

GC columns

TracePLOT GC columns

Use and care instructions

Installing the column

1. Before removing the previously installed column from the gas chromatograph (GC), be sure to turn off the detector and cool all heated temperature zones.
2. Once all zones of the GC are cooled, turn off all gases. Remove the installed column, plug each end with silicone septa (or column end caps), and return the column to its original box.
3. Remove the new Thermo Scientific™ TracePLOT™ GC Column from its box. Remove the septa (or column end-caps) that are on each end of the TracePLOT column.

Important: If your column is tied onto the metal cage with high-temperature string, do not remove the string. This high-temperature string can withstand temperatures up to 400 °C.

4. Attach the appropriate GC capillary nut (fitting) onto the inlet side of the column. Attach the appropriate GC column ferrule onto the inlet side of the column.

Fused silica columns:

- 0.25 mm columns, use 0.4 mm ID ferrule
- 0.32 mm columns, use 0.5 mm ID ferrule
- 0.53 mm columns, use 0.8 mm ID ferrule

Note: Do not install the capillary column nut (fitting) or ferrule onto the outlet side of the column at this time; this will be performed later.

Note: See 'Tips and Tricks' section for information on using particle traps.



5. Trim 2 cm from both ends of the column. If the fused silica column is flame sealed, remove 20 cm from both ends. Make sure that a clean, square cut is obtained. Install the inlet side of the column into the GC injection port at the appropriate distance (see your GC manual to determine the correct installation distance).
6. Turn on the carrier gas flow, using Table 1 to determine an appropriate head pressure.

Note: A small amount of particles may exit the column when the carrier gas is first turned on. This is normal as particles can become dislodged when the column is cut, when a ferrule is tightened onto a column, or due to vibrations during transport. See 'Protection from particles' section.

7. Purge the column with clean, dry carrier gas for at least 20 minutes. During this purging step, check for leaks at the injector connections using an electronic leak detector. Note that the use of carrier gas filters is also highly recommended.

Important: If using hydrogen as the carrier gas, be sure to safely vent the gas exiting the column and the split vent.

Table 1. Approximate head pressures (at 40 °C) using hydrogen and helium

Column length	Internal diameter	Approximately psi	Approximately kPa	Approximately psi	Approximately kPa
		Head pressure for -Q, -Q+, -S, and BOND-U		Head pressure for Sieve 5A and all BOND Alumina	
15 m	0.25 mm	6.5	45	10	69
15 m	0.32 mm	3	21	6.5	45
15 m	0.53 mm	1.5	10	2	14
30 m	0.25 mm	9.5	66	11.5	79
30 m	0.32 mm	6	41	9	62
30 m	0.53 mm	2.5	17	3.5	24
50 m	0.25 mm	18	124	–	–
50 m	0.32 mm	10	69	14	97
50 m	0.53 mm	3.5	24	6	41

8. Set the injection port temperature according to the method, but do not exceed the maximum operating temperature for the column. Set the GC oven to 40 °C.
9. Program the GC oven to heat up at 5 °C/min up to the column's maximum temperature.
10. Once the column's maximum temperature is reached, hold this temperature for at least 60 minutes for porous polymer columns (-Q, -Q+, -S and BOND-U), and for at least 2 hours for molecular sieve and alumina columns. Do not exceed 6 hours for any column.
11. Cool the GC oven. Do not turn off the carrier gas. Do not remove the inlet side of the column from the injection port.
12. Attach the appropriate capillary column nut (fitting) to the outlet side of the column. Attach the appropriate GC column ferrule to the outlet side of column. Trim an additional 1 cm from the outlet side of the column and verify that a clean, square cut is obtained. Before installing the column into the detector, pre-seat the ferrule onto the column. This will help prevent dislodged particles from entering the detector.
13. Install the column into the detector at the appropriate distance (see your GC manual to determine the correct installation distance). Confirm that your detector gases and electronics are turned on, then set the appropriate detector and injector temperatures for your analysis and allow them to stabilize. You are now ready to use the column.

Tips and tricks

Temperature limits

Never exceed the recommended maximum temperature of the column, which is given on the box label for each TracePLOT column.

Column regeneration

- Occasionally, Thermo Scientific™ TracePLOT™ TG-BOND Alumina Columns need to be regenerated to remove moisture. To regenerate, set the carrier gas head pressure as shown in Table I, set the GC oven temperature to the maximum column operating temperature, and condition the column for 6 hours.
- Occasionally, Thermo Scientific™ TracePLOT™ TG-BOND Sieve 5A Columns also need to be regenerated to remove moisture. To regenerate, set the carrier gas head pressure as shown in Table I, set the GC oven temperature to the maximum column temperature, and condition the column for 1–3 hours.

Caution: If using hydrogen as a carrier gas, subjecting molecular sieve columns to high temperatures using hydrogen carrier gas for more than an hour will cause surface activity, resulting in carbon monoxide (CO) peak tailing.

Table 2. Fused silica TracePLOT particle traps

Description	Includes	Quantity	Cat. no
Thermo Scientific™ TracePLOT™ Particle Trap, 0.32 mm ID	Press-Tight connectors (2); 2.5 m, 0.32 mm ID column; high-temperature string	Each	60180-860
Thermo Scientific™ TracePLOT™ Particle Trap, 0.53 mm ID	Press-Tight connectors (2); 2.5 m, 0.53 mm ID column; high-temperature string	Each	60180-861

Protection from particles

- TracePLOT columns are not ideal for use in MS or valve systems due to their potential to generate particles that can contaminate and, in severe cases, damage GC parts. If a TracePLOT column must be used in these instances, a particle trap is necessary to reduce the chances of particles getting into the GC system. Please see Table 2 for a list of available particle traps.
- If the TracePLOT column will be connected to a mass spectrometer (MS), the pressure drop (vacuum) may dislodge particles into the MS. To minimize the amount of particles from entering the MS, couple the detector end of the TracePLOT column to a particle trap (e.g., 5 m × 0.25 mm ID fused silica tubing coated with 0.25-0.50 µm of a nonpolar stationary phase, such as TG-1MS phase). Use a connector suitable for MS application.
- If the TracePLOT column will be connected to a non-MS detector, connecting a particle trap to the detector end of the column is recommended.
- To ensure protection against particles flushing back into a valve/flow switching setup, connecting a particle trap to the injector end of the TracePLOT column is recommended.
- If the TracePLOT column is connected using a valve/flow switching setup, use of a particle trap on the outlet and inlet ends is recommended to minimize the number of particles entering the GC system. Conditioning the column as instructed under steps 6-11 (previous page) using three times higher gas flow to elute any loose particles is recommended. After column conditioning is complete, restore normal column flow and connect to the detector as described in steps 12-13. Now your column is stable for valve/flow switching applications.

Protection from high boiling

To prevent high boiling point compounds from contaminating a TracePLOT column, use of a precolumn (backflush column) or a valve/flow switching system should be considered.

Variation in color and appearance

Please note that TracePLOT columns have a unique appearance due to the particle deposition on the inside wall of the columns. Variation in color and appearance is normal and does not affect performance.

Protection from dislodged

Never abruptly pull the inlet end of the column from the injector while under pressure; this can cause a pressure surge in the column, resulting in particles being dislodged. Instead, turn off pressure to the injector and allow it to drop to atmospheric pressure before disconnecting the column.

**Image 1. Fused silica TracePLOT particle traps**

Ordering information

Thermo Scientific™ TracePLOT™ TG-BOND Alumina GC Columns

ID (mm)	Length (m)	Film thickness (µm)	Quantity	Cat. no.
Na₂SO₄ deactivation				
0.32	30	5	1 each	26001-6020
	50	5	1 each	26001-6050
0.53	30	10	1 each	26001-6080
	50	10	1 each	26001-6110
KCl deactivation				
0.32	30	5	1 each	26002-6020
	50	5	1 each	26002-6050
0.53	30	10	1 each	26002-6080
	50	10	1 each	26002-6110

Thermo Scientific™ TracePLOT™ TG-BOND Sieve 5A GC Columns

ID (mm)	Length (m)	Film thickness (µm)	Quantity	Cat. no.
0.32	15	30	1 each	26003-6010
	30	30	1 each	26003-6040
0.53	15	50	1 each	26003-6070
	30	50	1 each	26003-6100
	50	50	1 each	26003-1630

Thermo Scientific™ TracePLOT™ TG-BOND Q GC Columns

ID (mm)	Length (m)	Film thickness (µm)	Quantity	Cat. no.
0.32	15	10	1 each	26004-6000
	30	10	1 each	26004-6030
0.53	15	20	1 each	26004-6060
	30	20	1 each	26004-6090

Thermo Scientific™ TracePLOT™ TG-BOND Q+ GC Columns

ID (mm)	Length (m)	Film thickness (µm)	Quantity	Cat. no.
0.32	15	10	1 each	26005-6000
	30	10	1 each	26005-6030
0.53	15	20	1 each	26005-6060
	30	20	1 each	26005-6090

Ordering information (continued)
Thermo Scientific™ TracePLOT™ TG-BOND S GC Columns

ID (mm)	Length (m)	Film thickness (µm)	Quantity	Cat. no.
0.32	15	10	1 each	26006-6000
	30	10	1 each	26006-6030
0.53	30	20	1 each	26006-6090

Thermo Scientific™ TracePLOT™ TG-BOND U GC Columns

ID (mm)	Length (m)	Film thickness (µm)	Quantity	Cat. no.
0.32	15	10	1 each	26007-6000
	30	10	1 each	26007-6030
0.53	30	20	1 each	26007-6090

Thermo Scientific gas filters and leak detectors

Description	Quantity	Cat. no.
Carrier gas filter		
Thermo Scientific™ Super Clean™ Gas Cartridge Indicating triple filter (moisture, oxygen, hydrocarbons)	1 each	60180-824
Thermo Scientific™ Click-On™ Inline Gas Filter Triple filter (moisture, oxygen, hydrocarbons)	1 each	60180-805
Electronic leak detector		
Thermo Scientific™ GLD Pro Gas Leak Detector	1 each	66002-004

 Learn more at thermofisher.com/gccolumns