

High Temperature PC Pumps

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Our recent technology advancements extend the application range of downhole progressing cavity pumps (PCPs). The high temperature line of downhole pumps provide unique solutions to high temperature applications that previously prevented operators from using downhole PCPs.

The High-Temperature Lock (HTL) and Metal-To-Metal (MTM) pumps can operate in temperatures up to 150°C (300°F) and 350°C (660°F) respectively. Resulting from our extensive research and development as well as thorough in-field application testing, these proprietary high temperature downhole pump solutions have taken multiple approaches to achieving the advanced capability of handling increasing downhole temperature levels.

These innovative high temperature downhole pump solutions include:

- Proprietary elastomers that can not only withstand high temperatures but also effectively operate in wells with aromatic fluids
- Mechanically secured stator elastomers that do not rely on the bonding agent between the elastomer and the stator tube for greater temperature and chemical resistance
- Metal-to-metal pumps do not use elastomers, eliminating all limitations resulting from an elastomeric stator element and raising the maximum downhole temperature limit to an unprecedented level

PC Pumps with OH Elastomer

- Capable of handling downhole temperatures to 135°C (275°F)
- Uses our proprietary OH elastomer (Previously Moyno UF175™)
- Ideal for oils, aromatics and water environments
- Provides high resistance to gas permeation

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High-Temperature Lock (HTL) PC Pumps

- Capable of handling downhole temperatures to 150°C (300°F)
- The stator elastomer is mechanically secured to the stator tube
- The patented design does not rely on the bonding agent between the elastomer and the stator tube
- Compatible with steam injection

High-Temperature Lock (HTL) Models Available

Metric (m3/day per 100rpm - Lift in m)	Imperial (bpd per 100rpm - Lift in ft)
16-1200 HTL, 16-1800 HTL, 16-2400 HTL, 16-3000 HTL, 16-3600 HTL	094-4000 HTL, 094-6000 HTL, 094-8000 HTL, 094-10000 HTL, 094-12500 HTL
32-900 HTL, 32-1800 HTL	200-3000 HTL, 200-6000 HTL
45-800 HTL, 45-1200 HTL, 45-1600 HTL	280-2650 HTL, 280-4000 HTL, 280-5400 HTL
47-750 HTL, 47-1500 HTL, 47-2250 HTL	295-2500 HTL, 295-5000 HTL, 295-7500 HTL
54-600 HTL, 54-1200 HTL, 54-1800 HTL	340-2000 HTL, 340-4000 HTL, 340-6000 HTL
74-800 HTL, 74-1000 HTL, 74-1200 HTL	495-2650 HTL, 495-3300 HTL, 495-4000 HTL
96-520 HTL, 96-1040 HTL, 96-1560 HTL	600-1750 HTL, 600-3500 HTL, 600-5250 HTL
120-400 HTL, 120-800 HTL, 120-1200 HTL	755-1350 HTL, 755-2650 HTL, 755-4000 HTL
155-450 HTL, 155-600 HTL, 155-750 HTL, 155-900 HTL	975-1500 HTL, 975-2000 HTL, 975-2500 HTL, 975-3000 HTL

Metal-To-Metal (MTM) PC Pumps

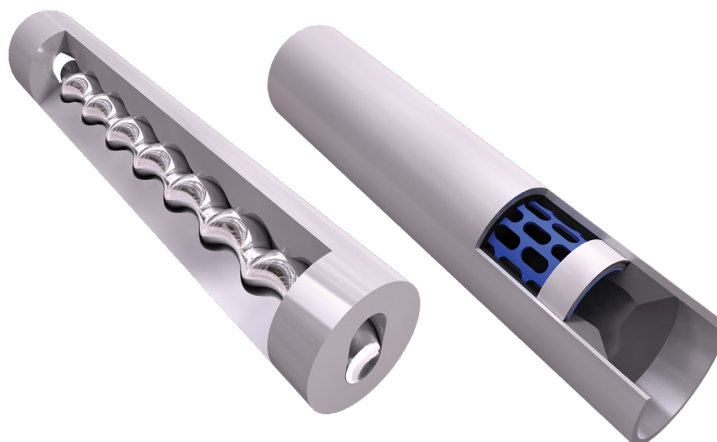
- Capable of handling downhole temperatures to 350°C (660°F)
- Features metal-to-metal rotor/stator technology
- The stator does not include elastomer
- Closely controlled tolerances between the metal-to-metal rotor/stator clearance for superior performance and allows for rotor change outs in the field which significantly reduces workover time and costs.
- Produces low levels of vibration that are comparable to conventional downhole PCPs
- Ideally suited to handle hot oil encountered during thermal recovery methods such as steam-assisted gravity drainage (SAGD) and cyclic steam stimulation (CSS)

Metal-To-Metal (MTM) Models Available

Metric (m3/day per 100rpm - Lift in m)	Imperial (bpd per 100rpm - Lift in ft)
82-600 MTM, 82-1200 MTM	520-2000 MTM, 520-4000 MTM
112-600 MTM, 112-1200 MTM	700-2000 MTM, 700-4000 MTM
218-700 MTM	1370-2200 MTM
300-510 MTM*	1900-1600 MTM*

*Scheduled for release in 2015

**Metal to Metal (MTM)
PC Pump**



**High Temperature
Lock (HTL) PC Pump**