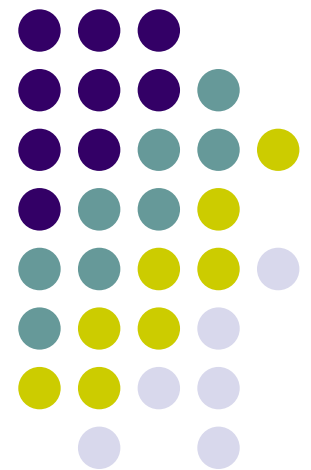


WANNER ENGINEERING

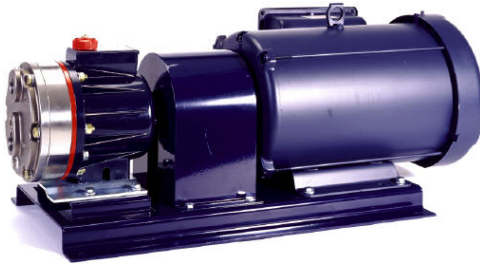
SEALLESS PUMPS FOR
INDUSTRIAL APPLICATIONS





PUMP MODELS

Hydra-Cell Pumps



EPM Pumps



Vector Pumps



Stancor Pumps



Manufacturing Capabilities

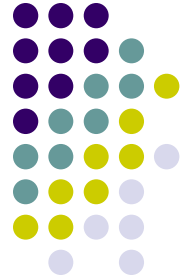


- State of Art in the Industry
- 65,000 Sq/Ft
- Every Pump is Tested prior to Shipment
 - Flow, Pressure, Temperature, Amp Draw
- Reinvest in New Technology



T.P.S., Inc.

Hydra-Cell Pumps



- Sealless, positive displacement pumps for flow rates up to 37 GPM within a discharge pressure range of 50 to 2,500 PSI
- Hydraulically balanced diaphragm (simplex, triplex and pentaplex) design



Features of Hydra-Cell Pumps

- No cups, packing or mechanical seals
 - Can pump hot fluids, up to 250°F
 - “Abrasive fluids” will not result in leakage
 - Reclaimed fluids, slurries, inks/paint/dye
 - Triplex and pentaplex designs provide smooth, relatively pulse-free flow
 - Will not damage shear sensitive fluids
 - Operates with 85-90% efficiency
 - Can run dry

Hydra-Cell Applications



- Machining Industry
 - Pumping machine tool coolant
- Power Generation
 - Reagent Injection
 - Spray Dry FGD
 - Inlet Fogging
- Spray Drying
 - Single fluid and two fluid atomization of slurries for the food, pharmaceutical and chemical industries
- Food & Beverage Industry
 - Centralized cleaning systems
 - ConveyORIZED washing and coating applications
- Pulp & Paper Industry
 - Wire/Felt cleaning
 - Wastewater and environmental related applications
- Chemical Industry
 - Liquefied gasses
 - Aggressive chemistries
 - Toxic fluids



EPM Pumps



- **Electronic Precision Metering**
- 10 : 1 Turndown
- +/- 1 % Steady State Accuracy
- +/- 3 % or Better Repeatability
- +/- 3 % or Better Linearity
- Electronically Controlled

Features of EPM Pumps



- Proven Success
- Simplistic Design
- Cost
 - Overall Reduction in Initial Cost
 - Decreased Maintenance Cost
 - Parts, and Down time
- Short Term Payback
- Electronic Control
- Excellent, Knowledgeable Customer Service

EPM Pump Applications



- **Wastewater Treatment**
 - < 1% Sodium Hypochlorite
 - High Flows
- **Chemical Dosing**
 - Pulp and Paper Industry
 - Sanitization in Food/Beverage Industry
 - Reagent Injection in Power Generation Industry

Vector Pumps



- Sealless positive displacement pumps for flow rates up to 150 GPM and discharge pressures up to 200 PSI
- Peristaltic (hose) Pump

Features of Vector Pumps



- **Run Dry** – no seals or stators to burn up
- **Sealless** – hazardous or expensive fluids
- **Fluids with solids** – gear pumps or plunger pumps fail
- **Stringy Materials** – No valves to clog
- **Entrained air** – does not cavitate pump
- **Reversible** – Easy cleaning, or filling and emptying tanks
- **Solids Handling** – fines to 2.5" solids
- **Hose Compatibility** – 6 to 7 hose materials to choose from
- **Does not emulsify/** Low Shear
- **Sealless** – no valves to clog or seals to leak.
- **Low Maintenance** – Easy hose replacement
 - Clear cover for easy inspection
- **Positive Displacement** – Metering, output flow varies directly with speed

Vector Pump vs. A.O.D.



- Have better metering accuracy
- Do not foam fluids
- Can be used to evacuate gases as well as fluids
- Do not stall
- Use less energy
- Can handle stringy material
- Can handle suspended solids
- Do not have valves to clog
- Are easier to maintain
- Cost more initially

Vector Pump Applications

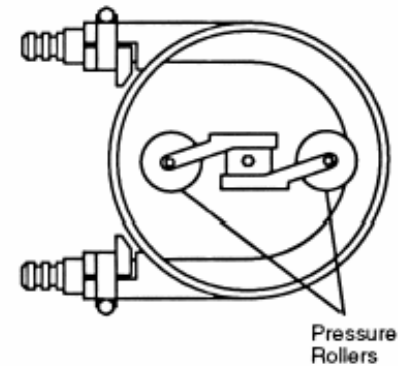
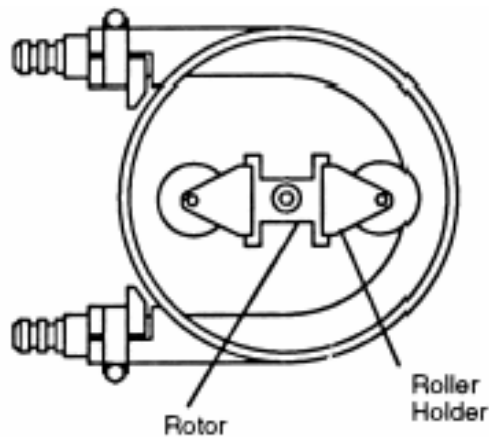


- Acids
- Bentonite Slurries
- Carbon Slurry
- Ceramic Slip
- Cosmetics & Creams
- Dyes & Inks
- Eggs
- Ferric Chloride
- Flavorings
- Iron Oxide Pigments
- Jams & Preserves
- Lime Slurries
- Paint
- Sodium Hydroxide
- Shampoos
- Yogurt

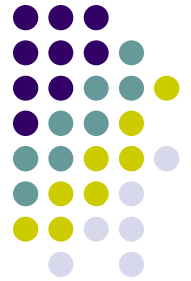


Vector Pump Models

- **2000 Series**
- (Roller Design)



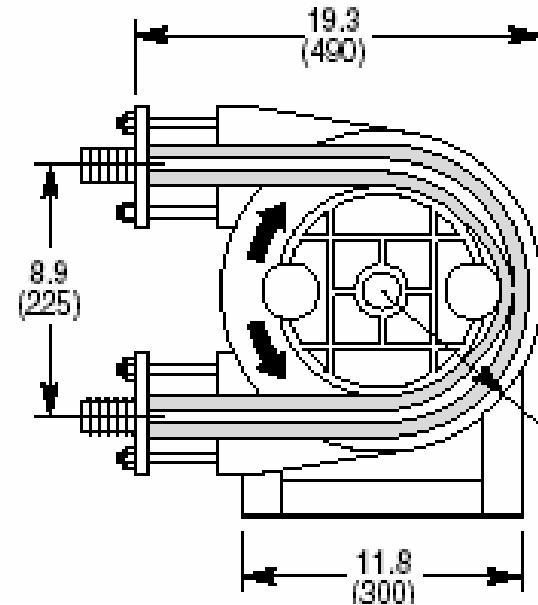
- Up to 116 PSIG
- 25 – 32 RPM roller speed in 24/7 operation
- Grease Lubricated



Vector Pump Models

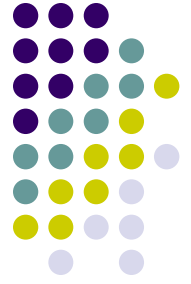
3000 Series

(Roller & Shoe Design)



- Up to 200 PSIG
- 70 RPM Roller Speed in 24/7 Operation
- Glycerin & Glycol Lubricated
- Less Heat, less starting torque, less HP than shoe ONLY pumps

Vector Pumps - 3000 Series



MODEL 3005



SPECIFICATIONS

- 200 PSI Discharge Pressure
- 0.5 to 9.8 GPM
- 22 Foot Suction Lift
- 100,000 Cps Fluids
- Lubricant Filled Cavity
- Shoe and roller rotor assembly

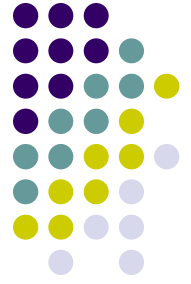
Equivalent to the Discontinued SPX 25

T.P.S., Inc.

Vector Pump Sizing



- Determine Maximum Roller Speed
 - **Hours of operation per day**
 - Viscosity of the fluid
- Select a pump that can deliver the flow at the maximum speed.
- Select a hose compatible with fluid and that can handle the pressure or vacuum.
- Select connector type and material
- Select a drive – motor, gearbox, VFD



Resources - Online

- **Wanner Engineering**

- Datasheets, specification sheets, manuals
 - Hydra-Cell Pumps: <http://www.hydra-cell.com/>
 - EPM Metering Pumps: <http://www.epmpump.com/>
 - Vector Pumps: <http://www.vectorpump.com/>
 - Stancor Pumps: <http://www.stancorpump.com/>

- **Technical Products & Services Inc.**

- Detailed application descriptions, many pictures
- Automated calculators for HPr, Chemical compatibility guidelines for Wannans materials of construction
- Article reprints
- Related complimentary products, Nozzles, Strainers
 - <http://www.fluidproducts.com>