

## Pharmaceutical Drum to a Reactor

### Application Description

Gum Arabic, 40 lbs/ft<sup>3</sup>, transfer rate not to exceed 5 kg/min, delivered in 1-2 kg/batch  
Ascorbic Acid, 45 lbs/ft<sup>3</sup>, transfer rate > 660 lbs/hr  
Potassium Sulfate, 90 lbs/ft<sup>3</sup>, transfer rate > 660 lbs/hr

### Customer Challenges

Customer was concerned with Vapors from the reactor. A Vapor barrier was incorporated which used a layer of inert gas to prevent reactor vapors from entering the conveyor.



### Application Data

<b>Application:</b>	<b>Conveying Various Products from Drums into a Reactor</b>		
<b>Product:</b>	See Above	<b>Bulk Density:</b>	See Below
<b>Particle Size:</b>	Fine Powder to Granulate	<b>Flow characteristics:</b>	Semi-free Flowing
<b>Bridging/Ratholing:</b>	Yes	<b>Hygroscopic:</b>	Yes
<b>Application Temp:</b>	Ambient	<b>Product Hazards:</b>	None
<b>Product Temp:</b>	Ambient	<b>Toxic:</b> No	<b>Caustic:</b> No
<b>Piping system:</b>	FDA Flexible Hose	<b>Conveying Distance:</b>	25'
<b># of Bends:</b>	2 - 3	<b>Horizontal:</b> 15'	<b>Vertical:</b> 10'
<b>Feed:</b>	Manually Operated Feed Wand	<b>Discharge To:</b>	Reactor
<b>Application rate:</b>	660 lbs/hr	<b>Quoted Rate:</b>	600 lbs/hr or greater

### Equipment Offered For Application

**Qty Article No. Description**

2 C2102A-C.200/1.AA.X4.BB

C21 Vacuum Conveyor with an L200 Vacuum Pump, Herding Filter, Nitrile Seals, 2" Tangential Inlet, Bottom Valve with SS Actuator and 7" Discharge Diameter (Full Open), and a CU-1B Pneumatic Control

2 01.04.486 Vapor Prevention Kit with Fluidization

01.04.081SS Regulator and SS Nozzles

2 31.04.054 2" Aspirated Feed Wand

50' CPVH2.0 2" FDA Flexible Hose with Ground Wire

### Transition Options

- 2 01.00.C033/1 C-Series Weld able Stub with Clamp and Seal
- 2 01.00.C324/1 C-Series to VC-Series Transition with Clamp and Seal

## Product Specifications

### Conveyor Body

316L SS construction on all product contact surfaces, 220 Grit Polish, Ra 0.8 (N6)

### Seals

FDA Approved Nitrile, NBR

Black, anti-static

Working Range: -20 C to +125 C (-4 F to 257 F)

### Filter

Herding element, FDA Approved

Anti-static, sintered polyethylene, PTFE coated

Filter Area: 0.12 m<sup>2</sup> (1.3 ft<sup>2</sup>)

Sterilize at 110 C (230 F) for 1 hour

Max. Operating Temp: 70 C (158 F)

### Pump

Patented high efficiency multi-characteristic, air driven vacuum pump

Maxi pump, Model L200

Air Inlet: G 1/2" female pipe thread (NPT compatible)

Maximum vacuum, -22" Hg

Anodized Aluminum and Stainless Steel body with PPS ejectors (non-product contact)

### Controller

CU-1B with mounting bracket NC Bottom Valve

Pneumatic control unit

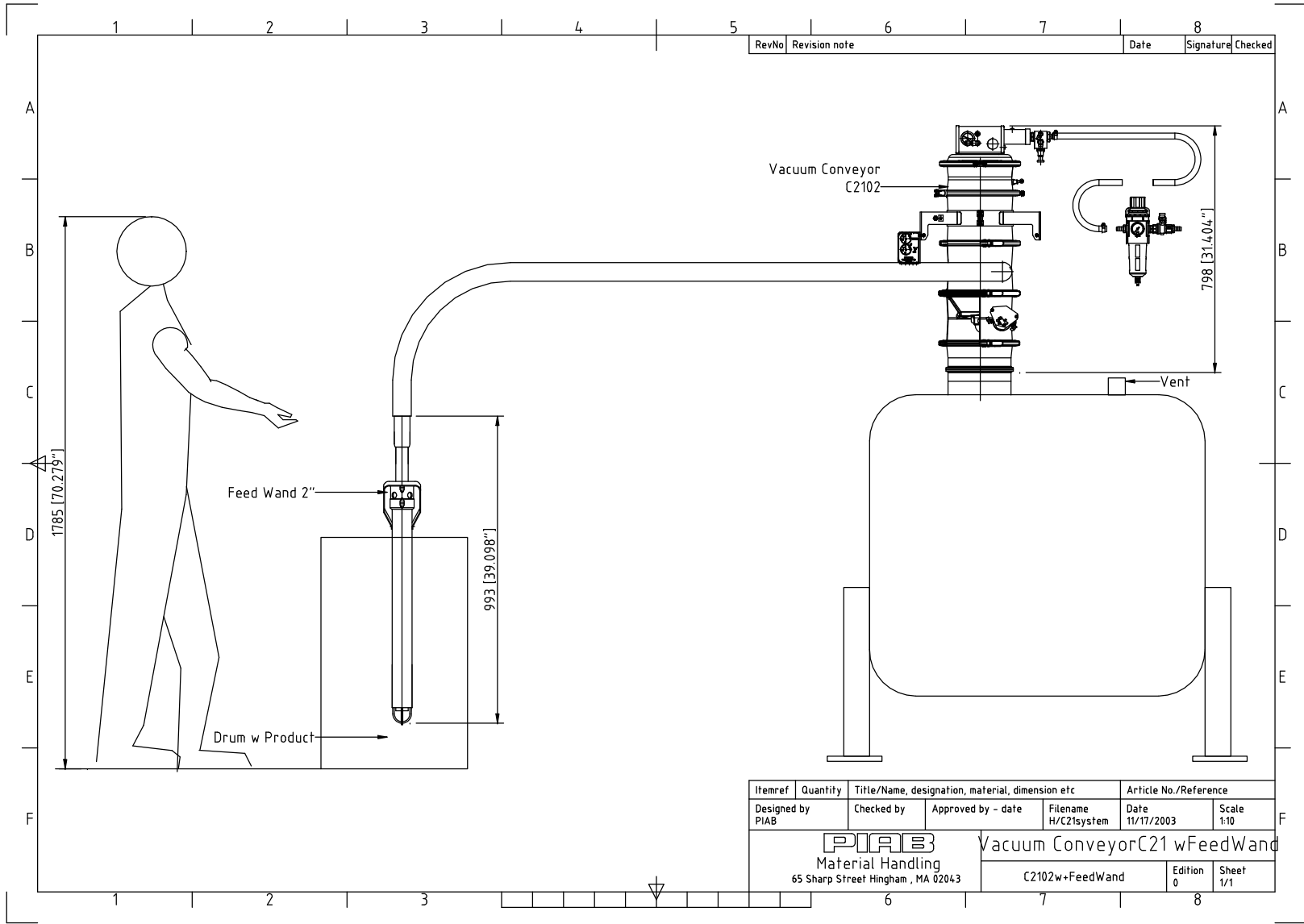
### Inlet

2" Tangential inlet

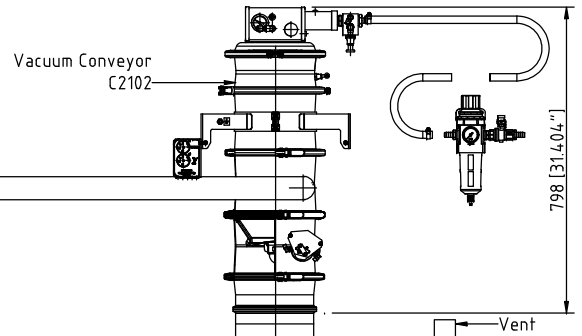
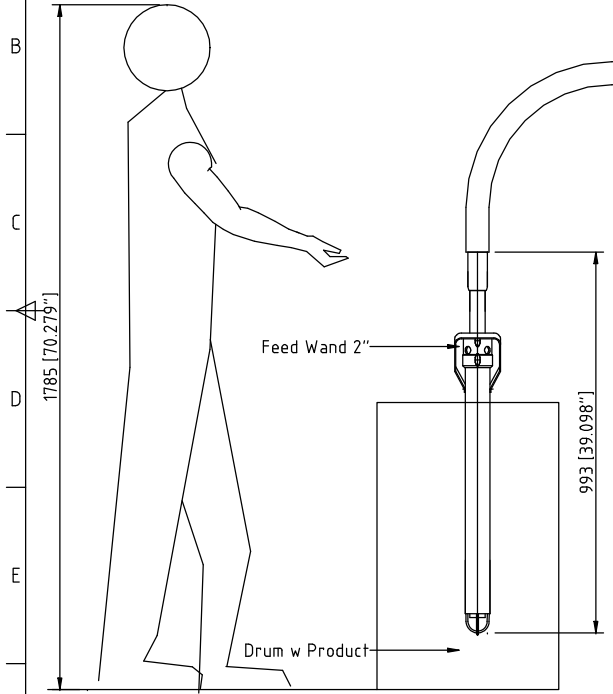
### Bottom Valve

SS Actuator

Approx. 7" diameter (full-open) discharge valve



RevNo	Revision note	Date	Signature	Checked



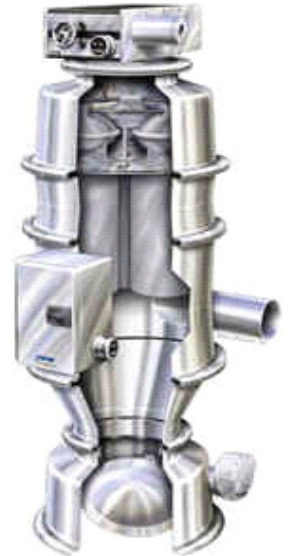
Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by PIAB	Checked by	Approved by - date	Filename H/C21system
<b>PIAB</b> Material Handling 65 Sharp Street Hingham, MA 02043			Date 11/17/2003 Scale 1:10
<b>Vacuum Conveyor C21 w FeedWand</b> C2102w+FeedWand			Edition 0 Sheet 1/1

## Pharmaceutical Fine powders to press

### Customer Challenges

Low head room on tablet press.  
 Manual operation to fill feed hopper, but requires a low volume of material.

### Application Data



<b>Application:</b>	<b>Conveying Pharma Powders into a Manesty Tablet Press</b>		
<b>Product:</b>	Pharmaceutical Powders	<b>Bulk Density:</b>	.33 g/cc (20 lbs/ft <sup>3</sup> )
<b>Particle Size:</b>	Fine Powder	<b>Flow characteristics:</b>	Free Flowing
<b>Bridging/Ratholing:</b>	No	<b>Hygroscopic:</b>	Yes
<b>Application Temp:</b>	Ambient	<b>Product Hazards:</b>	None
<b>Product Temp:</b>	Ambient	<b>Toxic:</b>	No
<b>Piping system:</b>	SS Hard Pipe / Flex Hose	<b>Conveying Distance:</b>	12'
<b># of Bends:</b>	3	<b>Horizontal:</b>	4'
<b>Feed:</b>	Custom Feed Adapter	<b>Vertical:</b>	8'
<b>Application rate:</b>	Max 1.82 liters/hour	<b>Discharge To:</b>	Tablet Press
		<b>Quoted Rate:</b>	>> 1.82 liters/hour

### Equipment Offered For Application

Qty	Article No.	Description
1	01.12.051TBD	C2100-64 Tablet Press Vacuum Conveyor C2100-64 Vacuum Conveyor Featuring a COAX Vacuum Pump, Gore-Sinbran Rod Filter, Nitrile Seals, 1" Inlet with Sanitary Connection, Bottom Valve Module with SS Actuator, and a PPT/R Pneumatic Control Unit
1	01.00.C021/1	C21 Weldable Stub, with Clamp and Seal
1	31.07.001	Valve for Remote Start/Stop of Conveyor Including 6mm Tubing, 2 x 10 ft
1		Custom Feed Attachment, Consisting of 2" Sanitary Elbow, Reduction to 1" Sanitary Hose Ferrule, Including a 1" Sanitary Butterfly Aspiration Valve

## Product Specifications

### Conveyor Body

316L SS construction on all product contact surfaces, 220 Grit Polish, Ra 0.8 (N6)

### Seals

FDA Approved Nitrile, NBR

Black, anti-static

Working Range: -40 C to +125 C (-40 F to 257 F)

### Filter

Gore Sinbran, FDA Approved

Sintered polyethylene rods, Gore PTFE coated

Filter Area: 0.027 m<sup>2</sup> (0.29 ft<sup>2</sup>)

Sterilize at 120 C (248 F) for 30 minutes

Max. Operating Temp: 120 C (248 F)

### Pump

Patented high efficiency, air driven COAX® P6510-4 Vacuum Pump

Maximum vacuum, -22"Hg

Aluminum and Stainless Steel Pump Assembly with PA COAX® Cartridges

Air Inlet: 10mm Push-in Connection for Nylon Tube

### Controller

PPT/R with mounting bracket 0.1-30 sec

Pneumatic control unit

### Inlet

1" Tangential inlet with Sanitary Connection

### Bottom Valve

SS Actuator

Approx. 4.5" diameter discharge valve

65 degree discharge angle

## TESTIMONIAL

### Reduced cleaning time by 600 hours with C2100-64

#### CUSTOMER

Rottendorf Pharma GmbH, Germany  
[www.rotteendorf-pharma.de](http://www.rotteendorf-pharma.de)

#### SEGMENT

Pharmaceutical industry – Conveying powder to tablet press.

#### PIAB PRODUCT

Conveyor C2100-64



#### BACKGROUND

Rottendorf is one of Germany's leading contract manufacturers for solid dosage forms. They have development and production of multi-layered tablets, film-coated tablets, sugar-coated tablets, pellets and hard gelatine capsules. In a highly competitive market, productivity improvements and reduced cleaning times create a strong competitive edge – something the company was searching for when looking for new production solutions.

Rottendorf presented three prioritized areas of improvement;

1. Increase of production capacity by reducing the cleaning process from 7,200 hrs to 6,600 hrs yearly.
2. Improved SHE (Safety, Health and Environment).
3. Productivity improvements with 15 million tablets every year.

#### SOLUTION

The C2100-64 conveyors replaced old VC conveyors that were used for conveying the powder to the tablet presses. This new solution made the cleaning process shorter and easier for the operators. The assembling of the conveyors was also easier, since there is no possibility to mix the modules.

#### RESULT

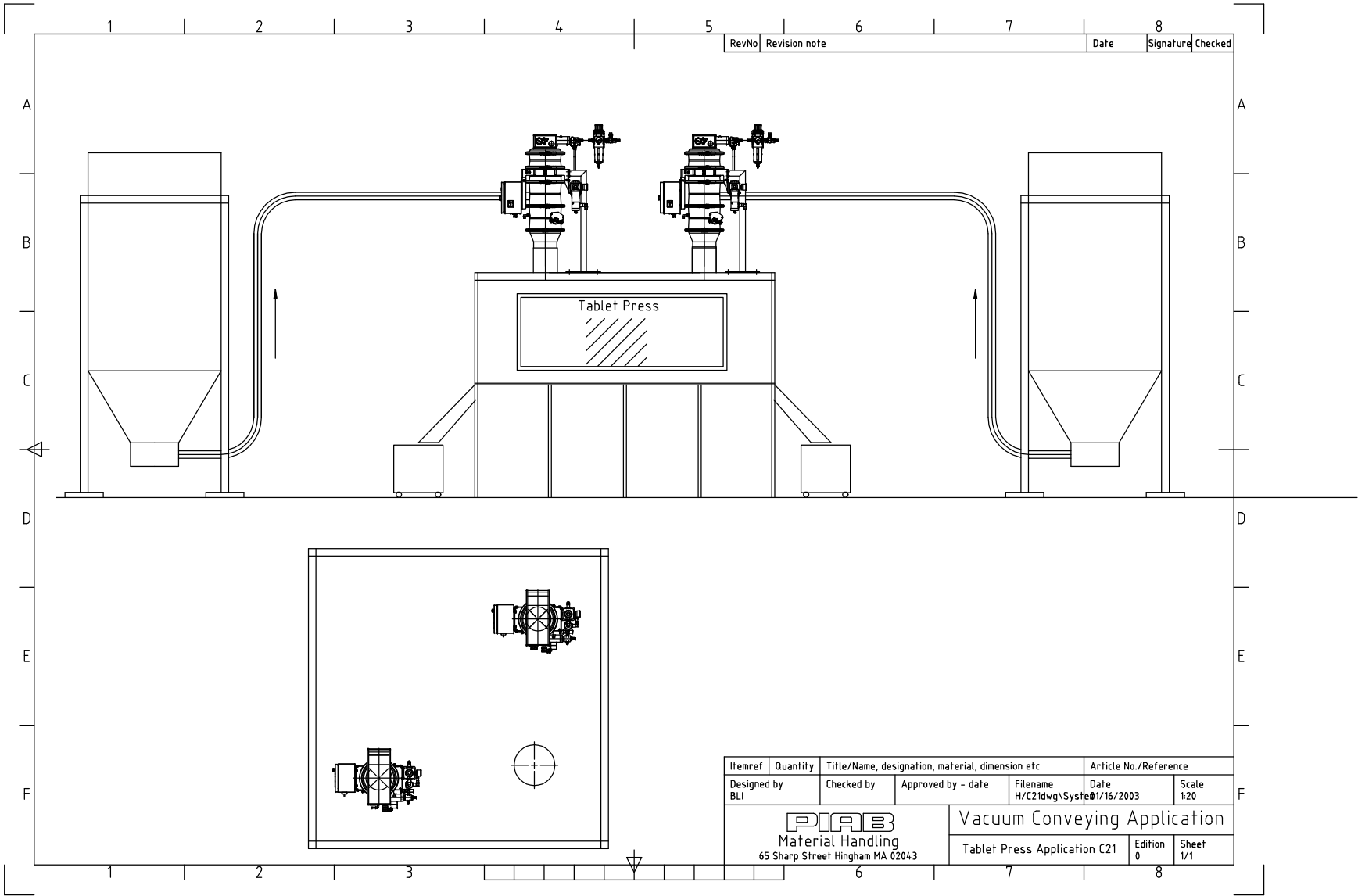
The machines were cleaned after every campaign and the cleaning time was reduced from 3 hrs to 2 hrs per machine, giving 1 hrs more of production time. The conveyors also gave improvements in the working environment thanks to lighter equipment and fewer parts of the machine, reducing the possibility of mix-up.

PIAB Solutions Business impact:

1. By using the PIAB compact conveyor both cleaning time and possibility of mixing parts could be reduced. Impact = the labour cost was reduced by €9,000 every year.
2. The operators are very positive thanks to easier assembling and very light equipment that is perfect to handle.
3. Conservatively calculated with a gross margin of €0,1 cent per tablet, the productivity increase is €15,000. Impact = ROI of €40,000 was 20 months.

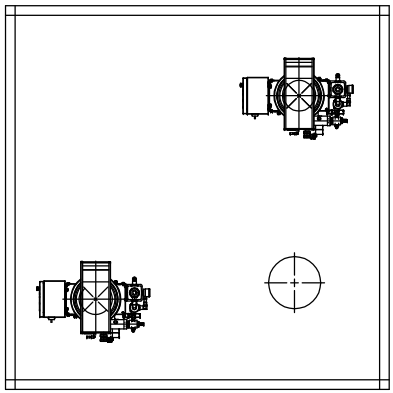
#### CONTACT

For more detailed information about this testimonial, please contact Johannes Krumme at PIAB Vakuum GmbH, Germany.



RevNo	Revision note	Date	Signature	Checked
-------	---------------	------	-----------	---------

Tablet Press



Itemref	Quantity	Title/Name, designation, material, dimension etc			Article No./Reference	
Designed by BLI	Checked by	Approved by - date	Filename H/C21dwg\System	Date 01/16/2003	Scale 1:20	
<b>PIAS</b> Material Handling 65 Sharp Street Hingham MA 02043				<b>Vacuum Conveying Application</b> Tablet Press Application C21    Edition 0    Sheet 1/1		

### Pharmaceutical Ribbon Blender to FIBC Filler

#### Application Description

Material is dropping from a ribbon blender to a low elevation. Convey into a FIBC.  
Angel repose 45degree, product color orange, stains ,materials pink slowly attacks 316L  
Particle size max 225micron min 20micron, majority 44-65 micron



#### Application Data

Convey Powder from a ribbon blender to a FIBC filler			
<b>Application:</b>			
<b>Product:</b>	Powder	<b>Bulk Density:</b>	0.6kg/dm3
<b>Particle Size:</b>	maj. 44-65micron	<b>Flow characteristics:</b>	Free flowing
<b>Bridging/Ratholing:</b>		<b>Hygroscopic:</b>	
<b>Application Temp:</b>	ambient	<b>Product Hazards:</b>	
<b>Product Temp:</b>	ambient	<b>Toxic:</b>	<b>Caustic:</b>
<b>Piping system:</b>	SS tubing	<b>Conveying Distance:</b>	30ft
<b># of Bends:</b>	2	<b>Horizontal:</b>	24ft
<b>Feed:</b>	Feed adapter 3"	<b>Vertical:</b>	21ft
<b>Application rate:</b>	9000lbs/hour	<b>Discharge To:</b>	FIBC
		<b>Quoted Rate:</b>	9000lbs/hour

#### Equipment Offered For Application

Qty	Article No.	Description
1	C5604A-C.800/1.AC.04.BB	Vacuum Conveyor size C56 consist of: PIAB Vacuum Pump L800 Filter Unit C5604 w/Herding filter Connection unit w4" reduced to 3" connection. Bottom Valve Unit w/SS actuator Control Unit w/ Suction time and discharge time, SS Enclosure
1	TBD	Feed Adapter 316L, size 3", w/ flange connection (Size TBD)
2	34.04.668304SS	SS 304, size 3" , 90 degree Bend, r=30" gauge #16
1	31.07.001	Pneumatic On/Off valve for remote On off valve for the PIAB control, incl. tubing



## Product Specifications

### Conveyor Body

316L SS construction on all product contact surfaces, 220 Grit Polish, Ra 0.8 (N6)

### Seals

FDA Approved Nitrile, NBR

Black, anti-static

Working Range: -20 C to +125 C (-4 F to 257 F)

### Filter

Herding element, FDA Approved

Anti-static, sintered polyethylene, PTFE coated

Filter Area: 0.19 m<sup>2</sup> (2.1 ft<sup>2</sup>) x 7 per conveyor

Sterilize at 110 C (230 F) for 1 hour

Max. Operating Temp: 70 C (158 F)

### Pump

Patented high efficiency multi-characteristic, air driven vacuum pump

Maxi pump, Model L800

Air Inlet: G 3/4" female pipe thread (NPT compatible)

Maximum vacuum, -22" Hg

Anodized Aluminum and Stainless Steel body with PPS ejectors (non-product contact)

### Controller

CU-1B with mounting bracket NC Bottom Valve

Pneumatic control unit

### Inlet

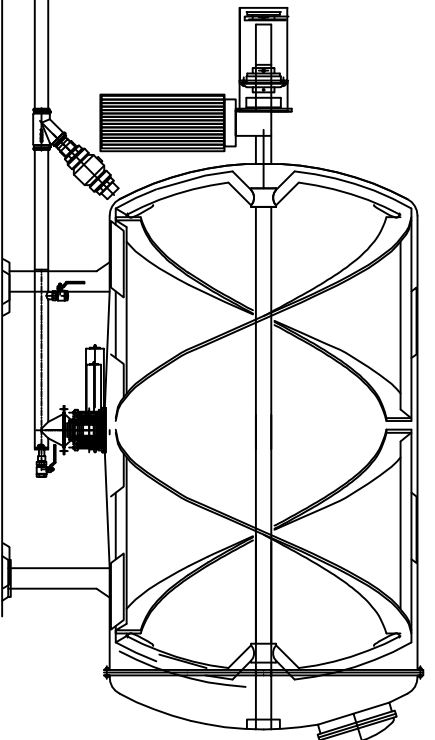
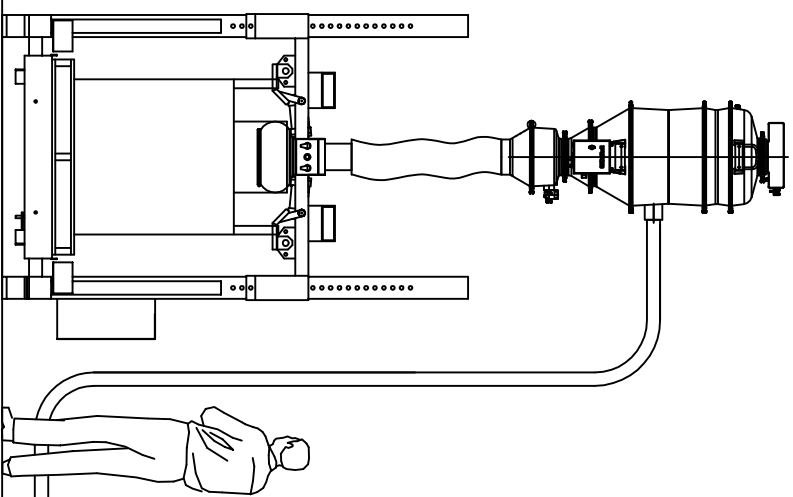
4" Tangential inlet

### Bottom Valve

SS Actuator

Approx. 7" diameter discharge valve

60 degree discharge angle



RevNo	Revision note	Date	Signature/Checked
8			

Designed by	Checked by	Approved by - date	Filename	Article No./Reference
XXX	XXX	XXX -	XXX	
<b>POIRIS</b> Material Handling 55 Accord Park Drive Rockland MA 02370				C56 Loading FBIC from Blender C56 Vacuum Conveyor
				Date 09/23/08 Scale 1:20 Edition 0 Sheet VI

### Pharmaceutical Finished Tablets from Press to Drum

#### Customer Challenges

#### Application Data



<b>Application:</b>	<b>Tablet transfer</b>	<b>Bulk Density:</b>	Unknown
<b>Product:</b>	Tablets	<b>Flow characteristics:</b>	Free Flowing
<b>Particle Size:</b>	More than 5mm	<b>Hygroscopic:</b>	No
<b>Bridging/Ratholing:</b>	No	<b>Product Hazards:</b>	No
<b>Application Temp:</b>	Ambient	<b>Toxic:</b>	No
<b>Product Temp:</b>	Ambient	<b>Caustic:</b>	No
<b>Piping system:</b>	2" Flex hose	<b>Conveying Distance:</b>	20ft
<b># of Bends:</b>	2	<b>Horizontal:</b>	10'
<b>Feed:</b>	2 feeding stations	<b>Vertical:</b>	5'
<b>Application rate:</b>	500,000 tablets in 60 min.	<b>Discharge To:</b>	Fiber Drums/Buckets
		<b>Quoted Rate:</b>	500,000 / h

#### Equipment Offered For Application

##### C21 Vacuum Conveyor for Tablet Transfer: (System consists of 2 identical units)

- PIAB pump Model L200 – Max Vac. Flow of 100 cfm .Capable to reach 22" inHg.
- Requires approx 22-30 scfm at 58-87 PSI on an intermittent basis.
- Air shock system for filter cleaning purpose
- Black nitrile FDA gaskets
- Textile vacuum filters FDA approve. Suitable for 5 micron
- 3" inlet with silicone cuff to avoid product damage
- Silicone pre separator valve
- Fluid cone made of FDA polyethylene to avoid tablet breakage
- FDA approved rubber on bottom valve to avoid tablet breakage
- Discharge valve 4.5" diameter

##### Feed station receivers (x2):

- 2 Feed Stations with FDA approved polyethylene cone for tablet protection and feed adapters to connect the 2" flexible hose.
- Feed station made of 316 SS grid 220.
- Volume of 10 liters each
- Sanitary connections via quick clamp

**Controls:**

- Pneumatic control unit - timer 0 to 30 seconds. Model PPT/R
- Actuating Valve ( remote start/stop unit)

**Wall mounting brackets, hose:**

- Wall mounting 304 SS construction finish <Ra0.8 (amount 4)
- Vacuum hose 2" diameter FDA approved, PVC, incl. grounding wire

## Product Specifications

**Conveyor Body**

316L SS construction on all product contact surfaces, 220 Grit Polish, Ra 0.8 (N6)

**Seals**

FDA Approved Nitrile, NBR

Black, anti-static

Working Range: -40 C to +125 C (-40 F to 257 F)

**Filter**

Textile , FDA Approved

AntiStatic, polyester/carbon needle felt, TFE coated, silicone sealed

Filter Area: 0.13 m<sup>2</sup> (1.4 ft<sup>2</sup>) x 1 per conveyor

Washable at 40 C (104 F)

Max. Operating Temp: 80 C (176 F)

**Pump**

Patented high efficiency multi-characteristic, air driven vacuum pump

Maxi pump, Model L200

Air Inlet: G 1/2" female pipe thread (NPT compatible)

Maximum vacuum, -22" Hg

Anodized Aluminum and Stainless Steel body with PPS ejectors (non-product contact)

**Controller**

PPT/R with mounting bracket NO Bottom Valve

Pneumatic control unit

**Inlet**

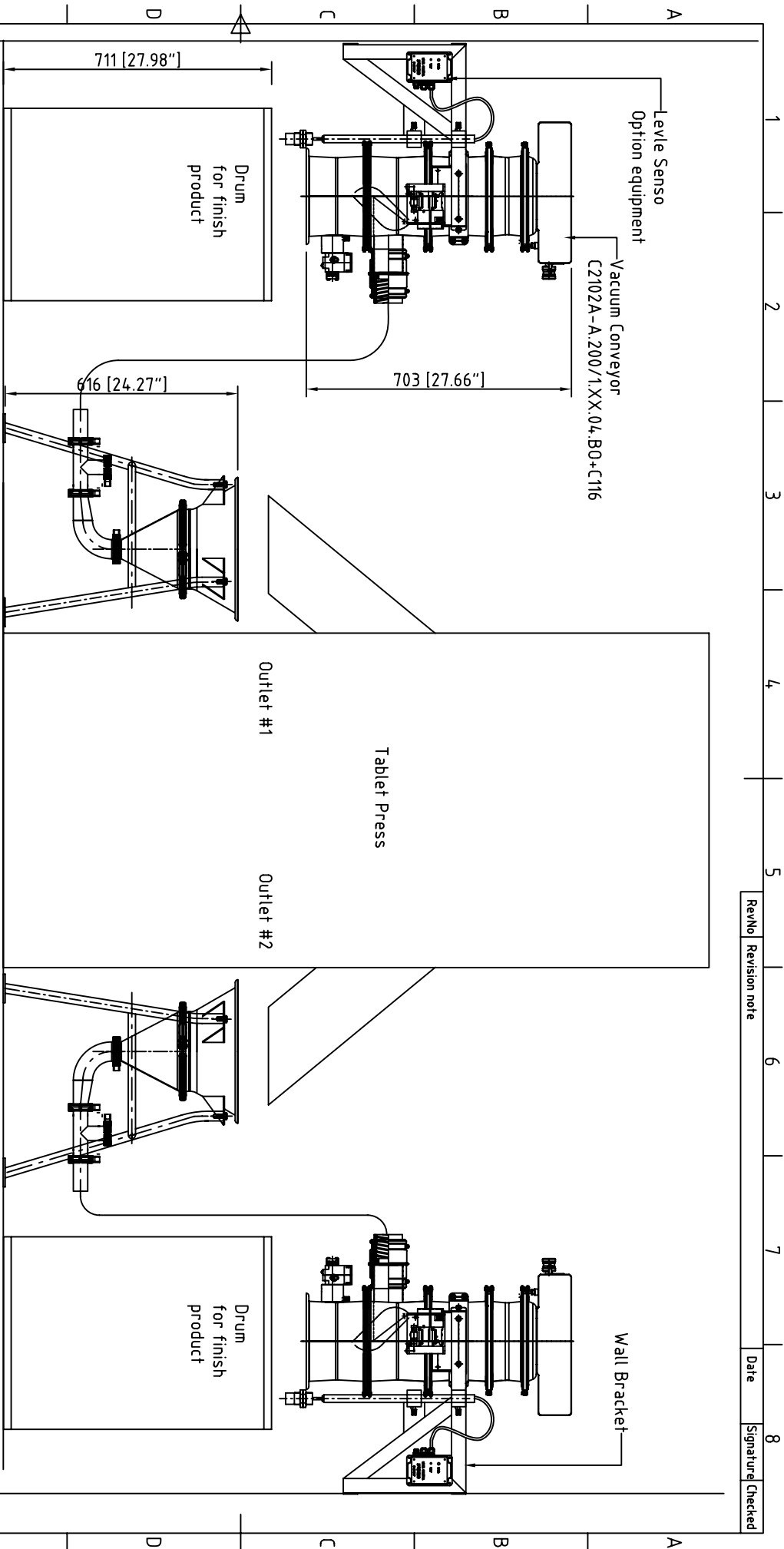
Straight Inlet with Pre Separator Flap

**Bottom Valve**

SS Actuator

Approx. 4.5" diameter discharge valve

RevNo	Revision note	Date	Signature	Checked
1				



Item ref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by PLAB	Checked by XXX	Approved by - date XXX - 00/00/00	Filename H/C21/System
		Date 07/29/2008	Scale 1:10

		<b>Vacuum Conveying system Table</b>	
Material Handling 65 Sharp Street Hingham MA 02043		0922200803	
		Edition 0	Sheet 1/1

1 2 3 4 5 6 7 8

## Pharmaceutical Tablets from Tablet Press to Bin

### Customer Challenges

### Application Data



<b>Application:</b>	Moving pills from machine to bin and dumpster		
<b>Product:</b>	pills	<b>Bulk Density:</b>	not specified
<b>Particle Size:</b>	N/s	<b>Flow characteristics:</b>	not specified
<b>Bridging/Ratholing:</b>	no	<b>Hygroscopic:</b>	not specified
<b>Application Temp:</b>	ambient	<b>Product Hazards:</b>	not specified
<b>Product Temp:</b>	ambient	<b>Toxic:</b>	not specified
<b>Piping system:</b>	2"	<b>Conveying Distance:</b>	17 ft / 5ft
<b># of Bends:</b>	2	<b>Horizontal:</b>	8ft /4ft
<b>Feed:</b>	Short feed station	<b>Vertical:</b>	9ft
<b>Application rate:</b>	1,000kg/hr	<b>Discharge To:</b>	Bin or dumpster
		<b>Quoted Rate:</b>	1,000kg/hr

### Equipment Offered For Application

Qty	Article No.	Description
1	C3302A-A.200/1.AA.04.BK	C33 Vacuum Conveyor System
2	34.00.Q182	2" Pinch Valve
2	R0802FOGO	¼" Regulator including Gauge
2	34.05.200	2" 304 SS Pipe
1	34.70.014	Feed Station
		w/ short legs (RPP237)
		w/ short module (34.02.048)
		w/o long module
1	34.00.Q672	50mm Y-Tube
1	C3302A-A.200/1.XX.04.BK	C33 Vacuum Conveyor System
		W/o Inlet
1	01.00.C001/2	Inlet Module w/ Flap
1	34.04.002	Tube Fitting 75x75/3"x3"
1	34.00.Q615	Coupling 3"-2" Cuff

4	34.04.031	Suspension Clamp
25	CPVH2.0	2” food Grade Hose
2	31.07.001	Remote On/Off Valve
100	01.04.711	4 / 2.5 Nylon Tubing

## Product Specifications

### CONVEYOR

**Conveyor Body:** 316 Stainless Steel construction on all product contact surfaces 220 Grit Polish.

**Seals:** FDA approved nitrile standard  
-4F to 176F

**Filter:** FDA approved PITEK MP02 TFE impregnated polyester needlefelt  
Anti-static standard  
Filter material washable and reusable  
Automatic filter shock every cycle to prevent filter blinding  
-4F to 176F

**Pump:** Patented high efficiency multi-characteristic air driven vacuum pump  
22 “Hg maximum vacuum  
Anodized Aluminum and Stainless body with Ryton ejectors  
Mounted directly to conveyor lid (non-product contact)

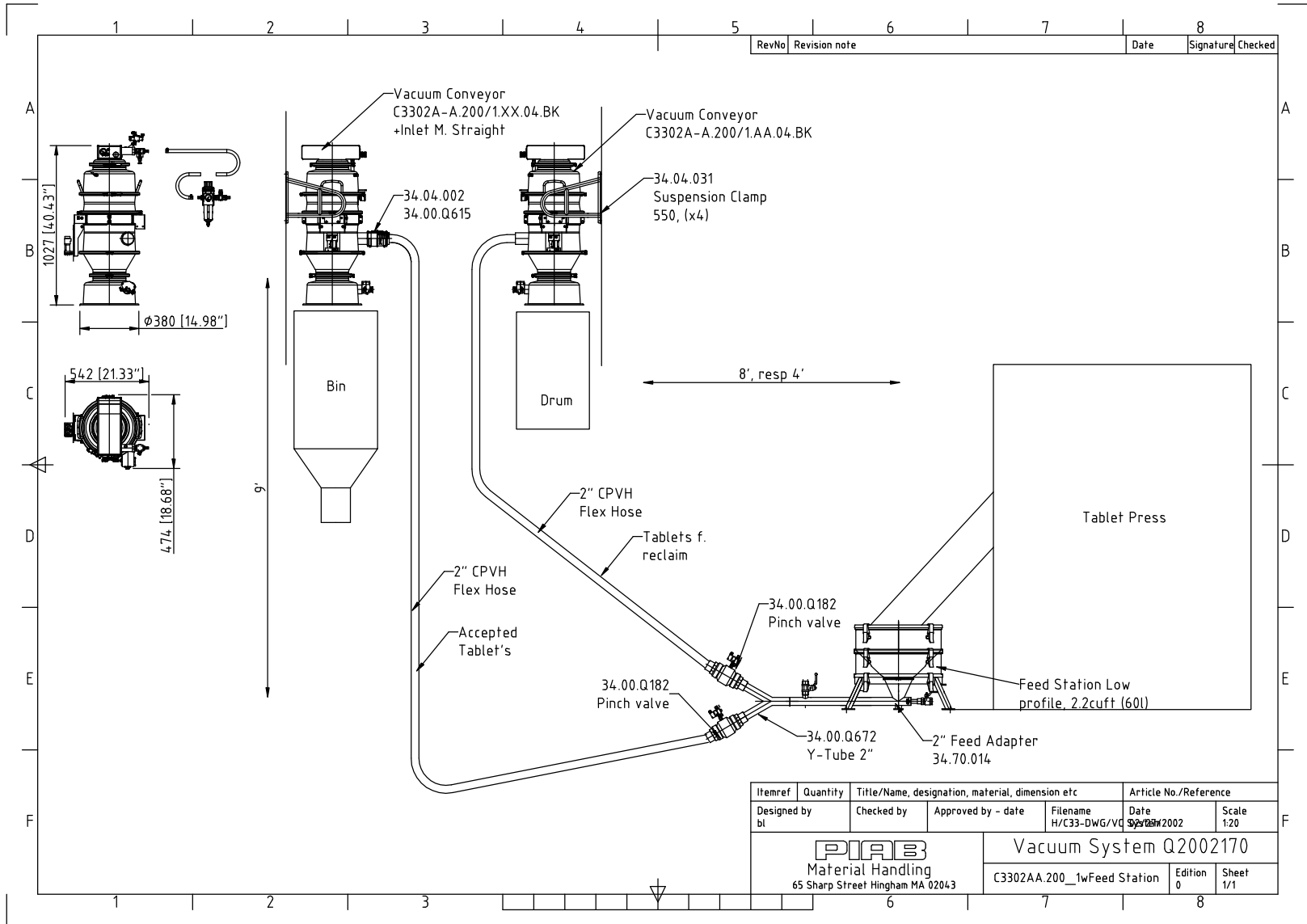
**Fluid Cone (on fluidized units only):** High density polyethylene porous cone FDA approved material, operating temperature -4F to 176F

### FEED STATIONS/FEED WANDS

316 Stainless Steel construction on all product contact surfaces

### HOSE

- Food grade PVC material
- Smooth bore ID
- Copper ground wire embedded
- Rated at -4C to +65C



RevNo	Revision note	Date	Signature	Checked

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by bl	Checked by	Approved by - date	Filename H/C33-DWG/VG
<b>PIAB</b> Material Handling 65 Sharp Street Hingham MA 02043			<b>Vacuum System Q2002170</b> C3302AA.200_1wFeed Station
Date 5/2/2002	Scale 1:20	Edition 0	Sheet 1/1