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Job Number:	IN1317	Date:	15/05/2023-11/07/2023

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*Agent
Install*

ADDITIONAL:

Payment Terms:

50% / 40% / 10%

Other: please specify

Penalty Clause Yes / No

Please specify:

Blue Book Completion:

Signed	<i>J. Moley</i>	Date	<i>11/5/24</i>
Verified	<i>J. Moley</i>	Date	<i>11/5/24</i>

3 - MACHINE SPECIFICATION

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Ref No.	Product Description	Required
HS2022 (continuous flow)		
20402/1	HS2022 Ref Gas + P Mag	
20402/2	HS2022 Ref Gas + E-Mag	
20402/3	HS2022 Ref Gas + Hd Collector + E-Mag	
20402/4	HS2022 Ref Gas + Hd Collector+E-Mag+Trap Loop	
20501	Hd Collector Assy	***
50101/2	Trapping Loop Assy	
70201-1	70201-1 Analyser spares kit – Included	
EA Units		
10202/11	iso-EArth	
10202/13	iso-EArth+	
10202/14	iso-Earth HT Furnace Upgrade	
10202/15	Iso-Earth (Without Autosampler)	
11802/1	Earth+PC	
11802/2	EArth+Clarity+PC	
70501-1	Consumables for C and N for Combustion Only	
70501-11	Simultaneous CNS Consumables Kit (approx. 10000 analysis)	
70501-3	Sample Prep Kit (Inc.)	
70501-4	GSL Combustion and Gas C & N Start Up Kit	
70501-5	Simultaneous NCS Consumables Kit	
70501-6	C&N Combustion Only Consumables Kit (approx. 5000 samples)	
70501-8	Simultaneous CNS Consumables Kit (approx. 5000 samples)	
70601-1	Sulphur Start Up Kit (Inc. with Sercon EA Systems)	
70601-2	Sulphur Consumables Kit for 1000 Samples	
70601-4	Sulphur Consumables Kit (approx. 5000 Samples)	
70801-2	Pyrolysis Consumables Kit-Low temp for Solids	
71701-1	Sub Microgram Nitrogen Analysis Start Up Kit	
SI2040	PN150 Pneumatic Autosampler with one no.50 pos, carousel	
SI2345	ME Micro Balance	
SI2737/A	Sercon 50 Position Autosampler Assy	
SI2789	Extra 50 Position Carousel	
SI2744	Automatic Liquid Sampler 15 Position	
SI2743	Liquid Sampler Mounting Plate	
Headspace Equilibration		
10202/10	XYZ Gas Sampling Control Box	
10302/1	Aqua System	
11103	µCarbs for CF	
11103-1	µCarbs for DI	
11601	200 Place Dual Heated Block 240 Volt	
11801	Sercon XYZ Gas Autosampler	
71107-1	CF oxygen-18 equilibration kit	
71107-2	DI Oxygen-18 Equilibration kit	
71201-1	CF deuterium equilibration kit	
71201-2	DI Deuterium Equilibration kit	
71801-1	WES-DI start up kit (Inc. with WES-DI)	
GC Units		
10402/2	Orchid module 1500C (Will run Hd 70901-1 C Spares Kit Inc)	
10901	Nitrogen Option (71301-1 N Spares kit Included)	
HP7890/1	Agilent 7890B GC System	
HP7890/2	Agilent 7890B GC with Auto Injector	
HP7890/3	Agilent 7890B GC + Auto Injector + 150 Vial Sample Tray	
SI2561	Nexis GC 2010 Plus	

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Ref No.	Product Description	Required
GC Units <i>continued</i>		
SI2564	Nexis GC-2030	
70901-3	GC Pyrolysis H and O Start Up Kit	
70901-4	GC Pyrolysis H Spares Kit	
70901-5	GC Combustion C Spares Kit (approx. 5000 samples)	
70901-6	GC Pyrolysis h Start Up Kit (approx. 5000 samples)	
71301-1	GC N Spares kit	
ABCA2 Units		
10502/1	ABCA2 Sercon XYZ Autosampler	
10602	ABCA2 Gas Box	
20602	Complete Sercon ABCA2 system	
20603	ABCA IR Analyser	
70101-1	ABCA2 spares kit (Inc. With ABCA2)	
70101-2	ABCA2 Spares Kit for AB Analytica Systems	
70101-3	ABCA2 Autosampler Upgrade Kit	
SI1767	CVL505 – Barcode Reader	
SC9973	13C Urea breath test kit for Helicobacter pylori infection	
SC9974	Helicobacter Test kit for children age 3-11 (45mg)	
Integra2 Units		
20802/4	Integra2	
70201-2	Integra2 analyser spares kit - Included	
70401-1	Integra-2 consumables (Inc. With Integra2)	
Trace Gas Systems		
10802/4	CryoPrep	
10802/5	Automated LN refiller	
10802/6	CryoFlex (TOC)	
10802/7	CryoGas	
10802/8	CryoFlex (LA)	
SI2533	Silicon Carbide Vertical Furnace	
SI2731	213nm Laser Ablation System	
SI2733	isoScell 100 sampler chamber	
71001-1	Cryoprep Spares Kit	
71001-5	CryoGas Consumables Kit	
TOC Units		
14001	Thermalox Environmental TOC-IRMS	
14002	Sercon Thermalox Environmental TOC-Standalone	Y
14003	Thermalox Environmental TOC-Standalone No Sampler	
SI2772	CO2 Detector, High sensitivity Option	
SI2773	NOx detector Option	
SI2774	Vacuum pump Option	
SI2775	Stirred Vial rack Option	
72101-1	TOC Start Up Kit	
72101-2	TOC Chem Pack	
72101-3	TOC & TN Instrument with heavy usage - one year	
72101-4	TOC only - economy holding	
GEO 20-22 (dual inlet)		
10702	GEO 20-22 Water Equilibration System (D & 18O)	
21802/1	GEO 20-22	
21802/2	GEO 20-22 + E-Mag	

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21802/3	GEO 20-22 + E-Mag +Hd	
21802/4	GEO 20-22 Inlet	
70301-1	GEO start up kit - Included	
70301-3E	Comprehensive GEO 20-22 spares kit for 5 years operation	
HT-EA		
11501/4	HT-EA (With Autosampler)	
11501/5	HT-EA With Liquid Option	
11501/6	HT-EA Stand Alone	
11501/7	HT-EA (Without Autosampler)	
SI2622	CTC PAL3-LSI-L-S	
SI2624	CTC PAL3-Kit-Standalone	
70801-1	Pyrolysis Consumables Kit-High Temp for Solids	
71501-1	HT-EA Pyrolysis Start Up kit O and H	
71501-2	HT-EA Pyrolysis Kit for Water injections	
71501-3	HT-EA Sensitivity Start Up Kit for O & H in small samples	
71501-4	HT-EA Sensitivity Consumables Kit for O & H in small samples	
71501-5	HT-EA Sensitivity Kit for O&H in Small Samples (5000 samples)	
71501-7	HT-EA Kit for Room Temp Equilibration	
71501-8	HT-EA Pyrolysis Kit for Water injections (approx.1 year kit)	

Ref No.	Product Description	Required
Upgrades		
12101	Evacuation System ***	
12102	2 Ref Gas+ Dilutor Box ***	
20101	Standard Source Assy ***	
20102	HS Source Assy ***	
20301	Standard Collector Assy ***	
30202/1	System Control Upgrade (Pmag) installation not included	Edwards Or Pfeiffer
30202/2	System Controller Upgrade (Emag) installation not included	Edwards Or Pfeiffer
10202/7	Preparation PCB Upgrade	
30202/3	Hijack Box ***	
30302/4	nEXT85 Edwards Pumping System Upgrade Single - installation not included	
30302/5	nEXT85 Edwards Pumping System Upgrade Dual - installation not included	
30302/6	nEXT85 Edwards Pumping System Upgrade Triple- installation not included	
SI2542	ABCA2 Upgrade Kit	
CALLISTOW	Callisto software upgrade ***	
Specials		
11702	LC-I interface	
12202	Leco Interface Unit	
SI2320	Agilent 1260 Series Refractive Index Detection HPLC System	
71401-1	ABCA-G Start Up/Spares Kit	
71401-2	ABCA-G Equilibration Spares Kit - Room temp O only	
71401-3	ABCA-G Equilibration Spares Kit - Room Temp O & H	
71601-1	LC Interface Spares Kit	
ADDITIONS		
PC	Windows 7 based PC System with Callisto Software	
Printer	Printer	
INST1	Installation and start up training at customer's site by Sercon Engineer	
INST2	Installation and start up training at customer's site by Agents Engineer	
WARR	1 year warranty	
WARR2	2 year warranty	
TRAIN	Training in UK for one person for 3 days	
SCONTRACT	Maintenance Service Contract – 1 year	

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SPECIFICATION REQUIREMENTS			
Voltage	230 Volts 50/60Hzs		Y
Plug Type	SI2510	3 Metre USA/Japan plug to IEC C 13	
	SI2511	2.5 Metre Australian plug to IEC C 13	
	SI2512	3 Metre UK 13 amp Fused plug to IEC C 13	Y
	SI2523	3metre Schuko (Euro) Plug to IEC C13 Socket	
	SI2514	2.5 metre Chinese mains to IEC C13	
Pallet	Stamped for export heat treated for 30 min @ 56 °C		Y
	Complies with all Export Requirements		

4 - LOG SHEET

Client:	Sercon-Stock LabTech, China		
Quotation Number:	17330	Date:	19/06/2023
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Date	Action Taken	By Whom
12/09/23	System now complete on test	SM
	Wayne use Software from Zu1299 to Set up.	
①	Sampler communicates with Software however no other communication from TOC	SM
	Paul found no internal USB cable from TOC to PC	SM
	System now communicates with Software. readbacks now good	SM
	Gas connected to Start leak check.	SM
13/9/23	on leak check Flow starts at a base line of 6ml/min	
	Failed leak test.	SM
②	Leak on NO of main valve and common	
③	Leak at combustion tube Seal tube was in place but knurled nut inside was loose.	SM
④	Tube end fitting leaking	SM
⑤	All fittings to Glass pettier tube Leaking, these are now threaded and easy to come loose	SM

23943

4 - LOG SHEET

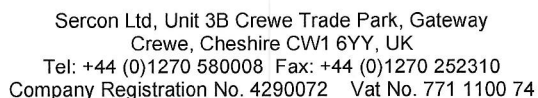
Client:	Sercon Stock LabTech, China		
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Date	Action Taken	By Whom
14/9/23		
⑥	Scrubber tube leaking yellow Ferrule wrong way around	JM
⑦	Flow meter leaking on both connections not using Sealing tape	JM
18/9/23	Instrument appears now leak tight	JM
18/9/23	Memory .vi fault fixed	JM
-	TIC furnace thermocouple fault fixed	JM
-	Flow confirmed @ 120ml/min out of CO ₂ detector.	
-	Leak check passed	
-	Line primed - blew out the side of 2mm tube from syringe pump to needle ↳ line replaced	
-	Noticed needle was coring septum, causing overpressure	
-	Swapped for previous style, modified blue Hamilton fitting to work with modification	
-	Replaced cored septum	JM
-	Unit primed - no overpressure	MOC
-	Poor peaks seen, left running overnight	JM
19-Sep-23	Results poor, investigating cause	
-	Needle cut down to remove dead volume between syringe pump and needle ↳ no effect on peaks.	
-	MPLC flush yields peaks, swapped for new MPLC	
-	System drained + primed, lower CO ₂ peaks on flush cycle	
-	Glass tube found to be fitted wrong - fixed ↳ O ring positioned on wrong side of bulge	
-	Poor peaks still	JM
20 Sep 23	Quartz wool found to be plugging	

4 - LOG SHEET

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Date	Action Taken	By Whom
20 Sep 23	Fixed plug with new wool - System overpressured, blew out TC furnace push fit fitting	JH
-	Swapped for finer wool + new TC reagent	
-	Septum replaced, peaks shouldering	
21 Sep 23	Peaks now consistent, not hanging around but size varies.	
22 Sep 23	Piping remade at some points, no change - Boats investigated, all ok - Main valve wiring loose in board connection - Furnaces compared, TC seems to be colder at 680 compared to TIC - thermocouple position altered - no peak change	
25 Sep 23	Peltier connections removed + remade - Peltier checked & blown out condensation around 'mushroom' at the top. - Peaks now more uniform, no flat lines	
26 Sep 23	Calibration run hit under 3% CV - PASS $\hookrightarrow$ 40w 100 - 125 - 150 - 175 - 200 ppm Analysis run hit under 3% CV - PASS $\hookrightarrow$ 4 x INS + 2 3% CV 2 deletions	JH
27 Sep 23	Needle found to be way depth, fixed unit working as should,	JH
28 Sep 23	Unit consistently hitting spec.	JH



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S029 v3

6 - TEST / ACCEPTANCE SPECIFICATION

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HS20-22			
Reference Gas Precision (n=5)			
¹³ C	(CO ₂)	0.06	
¹⁵ N		0.06	
¹⁸ O	(CO ₂)	0.06	
³⁴ S	(SO ₂)	0.1	
² H		0.4	

Reference Gas Linearity			
¹³ C	≤0.02‰/nA		
¹⁵ N	≤0.02‰/nA		

IsoEarth & IsoEarth+					
Combustion (n=5)					
¹³ C	100 µg C	0.1		10 µg C	0.8
¹⁵ N	100 µg N	0.15		10 µg N	1.5
³⁴ S	25 µg S	0.3		10 µg S	1.0
Dual	400 µg C	0.1		100 µg N	0.15

Integra2			
¹³ C	100 µg C	0.2	
¹⁵ N	100 µg N	0.3	
Dual	100 µg N & 400 µg C	0.4 & 0.15	
³⁴ S	30 µg S	0.5	
¹⁸ O	100 µg O	0.5	

6 - TEST / ACCEPTANCE SPECIFICATION

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HT-EA			
Pyrolysis (n=5)			
¹⁸ O	100 µg O or 1 µl water	0.3	
² H	200 µg H or 1 µl water	1.0	

Aqua, µCarbs & GasBox					
Equilibrations (n=5)					
¹⁸ O	0.2 ml water	0.1			
² H	0.2 ml water	2.0			
Carbonates (n=5)					
¹³ C	100 µg CaCO ₃	0.08			
¹⁸ O	100 µg CaCO ₃	0.1			
Gas Analysis (n=5)					
¹³ C	5% CO ₂	0.1		Air CO ₂	0.1
¹⁸ O	5% CO ₂	0.1		Air CO ₂	0.2
² H	0.5 ml H ₂	1.5			
¹⁵ N	0.5 ml N ₂	0.1		100 ppm N ₂ O	0.5
¹³ C	Breath (12 ml)	0.1			
DIC (n=5)					
¹³ C	15ppm (0.5ml)	0.15			

LC-I			
(n=5)			
¹³ C		0.2	

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GC Orchid						
Combustion (n=3 for each analyte)						
¹³ C	3 Alkanes	100 ng C	0.2		10 ng C	0.5
¹⁵ N	2 Amines	100 ng N	0.5		14 ng N	1.5
Pyrolysis (n=3 for each analyte)						
² H	3 Alkanes	250 ng H	3.0		25 ng H	10.0
¹⁸ O	3 FAMES	100 ng O	0.5		20 ng O	2.0
Water pyrolysis (n=5)						
² H	0.1 µl water	3.0				
¹⁸ O	0.1 µl water	0.4				

CryoRange						
(n=5)						
¹³ C	Air CO ₂ (12ml)	0.1		Air CH ₄ (125ml)	0.2	
¹⁵ N	Air N ₂ (1ml)	0.1		Air N ₂ O (125ml)	0.4	
¹⁸ O	Air CO ₂ (12ml)	0.15		Air N ₂ O (125ml)	0.7	
¹⁸ O	Air O ₂ (1ml)	0.1				
² H	Air CH ₄	3.0				
¹³ C	TOC (5ppm)	0.4				
¹³ C	Laser					

6 - TEST / ACCEPTANCE SPECIFICATION

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Geo2		
Internal precision (no change overs)		
² H	200 Bar µl	0.15
¹³ C	100 Bar µl	0.01
¹⁵ N	100 Bar µl	0.01
¹⁸ O	100 Bar µl	0.015
³⁴ S	100 Bar µl	0.015
Single cold finger volumes (10 change overs)		
¹³ C	20 Bar µl	0.01
¹⁸ O	20 Bar µl	0.015
¹³ C	3 Bar µl	0.02
¹⁸ O	3 Bar µl	0.03
CAPS (n=5)		
¹³ C	50 µg CaCO ₃	0.03
¹⁸ O	50 µg CaCO ₃	0.06
WES (n=5)		
² H		1.0
¹⁸ O		0.05
Manifold (10 tubes)		
² H		0.5
¹³ C		0.02
¹⁵ N		0.02
¹⁸ O		0.03
³⁴ S		0.03



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Company Registration No. 4290072 Vat No. 771 1100 74

Test acceptance - 6

6 - TEST / ACCEPTANCE SPECIFICATION

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Special tests

Sales Signature: <i>J O'Connor</i>	Date: 03/10/2023
Test Signature: <i>S Moseley</i>	Date: 03/10/2023

7: ASSEMBLY AND TEST RECORD

Client:	Sercon Stock LabTech, China		
Quotation Number:	17330	Date:	19/06/2023
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PRODUCT:

T.O.C STAND ALONE
 14002/2023/1317
 ↓

SERIAL NUMBER:

 ASSEMBLED:
 (Name)

P. Mayo

Date:

31-8-23

 PRE-TEST
 INSPECTION:
 (Production name)

P. Mayo

Date:

31/8/23

 PRE-TEST
 INSPECTION:
 (Test name)

James Hanson

Date:

21-8-Sep-23

 SYSTEM TEST:
 (Name)

James Hanson

Date:

28-Sep-23

 PRE-DESPATCH
 INSPECTION:
 (Name)

P. Mayo

Date:

3/10/23

P.A.T. Test results

In compliance with Low Voltage directive 73/23/EEC
 To Low Voltage standard EN61010 – 1:1993

Earth Continuity

0.057

Ω

Insulation

>300

MΩ

Earth Leakage Current

1.35

mA. @

0.08

kVA.

Tested by:

Oliver Wright

Date:

31-8-23

8 - Serial Numbers Record Document

Client:	Sercon Stock LabTech, China		
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Units	S/N	PCBs	S/N
MS/ABCA <i>TGC - 14002/202311317</i>		Electronics Box	
Integra 2		Prep PCB	
Prep Unit 1		VFC PCB	
Prep Unit 2/Misc		Watchdog PCB	
Electronics Upgrade		Head Amp PCB 1	
CETAC		Head Amp PCB 2	
Gas Box		Electromagnet RP	
Autosampler			
BCR			
Dual Heater Block			
Pump Kit and Optics	S/N	Furnaces	S/N
Turbo pump S		Combustion	
Turbo pump A		Reduction	
Rotary Pump		HT-EA	
Voltage 110 / 240		GC Oven	
Gauge S		Furnace 1	
Gauge A		Furnace 2	
Source			
Collector 1			
Collector 2			
Magnet			
Parts	S/N	PC	S/N
Fan PSU		PC	
24V PSU		Monitor	
		Printer	

Key

 Pumps: E: Edwards
 P: Pfeiffer

 Furnaces: V/S: Vecstar
 E: Elite

 Magnet: E: Electromagnet
 S: Standard

 Turbos & Gauges: S: Source
 A: Analyser

 Collectors: Std: Standard
 S: Sulphur
 HD: Hydrogen Deuterium

Additional System Info: