

# MULTI-SHELF DISPLAY CHILLER

**RC 60-70**

**RC 90-70**

**RC 120-70**

**RC 150-70**

**RC 180-70**

**RC240-70**

## **INTEGRAL CABINETS**

### **RECOMMENDATION TO USER!**

CONDENSER IN REFRIGERATION UNIT SHOULD BE CLEANED EVERY MONTH BY REMOVING THE COLLECTED DUST AND DIRT.

ABOVE MENTIONED SERVICING CAN BE PERFORMED AFTER DISCONNECTION OF ELECTRICAL POWER AT THE MAIN DISCONNECT.

FAILING WITH FULFILLMENT OF THE A.M. RECOMMENDATIONS WILL INVOLVE THE EQUIPMENT FAILURE AND LOST OF USER'S WARRANTY RIGHTS.



**NOTE:**

**PLEASE, READ CAREFULLY THE FOLLOWING INSTRUCTIONS BEFORE ASSEMBLING AND PUTTING INTO OPERATION OF THE DISPLAY CHILLER**

TABLE OF CONTENTS

1. Application notes
2. Technical data
3. Basic units and accessories
4. Start up / Operation
5. Shipping and installation directions
  - 5.1 Shipping case
  - 5.2 Handling
  - 5.3 Unpacking and aligning directions
  - 5.4 Position choice
  - 5.5 Multiple cabinet installing procedures
  - 5.6 Electrical connections
6. Operation instructions
  - 6.1 Installing instructions
  - 6.2 Start up / Switching off
  - 6.3 Roller blind
  - 6.4 Displacement of food products
  - 6.5 Ice removing
  - 6.6 Washing and cleaning
  - 6.7 Cleaning of evaporative condenser
  - 6.8 Daily servicing
7. Safety notes
8. Spares

**NOTE:**

**TO BETTER COMPLY WITH CLIENT'S DEMANDS, MANUFACTURER RESERVES RIGHTS TO CHANGE OR REVISE SPECIFICATIONS AND PRODUCT DESIGN IN CONNECTION WITH ANY FEATURE OF THE DELIVERED EQUIPMENT**

## 1. Application notes

Refrigerated cabinet is designed to expose, dispose for sale and storage the food products (e.g.: dairy products, fresh meat and drinks) under chilled temperature. It could be used in the grocery shops and, - among other – self service stores, canteens, quick-lunch bars, etc.

Cabinets are designed with segments thus, multiple-cabinet sets can be easy composed. Each cabinet in the refrigerating set is supplied by its own unit.

## 2. Technical data

	Units	RC60-70	RC90-70	RC 120-70	RC 150-70	RC 180-70	RC240-70
Total length	mm	700	1000	1310	1600	1900	2500
Length of exposition compartment (except side frame)	mm	600	900	1200	1500	1800	2400
Width	mm	760	760	760	760	760	760
Height	mm	1990	1990	1990	1990	1990	1990
Available area of exposition (window area in storage chamber)	m <sup>2</sup>	0,8	1,14	1,52	1,9	2,28	3
Available area of refrigerated shelves	m <sup>2</sup>	0,86	1,28 for 4 rows of upper shelves	1,72 for 4 rows of upper shelves	2,16 for 4 rows of upper shelves	2,56 for 4 rows of upper shelves	3,4 for 4 rows of upper shelves
Loading capacity: - on upper shelves - on lower shelves	kg	4x36 1x36	4 x 55 1x55	4x72 2 x 36	8 x 45 3 x 30	8 x 54 3 x 36	8x72 4 x 36
Temperature range (class 3H)	°C	+1 up to +10	+1 up to +10	+1 up to +10	+1 up to +10	+1 up to +10	+1 up to +10
Defrosting		automatic	automatic	automatic	automatic	automatic	automatic
Compressor unit		built-in	built-in	built-in	built-in	built-in	built-in
Rated voltage	V/Hz	230/50	230/50	230/50	230/50	230/50	230/50
Rated power	W	1200	1825	2250	2090	2630	2720
Total weight	kg	135	200	230	280	320	400
Refrigerating medium		R404A	R404A	R404A	R404A	R404A	R404A

### **3. Basic units and accessories**

The cabinet is designed as segmented structure filled with rigid polyurethane cell insulation. Internal surfaces are formed of the steel sheets that are covered with white, anti-corrosion paint. An open part of cabinet is furnished with the air curtain. Cold air stream is specially directed to reducing the heat exchange with surrounding area. Besides air curtain, each cabinet is provided with the spring loaded roller blind for covering front surface of cabinet during closing time of sale. The internal shelves [5] can be set at different height and angle of inclination. Electrical control panel with a temperature controller, lighting and ON/OFF switches can be forwarded-out from the right supporting column of cabinet. Also, the condensate tank is located inside of column, under the removable cover (furnished with handle).

### **4. Start up / Operation**

An air is sucked by fans [2] through the raster is forced by evaporator [3]. Chilled air is forced to cabinet via air channel, perforated shields, guide vanes (close to upper shelf) and exhaust nozzle of air curtain. Cold water receives the heat from food products, which are stored inside of cabinet. Heated air is taken repeatedly by fans and cycle recurs again.

### **5. Shipping and installation directions**

The cabinet shall be delivered in shipping packages as following:

- 1) Cabinet body is wrapped with a plastic foil and is secured onto the wooden skids that are fixed with 8 screws (M10 size);
- 2) All glass elements are collected in bottom part of cabinet in cartoon package with wooden, reinforcing flats;
- 3) The shelves, fixtures, etc. are wrapped with paper or foil;
- 4) Small elements, - i.e. screws, nuts, washers, adjustable foots, decorative jointing studs for external profiles and plugs are contained in plastic bag at bottom part of cabinet;
- 5) The roller blind is shipped in a separate cartoon box.

#### **5.1 Shipping case**

During transportation period, the cabinet shall be secured by, e.g. nailing to the container bottom plate and carried in working (vertical) position. Acceptable deflection from vertical plane is  $30^{\circ}$ . Chiller cabinet can be carried in any shielded carriage with reduced vibrations. Not shielded carriages are allowable for short distances only with no presence of raining or water condensation.

#### **5.2 Handling**

Loading or unloading can be done manually or using proper forklift however, deflection of cabinet from vertical plane can not excess  $30^{\circ}$ .

#### **5.3 Unpacking and aligning directions**

- 1) Remove plastic cover from display chilling cabinet;
- 2) Remove the wooden skids;
- 3) Remove spacer has been inserted for shipping period;

- 4) Screw-in adjustable foots;
- 5) Secure roller blind and side window glasses on the place.

## 5.4 Position choice

Display chilling cabinet should be installed and serviced in the compartments at relive humidity less than 65% and ambient temperature +25<sup>0</sup> C. Presence of alkaline or acid vapors and caustic substances is not permitted in such room. Direct heater influence or solar radiation should be also avoided. It is advised to install the cabinet in proximity to wall of room however; the free space between display cabinet and adjacent wall should be left 10 cm minimum.

## 5.5 Multiple cabinet installing procedures

A number of cabinets could be assembled in sale, successive arrangement by qualified serviceman. Design of cabinets allows common configuration of a few cabinets in one set. Method of connecting is shown in Fig. 2. The cabinets shall be assembled together after removing of side walls and mutual leveling. Special care shall be paid for possible damages of seals. Finally, the cabinets have to be fixed between each other with screws. Side walls shall be installed on a closing ends. Points of connection between decorative, top profiles shall be secured with two expanding studs that shall be seated in aluminum profile.

## 5.6 Electrical connections

The cabinets RC60-70, RC90-70, RC120-70, RC150-70, RC180-70 and RC 240-70 should be connected to power supply with supply cord via proper mains outlet with protective, grounding stud. Mains outlets shall be supplied from separate circuit with 16 A (delayed type) fuse protection or S-16A automatic switch ("D" type of characteristic). All the relevant regulations and standards have to be observed during execution of electrical connection.

**NOTE: DURING PROLONGED STOPPAGE AND BEFORE ATTEMPTING TO MAINTENANCE OR REPAIRS, THE SUPPLY CORD SHALL BE UNPLUGGED FROM MAINS OUTLET.**

## 6. Operation instructions

### 6.1 Installing instructions

When the counter is arranged on its positions, the next steps should be performed as following:

- 1) Unpack all the shelves, hurdles, shelf supports, seals;
- 2) Install the shelf supports [8] in the special cut-off on perforated columns assuring the required distances and inclination;
- 3) Insert a hurdle [9] in plastic sleeves on the shelves;
- 4) Insert the decorative strips with color price labels [10] in 'Z'-shaped place of a shelf [5];
- 5) Clean all the elements;

- 6) Displace complete shelves on its supports [8] and secure it in position using plastic studs [13] that shall be inserted in the holes [7], as shown in Fig. 1;
- 7) Insert the side glasses [11] in their seats on the side walls and secure it with six screws and nuts.

## 6.2 Start up / Switching off

The equipment starts after closing switch PRACA 'RUN' has been situated on front panel beside the ending, right-sided, removable cover with handle.

The fans start at this moment and signal lamps on temperature controller are lighted.

## 6.3 Roller blind

Display cabinet is provided with the roller blind, which moves backward in uniform motion. Lower part of blind contains the magnetic insert that 'sticks' to metal part of cabinet. The blind moves up slowly after slight pulling-up of magnetic strip.

## 6.4 Displacement of food products

Before loading food products into cabinet, the shelves [5] can be adjusted through changing height and inclination angle of shelf supports in their cut-offs situated on the strips that are fixed with supporting columns.

The shelves can be used for loading with any kind of food products and drinks. However, no hot product can be inserted into cabinet i.e., the differential temperature should not be significantly higher than ambient temperature. Storage time for different kinds of products varies in wide range. The shortest storage periods are defined for fresh dairy products, cakes with cream, products that include fresh meat or eggs as well some culinary meals. Longer time is allowed for vacuum packed pork-butcher's products, cheese, half-finished food, etc. The longest storage time is defined for canned food, drinks, oil and other products that are prepared and packed for long-term storage. Each one product that is intended for open sale receives the period guaranteed by manufacturer with regard on 'expire date' (if stored in prescribed temperature). Such period can be also applied as an advice for storage period in display cabinet. Heat exchange between cabinet and an ambient air can be reduced by switching-off lights using 'Oswietlenie'-[LIGHT] push-button and lowering the blind.

## 6.5 Ice removing

Defrosting of evaporator in the cabinet is realized automatically providing that relative humidity and ambient temperature around the cabinet are lower than the values have been reported in item 5.4. Defrosting process is controlled by CAREL – type regulator. A condensate drops from evaporator [3] (see Fig.1) to waste water system or internal tank. If the cabinet is used in compartments of rise relative humidity (over 55% at ambient temperature +30<sup>0</sup> C), a total amount of frost being forming currently onto evaporator [3] could be higher than actual efficiency of automatic defrosting feature. An additional, manual defrosting of evaporator is then

required. Thus, the switch 'Praca'-[RUN] shall be OFF and whole refrigerating unit is stopped until removing any frost. System is switched-on by closing a main switch 'Praca'-[RUN].

## 6.6 Washing and cleaning

Before attempting with washing of cabinet, use the switch 'Praca'-[RUN] to switching-out the refrigeration unit and unplug the supply cord from the mains receptacle. A cabinet should be washed not less than once per two weeks. After switching-out, it is necessary to wait until frost melts and drops away. Clear away all the parts of food products from all the surfaces inside cabinet and evaporator chamber. Then, all the surfaces should be washed thoroughly with a detergent solution using soft cloth or sponge saturated and moderate squeezed of excessive liquid. Unwanted liquid at bottom part of cabinet could decrease the properties of electrical installation.

An external surface of cabinet and any glass surfaces should be wiped dry to avoid the stains and seepages that could be visible after drying a washing liquid. Never use the abrasive cleaning means or washing soda.

Restart of the display chiller cabinet is achieved after closing a main switch 'Praca'-[RUN] (after connecting power supply cord to the mains outlet).

**Drainage hole in a sump tank shall be kept free (unclogged).**

## 6.7 Cleaning of evaporative condenser

Parts of refrigeration unit cover with the dust particles, seed floss, etc. during usual operation. Especially troublesome could be collecting of impurities between ribs of condenser that is a part of condenser section. Impurities form felt-like layer that makes difficult air flow through condenser. Heat exchange becomes reduced thus, power consumption increases and – in extreme case – the refrigeration unit will become defective.

**PERIODICAL CLEANING OF CONDENSER SHOULD BE CARRIED OUT BY USER AT LEAST ONCE PER MONTH.**

To clean the condenser [12], user shall disconnect the power supply with a main switch 'Praca'-[RUN] and use brush or vacuum cleaner to clean the condenser from impurities. Special care shall be paid on connections of electrical cables and thin condenser ribs.

**PERMANENT MAINTENANCE CAN BE ORDERED BY USER TO SPECIALIZED, AFTER-SALE SERVICING WORKSHOPS AT HIS OWN CHARGE**

## 6.8 Daily servicing

Daily servicing comprises:

- 1) Checking the food charges onto shelves;
- 2) Maintaining perfect cleanness all the parts of cabinet that remain in contact with food, as well as, other external surfaces that are able to be seen;
- 3) Aural verification of the functional noise of refrigerating unit. A display chiller cabinet shall be switched-off, if increased noise of fans or unrecognized sizzle is noted. Periodically,

check the temperature inside of cabinet. Temperature range should be from  $+1^{\circ}\text{C}$  up to  $+10^{\circ}\text{C}$ , at ambient temperature under  $+25^{\circ}\text{C}$ ;

- 4) Shutting-down the roller blind to cover a front surface of cabinet during closing time of sale or night periods. Release the rollers for self-opening before sale activity (see item 6.3);
- 5) Disposal of condensate water from the internal tank 2 times per day (if not connected to waste water system).

## 7. Safety notes

- 1) Display chiller should be powered from the separate mains socket with a protective, grounding stud.
- 2) Unqualified persons should never work with electrical installation inside of equipment.
- 3) Refrigerating system shall be serviced by authorized personnel.
- 4) Never handle the electrical system without special care. In case of malfunctions, the cabinet shall be switched off immediately from the mains and left to service.
- 5) Disconnecting or unsoldering of the internal installation is forbidden. Any repairs or maintenance can be only executed by specialized servicemen.

NOTE: DAMAGED POWER CORD SHALL BE REPLACED BY SPECIALIZED WORKSHOP OR AUTHORIZED SERVICEMAN ONLY.

## 8. Spares

The following data shall be quoted when ordering spare parts:

1. Type of equipment
2. Serial number of equipment
3. List of damaged (wear) parts

Type and serial number data can be read on the nameplate.

# OPERATION MANUAL for **CAREL PJEZ\* easy type controller**



PJ32SOH is the most comprehensive controller for refrigerating units with an active defrosting feature.





Temperature control process and defrosting action are governed in automatic mode.

## DISPLAY


LED-type (red colour display module).

During normal operation mode, the display shows the value is being measured by ambient temperature probe. During an alarm event, the alarm code flashes interchangeable with the ambient temperature value.

## ADJUSTING THE SET POINT OF TEMPERATURE

- press the  button for a second to display the value of the Set Point;
- after two seconds, previously set value starts to flash;
- increase or decrease value of the Set Point by using  and  buttons until the required value is displayed;
- press the  button again to confirm the new value.


## MANUAL FORCING THE DEFROSTING CYCLE

Defrosting runs in automatic cycle. Nevertheless, defrosting can be forced in any time by depressing  button for more than 5 seconds.

**NOTE!** Defrosting can not be started in manual or automatic mode, if the Set Point temperature for the end of defrosting (dt) is higher than temperature currently measured by defrosting probe.

Flashing light under defrosting button means the defrosting action has not been performed and will start as soon as possible (e.g., when the defrosting is prevented by time relay or other, active functions – continuous cycle).




## CONTINUOUS CYCLE OF COMPRESSOR

Press  button for more than 5 seconds to start or stop continuous cycle of compressor. Such cycle is indicated by flashing LED diode under the push-button and could be useful for harsh cooling action.

The Set Point in continuous cycle is ignored and an alarm point of low temperature is a significant parameter. It means, there is likelihood that the operating temperature in continuous cycle will drop below the Set Point. Duration time of that mode of operation is preset by manufacturer at 4 hours. If necessary, an authorized service workshop could be asked by user for modifying the preset value of duration time of continuous cycle.

**NOTE!** Low Temperature Alarm event is automatically ignored for the period of 2 hours after completion of the continuous cycle mode. Also, this one (2h) period can be modified by authorized service.

#### **WHAT MEANS BACK-LIGHTING OF PUSH-BUTTON?**

- back-lit diode under  button confirms the compressor is ON;
- back-lit diode under  button confirms the defrosting is ON;
- back-lit diode under  button confirms the alarm is in action.

Flashing diode under any of push-buttons means the related functions remains delayed for activation because of timing restrictions.

In particular event, specific flashing under  button means, the continuous cycle has been forced manually.

#### **WHAT ARE THE SAFE SETTINGS?**

The controller allows safe configuration i.e., in case of malfunction of ambient temperature probe, the compressor unit remains still in operation in accordance with the preset periods of operation/suspended run of compressor.

Changing to this alarm mode of regulation is automatic and the display will start to indicate an error of ambient temperature probe (E0). This kind of regulation doesn't maintain the proper level of temperature however, allows an emergency mode of operation until service arrival. Such method of automatic switching to emergency mode is not default setting. Nevertheless, such action can be programmed by authorized service workshop, - if ordered by user.

#### **ALARMS**

- |                |  |
|----------------|--|
| Flashing "E0": | malfunction of ambient temperature probe;  |
| Flashing "E1": | malfunction of evaporator probe;   |
| Flashing "L0": | low temperature alarm;   |
| Flashing "HI": | high temperature alarm;  |
| "EE":          | internal failure of controller;  |
| Flashing "Ed": | overridden maximum time of defrosting;   |
| Flashing "DF": | defrosting in progress (It is message only, without alarm status. "DF" appears if d6=0); |