

NRGI 151H-602H

Reversible air/water heat pump

Cooling capacity 28.9 ÷ 123.7 kW – Heating capacity 31.6 ÷ 133.9 kW



- High efficiency also at partial loads
- High modulation capacity
- Continuous modulation of the cooling capacity
- Compressors and fans with Inverter
- Low refrigerant charge
- Stable temperature control of the outlet water



DESCRIPTION

Reversible outdoor heat pumps for the production of chilled/heated water designed to satisfy the needs of residential and commercial buildings, or for industrial applications.

These are outdoor units with streamlined scroll compressors used with R32 gas.

Condensing coil with copper pipes and aluminium louvers, plate heat exchanger and **standard electronic expansion valve.**

The base, the structure and the panels are made of galvanized steel treated with polyester paint RAL 9003.

VERSIONS

- A High efficiency
- E Silenced high efficiency

FEATURES

Operating field

Working at full load up to -15 °C outside air temperature in winter, and up to 49 °C in summer. Hot water production up to 60 °C

For more information refer to the selection program and to the dedicated documentation.

High efficiency

These are flexible and reliable units which adapt to the most diverse load conditions thanks to the precise design and **the use of steady speed compressors together with inverter-controlled variable speed compressors** guaranteeing a high energy efficiency level both at full and partial load.

Inverter compressor + On-Off

They can be configured with a single variable speed compressor or two in tandem configuration, one steady and one variable speed. This pair guarantees high efficiency both with partial and full loads.

Sizes 151-281 have a single variable speed compressor. Sizes 302-602 have two compressors in tandem configuration.

This solution gets the best value out of the particularities and advantages of each compressor, enhancing the efficiency of each load condition and allowing for

- High seasonal efficiency
- steady and precise modulation of the chilling demand

- The stability of the outlet water temperature.

Refrigerant HFC R32

The environmental impact of the units is reduced considerably owing to the last generation R32 refrigerant.

Combining a reduced refrigerant load with a low global warming potential (GWP), these units boast low equivalent CO₂ values.

- *The leak detector is supplied as per standard.*

New condensing Coils

The whole range uses copper - aluminium condensation coils with reduced diameter rows, allowing a lower quantity of gas to be used compared to traditional coils.

Electronic expansion valve

Single-compressor units have a standard electronic expansion valve, while units with tandem compressors have two.

The possibility to use electronic expansion valve, offers significant benefits, especially when the chiller is working with partial loads, increasing the energy seasonal efficiency of the unit.

Inverter fans

All of the units are equipped as per standard with high-efficiency inverter-controlled axial fans which provide:

- Steady air flow rate adjustment
- Low consumption and reduced sound level at partial loads
- Operation with low outdoor air temperatures
- Precise condensation control for an extended operating range.

Option integrated hydronic kit

An optional, integrated hydronic kit containing the main hydraulic components, to obtain a solution that allows you to save money and to facilitate installation.

It is available in different configurations with storage tank or with fixed or variable pumps also inverter.

- *VARIABLE FLOW RATE: Correctly adjust the speed of the inverter-controlled pumps according to the load demand of the system, in order to reduce power consumption.*

CONTROL PCO⁵

Microprocessor control, with keyboard and LCD display, for easy access on the unit with a menu available in several languages.

- The presence of a programmable timer allows functioning time periods and a possible second set-point to be set.
- The temperature control takes place with the integral proportional logic, based on the water output temperature.
- **Swing HP and LP controls:** available for all models. By continuously modulating the fans, they streamline operation of the unit at any work point both in cooling and heating mode. This results in enhanced energy efficiency of the unit at partial loads.
- **Night mode:** only in the **non-silenced** versions is it possible to set a silenced operating mode, which is useful for example at night for greater acoustic comfort but always guarantees performance even at peak load times.

INTEGRATED SOLUTION

The **"integrated solution" concept has been implemented in the system architecture**, consisting in an integrated and streamlined control of compressors and electronic valves.

This solution allowed a variety of new features to be introduced, such as:

- **Low Superheat Control:** Progressive superheating reduction in conditions of stability. This allows to increase energy performance: both in modulation and in full load conditions;
- **DLT control:** Control of electronic valves at discharge temperature in certain operating conditions. This is demonstrated in an enhanced reliability of the control and a considerable expansion of the machine's operating range, especially in heating mode.

ACCESSORIES

AER485P1: RS-485 interface for supervising systems with MODBUS protocol. 1 accessory is provided for each unit control board.

AERBAC-ONE: Ethernet communication interface for Bacnet/IP and Modbus TCP/IP protocols, HTTPS protocol for web interface, encrypted communication protocols and access credential management in accordance with the latest standards. One accessory is provided for each unit control board.

AERBACP: Ethernet communication interface for Bacnet/IP and Modbus TCP/IP protocols. 1 accessory is provided for each unit control board.

AERNET: The device remotely controls, manages and remotely monitors a chiller/heat pump using a PC, smartphone or tablet via a Cloud connection. AERNET acts as Master while each connected unit is configured as Slave up to a maximum of 6 control cards. The connection is made via cable and/or USB key. Wi-Fi connectivity is not available. It is also possible to save a log file with all the data from the connected units to your terminal with a simple click for possible post-analysis. With the purchase of the Router, the Customer benefits from a 24-month free period during which he can use the Aernet Service at no additional cost. At the end of this initial period, the Service may be renewed by subscribing to a 1, 2 or 3 year subscription. For further details on costs and renewal methods, please contact our office or consult the technical documentation available on our website. www.aermec.com.

MULTICHILLER-EVO: Control, switch-on and switch-off system of the single chillers where multiple units are installed in parallel (max. no. 9), always ensuring constant flow rate to the evaporators.

PGD1: Allows you to control the unit at a distance.

SGD: Electronic expansion that enables connecting to the photovoltaic system and heat pumps to accumulate heat in the DHW tank or in the heating system during the photovoltaic production phase and release it at times when heating demand is highest.

PR4: Remote panel with LCD display and touch keyboard that allows carrying out the basic controls, the programming of time ranges and the signalling of the alarms of a single unit.

■ *The accessory PR4 should only be combined with the RS485 communication interface when the serial port is occupied by another device.*

GP: Anti-intrusion grid.

VT: Anti-vibration supports.

FACTORY FITTED ACCESSORIES

DRE: Electronic device for peak current reduction.

T6: Double safety valve with exchange cock, both on the high and low pressure branches.

RXBAS: Electric heating element mounted on the perforated base near the battery.

ACCESSORIES COMPATIBILITY

Model	Ver	151	201	281	302	332	352	382	502	552	602
AER485P1	A,E	*	*	*	*	*	*	*	*	*	*
AERBAC-ONE	A,E	*	*	*	*	*	*	*	*	*	*
AERBACP	A,E	*	*	*	*	*	*	*	*	*	*
AERNET	A,E	*	*	*	*	*	*	*	*	*	*
MULTICHILLER-EVO	A,E	*	*	*	*	*	*	*	*	*	*
PGD1	A,E	*	*	*	*	*	*	*	*	*	*
SGD	A,E	*	*	*	*	*	*	*	*	*	*

Remote panel

Model	Ver	151	201	281	302	332	352	382	502	552	602
PR4	A,E	*	*	*	*	*	*	*	*	*	*

The accessory PR4 should only be combined with the RS485 communication interface when the serial port is occupied by another device.

Antivibration

Ver	151	201	281	302	332	352	382	502	552	602	
Integrated hydronic kit: 00, I1, I2, I3, I4, P1, P2, P3, P4											
A, E	VT17	VT13	VT13	VT13	VT13	VT13	VT11	VT11	VT11	VT22	
Integrated hydronic kit: 01, 02, 03, 04, 05, 06, 07, 08, 09, K1, K2, K3, K4, W1, W2, W3, W4											
A, E	VT13	VT13	VT13	VT13	VT13	VT13	VT11	VT11	VT11	VT22	

Anti-intrusion grid

Ver	151	201	281	302	332	352	382	502	552	602
A, E	GP3	GP4	GP4	GP4	GP4	GP4	GP2 x 2 (1)	GP2 x 2 (1)	GP2 x 2 (1)	GP2 x 3 (1)

(1) x_ indicates the quantity to buy

Device for peak current reduction

Ver	151	201	281	302	332	352	382	502	552	602
A, E	-	-	-	DRENRG1302	DRENRG1332	DRENRG1352	DRENRG1382	DRENRG1502	DRENRG1552	DRENRG1602

The accessory cannot be fitted on the configurations indicated with -

A grey background indicates the accessory must be assembled in the factory

Double safety valves

Ver	151	201	281	302	332	352	382	502	552	602
A, E	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1	T6NRG1

A grey background indicates the accessory must be assembled in the factory

Heating electrical resistance

Ver	151	201	281	302	332	352	382	502	552	602
A, E	RXBAS5	RXBAS6	RXBAS6	RXBAS6	RXBAS6	RXBAS6	RXBAS7	RXBAS7	RXBAS7	RXBAS8

A grey background indicates the accessory must be assembled in the factory

CONFIGURATOR

Field	Description
1,2,3,4	NRGI
5,6,7	Size 151, 201, 281, 302, 332, 352, 382, 502, 552, 602
8	Operating field (1)
X	Electronic thermostatic expansion valve
9	Model
H	Heat pump
10	Heat recovery
D	With desuperheater (2)
°	Without heat recovery
11	Version
A	High efficiency
E	Silenced high efficiency
12	Coils
R	Copper pipes-copper fins
V	Copper pipes-Coated aluminium fins
°	Copper-aluminium
13	Fans
J	Inverter
°	Standard with phase cut
14	Power supply
°	400V ~ 3N 50Hz with magnet circuit breakers
15,16	Integrated hydronic kit
	Without hydronic kit
00	Without hydronic kit
	Kit with storage tank and pump/s
01	Storage tank with low head pump
02	Storage tank with low head pump + stand-by pump
03	Storage tank with high head pump
04	Storage tank with high head pump + stand-by pump
	Kit with pump/s and storage tank with holes for heaters

Field	Description
05	Storage tank with holes for heaters and single low head pump (3)
06	Storage tank with holes for heaters and pump low head + stand-by pump (3)
07	Storage tank with holes for heaters and single high head pump (3)
08	Storage tank with holes for heaters and pump high head + stand-by pump (3)
	Double loop
09	Double loop
	Kit with pump/s
P1	Single pump low head
P2	Pump low head + stand-by pump
P3	Single pump high head
P4	Pump high head + stand-by pump
	Kit with inverter pump/s to fixed speed
I1	Single low head pump + fixed speed inverter
I2	Single low head pump with fixed speed inverter + stand-by pump
I3	Single high head pump + fixed speed inverter
I4	Single high head pump with fixed speed inverter + stand-by pump
	Kit with storage tank and inverter pump/s to fixed speed
K1	Single low head pump + storage tank + fixed speed inverter
K2	Storage tank and low head pump with fixed speed inverter + stand-by pump
K3	Single high head pump + storage tank + fixed speed inverter
K4	Storage tank and low head pump with fixed speed inverter + stand-by pump
	Kit with storage tank and variable speed inverter pump/s
W1	Single low head pump + Storage tank + variable speed inverter
W2	Double low head pump + Storage tank + variable speed inverter
W3	Single high head pump + Storage tank + variable speed inverter
W4	Double high head pump + Storage tank + variable speed inverter

(1) Water produced from -10 °C ÷ 20 °C. Double electronic thermostatic valve from size 302 to 602.

(2) The desuperheater must be intercepted in heating mode. In cooling mode, a water temperature no lower than 35°C must always be guaranteed on the heat exchanger inlet.

(3) Storage tanks with holes for supplementary heaters (not provided) are sent from the factory with plastic protection caps. Before loading the system, if the installation of one or all resistances is not expected, all plastic caps must be replaced with the special caps, commonly commercially available.

PERFORMANCE SPECIFICATIONS

NRGI - HA

Size		151	201	281	302	332	352	382	502	552	602
Fans: J, °											
Cooling performance 12 °C / 7 °C (1)											
Cooling capacity	kW	36,5	48,9	54,2	64,1	72,1	77,3	87,0	95,7	106,0	123,7
Input power	kW	12,1	15,6	18,1	21,5	23,9	26,3	28,4	32,3	36,1	39,1
Cooling total input current	A	18,30	24,10	27,00	38,20	42,10	47,00	43,80	50,70	54,70	60,10
EER	W/W	3,00	3,13	3,00	2,98	3,02	2,94	3,06	2,96	2,93	3,16
Water flow rate system side	l/h	6.280	8.416	9.328	11.028	12.414	13.315	14.969	16.471	18.246	21.290
Pressure drop system side	kPa	15	28	34	28	35	41	19	18	23	25
Heating performance 40 °C / 45 °C (2)											
Heating capacity	kW	39,6	53,4	59,0	69,9	78,1	84,1	94,7	104,8	115,7	133,9
Input power	kW	11,6	15,4	17,3	20,3	23,0	24,9	29,4	32,2	34,6	40,6
Heating total input current	A	18,10	24,40	26,80	37,50	41,90	46,30	46,40	52,10	54,00	64,20
COP	W/W	3,42	3,46	3,42	3,45	3,40	3,37	3,22	3,25	3,34	3,30
Water flow rate system side	l/h	6.869	9.260	10.228	12.113	13.544	14.563	16.431	18.188	20.074	23.220
Pressure drop system side	kPa	18	33	40	34	42	49	23	22	27	29

(1) Data EN 14511:2022; Heat exchanger water (services side) 12°C / 7°C; outside air 35°C

(2) Data EN 14511:2022; System side water heat exchanger 40 °C / 45 °C; Outside air 7 °C d.b. / 6 °C w.b.

NRGI - HE

Size		151	201	281	302	332	352	382	502	552	602
Fans: J, °											
Cooling performance 12 °C / 7 °C (1)											
Cooling capacity	kW	28,9	37,0	42,6	56,7	64,9	70,1	78,8	84,0	94,0	111,3
Input power	kW	9,1	11,4	13,5	18,4	20,8	23,2	25,3	27,6	31,6	34,1
Cooling total input current	A	13,50	17,40	19,90	32,70	36,50	41,30	39,50	44,40	48,50	53,30
EER	W/W	3,17	3,25	3,15	3,07	3,12	3,03	3,12	3,04	2,97	3,26
Water flow rate system side	l/h	4.974	6.363	7.326	9.764	11.165	12.069	13.554	14.451	16.179	19.152
Pressure drop system side	kPa	10	16	21	22	29	33	16	14	18	20
Heating performance 40 °C / 45 °C (2)											
Heating capacity	kW	31,6	41,2	47,5	62,3	70,4	76,5	87,0	93,3	104,4	122,0
Input power	kW	9,1	11,8	13,6	18,0	20,3	22,2	27,0	28,5	31,2	36,8
Heating total input current	A	14,70	19,80	22,10	34,60	38,30	42,70	43,20	47,20	49,60	59,30
COP	W/W	3,49	3,49	3,49	3,47	3,47	3,44	3,23	3,27	3,35	3,32
Water flow rate system side	l/h	5.484	7.151	8.247	10.814	12.215	13.253	15.103	16.186	18.126	21.177
Pressure drop system side	kPa	12	20	26	27	34	40	20	18	22	24

(1) Data EN 14511:2022; Heat exchanger water (services side) 12°C / 7°C; outside air 35°C
 (2) Data EN 14511:2022; System side water heat exchanger 40 °C / 45 °C; Outside air 7 °C d.b. / 6 °C w.b.

ENERGY DATA

Size		151	201	281	302	332	352	382	502	552	602
Fans: J											
Performance in average ambient conditions (average) - 35 °C (1)											
Efficiency energy class	A	A++	A++	A++	A++	A++	-	-	-	-	-
	E	A++	A++	A++	A++	A++	A++	-	-	-	-
SCOP	A	W/W	4,25	4,33	4,25	4,40	4,29	-	-	-	-
	E	W/W	4,28	4,35	4,28	4,43	4,33	4,38	-	-	-
ηsh	A	%	167,00	170,00	167,10	173,00	168,40	-	-	-	-
	E	%	168,00	171,00	168,00	174,00	170,00	172,00	-	-	-
Water Regulation (2)	A	type	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	-	-	-	-
	E	type	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	-	-	-

(1) Efficiencies for low temperature applications (35 °C)
 (2) VW/VO - variable water flow rate/variable outlet temperature; FW/VO - fixed water flow rate/variable outlet temperature; VW/FO - variable water flow rate/fixed outlet temperature; FW/FO - fixed water flow rate/fixed outlet temperature.

Size		151	201	281	302	332	352	382	502	552	602
Fans: °											
Performance in average ambient conditions (average) - 35 °C (1)											
Efficiency energy class	A	A++	A++	A++	A++	A++	-	-	-	-	-
	E	A++	A++	A++	A++	A++	A++	-	-	-	-
SCOP	A	W/W	4,10	4,20	4,13	4,28	4,15	-	-	-	-
	E	W/W	4,15	4,20	4,15	4,30	4,18	4,25	-	-	-
ηsh	A	%	161,00	165,00	162,00	168,00	163,00	-	-	-	-
	E	%	163,00	165,00	163,00	169,00	164,00	167,00	-	-	-
Water Regulation (2)	A	type	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	-	-	-	-
	E	type	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	FW/VO	-	-	-

(1) Efficiencies for low temperature applications (35 °C)
 (2) VW/VO - variable water flow rate/variable outlet temperature; FW/VO - fixed water flow rate/variable outlet temperature; VW/FO - variable water flow rate/fixed outlet temperature; FW/FO - fixed water flow rate/fixed outlet temperature.

Size		151	201	281	302	332	352	382	502	552	602	
Fans: J												
SEER - 12/7 (EN14825: 2018)												
SEER	A	W/W	4,67	4,96	4,89	4,62	4,74	4,68	4,79	4,84	4,90	5,09
	E	W/W	4,71	5,00	4,93	4,66	4,80	4,70	4,80	4,90	4,94	5,13
Seasonal efficiency	A	%	183,90	195,27	192,49	181,84	186,68	184,20	188,75	190,52	192,91	200,54
	E	%	185,40	196,86	194,06	183,31	188,19	185,69	190,29	192,07	194,48	202,17
Water Regulation (1)	A,E	type	FW/VO									

(1) VW/VO - variable water flow rate/variable outlet temperature; FW/VO - fixed water flow rate/variable outlet temperature; VW/FO - variable water flow rate/fixed outlet temperature; FW/FO - fixed water flow rate/fixed outlet temperature.

Size		151	201	281	302	332	352	382	502	552	602	
Fans: °												
SEER - 12/7 (EN14825: 2018)												
SEER	A	W/W	4,49	4,76	4,69	4,44	4,60	4,50	4,60	4,60	4,70	4,88
	E	W/W	4,52	4,80	4,73	4,47	4,60	4,50	4,60	4,70	4,74	4,92
Seasonal efficiency	A	%	176,43	187,34	184,67	174,44	179,09	176,71	181,08	182,78	185,08	192,40
	E	%	177,80	188,86	186,17	175,86	180,55	178,15	182,56	184,26	186,58	193,96
Water Regulation (1)	A,E	type	FW/VO									

(1) VW/VO - variable water flow rate/variable outlet temperature; FW/VO - fixed water flow rate/variable outlet temperature; VW/FO - variable water flow rate/fixed outlet temperature; FW/FO - fixed water flow rate/fixed outlet temperature.

ELECTRIC DATA

Size			151	201	281	302	332	352	382	502	552	602
Electric data												
Maximum current (FLA)	A,E	A	23,8	31,6	34,9	47,6	52,8	58,1	60,1	68,8	74,4	87,5
Peak current (LRA)	A	A	30,3	43,0	43,0	142,8	167,1	201,1	174,4	211,8	278,6	329,2
	E	A	30,3	43,0	43,0	136,2	160,5	194,5	166,6	204,0	270,8	317,5

Data calculated without hydronic kit and accessories.

GENERAL TECHNICAL DATA

Refrigerant circuit

Size			151	201	281	302	332	352	382	502	552	602
Fans: J, °												
Compressor												
Type	A,E	type	Scroll									
Compressor regulation	A,E	Type	Inverter	Inverter	Inverter	I+1	I+1	I+1	I+1	I+1	I+1	I+1
Number	A,E	no.	1	1	1	2	2	2	2	2	2	2
Circuits	A,E	no.	1	1	1	1	1	1	1	1	1	1
Refrigerant	A,E	type	R32									
Total refrigerant charge (1)	A,E	kg	6,30	6,80	6,90	8,70	9,20	9,20	11,00	11,00	13,80	18,50
Potential global heating (GWP)	A,E		675									
Equivalent CO ₂	A,E	tCO ₂ eq	4,25	4,59	4,66	5,87	6,21	6,21	7,43	7,43	9,32	12,49

(1) The load indicated in the table is an estimated and preliminary value. The final value of the refrigerant load is indicated on the unit's technical label. For further information contact the office.

System side heat exchanger

Size			151	201	281	302	332	352	382	502	552	602
System side heat exchanger												
Type	A,E	type	Braze plate									
Number	A,E	no.	1	1	1	1	1	1	1	1	1	1
Connections (in/out)	A,E	Type	Grooved joints									
Sizes (in/out)	A,E	Ø	1" 1/2	1" 1/2	1" 1/2	1" 1/2	1" 1/2	1" 1/2	2" 1/2	2" 1/2	2" 1/2	2" 1/2

Fans

Size			151	201	281	302	332	352	382	502	552	602
Fans: J												
Fan												
Type	A,E	type	Axial									
Fan motor	A,E	type	Inverter									
Number	A,E	no.	4	6	6	8	8	8	2	2	2	3
Air flow rate	A	m ³ /h	16.896	24.887	24.891	31.613	29.660	29.659	36.859	36.859	36.859	55.733
	E	m ³ /h	14.667	21.591	21.591	27.379	25.774	25.774	27.308	27.308	27.307	41.430

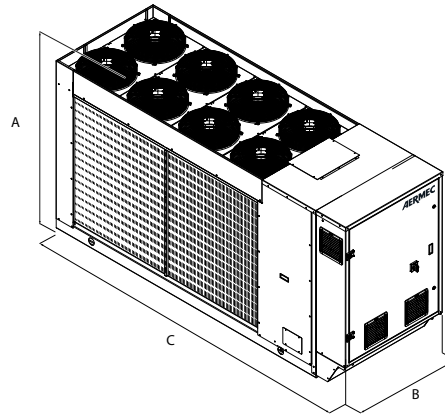
Size			151	201	281	302	332	352	382	502	552	602
Fans: °												
Fan												
Type	A,E	type	Axial									
Fan motor	A,E	type	Asynchronous with phase cut									
Number	A,E	no.	4	6	6	8	8	8	2	2	2	3
Air flow rate	A	m ³ /h	16.896	24.887	24.891	31.613	29.660	29.659	36.859	36.859	36.859	55.733
	E	m ³ /h	14.667	21.591	21.591	27.379	25.774	25.774	27.308	27.308	27.307	41.430

Sound data

Size			151	201	281	302	332	352	382	502	552	602
Sound data calculated in cooling mode (1)												
Sound power level	A	dB(A)	81,8	84,6	86,0	82,2	85,0	85,1	85,4	86,5	87,8	88,1
	E	dB(A)	79,3	82,8	83,3	80,9	81,3	81,7	82,8	83,0	85,4	85,6

(1) Sound power calculated on the basis of measurements made in accordance with UNI EN ISO 9614-2, as required for Eurovent certification. Sound pressure (cold functioning) measured in free field, 10m away from the unit external surface (in compliance with UNI EN ISO 3744).

DIMENSIONS



Size			151	201	281	302	332	352	382	502	552	602
Dimensions and weights												
A	A,E	mm	1.652	1.652	1.652	1.652	1.652	1.652	1.907	1.907	1.907	1.900
B	A,E	mm	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100	1.100
C	A,E	mm	2.873	3.372	3.372	3.372	3.372	3.372	3.623	3.623	3.623	4.373
Integrated hydronic kit: 00												
Weights												
Weight empty + packaging	A,E	kg	856	929	929	1.019	1.063	1.064	1.131	1.137	1.159	1.365
Weight functioning	A,E	kg	825	897	897	988	1.032	1.033	1.099	1.108	1.130	1.336

Aermec reserves the right to make any modifications deemed necessary.
All data is subject to change without notice. Aermec does not assume responsibility or liability for errors or omissions.

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