FRAL

RIGHT HUMIDITY ON DEMAND

## DEHUMIDIFIERS

# FDK 54

## USE AND MAINTENANCE MANUAL

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M.FDK54-06 UK Manual 04/12/2018

## 1. SAFETY WARNINGS

- The FDK Series Dehumidifier must always be connected using the grounded electrical connection as required from all electrical appliances. The warranty is voided and all responsibility for the operation is born by the owner if non-grounded wiring is utilized.
- The FDK Dehumidifiers must only be maintained and serviced by a qualified technician.
- The FDK Dehumidifiers are intended only for operation when oriented with the unit in the upright position and level. Any other orientation could cause water to encounter the electrical components and cause irreparable damage. Remove plug before moving dehumidifier. If any water may have spread throughout unit, the unit should be opened and allowed to dry thoroughly before being reconnected to electric and restarting.
- For proper operation, neither the inlet nor discharge should be positioned against a wall. The inlet requires a minimum of 12" clearance and the discharge need a minimum of 36" clearance.
- For proper diffusion of air throughout the room, the dehumidifier should be positioned with the sides against a wall and the inlet and discharge perpendicular to the wall.
- Do not insert any objects into the inlet or discharge. If service is required, call a qualified technician. All work on unit should be done with the unit "off" and unplugged.
- Do not use water to clean unit exterior. Only use a damp cloth with unit unplugged.
- Do not use unit as shelf or device to hang clothes. This could cause damage to unit.
- The inlet filter generally needs cleaned once per month. Check unit on a weekly basis to ensure that more frequent cleaning is not required:

## Identification:

For future reference, write down the model, serial number, date of purchase and use this information whenever corresponding concerning your dehumidifier.

Model Number _____
Serial Number _____
Date of Purchase _____
Register the unit for warranty at: www.fral-usa.com

## Warning

115 Volts AC may cause serious injury from electric shock.

1. Disconnect electrical power before servicing
2. Plug unit only into grounded electrical outlet
3. Do not use extension cord
4. Do not use plug adapter

## Power Supply:

| | |
|---|---|
| | 115V, 60 Hz |
| | AC Only 1 Phase |
| Outlet Requirement: | 3-Prong |
| Circuit Protector: | Only compressor thermal and overload relay protector |
| Circuit Breaker | Fuse on PCB supply |

## 2. DESCRIPTION OF THE MACHINE

### Functioning

This dehumidifier is a refrigerating cycle dehumidifier: its functioning is based on a physical principle according to which the air, coming into contact with a cooled surface (coils), humidity is then collected in the form of condensed drops, or ice with low ambient temperature (70 ° F). How this works is that a refrigerating machine maintains in a refrigerated state the coil through which is conveyed the incoming air that, in this way, is cooled and dehumidified. Then the air, passing through a warm heat-exchanger, heats up and returns in the room dehumidified and at a slightly higher temperature

The FDK Dehumidifier is a refrigeration dehumidifier which utilizes its Electronic Controls to monitor humidity in the space.

When the relative humidity exceeds the selected set point, the dehumidifier will energize. Air is then moved by an electric fan which pulls it across an evaporator coil. The evaporator coil is cooler than the dew point of the air so moisture will condense out of the air and goes out to the drain.

Air is then reheated through the condenser coil and distributed back into the room at a small rise temperature and lower Relative Humidity.

If the room temperature is lower than 35°F, the condensed moisture become ice; In this case every roughly 30 minutes, a defrost device actuates a Solenoid Valve, hot gas supplied by the compressor enters the evaporator coils therefore melting the ice.

## 3. INSTALLATION

The area to be controlled should be sealed with a vapor barrier. If installed in a crawlspace, all vents should be sealed.

- Place dehumidifier where desired and ensure that it is level.

CAUTION – Once unit is positioned, if the machine did not always remain in vertical position, wait minimum 5 hours before placing the unit into the "ON" position.

- Route drain line (3/4" ID tubing) to drain condensed water outside of the area.
- Plug unit into 10 amp GFCI grounded outlet.
- To operate unit, press Power key until unit energizes.
  - Confirm compressor is running and allow to run for minimum of 15 minutes
    - If under 70°F, a layer of ice will form on evaporator coil
    - If over 70°F, a layer of frost or water droplets will form on coil
- After you've confirmed satisfactory operation of unit, humidistat should be set at desired position for automatic operation.

NOTE: Humidistat settings are approximate only. For critical applications, you may want to confirm actual settings with a psychrometer and adjust according.

## 3. CONTROL

### Display panel

Units are provided with display light panel that indicates unit operational status. Below is reported a brief description of their meaning.

### Control panel

The Electronic control board with microprocessor, controls many functions:


**Power LED**; it's on when the machine is in the ON state.


**Alarm LED**; it's on when an alarm comes on. It turns off if the alarm is reset.


**Working LED**; the LED is on when the compressor is running, blinks when the dehumidifier is waiting to restart or is in defrost. It's switched off when, in the ON state, the set of desired humidity has been reached.


**ON/OFF function**; plugged into the outlet (with ground wire!), the display turns on and shows the relative humidity in the room.
The machine is in the OFF state when the Power LED is off. It's in the ON state when the Power LED is on.
When OFF, to switch on the dehumidifier, simply press the POWER key and depending on the relative humidity set point the machine starts working.
When the machine reaches the level of required moisture it goes into stand-by mode: automatically stops but remains in the ON state (POWER LED on).
If the humidity goes above the set point the dehumidifier starts again.
When ON to put the dehumidifier in OFF just press the POWER button (the display continues to indicate the humidity in the room).
Note: Placing the machine into the OFF position and then immediately to the ON position, locks out the compressor and it does not start immediately. The Run led starts to flash, then after a period of approximately 4.5 minutes the machine will restart.


**HUMIDITY/TEMPERATURE SET function**; press one of the SET-/ +: the display starts flashing to indicate the humidity set; continuing to press SET-/ + you can bring to the set of required moisture (from 30% to 80%). After 4 seconds the display stops flashing, and the new set point of moisture is detected by the control unit.
It's possible to make the machine work regardless of the degree of moisture holding SET- until the message "Cont" appears.


**HOUR COUNTER**: to show on the display the machine operating time press the HOURS.

## 4. UNIT ALARMS

| *PROBLEM* | *PROBABLE CAUSE and CORRECTIVE ACTION* |
|---|---|
| ⚠ ALARM + “Lo t” | It occurs for two possible reasons: the environment temperature is too low or the defrost cycles are not able to melt the ice in the battery. To reset put the dehumidifier above 50°F, if not reset put the dehumidifier off with POWER button and unplug the machine. |
| ⚠ ALARM + “LoPt” | Possible lack of gas in the circuit. The alarm resets automatically after 210 seconds.<br>If the alarm does not reset simultaneously press and SET HOURS + for 10 seconds. If the problem occurs again, call for service. |
| ⚠ ALARM + “Hl t” | Combination of temperature and humidity too high.<br>The alarm resets automatically when the temperature drops. |
| “Prob” | Malfunction humidistat. In any case, the machine continues to operate. Contact the service to replace the humidistat. |
| ⚠ ALARM + “Pro1” o “Pro2” o “Pro3” | Malfunction of one of the three temperature probes. The dehumidifier goes into stand-by mode. Contact the service to replace the probes. |

## 5. FIRST STARTING OF MACHINE

Before placing the dehumidifier in the “ON” position Ensure that it has been in the correct position nfor a minimum of 5 hours. If one fails to observe this procedure, irreparable damage may be caused to the compressor. Then one can proceed and connect the dehumidifier plug to a 115 V - one phase power socket.
If the dehumidifiers is still off, set a lower value of humidity on the control panel.
After approximately 3 minutes the dehumidifier will start operating.

## 6. PERIODICAL MAINTENANCE

### Air Filter Cleaning

The only required periodical maintenance is the cleaning of the filter **once every month,** or more often if the environment is very dusty or the dehumidifier is working for many hours every day.
The cleaning should be done by placing the filter under a low flow of water with the debris side facing down so that the water may push the debris off the filter.
Occasionally cleaning of the warm heat exchanger (condenser) is needed by using compressed air. This operation must be done by a specialized technician. This cleaning will improve the performances and the long life of the machine.

**Note: You can acquire spare filters from Fral /USA**

Warning: Never apply an external source of heat to melt ice off coil.

Maintenance – Annual Inspection of Coils and drain line is required.

1. Unplug Unit
2. Filter may be cleaned by
    a. Vacuuming
    b. Washing with warm, soapy water. Rinse and shake dry.
3. Coils may be cleaned by
    a. Vacuuming the external surfaces of coil
    b. Blowing compressed air from behind coils. Hold air nozzle 6" away from coil to avoid damage.

Warning: Do not steam clean refrigerant coils.

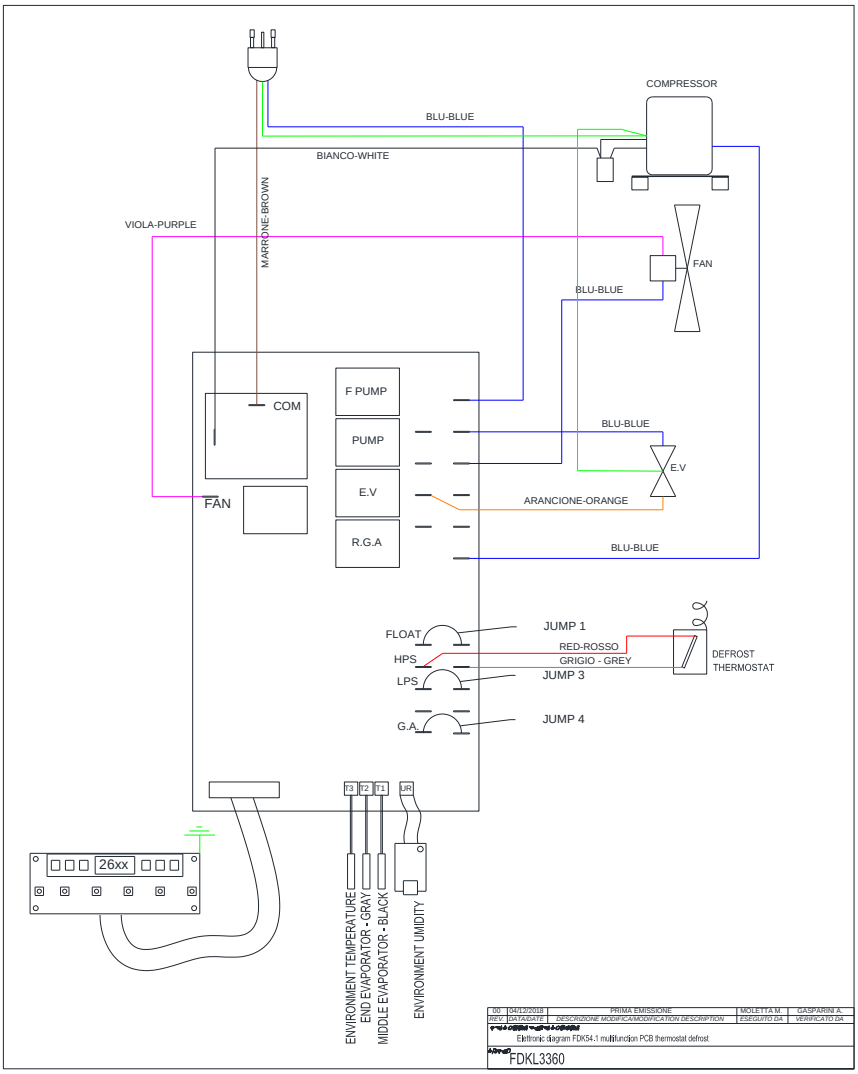
4. Plug in Unit
5. Test Refrigerant Charge
    a. Confirm compressor is running and allow to run for minimum of 15 minutes
        i. If under 70°F, a layer of ice will form on evaporator coils
        ii. If over 70°F, a layer of frost or water droplets will form on coil
6. Test Defrost System
    a. Leave unit running for approximately 30 minutes (45-55 minutes). The unit should enter a defrost mode for approximately 5 minutes. The unit will enter a defrost mode with the compressor operating and fan off to defrost the coil. If the unit will not defrost, either
        i. Control board may be defective
        ii. Bypass valve may be defective
7. After routine maintenance has been completed, return humidistat to desired setting.

If any problems occur during routine maintenance, contact your contractor or the factory.

## 7. TECHNICAL DATA

| | | |
|---|---|---|
| Rated Average Power Consumption | (at 68°F, 60% R.H.) | 480 W |
| Max. Absorbed Current | (at 95°F, 70% R.H.) F.L.A. | 6.7 A |
| Air Flow | | 280 cfm |
| Refrigerant | | R410A |
| Standard Defrosting Control System | | electronic |
| Hot gas defrosting control system | | thermostat. / electronic |
| Condensed Water Draining Pipe Connection | | 3 / 4 " M |
| Functioning Relative Humidity Range (Temperature range 33,8°F-89,6°F) | | 35 - 99 % |
| Functioning Relative Humidity Range (Temperature range 89,6°F-96,8°F) | | 35 - 78 % |
| Rated Condensation Capacity | (at 80°F-60%) | 54 ppd |
| Weight | | 75 lb |
| Dimensions LxDxH | | 14,2 x 22,85 x 16,5 in |
| Voltage : | | 115V / 1ph / 60Hz |

## 8. ELECTRIC DIAGRAM



## LIMITED WARRANTY (FRAL FDK54, FDK70 AND FDK100 MODELS)

Customer should not repackage and ship the Fral FKD 54, FDK70 and/or FDK100 (the "*Product*") unit due to possibility of irreparable damage. For warranty service, please contact Fral/USA customer Service at: **technical@fral-usa.com**

### WHAT IS COVERED BY THIS WARRANTY

Fral USA Warranties specifically the Product is warranted to the Customer, subject to the conditions herein, as follows: (i) the Product will be free of material defects in workmanship and material, for a period of **Two (2) years** following the date of initial purchase of such Product by an original customer from an authorized reseller ("*Customer*"); and (ii) the Product's condenser, evaporator, and compressor will be free of material defects in workmanship or materials for a period of **five (5) years** following the date of initial purchase of such Product by a Customer.

### LIMITATION OF REMEDIES.

CUSTOMER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS LIMITED WARRANTY AND FRAL/USA' ENTIRE LIABILITY HEREUNDER, SHALL BE, AT THE SOLE OPTION OF FRAL/USA, REPLACEMENT OR REPAIR OF SUCH PRODUCT OR ITS COMPONENTS ("*COMPONENTS*") BY FRAL/USA OR FRAL/USA AGENTS ONLY. REFRIGERANT, PIPING, SUPPLIES, TRANSPORTATION COSTS, LABOR COSTS INCURRED IN REPAIR OR REPLACEMENT OF SUCH COMPONENTS ARE NOT INCLUDED. THIS DISCLAIMER AND EXCLUSION SHALL APPLY EVEN IF THE EXPRESS WARRANTY AND LIMITED REMEDY SET FORTH HEREIN FAILS OF ITS ESSENTIAL PURPOSE. CUSTOMER ACKNOWLEDGES THAT NO REPRESENTATIVE OF FRAL/USA OR OF ITS AFFILIATES OR RESELLERS IS AUTHORIZED TO MAKE ANY REPRESENTATION OR WARRANTY ON BEHALF OF FRAL/USA OR ANY OF ITS AFFILIATES OR RESELLERS THAT IS NOT IN THIS WARRANTY.

### WARRANTY LIMITATIONS

This warranty is expressly conditioned upon proper installation, operation, cleaning, and maintenance, all in accordance with the Owner's Manual. Failure to meet any of these requirements will void this warranty. Servicing of the Product by parties other than Fral/USA authorized representatives and/or using parts other than genuine parts will also void this warranty. Not for commercial use. Ordinary wear and tear shall not be considered a defect in workmanship or material. These warranties do not apply for loss or damage caused by accident, fire, abuse, misuse, improper installation, leaking, modification, misapplication, weather, freezing, lack of normal care, failure to follow written instructions or any repairs other than those provided by our authorized Service Center. This warranty is non-transferable and does not cover consumable items such as filters.

### CUSTOMER RESPONSIBILITIES

As a further condition to obtaining warranty coverage hereunder, the Customer must send a valid warranty claim to Fral/USA such that Fral/USA receives such claim prior to the end of the applicable warranty period. Fral/USA shall have no obligation hereunder with respect to any claim received by Fral/USA after the expiration of the applicable warranty period. As a further condition to obtaining warranty coverage hereunder, the Customer must present forms of invoices evidencing proof of purchase of a Product. If such invoices do not clearly indicate the date of initial purchase by a Customer, the applicable Product's date of manufacture will be used instead of the date of initial purchase for the purpose of calculating the commencement of the applicable warranty period. Warranty service must be performed by Fral/USA or a servicer authorized by Fral/USA. In order to obtain warranty service, the Customer should contact Fral/USA at**: technical@fral-usa.com** which will then arrange for applicable warranty service. Warranty service will be performed during customary, daytime working hours. If the Product must be shipped for service, Customer shall be solely responsible for properly packaging the Product, for all freight charges, and for all risk of loss associated with shipment.

## HOW TO OBTAIN WARRANTY SERVICE

Customer must contact FRAL/USA Customer Service by email at**: technical@fral-usa.com** and provide proof of purchase within the above time periods. We will repair or replace and return the product, without charge and within a reasonable period, subject to the conditions herein, if our examination shall disclose any part to be defective in workmanship or material. If we, in our discretion, are unable to repair the product after a reasonable number of attempts, we will provide replacement of the unit, at the company's option. We reserve the right to inspect and/or require conformation of installation method.

**Note: The unit must be registered with Fral-USA at the time of purchase for the full warranty to be in place. In order to do this go to:**www.fral-usa.com **and complete the form.**

## EXCLUSION OF OTHER WARRANTIES & CONDITIONS

EXCEPT AS PROVIDED HEREIN, WE MAKE NO REPRESENTATION OR WARRANTY OF ANY KIND. ALL OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, ARE HEREBY EXPRESSLY DISCLAIMED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

## LIMITATION OF LIABILITY FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES

WE SHALL NOT IN ANY CASE BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING FROM BREACH OF EXPRESSED OR IMPLIED WARRANTIES, CONDITIONS, GUARANTEES, OR REPRESENTATIONS, BREACH OF CONTRACT, NEGLIGENCE, OR ANY OTHER LEGAL THEORY. Such excluded damages include, but are not limited to, loss of profits or revenue, and loss of the use of the products, and any loss caused by leaks or other water damage.

## FOR U.S. APPLICATION ONLY

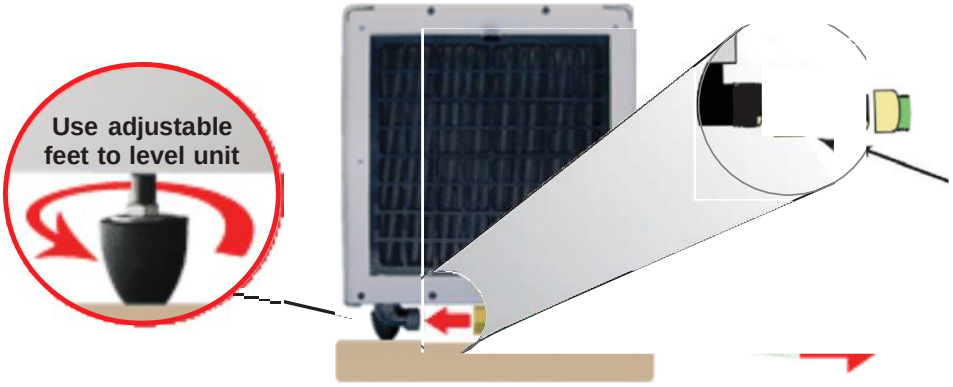
This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow limitations on warranties, or on remedies for breach. In such states, the above limitations may not apply to you.

## SERVICE

Every effort is made to ensure customers receive an up-to-date instruction manual on the use of our products; however, from time to time, modifications to our products may without notice make the information contained herein subject to alteration. For the latest information, please visit our website.

# GRAVITY DRAIN INSTALLATION

## Step 1 Level Unit




## Step 2 Attach Drain Line

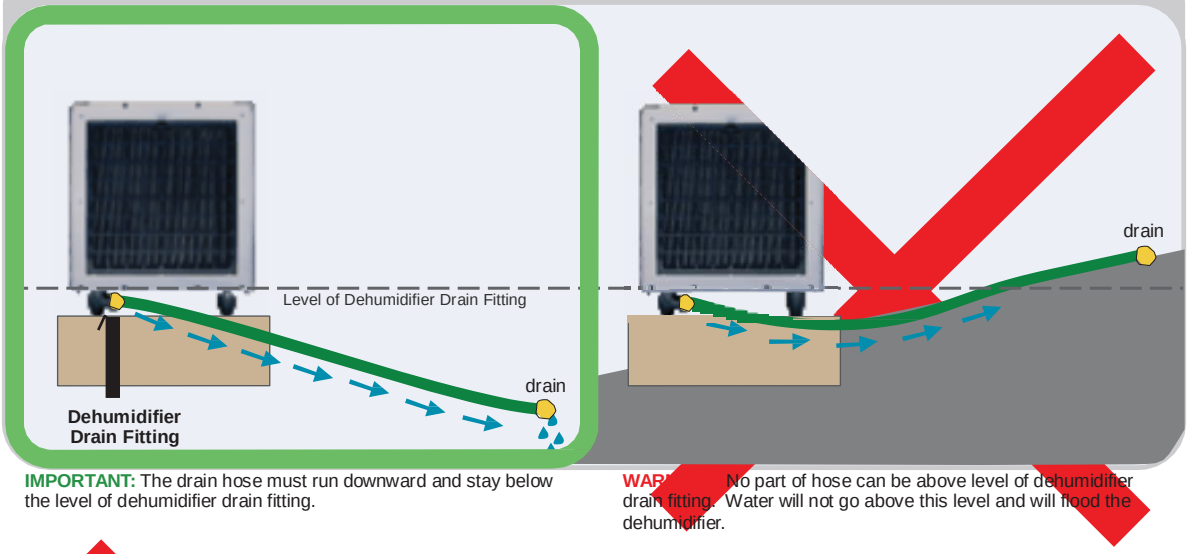
Screw female end of drain line onto Fral drain.
The Fral dehumidifier comes with a fixed drain outlet underneath the machine, it is a standard garden hose thread" (GHT), which is 3/4" diameter straight

Run line down to drain, condensate pump or sump pump.

Note well: If the machine does not have adjustable feet, check that it is properly leveled.

## Step 3 Run Drain Line

### Option 1: Gravity Drain Installation




**IMPORTANT:** The drain hose must run downward and stay below the level of dehumidifier drain fitting.

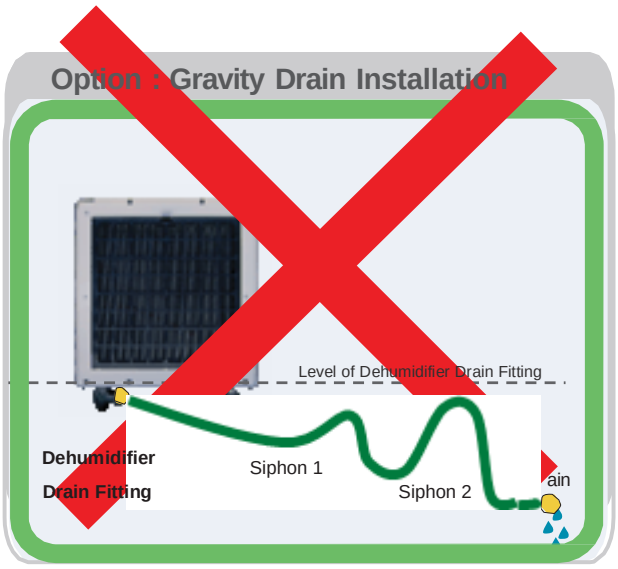
**WARN** No part of hose can be above level of dehumidifier drain fitting. Water will not go above this level and will flood the dehumidifier.

**NOTICE:**
It is very important to get a *constant gravity flow* from the unit to the condensate pump.

Make sure no part of the hose is higher than the bottom of the drain fitting.

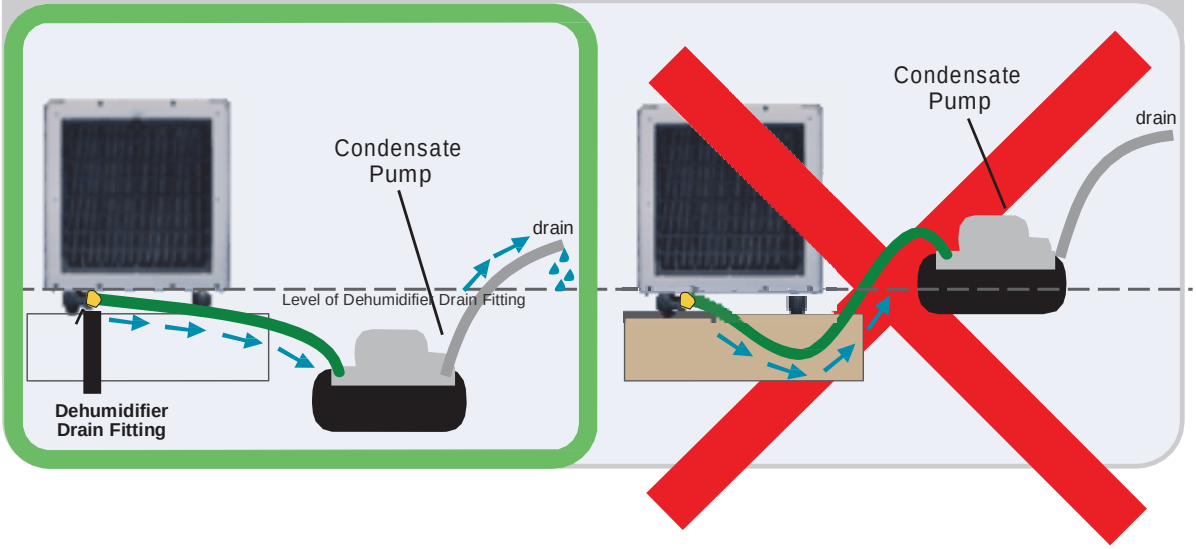
**Note:** The drain elbow is spot welded to the base of the unit to allow proper venting of drain line.
If any water leaks at this joint, please check for restrictions or low spots in drain line

### Option : Gravity Drain Installation




**WARNING:** Double siphon is not allowed because it not allow correct drainage of water

## Option 2: Condensate Pump Installation




**IMPORTANT:** The drain hose from dehumidifier to pump must run downward and stay below the level of dehumidifier drain fitting.
Tubing line from pump can run up to 20 feet upward and out into drain.

**WARNING:** Hose line going from dehumidifier into pump must run downward. Water will not go above the level of dehumidifier drain fitting and will flood the dehumidifier.