

Date: 12th July 2021

Ref: [5255/ TSM / 043M Rev 01](#)

FORM BFES 10/2

To: Willmott Dixon Construction Limited
Hollinwood Business Centre,
Albert Mill
Albert Street
Hollinwood
Oldham
Lancashire OL8 3QL

For the attention of: Andrew Sampey

Contract Title: Manchester College City Campus

Contract No: 5255

TECHNICAL SUBMISSION

T.S. No. 043M REV-1

Dear Sirs

We are pleased to submit the following for your approval by 15th July 2021.

Equipment: Local Exhaust Ventilation (LEV) Including LEV-07 Fan data

Manufacturer: Duscovent

Description: BMS Wiring Schedule

Specification References: _____

Drawing References: _____

Attached detail documents:

Manufacturers Data:	ü
Manufacturers Leaflet:	N/A
Manufacturers Drawings:	N/A
Electrical Requirements:	N/A

For Briggs & Forrester Engineering Services Ltd

Michael Barrett

Approved/Approved with Comment

Date:

Comments:

LEV 01 Spray Booth

Room 3.05 will incorporate a bench mounted spray booth for use with both water and solvent based paints. The spray booth will be 1835mm wide x 1290mm high and will operate with a face capture velocity of 0.5 /sec. The booth will be fabricated from mild steel sheet with a powder coated paint finish and will incorporate disposable filter media to remove any overspray generated during use. The front fascia of the spray booth will incorporate a filter condition gauge complete with green and red field markings to afford a quick visual indication of when the filter media requires changing. The booth will also include an LED light mounted above a safety glass panel in the spray chamber complete with vapour seal.

The booth would be connected to the roof mounted fan set using suitably sized, spiral wound, galvanised steel ducting. The duct main will access the roof via the dry riser and will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The independent, roof mounted fan set will be directly driven by a 2.2 kw, 4 pole motor. The motor will be ready for connection to a 415V/3Ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated paint finish and spark minimising features for an internal zone II IE3 motor ATEX rating and will be installed complete with 'Big foot' roof mounts, anti-vibration mounts and flexible connections. The fan will be sized to handle a total air volume of 4500 m³/hr at calculated system resistance and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include for loose issue of a suitably rated control panel with variable speed drive and BMS interlocking. Please note that wall mounting of the panel and all cabling will be the responsibility of the clients electrical contractor.

LEV 02 & (03) Encapsulation and Fibreglass Rooms Fume Extraction System

The main extraction system will incorporate 15 off Ø160 PR ATEX type articulated extract arms at 2m long, supported from the peripheral workshop walls using the integral wall mounting bracket.

Each of the arms would be served by a central suction ductwork system installed using suitably sized, spiral wound, galvanised steel ducting. The duct main will access the roof via the dry riser and will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The extract system will be served by a roof mounted centrifugal fan set directly driven by a 11 kw, 2 pole EXN zone 2 motor. The motor will be located outside the contaminated airstream and ready for connection to a 415v/3ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated paint finish and will incorporate spark minimising features for an internal T4 ATEX rating.

The fan will be installed complete with 'Big Foot' roof mounts, anti-vibration mounts and flexible connections. The fan will be rated to handle a total air volume of 12,000 m³/hr at calculated system resistance and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include for a loose issue control panel for wall mounting, cabling and BMS interlocking by the clients electrical contractor.

The fan will be connected to the extract arms using suitably sized, spiral wound, galvanised steel ducting complete with all necessary clips, brackets, hangers and supports for a neat and rigid installation. The duct droppers to each articulated extract arm will incorporate a balancing damper which will be set during our commissioning procedure.

LEV 04 Jewellery Workshop

We understand that the jewellery workshop will incorporate a brazing hearth with integral varivac rear fume extract canopy.

The varivac hood will be supplied by others and will include 2 off Ø160 off – take spigots which will be connected to a common suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting and will access the roof via the dry riser. The suction ductwork will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The independent roof mounted fan set will be directly driven by a 0.75 kw, 2 pole IE3 motor, ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated finish and will incorporate anti-vibration mounts and flexible connections. The fan will be sized to handle a total air volume of 1600 m³/hr and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 05 Laser Cutter

We understand that the laser cutter workshop will incorporate a CNC controlled laser cutting machine for the use with paper, wood, plastics and acrylics.

The laser cutter off take-spigots which will be connected to a common suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting and will access the roof via the dry riser.

The suction ductwork will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The independent roof mounted fan set will be directly driven by a 0.75 kw, 2 pole zone 2 - IE3 motor, ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated finish and will incorporate anti-vibration mounts and flexible connections. The fan will be sized to handle a total air volume of 300 m³/hr and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 06 Plastics Room.

We understand that the plastics room will incorporate a resin cabinet.

The resin cabinet off take - spigots which will be connected to a common suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting and will access the roof via the dry riser.

The suction ductwork will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The independent roof mounted fan set will be directly driven by a 0.75 kw, 2 pole zone 2 IE3 motor, ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated finish and will incorporate anti-vibration mounts and flexible connections. The fan will be sized to handle a total air volume of 300 m³/hr and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 07 Print Making Studio

We understand that the print making studio will incorporate a screen wash cabinet and drying rack supplied by others.

The screen wash cabinet off - take spigots which will be connected to a common suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting and will access the roof via the dry riser.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 07 Print Making Studio (upgrade from original)

We understand that in conjunction with the screen wash cabinet and drying rack it is proposed to provide additional extraction to 2 off screen print silk tables.

We propose additional rear extract plenum type capture hoods to be wall mounted behind each screen print table so as not to restrict the operators movement around the tables.

Each extract plenum would be fabricated from galvanised sheet steel and would feature a slotted capture face to allow air to be drawn past each operator, over the screen printing process where any fumes and odours will be entrained prior to entering the capture hood. An additional air volume of 5400 m³/hour will provide a face capture velocity in excess of 0.6 m/second at each rear extract plenum. The screen wash cabinet, drying rack hood and screen print table rear extract plenum off - take spigots which will be connected to a common

suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting and will access the roof via the dry riser. The suction ductwork will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The independent roof mounted fan set will be directly driven by a 4 kw, 4 pole zone 2 -IE motor, ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated finish and will incorporate anti-vibration mounts and flexible connections. The fan will be sized to handle a total air volume of 7500 m³/hr and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 08 Textile Print Studio

We understand that the print making studio will incorporate a screen wash cabinet supplied by others.

The screen wash cabinet off - take spigots which will be connected to a common suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting and will access the roof via the dry riser.

The suction ductwork will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The independent roof mounted fan set will be directly driven by a 1.1 kw, 2 pole zone 2 - IE3 motor, ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated finish and will incorporate anti-vibration mounts and flexible connections. The fan will be sized to handle a total air volume of 2600 m³/hr and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 09 Special Effects Studio

The special effects studio will be served by 36 off bench mounted articulated extract arms, each nominally Ø 75 mm. Each arm is fabricated from anodised aluminium tubing with polypropylene joints and features a flared capture hood for positioning by the operator close to the point of fume generation.

The articulated arms will be connected to a common suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting and will access the roof via the dry riser. The suction ductwork will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The extract system will be served by a roof mounted pulse jet filter unit, type DFPRO 12 housing 212m² of pleated cellulose cartridge media with an internal steel mesh support frame and fully automatic compressed air cleaning system. The filter will incorporate a suitably ATEX certified explosion relief panel with burst indicator, sealed collection bin with plastic liner and balance pipe, roof mounted centrifugal fan set directly driven by an 18.5 kw motor with a Cat 3 G ATEX rating. The fan set is designed to handle a total air volume of 8,700 m³/hr at calculated system resistance and will discharge the filtered air to atmosphere at 3m above roof top level with a discharge velocity in excess of 15 m/sec.

The contaminated airstream enters the filter unit by high level inlet spigot which promotes product pre-separation with the air passing through the pleated cartridge media which retains the fine particulate. The cleaned air is drawn through to the fan and discharged to atmosphere whilst the dust deposit on the cartridge media is removed by the automatic compressed air pulse jet cleaning system. The collection bin incorporates a plastic liner and bin balance system to allow the collected waste to be bagged, for disposal by the end user, preventing any secondary waste handling problems.

The filter unit will be connected to the extract arms using suitably sized, spiral wound, galvanised steel ducting complete with all necessary clips, brackets, hangers and supports for a neat and rigid installation. The duct droppers to each articulated extract arm will incorporate a balancing damper which will be set and locked in position during our commissioning procedure. The immediate duct connection to the filter inlet will be made using heavy duty, clipped ductwork and will feature an ATEX certified, quick acting, non-return damper which will prevent any flame or pressure wave that may be generated during an explosion within the filter unit from travelling back down the suction ductwork system into the classroom where injury to students or secondary explosions may occur.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 10 Kiln Room

We understand that the kiln room will incorporate 2 off small bench mounted electric kilns and each will require the supply and installation of a canopy hood.

The canopy hood off – take spigots which will be connected to a common suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting and will access the roof via the dry riser. The suction ductwork will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The independent roof mounted fan set will be directly driven by a 1.5 kw, 2 pole IE3 motor, ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated finish and will incorporate anti-vibration mounts and flexible connections. The fan will be sized to handle a total air volume of 2100 m³/hr and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 11 Dark Room

We understand that the dark room will require the supply and installation of 2 off Ø 100 articulated extract arms at 2m long, supported from the peripheral walls.

Each extract arm will be connected to a common suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting

and will access the roof via the dry riser. The suction ductwork will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The independent roof mounted fan set will be directly driven by a 1.5 kw, 2 pole EXN - zone 2 motor, ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated finish and will incorporate anti-vibration mounts and flexible connections. The fan will be sized to handle a total air volume of 600 m³/hr and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 12 Screen Print

We understand that the screen print will incorporate a screen wash cabinet supplied by others.

The screen wash cabinet off – take spigots which will be connected to a common suction ductwork system. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ducting and will access the roof via the dry riser.

The suction ductwork will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The independent roof mounted fan set will be directly driven by a 1.1 kw, 2 pole zone 2 - IE3 motor, ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. The fan will be fabricated from mild steel plate with a powder coated finish and will incorporate anti-vibration mounts and flexible connections. The fan will be sized to handle a total air volume of 2600 m³/hr and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include the loose supply of a suitably rated control panel for wall mounting, cabling and interlocking by the clients electrical contractor.

LEV 13 Machines Room

We understand that LEV13 – machine room will be designed to serve cutting machines used to size and finish soft and hardwoods along with man-made boards. This room is on the ground floor with the dust extraction equipment to be sited within a nearby compound.

We understand that the room will incorporate the following machines;

<u>Machine Requirement</u>	<u>Extract spigot</u>	<u>Dropper size</u>	<u>Extract</u>
	Ø mm	Ø mm	m ³ /hr
Table saw	1x Ø100, 1x Ø80	Ø125	840
Mitre saw	1x Ø100, 1x Ø80	Ø125	840
Large band saw	1x Ø100, 1x Ø80	Ø125	840
Disc/Belt sander	2x Ø80	Ø100	660
Scroll saw	Ø80	Ø80	330
Bobbin sander	Ø80	Ø80	330
Bench mounted Band saw	Ø80	Ø80	330
<u>Total extract requirement</u>			<u>4170m³/hr</u>

We also understand that a degree of diversity is to be applied within the workshop and that only 4 or 5 machines are expected to be in use at any one time and therefore an extract volume of 2670 m³/hr is to be applied to the extract system.

Each machine off-take spigot will be connected to the suction ductwork system using heavy duty PU flexible hoses with an encapsulated copper coil support. The suction ductwork system will be installed using suitably sized, spiral wound, galvanised steel ductwork complete with all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The extract system will be served by an auto-shake, clean filter unit. We propose the installation of an auto shake clean filter unit, type UMA253V filter unit housing 22.7 m² of polyester needlefelt media with an epitropic surface treatment in a tapered envelope pocket arrangement suspended within a mild steel constructed cabinet with a 2 coat paint finish suitable for an external location. The filter unit incorporates ATEX approved ST1 rated explosion relief, sealed collection bin with liner, and is served by an independent fan set, directly driven by a 7.5 kw 2 pole - EXN zone 2 motor. The filter plant would be rated to handle a total air volume of 2675 m³/hr at calculated system resistance.

The contaminated dust laden air enters the filter through an inlet spigot located on the hopper above the collection bin. The inlet incorporates product pre-separation which allows the larger dust particles to drop out into the hopper and collection bin whilst the finer dust remains airborne and is filtered by the tapered media. The cleaned air is drawn

through to the fan and discharged to atmosphere via an attenuated discharge, with an efflux velocity in excess of 15 m/sec.

The fine dust deposit on the filter surface is dislodged by the automatic shaking mechanism and then falls down into the collection bin. The shaking mechanism is activated automatically on fan shutdown and is controlled by a run on timer.

The collection bin incorporates a plastic liner and bin balance system to allow the collected waste to be bagged for disposal, preventing any secondary waste handling problems.

The filter unit will be connected to the extract arms using suitably sized, spiral wound, galvanised steel ducting complete with all necessary clips, brackets, hangers and supports for a neat and rigid installation. The duct droppers to each articulated extract arm will incorporate a balancing damper which will be set during our commissioning procedure. The immediate duct connection to the filter unit will be made using heavy duty, clipped ductwork, and an ATEX certified, quick acting, non-return damper which will prevent over pressure or flames generated during an explosion within the filter unit from travelling back down the duct system into the workspace.

Within our offer we include for loose issue control panels for wall mounting, cabling and BMS interlocking by the clients electrical contractor.

LEV14A Encapsulation Room Flammable Cupboard Systems

Each ventilated storage cabinet supplied by others, will be served by an individual suction ductwork system which will operate continuously to prevent the build-up of any flammable or explosive atmosphere.

Each cabinet will be served by a roof mounted extract fan for 24 hour, 7 day operation. The connection to these fans will be made using suitably sized, spiral wound, galvanised steel ducting. The suction duct mains will access the roof via the dry riser and will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

Each independent, roof mounted fan set will be directly driven by a 0.75 kw, 2 pole zone 2 - IE3 motor. The motor will be located outside the contaminated airstream and ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. Each fan will be fabricated from mild steel plate with a powder coated finish – polypropylene would not be strong enough to cope with the pressure involved – and the fans will incorporate spark minimising features for an internal zone 2G Exd IIC T4 ATEX rating and will be installed complete with 'Big foot' roof mounts, anti-vibration mounts and flexible connections. Each fan will be sized to handle an air volume of 300 m³/hr at calculated system resistance and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include for loose issue control panels for wall mounting, cabling and BMS interlocking by the clients electrical contractor.

LEV14B Encapsulation Room Flammable Cupboard Systems

Each ventilated storage cabinet supplied by others, will be served by an individual suction ductwork system which will operate continuously to prevent the build-up of any flammable or explosive atmosphere.

Each cabinet will be served by a roof mounted extract fan for 24 hour, 7 day operation. The connection to these fans will be made using suitably sized, spiral wound, galvanised steel ducting. The suction duct mains will access the roof via the dry riser and will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

Each independent, roof mounted fan set will be directly driven by a 0.75 kw, 2 pole zone 2 - IE3 motor. The motor will be located outside the contaminated airstream and ready for connection to a 415v/3Ph/50hz electrical supply by the clients electrical contractor. Each fan will be fabricated from mild steel plate with a powder coated finish – polypropylene would not be strong enough to cope with the pressure involved – and the fans will incorporate spark minimising features for an internal zone 2G Exd IIC T4 ATEX rating and will be installed complete with 'Big foot' roof mounts, anti-vibration mounts and flexible connections. Each fan will be sized to handle an air volume of 300 m³/hr at calculated system resistance and will be arranged to discharge to atmosphere via a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

Within our offer we include for loose issue control panels for wall mounting, cabling and BMS interlocking by the clients electrical contractor.

LEV 15 Fibreglass Workshop Dust Extraction System

We understand that LEV03 – fibreglass will incorporate a combined dust and fume extraction system complete with 2 off ATEX rated articulated arms. The extraction system will incorporate 2 off Ø160 PR ATEX type articulated extract arms at 2m long, supported from the peripheral workshop walls, using the integral wall mounting bracket.

Each of the arms would be served by a central suction ductwork system installed using suitably sized, spiral wound, galvanised steel ducting. The duct main will access the roof via the dry riser and will incorporate all necessary clips, brackets, hangers and supports for a neat and rigid installation.

The extract system will be served by a roof mounted auto-shake, clean filter unit. We propose the installation of an auto shake clean filter unit, type UMA253Y filter unit housing 22.7 m² of polyester needlefelt media with an epitropic surface treatment in a tapered envelope pocket arrangement suspended within a mild steel constructed cabinet with a 2 coat paint finish suitable for an external location. The filter unit incorporates ATEX approved ST1 rated explosion relief, sealed collection bin with liner and an independent fan set, directly driven by a 4 kw EXN zone 2 - 2 pole motor. The filter plant would be rated to handle a total air volume of 2200 m³/hr at calculated system resistance.

The contaminated dust laden air enters the filter through an inlet spigot located on the hopper above the collection bin.

The inlet incorporates product pre-separation which allows the larger dust particles to drop out into the hopper and collection bin whilst the finer dust remains airborne and is filtered by the tapered media. The cleaned air is drawn through to the fan and discharged to atmosphere a vertical discharge stack terminating at 3m above roof level with an efflux velocity in excess of 15 m/sec.

The fine dust deposit on the filter surface is dislodged by the automatic shaking mechanism and then falls down into the collection bin. The shaking mechanism is activated automatically on fan shutdown and is controlled by a run on timer.

The collection bin incorporates a plastic liner and bin balance system to allow the collected waste to be bagged for disposal, preventing any secondary waste handling problems.

The filter unit will be connected to the extract arms using suitably sized, spiral wound, galvanised steel ducting complete with all necessary clips, brackets, hangers and supports for a neat and rigid installation. The duct droppers to each articulated extract arm will incorporate a balancing damper which will be set during our commissioning procedure. The immediate duct connection to the filter unit will be made using heavy duty, clipped ductwork, and will feature an ATEX certified, quick acting, non-return damper which will prevent over pressure or flames generated during an explosion within the filter unit from travelling back down the duct system into the workspace.

Within our offer we include for loose issue control panels for wall mounting, cabling and BMS interlocking by the clients electrical contractor.

1.2. Ductwork

1.2.1. Galvanised Steel Ductwork

All galvanised sheet metal ductwork shall be manufactured and installed in accordance with B&ES Specification DW144 with exceptions where identified below. All ductwork shall be leakage tested in accordance with DW143 Appendix A and the Building Regulations, Part L2A.

- Ductwork shall be manufactured using hot dipped galvanised sheeting to BS EN 10142 grade PO2G, 275 mass coating, M finish, B surface with C surface treatment, to the nominal cross sectional sizes shown on the drawings, based on the standard sizes and thicknesses described in DW144 except no gauge less than 0.8mm shall be used for indoors applications or less than 1.0mm for outdoors applications.
- Longitudinal seams shall be made using either the 'Grooved Seam' or 'Pittsburgh Lock' method with continuous sealant injected during the seam forming process.
- Cross joints in rectangular ducts shall be by slide-on flanges with bolted corner joints and knock-on clamps. Slip joints may be used for adjustable sections only when they shall be angle reinforced for their full girth, integrally sealed and fixed using mechanical rivets at 50mm centres.
- Cross joints in circular ductwork shall be plain socket and spigot, with or without connectors, with integral sealant and mechanical rivet fixings. Flanged joints, with gaskets, shall be used in strategic positions to facilitate future removal.
- Changes in direction in rectangular ductwork shall be by square pattern fittings with integral air turns. Air turning vanes shall be of the correct profile to ensure complete changes of direction of the air flow, with extended leading and trailing edges and with the radius and spacing selected to achieve uniform velocity through the bend. Air turns shall be fixed to the ductwork fitting with mechanical rivets and stiffened to obviate vibration or blade oscillation.
- Bends in circular ductwork shall be 0.5D throat radius on sizes up to 400mm and segmented thereafter.
- Branches off main ducts shall be by 45° shoes.
- Shape changes shall be long taper with the total included angle not exceeding 30°.

— CABLING / ELECTRICAL
PARTS BY OTHERS

2.2KW / 4 POLE 3 PHASE 4.6 AMPS FLC / 37.3
AMPS START CURRENT

ROTARY ISOLATOR(LOCAL TO FAN)

DUSCOVENT SUPPLIED CONTROL PANEL
SEE DRAWING -.

415 / 3 / 50
SUPPLY FROM
DISTRIBUTION BOARD BY OTHERS

CP01

EFFLUX
REDUCER

ROOF LEVEL

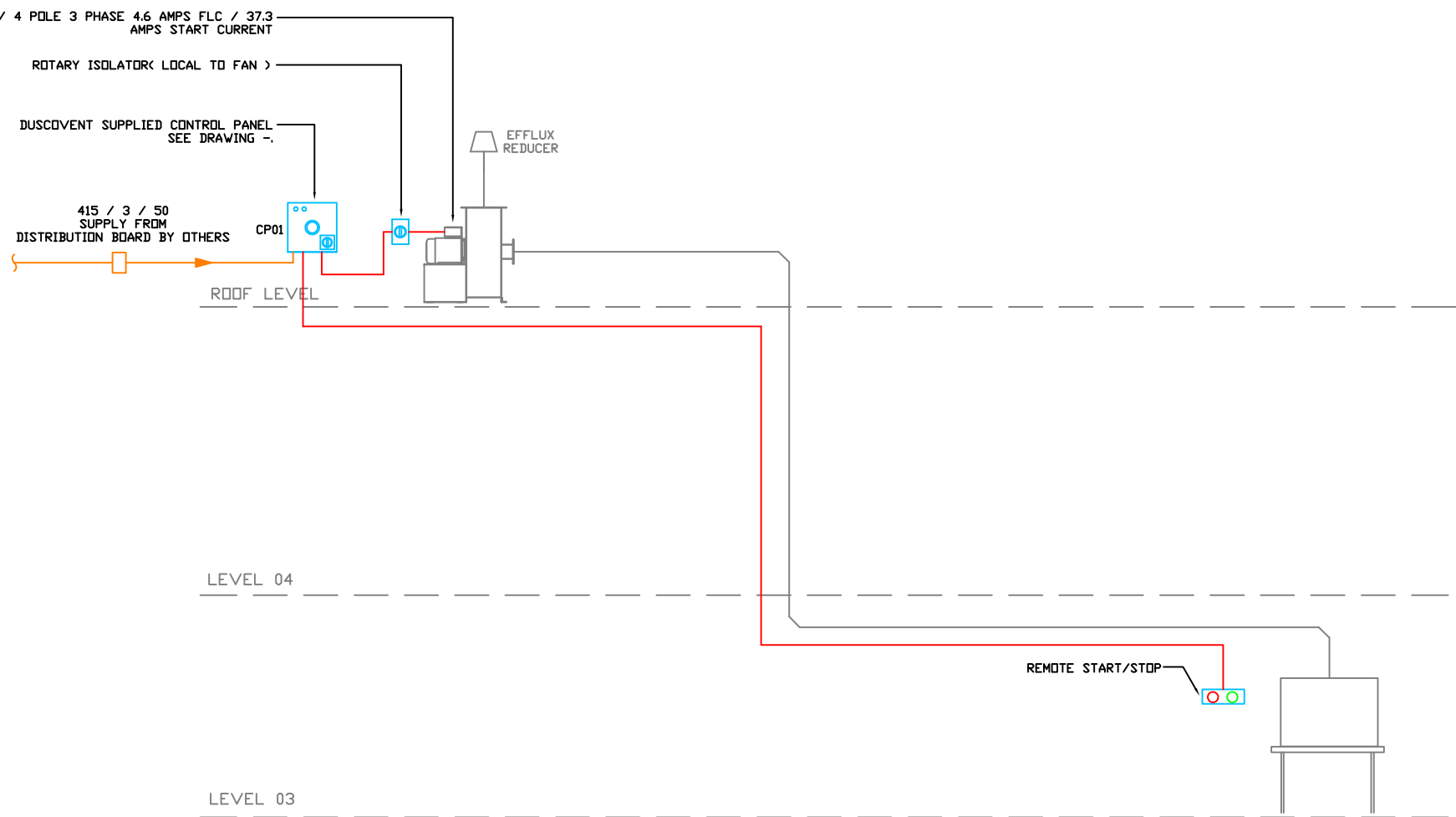
LEVEL 04

LEVEL 03

REMOTE START/STOP

LEV 01

SPRAY BOOTH (FUME EXTRACTION)



— CABLEING / ELECTRICAL
PARTS BY OTHERS

7.5KW / 4 POLE 3 PHASE 14.5 AMPS FLC / 124.7
AMPS START CURRENT

ROTARY ISOLATOR < LOCAL TO FAN >

DUSCOVENT SUPPLIED CONTROL PANEL
SEE DRAWING -.

415 / 3 / 50
SUPPLY FROM
DISTRIBUTION BOARD BY OTHERS

CP02

EFFLUX
REDUCER

ROOF LEVEL

LEVEL 04

REMOTE START/STOP

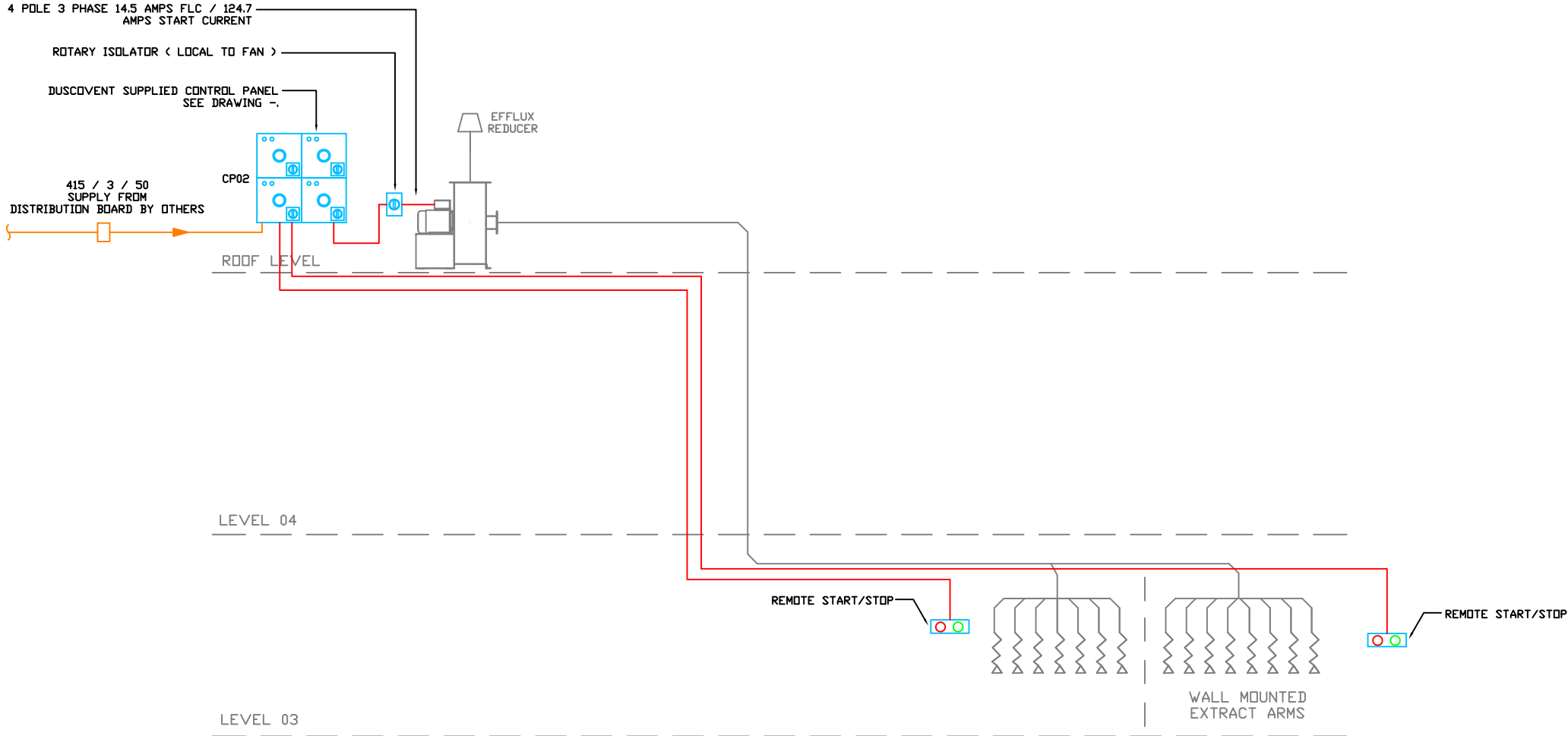
REMOTE START/STOP

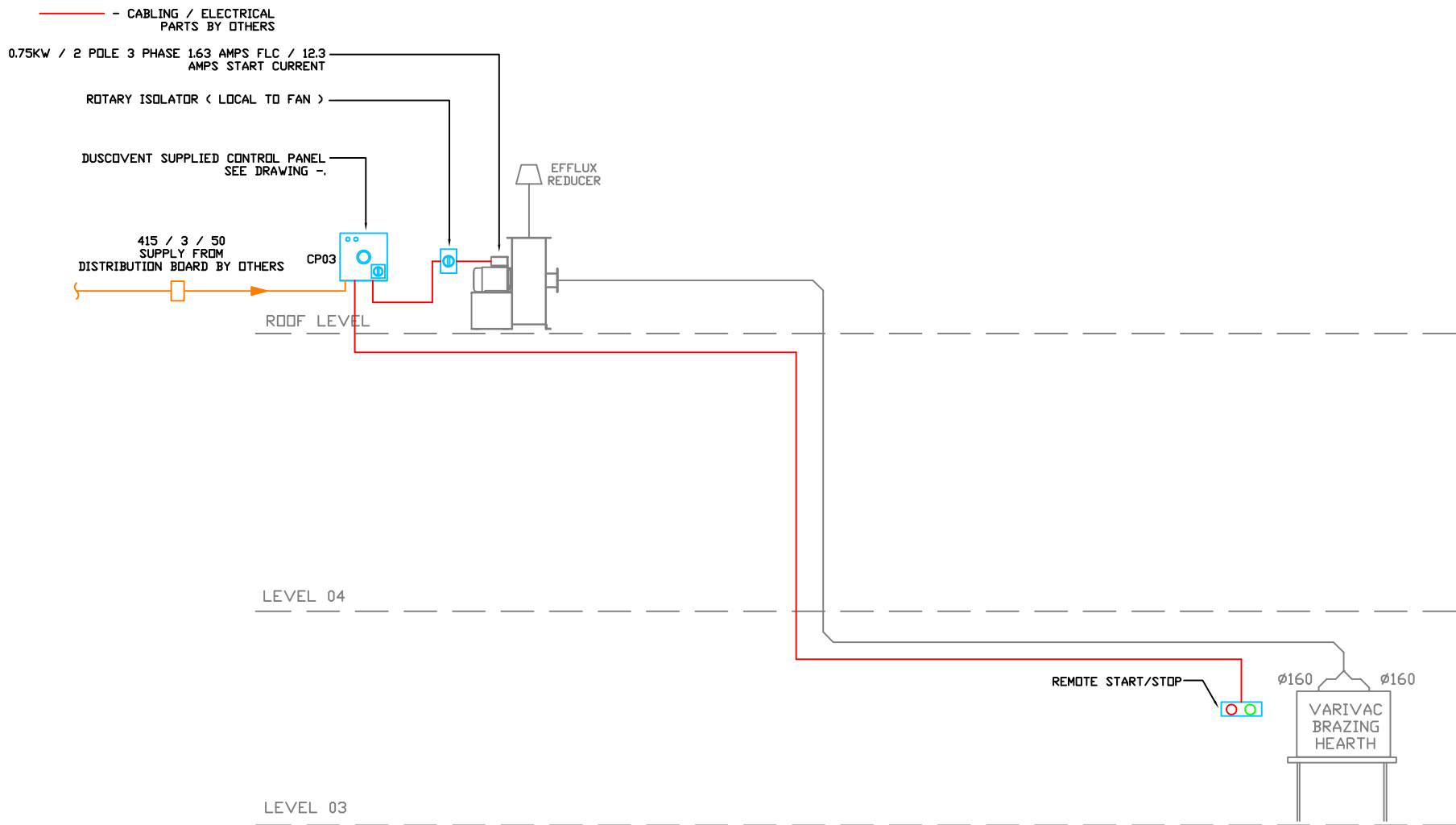
LEVEL 03

WALL MOUNTED
EXTRACT ARMS

LEV 02&03

ENCAPSULATION AND FIBREGLASS ROOMS <FUME EXTRACTION>





LEV 04
JEWELLERY WORKSHOP <FUME EXTRACTION>

— CABLING / ELECTRICAL
PARTS BY OTHERS

0.75KW / 2 POLE 3 PHASE 1.48 AMPS FLC / 11.4
AMPS START CURRENT

ROTARY ISOLATOR < LOCAL TO FAN >

DUSCOVENT SUPPLIED CONTROL PANEL
SEE DRAWING -.

415 / 3 / 50
SUPPLY FROM
DISTRIBUTION BOARD BY OTHERS

CP04

EFFLUX
REDUCER

ROOF LEVEL

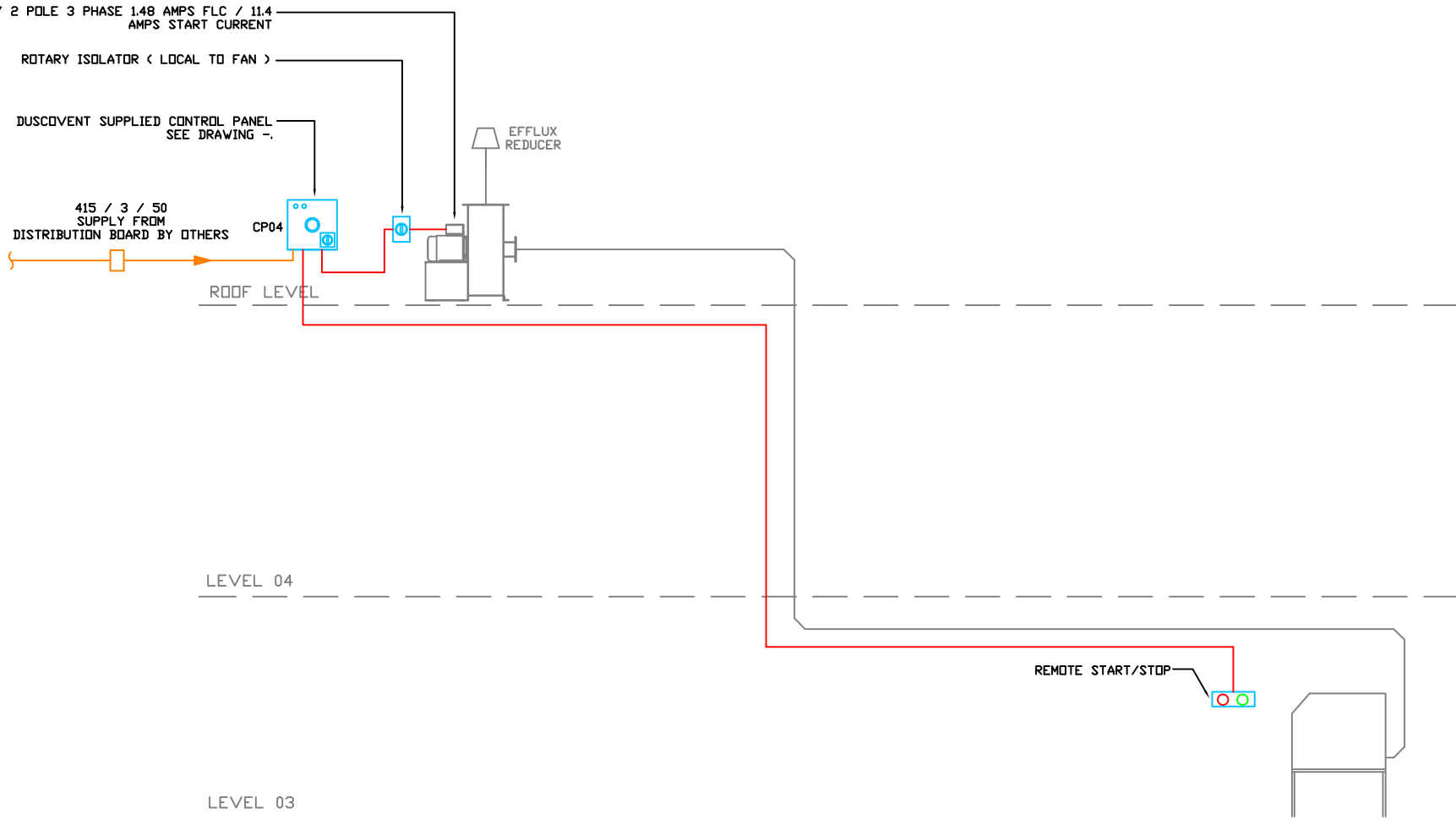
LEVEL 04

LEVEL 03

REMOTE START/STOP

LEV 05

LASER CUTTER <FUME EXTRACTION>



— CABLEING / ELECTRICAL
PARTS BY OTHERS

0.75KW / 2 POLE 3 PHASE 1.48 AMPS FLC / 11.4
AMPS START CURRENT

ROTARY ISOLATOR < LOCAL TO FAN >

DUSCOVENT SUPPLIED CONTROL PANEL
SEE DRAWING -.

415 / 3 / 50
SUPPLY FROM
DISTRIBUTION BOARD BY OTHERS

CP05

EFFLUX
REDUCER

ROOF LEVEL

LEVEL 04

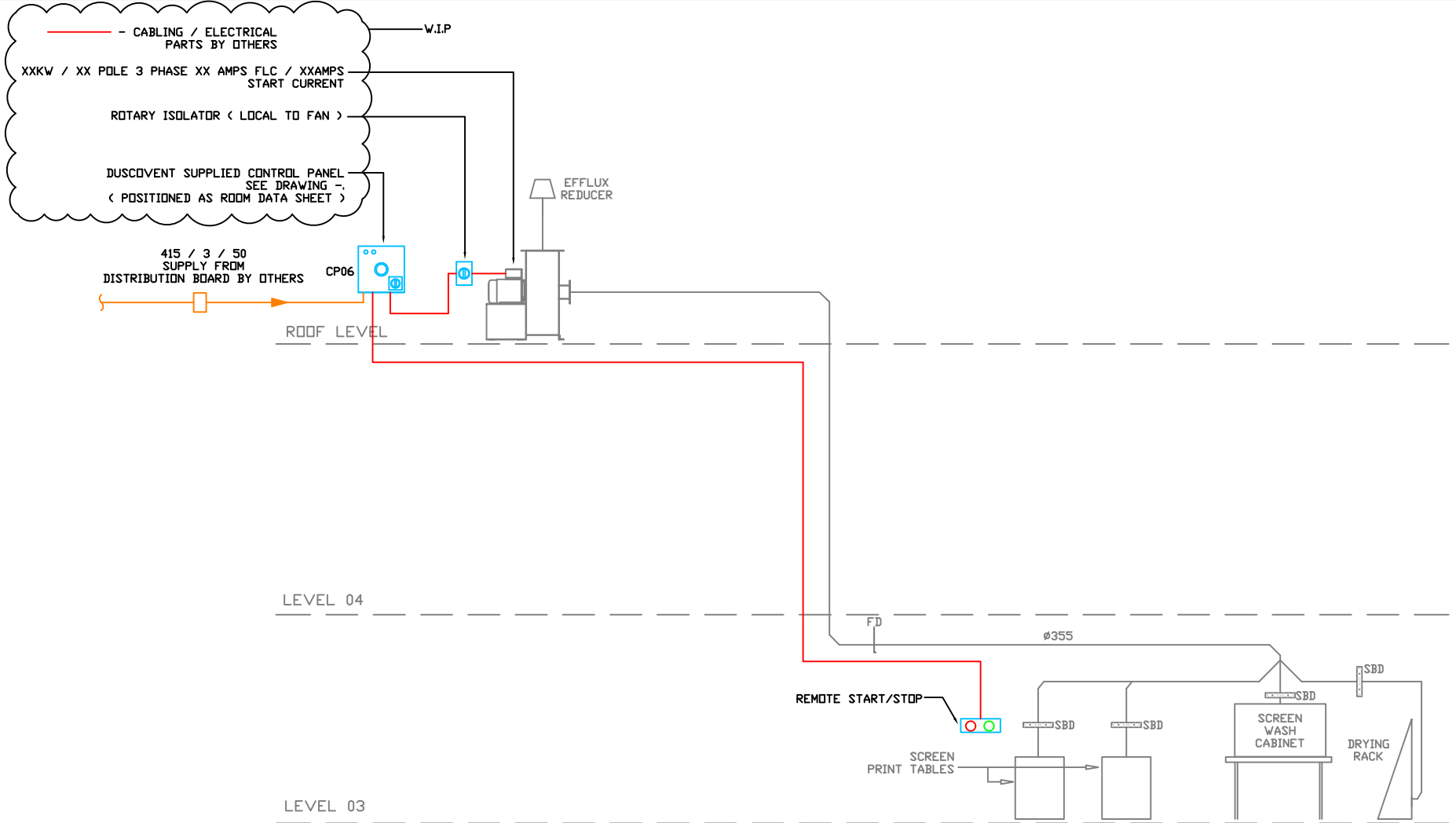
LEVEL 03

REMOTE START/STOP

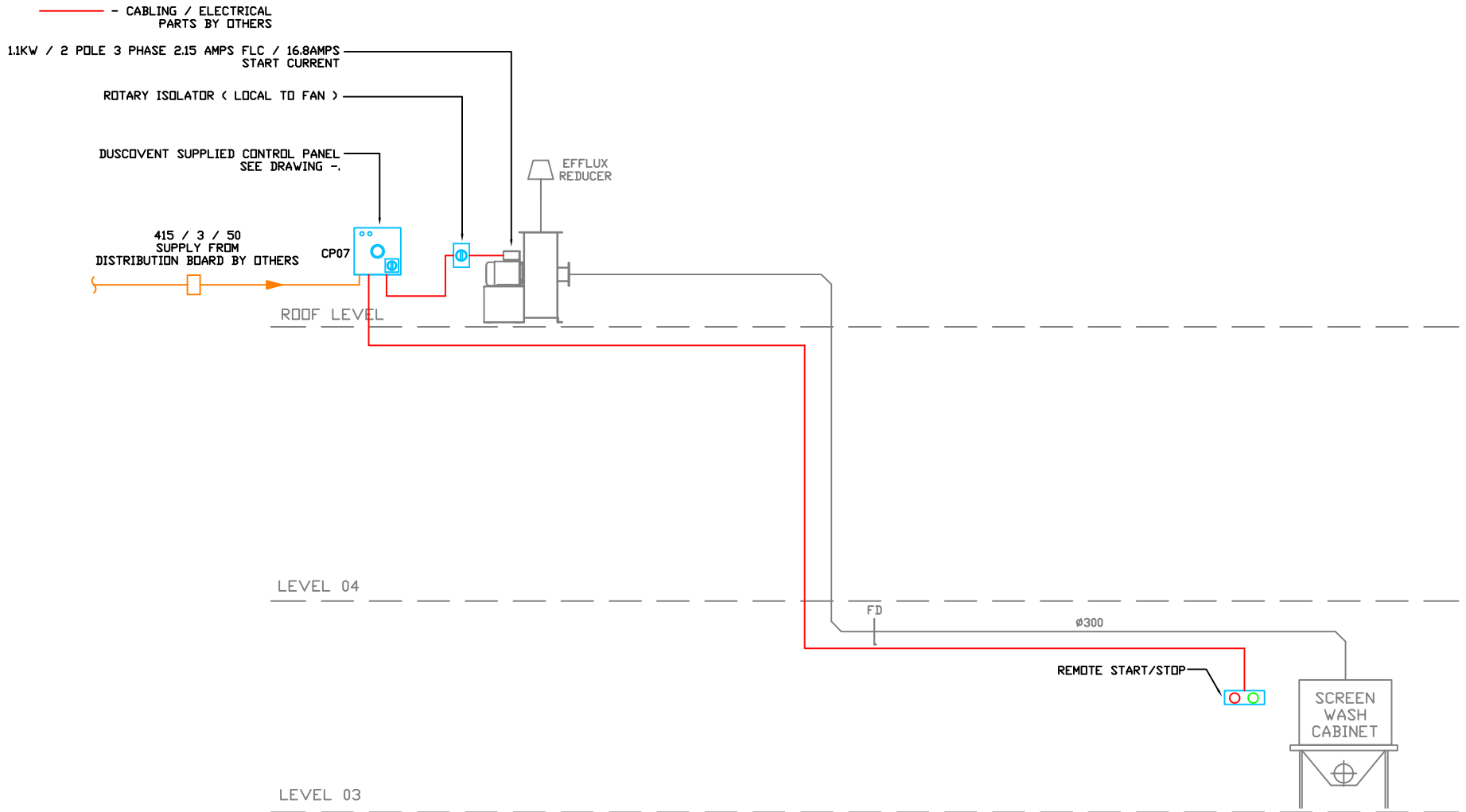
RESIN
CABINET

LEV 06

PLASTICS ROOM RESIN CABINET <FUME EXTRACTION>



LEV 07
PRINT MAKING STUDIO <FUME EXTRACTION>



LEV 08

TEXTILE PRINT STUDIO <FUME EXTRACTION>

— CABLEING / ELECTRICAL
PARTS BY OTHERS

18.5KW / 2 POLE 3 PHASE 33.9 AMPS FLC /
292AMPS START CURRENT

ROTARY ISOLATOR < LOCAL TO FAN >

DUSCOVENT SUPPLIED CONTROL PANEL
SEE DRAWING -,
< POSITIONED AS ROOM DATA SHEET >

415 / 3 / 50
SUPPLY FROM
DISTRIBUTION BOARD BY OTHERS

CP08

EFFLUX
REDUCER

XXKW 3 PHASE SHAKER MOTOR
XX AMPS

ROOF LEVEL

LEVEL 04

REMOTE START/STOP

FD

LEVEL 03

36 OFF - Ø75mm BENCH
MOUNTED EXTRACT ARMS

LEV 09

SPECIAL EFFECTS STUDIO <DUST EXTRACTION>

— CABLEING / ELECTRICAL
PARTS BY OTHERS

1.5KW / 2 POLE 3 PHASE 3.09 AMPS FLC /
23.5AMPS START CURRENT

ROTARY ISOLATOR < LOCAL TO FAN >

DUSCOVENT SUPPLIED CONTROL PANEL
SEE DRAWING -.

415 / 3 / 50
SUPPLY FROM
DISTRIBUTION BOARD BY OTHERS

CP09

EFFLUX
REDUCER

ROOF LEVEL

LEVEL 04

FD

Ø250

SBD SBD

CANOPY

REMOTE START/STOP

KILN
01

KILN
02

LEVEL 03

LEV 10

KILN ROOM (FUME EXTRACTION)

— CABLING / ELECTRICAL
PARTS BY OTHERS

1.5KW / 2 POLE 3 PHASE 3.09 AMPS FLC /
23.5AMPS START CURRENT

ROTARY ISOLATOR < LOCAL TO FAN >

DUSCOVENT SUPPLIED CONTROL PANEL
SEE DRAWING -.

415 / 3 / 50
SUPPLY FROM
DISTRIBUTION BOARD BY OTHERS

CP10

EFFLUX
REDUCER

ROOF LEVEL

LEVEL 04

FD

REMOTE START/STOP

ø100

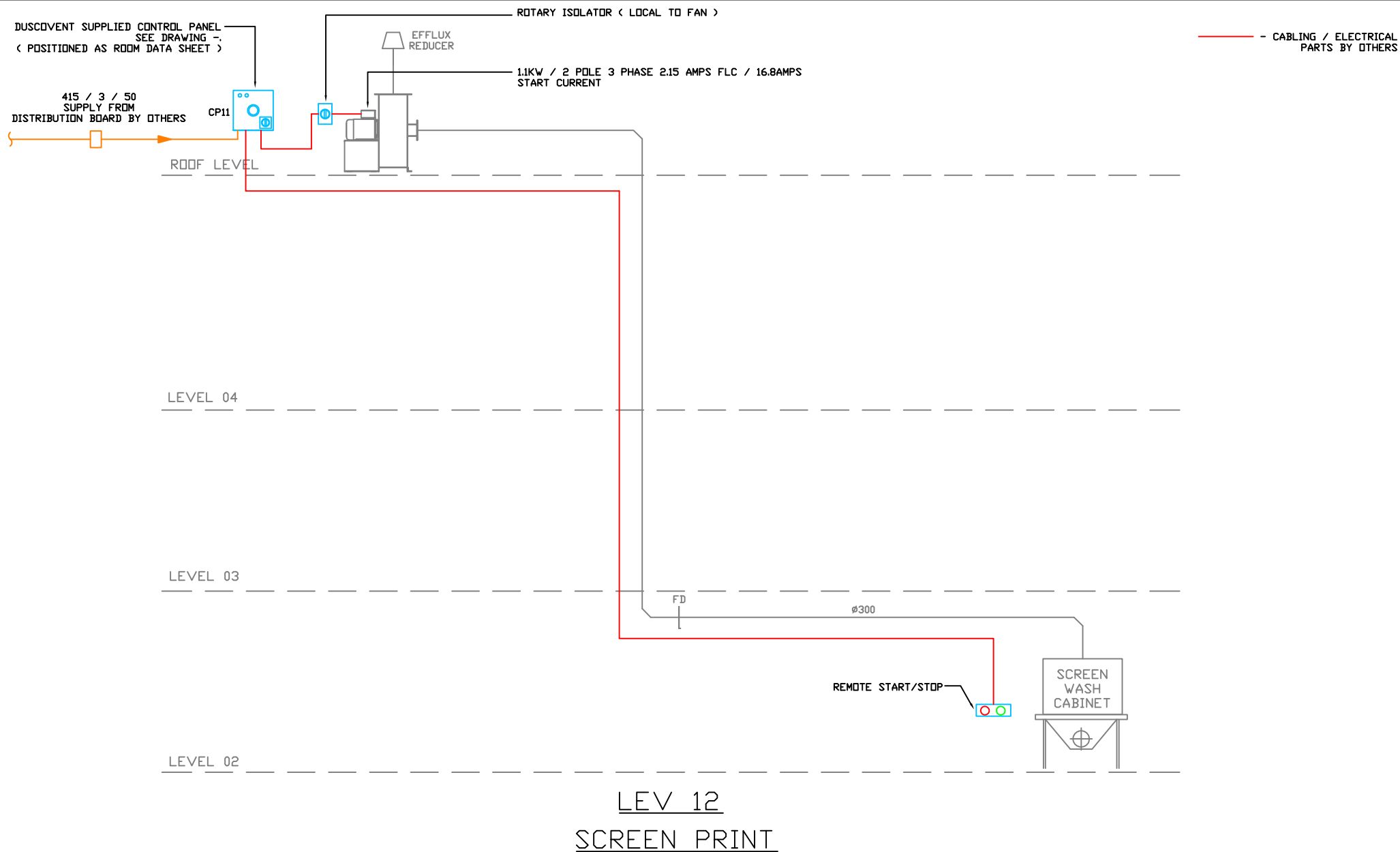
ø100

SBD

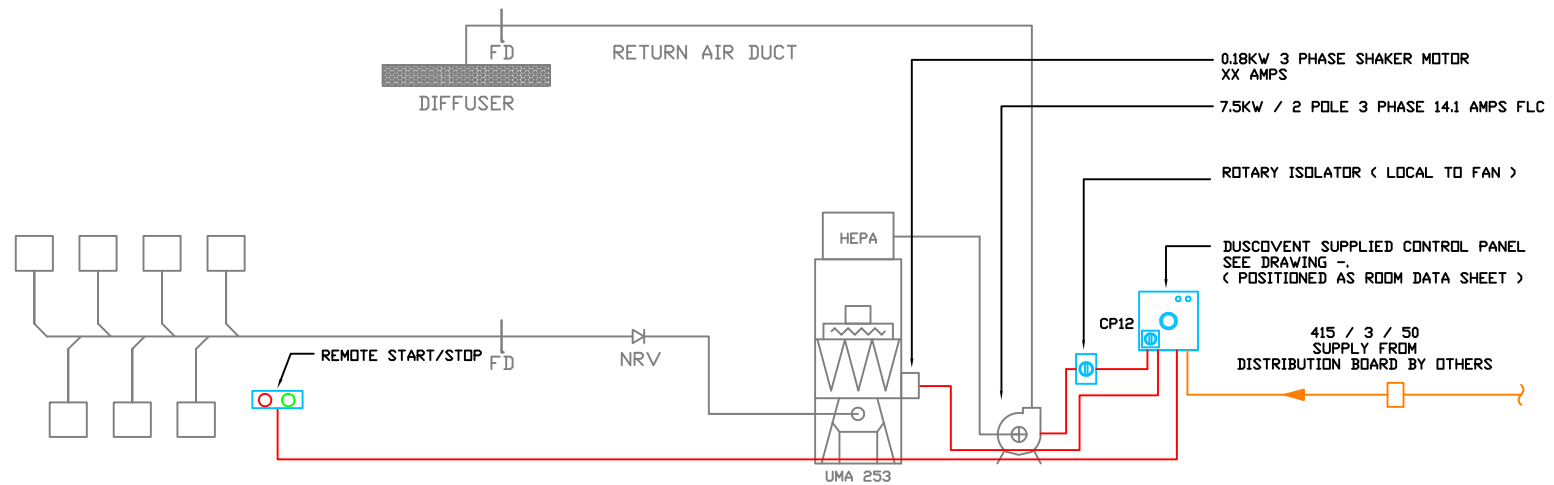
SBD

LEVEL 03

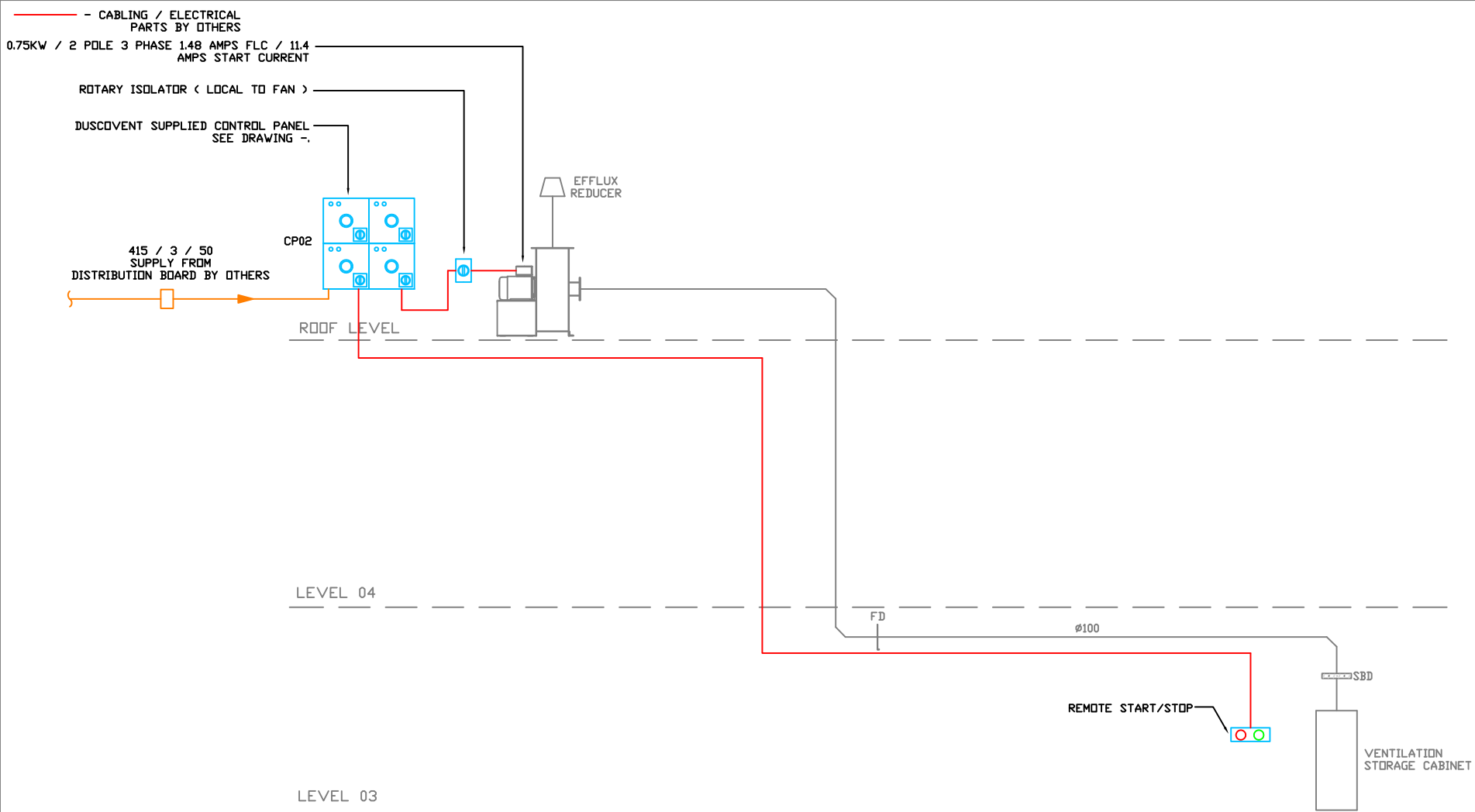
LEV 11
DARK ROOM



— CABLEING / ELECTRICAL
PARTS BY OTHERS

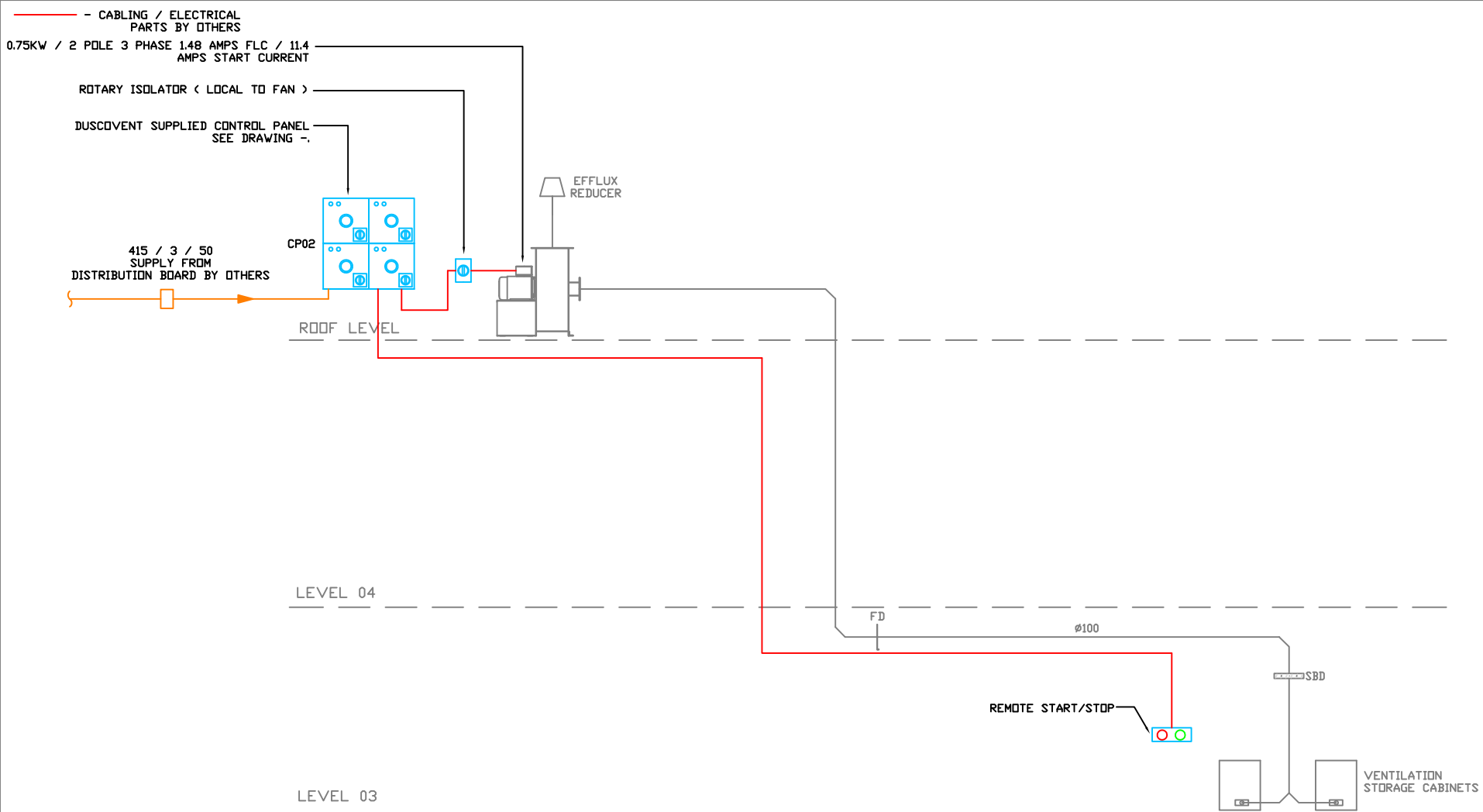


LEV 13
MACHINE ROOMS - (DUST EXTRACTION)



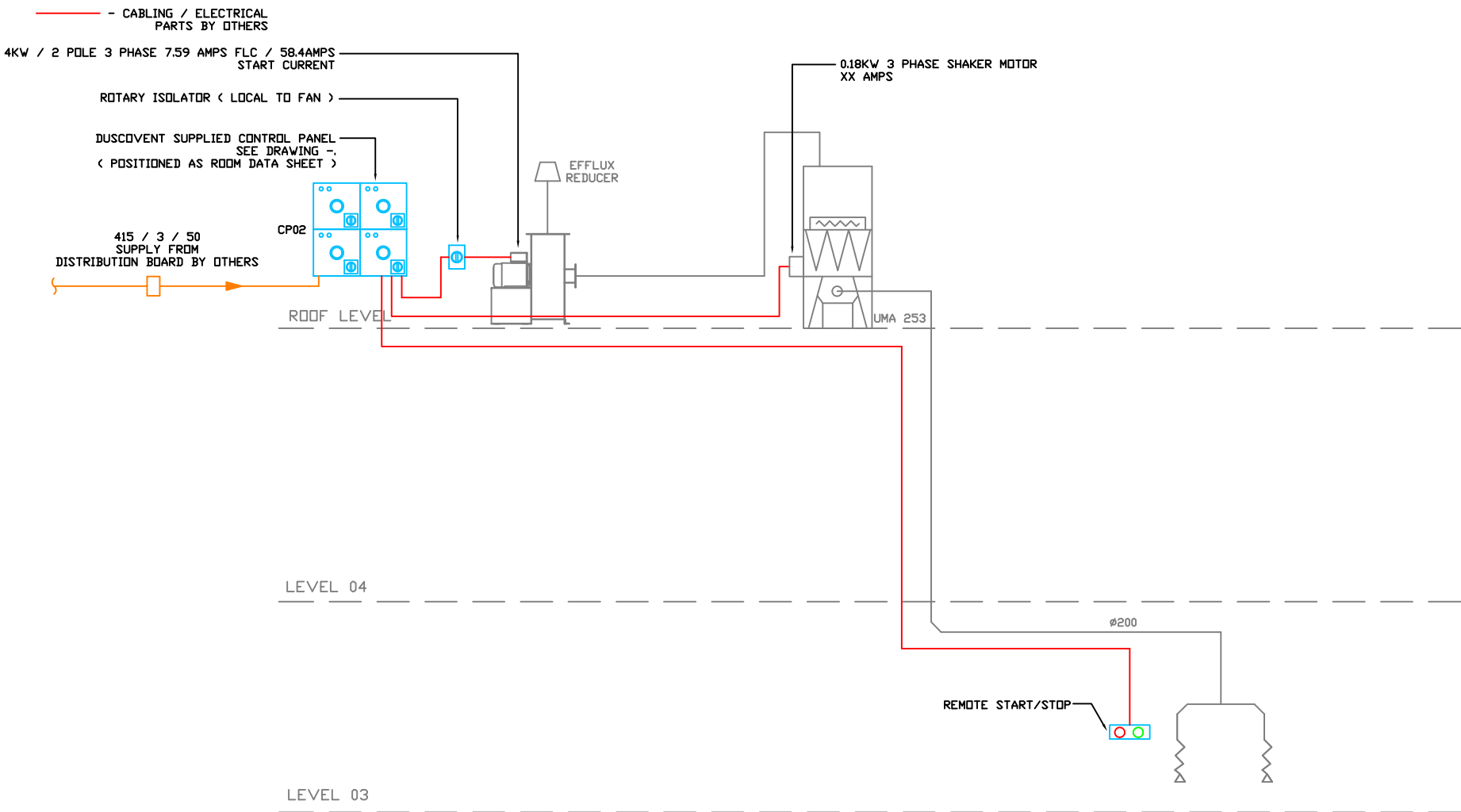
LEV 14A

FLAMMABLE/VENTILATED CABINETS <FUME EXTRACTION>



LEV 14B

FLAMMABLE/VENTILATED CABINETS (FUME EXTRACTION)



LEV 15

FIBRE GLASS WORKSHOP (DUST EXTRACTION)

Extract Arms Schedule

Type A – 160 DIA PRX ATEX Arms x 2m long

For LEV02 – 15 OFF , For LEV15 – 2 OFF

Type B – 75 DIA X 1.3M – MEB , BENCH MOUNTED ARMS

+ ME-SH SQUARE HOOD

For LEV09 – 36 OFF

PR

The ideal extractor for industrial environments.

New technology in combination with new materials and a focus on design gives MOVEX PR many new and important advantages:

- Unique ease of maneuverability.
- High positional stability.
- Hood designed for maximum capture efficiency and extraction.

PR's design is based on MOVEX's basic principles:

- External arm support.
- Hose dimensions according to requirement: 100, 125, 160 or 200mm.
- Hose quality according to application.
- Supplied partially assembled for ease of installation.

PR can be equipped with LED lighting and/or switch to control fan/damper.

MOVEX PR is available in the lengths 1.5, 2, 3, 4, 5, 7, 9 and 11m.



LED lighting, including the necessary transformer is an additional accessory to the standard models.



External skeletal supports deliver numerous advantages

An externally positioned arm support has many advantages compared to extractors that have the supporting part internally in the extraction duct.

- Making the necessary adjustment to the friction joints is very simple.
- Option of selecting the correct hose dimension, MOVEX PR is available in dimensions 100, 125, 160 and 200mm.
- Lightweight construction with two gas springs balancing it's own weight.

Always choose low pressure drop arms

An arm with a lower pressure drop reduces the extra requirement for a larger total pressure extraction fan. This subsequently reduces energy costs and produces a reduced sound level from the system.

MOVEX PR with external arm supports and joints delivers flexibility and advantages.

The external link joints enable hose dimensions of 100, 125, 160 and 200mm, and also make adjustment of the joints simple and relatively clean.

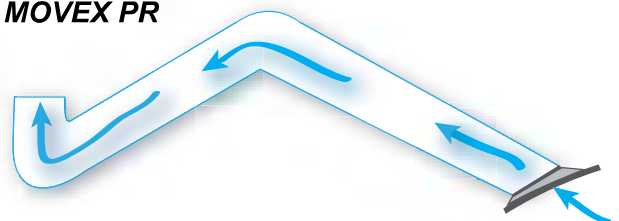
Compared to extractors with internal link systems, the PR arm has approx. 50% lower pressure drop.

Extractors with link joints internally in the suction duct have limitations and disadvantages.

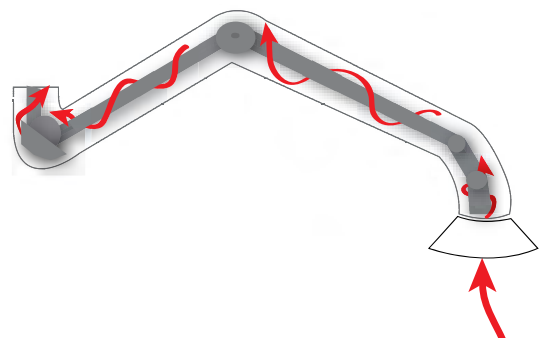
Their size restricts the link joint's hose dimensions to 160mm as the smallest possible selection, moreover, the location makes the necessary adjustment of the joints both difficult and often dirty.

There is up to double the pressure drop compared with MOVEX PR.

MOVEX PR



Internal arm support



A range of designs for different needs



PR STANDARD

- Brackets in powder coated steel.
- Arm supports in anodised aluminium and joints in anthracite grey PA & PP.
- Hood designed in accordance with EU standard. Injection moulded in anthracite grey PP with hood plate in anodised aluminium.
- Hose of dark blue PE-coated polyamide fabric.



PR WHITE

- White brackets in powder coated steel.
- Arm supports in anodised aluminium and joints in white PA & PP.
- White dome with anthracite grey handle, injection moulded in PP with dome plate in anodised aluminium.
- Hose in white PVC.



PR RF

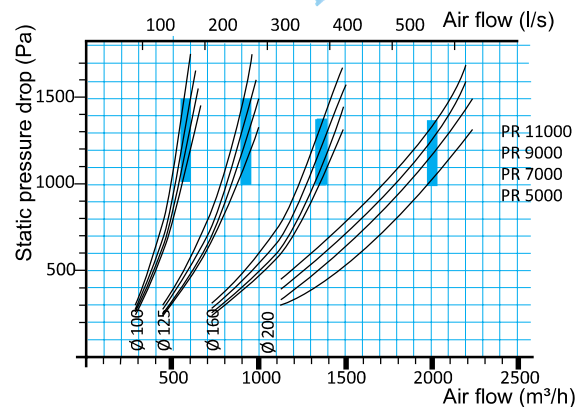
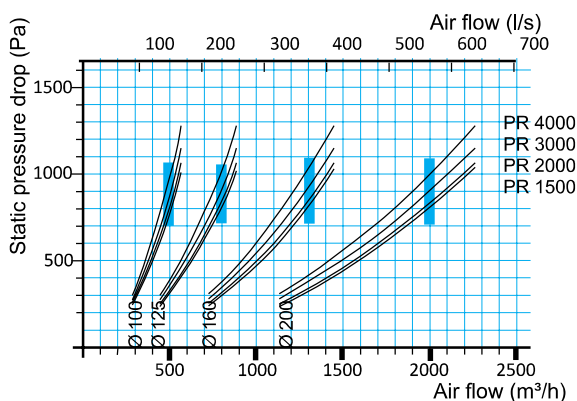
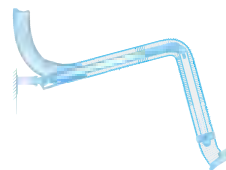
- White brackets in powder coated steel.
- Arm supports in anodised aluminium and joints in white PA & PP.
- White hood with anthracite grey handle in injection moulded PP, stainless hood plate and screws.
- Bracket element in contact with the evacuated air made of stainless material.
- Hose of white PE-coated polyamide fabric.
- Used for evacuating corrosive gases.



The PR arm is also available in an ATEX version, see separate product sheet.

Flow & Pressure Drop Diagram

The black line indicates the pressure drop for the arm in the same position as in the sketch. Recommended transport velocity for welding fumes is 18m/s. (See blue lines for each dimension.)

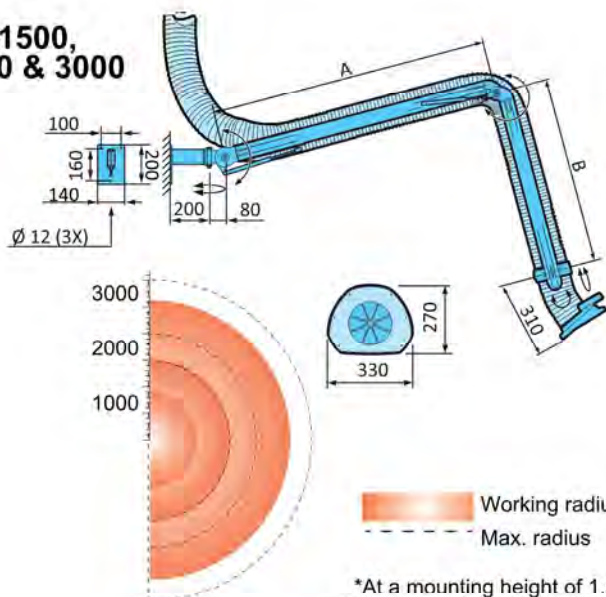


Optimally designed hood

The hood is designed for maximum capture efficiency.

It is ideal for capture of welding fumes and other hot contaminants. Capture efficiency for isothermal (non-hot) contaminants can be further improved by using the Coanda effect, which means that the air stream follows a level, solid surface, e.g. a table or a bench, rather than flowing freely through the room.

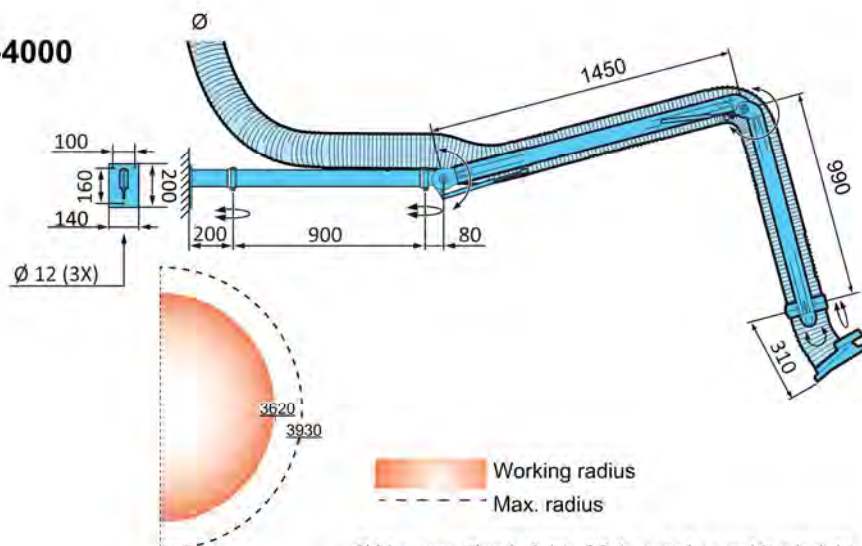
PR-1500, 2000 & 3000



	A (mm)	B (mm)	Working radius* (mm)	Max. radius (mm)
PR-1500	420	490	910*	1500
PR-2000	950	490	1440**	2030
PR-3000	1450	990	2690**	3030

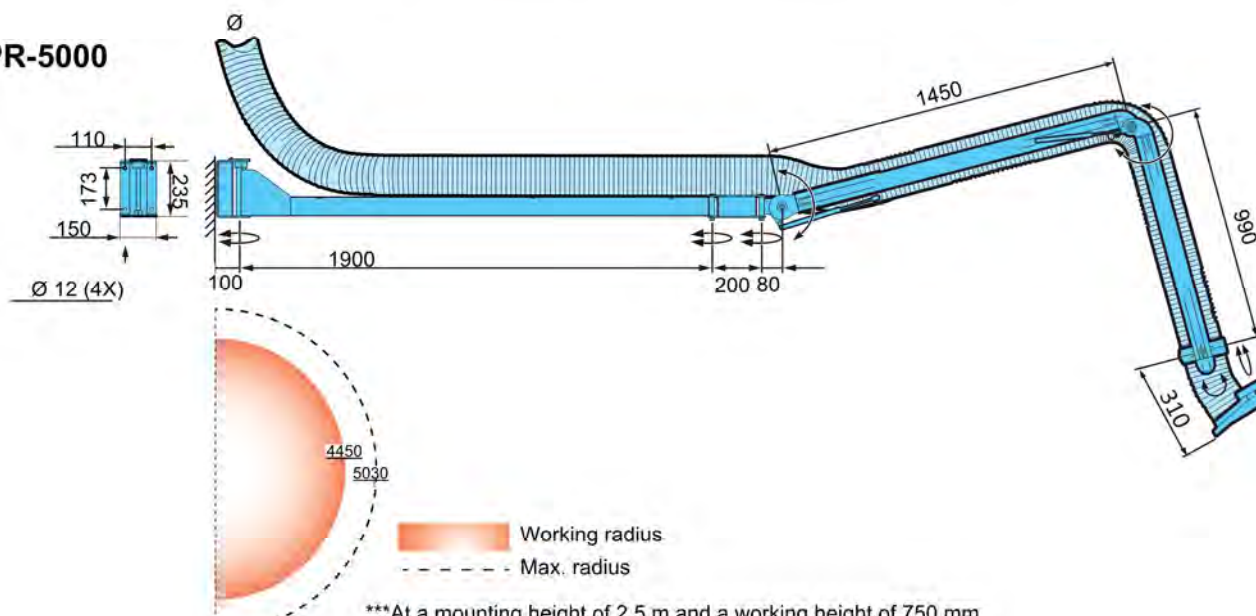
*At a mounting height of 1.8 m and a working height of 750 mm.
**At a mounting height of 2.1 m and a working height of 750 mm.

PR-4000



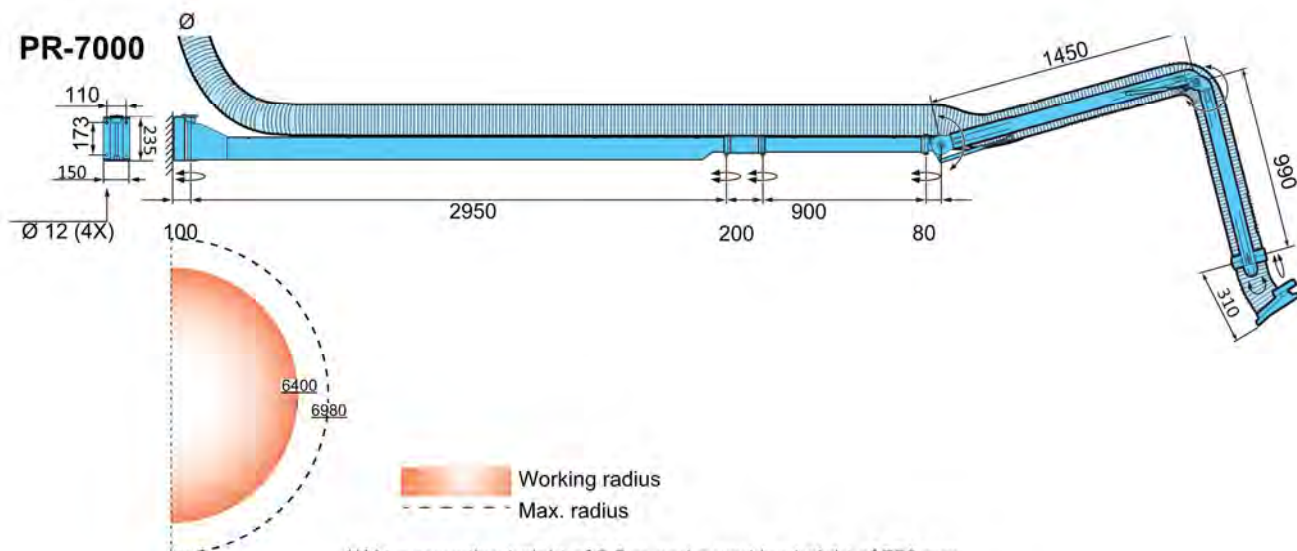
**At a mounting height of 2.1 m and a working height of 750 mm.

PR-5000

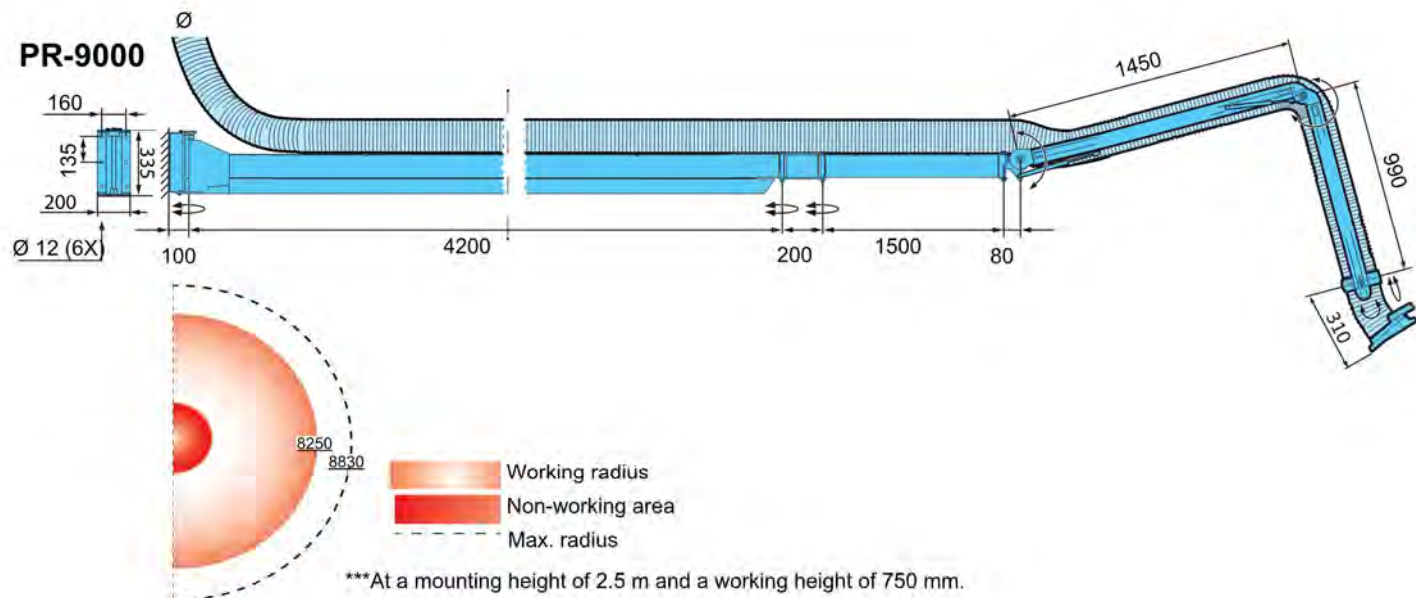


***At a mounting height of 2.5 m and a working height of 750 mm.

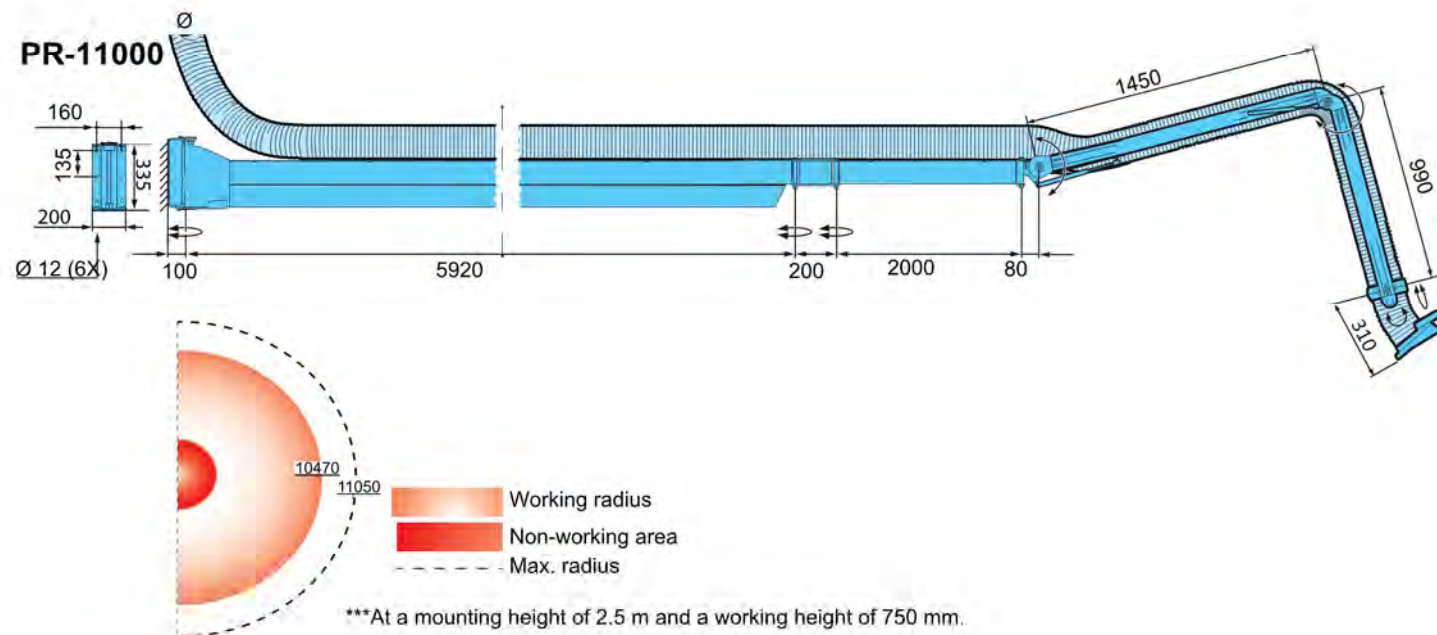
PR-7000



PR-9000



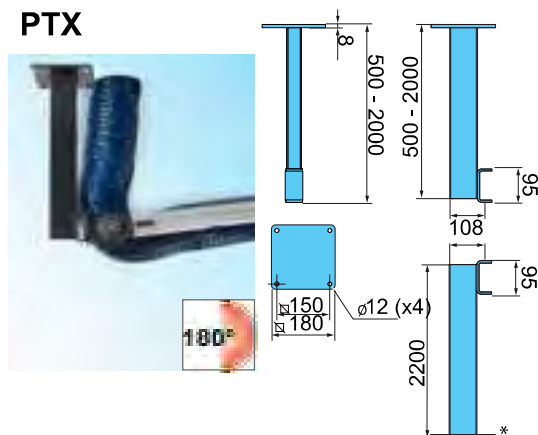
PR-11000



Brackets for ceiling and floor mounting.

MOVEX PR is supplied as standard including wall bracket. The following brackets are available for ceiling and floor mounting.

PTX

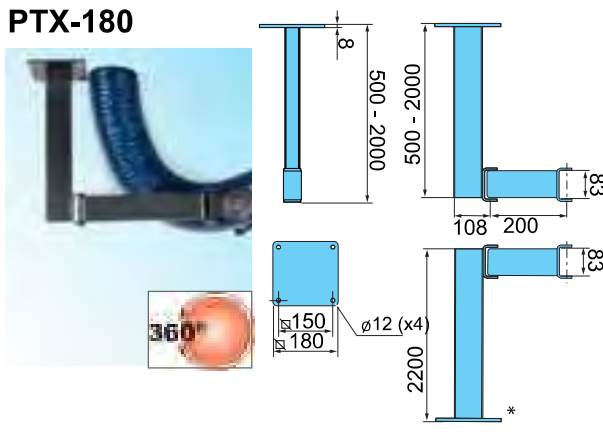


Ceiling and floor bracket for extractor type MOVEX PR in lengths 1.5, 2, 3 & 4m. Rotatable 180°.

PTX Article	Length (mm)	Weight (kg)
PTX-500	500	5
PTX-1000	1000	7,5
PTX-1500	1500	10
PTX-2000	2000	12,7
PTX 2200*	2200	14

*Floor bracket

PTX-180

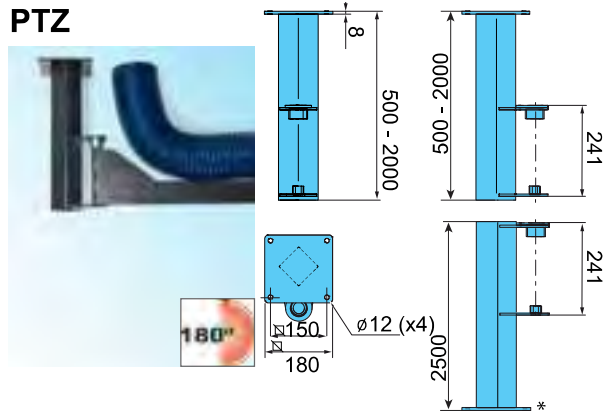


Ceiling and floor bracket for extractor type MOVEX PR in lengths 1.5, 2, 3 & 4m. Rotatable 360°.

PTX 180 Article	Length (mm)	Weight (kg)
PTX-180-500	500	6,7
PTX-180-1000	1000	9,3
PTX-180-1500	1500	12
PTX-180-2000	2000	14,5
PTX-180-2200*	2200	15,5

*Floor bracket

PTZ

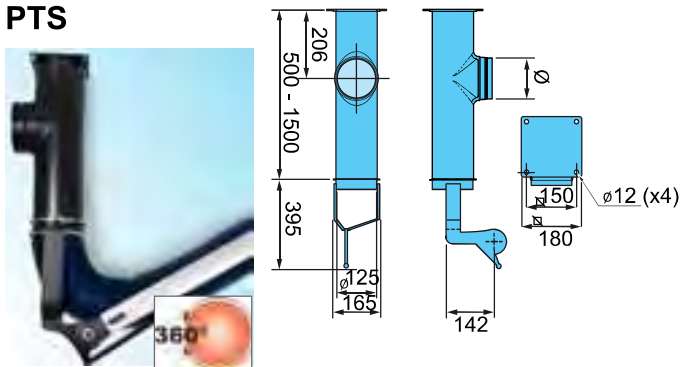


Ceiling and floor bracket for extractor type MOVEX PR in lengths 5 and 7m. Rotatable 180°.

PTZ Article	Length (mm)	Weight (kg)
PTZ-500	500	7,6
PTZ-1000	1000	12
PTZ-1500	1500	16,6
PTZ-2000	2000	21,2
PTZ-2500*	2500	25,7

*Floor bracket

PTS



Ceiling bracket for extractor type MOVEX PR in lengths 1.5, 2 and 3m. Rotatable 360°, Ø125 and Ø160mm.

PTS Article	Length (mm)	Ø (mm)	C (mm)	Weight (kg)
PTS-500-125	500	Ø125	300	6,6
PTS-1000-125	1000	Ø125	300	8,1
PTS-1500-125	1500	Ø125	300	9,6
PTS-500-160	500	Ø160	320	7,8
PTS-1000-160	1000	Ø160	320	9,7
PTS-1500-160	1500	Ø160	320	11,7

Work lighting and fan control.

MOVEX PR can be supplied with work lighting and a push button for fan and damper control.



PR-LED

LED work lighting including cabling, transformer and push button.

Technical data lighting

Output..... 5 W at 350 mA
Illuminance (Lux)..... 2000 lx
Colour temperature.... 6500 K



PR-T

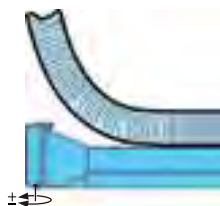
Push button for control of fan or damper.



PR-LED-T

LED work lighting including cabling and transformer with push button and an additional push button for control of fan/damper.

Friction brake



A friction brake can be mounted on the longer arms 5, 7, 9 and 11m. The brake is mounted under the wall bracket's joint, giving the arm optimum manoeuvrability and ensuring that the arm stays in the position selected.

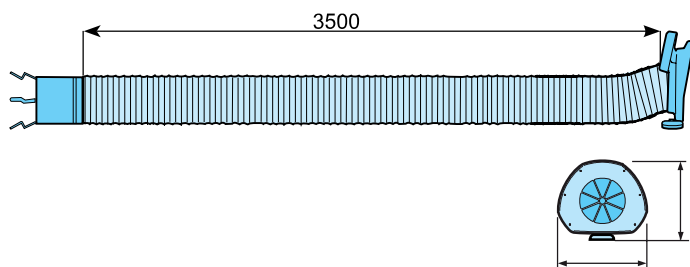
The friction brake is included as standard in PR 9000 and PR 11000 and can be ordered as an accessory for PR 5000 and PR 7000.

Article	Description	Length (mm)	Weight (kg)
PR-100-6340	Friction brake	212	0.3

Extension hose

With magnetic nozzle and quick connection adapted to the PR arm.

Hose, PVC coated polyamide fabric with fully embedded spring steel coil,
Temperature range -10° to +90°C
Plastic components PA, PA 30%
Aluminium components Anodised
Steel components Black oxidised, chromed or powder coated



Article	Description	Ø	Length (mm)	Weight (kg)
PFS-125	Extension hose	Ø125	3500	4
PFS-160	Extension hose	Ø160	3500	4





Hose standard

PVC coated polyamide fabric with fully embedded spring steel coil.

Special hoses are available on request to cope with aggressive chemicals, contact MOVEX with specifications and data sheet of the products concerned.

Delivery configuration

The arms are supplied partially assembled, including wall bracket, for ease of installation.

Technical data hose

Properties Non-inflammable, suitable for welding fumes and flue gases.
Temperature range..... -10°C to +90°C.

Technical data other standards

Plastic componentsPA, PA30%.
Aluminium components ...Anodised.
Steel componentsBlack oxidised, chromed or powder coated.
Weight PR-1500: 9kg PR-2000: 10kg
PR-3000: 12 kg PR-4000: 15 kg
PR-5000: 23 kg PR-7000: 37 kg
PR-9000: 52 kg PR-11000: 64 kg



The PR arm is also available in an ATEX version, see separate product sheet.

ME-75 LABORATORY EXTRACTION ARM DATA SHEET



ME-75 EXTRACTION ARM

DESCRIPTION

The ideal extractor for laboratory environments.

With its optimal design, the Ø 75 mm Movex ME has a very low pressure drop, which provides many valuable benefits.

- Low pressure drop saves energy.
- Air flow noise is reduced.
- Lower pressure drop is achieved without selecting a larger diameter extractor.
- Lower pressure drop allows the ME to be combined with additional extraction systems.

Unique design and stable mounting brackets make the Movex ME your best choice.



ALWAYS CHOOSE A LOW PRESSURE DROP

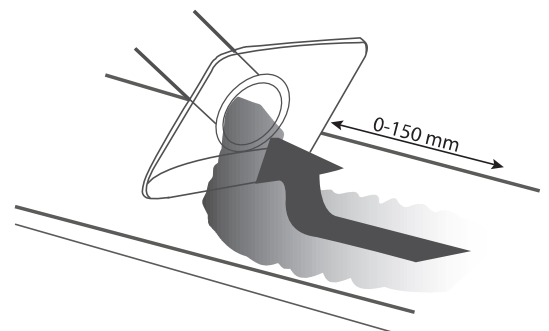
Lowest possible pressure drop is a quality aspect that always should be considered.

With its uniquely designed joint construction, Movex ME combines maximum flexibility with low pressure drop. The air passes through the joints without creating unnecessary turbulence, thus producing an energy-saving low pressure drop and a quieter working environment.



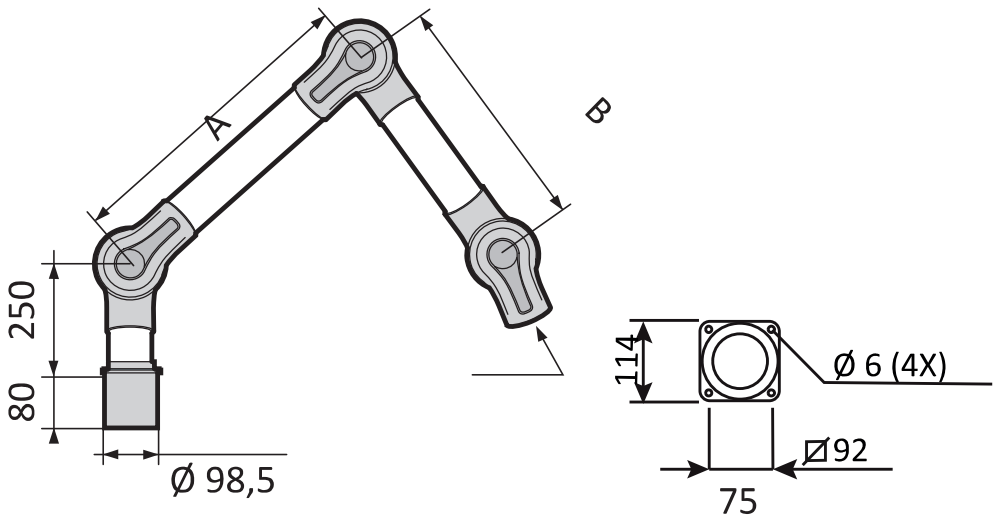
OPTIMAL CAPTURE

For optimum benefit from the local extractor, it is important to use the flexibility of the extractor to get as close to the contaminant as possible. A good rule of thumb would be a distance of 2–3 times the diameter of the extractor tube. At the recommended air flow, the extractor will provide high efficiency even if disturbances are generated in the surroundings.

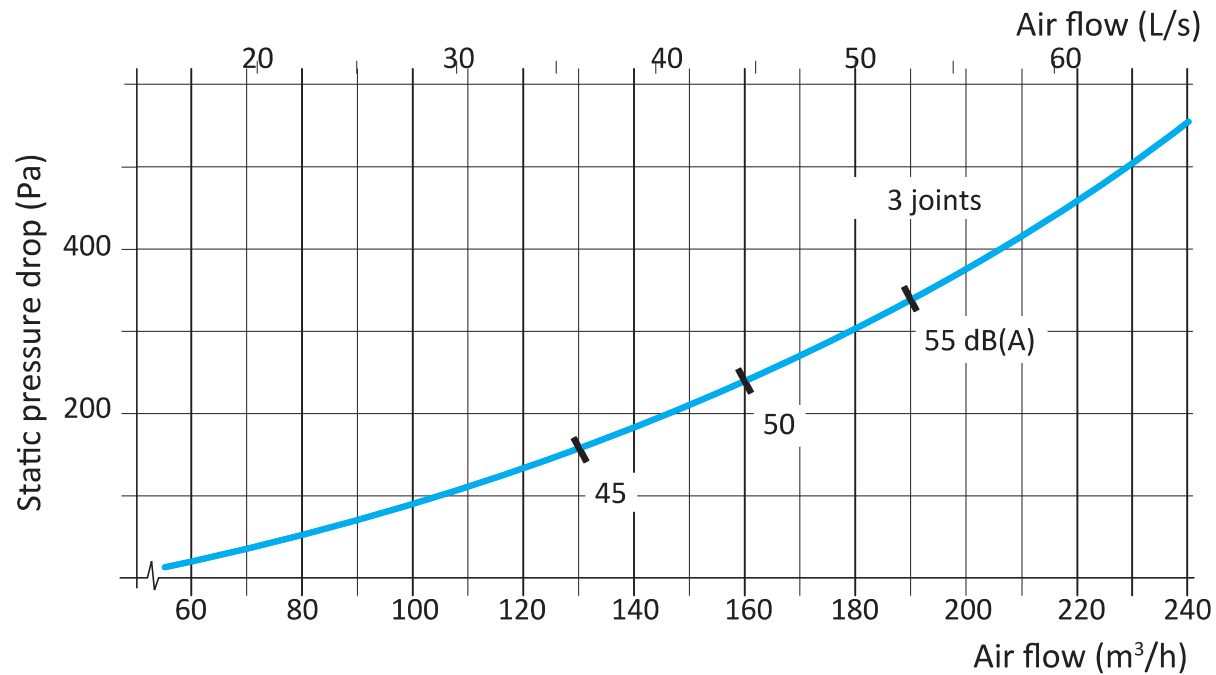


MEB (FOR TABLE MOUNTING)

MODEL	A (mm)	B (mm)	C (mm)	WEIGHT (Kg)
STANDARD				
MEB 1000-75	400	300	75	2,25
MEB 1300-75	550	450	75	2,60
MEB 1500-75	750	450	75	2,75
PP				
MEB 1000-75PP	400	300	75	2,25
MEB 1300-75PP	550	450	75	2,60
MEB 1500-75PP	750	450	75	2,75
ATEX				
MEB 1000-75EX	400	300	75	2,25
MEB 1300-75EX	550	450	75	2,60
MEB 1500-75EX	750	450	75	2,75
ESD				
MEB 1000-75ES	400	300	75	2,25
MEB 1300-75ES	550	450	775	2,60
MEB 1500-75ES	750	450	775	2,75



FLOW AND PRESSURE DROP DIAGRAM



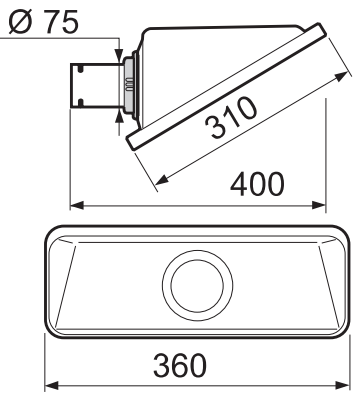
Static pressure drop is measured in accordance with ISO standard 5167-1.

Noise level is measured in accordance with ISO standard 3743. Indicated sound level refers to sound pressure level.

MESH SQUARE HOOD

The square hood is suitable for placing above gases with a high lift, or adjacent to the work surface for contaminants with no lift or low lift – all this without interfering with the work.
Temperature range: -15°C to +80°C. Material: Standard - PETG

ITEM NO	VARIANTS	WEIGHT (g)
MESH 350-75	-	485





TECHNICAL DATA

MATERIAL	DESCRIPTION
Friction Joints	Ball bearing-equipped adjustable friction joints in polypropylene (PP), with guide ring in low friction-treated rubber. Support springs and other component parts in zinc-plated steel or stainless steel.
Tubes	Made from thin-walled anodised aluminium. Air-tight damper supplied as standard.
ME Standard	The standard ME version has polypropylene joints and anodised aluminium tubes. The standard ME version is suitable for evacuating most types of airborne contaminants, e.g. in laboratories, schools, hospitals, the pharmaceutical industry, hairdressing salons and light industrial applications.

DE 3073

FAN WEIGHTS	FLOOR LEVEL	
LEV01 / FAN	ROOF	155 KG
LEV02 / FAN	ROOF	250 KG
LEV04 / FAN	ROOF	70 KG
LEV05 / FAN	ROOF	200 KG
LEV06 / FAN	ROOF	200 KG
LEV07 / FAN	ROOF	(280) KG TBC
LEV08 / FAN	ROOF	51 KG
LEV09 / FAN - (INTEGRAL TO FILTER)	ROOF	N/A
LEV10 / FAN	ROOF	78 KG
LEV11 / FAN	ROOF	78 KG
LEV12 / FAN	ROOF	51 KG
LEV13 / FAN	GROUND	173 KG
LEV14A / FAN	ROOF	200 KG
LEV14B / FAN	ROOF	200 KG
LEV15 / FAN	ROOF	151 KG

Item	Description	Units
1	Fan Systems Group - Centrifugal Fan Type : S-RNZ9/450/560/1 $V = 4500 \text{ m}^3/\text{h}$; $\Delta p_t = 1137 \text{ Pa}$; $P_r = 1.69 \text{ kW}$ ($\rho = 1,2 \text{ kg/m}^3$) Separate parts (per unit)	Lev 01 1
1	Earthing Stud	
1	Outlet Silencer 900x 500x 500	
1	Silencer Transition	
1	Mechanical Run Test	

Type : S-RNZ9/450/560/1

TECHNICAL DATA

Volume flow rate	V	m ³ /h	4,500
Static pressure at $\rho = 1.2$ kg/m ³	Δp_{sf}	Pa	1,100
Total pressure at $\rho = 1.2$ kg/m ³	Δp_t	Pa	1,137
Static pressure at $\rho =$ kg/m ³	Δp_{sf}	Pa	
Total pressure at $\rho =$ kg/m ³	Δp_t	Pa	
Rated speed	n	1/min	1,441
Impeller power at $\rho = 1.2$ kg/m ³	Pr	kW	1.69
Impeller power at $\rho =$ kg/m ³	Pr	kW	
Sound pressure, free field	L _{pp}	dB(A)	54-3m
for installation type D (ISO) calculated acc. to VDI 3731			
Sound pressure at free inlet	L _p	dB(A)	79-3m
Fan weight (without motor) approx.	kg		110
Inlet temperature t	°C		20
maximum inlet temperature t _{max}	°C		

Flow medium ☒ Air ☒ Dust free ☐
Ex-protection ☒ II 3G / 3G IIC - - / Dc, PTB 03 ATEX D076

☐ for speed control: block resonance frequencies, max speed see above

INSTALLATION TYPE according to ISO 13349

- ☐ A -Free inlet, free outlet
- ☐ B -Free inlet, ducted outlet
- ☒ C -Ducted inlet, free outlet
- ☐ D -Ducted inlet and outlet

Exhaust position according to ISO 13349 **RD0 -**

MOTOR

Make **Zone 2 IE3 motor**
Type/Size **W22 / 100L**

Rated voltage U/Frequency f	V/Hz	3x400 / 50
Rated speed n approx.	1/min	1450
Rated power P	kW (acc. eff.-cl.)	2.2
Design/protection class		B3 / IP55
Motor weight approx.	kg	45
Classification		IEC 60034
Insulation class/utilised		F/B
Rated current I/ Starting current I approx. A		4.55 / 8.2-times
efficiency motor / cos phi		86.7 % / 0.81

☒ Ex-protection **Exna IIC**
☐ Multi speed
☒ Direct-Connection ☒ with fan
☒ Thermistor protection 3-times ☐ Bearing with external lubrication
☐ Space heater
☒ terminal box on Top /loc. Mid,A o.B side
☒ without separate rating plate
☒ Standard paint system

OTHER REQUIREMENTS

_____ , garcasson,

- | |
|---|
| Single inlet |
| Direct drive, impeller mounted on motor shaft |
| Belt drive |
| Drive through elastic coupling |
| Enclosed bearing lubr. for life |
| Outdoor installation |
| 1 x Shaft seal Anti spark |
| Split casing |
| 1 x Inlet spigot |
| 1 x Anti-spark lining |
| 1 x Inspection opening ST |

MAIN MATERIALS

Impeller, main mat.	S235JR+N
Casing	S235JR+N=RSt37-2
Base frame/support	S235JR+N=RSt37-2

SURFACE TREATMENT

Impeller	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Casing outside	powder coated
color/corr.-cl.	- / -
Casing inside	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Base frame/support	powder coated
color/corr.-cl.	- / -

<i>Item No.:</i>	1	<i>No. Req:</i>	1
<i>Volume:</i>	12000 M3/HR		
<i>Pressure:</i>	1500 PA		
<i>Temp/MaxTemp:</i>	20 .C		
<i>Fan Model:</i>	465 BL		
<i>Absorbed Power:</i>	8.8		KW
<i>Effic.@ Duty:</i>			
<i>Motor Details:</i>	11 KW 2 POLE		
<i>Fan Speed:</i>	2930 RPM		
<i>Drive Type:</i>	DIRECT DRIVEN		
<i>Construction:</i>	MILD STEEL CONSTRUCTION 1 PACK PAINT FINISH		
<i>Inlet:</i>	FLANGED		
<i>Outlet:</i>	FLANGED		
<i>Drain Plug:</i>	YES		
<i>Inspection Door:</i>	YES		
<i>Base Frame:</i>	RS-ANGLE		

A.B. Fan Services Ltd

Phone : 01384 242156

Fax : sale@abfans.co.uk

Customer : Internal

Project : Fan Selection by Ricky Guy

Item 1 - Ref : Temp 1



Quote Ref : as quote

21/06/2021

Gas Properties :

Barom Pressure : 101325 pa
 Operating Temp : 20 Deg.C.
 Humidity : 38 %
 Specific Gravity : 1.0
 Inlet Density : 1.2001 Kg/m3
 Dust Load : 0 g/m3

Duty Required :

Inlet Volume Flow : 12000 m3/hr
 Fan Static Pressure:

Inlet Pressure : -0 pa

Outlet Pressure : 1500 pa

Fan Selected :

SWSI-BL245-465/100-92

Speed : 2900 Rpm

Impeller Ø : 465 mm

Fan Class : 3

Impeller Power :

@ 20 Deg C : 8.80 kW

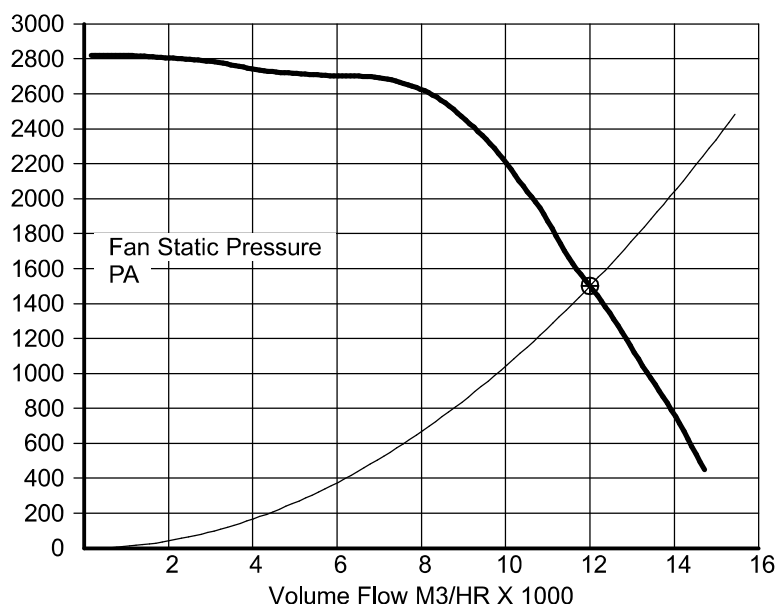
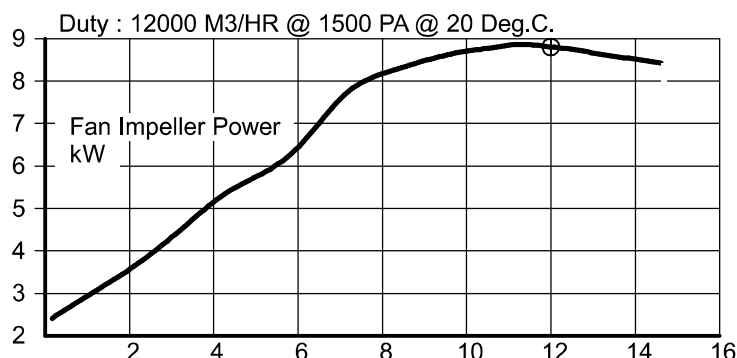
@ Duty Temp : 8.80 kW

Tip Speed : 70.6 m/s

Inlet Velocity : 16.5 m/s

Outlet Velocity : 17.9 m/s

Temp Rise : 2.2 Deg.C.



Prog V410.42

Noise Details :

	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Total
Internal SWL dB	108	105	104	104	98	93	92	86	112
Free Inlet SPL dBA	62	75	84	92	89	85	84	76	95
Free Outlet SPL dBA	62	75	84	92	89	85	84	76	95
Outside Casing dBA	61	67	70	76	73	69	68	58	80

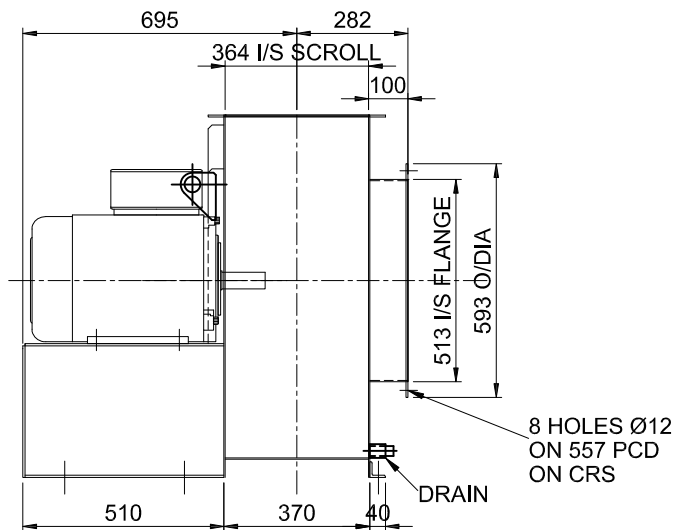
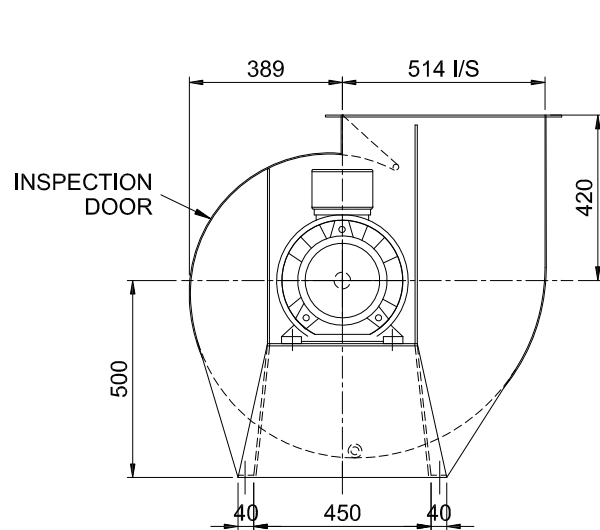
Motor noise is NOT included in the figures above.

Sound Pressure levels (SPL) are estimated within the Near Field range at 1 metre(s)

Breakout at 1 metre from 3 mm thick casing (inside Near Field range).

Casing levels assume the inlet / outlet are ducted and noise does not breakout through duct.

All values are averages. Free Inlet assumes that outlet is ducted and vice versa.

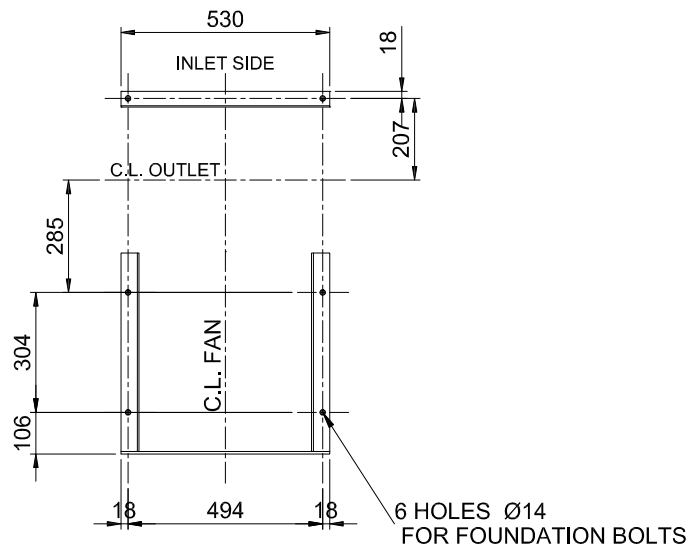


CLIENT :
TAG :
DUTY
INLET VOLUME :

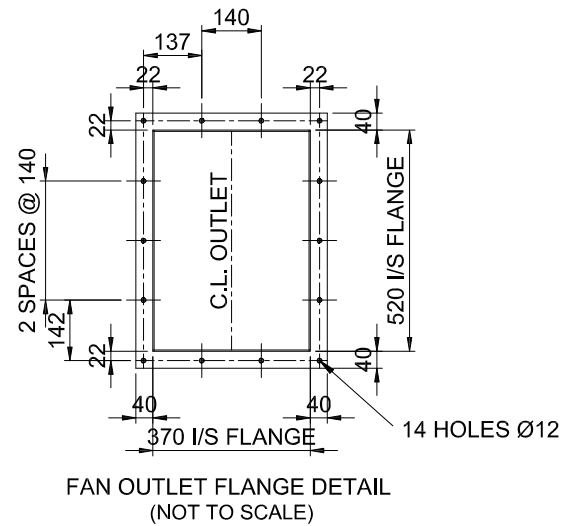
TEMPERATURE : 20 °C
SPEED : 2930 RPM
POWER :
MOTOR : 11 kW 2 POLE
FRAME D160M
415-3-50Hz

FOUNDATION LOADS
OUT OF BALANCE : NORMAL : 40.52 N
MAXIMUM : 4656.60 N
AXIAL THRUST : 77.49 N
TOTAL WEIGHT : 249 KG
ACCESSORIES :

INSPECTION DOOR & DRAIN
SHAFT SEAL



PLAN VIEW FROM ABOVE SHOWING
FOUNDATION BOLT HOLE DRILLING



<i>Item No.:</i>	1	<i>No. Req:</i>	1
<i>Volume:</i>	1600 M3/HR		
<i>Pressure:</i>	1650 PA		
<i>Temp/MaxTemp:</i>	20 .C		
<i>Fan Model:</i>	310 BCP		
<i>Absorbed Power:</i>	0.2	KW	
<i>Effic.@ Duty:</i>			
<i>Motor Details:</i>	0.75 KW 2 POLE		
<i>Fan Speed:</i>	2800 RPM		
<i>Drive Type:</i>	DIRECT DRIVEN		
<i>Construction:</i>	MILD STEEL CONSTRUCTION 1 PACK PAINT FINISH		
<i>Inlet:</i>	FLANGED		
<i>Outlet:</i>	FLANGED		
<i>Drain Plug:</i>	YES		
<i>Inspection Door:</i>	YES		
<i>Base Frame:</i>	RS-ANGLE		

A.B. Fan Services Ltd

Phone : 01384 242156

Fax : sale@abfans.co.uk

Customer : Internal

Project : Fan Selection by Ricky Guy

Item 1 - Ref : Temp 1



Quote Ref : as quote

21/06/2021

Gas Properties :

Barom Pressure : 101325 pa
Operating Temp : 20 Deg.C.
Humidity : 38 %
Specific Gravity : 1.0
Inlet Density : 1.2001 Kg/m3
Dust Load : 0 g/m3

Duty Required :

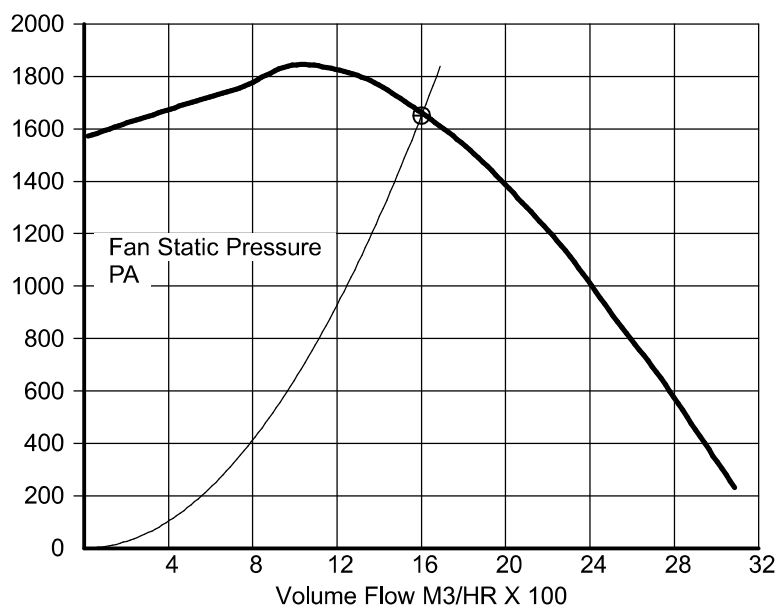
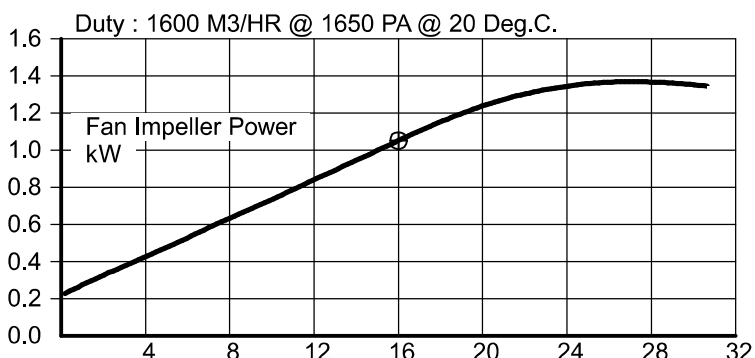
Inlet Volume Flow : 1600 m3/hr
Fan Static Pressure: -0 pa
Inlet Pressure : -0 pa
Outlet Pressure : 1650 pa

Fan Selected :

SWSI-BC130-350/100-89

Speed : 2900 Rpm
Impeller Ø : 350 mm
Fan Class : 2

Impeller Power :
@ 20 Deg C : 1.05 kW
@ Duty Temp : 1.05 kW
Tip Speed : 53.1 m/s
Inlet Velocity : 10.2 m/s
Outlet Velocity : 10.1 m/s
Temp Rise : 2.0 Deg.C.



Prog V410.42

Noise Details :

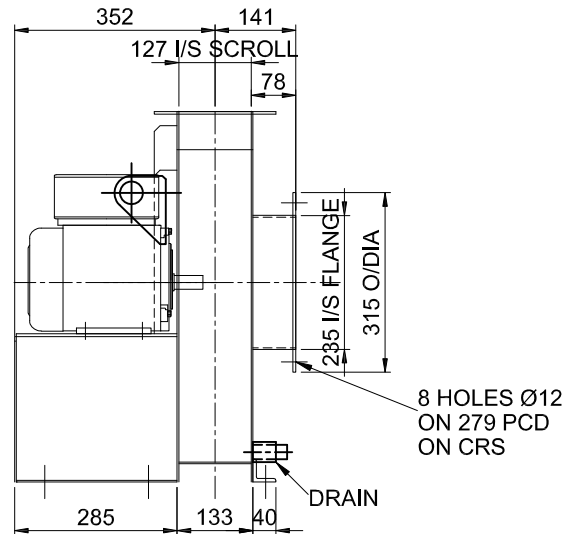
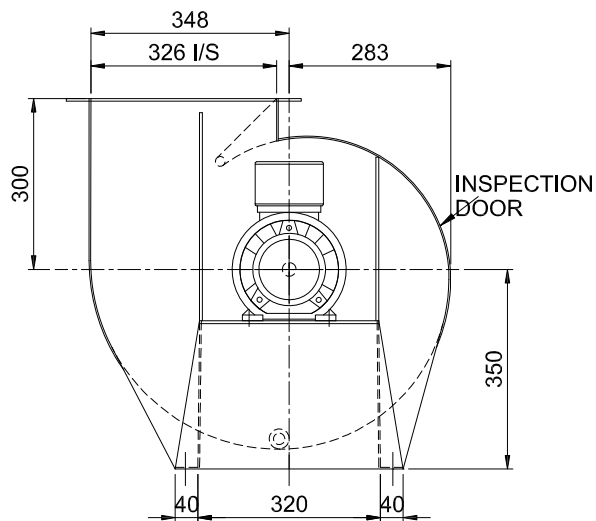
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Total
Internal SWL dB	92	89	85	86	82	78	75	73	95
Free Inlet SPL dBA	38	51	60	70	71	68	65	61	75
Free Outlet SPL dBA	38	51	59	69	71	68	65	61	75
Outside Casing dBA	43	49	49	56	55	52	49	43	61

Motor noise is NOT included in the figures above.

Sound Pressure levels (SPL) assume Free Field Hemispherical Radiation at 1 metre(s)
Breakout at 1 metre from 3 mm thick casing (inside Near Field range).

Casing levels assume the inlet / outlet are ducted and noise does not breakout through duct.

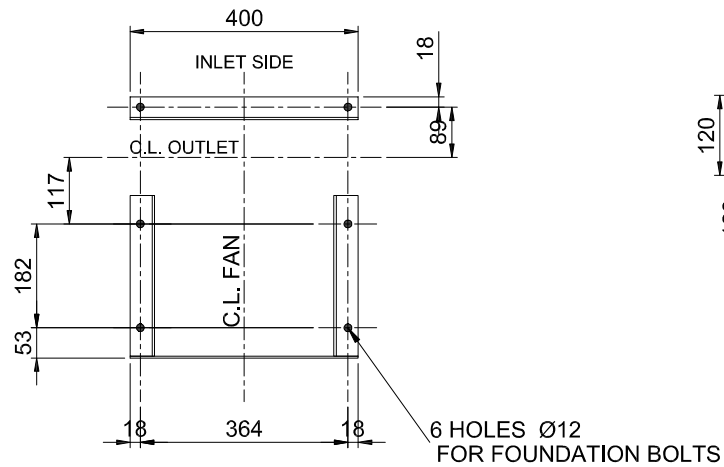
All values are averages. Free Inlet assumes that outlet is ducted and vice versa.



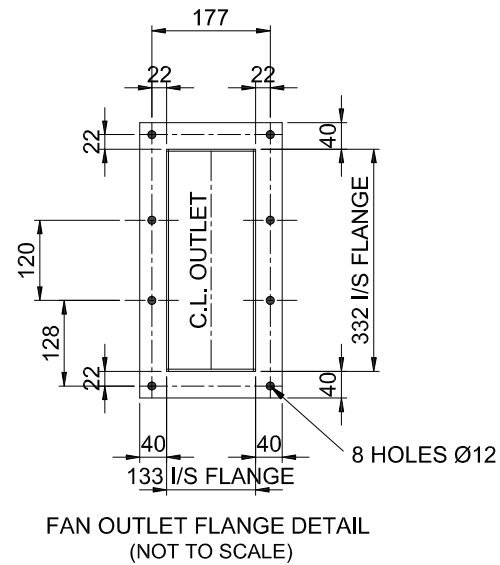
DUTY
 INLET VOLUME :
 STATIC PRESSURE :
 TEMPERATURE :
 SPEED : 2900 RPM
 POWER :
 MOTOR : 1.5 kW 2 POLE
 FRAME D90S
 415-3-50Hz

FOUNDATION LOADS
 OUT OF BALANCE : NORMAL : 12.17 N
 MAXIMUM : 1012.40 N
 AXIAL THRUST : 47.92 N
 TOTAL WEIGHT : 70 KG
 ACCESSORIES :

INSPECTION DOOR & DRAIN
 SHAFT SEAL



PLAN VIEW FROM ABOVE SHOWING
 FOUNDATION BOLT HOLE DRILLING



FAN OUTLET FLANGE DETAIL
 (NOT TO SCALE)

Date: 21/06/2021

DATA SHEET FOR CENTRIFUGAL FAN

FAN SYSTEMS
WITT

HX3 7BJ Halifax, West Yorkshire, Tel.: +44 (0) 1274 694999 Fax:

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:02 / gareth.berry	

Type : S-133CRB9/79/330/1**TECHNICAL DATA**

Volume flow rate	V	m ³ /h	300
Static pressure at $\rho = 1.2$ kg/m ³	Δp_{sf}	Pa	1,200
Total pressure at $\rho = 1.2$ kg/m ³	Δp_t	Pa	1,374
Static pressure at $\rho =$ kg/m ³	Δp_{sf}	Pa	
Total pressure at $\rho =$ kg/m ³	Δp_t	Pa	
Rated speed	n	1/min	2,787
Impeller power at $\rho = 1.2$ kg/m ³	Pr	kW	0.21
Impeller power at $\rho =$ kg/m ³	Pr	kW	
Sound pressure, free field	L _{pp}	dB(A)	45-3m
for installation type D (ISO) calculated acc. to VDI			3731
Sound pressure at free inlet	L _p	dB(A)	79-3m
Fan weight (without motor) approx.	kg		186
Inlet temperature t	°C		20
maximum inlet temperature t _{max}	°C		

Flow medium ☒ Air ☒ Dust free ☐

Ex-protection ☒ II 3G / 3G Ex d IIC - - / Dc, PTB 03 ATEX D076

☐ for speed control: block resonance frequencies, max speed see above

INSTALLATION TYPE according to ISO 13349

- ☐ A -Free inlet, free outlet
- ☐ B -Free inlet, ducted outlet
- ☒ C -Ducted inlet, free outlet
- ☐ D -Ducted inlet and outlet

Exhaust position according to ISO 13349 **RD0 -****MOTOR**

Make **Zone 2 IE3 motor**

Type/Size **W22 / 71**

Rated voltage U/Frequency f	V/Hz	3x400 / 50
Rated speed n approx.	1/min	2800
Rated power P	kW (acc. eff.-cl.)	0.75
Design/protection class		B3 / IP55
Motor weight approx.	kg	15
Classification		IEC 60034
Insulation class/utilised		F/B
Rated current I / Starting current I approx.		1.48 / 7.7-times
efficiency motor / cos phi		80.7 % / 0.88

- ☒ Ex-protection **Exna IIC**
- ☐ Multi speed
- ☒ Direct-Connection ☐ with fan
- ☐ Thermistor protection 3-times ☐ Bearing with external lubrication
- ☐ Space heater
- ☒ terminal box on Top /loc. Mid, A o. B side
- ☒ without separate rating plate
- ☒ Standard paint system

OTHER REQUIREMENTS**CENTRIFUGAL FAN**

- ☒ Single inlet
- ☒ Direct drive, impeller mounted on motor shaft
- ☐ Belt drive
- ☐ Drive through elastic coupling
- ☐ Enclosed bearing lubr. for life
- ☒ Outdoor installation
- ☒ 1 x Shaft seal Anti spark
- ☐ Split casing
- ☒ 1 x Inlet spigot
- ☒ 1 x Anti-spark lining
- ☒ 1 x Inspection opening ST

MAIN MATERIALS

Impeller, main mat.	Mild Steel 43A
Casing	Mild Steel 43A
Base frame/support	Mild Steel 43A

SURFACE TREATMENT

Impeller	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Casing outside	powder coated
color/corr.-cl.	- / -
Casing inside	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Base frame/support	powder coated
color/corr.-cl.	- / -

Contract basis: Without obligation. Tolerances acc. to ISO 13348, AN3.0

Fan Systems Terms and Conditions

Payment terms conditional on positive credit rating

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:03 / gareth.berry 75-Radial Alldays Peacock	

Fan type : S-133CRB9/79/330/1**Input data :**

Input data	: 2 - T1 - P1
Medium	: Air
Airflow-input	V [m ³ /h]: 300.00
Mass flow rate	m [kg/h]: 359.96
Static pressure	pst = pt-pd2 [Pa]: 1200.00
Gas constant	R [J/(kgK)]: 288.20
Isentropic exponent	kappa [-]: 1.40
Install. height	h [m]: -
Pressure addition	% of pd2 [%]: 0.00
Tolerances acc. to ISO 13348, AN	: 3.0

Selection data :

Flow rate	V [m ³ /h]	300
Static pressure	pst = pt-pd2 [Pa]	1,201
Total pressure	pt [Pa]	1,374
Inlet density	Rho [kg/m ³]	1.200
Inlet pressure	p1 [kPa]	101.320
Inlet temperature	T1 [°C]	20
Fan speed	n [1/min]	2,787
Impeller power	Pw [kW]	0.21
Rated motor power	PM [kW]	0.75
Efficiency at operating point	Eta [%]	54.78
Impeller power (Rho1.2)	Pw [kW]	0.21
St.pressure (Rho1.2) pst=pt-pd2 [	Pa] []	1,201
Total pressure (Rho1.2)	pt [Pa]	1,374
Sound pressure 1m (ISO-D)	Lp [dB(A)]	53(58)*
Sound power	Lw [dB(A)]	86
Blade frequency	f [Hz]	418
Tip speed	u2 [m/s]	48.16
Inlet speed	c1 [m/s]	17.00
Outlet speed	c2 [m/s]	17.00
Temperature increase	dT [°C]	2.06
Impeller power (Vol=0)	Pw [kW]	0.03
Compressibility coeff.	k [-]	0.995
Fan flow-rate coeff.	phi [-]	0.020
Pressure coeff.	psi [-]	0.959
Improve-/Devalue-factor [-]	[]	1.000
Rough approximation of starting time :		
Appx. impeller weight	[kg]	5.00
Appx. mass moment of inertia [	kg m ²] []	1.00
Appx. starting time	ta [s]	85
ca. Standard Rundown time	td [s]	2,320

*Values in brackets for aluminium casing.

Date: 21/06/2021

CUSTOMER:

Duscovent Engineering Ltd

ENQUIRY: from 21/06/2021**PROJECT:** College Manchester**Y/DESC.:** Lev 5/6/14**Item:**

3

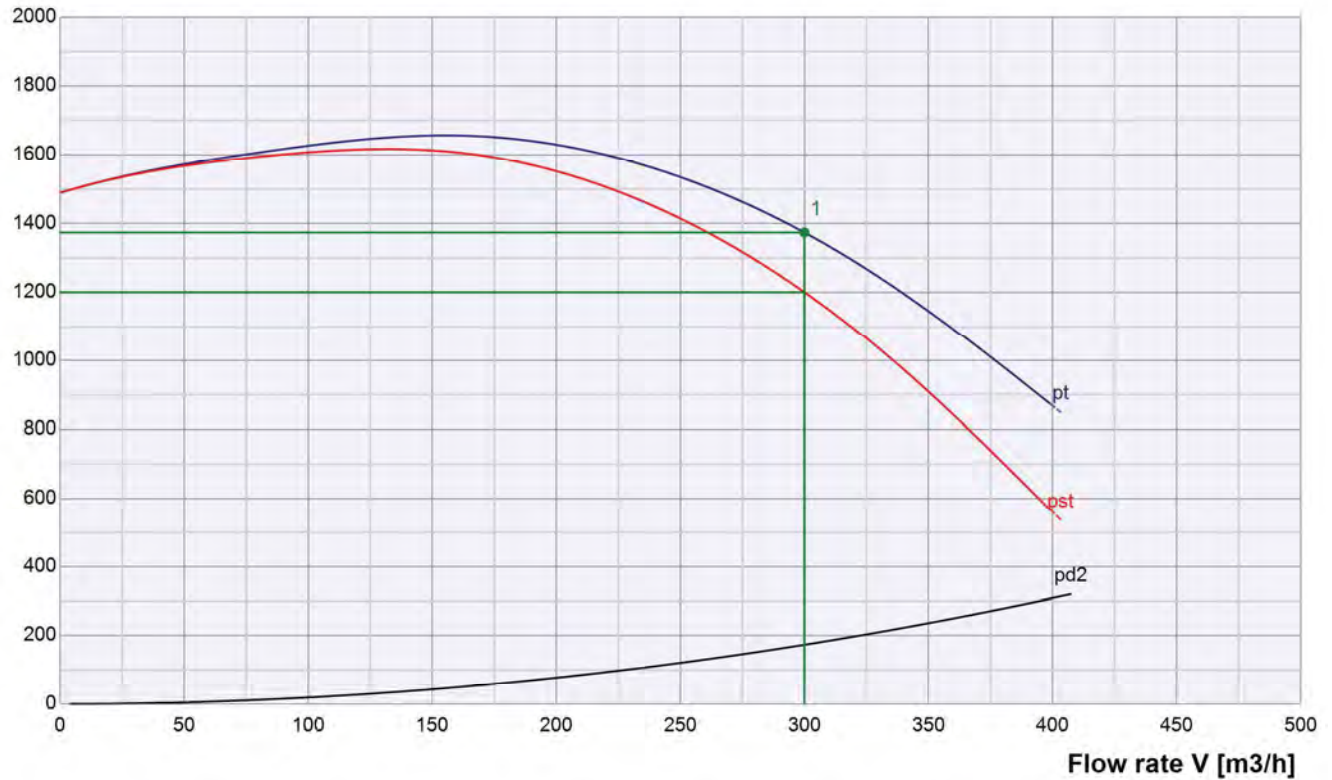
TENDER No.:**21062109GH_R3****Units:**

3

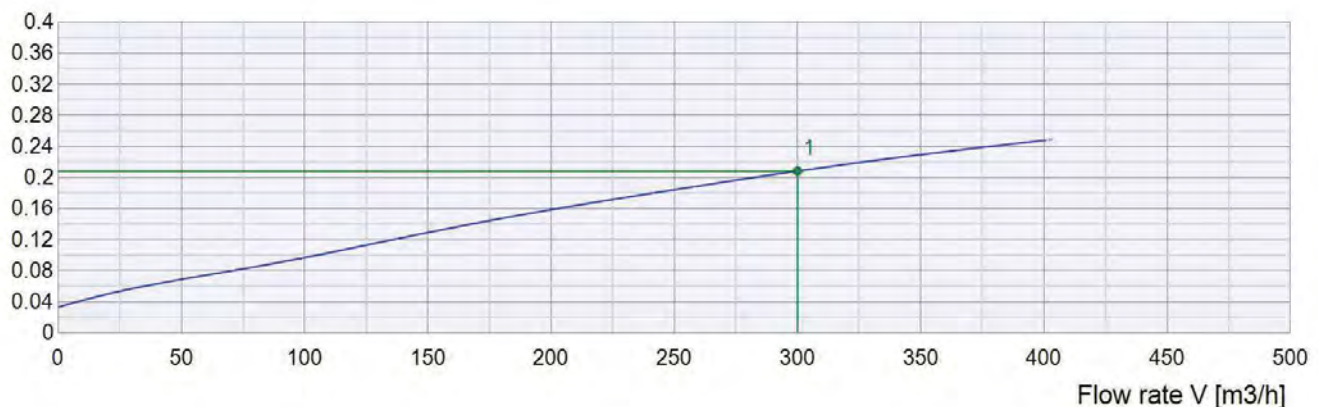
Handled by: Gareth Berry**+44 (78 43) 46 24 50**

21/06/2021 11:48:03 / gareth.berry

75-Radial Alldays Peacock

Fan type : S-133CRB9/79/330/1**Total press. pt, static press. pst, dynamic press. pd2 [Pa]**

0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 0.11 0.12 [m³/s]

Impeller power Pw [kW]

		1				
Flow rate	V [m3/h]	300				
Inlet density	Rho [kg/m3]	1.200				
Fan speed	n [1/min]	2,787				

The fan data is for naked fan and NOT taking into account the effects from additional parts/accessories unless explicitly stated. Dotted lines above indicate stall zone: NOT allowed for the operation of the fan!

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:04 / gareth.berry 75-Radial Alldays Peacock	

Fan type : S-133CRB9/79/330/1

Fan speed	2,787 1/min	Flow rate	300 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.26 -
Inlet pressure	101.320 kPa	Blade frequency	418 Hz
Inlet temperature	20 °C	Fan curve no.:	1

Basic sound	dB	86							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.9	1.7	3.4	6.9	14	27	55
Rel. spectrum	dB	-15	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	72	76	78	84	80	79	77	74
A-weighting corr.	dB	-26	-16	-9	-3	0	1	1	-1
Octave-power-level in duct	dB(A)	46	60	69	81	80	80	78	73

with reference to the definitions in DIN 45 635 Part 38 :

Sound power level radiated into duct **86 dB(A) re 10⁻¹² W**

Motor sound power level **61 dB(A) re 10⁻¹² W**

Free inlet/outlet sound power level **84 dB(A) re 10⁻¹² W**

Free inlet/outlet sound pressure level, free field 1m/45° **76 dB(A) re 20 µPa**

Free inlet/outlet sound pressure level, free field 3m/45° **66 dB(A) re 20 µPa**

Casing break-out noise, sound power level ¹⁾ **65(70) dB(A) re 10⁻¹² W**

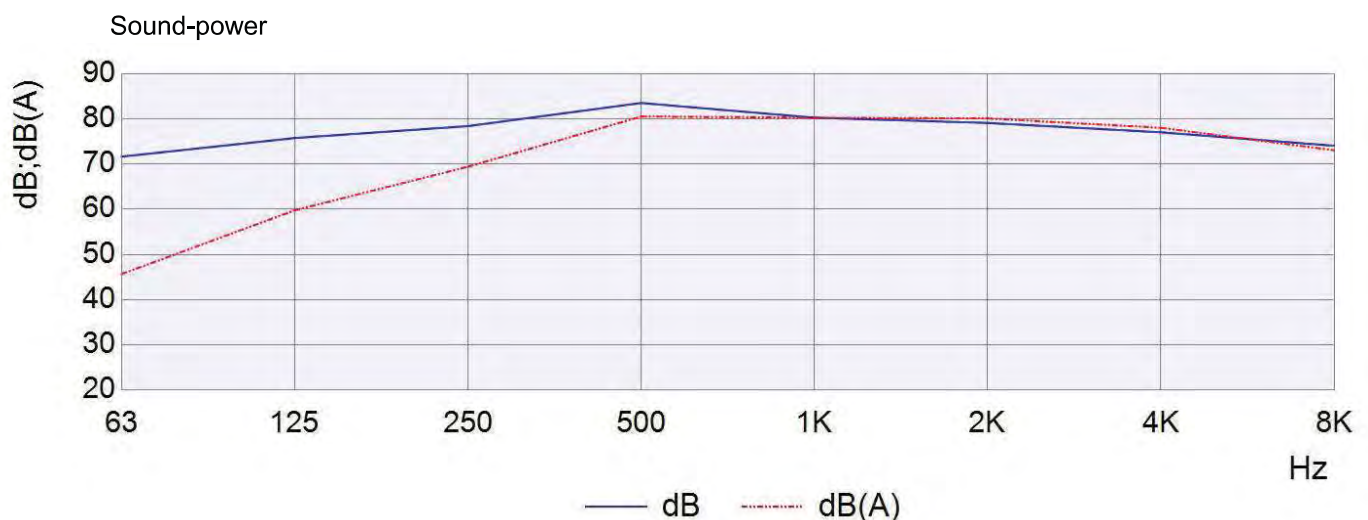
Casing break-out noise, average sound pres. level, free field 1m ¹⁾ **53(58) dB(A) re 20 µPa**

Casing break-out noise, average sound pres. level, free field 3m ¹⁾ **45(50) dB(A) re 20 µPa**

ΔLP to casing breakout noise, free field, 1m owing to el. motor: **1 dB(A) re 20 µPa**

Uncertainty of total levels at undisturbed inlet flow: Standard deviation 4 dB

1) Without noise contribution from motor, ducts, flexible connections, shaft gap etc. which the customer must take responsibility for. Values in brackets for aluminium casing.



Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14		21/06/2021 11:48:04 / gareth.berry

Fan type :

Fan speed	2,787 1/min	Flow rate	300 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.26 -
Inlet pressure	101.320 kPa	Blade frequency	418 Hz
Inlet temperature	20 °C		

Fan	Octavband	Hz	63	125	250	500	1K	2K	4K	8K	Total
Fan-Sound power level radiated into duct			46	60	69	80	80	80	78	73	86 dB(A) re 10 ⁻¹² W
Fan-casing sound power level			39	49	53	60	58	58	57	51	65 dB(A) re 10 ⁻¹² W
Motor sound power level											61 dB(A) re 10 ⁻¹² W

Silencer (outlet) - Rectangular Attenuator 284 L=600 W=400

Insertion losses silencer	-3	-4	-8	-13	-15	-12	-10	-10			dB(A)
Total Fan-Sound power level in duct	43	56	61	67	65	68	68	63			74 dB(A) re 10 ⁻¹² W
Free outlet sound power level											74 dB(A) re 10 ⁻¹² W
Free outlet sound pressure level, free field 1m/45°											66 dB(A) re 20 µPa
Free outlet sound pressure level, free field 3m/45°											57 dB(A) re 20 µPa
potential nozzle reflection									at diameter 79 mm		-2 dB

Date: 21/06/2021

DATA SHEET FOR CENTRIFUGAL FAN

FAN SYSTEMS
WITT

HX3 7BJ Halifax, West Yorkshire, Tel.: +44 (0) 1274 694999 Fax:

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:02 / gareth.berry	

Type : S-133CRB9/79/330/1**TECHNICAL DATA**

Volume flow rate	V	m³/h	300
Static pressure at $\rho = 1.2$ kg/m³	Δp_{sf}	Pa	1,200
Total pressure at $\rho = 1.2$ kg/m³	Δp_t	Pa	1,374
Static pressure at $\rho =$ kg/m³	Δp_{sf}	Pa	
Total pressure at $\rho =$ kg/m³	Δp_t	Pa	
Rated speed	n	1/min	2,787
Impeller power at $\rho = 1.2$ kg/m³	Pr	kW	0.21
Impeller power at $\rho =$ kg/m³	Pr	kW	
Sound pressure, free field	L _{pp}	dB(A)	45-3m
for installation type D (ISO) calculated acc. to VDI			3731
Sound pressure at free inlet	L _p	dB(A)	79-3m
Fan weight (without motor) approx.	kg		186
Inlet temperature t	°C		20
maximum inlet temperature t _{max}	°C		

Flow medium ☒ Air ☒ Dust free ☐
 Ex-protection ☒ II 3G / 3G Ex d IIC - - / Dc, PTB 03 ATEX D076

☐ for speed control: block resonance frequencies, max speed see above

INSTALLATION TYPE according to ISO 13349

- ☐ A -Free inlet, free outlet
☐ B -Free inlet, ducted outlet
☒ C -Ducted inlet, free outlet
☐ D -Ducted inlet and outlet

Exhaust position according to ISO 13349 **RD0 -****MOTOR**

Make **Zone 2 IE3 motor**
 Type/Size **W22 / 71**

Rated voltage U/Frequency f	V/Hz	3x400 / 50
Rated speed n approx.	1/min	2800
Rated power P	kW (acc. eff.-cl.)	0.75
Design/protection class		B3 / IP55
Motor weight approx.	kg	15
Classification		IEC 60034
Insulation class/utilised		F/B
Rated current I / Starting current I approx.		1.48 / 7.7-times
efficiency motor / cos phi		80.7 % / 0.88

- ☒ Ex-protection **Exna IIC**
☐ Multi speed
☒ Direct-Connection ☐ with fan
☐ Thermistor protection 3-times ☐ Bearing with external lubrication
☐ Space heater
☒ terminal box on Top /loc. Mid, A o.B side
☐ without separate rating plate
☒ Standard paint system

OTHER REQUIREMENTS**CENTRIFUGAL FAN**

- ☒ Single inlet
☒ Direct drive, impeller mounted on motor shaft
☐ Belt drive
☐ Drive through elastic coupling
☐ Enclosed bearing lubr. for life
☒ Outdoor installation
☒ 1 x Shaft seal Anti spark
☐ Split casing
☒ 1 x Inlet spigot
☒ 1 x Anti-spark lining
☒ 1 x Inspection opening ST

MAIN MATERIALS

Impeller, main mat.	Mild Steel 43A
Casing	Mild Steel 43A
Base frame/support	Mild Steel 43A

SURFACE TREATMENT

Impeller	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Casing outside	powder coated
color/corr.-cl.	- / -
Casing inside	A1-primer ca.50µm for St, grey/green
color/corr.-cl.	- / -
Base frame/support	powder coated
color/corr.-cl.	- / -

Contract basis: Without obligation. Tolerances acc. to ISO 13348, AN3.0

Fan Systems Terms and Conditions

Payment terms conditional on positive credit rating

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:03 / gareth.berry 75-Radial Alldays Peacock	

Fan type : S-133CRB9/79/330/1**Input data :**

Input data	: 2 - T1 - P1
Medium	: Air
Airflow-input	V [m ³ /h]: 300.00
Mass flow rate	m [kg/h]: 359.96
Static pressure	pst = pt-pd2 [Pa]: 1200.00
Gas constant	R [J/(kgK)]: 288.20
Isentropic exponent	kappa [-]: 1.40
Install. height	h [m]: -
Pressure addition	% of pd2 [%]: 0.00
Tolerances acc. to ISO 13348, AN	: 3.0

Selection data :

Flow rate	V [m ³ /h]	300
Static pressure	pst = pt-pd2 [Pa]	1,201
Total pressure	pt [Pa]	1,374
Inlet density	Rho [kg/m ³]	1.200
Inlet pressure	p1 [kPa]	101.320
Inlet temperature	T1 [°C]	20
Fan speed	n [1/min]	2,787
Impeller power	Pw [kW]	0.21
Rated motor power	PM [kW]	0.75
Efficiency at operating point	Eta [%]	54.78
Impeller power (Rho1.2)	Pw [kW]	0.21
St.pressure (Rho1.2) pst=pt-pd2 [	Pa] []	1,201
Total pressure (Rho1.2)	pt [Pa]	1,374
Sound pressure 1m (ISO-D)	Lp [dB(A)]	53(58)*
Sound power	Lw [dB(A)]	86
Blade frequency	f [Hz]	418
Tip speed	u2 [m/s]	48.16
Inlet speed	c1 [m/s]	17.00
Outlet speed	c2 [m/s]	17.00
Temperature increase	dT [°C]	2.06
Impeller power (Vol=0)	Pw [kW]	0.03
Compressibility coeff.	k [-]	0.995
Fan flow-rate coeff.	phi [-]	0.020
Pressure coeff.	psi [-]	0.959
Improve-/Devalue-factor [-]	[]	1.000
Rough approximation of starting time :		
Appx. impeller weight	[kg]	5.00
Appx. mass moment of inertia [	kg m ²] []	1.00
Appx. starting time	ta [s]	85
ca. Standard Rundown time	td [s]	2,320

*Values in brackets for aluminium casing.

Date: 21/06/2021

CUSTOMER:
 Duscovent Engineering Ltd

ENQUIRY: from 21/06/2021

PROJECT: College Manchester

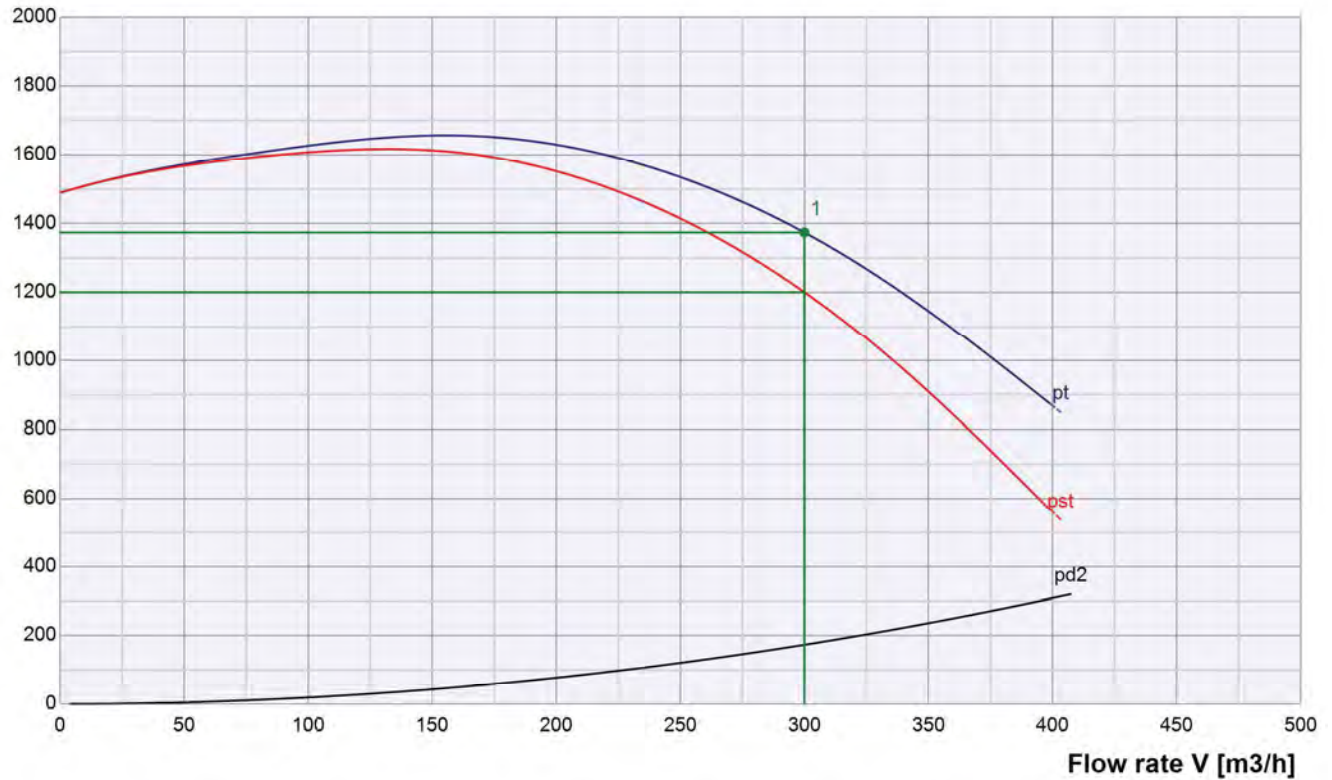
Item: 3

TENDER No.:
21062109GH_R3
YOUR REF.: Barry Thornton**Y/DESC.:** Lev 5/6/14
Units: 3

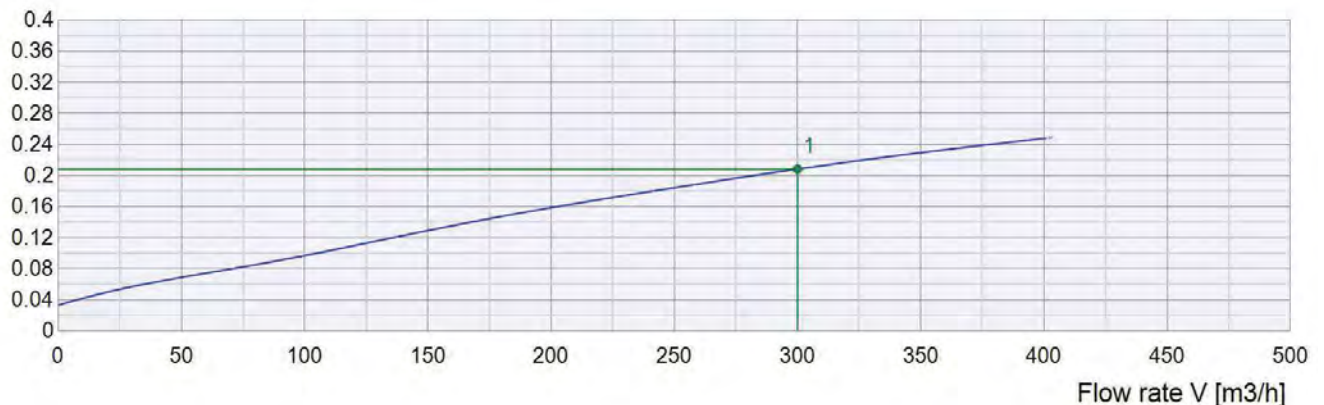
Handled by: Gareth Berry
+44 (78 43) 46 24 50

21/06/2021 11:48:03 / gareth.berry

75-Radial Alldays Peacock

Fan type : S-133CRB9/79/330/1**Total press. pt, static press. pst, dynamic press. pd2 [Pa]**

0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 0.11 0.12 [m³/s]

Impeller power Pw [kW]

		1				
Flow rate	V [m3/h]	300				
Inlet density	Rho [kg/m3]	1.200				
Fan speed	n [1/min]	2,787				

The fan data is for naked fan and NOT taking into account the effects from additional parts/accessories unless explicitly stated. Dotted lines above indicate stall zone: NOT allowed for the operation of the fan!

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14	21/06/2021 11:48:04 / gareth.berry 75-Radial Alldays Peacock	

Fan type : S-133CRB9/79/330/1

Fan speed	2,787 1/min	Flow rate	300 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.26 -
Inlet pressure	101.320 kPa	Blade frequency	418 Hz
Inlet temperature	20 °C	Fan curve no.:	1

Basic sound	dB	86							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.9	1.7	3.4	6.9	14	27	55
Rel. spectrum	dB	-15	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	72	76	78	84	80	79	77	74
A-weighting corr.	dB	-26	-16	-9	-3	0	1	1	-1
Octave-power-level in duct	dB(A)	46	60	69	81	80	80	78	73

with reference to the definitions in DIN 45 635 Part 38 :

Sound power level radiated into duct **86 dB(A) re 10⁻¹² W**

Motor sound power level **61 dB(A) re 10⁻¹² W**

Free inlet/outlet sound power level **84 dB(A) re 10⁻¹² W**

Free inlet/outlet sound pressure level, free field 1m/45° **76 dB(A) re 20 µPa**

Free inlet/outlet sound pressure level, free field 3m/45° **66 dB(A) re 20 µPa**

Casing break-out noise, sound power level ¹⁾ **65(70) dB(A) re 10⁻¹² W**

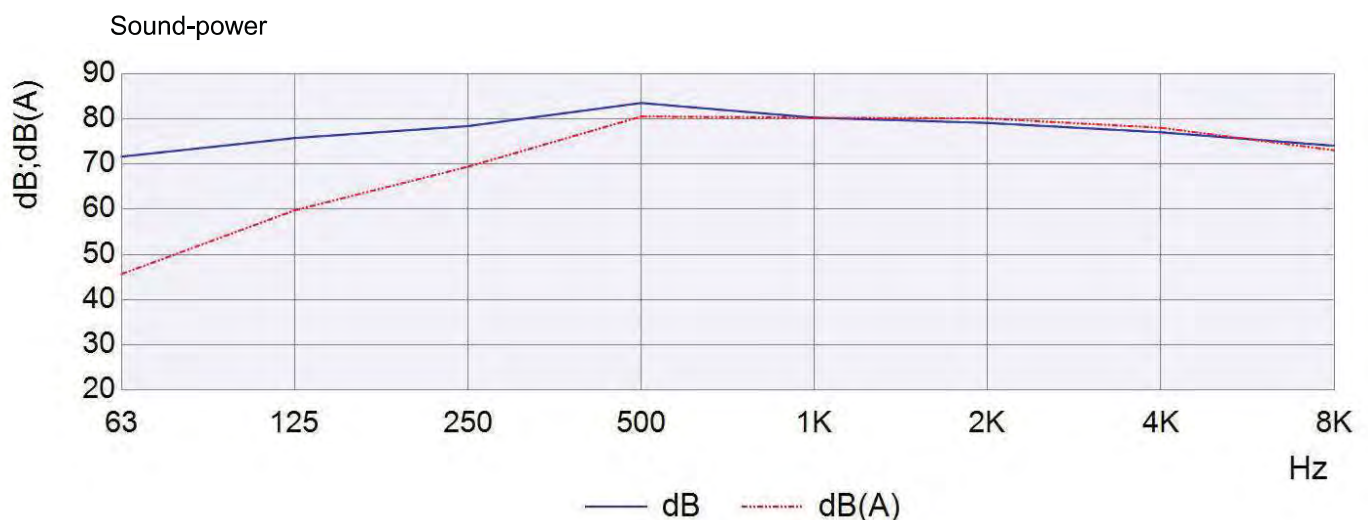
Casing break-out noise, average sound pres. level, free field 1m ¹⁾ **53(58) dB(A) re 20 µPa**

Casing break-out noise, average sound pres. level, free field 3m ¹⁾ **45(50) dB(A) re 20 µPa**

ΔLP to casing breakout noise, free field, 1m owing to el. motor: **1 dB(A) re 20 µPa**

Uncertainty of total levels at undisturbed inlet flow: Standard deviation 4 dB

1) Without noise contribution from motor, ducts, flexible connections, shaft gap etc. which the customer must take responsibility for. Values in brackets for aluminium casing.



Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 3	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 3	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 5/6/14		21/06/2021 11:48:04 / gareth.berry

Fan type :

Fan speed	2,787 1/min	Flow rate	300 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.26 -
Inlet pressure	101.320 kPa	Blade frequency	418 Hz
Inlet temperature	20 °C		

Fan	Octavband	Hz	63	125	250	500	1K	2K	4K	8K	Total
Fan-Sound power level radiated into duct			46	60	69	80	80	80	78	73	86 dB(A) re 10 ⁻¹² W
Fan-casing sound power level			39	49	53	60	58	58	57	51	65 dB(A) re 10 ⁻¹² W
Motor sound power level											61 dB(A) re 10 ⁻¹² W

Silencer (outlet) - Rectangular Attenuator 284 L=600 W=400

Insertion losses silencer	-3	-4	-8	-13	-15	-12	-10	-10			dB(A)
Total Fan-Sound power level in duct	43	56	61	67	65	68	68	63			74 dB(A) re 10 ⁻¹² W
Free outlet sound power level											74 dB(A) re 10 ⁻¹² W
Free outlet sound pressure level, free field 1m/45°											66 dB(A) re 20 µPa
Free outlet sound pressure level, free field 3m/45°											57 dB(A) re 20 µPa
potential nozzle reflection									at diameter 79 mm		-2 dB

Type : S-RNZ9/250/315/1**TECHNICAL DATA**

Volume flow rate	V	m ³ /h	2,600
Static pressure at $\rho = 1.2 \text{ kg/m}^3$	Δp_{sf}	Pa	800
Total pressure at $\rho = 1.2 \text{ kg/m}^3$	Δp_t	Pa	930
Static pressure at $\rho =$	Δp_{sf}	Pa	
Total pressure at $\rho =$	Δp_t	Pa	
Rated speed	n	1/min	2,853
Impeller power at $\rho = 1.2 \text{ kg/m}^3$	Pr	kW	0.92
Impeller power at $\rho =$	Pr	kW	
Sound pressure, free field	L _{pp}	dB(A)	46-3m
for installation type D (ISO) calculated acc. to VDI 3731			
Sound pressure at free inlet	L _p	dB(A)	79-3m
Fan weight (without motor) approx.	kg		33
Inlet temperature t	°C		20
maximum inlet temperature t _{max}	°C		

Flow medium ☒ Air ☒ Dust free ☐Ex-protection ☒ II 3G / 3G IIC - - / Dc, PTB 03 ATEX D076☐ for speed control: block resonance frequencies, max speed see above**INSTALLATION TYPE according to ISO 13349**

- ☐ A -Free inlet, free outlet
- ☐ B -Free inlet, ducted outlet
- ☒ C -Ducted inlet, free outlet
- ☐ D -Ducted inlet and outlet

Exhaust position according to ISO 13349 **RD0 -****MOTOR**Make **Zone 2 IE3 motor**Type/Size **IE3-W41R 80 GY2 / 80G**

Rated voltage U/Frequency f	V/Hz	3x400 / 50
Rated speed n approx.	1/min	2885
Rated power P	kW (acc. eff.-cl.)	1.1
Design/protection class		B3 / IP55
Motor weight approx.	kg	18
Classification		IEC 60034
Insulation class/utilised		F/B
Rated current I / Starting current I approx. A		2.15 / 7.8-times
efficiency motor / cos phi		82.7 % / 0.89

☒ Ex-protection **Exna IIC**

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 5	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 2	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 08/12	21/06/2021 11:48:04 / gareth.berry 50-Centrifugal Witt	

Fan type : S-RNZ9/250/315/1
Input data :

Input data	: 2 - T1 - P1		
Medium	: Air		
Airflow-input	V [	m3/h]:	2600.00
Mass flow rate	m [	kg/h]:	3119.66
Static pressure	pst = pt-pd2[	Pa]:	800.00
Gas constant	R [	J/(kgK)]:	288.20
Isentropic exponent	kappa [	-]:	1.40
Install. height	h [	m]:	-
Pressure addition	% of pd2 [	%]:	0.00
Tolerances acc. to ISO 13348, AN			3

Selection data :

Flow rate	V [m ³ /h]	2,600
Static pressure	pst = pt-pd2 [Pa]	800
Total pressure	pt [Pa]	930
Inlet density	Rho [kg/m ³]	1.200
Inlet pressure	p1 [kPa]	101.320
Inlet temperature	T1 [°C]	20
Fan speed	n [1/min]	2,853
Impeller power	Pw [kW]	0.92
Rated motor power	PM [kW]	1.1
Efficiency at operating point	Eta [%]	72.94
Impeller power (Rho1.2)	Pw [kW]	0.92
St.pressure (Rho1.2) pst=pt-pd2 [	Pa] []	800
Total pressure (Rho1.2)	pt [Pa]	930
Sound pressure 1m (ISO-D)	Lp [dB(A)]	54(59)*
Sound power	Lw [dB(A)]	88
Blade frequency	f [Hz]	428
Tip speed	u2 [m/s]	47.06
Inlet speed	c1 [m/s]	14.71
Outlet speed	c2 [m/s]	14.71
Temperature increase	dT [°C]	1.05
Impeller power (Vol=0)	Pw [kW]	
Compressibility coeff.	k [-]	0.997
Fan flow-rate coeff.	phi [-]	0.197
Pressure coeff.	psi [-]	0.783
Improve-/Devalue-factor [-]	[]	0.892
Rough approximation of starting time :		
Appx. impeller weight	[kg]	5.00
Appx. mass moment of inertia [	kg m ²] []	0.07
Appx. starting time	ta [s]	5
ca. Standard Rundown time	td [s]	40

*Values in brackets for aluminium casing.

Date: 21/06/2021

CUSTOMER:
 Duscovent Engineering Ltd

ENQUIRY: from 21/06/2021

PROJECT: College Manchester

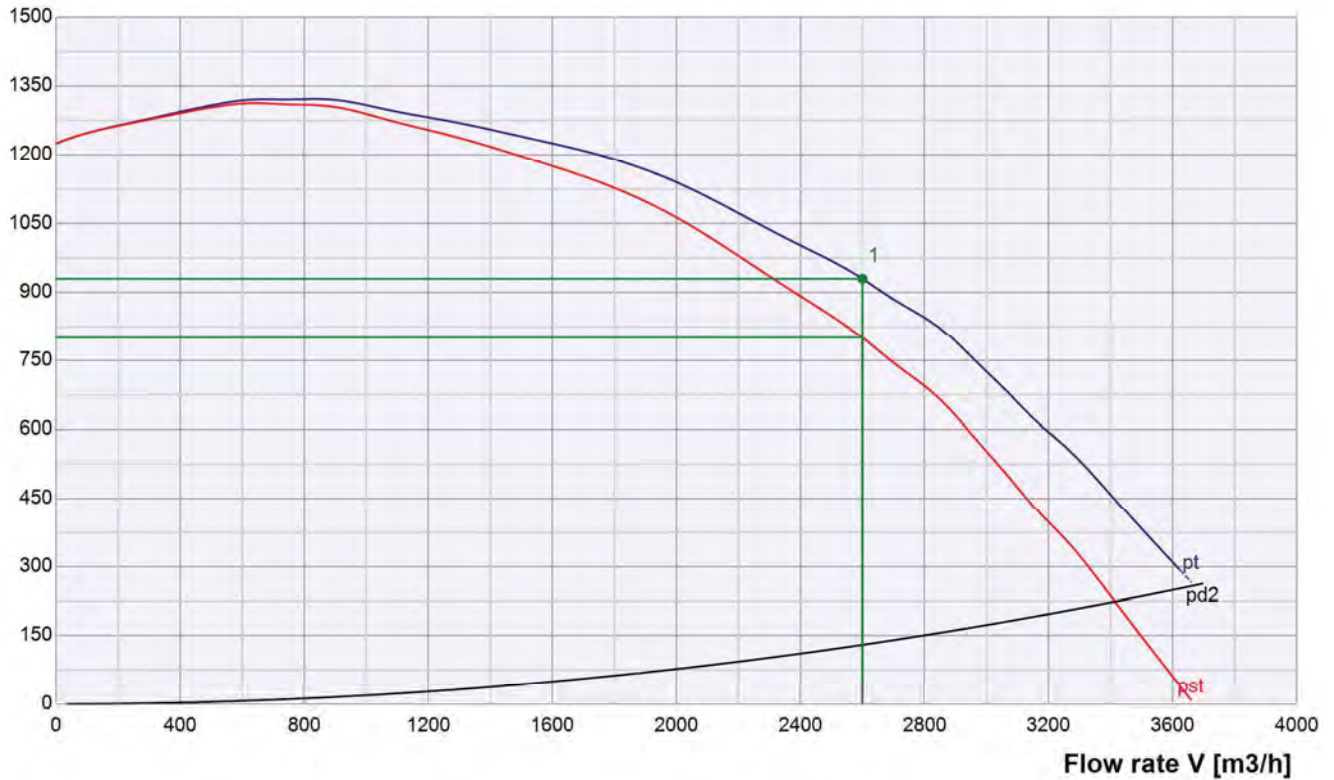
Item: 5

TENDER No.:
21062109GH_R3
YOUR REF.: Barry Thornton**Y/DESC.:** Lev 08/12
Units: 2

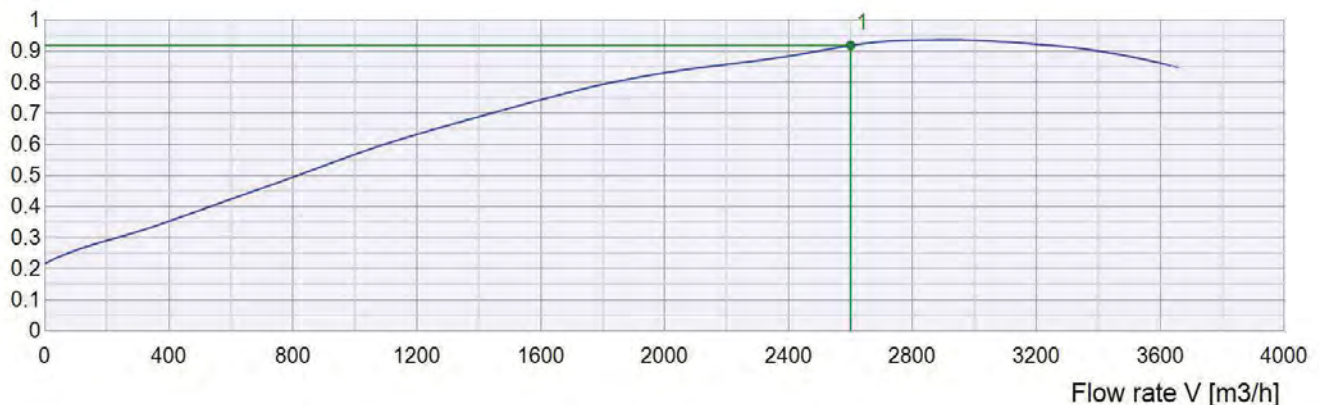
Handled by: Gareth Berry
+44 (78 43) 46 24 50

21/06/2021 11:48:04 / gareth.berry

50-Centrifugal Witt

Fan type : S-RNZ9/250/315/1**Total press. pt, static press. pst, dynamic press. pd2 [Pa]**

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 [m³/s]

Impeller power Pw [kW]

		1				
Flow rate	V [m3/h]	2,600				
Inlet density	Rho [kg/m3]	1.200				
Fan speed	n [1/min]	2,853				

The fan data is for naked fan and NOT taking into account the effects from additional parts/accessories unless explicitly stated. Dotted lines above indicate stall zone: NOT allowed for the operation of the fan!

Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 5	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 2	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 08/12	21/06/2021 11:48:04 / gareth.berry 50-Centrifugal Witt	

Fan type : S-RNZ9/250/315/1

Fan speed	2,853 1/min	Flow rate	2,600 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	1.21 -
Inlet pressure	101.320 kPa	Blade frequency	428 Hz
Inlet temperature	20 °C	Fan curve no.:	1

Basic sound	dB	88							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.8	1.7	3.3	6.7	13	27	54
Rel. spectrum	dB	-16	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	73	77	80	85	82	81	79	76
A-weighting corr.	dB	-26	-16	-9	-3	0	1	1	-1
Octave-power-level in duct	dB(A)	47	61	71	82	82	82	80	75

with reference to the definitions in DIN 45 635 Part 38 :

Sound power level radiated into duct **88 dB(A) re 10⁻¹² W**
Motor sound power level **72 dB(A) re 10⁻¹² W**

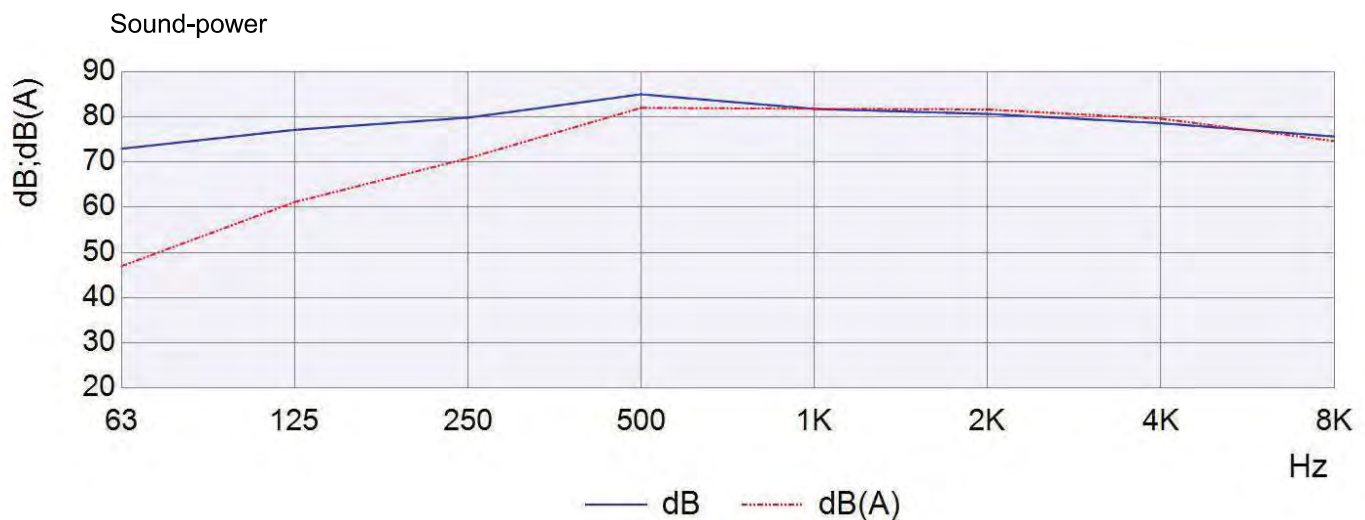
Free inlet/outlet sound power level **87 dB(A) re 10⁻¹² W**
Free inlet/outlet sound pressure level, free field 1m/45° **79 dB(A) re 20 µPa**
Free inlet/outlet sound pressure level, free field 3m/45° **70 dB(A) re 20 µPa**

Casing break-out noise, sound power level ¹⁾ **66(71) dB(A) re 10⁻¹² W**
Casing break-out noise, average sound pres. level, free field 1m ¹⁾ **54(59) dB(A) re 20 µPa**
Casing break-out noise, average sound pres. level, free field 3m ¹⁾ **46(51) dB(A) re 20 µPa**

ΔLP to casing breakout noise, free field, 1m owing to el. motor: **7 dB(A) re 20 µPa**

Uncertainty of total levels at undisturbed inlet flow: Standard deviation 4 dB

1) Without noise contribution from motor, ducts, flexible connections, shaft gap etc. which the customer must take responsibility for. Values in brackets for aluminium casing.



Date: 21/06/2021

CUSTOMER: Duscovent Engineering Ltd	ENQUIRY: from 21/06/2021	Item: 5	TENDER No.: 21062109GH_R3
	PROJECT: College Manchester	Units: 2	Handled by: Gareth Berry +44 (78 43) 46 24 50
YOUR REF.: Barry Thornton	Y/DESC.: Lev 08/12		21/06/2021 11:48:04 / gareth.berry

Fan type :

Fan speed	2,853 l/min	Flow rate	2,600 m³/h
Inlet density	1.200 kg/m³	Rel.flow rate V/Vopt	1.21 -
Inlet pressure	101.320 kPa	Blade frequency	428 Hz
Inlet temperature	20 °C		

Fan	Octavband	Hz	63	125	250	500	1K	2K	4K	8K	Total
Fan-Sound power level radiated into duct			47	61	71	82	82	82	80	75	88 dB(A) re 10 ⁻¹² W
Fan-casing sound power level			40	50	54	61	58	59	58	51	66 dB(A) re 10 ⁻¹² W
Motor sound power level											72 dB(A) re 10 ⁻¹² W

Silencer (outlet) - Rectangular Attenuator 274 L=600 W=375

Insertion losses silencer	-3	-5	-10	-15	-19	-16	-13	-12			dB(A)
Total Fan-Sound power level in duct	44	56	61	67	63	66	67	63			73 dB(A) re 10 ⁻¹² W
Free outlet sound power level											73 dB(A) re 10 ⁻¹² W
Free outlet sound pressure level, free field 1m/45°											65 dB(A) re 20 µPa
Free outlet sound pressure level, free field 3m/45°											55 dB(A) re 20 µPa
potential nozzle reflection									at diameter 250 mm		-1 dB

<i>Item No.:</i>	1	<i>No. Req:</i>	1
<i>Volume:</i>	2100 M3/HR		
<i>Pressure:</i>	800 PA		
<i>Temp/MaxTemp:</i>	20 .C		
<i>Fan Model:</i>	310 BL		
<i>Absorbed Power:</i>	0.8	KW	
<i>Effic.@ Duty:</i>			
<i>Motor Details:</i>	1.5 KW 2 POLE		
<i>Fan Speed:</i>	2900 RPM		
<i>Drive Type:</i>	DIRECT DRIVEN		
<i>Construction:</i>	MILD STEEL CONSTRUCTION 1 PACK PAINT FINISH		
<i>Inlet:</i>	FLANGED		
<i>Outlet:</i>	FLANGED		
<i>Drain Plug:</i>	YES		
<i>Inspection Door:</i>	YES		
<i>Base Frame:</i>	RS-ANGLE		

A.B. Fan Services Ltd

Phone : 01384 242156

Fax : sale@abfans.co.uk

Customer : Internal

Project : Fan Selection by Ricky Guy

Item 1 - Ref : Temp 1



Quote Ref : as quote

21/06/2021

Gas Properties :

Barom Pressure : 101325 pa
Operating Temp : 20 Deg.C.
Humidity : 38 %
Specific Gravity : 1.0
Inlet Density : 1.2001 Kg/m3
Dust Load : 0 g/m3

Duty Required :

Inlet Volume Flow : 2100 m3/hr

Fan Static Pressure:

Inlet Pressure : -0 pa

Outlet Pressure : 800 pa

Fan Selected :

SWSI-BL245-310/100-70

Speed : 2800 Rpm

Impeller Ø : 310 mm

Fan Class : 1

Impeller Power :

@ 20 Deg C : 0.821 kW

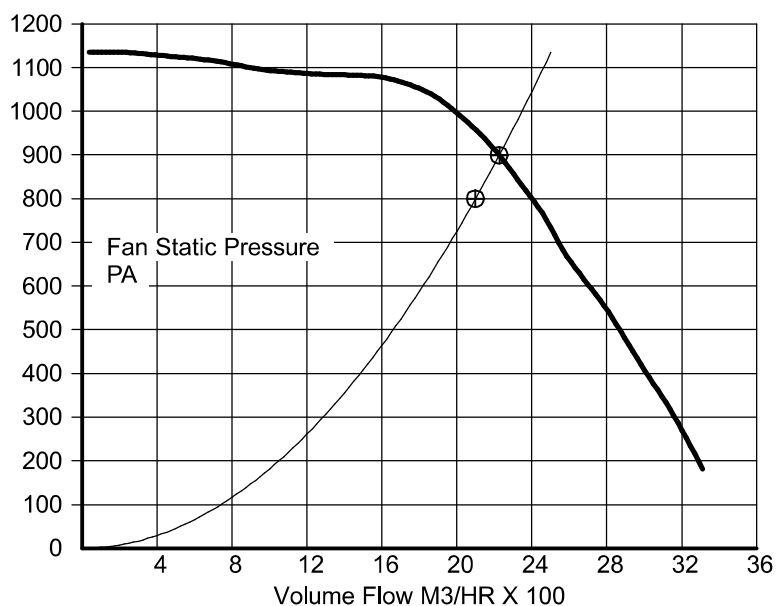
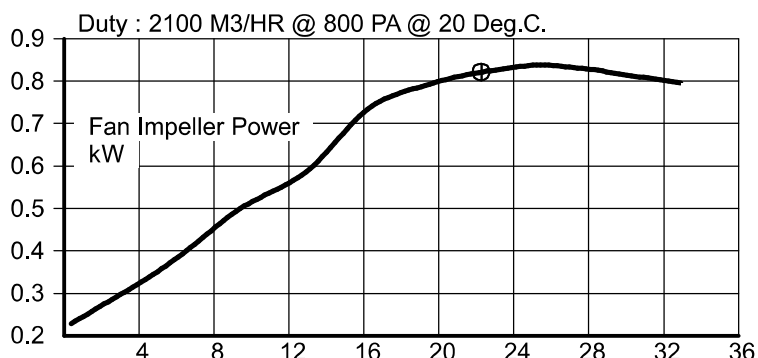
@ Duty Temp : 0.821 kW

Tip Speed : 45.4 m/s

Inlet Velocity : 6.5 m/s

Outlet Velocity : 7.6 m/s

Temp Rise : 1.2 Deg.C.



Prog V410.42

Noise Details :

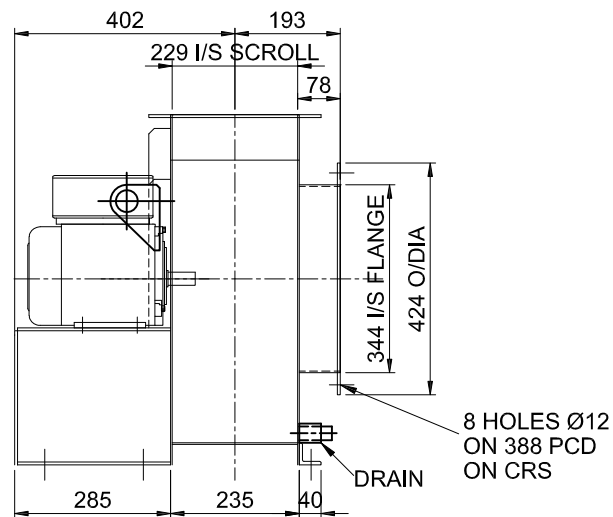
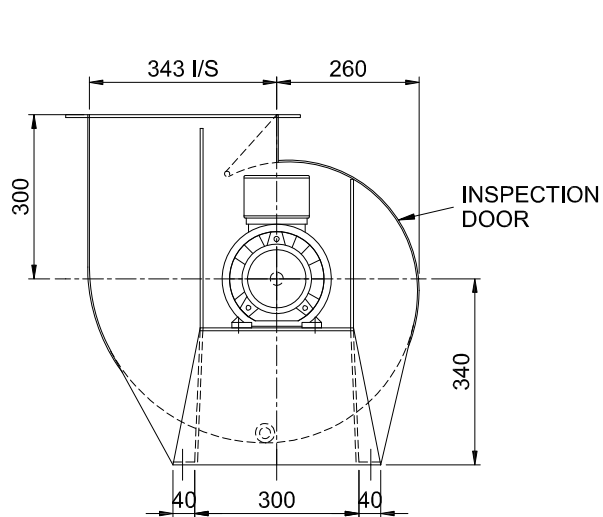
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Total
Internal SWL dB	95	92	91	91	84	80	78	73	99
Free Inlet SPL dBA	44	57	67	76	73	70	68	61	79
Free Outlet SPL dBA	43	56	67	76	73	70	68	61	79
Outside Casing dBA	45	51	54	60	56	53	51	42	63

Motor noise is NOT included in the figures above.

Sound Pressure levels (SPL) assume Free Field Hemispherical Radiation at 1 metre(s)
Breakout at 1 metre from 3 mm thick casing (inside Near Field range).

Casing levels assume the inlet / outlet are ducted and noise does not breakout through duct.

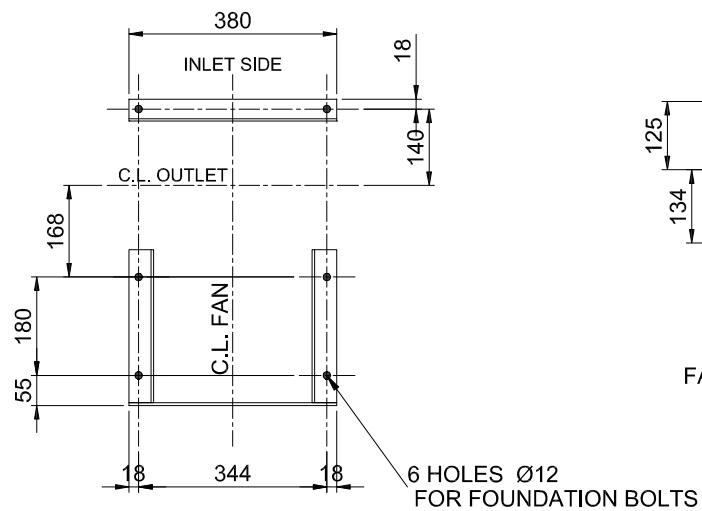
All values are averages. Free Inlet assumes that outlet is ducted and vice versa.



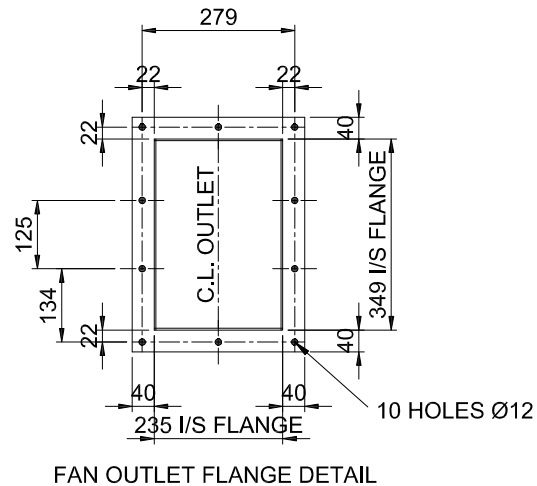
CLIENT :
 TAG :
 DUTY
 INLET VOLUME :
 STATIC PRESSURE :
 TEMPERATURE : 20 °C
 SPEED : 2900 RPM
 POWER :
 MOTOR : 1.5 kW 2 POLE
 FRAME D90S
 415-3-50Hz

FOUNDATION LOADS
 OUT OF BALANCE : NORMAL : 11.32 N
 MAXIMUM : 858.60 N
 AXIAL THRUST : 15.56 N
 TOTAL WEIGHT : 78 KG
 ACCESSORIES :

INSPECTION DOOR & DRAIN
 SHAFT SEAL



PLAN VIEW FROM ABOVE SHOWING
 FOUNDATION BOLT HOLE DRILLING



FAN OUTLET FLANGE DETAIL

<i>Item No.:</i>	1	<i>No. Req:</i>	1
<i>Volume:</i>	600 M3/HR		
<i>Pressure:</i>	1400 PA		
<i>Temp/MaxTemp:</i>	20 .C		
<i>Fan Model:</i>	340 BCP		
<i>Absorbed Power:</i>	0.5		KW
<i>Effic.@ Duty:</i>			
<i>Motor Details:</i>	1.5 KW 2 POLE		
<i>Fan Speed:</i>	2900 RPM		
<i>Drive Type:</i>	DIRECT DRIVEN		
<i>Construction:</i>	MILD STEEL CONSTRUCTION 1 PACK PAINT FINISH		
<i>Inlet:</i>	FLANGED		
<i>Outlet:</i>	FLANGED		
<i>Drain Plug:</i>	YES		
<i>Inspection Door:</i>	YES		
<i>Base Frame:</i>	RS-ANGLE		