
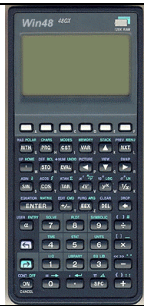


Program Version	Creation Date	Program Author	Country	Calculator	ROM Version
1.00	8/05/2000	Miguel Angel CAPORALINI HERK			HP48-R
<p style="text-align: center;">Program Title</p> <p style="text-align: center;"><b>Positive Displacement Reciprocating Pumps Calculus for Liquids Fluids of the Oil Industry</b></p>					
Library Number			Checksum (CRC)		Bytes
<b>L910 - RECPUMP</b>			<b># 1547h</b>		<b>10,165.5</b>

I'm writing this program in UsrRPL Language and after create a Library ..... (L910 - RECPUMP), wich allow calculate for a Positive Displacement Reciprocating Pumps:

- **For Single Acting Pumps is :**
  1. The product of Plunger or Piston Gross Area in square inches and the Stroke Length in inches, divided 231 (U.S.Gallons per Cylinder x Stroke, if the Number of Cylinders is = 1) or (U.S.Gallons per Stroke, if the Number of Cylinders is > 1).
  2. Or The product of Plunger or Piston Gross Area in square inches per the Stroke Length in inches per the Stroke rate or Crank Revolutions per Minute per the Number of Piston, Plungers or Diaphragms, divided 231 (U.S.Gallons per Minute).
- **0- Displacement**
- **For Double Acting Pumps is :**
  1. The product of Plunger or Piston Gross Area in square inches per the Stroke Length in inches per the Number of Piston, Plungers or Diaphragms, divided 231 (U.S.Gallons per Stroke) (Chamber without Rod).
  2. Or the diference of Plunger or Piston Gross Area in square inches less the Piston Rod Cross Sectional Area in square inches per the Stroke Length in inches, divided 231 per the Number of Piston, Plungers or Diaphragms

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- 1- Capacity
    - 3. Or the difference of Two per Plunger or Piston Gross Area in square inches less the Piston Rod Cross Sectional Area in square inches per the Slip percentage per the Stroke Length in inches per the Number of Piston, Plungers or Diaphragms, divided 231 (U.S.Gallons per Minute).
    - Is the Total Volume delivered per unit of time, less slip (U.S.Gallons per Minute).
    - Is the Percentage (%) of quantity of liquids with leaks past Piston clearances and Valves, plus the loss resulting from liquid compressibility, plus any external leakage through stuffing boxes.
    - Is the Pump Power Input less the Power lost within the Pump (whp).
  - 2- Slip
    - 1. Overall Unit Efficiency is the ratio in percentage (%) of the Pump Power Output (whp) to the Total Power Input (ehp or ihp).
    - 2. Pump Efficiency is the ratio in percentage (%) of the Pump Power Output (whp) to the Pump Power Input (bhp).
    - 3. Pump Volumetric Efficiency is the ratio in percentage (%) of the actual Pump Capacity to the Displacement
  - 3- Hydraulic Power
    - 1. Suction (Inlet) Pressure is the algebraic sum of Inlet Gauge Pressure and Atmospheric Pressure (psia).
    - 2. Discharge (Outlet) Pressure is the algebraic sum of Outlet Gauge Pressure and Atmospheric Pressure (psia).
    - 3. Differential Pressure is the difference between the Absolute Pressures of the Liquid at the Outlet Port (Discharge) and at the Inlet Port (Suction) (psi).
  - 4- Efficiency
    - 1. Plunger Load Single Acting Pump is
  - 5- Pressure
  - 6- Load Acting

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the product of Plunger Area and the Gauge Discharge Pressure (pounds).

2. Net Piston Rod Load Double Acting Pumps is the product of Gross Piston Area and Absolute Discharge Pressure, less the product of net Piston Area, Rod deducted, and Absolute Suction Pressure and less the product of Piston Rod Area and Atmospheric Pressure (net pounds).

- 7- Plunger / Piston Speed
- The Plunger or Piston Speed is the average speed of the Plunger or Piston (feet per minute).

#### Unit Conversion :

1 Cubic Inch = 1 / 231 (U.S. Liquid Gallons) = 0.004329 (U.S. Liquid Gallons)

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For any questions, please contact me :

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