

Simultaneous ICP Emission Spectrometer

# ICPE-9800 Series

## Supplies and Maintenance Parts



# Contents






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<b><u>Sample Introduction</u></b> .....	<b>3</b>
<u>Torches</u> .....	3
<u>Nebulizers/Tubing</u> .....	5
<u>Spray Chambers</u> .....	6
<u>Drains</u> .....	7
<u>Orifices</u> .....	8
<u>Miscellaneous</u> .....	8
<b><u>ICPE-9800</u></b> .....	<b>10</b>
<u>Main unit</u> .....	10
<u>Plasma Stand</u> .....	10
<u>Argon Supply</u> .....	12
<u>Vacuum System</u> .....	13
<b><u>ASC-9800</u></b> .....	<b>14</b>
<u>Maintenance Parts</u> .....	14
<u>Sample Cups / Accessories</u> .....	14
<b><u>Peripheral Equipment</u></b> .....	<b>16</b>
<u>Software</u> .....	16
<u>Auto-Samplers</u> .....	16
<u>High-Sensitivity Analysis</u> .....	17
<u>Peristaltic Pumps</u> .....	17
<u>Chillers/Cooling Kits</u> .....	19
<b><u>Chemical Compatibility Charts</u></b> .....	<b>20</b>
<u>ASC-9800</u> .....	20
<u>Organic Solvents</u> .....	21
<b><u>Sample System Configurations</u></b> .....	<b>22</b>






# Sample Introduction

\*See [System Configurations](#) chart on page 22

## Torches


P/N	Part Name	Remarks	External Appearance
211-81448-00	<b>Mini Torch</b>	Mini torch (comes standard)	
204-74323-00	<b>High Salts Torch</b>	Used when introducing an undiluted solution of a sample where the base element is on the percent order of concentration	
211-92878-41	<b>Organics Torch</b>	Used with non-volatile organics	
211-92876-41	<b>Volatile Organics Torch</b>	Used when analyzing organic solvent samples that are difficult to inject into the plasma	
220-95356-20	<b>Semi-Demountable Torch</b>	Used for samples in HF; see following page for parts breakdown	


## Semi-Demountable Torch

P/N	Part Name	External Appearance
220-95356-30	<b>Torch Body</b>	
220-95356-31	<b>Torch Adapter</b>	
220-95356-32	<b>Tapered Alumina Injectioner (1.5 mm)</b>	
220-95356-33	<b>Joint Clip B14</b>	
220-95356-34	<b>GazFit Connectors, for 4 mm OD (4/PK)</b>	




## Nebulizers


Part Name	P/N	Remarks	External Appearance
Nebulizer, 10UES	046-00092-20	<b>Standard Nebulizer</b>	
	<i>Includes:</i>		
	046-00092-09	<b>Connector, QSM</b>	
	046-00092-10	<b>Tube adaptor, 0735</b>	
	037-61113-01	<b>Clamp, SNP-1</b>	
	046-00092-18	<b>Take-up tube ASSY, NFTS-075</b>	
Nebulizer, 07UES	046-00092-21	<b>For small sample amounts</b>	
	<i>Includes:</i>		
	046-00092-09	<b>Connector, QSM</b>	
	046-00092-10	<b>Tube adaptor, 0735</b>	
	037-61113-01	<b>Clamp, SNP-1</b>	
	046-00092-18	<b>Take-up tube ASSY, NFTS-075</b>	
Nebulizer, DuraMist	220-95356-25	<b>For samples containing &gt;5% HF</b>	
	<i>Includes:</i>		
	220-95356-13	<b>Sample Tubing ASSY, NFT-050</b>	
	046-00092-09	<b>Connector, QSM</b>	
	046-00092-10	<b>Tube Adaptor, 0735</b>	
	037-61113-01	<b>Clamp, SNP-1</b>	
	046-00092-19	<b>Ratchet UniFit Kit</b>	
Nebulizer, OpalMist	220-95356-26	<b>For samples containing ≤5% HF</b>	
	<i>Includes:</i>		
	220-95356-14	<b>Sample Tubing ASSY, NFT-075</b>	
	046-00092-09	<b>Connector, QSM</b>	
	046-00092-10	<b>Tube Adaptor, 0735</b>	
	037-61113-01	<b>Clamp, SNP-1</b>	
	046-00092-19	<b>Ratchet UniFit Kit</b>	
Nebulizer, SeaSpray, ARG-1-USS2S	046-00092-12	<b>For samples with up to 20% TDS</b>	
	<i>Includes:</i>		
	046-00092-09	<b>Connector, QSM</b>	
	046-00092-10	<b>Tube adaptor, 0735</b>	
	037-61113-01	<b>Clamp, SNP-1</b>	
	046-00092-18	<b>Take-up tube ASSY, NFTS-075</b>	

<b>Nebulizer, Noordermeer, 01-801- 0749</b>	220-95356-01	<b>For samples with up to 40% TDS</b>	
	<i>Includes:</i>		
	037-61113-01	<b>Clamp, SNP-1</b>	
	--	<b>Take-up tube ASSY</b>	


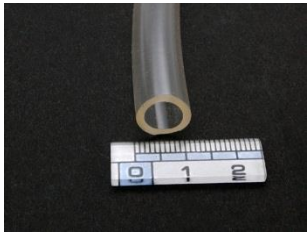

<b>Eluo™ Cleaning Tool</b>	220-95356-02	Used to flush nebulizer with cleaning solution to dislodge particle build-up	
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## Spray Chambers



P/N	Part Name	Remarks	External Appearance
046-00093-02	<b>Cyclone Chamber, HE</b>	For use with Mini Torch and High Salts Torch	
	<i>Includes:</i>		
	046-00093-92	<b>Locking Screw</b>	
	046-00093-93	<b>Seal</b>	
220-95356-11	<b>Twister Spray Chamber</b>	For use with non-volatile organics	
220-95356-10	<b>IsoMist Kit</b>	Temperature-controlled sample introduction system. Programmable from -10°C to +60°C. Ideal for volatile organics. Also aids in stability for long durations of continuous analysis.	
	<i>Includes:</i>		
	220-95356-12	<b>PuraFlex Transfer Tube</b>	
	046-00093-01	<b>Drain</b>	
	--	<b>Bench-top Jack</b>	
	210-15508-01	<b>Ball Joint Clip</b>	

220-95356-22	<b>Tracey TFE Spray Chamber</b>	For use with HF system	
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## Drains

P/N	Part Name	Remarks	External Appearance
046-00093-01	<b>Drain Trap (Leveler)</b>	Drain for cyclone spray chamber	
016-31429-10	<b>Drain Tube</b>	For use with Drain Trap	
220-95356-23	<b>HF Drain</b>	Drain device used with Tracey HF System	

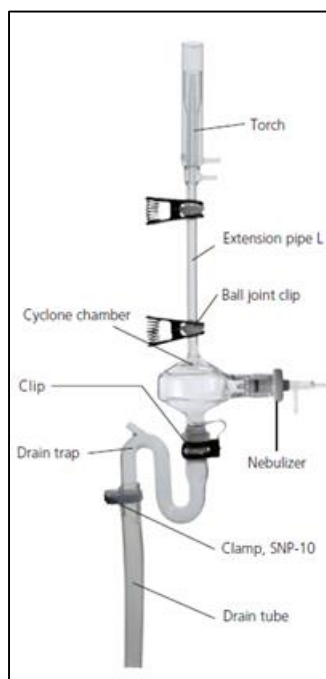
## Orifices

P/N	Part Name	Remarks	External Appearance
211-87758-42	<b>Orifice ASSY, L2</b>	For use with Mini Torch	 A stainless steel conical orifice assembly with a threaded top section.
211-88571-42	<b>Orifice ASSY, S2</b>	For use with torches other than the Mini Torch	 A stainless steel conical orifice assembly with a threaded top section, similar to the L2 version but with a different internal structure.

## Miscellaneous

P/N	Part Name	Remarks	External Appearance
204-19281-00	<b>Carriage Gas Humidifier</b>	Used to prevent blockages in the nebulizer when analyzing high salt samples	 A clear glass humidifier with a metal frame and a curved glass tube.






211-86533-00	<b>Connect Pipe L</b>	Connects torch to sample introduction accessories
210-15508-01	<b>Ball Joint Clip</b>	Used with Connect Pipe L
046-00993-01	<b>Clip</b>	Attaches Drain Trap to Cyclone Chamber
037-61113-04	<b>Clamp, SNP-10</b>	Attaches drain tubing to Drain Trap
220-95356-21	<b>PFA Adapter</b>	Connect Pipe used with HF System



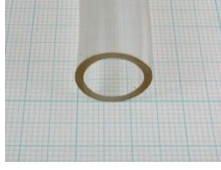
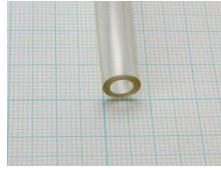

# ICPE-9800

## Main Unit


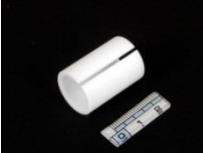


P/N	Part Name	Remarks	Replacement	External Appearance
211-88556-00	<b>Filter</b>	Main Unit Filter	1 Year	

## Plasma Stand

For sample introduction accessories, see pages 3-7

P/N	Part Name	Remarks	Replacement*	External Appearance
016-31404-00	<b>Tygon Tubing</b>	Auxiliary gas and carrier gas 1/8" x 1/16" Specify length (meters)	1 Month	
211-85118-91	<b>Plasma Gas Tube ASSY</b>	Tube for plasma gas	1 Month	
200-30864-24	<b>Drain Tube</b>	Tygon tubing 7/16" x 1/16" Specify length (meters)	3 Months	
016-31428-00	<b>Leveler Exhaust Tube</b>	Tygon tubing 3/16" x 5/16" x 7/16" Specify length (meters)	3 Months	
220-95363-34	<b>GazFit Connectors</b>	<b>For 4 mm OD, (4/PK)</b>	Varies	






\*Varies by sample type

211-86114-95	Partition Window Holder	Axial view window	
211-81444-00	<b>Torch Adapter</b>	Used with Mini Torch	
211-91422-41	<b>Torch Positioning Jig</b>	Used to set torch height	
211-88275-91	<b>Axial Mirror</b>	Located in cooling jacket	

## Argon Supply

P/N	Part Name	Remarks	Replacement	External Appearance
210-14037-00	<b>Inline Filter</b>	For argon supply	1 Year	
035-69703-01	<b>Insert, B-405-170</b>	Two used when replacing filter	1 Year	
035-62974-01	<b>Sleeve Set, B400SET</b>	Two used when replacing filter	1 Year	
016-43505-00	<b>Tube, 44PP, White</b>	Argon supply Specify length (meters)	--	
035-65503-00	<b>Half Union, 1/4"</b>	Connect argon supply hose to regulator. Comes with nut and ferrule.	--	
035-60903-01	<b>Coupler, MC-04PH</b>	Quick connect coupler	--	



## Vacuum System

P/N	Part Name	Remarks	Replacement	External Appearance
017-30166-01	<b>Pump Oil, R-2</b>	1 L	6 Months	
210-07003-04	<b>Molecular Sieve</b>	1 kg	6 Months	
017-30813-01	<b>Silicone Grease</b>	HVAG-G, 50 g	6 Months	
042-00125-25	<b>Oil Mist Trap</b>	OMT-050A	6 Months	
042-00125-92	<b>Filter</b>	--	1500 Hrs	




## ASC-9800




\*Check [Chemical Compatibility](#)

### Maintenance Parts

P/N	Part Name	Remarks	External Appearance
206-50290-91	<b>Nozzle ASSY, F</b>	Sample introduction nozzle for auto-sampler	
211-83697-00	<b>Connection Tube</b>	Used to connect nozzle tubing to nebulizer tubing	

### Sample Cups / Accessories

P/N	Part Name	Remarks	External Appearance
046-00147-04	<b>Vial, 15 mL</b>	Polypropylene vial, 16 mL	
220-95369-00	<b>Vials, 15 mL</b>	Polypropylene vials, 16 mL. 1000/pk	
200-93113-05	<b>Reagent Tube</b>	Glass tube, 53 mL	




046-00150-27	<b>Vial, 15 mL</b>	Glass vial, 12 mL	
220-95306-01	<b>Vial, 15 mL</b>	Glass vial, 12 mL. 1000/pk	
206-50295-01	<b>Turntable Cover</b>	Protects samples in auto-sampler from contamination	

# Peripheral Equipment

## Software


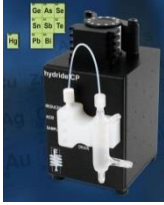
P/N	Part Name	Remarks
211-49146-91	<b>QAQC Package</b>	<p>Supports functions related to quality assurance and quality control:</p> <ul style="list-style-type: none"> <li>ICV, CCV, CRI, ICB, CCB, ICS, PB, MS, PDS, DUP, LCSW, LCSS, SDIL, MDL, IDL, CRQL</li> </ul>
211-44280-92	<b>Agent Connection Kit</b>	<p>Connection kit for CLASS-Public Agent Requires:</p> <ul style="list-style-type: none"> <li>CLASS-Public Agent, 1 license (223-18236-92)</li> </ul>

## Auto-Samplers

Part Name	P/N	Remarks	External Appearance
<b>ASC-9800</b>	211-88770-58	<p><b>Sample Capacity:</b> 60 x 15-mL sample tubes 8 x 50-mL reagent/standard cups</p>	
<b>CETAC ASX-520</b>	220-95336-03	<p><b>Sample Capacity:</b> 10 x 50-mL reagent/standard vials 240 x 14-mL sample tubes 160 x 20-mL sample tubes (Optional) 84 50-mL sample tubes (Optional)</p>	
	211-92938-41	<p><b>Requires:</b> Connection Kit</p>	
<b>CETAC ASX-260</b>	220-95336-02	<p><b>Sample Capacity:</b> 10 x 50-mL reagent/standard vials 120 x 14-mL sample tubes 80 x 20-mL sample tubes (Optional) 42 50-mL sample tubes (Optional)</p>	
	211-92938-41	<p><b>Requires:</b> Connection Kit</p>	




## High-Sensitivity Analysis

P/N	Part Name	Remarks	External Appearance
220-95337-01	<b>CETAC U5000 AT+</b>	Ultrasonic Nebulizer; Sample injection system developed for high-sensitivity ICP analysis. Uses ultrasonic energy to nebulize a solution consisting of extremely fine particles. This enables the ICPE-9000 to perform analyses at a sensitivity 10 times higher than conventional nebulizers	
220-95370-01	<b>ESI hydrideICP</b>	Hydride Vapor Generator; Provides high-sensitivity measurement for Ge, As, Se, Sn, Sb, Te, Pb, Bi, Hg	

## Peristaltic Pumps

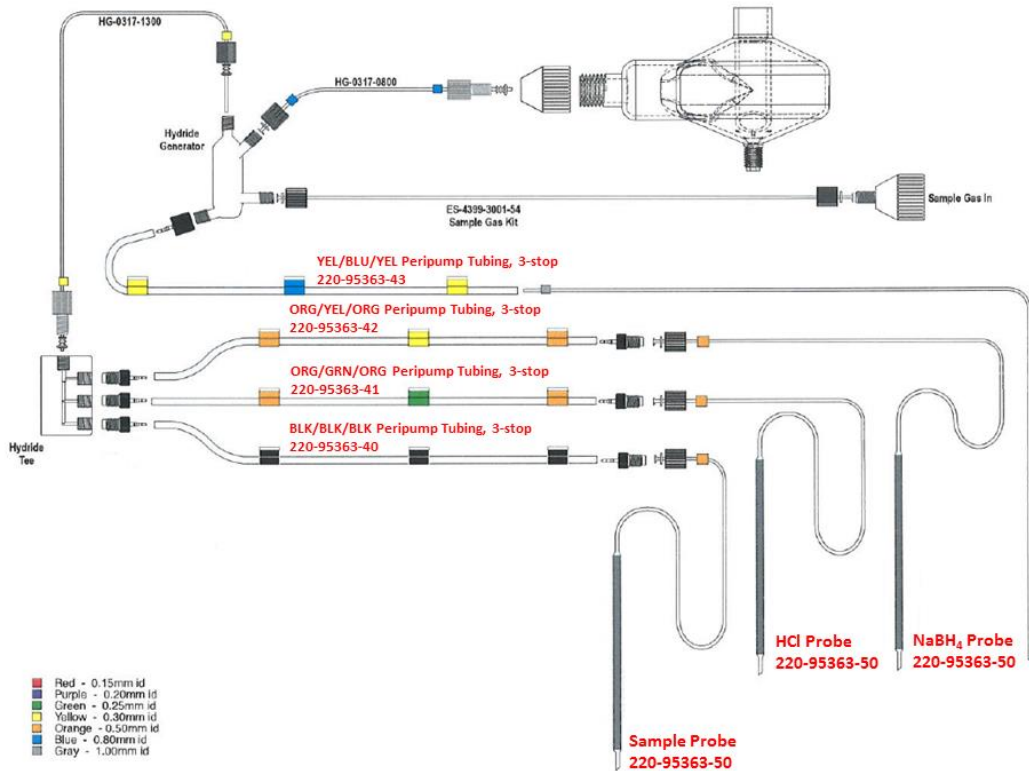
### Pumps

P/N	Part Name	Remarks	External Appearance
211-92430-41	<b>Peristaltic Pump</b>	Four-channel peristaltic pump. On-line IS addition possible with additional kit.	

## Accessories

Part Name	P/N	Remarks
<b>Internal Standard Kit</b>	211-92883-41	Allows for on-line addition of an internal standard solution
<b>ICP Connection Kit</b>	220-95370-03	For ESI HVG. Includes nebulizer adapter, 1/4-28 male/female barbed fittings (4 each), and ASC nozzle

## HVG Diagram:




## Tubing

HVG Tubing		
Part Name	P/N	Remarks
BLK/BLK/BLK, Tygon	220-95363-40	3-stop, flared, ES-4397-3076, 12/pk
ORG/GRN/ORG Tygon	220-95363-41	3-stop, flared, ES-4397-3058, 12/pk
ORG/YEL/ORG PVC	220-95363-42	3-stop, flared, ES-4397-3051, 12/pk
YEL/BLU/YEL PVC	220-95363-43	3-stop, flared, ES-4397-3152, 12/pk

Probe ASSY	220-95363-50	For HVG; sample/reagents
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Peristaltic Pump Tubing	
Part Name	P/N
Tube, 0.25-OB-F	018-31558-01
Tube, 0.76-BLK-F	018-31558-02
Tube, 0.89-ORG-F	018-31558-03
Tube, 0.76-BLK-SF-F	018-31558-11
Tube, VS0.76-BLK-F	018-31558-21
Tube, 1.02-WHT-MH-F	018-31558-31

## Chillers/Cooling Kits

Part Name	P/N	Remarks	External Appearance
Cooling Water Circulator	211-92962-41	<b>Cooling water circulator for ICPE-9800 Series</b>	
	<i>Requires:</i>		
	211-92884-41	Connection kit	
	018-31509-00	Tetron braided hose	
Tap Water Connection Kit	211-86153-91	<b>Required when tap water is used to cool ICPE-9000</b>	--
	<i>Requires:</i>		
	035-60942-15	Coupler set	

## Chemical Compatibility: ASC-9800

Chemical	Sample	Rinse Liquid
Water (<0.5% acid)	✓	✓
Ethanol	✓	✓
Hydrochloric acid	✓	✓
Nitric acid	✓	✓
Sulfuric acid	✓	✓
Hydrofluoric Acid	✓	X
Xylene	X	X
Perchloric acid	✓**	X
Methanol	✓	✓
Sodium hydroxide	✓	X
Gasoline	X	X
Petroleum	X	X
Acetic acid	X	X
MIBK	X	X
Butyl acetate	X	X
Acetone	X	X
IPA	X	X
THF	X	X

✓ Can be used



X CANNOT be used

\*\* Glass sample cups required

## Organic Solvents Compatibility

Compound	Boiling Point (°C)	Vapor Pressure (mmHg)	Torch	Chamber
Methanol	64.7	99	VOC	Twister Spray Chamber
Ethanol	78.3	120	Standard	Twister Spray Chamber
n-Propyl alcohol	97.5	15	Standard	Twister Spray Chamber
Isopropyl alcohol	82.4	33	Standard	Twister Spray Chamber
n-Butyl alcohol	117.5	4	Standard	Twister Spray Chamber
n-Hexyl alcohol	157	3	Standard	Twister Spray Chamber
Ethyl acetate	77.1	74	VOC	Twister Spray Chamber
n-Butyl alcohol	126.3	10	Standard	Twister Spray Chamber
Isobutyl acetate	118	13	Standard	Twister Spray Chamber
Amyl acetate	148.8		Standard	Twister Spray Chamber
Isoamyl acetate	142	4	Standard	Twister Spray Chamber
Acetone	56.3	175	VOC	IsoMist Spray Chamber
Dichloromethane	40	349	VOC	Twister Spray Chamber
1,2-dichloroethane	83	64	VOC	Twister Spray Chamber
Methyl isobutyl ketone (MIBK)	117	5	Standard	Twister Spray Chamber
Di-isopropyl ketone	125	3	Standard	Twister Spray Chamber
Di-isobutyl ketone (DIBK)	168	2	Standard	Twister Spray Chamber
Acetylacetone	140.5		Standard	Twister Spray Chamber
Acetic acid	117.8	12	Standard	Twister Spray Chamber
Propionic acid	141	2.8	Standard	Twister Spray Chamber
n-Butyl Cellosolve	171.2		Standard	Twister Spray Chamber
Chloroform	61.2	160	Standard	Twister Spray Chamber
Carbon tetrachloride	76.7	90	Standard	Twister Spray Chamber
o-Dichlorobenzene	180	1	Standard	Twister Spray Chamber
Toluene	110.6	21	VOC	Twister Spray Chamber
Xylene	138-144	47	Standard	Twister Spray Chamber
Nitrobenzene	210.9	<1	Standard	Twister Spray Chamber
Aniline	184.6	<1	Standard	Twister Spray Chamber
Pyridine	115.5	15	Standard	Twister Spray Chamber
Acetonitrile	81.6	70	Standard	Twister Spray Chamber
Benzyl alcohol	205.4	<1	Standard	Twister Spray Chamber
Tributyl phosphate	289		Standard	Twister Spray Chamber
Dimethyl sulfoxide (DMSO)	189	0.4	Standard	Twister Spray Chamber
n-Methyl-2-pyridone (NMP)	202		Standard	Twister Spray Chamber
N,N-dimethylacetamide (DMA)	165.5		Standard	Twister Spray Chamber
Gasoline	35-200		VOC	IsoMist Spray Chamber
Kerosene	150-300		Standard	Twister Spray Chamber
Light oil	220-350		Standard	Twister Spray Chamber
Naphtha	30-200		VOC	IsoMist Spray Chamber

## System Configurations

Sample Type	Item	Nebulizer	Sample Tubing	Spray Chamber	Torch	Drain	Other
Standard		Nebulizer, 10UES Connector → Tube adapter →	Take-up tube ASSY, NFTS-075	Cyclone Chamber, HE Seal Locking Screw	Mini Torch		<ul style="list-style-type: none"> <li>Orifice ASSY, L2</li> </ul>
Small Sample Amounts		Nebulizer, 07UES Connector → Tube adapter →	Take-up tube ASSY, NFTS-075	Cyclone Chamber, HE Seal Locking Screw	Mini Torch		
High Salt Samples ≤5% TDS		Nebulizer, 10UES Connector → Tube adapter →	Take-up tube ASSY, NFTS-075	Cyclone Chamber, HE Seal Locking Screw	High TDS torch		<ul style="list-style-type: none"> <li>Orifice ASSY, S2</li> <li>Carriage Gas Humidifier</li> </ul> 
High Salt Samples ≤20% TDS		SeaSpray Nebulizer, ARG-1-USS2S Connector → Tube adapter →	Take-up tube ASSY, NFTS-075	Cyclone Chamber, HE Seal Locking Screw	High TDS torch		
High Salt Samples ≤30% TDS		Noordermeer Nebulizer, 01-801-0749	--	Cyclone Chamber, HE Seal Locking Screw	High TDS torch		<ul style="list-style-type: none"> <li>Radial view only; remove axial jacket</li> </ul>
Organic Solvent Samples		Nebulizer, 10UES Connector → Tube adapter →	Take-up tube ASSY, NFTS-075	Twister Chamber, HE Locking Screw	Standard size torch		
Volatile Samples IsoMist Kit		--	--	IsoMist	VOC torch	<ul style="list-style-type: none"> <li>Radial view only; remove axial jacket</li> <li>PuraFlex Adapter</li> <li>Benchtop Jack</li> </ul>	
HF Acid Samples		Nebulizer, DuraMist/OpalMist	Take-up tube ASSY, NFT-050/075	Tracey TFE Chamber	De-mountable torch		<ul style="list-style-type: none"> <li>Radial view only; remove axial jacket</li> <li>PFA Adapter</li> <li>Mounting Bracket</li> </ul>



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