

DATA SHEET

Water Injection & NGL Injection

Electric Drive



■ Sea Water - Produced Water - Condensate Water & Natural Gas Liquid High Pressure Injection Pumps



Pressure: 30 Bar (435 psi) to 4000 Bar (56,000 psi)

Flows: 5 LPM (1.3 gpm) to 2000 LPM (528 gpm)



- Local control systems available which can be skid mounted.
- Full integration & interface with client control systems.
- Use of latest communication protocols.
- Comprehensive instrumentation with health/status monitoring functions.
- Full data acquisition and logging capabilities.

Introduction:

The Calder range of electric motor driven high pressure reciprocating plunger pump units are designed and built primarily for the Oil & Gas Industry for operation in hazardous and non-hazardous locations; On-shore fields from the Siberian Arctic to Kuwait Desert; Offshore facilities from Northern Norwegian waters to Asian and African tropical oceans. The pump packages are designed to deliver fixed or variable flows at a range of pressures to meet the most challenging field conditions.

Applications:

- Sea Water Injection
- Produced Water Injection
- Water Condensate Injection
- Liquid Natural Gas Injection

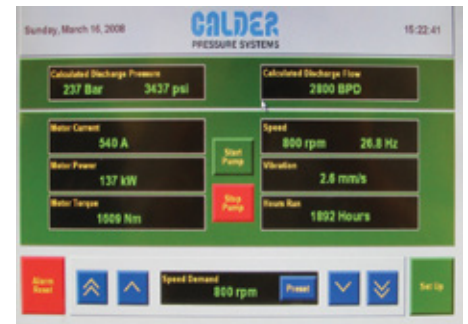
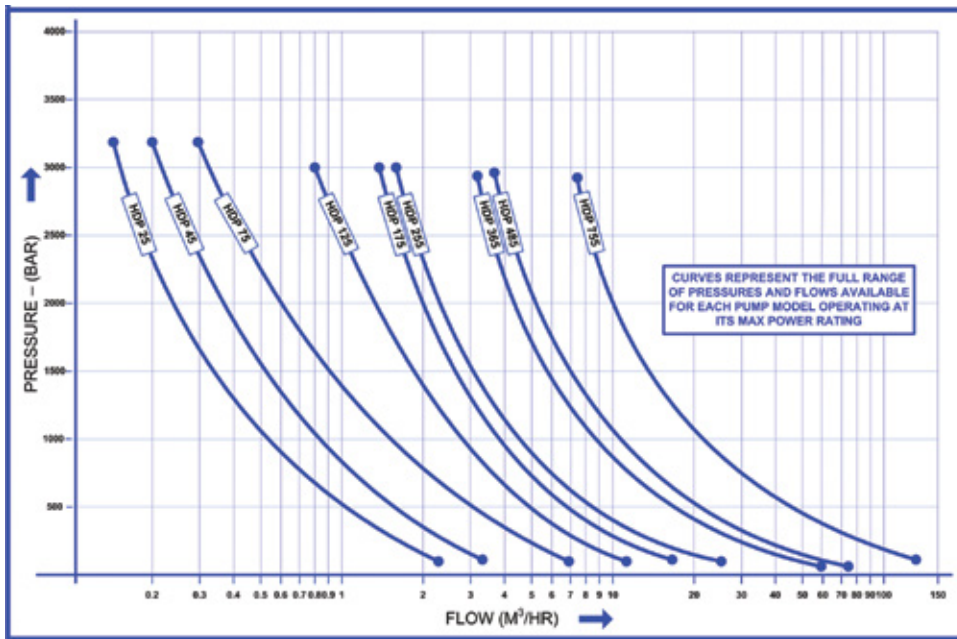
Operation & Control Systems:

- Simple controls to fully integrated unmanned control systems.
- Pump flow rate controls allow fixed or variable flow rates using variable frequency or hydraulic drives.
- Pump unit control system configurations featuring the following options:
 - Single or Multiple pump unit control systems which can be operated from a remote location.

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INNOVATION THROUGH EXPERIENCE

CALDER



Performance Curve: Chart illustrates the range of flows & pressures available.

Pumped Liquids:

- Sea Water, Brine, Produced Water
- Liquid Natural Gas
- Water Condensate
- Corrosion Inhibitors

Technical Specifications:

- Skid mounting options:
 - Fixed Installation Skids complete with FEA
 - Open Oil Field Type Skid
 - Crash Frame Skid. (DNV 2.7-1)
- Compact design for minimal footprint
- Containerised/noise enclosure with blast case FEA
- Noise attenuated to 85, 83 or 78 Db(A) at 1M (as required)
- Single pump or multi-pump skids
- Environmental conditions -40°C (-40°F) to 55°C (130°F)
- Hazardous area: Zone 1, Zone 2, or Safe Area
- Driver type: electric motor

Pump Types:

- Triplex or quintuplex reciprocating plunger pumps. API 674
 - Pressure range: 30 bar (435 psi) to 4000 bar (56,000 psi)
 - Flow range: 6.0 Litres/hr (1.6 gpm) to 120M³/hr (528 gpm)
- Zero leakage to atmosphere, hermetically sealed
- Leak detection
- Flow Control <10:1 flow range
- Discharge pulsation <1.5% peak to peak
- Hammelmann high pressure labyrinth seal for long term reliability >4000 hrs
- Volumetric efficiency 95% (with water)
- Mechanical efficiency 95%

• Vertical mount pump for minimal foot print

• In-built gear reducer

• Material options

- 304 or 316SS or Duplex Stainless Steel
- Super Duplex Stainless Steels (25% Cr)
- Hastalloy & Inconel

Standards & Specifications:

Calder pump packages can comply with most international standards and specifications including:

ATEX | IEC | GOST | EN | DNV | API | ANSI | PED | AS/NZ | NORSOK | NACE | CE | PED

ISO 9001 Quality standard has been practised by Calder since 1987 with award of certification in 1999. Our rigorous application of this highly respected International Quality Standard has ensured that we consistently meet and exceed our customers' most demanding expectations for both quality and reliability.

ISO 14001 Environmental Standard has been held by Calder since 1999. Careful and judicious management of our working environment with the application of sound and well informed design applications utilising the latest and most efficient technologies helps us to produce equipment which minimises the environmental footprint of our production facility and the operating equipment in the field.

OHSAS 18001 We at Calder pride ourselves on our safety record. As members of the British Safety Council we practise the strictest safety procedures within our factory and working environments, applying rigorous risk assessments to all activities and equipment which we design and build.



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