

# Agilent FID Maintenance Kit Instructions

For 7890, 7820, 6850, and 6890 Series GCs

## Overview

This document contains instructions for two different FID Maintenance Kits.

Please review the whole document before starting the procedures.

**Table 1** Available FID Maintenance Kits

Part Number	Description	Purpose
G1531-67000	FID Maintenance Kit for “ <b>Cleaning</b> ” <b>Contains:</b> Instructions, ignitor glow-plug, 2 PTFE collector insulators, FID housing gasket, cleaning brushes, jet cleaning wire	Key parts are replaced, most are cleaned per the instructions provided. Jet and column adapter ordered separately. More labor intensive – about 1 hour labor.
G1531-67001	FID Maintenance Kit for “ <b>Rebuilding</b> ” <b>Contains:</b> Instructions and a complete FID collector assembly	The entire collector assembly including the ignitor is replaced. The jet and column adapter must be ordered separately – about 15 minutes labor.

## Materials Required for FID Maintenance

- One of the two maintenance kits listed in [Table 1](#).
- The appropriate FID Jet for your configuration and application. See “[Selecting a Replacement FID Jet](#)” on page 2.
- T20 Torx screwdriver.
- 1/4-inch nut driver.
- Tweezers.
- 1/4 x 5/16-inch wrench.
- 7/16 x 9/16-inch wrench if adaptable FID.



- Lint-free gloves.
- Clean cloth.
- Reagent grade methanol and glassware.
- Ultrasonic bath (optional).
- Aqueous detergent.

## Preparing the GC for Maintenance

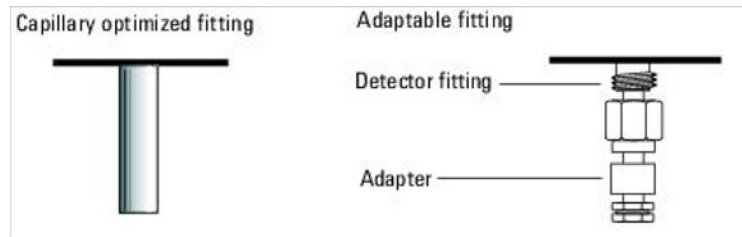
Load a GC Maintenance Method if you have one prepared, or do the following:

- 1 Set the oven temperature to 35 °C. When the temperature is reached, set the oven to “OFF”.
- 2 Set the FID flame to “OFF”.
- 3 Set the FID temperature to “OFF”.
- 4 Remove the column from the FID.

## Selecting a Replacement FID Jet

### Determine your type of FID

Your FID will be one of two types: “Capillary Optimized” or “Adaptable” (for capillary and packed columns).



### Capillary Optimized Jets

ID	Jet type	Part number	Jet tip id	Length
1	Capillary	G1531-80560	0.29 mm (0.011 inch)	48 mm
2	Capillary, high- temperature (use with simulated distillation)	G1531-80620	0.47 mm (0.018 inch)	48 mm



**Adaptable FID Jets**

ID	Jet type	Part number	Jet tip id	Length
1	Capillary	19244-80560	0.29 mm (0.011 inch)	61.5 mm
2	Capillary, high- temperature (use with simulated distillation)	19244-80620	0.47 mm (0.018 inch)	61.5 mm
3	Packed	18710-20119	0.46 mm (0.018 inch)	63.6 mm
4	Packed, wide-bore (use with high-bleed applications)	18789-80070	0.76 mm (0.030 inch)	63.6 mm



## General Precautions

**WARNING**

During this maintenance procedure, wear safety glasses and follow normal standard safety procedures.

## Detector Disassembly Procedure

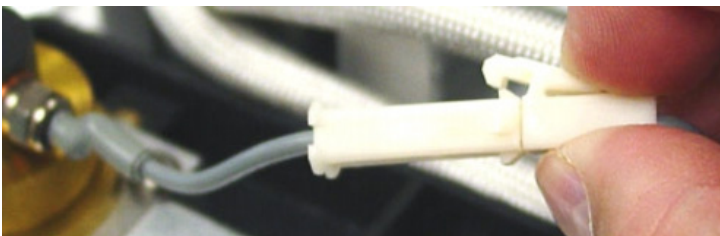
### Collector Assembly Removal — Follow these initial steps for either of the FID Maintenance Kits

#### CAUTION

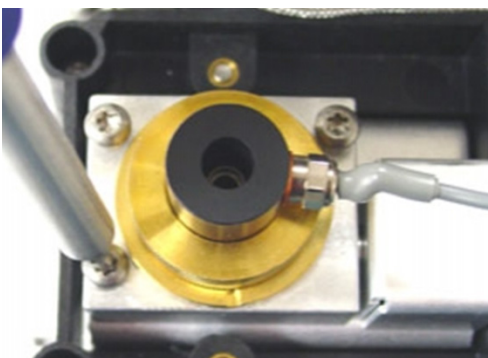
Components can be damaged by static electricity: be sure to wear an ESD strap grounded to the GC chassis while performing this procedure.

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- 1 Disconnect the ignitor cable connector.



- 2 Remove the three T20 Torx screws that secure the collector to the FID body.

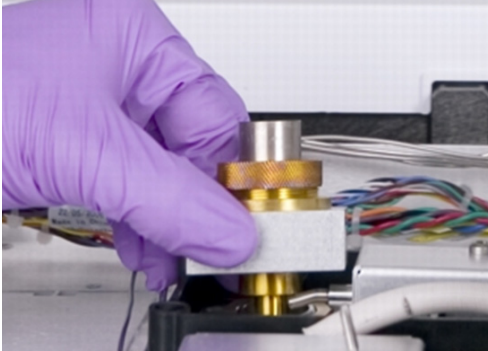


#### CAUTION

The next step exposes the interconnect spring. Be careful not to touch or disfigure the spring while working on the FID. Any dirt or bending will reduce the sensitivity of your detector.

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**3** Remove the collector assembly.



**NOTE**

If you are using the “Rebuilding Kit” part number G1531-67001, proceed to “Remove the Jet” on page 13 to complete the appropriate procedures.

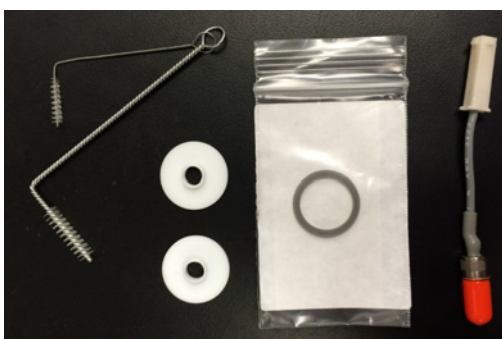
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## Procedure for Performing Maintenance with the FID “Cleaning” Kit – Part Number G1531-67000

### CAUTION

To avoid contaminating the FID, wear clean, lint-free gloves when handling the collector assembly.

### Disassemble the collector assembly



**Figure 1** Parts included in the FID Cleaning Kit (jet cleaning wire not shown)

- 1 Remove the ignitor with a 5/16-inch wrench.



- 2 Loosen and remove the knurled brass retaining nut and spring washer.



**3** Remove the castle assembly.



**4** Remove the collector and upper PTFE insulator.



**5** Remove the Lower PTFE Insulator.



- 6 Remove the bottom silicone rubber housing gasket.



## Cleaning the FID components

### Procedure: cleaning the collector

- 1 Clean the inside of the collector with methanol using the larger brush provided in the kit.
- 2 Rinse the inside and outside of the collector with methanol.
- 3 Air dry the collector – handle with gloves or tweezers.





## Optional Ultrasonic Cleaning

### WARNING

This procedure summarizes the general steps for cleaning the parts. You need to follow the standard safety practices of your laboratory for handling chemicals. For example, wear the appropriate safety eye glasses, lab coat, and gloves.

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- 1 Place the parts to be cleaned in your glassware, cover them with the aqueous detergent, and place them in the ultrasonic bath.
- 2 Sonicate the parts for 1 to 5 minutes.
- 3 Clean the inside of the collector with the brush provided. Remove the parts from the bath.
- 4 Rinse the parts in distilled water.
- 5 Rinse all surfaces of the parts in methanol – inside and outside surfaces.

To insure good rinsing use either a PTFE wash bottle or a beaker.

### CAUTION

The FID castle is coated with a layer of PTFE. Ultrasonic cleaning of this part for more than 5 to 10 seconds will damage this coating.

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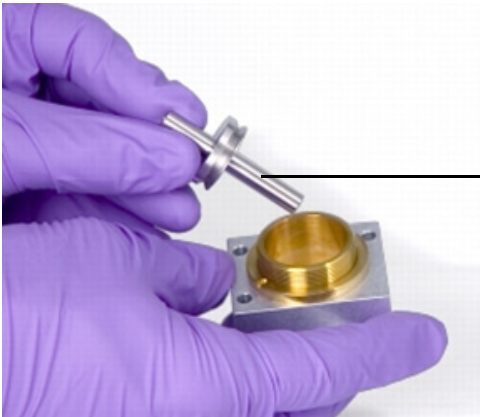
**Figure 2** Castle assembly

## Reassembling the FID collector assembly

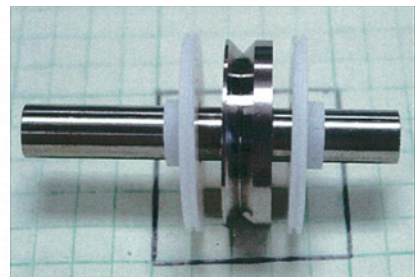
- 1 Insert the first PTFE insulator from the kit into the collector housing.



- 2 Insert the cleaned collector through the PTFE Insulator – **The long end goes down!**

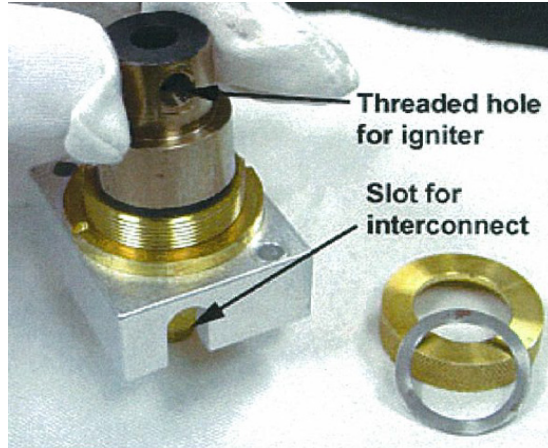


- 3 Place the second insulator over the collector.

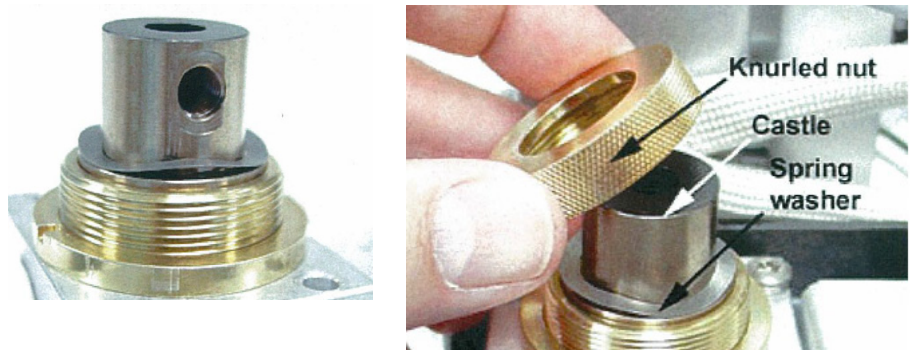


**Orientation of the collector and insulators in the FID**

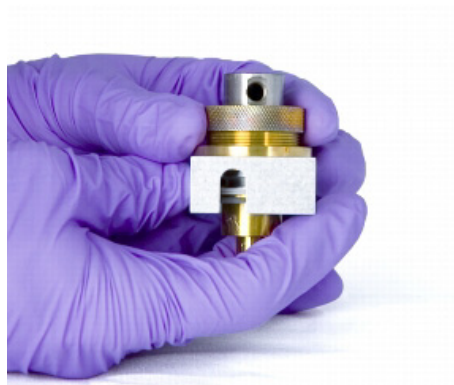
- 4 Place the castle assembly on top of the collector with the threaded hole for the igniter oriented toward the slot for the interconnect.



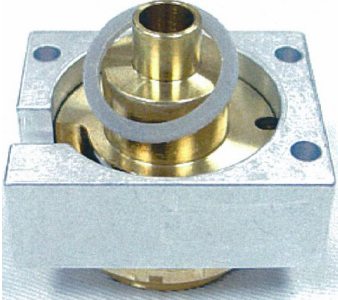
- 5 Place the spring washer over the castle and screw on the knurled nut.



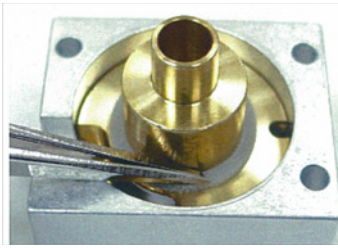
- 6 Tighten the knurled nut firmly.



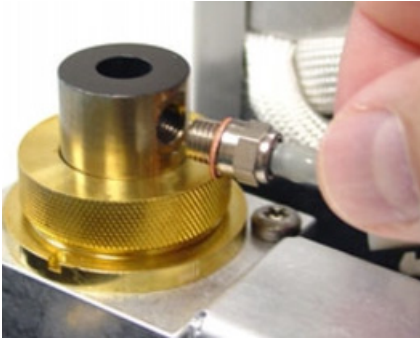
- 7** Turn over the collector assembly and install the new silicone rubber gasket.



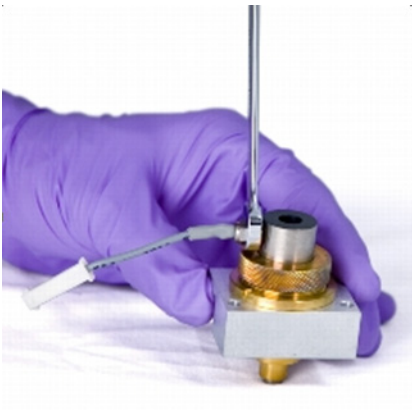
- 8** Make sure that the gasket lays flat against the bottom of the collector.



- 9** Install the new ignitor with the copper washer installed as shown below.



- 10** Tighten the ignitor with a 5/16-inch wrench.



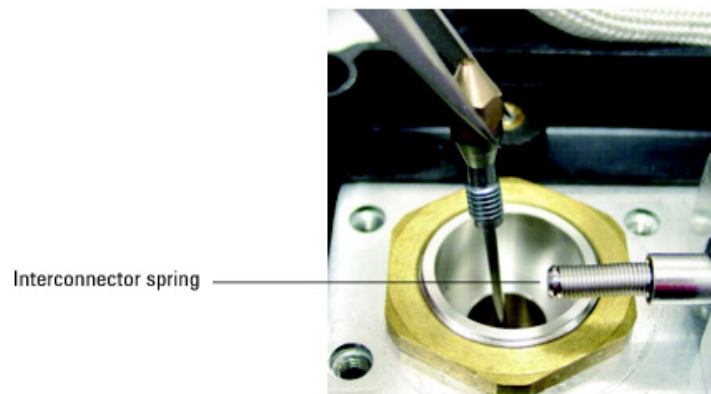
## Remove the Jet

*Continued from page 5 if you are using the “Rebuilding Kit” part number G1531-67001.*

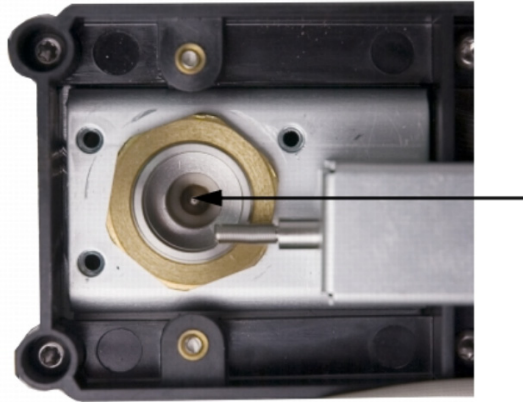
- 1 Loosen the FID jet with a 1/4 inch nut driver.



- 2 Remove the jet using tweezers – be careful not to touch or bend the interconnect spring.

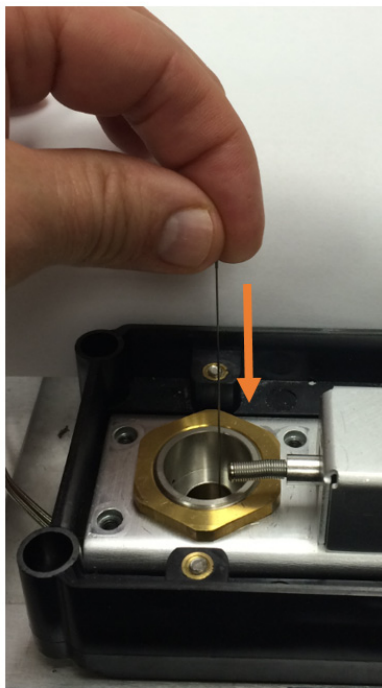


- 3 Examine the detector base for any particulates – blow out the base with compressed air or nitrogen.



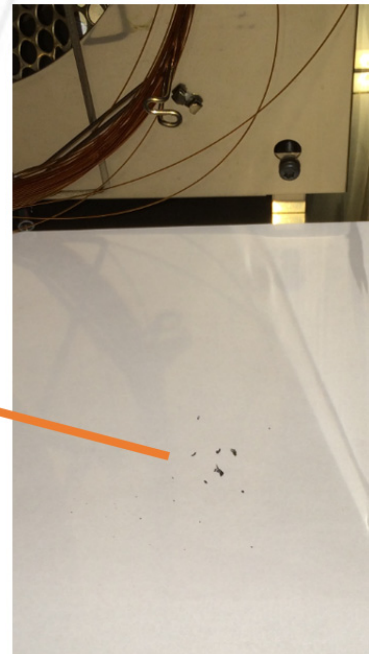
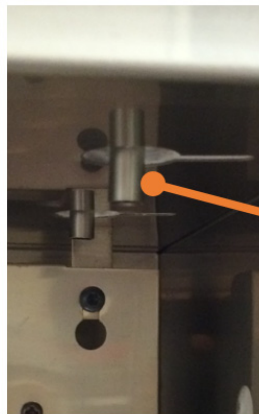
## Clean the Detector Base

Clean any built-up graphite from the detector base. The “Capillary Optimized” base is shown below.



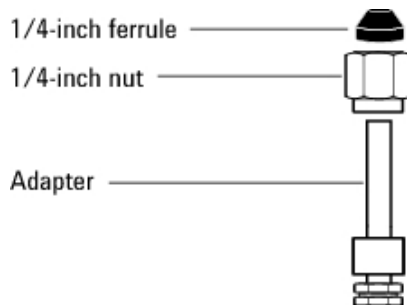
Use a cleaning wire or used Syringe Plunger to clean any Graphite from the detector base

Place a clean sheet of paper in the bottom of the oven to collect graphite chunks that fall out of the detector base



If you have an adaptable FID base – remove the capillary adapter with a 9/16-inch wrench, and clean any graphite out of the adapter out with a wire. Optionally, sonicate the part.

Re-install the adapter with a new 1/4-inch Swagelok nut and graphite/Vespel ferrule or brass front and back ferrule.



## Clean or Replace the Jet

### CAUTION

Scratches on the FID jet affects its performance. If you choose to clean the jet, be sure not to scratch or bend the jet.

Agilent recommends replacing the FID Jet during maintenance. However, the jet can be cleaned using the following procedure:

- 1 Run a .010-inch cleaning wire through the tip of the jet.
- 2 Run the wire back and forth a few times until it moves smoothly. **Be careful not to scratch the jet.**
- 3 Optional: Immerse the jet in a beaker of aqueous detergent. Place it in an ultrasonic bath for 1–5 minutes.
- 4 Rinse the jet in methanol.
- 5 Air dry the jet.

### NOTE

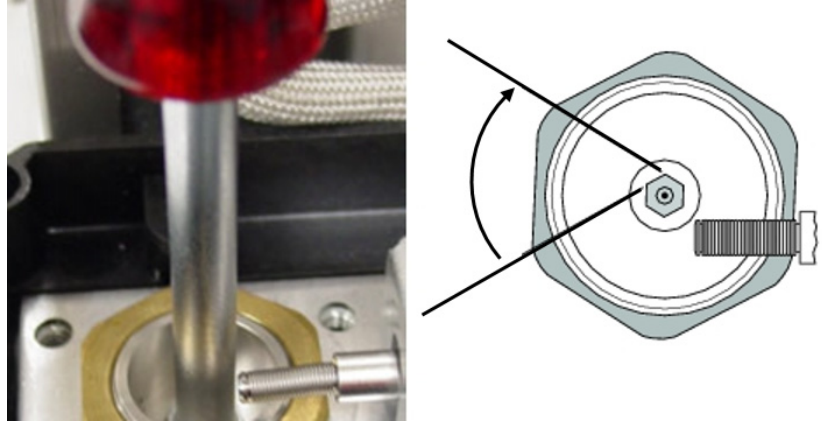
If the jet becomes bent or disfigured during the cleaning process, discard it and use a new replacement jet.

**The FID jet should not be re-used more than once.**



## Install the Cleaned or Replacement Jet

If the jet is new, tighten the jet 1/6-turn past finger tight.

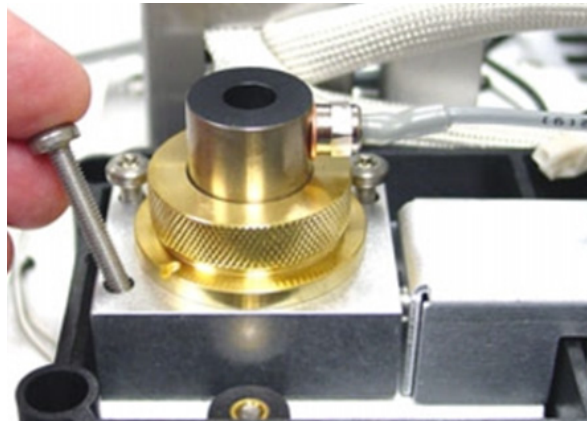


### CAUTION

If you are re-using the old jet be very careful not to over-tighten the jet to avoid breaking it off in the FID Base!

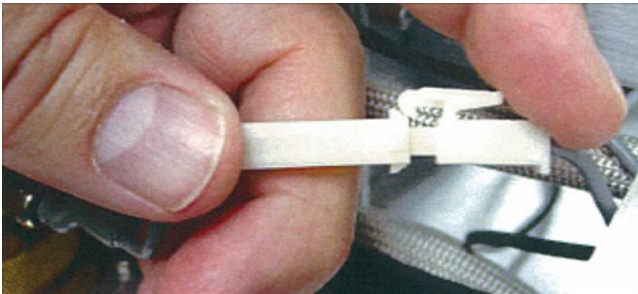
## Install the Replacement or Cleaned Collector Assembly

- 1 Carefully lower the new or cleaned and reassembled collector assembly straight down on to the FID base – the interconnect spring will move into the correct position.
- 2 Secure it firmly with the three T20 Torx screws.





3 Reconnect the ignitor extension cable.



4 Tighten the knurled nut and ignitor one more time.



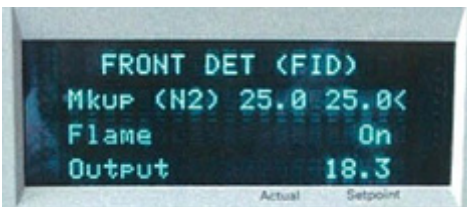
## Final Procedure

### WARNING

**Inlets, detectors, and the oven are insulated with fibrous materials which may cause irritation to skin, eyes, and/or mucous membranes. Always wear gloves when working with the insulation. Additionally, if the insulation is flaky/crumby, wear protective eyewear and a suitable breathing mask and/or respirator.**

- 1 Trim and re-install the column.
- 2 Heat the detector to your normal operating temperature.
- 3 Check the FID output with the flame off (check the leakage current). The output should be stable and  $< 1.0$  pA.
- 4 Enter or reload your method.
- 5 Light the flame.
- 6 Bakeout the detector at  $350$  °C for 20 minutes.
- 7 Set the FID to normal operating temperature.

- 8 If you have the “Adaptable” FID, re-tighten the capillary column adapter with a 9/16-inch wrench. Install the FID insulating cup over the capillary adapter.
- 9 Check the FID output at normal operating temperature. The output should be stable and < 20.0 pA.



## Warranty

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Agilent Technologies, Inc.

2850 Centerville Road

Wilmington, DE 19808-1610 USA

安捷伦科技（上海）有限公司

上海市浦东新区外高桥保税区

英伦路 412 号

联系电话：（800）820 3278



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