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R-290 COOLERS (HC SERIES)

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

CAUTION

READ THIS MANUAL BEFORE INSTALLATION, OPERATION AND/OR SERVICING YOUR COOLER.

V2.6

Publication: 47-0480-189 C
10-2017

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- **Always use QBD supplied OEM parts only. Use of non-OEM parts will not only void the warranty but may also lead to a fire, explosion, serious injury or death.**

- **Only trained and certified technician, for Hydrocarbon systems, should service these coolers.**

- **Use extreme caution and follow all local/regional codes for transportation or relocation of Hydrocarbon coolers.**

1. DISCLAIMER

Please read this manual carefully before installing, operating and servicing this QBD R-290 Hydrocarbon cooler. Improper installation, operation and maintenance of cooler can cause damage to the cooler, fire, explosion, severe injuries or death.

This manual must be kept in an accessible location for easy reference during installation, operation, maintenance and service.

QBD neither assumes nor authorizes any representative or other person to assume for it any obligation or liability in connection with the QBD product, its sale, operation or use other than such as is expressly set forth herein.

Exclusions from Warranty Coverage

QBD warranty does not cover:

a) Spoilage of products, loss of sales, incidental, indirect, consequential or special damages, or any injury, loss, cost or expense directly or indirectly sustained in connection with the Product, its sale, operation or use.

b) without limiting the generality of the foregoing, spoilage of products, loss of sales, incidental, indirect, consequential or special damages, or any injury, loss, cost or expense arising directly or indirectly from fungi or fungal derivatives sustained in connection with the Product, its sale, operation or use.

c) glass (Door & Side Window) or light bulb breakage (Fluorescent Tubes or Light Bulbs), castors, hinges, magnetic gasket, sliding door wheels, (Header & Header Lens),door tracks, decals, (Power Cord, Starters) and parts of normal wear and tear.

d) any product that has been subject to misuse, neglect, alteration, tampering, accident, or to any damage to any product caused during transportation, improper installation (except when the Product is installed by employees of QBD), flood, fire, water damage, burglary, terrorism or acts of God.

Limited Warranty

QBD warrants to the original purchaser at the location of original installation of the Product that the Product is free from defects in material or workmanship under normal use and service for a period as defined in warranty terms from the date of shipment.

QBD's obligation under this warranty shall be limited to repairing or replacing at QBD's option, any part of such product, which proves thus defective and which upon examination by QBD and to its satisfaction to be defective shall be determined to be defective. Notwithstanding this assumption

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of responsibility by QBD, QBD's responsibility for the costs and labour incurred in repairing or replacing the Product shall not exceed the sale price of the Product. The labor warranty shall include standard straight time labor charges only and reasonable travel time, as determined by QBD.

For CD Series coolers, QBD reserves the right to exchange the cooling deck, and the defective cooling deck must be returned. Labor charges to remove and install the cooling deck, is not covered by warranty.

! CAUTION

1. The cooler contains flammable refrigerant R-290 (Propane). **To confirm refrigerant type, please refer serial label inside cabinet.**
2. The cooler requires adequate ventilation at all times during installation, operation and servicing.
3. In order to carry out service and repair on R-290 COOLER **the service personnel must be qualified and trained to handle flammable refrigerants.** This includes knowledge on tools, transportation of the compressor and refrigerant, relevant regulations and safety precautions. Also, service must be performed in a well-ventilated area and in compliance with the local/ regional /national safety codes.
4. **Conversions from refrigerant R134A to R-290 is NOT allowed**. Using R-290 in a system, which is not approved and does not have symbols indicating use of R-290, may cause fire, explosion, severe injury or death.
5. As per the EPA, R-290 is prohibited for retrofitting in existing hydrofluorocarbon (HFC) refrigerant systems.
6. Only a maximum 150 grams (5.3 oz.) of R-290 charge is allowed in any HC based beverage cooler refrigeration system. (Ref: UL#471). However you are advised to **refer serial plate on the cooling deck to check R-290 charge amount in your refrigeration system. Refrigerant overcharge may lead to fire, explosion, severe injury or death.**
7. EPA has approved the venting of Hydrocarbon refrigerant into the atmosphere. However, it is recommended that you observe venting requirements in your jurisdiction. Use extreme precaution while venting- refer paragraph 9 on page 26 for more instructions on safe venting practices.

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8. **R-290 cooling deck must be installed in R-290 certified cabinet only. Only cabinets with serial plate indicating R-290 should be used for R-290 based refrigeration system.** R-290 installation on a non-approved cabinet may result into fire, explosion, severe injury or death.

9. Check for refrigerant leak before connecting or disconnecting power to cooler.

10. Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this cooler.

11. Smoking is strictly prohibited near coolers with R-290 refrigerant.

12. Ensure the cooler, refrigerant, oil and/or other component(s) are disposed in accordance with local and federal regulations.

13. To maintain average product temperature at 3.3°C (38°F), follow temperature setting as indicated on rating plate inside the cooler. Any change in setting could result in poor performance and/or component(s) failure.

14. QBD will not be responsible for poor performance, component failure(s), damages or losses due to improper installation of the cooling deck, electrical components, cooler itself, and/or use of non-OEM parts.

15. Use of NON OEM parts is strictly prohibited. Use of non OEM parts will not only void the warranty but may also lead to a major fire or explosion causing property damage, severe personal injury or even death.

All repairs must be performed by a trained and authorized service technician and at a safe environment.

2. GENERAL INSTRUCTIONS

Unsafe use of the cooler other than intended by QBD can result in death, serious injury, property damage and /or cooler failure.

This manual contains important information about cooler safety and maintenance. READ and UNDERSTAND this manual before operating the cooler. If you have any questions, **please call QBD (Contact number (905)-459-0709)** for clarification. This manual must remain near the cooler and should be available to all users and service technicians.

All specifications are subject to change without notice.

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- **Only trained and certified technician, for Hydrocarbon systems, should service these coolers.**

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3. SYMBOLS USED IN THIS MANUAL

	This sign will indicate that you are handling a flammable substance that may be present in the surrounding environment.
	WARNING Indicates potentially hazardous situation which, if not avoided, may result in injury, property damage and/or cooler failure.
	DANGER Indicates potentially hazardous situation which, if ignored, could result in death or serious injury, property damage and/or cooler failure.
	CAUTION emphasise information which may cause cooler failure or environmental harm.
	This label is used to indicate that the flammable refrigerant (R-290) is present within the application and service equipment

	Images that indicate something that should be strictly avoided
	Specific bans!
	Instructions for first aid!
	Fire protection!

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- **Only trained and certified technician, for Hydrocarbon systems, should service these coolers.**

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4. INTENDED USE

QBD`s coolers are designed for storage of beverage products and/or commercial merchandise.

Storage of pharmaceutical products (unless it is an RX-series cooler), perishable food, scientific material or temperature sensitive product in the cooler is **NOT RECOMMENDED**.

QBD warranty does not cover spoilage of products, loss of sales, incidental, indirect, consequential or special damages, or any injury, loss, cost or expense directly or indirectly sustained in connection with the Product, its sale, operation or use.

This cooler is NOT intended for outdoor use or to be subjected to direct sunlight, dampness, high dust levels, extreme heat and/or cold temperature. Ensure adequate ventilation around the cooler.

It should not be subjected to temperature more than 90°F and relative humidity more than 65%.

5. R290 REFRIGERANT

This cooler contains R-290 refrigerant. It is highly flammable and is heavier than air and the concentration will always be highest at floor level.

Odor:	Odorless
Chemical formula:	C_3H_8
Appearance:	Liquefied compressed gas
Boiling Temp.:	-42°C (460mm/Hg)
Flash point temp:	−104 °C
Self-ignition temperature :	470°C (Under 760 mm/Hg)
Lower Explosive Limit (LEL) :	2.30%
Upper Explosive Limit (UEL) :	9.50%
Density:	580 Kg/m³ (25°C)

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6. FIRST AID MEASURES FOR R-290

Material Safety Data Sheet (MSDS) of R-290 (Propane) is required to be available to all users and employees at the installed sites. It is mandatory for users to refer to MSDS for complete understanding of hazards and take necessary precautions.

Ingestion DO NOT induce vomiting unless directed to do so by medical personnel. Never provide anything by mouth to an unconscious person. Get medical attention if symptoms persist.
Skin Contact In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Eyes Immediately flush eyes with plenty of water for at least 15min. Get medical attention.
Frostbite Try to warm up the frozen tissues and seek medical attention.
Inhalation Immediately move to area with fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Get medical attention.

Refer to updated MSDS for more details.

7. INSPECTION UPON DELIVERY

Your cooler contains R-290 refrigerant. For safety, examine all packaging material for damage when received. Damage to external packaging may have resulted in unit damage.

If you received a damaged cooler, refuse the shipment and immediately contact the carrier to report the incident.

Unpack the cooler. Check cooler for all accessories and components, including legs, casters (if applicable) and shelves.

All goods are shipped at the customer's risk. Return of goods to the factory must have the authorized approval from QBD.

No returns will be accepted after 10 days. Any shortage claims must be made within 5 days of receiving the goods.

If the cooler is tilted during transportation/relocation please allow it to sit for 2 hours in upright position before connecting to power source. Ensure the cooler is not damaged during transportation.

Follow all local/regional codes for transportation or relocation of hydrocarbon coolers.

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8. VISUAL CHANGES TO CD 3.0

Technicians are responsible to ensure these red sleeves are always present on access points as per UL#471 requirement.

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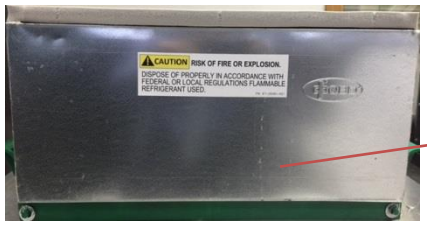
- **Use extreme caution and follow all local/regional codes for transportation or relocation of Hydrocarbon coolers.**



CAUTION RISK OF FIRE OR EXPLOSION.
DISPOSE OF PROPERLY IN ACCORDANCE WITH FEDERAL OR LOCAL REGULATIONS FLAMMABLE REFRIGERANT USED.
PN 47-0040-421

CAUTION HAZARDOUS ATMOSPHERE RISK OF FIRE OR EXPLOSION.
NO WELDING, CUTTING OR BRAZING ALLOWED.

CAUTION
REFRIGERANT CHARGE ALWAYS < 150 GMS
(CHECK COOLER LABEL FOR EXACT CHARGE AMOUNT)
USE ONLY REFRIGERANT GRADE 99.9% PURE PROPANE FOR CHARGING
PN 47-0040-419

DANGER RISK OF FIRE OR EXPLOSION. FLAMMABLE REFRIGERANT USED.
-TO BE REPAIRED ONLY BY TRAINED SERVICE PERSONNEL. DO NOT PUNCTURE REFRIGERANT TUBING.
-DO NOT USE MECHANICAL DEVICES TO DEFROST REFRIGERATOR.
DO NOT PUNCTURE REFRIGERANT TUBING.
CAUTION RISK OF FIRE OR EXPLOSION. FLAMMABLE REFRIGERANT USED.
-CONSULT REPAIR MANUAL/OWNER'S GUIDE BEFORE ATTEMPTING TO INSTALL OR SERVICE PRODUCT. ALL SAFETY PRECAUTIONS MUST BE FOLLOWED.
PN 47-0040-495

CAUTION
RISK OF FIRE OR EXPLOSION DUE TO PUNCTURE OF REFRIGERANT TUBING; FOLLOW HANDLING INSTRUCTIONS CAREFULLY. FLAMMABLE REFRIGERANT USED.

CAUTION
Rotating Fan Blades
Only certified technician can access this area.
Can cause serious injury or cut.
Keep hands clear. Turn power off and lock-out unit before servicing it
PN 47-0040-420

All QBD Hydrocarbon coolers are provided with multiple identification and hazard labels. These can be located inside the cabinet and other visible surfaces of the cooler. Please contact QBD technical support for more information.

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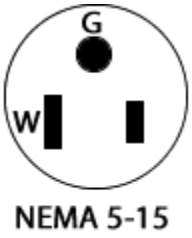
9. ELECTRICAL SAFETY

The cooler must always be plugged into its own dedicated individual electrical circuit, which has a voltage rating same as mentioned on the serial plate, and is in compliance with the Canadian Electrical Code, Part I, the National Electrical Code or the local Electrical Code.

Ensure that a dedicated 3-prong grounded electrical receptacle is available at the intended location of the cooler.

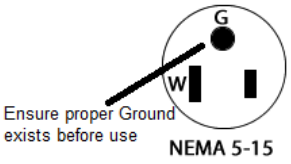
Ensure that the electrical branch circuit of the fixed wiring to the dedicated receptacle is protected with a fuse or a circuit breaker.



For personal safety, this appliance must be effectively grounded at all times. The power cord of this cooler is equipped with a three-prong (grounding) plug which mates with a standard three-prong (grounding) wall outlet (receptacle) to minimize the possibility of electric shock hazard from this cooler.

Have the wall outlet and circuit checked by a qualified electrician to make sure the outlet is effectively grounded. If only an old two-prong wall outlet is available, it is the user's responsibility and obligation to have it replaced with an effectively grounded three-prong wall outlet for protection against potential electrical shock and fire hazard.

DO NOT USE EXTENSION CORDS, POWER BARS, AND / OR WIRING DEVICE ADAPTERS TO POWER THE COOLER.



Inspect the cooler power supply cord for any damage prior to use. Do not use a cord that is damaged or have crack signs. If power cord is damaged, it must be replaced with QBD supplied OEM part only. Do not alter impact or apply pressure on power cord.

Don't access electrical parts & mechanically moving parts without authorization and this should be done by a qualified service technician only.

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CAUTION

Always check for Hydrocarbon leak (using a certified hydrocarbon leak detector) before plugging / unplugging/ or switching ON-OFF power supply.

CAUTION

When working on the equipment or parts thereof, the system has to be de-energized (by master switch, circuit breaker or separate cut-out) and unplug power cord, such that it cannot be restarted accidentally. Do not reconnect the system to the electric circuit until all work is completed and all connections are tested.

CAUTION

All units must be powered at their nominal operating voltages at all times. The voltage should be within 10% of the nameplate voltage rating, as overvoltage or under voltage could damage the cooler. QBD is not responsible for the repair or replacement of failed or damaged components resulting from electrical power failure, incorrect supply voltage, low voltage, or unstable supply voltage. Ensure that the power quality (i.e. the voltage and current harmonics) are within the acceptable industry tolerance.

CAUTION

Please do not spray or immerse any electrical component with water and/or chemicals. Doing so may will void all warranties and may lead to fire, explosion, severe injury or death.

Always use QBD supplied OEM components only which are approved and certified to be used in coolers using R290.

Consult **QBD technical service (Contact number (905)-459-0709)** for details on wiring diagram, or other electrical components.

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10. ELECTRICAL PARTS FOR HC COOLERS

Always use QBD supplied OEM parts only. Use of non-OEM parts will not only void the warranty but may also lead to a fire, explosion, serious injury or death. Below is just to demonstrate some examples of difference in parts used in non R-290 vs R-290 systems.

		CONTROLLER *Please contact QBD Technical support for more information on controller for your particular cooler.*
		ECM MOTORS UL Approved / Very High Efficiency / Brushless / Wider operating range
		ELECTRICAL CONNECTORS USE OEM PARTS ONLY
		COMPRESSOR RELAY/OVERLOAD/ CAPACITOR USE OEM PARTS ONLY
		LED POWER SUPPLY Approved for Hydrocarbon / Class 2 Type Power supply: 12V DC / High Energy Efficiency
		LED+ Lighting up-to 50% less energy per fixture

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11. INSTALLATION

LOCATION & LEVELING— INDOORS ONLY!

- Cooler must be leveled front to back and side to side to ensure optimum performance. Use leg -adjust for proper leveling.
- Improper leveling may cause cooler door(s) to not close properly. This can cause the evaporator coil to accumulate frost and/or drain pan to overflow.

EXTERNAL AND INTERNAL CLEARANCES, SHELF POSITION AND DOOR SUPPORT BRACKETS

- Always maintain the following **EXTERNAL** clearances for ease of installation, door opening and proper air circulation:
    - Top .....2”
    - Hinge Side..... 1 1/4”
    - Non Hinge Side..... 1/2”
    - Back..... 3”
- Maintain a clearance of at least 2 feet in front of the grill to ensure free air flow from the refrigeration unit.
- Cooler is designed for freestanding installation only. It should not be recessed or built-in.
- Don’t locate cooler in close proximity to high heat appliances such as fryers, heating ranges and / or heating ducts.
- Minimum **INTERNAL** clearances are required for adequate air circulation inside the cooler. Maintain internal clearances between the beverages and the cooler walls and door(s) as follows :

- Clearance	- Inches
- Side wall	- 1/2
- Rear wall	- 1/2
- Front glass	- 1

- **MUST** remove the door support bracket(s) before installation. (applicable for specific models only)
- **ALWAYS** use the door support bracket(s) during transport and/or changing locations.

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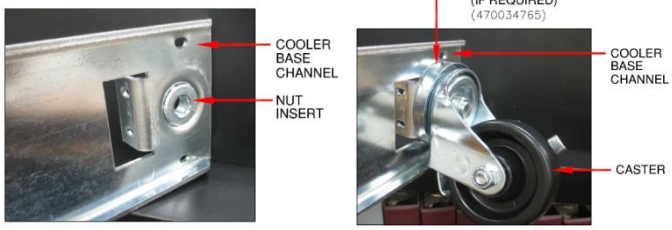
12. CASTER INSTALLATION

The cooler has a new design for caster installation. It does not require a transfer plate anymore.

Nut insert (to fit casters) is flush with the bottom surface of base channel. This design will allow caster top in firm contact with cooler base channel. Hence, transfer plate can be avoided.



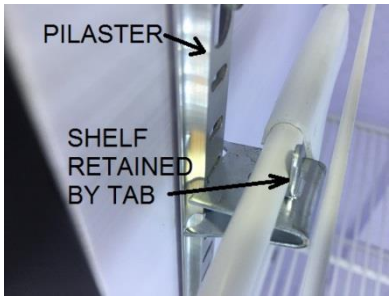
No Transfer plate required as caster top is directly in contact with the vase channel plate. Shim plate may be required for leveling of cooler.

IMPORTANT NOTE:

- QBD does not offer casters for PC8** /PC8L** models Do not use any third party casters kits. For safety and stability of the cooler, only use the supplier levelling legs.
- Don't adjust the levelling legs beyond a Maximum Height of 1/2`` (1/2 inch) on PC8xx coolers.
- DC6/DC7 models have option for adjustable leg too.

13. SHELF INSTALLATION

- Cooler shelves (flat or gravity) and a bag containing shelf support clips are packed at the factory inside the unit.
- In CD HC models (except CD10/12/20 HC), a bottom shelf must be installed on top of the base step (return air duct).



- Improper shelf clip installation may cause shelf and/or product to fall which could result in personal injury or damage to the cooler.
- Do NOT place solid packages on bottom shelf to avoid poor cooling performance.

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- Don’t overload the shelves. The cooler is designed to use all the shelves provided. Install in equally spaced configuration. If fewer shelves or a different configuration is required, contact QBD to ensure that shelf overloading will not occur.

- Store products as evenly as possible inside the cabinet to maintain uniform product temperature.

14. COLD CONTROL

Different cold controls are being used in different models of HC coolers. All these are certified for use in an HC unit. **Please contact QBD technical support to know more about cold control for your unit.**

All cooling deck based HC coolers are equipped with customized CAREL cold control (**QBD Part # 47-0520-255**). The recommended setting is at #5 which will allow the cooler to operate between 38-42°F. Temperature probe should be in the return air section.
This controller features voltage protection, automatic defrost and energy saving logics.

DISPLAY INDICATORS

This indicates the Evaporator Motor(s) is/are running but the Compressor is off. On initial power up, there is an intelligent delay for protection of the Compressor. Power to the Compressor will initiate after one (1) minute.

This is the typical look of the CAREL controller while in use. "USE" indicates the unit is in working order. The symbols to the left of "USE" indicate that the Compressor and Evaporator Motor(s) are both running. If the Compressor Indicator is blinking, the compressor is under "Time Protection".

DEFROST CYCLE

Indication that unit is in DEFROST cycle. Evaporator Fan Motor(s) is/are ON for 4 minutes and OFF for 1 minute during this cycle. To manually initiate the defrost cycle, push and hold the "WARMER" button for 3 seconds. The controller will automatically come out of DEFROST after 20 minutes. To manually end the defrost cycle, push the "WARMER" button for 3 seconds.

Second picture is the indication that unit is in DEFROST MODE and Evaporator

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Motor(s) will be running. There is an automatic defrost cycle of 20 minutes every 6 hours.

This is the indication that the cold control is "OFF" and power to the Compressor and condenser fan motor has been disabled. Power to Evaporator Motor(s) is still live. To manually turn the controller "OFF", push and hold the "COLDER" (upper) key for 3 seconds. To turn back "ON", push and hold the "COLDER" (upper) button for 3 seconds

This is the indication that an ERROR has occurred with the probe. Either the probe is faulty or it has been disconnected from the controller.

CHANGE THE TEMPERATURE SETTING

Check controller temperature setting. Proper setting should be #5 on CAREL Controllers. Push the "WRENCH" button for 3 seconds to get to the settings mode. Use the "COLDER" or "WARMER" buttons to adjust to the desired setting. To save the new setting, you MUST push and hold the "WRENCH" button for 3 seconds or until the controller returns to "USE".

- QBD doesn't recommend any temperature setting change without prior authorization.
- Cold control is set at #5 for beverage storage. Cooler maintains average product temperature of 3.3°C (38°F).
- Cold control follows an automatic defrost cycle every six hours for 20 min.
- Evaporator fan follows a defined logic (4 minutes ON and 1 minute OFF) during compressor OFF cycle and defrost cycle for optimum energy conservation.

Other HC coolers have mechanical (QBD Part # 47-0430-257) or electronic Danfoss cold control (QBD Part # 47-0430-268). Please contact QBD technical support (phone number 905-459-0709) to confirm the right controller for your cooler.

The temperature control dial has settings from 1 to 9 (or 1 to 7 in some cases) plus “OFF” or “O”.

- 1 is the warmest setting.
- 9 (or 7) is the coldest setting.

Initially set the temperature to the recommended setting shown on the cabinet serial-name plate, this setting is for ambient condition of 75º F (±2°F). For every 5 degree rises in ambient temperature the

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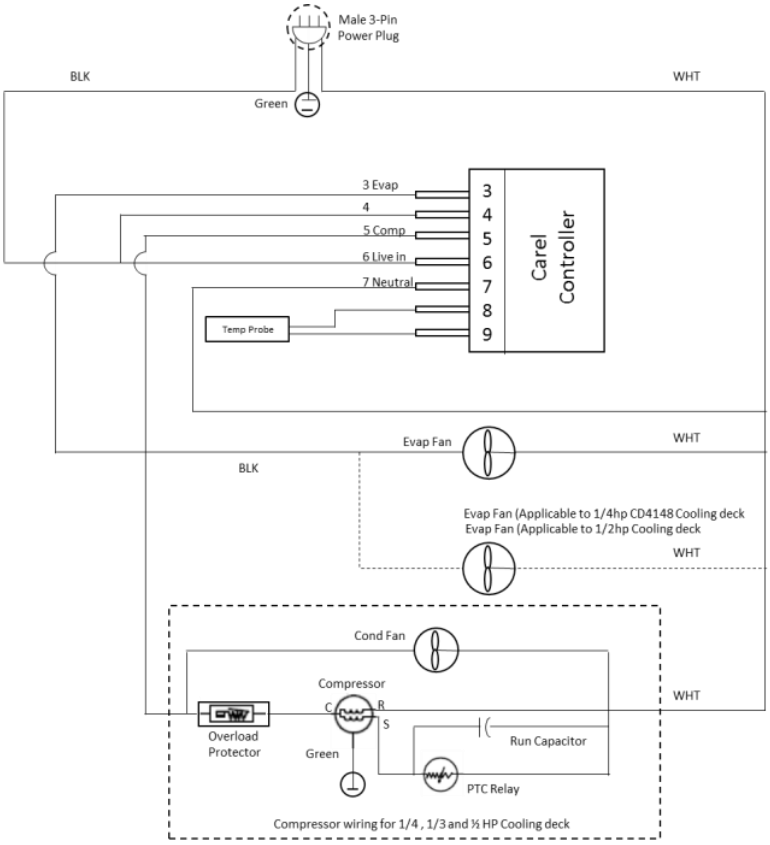
control setting should be moved 1 digit warmer (backwards).
After using the cooler for 24 hours, adjust the temperature control to the setting that is best suited for your needs.

NOTE : If the cooler is unplugged or turned off, you must allow 5 minutes before starting it or plugging it back in. If you attempt to restart it in less than 5 minutes, it may not restart and it may damage the compressor and VOID WARRANTY. Turning the temperature control dial to “OFF” or “O” stops cooling but does not shut off power to the cooler.

USE OF NON-QBD REPLACEMENT PARTS WILL VOID THE WARRANTY. PLEASE CONTACT QBD (Tel: 905-459-0709) TO CONFIRM MOST CURRENT PART NUMBERS

15. WIRING DIAGRAMS

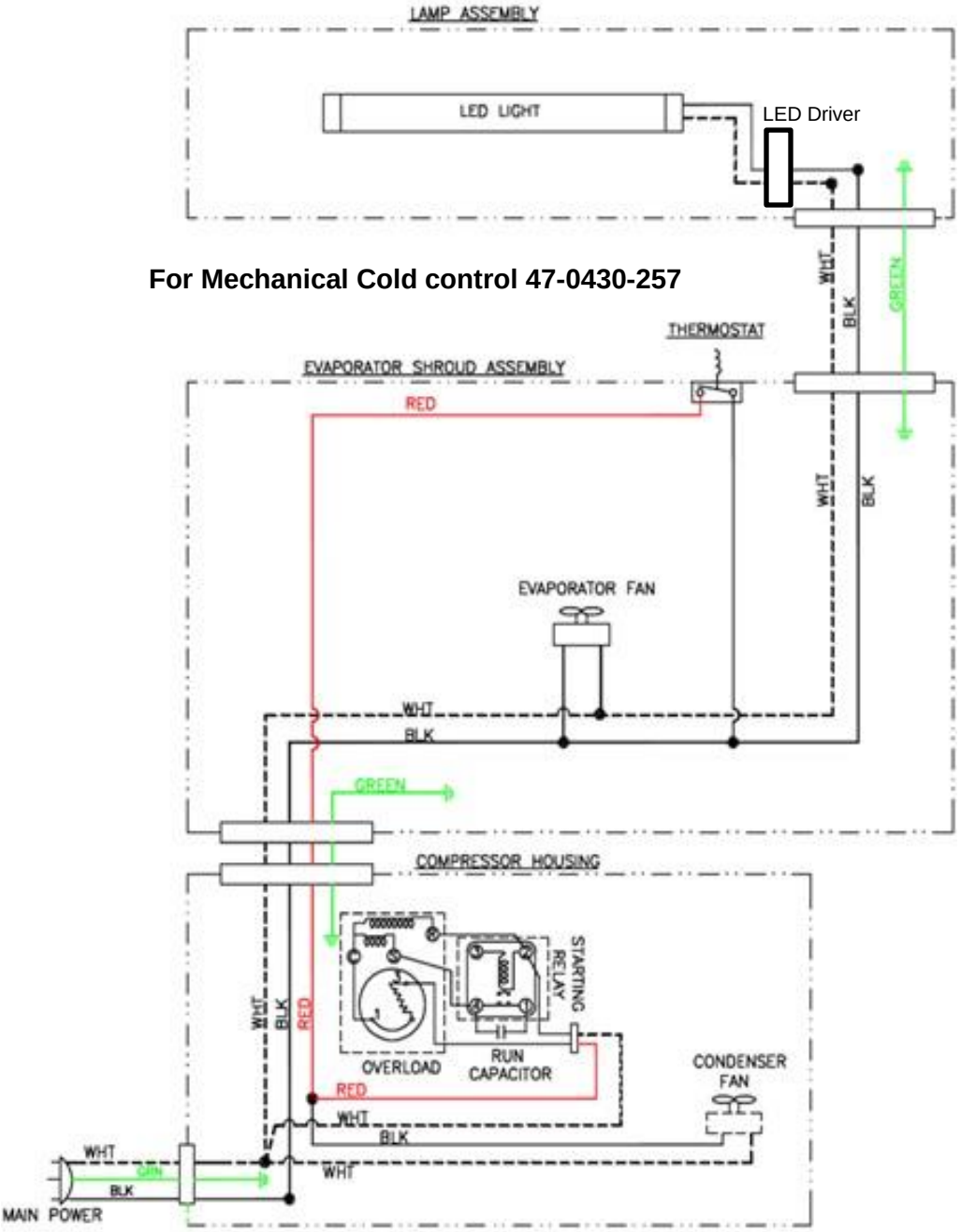


Ref No#47-0040-532

- **Always use QBD supplied OEM parts only. Use of non-OEM parts will not only void the warranty but may also lead to a fire, explosion, serious injury or death.**

- **Only trained and certified technician, for Hydrocarbon systems, should service these coolers.**

- **Use extreme caution and follow all local/regional codes for transportation or relocation of Hydrocarbon coolers.**

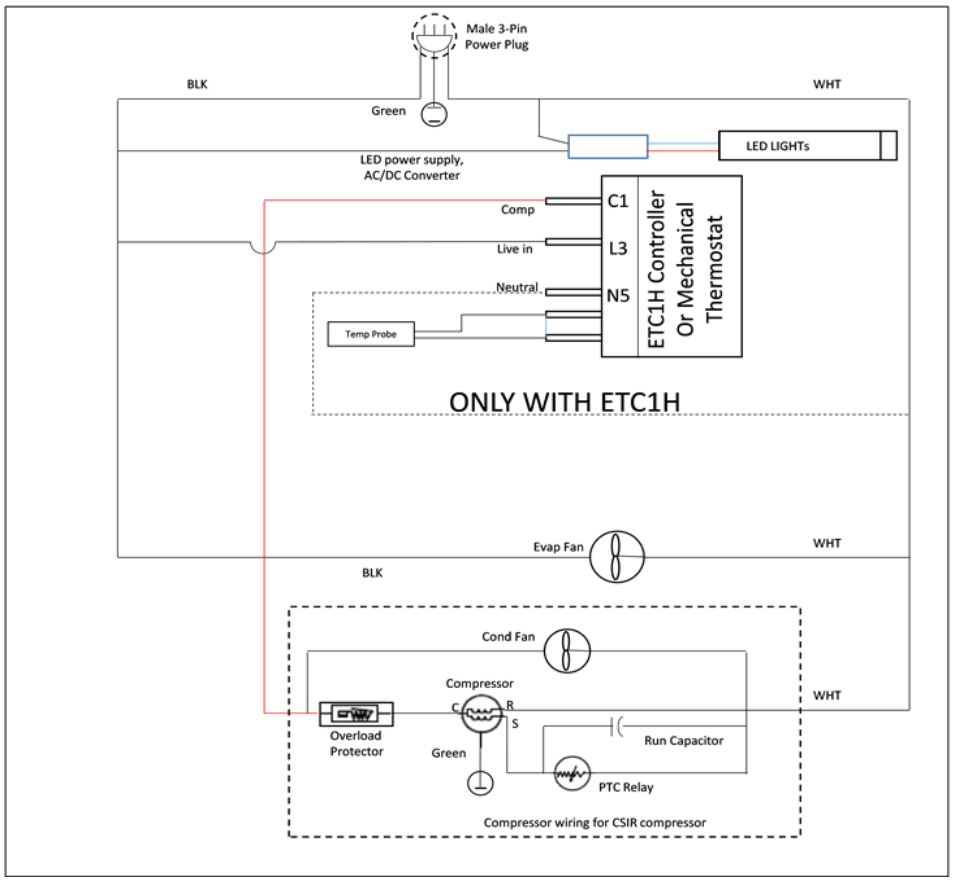


For Mechanical Cold control 47-0430-257

- **Always use QBD supplied OEM parts only. Use of non-OEM parts will not only void the warranty but may also lead to a fire, explosion, serious injury or death.**

- **Only trained and certified technician, for Hydrocarbon systems, should service these coolers.**

- **Use extreme caution and follow all local/regional codes for transportation or relocation of Hydrocarbon coolers.**



Ref No#

47-0040-533

Please call QBD service for additional information if required. Check for refrigerant leak before connecting or disconnecting power to unit.

16. LED LIGHTING

- All HC coolers are installed with customized LED+ lighting for maximum product illumination, high energy efficiency and convenient replacement option.

- Check for HC leak prior to disconnecting power. Do not use lights or light connectors, which are not UL certified for R-290 coolers. **This may also lead to a major fire, explosion, severe injury or death.**.

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17. COOLING DECK REMOVAL, ACCESS AND RE-INSTALL

FOLLOW STEPS BELOW FOR COOLING DECK REMOVAL & RE-INSTALLATION

1 Loosen Front Grill Screws	2 Remove Locking Screws
3 Slide Up Lift Bar Holder	4 Unplug the Power Cord
5 Rotate Lift Bars Inward to Release CD from Lock Position	6 Slide CD Out By Pulling Lift Bars Towards You

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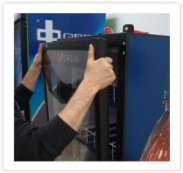
- **Use extreme caution and follow all local/regional codes for transportation or relocation of Hydrocarbon coolers.**

- **Don't pull or apply pressure on suction line.**
- **Ensure locking bar is re-positioned after installation.**
- **Maintain clean coil and clear drain lines**

18. HC MODEL DOOR REVERSAL AND ADJUSTMENT

To position the door hinges from the right side (factory set) to the left for CD models:

Loosen the two hold down screws of the front grill. Remove front grill by lifting the grill vertically upward approximately ½" until the grill is lifted free of the two keyhole slots and screws that hold the grill in place.	
Use a Philips type screwdriver to remove the top right bracket while holding the door. If there is a shim under the bracket, remove it too. Set the bracket aside but take care to hold the door. **Open the door slightly and lift it up firmly. The spring would be released at the bottom.**	
Place the door on a flat non-scratching surface. Interchange the door's top and bottom pivot pins by removing and fixing the two screws. Do not disturb the door handle. **Remove the bottom right bracket and if there is a shim under the bracket, remove it too.**	
Install the new bottom left hinge bracket on the left side (QBD Part# 47-0090-015), before fully tightening the two screws, mount the door spring onto the pin on the back side of the hinge bracket. **Now fully tighten the screws.**	
Remove and re-insert the plastic plugs for the screw holes on the cooler's front face from the left side to the right side holes. **Set the door on the cabinet through the bronze bushing in the bottom hinge bracket.**	

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Install the new left top hinge bracket to its new top left position. (QBD Part # 47-0090-014)	
Fix the door closing spring into the door pivot pin slot located at the bottom left of the cabinet. Pre-load the spring by giving one (1) full turn. Swing the door to test the proper operation.	
Remove the brand QBD logo from the bottom of the door and refit at the right hand top corner of the door. Install front grill.	

To position the door hinges from the right side (factory set) of the cooler to the left for Counter Top Model:

1. Unplug the cooler and empty it.
2. Don't remove the leveling legs
3. Use a Philips type screwdriver to remove the top bracket while holding the door. If there is a shim under the bracket, remove it as well. Set the bracket aside while continuing to support the door.
4. Open the door slightly and lift it firmly. The spring will be released at the bottom.
5. Tilt the cooler approximately 6" to the back and block the lower front section to create enough space to proceed to step 6.
6. Remove the bottom bracket and shims if applicable.
7. Remove the bronze inserts from the bottom bracket and transfer it to the other opening in the hinge.
8. Relocate the bottom bracket to the left side. Remove the front block and rest the cooler in the upright position. Don't alter the door handle.
9. Remove the door and place it on a flat and smooth (none scratching) surface. Interchange the top and bottom pivot pins.
10. Remove the bronze insert from the top bracket and transfer it to the other hole in the hinge.

USEFUL TIP: Easier to order and install a new insert.

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11. Remove all the plastic screw plugs (caps) on the left side and reinsert them to cover the holes on the right side.

12. Reinstall the door by positioning the lower pivot pin into the hole of the bottom bracket with the bronze insert. Attach the top left hand hinge to the top pivot pin and screw bracket to the cabinet.

13. Tilt cooler back (similar to step 5). Position the spring under the bottom bracket and turn the spring counter clockwise for one full turn (for models DC6/7) and attach the spring to the slot in the pivot pin. Remove and reposition any label and graphic if required.

14. Check door gasket for proper sealing and alignment

19. PREVENTIVE MAINTENANCE AND CLEANING INSTRUCTIONS

Interior-Exterior Cleaning (Cabinet)

- Check the area for any refrigerant leak before connecting or disconnecting power to unit.
- Remove all products and shelves.
- Never use acids, chemical thinner, gasoline, benzene or the like for cleaning any part of the cooler. Boiling water or benzene may deform or damage plastic parts.
- Avoid using abrasive materials, scouring powders or aggressive spray cleaners which may damage the painted surfaces of the cooler.
- Wipe inside of the cooler with damp cloth and mild non-abrasive detergent. Then dry with soft cloth.
- Clean the door gasket (s) and shelves with mild detergent and dry with soft cloth.
- To help prevent odors, leave open box of baking soda inside the cooler and replace every three months.
- Wipe exterior of the cooler with a soft cloth dampened with soapy water. Make sure the cooler is completely dry before installing shelves.

PLEASE DO NOT SPRAY OR IMMERSE ANY ELECTRICAL COMPONENT WITH WATER AND / OR CHEMICALS. DOING SO WILL VOID ALL WARRANTIES AND MAY LEAD TO FIRE, EXPLOSION, SEVERE INJURY OR DEATH.

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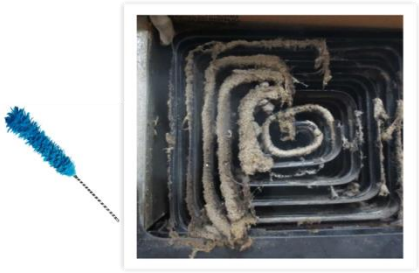
"LTC" (Lint Tolerant Condenser) cleaning procedure:

It is recommended to clean the condenser once a month or earlier based on surrounding environment conditions.

- Remove all dust and debris from condenser coil by using a wand type duster, soft brush, vacuum cleaner or compressed air if available.

- Failure to keep condenser coil clean and unobstructed at all times will result in inefficient or poor cooling. It may also cause damage(s) to the cooler and void the warranty.



Once all necessary servicing and/or cleaning have been carried out, reverse the above procedures to reinstall the cooling deck. Please make sure you connect the power supply, lift the handles, install the locking bar and fasten the two screws (CD coolers only).

Never use any sharp tool for cleaning the condensing coil. The cooler contains flammable refrigerant.

20. REPLACE VS REPAIR FOR COOLING DECK 3.0

Replace (swap) the cooling deck under the following circumstances:

a. Compressor failure
b. Refrigerant leak
c. Damaged/broken base (platform)

Repair the cooling deck under the following conditions:

d. Controller failure
e. Motor (condenser/evaporator) malfunction
f. Damaged fan blade(s)

NOTE: Use only OEM parts for replacement.

21. SAFETY INSTRUCTIONS FOR SERVICE, MAINTENANCE AND HANDLING OF QBD HC COOLER

This section covers maintenance and safety aspects related to the handling of R-290 refrigeration systems. Note that the requirements detailed under this manual are not exhaustive but are intended as a guide only. Additional precautions may be required dependent upon the particular equipment, application and conditions.

Practical Competence

Any person involved with working on or breaking into an R-290 refrigerant circuit

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should hold a valid certificate from an industry accredited authority.

General approach to handling of Hydrocarbon Refrigerant

All flammable refrigerant gases when mixed with air form a flammable mixture. The effect of ignition of such a mixture can be severe. It is therefore important that appropriate safety requirements are observed at all times when working with flammable refrigerants.

Any equipment and tools (including measuring equipment) used in the process of repair must be suitable for use with R-290 refrigerant. Particular attention is to be paid to the selection of the following:

- Refrigerant recovery units (no external brushes)
- Refrigerant leak detector (non-sparking, adequately sealed and intrinsically safe)
- Electric test meter
- Refrigerant recovery cylinder
- Portable lighting

If possible, it is recommended that the cooler/cooling deck be removed from its existing position to a controlled workshop environment suitable to conduct the repair safely.

Safety Checks

Prior to conducting maintenance or service on R-290 coolers, perform all necessary safety checks to ensure the risk of ignition is minimized. Please comply with the following precautions:

- Work Procedure:

Work shall be undertaken only under a controlled procedure so as to minimize the presence of flammable gas or vapor while work is being performed. Prior to work taking place the area surrounding the equipment is to be surveyed to establish any flammable hazards or ignition risks. Display “NO-SMOKING” signs.

- General Work Area

All maintenance staff and personnel working near the area should be notified as to the nature of work being carried out. Work in confined spaces should be avoided. The area around the workspace is to be sectioned off. Ensure that the condition within the work area is safe and free of any flammable materials.

- Checking for presence of Refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work to ensure the technician is aware of any potentially flammable conditions.

! CAUTION

R-290 is the refrigerant used in this cooler and it is odourless.

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Ensure that the leak detector equipment being used is suitable for use with R-290 refrigerant, i.e. non-sparking, adequately sealed and intrinsically safe.

Presence of a Fire Extinguisher

If any hot work is to be conducted on the cooler or any associated parts, appropriate fire extinguishing equipment shall be available on hand. Make sure a dry powder or CO2 fire extinguisher is available adjacent to the charging area.

No Ignition Sources

Any person carrying out work on an R-290 refrigeration system, which involves exposing any pipe work containing or has contained flammable refrigerant, shall not carry any sources of ignition in such a manner that it may lead to the risk of fire or explosion.

All possible ignition sources, including cigarette smoking, should be sufficiently far away from the site of installation, repairing, removal and disposal during which R-290 refrigerant can possibly be released to surrounding space.

If brazing or welding is required, this should be performed in an area detached from the cooler. If this is not possible, then the system should be fully evacuated using guidelines as outlined in QBD service documents.

Ventilated Area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system. Ventilation should continue for the duration of the work process. The process should safely disperse any released R-290 refrigerant to the atmosphere.

Checks to the Refrigeration Equipment

Where electrical components are being replaced, they are to be “fit for purpose” and to the correct specifications. At all times the manufacturer’s maintenance and service guidelines are to be followed. If in doubt consult QBD.

22. RECOMMENDED SERVICE PROCEDURES FOR HC COOLER

If diagnosis indicate failure of any sealed system component (e.g. compressor, evaporator or condenser leak, partial blockage, full/partial loss of refrigerant, etc.), please follow recommended procedures below:

Venting or Recovery

R-290 refrigerant recovery is not required under SNAP but may still be called for under other authorities, controls or practices. Always follow local laws and regulations for recovery or venting of hydrocarbon refrigerant.

If the HC refrigerant is to be vented to the atmosphere, either the unit should be moved to a well ventilated area before the

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venting procedure begins or use hoses long enough to discharge it safely to outside environment.

- Attach gauges to both the high and low sides of the system using an approved method.
- To avoid accidental release of refrigerant and lubricant, ensure that they are recovered/ vented safely from the system before removing the failed component of the sealed system.
- Always recover the refrigerant from both high and low sides of the system to assure that no refrigerant is trapped in the system.
- Purge the system with Oxygen Free Dry Nitrogen (OFDN) several times to ensure complete removal of refrigerant from refrigeration system.
- Achieve a 500 micron vacuum in the refrigeration system using a certified vacuum pump before replacing failed sealed system component(s).
- Use a tube cutter rather than a torch to remove the failed component as shown below. Using a torch may cause a fire hazard, especially if the refrigerant has not been completely discharged/ recovered. If you must use a torch to remove the failed component of sealed system, do so while running dry nitrogen continuously through the system.

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Pressure Testing and Evacuation

- Pressurise the serviced refrigeration system with oxygen free dry nitrogen (OFDN) up to 150 psig.
- Hold the pressure and check for possible leak.
- Purge OFDN before starting the evacuation process.
- Never use a compressor to evacuate a system. Use a certified vacuum pump with manifold gauges and initiate evacuation..
- The discharge of the vacuum pump must be vented to an open-air area.
- Ensure the refrigeration system holds a vacuum pressure of at least 100 micron before charging.
- Never attempt to start the compressor while the system is under vacuum.
- Always break a vacuum with refrigerant charge before starting the compressor.

Charging refrigerant

- **Do not overcharge the refrigeration system** (maximum 150 grams or 5.3 oz.) as per UL#471. Overcharging is a safety hazard.
- Use only recommended type and amount of refrigerant as indicated on the serial label

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- Always use proper charging techniques e.g.- using only certified and calibrated weighting scales

Leak test

- Leaks inside or outside of a cooler may result in a flammable mixture.
- Leak detection must be done using electronic or ultrasonic leak detectors calibrated for hydrocarbon refrigerants.

Sealing the process tubes

- Seal the process tube using an approved method or by pinching the tubing with the recommended equipment and then sealing it with brazing material or silver solder.
- Improper sealing of the process tube may lead to leaks or a sudden release of flammable refrigerant.

23. GUIDELINES FOR TROUBLE- SHOOTING

Symptom	Possible Cause	Solution
Compressor starts and runs but short cycles on the overload protector	- Excess current passing through overload - Low / unstable voltage - Overload failed - Capacitor fault - Excessive discharge - Suction pressure too high - Compressor overheating - Compressor electrical fault	- Check wiring diagram for wrong connections of electrical components - Check voltage supply - Replace overload - Replace capacitor - Check for over charge or condenser blockage / condenser fan failure - Check refrigerant charge - Replace compressor
Units runs OK but short cycles	- Overload protection - Incorrect thermostat setting	- Check the wiring - Replace the overload - Change the thermostat setting if required
Warm temperature	- Too low control setting - Inadequate air circulation	- Reset the controller to colder setting - Improve air movement

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Blowing Fuse	- Power cord is cut and grounding out - Defective compressor - Defective overload - High Voltage - Low Voltage	- Replace power cord - Replace compressor - Replace overload - Correct voltage condition - Ensure cooler plugged into dedicated supply with properly sized circuit. (Correct voltage condition)
Suction line frosted	- Evaporator fan not working - Overcharged system	- Determine reason or replace if required - Correct the charge
Leaking water	- Very humid conditions - Blocked drain - Door not sealed properly / top door seal	- Clear blocked drains - Repair/replace door gaskets, realign/seal doors
Evaporator freeze up	- Temperature controller set too cold - Blocked/restricted air flow - Defective evap motor/ running at low speed - Blocked drain - Low refrigerant charge - Open door or door not sealed properly - Defective or open gasket on cooling deck - Deck not in locked position.	- Adjust to higher temperature setting (lower number) - Remove source of blockage - Replace evap motor - Clear blocked drain - Repair/recharge system - Repair/seal air leaks. Replace defective or damaged gasket - Lock deck in position and secure with locking bar
Controller miscommunication	- Internal controller failure - Voltage spike	- Replace controller & probe

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24. FREQUENTLY ASKED QUESTIONS

1. **How do I know if a cooler is using R-290 refrigerant?**
   A number of visual differences have been made in coolers running on R-290. Check for R-290 indication on Cooling Deck and the serial plate of the cooler.

2. **Do you need any specialized training to service R-290?**
   Although it is not mandatory, we recommend you to attend specialized training for this. Contact Refrigeration Service Engineers Society www.rses.org for more details.

3. **Can I retrofit any cabinet to HC/R-290 refrigerant?**
   NO. The EPA has ruled that the retrofitting of any existing equipment is prohibited. All potential spark producing parts in the system, including those in cabinet have to be UL certified. Any negligence may also lead to a major fire, explosion, severe injury or death.

4. **Can I use/add light switches in R-290 cabinet?**
   NO. All electrical fittings must comply with UL # 471 and must be explosion proof. It is therefore recommended not to add any electrical switch in the cabinet. LEDs provided with the cooler are compliant to UL#471 and must be replaced with OEM parts only.

5. **Can the same tools be used to service a hydrocarbon cooler and an R-134a/R-404A system?**
   Since refrigerant R-290 is highly flammable, no spark producing tool can be used with HC cooling system. More details of recommended tools are provided in this manual. Please check with QBD technical support team if you have any questions.

6. **Can the same parts be used in a hydrocarbon cooler and an R-134a/R-404A system?**
   NO

7. **Is there a maximum charge amount for R-290 refrigeration systems?**
   YES. You can only have a maximum charge amount of 150 grams (5.3 ounces) in HC refrigeration system.

8. **Do I need to recover the R-290 refrigerant?**
   NO. It is not mandatory. Always follow local laws and regulations for recovery or venting of hydrocarbon refrigerant.

9. **Where can I get R-290 refrigerant?**
   You can source this refrigerant from an HVAC supply house or a company that sells gases and welding supplies. Always make sure you are purchasing “refrigerant grade propane R-290”.

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QBD CONTACT INFORMATION

QBD Cooling Systems Inc.

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Toll Free: 1-800-663-3005 Main Phone: 905-459-0709

Fax: 905-459-1478 info@qbd.com www.qbd.com

PARTS STORE

Get parts details for all QBD coolers here and place an order. We will contact you with pricing and availability details.

www.qbd.com/parts

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