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 m^3/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 m^3/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 m^3/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 m^3/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 m^3/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 m^3/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 m^3/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 212m^2 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 m^3/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 m^3/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 m^3/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;

Machine Requirement	Extract spigot	Dropper size	Extract
	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
	Total extract requirement		4170m^3/hr

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 m^3/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 m^2 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 m^3/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 m^3/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 m^2 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 m^3/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.

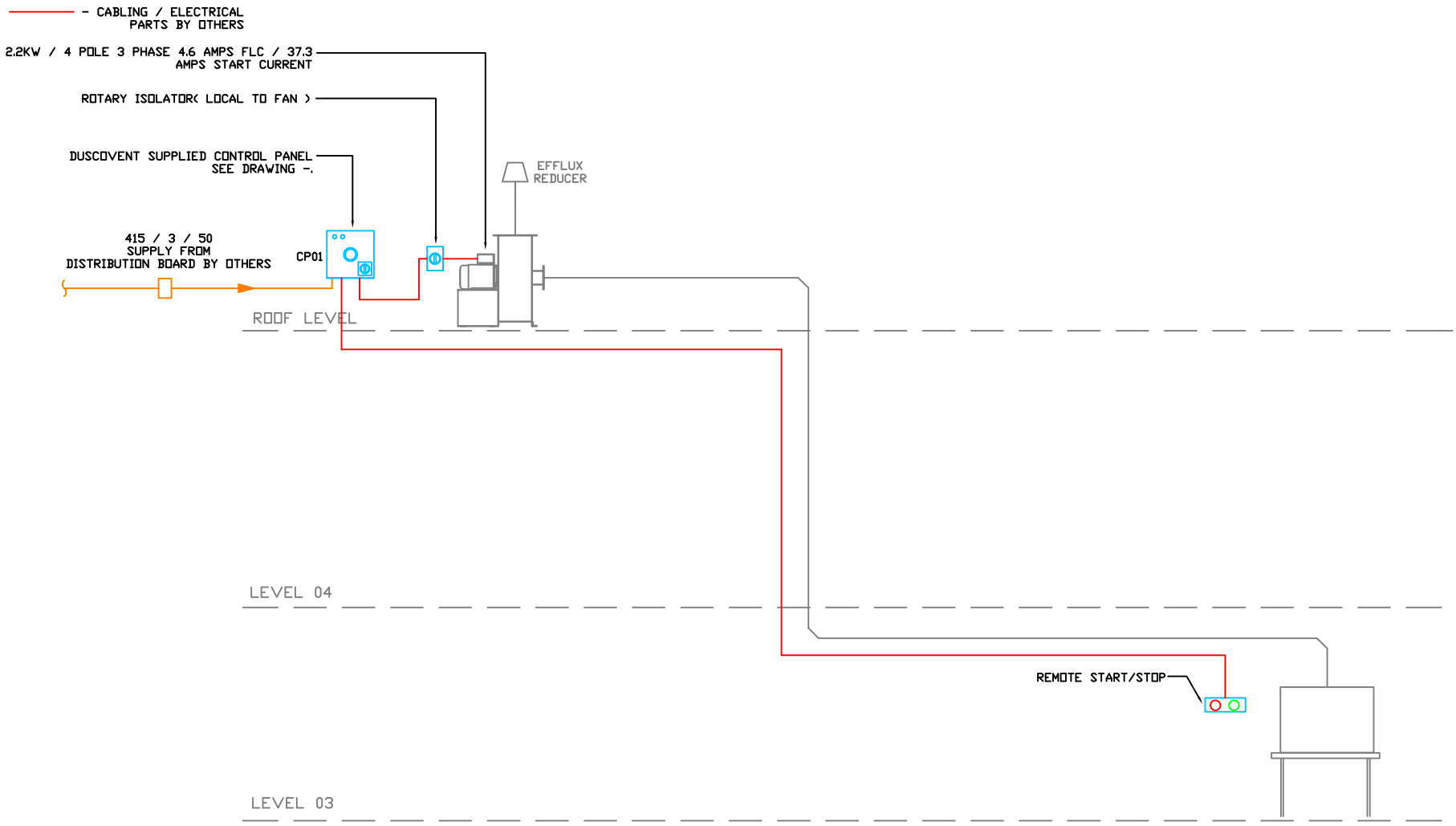
Within our offer we include for loose issue control panels for wall mounting, cabling and BMS interlocking by the clients electrical contractor.

1.2. Ductwork

1.2.1. Galvanised Steel Ductwork

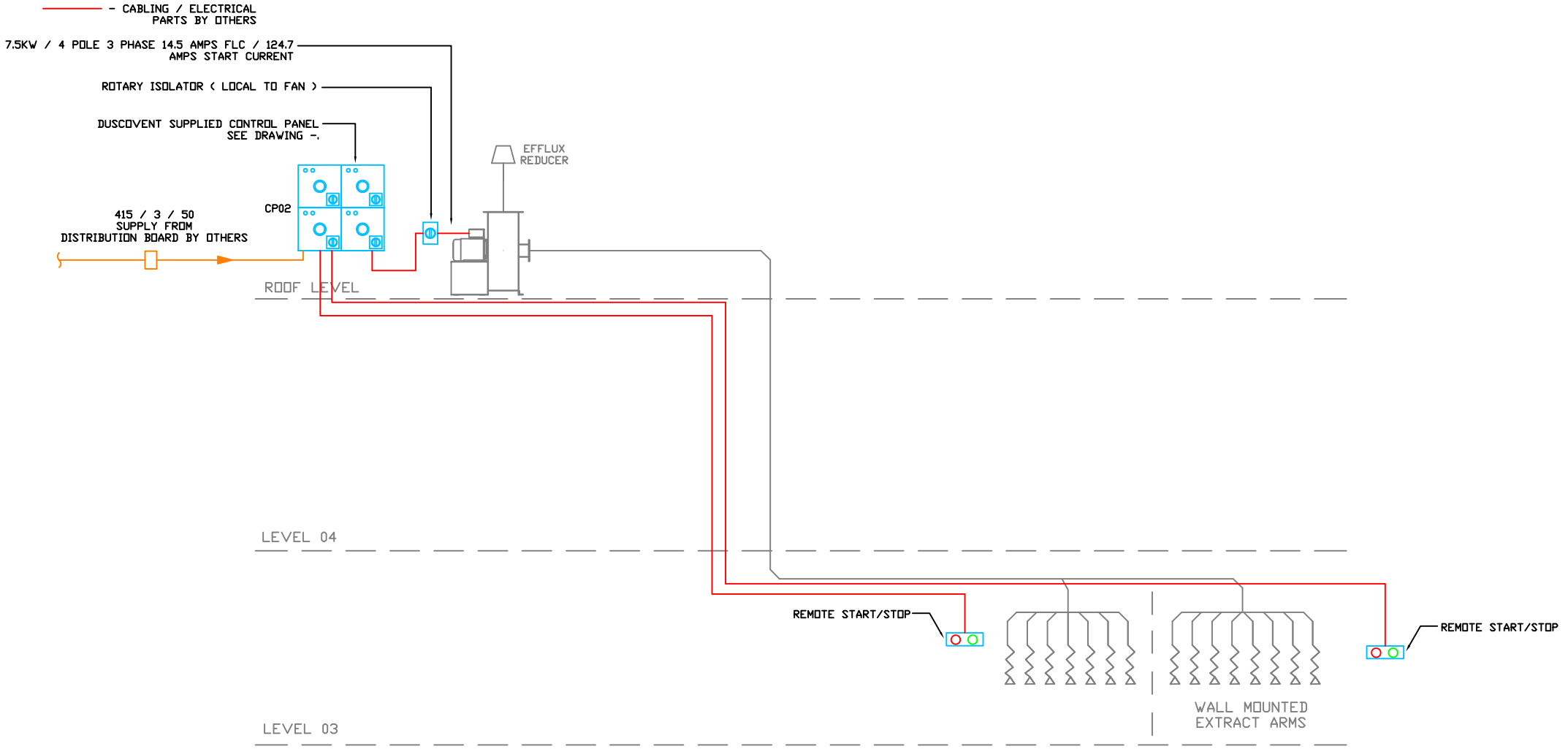
All galvanised sheet metal ductwork shall be manufactured and installed in accordance with B&ES Specification DW144 with exceptions where identified below. All ductwork shall be leakage tested in accordance with DW143 Appendix A and the Building Regulations, Part L2A.

- 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 'Pitsburgh 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°.



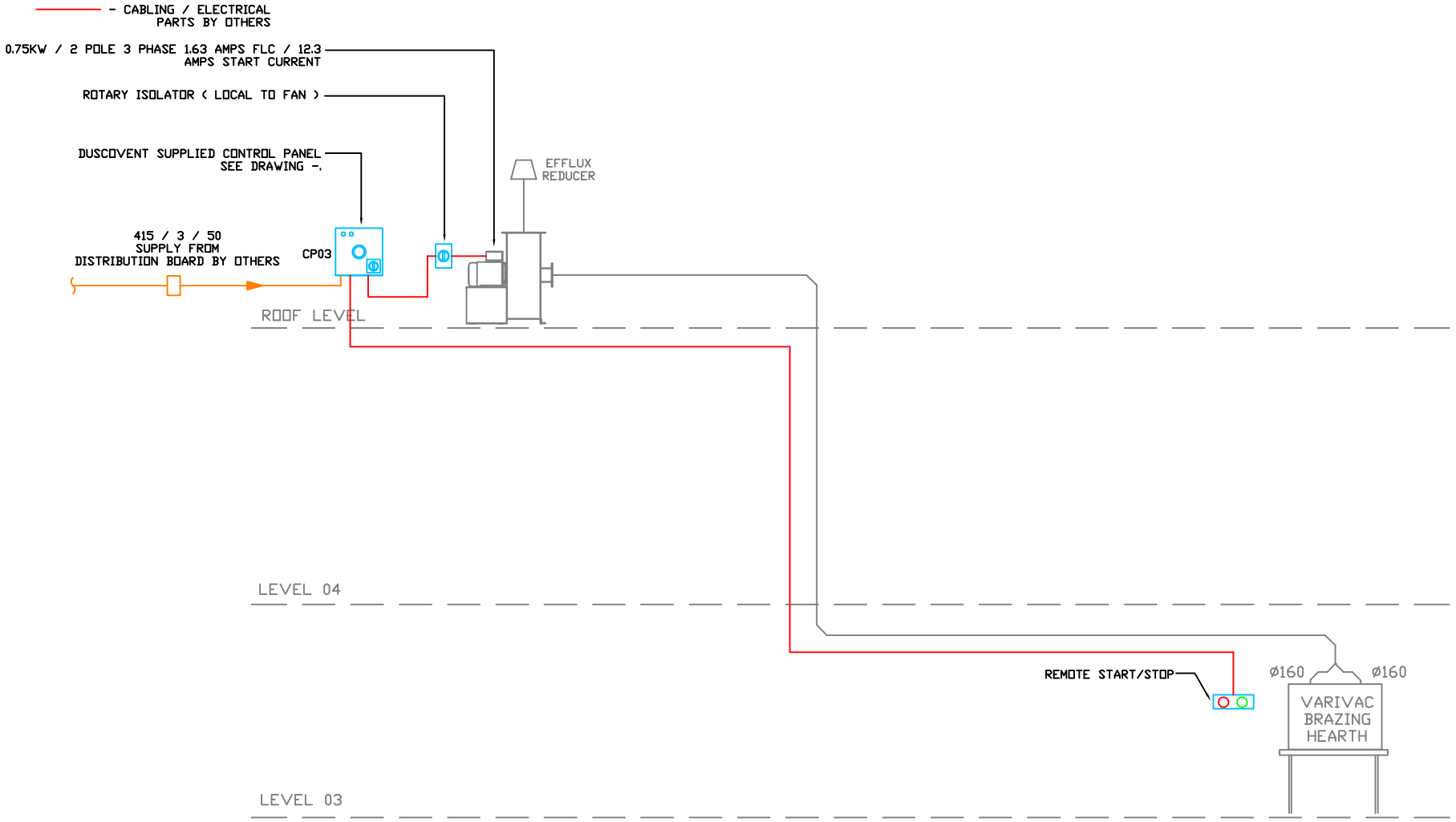
LEV 01

SPRAY BOOTH (FUME EXTRACTION)



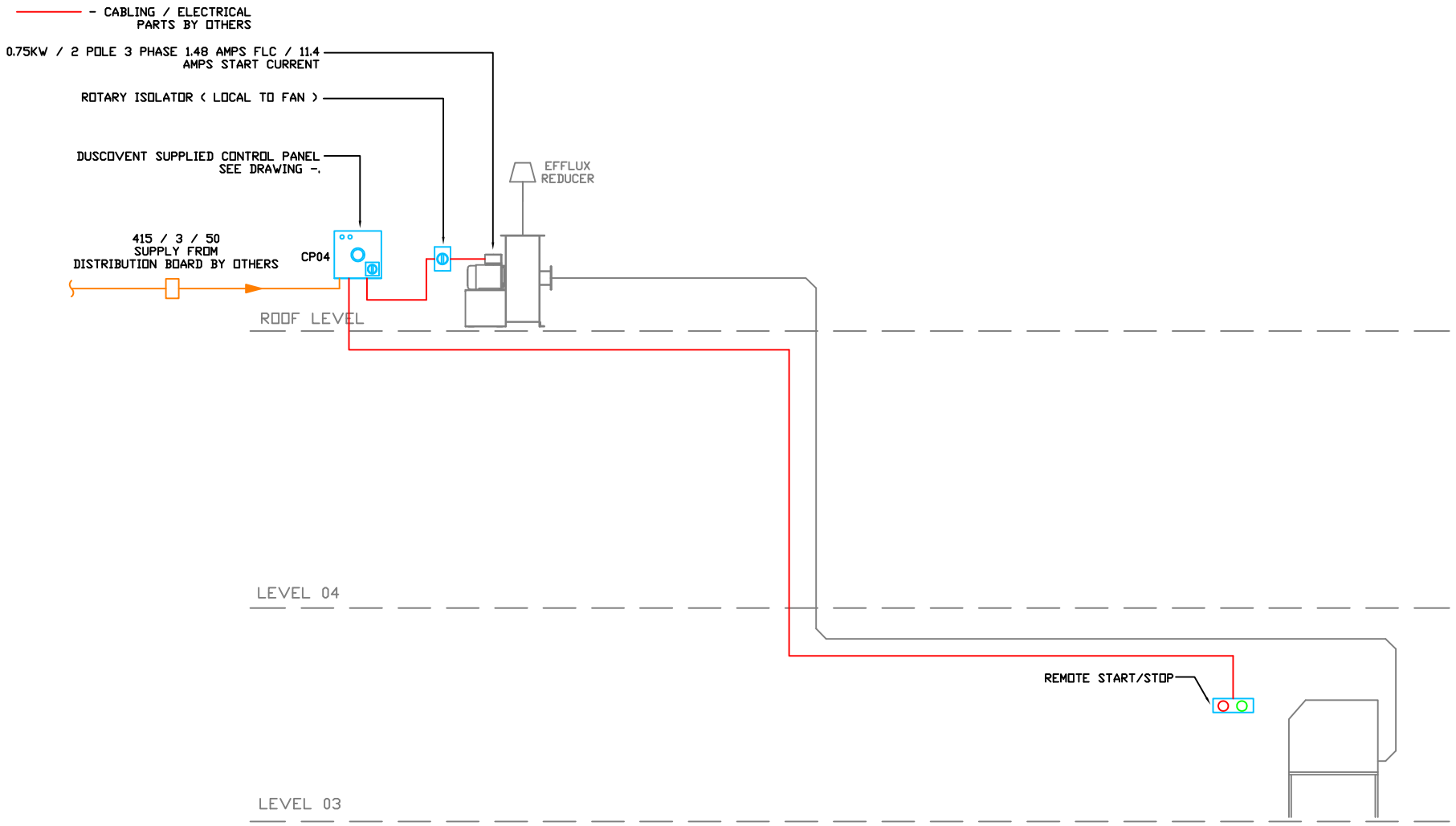
LEV 02&03

ENCAPSULATION AND FIBREGLASS ROOMS (FUME EXTRACTION)

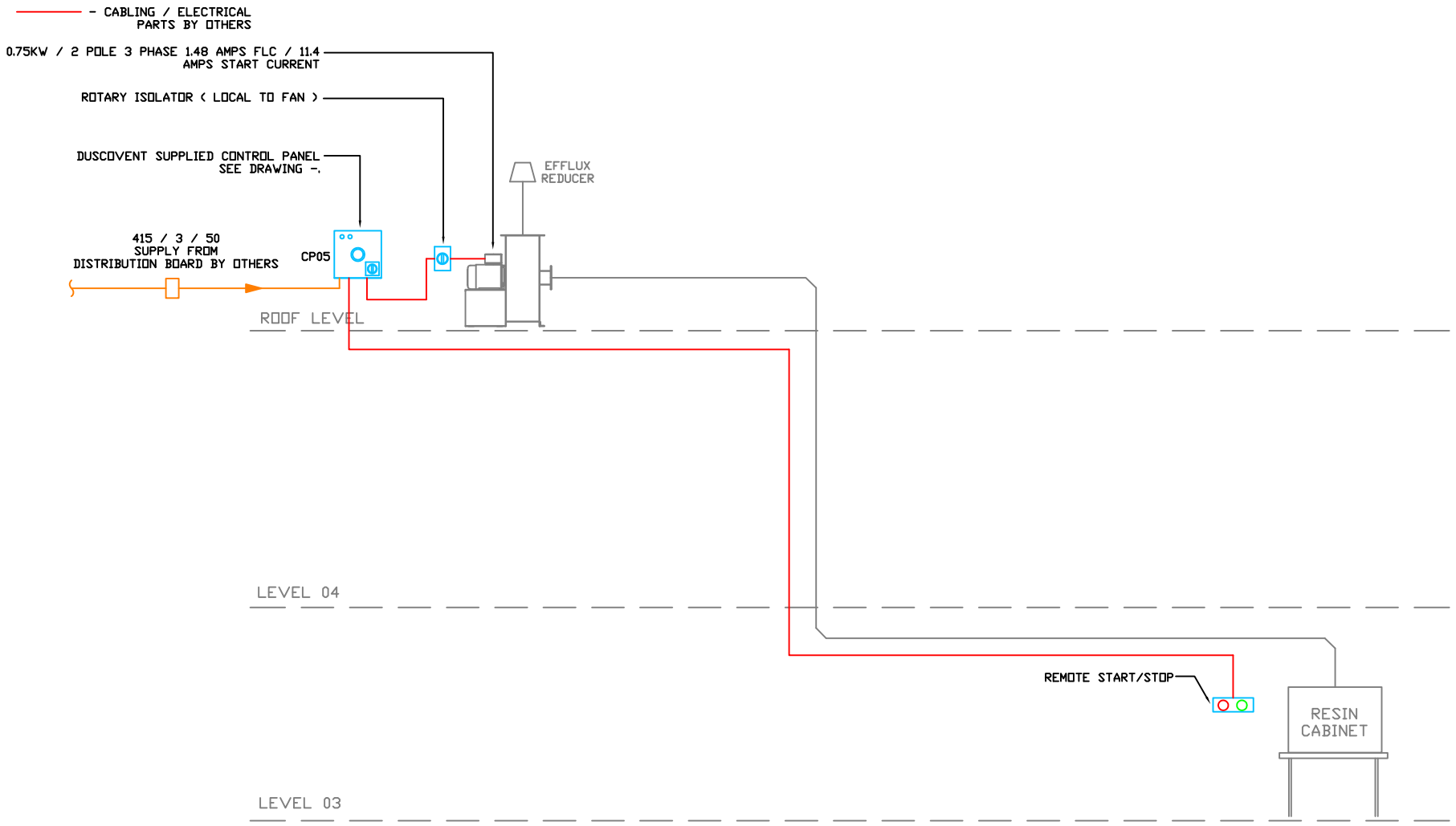


LEV 04

JEWELLERY WORKSHOP (FUME EXTRACTION)

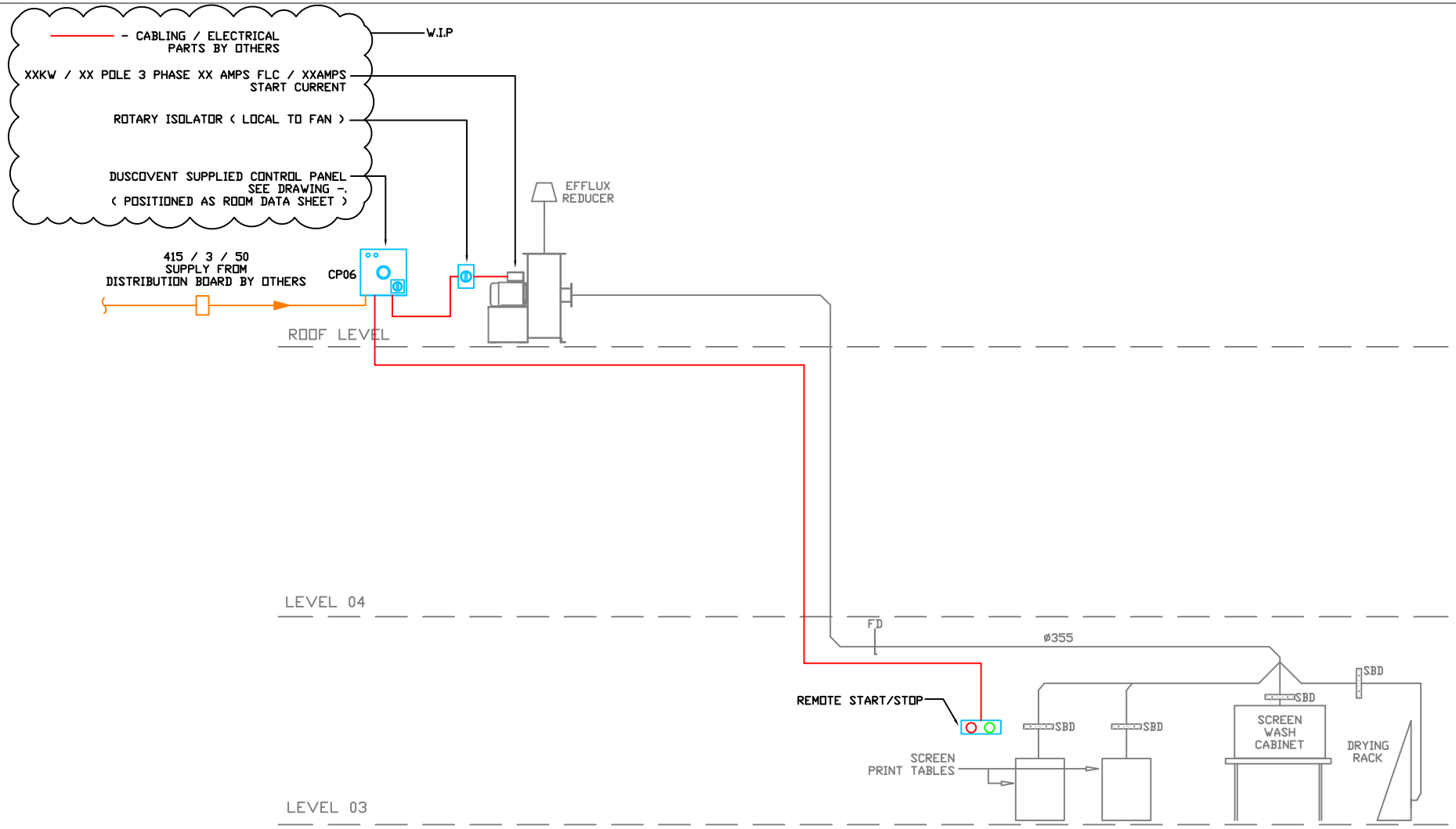


LEV 05
LASER CUTTER (FUME EXTRACTION)



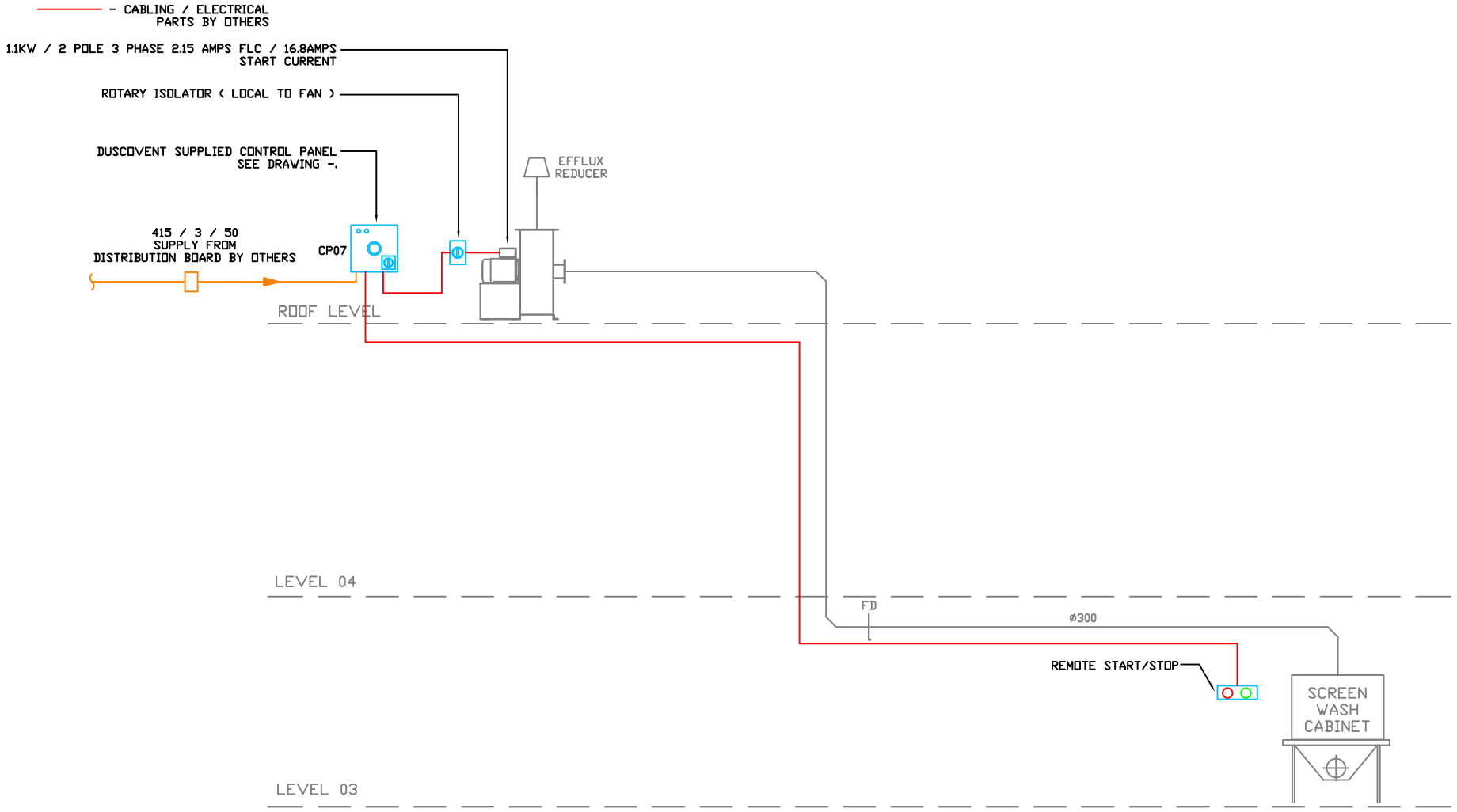
LEV 06

PLASTICS ROOM RESIN CABINET (FUME EXTRACTION)



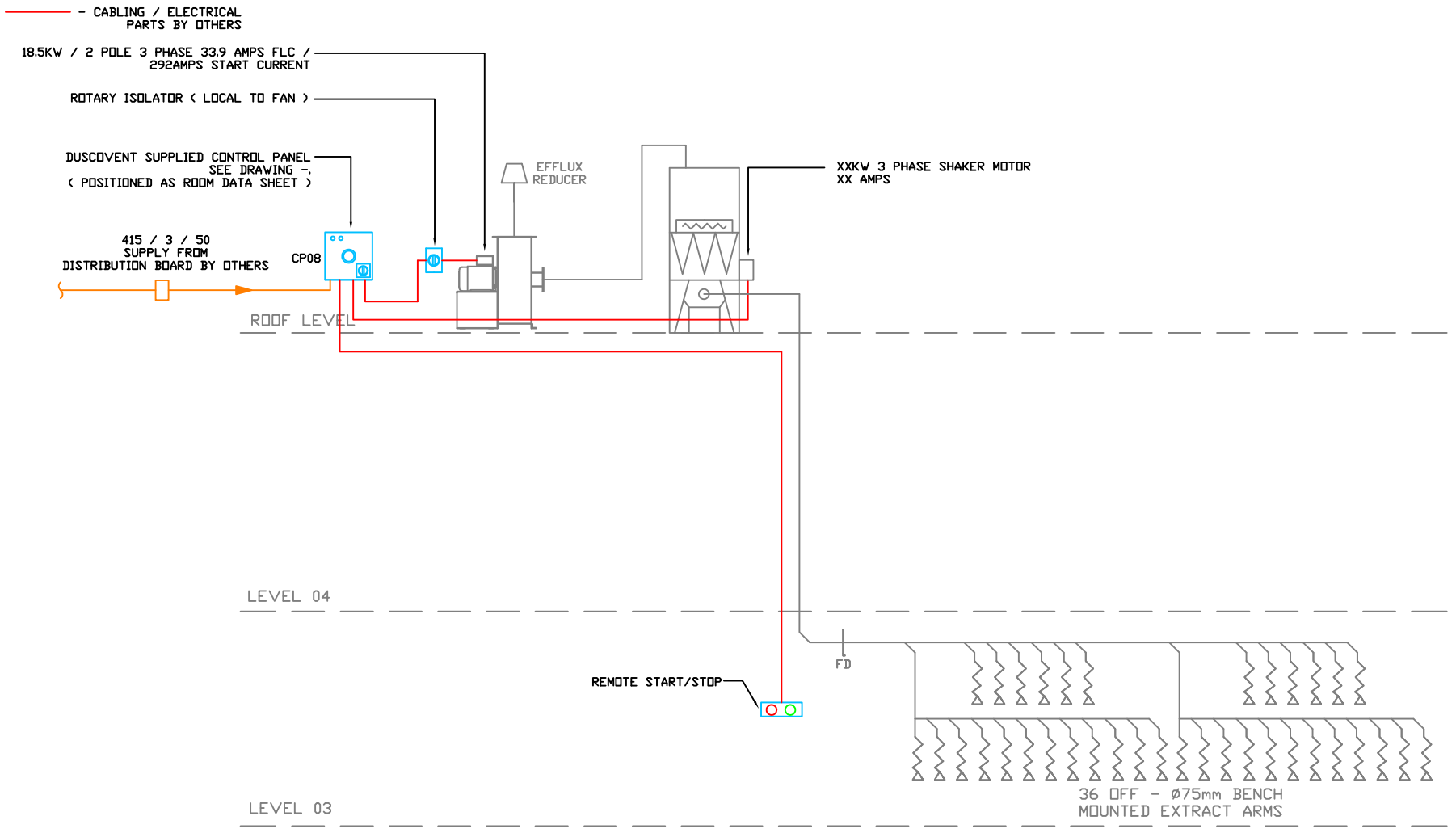
LEV 07

PRINT MAKING STUDIO (FUME EXTRACTION)



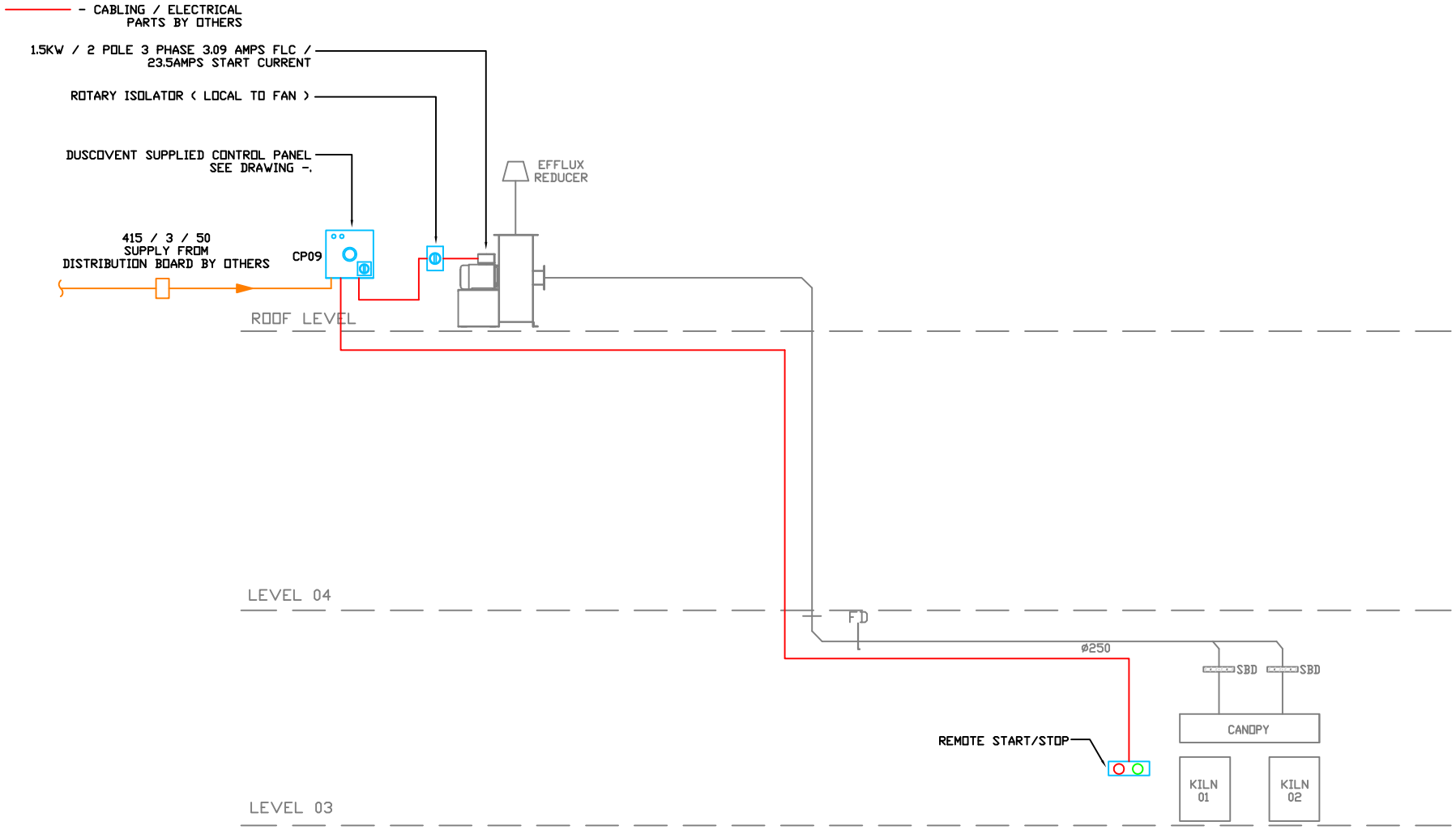
LEV 08

TEXTILE PRINT STUDIO (FUME EXTRACTION)



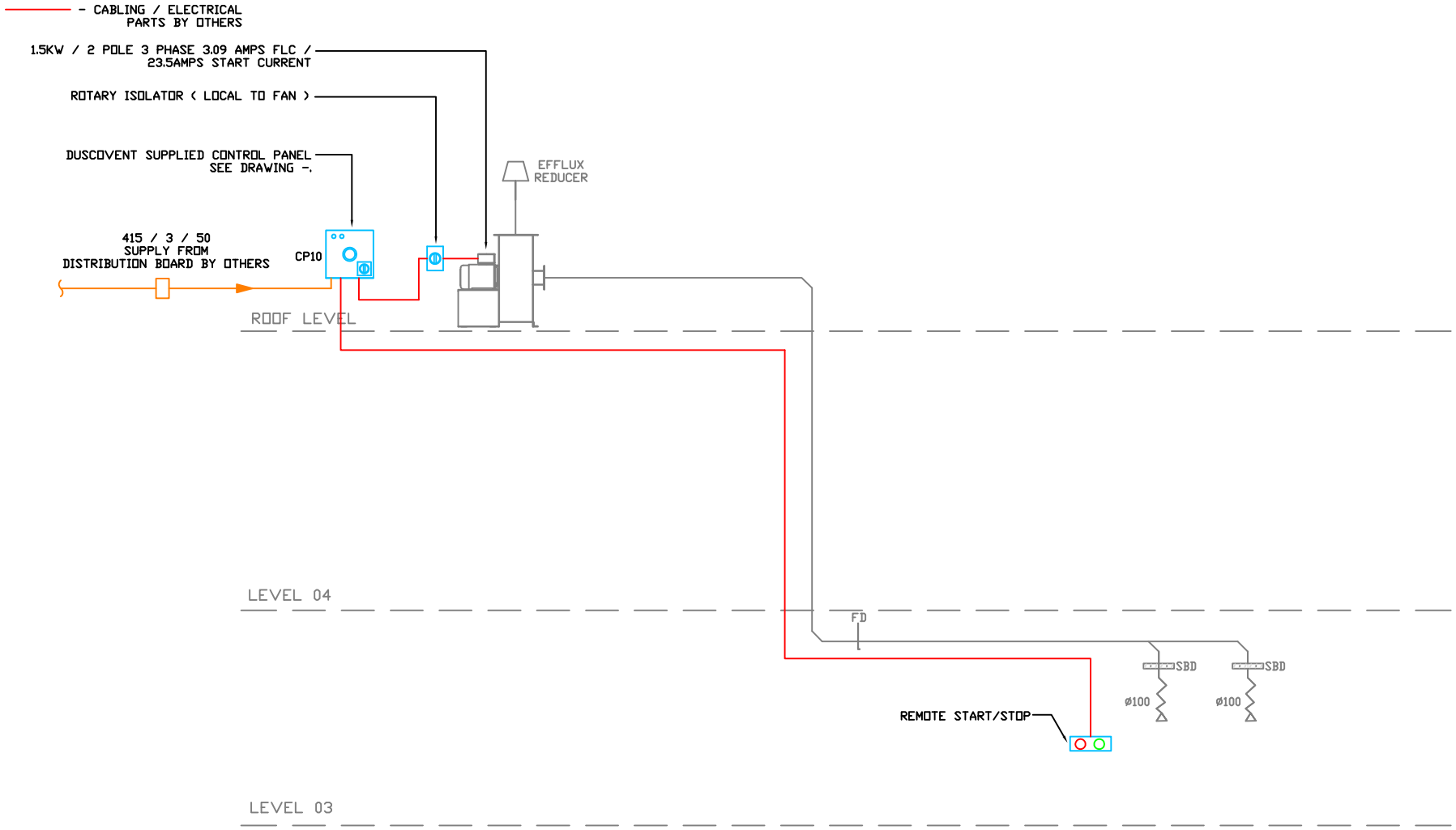
LEV 09

SPECIAL EFFECTS STUDIO (DUST EXTRACTION)



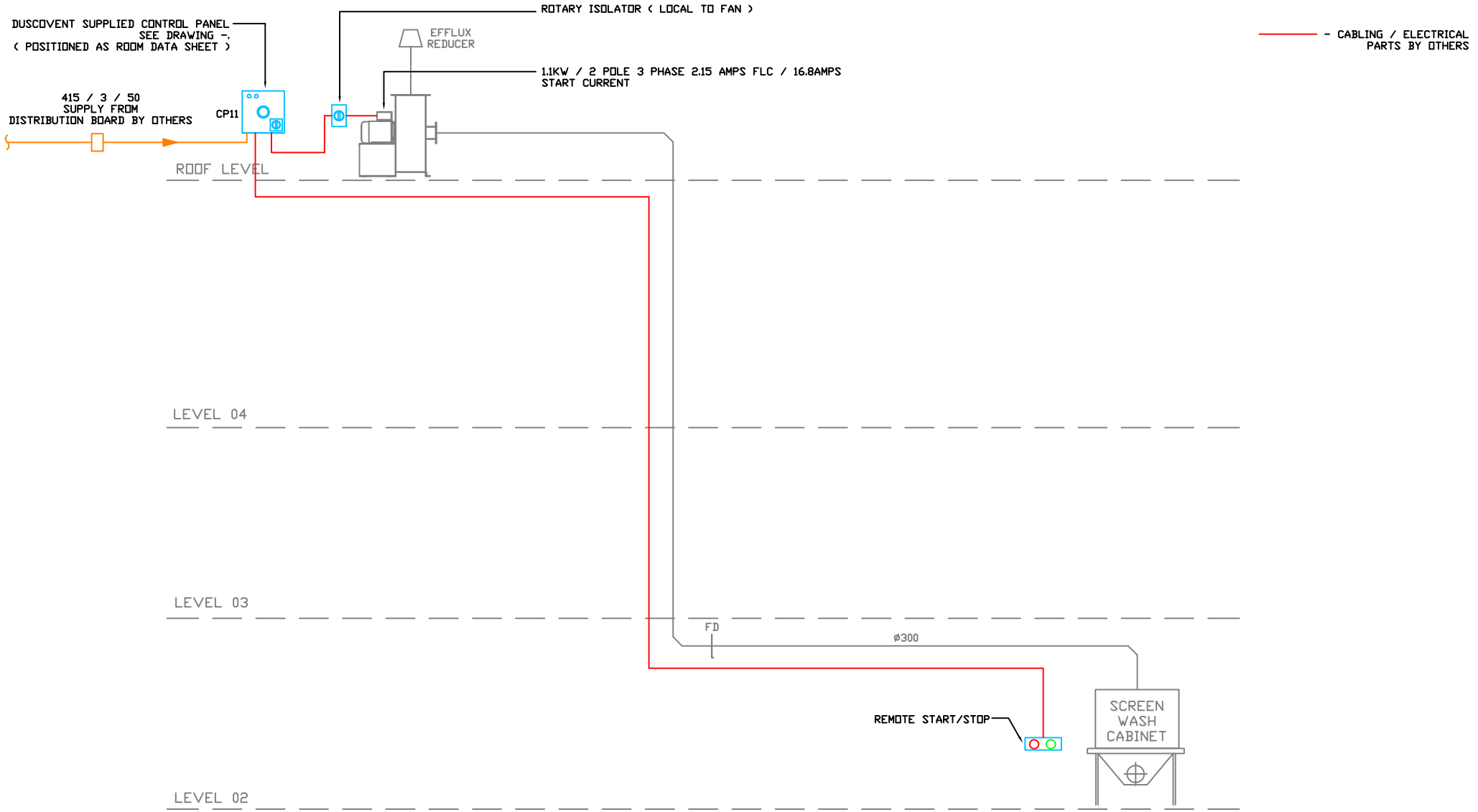
LEV 10

KILN ROOM (FUME EXTRACTION)



LEV 11

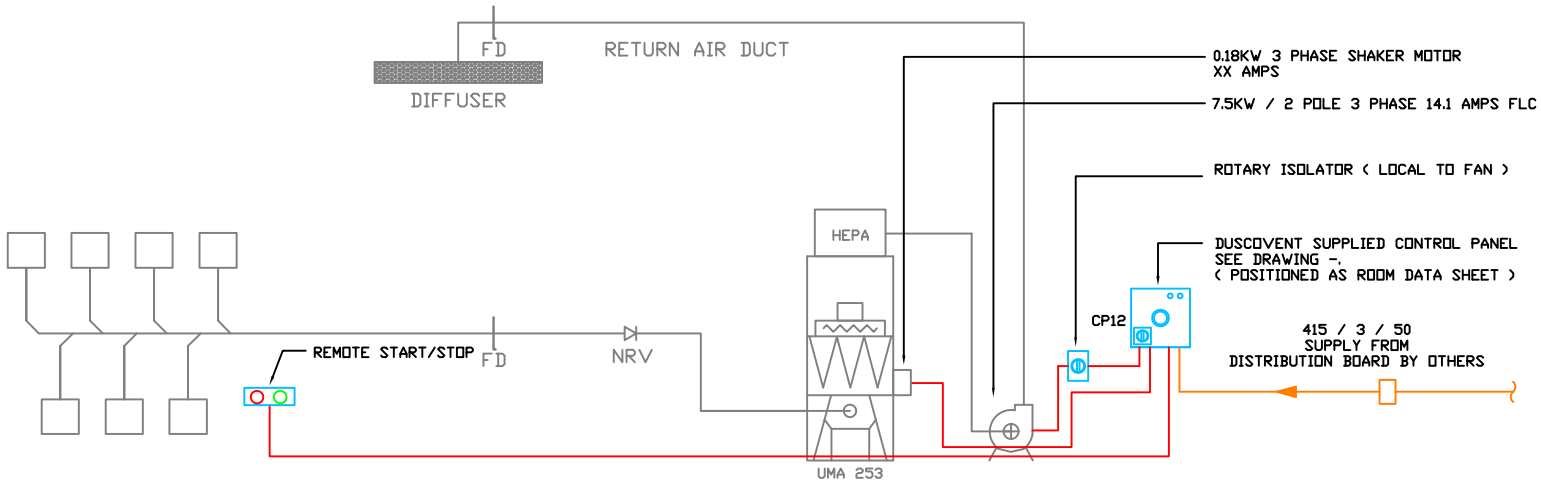
DARK ROOM



LEV 12

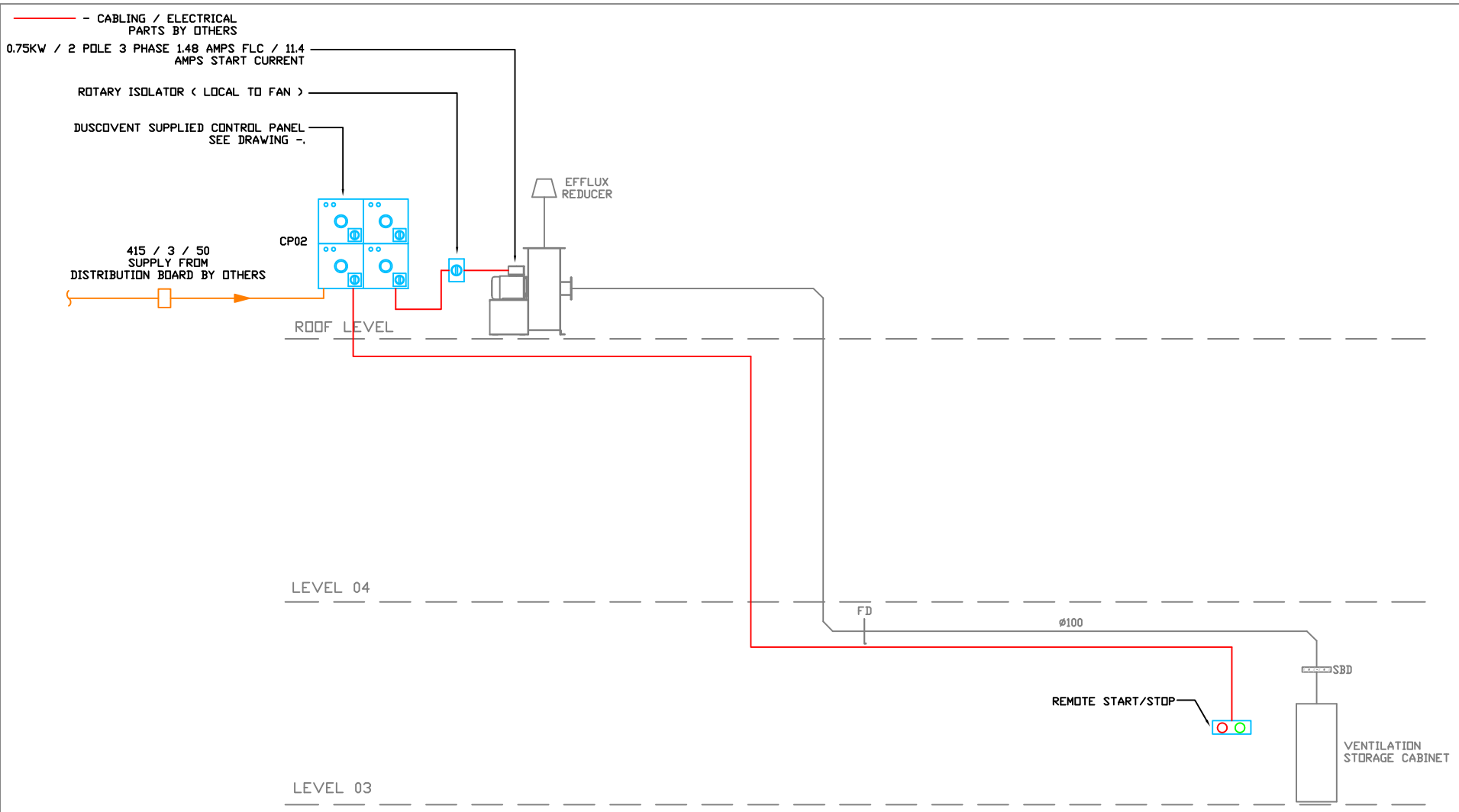
SCREEN PRINT

– CABLING / ELECTRICAL
PARTS BY OTHERS



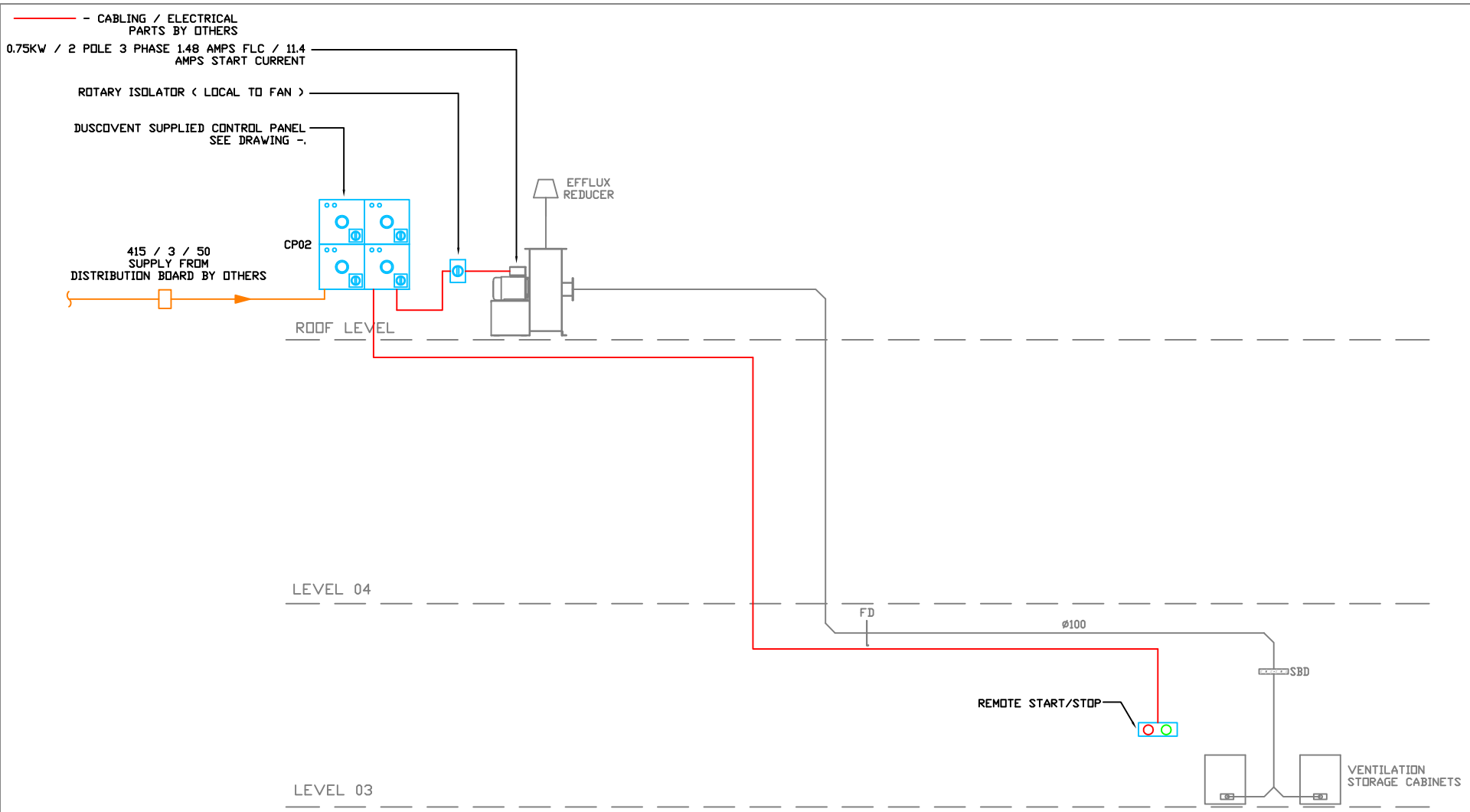
LEV 13

MACHINE ROOMS – (DUST EXTRACTION)



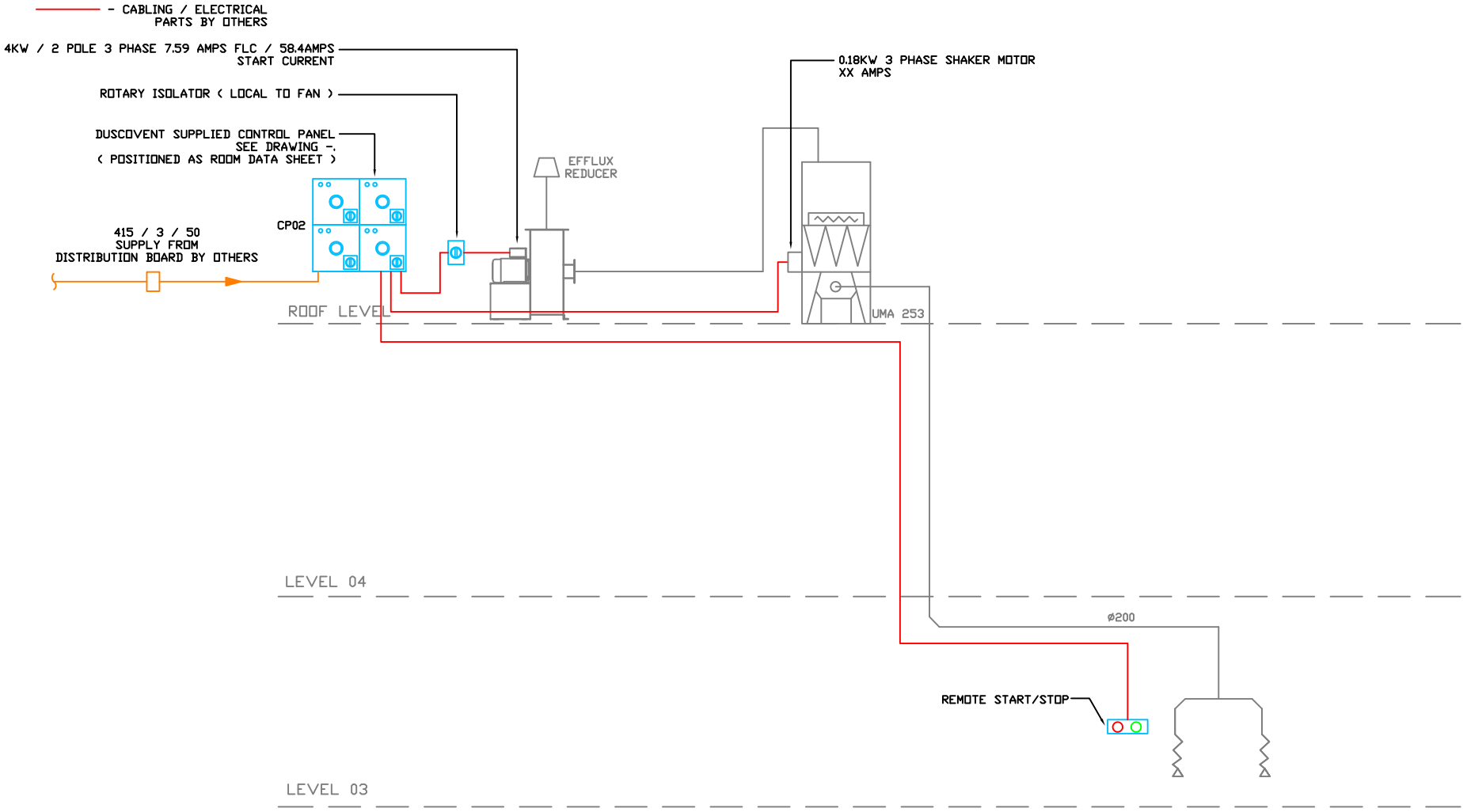
LEV 14A

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



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

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.



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

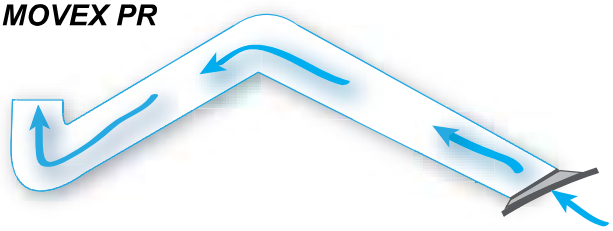
An arm with a lower pressure drop reducer the extra requirement for a larger total pressure extraction fan. This subsequently reduces energy costs and produces a reduced sound level from the system.

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.

MOVEX PR

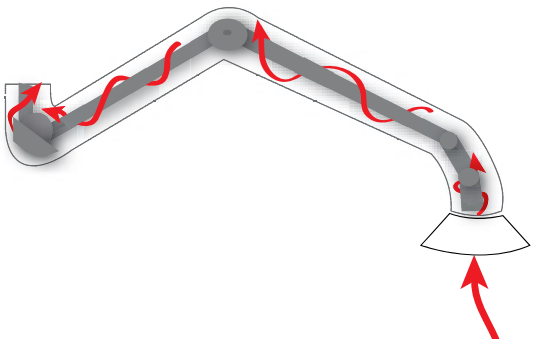


Extractors with link joints internally in the suction duct have limitations and disadvantages.

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.

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.



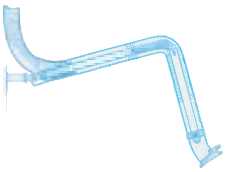
PR RF

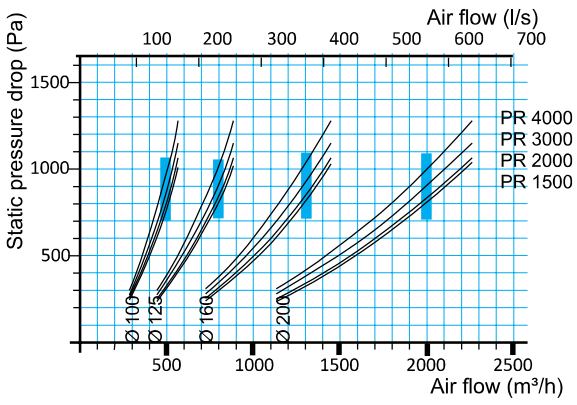
- White brackets in powder coated steel.
- Arm supports in anodised aluminium and joints in white PA & PP.
- White hood with anthracite grey handle in injection moulded PP, stainless hood plate and screws.
- Bracket element in contact with the evacuated air made of stainless material.
- Hose of white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

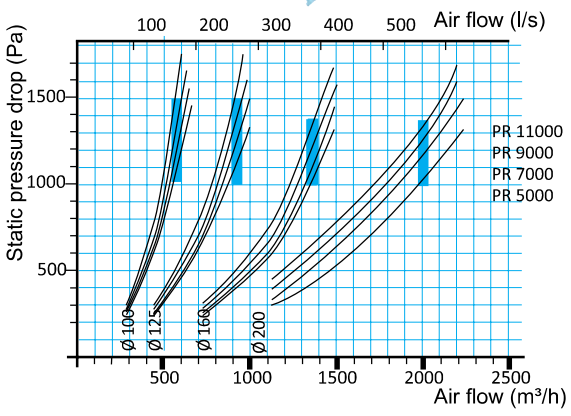
The PR arm is also available in an ATEX version, see separate product sheet.

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.)





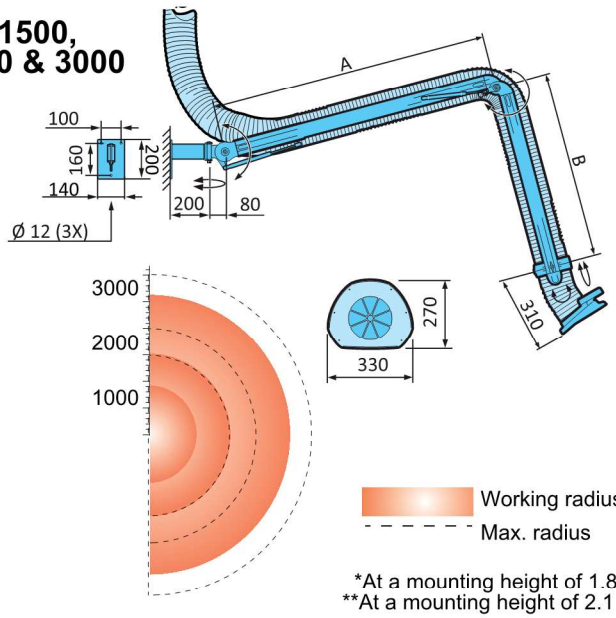




Optimally designed hood

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

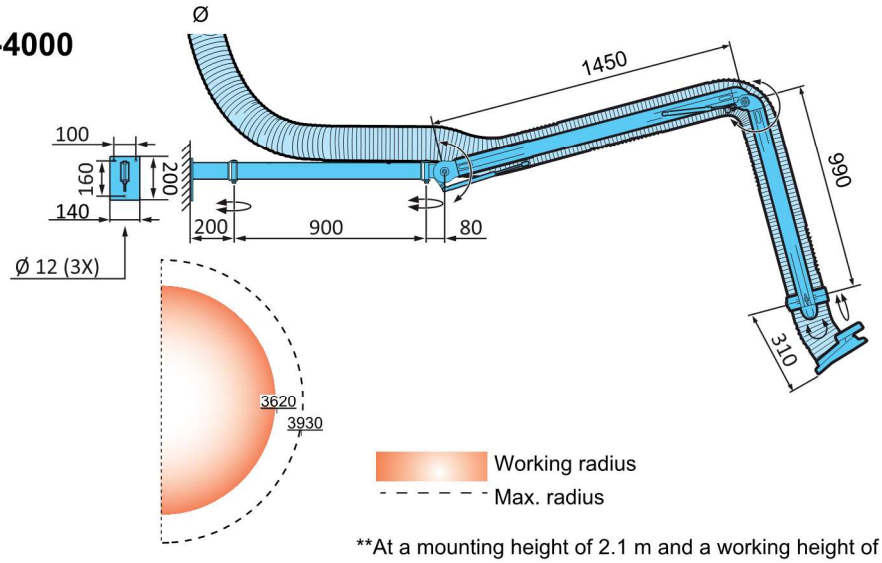


	A (mm)	B (mm)	Working radius* (mm)	Max. radius (mm)
PR-1500	420	490	910*	1500
PR-2000	950	490	1440**	2030
PR-3000	1450	990	2690**	3030

Working radius
Max. radius

*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.

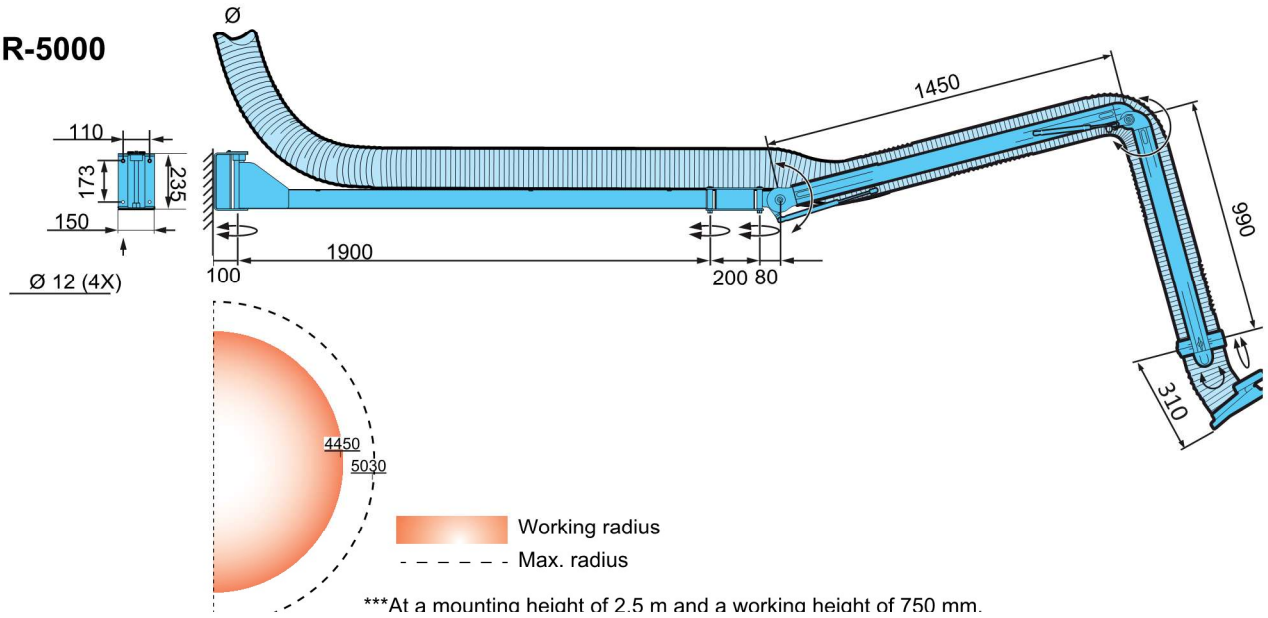
PR-4000



Working radius
Max. radius

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

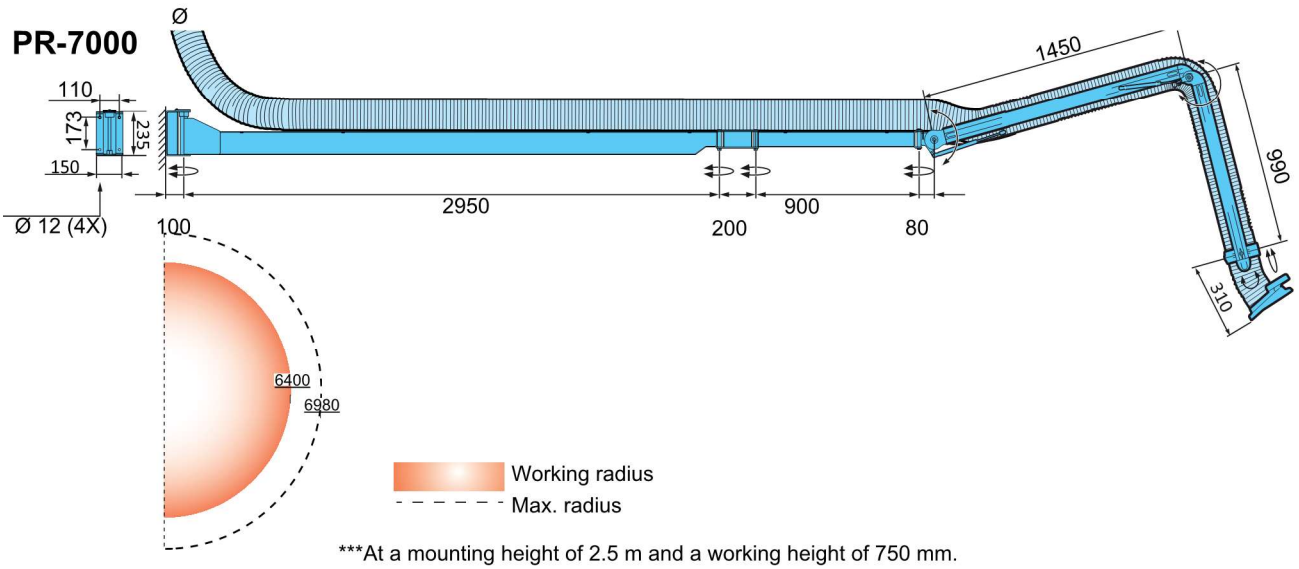
PR-5000



Working radius
Max. radius

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

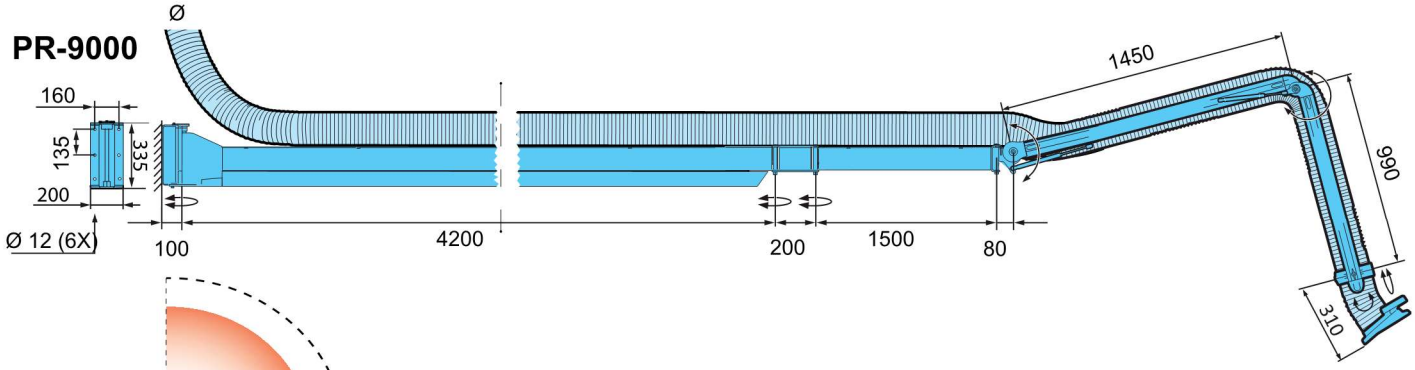
PR-7000

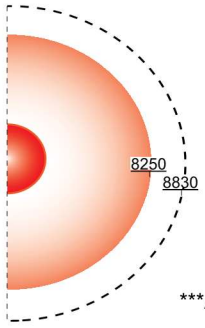


Working radius
Max. radius

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

PR-9000

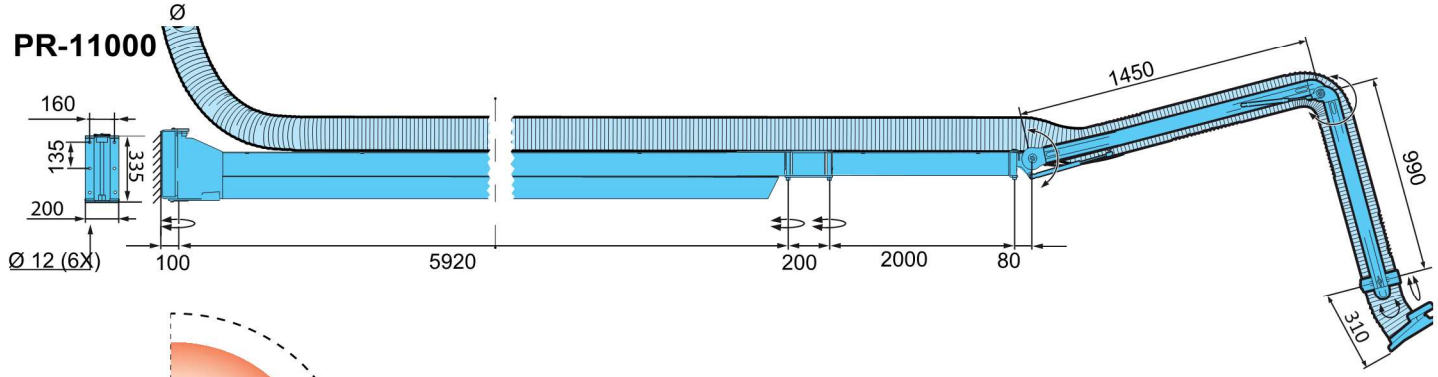


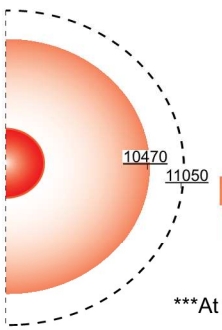


Working radius
Non-working area
Max. radius

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

PR-11000





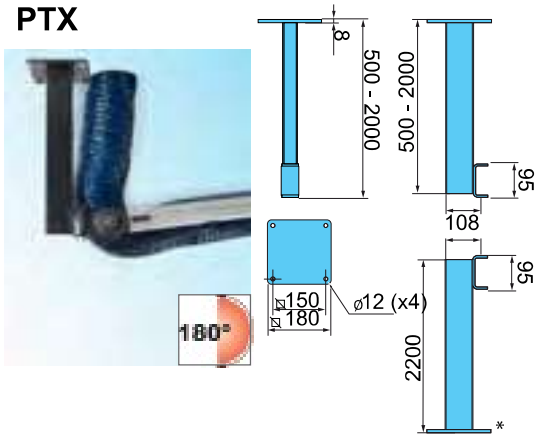
Working radius
Non-working area
Max. radius

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

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

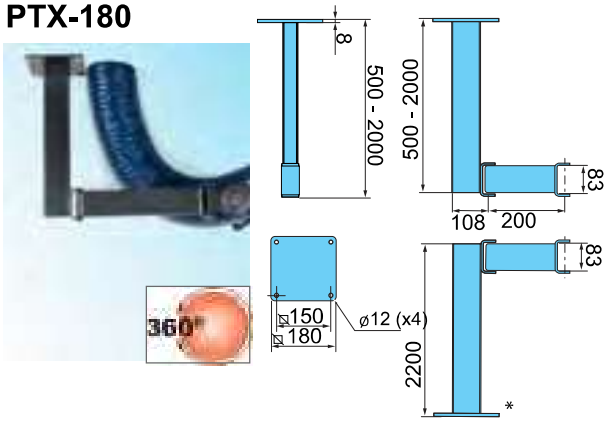


Ceiling and floor bracket for extractor type MOVEX PR in lengths 1.5, 2, 3 & 4m. Rotatable 180°.

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

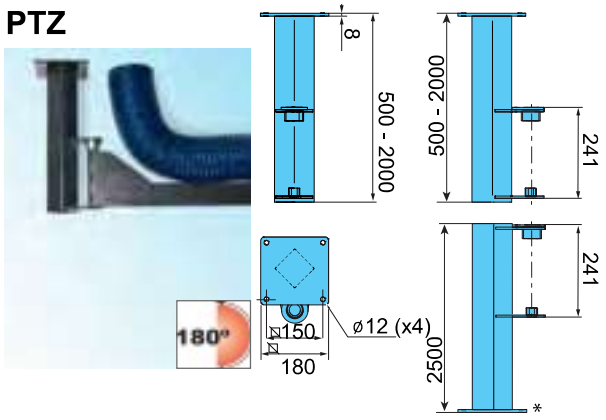


Ceiling and floor bracket for extractor type MOVEX PR in lengths 1.5, 2, 3 & 4m. Rotatable 360°.

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

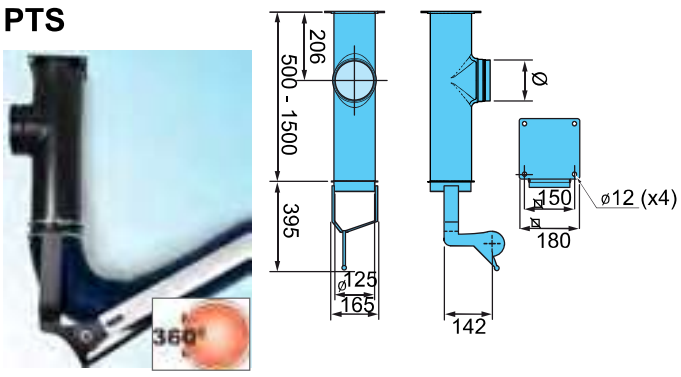


Ceiling and floor bracket for extractor type MOVEX PR in lengths 5 and 7m. Rotatable 180°.

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.



PR-T

Push button for control of fan or damper.



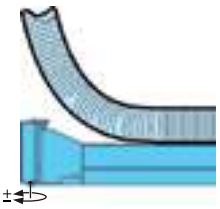
PR-LED-T

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

Technical data lighting

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

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.

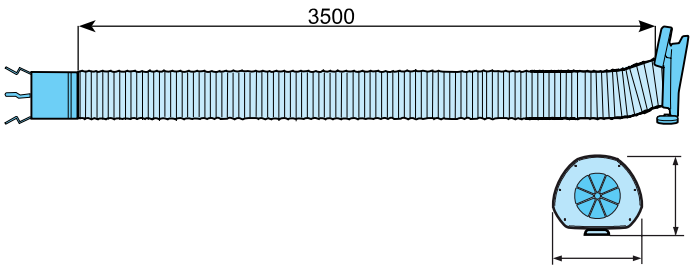
Article	Description	Length (mm)	Weight (kg)
PR-100-6340	Friction brake	212	0.3

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 components	PA, PA30%.
Aluminium components ...	Anodised.
Steel components	Black 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

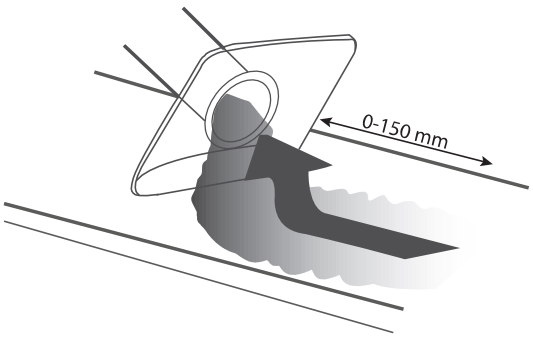
Lowest possible pressure drop is a quality aspect that always should be considered.

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.



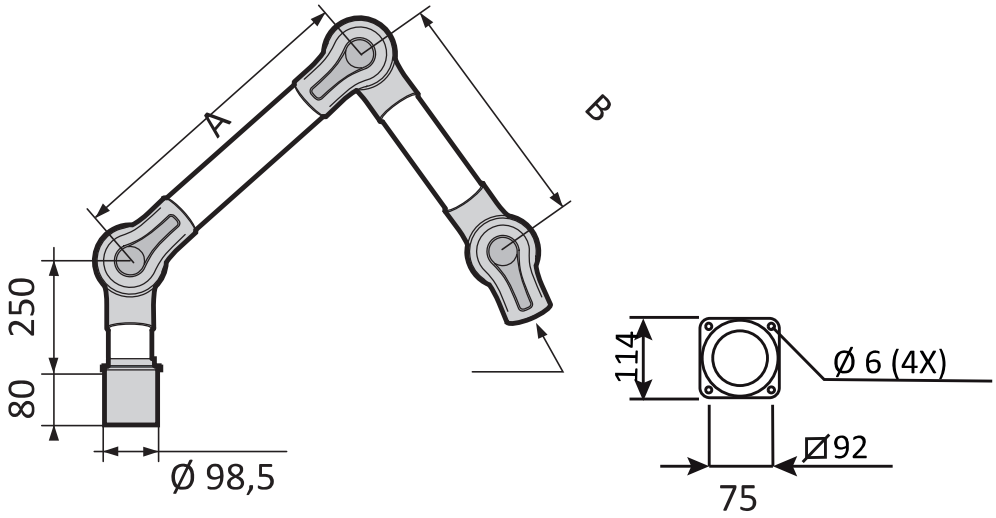
OPTIMAL CAPTURE

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.

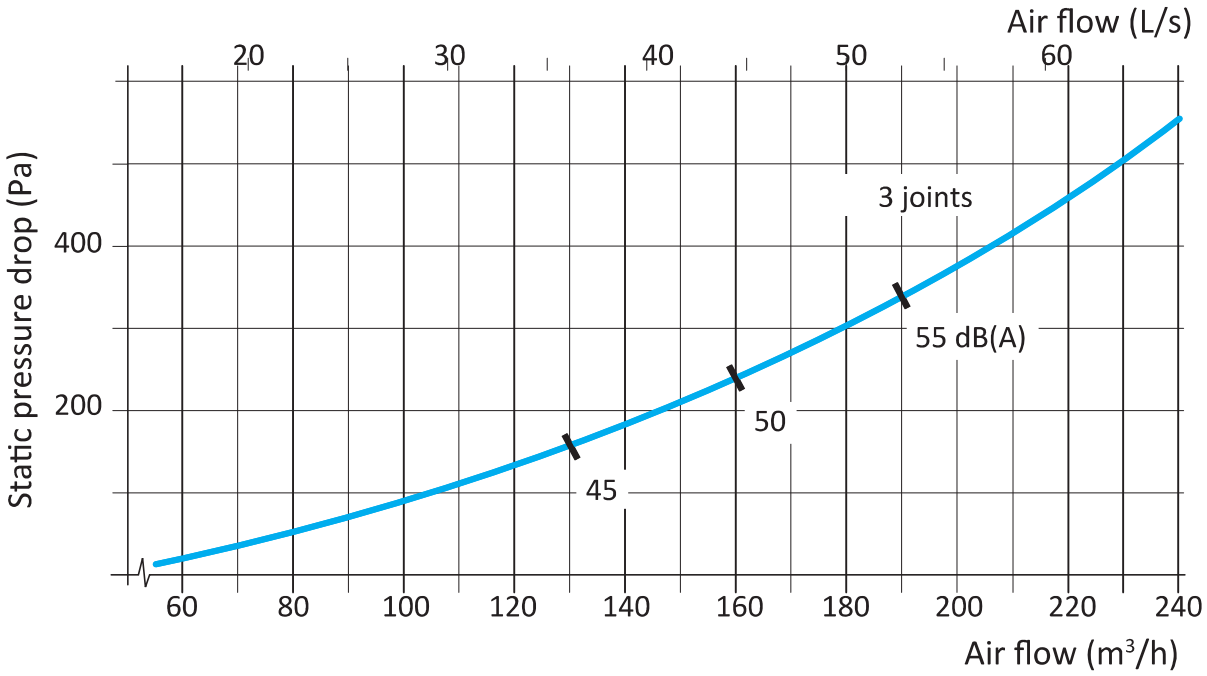


MEB (FOR TABLE MOUNTING)

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	75	2,60
MEB 1500-75ES	750	450	75	2,75



FLOW AND PRESSURE DROP DIAGRAM



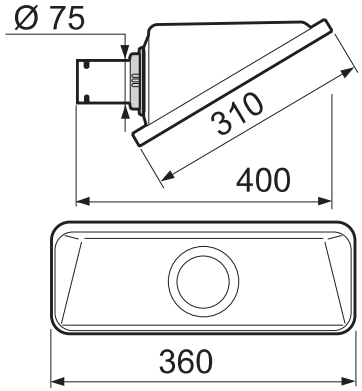
Static pressure drop is measured in accordance with ISO standard 5167-1.

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**	**Lev 01**	**1**

Type : S-RNZ9/450/560/1

V = 4500 m³/h; Δpt = 1137 Pa; Pr = 1.69 kW (ρ=1,2 kg/m³)

Separate parts (per unit)

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 m³/h	**4,500**
Static pressure at	ρ= 1.2	kg/m³	Δpsf Pa	**1,100**
Total pressure at	ρ= 1.2	kg/m³	Δpt Pa	**1,137**
Static pressure at	ρ=	kg/m³	Δpsf Pa	
Total pressure at	ρ=	kg/m³	Δpt Pa	
Rated speed			n 1/min	**1,441**
Impeller power at	ρ= 1.2	kg/m³	Pr kW	**1.69**
Impeller power at	ρ=	kg/m³	Pr kW	
Sound pressure,free field			Lpp dB(A)	**54-3m**
for installation type D (ISO) calculated acc. to VDI 3731				
Sound pressure at free inlet Lp dB(A)				**79-3m**
Fan weight (without motor) approx.			kg	**110**
Inlet temperature t			°C	**20**
maximum inlet temperature tmax			°C	

Flow medium ■ Air ■ Dust free ☐

Ex-protection ■ ⟨Ex⟩ 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
- ■ Thermistor protection 3-times
- ☐ Space heater
- ■ terminal box on Top /loc. Mid,A o.B side
- ■ without separate rating plate
- ■ Standard paint system

- ■ with fan
- ☐ Bearing with external lubrication

OTHER REQUIREMENTS

CENTRIFUGAL FAN

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

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

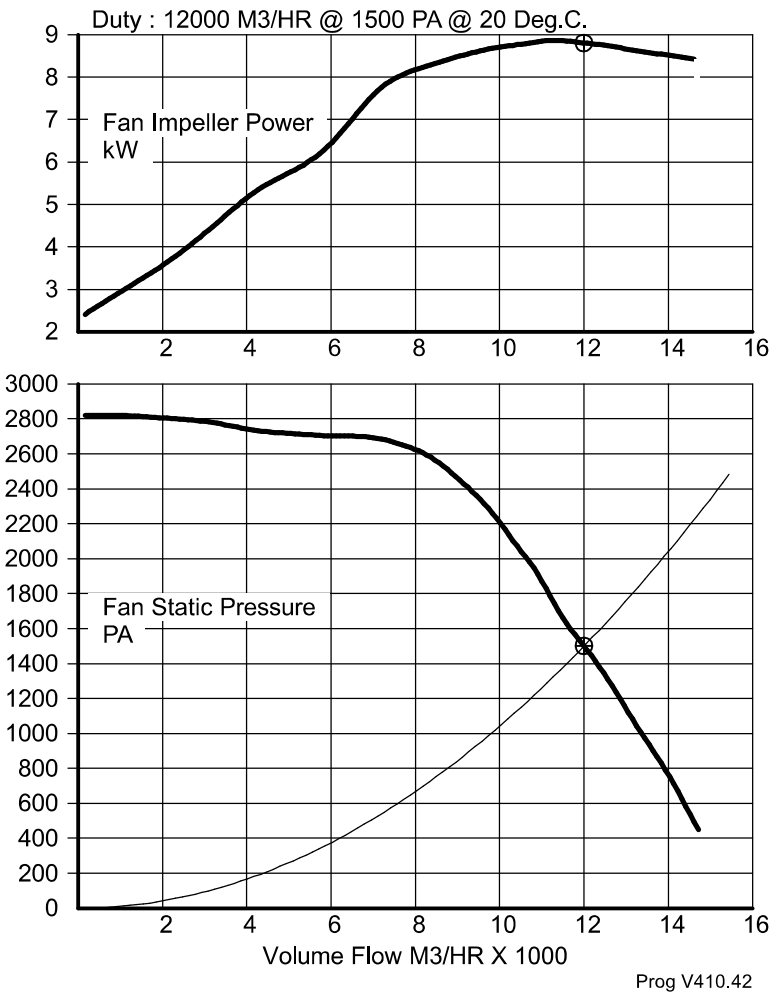
Inlet Volume Flow :	12000	m3/hr
Fan Static Pressure:		
Inlet Pressure :	-0	pa
Outlet Pressure :	1500	pa

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.

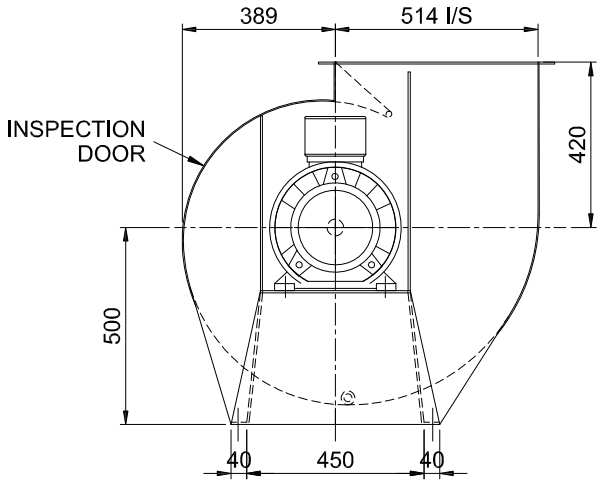


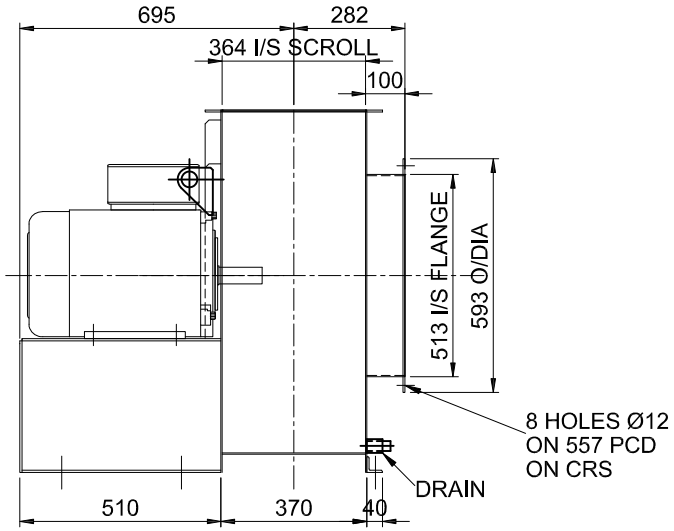
Prog V410.42

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.



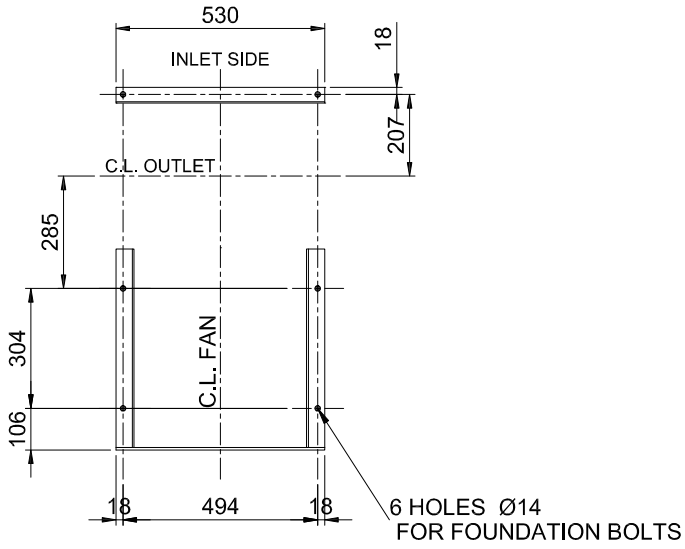


CLIENT :
TAG :
DUTY
INLET VOLUME :

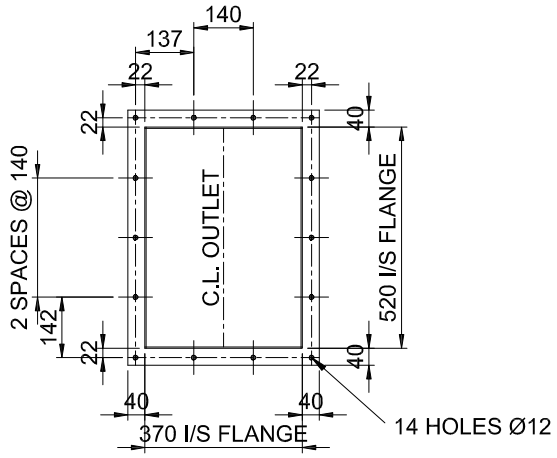
TEMPERATURE :	20 °C
SPEED :	2930 RPM
POWER :	
MOTOR :	11 kW 2 POLE
	FRAME D160M
	415-3-50Hz

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



FAN OUTLET FLANGE DETAIL
(NOT TO SCALE)

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

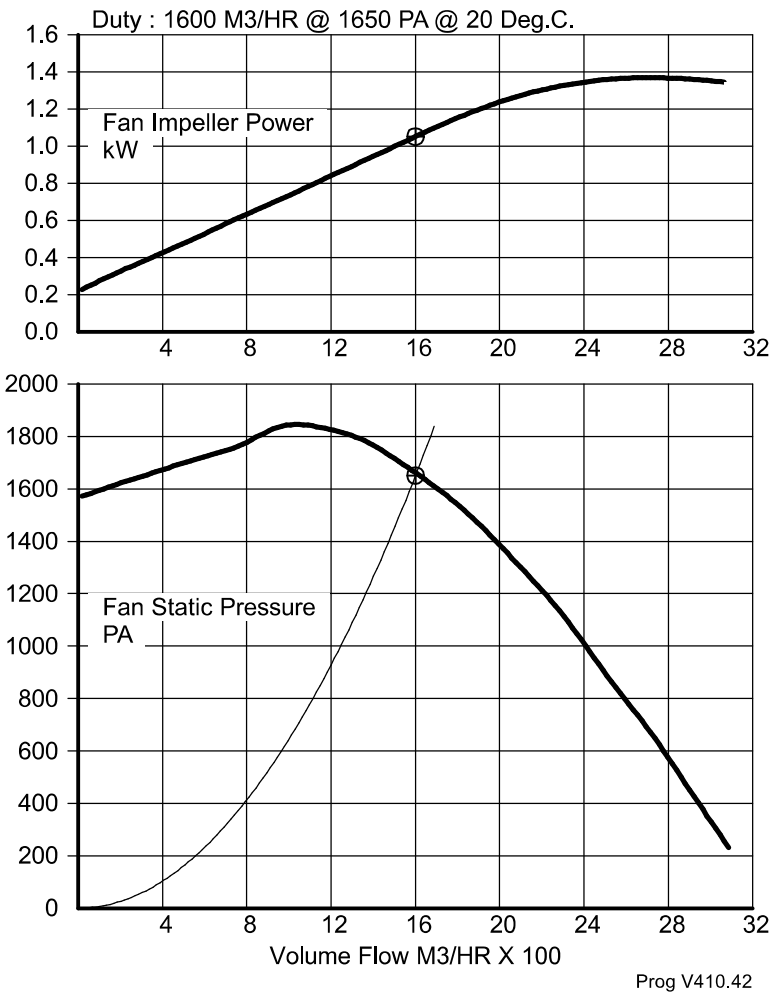
Inlet Volume Flow :	1600	m3/hr
Fan Static Pressure:		
Inlet Pressure :	-0	pa
Outlet Pressure :	1650	pa

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.

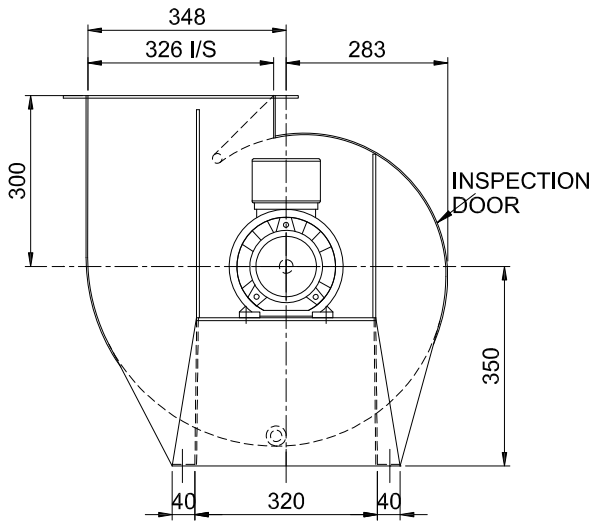


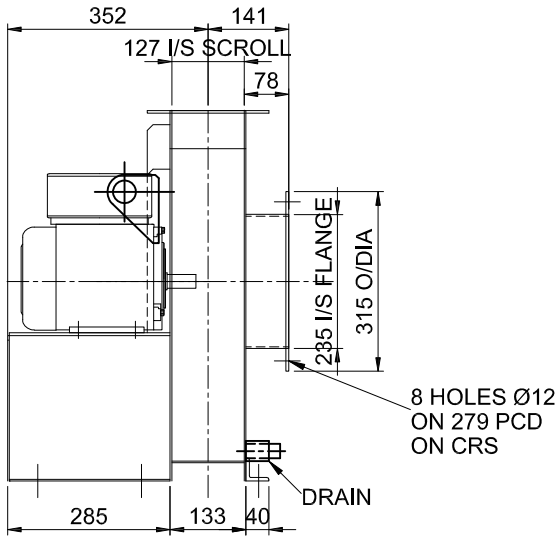
Prog V410.42

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.

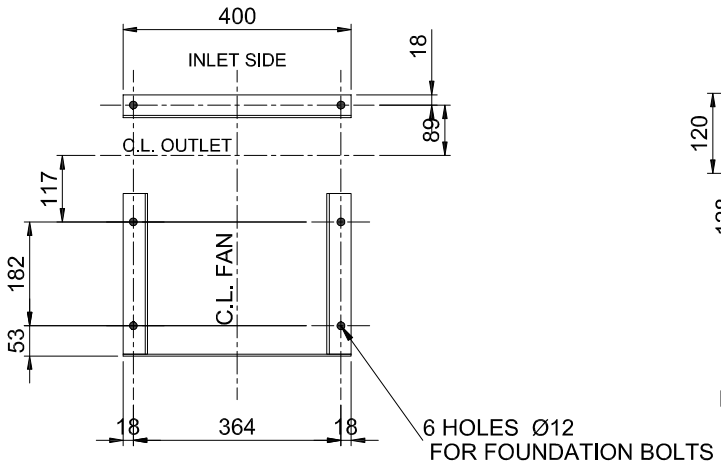
Sound Pressure levels (SPL) assume Free Field Hemispherical Radiation at 1 metre(s)
Breakout at 1 metre from 3 mm thick casing (inside Near Field range).
Casing levels assume the inlet / outlet are ducted and noise does not breakout through duct.
All values are averages. Free Inlet assumes that outlet is ducted and vice versa.



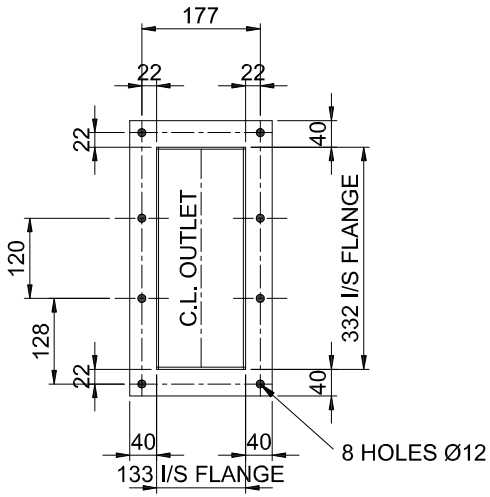


DUTY
INLET VOLUME :
STATIC PRESSURE :
TEMPERATURE :
SPEED : 2900 RPM
POWER :
MOTOR : 1.5 kW 2 POLE
FRAME D90S
415-3-50Hz

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**

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		21/06/202111:48:02 / gareth.berry

Type : S-133CRB9/79/330/1

TECHNICAL DATA

Volume flow rate			V m³/h	**300**
Static pressure at	ρ= 1.2	kg/m³	Δpsf Pa	**1,200**
Total pressure at	ρ= 1.2	kg/m³	Δpt Pa	**1,374**
Static pressure at	ρ=	kg/m³	Δpsf Pa	
Total pressure at	ρ=	kg/m³	Δpt Pa	
Rated speed			n 1/min	**2,787**
Impeller power at	ρ= 1.2	kg/m³	Pr kW	**0.21**
Impeller power at	ρ=	kg/m³	Pr kW	
Sound pressure,free field			Lpp dB(A)	**45-3m**
for installation type D (ISO) calculated acc. to VDI 3731				
Sound pressure at free inlet Lp dB(A)				**79-3m**
Fan weight (without motor) approx.			kg	**186**
Inlet temperature t			°C	**20**
maximum inlet temperature tmax			°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.	A	**1.48 / 7.7-times**
efficiency motor / cos phi		**80.7 % / 0.88**

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

■ with fan

☐ Bearing with external lubrication

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

TECHNICAL DATA FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

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		21/06/202111:48:03 / 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 [	m3/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 [	m3/h]	**300**
Static pressure	pst = pt-pd2 [	Pa]	**1,201**
Total pressure	pt [	Pa]	**1,374**
Inlet density	Rho [	kg/m3]	**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 m²] [	]	**1.00**
Appx. starting time	ta [	s]	**85**
ca. Standard Rundown time	td [	s]	**2,320**

*Values in brackets for aluminium casing.

FAN CURVE FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

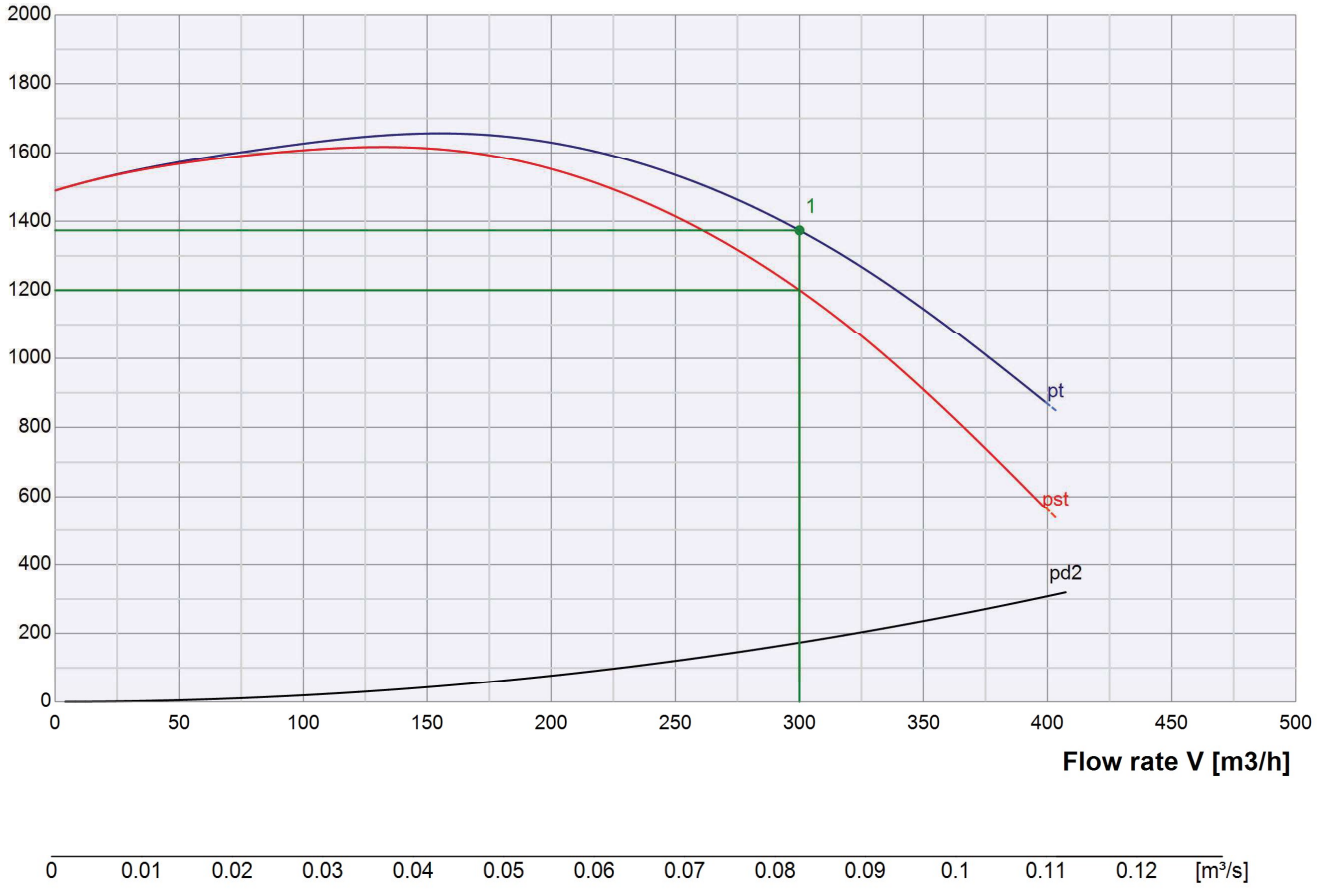
Date: 21/06/2021

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		21/06/202111:48:03 / gareth.berry

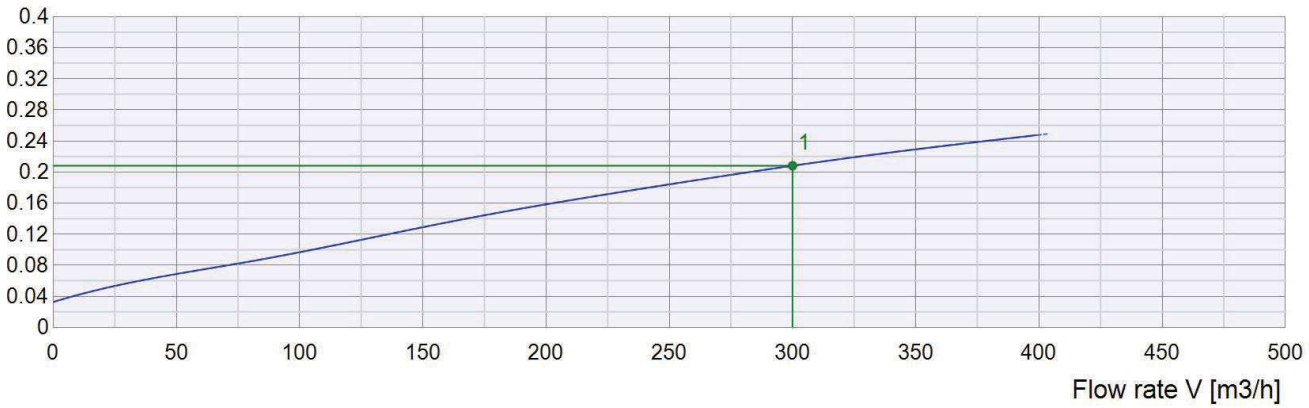
75-Radial Alldays Peacock

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

Total press. pt, static press. pst, dynamic press. pd2 [Pa]



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!

SOUND POWER / - PRESSURE FOR CENTRIFUGAL FAN
Calculated acc. to VDI 3731

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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

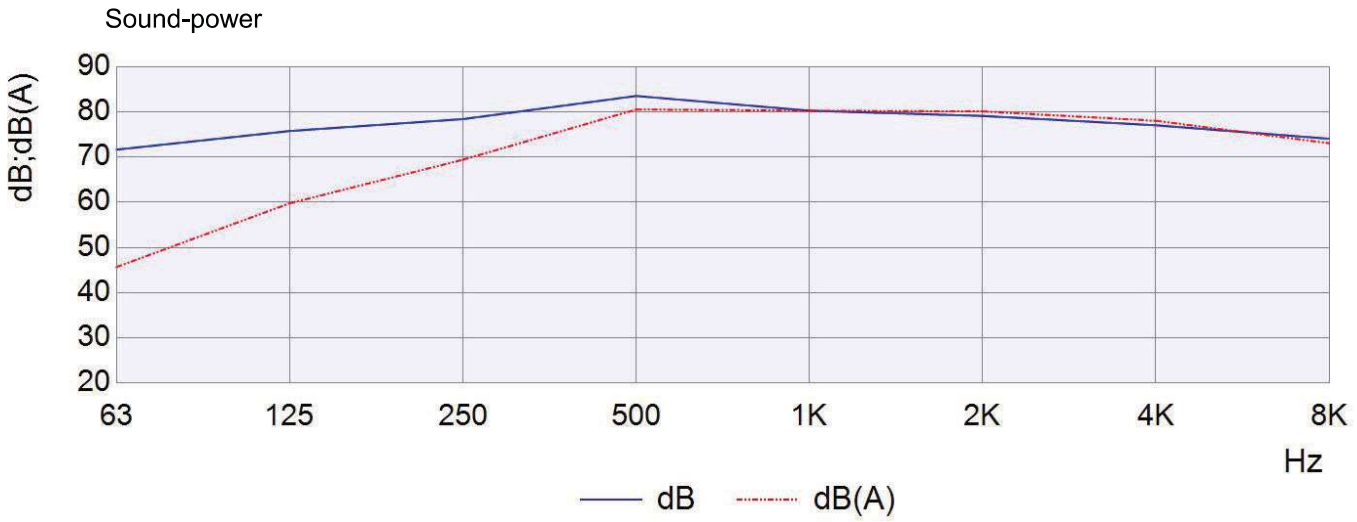
Basic sound	dB	86							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.9	1.7	3.4	6.9	14	27	55
Rel. spectrum	dB	-15	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	72	76	78	84	80	79	77	74
A-weighting corr.	dB	-26	-16	-9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



NOISE REDUCTION

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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**

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		21/06/202111:48:02 / gareth.berry

Type : S-133CRB9/79/330/1

TECHNICAL DATA

Volume flow rate			V m³/h	**300**
Static pressure at	ρ= 1.2	kg/m³	Δpsf Pa	**1,200**
Total pressure at	ρ= 1.2	kg/m³	Δpt Pa	**1,374**
Static pressure at	ρ=	kg/m³	Δpsf Pa	
Total pressure at	ρ=	kg/m³	Δpt Pa	
Rated speed			n 1/min	**2,787**
Impeller power at	ρ= 1.2	kg/m³	Pr kW	**0.21**
Impeller power at	ρ=	kg/m³	Pr kW	
Sound pressure,free field			Lpp dB(A)	**45-3m**
for installation type D (ISO) calculated acc. to VDI 3731				
Sound pressure at free inlet Lp dB(A)				**79-3m**
Fan weight (without motor) approx.			kg	**186**
Inlet temperature t			°C	**20**
maximum inlet temperature tmax			°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.	A	**1.48 / 7.7-times**
efficiency motor / cos phi		**80.7 % / 0.88**

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

- ■ with fan
- ☐ Bearing with external lubrication

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

TECHNICAL DATA FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

Date: 21/06/2021

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YOUR REF.:	Barry Thornton	**Y/DESC.:**	Lev 5/6/14		21/06/202111:48:03 / 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 [	m3/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 [	m3/h]	**300**
Static pressure	pst = pt-pd2 [	Pa]	**1,201**
Total pressure	pt [	Pa]	**1,374**
Inlet density	Rho [	kg/m3]	**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 m²] [	]	**1.00**
Appx. starting time	ta [	s]	**85**
ca. Standard Rundown time	td [	s]	**2,320**

*Values in brackets for aluminium casing.

FAN CURVE FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

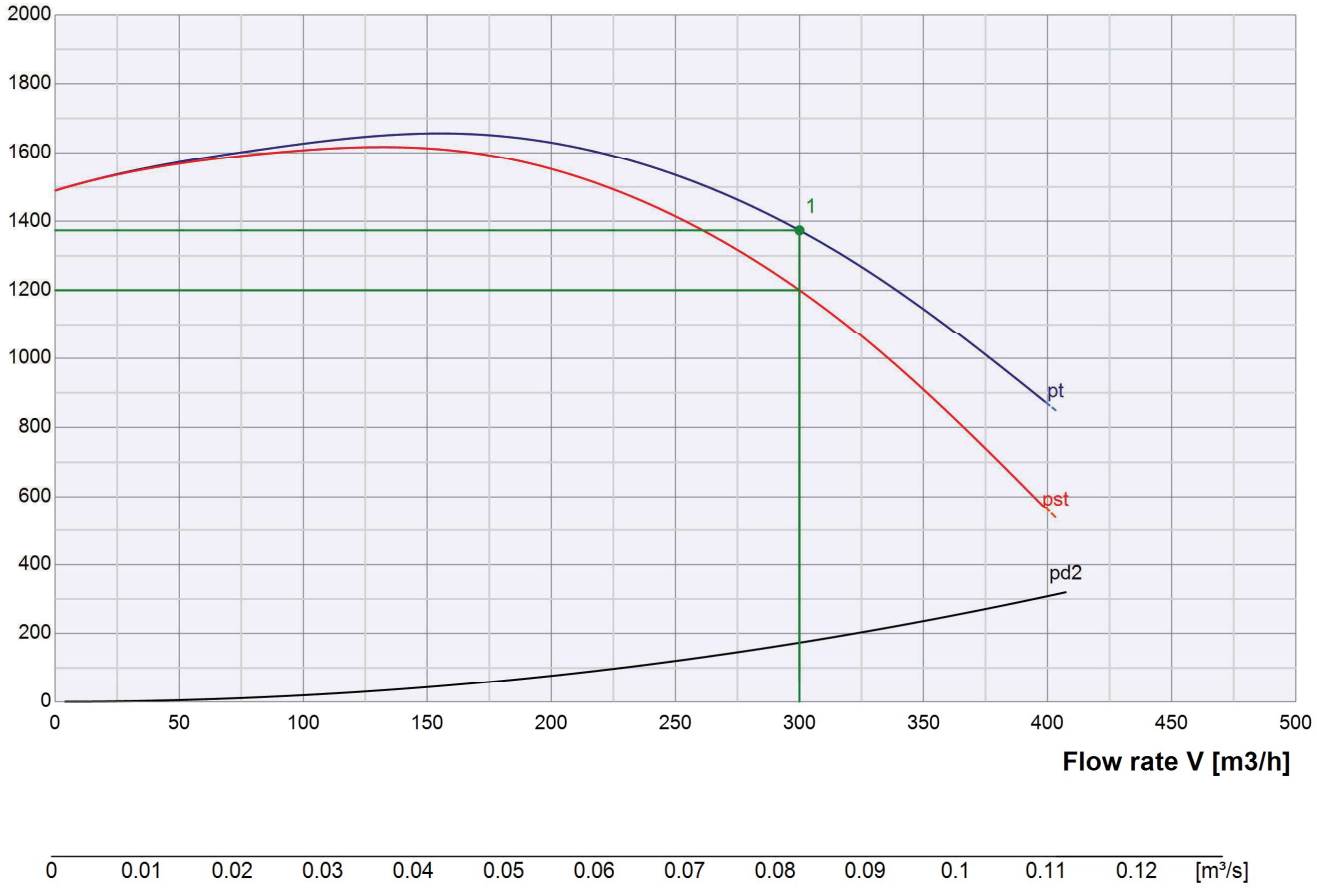
Date: 21/06/2021

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YOUR REF.:	Barry Thornton	**Y/DESC.:**	Lev 5/6/14		21/06/202111:48:03 / gareth.berry

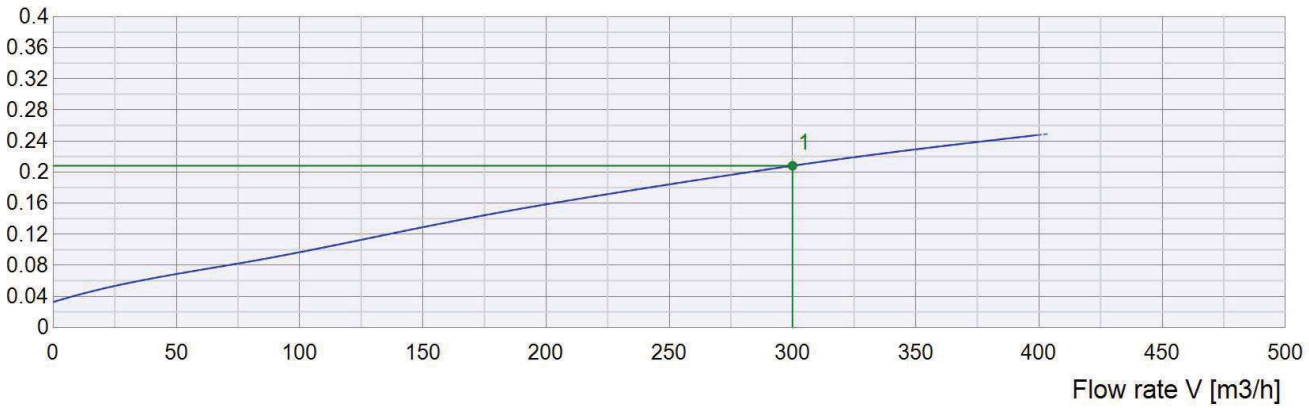
75-Radial Alldays Peacock

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

Total press. pt, static press. pst, dynamic press. pd2 [Pa]



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!

SOUND POWER / - PRESSURE FOR CENTRIFUGAL FAN
Calculated acc. to VDI 3731

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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

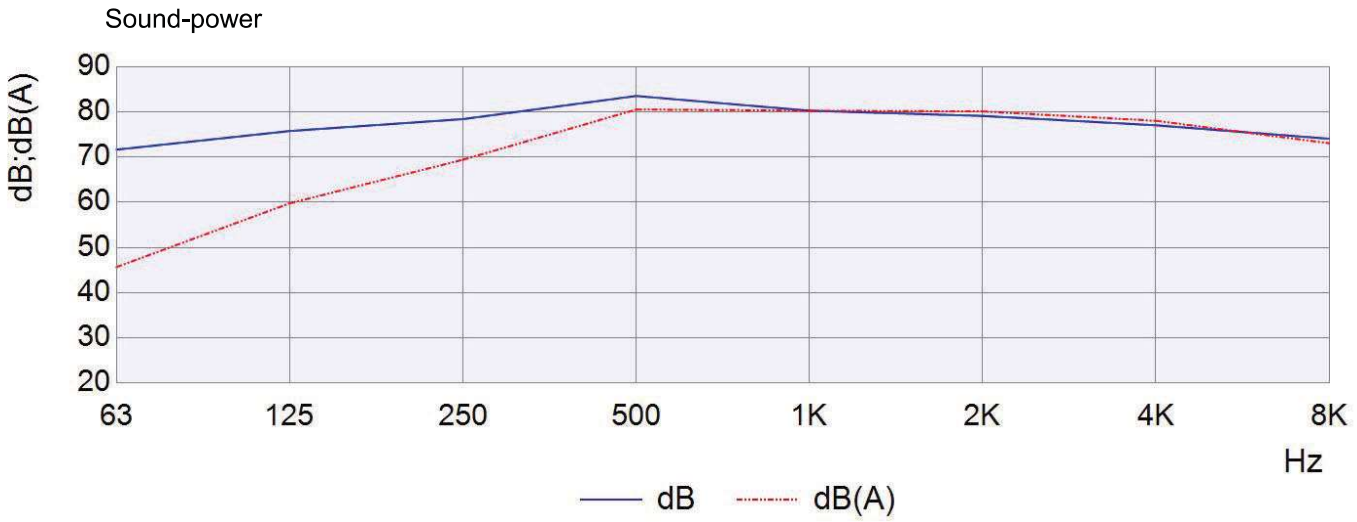
Basic sound	dB	86							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.9	1.7	3.4	6.9	14	27	55
Rel. spectrum	dB	-15	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	72	76	78	84	80	79	77	74
A-weighting corr.	dB	-26	-16	-9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



NOISE REDUCTION

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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

YOUR REF.:	Barry Thornton	Y/DESC.:	Lev 08/12

Type : S-RNZ9/250/315/1

TECHNICAL DATA

Volume flow rate				V m³/h	**2,600**
Static pressure at	ρ= 1.2	kg/m³	Δpsf Pa		**800**
Total pressure at	ρ= 1.2	kg/m³	Δpt Pa		**930**
Static pressure at	ρ=	kg/m³	Δpsf Pa		
Total pressure at	ρ=	kg/m³	Δpt Pa		
Rated speed				n 1/min	**2,853**
Impeller power at	ρ= 1.2	kg/m³	Pr kW		**0.92**
Impeller power at	ρ=	kg/m³	Pr kW		
Sound pressure,free field			Lpp dB(A)		**46-3m**
for installation type D (ISO) calculated acc. to VDI 3731					
Sound pressure at free inlet Lp dB(A)					**79-3m**
Fan weight (without motor) approx.			kg		**33**
Inlet temperature t			°C		**20**
maximum inlet temperature tmax			°C		

Flow medium ■ Air ■ Dust free ☐

Ex-protection ■ ⟨Ex⟩ 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**

TECHNICAL DATA FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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 [	m3/h]	**2,600**
Static pressure	pst = pt-pd2 [	Pa]	**800**
Total pressure	pt [	Pa]	**930**
Inlet density	Rho [	kg/m3]	**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 m²] [	]	**0.07**
Appx. starting time	ta [	s]	**5**
ca. Standard Rundown time	td [	s]	**40**

*Values in brackets for aluminium casing.

FAN CURVE FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

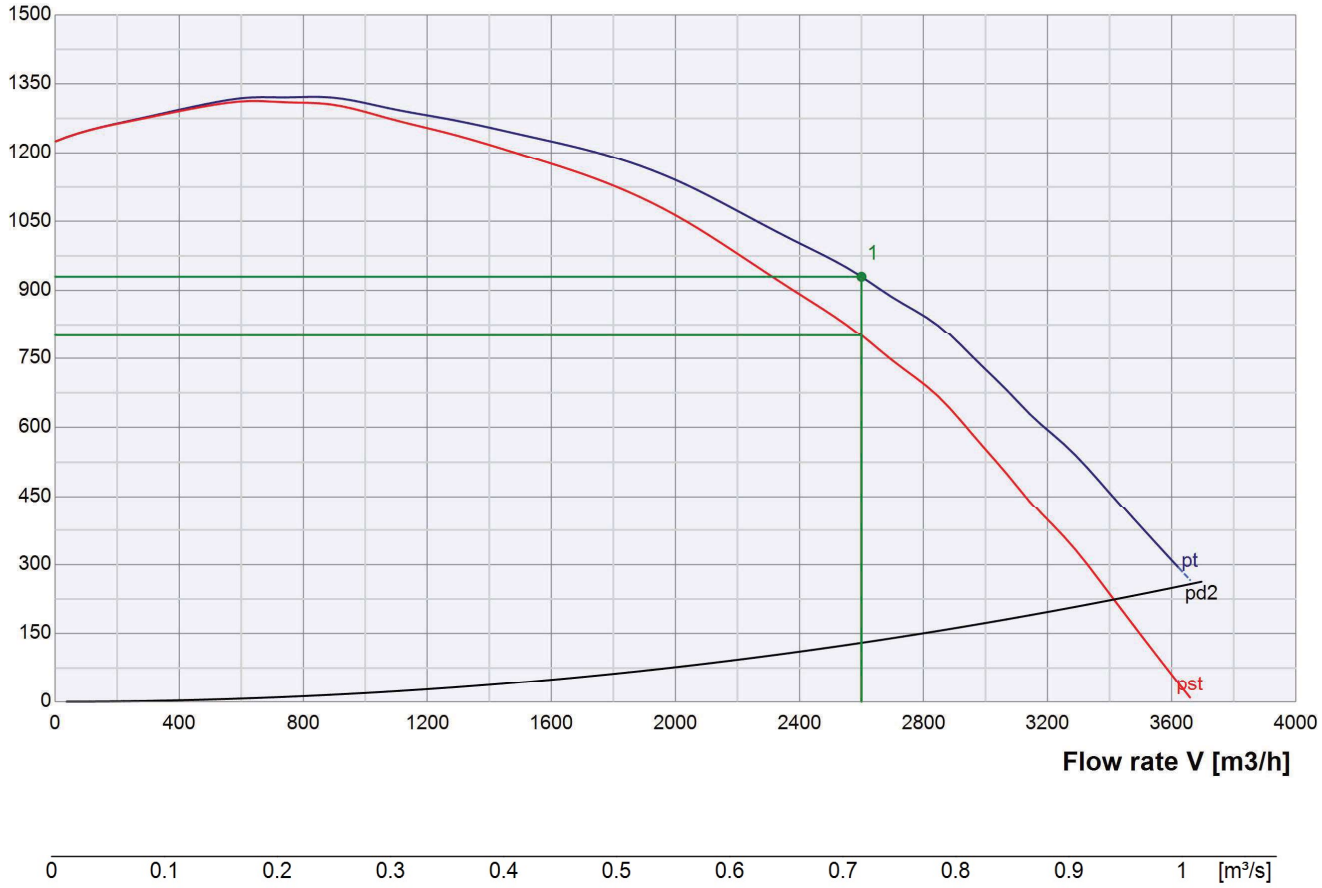
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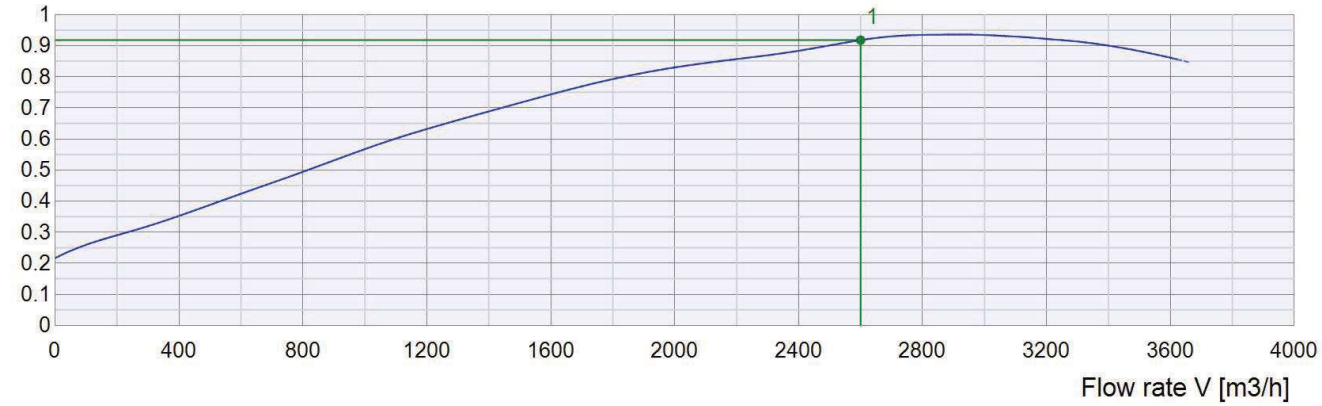
50-Centrifugal Witt

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

Total press. pt, static press. pst, dynamic press. pd2 [Pa]



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!

SOUND POWER / - PRESSURE FOR CENTRIFUGAL FAN
Calculated acc. to VDI 3731

FAN SYSTEMS WITT

Date: 21/06/2021

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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

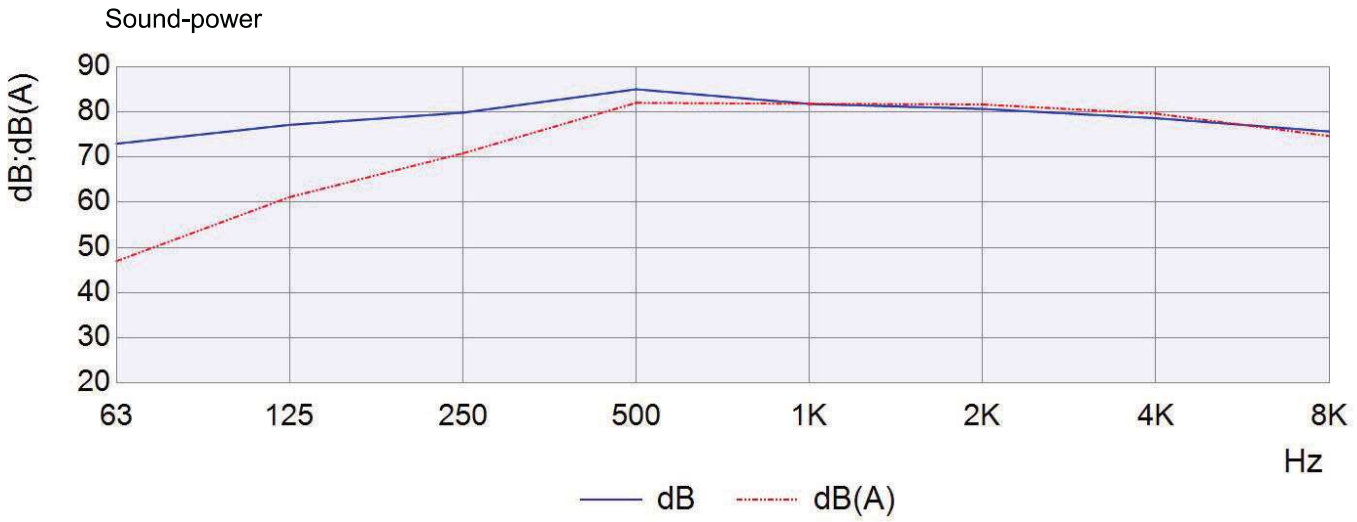
Basic sound	dB	88							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.8	1.7	3.3	6.7	13	27	54
Rel. spectrum	dB	-16	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	73	77	80	85	82	81	79	76
A-weighting corr.	dB	-26	-16	-9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



NOISE REDUCTION

FAN SYSTEMS WITT

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		21/06/202111:48:04 / gareth.berry

Fan type :

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 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

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

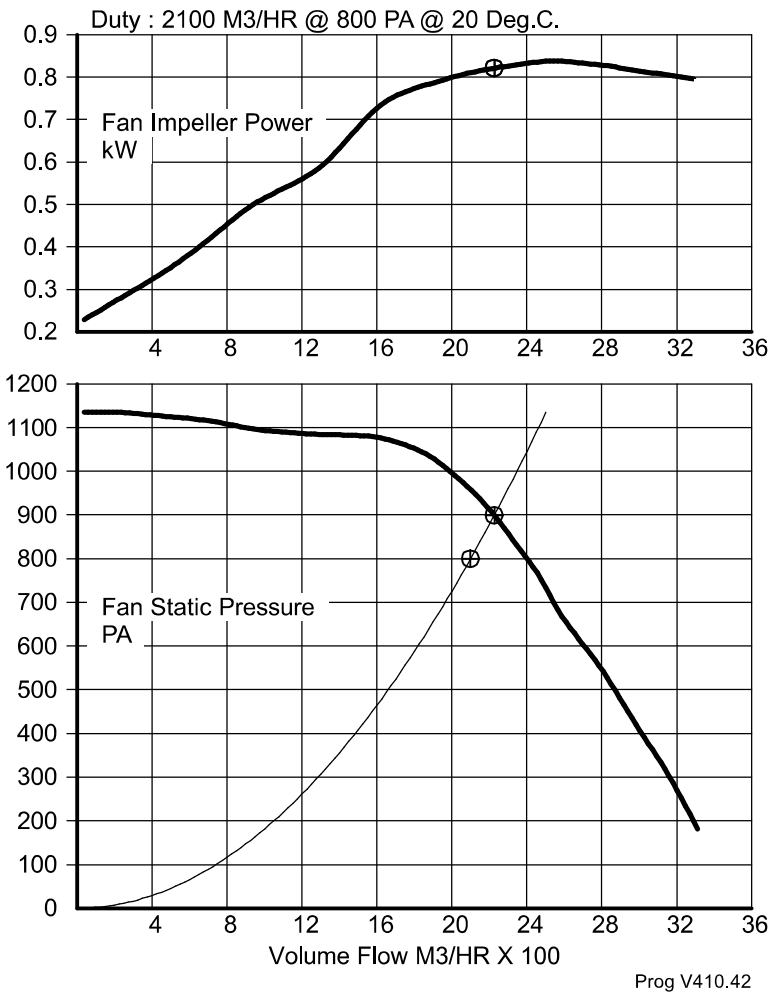
Inlet Volume Flow :	2100	m3/hr
Fan Static Pressure:		
Inlet Pressure :	-0	pa
Outlet Pressure :	800	pa

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.

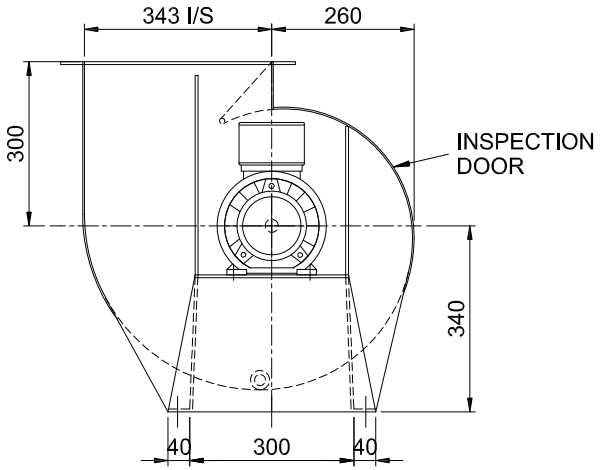


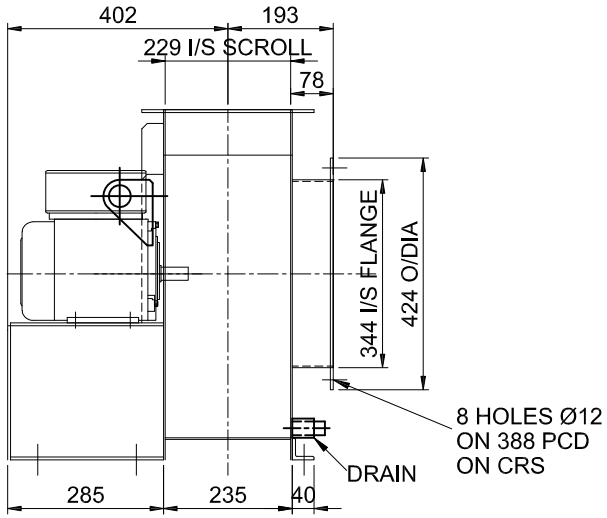
Prog V410.42

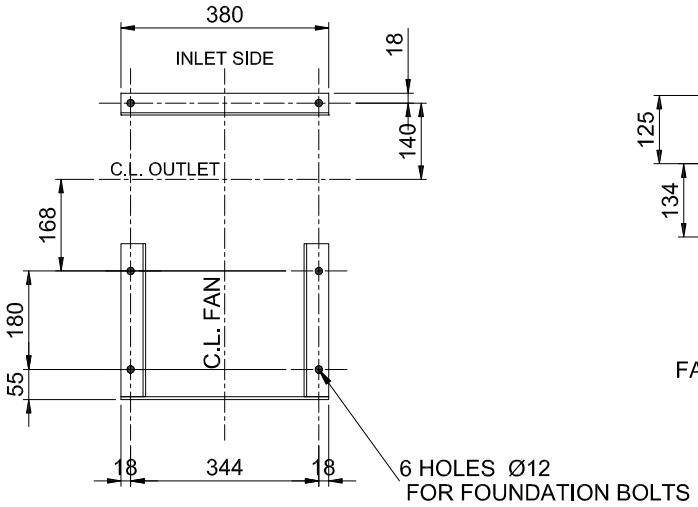
Noise Details :	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	Total
Internal SWL dB	95	92	91	91	84	80	78	73	**99**
Free Inlet SPL dBA	44	57	67	76	73	70	68	61	**79**
Free Outlet SPL dBA	43	56	67	76	73	70	68	61	**79**
Outside Casing dBA	45	51	54	60	56	53	51	42	**63**

Motor noise is NOT included in the figures above.

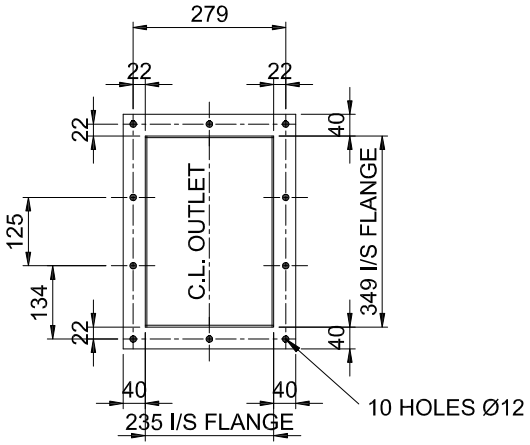
Sound Pressure levels (SPL) assume Free Field Hemispherical Radiation at 1 metre(s)
Breakout at 1 metre from 3 mm thick casing (inside Near Field range).
Casing levels assume the inlet / outlet are ducted and noise does not breakout through duct.
All values are averages. Free Inlet assumes that outlet is ducted and vice versa.







PLAN VIEW FROM ABOVE SHOWING
FOUNDATION BOLT HOLE DRILLING



FAN OUTLET FLANGE DETAIL

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

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

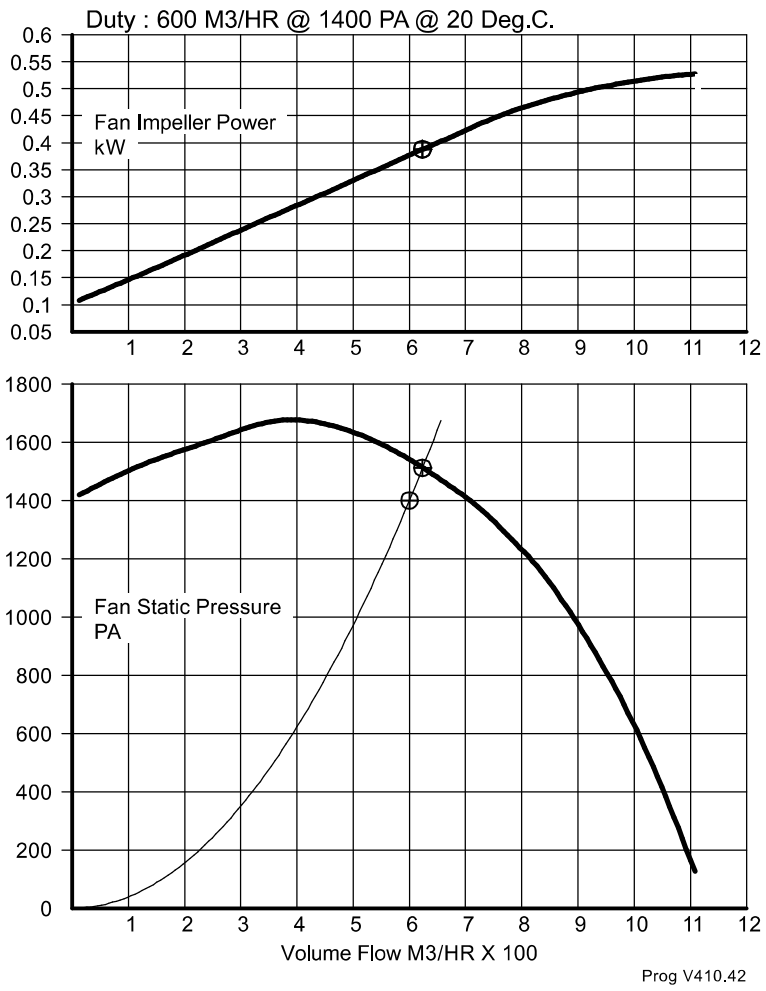
Inlet Volume Flow :	600	m3/hr
Fan Static Pressure:		
Inlet Pressure :	-0	pa
Outlet Pressure :	1400	pa

Fan Selected :

SWSI-BCP108-340/100-70

Speed :	2800	Rpm
Impeller Ø :	340	mm
Fan Class :	1	

Impeller Power :		
@ 20 Deg C :	0.388	kW
@ Duty Temp :	0.388	kW
Tip Speed :	49.8	m/s
Inlet Velocity :	5.1	m/s
Outlet Velocity :	5.8	m/s
Temp Rise :	1.9	Deg.C.

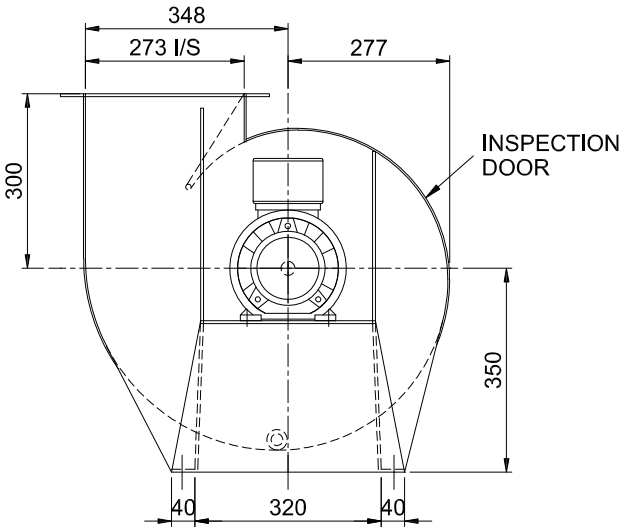


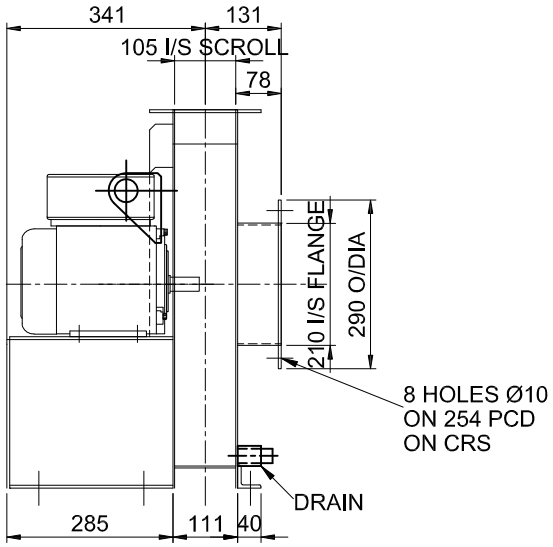
Prog V410.42

Noise Details :	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	**Total**
Internal SWL dB	85	83	83	90	86	79	75	69	**93**
Free Inlet SPL dBA	30	44	57	73	75	69	65	57	**78**
Free Outlet SPL dBA	29	43	56	73	75	69	65	57	**78**
Outside Casing dBA	35	42	46	59	58	52	48	38	**62**

Motor noise is NOT included in the figures above.

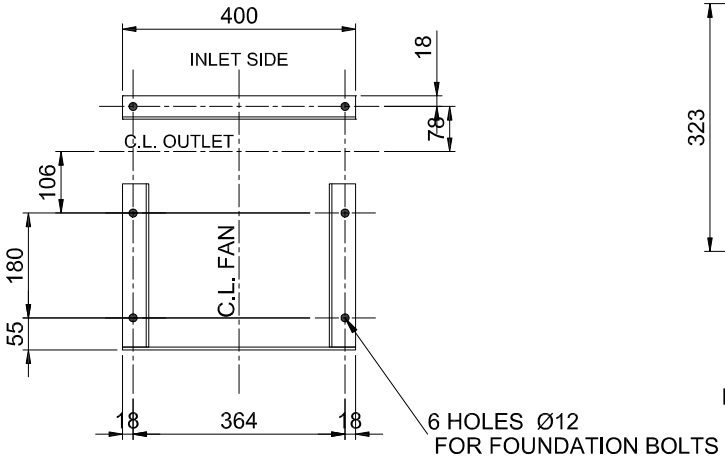
Sound Pressure levels (SPL) assume Free Field Hemispherical Radiation at 1 metre(s)
Breakout at 1 metre from 3 mm thick casing (inside Near Field range).
Casing levels assume the inlet / outlet are ducted and noise does not breakout through duct.
All values are averages. Free Inlet assumes that outlet is ducted and vice versa.



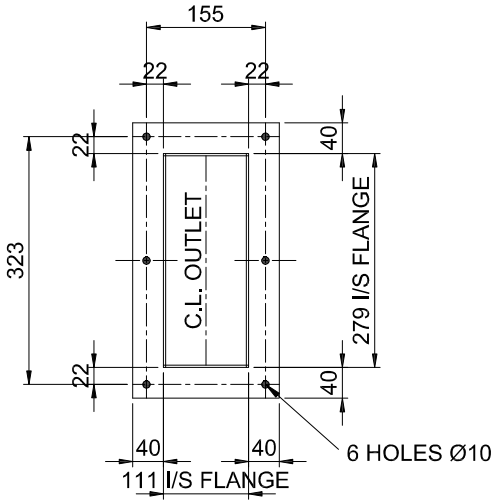


CLIENT :
TAG :
DUTY
INLET VOLUME :
STATIC PRESSURE :
TEMPERATURE : 20 °C
SPEED : 2900 RPM
POWER :
MOTOR : 1.5 kW 2 POLE
FRAME D90S
415-3-50Hz

FOUNDATION LOADS
OUT OF BALANCE : NORMAL : 13.31 N
MAXIMUM : 1107.20 N
AXIAL THRUST : 18.66 N
TOTAL WEIGHT : 78 KG
ACCESSORIES :
INSPECTION DOOR & DRAIN
SHAFT SEAL



PLAN VIEW FROM ABOVE SHOWING
FOUNDATION BOLT HOLE DRILLING



FAN OUTLET FLANGE DETAIL
(NOT TO SCALE)

YOUR REF.:	Barry Thornton	Y/DESC.:	Lev 08/12

Type : S-RNZ9/250/315/1

TECHNICAL DATA

Volume flow rate				V m³/h	**2,600**
Static pressure at	ρ= 1.2	kg/m³	Δpsf Pa		**800**
Total pressure at	ρ= 1.2	kg/m³	Δpt Pa		**930**
Static pressure at	ρ=	kg/m³	Δpsf Pa		
Total pressure at	ρ=	kg/m³	Δpt Pa		
Rated speed				n 1/min	**2,853**
Impeller power at	ρ= 1.2	kg/m³	Pr kW		**0.92**
Impeller power at	ρ=	kg/m³	Pr kW		
Sound pressure,free field			Lpp dB(A)		**46-3m**
for installation type D (ISO) calculated acc. to VDI 3731					
Sound pressure at free inlet Lp dB(A)					**79-3m**
Fan weight (without motor) approx.			kg		**33**
Inlet temperature t			°C		**20**
maximum inlet temperature tmax			°C		

Flow medium ■ Air ■ Dust free ☐

Ex-protection ■ ⟨Ex⟩ 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**

TECHNICAL DATA FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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 [	m3/h]	**2,600**
Static pressure	pst = pt-pd2 [	Pa]	**800**
Total pressure	pt [	Pa]	**930**
Inlet density	Rho [	kg/m3]	**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 m²] [	]	**0.07**
Appx. starting time	ta [	s]	**5**
ca. Standard Rundown time	td [	s]	**40**

*Values in brackets for aluminium casing.

FAN CURVE FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

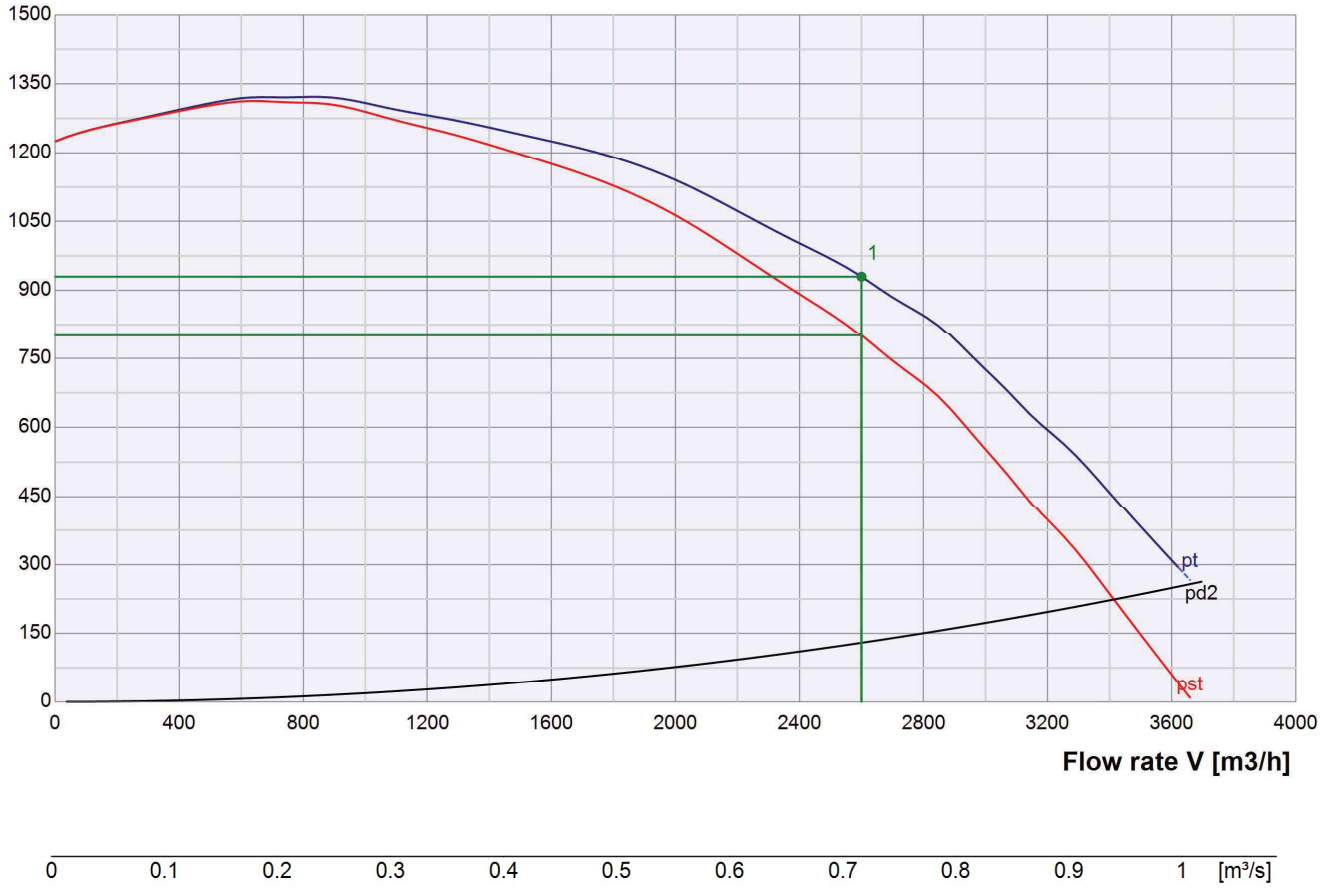
Date: 21/06/2021

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		21/06/202111:48:04 / gareth.berry

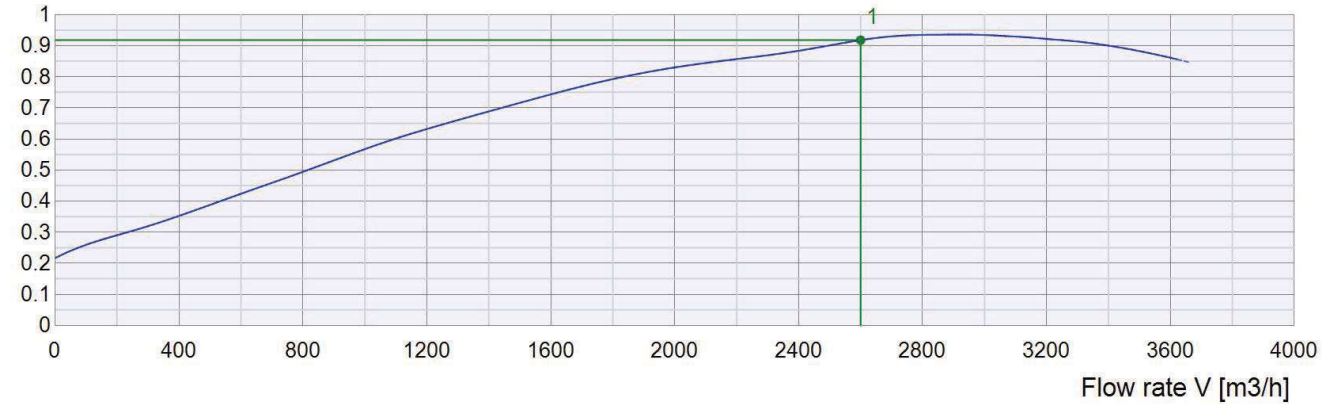
50-Centrifugal Witt

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

Total press. pt, static press. pst, dynamic press. pd2 [Pa]



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!

SOUND POWER / - PRESSURE FOR CENTRIFUGAL FAN
Calculated acc. to VDI 3731

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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

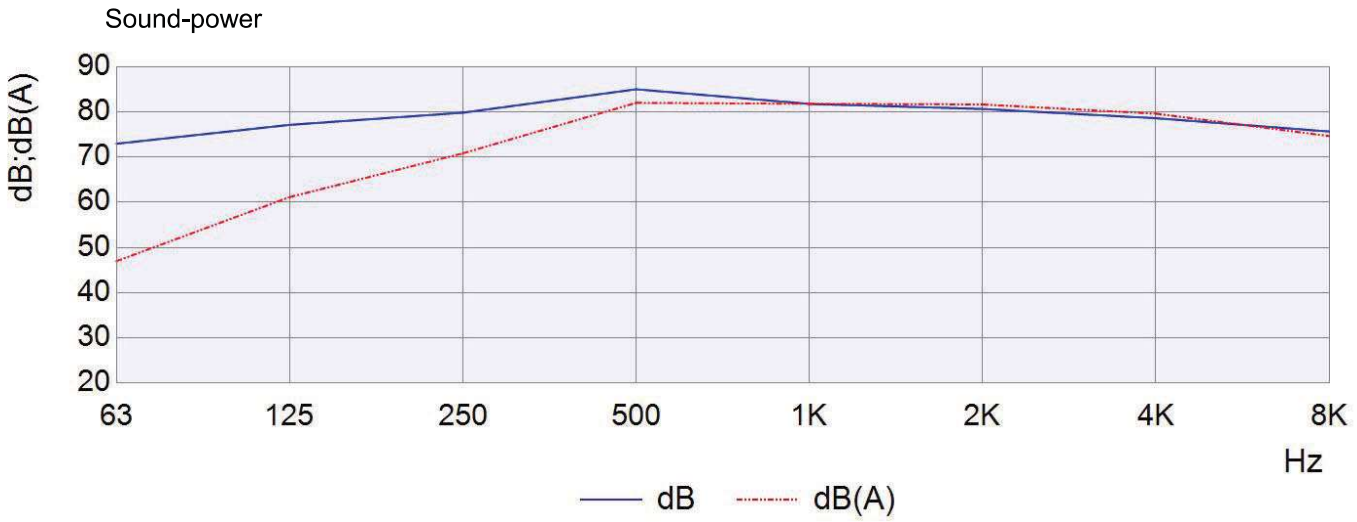
Basic sound	dB	88							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.8	1.7	3.3	6.7	13	27	54
Rel. spectrum	dB	-16	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	73	77	80	85	82	81	79	76
A-weighting corr.	dB	-26	-16	-9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



NOISE REDUCTION

FAN SYSTEMS WITT

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		21/06/202111:48:04 / gareth.berry

Fan type :

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 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

Item No.:	1	*No. Req:*	1
Volume:	2670 M3/HR		
Pressure:	4000 pa		
Temp/MaxTemp:	20 .C		
Fan Model:	510 bcp		
Absorbed Power:	4.1	KW	
Effic.@ Duty:			
Motor Details:	5.5 kw 2 pole		
Fan Speed:	2900 RPM		
Drive Type:	DIRECT DRIVEN		
Construction:	MILD STEEL CONSTRUCTION 1 PACK PAINT FINISH		
Inlet:	FLANGED		
Outlet:	FLANGED		
Drain Plug:	YES		
Inspection Door:	YES		
Base Frame:	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
23/06/2021

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 :

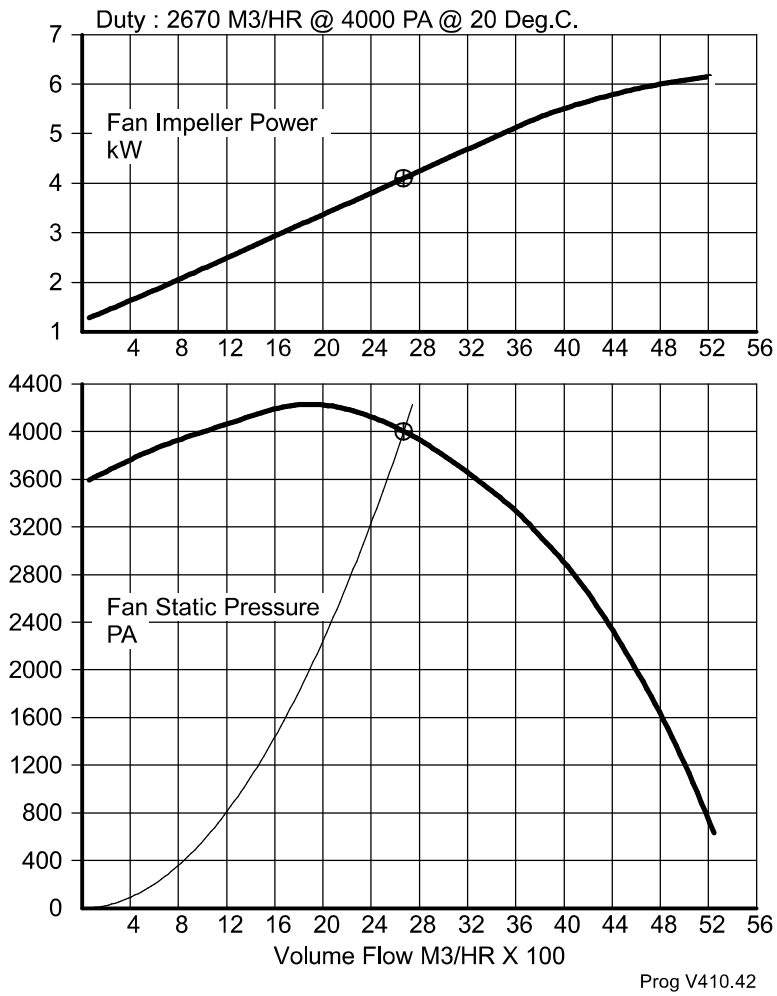
Inlet Volume Flow :	2670	m3/hr
Fan Static Pressure:		
Inlet Pressure :	-0	pa
Outlet Pressure :	4000	pa

Fan Selected :

SWSI-BCP108-510/100-95

Speed :	2900	Rpm
Impeller Ø :	510	mm
Fan Class :	3	

Impeller Power :		
@ 20 Deg C :	4.10	kW
@ Duty Temp :	4.10	kW
Tip Speed :	77.4	m/s
Inlet Velocity :	10.1	m/s
Outlet Velocity :	11.4	m/s
Temp Rise :	4.6	Deg.C.

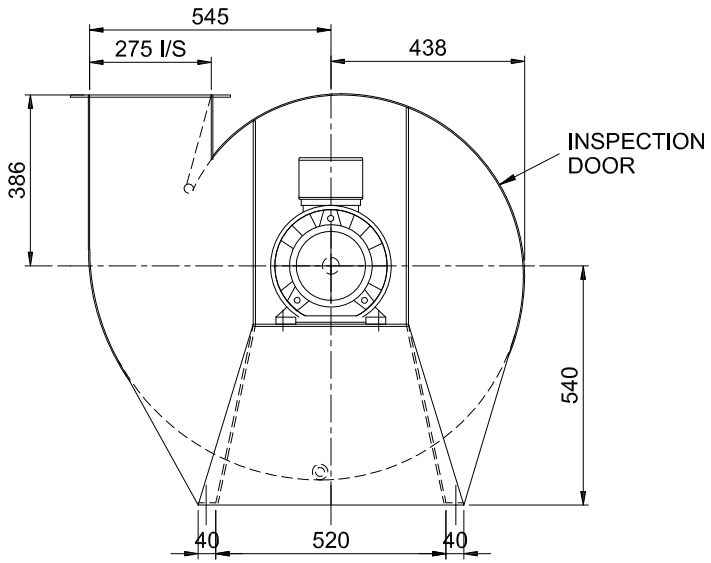


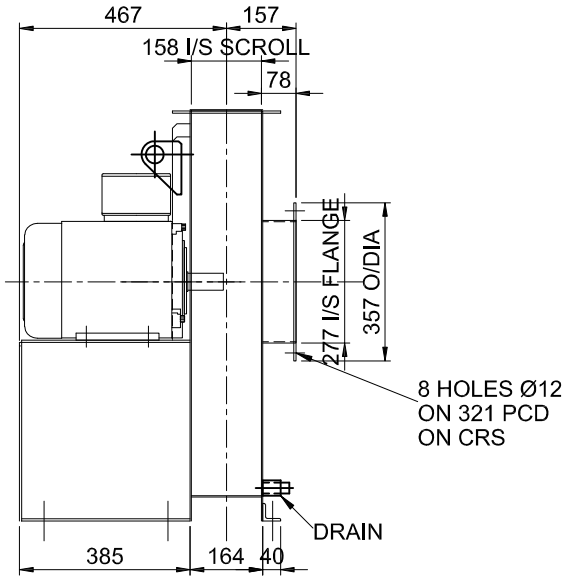
Prog V410.42

Noise Details :	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	**Total**
Internal SWL dB	98	97	97	101	97	92	89	85	**106**
Free Inlet SPL dBA	46	61	73	86	86	82	79	73	**90**
Free Outlet SPL dBA	46	61	72	85	86	82	79	73	**90**
Outside Casing dBA	51	59	63	73	72	68	65	57	**77**

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.

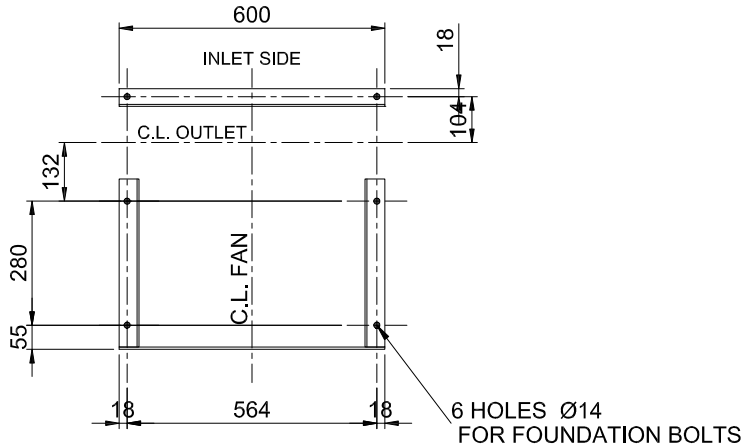




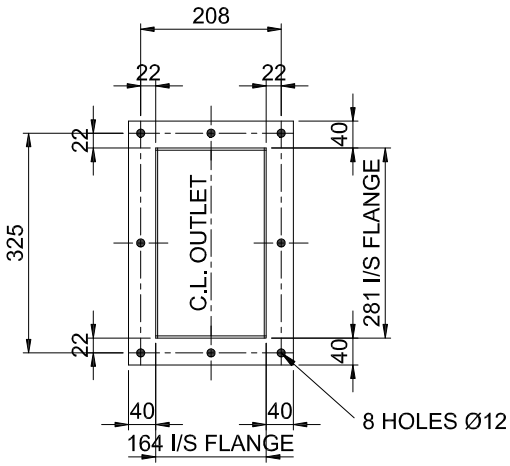
CLIENT :

DUTY
INLET VOLUME :
STATIC PRESSURE :
TEMPERATURE : 20 °C
SPEED : 2860 RPM
POWER :
MOTOR :
FRAME D132S
415-3-50Hz

FOUNDATION LOADS
OUT OF BALANCE : NORMAL : 35.01 N
MAXIMUM : 4772.00 N
AXIAL THRUST : 193.13 N
TOTAL WEIGHT : 173 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**

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		21/06/202111:48:02 / gareth.berry

Type : S-133CRB9/79/330/1

TECHNICAL DATA

Volume flow rate			V m³/h	**300**
Static pressure at	ρ= 1.2	kg/m³	Δpsf Pa	**1,200**
Total pressure at	ρ= 1.2	kg/m³	Δpt Pa	**1,374**
Static pressure at	ρ=	kg/m³	Δpsf Pa	
Total pressure at	ρ=	kg/m³	Δpt Pa	
Rated speed			n 1/min	**2,787**
Impeller power at	ρ= 1.2	kg/m³	Pr kW	**0.21**
Impeller power at	ρ=	kg/m³	Pr kW	
Sound pressure,free field			Lpp dB(A)	**45-3m**
for installation type D (ISO) calculated acc. to VDI 3731				
Sound pressure at free inlet Lp dB(A)				**79-3m**
Fan weight (without motor) approx.			kg	**186**
Inlet temperature t			°C	**20**
maximum inlet temperature tmax			°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.	A	**1.48 / 7.7-times**
efficiency motor / cos phi		**80.7 % / 0.88**

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

- ■ with fan
- ☐ Bearing with external lubrication

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

TECHNICAL DATA FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

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		21/06/202111:48:03 / 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 [	m3/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 [	m3/h]	**300**
Static pressure	pst = pt-pd2 [	Pa]	**1,201**
Total pressure	pt [	Pa]	**1,374**
Inlet density	Rho [	kg/m3]	**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 m²] [	]	**1.00**
Appx. starting time	ta [	s]	**85**
ca. Standard Rundown time	td [	s]	**2,320**

*Values in brackets for aluminium casing.

FAN CURVE FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

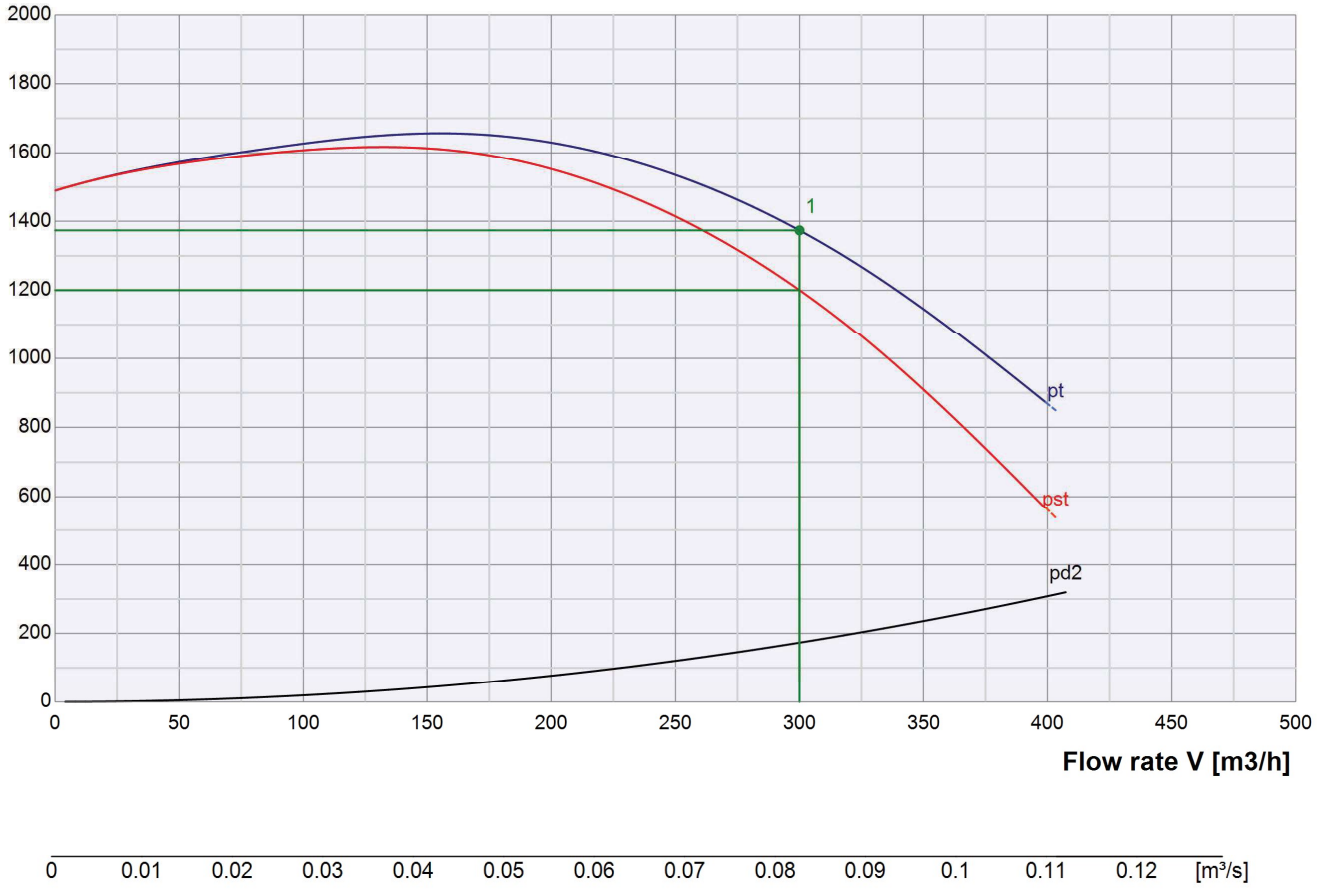
Date: 21/06/2021

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		21/06/202111:48:03 / gareth.berry

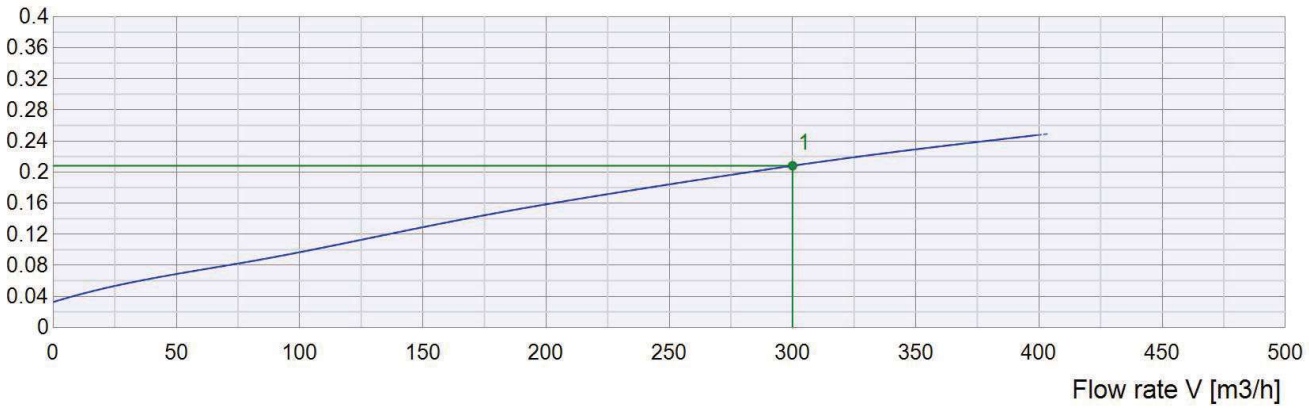
75-Radial Alldays Peacock

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

Total press. pt, static press. pst, dynamic press. pd2 [Pa]



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!

SOUND POWER / - PRESSURE FOR CENTRIFUGAL FAN
Calculated acc. to VDI 3731

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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

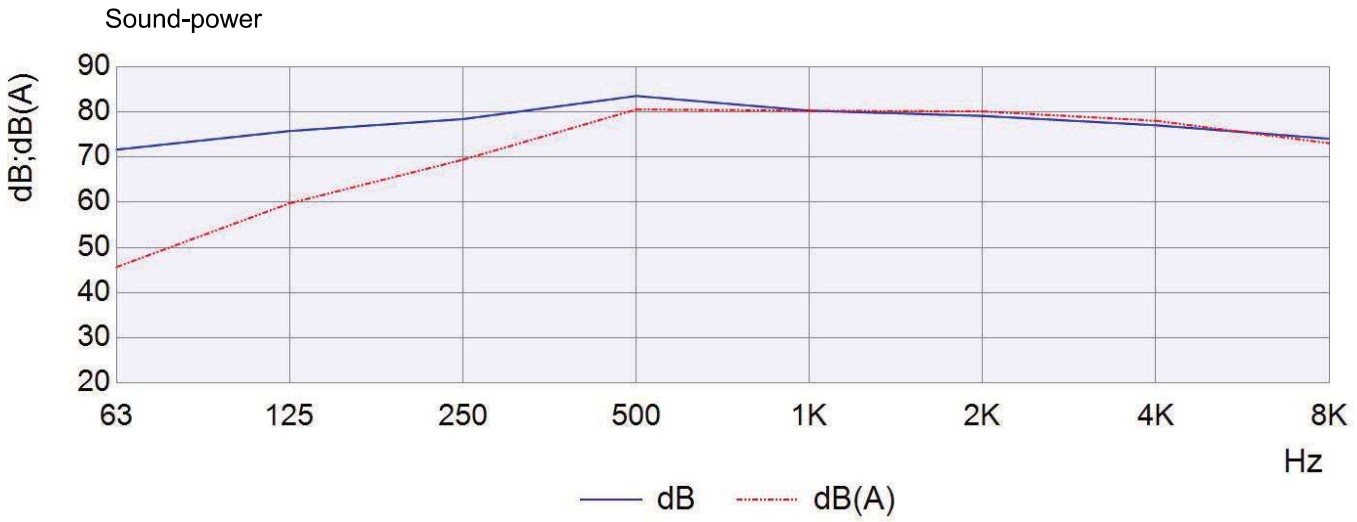
Basic sound	dB	86							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.9	1.7	3.4	6.9	14	27	55
Rel. spectrum	dB	-15	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	72	76	78	84	80	79	77	74
A-weighting corr.	dB	-26	-16	-9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



NOISE REDUCTION

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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**

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		21/06/202111:48:02 / gareth.berry

Type : S-133CRB9/79/330/1

TECHNICAL DATA

Volume flow rate			V m³/h	**300**
Static pressure at	ρ= 1.2	kg/m³	Δpsf Pa	**1,200**
Total pressure at	ρ= 1.2	kg/m³	Δpt Pa	**1,374**
Static pressure at	ρ=	kg/m³	Δpsf Pa	
Total pressure at	ρ=	kg/m³	Δpt Pa	
Rated speed			n 1/min	**2,787**
Impeller power at	ρ= 1.2	kg/m³	Pr kW	**0.21**
Impeller power at	ρ=	kg/m³	Pr kW	
Sound pressure,free field			Lpp dB(A)	**45-3m**
for installation type D (ISO) calculated acc. to VDI 3731				
Sound pressure at free inlet Lp dB(A)				**79-3m**
Fan weight (without motor) approx.			kg	**186**
Inlet temperature t			°C	**20**
maximum inlet temperature tmax			°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.	A	**1.48 / 7.7-times**
efficiency motor / cos phi		**80.7 % / 0.88**

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

- ■ with fan
- ☐ Bearing with external lubrication

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

TECHNICAL DATA FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

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		21/06/202111:48:03 / 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 [	m3/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 [	m3/h]	**300**
Static pressure	pst = pt-pd2 [	Pa]	**1,201**
Total pressure	pt [	Pa]	**1,374**
Inlet density	Rho [	kg/m3]	**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 m²] [	]	**1.00**
Appx. starting time	ta [	s]	**85**
ca. Standard Rundown time	td [	s]	**2,320**

*Values in brackets for aluminium casing.

FAN CURVE FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

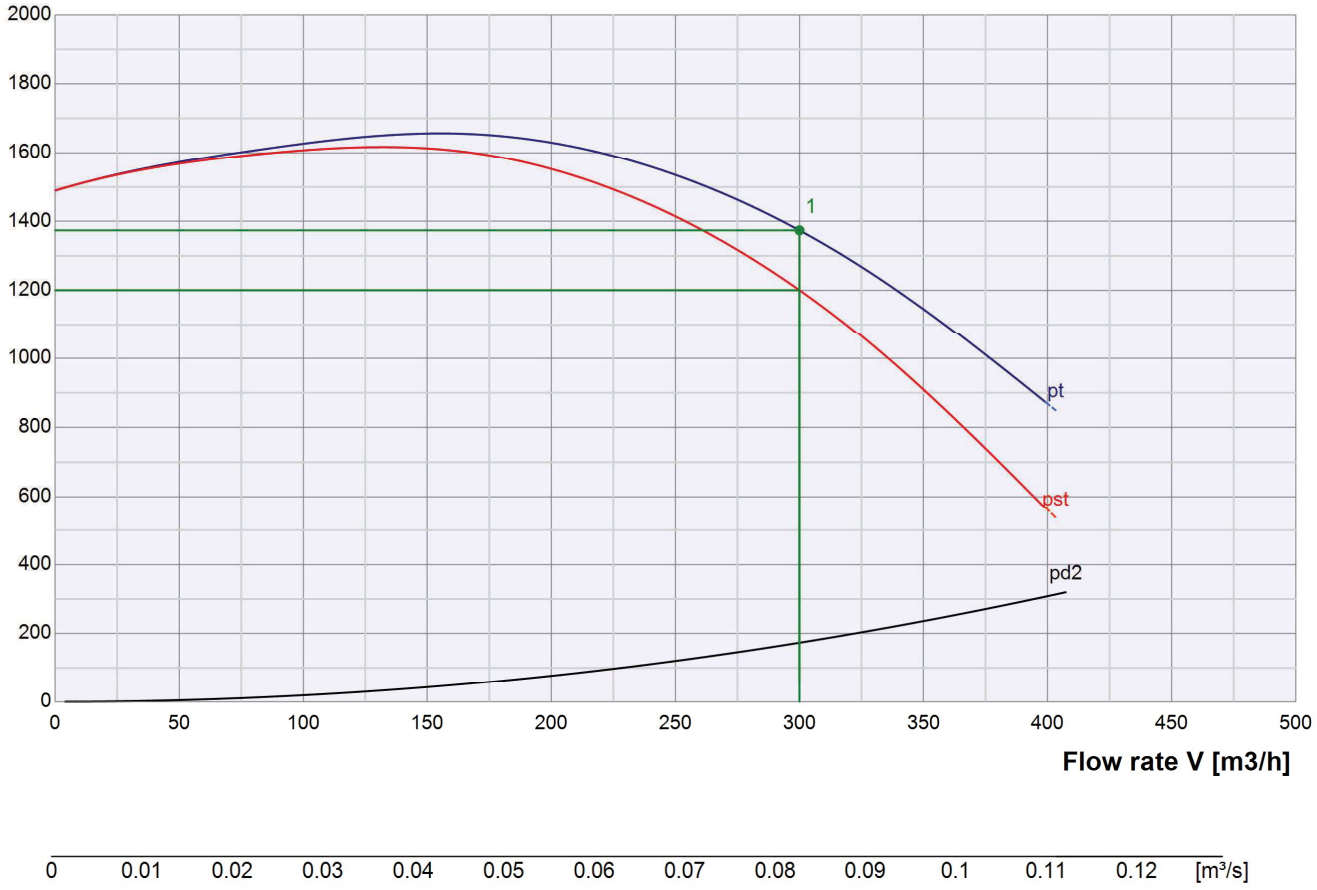
Date: 21/06/2021

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		21/06/202111:48:03 / gareth.berry

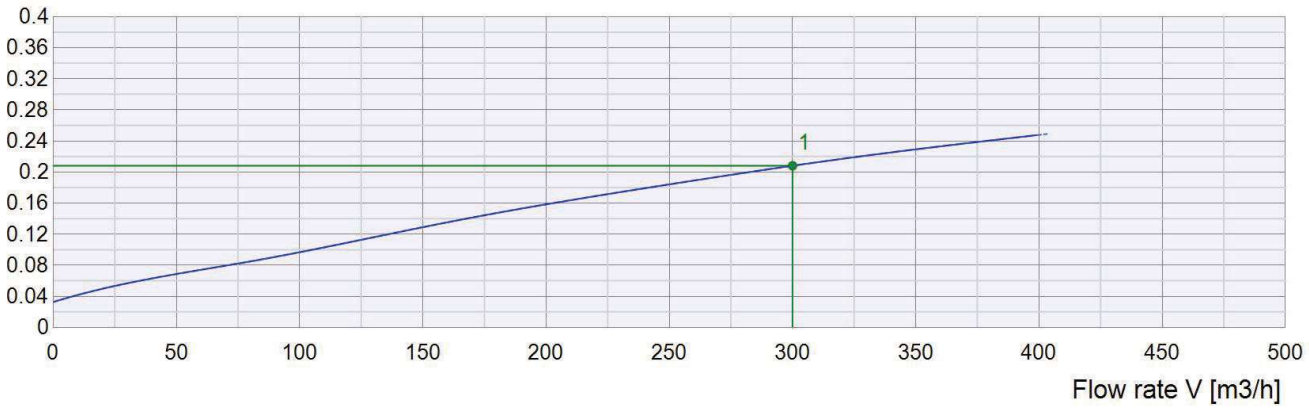
75-Radial Alldays Peacock

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

Total press. pt, static press. pst, dynamic press. pd2 [Pa]



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!

SOUND POWER / - PRESSURE FOR CENTRIFUGAL FAN
Calculated acc. to VDI 3731

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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

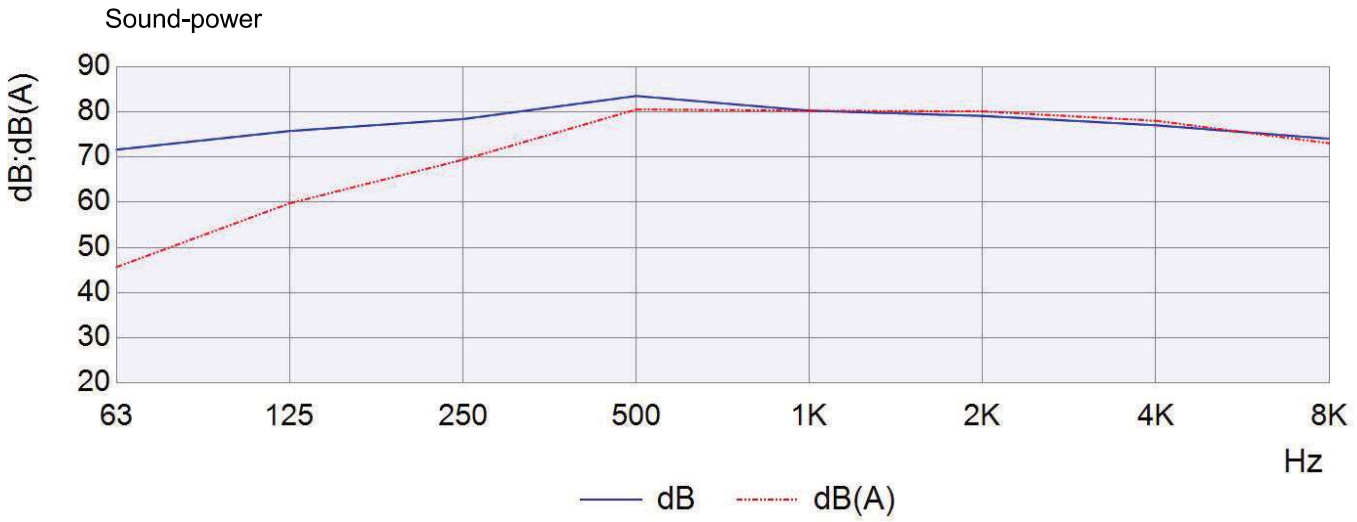
Basic sound	dB	86							
Correction V/Vopt	dB	1							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	0	3	0	0	0	0
Strouhal-Number	dB	0.4	0.9	1.7	3.4	6.9	14	27	55
Rel. spectrum	dB	-15	-11	-9	-6	-7	-8	-10	-13
Octave-power-lev.	dB	72	76	78	84	80	79	77	74
A-weighting corr.	dB	-26	-16	-9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



NOISE REDUCTION

FAN SYSTEMS WITT

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		21/06/202111:48:04 / 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

Item No.:	1	*No. Req:*	1
Volume:	2200 M3/HR		
Pressure:	3800 PA		
Temp/MaxTemp:	20 .C		
Fan Model:	510 BCP		
Absorbed Power:	3.3	KW	
Effic.@ Duty:			
Motor Details:	4 KW 2 POLE		
Fan Speed:	2900 RPM		
Drive Type:	DIRECT DRIVEN		
Construction:	MILD STEEL CONSTRUCTION 1 PACK PAINT FINISH		
Inlet:	FLANGED		
Outlet:	FLANGED		
Drain Plug:	YES		
Inspection Door:	YES		
Base Frame:	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 :

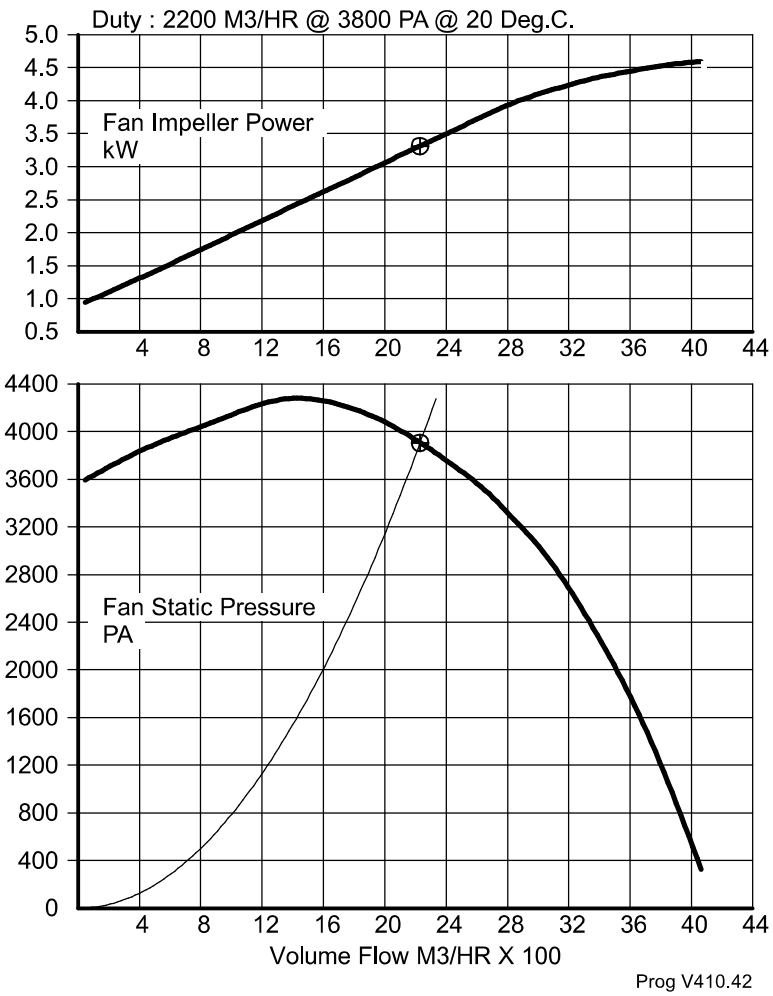
Inlet Volume Flow :	2200	m3/hr
Fan Static Pressure:		
Inlet Pressure :	-0	pa
Outlet Pressure :	3800	pa

Fan Selected :

SWSI-BCP108-510/100-70

Speed :	2900	Rpm
Impeller Ø :	510	mm
Fan Class :	3	

Impeller Power :		
@ 20 Deg C :	3.31	kW
@ Duty Temp :	3.31	kW
Tip Speed :	77.4	m/s
Inlet Velocity :	8.3	m/s
Outlet Velocity :	9.4	m/s
Temp Rise :	4.5	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	97	95	95	101	97	91	87	83	**105**
Free Inlet SPL dBA	45	59	71	86	86	81	77	71	**90**
Free Outlet SPL dBA	45	59	70	85	86	81	77	71	**90**
Outside Casing dBA	50	57	61	73	72	67	63	55	**77**

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.

YOUR REF.:	Barry Thornton	Y/DESC.:	Lev 07

Type : S-RNZ9/500/630/1

TECHNICAL DATA

Volume flow rate			V	m³/h	**7,500**
Static pressure at	ρ= 1.2	kg/m³	Δpsf	Pa	**1,200**
Total pressure at	ρ= 1.2	kg/m³	Δpt	Pa	**1,267**
Static pressure at	ρ=	kg/m³	Δpsf	Pa	
Total pressure at	ρ=	kg/m³	Δpt	Pa	
Rated speed			n	1/min	**1,400**
Impeller power at	ρ= 1.2	kg/m³	Pr	kW	**3.08**
Impeller power at	ρ=	kg/m³	Pr	kW	
Sound pressure,free field			Lpp	dB(A)	**56-3m**
for installation type D (ISO) calculated acc. to VDI 3731					
Sound pressure at free inlet Lp				dB(A)	**77-3m**
Fan weight (without motor) approx.				kg	**142**
Inlet temperature t				°C	**20**
maximum inlet temperature tmax				°C	

Flow medium ■ Air ■ Dust free ☐

Ex-protection ■ Ⓔx 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 100 LZ4 / 112**

Rated voltage U/Frequency f	V/Hz	**3x400 / 50**
Rated speed n approx.	1/min	**1455**
Rated power P	kW (acc. eff.-cl.)	**4**
Design/protection class		**B3 / IP55**
Motor weight approx.	kg	**50**
Classification		**IEC 60034**
Insulation class/utilised		**F/B**
Rated current I/ Starting current I approx.	A	**6.4 / 8.6-times**
efficiency motor / cos phi		**87.7 % / 0.77**

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

■ with fan
☐ Bearing with external lubrication

OTHER REQUIREMENTS

TECHNICAL DATA FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

Date: 23/06/2021

CUSTOMER: Duscovent Engineering Ltd		**ENQUIRY:**	from 23/06/2021	**Item:** 4	**TENDER No.:** 23062111GH_R4
		PROJECT:	College Manchester	**Units:** 1	**Handled by: Gareth Berry** +44 (78 43) 46 24 50
YOUR REF.:	Barry Thornton	**Y/DESC.:**	Lev 07		23/06/202110:19:48 / gareth.berry

50-Centrifugal Witt

Fan type : S-RNZ9/500/630/1

Input data :

Input data		:	2 - T1 - P1
Medium		:	Air
Airflow-input	V [m3/h]:		7500.00
Mass flow rate	m [kg/h]:		9002.57
Static pressure	pst = pt-pd2[Pa]:		1200.00
Gas constant	R [J/(kgK)]:		288.20
Isentropic exponent	kappa [-]:		1.40
Install. height	h [m]:		0.00
Pressure addition	% of pd2 [%]:		0.00
Tolerances acc. to ISO 13348, AN	:		3

Selection data :

Flow rate	V [	m3/h]	**7,500**
Static pressure	pst = pt-pd2 [	Pa]	**1,200**
Total pressure	pt [	Pa]	**1,267**
Inlet density	Rho [	kg/m3]	**1.200**
Inlet pressure	p1 [	kPa]	**101.360**
Inlet temperature	T1 [	°C]	**20**
Fan speed	n [	1/min]	**1,400**
Impeller power	Pw [	kW]	**3.08**
Rated motor power	PM [	kW]	**4**
Efficiency at operating point	Eta [	%]	**85.30**
Impeller power (Rho1.2)	Pw [	kW]	**3.08**
St.pressure (Rho1.2) pst=pt-pd2 [	Pa] [	]	**1,199**
Total pressure (Rho1.2)	pt [	Pa]	**1,267**
Sound pressure 1m (ISO-D)	Lp [	dB(A)]	**64(69)***
Sound power	Lw [	dB(A)]	**91**
Blade frequency	f [	Hz]	**210**
Tip speed	u2 [	m/s]	**46.18**
Inlet speed	c1 [	m/s]	**10.61**
Outlet speed	c2 [	m/s]	**10.61**
Temperature increase	dT [	°C]	**1.22**
Impeller power (Vol=0)	Pw [	kW]	
Compressibility coeff.	k [	-]	**0.996**
Fan flow-rate coeff.	phi [	-]	**0.145**
Pressure coeff.	psi [	-]	**0.980**
Improve-/Devalue-factor [-]	[	]	**1.006**
Rough approximation of starting time :			
Appx. impeller weight	[	kg]	**26.0**
Appx. mass moment of inertia [	kg m²] [	]	**1.50**
Appx. starting time	ta [	s]	**7**
ca. Standard Rundown time	td [	s]	**59**

*Values in brackets for aluminium casing.

FAN CURVE FOR CENTRIFUGAL FAN

FAN SYSTEMS WITT

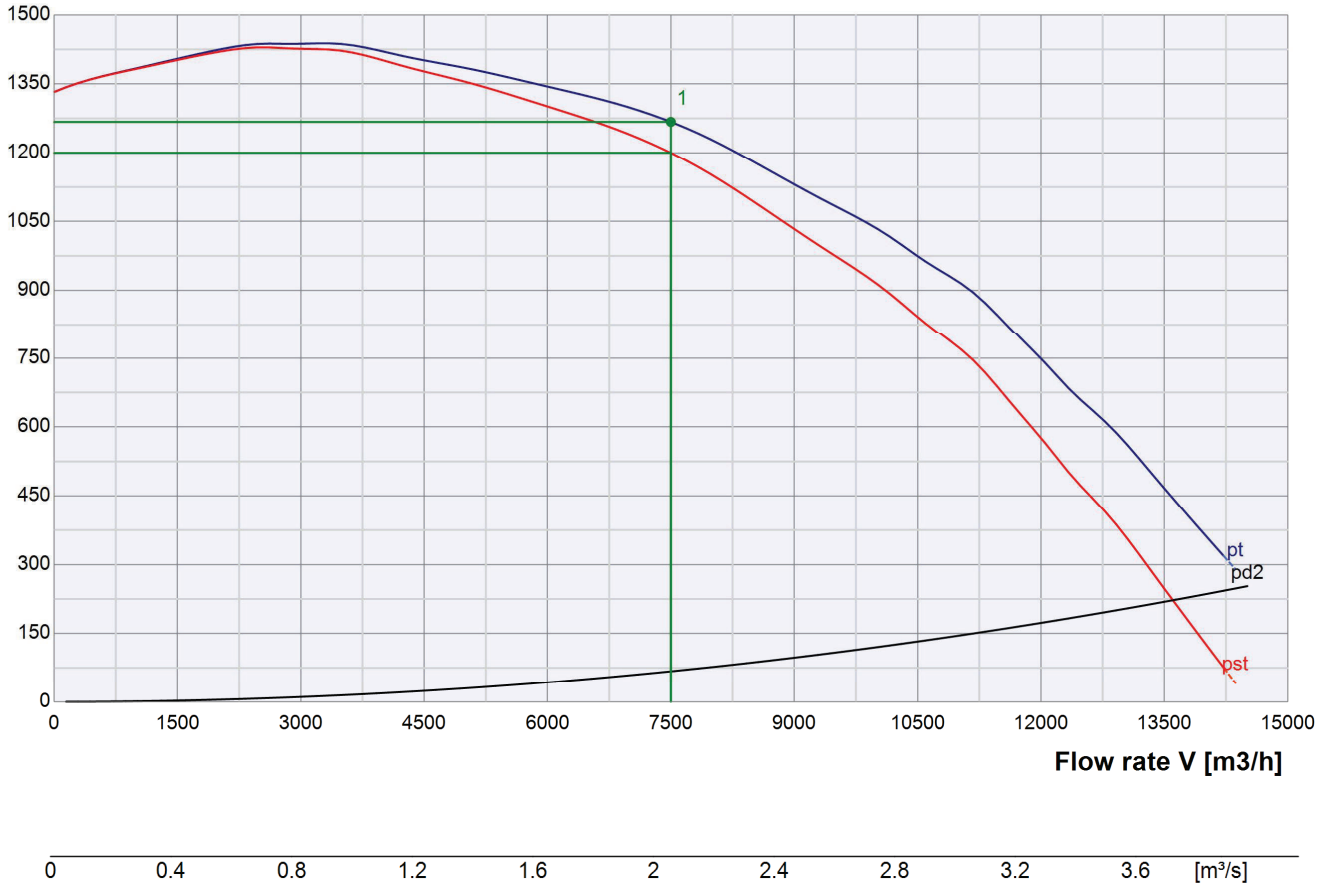
Date: 23/06/2021

CUSTOMER: Duscovent Engineering Ltd		**ENQUIRY:**	from 23/06/2021	**Item:** 4	**TENDER No.:** 23062111GH_R4
		PROJECT:	College Manchester	**Units:** 1	**Handled by: Gareth Berry** +44 (78 43) 46 24 50
YOUR REF.:	Barry Thornton	**Y/DESC.:**	Lev 07		23/06/202110:19:48 / gareth.berry

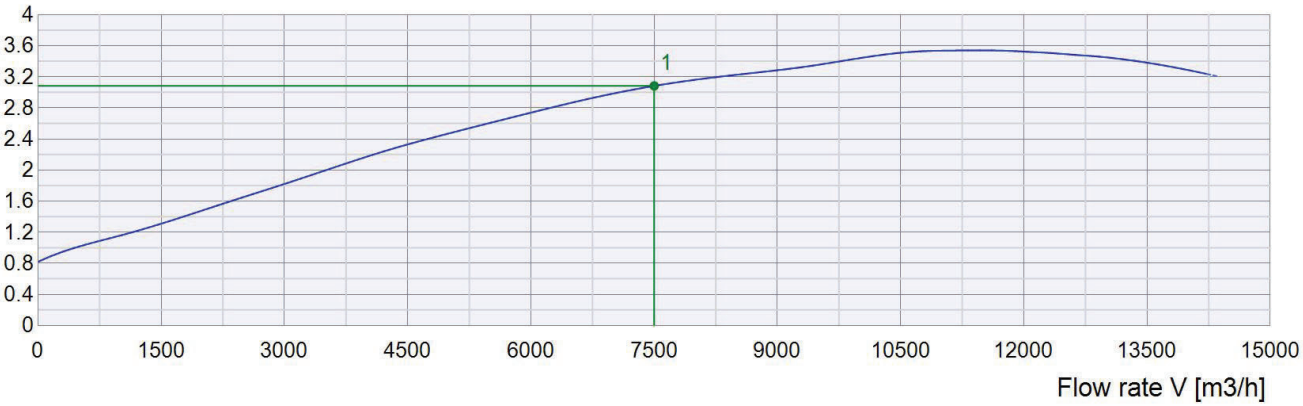
50-Centrifugal Witt

Fan type : S-RNZ9/500/630/1

Total press. pt, static press. pst, dynamic press. pd2 [Pa]



Impeller power Pw [kW]



		1				
Flow rate	V [m3/h]	7,500				
Inlet density	Rho [kg/m3]	1.200				
Fan speed	n [1/min]	1,400				

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!

SOUND POWER / - PRESSURE FOR CENTRIFUGAL FAN
Calculated acc. to VDI 3731

FAN SYSTEMS WITT

Date: 23/06/2021

CUSTOMER: Duscovent Engineering Ltd		**ENQUIRY:**	from 23/06/2021	**Item:** 4	**TENDER No.:** 23062111GH_R4
		PROJECT:	College Manchester	**Units:** 1	**Handled by: Gareth Berry** +44 (78 43) 46 24 50
YOUR REF.:	Barry Thornton	**Y/DESC.:**	Lev 07		23/06/202110:19:48 / gareth.berry

50-Centrifugal Witt

Fan type : S-RNZ9/500/630/1

Fan speed	1,400 1/min	Flow rate	7,500 m3/h
Inlet density	1.200 kg/m3	Rel.flow rate V/Vopt	0.89 -
Inlet pressure	101.360 kPa	Blade frequency	210 Hz
Inlet temperature	20 °C	Fan curve no.:	1

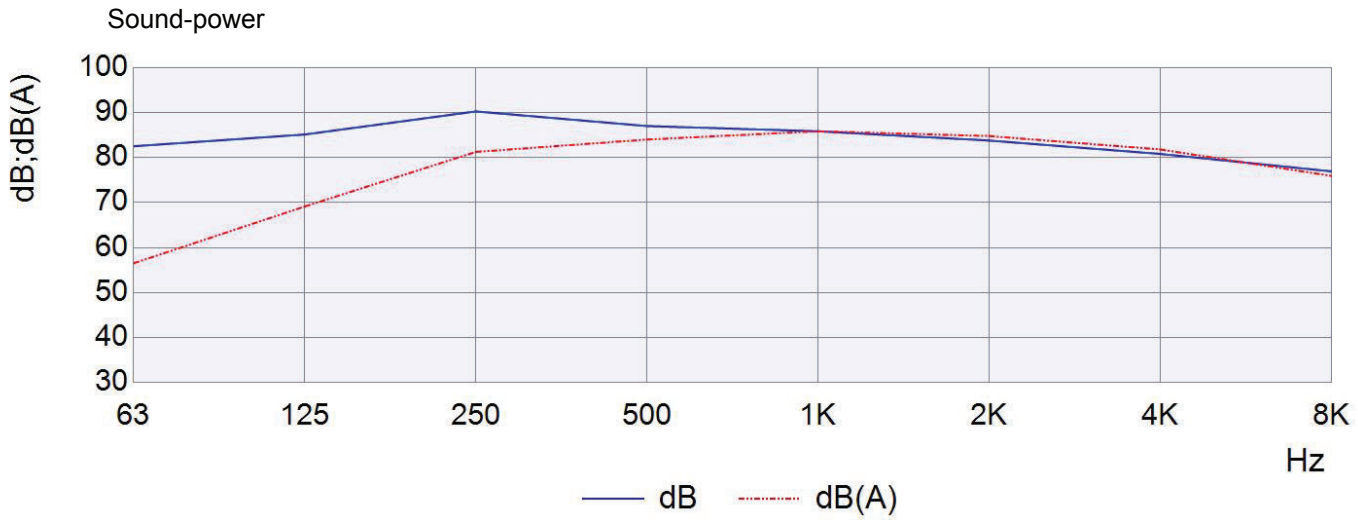
Basic sound	dB	94							
Correction V/Vopt	dB	0							
Octave-band	Hz	63	125	250	500	1K	2K	4K	8K
Blade freq.corr.	dB	0	0	3	0	0	0	0	0
Strouhal-Number	dB	0.9	1.7	3.4	6.8	14	27	55	109
Rel. spectrum	dB	-11	-9	-6	-7	-8	-10	-13	-17
Octave-power-lev.	dB	83	85	90	87	86	84	81	77
A-weighting corr.	dB	-26	-16	-9	-3	0	1	1	-1
Octave-power-level in duct	dB(A)	57	69	81	84	86	85	82	76

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

Sound power level radiated into duct	**91** dB(A) re 10^{-12} W
Motor sound power level	**58** dB(A) re 10^{-12} W
Free inlet/outlet sound power level	**91** dB(A) re 10^{-12} W
Free inlet/outlet sound pressure level, free field 1m/45°	**83** dB(A) re 20 µPa
Free inlet/outlet sound pressure level, free field 3m/45°	**73** dB(A) re 20 µPa
Casing break-out noise, sound power level [1]	**77(82)** dB(A) re 10^{-12} W
Casing break-out noise, average sound pres. level, free field 1m [1]	**64(69)** dB(A) re 20 µPa
Casing break-out noise, average sound pres. level, free field 3m [1]	**57(62)** dB(A) re 20 µPa
ΔLP to casing breakout noise, free field, 1m owing to el. motor:	**0** 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.



NOISE REDUCTION

FAN SYSTEMS WITT

Date: 23/06/2021

CUSTOMER: Duscovent Engineering Ltd		**ENQUIRY:**	from 23/06/2021	**Item:** 4	**TENDER No.:** **23062111GH_R4**
		PROJECT:	College Manchester	**Units:** 1	**Handled by: Gareth Berry** **+44 (78 43) 46 24 50**
YOUR REF.:	Barry Thornton	**Y/DESC.:**	Lev 07		23/06/202110:19:48 / gareth.berry

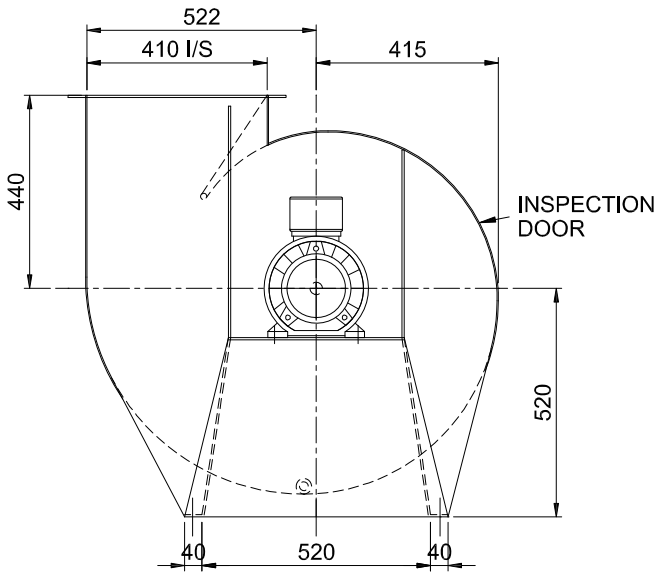
Fan type :

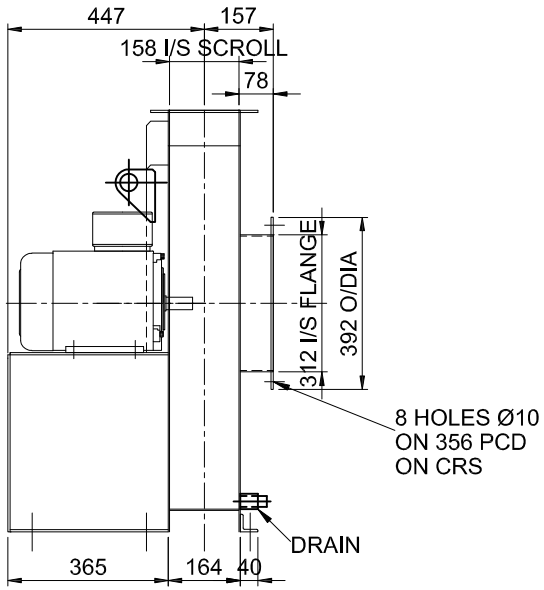
Fan speed	**1,400 1/min**	**Flow rate**	**7,500 m3/h**
Inlet density	**1.200 kg/m3**	**Rel.flow rate V/Vopt**	**0.89 -**
Inlet pressure	**101.360 kPa**	**Blade frequency**	**210 Hz**
Inlet temperature	**20 °C**		

Fan Octavband Hz	63	125	250	500	1K	2K	4K	8K	Total	
Fan-Sound power level radiated into duct	56	69	81	84	86	85	82	76	91	dB(A) re 10^{-12} W
Fan-casing sound power level	52	62	70	70	71	70	68	61	77	dB(A) re 10^{-12} W
Motor sound power level									58	dB(A) re 10^{-12} W

Silencer (outlet) - Rectangular Attenuator 374 L=900 W=375

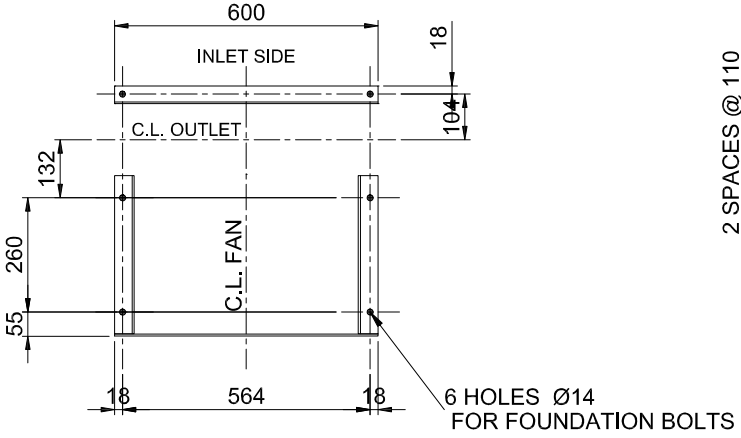
Insertion losses silencer	-5	-7	-14	-22	-26	-21	-15	-14		dB(A)
Total Fan-Sound power level in duct	51	62	67	62	60	64	67	62	73	dB(A) re 10^{-12} W
Free outlet sound power level									73	dB(A) re 10^{-12} W
Free outlet sound pressure level, free field 1m/45°									65	dB(A) re 20 µPa
Free outlet sound pressure level, free field 3m/45°									55	dB(A) re 20 µPa
potential nozzle reflection						at diameter 500 mm			-1	dB



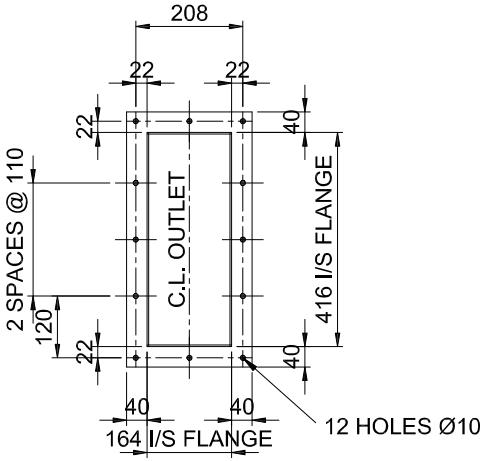


CLIENT :
TAG :
DUTY
INLET VOLUME :
STATIC PRESSURE :
TEMPERATURE : 20 °C
SPEED : 2900 RPM
POWER :
MOTOR : 4 kW 2 POLE
FRAME D112M
415-3-50Hz

FOUNDATION LOADS
OUT OF BALANCE : NORMAL : 20.01 N
MAXIMUM : 2496.40 N
AXIAL THRUST : 161.08 N
TOTAL WEIGHT : 151 KG
ACCESSORIES :
INSPECTION DOOR & DRAIN
SHAFT SEAL

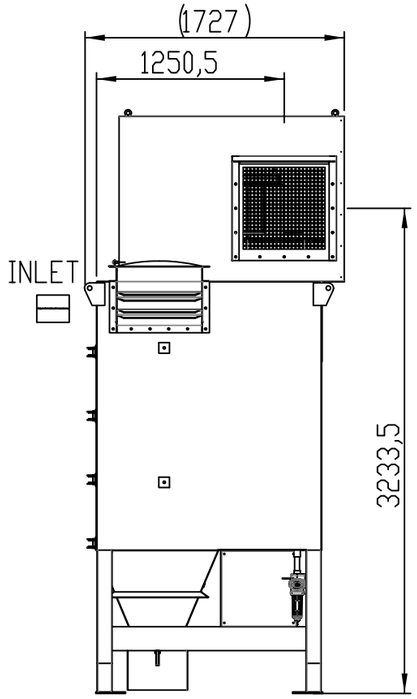


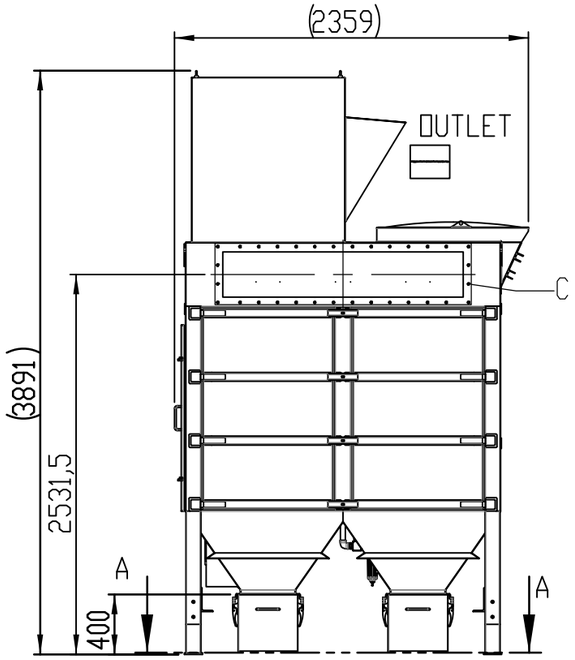
PLAN VIEW FROM ABOVE SHOWING
FOUNDATION BOLT HOLE DRILLING

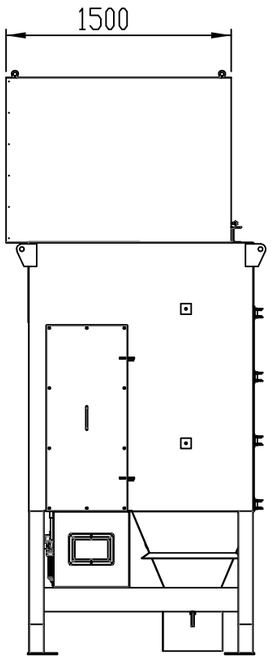


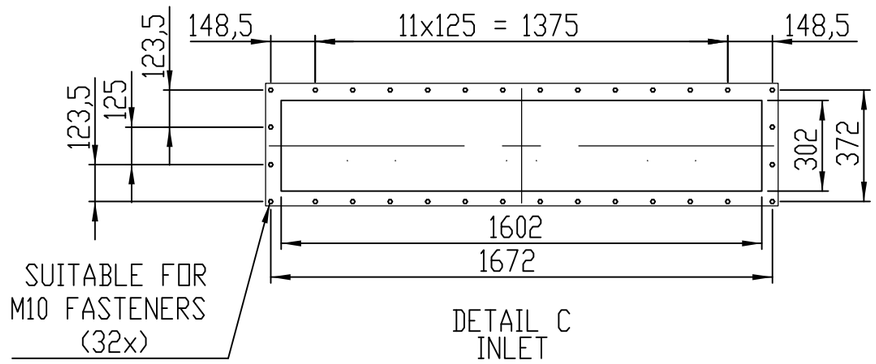
FAN OUTLET FLANGE DETAIL
(NOT TO SCALE)

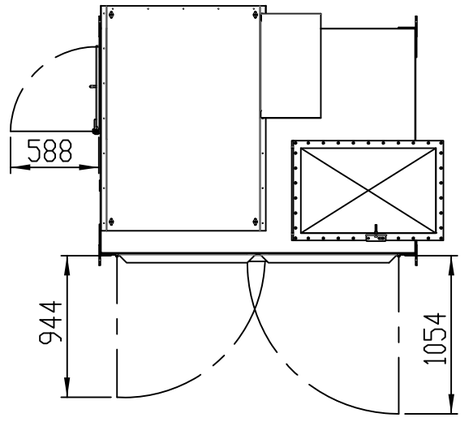
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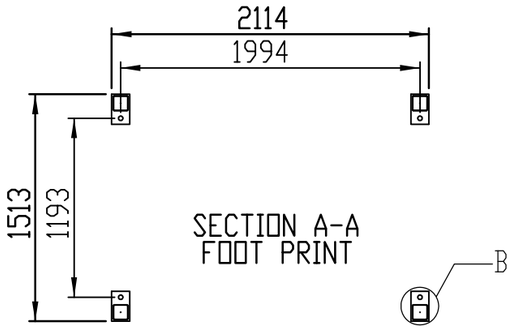


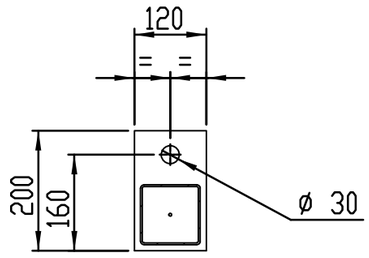












DETAIL B
FOOT PLATE

NOTE:
FOR DETAILED SPECIFICATIONS, SEE QUOTATION SPECIFICATION SHEET (QSS)
http://intranet.dci.com/ind/iaf/emea/eng/pdt/Shared%20Documents/AW0296601.xlsm

THIS DRAWING IS FOR QUOTATION PURPOSES ONLY

ALL BURRS AND SHARP EDGES TO BE REMOVED				
CORROSION PROTECTION ACCORDING TO PURCHASE ORDER				
WELDING STANDARD ACCORDING TO I.S. EN ISO 25532013 ALL WELDSPATTER TO BE REMOVED, USE OF SILICONE BASED REMOVER IS NOT ALLOWED				
GASKET/CAULKING AREA TO BE DEGREASED BEFORE APPLICATION				
ALL DIMENSIONS ARE IN MILLIMETRES				
FOR EXPLANATION OF DIMENSIONS, NOTES, SYMBOLS, ETC. SEE: BS 8888				
DR.	DATE	REV.	REV. N°	CHANGE DESCRIPTION
		0		

PAINT SPEC: –
THICKNESS:
MATERIAL:
WEIGHT: 1595.40 Kg
USED ON:
GENERAL TOLERANCES UNLESS OTHERWISE SPECIFIED:
For linear, angular dimensions and form and location. ISO 2768 mK
For welded constructions. EN ISO 13920 BF
GENERAL ROUGHNESS UNLESS OTHERWISE SPECIFIED: 3.2

TITLE: PROPOSAL DRAWING DFPR012-R

RELEASE NR		
DR.	BD	10/06/2021
APP.	AH	10/06/2021

NUMBER: AW0296601
REVISION: 0
SCALE: N.T.S.
SHEET: 1 OF 2
SIZE: A3
C/C SW: SolidWorks
FIRST ANGLE PROJECTION
DO NOT SCALE

Donaldson. Europe IAF

COPYRIGHT DONALDSON COMPANY, INC.

Re: UMA 253 - Wood Waste + HEPA

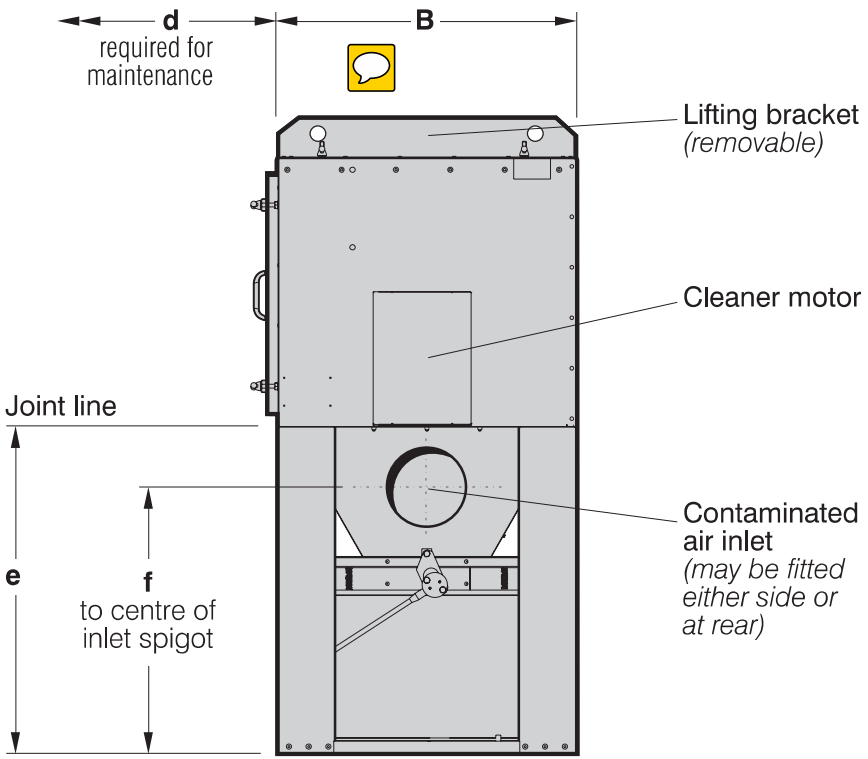
Many thanks for your recent enquiry as discussed with Philip McHale. Please see below our quotation for the filter unit to serve the above. Please provide flange detail for clean air outlet spigot.

Application Details

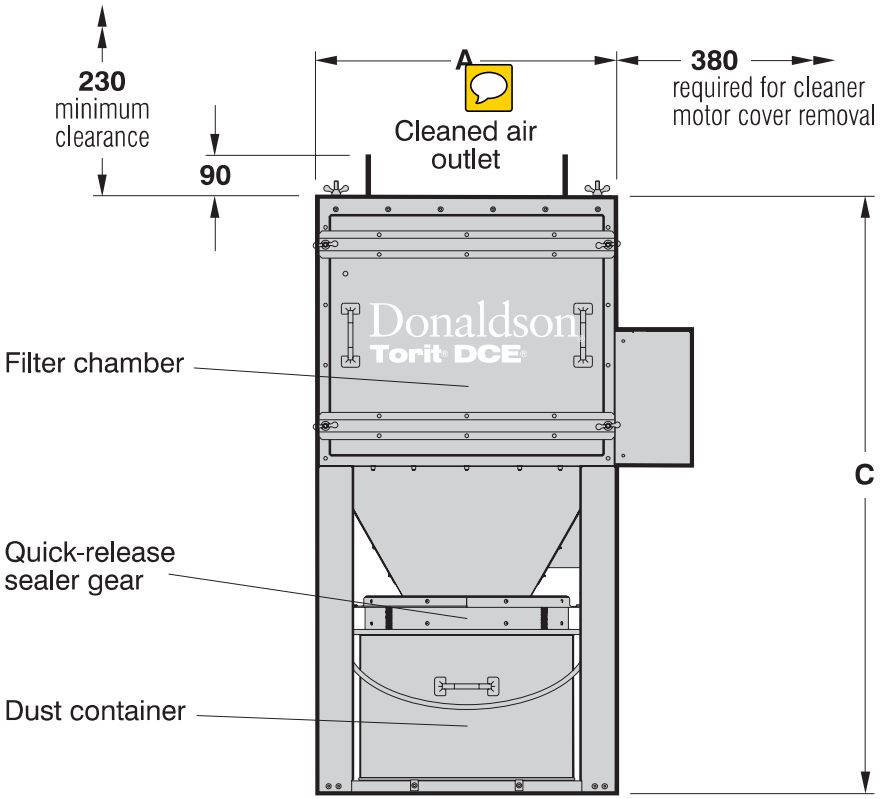
Application	:	Wood Dust
Air volume	:	2,670m³/hr
Dust Type	:	Wood
Explosion Class	:	KST: 199bar/m-1, Pmax: 6bar, MIE: > 3 mJ
Filtration Velocity	:	2.13m/min
Inlet Temperature	:	Ambient
Power Requirements	:	400 Volts 3 Phase 50 Hz
Paint Finish	:	Capri Blue RAL 5019

Filter

To handle this duty we propose our Donaldson Unimaster UMA 253 V unit dust collector manufactured in mild steel, complete with Dura-Life filter media, rear explosion relief with detection switch, anti-static filter and earthing, 80 litre bin, bin balance connection, absolute filter and housing, dial manometer, special filter to fan discharge spigot, weatherproofing, and UCS venting unit controller, all as outlined in the attached filter specification.



SIDE ELEVATION



FRONT ELEVATION

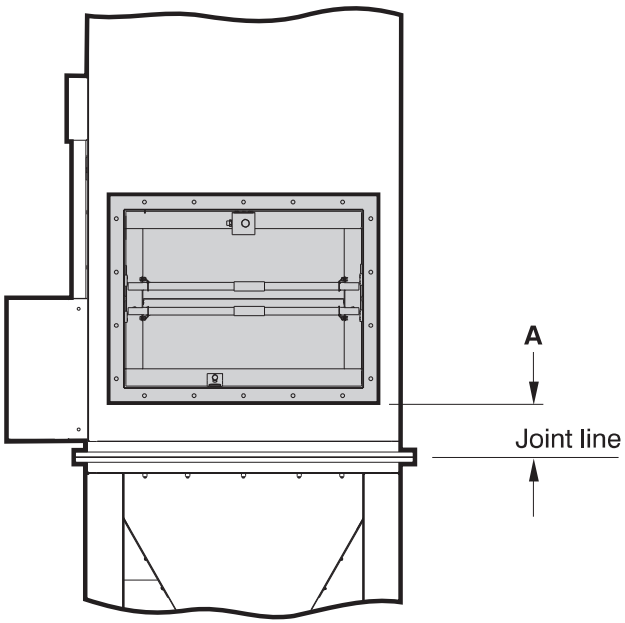
UNIMASTER VENTING TYPE DUST COLLECTOR WITH DUST CONTAINER

UMA 153V illustrated. Suitable for inside locations and outside when fitted with optional weather cowl.

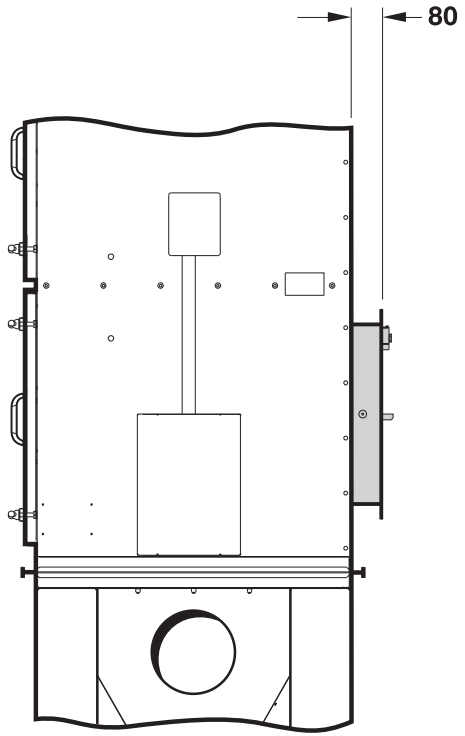
SPECIFICATION

Type	Filtration area	DIMENSIONS in mm A	B	C	d	e	f	Inlet spigot (inside dia.) mm	Dust container	Net weight (approx.)
UMA 72V	6.23 m²	575	575	1369	560	729	648	∅ 101	55 litre	126 kg
UMA 103V	9.29 m²	765	575	1485	560	845	685	∅ 203	80 litre	174 kg
UMA 153V	13.94 m²	765	765	1542	760	845	685	∅ 203	80 litre	199 kg
UMA 253V	22.67 m²	1146	765	1758	760	1061	883	∅ 254	80 litre	265 kg

Unimaster Dust Collectors – Series UMA 70-250



REAR ELEVATION



SIDE ELEVATION

POSITION OF OPTIONAL EXPLOSION RELIEF FLANGE

UMA 153 illustrated

UMA type:	72	103	153	253	70H	100H	150H	250H	70V	100V	150V	250V	72V	103V	153V	253V
Dimension **A** in mm:	76	114	171	105	114	114	171	105	114	114	171	105	76	76	133	67

If a vent duct is not connected to the explosion relief flange, then a minimum clearance of 500 mm should be made to the rear of the collector to ensure efficient operation of the explosion venting process. Consideration should be given to the local surrounding area in regards to the pressure and flame effects.

Re: UMA 253 - Wood Waste

Many thanks for your recent enquiry as discussed with Eddie Wall. Please see below our quotation for the filter unit to serve the above.

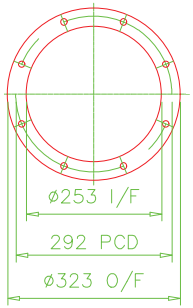
Application Details

Application	:	Wood Dust
Air volume	:	2,670m³/hr
Dust Type	:	Wood
Explosion Class	:	KST: 199bar/m-1, Pmax: 6bar, MIE: > 3 mJ
Inlet Temperature	:	Ambient
Filtration Velocity	:	2.13m/min
Power Requirements (C200)	:	105-115V AC or 200-240V AC 50/60 Hz or 24 volt DC
Paint Finish	:	Capri Blue RAL 5019

Filter

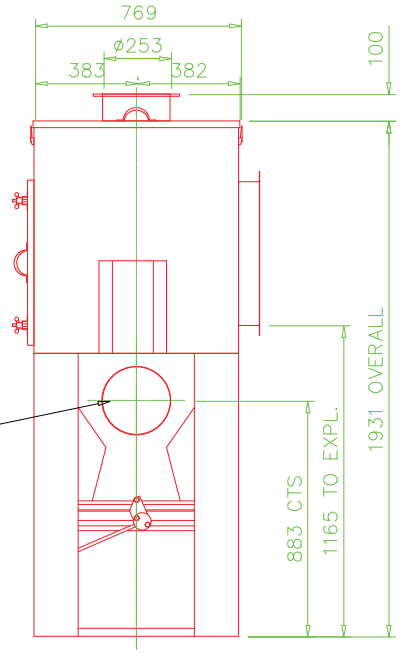
To handle this duty we propose our Donaldson Unimaster UMA 253 V unit dust collector manufactured in mild steel complete with Dura-Life filter media with dial manometer, explosion relief with detection switch, hopper, support, 80 litre bin, bin balance connection, weatherproofing and UCS venting unit controller all as outlined in the attached filter specification.

EU_UNIMASTER
Process temperature within standard range -10 °C to +60 °C = Yes
Is the unit handling interior explosive atmosphere? = Yes
Which interior explosive atmosphere? = Dust
Dust Kst [bar m/s] = 199.0
Dust Pmax [bar] = 6.0
Interior dust cloud ignition temperature = ≥ 203 °C
Interior layer ignition temperature = ≥ 210 °C
Unit size = 253
Unit type = Venting 3 cu ft bin
Media = Dura-Life (Standard)
Paint finish = Standard
Standard - 895 line = RAL 5019 - Capri Blue

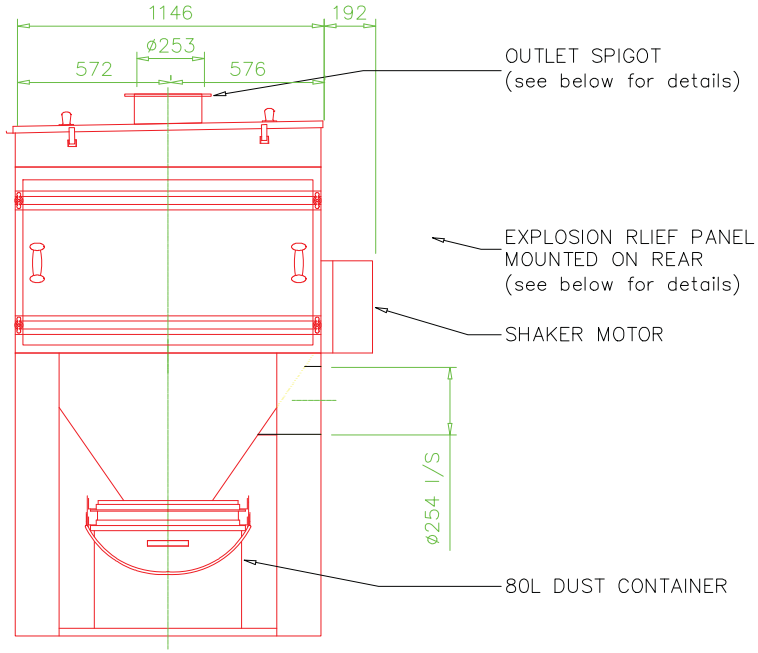


8–OFF ø12mm
HOLES ON 292 PCD

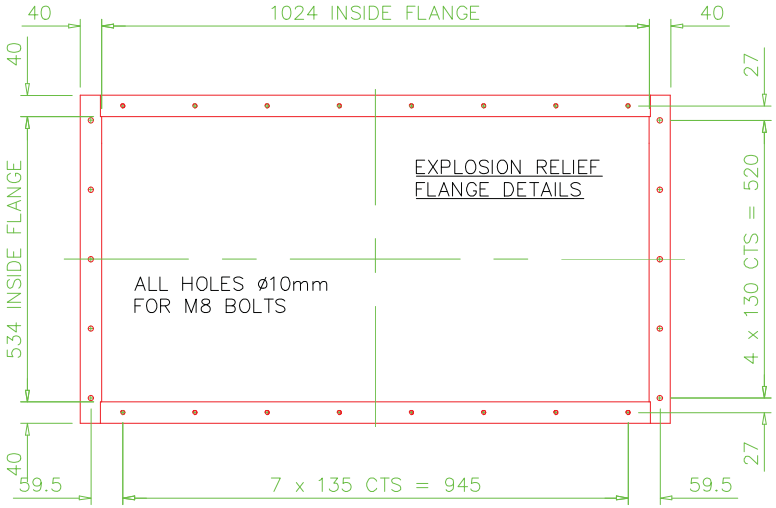
OUTLET SPIGOT DETAILS

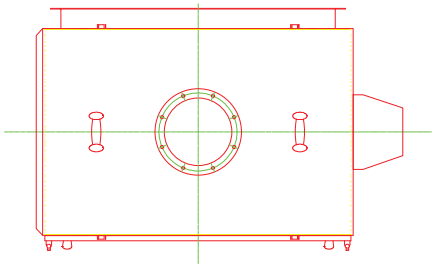


SIDE ELEVATION



FRONT ELEVATION





PLAN VIEW

Donaldson Europe
Leicester
UK
I.A.F.

DIMENSIONS IN MILLIMETRES DO NOT SCALE

FABRICATION TOLERANCES UNLESS OTHERWISE STATED

0-300mm	±1.0mm
301-1000mm	±2.0mm
Over 1000mm	±3.0mm
Hole Centres	±1.0mm

WELDING SYMBOLS TO BS. 499

SURFACE FINISH
3.2 METRIC = 125 IMPERIAL
EXCEPT AS STATED

FOR EXPLANATION OF DIMENSIONS, NOTES, SYMBOLS ETC., SEE BS. 308

SQUARENESS - FABRICATED & SHEET METAL PARTS
DIAGONAL DIMENSIONS UNDER 600mm TO BE WITHIN 1mm OF EACH OTHER
DIAGONAL DIMENSIONS OVER 600mm TO BE WITHIN 2mm OF EACH OTHER

ALL THREAD FORMS TO BS, SPECIFICATION

REV						
F	E	D	C	B	A	21/06/2021
						OUTLET FLANGE REQUIRED BY CUSTOMER

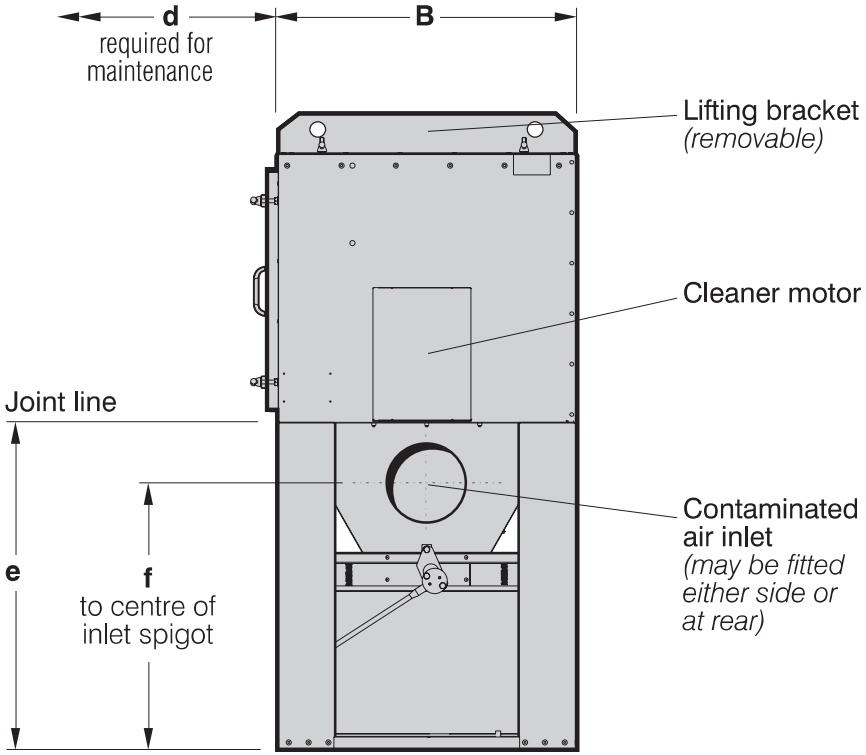
DRN. BY: PMH
CH'D: NAME
DATE: DATE
ORIGINAL SCALE: 1:20 + 1:10

TITLE: UMA 253 V ARRANGEMENT
FOR: DUSCOVENT
CONTRACT REF.: 15394604
REV.: A
DRAWING NUMBER: 001

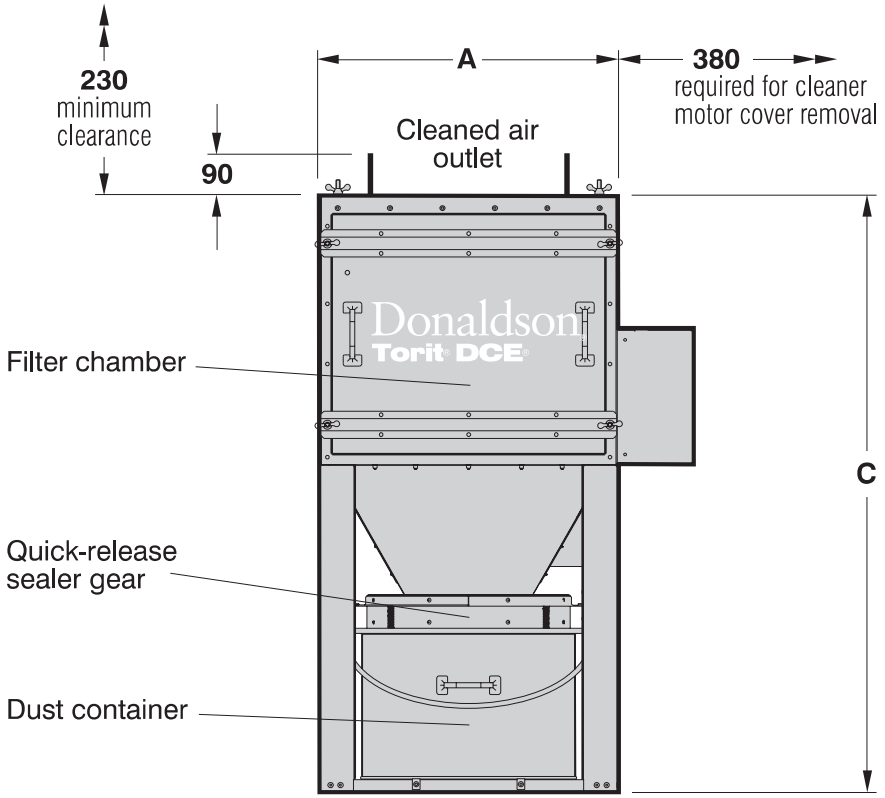
A3

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SIDE ELEVATION



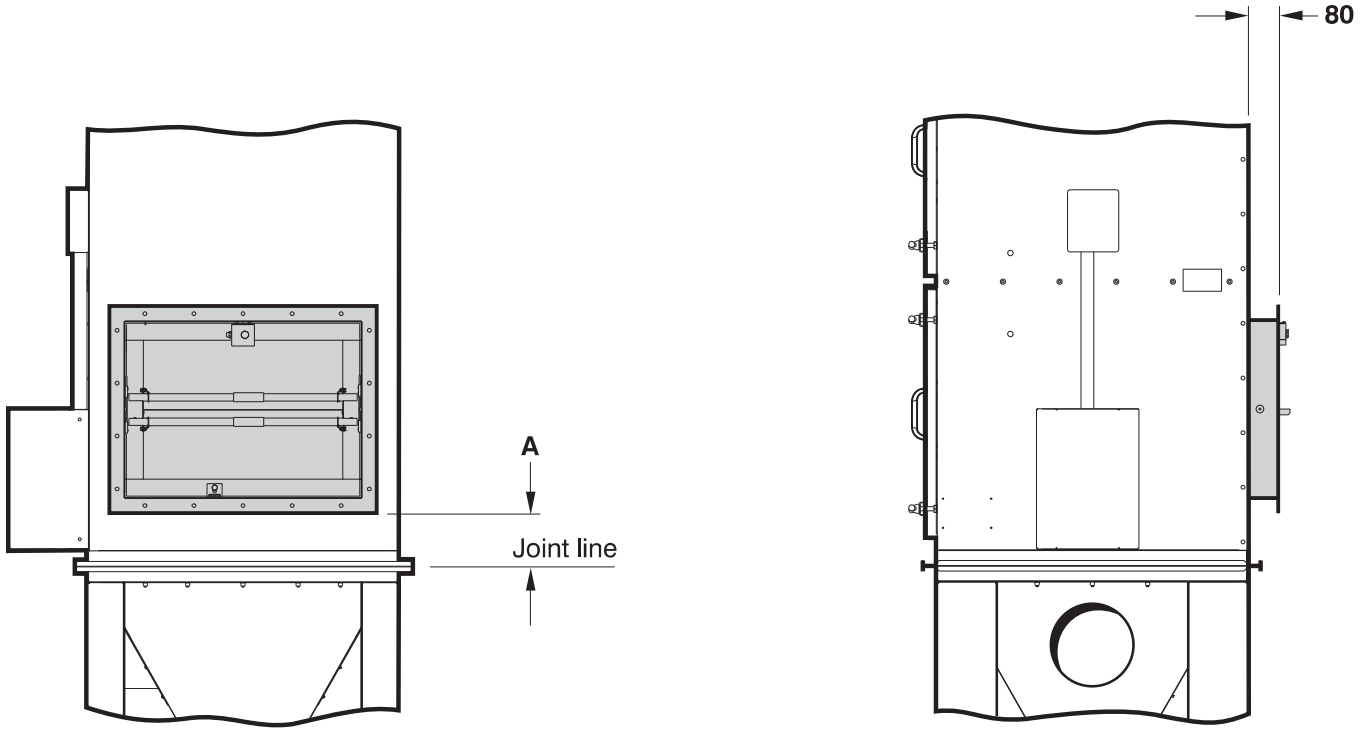
FRONT ELEVATION

UNIMASTER VENTING TYPE DUST COLLECTOR WITH DUST CONTAINER

UMA 153V illustrated. Suitable for inside locations and outside when fitted with optional weather cowl.

SPECIFICATION

Type	Filtration area	DIMENSIONS in mm A	B	C	d	e	f	Inlet spigot (inside dia.) mm	Dust container	Net weight (approx.)
UMA 72V	6.23 m²	575	575	1369	560	729	648	∅ 101	55 litre	126 kg
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UMA 153V	13.94 m²	765	765	1542	760	845	685	∅ 203	80 litre	199 kg
UMA 253V	22.67 m²	1146	765	1758	760	1061	883	∅ 254	80 litre	265 kg



REAR ELEVATION

SIDE ELEVATION

POSITION OF OPTIONAL EXPLOSION RELIEF FLANGE

UMA 153 illustrated

UMA type:	72	103	153	253	70H	100H	150H	250H	70V	100V	150V	250V	72V	103V	153V	253V
Dimension **A** in mm:	76	114	171	105	114	114	171	105	114	114	171	105	76	76	133	67

If a vent duct is not connected to the explosion relief flange, then a minimum clearance of 500 mm should be made to the rear of the collector to ensure efficient operation of the explosion venting process. Consideration should be given to the local surrounding area in regards to the pressure and flame effects.

PRODUCT DATA SHEET
Pump House flexi Foot

The flexi foot supports small pipework and runs of cable tray, and can also be used to mount a/c condensing units, air source heat pumps and a variety of outdoor equipment.

The flexi foot with steel strut

Available in four sizes 250mm, 400mm, 600mm and 1000mm supplied with 41mm x 21mm galvanised steel strut pre-adhered to the rubber.

The flexi foot universal

Supplied with three M10 threaded inserts moulded into the rubber. Available in one standard size 250mm.



	Material
Rubber	Compression moulded using milled, sieved and graded, recycled rubber bound with high quality adhesive. Density 1.0g/cm³. Working temperature range -10°C to +75°C
Strut	41mm x 21mm x 1.5mm galvanised steel
Inserts	M10 (metric course thread) x 20mm, zinc plated steel, through inserts. Maximum torque 15 Nm. Maximum Load 25kg

Part Code	Description	Length	Width	Height	Weight	Max. Load*
FF-250-S	FLEXI FOOT – 250 mm Strut	250 mm	185 mm	100 mm	2.8 kg	125 kg
FF-400-S	FLEXI FOOT – 400 mm Strut	400 mm	185 mm	100 mm	4.6 kg	200 kg
FF-600-S	FLEXI FOOT – 600 mm Strut	600 mm	185 mm	100 mm	7.6 kg	300 kg
FF-1000-S	FLEXI FOOT – 1000 mm Strut	1000 mm	185 mm	100 mm	12.0 kg	500 kg

Part Code	Description	Length	Width	Height	Weight	Max. Load*
FF-250-UNI	FLEXI FOOT – 250 mm Universal	250 mm	185 mm	100 mm	2.8 kg	125 kg

** The maximum loads quoted in the above tables are based on loads applied over the top surface, and have been tested with a 4:1 safety ratio. On the universal the maximum load per insert is 25kg, tested with a 4:1 safety ratio.*

- It is the installer's responsibility to ensure that equipment weights do not exceed the safe working loads quoted and that the roof structure onto which these products are being applied is sufficiently sound to withstand the weight and point loading. If these products are used in contact with a pvc roof membrane the installer should seek advice from the membrane manufacturer on the possible migration of plasticizers, and the effect of this on the roof guarantee. These products should not be used for any purpose other than that for which they have been designed, and the products must not be modified in any way. Pump House accepts no liability for damage caused by the incorrect application or installation of these products.

Pump House
Glaisdale Drive East, Nottingham, NG8 4LY
Tel ~ 0115 900 5858 Fax ~ 0115 929 4468

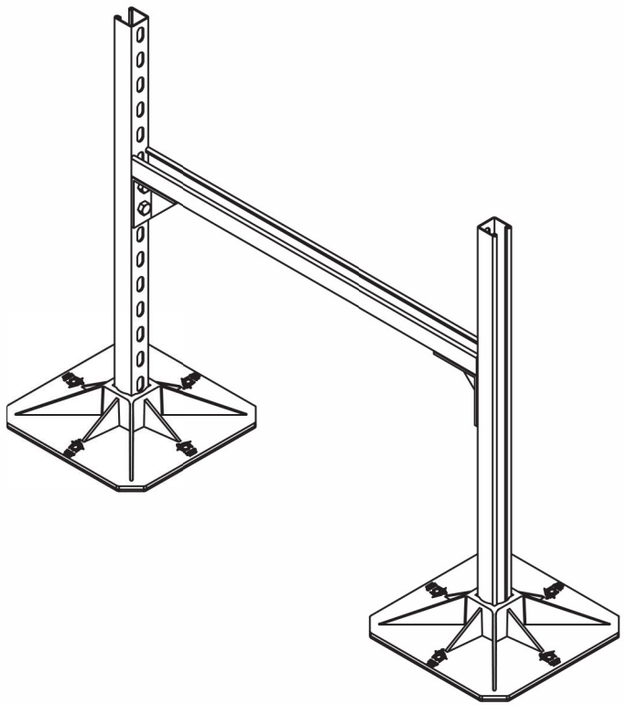
Email ~ sales@pumphousepumps.com Website ~ www.pumphousepumps.com

everyday

Flexi everyday - Flexi H-frame kits

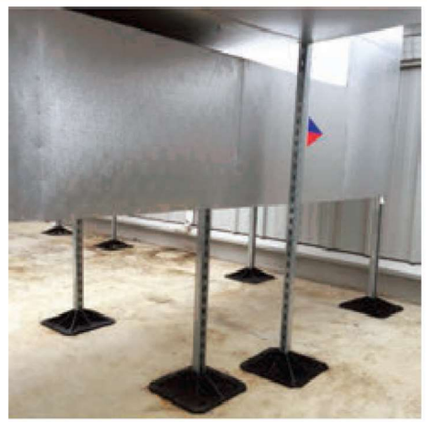
H-frame kits to support ducts, pipes and electrical containment





Features & Benefits

- Non-penetrative support
- Flexible design to accommodate late design changes
- Fast and simple installation
- Hot dip galvanised bracketry
- Rubber mats adhered to feet
- Two foot sizes available
- The kit comes supplied in a box
- Full AutoCAD drawing support
- Load management and wind calculations available
- Full on-site support and surveying services





pump house

Pump House
Glaisdale Drive East
Nottingham
NG8 4LY
Tel: 0115 900 5858
www.flexisupportsystems.co.uk
sales@flexisupportsystems.co.uk

light

KG

heavy

access

solar

Flexi

Flexi H-frame kits

Our H-frame kits offer the installer full flexibility by providing a solution where they can supply their own strut to suit their installation requirements. The H-frame kits are supplied with a pair of either our 320mm feet, most widely used in the majority of installations or where heavier more demanding loads are present, then our 500mm foot version kit is available. All kits are supplied with hot dip galvanised angle brackets together with all the necessary fixings to assist the installer in a low cost, versatile and fast assembly solution on site.

Typical duct installation



What's in the box



Part Code - F-HF-320 (shown above)

Part Code	Description	Foot Size	Recommended Max Load	Weight
F-HF-320	Flexi H Frame Set - 2 square black feet and fittings	320 mm x 320 mm	250 kg	4 kg
F-HF-500	Flexi H Frame Set - 2 square black feet and fittings	500 mm x 500 mm	600 kg	6 kg

Flexi

Specification Extract

Duct/pipe/tray services will be supported on flexi everyday H-frame kits utilising (add required foot size) and with adhered rubber mats. Contact Pump House: 0115 900 5858

Application

Suitable for everyday installation of ductwork including associated attenuators. Small to medium sized flow and return pipework and electrical containment e.g. cable trays or cable ladders.

Material Specification

- Foot - 320mm & 500mm square UV stabilised 90% polypropylene, 10% grp
- Mat - 100% natural rubber, (mat is adhered to the feet)
- Fixings - M10 ZP sets, sprung washers and nuts.
- Angle brackets - mild steel, hot dip galvanised BS EN ISO 1461:1999
- This product is supplied boxed. Kit does NOT include strut (frame) metalwork.

Our service offers you

- Quotation upon request
- Full AutoCAD drawings support
- Site support and site surveys
- Load management calculations
- 20 years experience in flat roof design and providing support systems to building services
- Fast delivery
- Experienced in-house technical staff
- Friendly, family run business

Duscovent

Industrial Ventilation
Air Pollution Control
Central Vacuum Systems
Dust Suppression

LOCAL EXHAUST VENTILATION PLANT
REGULAR MAINTENANCE LOG BOOK

The operative who checks each item must complete the relevant daily/weekly box
Record problems and resolutions in boxes at bottom of sheet
Completed logs must be retained for inspection by the LEV Test Engineer during the annual detailed examination and test
The HSE require you to complete a maintenance log book for each LEV system and retain on record for 5 years

LEV System Ref No. _____ System Description _____

Duscovent Contract No. _____ Date of last Annual Test _____ Annual Test Due _____

MONTH _____ Date of last service _____ Service due _____

DAILY CHECK LIST	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
Extraction unit is in use when machinery is operated																																			
Waste collection receptacle removed,																																			
Waste sealed for disposal,																																			
New waste receptacle fitted.																																			
Airflow appears normal and satisfactory																																			
Filter cleaning system activated																																			
Area cleaned																																			
Airflow indicator functioning																																			

WEEKLY CHECKLIST					
Hoods/Ductwork					
Flexible Hoses					
Blastgate Dampers					
Filter Shaking Mechanism					
Noise/Vibration of fan is normal					
Electrical Operation					

General Housekeeping - All dust spillages must be immediately removed by vacuum. Sweeping, dusting or use of compressed airline is contrary to HSE guidelines.
- A regular cleaning routine must be operated, including high level surfaces - walls, ceilings, ducts, services pipes - every three months.

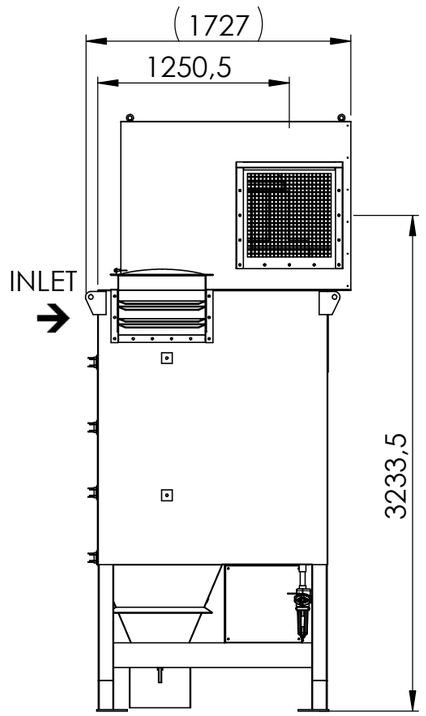
Record details of any problems reported to management, include date, nature of problem, person reporting problem, name of person reported to.

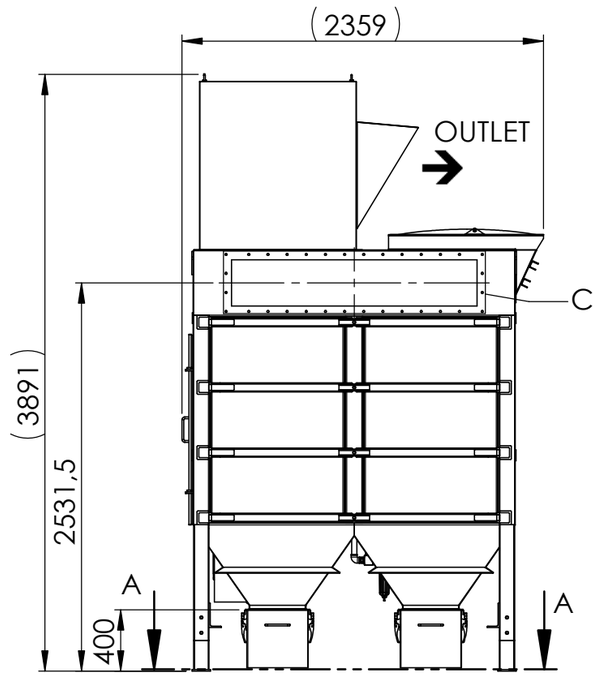
Date.	Problem	Problem reported by; Problem reported to;

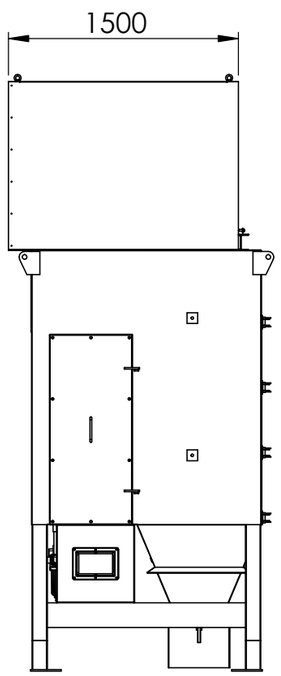
Record action taken to resolve problem

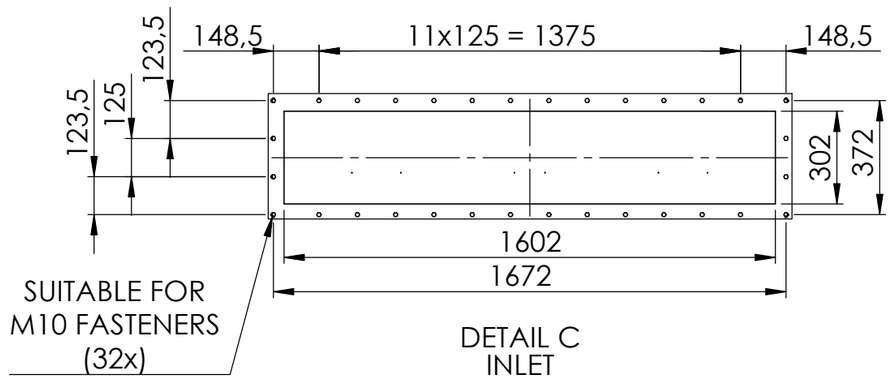
Date.	Resolution.	Problem resolved? Yes / No

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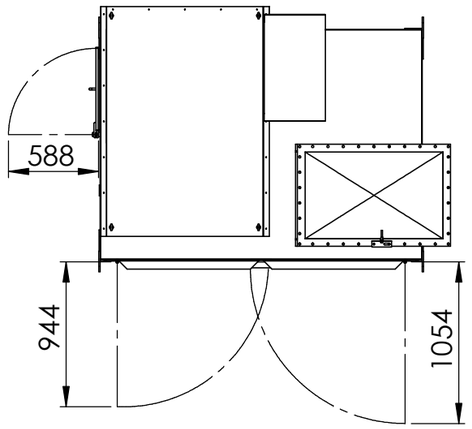


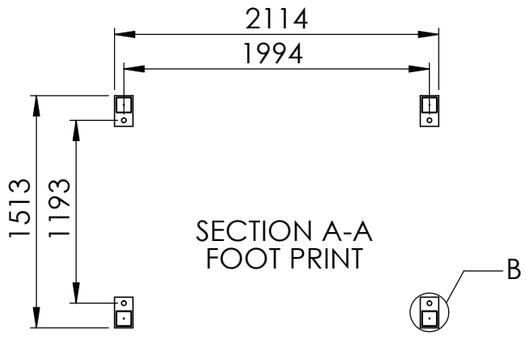




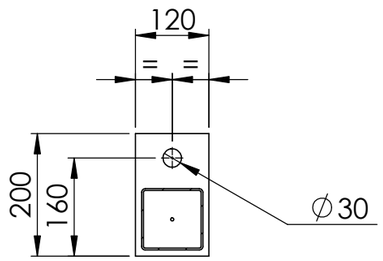


DETAIL C
INLET





SECTION A-A
FOOT PRINT



DETAIL B
FOOT PLATE

NOTE:
FOR DETAILED SPECIFICATIONS, SEE QUOTATION SPECIFICATION SHEET (QSS)

http://intranet.dci.com/ind/iaf/emea/eng/pdt/Shared%20Documents/AW0296601.xlsm

THIS DRAWING IS FOR QUOTATION PURPOSES ONLY

ALL BURRS AND SHARP EDGES TO BE REMOVED
CORROSION PROTECTION ACCORDING TO PURCHASE ORDER
WELDING STANDARD ACCORDING TO: I.S. EN ISO 2553:2013 ALL WELDSPATTER TO BE REMOVED, USE OF SILICONE BASED REMOVER IS NOT ALLOWED
GASKET/CAULKING AREA TO BE DEGREASED BEFORE APPLICATION
ALL DIMENSIONS ARE IN MILLIMETRES
FOR EXPLANATION OF DIMENSIONS, NOTES, SYMBOLS, ETC. SEE: BS 8888

DR.	DATE	REV.	REV. N°	CHANGE DESCRIPTION
		0		

PAINT SPEC: _

THICKNESS:

MATERIAL:

WEIGHT: 1595.40 Kg

USED ON:

GENERAL TOLERANCES UNLESS OTHERWISE SPECIFIED:
For linear, angular dimensions and form and location.
ISO 2768 mK
For welded constructions.
EN ISO 13920 BF
GENERAL ROUGHNESS
UNLESS OTHERWISE SPECIFIED: 3.2

TITLE:
PROPOSAL DRAWING DFPRO12-R

RELEASE NR		
DR.	**BD**	10/06/2021
APP.	**AH**	10/06/2021

FIRST ANGLE PROJECTION

DO NOT SCALE

NUMBER: **AW0296601**

REVISION **0**

SCALE: N.T.S. SHEET: 1 OF 2

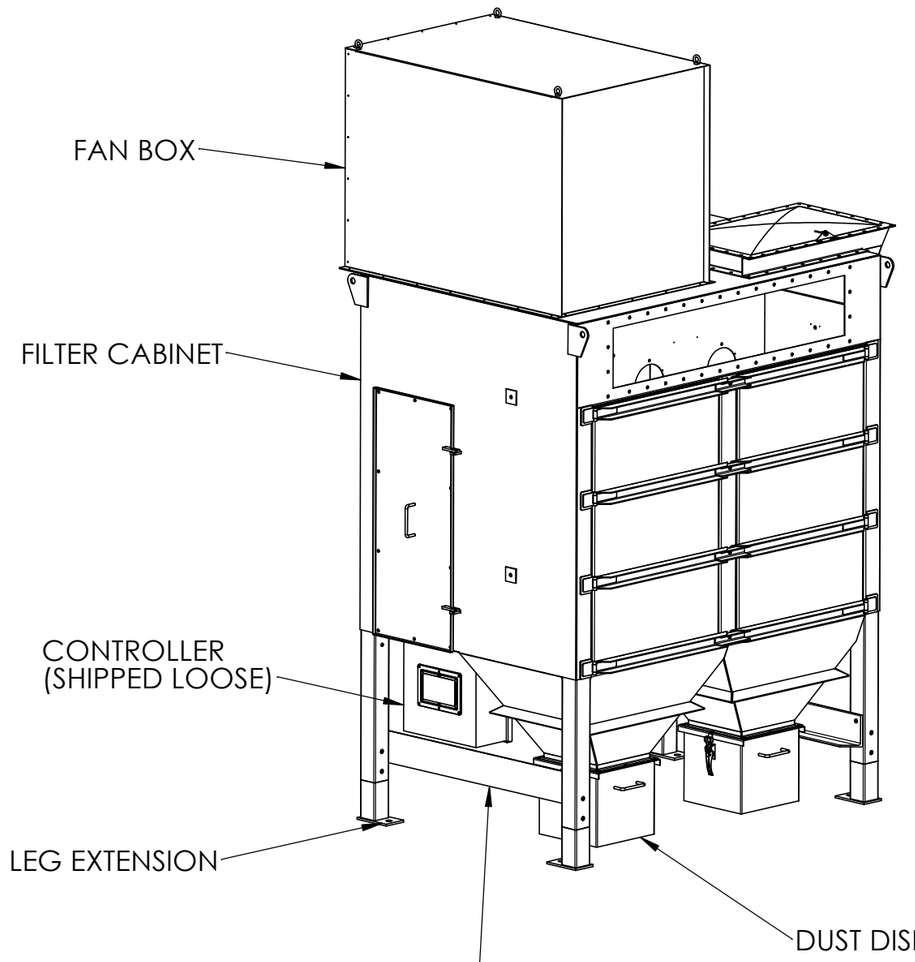
C/C SW: **SolidWorks**

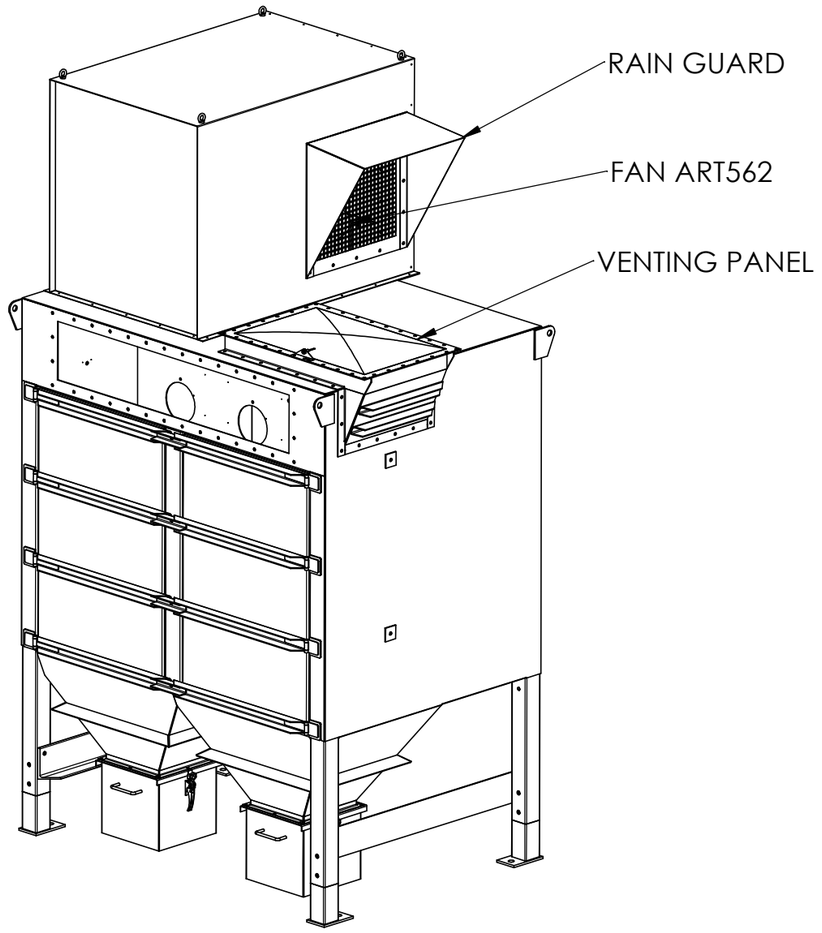
SIZE **A3**

Donaldson™ Europe **IAF**

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LIFTING PROFILES ARE ONLY NEEDED TO MANIPULATE THE UNIT AND CAN BE REMOVED IF THEY'RE IN CONFLICT WHEN FITTING THE X-BRACINGS OR ANYTHING ELSE.

REMARK:
* BIN BALANCE PIPE NOT SHOWN.

NOTE:
FOR DETAILED SPECIFICATIONS, SEE QUOTATION SPECIFICATION SHEET (QSS)

http://intranet.dci.com/ind/iaf/emea/eng/pdt/Shared%20Documents/AW0296601.xlsm

THIS DRAWING IS FOR QUOTATION PURPOSES ONLY

		0		
DR.	DATE	REV.	REV. N°	CHANGE DESCRIPTION

- ALL BURRS AND SHARP EDGES TO BE REMOVED
- CORROSION PROTECTION ACCORDING TO PURCHASE ORDER
- WELDING STANDARD ACCORDING TO: I.S. EN ISO 2553:2013 ALL WELDSPATTER TO BE REMOVED, USE OF SILICONE BASED REMOVER IS NOT ALLOWED
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- ALL DIMENSIONS ARE IN MILLIMETRES
- FOR EXPLANATION OF DIMENSIONS, NOTES, SYMBOLS, ETC. SEE: BS 8888

PAINT SPEC: _
THICKNESS:
MATERIAL:
WEIGHT: 1595.40 Kg
USED ON:

GENERAL TOLERANCES UNLESS OTHERWISE SPECIFIED:
For linear, angular dimensions and form and location.
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For welded constructions.
EN ISO 13920 BF
GENERAL ROUGHNESS UNLESS OTHERWISE SPECIFIED: 3.2

RELEASE NR
DR. **BD** 10/06/2021
APP. **AH** 10/06/2021
FIRST ANGLE PROJECTION
DO NOT SCALE

TITLE:
PROPOSAL DRAWING DFPRO12-R

NUMBER: **AW0296601**
REVISION **0**
SCALE: N.T.S. SHEET: 2 OF 2
C/C SW: **SolidWorks**
SIZE **A3**

Donaldson™ Europe IAF

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DATA SHEET

Filter media

Ultra-Web® on Spunbond Anti-Static

Ultra-Web® on Spunbond Anti-Static

Appearance	Grey, corrugated
Use	Pleatable filter media
Composition	Spunbond polyester with nanofibre layer aluminised
Area weight	260 g/m²
Thickness	0.61 mm
Air Permeability (Frazier)	360 m³/m².h at 125 Pa
Surface finish	Aluminised
Surface electrical resistance (DIN 54345)	Less than 10^8 Ω (on the Anti-Static coated side)
IFA/BIA certificate (DIN 660335-2-69)	Class M Test report number: 201523948/6210
Temperature (dry heat)	
Continuous	93 °C
Peaks	110 °C
Chemical resistance	
Hydrolysis	N/A
Acids	Good
Alkalis	Good
Oxidising agents	Good
Organic solvents	Good
Abrasion resistance	Excellent
Supports combustion	Yes
Application field	Wide pleat spacing provides excellent particle release. Highly recommended for chemical, food and industrial processing, when product contamination must be minimised. Excellent performance on moist, hygroscopic or agglomerative dust. High filtration efficiency on very fine particulate < 1 micron. Chemical processing, food processing, general industrial.

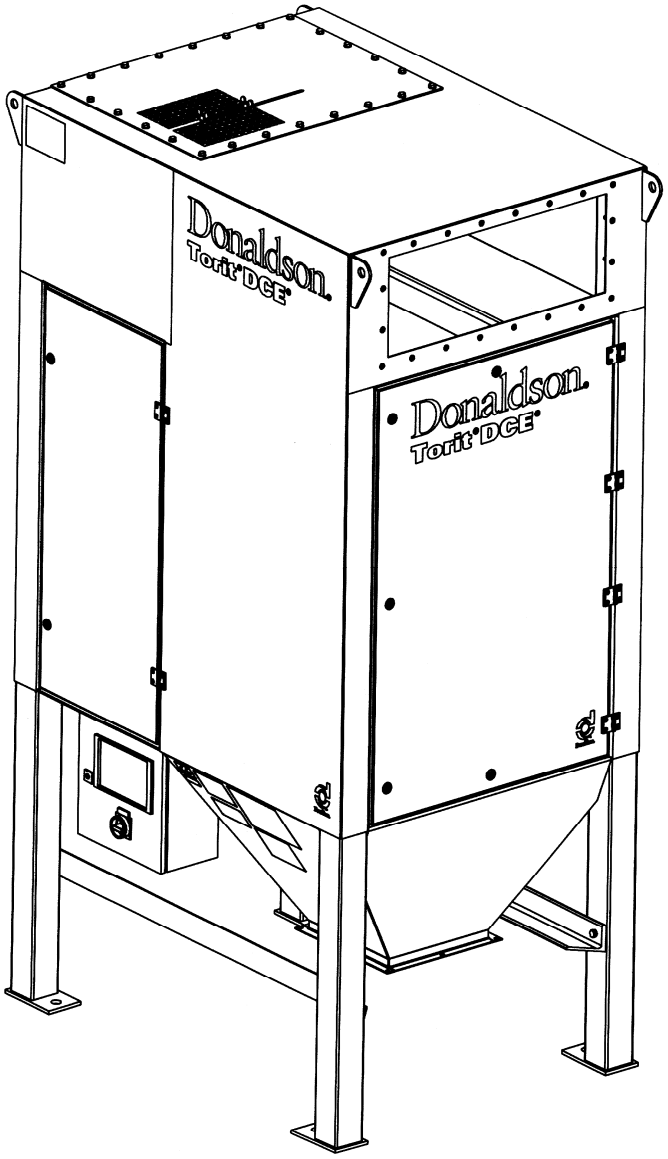
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Installation, Operation and Maintenance Manual

Donaldson
Torit® DCE®

FOR TORIT DCE DUSTCOLLECTOR TYPE DFPRO4, DFPRO6, DFPRO8, DFPRO12, DFPRO16 (including DOB, Cyclopeel, and Spark Trap versions)



Publication 262-3121 (GB) ● 01/2010 Rev. 06
Donaldson reserve the right to alter design without notice. Freedom from patent restrictions must not be assumed.

'MASTER' LANGUAGE

Donaldson

IMPORTANT

PLEASE READ THIS MANUAL CAREFULLY BEFORE INSTALLATION

THIS MANUAL SHOULD BE READ IN CONJUNCTION WITH THE RESPECTIVE PRODUCT MANUAL AND CIRCUIT DRAWINGS SUPPLIED WITH THE DUST COLLECTOR

EXPLANATION OF SYMBOLS USED



Refers to special information regarding the most efficient use.



Refers to special information directed towards preventing damage.



Refers to special information designed to prevent injury or extensive damage.

IMPORTANT

These details correspond to the serial nameplate located on the side panel of the equipment to which this Manual refers

Donaldson
Filtration Solutions

Dustcollector

Entstauber

Model / Type	Serial Nr / Fabrik Nr	Seq Nr	Year / Baujahr

Voltage / Spannung	kW
V	

Cycle / Frequenz	PH

Net weight / Nettogewicht

Control Timer / Steuerkasten

Part / Teil #

Input / Eingang

Output / Ausgang

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1 SAFETY RECOMMENDATIONS

This manual contains specific precautionary statements relative to worker safety in appropriate sections. To avoid dangerous situations we give you the following advice:



Refers to special information on how to use the dust collector most efficiently.



Refers to special information directed towards preventing damage.



Refers to special information designed to prevent injury or extensive damage.



a) *The dust collector has been built in accordance with state-of-the-art standards and recognised safety rules. Nevertheless if not handled carefully, it may put people at risk, or also cause damages.*

b) *The dust collector must only be used in technically perfect condition in accordance with its designated use and the instructions set out in the operation manual. Any functional disorders, especially those affecting the safety, should therefore be rectified immediately.*

c) *Make sure to give proper training to operators before start-up.*

The dust collector is designed exclusively for use in accordance with the scope of delivery, drawing(s) and the specification sheet.

d) *The dust collector is not designed for applications with combustible materials involving a potential dust explosion risk (e.g. buffing lint, paper, wood dust, aluminium and magnesium).*

e) *It is not allowed to put lit cigarettes or any burning object into the hood or ducting of any dust collection system;*

f) *Regular maintenance is important for a good performance of your dust collector.*

A prudent user of Torit DCE equipment should consult and comply with all relevant Fire Codes and/or other appropriate codes when determining the location and operation of dust collector equipment.

A hand-operated supply-disconnecting device is necessary for each incoming electrical supply in accordance with EN 60204-1.

g) *To prevent accidents the access to the fan wheel must be impossible during operation. Refer to EN 294.*

h) *Disconnect all power before servicing. All electrical work must be done by a qualified electrician according to local codes.*

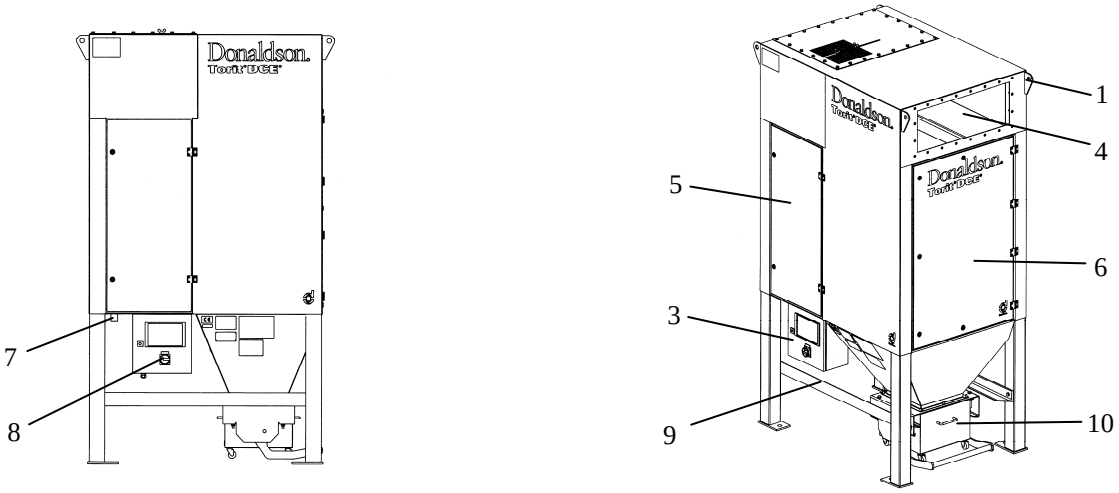
i) *All exposed conductive parts of the electrical equipment and the dust collector shall be connected to the protective bonding circuit (refer to EN 60204-1).*

j) *Shutoff and bleed-off compressed air supply before doing any service work.*

k) The dust collector cannot be used in a potentially explosive atmosphere (according ATEX directive 94/9/EC), unless stated otherwise on the nameplate of the unit and scope of delivery.

l) The user of the dustcollector is responsible to dispose of any dust generated by the process, according to local regulations.

2 INTRODUCTION



1. Lifting lugs 2. Controlbox 3. Torit DCE Control Board 4. Dirty air inlet 5. Clean air chamber door 6. Dirty air chamber door	7. Compressed air connection 8. Disconnector for electrical power 9. Lifting profiles 10. Dust disposal

Figure 1: Typical Installation View

2.1 Product information

The dust collector is used for the collection of airborne dust and particulate. Whether in answer to the problem of air pollution, or as part of a manufacturing process, the dust collector provides highly efficient, continuous, on-line dust collection.
The filter elements are the heart of the dust collector. These filter elements help ensure that only cleaned air is returned to the plant environment.
Technical and field supports are available from your local Torit DCE Representative or Distributors to answer your questions.

2.2 Function

During operation, contaminated air enters the dust collector through the dirty air inlet area and passes through the filter elements.

Dust is collected on the outside surface of the filter elements. The filtered air flows through the centre of the filter elements into the clean air chamber, where it exits through the clean air outlet and can be recirculated into the environment.

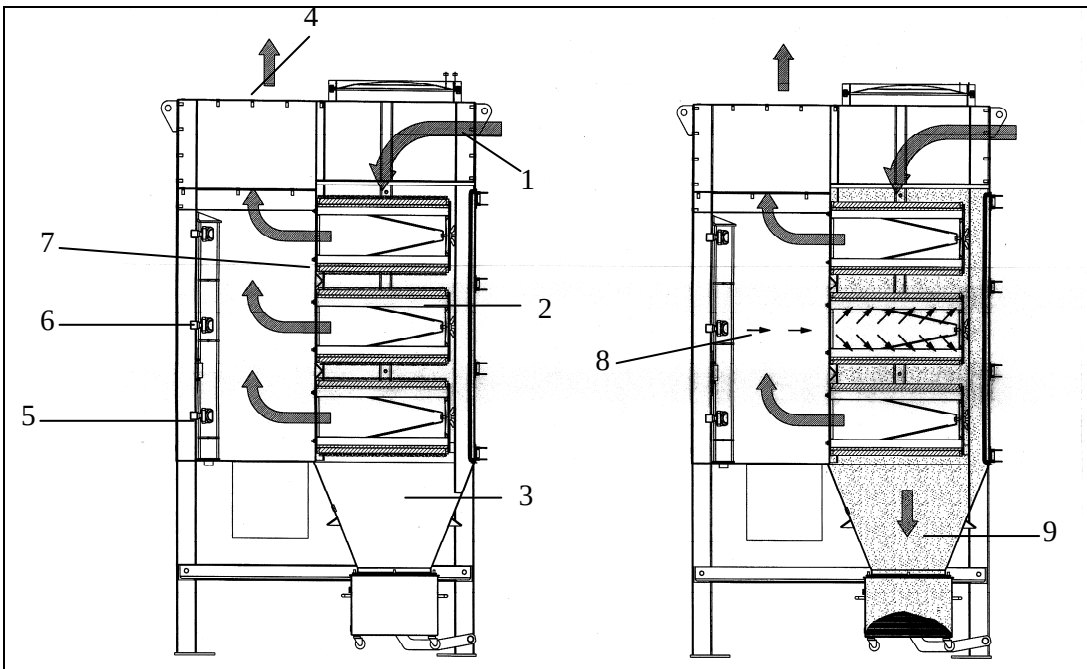
To ensure the optimal performance of your dust collector it is necessary that the filter elements are cleaned automatically and sequentially.

During the filter cleaning sequence, the timer energises a solenoid valve, causing the corresponding diaphragm valve to send a pulse of compressed air through the filter elements (from the inside outward), removing the collected dust from the outside surfaces of the filter elements.
The dust falls through the hopper into the dust disposal system.

Another important part of the collector is the damper valve integrated in the clean air plenum. It has two functions: regulating the airflow and protecting new filter elements.

When installing a filter unit on site, different locations have a different static pressure in the incoming ductwork. The damper valve can be adjusted so the airflow at the unit inlet is always ideal for that particular dust collector. Please contact your Donaldson representative to find out the best values for your installation.

When new filter elements are installed it is necessary to reduce the airflow through the filter media. This way the dust will not penetrate the media and can be cleaned off as described above. After the elements are conditioned the damper valve can be placed back to its original position.



Operation	Filter element cleaning
1. Dirty air inlet	6. Diaphragm valve with built on solenoid valve
2. Filter element	7. Tube sheet
3. Hopper	8. Air pulse
4. Clean air outlet	9. Dust (falling)
5. Manifold	

Figure 2: Operational Schematic

3 PRIOR TO INSTALLATION

You should ensure all persons carrying out work on the supplied equipment follow any relevant recognised standards or codes and are competent to do so. Areas requiring competent person include:

- Lifting and erection
- Electrical installation, inspection and maintenance
- Pneumatic installation, inspection and maintenance

3.1 Location

The dust collector should be located with consideration for:

- emptying the dust disposal (item 11, fig. 1)
- shortest runs of inlet and outlet ductwork
- radius bends on elbows as big as possible
- easy access to electrical and compressed air connections

- convenience of maintenance.

Consult the technical specification sheet and drawings for the dust collector weight and dimensions.

For calculating for foundation or supporting structure consider the following factors:
- the weight of the dust collector
- the material being collected
- and all auxiliary equipment
- live loads
- for outdoor installation snow and wind loads

3.2 Required tools and equipment

- Crane/Fork lift
- Slings/ Clevis Pins and adequate lifting equipment
- Standard tools (e.g. screwdrivers, wrenches, etc.)
- Drill
- Pipe Sealant

3.3 Delivery and inspection

The dust collector is normally shipped by truck as a completely mounted dust collector and should be checked for any damage that may have occurred during shipping. Compare the parts received against the packing list. If there is damage or parts missing, notify the delivery company and your local Torit DCE representative.

Parts shipped loose with the delivery (depending on your order):

- Dust disposal system
- Transition pieces
- Fan set (if not pre-mounted)
- Fan box
- Silencer
- Platform
- Spare parts
- Anchor bolts
- Cyclopeel
- Hardware/Sealant

The collector comes with a can of paint with the colour the unit is painted in. Use it to touch up scratches and dents on the bodywork.

4 INSTALLATION

4.1 Unloading and transport to location

Before unloading remove all packing and strapping.

- A crane is recommended for the unloading, transport and installation of the dust collector.

Chains or slings with an adequate safe working load must be used. Refer to the collector nameplate for weight of equipment supplied by Torit DCE. The chains must be long enough to

ensure that the lifting angle between diagonal chains is not greater than 90°. When using a forklift the forks must be of a suitable length and adjusted to ensure a stable lift.

- Possibly a forklift can be used. If using lifting profiles (item 10, fig. 1) pay attention not to hit the optional quick release dust disposal system.
- Using plumb line and/or spirit level, line up the unit both horizontally and vertically using shims under the legs where required.

4.2 Installation and assembly

Anchor the dust collector to the foundations.

If one of the following equipment is ordered and not mounted please follow the according instructions.

4.2.1 Pre-separators

All pre-separators are no add-on options. They have to be ordered together with the dust collector.

a) Cyclopeel

The Cyclopeel is shipped loose and has to be mounted on the dust collector according following mounting instructions. (see figure 3)
The isolation foam on the cyclopeel side of the clean airside of the unit is shipped loose and has to be applied when the cyclopeel is mounted.

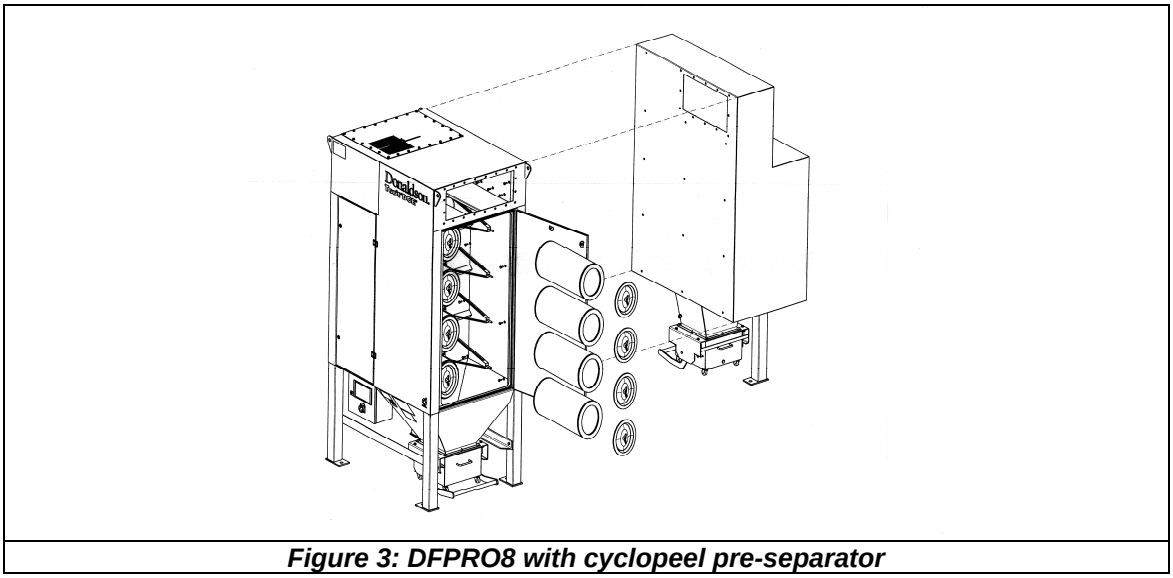


Figure 3: DFPRO8 with cyclopeel pre-separator

b) Spark trap

The spark trap is pre-mounted on the dust collector.

c) Drop out box

The drop out box is integrated in the dust collector.

4.2.2 Fan Set

If the fan set is not pre-mounted, place and anchor on the foreseen position.

When installing your fan:

- *Rotate the fan wheel before and after installing into the fan housing to assure proper clearance.*

- *Check the rotation of the fan wheel (direction of the arrow).*

4.2.3 Fan box

The fan box is shipped loose and has to be mounted on the unit according following mounting instructions.

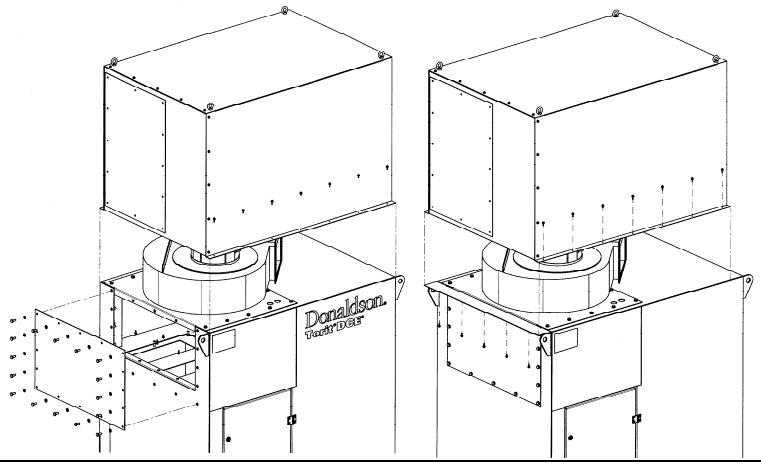


Figure 4: Position of fan box

The outlet position can be changed by swapping the grid and the closing cover before mounting the fan box.

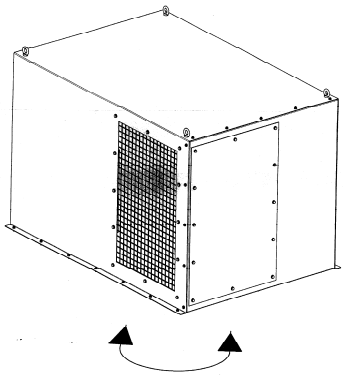


Figure 5: Fan box outlet grid

4.2.4 In- and Outlets

If not pre-mounted, mount the in- and outlets as shown on the specific drawings.

4.2.5 Platform

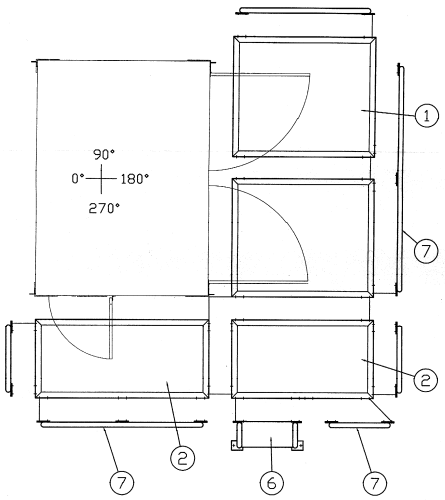
The platform is shipped loose and has to be mounted on the unit according following mounting instructions:

- *Platform fully galvanised.*
- *Max allowable point load (on surface 200x200 mm): 1500 N*
- *Max allowable load: 200 kg/m²*
- *Grate: 30x30 mm*
- *Self-closing door*

- *Step 1: Mount frames 1 and 2 (optional) on supports on unit and on legs (item 4) (14 x M12x35) (figure 'Front view').*
- *Step 2: (optional). Connect frame 1 and 2 to each other (24 x M10x35) (figure 'Front view').*
- *Step 3: Mount walking grid (item 5) on the frames with normal fastening (1 fastener -item 10- near each corner) (figure 'Front view' + detail).*
- *Step 4: Mount ladder (item 6) on frame (8 x M10x30) (figure 'Front view').*

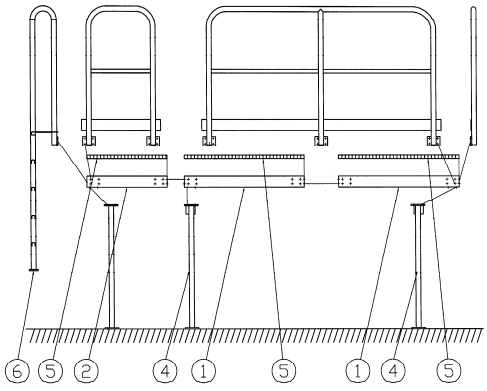
Ladder is shown at 270°, it can be mounted at 90°.

- *Step 5: Mount guardrails (item 7) on frame (56 x M10x30) (figure 'Top view')*
- *Step 6: Anchor the platform and the ladder to the foundation*



1.Frame service platform
2.Frame inspection platform
6. Ladder
7. Guardrails

Figure 6: Top view



1. Frame service platform
2. Frame inspection platform
4. Leg
5. Walking grid
6. Ladder

Figure 7: Front view

4.2.6 Control Box

The control box is factory mounted on the dust collector, according to our standards (except when specified by order).

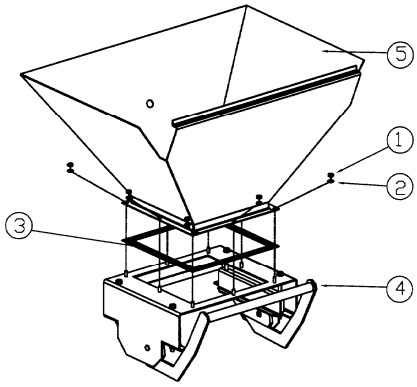
All the instructions related to the controls are mentioned in a separate manual (e.g. 262-3103-UK for Torit DCE Control Board).

4.2.7 Dust disposal system

a) Quick release dust disposal system

If the system is shipped loose it has to be mounted on the unit according figure 5.

The system can be installed in 4 directions (0°, 90°, 180°, 360° - see fig. 1)



1. Nut M10
2. Washer M10
3. Gasket (double row)
4. Quick release dust disposal system
5. Hopper

Figure 8: Installation Quick release dust disposal system

b) Other systems

Other available dust disposal systems (container, screw conveyor, etc…).

4.2.8 Compressed Air Connection

- *Compressed air pressure must be between 6 and 7 bar.*
- *Be sure that all compressed air components are adequately sized to meet the maximum system requirements of 45 Nliters per pulse at 7 bar supply pressure (= design pressure).*
- *It is a requirement that adequate precaution is taken to avoid exceeding this pressure. Relief, safety valve is required if the connected supply can exceed this pressure. A label is also attached to each manifold indicating manifold design details.*
- *Compressed air supply must be both oil and moisture free.*
- *The piping should be installed to provide a fall in the directions of the airflow to assist in the drainage. A blow-down cock should be provided at the lowest point of the installation.*
- *Purge compressed air lines to remove debris before connecting to the manifold.*
- *Connect the compressed air supply line to the compressed air connection of the dust collector (item 8 fig. 1)*
- *Use thread-sealing tape or pipe sealant on all compressed air connections.*

- *A compressed air shut-off valve, a filter/water separator with automatic condense drain, a pressure regulator with gage must be installed on the compressed air supply line. Locate these components for convenient service, in the immediate vicinity of the dust collector.*

Alternative cleaning gases should be assessed before use to ensure explosive atmospheres are not introduced.

4.2.9 Electrical connection

Amperage and voltage information is shown on the nameplate ratings of the fan motor. Over amperage of motor will cause damage.

- If the fan is not pre-mounted, connect the fan motor to the control box according wiring diagram.
- Connect the main power to the control box according the wiring diagram included in the control box.

Check the rotation of the fan wheel (direction of the arrow on the fan housing). If the fan is running in the wrong way, it will deliver only approximately 40 % of its rated air volume. Lock out all electrical input power and interchange any two wire leads (3 phase only) on the output side of the motor starter to reverse fan rotation.

4.2.10 Duct connections and damper valve

Connect::
- Fan and dust collector
- Inlet
- Outlet if needed

All connections have to be sealed properly.

If not integrated in the unit it is ABSOLUTELY NECESSARY to install a damper to adjust the airflow.

There are 2 different kinds of standard damper valves. The smaller dust collectors with a fan until 3 kW integrated will have a damper valve (sliding gate) in the roof. The dust collectors with a bigger fan integrated or mounted on the roof will have an integrated damper valve with access via the clean air chamber door.

Both damper valves can be adjusted by unfastening the bolts so the valve can be slided. Please make sure to fasten the bolts afterwards. An opening of 50 % is a factory pre-setting.

4.2.11 Anti-static earthing

It is particularly important on collectors having anti-static filter elements that the earthing post (located adjacent to the earthing location sticker) is properly connected to earth, using the brass screw provided, to prevent any static build-up.

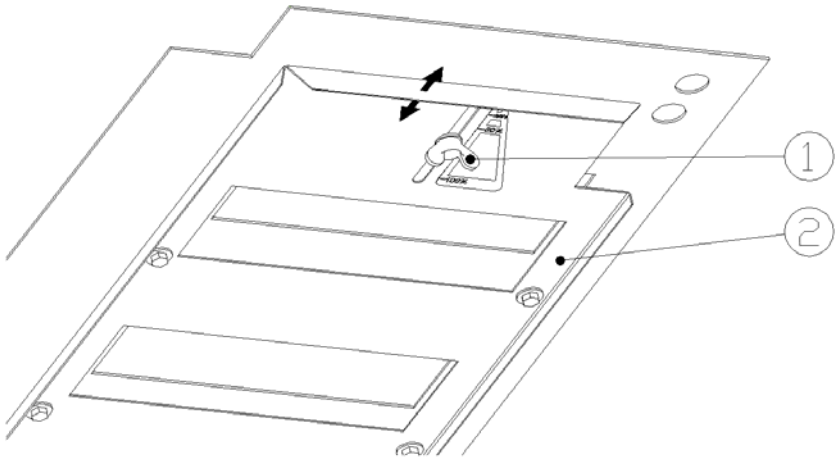
5 START-UP CHECKLIST

- *Follow all steps before first start-up and when the dust collector is not been used for a long period.*
- *For daily use follow steps 1, 2, 4, 5 and 7.*

1. Check that the outlet of the fan is free of debris before starting.
2. Make sure the dust disposal system is properly installed under the hopper.

Too much airflow can cause electrical failure of the fan motor or dramatically reduce the life of the filter elements.

3. With new filter elements the damper valve wingnut should be positioned at the 50% marking. (figure Damper valve position)



1. wingnut	2. damper valve

Figure 9 : Damper valve position

4. Check if the access doors are closed.
5. Switch main power on and press switch 'on'.
6. Check the airflow with a pitot tube and a micro-manometer in the ductwork and adjust the damper valve to the desired airflow.

In case of an integrated damper valve, switch the fan off before opening the access door to increase/decrease airflow.

7. Turn on the compressed air supply. Adjust to 6.5 bar of pressure with the compressed air regulator.

Do not increase compressed air pressure beyond 7 bar as component damage may result.

The cleaning cycle only starts when necessary. For customised settings see the controller manual.

6 OPERATION SCHEDULE

To ensure a good performance of your dust collector follow the checkpoints mentioned below according the timetable.

No.	***Checkpoint***	***Type of control***	***Recommended action***	***Day***	***Weeks***			
					2	**4**	**8**	**26**
1.	Control board	Visual check alarm light (illuminated)	See trouble shooting guide in Control manual	**X**				
2.	Dust disposal system	Check contents of dustbin(s)	If ¾ full, empty dustbin (see chapter 7.1)	**X**				
3.	Fan set	Excessive noise	See trouble shooting guide chapter 8	**X**				
4	Clean air chamber	Emission : dust carry over in clean air chamber	See trouble shooting guide chapter 8		**X**			

No.	Checkpoint	Type of control	Recommended action	Day	Weeks			
					2	4	8	26
5	Damper valve	Check position of damper valve	Wingnut at 50% when the elements are new; at 100% when the elements are conditioned		X			
6	Controls settings	Check settings of both potentiometers (pulse time 100 milliseconds, interval time 10 seconds) on the control board (see separate manual)	Interval time normally to be set at 10 seconds. Pulse time 100 milliseconds.		X			
7	Filter/regulator	Oil and/or water is in the reservoir	Switch off and bleed compressed air prior servicing. Clean oil/water separator. Check compressor.		X			
8	Diaphragm valves	Noise of escaping air is produced	See trouble shooting guide chapter 8			X		
9	Doors	Visual check gaskets	Replace gaskets if necessary			X		
10	Connecting ducts	Check for leakage	Repair if necessary				X	
11	Dust collector and platform	Check damage, strength and corrosion	Repair or replace if necessary					X
12	Filter element	Preventive replacement of all filter elements (see chapter 7.2)	Unless otherwise specified in the scope of delivery every **2 years.**					

7 SERVICE

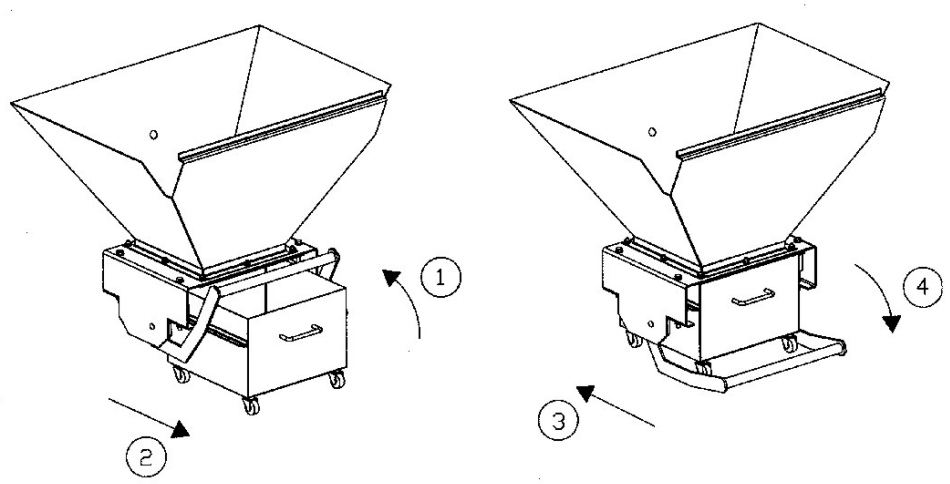
- *Disconnect electrical power before servicing.*
- *Shut off and bleed compressed air supply before servicing any compressed air components.*
- *No welding should be performed inside without fire protection.*
- *Avoid contact or exposure to dust during servicing or maintenance.*

7.1 Dust Removal

Do not let the dustbin overfill. It can cause poor dust collector performance.

Turn off the dust collector and empty the dustbin on a regular base (recommend to empty the dustbin when 3/4 full).

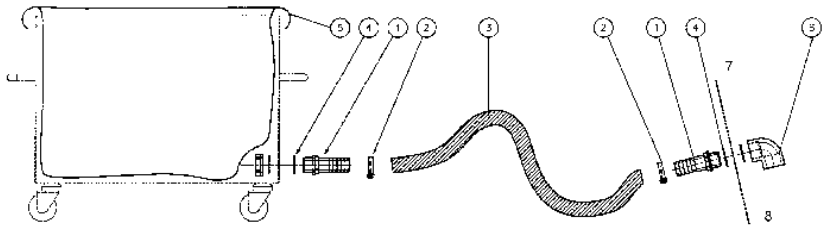
The bin can be installed and removed as shown below:



1. Lift the handle
2. Remove and empty the bin
3. Install the bin
4. Push handle completely down

Figure 10: Dust removal for quick release dust disposal system

If plastic bags used a pressure balance pipe is recommended. If shipped loose it has to be mounted according figure 7.



1. Socket
2. Hose clamp
3. Pressure balance pipe
4. Rubber sealing
5. Plastic bag
6. Elbow balance pipe

Figure 11: Balance pipe pack

A hole is already predrilled in the back of the hopper for the connection. If the system is installed to remove the bin from the back (0° position), a hole (dia 28.5 mm) has to be drilled on the opposite side of the hopper. The predrilled hole has to be closed.

Where the dust has self-heating properties, it is important to remove any deposits in the dust container to reduce the risk of an explosion

*In case of a **spark trap**: don't forget to empty it. Use a vacuum cleaner through the access cover on the spark trap.*

7.2 Change of filter Elements

(see figure 'Exchanging filter element')

All filter elements should be changed at the same time.

Dust laden filters may be heavy and difficult to handle. Provide appropriate means of access to replace filter elements safely in case no platform is installed.

1. Open the dirty air chamber door by using the delivered key.

2. Remove filter element cover by unscrewing the wing nut counter clockwise. Set cover aside.

3. Rotate the filters to break the gasket seals between the filter element and the tube sheet (see figure 'Operational schematic') and dump any loose build up dust off of the top of the filter element. Slide the filter element along the yoke and out of the dust collector.

- *The genuine Torit DCE filter element is the only replacement filter that will provide the high level of performance that you expect from your investment in the Torit DCE Dust collector.*
- *Do not drop the new filter element on the floor or any other hard surface. Damage to the filter element will occur, resulting in leakage.*
  It is necessary to clean the dust off of the tube sheet all around the opening to ensure a positive seal of the filter gasket.

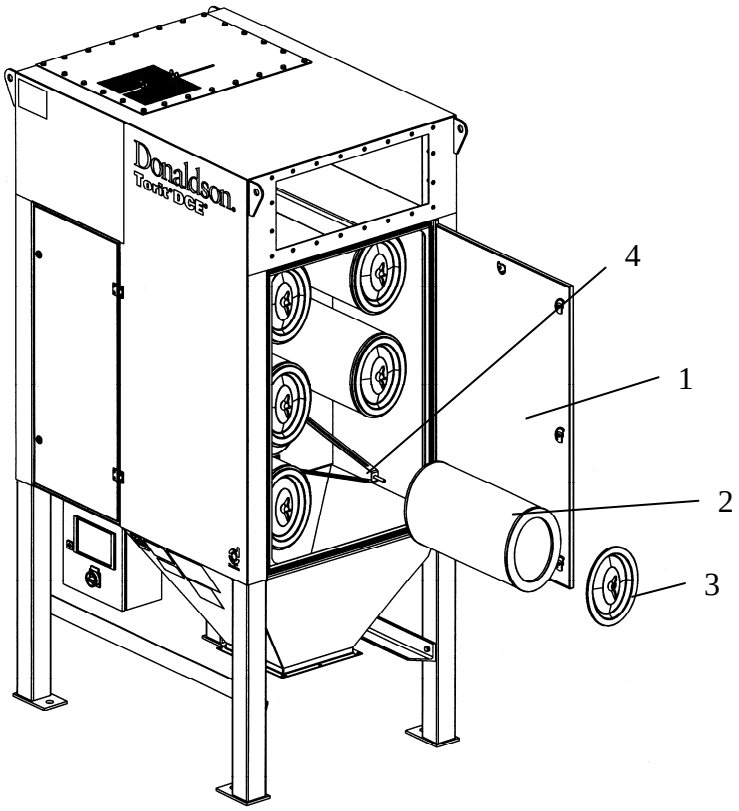
4. Slide the new filter element along the yoke with the gasket end facing inward toward the clean air chamber.

5. Reinstall the cover and screw the wing nut clockwise onto the yoke. Tighten securely, to prevent leakage, by hand, do not use any tools to achieve this.

- *If the gasket is damaged the cover has to be replaced.*
- *Lack of compression of the filter gaskets can cause leakage.*
- *If the door gasket is damaged, it has to be replaced.*

6. Clean the gasket of the dirty air chamber door.

7. Close the dirty air chamber door by using the delivered key.



1. Dirty air chamber door
2. Filter element
3. Cover
4. Yoke

Figure 12: Exchanging Filter Element

7.3 Diaphragm valve

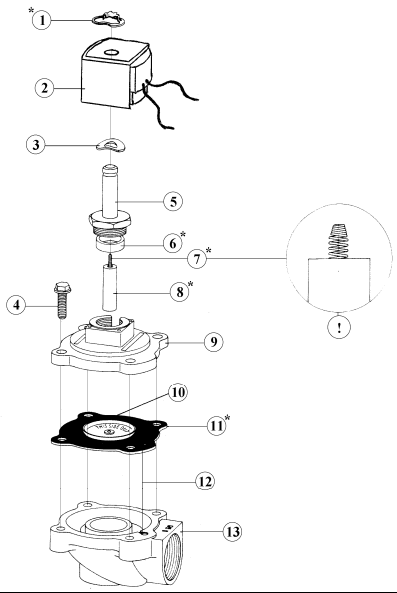
Valve disassembly and reassembly

Depressurise valve before making repairs.

To avoid damage to the valve body, DO NOT OVERTIGHTEN PIPE CONNECTIONS. If Teflon tape, paste, spray or similar lubricant is used, use extra care due to reduced friction.

Depressurise valve. Proceed in the following manner:

1. Remove bonnet bolts and valve bonnet.
2. Diaphragm assembly is now accessible for cleaning or replacement. Replace diaphragm assembly if worn or damaged.
3. Reassemble in reverse order of disassembly paying careful attention to exploded views provided for placement of diaphragm assembly.
4. When replacing diaphragm assembly be sure marking **"THIS SIDE OUT"** on diaphragm assembly faces valve bonnet and that bleed hole in diaphragm assembly is in alignment with cavity in valve body and bonnet. The external contours of the diaphragm, body and bonnet must all be in alignment.
5. Replace bonnet bolts and tighten in a criss-cross manner. Torque bonnet bolts (4) 7 ± Newton meters.
6. After maintenance operate the valve a few times to be sure of proper opening and closing.



1. Retainer clip (*)
2. Coil
3. Washer spring
4. Bonnet bolts (4)
5. Sol base sub assembly (torque to 20 Nm)
6. Silencer (*)
7. Spring (*)
8. Core assembly (*)
9. Valve bonnet
10. Marking "THIS SIDE OUT" on diaphragm assembly to face valve bonnet
11. Diaphragm valve (*)
12. Bleed hole in diaphragm assembly must be in alignment with cavity in valve body and bonnet. The external contours of the diaphragm assembly, body and bonnet must be in alignment.
13. Valve body

(!) Place conical spring end on top
(*) Parts included in the diaphragm repair kit

Figure 13: Diaphragm Valve

8 TROUBLE SHOOTING GUIDE

Please consult other manuals if necessary (e.g. controls, fans…)

Disconnect all power and compressed air supply before services.

TROUBLE	POSSIBLE CAUSE	REMEDY
A. Fan does not start	1. Not wired correctly.	Check and correct internal motor wiring for proper connections for your voltage (see Wiring Diagram)
	2. Proper wire size not used for motor	Rewire per national and local electric codes for proper wire size.
B. Fan set starts, but does not keep running	1. Incorrect overload protection is installed	Check for proper motor overload protection. Reset or replace if needed for proper value.
	2. Dust collector doors are open or not closed tight	Tighten doors securely (see figure 1)
	3. Hopper open to atmosphere	Install dust bin under hopper and seal securely
	4. Damper valve not adjusted properly	Check airflow in ducting for proper requirements. Adjust the damper valve until the proper airflow is achieved. Do not attempt to run without inlet ducting attached. (see chapter 5)
	5. Electrical circuit fuses	Check if the supply circuit has sufficient power to run all equipment
C. Excessive noise/vibration of the fan ***If this happens it should be rectified at once***	1. Dust deposit on the blades	Clean the blades
	2. Worn blades	The fan wheel has to be replaced
	3. Worn bearings	The bearings has to be replaced
D. Dust emission	1. Filter elements installed improperly	Check that gaskets on the filter element(s) are firmly pressed to the tube sheet (the wing nuts of the filter elements should be fully tighten by hand).
	2. Filter element damage, dents in the end caps, gasket damage or holes in pleated media	Replace the filter elements. (see chapter 7.2)
	3. Doors not airtight	Tighten doors securely and check sealing
E. Insufficient airflow	1. Fan wheel rotating wrong way	Check fan rotation. Refer to rotation sticker on fan housing (see chapter 4.2.2)

TROUBLE	POSSIBLE CAUSE	REMEDY
	2. Openings not properly sealed	Check doors, that they are closed and tightened securely (see figure 1). Also check hopper area that openings are closed off and that the hopper dust disposal is installed.
	3. Outlet is restricted	Check outlet for blockage. Remove material or debris that is blocking the outlet.
	4. Filter elements plugged :	
	a. Lack of compressed air	Check compressed air supply for 6 bar minimum. Increase pressure at maximum 7 bar.
	b. Pulse cleaning not energised	Refer to the trouble shooting guide from the Control manual
E. Insufficient airflow (continued)	c. Dust disposal system is too full or plugged	Clean out dust disposal system as described in chapter 7.1
	d. Hopper full of dust or plugged	Clean out the hopper
	e. Slide gate valve (if fitted) closed under hopper	Open slide gate cover under hopper
	f. Filter elements need to be replaced	Replace the filter elements (see chapter 7.2)
	5. Solenoid valves/diaphragm valves are not functioning	
	a. Solenoid valves/diaphragm valves are leaking compressed air	Check for debris, obstruction, valve wear or diaphragm failure by removing the diaphragm cover on the solenoid valves. Also check for solenoid leakage damage. If diaphragm valves or solenoid valves are damaged replace it or replace damaged part(s).
	b. Pulse control printed circuit board has failed or is out of adjustment	Refer to Operating manual of the Controls.
F. Excessive noise of a diaphragm valve	1. Failure on the diaphragm valve	Check for debris, obstruction, valve wear or failure by removing the diaphragm cover. If the diaphragm valve is damaged, replace it or replace damaged part(s).

9 SPARE PARTS

Item N°	Part number	Description	
2 fig. 2	262-5112	Torit DCE filter element Ultra-Web®	see scope of delivery for type of filter element installed in your dust collector
2 fig. 2	262-5115	Torit DCE filter element Ultra-Web® FR	
2 fig. 2	262-5116	Torit DCE filter element Fibra Web®	
2 fig. 2	262-5117	Torit DCE filter element Torit-Tex™	
2 fig. 2	262-5125	Torit DCE filter element Thermo-Tek™	
6 fig 2	262-0139	Diaphragm valve 1”	
fig 10	262-0087	Diaphragm valve repair kit	
6 fig 8	726-1996	Cover	
/	262-2564	Key door locks	
/	262-2612	Key controlbox	
/	AD1000279	plastic bag for balance pipe pack	
/	262-2569	Door gasket	Length to be specified

In order to maintain the original collector specification and to ensure the same level of safety, only genuine spare parts should be fitted.

When ordering parts, give model number and serial number of dust collector, description and quantity of parts desired

DECLARATION OF CONFORMITY

GB

EC DECLARATION OF CONFORMITY

(Machinery Directive 2006/42/EC)

Manufacturers: **Donaldson Filtration (GB) Ltd.**
Humberstone Lane, Thurmaston, Leicester LE4 8HP, England
ISO Certificate number: 367984 QM

Donaldson Industrial CR – koncern s.r.o.
Kralovsky vrch 1986, 432 01 Kadan, Czech Republic
ISO Certificate number: CH06/0372

Technical file *(Head Office)*: **Donaldson Europe B.V.B.A.**
Interleuvenlaan 1, B-3001 Leuven (Heverlee), Belgium
ISO Certificate number: BE09/961048

Description of the machinery: **Dust Collector**

Brand: **Donaldson Torit DCE**

Description: See attached **Scope of Delivery**

The undersigned, authorized by Donaldson, certifies that the machine described above, provided that it is installed, maintained and used in accordance with the instructions for use and the codes of practice, meets the essential safety and health requirements of the following Directives:

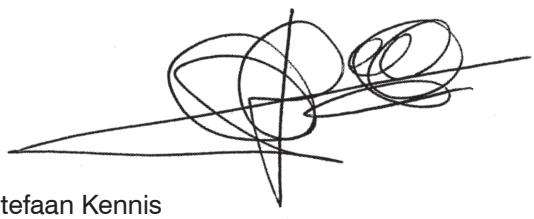
- Machinery Directive 2006/42/EC
- Low voltage Directive 2006/95/EC
- Pressure equipment Directive 97/23/EC
- Electromagnetic compatibility Directive 2004/108/EC
- Equipment and protective systems intended for use in Potentially Explosive Atmospheres 94/9/EC

IMPORTANT! Read the Installation, Operation and Maintenance Manual for order specifics and before using this machine. If you require additional copies contact your local Donaldson representative.

If the machine is part of a system then it must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the above mentioned directives.

For connection to a power supply refer to appropriate manual.

Signature:



Name: Stefaan Kennis

Position: Product Line Manager

Place: Leuven, Belgium

Date: January 2010

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Email: IFS-se@donaldson.com

www.donaldson.com

Duscovent Engineering Limited

e-mail: sales@duscovent.co.uk
website: www.duscovent.co.uk

86 Wellington Road North, Heaton Norris,
Stockport, Cheshire SK4 1HT
Telephone: 0161-480 4811
Facsimile: 0161-480 6503

Duscovent

Industrial Ventilation
Air Pollution Control
Central Vacuum Systems
Dust Suppression

Quotation

Date : 15 August 2022

Our ref. : BT/AB/QTS 20031

Your ref. : 3 Year LEV - Plan

The Manchester College
Ashton Old Road
Openshaw
Manchester
M11 2WH

For the attention of Joanne Appleby - Facilities Management Admin

Dear Sirs

Re: MCC - Annual Thorough Examination and Testing of L.E.V. Systems at M3 1PT site

We thank you for the opportunity to submit a quotation for annual Thorough Examination and Testing of your L.E.V. systems, and now have pleasure in submitting details of our proposals for your consideration.

As you will be aware, all L.E.V. systems require inspection and test by a competent engineer at a maximum interval of 14 months as required by law under the C.O.S.H.H. regulations. Normally a 12 month contract to carry out this work is arranged and we provide this service for many clients. We will accept your well intended proposal to price for a 3 year service plan on the basis we can offer discounted costs as generally agreed.

Our engineers carry the following accreditations:-

- P601 (BOHS) Accreditation - Thorough Examination and Testing of Local Exhaust Ventilation (L.E.V.) systems.
- ILEVE (The Institute of Local Exhaust Ventilation Engineers).
- CIBSE (Chartered Institute of Building Service Engineers).

During our scheduled visit we would propose to:-

- Complete a visual examination of fans and filter plant including external and internal condition, operation of all doors and bin seals, casings, motors, guards and interconnecting ductwork and hooding.
- Internal inspection, where possible, of filters and ductwork.

- Inspection of any filter cleaning mechanism including shaker linkages and compressed air pulse cleaning systems.
- Full airflow tests in line with C.O.S.H.H. regulations including total air volume, filter inlet / outlet static pressures, filter media pressure drop, fan inlet / outlet static pressure. Where possible these recorded figures will be set against design or previously tested figures to indicate any drop or fall in overall performance. Reports must be included within your records of full L.E.V. inspections and kept on file for a minimum of 5 years as required under the C.O.S.H.H. regulations.
- If more serious problems are discovered, these will be notified to clients personnel who will be advised on action to be taken.
- All Duscovent employees will be equipped with clean disposable overalls, high viz jacket with 'DUSCOVENT' clearly marked, ear defenders, gloves, face masks, glasses and suitable safety footwear, and all Covid 19 associated PPE and hygiene products.

Costs

Based on current labour and material rates, our costs for the supply, delivery and installation of the foregoing equipment amounts to as follows :-

- 6 Month service work inspection £1069.00
- Annual Thorough Examination and Testing - L.E.V. systems £2043.00

The above costs are nett and exclusive of V.A.T.

Delivery

Delivery can be scheduled to suit your reasonable requirements.

Conditions

This quotation is subject to our standard Conditions of Sale, attached, and the following Terms of Payment:-

Invoices to be paid 30 days after final day of month which it is presented.

We trust that the above provides sufficient information for your current needs but should any further details be required, please do not hesitate to contact us.

Assuring you of our continued attention, we remain

Yours faithfully
for DUSCOVENT ENGINEERING LIMITED

B Thornton

B Thornton MILEVE
Contracts Director

CONDITIONS OF SALE

1. GENERAL. Unless otherwise arranged, acceptance of this offer is to be on the following terms.

2. VALIDITY. Our offer remains open for acceptance within 30 days from date, unless previously cancelled.

3. (a) SPECIFICATIONS. All particulars given by us in specifications, drawings, or like matter, shall be deemed to be approximate only and we reserve the right to alter such particulars if necessary. Such specifications, drawings, or like matter supplied by us shall remain our property and shall not be used except for the purpose of this contract; the purchaser shall not copy them or disclose the contents thereof or in any way use them to our detriment, and shall return them to us if requested.

(b) ADVERTISEMENTS. All descriptions and illustrations contained in our catalogues, price lists, and other advertising matter are intended merely to present a general idea of the equipment described therein and shall, not form part of the contract unless specifically incorporated therein.

4. PERFORMANCE. Any performance figures given by us are based upon our experience and are such as we would expect to obtain under normal working conditions. Unless otherwise arranged, you assume responsibility for the capacity and performance of the equipment being sufficient and suitable for your purpose.

5. DELIVERY. Any times quoted for despatch are to date from receipt of a written order and full information enabling us to proceed uninterruptedly. We will use all reasonable endeavours to keep to the dates given but cannot accept any liability whatsoever for failure to do so. You shall be responsible for unloading and moving the equipment from the place of delivery to site. When delivery is made by rail or other carrier on our behalf we can only accept responsibility for loss or damage in transit if we are given written notification of non-delivery or damage within 3 days.

6. EXTRA COST. Should we incur extra cost owing to the suspension of the work by your instruction or lack of instruction or to interruption, alteration, delay, mistakes or work for which we are not responsible, such extra cost including the cost incurred by working overtime or unusual hours or by keeping any of our men on the site after completion of erection. shall be added to the contract price and paid for accordingly. In the event of our agreeing to any cancellation or modification of plant after acceptance of our quotation we shall be entitled to make such revised or additional charges as we shall consider reasonable.

7. ERECTION. Where the contract provides for erection we will supply competent supervision and skilled labour for erection of the equipment included in our tender which shall be supplemented as necessary by you by the supply of all necesssary additional labour skilled and unskilled in any necessary trade for preparation of the site, making good and for any services and ancillary equipment not included in our tender. You shall provide suitable access to, and possession of the site, proper foundations ready to receive the equipment as and when delivered, adequate cranes, lifting tackle and scaffolding, suitable protection for the equipment from the time of delivery and all necessary facilities and adequate assistance for erection and tests including supplies of water, power, light and, if required, an earthing point. All of these to be at your expense so as to enable the work to be expeditiously and continuously carried out under our supervision. All labour provided by you shall remain your servants and under your control. Every care will be taken by our men during erection, but we do not accept responsibility for any accidental damage which may occur during progress of work to the property of the customer or third parties.

8. TAKING OVER. The equipment shall be deemed to have been taken over by you when erection or installation is completed, or on completion of tests on site when included in our tender, or one calendar month after it shall have been put into commercial use (whichever may be the earliest): If there be any delay in taking over through any cause for which we are not responsible the equipment shall be deemed to have been taken over at the expiration of two calendar months after we shall have given you written notice that it is ready for despatch or ready for erection to commence or for tests on site to commence (whichever is the earliest) unless in the meantime tests shall have been made showing that it does not comply with the terms of the contract. Taking over shall not be delayed on account of additions, minor omissions or defects which do not materially affect the commercial use of the equipment.

9. PAYMENT. All materials will be invoiced when despatched or ready for despatch and site erection work will be subject to progress payments. Payments should be made nett by the end of the month following the month of invoice. Failure to do so will render you liable for an interest charge of 1½% monthly on the overdue balance.

10. PRICE VARIATION. Unless otherwise stipulated our price is calculated on the basis of present day costs and we reserve the right to invoice at prices ruling at the date of despatch. Any increases will be calculated in accordance with BEAMA formulae.

11. LIABILITY. The equipment is sold and services or advice rendered in connection therewith upon such terms that save to the extent of replacements and repairs under Clause 12 hereof neither we nor our servants shall be liable in contract, tort or otherwise for any personal injury or any loss or loss of production or damage (howsoever such loss or loss of production or damage be caused) suffered by you or any other person and arising out of or in connection with the design, manufacture, sale, delivery (or failure to deliver or delay in delivery) installation, stoppage, repair, adjustment or faulty working of any equipment sold (including replacements) or the use thereof or any advice or services in connection therewith and you shall indemnify us and our servants against any claims in respect of any such injury, loss or loss of production or damage. For the purpose of this Clause we contract on our behalf and on behalf of and as trustees for our servants. Without limiting the generality of the foregoing we shall not be liable for any loss of production or any loss of or damage of any material in the course of being processed by the equipment.

12. GUARANTEE. Save as provided in Clause 11 hereof, our liability in respect of any defect in the equipment supplied or for any loss, injury or damage attributable thereto is limited to making good by replacement or repair such defect which under proper use and excluding fair wear and tear, appears therein and arises solely from faulty materials or workmanship within a period of twelve calendar months after such equipment has been taken over or been deemed to have been taken over under Clause 8; Provided that in the case of goods not of our manufacture you are entitled only to such benefits as we may be able to recover from the manufacturers thereof. This undertaking shall exclude and be adopted in place of any condition or warranty as to the equipment or its fitness for any particular purpose, whether express or implied by law or otherwise, and any collateral warranty whenever given unless in writing signed by and on behalf of one of our Directors.

13. FRUSTRATION. We shall be relieved of liabilities incurred under this contract wherever and to the extent to which the fulfilment of such obligation is prevented, frustrated or impeded as a consequence of shortage of raw materials, services or components necessary to enable us to supply the equipment or any part thereof contracted to be supplied, or by reason of (a) act of God, war, national emergency or threat of war, Act of Parliament, or others, regulations, or by-laws made under Statutory Authority, industrial disputes, civil commotion, fire, tempest, flood, quarantine, failure of suppliers of raw materials or other goods to deliver, or (b) any cause other than the foregoing of whatsoever kind and wherever occurring being a cause beyond our control.

14. LAW. The Contract shall in all respects be construed and operate as an English contract in conformity with English Law.

DATA SHEET

Filter media

Dura-Life®

Dura-Life®

Appearance	White
Use	Filter bags
Composition	Mixture of polyester and bicomponent polyester fibres
Area weight	320 g/m²
Thickness	1.6 mm
Air Permeability (Frazier)	800 m³/m²/h at 125 Pa
ISO Classification ISO 16890-2:2016(E) CERTIFICATE	ePM10 70% Test report number: 172-2
Dimensional stability at 177 °C (%)	<3.0%
Surface finish	None
Additional treatments	Heat set
Temperature (dry heat)	
Continuous	135 °C
Peaks	150 °C
Chemical resistance	
Hydrolysis	Poor
Acids	Good
Alkalis	Good
Oxidising agents	Very good
Organic solvents	Very good
Abrasion resistance	Good
Supports combustion	Yes
Application field	Dura-Life is suitable for the majority of temperature and chemical environments normally encountered in Dalamatic applications including acidic and weak alkaline conditions at ambient temperature. This media complies with EC 1935/2004 and EU 10/2011 (food contact) regulations.

Publication 4218055GB • Rev. 13 • 0820

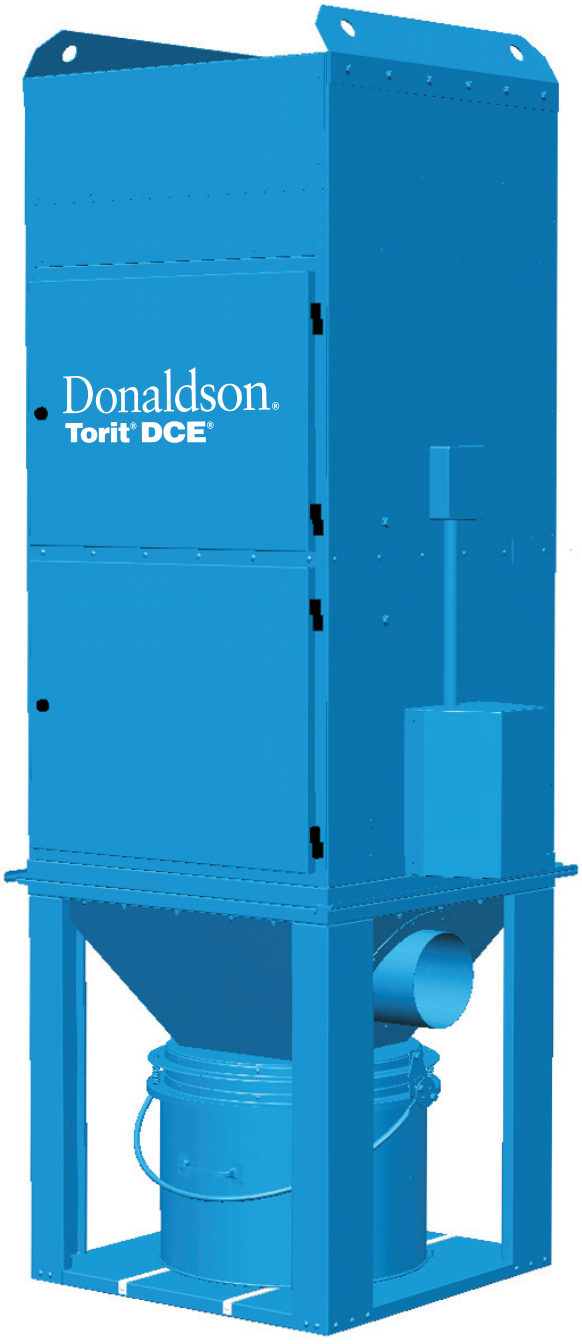
Donaldson reserves the right to change or discontinue any model or specification at any time and without notice. Freedom from patent restrictions must not be assumed.

Installation, Operation and Maintenance Manual

Donaldson® Torit® DCE®

Unimaster Dust Collectors

Series UMA 40-750



Publication 2727K (GB) • 0611 1A 2119 8019N

Donaldson reserve the right to alter design without notice. Freedom from patent restrictions must not be assumed.

'MASTER' LANGUAGE

Donaldson®

IMPORTANT

PLEASE READ THIS MANUAL CAREFULLY BEFORE INSTALLATION.

THIS MANUAL SHOULD BE READ IN CONJUNCTION WITH THE CONTROLLER MANUAL, PUBLICATION 2696, SUPPLIED WITH THE DUST COLLECTOR.

FOR DETAILS OF THE OPTIONAL SECONDARY OR ABSOLUTE FILTER MONITOR, REFER TO PUBLICATION 2920.

PRODUCT RELIABILITY, WARRANTY AND SAFE OPERATION MAY BE COMPROMISED BY NOT FOLLOWING THE GUIDANCE GIVEN IN THESE DOCUMENTS.

EXPLANATION OF SYMBOLS USED



Indicates information on the efficient operation of the collector.



Indicates important information directed towards preventing damage.



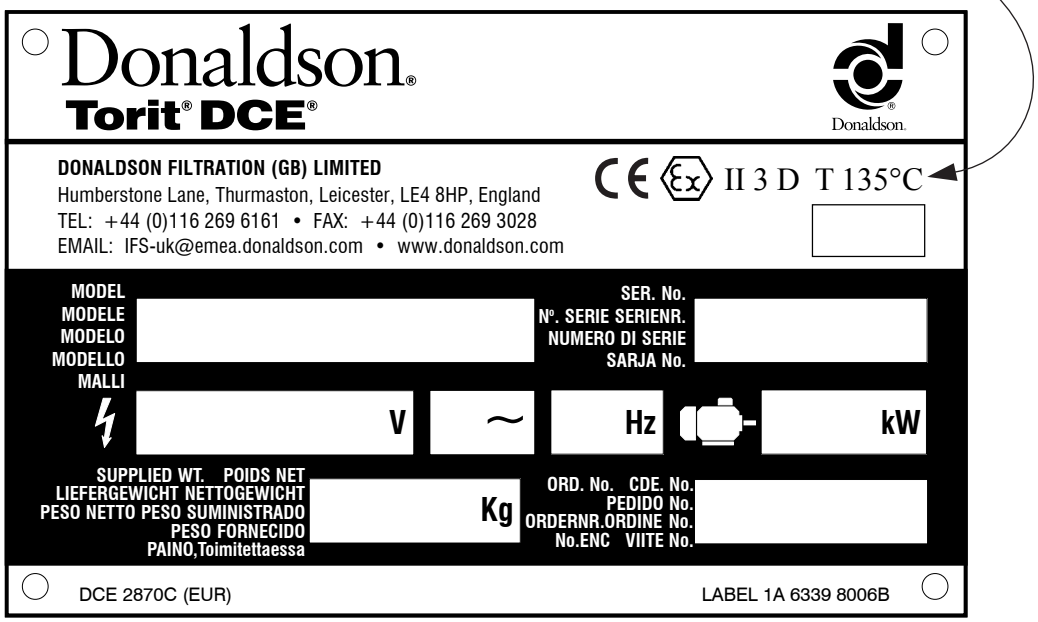
Indicates an important warning, designed to prevent injury or extensive damage.

IMPORTANT

Improper operation of a dust control system may contribute to conditions in the work area or facility that could result in severe personal injury and product or property damage. Check that all collection equipment is properly selected, sized and operated for the intended use.

These details correspond to the serial nameplate located on the left-hand side panel of the equipment

This marking is used only on equipment suitable for use in Potentially Explosive Atmospheres



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Unimaster hopper type dust collectors:

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Unimaster sack tipping units:

UMA 100STU, UMA 150STU and UMA 250STU 18

Unimaster venting type dust collectors:

UMA 70V, UMA 100V, UMA 150V, UMA 250V, UMA 450V and UMA 750V 19

Unimaster venting type dust collectors with dust container:

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GENERAL SAFETY REQUIREMENTS

The collector should be stored as supplied. Only remove packaging to install.
For the purposes of storage:
- *Collector with specification for inside use = IP50.*
- *Collector with specification for outside use = IP54.*

The dust collector should be used only when it is in a technically acceptable condition. Regular maintenance, as set out in this manual, is required to minimise technical failure. Third party supplied components (for example motors) should be maintained according to the manufacturer's instructions.

You should ensure any persons carrying out work on the supplied equipment follow any relevant recognised standards/codes, have received adequate training and are competent to do so. Areas requiring a competent person include:
- *Maintenance on any component identified as a potential ignition source.*
- *Lifting and erection.*
- *Electrical installation, inspection and maintenance work.*
- *Any access to internal classified potentially explosive atmospheres where there may be a risk due to explosion.*

During assembly/installation or dismantling of equipment, potential ignition sources may occur that were not considered in the risk assessment of the unit in operation (for example, grinding, welding sparks, etc.)

You should use the dust collector in full accordance with the conditions set out in the Order Acknowledgment and relevant Scope of Delivery. Failure to do so may compromise product reliability, warranty and safety. The Scope of Delivery is an integral part of the manual.

Other items of equipment, not supplied under the Scope of Delivery from Donaldson, should be installed, operated and maintained according to the documentation supplied with the respective equipment.

Any modification carried out on the 'as supplied' equipment may reduce reliability and safety, and will nullify warranty; such actions fall outside the responsibility of the original supplier.

The hopper should not be used as a storage vessel. To prevent damage to the collector, care should be taken to avoid an excessive build up of heavy materials.

Where necessary for safety, the dust collector is fitted with fixed guards. Removal of these guards and any subsequent work should only be carried out after adequate precaution is taken to ensure it is safe to do so. All guards should be refitted before re-energising.

GENERAL SAFETY REQUIREMENTS



The access door requires tools to open. To avoid danger from rotating fan impellor, ensure fan is isolated and allow sufficient time for fan to become stationary.



Where the equipment supplied is suitable for working within a potentially explosive atmosphere (as defined by Directive 94/9/EC) it will be according to the categories and conditions marked on the collector serial nameplate. You should ensure the equipment supplied by others is also suitable. If no marking is given on the serial nameplate then the supplied equipment is not suitable for use in potentially explosive atmospheres.



Care should be taken to ensure that any potentially explosive atmosphere is not present when performing operations that increase the risk of ignition (opening of controller for adjustment or electrical repair for example). Ensure the installation is always returned to its original state.



To reduce the risk of ignition when handling explosive or flammable materials, it is important that the accumulation of flammable deposits are prevented/removed, e.g. from within ducting etc.



If the collector is handling a potentially explosive dust or is placed in a potentially explosive atmosphere, then all motors should be connected to thermal protection devices to prevent them exceeding their maximum surface temperature. All electrical equipment should comply with a category according to EN 60079-0.



Where the dust being processed can ignite due to exothermic reaction, including self ignition, the collector MUST be fitted with a suitable explosion protection method (venting for example). The risk of ignition can be minimised by avoiding the accumulation of dust layers with regular cleaning.



The dust collector may be fitted with explosion protection in the form of a vent panel. Precautions, as set out in the Scope of Delivery, are used to minimise the risk of ignition of any dust clouds contained within the dust collector. The possibility of other ignition sources being introduced into the collector during periods where any dust cloud may be present should be minimised. Particular care should be taken to avoid introducing glowing particles via the collector inlet ducting.



The explosion relief assembly, where fitted, has been designed to provide adequate safety from an explosion initiated from within the collector, for the given dust explosion characteristics and collector arrangement as set out in the Scope of Delivery. You should ensure that explosions are not allowed to propagate into the dust collector (using suitable isolation devices) since pressures may be generated leading to unsafe equipment rupture.

GENERAL SAFETY REQUIREMENTS

Where applicable, equipment connected to the dust collector (for example, a cyclone) should be protected, using suitable isolation devices, against the transfer of flame and pressure if, in the event of an explosion initiating inside the dust collector, the connected equipment is not capable of safely withstanding these effects.

The explosion relief assembly, where fitted to the dust collector, is not suitable for use with dusts that are classified as poisonous, corrosive, irritant, carcinogenic, teratogenic or multigenic unless the dust released during the explosion venting process can be contained to a safe level.

In order to ensure the required venting efficiency is maintained, the explosion relief assembly, if fitted to the collector, should not be obstructed in any way.

It may be necessary to provide a facility to shut down the equipment in the event of an explosion (where collectors are fitted with explosion relief panels). The signal should be taken from the bursting panel detection device.

Part of the risk assessment on possible ignition sources for dust and gas mixtures with very low MIE, has considered the electrostatic risk from cone discharges. Here the basis of safety is based on using a conductive bin, dusts with a median particle size of less than 400µm and advising frequent emptying.

You may wish to consider the use of a sprinkler system when handling explosive or flammable materials.

None of the fan assemblies can be considered to be a fully sealed design, indeed most are arranged with either an open inlet or an open outlet. For this reason, the internal and external atmospheres can be considered the same in terms of any potentially hazardous classification.

Standard fan assemblies should not exceed 3000 rpm (50 Hz supply) on systems fitted with an inverter drive.

The filtration media is suitable for filtering particulate only (and not gas).

Some applications are prone to risk of fire. This risk can be reduced by pulse cleaning and emptying the dust container regularly.

- *Any extinguishing technique and material used must be suitable for the flammable nature of the dust.*
- *A water sprinkler system can be fitted as a special option.*

Materials handled by the dust collector may be hazardous (e.g. toxic). Conduct a Risk Assessment to ensure correct technique is employed.

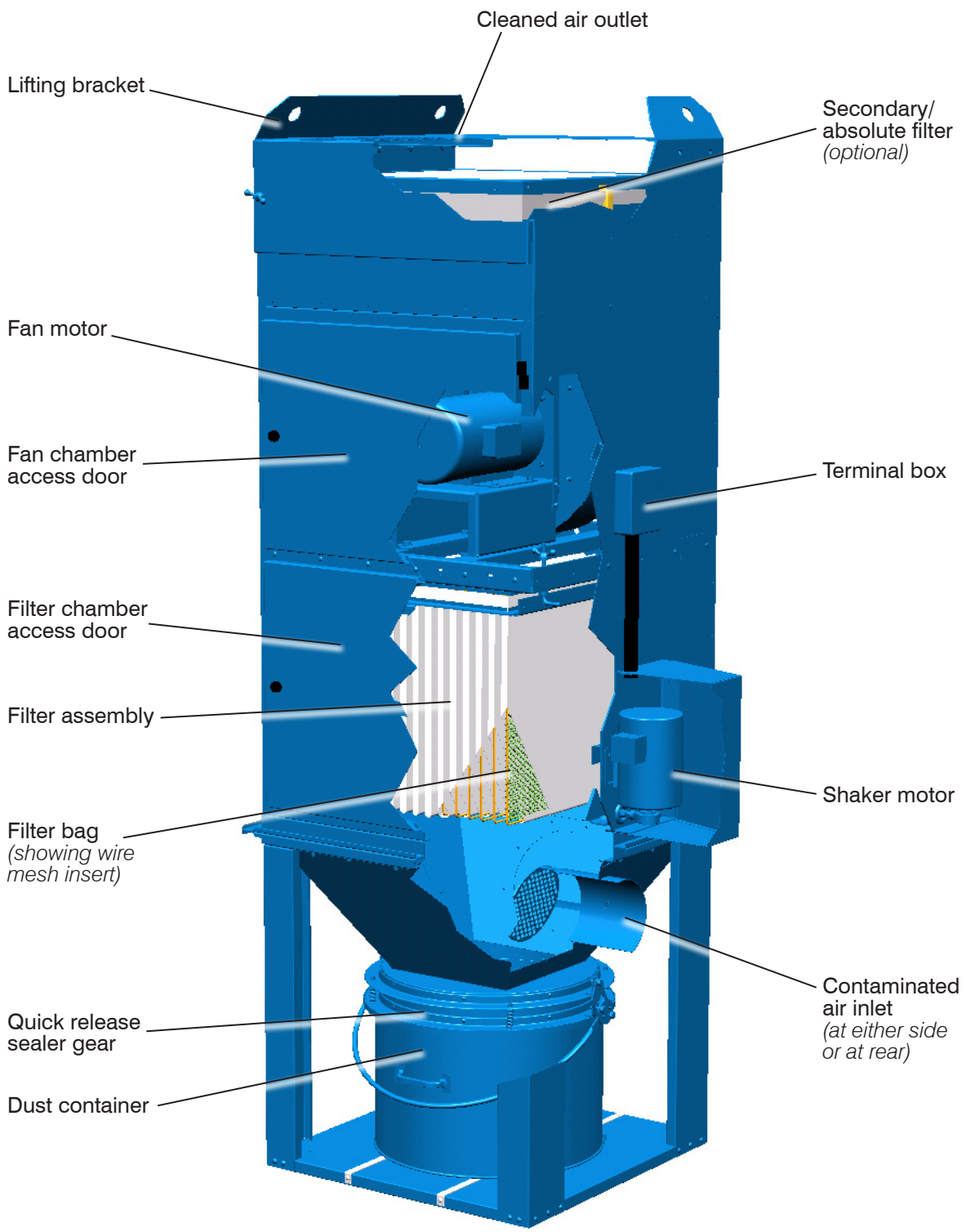


Figure 1 Unimaster dust collector. Model UMA 153 K5 SF illustrated.
(For the complete series of models in the Unimaster range, refer to Publications 2723, 2724, 2725 and 2726)

INSTALLATION

Where equipment is installed in a Potentially Explosive Atmosphere, care should be taken not to locate or use the collector where external ignition sources can be introduced, for example stray electric currents, lightening, electromagnetic waves, ionising radiation, ultrasonic waves.

When handling explosive or flammable materials and the risk of a fire is high, then precautions such as fitting a sprinkler system and not locating the collector in a zone 21/1 area should be considered.

When handling explosive or flammable materials the collector should be located so as to avoid external heat sources, e.g. from nearby processes or extreme direct sunlight.

Where applicable, care is required when siting the dust collector to ensure that the effects (flame, pressure, noise and fire) produced during and after the explosion venting process do not put at risk personnel and nearby plant.

The collector is not designed to support site-installed ducts, interconnecting piping or electrical services. All ducts, piping or electrical services must be adequately supported.

All external equipment connected to the dust collector should be correctly sealed. This can be achieved by applying a continuous 5 mm bead of sealing compound to the mounting surface, along each side of the hole pattern. For non-Donaldson equipment please also check supplier's IOM manual for any specific requirements.

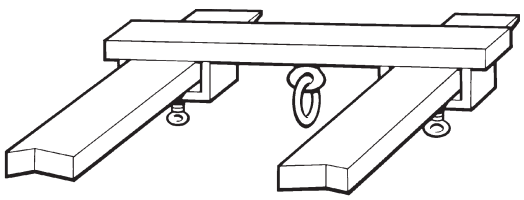


Figure 2 Fork lifting attachment

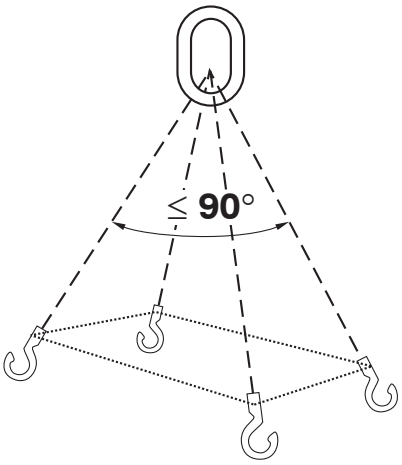


Figure 3 Four-point lifting arrangement

INSTALLATION

All collectors are delivered to site either upright or laid on their side, in one piece or in a number of pieces depending on their configuration.

Lifting brackets are provided on all collectors except the UMA 40 and 40MM. They are also fitted to the UMA 100 to 750 bottom assemblies when supplied separate to the main filter case. Where headroom is restricted, a fork lifting option is available on all collectors except for the UMA 750V. The UMA 750 fan type collectors have a lifting beam within the fan chamber, while the smaller collectors are lifted from underneath the seal frame after filter assembly removal.

General guidance to lifting

During all lifting operations a crane or fork lift with an adequate SWL (safe working load) must be used. (Refer to lifting labels located adjacent to lifting fixture for weight of equipment supplied by Donaldson).

It may be necessary to guide the collector during lifting to prevent excessive swing.

If a fork lift is used to lift the collector using the lifting brackets, a suitable lifting attachment must be used to prevent the chains slipping off the forks (see fig. 2).

If chains or slings are used they must have an adequate SWL (safe working load). (Refer to lifting labels located adjacent to lifting brackets for weight of equipment supplied by Donaldson).

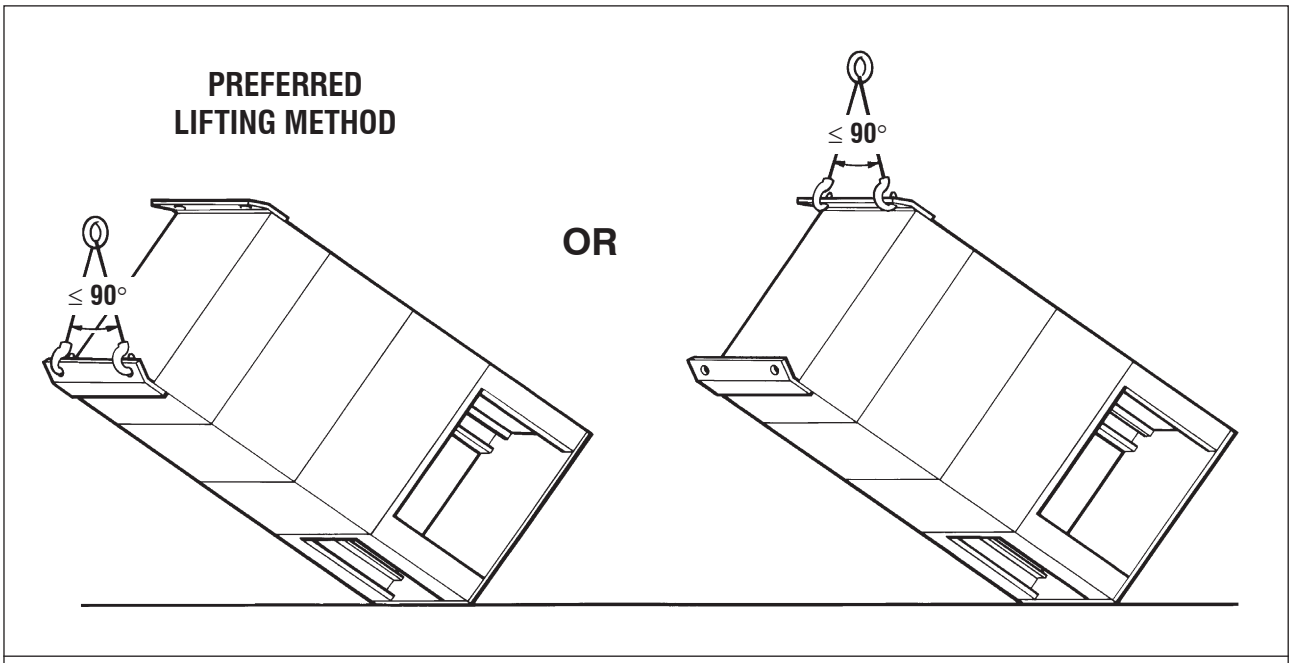


Figure 4 Lifting collector to vertical position

INSTALLATION

Lifting collector to vertical position

UMA 70 to 450 collectors:

A two-point lifting method should be used to lift the collector from the horizontal to the vertical position. The lifting points are located on top of the collector at the sides.

The collector must be lifted as shown in figure 4 following the general guidance to lifting.

Four-point lifting method

The four-point lifting method can be used for all collectors except the UMA 40 and UMA 40MM.

The lifting points are located on top of the collector in all cases except for the UMA V when fitted with a side outlet box (in this case the lifting points for the collector are located within the outlet box and are accessed by removing the top access door).

The collector must be lifted as shown in figure 3, following the general guidance to lifting. Chains must be long enough to ensure that the included angle between diagonal chains is not greater than 90°.

Fork lifting method

UMA 40 to 450 collectors:

Remove filter assembly as described in the 'Maintenance' section. If the collector is fitted with a static earthing arrangement, the earthing bar attached to the seal frame will also need removing.

The collector can now be lifted by positioning the forks underneath the seal frame.

Care should be taken not to damage the seal frame rubber seal and the back of the collector.

The forks used should be long enough to reach the back of the collector and set as wide as possible. On UMA 40-250 collectors, the forks should be positioned centrally across the front. On UMA 450 collectors, the forks should be positioned as shown in figure 5. The collector must be lifted following the general guidance to lifting.

When replacing earthing bar, ensure earthing strap is reconnected (collectors fitted with static earthing arrangement).

INSTALLATION

UMA 750 collectors:
(fan type only – the venting type has no fork lifting facility)

Remove the mattress support frame from its storage position inside the fan chamber.

The collector can now be lifted by positioning the forks underneath the lifting beams.

The forks should be positioned as shown in figure 6. The collector must be lifted following the general guidance to lifting.

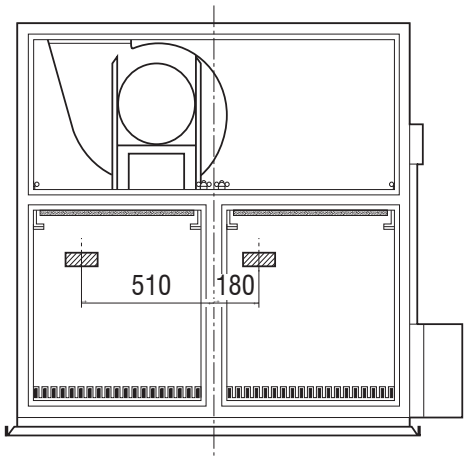
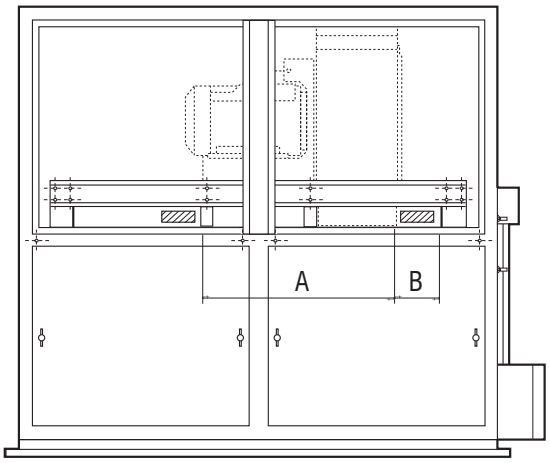


Figure 5 Fork lift positions for UMA 450



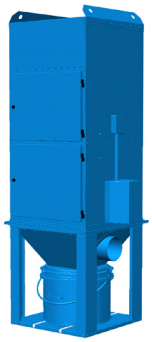
Dimension:	A	B
with K15 fan	768	210
with K18 fan	818*	160
with K21 fan	818*	160

*Add 75 mm for Increased Safety motors

Figure 6 Fork lift positions for UMA 750

INSTALLATION

Unimaster standard dust collectors with dust container



UMA 40, UMA 40MM and UMA 72

These collectors are supplied fully assembled.

For UMA 40 and 40MM collectors, lift into position using the fork lifting method.

For UMA 72 collectors, lift into position using either the four-point lifting method or the fork lifting method.

If the contaminated air inlet requires repositioning, make sure sealant is used when repositioning the inlet blanking plate, in order to ensure an effective seal.

UMA 103, UMA 153, UMA 253 and UMA 456

These collectors are supplied in two sections.

1 Using the four-point lifting method, lift the bottom assembly into position using the lifting brackets provided.
2 Using spirit levels, line up the bottom assembly both horizontally and vertically, using shims under legs where required.
3 Remove lifting brackets from the joint flange.

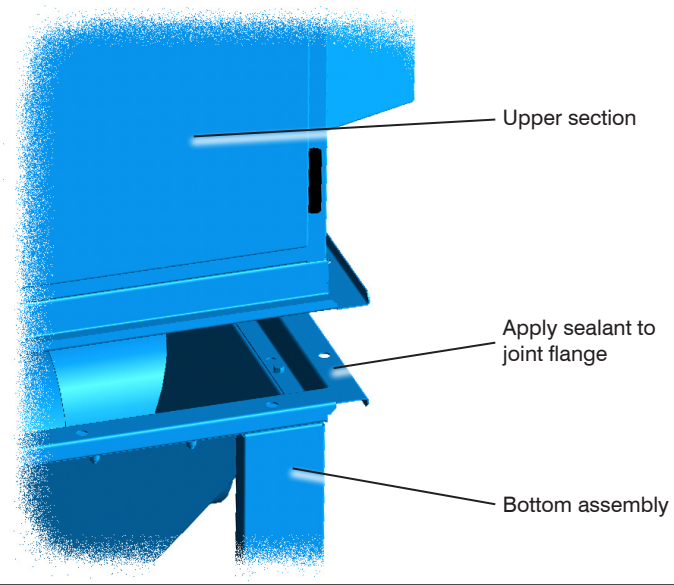


Figure 7 Applying sealant to bottom assembly

INSTALLATION

4 Using the sealant provided, apply two beads of sealant to the bottom assembly joint flange, one each side of the fixing holes (see fig. 7).

5 Lift the combined fan and filter section, using either the four-point lifting method or the fork lifting method, onto the bottom assembly.

6 Secure the two sections with the nuts and bolts provided and remove excess sealant.

When the collector is fitted with an explosion relief assembly, an earthing connection must be made between the bottom assembly and the upper section using the earthing strap provided (see fig. 8).

If the contaminated air inlet requires repositioning, make sure sealant is used when repositioning the inlet blanking plate, in order to ensure an effective seal.

UMA 756

These collectors are supplied in two sections.

1 Using the four-point lifting method, lift the bottom assembly into position using the lifting brackets provided.

2 Using plumb lines and spirit levels, line up the bottom assembly both horizontally and vertically, using shims under legs where required.

3 Drill through base holes and insert and tighten suitable expandible bolts (if required, details of foundation fixing positions are provided in Publication 2726).

4 Remove lifting brackets from the joint flange.

5 Using the sealant provided, apply two beads of sealant to the bottom assembly joint flange, one each side of the fixing holes (see fig. 7).

6 Lift the combined fan and filter section, using either the four-point lifting method or the fork lifting method, onto the bottom assembly.

7 Secure the two sections with the nuts and bolts provided and remove excess sealant.

When the collector is fitted with an explosion relief assembly, an earthing connection must be made between the bottom assembly and the upper section using the earthing strap provided (see fig. 8).

If the contaminated air inlet requires repositioning, make sure sealant is used when repositioning the inlet blanking plate, in order to ensure an effective seal.

When the UMA 756 is supplied with the optional secondary or absolute filter, the acoustic diffuser is supplied separately and should be assembled as follows:

1 Remove lifting brackets from the combined fan and filter section.

2 With the aid of a colleague, lift the acoustic diffuser onto its back, taking care not to damage the paintwork.

INSTALLATION

3 Using the sealant supplied in the fixing pack, seal all around the underside of the seating flange (see fig. 9).

4 Lay the acoustic diffuser down so that the lifting brackets are uppermost.

5 Using the four-point lifting method, lift the acoustic diffuser into position on top of the fan section, so that the diffuser outlet is at the front, right-hand corner of the top plate (see fig. 10).

6 The acoustic diffuser can now be fixed in position using M10 bolts and washers at the sides, and self-tapping screws at the front and rear.

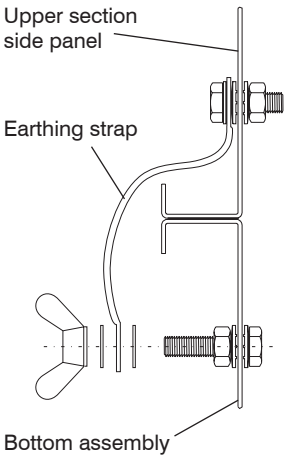


Figure 8 Earthing connection

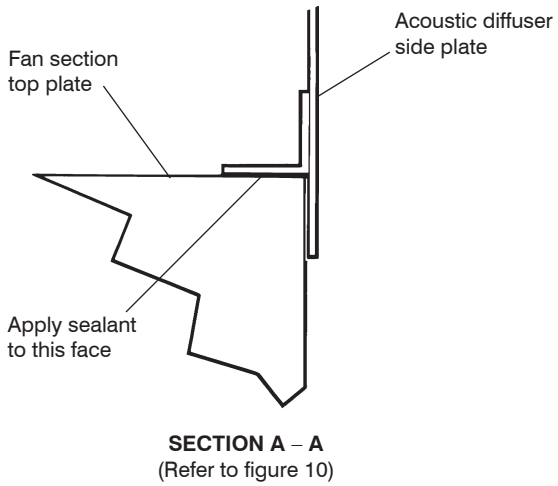


Figure 9 Applying sealant to the UMA 750 acoustic diffuser

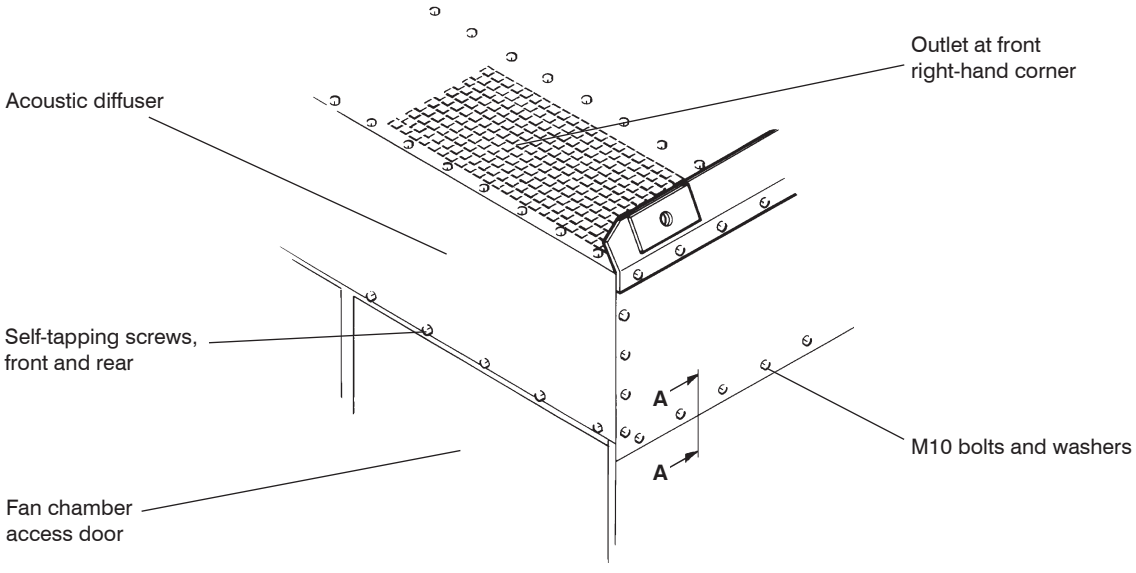
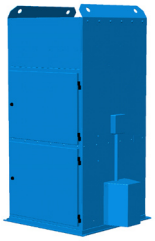


Figure 10 Fitting the UMA 750 acoustic diffuser

INSTALLATION

Unimaster hopper type dust collectors



UMA 40H, UMA 40MM H, UMA 70H, UMA 100H, UMA 150H, UMA 250H, UMA 450H and UMA 750H

These collectors are supplied fully assembled.

When the collector is fitted with an explosion relief assembly, the explosion relief area is suitable for the collector volume only. Additional protection may be required when mounting onto other vessels.

1 Using the sealant provided, apply two beads of sealant to the site seating flange, one each side of the fixing holes, as shown in figure 11 (if required, details of mounting flange fixing positions are provided in Publication 2723 for UMA 40 collectors, Publication 2724 for UMA 70-250 collectors, Publication 2725 for UMA 450 collectors and Publication 2726 for UMA 750 collectors).

2 For UMA 40 and 40MM collectors, lift the collector using the fork lifting method, onto the site seating flange.

For UMA 70-750 collectors, lift the collector using either the four-point lifting method or the fork lifting method, onto the site seating flange.

3 Secure the joint with fixings to suit the application and remove excess sealant.

When the UMA 750H is supplied with the optional secondary or absolute filter, the acoustic diffuser is supplied separately and should be assembled as follows:

1 Remove lifting brackets from the collector.

2 With the aid of a colleague, lift the acoustic diffuser onto its back, taking care not to damage the paintwork.

3 Using the sealant supplied in the fixing pack, seal all around the underside of the seating flange (see fig. 9).

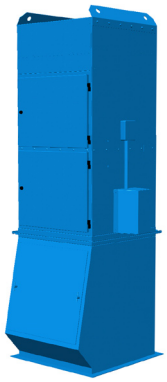
4 Lay the acoustic diffuser down so that the lifting brackets are uppermost.

5 Using the four-point lifting method, lift the acoustic diffuser into position on top of the fan section, so that the diffuser outlet is at the front, right-hand corner of the top plate (see fig. 10).

6 The acoustic diffuser can now be fixed in position using M10 bolts and washers at the sides, and self-tapping screws at the front and rear.

INSTALLATION

Unimaster sack tipping units



UMA 100STU, UMA 150STU and UMA 250STU

These collectors are supplied in two sections.

When the collector is fitted with an explosion relief assembly, the explosion relief area is suitable for the collector volume only. Additional protection may be required when mounting onto other vessels.

1 Using the sealant provided, apply two beads of sealant to the site seating flange, one each side of the fixing holes, as shown in figure 11 (if required, details of mounting flange fixing positions are provided in Publication 2724).

2 Using the four-point lifting method, lift the bottom assembly using the lifting brackets provided, onto the site seating flange.

3 Secure the joint with fixings to suit the application and remove excess sealant.

4 Apply two beads of sealant to the top joint flange of the assembly, one each side of the fixing holes.

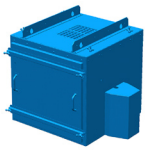
5 Lift the combined fan and filter section, using either the four-point lifting method or the fork lifting method, onto the bottom assembly.

6 Secure the two sections with the nuts and bolts provided and remove excess sealant.

When the collector is fitted with an explosion relief assembly, an earthing connection must be made between the bottom assembly and the upper section using the earthing strap provided (see fig. 8).

INSTALLATION

Unimaster venting type dust collectors



UMA 70V, UMA 100V, UMA 150V, UMA 250V, UMA 450V and UMA 750V

These collectors are supplied fully assembled.

When the collector is fitted with an explosion relief assembly, the explosion relief area is suitable for the collector volume only. Additional protection may be required when mounting onto other vessels.

1 Using the sealant provided, apply two beads of sealant to the site seating flange, one each side of the fixing holes, as shown in figure 11 (if required, details of mounting flange fixing positions are provided in Publication 2724 for UMA 70-250 collectors, Publication 2725 for UMA 450 collectors and Publication 2726 for UMA 750 collectors).

2 Lift the collector using either the four-point lifting method or the fork lifting method, onto the site seating flange.

3 Secure the joint with fixings to suit the application and remove excess sealant.

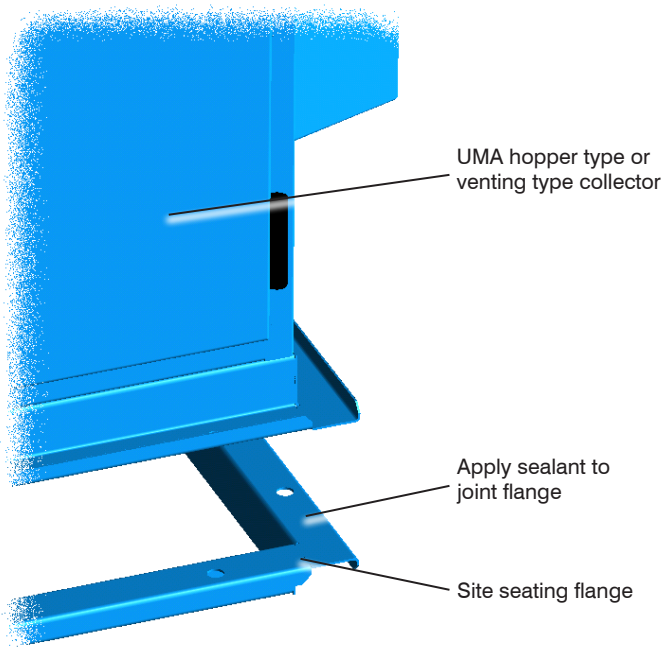


Figure 11 Applying sealant to site sealing flange

INSTALLATION

Unimaster venting type dust collectors with dust container



UMA 72V, UMA 103V, UMA 153V, UMA 253V and UMA 456V

These collectors are supplied fully assembled.

Lift collector into position using the four-point lifting method or the fork lifting method.

If the contaminated air inlet requires repositioning, make sure sealant is used when repositioning the inlet blanking plate, in order to ensure an effective seal.

UMA 756V

These collectors are supplied in two sections.

1 Using the four-point lifting method, lift the bottom assembly into position using the lifting brackets provided.

2 Using plumb lines and spirit levels, line up the bottom assembly both horizontally and vertically, using shims under legs where required.

3 Drill through base holes and insert and tighten suitable expandible bolts (if required, details of foundation fixing positions are provided in Publication 2726).

4 Remove lifting brackets from the joint flange.

5 Using the sealant provided, apply two beads of sealant to the bottom assembly joint flange, one each side of the fixing holes (see fig. 7).

6 Lift the filter section, using the four-point lifting method, onto the bottom assembly.

7 Secure the two sections with the nuts and bolts provided and remove excess sealant.

When the collector is fitted with an explosion relief assembly, an earthing connection must be made between the bottom assembly and the upper section using the earthing strap provided (see fig. 8).

If the contaminated air inlet requires repositioning, make sure sealant is used when repositioning the inlet blanking plate, in order to ensure an effective seal.

INSTALLATION

Controller

It is a requirement of the Supply of Machinery (Safety) Regulations 1992 to provide adequate isolation and emergency stop facilities. Due to the varied nature of site installations this cannot be provided by Donaldson but instead is the responsibility of the customer.

Always isolate power before opening the controller.

The controller must not be mounted on the side of the collector.

Each Unimaster dust collector can be supplied with a controller, which is designed to operate the fan and/or shaker in the correct sequence, to ensure that effective cleaning of the filter fabric is achieved.

The controller contains either a direct-on-line or star/delta fan starter, dependant on fan size, and a direct-on-line shaker starter. Star/delta versions are standard for the UMA 750.

Controllers for venting type collectors, contain a shaker starter only.

For controller connections and set-up, refer to Publication 2696.

Details of standard fan motor supply voltage are given in Table 6 (refer to 'Specification' section).

Unimaster optional extras

Castor bases

UMA 40 and 40MM collectors are supplied with the castor base fitted.

UMA 70-250 collectors should be lifted into the castor frame using either the four-point lifting method or the fork lifting method. No additional fixing is required.

Pressure balance pipe

When this option is fitted, the dust container may be lined with a polythene bag which can be closed and sealed before lifting out of the container to assist in the safe removal of toxic or noxious dusts. The containers supplied for this purpose are fitted with a detachable pressure balance pipe to prevent the bag from being drawn up into the collector.

To assemble the pressure balance pipe, the following procedure should be used:

1. Slide the pressure balance pipe over the pipe connection on the dust container and secure with the hose clip provided.
2. Slide the other end of the pressure balance pipe over the bin balance spigot assembly on the side of the collector and secure with the hose clip provided.

INSTALLATION

Secondary or absolute filter monitor

The optional secondary or absolute filter monitor is supplied fitted to the collector.

For secondary or absolute filter monitor connections and set-up, refer to Publication 2920.

Weather bends and cowls

The weather bend, if required, is supplied as a separate piece for site assembly. It should be secured around the collector outlet with self tapping screws and sealed around the joint. On certain collectors the lifting brackets need to be removed to facilitate assembly.

Weather cowls on venting type collectors are factory fitted.

Antistatic earthing

It is particularly important on collectors having antistatic features and/or explosion relief, that the earthing boss (located adjacent to the symbol, shown opposite) is properly connected to earth, using the brass screw provided, to prevent any static build-up.



Explosion relief

Explosion panels, if fitted, must be relieved to a safe area in accordance with local relevant recommendations. The explosion relief area is suitable for the collector volume only. Fitment of the collector to larger vessels will require additional explosion protection to be fitted to the vessel. This protection should ensure that pressures developed during an explosion are lower than the collector strength. Consult Donaldson for specific collector design pressures. Refer to Table 1 for predicted flame lengths during an explosion.

Refer to Publication 2713 for explosion relief assembly installation.

TABLE 1 – PREDICTED FLAME LENGTHS
(calculation based on VDI 3673)

Type:	UMA 40	UMA 40MM	UMA 70	UMA 100	UMA 150	UMA 250	UMA 450	UMA 750
Flame length:	5.21 m	5.21 m	6.68 m	7.08 m	7.59 m	8.77 m	11.63 m	13.28 m

INSTALLATION

Installation check list ☑

- ☐ Ensure all collector section joints made on site are secure and that UMA 750 collectors with dust container are securely bolted to the floor.
- ☐ If the filter assembly has been removed during installation, ensure it has been replaced and clamped correctly (check top frame is against sealing rubber, figs. 17 and 18).
- ☐ Ensure collectors fitted with antistatic filter bags and/or explosion relief are suitably earthed.

COMMISSIONING

It is a requirement of the Supply of Machinery (Safety) Regulations 1992 to provide adequate isolation and emergency stop facilities. Due to the varied nature of site installations this cannot be provided by Donaldson but instead is the responsibility of the customer.

Before putting the Unimaster dust collector into service the following items should be checked. Similar checks, as appropriate, should be made after any major overhaul.

Commissioning check list ☑

- ☐ Ensure all collector section joints made on site are secure and that UMA 750 collectors with dust container are securely bolted to the floor.
- ☐ Ensure controller overloads are correctly set (refer to Publication 2696).
- ☐ Ensure all ducting is complete, all detachable panels are in position and fixed guards are secure.
- ☐ If the filter assembly has been removed during installation, ensure it has been replaced and clamped correctly (check top frame is against sealing rubber, figs. 17 and 18).
- ☐ Ensure collectors fitted with antistatic filter bags and/or explosion relief are suitably earthed and the earthing straps between assembled sections are connected.
- ☐ Where fitted, ensure explosion relief panels vent to a safe area.
- ☐ Ensure door seals are intact, then close and secure the doors.
- ☐ Check sealer gear seal, then replace bin and close sealer gear.
- ☐ Ensure electrical power is available.
- ☐ Check fan motor for correct rotation (refer to fan rotation label located on the fan case).
- ☐ Verify operation of the interlocks, and visual or audible warning systems fitted.

If any of the above check boxes are not ticked, then the reasons why should be investigated. (Refer to fault location table in 'Maintenance' section).

COMMISSIONING

Start-up sequence

Refer to Controller manual, Publication 2696, for further details.

All collectors except venting type

The collector is started by depressing the 'start' button on the controller; the fan will then run.

Venting type collectors

There is no start function for a venting type collector as the air flow is generated by external sources.

Shut-down sequence

Refer to Controller manual, Publication 2696, for further details.

All collectors except venting type

The collector shut down sequence is initiated by depressing the 'clean' button on the controller. This will stop the fan and allow a time delay for fan run down. The cleaning cycle will then operate automatically and, when finished, the collector is off and ready for restarting.

Venting type collectors

There is no shut down operation for a venting type collector; however it should be cleaned at regular intervals by depressing the 'clean' button on the controller.

Still air conditions must exist inside the venting type collector for effective cleaning.

OPERATION

Unimaster standard collectors with dust container and Unimaster hopper type collectors

Contaminated air from the dust generation source is drawn through the inlet to the collector by the fan. Initially some pre-separation takes place as heavier dust particles lose momentum and fall into the dust container or hopper. Finer dusts are carried up to the filter elements where they are retained on the outer surface of the filter fabric. The cleaned air is then passed through the filter fabric into the fan chamber and discharged. When the fan is switched off the filter fabric cleaning cycle is automatically activated. The collected dust is then dislodged from the filter elements and falls into the dust container or hopper below. On most applications the optimum interval between cleaning cycles is four hours.

Unimaster sack tipping units

When the quick-release sack tipping door is removed from the hopper, the unit fan can be switched on. Air is entrained through the hatch preventing dust escaping while sacks are being emptied. Airborne dust is carried up and retained on the filter fabric. On completion of the sack tipping, the fan may then be switched off and the door replaced. The cleaning cycle mechanism will then automatically be activated – depositing the collected dust directly into a hopper chute or conveyor beneath. Units fitted with explosion relief are fitted with a swing door that does not require removal.

Unimaster venting type collectors

Venting type collectors usually operate above atmospheric pressure. No fan is supplied as the air flow is provided by the blower or fan associated with the system. The product laden air should enter the receiving vessel in a way that allows pre-separation of the bulk product from the conveying air before it reaches the filter. Dust is collected on the filter fabric as previously described. On completion of the delivery operation, the blower or fan must be allowed to run down before the cleaning mechanism is operated. Collected dust is deposited directly into the silo or, on venting type collectors with dust container, the dust will be deposited in the collection facility for disposal later.

Cleaning

Approximately every four hours or when operating pressure drop reaches 100-150 mm WG, depending on dust type and volume, the filter assembly should be cleaned.

On all collectors, fans or blowers should be allowed to run down before cleaning mechanism operation, otherwise dust penetration of the filter media can occur, reducing media service life. The Donaldson controllers for all collectors except venting type, have an automatic time delay after the cleaning cycle has been initiated. The controllers on venting type collectors do not have this facility due to

OPERATION

their functional requirements. It is therefore the customers responsibility to ensure that sufficient time is allowed for the air flow to have ceased before cleaning is initiated, fitting interlocks if necessary.

Before restarting the collector, the dust container, if fitted, should be checked for dust quantity and emptied if necessary.

Refer to Controller manual, Publication 2696, for further details.

Dust disposal

For safe handling of the dust container an assessment must be made to satisfy the requirements of the European Directive 90/269/EEC on manual handling.

Dust containers may require regular emptying. If the dust being handled is explosive, then care should be taken to ensure that dust spillage is kept to a minimum to avoid the creation of potentially explosive atmospheres and secondary hazards.

Dust containers should be securely replaced and resealed prior to collector restart. This is a good time to check the dust container for damage, which may lead to a dust leak or flame emission in the rare instance of an internal explosion.

Dust container:

1 On UMA 40 and 40MM collectors, release the dust container by undoing the two toggle fasteners located at the sides of the container and slide it out. On all other collectors, release the container by raising the sealer gear handle.

2 Remove and empty the container.

3 Replace container by sliding it back to the locating stops.

4 On UMA 40 and 40MM collectors, reseal the container by fastening the toggle clips. On all other collectors, lower the sealer gear handle.

Dust container with pressure balance:

1 On UMA 40 and 40MM collectors, release the dust container by undoing the two toggle fasteners located at the sides of the container and slide it out. On all other collectors, release the container by raising the sealer gear handle and slide the container out.

2 The polythene bag liner can be sealed in a manner to suit the toxicity of the dust and then removed.

3 Fit a new polythene bag into the dust container and slide the container back to the locating stops.

4 On UMA 40 and 40MM collectors, reseal the container by fastening the toggle clips. On all other collectors, lower the sealer gear handle.

MAINTENANCE

A platform should be used when carrying out maintenance where the position of the technician's feet is greater or equal to 2 metres above ground level.

Before any work is carried out, ensure the equipment is adequately isolated and safe.

For ancillary equipment not manufactured by Donaldson, refer to manufacturer's instructions.

If it is unavoidable to work on the equipment while a potentially explosive atmosphere is present, care should be taken to avoid introducing ignition sources not present during expected operation. Non-sparking tools should be used.

Access to the dirty air chamber of the equipment may create risks and hazards that under normal circumstances are not present and as such this work must be carried out by competent personnel. These risks include inhalation of dust and potential explosion hazards. Appropriate personal protection equipment (PPE) should be used, e.g. dust mask, safety hat, gloves etc.

In order to maintain the original collector specification and to ensure the same level of safety, only genuine spare parts should be fitted.

Every care has been taken to avoid the risk of ignition of a flammable atmosphere. The measures taken to avoid ignition should not be altered since this may result in unsafe operation. Particular care should be taken during maintenance and component replacement to ensure the same level of safety is maintained. When replacing fan impellers, avoid any rubbing of components (to prevent mechanical sparks).

Care should be taken during cleaning and maintenance to avoid creating static discharges that have the potential to ignite a flammable atmosphere.

When carrying out maintenance always follow typical best practice to local regulations (e.g. TRGS 560).

Routine inspection

To maintain the optimum performance of any Unimaster dust collector, a routine inspection should be made to minimise down-time in the event of equipment malfunction and to ensure the equipment is maintained to its original supply condition.

Any abnormal change in pressure differential across the filter assembly indicates a change in operating conditions and a fault to be rectified. For example, a fault in the cleaning mechanism will cause an excessive build-up of dust on the filter bags, resulting in a greatly increased pressure drop.

MAINTENANCE

Filter resistance can be checked by connecting a U-tube manometer or differential-type pressure gauge to tapping points (if fitted) on the unit casing. This will give a continuous indication of the state of the filter. Normally a resistance of 75 to 125 mm WG may be expected for all collectors except the UMA 750, depending on the air volume and the characteristics of dust being handled, increasing slightly until the collector is cleaned. For UMA 750 collectors, a resistance of 125 to 175 mm WG may be expected.

The secondary or absolute filter monitor, if fitted, will provide a constant indication of the state of the secondary or absolute filter element.

It is recommended to periodically inspect the general casing integrity.

It is recommended that door fastener threads are lubricated at regular intervals (applicable to collectors fitted with explosion relief).



Ignition minimising fans are fitted with a lining inside the casing. As this may only offer protection for a limited period, any upset condition leading to rubbing, the fan must be switched off immediately and the condition corrected.

Servicing schedule

A record of all pressure checks should be kept in a log book to aid the speedy diagnosis of faulty operation.

Weekly

Measure the pressure drop across the filter assembly (use tapping points, if fitted). Record the figure in the log book. If the pressure drop increases significantly over two or three successive checks, e.g. 50% (a variation of up to 10% is permissible) check the filter as described in Table 3.

If the collector is fitted with a secondary or absolute filter, then the pressure drop across this filter should also be checked if a filter monitor is not fitted. The filter should be changed when the pressure drop reaches 100 mm W.G.



Unimaster collectors fitted with an explosion relief assembly should be inspected weekly to ensure the bursting panels are intact and clear of obstruction. During winter, particular care must be taken to prevent build-up of snow or ice on explosion panels.

Six-monthly

The fan impellor has been dynamically balanced and the fan assembly vibration level should be in line with category BV-3, ISO 14694. An assessment of vibration should be made every six months, or after a significant emission, or after any misuse and a record kept of measured values. Excessive vibration levels should be investigated and corrected immediately.



Vibration monitoring is mandatory on category 2G, 3G and 2D fan assemblies.

MAINTENANCE

Every 1000 working hours the following parts should be checked:

1 Filter bag – for wear.

2 Rubber seals – for tears and over-compression.

3 Shaker mechanism (see fig. 12) with particular attention to:

- tightness of mounting bolts.
- play in eccentric.
- splits in diaphragm.
- broken locators on shaker bar.
- torn shaker bar support strap(s).
- eccentric bearing: check for lubrication; any absence may lead to excessive heat being generated during operation.

Any defective parts should be replaced.

Annually

1 Flameproof maintenance – It is important that all flameproof enclosures, motors and cable glands are inspected for corrosion and tightness on an annual basis.

In particularly aggressive environments, this period should be more frequent.

2 Antistatic earthing (if fitted) – Check collector earthing continuity.

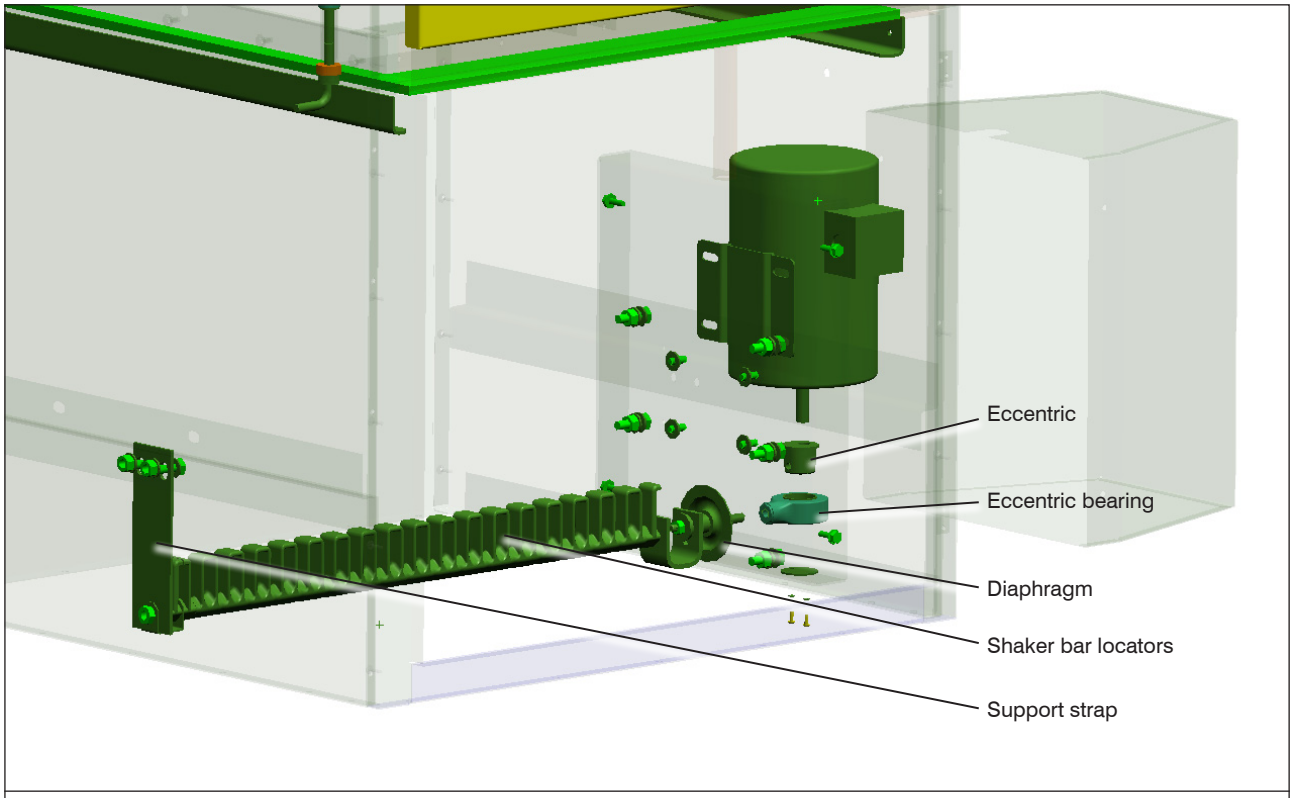


Figure 12 Standard UMA shaker assembly

MAINTENANCE

3 Explosion risks – Check measures taken to avoid ignition sources are still in place.

4 Fan maintenance – Inspect the fan thoroughly. This is achieved on UMA 40 collectors by removing acoustic diffuser, if necessary, and looking through cleaned air outlet; on UMA 40MM collectors by unbolting and removing fan power pack and inspecting; on all other collectors by unbolting and rotating fan assembly and looking through fan inlet eye.

If necessary, remove all residual dust accumulation. (Although the fan is located on the clean side of the collector, it is possible for low quantities of dust to migrate through the filter media).



The fan should be inspected immediately after any period of significant dust emission, i.e. due to damaged filter media or seal etc.



The fan should be inspected immediately if there is any unexpected noise, temperature or vibration.



The fan should be inspected every twelve months or immediately following any misuse.



If inspection reveals any damage then the fan must not be put back into service until properly repaired or replaced.

Three-yearly

Lubrication – Under normal operating conditions the UMA 40MM power unit will operate for 6,000 hours (or approximately three years at 40 hours per week) without attention. After this period the fan bearings should be re-packed with Shell Alvania ET3 grease (or equivalent) to ensure reliability.



The motor bearings are sealed and therefore do not require lubrication.

UMA 40MM

Filter assembly removal

1 Isolate electrical supply and remove filter chamber access door.

2 To gain access to the four wing nuts securing the filter assembly, which are located in the fan chamber, remove the cleaned air outlet cowl or, where fitted, the absolute filter.

3 Fully slacken the wing nuts and withdraw the filter assembly horizontally through the front of the collector.

(Filter bag assembly renewal)

4 Remove wire mesh insert frames from individual filter bags. These should be checked for broken mesh and worn material edgings, especially around the area of any filter bag damage.

5 Detach filter bag assembly from supporting frame.

MAINTENANCE

6 Fit new filter bag assembly into supporting frame, feeding individual filter bags between locating bars, and fold collar over peripheral sealing flange.

7 Prior to fitting wire mesh inserts, any material edgings that need replacing should be fitted around the three edges of the insert that do not have the insert frame joint. The inserts should then be fitted, edging first, into the filter bags.

(Filter assembly replacement)

8 Slide filter assembly into the collector using the guides until the bottoms of the filter bags make contact with the shaker bar.

9 Locate individual filter bags in shaker bar.

10 Slide filter assembly fully home and tighten securing wing nuts to form an airtight seal. Check top frame is against sealing rubber (see fig. 17).

11 Replace access door and discharge cowl (or, if fitted, the absolute filter).

12 If in doubt regarding the safe disposal of the used filter bag assembly, consult your local regulations.

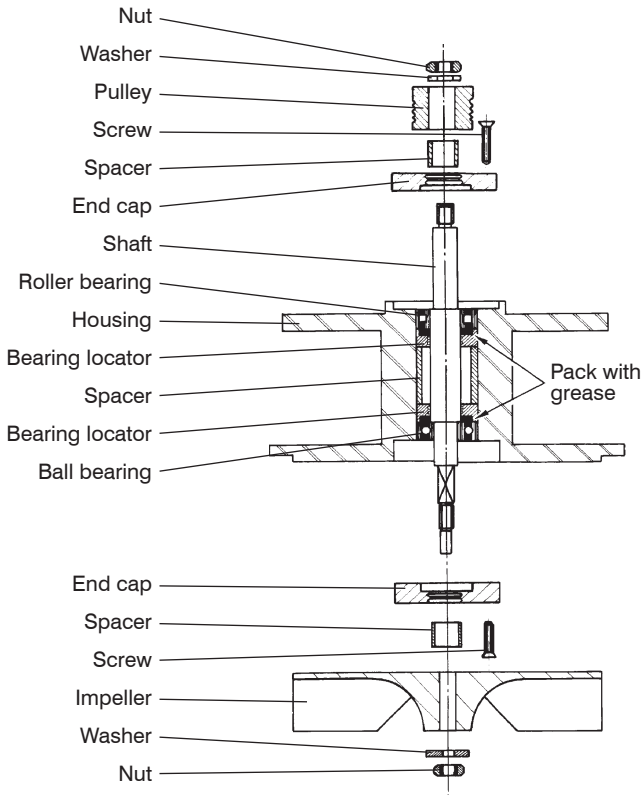


Figure 13 Section through fan assembly (UMA 40MM)

MAINTENANCE

Renewal of fan bearings (fig. 13)

1 Isolate electrical supply and remove fan chamber lid.

2 Disconnect electrical wiring to terminal box.

3 Remove the four bolts securing the motor drive bed-plate and withdraw the complete assembly from the unit case.

4 Loosen, but do not remove, the four socket screws in the base flange and withdraw drive cover.

5 Remove drive belt.

6 Remove the six nuts securing flange of bearing housing to the bed-plate and withdraw the housing.

7 Remove fan pulley and the six bolts securing the fan case.

8 Remove fan impeller and fan case.

9 Remove end caps and spacers from fan bearing housing.

10 Remove fan bearings.

11 Fit new bearings, ensuring that the fan end bearing is flush with bearing housing.

12 Flush out bearings with a degreasing solvent (a special high temperature grease is required as step '14').

13 When inside of bearings is dry, apply a small amount of light oil to the bearings and spin the shaft round.

14 Repack with Shell Alvania ET3 grease (or equivalent) as shown in figure 13.

15 Secure bearing end caps and reassemble all other items to shaft, tightening up securely.

16 Refit fan unit to bed-plate. (Air discharge towards motor).

17 Tension drive belt as shown in figure 14.

18 Replace drive cover and tighten four socket screws.

19 Reconnect electrical wiring to terminal box.

20 Recheck fan rotation (see fig. 14).

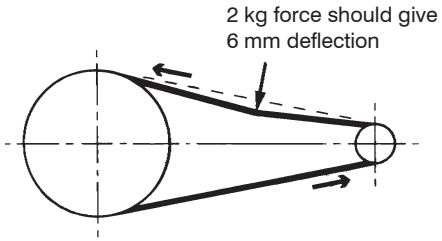


Figure 14 V-belt tensioning (UMA 40MM)

MAINTENANCE

V-belt drive tensioning

The Polyvee drive belt has been pre-stretched and tensioned during assembly but will require checking for correct tension after the first day of operation, when it will have fully seated into its grooves. Tension should be as shown in figure 14 and is adjustable by loosening (not removing) the four bolts securing the motor. Slot holes in the motor baseplate permit the necessary adjustment.

Incorrect tensioning can be harmful to the belt and also impair the operating efficiency of the dust collector itself.

UMA 40 to 450

Filter assembly removal

1 Isolate electrical controls and open fan and filter chamber access doors.

2 Fully slacken the four captive wing-nuts located in the fan chamber, on the top plate of venting type collectors or in the side outlet box.

3 With the aid of a colleague, withdraw the complete filter assembly through the front of the filter chamber.

(Filter bag assembly renewal)

4 Remove wire mesh insert frames from individual filter bags. These should be checked for broken mesh and worn material edgings, especially around the area of any filter bag damage.

5 Detach filter bag assembly from supporting frame.

6 Fit new filter bag assembly into supporting frame, feeding individual filter bags between locating bars, and fold collar over peripheral sealing flange.

7 Prior to fitting wire mesh inserts, any material edgings that need replacing should be fitted around the three edges of the insert that do not have the insert frame joint. The inserts should then be fitted, edging first, into the filter bags.

(Filter assembly replacement)

8 With the aid of a colleague, slide filter assembly into the guides until bottom corners of filter bags make contact with the shaker bar.

9 Locate individual filter bags in shaker bar.

10 Slide filter assembly fully home and tighten securing wing nuts to form an airtight seal. Check top frame is against sealing rubber (see fig. 17).

11 Close and fasten access doors.

12 If in doubt regarding the safe disposal of the used filter bag assembly, consult your Environmental Health Officer.

MAINTENANCE

UMA 750

Filter bag assembly renewal

Due to the weight of the mattress assembly, it should not be removed without using the support frame provided.

1 Isolate electrical controls and open front access doors.

2 Remove the mattress support frame from its storage position in the fan chamber or on the top plate of venting type collectors, and assemble into door frame (see fig. 15).

3 Lower the mattress assembly using the extended nuts on the front of the door frame.

4 Slide the mattress assembly out of the collector onto the mattress support frame.

5 Remove wire mesh insert frames from individual filter bags. These should be checked for broken mesh and worn material edgings, especially around the area of any filter bag damage.

6 Detach filter bag assembly from supporting frame.

7 Fit new filter bag assembly into top frame, feeding individual filter bags between locating bars, and fold collar over peripheral sealing flange.

8 Prior to fitting wire mesh inserts, any material edgings that need replacing should be fitted around the three edges of the insert that do not have the insert frame joint. The inserts should then be fitted, edging first, into the filter bags.

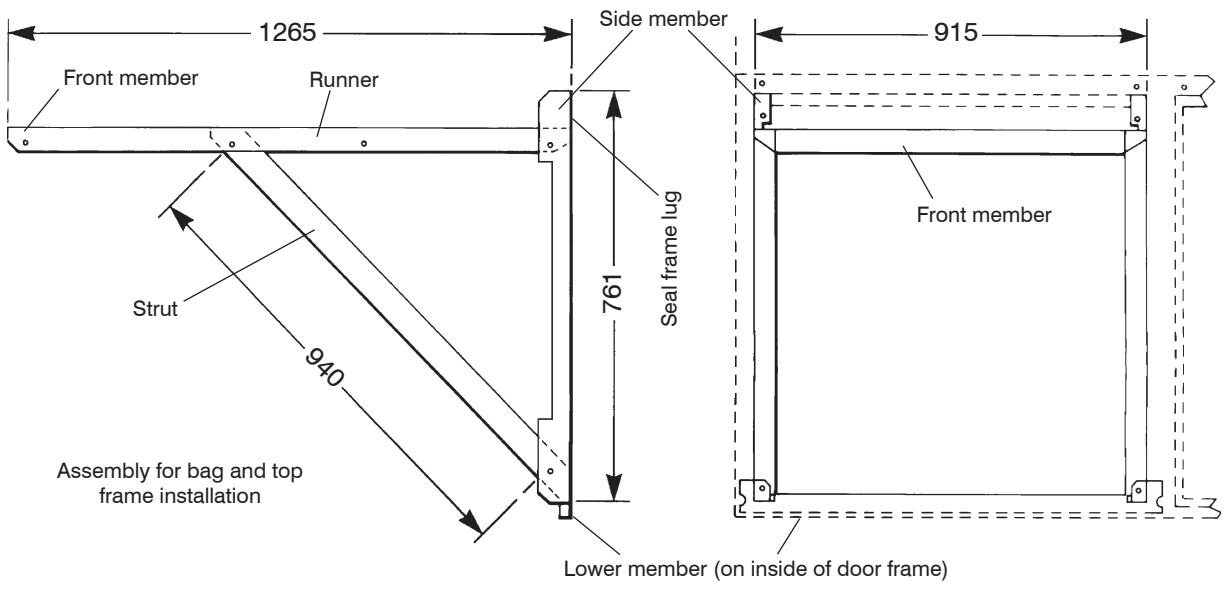


Figure 15 Assembly of UMA 750 filter support frame

MAINTENANCE

9 Slide filter assembly into the guides until bottom corners of filter bags make contact with the shaker bar.

10 Locate individual filter bags in shaker bar.

11 Slide filter assembly fully home and raise mattress assembly with extended nuts to form an airtight seal. Check top frame is against sealing rubber (see fig. 18).

12 Dismantle mattress support frame and replace in storage position.

13 Close and fasten access doors.

14 If in doubt regarding the safe disposal of the used filter bag assembly, consult your Environmental Health Officer.

Secondary or absolute filter replacement

1 Open secondary/absolute filter door.

2 UMA 40MM – Lift bar to release sealing mechanism.

UMA 100-450 – Undo clamping nuts or clips as appropriate and remove retaining mesh or frame.

UMA 750 – Undo clamping nuts sufficient to allow element removal.

3 Remove used element, place it directly into a plastic bag and then seal the bag.

4 Slide the new element into the housing, with the element seal against the secondary/absolute filter seal frame, until it reaches the backstop.

5 Clamp element in position using the arrangement provided.

6 Close secondary/absolute filter door.

7 If in doubt regarding the safe disposal of the used element, consult your Environmental Health Officer.

Fan assembly removal/replacement (UMA 70-750)

Isolate electrical power supply.

1 Open fan access door.

2 On UMA 750 collectors only – Remove door frame centre member, remove mattress support frame from its storage position and remove fork lifting beam.

3 Disconnect electrical cables from terminal box.

4 Remove fan outlet grille cover plate.

5 Remove fan securing bolts.

6 The fan assembly can now be removed using a suitable lifting arrangement.

MAINTENANCE

Renewing fan impeller and/or motor:

Refer also to Table 2.

1 Make a note of the distance from either impeller back plate to fan case (preferred) or inlet eye to impeller front plate, as this will assist with replacement. If required, refer to Donaldson for exact dimensions.

2 From front of fan assembly (non motor end) remove impeller inlet eye from fan casing by removing outer circle of bolts and pulling away the plate.

3 Undo grub screw that holds hub onto motor shaft.

4 Undo and remove bolt in end of motor shaft holding the hub retaining washer.

5 Remove motor key by easing it out from keyway.

6 Using the location grooves machined into hub, pull impeller from motor shaft and out through the front of fan case.

7 Slide spacer off motor shaft.

8 Remove the 4 nuts, bolts and washers holding motor to pedestal.

9 The motor can now be removed using suitable lifting equipment, taking care not to damage sealing washer placed between motor endplate and fan casing.

10 Place the new motor on support pedestal and locate rubber sealing washer between fan case and motor.

11 Position motor on pedestal and secure loosely by replacing the 4 nuts, bolts and washers.

12 Locate motor key into keyway on motor shaft.

13 Push motor shaft spacer onto motor shaft.

14 Align keyway of impeller hub onto key and slide impeller onto motor shaft.

15 Replace hub retaining washer and shakeproof washer. Apply thread lock to motor end shaft bolt and replace bolt, ensuring impellor is pushed back onto spacer.

16 Apply thread locks to grub screws holding hub and tighten into place.

17 Locate impeller, according to the dimension taken during removal, by moving motor along pedestal, ensuring motor remains square to fan case.

18 If the measurement was taken from impeller back plate to fan case, adjust to suit and tighten motor fixing fasteners through pedestal and motor feet. Replace inlet eye, using a bead of sealant between the plate and fan case and replace outer circle of bolts.

19 If the measurement was taken from inlet eye to impeller front plate, then replace inlet eye, using a bead of sealant between the plate and fan case and replace outer circle of bolts. Adjust impeller to suit and tighten motor fixing fasteners through pedestal and motor feet.

20 If a measurement was not taken, then replace inlet eye, using a bead of sealant between the plate and fan case and replace outer circle of bolts. Adjust impeller so that there is approximately 2 mm clearance between inlet eye and front of impeller and tighten motor fixing fasteners through pedestal and motor feet. For ignition minimising fans the minimum clearance must be >1% of the relevant contact diameter.

21 Rotate impeller by hand, adjusting where necessary, to ensure that impeller runs freely.

MAINTENANCE

Replacing the fan assembly:

If the equipment has been supplied for use in a potentially explosive atmosphere, then a check should be made to ensure earthing continuity after replacing each panel.

1 Lift fan assembly into the fan chamber.

2 Loosely replace fan securing bolts.

3 Replace fan outlet grille cover plate.

4 Tighten fan securing bolts.

5 Reconnect motor cable.

6 On UMA 750 collectors only – Refit fork lifting beam, mattress support frame and door frame centre member.

7 Switch on electrical power.

8 Ensure correct fan rotation (refer to fan rotation label located on the fan case).

TABLE 2 – TORQUE VALUES FOR BOLTS WITH ISO METRIC THREAD

Nominal diameter	Thread pitch	Stress area	Torque value*		
			Grade 8.8	Grade 10.9	Grade 12.9
8 mm	1 mm	20.1 mm^2	10.4 Nm	15.3 Nm	17.9 Nm
7 mm	1 mm	28.9 mm^2	17.2 Nm	25 Nm	30 Nm
8 mm	1.25 mm	36.6 mm^2	25 Nm	37 Nm	44 Nm
10 mm	1.5 mm	58 mm^2	50 Nm	73 Nm	86 Nm
12 mm	1.75 mm	84.3 mm^2	86 Nm	127 Nm	148 Nm
14 mm	2 mm	115 mm^2	137 Nm	201 Nm	235 Nm
16 mm	2 mm	157 mm^2	214 Nm	314 Nm	368 Nm
18 mm	2.5 mm	192 mm^2	306 Nm	435 Nm	509 Nm
20 mm	2.5 mm	245 mm^2	432 Nm	615 Nm	719 Nm
22 mm	2.5 mm	303 mm^2	592 Nm	843 Nm	987 Nm
24 mm	3 mm	353 mm^2	744 Nm	1060 Nm	1240 Nm
27 mm	3 mm	459 mm^2	1100 Nm	1570 Nm	1840 Nm
30 mm	3.5 mm	561 mm^2	1500 Nm	2130 Nm	2500 Nm

* For nuts and bolts to ISO 4017.

MAINTENANCE

TABLE 3 – FAULT LOCATION

Symptom	Possible cause	Action
1 Part loss of suction (excessive pressure differential).	1.1 Filter blocked.	a Filter not cleaned regularly enough. Initiate cleaning sequence. b Filter cleaned while fan in motion. Remove filter bags and clean by hand. c Check secondary/absolute filter elements if fitted. Replace if necessary. d Defective cleaning. Check operation of cleaner mechanism. Check controller.
	1.2 Motor speed low.	a Check line voltage, phases, fan motor connections. For Star/Delta applications, check motor is in Delta.
	1.3 Incorrect fan motor rotation.	a Check electrical connections and transpose if necessary.
2 Total loss of suction.	2.1 Fan motor stopped.	a Check controller. b Check motor connections and windings.
	2.2 Filter blocked.	a Filter not cleaned regularly enough. Initiate cleaning sequence. b Filter cleaned while fan in motion. Remove filter bags and clean by hand. c Check secondary/absolute filter elements if fitted. Replace if necessary. d Defective cleaning. Check operation of cleaner mechanism. Check controller.
	2.3 Ducting blocked.	a Check throughout and clear.
3 Visible effluent in clean air outlet.	3.1 Filter assembly not properly sealed.	a Check tightness of filter assembly clamping nuts.
	3.2 Damaged sealing gasket or filter bag.	a Identify and replace defective component(s) by following the procedure given in 'Maintenance' section under 'Servicing schedule'.
4 Dust container pressure balance not working.	4.1 Sock filter blocked.	a Clean sock filter.

Refer to Publication 2696 for controller fault location.

SPECIFICATION

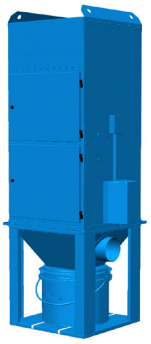
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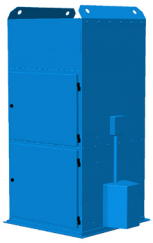
The Unimaster dust collector is a compact, completely self contained fabric filter designed for intermittent duty, with filter cleaning automatically activated when the dust collector is turned off. The Unimaster is based on seven fabric areas between 4 m^2 and 70 m^2 with a range of standard components and optional extras which can be assembled in numerous combinations.

Equipment is available suitable for use in a potentially explosive atmosphere (Directive 94/9/EC) satisfying the requirements for group II category 2G or 2D and 3G or 3D T135°C.

Unimaster standard dust collector with dust container

Standard integral dust collector complete with fan, easy-access filter assembly, triple-inlet position hopper and dust container with quick-release sealer gear.



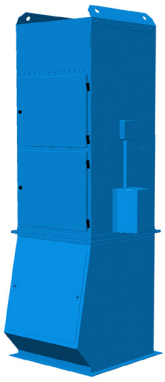


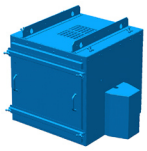
Unimaster hopper type dust collector

Dust collector with fan and filter assembly only, the base is flanged and can be bolted directly onto a purpose made dust container or hopper.

Unimaster sack tipping unit

For use in sack tipping operations this unit is a dust collector with fan, filter assembly and material discharge hopper incorporating quick release 'tipping' door.





Unimaster venting type dust collector

Filter assembly only, in flanged case, specifically designed for venting silos and other storage vessels or process machinery which is under positive pressure.

Unimaster venting type dust collector with dust container

Venting type dust collectors may be supplied with hopper and dust container when siting is required away from the dust source.



SPECIFICATION

Optional extras

Castors

The standard UMA 40 to 250 collectors are available with the collector base mounted on castors. This makes the collector suitable for portable applications and would generally require single phase motors. In which case, it should be noted that the maximum fan size available with a single phase motor is the K3, 1.5 kW (2 HP).

Weather bends and cowls

Weather bends and cowls are available to fit over collector outlets for outside locations.

Static earthing

An earthing arrangement can be fitted to collectors to prevent the build up of static charge within the collector – particularly important for reducing the risk of fires or explosions when handling flammable or explosive dusts.

TABLE 4 – UNIMASTER DUST COLLECTOR RANGE

Type	Filtration area	Designation
UMA 40	3.70 m^2	UMA = Unimaster
UMA 40MM	3.70 m^2	40, 70, 100 etc. = Collector size (filtration area in ft^2)
UMA 70	6.23 m^2	2, 3 or 6 = Collector with dust container (number represents dust container size)
UMA 100	9.29 m^2	H = Hopper type collector
UMA 150	13.94 m^2	V = Venting type collector (collector supplied for external fan fitment)
UMA 250	22.67 m^2	STU = Sack tipping unit
UMA 450	42.00 m^2	G1, K3, K5 etc. = Fan size, if fitted
UMA 750	70.00 m^2	SF = Secondary filter, if fitted
		AB = Absolute filter, if fitted
		W/C = Weather cowl, if fitted

Examples:

UMA 72V = Unimaster, size 70, 55 litre (2 ft^3) dust container, venting type.

UMA 250STU = Unimaster, size 250, sack tipping unit type (modified K3 fan fitted as standard).

UMA 456 K11 SF = Unimaster, size 450, 2 x 80 litre (3 ft^3) dust containers, K11 fan, secondary filter.

SPECIFICATION

Explosion relief

Most carbonaceous dusts, plastics, fertilisers, pharmaceuticals, fossil fuels, chemicals, foodstuffs and certain metallic dusts present an explosion hazard for which explosion relief panels must be fitted. Expert advice must be sought from Health and Safety authorities where dust is thought to be explosive and toxic.

For applications where the dust collector is to be installed in a potentially explosive atmosphere, the electrical specification will be upgraded to suit. e.g. EEx motors, cabling and terminal box.

The classification of the hazard (Zone) must be specified when ordering the collector to ensure that it is to the correct specification.

Details on the explosion relief assembly can be found in Publication 2713.

Details of the controller can be found in Publication 2696.

Acoustic diffuser

UMA 40 and 40MM collectors can be fitted with an acoustic diffuser to reduce noise levels. (UMA 70 to 750 collectors have acoustic diffusers fitted as standard). The acoustic diffuser for UMA 40 and 40MM collectors is mounted at the rear (or side if the collector has explosion relief).

Secondary or absolute filter (not available on UMA 40 or 70 collectors)

A secondary filter (see fig. 16) can be fitted to Unimasters handling hazardous dusts, enabling filtered air to be recirculated safely back into the working area. It also acts as a fail-safe device should the main filter element become damaged. For special applications, absolute (HEPA) filters are available (details on request). With certain dusts the filtered air must not be recirculated – if in doubt refer to Donaldson or the appropriate Health and Safety authorities. Each secondary filter panel is inserted through the front access door of its housing and sealed tightly

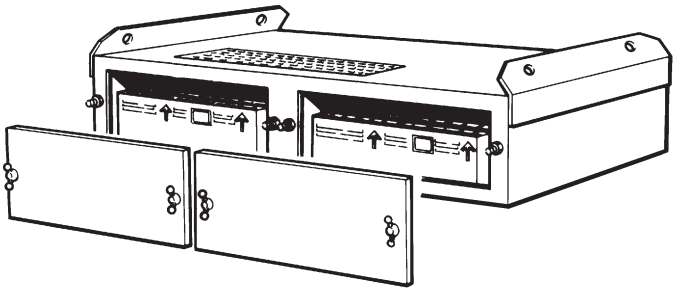


Figure 16 Secondary filter assembly (UMA 450 illustrated)

SPECIFICATION

in position by the locating mechanism. A secondary or absolute filter monitor can be supplied to measure the pressure drop across the filter elements which will indicate the filter condition, and when maintenance is required.

Pressure balance pipe

To assist in the safe removal of toxic or noxious dusts the dust container may be lined with a polythene bag which can be closed and sealed before lifting out of the container. The container is fitted with a detachable pressure balance pipe to prevent the bag from being drawn up into the collector.

Left-hand shaker

All the standard range of Unimaster dust collectors have the shaker motor and mechanism on the right-hand side of the collector when viewed from the front.

When site conditions call for collectors to be positioned side by side or there are space limitations, collectors may be supplied with the shaker motor positioned on the left-hand side when viewed from the front.

Half bags

On some Unimaster applications, for instance, when handling paper or cotton fluff, a filter assembly with every other pad removed may be advantageous to enable the filter to clean down more effectively. This reduces the cloth area of the collector by 50% and the collector designation is changed. e.g. The designation UMA 250H K3 becomes UMA 250/125H K3 – the figure 125 signifying the reduced cloth area in ft^2.

Construction

The Unimaster dust collector is constructed of sheet steel. Access to the various chambers, where necessary, is provided by front access doors. The sack tipping base also has the option of having a swing door. The fan chamber is mounted above the filter chamber with the discharge arrangements i.e. the dust container or sack tipping base positioned below. The shaker assembly is usually mounted on the right hand side of the filter chamber when looking from the front with access via a removable cover.

Acoustic diffusers are mounted above the fan section on all collectors except for the UMA 40 and 40MM where they are mounted at the rear or side.

Secondary and absolute filters are mounted above the fan section on all collectors except for the UMA 40MM and 750 where they are mounted between the filter chamber and the fan chamber. The secondary filter monitor, when supplied, is mounted on the right-hand side. (UMA 40 and 70 collectors are not available with secondary or absolute filters).

Collectors fitted with an explosion relief assembly have an explosion vent at the rear, additional door straps for added strength and additional earthing as required.

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The controller is supplied for remote mounting. On collectors with fan, the controller is connected to the fan and shaker motors via a terminal box usually mounted on the right-hand side of the fan chamber. On venting type collectors, controller connection is made directly to the shaker motor.

The controller must not be mounted on the side of the collector.

On collectors with dust containers, the contaminated air inlet is in the hopper and can be positioned at the rear or either side (two inlets are required on the UMA 450 and 750). The cleaned air outlet is at the top on all collectors except for the UMA 40 and 40MM, where it is at the rear or side, and the UMA V with a weather cowl, where it is at the side.

Filter assembly

The filter assembly consists primarily of a filter bag which can be made from a variety of materials to suit the application. The top of the bag is wrapped around a top frame which provides support and a rigid sealing face. The bag also has inserts placed in each individual pocket to maintain bag shape and help dislodge dust during the cleaning cycle.

Seal frame

The seal frame is a rigid structure fabricated out of sheet steel with a rubber seal attached to its underside. This provides a clamping face and seal for the filter assembly. The filter assembly clamping is provided by two mattress runners which fit underneath the top frame, each having two threaded bars protruding through the seal frame. These are secured on UMA 40-450 collectors by using wing nuts (see fig. 17), and on the UMA 750 by a clamping device, which is operated by extended nuts protruding through the door frame (see fig. 18).

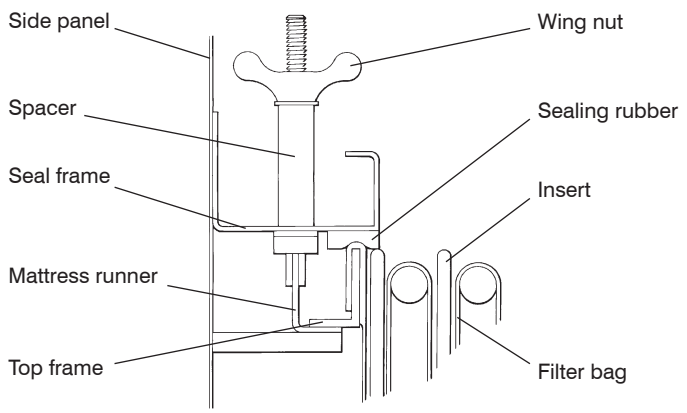


Figure 17 Filter clamping arrangement for UMA 40 to 450 collectors

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Shaker assembly

The shaker assembly is situated on the side of the collector. This consists of a motor which turns an eccentric mechanism to vibrate a shaker bar. The shaker bar has locators into which each filter pad is fitted, thus, vibrating the filter assembly clean.

Fan (not supplied on venting type collectors)

The fan assembly is fitted above the filter assembly. All fans have electrical connections via a terminal box on the side of the collector, except for the UMA 40 where electrical connection is made directly to the motor. All fan impellers are directly driven except for the UMA 40MM which is belt driven.

Controller

A controller, if required, is provided for remote mounting to suit site requirements.

For controller specifications, refer to Publication 2696.

Sealer gear (UMA 70-750 collectors with dust container only)

The sealer gear is fitted to the bottom of the hopper and, by lifting the handle, provides a quick-release seal on the dust container.

(On UMA 40 and 40MM collectors, the dust container is sealed by two toggle fasteners).

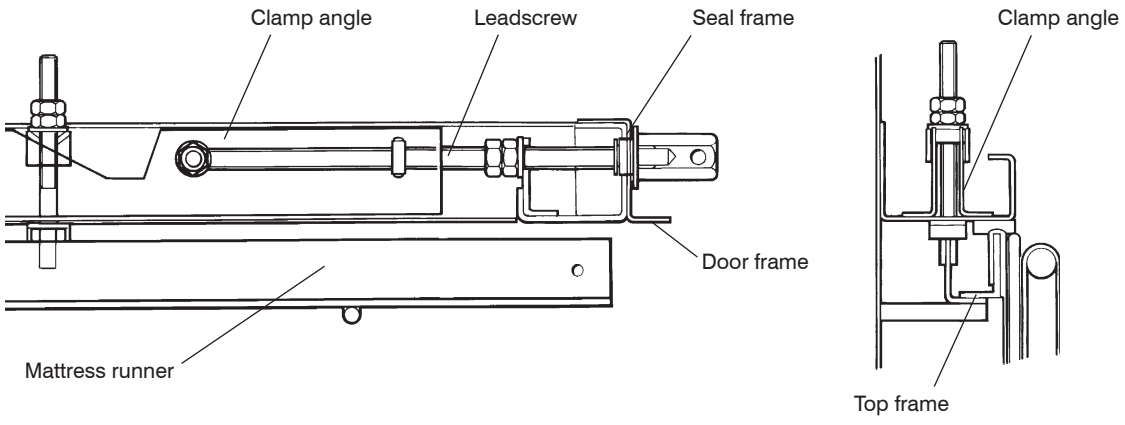


Figure 18 Filter clamping arrangement for UMA 750 collectors

SPECIFICATION

TABLE 5 – DESIGN LIMITS

Temperature range:	–10° to +60°C
Pressure range:	–300 mm W.G. to +250 mm W.G.
	Collectors with fan: as fan performance curves from shut-off to ambient pressure (for UMA 40 and 40MM refer to Publication 2723; for UMA 70 to 250 refer to Publication 2724; for UMA 450 refer to Publication 2725; for UMA 750 refer to Publication 2726)
Maximum fan impeller and shaker motor speeds:	UMA 40-750 direct driven fan (50 Hz) = 3000 RPM UMA 40-750 direct driven fan (60 Hz) = 3600 RPM UMA 40MM belt driven fan (50 and 60 Hz) = 10000 RPM UMA 40-750 maximum shaker motor speed (50 Hz) = 1000 RPM UMA 40-450 maximum shaker motor speed (60 Hz) = 1200 RPM UMA 750 maximum shaker motor speed (60 Hz) = 900 RPM

The UMA 40MM is designed to handle a limited amount of air. If exceeded there is a serious danger of overloading the motor. The maximum volume handled should not exceed 425 m^3/h

TABLE 6 – STANDARD FAN MOTOR SUPPLY VOLTAGE DETAILS

To comply with European standards the motor nameplate will display the following:

3 Phase / 50 Hz
(IEC 60034-30)

kW	Nameplate details	Range
0.75 – 1.5	230/3/50 D	220-240 D
	400/3/50 Y	380-420 Y
2.2 and above	400/3/50 D	380-420 D
	690/3/50 Y	660-690 Y

3 Phase / 60 Hz*

kW	Nameplate details	Range
0.75 – 1.5	250-280/3/60 D	250-280 D
	440-480/3/60 Y	440-480 Y
2.2 and above	440-480/3/60 D	440-480 D

*Some motors will be fitted with a second nameplate displaying 60 Hz details

The details above may not apply to non-standard motors.

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TABLE 7 – WEIGHTED SOUND PRESSURE LEVELS

	UMA 40	UMA 40MM	UMA 70 to 250				
	STD (0.55 kW)	**STD** (1.1 kW)	**G1** (0.75 kW)	**K3** (1.5 kW)	**K5** (2.2 kW)	**K7** (3.0 kW)	**G8** (5.5 kW)
Collector only	80 dB(A)†	80 dB(A)†	–*	–*	–*	–*	–*
With acoustic diffuser**	75 dB(A)†	75 dB(A)	65 dB(A)	67 dB(A)	69 dB(A)	69 dB(A)†	72 dB(A)
With secondary filter	–*	–*	–*	67 dB(A)	69 dB(A)	69 dB(A)	72 dB(A)
With absolute filter	–*	75 dB(A)	–*	67 dB(A)	69 dB(A)	69 dB(A)	72 dB(A)

	UMA 450		UMA 750		
	K10 (5.5 kW)	**K11** (7.5 kW)	**K15** (11.0 kW)	**K18** (15.0 kW)	**K21** (18.5 kW)
Collector only	–*	–*	–*	–*	–*
With acoustic diffuser**	74 dB(A)	76 dB(A)†	77 dB(A)	79 dB(A)†	80 dB(A)
With secondary filter	74 dB(A)	76 dB(A)	77 dB(A)	79 dB(A)	80 dB(A)
With absolute filter	74 dB(A)	76 dB(A)	77 dB(A)	79 dB(A)	80 dB(A)

All readings were taken in normal industrial areas, i.e. semi-reverberant surroundings, with local equipment silent. Measurements were taken at maximum air flow conditions at 1.0 metre radius from the equipment housing and 1.6 metres above base level, using a precision sound level meter and octave filter. Noise levels of installed equipment may vary due to site conditions.

† Measured data. * Non-available option.

** An acoustic diffuser is fitted as standard on UMA 70 to 750 collectors.

TABLE 8 – DUST CONTAINERS

Collector	Dust container supplied
UMA 40 and 40MM	20 litre
UMA 70	55 litre
UMA 100, 150, 250, 450* and 750*	80 litre

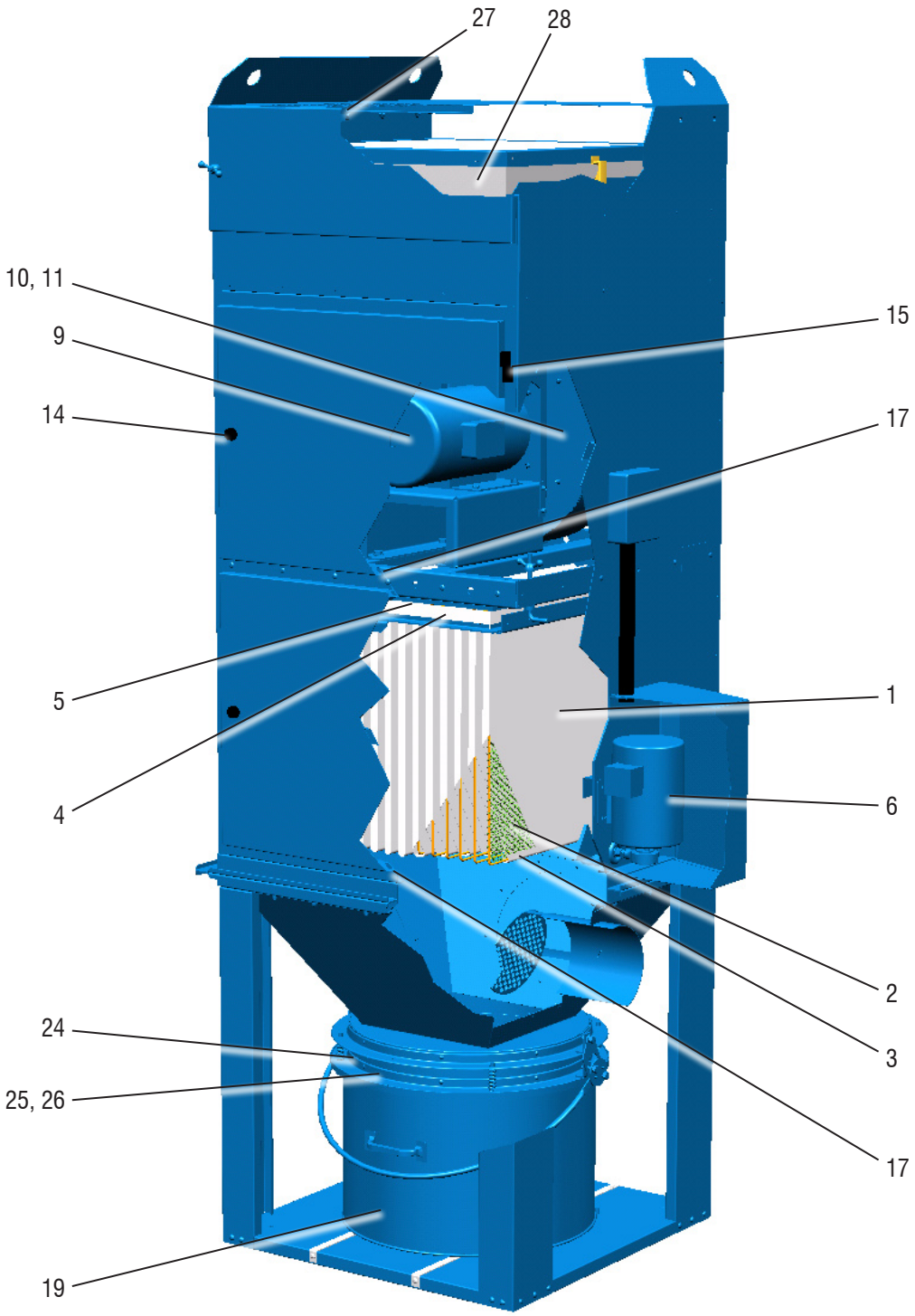
Dust container size	Approx. weight (empty)
20 litre	3 kg
55 litre	5 kg
80 litre	7 kg

Dust	Typical density with 50% voidage
Sander	0.13 kg/litre
Graphite	0.80 kg/litre
Sand	1.33 kg/litre
Iron	3.58 kg/litre
Steel	3.72 kg/litre

A reasonable total load for removal by hand would be 25 kg.

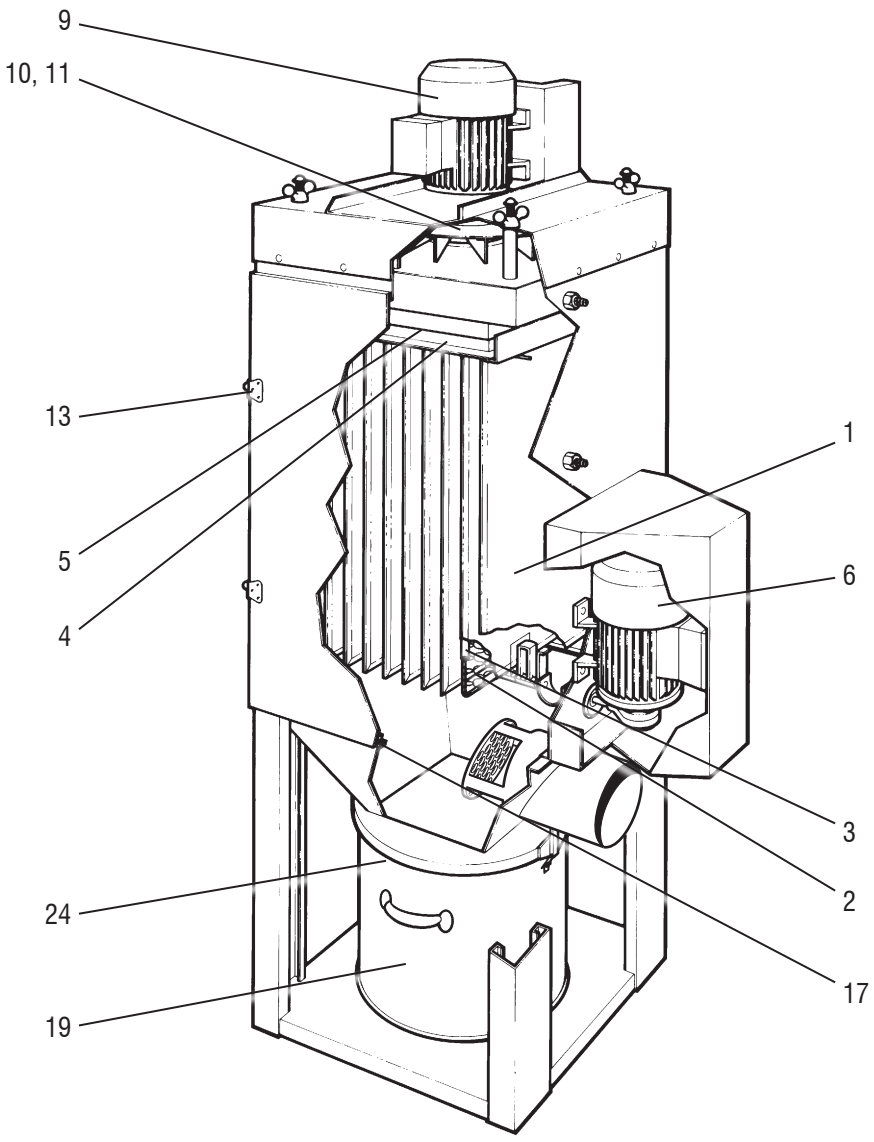
* UMA 450 and 750 collectors are supplied with two dust containers.

SPARE PARTS



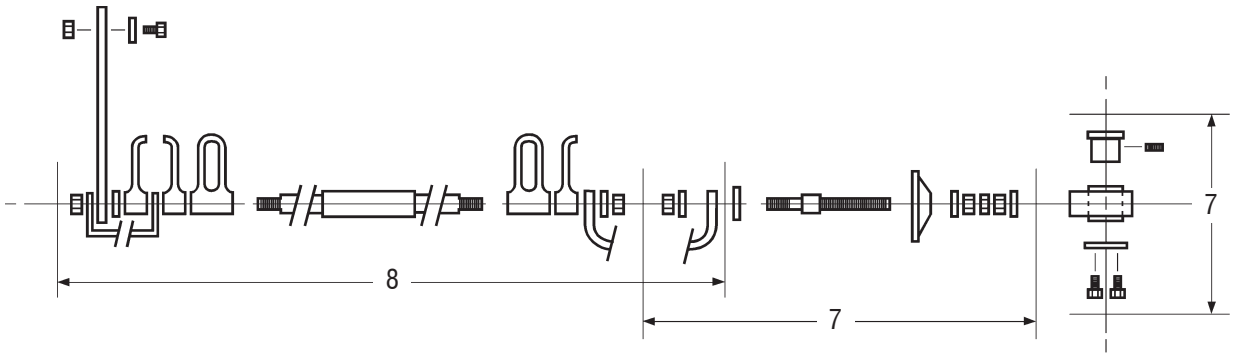
Unimaster UMA 153 K5 SF illustrated

SPARE PARTS

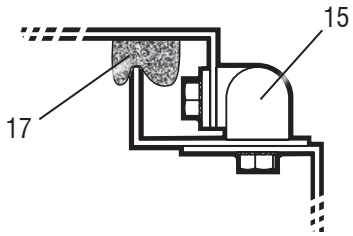


Unimaster UMA 40 illustrated

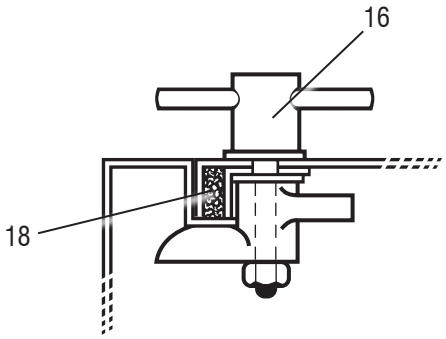
SPARE PARTS



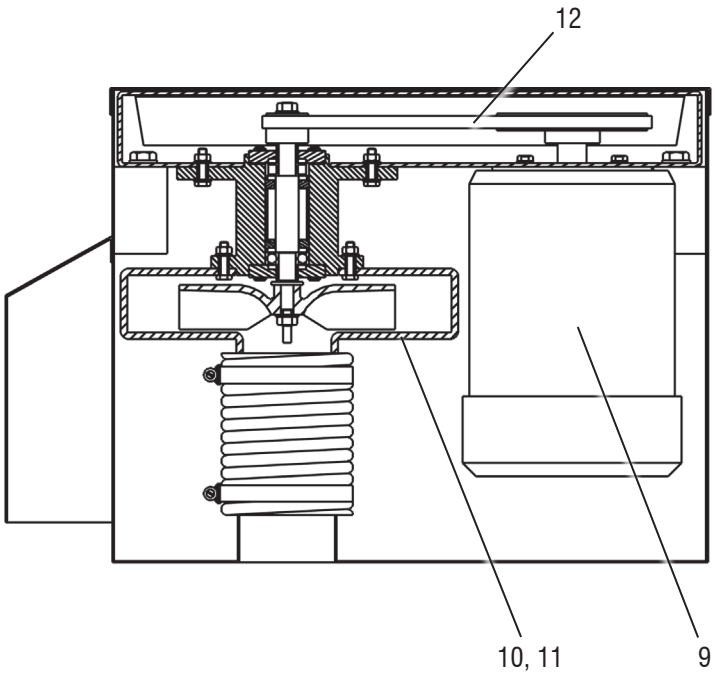
Shaker mechanism assembly
(UMA 40-450 illustrated)



Door hinge assembly
(not applicable to UMA 40)



Door fastener assembly for
Sack Tipping Unit base (standard door)



Fan chamber assembly
(UMA 40MM only)

Item	Description	UMA 40	UMA 70	UMA 100	UMA 150	UMA 250	UMA 450	UMA 750	✳
	Filter assembly								
1	Multiple filter bag, Dura-Life® standard – full bag	1A 2139 2414	1A 2139 2370	1A 2139 2371	1A 2139 2372	1A 2139 2373	1A 2139 2374	1A 2139 9013	✔
1	Multiple filter bag, Dura-Life® standard – half bag	1A 2139 2542	1A 2139 2544	1A 2139 2404	1A 2139 2405	1A 2139 2406	1A 2139 2408	1A 2139 9017	✔
1	Multiple filter bag, Dura-Life® antistatic¶ – full bag	1A 2139 2009	1A 2139 2076	1A 2139 2028	1A 2139 2043	1A 2139 2059	1A 2139 2096	1A 2139 9014	✔
1	Multiple filter bag, Dura-Life® antistatic¶ – half bag	1A 2139 2227	1A 2139 2179	1A 2139 2120	1A 2139 2139	1A 2139 2158	1A 2139 2244	1A 2139 9016	✔
1	Multiple filter bag, Dura-Life® oleophobic – full bag	1A 2139 2509	1A 2139 2518	1A 2139 2520	1A 2139 2522	1A 2139 2524	1A 2139 2528	1A 2139 2530	✔
1	Multiple filter bag, Dura-Life® oleophobic – half bag	1A 2139 2491	1A 2139 2517	1A 2139 2519	1A 2139 2521	1A 2139 2523	1A 2139 2527	1A 2139 2529	✔
1	Multiple filter bag, Dura-Life® oleophobic antistatic¶ – full bag	1A 2139 2589	1A 2139 2591	1A 2139 2593	1A 2139 2595	1A 2139 2597	1A 2139 2601	1A 2139 2603	✔
1	Multiple filter bag, Dura-Life® oleophobic antistatic¶ – half bag	1A 2139 2590	1A 2139 2592	1A 2139 2594	1A 2139 2596	1A 2139 2598	1A 2139 2602	1A 2139 2604	✔
1	Multiple filter bag, Tetratex®	1A 2139 7231	1A 2139 7232	1A 2139 7233	1A 2139 7234	1A 2139 7235	1A 2139 7236	1A 2139 7237	✔
1	Multiple filter bag, Tetratex® antistatic¶	1A 2139 7238	1A 2139 7239	1A 2139 7240	1A 2139 7241	1A 2139 7242	1A 2139 7243	1A 2139 7244	✔
	¶ Fitting antistatic bags will not provide a full earthing arrangement without fitting an additional earthing bar and straps								
2	Bag insert	1A 2131 9007	1A 2131 9005	1A 2131 9005	1A 2131 9006	1A 2131 9006	1A 2131 9008	1A 2131 9010	✔
3	Insert edgings, polypropylene	1A 2139 2263	1A 2139 2261	1A 2139 2261	1A 2139 2264	1A 2139 2264	1A 2139 2266	1A 2139 2403	✔
4	Mattress frame assembly	1A 2131 0008	1A 2131 9002	1A 2131 9004	1A 2131 9000	1A 2131 9001	1A 2131 9003	1A 2131 9011	
5	Mattress frame seal	1A 2119 2029	1A 2119 2056	1A 2119 2055	1A 2119 2054	1A 2119 2077	1A 2119 2063	1A 2119 2100	
	Shaker assembly								
6	Shaker motor†, 1 phase, 0.18kW, 220-240V 50Hz	1A 2756 2522	1A 2756 2522	1A 2756 2522	1A 2756 2522	1A 2756 2522	–	–	
6	Shaker motor†, 3 phase, 0.18kW, 218-242V/380-420V 50Hz, 250-277V/440-480V 60Hz	1A 2757 2545	1A 2757 2545	1A 2757 2545	1A 2757 2545	1A 2757 2545	1A 2757 2545	–	
6	Shaker motor†, 3 phase, 0.55kW, 380-420V/655-752V 50Hz	–	–	–	–	–	–	1A 2757 2547	
	† Motors are IP55 rated. For other types/specifications/motors for hazardous areas consult Donaldson								

✳ Recommended spares for up to two years' operation

Damaged safety related parts and safety components should be replaced only with genuine original spare parts otherwise CE mark will become invalid

Item	Description	UMA 40	UMA 70	UMA 100	UMA 150	UMA 250	UMA 450	UMA 750	✳
6	Shaker motor†, 3 phase, 0.55kW, 440-480V 60Hz	–	–	–	–	–	–	1A 2757 2558	
7	Shaker mechanism parts – eccentric assembly, connecting rod assembly	1A 2181 7139	1A 2181 7139	1A 2181 7139	1A 2181 7140	1A 2181 7140	1A 2181 7140	1A 2181 7141	
8	Shaker mechanism parts – shaker bar assembly, support strap	1A 2181 9009	1A 2181 9002	1A 2181 9000	1A 2181 9000	1A 2181 9001	1A 2181 9010	1A 2181 9057	
	Fan assembly								
9	Fan motor†, 71 frame, 1 phase, 0.55kW – UMA 40 ONLY 220-240V 50Hz 220-240V 60Hz	 1A 2756 2541 1A 2756 2542	 – –	 – –	 – –	 – –	 – –	 – –	
9	Fan motor†, 71 frame, 3 phase, 0.55kW – UMA 40 ONLY 220-240V/380-420V 50Hz, 250-280V/440-480V 60Hz	1A 2757 2557	–	–	–	–	–	–	
9	Fan motor†, 80 frame, 1 phase, 1.1kW – UMA 40MM ONLY 220-240V 50Hz	1A 2756 2530	–	–	–	–	–	–	
9	Fan motor†, 80 frame, 3 phase, 1.1kW – UMA 40MM ONLY 220-240V/380-420V 50Hz 250-280V/440-480V 60Hz	 1A 2757 2260 1A 3329 7037	 – –	 – –	 – –	 – –	 – –	 – –	
9	Fan motor†, G1 fan, 1 phase, 0.75kW 220-240V 50Hz	–	1A 2756 2529	1A 2756 2529	1A 2756 2529	1A 2756 2529	–	–	
9	Fan motor†, G1 fan, 3 phase, 0.75kW 220-240V/380-420V 50Hz 250-280V/440-480V 60Hz	 – –	 1A 2757 2259 1A 3329 7036	 1A 2757 2259 1A 3329 7036	 1A 2757 2259 1A 3329 7036	 1A 2757 2259 1A 3329 7036	 – –	 – –	
9	Fan motor†, K3 fan, 1 phase, 1.5kW 220-240V 50Hz	–	–	1A 2756 2540	1A 2756 2540	1A 2756 2540	–	–	
9	Fan motor†, K3 fan, 3 phase, 1.5kW 220-240V/380-420V 50Hz 250-280V/440-480V 60Hz	 – –	 – –	 1A 2757 2263 1A 3329 7038	 1A 2757 2263 1A 3329 7038	 1A 2757 2263 1A 3329 7038	 – –	 – –	
9	Fan motor†, K5 fan, 3 phase, 2.2kW 380-420V/660-690V 50Hz 440-480V 60Hz	 – –	 – –	 – –	 1A 2757 2264 1A 3329 7039	 1A 2757 2264 1A 3329 7039	 – –	 – –	
	† Motors are IP55 rated. For other types/specifications/motors for hazardous areas consult Donaldson								

✳ Recommended spares for up to two years' operation

Damaged safety related parts and safety components should be replaced only with genuine original spare parts otherwise CE mark will become invalid

Item	Description	UMA 40	UMA 70	UMA 100	UMA 150	UMA 250	UMA 450	UMA 750	✳
9	Fan motor†, K7 fan, 3 phase, 3.0kW 380-420V/660-690V 50Hz 440-480V 60Hz	 – –	 – –	 – –	 1A 2757 2268 1A 3329 7040	 1A 2757 2268 1A 3329 7040	 – –	 – –	
9	Fan motor†, G8 fan, 3 phase, 5.5kW 380-420V/660-690V 50Hz 440-480V 60Hz	 – –	 – –	 – –	 1A 2757 2271 1A 3329 7041	 1A 2757 2271 1A 3329 7041	 – –	 – –	
9	Fan motor†, K10 fan, 3 phase, 5.5kW 380-420V/660-690V 50Hz 440-480V 60Hz	 – –	 – –	 – –	 – –	 – –	 1A 2757 2271 1A 3329 7041	 – –	
9	Fan motor†, K11 fan, 3 phase, 7.5kW 380-420V/660-690V 50Hz 440-480V 60Hz	 – –	 – –	 – –	 – –	 – –	 1A 2757 2276 1A 3329 7042	 – –	
9	Fan motor†, K15 fan, 3 phase, 11.0kW 380-420V/660-690V 50Hz 440-480V 60Hz	 – –	 – –	 – –	 – –	 – –	 – –	 1A 2757 3280 1A 3329 7043	
9	Fan motor†, K18 fan, 3 phase, 15.0kW 380-420V/660-690V 50Hz 440-480V 60Hz	 – –	 – –	 – –	 – –	 – –	 – –	 1A 2757 3281 1A 3329 7044	
9	Fan motor†, K21 fan, 3 phase, 18.5kW 380-420V/660-690V 50Hz 440-480V 60Hz	 – –	 – –	 – –	 – –	 – –	 – –	 1A 2757 3282 1A 3329 7045	
10	UMA 40 fan assembly (including motor†), 1 phase, 220-240V 50Hz 1 phase, 220-240V 60Hz	 1A 2121 9207 1A 2121 9104	 – –	 – –	 – –	 – –	 – –	 – –	
10	UMA 40 fan assembly (including motor†), 3 phase, 220-240V/380-420V 50Hz 3 phase, 250-280V/440-480V 60Hz	 1A 2121 9008 1A 2121 9009	 – –	 – –	 – –	 – –	 – –	 – –	
10	UMA 40MM fan assembly (including motor†), 1 phase, 220-240V 50Hz	 1A 2129 9035	 –	 –	 –	 –	 –	 –	
10	UMA 40MM fan assembly (including motor†), 3 phase, 220-240V/380-420V 50Hz 3 phase, 250-280V/440-480V 60Hz	 1A 2129 9036 1A 2129 9037	 – –	 – –	 – –	 – –	 – –	 – –	
	† Motors are IP55 rated. For other types/specifications/motors for hazardous areas consult Donaldson								

✳ Recommended spares for up to two years' operation

Damaged safety related parts and safety components should be replaced only with genuine original spare parts otherwise CE mark will become invalid

Item	Description	UMA 40	UMA 70	UMA 100	UMA 150	UMA 250	UMA 450	UMA 750	✳
10	G1 fan assembly (including motor†), 1 phase, 220-240V 50Hz	–	1A 2121 9101	1A 2121 9101	1A 2121 9101	1A 2121 9101	–	–	
10	G1 fan assembly (including motor†), 3 phase, 220-240V/380-420V 50Hz 3 phase, 250-280V/440-480V 60Hz	– –	1A 2121 9004 1A 2121 9016	1A 2121 9004 1A 2121 9016	1A 2121 9004 1A 2121 9016	1A 2121 9004 1A 2121 9016	– –	– –	
10	K3 fan assembly (including motor†), 1 phase, 220-240V 50Hz	–	–	1A 3321 9345	1A 3321 9345	1A 3321 9345	–	–	
10	K3 fan assembly (including motor†), 3 phase, 220-240V/380-420V 50Hz 3 phase, 250-280V/440-480V 60Hz	– –	– –	1A 3321 9190 1A 3321 9191	1A 3321 9190 1A 3321 9191	1A 3321 9190 1A 3321 9191	– –	– –	
10	K5 fan assembly (including motor†), 3 phase, 380-420V/660-690V 50Hz 3 phase, 440-480V 60Hz	– –	– –	– –	1A 3321 9192 1A 3321 9193	1A 3321 9192 1A 3321 9193	– –	– –	
10	K7 fan assembly (including motor†), 3 phase, 380-420V/660-690V 50Hz 3 phase, 440-480V 60Hz	– –	– –	– –	1A 3321 9501 1A 3321 9504	1A 3321 9501 1A 3321 9504	– –	– –	
10	G8 fan assembly (including motor†), 3 phase, 380-420V/660-690V 50Hz 3 phase, 440-480V 60Hz	– –	– –	– –	1A 2121 9011 1A 2121 9012	1A 2121 9011 1A 2121 9012	– –	– –	
10	K10 fan assembly (including motor†), 3 phase, 380-420V/660-690V 50Hz 3 phase, 440-480V 60Hz	– –	– –	– –	– –	– –	1A 3321 9567 1A 3321 9570	– –	
10	K11 fan assembly (including motor†), 3 phase, 380-420V/660-690V 50Hz 3 phase, 440-480V 60Hz	– –	– –	– –	– –	– –	1A 3321 9421 1A 3321 9422	– –	
10	K15 fan assembly (including motor†), 3 phase, 380-420V/660-690V 50Hz 3 phase, 440-480V 60Hz	– –	– –	– –	– –	– –	– –	1A 3321 9378 1A 3321 9379	
10	K18 fan assembly (including motor†), 3 phase, 380-420V/660-690V 50Hz 3 phase, 440-480V 60Hz	– –	– –	– –	– –	– –	– –	1A 2121 7005 1A 2121 7006	
10	K21 fan assembly (including motor†), 3 phase, 380-420V/660-690V 50Hz 3 phase, 440-480V 60Hz	– –	– –	– –	– –	– –	– –	1A 2121 7009 1A 2121 7010	
	† Motors are IP55 rated. For other types/specifications/motors for hazardous areas consult Donaldson								

✳ Recommended spares for up to two years' operation

Damaged safety related parts and safety components should be replaced only with genuine original spare parts otherwise CE mark will become invalid

Item	Description	UMA 40	UMA 70	UMA 100	UMA 150	UMA 250	UMA 450	UMA 750	✳
11	Impeller, UMA 40 fan, 50Hz	1A 2121 9041	–	–	–	–	–	–	
11	Impeller, UMA 40 fan, 60Hz	1A 2121 9076	–	–	–	–	–	–	
11	Impeller, UMA 40MM fan	1A 2129 3035	–	–	–	–	–	–	
11	Impeller, G1 fan, 50Hz	–	1A 2121 9061	1A 2121 9061	1A 2121 9061	1A 2121 9061	–	–	
11	Impeller, G1 fan, 60Hz	–	1A 2121 9060	1A 2121 9060	1A 2121 9060	1A 2121 9060	–	–	
11	Impeller, K3 fan, 50Hz	–	–	1A 3321 9137	1A 3321 9137	1A 3321 9137	–	–	
11	Impeller, K3 fan, 60Hz	–	–	1A 3321 9143	1A 3321 9143	1A 3321 9143	–	–	
11	Impeller, K5 fan, 50Hz	–	–	–	1A 3321 9138	1A 3321 9138	–	–	
11	Impeller, K5 fan, 60Hz	–	–	–	1A 3321 9144	1A 3321 9144	–	–	
11	Impeller, K7 fan, 50Hz	–	–	–	1A 3321 9464	1A 3321 9464	–	–	
11	Impeller, K7 fan, 60Hz	–	–	–	1A 3321 9465	1A 3321 9465	–	–	
11	Impeller, G8 fan, 50Hz	–	–	–	1A 2121 9099	1A 2121 9099	–	–	
11	Impeller, G8 fan, 60Hz	–	–	–	1A 2121 9047	1A 2121 9047	–	–	
11	Impeller, K10 fan, 50Hz	–	–	–	–	–	1A 3321 9557	–	
11	Impeller, K10 fan, 60Hz	–	–	–	–	–	1A 3321 9558	–	
11	Impeller, K11 fan, 50Hz	–	–	–	–	–	1A 3321 9414	–	
11	Impeller, K11 fan, 60Hz	–	–	–	–	–	1A 3321 9415	–	
11	Impeller, K15 fan, 50Hz	–	–	–	–	–	–	1A 3321 9365	
11	Impeller, K15 fan, 60Hz	–	–	–	–	–	–	1A 3321 9366	
11	Impeller, K18 fan, 50Hz	–	–	–	–	–	–	1A 2121 9160	
11	Impeller, K18 fan, 60Hz	–	–	–	–	–	–	1A 2121 9161	
11	Impeller, K21 fan, 50Hz	–	–	–	–	–	–	1A 2121 9171	
11	Impeller, K21 fan, 60Hz	–	–	–	–	–	–	1A 2121 9172	
12	Drive belt, J4-26in – UMA 40MM ONLY	1A 2129 5019	–	–	–	–	–	–	✔

✳ Recommended spares for up to two years' operation

Damaged safety related parts and safety components should be replaced only with genuine original spare parts otherwise CE mark will become invalid

Item	Description	UMA 40	UMA 70	UMA 100	UMA 150	UMA 250	UMA 450	UMA 750	✳
	Door assembly								
13	Toggle fastener and hook	1A 2111 7102	–	–	–	–	–	–	
14	Door latch and key	–	1A 2111 7103	1A 2111 7103	1A 2111 7103	1A 2111 7103	1A 2111 7103	1A 2111 7103	
15	Hinge assembly	–	1A 2111 3177	1A 2111 3177	1A 2111 3177	1A 2111 3177	1A 2111 3177	1A 2111 3177	
16	Door fastener assembly (for sack tipping unit base with standard door)	–	–	1A 2111 3100	1A 2111 3100	1A 2111 3100	–	–	
17	Door seal, filter and fan chamber	1A 1816 5647	1A 1816 5221	1A 1816 5221	1A 1816 5221	1A 1816 5221	1A 1816 5221	1A 1816 5221	✔
18	Door seal, sack tipping unit base (standard door)	–	–	1A 1816 5481	1A 1816 5481	1A 1816 5481	–	–	✔
	Dust container assembly								
19	Dust container	1A 2141 1007	1A 2141 1020	1A 6341 1001	1A 6341 1001	1A 6341 1001	1A 6341 1001	1A 6341 1001	
19	Dust container with pressure balance connection – Item not illustrated	1A 2141 1005	1A 2141 1011	1A 6341 1003	1A 6341 1003	1A 6341 1003	1A 6341 1003	1A 6341 1003	
20	∅1½" flexible pipe (for pressure balance) – Item not illustrated	1A 1827 2311	1A 1827 2311	1A 1827 2311	1A 1827 2311	1A 1827 2311	1A 1827 2311	1A 1827 2311	
21	Sock filter (for pressure balance pipe) – Item not illustrated	–	1A 2139 7210	1A 2139 7210	1A 2139 7210	1A 2139 7210	1A 2139 7210	1A 2139 7210	
22	Seal (for pressure balance pipe) – Item not illustrated	1A 2149 1050	1A 2149 1054	1A 2149 1055	1A 2149 1055	1A 2149 1055	1A 2149 1055	1A 2149 1055	
23	Polythene bag liner (for dust container with pressure balance) – Item not illustrated	1A 5995 5133	1A 5995 5133	1A 5995 5138	1A 5995 5138	1A 5995 5138	1A 5995 5138	1A 5995 5138	
24	Dust container sealer gear assembly – Includes items 25 and 26	–	1A 2141 2009	1A 2141 2046	1A 2141 2046	1A 2141 2046	1A 2141 2046	1A 2141 2046	
25	Canvas sleeve, dust container sealer gear	–	1A 2149 2002	1A 2149 2025	1A 2149 2025	1A 2149 2025	1A 2149 2025	1A 2149 2025	✔
26	Seal, dust container	1A 1816 6684	1A 1816 5223	1A 2149 2047	1A 2149 2047	1A 2149 2047	1A 2149 2047	1A 2149 2047	✔
	Secondary/absolute filter assembly								
27	Door seal, secondary/absolute filter	1A 1816 5482	–	1A 1816 5461	1A 1816 5461	1A 1816 5461	1A 1816 5461	1A 1816 5221	✔
28	Secondary filter element	–	–	1A 2585 6800	1A 2585 6801	1A 2585 6801	1A 2585 6801	1A 2585 6801	
28	Absolute filter element	1A 2585 6703	–	1A 2585 6824	1A 2585 6818	1A 2585 6820	1A 2585 6820	1A 2585 6821	

✳ Recommended spares for up to two years' operation

Damaged safety related parts and safety components should be replaced only with genuine original spare parts otherwise CE mark will become invalid

Item	Description	UMA 40	UMA 70	UMA 100	UMA 150	UMA 250	UMA 450	UMA 750	✳
	Pressure measurement								
29	Magnahelic gauge assembly – Item not illustrated	1A 2151 9155	1A 2151 9155	1A 2151 9155	1A 2151 9155	1A 2151 9155	1A 2151 9155	1A 2151 9155	
	Controller								
	For controller spares information, refer to Publication 2696								
	Explosion relief assembly								
	For explosion relief spares information, refer to Publication 2713								
	Secondary or absolute filter monitor								
	For secondary or absolute filter monitor spares information, refer to Publication 2920								

✳ Recommended spares for up to two years' operation

Damaged safety related parts and safety components should be replaced only with genuine original spare parts otherwise CE mark will become invalid

GB

EC DECLARATION OF CONFORMITY

(Machinery Directive 2006/42/EC)

Manufacturers: **Donaldson Filtration (GB) Ltd.**
Humberstone Lane, Thurmaston, Leicester LE4 8HP, England
ISO Certificate number: 367984 QM

Donaldson Industrial CR – koncern s.r.o.
Kralovsky vrch 1986, 432 01 Kadan, Czech Republic
ISO Certificate number: CH06/0372

Technical file *(Head Office)*: **Donaldson Europe B.V.B.A.**
Interleuvenlaan 1, B-3001 Leuven (Heverlee), Belgium
ISO Certificate number: BE09/961048

Description of the machinery: **Dust Collector**

Brand: **Donaldson Torit DCE**

Description: See attached **Scope of Delivery**

Serial number: _____

The undersigned, authorized by Donaldson, certifies that the machine described above, provided that it is installed, maintained and used in accordance with the instructions for use and the codes of practice, meets the essential safety and health requirements of the following Directives:

- Machinery Directive 2006/42/EC
- Low voltage Directive 2006/95/EC*
- Pressure equipment Directive 97/23/EC*
- Electromagnetic compatibility Directive 2004/108/EC*
- Equipment and protective systems intended for use in Potentially Explosive Atmospheres 94/9/EC*

IMPORTANT! Read the Installation, Operation and Maintenance Manual for order specifics and before using this machine. If you require additional copies contact your local Donaldson representative.

If the Donaldson product is part of a system then it must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the above mentioned directives.

For connection to a power supply refer to appropriate manual.

*Directive only applicable as defined by the Scope of Delivery.

Signature:

Name: Erwan Clément

Place: Leuven, Belgium

Position: Engineering Manager

Date: April 2011

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