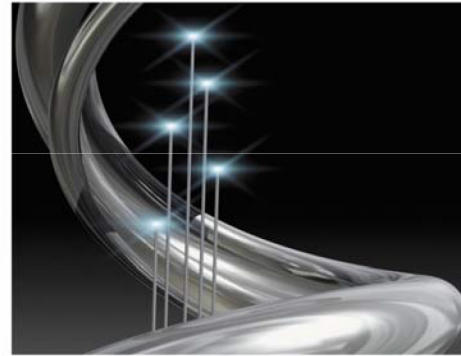


# DK50 B



INSTALLATION, OPERATION AND MAINTENANCE MANUAL

EN

**ekom**<sup>®</sup>

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# INSTRUCTIONS FOR USE

## **IMPORTANT INFORMATION**

### **1. CE MARKING**

Products labeled with compliance mark CE meet safety Guidelines of the European Union. (2006/42/EC - Machinery directive, 2014/29/EU - Simple pressure vessels directive, 2014/35/EU – Low-voltage directive, 2014/30/EU-EMC directive)

### **2. WARNINGS**

#### **2.1. General warnings**

- This Installation, Operation and Maintenance Manual is a part of the appliance and must be kept with the compressor. Careful review of this manual will provide the information necessary for correct operation of the appliance.
- The safety of operating personnel and trouble-free operation of the appliance are guaranteed only if original parts are used. Only accessories and parts mentioned in the technical documentation or expressly approved by the manufacturer can be used.
- If any other accessories or consumable materials are used, the manufacturer cannot be held responsible for the safe operation of the appliance. This guarantee does not cover damages originating from the use of accessories or consumable material other than those specified or suggested by the manufacturer.
- The manufacturer guarantees the safety, reliability and function of the appliance only if:
  - Installation, new settings, amendments, extensions and repairs are performed by the manufacturer or its representative, or a service provider authorized by the manufacturer
  - The appliance is used in accordance with this Installation, Operation and Maintenance Manual
- The manufacturer reserves all rights for the protection of its wiring diagrams, methods and names.
- Translation of Manual for Installation, Operation and Maintenance is carried out in accordance with the best knowledge. In the case of ambiguities, the Slovak version of the text prevails.

#### **2.2. General safety warnings**

The manufacturer developed and designed the equipment in such a way so that any risks were excluded if it is used according to intention. The manufacturer considers it to be its obligation to describe the following safety measures in order to exclude residual damages.

















- Operation of the appliance must be in compliance with all local codes and regulations.
- Original packaging should be kept for the return of the appliance. Only the original packaging ensures protection of the appliance during transport. If it is necessary to return the appliance during the guarantee period, the manufacturer is not liable for damages caused by improper packaging.
- Each time the appliance is used, the operator must make sure that it is functioning correctly and safely.
- The user must fully understand the operation of the appliance.
- The product is not intended for operation in areas with a risk of explosion.
- If any problem occurs during use of the appliance, the user must inform his supplier immediately.

#### **2.3. Electrical system safety warnings**

- The appliance must be connected to earth (grounded).
- Before the appliance is plugged in, make sure that the mains voltage and mains frequency stated on the appliance are the same as the power mains.
- Prior to putting into operation it is necessary to check for possible damage of the equipment and connected air and electric distributions. Damaged pneumatic and electric lines must be immediately replaced.
- Immediately disconnect the appliance from the mains (pull out mains plug) if a technical failure occurs.
- During repairs and maintenance, ensure that:
  - The mains plug is pulled out from the socket
  - Pressure pipes are vented and pressure is released from the air tank.
- The appliance must be installed by an approved, qualified technician.

### 3. ALERT NOTICES AND SYMBOLS

In the Installation, Operation and Maintenance Manual and on the appliance and its packaging, the following labels or symbols are used for important information:

	Information, instructions and cautions for the prevention of damage to health or materials
	Caution! Dangerous electric voltage
	Read the user manual!
	CE mark of compliance
	Caution! Hot surface
	Compressor is remote-controlled and may start without warning
	Earth (ground) connection
	Terminal for ground connection
	Fuse
	Alternating current
	Handling mark on package – FRAGILE
	Handling mark on package – THIS SIDE UP
	Handling mark on package – KEEP DRY
	Handling mark on package – TEMPERATURE LIMITATIONS
	Handling mark on package – LIMITED STACKING
	Mark on package – RECYCLABLE MATERIAL

### 4. STORAGE AND TRANSPORT

The compressor is shipped in cardboard that protects the appliance from damage during transport.



**Caution! For transport, always use the original packaging and secure the compressor in the upright position.**



Protect the compressor from humidity and extreme temperatures during transport and storage. A compressor in its original packaging can be stored in a warm, dry and dust-free area. Do not store near any chemical substances.



Keep packaging material if possible. If not, please dispose of the packaging material in an environmentally friendly way and recycle if possible.



**Caution! Before moving or transporting the compressor, release all the air pressure from the tank and hoses and drain the condensed water.**

## 5. TECHNICAL DATE

		DK50 B	DK50 BS
Rated voltage / Frequency	V / Hz	230 / 50 230 / 60 *	230 / 50 230 / 60 *
The capacity of compressor at max.pressure 10 bar	Lit.min <sup>-1</sup>	50	50
Performance on motor	kW	0.55	0.55
Maximal current	A	3.5	3.5
Air chamber capacity Lit.		4	4
Working pressure of the compressor	bar	9.5 – 11.5	9.5 – 11.5
Allowable operation pressure of safety valve	bar	12	12
Sound level	L <sub>pfA</sub> [dB]	≤ 65	≤ 45
Mode of the operation of compressor		Interrupted S3-50%	Interrupted S3-50%
Dimensions of compressor w x d x h	mm	290x430x490	380x525x575
Weight of compressor	kg	35	47
Weight of compressor in packaging	kg	37	49

Notes: \* When ordering, state the version of compressor

### Climatic conditions during storage and transport

**Temperature** -25°C to +55°C, 24 h to +70°C

**Relative air humidity** 10% to 90% (no condensation)

### Climatic operation conditions

**Temperature** +5°C to +40°C

**Relative air humidity** 70%

#### 5.1. FAD efficiency correction for differences in elevation

*FAD correction table*

Elevation [mamsl]	0 - 1500	1501 - 2500	2501 - 3500	3501 - 4500
FAD [l/min]	FAD x 1	FAD x 0.8	FAD x 0.71	FAD x 0.60

FAD efficiency refers to conditions at an elevation of 0 mamsl:

Temperature: 20°C

Atmospheric pressure: 101325 Pa

Relative humidity: 0%

## 6. PRODUCT DESCRIPTION

### 6.1. Model variations and their uses

Compressors are the source of clean, oil-free pressurized air for use with the appliance using the higher pressure e.g, for impulse air abrasion in stomatology.

The compressors are manufactured according to its intended purpose:

**Compressor DK50 B (*Stabil*)** – with the base enabling an independent positioning of the compressor.

**Compressor DK50 BS (*Silent*)** – with the base in compact casings, with effective noise damping, suitable for the situation in a dental consulting room.



DK50 B



DK50 BS



**The compressed air from a compressor is not suitable for the operation of breathing appliances or similar equipment.**

## 7. FUNCTION

### Compressor (Fig.1)

The compressor (1) draws in air through a filter (8) and compresses it through a check valve (3) into an air tank (2). The connected apparatus draws the compressed air from the air tank until the pressure drops to a default preset level on the air-pressure switch (4) switching the compressor on. The compressor again compresses air into the nozzle until the maximum pressure is reached and the compressor switches off. After compressor aggregate is switched off, pressure hose shall be pressure-release solenoid valve (13). Safety valve (5) prevents the pressure in air chamber from rising above the maximal allowed value. The time of work of a compressor is recorded on an operation clock. The drain valve (7) releases the condensate from the air nozzle. Compressed, clean air free from oil traces is stored in the air tank ready for use.

### Compressor box

The soundproof box is compact yet allows sufficient exchange of cooling air. It can be placed in a dentist's office. The ventilator under the aggregate of a compressor provides cooling of compressor and it is in operation at the same time with an engine of the compressor. After prolonged use the temperature in the case may rise above 40°C, causing the cooling fan blower to automatically turn on. After cooling the case area to 32°C the fan blower turns off automatically.

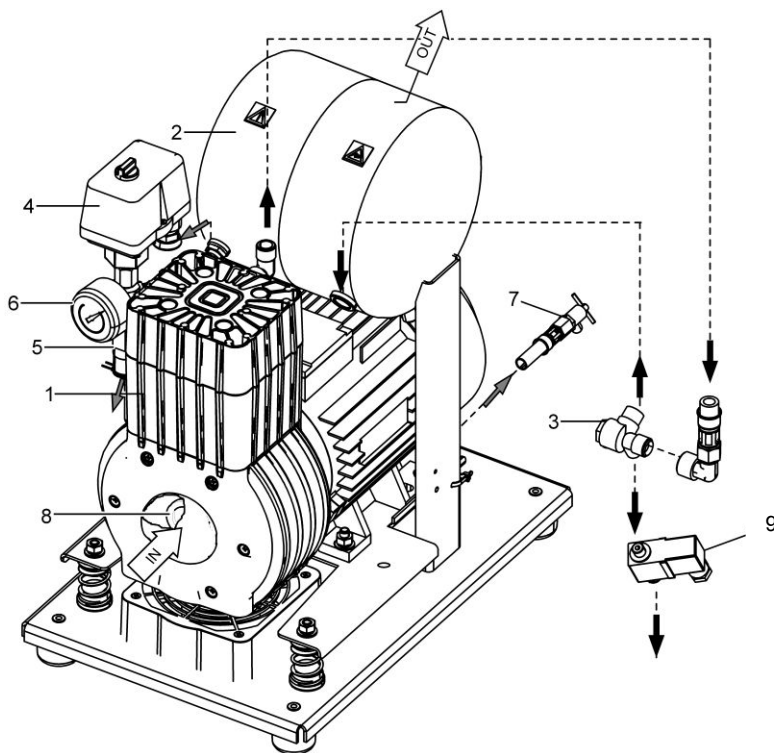


**Make sure that nothing impedes the free flow of air under and around the compressor. Never cover the hot air outlet on the top back side of the case.**



**If placing the compressor on a soft floor such as carpet, create space for ventilation between the base and floor or the box and floor, e.g. underpin the footings with hard pads.**

Fig.1 – Compressor



1. Compressor motor
2. Air tank
3. Check valve
4. Pressure switch
5. Safety valve
6. Manometer
7. Drain valve
8. Input filter
9. Solenoid valve

## INSTALLATION

### 8. USE

- Aspirators (suction unit) are designed for operation in dry, well ventilated and dust-free area where ambient temperature is within the range of +5°C to +40°C and relative air humidity does not exceed 70%. The compressor must be installed so that it is accessible at all times for operating and maintenance. Please ensure that the appliance label is accessible as well.
- The appliance must stand on a flat, sufficiently stable base. See paragraph 5 (Technical data) when positioning or lifting the compressor.
- Compressors cannot be exposed to outdoor environments. The appliance cannot be used in moist or wet environments. Do not use the compressor in the presence of explosive gases, dust or combustible liquids.
- Before connecting the compressor to equipment, the supplier must confirm that it meets all requirements for its use. Refer to the technical data of the product for this purpose. When a unit is to be built-in, classification and evaluation of compatibility must be done by the manufacturer or supplier of the product to be used.
- Any use other than that described in this manual is not covered by the guarantee, and the manufacturer is not liable for any damages that may result. The operator/user assumes all risk.

### 9. INSTALLATION



Only qualified personnel can install and start up the appliance and train operating personnel in its correct use and maintenance. Installation and training of all operators shall be confirmed by the installer's signature on the certificate of installation.

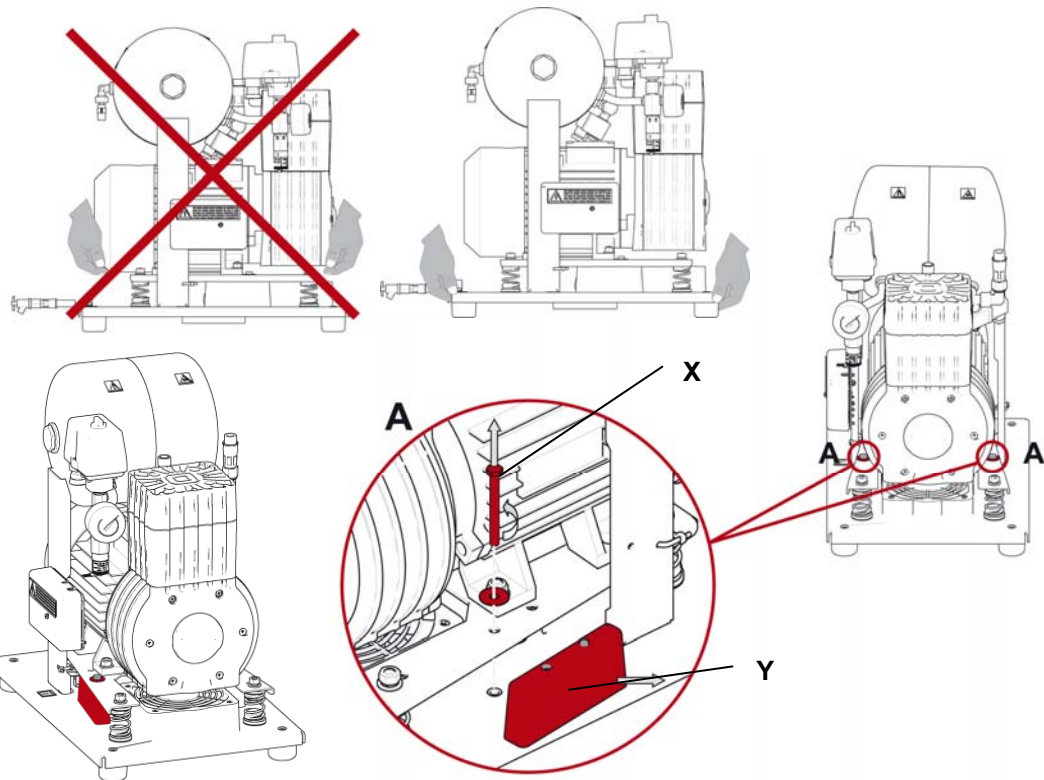


Prior to installation, ensure that the compressor is free of all transport packaging and stabilizers to avoid any risk of damage to the product.



Caution! When in operation, the compressor is hot. Burns or fire may result if contact is made by the operator or any flammable material.

**9.1. Placement of the compressor**



Handling

Unpacking

Fig.2

**Compressor with base DK50 B (Fig.2)**

After removing all packaging material, place the product on the floor and remove stabilization parts X and Y (Detail A). Direct the output pressure hose, drain hose and power cord out the back of the compressor.

**Compressor in box DK50 BS (Fig.2)**

After removing all packaging material, place the product on the floor and remove stabilization parts X and Y (Detail A). Direct the output pressure hose, drain hose and power cord out the back of the compressor. Slide the box over the compressor so that the front face of the box matches the front part of the compressor and the box is fully seated. Make sure that the pressure hose, drain hose and electric cord come out via the opening at the back of the box. Position the drain hose with its valve in the holder at the rear of the box.

**9.2. Compressed air outlet**

(Fig.3)

At the compressed air outlet (1) of the compressor, connect the pressure hose with a nut (2) and fasten clip (3). Connect the hose to the dental appliance.

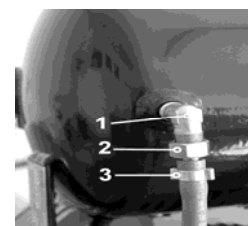


Fig.3

**9.3. Electrical connection**

**Plug the electrical cord into the mains.**



**The appliance is equipped with a grounded plug. Make sure this connection complies with local electrical codes. The mains voltage and frequency must comply with the data stated on the appliance label.**

- Keep the socket easily accessible to ensure that in an emergency the appliance can be safely disconnected from the mains.
- Connection to the power distribution box must be max.16 A.

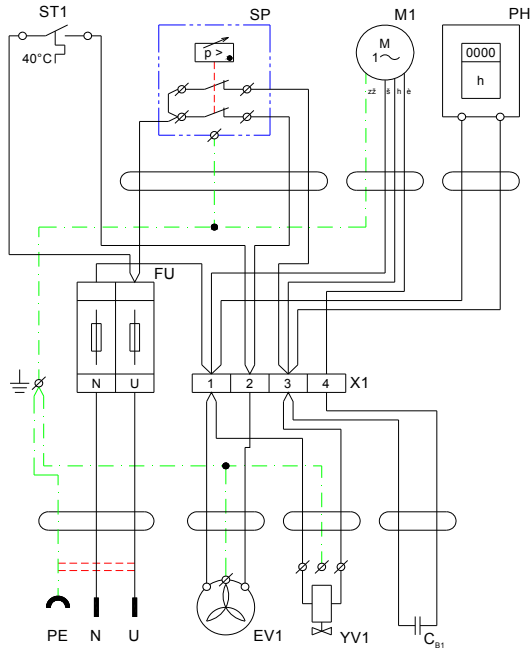


**Electrical cable may not contact the hot parts of a compressor. Insulation could be damaged! If any electrical cord or air hose is damaged it must be replaced immediately.**



10. WIRING DIAGRAMS

1/N/PE ~ 230V 50..60Hz  
ELECTRIC OBJECT OF 1ST. CAT  
TYP B



- M Motor of compressor
- EV1 Fan of compressor
- YV1 Solenoid valve of compressor
- FU Fuses
- ST Thermo switch
- Cb1 Capacitor
- SP Pressure switch
- X1 Terminal
- PH Hours meter

11. FIRST OPERATION

(Fig.4)

- Make sure that all stabilizers used during transport were removed.
- Check that all pressurized air line connections are secure.
- Connect to the mains.
- Start compressor at pressure switch (2) by turning switch (3) to position “I.”

**Compressor** - At first operation the air tank is pressurized until it reaches a preset level when the compressor automatically switches off. As the air is used, the compressor works in automatic mode, switched on or off by the pressure switch.



The compressor is not equipped with an emergency power supply.

**OPERATION**



In case of emergency, disconnect the compressor from the mains (pull out the mains plug).



The compressor has hot surfaces.  
Burns or fire may result if contact is made.



During prolonged operation of the compressor, the temperature in the box may increase to over 40°C. At this point the cooling fan automatically switches on. After cooling the space to under 32°C, the ventilator switches off.



Automatic start: when pressure in the tank drops to the pressure switch’s lower limit level, the compressor automatically switches on. The compressor automatically switches off after reaching the pressure switch’s upper limit level.

## 12. SWITCHING THE COMPRESSOR ON

(Fig.4)

Switch on the compressor at the pressure switch (2) by turning the knob (3) to position "I." The compressor sends pressurized air to the air tank. As the compressed air is used, the pressure in the air nozzle drops to a preset level, the compressor switches on and the air nozzle fills with compressed air. After reaching the cutoff pressure the compressor turns off automatically and the cycle is repeated. Check the value of switching-on and switching-off pressure on pressure gauge. The values may be within a tolerance of  $\pm 10\%$ . Air pressure in air chamber must not exceed maximal permitted operation pressure.

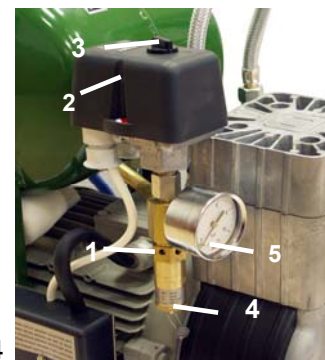


Fig.4



**Never tamper with the pressure switch (2). Adjustments are not allowed. The pressure switch (2) has been set by the manufacturer and further setting of switching on and off pressure may be carried out only by a qualified expert trained by the manufacturer.**

## MAINTENANCE

### 13. MAINTENANCE SCHEDULE

Maintenance that must be performed	Chapter	Time interval	Performed by
• Release condensate At high air humidity	14.1	1 x week 1 x day	operating staff operating staff
• Check safety valve	14.2	1 x year	qualified technician
• Replacement of input filter	14.3	1 x 4 years or after 8000 hours	qualified technician
• Check tightness of joints Overall examination of device	Service documentation	1 x year	qualified technician
• Replacement Piston with piston rod and Valve plate		12bar after 5000 hours (Air pump DK50 B - 603011907)	qualified technician

### 14. MAINTENANCE



**Repair work beyond normal maintenance can be performed only by qualified personnel or the manufacturer's representative.  
Use only spareparts and accessories approved by the manufacturer.**



**Prior to any maintenance or repair work, switch off the compressor and disconnect it from the mains (pull out the mains plug).**

TO ENSURE THAT THE COMPRESSOR WORKS CORRECTLY, PERFORM THE FOLLOWING MAINTENANCE TASKS AT REGULAR INTERVALS (CHAPTER 13):

### 14.1. Condensation drain valve

#### Compressors (Fig.5)

During regular use, release condensation from the pressure tank. Switch off the compressor at the mains. Reduce air pressure in the appliance to max. 1 bar by releasing air via a connected device. Place the hose with the drain valve into a container prepared in advance and open the drain valve (1). Wait until condensation is fully drained from the pressure tank. Close drain valve (1).

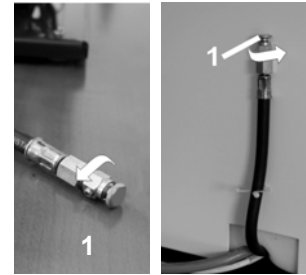


Fig.5



**For compressor DK50 BS the case must be removed before beginning the following procedures.**

### 14.2. Safety valve check

(Fig.4)

When the compressor is operated for the first time, make sure that the safety valve is working properly. Turn screw (4) of safety valve (1) several rotations to the left until the safety valve releases air. Let the safety valve blow out for only a few seconds. Turn screw (4) to the right until it seats, closing the valve.



**The safety valve must never be used for depressurizing the air tank. It could damage the safety valve. The valve is set to the maximum permitted pressure by the manufacturer. Adjustments are not permitted.**



**Warning! Compressed air can be dangerous. Wear eye protection when blowing air out.**

### 14.3. Replacement of input filter

(Fig.6)

It is necessary to replace the input filter (1) located in the lid of crank box of a compressor.

- Pull out the rubber plug (2) using a hand.
- Take out the used and contaminated filter.
- Insert new filter and put on a rubber plug.

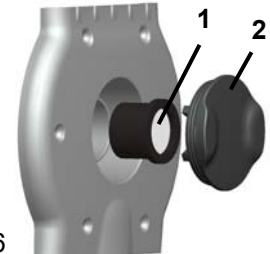


Fig.6

## 15. STORAGE

If the compressor will not be used for a prolonged time period, drain any condensate from the air tank. Then turn on the compressor for 10 minutes, keeping the drain valve open (1) (Fig.5). Switch off the compressor by switch (3) at pressure switch (2) (Fig.4), close the drain valve and disconnect the appliance from the mains.

## 16. DISPOSING OF THE APPLIANCE

- Disconnect the appliance from the mains.
- Release air pressure in the pressure tank by opening the drain valve (1) (Fig.5).
- The components of the product are non-toxic.
- Dispose of the appliance following all environmental regulations.

## 17. REPAIR SERVICE

Guaranteed and post-guarantee repairs must be done by the manufacturer, its authorized representative, or service personnel approved by the supplier.

The manufacturer reserves the right to make changes to the appliance without notice. Any changes made will not affect the functional properties of the appliance.

## 18. SOLVING PROBLEMS



**Caution! Before proceeding, depressurize the air tank to zero and disconnect the appliance from the mains.**

Troubleshooting can be performed only by qualified personnel.

<b>FAILURE</b>	<b>POSSIBLE CAUSE</b>	<b>REMEDY</b>
Compressor does not start	No voltage in pressure switch  Disconnected winding of motor, damaged thermal protection Faulty capacitor Seizure of piston or another rotary part Pressure switch does not switch on	Check voltage in socket Check fuse – replace faulty one Loosen terminal – tighten it Check power cord – replace faulty one Replace motor or re-wind it  Replace capacitor Replace damaged parts Check the function of pressure switch
Compressor often switches on	Air leak in pneumatic distribution system  Leaking check valve Greater volume of condensed liquid in pressure vessel	Check pneumatic distribution system – seal loose joint Clean valve, replace seals, replace valve Drain condensed liquid
Prolonged running of compressor	Air leak in pneumatic distribution system Worn piston ring Contaminated input filter  Defective solenoid valve	Check pneumatic distribution system – seal loose joint Replace worn piston ring Replace contaminated filter with the new one Repair or change the valve
Compressor is noisy (knocking, metal noises)	Damaged bearing of piston, piston rod, motor bearing Loose or cracked spring	Replace damaged bearing  Replace damaged spring



# DK50 B



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