

# D-Torch\* with Quartz Outer Tube Varian 700-ES or Vista Radial 30-808-3052



## BEFORE YOU START

Congratulations on the purchase of your D-Torch.

The D-Torch is supplied fully assembled. This document will explain how to dismantle and replace the D-Torch components. Table 1 lists D-Torch components, they can be ordered separately from your D-Torch supplier.

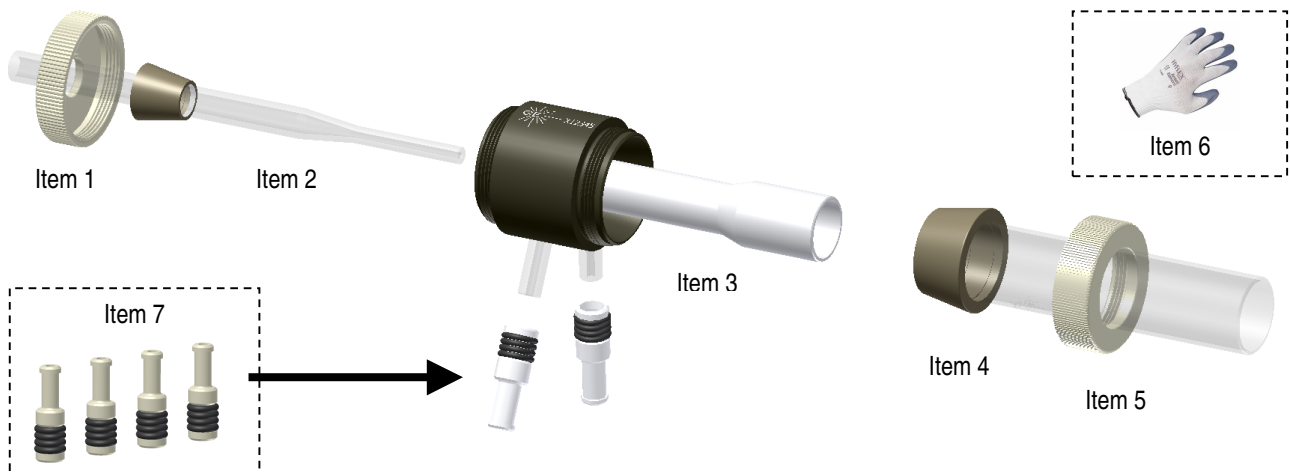
Item No.	Part Number	Description	Qty
1	31-808-2921	D-Torch injector retainer	1
2	Refer Note	D-Torch injector	Refer Note
3	31-808-3146	D-Torch Varian radial body	1
4	31-808-3062	D-Torch Varian radial quartz outer tube	1
5	31-808-2818	Outer tube retainer	1
6	SAFEGLOVE-MED	Safety gloves	1
7	GAZ-06	GazFit connectors 6mm (four per pack)	Refer Note

Table 1

### Note:

Item 2. D-torch injector not supplied with standard D-torch assembly (Shown for reference only). There is a range of different injectors suitable for this D-Torch – These can be purchased from your D-Torch supplier

Item 7. Use GazFit connectors to attach ICP tubes to the D-torch side arms. Four connectors are supplied (two spare).



### Scope

This document will explain how to: -

1. Install D-torch
2. Removal of D-Torch outer tube.
3. Re-attach D-Torch outer tube.
4. Access D-Torch injector.

\* The D-Torch is covered by US Patent 7,847,210 B2

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## GENERAL SAFETY

- Always wear safety gloves (item 6) and safety glasses when handling ICP torches.
- It is recommended you read and understand this procedure before starting.
- The person performing this work must be competent in making basic ICP connections
- The ICP torches are made from high grade engineered materials – handle all torches with extreme care

## 1. INSTALL D-TORCH

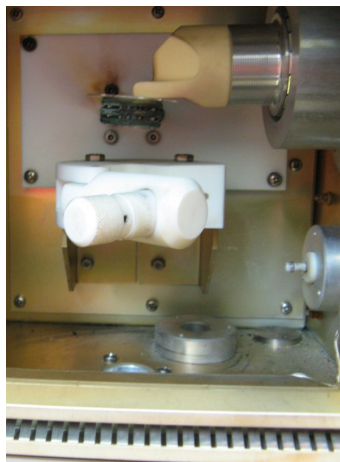
D-Torch is fully compatible with the traditional Varian ICP torch. It can be installed and used in the same way.

1.1 Remove existing ICP Torch

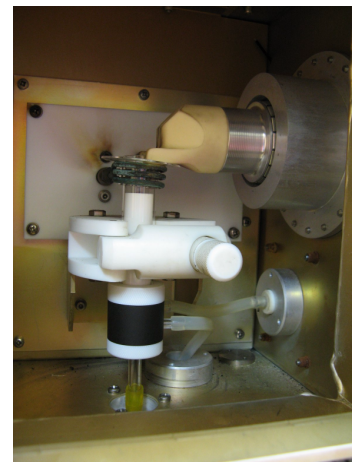
1.2 Fit D-Torch in mounting block and connect gas tubes as normal.



1.1a



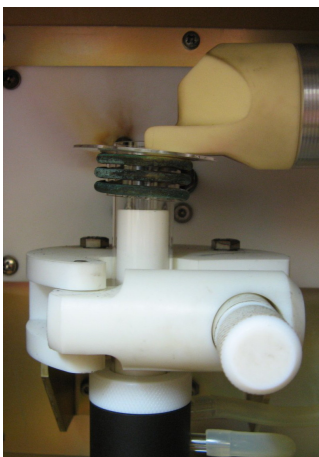
1.1b



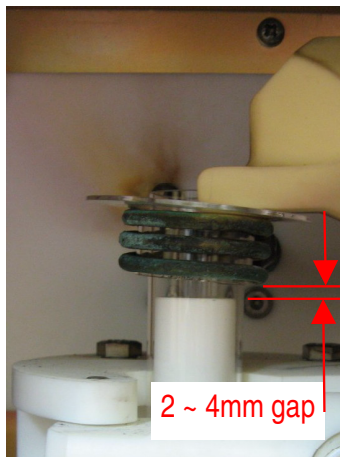
1.2

1.3 Check position of D-Torch relative to RF coil.

There must be gap of 2 to 4mm between end of D-Torch inner tube and lower arm of RF coil (Fig 1.3b).



1.3a



1.3b

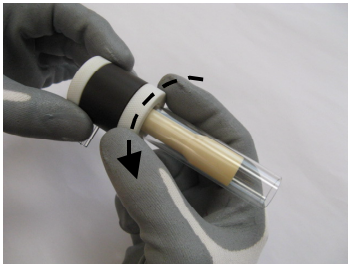
Once satisfied with the D-Torch position and gas line connections, the **D-Torch is ready for use.**

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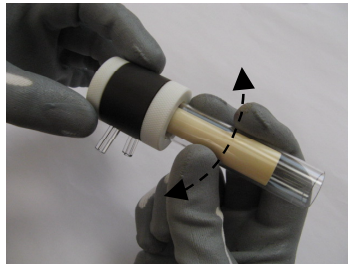
## 2. REMOVAL OF D-TORCH OUTER TUBE

The D-Torch's outer tube is accurately located in the D-Torch body with a retainer cap. The outer tube can be removed at any time by completing the following steps.

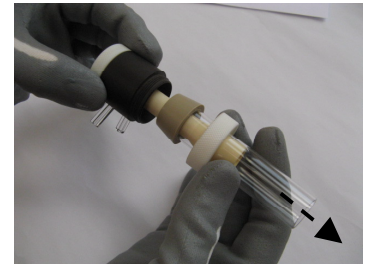
- 2.1 If fitted, remove D-Torch assembly from ICP (not shown).
- 2.2 Unscrew retainer ½ turn.
- 2.3 Grip outer tube (lower end, near D-Torch body) then gently wriggle the tube from side to side (figure 2.3). You will hear a 'click' as the outer tube releases.
- 2.4 Fully unscrew the retainer then carefully withdraw the outer tube from the D-Torch body



2.2.



2.3.



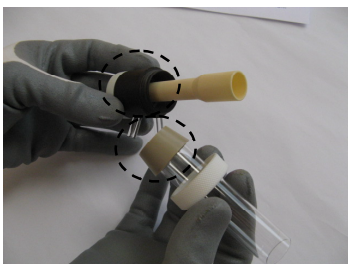
2.4.

**Note!** D-Torch outer tube is permanently fitted with a taper ferrule - do not attempt to remove ferrule from outer tube.  
Alumina inner tube is permanently fixed to D-Torch body - do not attempt to remove alumina inner tube from D-Torch

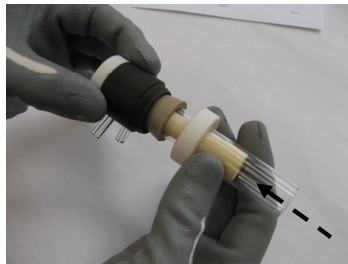
## 3. RE-ATTACH D-TORCH OUTER TUBE

To fit the D-Torch outer tube to D-Torch body, complete the following steps.

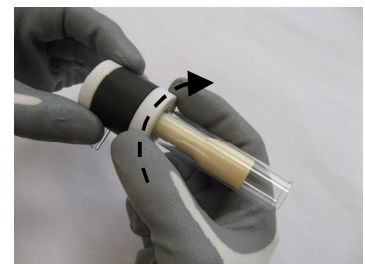
- 3.1 Check that both locating surfaces (outer tube and torch body) are clean and free from damage.
- 3.2 Carefully slide the outer tube over the inner tube – the outer tube will self locate into the torch body.
- 3.3 Tighten the retainer to fix the outer tube in place.  
**Do not** over tighten retainer - Only medium force by hand is necessary.



3.1.



3.2.



3.3.

- 3.4 If required, return torch assembly to ICP and connect as normal (not shown).

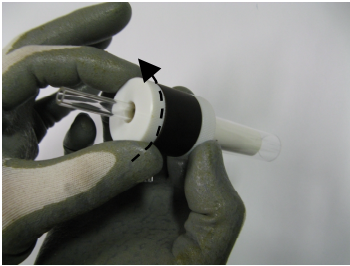
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## 4. ACCESS THE D-TORCH INJECTOR

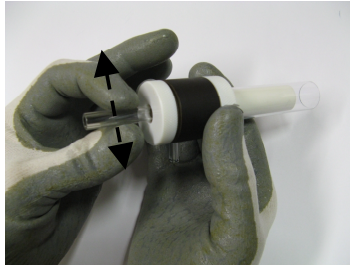
To access D-Torch injector, complete the following steps.

### To remove the injector

- 4.1 Unscrew the injector retainer ½ turn
- 4.2 Grip injector and gently wriggle it from side to side.  
You will hear a “click” as the injector releases from the D-Torch body.
- 4.3 Fully unscrew injector retainer from D-Torch body  
Injector is now loose in D-Torch body



4.1



4.2



4.3

- 4.4 Pull out injector from D-Torch body  
**Check** condition of the injector. Replace if damaged or deteriorated.



4.4a

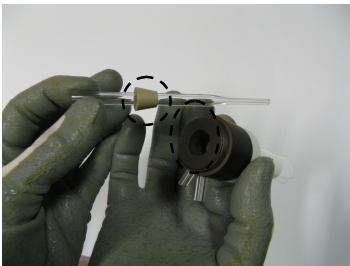


4.4b

**Note!** A tapered ferrule is permanently fixed to the injector – **Do not** attempt to remove the ferrule from the injector.

### To reinstall the injector

- 4.5 Check that both locating surfaces are clean and free from damage
- 4.6 Slide injector into D-torch body.
- 4.7 Screw injector retainer to D-torch body.  
**Do not** over tighten injector retainer - Only medium force by hand is necessary.



4.5



4.6



4.7

**Note!** If you have questions regarding the D-Torch or this document, please contact your supplier.