment.

### 2.3 Informal Safety Measures

The operating and maintenance instructions should be kept at the installation site of the Amiad Controller at all times. Applicable local regulations on the prevention of accidents and on the protection of the environment should be posted at the facility.

### 2.4 Hazards of Electric Power and Cables

All live components and cables are protected against accidental contact. Before opening any housing covers, connectors and cables, these items should be de-energized using safe electrical practices outlined in NFPA 79, NFPA 70 and other local standards.





## 2.5 Safety Devices

Trained operating personnel must ensure the following:

- Disconnect handle is damage free and able to lock out when work is required.
- Latches are secured and door is closed when equipment is in operation.



Identified deficiencies regarding these safety devices must be remedied immediately. The Amiad Controller must be disabled if any safety devices are missing or malfunctioning.

## 3. Product Description

This Amiad controller enables users to have powerful filter controls in a compact design. It is available in a wide array of power classes and voltages to meet the needs of the market. The initiation of the Amiad filters' self cleaning systems is by a signal from a differential pressure switch measuring the pressure of the filter inlet and outlet, a timer, control panel pushbutton for manual start or a remote start input.

The system is designed specifically for each customer's needs. Refer to the drawings/schematics or electrical data plate on the side of the enclosure to determine the largest motor which can be used and specific technical data.

### 3.1 Functional Description

Utilizing a start command (as described in the Product Description) for the self-cleaning cycle, the system is designed to be self-sufficient. There is no need to interfere with the filter as the equipment uses the highest level of technology to control the filter system. Typical start command is given by a differential pressure switch, however a variety of inputs are available for different applications. Consult with your local Regional Sales Manager or Application Engineer for more details on the best controller options for your application.

### 3.2 Standard Component Description

The following is for the standard controller configuration. Additional control options are available and may enhance the capabilities of your controller. All components are, UL approved, and conform to most international standards.

#### Disconnect Switch

This disconnect switch is for power isolation. It's capable of handling up to 600V AC.

#### Contactor and Overloads

The contactor and overload allow the end-user to have full control over the pump/drive motor. From the factory, the pump/drive motor is controlled to either turn on or off with the self-cleaning cycle as appropriate, but is easily modified to accept different logic schemes. The overloads use solid-state technology to

determine if the motor is being overdriven. At the factory, these settings are set and checked before shipment. Raising the overloads current value over the factory settings or removing the overloads from the controls will inhibit the ability of the controller to properly protect the motor. This setting should not be modified without contacting the manufacturer first.

### **Transformer**

The transformer steps the high voltage down to a usable low voltage for the control components. It is protected with fuses on the primary side and circuit breakers on the secondary side. Exchanging the short-circuit protection of the controller should be exact one for one. Never increase the short circuit protection of the controller without consulting the manufacturer first.

### **Adjustable Flush Interval Timer**

This timer allows the end-user to define the minimum self-cleaning/flush cycle interval time. This is very important to ensure efficiency of the filter system. Standard factory setting is to initiate one self-cleaning cycle every day at a minimum. This is a high performance timer with 8A contacts and the ability to set the interval from 0.05 seconds to 60 hours.

### **Programmable Logic Controller (PLC)**

The Programmable Logic Controller (PLC) is designed to handle all of the controls. It is used to simplify the operation, thereby making the overall controller more robust. It has a special program designed by Amiad for this filter system. Although the software is available for download by the manufacturer, the program should not be altered without the consent of Amiad to avoid equipment malfunctions.

### **Power On Light**

This panel face LED light is for local indication that the power is on and the system is running.

### **Flush Pushbutton**

This panel face green pushbutton is used to initiate a system self-cleaning or flush cycle, providing the operator with a local means of self-cleaning/flushing the system.

### **Fault Reset Pushbutton and Light**

This panel face red pushbutton and LED light is used to indicate when a fault has occurred (see Fault Conditions section for more detail) and the pushbutton function is used to clear a fault condition when the issue has been corrected and the system is ready to resume normal operation.

### 3.3 Transportation

The system can only be transported with the Disconnect Switch turned to the off position, and the power isolated.

### 3.4 Communication

The Amiad Controller allows for basic communication using standard dry-contacts for connecting to the end-user's facility controller. Standard communication includes:

- Major Fault dry contact
- Motor On dry contact

If the end-user requires additional logic to incorporate the filter into their system, additional inputs are available. Refer to the schematic for the following:

- Remote Start of the self-cleaning cycle – Allows the control panel to run in the Automatic mode, self-cleaning/flush cycle will be initiated by differential pressure or time.
- Remote Stop of the equipment - If the filter is in self-cleaning mode, it will terminate the operation, and return to filtering mode until the next self-cleaning cycle is initiated.)

## 4. Operation

### 4.1 Initial Operation

- Always use the appropriate Personal Protective Equipment (PPE) when working with electrical components.
- With the electrical source isolated, connect the appropriate electrical connections to the Amiad Controller. Check on the data plate to ensure the appropriate power supply is connected.
- Add necessary short circuit protection as required on schematic.
- Ensure pump is appropriately supplied with water.
- Ensure Stop connections are installed.
- Check the motor data plate and ensure that the motor overloads are set to the FLA on the data plate.
- Check to make sure that circuit breakers within panel are switched to the off position.
- Before switching power on to the panel, use a meter to ensure the correct voltage is being supplied to the panel.
- Close the disconnect switch to the on position to supply power to the panel.
- Before switching circuit breakers on, check voltages on the secondary of the transformer to ensure the correct voltage.
- Apply power to the control circuit by switching on the circuit breakers.
- Check configuration of Inputs and Outputs if applicable.
- Check timers to ensure appropriate self-cleaning/flush parameters.

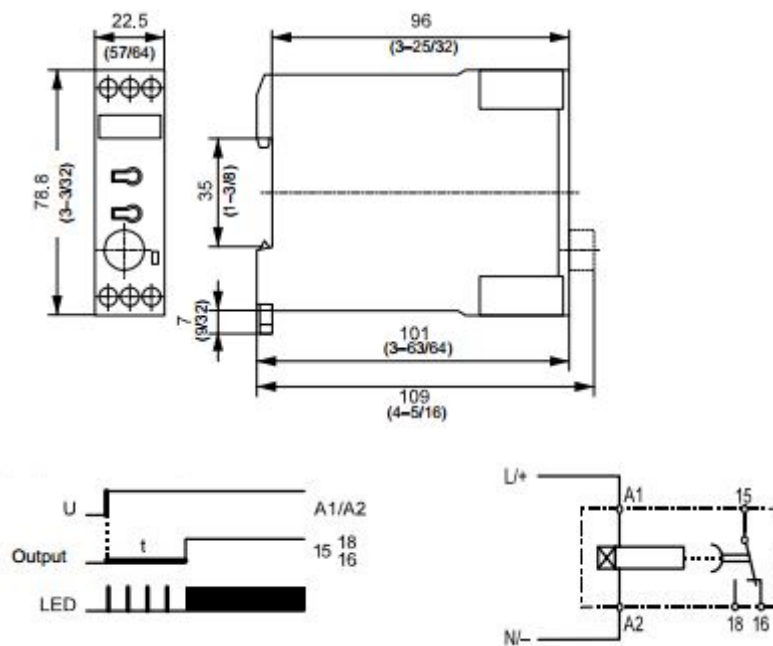
- Check for leaks within the filter pipes and valves and tighten if necessary as described in the filter O&M.

## 4.2 Deactivation

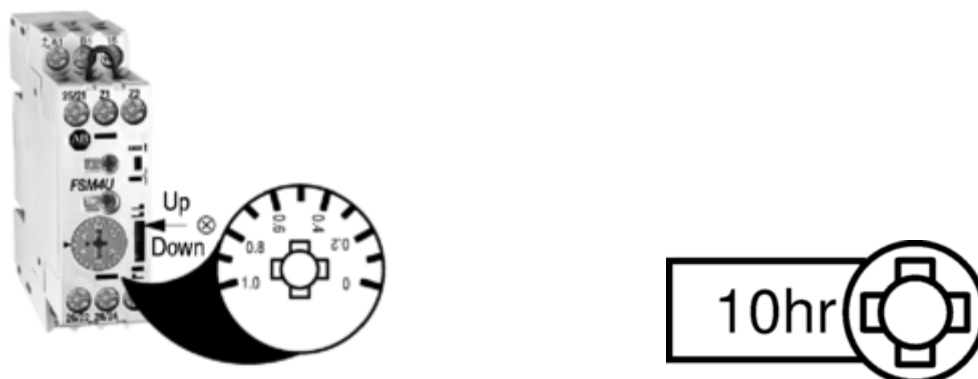
- Turn disconnect switch to the off position.
- Turn all circuit breakers to the off position.
- Apply appropriate lock-out/tag-out measures to ensure that power is not accidentally switched on.

## 5. Electro-mechanical Controls

Standard settings are set at the factory. These settings are specific to the customer's application. There is, however, a wide range of flexibility with this product.



The image above is the timing chart for the Flush Interval Timer.



The adjustable Interval Timer has a small dial for adjusting timing settings in 12 convenient larger ranges, and a larger dial for adjusting through the specific range for both timers.

#### Setting the controller

#### Configuración del controlador

#### Réglage du régulateur

Large Dial number Número de marcación grande Un grand nombre de numérotation	Actual Time Tiempo real Temps réel
0.17	30s
0.33	60s
0.67	120s
1.00	180s

Set the large dial on TR1 to get the appropriate flush time.

*Ajuste el dial grande en TR1 para obtener el tiempo de lavado adecuado.*

*Réglez le grand cadran sur TR1 pour obtenir le temps de rinçage approprié.*

Small Dial Number Pequeño número de marcación Petit numéro d'appel	Large Dial number Número de marcación grande Un grand nombre de numérotation	Actual Time Tiempo real Temps réel
1h	.5	30m
1h	1.0	1h
3h	1.0	3h
10h	.8	8h
60h	.4	24h

Set the dials on TR2 to get the flush interval time.

*Ajuste los selectores de TR2 para obtener el tiempo de intervalo de vaciado.*

*Régler les cadrans sur TR2 pour obtenir l'intervalle de temps de chasse.*

Set the overload(s) according the FLA on the motor data plate.

*Establezca la sobrecarga (s) de acuerdo a la FLA en la placa de datos del motor.*

*Réglez la surcharge (s) selon la FLA sur la plaque signalétique du moteur.*

## 6. Fault Conditions

There are two different types of faults conditions:

1. A Minor Fault is a condition in which the filter can still continue operating in the current condition, but has a fault that needs to be corrected. The red Reset Fault light will blink during this condition.
2. A Major Fault is a condition in which the filter cannot continue to operate and a self-cleaning/flush cycle cannot be operated properly. The system will be shut-down (filter and pump if included). The red Reset Fault light will glow continuously during this condition.

Minor Fault indication is caused by a mechanical fault which is the failure of the filter suction scanner (SAF, EBS and Omega filter systems) to complete its travel (monitored by limit or proximity switches). The Minor Fault condition will continue until a self-cleaning/flush cycle is initiated, at which time the Minor Fault will become a Major Fault as a self-cleaning/flush cycle cannot be started with this fault occurring.

There are two standard filter Major Faults and one Major Fault which can occur when a suction pump is used during the self-cleaning/flush cycle:

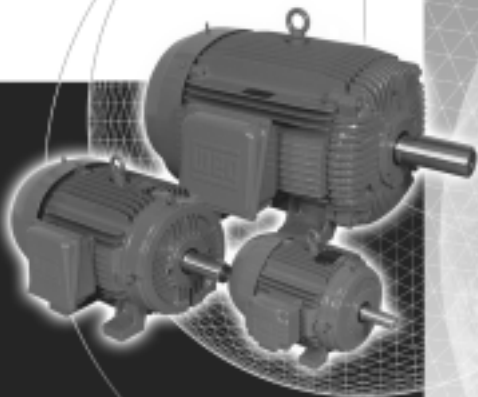
1. Differential Pressure Fault - the self-cleaning/flush cycle has not been able to clear the differential pressure for a programmed period of time (factory set at 240 seconds). The differential pressure must be cleared by power flushing the filter system or by manually cleaning the filter element(s). The fault can then be cleared by pushing the Fault Reset button.
2. Overload Fault - the motor current has exceeded the setting on the overload. Pushing the reset button alone will not affect this fault condition. The overload will have to be reset on the device and then the Fault Reset button can be pushed to clear the fault condition.
3. Suction Pump Fault - the flow switch placed after the suction pump did not engage after a period of time or flow dropped off during the self-cleaning/flush cycle. The suction pump must be inspected and repaired if necessary or flow restrictions to the pump feed must be removed. Once the flow conditions are corrected, the Fault Reset button can be pushed to clear the fault condition.

The Major Alarm dry contact will only be activated during a Major Alarm condition and not by Minor Fault conditions.

## Appendix 1 – Pump IOM



**MOTORS AND DRIVES**



INSTALLATION AND  
MAINTENANCE  
INSTRUCTIONS FOR  
ELECTRIC MOTORS  
Frames 143/5T - 586/7T

QUALITY SYSTEM  
**ISO 9001**  
WEG MOTORES







*READ CAREFULLY THIS MANUAL BEFORE  
INSTALLING THE MOTOR.*

## RECEIVING CHECK

- ✓ Check if any damage has occurred during transportation.
- ✓ Check nameplate data.
- ✓ Remove shaft locking device (if any) before operating the motor.
- ✓ Turn the shaft with the hand to make sure if it is turning freely.

## HANDLING AND TRANSPORTATION

### 1 - General



*MOTORS MUST NOT BE LIFTED BY THE SHAFT,  
BUT BY THE EYE BOLTS WHICH ARE PROPERLY  
DESIGNED TO SUPPORT THE MOTOR WEIGHT.*

Lifting devices, when supplied, are designed only to support the motor. If the motor has two lifting devices then a double chain must be used to lift it.

Lifting and lowering must be done gently without any shocks, otherwise the bearings can get damaged.



*DURING TRANSPORTATION, MOTORS FITTED  
WITH ROLLER OR ANGULAR CONTACT  
BEARINGS ARE PROTECTED AGAINST BEARING  
DAMAGES WITH A SHAFT LOCKING DEVICE.*



*THIS LOCKING DEVICE MUST BE USED ON ANY  
FURTHER TRANSPORT OF THE MOTOR, EVEN  
WHEN THIS MEANS TO UNCOUPLE THE MOTOR  
FROM THE DRIVEN MACHINE.*

## STORAGE

If motors are not immediately installed, they must be stored in dry places, free of dust, vibrations, gases, corrosive smokes, under constant temperature and in normal position free from other objects.

In case the motors are stored for more than two years, the bearings must be changed or the lubrication grease must be totally replaced after cleaning.

Single phase motors when kept in stock for 2 years or more must have their capacitors replaced (if any).

We recommend to turn the shaft (by hands) at least once a month, and to measure the insulation resistance before installing it, in cases of motors stored for more than 6 months or when subject to high humidity areas.

If motor is fitted with space heaters, these should be switched on.

### **Insulation Resistance Check**

Measure the insulation resistance before operating the motor and/or when there is any sign of humidity in the winding.

The resistance measured at 25°C (77°F) must be:

$R_i > (20 \times U) / (1000 + 2P)$  [Mohm] (measured with a MEGGER at 500 V d.c.); where U = voltage (V); P = power (kW).

If the insulation resistance is less than 2 megaohms, the winding must be dried according to the following:

✓ Warm it up inside an oven at a minimum temperature of 80°C (176°F) increasing 5°C (41°F) every hour until 105°C (221°F), remaining under this temperature for at least one hour. Check if the stator insulation resistance remains constant within the accepted values. If not, stator must be reimpregnated.

# INSTALLATION

## 1 - Safety

All personnel involved with electrical installations, either handling, lifting, operation or maintenance must be well informed and up-to-dated concerning the safety standard and principles that govern the work and carefully follow them.

We strongly recommend that these jobs are carried out by qualified personnel.



*MAKE SURE THAT THE ELECTRIC MOTORS ARE SWITCHED OFF BEFORE STARTING ANY MAINTENANCE SERVICE.*

Motors must be protected against accidental starts.

When performing any maintenance service, disconnect the motor from the power supply. Make sure all accessories have been switched off and disconnected.

Do not change the regulation of the protecting devices to avoid damaging.



*LEAD CONNECTION IN SULATION INSIDE THE TERMINAL BOX MUST BE DONE WITH AN INSULATING MATERIAL COMPATIBLE WITH MOTOR THERMAL CLASS WHICH IS SHOWN ON THE MOTOR NAMEPLATE.*

## 2 - Operating Conditions

Electric motors, in general, are designed for operation at an altitude of 1000m above sea level for an ambient temperature between 25°C (77°F) and 40°C (104°F). Any variation is stated on the nameplate.



*COMPARE THE CURRENT, VOLTAGE, FREQUENCY, SPEED, OUTPUT AND OTHER VALUES DEMANDED BY THE APPLICATION WITH THE DATA GIVEN ON THE NAMEPLATE.*

Motors supplied for hazardous locations must be installed in areas that comply with that specified on the motor nameplate.



*KEEP AIR INLET AND OUTLET FREE AND CLEAN. THE AIR BLOWN OUT BY THE MOTOR SHALL NOT ENTER AGAIN. THE DISTANCE BETWEEN THE AIR INLET AND THE WALL MUST BE AROUND  $\frac{1}{4}$  OF THE INLET OPENING DIAMETER.*

### **3 - Foundation**

Motors provided with feet must be installed on though foundations to avoid excessive vibrations.

The purchaser is fully responsible for the foundation.

Metal parts must be painted to avoid corrosion.

The foundation must be uniform and sufficiently tough to support any short circuit strengths. It must be designed in such a way to stop any vibration originated from resonance.

### **4 - Drain Holes**

Make sure the drains are placed in the lower part of the motor when the mounting configuration differs from that specified on the motor purchase order.

## 5 - Balancing



*WEG MOTORS ARE DYNAMICALLY BALANCED, WITH HALF KEY AT NO LOAD AND UNCOUPLED.*

Transmission elements such as pulleys, couplings, etc must be dynamically balanced with half key before installation. Use always appropriate tools for installation and removal.

## 6 - Alignment

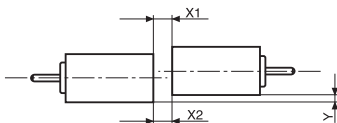


*ALIGN THE SHAFT ENDS AND USE FLEXIBLE COUPLING, WHENEVER POSSIBLE.*

Ensure that the motor mounting devices do not allow modifications on the alignment and further damages to the bearings.

When assembling a half-coupling, be sure to use suitable equipment and tools to protect the bearings.

Suitable assembly of half-coupling: check that clearance Y is less than 0.05mm and that the difference X1 to X2 is less than 0.05m as well.



Note: The "X" dimension must be at least 3mm.

## 7 - Belt Drive

When using pulley or belt coupling the following must be observed:

✓ Belts must be tighten just enough to avoid slippage when running, according to the specifications stated on the belt supplier recommendation.

### **WARNING:**

Excessive tension on the pulleys will damage the bearings and lead to a probable shaft rupture.

## 8 - Connection

**WARNING:** Voltage may be connected at standstill inside the terminal box for heating elements or direct winding heating.

**WARNING:** The capacitor on single-phase motors can retain a charge which appears across the motor terminals, even when the motor has reached standstill.



*A WRONG CONNECTION CAN BURN THE MOTOR.*

Voltage and connection are indicated on the nameplate. The acceptable voltage variation is  $\pm 10\%$ , the acceptable frequency variation is  $\pm 5\%$  and the total acceptable variation is  $\pm 10\%$ .

## 9 - Starting Methods

The motor is rather started through direct starting. All Weg motors must be connected as shown on the motor nameplate, failure to follow the motor nameplate could lead to motor failure.

In case this is not possible, use compatible methods to the motor load and voltage.

- ✓ 3 lead single voltage and 9 lead dual voltage motors can be started as follows:
  - Full Voltage Direct On Line.
  - Auto-Transformer Starting.
  - Electronic Soft-Starting.
  - VFD Starting - subject to verification and application analysis.
- ✓ 6 lead single voltage motors and 12 lead dual voltage motors can be connected as follows:
  - Full Voltage Direct On Line.
  - WYE/DELTA Starting.
  - Auto-Transformer Starting.
  - Electronic Soft-Starting.
  - VFD Starting - subject to verification and application analysis.

The rotation direction is clockwise if the motor is viewed from DE side and if the phases are connected according to the sequence L1, L2, L3.

To change the rotation direction, interchange two of the connecting leads.



*THE CONNECTION TO THE POWER SUPPLY MUST BE DONE BY QUALIFIED PERSONNEL AND WITH FULL ATTENTION TO ASSURE A SAFE AND PERMANENT CONNECTION. AFTER CONNECTING THE MOTOR, CHECK FOR ANY STRANGE BODY INSIDE THE TERMINAL BOX. THE CABLE INLETS NOT IN USE MUST BE CLOSED.*

Make sure to use the correct cable dimension, based on the rated current stamped on the motor nameplate.



*BEFORE ENERGIZING THE TERMINALS, CHECK IF THE EARTHING IS MADE ACCORDING TO THE ACTUAL STANDARDS. THIS IS ESSENTIAL AGAINST ACCIDENT RISKS.*

When the motor is supplied with protective or monitor temperature device such as thermostats, thermistors, thermal protector, etc, connect their terminals to the corresponding devices on the control panel.

## 10- Start-Up



*THE KEY MUST BE FASTENED OR REMOVED  
BEFORE STARTING THE MOTOR.*

a) The motor must start and operate smoothly. In case this does not occur, turn it off and check the connections and the mounting before starting it again.

b) If there is excessive vibration, check if the fastening screws are correctly fastened. Check also if the vibration comes from a neighbour machine. Periodical vibration checks must be done.

c) Run the motor under rated load for a short period of time and compare if the running current is equal to that stamped on the nameplate.

## MAINTENANCE



*WARNING:  
SAFETY CHECK LIST.*

### 1 - General Inspection

- ✓ Check the motor periodically.
- ✓ Keep the motor clean and assure free air flow.
- ✓ Check the seals or V Ring and replace them, if required.
- ✓ Check the connections as well as supporting screws.
- ✓ Check the bearings and observe:  
Any excessive noise, bearing temperature and grease condition.
- ✓ When a changing, under normal conditions, is detected, check the motor and replace the required parts.  
The frequency of the inspections depends on the motor type and on the application conditions.



## LUBRICATION



*FOLLOW THE REGREASING INTERVALS. THIS IS FUNDAMENTAL FOR PROPER MOTOR OPERATION.*

### 1 - Machines without Grease Nipples

Motors up to frame 324/6T are normally fitted without grease nipples. In these cases the regreasing shall be done at the preventive maintenance job observing the following aspects:

- ✓ Disassemble carefully the motors.
- ✓ Take all the grease out.
- ✓ Wash the bearing with querosene or diesel.
- ✓ Regrease the bearing immediately.

### 2 - Machines Fitted with Grease Nipples

It is strongly recommended to grease the machine while running. This allows the grease renewal in the bearing housing. When this is not possible due to turning parts by the grease device (pulleys, bushing, etc) that offer some risk to the physical integrity of the operator, proceed as follows:

- ✓ Clean the area near to the grease nipple.
- ✓ Put approximately half of the total grease and run the motor for 1 minute at full speed. Then turn off the motor and pump the rest of the grease.
- ✓ The injection of all the grease with the motor in standstill can make the grease penetrate into the motor, through the inner seal of the bearing housing.

When regreasing, use only special bearing grease with the following properties:

# RELUBRICATION INTERVALS RECOMMENDED - POLYREX® EM GREASE (ESSO/EXXON)

Frame	Amount of grease (g)	3600 rpm	3000 rpm	1800 rpm	1500 rpm	1200 rpm	1000 rpm	900 rpm	750 rpm	720 rpm	600 rpm	500 rpm
Relubrication intervals in hours - ball bearings												
254/6T	13	15700	18100	20000	20000	20000	20000	20000	20000	20000	20000	20000
284/6T	18	11500	13700	20000	20000	20000	20000	20000	20000	20000	20000	20000
324/6T	21	9800	11900	20000	20000	20000	20000	20000	20000	20000	20000	20000
364/5T	27	3600	4500	9700	11600	14200	16400	17300	19700	20000	20000	20000
404/5TS	27	3600	4500	9700	11600	14200	16400	17300	19700	20000	20000	20000
444/5TS	27	3600	4500	9700	11600	14200	16400	17300	19700	20000	20000	20000
504/5TS	27	3600	4500	9700	11600	14200	16400	17300	19700	20000	20000	20000
586/7TS	27	3600	4500	9700	11600	14200	16400	17300	19700	20000	20000	20000
Relubrication intervals in hours - cylindrical roller bearings												
324/5T	21	9800	11900	20000	20000	20000	20000	20000	20000	20000	20000	20000
364/5T	27			9700	11600	14200	16400	17300	19700	20000	20000	20000
404/5T	34			6000	7600	9500	11600	13800	15500	15500	17800	20000
444/5T	45			4700	6000	7600	9800	12200	13700	13700	15700	20000
447/5T	45			4700	6000	7600	9800	12200	13700	13700	15700	20000
504/5T	45			4700	6000	7600	9800	12200	13700	13700	15700	20000
586/7T	60			3300	4400	5900	7800	10700	11500	11500	13400	17300

**WARNING:**

The table above is specifically intended for relubrication with Polyrex® EM grease and bearing absolute operating temperature of:

- ✓ 70°C (158°F) for 254/6T to 324/6T frame motors;
- ✓ 85°C (185°F) for 364/5T to 586/7T frame motors.

For every 15°C (59°F) above these limits, relubrication interval must be reduced by half.

Shielded bearing (ZZ) are lubricated for bearings life as long as they operate under normal ambient conditions and temperature of 70°C(158°F ).



*WE RECOMMEND TO USE BALL BEARINGS FOR MOTORS DIRECTLY COUPLED TO THE LOAD.*



**WARNING:**  
*EXCESS OF GREASE CAN CAUSE BEARING OVERHEATING RESULTING IN COMPLETE DAMAGE.*

### **Compatibility of Polyrex® EM grease with other types of grease:**

Containing polyurea thickener and mineral oil, the Polyrex® EM grease is compatible with other types of grease that contain:

- ✓ Lithium base or complex of lithium or polyurea and highly refined mineral oil;
- ✓ Inhibitor additive against corrosion, rust and anti-oxidant additive.

#### **Notes:**

- ✓ Although Polyrex® EM is compatible with the types of grease given above, we do not recommend to mix it with any other greases.
- ✓ If you intend to use a type of grease different than those recommended above, first contact WEG.
- ✓ On applications (with high or low temperatures, speed variation, etc), the type of grease and relubrication interval are given on an additional nameplate attached to the motor.
- ✓ Vertical mounted motors must have the relubrication intervals reduced by half.



*THE USE OF STANDARD MOTORS IN SPECIFIC  
AREAS OR SPECIAL APPLICATIONS MUST BE  
DONE BY CONSULT TO THE GREASE  
MANUFACTURER OR WEG.*

## **ASSEMBLY AND DISASSEMBLY**

Disassembly and assembly must be done by qualified personnel using only suitable tools and appropriated methods. The stator grips must be applied over the side face of the inner ring to be disassembled or over and adjacent part.

It is essential that the bearings disassembly and assembly be done under cleaning conditions to ensure good operation

and to avoid damages. New bearings shall only be taken out from their cases when assembling them.

Before installing a new bearing it is required to check the shaft fitting for any sharp edge or strike signals.

For bearing assembly, warm their inner parts with suitable equipment - inductive process - or use suitable tools.

## SPARE PARTS

When ordering spare parts, please specify the full type designation and product code as stated on the motor nameplate.

Please also inform the motor serial number stated on the nameplate.

## MOTORS FOR HAZARDOUS LOCATIONS

Besides the recommendations given previously, these ones must be also followed:



*THE SPECIFICATION OF THE MOTOR  
INSTALLATION PLACE IS FOR CUSTOMER'S  
RESPONSIBILITY, WHO WILL ALSO DETERMINE  
THE ENVIRONMENT CHARACTERISTICS.*

Motors for hazardous locations are manufactured according to specific standards for such environments and they are certified by worldwide certifying entities.

### 1 - Installation

The complete installation must follow procedures given by the local legislation in effect.



*THE INSTALLATION OF HAZARDOUS LOCATION MOTORS MUST BE CARRIED OUT BY SKILLED PEOPLE, AND THE THERMAL PROTECTION MUST BE ALWAYS INSTALLED, EITHER INSIDE OR OUTSIDE THE MOTOR, OPERATING AT THE RATED CURRENT.*

## **2 - Maintenance**

Maintenance must be carried out by repair shops authorized by WEG.

Repair shops and people without WEG's authorization who will perform any service on hazardous location motors will be fully responsible for such service as well as for any consequential damage.



*ANY ELECTRICAL OR MECHANICAL MODIFICATION MADE ON HAZARDOUS LOCATION MOTORS WILL VOID THE CERTIFICATION.*

When performing maintenance, installation or relubrication, follow these instructions:

- ✓ Check if all components are free of edges, knocks or dirt.
- ✓ Make sure all parts are in perfect conditions.
- ✓ Lubricate the surfaces of the endshield fittings with protective oil to make the assembly easier.
- ✓ Use only rubber hammer to fit the parts.
- ✓ Check for correct bolts tightening.
- ✓ Use clearance calibrator for correct T-box fitting (smaller than 0.05mm).



*DO NOT REUSE DAMAGED OR WORN PARTS. REPLACE THEM BY NEW ONES SUPPLIED BY THE FACTORY.*

## MOTORS DRIVEN BY VFD

Applications using VFD's without filter can affect motor performance as follows:

- ✓ Lower efficiency.
- ✓ Higher vibration.
- ✓ Higher noise level.
- ✓ Higher rated current.
- ✓ Higher temperature rise.
- ✓ Reduced motor insulation.
- ✓ Reduced bearing life.

### 1 - Standard Motors

- ✓ Voltages lower than 440V do not require filter.
- ✓ Voltages equal or higher than 440V or lower than 575V require filter for motor power supply cables longer than 20 meters.
- ✓ Voltages equal or higher than 575V require filter for any size of power supply cables.



*IF SUCH RECOMMENDATIONS ARE NOT  
FOLLOWED ACCORDINGLY, MOTOR WARRANTY  
WILL BE VOID.*

### 2 - Inverter Duty Motors

- ✓ Check power supply voltage of the forced cooling set.
- ✓ Filters are not required.

## **WARRANTY TERMS SERIES AND ENGINEERING PRODUCTS**

*WEG warrants its products against defects in workmanship and materials for 18 months from the invoice date issued by the factory, authorized distributor or agent limited to 24 months from manufacturing date independent of installation date as long as the following items are fulfilled accordingly:*

- Proper transportation, handling and storage;*
- Correct installation based on the specified ambient conditions and free of corrosive gases;*
- Operation under motor capacity limits;*
- Observation of the periodical maintenance services;*
- Repair and/or replacement effected only by personnel duly authorized in writing by WEG;*
- The failed product be available to the supplier and/or repair shop for a required period to detect the cause of the failure and corresponding repair;*
- Immediate notice by the purchaser about failures occurred and that these are accepted by WEG as manufacturing defects.*

*This warranty does not include disassembly services at the purchaser facilities, transportation costs with product, tickets, accommodation and meals for technical personnel when requested by the customer. The warranty service will be only carried out at WEG Authorized Repair Shops or at WEG's facilities.*

*Components whose useful life, under normal use, is shorter than the warranty period are not covered by these warranty terms.*

*The repair and/or replacement of parts or components, when effected by WEG and/or any WEG Authorized Repair Shop, will not give warranty extension.*

*This constitutes WEG's only warranty in connection with this sale and the company will have no obligation or liability whatsoever to people, third parties, other equipment or installations, including without limitation, any claims for consequential damages or labor costs.*