

Simultaneous ICP Emission Spectrometer

ICPE-9800 Series

Supplies and Maintenance Parts



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Note: **Aq.** – Specific for aqueous samples
Org. – Specific for organic samples
HF – Specific for HF samples

One-Year Consumables Kit

Part Name	P/N	Remarks
Aq. One-Year Consumables Kit	220-95356-98	Each kit includes: • 3 mini torches • 3 micromist DC conikal nebulizer (1ml/min) • 1 Helix CT locking screw with seal • 2 PTFE joint Clip for spray chamber drain • 1 package of GazFit Connectors connecting tygon tubes to torch arms (4/pk) • 6 packages of sample peristaltic pump tubing (6/pk) • 6 packages of internal standard peristaltic pump tubing (6/pk) • 1 Fluka RBS-25 cleaning solution • 1 Eluo nebulizer cleaning tool • 1 package of replacement O-rings set for Eluo (2 sets/pk)

Sample Introduction

[*See System Configurations chart](#)

Torches

P/N	Part Name	Remarks	External Appearance
Aq. 211-81448-00	Mini Torch	Mini torch (comes standard)	
Aq. 204-74323-00	High Salts Torch	Used when introducing an undiluted solution of a sample where the base element is on the percent order of concentration (tip is straight up).	
Org. 211-96189-41	Organics Torch	Used with non-volatile organics (tip is steady long V-shape taper)	
Org. 211-92876-41	Volatile Organics Torch	Used when analyzing organic solvent samples that are difficult to inject into the plasma (sudden taper at the end of the tip)	
HF 211-92893-41	Demountable Torch	Used for samples in HF; see following page for parts breakdown	

Demountable Torch

P/N	Part Name	External Appearance
HF 205-09632-01	Injector Tube	
HF 205-09630-00	AL203 CHIP 1.8	
HF 036-11213-00	O-Ring, 4D P12	
220-95356-35	Joint Clip B14-PTFE	
220-95363-34	GazFit Connectors, for 4 mm OD (4/PK)	

Nebulizers

Part Name	P/N	Remarks	External Appearance
Aq. Org. Conikal DC Nebulizer, 1mL/min	220-95356-37	Standard Nebulizer	
	Includes:		
	220-95356-05	Gas Connector	
	220-95356-07	Gas Tubing	
	220-95356-08	Fitting Seal	
	046-00092-18	Take-up tube ASSY, NFTS-075	
Aq. Org. MicroMist DC Nebulizer, 0.6 mL/min	220-95356-27	For small sample amounts (Replacement of 046-00092-21)	
	Includes:		
	220-95356-05	Gas Connector	
	220-95356-07	Gas Tubing	
	220-95356-08	Fitting Seal	
	046-00092-18	Take-up tube ASSY, NFTS-075	
HF Nebulizer, DuraMist	220-95356-28	For samples containing <5% HF, 1 mL/min, up to 30% TDS. Material: PEEK.	
	Includes:		
	046-00092-18	Take-up tube ASSY, NFTS-075	
	220-95356-07	Gas Tubing	
HF Nebulizer, OpalMist, 1ml/min	046-00092-17	PFA Nebulizer for samples containing higher than 5% HF, 1 mL/min with direct connect, up to 15% TDS.	
	Includes:		
	046-00092-18	Take-up tube ASSY, NFTS-075	
	046-00092-09	Connector, QSM	
	046-00092-10	Tube Adaptor, 0735	
	037-61113-01	Clamp, SNP-1	
	046-00092-19	Ratchet UniFit Kit	
Aq. Nebulizer, SeaSpray, ARG-1-USS2S	046-00092-12	For samples with up to 20% TDS	
	Includes:		
	046-00092-09	Connector, QSM	
	046-00092-10	Tube adaptor, 0735	
	037-61113-01	Clamp, SNP-1	
	046-00092-18	Take-up tube ASSY, NFTS-075	

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

Eluo™ Cleaning Tool	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
Aq. 046-00093-02	Cyclone Chamber, HE	For use with Mini Torch and High Salts Torch	
Includes:			
046-00093-92	Locking Screw		
046-00093-93	Seal		
Org. 220-95356-11	Twister Spray Chamber	For use with non-volatile organics	
220-95356-10	IsoMist Kit	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.	
	Includes:		
	220-95356-12	PuraFlex Transfer Tube	
	046-00093-01	Drain	
	--	Bench-top Jack	
	210-15508-01	Ball Joint Clip	
HF 220-95356-22	Tracey TFE Spray Chamber	For use with HF system	

Drains

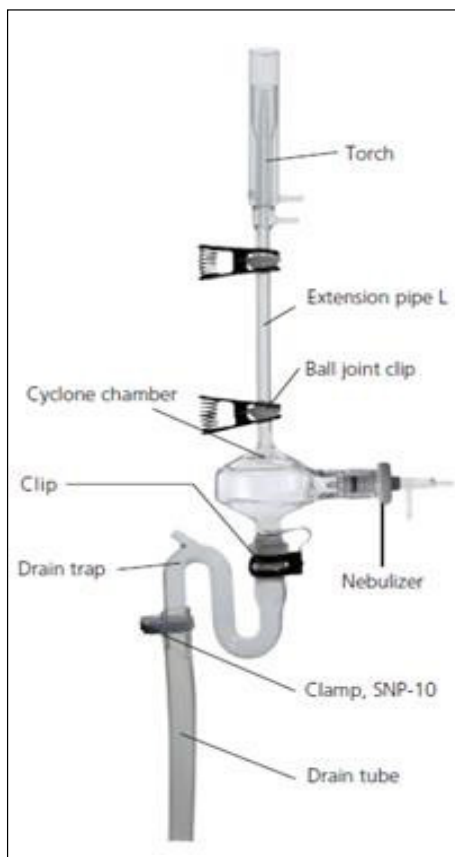
P/N	Part Name	Remarks	External Appearance
046-00093-01	Drain Trap (Leveler)	Drain for cyclone spray chamber	
016-31429-10	Drain Tube	For use with Drain Trap	
HF 220-95356-23	HF Drain	Drain device used with Tracey HF System	

Orifices

P/N	Part Name	Remarks	External Appearance
Aq. 211-87758-42	Orifice ASSY, L2	For use with Mini Torch	
211-88571-42	Orifice ASSY, S2	For use with torches other than the Mini Torch	

Miscellaneous

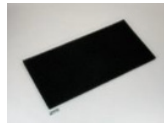
P/N	Part Name	Remarks	External Appearance
220-95356-70	Elegra Argon Humidifier	Used to prevent blockages in the nebulizer when analyzing high salt samples	



Aq.	Org.		
211-86533-00	Connect Pipe L	Connects torch to sample introduction accessories	
210-15508-01	Ball Joint Clip	Used with Connect Pipe L	
220-95356-35	Clip (B14-PTFE)	Attaches Drain Trap to Cyclone Chamber	
037-61113-04	Clamp, SNP-10	Attaches drain tubing to Drain Trap	
HF			
220-95356-21	PFA Adapter	Connect Pipe used with HF System	

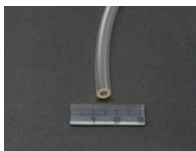
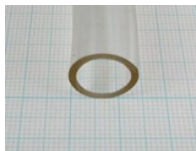
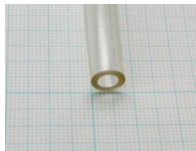
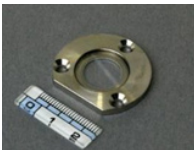
ICPE-9800

Main Unit

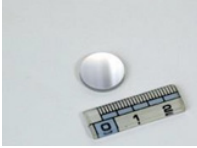
P/N	Part Name	Remarks	Replacement	External Appearance
211-88556-00	Filter	Main Unit Filter	1 Year	

Plasma Stand

For sample introduction accessories, see pages 3-7

P/N	Part Name	Remarks	Replacement*	External Appearance
016-31404-00	Tygon Tubing	Auxiliary gas and carrier gas 1/8" x 1/16" Specify length (meters)	1 Month	
211-85118-91	Plasma Gas Tube ASSY	Tube for plasma gas	1 Month	
016-31429-10	Drain Tube	Tygon tubing 7/16" x 1/16" Specify length (meters)	3 Months	
016-31428-00	Leveler Exhaust Tube	Tygon tubing 3/16" x 5/16" x 7/16" Specify length (meters)	3 Months	
220-95363-34	GazFit Connectors	For 4 mm OD, (4/PK)	Varies	
211-86114-95	Partition Window Holder	Axial view window	---	
211-81444-00	Torch Adapter	Used with Mini Torch	---	

*Varies by sample type

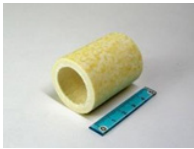
P/N	Part Name	Remarks	Replacement*	External Appearance
211-86093-91	Torch Positioning Jig	Used to set torch height	---	
211-86125-41	Copper RF Coil		---	
211-88275-91	Axial Mirror	Located in cooling jacket	---	

*Varies by sample type

Argon Supply

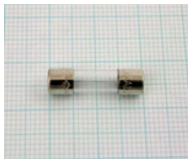
P/N	Part Name	Remarks	Replacement	External Appearance
210-14037-00	Inline Filter	For argon supply	1 Year	
220-95356-92	Guardian In-line Gas Filter	Protects gas box from liquid siphoning and the nebulizer from particulates in the argon supply	1 Year	
220-95356-93	Guardian In-line Sample Filter	Protects nebulizer from particulates in samples. 120µm PEEK filter	1 Year	
035-69703-01	Insert, B-405-170	Two used when replacing filter	1 Year	
035-62974-01	Sleeve Set, B400SET	Two used when replacing filter	1 Year	
016-43505-00	Tube, 44PP, White	Argon supply Specify length (meters)	---	
035-65503-00	Half Union, 1/4"	Connect argon supply hose to regulator. Comes with nut and ferrule.	---	
035-60903-01	Coupler, MC-04PH	Quick connect coupler	---	

Vacuum System

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

AS-10

Consumable and Repair Parts

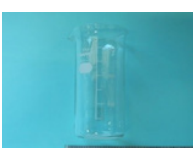
Part Name	P/N	Remarks	Replacement	External Appearance
Peristaltic Pump Tube	042-00405-24	PTFE tubing used in the peristaltic pump	6 months*1*2	
Cassette Head, SR10/30-N2.5	042-00405-11	Peristaltic pump head	1 Year*1	
Filter	211-88565-00	Intake vent filter on the left side of the Autosampler	1 Year	
Connection Tube	211-83697-00	Connects nebulizer suction tube to the sample tubing	1 month*1	
Connector, F-CONNECTOR S MH	046-00092-39	Connects the nebulizer suction tube for optional rinse station for organic solvents	1 month*1	---
Nozzle	206-50290-91	Acquires the sample; comprises of a PTFE tube set into a stainless steel pipe	---	
Fuse, 218 3.15P	072-02004-21	250 V, 3.15 A, T-type	---	
Turntable Cover	206-50295-01	Prevents contamination of the Samples	---	
Turntable	206-50062-00	Holds sixty regular test tubes and eight high-capacity test Tubes	---	

*1: Although it depends on the usage conditions, as a guide, this applies when measuring 50 samples per day every day.

*2: When using distilled water as rinse solution.

Part Name	P/N	Remarks	Replacement	External Appearance
Power Cord	071-60821-08	Power cable, 125 VAC/13 A	---	

Sample Cups and Containers

Part Name	P/N	Remarks	External Appearance
Vial, 15 mL	046-00147-04	Polypropylene vial, 15 mL capacity	
Vials, 15 mL	220-95369-00	Polypropylene vials, 16 mL, 1000/pk, for any autosampler	
Glass Test Tube, 12 mL	046-00150-27	For AS-10 only	
50 mL Containers, 8520-50111	046-00428-01	50 mL capacity, 25 pieces, for any autosampler	
Reagent Tube	200-93113-05	Glass tube, 53 mL, for AS-10 only	
Rinse Solution Container	206-87284-91	2 L plastic container for rinse solution	
Org. Rinse Beaker	046-00116-00	Rinse solution container for organic solvents, 300 mL	
Auxiliary Rinse Solution Vial	211-94080-41	Auxiliary rinse solution container for organic solvents	---

ASX-280 and ASX-560

Consumable and Repair Parts

Part Name	P/N	Remarks	External Appearance
2-Rack Enclosure	220-95356-51	For ASX-280 or AS-10	
4-Rack Enclosure	220-95356-50	For ASX-560	
Enclosure Flange for Hood Venting	220-95356-53	Replacement enclosure flange	
Enclosure Filter and Adapter	220-95356-57	Used with fan or external ventilation	---
Enclosure Fan	220-95356-52	Maintains positive pressure	
2-Rack Enclosure Base	220-95356-59	Optional base for ASX-280 or AS-10 enclosure	---
4-Rack Enclosure Base	220-95356-58	Optional base for ASX-560 enclosure	---
Autosampler Probe	220-95336-10	Replacement Probe for ASX-280 & ASX-560	
Rinse and Drain Hookup Kit	220-95336-11	For ASX-280 & ASX-560	

Part Name	P/N	Remarks	External Appearance
2-Channel Peristaltic Pump Tubing Cartridge	220-95336-14	For ASX-280 & ASX-560	
Sample Rack (60 vials)	220-95336-15	For ASX-280 & ASX-560	
Sample rack (21 vials)	220-95336-17	For ASX-280 & ASX-560	
Polypropylene Sample Vials (14 mL)	220-95369-00	For ASX-280 & ASX-560; 1000/pk	
Polypropylene Sample Vials (50 mL)	220-95336-20	For ASX-280 & ASX-560; 500/pk	
2-Rack Spill Tray for Flat Bottom Flasks	220-95336-22	For ASX-280	
4-Rack Spill Tray for Flat Bottom Flasks	220-95336-23	For ASX-560	
RS-232 Interface Cable	220-95336-27	For ASX-280 & ASX-560	
Z-Axis Drive Assembly	220-95336-30	For ASX-280 & ASX-560	
Z-Axis Tubing	220-95336-31	For ASX-280 & ASX-560	

Part Name	P/N	Remarks	External Appearance
24-Volt Power Supply	220-95336-33	For ASX-280 & ASX-560	
X-Axis Drive Belt	220-95336-34	For ASX-280 & ASX-560	
Rinse Station	220-95336-41	For ASX-280 & ASX-560	

Peripheral Equipment

Software

P/N	Part Name	Remarks
211-49136-92	ICPE LabSolutions Software Package	Required for running the instrument; install on the connected computer
211-49146-91	QA/QC Package	Supports functions related to quality assurance and quality control: • ICV, CCV, CRI, ICB, CCB, ICS, PB, MS, PDS, DUP, LCSW, LCSS, SDIL, MDL, IDL, CRQL

Autosamplers

Part Name	P/N	Remarks	External Appearance
AS-10	211-93680-58	Sample Capacity: 60 x 15-mL sample tubes 8 x 50-mL reagent/standard cups	
	Requires:		
	071-60821-08	Power Cord	
	Options:		
	211-94072-41	AS-10 Rinse Port Expansion Kit (Rinse station for organic solvents; installation requires work by Shimadzu service personnel)	
CETAC ASX-560	220-95336-04	Sample Capacity: 10 x 50-mL reagent/standard vials 240 x 14-mL sample tubes	
	Options:		
	220-95356-50	Enclosure	
CETAC ASX-280	220-95336-05	Sample Capacity: 10 x 50-mL reagent/standard vials 120 x 14-mL sample tubes	
	Options:		
	220-95356-51	Enclosure	

High-Sensitivity Analysis

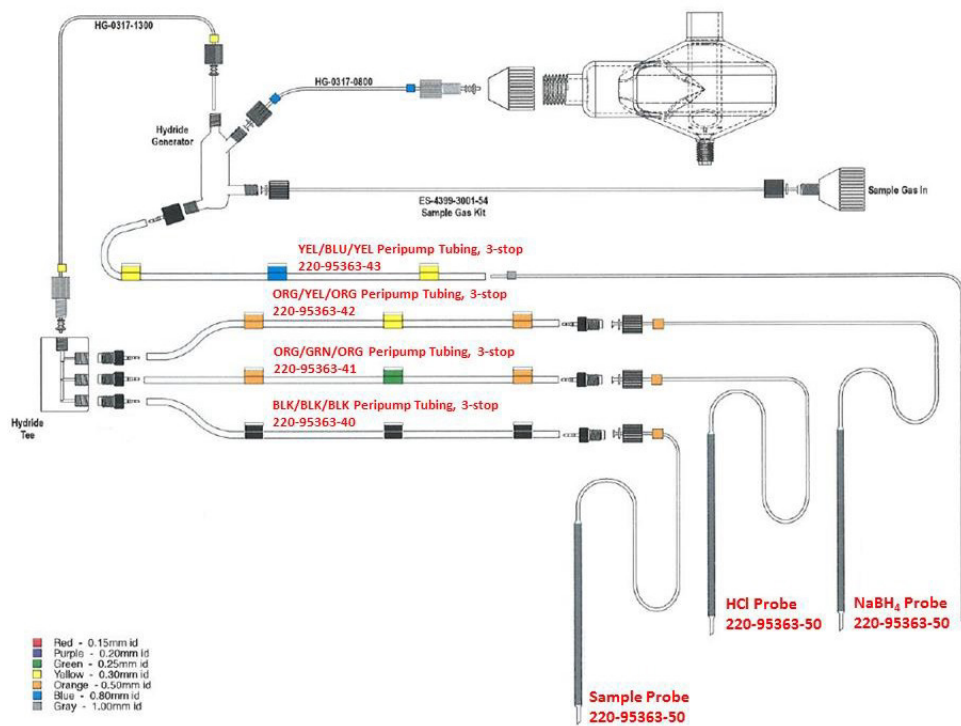
P/N	Part Name	Remarks	External Appearance
220-95337-01	CETAC U5000 AT+	Ultrasonic Nebulizer; Sample injection system developed for high-sensitivity ICP analysis. Uses ultrasonic energy to nebulize a solution consisting of extremely fine particles. This enables the ICPE to perform analyses at a sensitivity 10 times higher than conventional nebulizers	
220-95370-01	ESI hydride ICP	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	Peristaltic Pump	Four-channel peristaltic pump. On-line IS addition possible with additional kit.	

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

Peristaltic Pump Tubing

Part Name	P/N	Remarks
Tube, 0.25-OB-F	018-31558-01	PVC, orange/blue; general use
Tube, 0.76-BLK-F	018-31558-02	PVC, black/black; general use
Tube, 0.89-ORG-F	018-31558-03	PVC; orange/orange; general use
Tube, 0.76-BLK-SF-F	018-31558-11	Solva, black/black; hydrocarbons, petroleum products and distillates
Tube, VS0.76-BLK-F	018-31558-21	Viton, black/black; concentrated acids and corrosive solvents
Tube, 1.02-WHT-MH-F	018-31558-31	Tygon MH, white/white; environmentally-friendly; for MIBK

Chillers/Cooling Kits

Part Name	P/N	Remarks	External Appearance
Cooling Water Circulator	211-92962-41	Cooling water circulator for ICPE-9800 Series	
	Requires:		
	211-93827-41	Chiller Connection Kit	
	018-31509-00	Tetron Braided Hoses	
	220-90646-15	NEMA 6-15P Plug, 15A 250V	
Tap Water Connection Kit	211-90558-41	Required when tap water is used to cool ICPE-9000	---
	Requires:		
	035-60942-15	Coupler set	
Coupler, PMCD1002BSPT	035-60928-21	Coupler for cooling water tubing connection	---

Accessories

Part Name	P/N	Remarks
Aq. Automatic Internal Standard Addition Kit, Glass	220-95356-90	Allows for on-line addition of an internal standard solution
HF Automatic Internal Standard Addition Kit, PEEK	220-95356-94	For use with the peristaltic pump. mixing block is made of HF-resistant materials. For HF applications.
ASXpress Rapid Sample Instruction System	220-95379-01	Increases sample introduction efficiency. Configured for aqueous samples. works with CETAC ASX-280 and ASX-560 ONLY
Niagara Rapid Rinse Kit	220-95356-61	Increases sample introduction efficiency. Configured for aqueous samples. works with AS-10 and CETAC ASX-280/560
ICP Connection Kit	220-95370-03	For ESI HVG. Includes nebulizer adapter, 1/4-28 male/female barbed fittings (4 each), and ASC nozzle

Chemicals

Part Name	P/N	Remarks
Extra-Pure Nitric Acid, 67-70%	220-95371-02	Used to digest samples and stabilize metals. For trace metal analysis at ppb level
Extra-Pure Hydrochloric Acid, 34-37%	220-95371-07	Used to digest samples and stabilize metals. For trace metal analysis at ppb level
Standards, AA, ICP Setup Standard #1	220-95366-98	Required for mapping CCD detector. Contains one 100 mL of 5 ppm Lead (Pb), 5 ppm Lithium (Li) and 5 ppm Phosphorus (P) in 0.5% HNO ₃
Standards, AA, ICP Setup Standard #2	220-95366-99	Required for qualitative database calibration. Contains one 100 mL of 10 ppm Barium (Ba) and 10 ppm Aluminum (Al) in 2% HNO ₃ .

Chemical Compatibility: AS-10

Standard Setup

Chemical Name	Sample	Rinse Solution
Water	✓	✓
Ethanol	✓	✓
Hydrochloric Acid	✓	✓
Nitric Acid	✓	✓
Sulfuric Acid	✓	✓
Hydrofluoric Acid	✓	✗
Xylene	✗	✗
Perchloric Acid	✓* ₁	✗
Methanol	✓	✓
Sodium Hydroxide	✓	✗
Kerosene	✗	✗
Acetic Acid	✗	✗
MIBK	✗	✗
IPA	✗	✗
DMF	✗	✗
NMP	✗	✗

✓: Usable

✓*₁: Use a glass container for the sample and reagent

✗: Not usable

Organic Solvents Compatibility

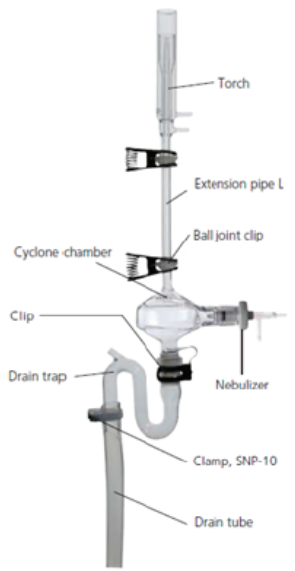
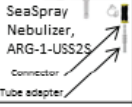
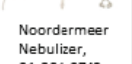
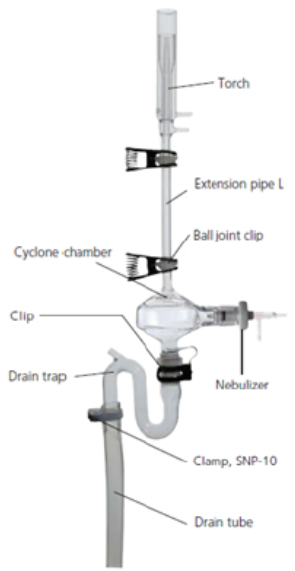
Chemical Name	Sample	Rinse Solution
Water	✓	✓
Ethanol	✓	✓
Hydrochloric Acid	✓	✓
Nitric Acid	✓	✓
Sulfuric Acid	✓	✓
Hydrofluoric Acid	✓	✗
Xylene	✗	✗
Perchloric Acid	✓* ₁	✗
Methanol	✓	✓
Sodium Hydroxide	✓	✗
Kerosene	✓	✓
Acetic Acid	✗	✗
MIBK	✓	✓
IPA	✓	✓
DMF	✓	✓
NMP	✓* ₁	✓

✓: Usable

✓*₁: Use a glass container for the sample and reagent

✗: Not usable

Sample System Configuration

Sample Type	Item	Nebulizer	Sample Tubing	Spray Chamber	Torch	Drain	Other
Standard		Conikal DC Nebulizer 	Take-up tube ASSY, NFTS-075 	Cyclone Chamber, HE 	Mini Torch 		Orifice ASSY, L2
Small Sample Amounts		Nebulizer, 07UES Connector → Tube adapter → 	Take-up tube ASSY, NFTS-075 	Cyclone Chamber, HE 	Mini Torch 		
High Salt Samples ≤5% TDS			Take-up tube ASSY, NFTS-075 	Cyclone Chamber, HE 	High TDS torch 		- Orifice ASSY, S2 - Carriage Gas Humidifier 
High Salt Samples ≤20% TDS		SeaSpray Nebulizer, ARG-1-US\$2S Connector → Tube adapter → 	Take-up tube ASSY, NFTS-075 	Cyclone Chamber, HE 	High TDS torch 		
High Salt Samples ≤30% TDS		Noordmeer Nebulizer, 01-801-0749 	--	Cyclone Chamber, HE 	High TDS torch 		
Organic Solvent Samples		Nebulizer, 10UES Connector → Tube adapter → 	Take-up tube ASSY, NFTS-075 	Twister Chamber, HE 	Standard size torch 		Radial view only, remove axial jacket
Volatile Samples IsoMist Kit		--	--	IsoMist 	VOC torch 		- Radial view only, remove axial jacket - PuraFlex Adapter - Benchtop Jack
HF Acid Samples		Nebulizer, DuraMist/OpalMist 		Tracey TFE Chamber 	De-mountable torch 	HF Drain 	- Radial view only, remove axial jacket - PFA Adapter - Mounting Bracket



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