

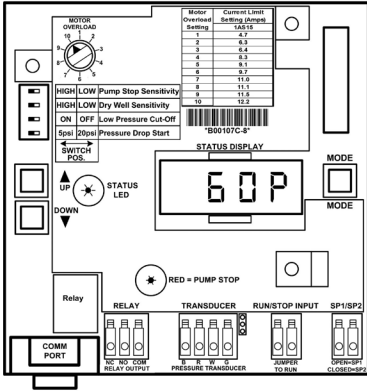
Aquavar SOLO²

Quick Installation Guide

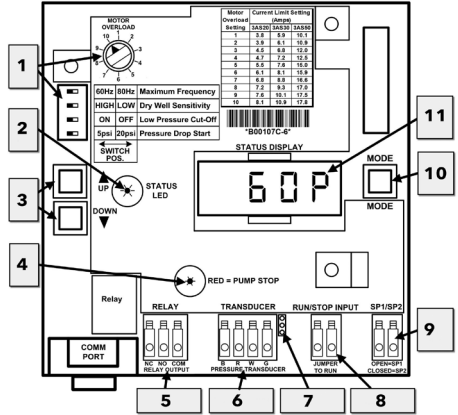
- 1. Mount Drive** (in a vertical position);
 - Must have 6" minimum clearance on all sides for proper cooling.
- 2. Connect Input Power Wire** (Single Phase, 230V, Size Wire Ampacity for 75°C Copper Wire)
 - Review Circuit Breaker Sizing see IMS-SOLO2Q-2 or IM260
- 3. Wire Motor Drop Cable** (Size Wire 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 Goulds Water Technology / Pentek XE; .5 - 1.5 HP Franklin Electric and Grundfos
 - 2-Wire - .5 - 1.5 Goulds Water Technology, 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**

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	
	Goulds ¹	Franklin	Grundfos	Goulds	Franklin	Grundfos	Goulds	Franklin	Grundfos	Goulds	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 Goulds Water Technology 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 Transducer Range	Maximum Pressure Setpoint
100 PSI	85 PSI
200 PSI	170 PSI
300 PSI	255 PSI

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

Motor HP	Motor Voltage ^①	Controller Model ^②				Circuit Breaker ^③	Generator (VA) ^④
		1AS15	3AS20	3AS30	3AS50		
½	230					15	2200
	200						
¾	230						2900
	200						
1	230					3500	
	200						
1½	230					20	4400
	200						
2	230					30	6100
	200						
3	230					40	8100
	200						
5	230					50	13300
	200						

^① Supply voltage must be 196 VAC - 265 VAC.

^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.

^③ Circuit Breaker or Dual Element Time Delay Fuse Size (Amps) protecting branch circuit supplying controller.

^④ Minimum size of single phase 240 V generator required.

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	Goulds, Pentek	4.7	2	4.7
	0.75	Goulds, Pentek	6.4		6.4
	1	Goulds, Pentek	8.2		8.3
	1.5	Goulds, 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	Goulds, Pentek	6.3	3	6.3
	.75	Goulds, Pentek	7.9		8.3
	1	Goulds, Pentek	9.5		9.7
	1.5	Goulds, Pentek	11.0		11
	2	Goulds, 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	8.3
5	9.1
6	9.7
7	11.0
8	11.1
9	11.5
10	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 Goulds 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



6K210 Gauge Guard

Note 6K210: 1/2" x 1/4"

6K216: 1/4" x 1/4"

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

Connect wires to Switch Input Terminals

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.

See BCPVFDACC for more information.

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Let's Solve Water