Project “Get Fresh”

Hauser survey guidelines for full replacement stores.

Rev 2 – 20th May 2019

Revision	Description	Date	By
0	First Issue – 152KW Dry Cooler Data is DRAFT only	07/04/19	[redacted]
1	152KW Low noise Floor mounted Dry cooler data updated and non-standard dry cooler options detailed.	06/05/19	
2	152KW Low noise wall mounted dry cooler data updated and data sheet added. Spacing distances updated for all types.	20/5/19	

CONTENTS

1.0 INTRODUCTION

1.1 Overview

The purpose of this document is to provide a set of guidelines to support surveys being carried out in existing trading Lidl stores that will have the current R404A systems removed and replaced with new dry coolers and SPI cabinets.

The survey must be carried out in the latest iAuditor template version which is available from the Hauser project team.

This document is aimed at supporting Hauser Project Managers in completing that template.

1.2 General Considerations

The following points should always be considered when selecting plant locations;

- Not visible to customers
- Avoid Loading bays due to the risk of collision
- Avoid proposing using car parking spaces
- Try to avoid areas adjacent to residential properties
- Try to position plant to minimize pipe run lengths
- Consider future service and maintenance access

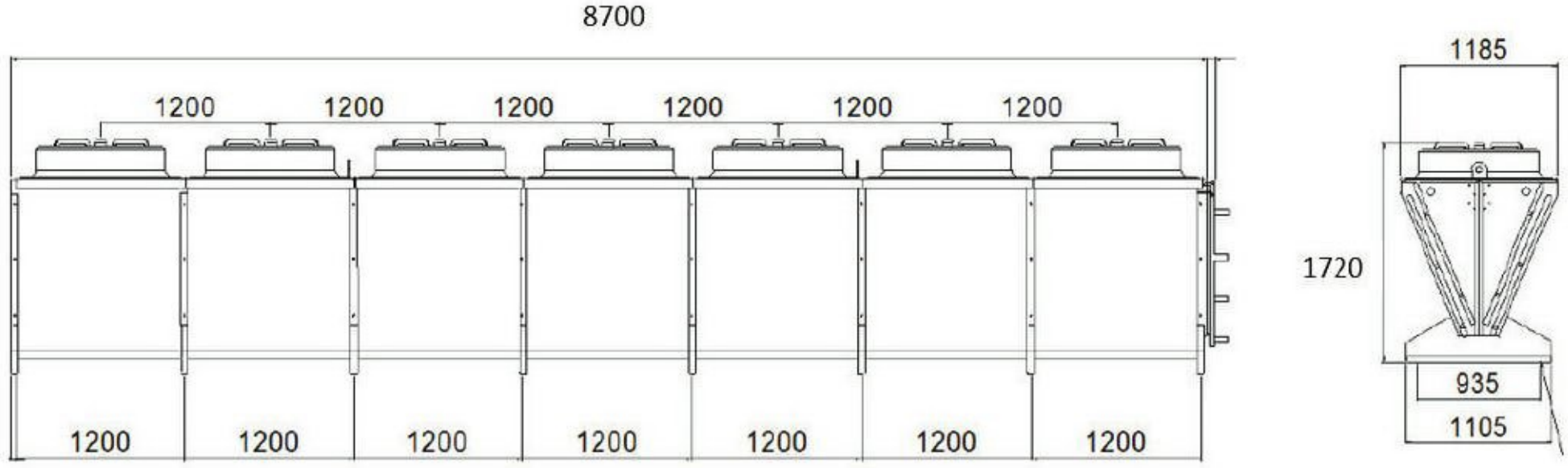
2.0 EXTERNAL REFRIGERATION PLANT OPTIONS

2.1 Option 1 – 1 x 152KW Low Noise Floor Mounted Dry Cooler

This is the preferred option and should be the priority to find a location for, look for up to three alternate positions around the store perimeter if you can.

Each potential location should be photographed, and dimensions added in order when Hauser and Lidl are reviewing the report it is clear to see the differences between them all.

S-GFW 090.4/7-U(1)-F4/04/2P



Dry Cooler Noise level

- 38 dB(A) @ 10 Mtrs
- 43 dB(A) @ 5 Mtrs

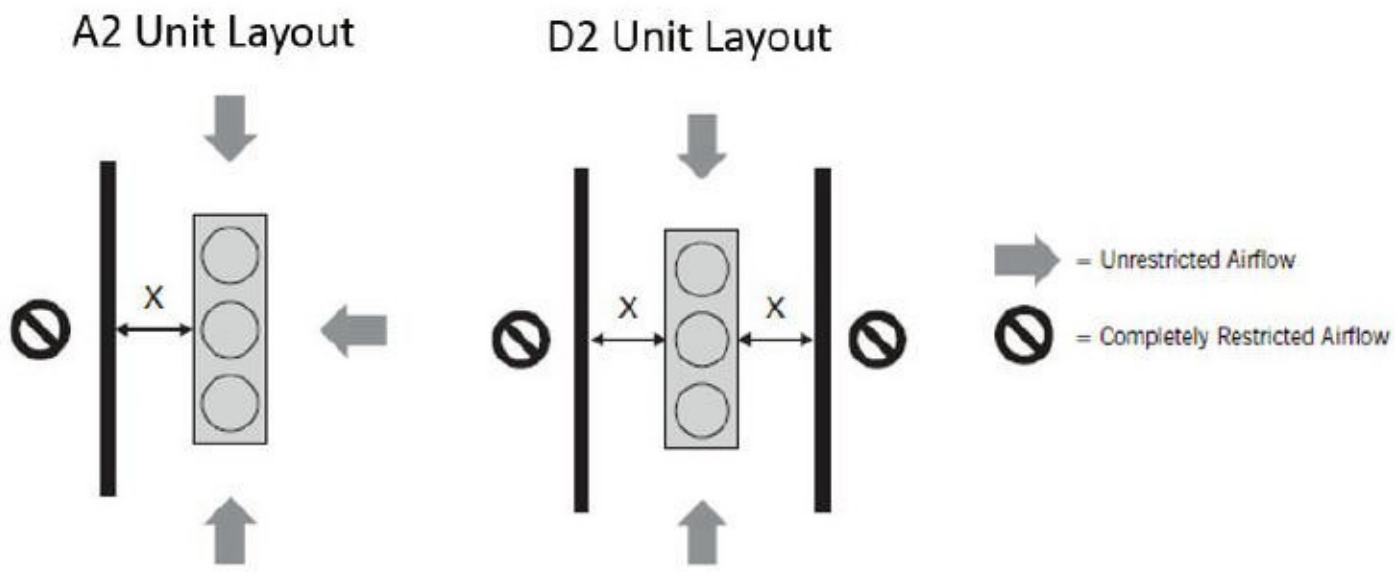
The sound power levels (SWL) for each fan within the dry-cooler is provided below. Each dry-cooler will be provided with 7 No. fans each.

Sound Power Level (dBA) Nominal max fan speed of 450 (min-1)									
TBC									
Frequency (Hz)	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Total (dBA)**
Sound Power (dba)	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC

Weights

152KW Low noise Dry Cooler weight	
Dry Weight (KG)	**Wet Weight (KG)**
1527	1718

Distance from the Dry Cooler to obstacles i.e. walls, solid boundaries.



A2 Layout dimension X would be 2.89Mtrs, this can be reduced if the unit is raised, so if the unit was raised by 340mm then it could be 960mm from the wall

D2 Layout each dimension x would be 2.89Mtrs, this can be reduced if the unit is raised, so if the unit was raised by 860mm then it could be 1.29Mtrs from each wall.

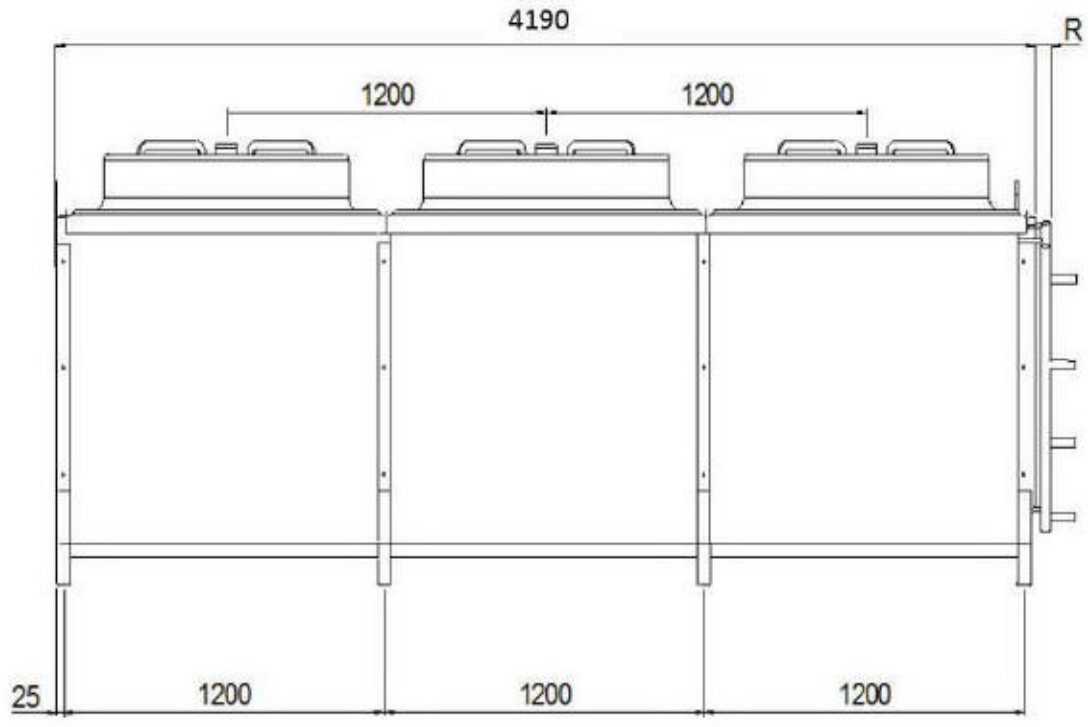
Generally, we will need at least 1Mtr each side to allow for service & maintenance access. You will need to find a space for a single external pump station as well and those dimensions are in detailed in section three. If space is tight then an internal pump station can be considered as a last resort.

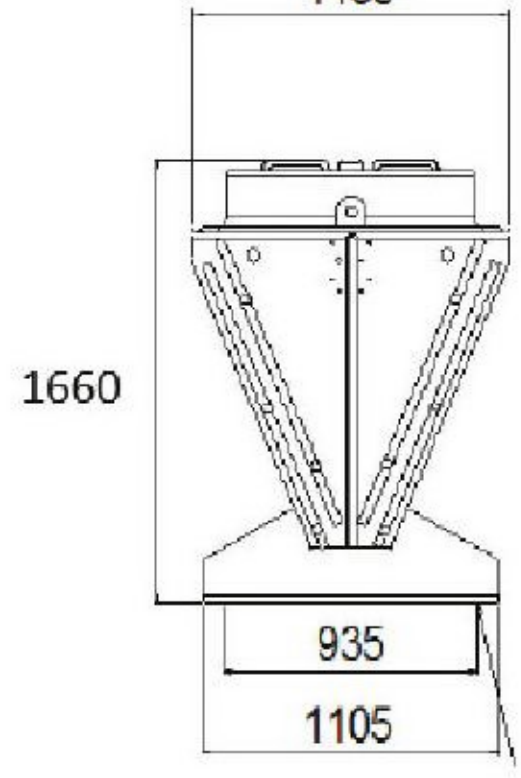
2.2 Option 2 – 2 x 80KW Low Noise Floor Mounted Dry Coolers

This is the second preferred option and should be looked for if you can't find a space large enough for option 1. There is no reason why each of these dry coolers must be close to each other if space does not allow in order to provide more flexibility. look for up to three alternate positions around the store perimeter if you can.

Each potential location should be photographed, and dimensions added in order when Hauser and Lidl are reviewing the report it is clear to see the differences between them all.

BASETEC GFW090.4/3-S(S)F4/03/6P





Dry Cooler Noise level when running at 100%

- 37 dB(A) @ 10 Mtrs
- 42 dB(A) @ 5 Mtrs

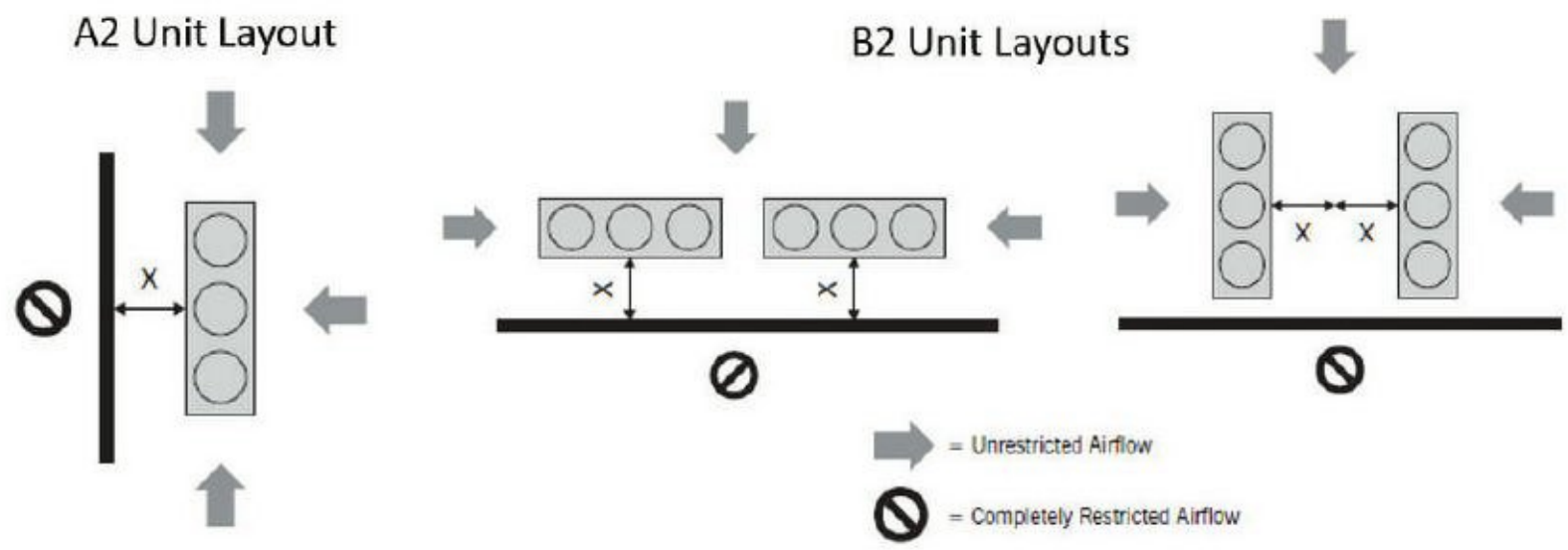
The sound power levels (SWL) for each fan within the dry-cooler is provided below. Each dry-cooler will be provided with 3 No. fans each.

Sound Power Level (dBA) Nominal max fan speed of 470 (min-1)									
VT03067U.1/S3G910-CD61-39									
Frequency (Hz)	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Total (dBA)**
Sound Power (dba)	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC

Weights

80KW Low noise Dry Cooler weight	
Dry Weight (KG)	**Wet Weight (KG)**
790	875

Distance from the Dry Cooler to obstacles i.e. walls, solid boundaries.



A2 Layout dimension X would be 1.16Mtrs, this can be reduced if the unit is raised, so if the unit was raised by 260mm then it could be 430mm from the wall

B2 Layouts each dimension x would be 2.46Mtrs, this can be reduced if the unit is raised, so if the unit was raised by 270mm then it could be 1.06Mtrs from each wall.

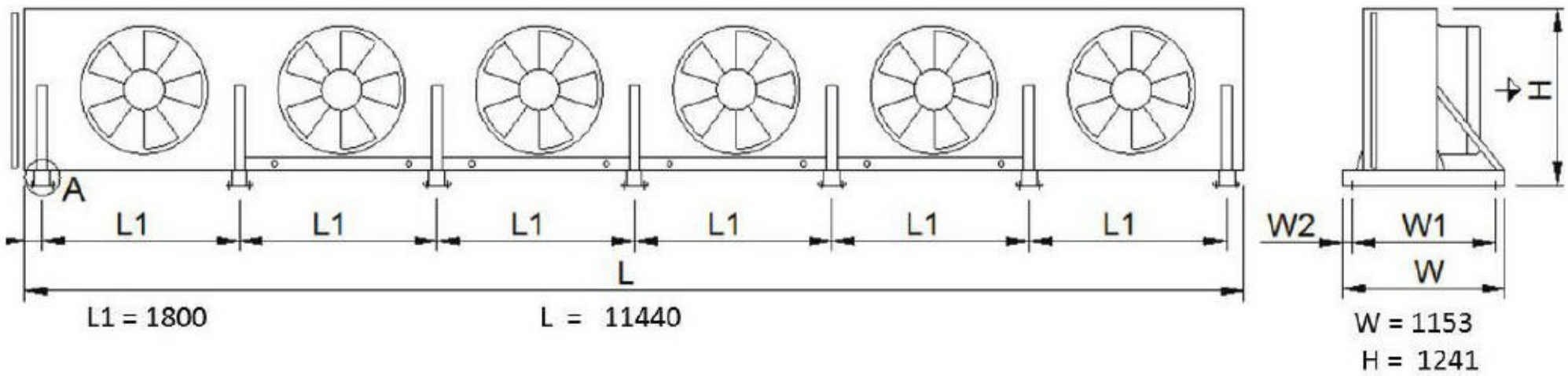
Generally, we will need at least 1Mtr each side to allow for service & maintenance access. You will need to find a space for 2 x external pump stations as well and those dimensions are in detailed in section three. If space is tight then an internal pump station can be considered as a last resort.

2.3 Option 3 – 1 x 152KW Low Noise Wall mounted Dry Cooler

This is the third preferred option and should be looked for if you can't find a space large enough for options 1 or 2. Although very large and heavy we are likely to provide a frame for it to be mounted on in order the weight does not transfer to the walls. Look for up to three alternate positions around the store perimeter if you can.

Each potential location should be photographed, and dimensions added in order when Hauser and Lidl are reviewing the report it is clear to see the differences between them all.

BASETEC GFVV FD 090.2NF/16E-39



Dry Cooler Noise level when running at 100%

- 38 dB(A) @ 10 Mtrs
- 43 dB(A) @ 5 Mtrs

The sound power levels (SWL) for each fan within the dry-cooler is provided below. Each dry-cooler will be provided with 6 No. fans each.

Sound Power Level (dBA) Nominal max fan speed of 450 (min-1)									
VT03067U.1/S3G910-CD61-39									
Frequency (Hz)	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Total (dBA)**
Sound Power (dba)	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC

Weights

150KW Low noise Dry Cooler weight	
Dry Weight (KG)	**Wet Weight (KG)**
1471	1641

Distance from the Dry Cooler to the supporting wall

The manufacture's calculation is X = 0.7 x L x C / (2 x C + L) therefore 0.7 x 11.4 x 1.2 / (2 x 1.2 + 11.4) = 0.7Mtrs

Therefore, we have a 0.7 gap plus 1.24 which means the dry cooler will stick out from the wall 1.94 Mtrs and service will need at least 0.6 in front of it to be able to access the fans safely. So, we need at least 2.5Mtrs from the wall for the dry cooler and ideally another 1Mtr in front of that to allow for the air to be able to discharge.

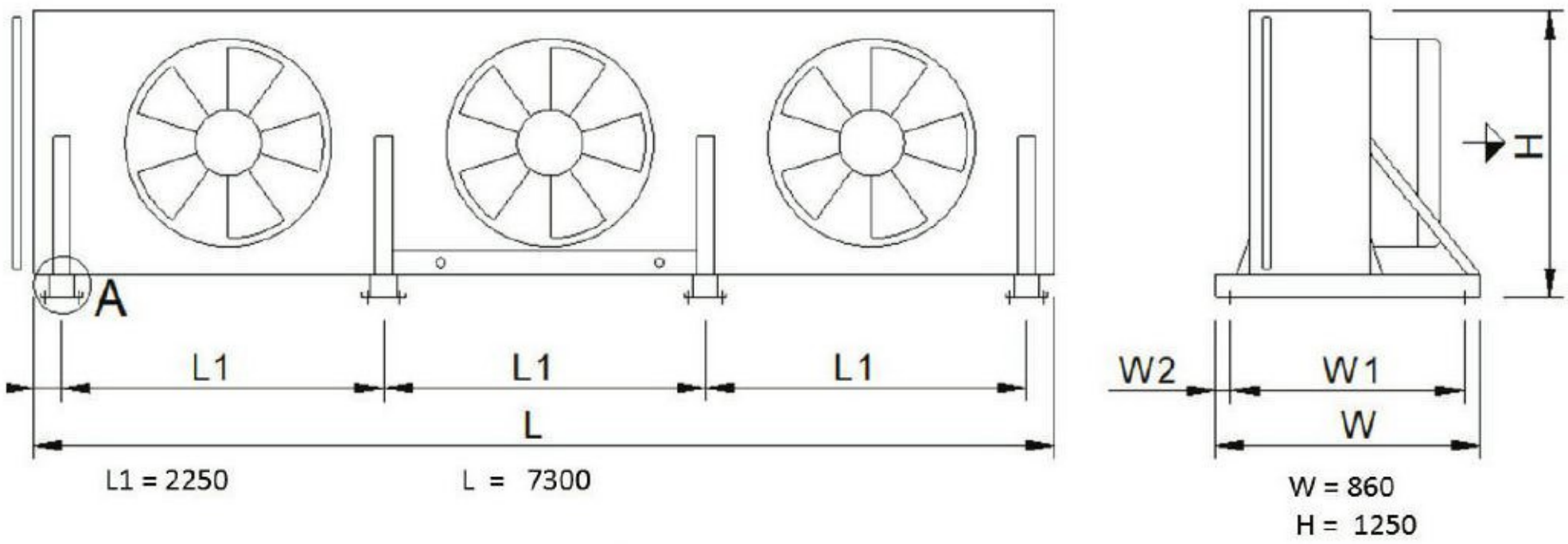
You will need to find a space for 1 x external pump station as well and those dimensions are in detailed in section three. If space is tight then an internal pump station can be considered as a last resort.

2.4 Option 4 – 2 x 80KW Low Noise Wall Mounted Dry Coolers

This is the final option and what should be looked for if you can't find a space large enough for options 1 to 3. Although very large and heavy we are likely to provide a frame for these to be mounted on in order the weight does not transfer to the walls. Look for up to three alternate positions around the store perimeter if you can.

Each potential location should be photographed, and dimensions added in order when Hauser and Lidl are reviewing the report it is clear to see the differences between them all.

BASETEC GFVV FD 080.20F/13E-38



Dry Cooler Noise level when running at 100%

- 38 dB(A) @ 10 Mtrs
- 43 dB(A) @ 5 Mtrs

The sound power levels (SWL) for each fan within the dry-cooler is provided below. Each dry-cooler will be provided with 3 No. fans each.

Sound Power Level (dBA) Nominal max fan speed of 470 (min-1)									
VT03067U.1/S3G910-CD61-39									
Frequency (Hz)	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Total (dBA)**
Sound Power (dba)	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC

Weights

80KW Low noise Dry Cooler weight	
Dry Weight (KG)	**Wet Weight (KG)**
960	1060

Distance from the Dry Cooler to the supporting wall

The manufacture's calculation is X = 0.7 x L x C / (2 x C + L) therefore 0.7 x 7.3 x 1.2 / (2 x 1.2 + 7.3) = 0.63Mtrs

Therefore, we have a 0.63 gap plus .86 which means the dry cooler will stick out from the wall 1.50 Mtrs and service will need at least 0.6 in front of it to be able to access the fans safely. So, we need at least 2.1Mtrs from the wall for the dry cooler and ideally another 1Mtr in front of that to allow for the air to be able to discharge.

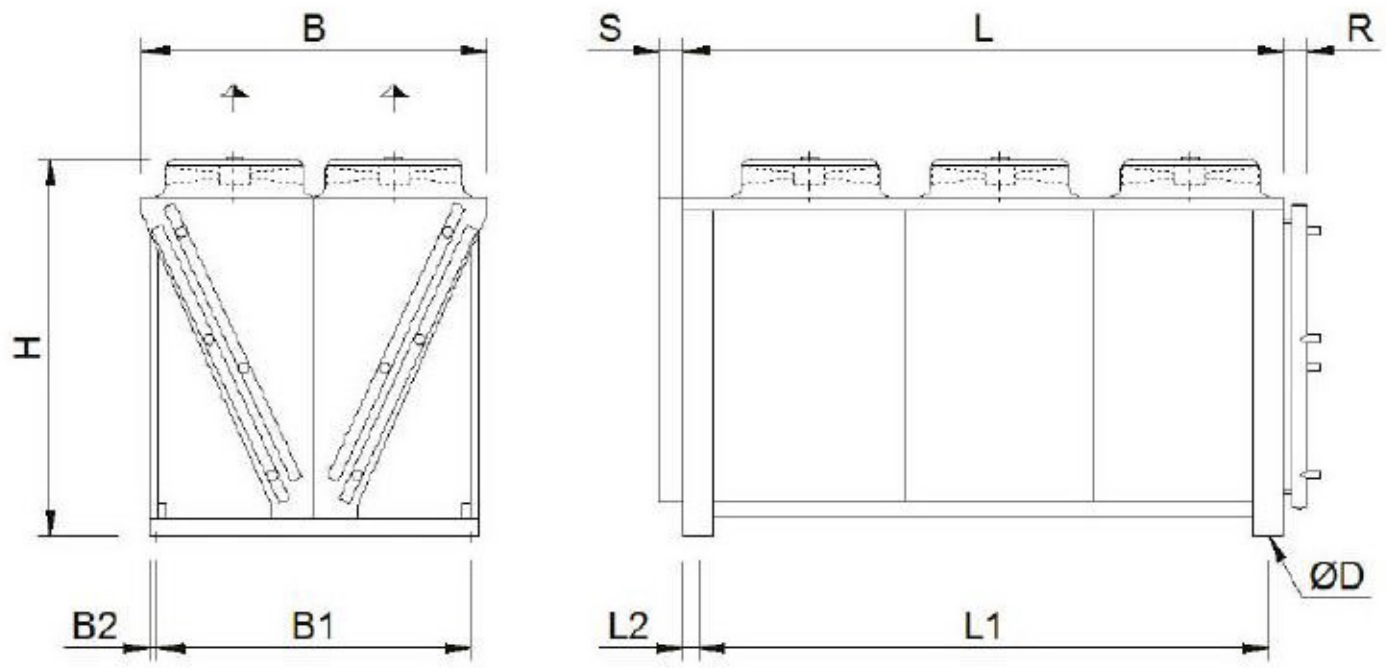
You will need to find a space for 2 x external pump stations as well and those dimensions are in detailed in section three. If space is tight then internal pump stations can be considered as a last resort.

2.5 Non-Standard Solution Option A

This dry cooler has been selected to match the generic noise level of the existing R404A external wall mounted condenser which is 43 dB(A) @ 10Mtrs

It has a more compact footprint and is taller than the standard V Block

L = 3899 mm
B = 2300 mm
H = 2532 mm
R = 245 mm
L1 = 3745 mm
L2 = 77 mm
B1 = 2093 mm
B2 = 50 mm
S = 20 mm
ØD = 17 mm



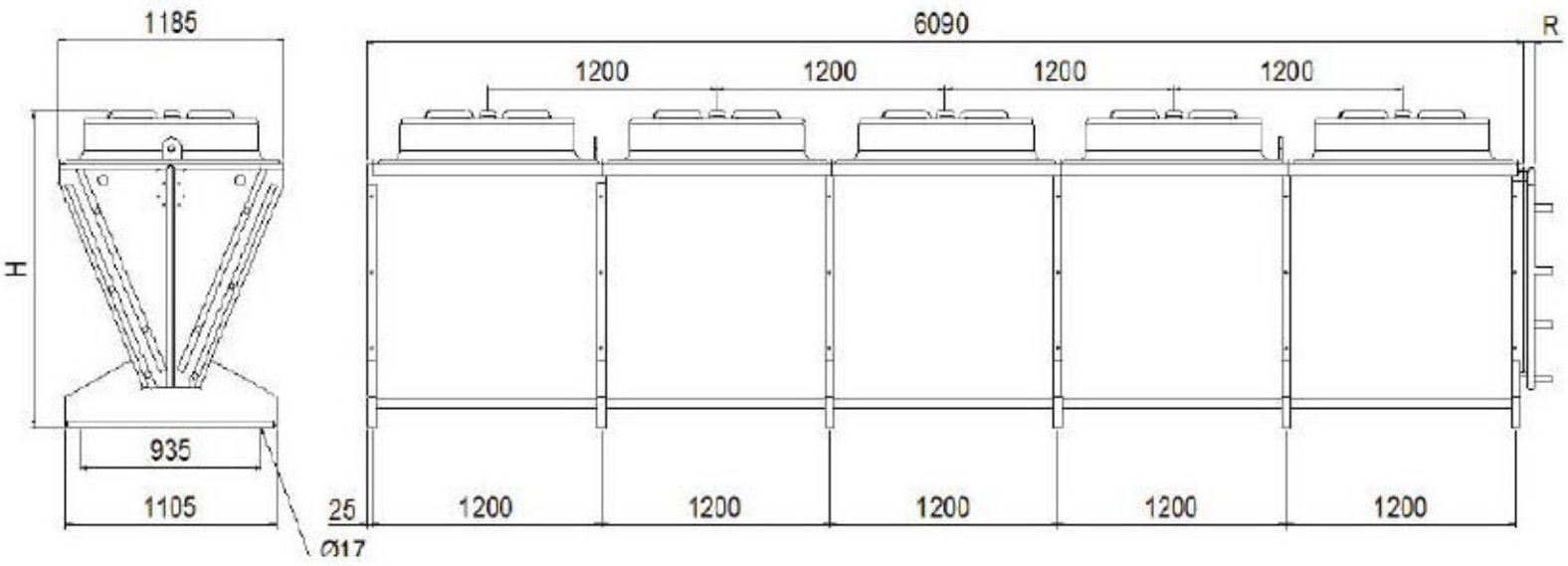
The noise level of this option is 43 dB(A) @ 10Mtrs

2.6 Non-Standard Solution Option B

This dry cooler has been selected to match the generic noise level of the existing R404A external wall mounted condenser which is 43 dB(A) @ 10Mtrs

It is more compact than the standard V Block

H = 1720 mm
R = 85 mm



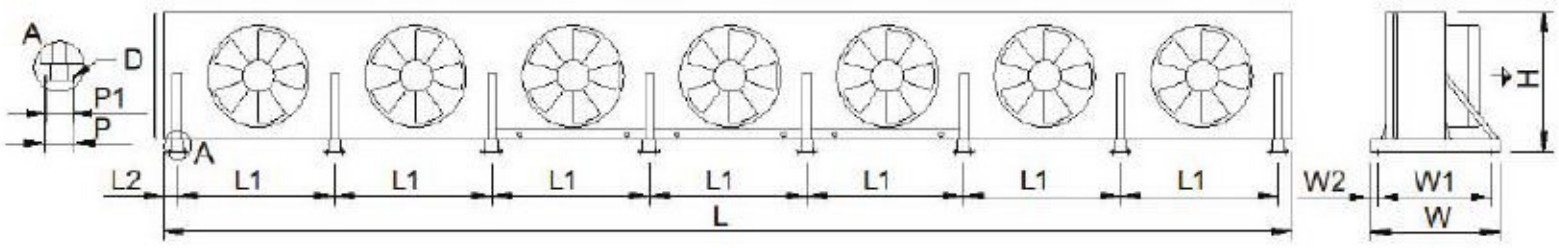
2.7 Non-Standard Solution Option C

This dry cooler has been selected to match the generic noise level of the existing R404A external wall mounted condenser which is 43 dB(A) @ 10Mtrs

It is slightly shorter than the standard wall mounted unit.

Abmessungen:(6)

L = 10040 mm
W = 1153 mm
H = 1241 mm
L1 = 1400 mm
L2 = 120 mm
P = 184 mm
P1 = 144 mm
W1 = 1016 mm
W2 = 69 mm
D = 17 mm



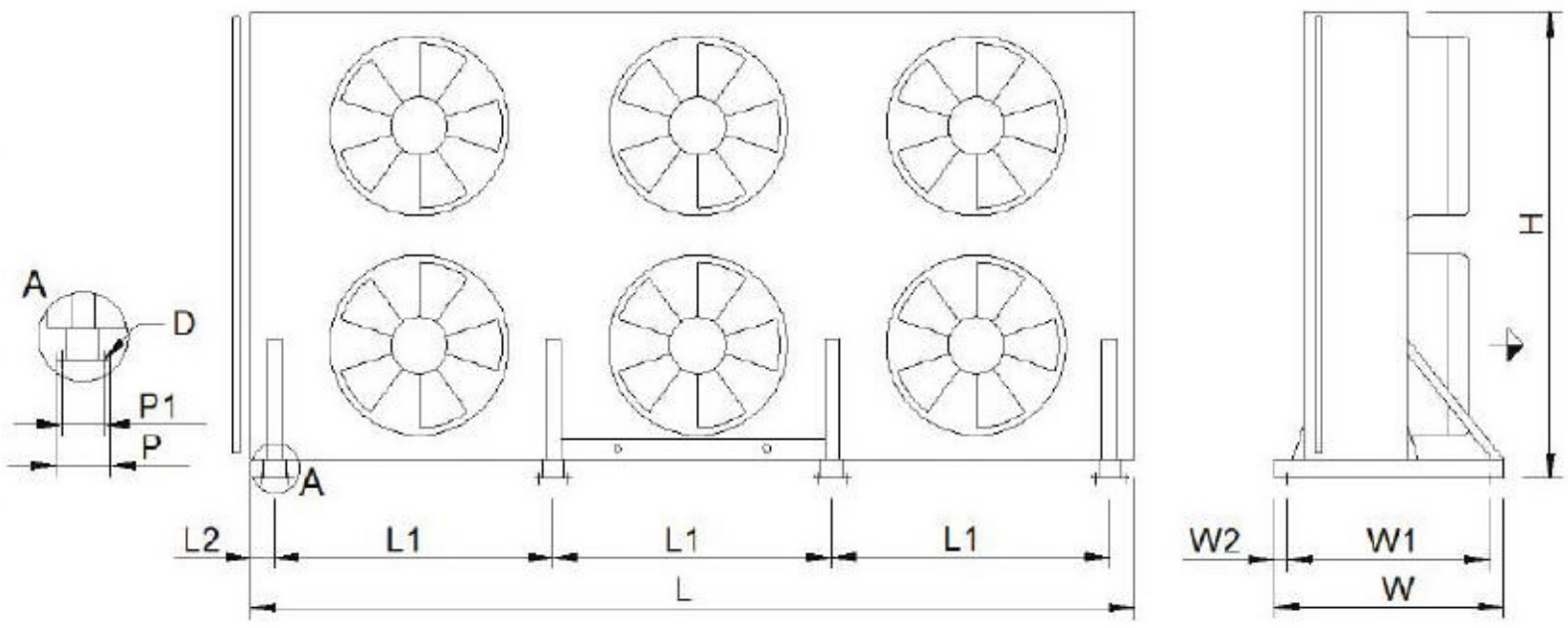
2.8 Non-Standard Solution Option D

This dry cooler has been selected to match the generic noise level of the existing R404A external wall mounted condenser which is 41 dB(A) @ 10Mtrs

This option has horizontal air discharge and has a smaller footprint than the rest.

Abmessungen:[6]

L	=	5640 mm
W	=	1153 mm
H	=	2341 mm
L1	=	1800 mm
L2	=	120 mm
P	=	184 mm
P1	=	144 mm
W1	=	1016 mm
W2	=	69 mm
D	=	17 mm



2.9 Section 2 appendix's

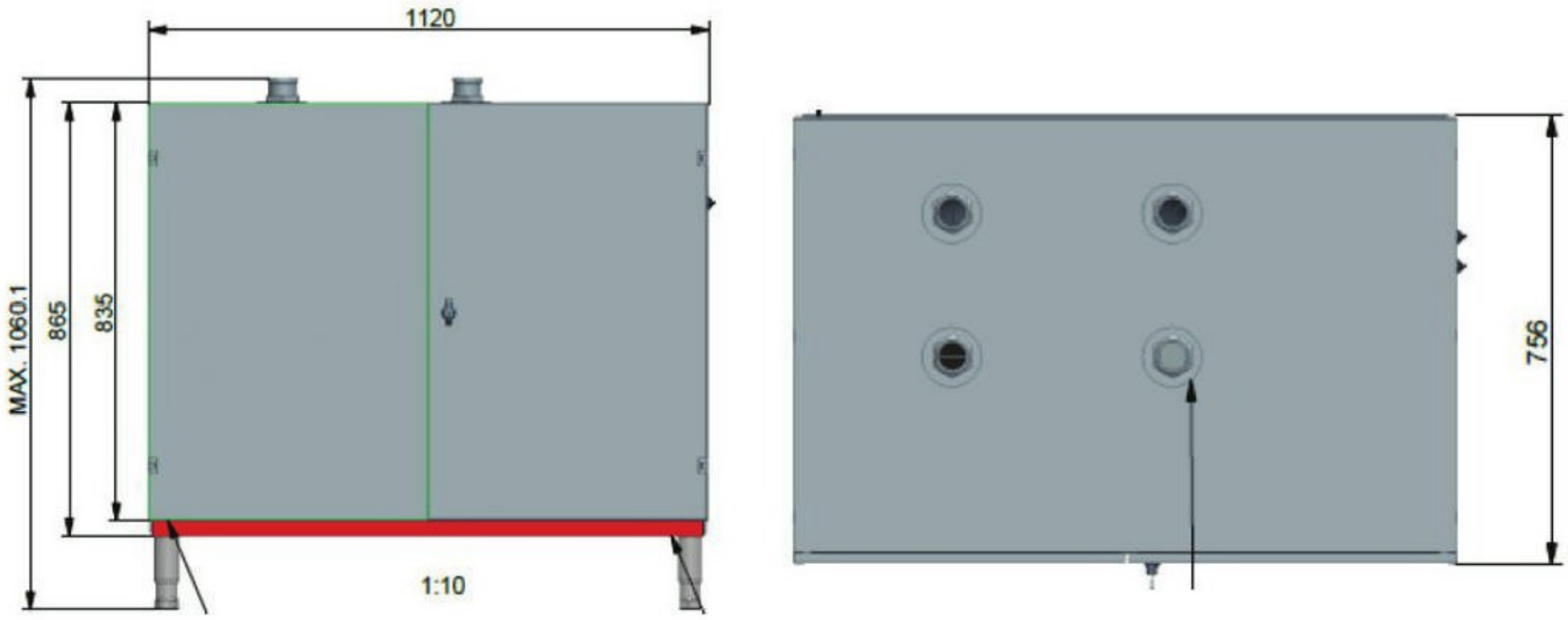
Appendix 2.1 152KW Floor Mounted Dry cooler technical data sheet
Appendix 2.2 80KW Floor Mounted Dry cooler technical data sheet
Appendix 2.3 152KW Wall Mounted Dry cooler technical data sheet (To follow)
Appendix 2.4 80KW Wall Mounted Dry cooler technical data sheet

3.0 INTERNAL / EXTERNAL PUMP STATIONS

3.1 External Pump Stations

Each dry cooler has a pump-station which is not directly fitted to the dry cooler in order to provide some flexibility when positioning the equipment. These can be positioned directly at the end of the dry cooler or against the wall where the pipes exit the building.

You need to ensure that there is enough space in front of it (1Mtr) for the doors to open and a service and maintenance engineer can access it.



Weight

External Pumpstation weight	
Dry Weight (KG)	**Wet Weight (KG)**
160KG	230KG

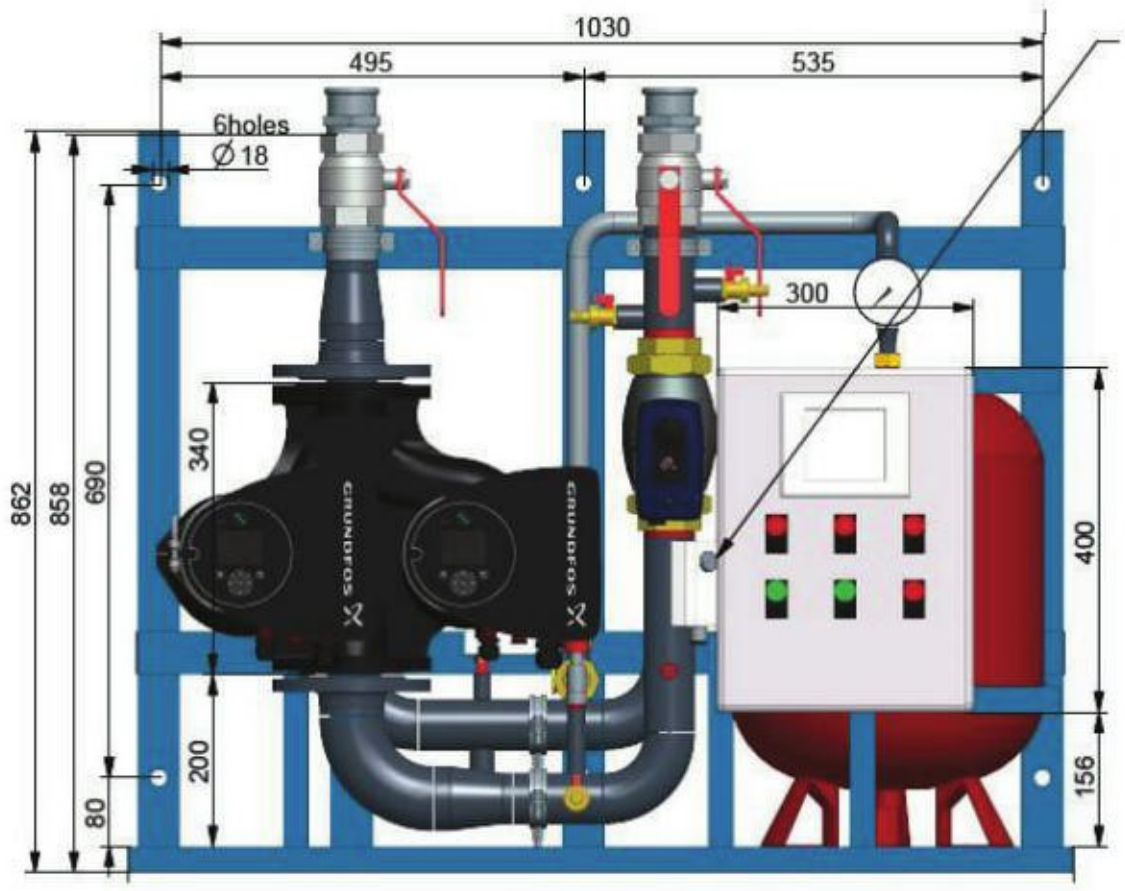
The sound pressure level for the pump-station is 43dB(A) at 1 metre.

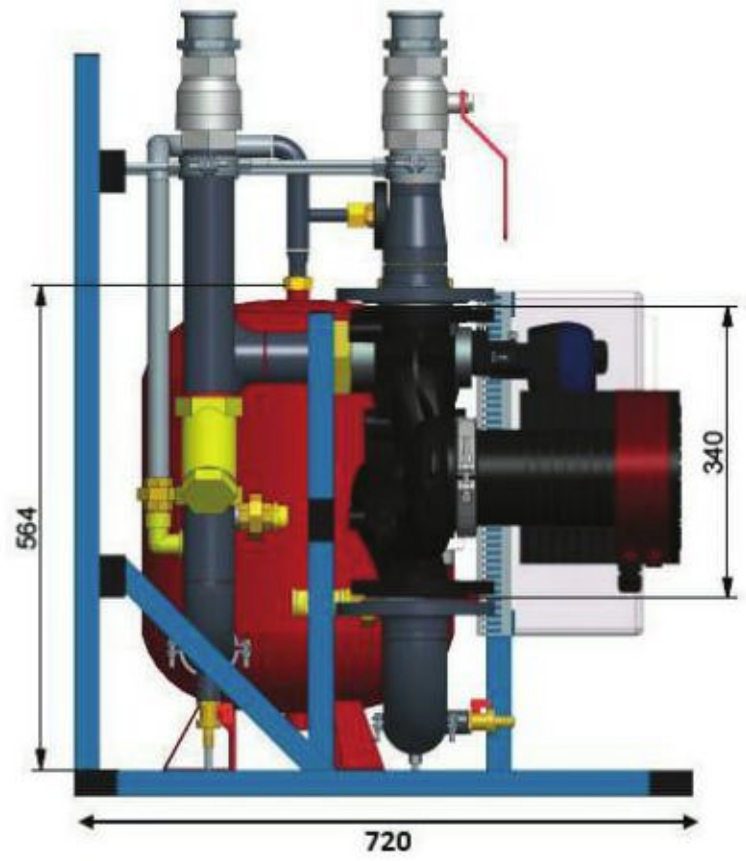
3.2 Internal Pump Stations

When using wall mounted dry coolers you can look to position the pumpstation internally in the warehouse mounted to the wall and ideally it would be back to back with the dry cooler in order to reduce pipe runs.

Dependent upon the warehouse ceiling height you should look to position the pumpstation as high as possible on the wall so that Lidl can store products under the pumpstation(s). The pumpstation frame has bolt holes through it so that is can be anchored to the wall.

So, look to see if 2100 under the pumpstation is achievable?





Weight

Internal Pumpstation weight	
Dry Weight (KG)	**Wet Weight (KG)**
160KG	230KG

The sound pressure level for the pump-station is 43dB(A) at 1 metre.

4.0 EXISTING CONDENSER NOISE LEVELS

These are the typical condensers supplied to the R404A systems dependent upon the size of the compressor pack and their associated noise levels.

You need to add to the survey the noise level of the existing condenser and can you this as a resource.

4.1 4 x ZB26 Pack – LUVE SAV7S 8521 2VENT

The noise level for this condenser is 41 Db(A) @ 10 Mtrs

4.2 4 x ZB30 Pack – LUVE SAV6N 6430 3VENT

The noise level for this condenser is 41 Db(A) @ 10 Mtrs

4.3 4 x ZB38 Pack – LUVE SAV8T 3120 2VENT

The noise level for this condenser is 44 Db(A) @ 10 Mtrs

4.4 4 x ZB45 Pack – LUVE EAV8T 8120 2VENT

The noise level for this condenser is 43 Db(A) @ 10 Mtrs

4.5 4 x ZB50 Pack – LUVE EAV8S 7121 2VENT

The noise level for this condenser is 43 Db(A) @ 10 Mtrs

4.6 Non-Standard Condenser noise levels

We will add non standard condenser noise levels in this section each time one is identified.

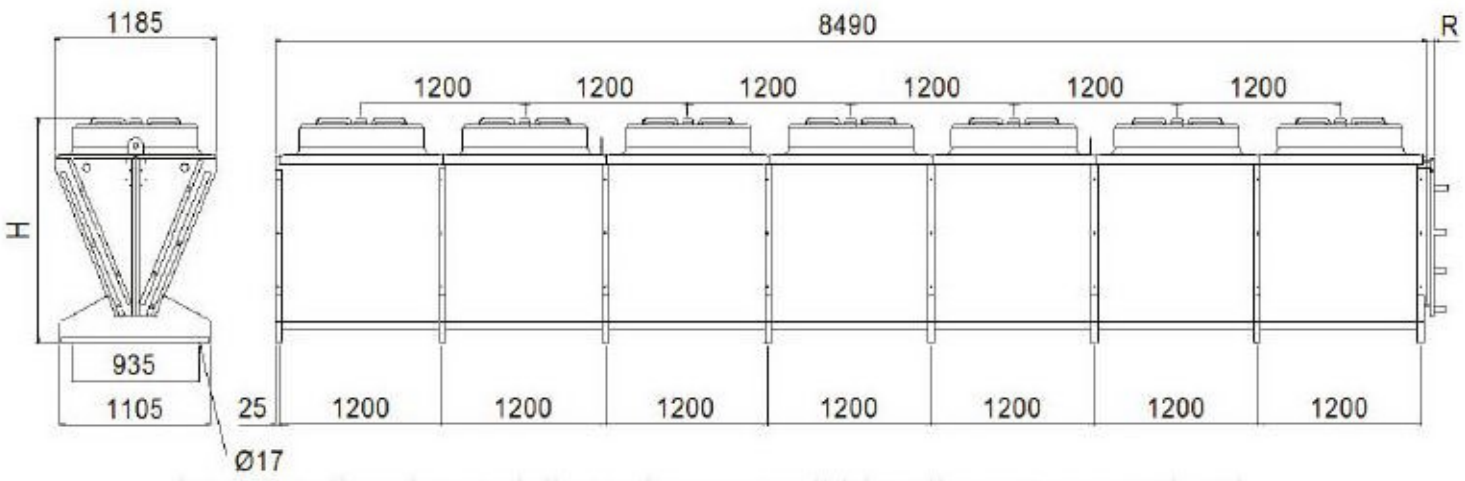
Hauser		Date:	2019-05-03
		Enquiry dated:	
		Project:	Drycooler 152 kW F
		Quotation-no.:	
		Item:	
		Reference:	

Drycooler S-GFW 090.4/7-U(1)-F4/04/2P For calculation only!

Capacity:	152.0 kW	**Medium:**	Propylene glycol 38 Vol. %(1)
Surface reserve:	2.9 %	Inlet:	54.0 °C
Air flow:	81901 m³/h	Outlet:	48.0 °C
Air inlet:	43.0 °C	Pressure drop:	0.11 bar
Altitude:	0 m	Volume flow:	23.34 m³/h
Fans (EC):	7 Piece(s) 1~230V 50-60Hz	Noise pressure level:	43 dB(A)(2)
Data per motor (nominal data):		at a distance of:	5.0 m
Speed:	450 min-1	Noise power level:	71 dB(A)
Capacity (el.):	0.26 kW	ErP:	Compliant(3)
Current:	1.15 A(4)		
Total el. power consumption: --		Energy efficiency class:	--
Casing:	Galv. Steel, RAL 7035	Tubes:	Copper(5)
Surface:	1574.4 m²	Fins:	Epoxy(5)
Tube volume:	190.7 l	Connections per unit:	
Fin spacing:	2.40 mm	Inlet:	2 x 54.0 * 2.00 mm
Dry weight:	1527 kg(6)	Outlet:	2 x 54.0 * 2.00 mm
Max. operating pressure:	10.0 bar	PED classification:	Art. 4, par. 3(7)
		Passes:	2

Dimensions:(6)

H = 1720 mm
R = 85 mm



Attention: Drawing and dimensions not valid for all accessory options!

(S = Special fan VT03067U.1 1~230V 5060Hz)

Accessories	Piece(s)
Epoxy coated fins	1
Vibration Dampers SMA1	16
Lapped flanges DN50/54.5 PN10 with brazing neck(8) like DIN EN 1092-1	4
Ball valve 1/2" for ventilation/drain	4
Special design	1
Extra accessories	
Lidl	1
1 Inlet, 1 outlet DN65 Mapress VA	1

Remark:

For the installation of two or more units side by side a sub-construction is compulsory to guarantee the repartition of air.

Important remarks / explanatory notes:

(1) Fluid group 2 according to pressure equipment directive 2014/68/EU

GPC.EU Professional, 2018.41-191a/2019-03-21, PL 1/2018

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basetec products + solutions

BHCU
xxxxx-xx-DS2A80X-65Px-xx

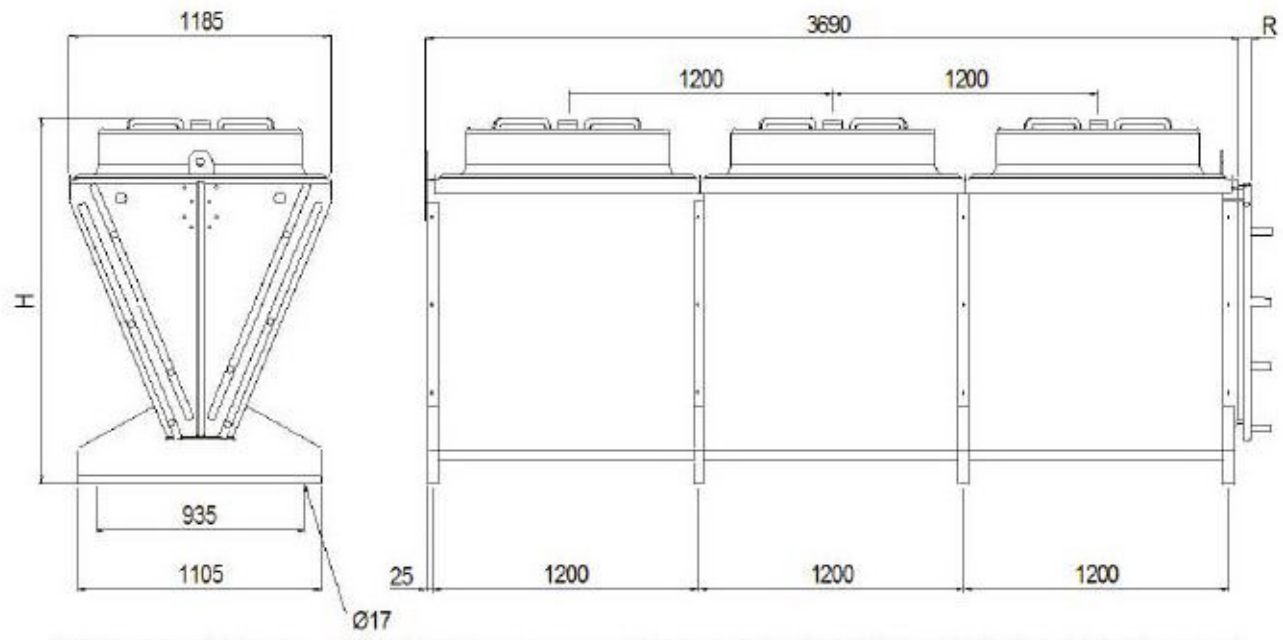
Datum: 2018-08-08
Anfrage vom:
Projekt: D0000399625
Angebots-Nr.:
Position:
Ansprechpartner:

Rückkühler GFW 090.4/3-S(S)-F4/03/6P

Leistung:	80.0 kW	**Medium:**	Propylenglykol 38 Vol. %(1)
Flächenreserve:	3.6 %	Eintritt:	54.0 °C
Luftvolumenstrom:	36904 m³/h	Austritt:	48.0 °C
Luft Eintritt:	43.0 °C	Druckverlust:	0.32 bar
Geodätische Höhe:	500 m	Volumenstrom:	12.28 m³/h
Ventilatoren (EC):	3 Stück 1~230V 50-60Hz	Schalldruckpegel:	42 dB(A)(2)
Daten je Motor (Nominaldaten):		im Abstand:	5.0 m
Drehzahl:	470 min-1	Schallleistung:	69 dB(A)
Leistung (el.):	0.29 kW	ErP:	Konform(3)
Stromaufnahme:	1.30 A(4)		
Gesamte el. Leistungsaufnahme: 0.66 kW		Energieeffizienzklasse:	A (2014)
Gehäuse:	Stahl verzinkt, RAL 7035	WT-Rohre:	Kupfer(5)
Austauschfläche:	804.3 m²	Lamellen:	Aluminium(5)
Rohrinhalt:	85.7 l	Anschlüsse je Gerät:	
Lam. Teilung:	2.00 mm	Eintritt:	DN65 Mapress
Leergewicht:	777 kg(6)	Austritt:	DN65 Mapress
Max. Betriebsdruck:	10.0 bar	DGRL-Einstufung:	Art. 4, Abs. 3(7)
		Pässe:	6

Abmessungen:(6)

H = 1720 mm
R = 85 mm



Achtung: Skizze und Abmessungen gelten nicht für alle möglichen Varianten!

Zubehör	Stück
EC-Sicherungskasten(8)	1
1 x (5209266) Einspeiseklemmen 3ph+N 16A	
3 x (5209041) Leitungsschutzschalter 1ph+N, 6A	
1 x (5209039) Leitungsschutzschalter 1ph+N, 6A	
1 x (5209005) GPD Güntner Power Distribution Gehäuse (Kunststoff) 200x300x132 [mm]	
Temperaturfühler mit Edelstahl-Tauchhülse	1
Montage und Verdrahtung	1
Gewindeanschlüsse R 1 1/2" Rotguß 4243g	4
EC-Ventilatoren mit Motormanagement GMM EC/04	1
Kugelhahn 1/2" für Entlüftung/Entleerung	4
Sonderzubehör	
MP für 4. Sicherung und größere Sicherungskasten JB2	1
Gewindeanschlüsse INNENGEWINDE R2" Rotguß 4243g	2
MP für Anschluss-Zusammenführung	1

Hauser

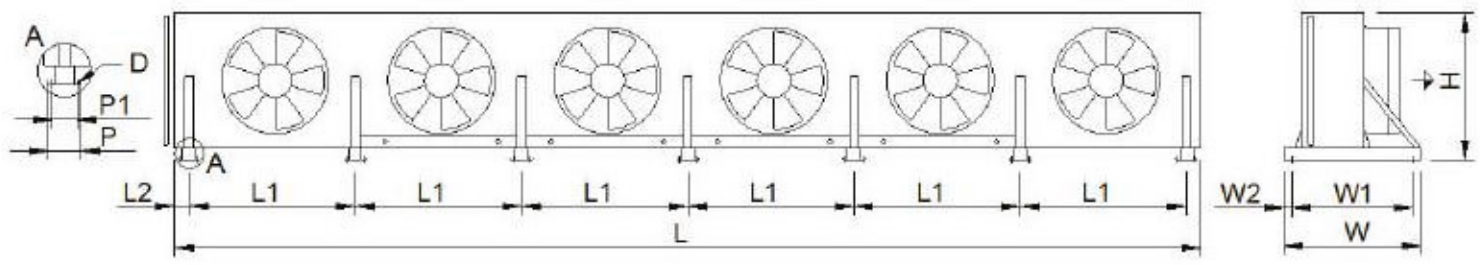
Date: 2019-05-09
Enquiry dated:
Project: Drycooler 152 kW E
Quotation-no.:
Item:
Reference:

Drycooler GFVV FD 090.2NF/16E-39

Capacity:	152.0 kW	**Medium:**	Propylene glycol 38 Vol. %(1)
Surface reserve:	-1.4 %	Inlet:	54.0 °C
Air flow:	57524 m³/h	Outlet:	48.0 °C
Air inlet:	42.0 °C	Pressure drop:	0.26 bar
Altitude:	0 m	Volume flow:	23.34 m³/h
Fans (EC):	6 Piece(s) 1~230V 50-60Hz	Noise pressure level:	43 dB(A)(2)
Data per motor (nominal data):		at a distance of:	5.0 m
Speed:	450 min-1	Noise power level:	71 dB(A)
Capacity (el.):	0.26 kW	ErP:	Compliant(3)
Current:	1.15 A(4)		
Total el. power consumption: 1.42 kW		Energy efficiency class:	B (2014)
Casing:	Galv. Steel, RAL 7035	Tubes:	Copper(5)
Surface:	1446.4 m²	Fins:	Epoxy(5)
Tube volume:	169.9 l	Connections per unit:	
Fin spacing:	2.40 mm	Inlet:	76.1 * 2.00 mm
Dry weight:	1471 kg(6)	Outlet:	76.1 * 2.00 mm
Max. operating pressure:	10.0 bar	PED classification:	Art. 4, par. 3(7)
		Passes:	2

Dimensions:(6)

L = 11040 mm
W = 1153 mm
H = 1241 mm
L1 = 1800 mm
L2 = 120 mm
P = 184 mm
P1 = 144 mm
W1 = 1016 mm
W2 = 69 mm
D = 17 mm



Attention: Drawing and dimensions not valid for all accessory options!

UI: 540.0850.2CD.02F.001E.E

Accessories	Piece(s)
Extra accessories	
Lidl	1
Vibration Dampers SMA1	14
Ball valve 1/2" for ventilation/drain	2
Lapped flanges DN65 PN10 with brazing neck(8) like DIN EN 1092-1	2
Temp. sensor with stainless steel pocket (5209566)	1
Mounting and wiring (Control cabinet, Fan, Temperature sensor)	1
GMM EC Controller + GPD(9)	1
1 x (5209266) Power Distribution Block 3ph+N 16A	
6 x (5209041) Circuit Breaker 1ph+N, 6A	
1 x (5209197) GMM EC-Controller IP54 8xM	
1 x (5209192) Interface Module for Modbus Type GMM EC/08	

BHCU
xxxxx-xx-VS2A80X-65Px-xx

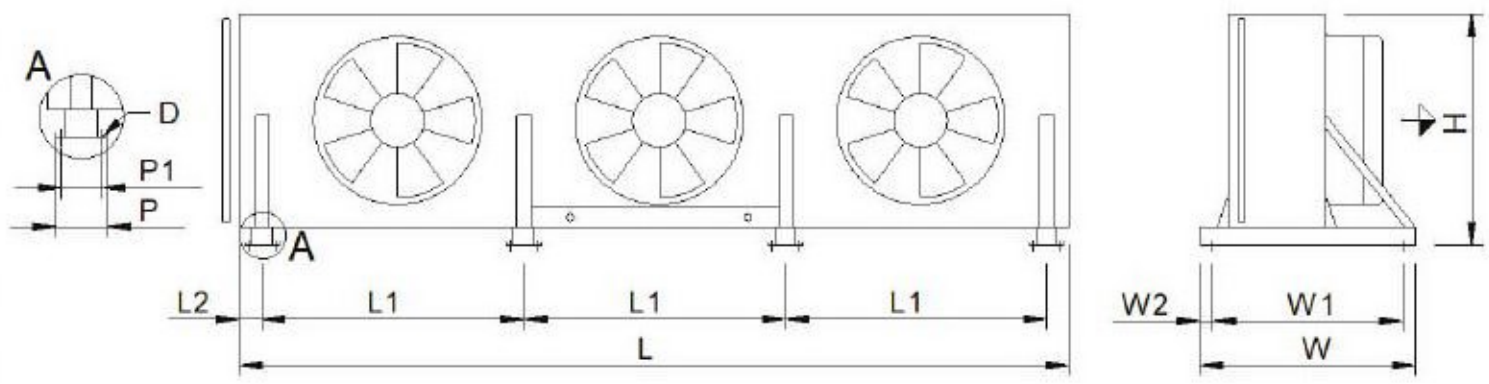
Datum: 2018-10-11
Anfrage vom:
Projekt: D0000408117
Angebots-Nr.:
Position:
Ansprechpartner:

Rückkühler GFVV FD 080.2OF/13E-38

Leistung:	80.0 kW	**Medium:**	Propylenglykol 38 Vol. %(1)
Flächenreserve:	6.6 %	Eintritt:	54.0 °C
Luftvolumenstrom:	33216 m³/h	Austritt:	48.0 °C
Luft Eintritt:	43.0 °C	Druckverlust:	0.36 bar
Geodätische Höhe:	500 m	Volumenstrom:	12.28 m³/h
Ventilatoren (EC):	3 Stück 1~230V 50-60Hz	Schalldruckpegel:	43 dB(A)(2)
Daten je Motor (Nominaldaten):		im Abstand:	5.0 m
Drehzahl:	565 min-1	Schallleistung:	71 dB(A)
Leistung (el.):	0.36 kW	ErP:	Konform(3)
Stromaufnahme:	1.55 A(4)		
Gesamte el. Leistungsaufnahme:	0.94 kW	Energieeffizienzklasse:	B (2014)
Gehäuse:	Stahl verzinkt, RAL 7035	WT-Rohre:	Kupfer(5)
Austauschfläche:	904.0 m²	Lamellen:	Aluminium(5)
Rohrinhalt:	104.8 l	Anschlüsse je Gerät:	
Lam. Teilung:	2.40 mm	Eintritt:	DN65 Mapress
Leergewicht:	837 kg(6)	Austritt:	DN65 Mapress
Max. Betriebsdruck:	10.0 bar	DGRL-Einstufung:	Art. 4, Abs. 3(7)
		Pässe:	4

Abmessungen:(6)

L =	6990 mm
W =	1153 mm
H =	1241 mm
L1 =	2250 mm
L2 =	120 mm
P =	184 mm
P1 =	144 mm
W1 =	1016 mm
W2 =	69 mm
D =	17 mm



Achtung: Skizze und Abmessungen gelten nicht für alle Zubehörsvarianten!

UI: 540.03UJ.2BT.1XF.000F.E

Zubehör	Stück
Sonderzubehör	
Gewindeanschlüsse INNENGEWINDE R2" Rotguß 4243g	2
MP für automatisches Entlüftungsventil	2
MP für 4. Sicherung und größere Sicherungskasten JB2	1
Konsole	4
Kugelhahn 1/2" für Entlüftung/Entleerung	2
Gewindeanschlüsse R 2" Rotguß 4243g	2
Temperaturfühler mit Edelstahl-Tauchhülse (5209566)	1
Montage und Verdrahtung (Schaltschrank, Ventilator, Temperaturfühler)	1
GMM EC Controller + GPD(8)	1
1 x (5209266) Einspeiseklemmen 3ph+N 16A	

*

Hauser

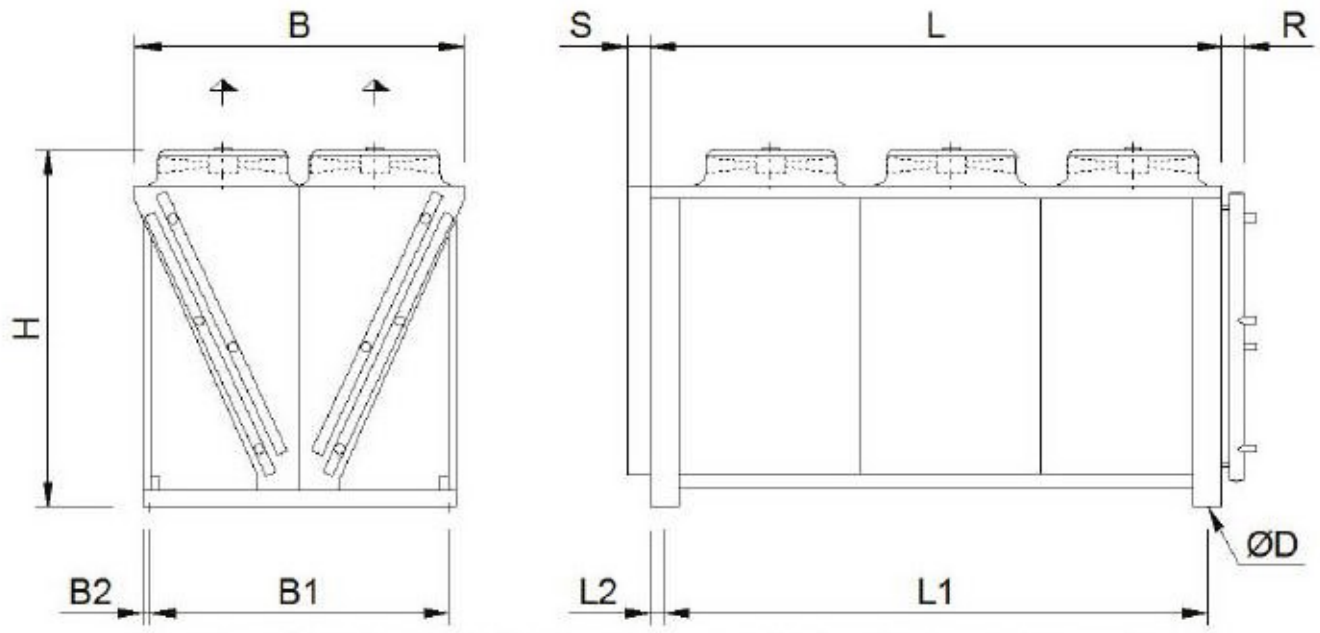
Date: 2019-04-26
Enquiry dated:
Project: Drycooler 152 kW A
Quotation-no.:
Item:
Reference:

Drycooler GFD 080.3A/2x3-LS1A/6P.E

Capacity:	152.0 kW	**Medium:**	Propylene glycol 38 Vol. %(1)
Surface reserve:	3.5 %	Inlet:	54.0 °C
Air flow:	78752 m³/h	Outlet:	48.0 °C
Air inlet:	43.0 °C	Pressure drop:	0.38 bar
Altitude:	0 m	Volume flow:	23.34 m³/h
Fans (EC):	6 Piece(s) 1~230V 50-60Hz	Noise pressure level:	43 dB(A)(2)
Data per motor (nominal data):		at a distance of:	10.0 m
Speed:	630 min-1	Noise power level:	75 dB(A)
Capacity (el.):	0.48 kW	ErP:	Compliant(3)
Current:	2.10 A(4)		
Total el. power consumption: 2.32 kW		Energy efficiency class:	B (2014)
Casing:	Galv. Steel, RAL 7035	Tubes:	Copper(5)
Surface:	1244.8 m²	Fins:	Epoxy(5)
Tube volume:	164.3 l	Connections per unit:	
Fin spacing:	2.40 mm	Inlet:	2 x 54.0 * 2.00 mm
Dry weight:	1520 kg(6)	Outlet:	2 x 54.0 * 2.00 mm
Max. operating pressure:	10.0 bar	PED classification:	Art. 4, par. 3(7)
		Passes:	6

Dimensions:(6)

L = 3899 mm
B = 2300 mm
H = 2532 mm
R = 245 mm
L1 = 3745 mm
L2 = 77 mm
B1 = 2093 mm
B2 = 50 mm
S = 20 mm
ØD = 17 mm



Attention: Drawing and dimensions not valid for all accessory options!

Accessories	Piece(s)
Epoxy coated fins	1
Vibration Dampers SMA2 (Fixing dimensions B1!)	4
EC fuse box system(8)	1
1 x (5209266) Power Distribution Block 3ph+N 16A	
6 x (5209041) Circuit Breaker 1ph+N, 6A	
1 x (5209192) Interface Module for Modbus Type GMM EC/08	
1 x (5209039) Circuit Breaker 1ph+N, 6A	
1 x (5209005) GPD Güntner Power Distribution Housing (Plastic) 200x300x132 [mm]	
Temp. sensor with stainless steel pocket	1
Mounting and wiring	1
Lapped flanges DN50/54.5 PN10 with brazing neck(9)	4
like DIN EN 1092-1	
EC fans with motor management GMM EC/08	1
Ball valve 1/2" for ventilation/drain	4
Extra accessories	
Lidl	1

*

Hauser

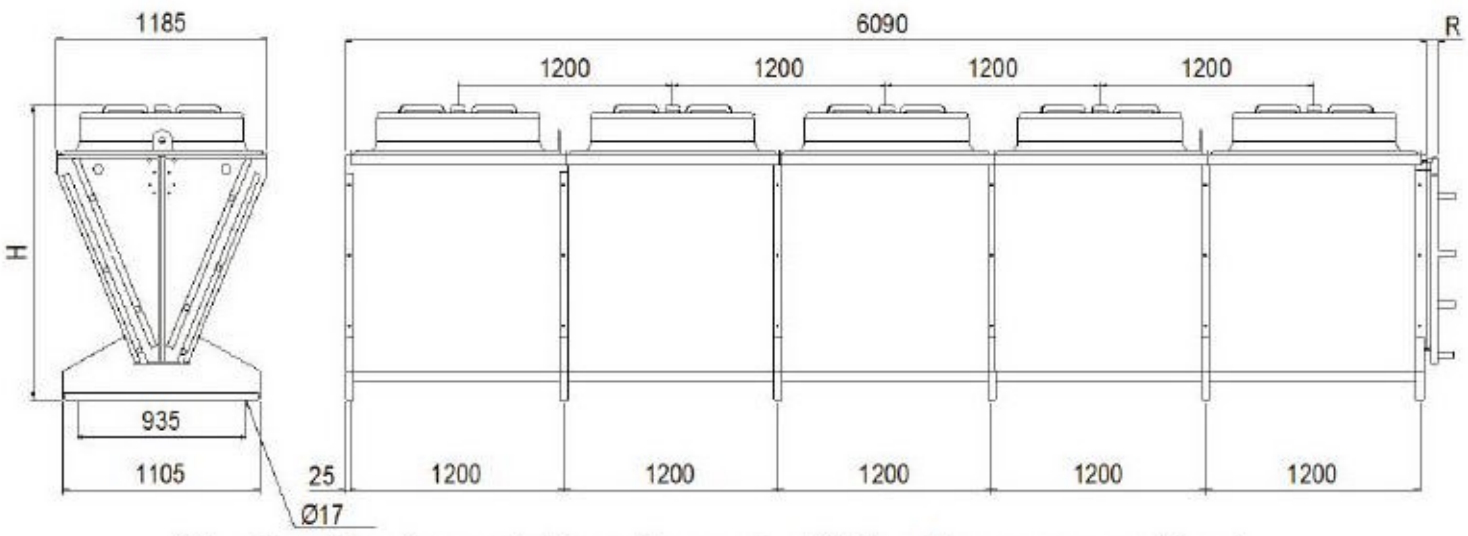
Date: 2019-04-26
Enquiry dated:
Project: Drycooler 152 kW B
Quotation-no.:
Item:
Reference:

Drycooler GFW 090.4/5-S(D)-F4/03/4P

Capacity:	152.0 kW	**Medium:**	Propylene glycol 38 Vol. %[1]
Surface reserve:	6.8 %	Inlet:	54.0 °C
Air flow:	73898 m³/h	Outlet:	48.0 °C
Air inlet:	43.0 °C	Pressure drop:	0.52 bar
Altitude:	0 m	Volume flow:	23.34 m³/h
Fans (EC):	5 Piece(s) 1~230V 50-60Hz	Noise pressure level:	43 dB(A)[2]
Data per motor (nominal data):		at a distance of:	10.0 m
Speed:	560 min-1	Noise power level:	75 dB(A)
Capacity (el.):	0.47 kW	ErP:	Compliant[3]
Current:	2.10 A[4]		
Total el. power consumption: 1.84 kW		Energy efficiency class:	B (2014)
Casing:	Galv. Steel, RAL 7035	Tubes:	Copper[5]
Surface:	1340.5 m²	Fins:	Epoxy[5]
Tube volume:	141.1 l	Connections per unit:	
Fin spacing:	2.00 mm	Inlet:	2 x 54.0 * 2.00 mm
Dry weight:	1253 kg[6]	Outlet:	2 x 54.0 * 2.00 mm
Max. operating pressure:	10.0 bar	PED classification:	Art. 4, par. 3[7]
		Passes:	4

Dimensions:[6]

H = 1720 mm
R = 85 mm



Attention: Drawing and dimensions not valid for all accessory options!

Accessories	Piece(s)
Epoxy coated fins	1
Vibration Dampers SMA1	12
EC fuse box system[8]	1
1 x (5209266) Power Distribution Block 3ph+N 16A	
5 x (5209041) Circuit Breaker 1ph+N, 6A	
1 x (5209192) Interface Module for Modbus Type GMM EC/08	
1 x (5209039) Circuit Breaker 1ph+N, 6A	
1 x (5209005) GPD Güntner Power Distribution Housing (Plastic) 200x300x132 [mm]	
Temp. sensor with stainless steel pocket	1
Mounting and wiring	1
Lapped flanges DN50/54.5 PN10 with brazing neck[9] like DIN EN 1092-1	4
EC fans with motor management GMM EC/08	1
Ball valve 1/2" for ventilation/drain	4
Extra accessories	

*

Hauser

Datum: 2019-04-17
Anfrage vom:
Projekt: Drycooler 152 kW C
Angebots-Nr.:
Position:
Ansprechpartner:

Rückkühler GFVV FD 080.2MF/17E-43

Leistung:	152.0 kW	**Medium:**	Propylenglykol 38 Vol. %[1]
Flächenreserve:	-1.7 %	Eintritt:	54.0 °C
Luftvolumenstrom:	64675 m³/h	Austritt:	48.0 °C
Luft Eintritt:	43.0 °C	Druckverlust:	0.31 bar
Geodätische Höhe:	0 m	Volumenstrom:	23.34 m³/h

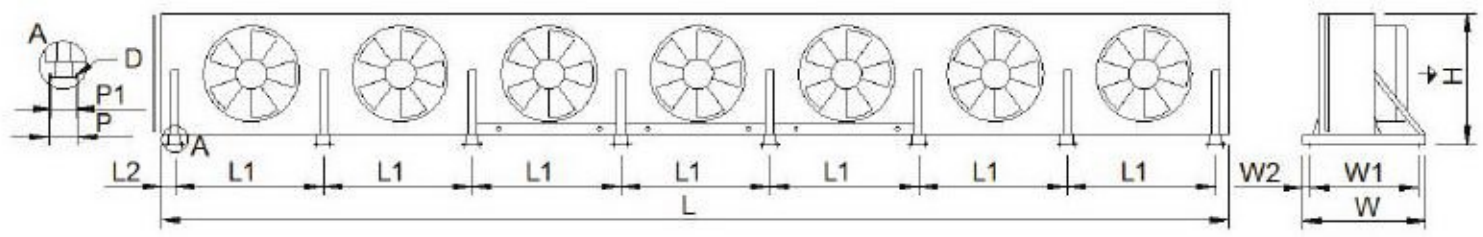
Ventilatoren (EC):	7 Stück 1~230V 50-60Hz	Schalldruckpegel:	43 dB(A)[2]
Daten je Motor (Nominaldaten):		im Abstand:	10.0 m
Drehzahl:	565 min-1	Schallleistung:	75 dB(A)
Leistung (el.):	0.36 kW	ErP:	Konform[3]
Stromaufnahme:	1.55 A[4]		

Gesamte el. Leistungsaufnahme: 2.45 kW		Energieeffizienzklasse:	C (2014)

Gehäuse:	Stahl verzinkt, RAL 7035	WT-Rohre:	Kupfer[5]
Austauschfläche:	1312.5 m²	Lamellen:	Epoxy[5]
Rohrinhalt:	154.2 l	Anschlüsse je Gerät:	
Lam. Teilung:	2.40 mm	Eintritt:	76.1 * 2.00 mm
Leergewicht:	1398 kg[6]	Austritt:	76.1 * 2.00 mm
Max. Betriebsdruck:	10.0 bar	DGRL-Einstufung:	Art. 4, Abs. 3[7]
		Pässe:	2

Abmessungen:[6]

L =	10040 mm
W =	1153 mm
H =	1241 mm
L1 =	1400 mm
L2 =	120 mm
P =	184 mm
P1 =	144 mm
W1 =	1016 mm
W2 =	69 mm
D =	17 mm



Achtung: Skizze und Abmessungen gelten nicht für alle möglichen Varianten!

UI: 540.03SY.2BT.02F.001E.E

Zubehör	Stück
Sonderzubehör	
Lidl	1
Schwingungsdämpfer SMA1	16
Kugelhahn 1/2" für Entlüftung/Entleerung	2
Losflansche DN65 PN10 mit Lötbördel[8]	2
ähnlich DIN EN 1092-1	
Temperaturfühler mit Edelstahl-Tauchhülse (5209566)	1
Montage und Verdrahtung (Schaltschrank, Ventilator, Temperaturfühler)	1
GMM EC Controller + GPD[9]	1
1 x (5209266) Einspeiseklemmen 3ph+N 16A	
7 x (5209041) Leitungsschutzschalter 1ph+N, 6A	
1 x (5209197) GMM EC-Controller IP54 8xM	
1 x (5209192) Interface Modul für Modbus Type GMM EC/08	
1 x (5209039) Leitungsschutzschalter 1ph+N, 6A	

*

Hauser

Datum: 2019-04-17
Anfrage vom:
Projekt: Drycooler 152 kW D
Angebots-Nr.:
Position:
Ansprechpartner:

Rückkühler GFVV FD 080.2NF/23E-41

Leistung:	152.0 kW	**Medium:**	Propylenglykol 38 Vol. %[1]
Flächenreserve:	5.6 %	Eintritt:	54.0 °C
Luftvolumenstrom:	61917 m³/h	Austritt:	48.0 °C
Luft Eintritt:	43.0 °C	Druckverlust:	0.35 bar
Geodätische Höhe:	0 m	Volumenstrom:	23.34 m³/h

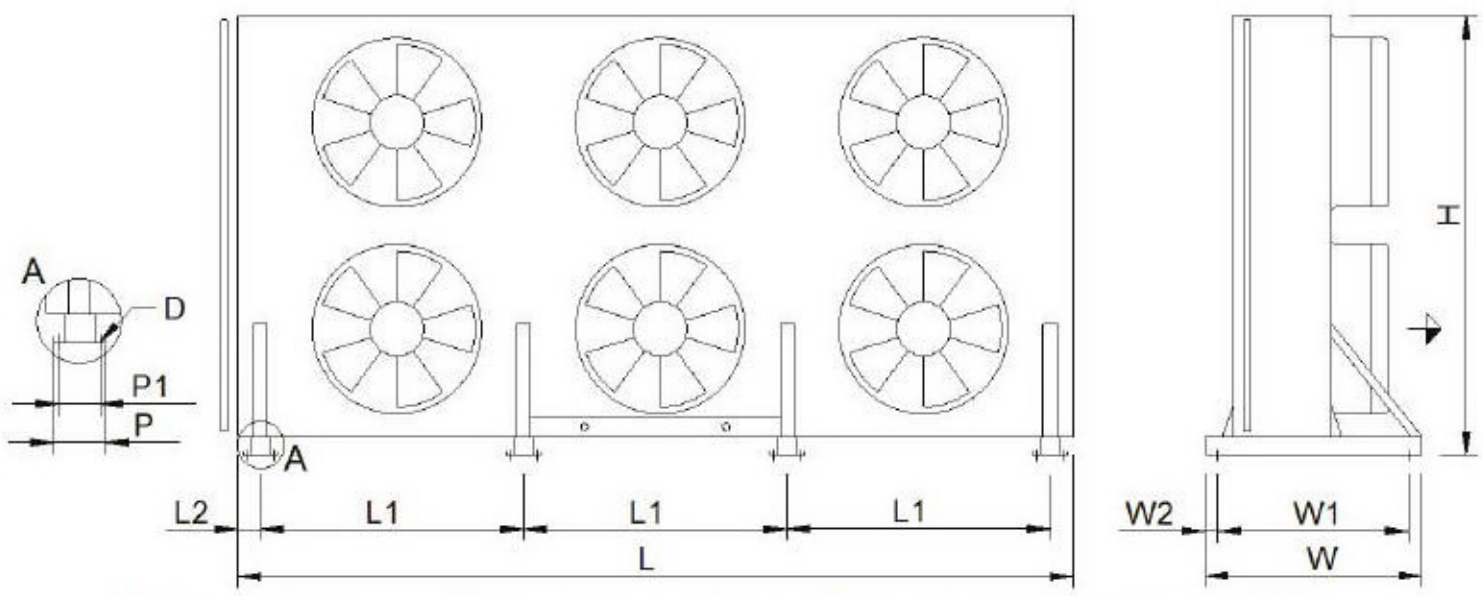
Ventilatoren (EC):	6 Stück 1~230V 50-60Hz	Schalldruckpegel:	41 dB(A)[2]
Daten je Motor (Nominaldaten):		im Abstand:	10.0 m
Drehzahl:	565 min-1	Schallleistung:	74 dB(A)
Leistung (el.):	0.36 kW	ErP:	Konform[3]
Stromaufnahme:	1.55 A[4]		

Gesamte el. Leistungsaufnahme: 1.98 kW		Energieeffizienzklasse:	B (2014)

Gehäuse:	Stahl verzinkt, RAL 7035	WT-Rohre:	Kupfer[5]
Austauschfläche:	1446.4 m²	Lamellen:	Epoxy[5]
Rohrinhalt:	178.3 l	Anschlüsse je Gerät:	
Lam. Teilung:	2.40 mm	Eintritt:	76.1 * 2.00 mm
Leergewicht:	1246 kg[6]	Austritt:	76.1 * 2.00 mm
Max. Betriebsdruck:	10.0 bar	DGRL-Einstufung:	Art. 4, Abs. 3[7]
		Pässe:	4

Abmessungen:[6]

L = 5640 mm
W = 1153 mm
H = 2341 mm
L1 = 1800 mm
L2 = 120 mm
P = 184 mm
P1 = 144 mm
W1 = 1016 mm
W2 = 69 mm
D = 17 mm



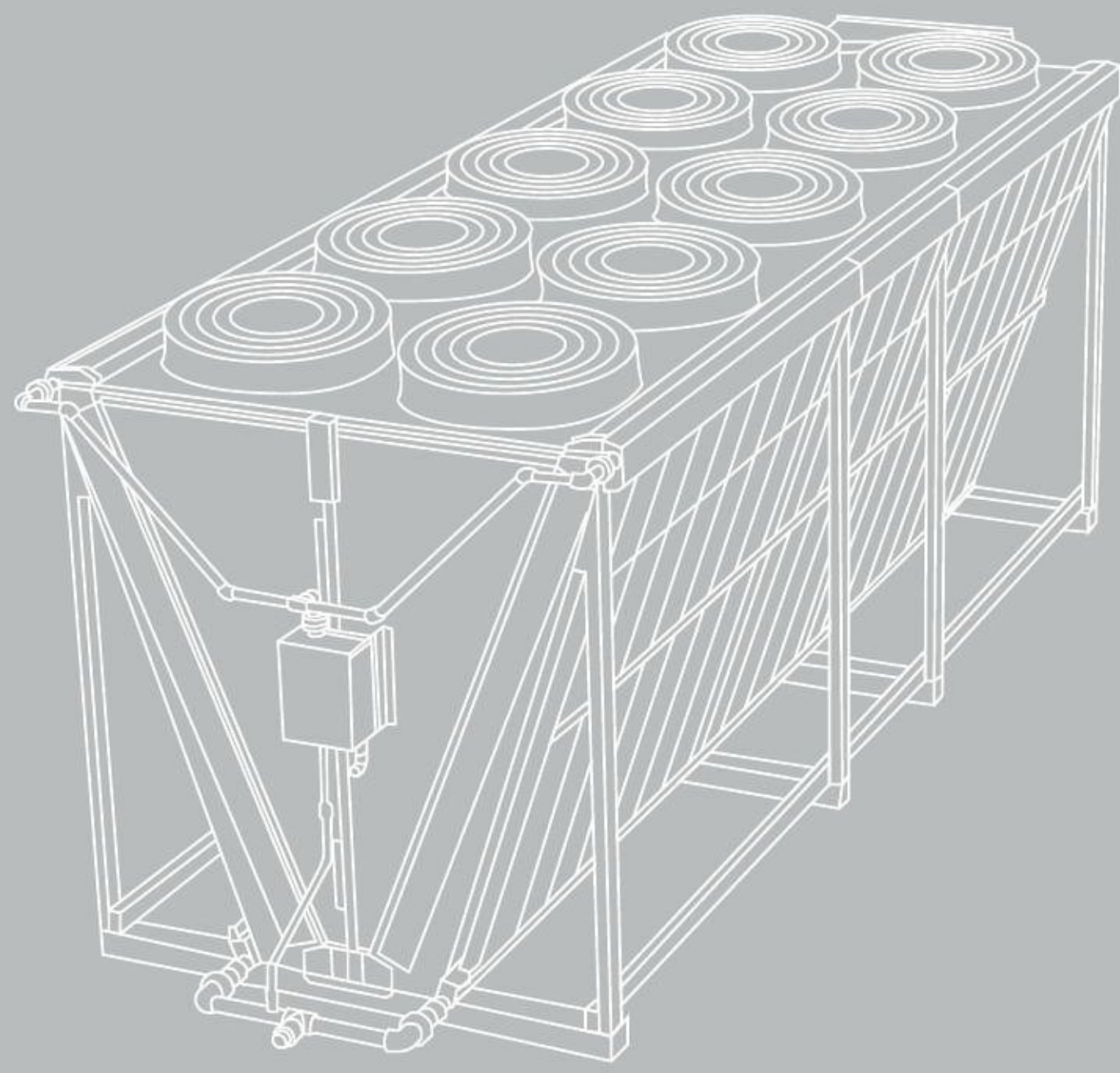
Achtung: Skizze und Abmessungen gelten nicht für alle möglichen Varianten!

UI: 540.0RZM.2BT.1ZF.001E.E

Zubehör	Stück
Sonderzubehör	
Lidl	1
Schwingungsdämpfer SMA1	8
Kugelhahn 1/2" für Entlüftung/Entleerung	2
Losflansche DN65 PN10 mit Lötbördel[8] ähnlich DIN EN 1092-1	2
Temperaturfühler mit Edelstahl-Tauchhülse (5209566)	1
Montage und Verdrahtung (Schaltschrank, Ventilator, Temperaturfühler)	1
GMM EC Controller + GPD[9]	1
1 x (5209266) Einspeiseklemmen 3ph+N 16A	
6 x (5209041) Leitungsschutzschalter 1ph+N, 6A	
1 x (5209197) GMM EC-Controller IP54 8xM	
1 x (5209192) Interface Modul für Modbus Type GMM EC/08	

UNIT LAYOUT MANUAL

Adiabatic and Dry V-Shape Coolers and Condensers



GÜNTNER

Unit Layout Manual

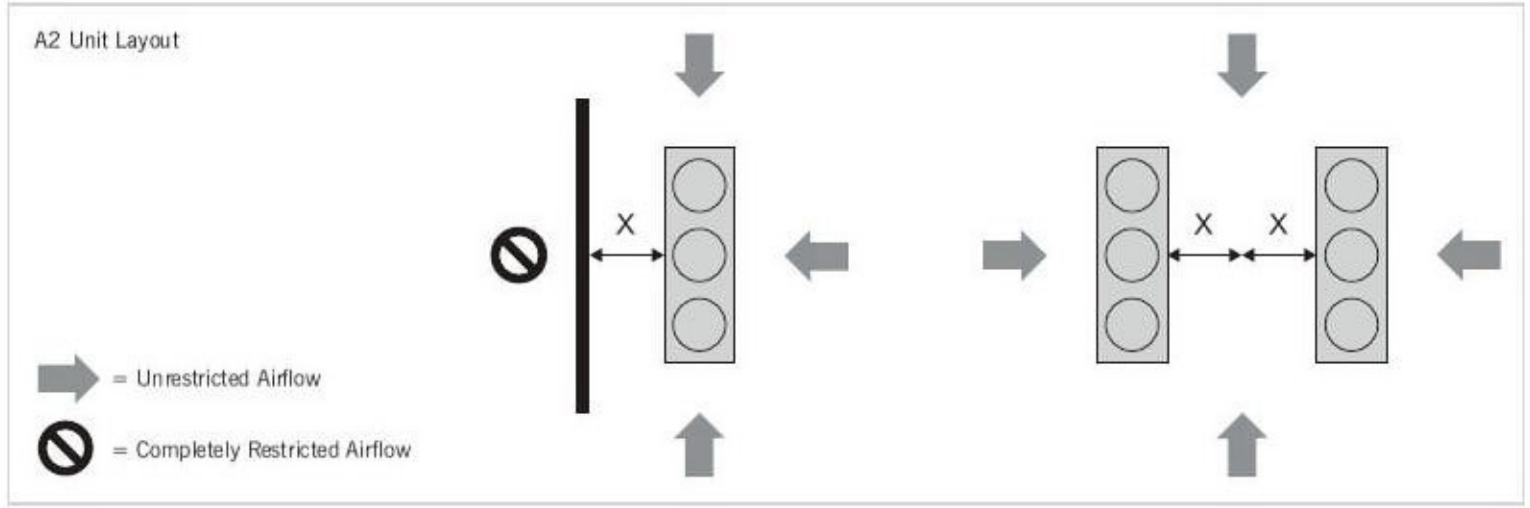
Adiabatic and Dry V-Shape Coolers and Condensers

Distance and Frame Height Considerations and Disclaimers:

- The walls outlined in the below cases assume complete airflow restriction, with the unit fans below the top of the walls
- It is recommended to elevate units so that the fans are above the top of the walls for best performance, which will allow the airflow to only be partially restricted. If you are looking for required distances in cases of partial airflow restrictions, please contact your Güntner Sales Representative for assistance
- If several units are placed side by side the use of cover plates between the units have to be considered. (Cover Plates: plates covering the space between the units to avoid air short cut.)
- For best performance, arrange air intake sides perpendicular to prevalent wind direction
- Nearby foliage can accelerate airside fouling, so it is recommended to avoid plant life as much as possible
- If the unit cannot be placed within the clearances and guidelines in the tables, the performance may be reduced
- If the desired layout case is not depicted or there is a deviation, contact your Güntner Sales Representative for assistance

In order to ensure optimized thermal performance of the cooler or condenser, unrestricted airflow entering the heat exchanger surface area is crucial. The tables below outline the elevation required between the base of the unit supplied and grade.

A2 Unit Layout

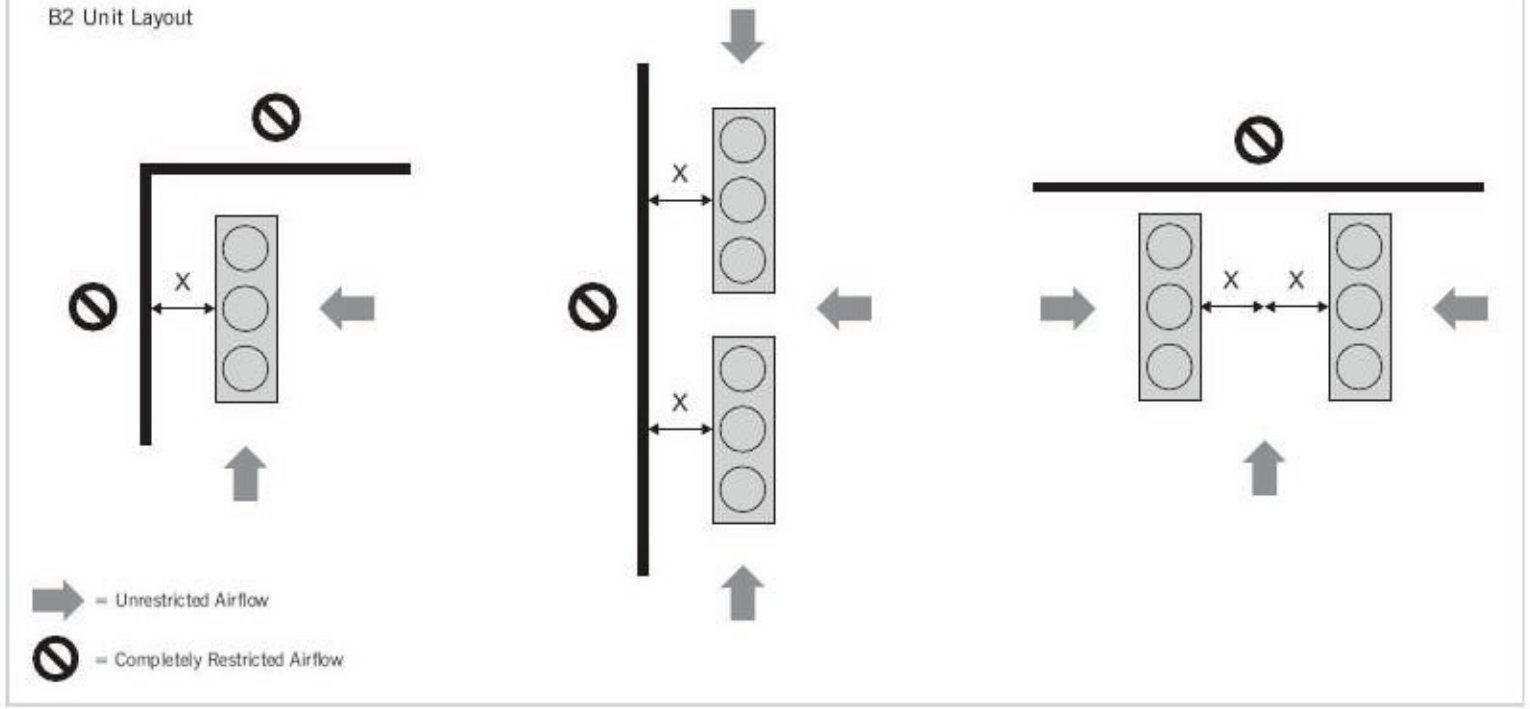


A2 Unit Size Tables

A2 UNIT SIZE - G_W															
1X1		1X2		1X3		1X4		1X5		1X6		1X7		1X8	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
0.73	0	0.73	0	1.16	0	1.6	0	2.03	0	2.46	0	2.89	0	3.32	0
0.56	0.07	0.56	0.07	0.88	0.09	1.19	0.1	1.5	0.1	1.81	0.11	2.12	0.11	2.42	0.11
0.41	0.15	0.41	0.15	0.63	0.17	0.85	0.19	1.07	0.21	1.28	0.22	1.49	0.22	1.69	0.23
0.27	0.22	0.27	0.22	0.43	0.26	0.57	0.29	0.7	0.31	0.83	0.32	0.96	0.34	1.09	0.34
0.16	0.29	0.16	0.29	0.24	0.35	0.32	0.39	0.39	0.41	0.45	0.43	0.52	0.45	0.58	0.46
0.05	0.37	0.05	0.37	0.08	0.44	0.1	0.48	0.12	0.52	0.13	0.54	0.14	0.56	0.14	0.57

A2 UNIT SIZE - G_D C+D															
2X2		2X3		2X4		2X5		2X6		2X7		2X8		2X9	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
0.48	0	0.83	0	1.19	0	1.55	0	1.91	0	2.26	0	2.62	0	2.98	0
0.37	0.1	0.65	0.12	0.93	0.14	1.21	0.16	1.48	0.17	1.75	0.18	2.02	0.19	2.28	0.19
0.27	0.2	0.49	0.25	0.7	0.28	0.91	0.31	1.1	0.34	1.3	0.35	1.49	0.37	1.68	0.39
0.17	0.29	0.34	0.37	0.49	0.42	0.63	0.47	0.77	0.5	0.9	0.53	1.03	0.56	1.15	0.58
0.08	0.39	0.2	0.49	0.3	0.56	0.39	0.62	0.47	0.67	0.55	0.71	0.61	0.74	0.68	0.77
0	0.49	0.07	0.61	0.13	0.7	0.17	0.78	0.2	0.84	0.23	0.89	0.25	0.93	0.27	0.97

B2 Unit Layout

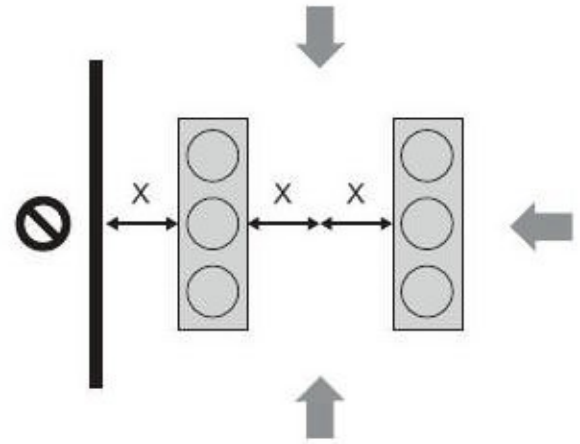


B2 Unit Size Tables

B2 UNIT SIZE - G_W															
1X1		1X2		1X3		1X4		1X5		1X6		1X7		1X8	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
1.6	0	1.6	0	2.46	0	3.32	0	4.19	0	5.05	0	5.92	0	6.78	0
1.19	0.1	1.19	0.1	1.81	0.11	2.42	0.11	3.04	0.12	3.65	0.12	4.25	0.13	4.86	0.13
0.85	0.19	0.85	0.19	1.28	0.22	1.69	0.23	2.11	0.24	2.52	0.25	2.92	0.25	3.33	0.26
0.57	0.29	0.57	0.29	0.83	0.32	1.09	0.34	1.34	0.36	1.59	0.37	1.84	0.38	2.08	0.38
0.32	0.39	0.32	0.39	0.45	0.43	0.58	0.46	0.7	0.48	0.82	0.49	0.93	0.5	1.05	0.51
0.1	0.48	0.1	0.48	0.13	0.54	0.14	0.57	0.15	0.6	0.16	0.61	0.17	0.63	0.17	0.64

B2 UNIT SIZE - G_D C+D															
2X2		2X3		2X4		2X5		2X6		2X7		2X8		2X9	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
1.19	0	1.91	0	2.62	0	3.33	0	4.05	0	4.76	0	5.48	0	6.19	0
0.93	0.14	1.48	0.17	2.02	0.19	2.55	0.2	3.07	0.21	3.6	0.22	4.12	0.22	4.64	0.23
0.7	0.28	1.1	0.34	1.49	0.37	1.87	0.4	2.24	0.42	2.6	0.44	2.97	0.45	3.32	0.46
0.49	0.42	0.77	0.5	1.03	0.56	1.27	0.6	1.51	0.63	1.74	0.65	1.97	0.67	2.19	0.69
0.3	0.56	0.47	0.67	0.61	0.74	0.75	0.8	0.87	0.84	0.99	0.87	1.11	0.9	1.22	0.92
0.13	0.7	0.2	0.84	0.25	0.93	0.28	1	0.31	1.05	0.33	1.09	0.35	1.12	0.36	1.15

C2 Unit Layout



= Unrestricted Airflow

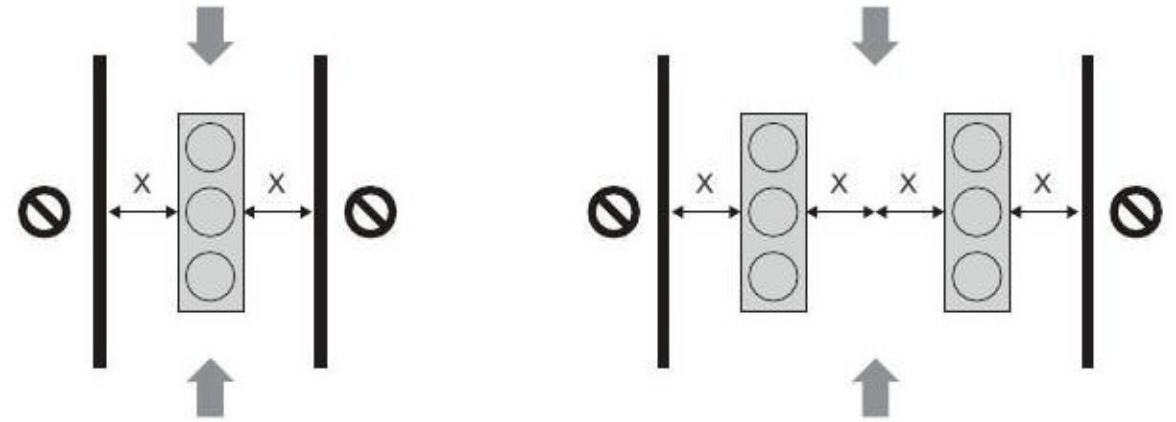
= Completely Restricted Airflow

C2 Unit Size Tables

C2 UNIT SIZE - G_W													
1X1		1X2		1X3		1X4		1X5		1X6		1X7		1X8	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
0.73	0	0.73	0	1.16	0	1.6	0	2.03	0	2.46	0	2.89	0	3.32	0
0.53	0.14	0.53	0.14	0.81	0.18	1.08	0.21	1.34	0.23	1.6	0.25	1.86	0.27	2.11	0.28
0.36	0.27	0.36	0.27	0.55	0.36	0.71	0.42	0.88	0.47	1.03	0.51	1.18	0.54	1.33	0.56
0.23	0.41	0.23	0.41	0.34	0.53	0.44	0.63	0.54	0.7	0.63	0.76	0.71	0.81	0.79	0.85
0.13	0.54	0.13	0.54	0.19	0.71	0.24	0.84	0.28	0.93	0.32	1.01	0.36	1.08	0.4	1.13
0.05	0.68	0.05	0.68	0.08	0.89	0.1	1.05	0.12	1.17	0.13	1.27	0.14	1.34	0.14	1.41

C2 UNIT SIZE - G_D C+D													
2X2		2X3		2X4		2X5		2X6		2X7		2X8		2X9	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
0.48	0	0.83	0	1.19	0	1.55	0	1.91	0	2.26	0	2.62	0	2.98	0
0.36	0.15	0.63	0.21	0.89	0.27	1.14	0.31	1.38	0.35	1.62	0.38	1.86	0.41	2.09	0.44
0.26	0.3	0.45	0.43	0.64	0.53	0.81	0.62	0.97	0.7	1.13	0.76	1.28	0.82	1.43	0.87
0.16	0.45	0.3	0.64	0.42	0.8	0.53	0.93	0.64	1.05	0.74	1.14	0.83	1.23	0.92	1.31
0.08	0.6	0.17	0.85	0.24	1.06	0.31	1.24	0.36	1.39	0.42	1.52	0.46	1.64	0.51	1.74
0	0.75	0.07	1.07	0.13	1.33	0.17	1.55	0.2	1.74	0.23	1.9	0.25	2.05	0.27	2.18

D2 Unit Layout



= Unrestricted Airflow

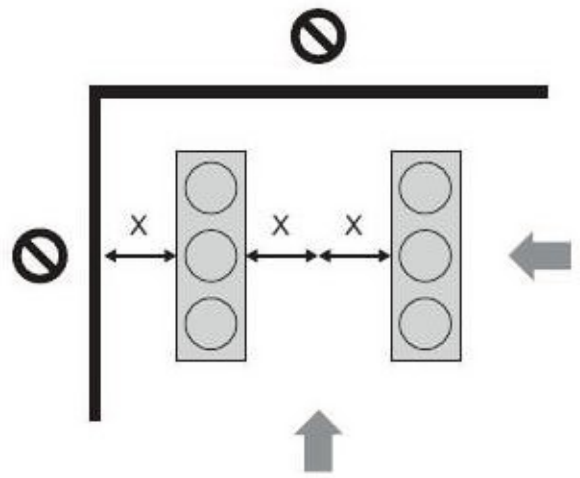
= Completely Restricted Airflow

D2 Unit Size Tables

D2 UNIT SIZE - G_W													
1X1		1X2		1X3		1X4		1X5		1X6		1X7		1X8	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
0.73	0	0.73	0	1.16	0	1.6	0	2.03	0	2.46	0	2.89	0	3.32	0
0.49	0.23	0.49	0.23	0.7	0.35	0.89	0.48	1.04	0.61	1.17	0.73	1.29	0.86	1.39	0.98
0.32	0.46	0.32	0.46	0.44	0.71	0.52	0.96	0.59	1.21	0.65	1.46	0.69	1.71	0.73	1.96
0.19	0.68	0.19	0.68	0.26	1.06	0.31	1.44	0.34	1.82	0.36	2.19	0.39	2.57	0.4	2.94
0.1	0.91	0.1	0.91	0.14	1.42	0.16	1.92	0.18	2.42	0.19	2.92	0.2	3.42	0.2	3.93
0.05	1.14	0.05	1.14	0.08	1.77	0.1	2.4	0.12	3.03	0.13	3.66	0.14	4.28	0.14	4.91

D2 UNIT SIZE - G_D C+D													
2X2		2X3		2X4		2X5		2X6		2X7		2X8		2X9	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
0.48	0	0.83	0	1.19	0	1.55	0	1.91	0	2.26	0	2.62	0	2.98	0
0.35	0.2	0.6	0.33	0.83	0.46	1.04	0.58	1.23	0.71	1.41	0.83	1.57	0.96	1.73	1.09
0.25	0.4	0.42	0.66	0.56	0.91	0.69	1.16	0.8	1.42	0.89	1.67	0.98	1.92	1.06	2.18
0.16	0.61	0.27	0.99	0.36	1.37	0.43	1.75	0.49	2.13	0.55	2.5	0.59	2.89	0.63	3.26
0.07	0.81	0.14	1.32	0.2	1.82	0.24	2.33	0.27	2.84	0.3	3.34	0.32	3.85	0.35	4.35
0	1.01	0.07	1.65	0.13	2.28	0.17	2.91	0.2	3.55	0.23	4.17	0.25	4.81	0.27	5.44

E2 Unit Layout



= Unrestricted Airflow

= Completely Restricted Airflow

E2 Unit Size Tables

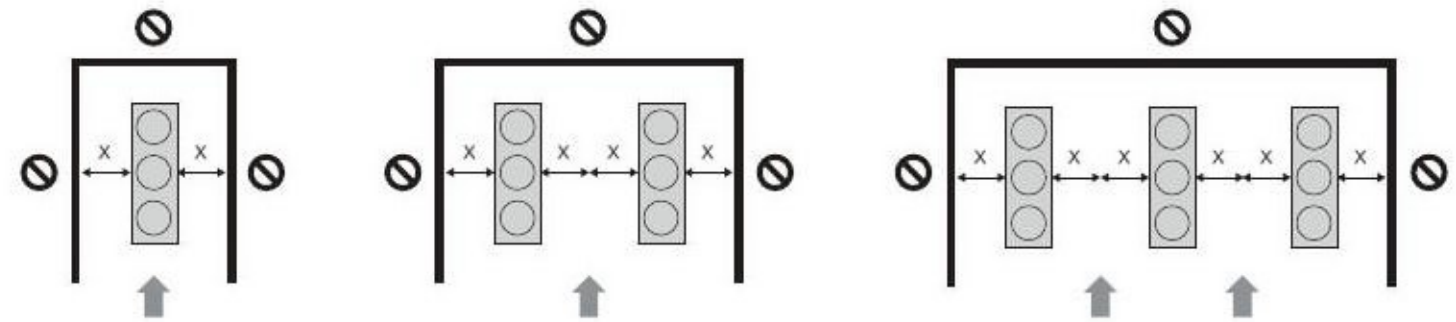
E2 UNIT SIZE - G_W

1X1		1X2		1X3		1X4		1X5		1X6		1X7		1X8	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
1.6	0	1.6	0	2.46	0	3.32	0	4.19	0	5.05	0	5.92	0	6.78	0
1.08	0.21	1.08	0.21	1.6	0.25	2.11	0.28	2.61	0.3	3.11	0.32	3.6	0.33	4.09	0.34
0.71	0.42	0.71	0.42	1.03	0.51	1.33	0.56	1.63	0.61	1.92	0.64	2.21	0.66	2.49	0.68
0.44	0.63	0.44	0.63	0.63	0.76	0.79	0.85	0.96	0.91	1.12	0.96	1.28	0.99	1.43	1.02
0.24	0.84	0.24	0.84	0.32	1.01	0.4	1.13	0.47	1.21	0.54	1.28	0.61	1.33	0.68	1.36
0.1	1.05	0.1	1.05	0.13	1.27	0.14	1.41	0.15	1.52	0.16	1.59	0.17	1.66	0.17	1.71

E2 UNIT SIZE - G_D C+D

2X2		2X3		2X4		2X5		2X6		2X7		2X8		2X9	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
1.19	0	1.91	0	2.62	0	3.33	0	4.05	0	4.76	0	5.48	0	6.19	0
0.89	0.27	1.38	0.35	1.86	0.41	2.32	0.46	2.78	0.5	3.23	0.53	3.68	0.56	4.12	0.58
0.64	0.53	0.97	0.7	1.28	0.82	1.58	0.92	1.86	1	2.14	1.06	2.42	1.11	2.69	1.16
0.42	0.8	0.64	1.05	0.83	1.23	1.01	1.38	1.17	1.49	1.34	1.59	1.5	1.67	1.65	1.74
0.24	1.06	0.36	1.39	0.46	1.64	0.55	1.84	0.64	1.99	0.72	2.12	0.79	2.23	0.86	2.32
0.13	1.33	0.2	1.74	0.25	2.05	0.28	2.29	0.31	2.49	0.33	2.65	0.35	2.78	0.36	2.9

E10 Unit Layout



= Unrestricted Airflow

= Completely Restricted Airflow

E10 Unit Size Tables

E10 UNIT SIZE - G_W

1X1		1X2		1X3		1X4		1X5		1X6		1X7		1X8	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
0.72	0	1.44	0	2.16	0.00	2.88	0	3.60	0	4.32	0	5.04	0	5.76	0
0.61	0.11	1.21	0.15	1.82	0.17	2.42	0.18	3.03	0.19	3.63	0.20	4.24	0.20	4.84	0.20
0.49	0.25	0.98	0.35	1.47	0.40	1.96	0.43	2.45	0.45	2.94	0.47	3.43	0.48	3.92	0.49
0.37	0.43	0.75	0.61	1.12	0.72	1.50	0.79	1.87	0.84	2.25	0.87	2.62	0.90	3.00	0.92
0.26	0.64	0.52	0.99	0.78	1.20	1.04	1.35	1.30	1.46	1.56	1.54	1.82	1.60	2.07	1.65
0.14	0.93	0.29	1.56	0.43	2.01	0.58	2.35	0.72	2.62	0.86	2.83	1.01	3.01	1.15	3.15

E10 UNIT SIZE - G_D C+D

2X2		2X3		2X4		2X5		2X6		2X7		2X8		2X9	
X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)	X (m)	Elevation (m)
1.44	0	2.16	0	2.88	0	3.60	0	4.32	0	5.04	0	5.76	0	6.48	0
1.21	0.23	1.81	0.28	2.42	0.31	3.02	0.33	3.63	0.34	4.23	0.36	4.84	0.37	5.44	0.37
0.98	0.51	1.47	0.62	1.96	0.70	2.45	0.76	2.94	0.80	3.43	0.84	3.92	0.86	4.41	0.89
0.75	0.85	1.12	1.07	1.50	1.23	1.87	1.35	2.25	1.44	2.62	1.52	3.00	1.58	3.37	1.63
0.52	1.29	0.78	1.68	1.04	1.98	1.30	2.22	1.56	2.41	1.81	2.57	2.07	2.70	2.33	2.82
0.29	1.86	0.43	2.54	0.58	3.11	0.72	3.60	0.86	4.02	1.01	4.38	1.15	4.70	1.30	4.98

Warning: In cases when the minimum distances cannot be ensured or your case does not appear, please contact Güntner for additional support.