

# Hydra-Cell<sup>®</sup>

Seal-less Pumps

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



**Oil & Gas Processing**



# Pressure Injecting and Mixing • Transfer • Spraying • Metering and Dosing

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

With more than 40 years of experience serving the industry, including many of the major global companies, Hydra-Cell 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 seals, packing, or cups to leak or replace.

### Field Production and Transport Applications

- Hot Glycol Injection
- Produced Water Injection, Disposal & Transfer
- Condensate Transfer & Injection
- Sour Service
- Chemical Injection

### Refinery Applications

- Catalytic Injection
- Crude Oil Sampling
- High Pressure Water
- Caustic Soda Wash Down
- Sour Gas Injection
- Emission Control
- Pumping Slurry for SO<sub>2</sub> Removal/Acidic Neutralization

*“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 Standard Pumps, Hydra-Cell Metering Pumps and Hydra-Cell T80 Series Pumps

Hydra-Cell positive displacement pumps are available in 16 pump models covering a wide range of flows and pressures.



Eight (8) standard Hydra-Cell models are ideal for transfer, spraying, and pressure injecting and mixing.



Six (6) metering pump models are ideal for metering and dosing, spraying, and pressure injecting and mixing.

Two (2) Hydra-Cell T80 Series high-pressure pumps.



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  
(Power Fluid Pressurization)

Pressure Testing  
(Pipes and Well Testing)



Oil Extraction  
(Well Simulation, Water ReInjection, Chemical Injection)

Crude Oil  
(Transfer & Sampling)

Typical Chemicals and Liquids Pumped	Challenges in Pumping	The Hydra-Cell Advantage
<b>Produced Water &amp; Sour Water</b> (Injection, Disposal, Transfer)	Corrosive – can contain H <sub>2</sub> S, salt, CO <sub>2</sub> plus other impurities forming acidic solutions that can damage a pump.	<ul style="list-style-type: none"> <li>Seal-less design provides no leak path and handles corrosive fluids.</li> <li>Corrosion-resistant liquid end materials available.</li> </ul>
	Abrasive – water contains sand and other contaminants (e.g.) barium, cadmium, sulfur, chromium, copper, iron, lead, nickel, silver, zinc.	<ul style="list-style-type: none"> <li>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.</li> <li>No dynamic seals to wear.</li> </ul>
	H <sub>2</sub> S gas may not be fully contained by packing or seals.	<ul style="list-style-type: none"> <li>No cups, packing or seals to leak gas.</li> <li>Seal-less pump chamber provides 100% containment.</li> </ul>
<b>Hot Triethylene Glycol (TEG) Diethylene Glycol (DEG)</b> (Gas Drying)	Non-lubricating – requires internal gearing or reservoir with added maintenance issues.	<ul style="list-style-type: none"> <li>Pumping action does not require lubrication.</li> </ul>
	Handling high temperature of liquid pumped.	<ul style="list-style-type: none"> <li>No dynamic seals to be damaged.</li> </ul>
	Controllability of injected TEG/DEG.	<ul style="list-style-type: none"> <li>Flow rate directly proportional to pump speed.</li> <li>Shaft speed adjustable range from 10 to 1800 rpm (1200 rpm for some models).</li> </ul>
<b>Methanol</b> (Well Icing Prevention)	Non-lubricating, especially pumping at pressure.	<ul style="list-style-type: none"> <li>Pumping action does not require lubrication.</li> </ul>
<b>Natural Gas Liquids</b> (Mixtures of Methane, Propane, Ethane)	Non-lubricating – requires internal gearing or reservoir with added maintenance issues.	<ul style="list-style-type: none"> <li>Pumping action does not require lubrication.</li> </ul>
<b>Amines</b> (Monoethanolamine, Diethanolamine, Methyl-diethanolamine, Diglycolamine)	Difficult to contain any H <sub>2</sub> S saturated in an amine.	<ul style="list-style-type: none"> <li>Seal-less pump chamber provides 100% containment.</li> </ul>
	Control of flow rate must be responsive and accurate.	<ul style="list-style-type: none"> <li>Utilizes speed control for greater accuracy.</li> <li>Exceeds API 675 performance criteria for linearity (speed/flow rate relationship).</li> </ul>
<b>Caustics</b> (Sodium Hydroxide, Potassium Hydroxide)	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.	<ul style="list-style-type: none"> <li>Seal-less design means no rotary shaft seals to wear or replace, preventing air and moisture contamination.</li> <li>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.</li> </ul>
<b>Acids</b> (Sulfuric, Hydrochloric, Nitric)	Corrosive – can damage pump.	<ul style="list-style-type: none"> <li>Seal-less design provides no leak path and handles corrosive fluids.</li> <li>Corrosion-resistant liquid end materials available.</li> </ul>
	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.	<ul style="list-style-type: none"> <li>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.</li> </ul>
<b>Condensates</b> (Field, Lease)	Non-lubricating – requires internal gearing or reservoir with added maintenance concerns.	<ul style="list-style-type: none"> <li>Pumping action does not require lubrication.</li> </ul>
	Must be 100% contained to comply with VOC emissions legislation.	<ul style="list-style-type: none"> <li>No cups, packing or seals to leak gas.</li> <li>Seal-less pump chamber provides 100% containment.</li> </ul>
<b>Polymers</b> (Well Simulation)	Shear-sensitive gel structures can be broken down easily.	<ul style="list-style-type: none"> <li>Provides low-shear pumping action and virtually pulse-less flow that protect polymers.</li> </ul>
	Difficultly in pumping high-viscosity fluids.	<ul style="list-style-type: none"> <li>Low-shear pumping action also handles higher-viscosity fluids.</li> </ul>
	Abrasive – contains soda ash.	<ul style="list-style-type: none"> <li>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.</li> </ul>
	Control of flow rate must be responsive and accurate.	<ul style="list-style-type: none"> <li>Utilizes speed control for greater accuracy.</li> <li>Exceeds API 675 performance criteria for linearity (speed/flow rate relationship).</li> </ul>
<b>Crude Oil</b> (Transfer, Sampling)	Range of viscosities makes it difficult to pump.	<ul style="list-style-type: none"> <li>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.</li> </ul>

# 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.

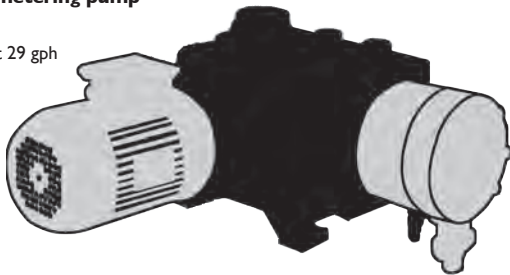


**Hydra-Cell metering pump**

Weight: 51 lbs.  
Rated: 2500 psi at 35 gph  
Motor: 1-1/2 hp

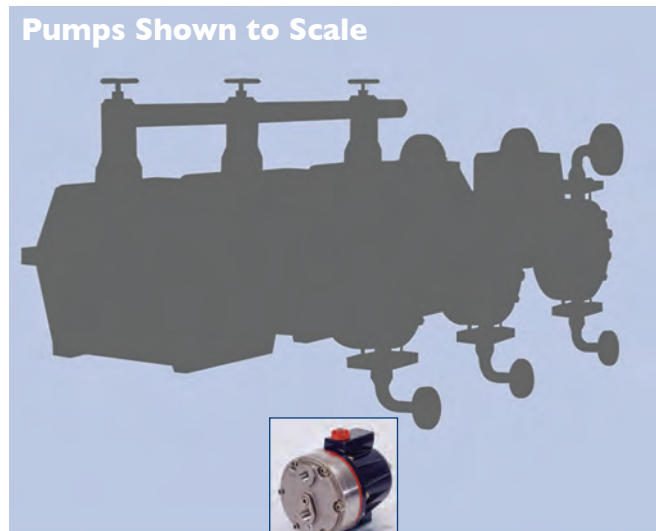
## Conventional metering pump

Weight: 220 lbs.  
Rated: 2500 psi at 29 gph  
Motor: 5 hp



## 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.

## 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 (ft <sup>3</sup> /hr)	Energy Used (kW)		Energy Saving	Potential Annual Savings*
	Centrifugal	Hydra-Cell		
21	1.54	0.50	67%	\$250
53	2.0	1.44	28%	\$134

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

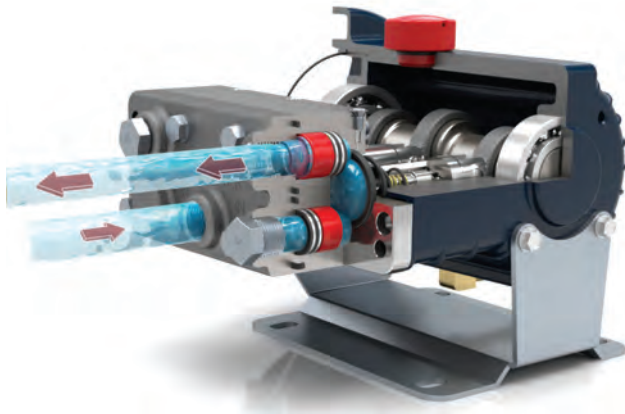
Flow (ft <sup>3</sup> /hr)	Energy Used (kW)		Energy Saving	Potential Annual Savings*
	Centrifugal	Hydra-Cell		
148	9.34	6.10	35%	\$778
268	15.40	11.00	28%	\$1,056

\* Based on pumps running 2,000 hr/yr @ USA average of 12¢/kWh.

“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

# Pumps Abrasives and Runs Dry without Damage



Hydra-Cell's horizontal check valves operate in a horizontal liquid flow and will handle abrasives and particulates without clogging or damage to the pump.

## Handles abrasives and particulates

- Seal-less design and spring-loaded, horizontal disk check valves provide superior handling of abrasives and particulates.
- Efficient pumping of liquids with solid particles 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 on the Mohs scale.

## Runs dry without damage

- Hydraulically-balanced diaphragms with Kel-Cell® technology enable Hydra-Cell pumps to run dry or in a blocked suction line or valve closure without damage.

## Handles low-to-high viscosity fluids

- Pumps non-viscous as well as 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.

## Reduced filtration maintenance and management

- No mechanical 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.

*"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

## Reliable Pump Design for Low Maintenance

### No seals or packing to leak, wear or replace, and no harmful emissions

- 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.
- Liquids are 100% sealed from the atmosphere, and there is no leak path for toxic vapors.
- Containment of Volatile Organic Compounds (VOC) and potentially harmful gases such as H<sub>2</sub>S.
- 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.

### 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.
- Typically runs 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.
- Low cost of spare parts.



### Adaptable to many applications

- One Hydra-Cell seal-less design with 16 models (8 standard; 6 metering; 2 high-pressure) 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 8-9).

# Accurate Metering and Dosing with Pulse-free, Linear Flow

## Accurate electronic flow control

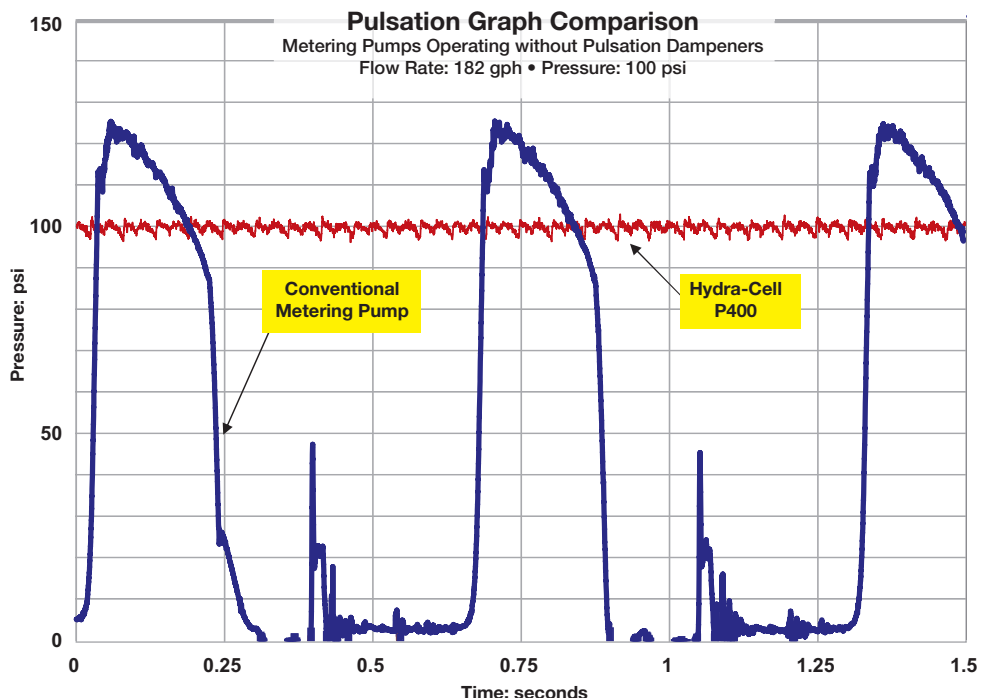
- Compared to pumps that rely on manual stroke adjustment or expensive actuators to change flow, Hydra-Cell metering pumps utilize speed control for greater accuracy throughout the turndown range.
- Can be equipped with solid-state electronic flow control where the volume per every stroke is constant 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).

	Standard Models	Metering Pumps
Steady State Accuracy	>±1%	>±0.5%
Repeatability	>±3%	>±1%
Linearity	>±3%	>±1%

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.



# 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
- Brass
- Cast Iron
- Polypropylene
- PVDF

## 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

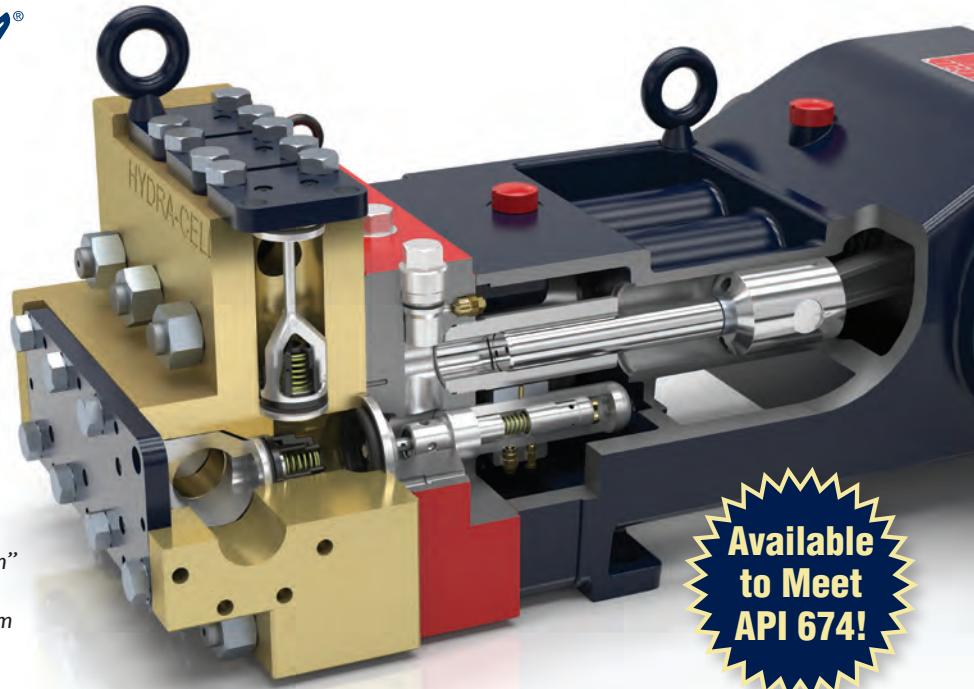


NPT or BPST threaded connections

# Hydra-Cell High-pressure Pumps for Economical and Environmentally-sound Operation

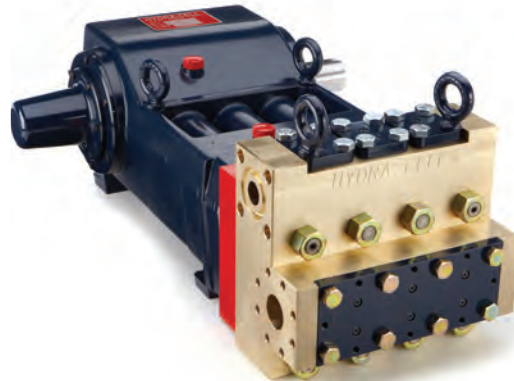


Hydra-Cell model T8030 was a finalist in the Pumps & Systems "Product Innovation" awards, and the T80 Series earned a "Spotlight on New Technology" award from the Offshore Technology Conference.



**Available to Meet API 674!**

- 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 to 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-ended shaft provides a variety of installation options.
- Hydra-Cell T80 Series pumps can be configured to meet API 674 standards - consult factory for details.



## Model T8045

Flow Rates to: 45 gpm (1543 bpd)  
 Maximum Inlet Pressure: 500 psi  
 Maximum Discharge Pressure: 3000 psi  
 Operating Temperature Range: 40°F to 180°F  
 Manifold Material Options: Nickel Aluminum Bronze (NAB)  
 316L Stainless Steel

## Model T8030

Flow Rates to: 26 gpm (891 bpd)  
 Maximum Inlet Pressure: 500 psi  
 Maximum Discharge Pressure: 5000 psi  
 Operating Temperature Range: 40°F to 180°F  
 Manifold Material: Nickel Aluminum Bronze (NAB)

For complete specifications, consult the Hydra-Cell T8045 and T8030 product bulletins.

Hydra-Cell® T80 Series High-Pressure Pumps

# Hydra-Cell® Performance Advantages Compared to Other Types of Pumps

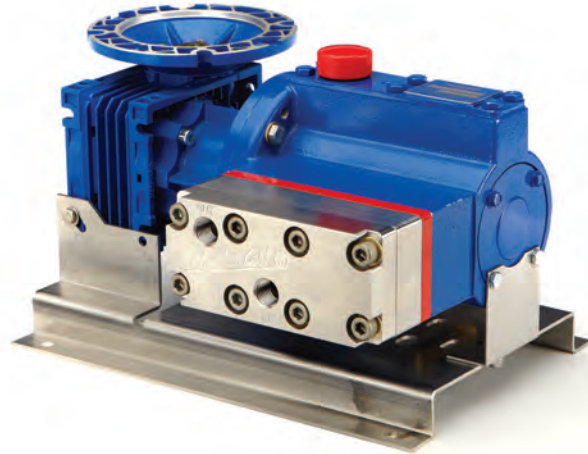


Plunger pumps (shown) have maintenance, wear, lubrication, and environmental issues that Hydra-Cell pumps avoid because of the seal-less, multiple-diaphragm design of Hydra-Cell.

Plunger/Piston Pump Disadvantages:	Hydra-Cell Advantages:
<ul style="list-style-type: none"> <li>• Packing requires frequent adjustments and then replacement as it wears.</li> </ul>	<ul style="list-style-type: none"> <li>• Seal-less design uses no packing, reducing downtime and maintenance costs.</li> </ul>
<ul style="list-style-type: none"> <li>• Packing must leak to provide lubrication – creating maintenance, containment, disposal, safety, and housekeeping issues with their associated costs.</li> </ul>	<ul style="list-style-type: none"> <li>• No packing means no secondary containment requirements, no clean-up or disposal issues, improved safety, and reduced maintenance costs.</li> </ul>
<ul style="list-style-type: none"> <li>• Packing allows emissions that require expensive “vapor-less” alternatives or vapor recovery systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Seal-less design eliminates emissions and costly associated fines.</li> </ul>
<ul style="list-style-type: none"> <li>• Packing causes plunger wear, which is made worse by abrasive media; the plunger, stuffing box, and packing must be compatible with the product being pumped.</li> </ul>	<ul style="list-style-type: none"> <li>• Diaphragm design allows pumping of abrasive and corrosive media without concern for wear, compatibility or replacement of packing or plunger/piston.</li> </ul>
<ul style="list-style-type: none"> <li>• May require external lubrication systems at an additional cost of up to \$3,000 – another maintenance and repair factor.</li> </ul>	<ul style="list-style-type: none"> <li>• No lubrication necessary, resulting in less maintenance and lower cost of ownership expenses.</li> </ul>

Conventional Metering Pump Disadvantages:	Hydra-Cell Advantages:
<ul style="list-style-type: none"> <li>• 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.</li> </ul>	<ul style="list-style-type: none"> <li>• Hydra-Cell 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.</li> </ul>
<ul style="list-style-type: none"> <li>• Require expensive pulsation dampeners to minimize pulsations.</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple-diaphragm design provides virtually pulse-free flow, so expensive pulsation dampeners may not be required.</li> </ul>
<ul style="list-style-type: none"> <li>• May only offer PTFE diaphragms, requiring frequent replacement due to stress and poor elastomeric memory.</li> </ul>	<ul style="list-style-type: none"> <li>• Available with a wide choice of cost-effective, elastomeric diaphragm materials.</li> </ul>
<ul style="list-style-type: none"> <li>• Large footprint to achieve required maximum flow and pressure.</li> </ul>	<ul style="list-style-type: none"> <li>• Can meet the same flow and pressure requirements with a much smaller footprint, saving space and costs.</li> </ul>
<ul style="list-style-type: none"> <li>• Different plunger and liquid end sizes needed to accommodate changes in operating pressures.</li> </ul>	<ul style="list-style-type: none"> <li>• Operates over a wide range of pressures without changes to the plunger or liquid end size.</li> </ul>
<ul style="list-style-type: none"> <li>• Integral gearing (necessary to prevent cross-contamination of actuating oil) is difficult and expensive to maintain.</li> </ul>	<ul style="list-style-type: none"> <li>• The simplicity of design means lower parts and maintenance costs.</li> <li>• Separate gearbox prevents cross-contamination of the actuating oil.</li> </ul>





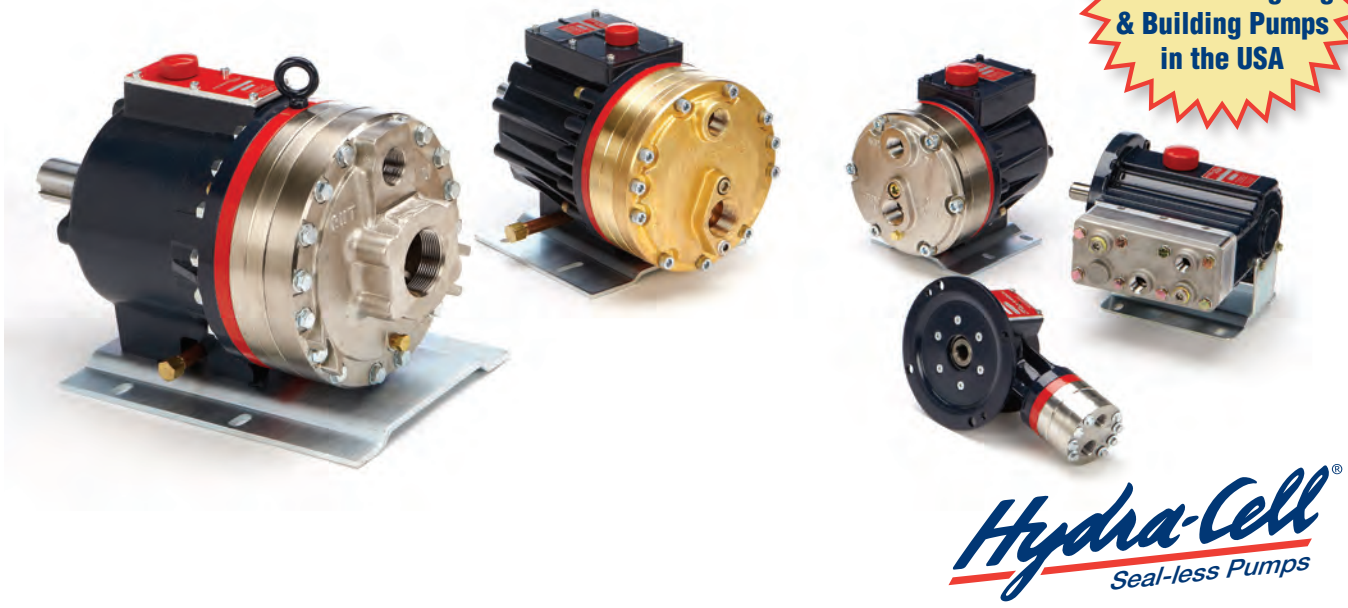
Compared to other pumps, Hydra-Cell requires minimal maintenance for oil and gas processing. Hydra-Cell has no packing or seals that leak or need to be replaced and no internal gears to wear.

Internal Gear Pump Disadvantages:	Hydra-Cell Advantages:
<ul style="list-style-type: none"> <li>Mechanical seals and packing require maintenance, and replacement or adjustment.</li> </ul>	<ul style="list-style-type: none"> <li>The seal-less design of Hydra-Cell means that there are no seals or packing to leak or replace.</li> </ul>
<ul style="list-style-type: none"> <li>Does not tolerate thin/non-lubricating liquids, and does not handle solids, abrasives or particulates well.</li> </ul>	<ul style="list-style-type: none"> <li>Seal-less pumping chamber and spring-loaded, horizontal disk check valves can pump solids, abrasive fillers and particulates while handling liquids thick or thin.</li> </ul>
<ul style="list-style-type: none"> <li>Designed for operating at low speeds and low pressure ratings.</li> <li>Low volumetric efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>Operates at low-to-high speeds and at higher pressures with higher volumetric efficiency.</li> </ul>
<ul style="list-style-type: none"> <li>Component wear reduces accuracy and efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>No internal gears to wear so there is less maintenance and spare part replacement.</li> <li>Accuracy and efficiency are more stable.</li> </ul>
<ul style="list-style-type: none"> <li>One bearing runs in the pumped fluid.</li> </ul>	<ul style="list-style-type: none"> <li>No bearings in the pumped fluid.</li> </ul>
<ul style="list-style-type: none"> <li>Unbalanced - overhung load on the shaft bearing.</li> </ul>	<ul style="list-style-type: none"> <li>Hydraulically balanced design so there is no overhung load.</li> </ul>

External Gear Pump Disadvantages:	Hydra-Cell Advantages:
<ul style="list-style-type: none"> <li>Mechanical seals and packing require maintenance, and replacement or adjustment.</li> </ul>	<ul style="list-style-type: none"> <li>The seal-less design of Hydra-Cell means that there are no seals or packing to leak or replace.</li> </ul>
<ul style="list-style-type: none"> <li>Does not tolerate solids, abrasives, or particulates.</li> </ul>	<ul style="list-style-type: none"> <li>Seal-less pumping chamber and spring-loaded, horizontal disk check valves can pump solids, abrasive fillers and particulates.</li> </ul>
<ul style="list-style-type: none"> <li>Component wear reduces accuracy and efficiency.</li> </ul>	<ul style="list-style-type: none"> <li>No internal gears to wear so there is less maintenance and spare part replacement.</li> </ul>
<ul style="list-style-type: none"> <li>Contains four bushings/bearings in the fluid area.</li> </ul>	<ul style="list-style-type: none"> <li>No bushings/bearings in the pumped fluid.</li> </ul>
<ul style="list-style-type: none"> <li>Fixed end clearances.</li> </ul>	<ul style="list-style-type: none"> <li>Design does not rely on clearances.</li> </ul>
<ul style="list-style-type: none"> <li>Efficiency drops as outlet pressure increases.</li> </ul>	<ul style="list-style-type: none"> <li>Efficiency remains relatively constant over its range of operating pressures.</li> </ul>
<ul style="list-style-type: none"> <li>Depends on pumped liquid for lubrication.</li> </ul>	<ul style="list-style-type: none"> <li>Seal-less design does not require pumped liquid for lubrication.</li> </ul>

# Hydra-Cell Positive Displacement Diaphragm Pumps are Ideal for Handling Abrasives and Particulates

**40+**  
Years of Designing  
& Building Pumps  
in the USA



**Hydra-Cell**  
Seal-less Pumps

- 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.
- Variety 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

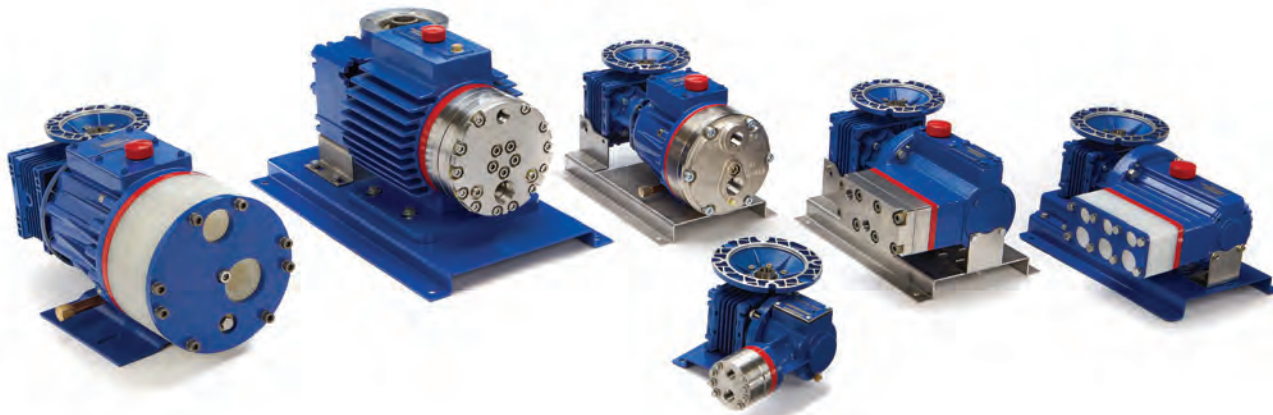
## Flow Capacities (barrels per day) and Pressure Ratings

Model <sup>1</sup>	Maximum Capacity bpd (gpm - l/min)	Maximum Discharge Pressure psi (bar)		Maximum Operating Temperature F (C) <sup>3</sup>		Maximum Inlet Pressure psi (bar)
		Non-metallic <sup>2</sup>	Metallic	Non-metallic	Metallic	
<b>F20</b>	34.3 (1.0 - 3.8)	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
<b>M03</b>	106.3 (3.1 - 11.7)	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
<b>D04</b>	99.4 (2.9 - 11.2)	N/A	2500 (172)	N/A	250° (121°)	500 (34)
<b>D10<sup>4</sup></b>	147.4 (4.3 - 15.1)	N/A	1500 (103)	N/A	250° (121°)	250 (17)
<b>D10</b>	277.7 (8.1 - 30.6)	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
<b>D12</b>	277.7 (8.1 - 30.6)	N/A	1000 (69)	N/A	250° (121°)	250 (17)
<b>D15 &amp; D17</b>	473.1 (13.8 - 52.3)	N/A	2500 (172)	N/A	250° (121°)	500 (34)
<b>H25</b>	685.7 (20.0 - 75.7)	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
<b>D35<sup>5</sup></b>	792.0 (23.1 - 87.5)	N/A	1500 (103)	N/A	250° (121°)	250 (17)
<b>D35</b>	1251.4 (36.5 - 138)	N/A	1200 (83)	N/A	250° (121°)	500 (34)

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 @700 rpm maximum.

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

# Hydra-Cell Metering Pumps Exceed API 675 Standards and Provide “Pulse-free” Linear Flow



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 standard Hydra-Cell pumps (F/M/D/H Series pumps) including seal-less design, horizontal disk check valves, and space-saving, compact design.
- Variety 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.
- 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

Model <sup>1</sup>	Maximum Capacity gph <sup>2</sup>	Maximum Discharge Pressure psi (bar)		Maximum Operating Temperature F (C) <sup>4</sup>		Maximum Inlet Pressure psi (bar)
		Non-metallic <sup>3</sup>	Metallic	Non-metallic	Metallic	
<b>P100</b>	26.5	350 (24)	1500 (103)	140° (60°)	250° (121°)	250 (17)
<b>P200</b>	80.8	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
<b>P300</b>	82.3	N/A	2500 (172)	N/A	250° (121°)	500 (34)
<b>P400</b>	243.0	350 (24)	1000 (69)	140° (60°)	250° (121°)	250 (17)
<b>P500</b>	426.0	N/A	2500 (172)	N/A	250° (121°)	250 (17)
<b>P600</b>	894.6	350 (24)	1000 (69)	140° (60°)	250° (121°)	500 (34)

<sup>1</sup> Ratings are for X-cam design.

<sup>2</sup> Consult factory for ratings in liters per hour (lph).

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

<sup>4</sup> 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®

## Seal-less Pumps

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