

**SHOP
DRAWING
REVIEW**

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NOT REVIEWED
REVIEWED
REVIEWED AS NOTED
REVISE AND RESUBMIT

This review by Hilditch Architect Inc. is for the sole purpose of ascertaining conformance with the general design concept features only, and does not in any way constitute review of the design of engineering elements which form part of the Contract Documents prepared by others. This review shall not mean that Hilditch Architect Inc. approves the design detail inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all trades.

Hilditch Architect Inc.

By: Sasha Stairs

Project No: 1809

Date Rec'd:

Date Rev'd: 2024.12.05

GC/CM: 2024.11.27

Consultant: 2024.12.04

HAI; reviewed for architectural only; 36 pages total:

1. Ensure mechanical and electrical equipment and services can be located as indicated in contract documents. Do not begin installation before layouts have taken place on site with all trades.

Submittal No. 21

Boilers and accessories

Project Name:
Neshama Hospice

Owner:
Neshama

Prime Consultant:
Hilditch Architect Inc

General Contractor: Renokrew

SHOP DRAWING <hr/> SUBMITTAL REVIEW	JOB NAME Neshama Hospice JOB # 24-130 DATE Nov 27, 2024
REVIEWED REJECTED REVIEW & RESUBMIT REVIEW AS NOTED	<p>This review is for general conformance of plans and specifications only. Approvals are subject to subcontractors performance within the confines of the contract documents. Review of dimensions will not serve to relieve the subcontractor of contractual responsibility for any deviation from the contract requirements.</p> <p>SPECIFICATION 23 08 10 ✓ SHOP DRAWING PRODUCT DATA DOCUMENTATION LETTER</p> <p>RENOKREW TORONTO OTTAWA</p> <p>CHECKED BY: REVIEWED BY: TOTAL PAGES: 36</p>

SustainGlobe Ltd.

THIS DRAWING REVIEWED SOLELY FOR GENERAL CONFORMITY WITH DESIGN CONCEPTS. QUANTITIES, DETAILS, DIMENSIONS AND DESIGNS INHERENT IN THE SHOP DRAWINGS ARE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY DATA WITH FIELD DIMENSIONS. CONTRACTOR IS SOLELY RESPONSIBLE FOR DESIGN OF MANUFACTURED ITEMS, FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION AND INSTALLATION OF EQUIPMENT.

DATE RECEIVED:

November 27, 2024

✓ **MECHANICAL**

☐ **ELECTRICAL**

☐ **OTHERS**

THIS DRAWING IS:

☐ **REVIEWED**

✓ **REVIEWED AS NOTED**

☐ **REVIEWED AND
TO BE RESUBMIT**

BY: TL

DATE: December 04, 2024

PROJ. NO.: 18031



54 Audia Court, Unit 2
Concord, ON L4K 3N5
(905)-738-1400

Submittal 24-256-012

PROJECT NAME	PROJECT ADDRESS	DATE SUBMITTED
NESHAMA HOSPICE	24-256 3 Cadillac Avenue North York, ON M3H 1R9	Nov 26, 2024

TO	FROM
Taranjeet Singh	PAUL LEDDY
COMPANY	COMPANY
1568796 ONTARIO INC. C/A RENOKREW	Consult Mechanical Inc.
EMAIL	EMAIL
taranjeet@renokrew.com	paul.l@consultmechanical.com
ADDRESS	ADDRESS
43 LEPAGE COURT TORONTO, ON M3J 1Z9	54 Audia Court, Unit 2 Concord, ON L4K 3N5

Title

Boilers

Description

Tag B-1, B-2 Manufacturer Viessmann Model B2HA150 and accessories

Package Items

SPEC	SUBSECTION	ITEM	TYPE
M15 Schedule of Equipment	M15	Schedule of Equipment	Shop Drawings

**Submittal # 83035****APPROVAL REQUIRED**

Project 22404896-MECH-1- Neshama Hospice - 3 Cadillac
Leader Nevin Wong
Job Site Neshama Hospice
Submission Date 2024-11-26
Sold To CONSULT MECH
Submitted By Andrew Fazio

Contacts

Role	Customer	Our Rep
Mechanical Contractor	Con-Sult Mechanical Inc.*	Nevin Wong
Mechanical Contractor	Con-Sult Mechanical Inc.*	Nevin Wong
Designer	Sustainglobe Ltd	John Samson

Deliverables

Track #	281370		
Tag	B-1,2, LLH-1		
Description	Modular Wall Hung Condensing Gas Boiler		
Quantity	3		
Manufacturer	Viessmann Heating Systems		
Model #	B2HA530, LLH-250/150		
Specification			
Production Lead Time	12 - 14 Weeks		
Revision #	0		

Attention:

- 1) HTS will provide equipment in accordance with the attached shop drawings.
- 2) Upon approved submittal and customer release, HTS will release equipment to fabrication per the published lead times. Any storage fees associated with project schedule changes will be the responsibility of the purchaser.
- 3) HTS can provide freight and logistics to the purchaser as an added benefit of doing business with HTS. When freight is received by the purchaser, any noticeable damage must be recorded. Otherwise, HTS is not responsible for subsequent damage claims.

Approval Stamps



HTS Toronto

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Toronto, ON M3N 1W8
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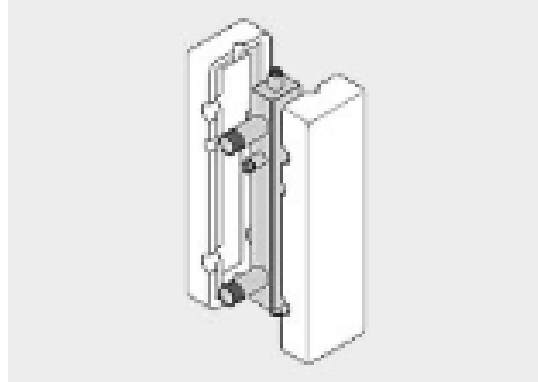
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Compliance



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System Accessories Data



Low-Loss Header

For hydronic heating systems

Full product manuals:

Technical Data & Installation Instructions

1.0 Product Description

Steel mixing chamber with supply and return teppings for both boiler and system loop, used to decouple high flow rate systems from the boiler loop.

Pressure tested to 145 psig / 10 bar.

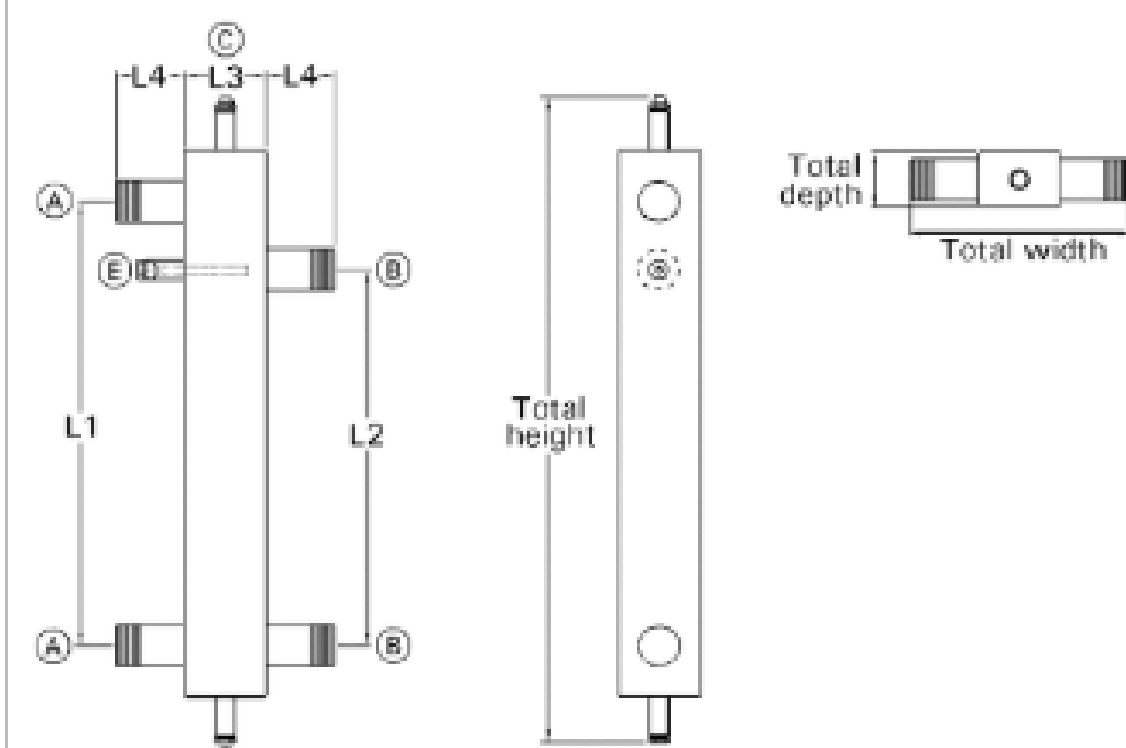
1.1 Technical Data for Model 120/80

Connections	2 inch NPT
Maximum flow rate	36 USG/min 8 cubic m/hr
Water fill volume	2.0 USG 7.6 L

Dimensions (with insulation)	
Total height	36 inches 914 mm
Total width	12.6 inches 320 mm
Total depth	7.2 inches 183 mm
Shipping weight	22 lbs 10 kg

1.2 Dimensional Drawings

Low-Loss Header Front and Side Views



Dimensions	
L1	25.6" 650 mm
L2	21.7" 550 mm
L3	4.7" 120 mm
L4	4" 100 mm

Legend	
A	Boiler supply (top) and boiler return (bottom)
B	System supply (top) and system return (bottom)
C	Air bleed plug
D	Drain plug, 1/2"
E	Sensor well

Technical Data

Technical Data

Boiler Model No. B2HA	150, 530 *A
CSA input Natural Gas (NG)	MBH (kW) 113-530 (33-155)
CSA input Liquid Propane Gas (LPG)	MBH (kW) 113-530 (33-155)
CSA output NG *3	MBH (kW) 103-495 (30-145)
CSA output LPG *3	MBH (kW) 103-495 (30-145)
DOE/AHRI Gross output	MBH (kW) 490 (144)
Net AHRI Rating *C	MBH (kW) 426 (125)
Heat exchanger surface area	ft. ² (m ²) 36.75 (3.41)
Min. gas supply pressure	
Natural gas	"w.c. 4
Liquid propane gas	"w.c. 10
Max. gas supply pressure *1	
Natural gas	"w.c. 14
Liquid propane gas	"w.c. 14
ANSI Z21.13/CSA 4.9	
Thermal efficiency	% 93.5
AHRI, BTS-2000 *D	
Combustion efficiency	% 93.0
Thermal efficiency	% 92.5
Weight	lbs (kg) 298 (135)
Boiler water content	USG (L) 3.54 (13.38)
Boiler max. flow rate *2	GPM (L/h) 38 (8600)
Max. operating pressure at 210°F (99°C)	psig (bar) 80 (5.5)
Boiler water temperature	
- Adjustable high limit (AHL) range space heating (steady state) DHW production	°F (°C) 68 to 185 (20 to 85)
	°F (°C) 185 (85)
	°F (°C) 210 (99)
- Fixed high limit (FHL)	°F (°C) 210 (99)
Boiler connections	
Boiler heating supply and return	NPTM 2 in.
Pressure relief valve	NPTF 3/4 in.
Drain valve	(male thread) 3/4 in.
Boiler supply/return for indirect-fired DHW storage tank (field supplied)	NPT 2 in.
Gas valve connection	NPTF 1 in.

- *A For high altitude installations 5,000 - 10,000 ft. (1500 m - 3000 m), the input for model B2HA 88,100, 150, 311, 352, 530 will have an altitude de-ration of 14% for 5,000 ft. (1500 m) and 29% for 10,000 ft. (3000 m) average of 2.8% / 1,000 ft. (305 m).
- *B The input for model B2HA 112, 399 at 10,000 ft. (3000 m) will have an input de-rate of 13%.
- *C Net AHRI rating based on piping and pick-up allowance of 1.15.
- *D Tested to AHRI, BTS-2000 Testing Standard Method to Determine Efficiency of Commercial Heating Boilers.
- *1 If the gas supply pressure exceeds the maximum gas supply pressure value, a separate gas pressure regulator must be installed upstream of the heating system.
- *2 See "Waterside Flow" starting on page 9 of this manual.
- *3 Output based on 180°F (82°C), 80°F (26°C) system supply/return temperature.

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EQUIPMENT SCHEDULE			
NO.	EQUIPMENT	MAKE AND MODEL	DESCRIPTION
BH-1, BH-2	GAS FIRED WALL MOUNTED CONDENSING BOILER	VISSMANN MODEL: B2HA150, 530	GAS-FIRED WALL MOUNTED CONDENSING BOILER, 40% ETHYLENE GLYCOL SPACE HEATING, AFUE = 93.5%, GAS INPUT = 105-530 MBH GAS OUTPUT = 100-495 MBH GAS SUPPLY PRESSURE = 1" TO 14" A.G. MAX. OPERATING PRESSURE = 45 PSIG INTH RELIEF VALVE, BOILER WATER CONTENT = 15 L (4 US GAL), MAX. FLOW RATE = 36 GPM (1.36 LPM) P.D. = 16 FT. AVERAGE CONDENSATE FLOWRATE = 20 L/H (5.28 USG/H) 120V/1PH MAX. POWER CONSUMPTION = 12 AMP GYM CASCADE CONTROLLER, MOUNTING BRACKET KIT, SUPPLY TEMPERATURE SENSOR, VERTICAL COAXIAL FLUE AND INTAKE, PRESSURE RELIEF VALVE, BOILER SYSTEM CONTROL, CONDENSATE NEUTRALIZATION UNIT, OUTDOOR RESET SENSOR, LOW LOSS HEADER, VITO 500 BACKET GATEWAY CONTROLLER FOR BAS CONNECTION DIMENSION = 600mm(23-5/8")x486mm(19-1/2")x102mm(4-1/2")H, HEIGHT = 159 kg (358.55 lb)

1.1 Technical Data for Vitogate 300, Type BNMB

Mains voltage	12 to 24V AC/DC
Power consumption	Max. 320 W
Rated output	Max. 3.85 W
Frequency range	47 to 63 Hz
Permissible ambient temperature	- During operation: 32 to 113°F (0 to 45°C) - During storage and transport: 14 to 149°F (-10 to 65°C)
Permissible humidity	- During operation: 20 to 80% relative humidity, non-condensing - During storage and transport: 10 to 85% relative humidity, non-condensing
Dimensions (height x width x depth)	4 x 2 x 2.75 in. (100 x 48 x 70 mm)
Installation	DIN rail (TS35 Top Hat Rail 35 x 15 mm or 35 x 7.5 mm)
Power supply unit	STEP-PS 1AC24DC 0.75FL

1.2 Technical Data for Power Supply Unit

Rated voltage	100 to 240V~
Rated frequency	45 to 60 Hz
Output voltage	24VDC ±1%
Output current max.	1.4A
Permissible ambient temperature	- During operation >131°F (>55°C) time loss - During storage and transport: -13 to 168°F (-25 to 70°C) -40 to 165°F (-40 to 35°C)
Max. humidity	95% relative humidity at 77°F (25°C), non-condensing
Dimensions (height x width x depth)	6 x 1.4 x 1.7 in. (150 x 36 x 43 mm)
Installation	DIN rail (TS35 Top Hat Rail 35 x 15 mm or 35 x 7.5 mm)

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SCHEDULE OF PUMPS (mmmm)							
TYPE	SERIES	CAPACITY (USGPM)	HEAD (FEET)	MOTOR (HP)	RPM	VOLTAGE	REMARKS
PH-1, PH-2	UPS 32-80P	31.4	12	1/2	-	120V/1Ø	BOILER CIRCULATING PUMP, INTERLOCK WITH BOILER

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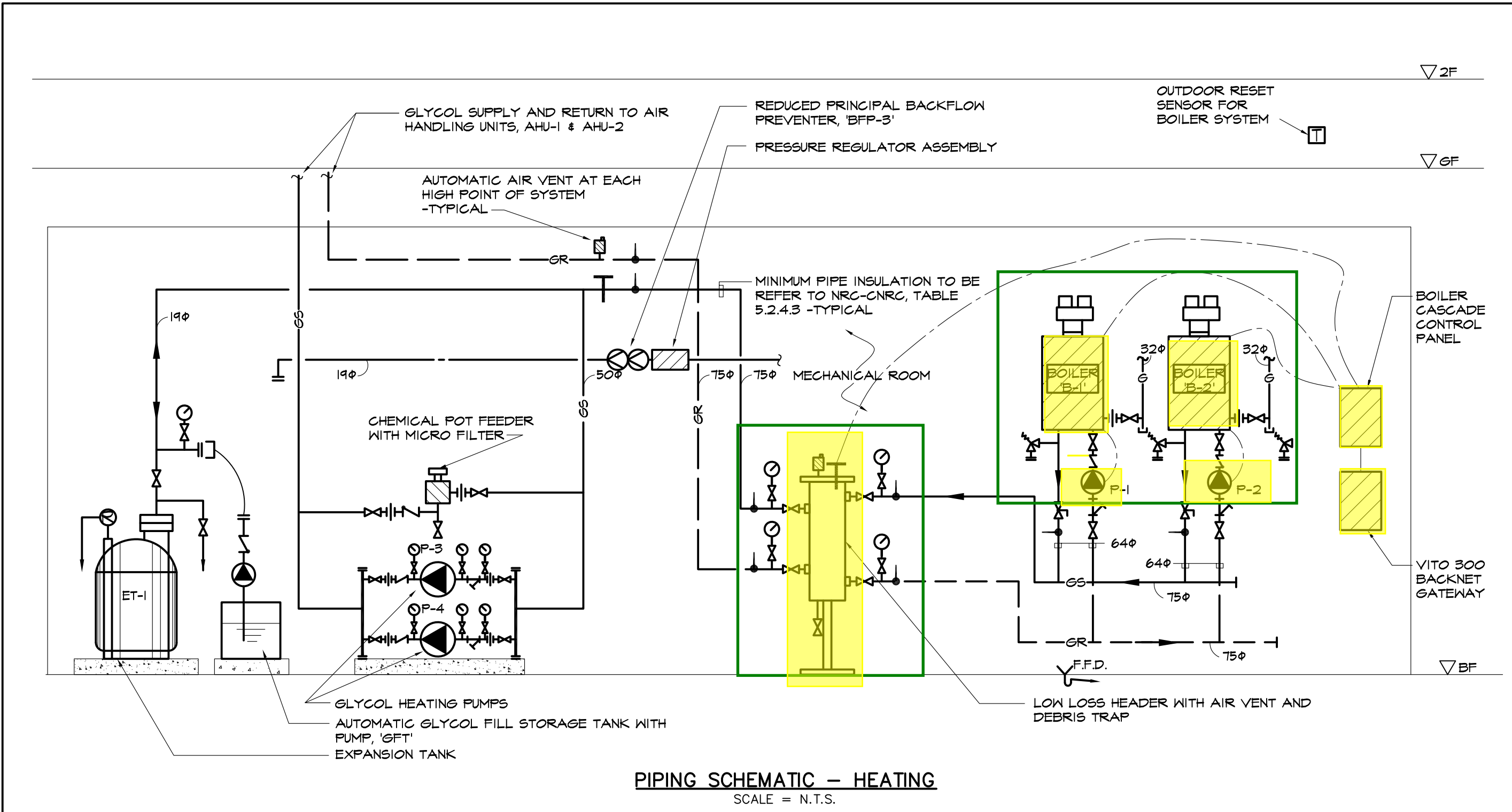
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LLH-1	LOW LOSS HEADER	VISSMANN MODEL: LLH-250/80	MAX. FLOW RATE: 118 USGPM, GYM INSULATION, DIMENSION: 13-5/4" (350MM) DEPTH X 25-5/8" (650MM) WIDTH X 51-3/4" (1315MM) HEIGHT
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- NOTE:
- 1) MECHANICAL CONTRACTOR TO PROVIDE STARTER, TIMER, DELAY SWITCH, REVERSE ACTION THERMOSTAT OF MECHANICAL EQUIPMENT AND ELECTRICAL CONTRACTOR TO INSTALL.
 - 2) FAN SWITCH, THERMOSTAT, CONTROL PANEL LOCATION SHOULD COORDINATE WITH LIGHT SWITCH, FURNITURE LAYOUT ON SITE.
 - 3) EQUIPMENT INSTALLATION SHALL BE ACCORDANCE TO MANUFACTURER'S RECOMMENDATION.
 - 4) PROVIDE ALL REQUIRED CONTROL WIRING, POWER WIRING REQUIRED AND INSULATED CONDENSATION DRAIN PIPING FOR A COMPLETE INSTALLATION.
 - 5) PROVIDE CONCRETE PAD FOR ALL EQUIPMENT SIT ON SLAB.
 - 6) COLOR AND FINISHING OF DIFFUSER AND GRILLE SHALL BE SELECTED BY ARCHITECT/INTERIOR DESIGNER.

6. ISSUED FOR ADDENDUM M-1	JUL 03, 2024
5. ISSUED FOR TENDER	JUN 06, 2024
4. COORDINATION	MAY 24, 2024
3. BUILDING PERMIT	APR 29, 2024
2. MOH 90% SUBMISSION	FEB 29, 2024
1. BUILD, PERMIT-CLIENT REVIEW	FEB 29, 2024
No. Issuance	Date

Contractor must verify all dimensions on the job & report any discrepancy to the consultant before proceeding with the work. All drawings & specifications are instruments of service & the property of the consultant & must be re-turned upon completion of the work.

Consultants



Seals

Project

NESHAMA HOSPICE
3 CADILLAC AVENUE
NORTH YORK, ON M3H 1R9

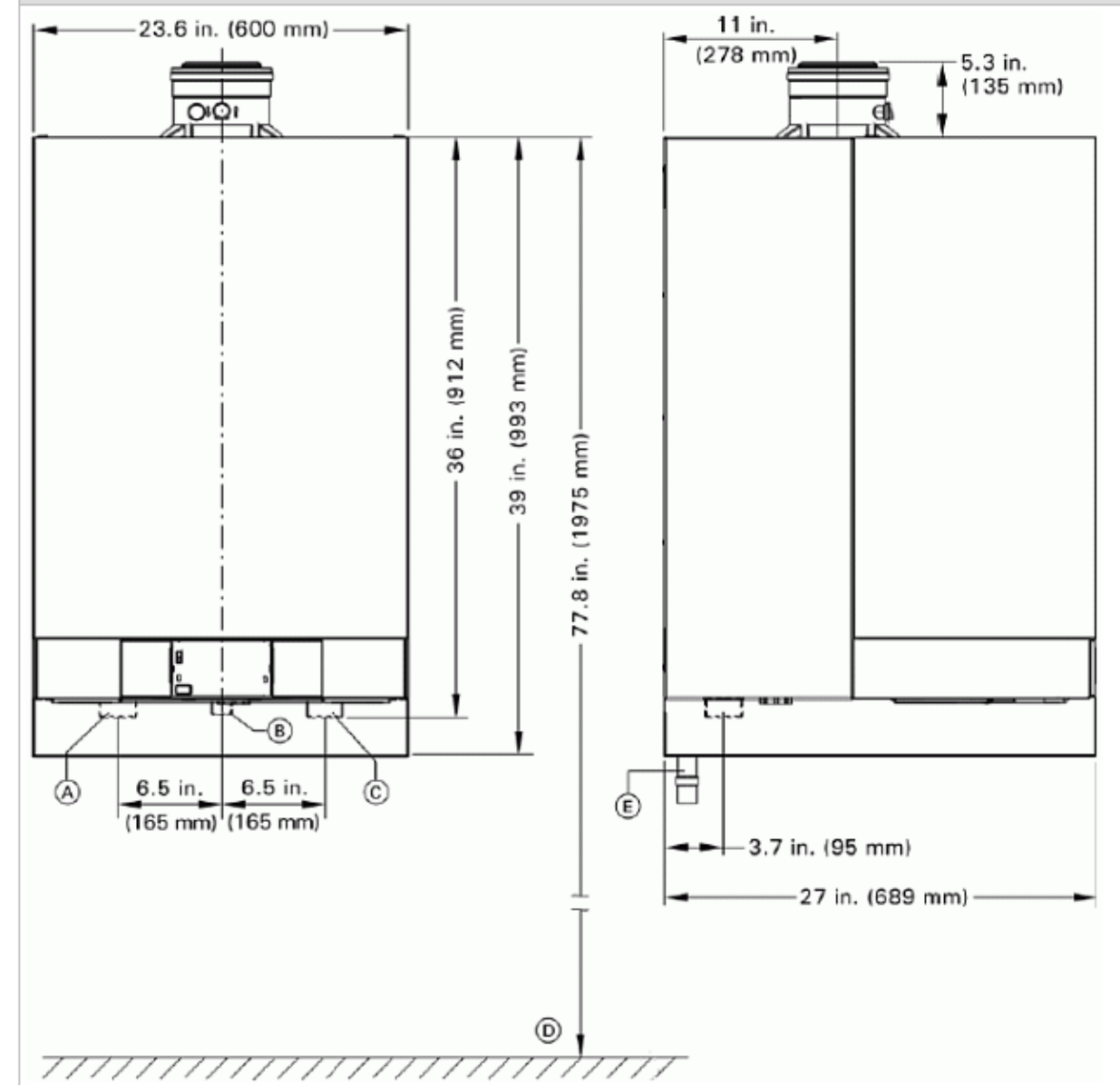
Sheet Title

EQUIPMENT SCHEDULES & PIPING
SCHEMATIC
- MECHANICAL

Date	AUG. 2019	Drawn
Scale	AS NOTED	Sheet
Job No.	18031	M-15

1.2 Dimensional Drawings

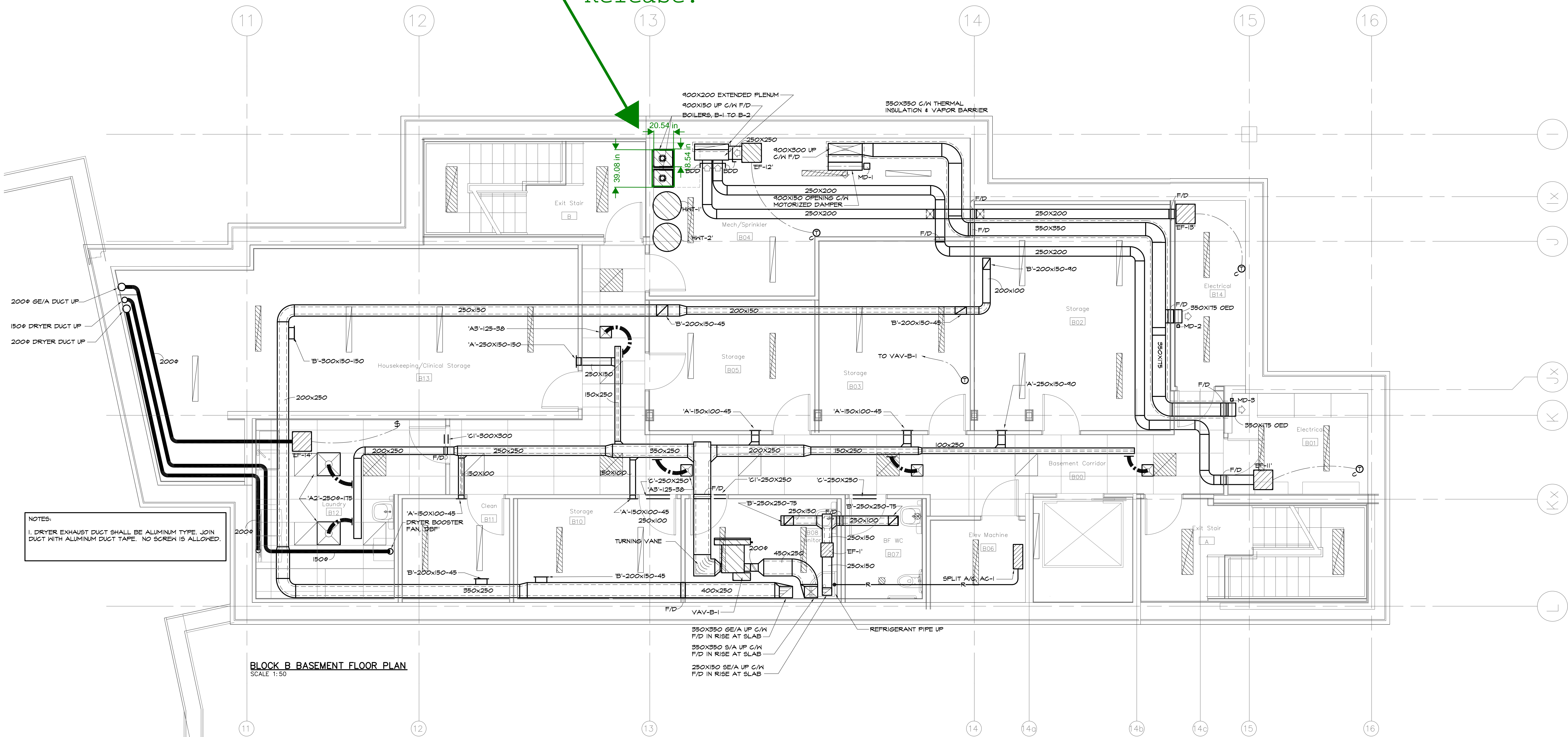
Boiler Front and Side Views



Legend

- A Boiler supply
- B Gas connection
- C Boiler return
- D Recommended height (single boiler system)
- E Condensate drain

Dimensions DO NOT Comply. Contractor to Verify that Units Fit in the Space BEFORE Release.



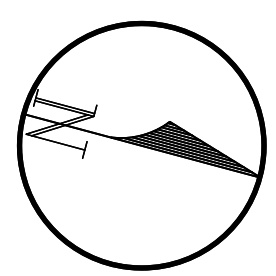
5. ISSUED FOR TENDER	JUN 06, 2024
4. COORDINATION	MAY 24, 2024
3. BUILDING PERMIT	APR 29, 2024
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Contractor must verify all dimensions on the job & report any discrepancy to the consultant before proceeding with the work. All drawings & specifications are instruments of service & the property of the consultant & must be re-returned upon completion of the work.

Consultants

 **SustainGlobe Ltd.**
Consulting Engineers
28 Eglar Way, Unit 8-10, Richmond Hill, Ontario L4B 1G5
(905) 765-1551

Seals



Project
NESHAMA HOSPICE
3 CADILLAC AVENUE
NORTH YORK, ON M3H 1R9

Sheet Title
BLOCK B BASEMENT & GROUND FLOOR PLAN
— MECHANICAL

Date	AUG. 2019	Drawn	
Scale	AS NOTED	Sheet	
Job No.	180311	M-3	



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Technical Data



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Product Submittal



Project:

Location:

Index:

► **Boilers and Burners**

Vitodens 200-W, B2HA-530 Wall-Mounted Gas-Fired Condensing Boiler (Qty. of 2)

► **Boiler Controls**

Vitotronic 300-K, MW2C Digital Cascade Control (Qty. of 1)

► **System Accessories**

Outdoor Temperature Sensor (Qty. of 2)

DHW Temperature Sensor (Qty. of 2)

LLH Temperature Sensor (Qty. of 2)

Low Gas Pressure Switch for Vitodens 200-W, B2HA-530 (Qty. of 2)

45 psig Pressure Relief Valve (Qty. of 2)

Grundfos UPS 26-150F Cast Iron Circulator Pump (Qty. of 2)

Low-Loss Header Model 250/150 (Qty. of 1)

Neutralization System, Model N-70 (Qty. of 1)

Vitogate 300 BACNet/ModBUS Gateway (Qty. of 1)








Boiler Data



VITODENS 200-W

B2HA Series

Full product manuals:

-  [Technical Data Manual](#)
-  [Installation Instructions](#)
-  [Operating Instructions](#)
-  [Service Instructions](#)
-  [Wiring Diagram](#)
-  [Rigid & Flex Pipe Venting System Manual](#)
-  [Common Venting System Manual](#)

1.0 Product Information

Vitodens 200-W is a wall-mounted, gas-fired condensing boiler with modulating stainless steel MatriX cylinder burner, stainless steel Inox-Radial heat exchanger, and Vitotronic 200 HO1B control unit.

Standard Equipment:

Wall-mount boiler and installation fittings c/w 80 psig pressure relief valve, Vitotronic 200 HO1B control, pressure gauge, temperature gauge, temperature sensors (outdoor, LLH and DHW), gas shut-off valve, two fill/drain valves, and mounting hardware.

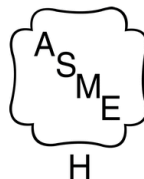
Standard Warranty:

Canada: In residential applications, limited lifetime warranty for pressure vessel, and 2 year warranty for boiler enclosure, burner, controls and accessories. In commercial applications, limited 10 year warranty for pressure vessel, and 2 year warranty for boiler enclosure, burner, controls and accessories. See [warranty sheet](#) for details.

United States: In residential applications, limited lifetime warranty for pressure vessel, and 5 year warranty for boiler enclosure, burner, controls and accessories. In commercial applications, limited 10 year warranty for pressure vessel, and 2 year warranty for boiler enclosure, burner, controls and accessories. See [warranty sheet](#) for details.

Certifications and Listings:

CSA, CRN, ASME, MA State approval, AHRI



1.1 Technical Data for B2HA-530

Natural Gas / Liquid Propane Gas

CSA input *A	113 - 530 MBH	33 - 155 kW
CSA output *B	103 - 495 MBH	30 - 145 kW
DOE/AHRI Gross output	490 MBH	144 kW
Net AHRI Rating *C	426 MBH	125 kW
Heat exchanger surface area	36.78 sq. ft.	3.41 sq. m

ANSI Z21.13 / CSA 4.9

Thermal efficiency	93.5 %
--------------------	--------

AHRI BTS-2000 *D

Combustion efficiency	93.0 %
Thermal efficiency	92.5 %

Min. gas supply pressure

Natural gas	4 "w.c.	996 Pa
Liquid propane gas	10 "w.c.	2491 Pa

Max. gas supply pressure *1

Natural gas	14 "w.c.	3487 Pa
Liquid propane gas	14 "w.c.	3487 Pa

Weight	298 lbs	135 kg
Boiler water content	4 USG	15 L
Boiler max. flow rate *2	37.9 GPM	8600 L/h
Max. operating pressure at 210°F (99°C)	80 psig	5.5 bar

Boiler water temperature

– Adjustable high limit (AHL) range

– space heating (steady state)	68 to 185 °F	20 to 85 °C
– DHW production	185 °F	85 °C
– Fixed high limit (FHL)	210 °F	99 °C

Boiler connections

Boiler heating supply and return	2 inch	NPTM
Pressure relief valve	¾ inch	NPTF
Drain valve	¾ inch	Male thread
Boiler supply/return for indirect-fired DHW storage tank (field supplied)	2 inch	NPT
Gas valve connection	1 inch	NPTF
Condensate connection (hose/nozzle diameter) *3	¾ - 1 inch	
Boiler flue gas connection (diameter) *4	4⅜ inches	110 mm
Combustion air supply (coaxial outer diameter)	6 inches	150 mm

Dimensions

Overall depth	27.1 inches	698 mm
Overall width	23⅝ inches	600 mm
Overall height *5	44½ inches	1128 mm

Flue gas *6

Temperature at boiler return temp. of 86°F (30°C)		
– At rated full load	140 °F	60 °C
– At rated partial load	102 °F	39 °C
Temperature at boiler return temp. of 140°F (60°C)	165 °F	74 °C

Max. condensate flow rate for NG and LPG *7

– At supply/return temp. of 104/86°F (40/30°C)	5.28 USG/h	20.0 L/h
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Sound ratings

– At maximum input	61 dB
– At minimum input	40 dB

NOx emissions

NOx @ 3% O ₂	< 20 PPM *8
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Electrical ratings – main power supply

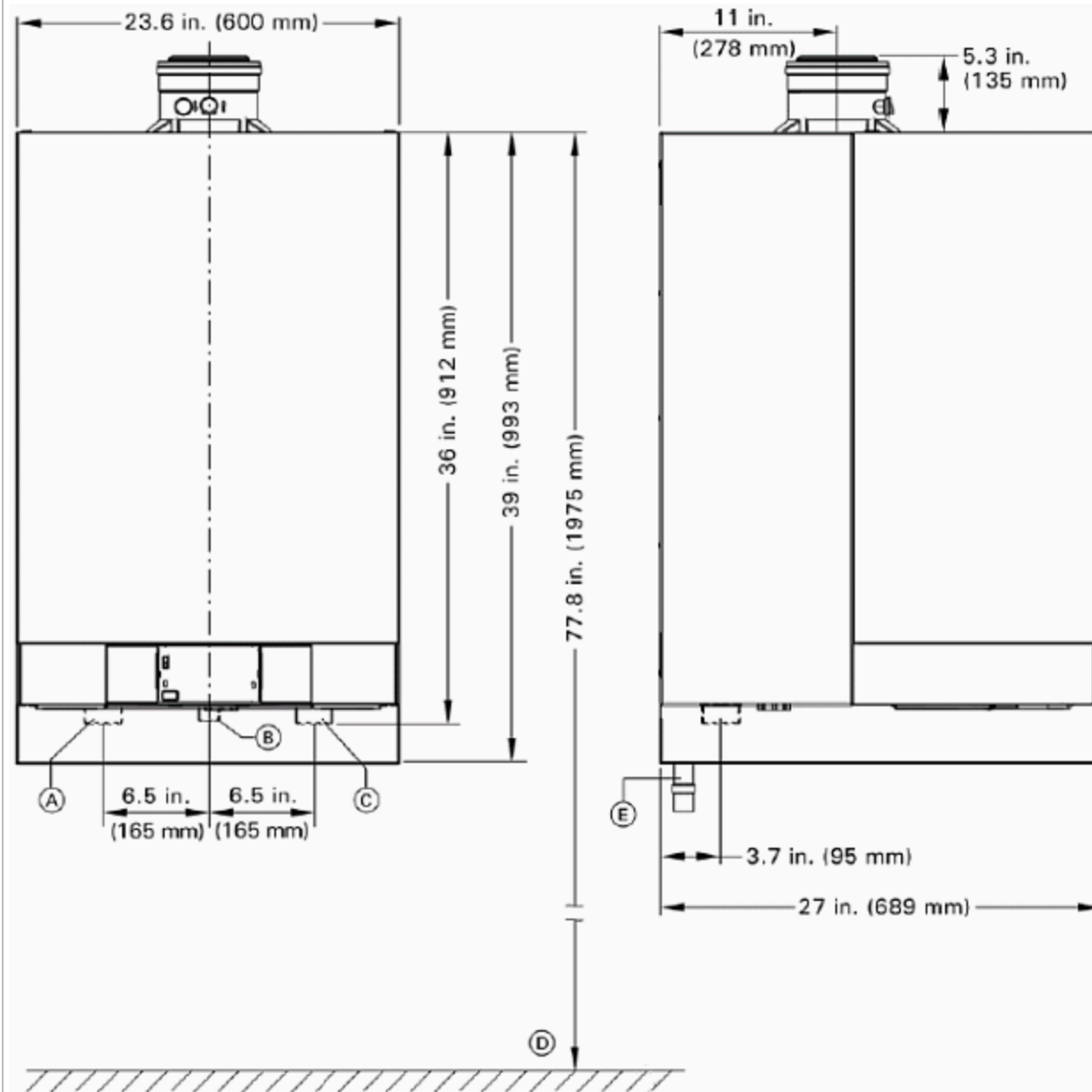
Voltage	120 VAC
Phase	Single phase
Frequency	60 Hz
Current	12 Amps

Notes:

- *A For high altitude installations 5,000 - 10,000 ft. (1500 m - 3000 m), the input for B2HA models 88, 100, 150, 311, 352 and 530 will have an altitude de-rating of 14% for 5,000 ft. (1500 m) and 29% for 10,000 ft. (3000 m); average of 2.8% / 1,000 ft. (305 m). The input for B2HA models 112 and 399 at 10,000 ft. (3000 m) will have an input de-rate of 13%.
- *B Output based on 180°F (82°C), 80°F (26°C) system supply/return temperature.
- *C Net AHRI rating based on piping and pick-up allowance of 1.15.
- *D Tested to AHRI, BTS-2000 Testing Standard Method to Determine Efficiency of Commercial Heating Boilers.
- *1 If the gas supply pressure exceeds the maximum gas supply pressure value, a separate gas pressure regulator must be installed upstream of the heating system.
- *2 See "Typical System Flow Rates" starting on page 10 of the Technical Data Manual.
- *3 Requires 1 inch (25 mm) tubing. See the Installation Instructions of the Vitodens 200-W, B2HA for details.
- *4 For side wall vent installations (coaxial system): Do not exceed max. equivalent length specified in the Installation Instructions of the Vitodens 200-W, B2HA Venting System. Side wall co-axial vent installation must include Viessmann protective screen! For details refer to the Installation Instructions for the Vitodens 200-W, B2HA Venting System. The Vitodens 200-W can only be common vented with other Vitodens 200-W boilers of the same size and series. For details refer to the Common Venting Manual.
- *5 Add approximately 2½ inches (65 mm) for coaxial vent pipe transition adaptor.
- *6 Measured flue gas temperature with a combustion air temperature of 68°F (20°C).
- *7 Based on maximum input rate.
- *8 Optional low NOx certified by SCAQMD Natural Gas models available.

1.2 Dimensional Drawings

Boiler Front and Side Views

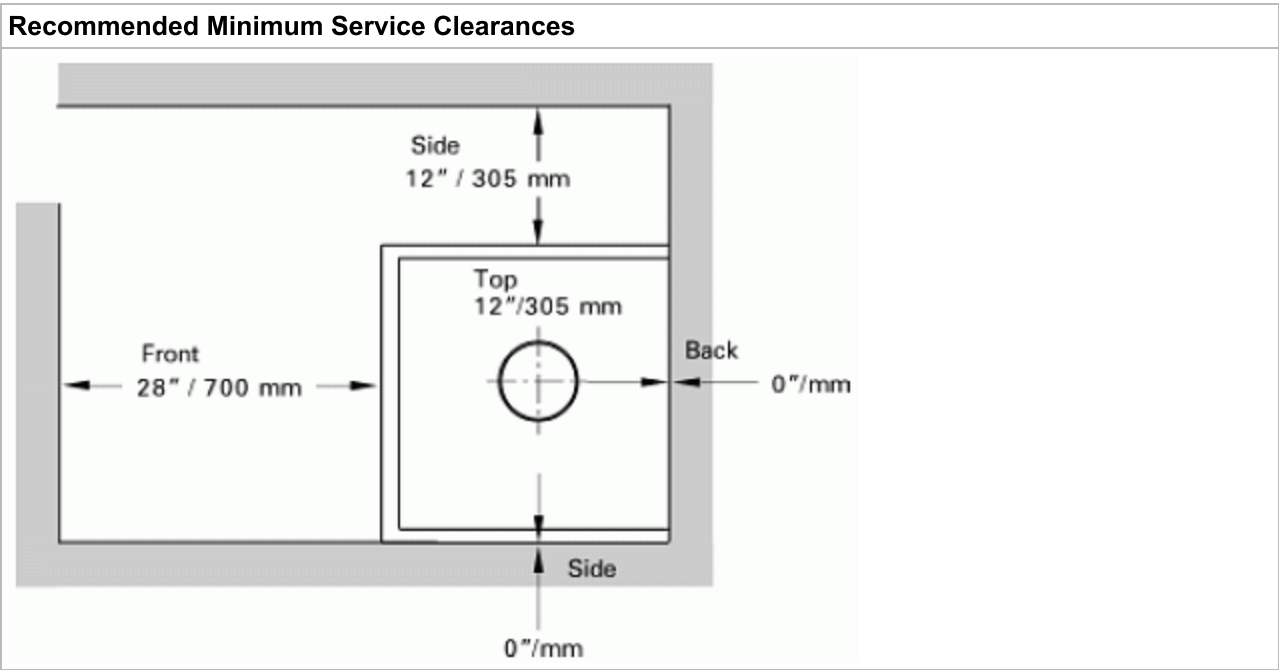


1.3 Minimum Clearances

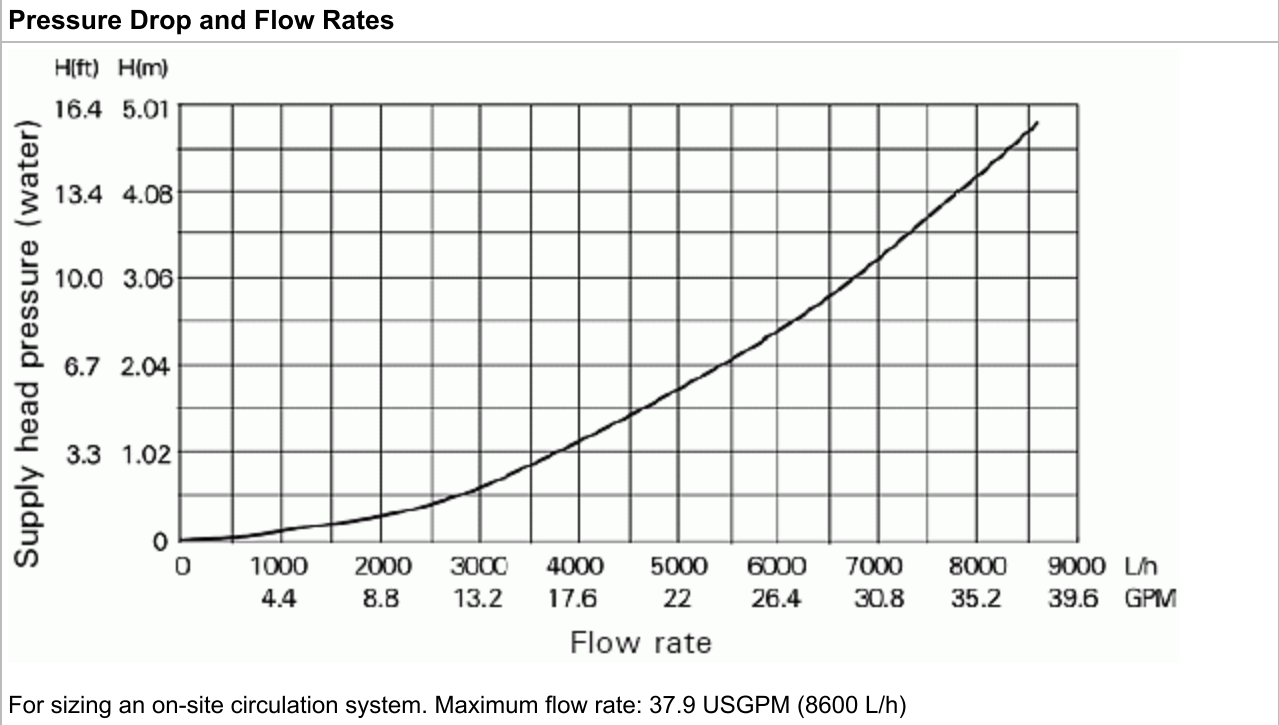
Clearances to Combustibles	
Top	0" / 0 mm
Front	0" / 0 mm for alcove or closet installations
Rear	0" / 0 mm
Sides	0" / 0 mm
Vent pipe *1	0" / 0 mm

Notes:
*1 Refer to the Installation Instructions of the Vitodens 200-W B2HA Venting System for details.

The Vitodens 200-W boiler has passed the zero inches vent clearance to combustibles testing requirements dictated by the Harmonized Standard ANSI Z21.13 CSA 4.9 (latest edition) and therefore is listed for zero clearance to combustibles when vented with a single wall special venting system (AL-29-4C material). The zero inches vent clearance to combustibles for the Vitodens 200-W boiler supercedes the clearance to combustibles listing that appears on the special venting system label.



1.4 Waterside Flow (Primary Circuit)



The Vitodens 200-W is designed for closed loop, forced circulation hot water heating systems only. Use standard friction loss method for pipe sizing. Observe boiler maximum and minimum flow rate limitations. If system flow rate exceeds boiler maximum flow rate (as stated above), falls below the minimum flow rate or if system flow rate is unknown, Viessmann strongly recommends the installation of a low-loss header.

An alternative method may be used, such as primary secondary piping using closely spaced tees. A low-loss header offers additional benefits not provided by a pair of closely spaced tees. Viessmann therefore strongly recommends and prefers the use of a low-loss header over closely spaced tees. Once the low-loss header is connected, the built-in low-loss header logic of the Vitodens 200-W boiler ensures the required Δt across the system through the sensory communication between the low-loss header and the boiler.

Control Data



VITOTRONIC 300-K

MW2C Series

Full product manuals:



[Installation and Service Instructions](#)



[Operating Instructions](#)



[Wiring Diagram](#)

1.0 Product Description

Weather-compensated, digital cascade control unit for boiler and heating system control of up to 8 boilers.

For use with:

- Vitodens 200-W, B2HA Series
- Vitodens 200-W, B2HB Series
- Vitocrossal 300, CU3A Series

1.1 Technical Data

Rated voltage	120 V~
Rated frequency	60 Hz
Rated current	6 A~
Power consumption	10 W
Protection class	I

Permissible ambient temperature

– During operation	32 to 104°F
Installation in living spaces or boiler rooms (standard ambient conditions)	0 to +40°C
– During storage and transport	-4 to 149°F
	-20 to +65°C

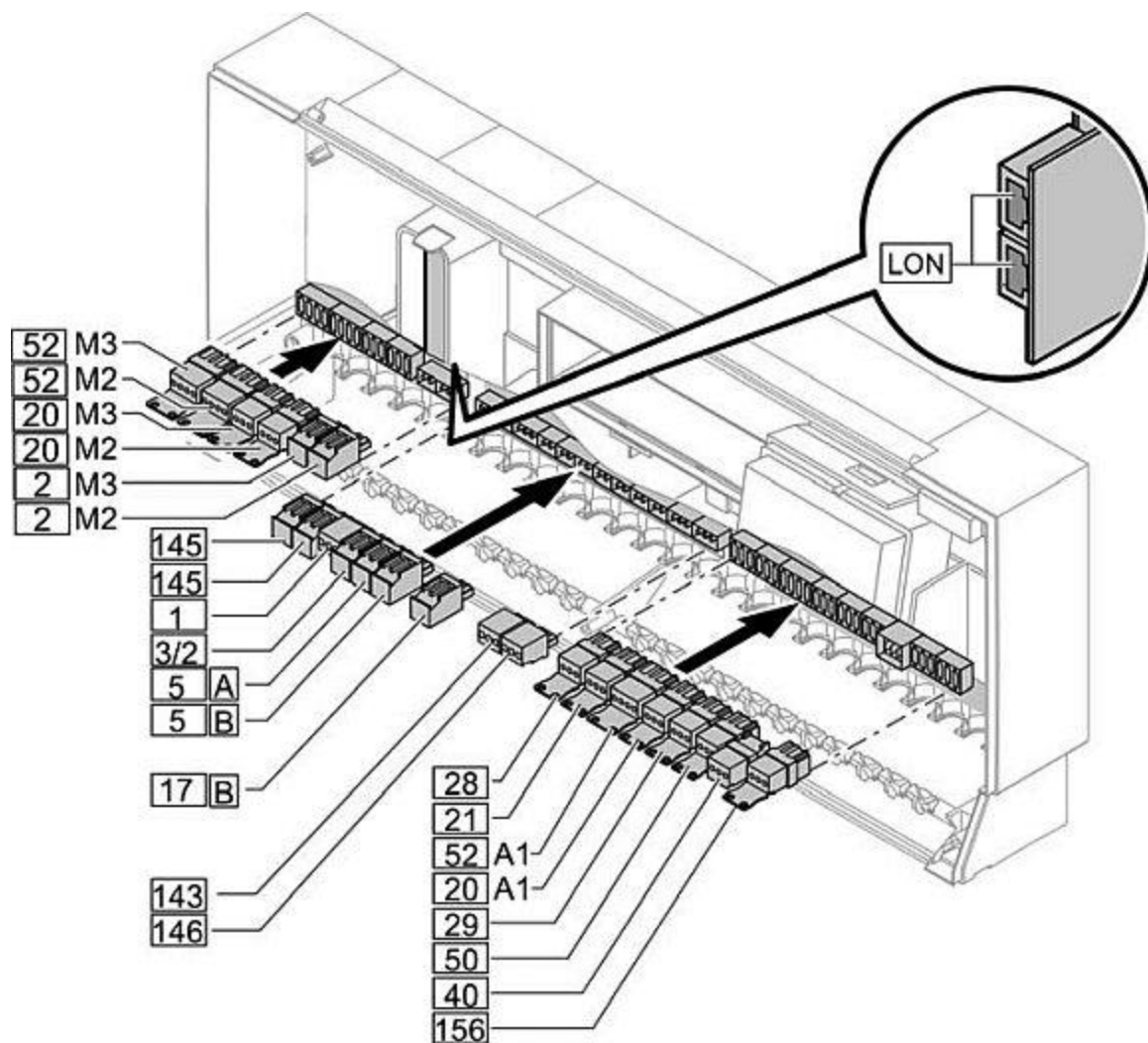
Rated relay output breaking capacity at 120 V~

[20]A1/M1	Heating circuit pump or Primary pump, primary store system	2 A~ *
[21]	Circulation pump for DHW tank heating	2 A~ *
[28]	DHW recirculation pump	2 A~ *
[29]	Distribution pump	2 A~ *
[50]	Central fault message	2 A~ *
[52]A1/M1	Mixing valve motor or Motor, 3-way mixing valve, primary store system	0.1 A~ *
[20] M2	Heating circuit M2 pump	2 A~ *
[20] M3	Heating circuit M3 pump	2 A~ *
[52] M2	Heating circuit M2 pump, Mixing valve motor	0.1 A~ *
[52] M3	Heating circuit M3 pump, Mixing valve motor	0.1 A~ *

* Total max. 6 A~ (shared between all 120V outputs)

1.2 Control Diagrams

Overview of Electrical Connections



Legend

PCB, extension for heating circuits 2 and 3

[2] M2/M3	Supply temperature sensor
[20] M2/M3	Heating circuit pump
[52] M2/M3	Mixing valve motor

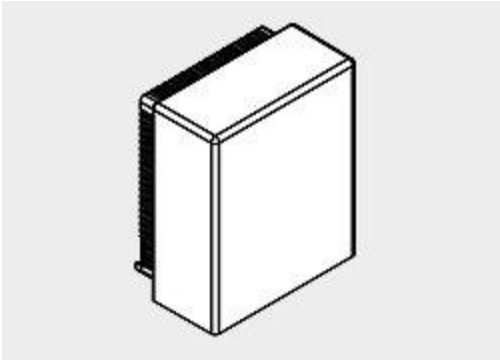
Main circuit board, low voltage

[1]	Outdoor temperature sensor
[3]/[2]	Supply temperature sensor, common supply temperature sensor/low loss header
[5][A]	DHW tank temperature sensor
[5][B]	DHW tank temperature sensor 2 for primary store system (accessory)
[17][B]	Temperature sensor primary store system (accessories)
[143]	External hook-ups
[145]	KM BUS participant (Vitotronic 200 and accessories, e.g. Vitotrol remote controls)
[146]	External hook-ups
LON	LON BUS, connecting cable for data exchange with the Vitotronic 200-H and the Vitocom

Main PCB 120V~

[20]A1	Heating circuit pump or Primary pump, primary store system
[21]	DHW pump
[28]	DHW recirculation pump
[29]	System pump
[40]	Power supply
[50]	Central fault message
[52]A1	Motor for 3-way mixing valve, primary store system
[156]	Internal power supply for mixing valve extension PCB

System Accessories Data



Outdoor Temperature Sensor

Viessmann NTC 10K sensor, used to monitor the outdoor temperature.

1.0 Technical Data

Sensor type	NTC 10K ohms @ 77°F (25°C)	
Electrical connection		
– 2-wire cable with max length of	115 ft	35 m
– Minimum wire size	AWG 18 copper	
– Cable to the outdoor sensor must not be laid near line voltage wiring (120/240V)		
Permissible ambient temperature		
– During operation, storage and transport	-40 to +194 °F	-40 to +90 °C

1.1 Dimensional Drawings

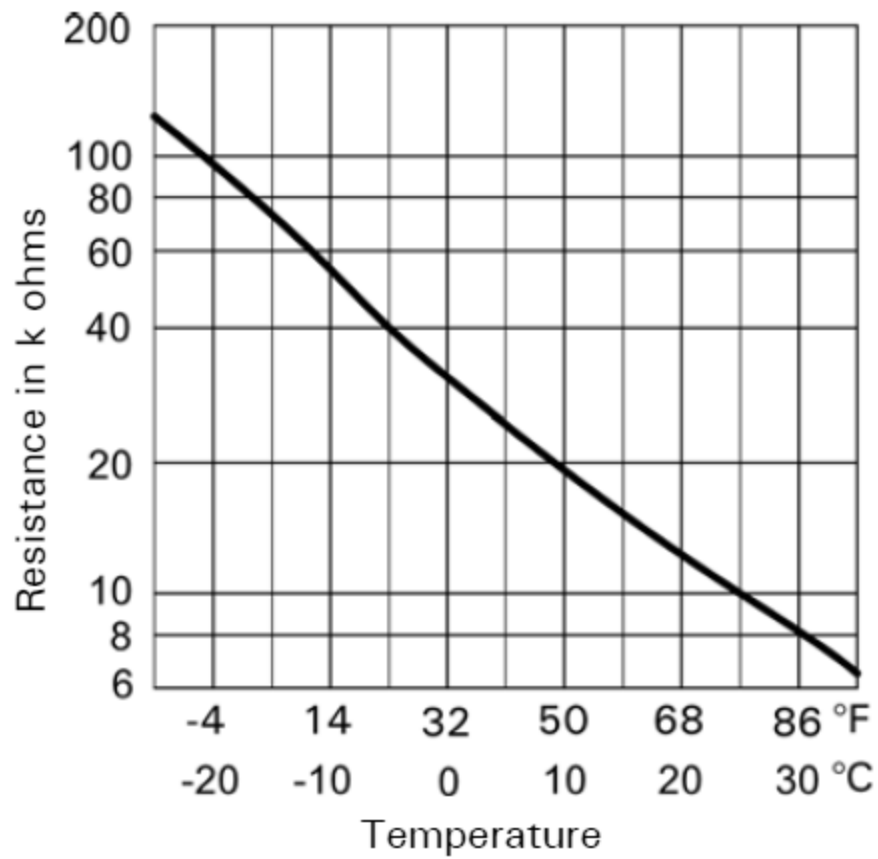
Sensor Front View

An isometric line drawing of a rectangular sensor. The drawing shows three dimensions with double-headed arrows and labels: 'D' for depth (the front edge), 'H' for height (the right vertical edge), and 'W' for width (the bottom edge receding into the background). The left vertical edge of the rectangle is filled with diagonal hatching lines.

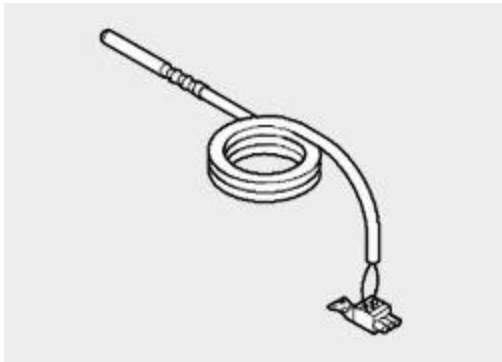
Dimensions

D	1.6 in.	41 mm
H	3.2 in.	80 mm
W	2.6 in.	66 mm

1.2 Diagrams

Resistance vs Temperature

System Accessories Data



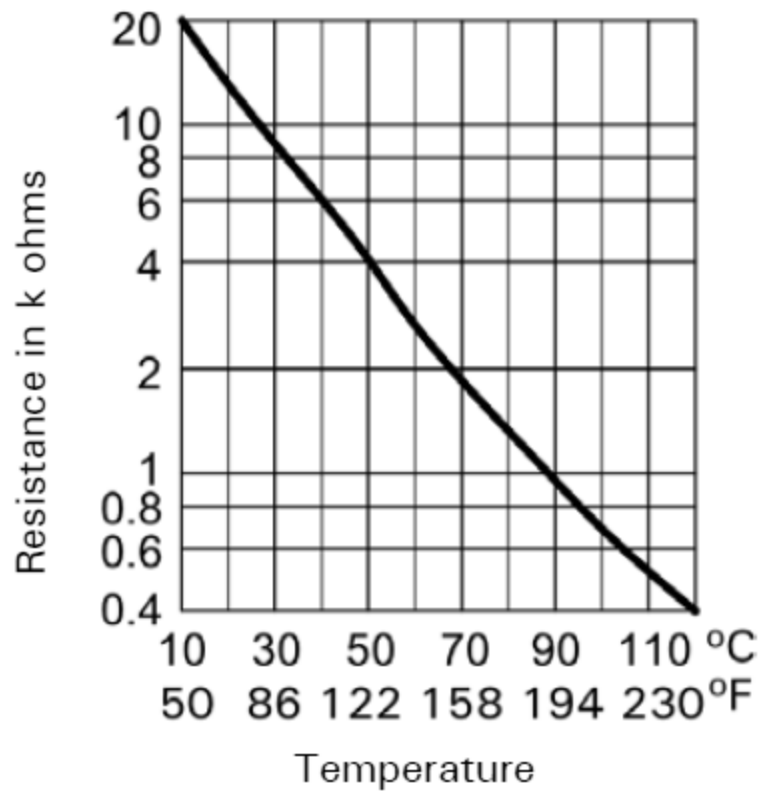
DHW Temperature Sensor

Viessmann NTC 10K immersion-type sensor, used to monitor the temperature in a DHW tank.

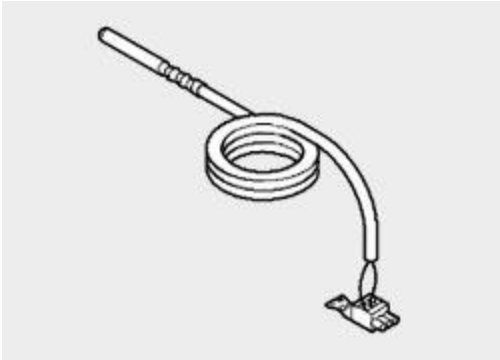
1.0 Technical Data

Sensor type	NTC 10K ohms @ 77°F (25°C)	
Supplied with:		
– Cable length (ready to plug in)	12.3 ft	3.75 m
– All pipe connections are field supplied		
Permissible ambient temperature		
– During operation	32 to 194 °F	0 to 90 °C
– During storage and transport	-4 to +158 °F	-20 to +70 °C

1.2 Diagrams

Resistance vs Temperature

System Accessories Data



LLH Temperature Sensor

Viessmann NTC 10K immersion-type sensor, used to monitor the temperature in a Low-Loss Header.

1.0 Technical Data

Sensor type	NTC 10K ohms @ 77°F (25°C)	
Supplied with:		
– Cable length (fully wired)	12.3 ft	3.75 m
Permissible ambient temperature		
– During operation	32 to 194 °F	0 to 90 °C
– During storage and transport	-4 to +158 °F	-20 to +70 °C

System Accessories Data



Low Gas Pressure Switch

Honeywell Model C6097A3012

Full product manuals:

 [Installation Instructions](#)

1.0 Product Description

Low gas pressure switch with manual reset & adjustable pressure dial, for use with Vitodens 200-W, B2HA-530.

When sufficient gas pressure is available, the low gas pressure switch contact terminals 3 (COM) and 2 (NO) will close. The burner control is then energized and the system will operate normally.

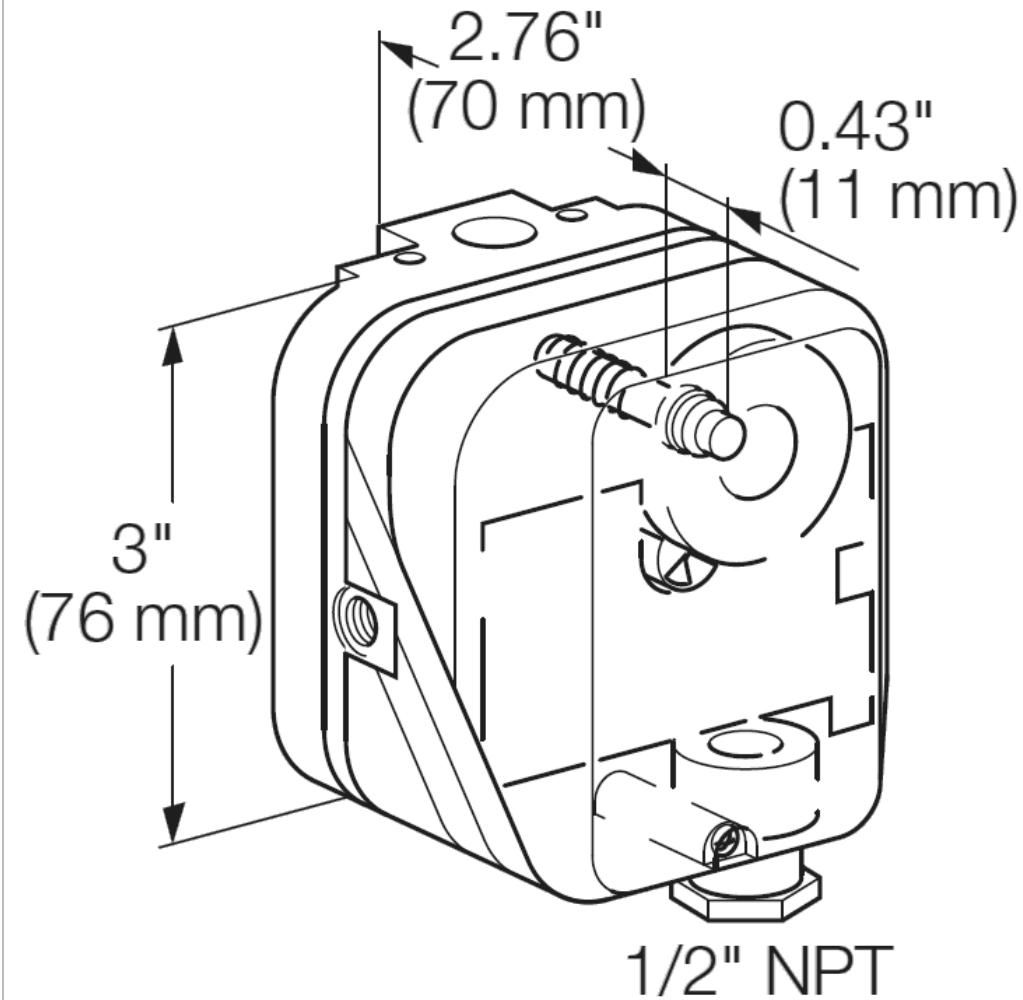
When there is insufficient gas pressure, the low gas pressure switch contact terminals 3 (COM) and 2 (NO) will open and the burner will stop operating.

1.1 Technical Data

Adjusting range	1 - 20 inch w.c.	2.5 - 50 mbar
Max. inlet pressure	8.5 psi	600 mbar
Switching capacity	24 - 240 VAC	max. 5 A at cos φ = 1 max. 0.5 A at cos φ = 0.6
Ambient temperature range	-40 to +140°F	-40 to +60°C
Medium	Air/gas	
Enclosure rating	IP 65	Safety class 1
Pipe connection	1/4" NPT	
Electrical connection	Screw terminals	1/2" NPT conduit
Certifications	UL listed	FM approved

1.2 Dimensional Drawings

Front View



System Accessories Data



Pressure Relief Valve

Conbraco 10 Series

Bronze safety relief valve for protection of hot water boilers and heating systems.

1.0 Technical Data for Model 10-418-09

Set pressure	45 psig	
Certified capacity *1	642,000 Btu/hr	
Maximum temperature	250 °F	121 °C

Connections

Inlet size	3/4 inch NPT Female	
Outlet size	3/4 inch NPT Female	

Dimensions

Height	2.75 inches	70 mm
Weight	0.65 lbs	295 g

Notes:

*1 ASME HV Rating - 90% of actual capacity at 10% overpressure.

System Accessories Data



Circulation Pump

Grundfos UPS Series

Cast iron circulator pump for closed systems.

1.0 Product Description

The pump uses a 2-pole asynchronous squirrel-cage permanent split capacitor motor. The motor incorporates thermal overload or impedance protection, so no external motor protection is required. The terminal box is easily accessible and has functional cable connecting leads or terminals.

The pump comes with:

- Flanged pipe connections

The pump must always be installed with horizontal motor shaft, and is intended for indoor use only. UPS pumps can be installed in both vertical and horizontal lines.

1.1 Technical Data for UPS 26-150F

Flow range	0 - 53 GPM	0 - 12 m³/h
Head range	0 - 46 feet	0 - 14 m
Motor type	3 Speed	
Horsepower	1/6 HP	

Available voltages, and capacitors

115 Volts / 1 Ph / 60 Hz	40 µF
208 Volts / 1 Ph / 60 Hz	10 µF
230 Volts / 1 Ph / 60 Hz	10 µF

Power usage at 115 VAC

115V is specified

• At speed 3 (high)	370 Watts	3.5 Amps
• At speed 2 (medium)	335 Watts	3.1 Amps
• At speed 1 (low)	265 Watts	2.5 Amps

Power usage at 208 VAC

• At speed 3 (high)	350 Watts	1.7 Amps
• At speed 2 (medium)	310 Watts	1.5 Amps
• At speed 1 (low)	250 Watts	1.2 Amps

Power usage at 230 VAC

• At speed 3 (high)	370 Watts	1.7 Amps
• At speed 2 (medium)	335 Watts	1.5 Amps
• At speed 1 (low)	265 Watts	1.2 Amps

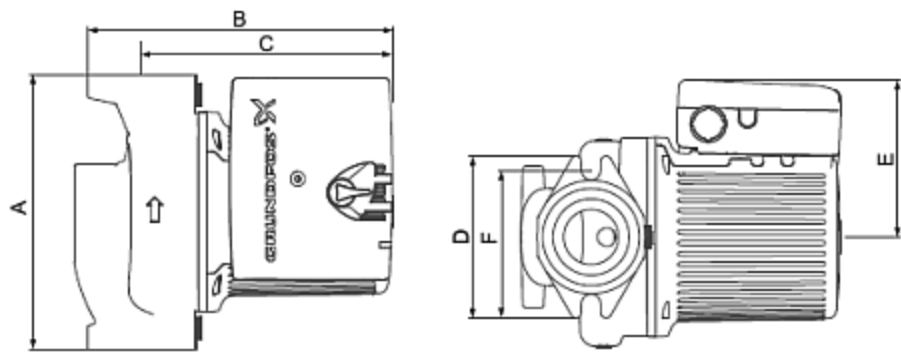
Max. system pressure	145 psi	10 bar
Max. liquid temperature *1	230 °F	110 °C
Min. liquid temperature	36 °F	2 °C

Shipping weight	17.4 lbs	7.9 kg
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Connection type	GF 15/26 flange with two 1/2" dia. bolt holes
Insulation class	H
Certifications	ETL listed

1.2 Dimensional Drawings

Pump Side and Top Views

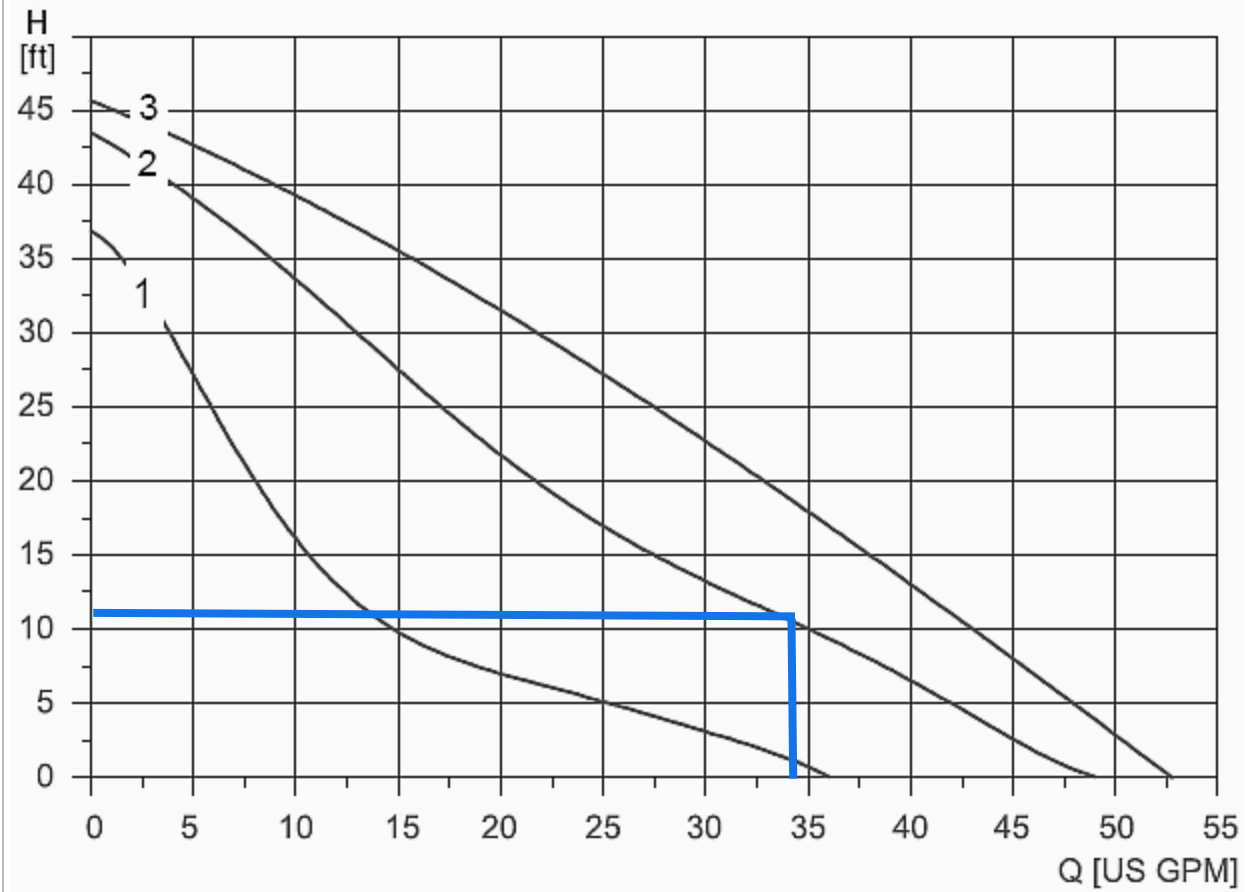


Drawings courtesy of Grundfos

Dimensions		
A	6.50"	165 mm
B	7.13"	181 mm
C	5.88"	149 mm
D	3.88"	98 mm
E	3.75"	95 mm
F	3.13"	79 mm

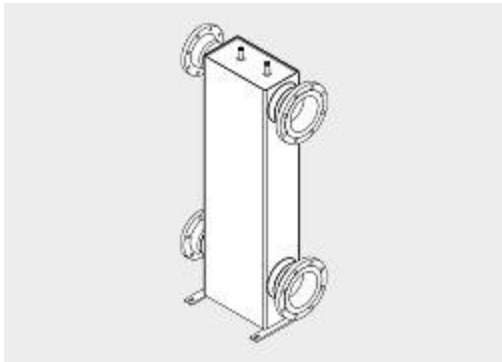
1.3 Performance Curves

Flow Rate Curves (Single Phase)



Performance chart courtesy of Grundfos

System Accessories Data



Low-Loss Header

For hydronic heating systems

Full product manuals:

 [Technical Data & Installation Instructions](#)

1.0 Product Description

Steel mixing chamber with supply and return tapings for both boiler and system loop, used to decouple high flow rate systems from the boiler loop.

Pressure tested to 145 psig / 10 bar.

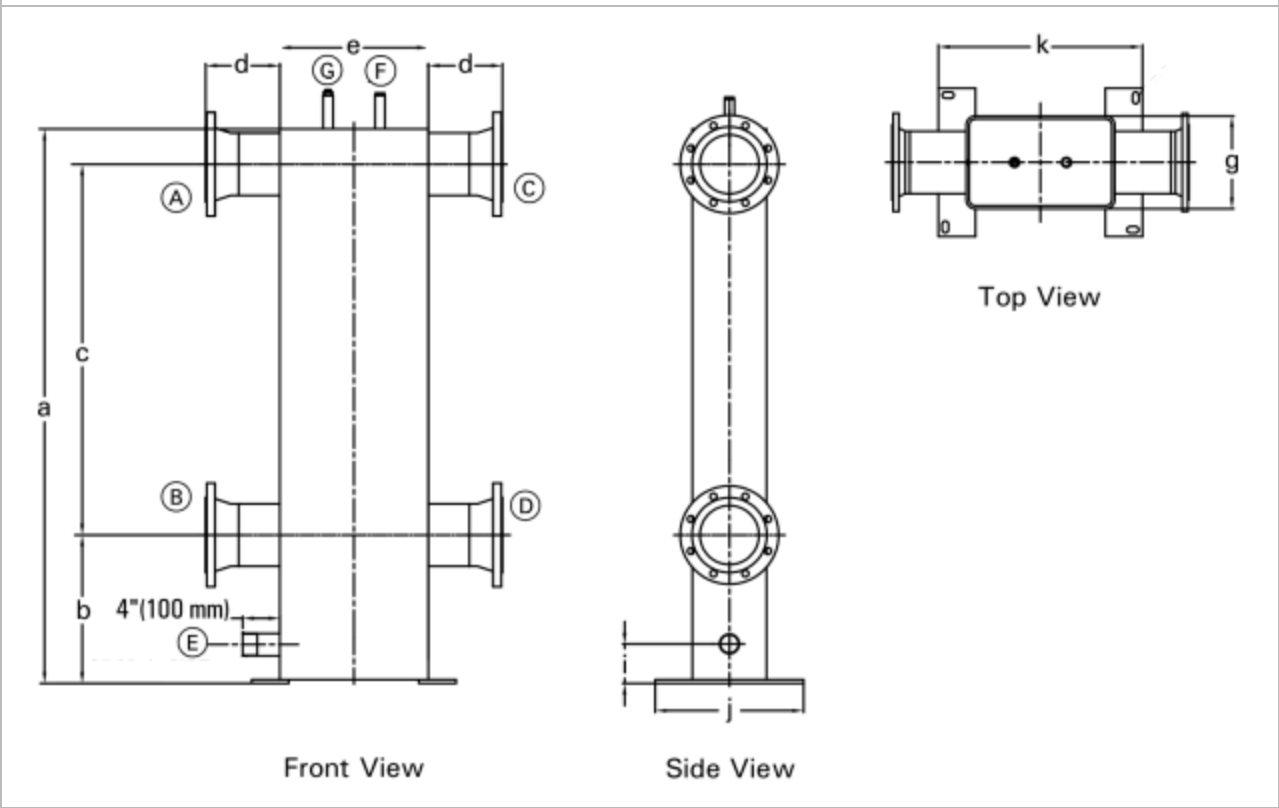
All commercial low-loss headers (models 160/80 and larger) are floor-standing, with anchor bolt holes to secure the unit to the floor.

1.1 Technical Data for Model 250/150

Connections	4 inch ANSI	
Maximum flow rate	119 USG/min	27 cubic m/hr
Water fill volume	14.5 USG	55.1 L
Dimensions (with optional insulation)		
Total height	57.8 inches	1468 mm
Total width	25.6 inches	650 mm
Total depth	13.8 inches	350 mm
Shipping weight		
Low-loss header	185 lbs	84 kg
Insulation	46 lbs	21 kg

1.2 Dimensional Drawings

Low-Loss Header Front and Side Views



Dimensions

a	57.8"	1468 mm
b	15.7"	400 mm
c	39.4"	1000 mm
d	7.9"	200 mm
e	9.8"	250 mm
g	5.9"	150 mm
i	4.2"	107 mm
j	13.8"	350 mm
k	15.7"	400 mm

Legend

A	Boiler supply
B	Boiler return
C	System supply
D	System return
E	Drain/clean-out opening
F	Sensor well (system side)
G	Air vent (boiler side)

System Accessories Data



Neutralization System

Grünbeck GENO®-Neutra V N-70

Full product manuals:

 [Installation and Service Instructions](#)

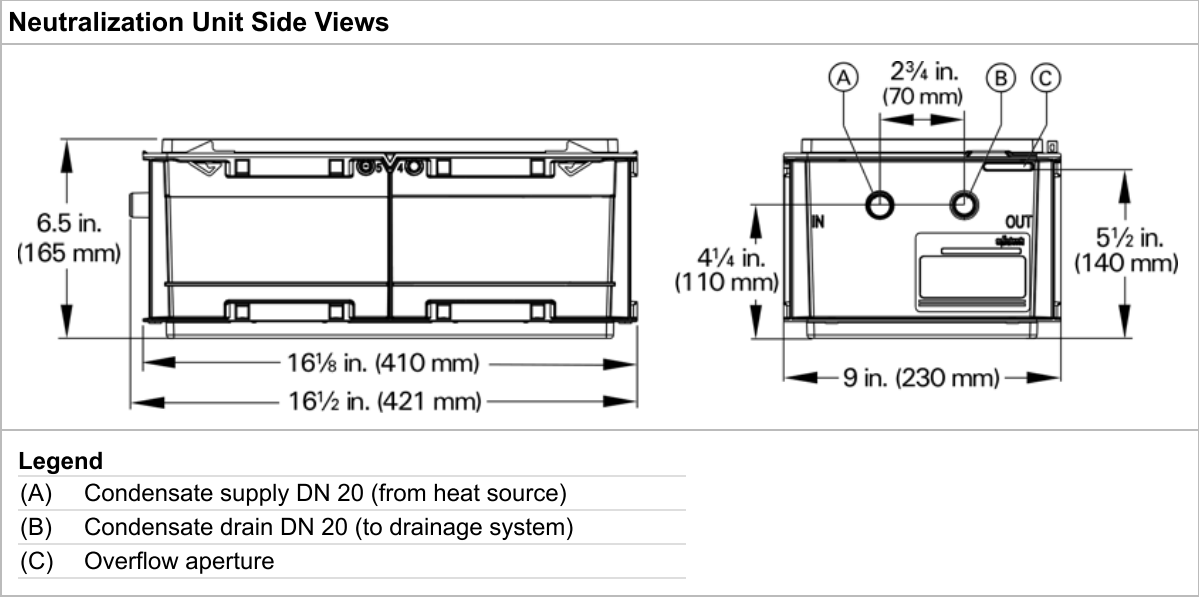
1.0 Product Description

Refillable neutralization unit with granular pellets designed to neutralize aggressive condensate produced by gas-fired condensing boilers. The neutralized condensate released by the unit will be non-corrosive, with a safe pH value of above 6.5.

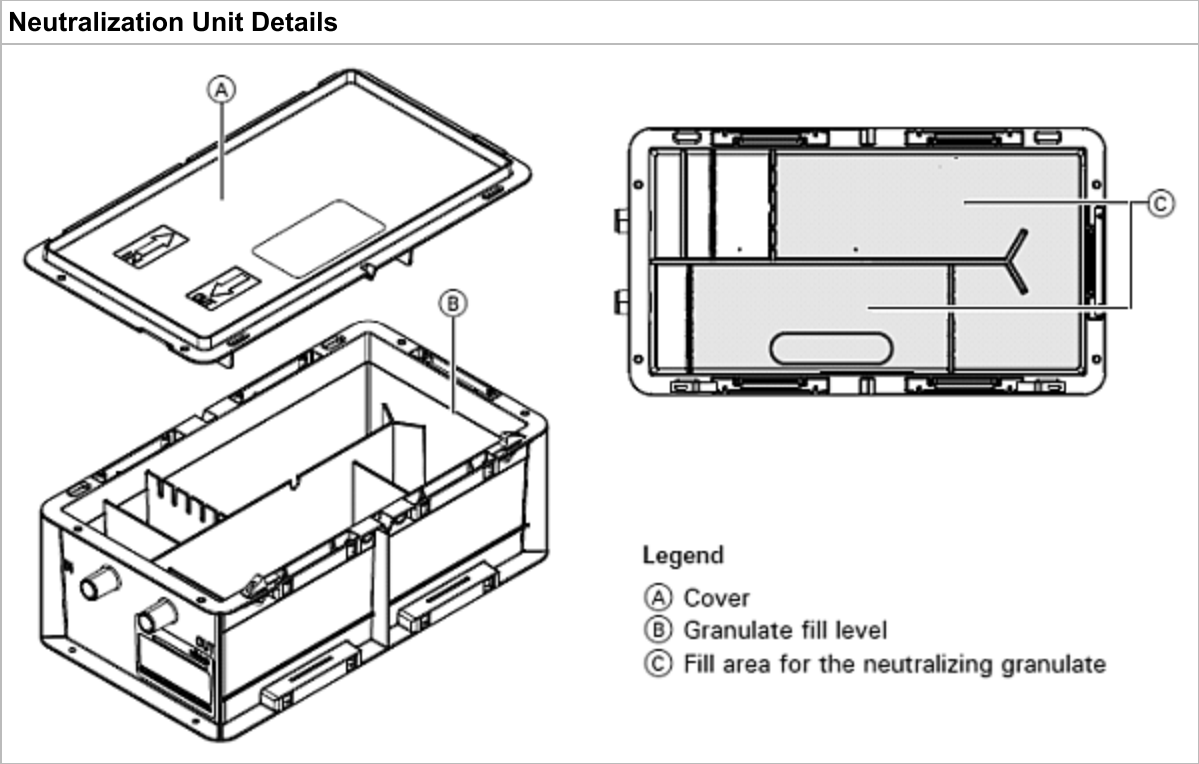
1.1 Technical Data

Max. neutralizing output	18.5	GPH	70	L/h
Neutralizing granulate	GENO-	Neutralit Hz		
Neutralizing granulate fill volume	17.6	lbs	8	kg
Service life	12	months		
Neutralizable condensate amount				
– With standard condensate to DVGW-VP-114, pH 3	2225	cubic ft.	63	cubic m
This corresponds to full boiler utilisation hours	900	bVH		
– With standard condensate with min. pH 3.2	3708	cubic ft.	105	cubic m
This corresponds to full boiler utilisation hours	1500	bVH		
Weight				
In the delivered condition	26.5	lbs	12	kg
In operation (filled) approx.	33	lbs	15	kg

1.2 Dimensional Drawings



1.3 Diagrams





System Accessories Data



Vitogate 300 BN/MB

For Integration of Viessmann Systems to BMS/BAS

Full product manuals:

-  [Installation and Service Instructions](#)
-  [Online Help](#)

1.0 Product Description

Vitogate 300 is a gateway designed to integrate Vitotronic controls which utilize the LON communication protocol, with Building Management Systems utilizing BACnet or ModBUS communication protocols.

Comes in one of the 2 following configurations:

- Mounted in a CSA housing, with 6.5 ft (2m) cord and 120V plug.
- Vitogate 300 Module and Power Supply Unit for DIN Rail mounting

1.1 Technical Data for Vitogate 300, Type BN/MB

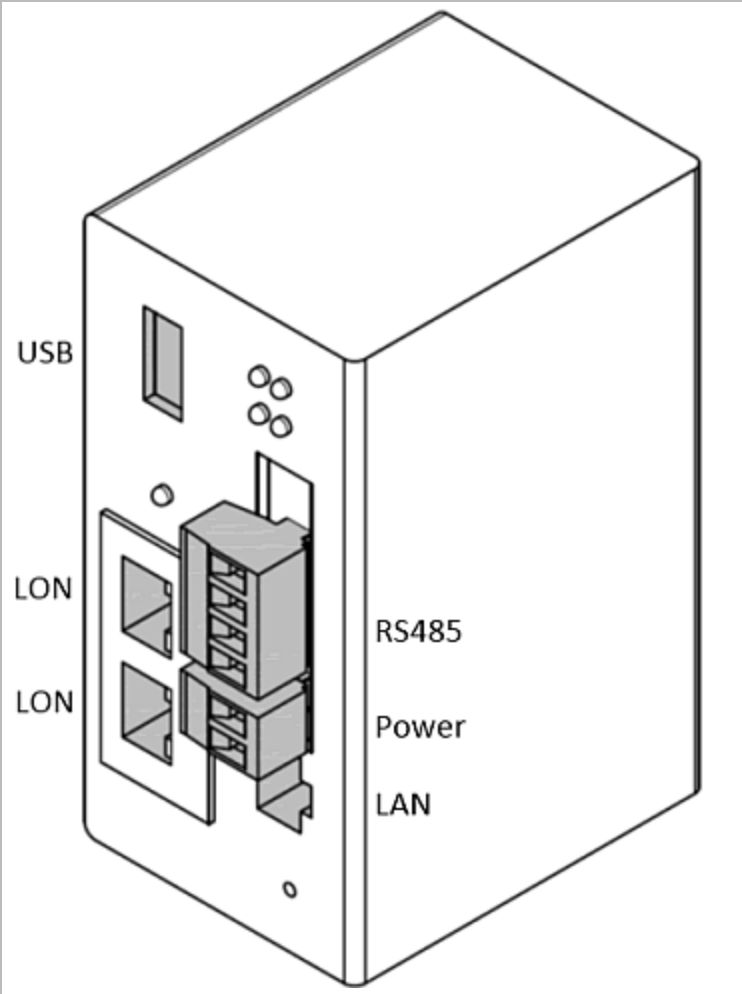
Mains voltage	12 to 24V AC/DC
Power consumption	Max. 320 mA
Rated output	Max. 3.85 W
Frequency range	47 to 63 Hz
Permissible ambient temperature	
– During operation	32 to 113°F (0 to 45°C)
– During storage and transport	14 to 149°F (-10 to 65°C)
Permissible humidity	
– During operation	20 to 80% relative humidity, non-condensing
– During storage and transport	10 to 85% relative humidity, non-condensing
Dimensions (height x width x depth)	4 x 2 x 2.75 in. (100 x 48 x 70 mm)
Installation	DIN rail (TS35 Top Hat Rail 35 x 15 mm or 35 x 7.5 mm)
Power supply unit	STEP-PS 1AC/24DC 0.75/FL.

1.2 Technical Data for Power Supply Unit

Rated voltage	100 to 240V~
Rated frequency	45 to 65 Hz
Output voltage	24VDC ±1%
Output current max.	1.4A
Permissible ambient temperature	
– During operation >131°F (>55°C) line loss	-13 to 158°F (-25 to 70°C)
– During storage and transport	-40 to 185°F (-40 to 85°C)
Max. humidity	95% relative humidity at 77°F (25°C), non-condensing
Dimensions (height x width x depth)	6 x 1.4 x 1.7 in. (150 x 36 x 43 mm)
Installation	DIN rail (TS35 Top Hat Rail 35 x 15 mm or 35 x 7.5 mm)

1.3 Connection Diagrams

Overview of Electrical Connections



Legend

LON	Connection to the Viessmann LON System
LON	Connection to the Viessmann LON System
LAN	Connection to PC/Laptop, BACnet IP or Modbus TC/IP
RS485	Connection for BACnet MS/TP or Modbus 485
USB	Connection for Software Configuration Back-up
Power	Connection for 24VDC power Supply



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