

Project Memo.

To: Christopher Gilbert, Victoria Ridgewell

Cc: James Howard, Daisy Baker

From: Al Plail, Senior Acoustics Engineer

Date: 31 January 2020

Project: UCL Eastman Dental Institute, Rockefeller Building

File ref: MEM-1010490-5A-AP-20200131-Noise impact of compressed air plant-F

Noise impact of compressed air plant.

1. Summary.

This document presents an assessment of the potential impact of noise emissions from the proposed new compressed air enclosure on the roof of UCL Rockefeller Building.

Requirements

As part of the wider UCL Eastman Dental Institute refurbishment scheme at the Rockefeller building (which is currently ongoing), external plant installation has been consented under Planning Permission 2018/4242/P. This plant has been designed to meet a level of 10 dB below the existing background in line with typical London Borough of Camden requirements.

To ensure that noise from the compressed air plant does cause the cumulative level in conjunction with the consented plant to exceed this requirement, it is proposed that a further 10 dB reduction be applied to the new air plant. The air plant should therefore achieve a level of at least 20 dB below the existing background noise level.

Noise data from an environmental noise survey carried out at the site by Sound Space Vision between 6 July and 13 July 2018 have been used to set plant noise limits in line with this.

Assessment.

Based on the results of the calculations to predict noise from the proposed compressed air plant, noise emissions are predicted to comply with the requirements described above.

2. Criteria.

2.1 London Borough of Camden requirements.

London Borough of Camden (LBC) typically require plant noise emissions to be limited to 10 dB below the existing background at the façade of the nearby sensitive premises.

Residential properties which would potentially be most affected by the changes at the UCL Rockefeller building have been identified as the following;

- 84 Chenies Mews
- Janet Poole House, 101-105 Gower Street
- 70 Huntley Street.

Given that UCL Rockefeller refurbishment works as consented in Planning Permission 2018/4242/P are currently ongoing, it is proposed that a further 10 dB reduction be applied to the new air plant. This will ensure that the cumulative noise levels from the consented 2018/4242/P works and proposed compressed air plant do not exceed the LBC requirements.

Specific limits based on this are discussed further below.

2.2 Plant noise limits.

2.2.1 Existing environmental sound levels in the area.

An acoustic survey has been undertaken by Sound Space Vision to establish the existing background sound levels in the vicinity of the site, as detailed in the report '180725 UCL Rockefeller Building - Environmental Noise Report' dated 25 June 2018. As part of the survey, long term monitoring was undertaken at three positions.

In line with BS 4142:2014, for the purpose of establishing representative background noise levels during the periods of interest, the raw background sound level data from the Sound Space Vision noise survey has been quantified using statistical analysis. This is presented in Appendix A.

From the analysis carried out, the representative background sound levels measured during the survey are summarised in Table 1.

Table 1 Existing background sound levels

Time period	Representative measured background sound level, LA90 (dB)
<i>Residential premises overlooking the courtyard to the rear of the Rockefeller building</i>	
Day (07:00 – 23:00)	52
Night (23:00 – 07:00)	51
<i>Residential premises overlooking Huntley Street/University Street</i>	
Day (07:00 – 23:00)	56
Night (23:00 – 07:00)	54
<i>Residential premises overlooking Gower Street</i>	
Day (07:00 – 23:00)	58
Night (23:00 – 07:00)	56

2.2.2 Plant noise limits.

In line with the comments in Section 2.1, the plant noise limits set out in Table 3 shall be achieved at 1 m from the facades of the nearby sensitive properties (ie, 20 dB below the existing background level).

Table 2 Existing background noise levels

Time period	Plant noise limit at 1 m from the façade of nearby sensitive receptors, L_{Aeq} (dB)*
<i>Residential premises overlooking the courtyard to the rear of the Rockefeller building</i>	
Day (07:00 – 23:00)	32
Night (23:00 – 07:00)	31
<i>Residential premises overlooking Huntley Street/University Street</i>	
Day (07:00 – 23:00)	36
Night (23:00 – 07:00)	34
<i>Residential premises overlooking Gower Street</i>	
Day (07:00 – 23:00)	38
Night (23:00 – 07:00)	36

For the key noise sensitive properties identified above, the relevant plant noise limits are summarised in Table 3.

Table 3 Plant noise limits at nearby sensitive properties

Receptor	Plant noise limit, L_{Aeq} (dB)	
	Daytime (07:00 - 23:00)	Night time (23:00 - 07:00)
84 Chenies Mews (courtyard)	32	31
Janet Poole House, 101-105 Gower Street (faces courtyard to rear)	32	31
70 Huntley Street	36	34

3. Assessment.

3.1 Plant information.

The initial assessment considers the plant noise data and layouts received from TClarke on 28 November 2019. This information is provided in Appendix B for reference.

It is understood that the proposals are for the installation of a new rooftop compressed air plant enclosure containing 2x compressors and 1x fan unit to dissipate heat. No other noise generating plant is understood to be proposed within the enclosure.

Noise emissions to the atmosphere will be driven by louvres provided within the lower part of each of the doors, as shown in the elevation drawing in Figure 1.

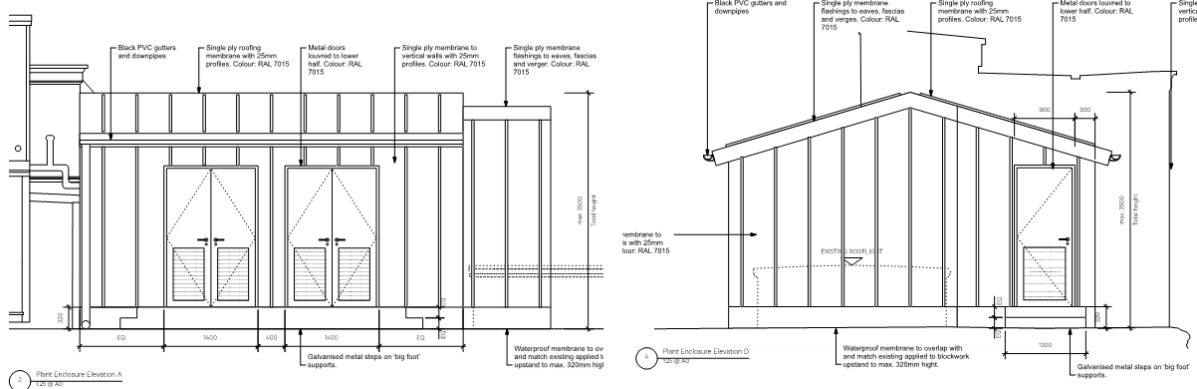


Figure 1 Elevation drawings indicating louvred openings

3.2 Predicted noise levels.

Calculations have been carried out to predict the level of noise emissions from the compressed air plant enclosure. The below table sets out the predicted levels at 1 m from facades of the nearby sensitive properties.

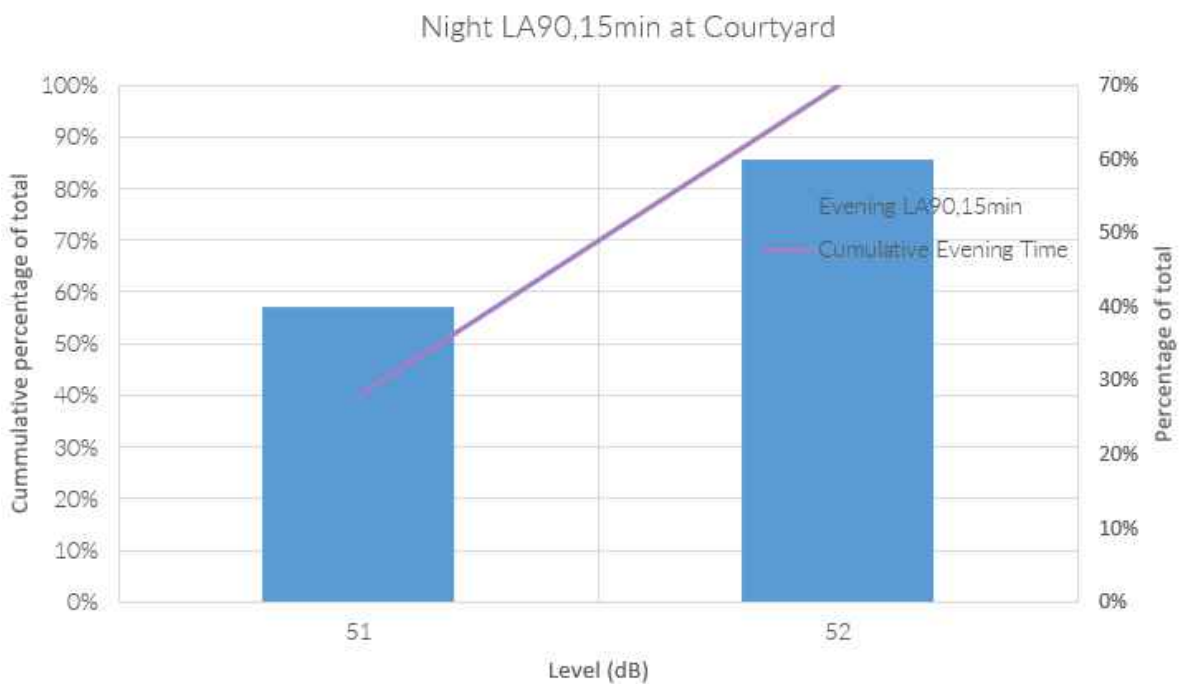
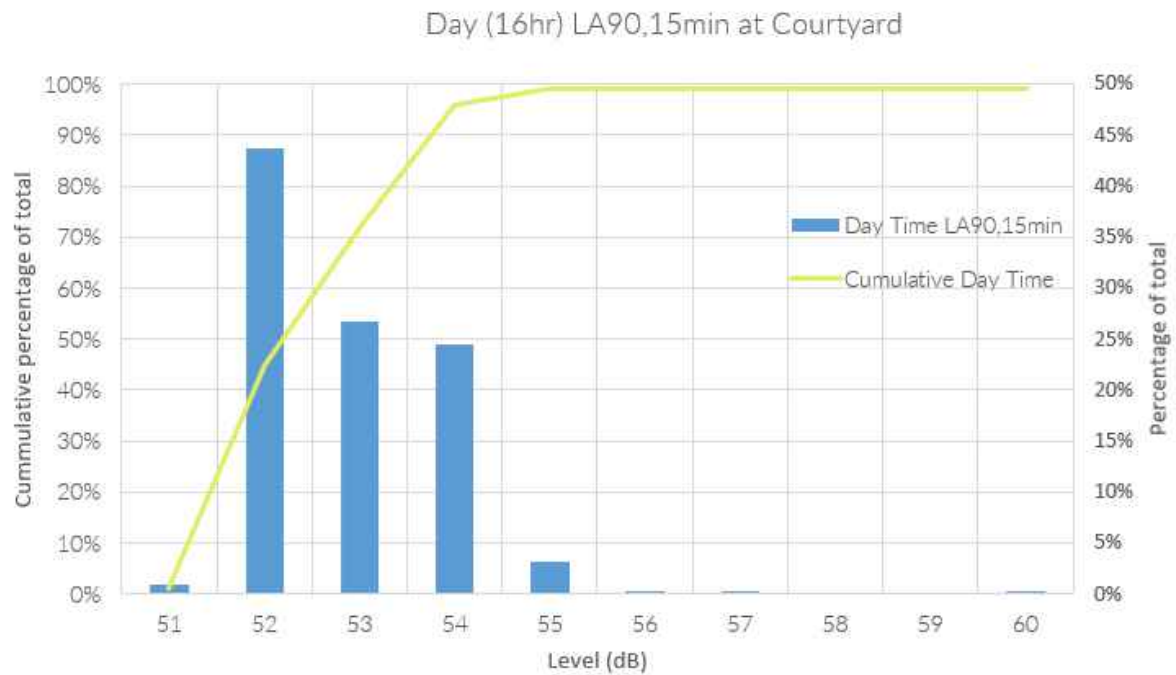
Table 4 Predicted noise levels at the nearby receptors

Receptor	Noise level due to new plant noise emissions at 1m from the worst affected façade, L_{Aeq}	Assessment outcome
84 Chenies Mews	16 dB	Complies with criteria
Janet Poole House, 101-105 Gower Street	15 dB	Complies with criteria
70 Huntley Street	15 dB	Complies with criteria

From the assessment, it can be seen that the predicted levels of noise emission from the compressed air plant enclosure are predicted to comply with the criteria given in Section 2.

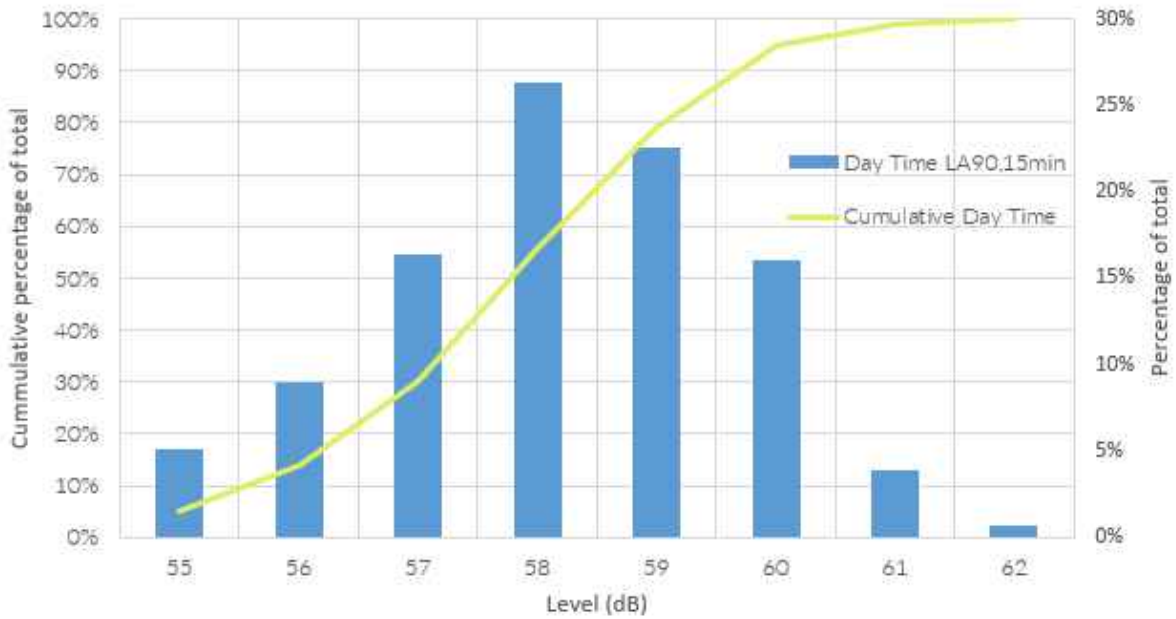
Appendix A: Statistical analysis of measured background noise levels.

Courtyard.

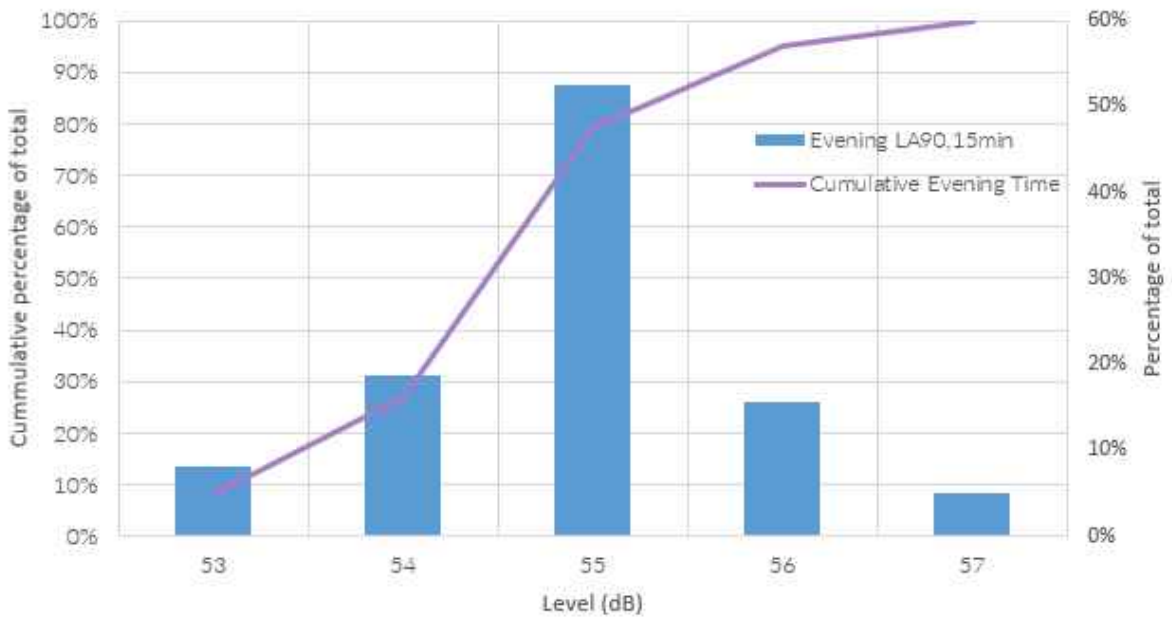


Huntley Street/University Street.

Day (16hr) LA90,15min at Huntley Street/University Street

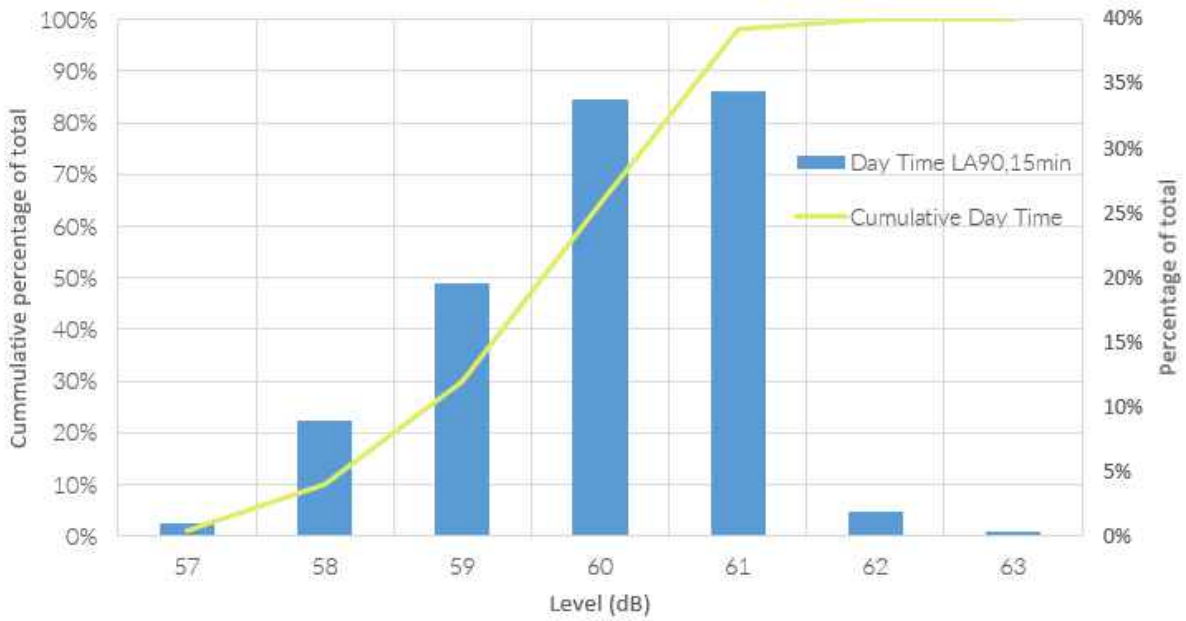


Night LA90,15min at Huntley Street/University Street

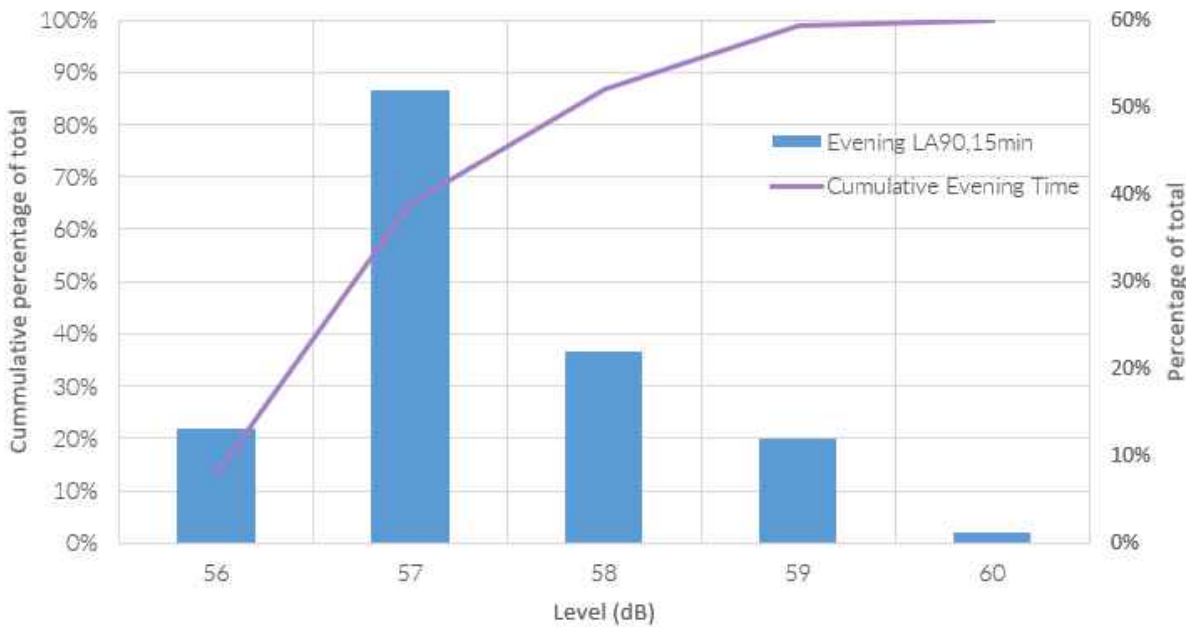


Gower Street.

Day (16hr) LA90,15min at Gower Street



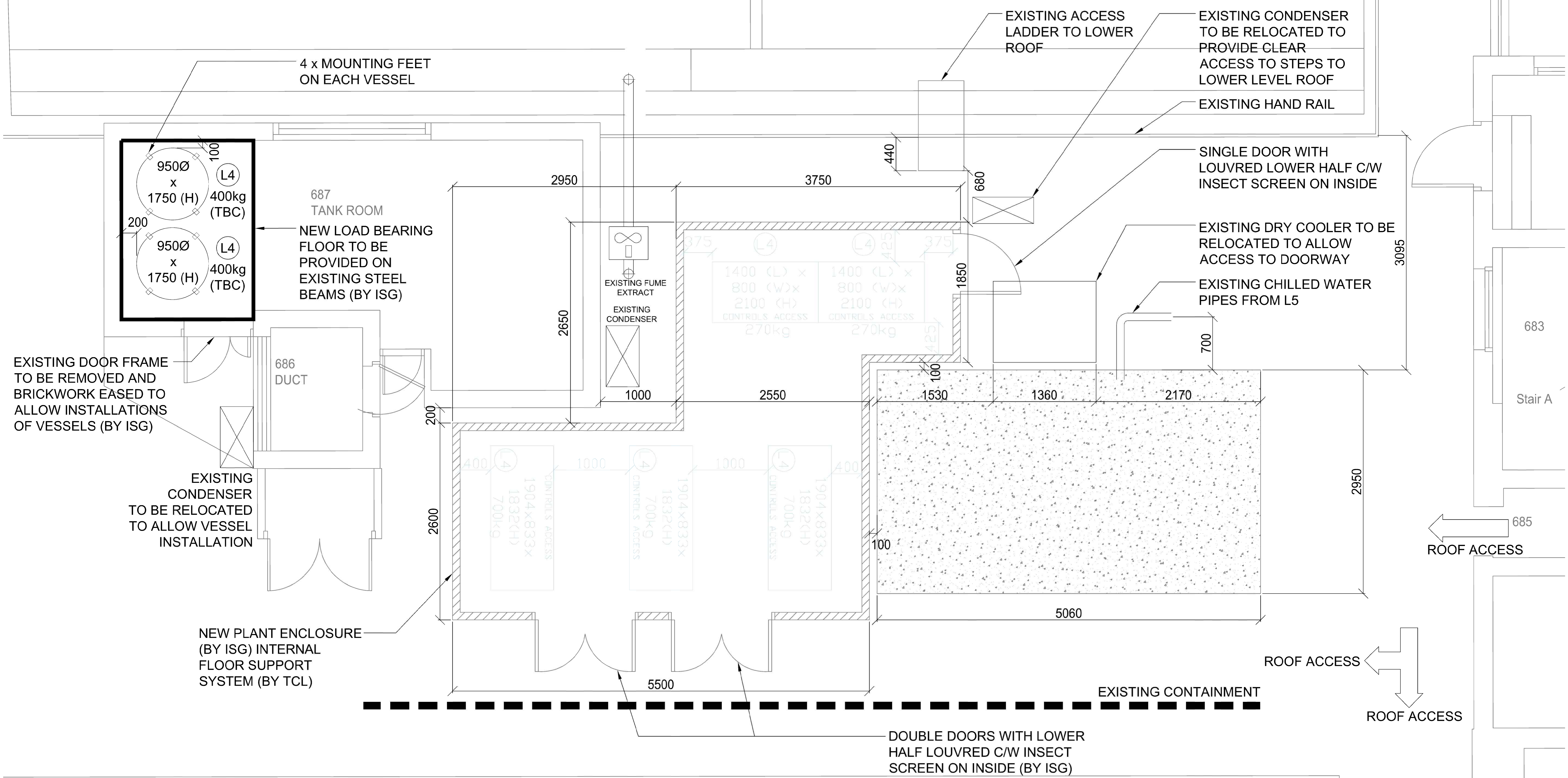
Night LA90,15min at Gower Street





Appendix B: Plant information.

CDM REGULATIONS 2015
 IN ACCORDANCE WITH THE CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS THE HAZARDS AND RISKS ASSOCIATED WITH CONSTRUCTING, MAINTAINING AND CLEANING THE STRUCTURE HAVE BEEN ASSESSED.
 THE DESIGN SOLUTION HAS MITIGATED THESE WHERE POSSIBLE, HOWEVER, RESIDUAL UNUSUAL HAZARDS OR RISKS IDENTIFIED HAVE BEEN RECORDED IN THE DESIGNERS RISK ASSESSMENT.
 THE ABOVE NOTES REFER SPECIFICALLY TO THE INFORMATION SHOWN ON THIS DRAWING AS DESIGNER.
 PLEASE REFER TO THE DESIGNERS RISK INFORMATION FOR FURTHER CLARIFICATION AND THOSE RELEVANT TO OTHER DISCIPLINES.



4 x MOUNTING FEET ON EACH VESSEL

950Ø x 1750 (H) 400kg (TBC) (L4)
 950Ø x 1750 (H) 400kg (TBC) (L4)

687 TANK ROOM
 NEW LOAD BEARING FLOOR TO BE PROVIDED ON EXISTING STEEL BEAMS (BY ISG)

EXISTING DOOR FRAME TO BE REMOVED AND BRICKWORK EASED TO ALLOW INSTALLATIONS OF VESSELS (BY ISG)

EXISTING CONDENSER TO BE RELOCATED TO ALLOW VESSEL INSTALLATION

NEW PLANT ENCLOSURE (BY ISG) INTERNAL FLOOR SUPPORT SYSTEM (BY TCL)

EXISTING FUME EXTRACT
 EXISTING CONDENSER

1400 (L) x 800 (W) x 2100 (H) 270kg (L4) CONTROLS ACCESS
 1400 (L) x 800 (W) x 2100 (H) 270kg (L4) CONTROLS ACCESS

EXISTING ACCESS LADDER TO LOWER ROOF

EXISTING CONDENSER TO BE RELOCATED TO PROVIDE CLEAR ACCESS TO STEPS TO LOWER LEVEL ROOF

EXISTING HAND RAIL

SINGLE DOOR WITH LOUVRED LOWER HALF C/W INSECT SCREEN ON INSIDE

EXISTING DRY COOLER TO BE RELOCATED TO ALLOW ACCESS TO DOORWAY

EXISTING CHILLED WATER PIPES FROM L5

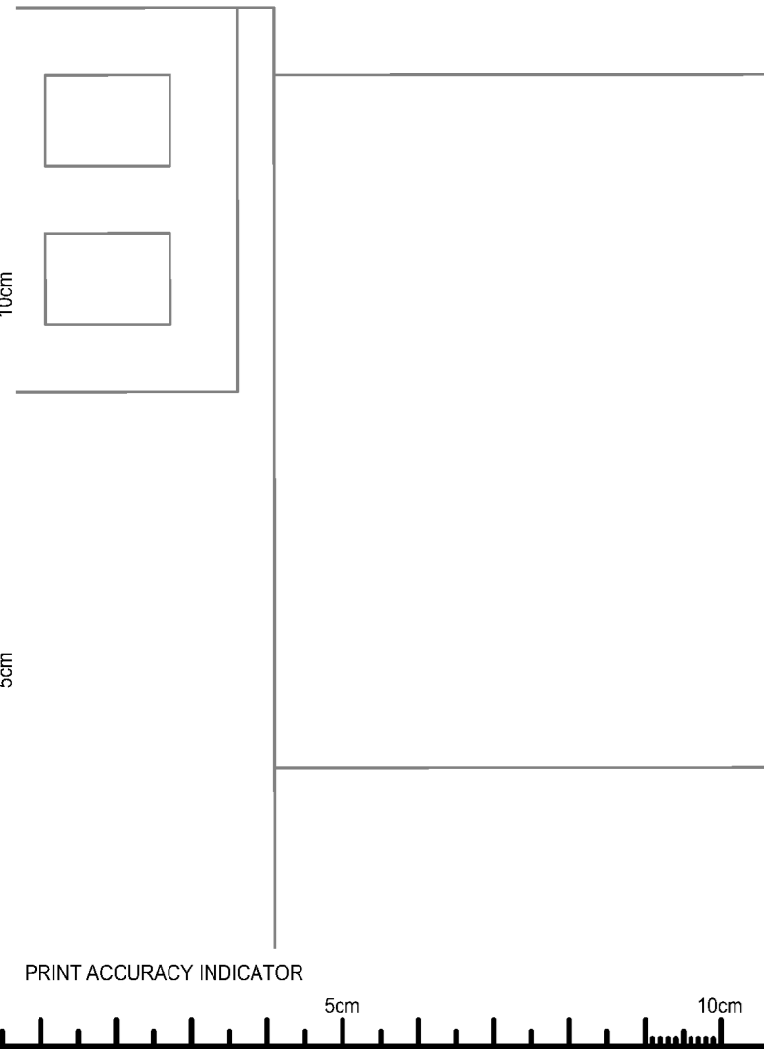
ROOF ACCESS

ROOF ACCESS

ROOF ACCESS

DOUBLE DOORS WITH LOWER HALF LOUVRED C/W INSECT SCREEN ON INSIDE (BY ISG)

EXISTING CONTAINMENT



PO0	27.11.19	ISSUED FOR APPROVAL - Updated to final enclosure details	LB	CG	CG
PO1	20.11.19	ISSUED FOR APPROVAL - Enclosure	LB	CG	CG
PO2	15.11.19	ISSUED FOR APPROVAL - Enclosure 1, 2 & 3	LB	CG	CG
PO3	04.11.19	Issued Final Memo to client	LB	CG	CG
PO4	01.11.19	ISSUED FOR APPROVAL - System 4 added	LB	CG	CG
PO5	01.11.19	ISSUED FOR APPROVAL	LB	CG	CG

APPROVAL



CLIENT:
UCL THE EASTMAN PROJECT

DRAWING TITLE:
PROPOSED 6th FLOOR DENTAL AIR PLANT ROOM L4-60 HEAD SYSTEM LAYOUT OPTIONS

TClarke

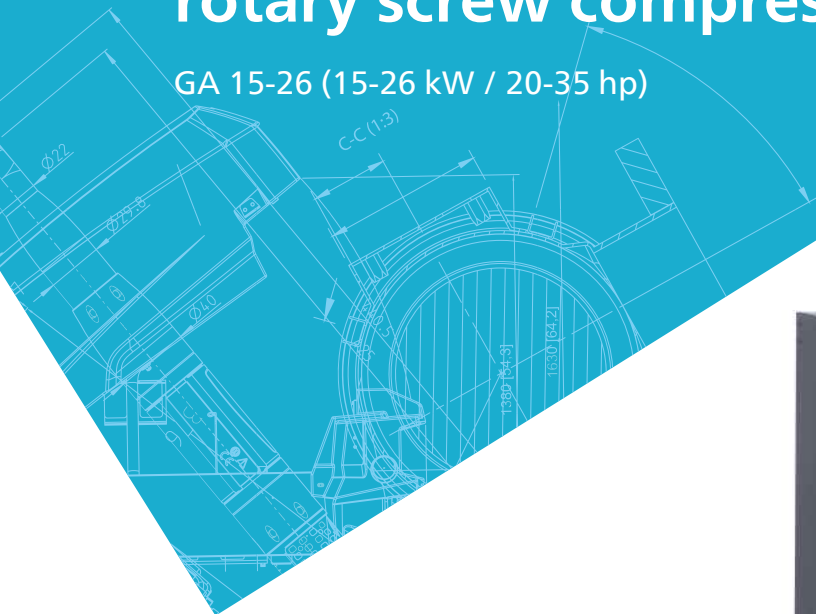
Commodity Centre
 Braxated Park Road, Great Braxated Essex, CM8 3EW t: +44 (0)2036 931776 w: www.tclarke.co.uk

SCALE	DRAWN BY	CHECKED BY	DATE
1:1	LB	CL	NOV'19
TC PROJECT REF	STATUS	REVISION	
TC260028	S4	PO5	
PROJECT	DESIGN	ZONE	LEVEL
6000 - TCL	XX	06	SK - M - 00012

Atlas Copco

Oil-injected rotary screw compressors

GA 15-26 (15-26 kW / 20-35 hp)



The compact industrial air system

Atlas Copco's all-in-one GA 15-26 compressor is always ready to supply high-quality air to help you tackle your daily challenges. Better than any workshop solution, the GA 15-26 keeps your air network clean and your production running.



Features & benefits



Reliable performance

- 100% continuous duty cycle.
- Gear-driven for best-in-class reliability and limited maintenance.
- Quality, dry air thanks to the integrated dryer and water separator.
- High-tech oil vessel protects from oil contamination with minimal air loss.



High energy efficiency

- New state-of-the-art compression element coupled with IE3 efficiency motor.
- 5-6% higher efficiency compared to belt-driven systems.



Simple installation & maintenance

- Delivered plug & play.
- Remarkably compact footprint.
- Easy transportation by forklift.
- Main components are readily accessible.



Advanced connectivity & touch control

- Elektronikon® Swipe controller with built-in connectivity.
- Service and warning indications, error detection and compressor shut-down.
- Optional Elektronikon® Touch controller for enhanced remote monitoring and service time indications.



Dimensions



Standard:

H TM: 1832 mm, 72"
 H FM: 1220 mm, 48"
 L TM: 1904 mm, 74"
 L FM: 1280 mm, 50"
 W: 833 mm, 33"

Full Feature:

H TM: 1832 mm, 72"
 H FM: 1220 mm, 48"
 L TM: 1904 mm, 74"
 L FM: 1775 mm, 69"
 W: 833 mm, 33"

Options

- Integrated filter
- Dryer bypass
- Main power isolator
- Electronic Water Drains (EWD) on coolers
- Air receiver drain EWD
- Motor thermistors and anti-condensation heaters
- Tropical thermostat
- Freeze protection
- Heavy duty air inlet filter
- Fan Saver Cycle
- Compressor inlet pre-filter
- EQi central control license for 4 or 6 machines (available on Elektronikon[®] Touch only)
- Elektronikon[®] Touch
- FoodGrade oil
- Roto Synthetic Xtend oil
- Energy recovery
- Dryer Save Cycle
- Performance certificates

Technical specifications

Compressor type	Max. working pressure				Capacity FAD*			Installed motor power		Noise level**	Weight (kg)***			
	WorkPlace		WorkPlace Full Feature								FM	FM FF	TM	TM FF
	bar(e)	psig	bar(e)	psig	l/s	m ³ /h	cfm	kW	hp	dB(A)	kg	kg	kg	kg
50 Hz VERSION														
GA 15														
7.5	7.5	108.8	7.3	105	46.9	168.8	99.4	15	20	67	455	529	645	718
8.5	8.5	123.3	8.3	120	43.5	156.6	92.2	15	20	67	455	529	645	718
10	10	145.0	9.8	141	39.3	141.5	83.3	15	20	67	455	529	645	718
13	13	188.5	12.8	185	33.3	119.9	70.6	15	20	67	455	529	645	718
GA 18														
7.5	7.5	108.8	7.3	105	59.6	214.6	126.3	18	25	68	464	559	654	749
8.5	8.5	123.3	8.3	120	57.0	205.2	120.8	18	25	68	464	559	654	749
10	10	145.0	9.8	141	49.5	178.5	105.0	18	25	68	464	559	654	749
13	13	188.5	12.8	185	40.0	144.0	84.8	18	25	68	464	559	654	749
GA 22														
7.5	7.5	108.8	7.3	105	65.6	236.2	139.0	22	30	69	480	575	670	765
8.5	8.5	123.3	8.3	120	63.3	227.9	134.1	22	30	69	480	575	670	765
10	10	145.0	9.8	141	55.3	199.1	117.2	22	30	69	480	575	670	765
13	13	188.5	12.8	185	49.3	177.5	104.5	22	30	69	480	575	670	765
GA 26														
7.5	7.5	108.8	7.3	105	72.5	260.9	153.6	26	35	70.2	490	585	680	775
8.5	8.5	123.3	8.3	120	66.6	239.7	141.1	26	35	70.2	490	585	680	775
10	10	145.0	9.8	141	64.3	231.4	136.2	26	35	70.2	490	585	680	775
13	13	188.5	12.8	185	56.6	203.9	120.0	26	35	70.2	490	585	680	775
60 Hz VERSION														
GA 15														
100	7.4	107.0	7.1	103	47.6	171.4	100.9	15	20	67	455	529	645	718
125	9.1	132.0	8.9	128	43.3	155.9	91.7	15	20	67	455	529	645	718
150	10.8	157.0	10.6	153	40.0	144.0	84.8	15	20	67	455	529	645	718
175	12.6	182.0	12.3	178	33.5	120.6	71.0	15	20	67	455	529	645	718
GA 18														
100	7.4	107.0	7.1	103	60.3	217.1	127.8	18	25	68	464	559	654	749
125	9.1	132.0	8.9	128	57.7	207.7	122.3	18	25	68	464	559	654	749
150	10.8	157.0	10.6	153	49.5	178.2	104.9	18	25	68	464	559	654	749
175	12.6	182.0	12.3	178	39.4	141.8	83.5	18	25	68	464	559	654	749
GA 22														
100	7.4	107.0	7.1	103	67.2	241.9	142.4	22	30	69	480	575	670	765
125	9.1	132.0	8.9	128	63.2	227.5	133.9	22	30	69	480	575	670	765
150	10.8	157.0	10.6	153	60.2	216.7	127.6	22	30	69	480	575	670	765
175	12.6	182.0	12.3	178	49.9	179.6	105.7	22	30	69	480	575	670	765
GA 26														
100	7.4	107.0	7.1	103	69.1	248.8	146.4	26	35	70.3	490	585	680	775
125	9.1	132.0	8.9	128	66.5	239.4	140.9	26	35	70.3	490	585	680	775
150	10.8	157.0	10.6	153	63.7	229.3	135.0	26	35	70.3	490	585	680	775
175	12.6	182.0	12.3	178	56.6	203.8	119.9	26	35	70.3	490	585	680	775

* Unit performance measured according to ISO 1217 ed. 4 2009, annex C, latest edition.

** Mean noise level measured at a distance of 1 m according to ISO 2151: 2004 using ISO 9614/2 (sound intensity method); tolerance 3 dB(A).

*** FM: Floor-mounted, FM FF: Floor-mounted Full Feature, TM: Tank-mounted, TM FF: Tank-mounted Full Feature.

Reference conditions:

- Absolute inlet pressure 1 bar (14.5 psi).
- Intake air temperature 20°C/68°F.

Maximum working pressure:

- 13 bar(e) (188 psig)

FAD is measured at the following effective working pressures:

- 7 bar(e)
- 8 bar(e)
- 9.5 bar(e)
- 12.5 bar(e)



www.atlascopco.com

PLANT SPECIFICATION FOR 10 BAR TRIPLEX MEDICAL AIR PLANT (Compliant to HTM2022)

MMA6790STFM Floor mounted Compressor Length 9380mm x Width 2000mm x Height 2800mm Weight 3310kg.
MMA6790STC Compact Vessel mounted Compressors Length 9210mm x Width 2000mm x Height 2800mm Weight 3320kg.

COMPRESSORS

3 Atlas Copco oil lubricated screws (26 kW) 2 compressor running as duty with the other compressor as standby.

TM. H1832mm x L1904mm x W833 (700kg)

VESSELS

MMA6790STFM 2 x Vertical Vessel 2000 litres, **MMA6790STC** 3 x Horizontal Vessels 500 litres plus ~~1 x Vertical Vessel 2000 litres~~, each vessel is fitted with a pressure relief valve, a fusible plug, a manual drain, an automatic drain and a pressure gauge. Built to BS 5169-75-3-E/EN 286.

2000l Vessel. H2788mm x D1016mm (650kg)

DUPLEX FILTER/DRYER ASSEMBLY

Comprising; water separation filters, oil mist separation filters, desiccant dryers, carbon odour filters, sterile filters, line pressure regulators and line pressure relief valves. All filters are fitted with pressure differential indicators.

H2100mm x L1800mm x W1800mm (540kg)

CONTROLS AND MONITORING

Pressure sensors to monitor the following; each compressor on/off load (producing air), low vessel pressure, duty and standby compressor control, dryer fault (pressure drop), high and low pressure fault. Monitoring sensors for each compressor; control circuit failure, motor overload, output air temperature high. Monitoring sensor for dryer, Dewpoint failure (dryers will automatically change over in the event of either a pressure or Dewpoint failure).

ELECTRICAL REQUIREMENTS

Each Compressor requires
3 Phase + Neutral + Earth supply
Fused at 63 amps Motor Rated.
Start Current –96 amps.
Run Current – 48 amps
Starter type – S/D.

AIR QUALITY SPECIFICATION

Nett Plant output after dryer losses – 6790 l/m.
Meets the requirement of the European Pharmacopoeia
Particulates as per ISO 8573-1 (Class 0)
Oil Aerosols as per ISO 8573-1 (Class 0)
Atmospheric Dewpoint > -46 °C

NOISE RATING

71dB(A)

ALARM OUTPUTS

Clean contacts closed in Normal;

1. PLANT FAULT
2. PLANT EMERGENCY
3. RESERVE MANIFOLD BELOW 50%
4. LINE PRESSURE FAULT
5. BMS OUTPUTS

Any compressor fault or dryer pressure fault.
Either dryers Dewpoint failed or low vessel pressure.
Monitored by input from backup cylinder manifold if fitted.
Either high or low pipeline pressure fault.
Repeat of all conditions 1-4 above.

Individual indicators provided for all faults including output alarms to enable easy fault diagnosis.

RECOMMENDED SPARES

25 Ltr compressor oil.
1 off Unloader kit.
3 off air intake filter elements
1 off compressor pressure relief valve.
1 off regulator pressure relief valve for 4 Bar Line Pressure
1 off regulator pressure relief valve for 7 Bar Line Pressure
1 off compressor operating /low pressure switch.
1 off compressor high pressure switch.
6 off pre filter elements.
6 off carbon filter elements.
2 off sterile filter elements.
1 off different pressure gauge.
1 off filter bowl auto drain.
1 off regulator overhaul kit.
1 off 4 pole 230V relay.
1 off 230V timer relay.

PART NUMBER

ASPA1010
GA26 (Serial No. Required)
GA26 (Serial No. Required)
GA26 (Serial No. Required)
PLP1101-5.3
PLP1101-9.0
ASPA1033
ASPA1032
FILTN110/E
FILTN111/E
FILTN132/E
FILTN105
FILTN106
ASPA1057
ELE2052
ELE2053

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk

UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
This data sheet produced on 19 Dec 2019 15:18 using software version 4.3.3335.0

Project Details

Location: EF01

Technical Data

AVS - Aire-Volve Internal Duct Mounted Fans

Fan Code: **AVS7**
Installation Manual Links: 671591

Required duty: 1.26 m³/s at 50 Pa
Actual duty: 1.301 m³/s at 53 Pa
Actual at required flow: 1.26 m³/s at 97 Pa

When speed controlled to required duty (96.86%):

Motor Input Power: **0.536 kW**
Specific Fan Power: **0.4 W/(l/s)**
Velocity at required duty: 10.027 m/s

At full speed:

Motor Input Power: 0.589 kW
Specific Fan Power: 0.5 W/(l/s)
Nominal Fan Speed: 1,700 RPM
Electrical Supply: 230V 1 Phase 50 Hz
Nominal Motor Rating: 0.79 kW
Motor Current (flc): 3.5 A
Motor Current (sc): 3.5 A

Max. operating temp: 40°C
Weight: 106 kg

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnector is required to isolate the fan from the electrical supply.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (96.86%)

Sound Power Levels re 1 pWatts (Hz):									
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	77	75	72	72	66	64	61	56	
Induct Outlet	80	76	73	74	73	70	66	60	
Breakout	66	58	53	45	35	32	36	26	28
For 100% speed:	+1	+1	+1	+1	+1	+1	+1	+1	

dBA is spherical at 3 metres. For hemi-spherical add 3 dBA.

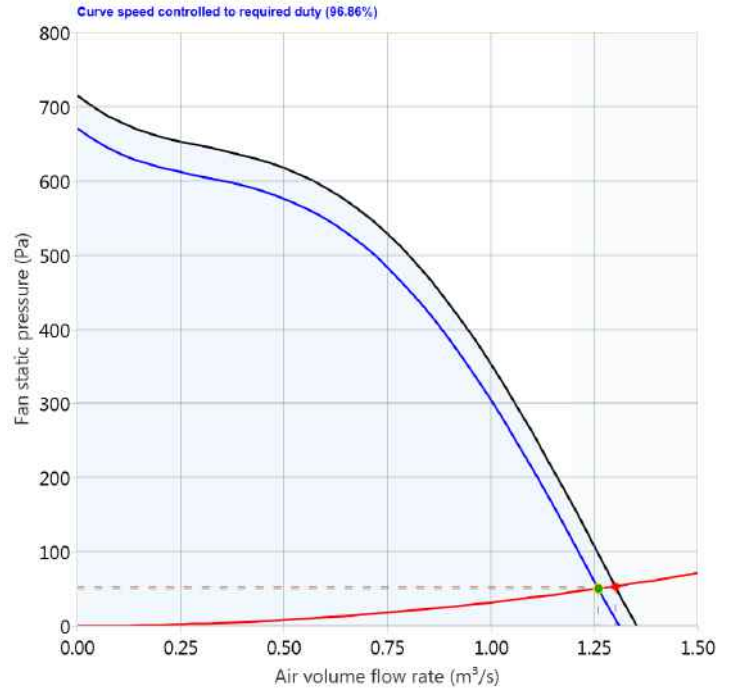
Values shown are for inlet Lw, outlet Lw sound power & breakout levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

AVS7-MSS

At all volumes -4 -8 -11 -19 -20 -16 -14 -12

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Selected Ancillaries

2 x CFC40	Flexible connector
3 x NAV3	Anti-vibration mounting kit
2 x AVS7-MSS	1000mm matched silencer acoustically lined
1 x ES-THERMOSTAT2	Ecosmart Thermostat
1 x ES-UCF	Ecosmart Fan User Control

CFC40 - Flexible connector

Weight: 0.5 kg

AVS7-MSS - 1000mm matched silencer acoustically lined

Size: 1000 mm (L) 1013 mm (W) 575 mm (H)

Weight: 41.0 kg

Nuair, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk

UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended. This data sheet produced on 19 Dec 2019 15:18 using software version 4.3.3335.0

Specification

The Aire-Volve range of high performance extract fans shall be double skinned with 35mm infill panels and shall be manufactured from heavy gauge, corrosion resistant Aluzinc steel. The unit is suitable for internal mounting in any orientation and shall incorporate full size top or bottom access panels. The fan impeller and EC motor are selected to provide optimum performance and the most energy efficient solution conforming to Part L regulations. Units are suitable for operation in ambient temperatures of 40°C.

The units are Class L2 leakage and shall be controlled by an integrated Ecosmart control panel mounted externally to the case or provided loose for sizes 1 & 2.

The fans shall have the following energy saving and operational functions integrally installed with in it, all components will be pre-wired and fitted by the manufacturer:

- Integral Frequency inverter/speed controller.
- Integral adjustable run-on timer.
- Maximum and minimum speed adjustment/setting (trickle and boost).
- Volt free run & failure/status indication.
- 0-10V BMS interface for remote operation.
- Multiple low voltage sockets for interconnection of sensors or fans.
- Background ventilation/trickle enable switch.

Fan, Ecosmart controls and associated sensors/controllers shall be manufactured by Nuair.

The Fan unit shall have a 5 year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuair International Sales office for further details.

CFC40

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

NAV3

Resilient rubber anti-vibration mountings, supplied as a set of 4.

ES-THERMOSTAT2

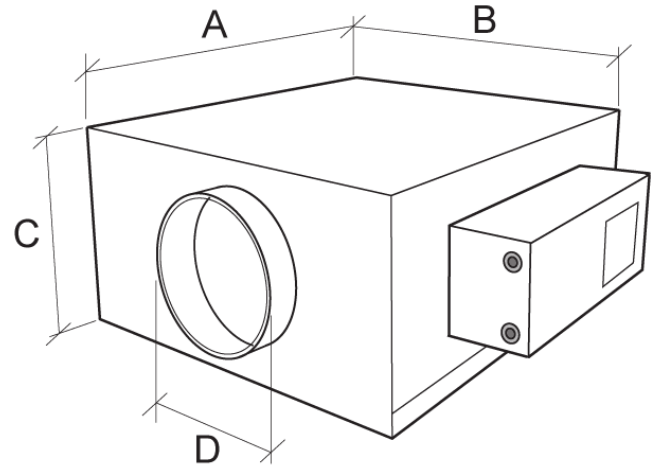
Circular thermostat sensor - supplied with pre-plugged 10m length of communication cable. The sensor activates the system when the temperature is above set point.

ES-UCF

Ventilation user control compatible with Ecosmart system.

- ES-UCF User Control - supplied with a pre-plugged, 10M length of communications cable. The ES-UCF control is used to switch the fan on/off and adjust the fan speed.

Fan Dimensions



A	B	C	D	E	kg
1180	1116	571	400	108	106
Length:	Width:	Height:			
1180	1116	571			

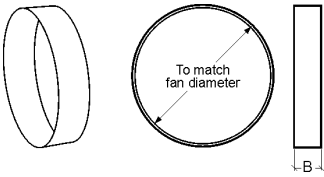
Spigot size: 400

Drawing is for dimensional purposes only. Dimensions in mm

Ancillary Dimensions

CFC40 - Flexible connector

B=150 mm



NAV3 - Anti-vibration mounting kit

B=45 C=75 mm

