



# G40

## With 4 x Submersible Pumps

### Instruction Manual

**KL13499**



**KegLand Distribution PTY LTD**

**[www.KegLand.com.au](http://www.KegLand.com.au)**

 **WARNING** 

**IF THE GLYCOL CHILLER HAS JUST BEEN MOVED DO NOT TURN ON UNLESS THE GLYCOL CHILLER HAS BEEN STANDING UPRIGHT FOR 24 HOURS. FAILURE TO DO SO WILL VOID WARRANTY. STAND THE GLYCOL CHILLER IN THE UPRIGHT POSITION FOR 24 HOURS BEFORE PLUGGING INTO THE MAINS SOCKET**

 **WARNING** 

**ENSURE THAT THERE IS ALWAYS ATLEAST 100mm OF CLEARANCE ON EACH SIDE OF THE GLYCOL CHILLER TO ALLOW ADEQUATE AIRFLOW. NOT ALLOWING ADEQUATE VENTILATION WILL REDUCE PERFORMANCE, INCREASE POWER CONSUMPTION AND VOID WARRANTY**

 **WARNING** 

**THIS GLYCOL CHILLER IS NOT INTENDED FOR COOLING WORT FROM BOILING TEMPERATURES. USING THE CHILLER TO COOL FROM BOILING TEMPERATURES COULD OVERLOAD THE COMPRESSOR AND VOID WARRANTY**

 **WARNING** 

**DO NOT RUN THE PUMPS DRY OR ALLOW THE RESERVOIR TO ICE OVER. ENSURE THE PUMPS ARE ALWAYS SUBMERGED WHEN IN OPERATION. RUNNING DRY OR INCREASED RESISTANCE DUE TO ICE FORMATION IN THE RESERVOIR CAN DAMAGE THE PUMPS.**

**Important**

**Before Installation:**

1. Let the glycol chiller sit for at least 24 hours after delivery or after sitting on its side before turning the unit on.
2. Ensure there is adequate ventilation (at least 100mm on each side of the glycol chiller)
3. Check for any signs of damage which may have occurred during shipping

Remove the top service cover of the G40 by removing the 4 screws holding it in place. Under this cover you will find an IEC cable, castor wheels and screws, brass push in fitting for the drainage pipe and an STC-1000 instruction manual.

**Assembly**

**Assemble the Reservoir Drainage Outlet**

Attach the ½ inch brass fitting onto the outlet/drainage pipe. This brass fitting is a push fitting and can be attached by firmly pushing the ½ inch brass fitting onto the pipe and then pulling back to ensure the fitting is secured into place.



To remove this ½ inch brass fitting from the drainage pipe, pull the blue collar towards you while pulling on the brass fitting. Do not rotate the brass fitting as you try and remove it as this can result in it cutting the drainage pipe and it not sealing upon reassembly.



**1. Pull blue collar towards you**

**2. Pull brass fitting towards you**

**Install the castor wheels (Optional)**

- Make sure the G40 is empty
- Carefully lay the G40 on its side on a soft surface such as carpet, cardboard or a towel
- Attach each castor wheel to the base of the G40 using 4 screws
- Install the two locking castor wheels at whichever position will be most accessible for you.
- Position the G40 back upright and leave for a minimum of 1 hour before turning it on to allow the refrigerant to settle.

**Install the temperature probes**

Simply push the temperature probe male connector into the socket underneath each temperature controller.



**Attach hosing to the IN and OUT ports for each fermenter**

This G40 has 10mm barbs as standard for the inlet and outlet of each pump. 10mm ID x 15mm OD Heavy Duty Silicone Tube (KL18142) is suitable to be used with these barbs. Simply push the hose over the IN and OUT barbs under the temperature controller you wish to use and secure with a clamp.

For best performance, insulate the hosing between the G40 and the fermenter and try and minimise the distance between the G40 and fermenter.

### Fill the Reservoir

The G40 can be operated with either just water in the reservoir or both water and glycol to reduce the freezing point of water.

**IMPORTANT: If you are only using water in the reservoir and not glycol then do not set the temperature of the reservoir below 2°C.**

Fill the reservoir until the copper cooling coils are fully submerged with water if the reservoir is set at 2°C or an appropriate concentration of glycol solution if dropping the reservoir below 2°C according to the table below. The amount of glycol required to be added to the reservoir depends on the desired set temperature of the reservoir which is dependent on a number of factors including heat ingress into the entire system, insulation of the glycol lines, ambient temperature, the number of kegs being cooled and the temperature of the kegs. Use the table below to determine what percentage of glycol you require.

Glycol Volume %	Freezing Point °C	Specific Gravity at 21°C
0	0.0	1.000
10	-3.3	1.006
20	-7.8	1.015
30	-13.3	1.024

You can measure the glycol percentage using a calibrated refractometer and comparing to the specific gravity at 21°C in the above table.

We would advise running a 20% glycol solution which will result in around a -8°C freezing point. However, if you do not have a jacketed fermenter or have the fermenter in a very warm environment you can run it at a higher glycol concentration. The pumps are not designed to be run with a glycol concentration higher than 30% hence it is not advised to exceed this glycol concentration. Doing so may damage the pumps.

## Changing the Reservoir Set Temperature on the STC-1000

1. Hold the 'S' button until F1 displayed on the screen.
2. Press 'S' again which will enter the temperature adjustment mode
3. Then simultaneously hold 'S' and the up/down button to alter the set temperature of the reservoir.
4. The reservoir set temperature will be saved and the actual measured temperature of the reservoir will be displayed after a few seconds.

To change any settings on the temperature controller for the reservoir such as temperature hysteresis or calibration refer to this instruction manual

<https://www.kegland.com.au/media/pdf/stc1000%20instructions.pdf>



## Submersible Pump Temperature Controller Operation Turning On/Off the Temperature Controllers

To turn the temperature controller On/Off, hold the 'Down' button for 3 seconds.



## Temperature Controller Set Point Adjustment

5. Hold the 'Up' button for 3 seconds. A number will begin flashing on the display, this flashing number is your set temperature.
6. Press the 'Down' button to decrease the set temperature and press the 'Up' button to increase the set temperature.

## Parameter Adjustment

1. Hold the "Up" and "Down" buttons simultaneously for 3 seconds. The first menu code FO will appear on the display.
2. Press the "Up" or "Down" buttons to cycle through the parameters F0-F12
3. Press both the "Up" and "Down" buttons simultaneously to alter the parameter which appears on the display.
4. Press the "Up" or "Down" buttons to change the set value of the parameter selected.

If there is no key operation within 5 seconds then the parameter will be set with the displayed value. The parameters which can be modified are outlined below.

<i>Parameter</i>	<i>Function</i>	<i>Range</i>	<i>Default</i>	<i>Units</i>
F0	SetPoint range	-40.0 – 90.0	10.0	°C
F1	Minimum value for SetPoint	-40.0 – F0	-40.0	°C
F2	Maximum value for SetPoint	F0 – 90.0	90.0	°C
F3	Cooling hysteresis	0.1 – 10.0	0.5	°C
F4	Heating hysteresis	0.1 – 10.0	0.5	°C
F5	Temperature probe calibration	-10.0 – 10.0	0	°C
F6	Cooling start delay	1 – 10.0	1	Minute
F7	Cooling start delay after power failure	0 – 300	10	Second
F8	Heating start delay	1 – 10.0	1	Minute
F9	Heating start delay after power failure	0 – 300	10	Second
F10	Maximum temperature before alarm activation	F11 – 99.9	90.0	°C
F11	Minimum temperature before alarm activation	-45.0 – F10	-40.0	°C
F12	Alarm delay	1 – 120	1	Minute

## Testing the System

### Leak Test

1. With the G40 unplugged fill the reservoir until the copper cooling coils are submerged.
2. Look for any signs of leak around the exterior of the G40.
3. Attach 10mm ID silicone tube (KL18142) to the first OUT barb and either loop this back into the IN barb or run it to a fermenter and then back into the IN barb.
4. Plug the G40 in using the provided IEC cable and turn the red power switch on.
5. Turn the temperature controller on which is above the IN and OUT barbs being tested and set the temperature to 2°C (or a lower temperature than the ambient temperature).
6. Check that the pump is operating correctly and there are no leaks.

Repeat the above steps for all four temperature controllers to determine whether all pumps are working correctly and there are no leaks in the system.

Prior to putting any beer into the fermenter for cooling you should leak test your whole system to ensure that there are no leaks in the system including on the inlet/outlet of the fermenter itself.

### Cooling Test

1. With the reservoir filled, set the temperature on the STC-1000 above the IEC socket to 2°C
2. Measure how long it takes to drop the temperature to 2°C from ambient temperature to get a rough guide of the cooling factor of the glycol chiller when not under load.

After all testing is complete empty the reservoir by unscrewing the 1/2" nut on the drainage port. Then fill with correct concentration glycol solution and set the temperature on the STC-1000 to the desired reservoir temperature.

If water is being used then the water does not need to be emptied from the reservoir after testing.

The system has now been tested for cooling and leaks and is ready to be used to cool a fermenter.

### Setup and Operating Procedure for Each Fermenter

1. Prior to connecting the G400 to the fermenter ensure that the temperature of the liquid in the fermenter is below 50°C. The G400 is not designed to cool from boiling to 50°C and instead normal tap water should be recirculated through the cooling coils first to drop the temperature of the liquid.
2. Connect a suitable length of silicone tubing for your application to the desired outlet (OUT) port on the G40.
3. Connect the silicone tubing to the cooling coil on your fermenter.
4. Run a length of silicone tubing from the fermenter back into the inlet (IN) adjacent to the outlet chosen on the G40.
5. Insert the temperature probe into the thermowell of the fermenter being controlled.
6. Set the temperature on the temperature controller to the set temperature of fermentation
7. Set the temperature on the STC-1000 for the reservoir to -2°C if using glycol. **If you are only using water in the reservoir and not glycol then do not set the temperature of the reservoir to below 2°C.**

When under load such as when cooling a fermenter, it can take a longer time than the cooling factor you have measured to cool the reservoir down to the set temperature and this time is dependent on a number of variables including and not limited to:

- Jacketing of the fermenter (jacketed or non-jacketed)
- Number of fermenters being cooled
- Ambient temperature
- Heat ingress

### Cooling Fermenters at a Large Distance Away from the G40

The G40 is capable of cooling four 60L jacketed fermenters. However, if your fermenter is a large distance away from the G40 then the submersible pumps may not be able to handle this increased resistance. Hence, it is suggested for fermenters at a distance that an external pump be used to transfer the glycol to the fermenter.

1. Connect an external pump to an external temperature controller.
2. Attach tubing to the outlet of the external pump and attach this tube to the cooling coils on your fermenter.
3. Run tubing from the outlet of the fermenter cooling coils back into the reservoir of the G40
4. Set the temperature on the G40 to -2°C (if using glycol) or to 2°C (if only using water in the reservoir).



5. Insert the temperature probe of the external temperature controller into the thermowell on your fermenter.
6. Set the temperature on your external temperature controller to your desired fermentation temperature. This will cycle the pump on and off to supply cold glycol solution only when the temperature of the fermenter increases above the set fermentation temperature.

### **Cooling Large Jacketed Fermenters**

If you are planning to cool jacketed fermenters which are larger than 60L the submersible pumps may not be powerful enough to overcome the head pressure or resistance in the long cooling coils within the fermenter.

If planning to cool large jacketed fermenters we would suggest using a more powerful external pump or using an industrial glycol chiller.

### **MAINTENANCE**

If the glycol solution has been stored for an extended period of time then it is suggested to replace the solution, despite glycol having antimicrobial properties. It is recommended to replace the glycol if it has changed colour dramatically or between 12 to 24 months of usage. To replace the glycol solution empty the reservoir using the drainage port and then refill with the required concentration of glycol using a refractometer to confirm the concentration.

Clean out dust from the radiator periodically to maintain optimum efficiency.

## Heating Relay Instructions



**WARNING**

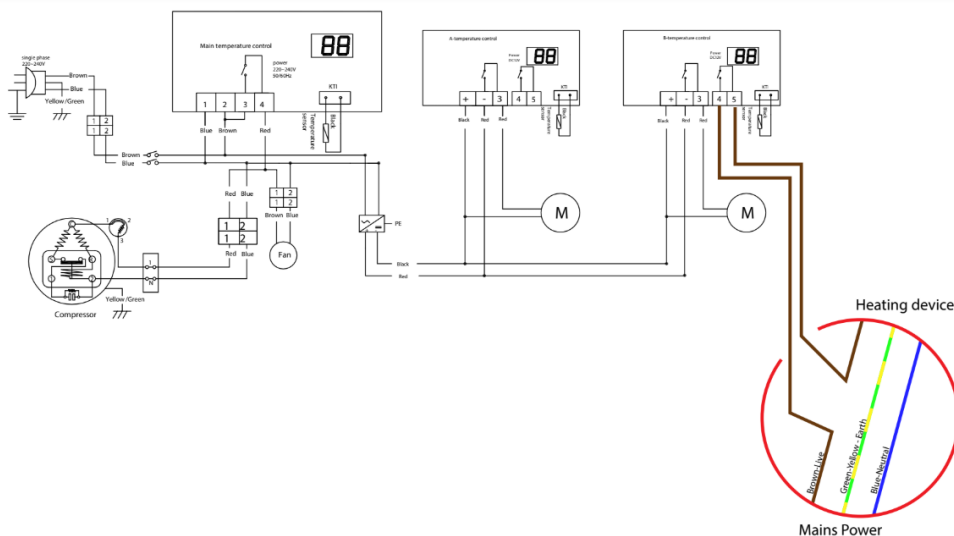
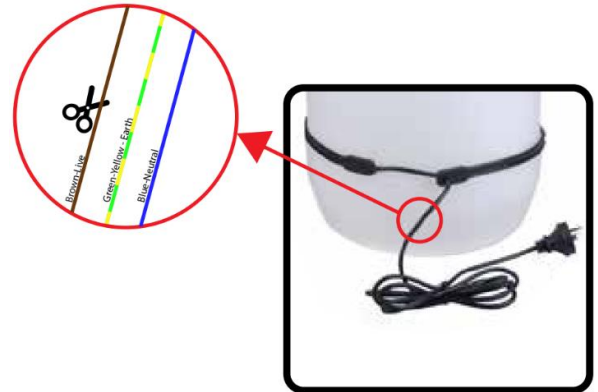
**ENSURE ALL WORKS ARE CARRIED OUT BY OR INSPECTED BY A CERTIFIED ELECTRICIAN**

Each temperature controller contains heating terminals as standard which a heating device can be wired into. To do this a certified electrician can use the following steps:

**Step 1.** Unplug the power source for the heating device and the G40 chiller.

**Step 2.** Locate and cut the active wire to your heating device (see diagram to the right). Most active wires are brown or red but this should be double checked with an electrician.

**Step 3.** Divert the active wire into the blade connects (terminals 4 and 5 shown below)



**Step 4.** Plug both the G40 and heating device into mains power

NOTE: This is the same process for all four temperature controllers. So repeat this step to wire multiple controllers in the same way.

## **Warranty (Australia)**

The G40 with 4 x submersible pumps comes with a 12-month Warranty when sold in Australia.

Warranty does not cover product failure as a result of installation or operating procedure not in accordance with installation and operating guidelines as described in the instruction manual.

To lodge a warranty claim in Australia please forward as many visual pieces of supporting information and a detailed description of your issue to [beer@kegland.com.au](mailto:beer@kegland.com.au)

If you purchased your unit from an international distributor, you will be required to go through their warranty claims process.

*For a full terms and conditions, please visit our website here -> [Terms & Conditions](#)*