



DP0040 Rev 00.4

Cooler



SAFETY WARNINGS / PRECAUTIONS

KEEP THIS MANUAL – DO NOT LOSE

THIS MANUAL IS PART OF THE **COOLER** SYSTEM AND MUST BE RETAINED FOR THE LIFE OF THE PRODUCT. PASS ON TO SUBSEQUENT OWNERS.

Ensure any amendments are incorporated with this document.



DANGER! The Cooler is designed for a specific use. Using the Cooler outside of its intended use could be dangerous. Read and understand this manual before using.



DANGER! **ELECTRICAL CORDS CAN BE HAZARDOUS.** Misuse can result in **FIRE** or **DEATH by ELECTRICAL SHOCK**. Inspect thoroughly before each use. Do **NOT** use if damaged. Do **NOT** use when wet. Keep away from water. Do **NOT** drive, drag or place objects over cord.



WARNING! Do **NOT** operate in an explosive environment. Do **NOT** operate scanner in the presence of volatile substances.



WARNING! The coolant used in this product contains a 50/50 blend of ethylene glycol based automotive antifreeze and water. Consult the MSDS for hazards associated with the use and handling of this coolant.



WARNING! **DO NOT DISASSEMBLE.** No user-serviceable parts. Disassembling any of the components in this product, beyond the instructions in this user manual, could void the regulatory certifications and/or effect the safety of the product.



CAUTION! DO NOT DISCONNECT UNDER LOAD. Shut off power before connection or disconnecting. Permanent damage to electronics could occur.



The WEEE symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately.

(see Disposal on page 26 for additional details).

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IDENTIFICATION

1.1. Product Brand

The Cooler is a heat exchanger used to transfer thermal energy from one medium to another for the purpose of cooling.

1.2. Manufacturer

Distributor:

Manufacturer:

Jireh Industries Ltd.
53158 Range Road 224
Ardrossan, Alberta, Canada
T8E 2K4
780.922.4534
jireh.com

1.3. Compliance Declarations

1.3.1. ISED Emissions Compliance (Canada)

CAN ICES-003(A) / NMB-003(A)

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

1.3.2. FCC Suppliers Declaration of Conformity (United States)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RESPONSIBLE PARTY NAME:	Jireh Industries
ADDRESS:	2955 S Sam Houston Pkwy E Suite 300 Houston, Texas United States 77047
TELEPHONE:	832-564-0626

1.3.3. European Union CE Declarations

Jireh Industries hereby declares that the Cooler product complies with the essential requirements and other relevant provisions of the following European Union directives:



2014/30/EU	EMC Directive
2014/35/EU	Low Voltage Directive
2012/19/EU	Directive on Waste Electrical and Electronic Equipment
2011/65/EU	Directive on Restriction of Hazardous Substances (RoHS)

1.3.4. UKCA Declarations

Jireh Industries hereby declares that the Cooler product complies with the essential requirements and other relevant provisions of the following UK directives.



Title	Edition/Date of Issue
Electromagnetic Compatibility Regulations	2016
Electrical Equipment (Safety) Regulations	2016
Waste Electrical and Electronic Equipment Regulations	2013
Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations	2012

PRODUCT SPECIFICATIONS

2.1. Intended Use

The Cooler provides a flow of cooled coolant for use in actively cooling NDT equipment such as manual crawlers, motorized crawlers, probes, etc., that are equipped with cooling passages.

2.1.1. Operating Environment

The Cooler is for use in industrial environments having ambient temperatures between -20°C (-4°F) and 40°C (104°F).

2.1.2. User

The Cooler is intended to be used by persons who have read and understand the user manual.

2.2. Unintended Use

The Cooler is not intended for use:

- ▶ outside of the intended use
- ▶ at locations having an explosion or fire hazard
- ▶ as an open-loop pumping system, such as a couplant pump

2.3. Cooler Dimensions, Weight and Capacity

A:	20.8 cm	8.2 in
B:	28.2 cm	11.1 in
C:	32.8 cm	12.9 in
Cooler Weight*:	8.3 kg	18.3 lb
Coolant Capacity, Cooler:	600 ml	20.3 oz
Coolant Capacity, Hose:	32 ml/m	0.33 oz/ft

** Cooler weight includes coolant*

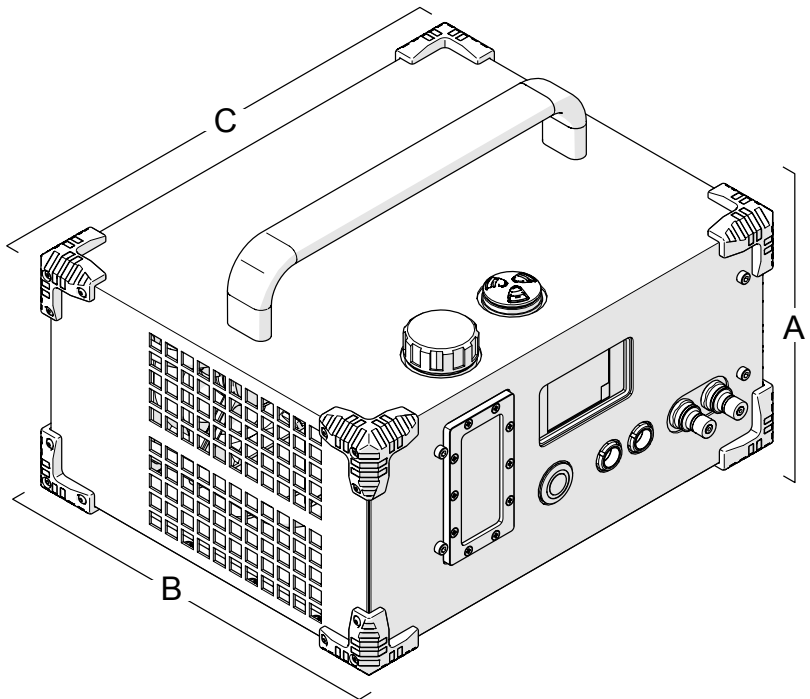


Fig. 1 - Cooler dimensions

2.4. Power Requirements



CAUTION! DO NOT DISCONNECT UNDER LOAD. Shut off power before connection or disconnecting. Permanent damage to electronics could occur.

Input Voltage: 25-45 VDC

Input Power: 23 W

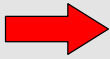
2.5. Environmental Sealing

Dust-tight, watertight (*not submersible*)

2.6. Recommended Coolant

The recommended coolant is a 50/50 blend of ethylene glycol-based automotive antifreeze and water. Consult the MSDS for hazards associated with the use and handling of this coolant.

DEFINITION OF SYMBOLS



Denotes movement. Instructing user to carry out an action in a specified direction.



Indicates alignment axis.

SYSTEM COMPONENTS

4.1. Component Identification

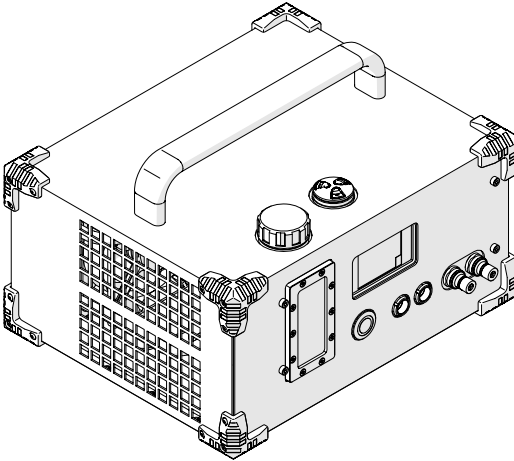


Fig. 2 - Cooler
DPA002

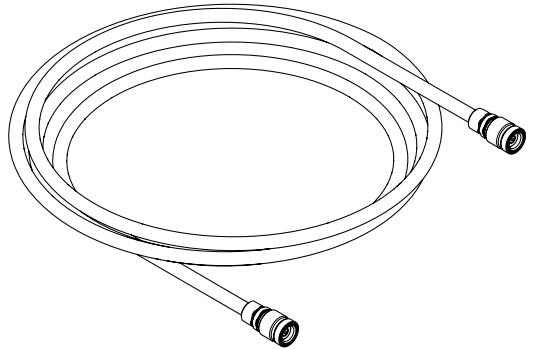


Fig. 3 - Hose
DPA004-

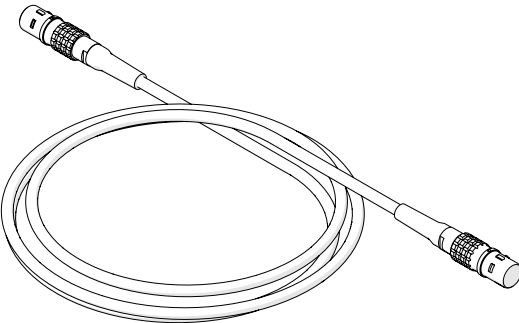


Fig. 4 - Auxiliary Cable
UMA017-01

4.2. Tools

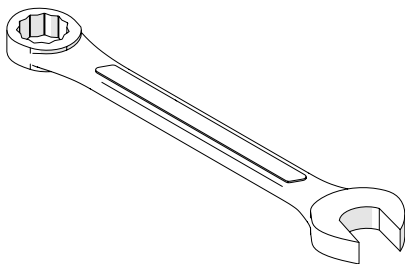


Fig. 5 - 15 mm wrench

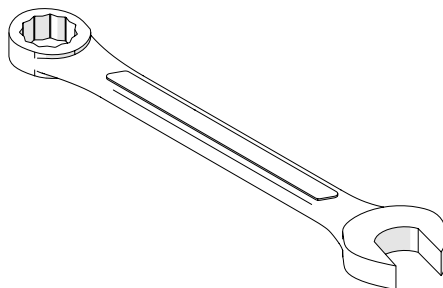


Fig. 6 - 16 mm wrench

A 15 mm wrench and 16 mm wrench (*not supplied*) are required when removing and/or installing the quick connect fitting of the hose assemblies.

4.3. Cooler

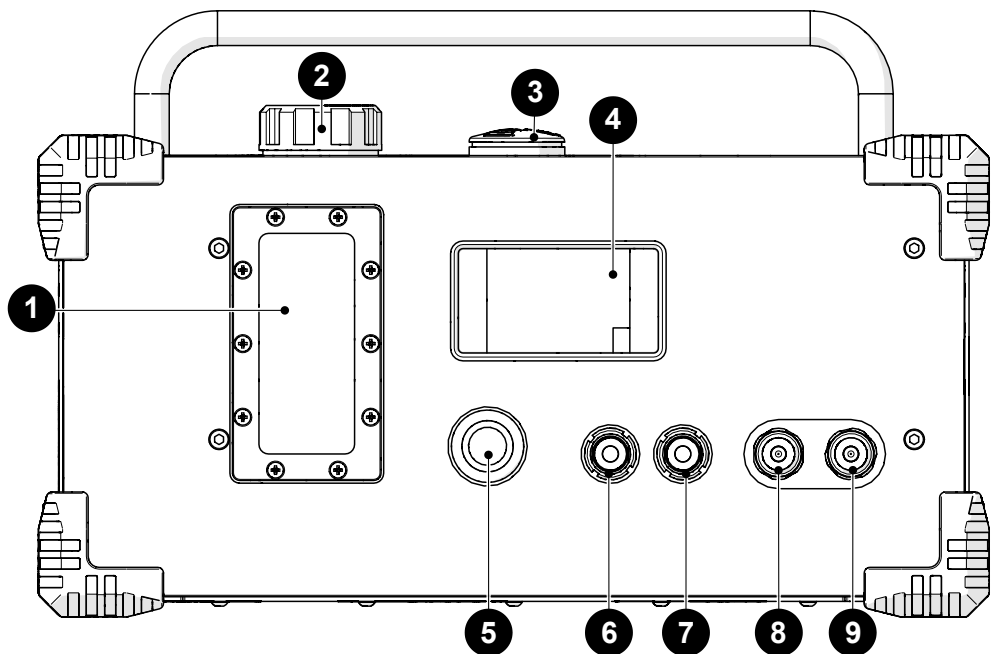


Fig. 7 - Cooler identification

1	Reservoir Window	6	AUX Connection
2	Fill Cap	7	AUX Connection
3	Indicator	8	OUT Port
4	LCD Screen	9	IN Port
5	MODE Button		

NOTE: The Cooler is to be operated with the handle oriented upwards at all times.

NOTE: Ensure the Cooler has adequate unobstructed airflow on all sides during operation.

TIP: Do not operate the Cooler in ambient temperatures above 40°C (104°F). Operation in low ambient temperatures will yield the best cooling results.

The Cooler's pump will not exceed 30 p.s.i.

4.3.1. Reservoir Window

The reservoir window allows observation of the coolant level.

4.3.2. Fill Cap

Unscrew the fill cap to add additional coolant when instructed via the LCD screen. Use only the recommended coolant (*see Recommended Coolant on page 4 for additional details*). Consult MSDS sheet for coolant handling.

4.3.3. Indicator

The chart below describes the various indicator states:

	Solid Red	Standby Mode	System power is connected. An alert will chime every 60 seconds to inform the user that coolant is not flowing.
	Blinking Green	Initializing Cooler	Pump is running and purging air from the system. This process may take up to 150 seconds, depending on umbilical length.
	Solid Green	Normal Operation	The pump is operating normally.
	Blinking Yellow	Shutdown Confirmation	Press the MODE button once during cooling operation to enter Cooler shutdown confirmation. Press the MODE button again to turn off the Cooler. If MODE button is not pressed a second time, the indicator will return to solid green after 5 seconds.
	Blinking Red	Warning	Alarm sounds, and warning condition is displayed on the LCD screen.

4.3.4. LCD Screen

The LCD screen displays all the information and warnings related to the cooling system.

4.3.5. Mode Button

The **MODE** button offers control of the cooling system.

- ▶ When the system is in standby, press the **MODE** button once to activate the cooling system.

- ▶ Pressing the **MODE** button during operation will enter the shutdown confirmation mode. Press the **MODE** button again (*within 5 seconds*) to cease Cooler operation.
- ▶ Press and hold the **MODE** button to display detailed Cooler information on the LCD screen.

4.3.6. Auxiliary Connection

Plug in the power supply to either auxiliary connection. Additional accessories may be connected to the additional auxiliary connection.

4.3.7. In Port

The **IN** port is a quick connect for the red hose, which contains fluid to be cooled.

4.3.8. Out Port

The **OUT** port is a quick connect for the blue hose, which contains cooled fluid.

4.3.9. Draining Coolant

Should removing coolant from the Cooler be required, follow these steps:

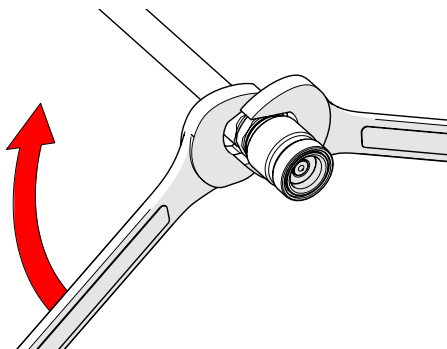


Fig. 8 - Remove quick connect fitting from hose

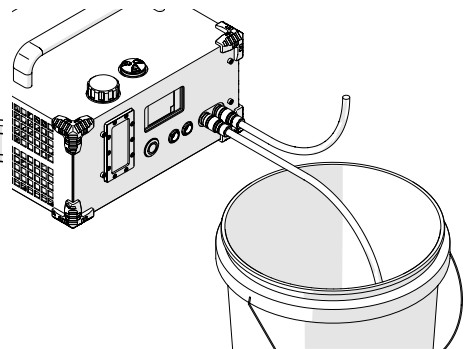


Fig. 9 - Draining coolant

1. Create two hose assemblies with a quick connect fitting on one end and an open hose on the other.
 - ▶ To remove quick connect fittings:
 1. Remove the nut from fitting using 15 mm and 16 mm wrenches
 2. Pry hose off of fitting barb by hand.
2. Connect one open-ended hose to the **OUT** port and place the open end into an appropriate container.
3. Connect the other open-ended hose to the **IN** port to allow the system to vent.

4. Press the **MODE** button to start the pump. Once the low coolant warning appears, press and hold the **MODE** button to override the low coolant warning and continue pumping the reservoir dry.

NOTE: *Ensure coolant is handled in accordance with instructions found in the MSDS sheet.*

NOTE: *Ensure coolant is discarded in accordance with instructions found on the MSDS sheet.*



Fig. 10 - Manual pump override screen

5. Press and hold the **MODE** button to override the low coolant warning and pump fluid from the Cooler (Fig. 10).

4.4. Power Supply

The Cooler is to be powered by a JIREH approved power controller using the auxiliary cable.

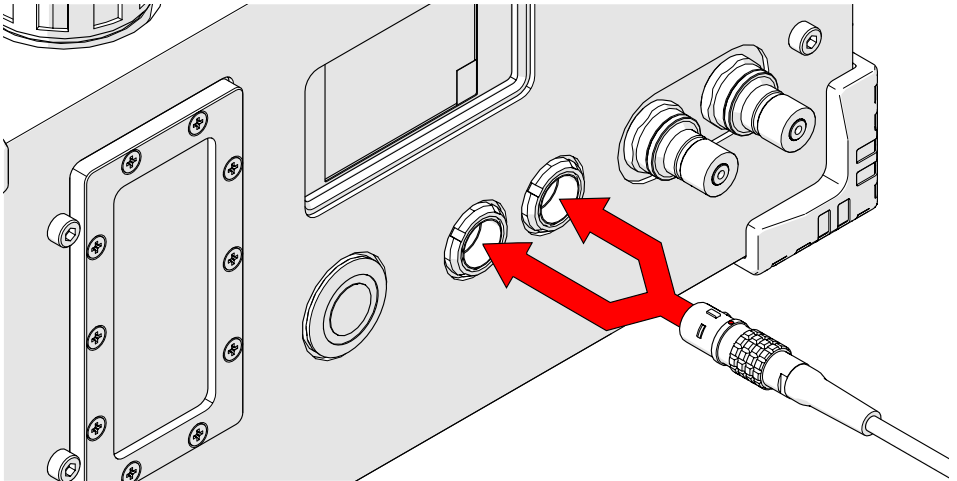


Fig. 11 - Plug into AUX port

1. Align the connector's red dot with the top of the **AUX** port. Press the connector into either **AUX** port on the Cooler (Fig. 11).

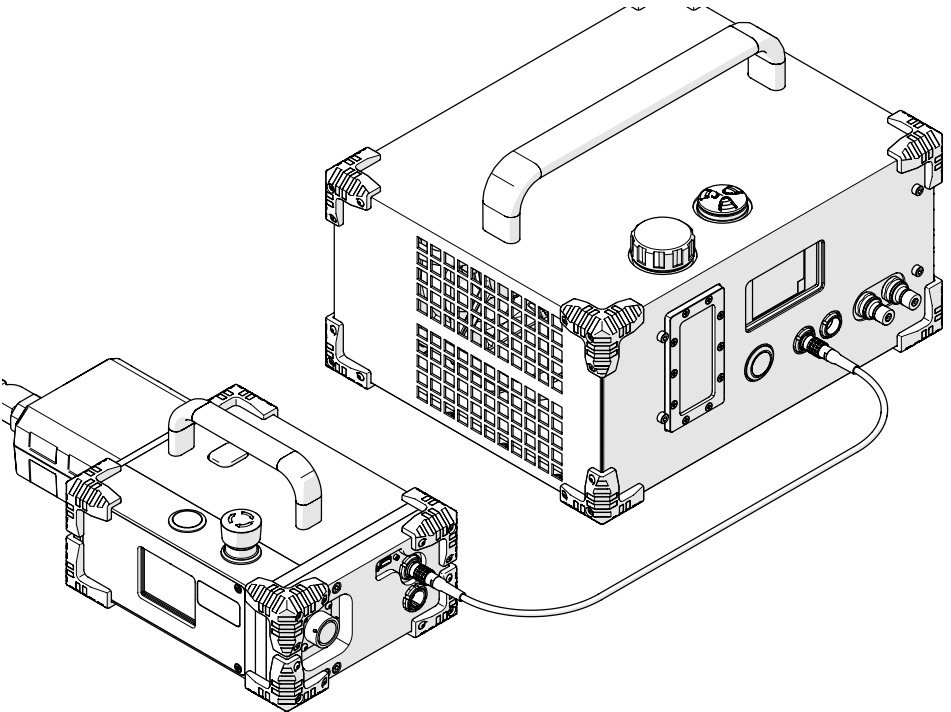


Fig. 12 - Plug into power source

2. Connect the auxiliary cable to an approved power controller (Fig. 12).

4.5. Hose

Blue and red hoses are included with the Cooler system. The hoses are affixed with quick connects that do not drip or leak when connecting or disconnecting.

1. Press the hose fitting onto the Cooler's appropriate quick connect fitting.

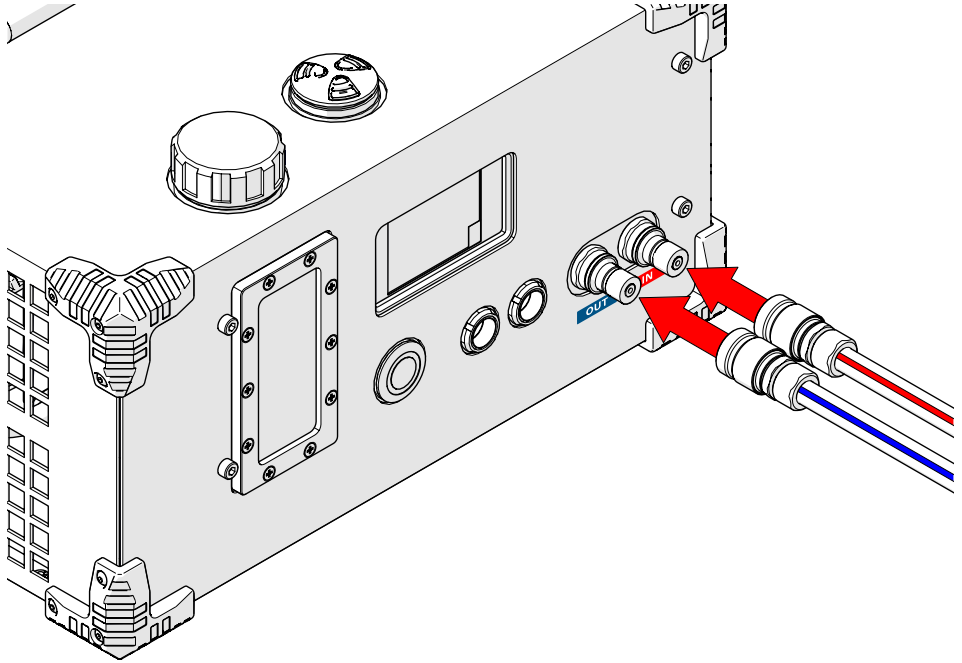


Fig. 13 - Connect red hose to IN port, connect blue hose to OUT port

- ▶ The **RED HOSE** connects to the **IN PORT** (Fig. 13).
- ▶ The **BLUE HOSE** connects to the **OUT PORT** (Fig. 13).

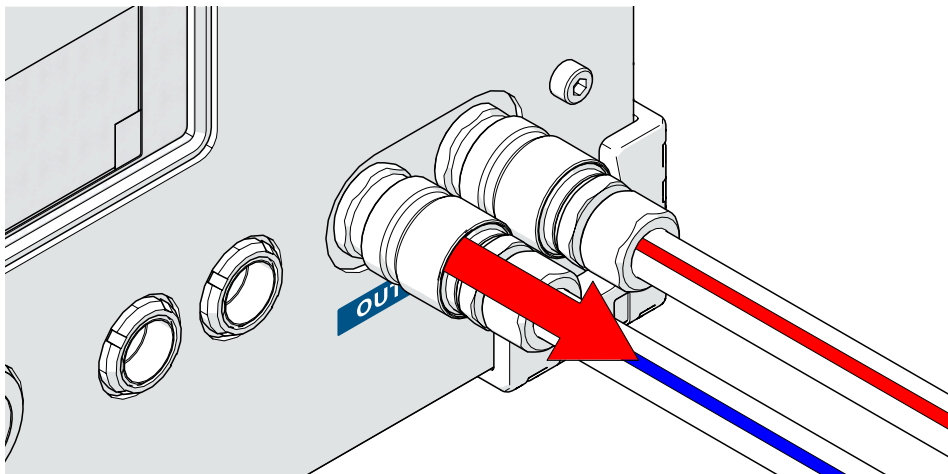


Fig. 14 - Disconnect hose by pulling on sleeve of the quick connect

2. To disconnect a hose, grasp the sleeve of the hose fitting and pull it away from the Cooler (Fig. 14).

OPERATION

5.1. Cooler Startup

To activate the system, follow these steps:

1. Place the power supply in a dry location and plug the power cord into an appropriate power source.
2. Plug the power supply's Lemo connector into one of the **AUX** connections on the Cooler.

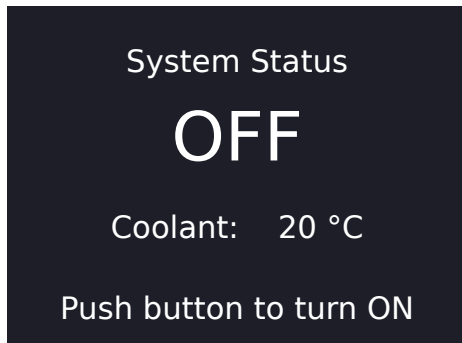


Fig. 15 - Standby screen

3. When power is connected, the Cooler enters standby mode and the indicator appears solid red. The LCD indicates the system status as OFF (Fig. 15).

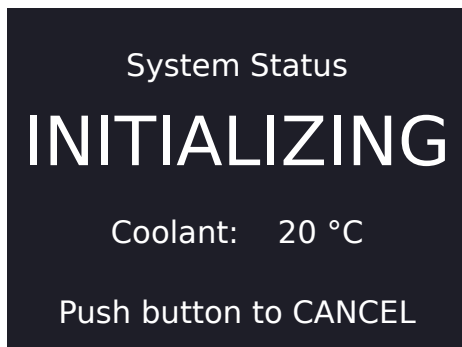


Fig. 16 - Initializing screen

4. To activate the Cooler, press the **MODE** button. Initialization of the system begins, and the indicator will blink green (Fig. 16).

NOTE: *Initializing will time-out if closed-loop flow is not fully established after 3 minutes.*

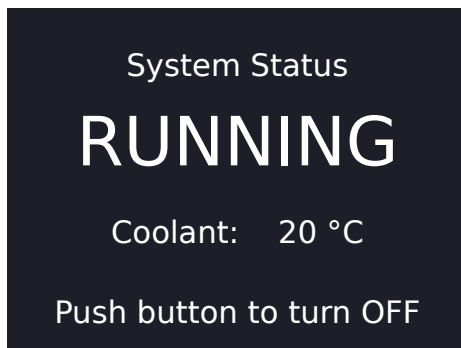


Fig. 17 - Running screen

5. Normal Cooler operation begins when the operating flow is achieved (*Fig. 17*).

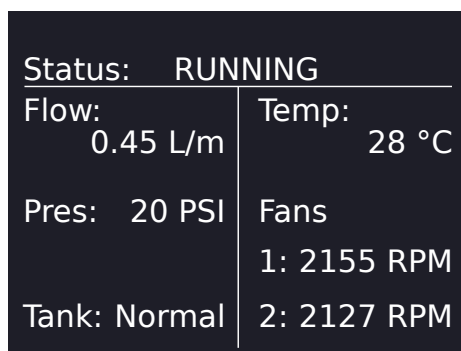


Fig. 18 - Information screen

6. Press and hold the **MODE** button on the cooler to view detailed information on the cooler's LCD screen (*Fig. 18*).

5.2. Cooler Shutdown

To cease Cooler operation and enter standby mode, follow these steps:

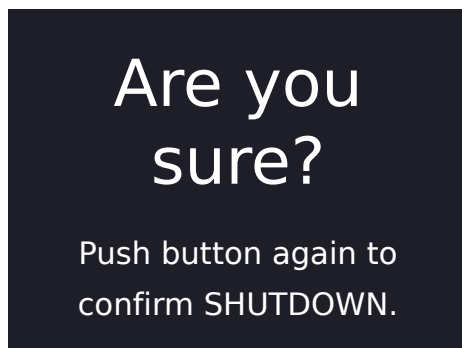


Fig. 19 - Confirmation screen

1. Press the **MODE** button once. A screen confirming Cooler shutdown appears (Fig. 19), and the indicator will blink yellow. If the **MODE** button is not pressed a 2nd time within 5 seconds, the screen reverts to running (Fig. 17).

NOTE: During shutdown confirmation, the system continues to operate normally until the **MODE** button is pressed a second time.

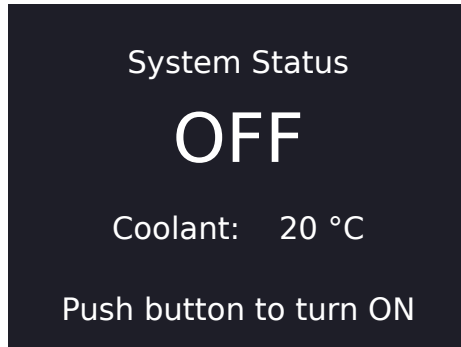


Fig. 20 - Standby screen

2. Press the **MODE** button a second time, and the Cooler enters standby mode (Fig. 20).

5.3. Cooler Warnings

5.3.1. Low Coolant



Fig. 21 - Low coolant warning screen

This warning will display when additional coolant must be added to the system. The Cooler continues pumping fluid when this warning is displayed. Coolant may be added to the reservoir while the Cooler is still in operation (*Fig. 21*).

5.3.2. Insufficient Flow

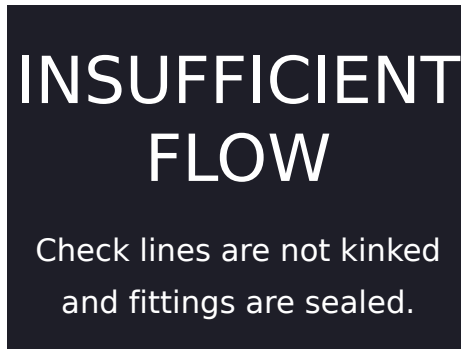


Fig. 22 - Insufficient flow warning screen

If warning appears during initialization (*Fig. 22*):

- ▶ Pump will turn off.
- ▶ User to ensure hoses are straight, unobstructed and contain no kinks or awkward bends.
- ▶ Press the **MODE** button to restart the Cooler.

If warning appears while Cooler is running (*Fig. 22*):

- ▶ Pump will remain on.
- ▶ If hoses can not be quickly adjusted to remove the warning, remove the device relying on Cooler from any hot surface.

5.3.3. Fan Failure



Fig. 23 - Fan failure warning screen

Should this warning appear during operation, immediately remove the device connected to the Cooler from any hot surface (*Fig. 23*). (see *Troubleshooting* on page 21 for additional details).

MAINTENANCE



WARNING! ELECTRICAL SHOCK HAZARD.
Disconnect the power supply when servicing the equipment.

The Cooler system must be maintained according to the following schedule:

Maintenance Item	Frequency
Inspect the power supply and cable for damage. Replace the power supply as necessary.	Every Use
Inspect all connectors for damage or moisture. Straighten bent pins. Dry connectors before using.	Every Use
Clean the radiator with water from a garden hose or carefully with a pressure washer set on low.	As required for optimal cooling performance

TROUBLESHOOTING

Cooler is not cooling adequately	Hose(s) is kinked	Unkink hose(s)
	Radiator is dirty	Rinse radiator with water from a garden hose, or carefully with a pressure washer set on low
Coolant is leaking out of cooler	Radiator hose has ruptured	Replace radiator hose(s)
	Rad hose fitting has loosened	Remove bottom cover, push hose back onto fitting barb, tighten fitting nut
Display shows 'Low Coolant', even though the reservoir is full	Level sensor has failed	Send unit in for repair (see <i>Jireh Industries Ltd. on page 1 for additional details</i>)
Display shows 'Insufficient Flow', even though all fittings are connected properly, and hoses are not kinked	Flow sensor has failed	Send the unit in for repair (see <i>Jireh Industries Ltd. on page 1 for additional details</i>)
Display shows 'Fan Failure'	A fan has failed	Replace fan(s)
	Fan connector has been disconnected	Remove the bottom cover and ensure fan connectors are securely connected

SERVICE AND REPAIR



WARNING! ELECTRICAL SHOCK HAZARD.

Disconnect the power controller when servicing the equipment. The power controller is powered even when the E-Stop push-button is latched in the off position.



WARNING! DO NOT DISASSEMBLE.

No user-serviceable parts. Disassembling any of the components in this product, beyond the instructions in this user manual, could void the regulatory certifications and/or effect the safety of the product.

8.1. Technical Support

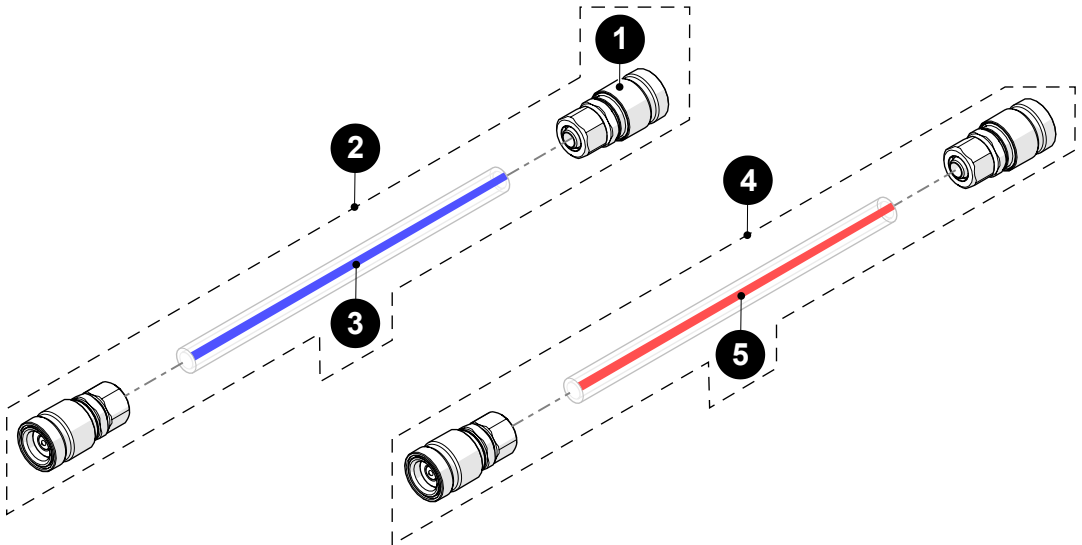
For technical support, contact Jireh Industries (see “Jireh Industries Ltd.” on page 1).

SPARE PARTS

To order accessories or replacement parts for the Cooler
(contact Jireh Industries Ltd. on page 1)

NOTE: These drawings are for parts order. This is not a list of kit contents.

9.1. Hose Spare Parts



BOM ID	PART #	Description
1	DP0056	Hose Fitting
2	DPA004-BLU-0.75	Hose Blue
3	LA139	Hose Blue, 1/4" ID x 3/8" OD, 7.5 m (25 ft)
4	DPA004-RED-07.5	Hose Red
5	LA140	Hose Red, 1/4" ID x 3/8" OD, 7.5 m (25 ft)

Fig. 24 - Hose spare parts

9.2. Cooler Spare Parts

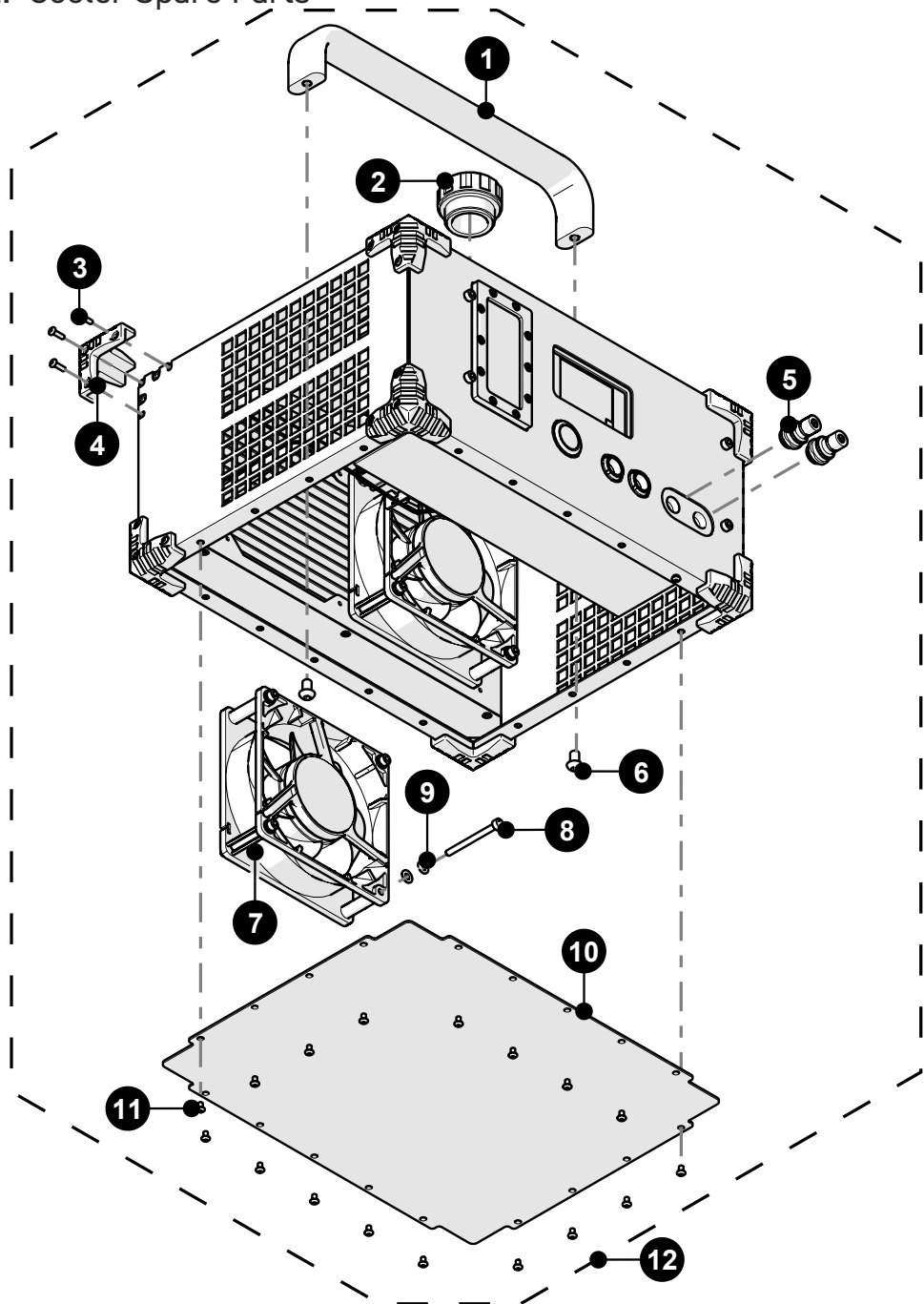


Fig. 25 - Cooler spare parts

BOM ID	PART #	Description
1	EA531	Cooler Handle
2	LA129	Fill Cap
3	MD072-010	BHCS, M3x0.5 X 10 mm, SST
4	DY0011	Cooler Bumper
5	LA125	Quick Connect Fitting
6	MD075-010	BHCS, M6x1 X 10 mm, SST
7	SE006	FAN, 24VDC 120x120x38 99CFM IP68
8	MD050-045	SHCS, M4x0.7 X 45 mm, SST
9	MD302-004	WASHER, M4, DIN 125A, SST
10	DP0011	COVER, RAD BOX
11	MD072-005	BHCS, M3x0.5 X 5 mm, SST
12	DPA002	Cooler

Fig. 26 - Cooler spare parts

DISPOSAL

WEEE Directive

In accordance with European Directive on Waste Electrical and Electronic Equipment (WEEE), this symbol indicated that the product must not be disposed of as unsorted municipal waste, but should be collected separately. Refer to Jireh Industries for return and/or collection systems available in your country.



Consult MSDS for proper coolant disposal.

LIMITED WARRANTY

WARRANTY COVERAGE

Jireh Industries warranty obligations are limited to the terms set forth below: Jireh Industries Ltd. (“Jireh”) warrants this hardware product against defects in materials and workmanship for a period of THREE (3) YEARS from the original date of purchase. If a defect exists, at its option Jireh will (1) repair the product at no charge, using new or refurbished replacement parts, (2) exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product, or (3) refund the purchase price of the product. A replacement product/part assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes Jireh’s property. When a refund is given, your product becomes Jireh’s property.

OBTAINING WARRANTY SERVICE

To utilize Jireh’s warranty service you must ship the product, at your expense, to and from Jireh Industries. Before you deliver your product for warranty service you must phone Jireh and obtain an RMA number. This number will be used to process and track your product. Jireh is not responsible for any damage incurred during transit.

EXCLUSIONS AND LIMITATIONS

This Limited Warranty applies only to hardware products manufactured by or for Jireh Industries. This warranty does not apply: (a) to damage caused by accident, abuse, misuse, misapplication, or non-Jireh products; (b) to damage caused by service (including upgrades and expansions) performed by anyone who is not a Jireh Authorized Service Provider; (c) to a product or a part that has been modified without the written permission of Jireh.

Jireh Industries Ltd.

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Ardrossan AB T8E 2K4
Canada

780.922.4534

jireh.com

All brands are trademarks or registered trademarks of their respective owners and third-party entities.

Changes or modifications to this unit or accessories not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

All specifications are subject to change without notice.

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jireh.com