

Horizontal Pumping System

2.0



Innovative Solutions for Moving Fluids to Power the World



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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, Horizontal Pump Systems for a variety of high pressure applications and innovative Variable Speed Drive Systems.

Engineered Operating sophisticated production processes in challenging conditions, extreme climates and remote locations requires reliable pumping systems. Canadian Advanced pumping systems are the industry choice, producing more flow, 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 and Safety All Canadian Advanced operations are certified to ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 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 Horizontal Pump System (HPS) 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 HPS is the ideal choice for urban and environmentally sensitive locations. 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 HPS has radial and mixed flow hydraulics for optimum efficiency at any rating.

Low Maintenance The thrust chamber, or bearing frame, on the HPS features sleeve type radial and tilting pad thrust bearings. An ample oil reservoir and internal pump ring provide excellent lubrication and temperature control. Optimal 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 applications 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 can cater to services with high levels of abrasion. Other materials are available upon request.



Horizontal Pumping System

intake manifold

316 SS standard
standard ANSI flanges available in RF or RTJ

flexible intake hose

316 SS flanges and braiding

electric motor

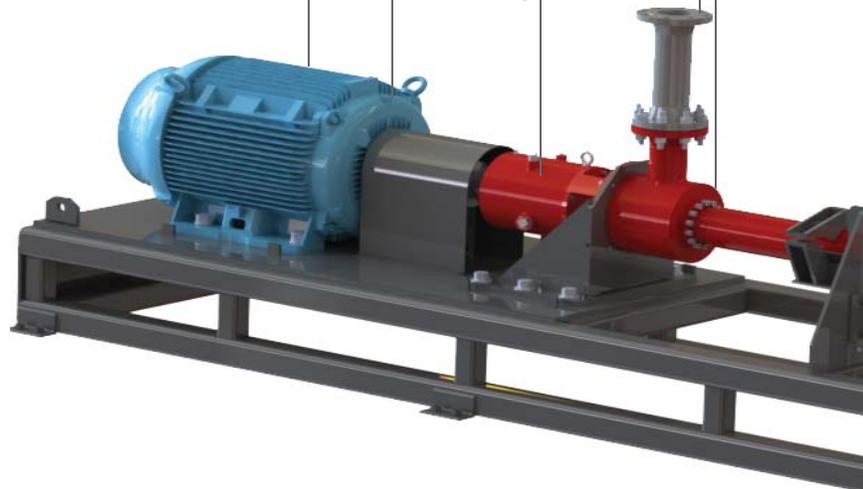
suit customer preferences
and specifications

disc spacer coupling

lovejoy SX-158
0-700hp standard
metastream up to
1650hp available

675 series

AFB HTC

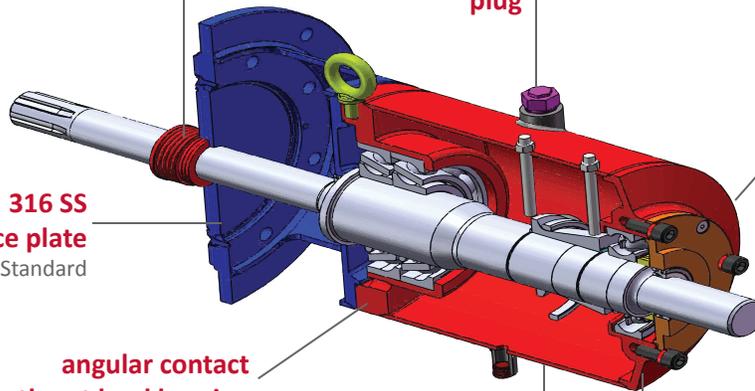


mechanical seal

Type 2, Silicone
Carbide on Silicone
Carbide and Viton
elastomers

vent plug

labyrinth seal



**316 SS
seal face plate**
Standard

**angular contact
thrust load bearing**

oil flinger disk

radial support ball bearing

675 Series HTC

rated 1000HP, 6000lbf @ 3560 rpm;
lubrication: oil bath, splash type
system

pump base 316 SS standard or 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. tungsten Carbide bearing available every stage upon request for abrasive environment

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 316 SS standard or teflon coated for scale, asphaltenes or waxes applications available upon request

shaft standard material MONEL K500, high strength shaft Inconel 718

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. Tungsten Carbide bearing available on every stage upon request for abrasive environment

pump coupling

multistage centrifugal pump

HPS DESIGN CAPACITIES

- Flow to 65,000 bpd (430 m³/hr)
- Heads to 9,850 ft (3,450 m)
- Temperature to 250°F (120°C)

PRESSURE RATINGS

- 538 series - 4600 PSI
- 675 series - 3700 PSI
- 875 series - 3600 PSI
- 1025 series - 3600 PSI

- Driver Power to 1,300 HP (950 KW)
- Higher rating upon request

HPS APPLICATIONS

- Crude oil transfer
- Pipeline booster
- Reservoir pressure maintenance
- Salt water disposal and water flood
- Amine circulation
- CO2 booster
- Power fluid booster
- NGL booster and injection
- LPG booster
- Mine dewatering
- Geothermal
- Reverse osmosis
- Wash down and descaling
- Jet pump fluid prime mover

pump base

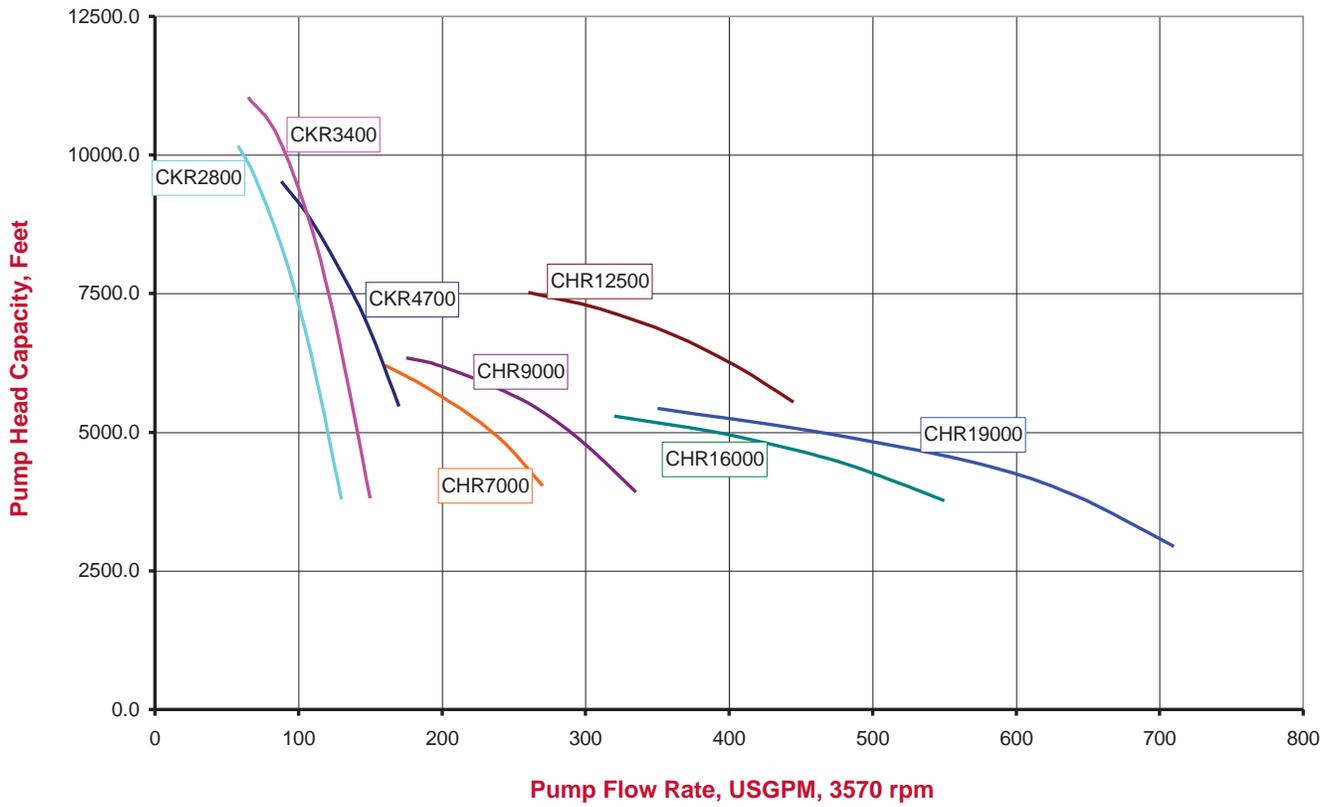
oilfield type welded assembly, structural steel with lifting lugs

bolt on discharge

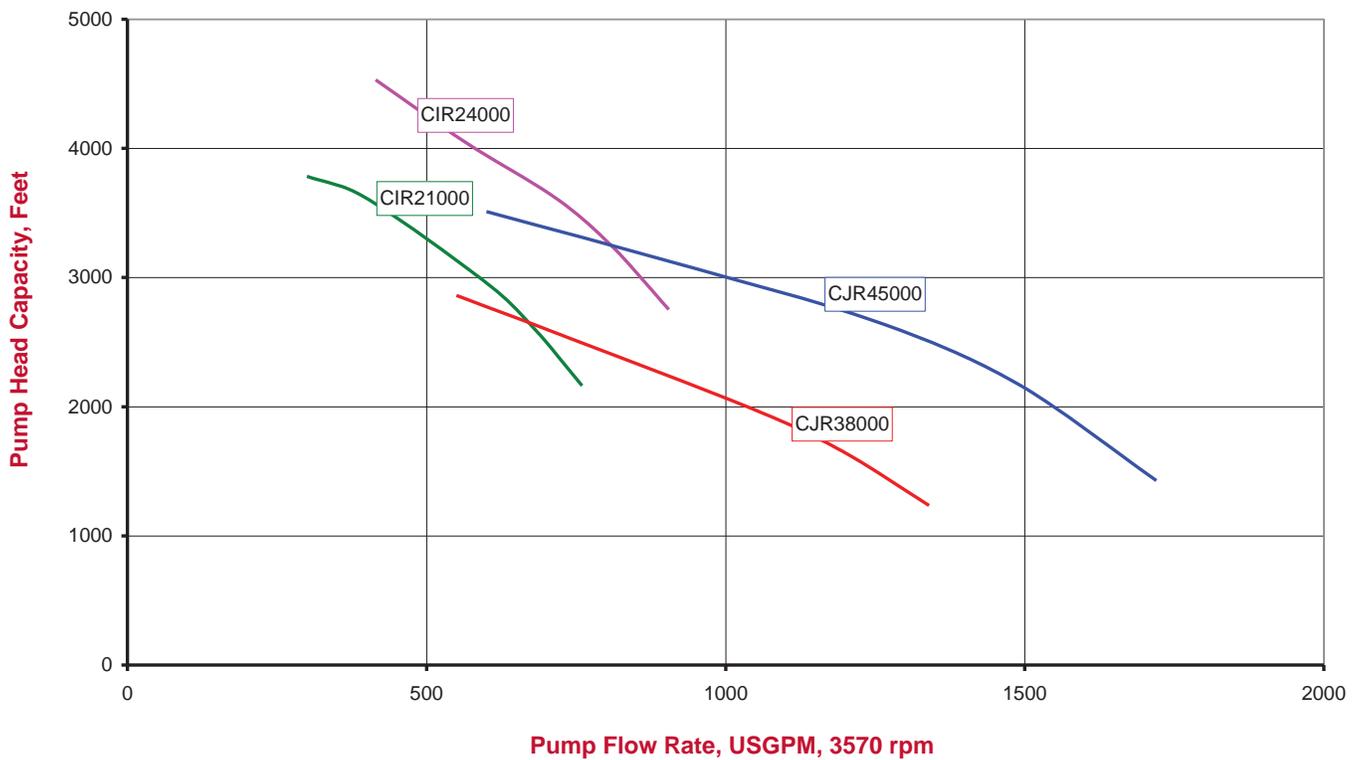
standard ISO or ANSI flanges, available in RF or RTJ



538/675 SERIES PUMPS



875/1025 SERIES PUMPS





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 - like our Super Duty Sand Pump that can master the toughest abrasion conditions in the industry.

Horizontal Pumping System (HPS)

Canadian Advanced manufactures a range of HPS for low flow/high head applications like crude oil transfer, pipeline booster, water injection and reverse osmosis. The HPS technology distinguishes itself as a cost effective alternative to other designs like multi-stage barrel, split case and segmental pumps and is based on proven multi-stage centrifugal pump designs that are used in our ESP product range.

Variable Frequency Generators (VFG)

Canadian Advanced has designed and manufactures a unique power supply system that eliminates the need for variable speed drives, harmonic power filters and step-up transformers. It provides pure sine wave and significantly extends your MTBF and production rates. Combined with an improved electrical efficiency the VFG reduces both, capital and operating costs.

Variable Frequency Drive (VFD)

Canadian Advanced is proud to introduce a new VFD product line to the ESP market, the ACT (Advanced Control Technology) VFD control panel. ACT is supplied with the latest, high performance, full vector drive technology from Mitsubishi. With superior starting torque and precise speed control, ACT will rival all other VFD technology in the ESP industry today.

Advanced Monitoring Technology (AMT)

Canadian Advanced provides the AMT and can help producers implement the iWellsite Monitoring System. It is a flexible, easily installed system supporting secure on-demand viewing of remote site data. Producers are able to view their wells from anywhere with an internet connection and a web browser. The implementation of this system enables producers to reduce costly down-time and equipment failures.

Specialty Engineering & Testing

In addition to our standard products, Canadian Advanced specializes in Custom Product Engineering. Our modern and extensive testing facilities guarantee you thorough testing of each engineered solution before the product is shipped to the field. As well, Canadian Advanced also has the ability to offer all materials and accessories needed for the installation and maintenance of ESP and HPS applications.

Contact

ISO 9001:2008, ISO 14001:2004
OHSAS 18001:2007
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