VIESMANN

VITOGAS 050

Cast iron hot water heating boiler
65 to 200 MBH / 19 to 59 kW

Technical Data Manual

Model Nos. and pricing: see Price List

Vitogas 050

ECD Series

Gas-/Propane-Fired Boiler
cast iron construction
atmospheric
Heating input: 65 to 200 MBH
19 to 59 kW

CERTIFIED

DESIGN CERTIFIED

I=B=R

H

VERIFIED
CSA
Energy Performance
Rendement Énergétique
VÉRIFIÉ

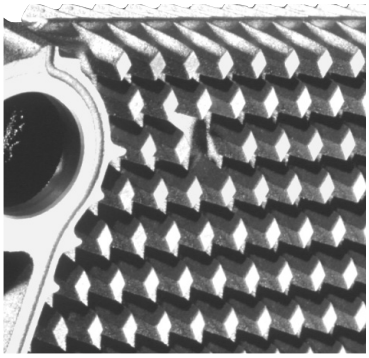
5167 444 v1.4 01/2008

Vitogas 050

Impressive performance, yet a very compact design. Due to its compact dimensions, the Vitogas 050 is ideal for installation in small mechanical rooms and even in closets. In addition to saving space, the Vitogas 050 is economical in two ways - initial investment and operational cost.

The benefits at a glance:

- **Economical, compact**, with **integrated draft hood** for vertical chimney venting.
- **High operational reliability and a long service life** due to special high-grade gray cast iron with lamellar graphite and uniform heat transfer to avoid stress fractures.
- Large diameter, stainless steel burners provide quiet, reliable performance; **seasonal efficiency of up to 83.7%**.
- Optimal operation due to wide water passageways and a wet-base, sectional design.
- **Compact dimensions** – therefore suitable for installation in almost any mechanical room, or even closet installation.
- **Problem-free transport into difficult-to-access** boiler rooms due to light weight and compact design.



Heat exchanger surfaces of special high-grade gray cast iron for high operational reliability and a long service life

Technical data

Boiler Model	Model No.	ECD-65	ECD-80	ECD-100	ECD-115	ECD-140	ECD-155	ECD-180	ECD-200
CSA input	MBH	65	80	100	115	140	155	180	200
	kW	19	23	29	34	41	45	53	59
CSA output / DOE output	MBH	54	66	83	95	116	129	149	166
	kW	16	19	24	28	34	38	44	49
A.F.U.E. **1 *2*	%	83.7	83.5	83.5	83.5	83.5	83.4	83.2	83.0
Heat exchanger surface area	ft^2	14.32	14.32	21.10	21.10	27.99	27.99	34.88	34.88
	m^2	1.33	1.33	1.96	1.96	2.60	2.60	3.24	3.24
Cast iron sections		3	3	4	4	5	5	6	6
Burners		2	2	3	3	4	4	5	5
Manifold pressure									
Natural gas	"w.c.	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Propane gas	"w.c.	10	10	10	10	10	10	10	10
Max. gas supply pressure **3*	"w.c.	14	14	14	14	14	14	14	14
Overall dimensions									
Overall depth	inches	19¾	19¾	19¾	19¾	19¾	19¾	19¾	19¾
	mm	502	502	502	502	502	502	502	502
Overall width	inches	13½	13½	17	17	21	21	25	25
	mm	340	340	432	432	533	533	635	635
Overall height	inches	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
	mm	1035	1035	1035	1035	1035	1035	1035	1035
– Height	inches	39½	39½	39½	39½	39½	39½	39½	39½
	mm	1003	1003	1003	1003	1003	1003	1003	1003
Height of Vitocell-H DHW tank under boiler									
– 160 to 200 ltr / 42 to 53 USG capacity	inches	28¼	28¼	28¼	28¼	–	–	–	–
	mm	715	715	715	715				
– 350 ltr / 92 USG capacity	inches	33¼	33¼	33¼	33¼	33¼	33¼	33¼	33¼
	mm	847	847	847	847	847	847	847	847
– 450 ltr / 120 USG capacity	inches	–	–	–	–	37¼	37¼	37¼	37¼
	mm					947	947	947	947
Weight, boiler with insulation, burners and packaging	lbs	233	233	285	285	345	345	423	423
	kg	106	106	130	130	157	157	192	192
Boiler water content	USG	2.6	2.6	3.5	3.5	4.3	4.3	7.1	7.1
	ltr	9.9	9.9	13.2	13.2	16.5	16.5	26.8	26.8
Max. operating pressure	psig	50	50	50	50	50	50	50	50
	kPa	345	345	345	345	345	345	345	345
Boiler connections									
Boiler supply and return	Ø" (male thread)	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼
Gas supply connection	Ø" (male thread)	½	½	½	½	½	½	½	½
Vent pipe collar	inches	5	5	6	6	7	7	7	7

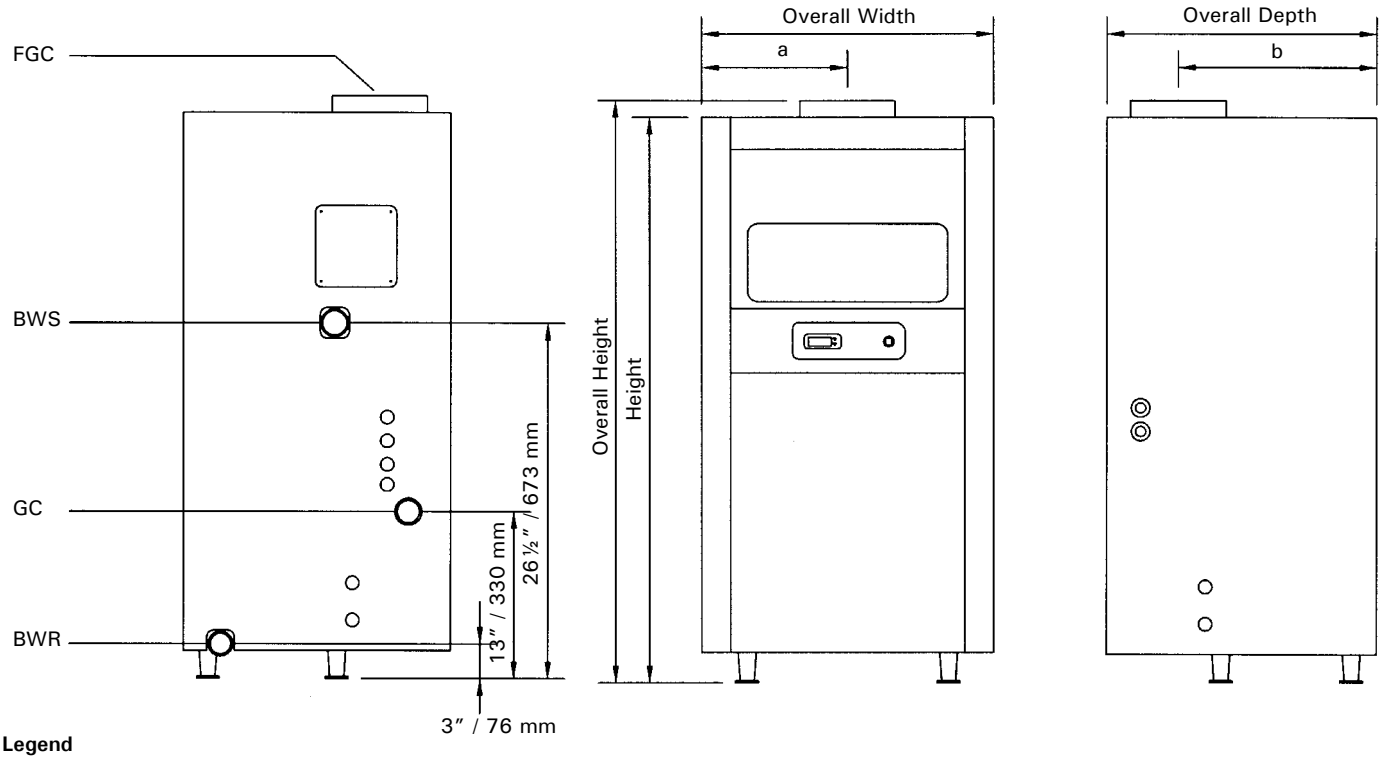
1 Each Vitogas 050 ECD Series boiler sold in North America must be ordered with a vent damper to comply with minimum A.F.U.E. requirement of 80% (when utilizing a natural draft chimney). If power venting, order wall vent system only and do* ***not* *order a vent damper. See Price List.*

**2 With intermittent pilot electronic ignition system and vent damper.*

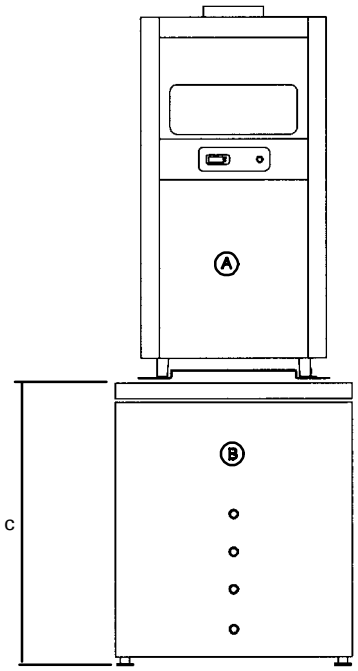
**3 If the gas supply pressure is higher than the maximum permissible value, a separate field supplied gas regulator must be installed upstream of the boiler gas train.*

► *For information regarding other Viessmann System Technology componentry, please reference documentation of the respective product.*

Technical Data



Legend
BWR Boiler Water Return
BWS Boiler Water Supply
FGC Flue Gas Collar
GC Gas Connection



Ⓐ Vitogas 050, ECD Series
Ⓑ Vitocell-H 100 or 300
(see separate Technical Data Manuals)

Note:
Support Bars are installed lengthwise for ECD-65 through ECD-115 and widthwise for ECD-140 through ECD-200. Widthwise installation is pictured. The Base Pan is installed between the boiler and the Support Bars (also shown).

Dimensions

Boiler Model	ECD	-65	-80	-100	-115	-140	-155	-180	-200
a	inches	6¾	6¾	8.5	8.5	10½	10½	12½	12½
	mm	170	170	216	216	267	267	318	318
b	inches	15	15	14¾	14¾	14½	14½	14	14
	mm	381	381	375	375	368	368	352	352

With Vitocell-H	USG	34 to 53	92	34 to 53	92	34 to 53	92	34 to 53	92	92	120	92	120	92	120	92	120
DHW tank under boiler	ltr	130 to 200	350	130 to 200	350	130 to 200	350	130 to 200	350	350	450	350	450	350	450	350	450
c	inches	28¼	33¼	28¼	33¼	28¼	33¼	28¼	33¼	33¼	37¼	33¼	37¼	33¼	37¼	33¼	37¼
	mm	715	847	715	847	715	847	715	847	847	947	847	947	847	947	847	947

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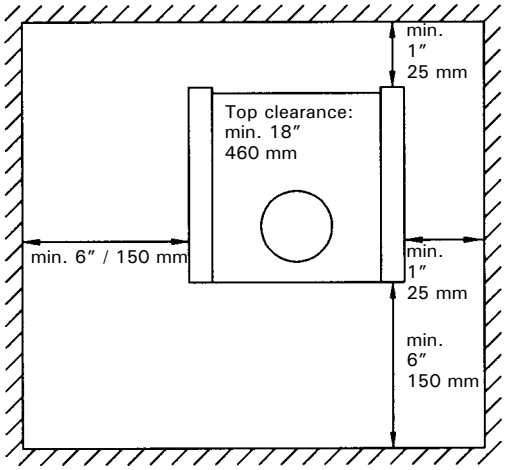
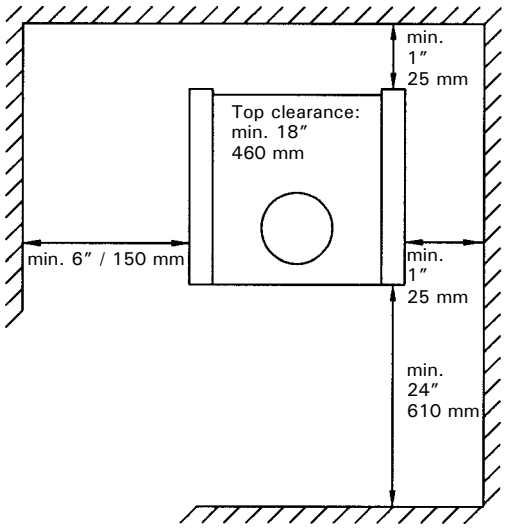
Recommended Minimum Clearances

The Vitogas 050 is designed for closed loop, forced circulation hot water heating systems only.

Closet installation, ECD-65 to -155



Alcove installation, ECD-180 and -200



Installation on combustible flooring

A Base Pan (Optional Equipment) **must** be ordered if the Vitogas 050, ECD Series is to be installed on combustible flooring. See Price List.

Mounting the Vitogas 050 on a Vitocell-H

The Vitogas 050 can be mounted on a Vitocell-H as shown previously to reduce the footprint of heating equipment in the mechanical room. Two Support Bars and one Base Pan **are necessary**. Order a Support Bar Kit from the Price List. Do **not** attempt to install combinations not listed in the Price List.

Standard Equipment

Boiler shell with mounted insulation jacket and atmospheric burners for natural gas or propane gas (as per order) conforming to national and local regulations.

Standard equipment includes 30 psig pressure relief valve, pressure gage, installation fittings, and cleaning brush.

Boiler Control

Standard control (included with boiler)
control with temperature gage, adjustable high limit, and fixed high limit.

Vitotronic 200-H, HK1M Series (Optional Equipment)
Digital mixing valve mounted heating circuit control with outdoor reset function to operate a heating circuit with a mixing valve.

System Design Considerations

Boiler selection

The boiler model size should be based on an accurate heat loss calculation of the building. The boiler selected must be compatible with the connected radiation.

Chimney

For proper operation of the Vitogas boiler, all products of combustion must be safely vented to the outdoors, while ensuring that flue gases do not cool prematurely.
It is critical that the chimney system be properly designed and sized to handle the relatively cool flue gas temperatures which the Vitogas boiler produces.
Flue gases which cool too quickly and produce condensation lead to damages if the chimney diameter is too large and the chimney system is not well insulated.
If a calculated chimney diameter lies between two values, the larger diameter should be selected.

Intermediate vent section
The intermediate (vertical and horizontal) section of venting between the boiler vent pipe collar and the chimney must be of the identical diameter as the vent connection of the boiler. Use the shortest possible path between the boiler and the chimney. A maximum of two elbows may be installed in the intermediate section. Avoid the use of two level 90° elbows.
The intermediate section must be sealed pressure tight at the boiler vent pipe collar and at the chimney connection. Ensure any test port for combustion values is sealed as well.

The chimney connection length between the boiler vent pipe collar and the chimney must be installed with insulation. We recommend consulting a reputable chimney installer for advice in project-specific circumstances.

Warranty excerpts

Our warranty does not cover damages resulting from the following:
- installation or service by unqualified and not licensed personnel
- corrosion caused by flue gas condensation due to low boiler water and/or return water temperatures
- operation with contaminated fill and supplementary feed water

For detailed warranty information, please read warranty sheet supplied with product.

Combustion air supply

The boiler must not be located in areas or rooms where chemicals containing chlorine, bromine, fluorine, or other corrosive chemicals are stored. Examples include refrigerants, bleach, paint, paint thinner, hair spray, cleaning solvents, water softener salt, etc. The combustion air must not be contaminated with the above mentioned, or other aggressive or corrosive chemicals.

Boiler should never be installed in areas where excessive dust, high humidity, or risk of frost exist. Ensure adequate ventilation and supply of fresh combustion air.

Consult Viessmann with uncertainties in regard to a suitable boiler installation location.

This boiler/burner unit needs clean fresh air for safe operation and must be installed so that there are provisions for adequate combustion and ventilation air. For natural gas or propane, use the “Natural Gas Installation Code CAN/CSA-B149.1 or B149.2” (Canada), or “National Fuel Gas Code ANSI Z223.1” (USA), and/or provisions of local codes.

The sizing methods outlined in the above codes must be used when installing a round duct to supply combustion air from the outside. Observe local jurisdictional requirements.

System layout

The boiler water temperature limit is factory set to 167°F / 75°C.
The boiler water temperature limit can be increased by altering the adjustable high limit to increase the supply water temperature.
To minimize piping losses of the system however, we recommend that the radiation and domestic hot water production in the system be designed for a 158°F / 70°C boiler supply water temperature (new systems).

Water quality

Treatment for boiler feed water should be considered in areas of known problems, such as where a high mineral content and hardness exist. In areas where freezing might occur, an antifreeze may be added to the system water to protect the system. Please adhere to the specifications given by the antifreeze manufacturer. Do not use automotive silicate based antifreeze. Please observe that an antifreeze/water mixture may require a backflow preventer within the automatic water feed and influence components such as diaphragm expansion tanks, radiation, etc. A 40% antifreeze content will provide freeze-up protection to -10°F / -23°C. Do **not** use antifreeze other than specifically made for hot water heating systems. System also may contain components which might be negatively affected by antifreeze. Check total system frequently when filled with antifreeze. Advise system operator/ultimate owner that system is filled with a glycol mix.

The heating contractor must provide an MSDS (Material Safety Data Sheet) for the antifreeze used to the system operator/ultimate owner.

Oxygen diffusion barrier underfloor tubing

The boiler warranty does not cover leaks resulting from corrosion caused by the use of underfloor plastic tubing without an oxygen diffusion barrier. Such systems must have the non-oxygen diffusion barrier tubing separated from the boiler with a heat exchanger. Viessmann recommends the use of underfloor plastic tubing with an oxygen diffusion barrier.

Low water cut-off

A low water cut-off may be required by local codes. If boiler is installed above the radiation level, a low water cut-off device of approved type must be installed in all instances. An approved type low water cut-off device must be provided by the heating contractor. Do not install an isolation valve between the boiler and the low water cut-off.

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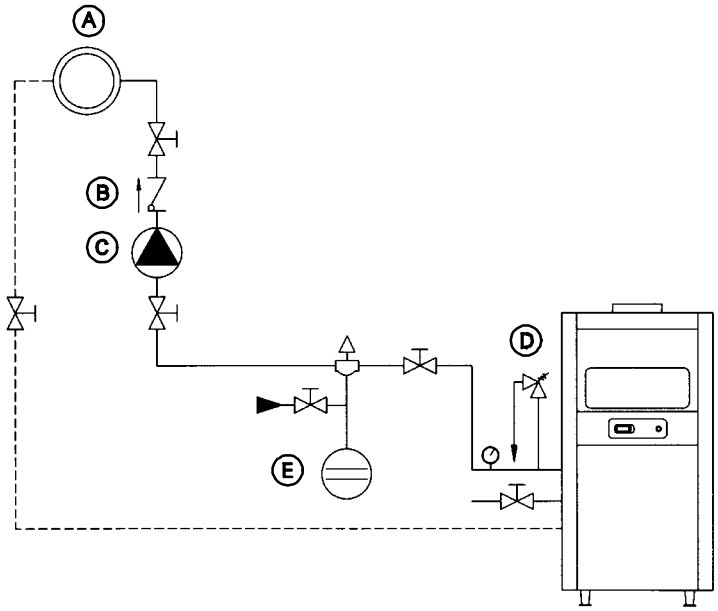
Installation Examples

Important!
These examples depict possible piping layouts for Viessmann product equipped with Viessmann System Technology. For boiler and tank combinations, please install only the feasible combinations listed in the Price List.

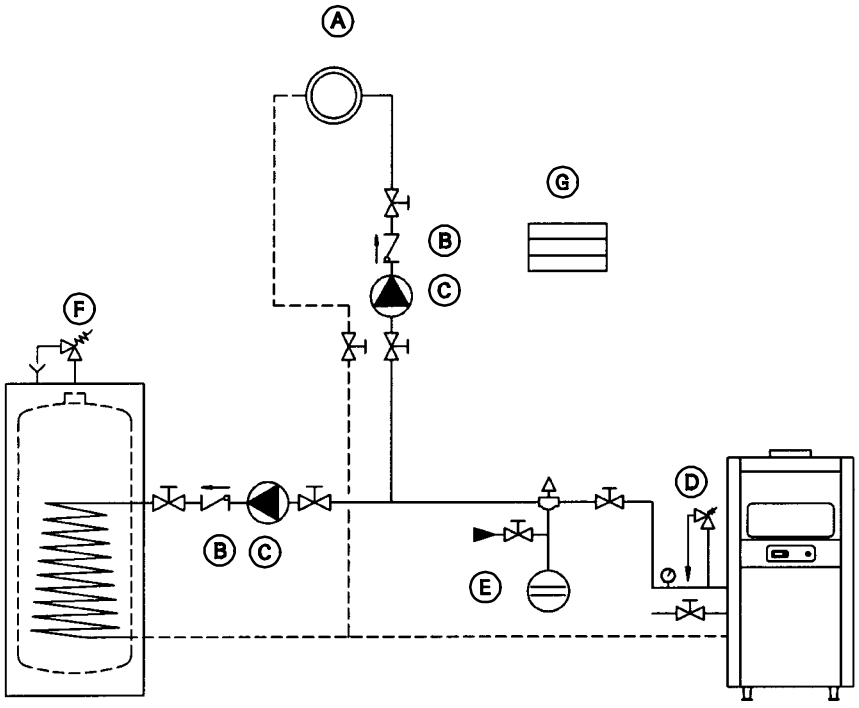
These are simplified conceptual drawings only! Piping and necessary componentry must be field verified.

Proper installation and functionality in the field is the responsibility of the heating contractor.

Without a mixing valve



Ⓐ Heating circuit
Ⓑ Spring-loaded flow check valve
Ⓒ Circulation pump
Ⓓ Pressure relief valve
Ⓔ Precharged expansion tank
Ⓕ Domestic hot water storage tank (indirect-fired)
Ⓖ DHW Pump Module



The installation of the check valve to restrict gravity circulation in the heating supply pipe prevents uncontrolled heat flow to the heating system by gravity during priority switching of domestic hot water heating or during summer operation.

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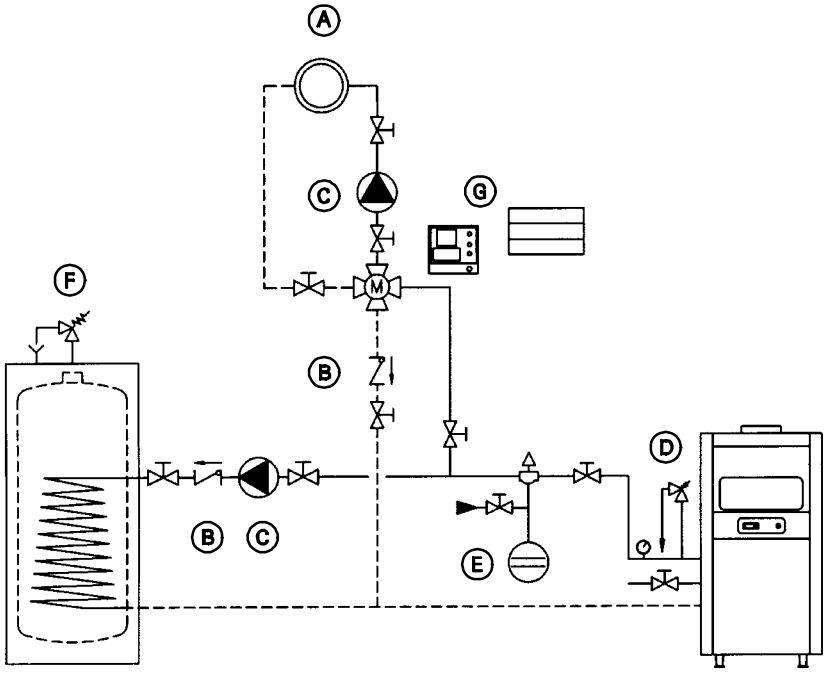
With a 4-way mixing valve to regulate heating circuit, with domestic hot water control, and with boiler activation capability



Ⓐ Heating circuit
Ⓑ Spring-loaded flow check valve
Ⓒ Circulation pump
Ⓓ Pressure relief valve
Ⓔ Precharged expansion tank
Ⓕ Domestic hot water storage tank (indirect-fired)
Ⓖ Vitotronic 200-H, HK1M Series mixing valve control

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