



INSTALLATION AND OPERATING MANUAL SHAFT-120

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2. GENERAL INFORMATION

The electromechanical operator SHAFT-120 of the company "DoorHan" is intended for automation of balanced industrial sectional gates.

The electromechanical operator SHAFT-120 is a shaft-type operator with reduction gear in "oil bath".

It consists of a mechanical reducer in "oil bath" and an electric motor with an integral control unit. The reducer and the motor have a common housing.

A 3-position control station is connected to the control unit. The operator can be mounted either on the shaft or via the intermediate chain-drive (optional).

The self-locking reducer enables mechanical lock of the gate shaft, when the motor does not work. In case of power disconnection the emergency manual release with built-in hand chain drive enables manual opening or closing with chains.

2.1 BASIC FUNCTIONS

The automatic stop system enables quick and reliable stop of the motor in close and open positions.

In case of power cut you can release the operator by pulling the red knob and open the gate manually using the chain.



Important: Check routinely the torsion spring adjustment: when the springs are not adjusted properly, the release can cause spontaneous closing of the door.

In an emergency case the door can be controlled manually through the chain.



Important: Use the manual chain without the release only at emergency, otherwise the chain reducer can fail.

Double end switches enable safe and reliable operation of the operator.

2.2 SPECIFICATIONS

	Shaft-120
Power supply	~ 380V 50 Hz
Torque	120 Nm
Motor speed	1400 rpm
Shaft hole	25,4 mm with key way
Manual chain length	12 m
Shaft speed	22 rpm
Weight with chain	20 kg
Dimensions	430x290x120
Thermal protection	100 °C
Intensity	60%
Oil amount	0,25 l
Engine power	370 W
Protection rating	IP44
Operation temperature	-40 °C... +45 °C

3. Delivery set

After receiving the operator, unpack it and make sure, that the operator is not damaged. If any damages are found, please contact the supplier of the operator.

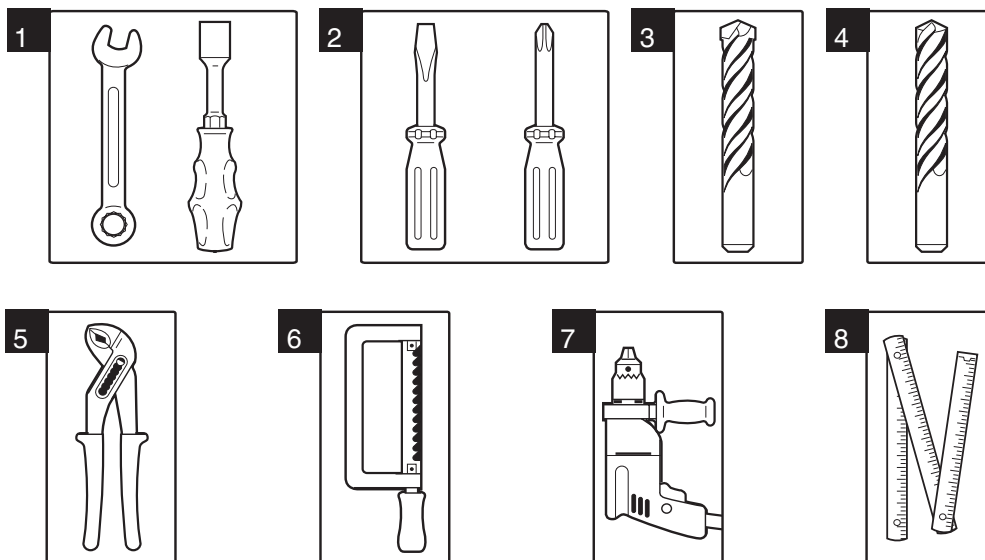
A standard package includes:

No	Name	Quantity
1	Operator	1
2	Bracket	1
3	Set of fastenings	1
4	Manual operator chain (12m)	1
5	External button switch	1
6	Manual	1

4. SAFETY INSTRUCTIONS

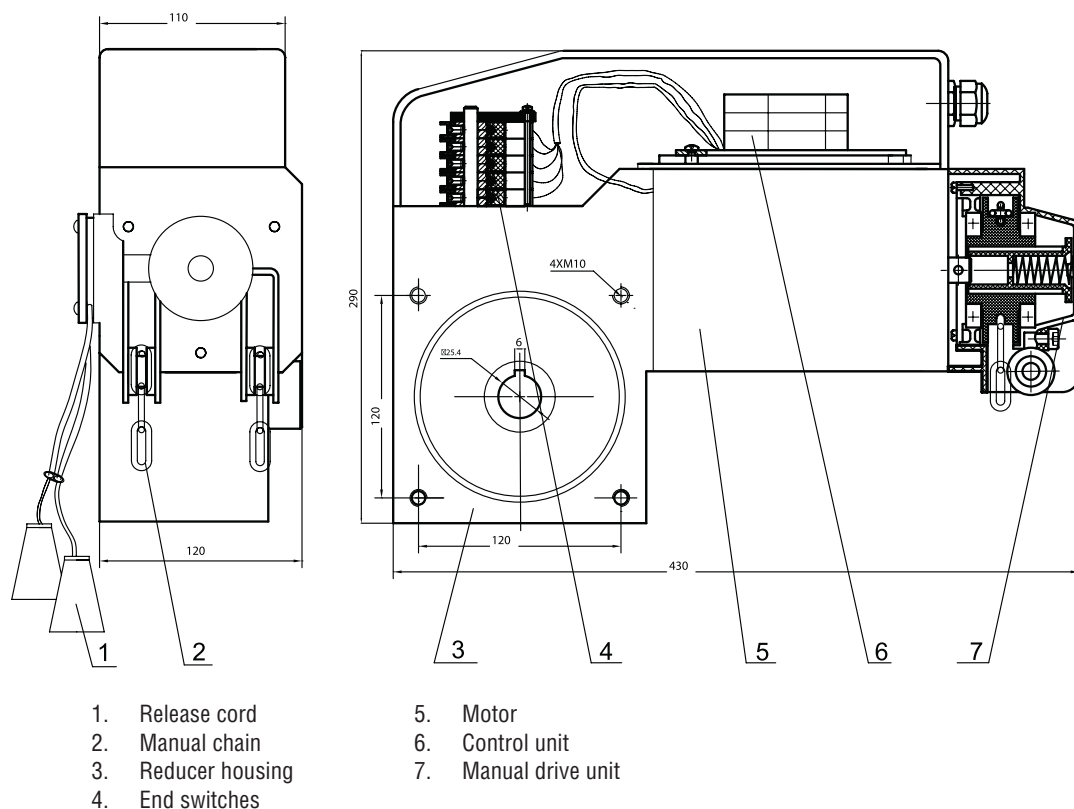
- Read carefully this manual.
- Have qualified personnel carry out installation and startup of the operator .
- Open and close the gate by hand, make sure, that it moves smoothly.
- The gate shall be equipped with balance springs and balanced, otherwise the operator will fail. Before installation of the operator be sure, that the gate is balanced properly and is in a good working condition.
- It is necessary to install mechanical stops on the guides, in order to avoid the exit of the gate leaf from the guides.
- Check for compliance of the mains power with the requirements, specified in this manual.
- Do not let children use the opening button in order to avoid spontaneous moving of the gate. Never let children play with the automatic system.
- Deenergize the operator before putting it into operation, after releasing or before removal its housing.
- Do not go or drive through the gate during its closing or opening.
- Do not impede moving of the gate.
- Control of the gate shall be executed only under condition of its safe moving.
- Do not pull the chain by hand to open or close the gate.
- Ground properly all metal elements of the operator and the gate.
- Be sure, that the leaf is well balanced: if you stop it in any position, the leaf shall remain in this position.
- In case of failure, unblock the operator and contact qualified technicians.
- Only the intended use of the operator is allowed, any other use is forbidden.

5. TOOLS



- | | |
|--|--------------------------------|
| 1. Set of spanners | 5. Pliers |
| 2. Set of slotted and cross screwdrivers | 6. Hacksaw for metal |
| 3. Set of drills for metal | 7. Electric drill |
| 4. Set of drills for concrete | 8. Tape measure (folding rule) |

6. Operator components



7. Installation

Before installation make sure that the gate is in good working condition and the torsion springs balance its leaf. Install the operator as described below (Section "On-shaft mounting" or "Mounting via chain drive").

7.1 On-shaft mounting

Mount the mounting bracket on the wall using screws. The mounting bracket can be placed from the left or from the right of the operator.

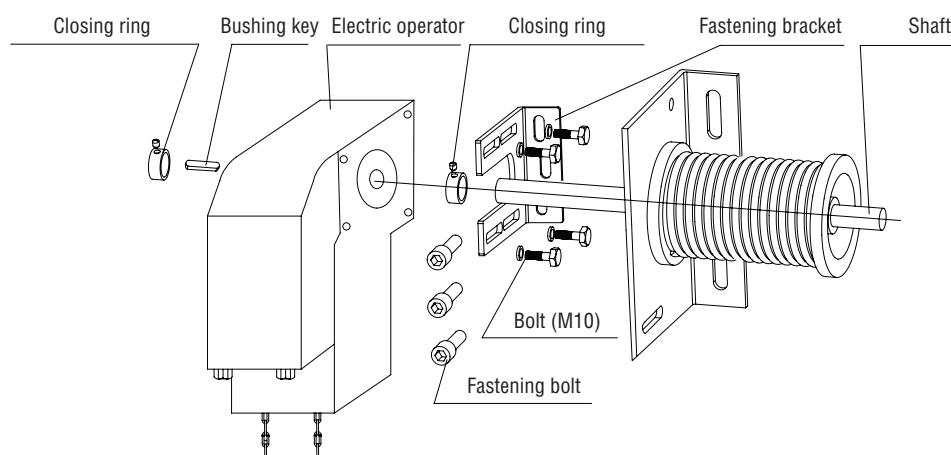
Turn the release knob by 180 degrees counterclockwise.

Mount the first closing ring on the gate shaft.

Mount the operator on the gate shaft (be sure, that the bushing key is in its proper position) and screw it to the mounting basis.

Mount the second closing ring on the gate shaft and push it close to the operator.

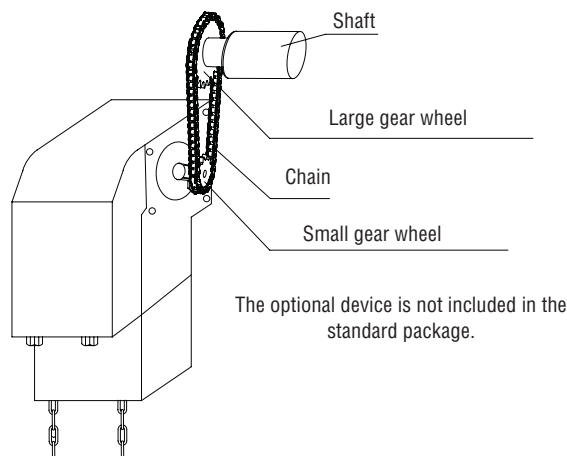
Mount the first closing ring close to the operator and fix both closing rings.



7.2 Mounting via the chain operator

- Additional accessories for installation can be purchased separately.
- Mount the large sprocket on the gate shaft end.
- Fix the bracket on the wall according to the length of the chain using dowels.
- Secure the operator on the bracket using 4 bolts M10. Tension the chain, having adjusted the position of the operator.

Mounting options	Torque (Nm)	Shaft speed (rpm)	Maximum amount of gate shaft rotations
Direct transmission 1:1	120	22	18
Gear ratio 1:1,5	180	15	12



8. Wiring



Very important: Always disconnect power before starting work with the control plate (connection, maintenance).

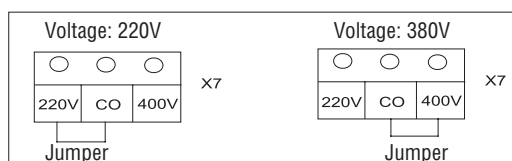
- Connect the ground wire to the suitable terminal on the electric operator housing.
- Always route the signal wires of control and safety devices separately from the supply cable 230V and power leads of electric motors using separate flutes and tubes.

The cable wires must be protected from the contact with any rough and sharp parts.

In order to protect electric elements from moisture, tighten the waterproofing reducing coupling of the cable input by turning the plastic nut.

1. Selection of supply voltage (terminal block X7)

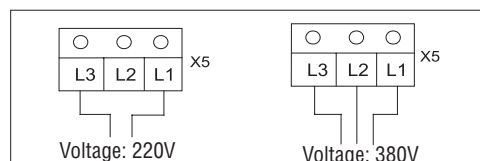
To select voltage 220V, connect 'CO' and '400V'



2. Connection of supply voltage (terminal block X5)

Connect voltage 220V to terminals 'L1', 'L3'.

Connect voltage 380V to terminals 'L1', 'L2', 'L3'.

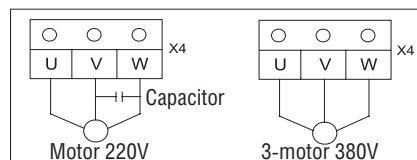


3. Motor (terminal block X4)

Connect motor to terminals 'U', 'V' and 'W'.

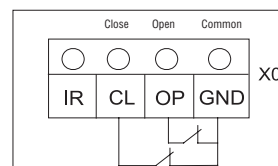
380V motor: max. operating current < 9A, wattage ≤ 4 kW

220V motor: max. operating current < 2.4A, wattage ≤ 2.4 kW



4. End switches (terminal block X10)

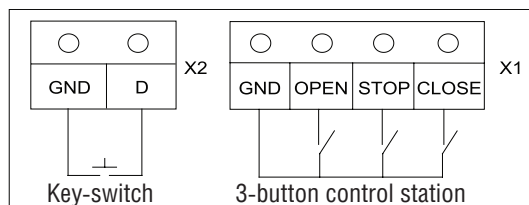
Connect end switch wires 'OP' (opening switch), 'CL' (closing switch) and 'GND' (common wire).



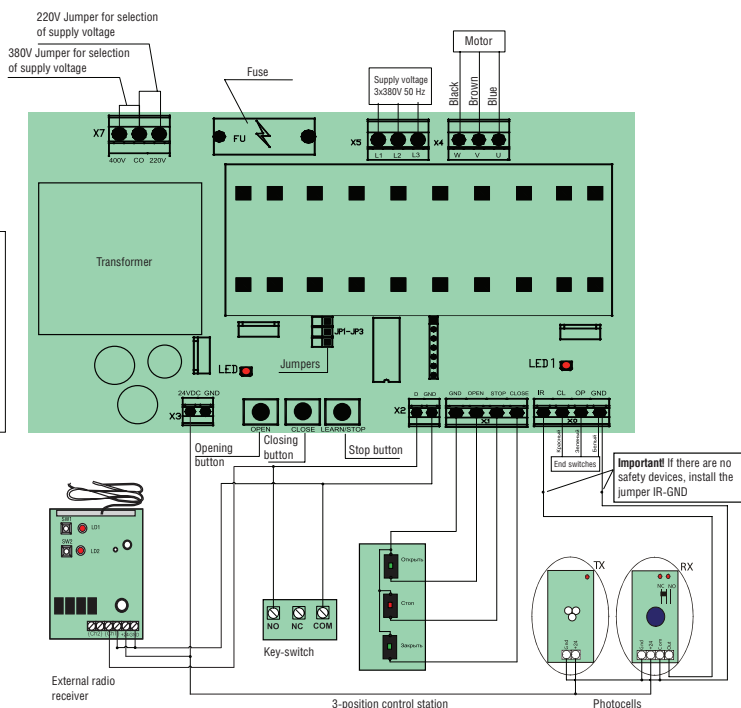
5. 3-position control station or key-switch (N.O. contact) (terminal block X1 and X2)

Connect 3-position control station to terminals 'OPEN', 'STOP', 'CLOSE' and 'GND'.

Important! If 3-position control station is not used, install the jumper 'STOP' and 'GND'.



8.1 Control unit connection



9. Programming of operator

9.1 Selection of operation logic

The logic is selected with jumpers on the control unit:

To set the required logic, set the jumpers according to the table:

JP1 <input type="checkbox"/> <input type="checkbox"/>	Opening – Pulse	JP1 <input type="checkbox"/> <input type="checkbox"/>	Opening – Key hold-down
JP2 <input type="checkbox"/> <input type="checkbox"/>	Closing – Pulse	JP2 <input type="checkbox"/> <input type="checkbox"/>	Closing – Key hold-down
JP3 <input type="checkbox"/> <input type="checkbox"/>	Automatic closing is off	JP3 <input type="checkbox"/> <input type="checkbox"/>	Automatic closing is off (Remove the jumper JP2)

JP1 <input type="checkbox"/> <input type="checkbox"/>	Opening – Pulse	JP1 <input type="checkbox"/> <input type="checkbox"/>	Opening – Pulse
JP2 <input type="checkbox"/> <input type="checkbox"/>	Closing – Key hold-down	JP2 <input type="checkbox"/> <input type="checkbox"/>	Closing – Pulse
JP3 <input type="checkbox"/> <input type="checkbox"/>	Automatic closing is off (Remove the jumper JP1)	JP3 <input type="checkbox"/> <input type="checkbox"/>	Automatic closing is on (delay 30 sec)

10. Adjustment of open and close positions.

10.1 Close position (red cam)

Coarse adjustment

- Make sure, that the operator is fixed rigidly; put the gate in completely closed position.
- Loosen the screws for coarse adjustment of red cams, then turn them so, that the micro-switches are pushed, then tighten the screws.
- Open and close the gate, make sure, that the red cams push the micro-switch, and indicator DL3 on the control unit is dim.

Fine adjustment

Turning screw for fine adjustment, correct the close position of the gate.

- Open and close the gate, make sure, that red cams push the micro-switches and the gate remains in the desired position.
- Clockwise turn of the screw causes earlier actuation of the end switch, counter-clockwise turn of the screw causes later actuation respectively.
- Open and close the gate, make sure, that red cams push the micro-switch and the gate remains in the required position.

10.2 Open position (blue cam)

Coarse adjustment

- Make sure, that the operator is fixed rigidly; put the gate in completely closed position.
- Loosen the screws for coarse adjustment of blue cam, then turn them so, that the micro-switches are pushed, then tighten the screws.
- Close and open the gate, make sure, that the blue cams push the micro-switch and the indicator DL2 on the control unit is out.

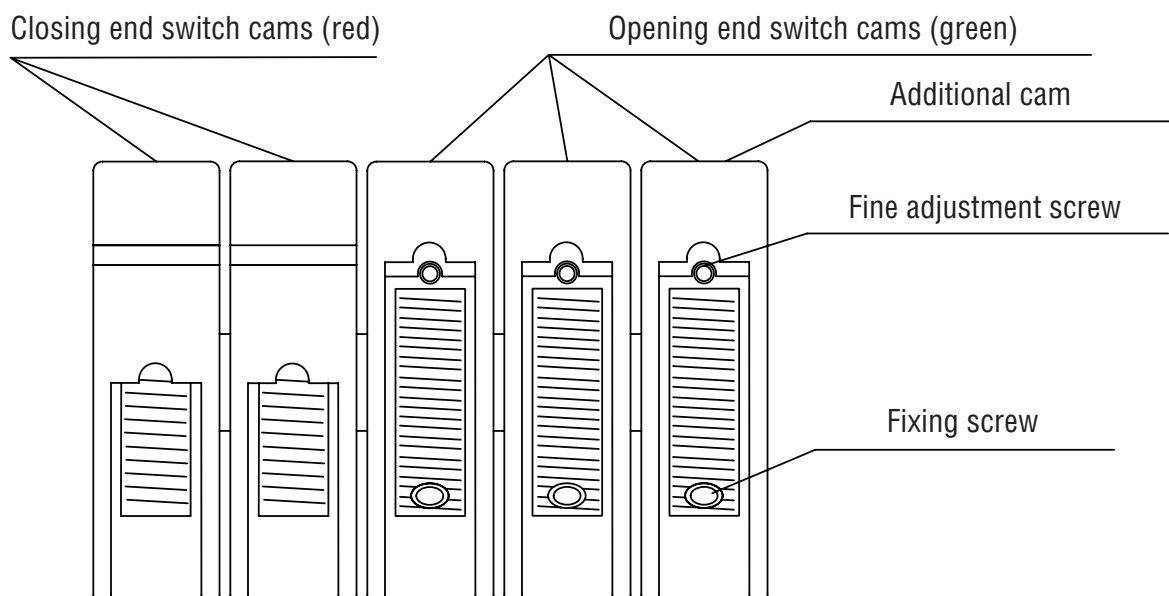
Fine adjustment

- Turning the fine adjustment screw, correct the closed position of the gate.
- Clockwise turning of the screw causes earlier actuation of the end switch; counter-clockwise turning of the screw causes later actuation of the end switch.
- Open and close the gate, make sure, that the blue cams push micro-switch and the gate remains in the required position.

Notes:



- When the end positions are adjusted, make sure, that the end switches are operable: after pushing of the cam the relative indicator on the control unit shall dim out.
- If the indicator does not dim out, repeat adjustment.



Note:



- When the end positions have been adjusted, make sure, that the end switches are operable: by pushing the cam the relative indicator on the control unit shall be out.
- If the indicator is not out, repeat adjustment.

11. Release operation

The electric operator SHAFT-120 is equipped with a manual chain reducer, which is used for emergency lifting/lowering of the gate in case of power cut. For emergency control, pull the red knob down up to the stop, avoiding in such way automatic actuation of the operator. To return to the automatic control, pull the green knob down up to the stop.



Important: It is forbidden to pull down the red knob, when the electric operator runs. That can cause damage of the motor.



Important: Intensive and continuous use of the manual chain reducer is forbidden. It may be used only in emergency.

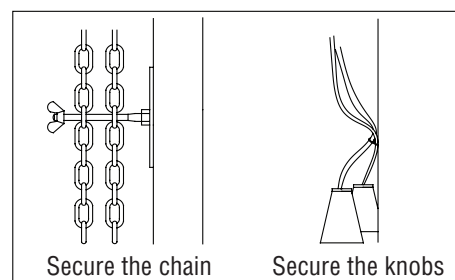


Important: Before using the manual chain reducer, make sure, that the chain links are not deformed and are not dirty. Otherwise use of the reducer can cause its jamming.

If required, the door can be opened using the chain. Lengthen or shorten the chain so, that when assembled, its edge is at a height of 50-150 cm from the floor. It is recommended to fix the lower part of the chain, to avoid hindrance to people and equipment move. Besides attach the warning labels, showing closing and opening direction, so, that they can be easily seen.



Use the chain only in case of emergency, otherwise the reducer parts can be damaged.



12. MAINTENANCE

- Make sure, that the gate operate properly and are balanced.
- Check operable condition of the system units and safety devices not less than once in six months.
- Have qualified technicians to service the operator.
- Keep the operator clean.

The manufacturing company reserves the right to make changes in the products described in this manual and modify their design without notice and without obligation to notify any persons of any such revisions or changes.

The Manual describes installation and adjustment of the operator SHAFT-120.

Following the operator's operating and maintenance recommendations as well as operator's and gate installation order, described in the manual will guaranty long life of the equipment and reduce the accidents at installation and operation of the gate.

Always observe safety standards at installation, operation and maintenance.

In the event you lost the Directions you may send a request letter for the duplicate copy to the following address:

DoorHan, Russia, 143002, Moscow region, Odintsovsky district, Akulovo village, Novaya street 120 or by e-mail: info@doorhan.ru

The producer (DoorHan) does not handle with installation of gates and automation, their maintenance and operation and shall no be held responsible for safety of installation, operation and maintenance of gates and automation.

The content of the Manual shall no be basis for any claim.

13. TROUBLE SHOOTING

Symptom	Possible reason	Possible solution
Operator does not run	Power is off	Make sure, that the power is on
	Obstruction at gate's movement	Remove the obstruction
	Bad connection of electric wires	Check reliability of electric wiring connection
	The operator is released	Engage the operator
After use of manual chain the operator does not run after pushing of control buttons or remote controller	Return in the original position was not executed	Pull the knob to resume operation. (See par. "Release operation")
	The door is not balanced	Adjust the door
Operator stops suddenly	The operator's thermal protection works	Let the operator cool
Gate does not open completely or does not close completely	Wrong adjustment of end switches	Adjust end switches

14. GUARANTY CARD

Bar code		Serial number	Installation date
Component part	Component part	Seller's stamp	
Component part	Component part		
Component part	Component part		
Component part	Component part		
Customer		Installation crew
		City/town
		Tel/fax
		Name
		City/town
		Address
		Postal code
		Tel/fax
		Guaranteeing party signature	
		Customer signature	

Hereby we inform you that your data will be entered in the database of the company DoorHan and you will be notified with guarantee registration letter. We also can send you promotional materials and other explanatory materials.

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