

**PROGRESSIVE CAVITY PUMPS**  
and **WELLHEAD DRIVE SYSTEMS**

Commercial catalogue PCP's and Driveheads



QUALITY INTEGRITY INNOVATION

## OUR COMPANY

OILTECHSYSTEMS is part of SIEBC group of companies working in the energy industry for more than 20 years which produce, engineer and develop systems with the most advanced technologies for the conduction and storage of all kind of fluids at high pressures and temperatures.

The group is working worldwide providing services, installations, products and performing turn key projects.



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# PROGRESSIVE CAVITY PUMP



## OUR PRODUCT

Within our product range we offer artificial lift systems where we produce reinforced thermoplastic umbilicals and we also collaborate and design solutions with the most advanced pump manufacturers.



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## ADVANTAGES

Progressive cavity pumps have many advantages. Here are some of them:

✓ The progressive cavity pump can operate at a much lower suction pressure than rod pumps. As a result, the wellbore column requires less fluid to feed the pump. Under atmospheric suction pressure, it can operate with the well fluid level close to the suction inlet of the pump without affecting its performance. This allows the well's production to be increased up to the maximum level of fluid available.

✓ PCP pumps do not require a heater, even when pumping high viscosity oils.

✓ Oil and water pumps with solids.

✓ There are no internal valves to obstruct or block the gas.

✓ Continuous, smooth operation helps prevent and control the production of unwanted fluid and particulate waste.

✓ Minimum maintenance costs.

## MAIN APPLICATIONS

- ✓ Heavy oil
- ✓ Medium Crude
- ✓ Coal Bed Methane (CBM)/ Coal Seam Gas (CSG)
- ✓ Shale oil and water



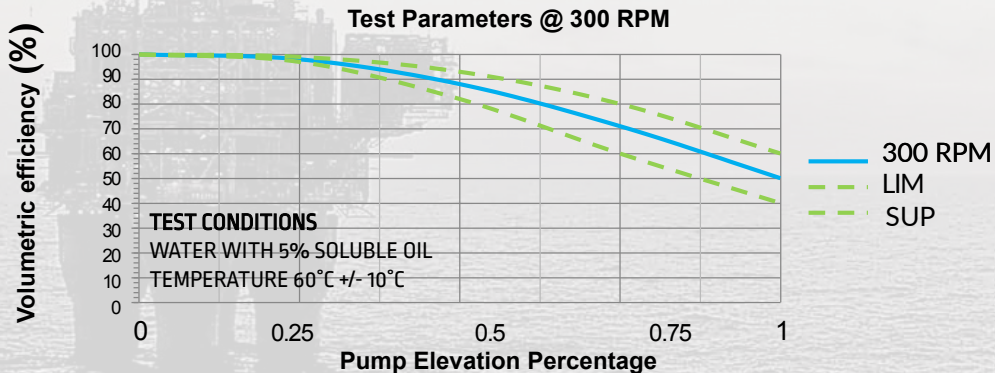
# PROGRESSIVE CAVITY PUMP



## PCP TECHNICAL DATA SHEET

2 3/8" PUMPS					
AVAILABLE MODELS		2OT-1900	2.5OT--1200	3OT--600	3OT--1000
Pump performance (m <sup>3</sup> /day @ 100RPM)		2	2.5	3	3
Pump lift m (ft)		1900 (6234)	1200 (3937)	600 (1968)	1000 (3281)
Nominal pressure kPa (psi)		18632 (2702)	11768 (1707)	5884 (853)	9807 (1422)
Nominal lift Torque Nm (ft.lbs)		40.58 (29.93)		26.26 (19,368)	40.58 (29.93)
ROTOR	Rotor Superior Connection	1/2" API			
	Rotor head diameter	27mm			
	Rotor Total Length	2643	1833	2643	
	Minimum pipe size	2 3/8" (Min. DRIFT 48.28mm)			
STATOR	External Stator Diameter	2 3/8"			
	External coupling diameter	78mm			
	Top connection	2 3/8" NU			
	stator total length	2160	1350	2160	
	Label bar length	410			
	Label Bar Bottom Connection	2.3/8" NU			

2 3/8" PUMPS					
AVAILABLE MODELS		4OT--1900	5OT--1200	6OT--600	6OT--1000
Pump performance (m <sup>3</sup> /day @ 100RPM)		4	5	6	6
Pump lift m (ft)		1900 (6234)	1200 (3937)	600 (1968)	1000 (3281)
Nominal pressure kPa (psi)		18632 (2702)	11768 (1707)	5884 (853)	9807 (1422)
Nominal lift Torque Nm (ft.lbs)		78.78 (58.11)	81.17 (59.87)	54.91 (40.50)	78.78 (58.11)
ROTOR	Rotor Superior Connection	5/8" API			
	Rotor head diameter	35 mm			
	Rotor Total Length	3130	2193	3130	
	Minimum pipe size	2.3/8" (Min. DRIFT 48.28mm)			
STATOR	External Stator Diameter	2.3/8"			
	External coupling diameter	78 mm			
	Top connection	2.3/8" NU			
	stator total length	2625	1688	2625	
	Label bar length	410			
	Label Bar Bottom Connection	2.3/8" NU			



# PROGRESSIVE CAVITY PUMP

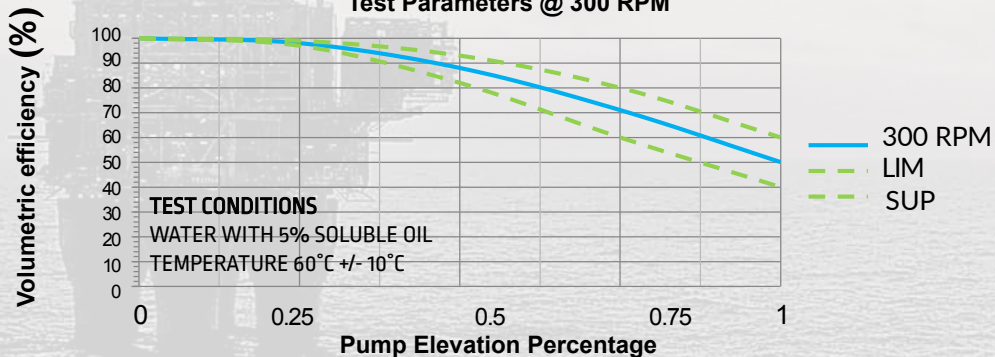


## PCP TECHNICAL DATA SHEET

2 7/8" PUMPS					
AVAILABLE MODELS		90T-1900	120T--1200	160T--600	160T--1000
Pump performance (m <sup>3</sup> /day @ 100RPM)		9	12	16	16
Pump lift m (ft)		1900 (6234)	1200 (3935)	600 (1968)	1000 (3280)
Nominal pressure kPa (psi)		18632 (2702)	11765 (1700)	5885 (850)	9800 (1420)
Nominal lift Torque Nm (ft.lbs)		200 (145)		120(88)	200(145)
ROTOR	Rotor Superior Connection	7/8"API			
	Rotor Head Diameter	44 mm			
	Rotor Total Length	4304	2992	4304	
	Minimum Tubing Size	2 7/8" (Min. DRIFT 48mm)			
STATOR	External Stator Diameter	2 7/8"			
	External Coupling Diameter	89 mm			
	Superior Connection	2 7/8" NU			
	Stator Total Length	2363	3675	2363	
	Tag Bar Length	504			
	Inferior Tag Bar Connection	2.7/8" NU			
3 1/2" PUMPS					
AVAILABLE MODELS		160T--1900	200T--1200	220T--600	220T--1000
Pump performance (m <sup>3</sup> /day @ 100RPM)		16	20	22	22
Pump lift m (ft)		1900 (6234)	1200 (3935)	600 (1968)	1000 (3280)
Nominal pressure kPa (psi)		18632 (2702)	11765 (1700)	5885 (850)	9800 (1420)
Nominal lift Torque Nm (ft.lbs)		195 (140)		330 (240)	195(140)
ROTOR	Rotor Superior Connection	1"API			
	Rotor head diameter	60 mm			
	Rotor Total Length	4844	4844	3444	
	Minimum pipe size	3.1/2" (Min. DRIFT 60 mm)			
STATOR	External Stator Diameter	3.1/2"			
	External coupling diameter	106 mm			
	Top connection	3.1/2" NU			
	stator total length	4200	4200	2800	
	Label bar length	504			
	Label Bar Bottom Connection	3.1/2" NU			



Test Parameters @ 300 RPM



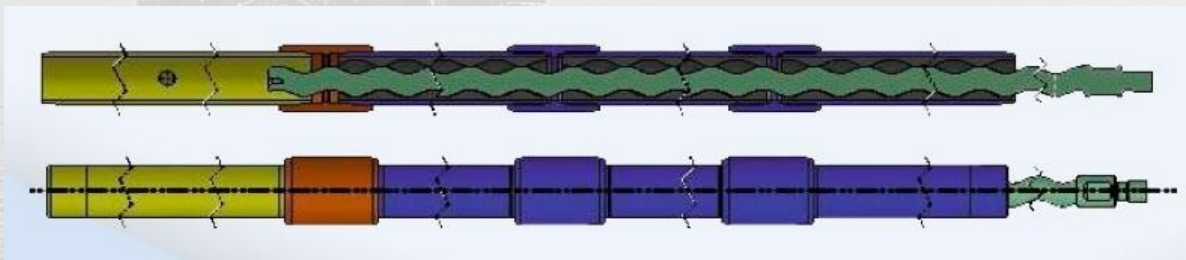
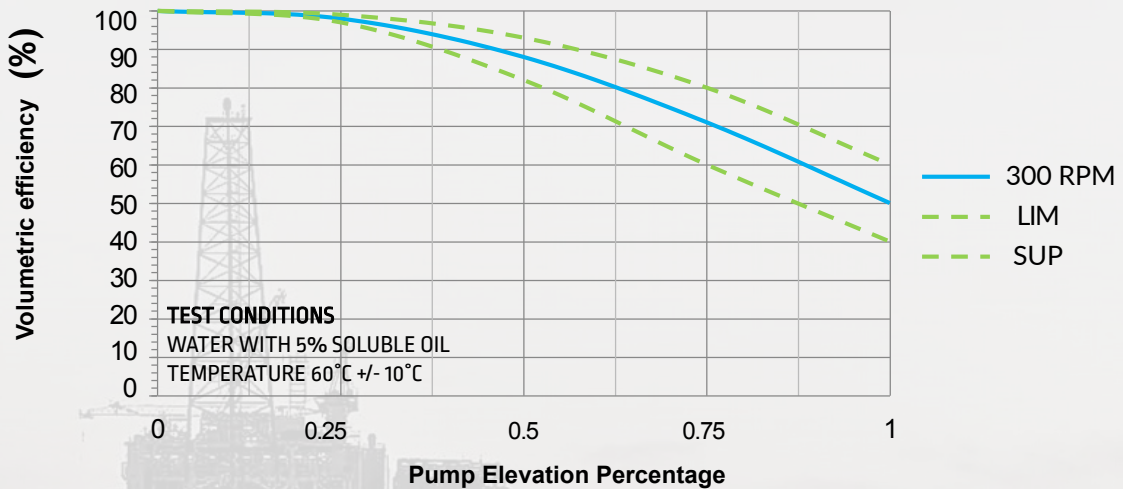
# PROGRESSIVE CAVITY PUMP



## PCP TECHNICAL DATA SHEET

4" PUMPS				
AVAILABLE MODELS		38OT-1900	48OT-1200	67OT-600
Pump performance (m <sup>3</sup> /day @ 100RPM)		38	48	67
Pump lift m (ft)		1900 (6234)	1200 (3935)	1000 (3280)
Nominal pressure kPa (psi)		18632 (2702)	11765 (1700)	9800 (1420)
Nominal lift Torque Nm (ft.lbs)		859 (634)	773(570)	688 (507)
ROTOR	Rotor Superior Connection	1"API		
	Rotor Head Diameter	61mm		
	Rotor Total Length (mm)	5734		5348
	Minimum Tubing size	3.1/2" (Min. DRIFT 72.82mm)		
STATOR	External Stator diameter	4"		
	External Coupling diameter	114mm		
	Superior Connection	4" NU		
	Stator Total Length (mm)	5075		4725
	Tag Bar Length	504		
	Inferior Tag Bar Connection	4" NU		

Test Parameters @ 300 RPM





# PROGRESSIVE CAVITY PUMP



## PCP SPECIFICATIONS

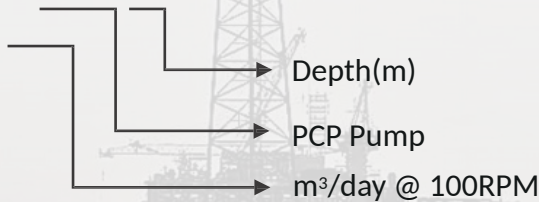
MODEL	ISO MODEL	A (in)	B (mm)	C (mm)	D (mm)	E (mm)	F (in)	Tubing min $\phi$ (in)	Casing min $\phi$ (in)	Drive Head
2OT - 1900	002 19 041	2 3/8"	twenty	2160	2643	410	3/4" (1/2")			OTD-1H-15
2.5OT - 1200	003 12 041			1350	1833					OTD-1H-9
3OT - 600	003 06 041			2160	2643					OTD-1H-15
3OT - 1000	003 10 041			2625	3130					OTD-1H-9
4OT - 1900	004 19 041	25	25	1688	2193	504	15/16" (5/8")	23/8"	41/2"	OTD-1H-9
5OT - 1200	005 12 041			2625	3130					OTD-1H-15
6OT - 600	007 06 041			3675	4304					OTD-1H-9
6OT - 1000	007 10 041	27/8"	32	2450	3080	504	13/16" (7/8")			OTD-1H-9
9OT - 1900	010 19 050			3675	4304					OTD-1H-15
12OT - 1200	012 12 050			2450	3080					OTD-1H-9
16OT - 600	016 06 050	3 1/2"	40	3675	4304	504	13/8" (1")	27/8"	51/2"	OTD-1H-9
16OT - 1000	016 10 050			4200	4844					OTD-1H-15
16OT - 1900	016 19 050			2800	3444					OTD-1H-9
20OT - 1200	026 10 050			4200	4844					OTD-1H-9
22OT - 600	021 12 050	3 1/2"	40	2800	3444	504	13/8" (1")	27/8"	51/2"	OTD-1H-9
22OT - 1000	026 06 050			4200	4844					OTD-1H-9

### NOTE:

When the diameter of the tube is smaller than that of the stator, the first production tube connected to the stator (orbit tube) must have the same diameter as the pump stator.

### PCP Pump Model Identification

16 OT - 600



### ISO pump model identification

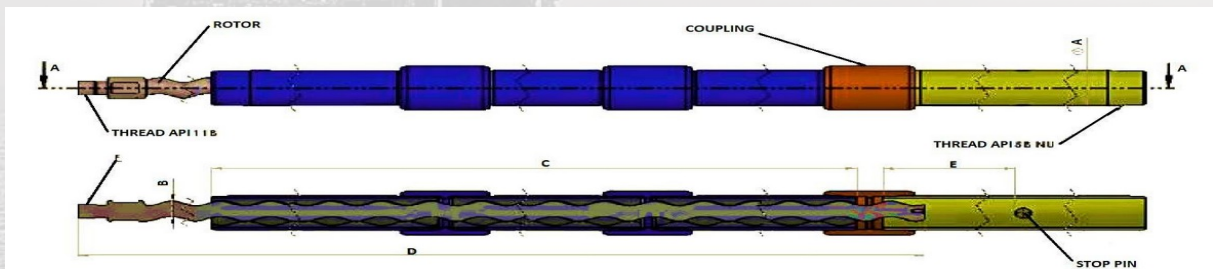
016

06

050

Dairy produce m<sup>3</sup>/day @ 100RPM      Lifting capacity meter of water / 100      Distance from stator bottom to Tag Pin (cm)

\*As recommended by ISO in WD 15136



# PROGRESSIVE CAVITY PUMP



## PCP ELASTOMER GUIDE

The selection of an elastomer for a Progressive cavity pump depends on the crude composition.

The table below shows the main properties of the most common elastomer in Progressive cavity pump applications.

MAIN PROPERTIES	NBRM	NBRA	HNBR
Hardness (Shore A)	65	65	70
Maximum Temperature (°F/°C)	195/90	210/100	300/150
Service Temperature (°F/°C)	175/80	190/88	265/130
Mechanical Resistance	++	++	++
Abrasion Resistance	++	+	++
Carbon Dioxide (CO <sub>2</sub> )	-	+	++
Hydrogen sulfide (H <sub>2</sub> S)	-	-	++
Aromatic's Resistance	+	++	+
Hot water	-	+	+
Steam	-	-	-
APPLICATION	Heavy crude oils with low aromatic content and/or presence of abrasives.	Light and medium crude oils (26 <° API <40) with high aromatic content.	Heavy and medium crude oils (with low aromatic content) at high temperature or presence of H <sub>2</sub> S

Legend:

++ Very good

+ good

- weak

HARD CHROMIUM LAYER FOR ROTOR	
Normal	0.12 mm (0.005")
Thick	0.30 mm (0.012")

# WELLHEAD DRIVE MOTOR

## ADVANTAGES

Wellhead drive motor main advantages:

- ✓ The PCP wellhead drive motor is connected directly to the wellhead, eliminating the concrete base required by some other pumping systems.
- ✓ The space required for installation in the well is much smaller and lower than many other artificial lift systems.
- ✓ Unlike other pumping systems, the PCP system has a much lower risk of accident if people or animals approach the wellhead.
- ✓ The API flange allows direct connection without adapters when changing from other systems to the PCP system.
- ✓ The simple design minimizes maintenance and requires little lubrication.
- ✓ The PCP wellhead drive motor bearing system provides minimal vibration.
- ✓ It can be easily adjusted to production rates or changing rotations through a mechanical process or with speed controllers (or with a simple change in throttle if internal combustion engines are used).
- ✓ Equipped with safety device to prevent the polished bar from being ejected
- ✓ Hydrodynamic brake system for the automatic and safe controlled release of the energy stored in the bar string (backspin).
- ✓ Insurance against leaks and mechanical failures.



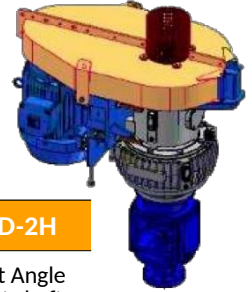
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# WELLHEAD DRIVE MOTOR



## TECHNICAL PARAMETERS

The following table shows the technical parameters of the basic models of wellhead drive motors.



MODELEITHER	OTD-1H	OTD-2H	OTD-1H-M	OTD-2H
Shaft Mounting Type:	Vertical Input Shaft	Vertical Input Shaft	Vertical Input Shaft	Right Angle Input shaft
Type of box:	Bearing box	Bearing box	Bearing box	Bearing box
Axle type:	Hollow shaft	Hollow shaft	Solid shaft	Solid shaft
Wellhead connection (mm): (in):	79,375 3 1/8	79,375 3 1/8	79,375 3 1/8	79,375 3 1/8
Polish rod size (mm): (in):	38.1 1 1/2	38.1 1 1/2	N/A	38.1 1 1/2
Sealing system:	Packing rings	Packing rings	Packing rings	Packing rings
Max. Torque rating on polish bar (Nm):	5600	6535	5600	1430
Max. Axial load capacity (ton):	9/12/15	9/15/30	9/15	9/15
Max. Power (kW): (hp):	44.74 60	74.57 100	44.74 60	44.74 60
Max. Polish bar speed (RPM):	600	600	600	600
Gearbox - Gear reduction:	N/A	N/A	N/A	4.1
Hydraulic compatibility:	Yes	Yes	Yes	Yes
Belts Compatible:	Yes	Yes	No	Yes
Maximum size of driven pulley (mm):	600	711	N/A	250
Minimum size of driven pulley (mm):	500	500		125
Maximum size of drive pulley (mm):	240	240		250
Minimum size of the drive pulley (mm):	130	130		125
Maximum pulley ratio:	5	6		2
Minimum pulley ratio:	2	2		1

# WELLHEAD DRIVE MOTOR

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## TECHNICAL PARAMETERS



The rotary head can be supplied with different stuffing box options, according to the unit model and wellhead connection requirement.



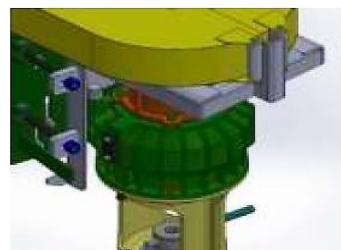
### Characteristics:

- Provides continuous gasket compression adjustment elements of a spring assembly.
- Bronze guide bushings to keep polished bar aligned to prevent premature filler box wear.
- Double protection (upper and lower) against leaks. 1" NPT bottom leak drain.
- Open access to run a clamp to lock the polished rod in position for maintenance or removal of the unit.

Wellhead drive motors are supplied with a hydrodynamic brake system. This system is designed to release the resulting torque stored in the bar chain when the main motor is shut down (maintenance, power failure, etc.). The total release of the stored energy is carried out gradually in a continuous and uniform manner to avoid the risk of accidents.



Braking system



# PCP DATA SHEET



Prepared by: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ /

Company name:	Country:
Field name:	Well name:
Vertical <input type="radio"/> Horizontal <input type="radio"/> Slant <input type="radio"/>	

WELL DATA	Units
Total Depth	Meters
Pump landing depth	Meters
Producing fluid level from surface	
Current	Meters
Projected	Meters
Flow line pressure	PSI
Casing pressure	PSI
Tubing size	in
Casing size	in
Rod size & grade	in
Tubing thread type and size	

PRODUCTION & FLUID DATA	Units
API grade	
Current flow rate	m <sup>3</sup> / Day
Projected flow rate	m <sup>3</sup> / Day
Water cut	%
Abrasive cut	%
Gas Oil Ratio	M <sup>3</sup> / m <sup>3</sup>
Fluid viscosity	cP
H <sub>2</sub> S	PPM
CO <sub>2</sub>	PPM
Aromatics	Mol %
Bottom hole temperature	°C
Ambient temperature	°C

SURFACE EQUIPMENT	
Prime Mover Type	Electric <input type="radio"/> Gas <input type="radio"/>
Surface Drive	Direct <input type="radio"/> Hydraulics <input type="radio"/>
Operating Frequency	Hz
Voltage	V
Flow tee to drive head connecton	
Wellhead connecton type and size	

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