# **INSTRUCTIONS-PARTS LIST**



Rev. A

309275



This manual contains important warnings and information. **READ AND KEEP FOR REFERENCE.** 



First choice when quality counts.™

## UNI-DRUM<sup>™</sup> SUPPLY SYSTEM 7–Day Timer System

Refer to page 2 for the Table of Contents.



C56508 7–Day Timer

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AUTO OPEN  $\bigcirc$ 

CAUTION AGE DISLIM CLAMPS CRE RAISING RAM

(B) RAM UP

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C56518 Timer/Pneumatic Interface

**Related Manuals:** 

309169 Uni–Drum Supply System **Omron H5L–A Instruction Manual** Hoffman 99401677 Installation Instructions Hoffman 99401747 Installation Instructions

243559 Pneumatic Control

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# Symbols

### Warning Symbol

#### WARNING Λ

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

### **Caution Symbol**

### **A** CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

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	E	QUIPMENT MISU
	Ec	quipment misuse can
INSTRUCTIONS	•	This equipment is fo
	•	Read all instruction
	•	Use the equipment of distributor.
	•	Do not alter or modi
	•	Check equipment da
	•	Do not exceed the n for your equipment. in your system.
	•	Use fluids and solve <b>nical Data</b> section of
	•	Route hoses away f Graco hoses to tem
	•	Wear hearing protec
	•	Do not lift pressurize
	•	Comply with all appl
	Pl	RESSURIZED EG
	Sp the	pray from the dispens e skin and cause seri
	•	Do not point the disp
	•	Do not stop or defle

### cause the equipment to rupture or malfunction and result in serious injury.

or professional use only.

SE HAZARD

- manuals, tags, and labels before operating the equipment.
- only for its intended purpose. If you are uncertain about usage, call your Graco
- fy this equipment. Use only genuine Graco parts and accessories.
- aily. Repair or replace worn or damaged parts immediately.
- naximum working pressure stated on the equipment or in the Technical Data Do not exceed the maximum working pressure of the lowest rated component
- ents which are compatible with the equipment wetted parts. Refer to the **Tech**of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- rom traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose peratures above 180°F (82°C) or below –40°F (–40°C).
- tion when operating this equipment.
- ed equipment.
- licable local, state, and national fire, electrical, and safety regulations.

### UIPMENT HAZARD

e valve, hose leaks, or ruptured components can splash fluid in the eyes or on ous injury.

- pense valve at anyone or at any part of the body.
- not stop or deflect leaks with your hand, body, glove or rag.
- Follow the Pressure Relief Procedure on page 7 whenever you: are instructed to relieve pressure; stop spraying; clean, check, or service the equipment; and install or clean the spray tip.
- Tighten all fluid connections before operating the equipment. .
- Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose.

### 

### **MOVING PARTS HAZARD**

Moving parts, such as the air motor piston, can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Before servicing the equipment, follow the **Pressure Relief Procedure** on page 7 to prevent the equipment from starting unexpectedly.

### FIRE AND EXPLOSION HAZARD

Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.

- Ground the equipment and the object being sprayed. Refer to **Grounding** on page 16.
- If there is any static sparking or you feel an electric shock while using this equipment, **stop spraying immediately.** Do not use the equipment until you identify and correct the problem.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being sprayed.
- Keep the spray area free of debris, including solvent, rags, and gasoline.
- Electrically disconnect all equipment in the spray area.
- Extinguish all open flames or pilot lights in the spray area.
- Do not smoke in the spray area.
- Do not turn on or off any light switch in the spray area while operating or if fumes are present.
- Do not operate a gasoline engine in the spray area.
- **TOXIC FLUID HAZARD**

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- Know the specific hazards of the fluid you are using.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

# **Component Identification**



Fig. 1

# **System and Component Functions**

### 7–Day Timer Control System

Fig. 1. The 7–Day Timer Control System consists of: a 7–Day Timer (A), a Timer/Pneumatic Interface (B), and two Pneumatic Controls (C). The system receives inputs from human users, the Dual Uni–Drum supply units, and embedded Omron timers. It processes the inputs and generates corresponding outputs to control the supply units.

### 7–Day Timer

The 7–Day Timer (A) is the main operator interface for the Dual Uni–Drum supply units system and is responsible for all electrical signals. The 7–Day Timer operates the system by sending and receiving electrical signals to and from the Timer/Pneumatic Interface. It is a visual interface which consists of lights that inform the human user of the system's operating status. The 7–Day Timer houses two Omron Timers, switches, and relays required for communicating with the Timer/ Pneumatic Interface. The 7–Day Timer can also provide signals for use with outside monitoring and control systems.

### 7–Day Timer Modes and Functions

**Timer Mode Select Auto.** In Timer Mode Select Auto, the 7–Day Timer automatically operates the dual Uni–Drum system on data programmed into the Omron Timers. The timers must be set to the Run mode.

**Timer Mode Select Man.** In Timer Mode Select Man, the 7–Day Timer will operate on manual inputs from human users. In this mode, the user can manually depressurize and circulate material through the dual Uni–Drum system.

**Timer Mode Select Off.** In Timer Mode Select Off, the 7–Day Timer has no effect on the dual Uni–Drum System. In this mode, the Pneumatic Control on each ram controls the ram.

**Depressurization and Circulation.** Depressurization and circulation functions of the supply units are automated by two Omron H5L–A Timers located in the 7–Day Timer. The Depressurization Timer automates depressurization functions by using two program circuits. One circuit programs weekday automation and the other weekend automation. The Circulation Timer automates system circulation in the same way.

### **Timer/Pneumatic Interface**

The Timer/Pneumatic Interface (B) converts electrical and pneumatic signals between the 7–Day Timer and each of the Pneumatic Controls mounted on the Uni– Drum rams. The Timer/Pneumatic Interface consists of pressure switches and solenoid valves.

### **Pneumatic Control**

A Pneumatic Control (C) is mounted on each of the Uni–Drum rams. The control has two functions. It operates the ram–mounted pumps and it raises and lowers the ram. Each Pneumatic Control is connected to the Timer/Pneumatic Interface and the Pneumatic Control on the other ram.

### **Pressure Relief Procedure**

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#### PRESSURIZED EQUIPMENT HAZARD

The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. To reduce the risk of an injury from accidental spray from the dispense valve, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

- are instructed to relieve the pressure,
- stop spraying,
- check or service any of the system equipment,
- or install or clean the dispense equipment.

Follow the **Pressure Relief Procedure** outlined in the Uni–Drum Supply System Manual.

### General

The installation procedures in this section are intended to serve as a guide for installing the 7–Day Timer, Timer/Pneumatic Interface, and Pneumatic Controls. If more information is required, consult the enclosed Hoffman instruction sheet or contact your Graco distributor.

### **Suggested Tools and Materials**

To install the 7–Day Timer and Timer/Pneumatic Interface we suggest these tools and materials:

- Standard open-end wrench set
- Mounting hardware
- Attaching hardware (air lines and tubing)

### **Preparing the Site**

Ensure that the units are located in close proximity to the Uni–Drum System. It is necessary to locate the units on a wall near the Uni–Drum System to ensure that the unit controls are readily available. Keep the site clear of any obstacles or debris that could interfere with the installer's and operator's movement.

### Selecting a Location for the System Units

When selecting a location for the system units keep the following in mind:

- There should be sufficient space for installing, servicing, and using the equipment.
- Select an accessible location for the system units. There must be sufficient space around the system for maintenance.
- Select a convenient location for the system units. Make sure that there is sufficient clearance to make all necessary connections between the 7–Day Timer, Timer/Pneumatic Interface, Pneumatic Control, and the Uni–Drum System.
- Make sure that there is adequate clearance in front of the system panels to allow for opening and closing, connections, and operational accessibility.
- Note: Consult appropriate codes to determine minimum clearance around system panels

### Preparing to Install the System Units

Before installing the system units:

- Refer to the Hoffman panel installation instructions for information on mounting, leveling, and adjusting the system panels.
- Have all system and subassembly documentation available during installation.
- Be sure that all non–Graco supplied hoses are adequately sized and pressure–rated to meet system requirements.

### Installing the System Units

To install the system units, use the following procedure:

- 1. Remove all packaging.
- 2. Using equipment such as suitable hoist, position system panel on intended wall installation location.
- 3. Level system panel being installed.
- 4. Use appropriate fasteners in all mounting holes to secure panel to wall.
- 5. Make all necessary adjustments so that door closes properly.
- **Note:** Please be aware that the wall on which a panel is mounted must be flat or else the door might not close properly. Also refrain from placing heavy objects on the door of a panel enclosure as the weight may cause the door to sag. Be sure that all mounting screws are tightened securely after making any adjust–ments. See Hoffman panel installation instructions for further information.
- Make sure that 7–Day Timer Panel and Timer/ Pneumatic Interface are securely installed and are placed within adequate distance from each other and Uni–Drum System in order to make all necessary connections.
- 7. Connect all lines.

### **Connect 7–Day Timer**

Fig. 2. The 7–Day Timer must be connected to the Timer/Pneumatic Interface, rams, and a 480 VAC power supply.

#### Connect 7–Day Timer to 480 VAC

The 7–Day Timer must be connected to a 480 VAC, 60 Hz, single phase power source in order to operate. A qualified electrician is required to make the necessary connections. It is also necessary to drill a hole in the 7–Day Timer enclosure to allow an exit port for the power cord.

**Note:** See Figs. 3 through 6 for 7–Day Timer wiring diagrams.

## Connect 7–Day Timer to: Ram Not Ready Limit Switch – Ram #1

Connect as follows:

- Drill hole in 7–Day Timer enclosure to allow for most convenient exit port for 1/2 in. diameter cord. Hole should be on bottom side of enclosure.
- 2. Strip back approximately 12 inches of sheath from five-pin connector cord.
- Use 1/2 in. cord grip connector (C20579), locknut, and O-ring to attach cable securely to 7–Day Timer enclosure.
- 4. After enclosure to cable connections are made, refer to the 7–Day Timer wiring diagrams, Figs. 3 through 6, for wiring details.
- 5. Use following table to make Ram #1 Ram Not Ready Limit Switch connections:

Wire/Pin Number	Connection
One	Line 1621
Two	N/C
Three	Ground
Four	N/C
Five	Line 1101

N/C = no connection

 Check that female end of five-pin connector cord is connected to Ram Not Ready Limit Switch C57536 on Ram #1.



### 7–Day Timer – Front and Side View

## Connect 7–Day Timer to: Ram Not Ready Limit Switch – Ram #2

Connect as follows:

- Repeat steps 1–4 as in Connect 7–Day Timer to: Ram Not Ready Limit Switch – Ram #1 preceding.
- 2. Use following table to make Ram #2 Ram Not Ready Limit Switch connections:

Wire/Pin Number	Connection
One	Line 1681
Two	N/C
Three	Ground
Four	N/C
Five	Line 1101

N/C = no connection

 Check that female end of five-pin connector cord is connected to Ram Not Ready Limit Switch C57536 on Ram #2.

## Connect 7–Day Timer to: Ram Low Limit Switches – Ram #1

Connect as follows:

- Repeat steps 1–4 as in Connect 7–Day Timer to: Ram Not Ready Limit Switch – Ram #1 preceding.
- 2. Use following table to make Ram #1 Ram Low Limit Switch:

Wire/Pin Number	Connection
One	Line 1741
Two	N/C
Three	Ground
Four	N/C
Five	Line 1101

N/C = no connection

3. Check that female end of five-pin connector cord is connected to Ram Low Limit Switch C57553 on Ram #1.

## Connect 7–Day Timer to: Ram Low Limit Switch – Ram #2

Connect as follows:

- Repeat steps 1–4 as in Connect 7–Day Timer to: Ram Not Ready Limit Switch – Ram #1 preceding.
- 2. Use following table to make Ram #2 Ram Low Limit Switch:

Wire/Pin Number	Connection
One	Line 1801
Two	N/C
Three	Ground
Four	N/C
Five	Line 1101

N/C = no connection

3. Check that female end of five-pin connector cord is connected to Ram Low Limit Switch C57553 on Ram #2.



7–Day Timer Wiring Diagram (Sheet 1 of 4)



7–Day Timer Wiring Diagram (Sheet 2 of 4)

Fig. 4



### 7–Day Timer Wiring Diagram (Sheet 3 of 4)



Fig. 6

#### Connect 7–Day Timer to: Timer/Pneumatic Interface

Fig. 7. All connections from the 7–Day Timer to Timer/ Pneumatic Interface are labeled on both enclosures and on the cords. Connections must be made to pressure switches PS133, PS137, PS150, and PS156. Solenoid valves SOL218, SOL220, SOL230, SOL222, and SOL228 also need to be connected. Refer to the 7–Day Timer wiring diagrams, Figs. 3 through 6, for wiring details. See Fig. 7. below for the location of pressure switches and solenoid valves.



### **Timer/Pneumatic Interface – Front View**

### **Connect Timer/Pneumatic Interface**

Fig. 8. Besides electrical connections, the Timer/Pneumatic Interface needs to be connected to the Pneumatic Control on each ram. Most of these connections are 1/4 in. tubing. The ports are divided into two rows, one for each ram. The front row is for Ram #1 and the back row is for Ram #2.

The RETURN VALVE OPEN and RETURN VALVE CLOSED ports should be connected to the appropriate depressurization connection on each ram. The Pneumatic Control also needs to be connected to an air supply and it is important that the four pressure switches (PS133, PS137, PS150, and PS156) inside the Timer/Pneumatic Interface are set to 50 psi. If the switches are not set to 50 psi, the Timer/Pneumatic Interface will not register air pressure and the system will not work. The following table provides a translation of Port Labels:

Port	Label on Tim- er/Pneumatic Interface	Label on Pneu- matic Control
М	AIR IN	TIMER PANEL AIR SIGNAL
N	CIRC. SIGNAL	CIRCULATION SIGNAL
L	DEPRESS. SIGNAL	DEPRESSU- RIZATION SIG- NAL
В	EMPTY	DRUM EMPTY SIGNAL
Q	AIR/ELECT ON	AIR/ELECT ON



Timer/Pneumatic Interface – Top View

Fig. 8

### Grounding



FIRE AND EXPLOSION HAZARD Before operating the 7–Day Timer System, ground the system as explained below. Also read the section FIRE AND EXPLOSION HAZARD on page 4.

- 1. Panels: follow manufacturer's recommendations.
- 2. Air hoses: use only electrically conductive hoses.

## Operation

### Timer

Fig. 9. The Omron H5L–A Time Switch is a programmable timer that operates on a weekly basis. The basic programs that can be entered are ON/OFF and CYCLE operations. The time switch has two separate circuits which can be programmed to run in an ON/ OFF or CYCLE mode. The 7–Day Timer contains two Omron H5L–A Time Switches, see Figure X–7. One time switch is used for processing circulation requirements (right side) and the second is used for depressurization (left side). Of the two separate circuits in the Circulation or Depressurization timers, one is used to perform weekday operations and the other for weekend operations. The following section will provide a brief explanation of the following:

- Major key operations
- Modes of operation
  - Recommendations and important warnings
- **Note:** Refer to the Omron instruction manual for detailed information about programming the timer and for programming examples.





# Operation

Кеу	Name	Function
MODE	Mode Key	Allows the user to toggle between the six program modes.
▲	Write Key	<ul> <li>Stores data entered using the Plus and Minus Keys</li> <li>Reads out the set program</li> </ul>
+	Plus Key	<ul> <li>Toggles between weekdays when setting the day of the week</li> <li>Changes the hour or minute val ue when setting the current time. Holding either key down will incre ment or decrement the displayed digit continuously</li> </ul>
	Minus Key	<ul> <li>When specifying output the Plus Key specifies output ON while the Minus Key specifies output OFF. If either key is pressed twice there will be no set output specifi cation.</li> </ul>
	Cycle Key	Allows the user to set a cyclical pro- gram. Pressing the Cycle Key twice will clear the program.
	Manual Override Switch	<ul> <li>ON: Turns ON output regardless of any program.</li> <li>OFF: Turns OFF output regardless of any program.</li> <li>RUN: Allows programs to execute.The first and second circuits can be operated sepa rately</li> </ul>

### **Modes of Operation**

The Omron H5L–A has six modes of operation. Pressing the mode key allows for switching between the six modes. The six modes of operation are:

- 3. First circuit weekday setting
- 4. Second circuit operation setting
- 5. Second circuit weekday setting

1. Current time setting

6. Run

2. First circuit operation setting

## Operation

**Current Time Setting.** The current time setting mode allows the operator to program the current time by setting the day of the week, the hour, and the minute. For specific steps on programming the current time setting refer to the enclosed Omron instruction manual.

**First Circuit Operation Setting.** This mode allows for the first circuit operation of ON/OFF or CYCLE to be programmed in order of hour, minute, and specifying whether the output is to be ON or OFF. For instructions on how to program an ON/OFF or CYCLE program refer to the Omron instruction manual.

**First Circuit Weekday Setting.** Specifies for each weekday whether the program from first circuit operation setting is to be run or not. Refer to the enclosed Omron instruction manual for necessary steps.

Second Circuit Operation Setting. This mode is the same as the First Circuit Operation Setting but applies to the second circuit.

Second Circuit Weekday Setting. This mode is the same as the First Circuit Weekday Setting but applies to the second circuit.

**Run.** This mode executes the programs set in the four previous modes. Run mode displays the current time and indicates whether the current output is ON or OFF. The time switch is counting when the colon between the hour and minute is blinking.

## Recommendations and Important Warnings

 Creating a timing chart before programming is highly recommended.

- Be aware that the timer generates output according to previously stored programs. When programming a timer, switch the Manual Override Switch to the OFF position to prevent unexpected output from occurring.
- Try to position the control box in an area that will minimize noise-induced errors.
- Don't take the case off of the body.
- Avoid exposing the timer to the following conditions:
  - Corrosive gas environment
  - Location where shocks or vibrations occur constantly
  - Splashed water or oil
  - Location where there are extreme amounts of dust
  - Direct sunlight
  - Organic solvents (thinner or benzene), strong alkalis, or strong acids
- Please note that there is a backup battery that serves as memory protection during power outages. The battery supplies a constant supply of power to the internal timer during the outage, but during the outage the output will be in the OFF state and the display will be in the extinguished state. The battery will last for approximately ten years under normal usage conditions.
- Note: Be thoroughly familiar with the Omron instruction manual before operating the 7–Day Timer System.

# Troubleshooting

#### 



To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** (page 7).

Problem	Cause(s)	Solution(s)
Timer display is not lit.	Electrical power is turned off, or the timer power is disconnected.	Make sure that the panel disconnect is turned On, and that electrical power is supplied to the panel.
	Timer device has failed.	Have a qualified electrician replace the timer with an identical model.
Timer display is garbled or only partially lit.	Timer device has failed.	Have a qualified electrician replace the timer with an identical model.
Hour indicator blinks twice as fast as normal.	On and Off are set to occur at the same time.	Reset Off (or On) time.
Hour, cycle, Start, and Stop indi- cators blink twice as fast as nor- mal.	On/Off timer (circuit 2) start and end are set outside of cyclic timer (circuit 1) start and end, or cyclic timer is not set.	Set the <b>Hour</b> and <b>Minute</b> for the cyclic timer (Circuit 1). Note that cyclic timer start must be before the On/Off timer turns on, and the cyclic timer end must be after the On/Off timer turns Off.
Hour, Start, and Stop indicators blink twice as fast as normal.	On/Off timer (circuit 2) starts before cyclic timer (circuit 1) starts, or On/ Off timer ends after cyclic timer ends.	Set cyclic or On/Off timer so that the start and end times do not overlap, and the On/Off timer turns On and Off between the start and end times of the cyclic timer.

Note: Refer to the Uni–Drum Supply System Manual for troubleshooting rams and pumps.

### 7–Day Timer System



Ref No.	Part No.	Description	Qty	Ref No.	Part No.	Description	Qty
1	C56508	7–DAY TIMER	1	3	243559	PNEUMATIC CONTROL	2
2	C56518	TIMER/PNEUMATIC INTERFACE	1				

Notes

## **Technical Data**

Category	Data
Air Operating Range	0.28–0.6 MPa, 2.8 – 6.2 bar (40 – 90 psi)

# Dimensions



243559 Pneumatic Control

## **Graco Standard Warranty**

Graco warrants all equipment manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non–Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

#### THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

Graco makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose in connection with accessories, equipment, materials or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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## **Graco Phone Number**

*TO PLACE AN ORDER*, contact your Graco distributor, or call this number to identify the distributor closest to you: 1–800–367–4023 Toll Free

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