

Reliable Pumps for Oil and Gas Processing
with No Dynamic Seals or Packing to Leak or Replace



Hydra-Cell® Pro | Pumps for Oil & Gas Processing

Pressure Injecting and Mixing | Transfer | Spraying | Metering and Dosing

Compact, Seal-less Pumps for Reliable Operation and Long Service Life

With nearly 50 years of experience serving the industry, including many of the major global companies, Wanner Hydra-Cell Pro pumps are performance-proved for continuous use in a wide range of oil and gas applications.

- Can pump corrosive and abrasive fluids, even at high temperatures.
- Able to run dry without damage (or additional maintenance) to the pump in case of accident or operator error.
- Minimizes maintenance because there are no mechanical seals, packing, or cups to leak, adjust, or replace.

Field Production and Transport Applications

- Hot Glycol Injection
- Produced Water Injection, Disposal & Transfer
- Condensate Transfer & Injection
- Hot Amine Injection
- Chemical Injection
- Crude Oil Transfer

Refinery Applications

- Catalytic Injection
- Crude Oil Sampling
- High Pressure Water
- Caustic Soda Wash Down
- Emission Control
- Pumping Slurry for SO₂ Removal/Acidic Neutralization
- Amine Injection for Sour Liquids & Gases

"Before we installed our Hydra-Cell pump, we were using a plunger pump. And, anytime you run a plunger pump you're going to get some leakage in the packing or they end up burning out. At the speed we needed to run them at, they were burning up packing quite regularly. So we replaced our old plunger pumps with D04 Hydra-Cell pumps and since then we haven't had an issue. Their durability and seal-less design have helped us reduce costly maintenance."

Denis Boucher
Production Foreman
Trident Exploration Group Inc.

Hydra-Cell Pro Pumps Selection and Applications

Wanner Hydra-Cell Pro positive displacement pumps are available in several models to cover a wide range of flows and pressures in different applications.

Ten (10) Hydra-Cell Seal-less models are ideal for transfer, spraying, and pressure injecting and mixing.



Nine (9) Hydra-Cell T&Q Series pump models designed for higher flow capacities and greater pressure ratings.



Seven (7) Hydra-Cell Metering Solutions models that are ideal for metering and dosing, spraying, and pressure injection and mixing.

In addition, four (4) Hydra-Cell solenoid diaphragm metering pump models provide low-flow, low-pressure chemical injection.



Hydra-Cell pumps are used for many oil and gas processing applications:



Offshore

Chemical Injection & Reverse Osmosis

Gas Extraction

Water Reinjection, Well Dewatering & NGL Transfer



Gas Processing & Distribution

Glycol Injection and Odorizing



Oil Refining

Steam, Stripping, Additive Injection, Stack Cooling & Chemical Metering

Jet Pumps

Artificial Lift

Pressure Testing

Pipes and Well Testing



Oil Extraction

Well Simulation, Water Reinjection, Chemical Injection

Crude Oil

Transfer, Sampling, LACT Units

Typical Chemicals and Liquids Pumped	Challenges in Pumping	The Hydra-Cell Pro Advantage
Produced Water & Sour Water (Injection, Disposal, Transfer, Steam Generator Feed Water)	Corrosive – can contain H ₂ S, salt, CO ₂ plus other impurities forming acidic solutions that can damage a pump. Abrasive – water contains sand and other contaminants (e.g.) barium, cadmium, sulfur, chromium, copper, iron, lead, nickel, silver, zinc. H ₂ S gas may not be fully contained by packing or seals.	- Seal-less design provides no leak path and handles corrosive fluids. - Corrosion-resistant liquid end materials available. - Seal-less design and spring-loaded, horizontal disk check valves enable liquids with particulates up to 800 microns (depending on pump model) to be pumped reliably without damage to the pump. - No dynamic seals to wear. - No cups, packing or dynamic seals to leak gas. - Seal-less pump chamber provides 100% containment.
Hot Triethylene Glycol (TEG) Diethylene Glycol (DEG) (Gas Drying)	Non-lubricating – requires internal gearing or reservoir with added maintenance issues. Handling high temperature of liquid pumped. Controllability of injected TEG/DEG.	- Pumping action does not require lubrication. - No dynamic seals to be damaged. - Flow rate directly proportional to pump speed. - Shaft speed adjustable range from 10 to 1800 rpm (1200 rpm for some models).
Methanol (Well Icing Prevention)	Non-lubricating, especially pumping at pressure.	Pumping action does not require lubrication.
Natural Gas Liquids (Mixtures of Methane, Propane, Ethane)	Non-lubricating – requires internal gearing or reservoir with added maintenance issues.	Pumping action does not require lubrication.
Amines (Liquid & Gas Sweetening, Monoethanolamine, Diethanolamine, Methyl-diethanolamine, Diglycolamine)	Difficult to contain any H ₂ S saturated in an amine. Control of flow rate must be responsive and accurate.	- Seal-less pump chamber provides 100% containment. - Utilizes speed control for greater accuracy. - Exceeds API 675 performance criteria for linearity (speed/flow rate relationship).
Caustics (Sodium Hydroxide, Potassium Hydroxide)	Tend to crystallize when cold or in contact with air, forming solids that can damage mechanical seals, cups, packing, and other pump components that require a lubricating film.	- Seal-less design means no rotary shaft seals to wear or replace, preventing air and moisture contamination. - Spring-loaded, horizontal disk check valves enable liquids with particulates up to 800 microns in size (depending on pump model) to be pumped reliably without damage to the pump.
Acids (Sulfuric, Hydrochloric, Nitric)	Corrosive – can damage pump. Tend to crystallize when cold or in contact with air, forming solids that can damage mechanical seals and other pump components that require a lubricating film.	- Seal-less design provides no leak path and handles corrosive fluids. - Corrosion-resistant liquid end materials available. - Seal-less design and spring-loaded, horizontal disk check valves enable liquids with particulates up to 800 microns (depending on pump model) to be pumped reliably without damage to the pump.
Condensates (Field, Lease)	Non-lubricating – requires internal gearing or reservoir with added maintenance concerns. Must be 100% contained to comply with VOC emissions legislation.	- Pumping action does not require lubrication. - No cups, packing or dynamic seals to leak gas. - Seal-less pump chamber provides 100% containment.
Polymers (Enhanced Oil Recovery)	Shear-sensitive gel structures can be broken down easily. Difficulty in pumping high-viscosity fluids. Abrasive – contains soda ash. Control of flow rate must be responsive and accurate.	- Provides low-shear pumping action and virtually pulse-less flow that protect polymers. - Low-shear pumping action also handles higher-viscosity fluids. - Seal-less design and spring-loaded, horizontal disk check valves enable liquids with particulates up to 800 microns (depending on pump model) to be pumped reliably without damage to the pump. - Utilizes speed control for greater accuracy. - Exceeds API 675 performance criteria for linearity (speed/flow rate relationship).
Crude Oil (Transfer, Sampling, LACT)	Range of viscosities makes it difficult to pump.	Seal-less design and low-shear pumping action enable handling of liquids with viscosities from 0.01 to 5000 cPs or more as well as liquids containing a mixture of viscosities.

Hydra-Cell® Pro | Design & Performance Features

Lower Initial Investment and Lower Energy Costs

Uses lower hp motors

- Although both metering pumps have the same pressure rating, the lighter, more compact Hydra-Cell has a higher flow rating while requiring a less expensive, lower hp motor. This means Hydra-Cell saves approximately 30% to 55% on initial costs.

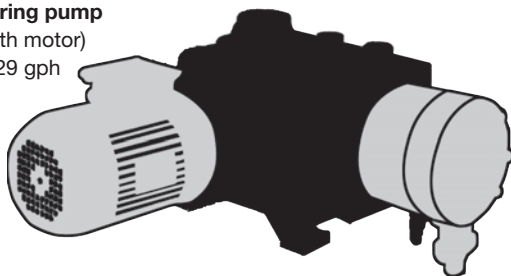


Hydra-Cell metering pump

Weight: 83.5 lbs. (with motor)
Rated: 2500 psi at 36 gph
Motor: 1-1/2 hp

Conventional metering pump

Weight: 220 lbs. (with motor)
Rated: 2500 psi at 29 gph
Motor: 5 hp



Low power consumption – 85% to 90% energy efficiency

- The lower hp requirement of the Hydra-Cell pump achieves the same performance but with greater energy efficiency and less power consumption.
- Hydra-Cell positive displacement pumps show significant energy savings when compared to screw pumps and multi-stage centrifugal pumps.



The multiple-diaphragm liquid head of Hydra-Cell also allows a less expensive, energy-saving motor to be used.

Compared with multi-stage centrifugal pumps for fluid pumped at 290 psi.

Flow (ft³/hr)	Energy Used (kW)		Energy Saving	Potential Annual Savings*
	Centrifugal	Hydra-Cell Pro		
21	1.54	0.50	67%	\$280
53	2.0	1.44	28%	\$151

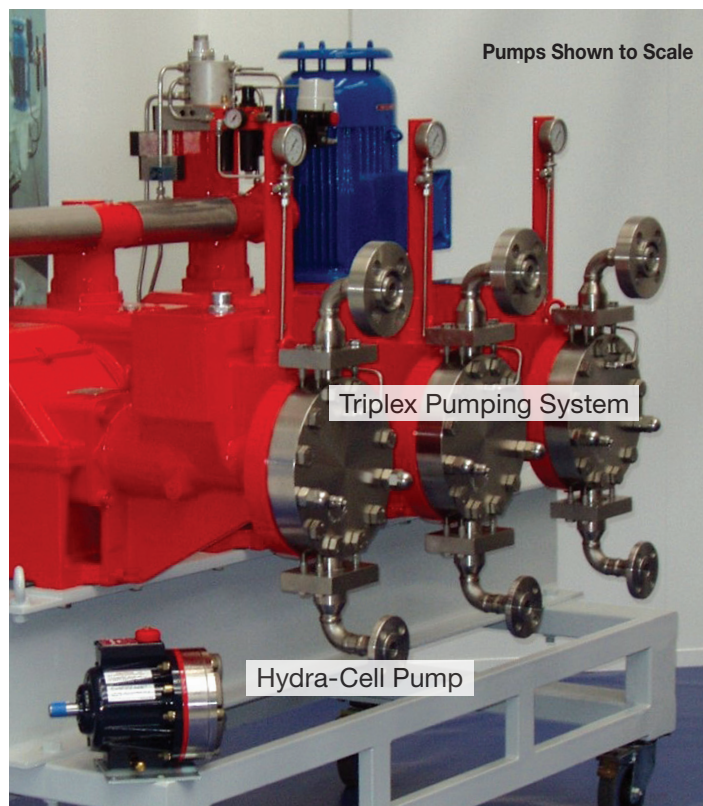
Compared with multi-stage centrifugal pumps for fluid pumped at 580 psi.

Flow (ft³/hr)	Energy Used (kW)		Energy Saving	Potential Annual Savings*
	Centrifugal	Hydra-Cell Pro		
148	9.34	6.10	35%	\$875
268	15.40	11.00	28%	\$1,188

* Based on pumps running 2,000 hr/yr @ USA average of 13.5¢/kWh.

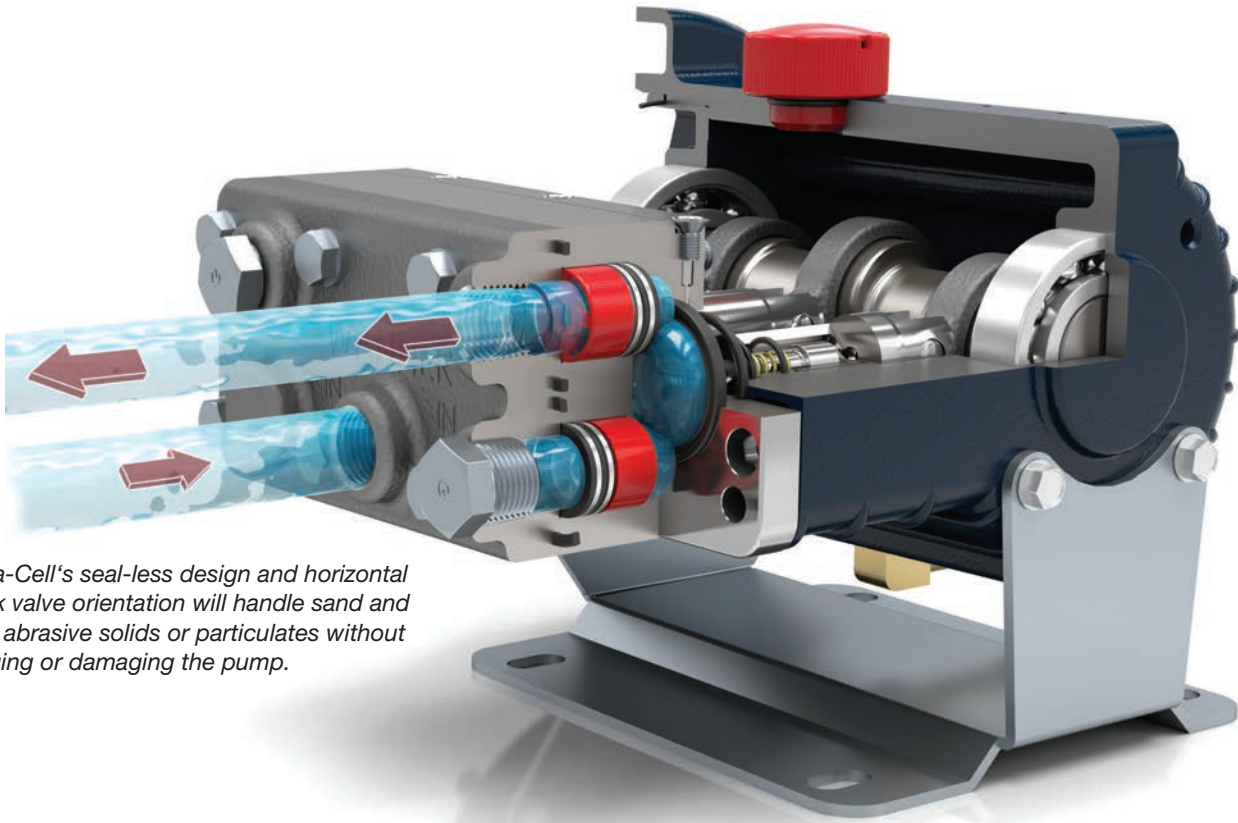
Small footprint for savings

- Compact design can mean up to 30% lower initial cost compared to other pumps.
- Space-saving design creates a smaller footprint for more efficient use of plant space.
- Easier to access for routine maintenance or servicing.



This Hydra-Cell pump shown to scale has the same flow capacity and pressure rating as this conventional triplex metering pump system.

Pumps Abrasives and Low-to-High Viscosity Fluids



Hydra-Cell's seal-less design and horizontal check valve orientation will handle sand and other abrasive solids or particulates without clogging or damaging the pump.

Handles abrasives and particulates

- Seal-less design and spring-loaded, horizontal disk check valves provide superior handling of abrasives and particulates.
- Efficiently pumps liquids with solids such as lime slurries and sour water containing sand. Can handle abrasive fillers and particulates up to 800 microns in size (depending on pump model) and up to 9 hardness (out of 10) on the Mohs scale.

Runs dry without damage

- Hydraulically-balanced diaphragms with patented Diaphragm Position Control (DPC) technology enable Hydra-Cell pumps to run dry without damage to the pump in the event of a blocked suction line, valve closure, or other system interruptions.

Handles low-to-high viscosity fluids

- Pumps thin to highly viscous liquids up to 5000 cPs or more (depending on pump model) throughout the entire pressure range.
- Low-shear pumping action makes Hydra-Cell ideal for pumping and protecting shear-sensitive polymers.
- Non-lubricating liquids can be pumped reliably.



Hydra-Cell pumping shear-sensitive polymers for enhanced oil recovery.

"We've had our pump for three years – four years this fall and it's been great. There's very little maintenance and it's cost effective to run."

Pat Hollman
Senior Operator
Macklin Facility • Husky Energy

Hydra-Cell® Pro | Design & Performance Features

One Versatile, Low-Maintenance Pump Design

No dynamic seals, cups, or packing to leak, wear or replace

- Since there are no dynamic seals to wear or replace, Hydra-Cell pumps need little maintenance and will operate reliably under continuous duty at high pressure.
- No tight tolerances that could be susceptible to corrosion or damaged by solid particles.
- No drop-off in performance common to sealed pumps as the seals wear.

Environmental protection - no harmful emissions

- Liquids are 100% sealed from the atmosphere.
- No leak path for toxic vapors or harmful gases such as H₂S.
- No dynamic seals so there is full containment of Volatile Organic Compounds (VOC).

Built for continuous duty and long service life

- One design for all applications minimizes the need for standby pumps and spare parts, which optimizes training and service expertise and reduces inventory size and expense.
- Can operate up to 6,000 hours between lubricating oil changes (compared to 1,500 hours recommended by many piston pump manufacturers).



Simple pump head design

- Liquid head materials can be changed readily, enabling Hydra-Cell to be used for many different chemicals and liquids pumped.
- Minimal maintenance required; no special tools are needed.
- Low cost of spare parts.

"The longevity of the pump is what makes it such a great tool. With the Hydra-Cell, we just don't have any of the packing or leaking issues that most normal pumps do."

Trevor Clay,
Field Operator
Talisman Energy

Reduced filtration maintenance and management

- No dynamic seals or tight tolerances that need protection by fine filtration.
- Pumps particulates and abrasives up to 800 microns in size (depending on pump model) which can eliminate the need for fine filtration.
- Can pump liquids with non-dissolved solids up to 40%, depending on particle distribution.
- Unaffected by lapses in filtration, reducing costly pump repairs.

Adaptable to many applications

- One Hydra-Cell design applied to a large selection of models covers a wide range of operating flows and pressures.
- Can be fitted with ANSI, SAE or DIN flanges, IEC or NEMA motor mounts, or provided with ATEX certification to adapt to specific applications or meet international standards.
- Proven record of replacing different pump technologies with improved abrasives handling, less maintenance, and other benefits (as detailed on pages 8-10).



Hydra-Cell pumps shown processing volatile crude oil.

Accurate Metering and Dosing with Pulse-free, Linear Flow

Accurate electronic flow control

- Compared to pumps that rely on manual stroke adjustment or expensive actuators to change flow, Hydra-Cell Pro metering pumps utilize speed control for greater accuracy throughout the turndown range.
- Can be equipped with solid-state electronic flow control where the volume per every stroke is constant and a known value.
- Electronic flow also provides easy calibration of the desired feed rate and a near instantaneous rate of change (0 to maximum rpm in 0.3 seconds).

	Hydra-Cell Pro Seal-less Pump Models	Hydra-Cell Pro Metering Pump Models
Steady State Accuracy	±1%	±1% or better
Repeatability	±3%	±3% or better
Linearity	±3%	±3% or better

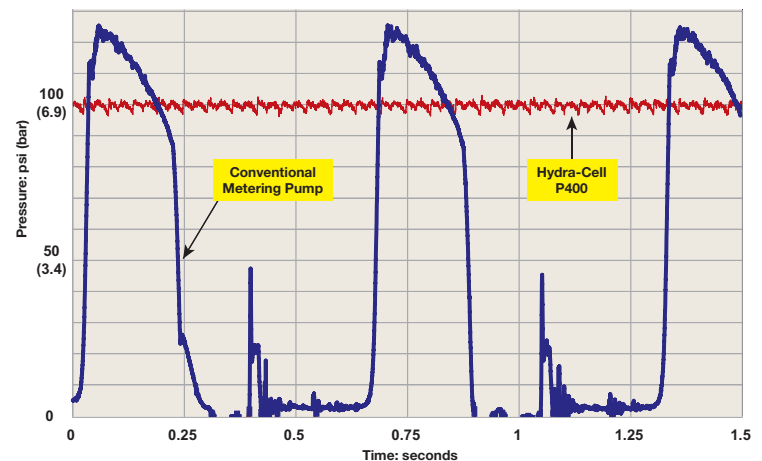
Typical results for recommended speed range.

Virtually pulse-free flow

- Multiple-diaphragm design minimizes pulsations, eliminating the need for expensive pulsation dampeners for most Hydra-Cell models.
- Reduces pipe strain.
- Enhances operating safety.
- Minimizes maintenance.
- Reduces acceleration/friction losses in the suction line.
- Provides accurate metering with linear, constant flow.
- Lowers system acquisition costs.

Pulsation Graph Comparison

Metering pumps operating without pulsation dampeners
Flow Rate: 182 gph (689 lph) | Pressure: 100 psi (6.9 bar)



Versatility for Field and Refinery Applications

Variety of liquid end materials

A choice of liquid end materials is available to suit the fluid being pumped:

- Hastelloy C
- Duplex Alloy 2205 SST
- 316L SST
- Manganese Bronze
- 304 SST
- Nickel Aluminum Bronze (NAB)
- Cast Iron
- Polypropylene
- Ductile Iron
- PVDF
- Brass
- PVC

Variety of diaphragm materials

Diaphragms are available in a choice of materials to operate over a wide range of processing and performance conditions:

- EPDM
- FKM
- PTFE
- Neoprene
- Buna-N
- Aflas



Variety of pipe connections



SAE flange connections



ANSI flange connections



NPT or BPST threaded connections

Hydra-Cell® Pro | Technology Comparative Advantages



Plunger pumps (shown) have maintenance, wear, lubrication, and environmental issues that Hydra-Cell pumps avoid because of the seal-less, multiple-diaphragm design of Hydra-Cell.

Plunger/Piston Pump Disadvantages:

- ✗ Packing requires frequent adjustments and then replacement as it wears.
- ✗ Packing must leak to provide lubrication – creating maintenance, containment, disposal, safety, and housekeeping issues with their associated costs.
- ✗ Packing allows emissions that require expensive “vapor-less” alternatives or vapor recovery systems.
- ✗ Packing causes plunger and stuffing box wear, which is made worse by abrasive media; the plunger, stuffing box, and packing must be compatible with the product being pumped.
- ✗ May require external lubrication system at an extra cost of up to \$3,000 – another maintenance and repair factor.

Hydra-Cell Pro Advantages:

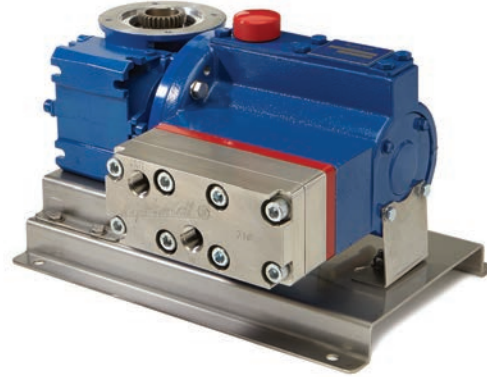
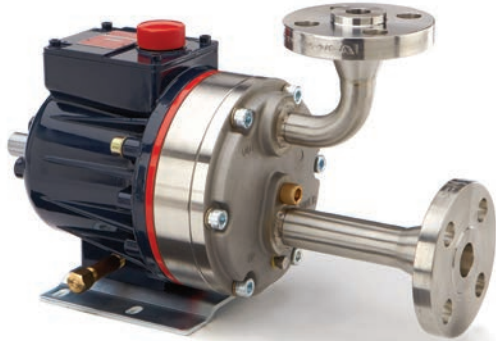
- ✓ Seal-less design uses no packing, reducing downtime and maintenance costs.
- ✓ No packing means no secondary containment requirements, no clean-up or disposal issues, improved safety, and reduced maintenance costs.
- ✓ Seal-less design eliminates emissions and costly associated fines.
- ✓ Diaphragm design allows pumping of abrasive and corrosive media without concern for wear, compatibility, or replacement of packing, stuffing boxes, or plungers.
- ✓ No external lubrication necessary, resulting in less maintenance and lower cost of ownership expenses.

Conventional Metering Pump Disadvantages:

- ✗ Use manual stroke adjusters or expensive actuators to control flow, which can result in pumping inaccuracies, lost motion, operator error, and a greater chance of leakage.
- ✗ Require expensive pulsation dampeners to minimize pulsations.
- ✗ May only offer PTFE diaphragms, requiring frequent replacement due to stress and poor elastomeric memory.
- ✗ Large footprint to achieve required maximum flow and pressure.
- ✗ Different plunger and liquid end sizes needed to accommodate changes in operating pressures.
- ✗ Integral gearing (necessary to prevent cross-contamination of actuating oil) is difficult and expensive to maintain.

Hydra-Cell Pro Advantages:

- ✓ Hydra-Cell Pro employs optional Variable Frequency Drive (VFD) electronic flow control for greater accuracy and repeatability, eliminating lost motion, reducing the chance of operator error, and removing a potential leak path.
- ✓ Multiple-diaphragm design provides smooth, linear, virtually pulse-free flow, so expensive pulsation dampeners may not be required.
- ✓ Available with a wide choice of cost-effective, elastomeric diaphragm materials.
- ✓ Can meet the same flow and pressure requirements with a much smaller footprint, saving space and costs.
- ✓ Operates over a wide range of pressures without changes to the plunger or liquid end size.
- ✓ The simplicity of design means lower parts and maintenance costs.
- ✓ Separate gearbox prevents cross-contamination of the actuating oil.



Compared to other pumps, Hydra-Cell Pro requires minimal maintenance for oil and gas processing. Hydra-Cell Pro has no mechanical seals, cups, or packing that leak and need to be adjusted or replaced. There are no internal gears in a Hydra-Cell Pro to wear.

Internal Gear Pump Disadvantages:

- ✗ Mechanical seals and packing require maintenance, and replacement or adjustment.
- ✗ Does not tolerate thin/non-lubricating liquids, and does not handle solids, abrasives or particulates well.
- ✗ Designed for operating at low speeds and low pressure ratings.
- ✗ Low volumetric efficiency.
- ✗ Component wear reduces accuracy and efficiency.
- ✗ One bearing runs in the pumped fluid.
- ✗ Unbalanced - overhung load on the shaft bearing.

Hydra-Cell Pro Advantages:

- ✓ The seal-less design of Hydra-Cell Pro means that there are no mechanical seals or packing to leak or replace.
- ✓ Seal-less pumping chamber and spring-loaded, horizontal disk check valves can pump solids, abrasive fillers and particulates while handling liquids thick or thin.
- ✓ Operates at low-to-high speeds and at higher pressures with higher volumetric efficiency.
- ✓ No internal gears to wear so there is less maintenance and spare part replacement.
- ✓ Accuracy and efficiency are more stable.
- ✓ No bearings in the pumped fluid.
- ✓ Hydraulically balanced design so there is no overhung load..

External Gear Pump Disadvantages:

- ✗ Mechanical seals and packing require maintenance, and replacement or adjustment.
- ✗ Fluid pumped must be clean. Does not tolerate solids, abrasives, or particulates. Sand can cause irreparable damage to the pump.
- ✗ Component wear reduces accuracy and efficiency.
- ✗ Contains four bushings/bearings in the fluid area that require lubrication from the pumped fluid.
- ✗ Fixed end clearances with tight tolerances are typical; hard to avoid "slip" at higher pressures, low-viscosity fluids, or as the pump wears.
- ✗ Efficiency drops when pumping at lower viscosities. Requires a PID control loop to increase pump speed for different viscosities or as the pump wears.
- ✗ Depends on pumped liquid for lubrication.

Hydra-Cell Pro Advantages:

- ✓ The seal-less design of Hydra-Cell Pro means that there are no mechanical seals or packing to leak or replace.
- ✓ Seal-less pumping chamber and spring-loaded check valves can pump sand or other solids, abrasive fillers, and particulates up to 800 microns in size.
- ✓ No internal gears to wear so efficiency is more stable and there is less maintenance and spare part replacement.
- ✓ No bushings/bearings in the pumped fluid.
- ✓ Seal-less diaphragm design does not rely on tight valve clearances that wear and reduce performance.
- ✓ Efficiency remains relatively constant over a wide range of low-to-high viscosity fluids.
- ✓ Seal-less design does not require pumped liquid for lubrication.

Hydra-Cell® Pro | Technology Comparative Advantages

Progressive Cavity Pump Disadvantages:

- ✗ Stator becomes worn by pumping abrasive fluids and is expensive and time-consuming to replace.
- ✗ Hydrodynamic film between the stator and rotor cam breaks down under pressure, reducing flow rate and negating true positive displacement pumping action.
- ✗ Cannot run dry.

Hydra-Cell Pro Advantages:

- ✓ Seal-less diaphragm design can handle abrasives reliably.
- ✓ Seal-less pump chamber with hydraulically-balanced diaphragms mean that flow rate is maintained even as discharge pressure increases.
- ✓ Seal-less design enables Hydra-Cell to run dry indefinitely without damage to the pump.

Centrifugal Pump (Multi-stage) Disadvantages:

- ✗ Mechanical seals require maintenance and replacement.
- ✗ Sand and other particulates or fines in the pumped fluid will cause wear in the case, impellers, and mechanical seals.
- ✗ Designed to run within a limited flow and pressure range; thrust chamber issues can develop if operating outside the range, such as a sudden pressure drop.
- ✗ Running dry and air/gas entrapment can cause catastrophic mechanical seal failure.
- ✗ Ineffective at low speeds and high outlet pressures.
- ✗ Flow rate is difficult to control effectively; requires a complex VFD control system to stay within the performance curve.
- ✗ In case of pressure drop, a choke is often installed to create artificial pump pressure. Since the controller still reads the higher pressure, the pump operates at full horsepower, wasting energy.
- ✗ Higher pressure requires additional stages with an increasing footprint for horizontal pumps.

Hydra-Cell Pro Advantages:

- ✓ The seal-less design of Hydra-Cell Pro has no mechanical seals or packing to fail and replace.
- ✓ Seal-less pumping chamber with spring-loaded disk check valves can pump sand and other particulates or fines up to 800 microns in size.
- ✓ Designed for efficient, high-pressure delivery at varying flow rates and pressures.
- ✓ Can run dry indefinitely.
- ✓ Runs at low-to-high speeds while maintaining outlet pressures.
- ✓ Positive displacement design allows for accurate speed control, which is directly proportional to the flow rate.
- ✓ Horsepower used is directly proportional to the system pressure. In case of a discharge pressure drop, less energy is required. Operating costs are lower.
- ✓ Can meet the same flow and pressure requirements with a much smaller footprint, saving space as well as investment and operation costs.



Hydra-Cell features a seal-less design that separates the liquid end from the hydraulic end. This enables the pump to tolerate solids, abrasives, and particulates, handle non-lubricating fluids, and run dry without damage to the pump.

Hydra-Cell® Pro | Positive Displacement Diaphragm Pumps

Ideal for Handling Abrasives and Particulates



- Unmatched versatility for a wide range of pumping applications required in oil and gas processing.
- Features a seal-less design and horizontal disk check valves that enable the pump to handle abrasives and particulates that might damage or destroy other types of pumps.
- Simple, compact design reduces initial investment and lowers maintenance costs.
- Selection of models that can operate with very low to very high flow rates and discharge pressures up to 2500 psi.
- Available in a wide range of pump head materials of construction and diaphragm materials.
- Variety of options and accessories to optimize performance.

In his work throughout Southern and Central California, Steve Burks of Oil Field Solutions, has found it challenging at times to get customers to change the way they operate.

"But once I get them using a Hydra-Cell and they see the difference it can make in reducing maintenance headaches and operating costs for their well operations, they are all for it."

Steve Burks
Owner
Oil Field Solutions

Flow Capacities (barrels per day) and Pressure Ratings

Model ¹	Maximum Capacity			Maximum Discharge Pressure psi (bar)		Maximum Operating Temperature F (C) ³		Maximum Inlet Pressure psi (bar)
	BPD	gpm	l/min	Non-metallic ²	Metallic	Non-metallic	Metallic	
F20	34	1.0	3.8	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
M03	106	3.1	11.7	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
D04	99	2.9	11.2	N/A	2500 (172)	N/A	250° (121°)	500 (34)
D10⁴	147	4.3	15.1	N/A	1500 (103)	N/A	250° (121°)	250 (17)
D10	301	8.8	33.3	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
D12	278	8.1	30.6	N/A	1000 (69)	N/A	250° (121°)	250 (17)
D15 & D17	473	13.8	52.3	N/A	2500 (172)	N/A	250° (121°)	500 (34)
H25	686	20.0	75.7	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
D35⁵	792	23.1	87.5	N/A	1500 (103)	N/A	250° (121°)	250 (17)
D35	1251	36.5	138.0	N/A	1200 (83)	N/A	250° (121°)	500 (34)
D66	2253	65.7	248.7	250 (17)	700 (48)	120° (49°)	200° (93.3°)	250 (17) ⁶

¹ Ratings are for X-cam design.

² 350 psi (24 bar) maximum with PVDF liquid end; 250 psi (17 bar) maximum with Polypropylene liquid end.

³ Consult factory for correct component selection from 160°F (71°C) to 250°F (121°C).

⁴ D10 @790 rpm maximum.

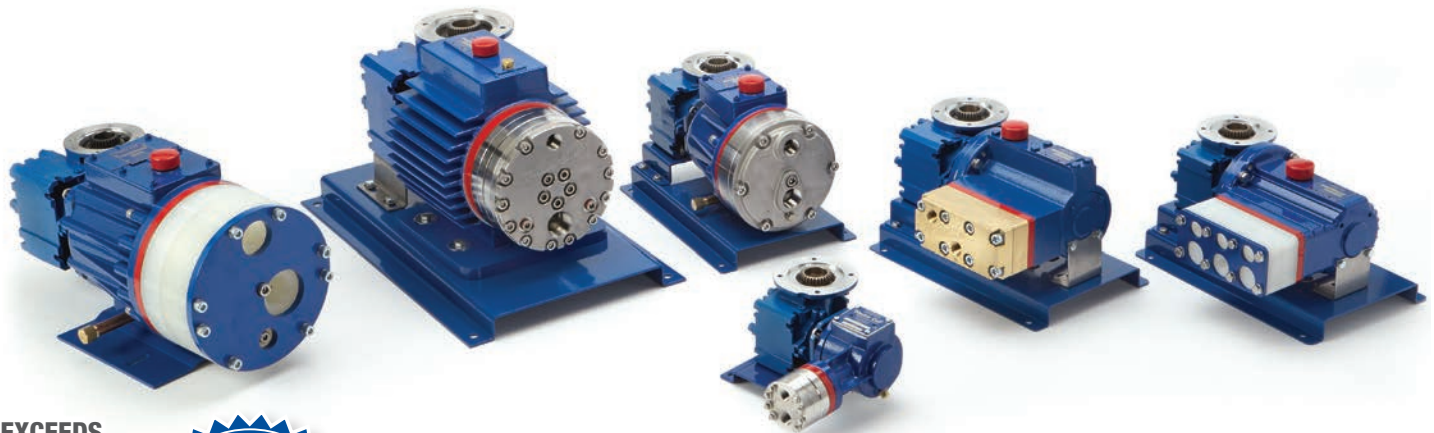
⁵ D35/G35 @700 rpm maximum; consult factory for pressures above 1200 psi (83 bar).

⁶ D66 maximum inlet pressure 50 psi (3.4 bar) for non-metallic models.

For complete specifications and ordering information, consult the Hydra-Cell catalog.

Hydra-Cell® Pro | Metering Pump Solutions

Exceed API 675 Standards and Provide “Pulse-free” Linear Flow



EXCEEDS
API
675



WANNER™ HYDRA-CELL® PRO
METERING PUMP SOLUTIONS

The IChemE Awards recognize innovation and excellence in making outstanding contributions to safety, the environment, and sustainable development in the chemical and bioprocess industries.

- Designed for use with Variable Frequency Drive (VFD) electronic flow control to maintain greater accuracy throughout the turndown range.
- Multiple-diaphragm design (except the P100) provides virtually pulse-free flow, eliminating the need to purchase expensive pulsation dampeners.
- Offers all the features and benefits of original Hydra-Cell pumps (F/M/D/H Series) including seal-less design, horizontal disk check valves (P Series) and space-saving, compact design.
- Selection of models that can operate with very low to very high flow rates and discharge pressures up to 3500 psi.
- Available in a wide range of pump head materials of construction and diaphragm materials.
- Every model is available with a variety of gear box ratios to meet your application needs.
- Variety of options and accessories to optimize performance.

“We use our Hydra-Cell to pump ethanol glycol for dehydrating natural gas and it’s been working well. We’ve had it for over two years and it’s easy to use and there’s minimal maintenance, which makes for a longer lasting pump.”

Bud Bessler
Worland Plant Manager
Hiland Partners

Flow Capacities and Pressure Ratings

Flows listed for each metering pump in the chart below are based upon lab testing of multiple pumps. However, flows listed are approximate values and pumps must be calibrated once installed into any system. Flow variations will occur, but calibration will ensure proper pump performance.

Model ¹	Maximum Capacity gph (lph) ²	Maximum Discharge Pressure psi (bar)		Maximum Operating Temp. F (C) ⁴		Maximum Inlet Pressure psi (bar)
		Non-metallic ³	Metallic	Non-metallic	Metallic	
P100	27.0 (85.0)	350 (24)	1500 (103)	140° (60°)	250° (121°)	250 (17)
P200	81.0 (255.4)	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
P300	81.4 (256.8)	N/A	2500 (172)	N/A	250° (121°)	500 (34)
P400	242.8 (765.9)	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
P500	425.9 (1343.5)	N/A	2500 (172)	N/A	250° (121°)	500 (34)
P600	890.3 (2808.0)	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
P700	1394.0 (4396.0)	N/A	1200 (83)	N/A	250° (121°)	250 (17)

¹ Ratings are for X-cam design.

² Flow capacities are based on pump speeds of 3600 rpm for gallons per hour (gph) and 3000 rpm for liters per hour (lph).

³ 350 psi (24 bar) maximum with PVDF liquid end; 250 psi (17 bar) maximum with Polypropylene liquid end.

⁴ Consult factory for correct component selection for temperatures from 160°F (71°C) to 250°F (121°C).

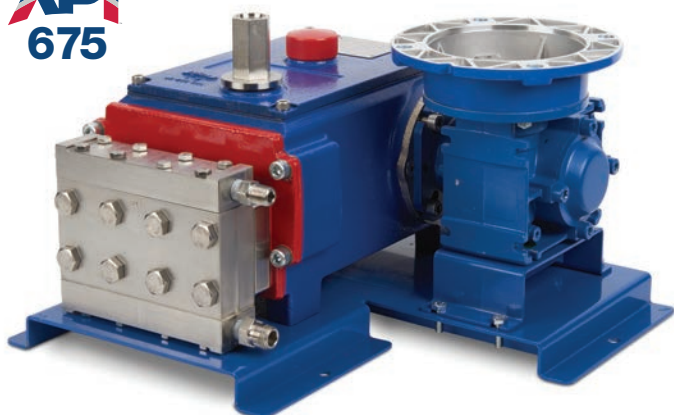
For complete specifications and ordering information, consult the Hydra-Cell metering pumps catalog.

Hydra-Cell® Pro | MT8 & S Series Metering Pumps

MT8 Triplex and S Series Electronic Solenoid/Diaphragm Pumps

EXCEEDS
API
675

WANNER™ HYDRA-CELL® PRO
METERING PUMP SOLUTIONS



The groundbreaking MT8 triplex metering pump provides linear, virtually pulse-free flow without the need for expensive pulsation dampeners. It is available with PTFE diaphragms and a variety of metallic and non-metallic liquid ends.

MT8 Triplex Metering Pumps

The MT8 meets or exceeds API 675 performance standards for Steady-State Accuracy ($\pm 1\%$), Linearity ($\pm 3\%$) and Repeatability ($\pm 3\%$).

Hydraulically-balanced and actuated, the pump features an integral relief valve for added safety and cartridge check valves for ease of maintenance.

MT8 Flow Capacities and Pressure Ratings

Model	Minimum Flow Rate gph (lph)	Maximum Flow Rate gph (lph)	Maximum Pressure gph (lph)	
			Metallic	Non-metallic
MT8	0.06 (0.227)	350 (24)	3500 (241)	350 (24)



SM030CAS manual control with stroke speed dial.



SP060HVS with pulse-in control and digital readout.



ST03RPES with pulse-in control, timer, and digital readout.



SA03RPES with pulse-in/ analog-in control and digital readout.

S Series Metering Pumps

The S Series pumps provide an economical choice for chemical injection in metering applications. Solenoid driven, the S Series pumps feature a wide discharge-volume range, extensive choice of liquid end materials, various control functions, and a wide voltage range.

Double-ball check valve ensures accurate metering and reduces the chance of water hammer, and an anti-syphon check valve prevents clogging at the injection point and aids in priming.

“Eco-friendly” environmentally sound operation is standard with SP, ST, and SA models. This feature can lower power consumption up to 55%.

Flow Rate	SM Series Models	SP/ST/SA Series Models
30 ml/min*	SM030	SP/ST/SA-030
60 ml/min	SM060	SP/ST/SA-060
100 ml/min	SM100	SP/ST/SA-100
220 ml/min	N/A	SP/ST/SA-200
With Relief Valve		
30 ml/min*	SM03R	SP/ST/SA-03R
60 ml/min	SM06R	SP/ST/SA-06R
100 ml/min	SM10R	SP/ST/SA-10R

* High-pressure models have maximum flow rates of either 25 or 28 ml/min. Consult S Series catalog for more information.

Hydra-Cell® Pro T & Q Series | Large Capacity Pumps

T and Q Series Design Features

- Seal-less design separates the power end from the process fluid end, eliminating leaks, hazards and the expense associated with seals and packing.
- Low NPSH requirements allow for operation with a vacuum condition on the suction - positive inlet pressure is not necessary.
- Can operate with a closed or blocked suction line and run dry indefinitely without damage, eliminating downtime and repair costs.
- Unique diaphragm design handles more abrasives with less wear than gear, screw, or plunger pumps.
- Hydraulically balanced diaphragms handle high pressures with low stress.



- Provides low-pulse, linear flow due to its multiple-diaphragm design.
- Lower energy costs than centrifugal pumps and other pump technologies.
- Rugged construction for long life with minimal maintenance.
- Compact design and double-end shaft (T100 and Q155) provide a variety of installation options.



Spotlight on New Technology Winner

For complete specifications and ordering information, consult Hydra-Cell Pro T100, Q155, T200 & Q330 product bulletins.



T100

T100 Series with NAB pump head.



Q155

Q155 Series with 316 SST pump head.



T200

T200 Series with NAB pump head.



Q330

Q330 Series with NAB pump head.

Model	Maximum Capacity			Max. Discharge Pressure	
	BPD	gpm	l/min	psi	bar
T100E	3292	96.0	366.1	1500	103
T100F	2623	76.5	289.6	1850	128
T100H	2332	68.0	257.8	2100	145
T100K	1543	45.0	170.4	3000	207
T100M	1302	38.0	143.8	3500	241
T100S	891	26.0	98.4	5000	345

Model	Maximum Capacity			Max. Discharge Pressure	
	BPD	gpm	l/min	psi	bar
Q155E	5383	157	595	1500	103
Q155F	4354	127	490	1850	128
Q155H	3806	111	421	2100	145
Q155K	2674	78	295	3000	207
Q155M	2160	63	238	3500	241

Model	Maximum Capacity			Max. Discharge Pressure	
	BPD	gpm	l/min	psi	bar
T200K	3189	93	352	3000	207
T200M	2846	83	314	3500	241
T200P	2469	72	272	4000	276
T200Q	2160	63	238	4500	310

Model	Maximum Capacity			Max. Discharge Pressure	
	BPD	gpm	l/min	psi	bar
Q330K	5247	153	579	3000	207
Q330M	4664	136	514	3500	241
Q330P	4011	117	442	4000	276
Q330Q	3567	104	393	4500	310

Maximum Inlet Pressure for all models: 500 psi (34 bar).
Maximum Operating Temperature for all models: 180°F (82°C).

STAN-COR

Non-metallic ANSI Centrifugal Pumps

- Solid PVDF pump head for chemical compatibility and excellent abrasion resistance.
- Operate with a smooth, full-curve performance.
- Concentric casing design for better flow patterns than other centrifugal pumps - less turbulence, longer seal life, and reduced shaft deflection.
- Handles high operating temperatures.
- Compact design features including heavy-duty drive shaft, adjustable bearing supports, and large-capacity oil bath ensure low maintenance as well as durable performance for the toughest fluid applications.
- Back pull-out design for easy servicing.
- Handles solid sizes up to 9/16" maximum.

Designed to handle difficult process fluids, Stan-Cor pumps offer total dynamic head to 350 feet and flow rate capacities to 700 gpm (2650 l/min).



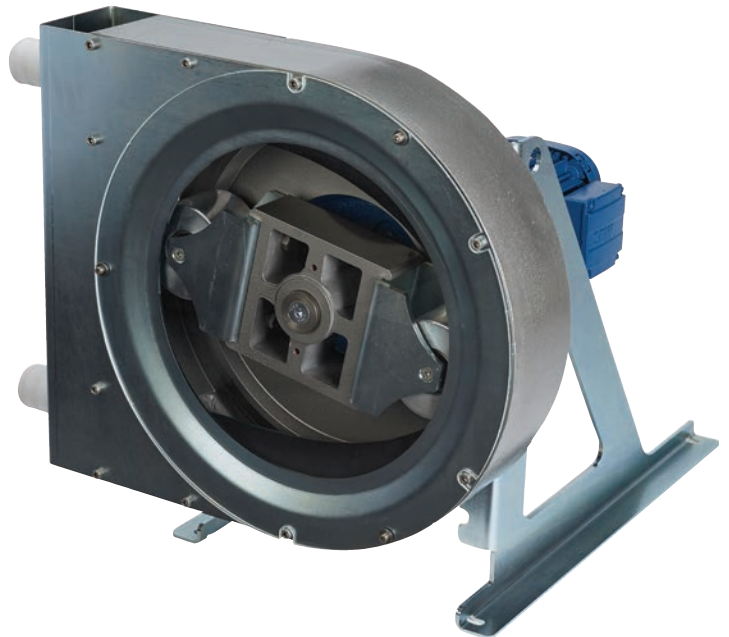
VECTOR

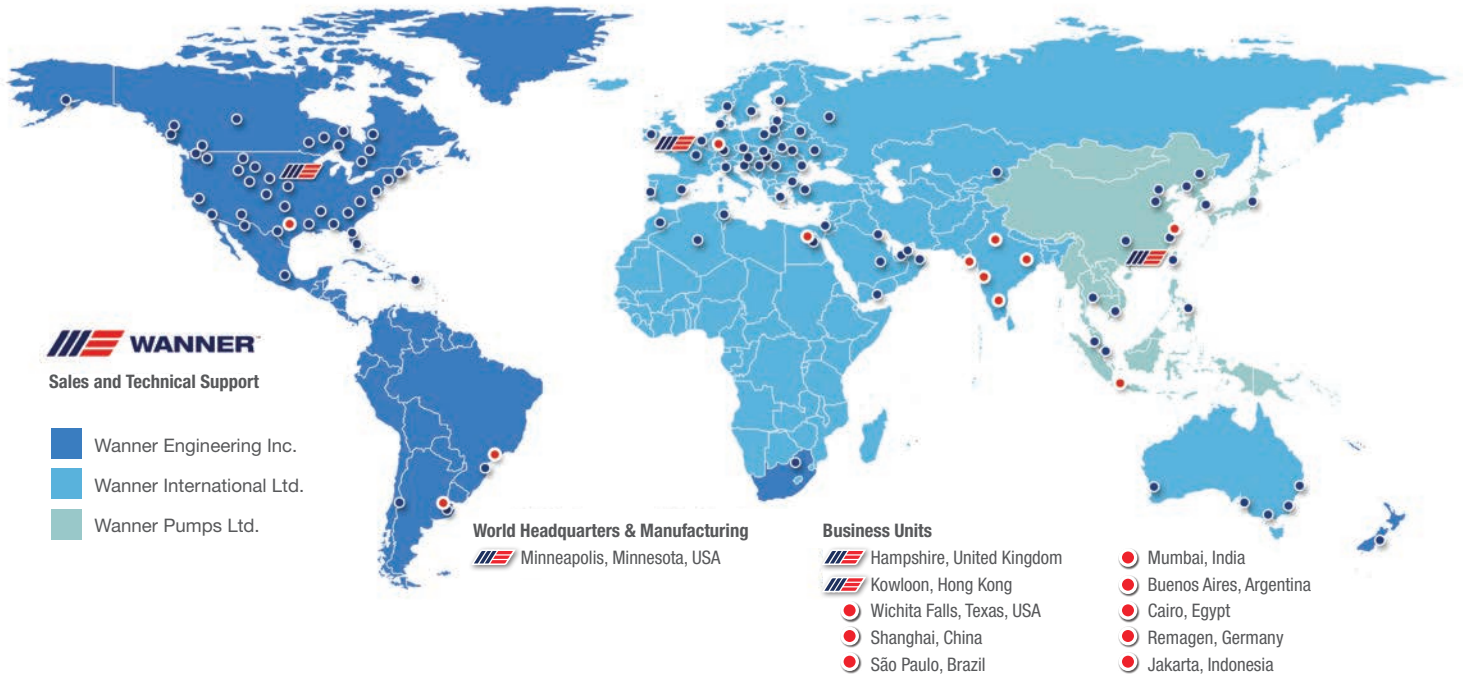
Peristaltic Pumps that Isolate the Pumped Fluid

- Dry pump cavity.
- Self-priming operation.
- Runs dry without damage to the pump.
- Complete isolation of the fluid being pumped from contact with mechanical parts for the fluid transport system.
- Heavy-duty roller bearings.
- Wide range of pump configurations and flow rates.
- No cups, packing, or dynamic seals to leak or replace or come in direct contact with the pumped fluid.
- Low maintenance.
- Reversible flow.

Nine 2000 Series Vector pump models (2006 shown) offer maximum flow rates from 0.3 gpm (1.1 l/min) to 211 gpm (798.7 l/min) and discharge pressures from 30 psig (2.1 bar) to 116 psig (8 bar) depending on pump model. Model 3005 provides up to 9.2 gpm (34.8 l/min) at 200 psig (13.8 bar).

Seven 4000 Series Vector pump models offer maximum flow rates from 0.79 gpm to 154.1 gpm and discharge pressures of 110 psig or 218 psig depending on pump model.





Partners in over 70 countries

Hydra-Cell pumps are sold and serviced worldwide by a comprehensive network of factory-trained pump distributors. As specialists in pump technologies, our distributor organizations offer you a vital local resource for technical expertise, product training, sales and service.

Hydra-Cell distributors are located in more than 70 countries worldwide. In North America specifically, there are more than 100 Hydra-Cell distributor locations to provide local availability for every major commercial, institutional, industrial, and municipal marketplace.

Wanner worldwide

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