PROJECT MANUAL GUIDE SPECIFICATIONS FOR:
PFANNENBERG SERIES EB COMPACT PACKAGED CHILLERS





PART 1 – GENERAL

1.1 SUMMARY

A. Packaged Chillers offer a self-contained means of producing cooling liquid primarily comprised of water, a mixture water and glycol, or low-viscosity oil. The cooling liquid (coolant) may then be pumped to heat exchangers or cold plates for a variety of applications including: 1) Cooling control panels containing sensitive electronic devices. 2) Cooling variable frequency drives that are contained within an enclosure, box, or console; 3) Cooling machine tool spindle motors; 4) Cooling reaction vessels (reactors) where process temperatures must be maintained or heat removed.

1.2 SECTION INCLUDES

A. Chillers, Packaged Chillers, Heat Exchangers, Cold Plates, and Cooling Devices as scheduled in this section and as indicated on the drawings.

1.3 SUBMITTALS

A. Product Data: Submit the following manufacturer's documentation for each product specified.
   1. Catalog specifications and outline drawings.
   2. Installation and operating instructions.
   3. Certifications to substantiate necessary agency approvals.

B. Manufacturer Warranty
   1. Manufacturer's warranty for Packaged Chillers and Air-to-Water Heat Exchangers.

Manufacturer's standard 1-year warranty for Packaged Chillers and Air-to-Water Heat Exchangers.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design and Support: The packaged chiller is ideal for applications with cooling requirements of less than a half a ton up to 50 tons. It is a fully, self-contained, continuous source of chilled coolant – requiring only power and piping to provide recirculated chilled coolant for virtually any process. To ensure uniformity of operation, quality of construction, standard 1-year warranty term, and worldwide localized support, specifications are solely based, wherever practical, on the products of Pfannenberg Inc. www.pfannenbergusa.com.

B. Substitution: Products of a similar nature from other manufacturers may be considered only when performance capabilities, component capabilities, installation capabilities, service capabilities, and warranty terms are fully met or exceeded.

2.2 PERFORMANCE / DESIGN CRITERIA

A. Packaged Compact Chiller Description. Series EB – Pfannenberg Compact Chiller. Available in four frame sizes to support a wide range of capacities from 16,700 to 356,000 BTU (4.9 to 104.2 W) [1.39 to 29.67 TR], the compact chiller utilizes compressor-based refrigeration technology to cool water or a water/glycol mixture (coolant) and includes an integral pump to facilitate coolant circulation through remotely located heat exchangers or cold plates. The compact chiller shall contain a compressor-based refrigeration system, insulated coolant reservoir tank, coolant pump, finned-tube condenser, axial type compressor fan, stainless-steel brazed plate evaporator, electronic parametric controller, high & low refrigerant pressure switches, freeze protection, and an indoor/outdoor IP 56, NEMA 12/4 rated housing with polyester powder-coated galvanized steel panel construction.

B. Packaged Compact Chiller Specifications. Pfannenberg Series EB Compact Chillers.

Model: EB 30 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 16,700 BTU/hr; 4887 watts; 1.39 TR.
- Power Required: 380 to 460 VAC 50-60 Hz three phase.
- Nominal Power Consumption: 1.6 kW.
- Coolant Connections: 3/4 inch NPTF.
- Coolant Tank Volume: 8 gal (30 l)
- Nominal Coolant Flow Rate: 3.3 gpm (750 l/hr).
- Available Coolant Pressure: 75 psig (5.27 kg/cm^2).
- Dimensions (w x l x h): 22 x 24 x 41 in (55.9 x 61.0 x 104.1 cm)
- Dry Weight: 209 lb (95 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <66 dB(A).
- Duty Cycle: 100%.

Model: EB 60 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 21,800 BTU/hr; 6380 watts; 1.8 TR.
- Power Required: 380 to 460 VAC 50-60 Hz three phase.
- Nominal Power Consumption: 2.2 kW.
- Coolant Connections: 3/4 inch NPTF.
- Coolant Tank Volume: 8 gal (30 l)
- Nominal Coolant Flow Rate: 4.4 gpm (999 l/hr).
- Available Coolant Pressure: 75 psig (5.27 kg/cm^2).
- Dimensions (w x l x h): 22 x 24 x 41 in (55.9 x 61.0 x 104.1 cm)
- Dry Weight: 331 lb (150 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <70 dB(A).
- Duty Cycle: 100%.

Model: EB 90 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 43,000 BTU/hr; 12,584 watts; 3.6 TR.
- Power Required: 380 to 460 VAC 50-60 Hz three phase.
- Nominal Power Consumption: 4.3 kW.
- Coolant Connections: 1 inch NPTF.
- Coolant Tank Volume: 13 gal (49 l)
- Nominal Coolant Flow Rate: 8.6 gpm (1953 l/hr).
- Available Coolant Pressure: 75 psig (5.27 kg/cm^2).
- Dimensions (w x l x h): 28 x 30 x 52 in (71.1 x 76.2 x 132.1 cm)
- Dry Weight: 397 lb (180 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <72 dB(A).
- Duty Cycle: 100%.

Model: EB 150 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 67,500 BTU/hr; 19,754 watts; 5.6 TR.
- Power Required: 380 to 460 VAC 50-60 Hz three phase.
- Nominal Power Consumption: 6.4 kW.
- Coolant Connections: 1 inch NPTF.
- Coolant Tank Volume: 13 gal (49 l)
- Nominal Coolant Flow Rate: 13.5 gpm (3066 l/hr).
- Available Coolant Pressure: 65 psig (4.57 kg/cm^2).
- Dimensions (w x l x h): 28 x 30 x 52 in (71.1 x 76.2 x 132.1 cm)
- Dry Weight: 496 lb (225 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <72 dB(A).
- Duty Cycle: 100%.

Model: EB 220 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 83,000 BTU/hr; 24.3 watts; 6.95 TR.
- Power Required: 414 to 506 VAC 60 Hz three phase.
- Coolant Connections: 1 inch NPTF.
- Coolant Tank Volume: 13.2 gal (50 l)
- Nominal Coolant Flow Rate: 16 gpm (3771 l/hr).
- Dimensions (w x l x h): 28 x 30 x 72 in (71.2 x 76.2 x 182.9 cm)
- Dry Weight: 660 lb (300 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Duty Cycle: 100%.

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Internet: http://www.pfannenbergusa.com

Model: EB 250 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 98,900 BTU/hr; 28,944 watts; 8.2 TR.
- Power Required: 460 VAC 60 Hz three phase.
- Nominal Power Consumption: 8.9 kW.
- Coolant Connections: 1-1/2 inch NPTF.
- Coolant Tank Volume: 45 gal (170 l)
- Nominal Coolant Flow Rate: 19.8 gpm (4497 l/hr).
- Available Coolant Pressure: 40 psig (2.81 kg/cm^2).
- Dimensions (w x l x h): 30 x 74 x 57 in (76.2 x 188.0 x 144.8 cm)
- Dry Weight: 730 lb (331 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <58 dB(A).
- Duty Cycle: 100%.

Model: EB 350 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 151,100 BTU/hr; 44,222 watts; 12.6 TR.
- Power Required: 460 VAC 60 Hz three phase.
- Nominal Power Consumption: 11.8 kW.
- Coolant Connections: 1-1/2 inch NPTF.
- Coolant Tank Volume: 70 gal (265 l)
- Nominal Coolant Flow Rate: 30.2 gpm (6859 l/hr).
- Available Coolant Pressure: 36 psig (2.53 kg/cm^2).
- Dimensions (w x l x h): 30 x 74 x 57 in (76.2 x 188.0 x 144.8 cm)
- Dry Weight: 850 lb (386 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <58 dB(A).
- Duty Cycle: 100%.

Model: EB 450 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 191,000 BTU/hr; 55,597 watts; 15.9 TR.
- Power Required: 460 VAC 60 Hz three phase.
- Nominal Power Consumption: 14.7 kW.
- Coolant Connections: 1-1/2 inch NPTF.
- Coolant Tank Volume: 70 gal (265 l)
- Nominal Coolant Flow Rate: 38.2 gpm (8676 l/hr).
- Available Coolant Pressure: 32 psig (2.25 kg/cm^2).
- Dimensions (w x l x h): 30 x 74 x 57 in (76.2 x 188.0 x 144.8 cm)
- Dry Weight: 895 lb (406 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <58 dB(A).
- Duty Cycle: 100%.

Model: EB 550 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 210,600 BTU/hr; 61,633 watts; 17.6 TR.
- Power Required: 460 VAC 60 Hz three phase.
- Nominal Power Consumption: 17.9 kW.
- Coolant Connections: 1-1/2 inch NPTF.
- Coolant Tank Volume: 105 gal (397 l)
- Nominal Coolant Flow Rate: 42.1 gpm (9562 l/hr).
- Available Coolant Pressure: 28 psig (1.97 kg/cm^2).
- Dimensions (w x l x h): 30 x 74 x 57 in (76.2 x 188.0 x 144.8 cm)
- Dry Weight: 920 lb (417 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <58 dB(A).
- Duty Cycle: 100%.

Model: EB 600 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 241,000 BTU/hr; 70,530 watts; 20.1 TR.
- Power Required: 460 VAC 60 Hz three phase.
- Nominal Power Consumption: 22.4 kW.
- Coolant Connections: 2 inch NPTF.
- Coolant Tank Volume: 105 gal (397 l)
- Nominal Coolant Flow Rate: 48.2 gpm (10,947 l/hr).
- Available Coolant Pressure: 41 psig (2.88 kg/cm^2).
- Dimensions (w x l x h): 35 x 90 x 82 in (88.9 x 228.6 x 208.3 cm)
- Dry Weight: 1250 lb (567 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <60 dB(A).
- Duty Cycle: 100%.

Model: EB 700 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 278,800 BTU/hr; 81,892 watts; 23.2 TR.
- Power Required: 460 VAC 60 Hz three phase.
- Nominal Power Consumption: 23.4 kW.
- Coolant Connections: 2 inch NPTF.
- Coolant Tank Volume: 105 gal (397 l)
- Nominal Coolant Flow Rate: 55.8 gpm (12,674 l/hr).
- Available Coolant Pressure: 40 psig (2.81 kg/cm^2).
- Dimensions (w x l x h): 35 x 90 x 82 in (88.9 x 228.6 x 208.3 cm)
- Dry Weight: 1450 lb (658 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <60 dB(A).
- Duty Cycle: 100%.

Model: EB 800 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 323,000 BTU/hr; 94,527 watts; 26.9 TR.
- Power Required: 460 VAC 60 Hz three phase.
- Nominal Power Consumption: 25.6 kW.
- Coolant Connections: 2 inch NPTF.
- Coolant Tank Volume: 105 gal (397 l)
- Nominal Coolant Flow Rate: 64.6 gpm (14,672 l/hr).
- Available Coolant Pressure: 39 psig (2.74 kg/cm^2).
- Dimensions (w x l x h): 35 x 90 x 82 in (88.9 x 228.6 x 208.3 cm)
- Dry Weight: 1630 lb (739 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <60 dB(A).
- Duty Cycle: 100%.

Model: EB 900 WT (specifications at 64 °F chilled water setting, 90 °F ambient temperature, and 60 Hz power)

- Cooling Capacity: 356,000 BTU/hr; 104,185 watts; 29.7 TR.
- Power Required: 460 VAC 60 Hz three phase.
- Nominal Power Consumption: 32.4 kW.
- Coolant Connections: 2 inch NPTF.
- Coolant Tank Volume: 160 gal (606 l)
- Nominal Coolant Flow Rate: 71.2 gpm (16,171 l/hr).
- Available Coolant Pressure: 38 psig (2.67 kg/cm^2).
- Dimensions (w x l x h): 35 x 90 x 82 in (88.9 x 228.6 x 208.3 cm)
- Dry Weight: 1680 lb (762 kg).
- Enclosure Rating: IP 56; NEMA Type 12/4.
- Housing Construction: powder-coated galvanized steel.
- Noise Level (@ 1 m): <60 dB(A).
- Duty Cycle: 100%.

C. Packaged Compact Chiller Component Details.

1. Cabinet and frame construction: The cabinet shall be constructed of galvanized-steel panels with light grey (RAL 7035) polyester powder coat finish and hinged service access panel. An integral channel base facilitates lift-truck handling and mounting.

2. Compressor:

(For EB 30-150 WT): Compressor shall be a hermetic, reciprocating-type compressor with R404a or R134a refrigerant and crankcase heaters.

(For EB 250-900 WT): Compressor shall be a hermetic scroll-type compressor with R404a or R134a refrigerant and crankcase heaters.

3. Thermal expansion valve shall be an externally equalized thermal expansion valve to continuously manage refrigerant flow based on load.

4. Evaporator shall be a stainless-steel plate, copper brazed evaporator to offer efficient operation in a small size and to keep the chiller footprint minimized.

5. Condenser shall be a large, copper tube, aluminum fin condenser to provide high energy efficiency and operation in higher ambient temperature conditions.

6. Fan shall be an axial type fan to offer high airflow in order to reduce condensing temperatures and increase refrigeration efficiency. Fan cycling control is included for condensing pressure control and energy savings.

7. Reservoir Tank shall be a vented poly tank of sufficient size to support efficient cycling-based capacity control.

8. Pump shall be a stainless steel, multi-stage centrifugal pump with wide flow & pressure range.

9. Controller shall be a parametric controller with digital display in a NEMA 4 rated enclosure. The controller shall provide operating information as well as warning and alarm indication. I/O includes a remote start/stop input and general alarm output.

10. A coolant flow switch shall be included.

11. A condenser air filter with cleanable mesh type filter shall be included.

12. A stack Light optical status indicator shall be included.

D. Packaged Chiller Options.

1. Coolant bypass kit.

2. Coolant tank level switch.

3. Fine-tune temperature control (+/- 1 °F)

4. Remotely controllable (up to 450 ft. distance with 2-wire connection)

2.3 PACKAGED CHILLER SCHEDULE

A. Pfannenberg **Model EB 30 WT Packaged Chiller** (16,700 BTU/hr; 4.9 kW; 1.39 Ton).
B. Pfannenberg **Model EB 60 WT Packaged Chiller** (21,800 BTU/hr; 6.4 kW; 1.82 Ton).
C. Pfannenberg **Model EB 90 WT Packaged Chiller** (43,000 BTU/hr; 12.6 kW; 3.58 Ton).
D. Pfannenberg **Model EB 150 WT Packaged Chiller** (67,500 BTU/hr; 19.8 kW; 5.63 Ton).
E. Pfannenberg **Model EB 220 WT Packaged Chiller** (88,000 BTU/hr; 25.8 kW; 7.33 Ton).
F. Pfannenberg **Model EB 250 WT Packaged Chiller** (98,900 BTU/hr; 29.0 kW; 8.24 Ton).
G. Pfannenberg **Model EB 350 WT Packaged Chiller** (151,100 BTU/hr; 44.2 kW; 12.59 Ton).
H. Pfannenberg **Model EB 450 WT Packaged Chiller** (191,100 BTU/hr; 55.9 kW; 15.92 Ton).
I. Pfannenberg **Model EB 550 WT Packaged Chiller** (210,600 BTU/hr; 61.7 kW; 17.55 Ton).
J. Pfannenberg **Model EB 600 WT Packaged Chiller** (241,000 BTU/hr; 70.6 kW; 20.08 Ton).
K. Pfannenberg **Model EB 700 WT Packaged Chiller** (278,800 BTU/hr; 81.6 kW; 23.23 Ton).
L. Pfannenberg **Model EB 800 WT Packaged Chiller** (323,000 BTU/hr; 94.6 kW; 26.92 Ton).
M. Pfannenberg **Model EB 900 WT Packaged Chiller** (356,000 BTU/hr; 104.2 kW; 29.67 Ton).

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install products in strict compliance with manufacturer's written instructions and recommendations.

END OF SECTION

CSI Master Format Sections for which this product may be applicable include the following:

23 06 60 Schedules for HVAC
- 23 06 60.16 Packaged Water Chiller Schedule

23 64 00 Packaged Water Chillers
- 23 64 19 Reciprocating Water Chillers
- 23 64 23 Scroll Water Chillers

26 06 00 Schedules for Electrical
- 26 06 20.13 Electrical Switchboard Schedule
- 26 06 20.16 Electrical Panelboard Schedule
- 26 06 20.19 Electrical Motor-Control Center Schedule

26 24 00 Switchboards and Panelboards
- 26 24 13 Switchboards
- 26 24 16 Panelboards
- 26 24 19 Motor-Control Centers

26 27 00 Low-Voltage Distribution Equipment
- 26 27 16 Electrical Cabinets and Enclosures

26 29 00 Low-Voltage Controllers
- 26 29 13 Enclosed Controllers
- 26 29 13.13 Across-the-Line Motor Controllers
- 26 29 13.16 Reduced-Voltage Motor Controllers
- 26 29 23 Variable-Frequency Motor Controllers
- 26 29 33 Controllers for Fire Pump Drivers
- 26 29 33.13 Full-Service Controllers for Fire Pump Electric-Motor Drivers
- 26 29 33.16 Limited-Service Controllers for Fire Pump Electric-Motor Drivers
- 26 29 33.19 Controllers for Fire Pump Diesel Engine Drivers

42 22 00 Process Chillers and Coolers
- 42 22 16 Reciprocating Process Chillers and Coolers
- 42 22 23 Rotary Process Chillers and Coolers

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