2200 SERIES VACUUM CONVEYOR
Special Capabilities Specification Sheet

975 Cottonwood Ave., PO Box 20, Hartland, Wisconsin 53029-0020, USA | www.dorner.com | info@dorner.com

VACUUM CONVEYORS

Vacuum conveyors are made by perforating the belt and drawing air through grooves in the bed of a standard conveyor.

- Holds flat parts of any material fast to the belt
- Ideal for elevation changes or part holding
- Can be used in upside down applications
- Vacuum area required is designed per application
- A variety of vacuum sources can be used

2200 Series Conveyor Specifications

- Aluminum Extruded Frame with T-slot Construction
- Sealed Ball Bearings
- V-Guided and Non-V-Guided Compatible
- Rack and Pinion Belt Tensioning
- End and Center Drive Compatible
- Conveyor Widths: 2.75" (70 mm) to 24" (610 mm) wide
- Conveyor Lengths:
  End Drive = 2' (610 mm) to 18' (5,486 mm)
  Center Drive = 2' (610 mm) to 24' (7,315 mm)
- Speed Capacity: up to 264 ft/min (81 m/min)

Reference Full Specification Catalog or www.dorner.com for conveyor details.

Application Notes:

1. Products being conveyed on a vacuum conveyor must be placed in physical contact with the belt to create a seal.
2. Do not attempt to accumulate product on a vacuum conveyor.
3. Do not use in an application with powder or liquid.

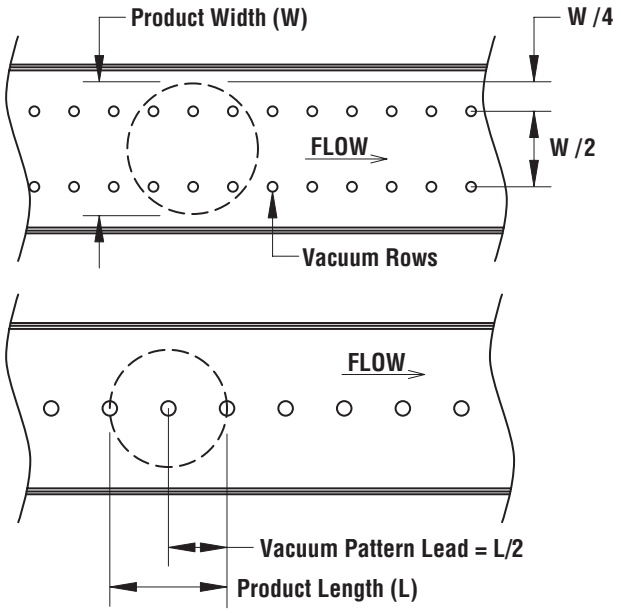
VACUUM SPECIFICATIONS

• Rows:

Generally (1) row of vacuum is used for products 2" (51 mm) wide or less
(2) rows or more should be used for larger width product row spacing

• Vacuum Pattern Lead:

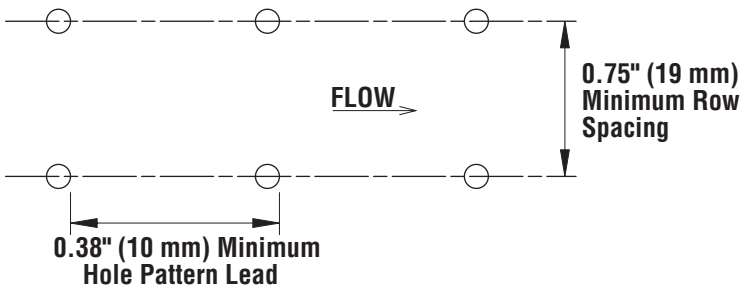
The lead on the vacuum holes should be placed so a minimum of
(2) hole patterns are on the product at all times



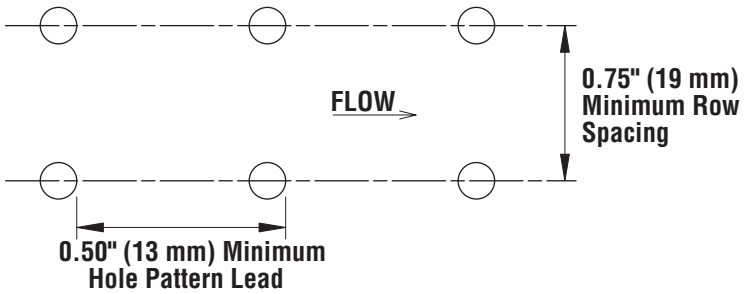
 | Part Number 851-763 0516 Rev B. | D.O.

- Vacuum Pattern Options

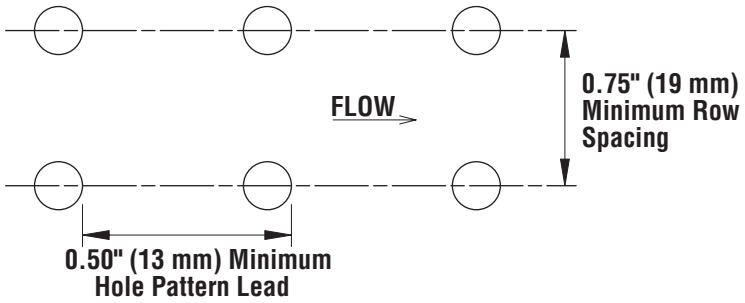
0.12" (3 mm) DIA Hole



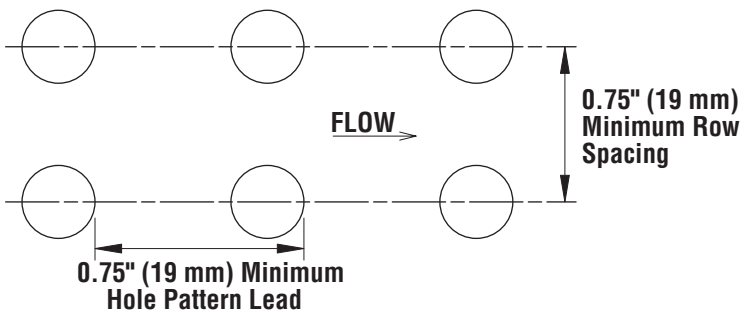
0.19" (5 mm) DIA Hole



0.25" (6 mm) DIA Hole



0.38" (10 mm) DIA Hole



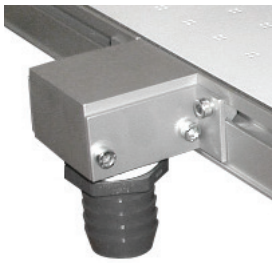
Recommended Belt Types

Type 03 FDA High Friction
For rigid parts like plastic caps, plastic bottles, ceramic wafers, glass ware, etc.

Type 06 Electrically Conductive Belt
For thin product like paper, light cardboard, cloth, plastic film, etc.

• Vacuum Ports:

Vacuum is drawn through the side frame of the conveyor
2.1" (53 mm) O.D. fitting for standard 2" (51 mm) vinyl tubing



• Number of Vacuum Ports:

The number of vacuum ports is determined by the vacuum hole selected, the hole pattern and the number of vacuum rows

$$\textbf{Number of Ports} = \left[\frac{(\text{Area})\ (\text{Zone Length})\ (\text{Rows})}{(3)\ (\text{Lead})} \right] \textit{(Round Up)}$$

Where:

Area = Area of Vacuum holes (in^2)

- 0.12" (3 mm) Hole Pattern = 0.012 in^2
- 0.19" (5 mm) Hole Pattern = 0.028 in^2
- 0.25" (6 mm) Hole Pattern = 0.049 in^2
- 0.38" (10 mm) Hole Pattern = 0.110 in^2

Zone Length = Length of Vacuum Zone (in)
**See dimensional drawing for details (page 5)*

Rows = Number of Vacuum Rows

Lead = Vacuum Hole Pattern Lead (in)

Example:

10" (254 mm) wide by 12' (3,658 mm) Long 2200 Series End Drive Conveyor with (3) rows of 0.12" (3 mm) DIA holes with a 1.0" (25 mm) lead.

$$\textbf{Number of Ports} = \frac{(.012)\ (144" - 6.3")\ (3)}{(3)\ (1.0)} = \frac{(.012)\ (137.7)\ (3)}{(3)\ (1.0)} = \frac{4.96}{3.0} = 1.7 \textit{ (Round Up)}$$

Number of Ports = 2

** 6.3" (160 mm) = 2200 Series No Vacuum Zones, see page 5 & 6*

Vacuum Source

- Vacuum source is provided by a regenerative vacuum blower
- An inlet filter, muffler and exit relief valve is recommended
- Plumbing is done thru vinyl tubing
- The size of the vacuum blower is determined by the total area of vacuum holes open during product running, pressure required to hold the product and the seal of the product to the conveyor belt

$$\textbf{Number of Open Vacuum Holes} = \left[\frac{(\text{Rows})}{(\text{Lead})}\right]\left[\frac{(\text{Zone Length})\,(\text{Rate})}{(\text{Speed})}\left(\frac{(\text{Speed})}{(\text{Rate})} - \text{Product Length}\right)\right]$$

Where: Rows = Number of Vacuum Rows
Lead = Vacuum Hole Pattern Lead (in)
Zone Length = Length of vacuum zone (in) **See dimensional drawing for details*
Speed = Belt Speed (in/min)
Rate = Product Rate (parts/min)
Product Length = Length of product in the direction of flow (in)

$$\textbf{Blower Size (CFM)} = \left(\frac{\text{Number of Open Vacuum Holes}}{}\right)\left(\frac{\text{Flow Rate Per Hole}}{}\right)$$

Where: Number of Open Vacuum Holes = From Above
Flow Rate Per Hole* =
0.12" Hole Pattern = 0.56 CFM
0.19" Hole Pattern = 1.00 CFM
0.25" Hole Pattern = 2.20 CFM
0.38" Hole Pattern = 10.00 CFM
** Flow Rate is estimated at 8" (203 mm) of H2O Vacuum venting to atmosphere.*

Vacuum Blower Size

Blower CFM (at 15" (381 mm) H2O)	Blower hp	Blower Volts Blower	Phase/Hz	Blower Amps
68	1.0	230 / 460	3 / 60	3.2 / 1.6
125	2.5	230 / 460	3 / 60	6.9 / 3.45
180	3.5	230 / 460	3 / 60	8.8 / 4.4

Note: Multiple blowers may be required for large applications. Testing of product is recommended to verify Vacuum pressure required and blower size.

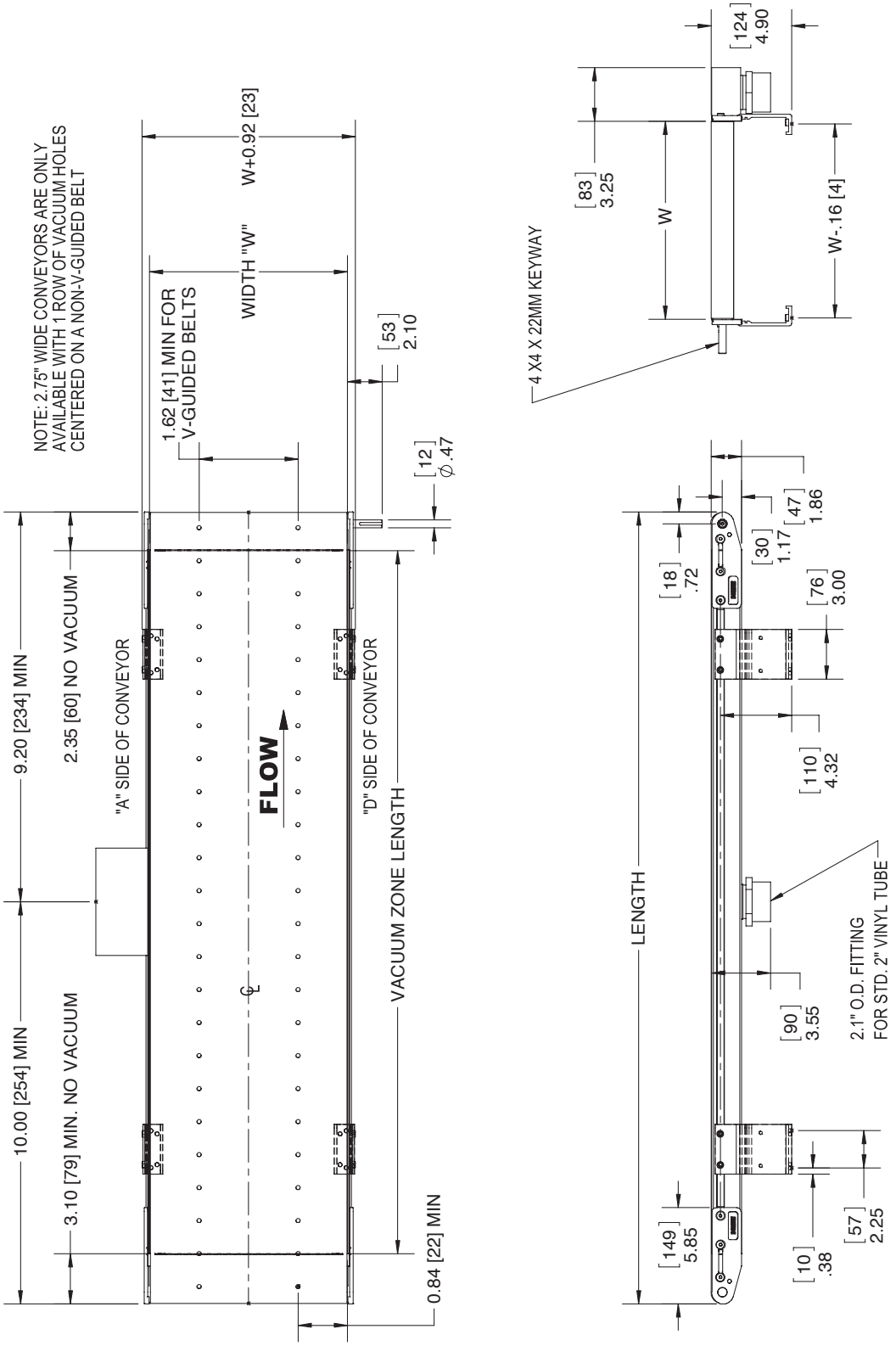
Example:

10" (254 mm) wide by 12' (3,658 mm) long 2200 Series End Drive Conveyor with (3) rows of 0.12" (3 mm) DIA holes on 1.0" (21 mm) lead, 12" (305 mm) long product, 30 parts/minute rate, and 50 ft/min (15 m/min) belt speed

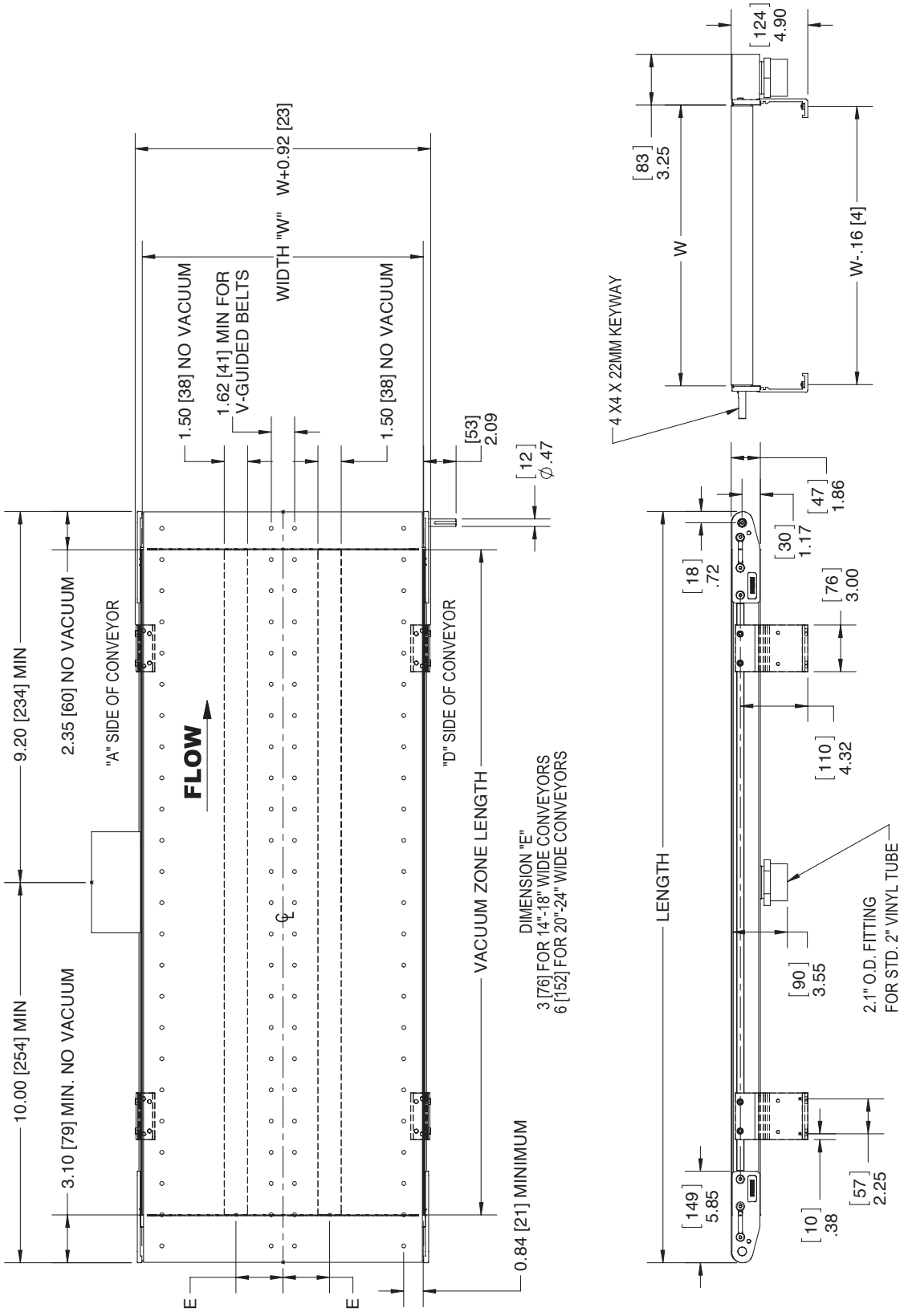
$$\textbf{Number of Open Vacuum Holes} = \left[\frac{3}{1.0}\right]\left[\frac{(137.7)\,(30)}{50\,(12)}\left(\frac{50\,(12)}{30} - 12\right)\right] = 165.24 = \textbf{165 holes}$$

$$\textbf{Blower Size (CFM)} = (165 \text{ holes})\,(.56 \text{ CFM}) = \textbf{92.5 CFM}$$ **Therefore, use a 2.5 hp Blower**

Dimensions & Vacuum Layout (2.75" (70 mm) - 12" (305 mm) Wide):



Dimensions & Vacuum Layout (14" (356 mm) - 24" (610 mm) Wide):



Profiles:

- Product guiding is generally not required or recommended
- All 2200 Series profiles are applicable
- *See Full Specifications Catalog or www.dorner.com for details*

Belting:

- Standard Belting: Type 03 or Type 06 Belt is recommended

  Type 03 FDA High Friction
  For rigid parts like plastic caps, plastic bottles, ceramic wafers, glass ware, etc.

  Type 06 Electrically Conductive Belt
  For thin product like paper, light cardboard, cloth, plastic film, etc.

- Belt must be finger spliced
- *See Full Specifications Catalog or www.dorner.com for details*

Mounting Packages & Gearmotors:

- All 2200 series Mounting Packages and Gearmotors are applicable
- *See Full Specifications Catalog or www.dorner.com for details*

Support Stands:

- All 2200 Series Support Stands are applicable.
- *See Full Specifications Catalog or www.dorner.com for details*

DORNER®
MOVE FAST. MOVE SMART.

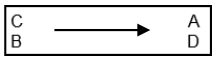
REQUEST FOR QUOTE

FAX COMPLETED FORMS TO 800.369.2440 or 262.367.5827
or email directly to your team or customerservice@dorner.com

975 Cottonwood Ave., PO Box 20, Hartland, Wisconsin 53029-0020, USA
www.dorner.com | info@dorner.com

Contact Name:		Project Name:	
Company Name:		DTools Cong #:	
Email:		Phone:	
Address:			

The Basics

	Conveyor 1	Conveyor 2	Conveyor 3
Belt Widths			
Conveyor Lengths			
Drive Position (side, bottom, top, center)			
Drive Location (C & B reduce load capacity 66%) 			
Belt Requirements (Flat or Cleated) (if unsure, describe application)			
Cleat Height (if needed) (see catalog for types)			
Cleat Spacing (if needed)			
Profile / Guiding type (see catalog)			
Top of Belt Heights from Floor (if stands are required) (Infeed and Outfeed)			
Belt Speed (fixed/variable) (Feet per Minute) or (Parts per Minute)			
For Variable Speed: DC or VFD?			
Input Voltage / Phase / HZ			
Stands Needed? Casters or Fixed Feet?			
Curves and LPZ models: attach a sketch with critical dimensions.			
Maximum load on conveyors			
Will parts accumulate? (Stop while belt continues to run)			
Describe how the products are presented to & discharged from conveyor			

The Product

Product Description (shape, material, unique features, sharp edges, fragile, etc)			
Product Dimensions & orientation on the belt			
Part Temperature			
Part Weight			

The Environment

Room temperature or operating temperature near conveyor, if unusual			
Describe any chemicals, lubricants, etc. to contact conveyors?			
Wash down or wipe down? High pressure? (Over 60 psi)?			

 | Part Number 851-820 Rev A | D.O.

Application Description / Additional Information

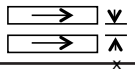
	Conveyor 1	Conveyor 2	Conveyor 3
Enter any other pertinent information here			

Common modifications and additional information needed.

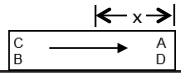
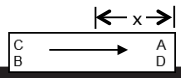
Magnetic & Vacuum Conveyors

How are products presented to the conveyor?			
How are products to be removed from conveyor?			
Angle of incline/decline, if any?			
What function is the conveyor expected to perform?			
Are product samples available for testing?			
Specific zone length requirements?			
What forces must the magnets or vacuum resist?			

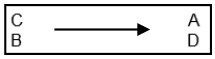
Common Drive Conveyors

Size of free & clear gaps required between conveyors 			
Quantity of conveyors to be common driven			

Backlit Conveyors

LED light source type (light color, brightness, etc)			
Zone length			
Zone location along conveyor length from tension end 			
Switch plate location (must be within 12" of the light) 			

Additional Output Shaft

Position on conveyor (A, B, C, D) 			
Required shaft dimensions			
How is shaft to be used?			

Guiding

Height from top of belt			
Required width for product			
Lane spacing (if any)			
Material requirements			
How is guiding to be used (create simple lanes, product positioning, etc) ?			

Metal Free Zone Conveyors

Length of zone			
Why is zone needed (metal detection, X-Ray, etc)			

Complex Projects

For sophisticated projects, please provide as much of the following information as possible.			
Layout drawings			
Process / sequence of operation descriptions			
Control requirements			
Machine interface needs			
Sample products			
Factory acceptance test requirements			
Installation requirements			

Contact Name:		Project Name:	
Company Name:		DTools Cong #:	
Email:		Phone:	
Address:			

