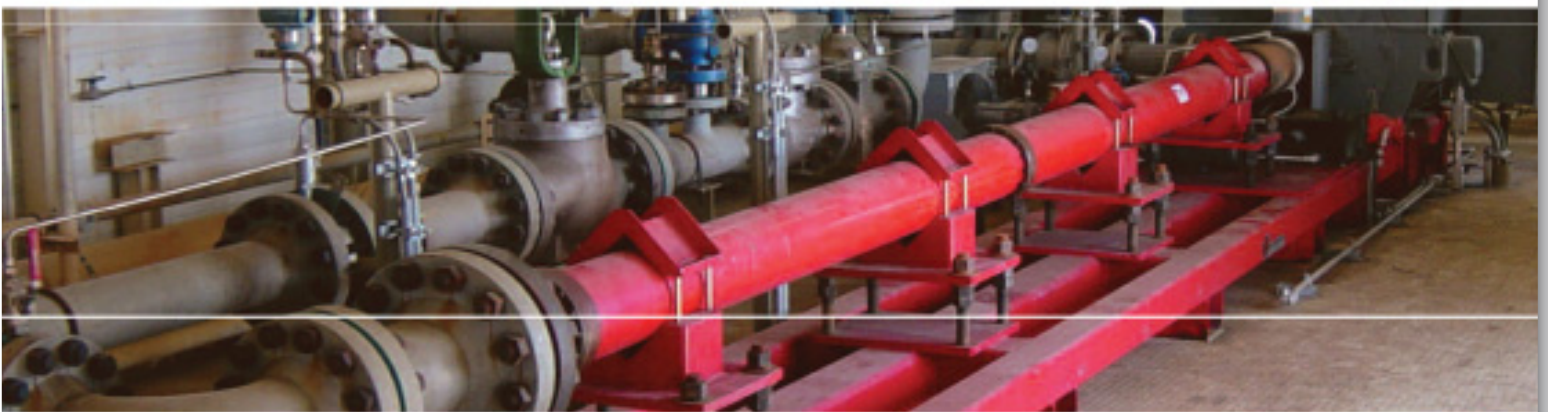


*ROTATING RIGHT*

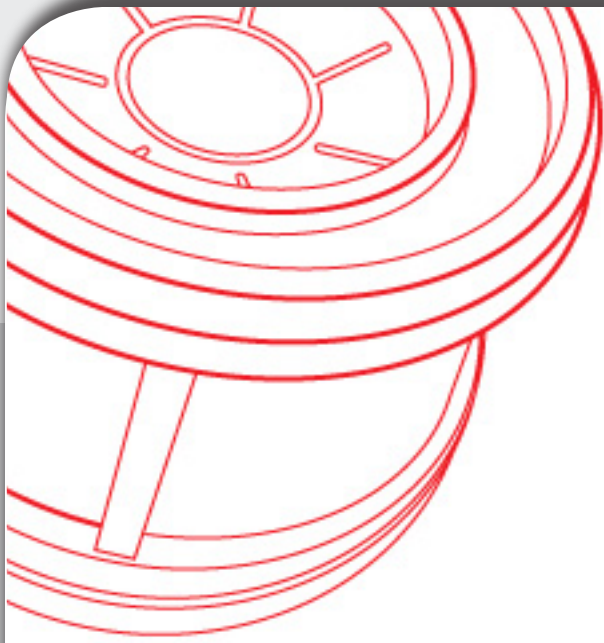
## CANADIAN ADVANCED HORIZONTAL PUMPING SYSTEMS

# Horizontal Pumping System

# 2.0



**Advanced Thinking – Down to Earth Service**



## Advanced Thinking – Down to Earth Service

By bringing together a highly experienced team with state-of-the-art manufacturing and a deep commitment to customer service, Canadian Advanced is able to deliver superior high pressure pump applications and leading variable speed drive systems

to the global oil and gas industry. Located in the heart of Canada's energy sector, our focus is on Electric Submersible Pump Systems for Artificial Lift applications and Horizontal Pump Systems for a variety of high pressure applications.

**Engineered** Operating sophisticated production processes in challenging conditions, extreme climates and remote locations requires reliable pumping systems. Canadian Advanced pumps are the industry choice, producing more head, greater efficiency and wider operating ranges than most competitor's offerings.

Canadian Advanced creates high quality, innovative, safe and environmentally sound solutions by applying advanced state-of-the-art technologies, strict quality management and superior engineering capabilities. Our detailed process and application knowledge has allowed us to develop several patented engineering solutions as well as custom design systems when required.

**Quality** All Canadian Advanced operations are certified to ISO 9001:2000 standards to ensure the highest quality products with the greatest value for customers worldwide. Quality assurance begins with a contract review and continues throughout the entire process. All products are inspected and performance tested in line with relevant API and other specification criteria before leaving the factory.

# Horizontal Pumping System

**Proven Design** The Canadian Advanced Model HPS Horizontal Pump System is based on the proven multi-stage centrifugal pump design that is successfully used in thousands of downhole submersible pump system applications around the world. The horizontal skid mounting allows for a multitude of high head surface pumping applications. The Model HPS is the ideal choice for urban and environmentally sensitive locations as the high pitched noise inherent in single stage designs and the piston noise associated with reciprocating pumps are alleviated.

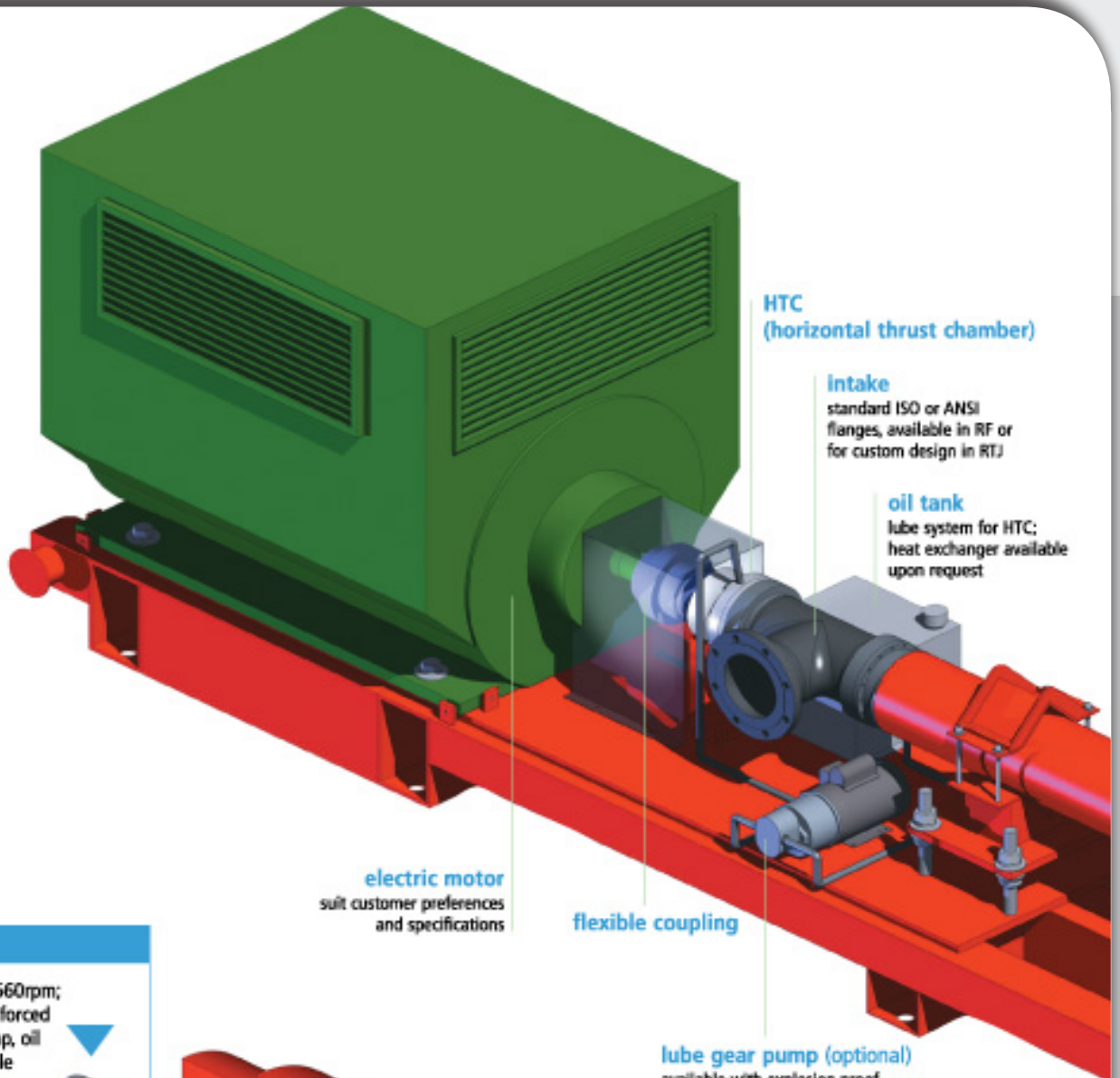
**Cost Effective** Our Horizontal Pump System technology distinguishes itself as a cost effective alternative to traditional high pressure designs such as the multi-stage barrel, split case, segmental and vertical turbine pumps, as well as high speed gear and positive displacement pumps. The Model HPS has radial and mixed flow hydraulics for optimum efficiency at any rating.

**Low Maintenance** The thrust chamber, or bearing frame, on the Model HPS features sleeve type radial and tilting pad thrust bearings. An ample oil reservoir and internal pump ring provide excellent lubrication and temperature control. Optional pressure lubrication, oil filtering and heat exchangers are available for severe applications. To create the best solution for each application, a variety of mechanical seals are available to accommodate customer preferences.



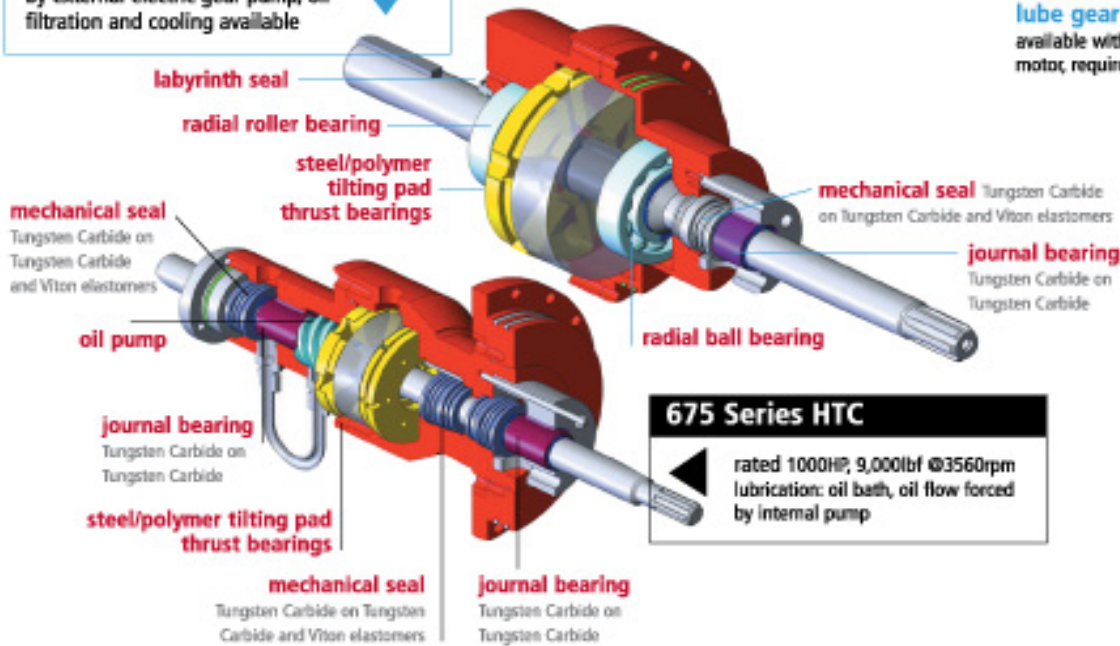
**Expert Advice - High Quality Materials** The correct application of technology is the critical success factor for any pumping system. You can count on Canadian Advanced's professional engineers to design a pumping system that exactly meets your application requirements. We use Ni-Resist as a standard material for diffusers and impellers and MONEL K500 for shafting. These special material combinations and designs cater to services with high levels of abrasion. Other materials are available upon request.

# Horizontal Pumping System



## 875 Series HTC

rated 1300HP, 25,000lbf @3560rpm;  
lubrication: oil bath, oil flow forced by external electric gear pump, oil filtration and cooling available



## 675 Series HTC

rated 1000HP, 9,000lbf @3560rpm  
lubrication: oil bath, oil flow forced by internal pump

**pump base** Teflon coated for scale, asphaltenes or waxes applications available upon request

**bottom diffuser** standard material Ni-Resist Type 1, hardened stages available upon request for abrasive environment, Teflon coated for scale, asphaltenes or waxes applications available upon request

**diffuser** standard material Ni-Resist Type 1, hardened stages available upon request for abrasive environment, Teflon coated for scale, asphaltenes or waxes applications available upon request

**journal radial bearing** every pump stage lubricated with pumped medium, hardened Tungsten Carbide bearing available every stage upon request for abrasive environment

**pump housing**  
secondary containment

**pump head**  
Teflon coated for scale, asphaltenes or waxes applications available upon request

**shaft** standard material MONEL K500, high strength shaft Inconel 718

**pump coupling**

**impeller** standard material Ni-Resist Type 1, hardened stages available upon request for abrasive environment, Teflon coated for scale, asphaltenes or waxes applications available upon request

### multistage centrifugal pump

### HPS DESIGN CAPACITIES

- Flow to 65,000 bpd (430 m<sup>3</sup>/hr)
- Heads to 9,850 ft (3,450 m)
- Temperatures to 250° F (120° C)

#### PRESSURES RATINGS:

538 series – 5000 PSI

675 series – 3500 PSI

875 series – 4300 PSI

1025 series – 3000 PSI

- Driver power to 1,300 HP (950 KW)
- Higher ratings upon request

### HPS APPLICATIONS

- Crude oil transfer
- Pipeline booster
- Reservoir pressure maintenance
- Salt water disposal and water flood
- Amine circulation
- CO<sub>2</sub> booster
- Power fluid booster
- NGL booster and injection
- LPG booster
- Mine dewatering
- Geothermal
- Reverse osmosis
- Wash down and descaling

### pump base

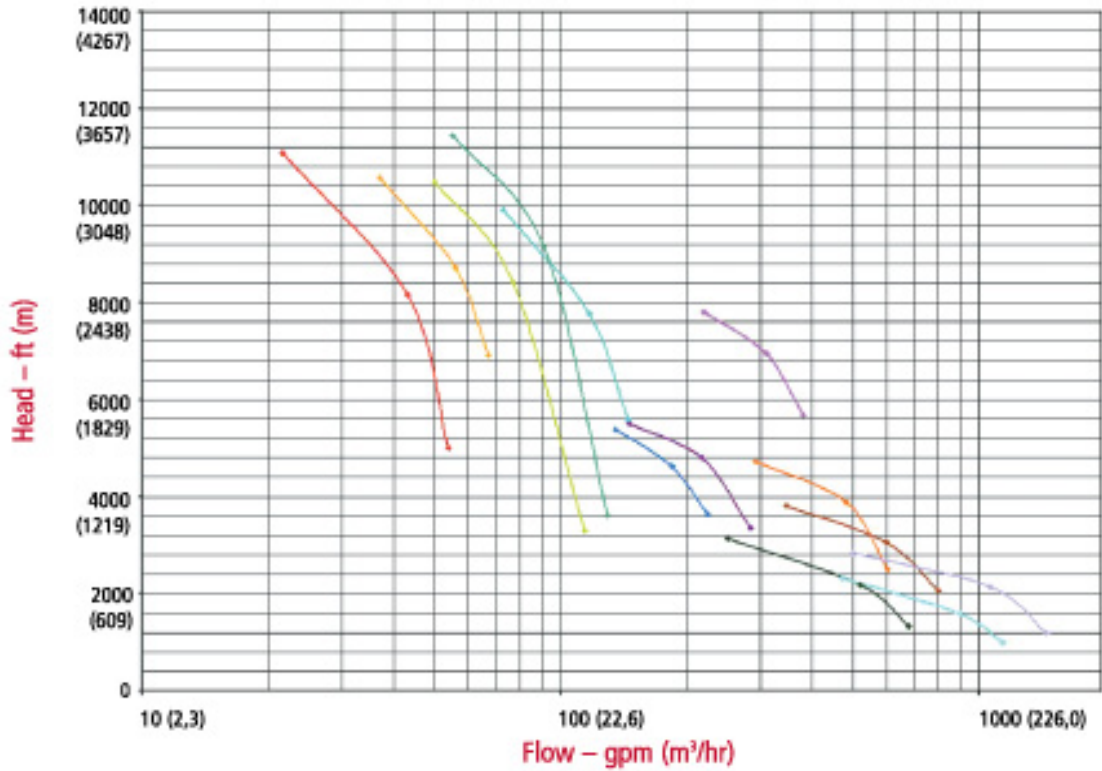
oilfield type welded assembly, structural steel with lifting lugs

### bolt on discharge

standard ISO or ANSI flanges, available in RF or RTJ

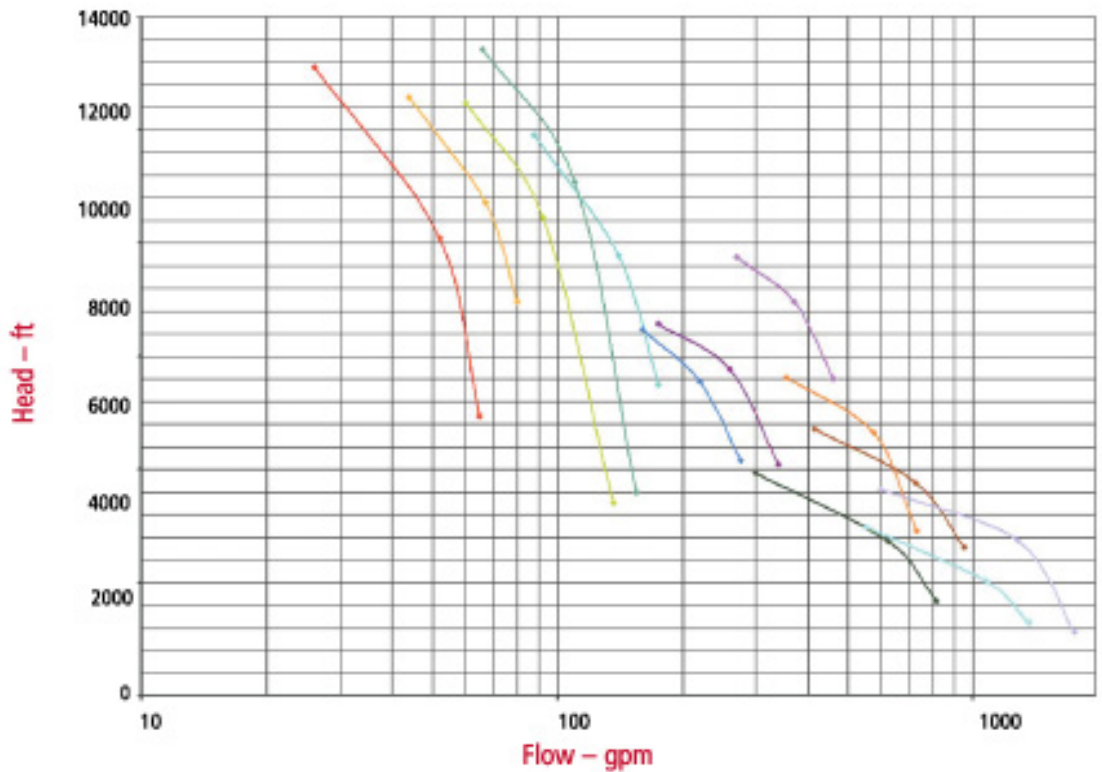
# Standard Operating Ranges | CAI HPS Pumps

50 Hz ratings



CKR4700	CKR2000	CHR7000	CHR19000	CJR35000
CKR3400	CKR1600	CHR9000	CIR21000	CJR45000
CKR2800		CHR12500	CIR24000	

60 Hz ratings





## Customer Support Service

The long-term success of any pumping system depends upon the quality and availability of customer support services.

Canadian Advanced prides itself on providing fast and efficient response to any situation, without compromising quality.

**Fast Response** Our field technicians will install, start and monitor the pumping system to ensure successful operation. The crews are equipped with state-of-the-art tooling and modern truck-mounted spooling units for all capillary tube spooling and banding needs. Canadian Advanced service centres, strategically located across the globe, offer our customers easy access to a full range of repair and maintenance services including unit installation, troubleshooting and preventive maintenance.

**Servicing All Markets** In addition to supplying parts and services for all of our equipment, Canadian Advanced's in-house re-engineering specialists will design, deliver and fit high integrity components for other manufacturer's machinery – including upgrading and retrofitting existing pump installations. Using root-cause failure analysis, system investigation and material assessment, Canadian Advanced can modify existing installations to meet new duty conditions, improve operating efficiencies and increase MTBF.

Canadian Advanced also provides all the accessories needed during installation and overhaul of Electric Submersible Pumps and Horizontal Pump Systems including bleeder valves, check valves, banding materials, MONEL bolting and couplings, as well as flat cable extensions for most designs used in the industry.

**Commitment** At Canadian Advanced, we constantly strive to improve our customer service performance and deliver the highest possible life cycle value in the industry.

# Canadian Advanced provides a broad range of pumping systems.

## Electric Submersible Pumps (ESP)

Canadian Advanced manufactures a wide range of ESP for artificial lift and other specialized applications. Many specially engineered and often patented solutions provide equipment that is tailored to your specific operating conditions.

## Variable Frequency Generators (VFG)

Canadian Advanced has developed and manufactures a unique power supply system that eliminates the need for variable speed drives, harmonic filters and step-up transformers. It provides a pure sine wave and significantly extends your MTBF and production rates.

## Rebuilding of ESP's

Canadian Advanced rebuild used ESP's of most known manufacturers into "as new" condition. Systems are completely tested and certified before leaving the factory.

## Consumables

Canadian Advanced offers all of the materials and accessories needed for the installation and overhaul of Electrical Submersible Pumps and Horizontal Pump Systems, including:

- Bleeder valves and check valves on 2 7/8 and 3 1/2 inches, EUE B RD
- MONEL K500 bolts, stainless steel
- MONEL couplings
- Flat cable extension on 540 and 456 series taped in with Galvanized or MONEL Armor
- Other consumable items such as quality banding materials are offered at competitive prices.



**Head Office:**  
6120 Davies Road  
Edmonton, AB  
T6E 4M9

Phone: (780) 485-2010 • Toll Free: (866) 707-7867  
Fax: (780) 485-1938  
• Calgary • Drayton Valley • Lethbridge  
[www.rotatingright.com](http://www.rotatingright.com)