

Aquavar SOLO²

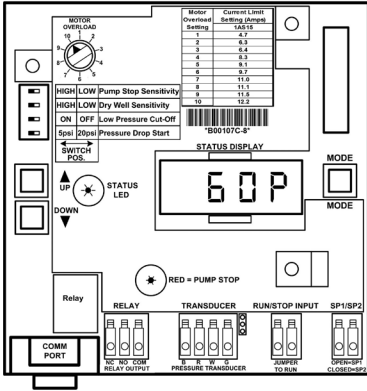
Quick Installation Guide

- 1. Mount Drive** (in a vertical position);
 - Must have 6" minimum clearance on all sides for proper cooling.
- 2. Connect Input Power Wire** (Single Phase, 230V, Size Wire Ampacity for 75°C Copper Wire)
 - Review Circuit Breaker Sizing see IMS-SOLO2Q-2 or IM260
- 3. Wire Motor Drop Cable** (Size Wire Ampacity for 75°C Copper Wire)
 - 3AS Models - Use with Three Phase, 230V, ¾ to 5 HP Motors
 - 1AS15 Model - Compatible with Single Phase, 230V Motors
 - 3-Wire - .5 - 2 HP CentriPro / Pentek XE; .5 - 1.5 HP Franklin Electric and Grundfos
 - 2-Wire - .5 - 1.5 CentriPro, Pentek XE, Franklin Electric and Grundfos 2-Wire
 - Review Wire Sizing (Table 4 of IM260)
- 4. Mount Transducer and Connect Transducer Cable Wiring**
 - Transducer cable maximum length = 200 feet
 - Connect Pressure Transducer to piping manifold and to ground
- 5. User Interface Board Adjustments**
 - Select proper "Current Limit Setting" (equal to motor SFA)
 - 1AS15 Only - Set "Pump Stop Sensitivity" - High 40 Hz is Default
 - 3AS-- Only - Select maximum frequency setting (60 Hz or 80 Hz);
 - 60 Hz = matching Liquid End HP and Motor HP
 - 80 Hz = "over-speed" application; motor HP is greater than Liquid End HP (typically 2x larger)
 - Dry Well Sensitivity - Set on "High" position;
 - If nuisance tripping occurs, switch to "Low" position
 - Low Pressure Cut-Off and Pressure Drop setting adjusted to application / system requirements.
 - Optional use of Run/Stop Input, Setpoint Select Input and Relay Output, refer to IM260
- 6. Adjust Tank Pressure**
 - Set approximately 20 PSI below pressure Setpoint
 - Adjust as needed to optimize - see IMS-SOLO2Q-2 or IM260
- 7. Turn Drive Power On - Adjust Pressure - Purge Air**
 - Purge air from system and check for leaks
 - Factory default is 60 psi for Setpoint 1 and 70 psi for Setpoint 2- push and hold Increase Pressure button if higher pressure is desired and also adjust tank pre-charge.
 - Setpoint Select Input Terminal is used to switch from 2 different pressure Setpoints, refer to IM260.
- 8. Check Motor Rotation and Confirm Performance**

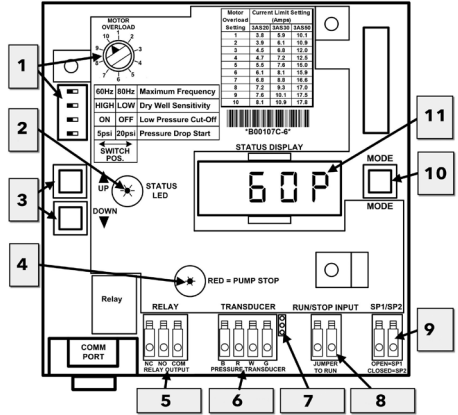
Refer to Aquavar SOLO² Installation Manual, IM260, for complete details. Check Motor Insulation Resistance on retrofit jobs before replacing drive.

Aquavar SOLO² User Interface Board

1AS Controllers



3AS Controllers



- | | | |
|----------------------------------|----------------------|----------------------------------|
| 1) Basic Drive Settings | 5) Relay Output | 9) Setpoint Select Input |
| 2) Controller Status Indicator | 6) Transducer Input | 10) Display Mode Adjust |
| 3) Setpoint and Parameter Adjust | 7) Transducer Jumper | 11) Status and Parameter Display |
| 4) Run/Stop Indicator | 8) Run/Stop Input | |

Service Factor Amps - All Motors

HP	230 Volt									200 Volt	
	1Ø 2-Wire			1Ø 3-Wire			3Ø			3Ø	
	CentriPro ¹	Franklin	Grundfos	CentriPro	Franklin	Grundfos	CentriPro	Franklin	Grundfos	CentriPro	Franklin
½	4.7	6.0	6.0	6.3	6.0	6.0	N/A	N/A	N/A	N/A	N/A
¾	6.4	8.0	8.4	7.9	8	8.4	4.0	3.8	N/A	4.7	4.4
1	8.2	9.8	9.8	9.5	9.8	9.8	4.9	4.7	N/A	5.7	5.4
1½	10.5	13.1 ²	13.1 ²	11.0	11.5	11.6	6.6	5.9	7.3	7.6	6.8
2	N/A	N/A	N/A	12.2	13.2 ²	13.2 ²	8.0	8.1	8.7	9.3	9.3
3	N/A	N/A	N/A	N/A	N/A	N/A	10.1	10.9	12.2	12.0	12.5
5	N/A	N/A	N/A	N/A	N/A	N/A	17.5	17.8	19.8 ²	20.2 ²	20.5 ²

1. All CentriPro ratings are Generation II November 2015 and later, for earlier versions see IOM. These motors will have a suffix of -01, example M05422 will be M05422-01.

2. Amps are higher than controller overload range - use of these motors will current limit and provide reduced performance.

Pressure Ranges for All Available Transducers

Transducer	1AS15 / 3AS20		3AS30		3AS50	
	(Min. PSI)	(Max. PSI)	(Min. PSI)	(Max. PSI)	(Min. PSI)	(Max. PSI)
100 PSI ⁽¹⁾	20	85	20	85	10	50
200 PSI ⁽²⁾	40	170	40	170	20	100
300 PSI	60	255	60	255	30	150

(1) Standard on 1AS15, 3AS20 and 3AS30

(2) Standard on 3AS50

Aquavar SOLO² Controller

PRESSURE TANK SIZING and SET-UP

- Use Total Tank Volume to size tank. Total tank volume should be approximately 20% of the pump's maximum flow rate. Ex., pump maximum flow = 10 gpm = 2 gallon total volume tank
- If the User Interface Board (UIB) is set for a 5 PSI Pressure Drop, adjust the tank pressure to 20 PSI below the desired system set-point. Ex., 50 PSI system set-point = 30 PSI tank pre-charge.
- If the UIB is set for a 20 PSI Pressure Drop adjust the tank pressure to 30 PSI below the desired system set-point. Ex., 50 PSI system set-point = 20 PSI tank pre-charge. Each system is different so this setting may require minor adjustment for optimum performance.
- *Large Tanks - installations with large volume tanks may require minor tank pre-charge pressure adjustments for optimum performance - please see more details in IM260, especially if the system turns On and Off too often or does not turn off.*

Maximum Pump GPM	Recommended Tanks			
	Total Volume	Order No.	or	Order No.
10	2	V6P		TP6P
23	4.5	V15P		TP15P
41	8.2	V25P		TP25P
70	13.9	V45		TP45
100	19.9	V60		TP60

CONTROLLER, BREAKER, GENERATOR SIZING

HP	Motor	Controller Model ②				Circuit Breaker ③	Generator ④ (VA)	① Supply voltage must be 196 VAC - 265 VAC.
	Voltage ①	1AS15	3AS20	3AS30	3AS50			
½	230					15	2200	② Shaded areas indicate which controller models can be used with which motors. Lighter shading indicates combinations where controller will limit peak performance to 85% of catalog value for pump/motor.
	200							
¾	230						2900	
	200							
1	230					3500		
	200							
1½	230					20	4400	
	200							
2	230					30	6100	
	200							
3	230						8100	
	200							
5	230					40	13300	
	200							
5	230					50	13300	④ Minimum size of single phase 240 V generator required.
	200							

FAULT CODES

No Light: Low Voltage or No Voltage to Controller

Green Light Codes:

- **Constant Green - Unit in Standby:** system is Off or system detected low voltage, below 190 VAC and is waiting for voltage to increase to acceptable level.
- **Blinking Green - Pump is running:** all is normal

Red Light Codes:

- **F01 (Constant Red) - Controller Error:** internal controller issue, replace controller.
- **F02 (2 Blinks) - Dry Well:** controller will restart automatically
- **F03 (3 Blinks) - Transducer Fault:** controller will not run if the signal from the transducer is disconnected or out of tolerance.
- **F04 (4 Blinks) - Over Current:** controller will attempt to restart three times before displaying this fault during which time the display will read the number of seconds before a reset will be attempted by the drive (61.7.04 and newer on 1AS15 and 63.6.04 on 3 phase drives and newer). Once the drive has reached 3 attempts, a manual reset must be done to restart and clear the fault. To clear the fault, turn power off, wait 1 minute, turn power on, then perform a system reset. Press and hold up AND down buttons for 10 seconds. Controller must remain powered up to clear this fault, this could take 5-15 minutes with the power on. It is also recommended to reset the fault code history (refer to Advanced menu in IM260). Setting the overload dial on too low a number can cause a fault.
- **F05 (5 Blinks) - Short Circuit:** controller will attempt to restart three times, to clear, turn power off, wait 1 minute, turn power on.
- **F06 (6 Blinks) - Ground Fault:** controller will not restart - To clear the fault, turn power off, wait 1 minute, turn power on.
- **F07 (7 Blinks) - Temperature:** controller will restart automatically when the temperature reaches an acceptable level.
- **F08 (8 Blinks) - Open Lead:** controller will not restart. To clear the fault, turn power off, wait 1 minute, turn power on.
- **F09 (9 Blinks) - Low Pressure Cut-off:** Controller will not restart. Pressure 20 PSI below set point for 30 seconds. May be a broken pipe or tripped pressure relief valve.

Note - In many instances the controller is blamed for faults caused by bad motors, tanks with incorrect or no air charge, poor wiring and/or improper grounding. Since the SOLO² may be used to retrofit an existing installation into a variable speed system, IM260 includes instructions on checking Motor Insulation Resistance and Winding Resistance. Before replacing a SOLO² drive on a retrofit installation please perform these tests to verify the motor and wire are in good condition and the tank pressure is set properly.

Aquavar SOLO²

Quick Installation Guide

Recommended 1AS15 Overload Settings - All Motor Brands

Motor Type	HP	Brand	Motor SFA	No. Wires	Set Dial On ²
2 wire ³	0.5	CentriPro, Pentek	4.7	2	4.7
	0.75	CentriPro, Pentek	6.4		6.4
	1	CentriPro, Pentek	8.2		8.3
	1.5	CentriPro, Pentek	10.5		11
2 wire	.5	Franklin / Grundfos / F&W	6		6.3
	.75	Franklin / Grundfos / F&W	8 / 8.4 / 8		8.3
	1	Franklin / Grundfos / F&W	9.8 / 9.8 / 10.4		9.7
	1.5	Franklin / Grundfos / F&W	13.1 ¹		12.2
3 wire ³	.5	CentriPro, Pentek	6.3	3	6.3
	.75	CentriPro, Pentek	7.9		8.3
	1	CentriPro, Pentek	9.5		9.7
	1.5	CentriPro, Pentek	11.0		11
	2	CentriPro, Pentek	12.2		12.2
3 wire	.5	Franklin / Grundfos / F&W	6		6.3
	.75	Franklin / Grundfos / F&W	8 / 8.4 / 8		8.3
	1	Franklin / Grundfos / F&W	9.8 / 9.8 / 10.4		9.7
	1.5	Franklin / Grundfos / F&W	11.5 / 11.6 / 11.5		11.5
	2	Franklin / Grundfos / F&W	13.2 ¹		12.2

SOLO² Dial Setting

Overload Setting	Current Setting
1	4.7
2	6.3
3	6.4
4	6.4
5	8.3
6	9.1
7	9.7
8	11.0
9	11.1
10	11.5
	12.2

Overload Setting Dial is located on the UIB (User Interface Board) inside the controller.

¹ Amps are higher than controller overload range - use of 1AS15 on these motors will limit current and reduce performance.

² **Note:** It is acceptable to use a higher setting than the 2-wire motor maximum amperage because the 2-wire motor's on winding overloads will protect the motor while the higher SOLO² setting will not inhibit performance.

³ All centripro ratings are Generation II November 2015 and later, for earlier versions see IOM. These motors will have a suffix of -01, example M05422 will be M05422-01.

VFD Accessories



9K585 Moisture Sensor with Relay

9K585 Wiring Instructions:

White and Green Wires - Connect to Switch Input Terminals

Black Wire to Transducer "B" Connector

Red Wire to Transducer "R" Connector

Float Switches - tested for use with Aquavar SOLO² Controllers



FLOAT SWITCH CATALOG NUMBERS

A2X13	10'	N.O.
A2X33	20'	N.O.
A2X53	30'	N.O.
A2X23U	15'	N.C.
A2X33U	20'	N.C.
A2X53U	30'	N.C.



6K210 Gauge Guard

Note 6K210: ½" x ¼"

6K216: ¼" x ¼"



9K589 Over-Pressure Switch for use with Aquavar SOLO² or "S-Drive" Controllers

Connect wires to Switch Input Terminals

Xylem Inc.
www.xylem.com

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See BCPVFDACC for more information.

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