



OPERATING and ENGINEERS MANUAL for REACH-IN and MODULAR BLAST CHILLERS, BLAST CHILLER FREEZERS and BLAST FREEZERS

This manual covers the Installation, Operation, Routine Maintenance and Cleaning requirements for the following Williams Refrigeration products:

WBC/WBCF10	WMBC/WMBCF90	WMBF100	J1BC
WBC/WBCF20	WMBC/WMBCF120	WMBF200	WBC70
WBC/WBCF30	WMBC/WMBCF160		
WBC/WBCF40	WMBC/WMBCF200		
WBC/WBCF50	WMBC/WMBCF240		
	WMBC/WMBCF320		

Provided the instructions in this Operating Manual are read and implemented correctly, the optimum performance and reliability of your equipment should be maintained.

The Williams range of Reach-In Blast Chillers has temperature parameters set as follows: +90°C (194°F) / +3°C (37°F)

The Williams range of Reach-In Blast Chiller Freezers has temperature parameters set as follows: +90°C (194°F) / +3°C (37°F) and +90°C (194°F) / -18°C (0°F)

The Williams range of Modular Blast Chillers, Chiller Freezers and Freezers are designed to blast chill/freeze products:

WMBC	+90°C (194°F) / +3°C (37°F) in 90 minutes or less
WMBCF	+90°C (194°F) / +3°C (37°F) in 90 minutes or less +90°C (194°F) / -18°C (0°F) in 240 minutes or less
WMBF	+90°C (194°F) / -18°C (0°F) in 240 minutes or less

Also designed to hold product at the following temperatures:

WMBC	+3°C (37°F)
WMBCF	+3°C (37°F) (blast chill cycle) or -18°C (0°F) (blast freeze cycle)
WMBF	-18°C (0°F) (blast freeze cycle)

Declaration of Conformity References:

Low Voltage Directive 2006/95/EC

Machinery Directive 2006/42/EC

Electromagnetic Compatibility Directive 2004/108/EC

Pressure Equipment Directive 97/23/EC

Waste Electrical and Electronic Equipment Directive (WEEE) 2012/19/EU

Restriction on Use of Certain Hazardous Substances Directive (RoHS2) 2011/65/EU

Refrigerant Designation	Global Warming Potential
HFC - R134a	1300
HFC - R404a	3260

CFC Free Refrigerant

Williams Refrigeration declares that all products manufactured by Williams Refrigeration comply with the above directives as they apply to those products, and those products are therefore declared to be in conformity with the provisions of the above legislation.

Model No.:

Serial No.:



REMOVAL OF REDUNDANT UNITS

Please ensure the old / redundant panels and refrigeration equipment are disposed of safely and legally.

It is recommended that doors are removed prior to disposal in order to ensure safety.

INSTALLATION

Remove all external and interior packing and accessories. Ensure all such material is disposed of safely.

The Roll-in Blast Chillers/Chiller Freezers and Freezers are supplied modular form on pallets and require assembly on site. Please see additional manual on assembly.

Stainless steel sections are protected with plastic film when shipped. Prior to assembly remove the film from any surfaces to be joined together and thoroughly clean the surfaces thus exposed to remove any residual adhesive. White spirit is useful for this purpose. Once assembly is complete you may remove the rest of the film.

Please ensure all film and waste materials from unpacking and assembly are disposed of safely once the process is completed.

VENTILATION

It is essential to ensure that the room in which the unit is to be installed has adequate ventilation. Refrigeration equipment generate a considerable amount of heat and, if operated in a small unventilated room, especially in warm weather, will quickly cause the room temperature to become excessive. This could cause the motor to overheat and possibly damage the windings. At the very least, such an installation will cause the unit to use an excessive amount of electricity.

In addition to ventilation in a room, please ensure that cabinets with top-mounted systems (**WBC/WBCF50**) have 500mm clearance between the cabinet top and the ceiling for engineer access and ventilation. For all other cabinets, please ensure a minimum adequate clearance of 50mm/2" is provided around the unit to ensure efficient and effective performance. Do not block vents by stacking boxes on top or in front of unit as this could affect performance.

Roof mounted pod storage refrigeration systems require adequate ventilation as well.

Levelling/Castors/Feet

The Reach-In Blast Chillers/Chiller Freezers should stand level to ensure correct operation of self-closing doors and proper drainage of condensate from the evaporator. All models (**except WBC/WBCF50**) feature automatic evaporation so no drain is required.

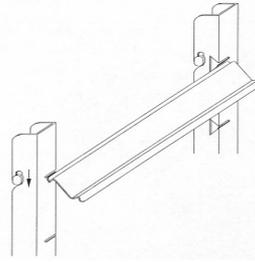
Models fitted with castors are non-adjustable, therefore a level platform/floor should be provided where cabinet is to be located. Where swivel and brake castors are fitted

and when the unit has been positioned please ensure the brakes have been activated by pressing the metal bar down. Remember to release the brakes before trying to move the unit. On models fitted with adjustable legs, levelling may be achieved by adjusting the bottom section of the legs. For marine specification models with flanged feet or deck fixing and bulkhead fixings, installation should be carried out by a specialist marine company.

Shelf/Slide Fitting

When positioning the slides, present the slide to the racking by holding it in the opposite hand to the side of the unit you are installing the slides. Present the slide at a 45° angle (see Figure 1). Once in place, let the slide drop into position creating a horizontal ledge on which the shelves will sit.

Fig. 1



Mains Supply Connection

Installation is to be carried out by a competent and qualified person or persons. Install according to local codes and regulations and use the following:

- Copper conductors only, for mains supply wiring.
- Use conductors with a minimum cross-sectional area (CSA) of 12AWG (4.00mm²).
- Suitable overcurrent protective device (fuse/circuit breaker) with a 10kA or greater breaking capacity.



*** WARNING! Risk of electric shock. Some conductors remain live when the equipment is in 'Standby' mode. Disconnect from the power supply before servicing.**

*** Applicable to the U.S.A cabinets only.**

WBC/WBCF10 & 20 are single phase and come fitted with moulded plug for safety and must be earthed. We recommend that should the plug or cable fail contact Williams spares office for a replacement part.

WBC/WBCF30 & 40 are single phase. They should be connected to a 16A single phase supply by a qualified refrigeration engineer or electrician.

WBC/WBCF50 are 3 phase. They should be connected to a 16A 3 phase and neutral power supply. This should be carried out by a qualified refrigeration engineer or electrician.

If the cabinet has been laid on its back or tipped, DO NOT switch on immediately. Leave in an upright position for at least 1 hour before switching on.

NB: WBC/WBCF50 requires then condensate drain pipe to be connected to a suitable 22mm (7/8") waste pipe or larger 'P' trap or routing to an open floor drain. (This can be found at the base of the cabinet rear).

LOADING AND USING YOUR BLAST CHILLER

The maximum temperature of product entering the Blast Chiller/Chiller Freezer/Blast Freezer must not exceed +90°C (194°F). Regulations state that product should be placed in the Blast Chiller/Chiller Freezer/Blast Freezer within 30 minutes from completion of cooking.

The packaging of food and the way in which it is loaded or placed within the equipment can have a significant effect on the time within which the temperature can be reduced to the require level and the amount of food which can be processed in each chilling or freezing batch. (Maximum food thickness 50mm).

When blast chilling always use metal or foil containers which are good conductors. Plastic or polyurethane containers insulate the food from the cold air. When chilling unportioned food we recommend the use of the appropriate gastronorm tray or similar. Likewise, placing lids or covers on food will also increase the chilling time but may be of some use when processing some delicate foods to avoid dehydration. When blast freezing bear in mind how easy the finished produce will be to thaw.

Always load your machine in such a way that it is possible for the cold air to contact all sides of the containers. Avoid stacking containers directly on top of one another as this will drastically extend the chilling time and take special care not to block the air ducts.

Always load the machine before selecting the blast facility. Unless it is unavoidable do not open the door of the machine whilst the blast cycle is engaged.

When loading the cabinet/trolley please ensure the load is equally distributed throughout the cabinet and ensure air can circulate around and through stored products.

THERMOMETER

The controller is marked in Centigrade or Fahrenheit. The Thermometer should be checked daily to ensure that correct temperature is being maintained.

If the cabinet is operating at the wrong temperature due to a fault the cabinet will alarm.

STORAGE TIMES

Chilled foods can be stored for up to 5 days at between 0°C (32°F) and +3°C (37°F).

Frozen foods can be stored for longer periods, in general. for up to 8 weeks without loss of nutrients or palatability. Beyond 8 weeks those foods with a high fat content may display some signs of rancidity. Nevertheless, some other foods can be stored for periods longer than 8 weeks. Frozen food must be stored at between -18°C (0°F) and -22°C (-8°F) or below.

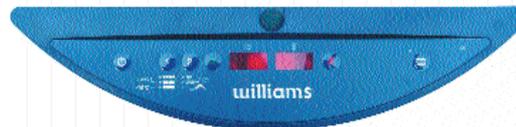
Important: Once thawed, frozen food should not be re-frozen.

CONTROL PANELS

Blast Chiller (WBC)



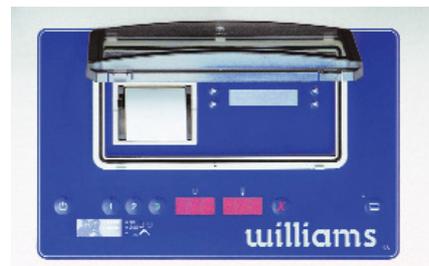
Blast Chiller Freezer (WBCF)



Blast Chiller (WMBC) - no printer



Blast Chiller (WMBC) - printer



PRINCIPLES OF OPERATION

Williams Blast Chillers/Chiller Freezers/Blast Freezers have been designed to quickly reduce the temperature of food in accordance with Department of Health Guidelines on the chilling and freezing of cooked foods. All operators should be conversant with latest European Food Safety Legislation.

Further information is also contained in the Williams Guide to Cook Chill which is available from Williams Marketing Department - +44 1553 817000.

Fast temperature reduction is not brought about by placing the food in a very cold cabinet like a deep freeze. This would only dry the food badly and would take a very long time to reduce its temperature to the required level increasing the risk to food safety. The secret of fast temperature reduction is in delivering the correct blast of air and ensuring correct and unobstructed horizontal air flow inside the cabinet.

Williams range of Blast Chillers feature the option of soft and hard facility on blast chill offering flexibility and ensures food stays in prime condition whether it is delicate pastries or fish, or heavier items such as lasagne and meat casseroles.

Exceptions: depending on the density types and sizes of the portions the chiller/freezer might not be capable of achieving the required guidelines therefore the load and/or depth of the food layers

should be reduced. You may find it necessary, therefore, to experiment with different amounts of food and loading methods in order to achieve the optimum performance with your blast chiller/freezer.

OPERATION OF BLAST CHILLERS / CHILLER FREEZERS

Initially the cabinet will be in standby mode, shown by 3 dashes (- - -) in both display windows. The cabinet needs to have run at least half an hour before being used.

All Blast Chillers have 3 basic modes:

1. Normal storage +1°C (34°F) to +3°C (37°F)
2. Blast Chill Hard +10°C (14°F)
3. Blast Chill Soft +1°C (34°F)

Combination Blast Chiller Freezers have 2 further modes:

4. Freezer Storage -18°C (0°F) to -22°C (-8°F)
5. Blast Freeze -25°C (-13°F)

Dedicated Blast Freezers have the same two modes.

STORE MODE

During store mode (with no alarm condition or defrost cycle running) the left hand window will display the previous blast cycle duration and the right hand window will display the store temperature. Some chillers have more than 1 fan installed these may not all operate during the storage mode, giving a reduced air circulation within the chiller.

The type of store mode is indicated under button **1**. Press button to select the right storage temperature if using the combination chiller freezer.

From store mode the following functions can be achieved:

1. Go into **standby** mode by pressing and holding **⏻** for 3 seconds.
2. Initiate the setting of a **blast chill or freeze cycle** by pressing **1**
3. Initiate a **manual defrost** by pressing and holding both **X** and **1** for 3 seconds.
4. Pressing **3** during a probe cycle only will cause all enabled food probes and their respective temperatures can be displayed in a scrolling process (each probe's information is displayed for 4 seconds):



5. Further pressing **3** during a blast cycle will cause the displays to revert back to the standard display (ie time and temperature). Also, cancelling the blast cycle or when the blast cycle ends the display will revert back to the standard food probe display.

If no button is pressed for 10 seconds or if **X** is pressed at any time the cabinet returns to normal store mode.

Function 5 can be initiated in any operating mode except in standby.

BLAST CHILL OR FREEZE PROGRAMMING

Check that the chiller is operating at storage temperature. Load the products for chilling/freezing - refer to the previous loading information. If using, place the food probe into the centre of the product to be chilled. Then programme the cycle as follows:

1. By pressing button '1' to select the desired type of blast - soft blast (4 blocks), hard blast (2 blocks) or freeze (single block). (Freeze option on Blast Chiller Freezer models only).
2. By pressing button '2' select timer for the desired duration either 90 or if blast freezing 240 minutes or probe (temperature controlled cycle).
3. By pressing button '3' start the blast chill or freeze cycle.

If you are not happy with your selection press the **X** button to cancel your selections and the cabinet will revert back to store mode. Pressing this button will stop the blast chiller mid cycle and will keep the time displayed following cancellation until a new blast cycle is programmed - this will be displayed in the left window.

During defrost or blast cycle it is not possible to enter the blast set mode.

When a Blast Cycle has been initiated - the following will be displayed:



Left window - time counting up



Right window - clockwise rotating LED's signifying a cycle in progress

The blast cycle is ended under normal operation by:

- Reaching the required temperature +3°C (37°F) or -18°C (0°F).
- Reaching the end of the designated time (90 or 240 minutes).
- Manual cancellation of the cycle by pressing **X** and holding for 2 seconds.
- Putting the controller into standby mode by pressing **⏻**

A blast cycle may also be terminated due to the following faults or failures:

- Over temperature fault
- HP/LP fault (if enabled)
- Air probe (T1) failure
- Food probe failure - terminates the blast cycle if all the food probes fail. If a 3 probe system is used, and 1

probe fails, the cycle will continue until the last working probe reaches temperature.

- Mains failure longer than 3 minutes.

The LED's beneath the right-hand display window indicate whether or not each enabled food probe has achieved the target temperature (temperature setpoint). If the LED is illuminated, the food probe relevant to that LED is yet to reach the target temperature. Thus, if it is not illuminated, the food probe relevant to that LED is yet to reach the target temperature. Thus, if it is not illuminated, that food probe has achieved the target temperature. The LED will illuminate once more when the temperature relevant to that probe reaches 10°C (10°F) above the target temperature (for example: inserted into hot food).

At the end of a cycle, an audible alarm will sound for 10 seconds with the left window displaying the time and in the right window the LED's will start flashing.

DEFROST

A defrost cycle is automatically instigated at the end of each blast chill cycle to clear any ice from the evaporator ready for the next cycle. During storage mode a defrost will be performed automatically at the factory preset interval of 6 hours. If a blast cycle is cancelled the machine will automatically initiate a defrost.

During a defrost the display windows will indicate the following:

90	dF	Following a blast chill cycle
AL	dF	An alarm condition is present
- - -	dF	A mains failure has taken place and no blast chill cycle has been initiated since the mains failure

A manual defrost can be initiated by pressing and holding both **X** and **1**

During the defrost cycle **all** fans will stop running. When the defrost cycle is finished the compressor will run for approximately 60 seconds before the fans cut in. It is safe to leave products in the cabinet during the defrost cycle - the air temperature rises slightly but will not affect the products stored.

After every defrost there is a short period - about 5 minutes during which a blast cycle cannot be programmed. This short interval is to allow defrost water to drain away from the evaporator. At the end of each cycle, a defrost will automatically clear any ice from the evaporator ready for the next cycle.

ALARMS

When a fault or adverse operational condition arises, an audible and visual alarm will be initiated:

AL	03	General alarm in left window / right window will show mode (storage temperature/blast or defrost)
- - -	dF	Mains failure alarm in left window / right window will show mode (storage temperature/defrost) (longer than 3 minutes)

The alarm will sound intermittently. Press **X** to mute the alarm, the alarm will retrigger if the fault causing the alarm has not been addressed. The alarm mode will still be displayed.

More information on the alarm can be displayed during normal operation by accessing the diagnostic menu by pressing and holding **2** for 3 seconds.

AL	E3
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Left window indicates alarm - the right window indicates the type of alarm.

When a probe is at fault then the windows will display as follows:

T1	or
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Left window indicates probe type and the right window indicates the fault type.

T1 - air probe	T4 - Food probe 1
T2 - evaporator	T5 - Food probe 2
T3 - auxiliary probe (not applicable)	T6 - Food probe 3

Alarm codes that are displayed are:

- E1** - HP/LP fault (not applicable)
- E2** - Over temperature
- E3** - Mains failure longer than 3 minutes
- Hi** - High temperature
- Lo** - Low temperature
- or** - Probe over range failure

Alarms during Blast Cycles

If the blast chill cycle has been terminated as a result causing an alarm, a defrost cycle will automatically be initiated. However, if an alarm occurs such as evaporator probe (T2) fault then the blast chill cycle will continue.

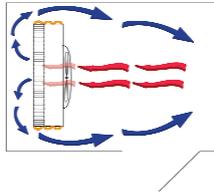
Door Operated Fan & Condensing Unit Cut Out Switches

If the door is opened during blast or store mode the refrigeration unit and evaporator fans will cut out. Both will restart on closure of door.

Note: it is not advisable to open the door during blast mode as this will effect the cycle.

AIRFLOW

In the unlikely event that your blast chiller is taking longer to perform its chilling cycle, ensure that the system is operating in the correct way. A possible explanation is that the fan system has been installed the wrong way round. As a result the airflow within the blast chiller will not work as effectively as it should. See the diagram.



COMPLIMENTARY COMPRESSOR CONTROL

In addition to the conventional operation of the compressor, the following complementary function applies;

Compressor Rest Time

This function is to ensure that the main compressor used does not run too frequently, and succumb to damage. The parameter “**crt**” can be adjusted accordingly. The compressor rest time does not apply to the beginning of a blast cycle or hot gas defrost cycle.

Compressor Duty Cycle

This function performs the task of over-riding the controller's logic when an air probe (**T1**) fails, thus preserving the food until a service engineer intervenes. The parameter “**cdc**” controls the number of forced compressor cycles per hour.

Example: If set to 5, the compressor (compressor used for store) will alternate, 5 minutes running, 5 minutes off and so on.

High Pressure/Low Pressure Control

To enable the High Pressure/Low Pressure control, the parameter “**PS**” must be set to “**YES**”. Once set the main compressor relay output is additionally controlled by the High Pressure/Low Pressure switch (terminals L3 and L2 in series with terminal L1). If the High Pressure/Low Pressure input goes open circuit, then the main compressor will stop running and an alarm “**E1**” will be displayed.

NB: If the High Pressure/Low Pressure input goes open circuit during a hot gas defrost, the alarm is ignored. A subsequent refrigeration cooling cycle will trigger the alarm if the input stays open circuit.

If a High Pressure/Low Pressure switch is not fitted then terminals L2 and L3 have to be linked.

THERMOSTATS AND PROBES

Thermostats

The controller can, via the set of thermostat parameters, control the refrigeration for soft blast chill, hard blast chill and chill store.

All have independent parameters for set points and the two hysteresis parameters are for the chill thermostats and freeze thermostats.

NB: The soft blast chill thermostat is a “delta” (floating) value to be added to the store chill thermostat set point to achieve the final soft blast chill thermostat set point.

Example: If the store chill thermostat is set to +3°C (37°F), and the soft chill value is set to -2°C (34°F), then the achieved soft blast thermostat will be +1°C (28°F).

Probes

The type of probe sensor used for all probes is of the KTY-81-121 type.

The controller will always require the air (T1) and evaporator (T2) probes. The number of food probes is selectable from 0 to 3.

If the number of food probes is set to 1, then only the alarm, diagnostics and temperature controlled blast cycle will be respective to probe (T4). All other food probes (T5 and T6) will be ignored. The auxiliary probes (T3) function can be selected via the parameter “3PM” (default to “no”).

NB: If any probe is enabled but not connected, a probe failure will arise. All probes have an offset parameter to compensate for temperature drift and manufacturing tolerances of the probes.

Do not submerge probe handles into liquids.

MISCELLANEOUS FUNCTIONALITY

Condenser Clean

The condenser will require cleaning from time to time. A timer parameter “Acc” is used to log the compressor run time (units of weeks). After the preset period a warning is announced.

For the purpose of notifying the user, a designated condenser clean button and LED are used. A flashing red LED signifies that the condenser requires cleaning. Pressing and holding the button for 3 seconds will reset the timer and the LED will stop flashing.

Display Slow Down

The purpose of applying a “display slow down” is to delay the real time temperature being displayed on the controller's front control interface. This will avoid rapid fluctuations displayed when a door is opened, or when the controller is “hunting” the instantaneous temperature. This is achieved by introducing a thermal mass simulation routine in the software to simulate a thermal mass inside the chiller. The parameter “SiM” (default to 3) is used, and an example being a value of 100 simulates a 0.5 litre (0.1 Gallon) bottle of water.

ENGINEERING PARAMETERS

The engineering parameters are accessed by pressing and holding button **2** for 5 seconds, whilst in the standby mode.

The left hand display shows the mnemonic that features the parameter, the right hand display shows the current value. i.e.;

chb **-10**

To select and adjust parameters, the following process is required;

Select parameters: Button **2** scrolls down the parameter list, the button **3** views the previous parameter.

Adjust parameter values: Press and hold button **1** together with button **2** to increase the value; press and hold button **1** together with button **3** to decrease the value.

To exit from the engineering parameter mode, press **X**. Alternatively, if no buttons are pressed for 30 seconds, the controller automatically exits to the standby mode.

BREAKDOWN

In the event of a breakdown, please check the thermostat setting and take note of displayed alarms before calling the service engineer. When calling the engineer, please advise him of the model and serial number of the machine. These details are on the identification plate located inside the cabinet and should also be noted on the front cover of this booklet. Please ensure all redundant parts are disposed of safely and legally.

CLEANING

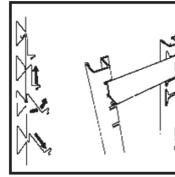
Exterior: If the exterior of the cabinet is stainless steel, cared for correctly will keep its 'as new' finish for many years. Normal day to day cleaning should be carried out with a soft cloth and soapy water. Always wipe the unit in the same direction as the grain in the stainless steel. Whilst stainless steel is a very strong and robust material, the stain smooth finish can be spoilt by wiping against the grain. Never use abrasive materials or cleaners, or chemical cleaners. They can damage the surface and cause corrosion. Occasionally, the exterior should be polished with a good stainless steel polish to protect the surface.

White PVC coated panels are more durable, but still should be cleaned with a soft cloth and soapy water.

Interior: The racking can be removed for easy cleaning (see pictures below). This should be done on a regular basis with warm soapy water and a soft cloth, dry thoroughly afterwards. To remove the racking and shelf supports follow this procedure:

First remove the shelves, then remove the shelf supports by grasping firmly in the centre and lifting slightly. Turn the shelf support towards the interior of the cabinet by pushing it in the centre as you twist the support through

90°. The shelf support will be released. (Note: the supports are designed to be anti-tilt and you may therefore experience some resistance at first which will be overcome with practice.) When all shelves have been removed, remove the racking by lifting up and over the mylon retaining blocks.



GASKET

Door gaskets should be checked and cleaned regularly and replaced if damaged. To clean the gasket, wipe with warm soapy water and a soft cloth, ensuring it is completely dry before closing the door. **DO NOT** use a sharp knife to clean or scrape the gasket. Regularly check the gasket for any damage. Damaged gaskets do not seal correctly and can increase the amount of electricity consumed, seriously affecting the efficiency and performance of the cabinet.

ROUTINE MAINTENANCE

All maintenance should be carried out by a competent, qualified person. We recommend that you undertake regular preventative maintenance using a qualified service provider in order to get the best from your equipment.



*** WARNING! Risk of electric shock. Some conductors remain live when the equipment is in 'Standby' mode.**

Disconnect from the power supply before servicing.

*** Applicable to the U.S.A cabinets only.**

When carrying out any work on the machine, ensure that the equipment is isolated at the incoming mains supply and/or main control panel isolator and that the circuit breaker protecting the main electrical controller is switched off.

Ensure you check the sealant between panels on an annual basis and clean and replace the sealant if required as damaged sealant can affect the hygiene, performance and efficiency of your equipment.

CONDENSER CLEANING (Only applicable to Air Cooled Units)

The condenser, which is part of the refrigeration unit, is sited in the unit compartment and requires cleaning, approximately 4 times per year or when the LED indicates. To clean the condenser, disconnect mains supply before starting, then brush the fins vertically with a stiff brush, taking care not to damage the fins or push dirt or dust further in and vacuum away.

To cancel the flashing LED, press and hold **≡** for 3 seconds.

If there are further grease deposits still remaining on the condenser call your Service Provider to carry out a full service.

Note: Non-compliance may invalidate your Warranty.

Top Mounted Cabinets (WBC/WBCF50)

The condensing unit and refrigeration equipment can be accessed from above or in some cases behind. Remove the screws in the top and bottom edge of the unit cover and pull the unit cover away from the cabinet and retaining clips.

Bottom Mounted Units (WBC/WBCF10-40)

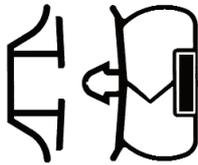
Pull the unit cover away from the cabinet and retaining clips.

EVAPORATOR/DRAINLINE

Inspect periodically to ensure drain hole is not blocked.

REPLACING THE GASKET

Damaged gaskets are easily replaced. Simply pull out existing part and push new gasket into channel (gasket retainer) at centre and work along, pushing gasket into channel.



Continue with additional three sides, pushing corners in last.



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