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Job Number:	IN1270	Date:	06/12/2021

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ADDITIONAL:

Payment Terms:

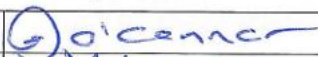
50% / 40% / 10%

Other: please specify

Penalty Clause Yes / No

Please specify:

Blue Book Completion:

Signed		Date	15/3/23.
Verified		Date	16/06/23

3 - MACHINE SPECIFICATION

Client:	University of St Andrews		
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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 (<i>Inc. With ABCA2</i>)	
70101-2	ABCA2 Spares Kit for AB Analitica 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 (<i>Inc. With Integra2</i>)	
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	Thermalox Environmental TOC-Standalone	
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 & 180)	
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 <i>Year 3-4.</i>	✓

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SPECIFICATION REQUIREMENTS		
Voltage	Volts 50/60Hzs	
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	✓
	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	✓
	Complies with all Export Requirements	

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SPECIAL REQUIREMENTS (DETAILED SPECIFICATION)

Air Compressor. SI 2955

Includes large hole autosampler. SI 2040

Does not include sercon Autosampler.

Approved by Sales: (Name) <i>G/H</i>	Date: 8/DEC/2021
Approved by Tech.: (Name) <i>M.O. Low</i>	Date: 8/12/21



3 - MACHINE SPECIFICATION

Client:	University of St Andrews		
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[illegible]

4 - LOG SHEET

Client:	University of St Andrews		
Quotation Number:	12425	Date:	04/11/2021
Job Number:	IN1270	Date:	06/12/2021

Date	Action Taken	By Whom
-	Machine built using new wiring C4 rev. (220-240 VOLT)	JH.
2/2/22	P.A.T UNIT	P.H.
2/2/22	vent valve tightened, was loose	JH.
2/2/22	4A fuse added, 24v PSU cables corrected, cal controllers set up, com + Red + Gc run @ 300% / 300% / 100%, pumped down.	JH.
4/2/22	6thor pipe added from isolation valve → source Pumping down - 6 reached	JH
10/2/22	lots of loose 1/16 caps on plumbing Production informed of the issue	SM
↓		
11/2/22	trap Tube coupling into water + CO2 Trap plumbed the wrong way round	SM
	all crimps and flans set up	SM.
	Gc Box had an internal leak HRC resolved	SM
	Pressure test with V13 closed 24PSI held over 10mins	SM
	Pressure test repeated with trap loop in play 24 PSI → 23 PSI over 10min.	SM
	Helium 15 leak tight!!	SM
	Oxygen line - more finger tight 1/16 caps!	
	Pressure 24 PSI → 24 PSI	
14/2/22	O2 held pressure all weekend!	SM
	Flow rate calibrated won't read due to wired wrong	



Sercon Ltd, Unit 3B Crewe Trade Park, Gateway
Crewe, Cheshire CW1 6YY, UK
Tel: +44 (0)1270 580008 Fax: +44 (0)1270 252310
Company Registration No. 4290072 Vat No. 771 1100 74

4 - LOG SHEET

Client:	University of St Andrews		
Quotation Number:	12425	Date:	04/11/2021
Job Number:	IN1270	Date:	06/12/2021

Date	Action Taken	By Whom
14/2/22	Flow meter now reads correctly	
16-FEB-22	SAMPLE DROPPED - POOR SENSITIVITY AND LOW FOCUS. TEST RIG SOURCE AT LOW. REMAINING.	CM
17-FEB-22	TEST RIG SOURCE MUCH HIGHER SENSITIVITY AND NORMAL FOCUS - VERY LARGE NITROGEN PLANK COMING FROM OXYGEN. OXYGEN WASN'T CRIMPED. CRIMPED DOWN. 4.2A ON N (100V) 8.5A ON C (400V) ORIGINAL SOURCE PUT BACK IN TO CHECK CRIMP ISSUE WASN'T AT FAULT BECAUSE	CM
18/Feb 22	Original Source seems ok good sense for both CO ₂ + N ₂ both peak shapes also look good	SM
	GC increased to 75 to quicker run time 400/100	SM
	Short gas Precision run put on CO ₂ - 0.09 N ₂ - 0.11	SM
21/Feb 22	Linearity results out of Spec for CO ₂ N ₂ in at 0.33 CO ₂ 0.76X	SM
	Dropped Sample to return	
22/2/22	O ₂ pressure gauge was showing 56 p.s.i when I came to the instrument. Purging line reduced it back to 22 p.s.i?	PB
	Run peak + slab for CO ₂ + N ₂ G.C temp reset to 75°C	
23/2/22	Short linearity run 1.5x10 O ₂ meter reading 37 psi overnight with all valves closed. Backed off pressure regulator to zero and reset to 22 psi. Short lin run after changing IR from -2--9	PB



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S028_v3

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Client:	University of St Andrews		
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[illegible]

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[illegible]

Client:	University of St Andrews		
Quotation Number:	12425	Date:	04/11/2021
Job Number:	IN1270	Date:	06/12/2021

[illegible]

Client:	University of St Andrews		
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Job Number:	IN1270	Date:	06/12/2021

[illegible]

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	University of St Andrews		
Quotation Number:	12425	Date:	04/11/2021
Job Number:	IN1270	Date:	06/12/2021

Special tests

Sales Signature: <i>J. D. C. M. C.</i>	Date: <i>15/3/22</i>
Test Signature: <i>S. M. C.</i>	Date: <i>15/3/22</i>

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	University of St Andrews		
Quotation Number:	12425	Date:	04/11/2021
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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	

Dual linearity

0.5 N=0.26 C 0.33

6 - TEST / ACCEPTANCE SPECIFICATION

Customer:	University of St Andrews		
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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	

6 - TEST / ACCEPTANCE SPECIFICATION

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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	

7: ASSEMBLY AND TEST RECORD

Client:	University of St Andrews		
Quotation Number:	12425	Date:	04/11/2021
Job Number:	IN1270	Date:	06/12/2021

PRODUCT:

INTEGRA 2

SERIAL NUMBER:

20802/4-2022/1270

ASSEMBLED:

(Name)

James Hume

Date:

2/2/22

 PRE-TEST
INSPECTION:

(Production name)

Hume

Date:

2/2/22

 PRE-TEST
INSPECTION:

(Test name)

S. Madsen

Date:

2/2/22

SYSTEM TEST:

(Name)

S. Madsen

Date:

15/3/22

 PRE-DESPATCH
INSPECTION:

(Name)

James Hume

Date:

15/3/22

P.A.T. Test results

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

Earth Continuity

0.78
 Ω

Insulation

7300
 $M\Omega$

Earth Leakage Current

0.85

mA. @

0.05

kVA.

Tested by:

P. Hays

Date:

2/2/22

8 - Serial Numbers Record Document

Client:	University of St Andrews		
Quotation Number:	12425	Date:	04/11/2021
Job Number:	IN1270	Date:	06/12/2021

Units	S/N
MS/ABCA	
Integra 2	20802/4-2022/1270
Prep Unit 1	
Prep Unit 2/Misc	
Electronics Upgrade	
CETAC	
Gas Box	
Autosampler	42653
BCR	
Dual Heater Block	

Pump Kit and Optics	S/N
Turbo pump S	210817842
Turbo pump A	
Rotary Pump	210452882
Voltage	110 / 240
Gauge S	210722547
Gauge A	
Source	20102HS-190
Collector 1	20301-111
Collector 2	
Magnet	23-5-19 (5)

Parts	S/N
Fan PSU	
24V PSU	

PCBs	S/N
Electronics Box	202160016
Prep PCB	
VFC PCB	
Watchdog PCB	
Head Amp PCB 1	21013
Head Amp PCB 2	
Electromagnet RP	

Furnaces	S/N
Combustion	
Reduction	
HT-EA	
GC Oven	
Furnace 1	
Furnace 2	

PC	S/N
PC	8X4TJ33
Monitor	F22BWB2
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:



Packing List

Customer Reference: GAT 15742

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1270

Consignee:

University of St Andrews
Gatty Marine Laboratory
Fair Sands
St Andrews
Fife
KY16 8LB

Contact Name: Bill Austin / Craig Smeaton
Contact Tel Number:

BOX: 1

Quantity	Product Code	Product Description	Serial Number: if available
☒ 1		Magnet	23-5-19 (5)
☒ 1		Pc (USB drives enclosed)	8X4TTJ3
☒ 1		Monitor	F22BWB2
☒ 1		Autosampler	42653
☒ 1		Rotary pump	210452882
☒ 1		Kit 70201-2 analyser spares kit	
☒ 1		Kit 70201-2 analyser spares kit	
☒ 1		Kit 70501-3 sample preparation kit	
☒ 1		Kit 70501-6 combustion only consumables kit	
☒ 1		USB Software + Manuals	
☒ 1		USB Windows recovery	

Packed by:

James Hannon

Date:

15/3/22

Claims for damage or shortages must be made within 3 days



S035b_v6

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

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www.sercongroup.com
VAT No.: 771 1100 74
19/01/2017



Packing List

Customer Reference: GAT 15742

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1270

Consignee:

University of St Andrews
Gatty Marine Laboratory
East Sands
St Andrews
Fife
KY16 8LB

Contact Name: Bill Austin / Craig Smeaton
Contact Tel Number:

BOX: 2

Quantity	Product Code	Product Description	Serial Number: if available
1		INTEGRA 2	20802/4-2022/1270

Packed by:

James Hume

Date:

15/3/22

Claims for damage or shortages must be made within 3 days



S035b_v6

Sercon Limited
Unit 3B Crewe Trade Park
Gateway, Crewe
CW1 6JT U.K.
Company Registration No.: 4290072

Phone: +44 (0) 1270 580008
Fax: +44 (0) 1270 252310
sales@sercongroup.com
www.sercongroup.com
VAT No.: 771 1100 74
19/01/2017



Packing List

Customer Reference: GAT 15742

Shipper / Exporter:

Sercon Limited
Unit 3B Crewe Trade park
Gateway
Crewe
CW1 6JT
UK

Tel: +44 (0)1270 580008
Reference: IN1270

Consignee:

University of St Andrews
Gatty Marine Laboratory
East Sands
St Andrews
Fife
KY16 8LB

Contact Name: Bill Austin / Craig Smeaton
Contact Tel Number:

BOX: 3

Quantity	Product Code	Product Description	Serial Number: if available
1		Compressor	210610A0102

Packed by: *Jan Homan*

Date: *15/3/22*

Claims for damage or shortages must be made within 3 days



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St Andrews
Fife
KY16 8LB

Contact Name: Bill Austin / Craig Smeaton
Contact Tel Number:

BOX: Dimensions and weights

	<u>L</u>		<u>W</u>		<u>H</u>		
Box 1	<u>100</u>	x	<u>86</u>	x	<u>109</u>	cm	gw <u>86</u> kg
Box 2	<u>100</u>	x	<u>86</u>	x	<u>107</u>	cm	gw <u>153</u> kg
Box 3	<u>60</u>	x	<u>48</u>	x	<u>84</u>	cm	gw <u>35</u> kg



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11 – Installation Report

Client:	University of St. Andrew`s, Gaty Marine Laboratory		
Quotation Number:	12425	Date:	13.1.2023
Job Number:	IN1270	Date:	13.1.2023

Contact:	Peter Baxter (pmb1@st-andrews.ac.uk)		
Date of Visit:	12.-13.8.2022, 9-13.1.2023	No. of Days:	6
Engineer:	Robert Kamený		

Details of visit:

August 2022

- Unit unpacked and positioned on the bench in the dedicated lab room
- Attention: issue with the O2 gas cylinder delivery
- Available gases on site: Helium and compressed air
- Comms established
- Pumps on overnight
- Customer to seek out O2 gas cylinder alternative resources
- Unable to resource gas supply alternatives
- Att. Unable to proceed with training due to absence to a lab personnel
- RK called meeting to negotiate further steps
- Meeting outcome: It has been agreed to abort installation work until further notice. Customer will contact Sercon office with new dates.
New installation work will be classified as a nonstandard cover visit, and it may be subject to a additional charge

January 2023

1

- Unit powered off up on arrival (supervised shut down procedure before Christmas 2022)
- Pumps on
- Reaction tubes NC set up conditioned
- O2 plumbing (RK)
- Filament conditioned at 3.2e-07mBar
- Reaction tubes temps 1000-600-75 (Celsius)

2

- Helium bottle empty (overnight)
- Lost both reaction tubes
- Training demo: Reaction tubes set up
- GC Column bake out overnight 140C (65ml/min)

3

- Pressure test AM :Pass
- Initial tuning N2, CO2: Pass
- Single test 400/100 beet mix signal observed: 6.1e-09 (15N), 9.9e-09(13C)
- Source pressure: 4.0e-06mBar (isol. Valve open)
- Blank (empty sampler): 1.6-1.7e-10 (15N)
- Dual precision 400/100 beet mix achieved: 0.06std (15N), 0.07std (13C)
- Dual linearity 250/100 beet mix achieved: 0.07std (15N) 2-10ul, 0.35std (13C) 2-10ul
- Suspected adjust to source tuning (RK to investigate)

11 – Installation Report

Client:	University of St. Andrew`s, Gaty Marine Laboratory		
Quotation Number:	12425	Date:	13.1.2023
Job Number:	IN1270	Date:	13.1.2023

4

- Dual 250/100 beet mix linearity: 0.39std (15n), 0.28std (13c) 1-10ul (pass)
- Peak shape for both gas species: pass (2/1 stability: pass)
- Flows as indicated: standby 15ml/min (50ml/min full), O2: 60ml/min, 23psi for He&O2
- Att. poor combustion properties observed
- Pressure test AM: Pass
- Blank: 1.97e-10 (15N)
- Training : PM including demo Dual precision practical session using 400/100 beet mix

5

- Training AM
- Poor combustion properties diagnosis: disabled O2 event in the event sequence
- 400/100 beet mix single test signal observed: 6.2e-09 (15N), 1.7e-08 (13C)
- 400/100 beet mix dual precision:0.08std (15n), 0.01std (13C)
- Blank empty sampler: 2.9e-10 (15N)

Recommendations:

- Refer to dedicated manuals when operating the instrument

Faults and Shortages:

Follow up:

Engineer: Robert Kamený

Date: 13.1.2023

Signed:



12 – Installation Acceptance and Warranty Certificate

Client:	University of St. Andrew's, Gaty Marine Laboratory		
Quotation Number:	12425	Date:	13.1.2023
Job Number:	IN1270	Date:	13.1.2023

Contact:	Peter Baxter (pmb1@st-andrews.ac.uk)
System:	Integra 2 (20802/4-2022/1270)
Software:	Calisto:CF IRMS v 40.2.1
Engineer:	Robert Kamený
Installation Date:	12.-13.8.2022, 9-13.1.2023

Warranty commences:	13.1.2023
Warranty Expires:	12.1.2024 ⁵

Sm

Customer Acceptance:

Name: PETER BAXTER

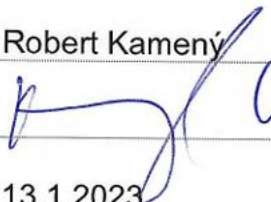
Signature: 

Date: 13.1.2023

Engineer's Signature:

On behalf of Sercon Limited

Name: Robert Kamený

Signature: 

Date: 13.1.2023

Notes: