

NOVUM

Redefining refrigeration

Frost Free Technical Manual

410L | 401L | 610L | 601L



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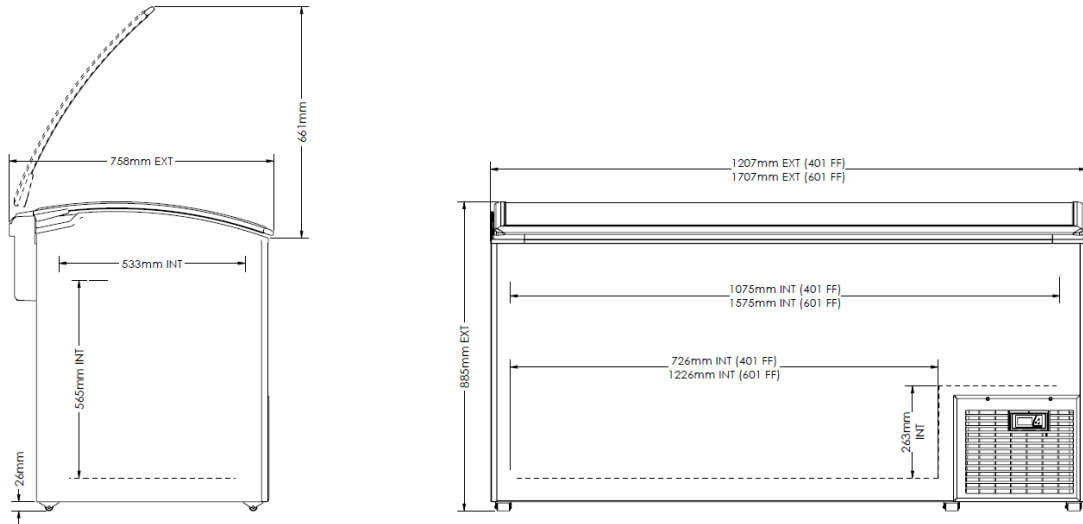
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1. Technical data

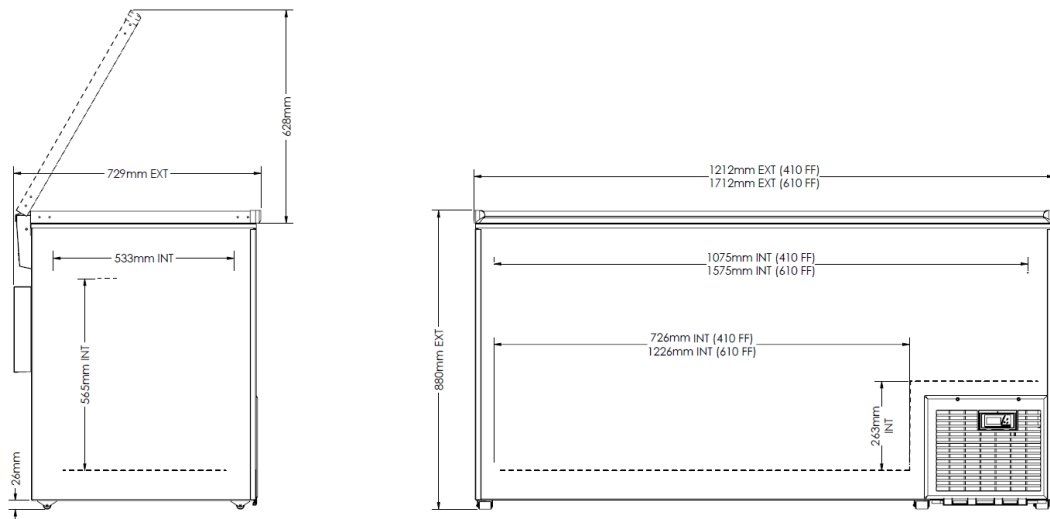
1.1. Specifications

	Model	401L/410L	601L/610L
Technical Data			
Gross content	litre	400	600
Net content according to EN 23953	litre	296	447
Total display area (TDA) according to Eco-design Directive	m ²	0.55	0.8
Classification according to EN 23953		3L1	3L1
Energy class according to Eco-design Directive		C	C
Ambient temperature range	°C	+16 to +25	+16 to +25
Inner temperature range	°C	-18 to -25	-18 to -25
Sound pressure at 1m distance	dB(A)	<43.3	<43.3
Electrical Data			
Nominal voltage / frequency	V / Hz	220-240 / 50	220-240 / 50
Nominal power cabinet	W	200	200
Nominal power LED light	W	11	14
Nominal current	A	1.0	1.0
Fuse protection	A	10	10
Energy consumption at 25°C according to Eco-design Directive	kWh/24h	2.7	3.93
Length of power supply cord	mm	2000	2000
Refrigeration Data			
Refrigerant	Type	R290	R290
Gas charge	g	40	40
Maximum operating pressure	Bar	30	30
Maximum heat output	W/h	386	386
Dimensions			
Length outside / inside	mm	1200 / 1080	1700 / 1580
Depth outside / inside	mm	720 / 540	720 / 540
Front access height	mm	790 / 840	790 / 840
Stacking height at the front / back	mm	565 / 565	565 / 565
Weight			
Net weight (excl. packaging, incl. internal accessories)	kg	79	103
Gross Weight (incl. packaging & internal accessories)	kg	90	120

1.2. 401L/601L dimensions



1.3. 410L/610L dimensions



2. Transport & Handling

- Cabinets must be transported and stored in an upright position.
- During transport, cabinets must be protected from water and direct sunlight.
- Cabinets should only be lifted onto their pallet.
- Novum cabinets are heavy, so take appropriate care when lifting or moving.
- Cabinets should only be lifted or moved when empty.
- Due care and attention must be observed when handling or moving so as to avoid damaging the refrigerant tubing or risk of a leak.
- If cabinet is powered off, the lid must be left open.

3. Commissioning

3.1. Installation

- Air flow: a minimum gap of 20 mm must be maintained around the unit to allow air flow and to prevent condensation. The spacer bar must never be removed from the cabinet as this ensures air flow to the vent grill.
- Never install a cabinet beside a heating device nor on direct sunlight.
- Ensure air flow of air conditioning unit is not directed towards cabinets.
- Avoid positioning cabinets near external door ways or opened chiller cabinets.
- Mains lead must be connected to mains power supply and LED power cable must be connected to specific power plug if any.

3.2. Product loading

- Novum cabinets are conservators in nature and can be used to store and display previously frozen food.
- Do not load the cabinet with non-frozen foods or try to freeze products in the cabinet.
- As soon as the cabinet has reached a storage temperature of below -18°C (as indicated by the controller display), it can be loaded with frozen foods up to the maximum of the load limit line. Novum recommend loading the cabinet in 3 stages allowing cabinet to recover -18°C between each.
- **Never** merchandise product above the red load limit sticker (565 mm from base).



- **Do not leave lid open** for extended periods of more than 15 minutes during merchandising.
- Exercise due care when loading heavy product, do not damage internal liner.

4. Care and maintenance

- All below recommendations are standard requirements and may need to be done more frequently depending of store conditions.
- The below are manufacturer recommendations and do not override local regulations.

4.1. Monthly checks

- Inspect the area behind the cabinet and remove any debris.
- Clean the interior and exterior plastic components of your cabinet with a mild detergent. Never use bleach or abrasive material.
- Using a damp cloth, clean the interior plastic components with a mild detergent, water/vinegar or 'Vim' liquid is also suitable. After cleaning wipe away excess residue.
- Use proprietary glass cleaner with soft cloth to clean glass lid and front. Never use abrasive material to clean glass.

4.2. Quarterly checks

- Condenser should be checked every quarter and cleaned as required. This is a very important cleaning requirement to ensure the condenser gets a proper cooling air flow. Dust build up on the condenser will lead into higher energy usage for the cabinet and reduce components life time and may void warranty.

4.3. Yearly checks

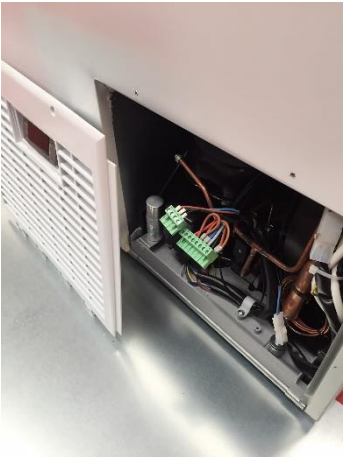
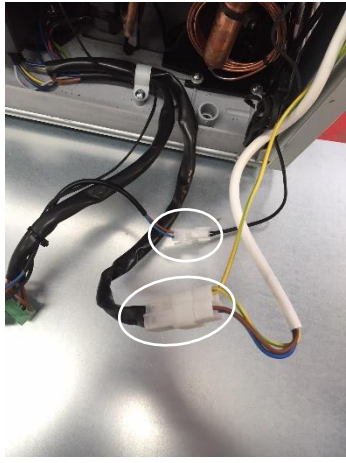
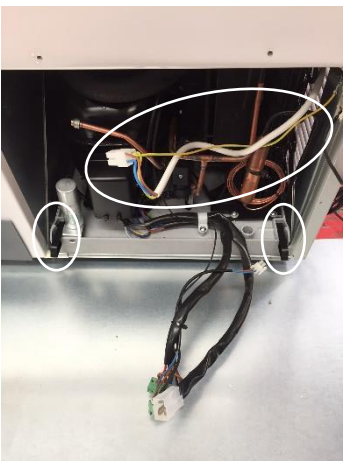
- Best practice demands that cabinet should be thoroughly cleaned a minimum of once per year.

4.4. Cassette/condenser cleaning procedure

1. ⚠ Disconnect cabinet from mains supply to ensure safety of operations.	2. Remove the side grille by removing the 4 screws.
	
3. Remove any dust build up with a vacuum cleaner equipped with a non-metallic brush*.	4. After cleaning the outside area, in case there is dust inside the condenser, further clean with a specific brush*.
	
5. Refit the side grille.	6. Reconnect power supply.
	

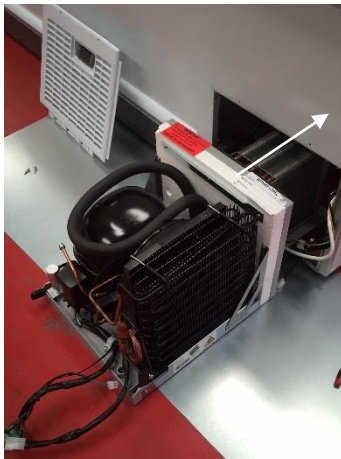
* Tools for cleaning the condenser are available at Novum. Contact spareparts@novum.ie

4.5. Cassette removal procedure

1.  Disconnect cabinet from mains supply to ensure safety of operations.	2. Remove the front grille 2 screws.	3. Disconnect from controller the 2 green connectors.
		
4. Set aside the front grille.	5. Remove transportation bolt.	6. Disconnect power supply and temperature sensor.
		
7. Release the 2 latches by clicking forward and take care of the cables.	8. Slide out the cassette.	9. Fill out the return label.
		RETURN LABEL. Returned from: _____ Reason for return: _____ Cabinet serial no. _____ Date: _____

4.6. Cassette installation procedure

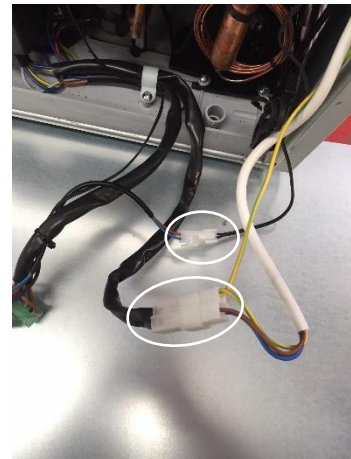
1. Slide in the cassette. This is very important to make sure the gasket is properly sealing with the evaporator box.



2. Lock the 2 latches and make sure the cassette is flush and latches are fully engaged.



3. Reconnect power supply and temperature sensor and tidy excess cable.



4. Reconnect the 2 green connectors on the controller and make sure the connectors are latched in correct position.



5. Reinstall the front grille and secure it with the 2 screws.



6. Reconnect the cabinet to mains supply and make sure it is operating and cooling properly.

5. Controller information

5.1. Dixell XR06CX



See the set point:

- Press and immediately release the **SET** button to see the set point temperature.
- Press and immediately release **SET** or wait for about 10 seconds to return to normal visualisation.

Change the set point:

- Press the **SET** button for more than 2 seconds.
- The value of the set point will be displayed and the °C or °F LED will start blinking.
- To change the set point value, press the **UP** or **DOWN** arrows.
- To memorise the new set point temperature, press **SET** again or wait for about 10 seconds.

Start manual defrost:

- Press the defrost button  for more than 2 seconds and a manual defrost will start.

5.2. Dixell XRB60CH



Display the set point:

- Press the **SET** button, then SET will appear on the screen.
- Press **SET** again to see the set point temperature.
- Press **SET** to exit.

Change the set point:

- Press the **SET** button for more than 3 seconds, then SET will appear on the display and the °C or °F LED will start blinking.
- Press **SET** again.
- To change the set point value, press the **UP** or **DOWN** arrows.
- To memorise the new set point value, press **SET** or wait for about 60 seconds.

Start manual defrost:

- Press the defrost button  for more than 2 seconds and a manual defrost will start.

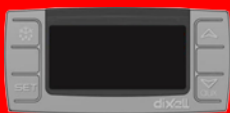
Adjust Real Time Clock (RTC):

- To enter in the setting menu, press at the same time both **SET** + **DOWN** arrow during 3 seconds.
- Press the **DOWN** arrow until finding the RTC parameters, then press **SET**.
- HUR will appear, then press **SET**, adjust the hour with the arrows and press **SET** again, the value flashes, press **SET** a last time to validate. Repeat this for all other parameters:
 - MIN – minute
 - DAY – day of the week:
 - SUN – Sunday
 - MON – Monday
 - TUE – Tuesday
 - UED – Wednesday
 - THU – Thursday
 - FRI – Friday
 - SAT – Saturday
 - DYM – Day of the date
 - MON – Month of the date
 - YAR – Year of the date
- Once all the parameters have been entered correctly, the date and the time are set.
- Press **SET** + **UP** arrow to exit.

Change from freezer to chiller (mapping)

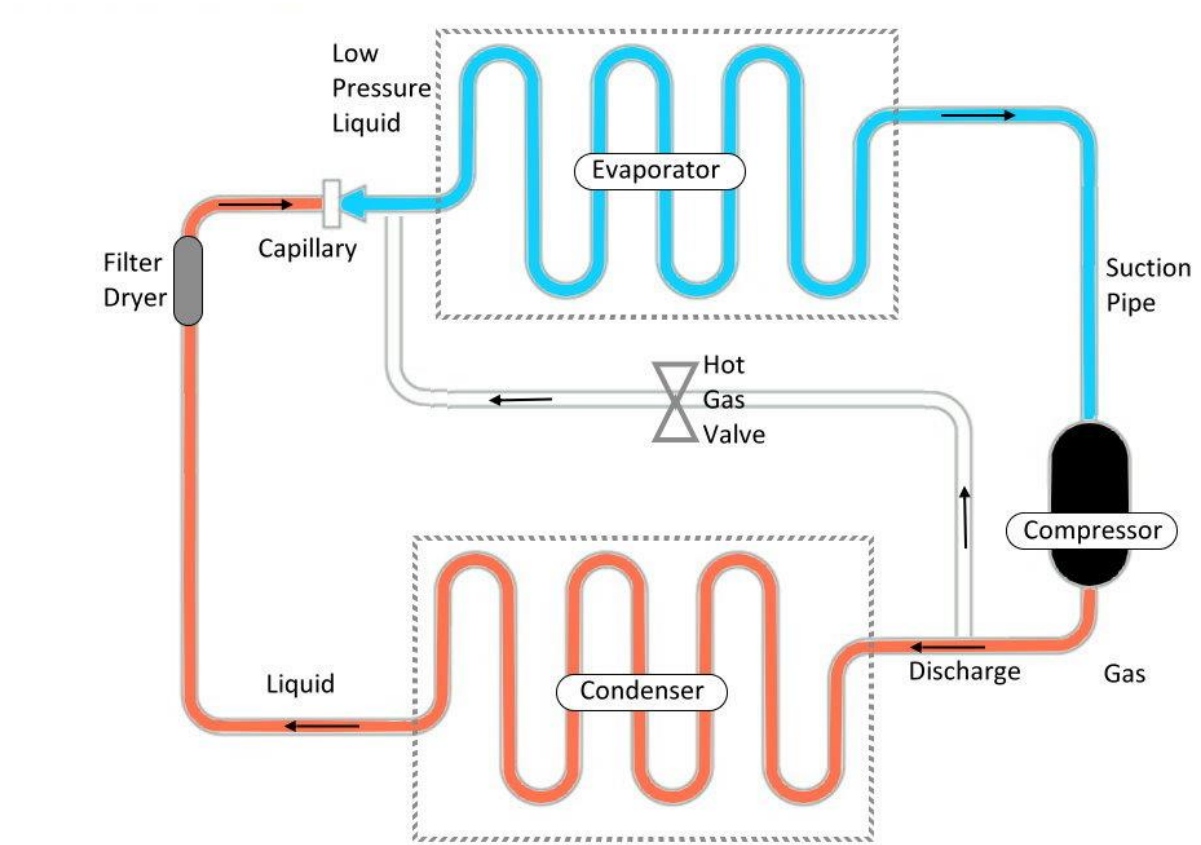
- Press the **DOWN** arrow for more than 3 seconds.
 - If NT appears: The cabinet is now into Normal Temperature mode = CHILLER.
 - If LT appears: The cabinet is now into Low Temperature mode = FREEZER.

6. Troubleshooting

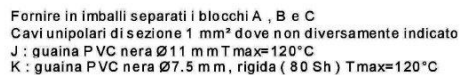
Symptom	Status	Cause	Action
 No display	Critical	No power	1. Check product temp, if above -12°C, move product. 2. Check plug connected to socket. 3. Check plug is connected to back of cabinet. 4. Check breaker is not tripped on distribution panel. 5. Check plug fuse. 6. Call service agent.
 HA alarm	Critical	High cabinet temperature	1. Check product temp, if above -12°C, move product. 2. Call service agent.
 P1 alarm	Not critical	Loose temperature probe	1. Call service agent.
 P2 alarm	Not critical	Loose temperature probe	1. Initiate defrost on controller. 2. If unsuccessful, call service agent.
 Temp variation	Not critical	Normal operation. Temp varies between -16°C to -24°C	1. No action required.
Condensation on glass	Not critical	Excess humidity	1. Check air conditioning is working. 2. Check product not above load limit line. 3. Check frozen product has not been placed on glass. 4. Check lid is closed correctly 5. Call service agent.

7. Diagrams

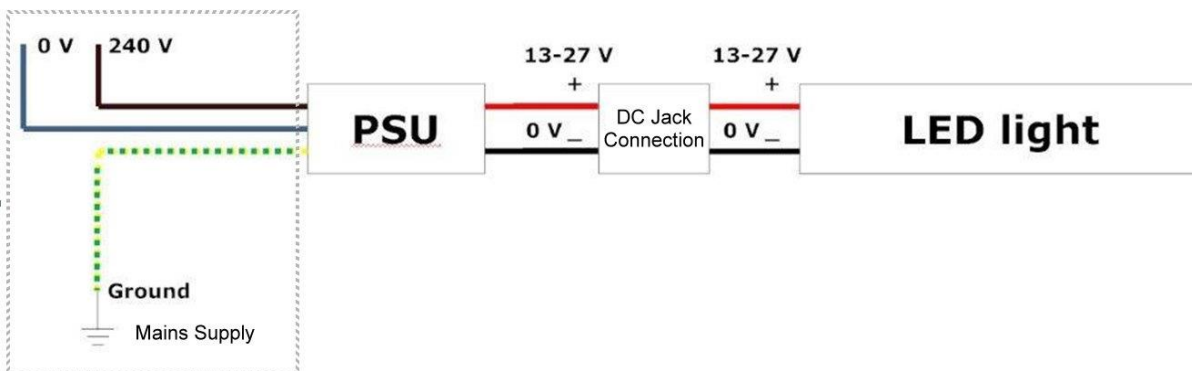
7.1. Refrigeration circuit



7.2. Cassette wiring diagram

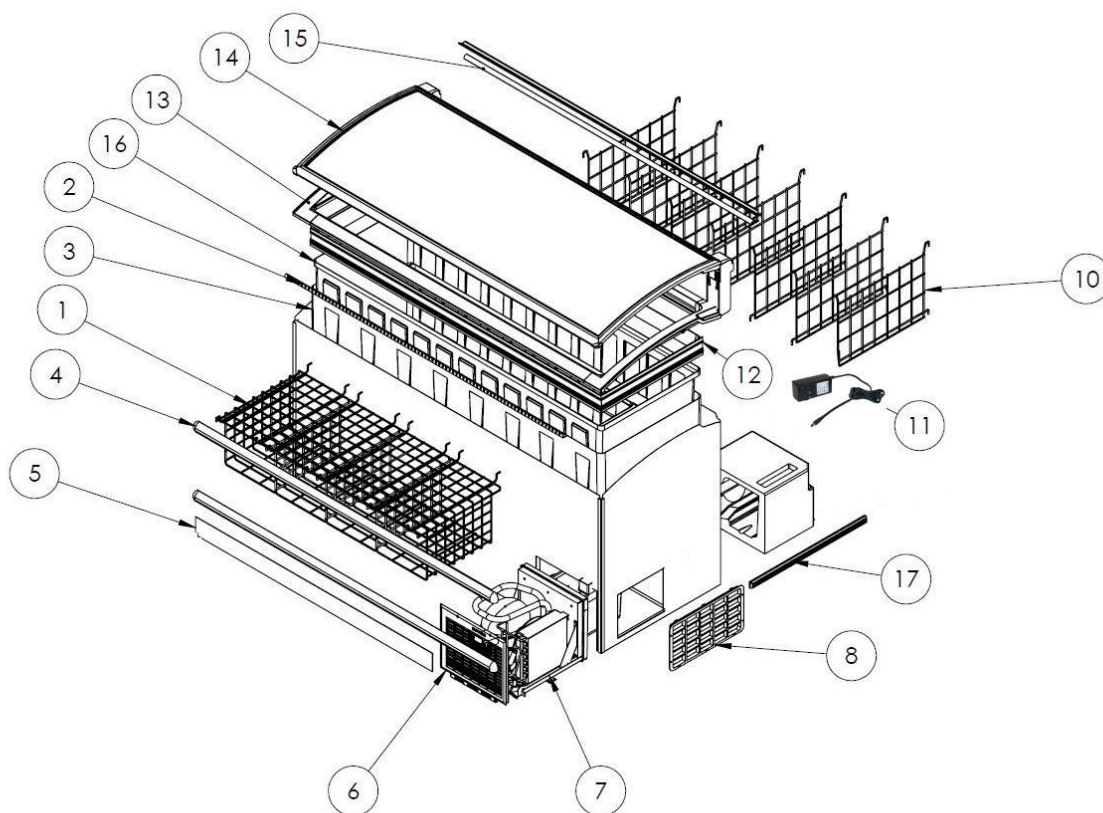


7.3. LED wiring diagram



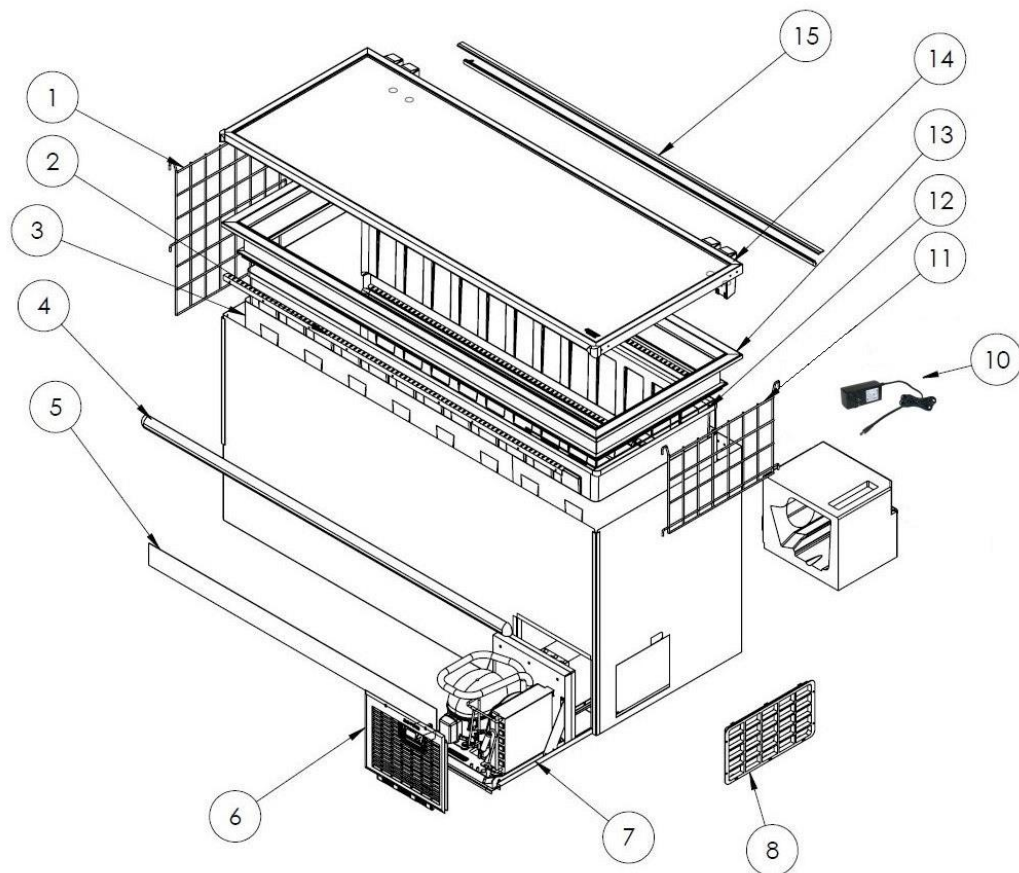
8. Spare Parts

8.1. 401L/601L cabinet assembly



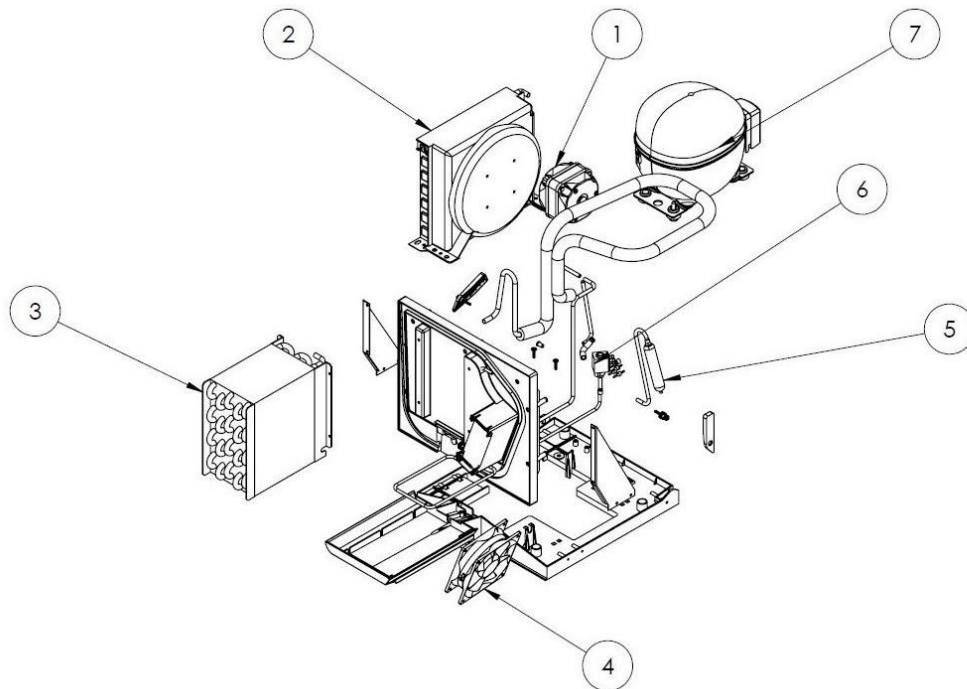
Item number	Description	401L part number	601L part number
1	False floor	015.6FF.001	
4	Buffer (white)	006.410.146	006.610.347
5	Kick strip	006.4FF.083	006.6FF.083
6	Grille (white)	006.6FA.024/124	
7	Frost Free cassette 230V	003.6FF.101	
8	Side grille (white)	006.6FF.111	
10	Short dividers	015.6FA.005	
11	LED driver	018.601.042	
14	Lid	009.401.440A	009.601.840A
	Lid gasket	009.411.101	009.611.873
	Hinge LHS	006.410.091	006.601.201
	Hinge RHS	006.410.191	006.601.202
15	LED light	018.306.703	018.601.041
17	Separator profile	006.610.259	
18a	Controller Dixell XR06CX 230V	018.6FF.106	
18b	Controller Dixell XRB60CH 230V	018.PAN.346	

8.2. 410L/610L cabinet assembly



Item number	Description	410L part number	610L part number
1	Long divider	015.6FA.006	
4	Buffer (white)	006.410.146	006.610.347
5	Kick strip	006.4FF.083	006.6FF.083
6	Grille (white)	006.6FA.024/124	
7	Frost Free cassette 230V	003.6FF.101	
8	Side grille (white)	006.6FF.111	
10	LED driver	018.601.042	
11	Short divider	015.6FA.005	
14	Lid	009.410.245	009.610.245
	Lid gasket	009.411.101	009.611.873
	Hinge	006.410.299	006.610.399
15	LED light	018.401.141	018.601.141
16a	Controller Dixell XR06CX 230V	018.6FF.106	
16b	Controller Dixell XRB60CH 230V	018.PAN.346	

8.3. Frost Free cassette assembly



Item number	Description	Part number
1	Condenser fan	003.111.424
2	Condenser	003.6FA.022
3	Evaporator	003.6FA.026
4	Evaporator fan	003.6FF.301
5	Filter dryer	003.6FA.020
6	Solenoid coil and valve	003.6FA.019
7	Compressor Embraco EMC3134U 230V	003.610.841
8	Controller probe	018.8AD.002
9	Cassette gasket	003.CASS.007

9. Safety instructions R290 refrigerant

9.1. R290 specification

Composition: Propane CH₃CH₂CH₃ (R290)

Molecular mass: 44.1 kg/kmol

Colour: colorless

Odour: faint

Decomposition temperature: unknown

Vapour density:

- approx. 1.9 kg/m³ at 25°C
- heavier than air
- collects at floor level

Handling

Ensure good room ventilation at floor level as well. Use only grounded apparatus. Take measures against electrostatic charge. Keep vessels away from electric devices, sparks, heat sources, and open light. Area of explosive danger.

Dangerous reactions

Explosion risk!

Explosion limit (in air): 1,7 – 10,9%

Do not smoke and avoid contact with heated surfaces!

Classification group

L3 (The refrigerants lower explosion limit in air is less than 3.5%.)

Safety group

A3 (no or only insignificant poisonous or caustic effect, high flammability)

Toxicological details

Significant poisonous is unknown.

Fast evaporation of the product may cause displacement of breathing air and therefore unconsciousness and asphyxiation. Skin contact may cause frostbite at skin and eyes. The product leads to narcotisation at high concentration. The effect disappears at fresh air.

General rules of protection

Ensure good room ventilation at floor level. Do not breath refrigerant. Avoid contact with liquid phase.

9.2. Personal protective equipment

Safety shoes, antistatic and non-combustible clothes, protective gloves and eye protection are to be provided for every person concerned with maintenance, repair and recovery and to be used by them. A self-contained breathing apparatus should always be used under unclear circumstances.

9.3. First aid when using R290, immediate measures

If the injured person is unconscious:

- Evacuate person at risk from hazard area. Pay attention to wind direction.
- Call a doctor and an ambulance equipped with a respirator immediately.
- The injured person should be brought into a well-ventilated room or outdoors until the arrival of the ambulance, as long as this is safe. The injured person should be placed on his or her side.
- Inform the doctor that the injured person was exposed to the refrigerant R290 (propane). Preferably, the injured person should be given an appropriate label.
- Loosen the clothing around the chest in order to facilitate breathing.
- Mouth-to-mouth resuscitation is to be applied if required.
- Persons who have breathed in a large amount of fumes are to be treated as quickly as possible with oxygen by a knowledgeable person. In addition they should be kept as quiet as possible.
- Water or other fluids should never be administered except as ordered by the doctor.

9.4. Eye injuries

- At burns use cold water immediately.
- At frostbite use warm water. Lift the eyelid careful and rinse for at least 20 min. with copious amounts of water.
- Do not rub the eyes.
- Remove contact lenses, if present.
- Loose fitting, amicrobic dressing.
- Then take the injured person immediately to an eye specialist or accident hospital.
- Do not open blisters from burns. Cover wounds aseptic.
- Take the injured person to a doctor or accident hospital as quickly as possible.

9.5. Injuries from swallowing liquid refrigerant

Give the injured person, as long as he or she is conscious, as much water or other warm drink as possible.

 **Warning! Further information see EN 378-1 and EN 378-3.**

10. Novum Warranty Terms and Conditions

Your appliance has the benefit of our manufacturer's warranty, which covers the cost of breakdown repairs. This gives you the reassurance that if, within the warranty period, your appliance is proven to be defective because of either workmanship or materials; we will, at our discretion, either repair or replace the appliance at no cost to you.

THIS WARRANTY IS SUBJECT TO THE FOLLOWING CONDITIONS

- The appliance has been installed and operated correctly and in accordance with our installation, operating and maintenance instructions.
- The appliance is used only on the electricity supply printed on the rating plate.
- The appliance is used only within climate conditions as printed on the rating plate.
- The appliance has been used for normal commercial refrigeration display purposes only and not loaded above loading level.
- The appliance has not been altered, serviced, maintained, dismantled, or otherwise interfered with by any person not authorised by us.
- Any repair work must be undertaken by Novum or our appointed agents.
- Any parts removed during repair work or any appliance that is replaced becomes our property.

THE WARRANTY DOES NOT COVER (as deemed by Novum)

- Wilful damage resulting from transportation, improper use, neglect or interference or as a result of improper installation.
- Inaccurate or improper use and / or initial operation of the goods by the customer and / or third party.
- Improper work on our goods by the customer and / or by non-approved third parties.
- Non-compliance with normal operating conditions within Climate Class 3L1 (+16°C to +25°C ambient, max. 60% relative humidity).
- Non-compliance with the operating instructions or prescribed operating data or failure by the customer and / or by third parties to carry out maintenance as provided in the operating instructions.
- Use of unfit tools and equipment (as deemed by Novum) by the customer and / or by non-approved third parties.
- Replacement of any consumable item or accessory. These included but not limited to: plugs, cables, batteries, light bulbs, starters, covers, filters, dividers, baskets, shelves.
- Replacement of any removable parts made of glass, wire or plastic.
- Modifications of factory controller setting without written approval from Novum.
- Power failure, acts of God (flooding, earthquake etc.).

In addition, our disclaimer of liability includes, but is not limited to any loss of refrigerated / frozen goods.

COMMERCIAL USAGE POLICY

We will provide a full manufacturers' warranty, provided the appliance has not been:

- **Accidental damage:** damage that occurs suddenly as a result of an unexpected and non-deliberate external action.
- **Malicious damage:** the deliberate and intentional damage to the product.
- **Subjected to misuse:** incorrect or careless or improper use.
- **Subjected to overuse:** excessive usage versus that expected of a food retail application.

Contact

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