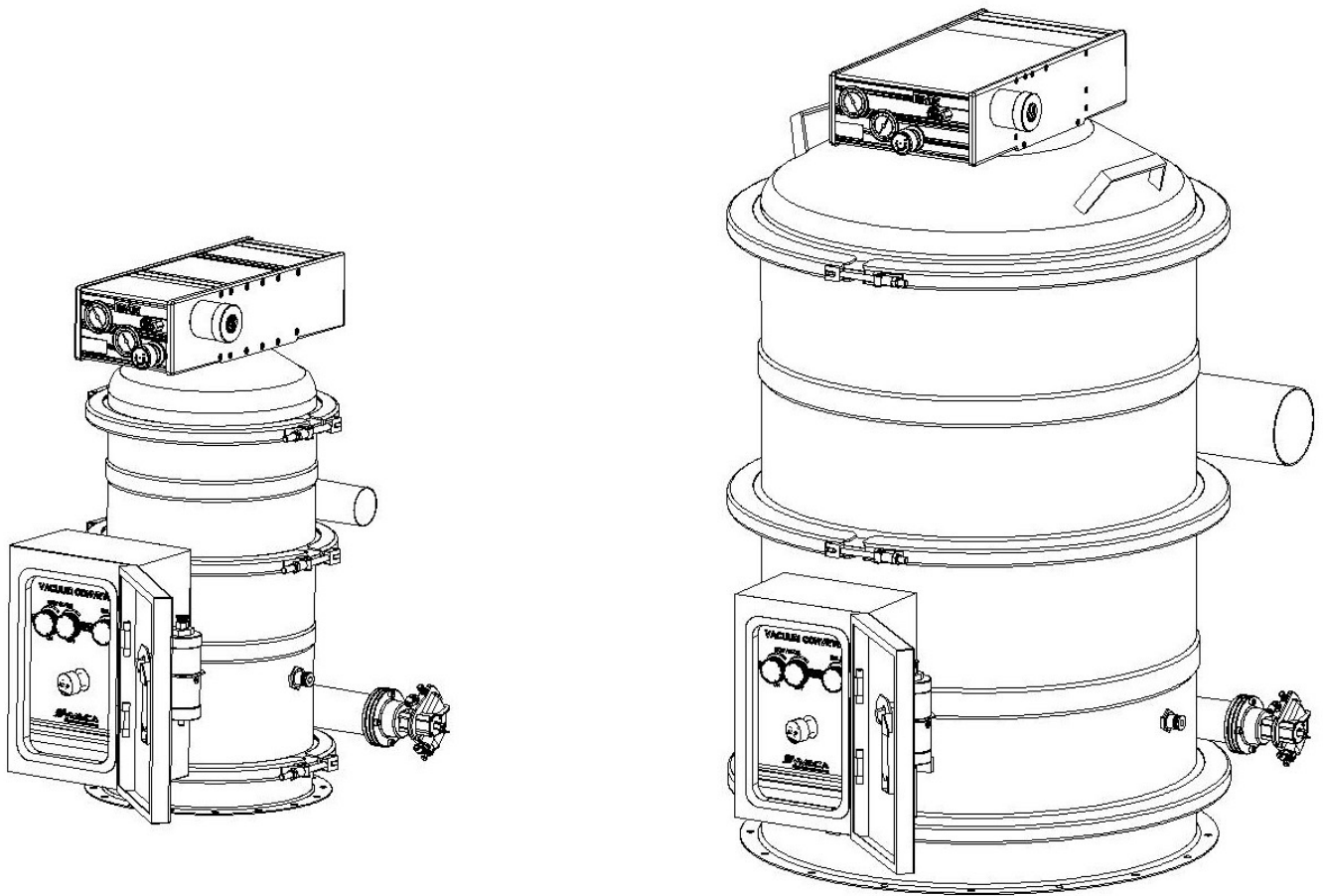




MANUAL

VTC SERIES VACUUM CONVEYOR

<http://www.vmeca.com>



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1. ATEX general information section

Safety instructions

The intended use of the conveyor

The intended use for a VMECA vacuum conveyor is to convey powders and granules in a pipe system.

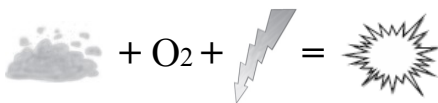
Instructions for building into a system

VMECA vacuum conveyors are CE marked. The person who installs and uses the conveyor in another main system has the responsibility of carrying out a risk analysis for the system as a whole.

ATEX — Explosion safety

How does a dust explosion occur?

When handling and conveying dry powders and materials made up of small particles, there is a risk that a dust explosion may occur. Dust explosions may occur when certain finely divided materials are mixed with air (oxygen) after which the mixture is ignited by, for example, a spark.



What is ATEX?

ATEX is an abbreviation of “ATmosphere EXplosible”.

ATEX is two EU directives that concerns equipment in potentially explosive atmospheres as well as the safety of workers potentially at risk from explosive atmospheres.

- ▶ ATEX Equipment directive 94/9/EC: equipment and protective systems intended for use in potentially explosive atmospheres.
- ▶ ATEX Working environment directive 99/92/EC: minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres.

Directive 94/9/EC divides the equipment and protective systems which it covers into equipment groups and categories; Directive 99/92/EC provides, among other things, for a classification by the employer of the places where explosive atmospheres may occur in terms of zones and determines which equipment and protective systems groups and categories should be used in each zone.

ATEX Equipment directive 94/9/EC applies to VMECA’s ATEX classified conveyors.

Classification of Ex equipment in accordance with EU ATEX directive, simplified table

Equipment group	Gas/Dust	Equipment category	Usage in zone
I = mining		M1 or M2	
II = other risk areas	G (gas)	1	0, 1, 2
		2	1, 2
		3	2
	D (dust)	1	20, 21, 22
		2	21, 22
		3	22

Example of code: II 2 GD

II = other risk areas (not mining)

2 = Equipment category (meaning usage in zone 21 and/or 22)

G = Gas

D = Dust

Ex classification of VMECA ATEX conveyors

The VMECA vacuum conveyors with the following model designations are classified for use in potentially explosive atmospheres.

Constructional safety “c”

 0575  II 1 D c 90°C / II 2 GD c 100°C

The figure above shows the ATEX nameplate that goes on the Vacuum conveyor VTC Unit and contains all the required markings as required by the relevant ATEX directives. Each of the letters and characters at the bottom of the nameplate has a significant meaning, which is explained below.

Note :  II 1 D c 90°C (inside the vacuum conveyor) /
 II 2 GD c 100°C (outside the equipment)



is the CE Mark. It stands for *Conformité Européenne*. The distinctive CE mark on a product signifies that the product complies with the requirements contained within one or more of the applicable European Directives.

► 0575 = Notified body number(DNV)



symbol for the ATEX certification and it stands for *Atmospheres Explosibles*, which is French for potentially explosive atmospheres.

where

► II = Equipment group, other risk areas (not mines).

► 1/2 = Equipment category: 1 (zone 20) inside the equipment/conveyor and 2 (zone 21) outside the Equipment/conveyor.

Namely,

- ◆ II 1 = signifies that the concerned equipment falls under Group II, Category 1 of the equipment classification category. This group comprises products designed to be capable of remaining within operational parameters and ensuring exceedingly high level of protection for its intended use in areas in which explosive atmospheres caused by mixtures of air and gases, vapors, mists or air/dust mixtures are likely to occur.
- ◆ II 2 = signifies that the concerned equipment falls under Group II, Category 2 of the equipment classification category. This group comprises products designed to be capable of remaining within operational parameters and ensuring a very high level of protection for its intended use in areas in which explosive atmospheres caused by mixtures of air and gases, vapors, mists or air/dust mixtures are likely to occur.
- G = signifies that the concerned equipment is deemed safe for operations in an environment in which a Gas is present.
- D = signifies that the concerned equipment is deemed safe for operations in an environment in which a Dust is present.
- c = “Protection by constructional safety”. The letter “c” indicates that the type of ignition protection that has been used is “Constructional safety” according to standard EN 13463-5. This means that the equipment is designed not to contain any ignition source in normal, prescribed service.
- 90°C, 100°C = Stands for a Maximum surface temperature of the conveyor is +90°C, 100°C
(Including 80% safety margins)

How an Ex classified conveyor of the VMECA VTC series should be used?

- ▶ The interior of the conveyor and the pipe system are permitted to belong to zone 20.
- ▶ The exterior of the conveyor and the pipe system are permitted to belong to zone 21.

NOTE! At the beginning of the pipe system and upward, manual filling of the feed hopper from a bag, for example, is often used. At such open interfaces between the interior and exterior of the conveying system there is a risk for increased probability of occurrence of an explosive atmosphere due to airborne dust, even on the exterior. This risk is also obvious if there is an “open” interface downwards in the equipment at the conveyor container’s bottom valve.

However, the operator has to ensure that zone 20 does not occur on the exterior of the conveyor system under no conditions. It is always the responsibility of the user/owner to ensure that the zone classification corresponds to the EX marking of the equipment. It is always preferable that all handling of the conveyed powder takes place in a closed system.

An Ex classified conveyor of the VMECA VTC series may NOT be used:

- ▶ Where the exterior of the conveyor is classified as zone 20.
- ▶ The conveyor may not be connected to or placed on equipment with a higher zone classification, in regard to explosion-hazardous atmospheres, than the allowable classification for VMECA’s conveyors. The requirements for a safe design, according to EN 13463-5 "Protection by constructional safety," must be taken into account when connecting equipment.

What are the specific features of a VMECA ATEX conveyor?

Only certain designs of conveyors of the VMECA VTC series are classified for use in potentially explosive atmospheres.

The specific features of an ATEX conveyor are:

- ▶ All seals/rubber parts between the machine’s sheet metal parts are made of dissipative (antistatic) materials. This means that all complete modules and units are fitted with seals of Conductive silicone (CS) and Nitrile butadiene rubber (NBR O-ring) with such characteristics.
- ▶ All larger plastic parts must be made of dissipative (antistatic) materials.
- ▶ As a consequence of this, only antistatic variants of filters and fluidization cones are used.
- ▶ It is characteristic of antistatic rubber and plastic parts as well as complete modules and building units containing antistatic rubber and plastic parts that the article description of the parts/modules/units always includes the word “ATEX”.

A VMECA Vacuum Conveyor of the “VTC series”, classified according to the ATEX is always CE-marked and Ex marked.

A conveyor without this marking is not allowed to be used in potentially explosive atmospheres.



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<http://www.vmecca.com>



II 1 D c 90°C / II 2 GD c 100°C
0575 DNV 13 ATEX 2880X

Model No: VTC XXXX •

Specification

Model	Max. Capacity (g/s)	Weight (kg)	Noise Level (dB(A))	Air Consumption (l/min)	Dimension
VTC100	0.6	19	60-65	280	≤ 320 x 690
VTC200	1.0	20	65-70	560	≤ 320 x 690
VTC400	2.1	23	65-70	1120	≤ 320 x 790
VTC800	3.1	44	65-70	1600	≤ 620 x 1048
VTC1000	4.2	45	68-75	2240	≤ 620 x 1048
VTC1200	5.2	48	68-75	2800	≤ 620 x 1413
VTC1300	6.0	50	68-75	3360	≤ 620 x 1413

Manuf. year: 0000 00•

- Rating -

- 1. VTC Conveyor Model Type :
100, 200, 400, 600, 800, 1000, 1200
- 2. Specification
(Max. Capacity / Weight / Noise level
Air consumption / Dimension) depends on
VTC-Conveyor Model.
- 3. The Date of Manufacture & Lot No

* Just reference, as specification are subject to change depending on the application.

Safe mounting, installation in respect to ATEX

For safe use the following shall be observed as to mounting of ATEX VTC series conveyors:

- Give special attention to the drawings of the manual, as these show how to mount the seals between the conveyor's steel modules.

NOTE: All seals between the modules and other steel parts shall be antistatic. VMECA's antistatic seals are made of black Conductive silicone rubber(carbon).

Give special attention to correctly mount the filters.

It is important that dust leakage passing the filter device is avoided. Possible leaks in the filter will cause blow-out of dust via the exhaust of the pump into the surroundings.

- The clamp that interconnect the modules are an important link for electric bonding between the conveyor's main parts. It is of utmost importance that these clamp rings are always mounted and that their latches are always in "locked" position.
- Earthing & Grounding: In order to discharge electrostatic energy from the conveyor it must be grounded and all its parts must be electrically bonded to each other. The grounding shall be done with earth clip(ground terminal). This is important that all units of the conveyor system.

The conveyor may not be connected to or onto an equipment with a higher zone classification regarding potentially explosive atmospheres than the classification of VMECA's conveyor allows. See table below.

	Explosion-hazardous area inside the connected equipment		Explosion-hazardous area in the vicinity of the connected equipment	
	Allowed	Not allowed	Allowed	Not allowed
Zones for equipment connected at interface A	20, 21, 22	0, 1, 2	21, 22	20, 0, 1, 2
Zones for equipment connected at interface B	20, 21, 22	0, 1, 2	21, 22	20, 0, 1, 2

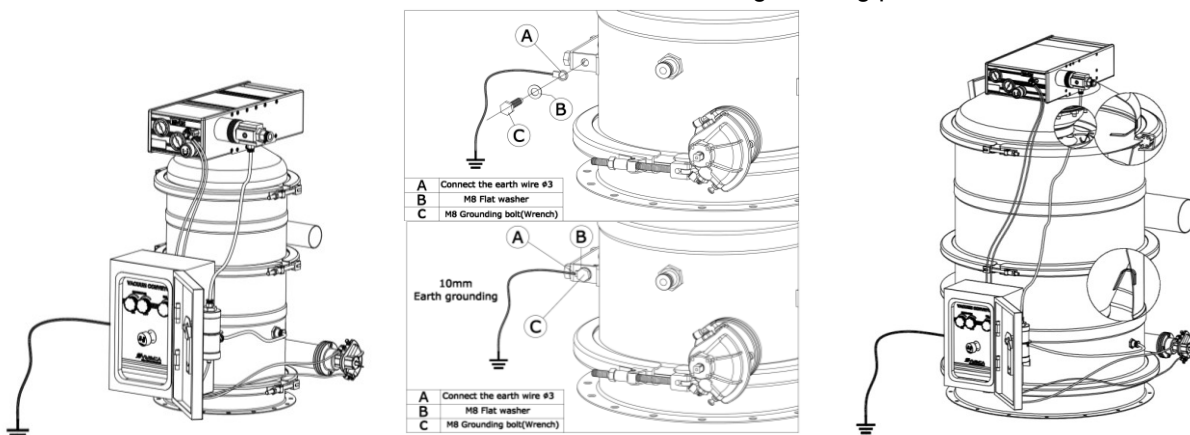
All the equipment in the conveying system must be CE marked according to EU directive 94/9/EC and to corresponding equipment category. Explosion hazard risk assessment has to be carried out on the complete system as a whole.

Points where the conveyed powder is introduced to or discharged from the conveyor system must be designed in such a way that developing dust cannot give arise to explosive atmosphere outside the equipment. It's important to always, if possible, connect receiving equipment tightly to the conveyor.

At both of the interface between the conveyor and the pipe system and the conveyor and the equipment receiving the conveyed powder it is important with electrical bonding via metal parts.

The whole conveyor system has to be grounded to the same point of earth (Equipotential Bonding).

How to connect the conveyor to ground: A) Connect the earth wire Ø3 B) M8 Flat washer C) to the M8 Grounding wrench bolt. A sure that the other end of the wire is connected to a grounding point.



WARNING

Warning for your safety

※ Please observe the warning that follow;

 Warning Serious injury may result if instructions are not followed.

- This equipment shall not be used beyond specified temperature range.
- The whole conveyor system has to be grounded to the same earthing point(Equipotential Bonding).
- VTC Vacuum conveyor must not be used lower than 3mJ bulk materials minimum ignition energy.
- There must be no flammable gases and vapors may be present in the bulk materials or be transported together.
- The delivery of the absorbed bulk materials must not be placed directly in hazardous areas of Zone 0 and 1.
- Inside temperature of vacuum conveyor is reached to the 11.7K level, bulk materials is available lower than 60°C. (The user is required to safe use VTC conveyor under the condition of the temperature does not exceed temperature range 11.7K)
 ex: Material(60°C) + 11.7K(11.7°C) = 71.7°C < 90°C(Application 80% safety margins)
- The amount of aspirated(suctioned) materials may not exceed the mass of 10Kg each intake stroke.

 WARNING	
 For your safety, please read the following before using.	● Please keep these instructions and review them before using this unit. 1. This equipment shall not be used beyond specified temperature range. 2. The whole conveyor system has to be grounded to the same earthing point(EquipotentialBonding). 3. VTC Vacuum conveyor must not be used lower than 3mJ bulk materials minimum ignition energy. 4. There must be no flammable gases and vapors may be present in the bulk materials or be transported together. 5. The delivery of the absorbed bulk materials must not be placed directly in hazardous areas of Zone 0 and 1. 6. Inside temperature of vacuum conveyor is reached to the 11.7K level, bulk materials is available lower than 60°C. 7. The amount of aspirated materials may not exceed the mass of 10Kg each intake stroke. It may cause accident if above instructions are not followed.

2. Introduction

2-1. Description

This manual will provide you with general operating method and maintenance of V-MECA Vacuum conveyor. Please contact KPS (Korea Pneumatic System Co., Ltd) if you have a question or need any support regarding the conveyor. Please be aware some information could be omitted about the operating technique, safety lock, etc. because based on our experience the operating system can differ depending on the customer environment.

2-2. Use

V-MECA's vacuum conveying system uses vacuum to great advantages by conveying dry powder products through dedicated pipe systems. With our help, customers raise their productivity and achieve higher quality.

KOREA PNEUMATIC SYSTEM CO.,LTD

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Http:// www.vmecca.com

2-3. Name Plate



KOREA PNEUMATIC SYSTEM.,LTD
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KOREA

<http://www.vmecca.com>

CE 0575  II 1 D c 90°C / II 2 GD c 100°C
DNV 13 ATEX 2880X

Model No: VTC XXXX •

Specification

Model	Max. Capacity (t/h)	Weight (kg)	Noise Level (dBA)	Air Consumption (L/min)	Dimension
VTC100	0.6	19	60-65	280	ø 320 x 690
VTC200	1.0	20	65-70	560	ø 320 x 690
VTC400	2.1	23	65-70	1120	ø 320 x 790
VTC800	3.1	44	65-70	1680	ø 620 x 1046
VTC900	4.2	45	68-75	2240	ø 620 x 1046
VTC1000	5.2	48	68-75	2800	ø 620 x 1413
VTC1200	6.0	50	68-75	3360	ø 620 x 1413

Manuf. year: 0000 00 •

- Rating -

- 1. VTC Conveyor Model Type :
100, 200, 400, 600, 800, 1000, 1200
- 2. Specification
(Max. Capacity / Weight / Noise level
Air consumption / Dimension) depends on
VTC-Conveyor Model.

VTC100	0.6	19	60-65	280	ø 320 x 690
VTC200	1.0	20	65-70	560	ø 320 x 690
VTC400	2.1	23	65-70	1120	ø 320 x 790
VTC800	3.1	44	65-70	1680	ø 620 x 1046
VTC900	4.2	45	68-75	2240	ø 620 x 1046
VTC1000	5.2	48	68-75	2800	ø 620 x 1413
VTC1200	6.0	50	68-75	3360	ø 620 x 1413

☞ Just reference, as specification are subject to change depending on the application.

- 3. The Date of Manufacture & Lot No

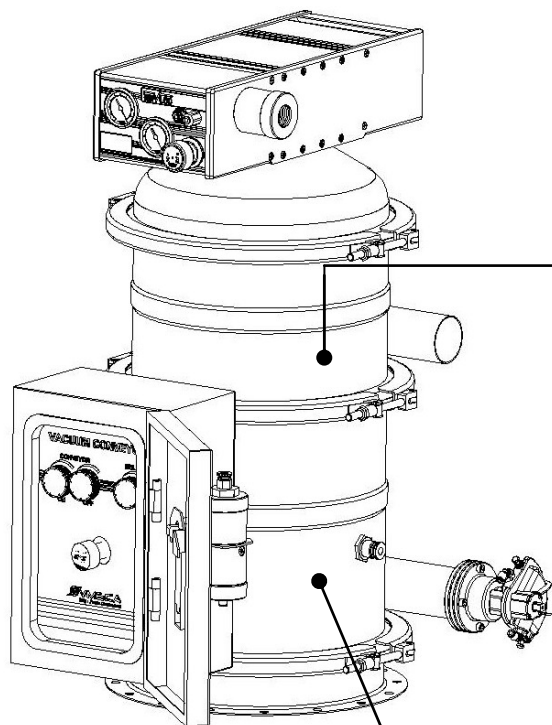
Note1) Model No: VTC100 . VTC200 . VTC400 . VTC600 .
VTC800 . VTC1000 . VTC1200

Note 2) Specification Information of Vacuum Conveyor VTC Model Type

Note 3) 0000 00

Lot No.

The Date of Manufacture.



VTC 100~400

VMeca KOREA PNEUMATIC SYSTEM, LTD.
#153-817 501-5, Doksan 1-dong, Geumcheon-gu, Seoul, KOREA
<http://www.vmecha.com>

CE 0575 II 1 D c 90°C / II 2 GD c 100°C
DNV 13 ATEX 2880X

Model No: VTC XXXX

Specification

Model	Max. Capacity (t/h)	Weight (kg)	Noise Level (dBA)	Air Consumption (l/min)	Dimension
VTC100	0.5	19	60-65	280	φ 320 x 600
VTC200	1.0	20	65-70	560	φ 320 x 600
VTC400	2.1	23	65-70	1120	φ 320 x 790
VTC800	3.1	44	65-70	1680	φ 620 x 1046
VTC1000	4.2	45	68-75	2240	φ 620 x 1046
VTC1200	5.2	48	68-75	2800	φ 620 x 1413
VTC1200	6.0	50	68-75	3360	φ 620 x 1413

Manuf. year: 0000 00

- Rating -

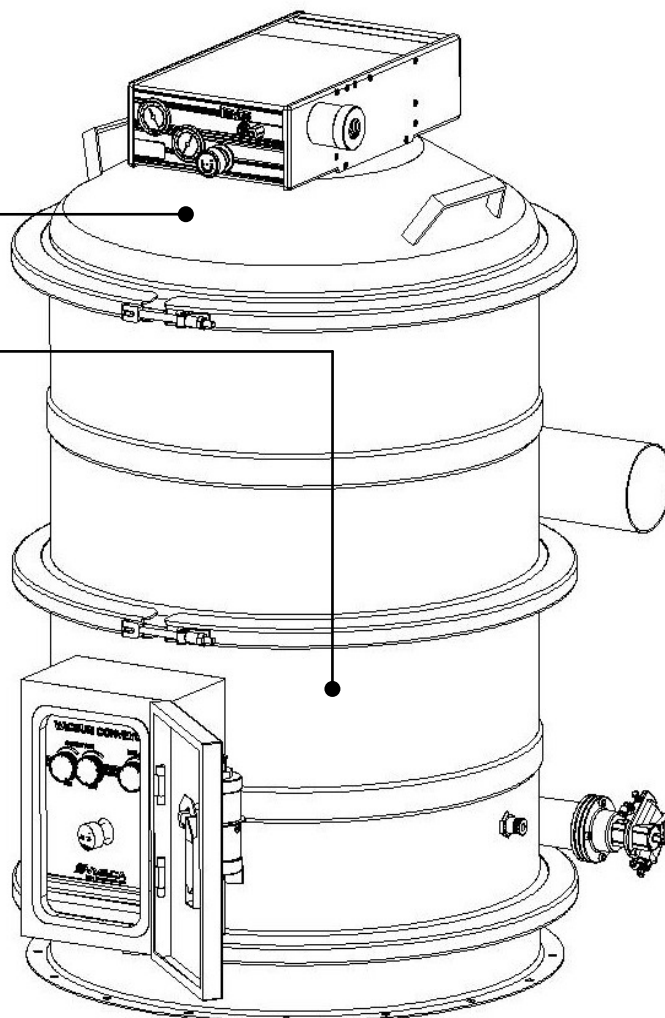
1. VTC Conveyor Model Type : 100, 200, 400, 600, 800, 1000, 1200

2. Specification (Max. Capacity / Weight / Noise level Air consumption / Dimension) depends on VTC-Conveyor Model.

VTC100	0.5	19	60-65	280	φ 320 x 600
VTC200	1.0	20	65-70	560	φ 320 x 600
VTC400	2.1	23	65-70	1120	φ 320 x 790
VTC800	3.1	44	65-70	1680	φ 620 x 1046
VTC1000	4.2	45	68-75	2240	φ 620 x 1046
VTC1200	5.2	48	68-75	2800	φ 620 x 1413
VTC1200	6.0	50	68-75	3360	φ 620 x 1413

* Just reference, as specification are subject to change depending on the application.

3. The Date of Manufacture & Lot No



VTC 600~1200



WARNING

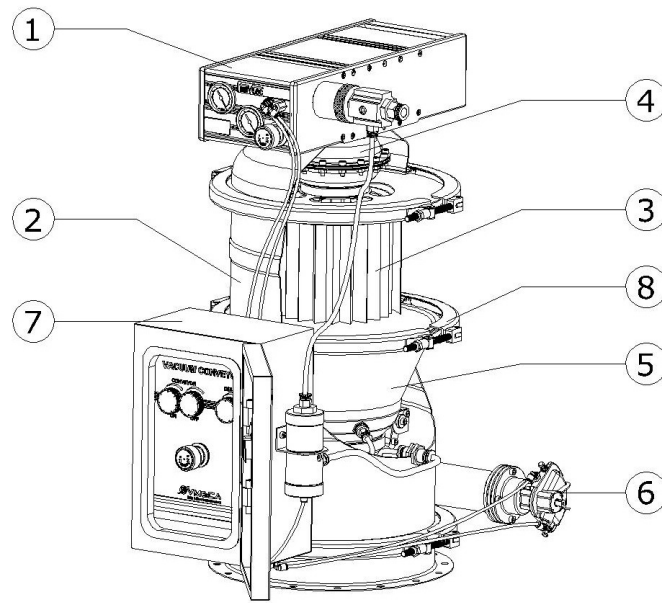


For your safety, please read the following before using.

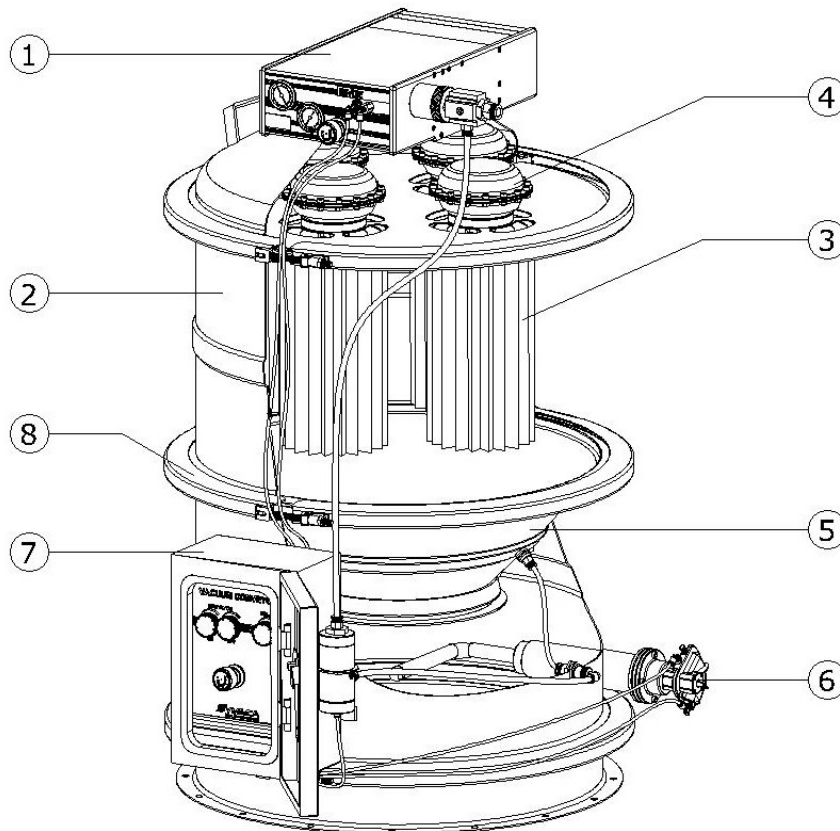
- Please keep these instructions and review them before using this unit.
- 1. This equipment shall not be used beyond specified temperature range.
- 2. The whole conveyor system has to be grounded to the same earthing point(EquipotentialBonding).
- 3. VTC Vacuum conveyor must not be used lower than 3mJ bulk materials minimum ignition energy.
- 4. There must be no flammable gases and vapors may be present in the bulk materials or be transported together.
- 5. The delivery of the absorbed bulk materials must not be placed directly in hazardous areas of Zone 0 and 1.
- 6. Inside temperature of vacuum conveyor is reached to the 11.7K level, bulk materials is available lower than 60°C.
- 7. The amount of aspirated materials may not exceed the mass of 10Kg each intake stroke.

It may cause accident if above instructions are not followed.

3. Description of Visual Appearance



VTC 100~400



VTC 600~1200

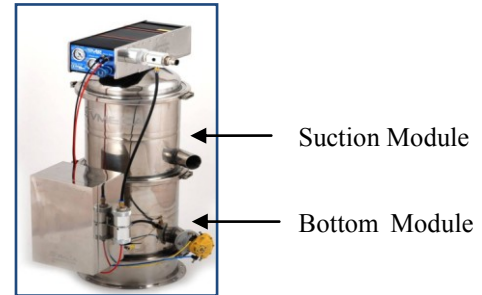
① Vacuum Pump

The Vacuum Pump is what allows the Vacuum Conveyor System to transport dry raw material. The multi-stage venturi vacuum pump runs off of compressed air as its main power supply. The vacuum pump creates a negative force allowing it to pick up the desired material and transfer it. Due to its multi-stage venturi vacuum pump, the air consumption is low and generates no heat. The servicing of the vacuum pump is brought down to a minimal level which allows it to have a long life.

② Conveyor Module

The VMECA Conveyor System is separated into different modules. Since there are different modules, servicing the Vacuum Conveyor System is made simple. The different types of modules are Extended Module, Suction Module, and Hopper Module which are included in the following models:

- Extended Module: VTC100, VTC200, VTC400, VTC600, VTC800, VTC1000, VTC1200.
- Suction Module: All Systems
- Bottom Module: All Systems



③ Vacuum Filter

The filter prevents any particles from the transferring materials to get stuck inside the vacuum pump and coming out through the exhaust port. The filters are pleated style allowing for a smaller size with a bigger surface area. The meshing of the filter ranges from 0.5 micron to 0.2 micron.

④ Air Shock Tank

Air Shock Tank releases any particles that are stuck in/on the canister or the filter by air blowing out that is stored in a tank for every cycle.

⑤ Hopper Cone

Hopper cone is used to hold and allow materials to smoothly flow down into the desired location. For fine material that bridges, we recommend the Fluidization Option. The Fluidization will assist in dumping out the remainder particles that is stuck inside the Vacuum Conveyor.

⑥ Actuator

The Actuator controls the Hopper Door (located at the bottom of the Vacuum Conveyor) to open and close. This allows the materials to drop that are held inside the Conveyor.

⑦ Control Box

The Control Box can have up to 3 functions.

- Vacuum Timer: Controls the amount of time the vacuum is created.
- Hopper Timer: Controls the amount of time the Hopper Door is open to release the materials.
- Delay Timer: Controls the amount of time the vacuum and hopper doors are closed before the next cycle start.

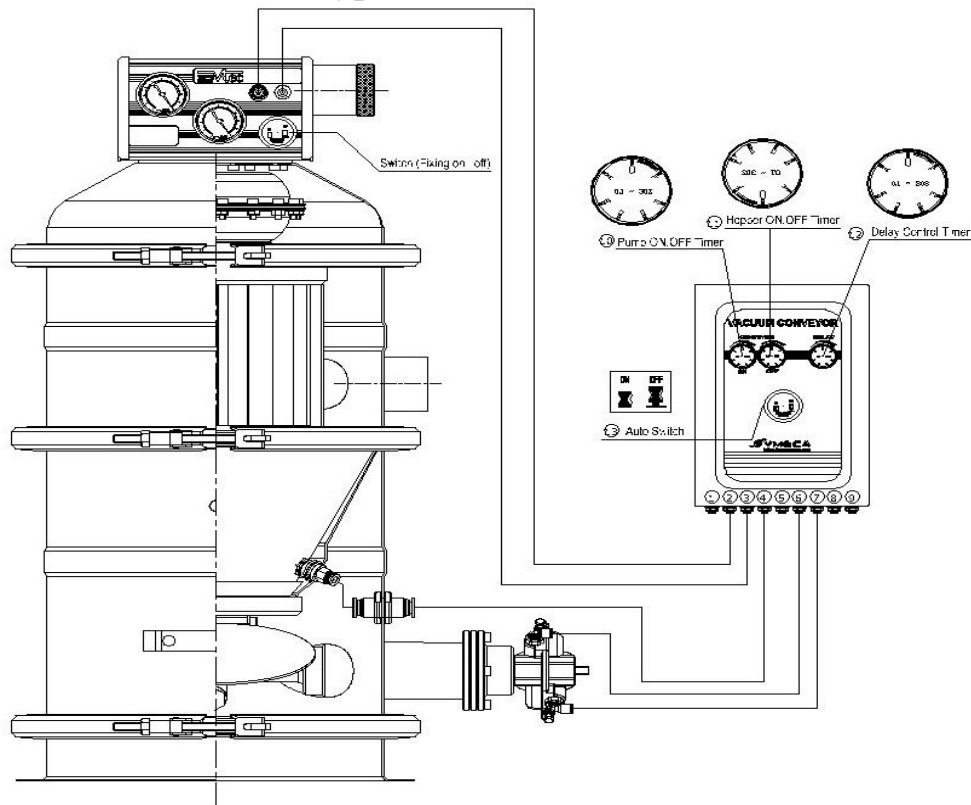
Pneumatic Control Box – Controlled and functions by only air

⑧ Ring Clamp

This is what is used to hold together the Vacuum Conveyor Modules together by a ring clamp design.

Manual of Vacuum Conveyor Control Unit

- AC3 Type (Pneumatic control type) -



Description corresponds with the numbers (Shown above).

- ① Exhaust Port – Do not obstruct
 - ② P-OUT [Pump]
 - ③ P-IN [Main]
 - ④ Signal OUT [For Blowing Gear] (Option)
 - ⑤ P-OUT [For Shock Tank]
 - ⑥ Hopper Close
 - ⑦ Hopper Open
 - ⑧ Signal IN [For Level Sensor] (Option)
 - ⑨ Injection ON/OFF Port
 - ⑩ Pump ON/OFF Timer – It can adjust the suction time from 0.1 second to 30 seconds.
(Control the volume of suction material)
 - ⑪ Hopper Open/Close Timer – The exhaust time can be adjusted from 0.1 second to 30 seconds.
 - ⑫ Delay Adjust Timer – The delay timer can adjust the delay time from the Hopper closing to the conveyor starting suction. Conveyor does not work during the delay time.
You have to set up the Pump ON/OFF Timer again when the Delay Control Timer is set up because the Pump ON/OFF timer is changed.
 - ⑬ Main Switch: Turn on the main switch – Conveyor will operate.
Turn off the main switch – Conveyor operation will stop.
- ☞ The cycle time can be adjusted by Pump ON/OFF, Hopper ON/OFF and Delay Control Timer.

4. Description of the Vacuum Conveyor



Start operating Vacuum conveyor after preparation in order, stipulated below.

1. Operate Vacuum conveyor at idle running with compressed air pressure over 4bar.
2. Check the Vacuum level at idle running.
3. Vacuum level should achieve 75~85kPa with compressed air at 5~6bar.
(With perfect line sealing and air tight seal at the vacuum port)
4. Adjust the inflow air at feed nozzle or feed adapter.
Start operating once the maximum air inflow is adjusted and reached
5. Adjust the time of control system.
Start operating after adjusting the inflow time shorter than exhaust time.
For example: 3 sec. inflow time and 4~5 sec. exhaust time.
6. Put in suction material at feed station or feed point.
Start operating and measure in a suitable maximum quantity inside the conveyor body.
7. Adjust the inflow and exhaust timer so they operate together.
Increase the transfer quantity by adjusting a longer suction time and decreasing the exhaust time.

Caution

- A. Check the inside cubic capacity of conveyor to protect from oversupply of suction material blocking the filter.
 - B. Depending on the material, they can have different volumes due to being conveyed.
 - C. Inflow air will be reduced if the filter is blocked.
8. Final check the vacuum level and pressure drop while running normally.
 9. Finally record the controlled time.
Moreover, record the weight and volume of material per cycle.

5. VMECA Special Vacuum Conveyors for Safe usage in respect to ATEX

[1] EC-Examination Certificate for model type.

[2] **Equipment or protective system intended for use in potentially explosive atmospheres directive 94/9/EC.**

[3] EC-Type Examination Certificate Number: **DNV 13 ATEX 2880X**

[4] Equipment or Protective System(Device): **Vacuum conveyor – Model Type VTC.**

[5] Applicant – Manufacturer or Authorized representative: **KOREA PNEUMATIC SYSTEM CO.,LTD (VMECA)**

[6] Address: **#153-817 501-5, Doksan 1-dong, Geumcheon – gu, Seoul, KOREA**

[7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] DNV, notified body number **0575** in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential reports listed in section 14.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

[10] If the sign “X” is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EC-Type Examination certificate relates only to the design and construction of the specified equipment or protected system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system.

[12] The marking of the equipment or protective system shall include the following:

 ₀₅₇₅  **II 1 D c 90°C / II 2 GD c 100°C**

[13] Description of Equipment or Protective System

The vacuum conveyor systems of the model series VTC, with the type designations

VTC 100, VTC200, VTC400, VTC600, VTC800, VTC1000 and VTC1200 serve the continuous transport of bulk goods in vacuum stream. The systems consist of a vacuum pump, filter systems, air shock tank, blowing systems, hopper cone(discharge and emptying) actuator and a pneumatic control system. The systems designations (The type designations) differ only in diameter and in their modular structure.

[14] It is important that "foreign matters" are prevented from entering the conveying system.

[15] It is prohibited to open or disassemble any part of the conveying system during operation!

Before disassembling any part of the conveying system the equipment must be closed down and the supply of compressed air to the vacuum conveyor must be switched off.

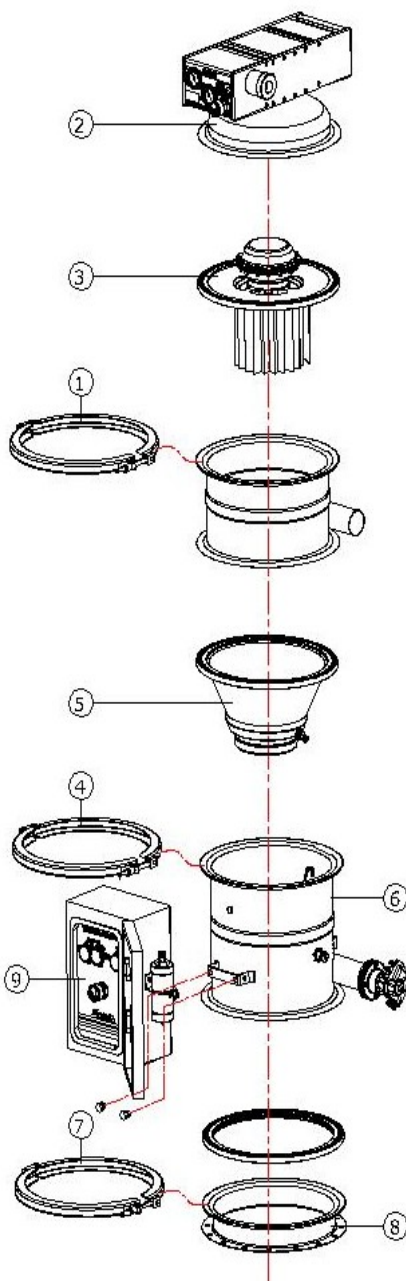
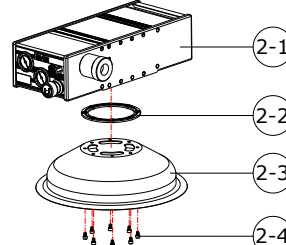
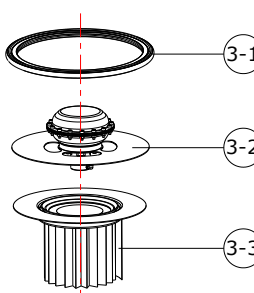
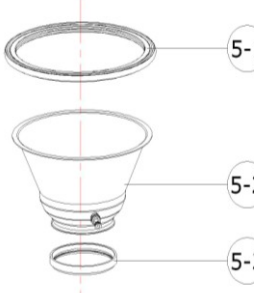
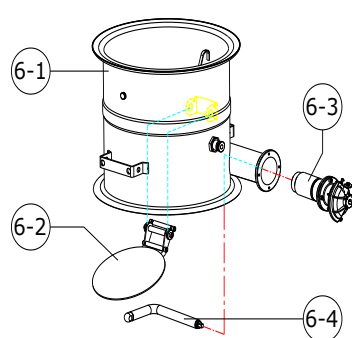
[16] Essential Health and Safety Requirements

See part 9 of this certificate

END OF CERTIFICATE

6. Maintenance

6-1. Disassembly (Reference of the blow drawing.)

MODEL : VTC100~400				
Full Disassembly	Detail Disassembly	Description		
		② Vacuum Pump Part		
		2-1	VTMLCV-CT Vacuum Pump	
		2-2	Pump Gasket 100~400	
		2-3	Top Cover 100~400	
		2-4	Wrench Bolt(M5xL12)	
		③ Air Shock Tank / Filter Part		
		3-1	Module Gasket : Air Shock Tank and Filter Housing Fixed	
		3-2	Air Shock Tank Part : Fixed to the Module Gasket(Top)	
		3-3	Filter Part : Fixed to the Module Gasket(Bottom)	
		⑤ Hopper Cone Part		
		5-1	Module Gasket : SUS Cone Fixed	
		5-2	SUS Cone : Fixed to the Module Gasket(Bottom)	
		5-3	Hopper Gasket : Coupled to the bottom of the SUS cone	
		⑥ Base Module / Actuator Part		
		6-1	Base Module : Inside the Hopper cover and Actuator assemble	
		6-2	Hopper Cover	
		6-3	Actuator Part	
		6-4	Crank	
Disassembly sequence				
① Clamp unlock ② Vacuum pump part separates. → Disassembly vacuum pump, top cover with wrench (Note : Detail 2) ③ Air shock tank part and Filter part disassembly in Module gasket (Note : Detail 3) ④ Clamp unlock ⑤ Hopper cone part disassembly in Beas module. (Note : Detail 5) ⑥ Hopper cover part and clamp, actuator part disassembly in Base module. (Note : Detail 6) ⑦ Clamp unlock ⑧ Fix module disassembly ⑨ Unlock bolt, disassembly control box				

MODEL : VTC600~1200

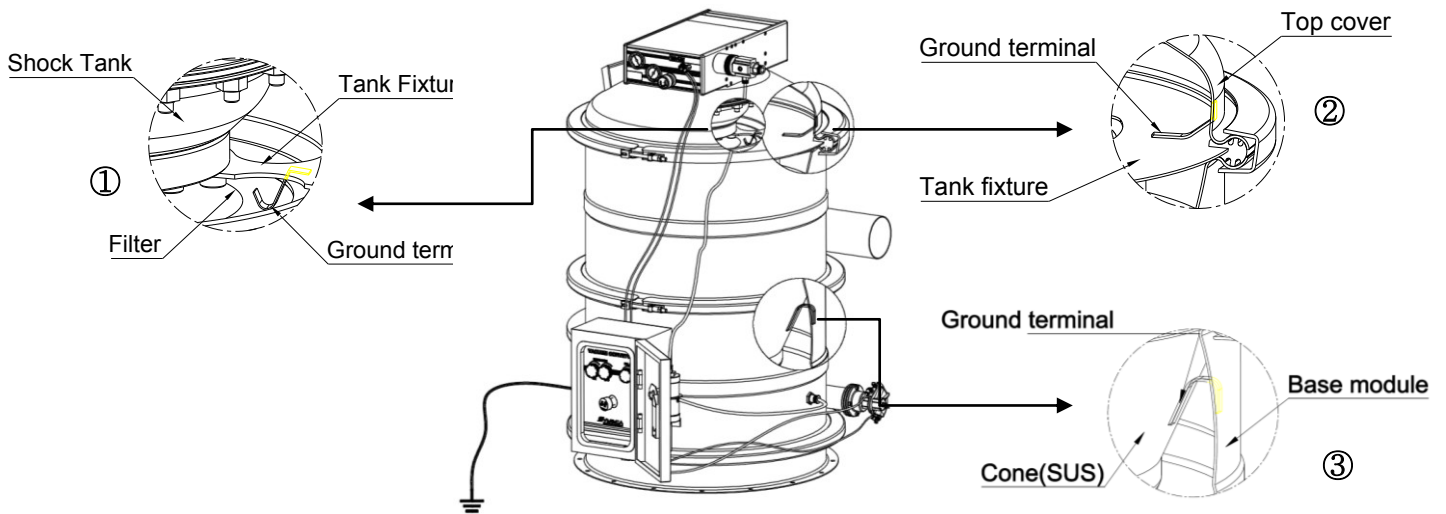
Full Disassembly	Detail Disassembly	Description
		② Vacuum Pump Part
		2-1 VTML CV-CT Vacuum Pump 2-2 Pump Gasket -600~1200 2-3 Top Cover -600~1200 2-4 Wrench Bolt(M5xL12)
		③ Air Shock Tank / Filter Part
		3-1 Module Gasket -600 : Air Shock Tank and Filter Housing Fixed 3-2 Air Shock Tank Part : Fixed to the Module Gasket(Top) 3-3 Filter Part : Fixed to the Module Gasket(Bottom)
		⑤ Hopper Cone Part
		5-1 Module Gasket-600 : SUS Cone Fixed 5-2 SUS Cone : Fixed to the Module Gasket(Bottom) 5-3 Hopper Gasket-600 : Coupled to the bottom of the SUS cone
		⑥ Base Module / Actuator Part
		6-1 Base Module-600 : Inside the Hopper cover and Actuator Assemble 6-2 Hopper Cover-600 6-3 Actuator Part-600 6-4 Crank-600

Disassembly sequence

- ① Clamp unlock
- ② Vacuum pump part separates. → Disassembly vacuum pump, top cover with wrench (Note : Detail 2)
- ③ Air shock tank part and Filter part disassembly in Module gasket (Note : Detail 3)
- ④ Clamp unlock
- ⑤ Hopper cone part disassembly in Beas module. (Note : Detail 5)
- ⑥ Hopper cover part and clamp, actuator part disassembly in Beas module. (Note : Detail 6)
- ⑦ Clamp unlock
- ⑧ Fix module disassembly
- ⑨ Unlock bolt, disassembly control box.

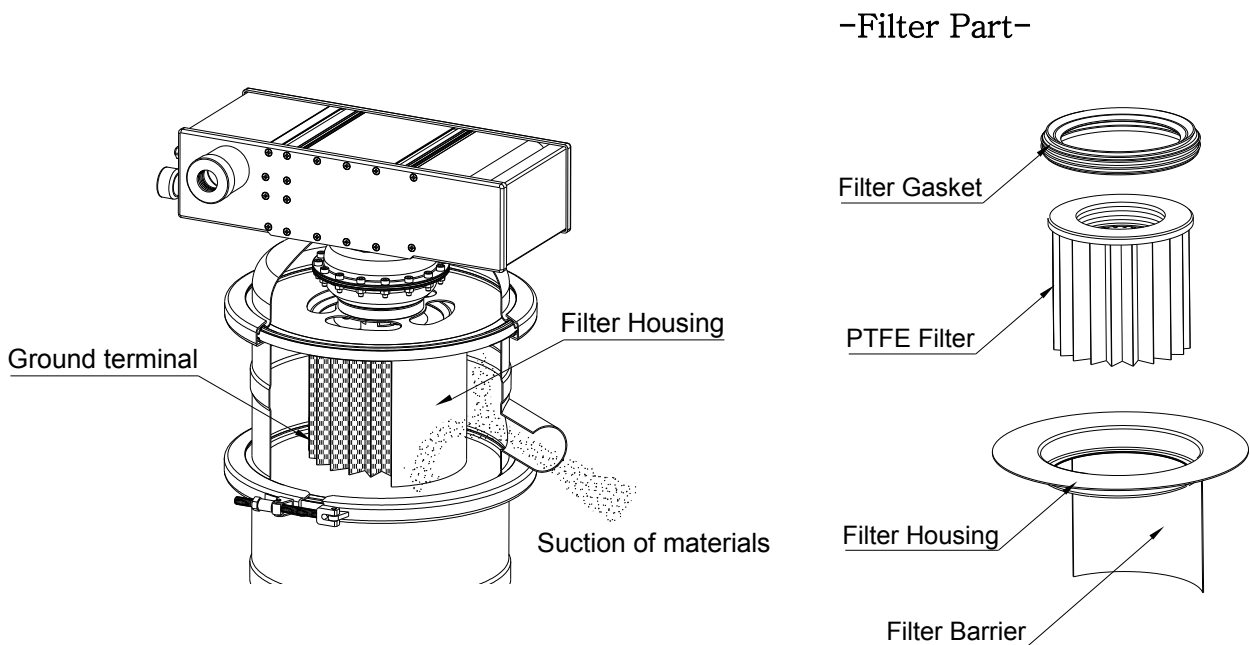
6 – 2. Assembly Part (Reference of disassembly)

1. Reverse of disassembly. But Assembling few matters that require attention.



- 1> Ground terminal of Tank fixture must be attached to the top of the filter
- 2> Ground terminal of Top cover must be attached to the tank fixture.
- 3> Base module of Ground terminal cover must be attached to the SUS Cone.

2. The direction of filter housing barrier



Assembling direction of filter housing barrier must match the suction port.
Because when suction of material, take to protect the filter.

Maintenance Control

- * V-MECA Vacuum Conveyor is designed and manufactured to operate with minimal air consumption and running cost.
- * For long life of the Vacuum conveyor, below check is necessary.
- * Check the vacuum conveyor based on the inspection chart as follows.
- * The maintenance is changeable depending on the specific material, standard cleanliness, and environment of the application.

(MAINTENANCE DIAGRAM)

Inspection / Action	Time Interval	Daily	Monthly	Every two months	Every six months	In accordance With experience	Start up date new conveyor :
							Pressure drop, idle running at startup date: -kPa
							Date of filter replacement / washing :
1. Check of feed pressure		O					
2. Leakage test. Conveyor and vacuum pipeline			O				
3. Check of pressure drop at material transport		O					
4. Check of pressure drop at idle running			O				
5. Washing of filter			O			(O)	
6. Filter replacement.				O		(O)	
7. Emptying water separator/ Filter replacement				O			
8. Dismantling, cleaning and Check		O			O	(O)	

 Just reference, as specification are subject to change depending on the application.

● Note

Record inspection / action time interval on left of the chart.

Record maintenance on right of the chart.

(1) Check feed pressure: Fix at 5~6bar

(2) Leak test conveyor and vacuum pipeline:

Compare the vacuum level against first result, isolating the pump only.

(3) Check pressure drop while transporting material.

Check the vacuum level while operating normally and compare it with first result.

(4) Check pressure drop at idle running:

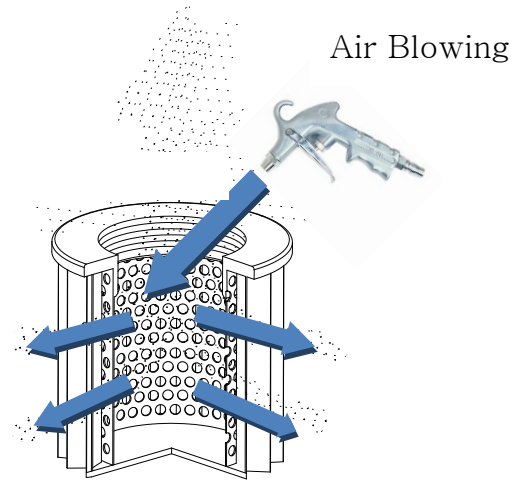
Check the vacuum level at idle running and record the vacuum level at first operation on right of Inspection chart. Wash or change the filter when vacuum level increases past 5~10kPa at idle running.

(5) Washing of Filter:

Filter can be washed 2~4 times with 40°C water. The filter will need replacing after multiple washes.

(6) Filter Cleaning:

Filter cleaning is needed when the vacuum pressure suddenly rises or the amount of material being transferred decreases. Do this by using an air gun or compressed air from inside the filter. Cleaning should be done with clean dry air that has no moisture or oily substances.

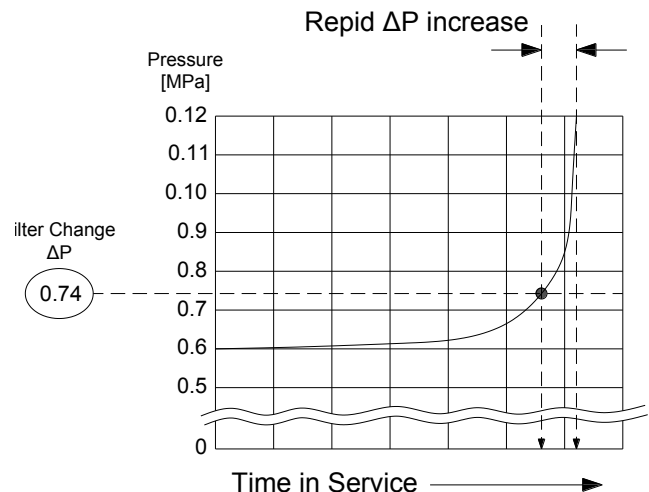
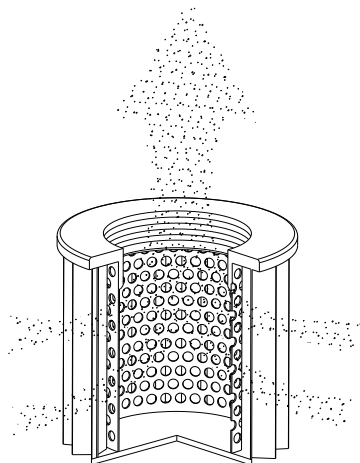


(7) Filter Replacement

Filter needs to be replaced when transferring material suddenly speeds up, transferring material is found in the vacuum pump, vacuum level decreases, and/or there is a decrease in the amount of material it transfers.

Note: Typically, the filter needs to be replaced once every 6 months.

Vacuum Flow



(8) Checking the air compressor and/or air line for moisture

- Check the air line to see if there is any moisture.
- Check the air compressor to see if there is any moisture.

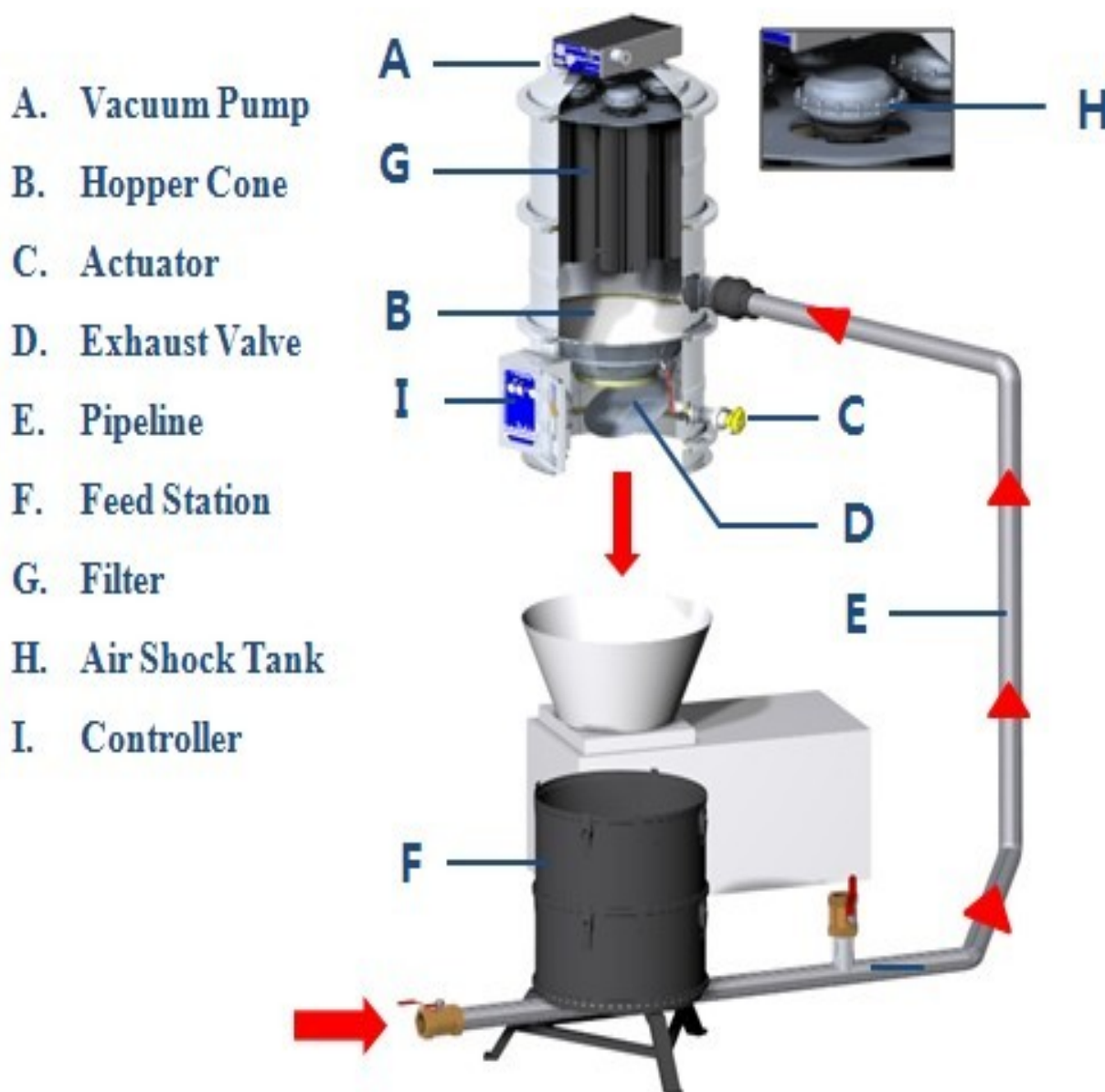
(9) Cleaning & Checking Degradation

Follow the step on Section 2 on the Disassembly section. After all the material is out of the Vacuum Conveyor, proceed with cleaning.

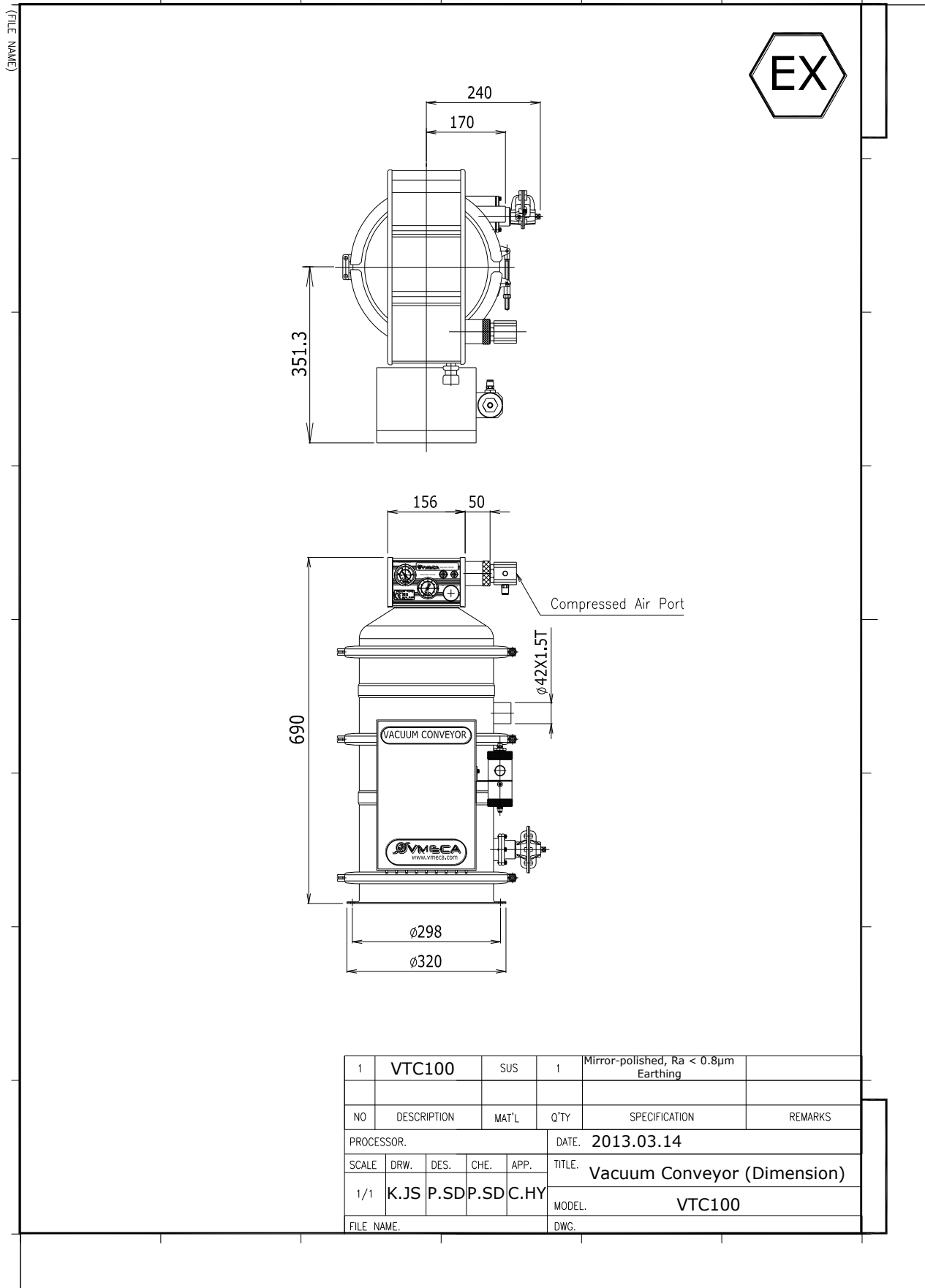
7. Specification

Model	Max. Capacity (t/h)	Weight (kg)	Noise Level (dBA)	Air Consumption (ℓ / min)	Dimension
VTC100	0.6	19	60-65	280	Ø 320 × 690
VTC200	1.0	20	65-70	560	Ø 320 × 690
VTC400	2.1	23	65-70	1120	Ø 320 × 790
VTC600	3.1	44	65-70	1680	Ø 620 × 1046
VTC800	4.2	45	68-75	2240	Ø 620 × 1046
VTC1000	5.2	48	68-75	2800	Ø 620 × 1413
VTC1200	6.0	50	68-75	3360	Ø 620 × 1413

Just reference, as specification are subject to change depending on the application.



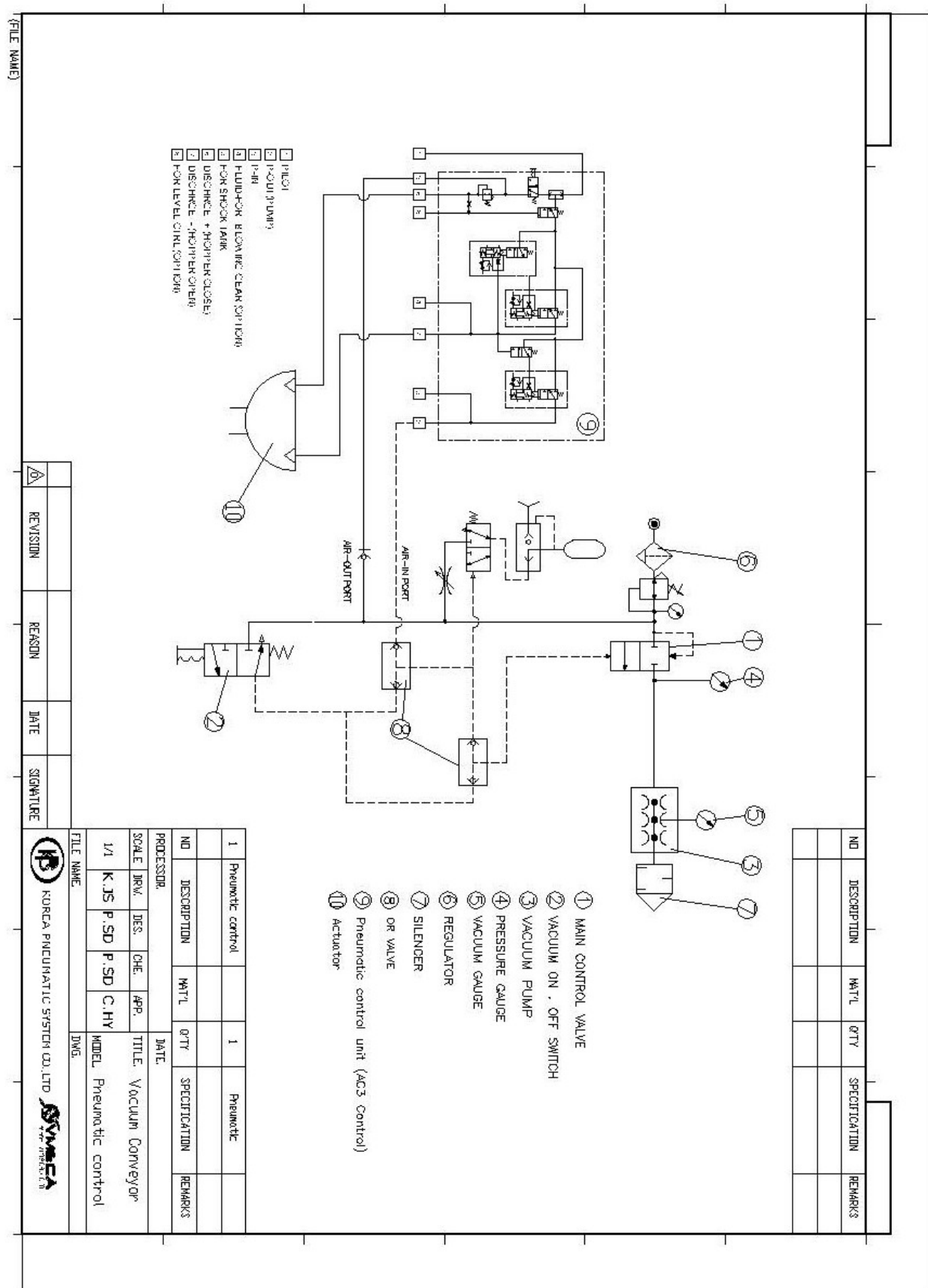
8. Dimension



9. Diagram

Install all test equipment

Install Vacuum Conveyor based on the circuit diagram.



10. Installation

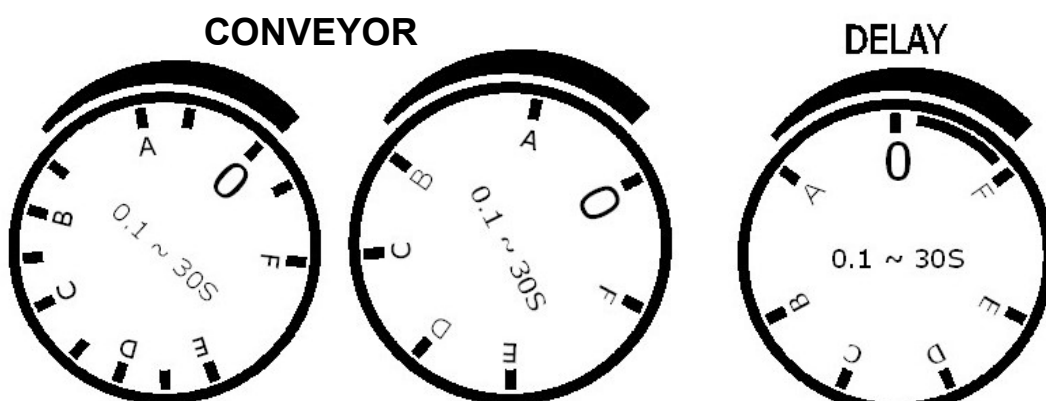


Pre-installation process needs to be done without transferring the material. This is to see if the Vacuum Conveyor System is fully operational

- 1) System Operating Procedures
 - a. Turn on the compressed air valve
 - b. Set the pressure on the Air-Regulator (6 Bar / 87 psi)
 - c. The switch on the Vacuum Pump must be set to “OFF”
 - d. The switch on the Control Box must be set to “ON”
 - e. The Vacuum Conveyor should start running at this point
- 2) Things to check
 - (1) First test the Vacuum Conveyor and the gauge on the vacuum pump should read 4.5 bar without transferring the material. If the gauge reads below 4.5 bar, this most likely means that the compressed air is too little which can result in fewer material transfers.
 - (2) If the air pressure is less than 4.5 bar, please check the vacuum gauge. If the system is running the way it should, the vacuum gauge should read below -10kPa.
 - (3) While keeping the suction port sealed, air pressure gauge should read 4.5-6bar and the vacuum gauge should read -65 to -75 kPa. If vacuum doesn't reach this level, there is probably a leakage in the system module. Check to see if all of the connection parts are sealed properly.
 - (4) From the feeding devices, whether it is from a Feed Nozzle or from a feed station, please set the devices so that the air and material will be able to transfer together. This will allow for smooth flowing of product without any parts clogging inside the piping. If this is done with a VMECA Feed Nozzle, there is a knob that you can adjust to allow air to flow in with the material.
 - (5) Adjust the timing on the Control Box
Vacuum, Hopper, and Delay timers allows the Vacuum Conveyor to run. After everything has been tested, set the timer without transporting any materials to see if the system is running (Adjustments will most likely be needed once the transferring of the material begins).

Note: Make the release time interval short while allowing the vacuum time interval to be long.

- (6) How to set the Vacuum, Hopper, and Delay Timer



- a. Vacuum Timer: Gradually increase the timer by adjusting the knob clockwise. To decrease the timer, please adjust the knob counter-clockwise.
- b. Hopper Timer: Gradually increase the timer by adjusting the knob clockwise. To decrease the timer, please adjust the knob counter-clockwise.
- c. Delay Timer: Gradually increase the timer by adjusting the knob clockwise. To decrease the timer, please adjust the knob counter-clockwise.

★CAUTION★

Avoid transferring excessive amount of materials. Transferring excessive amount of materials may clog the filter. Depending on the nature of the materials, the timer may need to be adjusted accordingly.

(7) If there are any pressure drops, then check the Vacuum Conveyor to see if it is creating any vacuum.

(8) Please record the final adjusted timer, material weight, and volume of material for future reference.

11. Installation Care



- 1) Install Vacuum Conveyor near the suction point.
- 2) Install pipeline so sufficient compressed air is fed to the vacuum pump.
- 3) Keep Vacuum supply port as big as possible.
- 4) Secure Vacuum Conveyor with bracket so it cannot be moved.
- 5) Don't install conveyor with the exhaust port parallel with eyes.
- 6) Check supplying air pressure, maintaining 4~6bar while vacuum conveyor operates.

12. Operation



12-1. Preparation for Operation

- 1) Check the compressed air pressure is 4~6bar
- 2) Check the power connection of Vacuum Conveyor control box.
- 3) Check pipe work for running vacuum conveyor.
- 4) Check the vacuum condition at suction port.
- 5) Check the vacuum condition with the suction pipe connected.
(Check the vacuum condition through the vacuum gauge after vacuum pipes are sealed)
- 6) Check the vacuum filter is in order so suction material is not drawn into the vacuum pump.

12-2. Starting

- 1) Decide the transfer quantity by adjusting suction /exhaust time according transfer quantity and start automatic running after adjustments.
- 2) Check supplying air pressure is maintained at 4~6bar when vacuum conveyor is operating.