

# INSTALLATION INSTRUCTIONS

## GRUNDFOS MAGNA 3 VARIABLE SPEED PUMP WITH LOCHINVAR BOILERS

### FOR KNIGHT 400 - 801, FTXL 400 - 850 AND CREST 751- 5000

#### Installation and Setup Procedure

1. Refer to the installation manual provided by the pump manufacturer to install the pump. NOTE: The boiler MUST be installed in the Primary / Secondary piping configuration. A system supply sensor MUST be installed in the Primary (building) loop. Refer to the installation and operation manual provided by the boiler manufacturer to ensure the proper system piping configuration.
2. Reference FIG. 1 to connect wiring to the boiler's low voltage control board on the "Boiler Pump Out" terminal:
  - a) Connect the (+) wire from the boiler to "In" connection on the pump 0-10V wiring terminal.
  - b) Connect the (-) wire from the boiler to the ground terminal on the pump 0-10V wiring terminal.
3. Connect line voltage by supplying it directly to the pump.

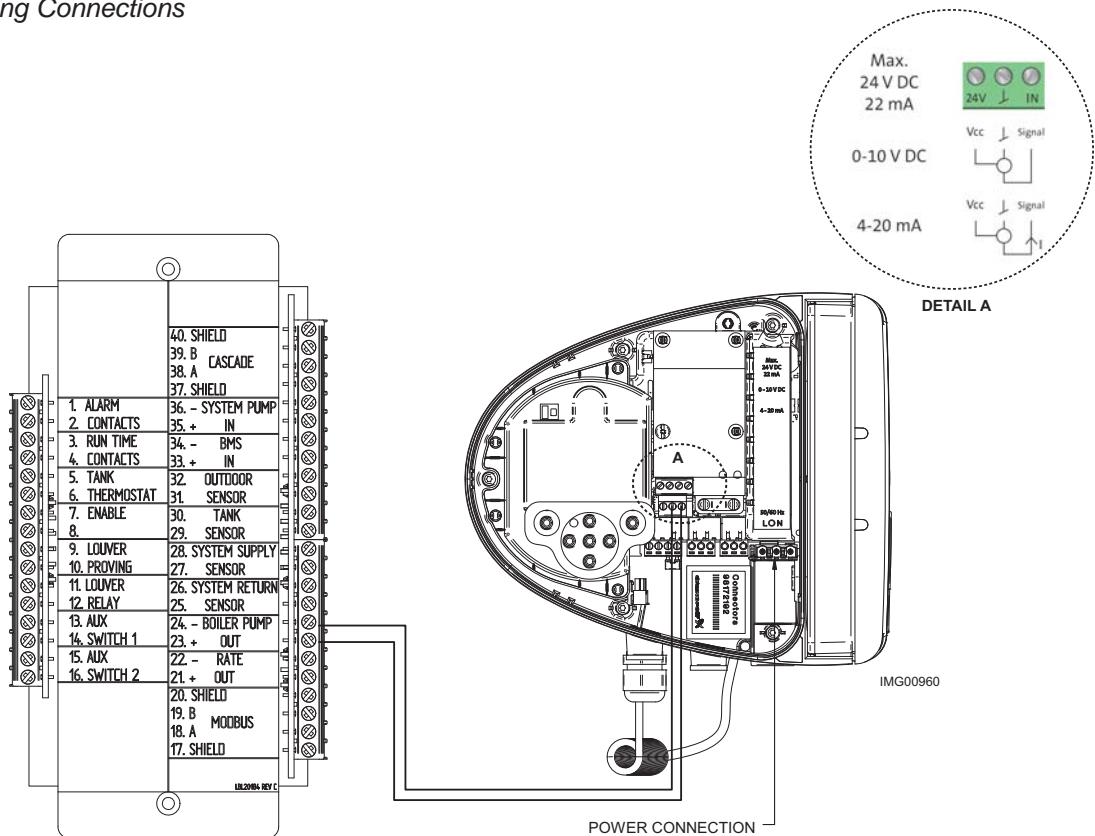
**For Knight and FTXL Models:** Wire the boiler pump dry contacts located on the boiler's line voltage terminal directly to the Magna 3 start/stop connection.

**For Crest Models:** Wire a relay to the 115V boiler pump connections on the boiler's line voltage terminal. Connect the relay to the Magna 3 start/stop connection.

This method of line voltage supply allows the pump screen to stay on even when the boiler is in Standby mode. For additional information always reference the "Wiring" section in the boiler Installation and Operation Manual.

4. Reference Tables 1A, 1B and 1C on this instruction sheet to determine the setpoint percentage of the pump.
5. Follow the procedure below to apply the pump setpoint:
  - a) From the pump Home screen use the arrow keys to select "Setpoint".
  - b) Select "OK" to go to the Setpoint screen.
  - c) Use the arrow keys to assign a setpoint based on the information provided in FIG. 2, on page 3.
  - d) Select "OK" to save the setting.
  - e) Select the "Home" button to return to the Home screen.
6. The pump is pre-programmed for 0-10V operation, but the boiler will require set-up to control the variable speed pump. Follow the instructions for variable speed pump setup in the boiler installation manual.

**Figure 1** Wiring Connections



**TABLE 1A - KNIGHT XL TEMPERATURE RISE APPLICATIONS**

Model	20°F			25°F		
	GPM	Magna 3	Setpoint (%)	GPM	Magna 3	Setpoint (%)
400	37	40-80	92%	30	40-80	75%
501	46	50-150	42%	37	50-150	83%
601	55	50-150	79%	44	50-150	67%
701	65	50-150	79%	52	50-150	64%
801	74	50-150	100%	60	50-150	69%

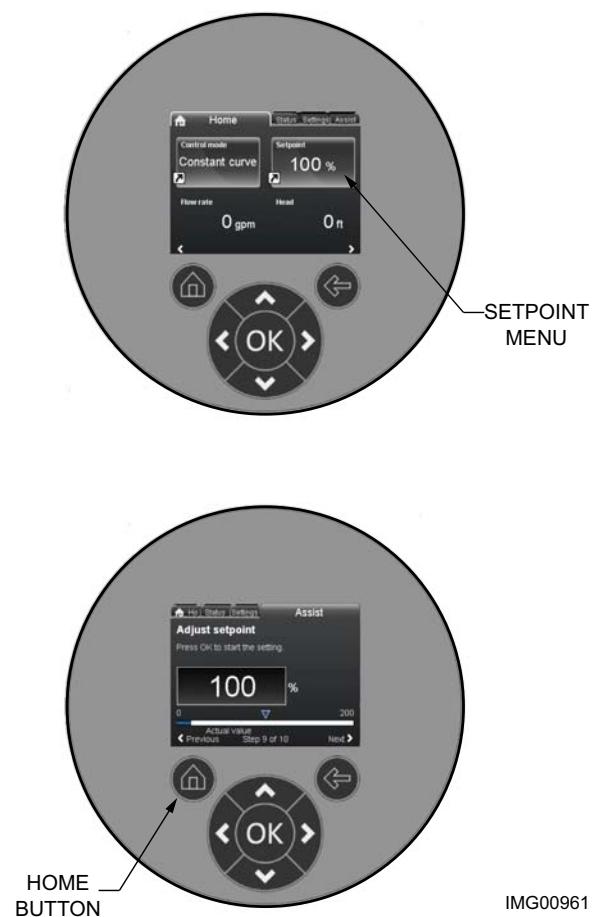
**TABLE 1B - FTXL TEMPERATURE RISE APPLICATIONS**

Model	20°F			30°F			40°F		
	GPM	Magna 3	Setpoint (%)	GPM	Magna 3	Setpoint (%)	GPM	Magna 3	Setpoint (%)
400	38	40-80	54%	N/A			N/A		
500	48	40-80	68%	32	40-80	45%			
600	57	40-80	79%	38	40-80	53%	29	32-60	64%
725	69	40-80	88%	46	40-80	60%	34	40-80	46%
850	81	50-150	50%	55	40-80	70%	40	40-80	53%

**TABLE 1C - CREST TEMPERATURE RISE APPLICATIONS**

Model	20°F			40°F			60°F		
	GPM	Magna 3	Setpoint (%)	GPM	Magna 3	Setpoint %	GPM	Magna 3	Setpoint %
751	72	50-150	42%	48*	40-80	60%	N/A		
1001	96	50-150	60%	48	40-80	60%			
1251	120	50-150	67%	60	40-80	75%	40	40-80	50%
1501	144	50-150	78%	72	40-80	91%	48	40-80	60%
1751	168	80-100	64%	84	50-150	48%	56	40-80	70%
2001	192	80-100	70%	96	50-150	54%	64	40-80	81%
2500	230	80-100	82%	115	50-150	57%	77	40-80	96%
3000	277	80-100	97%	138	50-150	69%	92	50-150	46%
3500	323	100-120	97%	161	50-150	81%	108	50-150	59%
4000	248*	80-100	87%	186	80-100	64%	124	50-150	61%
5000	310*	100-120	92%	233	80-100	79%	155	50-150	77%

\*Based on 30°F Temperature Rise

**Figure 2** Pump Setpoint Screens

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***Revision Notes:*** Revision A (ECO C14573) initial release.

Revision B (ECO C14859) reflects the update of Table 1A, Table 1B and other text adjustments.

Revision C (ECO C15375) reflects the addition of FTX Models and Table 1C.

Revision D (ECO C17117) reflects the addition of the system sensor note on page 1, Step 1.

DIR# 2000505834 Rev A (CN# 500000615) creation of TLT DIR in SAP.

Rev B (CN # 500000827) reflects the addition of Crest 751 - 1251 models and update of Tables 1B and 1C.