Heraeus

HERAGUARD HPH CLEAN BENCHES

First class culture quality





HERAGUARD: PERFECT FOR PRACTICAL WORK

Decades of experience in the development and manufacture of high quality laboratory products support every piece of HERAguard[®] equipment. The result: modern, economical, high performance solutions which are safe, functional, user friendly and easy to maintain.

Clear benefits

The benefits of HERAguard are particularly apparent when working with harmless substances or vapours where the following criteria are of the essence:

- product protection
- clean air conditions that can be validated
- ease of use
- sample proximity

Clean air requires a well thought out system

Step 1

Laboratory air is sucked into the top via fans. The prefilters and coarse dust filters remove coarse dust particles.

Step 2

The pre-cleaned air is fed through a high performance particle (ULPA) filter with a filtering efficiency of 99.999 % (based on a particle size of 0.3μ m).

Step 3

After the cleaning process, a horizontal flow of clean air continuously flows through the entire work area. Clean room conditions in excess of 100, in accordance with US. Fed. Std. 209 d and class 3 in accordance with VDI 20 83, are achieved inside the work space.

The result

Safe, reproducible working under clean room conditions.

Optimal work conditions in different zones

The work space of HERAguard HPH Clean Benches consists of different cleanliness zones, a work area and a storage area.

The division of the work and storage area provides three important benefits:

- defined area for reproducible work conditions that can be validated
- protection against contaminated objects
- interim storage of work aids and consumables



Air flow diagram for HERAguard HPH Clean Benches

laboratory air
prefiltered air

ULPA filtered clean air

Outstandingly flexible modular concept

The HERAguard HPH Clean Bench concept prevails through its extensive flexibility – tailor made for customer specific requirements and problems – thanks to the many equipment sizes and the extensive range of accessories and options.

Different sizes

- four widths
- two work space heights
- two work space depths

Configurations can include:

- UV light
- perforated side window
- combination plates with additional perforation
- melamine work tops
- stainless steel work tops

Other options and further information on accessories can be found in our detailed price list.

FOR A VARIETY OF REQUIREMENTS



For many types of work

Thanks to their modular flexibility, HERAguard HPH Clean Benches are an efficient solution for many different fields and areas of application.

For example:

- research work with cell cultures
- botany, plant cultivation
- media preparation
- production of parenteral feed
- filling of syringes
- precision engineering assemblies
- testing of electronic components or assembly groups
- testing of optical components



HERAguard HPH 12 Clean Bench – ideal for sophisticated applications



CERTIFIED IN ACC. WITH





REFINED DOWN TO THE SMALLEST DETAIL

HERAguard HPH Clean Benches incorporate a large number of well thought out components – attention to detail which pays off in daily work where safety, reliability and efficiency matter.

Modular side windows

The side windows of HERAguard HPH Clean Benches are made of single pane safety glass with an access port for tubing or a media tap. A lacquered sheet steel plate with three holes can be used, if desired.

The easy to remove window panes make cleaning straightforward.



Different equipment sizes

HERAguard HPH Clean Benches are available in two heights and with interior widths of 80, 120, 150 and 180 cm to suit differing requirements.

- standard work space height 650 mm for all common applications
- extra work space height 950 mm for special applications, e.g. for work with microscopes



Choice of work tops

Melamine or acid resistant stainless steel work tops are available for different requirements and individual work space designs. Also ideal without work top – e.g. if the equipment is to be driven up to work benches.



Ergonomic design

Easy to use controls, ergonomic work space design and the ability to store work aids and consumables to hand all make for ease and efficiency of use.

UV disinfection

After wiping and scouring, the disinfection light – fitted into the top of the work space as an option – can be used to disinfect the work top overnight, or when the equipment has not been used for a while. This helps to prevent undesirable contamination.



Easy exchange

... of the prefilter on the suction side The prefilter can be changed by hand, without the need for tools. Changing between scheduled maintenance visits is therefore possible.

... of the high performance particle filter

The filter is easily removed from the front – a simple process that does not involve any disassembly or removal of equipment from the wall. This saves time and can eliminate the need for a service visit.



Individual set-ups

Equipment can be placed on an existing laboratory bench, or on a support frame – available within the range of accessories – for different working heights, as desired. The benefit: optimal solutions for specific requirements.

TECHNICAL DATA



			HPH 9	HPH 12	HPH 15	HPH 18	HPH 12/95	HPH 18/95				
Dimensions (m	m)											
External	width	А	1,000	1,300	1,600	1,900	1,300	1,900				
	height	В	1,170	1,170	1,170	1,170	1,470	1,470				
	depth	С	800	800	800	800	800/1,000	800/1,000				
Work area	width	а	920	1,220	1,520	1,820	1,220	1,820				
	height	b	650	650	650	650	950	950				
	depth	С	580	580	580	580	580/780 ¹⁾	580/7801)				
						¹⁾ with 780 mm deep	stainless steel work to	p as an option				
Weights (kg)												
Equipment weight			≈ 90	≈ 120	≈ 140	≈ 150	≈ 180	≈ 220				
Max. load per continuous												
work top			30	30	30	30	30	30				
Electrical data												
Power consumption (kW)		0.75	0.75	1.3	1.3	0.75	1.3					
Current consum	ption (A)		3.3	3.3	5.7	5.7	3.3	5.7				
Lighting (W)			2x 30	2x 36	2x 58	2x 58	2x 30	2x 58				
Connected volta	ge		1/PE AC, 230	V; 50 Hz (other on	request)							
Protection type			IP 20	IP 20								
Safety measure			protective conductor connection									
Protection class			1									
Indiv. safety meas	sures thro	ugh customer	fuse (inert) T16 A or automatic cut-out B16									
Socket protectio	n		T5 A as summ	nation protection. I	f higher current in	take is required,						
			underbench s	ockets with separa	ate supply are ava	ilable						
Radio interferen	nce supp	ression	unilaterisation	in accordance wit	h EN 55 014							
Filter			high performa	nce particle filter (ULPA), filtering eff	iciency 99.999%	(at particle size of	⁻ 0.3 μm)				
Classes in acc.	with		EN 1822 H 14	, Eurovent 4/4 EU	14, DIN 24 183-1	, EU14 (ULPA), DI	N 24 184, better	than class S				
Suction protect	ion		type (EN 779)	G 3 dust filter, filt	ering efficiency: c	oarse – medium						
Air velocity (m/s	s)		1 step: 0.18-	0.32 / 2 step: 0.32	-0.48							
Minimum distar	nce to ro	om ceiling	150 mm									
Lighting intensi (measured on the v	ty (lx) work surfac	ce)	1 step > 600 / 2 step > 1,000									
Noise			sound excess dB (A) 1 step < 55 / 2 step < 66									
Ambient condit	ions		operation: te	mperature + 5°C t	o + 40°C	humidity (rH) 90 %	6					
			storage: te	mperature - 20°C	to + 60°C	humidity (rH) 70 %	6					

Order numbers and other options can be found in the current price list.

MORE THAN YOU EXPECT

One of the best endorsements

We think of ourselves as your partner, offering you competent, safe, reliable solutions. Individual support and specialist advice is available from highly qualified sales and service staff, who will quickly and competently help you with any questions you may have. But Kendro perfection begins with innovative equipment that incorporates a broad range of features – all designed to meet the many and diverse requirements of your daily work.

Examined with a close eye

Every piece of equipment undergoes strict quality control and extensive testing before it leaves our manufacturing sites. Delivery lorries only leave the yard when the testers in the test laboratory have given their thumbs up!

Tried and tested in many areas

Whether in the field of genetics, biotechnology, microbiology or research, our HERAguard HPH Clean Benches perform valuable tasks, day in and day out.

Setting the standard for quality

The most modern production methods and the highest quality components, in combination with careful finishing, guarantee that HERAguard HPH Clean Benches are quality products, renowned for their long term reliability and safety.



Individual testing of the filter's efficiency in our quality laboratory



Visual testing and production of a test protocol



Testing of electrical safety



Final assembly of pre-fabricated assembly groups



Sealing of components



Assembly of mechanical components

WE ARE ONLY SATISFIED IF YOU ARE



Individual

Many people talk about service – Kendro Laboratory Products fills this idea with life. You will notice this, for example, in the quality of our advice, which is individually geared towards your wishes, ideas and requirements. Our convincing solutions are exactly tailored to your specific needs. The next step: we will continue to be there for you after your purchase.

You will find us as a partner who quickly and competently assists in all matters, for instance

- calibration
- reference measurement
- application advice

repairs

exchange of spare parts

Other services are available on request.

For more detailed information please contact your local partner. The Kendro Service Team: a good feeling to know that this partner is at your side.

Your partner

Australia Austria Canada Denmark France Germany India	Kendro Laboratory Products · Lane Cove DC · NSW 2066 · Tel. +61 (02) 9936 1540 · Fax +61 (02) 9427 9765 · info@kendro.com.au Kendro Laboratory Products GmbH · Wien · Tel. +43 (1) 801 40 · 0 · Fax +43 (1) 801 40 · 0 · office@kendro.at Kendro Laboratory Products International Sales · Newtown · USA · Tel. +1 (203) 270-2080 · Fax +1 (203) 270-2166 · info@kendro.com Kendro Laboratory Products AB · Albertslund · Tel. +45-43 62 46 47 · Fax +45-43 62 46 41 · info@kendro.dk Kendro Laboratory Products · Courtaboeuf cedex · Tel. +33 (1) 69 18 77 77 · Fax +33 (1) 60 92 00 34 · info@kendro.de Kendro Laboratory Products (India) Pvt. Ltd. · New Delhi · Tel. +91 (11) 618 58 40 · Fax +91 (11) 618 53 97 · kendro.india@vsnl.com
Italy	AHSI S.p.A. · Cavenago Brianza · Tel. +39 (02) 95 08 11 · Fax +39 (02) 95 08 12 77 · ahsidue@tin.it
Poland	Kendro Spólka z.o.o. · Warszawa · Tel. +48 (22) 663 43 23 · Fax +48 (22) 663 43 25 · kendro.warszawa@kendro.com.pl
Portugal	Heraeus S.A. · Cacem · Tel. +351 (1) 912 08 65 · Fax +351 (1) 912 08 60 · heraeus@mail.telepac.pt
PR China	Kendro Laboratory Products (H.K.) Ltd. + Hong Kong SAR · Tel. +852 2711-3910 · Fax +852 2711-3858 · 106122.205@compuserve.com
Spain	Heraeus S.A. · Madrid · Tel. +34 (91) 358 19 96 · Fax +34 (91) 358 20 67 · heraeus@mx3.redestb.es
Sweden	Kendro Laboratory Products AB · Upplands Väsby · Tel. +46 (8) 59 07 21 90 · Fax +46 (8) 59 03 16 00 · info@kendro.se
Switzerland	Kendro Laboratory Products AG · Zürich · Tel. +41 (1) 454 12 12 · Fax +41 (1) 454 12 99 · kendro-aq@swissonline.ch
	Kendro Laboratory Products SA · Carouge-Genève · Tel. +41 (22) 343 21 67 · Fax +41 (22) 342 38 31 · kendro-sa@swissonline.ch
U.K./Ireland USA	Kendro Laboratory Products Limited · Bishop's Stortford · Herts · Tel. +44 (1279) 827700 · Fax +44 (1279) 827750 · kendro@kendro.co.uk Kendro Laboratory Products L.P. · Newtown · Tel. +1 (800) 522-7746 · Fax +1 (203) 270-2166 · info@kendro.com
All other Inter	national Sales in Europe. Middle East, Africa
	Kendro Laboratory Products International Sales · Hanau · Germany · Tel. +49 (6181) 35-300 · Fax +49 (6181) 35 59 44 · info@kendro.de
Asia Pacific Latin America	Kendro Laboratory Products (H.K.) Ltd. · Hong Kong SAR · Tel. +852 2711-3910 · Fax +852 2711-3858 · 106122.205@compuserve.com Kendro Laboratory Products International Sales · Newtown · USA · Tel. +1 (203) 270-2080 · Fax +1 (203) 270-2210 · info@kendro.com
Internet	http://www.kendro.com · http://www.heraeus-instruments.com



Kendro Laboratory Products - a worldwide company formed by the merger of Heraeus Instruments and Sorvall.

Laborator	у С	lean Benches v	vith horizontal la	aminar air flow,	Cle	ean Room Clas	s 100, Product I	Protection	Models	
Labor Rei	nlu	ftgeräte mit hor	izontalem lamir	naren Luftstrom,	, R	einraumklasse	100, Produktsc	hutz	Modelle	нрн
		<u> </u>	hort Form Informatio	n			Kurzinformation		Sketch / Skizze	
		Side windows: Sat	fety Glass, one lead	d through each		Seitenscheiben aus	Sicherheitsglas (ES	G) mit jeweils einer	~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
		side, 23 mm, stop	pers			Bohrung D=23 mm,	Stopfen			
		I wo stage ventilat	tion performance, t	wo stage		Zweistufige Gebläs	eleistung, zweistufig	e Beleuchtung	HERG	hard
		illumination switch	nable; operation no	ours counter		schaltbar, Betreibsz	zeiterfassung			
	3 sockets, switchable 3 Steckdosen, schaltbar									
		Air Flow Monitor for	laminar flow, optical	and acoustical		Strömungsüberwac	hung des Luftstrome	es, optische und		
		alarms Origl / mag filter to the				akustische Alarmga	ibe robfiltor) zum Auff:	angon yon grobon		
		Grid / pre-inter to tra	ip dusts and dirts,			Voruproinigungor	GE 3 2 Erestzfilt	angen von groben		
		HEPA Filter H 14 act	- FN 1822			HEPA Filtor H 14 na	ch FN 1822	51		
	Models / Modelle HPH 9 HPH 12 HPH 15							HPH 18		
·		Mains Voltage / Anschlußspannung : 1 / N / PE 230 V, AC ; 50 Hz								
	Inner width / Innenbreite [mm] :				920	1220	1520	1820		
		Width / Breite [mm] : 1000 1300 1600							1900	
			Inner height	/ Innenhöhe [mm] :			refer to listing /	siehe Auflistung		
			H	eight / Höhe [mm] :			refer to listing /	siehe Auflistung		
		Dept	h (footprint) / Tiefe (Aufstelltiefe) [mm] :			80	00		
	Г	Madalawa	the Malausia Table 7	Ferrar undelte		Madalaw		Tan		
2002			ith Melamin Table I	op, white			2002			
		i ypen mit i	Melamin - Arbeitsp	latte, weiss		i ypen mit	Melamin - Arbeitsp	latte, weiss		
	-		1180 mm, Hone: ~	1180 mm		Height: ~ With ra	1480 mm, Hone: ~	~ 1480 mm ~ 950 mm		
		Inne	nraumhöhe: ~ 650	mm		mit orh	öhtem Innenraum:	~ 950 mm		
/ alahoM	ŀ	Order No : /	Price / Preis			Order No : /	Price / Preis		Models /	
Modello		Bostoll - Nr :	rei idi	Prico / Prois [DM]		Bostoll - Nr :	rELIDI	Price / Prois [DM]	Modello	
		Desteil - NI				Desteil - NI			MOGENE	
нрн э		51 013 519								
HPH 12		51 013 520				51 013 780			HPH 12 / 95	
HPH 15		51 013 521								
HPH 18		51 013 522				51 013 781			HPH 18 / 95	
				[1 EUR = DM]						
				1,95583			PriceL_HERAguard_0	2_01.xls / Equipment, Ta	ab. 1 HPH Mod.	

PriceL_HERAguard_02_01.xls / Equipment, Tab. 1 HPH Mod.

Laboratory Clean Benches with horizontal laminar air flow, Clean Room Class 100, Product Protection	HPH /
Labor Reinluftgeräte mit horizontalem laminaren Luftstrom, Reinraumklasse 100, Produktschutz	HPH / 95

Valid for deliveries to German customers only :

Nur gültig für Lieferungen an Kunden in Deutschland:

Recertification Service after installation of the unit prior operation, Safety test :

Installationsprüfung nach Geräte - Aufstellung, vor Inbetriebnahme, Abnahmeprüfung :

			Order No.: Bestell - Nr.:	Price / Preis (EUR1	Preis IDM1	0/6
For HPH Models Für HPH Modelle	Safety test I:	Test of air velocities, electrical safety, filter performance	50 050 317	[[=01.]	μ. J.	
For HPH Models Für HPH Modelle	Safety test II:	Safety test I + test of Clean room class, filter integrity, calibration of air velocities	50 050 318			
Delivery to place un Conditions acc. to Tran Lieferung (frei) zur Rahmenbedingungen g For HPH Models Für HPH Modelle	nit will be used / to sport - Service Chec Verwendungsstell gemäß Transportserv	Laboratory k List e / ins Labor ice - Checkliste	50 041 775			
For HPH Models Für HPH Modelle	24 hours ready 24 - Stunden So	ness for Service ervicebereitschaft	50 050 316			

All prices in addition to service basic costs in accordance to valid Service Price List / Alle Preise zuzüglich der Nebenkosten nach aktueller Service - Preisliste Further Price information refer to valid Service - Price List / Weitere Service Preise: siehe aktuelle Service - Preisliste

PriceL_HERAguard_02_01.xls / Abn. Tr. D

2002

Laboratorv Clean Be Labor Reinluftgeräte	Laboratorv Clean Benches with horizontal laminar air flow. Clean Room Class 100. Product Protection Labor Reinluftgeräte mit horizontalem laminaren Luftstrom. Reinraumklasse 100. Produktschutz				Options Optionen	HPH	2002	2	
Sketch / Skizze	Short Form Information / Kurzinformation	Fits for / Passend für	Width / Breite [mm]	Height/ Höhe [mm]	Depth / Tiefe [mm]	Order No. / BestNr.	Add. Charge / Mehrpreis [EUR]	Add. Charge Mehrpreis [DEM]	/ III / D
	Work Table Top coated with stainless steel (AlSi 316), Depth ~ 580 mm, instead of Melamin Top	HPH 9 HPH 12 HPH 15 HPH 18	1000 1300 1600 1900	1180		51 900 317 51 900 318 51 900 319 51 900 319			-
	Arbeitsplatte mit Verkleidung aus Edelstahl 1.4571, Tiefe ~ 580 mm, anstelle Melamin Platte	HPH 12 / 95 HPH 18 / 95	1300 1900	~ 1480		51 900 318 51 900 319			-
	Depth <u>~ 780 mm</u> , instead of Melamin Top	HPH 12 / 95	1300	~ 1480		51 900 320			-
	Arbeitsplatte mit Verkleidung aus Edelstahl 1.4571, Tiefe <u>~</u> 780 mm, anstelle Melamin Platte	HPH 18 / 95	1900	~ 1480		51 900 321			_
	Left side window with combination plate, 3 lead throughs (+ Stoppers), 23 mm dia., instead of standard window	HPH 9 HPH 12 HPH 15				<u>51 900 310</u>			_
	Linke Seitenscheibe mit Kombinationsplatte, 3 Durchführg.(+ Stopfen), 23 mm Durchm., anstatt der Standard Seitenscheibe	HPH 18 HPH 12 / 95 HPH 18 / 95				All Models / A	lle Modelle		
	Right side window with combination plate, 3 lead throughs (+ Stoppers), 23 mm dia., instead of standard window	HPH 9 HPH 12 HPH 15				<u>51 900 311</u>			_
	Linke Seitenscheibe mit Kombinationsplatte, 3 Durchführg.(+ Stopfen), 23 mm Durchm., anstatt der Standard Seitenscheibe	HPH 18 HPH 12 / 95 HPH 18 / 95				All Models / A	lle Modelle		
	Monito contact for connection of external systems, Alarms Monitorkontakt zur Ansteuerung externer Systeme,					<u>51 900 313</u>			-
	Alarmgaben UV - C disinfection irradiator with timer (~ 1/2 hour operation, (company setting))	-				All Models / A	Alle Modelle		_
· · · ·	(Firmeneinstellung)) Combination: Options UV - C light + Monitor contact					All Models / A	lle Modelle		
-@- + f ⁶ ?°°°Ľ	Kombination: Optionen UV - Strahler + Monitorkontakt					51 900 316 All Models / A	lle Modelle		-

PriceL_HERAguard_02_02.xls / Options

Laboratorv Clean Benche Labor Reinluftgeräte mit	es with horizontal laminar air flow. Clean Room horizontalem laminaren Luftstrom. Reinraumk	r Class 1 lasse 10	00. P 0. Pro	roduct Protoduktschutz	tection z			Accessories Zubehör	HPH	2002
Sketch / Skizze	Short Form Information / Kurzinformation	Туре / Тур		Fits for / Passend für	Width / Breite [mm]	Height/ Höhe [mm]	Depth / Tiefe [mm]	Order No. / BestNr.	Add. Charge / Mehrpreis [EUR]	Add. Charge / Mehrpreis [DEM]
	Floor Stand, work height ~ 785 mm, for seat possition	FS 9			1002	680	800	50 044 284		
		FS 12			1302	680	800	50 044 285		
a a	Untergestell, Arbeitshöhe ~ 785 mm, für sitzende Postion	FS 15			1602	680	800	50 044 286		
		FS 18			1902	680	800	50 044 287		
	Floor Stand, work height ~ 925 mm, for seat / stand	FS 9/2			1002	820	800	50 050 078		
	possition	FS 12/2			1302	820	800	50 050 079		
	Untergestell, Arbeitshöhe ~ 925 mm, für sitzende /	FS 15/2			1602	820	800	<u>50 050 080</u>		
	stehende Postion	FS 18/2			1902	820	800	50 050 081		
	Floor Stand, work height ~ 1105 mm, for stand possition	FS 9/3			1002	1000	800	<u>50 051 764</u>		
\$ \$		FS 12/3			1302	1000	800	<u>50 051 765</u>		
	Untergestell, Arbeitshöhe ~ 1105 mm, für stehende	FS 15/3			1602	1000	800	<u>50 051 766</u>		
	Postion	FS 18/3			1902	1000	800	50 051 767		
	Adjustable floor stand, in steps of 50 mm, adjustable 785 -	FSH 9			1002	680-980	800	50 046 028		
	1085 mm	FSH 12			1302	680-980	800	50 046 029		
	Einstellbares Untergestell, in Schritten von 50 mm, Höhen	FSH 15			1602	680-980	800	<u>50 046 030</u>		
	von 785 - 1085 mm	FSH 18			1902	680-980	800	50 046 031		
	Set of Castors, 2 Pcs. Standard, 2 Pcs. fixable Castors,									
	Installation instruction							<u>50 051 989</u>		
	Rollensatz, 2 St. Lenkrollen, 2 St. Feststellrollen,									
	Montageanleitung						for all fl	oor stands / für	alle Untergeste	lle
	Foot rest bar for floor stands FS / 2; FS / 3; FSH, for	FS 9 / &	FSH 9					<u>50 051 982</u>		
	fixing at the floor stand; for :	FS 12 /	& FSH	12				<u>50 051 983</u>		
7 <u>4</u>	Fußstütze für Untergestelle FS / 2; FS / 3; FSH, zur	FS 15 /	& FSH	15				<u>50 051 984</u>		
X X	Montage am Untergestell; für :	FS 18 /	& FSH	18				50 051 985		
	Drawer set, 1 Drawer with stainless steel front for fixing									
	under work table top, set with all needed parts, installation									
	instruction							<u>50 051 986</u>		
	Schubladensatz, 1 Schublade mit Edelstahlblende zur									
	Montage unter der Arbeitsplatte, Satz mit allen							for all models	/ für alle Geräte	÷
	Befestigungsteilen, Montageanleitung									
	Waste Drawer set, 1 Drawer with stainless steel front for									
	fixing under work table top, set with all needed parts,									
	waste bags, installation instruction							<u>50 052 209</u>		
	Abfallbeutelhalter herausziehbar, 1 Lade mit									
ter	Edelstahlblende zur Mont. unter der Arbeitsplatte, Bef							for all models	/ für alle Geräte	÷
)]}	teilsatz, Abfallbeutel, Montageanleitung									

Laboratorv Clean Benches with horizontal laminar air flow. Clean Room Class 100. Product Protection Labor Reinluftgeräte mit horizontalem laminaren Luftstrom. Reinraumklasse 100. Produktschutz								HPH	2002		
Sketch / Skizze	Short Form Information / Kurzinformation	Туре / Тур	Fits for / Passend für	Width / Breite [mm]	Height/ Höhe [mm]	Depth / Tiefe [mm]	Order No. / BestNr.	Add. Charge / Mehrpreis [EUR]	Add. Charge / Mehrpreis [DEM]		
	IV - bar - Set, e.g. for hanging of Laboratory bottles and bags, incl. 6 hooks, inst. instr. Set Aufhängevorrichtung (IV - bar) zum Aufhängen von z.B. Laborflaschen, inkl. 6 Haken, Montageanl.						50 052 210 All Models / Alle Modelle				
	Installation set for Windscreen (for HPH 12 & HPH 18) for integration on control unit, hingable; for:	HPH 12				50 052 460					
	Integration an die Steuereinheit, klappbar; for :						<u>50 052 462</u>				
	Service Tap, Vacuum, 3/8" (right), long Type, fits in side wall. Laborarmatur, Grobvacuum, 3/8" (rechts), lange Ausf., passend für Seitenwände						50 044 678 All Models /	Alle Modelle			
└───╢┨┤╱┘╨╨╜	Service Tap, Water, 3/8" (right), long Type, fits in side wall. Laborarmatur, Wasser, 3/8" (rechts), lange Ausf., passend für Seitenwände	-					50 044 679 All Models /	Alle Modelle			
	Service Tap, <u>non combustible gas</u> , 3/8" (right), long Type, fits in side wall. Laborarmatur, <u>nicht brennbare Gase</u> , 3/8" (rechts), lange						50 045 959 All Models /	Alle Modelle			
	Service Tap, combustible gas, 3/8" (right), long Type, fits in side wall. Laborarmatur, brennbare Gase, 3/8" (rechts), lange Ausf., passend für Seitenwände	Gas supply shor valve ! (#: 50 044 Gasversorg soll (#: 50 044 664)	uld be interlock 4 664) te üb. Magnetve	ked by a s entil verri	olenoid egelt erf.	_	50 046 015 All Models /	Alle Modelle			
	Lead through for hose, short type, for integr. UV e.g., fits hoses 10 -13 mm dia. Schlauchdurchf., kurze Ausf., für integr. UV - Str. z.B., paßt für Schlauch-D: 10 - 13 mm	(#: 50 044 664) 					50 047 504 All Models /	Alle Modelle			
	Solenoid Valve for combustible gases, 5 m supply cord, fittings Magnetventil für Brenngas, 5m Anschlußleitung, Zubehör	Gas supply sho valve ! Gasversorg soll	uld be interlock te üb. Magnetv	ked by a s entil verri	50 044 664 All Models / Alle Modelle						
	Spare pre filter set, pre filter GF 3; 5 pcs. filters for units with length of :	max. 1,2 m					50 051 864				
	Verbrauchsmaterialsatz, Vorfilter GF 3; 5 St. Filtermatten für Geräte mit Arbeitsbreite :	max. 1,8 m					50 051 847				

Laboratory Clean Benches	aboratory Clean Benches with horizontal laminar air flow, Clean Room Class 100, Product Protection								2002
Labor Reinluftgeräte mit h	orizontalem laminaren Luftstrom, Reinraumkl	<u>asse 100, P</u> i	roduktschut	Z			Zubehör		
Sketch / Skizze	Short Form Information / Kurzinformation	Туре / Тур	Fits for / Passend für	Width / Breite [mm]	Height/ Höhe [mm]	Depth / Tiefe [mm]	Order No. / BestNr.	Add. Charge / Mehrpreis [EUR]	Add. Charge / Mehrpreis [DEM]
	Spare HEPA - Filter Sets, H 14 filter, fitting mat.		HPH 9				50 051 853		
			HPH 12				50 051 849		
			HPH 15				50 052 463		
	Ersatz-HEPA-Filtersätze, H 14 Filter, Bef. Mat.		HPH 18		50 051 850				
			HPH 12 / 95				50 051 852		
			HPH 18 / 95				50 051 851		
	Spare Envelope for Unit documentation, can be fitted on unit						50 048 897		
	Aufbewahrungstasche für Gerätedokumentation, kann am Ger. Bef. werden						All Models /	Alle Modelle	
	Flexible Night Cover for Clean Bench,		HPH 9				50 059 171		
	set with all accessories, installation instruction		HPH 12				50 059 172		
			HPH 15				50 058 775		
	Flexible Nachtabdeckung für Reine Werkbank,		HPH 18				50 055 553		
	Set mit allen Zubehörteilen, Montageanleitung		HPH 12 / 95				50 059 173		
			HPH 18 / 95				50 056 406		

Laboratory Clean Benches	aboratory Clean Benches with horizontal laminar air flow, Clean Room Class 100, Product Protection Accessories HPH 2002									
Labor Reinluftgeräte mit h	orizontalem laminaren Luftstrom, Reinraumkl	asse 100, P	ro	oduktschut	z			Zubehör		
Sketch / Skizze	Short Form Information / Kurzinformation	Туре / Тур		Fits for / Passend für	Width / Breite [mm]	Height/ Höhe [mm]	Depth / Tiefe [mm]	Order No. / BestNr.	Add. Charge / Mehrpreis [EUR]	Add. Charge / Mehrpreis [DEM]
	Laboratory Safety Burner with foot starter; comes with: Burner, Foot pedal, Line adaptor, nozzles for Propane, Butane & natural gas	vulcan						50 049 198		
Ê	Labor - Sicherheitsbrenner mit Fußstarter, Lieferumfang: Brenner, Fußstarter, Netzteil, Düsen für Propan, Butan & Erdgas									
	Safety Burner vulcan + gas cartridges, cartridge adaptor + 5 spare gas cartridges	vulcan plus						50 050 244		
	Sicherheitsbrenner vulcan mit Gaskartuschen, Gaskartuschenadapter, 5 St. Ersatz - Gaskartuschen									
	Adaptor for gas cartridges CV 360			for vulcan /						
	Adapter für Gaskartuschen CV 360			gas cartridges	6			50 049 199		
	Accessories set for Safety Burner: Spill protector & Instrument tray			for vulcan				50 049 200		
	Zubehörsatz Labor - Sicherheitsbrenner: Spritzschutz & Instrumentenablage									
	6 Pcs. Butane gas cartridges									
	6 St. Butan Gaskartuschen			for vulcan				50 054 130		
	Safety gas hose for natural gas supply									
	Sicherheits - Gasschlauch für Erdgas			for vulcan				50 049 718		
	Safety gas hose for bottled gas									
	Sicherheits - Gasschlauch für Flüssiggas			for vulcan				50 049 719		

PriceL_HERAguard_02_03.xls / Accessories





Clean Benches

with Horizontal Airflow

Model HPH



This instruction r	This instruction manual applies to the various versions of the HERAguard model series:						
Models	Equipment						
HPH 9; HPH 12; HPH 15; HPH 18	This edition of the instruction manual applies to series manufacture clean workbench. These instructions can be modified to reflect specific options or accessories.						
HPH 12/95; HPH 18/95	Models with taller working space						

Read this instruction manual and keep it near the equipment for reference purposes ! Failure to understand or to follow these instructions can result in reduced performance, damage to the unit, or endanger the health and safety of operating personnel.

Only authorized, knowledgeable service personnel may perform maintenance, adjustment, and repair work on this unit.

Neither these operating instructions nor any portion thereof may be reproduced or distributed in any manner without the express, written permission of Kendro Laboratory Products.

Certain sections of these operating instructions **may be copied for the internal use of the operator, e.g., for** <u>the purpose of accident prevention training of operating personnel</u>. These sections are identified in the contents.

Kendro L. P. assumes no warranty for the suitability of this device - including these operating instructions - for a specific purpose outside those listed in the section dealing with applications for the device.

The contents of these operating instructions are subject to change without notice at any time.

For translations of this manual into foreign languages, the German version remains binding.

Trademarks

HERAguard ® and "Heraeus" and "Kendro Laboratory Products", "Heraeus Sorvall" are registered trademarks of Kendro Laboratory Products GmbH.

All other trademarks mentioned in these instructions are the exclusive property of the manufacturer in question. © Kendro Laboratory Products GmbH, 63450 Hanau, Germany

Publication date: 10.1998

Nominal charge

=	Kendro Laboratory Products GmbH	C	++ (0 61 81) 35 - 300
	Heraeusstraße 12 -14		++ (0 61 81) 35 - 5973
	D - 63450 Hanau , Germany		
	Refer to the included directory for your local Kendro partner.		

Page

	-
	GLOSSARY
1.	OVERVIEW
	Control Panel4Control Panel Elements5Explanation of Symbols5
2.	ENVIRONMENTAL INFORMATION
	Disposal of Shipping Materials6Disposal of Old Units6Disposal of Used Filter Elements6Energy Consumption6
3.	SAFETY NOTES
•	Safety Notes
	Operating Instructions
	Unit Log 8 Test Chamber Outlets 8
4.	UNIT DESCRIPTION8
	Application Area 8 Unit Construction 9 operating Principle 9 Safety Equipment 9 Power switch with key lock
	(Function Selection Switch)
	- Air Monitoring
5.	SETUP AND INSTALLATION
	Transport10Setup Location10Room Ventilation11Setup11Spacing11Connections11- Power11- Fittings (Accessories)12- Monitor connections / External Monitoring System Connection (Optional)12
6.	OPERATION13
	Safety Check, Initial Startup13- Prior to Startup13Starting the Clean Bench13Work Rules13Error Messages13Taking the Unit out of Service14

	Pa	age
7.	MAINTENANCE	14
	Routine Maintenance Tasks	14 14
	Replacing Electrical Parts	14
	Filter Replacement	14
	- General Information	14
	Authorized Spare Parts	15
	Authorized Accessories	15
8.	TECHNICAL SPECIFICATIONS	16
	Geometry	16
	Weights, Performance	16
	Electrical Parts	
	17	
	Filtration	17
	Noise	17
	Illumination Strength	17
	Ambient Conditions	17

The safety of this device with respect to persons, the environment, and the material being processed depends to a great extent on the behavior of those working with the device. Health hazards in particular cannot, however, be ruled out. This residual risk depends on the work being performed on a case-by-case basis.

These operating instructions contain important information for your safety, the setup and installation of the unit, and for the unit's operation and maintenance !

Please read these instructions carefully before operating this unit, and follow all instructions in order to avoid errors and resulting damage or hazards, particularly health hazards.

ALWAYS:

Wear protective gear (clothing, gloves, safety glasses, ...) appropriate to the level of risk involved.

Initiate and follow hygienic measures. Each individual is responsible for his or her personal safety and health.

Control Panel

All switch elements and all optical and acoustic signal generators for operation and fault required to operate the unit are located on the control panel:

Fig. 1/1: Control panel



Control Panel Elements

Item No.	Symbol	Message / Comment			
	Power sw switch, w	vitch / Function selection vith key activation:			
	0	Unit off			
1		Unit on: Work / normal position			
	I	Unit on: Reduced ventilation			
		Unit on: Operation with UV surface disinfectant lamp (optional)			
	I	Unit on: Sleep mode, Ventilation off			

Note: In any switch position, the key can be removed and held by an authorized individual to prevent the unit from being used by unauthorized individuals.

Item No. Symbol		Signal	Message / Comment
2	h		Operating hours counter (e.g., for maintaining a unit log)
3			Acknowledge acoustic alarm button
4		Green	Ventilation system ope- rating correctly: Run
5	1200	Red	Ventilation system <u>Fault</u>
6	-Ŏ-		Sample chamber light ON/OFF switch Stage I and II
7		Yellow	Release active
8	╶╻╇┎		Release/unlock switch (optional, e.g., error message system relea- se, unlock magnetic val- ves, etc.)
9	-(UV)-		Start UV lamp (optional)
10	/ · · ·	Yellow	UV lamp on (optional)
11			Outlet ON/OFF switch
12		White	Outlet on

Â	Chapters and sections within the opera- ting instructed that relate to safety are in- dicated by this symbol.
Ĩ	This symbol denotes a comment for opti- mum utilization of the unit.
	This symbol indicates a note concerning regulated disposal / recycling of raw ma- terials.
CE	EU symbol that denotes conformity with all relevant European guidelines.

Explanation of Symbols

Warning / Note / Quality Symbol



Disposal of Shipping Materials

The packaging is intended to protect the unit against damage during shipping. Aside from suitability for performing this protective function, packaging material selection is primarily based on environmental and disposal aspects to ensure that the material can be recycled.

- The corrugated cardboard is made of recycled paper.
- Molded plastic parts (Styrofoam) are FCCH-free.
- Wood crating / palettes are made of recycled, untreated boards.
- The polyethylene shrink-wrap (PE) is made from recycled material.
- Strapping is made of polypropylene (PP).

Returning the packaging material to the material flow for reuse saves raw materials and reduces the amount of waste generated by your operation. In general, you can return the packaging materials to your dealer.

If you prefer recycling the packaging materials yourself, contact your local municipal government for the location of the nearest recycling center.

B

Disposal of Used Units

Prior to their proper disposal, used microbiological equipment must be thoroughly cleaned and disinfected. A corresponding certification that this has been done must be included with the equipment being disposed of.

Older units contain valuable materials. Do not simply send your used equipment to the nearest landfill, instead, contact your local municipal government authorities to determine what cleaning / disinfection measures are required, or contact your nearest scrap metal dealer to determine whether your unit can be recycled.

B

Disposal of Used Filter Elements

The service life of filters depends primarily on the cleanliness of the air in the setup location.

Dirty filters can be treated as domestic waste and be disposed of accordingly.

For separate disposal, the filter medium (domestic waste) can be removed from the aluminum frame (recyclable waste). Discuss the various possibilities for disposal with your firm's waste management section.

Further, observe all applicable federal. state, and local regulations (FRG: BImSchG, AbFG ...).

- Caution -

Kendro L. P. **warns** against the handling of this possibly hazardous filter waste by individuals who do not possess the necessary federal, state, or local certificates for transporting and/or disposing of waste (possible a hazardous materials handling license). **As the source, you are responsible for this waste material**.

Failure to observe all proper disposal regulations may make **you liable** to civil and/or criminal charges.

Should you encounter difficulties in disinfecting and thus neutralizing the filter elements in question, please contact us, and we will be pleased to have our service organization prepare an offer.

Energy Consumption

This unit is designed for **continuous operation** in order to minimize the risk of contamination. The retention capabilities of the filters can only be ensured when they are in operation, that is, when air is flowing through them.

- Therefore, never turn the unit's ventilation off immediately after completing your work. Otherwise any contaminants that are still floating free cannot be trapped by the filter. We recommend running the unit for a further 20 minutes in the low-power mode.
- To save electricity, turn the test chamber light off whenever you are not working with the unit.

If necessary, surface disinfection of the test chamber should be performed.

Safety Notes

Read the operating instructions carefully before beginning work with the unit in order to prevent errors and resultant damage, particularly to the health of personnel.

The unit may only be employed for its intended purpose, that is, for work with non-hazardous substances or vapors with the highest requirements for production safety.

The use of the bench for any other purpose may present unknown risks and hazards, and is not permitted.

Using these operating instructions as a basis, the operator (company) is to prepare written, understandable instructions in the local language, and tailored to the work to be performed on or with these clean benches.

In order to minimize the risk of contamination during operation:

- The unit may only be operated by trained and fully instructed personnel.

In case of damage:

A damaged unit can endanger the safety of the operator and present a hazard to the surrounding environment !

Take all necessary steps to prevent contamination, and immediately shut the affected unit down.

- Prerequisite:
- Proper installation
- Unit repair or replacement of parts in case of recognized damage;
- Disinfection and cleaning in accordance with an appropriate disinfection/cleaning schedule and prior to extensive periods of non-use.
- Regular safety inspections: <u>INSPECTION INTERVAL: AT LEAST ANNUAL-</u> <u>LY</u>.

Any necessary repairs may only be carried out by properly trained specialists. Improper repairs can result in significant hazards to the user and the environment.

The operability and safety of the workbench can only be guaranteed if all necessary inspections, maintenance, and repair work are performed by the Kendro Service Department or by individuals authorized by Kendro L. P. .

Follow all applicable federal, state, and local guidelines when setting up and operating the unit. (FRG: ZH 1/119, ZH 1/342, ZH 1/343, ZH 1/598)

The unit's electrical safety can only be assured if it is connected to a properly installed and operated **gro-unded power supply**.

Itis vital that this basic safety requirement is met. If in doubt, have the in-house circuits examined by a qualified electrician.

Kendro L. P. cannot be liable for damages, particularly personal injuries, resulting from a missing or interrupted ground circuit.

It may be necessary to perform suitable disinfection/cleaning work before beginning maintenance.

Disconnect the unit from the electrical and other supply networks before beginning maintenance/repair work, and pull the unit's power plug out of the wall socket or remove or turn off the fuse or circuit breaker. Lock the unit out to prevent the power from being accidentally turned on to it. Shut off and lock the gas connection, and secure it.

To prevent static electricity buildup and the hazards associated with it, it may be necessary to connect any supply lines (e.g., gas, water...) to your building's ground circuit.

If flammable materials/solvents are used or released during work in the test chamber, remember that, after a point that is specific to the material involved, these materials form a flammable, and in some cases explosive, vapor/air mixture. This mixture can result in fires or explosions.

If such work cannot be avoided, make sure that the release of such materials only occurs if there is adequate ventilation. Releases are to be controlled in such a way that they stay well below the limits with respect to the ventilation/volume flow of the unit and the laboratory ventilation system, as set forth in the regulations concerning primary explosion protection. (FRG: ZH 1/119, ZH 1/10, EG: EN 1127 Fire and Explosions)

In order to ensure the stability of the unit, only laboratory benches with an appropriate degree of stability and adequate capacity, or the bases and stands available as accessory parts may be employed. If in doubt and were the unit is subject to rough treatment, additional anchors should be installed. Suitable wall-mounting hardware is available to prevent the unit from being tipped.

Disinfect all no longer used units and make them unusable by cutting their power cord.

Carefully file these operating instructions for subsequent reference to safety instructions and other important information.

Please include the model and manufacturing numbers from the nameplate in all inquiries and when ordering spare parts.

Operating Instructions

Using these operating instructions as a basis, the operator (company) or an authorized individual is to prepare written, understandable instructions in the local language, and tailored to the work to be performed on or with these clean benches. (FRG: UVV VBG 1)

All affected employees are to receive regular instruction with respect to the safety issues involved in the employment of these units.

Those sections of this manual that may be reproduced (for internal use only) for this purpose are indicated in the contents.

Unit Log

Kendro L. P. recommends the maintenance of a unit logbook.

Test reports, reports concerning maintenance, repairs, relocations, etc., related to the unit are to be documented in this log which may be filed separately from the operating instructions.

Personnel training/instruction activities should also be documented here.

Kendro L. P. recommends filing reports regarding the materials processed in the bench in the log as well, in order to be able to develop and carry out targeted sterilization/disinfection plans.

A recommendation for such a log is included with the device.

Test Chamber Power Outlets

1/PE AC, 230 V power outlets are installed in the test chamber to connect any necessary tools or instruments.

Power to the outlets can be turned on and off from the control panel.

The outlets are equipped with $\underline{T5A}$ fuses to prevent short circuits or overloads from interrupting power to the unit and thus shutting down the technical ventilation (contamination hazard).

Thus, the <u>maximum load that can be connected</u> to the secondary outlets is <u>1,100 Watts</u>.

A higher level of protection may endanger the selectivity of the unit's internal protection with regard to the protection to be provided (by the customer) by a T 16 A fuse.

This jeopardizes the effectiveness of the unit. If in doubt, provide a dedicated connection. Under

no circumstances (e.g., in case of fuse replacement) may a higher level of protection be provided.

If more power is required for instruments/tools, the unit can be correspondingly retrofitted. In this case, a dedicated connection must be provided.

Application Area

The clean bench with horizontal airflow is a laboratory-quality unit, that:

Protects the material being processed against hazardous influences from the test area.

In general, clean benches are suitable for setup and operation in the following areas:

- In laboratories performing microbiological and biotechnology work;
- In pharmacy laboratories;
- In medical/microbiological laboratories in accord. with DIN 58956;
- In laboratories in the central areas of clinics and hospitals;
- In optical industry laboratories;
- In electronics industry laboratories.

The unit may not be used to process hazardous substances or vapors.

Follow all applicable federal, state, and local ordinances with respect to setup (e.g., FRG: ZH 119).

Clean benches provide <u>no</u> protection against hazardous gases or vapors.

Unit Construction

Fig. 1/4: Device construction, front view



Fig. 2/4: Device construction, side view



Key to Figure 1/4 and 2/4:

- 1 Housing
- 2 Control panel
- 3 Working space
- 4 Base
- 5 Air intake protector
- 6 Fan
- 7 Filter

Operating Principle

Fig. 3/4: Airflow through the system



The clean bench for product protection is a laboratory-grade unit into which ambient air is drawn through a prefilter in the top of the unit. This air passes through filters and is distributed horizontally over the entire work surface.

Safety Equipment

At regular intervals, but at least annually, all safety equipment is to be checked by properly qualified personnel for proper operation.

Power switch with key lock (Function Selection Switch)

In order to minimize the risk of contamination, the unit - from a technical ventilation aspect - is designed for continuous operation, and is equipped with a power switch with a key lock.

Use of the power switch assumes that only authorized individuals will consciously turn the unit on.

The use of a key allows the responsible operator to protect defined functions/modes by removing the key, thus preventing accidental or unauthorized operation of the unit. The key can be removed in any switch setting.

/ľ

► Air monitoring

The air and volume flowrates are continuously monitored.

Problems in any of the flows will initiate optical and acoustic alarms. The monitoring function performs a self-test (monitoring of the system at rest) when the unit is switched on. The optical and acoustic alarms will only turn off at the successful conclusion of this test.

If the unit signals a persistent problem with the airflow (RED indicator light on):

the unit may be faulty. Check the ventilation ratios, or have the unit inspected by an authorized service technician.

► Fuel gas shutoff (optional)

If the unit is equipped with a fuel gas connection, an additional magnetic valve that closes when there is no current can be installed in the in-house gas line or directly on the outside of the gas connector to provide a secondary shutoff. (Accessories: magnetic valve and connection for an external monitoring system).

If the unit's ventilation fails, a signal/contact is generated by the clean bench, shutting off the fuel gas supply.

This same lock can also prevent fuel gas from being accidentally released when the power to the unit is turned off (power switch position "O").

Only laboratory-grade safety Bunsen burners may be used in the unit.

► UV lock (optional)

Before turning on the UV lamp, remove the shipping protector cover from the UV tubes.

The UV lamp in the test chamber can only be employed if it is consciously selected with the keyswitch (special tool setting of the power/mode selection switch).

Pressing the start button turns the UV lamp on for a predefined period of time (60 min.).

Always wear appropriate safety glasses and protective clothing.

Transport

To move the unit, it can be lifted at the locations shown in the sketch. We recommend the use of transport aids such as wood strips to provide support and protection.

Ŧ

Fig. 1/5: Transport aids attachment points



Setup Location



Follow all applicable federal, state, and local guidelines pertaining to the setup and installation of the clean benches. (FRG: ZH 1/119, etc.).

Correct, "draught-free" setup of the unit in the laboratory is an essential requirement for safe operation.

Fig. 2/5: Examples of good and bad setup locations in a room:



Locations A, E, and F are well selected. Here, neither draughts nor traffic can be expected to affect the unit. Location B is significantly influenced by draughts. Location C is influenced by both draughts and traffic. Location D is also influenced by both draughts and traffic.

The bench must be set up horizontally on a low-vibration, secure stand, capable of supporting it.

5. SETUP AND INSTALLATION

Select the setup location so that air moving in front of or around the bench does not negatively impact its ventilation system. The setup location should face away from doors or windows in order to eliminate as much draught as possible. The location should also be selected to avoid traffic near the cabinet or behind the user.

Room Ventilation

The laboratory in which the unit is to be set up must be adequately ventilated. (FRG: ZH 1/119, ZH 1/392, etc.)

This should be a technical ventilation system that exchanges the room air at least 8-12 times per hour.

Setup

If the unit is set up on a workbench, it should not overhang the bench edges.

If the unit is to be set up as a freestanding device, additional measures to secure it may be necessary.

When using the optionally available stand: Assemble the stand at the intended setup location and level it. The underside of the bench is equipped with openings that fit over the mounting studs on the top of the stand to center the bench on the stand.

Check the adjustable feet on the stand and, if necessary, adjust them to provide a secure, horizontal base.

Normally, no additional connections to secure the bench to the stand are required. Should additional security be desired, mounting brackets that hold the bottom of the bench to the base are available. Be careful that the catch tray is not damaged when installing these brackets.

To prevent the bench from being accidentally tipped over, additional measures to secure it may be required (e.g., wall mounting, floor mounting).

To prevent damage that would impair the unit's safety or operation, additional holes for the installation of wall-mounting hardware may only be drilled in accordance with express instructions provided by Kendro L. P. .

Spacing

Minimum lateral spaces for any installed hardware must be observed in order to ensure accessibility for maintenance/repair work.

If several units are to be set up in a row, a minimum distance of 5 - 10 mm between benches must be maintained in order to avoid the transmission of vibrations and other factors. To prevent dirt from building up between units, these gaps should be sealed. Use an elastic sealant for this.

Before setting up the units in a row, always check that there will be adequate access for any necessary inspection, maintenance, and repair work.

Connections

Power supply

For Austria: The unit may only be connected to an electrical system that meets the requirements set forth in ÖVE - EN 1.

For Switzerland: The unit must be connected to the electrical system via a switch or circuit breaker. Installation must be performed by a qualified electrician, and be in accordance with the SEV guidelines.

Before establishing the power connection, make sure the specifications on the unit's nameplate agree with those of the power supply.

 Required mains protection: circuit breaker or T 16 A fuse.

The bench is equipped with a permanently installed, flexible power cord.

To prevent contamination, the unit is designed for continuous operation.

The connection to the power supply can be either by means of hardwired connection or a grounded outlet with a cover (to prevent the unit from being accidentally unplugged).

The unit's electrical safety can only be assured if it is connected to a properly installed and operated **gro-unded power supply**. If in doubt, have the in-house circuits examined by a qualified electrician.

Kendro L. P. cannot be liable for damages or injuries resulting from a missing or interrupted in-house ground circuit.

The unit is designed to be free of mains feedback, in accord. with EN 55 014.

Fittings (accessory equipment)

5. SETUP AND INSTALLATION

Follow all applicable federal, state, and local technical ordinances pertaining to the establishment of supply connections to the fittings provided on the unit (FRG: DVGW, etc.).

To prevent static electricity buildup and the hazards associated with it, it may be necessary to connect any supply lines (e.g., gas, water...) and the unit itself to your building's ground circuit.

A voltage compensation connection on the top of the unit and on the stand are provided for this purpose.

Monitor connection / connection to external monitoring systems (optional)

The connection can be activated/deactivated by the release/unlock key.

The intake protection must be removed to establish this connection:

- Remove the intake protection mat from the top of the unit.
- Remove the grid screen.
- Perform the installation.



Fig. 3/5: Direct connection of a magnetic gas valve with power supplied (= mains power) from the workbench



Fig. 4/5: Connection of an external fault alarm system



Fig. 5/5: Connection of an external signal processor (central monitoring)



Sound Dampening

Less than ideal setup conditions may result in excessive noise levels.

Additional sound dampening measures may be required in-house to counteract this.

For information concerning noise levels, refer to the Section, "TECHNICAL SPECIFICATIONS".

<u>/!</u>	safety check,
_ - _	initial startup

► Before starting the unit:

After the unit has been properly set up and installed, a safety check of the bench must be performed. (FRG: UVV VBG 4)

Only a unit that is operating properly can provide the necessary degree of operator protection and protection against contamination.

During startup, parameters such as:

- Airflow rates,
- Cleanliness zones/cleanliness classes,

should be determined and noted in the unit log.

Properly connect the unit to the mains power supply.

Starting up the clean bench

Switch	State			
	Power switch (keyswitch) = "II", Operation: After the airflow monitor self-test (approx. 5 - 10 sec.), the green indicator light indicates that the airflow monitor is ready.			
An antical (nodiadiates light) and accustic alarma				

An optical (red indicator light) and acoustic alarm will warn of problems with the circulation or exhaust air systems. The optical alarm will only go out once the problem has been rectified.

	The acoustic alarm can be turned off by pressing the acknowledge alarm
ビシ	button.

To reduce the risk of contamination as much as possible:

Wait approx. 15 to 20 minutes after turning the unit on. This will allow the safety cabinet to reach its proper ventilation equilibrium. You can now commence work in the test chamber.

Working Guidelines

Aside from the information previously provided in the "Safety Information" section, please also note the following:

The effectiveness and safety of the unit depends primarily on the proper behavior of individuals working at he clean bench.

Turn the clean bench on at least 15 minutes prior to starting work in order for the test chamber ventilation to reach proper equilibrium. Always wear appropriate protective gear, e.g., gloves, face protector, and protective clothing. Remove all jewelry.

Disinfect and clean the test chamber surfaces regularly.

Use only lint-free materials to wipe down test chamber surfaces. Always run the ventilator during all disinfecting work. Recommended disinfecting agent: one based on aldehyde.

When using alcohol-based disinfectants, please note: avoid EXPLOSION HAZARDS caused by alcohol vapors in the air. Use as little alcohol as possible. Follow all applicable federal, state, and local ordinances (FRG: ZH 1/598).

Only place clean, disinfected tools/aids in the test chamber. Limit the tools/aids to a minimum, e.g., no writing utensils, packaging, or similar materials. Placing larger objects in the test chamber may impair the product protection offered by the bench.

Avoid any negative influences on the airflow while working in the test chamber.

When shutting the unit down:

Remove all objects placed in the cabinet, and disinfect and clean them, as required.

Disinfect and clean the test chamber, as required.

Disinfect and remove any residue from the test chamber.

Cleaning and disinfecting agent residue may be damaging to subsequent work. As far as possible, ensure that no residue remains.

After disinfecting, operate the bench for at least an additional 15 minutes.

Error Messages

Limit the risk of contamination: Allow the ventilation to operate continuously.

Possible causes:

- Inadequate airflow
- (e.g., air vent covered)

If the problem cannot be rectified, inform your maintenance department. Do not attempt to repair the unit yourself.

Taking the unit out of service

Disinfect and dispose of any residue from the test chamber.

Continue to operate the clean bench for at least 15 minutes after cleaning.



The operability and safety of the safety cabinet can only be guaranteed if all necessary inspections, maintenance, and repair work are performed by authorized Kendro Service personnel.

Maintenance must be performed every 5,000 operating hours or annually, whichever comes first.

The operating time counter can assist in determining the maintenance interval. We recommend concluding a maintenance contract.

Routine Maintenance Tasks

Under normal operating conditions, little is required to maintain the clean bench in proper working order.

► Cleaning

For cleaning, use only small amounts of commercially available, domestic dish-washing detergent dissolved in water. Abrasives/scouring powders can destroy surfaces. Never clean any glass areas with abrasives or agents that can lead to abrasion.

Daily or weekly, depending on utilization level:

Disinfect and clean the test chamber. As a disinfectant, we recommend **Barrycidal 36**.

Clean the exterior bench surfaces and glass areas with a mild detergent solution or glass cleaner.

Using these operating instructions, perform a functional inspection of the unit's equipment.

Document all work performed in the unit log.

Monthly (or more often, as required):

Using a lint-free cloth and the above-described cleaners, remove any dust accumulation from the exterior of the unit.

Perform the previously described disinfection of the interior.

Perform a functional inspection and check the safety equipment during normal operation.

Document all work performed in the unit log.

Annually:

Safety inspection in accord. with locally applicable technical standards, and performed by trained personnel authorized by Kendro L. P. . (FRG: DIN VDE 0701, etc.)

Replace the UV radiation element (if equipped with this option).

Document all work performed in the unit log.

Every two years:

Replace the test chamber light bulbs.

Replacing Electrical Parts



Work on the unit's electrical equipment may only be carried out by a qualified electrician and with the bench in a safe condition (power turned off).

Only original replacement parts tested and authorized by Kendro L. P. may be employed.

The operator's trained electrotechnical personnel may replace the test chamber lighting unit.

Filter Replacement

General information

Because of the possibility of contamination, filter replacement may be the most serious maintenance task you will need to perform on this device. Aside from a knowledge of the applicable ordinances and standards, detailed knowledge concerning the modalities of the unit in question is vital for this task.

Only **trained and authorized Kendro Service Technicians** can perform this task properly. This is the only way to keep the **contamination risk in the setup area to a minimum**. Only accessories and corresponding replacement parts tested and authorized by Kendro L. P. may be employed. The use of other parts carries unknown risks and hazards for personnel and equipment, and is not permitted.

Models	HPH 9	HPH 12	HPH 15	HPH 18		
Parts	Order number					
Intake protector	50051735	50050797	50051736	50050798		
Filter	50045133	50045128	50045135	50045130		
Power circuit fuses	56052523	56052523	56052523	56052523		
T 5 A, fuse for outlets	50046843	50046843	50046843	50046843		
Instruction ma- nual	50051064	50051064	50051064	50051064		
Models		HPH 12/95		HPH 18/95		
Parts	Order number					
Intake protector		50050797		50050798		
Filter		2x 50043605		3x 50043605		
Power circuit fuses		56052523		56052523		
T 5 A, fuse for outlets		50046843		50046843		
Instruction ma- nual		50051064		50051064		

Authorized Replacement Parts

Authorized Accessories

Models	HPH 9 HPH 12 HPH 15 HPH 12/95		HPH 18 HPH 18/95		
Parts	Order number				
Stand	50044284	50044285	50044286	50044287	
Circuit diagram	50050553	50050553	50050553	50050553	

Fig. 1/8: Overview of unit dimensions, with base (accessory item). Models with a deeper test chamber are indicated by cross-hatching.

	Models	HPH 9	HPH 12 HPH 12/95 ¹⁾	HPH 15	HPH 18 HPH 18/95 ¹⁾	
GEOMETRY						Unit
Exterior dimensions	Width	1000	1300	1600	1900	mm
	Height ²⁾	1170	1170 / 1470	1170	1170 / 1470	
	Depth 2)	800	800 / 1000	800	800 / 1000	
Test chamber	Width	920	1220	1520	1820	mm
	Height ²⁾	650	650 / 950	650	650 / 950	mm
	Depth 2)	580	580 / 780	580	580 / 780	mm
Minimum space to ceilings		~ 150	~ 150	~ 150	~ 150	mm
WEIGHTS, PERFORMANCE						
Unit weight		90	100	125	135	kg
Max. surface load for one-piece work panel		30	30	30	30	kg

1) Models with higher test chamber

2) Varies by model

8. TECHNICAL SPECIFICATIONS

	Model	HPH 9	HPH 12 HPH 12/95 ¹⁾	HPH 15	HPH 18 HPH 18/95 ¹⁾		
ELECTRICAL VALUES							
Reference voltage		1/PE AC, 230	1/PE AC, 230	1/PE AC, 230	1/PE AC, 230	V	
Reference frequency		50	50	50	50	Hz	
Power consumption		0.75	0.75	1.3	1.3	kW	
Current consump	tion	3.3	3.3	5.7	5.7	A	
Protection class		I	I	I	I		
Grounding method		Ground wire connection	Ground wire connection	Ground wire connection	Ground wire connection		
Protection type		IP 20	IP 20	IP 20	IP 20		
Individual protection to be provi- ded by the customer		T 16 A fuse (slow-blow) or B 16 line circuit breaker. All applicable federal, state, and local ordinances pertaining to electrotech- nology and the individual connection conditions must be observed.					
Fuses for the protected outlets in the test chamber		230 V, T 5 A					
		The individual outlets can be connected to a load of up to 5 amps and are protected by T 5 A fuses. When all outlets are employed simultaneously, the maximum total load may not exceed 5 amps.					
Radio interference	e shielding	Mains-interference-free in accord. with EN 55 014					
FILTRATION							
Primary filter							
Туре		High-performance, suspended particle filter (HOSCH)					
Separation level	Γ	99.999 % at a particle size of 0.3 µm					
Filter classes	[EN 1822]	H 14					
	[Eurovent 4/4]	EU 14					
	[DIN 24 183-1]	EU 14 (ULPA)					
Intake protector			Cia	iss 5 preferred			
Type				Dust filter			
Separation level		Coarse - Medium					
Filter class	[EN 779]	G 3					
VENTILATION							
Airs speed			II		I		
		0.3	2 - 0.48	0.1	8 -0.32	m/s	
NOISE GENERA	TION		II		I	Unit	
Sound level			< 60		< 55	dB (A)	
ILLUMINATION STRENGTH			-Ō-	-,Č	<u> Ö-</u>	Unit	
Test chamber		:	> 500	>	1000	lx	
AMBIENT CONDITIONS						Unit	
Operation	Temperature		+ 5	+ 5 + 40			
	Humidity		90 %			r. H.	
Storage	Temperature	-20 + 60			°C		
	Humidity	70 %			r. H.		



This log book is to be used in conjunction with the unit's operating instructions.

Kendro Laboratory Products assumes no liability or responsibility for the marketability and the suitability of the unit and its log book for a particular purpose aside from those listed in the section dealing with the unit's areas of application.

We reserve the right to make changes to the content of this log book at any time and without prior notification.

For all translations into foreign languages, the original German version of this log book is binding.

Publication date: 03.2000

Subject to fee.

Trademarks

HERAguard ® and the term "Heraeus Instruments" and "Kendro Laboratory Products", "Sorvall Heraeus" are registered trademarks of Kendro Laboratory Products GmbH. Any other trademarks mentioned are the exclusive property of the manufacturers in question.



The safety of this unit with respect to persons, the environment, and the material being processed depends to a great extent on the behavior of those working with the unit.Please read the operating instructions carefully before working with these units. Follow all instructions in order to avoid problems that may result in damage, in particular, in damage to the user's health.

	Kendro Laboratory Products GmbH Heraeusstraße 12-14	A		++ 49 (0) 6181 / 35 - 300
	D-63450 Hanau			++ 49 (0) 6181 / 35 - 5973
The enclosed index contains a list of Kendro partners in your area.				

GENERAL INFORMATION

Contents	s Pag	ge
		-

1	General information Key to symbols Enten the Nameplate Information Maintaining the Log Operating Instructions	3 3 3 3 3 3
2	Basic principles of good Micro- biologica working practices	I _4
3	Maintenance Routine Maintenance Tasks Replacing Electrical Parts Materials Used Maintenance Contract Request Confirmation of Safety	6 6 6 7 8
4	Reports	9

KEY TO SYMBOLS

Warn- / Hinweis- / Gütezeichen		
Â	Chapters and sections within the operating instructions that are relevant to safety matters are indicated by this symbol. Where this symbol appears on the unit, it indicates particular attention must be paid to the operating instructions.	
Ŧ	Note providing information on optimum utilization of the unit.	
(FF)	Note concerning regulated disposal / reclamation of raw materials.	

Enter the Nameplate Information

Enter the information from your unit's nameplate on the cover page of this log. In this way, each log is assigned to a specific unit.

Maintaining the Log

Kendro L. P. recommends carefully maintaining the log.

Use it to document test reports, maintenance reports, relocation activities, etc., concerning the unit. It may be practical to file the log at a separate location from the operating instructions. Operator training/instruction should also be documented.

Kendro L. P. recommends filing protocols concerning the biological agents processed in the safety cabinet in this log, in order to develop and carry out targeted sterilization/disinfection programs.

Operating Instructions

Using the operating instructions as a basis, the operator (company) or an authorized individual is to prepare written, understandable instructions in the local language, and tailored to the work to be performed on or with these safety cabinets. (In Germany: UVV VBG 1.

This also applies to the disinfection of the safety cabinets.

All affected employees are to receive regular instruction with respect to the safety issues involved in the employment of these units.

2 Basic principles of good microbiological working practices 1)

General Information

- Doors and windows in the work area should remain closed during work.
- Drinking, eating, or smoking are not permitted in the work area. Food may not be stored in the work area.
- Lab coats or other protective clothing must be worn in the work area.
- Pipetting by mouth is prohibited. Always use a pipetting aid.
- Syringes and cannula should only be employed when other methods cannot be used.
- Avoid aerosol formation on all manipulators as much as possible.
- After completing work but before leaving the work area, hands must be thoroughly washed and, if necessary, disinfected and skin cream applied.
- Keep all work areas clean and tidy. Only the equipment and materials actually required should be placed on workbenches. Supplies should only be stored in designated areas and cabinets.
- Check the identity of the employed agents regularly if required in order to estimate the potential hazard. The inspection intervals depend on the estimated potential hazard.
- All employees handling agents must be instructed in the correct procedures prior to starting work. Subsequently, verbal refresher instructions are to be provided at least annually.
- Any employees not experienced in microbiology, virology, or cellular biology must receive particularly thorough instruction and must be carefully supervised.
- If necessary, insects or other vermin must be exterminated regularly..

The following additional principles apply to handling pathogens:

- All work areas are to be disinfected daily. If necessary, the employed disinfectant should be changed regularly to prevent an increase in resistant bacteria.
- Protective clothing may not be worn outside the work area.
- Contaminated tools/instruments must be autoclaved or disinfected before cleaning.
- Waste materials containing pathogens must be safely collected and autoclaved or disinfected.
- If infectious material is spilled, the area must be immediately blocked off and disinfected.
- If human pathogens for which effective vaccines exist are being used, all employees who are not already immune should be vaccinated. Immunity should be checked on a regular basis.
- Preventative examinations are to be employed to monitor the health of employees. That is, an initial examination at the time of employment, followed by annual follow-up examinations.
 With respect to these preventative examinations, the Industrial Professions Cooperative's guidelines G 24, "Skin Diseases", and G 42, "Infectious Diseases" contain valuable information concerning generally accepted rules of occupational health. These are to provide the physician with guidelines to evaluate, assess, and record examination results according to equal criteria.
- The guidelines set forth in the Industrial Professions Cooperative's guidelines G 43, Biotechnology", are to be observed when handling genetically altered organisms, viri, and subviral agents that are potentially hazardous.
- Information concerning first aid measures in case of accidents involving pathogenic microorganisms and viri must be immediately available in the work area. All accidents must be immediately reported to the responsible supervisor.
2 Basic principles of good microbiological working practices 1)

Additional safety measures that may apply, depending on the potential hazard level include:

- The employment of class I, class II (type-tested)2), or class III safety cabinets (airflow directed away from the operator).
- Limiting and monitoring access to certain areas.
- The employment of special protective clothing and breathing equipment.
- Disinfecting all materials containing pathogens before they leave the workbench.
- Keeping the work area under negative pressure.
- Reduction of the bacteria count in the exhaust air by, for example, employing high-performance, suspended particle filters.

The following, additional, general rules also apply to handling agents pathogenic to humans or animals:

- Approval in accordance with the Federal Epidemic Legislature is required for handling biological agents pathogenic to humans.
- Approval in accordance with the Animal Epidemic Legislature and the Animal Epidemic Agent Ordinances required for handling biological agents pathogenic to animals.
- Pregnant women and nursing mother may not handle infectious and human pathogen biological agents or material containing them.

¹⁾ Applies accordingly to cytostatic agents.

²⁾ Manufacturer's certificates can be found in the information sheets of Chemical Professions Cooperative, "Safe Chemical Working Practices", and those of the Health Services and Welfare Professions Cooperative, as well as upon request from the testing center of the expert committee "Health Services and Welfare". The expert committee can be reached at the Health Services and Welfare Professions Cooperative, Pappelallee 35-37, 2000 Hamburg.

Source: Notice B003, published 1/92 - ZH 1/343 the Chemical Industry Professions Cooperative, Jedermann Verlag, Heidelberg.

3 MAINTENANCE

The operability and safety of the safety cabinet can only be guaranteed if all necessary inspections, maintenance, and repair work are performed by authorized Kendro Service personnel.

Maintenance must be performed every 5,000 operating hours or annually, whichever comes first.

The operating time counter can assist in determining the maintenance interval. We recommend concluding a maintenance contract.

Routine Maintenance Tasks

Under normal operating conditions, little is required to maintain the safety cabinet in proper working order.

> Cleaning

For cleaning, use only small amounts of commercially available, domestic dish-washing detergent dissolved in water. Abrasives/scouring powders can destroy surfaces. Never clean any glass areas with abrasives or agents that can lead to abrasion.

Daily or weekly, depending on utilization level:

Disinfect and clean the test chamber. Remove the work panel(s) and disinfect and clean the areas under the panel(s).As a disinfectant, we recommend **Barrycidal 36**.

Clean the exterior cabinet surfaces and glass areas with a mild detergent solution of glass cleaner.

Using the operating instructions, perform a functional inspection of the unit's equipment.

Document all work performed in this log.

Monthly (or more often, as required):

Using a lint-free cloth and the above-described cleaners, remove any dust accumulation from the exterior of the unit.

Perform the previously described disinfection of the interior.

Perform a functional inspection and check the safety equipment during normal operation.

Document all work performed in this log.

Annually:

Safety inspection in accord. with locally applicable technical standards, and performed by trained personnel authorized by Kendro L. P.. (in German DIN VDE 0701, VBG 4 etc.)

Replace the UV radiation element (if equipped with this option).

Document all work performed in this log.

Every two years:

Replace the test chamber light bulbs.

Replacing Electrical Parts



All work on the unit's electrical equipment must be carried out by a qualified electrician and with the safety cabinet in a safe condition (power turned off).

Only original replacement parts tested and authorized by Kendro L. P. may be employed.

Materials Used

Part	Material
Housing	Steel sheets coated with
-	epoxy/polyester resin
Stand	Steel tubing coated with
	epoxy/polyester resin
Work panels	Melamin
	Stainless steel, AISI 316
Side windows	safety glass
Filter	
Frame:	Aluminum
Frame seal:	Polyurethane
Filter insert:	Fiberglass sheeting
Filter seal:	Polyurethane
Grid filter, GF 3	Polyester

3 MAINTENANCE

Maintenance Contract Request

Ŧ

Use the request form below to obtain more information from your authorized service agent regarding a maintenance and service contract for your unit.

Your authorized service agent (refer to the contents)

Information about, and offer concerning a maintenance and service contract

To whom it may concern,

Please forward additional information concerning an offer for a maintenance and service contract to cover the following device. (Refer to the your unit's nameplate for the necessary information.):

Kendro device:	
Model No.:	
Serial No.:	
Service No.:	

Please forward the information to the following address:

Company/institute	
name:	
Department:	
Contact:	
Street address:	
City, state, zip code:	
Telephone No.:	
Fax No.:	

(Date, signature)



Confirmation of Safety

When employing safety cabinets, maintenance and repair work or the replacement of filters can result in risks to the health of the affected personnel and contamination of the environment.

Within the context of legal concerning:

- The obligation of the employer to protect his employees, and
- The obligation of the operator to work in a safe manner,

all possible hazards must be avoided.

Depending on the work carried out with the safety cabinets, it may be necessary to disinfect and clean them prior to initiating maintenance and repair work, prior to filter replacement or relocation of the unit, as well as subsequent to their use prior to their being shut down.

We therefore request the following confirmation before any necessary work is performed.

The safe condition of the unit is herewith confirmed.

Date, signature

4 REPORT

Enter the nameplate information, work performed, maintenance, and repairs below.

Туре:	Order no.:	
Serial no.:	Service no. (if available):	
Unit location:	Operator comment:	

Operating hours	Work, maintenance, repairs performed	Comments	Date	Signature

4 REPORT

Enter the nameplate information, work performed, maintenance, and repairs below.

Туре:	Order no.:	
Serial no.:	Service no. (if available):	
Unit location:	Operator comment:	

Operating hours	Work, maintenance, repairs performed	Comments	Date	Signature

SERVICE HANDBUCH SERVICE MANUAL

Reine Werkbänke, Clean Benches,

Typen / Models HPH 9; HPH 12; HPH 15; HPH 18 HPH 12/95; HPH 18/95

Schutzgebühr / Nominal Charge



Exemplar-#



053936SM.SAM	Name / Name:	Datum / Date:	Benennung / Designation;			
Erstellt / prepared:	G. Herget	05.02.1998	Service Handbuch / Service Manual			
Geprüft / checked:				HERAguard		
Stand / Edition:		02.1998		Dokumentnr, / Document No.:	Seite / page:	
Ersatz für / Replacen	nent for:	······································	Heraeus	50 052 936	1/5	
Weitergabe sowie Vervielfa ten zu Schadensersatz All	iltigung dieser Unterlage, V e Rechte für den Fallider Pa	erwertung und Mitteilung ih stenterteilung öder Gebrau	nres Inhalts nicht gestattet, so chsmuster - Eintragung vorbel	weit nicht ausdrücklich zugestanden. Zuwide halten – Ø Heraeus Instruments GmbH, Gern	rhandlungen verpflich- nanv	

=	Hera	ieus Instru	ments GmbH		Technic	al Support	++ (0 61	81) 35
	Heraeusstraße 12 -14			L				
					Technic	al Support	++ (0 61	81) 35
	D - 6	3450 Hana	iu		J			
		·			Ersatzte	eile/Spare parts	++ (0 61	81) 35
			<u></u>			······································		
,								
Dieses S	Service	Handbuch	gilt für folgende	Typen :	·····		· · · · · · · · · · · · · · · · · · ·	
This Ser	vice N	lanual appl	ies for the following	g models :				
Bestell -	Nr.	Typ Model	Ausstattung			e o degeligi ti beggi e e a		
Order i	vc.	Moder	Equipment		· · · · · · · · · · · · · · · · · · ·			<u></u>
				<u></u>			<u> , , , , ,</u>	
					<u></u>			
							···· ·································	
		, <u></u>	}			· · · · · · · · · · · · · · · · · · ·		
			1					
· · · · · · · · · · · · · · · · · · ·				···· A···· ·· ··· ··· ··· ··· ·		, ,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,		
	ł		L				- t _{er} , t _{er} , t _{er} , t _{er}	
		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
			<u></u>					<u> </u>
	<u>ł</u>						- <u>.</u>	
eses Har	ndbuc	h unterlie	gt dem Änderung	ısdienst				
eses Har iis manu	ndbuc al is s	h unterlie ubject of L	gt dem Änderung Ipdate service	ısdienst				
eses Har iis manu	ndbuc al is s	h unterlie ubject of ι	gt dem Änderung Ipdate service	Isdienst				
eses Har iis manu	ndbuc al is s	h unterlie ubject of ι	gt dem Änderung Ipdate service	ısdienst				
eses Har iis manu	ndbuc al is s	h unterlie ubject of ι	gt dem Änderung Ipdate service	ısdienst				
eses Har is manu	ndbuc al is s	h unterlie ubject of L	gt dem Änderung Ipdate service	ısdienst				
eses Har is manu	ndbuc al is s	h unterlie ubject of ι	gt dem Änderung Ipdate service	sdienst				
eses Har is manu	ndbuc al is s	h unterlie ubject of ι	gt dem Änderung Ipdate service	ısdienst		······································		
eses Har iis manu	ndbuc al is s	h unterlie ubject of ι	gt dem Änderung Ipdate service	sdienst		· · · · · · · · · · · · · · · · · · ·		
eses Har iis manu	ndbuc al ís s	h unterlie ubject of ι	gt dem Änderung Ipdate service	ısdienst				
eses Har is manu	ndbuc al is s	h unterlie ubject of ι	gt dem Änderung Ipdate service	ısdienst		· · · · · · · · · · · · · · · · · · ·		
eses Har is manu	ndbuc al is s	h unterlie ubject of t	gt dem Änderung Ipdate service	ısdienst				
eses Har is manu 3936SM.S/	adbuc al is s	h unterlie ubject of L Name / Nar	gt dem Änderung Ipdate service	sdienst		Benennung / De	esignation:	
eses Har <i>is manu</i> 3936SM.S/ stellt / prep	AM	h unterlie ubject of u Name / Nar G. Herg	gt dem Änderung Ipdate service	ısdienst	Servi	Benennung / De ce Handbuch / HERAcu	esignation: Service Ma	anual
eses Har <i>is manu</i> 03936SM.S/ stellt / prep	AM ared:	h unterlie ubject of L Name / Nar G. Herg	gt dem Änderung Ipdate service	sdienst	Servi	Benennung / De ce Handbuch / HERAgu	esignation: Service Ma Jard	anual
eses Har <i>is manu</i> 3936SM.S/ stellt / prepa	AM ared: bked:	h unterfie ubject of u Name / Nar G. Herg	gt dem Änderung Ipdate service	sdienst	Servi	Benennung / De ce Handbuch / HERAgu Dokumentnr, / D	esignation: Service Ma Jard	anual

Condition of an environment of Allerians of the strength

SICHERHEITSHINWEISE



ACHTUNG:

Die Sicherheit im Bezug auf den Schutz der Personen, der Umgebung und des Bearbeitungsgutes ist bei diesen Geräten wesentlich vom Verhalten der an den Gerät beschäftigten Personen abhängig.

Arbeiten dürfen nur ausgeführt werden, wenn das Gerät ordnungsgemäß dekontaminiert wurde oder seitens des Betreibers eine schriftliche Erklärung abgegeben wurde, aus der hervorgeht, daß Wartungs- und Instandsetzungsmaßnahmen ohne Kontaminationsrisiko für den Durchführenden ausgegeführt werden können.

Arbeiten an der elektrotechnischen Ausrüstung dürfen nur im sicheren Zustand des Gerätes (Netzstecker ziehen) oder unter entsprechenden Schutz- maßnahmen durchgeführt werden.

SAFETY INSTRUCTIONS

WARNING:

To ensure the safety of personal, the environment and samples, it is of paramount importance that the operator uses these cabinets correctly.

Works for maintenance are only allowed, if the equipment is carefully decontaminated. Maintenance is also allowed if the owner declares, in writing, that there is no risk for the health of the Serviceman.

To avoid electric shock, this equipt ment must always be disconnected from the power supply prior to maintenance and service. Use a properly grounded electric outlet of correct voltage and current handling capacity. Allgemeines zu Reinen Werkbänken HERAguard Modell HPH mit horizontaler Luftführung

siehe beigeleter Technischer Information

. . .

General information aubout Clean benches Model HPH with horizontal air flow

► look Technical Information

Dieses Service Handbuch enthält: This Service Manual includes:

- 1. SERVICE INFORMATIONEN SERVICE INFORMATIONS
- 2. MESS- / PRÜFLISTE MEASUREMENTS -, CHECK LIST
- 3. ERSATZTEILE SPARE PARTS
- 4. BETRIEBSANLEITUNG INSTRUCTION MANUAL
- 5. SCHALTPLÄNE CIRCUIT DIAGRAMS
- 6. ANHANG APPENDIX

			00		
	\searrow				J
				- Pr.	
			Y		
				R R	
		1. 000			
			N.		
	A A A A A A A A A A A A A A A A A A A	A State of the second s			
		02 0			
		~	1. I		
				9	
53103.SAM	Name / Name:	Datum / Date:		Benennung / Designation:	
Erstellt / prepared:	C, Latz	06.02.1998	Monta Monta	ageanleitung HERAguard H Iounting HERAguard HPH	IPH
Stand / Edition:	anangan ngamanan na ana ana ana ang ang ang ang ang	01 1998	Lamara	Dokumeninr. / Document No.:	Seite / pag
		0111000	A DESCRIPTION OF A DESC		

1. Filter Replacement

1.1 Main filter

Replacement of the main filter:

Necessary tools: Screw driver, knife

\bigcap_{i} NOTE - Safety precautions:

Observe the safety instructions! Check decontamination of the unit! (if necessary use spray desinfection)

- 1. Switch the cabinet off using the rotary switch [1]; disconnect the power supply cable from the main power.
- 2. Remove the slotted 8 screws [4] from the thread bolts then tilt the diffuser panel [2] forward and remove it from the sample chamber.
- 3. If the unit is a HPH xx/95 cut the silicone seam between the filters.
- 4. Cut the silicone seam at the frame of the filter (only sealed with silicone when there where leakages) and remove the filter [3] forward.
- 5. Remove all residual silicone thorough.
- 6. Insert the new filter on the thread bolts.
- 7. The filter seals must be plain with the plenum frame and with the floor of the inner chamber (table top).
- 8. Insert the diffuser panel.
- 9. Drive the slotted 8 screws into the thread bolts and fix the diffuser panel.
- 10. Switch the cabinet on and make a filter scan test.

2. Pre filter

- 1. Switch the cabinet off using the rotary switch [1]; disconnect the power supply cable from the main power.
- 2. Remove pre filter (not fixed)
- 3. Replace pre filter with new one. Pre filter under metal top [5].

 \sim NOTE - Unit commissioning:

Prior to the commissioning of the unit:

- Perform test run!
- Check safety devices for proper operation!









<u>n</u>.

-suni3 - Tateur	mertouerdeD tobo prulienstrated tob lla rob	int einoen eine Stersenebenoù ur nenningen negnuibreneben. Z	nəbnətsəguz dolladırbana idol	ht gestattet, soweit n	oin ellerini serri gruliettiM l	наде, Verwerung und Hd, Germany	iatru tassib gangitiki ng sinemutsul suss	Weitergabe sowie Vervie gung vorbehalten. O Hei
		Service Manual HERAguard	STNEMURTZNI		Ers. (0r / Repl. for:			3epruft / checked:
61/1	20022936	Service Handbuch HERAguard	STIBELIEH	8661.20	Stand / Edition:	8661.20.20	G. Herget	rstellt / prepared:
Selte / page:	Dokumentnr. / Document No.:	:noihangised \ prunnene8		:els0 / muts0		Catum / Date:	:emeN \ emeN	MA2.9M856230
			·					
		6 0	· · · · · · · · · · · · · · · · · · ·	ЯΞ	ITHƏÄWZƏNUN AOTIN	NOATSTRON IRFLOW MO	NENT OF A	IƏTƏNIƏ TƏULQA
		81 81			••••••	N	, снеск	AEHOIS YTEAAS
		8 71			•••••	EEN	ÜЯЧ ИЭӨИЦ STSƏT JAON	SPANNI ELECTR
		9L Z	NG TO VDI 2083	5 ACCORDIN	V HOAN BSSAJ) SSAJO MOOA V	REINRAUMK	AJUNG DER MINATION OI	DETERN DETERN
		st 9	Enac)	ЮЯЯ - 2H 3 0	ISES FILTERS (I	רורדבת (סבו ארתבואבוד ו	NG DER LEC	PRÜFUN DAXA31
		4 51			1DIGKEIT	IGESCHWIN	OCITY TEST UG DER LUF	NUTÜRA AIR VEL
		ε ΣΓ		· · · · · · · · · · · · · · · · · · ·		···············	HILFSMITTE	PRÜF - I NITSƏT
		۱۱ ۲	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · ·	RÜFMITTEL	ERLICHEN F	АБИРЕР ТЕ МЕИРЕР ТЕ	RECOM LISTE D
		əpsq l əfiə2		•••••			, Contents	TJAHNI
<u></u>	ан нарадного на такит на такит на такита на такита на село на село на село на село на село за село се село се Село на село село село с		НЕСК ГІЗТ	ENTS -, C	MEASUREM	IFLISTE /	йяя ами	5. MESS-
								· · · · · · · · · · · · · · · · · · ·
2		ing and a second se	·	1. 				

Anemometer, unklivectional Almemo - MeBsystem Velocity of air value from 0 to 20 m/s Intake capacity 28,3 1 / Min.; Particle diameter 0.3 µm Photometer DEHA, Typ 28 LD Leakage test of litters Intake capacity 28,3 1 / Min.; Particle diameter 0.3 µm Aerosal rarefication device DEHA, VS 28 Particle count on drify side of filters Adjustment 1: 1000 / 1: 100 DEHS - Generator DEHA, AG 01 Particle count on drify side of filters Adjustment 1: 1000 / 1: 100 Ight meter DEHA, XG 28 Particle count on drify side of filters Adjustment 1: 1000 / 1: 100 Ight meter DEHA, KG 01 Particle count on drify side of filters Adjustment 1: 1000 / 1: 100 Ight meter Gassen, Typ PANLUX elec- tronic 2 Noiso leval test Phonometer Phonometer Briel & Kjaer, Typ 222 Noiso leval test States of Marswalt, senser 177 Sindka generating lube Dridge sindko tube Airlow direction test States of Marswalt, remessing DIN VDE 0701 States of Marswalt, remessing DIN VDE 0701 Type M 5013 Tape measure, pencil Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! States regular O02930MP SAM Name/ Yame. Datum / Date Datum / Date	Recommended test instrumen	Its Device for example:	Purpose		Remark		
Photometer DEHA, Typ 28 LD Leakage test of filters Inteke capacity 28.3 // Min.; Particle diameter 0,3 µm Aerosol rarefication device DEHA, VS 28 Particle count on dirty side of filters Adjustment 1 : 1000 / 1 : 100 DEHS - Genarator DEHA, AG 01 Particle penetration of DEHS, particles definited size (0,3 µm) Adjustment 1 : 1000 / 1 : 100 Ight meter DEHA, AG 01 Particle penetration of DEHS, particles definited size (0,3 µm) Adjustment 1 : 1000 / 1 : 100 Ight meter Cossen, Typ PANLUX elec- tronic 2 Particle penetration of DEHS Particle penetration of DEHS Phonometer Bridel & Kjaer, Typ 2222 Noise level test Particle diameter 0, 200 Stancing tube Dridger smoke tube Airlow direction test Particle diameter 0, 200 States tester BBC Multimeter M 2008 with Trype M 5013 Voltage test for fan current Trype M 5013 Particle diameter 0, 200 States testing tube Cossen Matrawatt, Type M 5013 Cossen Matrawatt, Type M 5013 Descenter 0, 200 Using the recommended test instruments, comply with the following instructions and the respective instruction manuals 1 States 1, 100	Anemometer, unidirectional	Almemo - Meßsystem	Velocity value fro	of air om 0 to 20 m/s			
Aerosol rarefication device DEHA, VS 28 Particle count on dirty side of hiters Adjustment 1 : 1000 / 1 : 100 DEHS - Generator DEHA, AG 01 Particle penetration of DEHS - particles definied size (0, 3 µm) Idjustment 1 : 1000 / 1 : 100 light meter Gossen, Typ PANLUX elec- tronic 2 Illumination intensity test Idjustment 1 : 1000 / 1 : 100 What meter Gossen, Typ PANLUX elec- tronic 2 Illumination intensity test Idjustment 1 : 1000 / 1 : 100 Phonometer Broke Skiper, Typ PANLUX elec- tronic 2 Illumination intensity test Idjustment 1 : 1000 / 1 : 100 What in meter Broke Skiper, Typ PANLUX elec- tronic 2 Illumination intensity test Idjustment 1 : 1000 / 1 : 100 Yardion meter Broke Generating tube Drager smoke tube Nise level test Idjustment 1 : 1000 / 1 : 100 Yoldage tester BBC Multimeter M 2008 with TRMS Voltage test for fan current Trape measure, penoil Yoldage test for fan current Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! Idjustment / Document / Docu	Photometer	DEHA, Typ 28 LD	Leakage	test of filters	Intake capacity 28, Particle diameter 0	3 [/ Min.; .3 μm	
DEHS - Generator DEHA, AG 01 Particle penetration of DEHS - particles defined size (0,3 µm) light meter Gossen, Typ PANLUX electronic 2 Illumination intensity test Phonometer Brüel & Kjaer, Typ 2222 Noise leval test Vibration meter Schenck, Vibrometer 20, sensor 177 Smoke generating tube Dräger smoke tube Airflow direction test Voltage tester BBC Multimeter M 2008 with TRMS Voltage test for fan current Safety check equipment according DIN VDE 0701 Gossen Metrawatt, Type M 5013 Type M 5013 Tape measure, pencil Using the recommended test instruments, comply with the following instructions and the respective instruction manuals 1 Selective instruction manuals 1	Aerosol rarefication device	DEHA, VS 28	Particle filters	count on dirty side of	Adjustment 1 : 100	0 / 1 : 100	
light meter Gossen, Typ PANLUX electronic 2 Illumination intensity test Phonometer Britel & Kjær, Typ 2222 Noise level test Vibration meter Schenck, Vibrameter 20, sensor T 77 Vibration resistence test Smoke generating tube Dräger smoke tube Airflow direction test Voltage tester BBC Multimeter M 2008 with TRMS Voltage test for fan current Safety check equipment according DIN VDE 0701 Gossen Metrawatt, Type M 5013 Type M 5013 Tape measure, pencil Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! D52936MP SAM Name / Name: Datum / Date. Benennung / Designation: Documents: / Document No EreteRUIt preparet: G. Herget 05.02.1998 Stand / Edition: 02.1998 Hergeeus Sorvice Handbuch HERAguard 50052936 11	DEHS - Generator	DEHA, AG 01	Particle particles	penetration_of DEHS - definied size (0,3 µm)			
Phonometer Brück & Kjaer, Typ 2222 Noise level test Vibration metor Schenck, Vibrometer 20, sensor T 77 Vibration resistence test Smoke generating tube Dräger smoke tube Airflow direction test Voltage tester BBC Multimeter M 2008 with TRMS Voltage test for fan current Safety check equipment according DIN VDE 0701 Gossen Metrawatt, Trype M 5013 Gossen Metrawatt, Trype M 5013 Tape measure, pencil Using the recommended test instruments, comply with the following instructions and the respective instruction manuals I O52936MP. SAM Name / Name: Datum / Date: Datum / Date: Bunennung / Designation: Document No: Settice Handbuch HERAguard Erstellt / prepared: G, Herget 05.02.1998 Stand / Edition: 02.1998 Hergerung Service Handbuch HERAguard 50052936 11	light meter	Gossen, Typ PANLUX tronic 2	elec- Illuminal	ion intensity test			
Vibration meter Schenck, Vibrometer 20, sensor T 77 Vibration resistence test Smoke generating tube Dräger smoke tube Airflow direction test Voltage tester BBC Multimeter M 2005 with TRMS Voltage test for fan current TRMS Safety check equipment according DIN VDE 0701 Gossen Metrawatt, Type M 5013 Voltage test for fan current TRMS Tape measure, pencil Gossen Metrawatt, comply with the following instructions and the respective Instruction manuals ! Using the recommended test instruments, comply with the following instructions and the respective Instruction manuals ! 052936MP SAM Name / Name: Datum / Date: Datum / Date: Detum / Date: Benennung / Designation: Dekumentnr. / Document No: Setting Service Handbuch HERAguard Sot52936 11	Phonometer	Brüel & Kjaer, Typ 222	2 Noise le	vel test			
Smoke generating tube Dräger smoke tube Airflow direction test Voltage tester BBC Multimeter M 2006 with TRMS Voltage test for fan current Safety check equipment according DIN VDE 0701 Gossen Metrawatt, Type M 5013 Voltage test for fan current Tape measure, pencil Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! 052936MP SAM Name / Name: Datum / Date: Datum / Date 052936MP SAM Name / Name: Datum / Date: Datum / Date 052936MP SAM Name / Name: Datum / Date: Datum / Date: 052936MP SAM Name / Name: Datum / Date: Datum / Date: 052936MP SAM Name / Name: Datum / Date: Datum / Date: 052936MP SAM Name / Name: Datum / Date: Datum / Date: 052936MP SAM Name / Name: Datum / Date: Datum / Date: 052936MP SAM Got 05.02.1998 Stand / Edition: 02.1998 052936MP SAM Got 05.02.1998 Stand / Edition: 02.1998	Vibration meter	Schenck, Vibrometer 2 sensor T 77	20, Vibratio	n resistence test			
BBC Multimeter M 2008 with TRMS Voltage test for fan current TRMS Safety check equipment according DIN VDE 0701 Gossen Metrawatt, Type M 5013 Tape measure, pencil Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! 052938MP.SAM Name / Name: Datum / Date: Datum / Date: Benennung / Designation: Dokumentnr. / Document No: Self. 11 Erstellt / prepared: G. Herget 05.02.1998 Stand / Edition: 02.1998 Hergeus Service Handbuch HERAguard Softward HereAguard Software HereAguard Softward HereAguard	Smoke generating tube	Dräger smoke tube	Airflow o	firection test			
Safety check equipment according DIN VDE 0701 Gossen Metrawatt, Type M 5013 Tape measure, pencil Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! 052936MP.SAM Name / Name: Datum / Date: Benenung / Designation: Dekumenter, / Document No: Setting 1 Erstellt / prepared: G. Herget 05.02.1998 Stand / Edition: 02.1998 Heracus Service Handbuch HERAguard Documenter, / Document No: Setting	Voltage tester	BBC Multimeter M 200 TRMS	98 with Voltage	test for fan current			
Tape measure, pencil Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! 052936MP.SAM Name / Name: Datum / Date: Datum / Date: Datum / Date: Datum / Date: December 2010 052936MP.SAM Name / Name: Datum / Date: Datum / Date: December 2010 December 2010 December 2010 052936MP.SAM Name / Name: Datum / Date: Datum / Date: December 2010 December 2010 December 2010 Service Handbuch HERAguard South South HERAguard South South HERAguard So	Safety check equipment according DIN VDE 0701	Gossen Metrawatt, Type M 5013					
Using the recommended test instruments, comply with the following instructions and the respective instruction manuals ! 052936MP.SAM Name / Name : Datum / Date: Datum / Date: Benennung / Designation: Dokumentur. / Document No: Setting the parent in the following instructions and the respective instruction manuals ! 052936MP.SAM Name / Name : Datum / Date: Datum / Date: Benennung / Designation: Dokumentur. / Document No: Setting the parent is the following instructions and the respective instruction manuals ! 052936MP.SAM Name / Name : Datum / Date: Datum / Date: Benennung / Designation: Dokumentur. / Document No: Setting the parent is the following instruction is the parent is the following instructions and the respective instructing and the respective	Tape measure, pencil						
O52936MP.SAM Name / Name: Datum / Date: Datum / Date: Benennung / Designation: Dokumentnr. / Document No : Seite Erstellt / prepared: G. Herget 05.02.1998 Stand / Edition: 02.1998 Hergeus Service Handbuch HERAguard 50052936 11	Using the recommended test instru	ments, comply with the follo	wing instructions	and the respective ins	struction manuals !		
O52936MP.SAM Name / Name: Datum / Date: Datum / Date: Benennung / Designation: Dokumentnr. / Document No.: Seite Erstellt / prepared: G. Herget 05.02.1998 Stand / Edition: 02.1998 Heraeus Service Handbuch HERAguard 50052936 11 Destrict of entrols Erstellinet Erstellinet Erstellinet Service Manual HERAguard 50052936 11							
Erstellt / prepared: G. Herget 05.02.1998 Stand / Edition: 02.1998 Heraeus Service Handbuch HERAguard 50052936 11	1	Datum / Date:	1	Benennung / D	esionation:	Dokumentnr. / Document No	Calledaat
Provide Manual HERAquard	052936MP.SAM Name / Name: Datum / Date						i Seile / nam
Gepruit / checked; 1 [LETS. TUF / Kepl, Tor;] Institutional Convolution and the Angular of the Convolution and the Angular of the Convolution and the Convolution an	052936MP.SAM Name / Name: Datum / Date Erstellt / prepared: G Herget 05.02.199	8 Stand / Edition: 02 1998		Service Handbuc	h HERAquard	50052936	11 / 10

Testing aid Komaks Stanting energied method Komaks Metasting fact Testing fact Stanting energied method Service Manual HERKQuard	-enni3 - 19tzu	medouerdeD rebo gruiteheine	en Fall der Pate	r vitestestes ats. Alle Rechte für d Alle Rechte für d	nətrisiliqiəv nəgrinlarısınısı	cht ausdrücklich zugestanden. Zu	hi gestattet, soweit n	วเก ฮาโดกก! ชอาก์เ อูกมโเอซ์เฟ	նու ընդեւթութը, չեն։ Հրեւներ հետ	istrigung dieser Unter nO stnomutsnt subst	Weitergabe sowie Vervie 9HO naffen OHe
Jestifug ald Scinus all Scinus all<				breugAAAH leur	neM aoivia2	MATRUMENTS		Ers. Iur / Repl. for:			Geprüft / checked:
Sharinga Keamarkis Silan Unit Keamarkis Silan Unit Keamarkis Silan Unit Keamarkis Silan Unit Silan Unit	12/10	9862909		buch HERAguard	Service Hand	snaeiah	8661.20	Stand / Edition:	8661.20.20	G. Herget	Erstellt / prepared:
Testing ald Remarks Measuring collar To measure sit velocity in working sporture Measuring collar To measure sit velocity in working sporture	Seite / page:	oN InemuooO \nine	Эшпуод	g / Designation:	unuuəuəg		Datum / Date:		Datum / Date:	:emeV \ emeV	MA2.9M3E6230
Testing aid Romarks anommeter Admarks anommeter Admarks Admarks iapo Clean the cabinal for lesting Admarks iapo Clean the cabinal for lesting Admarks iapo Clean the cabinal for lesting		·									
Stearing only Romarks Recommeder Incomplete Recommeder Incomplete Recommeder Incomplete Resolution Incomplete Resolution <td></td>											
Testing aid Remarks Stant for acrosol generator and adminutelar Construction Admesive tape Construction Gass oleaner and some is velocity in working speriure Construction Testing Construction Testing Construction Testing Construction Testing Construction Testing Construction Testing Testing <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>											
Testing ald Remarks Stand for earlier lesting To measure air velocity in working aperture Glass cleaned on forwals for Stand for earlier lesting Annow lest Stand for earlier lesting				ı							
Testing aid Remarks Statuty aid Remarks Adinesive tape Io measure air velocity in working aperture Measuring collar Io measure air velocity in working aperture											
Toesting sid Remarks Stand for aerosol generator and amemorite(r Glass clearer and soft towels to clean the cabinet after testing To measure all velocity in working sperture											
Testing aid Remarks Stand for derosol generator and anemonietic Glass fieland soft (owels to class fielant after festing To measure air velocity in working aperture										-	
Testing aid Remarks Stand for eerosol generator and soft reveals to dean the cabinet after (esting collar To measure air velocity in working aperture Adhesive tape 10 measure air velocity in working aperture											
Testing aid Remarks Stand for serosol generator and denomentation Stand for serosol generator and denomentation Adhesive tape Class classer and soft towels to deanting aperture Measuring colliar To measure air velocity in working aperture											
Testing aid Remarks Stand for aerosol generator and anemmater Remarks Adhesive lape Class clamper and soft towels to class clamper and soft towels to class clamper and soft towels to class clamper Measuring collar To measure air velocity in working aperture											
Testing aid Remarks Stand for aerosol generator and anemometer Stand for aerosol generator and class cleaner and soft fowels to clean the cabinel after testing Class clean the cabinel after testing To measure air velocity in working aperture											
Testing aid Remarks Stand for serosol generator and anemometer Stand for serosol generator and clean the cabinet after testing Measuring collar To measure air velocity in working aperture											
Testing aid Remarks Stand for serosol generator and anemometer Stand for serosol generator and Adhesive tape Adhesive tape Class ofeaner and soft towels to restring Desarting To measure air velocity in working aperture											
Testing aid Remarks Stand for aerosol generator and anemometer Stand for aerosol generator and anemometer Adhesive tape Class cleaner and soft towels to clean the cabinet after testing Diass cleaner and soft towels to clean the cabinet after testing To measure air velocity in working aperture											
Testing aid Remarks Stand for aerosol generator and anomoteler Stand for aerosol generator and descrime tape Adhesive tape Class cleaner and soft towels to for an the cabinet after testing Measuring collar To measure air velocity in working aperture											
Testing aid Remarks Stand for aerosol generator and anemometer Stand for aerosol generator and anemometer Adhesive tape Class cleaner and soft towels to clean the cabinet after testing Of an info cabinet after testing To measure air velocity in working aperture											
Testing aid Remarks Stand for aerosol generator and anemometer Remarks Adhesive tape Cleaner and soft towels to Glass cleaner and soft towels to Measuring collar To measure air velocity in working aperture											
Testing aid Remarks Stand for aerosol generator and anemometer Remarks Adhesive tape Class cleaner and soft towels to clean the cabinet after testing Measuring collar To measure air velocity in working aperture											
Testing aid Remarks Stand for serosol generator and annote Stand for serosol generator and annote Adhesive tape Clean fine cabinet after testing Clean fine cabinet after testing To measure air velocity in working aperture											
Testing aid Remarks Stand for aerosol generator and anemometer Stand for aerosol generator and anemometer Adhesive tape Cleanst soft towels to clean the cabinet after testing Measuring collar To measure air velocity in working aperture											
Testing aid Remarks Stand for serosol generator and anemometer Stand for serosol generator and anemometer Adhesive tape Glass cleaner and soft towels to Clean the cabinet after testing Measuring collar To measure air velocity in working aperture											
Testing aid Remarks Stand for aerosol generator and anneter Semarks Adhesive tape Seanet and soft towels to class cleaner and soft towels to measure air velocity in working aperture Measuring collar To measure air velocity in working aperture											
Testing aid Remarks Stand for serosol generator and antitor Remarks Adhesive tape Class cleaner and soft towels to Glass cleaner after testing To measure air velocity in working aperture											
Testing aid Remarks Stand for serosol generator and anemometer Stand for serosol generator and Soft towels to be and soft towels towels towels to be and soft towels						ອມຖາຍອ	ів фоткіпд аі	sure air velocity	вэт оТ	<u>ار</u>	ellos prinuseeM
Testing aid Stand for aerosol generator and anemometer Adhesive tape									۵ ۱۵ ډه ا	et stfer testini	e lass cleaner a Clean the cabin
Testing aid Stand for aerosol generator and anemometer				<u></u>		· ·				f	aqet avizarbA
Stand for aerosol generator and Stand for aerosol generator and							, <u>, , , , , , , , , , , , , , , , </u>				anemometer
אפשפולא אפישפולא אפישפולא אפישפולא אין אפישפולא אין אפישפולא אין אין אין אין אין אין אין אין אין אי									pue	ol generator i	Stand for aeros
								S.	Remark		bis pnitesT

Air Velocity Test

- Standard check
- Measure air velocity at one point in the middle of the filter area and note



- Distance to the filter area 150 mm
- Utilize the measuring

REQUIRED VALVE \geq 0,4 m/s \pm 20 %

052936MP.SAM	Name / Name:	Datum / Date:		Datum / Date:		Benennung / Designation:	Dokumentnr. / Document No.:	Seite / page
Erstellt / prepared:	G. Herget	05.02.1998	Stand / Edition:	02.1998	Heraeus	Service Handbuch HERAguard	50052936	13/19
Geprüft / checked:			Ers. für / Repl. for:		INSTRUMENTS	Service Manual HERAguard		

Standard check for high demands

Measure air velocity at II points over the filter area



Distance to the filter area 150 mm

2

Utilize teh measuring

Total of values	= mean
Number of values	mean

REQUIRED VALVE $\geq 0.4 \text{ m/s} \pm 20 \%$

052936MP.SAM	Name / Name:	Datum / Date:		Datum / Date:		Benennung / Designation:	Dokumentnr, / Document No.:	Seite / page:
Erstellt / prepared;	G. Herget	05.02.1998	Stand / Edition:	02.1998	Heraeus	Service Handbuch HERAguard	50052936	14/19
Geprüft / checked:	· · · · · · · · · · · · · · · · · · ·		Ers. für / Repl. for:		INSTRUMENTS	Service Manual HERAguard		
Weitergabe sowie Vervie gung vorbehalten. O He	elfältigung dieser Untr eraeus Instruments G	erlage, Verwertung und mbH, Germany	Mitteilung ihres Inhalts nic	cht gestattet, soweit r	nicht ausdrücklich zugestand	len. Zuwiderhandlungen verpflichten zu Schadensersatz. Alle Rechte für den	Fall der Patenterteilung oder Gebrauchsn	nuster - Eintra

Leakage Test Of Filter (DEHS - Test)

- Turn cabinet on
- Calibrate photometer
- Place aerosol generator filled with DEHS on the Ansaugöffnung
- Connect aerosol rarefication device to test connection and photometer
- Switch on aerosol generator
- Measure number of particles at the dirty side of main filter, 5 measurments- each for 1 minute
- Required value: approximately 30 million particles ¹⁾ of size 0,3 μm (doing this pay attention to the factor of rarefication 1 : 1000)
- Disconnect the photometer from the rarefication device and connect directly to measuring-head
- Scan the seat of the gasket and the clean side of the main filter, using the photometer's measuring-head. Speed of scanning < 5 cm/s, clearance to Itop of cabinet max. 10 mm.
- Fighthe number of particles > 300⁻²⁾ St./0,3 μm when scanning, then the location where this occurs has to be examined more accurately :
- Particle concentration has to be measured at this point for 1 minute <u>Measuring errors have to be excluded: Incorrect air, particle from tube and so on.</u>

The number of particles has to be < 300 / 0,3 μ m⁻²

- ▶ If the max. number of particles is exceeded change filter if necessary.
 - ¹⁾ Example, the concentration should be in this range
 - ²⁾ Supposed value at 30 million particles on the dirty side of the filter

052936MP.SAM	Name / Name:	Datum / Date:		Datum / Date:		Benennung / Designation:	Dokumentnr. / Document No.:	Seite / page:
Erstellt / prepared:	G. Herget	05.02.1998	Stand / Edition:	02.1998	Heraeus	Service Handbuch HERAguard	50052936	15/19
Geprüft / checked:			Ers. für / Repl. for:		INSTRUMENTS	Service Manual HERAguard		
Weitergabe sowie Vervie gung vorbehalten. O He	ilfältigung dieser Unte raeus Instruments Gr	infage, Verwertung und nbH, Germany	d Mitteilung ihres Inhalts nic	ht gestattet, soweit r	icht ausdrücklich zugestand	en Zuwiderhandlungen verpflichten zu Schadensersatz. Alle Rechte für de	n Fall der Patenterteilung oder Gebrauchsm	uster - Eintra-

Determination of the Clean Room Class according to VDI 2083

- Cabinet in operation (at least 20 minutes lead time).
- Calibrate photometer
- Measuring number of particles in the measuring guid
- **•** Valve aplies an paritcle size of 0.5 μm (see table)

	ŀ	IPH 9	HPH 12	HPH15	HPH18							
	x	x x	x	x	x	061 0			▲ [Required va	Ive Clean room cl	ass
						2	X			· · · ·	(US Fed. Std. 2	09 e)
	Х	X X	X	Х	X		Η	5		100	100	
						150		K / 5		10	10	
	X	X X	X	X	X			Ha		1	1	
						150	, ,	Ē				
	Y	x x	x	x	X	150	r_					
	1								•			
1	50 300											
052936MP.SAM	Name / Name:	Datum / Date:		Datum / Date:		Ţ			Benennung / Designal	lion;	Dokumentnr. / Document No,:	Seite / page:
Erstellt / prepared:	G. Herget	05.02.1998	Stand / Edition:	02.1998	Heraeus			Se	rvice Handbuch HE	RAguard	50052936	16/19
Geprüft / checked:			Ers. für / Repl. for:		INSTRUMENTS	1		S	ervice Manual HER	Aguard		
Weitergabe sowie Vervie gung vorbehalten. OHe	lfältigung dieser Unte raeus Instruments Gr	rlage, Verwertung und nbH, Germany	Mittellung ihres Inhalts nic	ht gestattet, soweit n	icht ausdrücklich zugesta	nden.	Zuwid	erhand	ungen verpflichten zu Schadense	ersatz. Alle Rechte für den	Fall der Patenterteilung oder Gebrauchsm	uster - Eintra-

oruft / checked:	·		Ers. für / Repl. for:		STNEMURTSNI	Service Manual	ial HEKAguard		
ellt / prepared:	G. Herget	05.02.1998	Stand / Edition:	8661.20	SUBERS	Service Handbuck	uch HÈRAguard	2002	9862
MA2.9M3E6	:9meN \ 9meN	Catum / Date:		Datum / Date:		Benenning / De	/ Designation:	Dokumentnr. /	Document No.:
									,
							i		
	+								
	<u></u>	**				·			[
.	(7141) 111						1	96/81 HdH '81 HdH	1 091
21	(LM) UE (CM) UE		2-EX / 9-EX E-EX / 1-EX						A 091
	<u> </u>	<u> </u>					1	HPH 12 /95	
	, .						1	'71 HdH	V 081
24	(LW) UE		X3:1/X3:3	······································		Voltage fester	Jə;	6 НӘН	V 081
W	suis		N:LX/7:LX			Voltage tester	Jə;	Supply voltage	
W	ark		Location		Transact	aoivad no		tlusəA	

Mark	Location	Transaction	Device	Result
Electrical Safety-Check	at the equipment	1)	Safety-check device	
Labels, manufacturers name plate			Visual check	Attached, undamaged
Ventilation in the laboratory	······································		Visual check	Ventilation present

1) Respective documents : Instruction DA 000 001

052936MP.SAM	Name / Name:	Datum / Date:		Datum / Date:		Benennung / Designation:	Dokumentnr. / Document No.:	Seite / page:
Erstelit / prepared:	G. Herget	05.02.1998	Stand / Edition:	02.1998	Heraeus	Service Handbuch HERAguard	50052936	18/19
Geprüft / checked:			Ers. für / Repl. for:		INSTRUMENTS	Service Manual HERAguard		
Weitergabe sowie Vervie	elfältigung dieser Unter vaeus Instruments G	erlage, Verwertung un mbH. Germany	d Mittellung ihres Inhalts nic	cht gestattet, soweit i	nicht ausdrücklich zugestand	len. Zuwiderhandlungen verpflichten zu Schadensersatz. Alle Rechte für den	Fail der Patenterteilung oder Gebrauchsn	nuster - Eintra-

Set Up Of Pressostats

- Cabinet in operation (at least 20 minutes lead time)
- Measure fan voltage
- Set anemoter in the middle of the Filter area
- Measure air velocity
- Set fan voltage so that at this measuring point air velocity is 0.2 m/s
- Change adjustment of lower pressostat that it just turns on visual and acoustic alarm
- Return fan voltage to the measured value
- ► Turn cabinet off and on, check operation according to operation instruction

052936MP.SAM	Name / Name:	Datum / Date:		Datum / Date:		Benennung / Designation;	Dokumentnr. / Document No.:	Seite / page:
Erstellt / prepared:	G. Herget	05.02.1998	Stand / Edition:	02.1998	Heraeus	Service Handbuch HERAguard	50052936	19/19
Geprüft / checked:			Ers. für / Repl. for:		INSTRUMENTS	Service Manual HERAguard		
Weitergabe sowie Vervie gung vorbehalten. OHei	ifältigung dieser Unte aeus Instruments Gr	rlage, Verwertung und nbH, Germany	Mitteilung ihres Inhalts nic	ht gestattet, soweit r	nicht ausdrücklich zugestand	ien, Zuwiderhandlungen verpflichten zu Schadensersatz, Alle Rechte für den	Fall der Patenterteilung oder Gebrauchsm	iuster - Eintra-

Test Report Clean Air Cabinets





Customer

Model		Test location		
Order No.		Serial - No.		
Operation hours		Date		
	Test according to VDI 2	083 part 3 and FED	209 E	
	 1. Visual	Inspection		
Instruction Manual 2		Operating instruction 2		
Log book ?		Latest test report ?		
Type plate ?		Safety markings ?		
	2. General	I Inspection		
Clean Room Class				
Modulwidth	[m]	Moduldepth		[m]
Remark:	<u> </u>			[]
	3. Electrical safety in a	accordance to IEC 1	1010	
Test Equipment		Safety test Equipment		measured
Bonding impedance		< 0 2 0		
Isolation impedance		> 2 MO/500 V DC		
Leakage curretn		< 7mA		
	A Filtertest in acc	vrdance to VDI 2083	2	1
Toot Equipmont	4. I intertest in acco	Leger Derticle counter 0		and dilution doving
rest Equipment			stor toot o	
		1.1000, aerosole genera	alor, lest a	
No ontical leakages				
Filter sealing				
Filter class (efficiency	(0.3 µm)			
No. of particles before	e filter 0.3um			
Max. allowed mean		Measured mean		
penetration		penetration		
Max. allowed local		Measured local		
penetration		penetration		
Meet all requiremen	ts	Yes	No	
Remark:				
	5. Air v	velocity		
Test equipment	Anemometer			
Measure plane	300 mm in front of filter surface	9		

Test Report (Clean Air Cabinets	SORVALL [®] Heraeus	Kendro Laboratory Products
Measure arid	3 points/gm filter surface (mea	euring points not under	ights and filter frame)
Fill in positon moasur	ing points In case of a l	ookagoo marko tho posit	ion
Fill in positon measur	ing points - in case of a li	eakayes marke the posit	1011 -
Air velocity	Mean air velocity		[m/s]
	80% of the values between + 2	20% from mean value	
	100 % oft the values between	+ 30 % from mean value	
Meet all requiremen	ts	Yes	No
Remark:			
	6. Clean R	Room Class	
Test equipment	Laser particle counter 0.5um		
Measure plane	300 mm in front of filter surfac	۵	
Measure grid	No. of measurements: square	of filter surface: at least	2
Fill in positon measur	ing point		-
Max allowed no. of Pa	articles sice 0.5µm		
Max. measured no. of	f Particles sice 0.5µm		
Meet all requirement	ts	Yes	No
Remark:			
Date	Tested by	Signature Service Tech	nican
Date	Approved by	Signature Customer	

Dept./Year	SAP-Order no.:	Sheet:



....

Test Record

..........

Sound Availass Costomer Inc.	.:			· · · ·	:		Place of installation/Destination	ยม :			
Year of construction:		KC:		ST:		Technician	's name:			Date;	
Out a data					0-1						
Order date:	On	dered by:			Urder no	p.:					
Instrument type:							ID-no./Article no.:		Service hour	s:	
Equipment no.:	Se	rial no.:		Servi	ice Instrument	t no.:	Delivery date:	Put into oper	ation on:	Customer invento	iry no.:
											80
Errer Dave		L Li a la	f			Dovrti	ala Eiltar				
Error Repo) i c	nign	-beu	orma	ance	Parti	cie riitei				
Measuring inst	rum	ent	: Pa rticl e	e monit	or 28.3 l	/min	Dilution system 1:	1000	Aerosol	generator	
Filter applied	· · ·			Circula	ation ai	r filter	Exhaust a	ir filter	Pre	e-filter	
Particle concer	ntrat	ion	DEHS	S(P/0	0.3 µm /	/ 2.8)					
Filter dimensio	ns		Туре	label	size :						mm
Serial number			Туре	label s	serial N	lo. :					
Part ID-number	r		Туре	label	Part No	. :					
								, , , -	· · ·	- / /	7
										+++	//
					//7				77	\mp //	
Testing grid	filte	er				<i></i>		_//		<u> </u>	/
Testing grid	filt	er				/ /					
Testing grid	filt	er		<u> </u>						$\leq / /$	/
Testing grid	filt	er	ſ	<u> </u>					_//	=//	
Testing grid	filt	er	(mark)		testing	arid)					
Testing grid	filt	er	(mark d	error in	testing g	grid)					
Testing grid	filt	er	(mark	error in	testing g	grid)					
Testing grid		er	(mark	error in	testing g	grid)					
Testing grid		er	(mark	error in	testing ç	grid)					
Testing grid		er	(mark	error in	testing g	grid)					
Testing grid		er rd H	(mark)	error in	testing c	grid)	article Filter	· · · · · · · · · · · · · · · · · · ·			
Testing grid	filt	rd H	(mark igh-p	error in	testing c	grid)	article Filter				
Testing grid Error number: Testing Re Date of test:	filt	er rd H	(mark)	error in	testing g	grid)	article Filter				
Testing grid Error number: Testing Re Date of test: Leakage confir	filt CO	rd H	(mark igh-p	error in eerfo /es	rman	grid) Ice Pa	article Filter Tested by: Filter :	·)			bed
Testing grid Error number: Testing Re Date of test: Leakage confir Cause:	filt CO rmec	rd H	(mark igh-p	error in perfo (es	testing c rman	grid) Ice Pa	article Filter Tested by: Filter :	΄) [Rε			bed
Testing grid Error number: Testing Re Date of test: Leakage confir Cause:	filt CO rmec	rd H	(mark)	error in eerfo (es	rman	grid) ICE Pa	article Filter Tested by: Filter :	') Re			bed
Testing grid Error number: Testing Re Date of test: Leakage confir Cause:	filt CO mec	rd H	(mark	error in perfo (es	rman	arid) ace Pa	article Filter Tested by: Filter :) Re	paired		bed
Testing grid Error number: Testing Re Date of test: Leakage confir Cause:	filt CO mec	rd H	(mark)	error in eerfo /es	rman	grid) ICE Pa	article Filter Tested by: Filter :	') _ Re	paired		bed
Testing grid	filt eCO mec	rd H	(mark	error in perfo (es	rman	arid) ace Pa	article Filter Tested by: Filter :) [] Re	paired		bed

Manufacturing site / Year	Order no.:	Sheet:

Date :2001- 05-15

•Kendro

. ŵ

ŵ

.

Safety Declaration

*

Billing address. Customer no.	· · · · · · · · · · · · · · · · · · ·				Installation address			n a ^{to} s a		
					•					
Manufacturing year:	Customer center:	Technician no:		Techniclan	's name:			Date:		
Date of order:	Customer name:	Cust	tomer	order no;	<u></u>			L		
-										
Equipment type:					Part no.:		Hours of us	e:		
Epulpment no:	Serial no:	Service referen	ico no	h.	delivery date:	installation Date): 	Customer Ident	t. na.	
										703
Declaration	of safety									
Dooraration	or ourory									
Dear Customer.		· · · · -· · ·								
							برية المغمر	, historiaal a	ممتلمم	
In order that our service of the ser	/ice personnel car zardous material.	n work sately c may we draw	one v vo	quipme ur atten	nt which may have be tion to certain nation	al and inte	nated by rnational	i laws which	have !	been:
written to ensure wor	kers safety.	•								
These relate to: -										
• The employer's re	esponsibility for t	he safety of his	s en	nployee	в.					
 The operator's re 	sponsibility for pr	otecting other	r per	rsonnel	and the environment.					
Therefore prior to a	ny installation s	onvice renair	or	calibrat	ion being carried ou	t on the e	aninwen	it please cor	nnlete	this
declaration of safety	to confirm that the	e equipment is	s fre	e from a	iny hazard and safe fo	or our perso	nnel to h	nandle.		
Thank you for your u	nderstanding,									
	Deaduate Combil									
Work to be ne	rformed (Pla	acó mark the		nuirod	tacke):					
work to be pe	nomea (rie								ř	
Maintenance			 		Filter to be changed					<u> </u>
Service					Transfer to new loca	tion				
Calibration	· · · ·		:		Transport	<u> </u>				
		áro Her-Althraid	ر. رید شده	1						
Declaration of	i decontamiı	nation (ye	s / ı	no)				· · · .		
The equipment is fre	e from biological	contamination			The equipment is free	e from che	mical ha	zards		
The equipment is fre	o from radioactive	contominatio	n		contamination	o from all o	ther has			
		Containinatio		┟╴┝╾╍┥╴	The equipment is in			.a) US		
Free from carcinoge	ns	1	1		Manfred we can not	disinfect e	quipment	t]
Confirmation:	· .									
The unit is free fro	m all hazardous	contam inat i	on,	is saf e	to work on and pre	es ent s no	danger	to service p	erson	inel.
Comment:										
Signature		Name (plea	ase	print)	<u>an martin () () () () () () () () () () () () () </u>	Position		Date		



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench

Installation Qualification (I.Q.) and Operational Qualification (O.Q.)



Va	lidation
vu	laalon

Thermo Electron LED GmbH Robert-Bosch-Straße 1, D-63505 Langenselbold

	V-No. Thermo:	
Clean Bench	Valid from:	
	Replaced V-No.:	
Installation Qualification (I.Q.)	Reviewed by:	
and	V-No. User:	
Operational Qualification (O.Q.)	Valid from:	
	Replaced V-No.:	
	Reviewed by:	
	Page 1	of 7

Author:	Thermo Electron LED GmbH	Reviewed:	Production / Laboratory
Signature: Name:	I. Nierobisch	Signature: Name:	
Date:		Date:	
Approved:	Technical Department	Approved:	Validation Manager
Signature:		Signature:	
Name:		Name:	
Date:		Date:	
Approved:	Quality Management		
Signature:			
Name:			
Date:			



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench Installation Qualification (I.Q.) and Operational Qualification (O.Q.)	V-No. Thermo: V-No. User:	
		Page 2 of 7

Table of Contents

- 1. Objective
- 2. Scope and responsibilities
- 3. Instruction
- 3.1 Description of the qualification-object
- 3.2 Type of examination
- 4. Installation Qualification (I.Q.)
- 4.1.1 Identification / Installation
- 4.1.2 Conformity to Standards
- 4.1.3 Documentation
- 5. Calibration
- 6. Operational Qualification (O.Q.)
- 6.1 General
- 7. Review / Re-qualification
- 8. Discrepancies
- 9. Summary Report and Certification
- 10. Appendices



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench Installation Qualification (I.Q.) and Operational Qualification (O.Q.)	V-No. Thermo: V-No. User:	
		Page 3 of 7

1. Objective

This Validation Plan / Report specifies the qualification of a Clean Bench with Horizontal Airflow, supplied for the department

for product protection of products and against environmental influences and influences of the persons working with the product.

2. Scope and responsibilities

This Validation Plan / Report stipulates the qualification of the instrument named above according to the requirements of cGMP (current Good Manufacturing Practice) and the norms and standards that apply to these instruments. Furthermore, the recommendations and guidelines of Quality Management for this application range are also considered.

The following persons are going to participate in the qualification:

	Name	Dept. / Function
Validation Manager:		
Validation Coordinator:		
Done by:		



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench Installation Qualification (I.Q.) and Operational Qualification (O.Q.)	V-No. Thermo: V-No. User:	
		Page 4 of 7

3. Instruction

3.1	Description of the qualification-object							
	Object:	Clean bench for product protection,						
		HERAguard HPH						
	Manufacturer:	Company Thermo Electron LED GmbH						
	Location:							
	Room No.:							
	Application:							

3.2 Type of examination

The safety clean bench is subject to a prospective / retrospective * qualification.

4. Installation Qualification (I.Q.)

4.1.1 Identification / Installation

Acceptance Criterion

All parts of operating means listed in the SOP have to be supplied and installed correctly.

Examination

All criteria for identification and installation of the object of qualification, including the acceptance criteria, are listed in the

SOP Installation Qualification (I.Q.)

Identification / Installation, see Appendix 1.

• Delete as appropriate



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench Installation Qualification (I.Q.) and Operational Qualification (O.Q.)	V-No. Thermo: V-No. User:	
		Page 5 of 7

4.1.2 Conformity to Standards

Acceptance Criterion

All test criteria listed in the SOP have to be complied with.

Examination

All measures for verification of the Conformity to Standards of the object of qualification, including the acceptance criteria, are listed in the

SOP Installation Qualification (I.Q.)

Conformity to Standards, see Appendix 2.

4.1.3 Documentation

Acceptance Criterion

All documents listed in the SOP have to be supplied.

Examination

All criteria for review of the documentation of the object of qualification, including the acceptance criteria, are listed in the

SOP Installation Qualification (I.Q.)

Documentation, see Appendix 3.

5. Calibration

Calibration has to be performed when required by the **appropriate use** of the instrument or if requested by pertinent **regulations/standards**.



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench Installation Qualification (I.Q.) and Operational Qualification (O.Q.)	V-No. Thermo: V-No. User:	
		Page 6 of 7

5.1 Calibration certificates

The calibration certificates of the applied measuring instruments have to be checked, as appropriate calibration is a prerequisite of the next qualification step. The calibration certificates have to be attached as Appendix to this Validation Plan / Report.

5.2 Performance of Calibration

Calibration is performed according to the working instruction HIG-SA 10.12.1997 on the performance of calibrations and the issuance of factory calibration certificates of company Thermo Electron LED GmbH. The calibration certificates have to be attached as Appendix to this Validation Plan / Report.

6. Operational Qualification (O.Q.)

6.1 General

Acceptance Criterion

All functions listed in the SOP have to operate properly.

Examination

All criteria for verification of the operation of the object of qualification, including the object of qualification, are listed in the

SOP Operational Qualification (O.Q.), see Appendix 4.

7. Review / Re-qualification

After completion of the qualification in the scope of this Validation Plan / Report, the instrument is maintained in the qualified condition under application of the guidelines of the user or the requirements of the manufacturer of the instruments (maintenance instructions / test intervals). In the event that an essential modification or an error impairs the product quality, the object has to be requalified according to this Validation Plan / Report.



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench Installation Qualification (I.Q.) and Operational Qualification (O.Q.)	V-No. Thermo: V-No. User:	
		Page 7 of 7

8. Discrepancies

Discrepancies or defects have to be reported in the Discrepancy List. Following items have to be recorded:

A consecutive number

A sufficient error specification

The date until when the discrepancy will be eliminated

The SOP Discrepancy List, Appendix 5, has to be used.

9. Summary Report and Certification

The Summary Report contains a specification of the process of qualification. Once the individual qualification steps have been successfully completed, they will be followed by the certification with approval of the instrument for the appropriate use. The SOP Summary Report and Certification, Appendix 6, has to be used.

10. Appendices

- Appendix 1: SOP Identification / Installation
- Appendix 2: SOP Conformity to Standards
- Appendix 3: SOP Documentation
- Appendix 4: SOP Operational Qualification
- Appendix 5: Discrepancy List
- Appendix 6: Summary Report and Certification
- Appendix 7: Calibration certificates for the applied measuring instruments
- Appendix 8: Calibration certificates of the calibration performed


Validation Thermo Electron LED GmbH Robert-Bosch-Straße 1, D-63505 Langenselbold

Clean BenchV-No. Thermo:Installation Qualification (I.Q.) andV-No. User:Operation Qualification (O.Q.)Appendix 1Page 1 of 2

Installation Qualification (I.Q.) Identification / Installation

Test Criterion		Target (=Acceptance Criterion)	OK yes/no	Remarks
1.	General Data			
	Manufacturer	Kendro Laboratory Products GmbH		
	Туре	HERAguard HPH		
	Order No. (Indent. No.)			
	Serial No.			
	Year of construction			
	Inventory No.			
2.	Technical Data			
	Circulation air filter / Exhaust air filter	High-performance submicron particle filter (ULPA-Filter)		
	Separation degree	99.999 % at a particle size of 0.3 ∝m		
	Light density	Dimension table Operating Instructions HERAguard		
	Sound pressure level	Dimension table Operating Instructions HERAguard		
	Dimensions:			
	External Dimensions (Width X Height X Depth) mm	Dimension table Operating Instructions HERAguard		
	Experimental chamber (Width X Height X Depth) mm	Dimension table Operating Instructions HERAguard		
	Nominal voltage: (V)	Dimension table Operating Instructions HERAguard		
Nominal output: (kW)		Dimension table Operating Instructions HERAguard		
		Date:	Signature	<u>;</u>



Validation Thermo Electron LED GmbH Robert-Bosch-Straße 1, D-63505 Langenselbold

Clean Bench	V-No. Thermo:	
Installation Qualification (I.Q.) and Operation Qualification (O.Q.)	V-No. User:	
	Appendix 1	Page 2 of 2

Installation Qualification (I.Q.) Identification / Installation

Test Criterion		Target (=Acceptance Criterion)	OK yes/no	Remarks
3.	Materials	•		
3.1	Experimental chamber and drip tub:			
	Rust-proof and acid-proof steel 1.4301	supplied		
3.2	Trays:			
	Rust-proof and acid-proof steel 1.4301 (if supplied)	supplied and fitted correctly		
3.3	Glass panels:			
	Multi-panel security glass	supplied and fitted correctly		
3.5	External casing:	•		
	Galvanized steel sheeting, outside coated with powder coating	supplied		
4.	Instrument equipment	·		
4.1	Scope of delivery			
	Scope of delivery according to order acknowledgement	Supplied completely		
4.2	Inspection			
	Data on serial plate conforms to documentation	Conform		
	External casing free of visible deformation that might indicate transport damage	No visible damage		
	Internal chamber free of visible deformation that might indicate transport damage	No visible damage		
	Cleanliness inside and outside	Clean		
	Proper coating	No visible damage		
		Date:	Signature	9:



Val	lid	ati	on
vu	10	au	

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench Installation Qualification (I.Q.) and Operational Qualification (Q.Q.)	V-No. Thermo: V-No. User:	
operational Quantication (O.Q.)	Appendix 2	Page 1 of 1

Installation Qualification (I.Q.) Conformity to Standards

	Test Criterion	Target (=Acceptance Criterion)	OK Yes/No	Remarks
1.	GMP – Conformity			
	Cleaning	Easy to clean thoroughly		
	Disinfection	Possible with usual detergents		
	Compatibility of product to materials	Granted		
	Measuring instruments	Precise		
	Measuring instruments	Suitable		
2.	Safety standards (Safety and Environment)			
	Compliance	Complied with		
3.	Technological standards (Engineering)			
	Compliance	Complied with		
4.	Cross-contamination			
	Cross-contamination is excluded through low-turbulence displacement flow	Complied with		
		Date:	Signature:	



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench	V-No. Thermo:	
Installation Qualification (I.Q.) and Operation Qualification (O.Q.)	V-No. User:	
	Appendix 3	Page 1 of 1

Installation Qualification (I.Q.) Documentation

Test Criterion	Target (=Acceptance Criterion)	OK Yes/No	Remarks
1. Supplier (Instrument documentation)			Document:
Application	supplied		TT/LB HS2
Instrument specification	supplied		BA 50 051 340 P. 8
Safety instructions	supplied		BA 50 051 340 P. 7 & 8
Assembly and Installation	supplied		BA 50 051 340 P. 10 to 12
Operation / Putting into operation	supplied		BA 50 051 340 P. 13 & 14
Error diagnosis/Error alarm	supplied		BA 50 051 340 P. 13
Maintenance	supplied		BA 50 051 340 P. 14 & 15
Spare parts list / Abrasives list	supplied		BA 50 051 340 P. 15 SM 50 052 956 P. 1 to 8
Operating instruction (complete according to table of contents)	supplied		BA 50 051 340
2. User	-		
Operating instruction	supplied		
Cleaning instruction	supplied		
Maintenance schedule	supplied		
	Date:	Signatur	e:



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench	V-No. Thermo:	
Installation Qualification (I.Q.) and Operational Qualification (O.Q.)	V-No. User:	
	Appendix 4	Page 1 of 3

Operational Qualification (O.Q.)

Function		Target (=Acceptance Criterion)	OK Yes/No	Remarks		
1. Preparatory Meas	ures					
1.1 Assembly						
1.1.1 Location of assen	nbly					
Check location of assembly	Loca BA 5	tion of assembly as specified in 0 051 340 P. 10				
1.1.2 Stability / Leveling	9					
Check Stability	Stabi BA 5	Stability as specified in BA 50 051 340 P. 11				
1.1.3 Room ventilation						
Check room ventilation requirements	Required room ventilation as specified in BA 50 051 340 P. 11					
1.2 Instrument						
1.2.1 Connections						
Check connection to correction to correction correctio		ctly connected according to A 50 051 340 P. 11 & 12				
1.2.1 Worktop	1.2.1 Worktop					
Assembly of worktop sup		lied and fitted correctly				
		Date:	Signatur	e:		



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench	V-No. Thermo:	
Installation Qualification (I.Q.) and Operational Qualification (O.Q.)	V-No. User:	
	Appendix 4	Page 2 of 3

Operational Qualification (O.Q.)

Function		Target (=Acceptance Criterion)	OK Yes/No	Remarks
2 Operation				
2.1 Operating parameter	r			
Check parameter according to specification in BA 50 051 340 P. 13	Para	meter within permissible tolerance		
2.2Functions			·	
Check functions according to specification in BA 50 051 340 P.13	supp	lied and operational		
2.3Test				
Test according to instruction SM 50 052 936	Test according to instructionAll functions and parameter according to instruction 50 052 936 chapter 2, page 11 / 19 to 19 / 19			
		Date:	Signatur	e:



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench	V-No. Thermo:	
Installation Qualification (I.Q.) and Operational Qualification (O.Q.)	V-No. User:	
	Appendix 4	Page 3 of 3

Operational Qualification (O.Q.)

Function		Target (=Acceptance Criterion)	OK Yes/No	Remarks				
3. Error	•							
3.1 Behavior in case of power supply breakdown								
Breakdown of electric power supply	Air flow saved	completely deactivated, settings are						
Recovery of electric power supply	Instrume paramet power b	ent adjusts to the operating er that had been set before the reakdown						
Check fusing of sockets in the experimental chamber	Fusing a BA 50 0	according to 51 340 P. 17						
		Date:	Signatur	e:				



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean Bench nstallation Qualification (I.Q.) and Operational Qualification (Q.Q.)	V-No. Thermo: V-No. User:	
operational qualification (o.q.)	Appendix 5	Page 1 of 1

Form Discrepancy List

No.	Error specification	Defect Report No. (if required)	Eliminated until	Signature / Date
Done	by:	Date:		
Appro	ved by:	Date:		

Validation Plan / Report



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

lean Bench stallation Qualification (I.Q.) and perational Qualification (O.Q.)	V-No. Thermo: V-No. User:	
	Appendix 6	Page 1 of 2

Form Summary Report and Certification

Summary	
Done by:	Date:
Approved by:	Date:

Validation Plan / Report



Validation

Thermo Electron LED GmbH Robert-Bosch-Straße 1 D-63505 Langenselbold

Clean BenchV-No. Thermo:Installation Qualification (I.Q.) and Operational Qualification (O.Q.)V-No. User:Appendix 6	Page 2 of 2
--	-------------

Form Summary Report and Certification

Certificatior								
This Validation P	lan / Validation Report has been checked by the undersigned. The qualification has been:							
Completed * with reservation	Completed * No /minor defects to be eliminated have been noticed. with reservation The defects do not impair the use of the instrument. Defects will be eliminated in due time. Instrument is released for appropriate use *.							
Author:	Date:							
Reviewed:	Date:							
Release with reservatio approved by :	on Date:							
Release *	Any defects have been completely eliminated. The instrument is released for appropriate use until next requalification *.							
Approved by:	Date:							
Approved by:	Date:							
Remark: Any limitations of the approval should be indicated clearly.								
* Please cross	out inapplicable items.							











					Legende zum Stromla	ufplan			
Benennung:	Betriebsmittel:		Funktion, Kenno	laten/Bemessungs	daten: Benennung:	Betriebsmittel:		Funktion, Kenndaten/Bemesst	ungsdaten:
A 1	Phasenanschnittsteu	erung	Ventilatormotor(en)	S 4	Strömungswächter		unterer Alarmwert	
C 1	Motor - Betriebskond	ensator			S 5	Taster		akustisches Signal quittieren	
C 2	Motor - Betriebskond	ensator	* (nur Baugröße	18)	\$6	Taster		Starttaster UV-Timer ** Option	.1
E 1	Steckdose				S7	Taster		Störkontakt ** Option	
E 2	Steckdose			· · · · · · · · · · · · · · · · · · ·	X1	Klemmenleiste		Netzanschluß	
E3	Steckdose				X2	Klemmenleiste		Energieverteilung	
E 4,E 5	Vorschaltgerät		Experimentierra	umbeleuchtung	X3	Klemmenleiste		Karkasse/Steuereinheit	
£6,E7	Leuchtstoffröhre		Experimentierra	um	X4	Klemmenleiste		Störkontakt ** Option	
E 8	Vorschaltgerät für U	V-Strahler	** Option		Z1	Funk-Entstörkondensator			
E 9, E10	UV-Strahler		** Option		Z2	Funk-Entstörkondensator		<u></u>	
F 1, F 2	Sicherung, Steckdos	en	T 5 A						
F 3, F 4	Sicherung, Steuerstr	omkreis	T2A						
H 1	Leuchtmelder, weiß		Steckdosen						
H 2	Leuchtmelder, rot		Störung Lüftung						
НЗ	Leuchtmelder, grün		Lüftung in Betrie	eb					
H 4	Summer		Störung Lüftung	}					
Н 5	Lechtmelder, gelb		UV-Betrieb ** O	ption					
H6	Leuchtmelder, weiß		Störkontakt **O	ption					
K1	Relais		Akustischer Ala	rm Lüftung					
К2	Zeitlelais		UV-Timer ** Op	tion					
КЗ	Relais		Störkontakt ** C	ption					
M 1	Ventilatormotor								
M 2	Ventilatormotor		* nur Baugröße	18					
P 1	Betriebsstundenzähl	er							
P2	Betriebsstundenzähl	er	UV-Strahler **	Option					
S 1	Netz- u. Funktionsar	tenwahlschalter							
S 2	Schalter	- <u> </u>	Steckdosen EIN	I/AUS					
\$3	Schalter		Experimentierra	umbeleuchtung					
50553_5.SAM	Name / Name:	Datum / Date:	Index:	В		Benennung / Designatio	on;	Dokumentnr. / Document No.:	Seite / page
Erstellt / prepare	d: Peekhaus	21.07.97	ÄndNr.:	N1	Heraeus	SP HPH 9 12 15	18	50050553	5/6
Geprüft / checke	ed;		Datum / Date :	03.12.97	INSTRUMENTS	, , , , , , , , , , , , , , , , , , ,		·	
Weitergabe sowie Ve gung vorbehalten.	ervielfältigung dieser Unterl D Heraeus Instruments Gml	age, Verwertung und bH, Germany	Mitteilung ibres Inhalts nicl	nt gestattet, soweit nich	t ausdrücklich zugestanden.	Zuwiderhandlungen verpflichten zu Schadensersa	atz. Alle Rechte für den F	all der Patenterteilung oder Gebrauchsn	nuster - Eintra-

			(i.e	1. 			
				1	Nomenclature to circuit	diagram	
Name: I	Parts:		Function;		Name:	Parts	Function:
A1 I	Power control		Ventilator(s)		S 4	Switch ventilation control	Setpoint lower alarm
C1 (Capacitor				S 5	Rocker switch	Reset acoustic alarm
C2 (capacitor		* (size 18 only)		S 6	Rocker switch	Start UV-Light timer ** Option
E1 :	Socket				S7	Rocker switch	Disturbance contact ** Option
E 2	Socket	· · · · · · · · · · · · · · · · · · ·			X1	Terminals	Mains connection
E3 4	Socket				X2	Terminals	Energy distribution
E4.E5	Electronic Ballast		Lighting		X3	Terminals	Connection control unit
E6.E7	Fluorescent tube	···=· · · · · · · · · · · · · · · ·	Lighting	· · · · · · · · · · · · · · · · · · ·	X4	Terminals	Disturbance contact ** Option
E 8	Electronic Ballast		UV-Light ** Optio	on .	Z1	Interference supression	
E9, E10	UV-Light tubes		** Option		Z2	Interference supression	
F1.F2	Fuses for sockets		T5A				
F3,F4	Fuses for control circu	nit	T2A				
H1	Signal lamp, white		Sockets	har n			
H2	Signal lamp, red		Ventilation alarm				
НЗ	Signal lamp, green		Ventilation				
H4	Buzzer		Ventilation alarm				
H5	Signal lamp, vellow		UV-Lamp ** Optio	on			,,,,,,,
H6	Signal lamp, white		Disturbance cont	act **Option			
К1	Relav		Ventilation acous	tic alarm			· ·
К2	Time Relay	ne Relay UV-Light timer ** Option					
КЗ	Relay	ay Disturbance contact ** Option					
M 1	Ventilator						
M 2	Ventilator	· · · · · · · · · · · · · · · · · · ·	*(size 18 only)				
P 1	Time counter						
P2	Time counter		UV-Light ** Optic	n			
S 1	Switch mains and fun	ctions					
S 2	Switch		Sockets ON / OF	F			
S 3	Switch		Lighting				
50553_6.SAM	Name / Name:	Datum / Date:	Index:	В		Benennung / Designatio	n: Dokumentnr. / Document No.: Seite / page
Erstelit / prepare	ed: Peekhaus	21.07.97	Änd-Nr.:	N1	Laradua		18 50050553 6/6
Coprilit / sharts	r ookiiddo		Datum / Data:	02 12 07	INSTRUMENTS	SF 1777 9, 12, 13,	
Сергип / спеск		l		03.12.97]		
Weitergabe sowie V gung vorbehalten.	Vervielfältigung dieser Unterl © Heraeus Instruments Gml	age, Verwertung und I bH, Germany	Mittellung ihres Inhalts nicht	gestattet, soweit nicht	t ausdrücklich zugestanden.	Zuwiderhandlungen verpflichten zu Schadensersat	tz. Alle Rechte für den Fall der Patenterteilung oder Gebrauchsmuster - Eintra-

e . . .





052956_E.SAM	Name / Name:	Datum / Date:		Benennung / Designation:					
Erstellt / prepared:	G.Herget	28.01.1998	Ersatzteile HERAguard HPH Spare Parts HERAguard HPH					Ersatzteile HERAguard HPH	
Geprüft / checked:									
Stand / Edition:		01.1998	Heraeus Dokumentnr. / Document No.: Seite		Seite / page:				
Ersatz für / Replacer	ment for:		INSTRUMENTS	50.052.956	2/8				
Weitergabe sowie Vervielfä ten zu Schadensersatz. All	iltigung dieser Unterlage, Ve e Rechte für den Fall der Pa	erwertung und Mitteilung ih atenterteilung oder Gebrau	res Inhalts nicht gestattet, sow chsmuster - Eintragung vorbe	veit nicht ausdrücklich zugestanden. Zuwiderh halten. © Heraeus Instruments GmbH, Germ	andlungen verpflich- any				

0

Nr.	Bestell Nr.	Ersatzteil	Menge	Einheit
1	50048661	SCHLÜSSEL FÜR HAUPTSCHALTER	1	ST
2	50051864	VORFILTERMATTE GF3 (5 STK.), HPH 9/12	1	ST
2	50051847	VORFILTERMATTE GF3 (5 STK.), HPH 15/18	1	ST
3	50043933	LEUCHTSTOFFLAMPE 895 MM 30W HPH 9	1	ST
3	50043931	LEUCHTSTOFFLAMPE 1200 MM 36W HPH 12	1	ST
3	50043932	LEUCHTSTOFFLAMPE 1500 MM 58W HPH 15/18	1	ST
3	50048537	UV LAMPE 15 W	1	ST
4	50051853	FILTER H 14 915X610X 69 HPH 9	1	ST
4	50051849	FILTER H 14 1220X610X 69 HPH 12	1	ST
4	50052463	FILTER H 14 1524X610X 69 HPH 15	1	ST
4	50051850	FILTER H 14 1830X610X 69 HPH 18	1	ST
5	50079724	RADIALGEBLÄSE VST. (ERSATZ HPH)	1	ST
6	50043535	KONDENSATOR 25 UF 400/450 V FOR MOTOR	1	ST
7	50049882	DREHZAHLSTELLER 230V/50HZ STANDBY	1	ST
8	50046861	DRUCKWÄCHTER 0,5 - 5 MBAR 230 VAC	1	ST
9	50050553	SCHALTPLAN	1	ST



- 0010 50051; KLEBEBAND ' ADHESIVE T 0020 500499 ARBEITSPLAT WORKING BEI 0030 500510 ARBEITSPLAT WORKING BEI 0040 500510 ARBEITSPLAT WORKING BEI 0050 036673 SCHLAUCH DI	344 FESAMOLL 9X APE 362 FTE 18 38X600 VCH 078 FTE 18 MIKROL 083 FTE 18 MIKROL 083 FTE 18 MIKROL 083 FTE 18 MIKROL 03 15 16 17 18 18 18 18 18 18 18 18 18 18	3 WS X1818 MELJ ON T=600 ON T=800	0,500 4761PV 1,000 AMIN 1,000 1,000	M ST ST 42 ST	L G L G L G 2X60	V 98 0X1818	2801 2801 2801	.98 .98
 - 0020 500491 ARBEITSPLAY WORKING BEI - 0030 500510 ARBEITSPLAY WORKING BEI - 0040 500510 ARBEITSPLAY WORKING BEI - 0050 036673 SCHLAUCH DI 	362 TTE 18 38X600 VCH 18 MIKROL VCH 18 MIKROL 083 TTE 18 MIKROL VCH 303 I= 6 X 1,5	X1818 MELJ ON T=600 ON T=800	1,000 AMIN 1,000 1,000	ST ST 42 ST	L G L G 2X60	V 98 0X1818	2801 2801	.98
- 0030 500510 ARBEITSPLAT WORKING BEN - 0040 500510 ARBEITSPLAT WORKING BEN - 0050 036673 SCHLAUCH DI	078 TTE 18 MIKROL 083 TTE 18 MIKROL VCH 303 I= 6 X 1,5	ON T=600 On T=800	1,000	ST 42 ST	L G 2X60	V 98 0X1818	280]	.98
- 0040 500510 ARBEITSPLAT WORKING BEN - 0050 036673 SCHLAUCH DI)83 TTE 18 MIKROL V <i>CH</i> 303 I= 6 X 1,5	ON T=800	1,000	ST				
- 0050 036673 SCHLAUCH DI	303 [= 6 X 1,5			4.	L G 2X80	V 98 0X1818	2801	.98
HOSE			1,000 PVC	М	LG		2801	.98
_ 0060 500518 KLEBEBAND 7 ADHESIVE 72	361 TESAMOLL 9X APE	4 WS	4,800 4702	M 2	LG		2801	.98
- 0070 500461 RADIALGEBLA RADIAL BLOW	198 AESE EBM D4E2 VER	25CC11-35	1,000	ST	LG		2801	.98
- 0080 500436 FILTER EU 1 <i>FILTER</i>	507 14 1830X610X	69	1,000	ST *	L G		2801	.98
_ 0090 500436 FILTER EU 1 <i>FILTER</i>	505 14 915X610X	69	1,000	ST B=	L G 9151	H=069T=610	2801	.98
_ 0100 500498 KRALLE SEIT FASTENER SI	IGG TE IDE		1,000	ST	L G	V	2801	.98
_ 0110 500498 KRALLE MITT FASTENER MI	365 TE IDDLE		1,000	ST	LG	v	2801	.98
– 0120 030305 SKTMU M 8 <i>NUT M8</i>	510	DIN 934-8	1,000 3-A4E	ST M	L G 8		2801	.98
_ 0130 031603 SHB B 8,4 WASHER	310 E DIN 125-S'	T A4E	1,000	ST	L G 8,4		2801	.98
<pre>_ 0140 500515 LOCHBLECH PLATE WITH</pre>	526 1 X1835 X <i>HOLES</i>	645	1,000	ST	L G	v	2801	.98
052956_E.SAM	Name / Name:	Datum / Date:		1		Benennung / Designatio	on:	-
Erstellt / prepared:	G.Herget	28.01.1998			Er	satzteile HERAguard	HPH	
Geprüft / checked:					Sp	are Parts HERĂguar	d HPH	
Stand / Edition:		01.1998	Her	e	IS	Dokumentnr. / Documer	nt No.:	Seite / page
Ersatz für / Replaceme	nt for:		INS	TRUM	ENTS	50.052.956		3/8

S POS KOM BEZEICHN	PONENTEN-NR/NO UNG/DESCRIPTION	MENGE/QUANT.	ME AB	T G MES	F E B SUNG	K S SO SOR	CIER ·	-KZ L
- 0150 500 LOCHBLEC PLATE WI	51527 H 1 X1835 X 95 <i>TH HOLES</i>	1,000 0	ST	L G		V	280	198
- 0160 500 FLSHR M <i>SCREW</i>	51041 5 X 8 DIN 921-	1,000 5.8 VRN	ST M	LG 5	X 8		280	198
- 0170 500 FRONTFOL FRONT FO	50982 IE STEUEREINHEIT H IL FOR CONTROLLING	1,000 PH 1 <i>UNIT HPH 1</i>	ST	ЬG			280:	198
- 0180 500 FRONTFOL FRONT FO	50983 IE STEUEREINHEIT H IL FOR CONTROLLING	1,000 PH 2 <i>UNIT HPH 2</i>	ST	LG			280	198
- 0190 500 ROSETTE <i>PLASTIC</i>	48437 FUER SCHLUESSEL 50 PROTECTION FOR KEY	1,000 048436	ST .	LG			2803	198
_ 0200 500 SCHLUESS KEY SET	48661 ELSATZ FUER SCHALT FOR SWITCH (2 PCS	1,000 ER (2 ST.) .)	ST .	LG		V	280	198
_ 0210 500 	43764 LER 230V 50HZ 7-ST NTER	1,000 ELLIG 48X24	ST :	LG			2803	198
_ 0220 500 LEUCHTME SIGNAL L	11688 LDER WEISS D=9MM 2: AMP WHITE	1,000 20V 50/60HZ	ST :	L G			2801	198
- 0230 030 WIPPENSCI SWITCH 1	01772 HALTER 1-POLIG W - <i>PIN CHANGE-OVER S</i>	1,000 ECHSELSCHALTE WITCH	ST : R	L G			2801	198
- 0240 5004 WIPPENSCI SWITCH 2	48656 HALTER 2-POLIG TA -PINS PUSH BUTTON	1,000 ASTER	ST 1	LG			2801	198
- 0250 5004 LEUCHTME SIGNAL L	46878 LDER GRUEN D=9MM 2. AMP GREEN	1,000 30V MIT LEITG	ST :	LG			2801	198
- 0260 500 LEUCHTME SIGNAL L	11623 LDER ROT D=9MM 220 AMP RED	1,000 V STECKBAR	ST 1	L G		02	2801	198
- 0270 500 WIPPENSCI SWITCH 2	50145 HALTER 2-POLIG AUS - <i>PINS</i>	1,000 2 WIPPEN	ST 1	L G			2801	198
- 0280 5004 DREHZAHLS SPEED REG	49882 STELLER 230V/50HZ : <i>GULATING UNIT</i>	1,000 STANDBY	ST 1	LG			2801	198
052956_E.SAM	Name / Name: Datu	m / Date:			Benenn	ung / Designation:		
Erstellt / prepared:	G.Herget 28.0	1.1998		E	satzteile	e HERAquard H	PH	
Geprüft / checked:				Sp	are Part	s HERAguard H	IPH	
Stand / Edition:	01	.1998 Her	aeu	S	Dokume	entnr. / Document N	o.:	Seite / page:
Ersatz für / Replace	ement for:	IN	STRUME	NTS		50.052.956		4/8
Weitergabe sowie Vervielf ten zu Schadensersatz. A	fältigung dieser Unterlage, Verwertung ur Ile Rechte für den Fall der Patenterteilun	nd Mitteilung ihres Inhalts nic o oder Gebrauchsmuster - Fi	ht gestatt	et, sow	veit nicht auso	trücklich zugestanden. Zur	widerhan	dlungen verpflich-

S	POS KOMI BEZEICHNU	PONENTEN-NR/NO JNG/DESCRIPTION	MEN	GE/QUANT.	ME	T BMI	G	FEBKSSOSORTIE	R-KZ L
_	0290 037: RELAIS RI RELAY	30023 4 205720	220V	1,000 50/60 HZ	ST	L	G	28	0198
-	0300 5004 KONDENSAT CAPACITO	46004 FOR 12 UF 400/45 R FOR MOTOR	50 V FU	1,000 ER MOTOR	ST	L	G	28	0198
-	0310 0300 SUMMER 2 BUZZER	02181 220V AC 65 DB(A	A) 100H	1,000 Z SIGNA	ST L	L	G	28	0198
	0320 5004 KONDENSAT CAPACITO	18677 FOR MIT FASTON 5 R	5 NF 25	1,000 0 VAC	ST	г	G	V 28	0198
	0330 5004 DRUCKWAEG PRESSURE	16861 CHTER 0,5 - 5 M <i>SWITCH</i>	IBAR 23	1,000 0 VAC	ST	L	G	28	0198
-	0340 5002 KOND FUNH CAPACITON	26042 (0,47UF 250V A R	AC GNG	1,000 E M.FASTO	ST N	Г	G	28	0198
-	0350 5003 ANSCHLUSS CONNECTOR	35409 SKLEMME 2-POLIG R 2-PINS WITH PU	M.ZUG JLL REL	1,000 ENTL. CSA IEF	ST	L	G	28	0198
-	0360 5004 NETZZULEI <i>SUPPLY MA</i>	6005 TUNG (EU) STECK AINS PLUG/	CER/BLAI BARE	1,000 NK (16 A)	ST)	L	G	28	0198
-	0370 5005 VORSCHALI <i>STARTER</i>	GERAET, ELEKTRO)N. 1X58	1,000 8/230V	ST	L	G	28	0198
-	0380 5004 FASSUNG F SOCKET FO	6493 7. LEUCHTSTOFFRC DR <i>LUMINESCENT I</i>	EHRE AMP	1,000	ST	L	G	28	0198
-	0390 5004 FASSUNG F SOCKET FO	6494 . LEUCHTSTOFFRO DR <i>LUMINESCENT I</i>	EHRE GI AMP	1,000 SFEDERT	ST	L	G	28	0198
-	0400 5004 LEUCHTSTC <i>LUMINESCE</i>	3932 DFFROEHRE 1500 M ENT LAMP	IM 58W	1,000	ST	г	G	28	0198
-	0410 5005 SCHEIBE 4 PLATE ACF	1089 X 125 X1495 AC RYLIC GLAS	RYLGLAS	1,000 5	ST	г	G	28	0198
-	0420 5004 UVC-ENTKE UVC DECON	8537 IMUNGSSTRAHLER ITAMINATION LAME	15 W	1,000	ST	L	G	28	0198
)529	56_E.SAM	Name / Name:	Datum / Dat	e:		-	-	Benennung / Designation:	-
Erste	llt / prepared:	G.Herget 2	28.01.199	8			Ers	satzteile HERAguard HPH	
Gepri	ift / checked:						Spa	are Parts HERAguard HPH	1
Stanc	I / Edition:		01.1998	Hera	aei	JS		Dokumentnr. / Document No.:	Seite / pag
	z für / Replace	ment for:				ALTO			

S	POS KOM BEZEICHN	PONENTEN-NR/ UNG/ <i>DESCRIPT</i>	NO MENG 'ION	E/QUANT.	ME AB	T 3MI	G F E SSUNC	EBKS 3	SO SORT	IER- GUEI	-KZ L JTIG
	0430 500	49781		1,000	ST	L	G				
	SCREW WI	TH THREAD M4	x12	ATZ M4X12	2				:	2801	198
-	0440 500 VORSCHAL	48679 TGERAET, ELE	KTRON. 2X18	1,000 /230-240	ST	L	G			2801	198
	STARTER			,							
-	0450 030 LEUCHTME <i>SIGNAL L</i>	01781 LDER ORANGE AMP ORANGE	D=9MM 220V	1,000 STECKB.	ST	L	G		:	2801	198
-	0460 030 WIPPENSC SWITCH 1	01773 HALTER 1-POL - <i>PIN PUSH B</i>	IG TASTER UTTON	1,000	ST	L	G		;	2801	L98
-	0470 500 ZEITRELA <i>TIME REL</i>	50358 IS 0,1S-10H AY	230V 1W MUL	1,000 TIFUNKT.	ST	L	G)	2801	198
-	0480 500 ZEITZAEH <i>TIME COU</i>	43764 LER 230V 50H NTER	Z 7-STELLIG	1,000 48X24	ST	L	G		ŝ	2801	198
	0490 500 LEUCHTME <i>SIGNAL L</i>	11688 LDER WEISS D AMP WHITE	=9MM 220V 5	1,000 0/60HZ	ST	L	G		:	2801	198
-	0500 030 WIPPENSC SWITCH 1	01773 HALTER 1-POL -PIN PUSH	IG TASTER <i>BUTTON</i>	1,000	ST	L	G		;	280]	198
	0510 037 RELAIS R <i>RELAY</i>	30023 M 205720	220V	1,000 50/60 HZ	ST	Г	G		;	2801	198
-	0520 500 STECKDOS SOCKET S	45907 E SYSTEM D S <i>YSTEM GERMAN</i>	СНИКО СНИКО	1,000	ST	г	G		-	2801	198
-	0530 500 STECKDOS <i>SOCKET S</i>	50086 E SYSTEM AUS <i>YSTEM AUSTRA</i>	TRALIEN <i>LIAN</i>	1,000	ST	L	G		:	2801	198
-	0540 500 STECKDOS <i>SOCKET S</i>	45908 E SYSTEM B/F <i>YSTEM</i>	/CR/SR/PL	1,000	ST	L	G		:	2801	198
-	0550 500 STECKDOS <i>SOCKET S</i>	45909 E SYSTEM GB <i>YSTEM</i>		1,000	ST	L	G		:	2801	198
	0560 500 STECKDOS <i>SOCKET S</i>	47982 E SYSTEM ITA <i>YSTEM ITALY</i>	LIEN 10/16	1,000 A 250 V	ST	L	G		;	2801	198
0529	56_E.SAM	Name / Name:	Datum / Date):		-	Ber	nennung / D	esignation:		
Erste	ellt / prepared:	G.Herget	28.01.1998	8			Ersatz	teile HER	Aguard HF	Н	
Gepr	üft / checked:						Spare F	Parts HEI	RAguard Hi	PH	
Stan	d / Edition:		01.1998	Hera	aei	jc	Dok	umentnr. /	Document No	.:	Seite / page:
Ersa	tz für / Replace	ement for:		INS	TRUM	ENT	S	50.05	2.956		6/8
Weiter	rgabe sowie Verviel	fältigung dieser Unterlage,	Verwertung und Mitteilur	ng ihres Inhalts nich	nt gesta	ttet,	soweit nich	l ausdrücklich :	zugestanden. Zuw	derhan	dlungen verpflich-

S	POS KOM BEZEICHN	PONENTEN- UNG/ <i>DESCF</i>	NR/NO) N	MEN	GE/(QUANT.	ME Al	T BM	G ESS	FEBKS SUNG	SO SORT AE-NR.	IER-KZ GUELTIG	L
-	0570 500 KLAPPDEC LID FOR	45912 KEL FUER SOCKET	STECH	DOSE]	L,000	ST	L	G			280198	
-	0580 500 FILTERSA <i>FILTER S</i>	51846 TZ G3/12 ET G3/12	HPH <i>HPH</i>			1	,000	ST L:	L =1:	G 250)B=400D=20		280198	
-	0590 500 FILTERSA FILTER S	51847 TZ G3/18 ET G3/18	HPH <i>HPH</i>			1	.,000	ST L:	L =1:	G 850)B=400D=20		280198	
-	0600 500 U-PROFIL <i>U PROFIL</i>	50599 1,2 X E <i>TOP</i>	10	X 8	х	1 405	.,000 5 OBEN	ST	L	G			280198	
-	0610 500! U-PROFIL U PROFIL	51057 1,2 X E TOP	10	X 8	Х	1 212	,000 OBEN	ST	L	G			280198	
-	0620 500 U-PROFIL <i>U PROFILI</i>	51049 1,2 X E <i>BACKSI</i>	10 DE	X 8	Х	1 648	,000 HINT	ST	L	G			280198	
-	0630 5009 U-PROFIL U PROFIL	51073 1,2 X E BACKSI	10 DE	X 8	Х	1 952	,000 HINT	ST	L	G			280198	
-	0640 5005 U-PROFIL <i>U PROFILI</i>	51050 1,2 X 5 <i>BOTTOM</i>	10	X 8	Х	1 567	,000 UNT	ST	L	G			280198	
-	0650 5009 U-PROFIL <i>U PROFILI</i>	51058 1,2 X 5 <i>ВОТТО</i> М	10	X 8	Х	1 367	,000 UNT	ST	L	G			280198	
-	0660 5001 NIET FUER RIVET	L0913 R D=3MM	POLYC	XYMET	HYLI	1 EN F	,000 ARBLO	ST S2,	L 8	G			280198	
-	0670 5005 GLASPLAT GLAS PLA	51051 FE 6 X FE	643	X 5	70	x	,000 420 L	ST O	L	G			280198	
-	0680 5005 GLASPLAT GLAS PLAT	51052 FE 6 X FE	643	Х З	70	x	,000 220	ST	L	G			280198	
-	0690 5005 GLASPLAT GLAS PLA	51053 FE 6 X FE	947	X 5	70	x	,000 420 L	ST O	L	G			280198	
0.00	ED FOLL													
0529 Fret	956_E.SAM	Name / Na	me:	Datum	/ Dat	e:				5	Benennung / De	esignation:		
Gep	rüft / checked:	G.Heig	ei	20.0	.199	0				Spa	are Parts HER	Aguard HE	PH	
Stan	d / Edition:			01.	1998		Lor		IC		Dokumentnr. / D	ocument No	o.: Seite / p	bage:
Ersa	tz für / Replace	ment for:					INS	STRUM	ENT	s	50.052	2.956	7/8	8

Weitergabe sowie Vervielfältigung dieser Unterlage, Verwertung und Mitteilung ihres Inhalts nicht gestattet, soweit nicht ausdrücklich zugestanden. Zuwiderhandlungen verpflichten zu Schadensersatz. Alle Rechte für den Fall der Patenterteilung oder Gebrauchsmuster - Eintragung vorbehalten. © Heraeus Instruments GmbH, Germany

S POS KO BEZEICH	MPONENTEN-NR/NO NUNG/DESCRIPTIO	MENGE/	QUANT.	ME AB	T 3MI	G	FEBKS SUNG	SO SORT AE-NR.	IER-KZ L GUELTIG
_ 0700 50 GLASPLA GLAS PI	051887 TTE 6 X 947 ATE	X 370 X	1,000 220	ST	L	G			280198
- 0710 50 ANSCHLU CONNECT	051054 SSBLECH HPH HIN ION PLATE BACK	TEN SIDE	1,000	ST	L	G	V		280198
- 0720 50 ANSCHLU CONNECT	051067 SSBLECH HPH HIN ION PLATE BACK	TEN HOCH SIDE FOR HI	1,000 PH WITH	ST HIC	L GHI	G ER	V WORKING A	REA	280198
- 0730 50 FUGENDI GAP SEA	044214 CHTMASSE SISTA LING COMPOUND	F 109	1,000	ST	L	G		02	280198
- 0740 50 WUERGES TWIST S	046334 TOPFEN PG 16 P TOPPER	VC	1,000	ST	L	G			280198
- 0750 03 MUTTER <i>NUT</i>	710384 L PG 16 DIN46 <i>GREY</i>	320 FS	1,000 GRAU	ST J	L	G			280198
- 0760 50 MONTAGE <i>MOUNTIN</i>	050087 STECKER AUS 15A G PLUG AUSTRALI.	/250V AN	1,000	ST	L	G			280198
- 0770 50 MONTAGE <i>MOUNTIN</i>	046991 STECKER CH TYP G PLUG SWITZERL	12 10A/250V A <i>ND</i>	1,000	ST	L	G			280198
- 0780 50 MONTAGE <i>MOUNTIN</i>	046990 STECKER GB 13A/: G <i>PLUG GB</i>	250V BS1363	1,000	ST	L	G			280198
- 0790 50 MONTAGE <i>MOUNTIN</i>	047983 STECKER ITALIEN G PLUG ITALY	16 A/250 V	1,000	ST	L	G			280198
_ 0800 50 BETRANL OPERATI	052101 TG HERAGUARD HPI NG MANUAL HERAG	H (SATZ) UARD (SET)	1,000	ST	L	G	V		280198
052956_E.SAM	Name / Name:	Datum / Date:					Benennung / D	Designation:	
Erstellt / prepared	: G.Herget	28.01.1998	1			Ers	satzteile HER	RAguard H	РΗ
Geprüft / checkee	1:		1			Spa	are Parts HE	RAguard H	PH
Stand / Edition:		01.1998	Hor		IC	T	Dokumentnr. /	Document No	b.: Seite / page:
Ersatz für / Repla	cement for:	0111000		TRUM	ENTS	5	50.05	2 956	8/8
Weitergabe sowie Ver	rielfältigung dieser Unterlage, Verw	ertung und Mitteilung ih	res Inhalts nich	it gesta	ttet,	sowe	elt nicht ausdrücklich :	zugestanden. Zuv	viderhandlungen verpflich-



HERAguard HPH

1. Problem description

By the leakage test of the HEPA filter of a HPH after filter replacement the service technician measure often a lot of particles at the clean side of the main filter.

Where are the leakages ? And what is to do ?

2. Reference to units

This problem is valid for all Heraguard units HPH.

3. Reason

To reduce the filter leakages normally the HPH has to be complete modificated from our development department. But what could our service technican only now do ?

Our production department has found that the leakages are often on the edges of the filter frame.

4. Problem recovery

Paste up all 4 edges of the filter with an adhesive tape (aluminium tape)before filter replacement (see picture 1).

Insert the new filter so that the side with the filter labeling is visible and in the right airflow direction (see arrow on the labeling).

Picture 1:



Erstellt / prepared	Datum / date	Benennung / designation	Seite / page
Kendro	20.04.2001	Leakages HPH	1 von 1

Service-Info HU-70 Heraguard leakages.doc



KONFORMITÄTSERKLÄRUNG STATEMENT OF CONFORMITY CERTIFICAT DE CONFORMITE

Produkt / Product / Produit:

Reine Werkbänke Clean benches Hotte laminaire

Modell(e) / Model(s) / Modèle(s):

HPH 9; HPH 12; HPH 15; HPH 18; HPH 12/95; HPH 18/95

Die bezeichneten Erzeugnisse erfüllen die Bestimmungen der Richtlinie:

The designated products conform to the guideline:

Les produits désignés sont conformes aux dispositions de la directive:

.

73/23/EWG mit Änderungen / with revisions / avec les modifications 89/336/EWG

Die Übereinstimmung der Erzeugnisse mit den Bestimmungen der Richtlinie wird durch die vollständige Einhaltung folgender Normen nachgewiesen:

The conformity of the products with the requisites as set forth in the guideline is evidenced by the full compliance with the following standards:

La conformité des produits aux dispositions de la directive est attestée par le respect total des normes suivantes:

EN 61010 (VDE 0411 Teil 1) : 1994-03, DIN VDE 0875/12.1993 EN 50081-1 und EN 50082-1

D-63450 Hanau, 06.10.1997

Heraeus Instruments GmbH 18 Produktsigherheit $\mathbb{T}S$ mort Heraeusstrade 12114 D-63450 Hanau

Vorsitzender des Aufsichtsrats: Dr Klaus Golfloo Geschäftsführer: Dr. Hermann Brendecke - Günther Heilos Registergericht Hariau HRB 4085 USI-IdNr. DE 811112647

50051695/ a

Telefon (06181) 35-1 Postfach 1563 D-63405 Hanau



BESTÄTIGUNG gemäß Unfallverhütungsvorschrift Elektrische Anlagen und Betriebsmittel VBG 4, § 5 (4)

Produkt

Reine Werkbänke

Typenbezeichnung (en):

HPH 9; HPH 12; HPH 15; HPH 18; HPH 12/95; HPH 18/95

Die bezeichneten Erzeugnisse erfüllen die Bestimmungen der Richtlinie:

73/23/EWG mit Änderungen 89/336/EWG

Die Übereinstimmung der Erzeugnisse mit den Bestimmungen der Richtlinie wird durch die vollständige Einhaltung folgender Normen nachgewiesen:

EN 61010 (VDE 0411 Teil 1) : 1994-03, DIN VDE 0875/12.1993 EN 50081-1 und EN 50082-1

D-63450 Hanau, 06.10.1997



Vorsitzender des Aufsichtsrats: Dr. Klaus Goffloo Geschäftsführer: Dr. Hermann Brendecke - Günther Heilos Registergericht Hanau HRB 4085 - (St. 4delr. DF. 81111-2647

50051753

HERAguard Clean Benches

Features :



HERAguard

Models HPH, Clean Benches with horizontally purified air flow





HERAguard Clean Benches

Features :



HERAguard

Models HPH, Clean Benches with horizontally purified air flow



Laboratory Safety Bunsen: VULCAN (accessory)



