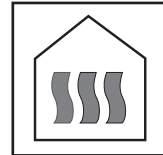


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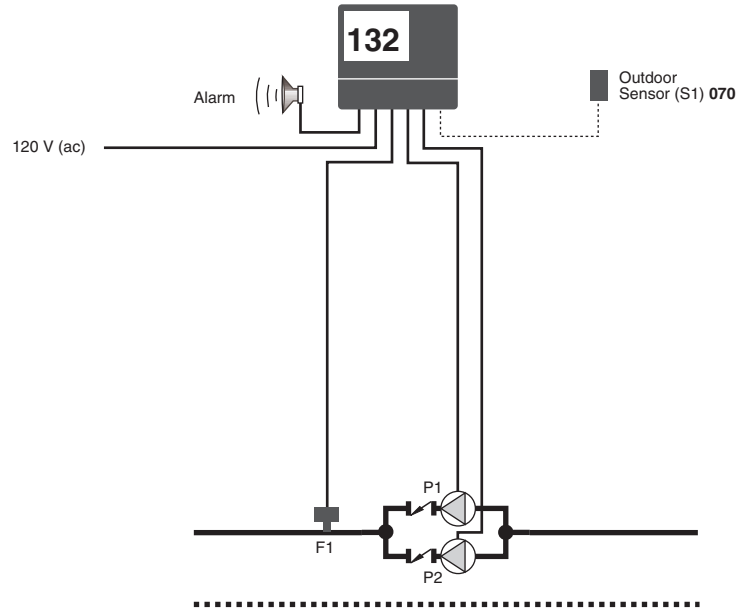
Pump Sequencer 132



A 132-1

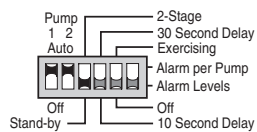
05/00

Mechanical

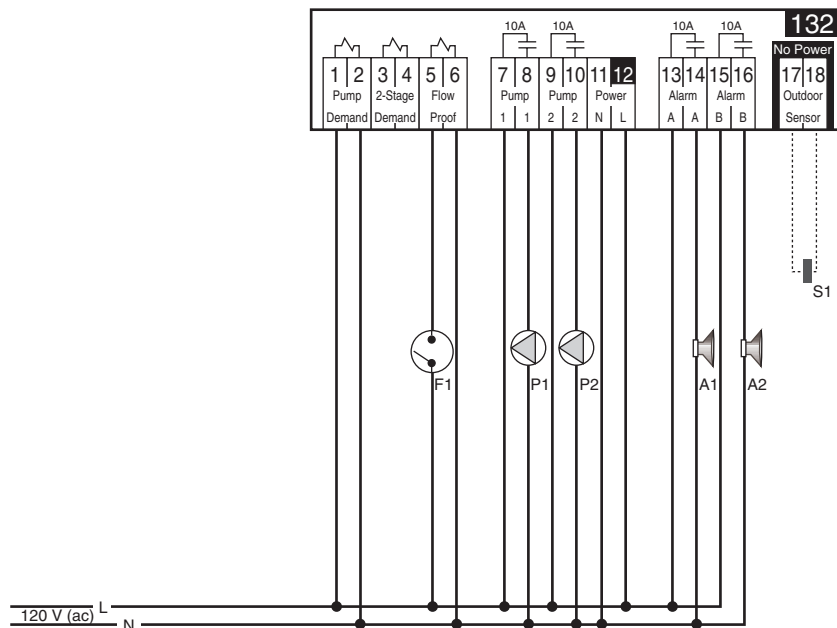


Electrical

A1 = Alarm A
 A2 = Alarm B
 F1 = Flow Switch
 P1 = Pump 1
 P2 = Pump 2
 S1 = Outdoor Sensor (070)



= Required
 = Optional



Note: This is only a concept drawing. The designer must determine whether this application will work in his system and must ensure compliance with code requirements. Necessary auxiliary equipment, isolation relays (for loads greater than the specified tekmar internal relay ratings), and other safety and limit devices must be added.

System Operation

The Pump Sequencer 132 provides stand-by pump operation.

Piping Details The lead pump and the stand-by pump are piped in parallel in the system.

Pump Demand The *Pump Demand* is powered continuously. When the 132 is not in warm weather shut down, the control turns on the lead pump to provide flow in the system.

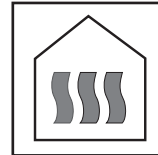
All control functions and specifications are listed in the Product Catalog I 000 and Data Brochure D 132.



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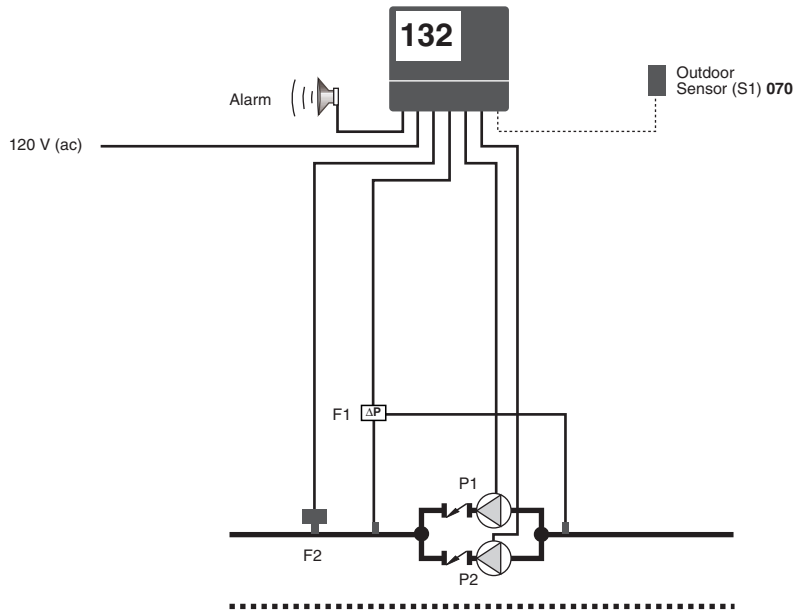
Pump Sequencer 132



A 132-2

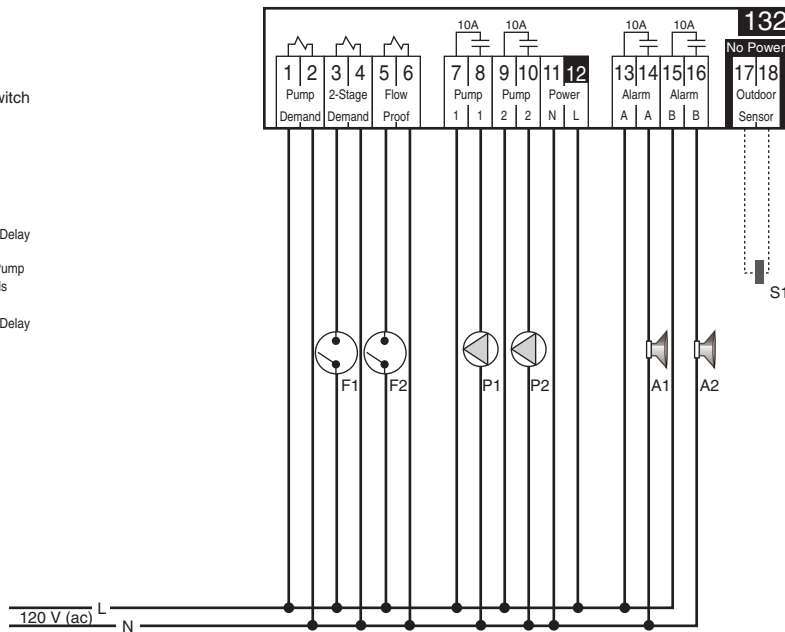
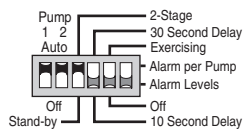
05/00

Mechanical



Electrical

- A1 = Alarm A
- A2 = Alarm B
- F1 = Pressure Differential Switch
- F2 = Flow Switch
- P1 = Pump 1
- P2 = Pump 2
- S1 = Outdoor Sensor (070)



Note: This is only a concept drawing. The designer must determine whether this application will work in his system and must ensure compliance with code requirements. Necessary auxiliary equipment, isolation relays (for loads greater than the specified tekmar internal relay ratings), and other safety and limit devices must be added.

System Operation

The Pump Sequencer 132 provides 2-stage pump operation.

Piping Details The first stage pump and the second stage pump are piped in parallel in the system.

Pump Demand The *Pump Demand* is powered continuously. When the 132 is not in warm weather shut down, the control turns on the first stage pump to provide flow in the system.

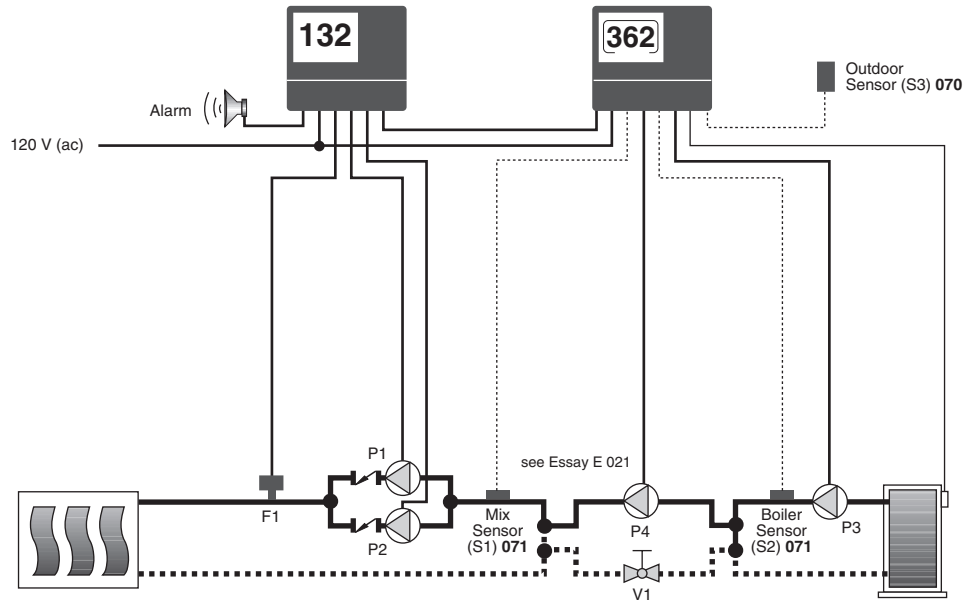
2-Stage Demand When additional flow is required, the pressure differential switch closes and provides power to the *2-Stage Demand*. When a *2-Stage Demand* is received, the second stage pump contact closes. The first stage and second stage pumps operate simultaneously to provide flow in the system.

All control functions and specifications are listed in the Product Catalog I 000 and Data Brochure D 132.



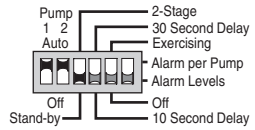
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Mechanical



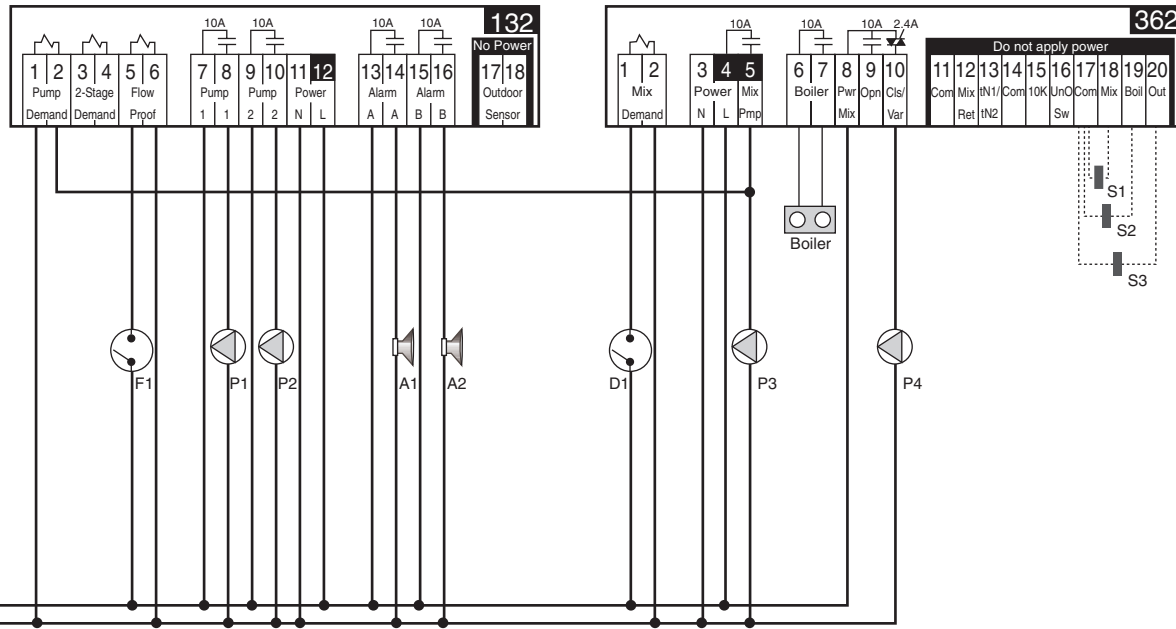
Electrical

- A1 = Alarm A
- A2 = Alarm B
- D1 = External Mix Demand
- F1 = Flow Switch
- P1 = Pump 1
- P2 = Pump 2
- P3 = Boiler Pump
- P4 = Variable Speed Injection Pump
- S1 = Mix Supply Sensor 071
- S2 = Boiler Supply Sensor 071
- S3 = Outdoor Sensor 070
- V1 = Balancing or Globe Valve

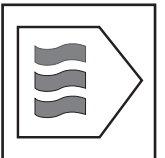


= Required
 = Optional

120 V (ac) L N



Note: This is only a concept drawing. The designer must determine whether this application will work in his system and must ensure compliance with code requirements. Necessary auxiliary equipment, isolation relays (for loads greater than the specified tekmar internal relay ratings), and other safety and limit devices must be added.



A 132-3
05/00

System Operation

The Mixing Control 362 provides full outdoor reset to a mixed zone. The output of the variable speed injection pump is modulated to mix the water temperature to the zone and protect the boiler from flue gas condensation. The boiler operates at the required temperature in order to satisfy the load. The 132 provides stand-by pump operation to the 362.

Heat Source Details The heat source can be either a high mass or low mass non-condensing boiler.

Piping Details The variable speed injection pump is piped in primary / secondary in order to isolate the boiler loop flow rate from the mixed loop flow rate. The boiler loop pump (P3) provides flow through the boiler and ensures flow past the variable speed injection pump take-off. The lead pump and the stand-by pump are piped in parallel in the mixed system.

Mixing Demand When heat is required in the mixed zone, the mix demand switch sends a *Mix Demand* to the 362. The 362 turns on the boiler pump (P3) and sends a *Pump Demand* to the 132. The mixed supply water temperature is based on the *Characterized Heating Curve* settings. The variable speed injection pump (P4) is then controlled to supply the required mixed supply water temperature. As the variable speed injection pump ramps up and requires more heat from the boiler, the boiler is fired to a temperature to satisfy the requirements of the variable speed injection pump. Whenever the boiler is fired, the 362 aims to maintain the boiler above the **BOIL MIN** setting. While the boiler is firing, the variable speed injection pump is also modulated to protect the boiler from excessively low water temperatures.

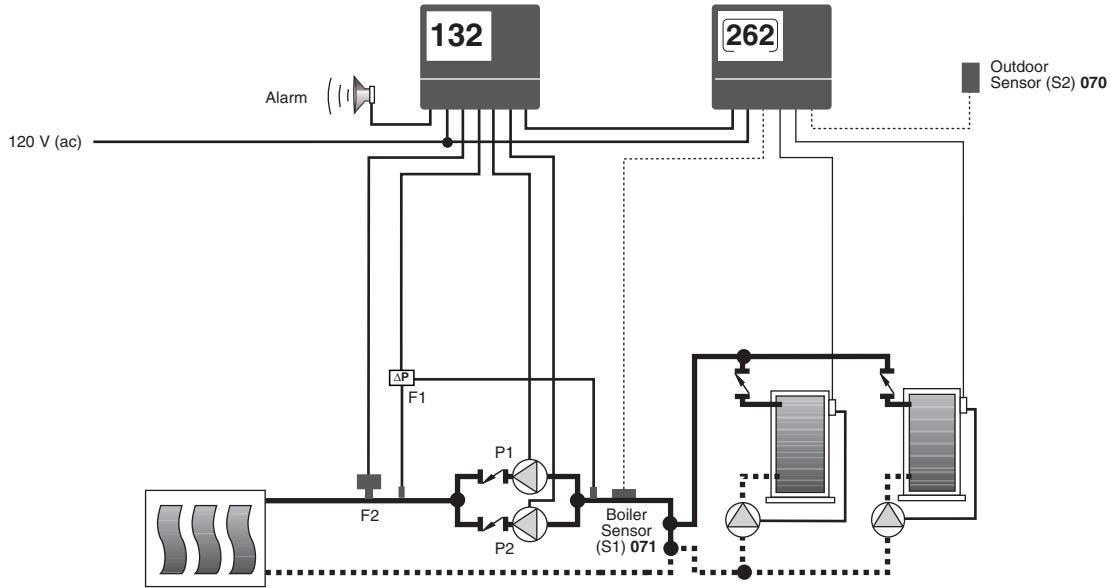
Pump Demand When the 132 receives a *Pump Demand*, the 132 turns on the lead pump to provide flow in the mixed system.

All control functions and specifications are listed in the Product Catalog I 000 and Data Brochure D 132 and D 362.



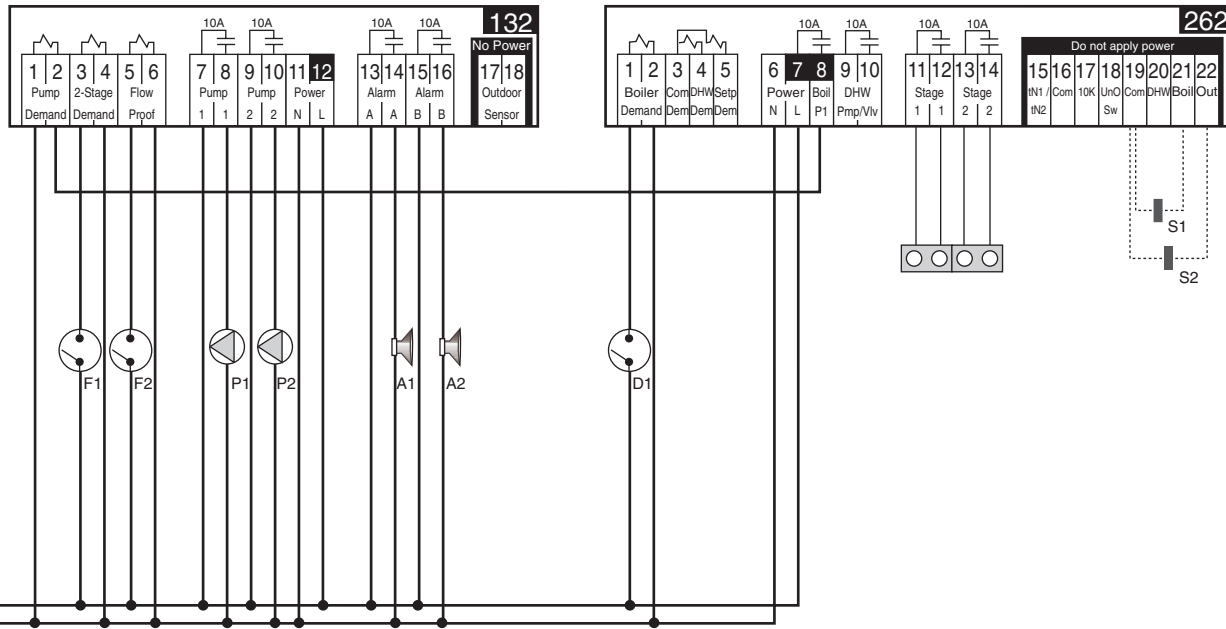
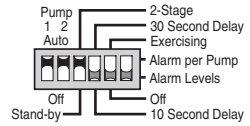
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Mechanical



Electrical

- A1 = Alarm A
- A2 = Alarm B
- D1 = External Boiler Demand
- F1 = Pressure Differential Switch
- F2 = Flow Switch
- P1 = Pump 1
- P2 = Pump 2
- S1 = Boiler Sensor 071
- S2 = Outdoor Sensor 070



Note: This is only a concept drawing. The designer must determine whether this application will work in his system and must ensure compliance with code requirements. Necessary auxiliary equipment, isolation relays (for loads greater than the specified tekmar internal relay ratings), and other safety and limit devices must be added.



A 132-4
05/00

System Operation

The Boiler Control 262 provides partial or full outdoor reset to a boiler zone. The boilers operate at the required temperature in order to satisfy the load. The 132 provides 2-stage pump operation to the 262.

Heat Source Details The heat source can be either high mass or low mass non-condensing or low temperature boilers.

Piping Details The boilers are piped using parallel primary / secondary in order to provide equal and isolated flow through each boiler. The first stage and second stage pumps are piped in parallel in the system loop.

Boiler Demand When heat is required in the boiler zone, the boiler demand switch sends a *Boiler Demand* to the 262. The 262 then sends a *Pump Demand* to the 132. The boiler supply water temperature is based on the *Characterized Heating Curve* settings. The boilers are staged to satisfy the required boiler supply water temperature. Whenever the boilers are fired, the 262 aims to increase the boiler supply water temperature to at least the BDIL MIN setting.

Pump Demand When the 132 receives a *Pump Demand*, the 132 turns on the first stage pump.

2-Stage Demand When additional flow is required, the pressure differential switch closes and provides power to the *2-Stage Demand*. When a *2-Stage Demand* is received, the second stage pump contact closes. The first stage and second stage pumps operate simultaneously to provide flow in the system.

All control functions and specifications are listed in the Product Catalog I 000 and Data Brochure D 132 and D 262.



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