Zip Scientific GC Chaser

Installation and User Guide

PN M003
Revision 1.0

Description
Zip Scientific GC Chaser, GC Cooling Accessory

Zip Scientific Part Numbers
121385-120: 120VAC, 5 amp
121385-240: 240VAC 5 amp

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Revision History		
Revision Level	Release Date	Comments
1.0	June 2007	Initial Release

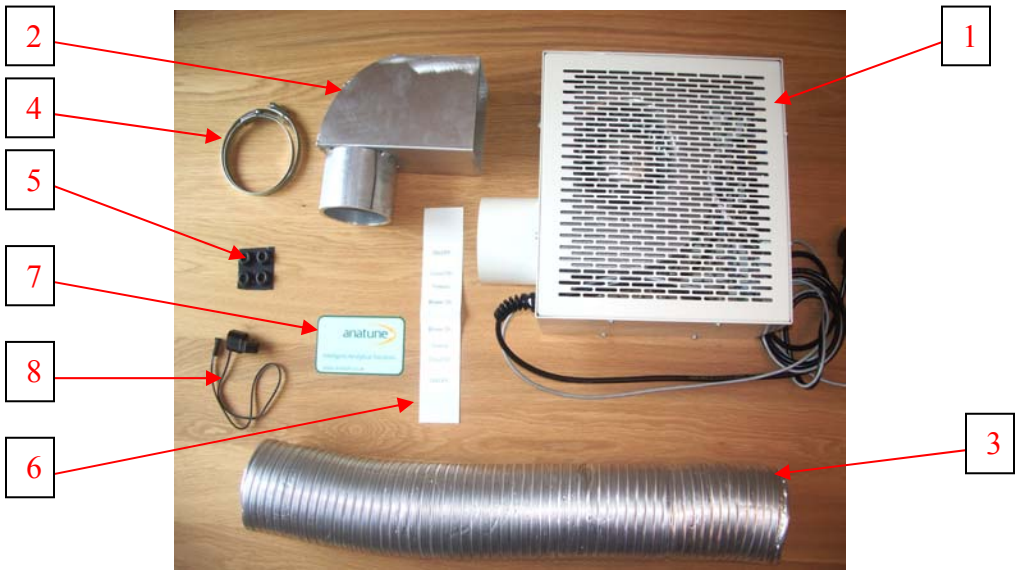
Table of Contents

1. Before you start.

1.1 Packing Slip - Confirm Delivery of All Parts.

Check the contents of your GC Chaser Box to make sure you have all the necessary parts.

Item	Packing List	Qty
1	Control Box	1
2	Air Inlet Adapter	1
3	Flexible Ducting	1
4	Aluminum Tape	2
5	Stick on Feet	4
6	Control Panel Label	1
7	Zip Scientific Label	1
8	Oven Sensor	1



1.2 Site Requirements.

- Functional GC System.
- Laboratory Ambient Temperature Range: 10 - 30 °C.

- Humidity Range: 0 - 90%, non-condensing.
- Power Requirements: 240 V, 5 amps.
- Bench Space adjacent or to the rear of the GC.

1.3 Warnings and Cautions

This section explains the warnings and cautions that should be observed when installing, maintaining or operating the Zip Scientific GC Chaser Oven Cooling Accessory.

Safety information is covered at relevant points throughout the manual. Please read this manual in its entirety before installing or operating the instrument. Should any point remain unclear, contact Zip Scientific LLC for assistance before you proceed with the installation, maintenance or operation of the unit.

The Zip Scientific GC Chaser is designed for installation and use in a laboratory environment by suitably trained personnel.

1.3.1 Warnings

The Zip Scientific GC Chaser is intended for use in laboratories which are equipped for the use of Gas Chromatography (GC) equipment without risk. In particular, provision must be made for the storage of solvents in flame-proof cabinets and personnel must wear protective clothing and eye protection at all times.

Both the GC Chaser and the host GC must be disconnected from the mains power supply until installation of the equipment is complete.

There are potentially hazardous voltages present inside the host GC and inside the GC Chaser control box. Switch off the GC and the GC Chaser and disconnect the mains power supply before removing the host GC or GC Chaser covers.

The GC Chaser is supplied with an oven sensor clip. This must be clipped onto the host GC column oven heater supply wire during installation for correct operation. When connecting this inside the rear cover of the host GC system potentially hazardous electrical supplies will be present. The host GC must be switched off and disconnected from the mains power supply before connecting this clip to avoid electrical shock or burns. The rear cover must be in place before reconnecting the mains supply and switching on the GC.

The operation of the GC Chaser requires that the centrifugal fan inside the control box rotates at high speed to achieve fast cooling rates. Never remove the covers of the GC Chaser whilst the unit is switched on or connected to the electrical mains.

The operation also requires that the cooling air is ducted from the GC Chaser through flexible ducting into the air inlet duct of the host GC oven. Never turn on the unit or leave the unit connected to electrical mains power when the flexible ducting is disconnected. Never place hands or other objects inside the cooling air outlet duct on the GC Chaser since serious injury could result.

Always turn the unit off and remove from the mains power supply before moving the unit, removing the flexible duct tubing or performing maintenance on any of the connections.

Parts of the host GC can be hot and hot air can be vented from the rear of the GC instrument during cool down. Ensure the GC has been allowed to cool down for sufficient time and that the GC oven fan is off before installing or carrying out maintenance on the duct and other connections at the rear of the GC to avoid burns.

The flexible duct tubing supplied with the GC Chaser may have sharp edges at the openings on each end or may become sharp if cut or damaged in any way. Always wear suitably padded protective gloves when installing or carrying out maintenance on the flexible duct connections etc to prevent cuts and grazes.

Hot air and debris such as fragments of fused silica column may be present in the GC Column Oven. Always switch off the GC Chaser Power Switch before opening the host GC Column Oven door.

1.3.2 Cautions

Ensure that the cooling air supply duct is clamped securely in place at both ends with the Aluminum tape provided, that the GC Vent/Air Inlet adapter is pushed firmly into the host GC air inlet duct and that the GC Chaser control box is positioned so that lab air can flow freely into the air intake of the internal centrifugal fan.

The GC Chaser control box should not be switched on with the oven sensor disconnected. Damage to the instrument may be caused.

Only connect the oven sensor clip over one of the two host GC oven heater wires, the GC Chaser will fail to function if not connected correctly or if connected across both oven heater wires.

Position the GC Chaser control box away from hot air exhausts from other GC systems or other sources of heat such as radiators etc. These heat

sources will detrimentally affect the cool down rate and minimum oven temperature that may be achieved.

1.4 Warranty.

GC Chaser Warranty

Zip Scientific LLC provides limited warranty for the GC Chaser product for a period of 1 year from date of purchase.

If any defects in hardware or workmanship are encountered during the warranty period Zip Scientific LLC will repair or replace the defective parts as appropriate.

Warranty is limited to products used in the prescribed manner consistent with intended use.

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1.5 Product Registration

You must register your GC Chaser in order to validate warranty and receive technical support. You may do this by filling out the information below and email to:

info@zipsci.com

GC Chaser Product Registration Form

Name	
Title	
Company	
Address	
Telephone	
Fax	
email	
GC Model	
GC Chaser Serial Number	
Purchase Date	
Install Date	

2. Installation Guide

2.1 GC Chaser: What is it?

The GC Chaser is an auxiliary cooling system designed to reduce the cool-down time between GC runs. Add the GC Chaser to your GC system and the GC will cool faster, reducing inject to inject times, performing more analysis, achieving higher sample throughput, all with reliable, rugged, field proven GC technology.

As seen in Figure 1, the GC Chaser consists of a control box, air inlet adapter and flexible duct tubing. It is rugged and reliable. The control box contains a control circuit that is controlled by the host GC. There are two electrical connections. The first connection goes to the GC; the second plugs in to a standard electrical outlet.

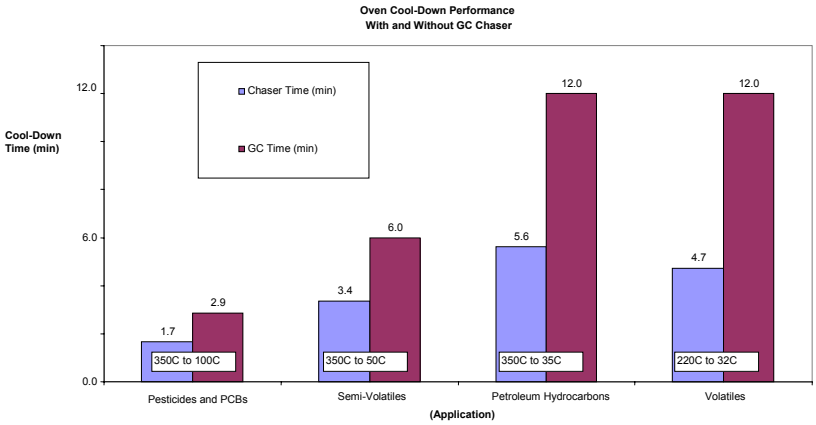
Caution!

Hot air can be exhausted from the GC oven. Follow manufacturer's recommendations for proper ventilation precautions.

The GC Chaser monitors the GC oven activity and controls the centrifugal blower accordingly. There are absolutely no buttons, controls, or software associated with the GC Chaser. It is completely transparent to the operator. No training is required. Set the method conditions on the host GC and the GC Chaser will take care of everything else automatically. The GC Chaser easily installs in minutes.

2.2 GC Chaser: What does it do?

The GC Chaser boosts the airflow through your GC oven during cool-down. Figure 2 shows typical cool-down rates for a commercial GC and the performance provided when the GC Chaser is installed. All of this can be done with standard GC columns.



2.3 GC Chaser: How does it do it? - Sequence of Operation.

Power Switch On - The GC Chaser enters standby and the Green Circuit On LED illuminates.

Standby - GC Chaser searches for a heat cycle. The GC Chaser will not activate unless it has detected a heat cycle. This prevents the unit from turning on when the oven is turned off to change columns etc.

Heat Cycle Detected - Once an oven heat cycle is detected the GC Chaser searches for a cool-down cycle and activates the blower when the temperature program is completed. The blower is now on rapidly cooling the GC oven back to the programmed initial temperature and the Green Blower On Neon is illuminated.

Oven Equilibration - When the oven has completed the cool-down cycle the GC Chaser detects a heat pulse as part of the initial temperature stabilization process and turns off the blower. The GC Chaser now enters a timeout period for two minutes and the amber Timeout Delay LED is illuminated.

Timeout - The blower is deactivated for 2 minutes to allow the GC oven to stabilize and wait for sample injection. After the 2 minute timeout the GC Chaser enters standby and searches for a heat cycle.

Sleep Mode - If the GC Chaser does not detect completion of the cool-down cycle after 15 minutes it will turn the blower off and enter the Standby Mode.

2.4 GC Chaser: Optimizing your oven performance.

Optimizing your oven's performance with the GC Chaser is easy.

- Position the GC Chaser close to the GC
- Arrange the duct to be short and straight
- Secure the duct between the GC Chaser and the Air Inlet Adapter with the Aluminum tape provided.
- Keep the air intake area free of obstructions.

2.5 GC Chaser: Installation.

Tip! Start by giving yourself plenty of workspace. The GC should be unplugged and positioned for plenty of access to the rear of the GC.

Turn GC Off! Disconnect GC system from electrical service.

You must unplug the GC to guard against electrical shock.

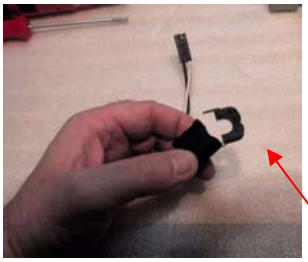
- Unpack the GC Chaser and place the components on the bench top.
- Turn off your GC, **unplug it from the electrical service**, and allow oven, injector, and detector to cool down.

2.5.1 Ensure the GC is turned off and UNPLUGGED from the mains.

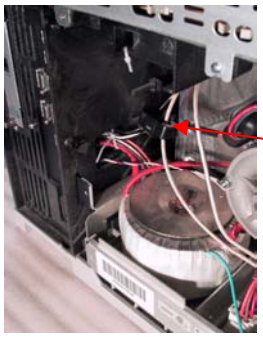
2.5.2 Position the GC to provide easy access to the rear panel.

2.5.3 Remove the rear panel of the GC according to manufacturer's manual.

2.5.4 Locate the two white heater wires inside the rear of the GC. Install the oven sensor by clipping it around either one (but not both) of the heater wires. Route the leads through the electronics bay securing with a plastic tie wrap and then out through the rear vent holes. If installing onto a 7890 route via the small rectangular hole below the rear cover as shown in the diagram below.



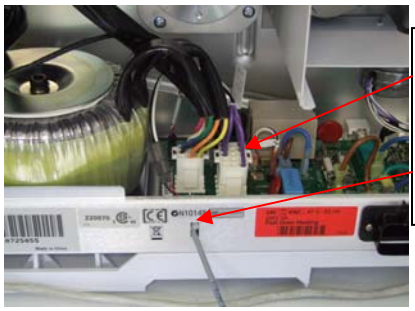
Oven Sensor Clip.



6890
Install the sensor clip around one of the white heater wires as shown.

7890 - 1
Remove the back panel & unplug the 2 transformer connectors.

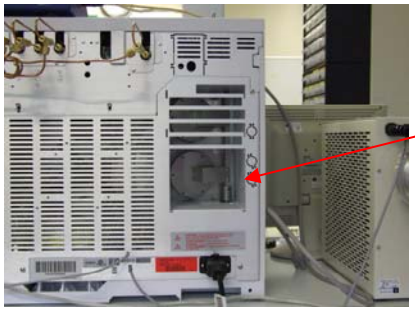
7890 – 2
Clip the oven sensor on one heater wire.



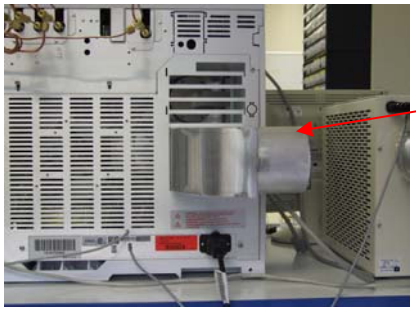
7890 - 3
Replace the transformer connectors and route the sensor cable through the rectangular hole.

2.5.5 Replace the rear panel.

2.5.6 Install the air inlet adapter into the air inlet duct on the rear panel as shown by slotting the adapter into the duct and pushing until it reaches a stop. The adapter may be installed so that the flexible duct tubing enters to the left or right of the GC to allow most convenient positioning of the control box.

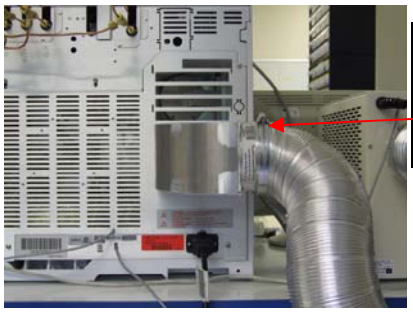


Oven Air Inlet Duct

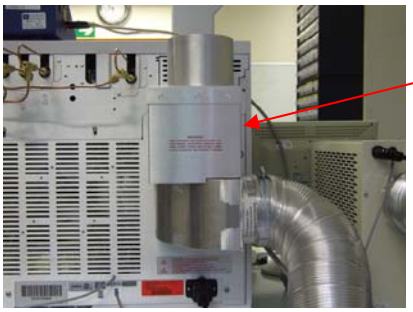


Push the Vent Adapter into the GC air inlet duct

2.5.7. Push the flexible duct over the adapter and secure with a piece of the aluminum tape. If one is available refit the hot air exhaust deflector.



Fit Duct & Jubilee Clip.



Fit Exhaust Deflector

2.5.8. Position the control box at a convenient position on the bench adjacent to or to the rear of the GC ensuring that the centrifugal fan air intake is not obstructed by the side of the GC and has at least 300mm clearance. Attach the stick on feet, Control Box label and Zip Scientific Sticker in the correct orientation to the now sited control box. Keep the site as close to the rear of the GC as possible preferably positioned so that the duct tubing is kept as straight and as short as possible.

Attach the 4 stick on feet to the bottom of the unit.

Attach the Zip Scientific Sticker and Control box

2.5.9. Connect the other end of the flexible duct to the GC Chaser control box and secure with aluminum tape.

2.5.10. Connect the oven sensor cable from the control box to the oven sensor and route the cable to keep the installation tidy.

2.5.11. Ensure the GC Chaser power switch is off then Plug the GC Chaser control box into a convenient mains outlet and switch on the mains outlet.

2.5.12. Follow the Check out procedure below to test your newly installed GC Chaser System for correct operation.

2.6 GC Chaser: Check out procedure.

Hot air can be exhausted from the GC oven. Follow manufacturer's instruction for proper ventilation precautions.

Review entire procedure before performing system check.

2.6.1 Make sure that you have carrier gas flowing to installed columns and check the upper temperature limit of installed column(s) and oven maximum temperature setting in the loaded method.

2.6.2 If any problems arise simply switch the host GC and GC Chaser **OFF** immediately and contact Zip Scientific for advice.

2.6.3 Switch the host GC on and wait for the system to complete the start up routine.

2.6.4 Set the GC oven temperature to 60 °C.

2.6.5 Turn the GC Chaser on and confirm that the small green 'Circuit On' LED is illuminated, wait 2 minutes and verify that the GC oven temperature remains stable at 60°C. The blower, green 'Blower On' neon and amber 'Time Out' LED should remain off.

2.6.6 Set the GC oven temperature to 100ºC.

2.6.7 Once the GC oven temperature has stabilized and equilibrated set the oven temperature to 40ºC.

2.6.8 Observe that the GC Chaser activates the centrifugal blower and that the GC oven starts to cool down. The large green 'Blower On' neon should now illuminate.

2.6.9 Check to see that the GC Chaser automatically turns the blower off when the oven has reached or gone slightly below the new lower set point. The green 'Blower On' neon should go off and the amber 'Time Out' LED should now illuminate.

2.6.10 The GC oven should now stabilize at the lower temperature set point as normal. The blower should remain off and the Amber 'Time Out' LED should remain illuminated for ~2 minutes and then go out.

2.6.11 Set the GC oven temperature to 100 °C and verify that the temperature climbs to setpoint and stabilizes. The GC Chaser blower and 'Blower On' neon should remain off as the temperature reaches 100 ºC and stabilizes.

2.6.12 Wait 2 minutes to verify that the GC Chaser blower remains inactive and the oven temperature is controlled at set point. The amber 'Time Out' LED should now have gone out since 2 minutes will have elapsed.

2.6.13 CHECK UPPER TEMP LIMIT OF INSTALLED COLUMN(S).

2.6.14 Check carrier gas flow.

2.6.15 Set method parameters.

2.6.16 Run your normal GC method and observe the GC Chaser operation. Monitor the system blower, 'Blower On' neon, 'Time Out' LED and oven temperature to confirm proper operation.

Testing is now complete. You may continue to use your new GC Chaser system and improve your GC instrument's productivity.

2.7 GC Chaser: Troubleshooting.

No serviceable parts inside.

Symptom	**Possible Cause**	**Corrective Action**
All indicator lights off.	No electrical power.	Make sure unit is plugged in. Check Mains Plug Fuse.
System does not activate immediately at completion of temperature program.	No electrical power.	see above
	There is a 5 second delay from the end of the temperature program before the GC Chaser activates.	This is normal.
	There is a 2 minute "time out" when the oven reaches initial temperature to allow the oven to equilibrate. The system will not activate during this period.	Contact Zip Scientific if the 2 minute time out period is not compatible with your method.
	The Oven Sensor Clip has come lose or is disconnected. The Oven sensor Clip has been incorrectly installed on BOTH wires.	Check the connection on the sensor lead and check that the Oven Sensor Clip is still firmly clipped on ONE column oven heater wire only. Secure the clip with electrical insulation tape if required.
Circuit breaker tripped/ Fuse Blown.	Short circuit.	Unplug system and measure resistance to GC chassis. Contact Zip Scientific.
Cool Down Rate or minimum achievable oven temperature is worse than expected.	The connection between the Chaser control box and the Oven inlet duct is loose or damaged.	Remake duct connections, tighten aluminum tape and push home the GC vent adapter.
	The control box air intake is blocked, obstructed or is close to a source of hot air.	Ensure the control box is positioned so there is no obstruction near the air intake side and it is away from a source of hot air such as GC hot air exhaust or radiator.

8.0 GC Chaser: Replacement Parts.

See page 4 for identification of parts.

Item	Part Number	Packing List	Qty
2	4290701	Air Inlet Adapter for 6890/7890	1
N/A	6171701	Air Inlet Adapter for 5890	1
3	7002140	Flexible Ducting	1
4	277-884	Aluminum tape	1
N/A	7000102	Chassis Bolts (Pack)	1
5	7002060	Stick on Feet	1
6	7002080	Control Panel Label	1
8	7002010	Oven Sensor	1