



AN EXCHANGE OF TECHNICAL INFORMATION
VOLUME 9 NUMBER 1 ABOUT CARRIER TRANSICOLD CONTAINER PRODUCTS **1st Quarter 2004**

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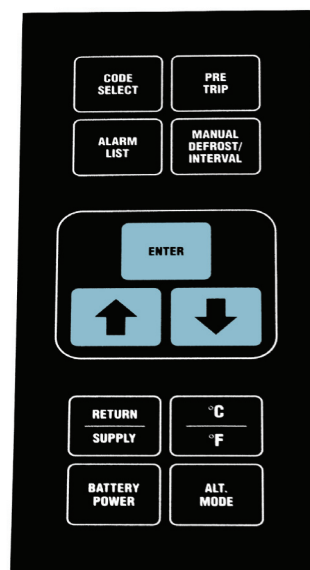
General

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Depressing and holding the **Manual Defrost / Interval** key for five (5) seconds will initiate defrost the same as if the manual defrost switch was toggled.

If the defrost interval key is released in less than five (5) seconds, defrost interval (code 27) shall be displayed.

It should be noted that with the installation of software version #5126 or greater, that this feature will become immediately active regardless of the keypad. A manual defrost will initiate by pressing and holding the defrost interval key as described above or by using the switch.



TechFact

Manual Defrost

69NT model units with PID's (parts identification numbers) 1200 and greater will have the manual defrost initiated through the keypad.

Minimum Software release version #5126 is required in order for the new keypad to function correctly.

Part Number: 79-01706-05SV

□ G. Busse



TRANSICOLD

Please circulate this newsletter to all of your support personnel

Feature Article

MicroLink 3

Carrier Transicold is proud to announce its latest edition to the microprocessor family, the ML3 controller. This new controller will have all the same capabilities as the previous ML2i controller, as well as some new enhancements.

Some of these enhancements are listed below.

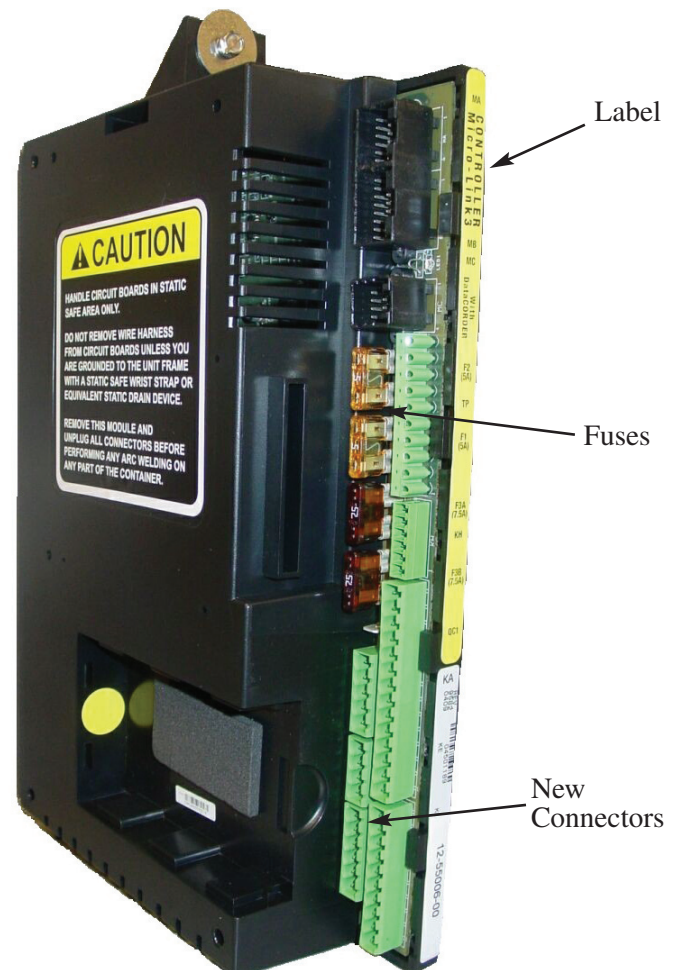
- Increased I/O; Additional internal relays allows for the added I/O capacity and future growth.
- Enhanced battery charging, this will shorten the time required to charge the battery for recording purposes.
- Elimination of ESMV drive pack for OEM equipment; The drive capability has been incorporated into the new controller.
- Elimination of IOE module for Scroll OEM, because of the increased I/O there is no longer the need for the expansion module on new equipment.
- New software programming card; The new format will shorten controller programming time and allow all software revisions to be stored on one card (Scroll, Recip, Configuration).
- Additional fuse added; This helps in troubleshooting of the controller.

The ML3 controller is backward compatible except for the ML2 (69NT40-489 and 501 model units) and the CA Controller in the Controlled Atmosphere part of the unit. These units will require the ML2i controller.

When an ML3 is used as a replacement for a ML2i with an IOE controller in the Scroll units, the IOE module must be replaced with an **adapter-harness / IOE kit, P/N 76-00763-00**.

An ML3 controller can be easily identified by one of the following means:

- PART NUMBER 12-00579-00 (OEM) OR 12-55006-00 (replacement).
- YELLOW LABEL reads CONTROLLER Micro-Link 3.
- 4 FUSES, F2, F1, F3A, AND F3B (note F2 & F1 are 5 Amp, and F3A & F3B are 7.5 Amp).
- 3 NEW CONNECTORS KE, KD, AND KC.
- All 69NT40-541 and 551 model units.



When replacing an ML2i with an ML3, the current sensor spades connectors need to be removed and replaced with butt-splices. The removal of the connections was reviewed in the 4th Quarter 2003 TechLine Article titled, "New Current Sensor".

□ M. Rogers

Feature Article - MicroLink3 (cont)

Software Card

The ML3 controller will require a new type of programming card. The new type is referred to as a PCMCIA card. Although there are many versions of cards available throughout the world, Carrier Transicold has selected one that fits its application and is guaranteed to work properly. The new card part number is 12-00594-XX. Carrier Transicold only supports the use of this card.



**New PC Card
P/N 12-00594-XX**

This card can hold the configuration and operation software for all 5XX units in the field. The software versions can be downloaded from the Internet just as it is being done today.

This PC card has an internal battery that needs to be periodically charged. It is recommended that the card be charged for two hours every six months. The PC card battery is charged when inserted in the Omni drive (detailed below).

To further support this need, a card charging station (CardPro 2000 SRAM) that can charge four PC cards at the same time is available as follows:
P/N 07-00446-00 for 110V, or 07-00446-01 for 220V.

An interface device is required to load the software to the card. The interface device, the Omni Drive that was referenced above, is shown in the picture. This Omni drive is an external, removable disk PC drive. It connects with the PC through the USB or the parallel port. It will display the PC card contents as shown to the right.

The Omni drive PC software may require periodic updates. All information and drive updates can be found and downloaded from:

http://www.csm.de/html/e/support/download/frm/xo_mnidrive_usb.htm

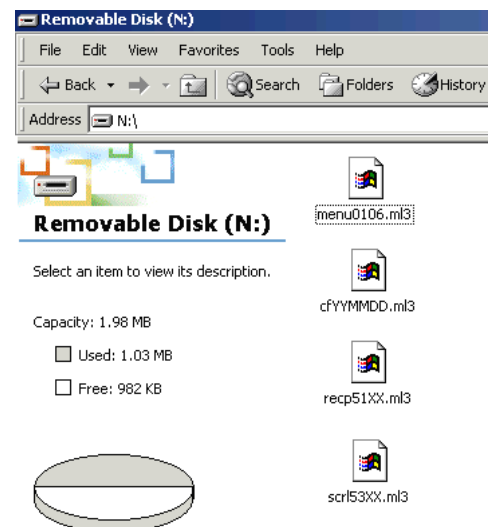
The PC card can only be inserted into the Omni Drive with the yellow label down, as shown in the picture.



**Omni PC Card Drive
(USB port) P/N 07-00439-00
(Parallel Port) P/N 07-00438-00**

The programming (updating the card with new software files) is as easy as dragging and dropping (copy and paste) the files between the different file folders. When new files are released and are available for downloading, they can be copied into the PC card via the Omni drive. Typically, the PC card file will have four files as shown in the picture.

- *menuDDMM.ml3*, this file allows the user to choose which file/program to upload into the controller.
- *cfYYMMDD.ml3*, multi-configuration file
- *recp51XX.ml3*, controller software program for recip, ML2i units.
- *scr153XX.ml3*, controller software program for scroll units.



□ Z. Asprovski

To program Operational Software into the controller:

1. Turn Power off
2. Insert software/programming PCMCIA card containing the following (example) files:
 - *menuDDMM.ml3*, this file allows the user to chose which file/program to upload into the controller.
 - *cfYYMMDD.ml3*, multi-configuration file
 - *recp51XX.ml3*, controller software program for recip units.
 - *scrl53XX.ml3*, controller software program for scroll units.
3. Turn unit Power On. Displays will show:
ruN COnFG
4. Press the UP or DOWN arrow key until display reads,
LOAD 53XX for Scroll (odd numbers)
LOAD 51XX for Recip (even numbers)
5. Press ENTER key once
6. Display will alternate to between PrESS
EntR and rEV XXXX
7. Press ENTER key once
8. Displays will show. Pro SoFt
9. When software programming is complete display will show: Pro donE
10. Turn unit power off and remove PCMCIA software/programming card
11. Turn power on, and wait 15 seconds - The status LED will be flashing fast, and there will be no display. The controller is loading the new software into memory. This takes about 15 seconds. When complete the controller will reset and power up normally.
12. Wait for default display, setpoint on the left, and control temperature on the right.
13. Confirm software is correct using keypad code select 18 to view Cd18 XXXX
14. Turn power off. Operational Software is loaded

To program the Model Configuration into the controller:

1. Turn the power off
2. Insert software/programming PCMCIA card containing the following (example) files:
 - *menuDDMM.ml3*, this file allows the user to chose which file/program to upload into the controller.
 - *cfYYMMDD.ml3*, multi-configuration file
 - *recp51XX.ml3*, controller software program for recip units.
 - *scrl53XX.ml3*, controller software program for scroll units.
3. Turn power on. Displays will show:
ruN COnFG
4. Press ENTER key once
5. Display will go blank for a few seconds and then display. The selection will be based on the operational software that is loaded into the controller.

531 00 for Scroll
511 01 for Recip
6. Press the UP or DOWN arrow key until display reads the desired model number is displayed.
7. Press ENTER key once
8. Display will show EEPrM done
9. Turn power off and remove PCMCIA software/programming card.
10. Turn unit on and confirm model configuration is correct using keypad to view code select 20 (Cd 20). The model will match what is found on the unit serial number plate.
11. Turn power off. Configuration is complete.

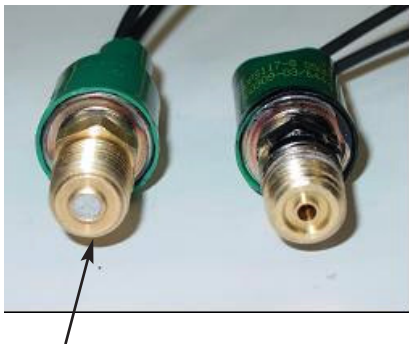
□ M. Rogers

TechFact

High Pressure Switch

In December 2003, Carrier Transicold began factory installing a new High Pressure Switch with an internal snubber, P/N 12-00309-06, on all Container 69NT40-511 (non-Scroll) units. The new switch supersedes the old style switch, P/N 12-00309-03 which required the use of a separate snubber elbow.

The new switch can be used on all non-Scroll units equipped with an OEM High Pressure Switch. When installing the new style switch in a unit that currently has the old style switch installed the snubber elbow **MUST** be removed and discarded. The new style switch can then be installed directly in the compressor cylinder head. It is very important that the new style switch **NOT** be used with the snubber elbow that was supplied with the old style switch and that old non-snubbed switch be used in units that have the new style switch. Using the old style switch without snubber elbow may lead to nuisance trips as a result of discharge pressure spikes that may occur as part of normal operation.



Internal Snubber

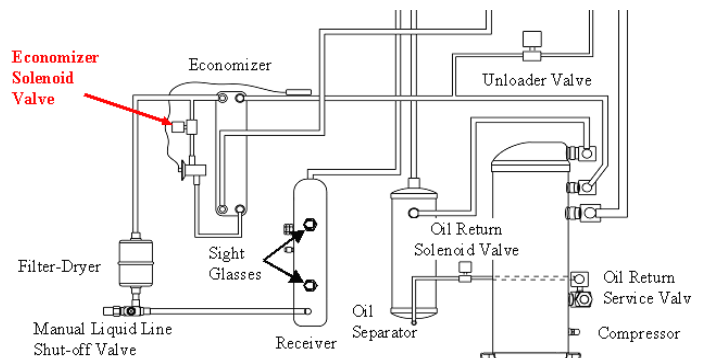
□ G. Busse

TechTip

F3 Fuse / Economizer Solenoid Valve Coil

Field reports identified a few cases where the 10 Amp control circuit fuse (F3) has repeatedly blown in the NT Scroll Units. Although there are a number of different components that could be the reason for current over limit resulting in a blown fuse, one component in particular should be checked.

The Economizer solenoid valve coil should be checked for the proper current draw. The picture below shows the location of the economizer solenoid.



Economizer Solenoid Valve Check Procedure:

While the unit is in economized mode of operation (Cd21 displays Open) measure the current draw of the coil with Amp meter (make sure only one wire is clamped while doing this). A good coil will measure around .5 to .6 Amps. A current greater than .6 Amps indicates problems with the coil and the part should be replaced.

□ Z. Asprovski

TechTip

Software Release Update

The latest software release versions for the 69NT units are:

Scroll – 5314
ML2i / ML3 - 5127
ML2 – 1207
ML2 Datacorder - 2104
CA – 3108

□ P. Laros

TechFact

Configuration Variables

On units with software version 5125 and higher, code select 44 (Air Slide Opening) and 45 (Air Slide Timer) have been consolidated into code 43 (Auto Fresh Mode). Code 44 is now Auto Fresh Values and Code 45 is Vent Position Value.

□ P. Tanner

Auto Defrost

Starting with software revisions 5127 (Recip Units), Carrier Transicold introduced the "Auto Defrost" user selectable option. This option is an optimal way to ensure proper airflow and lower power consumption.

The option has been added to the Defrost Interval selection (code select 27). When scrolling through the selection you will now have the following options, 3, 6, 9, 12, 24 and the new option "AUTO" (some units may be configured to allow defrost to be disabled altogether; in this case a user-selected value of OFF will also be available).

If automatic defrost option is chosen and the unit is in perishable mode of operation, the defrost timer will initially be set to 3 hours and then adjusted based on the accumulation of ice on the evaporator coil. The time interval will increase accordingly until it meets the operating conditions/requirements of the load. This way, defrosts are scheduled to occur only when necessary.

If the unit is running in frozen operation, the defrost logic will be the same as was the case in perishable mode until the set point is reached. Once the set point is reached, defrost timer will change to 12 hours for the duration of the trip. Since the defrost timer counts compressor run time only, 12 hr interval will result in roughly one defrost cycle per day.

Note, the temperature difference across the evaporator coil is constantly calculated and the unit may go into defrost prior to the 12 hr interval time, if determined necessary (i.e excessive amount of ice due to external factors, like partially open air exchange or container back doors left opened).

If the unit is off power for 24 hrs or more, the defrost interval will be reset to the 3 hrs followed by defrost cycles when necessary, as described above in the perishable mode or 12 hrs interval (frozen mode).

□ Z. Asprovski

Icing of Recip Compressor (frozen set points)

When a technician / engineer suspects a hermetic TXV to be faulty due to frosting of a compressor and stepper valve, they must always check the superheat of the TXV and not presume it is faulty just on unit looks (frost on the compressor). An empty or full unit in range with a frozen set point at or below 0F (-18C) may show, this along with a low refrigerant level in the receiver.

A unit on full capacity (i.e. running continuously) operation will run in the frozen mode without causing any icing on the compressor and a refrigerant level will be seen in the sight glass. However, at low ambient temperature, the compressor starts to cycle due to normal operation. As the unit cycles, some frosting can begin to appear.



During compressor off cycles, the TXV does not fully close. The refrigerant can then migrate from the high side through the TXV to the low side. At compressor startup, due to the excess refrigerant in the low side entering the compressor, the extra energy required to boil off any excess refrigerant comes from the walls of the compressor / suction line causing them to get much colder which results in their icing. After several cycles like this, the refrigerant in the receiver will show low levels. This is normal. This refrigerant will vaporize prior to entering the compressor cylinders, so no harm is done to the compressor. If you have any concerns that the TXV may be faulty, then the super heat should be checked prior to replacing it.

TXV's should only be replaced after checking the superheat, per recommended procedures in the service manual. Superheat range for model numbers 69NT 40 511 / 69NT 40 531 / 69NT 20 531 are 8F to 12F (4C to 7C). Valves being replaced should be the correct size and part number and should not be fitted to units other than those they are specified for.

- 69NT 40 511 (Recip Unit)
Part number 14-00273-01
- 69NT 40 531 (Scroll Unit)
Part number 14-00273-02

□ S. Bretherton

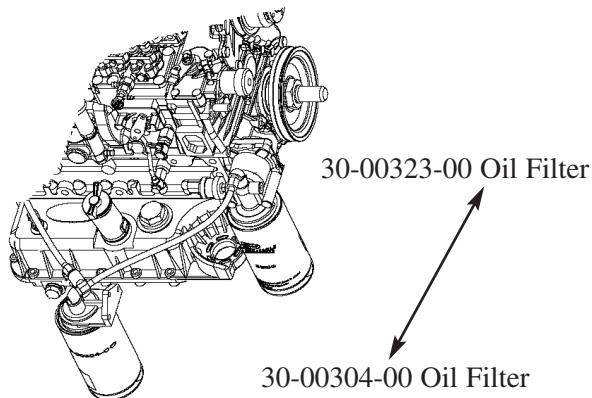
TechFact

Selection of Oil Filter

There is some confusion in the field regarding the correct oil filters to use in Carrier generator sets. In part, this has come about with technological improvements in the synthetic filter media. The full flow and the bypass options are now combined into the same filter (detailed in the **4th Quarter 2003 TechLine**). Below should assist in identifying the correct filter to be used in the 69RG and 69UG units.

Units equipped with dual filter housings (oil bypass system) see figure below

P/N 30-00323-00 - Full flow filter without internal bypass should only be used in combination with
P/N 30-00304-00 - Internal bypass oil filter



Units with Single oil filter housing and engine S/N's prior to 2Y2853

P/N 30-00450-00 - Full flow oil filter with internal by-pass

Units with Single oil filter housing and engine S/N's starting at 2Y2853

P/N 30-00463-00 - Extended Life Full flow oil filter with internal bypass. This filter requires a nipple for backward capabilities (**4th Quarter 2003 TechLine**).

It should be noted that although the 30-00323-00 and 30-00450-00 filters fit the same filter housing, the 30-00323-00 **MUST NOT** be used in place of the 30-00450-00. The 30-00450-00 has an internal bypass that will maintain lubrication in the event the filter is plugged. The 30-00323-00 does not have the bypass

and is used only in conjunction with the by-pass filter 30-00304-00 which will continue to provide lubrication in the event the full flow filter is plugged.

□ G. Barkowski

TechFact

Lower Vent Positioning Sensor

Carrier Transicold now offers a vent position sensor (VPS) option for the lower fresh air makeup vent. This option, like the upper VPS, adds the ability to record the position of the vent in the Datacoder. However, the lower vent position sensor option is only compatible with units equipped with the new ML3 controller as an OEM option.

General Overview: The lower VPS option functions the same as the upper VPS. Scrolling to Function Code 45 will display the "Fresh Air Vent Position". The display will be in either CFM (English) or CMH (Metric), depending on the setting of code select 28. To display the alternate reading, press the degree C/F key on the keypad. Once released, the display will return to the previous setting. Note, some units are permanently configured to one setting or the other. On these units, code select 28 cannot be changed.

The vent position will display for 30 seconds whenever motion corresponding to 5 CMH (3 CFM) or greater is detected. It will display in intervals of 5 CMH (3 CFM).

One difference of the lower VPS option is that there are 2 scales, which will be displayed based on **Function Code 34**. If the reefer unit is configured to economy mode (code 34 ON), code 45 will display the CFM/CMH setting as $\frac{1}{2}$ the value when compared to normal mode operation (code 34 OFF).

Vent Position Sensor Calibration: (Only required if and when a repair has been performed on the air make-up slide, motor, or sensor)

The vent position sensor is calibrated using the keypad as follows:

1. Remove the 2 nuts securing the air make-up panel slide to the unit.
 2. Rotate the gear **clockwise** until it stops.
 3. Rotate **1/4 turn counter clockwise**.
-

Lower Vent Positioning Sensor (cont)

- Carefully reposition the slide onto the air make-up panel (gear is engaged with rail and gear did not move)
- Position slide panel to full closed position.
- Code select 45 will automatically display. Press the Enter key and hold for 5 seconds.
- After the enter key has been pressed 'CAL' for calibration is displayed.
- Press the ALT MODE key on the display and hold for five seconds.
- After the calibration has been completed, Code 45 will display 0 CMH / CFM.
- Reassemble the nuts and stake threads.

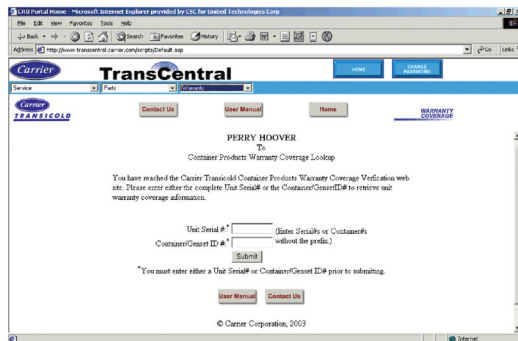
Software version **5127** is required to operate this option.

□ G. Barkowski

General

Warranty Lookup Feature

In November 2003, Carrier Transicold rolled out a new feature within TransCentral. This feature allows the user the ability to lookup warranty information on a unit by entering either the container number or the unit serial number.



This information has many uses. It can be used prior to filing a claim to assure that the unit is still under warranty.

It can be used to identify a unit's serial number or container number when you have only one of the numbers.

If you have any questions with regards to accessing this data please contact your Regional Service Engineer.

□ P. Hoover



TRANSICOLD

www.container.carrier.com

General

2004 School Schedule

Listed below is the planned schedule for Container training courses being offered in 2004. This information is also available on the Internet at <http://www.container.carrier.com/> and click on the Training tab.

Date	Program	Location	Class I.D.
MARCH			
15 - 16	2-Day Container/Genset	Mombasa, Kenya	834
22 - 26	1-Week Container	Qingdao, China	836
3/29 - 4/2	1-Week Container	Vladivostok, Russia	859
APRIL			
12 - 13	2-Day Container/Genset	Hamburg, Germany	839
14 - 16	3-Day Container Product Update	Hamburg, Germany	840
18 - 22	1-Week Container	Oman, Jordan	0402
19 - 23	1-Week Container	Rotterdam, The Netherlands	842
19 - 20	2-Day Container/Genset	Jakarta, Indonesia	841
26 - 28	3-Day Container	Liverpool, UK	844
MAY			
10 - 14	1-Week Container	Concepcion, Chile	845
17 - 21	1-Week Container	San Jose, Costa Rica	849
17 - 19	3-Day Container	Chicago, IL	848
JUNE			
7 - 11	1-Week Container	Veracruz, Mexico	853
7 - 8	2-Day Container/Genset	Vancouver, British Columbia	850
17 - 19	3-Day Container	Pusan, Korea	856
23 - 25	3-Day Container	Bangkok, Thailand	858
JULY / AUGUST			
No courses scheduled			
SEPTEMBER			
13 - 15	3-Day Container	Norfolk, VA	861
13 - 17	1-Week Container	Durban, South Africa	862
20 - 24	1-Week Container	Luanda, Angola	865
27 - 29	3-Day Container	Valencia, Spain	866
OCTOBER			
4 - 8	1-Week Container	Hamburg, Germany	869
11 - 13	3-Day Container	Aarhus, Denmark	870
20 - 22	3-Day Container	Panama	872
25 - 27	3-Day Container	Santiago, Chile	873
NOVEMBER			
1 - 5	1-Week Container	Oakland, CA	874
8 - 10	3-Day Container	Long Beach, CA	877
8 - 10	3-Day Container	Shenzhen, China	878
15 - 17	3-Day Container	Guam	879
DECEMBER			
1 - 3	3-Day Container	Montevideo, Uruguay	880
6 - 10	1-Week Container	Miami, FL	881



TechLine is a publication of Carrier Transicold

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